# PDC ENERGY

**WELD COUNTY, COLORADO**
**SW NW SEC. 17 T5N R64W 6th P.M.**
**SCHAUMBERG 17F-202**

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

# Anticollision Report

**17 December, 2015**

total

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **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 98.4usft | **Error Model:** | ISCWSA |
| **Depth Range:** | Unlimited | **Scan Method:** | Closest Approach 3D |
| **Results Limited by:** | Maximum center-center distance of 10,000.0 us | **Error Surface:** | Elliptical Conic |
| **Warning Levels Evaluated at:** | 2.00 **Sigma** | **Casing Method:** | Not applied |

**Survey Tool Program** **Date** 17/12/2015

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 11,987.2 | PROPOSAL #1 (ORIGINAL WELLBORE) | MWD | 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 |
|---|---|---|---|---|---|---|
| NW SW SEC. 17 T5N R64W 6th P.M. | | | | | | |
| CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC | 1,000.0 | 1,003.0 | 2,021.5 | 2,017.3 | 475.863 | CC |
| CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBC | 11,987.2 | 11,227.2 | 2,209.2 | 1,939.7 | 8.197 | ES, SF |
| CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC | 1,000.0 | 1,003.0 | 2,006.5 | 2,002.3 | 472.336 | CC |
| CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC | 1,200.0 | 1,202.8 | 2,006.9 | 2,001.8 | 392.047 | ES |
| CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBC | 10,433.0 | 6,250.0 | 2,840.7 | 2,725.6 | 24.676 | SF |
| CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC | 1,000.0 | 1,003.0 | 2,051.5 | 2,047.2 | 482.917 | CC |
| CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC | 1,082.7 | 1,079.0 | 2,051.6 | 2,047.0 | 446.954 | ES |
| CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBC | 11,987.2 | 11,318.2 | 2,428.7 | 2,159.3 | 9.013 | SF |
| CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC | 1,000.0 | 1,003.0 | 2,036.5 | 2,032.2 | 479.390 | CC |
| CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC | 1,181.1 | 1,179.6 | 2,036.8 | 2,031.8 | 405.562 | ES |
| CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBC | 10,826.7 | 6,300.0 | 3,240.3 | 3,113.6 | 25.575 | SF |
| CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC | 6,550.0 | 8,426.4 | 1,410.1 | 1,328.5 | 17.278 | SF |
| CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC | 7,050.0 | 8,078.4 | 1,348.5 | 1,276.7 | 18.780 | ES |
| CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBC | 8,052.5 | 7,084.5 | 1,346.5 | 1,283.9 | 21.519 | CC |
| CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC | 7,884.7 | 7,182.9 | 1,450.3 | 1,387.6 | 23.141 | CC |
| CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBC | 11,987.2 | 11,285.5 | 1,450.3 | 1,180.4 | 5.373 | ES, SF |
| CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC | 7,610.0 | 6,951.9 | 1,706.1 | 1,650.1 | 30.499 | CC |
| CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBC | 11,987.2 | 11,344.0 | 1,706.9 | 1,437.0 | 6.323 | ES, SF |
| CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC | 8,274.0 | 6,906.3 | 1,596.7 | 1,531.8 | 24.583 | CC |
| CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC | 8,366.1 | 6,831.1 | 1,597.5 | 1,530.9 | 23.996 | ES |
| CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBC | 9,500.0 | 6,419.0 | 1,873.9 | 1,782.2 | 20.438 | SF |
| CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC | 7,498.3 | 6,942.3 | 1,223.3 | 1,168.4 | 22.260 | CC |
| CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBC | 11,987.2 | 11,466.9 | 1,232.4 | 963.8 | 4.587 | ES, SF |
| CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC | 6,700.0 | 8,512.6 | 1,191.5 | 1,112.7 | 15.113 | SF |
| CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC | 8,357.2 | 6,910.9 | 1,106.8 | 1,039.8 | 16.514 | CC |
| CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBC | 8,400.0 | 6,878.6 | 1,107.1 | 1,039.3 | 16.319 | ES |
| EXIST VERT B&H #1 - Wellbore #1 - Design #1 | 6,234.9 | 5,987.9 | 4,561.8 | 4,413.1 | 30.668 | CC, ES, SF |
| EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1 | 6,234.9 | 5,987.9 | 3,930.7 | 3,779.0 | 25.906 | CC, ES, SF |
| EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 | 6,234.9 | 5,984.9 | 2,727.9 | 2,576.2 | 17.973 | CC, ES, SF |
| EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore | 1,959.7 | 1,960.9 | 1,698.0 | 1,691.8 | 274.136 | CC |
| EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore | 2,044.9 | 2,038.2 | 1,698.3 | 1,691.5 | 252.372 | ES |
| EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore | 10,531.5 | 6,682.6 | 3,244.3 | 3,139.0 | 30.809 | SF |
| EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellb | 339.3 | 332.3 | 2,242.8 | 2,241.9 | 2,680.612 | CC |
| EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellb | 393.7 | 376.8 | 2,242.9 | 2,241.9 | 2,312.350 | ES |
| EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellb | 11,500.0 | 6,700.0 | 3,796.3 | 3,664.9 | 28.891 | SF |
| EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des | 9,171.5 | 6,679.3 | 1,692.5 | 1,490.3 | 8.370 | CC |
| EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des | 9,200.0 | 6,679.1 | 1,692.7 | 1,489.8 | 8.342 | ES |

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

| | | | |
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| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **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 |
|---|---|---|---|---|---|---|
| NW SW SEC. 17 T5N R64W 6th P.M. | | | | | | |
| EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Des | 9,547.2 | 6,676.8 | 1,733.7 | 1,522.0 | 8.190 | SF |
| EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #: | 6,234.9 | 5,980.9 | 490.9 | 354.2 | 3.593 | CC |
| EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #: | 6,299.2 | 6,045.2 | 491.5 | 338.2 | 3.206 | ES |
| EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #: | 6,350.0 | 6,095.5 | 493.1 | 339.0 | 3.199 | SF |
| EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We | 6,234.9 | 5,984.8 | 1,487.5 | 1,454.9 | 45.640 | ES, SF |
| EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - We | 6,236.5 | 5,986.4 | 1,487.5 | 1,467.2 | 73.314 | CC |
| EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 | 10,750.0 | 6,631.3 | 2,034.8 | 1,923.4 | 18.267 | CC |
| EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 | 10,800.0 | 6,631.6 | 2,035.4 | 1,922.7 | 18.054 | ES |
| EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 | 11,800.0 | 6,638.4 | 2,289.7 | 2,149.8 | 16.364 | SF |
| EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 | 5,565.1 | 5,320.5 | 1,807.0 | 1,669.5 | 13.137 | CC |
| EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 | 6,400.0 | 6,148.6 | 1,809.6 | 1,654.0 | 11.633 | ES |
| EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 | 6,791.3 | 6,487.0 | 1,831.8 | 1,671.0 | 11.389 | SF |
| EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbo | 6,169.3 | 5,898.8 | 2,457.0 | 2,426.8 | 81.409 | CC, ES |
| EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbo | 11,987.2 | 6,692.3 | 7,140.9 | 6,996.1 | 49.309 | SF |
| EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig | 6,234.9 | 5,983.9 | 3,451.1 | 3,312.6 | 24.909 | CC |
| EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig | 6,250.0 | 5,999.0 | 3,451.2 | 3,299.9 | 22.805 | ES |
| EXIST VERT HETTINGER #34-18 - Wellbore #1 - Desig | 6,500.0 | 6,243.0 | 3,471.2 | 3,316.6 | 22.453 | SF |
| EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbo | 5,699.1 | 5,470.0 | 3,046.2 | 3,012.9 | 91.362 | CC |
| EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbo | 6,300.0 | 6,059.7 | 3,046.7 | 3,012.3 | 88.492 | ES |
| EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbo | 11,987.2 | 6,696.2 | 6,269.6 | 6,124.3 | 43.156 | SF |
| EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design # | 10,502.8 | 6,672.6 | 468.3 | 231.6 | 1.978 | CC, ES |
| EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design # | 10,531.5 | 6,672.4 | 469.2 | 231.7 | 1.976 | SF |
| EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design # | 11,831.3 | 6,664.0 | 457.2 | 184.7 | 1.677 | CC, ES, SF |
| EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb | 10,512.9 | 6,613.7 | 3,350.9 | 3,245.8 | 31.881 | CC |
| EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb | 10,600.0 | 6,614.0 | 3,352.1 | 3,244.6 | 31.199 | ES |
| EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellb | 11,987.2 | 6,619.6 | 3,660.9 | 3,515.8 | 25.225 | SF |
| EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore | 6,171.9 | 5,881.6 | 5,223.7 | 5,197.2 | 197.350 | CC |
| EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore | 6,204.9 | 5,929.4 | 5,223.8 | 5,195.9 | 187.582 | ES |
| EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore | 11,987.2 | 6,787.1 | 9,995.8 | 9,851.0 | 69.030 | SF |
| EXIST VERT MASON #1 - Wellbore #1 - Design #1 | 6,234.9 | 5,984.9 | 3,407.7 | 3,261.3 | 23.267 | CC, ES, SF |
| EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 | 0.0 | 0.0 | 3,044.6 | | | |
| EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 | 1,476.4 | 1,479.3 | 3,048.1 | 3,044.1 | 768.778 | ES |
| EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 | 11,987.2 | 6,668.6 | 5,234.3 | 5,089.6 | 36.157 | SF |
| EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 | 1,038.4 | 1,053.6 | 3,167.5 | 3,164.7 | 1,111.430 | CC |
| EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 | 9,251.9 | 6,638.3 | 3,181.6 | 3,109.6 | 44.200 | ES |
| EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 | 11,987.2 | 6,618.7 | 4,235.3 | 4,090.5 | 29.231 | SF |
| EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De | 1,673.9 | 1,662.7 | 373.7 | 336.7 | 10.103 | CC |
| EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - De | 8,010.0 | 6,690.8 | 508.5 | 332.3 | 2.886 | ES, SF |
| EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 | 11,826.0 | 6,676.0 | 1,954.5 | 1,682.0 | 7.171 | CC |
| EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 | 11,900.0 | 6,675.6 | 1,956.0 | 1,681.4 | 7.124 | ES |
| EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 | 11,987.2 | 6,675.0 | 1,961.2 | 1,684.3 | 7.082 | SF |
| EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 | 11,987.2 | 6,600.0 | 2,920.2 | 2,775.5 | 20.174 | CC, ES, SF |
| EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 | 9,171.7 | 6,684.3 | 489.9 | 287.6 | 2.422 | CC, ES |
| EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 | 9,200.0 | 6,684.1 | 490.7 | 287.8 | 2.418 | SF |

| | | | |
|---|---|---|---|
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| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **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 |
|---|---|---|---|---|---|---|
| SW NW SEC. 17 T5N R64W 6th P.M. | | | | | | |
| EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 | 6,234.9 | 5,975.9 | 4,089.6 | 3,937.5 | 26.891 | CC, ES, SF |
| EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Desig | 6,234.9 | 5,983.9 | 3,244.2 | 3,092.1 | 21.325 | CC, ES, SF |
| EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 | 6,234.9 | 5,978.0 | 2,893.5 | 2,859.9 | 86.258 | ES |
| EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 | 6,235.5 | 5,978.6 | 2,893.5 | 2,874.7 | 154.394 | CC |
| EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 | 11,987.2 | 6,632.9 | 8,155.4 | 8,010.9 | 56.458 | SF |
| EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1 | 6,234.9 | 5,971.9 | 1,635.7 | 1,485.4 | 10.886 | CC, ES, SF |
| EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design # | 6,234.9 | 5,969.9 | 815.3 | 678.2 | 5.948 | CC |
| EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design # | 6,300.0 | 6,034.9 | 815.8 | 663.2 | 5.346 | ES |
| EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design # | 6,450.0 | 6,181.8 | 820.8 | 665.9 | 5.296 | SF |
| EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design # | 10,616.2 | 4,623.0 | 2,177.3 | 2,097.6 | 27.316 | CC |
| EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design # | 10,629.9 | 4,623.0 | 2,177.4 | 2,097.5 | 27.264 | ES |
| EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design # | 11,300.0 | 4,623.0 | 2,282.2 | 2,194.6 | 26.071 | SF |
| EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design # | 11,730.9 | 6,658.7 | 745.0 | 475.4 | 2.764 | CC, ES |
| EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design # | 11,800.0 | 6,658.2 | 748.2 | 476.8 | 2.756 | SF |
| EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1 | 6,234.9 | 5,984.9 | 772.6 | 620.6 | 5.084 | CC, ES, SF |
| EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbor | 7,903.6 | 6,682.9 | 744.5 | 702.7 | 17.842 | CC, ES |
| EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbor | 8,169.3 | 6,683.7 | 790.4 | 743.7 | 16.908 | SF |
| EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbc | 9,296.0 | 6,520.0 | 690.2 | 618.0 | 9.558 | CC |
| EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbc | 9,300.0 | 6,520.0 | 690.2 | 617.9 | 9.545 | ES |
| EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbc | 9,448.8 | 6,520.0 | 706.9 | 630.9 | 9.302 | SF |
| SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 90.2 | 86.0 | 21.276 | CC |
| SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PR | 7,300.0 | 7,183.1 | 105.0 | 47.6 | 1.831 | SF |
| SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PR | 7,480.3 | 7,001.7 | 103.6 | 47.4 | 1.845 | ES |
| SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 30.1 | 25.8 | 7.092 | CC, ES |
| SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PR | 11,987.2 | 12,016.4 | 435.0 | 148.6 | 1.519 | SF |
| SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 105.0 | 100.8 | 24.757 | CC, ES |
| SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PR | 7,100.0 | 7,382.3 | 340.0 | 279.1 | 5.578 | SF |
| SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 15.0 | 10.8 | 3.546 | CC |
| SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PR | 11,987.2 | 12,064.9 | 240.7 | -31.0 | 0.886 | Level 1, ES, SF |
| SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 75.2 | 71.0 | 17.730 | CC |
| SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PR | 7,686.0 | 6,843.1 | 119.4 | 64.6 | 2.177 | ES, SF |
| SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 60.2 | 55.9 | 14.184 | CC, ES |
| SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PR | 11,987.2 | 12,129.6 | 989.1 | 702.7 | 3.453 | SF |
| SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 135.1 | 130.8 | 31.849 | CC, ES |
| SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PR | 6,791.3 | 7,698.5 | 905.6 | 839.1 | 13.620 | SF |
| SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 45.1 | 40.9 | 10.638 | CC, ES |
| SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PR | 11,987.2 | 12,132.3 | 755.1 | 470.4 | 2.652 | SF |
| SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PR | 1,000.0 | 1,000.0 | 120.0 | 115.8 | 28.303 | CC, ES |
| SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PR | 7,000.0 | 7,573.9 | 657.8 | 596.1 | 10.653 | SF |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P

**Survey Program:** 0-MWD

**Offset Site Error:** 0.0 usft

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,021.3 | 0.20 | N/A | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,021.3 | 0.20 | 9,993.117 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,020.9 | 0.64 | 3,170.184 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,020.9 | 0.65 | 3,101.314 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,020.4 | 1.08 | 1,871.567 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,020.4 | 1.10 | 1,835.472 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,020.0 | 1.52 | 1,327.696 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,020.0 | 1.55 | 1,303.451 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,019.5 | 1.97 | 1,028.746 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,019.5 | 2.00 | 1,010.541 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,019.1 | 2.41 | 839.680 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,019.1 | 2.45 | 825.121 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,018.7 | 2.85 | 709.319 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,018.6 | 2.90 | 697.195 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,018.2 | 3.29 | 613.996 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,018.2 | 3.35 | 603.612 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,017.8 | 3.73 | 541.258 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,017.7 | 3.80 | 532.178 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,017.3 | 4.18 | 483.929 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.61 | -2,019.7 | -84.4 | 2,021.5 | 2,017.3 | 4.25 | 475.863 | CC |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.20 | -2,019.7 | -84.4 | 2,021.6 | 2,017.0 | 4.61 | 438.494 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.22 | -2,019.7 | -84.4 | 2,021.6 | 2,016.9 | 4.69 | 431.400 | |
| 1,181.1 | 1,181.0 | 1,184.0 | 1,184.0 | 2.5 | 2.5 | -93.32 | -2,019.7 | -84.4 | 2,021.8 | 2,016.8 | 5.04 | 401.372 | |
| 1,200.0 | 1,199.8 | 1,202.8 | 1,202.8 | 2.5 | 2.6 | -93.36 | -2,019.7 | -84.4 | 2,021.9 | 2,016.8 | 5.12 | 394.973 | |
| 1,279.5 | 1,279.1 | 1,280.1 | 1,280.1 | 2.7 | 2.7 | -93.53 | -2,019.8 | -84.6 | 2,022.3 | 2,016.9 | 5.47 | 370.024 | |
| 1,300.0 | 1,299.5 | 1,300.0 | 1,300.0 | 2.8 | 2.8 | -93.57 | -2,019.8 | -84.8 | 2,022.5 | 2,016.9 | 5.55 | 364.236 | |
| 1,377.9 | 1,376.9 | 1,372.4 | 1,372.4 | 3.0 | 2.9 | -93.74 | -2,019.9 | -87.0 | 2,023.3 | 2,017.4 | 5.89 | 343.645 | |
| 1,400.0 | 1,398.7 | 1,393.1 | 1,393.0 | 3.0 | 3.0 | -93.78 | -2,019.9 | -88.0 | 2,023.6 | 2,017.6 | 5.98 | 338.224 | |
| 1,476.4 | 1,474.2 | 1,464.9 | 1,464.7 | 3.2 | 3.1 | -93.94 | -2,020.2 | -92.4 | 2,024.8 | 2,018.4 | 6.34 | 319.205 | |
| 1,500.0 | 1,497.5 | 1,487.1 | 1,486.8 | 3.3 | 3.2 | -93.99 | -2,020.3 | -94.2 | 2,025.2 | 2,018.7 | 6.45 | 313.749 | |
| 1,574.8 | 1,571.0 | 1,557.6 | 1,557.0 | 3.5 | 3.3 | -94.14 | -2,020.7 | -100.9 | 2,026.8 | 2,019.9 | 6.85 | 295.950 | |
| 1,600.0 | 1,595.6 | 1,581.4 | 1,580.6 | 3.6 | 3.4 | -94.20 | -2,020.8 | -103.5 | 2,027.4 | 2,020.4 | 6.98 | 290.385 | |
| 1,673.2 | 1,667.0 | 1,650.6 | 1,649.3 | 3.9 | 3.5 | -94.34 | -2,021.3 | -112.3 | 2,029.3 | 2,021.9 | 7.42 | 273.561 | |
| 1,700.0 | 1,693.1 | 1,675.9 | 1,674.3 | 4.0 | 3.6 | -94.39 | -2,021.5 | -115.9 | 2,030.1 | 2,022.5 | 7.58 | 267.842 | |
| 1,771.6 | 1,762.4 | 1,743.8 | 1,741.4 | 4.3 | 3.8 | -94.53 | -2,022.1 | -126.8 | 2,032.4 | 2,024.3 | 8.07 | 251.907 | |
| 1,800.0 | 1,789.6 | 1,770.7 | 1,767.8 | 4.4 | 3.9 | -94.58 | -2,022.4 | -131.5 | 2,033.4 | 2,025.1 | 8.26 | 246.037 | |
| 1,870.1 | 1,856.8 | 1,837.3 | 1,833.2 | 4.7 | 4.1 | -94.71 | -2,023.1 | -144.3 | 2,036.0 | 2,027.2 | 8.81 | 231.141 | |
| 1,900.0 | 1,885.3 | 1,866.5 | 1,861.7 | 4.9 | 4.2 | -94.77 | -2,023.4 | -150.3 | 2,037.2 | 2,028.2 | 9.05 | 225.109 | |
| 1,968.5 | 1,950.2 | 1,934.4 | 1,928.2 | 5.3 | 4.4 | -94.94 | -2,024.2 | -164.4 | 2,040.1 | 2,030.4 | 9.67 | 211.041 | |
| 2,000.0 | 1,979.8 | 1,965.6 | 1,958.7 | 5.5 | 4.5 | -95.02 | -2,024.6 | -170.9 | 2,041.5 | 2,031.5 | 9.95 | 205.115 | |
| 2,044.9 | 2,021.9 | 2,010.0 | 2,002.2 | 5.7 | 4.7 | -95.17 | -2,025.1 | -180.1 | 2,043.5 | 2,033.1 | 10.39 | 196.735 | |
| 2,066.9 | 2,042.5 | 2,031.7 | 2,023.4 | 5.9 | 4.7 | -95.26 | -2,025.4 | -184.6 | 2,044.5 | 2,033.9 | 10.61 | 192.727 | |
| 2,100.0 | 2,073.4 | 2,064.4 | 2,055.3 | 6.1 | 4.9 | -95.40 | -2,025.7 | -191.4 | 2,046.1 | 2,035.1 | 10.94 | 187.006 | |
| 2,165.3 | 2,134.4 | 2,128.9 | 2,118.4 | 6.5 | 5.1 | -95.68 | -2,026.5 | -204.8 | 2,049.2 | 2,037.6 | 11.62 | 176.411 | |
| 2,200.0 | 2,166.8 | 2,163.1 | 2,151.9 | 6.8 | 5.2 | -95.82 | -2,026.9 | -211.9 | 2,050.8 | 2,038.9 | 11.98 | 171.240 | |
| 2,263.8 | 2,226.4 | 2,226.1 | 2,213.5 | 7.2 | 5.5 | -96.09 | -2,027.6 | -225.0 | 2,053.9 | 2,041.3 | 12.66 | 162.299 | |
| 2,300.0 | 2,260.2 | 2,261.8 | 2,248.4 | 7.4 | 5.6 | -96.24 | -2,028.0 | -232.4 | 2,055.7 | 2,042.6 | 13.04 | 157.607 | |
| 2,362.2 | 2,318.3 | 2,323.2 | 2,308.5 | 7.9 | 5.9 | -96.51 | -2,028.8 | -245.1 | 2,058.8 | 2,045.0 | 13.72 | 150.052 | |
| 2,400.0 | 2,353.6 | 2,360.5 | 2,345.0 | 8.1 | 6.0 | -96.66 | -2,029.2 | -252.9 | 2,060.7 | 2,046.5 | 14.13 | 145.794 | |
| 2,460.6 | 2,410.3 | 2,420.4 | 2,403.5 | 8.6 | 6.3 | -96.92 | -2,029.9 | -265.3 | 2,063.7 | 2,048.9 | 14.81 | 139.389 | |
| 2,500.0 | 2,447.0 | 2,459.2 | 2,441.5 | 8.9 | 6.4 | -97.08 | -2,030.3 | -273.3 | 2,065.7 | 2,050.5 | 15.24 | 135.516 | |
| 2,559.0 | 2,502.2 | 2,517.5 | 2,498.6 | 9.3 | 6.7 | -97.33 | -2,031.0 | -285.4 | 2,068.8 | 2,052.9 | 15.91 | 130.061 | |
| 2,600.0 | 2,540.5 | 2,557.9 | 2,538.1 | 9.6 | 6.8 | -97.50 | -2,031.5 | -293.8 | 2,070.9 | 2,054.6 | 16.37 | 126.527 | |
| 2,657.5 | 2,594.2 | 2,614.7 | 2,593.6 | 10.0 | 7.1 | -97.73 | -2,032.2 | -305.6 | 2,074.0 | 2,057.0 | 17.02 | 121.860 | |
| 2,700.0 | 2,633.9 | 2,656.7 | 2,634.7 | 10.3 | 7.2 | -97.91 | -2,032.6 | -314.3 | 2,076.3 | 2,058.7 | 17.50 | 118.623 | |
| 2,755.9 | 2,686.1 | 2,711.8 | 2,688.6 | 10.7 | 7.5 | -98.14 | -2,033.3 | -325.8 | 2,079.3 | 2,061.1 | 18.14 | 114.611 | |
| 2,800.0 | 2,727.3 | 2,755.4 | 2,731.2 | 11.0 | 7.7 | -98.32 | -2,033.8 | -334.8 | 2,081.7 | 2,063.0 | 18.65 | 111.634 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,854.3 | 2,778.1 | 2,809.0 | 2,783.7 | 11.4 | 7.9 | -98.54 | -2,034.4 | -345.9 | 2,084.7 | 2,065.4 | 19.27 | 108.170 | |
| 2,900.0 | 2,820.7 | 2,854.1 | 2,827.8 | 11.8 | 8.1 | -98.73 | -2,034.9 | -355.3 | 2,087.2 | 2,067.4 | 19.80 | 105.422 | |
| 2,952.7 | 2,870.0 | 2,906.1 | 2,878.7 | 12.2 | 8.3 | -98.95 | -2,035.6 | -366.1 | 2,090.2 | 2,069.7 | 20.41 | 102.417 | |
| 3,000.0 | 2,914.2 | 2,952.8 | 2,924.3 | 12.5 | 8.5 | -99.14 | -2,036.1 | -375.8 | 2,092.8 | 2,071.9 | 20.96 | 99.871 | |
| 3,051.2 | 2,962.0 | 3,003.3 | 2,973.7 | 12.9 | 8.7 | -99.34 | -2,036.7 | -386.3 | 2,095.8 | 2,074.2 | 21.55 | 97.255 | |
| 3,100.0 | 3,007.6 | 3,051.5 | 3,020.9 | 13.3 | 9.0 | -99.54 | -2,037.2 | -396.3 | 2,098.6 | 2,076.5 | 22.12 | 94.888 | |
| 3,149.6 | 3,053.9 | 3,100.4 | 3,068.8 | 13.6 | 9.2 | -99.74 | -2,037.8 | -406.4 | 2,101.5 | 2,078.8 | 22.69 | 92.602 | |
| 3,200.0 | 3,101.0 | 3,150.2 | 3,117.4 | 14.0 | 9.4 | -99.94 | -2,038.4 | -416.8 | 2,104.4 | 2,081.1 | 23.28 | 90.394 | |
| 3,248.0 | 3,145.9 | 3,197.6 | 3,163.8 | 14.4 | 9.6 | -100.14 | -2,038.9 | -426.6 | 2,107.3 | 2,083.4 | 23.84 | 88.389 | |
| 3,300.0 | 3,194.4 | 3,248.9 | 3,214.0 | 14.8 | 9.8 | -100.35 | -2,039.5 | -437.2 | 2,110.4 | 2,085.9 | 24.45 | 86.323 | |
| 3,346.4 | 3,237.8 | 3,294.8 | 3,258.8 | 15.1 | 10.0 | -100.53 | -2,040.1 | -446.8 | 2,113.2 | 2,088.2 | 24.99 | 84.561 | |
| 3,400.0 | 3,287.8 | 3,347.6 | 3,310.5 | 15.5 | 10.3 | -100.74 | -2,040.7 | -457.7 | 2,116.4 | 2,090.8 | 25.62 | 82.623 | |
| 3,444.9 | 3,329.8 | 3,391.9 | 3,353.9 | 15.9 | 10.5 | -100.92 | -2,041.2 | -466.9 | 2,119.2 | 2,093.0 | 26.14 | 81.069 | |
| 3,500.0 | 3,381.3 | 3,446.3 | 3,407.1 | 16.3 | 10.7 | -101.14 | -2,041.8 | -478.2 | 2,122.6 | 2,095.8 | 26.78 | 79.245 | |
| 3,543.3 | 3,421.7 | 3,489.1 | 3,448.9 | 16.6 | 10.9 | -101.31 | -2,042.3 | -487.1 | 2,125.3 | 2,098.0 | 27.29 | 77.873 | |
| 3,600.0 | 3,474.7 | 3,545.0 | 3,503.6 | 17.0 | 11.1 | -101.53 | -2,043.0 | -498.7 | 2,128.8 | 2,100.9 | 27.95 | 76.153 | |
| 3,641.7 | 3,513.7 | 3,586.2 | 3,543.9 | 17.3 | 11.3 | -101.70 | -2,043.5 | -507.3 | 2,131.5 | 2,103.1 | 28.44 | 74.939 | |
| 3,700.0 | 3,568.1 | 3,643.7 | 3,600.2 | 17.8 | 11.6 | -101.92 | -2,044.1 | -519.2 | 2,135.2 | 2,106.1 | 29.12 | 73.312 | |
| 3,740.1 | 3,605.6 | 3,683.4 | 3,638.9 | 18.1 | 11.8 | -102.08 | -2,044.6 | -527.4 | 2,137.8 | 2,108.2 | 29.59 | 72.236 | |
| 3,800.0 | 3,661.5 | 3,742.5 | 3,696.7 | 18.5 | 12.0 | -102.31 | -2,045.3 | -539.7 | 2,141.7 | 2,111.4 | 30.29 | 70.695 | |
| 3,838.6 | 3,697.6 | 3,780.5 | 3,734.0 | 18.8 | 12.2 | -102.46 | -2,045.7 | -547.6 | 2,144.2 | 2,113.5 | 30.75 | 69.739 | |
| 3,900.0 | 3,754.9 | 3,841.2 | 3,793.3 | 19.3 | 12.5 | -102.70 | -2,046.4 | -560.2 | 2,148.2 | 2,116.8 | 31.46 | 68.277 | |
| 3,937.0 | 3,789.5 | 3,877.7 | 3,829.0 | 19.6 | 12.6 | -102.84 | -2,046.9 | -567.8 | 2,150.7 | 2,118.8 | 31.90 | 67.428 | |
| 4,000.0 | 3,848.4 | 3,939.9 | 3,889.8 | 20.1 | 12.9 | -103.09 | -2,047.6 | -580.7 | 2,154.9 | 2,122.3 | 32.63 | 66.037 | |
| 4,035.4 | 3,881.5 | 3,974.8 | 3,924.0 | 20.3 | 13.1 | -103.22 | -2,048.0 | -587.9 | 2,157.3 | 2,124.3 | 33.05 | 65.282 | |
| 4,100.0 | 3,941.8 | 4,038.6 | 3,986.4 | 20.8 | 13.4 | -103.47 | -2,048.7 | -601.1 | 2,161.7 | 2,127.9 | 33.80 | 63.956 | |
| 4,133.8 | 3,973.4 | 4,072.0 | 4,019.1 | 21.1 | 13.5 | -103.60 | -2,049.1 | -608.1 | 2,164.0 | 2,129.8 | 34.19 | 63.286 | |
| 4,200.0 | 4,035.2 | 4,137.3 | 4,082.9 | 21.6 | 13.8 | -103.85 | -2,049.9 | -621.6 | 2,168.5 | 2,133.6 | 34.96 | 62.021 | |
| 4,232.3 | 4,065.4 | 4,169.1 | 4,114.1 | 21.8 | 14.0 | -103.97 | -2,050.3 | -628.2 | 2,170.8 | 2,135.4 | 35.34 | 61.424 | |
| 4,300.0 | 4,128.6 | 4,236.0 | 4,179.5 | 22.3 | 14.3 | -104.22 | -2,051.0 | -642.1 | 2,175.5 | 2,139.4 | 36.13 | 60.215 | |
| 4,330.7 | 4,157.3 | 4,266.3 | 4,209.1 | 22.6 | 14.4 | -104.34 | -2,051.4 | -648.4 | 2,177.6 | 2,141.2 | 36.49 | 59.685 | |
| 4,400.0 | 4,222.0 | 4,334.7 | 4,276.0 | 23.1 | 14.7 | -104.60 | -2,052.2 | -662.6 | 2,182.5 | 2,145.3 | 37.29 | 58.528 | |
| 4,429.1 | 4,249.3 | 4,363.5 | 4,304.2 | 23.3 | 14.9 | -104.71 | -2,052.5 | -668.6 | 2,184.6 | 2,147.0 | 37.63 | 58.057 | |
| 4,500.0 | 4,315.5 | 4,433.4 | 4,372.6 | 23.9 | 15.2 | -104.97 | -2,053.3 | -683.1 | 2,189.7 | 2,151.2 | 38.45 | 56.948 | |
| 4,527.5 | 4,341.2 | 4,460.6 | 4,399.2 | 24.1 | 15.3 | -105.07 | -2,053.7 | -688.7 | 2,191.7 | 2,152.9 | 38.77 | 56.530 | |
| 4,600.0 | 4,408.9 | 4,532.1 | 4,469.2 | 24.6 | 15.6 | -105.34 | -2,054.5 | -703.6 | 2,196.9 | 2,157.3 | 39.61 | 55.466 | |
| 4,626.0 | 4,433.2 | 4,557.8 | 4,494.2 | 24.8 | 15.7 | -105.44 | -2,054.8 | -708.9 | 2,198.8 | 2,158.9 | 39.91 | 55.096 | |
| 4,700.0 | 4,502.3 | 4,630.8 | 4,565.7 | 25.4 | 16.1 | -105.71 | -2,055.6 | -724.1 | 2,204.3 | 2,163.5 | 40.76 | 54.074 | |
| 4,724.4 | 4,525.1 | 4,654.9 | 4,589.3 | 25.6 | 16.2 | -105.80 | -2,055.9 | -729.1 | 2,206.1 | 2,165.0 | 41.05 | 53.747 | |
| 4,800.0 | 4,595.7 | 4,729.5 | 4,662.3 | 26.2 | 16.5 | -106.08 | -2,056.8 | -744.6 | 2,211.7 | 2,169.8 | 41.92 | 52.763 | |
| 4,822.8 | 4,617.1 | 4,752.1 | 4,684.3 | 26.3 | 16.6 | -106.16 | -2,057.1 | -749.2 | 2,213.4 | 2,171.2 | 42.18 | 52.475 | |
| 4,900.0 | 4,689.2 | 4,828.3 | 4,758.8 | 26.9 | 17.0 | -106.44 | -2,057.9 | -765.0 | 2,219.2 | 2,176.1 | 43.07 | 51.528 | |
| 4,921.2 | 4,709.0 | 4,849.2 | 4,779.3 | 27.1 | 17.1 | -106.52 | -2,058.2 | -769.4 | 2,220.8 | 2,177.5 | 43.31 | 51.275 | |
| 5,000.0 | 4,782.6 | 4,927.0 | 4,855.4 | 27.7 | 17.4 | -106.80 | -2,059.1 | -785.5 | 2,226.8 | 2,182.6 | 44.22 | 50.363 | |
| 5,019.7 | 4,801.0 | 4,946.4 | 4,874.4 | 27.8 | 17.5 | -106.87 | -2,059.3 | -789.6 | 2,228.3 | 2,183.9 | 44.44 | 50.141 | |
| 5,100.0 | 4,876.0 | 5,025.7 | 4,951.9 | 28.4 | 17.9 | -107.16 | -2,060.2 | -806.0 | 2,234.5 | 2,189.1 | 45.36 | 49.262 | |
| 5,118.1 | 4,892.9 | 5,043.5 | 4,969.4 | 28.6 | 18.0 | -107.22 | -2,060.4 | -809.7 | 2,235.9 | 2,190.3 | 45.57 | 49.069 | |
| 5,159.9 | 4,932.0 | 5,084.8 | 5,009.8 | 28.9 | 18.2 | -107.37 | -2,060.9 | -818.3 | 2,239.2 | 2,193.1 | 46.04 | 48.630 | |
| 5,200.0 | 4,969.5 | 5,124.4 | 5,048.5 | 29.2 | 18.3 | -107.57 | -2,061.4 | -826.5 | 2,242.2 | 2,195.7 | 46.46 | 48.257 | |
| 5,216.5 | 4,985.1 | 5,139.4 | 5,063.1 | 29.3 | 18.4 | -107.64 | -2,061.6 | -829.6 | 2,243.4 | 2,196.8 | 46.60 | 48.138 | |
| 5,300.0 | 5,064.0 | 5,212.4 | 5,134.9 | 29.7 | 18.7 | -107.98 | -2,062.3 | -843.6 | 2,249.3 | 2,202.1 | 47.28 | 47.579 | |
| 5,314.9 | 5,078.2 | 5,225.5 | 5,147.7 | 29.8 | 18.7 | -108.04 | -2,062.5 | -845.9 | 2,250.4 | 2,203.0 | 47.38 | 47.498 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,400.0 | 5,159.6 | 5,300.0 | 5,221.2 | 30.2 | 18.9 | -108.38 | -2,063.1 | -857.9 | 2,256.0 | 2,208.0 | 47.96 | 47.037 | |
| 5,413.4 | 5,172.4 | 5,311.4 | 5,232.5 | 30.3 | 19.0 | -108.43 | -2,063.2 | -859.6 | 2,256.8 | 2,208.8 | 48.04 | 46.976 | |
| 5,500.0 | 5,256.1 | 5,386.8 | 5,307.2 | 30.7 | 19.1 | -108.75 | -2,063.8 | -869.5 | 2,262.1 | 2,213.5 | 48.56 | 46.583 | |
| 5,511.8 | 5,267.6 | 5,400.0 | 5,320.4 | 30.7 | 19.2 | -108.80 | -2,063.9 | -871.1 | 2,262.8 | 2,214.2 | 48.63 | 46.529 | |
| 5,600.0 | 5,353.5 | 5,473.5 | 5,393.5 | 31.1 | 19.3 | -109.11 | -2,064.3 | -878.5 | 2,267.7 | 2,218.6 | 49.08 | 46.205 | |
| 5,610.2 | 5,363.5 | 5,482.4 | 5,402.3 | 31.1 | 19.4 | -109.14 | -2,064.3 | -879.3 | 2,268.2 | 2,219.1 | 49.13 | 46.172 | |
| 5,700.0 | 5,451.6 | 5,560.0 | 5,479.8 | 31.4 | 19.5 | -109.44 | -2,064.7 | -884.9 | 2,272.8 | 2,223.3 | 49.52 | 45.898 | |
| 5,708.6 | 5,460.2 | 5,567.5 | 5,487.2 | 31.4 | 19.5 | -109.47 | -2,064.7 | -885.3 | 2,273.2 | 2,223.6 | 49.55 | 45.876 | |
| 5,800.0 | 5,550.4 | 5,646.3 | 5,565.9 | 31.7 | 19.6 | -109.76 | -2,064.9 | -888.6 | 2,277.3 | 2,227.4 | 49.88 | 45.656 | |
| 5,807.1 | 5,557.4 | 5,652.4 | 5,572.0 | 31.7 | 19.7 | -109.78 | -2,064.9 | -888.8 | 2,277.6 | 2,227.7 | 49.90 | 45.643 | |
| 5,900.0 | 5,649.6 | 5,733.0 | 5,652.6 | 31.9 | 19.8 | -110.06 | -2,064.9 | -889.8 | 2,281.3 | 2,231.1 | 50.17 | 45.470 | |
| 5,905.5 | 5,655.1 | 5,738.5 | 5,658.1 | 31.9 | 19.8 | -110.08 | -2,064.9 | -889.8 | 2,281.5 | 2,231.3 | 50.18 | 45.462 | |
| 6,000.0 | 5,749.2 | 5,832.6 | 5,752.2 | 32.1 | 19.9 | -110.33 | -2,064.9 | -889.8 | 2,284.3 | 2,233.9 | 50.43 | 45.297 | |
| 6,003.9 | 5,753.1 | 5,836.5 | 5,756.1 | 32.1 | 19.9 | -110.33 | -2,064.9 | -889.8 | 2,284.4 | 2,234.0 | 50.44 | 45.291 | |
| 6,100.0 | 5,849.1 | 5,932.4 | 5,852.1 | 32.3 | 20.0 | -110.49 | -2,064.9 | -889.8 | 2,286.2 | 2,235.6 | 50.67 | 45.122 | |
| 6,102.3 | 5,851.4 | 5,934.8 | 5,854.4 | 32.3 | 20.0 | -110.49 | -2,064.9 | -889.8 | 2,286.3 | 2,235.6 | 50.67 | 45.118 | |
| 6,200.8 | 5,949.8 | 6,033.2 | 5,952.8 | 32.4 | 20.2 | -110.55 | -2,064.9 | -889.8 | 2,286.9 | 2,236.0 | 50.88 | 44.946 | |
| 6,204.9 | 5,953.9 | 6,037.3 | 5,956.9 | 32.4 | 20.2 | 165.02 | -2,064.9 | -889.8 | 2,286.9 | 2,254.1 | 32.84 | 69.646 | |
| 6,224.5 | 5,973.5 | 6,056.9 | 5,976.5 | 32.4 | 20.2 | 165.02 | -2,064.9 | -889.8 | 2,286.9 | 2,254.0 | 32.90 | 69.513 | |
| 6,234.9 | 5,983.9 | 6,066.2 | 5,985.8 | 32.4 | 20.2 | 165.02 | -2,064.9 | -889.8 | 2,286.9 | 2,254.0 | 32.93 | 69.447 | |
| 6,250.0 | 5,999.0 | 6,075.1 | 5,994.7 | 32.4 | 20.2 | 75.02 | -2,064.9 | -889.7 | 2,286.9 | 2,235.9 | 50.97 | 44.868 | |
| 6,299.2 | 6,048.2 | 6,100.0 | 6,019.6 | 32.4 | 20.2 | 75.05 | -2,064.9 | -889.0 | 2,286.6 | 2,235.6 | 50.98 | 44.849 | |
| 6,300.0 | 6,048.9 | 6,100.0 | 6,019.6 | 32.4 | 20.2 | 75.06 | -2,064.9 | -889.0 | 2,286.6 | 2,235.6 | 50.98 | 44.849 | |
| 6,350.0 | 6,098.5 | 6,129.8 | 6,049.4 | 32.4 | 20.2 | 75.15 | -2,064.9 | -887.0 | 2,285.9 | 2,234.9 | 50.96 | 44.859 | |
| 6,397.6 | 6,145.3 | 6,150.0 | 6,069.4 | 32.3 | 20.3 | 75.27 | -2,064.9 | -884.9 | 2,284.8 | 2,233.9 | 50.90 | 44.888 | |
| 6,400.0 | 6,147.6 | 6,150.0 | 6,069.4 | 32.3 | 20.3 | 75.28 | -2,064.9 | -884.9 | 2,284.8 | 2,233.9 | 50.90 | 44.890 | |
| 6,450.0 | 6,195.8 | 6,184.7 | 6,103.8 | 32.2 | 20.2 | 75.49 | -2,064.9 | -880.0 | 2,283.2 | 2,232.4 | 50.81 | 44.937 | |
| 6,496.0 | 6,239.3 | 6,200.0 | 6,118.9 | 32.1 | 20.2 | 75.68 | -2,064.9 | -877.3 | 2,281.5 | 2,230.8 | 50.71 | 44.991 | |
| 6,500.0 | 6,243.0 | 6,212.1 | 6,130.8 | 32.1 | 20.2 | 75.74 | -2,064.9 | -875.0 | 2,281.3 | 2,230.6 | 50.70 | 44.995 | |
| 6,550.0 | 6,289.0 | 6,250.0 | 6,167.6 | 32.0 | 20.2 | 76.08 | -2,064.9 | -866.3 | 2,279.1 | 2,228.6 | 50.58 | 45.060 | |
| 6,594.5 | 6,328.6 | 6,264.1 | 6,181.2 | 31.8 | 20.2 | 76.34 | -2,064.9 | -862.6 | 2,276.8 | 2,226.3 | 50.46 | 45.117 | |
| 6,600.0 | 6,333.4 | 6,267.2 | 6,184.2 | 31.8 | 20.2 | 76.38 | -2,064.9 | -861.8 | 2,276.5 | 2,226.1 | 50.45 | 45.124 | |
| 6,650.0 | 6,376.2 | 6,300.0 | 6,215.5 | 31.7 | 20.1 | 76.80 | -2,064.9 | -852.0 | 2,273.6 | 2,223.3 | 50.32 | 45.182 | |
| 6,692.9 | 6,411.3 | 6,318.4 | 6,232.9 | 31.6 | 20.1 | 77.14 | -2,064.9 | -845.8 | 2,270.9 | 2,220.7 | 50.22 | 45.222 | |
| 6,700.0 | 6,417.0 | 6,322.4 | 6,236.6 | 31.5 | 20.1 | 77.20 | -2,064.9 | -844.5 | 2,270.4 | 2,220.2 | 50.20 | 45.228 | |
| 6,750.0 | 6,455.7 | 6,350.0 | 6,262.3 | 31.4 | 20.0 | 77.68 | -2,064.9 | -834.3 | 2,267.0 | 2,216.9 | 50.10 | 45.254 | |
| 6,791.3 | 6,486.0 | 6,373.0 | 6,283.3 | 31.3 | 20.0 | 78.10 | -2,064.9 | -825.1 | 2,264.0 | 2,213.9 | 50.02 | 45.257 | |
| 6,800.0 | 6,492.2 | 6,377.8 | 6,287.7 | 31.3 | 20.0 | 78.20 | -2,064.9 | -823.1 | 2,263.3 | 2,213.3 | 50.01 | 45.257 | |
| 6,850.0 | 6,526.1 | 6,400.0 | 6,307.7 | 31.2 | 19.9 | 78.70 | -2,064.9 | -813.4 | 2,259.5 | 2,209.5 | 49.96 | 45.226 | |
| 6,889.7 | 6,551.2 | 6,427.8 | 6,332.3 | 31.2 | 19.9 | 79.21 | -2,064.9 | -800.4 | 2,256.3 | 2,206.3 | 49.94 | 45.178 | |
| 6,900.0 | 6,557.4 | 6,433.6 | 6,337.3 | 31.2 | 19.9 | 79.34 | -2,064.9 | -797.6 | 2,255.4 | 2,205.5 | 49.94 | 45.164 | |
| 6,950.0 | 6,586.0 | 6,461.6 | 6,361.4 | 31.1 | 19.8 | 79.96 | -2,064.9 | -783.4 | 2,251.3 | 2,201.4 | 49.97 | 45.058 | |
| 6,988.2 | 6,605.8 | 6,483.1 | 6,379.6 | 31.2 | 19.8 | 80.45 | -2,064.9 | -771.8 | 2,248.1 | 2,198.1 | 50.02 | 44.944 | |
| 7,000.0 | 6,611.5 | 6,489.7 | 6,385.1 | 31.2 | 19.8 | 80.60 | -2,064.9 | -768.2 | 2,247.1 | 2,197.1 | 50.04 | 44.909 | |
| 7,050.0 | 6,634.1 | 6,518.0 | 6,408.3 | 31.2 | 19.7 | 81.28 | -2,064.9 | -751.9 | 2,242.9 | 2,192.8 | 50.16 | 44.712 | |
| 7,086.6 | 6,648.6 | 6,538.8 | 6,424.9 | 31.3 | 19.7 | 81.78 | -2,064.9 | -739.4 | 2,239.9 | 2,189.6 | 50.29 | 44.535 | |
| 7,100.0 | 6,653.4 | 6,550.0 | 6,433.7 | 31.4 | 19.6 | 82.01 | -2,064.9 | -732.5 | 2,238.8 | 2,188.4 | 50.34 | 44.472 | |
| 7,150.0 | 6,669.5 | 6,575.0 | 6,452.9 | 31.6 | 19.6 | 82.68 | -2,064.9 | -716.5 | 2,234.7 | 2,184.1 | 50.58 | 44.181 | |
| 7,185.0 | 6,678.8 | 6,600.0 | 6,471.6 | 31.7 | 19.6 | 83.25 | -2,064.9 | -699.9 | 2,231.9 | 2,181.1 | 50.78 | 43.950 | |
| 7,200.0 | 6,682.3 | 6,600.0 | 6,471.6 | 31.8 | 19.6 | 83.34 | -2,064.9 | -699.9 | 2,230.7 | 2,179.8 | 50.87 | 43.854 | |
| 7,250.0 | 6,691.6 | 6,632.8 | 6,495.1 | 32.1 | 19.5 | 84.13 | -2,064.9 | -677.1 | 2,226.9 | 2,175.7 | 51.22 | 43.478 | |
| 7,283.4 | 6,696.0 | 6,650.0 | 6,507.1 | 32.3 | 19.5 | 84.58 | -2,064.9 | -664.7 | 2,224.5 | 2,173.0 | 51.48 | 43.212 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,300.0 | 6,697.5 | 6,662.0 | 6,515.3 | 32.4 | 19.5 | 84.86 | -2,064.9 | -655.9 | 2,223.3 | 2,171.7 | 51.62 | 43.074 | |
| 7,350.0 | 6,699.9 | 6,691.5 | 6,534.7 | 32.8 | 19.5 | 85.60 | -2,064.9 | -633.7 | 2,220.0 | 2,168.0 | 52.06 | 42.641 | |
| 7,364.4 | 6,700.0 | 6,700.0 | 6,540.1 | 32.9 | 19.5 | 85.80 | -2,064.9 | -627.2 | 2,219.1 | 2,166.9 | 52.20 | 42.515 | |
| 7,381.9 | 6,699.9 | 6,710.6 | 6,546.7 | 33.1 | 19.5 | 85.98 | -2,064.9 | -618.9 | 2,218.1 | 2,165.7 | 52.37 | 42.354 | |
| 7,400.0 | 6,699.8 | 6,721.8 | 6,553.6 | 33.2 | 19.5 | 86.16 | -2,064.9 | -610.1 | 2,217.1 | 2,164.6 | 52.55 | 42.190 | |
| 7,480.3 | 6,699.2 | 6,774.8 | 6,584.3 | 34.0 | 19.6 | 86.96 | -2,064.9 | -566.9 | 2,213.6 | 2,160.1 | 53.49 | 41.382 | |
| 7,500.0 | 6,699.1 | 6,788.6 | 6,591.8 | 34.2 | 19.7 | 87.15 | -2,064.9 | -555.3 | 2,213.0 | 2,159.2 | 53.73 | 41.185 | |
| 7,578.7 | 6,698.6 | 6,850.0 | 6,622.3 | 35.2 | 19.9 | 87.95 | -2,064.9 | -502.0 | 2,211.0 | 2,156.1 | 54.92 | 40.255 | |
| 7,600.0 | 6,698.5 | 6,864.5 | 6,628.8 | 35.4 | 19.9 | 88.12 | -2,064.9 | -489.1 | 2,210.6 | 2,155.4 | 55.26 | 40.002 | |
| 7,677.1 | 6,698.0 | 6,929.1 | 6,654.6 | 36.5 | 20.3 | 88.80 | -2,064.9 | -429.8 | 2,209.7 | 2,153.0 | 56.73 | 38.952 | |
| 7,700.0 | 6,697.8 | 6,950.0 | 6,661.8 | 36.8 | 20.5 | 88.99 | -2,064.9 | -410.2 | 2,209.5 | 2,152.3 | 57.19 | 38.635 | |
| 7,775.6 | 6,697.3 | 7,018.6 | 6,681.3 | 38.0 | 21.0 | 89.51 | -2,064.9 | -344.5 | 2,209.2 | 2,150.3 | 58.96 | 37.470 | |
| 7,800.0 | 6,697.2 | 7,041.9 | 6,686.5 | 38.3 | 21.3 | 89.65 | -2,064.9 | -321.8 | 2,209.2 | 2,149.6 | 59.57 | 37.088 | |
| 7,874.0 | 6,696.7 | 7,114.1 | 6,697.9 | 39.6 | 22.1 | 89.95 | -2,064.9 | -250.5 | 2,209.1 | 2,147.5 | 61.63 | 35.847 | |
| 7,891.3 | 6,696.6 | 7,131.2 | 6,699.5 | 39.9 | 22.3 | 90.00 | -2,064.9 | -233.5 | 2,209.1 | 2,147.0 | 62.13 | 35.556 | |
| 7,900.0 | 6,696.5 | 7,139.9 | 6,700.2 | 40.0 | 22.4 | 90.02 | -2,064.9 | -224.8 | 2,209.1 | 2,146.8 | 62.39 | 35.410 | |
| 7,972.4 | 6,696.1 | 7,212.5 | 6,701.9 | 41.3 | 23.4 | 90.07 | -2,064.9 | -152.3 | 2,209.1 | 2,144.5 | 64.68 | 34.153 | |
| 8,000.0 | 6,695.9 | 7,240.0 | 6,701.8 | 41.8 | 23.8 | 90.08 | -2,064.9 | -124.7 | 2,209.1 | 2,143.5 | 65.60 | 33.675 | |
| 8,070.8 | 6,695.4 | 7,310.9 | 6,701.6 | 43.1 | 24.9 | 90.08 | -2,064.9 | -53.9 | 2,209.1 | 2,141.1 | 68.06 | 32.460 | |
| 8,100.0 | 6,695.2 | 7,340.0 | 6,701.5 | 43.7 | 25.4 | 90.08 | -2,064.9 | -24.7 | 2,209.1 | 2,140.0 | 69.12 | 31.961 | |
| 8,169.3 | 6,694.8 | 7,409.3 | 6,701.2 | 45.1 | 26.6 | 90.09 | -2,064.9 | 44.5 | 2,209.1 | 2,137.4 | 71.73 | 30.799 | |
| 8,200.0 | 6,694.6 | 7,440.0 | 6,701.1 | 45.7 | 27.2 | 90.09 | -2,064.9 | 75.3 | 2,209.1 | 2,136.2 | 72.93 | 30.292 | |
| 8,267.7 | 6,694.1 | 7,507.7 | 6,700.9 | 47.1 | 28.5 | 90.10 | -2,064.9 | 143.0 | 2,209.1 | 2,133.5 | 75.64 | 29.205 | |
| 8,300.0 | 6,693.9 | 7,540.0 | 6,700.7 | 47.8 | 29.2 | 90.10 | -2,064.9 | 175.3 | 2,209.1 | 2,132.2 | 76.98 | 28.699 | |
| 8,366.1 | 6,693.5 | 7,606.2 | 6,700.5 | 49.2 | 30.6 | 90.10 | -2,064.9 | 241.4 | 2,209.1 | 2,129.4 | 79.76 | 27.696 | |
| 8,400.0 | 6,693.3 | 7,640.0 | 6,700.4 | 49.9 | 31.3 | 90.11 | -2,064.9 | 275.3 | 2,209.1 | 2,127.9 | 81.23 | 27.198 | |
| 8,464.5 | 6,692.9 | 7,704.6 | 6,700.1 | 51.4 | 32.7 | 90.11 | -2,064.9 | 339.8 | 2,209.1 | 2,125.1 | 84.06 | 26.281 | |
| 8,500.0 | 6,692.6 | 7,740.0 | 6,700.0 | 52.1 | 33.5 | 90.11 | -2,064.9 | 375.3 | 2,209.1 | 2,123.5 | 85.64 | 25.795 | |
| 8,563.0 | 6,692.2 | 7,803.0 | 6,699.8 | 53.6 | 34.9 | 90.12 | -2,064.9 | 438.2 | 2,209.1 | 2,120.7 | 88.50 | 24.963 | |
| 8,600.0 | 6,692.0 | 7,840.0 | 6,699.6 | 54.4 | 35.8 | 90.12 | -2,064.9 | 475.3 | 2,209.1 | 2,118.9 | 90.20 | 24.492 | |
| 8,661.4 | 6,691.6 | 7,901.4 | 6,699.4 | 55.8 | 37.2 | 90.13 | -2,064.9 | 536.7 | 2,209.1 | 2,116.1 | 93.06 | 23.740 | |
| 8,700.0 | 6,691.3 | 7,940.0 | 6,699.3 | 56.7 | 38.1 | 90.13 | -2,064.9 | 575.3 | 2,209.1 | 2,114.3 | 94.88 | 23.285 | |
| 8,759.8 | 6,690.9 | 7,999.9 | 6,699.1 | 58.1 | 39.6 | 90.13 | -2,064.9 | 635.1 | 2,209.2 | 2,111.4 | 97.72 | 22.607 | |
| 8,800.0 | 6,690.7 | 8,040.0 | 6,698.9 | 59.1 | 40.6 | 90.14 | -2,064.9 | 675.3 | 2,209.2 | 2,109.5 | 99.65 | 22.169 | |
| 8,858.2 | 6,690.3 | 8,098.3 | 6,698.7 | 60.5 | 42.0 | 90.14 | -2,064.9 | 733.5 | 2,209.2 | 2,106.7 | 102.47 | 21.558 | |
| 8,900.0 | 6,690.0 | 8,140.0 | 6,698.6 | 61.5 | 43.0 | 90.14 | -2,064.9 | 775.3 | 2,209.2 | 2,104.6 | 104.51 | 21.137 | |
| 8,956.7 | 6,689.7 | 8,196.7 | 6,698.3 | 62.9 | 44.4 | 90.15 | -2,064.9 | 831.9 | 2,209.2 | 2,101.8 | 107.30 | 20.588 | |
| 9,000.0 | 6,689.4 | 8,240.0 | 6,698.2 | 63.9 | 45.5 | 90.15 | -2,064.9 | 875.3 | 2,209.2 | 2,099.7 | 109.45 | 20.184 | |
| 9,055.1 | 6,689.0 | 8,295.1 | 6,698.0 | 65.3 | 46.9 | 90.15 | -2,064.9 | 930.4 | 2,209.2 | 2,097.0 | 112.20 | 19.690 | |
| 9,100.0 | 6,688.7 | 8,340.0 | 6,697.8 | 66.4 | 48.1 | 90.16 | -2,064.9 | 975.3 | 2,209.2 | 2,094.7 | 114.45 | 19.302 | |
| 9,153.5 | 6,688.4 | 8,393.6 | 6,697.6 | 67.7 | 49.4 | 90.16 | -2,064.9 | 1,028.8 | 2,209.2 | 2,092.0 | 117.15 | 18.857 | |
| 9,200.0 | 6,688.1 | 8,440.0 | 6,697.5 | 68.9 | 50.6 | 90.17 | -2,064.9 | 1,075.3 | 2,209.2 | 2,089.6 | 119.51 | 18.486 | |
| 9,251.9 | 6,687.8 | 8,492.0 | 6,697.3 | 70.2 | 52.0 | 90.17 | -2,064.9 | 1,127.2 | 2,209.2 | 2,087.0 | 122.15 | 18.085 | |
| 9,300.0 | 6,687.4 | 8,540.0 | 6,697.1 | 71.4 | 53.2 | 90.17 | -2,064.9 | 1,175.3 | 2,209.2 | 2,084.5 | 124.61 | 17.729 | |
| 9,350.4 | 6,687.1 | 8,590.4 | 6,696.9 | 72.7 | 54.5 | 90.18 | -2,064.9 | 1,225.6 | 2,209.2 | 2,082.0 | 127.20 | 17.368 | |
| 9,400.0 | 6,686.8 | 8,640.0 | 6,696.7 | 73.9 | 55.8 | 90.18 | -2,064.9 | 1,275.3 | 2,209.2 | 2,079.4 | 129.76 | 17.025 | |
| 9,448.8 | 6,686.5 | 8,688.8 | 6,696.5 | 75.2 | 57.1 | 90.18 | -2,064.9 | 1,324.1 | 2,209.2 | 2,076.9 | 132.28 | 16.700 | |
| 9,500.0 | 6,686.1 | 8,740.0 | 6,696.3 | 76.5 | 58.5 | 90.19 | -2,064.9 | 1,375.3 | 2,209.2 | 2,074.2 | 134.94 | 16.371 | |
| 9,547.2 | 6,685.8 | 8,787.3 | 6,696.2 | 77.7 | 59.7 | 90.19 | -2,064.9 | 1,422.5 | 2,209.2 | 2,071.8 | 137.40 | 16.078 | |
| 9,600.0 | 6,685.5 | 8,840.0 | 6,696.0 | 79.0 | 61.1 | 90.19 | -2,064.9 | 1,475.3 | 2,209.2 | 2,069.0 | 140.16 | 15.762 | |
| 9,645.6 | 6,685.2 | 8,885.7 | 6,695.8 | 80.2 | 62.3 | 90.20 | -2,064.9 | 1,520.9 | 2,209.2 | 2,066.6 | 142.55 | 15.497 | |
| 9,700.0 | 6,684.8 | 8,940.0 | 6,695.6 | 81.6 | 63.8 | 90.20 | -2,064.9 | 1,575.2 | 2,209.2 | 2,063.8 | 145.41 | 15.193 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-212 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,744.1 | 6,684.6 | 8,984.1 | 6,695.4 | 82.8 | 64.9 | 90.20 | -2,065.0 | 1,619.3 | 2,209.2 | 2,061.4 | 147.73 | 14.954 | |
| 9,800.0 | 6,684.2 | 9,040.0 | 6,695.2 | 84.2 | 66.4 | 90.21 | -2,065.0 | 1,675.2 | 2,209.2 | 2,058.5 | 150.68 | 14.661 | |
| 9,842.5 | 6,683.9 | 9,082.5 | 6,695.1 | 85.3 | 67.6 | 90.21 | -2,065.0 | 1,717.7 | 2,209.2 | 2,056.2 | 152.93 | 14.446 | |
| 9,900.0 | 6,683.5 | 9,140.0 | 6,694.9 | 86.8 | 69.1 | 90.22 | -2,065.0 | 1,775.2 | 2,209.2 | 2,053.2 | 155.98 | 14.163 | |
| 9,940.9 | 6,683.3 | 9,181.0 | 6,694.7 | 87.9 | 70.2 | 90.22 | -2,065.0 | 1,816.2 | 2,209.2 | 2,051.0 | 158.15 | 13.968 | |
| 10,000.0 | 6,682.9 | 9,240.0 | 6,694.5 | 89.5 | 71.8 | 90.22 | -2,065.0 | 1,875.2 | 2,209.2 | 2,047.9 | 161.30 | 13.696 | |
| 10,039.3 | 6,682.6 | 9,279.4 | 6,694.4 | 90.5 | 72.9 | 90.23 | -2,065.0 | 1,914.6 | 2,209.2 | 2,045.8 | 163.40 | 13.520 | |
| 10,100.0 | 6,682.2 | 9,340.0 | 6,694.1 | 92.1 | 74.5 | 90.23 | -2,065.0 | 1,975.2 | 2,209.2 | 2,042.5 | 166.64 | 13.257 | |
| 10,137.8 | 6,682.0 | 9,377.8 | 6,694.0 | 93.1 | 75.5 | 90.23 | -2,065.0 | 2,013.0 | 2,209.2 | 2,040.5 | 168.66 | 13.098 | |
| 10,200.0 | 6,681.6 | 9,440.0 | 6,693.8 | 94.8 | 77.2 | 90.24 | -2,065.0 | 2,075.2 | 2,209.2 | 2,037.2 | 171.99 | 12.844 | |
| 10,236.2 | 6,681.4 | 9,476.2 | 6,693.6 | 95.7 | 78.2 | 90.24 | -2,065.0 | 2,111.4 | 2,209.2 | 2,035.2 | 173.94 | 12.701 | |
| 10,300.0 | 6,680.9 | 9,540.0 | 6,693.4 | 97.4 | 80.0 | 90.24 | -2,065.0 | 2,175.2 | 2,209.2 | 2,031.8 | 177.37 | 12.455 | |
| 10,334.6 | 6,680.7 | 9,574.7 | 6,693.3 | 98.3 | 80.9 | 90.25 | -2,065.0 | 2,209.9 | 2,209.2 | 2,029.9 | 179.23 | 12.326 | |
| 10,400.0 | 6,680.3 | 9,640.0 | 6,693.0 | 100.1 | 82.7 | 90.25 | -2,065.0 | 2,275.2 | 2,209.2 | 2,026.4 | 182.76 | 12.088 | |
| 10,433.0 | 6,680.1 | 9,673.1 | 6,692.9 | 101.0 | 83.6 | 90.25 | -2,065.0 | 2,308.3 | 2,209.2 | 2,024.6 | 184.54 | 11.971 | |
| 10,500.0 | 6,679.7 | 9,740.0 | 6,692.6 | 102.8 | 85.4 | 90.26 | -2,065.0 | 2,375.2 | 2,209.2 | 2,021.0 | 188.16 | 11.741 | |
| 10,531.5 | 6,679.4 | 9,771.5 | 6,692.5 | 103.6 | 86.3 | 90.26 | -2,065.0 | 2,406.7 | 2,209.2 | 2,019.3 | 189.86 | 11.636 | |
| 10,600.0 | 6,679.0 | 9,840.0 | 6,692.3 | 105.4 | 88.1 | 90.27 | -2,065.0 | 2,475.2 | 2,209.2 | 2,015.6 | 193.57 | 11.413 | |
| 10,629.9 | 6,678.8 | 9,869.9 | 6,692.2 | 106.2 | 89.0 | 90.27 | -2,065.0 | 2,505.1 | 2,209.2 | 2,014.0 | 195.19 | 11.318 | |
| 10,700.0 | 6,678.4 | 9,940.0 | 6,691.9 | 108.1 | 90.9 | 90.27 | -2,065.0 | 2,575.2 | 2,209.2 | 2,010.2 | 198.99 | 11.102 | |
| 10,728.3 | 6,678.2 | 9,968.3 | 6,691.8 | 108.9 | 91.7 | 90.28 | -2,065.0 | 2,603.6 | 2,209.2 | 2,008.6 | 200.53 | 11.017 | |
| 10,800.0 | 6,677.7 | 10,040.0 | 6,691.5 | 110.8 | 93.6 | 90.28 | -2,065.0 | 2,675.2 | 2,209.2 | 2,004.8 | 204.43 | 10.807 | |
| 10,826.7 | 6,677.5 | 10,066.8 | 6,691.4 | 111.5 | 94.4 | 90.28 | -2,065.0 | 2,702.0 | 2,209.2 | 2,003.3 | 205.89 | 10.730 | |
| 10,900.0 | 6,677.1 | 10,140.0 | 6,691.1 | 113.5 | 96.4 | 90.29 | -2,065.0 | 2,775.2 | 2,209.2 | 1,999.3 | 209.87 | 10.526 | |
| 10,925.2 | 6,676.9 | 10,165.2 | 6,691.0 | 114.2 | 97.1 | 90.29 | -2,065.0 | 2,800.4 | 2,209.2 | 1,997.9 | 211.25 | 10.458 | |
| 11,000.0 | 6,676.4 | 10,240.0 | 6,690.8 | 116.2 | 99.1 | 90.29 | -2,065.0 | 2,875.2 | 2,209.2 | 1,993.9 | 215.33 | 10.260 | |
| 11,023.6 | 6,676.3 | 10,263.6 | 6,690.7 | 116.8 | 99.8 | 90.30 | -2,065.0 | 2,898.8 | 2,209.2 | 1,992.6 | 216.62 | 10.199 | |
| 11,100.0 | 6,675.8 | 10,340.0 | 6,690.4 | 118.9 | 101.9 | 90.30 | -2,065.0 | 2,975.2 | 2,209.2 | 1,988.4 | 220.79 | 10.006 | |
| 11,122.0 | 6,675.6 | 10,362.0 | 6,690.3 | 119.5 | 102.5 | 90.30 | -2,065.0 | 2,997.3 | 2,209.2 | 1,987.2 | 221.99 | 9.952 | |
| 11,200.0 | 6,675.1 | 10,440.0 | 6,690.0 | 121.6 | 104.6 | 90.31 | -2,065.0 | 3,075.2 | 2,209.2 | 1,982.9 | 226.26 | 9.764 | |
| 11,220.4 | 6,675.0 | 10,460.5 | 6,689.9 | 122.2 | 105.2 | 90.31 | -2,065.0 | 3,095.7 | 2,209.2 | 1,981.8 | 227.38 | 9.716 | |
| 11,300.0 | 6,674.5 | 10,540.0 | 6,689.6 | 124.3 | 107.4 | 90.32 | -2,065.0 | 3,175.2 | 2,209.2 | 1,977.5 | 231.74 | 9.533 | |
| 11,318.9 | 6,674.3 | 10,558.9 | 6,689.6 | 124.9 | 107.9 | 90.32 | -2,065.0 | 3,194.1 | 2,209.2 | 1,976.4 | 232.77 | 9.491 | |
| 11,400.0 | 6,673.8 | 10,640.0 | 6,689.3 | 127.1 | 110.1 | 90.32 | -2,065.0 | 3,275.2 | 2,209.2 | 1,972.0 | 237.22 | 9.313 | |
| 11,417.3 | 6,673.7 | 10,657.3 | 6,689.2 | 127.5 | 110.6 | 90.32 | -2,065.0 | 3,292.5 | 2,209.2 | 1,971.0 | 238.17 | 9.276 | |
| 11,500.0 | 6,673.2 | 10,740.0 | 6,688.9 | 129.8 | 112.9 | 90.33 | -2,065.0 | 3,375.2 | 2,209.2 | 1,966.5 | 242.71 | 9.102 | |
| 11,515.7 | 6,673.1 | 10,755.7 | 6,688.8 | 130.2 | 113.3 | 90.33 | -2,065.0 | 3,390.9 | 2,209.2 | 1,965.6 | 243.57 | 9.070 | |
| 11,600.0 | 6,672.5 | 10,840.0 | 6,688.5 | 132.5 | 115.7 | 90.34 | -2,065.0 | 3,475.2 | 2,209.2 | 1,961.0 | 248.20 | 8.901 | |
| 11,614.1 | 6,672.4 | 10,854.2 | 6,688.5 | 132.9 | 116.1 | 90.34 | -2,065.0 | 3,489.4 | 2,209.2 | 1,960.2 | 248.98 | 8.873 | |
| 11,700.0 | 6,671.9 | 10,940.0 | 6,688.1 | 135.3 | 118.4 | 90.34 | -2,065.0 | 3,575.2 | 2,209.2 | 1,955.5 | 253.70 | 8.708 | |
| 11,712.6 | 6,671.8 | 10,952.6 | 6,688.1 | 135.6 | 118.8 | 90.34 | -2,065.0 | 3,587.8 | 2,209.2 | 1,954.8 | 254.40 | 8.684 | |
| 11,800.0 | 6,671.2 | 11,040.0 | 6,687.8 | 138.0 | 121.2 | 90.35 | -2,065.0 | 3,675.2 | 2,209.2 | 1,950.0 | 259.21 | 8.523 | |
| 11,811.0 | 6,671.1 | 11,051.0 | 6,687.7 | 138.3 | 121.5 | 90.35 | -2,065.0 | 3,686.2 | 2,209.2 | 1,949.4 | 259.81 | 8.503 | |
| 11,900.0 | 6,670.6 | 11,140.0 | 6,687.4 | 140.7 | 124.0 | 90.36 | -2,065.0 | 3,775.2 | 2,209.2 | 1,944.5 | 264.72 | 8.345 | |
| 11,909.4 | 6,670.5 | 11,149.4 | 6,687.3 | 141.0 | 124.3 | 90.36 | -2,065.0 | 3,784.6 | 2,209.2 | 1,944.0 | 265.24 | 8.329 | |
| 11,987.2 | 6,670.0 | 11,227.2 | 6,687.0 | 143.1 | 126.4 | 90.36 | -2,065.0 | 3,862.4 | 2,209.2 | 1,939.7 | 269.53 | 8.197 | ES, SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,006.3 | 0.20 | N/A | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,006.3 | 0.20 | 9,919.056 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,005.9 | 0.64 | 3,146.689 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,005.9 | 0.65 | 3,078.330 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,005.4 | 1.08 | 1,857.696 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,005.4 | 1.10 | 1,821.869 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,005.0 | 1.52 | 1,317.856 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,005.0 | 1.55 | 1,293.791 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,004.6 | 1.97 | 1,021.122 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,004.5 | 2.00 | 1,003.052 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,004.1 | 2.41 | 833.457 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,004.1 | 2.45 | 819.005 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,003.7 | 2.85 | 704.062 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,003.6 | 2.90 | 692.028 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,003.2 | 3.29 | 609.446 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,003.2 | 3.35 | 599.138 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,002.8 | 3.73 | 537.247 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,002.7 | 3.80 | 528.234 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,002.3 | 4.18 | 480.342 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.63 | -2,004.8 | -83.0 | 2,006.5 | 2,002.3 | 4.25 | 472.336 | CC |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.22 | -2,004.8 | -83.0 | 2,006.6 | 2,002.0 | 4.61 | 435.245 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.24 | -2,004.8 | -83.0 | 2,006.6 | 2,001.9 | 4.69 | 428.203 | |
| 1,181.1 | 1,181.0 | 1,184.0 | 1,184.0 | 2.5 | 2.5 | -93.35 | -2,004.8 | -83.0 | 2,006.8 | 2,001.8 | 5.04 | 398.398 | |
| 1,200.0 | 1,199.8 | 1,202.8 | 1,202.8 | 2.5 | 2.6 | -93.38 | -2,004.8 | -83.0 | 2,006.9 | 2,001.8 | 5.12 | 392.047 | ES |
| 1,279.5 | 1,279.1 | 1,282.1 | 1,282.1 | 2.7 | 2.8 | -93.56 | -2,004.8 | -83.0 | 2,007.3 | 2,001.9 | 5.47 | 366.691 | |
| 1,300.0 | 1,299.5 | 1,302.5 | 1,302.5 | 2.8 | 2.8 | -93.62 | -2,004.8 | -83.0 | 2,007.5 | 2,001.9 | 5.57 | 360.696 | |
| 1,377.9 | 1,376.9 | 1,379.9 | 1,379.9 | 3.0 | 3.0 | -93.87 | -2,004.8 | -83.0 | 2,008.1 | 2,002.1 | 5.93 | 338.634 | |
| 1,400.0 | 1,398.7 | 1,401.7 | 1,401.7 | 3.0 | 3.0 | -93.95 | -2,004.8 | -83.0 | 2,008.3 | 2,002.2 | 6.03 | 332.889 | |
| 1,476.4 | 1,474.2 | 1,477.2 | 1,477.2 | 3.2 | 3.2 | -94.26 | -2,004.8 | -83.0 | 2,009.1 | 2,002.7 | 6.41 | 313.301 | |
| 1,500.0 | 1,497.5 | 1,500.5 | 1,500.5 | 3.3 | 3.2 | -94.36 | -2,004.8 | -83.0 | 2,009.4 | 2,002.9 | 6.53 | 307.718 | |
| 1,574.8 | 1,571.0 | 1,574.0 | 1,574.0 | 3.5 | 3.4 | -94.73 | -2,004.8 | -83.0 | 2,010.5 | 2,003.6 | 6.93 | 290.055 | |
| 1,600.0 | 1,595.6 | 1,598.6 | 1,598.6 | 3.6 | 3.5 | -94.86 | -2,004.8 | -83.0 | 2,011.0 | 2,003.9 | 7.07 | 284.574 | |
| 1,673.2 | 1,667.0 | 1,670.7 | 1,670.7 | 3.9 | 3.6 | -95.29 | -2,004.8 | -82.9 | 2,012.4 | 2,004.9 | 7.49 | 268.539 | |
| 1,700.0 | 1,693.1 | 1,697.6 | 1,697.6 | 4.0 | 3.7 | -95.46 | -2,004.8 | -82.6 | 2,013.0 | 2,005.4 | 7.65 | 263.188 | |
| 1,771.6 | 1,762.4 | 1,768.3 | 1,768.3 | 4.3 | 3.8 | -95.99 | -2,004.7 | -80.6 | 2,014.8 | 2,006.7 | 8.10 | 248.884 | |
| 1,800.0 | 1,789.6 | 1,795.8 | 1,795.8 | 4.4 | 3.9 | -96.22 | -2,004.6 | -79.3 | 2,015.6 | 2,007.4 | 8.27 | 243.697 | |
| 1,870.1 | 1,856.8 | 1,862.7 | 1,862.5 | 4.7 | 4.0 | -96.83 | -2,004.4 | -75.1 | 2,017.9 | 2,009.2 | 8.75 | 230.525 | |
| 1,900.0 | 1,885.3 | 1,890.7 | 1,890.5 | 4.9 | 4.1 | -97.11 | -2,004.3 | -72.9 | 2,019.0 | 2,010.1 | 8.96 | 225.383 | |
| 1,968.5 | 1,950.2 | 1,953.5 | 1,953.0 | 5.3 | 4.2 | -97.78 | -2,004.1 | -67.0 | 2,022.0 | 2,012.5 | 9.48 | 213.313 | |
| 2,000.0 | 1,979.8 | 1,981.8 | 1,981.0 | 5.5 | 4.3 | -98.09 | -2,003.9 | -63.8 | 2,023.6 | 2,013.8 | 9.72 | 208.249 | |
| 2,044.9 | 2,021.9 | 2,021.3 | 2,020.3 | 5.7 | 4.4 | -98.56 | -2,003.7 | -59.0 | 2,026.1 | 2,016.0 | 10.08 | 200.940 | |
| 2,066.9 | 2,042.5 | 2,040.4 | 2,039.2 | 5.9 | 4.4 | -98.81 | -2,003.6 | -56.5 | 2,027.4 | 2,017.1 | 10.27 | 197.440 | |
| 2,100.0 | 2,073.4 | 2,068.8 | 2,067.3 | 6.1 | 4.5 | -99.20 | -2,003.4 | -52.5 | 2,029.5 | 2,018.9 | 10.55 | 192.436 | |
| 2,165.3 | 2,134.4 | 2,124.0 | 2,121.8 | 6.5 | 4.6 | -99.97 | -2,003.0 | -43.9 | 2,034.1 | 2,022.9 | 11.11 | 183.068 | |
| 2,200.0 | 2,166.8 | 2,152.8 | 2,150.2 | 6.8 | 4.7 | -100.38 | -2,002.8 | -39.0 | 2,036.7 | 2,025.3 | 11.41 | 178.463 | |
| 2,263.8 | 2,226.4 | 2,204.9 | 2,201.4 | 7.2 | 4.8 | -101.14 | -2,002.3 | -29.5 | 2,042.0 | 2,030.0 | 11.98 | 170.498 | |
| 2,300.0 | 2,260.2 | 2,233.9 | 2,229.9 | 7.4 | 4.9 | -101.57 | -2,002.1 | -23.8 | 2,045.3 | 2,033.0 | 12.30 | 166.265 | |
| 2,362.2 | 2,318.3 | 2,285.3 | 2,280.2 | 7.9 | 5.1 | -102.34 | -2,001.6 | -13.1 | 2,051.4 | 2,038.6 | 12.88 | 159.332 | |
| 2,400.0 | 2,353.6 | 2,317.1 | 2,311.2 | 8.1 | 5.2 | -102.82 | -2,001.3 | -6.5 | 2,055.4 | 2,042.2 | 13.23 | 155.385 | |
| 2,460.6 | 2,410.3 | 2,368.0 | 2,361.1 | 8.6 | 5.4 | -103.58 | -2,000.8 | 4.0 | 2,062.2 | 2,048.4 | 13.80 | 149.420 | |
| 2,500.0 | 2,447.0 | 2,401.1 | 2,393.4 | 8.9 | 5.5 | -104.07 | -2,000.5 | 10.9 | 2,066.9 | 2,052.7 | 14.17 | 145.841 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,450.7 | 2,442.0 | 9.3 | 5.6 | -104.81 | -2,000.0 | 21.2 | 2,074.3 | 2,059.5 | 14.74 | 140.733 | |
| 2,600.0 | 2,540.5 | 2,485.2 | 2,475.7 | 9.6 | 5.8 | -105.31 | -1,999.7 | 28.4 | 2,079.7 | 2,064.6 | 15.13 | 137.455 | |
| 2,657.5 | 2,594.2 | 2,533.5 | 2,522.9 | 10.0 | 5.9 | -106.02 | -1,999.2 | 38.4 | 2,087.7 | 2,072.0 | 15.68 | 133.105 | |
| 2,700.0 | 2,633.9 | 2,569.2 | 2,557.9 | 10.3 | 6.1 | -106.55 | -1,998.9 | 45.8 | 2,093.8 | 2,077.7 | 16.09 | 130.102 | |
| 2,755.9 | 2,686.1 | 2,616.2 | 2,603.8 | 10.7 | 6.2 | -107.23 | -1,998.4 | 55.6 | 2,102.3 | 2,085.7 | 16.63 | 126.388 | |
| 2,800.0 | 2,727.3 | 2,653.2 | 2,640.1 | 11.0 | 6.4 | -107.77 | -1,998.1 | 63.3 | 2,109.3 | 2,092.2 | 17.06 | 123.639 | |
| 2,854.3 | 2,778.1 | 2,698.9 | 2,684.7 | 11.4 | 6.5 | -108.42 | -1,997.7 | 72.7 | 2,118.2 | 2,100.6 | 17.58 | 120.462 | |
| 2,900.0 | 2,820.7 | 2,737.3 | 2,722.3 | 11.8 | 6.7 | -108.97 | -1,997.3 | 80.7 | 2,126.0 | 2,108.0 | 18.03 | 117.943 | |
| 2,952.7 | 2,870.0 | 2,781.6 | 2,765.6 | 12.2 | 6.8 | -109.60 | -1,996.9 | 89.9 | 2,135.3 | 2,116.8 | 18.53 | 115.211 | |
| 3,000.0 | 2,914.2 | 2,821.3 | 2,804.5 | 12.5 | 7.0 | -110.16 | -1,996.5 | 98.2 | 2,143.9 | 2,124.9 | 18.99 | 112.911 | |
| 3,051.2 | 2,962.0 | 2,864.3 | 2,846.6 | 12.9 | 7.2 | -110.77 | -1,996.1 | 107.1 | 2,153.6 | 2,134.1 | 19.48 | 110.559 | |
| 3,100.0 | 3,007.6 | 2,905.4 | 2,886.7 | 13.3 | 7.3 | -111.34 | -1,995.7 | 115.6 | 2,163.1 | 2,143.1 | 19.94 | 108.454 | |
| 3,149.6 | 3,053.9 | 2,947.1 | 2,927.5 | 13.6 | 7.5 | -111.92 | -1,995.3 | 124.3 | 2,173.0 | 2,152.6 | 20.42 | 106.427 | |
| 3,200.0 | 3,101.0 | 2,989.4 | 2,968.9 | 14.0 | 7.7 | -112.50 | -1,994.9 | 133.1 | 2,183.4 | 2,162.5 | 20.90 | 104.494 | |
| 3,248.0 | 3,145.9 | 3,029.8 | 3,008.4 | 14.4 | 7.8 | -113.05 | -1,994.5 | 141.4 | 2,193.6 | 2,172.2 | 21.35 | 102.749 | |
| 3,300.0 | 3,194.4 | 3,073.5 | 3,051.1 | 14.8 | 8.0 | -113.65 | -1,994.1 | 150.5 | 2,204.9 | 2,183.1 | 21.84 | 100.971 | |
| 3,346.4 | 3,237.8 | 3,112.5 | 3,089.3 | 15.1 | 8.2 | -114.17 | -1,993.7 | 158.6 | 2,215.3 | 2,193.0 | 22.27 | 99.468 | |
| 3,400.0 | 3,287.8 | 3,157.5 | 3,133.3 | 15.5 | 8.4 | -114.77 | -1,993.3 | 168.0 | 2,227.5 | 2,204.7 | 22.77 | 97.830 | |
| 3,444.9 | 3,329.8 | 3,195.2 | 3,170.2 | 15.9 | 8.5 | -115.27 | -1,992.9 | 175.8 | 2,238.0 | 2,214.8 | 23.18 | 96.534 | |
| 3,500.0 | 3,381.3 | 3,241.5 | 3,215.5 | 16.3 | 8.7 | -115.88 | -1,992.5 | 185.4 | 2,251.2 | 2,227.5 | 23.69 | 95.027 | |
| 3,543.3 | 3,421.7 | 3,277.9 | 3,251.1 | 16.6 | 8.9 | -116.36 | -1,992.1 | 193.0 | 2,261.7 | 2,237.7 | 24.08 | 93.907 | |
| 3,600.0 | 3,474.7 | 3,325.6 | 3,297.7 | 17.0 | 9.1 | -116.98 | -1,991.7 | 202.8 | 2,275.9 | 2,251.3 | 24.60 | 92.521 | |
| 3,641.7 | 3,513.7 | 3,360.7 | 3,332.0 | 17.3 | 9.2 | -117.43 | -1,991.3 | 210.1 | 2,286.5 | 2,261.5 | 24.97 | 91.553 | |
| 3,700.0 | 3,568.1 | 3,409.6 | 3,379.9 | 17.8 | 9.4 | -118.05 | -1,990.9 | 220.3 | 2,301.6 | 2,276.1 | 25.49 | 90.277 | |
| 3,740.1 | 3,605.6 | 3,443.4 | 3,412.9 | 18.1 | 9.5 | -118.48 | -1,990.6 | 227.3 | 2,312.2 | 2,286.4 | 25.85 | 89.441 | |
| 3,800.0 | 3,661.5 | 3,493.7 | 3,462.1 | 18.5 | 9.8 | -119.11 | -1,990.1 | 237.7 | 2,328.3 | 2,301.9 | 26.38 | 88.265 | |
| 3,838.6 | 3,697.6 | 3,526.1 | 3,493.9 | 18.8 | 9.9 | -119.51 | -1,989.8 | 244.5 | 2,338.9 | 2,312.1 | 26.72 | 87.545 | |
| 3,900.0 | 3,754.9 | 3,577.7 | 3,544.4 | 19.3 | 10.1 | -120.15 | -1,989.3 | 255.2 | 2,355.9 | 2,328.7 | 27.25 | 86.460 | |
| 3,937.0 | 3,789.5 | 3,608.8 | 3,574.8 | 19.6 | 10.3 | -120.52 | -1,989.0 | 261.7 | 2,366.4 | 2,338.8 | 27.57 | 85.841 | |
| 4,000.0 | 3,848.4 | 3,661.8 | 3,626.6 | 20.1 | 10.5 | -121.16 | -1,988.5 | 272.6 | 2,384.5 | 2,356.4 | 28.11 | 84.841 | |
| 4,035.4 | 3,881.5 | 3,691.5 | 3,655.7 | 20.3 | 10.6 | -121.52 | -1,988.2 | 278.8 | 2,394.8 | 2,366.4 | 28.41 | 84.309 | |
| 4,100.0 | 3,941.8 | 3,745.8 | 3,708.8 | 20.8 | 10.8 | -122.16 | -1,987.7 | 290.1 | 2,413.9 | 2,385.0 | 28.95 | 83.388 | |
| 4,133.8 | 3,973.4 | 3,774.3 | 3,736.6 | 21.1 | 11.0 | -122.50 | -1,987.4 | 296.0 | 2,424.1 | 2,394.9 | 29.23 | 82.931 | |
| 4,200.0 | 4,035.2 | 3,829.8 | 3,791.0 | 21.6 | 11.2 | -123.14 | -1,986.9 | 307.5 | 2,444.2 | 2,414.4 | 29.78 | 82.084 | |
| 4,232.3 | 4,065.4 | 3,857.0 | 3,817.5 | 21.8 | 11.3 | -123.46 | -1,986.6 | 313.2 | 2,454.2 | 2,424.1 | 30.04 | 81.692 | |
| 4,300.0 | 4,128.6 | 3,913.9 | 3,873.2 | 22.3 | 11.6 | -124.11 | -1,986.1 | 325.0 | 2,475.3 | 2,444.7 | 30.59 | 80.914 | |
| 4,330.7 | 4,157.3 | 3,939.7 | 3,898.4 | 22.6 | 11.7 | -124.40 | -1,985.8 | 330.3 | 2,485.0 | 2,454.2 | 30.84 | 80.580 | |
| 4,400.0 | 4,222.0 | 3,997.9 | 3,955.4 | 23.1 | 11.9 | -125.05 | -1,985.3 | 342.4 | 2,507.2 | 2,475.8 | 31.39 | 79.865 | |
| 4,429.1 | 4,249.3 | 4,022.4 | 3,979.3 | 23.3 | 12.0 | -125.32 | -1,985.0 | 347.5 | 2,516.6 | 2,485.0 | 31.62 | 79.581 | |
| 4,500.0 | 4,315.5 | 4,082.0 | 4,037.6 | 23.9 | 12.3 | -125.97 | -1,984.5 | 359.9 | 2,539.9 | 2,507.7 | 32.18 | 78.925 | |
| 4,527.5 | 4,341.2 | 4,105.1 | 4,060.2 | 24.1 | 12.4 | -126.22 | -1,984.3 | 364.7 | 2,549.0 | 2,516.6 | 32.39 | 78.684 | |
| 4,600.0 | 4,408.9 | 4,166.0 | 4,119.8 | 24.6 | 12.7 | -126.88 | -1,983.7 | 377.3 | 2,573.2 | 2,540.3 | 32.95 | 78.085 | |
| 4,626.0 | 4,433.2 | 4,187.9 | 4,141.2 | 24.8 | 12.8 | -127.11 | -1,983.5 | 381.9 | 2,582.0 | 2,548.8 | 33.15 | 77.881 | |
| 4,700.0 | 4,502.3 | 4,250.1 | 4,202.0 | 25.4 | 13.0 | -127.76 | -1,982.9 | 394.8 | 2,607.3 | 2,573.6 | 33.71 | 77.334 | |
| 4,724.4 | 4,525.1 | 4,270.6 | 4,222.1 | 25.6 | 13.1 | -127.98 | -1,982.7 | 399.0 | 2,615.7 | 2,581.8 | 33.90 | 77.163 | |
| 4,800.0 | 4,595.7 | 4,334.1 | 4,284.2 | 26.2 | 13.4 | -128.63 | -1,982.1 | 412.2 | 2,642.0 | 2,607.6 | 34.46 | 76.664 | |
| 4,822.8 | 4,617.1 | 4,353.3 | 4,303.0 | 26.3 | 13.5 | -128.83 | -1,981.9 | 416.2 | 2,650.0 | 2,615.4 | 34.63 | 76.522 | |
| 4,900.0 | 4,689.2 | 4,418.1 | 4,366.4 | 26.9 | 13.8 | -129.48 | -1,981.3 | 429.7 | 2,677.4 | 2,642.2 | 35.20 | 76.070 | |
| 4,921.2 | 4,709.0 | 4,436.0 | 4,383.9 | 27.1 | 13.9 | -129.66 | -1,981.1 | 433.4 | 2,685.0 | 2,649.7 | 35.35 | 75.952 | |
| 5,000.0 | 4,782.6 | 4,502.2 | 4,448.6 | 27.7 | 14.2 | -130.31 | -1,980.5 | 447.1 | 2,713.4 | 2,677.5 | 35.92 | 75.543 | |
| 5,019.7 | 4,801.0 | 4,527.4 | 4,473.3 | 27.8 | 14.3 | -130.56 | -1,980.2 | 452.3 | 2,720.6 | 2,684.5 | 36.06 | 75.443 | |
| 5,100.0 | 4,876.0 | 4,690.3 | 4,633.7 | 28.4 | 14.8 | -132.02 | -1,978.9 | 480.8 | 2,748.6 | 2,712.0 | 36.61 | 75.082 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,728.5 | 4,671.5 | 28.6 | 14.9 | -132.33 | -1,978.7 | 486.1 | 2,754.7 | 2,717.9 | 36.72 | 75.023 | |
| 5,159.9 | 4,932.0 | 8,269.5 | 6,711.1 | 28.9 | 47.0 | -111.45 | -1,977.5 | -1,295.0 | 2,753.0 | 2,680.3 | 72.73 | 37.854 | |
| 5,200.0 | 4,969.5 | 8,283.4 | 6,711.1 | 29.2 | 47.3 | -110.60 | -1,977.5 | -1,309.0 | 2,730.0 | 2,656.3 | 73.62 | 37.081 | |
| 5,216.5 | 4,985.1 | 8,289.0 | 6,711.1 | 29.3 | 47.5 | -110.26 | -1,977.5 | -1,314.6 | 2,720.5 | 2,646.6 | 73.96 | 36.781 | |
| 5,300.0 | 5,064.0 | 8,315.9 | 6,711.0 | 29.7 | 48.2 | -108.54 | -1,977.5 | -1,341.5 | 2,673.3 | 2,597.6 | 75.63 | 35.347 | |
| 5,314.9 | 5,078.2 | 8,320.5 | 6,711.0 | 29.8 | 48.3 | -108.23 | -1,977.5 | -1,346.0 | 2,664.9 | 2,589.0 | 75.91 | 35.107 | |
| 5,400.0 | 5,159.6 | 8,345.1 | 6,711.0 | 30.2 | 48.9 | -106.56 | -1,977.5 | -1,370.6 | 2,617.9 | 2,540.4 | 77.42 | 33.814 | |
| 5,413.4 | 5,172.4 | 8,348.7 | 6,711.0 | 30.3 | 49.0 | -106.30 | -1,977.5 | -1,374.3 | 2,610.6 | 2,532.9 | 77.64 | 33.624 | |
| 5,500.0 | 5,256.1 | 8,370.9 | 6,711.0 | 30.7 | 49.6 | -104.68 | -1,977.5 | -1,396.5 | 2,564.0 | 2,485.0 | 78.99 | 32.462 | |
| 5,511.8 | 5,267.6 | 8,373.8 | 6,711.0 | 30.7 | 49.7 | -104.47 | -1,977.5 | -1,399.3 | 2,557.8 | 2,478.6 | 79.15 | 32.314 | |
| 5,600.0 | 5,353.5 | 8,393.4 | 6,711.0 | 31.1 | 50.2 | -102.92 | -1,977.5 | -1,418.9 | 2,512.0 | 2,431.6 | 80.33 | 31.272 | |
| 5,610.2 | 5,363.5 | 8,395.5 | 6,711.0 | 31.1 | 50.3 | -102.75 | -1,977.5 | -1,421.1 | 2,506.8 | 2,426.3 | 80.45 | 31.160 | |
| 5,700.0 | 5,451.6 | 8,412.5 | 6,711.0 | 31.4 | 50.7 | -101.30 | -1,977.5 | -1,438.0 | 2,462.1 | 2,380.6 | 81.45 | 30.227 | |
| 5,708.6 | 5,460.2 | 8,414.0 | 6,711.0 | 31.4 | 50.7 | -101.17 | -1,977.5 | -1,439.5 | 2,457.8 | 2,376.3 | 81.54 | 30.144 | |
| 5,800.0 | 5,550.4 | 8,428.1 | 6,710.9 | 31.7 | 51.1 | -99.83 | -1,977.5 | -1,453.7 | 2,414.5 | 2,332.1 | 82.36 | 29.315 | |
| 5,807.1 | 5,557.4 | 8,429.1 | 6,710.9 | 31.7 | 51.1 | -99.73 | -1,977.5 | -1,454.6 | 2,411.2 | 2,328.8 | 82.42 | 29.255 | |
| 5,900.0 | 5,649.6 | 8,440.3 | 6,710.9 | 31.9 | 51.4 | -98.51 | -1,977.5 | -1,465.9 | 2,369.6 | 2,286.5 | 83.08 | 28.523 | |
| 5,905.5 | 5,655.1 | 8,440.9 | 6,710.9 | 31.9 | 51.5 | -98.44 | -1,977.5 | -1,466.5 | 2,367.2 | 2,284.1 | 83.11 | 28.483 | |
| 6,000.0 | 5,749.2 | 8,449.1 | 6,710.9 | 32.1 | 51.7 | -97.36 | -1,977.5 | -1,474.6 | 2,327.6 | 2,244.0 | 83.60 | 27.842 | |
| 6,003.9 | 5,753.1 | 8,449.4 | 6,710.9 | 32.1 | 51.7 | -97.32 | -1,977.5 | -1,474.9 | 2,326.0 | 2,242.4 | 83.62 | 27.818 | |
| 6,100.0 | 5,849.1 | 8,454.4 | 6,710.9 | 32.3 | 51.8 | -96.38 | -1,977.5 | -1,479.9 | 2,288.8 | 2,204.8 | 83.95 | 27.264 | |
| 6,102.3 | 5,851.4 | 8,454.5 | 6,710.9 | 32.3 | 51.8 | -96.36 | -1,977.5 | -1,480.0 | 2,287.9 | 2,203.9 | 83.95 | 27.252 | |
| 6,200.8 | 5,949.8 | 8,456.2 | 6,710.9 | 32.4 | 51.9 | -95.57 | -1,977.5 | -1,481.8 | 2,253.1 | 2,168.9 | 84.13 | 26.781 | |
| 6,204.9 | 5,953.9 | 8,456.2 | 6,710.9 | 32.4 | 51.9 | -179.98 | -1,977.5 | -1,481.8 | 2,251.7 | 2,221.3 | 30.40 | 74.068 | |
| 6,234.9 | 5,983.9 | 8,456.2 | 6,710.9 | 32.4 | 51.9 | -179.98 | -1,977.5 | -1,481.7 | 2,241.8 | 2,211.4 | 30.45 | 73.632 | |
| 6,250.0 | 5,999.0 | 8,456.0 | 6,710.9 | 32.4 | 51.9 | 90.42 | -1,977.5 | -1,481.6 | 2,237.0 | 2,152.8 | 84.18 | 26.574 | |
| 6,299.2 | 6,048.2 | 8,453.2 | 6,710.9 | 32.4 | 51.8 | 91.61 | -1,977.5 | -1,478.8 | 2,221.9 | 2,137.8 | 84.13 | 26.410 | |
| 6,300.0 | 6,048.9 | 8,453.2 | 6,710.9 | 32.4 | 51.8 | 91.63 | -1,977.5 | -1,478.7 | 2,221.7 | 2,137.5 | 84.13 | 26.407 | |
| 6,350.0 | 6,098.5 | 8,446.8 | 6,710.9 | 32.4 | 51.6 | 92.65 | -1,977.5 | -1,472.4 | 2,207.5 | 2,123.6 | 83.93 | 26.303 | |
| 6,397.6 | 6,145.3 | 8,437.6 | 6,710.9 | 32.3 | 51.4 | 93.43 | -1,977.5 | -1,463.2 | 2,195.0 | 2,111.4 | 83.60 | 26.257 | |
| 6,400.0 | 6,147.6 | 8,437.1 | 6,710.9 | 32.3 | 51.4 | 93.47 | -1,977.5 | -1,462.6 | 2,194.5 | 2,110.9 | 83.58 | 26.256 | |
| 6,450.0 | 6,195.8 | 8,423.9 | 6,710.9 | 32.2 | 51.0 | 94.10 | -1,977.5 | -1,449.5 | 2,182.6 | 2,099.5 | 83.11 | 26.261 | |
| 6,496.0 | 6,239.3 | 8,408.8 | 6,711.0 | 32.1 | 50.6 | 94.51 | -1,977.5 | -1,434.4 | 2,172.8 | 2,090.3 | 82.59 | 26.310 | |
| 6,500.0 | 6,243.0 | 8,407.4 | 6,711.0 | 32.1 | 50.6 | 94.54 | -1,977.5 | -1,433.0 | 2,172.0 | 2,089.5 | 82.54 | 26.316 | |
| 6,550.0 | 6,289.0 | 8,387.7 | 6,711.0 | 32.0 | 50.1 | 94.82 | -1,977.5 | -1,413.2 | 2,162.7 | 2,080.8 | 81.87 | 26.417 | |
| 6,594.5 | 6,328.6 | 8,367.5 | 6,711.0 | 31.8 | 49.5 | 94.93 | -1,977.5 | -1,393.0 | 2,155.4 | 2,074.2 | 81.20 | 26.543 | |
| 6,600.0 | 6,333.4 | 8,364.8 | 6,711.0 | 31.8 | 49.5 | 94.93 | -1,977.5 | -1,390.3 | 2,154.5 | 2,073.4 | 81.12 | 26.560 | |
| 6,650.0 | 6,376.2 | 8,338.8 | 6,711.0 | 31.7 | 48.8 | 94.90 | -1,977.5 | -1,364.4 | 2,147.5 | 2,067.2 | 80.29 | 26.746 | |
| 6,692.9 | 6,411.3 | 8,314.2 | 6,711.0 | 31.6 | 48.1 | 94.78 | -1,977.5 | -1,339.8 | 2,142.3 | 2,062.8 | 79.53 | 26.937 | |
| 6,700.0 | 6,417.0 | 8,310.0 | 6,711.0 | 31.5 | 48.0 | 94.75 | -1,977.5 | -1,335.5 | 2,141.6 | 2,062.2 | 79.40 | 26.971 | |
| 6,750.0 | 6,455.7 | 8,278.3 | 6,711.1 | 31.4 | 47.2 | 94.48 | -1,977.5 | -1,303.9 | 2,136.7 | 2,058.2 | 78.46 | 27.232 | |
| 6,791.3 | 6,486.0 | 8,250.2 | 6,711.1 | 31.3 | 46.5 | 94.20 | -1,977.5 | -1,275.8 | 2,133.3 | 2,055.6 | 77.65 | 27.473 | |
| 6,800.0 | 6,492.2 | 8,244.1 | 6,711.1 | 31.3 | 46.3 | 94.14 | -1,977.5 | -1,269.6 | 2,132.7 | 2,055.2 | 77.47 | 27.527 | |
| 6,850.0 | 6,526.1 | 8,207.4 | 6,711.1 | 31.2 | 45.3 | 93.72 | -1,977.5 | -1,232.9 | 2,129.5 | 2,053.0 | 76.45 | 27.855 | |
| 6,889.7 | 6,551.2 | 8,176.5 | 6,711.2 | 31.2 | 44.6 | 93.36 | -1,977.5 | -1,202.1 | 2,127.5 | 2,051.9 | 75.63 | 28.132 | |
| 6,900.0 | 6,557.4 | 8,168.4 | 6,711.2 | 31.2 | 44.3 | 93.26 | -1,977.5 | -1,193.9 | 2,127.0 | 2,051.6 | 75.41 | 28.207 | |
| 6,950.0 | 6,586.0 | 8,127.3 | 6,711.2 | 31.1 | 43.3 | 92.77 | -1,977.5 | -1,152.8 | 2,125.2 | 2,050.9 | 74.35 | 28.584 | |
| 6,988.2 | 6,605.8 | 8,094.6 | 6,711.2 | 31.2 | 42.5 | 92.40 | -1,977.5 | -1,120.2 | 2,124.2 | 2,050.6 | 73.54 | 28.884 | |
| 7,000.0 | 6,611.5 | 8,084.3 | 6,711.2 | 31.2 | 42.2 | 92.29 | -1,977.5 | -1,109.9 | 2,123.9 | 2,050.6 | 73.29 | 28.980 | |
| 7,050.0 | 6,634.1 | 8,039.7 | 6,711.3 | 31.2 | 41.1 | 91.82 | -1,977.5 | -1,065.2 | 2,123.0 | 2,050.8 | 72.24 | 29.389 | |
| 7,086.6 | 6,648.6 | 8,006.0 | 6,711.3 | 31.3 | 40.2 | 91.50 | -1,977.5 | -1,031.6 | 2,122.5 | 2,051.1 | 71.48 | 29.693 | |
| 7,100.0 | 6,653.4 | 7,993.6 | 6,711.3 | 31.4 | 39.9 | 91.39 | -1,977.5 | -1,019.1 | 2,122.4 | 2,051.2 | 71.20 | 29.807 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 7,946.2 | 6,711.4 | 31.6 | 38.7 | 91.00 | -1,977.5 | -971.8 | 2,122.1 | 2,051.9 | 70.21 | 30.226 | |
| 7,185.0 | 6,678.8 | 7,912.4 | 6,711.4 | 31.7 | 37.9 | 90.78 | -1,977.5 | -938.0 | 2,121.9 | 2,052.4 | 69.53 | 30.519 | |
| 7,200.0 | 6,682.3 | 7,897.9 | 6,711.4 | 31.8 | 37.5 | 90.69 | -1,977.5 | -923.4 | 2,121.9 | 2,052.6 | 69.24 | 30.647 | |
| 7,250.0 | 6,691.6 | 7,848.8 | 6,711.4 | 32.1 | 36.3 | 90.45 | -1,977.5 | -874.3 | 2,121.8 | 2,053.4 | 68.32 | 31.056 | |
| 7,283.4 | 6,696.0 | 7,815.6 | 6,711.5 | 32.3 | 35.5 | 90.34 | -1,977.5 | -841.1 | 2,121.7 | 2,054.0 | 67.73 | 31.325 | |
| 7,300.0 | 6,697.5 | 7,799.1 | 6,711.5 | 32.4 | 35.1 | 90.29 | -1,977.5 | -824.7 | 2,121.7 | 2,054.3 | 67.44 | 31.460 | |
| 7,350.0 | 6,699.9 | 7,749.2 | 6,711.5 | 32.8 | 33.9 | 90.23 | -1,977.5 | -774.7 | 2,121.7 | 2,055.1 | 66.63 | 31.844 | |
| 7,358.6 | 6,700.0 | 7,740.6 | 6,711.5 | 32.9 | 33.7 | 90.23 | -1,977.5 | -766.1 | 2,121.7 | 2,055.2 | 66.49 | 31.909 | |
| 7,364.4 | 6,700.0 | 7,734.8 | 6,711.5 | 32.9 | 33.5 | 90.23 | -1,977.5 | -760.4 | 2,121.7 | 2,055.3 | 66.40 | 31.953 | |
| 7,381.9 | 6,699.9 | 7,717.3 | 6,711.5 | 33.1 | 33.1 | 90.23 | -1,977.5 | -742.9 | 2,121.7 | 2,055.6 | 66.13 | 32.082 | |
| 7,400.0 | 6,699.8 | 7,699.2 | 6,711.6 | 33.2 | 32.7 | 90.24 | -1,977.5 | -724.7 | 2,121.7 | 2,055.9 | 65.86 | 32.216 | |
| 7,480.3 | 6,699.2 | 7,618.9 | 6,711.6 | 34.0 | 30.8 | 90.25 | -1,977.5 | -644.4 | 2,121.7 | 2,056.9 | 64.80 | 32.741 | |
| 7,500.0 | 6,699.1 | 7,599.2 | 6,711.6 | 34.2 | 30.4 | 90.26 | -1,977.5 | -624.7 | 2,121.7 | 2,057.2 | 64.55 | 32.872 | |
| 7,578.7 | 6,698.6 | 7,520.5 | 6,711.7 | 35.2 | 28.6 | 90.27 | -1,977.5 | -546.0 | 2,121.7 | 2,058.0 | 63.73 | 33.290 | |
| 7,600.0 | 6,698.5 | 7,499.2 | 6,711.7 | 35.4 | 28.1 | 90.28 | -1,977.5 | -524.7 | 2,121.7 | 2,058.2 | 63.52 | 33.405 | |
| 7,677.1 | 6,698.0 | 7,422.0 | 6,711.8 | 36.5 | 26.5 | 90.29 | -1,977.5 | -447.6 | 2,121.7 | 2,058.8 | 62.94 | 33.709 | |
| 7,700.0 | 6,697.8 | 7,399.2 | 6,711.8 | 36.8 | 26.0 | 90.30 | -1,977.5 | -424.7 | 2,121.7 | 2,059.0 | 62.77 | 33.800 | |
| 7,775.6 | 6,697.3 | 7,323.6 | 6,711.9 | 38.0 | 24.5 | 90.31 | -1,977.5 | -349.2 | 2,121.7 | 2,059.3 | 62.44 | 33.982 | |
| 7,800.0 | 6,697.2 | 7,299.2 | 6,711.9 | 38.3 | 24.0 | 90.32 | -1,977.5 | -324.7 | 2,121.7 | 2,059.4 | 62.33 | 34.041 | |
| 7,874.0 | 6,696.7 | 7,225.2 | 6,712.0 | 39.6 | 22.7 | 90.33 | -1,977.5 | -250.7 | 2,121.7 | 2,059.5 | 62.23 | 34.093 | |
| 7,900.0 | 6,696.5 | 7,199.2 | 6,712.0 | 40.0 | 22.2 | 90.34 | -1,977.5 | -224.7 | 2,121.7 | 2,059.5 | 62.20 | 34.110 | |
| 7,972.4 | 6,696.1 | 7,125.9 | 6,710.0 | 41.3 | 21.0 | 90.30 | -1,977.5 | -151.5 | 2,121.7 | 2,059.4 | 62.32 | 34.045 | |
| 8,000.0 | 6,695.9 | 7,098.0 | 6,707.4 | 41.8 | 20.6 | 90.23 | -1,977.5 | -123.8 | 2,121.7 | 2,059.3 | 62.39 | 34.008 | |
| 8,058.5 | 6,695.5 | 7,039.9 | 6,698.5 | 42.9 | 19.8 | 90.00 | -1,977.5 | -66.3 | 2,121.7 | 2,059.0 | 62.68 | 33.849 | |
| 8,070.8 | 6,695.4 | 7,027.7 | 6,696.1 | 43.1 | 19.6 | 89.94 | -1,977.5 | -54.4 | 2,121.7 | 2,058.9 | 62.76 | 33.807 | |
| 8,100.0 | 6,695.2 | 6,999.5 | 6,689.6 | 43.7 | 19.3 | 89.77 | -1,977.5 | -26.9 | 2,121.7 | 2,058.8 | 62.95 | 33.705 | |
| 8,169.3 | 6,694.8 | 6,934.8 | 6,670.8 | 45.1 | 18.5 | 89.27 | -1,977.5 | 35.0 | 2,121.9 | 2,058.3 | 63.61 | 33.357 | |
| 8,200.0 | 6,694.6 | 6,907.3 | 6,661.1 | 45.7 | 18.3 | 89.01 | -1,977.5 | 60.7 | 2,122.1 | 2,058.1 | 63.95 | 33.183 | |
| 8,267.7 | 6,694.1 | 6,850.0 | 6,637.8 | 47.1 | 17.8 | 88.39 | -1,977.5 | 113.0 | 2,122.7 | 2,057.9 | 64.86 | 32.726 | |
| 8,300.0 | 6,693.9 | 6,823.4 | 6,625.6 | 47.8 | 17.6 | 88.07 | -1,977.5 | 136.6 | 2,123.3 | 2,057.9 | 65.35 | 32.489 | |
| 8,366.1 | 6,693.5 | 6,773.1 | 6,600.0 | 49.2 | 17.4 | 87.39 | -1,977.5 | 180.0 | 2,124.8 | 2,058.3 | 66.46 | 31.970 | |
| 8,400.0 | 6,693.3 | 6,750.0 | 6,587.3 | 49.9 | 17.3 | 87.05 | -1,977.5 | 199.3 | 2,125.9 | 2,058.8 | 67.06 | 31.701 | |
| 8,464.5 | 6,692.9 | 6,705.6 | 6,561.2 | 51.4 | 17.1 | 86.35 | -1,977.5 | 235.1 | 2,128.6 | 2,060.3 | 68.29 | 31.169 | |
| 8,500.0 | 6,692.6 | 6,683.5 | 6,547.3 | 52.1 | 17.1 | 85.98 | -1,977.5 | 252.4 | 2,130.4 | 2,061.4 | 68.99 | 30.879 | |
| 8,563.0 | 6,692.2 | 6,650.0 | 6,525.4 | 53.6 | 17.0 | 85.40 | -1,977.5 | 277.7 | 2,134.5 | 2,064.2 | 70.30 | 30.365 | |
| 8,600.0 | 6,692.0 | 6,626.5 | 6,509.3 | 54.4 | 17.0 | 84.97 | -1,977.5 | 294.7 | 2,137.5 | 2,066.4 | 71.07 | 30.076 | |
| 8,661.4 | 6,691.6 | 6,600.0 | 6,490.5 | 55.8 | 16.9 | 84.47 | -1,977.5 | 313.4 | 2,143.2 | 2,070.8 | 72.40 | 29.600 | |
| 8,700.0 | 6,691.3 | 6,577.1 | 6,473.7 | 56.7 | 16.9 | 84.02 | -1,977.5 | 328.9 | 2,147.3 | 2,074.1 | 73.24 | 29.320 | |
| 8,759.8 | 6,690.9 | 6,550.0 | 6,453.1 | 58.1 | 16.9 | 83.47 | -1,977.5 | 346.7 | 2,154.7 | 2,080.2 | 74.57 | 28.896 | |
| 8,800.0 | 6,690.7 | 6,534.3 | 6,440.9 | 59.1 | 17.0 | 83.15 | -1,977.5 | 356.6 | 2,160.3 | 2,084.9 | 75.47 | 28.625 | |
| 8,858.2 | 6,690.3 | 6,511.9 | 6,423.2 | 60.5 | 17.0 | 82.68 | -1,977.5 | 370.2 | 2,169.5 | 2,092.7 | 76.80 | 28.250 | |
| 8,900.0 | 6,690.0 | 6,500.0 | 6,413.6 | 61.5 | 17.0 | 82.43 | -1,977.5 | 377.2 | 2,176.7 | 2,099.0 | 77.75 | 27.995 | |
| 8,956.7 | 6,689.7 | 6,477.9 | 6,395.4 | 62.9 | 17.0 | 81.95 | -1,977.5 | 389.8 | 2,187.6 | 2,108.5 | 79.06 | 27.671 | |
| 9,000.0 | 6,689.4 | 6,464.3 | 6,384.1 | 63.9 | 17.0 | 81.65 | -1,977.5 | 397.3 | 2,196.6 | 2,116.6 | 80.06 | 27.438 | |
| 9,055.1 | 6,689.0 | 6,450.0 | 6,372.0 | 65.3 | 17.0 | 81.33 | -1,977.5 | 405.0 | 2,209.1 | 2,127.7 | 81.35 | 27.155 | |
| 9,100.0 | 6,688.7 | 6,435.7 | 6,359.7 | 66.4 | 17.0 | 81.01 | -1,977.5 | 412.4 | 2,220.1 | 2,137.7 | 82.39 | 26.945 | |
| 9,153.5 | 6,688.4 | 6,421.7 | 6,347.6 | 67.7 | 17.1 | 80.69 | -1,977.5 | 419.3 | 2,234.1 | 2,150.5 | 83.66 | 26.706 | |
| 9,200.0 | 6,688.1 | 6,400.0 | 6,328.5 | 68.9 | 17.1 | 80.19 | -1,977.5 | 429.7 | 2,247.2 | 2,162.5 | 84.71 | 26.529 | |
| 9,251.9 | 6,687.8 | 6,400.0 | 6,328.5 | 70.2 | 17.1 | 80.19 | -1,977.5 | 429.7 | 2,262.6 | 2,176.6 | 86.00 | 26.311 | |
| 9,300.0 | 6,687.4 | 6,400.0 | 6,328.5 | 71.4 | 17.1 | 80.19 | -1,977.5 | 429.7 | 2,277.8 | 2,190.6 | 87.19 | 26.126 | |
| 9,350.4 | 6,687.1 | 6,377.7 | 6,308.6 | 72.7 | 17.1 | 79.67 | -1,977.5 | 439.8 | 2,294.5 | 2,206.2 | 88.34 | 25.974 | |
| 9,400.0 | 6,686.8 | 6,368.0 | 6,299.9 | 73.9 | 17.1 | 79.45 | -1,977.5 | 443.9 | 2,311.9 | 2,222.3 | 89.53 | 25.823 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-214 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,350.0 | 6,283.5 | 75.2 | 17.1 | 79.02 | -1,977.5 | 451.4 | 2,329.8 | 2,239.2 | 90.66 | 25.699 | |
| 9,500.0 | 6,686.1 | 6,350.0 | 6,283.5 | 76.5 | 17.1 | 79.02 | -1,977.5 | 451.4 | 2,349.4 | 2,257.5 | 91.94 | 25.553 | |
| 9,547.2 | 6,685.8 | 6,350.0 | 6,283.5 | 77.7 | 17.1 | 79.02 | -1,977.5 | 451.4 | 2,368.3 | 2,275.2 | 93.13 | 25.429 | |
| 9,600.0 | 6,685.5 | 6,334.1 | 6,268.8 | 79.0 | 17.2 | 78.64 | -1,977.5 | 457.6 | 2,390.3 | 2,295.9 | 94.37 | 25.329 | |
| 9,645.6 | 6,685.2 | 6,327.3 | 6,262.5 | 80.2 | 17.2 | 78.48 | -1,977.5 | 460.2 | 2,410.0 | 2,314.5 | 95.49 | 25.239 | |
| 9,700.0 | 6,684.8 | 6,319.6 | 6,255.4 | 81.6 | 17.2 | 78.29 | -1,977.5 | 463.0 | 2,434.3 | 2,337.5 | 96.81 | 25.144 | |
| 9,744.1 | 6,684.6 | 6,300.0 | 6,237.0 | 82.8 | 17.2 | 77.82 | -1,977.5 | 469.8 | 2,454.8 | 2,357.0 | 97.80 | 25.100 | |
| 9,800.0 | 6,684.2 | 6,300.0 | 6,237.0 | 84.2 | 17.2 | 77.82 | -1,977.5 | 469.8 | 2,481.4 | 2,382.2 | 99.22 | 25.008 | |
| 9,842.5 | 6,683.9 | 6,300.0 | 6,237.0 | 85.3 | 17.2 | 77.82 | -1,977.5 | 469.8 | 2,502.2 | 2,401.9 | 100.31 | 24.945 | |
| 9,900.0 | 6,683.5 | 6,300.0 | 6,237.0 | 86.8 | 17.2 | 77.82 | -1,977.5 | 469.8 | 2,531.3 | 2,429.6 | 101.78 | 24.870 | |
| 9,940.9 | 6,683.3 | 6,300.0 | 6,237.0 | 87.9 | 17.2 | 77.82 | -1,977.5 | 469.8 | 2,552.6 | 2,449.8 | 102.83 | 24.823 | |
| 10,000.0 | 6,682.9 | 6,300.0 | 6,237.0 | 89.5 | 17.2 | 77.82 | -1,977.5 | 469.8 | 2,584.2 | 2,479.9 | 104.35 | 24.764 | |
| 10,039.3 | 6,682.6 | 6,279.3 | 6,217.5 | 90.5 | 17.2 | 77.32 | -1,977.5 | 476.5 | 2,605.5 | 2,500.3 | 105.20 | 24.768 | |
| 10,100.0 | 6,682.2 | 6,273.4 | 6,211.8 | 92.1 | 17.2 | 77.17 | -1,977.5 | 478.4 | 2,639.4 | 2,532.7 | 106.71 | 24.735 | |
| 10,137.8 | 6,682.0 | 6,269.8 | 6,208.4 | 93.1 | 17.2 | 77.08 | -1,977.5 | 479.4 | 2,661.0 | 2,553.3 | 107.65 | 24.718 | |
| 10,200.0 | 6,681.6 | 6,250.0 | 6,189.4 | 94.8 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,697.3 | 2,588.3 | 109.08 | 24.729 | |
| 10,236.2 | 6,681.4 | 6,250.0 | 6,189.4 | 95.7 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,718.8 | 2,608.8 | 110.01 | 24.713 | |
| 10,300.0 | 6,680.9 | 6,250.0 | 6,189.4 | 97.4 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,757.3 | 2,645.7 | 111.66 | 24.693 | |
| 10,334.6 | 6,680.7 | 6,250.0 | 6,189.4 | 98.3 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,778.7 | 2,666.1 | 112.56 | 24.686 | |
| 10,400.0 | 6,680.3 | 6,250.0 | 6,189.4 | 100.1 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,819.6 | 2,705.4 | 114.26 | 24.677 | |
| 10,433.0 | 6,680.1 | 6,250.0 | 6,189.4 | 101.0 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,840.7 | 2,725.6 | 115.12 | 24.676 | SF |
| 10,500.0 | 6,679.7 | 6,250.0 | 6,189.4 | 102.8 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,884.0 | 2,767.2 | 116.86 | 24.679 | |
| 10,531.5 | 6,679.4 | 6,250.0 | 6,189.4 | 103.6 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,904.7 | 2,787.1 | 117.69 | 24.682 | |
| 10,600.0 | 6,679.0 | 6,250.0 | 6,189.4 | 105.4 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,950.4 | 2,831.0 | 119.47 | 24.695 | |
| 10,629.9 | 6,678.8 | 6,250.0 | 6,189.4 | 106.2 | 17.2 | 76.60 | -1,977.5 | 485.0 | 2,970.7 | 2,850.4 | 120.26 | 24.703 | |
| 10,700.0 | 6,678.4 | 6,227.1 | 6,167.3 | 108.1 | 17.2 | 76.04 | -1,977.5 | 490.9 | 3,018.3 | 2,896.5 | 121.83 | 24.775 | |
| 10,728.3 | 6,678.2 | 6,225.4 | 6,165.6 | 108.9 | 17.2 | 75.99 | -1,977.5 | 491.3 | 3,037.9 | 2,915.4 | 122.55 | 24.789 | |
| 10,800.0 | 6,677.7 | 6,221.2 | 6,161.5 | 110.8 | 17.2 | 75.89 | -1,977.5 | 492.3 | 3,088.1 | 2,963.7 | 124.38 | 24.828 | |
| 10,826.7 | 6,677.5 | 6,219.7 | 6,160.0 | 111.5 | 17.2 | 75.85 | -1,977.5 | 492.6 | 3,107.1 | 2,982.0 | 125.06 | 24.844 | |
| 10,900.0 | 6,677.1 | 6,200.0 | 6,140.8 | 113.5 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,159.6 | 3,032.9 | 126.74 | 24.931 | |
| 10,925.2 | 6,676.9 | 6,200.0 | 6,140.8 | 114.2 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,177.8 | 3,050.4 | 127.39 | 24.945 | |
| 11,000.0 | 6,676.4 | 6,200.0 | 6,140.8 | 116.2 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,232.4 | 3,103.0 | 129.36 | 24.988 | |
| 11,023.6 | 6,676.3 | 6,200.0 | 6,140.8 | 116.8 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,249.8 | 3,119.8 | 129.98 | 25.003 | |
| 11,100.0 | 6,675.8 | 6,200.0 | 6,140.8 | 118.9 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,306.5 | 3,174.6 | 131.98 | 25.053 | |
| 11,122.0 | 6,675.6 | 6,200.0 | 6,140.8 | 119.5 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,323.1 | 3,190.5 | 132.56 | 25.068 | |
| 11,200.0 | 6,675.1 | 6,200.0 | 6,140.8 | 121.6 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,382.0 | 3,247.4 | 134.61 | 25.124 | |
| 11,220.4 | 6,675.0 | 6,200.0 | 6,140.8 | 122.2 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,397.6 | 3,262.5 | 135.15 | 25.140 | |
| 11,300.0 | 6,674.5 | 6,200.0 | 6,140.8 | 124.3 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,458.8 | 3,321.5 | 137.25 | 25.201 | |
| 11,318.9 | 6,674.3 | 6,200.0 | 6,140.8 | 124.9 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,473.4 | 3,335.6 | 137.74 | 25.216 | |
| 11,400.0 | 6,673.8 | 6,200.0 | 6,140.8 | 127.1 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,536.7 | 3,396.8 | 139.88 | 25.283 | |
| 11,417.3 | 6,673.7 | 6,200.0 | 6,140.8 | 127.5 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,550.3 | 3,409.9 | 140.34 | 25.297 | |
| 11,500.0 | 6,673.2 | 6,200.0 | 6,140.8 | 129.8 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,615.7 | 3,473.1 | 142.53 | 25.368 | |
| 11,515.7 | 6,673.1 | 6,200.0 | 6,140.8 | 130.2 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,628.2 | 3,485.2 | 142.94 | 25.382 | |
| 11,600.0 | 6,672.5 | 6,200.0 | 6,140.8 | 132.5 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,695.7 | 3,550.5 | 145.17 | 25.457 | |
| 11,614.1 | 6,672.4 | 6,200.0 | 6,140.8 | 132.9 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,707.1 | 3,561.5 | 145.55 | 25.470 | |
| 11,700.0 | 6,671.9 | 6,200.0 | 6,140.8 | 135.3 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,776.6 | 3,628.8 | 147.82 | 25.549 | |
| 11,712.6 | 6,671.8 | 6,200.0 | 6,140.8 | 135.6 | 17.2 | 75.37 | -1,977.5 | 496.9 | 3,786.9 | 3,638.7 | 148.15 | 25.560 | |
| 11,800.0 | 6,671.2 | 6,177.9 | 6,119.2 | 138.0 | 17.2 | 74.82 | -1,977.5 | 501.0 | 3,858.1 | 3,708.0 | 150.12 | 25.700 | |
| 11,811.0 | 6,671.1 | 6,177.6 | 6,118.8 | 138.3 | 17.2 | 74.81 | -1,977.5 | 501.1 | 3,867.2 | 3,716.8 | 150.40 | 25.712 | |
| 11,900.0 | 6,670.6 | 6,174.8 | 6,116.0 | 140.7 | 17.2 | 74.74 | -1,977.5 | 501.5 | 3,940.7 | 3,788.0 | 152.72 | 25.804 | |
| 11,909.4 | 6,670.5 | 6,174.5 | 6,115.8 | 141.0 | 17.2 | 74.73 | -1,977.5 | 501.6 | 3,948.5 | 3,795.6 | 152.96 | 25.814 | |
| 11,987.2 | 6,670.0 | 6,172.1 | 6,113.4 | 143.1 | 17.2 | 74.68 | -1,977.5 | 502.0 | 4,013.4 | 3,858.4 | 154.98 | 25.896 | |

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|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,051.3 | 0.20 | N/A | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,051.3 | 0.20 | N/A | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,050.8 | 0.64 | 3,217.175 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,050.8 | 0.65 | 3,147.285 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,050.4 | 1.08 | 1,899.308 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,050.4 | 1.10 | 1,862.679 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,049.9 | 1.52 | 1,347.376 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,049.9 | 1.55 | 1,322.772 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,049.5 | 1.97 | 1,043.995 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,049.5 | 2.00 | 1,025.520 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,049.1 | 2.41 | 852.127 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,049.0 | 2.45 | 837.351 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,048.6 | 2.85 | 719.833 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,048.6 | 2.90 | 707.529 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,048.2 | 3.29 | 623.097 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,048.1 | 3.35 | 612.559 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,047.7 | 3.73 | 549.281 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,047.7 | 3.80 | 540.067 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,047.3 | 4.18 | 491.102 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.56 | -2,049.6 | -87.2 | 2,051.5 | 2,047.2 | 4.25 | 482.917 | CC |
| 1,005.1 | 1,005.1 | 1,008.1 | 1,008.1 | 2.1 | 2.1 | -93.13 | -2,049.6 | -87.2 | 2,051.5 | 2,047.2 | 4.27 | 480.414 | |
| 1,082.7 | 1,082.7 | 1,079.0 | 1,079.0 | 2.3 | 2.3 | -93.15 | -2,049.7 | -87.3 | 2,051.6 | 2,047.0 | 4.59 | 446.954 | ES |
| 1,100.0 | 1,100.0 | 1,093.1 | 1,093.1 | 2.3 | 2.3 | -93.15 | -2,049.7 | -87.5 | 2,051.7 | 2,047.0 | 4.66 | 440.627 | |
| 1,181.1 | 1,181.0 | 1,159.2 | 1,159.1 | 2.5 | 2.5 | -93.18 | -2,050.2 | -89.2 | 2,052.6 | 2,047.6 | 4.95 | 414.272 | |
| 1,200.0 | 1,199.8 | 1,174.6 | 1,174.5 | 2.5 | 2.5 | -93.19 | -2,050.4 | -89.8 | 2,052.9 | 2,047.9 | 5.02 | 408.616 | |
| 1,279.5 | 1,279.1 | 1,239.3 | 1,239.2 | 2.7 | 2.6 | -93.21 | -2,051.4 | -93.2 | 2,054.7 | 2,049.3 | 5.33 | 385.367 | |
| 1,300.0 | 1,299.5 | 1,256.0 | 1,255.8 | 2.8 | 2.6 | -93.21 | -2,051.7 | -94.3 | 2,055.2 | 2,049.8 | 5.41 | 379.775 | |
| 1,377.9 | 1,376.9 | 1,319.5 | 1,319.1 | 3.0 | 2.8 | -93.23 | -2,053.1 | -99.3 | 2,057.8 | 2,052.1 | 5.74 | 358.715 | |
| 1,400.0 | 1,398.7 | 1,337.4 | 1,337.0 | 3.0 | 2.8 | -93.24 | -2,053.6 | -101.0 | 2,058.7 | 2,052.8 | 5.83 | 353.073 | |
| 1,476.4 | 1,474.2 | 1,400.0 | 1,399.1 | 3.2 | 3.0 | -93.25 | -2,055.6 | -107.7 | 2,062.0 | 2,055.8 | 6.18 | 333.608 | |
| 1,500.0 | 1,497.5 | 1,418.9 | 1,417.9 | 3.3 | 3.0 | -93.25 | -2,056.2 | -110.0 | 2,063.2 | 2,056.9 | 6.29 | 327.852 | |
| 1,574.8 | 1,571.0 | 1,479.8 | 1,478.2 | 3.5 | 3.2 | -93.27 | -2,058.6 | -118.1 | 2,067.3 | 2,060.6 | 6.68 | 309.418 | |
| 1,600.0 | 1,595.6 | 1,500.0 | 1,498.2 | 3.6 | 3.2 | -93.27 | -2,059.4 | -121.1 | 2,068.8 | 2,062.0 | 6.81 | 303.740 | |
| 1,673.2 | 1,667.0 | 1,560.0 | 1,557.3 | 3.9 | 3.4 | -93.28 | -2,062.2 | -130.7 | 2,073.6 | 2,066.3 | 7.25 | 286.046 | |
| 1,700.0 | 1,693.1 | 1,581.8 | 1,578.7 | 4.0 | 3.5 | -93.28 | -2,063.3 | -134.5 | 2,075.5 | 2,068.1 | 7.41 | 280.131 | |
| 1,771.6 | 1,762.4 | 1,640.1 | 1,636.0 | 4.3 | 3.6 | -93.28 | -2,066.5 | -145.4 | 2,081.0 | 2,073.1 | 7.89 | 263.689 | |
| 1,800.0 | 1,789.6 | 1,666.1 | 1,661.4 | 4.4 | 3.7 | -93.29 | -2,068.0 | -150.5 | 2,083.3 | 2,075.2 | 8.10 | 257.296 | |
| 1,870.1 | 1,856.8 | 1,735.7 | 1,729.4 | 4.7 | 4.0 | -93.35 | -2,072.0 | -164.4 | 2,089.1 | 2,080.4 | 8.68 | 240.743 | |
| 1,900.0 | 1,885.3 | 1,765.3 | 1,758.4 | 4.9 | 4.1 | -93.39 | -2,073.7 | -170.3 | 2,091.6 | 2,082.6 | 8.93 | 234.279 | |
| 1,968.5 | 1,950.2 | 1,833.0 | 1,824.6 | 5.3 | 4.3 | -93.50 | -2,077.6 | -183.9 | 2,097.4 | 2,087.9 | 9.56 | 219.499 | |
| 2,000.0 | 1,979.8 | 1,864.1 | 1,855.0 | 5.5 | 4.4 | -93.57 | -2,079.4 | -190.1 | 2,100.2 | 2,090.3 | 9.85 | 213.282 | |
| 2,044.9 | 2,021.9 | 1,908.3 | 1,898.3 | 5.7 | 4.6 | -93.68 | -2,082.0 | -198.9 | 2,104.1 | 2,093.8 | 10.29 | 204.518 | |
| 2,066.9 | 2,042.5 | 1,929.9 | 1,919.4 | 5.9 | 4.7 | -93.77 | -2,083.3 | -203.2 | 2,106.1 | 2,095.6 | 10.51 | 200.341 | |
| 2,100.0 | 2,073.4 | 1,962.4 | 1,951.2 | 6.1 | 4.8 | -93.92 | -2,085.1 | -209.7 | 2,109.0 | 2,098.2 | 10.85 | 194.384 | |
| 2,165.3 | 2,134.4 | 2,026.6 | 2,014.0 | 6.5 | 5.1 | -94.20 | -2,088.9 | -222.5 | 2,114.9 | 2,103.4 | 11.53 | 183.390 | |
| 2,200.0 | 2,166.8 | 2,060.7 | 2,047.3 | 6.8 | 5.2 | -94.35 | -2,090.8 | -229.3 | 2,118.0 | 2,106.1 | 11.90 | 178.040 | |
| 2,263.8 | 2,226.4 | 2,123.3 | 2,108.6 | 7.2 | 5.5 | -94.63 | -2,094.5 | -241.8 | 2,123.9 | 2,111.3 | 12.58 | 168.808 | |
| 2,300.0 | 2,260.2 | 2,158.9 | 2,143.4 | 7.4 | 5.6 | -94.78 | -2,096.5 | -248.9 | 2,127.2 | 2,114.2 | 12.97 | 163.975 | |
| 2,362.2 | 2,318.3 | 2,220.1 | 2,203.2 | 7.9 | 5.9 | -95.05 | -2,100.1 | -261.1 | 2,132.9 | 2,119.3 | 13.65 | 156.205 | |
| 2,400.0 | 2,353.6 | 2,257.2 | 2,239.6 | 8.1 | 6.0 | -95.21 | -2,102.2 | -268.6 | 2,136.4 | 2,122.4 | 14.07 | 151.833 | |
| 2,460.6 | 2,410.3 | 2,316.8 | 2,297.8 | 8.6 | 6.3 | -95.47 | -2,105.7 | -280.5 | 2,142.1 | 2,127.4 | 14.75 | 145.263 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,355.5 | 2,335.7 | 8.9 | 6.5 | -95.64 | -2,107.9 | -288.2 | 2,145.8 | 2,130.6 | 15.19 | 141.295 | |
| 2,559.0 | 2,502.2 | 2,413.5 | 2,392.4 | 9.3 | 6.7 | -95.88 | -2,111.3 | -299.8 | 2,151.4 | 2,135.6 | 15.85 | 135.711 | |
| 2,600.0 | 2,540.5 | 2,453.8 | 2,431.8 | 9.6 | 6.9 | -96.06 | -2,113.6 | -307.8 | 2,155.3 | 2,139.0 | 16.32 | 132.096 | |
| 2,657.5 | 2,594.2 | 2,510.2 | 2,487.1 | 10.0 | 7.1 | -96.30 | -2,116.9 | -319.1 | 2,160.8 | 2,143.8 | 16.97 | 127.325 | |
| 2,700.0 | 2,633.9 | 2,552.0 | 2,527.9 | 10.3 | 7.3 | -96.47 | -2,119.3 | -327.4 | 2,164.9 | 2,147.5 | 17.46 | 124.017 | |
| 2,755.9 | 2,686.1 | 2,607.0 | 2,581.7 | 10.7 | 7.5 | -96.70 | -2,122.5 | -338.4 | 2,170.3 | 2,152.2 | 18.10 | 119.920 | |
| 2,800.0 | 2,727.3 | 2,650.3 | 2,624.1 | 11.0 | 7.7 | -96.89 | -2,125.0 | -347.1 | 2,174.7 | 2,156.0 | 18.61 | 116.881 | |
| 2,854.3 | 2,778.1 | 2,703.7 | 2,676.3 | 11.4 | 8.0 | -97.11 | -2,128.1 | -357.7 | 2,180.0 | 2,160.8 | 19.23 | 113.345 | |
| 2,900.0 | 2,820.7 | 2,748.6 | 2,720.2 | 11.8 | 8.2 | -97.29 | -2,130.7 | -366.7 | 2,184.5 | 2,164.7 | 19.76 | 110.542 | |
| 2,952.7 | 2,870.0 | 2,800.4 | 2,770.9 | 12.2 | 8.4 | -97.51 | -2,133.7 | -377.0 | 2,189.7 | 2,169.4 | 20.37 | 107.477 | |
| 3,000.0 | 2,914.2 | 2,846.8 | 2,816.3 | 12.5 | 8.6 | -97.70 | -2,136.4 | -386.3 | 2,194.4 | 2,173.5 | 20.92 | 104.880 | |
| 3,051.2 | 2,962.0 | 2,897.1 | 2,865.5 | 12.9 | 8.8 | -97.91 | -2,139.3 | -396.4 | 2,199.6 | 2,178.1 | 21.52 | 102.212 | |
| 3,100.0 | 3,007.6 | 2,945.1 | 2,912.4 | 13.3 | 9.0 | -98.10 | -2,142.0 | -405.9 | 2,204.5 | 2,182.4 | 22.09 | 99.798 | |
| 3,149.6 | 3,053.9 | 2,993.8 | 2,960.1 | 13.6 | 9.3 | -98.30 | -2,144.9 | -415.7 | 2,209.5 | 2,186.9 | 22.67 | 97.467 | |
| 3,200.0 | 3,101.0 | 3,043.4 | 3,008.5 | 14.0 | 9.5 | -98.50 | -2,147.7 | -425.6 | 2,214.7 | 2,191.4 | 23.26 | 95.216 | |
| 3,248.0 | 3,145.9 | 3,090.6 | 3,054.7 | 14.4 | 9.7 | -98.69 | -2,150.5 | -435.0 | 2,219.6 | 2,195.8 | 23.82 | 93.172 | |
| 3,300.0 | 3,194.4 | 3,141.6 | 3,104.7 | 14.8 | 9.9 | -98.90 | -2,153.4 | -445.2 | 2,225.0 | 2,200.5 | 24.43 | 91.066 | |
| 3,346.4 | 3,237.8 | 3,187.3 | 3,149.3 | 15.1 | 10.1 | -99.08 | -2,156.1 | -454.3 | 2,229.8 | 2,204.8 | 24.98 | 89.269 | |
| 3,400.0 | 3,287.8 | 3,239.9 | 3,200.8 | 15.5 | 10.4 | -99.29 | -2,159.1 | -464.8 | 2,235.4 | 2,209.8 | 25.61 | 87.292 | |
| 3,444.9 | 3,329.8 | 3,284.0 | 3,243.9 | 15.9 | 10.6 | -99.46 | -2,161.7 | -473.6 | 2,240.1 | 2,213.9 | 26.14 | 85.708 | |
| 3,500.0 | 3,381.3 | 3,338.2 | 3,296.9 | 16.3 | 10.8 | -99.68 | -2,164.8 | -484.4 | 2,245.9 | 2,219.1 | 26.78 | 83.848 | |
| 3,543.3 | 3,421.7 | 3,380.7 | 3,338.5 | 16.6 | 11.0 | -99.84 | -2,167.3 | -492.9 | 2,250.4 | 2,223.1 | 27.29 | 82.449 | |
| 3,600.0 | 3,474.7 | 3,436.4 | 3,393.0 | 17.0 | 11.3 | -100.06 | -2,170.5 | -504.1 | 2,256.4 | 2,228.5 | 27.96 | 80.694 | |
| 3,641.7 | 3,513.7 | 3,477.4 | 3,433.1 | 17.3 | 11.4 | -100.22 | -2,172.9 | -512.2 | 2,260.9 | 2,232.4 | 28.46 | 79.455 | |
| 3,700.0 | 3,568.1 | 3,534.7 | 3,489.1 | 17.8 | 11.7 | -100.44 | -2,176.2 | -523.7 | 2,267.1 | 2,238.0 | 29.14 | 77.796 | |
| 3,740.1 | 3,605.6 | 3,574.2 | 3,527.7 | 18.1 | 11.9 | -100.59 | -2,178.5 | -531.6 | 2,271.5 | 2,241.9 | 29.62 | 76.698 | |
| 3,800.0 | 3,661.5 | 3,633.0 | 3,585.3 | 18.5 | 12.2 | -100.82 | -2,181.9 | -543.3 | 2,277.9 | 2,247.6 | 30.32 | 75.125 | |
| 3,838.6 | 3,697.6 | 3,670.9 | 3,622.3 | 18.8 | 12.3 | -100.96 | -2,184.1 | -550.9 | 2,282.1 | 2,251.4 | 30.78 | 74.150 | |
| 3,900.0 | 3,754.9 | 3,731.3 | 3,681.4 | 19.3 | 12.6 | -101.19 | -2,187.6 | -562.9 | 2,288.8 | 2,257.3 | 31.50 | 72.657 | |
| 3,937.0 | 3,789.5 | 3,767.6 | 3,717.0 | 19.6 | 12.8 | -101.33 | -2,189.7 | -570.2 | 2,292.9 | 2,261.0 | 31.94 | 71.790 | |
| 4,000.0 | 3,848.4 | 3,829.5 | 3,777.5 | 20.1 | 13.1 | -101.56 | -2,193.3 | -582.6 | 2,299.8 | 2,267.2 | 32.68 | 70.370 | |
| 4,035.4 | 3,881.5 | 3,864.3 | 3,811.6 | 20.3 | 13.2 | -101.69 | -2,195.3 | -589.5 | 2,303.8 | 2,270.7 | 33.10 | 69.599 | |
| 4,100.0 | 3,941.8 | 3,927.8 | 3,873.6 | 20.8 | 13.5 | -101.93 | -2,199.0 | -602.2 | 2,310.9 | 2,277.1 | 33.86 | 68.245 | |
| 4,133.8 | 3,973.4 | 3,961.1 | 3,906.2 | 21.1 | 13.7 | -102.05 | -2,200.9 | -608.8 | 2,314.7 | 2,280.4 | 34.26 | 67.560 | |
| 4,200.0 | 4,035.2 | 4,026.1 | 3,969.8 | 21.6 | 14.0 | -102.29 | -2,204.6 | -621.8 | 2,322.1 | 2,287.1 | 35.04 | 66.268 | |
| 4,232.3 | 4,065.4 | 4,057.8 | 4,000.8 | 21.8 | 14.1 | -102.41 | -2,206.5 | -628.1 | 2,325.7 | 2,290.3 | 35.42 | 65.658 | |
| 4,300.0 | 4,128.6 | 4,124.3 | 4,065.9 | 22.3 | 14.4 | -102.65 | -2,210.3 | -641.4 | 2,333.4 | 2,297.2 | 36.22 | 64.422 | |
| 4,330.7 | 4,157.3 | 4,154.5 | 4,095.4 | 22.6 | 14.5 | -102.76 | -2,212.1 | -647.5 | 2,336.9 | 2,300.3 | 36.58 | 63.880 | |
| 4,400.0 | 4,222.0 | 4,222.6 | 4,162.0 | 23.1 | 14.9 | -103.01 | -2,216.0 | -661.1 | 2,344.8 | 2,307.4 | 37.40 | 62.697 | |
| 4,429.1 | 4,249.3 | 4,251.2 | 4,190.0 | 23.3 | 15.0 | -103.11 | -2,217.7 | -666.8 | 2,348.1 | 2,310.4 | 37.74 | 62.215 | |
| 4,500.0 | 4,315.5 | 4,320.9 | 4,258.1 | 23.9 | 15.3 | -103.36 | -2,221.7 | -680.7 | 2,356.2 | 2,317.7 | 38.58 | 61.081 | |
| 4,527.5 | 4,341.2 | 4,347.9 | 4,284.6 | 24.1 | 15.4 | -103.46 | -2,223.3 | -686.1 | 2,359.4 | 2,320.5 | 38.90 | 60.654 | |
| 4,600.0 | 4,408.9 | 4,419.1 | 4,354.2 | 24.6 | 15.8 | -103.71 | -2,227.4 | -700.3 | 2,367.8 | 2,328.0 | 39.75 | 59.565 | |
| 4,626.0 | 4,433.2 | 4,444.7 | 4,379.2 | 24.8 | 15.9 | -103.80 | -2,228.9 | -705.4 | 2,370.8 | 2,330.7 | 40.06 | 59.186 | |
| 4,700.0 | 4,502.3 | 4,517.4 | 4,450.4 | 25.4 | 16.2 | -104.06 | -2,233.1 | -719.9 | 2,379.4 | 2,338.5 | 40.93 | 58.139 | |
| 4,724.4 | 4,525.1 | 4,541.4 | 4,473.8 | 25.6 | 16.3 | -104.14 | -2,234.5 | -724.7 | 2,382.3 | 2,341.1 | 41.21 | 57.804 | |
| 4,800.0 | 4,595.7 | 4,615.7 | 4,546.5 | 26.2 | 16.7 | -104.40 | -2,238.8 | -739.6 | 2,391.1 | 2,349.0 | 42.10 | 56.797 | |
| 4,822.8 | 4,617.1 | 4,638.1 | 4,568.4 | 26.3 | 16.8 | -104.48 | -2,240.1 | -744.0 | 2,393.8 | 2,351.5 | 42.37 | 56.502 | |
| 4,900.0 | 4,689.2 | 4,713.9 | 4,642.6 | 26.9 | 17.1 | -104.74 | -2,244.5 | -759.2 | 2,403.0 | 2,359.7 | 43.27 | 55.532 | |
| 4,921.2 | 4,709.0 | 4,734.8 | 4,663.0 | 27.1 | 17.2 | -104.81 | -2,245.7 | -763.3 | 2,405.5 | 2,362.0 | 43.52 | 55.272 | |
| 5,000.0 | 4,782.6 | 4,812.2 | 4,738.7 | 27.7 | 17.6 | -105.08 | -2,250.2 | -778.8 | 2,414.9 | 2,370.4 | 44.44 | 54.337 | |
| 5,019.7 | 4,801.0 | 4,831.6 | 4,757.6 | 27.8 | 17.7 | -105.14 | -2,251.3 | -782.7 | 2,417.2 | 2,372.5 | 44.67 | 54.110 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,910.5 | 4,834.9 | 28.4 | 18.0 | -105.41 | -2,255.9 | -798.4 | 2,426.8 | 2,381.2 | 45.61 | 53.207 | |
| 5,118.1 | 4,892.9 | 4,928.3 | 4,852.3 | 28.6 | 18.1 | -105.47 | -2,256.9 | -802.0 | 2,429.0 | 2,383.2 | 45.82 | 53.009 | |
| 5,159.9 | 4,932.0 | 4,969.4 | 4,892.5 | 28.9 | 18.3 | -105.61 | -2,259.3 | -810.2 | 2,434.1 | 2,387.7 | 46.31 | 52.559 | |
| 5,200.0 | 4,969.5 | 5,008.8 | 4,931.0 | 29.2 | 18.5 | -105.83 | -2,261.5 | -818.1 | 2,438.8 | 2,392.1 | 46.74 | 52.175 | |
| 5,216.5 | 4,985.1 | 5,025.1 | 4,946.9 | 29.3 | 18.6 | -105.91 | -2,262.5 | -821.3 | 2,440.7 | 2,393.8 | 46.90 | 52.039 | |
| 5,300.0 | 5,064.0 | 5,108.5 | 5,028.6 | 29.7 | 18.9 | -106.31 | -2,267.3 | -837.9 | 2,450.1 | 2,402.4 | 47.70 | 51.367 | |
| 5,314.9 | 5,078.2 | 5,124.4 | 5,044.1 | 29.8 | 19.0 | -106.37 | -2,268.2 | -841.0 | 2,451.7 | 2,403.9 | 47.82 | 51.272 | |
| 5,400.0 | 5,159.6 | 5,214.3 | 5,132.5 | 30.2 | 19.3 | -106.75 | -2,272.8 | -856.7 | 2,460.3 | 2,411.8 | 48.49 | 50.737 | |
| 5,413.4 | 5,172.4 | 5,228.5 | 5,146.5 | 30.3 | 19.3 | -106.81 | -2,273.4 | -858.9 | 2,461.5 | 2,412.9 | 48.58 | 50.665 | |
| 5,500.0 | 5,256.1 | 5,319.9 | 5,236.9 | 30.7 | 19.6 | -107.18 | -2,277.1 | -871.8 | 2,469.2 | 2,420.0 | 49.19 | 50.202 | |
| 5,511.8 | 5,267.6 | 5,332.3 | 5,249.2 | 30.7 | 19.6 | -107.23 | -2,277.6 | -873.3 | 2,470.2 | 2,420.9 | 49.26 | 50.148 | |
| 5,600.0 | 5,353.5 | 5,425.1 | 5,341.5 | 31.1 | 19.8 | -107.58 | -2,280.4 | -883.1 | 2,476.9 | 2,427.1 | 49.78 | 49.755 | |
| 5,610.2 | 5,363.5 | 5,435.8 | 5,352.2 | 31.1 | 19.8 | -107.62 | -2,280.7 | -884.0 | 2,477.6 | 2,427.8 | 49.83 | 49.717 | |
| 5,700.0 | 5,451.6 | 5,530.0 | 5,446.1 | 31.4 | 20.0 | -107.97 | -2,282.6 | -890.7 | 2,483.3 | 2,433.1 | 50.28 | 49.389 | |
| 5,708.6 | 5,460.2 | 5,539.0 | 5,455.1 | 31.4 | 20.0 | -108.00 | -2,282.7 | -891.2 | 2,483.8 | 2,433.5 | 50.32 | 49.364 | |
| 5,800.0 | 5,550.4 | 5,634.5 | 5,550.5 | 31.7 | 20.2 | -108.34 | -2,283.7 | -894.6 | 2,488.6 | 2,437.9 | 50.69 | 49.097 | |
| 5,807.1 | 5,557.4 | 5,641.9 | 5,557.9 | 31.7 | 20.2 | -108.36 | -2,283.8 | -894.7 | 2,488.9 | 2,438.2 | 50.71 | 49.080 | |
| 5,900.0 | 5,649.6 | 5,736.6 | 5,652.6 | 31.9 | 20.3 | -108.68 | -2,283.9 | -895.2 | 2,492.5 | 2,441.5 | 51.01 | 48.860 | |
| 5,905.5 | 5,655.1 | 5,742.1 | 5,658.1 | 31.9 | 20.3 | -108.69 | -2,283.9 | -895.2 | 2,492.7 | 2,441.7 | 51.03 | 48.849 | |
| 6,000.0 | 5,749.2 | 5,836.2 | 5,752.2 | 32.1 | 20.4 | -108.92 | -2,283.9 | -895.2 | 2,495.4 | 2,444.1 | 51.30 | 48.647 | |
| 6,003.9 | 5,753.1 | 5,840.2 | 5,756.1 | 32.1 | 20.4 | -108.93 | -2,283.9 | -895.2 | 2,495.5 | 2,444.2 | 51.31 | 48.640 | |
| 6,100.0 | 5,849.1 | 5,936.1 | 5,852.1 | 32.3 | 20.5 | -109.07 | -2,283.9 | -895.2 | 2,497.2 | 2,445.6 | 51.54 | 48.449 | |
| 6,102.3 | 5,851.4 | 5,938.4 | 5,854.4 | 32.3 | 20.5 | -109.08 | -2,283.9 | -895.2 | 2,497.2 | 2,445.7 | 51.55 | 48.445 | |
| 6,200.8 | 5,949.8 | 6,036.8 | 5,952.8 | 32.4 | 20.7 | -109.13 | -2,283.9 | -895.2 | 2,497.8 | 2,446.0 | 51.76 | 48.260 | |
| 6,204.9 | 5,953.9 | 6,040.9 | 5,956.9 | 32.4 | 20.7 | 166.43 | -2,283.9 | -895.2 | 2,497.8 | 2,465.5 | 32.34 | 77.241 | |
| 6,234.9 | 5,983.9 | 6,070.9 | 5,986.9 | 32.4 | 20.7 | 166.43 | -2,283.9 | -895.2 | 2,497.8 | 2,465.4 | 32.43 | 77.012 | |
| 6,250.0 | 5,999.0 | 6,086.1 | 6,002.0 | 32.4 | 20.7 | 76.44 | -2,283.9 | -895.2 | 2,497.8 | 2,445.9 | 51.86 | 48.167 | |
| 6,299.2 | 6,048.2 | 6,135.2 | 6,051.2 | 32.4 | 20.8 | 76.55 | -2,283.9 | -895.2 | 2,497.1 | 2,445.2 | 51.92 | 48.092 | |
| 6,300.0 | 6,048.9 | 6,136.0 | 6,051.9 | 32.4 | 20.8 | 76.55 | -2,283.9 | -895.2 | 2,497.1 | 2,445.2 | 51.92 | 48.091 | |
| 6,350.0 | 6,098.5 | 6,169.7 | 6,085.6 | 32.4 | 20.8 | 76.74 | -2,283.9 | -894.9 | 2,495.8 | 2,443.8 | 51.93 | 48.059 | |
| 6,397.6 | 6,145.3 | 6,200.0 | 6,115.9 | 32.3 | 20.9 | 76.97 | -2,283.9 | -893.4 | 2,494.2 | 2,442.3 | 51.90 | 48.056 | |
| 6,400.0 | 6,147.6 | 6,200.0 | 6,115.9 | 32.3 | 20.9 | 76.98 | -2,283.9 | -893.4 | 2,494.1 | 2,442.2 | 51.90 | 48.057 | |
| 6,450.0 | 6,195.8 | 6,224.6 | 6,140.4 | 32.2 | 20.9 | 77.24 | -2,283.9 | -891.3 | 2,492.0 | 2,440.2 | 51.81 | 48.095 | |
| 6,496.0 | 6,239.3 | 6,250.0 | 6,165.7 | 32.1 | 20.9 | 77.52 | -2,283.9 | -888.2 | 2,489.9 | 2,438.2 | 51.72 | 48.139 | |
| 6,500.0 | 6,243.0 | 6,250.0 | 6,165.7 | 32.1 | 20.9 | 77.54 | -2,283.9 | -888.2 | 2,489.7 | 2,438.0 | 51.71 | 48.144 | |
| 6,550.0 | 6,289.0 | 6,279.7 | 6,195.0 | 32.0 | 20.9 | 77.91 | -2,283.9 | -883.5 | 2,487.0 | 2,435.5 | 51.58 | 48.214 | |
| 6,594.5 | 6,328.6 | 6,300.0 | 6,214.9 | 31.8 | 20.8 | 78.23 | -2,283.9 | -879.5 | 2,484.5 | 2,433.0 | 51.46 | 48.277 | |
| 6,600.0 | 6,333.4 | 6,300.0 | 6,214.9 | 31.8 | 20.8 | 78.25 | -2,283.9 | -879.5 | 2,484.2 | 2,432.7 | 51.45 | 48.286 | |
| 6,650.0 | 6,376.2 | 6,335.0 | 6,248.9 | 31.7 | 20.8 | 78.74 | -2,283.9 | -871.4 | 2,481.0 | 2,429.7 | 51.30 | 48.365 | |
| 6,692.9 | 6,411.3 | 6,350.0 | 6,263.4 | 31.6 | 20.8 | 79.07 | -2,283.9 | -867.4 | 2,478.2 | 2,427.0 | 51.18 | 48.422 | |
| 6,700.0 | 6,417.0 | 6,362.8 | 6,275.6 | 31.5 | 20.8 | 79.21 | -2,283.9 | -863.8 | 2,477.7 | 2,426.5 | 51.15 | 48.437 | |
| 6,750.0 | 6,455.7 | 6,400.0 | 6,310.9 | 31.4 | 20.7 | 79.79 | -2,283.9 | -852.0 | 2,474.2 | 2,423.2 | 51.01 | 48.504 | |
| 6,791.3 | 6,486.0 | 6,413.7 | 6,323.7 | 31.3 | 20.7 | 80.16 | -2,283.9 | -847.2 | 2,471.1 | 2,420.2 | 50.91 | 48.535 | |
| 6,800.0 | 6,492.2 | 6,418.5 | 6,328.2 | 31.3 | 20.7 | 80.25 | -2,283.9 | -845.4 | 2,470.5 | 2,419.6 | 50.89 | 48.543 | |
| 6,850.0 | 6,526.1 | 6,450.0 | 6,357.3 | 31.2 | 20.6 | 80.85 | -2,283.9 | -833.2 | 2,466.8 | 2,416.0 | 50.80 | 48.563 | |
| 6,889.7 | 6,551.2 | 6,468.9 | 6,374.4 | 31.2 | 20.6 | 81.28 | -2,283.9 | -825.3 | 2,463.7 | 2,413.0 | 50.74 | 48.551 | |
| 6,900.0 | 6,557.4 | 6,474.7 | 6,379.6 | 31.2 | 20.6 | 81.41 | -2,283.9 | -822.8 | 2,462.9 | 2,412.2 | 50.73 | 48.549 | |
| 6,950.0 | 6,586.0 | 6,500.0 | 6,402.2 | 31.1 | 20.5 | 81.99 | -2,283.9 | -811.3 | 2,459.1 | 2,408.4 | 50.71 | 48.496 | |
| 6,988.2 | 6,605.8 | 6,524.6 | 6,423.8 | 31.2 | 20.5 | 82.50 | -2,283.9 | -799.4 | 2,456.2 | 2,405.5 | 50.72 | 48.430 | |
| 7,000.0 | 6,611.5 | 6,531.4 | 6,429.6 | 31.2 | 20.4 | 82.65 | -2,283.9 | -796.0 | 2,455.3 | 2,404.6 | 50.72 | 48.409 | |
| 7,050.0 | 6,634.1 | 6,560.0 | 6,453.9 | 31.2 | 20.4 | 83.30 | -2,283.9 | -781.0 | 2,451.5 | 2,400.8 | 50.78 | 48.273 | |
| 7,086.6 | 6,648.6 | 6,581.0 | 6,471.4 | 31.3 | 20.3 | 83.78 | -2,283.9 | -769.3 | 2,448.9 | 2,398.0 | 50.87 | 48.140 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,588.7 | 6,477.8 | 31.4 | 20.3 | 83.95 | -2,283.9 | -764.9 | 2,447.9 | 2,397.0 | 50.90 | 48.092 | |
| 7,150.0 | 6,669.5 | 6,617.7 | 6,501.1 | 31.6 | 20.3 | 84.62 | -2,283.9 | -747.8 | 2,444.4 | 2,393.4 | 51.07 | 47.862 | |
| 7,185.0 | 6,678.8 | 6,638.2 | 6,517.2 | 31.7 | 20.2 | 85.09 | -2,283.9 | -735.1 | 2,442.1 | 2,390.9 | 51.23 | 47.670 | |
| 7,200.0 | 6,682.3 | 6,650.0 | 6,526.3 | 31.8 | 20.2 | 85.33 | -2,283.9 | -727.6 | 2,441.2 | 2,389.9 | 51.29 | 47.592 | |
| 7,250.0 | 6,691.6 | 6,676.4 | 6,546.2 | 32.1 | 20.2 | 85.96 | -2,283.9 | -710.2 | 2,438.2 | 2,386.6 | 51.58 | 47.270 | |
| 7,283.4 | 6,696.0 | 6,700.0 | 6,563.5 | 32.3 | 20.1 | 86.46 | -2,283.9 | -694.1 | 2,436.3 | 2,384.5 | 51.80 | 47.036 | |
| 7,300.0 | 6,697.5 | 6,706.2 | 6,567.9 | 32.4 | 20.1 | 86.62 | -2,283.9 | -689.8 | 2,435.5 | 2,383.6 | 51.91 | 46.915 | |
| 7,350.0 | 6,699.9 | 6,736.4 | 6,589.0 | 32.8 | 20.1 | 87.28 | -2,283.9 | -668.2 | 2,433.1 | 2,380.8 | 52.30 | 46.525 | |
| 7,364.4 | 6,700.0 | 6,745.2 | 6,594.9 | 32.9 | 20.1 | 87.47 | -2,283.9 | -661.7 | 2,432.5 | 2,380.1 | 52.41 | 46.409 | |
| 7,381.9 | 6,699.9 | 6,756.0 | 6,602.2 | 33.1 | 20.1 | 87.64 | -2,283.9 | -653.7 | 2,431.8 | 2,379.3 | 52.57 | 46.259 | |
| 7,400.0 | 6,699.8 | 6,767.5 | 6,609.7 | 33.2 | 20.1 | 87.82 | -2,283.9 | -645.0 | 2,431.2 | 2,378.5 | 52.73 | 46.103 | |
| 7,480.3 | 6,699.2 | 6,822.6 | 6,644.0 | 34.0 | 20.1 | 88.63 | -2,283.9 | -601.8 | 2,429.2 | 2,375.6 | 53.60 | 45.323 | |
| 7,500.0 | 6,699.1 | 6,837.2 | 6,652.5 | 34.2 | 20.1 | 88.83 | -2,283.9 | -589.9 | 2,428.9 | 2,375.1 | 53.82 | 45.132 | |
| 7,578.7 | 6,698.6 | 6,900.0 | 6,686.2 | 35.2 | 20.2 | 89.64 | -2,283.9 | -537.0 | 2,428.2 | 2,373.3 | 54.91 | 44.218 | |
| 7,600.0 | 6,698.5 | 6,918.1 | 6,695.0 | 35.4 | 20.2 | 89.85 | -2,283.9 | -521.2 | 2,428.1 | 2,372.9 | 55.24 | 43.955 | |
| 7,615.4 | 6,698.4 | 6,931.6 | 6,701.4 | 35.6 | 20.3 | 90.00 | -2,283.9 | -509.3 | 2,428.1 | 2,372.6 | 55.51 | 43.744 | |
| 7,677.1 | 6,698.0 | 6,988.3 | 6,725.5 | 36.5 | 20.5 | 90.58 | -2,283.9 | -458.0 | 2,428.3 | 2,371.6 | 56.64 | 42.875 | |
| 7,700.0 | 6,697.8 | 7,010.4 | 6,733.8 | 36.8 | 20.6 | 90.78 | -2,283.9 | -437.5 | 2,428.4 | 2,371.3 | 57.08 | 42.540 | |
| 7,775.6 | 6,697.3 | 7,087.2 | 6,757.6 | 38.0 | 21.1 | 91.35 | -2,283.9 | -364.5 | 2,428.8 | 2,370.0 | 58.83 | 41.285 | |
| 7,800.0 | 6,697.2 | 7,113.1 | 6,763.9 | 38.3 | 21.3 | 91.50 | -2,283.9 | -339.4 | 2,429.0 | 2,369.6 | 59.44 | 40.862 | |
| 7,874.0 | 6,696.7 | 7,194.2 | 6,777.5 | 39.6 | 22.2 | 91.83 | -2,283.9 | -259.5 | 2,429.4 | 2,367.8 | 61.55 | 39.472 | |
| 7,900.0 | 6,696.5 | 7,223.3 | 6,780.2 | 40.0 | 22.5 | 91.90 | -2,283.9 | -230.6 | 2,429.5 | 2,367.1 | 62.34 | 38.971 | |
| 7,972.4 | 6,696.1 | 7,302.7 | 6,781.8 | 41.3 | 23.5 | 91.95 | -2,283.9 | -151.2 | 2,429.5 | 2,364.8 | 64.70 | 37.548 | |
| 8,000.0 | 6,695.9 | 7,330.3 | 6,781.4 | 41.8 | 23.9 | 91.95 | -2,283.9 | -123.6 | 2,429.5 | 2,363.9 | 65.63 | 37.021 | |
| 8,070.8 | 6,695.4 | 7,401.1 | 6,780.4 | 43.1 | 25.0 | 91.93 | -2,283.9 | -52.8 | 2,429.5 | 2,361.4 | 68.07 | 35.691 | |
| 8,100.0 | 6,695.2 | 7,430.3 | 6,780.0 | 43.7 | 25.5 | 91.93 | -2,283.9 | -23.6 | 2,429.5 | 2,360.4 | 69.14 | 35.141 | |
| 8,169.3 | 6,694.8 | 7,499.5 | 6,779.1 | 45.1 | 26.7 | 91.92 | -2,283.9 | 45.6 | 2,429.5 | 2,357.7 | 71.73 | 33.868 | |
| 8,200.0 | 6,694.6 | 7,530.3 | 6,778.7 | 45.7 | 27.3 | 91.91 | -2,283.9 | 76.4 | 2,429.5 | 2,356.5 | 72.94 | 33.310 | |
| 8,267.7 | 6,694.1 | 7,598.0 | 6,777.7 | 47.1 | 28.6 | 91.90 | -2,283.9 | 144.1 | 2,429.5 | 2,353.8 | 75.64 | 32.117 | |
| 8,300.0 | 6,693.9 | 7,630.3 | 6,777.3 | 47.8 | 29.2 | 91.90 | -2,283.9 | 176.3 | 2,429.4 | 2,352.5 | 76.98 | 31.560 | |
| 8,366.1 | 6,693.5 | 7,696.4 | 6,776.4 | 49.2 | 30.6 | 91.88 | -2,283.9 | 242.5 | 2,429.4 | 2,349.7 | 79.76 | 30.459 | |
| 8,400.0 | 6,693.3 | 7,730.3 | 6,775.9 | 49.9 | 31.3 | 91.88 | -2,283.9 | 276.3 | 2,429.4 | 2,348.2 | 81.22 | 29.912 | |
| 8,464.5 | 6,692.9 | 7,794.8 | 6,775.1 | 51.4 | 32.7 | 91.87 | -2,283.9 | 340.9 | 2,429.4 | 2,345.4 | 84.05 | 28.905 | |
| 8,500.0 | 6,692.6 | 7,830.3 | 6,774.6 | 52.1 | 33.5 | 91.86 | -2,283.9 | 376.3 | 2,429.4 | 2,343.8 | 85.63 | 28.371 | |
| 8,563.0 | 6,692.2 | 7,893.2 | 6,773.7 | 53.6 | 34.9 | 91.85 | -2,283.9 | 439.3 | 2,429.4 | 2,340.9 | 88.48 | 27.456 | |
| 8,600.0 | 6,692.0 | 7,930.3 | 6,773.2 | 54.4 | 35.8 | 91.85 | -2,283.9 | 476.3 | 2,429.4 | 2,339.2 | 90.18 | 26.938 | |
| 8,661.4 | 6,691.6 | 7,991.7 | 6,772.4 | 55.8 | 37.2 | 91.84 | -2,283.9 | 537.7 | 2,429.4 | 2,336.3 | 93.04 | 26.111 | |
| 8,700.0 | 6,691.3 | 8,030.3 | 6,771.9 | 56.7 | 38.2 | 91.83 | -2,283.9 | 576.3 | 2,429.4 | 2,334.5 | 94.85 | 25.612 | |
| 8,759.8 | 6,690.9 | 8,090.1 | 6,771.1 | 58.1 | 39.6 | 91.82 | -2,283.9 | 636.1 | 2,429.3 | 2,331.6 | 97.70 | 24.866 | |
| 8,800.0 | 6,690.7 | 8,130.3 | 6,770.5 | 59.1 | 40.6 | 91.81 | -2,283.9 | 676.3 | 2,429.3 | 2,329.7 | 99.62 | 24.385 | |
| 8,858.2 | 6,690.3 | 8,188.5 | 6,769.7 | 60.5 | 42.0 | 91.80 | -2,283.9 | 734.5 | 2,429.3 | 2,326.9 | 102.45 | 23.713 | |
| 8,900.0 | 6,690.0 | 8,230.3 | 6,769.1 | 61.5 | 43.0 | 91.80 | -2,283.9 | 776.3 | 2,429.3 | 2,324.8 | 104.48 | 23.251 | |
| 8,956.7 | 6,689.7 | 8,286.9 | 6,768.4 | 62.9 | 44.4 | 91.79 | -2,283.9 | 832.9 | 2,429.3 | 2,322.0 | 107.27 | 22.646 | |
| 9,000.0 | 6,689.4 | 8,330.3 | 6,767.8 | 63.9 | 45.5 | 91.78 | -2,283.9 | 876.3 | 2,429.3 | 2,319.9 | 109.41 | 22.203 | |
| 9,055.1 | 6,689.0 | 8,385.4 | 6,767.0 | 65.3 | 46.9 | 91.77 | -2,283.9 | 931.4 | 2,429.3 | 2,317.1 | 112.16 | 21.659 | |
| 9,100.0 | 6,688.7 | 8,430.2 | 6,766.4 | 66.4 | 48.1 | 91.76 | -2,283.9 | 976.3 | 2,429.3 | 2,314.9 | 114.41 | 21.233 | |
| 9,153.5 | 6,688.4 | 8,483.8 | 6,765.7 | 67.7 | 49.4 | 91.75 | -2,283.9 | 1,029.8 | 2,429.3 | 2,312.1 | 117.11 | 20.743 | |
| 9,200.0 | 6,688.1 | 8,530.2 | 6,765.1 | 68.9 | 50.6 | 91.75 | -2,283.9 | 1,076.2 | 2,429.2 | 2,309.8 | 119.46 | 20.335 | |
| 9,251.9 | 6,687.8 | 8,582.2 | 6,764.4 | 70.2 | 52.0 | 91.74 | -2,283.9 | 1,128.2 | 2,429.2 | 2,307.1 | 122.11 | 19.894 | |
| 9,300.0 | 6,687.4 | 8,630.2 | 6,763.7 | 71.4 | 53.2 | 91.73 | -2,283.9 | 1,176.2 | 2,429.2 | 2,304.7 | 124.56 | 19.502 | |
| 9,350.4 | 6,687.1 | 8,680.6 | 6,763.0 | 72.7 | 54.5 | 91.72 | -2,283.9 | 1,226.6 | 2,429.2 | 2,302.1 | 127.15 | 19.105 | |
| 9,400.0 | 6,686.8 | 8,730.2 | 6,762.4 | 73.9 | 55.8 | 91.71 | -2,283.9 | 1,276.2 | 2,429.2 | 2,299.5 | 129.71 | 18.728 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-302 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 8,779.0 | 6,761.7 | 75.2 | 57.1 | 91.70 | -2,283.9 | 1,325.0 | 2,429.2 | 2,297.0 | 132.23 | 18.371 | |
| 9,500.0 | 6,686.1 | 8,830.2 | 6,761.0 | 76.5 | 58.5 | 91.70 | -2,283.9 | 1,376.2 | 2,429.2 | 2,294.3 | 134.89 | 18.009 | |
| 9,547.2 | 6,685.8 | 8,877.5 | 6,760.4 | 77.7 | 59.7 | 91.69 | -2,283.9 | 1,423.4 | 2,429.2 | 2,291.8 | 137.35 | 17.686 | |
| 9,600.0 | 6,685.5 | 8,930.2 | 6,759.6 | 79.0 | 61.1 | 91.68 | -2,283.9 | 1,476.2 | 2,429.2 | 2,289.1 | 140.10 | 17.338 | |
| 9,645.6 | 6,685.2 | 8,975.9 | 6,759.0 | 80.2 | 62.3 | 91.67 | -2,283.9 | 1,521.8 | 2,429.2 | 2,286.7 | 142.50 | 17.047 | |
| 9,700.0 | 6,684.8 | 9,030.2 | 6,758.3 | 81.6 | 63.8 | 91.66 | -2,283.9 | 1,576.2 | 2,429.1 | 2,283.8 | 145.35 | 16.713 | |
| 9,744.1 | 6,684.6 | 9,074.3 | 6,757.7 | 82.8 | 64.9 | 91.65 | -2,283.9 | 1,620.3 | 2,429.1 | 2,281.5 | 147.67 | 16.450 | |
| 9,800.0 | 6,684.2 | 9,130.2 | 6,756.9 | 84.2 | 66.4 | 91.64 | -2,283.9 | 1,676.2 | 2,429.1 | 2,278.5 | 150.62 | 16.127 | |
| 9,842.5 | 6,683.9 | 9,172.7 | 6,756.3 | 85.3 | 67.6 | 91.64 | -2,283.9 | 1,718.7 | 2,429.1 | 2,276.2 | 152.87 | 15.890 | |
| 9,900.0 | 6,683.5 | 9,230.2 | 6,755.6 | 86.8 | 69.1 | 91.63 | -2,283.9 | 1,776.2 | 2,429.1 | 2,273.2 | 155.92 | 15.580 | |
| 9,940.9 | 6,683.3 | 9,271.2 | 6,755.0 | 87.9 | 70.2 | 91.62 | -2,283.9 | 1,817.1 | 2,429.1 | 2,271.0 | 158.09 | 15.365 | |
| 10,000.0 | 6,682.9 | 9,330.2 | 6,754.2 | 89.5 | 71.8 | 91.61 | -2,283.9 | 1,876.1 | 2,429.1 | 2,267.8 | 161.23 | 15.066 | |
| 10,039.3 | 6,682.6 | 9,369.6 | 6,753.7 | 90.5 | 72.9 | 91.60 | -2,283.9 | 1,915.5 | 2,429.1 | 2,265.7 | 163.33 | 14.872 | |
| 10,100.0 | 6,682.2 | 9,430.2 | 6,752.8 | 92.1 | 74.5 | 91.59 | -2,283.9 | 1,976.1 | 2,429.1 | 2,262.5 | 166.57 | 14.583 | |
| 10,137.8 | 6,682.0 | 9,468.0 | 6,752.3 | 93.1 | 75.5 | 91.59 | -2,283.9 | 2,013.9 | 2,429.1 | 2,260.5 | 168.59 | 14.408 | |
| 10,200.0 | 6,681.6 | 9,530.2 | 6,751.5 | 94.8 | 77.2 | 91.58 | -2,283.9 | 2,076.1 | 2,429.0 | 2,257.1 | 171.93 | 14.128 | |
| 10,236.2 | 6,681.4 | 9,566.4 | 6,751.0 | 95.7 | 78.2 | 91.57 | -2,283.9 | 2,112.3 | 2,429.0 | 2,255.2 | 173.87 | 13.970 | |
| 10,300.0 | 6,680.9 | 9,630.2 | 6,750.1 | 97.4 | 79.9 | 91.56 | -2,283.9 | 2,176.1 | 2,429.0 | 2,251.7 | 177.30 | 13.700 | |
| 10,334.6 | 6,680.7 | 9,664.8 | 6,749.6 | 98.3 | 80.9 | 91.56 | -2,283.9 | 2,210.7 | 2,429.0 | 2,249.9 | 179.16 | 13.558 | |
| 10,400.0 | 6,680.3 | 9,730.2 | 6,748.8 | 100.1 | 82.7 | 91.54 | -2,283.9 | 2,276.1 | 2,429.0 | 2,246.3 | 182.68 | 13.296 | |
| 10,433.0 | 6,680.1 | 9,763.3 | 6,748.3 | 101.0 | 83.6 | 91.54 | -2,283.9 | 2,309.1 | 2,429.0 | 2,244.5 | 184.47 | 13.168 | |
| 10,500.0 | 6,679.7 | 9,830.2 | 6,747.4 | 102.8 | 85.4 | 91.53 | -2,283.9 | 2,376.1 | 2,429.0 | 2,240.9 | 188.08 | 12.914 | |
| 10,531.5 | 6,679.4 | 9,861.7 | 6,747.0 | 103.6 | 86.3 | 91.52 | -2,283.9 | 2,407.6 | 2,429.0 | 2,239.2 | 189.79 | 12.799 | |
| 10,600.0 | 6,679.0 | 9,930.2 | 6,746.0 | 105.4 | 88.1 | 91.51 | -2,283.9 | 2,476.1 | 2,429.0 | 2,235.5 | 193.49 | 12.553 | |
| 10,629.9 | 6,678.8 | 9,960.1 | 6,745.6 | 106.2 | 88.9 | 91.51 | -2,283.9 | 2,506.0 | 2,429.0 | 2,233.8 | 195.12 | 12.449 | |
| 10,700.0 | 6,678.4 | 10,030.2 | 6,744.7 | 108.1 | 90.9 | 91.49 | -2,283.9 | 2,576.1 | 2,429.0 | 2,230.0 | 198.92 | 12.211 | |
| 10,728.3 | 6,678.2 | 10,058.5 | 6,744.3 | 108.9 | 91.6 | 91.49 | -2,283.9 | 2,604.4 | 2,428.9 | 2,228.5 | 200.46 | 12.117 | |
| 10,800.0 | 6,677.7 | 10,130.2 | 6,743.3 | 110.8 | 93.6 | 91.48 | -2,283.9 | 2,676.1 | 2,428.9 | 2,224.6 | 204.35 | 11.886 | |
| 10,826.7 | 6,677.5 | 10,157.0 | 6,743.0 | 111.5 | 94.3 | 91.47 | -2,283.9 | 2,702.8 | 2,428.9 | 2,223.1 | 205.81 | 11.802 | |
| 10,900.0 | 6,677.1 | 10,230.2 | 6,742.0 | 113.5 | 96.3 | 91.46 | -2,283.9 | 2,776.0 | 2,428.9 | 2,219.1 | 209.80 | 11.578 | |
| 10,925.2 | 6,676.9 | 10,255.4 | 6,741.6 | 114.2 | 97.0 | 91.46 | -2,283.9 | 2,801.2 | 2,428.9 | 2,217.7 | 211.17 | 11.502 | |
| 11,000.0 | 6,676.4 | 10,330.2 | 6,740.6 | 116.2 | 99.1 | 91.44 | -2,283.9 | 2,876.0 | 2,428.9 | 2,213.6 | 215.25 | 11.284 | |
| 11,023.6 | 6,676.3 | 10,353.8 | 6,740.3 | 116.8 | 99.7 | 91.44 | -2,283.9 | 2,899.6 | 2,428.9 | 2,212.4 | 216.54 | 11.217 | |
| 11,100.0 | 6,675.8 | 10,430.2 | 6,739.2 | 118.9 | 101.9 | 91.43 | -2,283.9 | 2,976.0 | 2,428.9 | 2,208.2 | 220.71 | 11.005 | |
| 11,122.0 | 6,675.6 | 10,452.2 | 6,738.9 | 119.5 | 102.5 | 91.42 | -2,283.9 | 2,998.0 | 2,428.9 | 2,207.0 | 221.91 | 10.945 | |
| 11,200.0 | 6,675.1 | 10,530.2 | 6,737.9 | 121.6 | 104.6 | 91.41 | -2,283.9 | 3,076.0 | 2,428.9 | 2,202.7 | 226.18 | 10.739 | |
| 11,220.4 | 6,675.0 | 10,550.6 | 6,737.6 | 122.2 | 105.2 | 91.41 | -2,283.9 | 3,096.5 | 2,428.9 | 2,201.6 | 227.30 | 10.686 | |
| 11,300.0 | 6,674.5 | 10,630.2 | 6,736.5 | 124.3 | 107.4 | 91.39 | -2,283.9 | 3,176.0 | 2,428.8 | 2,197.2 | 231.65 | 10.485 | |
| 11,318.9 | 6,674.3 | 10,649.1 | 6,736.3 | 124.9 | 107.9 | 91.39 | -2,283.9 | 3,194.9 | 2,428.8 | 2,196.2 | 232.69 | 10.438 | |
| 11,400.0 | 6,673.8 | 10,730.2 | 6,735.2 | 127.1 | 110.1 | 91.38 | -2,283.9 | 3,276.0 | 2,428.8 | 2,191.7 | 237.14 | 10.242 | |
| 11,417.3 | 6,673.7 | 10,747.5 | 6,734.9 | 127.5 | 110.6 | 91.37 | -2,283.9 | 3,293.3 | 2,428.8 | 2,190.7 | 238.08 | 10.202 | |
| 11,500.0 | 6,673.2 | 10,830.2 | 6,733.8 | 129.8 | 112.9 | 91.36 | -2,283.9 | 3,376.0 | 2,428.8 | 2,186.2 | 242.62 | 10.011 | |
| 11,515.7 | 6,673.1 | 10,845.9 | 6,733.6 | 130.2 | 113.3 | 91.36 | -2,283.9 | 3,391.7 | 2,428.8 | 2,185.3 | 243.49 | 9.975 | |
| 11,600.0 | 6,672.5 | 10,930.2 | 6,732.5 | 132.5 | 115.7 | 91.34 | -2,283.9 | 3,476.0 | 2,428.8 | 2,180.7 | 248.12 | 9.789 | |
| 11,614.1 | 6,672.4 | 10,944.3 | 6,732.3 | 132.9 | 116.0 | 91.34 | -2,283.9 | 3,490.1 | 2,428.8 | 2,179.9 | 248.90 | 9.758 | |
| 11,700.0 | 6,671.9 | 11,030.2 | 6,731.1 | 135.3 | 118.4 | 91.33 | -2,283.9 | 3,575.9 | 2,428.8 | 2,175.2 | 253.62 | 9.577 | |
| 11,712.6 | 6,671.8 | 11,042.8 | 6,730.9 | 135.6 | 118.8 | 91.32 | -2,283.9 | 3,588.5 | 2,428.8 | 2,174.5 | 254.31 | 9.550 | |
| 11,800.0 | 6,671.2 | 11,130.2 | 6,729.7 | 138.0 | 121.2 | 91.31 | -2,283.9 | 3,675.9 | 2,428.8 | 2,169.6 | 259.12 | 9.373 | |
| 11,811.0 | 6,671.1 | 11,141.2 | 6,729.6 | 138.3 | 121.5 | 91.31 | -2,283.9 | 3,686.9 | 2,428.8 | 2,169.0 | 259.73 | 9.351 | |
| 11,900.0 | 6,670.6 | 11,230.2 | 6,728.4 | 140.7 | 124.0 | 91.29 | -2,283.9 | 3,775.9 | 2,428.7 | 2,164.1 | 264.63 | 9.178 | |
| 11,909.4 | 6,670.5 | 11,239.6 | 6,728.2 | 141.0 | 124.2 | 91.29 | -2,283.9 | 3,785.3 | 2,428.7 | 2,163.6 | 265.15 | 9.160 | |
| 11,987.2 | 6,670.0 | 11,318.2 | 6,727.2 | 143.1 | 126.4 | 91.28 | -2,283.9 | 3,864.0 | 2,428.7 | 2,159.3 | 269.47 | 9.013 | SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,036.3 | 0.20 | N/A | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,036.3 | 0.20 | N/A | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,035.8 | 0.64 | 3,193.679 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,035.8 | 0.65 | 3,124.299 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,035.4 | 1.08 | 1,885.437 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,035.4 | 1.10 | 1,849.075 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,035.0 | 1.52 | 1,337.536 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,034.9 | 1.55 | 1,313.112 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,034.5 | 1.97 | 1,036.371 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,034.5 | 2.00 | 1,018.030 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,034.1 | 2.41 | 845.903 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,034.0 | 2.45 | 831.236 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,033.6 | 2.85 | 714.576 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,033.6 | 2.90 | 702.362 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,033.2 | 3.29 | 618.547 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,033.1 | 3.35 | 608.085 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,032.8 | 3.73 | 545.269 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,032.7 | 3.80 | 536.123 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,032.3 | 4.18 | 487.515 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.59 | -2,034.7 | -85.8 | 2,036.5 | 2,032.2 | 4.25 | 479.390 | CC |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.18 | -2,034.7 | -85.8 | 2,036.6 | 2,031.9 | 4.61 | 441.744 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.19 | -2,034.7 | -85.8 | 2,036.6 | 2,031.9 | 4.69 | 434.597 | |
| 1,181.1 | 1,181.0 | 1,179.6 | 1,179.6 | 2.5 | 2.5 | -93.30 | -2,034.7 | -85.6 | 2,036.8 | 2,031.8 | 5.02 | 405.562 | ES |
| 1,200.0 | 1,199.8 | 1,196.0 | 1,196.0 | 2.5 | 2.6 | -93.33 | -2,034.8 | -85.4 | 2,037.0 | 2,031.9 | 5.10 | 399.744 | |
| 1,279.5 | 1,279.1 | 1,264.7 | 1,264.7 | 2.7 | 2.7 | -93.53 | -2,035.2 | -83.6 | 2,037.8 | 2,032.4 | 5.41 | 376.878 | |
| 1,300.0 | 1,299.5 | 1,282.3 | 1,282.3 | 2.8 | 2.7 | -93.59 | -2,035.4 | -82.8 | 2,038.2 | 2,032.7 | 5.49 | 371.450 | |
| 1,377.9 | 1,376.9 | 1,348.7 | 1,348.6 | 3.0 | 2.9 | -93.88 | -2,036.4 | -79.1 | 2,039.8 | 2,033.9 | 5.81 | 350.928 | |
| 1,400.0 | 1,398.7 | 1,367.4 | 1,367.2 | 3.0 | 2.9 | -93.98 | -2,036.7 | -77.8 | 2,040.3 | 2,034.4 | 5.90 | 345.540 | |
| 1,476.4 | 1,474.2 | 1,431.2 | 1,430.8 | 3.2 | 3.0 | -94.35 | -2,038.1 | -72.4 | 2,042.7 | 2,036.5 | 6.25 | 326.742 | |
| 1,500.0 | 1,497.5 | 1,450.7 | 1,450.2 | 3.3 | 3.1 | -94.48 | -2,038.6 | -70.5 | 2,043.6 | 2,037.2 | 6.36 | 321.308 | |
| 1,574.8 | 1,571.0 | 1,511.7 | 1,510.7 | 3.5 | 3.2 | -94.92 | -2,040.3 | -63.7 | 2,046.9 | 2,040.1 | 6.74 | 303.909 | |
| 1,600.0 | 1,595.6 | 1,531.9 | 1,530.8 | 3.6 | 3.3 | -95.08 | -2,040.9 | -61.2 | 2,048.1 | 2,041.3 | 6.86 | 298.363 | |
| 1,673.2 | 1,667.0 | 1,589.8 | 1,588.0 | 3.9 | 3.4 | -95.56 | -2,043.0 | -53.1 | 2,052.4 | 2,045.1 | 7.28 | 282.113 | |
| 1,700.0 | 1,693.1 | 1,610.5 | 1,608.6 | 4.0 | 3.5 | -95.75 | -2,043.8 | -50.0 | 2,054.2 | 2,046.8 | 7.43 | 276.558 | |
| 1,771.6 | 1,762.4 | 1,665.1 | 1,662.3 | 4.3 | 3.6 | -96.26 | -2,046.1 | -41.0 | 2,059.6 | 2,051.7 | 7.88 | 261.243 | |
| 1,800.0 | 1,789.6 | 1,686.2 | 1,683.1 | 4.4 | 3.7 | -96.47 | -2,047.0 | -37.3 | 2,062.0 | 2,053.9 | 8.06 | 255.742 | |
| 1,870.1 | 1,856.8 | 1,737.4 | 1,733.3 | 4.7 | 3.8 | -96.99 | -2,049.5 | -27.6 | 2,068.6 | 2,060.1 | 8.56 | 241.683 | |
| 1,900.0 | 1,885.3 | 1,760.7 | 1,756.1 | 4.9 | 3.9 | -97.24 | -2,050.7 | -23.0 | 2,071.8 | 2,063.0 | 8.78 | 235.998 | |
| 1,968.5 | 1,950.2 | 1,819.6 | 1,813.7 | 5.3 | 4.1 | -97.91 | -2,053.7 | -11.1 | 2,079.5 | 2,070.2 | 9.35 | 222.292 | |
| 2,000.0 | 1,979.8 | 1,846.5 | 1,840.0 | 5.5 | 4.2 | -98.21 | -2,055.1 | -5.7 | 2,083.4 | 2,073.7 | 9.62 | 216.543 | |
| 2,044.9 | 2,021.9 | 1,884.4 | 1,877.1 | 5.7 | 4.3 | -98.65 | -2,057.0 | 2.0 | 2,089.1 | 2,079.1 | 10.02 | 208.431 | |
| 2,066.9 | 2,042.5 | 1,902.9 | 1,895.2 | 5.9 | 4.4 | -98.92 | -2,058.0 | 5.7 | 2,092.1 | 2,081.9 | 10.22 | 204.606 | |
| 2,100.0 | 2,073.4 | 1,930.7 | 1,922.4 | 6.1 | 4.5 | -99.33 | -2,059.4 | 11.3 | 2,096.6 | 2,086.1 | 10.53 | 199.074 | |
| 2,165.3 | 2,134.4 | 1,985.6 | 1,976.1 | 6.5 | 4.7 | -100.12 | -2,062.2 | 22.4 | 2,106.1 | 2,094.9 | 11.15 | 188.907 | |
| 2,200.0 | 2,166.8 | 2,014.8 | 2,004.6 | 6.8 | 4.8 | -100.55 | -2,063.7 | 28.2 | 2,111.3 | 2,099.8 | 11.48 | 183.971 | |
| 2,263.8 | 2,226.4 | 2,068.4 | 2,057.0 | 7.2 | 5.0 | -101.32 | -2,066.4 | 39.0 | 2,121.3 | 2,109.2 | 12.09 | 175.427 | |
| 2,300.0 | 2,260.2 | 2,098.8 | 2,086.8 | 7.4 | 5.1 | -101.75 | -2,068.0 | 45.2 | 2,127.2 | 2,114.8 | 12.44 | 170.997 | |
| 2,362.2 | 2,318.3 | 2,151.1 | 2,137.9 | 7.9 | 5.4 | -102.50 | -2,070.7 | 55.7 | 2,137.7 | 2,124.7 | 13.05 | 163.824 | |
| 2,400.0 | 2,353.6 | 2,182.8 | 2,169.0 | 8.1 | 5.5 | -102.95 | -2,072.3 | 62.1 | 2,144.4 | 2,131.0 | 13.42 | 159.825 | |
| 2,460.6 | 2,410.3 | 2,233.8 | 2,218.9 | 8.6 | 5.7 | -103.66 | -2,074.9 | 72.4 | 2,155.4 | 2,141.4 | 14.01 | 153.805 | |
| 2,500.0 | 2,447.0 | 2,266.9 | 2,251.2 | 8.9 | 5.8 | -104.13 | -2,076.6 | 79.0 | 2,162.8 | 2,148.4 | 14.40 | 150.193 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,316.5 | 2,299.8 | 9.3 | 6.0 | -104.82 | -2,079.2 | 89.0 | 2,174.2 | 2,159.2 | 14.98 | 145.126 | |
| 2,600.0 | 2,540.5 | 2,350.9 | 2,333.4 | 9.6 | 6.2 | -105.29 | -2,080.9 | 96.0 | 2,182.3 | 2,167.0 | 15.38 | 141.860 | |
| 2,657.5 | 2,594.2 | 2,399.3 | 2,380.7 | 10.0 | 6.4 | -105.95 | -2,083.4 | 105.7 | 2,194.1 | 2,178.2 | 15.95 | 137.574 | |
| 2,700.0 | 2,633.9 | 2,435.0 | 2,415.6 | 10.3 | 6.5 | -106.44 | -2,085.2 | 112.9 | 2,203.1 | 2,186.7 | 16.37 | 134.613 | |
| 2,755.9 | 2,686.1 | 2,482.0 | 2,461.6 | 10.7 | 6.7 | -107.08 | -2,087.6 | 122.4 | 2,215.2 | 2,198.3 | 16.91 | 130.968 | |
| 2,800.0 | 2,727.3 | 2,519.0 | 2,497.9 | 11.0 | 6.9 | -107.57 | -2,089.5 | 129.8 | 2,224.9 | 2,207.6 | 17.34 | 128.285 | |
| 2,854.3 | 2,778.1 | 2,564.7 | 2,542.5 | 11.4 | 7.1 | -108.18 | -2,091.9 | 139.0 | 2,237.3 | 2,219.4 | 17.87 | 125.176 | |
| 2,900.0 | 2,820.7 | 2,603.1 | 2,580.1 | 11.8 | 7.2 | -108.69 | -2,093.8 | 146.8 | 2,247.9 | 2,229.6 | 18.32 | 122.735 | |
| 2,952.7 | 2,870.0 | 2,647.4 | 2,623.4 | 12.2 | 7.4 | -109.27 | -2,096.1 | 155.7 | 2,260.4 | 2,241.6 | 18.83 | 120.075 | |
| 3,000.0 | 2,914.2 | 2,687.1 | 2,662.3 | 12.5 | 7.6 | -109.79 | -2,098.2 | 163.7 | 2,271.9 | 2,252.6 | 19.28 | 117.846 | |
| 3,051.2 | 2,962.0 | 2,730.1 | 2,704.4 | 12.9 | 7.8 | -110.34 | -2,100.4 | 172.4 | 2,284.6 | 2,264.8 | 19.77 | 115.568 | |
| 3,100.0 | 3,007.6 | 2,771.2 | 2,744.5 | 13.3 | 8.0 | -110.87 | -2,102.5 | 180.6 | 2,297.0 | 2,276.7 | 20.23 | 113.527 | |
| 3,149.6 | 3,053.9 | 2,812.9 | 2,785.3 | 13.6 | 8.1 | -111.40 | -2,104.6 | 189.0 | 2,309.8 | 2,289.1 | 20.70 | 111.570 | |
| 3,200.0 | 3,101.0 | 2,855.2 | 2,826.7 | 14.0 | 8.3 | -111.93 | -2,106.8 | 197.6 | 2,323.0 | 2,301.8 | 21.18 | 109.698 | |
| 3,248.0 | 3,145.9 | 2,895.6 | 2,866.2 | 14.4 | 8.5 | -112.43 | -2,108.8 | 205.7 | 2,335.9 | 2,314.2 | 21.63 | 108.014 | |
| 3,300.0 | 3,194.4 | 2,939.3 | 2,908.9 | 14.8 | 8.7 | -112.97 | -2,111.1 | 214.5 | 2,350.0 | 2,327.9 | 22.11 | 106.295 | |
| 3,346.4 | 3,237.8 | 2,978.3 | 2,947.1 | 15.1 | 8.9 | -113.45 | -2,113.1 | 222.4 | 2,362.9 | 2,340.3 | 22.54 | 104.842 | |
| 3,400.0 | 3,287.8 | 3,023.3 | 2,991.1 | 15.5 | 9.1 | -114.00 | -2,115.4 | 231.5 | 2,377.9 | 2,354.9 | 23.03 | 103.261 | |
| 3,444.9 | 3,329.8 | 3,061.0 | 3,028.0 | 15.9 | 9.2 | -114.45 | -2,117.3 | 239.1 | 2,390.8 | 2,367.3 | 23.44 | 102.005 | |
| 3,500.0 | 3,381.3 | 3,107.4 | 3,073.3 | 16.3 | 9.4 | -115.01 | -2,119.7 | 248.4 | 2,406.8 | 2,382.8 | 23.94 | 100.550 | |
| 3,543.3 | 3,421.7 | 3,143.8 | 3,108.9 | 16.6 | 9.6 | -115.44 | -2,121.6 | 255.7 | 2,419.5 | 2,395.2 | 24.33 | 99.464 | |
| 3,600.0 | 3,474.7 | 3,191.4 | 3,155.6 | 17.0 | 9.8 | -116.00 | -2,124.0 | 265.3 | 2,436.5 | 2,411.6 | 24.83 | 98.121 | |
| 3,641.7 | 3,513.7 | 3,226.5 | 3,189.9 | 17.3 | 10.0 | -116.40 | -2,125.8 | 272.4 | 2,449.1 | 2,423.9 | 25.20 | 97.183 | |
| 3,700.0 | 3,568.1 | 3,275.5 | 3,237.8 | 17.8 | 10.2 | -116.97 | -2,128.3 | 282.3 | 2,467.0 | 2,441.3 | 25.71 | 95.943 | |
| 3,740.1 | 3,605.6 | 3,309.2 | 3,270.8 | 18.1 | 10.3 | -117.35 | -2,130.0 | 289.1 | 2,479.5 | 2,453.4 | 26.06 | 95.132 | |
| 3,800.0 | 3,661.5 | 3,359.5 | 3,320.0 | 18.5 | 10.6 | -117.92 | -2,132.6 | 299.2 | 2,498.3 | 2,471.7 | 26.58 | 93.986 | |
| 3,838.6 | 3,697.6 | 3,391.9 | 3,351.7 | 18.8 | 10.7 | -118.28 | -2,134.3 | 305.7 | 2,510.6 | 2,483.7 | 26.91 | 93.285 | |
| 3,900.0 | 3,754.9 | 3,443.6 | 3,402.2 | 19.3 | 10.9 | -118.85 | -2,136.9 | 316.1 | 2,530.4 | 2,503.0 | 27.44 | 92.226 | |
| 3,937.0 | 3,789.5 | 3,474.7 | 3,432.6 | 19.6 | 11.1 | -119.19 | -2,138.5 | 322.4 | 2,542.5 | 2,514.7 | 27.75 | 91.620 | |
| 4,000.0 | 3,848.4 | 3,527.6 | 3,484.4 | 20.1 | 11.3 | -119.76 | -2,141.2 | 333.1 | 2,563.2 | 2,535.0 | 28.28 | 90.641 | |
| 4,035.4 | 3,881.5 | 3,557.4 | 3,513.5 | 20.3 | 11.5 | -120.08 | -2,142.8 | 339.1 | 2,575.1 | 2,546.5 | 28.57 | 90.118 | |
| 4,100.0 | 3,941.8 | 3,611.7 | 3,566.6 | 20.8 | 11.7 | -120.66 | -2,145.6 | 350.0 | 2,596.8 | 2,567.7 | 29.11 | 89.213 | |
| 4,133.8 | 3,973.4 | 3,640.1 | 3,594.4 | 21.1 | 11.8 | -120.96 | -2,147.0 | 355.7 | 2,608.3 | 2,578.9 | 29.39 | 88.762 | |
| 4,200.0 | 4,035.2 | 3,695.7 | 3,648.8 | 21.6 | 12.1 | -121.53 | -2,149.9 | 366.9 | 2,631.1 | 2,601.1 | 29.92 | 87.925 | |
| 4,232.3 | 4,065.4 | 3,722.8 | 3,675.4 | 21.8 | 12.2 | -121.81 | -2,151.3 | 372.4 | 2,642.2 | 2,612.1 | 30.18 | 87.537 | |
| 4,300.0 | 4,128.6 | 3,779.8 | 3,731.0 | 22.3 | 12.5 | -122.39 | -2,154.2 | 383.9 | 2,666.0 | 2,635.2 | 30.73 | 86.763 | |
| 4,330.7 | 4,157.3 | 3,805.6 | 3,756.3 | 22.6 | 12.6 | -122.65 | -2,155.5 | 389.1 | 2,676.8 | 2,645.8 | 30.97 | 86.430 | |
| 4,400.0 | 4,222.0 | 3,863.8 | 3,813.2 | 23.1 | 12.8 | -123.23 | -2,158.5 | 400.8 | 2,701.5 | 2,670.0 | 31.52 | 85.715 | |
| 4,429.1 | 4,249.3 | 3,888.3 | 3,837.2 | 23.3 | 13.0 | -123.47 | -2,159.7 | 405.7 | 2,712.0 | 2,680.2 | 31.74 | 85.430 | |
| 4,500.0 | 4,315.5 | 3,947.9 | 3,895.5 | 23.9 | 13.2 | -124.05 | -2,162.8 | 417.7 | 2,737.7 | 2,705.4 | 32.30 | 84.770 | |
| 4,527.5 | 4,341.2 | 3,971.0 | 3,918.1 | 24.1 | 13.3 | -124.28 | -2,164.0 | 422.4 | 2,747.7 | 2,715.2 | 32.51 | 84.526 | |
| 4,600.0 | 4,408.9 | 4,031.9 | 3,977.7 | 24.6 | 13.6 | -124.86 | -2,167.1 | 434.7 | 2,774.4 | 2,741.3 | 33.06 | 83.918 | |
| 4,626.0 | 4,433.2 | 4,053.7 | 3,999.0 | 24.8 | 13.7 | -125.06 | -2,168.2 | 439.1 | 2,784.0 | 2,750.8 | 33.26 | 83.710 | |
| 4,700.0 | 4,502.3 | 4,116.0 | 4,059.9 | 25.4 | 14.0 | -125.65 | -2,171.4 | 451.6 | 2,811.7 | 2,777.9 | 33.81 | 83.150 | |
| 4,724.4 | 4,525.1 | 4,166.9 | 4,109.7 | 25.6 | 14.2 | -126.11 | -2,173.9 | 461.6 | 2,820.8 | 2,786.8 | 34.01 | 82.934 | |
| 4,800.0 | 4,595.7 | 4,440.3 | 4,380.1 | 26.2 | 15.0 | -128.32 | -2,183.9 | 500.6 | 2,846.4 | 2,811.9 | 34.55 | 82.388 | |
| 4,822.8 | 4,617.1 | 4,528.6 | 4,468.1 | 26.3 | 15.2 | -128.93 | -2,185.7 | 507.8 | 2,853.2 | 2,818.5 | 34.69 | 82.254 | |
| 4,900.0 | 4,689.2 | 4,752.8 | 4,692.2 | 26.9 | 15.5 | -130.30 | -2,187.4 | 514.4 | 2,872.9 | 2,837.7 | 35.13 | 81.786 | |
| 4,921.2 | 4,709.0 | 4,772.7 | 4,712.0 | 27.1 | 15.5 | -130.41 | -2,187.4 | 514.4 | 2,878.0 | 2,842.7 | 35.26 | 81.631 | |
| 5,000.0 | 4,782.6 | 4,846.3 | 4,785.6 | 27.7 | 15.6 | -130.82 | -2,187.4 | 514.4 | 2,897.0 | 2,861.2 | 35.74 | 81.066 | |
| 5,019.7 | 4,801.0 | 4,864.6 | 4,804.0 | 27.8 | 15.7 | -130.92 | -2,187.4 | 514.4 | 2,901.7 | 2,865.9 | 35.86 | 80.927 | |
| 5,100.0 | 4,876.0 | 4,939.7 | 4,879.0 | 28.4 | 15.8 | -131.33 | -2,187.4 | 514.4 | 2,921.3 | 2,885.0 | 36.35 | 80.375 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,956.6 | 4,895.9 | 28.6 | 15.8 | -131.42 | -2,187.4 | 514.4 | 2,925.7 | 2,889.3 | 36.46 | 80.254 | |
| 5,159.9 | 4,932.0 | 4,995.7 | 4,935.0 | 28.9 | 15.8 | -131.63 | -2,187.4 | 514.4 | 2,936.0 | 2,899.3 | 36.71 | 79.978 | |
| 5,200.0 | 4,969.5 | 8,372.0 | 6,789.1 | 29.2 | 47.5 | -109.82 | -2,187.4 | -1,312.3 | 2,942.4 | 2,868.2 | 74.16 | 39.679 | |
| 5,216.5 | 4,985.1 | 8,377.6 | 6,789.1 | 29.3 | 47.6 | -109.49 | -2,187.4 | -1,317.9 | 2,933.2 | 2,858.7 | 74.49 | 39.380 | |
| 5,300.0 | 5,064.0 | 8,404.3 | 6,789.0 | 29.7 | 48.3 | -107.87 | -2,187.4 | -1,344.6 | 2,887.5 | 2,811.4 | 76.09 | 37.949 | |
| 5,314.9 | 5,078.2 | 8,408.9 | 6,789.0 | 29.8 | 48.5 | -107.59 | -2,187.4 | -1,349.2 | 2,879.4 | 2,803.0 | 76.36 | 37.710 | |
| 5,400.0 | 5,159.6 | 8,433.3 | 6,788.9 | 30.2 | 49.1 | -106.01 | -2,187.4 | -1,373.6 | 2,833.8 | 2,756.0 | 77.81 | 36.418 | |
| 5,413.4 | 5,172.4 | 8,437.0 | 6,788.9 | 30.3 | 49.2 | -105.77 | -2,187.4 | -1,377.2 | 2,826.7 | 2,748.7 | 78.02 | 36.229 | |
| 5,500.0 | 5,256.1 | 8,459.0 | 6,788.8 | 30.7 | 49.8 | -104.24 | -2,187.4 | -1,399.3 | 2,781.6 | 2,702.3 | 79.32 | 35.067 | |
| 5,511.8 | 5,267.6 | 8,461.8 | 6,788.8 | 30.7 | 49.9 | -104.04 | -2,187.4 | -1,402.1 | 2,775.6 | 2,696.1 | 79.48 | 34.920 | |
| 5,600.0 | 5,353.5 | 8,481.3 | 6,788.8 | 31.1 | 50.4 | -102.59 | -2,187.4 | -1,421.6 | 2,731.1 | 2,650.5 | 80.61 | 33.879 | |
| 5,610.2 | 5,363.5 | 8,483.4 | 6,788.8 | 31.1 | 50.4 | -102.42 | -2,187.4 | -1,423.7 | 2,726.0 | 2,645.3 | 80.73 | 33.767 | |
| 5,700.0 | 5,451.6 | 8,500.2 | 6,788.7 | 31.4 | 50.9 | -101.05 | -2,187.4 | -1,440.5 | 2,682.5 | 2,600.8 | 81.69 | 32.836 | |
| 5,708.6 | 5,460.2 | 8,501.7 | 6,788.7 | 31.4 | 50.9 | -100.92 | -2,187.4 | -1,441.9 | 2,678.4 | 2,596.7 | 81.78 | 32.753 | |
| 5,800.0 | 5,550.4 | 8,515.7 | 6,788.7 | 31.7 | 51.3 | -99.65 | -2,187.4 | -1,455.9 | 2,636.2 | 2,553.6 | 82.57 | 31.925 | |
| 5,807.1 | 5,557.4 | 8,516.6 | 6,788.7 | 31.7 | 51.3 | -99.56 | -2,187.4 | -1,456.9 | 2,633.0 | 2,550.3 | 82.63 | 31.866 | |
| 5,900.0 | 5,649.6 | 8,527.7 | 6,788.7 | 31.9 | 51.6 | -98.39 | -2,187.4 | -1,468.0 | 2,592.2 | 2,508.9 | 83.26 | 31.134 | |
| 5,905.5 | 5,655.1 | 8,528.3 | 6,788.7 | 31.9 | 51.6 | -98.33 | -2,187.4 | -1,468.5 | 2,589.9 | 2,506.6 | 83.29 | 31.095 | |
| 6,000.0 | 5,749.2 | 8,536.3 | 6,788.6 | 32.1 | 51.8 | -97.29 | -2,187.4 | -1,476.6 | 2,550.9 | 2,467.1 | 83.76 | 30.455 | |
| 6,003.9 | 5,753.1 | 8,536.5 | 6,788.6 | 32.1 | 51.8 | -97.24 | -2,187.4 | -1,476.8 | 2,549.3 | 2,465.6 | 83.78 | 30.431 | |
| 6,100.0 | 5,849.1 | 8,541.4 | 6,788.6 | 32.3 | 51.9 | -96.33 | -2,187.4 | -1,481.7 | 2,512.5 | 2,428.4 | 84.09 | 29.879 | |
| 6,102.3 | 5,851.4 | 8,541.5 | 6,788.6 | 32.3 | 51.9 | -96.31 | -2,187.4 | -1,481.8 | 2,511.6 | 2,427.5 | 84.09 | 29.866 | |
| 6,200.8 | 5,949.8 | 8,543.0 | 6,788.6 | 32.4 | 52.0 | -95.54 | -2,187.4 | -1,483.3 | 2,476.9 | 2,392.6 | 84.26 | 29.396 | |
| 6,204.9 | 5,953.9 | 8,543.0 | 6,788.6 | 32.4 | 52.0 | -179.95 | -2,187.4 | -1,483.3 | 2,475.5 | 2,444.7 | 30.82 | 80.319 | |
| 6,234.9 | 5,983.9 | 8,542.9 | 6,788.6 | 32.4 | 52.0 | -179.95 | -2,187.4 | -1,483.2 | 2,465.6 | 2,434.7 | 30.87 | 79.878 | |
| 6,250.0 | 5,999.0 | 8,542.7 | 6,788.6 | 32.4 | 52.0 | 90.46 | -2,187.4 | -1,483.0 | 2,460.7 | 2,376.4 | 84.30 | 29.190 | |
| 6,299.2 | 6,048.2 | 8,539.9 | 6,788.6 | 32.4 | 51.9 | 91.67 | -2,187.4 | -1,480.2 | 2,445.4 | 2,361.2 | 84.23 | 29.032 | |
| 6,300.0 | 6,048.9 | 8,539.8 | 6,788.6 | 32.4 | 51.9 | 91.69 | -2,187.4 | -1,480.1 | 2,445.2 | 2,361.0 | 84.23 | 29.030 | |
| 6,350.0 | 6,098.5 | 8,533.4 | 6,788.6 | 32.4 | 51.7 | 92.75 | -2,187.4 | -1,473.7 | 2,430.7 | 2,346.7 | 84.00 | 28.936 | |
| 6,397.6 | 6,145.3 | 8,524.1 | 6,788.7 | 32.3 | 51.5 | 93.58 | -2,187.4 | -1,464.4 | 2,417.9 | 2,334.3 | 83.66 | 28.902 | |
| 6,400.0 | 6,147.6 | 8,523.5 | 6,788.7 | 32.3 | 51.5 | 93.62 | -2,187.4 | -1,463.8 | 2,417.3 | 2,333.7 | 83.64 | 28.902 | |
| 6,450.0 | 6,195.8 | 8,510.3 | 6,788.7 | 32.2 | 51.1 | 94.32 | -2,187.4 | -1,450.6 | 2,405.0 | 2,321.9 | 83.15 | 28.923 | |
| 6,496.0 | 6,239.3 | 8,495.2 | 6,788.7 | 32.1 | 50.7 | 94.81 | -2,187.4 | -1,435.4 | 2,394.7 | 2,312.1 | 82.61 | 28.989 | |
| 6,500.0 | 6,243.0 | 8,493.7 | 6,788.7 | 32.1 | 50.7 | 94.85 | -2,187.4 | -1,434.0 | 2,393.9 | 2,311.3 | 82.56 | 28.996 | |
| 6,550.0 | 6,289.0 | 8,473.9 | 6,788.8 | 32.0 | 50.2 | 95.22 | -2,187.4 | -1,414.2 | 2,383.9 | 2,302.0 | 81.88 | 29.116 | |
| 6,594.5 | 6,328.6 | 8,453.6 | 6,788.9 | 31.8 | 49.6 | 95.42 | -2,187.4 | -1,393.9 | 2,376.0 | 2,294.8 | 81.20 | 29.261 | |
| 6,600.0 | 6,333.4 | 8,450.9 | 6,788.9 | 31.8 | 49.6 | 95.44 | -2,187.4 | -1,391.2 | 2,375.1 | 2,294.0 | 81.11 | 29.282 | |
| 6,650.0 | 6,376.2 | 8,424.9 | 6,788.9 | 31.7 | 48.9 | 95.52 | -2,187.4 | -1,365.2 | 2,367.3 | 2,287.0 | 80.28 | 29.490 | |
| 6,692.9 | 6,411.3 | 8,400.3 | 6,789.0 | 31.6 | 48.2 | 95.50 | -2,187.4 | -1,340.5 | 2,361.5 | 2,282.0 | 79.51 | 29.701 | |
| 6,700.0 | 6,417.0 | 8,396.0 | 6,789.0 | 31.5 | 48.1 | 95.49 | -2,187.4 | -1,336.3 | 2,360.6 | 2,281.2 | 79.38 | 29.739 | |
| 6,750.0 | 6,455.7 | 8,364.3 | 6,789.1 | 31.4 | 47.3 | 95.35 | -2,187.4 | -1,304.6 | 2,354.9 | 2,276.4 | 78.43 | 30.023 | |
| 6,791.3 | 6,486.0 | 8,336.1 | 6,789.2 | 31.3 | 46.6 | 95.17 | -2,187.4 | -1,276.4 | 2,350.8 | 2,273.2 | 77.62 | 30.284 | |
| 6,800.0 | 6,492.2 | 8,329.9 | 6,789.2 | 31.3 | 46.4 | 95.13 | -2,187.4 | -1,270.2 | 2,350.0 | 2,272.6 | 77.45 | 30.343 | |
| 6,850.0 | 6,526.1 | 8,293.2 | 6,789.3 | 31.2 | 45.5 | 94.84 | -2,187.4 | -1,233.4 | 2,346.0 | 2,269.6 | 76.43 | 30.695 | |
| 6,889.7 | 6,551.2 | 8,262.3 | 6,789.4 | 31.2 | 44.7 | 94.58 | -2,187.4 | -1,202.6 | 2,343.4 | 2,267.8 | 75.61 | 30.992 | |
| 6,900.0 | 6,557.4 | 8,254.1 | 6,789.4 | 31.2 | 44.5 | 94.51 | -2,187.4 | -1,194.4 | 2,342.8 | 2,267.4 | 75.40 | 31.072 | |
| 6,950.0 | 6,586.0 | 8,213.0 | 6,789.5 | 31.1 | 43.4 | 94.14 | -2,187.4 | -1,153.3 | 2,340.2 | 2,265.8 | 74.35 | 31.476 | |
| 6,988.2 | 6,605.8 | 8,180.3 | 6,789.6 | 31.2 | 42.6 | 93.86 | -2,187.4 | -1,120.6 | 2,338.6 | 2,265.0 | 73.56 | 31.793 | |
| 7,000.0 | 6,611.5 | 8,170.0 | 6,789.6 | 31.2 | 42.3 | 93.77 | -2,187.4 | -1,110.2 | 2,338.1 | 2,264.8 | 73.31 | 31.896 | |
| 7,050.0 | 6,634.1 | 8,125.3 | 6,789.7 | 31.2 | 41.2 | 93.41 | -2,187.4 | -1,065.6 | 2,336.6 | 2,264.3 | 72.27 | 32.332 | |
| 7,086.6 | 6,648.6 | 8,091.6 | 6,789.8 | 31.3 | 40.3 | 93.15 | -2,187.4 | -1,031.9 | 2,335.7 | 2,264.1 | 71.53 | 32.655 | |
| 7,100.0 | 6,653.4 | 8,079.1 | 6,789.8 | 31.4 | 40.0 | 93.07 | -2,187.4 | -1,019.4 | 2,335.4 | 2,264.1 | 71.25 | 32.776 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 8,031.8 | 6,790.0 | 31.6 | 38.8 | 92.76 | -2,187.4 | -972.1 | 2,334.5 | 2,264.3 | 70.27 | 33.224 | |
| 7,185.0 | 6,678.8 | 7,998.0 | 6,790.1 | 31.7 | 38.0 | 92.58 | -2,187.4 | -938.3 | 2,334.1 | 2,264.5 | 69.60 | 33.538 | |
| 7,200.0 | 6,682.3 | 7,983.4 | 6,790.1 | 31.8 | 37.6 | 92.51 | -2,187.4 | -923.7 | 2,333.9 | 2,264.6 | 69.31 | 33.673 | |
| 7,250.0 | 6,691.6 | 7,934.3 | 6,790.2 | 32.1 | 36.4 | 92.32 | -2,187.4 | -874.6 | 2,333.5 | 2,265.1 | 68.40 | 34.115 | |
| 7,283.4 | 6,696.0 | 7,901.1 | 6,790.3 | 32.3 | 35.6 | 92.23 | -2,187.4 | -841.4 | 2,333.4 | 2,265.5 | 67.82 | 34.406 | |
| 7,300.0 | 6,697.5 | 7,884.6 | 6,790.4 | 32.4 | 35.2 | 92.20 | -2,187.4 | -824.9 | 2,333.3 | 2,265.8 | 67.54 | 34.549 | |
| 7,350.0 | 6,699.9 | 7,834.7 | 6,790.5 | 32.8 | 34.0 | 92.15 | -2,187.4 | -775.0 | 2,333.2 | 2,266.5 | 66.72 | 34.970 | |
| 7,357.8 | 6,700.0 | 7,826.9 | 6,790.5 | 32.9 | 33.8 | 92.15 | -2,187.4 | -767.2 | 2,333.2 | 2,266.6 | 66.60 | 35.035 | |
| 7,364.4 | 6,700.0 | 7,820.3 | 6,790.5 | 32.9 | 33.7 | 92.15 | -2,187.4 | -760.6 | 2,333.2 | 2,266.7 | 66.49 | 35.090 | |
| 7,381.9 | 6,699.9 | 7,802.8 | 6,790.6 | 33.1 | 33.2 | 92.15 | -2,187.4 | -743.1 | 2,333.2 | 2,267.0 | 66.23 | 35.232 | |
| 7,400.0 | 6,699.8 | 7,784.7 | 6,790.6 | 33.2 | 32.8 | 92.16 | -2,187.4 | -725.0 | 2,333.2 | 2,267.3 | 65.96 | 35.374 | |
| 7,480.3 | 6,699.2 | 7,704.4 | 6,790.8 | 34.0 | 30.9 | 92.18 | -2,187.4 | -644.7 | 2,333.3 | 2,268.4 | 64.90 | 35.951 | |
| 7,500.0 | 6,699.1 | 7,684.7 | 6,790.9 | 34.2 | 30.5 | 92.18 | -2,187.4 | -625.0 | 2,333.3 | 2,268.6 | 64.65 | 36.088 | |
| 7,578.7 | 6,698.6 | 7,605.9 | 6,791.1 | 35.2 | 28.7 | 92.20 | -2,187.4 | -546.2 | 2,333.3 | 2,269.5 | 63.84 | 36.550 | |
| 7,600.0 | 6,698.5 | 7,584.7 | 6,791.1 | 35.4 | 28.3 | 92.20 | -2,187.4 | -525.0 | 2,333.3 | 2,269.7 | 63.64 | 36.667 | |
| 7,677.1 | 6,698.0 | 7,507.5 | 6,791.4 | 36.5 | 26.6 | 92.22 | -2,187.4 | -447.8 | 2,333.3 | 2,270.3 | 63.05 | 37.005 | |
| 7,700.0 | 6,697.8 | 7,484.7 | 6,791.4 | 36.8 | 26.2 | 92.22 | -2,187.4 | -425.0 | 2,333.3 | 2,270.4 | 62.90 | 37.094 | |
| 7,775.6 | 6,697.3 | 7,409.1 | 6,791.6 | 38.0 | 24.6 | 92.24 | -2,187.4 | -349.4 | 2,333.4 | 2,270.8 | 62.56 | 37.300 | |
| 7,800.0 | 6,697.2 | 7,384.7 | 6,791.7 | 38.3 | 24.2 | 92.25 | -2,187.4 | -325.0 | 2,333.4 | 2,270.9 | 62.47 | 37.351 | |
| 7,874.0 | 6,696.7 | 7,310.7 | 6,791.9 | 39.6 | 22.8 | 92.26 | -2,187.4 | -251.0 | 2,333.4 | 2,271.0 | 62.36 | 37.417 | |
| 7,900.0 | 6,696.5 | 7,284.7 | 6,791.9 | 40.0 | 22.4 | 92.27 | -2,187.4 | -225.0 | 2,333.4 | 2,271.1 | 62.35 | 37.427 | |
| 7,972.4 | 6,696.1 | 7,204.8 | 6,789.8 | 41.3 | 21.1 | 92.23 | -2,187.4 | -145.1 | 2,333.4 | 2,271.0 | 62.36 | 37.415 | |
| 8,000.0 | 6,695.9 | 7,173.4 | 6,786.6 | 41.8 | 20.7 | 92.16 | -2,187.4 | -113.9 | 2,333.3 | 2,270.9 | 62.40 | 37.392 | |
| 8,070.8 | 6,695.4 | 7,094.5 | 6,772.6 | 43.1 | 19.6 | 91.83 | -2,187.4 | -36.3 | 2,332.8 | 2,270.1 | 62.69 | 37.213 | |
| 8,100.0 | 6,695.2 | 7,063.0 | 6,764.7 | 43.7 | 19.3 | 91.64 | -2,187.4 | -5.8 | 2,332.6 | 2,269.7 | 62.88 | 37.097 | |
| 8,169.3 | 6,694.8 | 6,991.4 | 6,741.7 | 45.1 | 18.5 | 91.08 | -2,187.4 | 61.9 | 2,332.1 | 2,268.5 | 63.54 | 36.705 | |
| 8,200.0 | 6,694.6 | 6,961.3 | 6,730.0 | 45.7 | 18.3 | 90.80 | -2,187.4 | 89.7 | 2,331.8 | 2,268.0 | 63.89 | 36.495 | |
| 8,267.7 | 6,694.1 | 6,898.7 | 6,702.1 | 47.1 | 17.9 | 90.12 | -2,187.4 | 145.7 | 2,331.6 | 2,266.7 | 64.86 | 35.949 | |
| 8,279.3 | 6,694.1 | 6,888.6 | 6,697.1 | 47.3 | 17.8 | 90.00 | -2,187.4 | 154.5 | 2,331.6 | 2,266.5 | 65.05 | 35.846 | |
| 8,300.0 | 6,693.9 | 6,870.8 | 6,688.0 | 47.8 | 17.8 | 89.78 | -2,187.4 | 169.9 | 2,331.6 | 2,266.2 | 65.38 | 35.661 | |
| 8,366.1 | 6,693.5 | 6,817.4 | 6,658.7 | 49.2 | 17.6 | 89.07 | -2,187.4 | 214.4 | 2,332.0 | 2,265.5 | 66.56 | 35.035 | |
| 8,400.0 | 6,693.3 | 6,792.1 | 6,643.6 | 49.9 | 17.5 | 88.70 | -2,187.4 | 234.7 | 2,332.5 | 2,265.3 | 67.20 | 34.712 | |
| 8,464.5 | 6,692.9 | 6,750.0 | 6,617.0 | 51.4 | 17.4 | 88.05 | -2,187.4 | 267.3 | 2,334.0 | 2,265.5 | 68.50 | 34.072 | |
| 8,500.0 | 6,692.6 | 6,724.6 | 6,600.0 | 52.1 | 17.4 | 87.64 | -2,187.4 | 286.2 | 2,335.2 | 2,266.0 | 69.24 | 33.729 | |
| 8,563.0 | 6,692.2 | 6,687.3 | 6,573.9 | 53.6 | 17.3 | 87.00 | -2,187.4 | 312.9 | 2,338.1 | 2,267.5 | 70.59 | 33.121 | |
| 8,600.0 | 6,692.0 | 6,667.0 | 6,559.1 | 54.4 | 17.3 | 86.64 | -2,187.4 | 326.7 | 2,340.3 | 2,268.9 | 71.40 | 32.776 | |
| 8,661.4 | 6,691.6 | 6,636.0 | 6,535.8 | 55.8 | 17.4 | 86.07 | -2,187.4 | 347.2 | 2,344.7 | 2,271.9 | 72.78 | 32.216 | |
| 8,700.0 | 6,691.3 | 6,618.0 | 6,521.8 | 56.7 | 17.4 | 85.73 | -2,187.4 | 358.6 | 2,348.0 | 2,274.3 | 73.65 | 31.881 | |
| 8,759.8 | 6,690.9 | 6,592.1 | 6,501.3 | 58.1 | 17.4 | 85.24 | -2,187.4 | 374.3 | 2,354.0 | 2,279.0 | 75.02 | 31.378 | |
| 8,800.0 | 6,690.7 | 6,576.1 | 6,488.3 | 59.1 | 17.4 | 84.92 | -2,187.4 | 383.7 | 2,358.7 | 2,282.8 | 75.95 | 31.058 | |
| 8,858.2 | 6,690.3 | 6,550.0 | 6,466.7 | 60.5 | 17.4 | 84.40 | -2,187.4 | 398.3 | 2,366.4 | 2,289.1 | 77.30 | 30.614 | |
| 8,900.0 | 6,690.0 | 6,540.0 | 6,458.3 | 61.5 | 17.4 | 84.19 | -2,187.4 | 403.7 | 2,372.6 | 2,294.4 | 78.28 | 30.309 | |
| 8,956.7 | 6,689.7 | 6,521.8 | 6,442.8 | 62.9 | 17.5 | 83.82 | -2,187.4 | 413.2 | 2,382.0 | 2,302.4 | 79.62 | 29.917 | |
| 9,000.0 | 6,689.4 | 6,500.0 | 6,423.9 | 63.9 | 17.5 | 83.36 | -2,187.4 | 424.1 | 2,390.0 | 2,309.3 | 80.63 | 29.642 | |
| 9,055.1 | 6,689.0 | 6,500.0 | 6,423.9 | 65.3 | 17.5 | 83.36 | -2,187.4 | 424.1 | 2,400.9 | 2,318.9 | 81.97 | 29.289 | |
| 9,100.0 | 6,688.7 | 6,481.8 | 6,407.9 | 66.4 | 17.5 | 82.97 | -2,187.4 | 432.8 | 2,410.6 | 2,327.6 | 83.03 | 29.032 | |
| 9,153.5 | 6,688.4 | 6,468.7 | 6,396.2 | 67.7 | 17.5 | 82.69 | -2,187.4 | 438.7 | 2,423.1 | 2,338.8 | 84.32 | 28.736 | |
| 9,200.0 | 6,688.1 | 6,450.0 | 6,379.4 | 68.9 | 17.5 | 82.29 | -2,187.4 | 446.9 | 2,434.8 | 2,349.4 | 85.42 | 28.504 | |
| 9,251.9 | 6,687.8 | 6,450.0 | 6,379.4 | 70.2 | 17.5 | 82.29 | -2,187.4 | 446.9 | 2,448.7 | 2,362.0 | 86.71 | 28.239 | |
| 9,300.0 | 6,687.4 | 6,450.0 | 6,379.4 | 71.4 | 17.5 | 82.29 | -2,187.4 | 446.9 | 2,462.4 | 2,374.5 | 87.91 | 28.010 | |
| 9,350.4 | 6,687.1 | 6,427.6 | 6,358.9 | 72.7 | 17.6 | 81.80 | -2,187.4 | 456.1 | 2,477.5 | 2,388.4 | 89.10 | 27.805 | |
| 9,400.0 | 6,686.8 | 6,418.6 | 6,350.7 | 73.9 | 17.6 | 81.60 | -2,187.4 | 459.5 | 2,493.3 | 2,403.0 | 90.32 | 27.606 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17B-304 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,400.0 | 6,333.4 | 75.2 | 17.6 | 81.18 | -2,187.4 | 466.5 | 2,509.7 | 2,418.2 | 91.48 | 27.435 | |
| 9,500.0 | 6,686.1 | 6,400.0 | 6,333.4 | 76.5 | 17.6 | 81.18 | -2,187.4 | 466.5 | 2,527.6 | 2,434.8 | 92.77 | 27.245 | |
| 9,547.2 | 6,685.8 | 6,400.0 | 6,333.4 | 77.7 | 17.6 | 81.18 | -2,187.4 | 466.5 | 2,544.9 | 2,450.9 | 93.97 | 27.081 | |
| 9,600.0 | 6,685.5 | 6,400.0 | 6,333.4 | 79.0 | 17.6 | 81.18 | -2,187.4 | 466.5 | 2,565.1 | 2,469.8 | 95.31 | 26.913 | |
| 9,645.6 | 6,685.2 | 6,381.1 | 6,315.7 | 80.2 | 17.6 | 80.76 | -2,187.4 | 473.0 | 2,583.2 | 2,486.8 | 96.39 | 26.798 | |
| 9,700.0 | 6,684.8 | 6,374.1 | 6,309.0 | 81.6 | 17.6 | 80.60 | -2,187.4 | 475.4 | 2,605.7 | 2,507.9 | 97.75 | 26.657 | |
| 9,744.1 | 6,684.6 | 6,368.6 | 6,303.9 | 82.8 | 17.6 | 80.48 | -2,187.4 | 477.1 | 2,624.5 | 2,525.7 | 98.85 | 26.550 | |
| 9,800.0 | 6,684.2 | 6,350.0 | 6,286.2 | 84.2 | 17.6 | 80.06 | -2,187.4 | 482.8 | 2,649.3 | 2,549.1 | 100.19 | 26.443 | |
| 9,842.5 | 6,683.9 | 6,350.0 | 6,286.2 | 85.3 | 17.6 | 80.06 | -2,187.4 | 482.8 | 2,668.7 | 2,567.4 | 101.28 | 26.349 | |
| 9,900.0 | 6,683.5 | 6,350.0 | 6,286.2 | 86.8 | 17.6 | 80.06 | -2,187.4 | 482.8 | 2,695.7 | 2,593.0 | 102.77 | 26.232 | |
| 9,940.9 | 6,683.3 | 6,350.0 | 6,286.2 | 87.9 | 17.6 | 80.06 | -2,187.4 | 482.8 | 2,715.5 | 2,611.7 | 103.83 | 26.155 | |
| 10,000.0 | 6,682.9 | 6,350.0 | 6,286.2 | 89.5 | 17.6 | 80.06 | -2,187.4 | 482.8 | 2,745.0 | 2,639.6 | 105.36 | 26.054 | |
| 10,039.3 | 6,682.6 | 6,350.0 | 6,286.2 | 90.5 | 17.6 | 80.06 | -2,187.4 | 482.8 | 2,765.1 | 2,658.7 | 106.38 | 25.993 | |
| 10,100.0 | 6,682.2 | 6,332.0 | 6,268.9 | 92.1 | 17.6 | 79.65 | -2,187.4 | 487.9 | 2,796.7 | 2,688.9 | 107.84 | 25.935 | |
| 10,137.8 | 6,682.0 | 6,328.7 | 6,265.7 | 93.1 | 17.6 | 79.57 | -2,187.4 | 488.8 | 2,817.0 | 2,708.2 | 108.80 | 25.891 | |
| 10,200.0 | 6,681.6 | 6,323.6 | 6,260.8 | 94.8 | 17.6 | 79.45 | -2,187.4 | 490.1 | 2,851.0 | 2,740.7 | 110.39 | 25.828 | |
| 10,236.2 | 6,681.4 | 6,320.7 | 6,258.0 | 95.7 | 17.7 | 79.39 | -2,187.4 | 490.8 | 2,871.3 | 2,760.0 | 111.31 | 25.795 | |
| 10,300.0 | 6,680.9 | 6,300.0 | 6,237.9 | 97.4 | 17.7 | 78.91 | -2,187.4 | 495.8 | 2,907.9 | 2,795.0 | 112.83 | 25.773 | |
| 10,334.6 | 6,680.7 | 6,300.0 | 6,237.9 | 98.3 | 17.7 | 78.91 | -2,187.4 | 495.8 | 2,928.0 | 2,814.2 | 113.73 | 25.744 | |
| 10,400.0 | 6,680.3 | 6,300.0 | 6,237.9 | 100.1 | 17.7 | 78.91 | -2,187.4 | 495.8 | 2,966.6 | 2,851.2 | 115.44 | 25.698 | |
| 10,433.0 | 6,680.1 | 6,300.0 | 6,237.9 | 101.0 | 17.7 | 78.91 | -2,187.4 | 495.8 | 2,986.5 | 2,870.2 | 116.31 | 25.677 | |
| 10,500.0 | 6,679.7 | 6,300.0 | 6,237.9 | 102.8 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,027.6 | 2,909.5 | 118.07 | 25.642 | |
| 10,531.5 | 6,679.4 | 6,300.0 | 6,237.9 | 103.6 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,047.2 | 2,928.3 | 118.90 | 25.629 | |
| 10,600.0 | 6,679.0 | 6,300.0 | 6,237.9 | 105.4 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,090.5 | 2,969.8 | 120.70 | 25.605 | |
| 10,629.9 | 6,678.8 | 6,300.0 | 6,237.9 | 106.2 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,109.8 | 2,988.3 | 121.49 | 25.597 | |
| 10,700.0 | 6,678.4 | 6,300.0 | 6,237.9 | 108.1 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,155.4 | 3,032.1 | 123.34 | 25.583 | |
| 10,728.3 | 6,678.2 | 6,300.0 | 6,237.9 | 108.9 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,174.1 | 3,050.1 | 124.09 | 25.580 | |
| 10,800.0 | 6,677.7 | 6,300.0 | 6,237.9 | 110.8 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,222.1 | 3,096.1 | 125.99 | 25.575 | |
| 10,826.7 | 6,677.5 | 6,300.0 | 6,237.9 | 111.5 | 17.7 | 78.91 | -2,187.4 | 495.8 | 3,240.3 | 3,113.6 | 126.69 | 25.575 SF | |
| 10,900.0 | 6,677.1 | 6,279.9 | 6,218.3 | 113.5 | 17.7 | 78.45 | -2,187.4 | 500.1 | 3,290.2 | 3,161.8 | 128.45 | 25.615 | |
| 10,925.2 | 6,676.9 | 6,278.7 | 6,217.1 | 114.2 | 17.7 | 78.42 | -2,187.4 | 500.3 | 3,307.7 | 3,178.6 | 129.10 | 25.620 | |
| 11,000.0 | 6,676.4 | 6,275.2 | 6,213.7 | 116.2 | 17.7 | 78.34 | -2,187.4 | 501.0 | 3,360.1 | 3,229.0 | 131.05 | 25.639 | |
| 11,023.6 | 6,676.3 | 6,274.2 | 6,212.6 | 116.8 | 17.7 | 78.32 | -2,187.4 | 501.2 | 3,376.7 | 3,245.1 | 131.67 | 25.646 | |
| 11,100.0 | 6,675.8 | 6,270.8 | 6,209.3 | 118.9 | 17.7 | 78.24 | -2,187.4 | 501.8 | 3,431.3 | 3,297.7 | 133.66 | 25.671 | |
| 11,122.0 | 6,675.6 | 6,269.9 | 6,208.4 | 119.5 | 17.7 | 78.22 | -2,187.4 | 502.0 | 3,447.2 | 3,313.0 | 134.24 | 25.680 | |
| 11,200.0 | 6,675.1 | 6,250.0 | 6,188.8 | 121.6 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,504.2 | 3,368.1 | 136.10 | 25.747 | |
| 11,220.4 | 6,675.0 | 6,250.0 | 6,188.8 | 122.2 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,519.2 | 3,382.6 | 136.65 | 25.754 | |
| 11,300.0 | 6,674.5 | 6,250.0 | 6,188.8 | 124.3 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,578.1 | 3,439.3 | 138.76 | 25.786 | |
| 11,318.9 | 6,674.3 | 6,250.0 | 6,188.8 | 124.9 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,592.2 | 3,452.9 | 139.26 | 25.794 | |
| 11,400.0 | 6,673.8 | 6,250.0 | 6,188.8 | 127.1 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,653.2 | 3,511.8 | 141.42 | 25.832 | |
| 11,417.3 | 6,673.7 | 6,250.0 | 6,188.8 | 127.5 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,666.3 | 3,524.4 | 141.89 | 25.840 | |
| 11,500.0 | 6,673.2 | 6,250.0 | 6,188.8 | 129.8 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,729.5 | 3,585.4 | 144.09 | 25.883 | |
| 11,515.7 | 6,673.1 | 6,250.0 | 6,188.8 | 130.2 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,741.6 | 3,597.1 | 144.51 | 25.892 | |
| 11,600.0 | 6,672.5 | 6,250.0 | 6,188.8 | 132.5 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,806.9 | 3,660.2 | 146.76 | 25.940 | |
| 11,614.1 | 6,672.4 | 6,250.0 | 6,188.8 | 132.9 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,818.0 | 3,670.8 | 147.14 | 25.948 | |
| 11,700.0 | 6,671.9 | 6,250.0 | 6,188.8 | 135.3 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,885.3 | 3,735.9 | 149.43 | 26.000 | |
| 11,712.6 | 6,671.8 | 6,250.0 | 6,188.8 | 135.6 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,895.3 | 3,745.5 | 149.77 | 26.008 | |
| 11,800.0 | 6,671.2 | 6,250.0 | 6,188.8 | 138.0 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,964.7 | 3,812.6 | 152.11 | 26.065 | |
| 11,811.0 | 6,671.1 | 6,250.0 | 6,188.8 | 138.3 | 17.7 | 77.76 | -2,187.4 | 505.4 | 3,973.5 | 3,821.1 | 152.41 | 26.072 | |
| 11,900.0 | 6,670.6 | 6,250.0 | 6,188.8 | 140.7 | 17.7 | 77.76 | -2,187.4 | 505.4 | 4,045.1 | 3,890.3 | 154.79 | 26.133 | |
| 11,909.4 | 6,670.5 | 6,250.0 | 6,188.8 | 141.0 | 17.7 | 77.76 | -2,187.4 | 505.4 | 4,052.7 | 3,897.6 | 155.04 | 26.139 | |
| 11,987.2 | 6,670.0 | 6,250.0 | 6,188.8 | 143.1 | 17.7 | 77.76 | -2,187.4 | 505.4 | 4,115.8 | 3,958.7 | 157.13 | 26.194 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,946.4 | 0.20 | 9,882.237 | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,946.4 | 0.20 | 9,622.828 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,946.0 | 0.64 | 3,052.715 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,945.9 | 0.65 | 2,986.397 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,945.5 | 1.08 | 1,802.217 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,945.5 | 1.10 | 1,767.460 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,945.1 | 1.52 | 1,278.499 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,945.0 | 1.55 | 1,255.153 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,944.6 | 1.97 | 990.627 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,944.6 | 2.00 | 973.096 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,944.2 | 2.41 | 808.566 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,944.1 | 2.45 | 794.546 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,943.7 | 2.85 | 683.036 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,943.7 | 2.90 | 671.361 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,943.3 | 3.29 | 591.245 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,943.2 | 3.35 | 581.245 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,942.9 | 3.73 | 521.202 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,942.8 | 3.80 | 512.459 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,942.4 | 4.18 | 465.997 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.72 | -1,945.1 | -77.4 | 1,946.6 | 1,942.4 | 4.25 | 458.230 | |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.31 | -1,945.1 | -77.4 | 1,946.7 | 1,942.1 | 4.61 | 422.247 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.33 | -1,945.1 | -77.4 | 1,946.7 | 1,942.0 | 4.69 | 415.417 | |
| 1,181.1 | 1,181.0 | 1,184.0 | 1,184.0 | 2.5 | 2.5 | -93.44 | -1,945.1 | -77.4 | 1,946.9 | 1,941.9 | 5.04 | 386.504 | |
| 1,200.0 | 1,199.8 | 1,202.8 | 1,202.8 | 2.5 | 2.6 | -93.48 | -1,945.1 | -77.4 | 1,947.0 | 1,941.9 | 5.12 | 380.344 | |
| 1,279.5 | 1,279.1 | 1,321.0 | 1,321.0 | 2.7 | 2.8 | -93.79 | -1,944.4 | -76.9 | 1,947.1 | 1,941.5 | 5.56 | 350.242 | |
| 1,300.0 | 1,299.5 | 1,365.9 | 1,365.9 | 2.8 | 2.9 | -93.96 | -1,943.2 | -76.0 | 1,946.7 | 1,941.0 | 5.70 | 341.286 | |
| 1,377.9 | 1,376.9 | 1,535.1 | 1,534.6 | 3.0 | 3.3 | -94.83 | -1,933.9 | -68.7 | 1,943.0 | 1,936.7 | 6.28 | 309.623 | |
| 1,400.0 | 1,398.7 | 1,582.2 | 1,581.5 | 3.0 | 3.4 | -95.14 | -1,929.9 | -65.5 | 1,941.3 | 1,934.9 | 6.44 | 301.543 | |
| 1,476.4 | 1,474.2 | 1,742.5 | 1,740.1 | 3.2 | 3.8 | -96.42 | -1,911.8 | -51.4 | 1,933.7 | 1,926.6 | 7.04 | 274.764 | |
| 1,500.0 | 1,497.5 | 1,790.9 | 1,787.7 | 3.3 | 4.0 | -96.88 | -1,905.0 | -46.0 | 1,930.7 | 1,923.5 | 7.23 | 267.188 | |
| 1,574.8 | 1,571.0 | 1,921.8 | 1,915.7 | 3.5 | 4.4 | -98.33 | -1,883.4 | -29.0 | 1,919.9 | 1,912.0 | 7.82 | 245.391 | |
| 1,600.0 | 1,595.6 | 1,945.2 | 1,938.5 | 3.6 | 4.5 | -98.65 | -1,879.3 | -25.8 | 1,916.1 | 1,908.1 | 7.97 | 240.352 | |
| 1,673.2 | 1,667.0 | 2,012.8 | 2,004.3 | 3.9 | 4.7 | -99.60 | -1,867.2 | -16.3 | 1,905.4 | 1,897.0 | 8.44 | 225.749 | |
| 1,700.0 | 1,693.1 | 2,037.4 | 2,028.2 | 4.0 | 4.8 | -99.96 | -1,862.8 | -12.9 | 1,901.7 | 1,893.1 | 8.61 | 220.777 | |
| 1,771.6 | 1,762.4 | 2,102.6 | 2,091.8 | 4.3 | 5.0 | -100.93 | -1,851.2 | -3.7 | 1,892.2 | 1,883.1 | 9.12 | 207.523 | |
| 1,800.0 | 1,789.6 | 2,128.3 | 2,116.8 | 4.4 | 5.1 | -101.32 | -1,846.6 | -0.1 | 1,888.7 | 1,879.3 | 9.32 | 202.651 | |
| 1,870.1 | 1,856.8 | 2,191.2 | 2,178.1 | 4.7 | 5.4 | -102.30 | -1,835.4 | 8.7 | 1,880.5 | 1,870.6 | 9.86 | 190.644 | |
| 1,900.0 | 1,885.3 | 2,217.9 | 2,204.0 | 4.9 | 5.5 | -102.73 | -1,830.6 | 12.4 | 1,877.2 | 1,867.1 | 10.10 | 185.923 | |
| 1,968.5 | 1,950.2 | 2,278.4 | 2,263.0 | 5.3 | 5.7 | -103.72 | -1,819.9 | 20.9 | 1,870.4 | 1,859.8 | 10.68 | 175.161 | |
| 2,000.0 | 1,979.8 | 2,306.0 | 2,289.8 | 5.5 | 5.8 | -104.18 | -1,814.9 | 24.7 | 1,867.6 | 1,856.7 | 10.95 | 170.634 | |
| 2,044.9 | 2,021.9 | 2,345.1 | 2,327.9 | 5.7 | 6.0 | -104.84 | -1,808.0 | 30.2 | 1,864.0 | 1,852.6 | 11.35 | 164.224 | |
| 2,066.9 | 2,042.5 | 2,364.1 | 2,346.5 | 5.9 | 6.1 | -105.13 | -1,804.6 | 32.9 | 1,862.3 | 1,850.8 | 11.55 | 161.173 | |
| 2,100.0 | 2,073.4 | 2,392.8 | 2,374.4 | 6.1 | 6.2 | -105.57 | -1,799.5 | 36.9 | 1,859.9 | 1,848.1 | 11.86 | 156.793 | |
| 2,165.3 | 2,134.4 | 2,449.4 | 2,429.5 | 6.5 | 6.4 | -106.43 | -1,789.4 | 44.8 | 1,855.7 | 1,843.2 | 12.48 | 148.636 | |
| 2,200.0 | 2,166.8 | 2,479.4 | 2,458.8 | 6.8 | 6.6 | -106.90 | -1,784.0 | 49.0 | 1,853.7 | 1,840.9 | 12.81 | 144.652 | |
| 2,263.8 | 2,226.4 | 2,534.6 | 2,512.6 | 7.2 | 6.8 | -107.75 | -1,774.2 | 56.8 | 1,850.4 | 1,836.9 | 13.43 | 137.731 | |
| 2,300.0 | 2,260.2 | 2,566.0 | 2,543.1 | 7.4 | 6.9 | -108.23 | -1,768.6 | 61.2 | 1,848.7 | 1,835.0 | 13.79 | 134.095 | |
| 2,362.2 | 2,318.3 | 2,619.9 | 2,595.6 | 7.9 | 7.2 | -109.07 | -1,759.0 | 68.7 | 1,846.3 | 1,831.9 | 14.40 | 128.222 | |
| 2,400.0 | 2,353.6 | 2,652.7 | 2,627.5 | 8.1 | 7.3 | -109.57 | -1,753.1 | 73.3 | 1,845.1 | 1,830.4 | 14.77 | 124.909 | |
| 2,460.6 | 2,410.3 | 2,705.2 | 2,678.7 | 8.6 | 7.5 | -110.39 | -1,743.8 | 80.6 | 1,843.6 | 1,828.2 | 15.37 | 119.917 | |
| 2,500.0 | 2,447.0 | 2,739.3 | 2,711.9 | 8.9 | 7.7 | -110.92 | -1,737.7 | 85.4 | 1,842.9 | 1,827.1 | 15.77 | 116.897 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,790.5 | 2,761.7 | 9.3 | 7.9 | -111.71 | -1,728.6 | 92.6 | 1,842.2 | 1,825.8 | 16.35 | 112.642 | |
| 2,600.0 | 2,540.5 | 2,825.9 | 2,796.3 | 9.6 | 8.1 | -112.26 | -1,722.2 | 97.5 | 1,842.0 | 1,825.2 | 16.76 | 109.889 | |
| 2,616.6 | 2,556.0 | 2,840.3 | 2,810.3 | 9.7 | 8.1 | -112.49 | -1,719.7 | 99.6 | 1,842.0 | 1,825.0 | 16.93 | 108.807 | |
| 2,657.5 | 2,594.2 | 2,875.7 | 2,844.8 | 10.0 | 8.3 | -113.04 | -1,713.4 | 104.5 | 1,842.1 | 1,824.7 | 17.34 | 106.253 | |
| 2,700.0 | 2,633.9 | 2,912.6 | 2,880.6 | 10.3 | 8.5 | -113.61 | -1,706.8 | 109.7 | 1,842.4 | 1,824.7 | 17.76 | 103.739 | |
| 2,755.9 | 2,686.1 | 2,961.0 | 2,927.8 | 10.7 | 8.7 | -114.36 | -1,698.2 | 116.5 | 1,843.3 | 1,825.0 | 18.32 | 100.625 | |
| 2,800.0 | 2,727.3 | 2,999.2 | 2,965.0 | 11.0 | 8.9 | -114.95 | -1,691.3 | 121.8 | 1,844.2 | 1,825.5 | 18.76 | 98.326 | |
| 2,854.3 | 2,778.1 | 3,046.3 | 3,010.9 | 11.4 | 9.1 | -115.68 | -1,682.9 | 128.4 | 1,845.8 | 1,826.5 | 19.30 | 95.653 | |
| 2,900.0 | 2,820.7 | 3,085.8 | 3,049.4 | 11.8 | 9.3 | -116.29 | -1,675.9 | 133.9 | 1,847.4 | 1,827.6 | 19.75 | 93.546 | |
| 2,952.7 | 2,870.0 | 3,131.5 | 3,093.9 | 12.2 | 9.5 | -117.00 | -1,667.7 | 140.3 | 1,849.6 | 1,829.3 | 20.27 | 91.249 | |
| 3,000.0 | 2,914.2 | 3,172.5 | 3,133.8 | 12.5 | 9.6 | -117.63 | -1,660.4 | 146.1 | 1,851.9 | 1,831.2 | 20.73 | 89.316 | |
| 3,051.2 | 2,962.0 | 3,216.8 | 3,177.0 | 12.9 | 9.8 | -118.31 | -1,652.5 | 152.3 | 1,854.7 | 1,833.5 | 21.24 | 87.339 | |
| 3,100.0 | 3,007.6 | 3,259.1 | 3,218.2 | 13.3 | 10.0 | -118.96 | -1,645.0 | 158.2 | 1,857.7 | 1,836.0 | 21.71 | 85.564 | |
| 3,149.6 | 3,053.9 | 3,302.1 | 3,260.0 | 13.6 | 10.2 | -119.62 | -1,637.3 | 164.2 | 1,861.1 | 1,838.9 | 22.19 | 83.860 | |
| 3,200.0 | 3,101.0 | 3,345.7 | 3,302.5 | 14.0 | 10.4 | -120.29 | -1,629.6 | 170.3 | 1,864.9 | 1,842.2 | 22.68 | 82.228 | |
| 3,248.0 | 3,145.9 | 3,387.3 | 3,343.1 | 14.4 | 10.6 | -120.92 | -1,622.1 | 176.1 | 1,868.8 | 1,845.6 | 23.14 | 80.759 | |
| 3,300.0 | 3,194.4 | 3,432.4 | 3,386.9 | 14.8 | 10.8 | -121.61 | -1,614.1 | 182.5 | 1,873.3 | 1,849.7 | 23.64 | 79.258 | |
| 3,346.4 | 3,237.8 | 3,472.6 | 3,426.1 | 15.1 | 11.0 | -122.21 | -1,606.9 | 188.1 | 1,877.7 | 1,853.6 | 24.08 | 77.989 | |
| 3,400.0 | 3,287.8 | 3,519.0 | 3,471.3 | 15.5 | 11.2 | -122.91 | -1,598.7 | 194.6 | 1,883.1 | 1,858.5 | 24.58 | 76.609 | |
| 3,444.9 | 3,329.8 | 3,557.9 | 3,509.2 | 15.9 | 11.4 | -123.50 | -1,591.7 | 200.0 | 1,887.8 | 1,862.8 | 25.00 | 75.514 | |
| 3,500.0 | 3,381.3 | 3,605.6 | 3,555.7 | 16.3 | 11.6 | -124.21 | -1,583.2 | 206.7 | 1,894.1 | 1,868.6 | 25.51 | 74.245 | |
| 3,543.3 | 3,421.7 | 3,643.2 | 3,592.2 | 16.6 | 11.8 | -124.77 | -1,576.5 | 212.0 | 1,899.2 | 1,873.3 | 25.91 | 73.300 | |
| 3,600.0 | 3,474.7 | 3,692.3 | 3,640.1 | 17.0 | 12.0 | -125.49 | -1,567.8 | 218.8 | 1,906.3 | 1,879.9 | 26.43 | 72.133 | |
| 3,641.7 | 3,513.7 | 3,728.4 | 3,675.3 | 17.3 | 12.2 | -126.03 | -1,561.3 | 223.9 | 1,911.8 | 1,885.0 | 26.81 | 71.319 | |
| 3,700.0 | 3,568.1 | 3,778.9 | 3,724.4 | 17.8 | 12.4 | -126.76 | -1,552.3 | 231.0 | 1,919.8 | 1,892.5 | 27.33 | 70.245 | |
| 3,740.1 | 3,605.6 | 3,813.7 | 3,758.3 | 18.1 | 12.6 | -127.27 | -1,546.1 | 235.8 | 1,925.5 | 1,897.9 | 27.69 | 69.544 | |
| 3,800.0 | 3,661.5 | 3,865.6 | 3,808.8 | 18.5 | 12.8 | -128.02 | -1,536.9 | 243.1 | 1,934.5 | 1,906.2 | 28.22 | 68.557 | |
| 3,838.6 | 3,697.6 | 3,899.0 | 3,841.4 | 18.8 | 13.0 | -128.50 | -1,530.9 | 247.8 | 1,940.4 | 1,911.9 | 28.55 | 67.955 | |
| 3,900.0 | 3,754.9 | 3,952.2 | 3,893.2 | 19.3 | 13.3 | -129.26 | -1,521.4 | 255.2 | 1,950.3 | 1,921.2 | 29.09 | 67.049 | |
| 3,937.0 | 3,789.5 | 3,984.2 | 3,924.4 | 19.6 | 13.4 | -129.72 | -1,515.7 | 259.7 | 1,956.5 | 1,927.0 | 29.41 | 66.533 | |
| 4,000.0 | 3,848.4 | 4,038.8 | 3,977.6 | 20.1 | 13.7 | -130.49 | -1,506.0 | 267.4 | 1,967.3 | 1,937.3 | 29.94 | 65.703 | |
| 4,035.4 | 3,881.5 | 4,069.5 | 4,007.5 | 20.3 | 13.8 | -130.92 | -1,500.5 | 271.7 | 1,973.6 | 1,943.3 | 30.24 | 65.261 | |
| 4,100.0 | 3,941.8 | 4,125.5 | 4,062.0 | 20.8 | 14.1 | -131.70 | -1,490.5 | 279.5 | 1,985.4 | 1,954.6 | 30.78 | 64.501 | |
| 4,133.8 | 3,973.4 | 4,154.8 | 4,090.5 | 21.1 | 14.2 | -132.10 | -1,485.3 | 283.6 | 1,991.7 | 1,960.7 | 31.06 | 64.125 | |
| 4,200.0 | 4,035.2 | 4,212.1 | 4,146.3 | 21.6 | 14.5 | -132.89 | -1,475.1 | 291.6 | 2,004.5 | 1,972.9 | 31.60 | 63.431 | |
| 4,232.3 | 4,065.4 | 4,240.1 | 4,173.6 | 21.8 | 14.6 | -133.27 | -1,470.1 | 295.5 | 2,011.0 | 1,979.1 | 31.86 | 63.111 | |
| 4,300.0 | 4,128.6 | 4,298.7 | 4,230.7 | 22.3 | 14.9 | -134.06 | -1,459.6 | 303.7 | 2,024.8 | 1,992.4 | 32.41 | 62.479 | |
| 4,330.7 | 4,157.3 | 4,325.3 | 4,256.6 | 22.6 | 15.0 | -134.42 | -1,454.9 | 307.5 | 2,031.2 | 1,998.5 | 32.65 | 62.208 | |
| 4,400.0 | 4,222.0 | 4,385.4 | 4,315.1 | 23.1 | 15.3 | -135.22 | -1,444.2 | 315.9 | 2,046.0 | 2,012.8 | 33.20 | 61.634 | |
| 4,429.1 | 4,249.3 | 4,410.6 | 4,339.7 | 23.3 | 15.4 | -135.55 | -1,439.7 | 319.4 | 2,052.4 | 2,019.0 | 33.42 | 61.406 | |
| 4,500.0 | 4,315.5 | 4,472.0 | 4,399.5 | 23.9 | 15.7 | -136.35 | -1,428.8 | 328.0 | 2,068.2 | 2,034.3 | 33.97 | 60.886 | |
| 4,527.5 | 4,341.2 | 4,495.9 | 4,422.7 | 24.1 | 15.8 | -136.66 | -1,424.5 | 331.3 | 2,074.5 | 2,040.4 | 34.18 | 60.696 | |
| 4,600.0 | 4,408.9 | 4,558.6 | 4,483.9 | 24.6 | 16.1 | -137.47 | -1,413.3 | 340.1 | 2,091.4 | 2,056.7 | 34.73 | 60.227 | |
| 4,626.0 | 4,433.2 | 4,581.1 | 4,505.8 | 24.8 | 16.2 | -137.75 | -1,409.3 | 343.3 | 2,097.6 | 2,062.7 | 34.92 | 60.069 | |
| 4,700.0 | 4,502.3 | 4,645.3 | 4,568.2 | 25.4 | 16.5 | -138.56 | -1,397.9 | 352.3 | 2,115.5 | 2,080.1 | 35.47 | 59.648 | |
| 4,724.4 | 4,525.1 | 4,666.4 | 4,588.8 | 25.6 | 16.6 | -138.83 | -1,394.1 | 355.2 | 2,121.6 | 2,085.9 | 35.65 | 59.518 | |
| 4,800.0 | 4,595.7 | 4,731.9 | 4,652.6 | 26.2 | 16.9 | -139.64 | -1,382.4 | 364.4 | 2,140.5 | 2,104.4 | 36.19 | 59.143 | |
| 4,822.8 | 4,617.1 | 4,751.7 | 4,671.9 | 26.3 | 17.0 | -139.88 | -1,378.9 | 367.2 | 2,146.4 | 2,110.0 | 36.36 | 59.037 | |
| 4,900.0 | 4,689.2 | 4,818.5 | 4,737.0 | 26.9 | 17.3 | -140.69 | -1,367.0 | 376.5 | 2,166.4 | 2,129.5 | 36.90 | 58.704 | |
| 4,921.2 | 4,709.0 | 4,836.9 | 4,754.9 | 27.1 | 17.4 | -140.92 | -1,363.7 | 379.1 | 2,172.0 | 2,135.0 | 37.05 | 58.618 | |
| 5,000.0 | 4,782.6 | 4,905.2 | 4,821.4 | 27.7 | 17.7 | -141.73 | -1,351.5 | 388.7 | 2,193.1 | 2,155.5 | 37.60 | 58.326 | |
| 5,019.7 | 4,801.0 | 4,922.2 | 4,838.0 | 27.8 | 17.8 | -141.93 | -1,348.5 | 391.0 | 2,198.5 | 2,160.7 | 37.74 | 58.258 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,991.8 | 4,905.8 | 28.4 | 18.2 | -142.74 | -1,336.1 | 400.8 | 2,220.6 | 2,182.3 | 38.28 | 58.003 | |
| 5,118.1 | 4,892.9 | 5,007.5 | 4,921.0 | 28.6 | 18.2 | -142.93 | -1,333.3 | 403.0 | 2,225.7 | 2,187.3 | 38.41 | 57.950 | |
| 5,159.9 | 4,932.0 | 8,308.2 | 6,711.1 | 28.9 | 46.6 | -119.64 | -1,202.3 | -1,295.0 | 2,217.8 | 2,149.9 | 67.91 | 32.659 | |
| 5,200.0 | 4,969.5 | 8,322.2 | 6,711.1 | 29.2 | 46.9 | -118.45 | -1,202.3 | -1,309.0 | 2,188.7 | 2,119.6 | 69.05 | 31.695 | |
| 5,216.5 | 4,985.1 | 8,327.8 | 6,711.1 | 29.3 | 47.1 | -117.95 | -1,202.3 | -1,314.6 | 2,176.7 | 2,107.2 | 69.50 | 31.318 | |
| 5,300.0 | 5,064.0 | 8,354.7 | 6,711.0 | 29.7 | 47.8 | -115.48 | -1,202.3 | -1,341.5 | 2,116.4 | 2,044.7 | 71.70 | 29.518 | |
| 5,314.9 | 5,078.2 | 8,359.2 | 6,711.0 | 29.8 | 47.9 | -115.04 | -1,202.3 | -1,346.0 | 2,105.6 | 2,033.5 | 72.07 | 29.216 | |
| 5,400.0 | 5,159.6 | 8,383.8 | 6,711.0 | 30.2 | 48.5 | -112.56 | -1,202.3 | -1,370.6 | 2,044.8 | 1,970.7 | 74.10 | 27.594 | |
| 5,413.4 | 5,172.4 | 8,387.5 | 6,711.0 | 30.3 | 48.6 | -112.18 | -1,202.3 | -1,374.3 | 2,035.4 | 1,961.0 | 74.40 | 27.356 | |
| 5,500.0 | 5,256.1 | 8,409.7 | 6,711.0 | 30.7 | 49.2 | -109.75 | -1,202.3 | -1,396.5 | 1,974.4 | 1,898.2 | 76.25 | 25.896 | |
| 5,511.8 | 5,267.6 | 8,412.5 | 6,711.0 | 30.7 | 49.3 | -109.43 | -1,202.3 | -1,399.3 | 1,966.2 | 1,889.7 | 76.48 | 25.710 | |
| 5,600.0 | 5,353.5 | 8,432.1 | 6,711.0 | 31.1 | 49.8 | -107.07 | -1,202.3 | -1,418.9 | 1,905.5 | 1,827.4 | 78.10 | 24.397 | |
| 5,610.2 | 5,363.5 | 8,434.2 | 6,711.0 | 31.1 | 49.9 | -106.81 | -1,202.3 | -1,421.1 | 1,898.5 | 1,820.3 | 78.27 | 24.255 | |
| 5,700.0 | 5,451.6 | 8,451.2 | 6,711.0 | 31.4 | 50.3 | -104.57 | -1,202.3 | -1,438.0 | 1,838.4 | 1,758.7 | 79.67 | 23.076 | |
| 5,708.6 | 5,460.2 | 8,452.7 | 6,711.0 | 31.4 | 50.3 | -104.36 | -1,202.3 | -1,439.5 | 1,832.7 | 1,752.9 | 79.79 | 22.970 | |
| 5,800.0 | 5,550.4 | 8,466.9 | 6,710.9 | 31.7 | 50.7 | -102.27 | -1,202.3 | -1,453.7 | 1,773.5 | 1,692.6 | 80.94 | 21.911 | |
| 5,807.1 | 5,557.4 | 8,467.8 | 6,710.9 | 31.7 | 50.7 | -102.12 | -1,202.3 | -1,454.6 | 1,769.0 | 1,688.0 | 81.02 | 21.835 | |
| 5,900.0 | 5,649.6 | 8,479.1 | 6,710.9 | 31.9 | 51.0 | -100.21 | -1,202.3 | -1,465.9 | 1,711.4 | 1,629.4 | 81.94 | 20.885 | |
| 5,905.5 | 5,655.1 | 8,479.6 | 6,710.9 | 31.9 | 51.1 | -100.10 | -1,202.3 | -1,466.5 | 1,708.0 | 1,626.0 | 81.99 | 20.833 | |
| 6,000.0 | 5,749.2 | 8,487.8 | 6,710.9 | 32.1 | 51.3 | -98.40 | -1,202.3 | -1,474.6 | 1,652.3 | 1,569.6 | 82.68 | 19.983 | |
| 6,003.9 | 5,753.1 | 8,488.1 | 6,710.9 | 32.1 | 51.3 | -98.33 | -1,202.3 | -1,474.9 | 1,650.1 | 1,567.4 | 82.71 | 19.951 | |
| 6,100.0 | 5,849.1 | 8,493.1 | 6,710.9 | 32.3 | 51.4 | -96.85 | -1,202.3 | -1,479.9 | 1,596.9 | 1,513.7 | 83.19 | 19.195 | |
| 6,102.3 | 5,851.4 | 8,493.2 | 6,710.9 | 32.3 | 51.4 | -96.82 | -1,202.3 | -1,480.0 | 1,595.6 | 1,512.4 | 83.20 | 19.178 | |
| 6,200.8 | 5,949.8 | 8,494.9 | 6,710.9 | 32.4 | 51.5 | -95.58 | -1,202.3 | -1,481.7 | 1,545.2 | 1,461.7 | 83.49 | 18.507 | |
| 6,204.9 | 5,953.9 | 8,494.9 | 6,710.9 | 32.4 | 51.5 | -179.97 | -1,202.3 | -1,481.7 | 1,543.2 | 1,507.1 | 36.09 | 42.765 | |
| 6,234.9 | 5,983.9 | 8,494.9 | 6,710.9 | 32.4 | 51.5 | -179.97 | -1,202.3 | -1,481.7 | 1,528.8 | 1,492.6 | 36.13 | 42.311 | |
| 6,250.0 | 5,999.0 | 8,494.7 | 6,710.9 | 32.4 | 51.5 | 90.66 | -1,202.3 | -1,481.6 | 1,521.7 | 1,438.1 | 83.60 | 18.202 | |
| 6,299.2 | 6,048.2 | 8,492.0 | 6,710.9 | 32.4 | 51.4 | 92.54 | -1,202.3 | -1,478.8 | 1,499.4 | 1,415.7 | 83.69 | 17.915 | |
| 6,300.0 | 6,048.9 | 8,491.9 | 6,710.9 | 32.4 | 51.4 | 92.57 | -1,202.3 | -1,478.7 | 1,499.1 | 1,415.4 | 83.69 | 17.911 | |
| 6,350.0 | 6,098.5 | 8,485.6 | 6,710.9 | 32.4 | 51.2 | 94.17 | -1,202.3 | -1,472.4 | 1,477.9 | 1,394.4 | 83.58 | 17.683 | |
| 6,397.6 | 6,145.3 | 8,476.4 | 6,710.9 | 32.3 | 51.0 | 95.40 | -1,202.3 | -1,463.2 | 1,459.3 | 1,376.0 | 83.30 | 17.518 | |
| 6,400.0 | 6,147.6 | 8,475.8 | 6,710.9 | 32.3 | 51.0 | 95.45 | -1,202.3 | -1,462.6 | 1,458.4 | 1,375.1 | 83.29 | 17.510 | |
| 6,450.0 | 6,195.8 | 8,462.7 | 6,711.0 | 32.2 | 50.6 | 96.44 | -1,202.3 | -1,449.5 | 1,440.6 | 1,357.7 | 82.85 | 17.388 | |
| 6,496.0 | 6,239.3 | 8,447.6 | 6,711.0 | 32.1 | 50.2 | 97.09 | -1,202.3 | -1,434.4 | 1,425.7 | 1,343.3 | 82.33 | 17.316 | |
| 6,500.0 | 6,243.0 | 8,446.2 | 6,711.0 | 32.1 | 50.2 | 97.14 | -1,202.3 | -1,433.0 | 1,424.5 | 1,342.2 | 82.29 | 17.311 | |
| 6,550.0 | 6,289.0 | 8,426.4 | 6,711.0 | 32.0 | 49.7 | 97.57 | -1,202.3 | -1,413.2 | 1,410.1 | 1,328.5 | 81.62 | 17.278 SF | |
| 6,594.5 | 6,328.6 | 8,406.2 | 6,711.0 | 31.8 | 49.1 | 97.74 | -1,202.3 | -1,393.0 | 1,398.9 | 1,317.9 | 80.95 | 17.282 | |
| 6,600.0 | 6,333.4 | 8,403.5 | 6,711.0 | 31.8 | 49.1 | 97.74 | -1,202.3 | -1,390.3 | 1,397.6 | 1,316.7 | 80.86 | 17.284 | |
| 6,650.0 | 6,376.2 | 8,377.6 | 6,711.0 | 31.7 | 48.4 | 97.70 | -1,202.3 | -1,364.4 | 1,386.7 | 1,306.7 | 80.03 | 17.329 | |
| 6,692.9 | 6,411.3 | 8,353.0 | 6,711.0 | 31.6 | 47.7 | 97.50 | -1,202.3 | -1,339.8 | 1,378.8 | 1,299.5 | 79.26 | 17.395 | |
| 6,700.0 | 6,417.0 | 8,348.7 | 6,711.0 | 31.5 | 47.6 | 97.46 | -1,202.3 | -1,335.5 | 1,377.5 | 1,298.4 | 79.13 | 17.409 | |
| 6,750.0 | 6,455.7 | 8,317.1 | 6,711.1 | 31.4 | 46.8 | 97.05 | -1,202.3 | -1,303.9 | 1,369.9 | 1,291.7 | 78.17 | 17.525 | |
| 6,791.3 | 6,486.0 | 8,288.9 | 6,711.1 | 31.3 | 46.1 | 96.60 | -1,202.3 | -1,275.8 | 1,364.6 | 1,287.3 | 77.34 | 17.644 | |
| 6,800.0 | 6,492.2 | 8,282.8 | 6,711.1 | 31.3 | 45.9 | 96.50 | -1,202.3 | -1,269.6 | 1,363.7 | 1,286.5 | 77.17 | 17.672 | |
| 6,850.0 | 6,526.1 | 8,246.1 | 6,711.1 | 31.2 | 45.0 | 95.85 | -1,202.3 | -1,232.9 | 1,358.7 | 1,282.6 | 76.13 | 17.848 | |
| 6,889.7 | 6,551.2 | 8,215.3 | 6,711.2 | 31.2 | 44.2 | 95.28 | -1,202.3 | -1,202.1 | 1,355.6 | 1,280.3 | 75.28 | 18.007 | |
| 6,900.0 | 6,557.4 | 8,207.1 | 6,711.2 | 31.2 | 44.0 | 95.13 | -1,202.3 | -1,193.9 | 1,354.9 | 1,279.8 | 75.05 | 18.052 | |
| 6,950.0 | 6,586.0 | 8,166.0 | 6,711.2 | 31.1 | 42.9 | 94.37 | -1,202.3 | -1,152.8 | 1,352.0 | 1,278.0 | 73.97 | 18.277 | |
| 6,988.2 | 6,605.8 | 8,133.4 | 6,711.2 | 31.2 | 42.1 | 93.78 | -1,202.3 | -1,120.2 | 1,350.3 | 1,277.2 | 73.14 | 18.461 | |
| 7,000.0 | 6,611.5 | 8,123.1 | 6,711.2 | 31.2 | 41.8 | 93.60 | -1,202.3 | -1,109.9 | 1,349.9 | 1,277.0 | 72.88 | 18.522 | |
| 7,050.0 | 6,634.1 | 8,078.4 | 6,711.3 | 31.2 | 40.7 | 92.87 | -1,202.3 | -1,065.2 | 1,348.5 | 1,276.7 | 71.80 | 18.780 ES | |
| 7,086.6 | 6,648.6 | 8,044.8 | 6,711.3 | 31.3 | 39.9 | 92.36 | -1,202.3 | -1,031.6 | 1,347.8 | 1,276.7 | 71.03 | 18.974 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 8,032.3 | 6,711.3 | 31.4 | 39.5 | 92.18 | -1,202.3 | -1,019.1 | 1,347.6 | 1,276.8 | 70.75 | 19.048 | |
| 7,150.0 | 6,669.5 | 7,985.0 | 6,711.4 | 31.6 | 38.4 | 91.58 | -1,202.3 | -971.8 | 1,347.0 | 1,277.3 | 69.72 | 19.320 | |
| 7,185.0 | 6,678.8 | 7,951.2 | 6,711.4 | 31.7 | 37.5 | 91.22 | -1,202.3 | -938.0 | 1,346.8 | 1,277.7 | 69.04 | 19.508 | |
| 7,200.0 | 6,682.3 | 7,936.6 | 6,711.4 | 31.8 | 37.2 | 91.08 | -1,202.3 | -923.4 | 1,346.7 | 1,278.0 | 68.74 | 19.590 | |
| 7,250.0 | 6,691.6 | 7,887.5 | 6,711.4 | 32.1 | 36.0 | 90.71 | -1,202.3 | -874.3 | 1,346.6 | 1,278.7 | 67.81 | 19.857 | |
| 7,283.4 | 6,696.0 | 7,854.3 | 6,711.5 | 32.3 | 35.2 | 90.53 | -1,202.3 | -841.1 | 1,346.5 | 1,279.3 | 67.23 | 20.028 | |
| 7,300.0 | 6,697.5 | 7,837.9 | 6,711.5 | 32.4 | 34.8 | 90.46 | -1,202.3 | -824.7 | 1,346.5 | 1,279.6 | 66.94 | 20.114 | |
| 7,350.0 | 6,699.9 | 7,787.9 | 6,711.5 | 32.8 | 33.6 | 90.36 | -1,202.3 | -774.7 | 1,346.5 | 1,280.4 | 66.13 | 20.362 | |
| 7,358.8 | 6,700.0 | 7,779.1 | 6,711.5 | 32.9 | 33.3 | 90.36 | -1,202.3 | -765.9 | 1,346.5 | 1,280.5 | 65.99 | 20.403 | |
| 7,364.4 | 6,700.0 | 7,773.5 | 6,711.5 | 32.9 | 33.2 | 90.36 | -1,202.3 | -760.3 | 1,346.5 | 1,280.6 | 65.91 | 20.429 | |
| 7,381.9 | 6,699.9 | 7,756.0 | 6,711.6 | 33.1 | 32.8 | 90.37 | -1,202.3 | -742.9 | 1,346.5 | 1,280.8 | 65.65 | 20.509 | |
| 7,400.0 | 6,699.8 | 7,737.9 | 6,711.6 | 33.2 | 32.4 | 90.37 | -1,202.3 | -724.7 | 1,346.5 | 1,281.1 | 65.39 | 20.593 | |
| 7,480.3 | 6,699.2 | 7,657.6 | 6,711.6 | 34.0 | 30.5 | 90.40 | -1,202.3 | -644.4 | 1,346.5 | 1,282.1 | 64.36 | 20.922 | |
| 7,500.0 | 6,699.1 | 7,637.9 | 6,711.7 | 34.2 | 30.1 | 90.41 | -1,202.3 | -624.7 | 1,346.5 | 1,282.4 | 64.11 | 21.002 | |
| 7,578.7 | 6,698.6 | 7,559.2 | 6,711.7 | 35.2 | 28.3 | 90.43 | -1,202.3 | -546.0 | 1,346.5 | 1,283.2 | 63.33 | 21.262 | |
| 7,600.0 | 6,698.5 | 7,537.9 | 6,711.7 | 35.4 | 27.8 | 90.44 | -1,202.3 | -524.7 | 1,346.5 | 1,283.4 | 63.13 | 21.329 | |
| 7,677.1 | 6,698.0 | 7,460.8 | 6,711.8 | 36.5 | 26.2 | 90.46 | -1,202.3 | -447.6 | 1,346.5 | 1,283.9 | 62.59 | 21.514 | |
| 7,700.0 | 6,697.8 | 7,437.9 | 6,711.8 | 36.8 | 25.7 | 90.47 | -1,202.3 | -424.7 | 1,346.5 | 1,284.1 | 62.44 | 21.564 | |
| 7,775.6 | 6,697.3 | 7,362.4 | 6,711.9 | 38.0 | 24.2 | 90.49 | -1,202.3 | -349.2 | 1,346.5 | 1,284.4 | 62.14 | 21.668 | |
| 7,800.0 | 6,697.2 | 7,337.9 | 6,711.9 | 38.3 | 23.7 | 90.50 | -1,202.3 | -324.7 | 1,346.5 | 1,284.4 | 62.07 | 21.695 | |
| 7,874.0 | 6,696.7 | 7,263.9 | 6,712.0 | 39.6 | 22.4 | 90.52 | -1,202.3 | -250.7 | 1,346.5 | 1,284.5 | 62.00 | 21.717 | |
| 7,900.0 | 6,696.5 | 7,237.9 | 6,712.0 | 40.0 | 22.0 | 90.53 | -1,202.3 | -224.7 | 1,346.5 | 1,284.5 | 62.00 | 21.716 | |
| 7,972.4 | 6,696.1 | 7,164.6 | 6,709.6 | 41.3 | 21.0 | 90.45 | -1,202.3 | -151.4 | 1,346.5 | 1,284.3 | 62.17 | 21.657 | |
| 8,000.0 | 6,695.9 | 7,136.8 | 6,706.8 | 41.8 | 20.8 | 90.34 | -1,202.3 | -123.8 | 1,346.5 | 1,284.2 | 62.27 | 21.623 | |
| 8,052.5 | 6,695.5 | 7,084.5 | 6,698.6 | 42.8 | 20.6 | 90.00 | -1,202.3 | -72.2 | 1,346.5 | 1,283.9 | 62.57 | 21.519 | CC |
| 8,070.8 | 6,695.4 | 7,066.6 | 6,694.9 | 43.1 | 20.6 | 89.85 | -1,202.3 | -54.7 | 1,346.5 | 1,283.8 | 62.70 | 21.476 | |
| 8,100.0 | 6,695.2 | 7,038.5 | 6,688.2 | 43.7 | 20.6 | 89.57 | -1,202.3 | -27.4 | 1,346.5 | 1,283.6 | 62.91 | 21.402 | |
| 8,169.3 | 6,694.8 | 6,974.1 | 6,669.0 | 45.1 | 20.6 | 88.77 | -1,202.3 | 34.1 | 1,346.8 | 1,283.2 | 63.62 | 21.170 | |
| 8,200.0 | 6,694.6 | 6,946.7 | 6,659.2 | 45.7 | 20.7 | 88.36 | -1,202.3 | 59.6 | 1,347.1 | 1,283.1 | 63.97 | 21.059 | |
| 8,267.7 | 6,694.1 | 6,889.3 | 6,635.4 | 47.1 | 20.8 | 87.37 | -1,202.3 | 111.9 | 1,348.2 | 1,283.3 | 64.90 | 20.772 | |
| 8,300.0 | 6,693.9 | 6,863.4 | 6,623.4 | 47.8 | 20.8 | 86.86 | -1,202.3 | 134.8 | 1,349.1 | 1,283.7 | 65.39 | 20.632 | |
| 8,366.1 | 6,693.5 | 6,813.4 | 6,597.8 | 49.2 | 20.9 | 85.79 | -1,202.3 | 177.7 | 1,351.6 | 1,285.1 | 66.48 | 20.330 | |
| 8,400.0 | 6,693.3 | 6,789.4 | 6,584.4 | 49.9 | 21.0 | 85.23 | -1,202.3 | 197.7 | 1,353.3 | 1,286.3 | 67.07 | 20.179 | |
| 8,464.5 | 6,692.9 | 6,750.0 | 6,561.1 | 51.4 | 21.0 | 84.25 | -1,202.3 | 229.4 | 1,357.7 | 1,289.4 | 68.26 | 19.888 | |
| 8,500.0 | 6,692.6 | 6,724.5 | 6,545.1 | 52.1 | 21.1 | 83.59 | -1,202.3 | 249.3 | 1,360.7 | 1,291.8 | 68.92 | 19.744 | |
| 8,563.0 | 6,692.2 | 6,688.0 | 6,521.0 | 53.6 | 21.2 | 82.58 | -1,202.3 | 276.6 | 1,367.3 | 1,297.1 | 70.14 | 19.494 | |
| 8,600.0 | 6,692.0 | 6,668.1 | 6,507.2 | 54.4 | 21.2 | 82.01 | -1,202.3 | 291.1 | 1,371.9 | 1,301.0 | 70.87 | 19.359 | |
| 8,661.4 | 6,691.6 | 6,637.2 | 6,485.1 | 55.8 | 21.3 | 81.10 | -1,202.3 | 312.7 | 1,380.9 | 1,308.8 | 72.10 | 19.153 | |
| 8,700.0 | 6,691.3 | 6,619.1 | 6,471.7 | 56.7 | 21.3 | 80.54 | -1,202.3 | 324.9 | 1,387.5 | 1,314.6 | 72.88 | 19.039 | |
| 8,759.8 | 6,690.9 | 6,600.0 | 6,457.3 | 58.1 | 21.4 | 79.95 | -1,202.3 | 337.4 | 1,399.1 | 1,325.0 | 74.15 | 18.870 | |
| 8,800.0 | 6,690.7 | 6,576.5 | 6,439.1 | 59.1 | 21.4 | 79.21 | -1,202.3 | 352.2 | 1,407.9 | 1,333.0 | 74.93 | 18.790 | |
| 8,858.2 | 6,690.3 | 6,550.0 | 6,418.0 | 60.5 | 21.5 | 78.35 | -1,202.3 | 368.2 | 1,422.0 | 1,345.9 | 76.10 | 18.686 | |
| 8,900.0 | 6,690.0 | 6,539.5 | 6,409.4 | 61.5 | 21.5 | 78.00 | -1,202.3 | 374.4 | 1,433.2 | 1,356.2 | 77.00 | 18.613 | |
| 8,956.7 | 6,689.7 | 6,520.6 | 6,393.9 | 62.9 | 21.5 | 77.37 | -1,202.3 | 385.0 | 1,449.8 | 1,371.6 | 78.19 | 18.541 | |
| 9,000.0 | 6,689.4 | 6,500.0 | 6,376.6 | 63.9 | 21.6 | 76.68 | -1,202.3 | 396.3 | 1,463.6 | 1,384.6 | 79.04 | 18.518 | |
| 9,055.1 | 6,689.0 | 6,500.0 | 6,376.6 | 65.3 | 21.6 | 76.68 | -1,202.3 | 396.3 | 1,482.5 | 1,402.1 | 80.36 | 18.448 | |
| 9,100.0 | 6,688.7 | 6,478.7 | 6,358.4 | 66.4 | 21.6 | 75.95 | -1,202.3 | 407.3 | 1,498.9 | 1,417.7 | 81.22 | 18.454 | |
| 9,153.5 | 6,688.4 | 6,464.9 | 6,346.4 | 67.7 | 21.6 | 75.47 | -1,202.3 | 414.2 | 1,519.8 | 1,437.4 | 82.37 | 18.450 | |
| 9,200.0 | 6,688.1 | 6,450.0 | 6,333.3 | 68.9 | 21.7 | 74.95 | -1,202.3 | 421.3 | 1,539.0 | 1,455.7 | 83.32 | 18.470 | |
| 9,251.9 | 6,687.8 | 6,450.0 | 6,333.3 | 70.2 | 21.7 | 74.95 | -1,202.3 | 421.3 | 1,561.7 | 1,477.1 | 84.59 | 18.463 | |
| 9,300.0 | 6,687.4 | 6,431.4 | 6,316.8 | 71.4 | 21.7 | 74.30 | -1,202.3 | 429.9 | 1,583.7 | 1,498.2 | 85.53 | 18.517 | |
| 9,350.4 | 6,687.1 | 6,421.1 | 6,307.6 | 72.7 | 21.7 | 73.94 | -1,202.3 | 434.5 | 1,607.9 | 1,521.2 | 86.62 | 18.561 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 6,686.8 | 6,400.0 | 6,288.5 | 73.9 | 21.8 | 73.19 | -1,202.3 | 443.3 | 1,632.8 | 1,545.3 | 87.55 | 18.651 | |
| 9,448.8 | 6,686.5 | 6,400.0 | 6,288.5 | 75.2 | 21.8 | 73.19 | -1,202.3 | 443.3 | 1,658.1 | 1,569.4 | 88.74 | 18.685 | |
| 9,500.0 | 6,686.1 | 6,400.0 | 6,288.5 | 76.5 | 21.8 | 73.19 | -1,202.3 | 443.3 | 1,685.8 | 1,595.8 | 90.00 | 18.732 | |
| 9,547.2 | 6,685.8 | 6,400.0 | 6,288.5 | 77.7 | 21.8 | 73.19 | -1,202.3 | 443.3 | 1,712.3 | 1,621.1 | 91.16 | 18.783 | |
| 9,600.0 | 6,685.5 | 6,377.8 | 6,268.0 | 79.0 | 21.8 | 72.40 | -1,202.3 | 452.1 | 1,742.6 | 1,650.4 | 92.12 | 18.916 | |
| 9,645.6 | 6,685.2 | 6,371.0 | 6,261.8 | 80.2 | 21.8 | 72.16 | -1,202.3 | 454.7 | 1,769.6 | 1,676.5 | 93.14 | 19.000 | |
| 9,700.0 | 6,684.8 | 6,350.0 | 6,242.1 | 81.6 | 21.8 | 71.41 | -1,202.3 | 462.2 | 1,802.9 | 1,708.8 | 94.12 | 19.155 | |
| 9,744.1 | 6,684.6 | 6,350.0 | 6,242.1 | 82.8 | 21.8 | 71.41 | -1,202.3 | 462.2 | 1,830.4 | 1,735.2 | 95.21 | 19.224 | |
| 9,800.0 | 6,684.2 | 6,350.0 | 6,242.1 | 84.2 | 21.8 | 71.41 | -1,202.3 | 462.2 | 1,866.2 | 1,769.6 | 96.60 | 19.319 | |
| 9,842.5 | 6,683.9 | 6,350.0 | 6,242.1 | 85.3 | 21.8 | 71.41 | -1,202.3 | 462.2 | 1,894.0 | 1,796.3 | 97.65 | 19.395 | |
| 9,900.0 | 6,683.5 | 6,350.0 | 6,242.1 | 86.8 | 21.8 | 71.41 | -1,202.3 | 462.2 | 1,932.5 | 1,833.4 | 99.08 | 19.504 | |
| 9,940.9 | 6,683.3 | 6,350.0 | 6,242.1 | 87.9 | 21.8 | 71.41 | -1,202.3 | 462.2 | 1,960.5 | 1,860.4 | 100.11 | 19.584 | |
| 10,000.0 | 6,682.9 | 6,327.4 | 6,220.8 | 89.5 | 21.8 | 70.60 | -1,202.3 | 469.6 | 2,001.3 | 1,900.1 | 101.14 | 19.787 | |
| 10,039.3 | 6,682.6 | 6,323.3 | 6,216.9 | 90.5 | 21.8 | 70.45 | -1,202.3 | 470.9 | 2,029.0 | 1,927.0 | 102.04 | 19.885 | |
| 10,100.0 | 6,682.2 | 6,317.4 | 6,211.3 | 92.1 | 21.8 | 70.24 | -1,202.3 | 472.7 | 2,072.5 | 1,969.1 | 103.43 | 20.038 | |
| 10,137.8 | 6,682.0 | 6,300.0 | 6,194.6 | 93.1 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,100.1 | 1,996.1 | 104.00 | 20.193 | |
| 10,200.0 | 6,681.6 | 6,300.0 | 6,194.6 | 94.8 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,145.9 | 2,040.4 | 105.55 | 20.330 | |
| 10,236.2 | 6,681.4 | 6,300.0 | 6,194.6 | 95.7 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,173.0 | 2,066.5 | 106.46 | 20.411 | |
| 10,300.0 | 6,680.9 | 6,300.0 | 6,194.6 | 97.4 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,221.2 | 2,113.2 | 108.05 | 20.557 | |
| 10,334.6 | 6,680.7 | 6,300.0 | 6,194.6 | 98.3 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,247.8 | 2,138.8 | 108.92 | 20.636 | |
| 10,400.0 | 6,680.3 | 6,300.0 | 6,194.6 | 100.1 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,298.4 | 2,187.9 | 110.56 | 20.789 | |
| 10,433.0 | 6,680.1 | 6,300.0 | 6,194.6 | 101.0 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,324.3 | 2,212.9 | 111.39 | 20.866 | |
| 10,500.0 | 6,679.7 | 6,300.0 | 6,194.6 | 102.8 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,377.3 | 2,264.2 | 113.08 | 21.024 | |
| 10,531.5 | 6,679.4 | 6,300.0 | 6,194.6 | 103.6 | 21.9 | 69.62 | -1,202.3 | 477.7 | 2,402.5 | 2,288.6 | 113.87 | 21.098 | |
| 10,600.0 | 6,679.0 | 6,277.7 | 6,173.1 | 105.4 | 21.9 | 68.82 | -1,202.3 | 483.6 | 2,457.3 | 2,342.3 | 115.04 | 21.360 | |
| 10,629.9 | 6,678.8 | 6,275.7 | 6,171.2 | 106.2 | 21.9 | 68.75 | -1,202.3 | 484.1 | 2,481.6 | 2,365.9 | 115.74 | 21.440 | |
| 10,700.0 | 6,678.4 | 6,271.4 | 6,167.0 | 108.1 | 21.9 | 68.59 | -1,202.3 | 485.1 | 2,538.9 | 2,421.5 | 117.39 | 21.627 | |
| 10,728.3 | 6,678.2 | 6,269.6 | 6,165.3 | 108.9 | 21.9 | 68.53 | -1,202.3 | 485.5 | 2,562.2 | 2,444.2 | 118.06 | 21.703 | |
| 10,800.0 | 6,677.7 | 6,250.0 | 6,146.2 | 110.8 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,621.9 | 2,502.5 | 119.33 | 21.972 | |
| 10,826.7 | 6,677.5 | 6,250.0 | 6,146.2 | 111.5 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,644.2 | 2,524.2 | 120.00 | 22.034 | |
| 10,900.0 | 6,677.1 | 6,250.0 | 6,146.2 | 113.5 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,705.7 | 2,583.8 | 121.84 | 22.206 | |
| 10,925.2 | 6,676.9 | 6,250.0 | 6,146.2 | 114.2 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,726.9 | 2,604.4 | 122.48 | 22.265 | |
| 11,000.0 | 6,676.4 | 6,250.0 | 6,146.2 | 116.2 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,790.5 | 2,666.2 | 124.36 | 22.439 | |
| 11,023.6 | 6,676.3 | 6,250.0 | 6,146.2 | 116.8 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,810.7 | 2,685.7 | 124.95 | 22.494 | |
| 11,100.0 | 6,675.8 | 6,250.0 | 6,146.2 | 118.9 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,876.3 | 2,749.5 | 126.88 | 22.670 | |
| 11,122.0 | 6,675.6 | 6,250.0 | 6,146.2 | 119.5 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,895.4 | 2,767.9 | 127.44 | 22.720 | |
| 11,200.0 | 6,675.1 | 6,250.0 | 6,146.2 | 121.6 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,963.1 | 2,833.6 | 129.40 | 22.898 | |
| 11,220.4 | 6,675.0 | 6,250.0 | 6,146.2 | 122.2 | 21.9 | 67.83 | -1,202.3 | 489.9 | 2,980.9 | 2,851.0 | 129.92 | 22.944 | |
| 11,300.0 | 6,674.5 | 6,250.0 | 6,146.2 | 124.3 | 21.9 | 67.83 | -1,202.3 | 489.9 | 3,050.6 | 2,918.6 | 131.93 | 23.122 | |
| 11,318.9 | 6,674.3 | 6,250.0 | 6,146.2 | 124.9 | 21.9 | 67.83 | -1,202.3 | 489.9 | 3,067.2 | 2,934.8 | 132.41 | 23.164 | |
| 11,400.0 | 6,673.8 | 6,250.0 | 6,146.2 | 127.1 | 21.9 | 67.83 | -1,202.3 | 489.9 | 3,138.9 | 3,004.4 | 134.47 | 23.343 | |
| 11,417.3 | 6,673.7 | 6,250.0 | 6,146.2 | 127.5 | 21.9 | 67.83 | -1,202.3 | 489.9 | 3,154.2 | 3,019.3 | 134.91 | 23.381 | |
| 11,500.0 | 6,673.2 | 6,250.0 | 6,146.2 | 129.8 | 21.9 | 67.83 | -1,202.3 | 489.9 | 3,227.8 | 3,090.8 | 137.00 | 23.560 | |
| 11,515.7 | 6,673.1 | 6,250.0 | 6,146.2 | 130.2 | 21.9 | 67.83 | -1,202.3 | 489.9 | 3,241.9 | 3,104.5 | 137.40 | 23.594 | |
| 11,600.0 | 6,672.5 | 6,229.1 | 6,125.7 | 132.5 | 21.9 | 67.09 | -1,202.3 | 494.0 | 3,317.1 | 3,178.2 | 138.85 | 23.889 | |
| 11,614.1 | 6,672.4 | 6,228.6 | 6,125.2 | 132.9 | 21.9 | 67.07 | -1,202.3 | 494.1 | 3,329.8 | 3,190.6 | 139.19 | 23.922 | |
| 11,700.0 | 6,671.9 | 6,225.6 | 6,122.3 | 135.3 | 21.9 | 66.96 | -1,202.3 | 494.6 | 3,407.1 | 3,265.8 | 141.26 | 24.119 | |
| 11,712.6 | 6,671.8 | 6,225.2 | 6,121.8 | 135.6 | 21.9 | 66.95 | -1,202.3 | 494.7 | 3,418.5 | 3,276.9 | 141.56 | 24.148 | |
| 11,800.0 | 6,671.2 | 6,222.3 | 6,119.0 | 138.0 | 21.9 | 66.84 | -1,202.3 | 495.2 | 3,497.7 | 3,354.0 | 143.67 | 24.344 | |
| 11,811.0 | 6,671.1 | 6,222.0 | 6,118.6 | 138.3 | 21.9 | 66.83 | -1,202.3 | 495.3 | 3,507.6 | 3,363.7 | 143.94 | 24.369 | |
| 11,900.0 | 6,670.6 | 6,200.0 | 6,096.9 | 140.7 | 21.9 | 66.06 | -1,202.3 | 498.7 | 3,589.0 | 3,443.6 | 145.40 | 24.684 | |
| 11,909.4 | 6,670.5 | 6,200.0 | 6,096.9 | 141.0 | 21.9 | 66.06 | -1,202.3 | 498.7 | 3,597.6 | 3,452.0 | 145.64 | 24.703 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-204 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,987.2 | 6,670.0 | 6,200.0 | 6,096.9 | 143.1 | 21.9 | 66.06 | -1,202.3 | 498.7 | 3,668.7 | 3,521.1 | 147.60 | 24.856 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,961.4 | 0.20 | 9,958.288 | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,961.4 | 0.20 | 9,696.883 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,960.9 | 0.64 | 3,076.208 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,960.9 | 0.65 | 3,009.380 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,960.5 | 1.08 | 1,816.086 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,960.5 | 1.10 | 1,781.062 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,960.1 | 1.52 | 1,288.338 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,960.0 | 1.55 | 1,264.812 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,959.6 | 1.97 | 998.250 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,959.6 | 2.00 | 980.585 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,959.2 | 2.41 | 814.789 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,959.1 | 2.45 | 800.661 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,958.7 | 2.85 | 688.292 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,958.7 | 2.90 | 676.527 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,958.3 | 3.29 | 595.795 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,958.2 | 3.35 | 585.718 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,957.8 | 3.73 | 525.213 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,957.8 | 3.80 | 516.403 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,957.4 | 4.18 | 469.583 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.70 | -1,960.0 | -78.8 | 1,961.6 | 1,957.3 | 4.25 | 461.757 | |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.29 | -1,960.0 | -78.8 | 1,961.6 | 1,957.0 | 4.61 | 425.496 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.31 | -1,960.0 | -78.8 | 1,961.7 | 1,957.0 | 4.69 | 418.613 | |
| 1,181.1 | 1,181.0 | 1,184.0 | 1,184.0 | 2.5 | 2.5 | -93.42 | -1,960.0 | -78.8 | 1,961.9 | 1,956.9 | 5.04 | 389.477 | |
| 1,200.0 | 1,199.8 | 1,202.8 | 1,202.8 | 2.5 | 2.6 | -93.45 | -1,960.0 | -78.8 | 1,962.0 | 1,956.9 | 5.12 | 383.269 | |
| 1,279.5 | 1,279.1 | 1,282.1 | 1,282.1 | 2.7 | 2.8 | -93.64 | -1,960.0 | -78.8 | 1,962.4 | 1,956.9 | 5.47 | 358.484 | |
| 1,300.0 | 1,299.5 | 1,302.5 | 1,302.5 | 2.8 | 2.8 | -93.69 | -1,960.0 | -78.8 | 1,962.5 | 1,957.0 | 5.57 | 352.624 | |
| 1,377.9 | 1,376.9 | 1,400.8 | 1,400.8 | 3.0 | 3.0 | -94.02 | -1,959.7 | -79.2 | 1,963.0 | 1,957.0 | 5.97 | 328.566 | |
| 1,400.0 | 1,398.7 | 1,438.2 | 1,438.2 | 3.0 | 3.1 | -94.15 | -1,959.1 | -79.9 | 1,962.9 | 1,956.8 | 6.11 | 321.297 | |
| 1,476.4 | 1,474.2 | 1,567.8 | 1,567.6 | 3.2 | 3.4 | -94.59 | -1,954.8 | -85.3 | 1,961.3 | 1,954.7 | 6.60 | 296.961 | |
| 1,500.0 | 1,497.5 | 1,608.0 | 1,607.6 | 3.3 | 3.5 | -94.73 | -1,952.7 | -87.9 | 1,960.4 | 1,953.6 | 6.76 | 290.013 | |
| 1,574.8 | 1,571.0 | 1,735.4 | 1,734.2 | 3.5 | 3.8 | -95.18 | -1,943.8 | -99.0 | 1,956.4 | 1,949.1 | 7.30 | 268.142 | |
| 1,600.0 | 1,595.6 | 1,778.4 | 1,776.8 | 3.6 | 3.9 | -95.33 | -1,940.0 | -103.8 | 1,954.7 | 1,947.2 | 7.48 | 261.276 | |
| 1,673.2 | 1,667.0 | 1,903.2 | 1,899.7 | 3.9 | 4.2 | -95.77 | -1,926.8 | -120.4 | 1,948.4 | 1,940.4 | 8.08 | 241.249 | |
| 1,700.0 | 1,693.1 | 1,948.8 | 1,944.4 | 4.0 | 4.4 | -95.94 | -1,921.1 | -127.5 | 1,945.7 | 1,937.4 | 8.31 | 234.234 | |
| 1,771.6 | 1,762.4 | 2,070.6 | 2,063.0 | 4.3 | 4.8 | -96.38 | -1,903.7 | -149.3 | 1,937.3 | 1,928.3 | 8.99 | 215.595 | |
| 1,800.0 | 1,789.6 | 2,116.5 | 2,107.3 | 4.4 | 5.0 | -96.55 | -1,896.4 | -158.4 | 1,933.5 | 1,924.3 | 9.26 | 208.854 | |
| 1,870.1 | 1,856.8 | 2,185.6 | 2,174.1 | 4.7 | 5.3 | -96.91 | -1,885.0 | -172.7 | 1,924.0 | 1,914.2 | 9.84 | 195.509 | |
| 1,900.0 | 1,885.3 | 2,215.2 | 2,202.6 | 4.9 | 5.4 | -97.08 | -1,880.1 | -178.7 | 1,920.0 | 1,909.9 | 10.09 | 190.253 | |
| 1,968.5 | 1,950.2 | 2,282.6 | 2,267.6 | 5.3 | 5.7 | -97.50 | -1,869.1 | -192.6 | 1,911.1 | 1,900.4 | 10.72 | 178.287 | |
| 2,000.0 | 1,979.8 | 2,313.5 | 2,297.5 | 5.5 | 5.8 | -97.70 | -1,864.0 | -199.0 | 1,907.1 | 1,896.0 | 11.01 | 173.234 | |
| 2,044.9 | 2,021.9 | 2,357.6 | 2,340.0 | 5.7 | 6.0 | -98.02 | -1,856.7 | -208.1 | 1,901.4 | 1,889.9 | 11.45 | 166.088 | |
| 2,066.9 | 2,042.5 | 2,379.2 | 2,360.8 | 5.9 | 6.1 | -98.12 | -1,853.2 | -212.5 | 1,898.7 | 1,887.0 | 11.67 | 162.706 | |
| 2,100.0 | 2,073.4 | 2,411.6 | 2,392.1 | 6.1 | 6.3 | -98.27 | -1,847.9 | -219.2 | 1,894.6 | 1,882.6 | 12.00 | 157.842 | |
| 2,165.3 | 2,134.4 | 2,475.6 | 2,453.8 | 6.5 | 6.6 | -98.58 | -1,837.3 | -232.3 | 1,886.5 | 1,873.8 | 12.68 | 148.796 | |
| 2,200.0 | 2,166.8 | 2,509.6 | 2,486.6 | 6.8 | 6.7 | -98.75 | -1,831.8 | -239.3 | 1,882.2 | 1,869.2 | 13.04 | 144.381 | |
| 2,263.8 | 2,226.4 | 2,572.1 | 2,546.9 | 7.2 | 7.0 | -99.05 | -1,821.5 | -252.2 | 1,874.4 | 1,860.7 | 13.71 | 136.707 | |
| 2,300.0 | 2,260.2 | 2,607.6 | 2,581.1 | 7.4 | 7.2 | -99.23 | -1,815.6 | -259.5 | 1,870.0 | 1,856.0 | 14.09 | 132.681 | |
| 2,362.2 | 2,318.3 | 2,668.5 | 2,639.9 | 7.9 | 7.5 | -99.53 | -1,805.6 | -272.0 | 1,862.5 | 1,847.8 | 14.76 | 126.160 | |
| 2,400.0 | 2,353.6 | 2,705.6 | 2,675.7 | 8.1 | 7.7 | -99.71 | -1,799.5 | -279.6 | 1,858.0 | 1,842.8 | 15.17 | 122.486 | |
| 2,460.6 | 2,410.3 | 2,765.0 | 2,733.0 | 8.6 | 8.0 | -100.01 | -1,789.8 | -291.8 | 1,850.7 | 1,834.9 | 15.83 | 116.926 | |
| 2,500.0 | 2,447.0 | 2,803.6 | 2,770.2 | 8.9 | 8.2 | -100.20 | -1,783.4 | -299.8 | 1,846.1 | 1,829.8 | 16.26 | 113.565 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,861.4 | 2,826.0 | 9.3 | 8.5 | -100.49 | -1,773.9 | -311.7 | 1,839.1 | 1,822.2 | 16.90 | 108.805 | |
| 2,600.0 | 2,540.5 | 2,901.6 | 2,864.8 | 9.6 | 8.7 | -100.70 | -1,767.3 | -319.9 | 1,834.3 | 1,816.9 | 17.35 | 105.722 | |
| 2,657.5 | 2,594.2 | 2,957.9 | 2,919.1 | 10.0 | 9.0 | -100.99 | -1,758.1 | -331.5 | 1,827.6 | 1,809.6 | 17.98 | 101.628 | |
| 2,700.0 | 2,633.9 | 2,999.6 | 2,959.3 | 10.3 | 9.2 | -101.20 | -1,751.2 | -340.1 | 1,822.7 | 1,804.2 | 18.45 | 98.789 | |
| 2,755.9 | 2,686.1 | 3,054.3 | 3,012.1 | 10.7 | 9.5 | -101.49 | -1,742.2 | -351.4 | 1,816.2 | 1,797.1 | 19.07 | 95.254 | |
| 2,800.0 | 2,727.3 | 3,097.6 | 3,053.8 | 11.0 | 9.7 | -101.71 | -1,735.1 | -360.2 | 1,811.2 | 1,791.6 | 19.55 | 92.631 | |
| 2,854.3 | 2,778.1 | 3,150.8 | 3,105.2 | 11.4 | 10.0 | -101.99 | -1,726.4 | -371.2 | 1,805.0 | 1,784.8 | 20.15 | 89.566 | |
| 2,900.0 | 2,820.7 | 3,195.6 | 3,148.4 | 11.8 | 10.2 | -102.23 | -1,719.0 | -380.4 | 1,799.8 | 1,779.2 | 20.66 | 87.135 | |
| 2,952.7 | 2,870.0 | 3,247.3 | 3,198.2 | 12.2 | 10.5 | -102.50 | -1,710.5 | -391.0 | 1,793.9 | 1,772.6 | 21.24 | 84.467 | |
| 3,000.0 | 2,914.2 | 3,293.6 | 3,242.9 | 12.5 | 10.7 | -102.75 | -1,702.9 | -400.6 | 1,788.6 | 1,766.9 | 21.76 | 82.206 | |
| 3,051.2 | 2,962.0 | 3,343.7 | 3,291.3 | 12.9 | 11.0 | -103.02 | -1,694.7 | -410.9 | 1,782.9 | 1,760.6 | 22.32 | 79.875 | |
| 3,100.0 | 3,007.6 | 3,391.5 | 3,337.4 | 13.3 | 11.2 | -103.28 | -1,686.8 | -420.7 | 1,777.6 | 1,754.7 | 22.86 | 77.766 | |
| 3,149.6 | 3,053.9 | 3,440.2 | 3,384.3 | 13.6 | 11.5 | -103.54 | -1,678.8 | -430.7 | 1,772.1 | 1,748.7 | 23.40 | 75.724 | |
| 3,200.0 | 3,101.0 | 3,489.5 | 3,432.0 | 14.0 | 11.7 | -103.81 | -1,670.7 | -440.9 | 1,766.7 | 1,742.7 | 23.95 | 73.751 | |
| 3,248.0 | 3,145.9 | 3,536.6 | 3,477.4 | 14.4 | 12.0 | -104.07 | -1,662.9 | -450.6 | 1,761.5 | 1,737.0 | 24.48 | 71.957 | |
| 3,300.0 | 3,194.4 | 3,587.5 | 3,526.5 | 14.8 | 12.3 | -104.35 | -1,654.6 | -461.0 | 1,756.0 | 1,730.9 | 25.05 | 70.106 | |
| 3,346.4 | 3,237.8 | 3,633.1 | 3,570.4 | 15.1 | 12.5 | -104.61 | -1,647.1 | -470.4 | 1,751.0 | 1,725.5 | 25.55 | 68.525 | |
| 3,400.0 | 3,287.8 | 3,685.5 | 3,621.1 | 15.5 | 12.8 | -104.90 | -1,638.5 | -481.2 | 1,745.4 | 1,719.2 | 26.13 | 66.786 | |
| 3,444.9 | 3,329.8 | 3,729.5 | 3,663.5 | 15.9 | 13.0 | -105.15 | -1,631.2 | -490.2 | 1,740.7 | 1,714.1 | 26.62 | 65.390 | |
| 3,500.0 | 3,381.3 | 3,783.5 | 3,715.6 | 16.3 | 13.3 | -105.46 | -1,622.4 | -501.3 | 1,735.0 | 1,707.8 | 27.21 | 63.751 | |
| 3,543.3 | 3,421.7 | 3,826.0 | 3,756.5 | 16.6 | 13.6 | -105.70 | -1,615.4 | -510.1 | 1,730.5 | 1,702.8 | 27.68 | 62.516 | |
| 3,600.0 | 3,474.7 | 3,881.5 | 3,810.1 | 17.0 | 13.9 | -106.02 | -1,606.3 | -521.5 | 1,724.7 | 1,696.4 | 28.29 | 60.968 | |
| 3,641.7 | 3,513.7 | 3,922.4 | 3,849.6 | 17.3 | 14.1 | -106.25 | -1,599.5 | -529.9 | 1,720.5 | 1,691.8 | 28.74 | 59.875 | |
| 3,700.0 | 3,568.1 | 3,979.5 | 3,904.7 | 17.8 | 14.4 | -106.58 | -1,590.1 | -541.7 | 1,714.7 | 1,685.3 | 29.36 | 58.410 | |
| 3,740.1 | 3,605.6 | 4,018.9 | 3,942.6 | 18.1 | 14.6 | -106.81 | -1,583.7 | -549.7 | 1,710.7 | 1,680.9 | 29.78 | 57.440 | |
| 3,800.0 | 3,661.5 | 4,077.5 | 3,999.2 | 18.5 | 14.9 | -107.16 | -1,574.0 | -561.8 | 1,704.8 | 1,674.4 | 30.41 | 56.052 | |
| 3,838.6 | 3,697.6 | 4,115.3 | 4,035.7 | 18.8 | 15.1 | -107.38 | -1,567.8 | -569.6 | 1,701.0 | 1,670.2 | 30.82 | 55.191 | |
| 3,900.0 | 3,754.9 | 4,175.5 | 4,093.8 | 19.3 | 15.4 | -107.74 | -1,557.9 | -582.0 | 1,695.1 | 1,663.6 | 31.46 | 53.873 | |
| 3,937.0 | 3,789.5 | 4,211.8 | 4,128.7 | 19.6 | 15.6 | -107.95 | -1,552.0 | -589.4 | 1,691.5 | 1,659.7 | 31.85 | 53.109 | |
| 4,000.0 | 3,848.4 | 4,273.5 | 4,188.3 | 20.1 | 16.0 | -108.32 | -1,541.8 | -602.1 | 1,685.5 | 1,653.0 | 32.50 | 51.856 | |
| 4,035.4 | 3,881.5 | 4,308.2 | 4,221.8 | 20.3 | 16.2 | -108.53 | -1,536.1 | -609.3 | 1,682.2 | 1,649.3 | 32.87 | 51.176 | |
| 4,100.0 | 3,941.8 | 4,371.5 | 4,282.8 | 20.8 | 16.5 | -108.91 | -1,525.7 | -622.3 | 1,676.2 | 1,642.6 | 33.53 | 49.983 | |
| 4,133.8 | 3,973.4 | 4,404.7 | 4,314.8 | 21.1 | 16.7 | -109.12 | -1,520.3 | -629.1 | 1,673.0 | 1,639.2 | 33.88 | 49.380 | |
| 4,200.0 | 4,035.2 | 4,469.5 | 4,377.4 | 21.6 | 17.1 | -109.51 | -1,509.6 | -642.4 | 1,667.0 | 1,632.4 | 34.55 | 48.242 | |
| 4,232.3 | 4,065.4 | 4,501.1 | 4,407.9 | 21.8 | 17.2 | -109.71 | -1,504.4 | -648.9 | 1,664.1 | 1,629.2 | 34.88 | 47.707 | |
| 4,300.0 | 4,128.6 | 4,567.5 | 4,471.9 | 22.3 | 17.6 | -110.12 | -1,493.5 | -662.6 | 1,658.0 | 1,622.5 | 35.56 | 46.621 | |
| 4,330.7 | 4,157.3 | 4,597.6 | 4,500.9 | 22.6 | 17.8 | -110.31 | -1,488.6 | -668.8 | 1,655.3 | 1,619.4 | 35.87 | 46.146 | |
| 4,400.0 | 4,222.0 | 4,665.5 | 4,566.4 | 23.1 | 18.1 | -110.73 | -1,477.4 | -682.8 | 1,649.2 | 1,612.7 | 36.56 | 45.108 | |
| 4,429.1 | 4,249.3 | 4,694.0 | 4,594.0 | 23.3 | 18.3 | -110.91 | -1,472.7 | -688.6 | 1,646.7 | 1,609.9 | 36.85 | 44.687 | |
| 4,500.0 | 4,315.5 | 4,763.5 | 4,661.0 | 23.9 | 18.7 | -111.35 | -1,461.3 | -702.9 | 1,640.6 | 1,603.1 | 37.55 | 43.695 | |
| 4,527.5 | 4,341.2 | 4,790.5 | 4,687.0 | 24.1 | 18.8 | -111.52 | -1,456.9 | -708.5 | 1,638.3 | 1,600.5 | 37.82 | 43.322 | |
| 4,600.0 | 4,408.9 | 4,861.5 | 4,755.5 | 24.6 | 19.2 | -111.97 | -1,445.2 | -723.1 | 1,632.2 | 1,593.7 | 38.52 | 42.373 | |
| 4,626.0 | 4,433.2 | 4,886.9 | 4,780.1 | 24.8 | 19.3 | -112.14 | -1,441.0 | -728.3 | 1,630.1 | 1,591.3 | 38.77 | 42.044 | |
| 4,700.0 | 4,502.3 | 4,959.5 | 4,850.1 | 25.4 | 19.7 | -112.60 | -1,429.1 | -743.2 | 1,624.0 | 1,584.6 | 39.48 | 41.135 | |
| 4,724.4 | 4,525.1 | 4,983.4 | 4,873.1 | 25.6 | 19.9 | -112.76 | -1,425.1 | -748.1 | 1,622.1 | 1,582.4 | 39.71 | 40.844 | |
| 4,800.0 | 4,595.7 | 5,057.5 | 4,944.6 | 26.2 | 20.3 | -113.24 | -1,413.0 | -763.4 | 1,616.0 | 1,575.6 | 40.43 | 39.973 | |
| 4,822.8 | 4,617.1 | 5,079.8 | 4,966.2 | 26.3 | 20.4 | -113.39 | -1,409.3 | -768.0 | 1,614.2 | 1,573.6 | 40.64 | 39.718 | |
| 4,900.0 | 4,689.2 | 5,155.5 | 5,039.1 | 26.9 | 20.8 | -113.88 | -1,396.9 | -783.5 | 1,608.3 | 1,566.9 | 41.36 | 38.882 | |
| 4,921.2 | 4,709.0 | 5,176.3 | 5,059.2 | 27.1 | 20.9 | -114.02 | -1,393.4 | -787.8 | 1,606.6 | 1,565.1 | 41.56 | 38.659 | |
| 5,000.0 | 4,782.6 | 5,253.5 | 5,133.7 | 27.7 | 21.4 | -114.53 | -1,380.8 | -803.7 | 1,600.7 | 1,558.4 | 42.28 | 37.857 | |
| 5,019.7 | 4,801.0 | 5,272.8 | 5,152.3 | 27.8 | 21.5 | -114.66 | -1,377.6 | -807.7 | 1,599.2 | 1,556.8 | 42.46 | 37.663 | |
| 5,100.0 | 4,876.0 | 5,342.7 | 5,219.8 | 28.4 | 21.8 | -115.13 | -1,366.1 | -822.0 | 1,593.4 | 1,550.2 | 43.16 | 36.918 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,354.8 | 5,231.5 | 28.6 | 21.9 | -115.21 | -1,364.2 | -824.4 | 1,592.2 | 1,548.9 | 43.30 | 36.768 | |
| 5,159.9 | 4,932.0 | 5,382.8 | 5,258.6 | 28.9 | 22.0 | -115.41 | -1,359.9 | -829.8 | 1,589.8 | 1,546.1 | 43.64 | 36.432 | |
| 5,200.0 | 4,969.5 | 5,400.0 | 5,275.3 | 29.2 | 22.1 | -115.49 | -1,357.3 | -833.1 | 1,587.7 | 1,543.8 | 43.91 | 36.161 | |
| 5,216.5 | 4,985.1 | 5,420.7 | 5,295.4 | 29.3 | 22.2 | -115.62 | -1,354.3 | -836.8 | 1,586.8 | 1,542.8 | 44.00 | 36.061 | |
| 5,300.0 | 5,064.0 | 5,476.6 | 5,349.9 | 29.7 | 22.4 | -115.91 | -1,346.5 | -846.5 | 1,582.8 | 1,538.3 | 44.46 | 35.597 | |
| 5,314.9 | 5,078.2 | 5,500.0 | 5,372.8 | 29.8 | 22.5 | -116.04 | -1,343.5 | -850.3 | 1,582.2 | 1,537.6 | 44.55 | 35.515 | |
| 5,400.0 | 5,159.6 | 5,543.8 | 5,415.7 | 30.2 | 22.6 | -116.23 | -1,338.2 | -857.0 | 1,578.5 | 1,533.6 | 44.96 | 35.108 | |
| 5,413.4 | 5,172.4 | 5,552.8 | 5,424.6 | 30.3 | 22.7 | -116.27 | -1,337.1 | -858.3 | 1,578.0 | 1,533.0 | 45.02 | 35.050 | |
| 5,500.0 | 5,256.1 | 5,600.0 | 5,471.1 | 30.7 | 22.8 | -116.46 | -1,331.9 | -864.9 | 1,574.9 | 1,529.5 | 45.40 | 34.687 | |
| 5,511.8 | 5,267.6 | 5,619.0 | 5,489.8 | 30.7 | 22.9 | -116.55 | -1,329.9 | -867.3 | 1,574.5 | 1,529.0 | 45.46 | 34.636 | |
| 5,600.0 | 5,353.5 | 5,678.5 | 5,548.6 | 31.1 | 23.0 | -116.77 | -1,324.3 | -874.4 | 1,571.8 | 1,526.0 | 45.81 | 34.312 | |
| 5,610.2 | 5,363.5 | 5,700.0 | 5,569.9 | 31.1 | 23.1 | -116.85 | -1,322.4 | -876.7 | 1,571.6 | 1,525.7 | 45.86 | 34.271 | |
| 5,700.0 | 5,451.6 | 5,746.0 | 5,615.5 | 31.4 | 23.2 | -116.99 | -1,318.8 | -881.3 | 1,569.2 | 1,523.0 | 46.16 | 33.997 | |
| 5,708.6 | 5,460.2 | 5,751.8 | 5,621.3 | 31.4 | 23.2 | -117.00 | -1,318.3 | -881.8 | 1,569.0 | 1,522.8 | 46.18 | 33.974 | |
| 5,800.0 | 5,550.4 | 5,800.0 | 5,669.2 | 31.7 | 23.3 | -117.13 | -1,315.1 | -885.9 | 1,567.2 | 1,520.7 | 46.45 | 33.741 | |
| 5,807.1 | 5,557.4 | 5,818.4 | 5,687.5 | 31.7 | 23.4 | -117.18 | -1,314.0 | -887.3 | 1,567.0 | 1,520.5 | 46.48 | 33.715 | |
| 5,900.0 | 5,649.6 | 5,881.3 | 5,750.2 | 31.9 | 23.5 | -117.31 | -1,310.7 | -891.4 | 1,565.5 | 1,518.8 | 46.72 | 33.511 | |
| 5,903.8 | 5,653.4 | 5,883.9 | 5,752.7 | 31.9 | 23.5 | -117.31 | -1,310.6 | -891.5 | 1,565.4 | 1,518.7 | 46.72 | 33.504 | |
| 5,905.5 | 5,655.1 | 5,900.0 | 5,768.9 | 31.9 | 23.5 | -117.35 | -1,309.9 | -892.4 | 1,565.5 | 1,518.8 | 46.74 | 33.492 | |
| 6,000.0 | 5,749.2 | 5,949.0 | 5,817.8 | 32.1 | 23.6 | -117.41 | -1,308.2 | -894.5 | 1,564.3 | 1,517.4 | 46.93 | 33.334 | |
| 6,003.9 | 5,753.1 | 5,951.6 | 5,820.4 | 32.1 | 23.6 | -117.41 | -1,308.1 | -894.6 | 1,564.3 | 1,517.4 | 46.94 | 33.329 | |
| 6,100.0 | 5,849.1 | 6,016.7 | 5,885.5 | 32.3 | 23.7 | -117.47 | -1,306.6 | -896.4 | 1,563.7 | 1,516.6 | 47.10 | 33.196 | |
| 6,102.3 | 5,851.4 | 6,018.3 | 5,887.1 | 32.3 | 23.7 | -117.47 | -1,306.6 | -896.5 | 1,563.7 | 1,516.6 | 47.11 | 33.193 | |
| 6,200.8 | 5,949.8 | 6,087.1 | 5,955.8 | 32.4 | 23.8 | -117.49 | -1,306.1 | -897.1 | 1,563.5 | 1,516.2 | 47.25 | 33.092 | |
| 6,203.4 | 5,952.4 | 6,087.1 | 5,955.8 | 32.4 | 23.8 | -117.49 | -1,306.1 | -897.1 | 1,563.4 | 1,516.2 | 47.25 | 33.091 | |
| 6,204.9 | 5,953.9 | 6,088.2 | 5,956.9 | 32.4 | 23.8 | 158.07 | -1,306.1 | -897.1 | 1,563.4 | 1,521.1 | 42.31 | 36.956 | |
| 6,224.5 | 5,973.5 | 6,107.8 | 5,976.5 | 32.4 | 23.8 | 158.07 | -1,306.1 | -897.1 | 1,563.4 | 1,521.1 | 42.35 | 36.914 | |
| 6,234.9 | 5,983.9 | 6,117.1 | 5,985.8 | 32.4 | 23.8 | 158.07 | -1,306.1 | -897.1 | 1,563.5 | 1,521.1 | 42.38 | 36.893 | |
| 6,250.0 | 5,999.0 | 6,126.0 | 5,994.7 | 32.4 | 23.8 | 68.07 | -1,306.1 | -897.1 | 1,563.4 | 1,516.1 | 47.32 | 33.039 | |
| 6,299.2 | 6,048.2 | 6,150.0 | 6,018.7 | 32.4 | 23.9 | 68.12 | -1,306.1 | -896.4 | 1,563.0 | 1,515.7 | 47.30 | 33.042 | |
| 6,300.0 | 6,048.9 | 6,150.0 | 6,018.7 | 32.4 | 23.9 | 68.12 | -1,306.1 | -896.4 | 1,563.0 | 1,515.7 | 47.30 | 33.042 | |
| 6,350.0 | 6,098.5 | 6,181.1 | 6,049.8 | 32.4 | 23.9 | 68.26 | -1,306.1 | -894.3 | 1,561.9 | 1,514.7 | 47.28 | 33.039 | |
| 6,397.6 | 6,145.3 | 6,200.0 | 6,068.5 | 32.3 | 23.9 | 68.42 | -1,306.1 | -892.3 | 1,560.5 | 1,513.2 | 47.23 | 33.039 | |
| 6,400.0 | 6,147.6 | 6,200.0 | 6,068.5 | 32.3 | 23.9 | 68.42 | -1,306.1 | -892.3 | 1,560.4 | 1,513.1 | 47.23 | 33.039 | |
| 6,450.0 | 6,195.8 | 6,236.3 | 6,104.4 | 32.2 | 23.9 | 68.73 | -1,306.1 | -887.2 | 1,558.2 | 1,511.0 | 47.20 | 33.008 | |
| 6,496.0 | 6,239.3 | 6,261.7 | 6,129.4 | 32.1 | 23.9 | 69.04 | -1,306.1 | -882.6 | 1,555.7 | 1,508.5 | 47.18 | 32.974 | |
| 6,500.0 | 6,243.0 | 6,263.9 | 6,131.6 | 32.1 | 23.9 | 69.07 | -1,306.1 | -882.1 | 1,555.5 | 1,508.3 | 47.18 | 32.970 | |
| 6,550.0 | 6,289.0 | 6,300.0 | 6,166.7 | 32.0 | 23.8 | 69.54 | -1,306.1 | -873.9 | 1,552.3 | 1,505.1 | 47.18 | 32.898 | |
| 6,594.5 | 6,328.6 | 6,316.2 | 6,182.3 | 31.8 | 23.8 | 69.91 | -1,306.1 | -869.6 | 1,548.9 | 1,501.8 | 47.17 | 32.835 | |
| 6,600.0 | 6,333.4 | 6,319.2 | 6,185.3 | 31.8 | 23.8 | 69.97 | -1,306.1 | -868.8 | 1,548.5 | 1,501.3 | 47.18 | 32.824 | |
| 6,650.0 | 6,376.2 | 6,350.0 | 6,214.6 | 31.7 | 23.8 | 70.55 | -1,306.1 | -859.6 | 1,544.3 | 1,497.1 | 47.22 | 32.703 | |
| 6,692.9 | 6,411.3 | 6,370.8 | 6,234.3 | 31.6 | 23.7 | 71.04 | -1,306.1 | -852.6 | 1,540.4 | 1,493.1 | 47.28 | 32.583 | |
| 6,700.0 | 6,417.0 | 6,374.8 | 6,238.0 | 31.5 | 23.7 | 71.13 | -1,306.1 | -851.3 | 1,539.7 | 1,492.4 | 47.29 | 32.560 | |
| 6,750.0 | 6,455.7 | 6,400.0 | 6,261.4 | 31.4 | 23.7 | 71.78 | -1,306.1 | -842.0 | 1,534.7 | 1,487.4 | 47.40 | 32.379 | |
| 6,791.3 | 6,486.0 | 6,425.7 | 6,285.0 | 31.3 | 23.6 | 72.42 | -1,306.1 | -831.7 | 1,530.4 | 1,482.8 | 47.54 | 32.194 | |
| 6,800.0 | 6,492.2 | 6,430.5 | 6,289.4 | 31.3 | 23.6 | 72.55 | -1,306.1 | -829.6 | 1,529.4 | 1,481.9 | 47.57 | 32.155 | |
| 6,850.0 | 6,526.1 | 6,450.0 | 6,306.9 | 31.2 | 23.6 | 73.23 | -1,306.1 | -821.1 | 1,523.9 | 1,476.1 | 47.75 | 31.914 | |
| 6,889.7 | 6,551.2 | 6,480.9 | 6,334.2 | 31.2 | 23.5 | 74.01 | -1,306.1 | -806.7 | 1,519.2 | 1,471.2 | 47.98 | 31.664 | |
| 6,900.0 | 6,557.4 | 6,486.7 | 6,339.2 | 31.2 | 23.5 | 74.19 | -1,306.1 | -803.9 | 1,518.0 | 1,470.0 | 48.03 | 31.602 | |
| 6,950.0 | 6,586.0 | 6,514.9 | 6,363.5 | 31.1 | 23.5 | 75.09 | -1,306.1 | -789.4 | 1,512.0 | 1,463.7 | 48.35 | 31.274 | |
| 6,988.2 | 6,605.8 | 6,536.5 | 6,381.7 | 31.2 | 23.4 | 75.80 | -1,306.1 | -777.8 | 1,507.3 | 1,458.7 | 48.62 | 31.000 | |
| 7,000.0 | 6,611.5 | 6,550.0 | 6,392.8 | 31.2 | 23.4 | 76.14 | -1,306.1 | -770.2 | 1,505.9 | 1,457.2 | 48.73 | 30.903 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,050.0 | 6,634.1 | 6,571.7 | 6,410.5 | 31.2 | 23.3 | 77.01 | -1,306.1 | -757.6 | 1,499.8 | 1,450.6 | 49.12 | 30.530 | |
| 7,086.6 | 6,648.6 | 6,600.0 | 6,433.0 | 31.3 | 23.3 | 77.89 | -1,306.1 | -740.4 | 1,495.3 | 1,445.8 | 49.48 | 30.219 | |
| 7,100.0 | 6,653.4 | 6,600.0 | 6,433.0 | 31.4 | 23.3 | 78.02 | -1,306.1 | -740.4 | 1,493.6 | 1,444.1 | 49.58 | 30.126 | |
| 7,150.0 | 6,669.5 | 6,629.2 | 6,455.4 | 31.6 | 23.2 | 79.07 | -1,306.1 | -721.7 | 1,487.6 | 1,437.5 | 50.09 | 29.701 | |
| 7,185.0 | 6,678.8 | 6,650.0 | 6,470.9 | 31.7 | 23.1 | 79.83 | -1,306.1 | -707.8 | 1,483.5 | 1,433.0 | 50.46 | 29.397 | |
| 7,200.0 | 6,682.3 | 6,658.2 | 6,476.9 | 31.8 | 23.1 | 80.14 | -1,306.1 | -702.2 | 1,481.8 | 1,431.2 | 50.62 | 29.270 | |
| 7,250.0 | 6,691.6 | 6,687.5 | 6,497.8 | 32.1 | 23.1 | 81.22 | -1,306.1 | -681.7 | 1,476.2 | 1,425.0 | 51.20 | 28.835 | |
| 7,283.4 | 6,696.0 | 6,707.2 | 6,511.4 | 32.3 | 23.0 | 81.96 | -1,306.1 | -667.5 | 1,472.6 | 1,421.1 | 51.60 | 28.542 | |
| 7,300.0 | 6,697.5 | 6,717.0 | 6,518.0 | 32.4 | 23.0 | 82.32 | -1,306.1 | -660.2 | 1,471.0 | 1,419.2 | 51.79 | 28.401 | |
| 7,350.0 | 6,699.9 | 6,750.0 | 6,539.5 | 32.8 | 22.9 | 83.50 | -1,306.1 | -635.2 | 1,466.1 | 1,413.7 | 52.41 | 27.972 | |
| 7,364.4 | 6,700.0 | 6,750.0 | 6,539.5 | 32.9 | 22.9 | 83.60 | -1,306.1 | -635.2 | 1,464.8 | 1,412.3 | 52.56 | 27.867 | |
| 7,381.9 | 6,699.9 | 6,766.0 | 6,549.5 | 33.1 | 22.9 | 83.99 | -1,306.1 | -622.7 | 1,463.3 | 1,410.5 | 52.78 | 27.727 | |
| 7,400.0 | 6,699.8 | 6,777.3 | 6,556.4 | 33.2 | 22.9 | 84.27 | -1,306.1 | -613.7 | 1,461.9 | 1,408.9 | 52.97 | 27.596 | |
| 7,480.3 | 6,699.2 | 6,830.8 | 6,587.1 | 34.0 | 22.8 | 85.48 | -1,306.1 | -570.0 | 1,456.8 | 1,402.8 | 54.00 | 26.979 | |
| 7,500.0 | 6,699.1 | 6,844.8 | 6,594.6 | 34.2 | 22.8 | 85.78 | -1,306.1 | -558.1 | 1,455.8 | 1,401.5 | 54.25 | 26.834 | |
| 7,578.7 | 6,698.6 | 6,904.3 | 6,623.8 | 35.2 | 22.8 | 86.94 | -1,306.1 | -506.3 | 1,452.9 | 1,397.4 | 55.51 | 26.176 | |
| 7,600.0 | 6,698.5 | 6,921.3 | 6,631.4 | 35.4 | 22.8 | 87.24 | -1,306.1 | -491.1 | 1,452.4 | 1,396.5 | 55.87 | 25.996 | |
| 7,677.1 | 6,698.0 | 6,986.5 | 6,656.9 | 36.5 | 22.9 | 88.26 | -1,306.1 | -431.1 | 1,451.1 | 1,393.7 | 57.38 | 25.286 | |
| 7,700.0 | 6,697.8 | 7,006.7 | 6,663.7 | 36.8 | 22.9 | 88.54 | -1,306.1 | -412.1 | 1,450.8 | 1,393.0 | 57.86 | 25.075 | |
| 7,775.6 | 6,697.3 | 7,076.5 | 6,682.9 | 38.0 | 23.2 | 89.31 | -1,306.1 | -345.1 | 1,450.4 | 1,390.7 | 59.67 | 24.308 | |
| 7,800.0 | 6,697.2 | 7,100.0 | 6,688.0 | 38.3 | 23.3 | 89.52 | -1,306.1 | -322.1 | 1,450.3 | 1,390.1 | 60.28 | 24.061 | |
| 7,874.0 | 6,696.7 | 7,172.3 | 6,698.6 | 39.6 | 23.7 | 89.96 | -1,306.1 | -250.6 | 1,450.3 | 1,387.9 | 62.36 | 23.257 | |
| 7,884.7 | 6,696.6 | 7,182.9 | 6,699.6 | 39.8 | 23.8 | 90.00 | -1,306.1 | -240.0 | 1,450.3 | 1,387.6 | 62.67 | 23.141 | CC |
| 7,900.0 | 6,696.5 | 7,198.2 | 6,700.7 | 40.0 | 23.9 | 90.05 | -1,306.1 | -224.8 | 1,450.3 | 1,387.2 | 63.12 | 22.979 | |
| 7,972.4 | 6,696.1 | 7,270.7 | 6,701.9 | 41.3 | 24.6 | 90.11 | -1,306.1 | -152.3 | 1,450.3 | 1,384.9 | 65.41 | 22.173 | |
| 8,000.0 | 6,695.9 | 7,298.3 | 6,701.7 | 41.8 | 25.0 | 90.11 | -1,306.1 | -124.7 | 1,450.3 | 1,384.0 | 66.30 | 21.874 | |
| 8,070.8 | 6,695.4 | 7,369.1 | 6,701.2 | 43.1 | 25.9 | 90.11 | -1,306.1 | -53.9 | 1,450.3 | 1,381.5 | 68.79 | 21.083 | |
| 8,100.0 | 6,695.2 | 7,398.3 | 6,701.1 | 43.7 | 26.3 | 90.11 | -1,306.1 | -24.7 | 1,450.3 | 1,380.5 | 69.82 | 20.773 | |
| 8,169.3 | 6,694.8 | 7,467.6 | 6,700.6 | 45.1 | 27.5 | 90.11 | -1,306.1 | 44.6 | 1,450.3 | 1,377.9 | 72.44 | 20.019 | |
| 8,200.0 | 6,694.6 | 7,498.3 | 6,700.5 | 45.7 | 28.0 | 90.11 | -1,306.1 | 75.3 | 1,450.3 | 1,376.7 | 73.61 | 19.702 | |
| 8,267.7 | 6,694.1 | 7,566.0 | 6,700.0 | 47.1 | 29.3 | 90.11 | -1,306.1 | 143.0 | 1,450.3 | 1,374.0 | 76.34 | 18.997 | |
| 8,300.0 | 6,693.9 | 7,598.3 | 6,699.8 | 47.8 | 29.9 | 90.12 | -1,306.1 | 175.3 | 1,450.3 | 1,372.7 | 77.65 | 18.678 | |
| 8,366.1 | 6,693.5 | 7,664.4 | 6,699.4 | 49.2 | 31.3 | 90.12 | -1,306.1 | 241.4 | 1,450.3 | 1,369.9 | 80.45 | 18.028 | |
| 8,400.0 | 6,693.3 | 7,698.3 | 6,699.2 | 49.9 | 32.0 | 90.12 | -1,306.1 | 275.3 | 1,450.3 | 1,368.4 | 81.88 | 17.712 | |
| 8,464.5 | 6,692.9 | 7,762.8 | 6,698.8 | 51.4 | 33.4 | 90.12 | -1,306.1 | 339.8 | 1,450.3 | 1,365.6 | 84.72 | 17.118 | |
| 8,500.0 | 6,692.6 | 7,798.3 | 6,698.6 | 52.1 | 34.1 | 90.12 | -1,306.1 | 375.3 | 1,450.3 | 1,364.0 | 86.28 | 16.808 | |
| 8,563.0 | 6,692.2 | 7,861.3 | 6,698.2 | 53.6 | 35.6 | 90.12 | -1,306.1 | 438.2 | 1,450.3 | 1,361.2 | 89.14 | 16.269 | |
| 8,600.0 | 6,692.0 | 7,898.3 | 6,698.0 | 54.4 | 36.4 | 90.12 | -1,306.1 | 475.3 | 1,450.3 | 1,359.5 | 90.83 | 15.968 | |
| 8,661.4 | 6,691.6 | 7,959.7 | 6,697.6 | 55.8 | 37.8 | 90.12 | -1,306.1 | 536.7 | 1,450.3 | 1,356.6 | 93.69 | 15.480 | |
| 8,700.0 | 6,691.3 | 7,998.3 | 6,697.4 | 56.7 | 38.8 | 90.12 | -1,306.1 | 575.3 | 1,450.3 | 1,354.8 | 95.49 | 15.188 | |
| 8,759.8 | 6,690.9 | 8,058.1 | 6,697.0 | 58.1 | 40.2 | 90.12 | -1,306.1 | 635.1 | 1,450.3 | 1,352.0 | 98.34 | 14.748 | |
| 8,800.0 | 6,690.7 | 8,098.3 | 6,696.8 | 59.1 | 41.2 | 90.12 | -1,306.1 | 675.3 | 1,450.3 | 1,350.0 | 100.25 | 14.467 | |
| 8,858.2 | 6,690.3 | 8,156.5 | 6,696.4 | 60.5 | 42.6 | 90.12 | -1,306.1 | 733.5 | 1,450.3 | 1,347.2 | 103.08 | 14.070 | |
| 8,900.0 | 6,690.0 | 8,198.3 | 6,696.2 | 61.5 | 43.6 | 90.12 | -1,306.1 | 775.3 | 1,450.3 | 1,345.2 | 105.10 | 13.799 | |
| 8,956.7 | 6,689.7 | 8,255.0 | 6,695.8 | 62.9 | 45.0 | 90.12 | -1,306.1 | 831.9 | 1,450.3 | 1,342.4 | 107.89 | 13.442 | |
| 9,000.0 | 6,689.4 | 8,298.3 | 6,695.5 | 63.9 | 46.1 | 90.12 | -1,306.1 | 875.3 | 1,450.3 | 1,340.3 | 110.02 | 13.182 | |
| 9,055.1 | 6,689.0 | 8,353.4 | 6,695.2 | 65.3 | 47.5 | 90.13 | -1,306.1 | 930.4 | 1,450.3 | 1,337.5 | 112.77 | 12.860 | |
| 9,100.0 | 6,688.7 | 8,398.3 | 6,694.9 | 66.4 | 48.6 | 90.13 | -1,306.1 | 975.3 | 1,450.3 | 1,335.3 | 115.01 | 12.610 | |
| 9,153.5 | 6,688.4 | 8,451.8 | 6,694.6 | 67.7 | 50.0 | 90.13 | -1,306.1 | 1,028.8 | 1,450.3 | 1,332.6 | 117.71 | 12.321 | |
| 9,200.0 | 6,688.1 | 8,498.3 | 6,694.3 | 68.9 | 51.2 | 90.13 | -1,306.1 | 1,075.3 | 1,450.3 | 1,330.2 | 120.06 | 12.080 | |
| 9,251.9 | 6,687.8 | 8,550.2 | 6,694.0 | 70.2 | 52.6 | 90.13 | -1,306.1 | 1,127.2 | 1,450.3 | 1,327.6 | 122.70 | 11.820 | |
| 9,300.0 | 6,687.4 | 8,598.3 | 6,693.7 | 71.4 | 53.8 | 90.13 | -1,306.1 | 1,175.3 | 1,450.3 | 1,325.2 | 125.15 | 11.588 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,350.4 | 6,687.1 | 8,648.7 | 6,693.4 | 72.7 | 55.1 | 90.13 | -1,306.1 | 1,225.6 | 1,450.3 | 1,322.6 | 127.74 | 11.354 | |
| 9,400.0 | 6,686.8 | 8,698.3 | 6,693.1 | 73.9 | 56.4 | 90.13 | -1,306.1 | 1,275.3 | 1,450.3 | 1,320.0 | 130.29 | 11.131 | |
| 9,448.8 | 6,686.5 | 8,747.1 | 6,692.8 | 75.2 | 57.7 | 90.13 | -1,306.1 | 1,324.1 | 1,450.3 | 1,317.5 | 132.82 | 10.920 | |
| 9,500.0 | 6,686.1 | 8,798.3 | 6,692.5 | 76.5 | 59.0 | 90.13 | -1,306.1 | 1,375.3 | 1,450.3 | 1,314.8 | 135.47 | 10.706 | |
| 9,547.2 | 6,685.8 | 8,845.5 | 6,692.2 | 77.7 | 60.3 | 90.13 | -1,306.1 | 1,422.5 | 1,450.3 | 1,312.4 | 137.93 | 10.515 | |
| 9,600.0 | 6,685.5 | 8,898.3 | 6,691.8 | 79.0 | 61.7 | 90.13 | -1,306.1 | 1,475.3 | 1,450.3 | 1,309.6 | 140.68 | 10.310 | |
| 9,645.6 | 6,685.2 | 8,943.9 | 6,691.6 | 80.2 | 62.9 | 90.13 | -1,306.1 | 1,520.9 | 1,450.3 | 1,307.2 | 143.07 | 10.137 | |
| 9,700.0 | 6,684.8 | 8,998.3 | 6,691.2 | 81.6 | 64.3 | 90.13 | -1,306.1 | 1,575.3 | 1,450.3 | 1,304.4 | 145.92 | 9.939 | |
| 9,744.1 | 6,684.6 | 9,042.4 | 6,691.0 | 82.8 | 65.5 | 90.13 | -1,306.1 | 1,619.3 | 1,450.3 | 1,302.1 | 148.24 | 9.784 | |
| 9,800.0 | 6,684.2 | 9,098.3 | 6,690.6 | 84.2 | 67.0 | 90.14 | -1,306.1 | 1,675.2 | 1,450.3 | 1,299.1 | 151.18 | 9.593 | |
| 9,842.5 | 6,683.9 | 9,140.8 | 6,690.4 | 85.3 | 68.1 | 90.14 | -1,306.1 | 1,717.7 | 1,450.3 | 1,296.9 | 153.43 | 9.452 | |
| 9,900.0 | 6,683.5 | 9,198.3 | 6,690.0 | 86.8 | 69.7 | 90.14 | -1,306.1 | 1,775.2 | 1,450.3 | 1,293.8 | 156.47 | 9.269 | |
| 9,940.9 | 6,683.3 | 9,239.2 | 6,689.7 | 87.9 | 70.8 | 90.14 | -1,306.1 | 1,816.2 | 1,450.3 | 1,291.7 | 158.65 | 9.142 | |
| 10,000.0 | 6,682.9 | 9,298.3 | 6,689.4 | 89.5 | 72.4 | 90.14 | -1,306.1 | 1,875.2 | 1,450.3 | 1,288.5 | 161.79 | 8.964 | |
| 10,039.3 | 6,682.6 | 9,337.6 | 6,689.1 | 90.5 | 73.4 | 90.14 | -1,306.1 | 1,914.6 | 1,450.3 | 1,286.4 | 163.89 | 8.849 | |
| 10,100.0 | 6,682.2 | 9,398.3 | 6,688.8 | 92.1 | 75.1 | 90.14 | -1,306.1 | 1,975.2 | 1,450.3 | 1,283.2 | 167.12 | 8.678 | |
| 10,137.8 | 6,682.0 | 9,436.1 | 6,688.5 | 93.1 | 76.1 | 90.14 | -1,306.1 | 2,013.0 | 1,450.3 | 1,281.2 | 169.14 | 8.574 | |
| 10,200.0 | 6,681.6 | 9,498.3 | 6,688.1 | 94.8 | 77.8 | 90.14 | -1,306.1 | 2,075.2 | 1,450.3 | 1,277.8 | 172.47 | 8.409 | |
| 10,236.2 | 6,681.4 | 9,534.5 | 6,687.9 | 95.7 | 78.7 | 90.14 | -1,306.1 | 2,111.4 | 1,450.3 | 1,275.9 | 174.42 | 8.315 | |
| 10,300.0 | 6,680.9 | 9,598.3 | 6,687.5 | 97.4 | 80.5 | 90.14 | -1,306.1 | 2,175.2 | 1,450.3 | 1,272.5 | 177.84 | 8.155 | |
| 10,334.6 | 6,680.7 | 9,632.9 | 6,687.3 | 98.3 | 81.4 | 90.14 | -1,306.1 | 2,209.9 | 1,450.3 | 1,270.6 | 179.70 | 8.071 | |
| 10,400.0 | 6,680.3 | 9,698.3 | 6,686.9 | 100.1 | 83.2 | 90.14 | -1,306.1 | 2,275.2 | 1,450.3 | 1,267.1 | 183.22 | 7.916 | |
| 10,433.0 | 6,680.1 | 9,731.3 | 6,686.7 | 101.0 | 84.1 | 90.14 | -1,306.1 | 2,308.3 | 1,450.3 | 1,265.3 | 185.01 | 7.839 | |
| 10,500.0 | 6,679.7 | 9,798.3 | 6,686.3 | 102.8 | 85.9 | 90.14 | -1,306.1 | 2,375.2 | 1,450.3 | 1,261.7 | 188.62 | 7.689 | |
| 10,531.5 | 6,679.4 | 9,829.8 | 6,686.1 | 103.6 | 86.8 | 90.14 | -1,306.1 | 2,406.7 | 1,450.3 | 1,260.0 | 190.32 | 7.620 | |
| 10,600.0 | 6,679.0 | 9,898.3 | 6,685.7 | 105.4 | 88.7 | 90.14 | -1,306.1 | 2,475.2 | 1,450.3 | 1,256.3 | 194.03 | 7.475 | |
| 10,629.9 | 6,678.8 | 9,928.2 | 6,685.5 | 106.2 | 89.5 | 90.15 | -1,306.1 | 2,505.1 | 1,450.3 | 1,254.7 | 195.65 | 7.413 | |
| 10,700.0 | 6,678.4 | 9,998.3 | 6,685.0 | 108.1 | 91.4 | 90.15 | -1,306.1 | 2,575.2 | 1,450.3 | 1,250.9 | 199.45 | 7.272 | |
| 10,728.3 | 6,678.2 | 10,026.6 | 6,684.9 | 108.9 | 92.2 | 90.15 | -1,306.1 | 2,603.6 | 1,450.3 | 1,249.3 | 200.99 | 7.216 | |
| 10,800.0 | 6,677.7 | 10,098.3 | 6,684.4 | 110.8 | 94.1 | 90.15 | -1,306.1 | 2,675.2 | 1,450.3 | 1,245.4 | 204.88 | 7.079 | |
| 10,826.7 | 6,677.5 | 10,125.0 | 6,684.3 | 111.5 | 94.9 | 90.15 | -1,306.1 | 2,702.0 | 1,450.3 | 1,244.0 | 206.34 | 7.029 | |
| 10,900.0 | 6,677.1 | 10,198.3 | 6,683.8 | 113.5 | 96.9 | 90.15 | -1,306.1 | 2,775.2 | 1,450.3 | 1,240.0 | 210.32 | 6.896 | |
| 10,925.2 | 6,676.9 | 10,223.5 | 6,683.7 | 114.2 | 97.6 | 90.15 | -1,306.1 | 2,800.4 | 1,450.3 | 1,238.6 | 211.69 | 6.851 | |
| 11,000.0 | 6,676.4 | 10,298.3 | 6,683.2 | 116.2 | 99.6 | 90.15 | -1,306.1 | 2,875.2 | 1,450.3 | 1,234.5 | 215.77 | 6.721 | |
| 11,023.6 | 6,676.3 | 10,321.9 | 6,683.0 | 116.8 | 100.3 | 90.15 | -1,306.1 | 2,898.8 | 1,450.3 | 1,233.2 | 217.06 | 6.682 | |
| 11,100.0 | 6,675.8 | 10,398.3 | 6,682.6 | 118.9 | 102.4 | 90.15 | -1,306.1 | 2,975.2 | 1,450.3 | 1,229.1 | 221.23 | 6.556 | |
| 11,122.0 | 6,675.6 | 10,420.3 | 6,682.4 | 119.5 | 103.0 | 90.15 | -1,306.1 | 2,997.2 | 1,450.3 | 1,227.9 | 222.43 | 6.520 | |
| 11,200.0 | 6,675.1 | 10,498.3 | 6,681.9 | 121.6 | 105.1 | 90.15 | -1,306.1 | 3,075.2 | 1,450.3 | 1,223.6 | 226.70 | 6.398 | |
| 11,220.4 | 6,675.0 | 10,518.7 | 6,681.8 | 122.2 | 105.7 | 90.15 | -1,306.1 | 3,095.7 | 1,450.3 | 1,222.5 | 227.82 | 6.366 | |
| 11,300.0 | 6,674.5 | 10,598.3 | 6,681.3 | 124.3 | 107.9 | 90.15 | -1,306.1 | 3,175.2 | 1,450.3 | 1,218.1 | 232.17 | 6.247 | |
| 11,318.9 | 6,674.3 | 10,617.2 | 6,681.2 | 124.9 | 108.4 | 90.15 | -1,306.1 | 3,194.1 | 1,450.3 | 1,217.1 | 233.21 | 6.219 | |
| 11,400.0 | 6,673.8 | 10,698.3 | 6,680.7 | 127.1 | 110.6 | 90.15 | -1,306.1 | 3,275.2 | 1,450.3 | 1,212.7 | 237.65 | 6.103 | |
| 11,417.3 | 6,673.7 | 10,715.6 | 6,680.6 | 127.5 | 111.1 | 90.15 | -1,306.1 | 3,292.5 | 1,450.3 | 1,211.7 | 238.60 | 6.078 | |
| 11,500.0 | 6,673.2 | 10,798.3 | 6,680.1 | 129.8 | 113.4 | 90.15 | -1,306.1 | 3,375.2 | 1,450.3 | 1,207.2 | 243.14 | 5.965 | |
| 11,515.7 | 6,673.1 | 10,814.0 | 6,680.0 | 130.2 | 113.8 | 90.15 | -1,306.1 | 3,390.9 | 1,450.3 | 1,206.3 | 244.00 | 5.944 | |
| 11,600.0 | 6,672.5 | 10,898.3 | 6,679.5 | 132.5 | 116.2 | 90.16 | -1,306.1 | 3,475.2 | 1,450.3 | 1,201.7 | 248.63 | 5.833 | |
| 11,614.1 | 6,672.4 | 10,912.4 | 6,679.4 | 132.9 | 116.5 | 90.16 | -1,306.1 | 3,489.4 | 1,450.3 | 1,200.9 | 249.41 | 5.815 | |
| 11,700.0 | 6,671.9 | 10,998.3 | 6,678.8 | 135.3 | 118.9 | 90.16 | -1,306.1 | 3,575.2 | 1,450.3 | 1,196.2 | 254.13 | 5.707 | |
| 11,712.6 | 6,671.8 | 11,010.9 | 6,678.8 | 135.6 | 119.3 | 90.16 | -1,306.1 | 3,587.8 | 1,450.3 | 1,195.5 | 254.82 | 5.692 | |
| 11,800.0 | 6,671.2 | 11,098.3 | 6,678.2 | 138.0 | 121.7 | 90.16 | -1,306.1 | 3,675.2 | 1,450.3 | 1,190.7 | 259.63 | 5.586 | |
| 11,811.0 | 6,671.1 | 11,109.3 | 6,678.1 | 138.3 | 122.0 | 90.16 | -1,306.1 | 3,686.2 | 1,450.3 | 1,190.1 | 260.24 | 5.573 | |
| 11,900.0 | 6,670.6 | 11,198.3 | 6,677.6 | 140.7 | 124.5 | 90.16 | -1,306.1 | 3,775.2 | 1,450.3 | 1,185.2 | 265.14 | 5.470 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-232 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,909.4 | 6,670.5 | 11,207.7 | 6,677.5 | 141.0 | 124.7 | 90.16 | -1,306.1 | 3,784.6 | 1,450.3 | 1,184.7 | 265.66 | 5.459 | |
| 11,987.2 | 6,670.0 | 11,285.5 | 6,677.0 | 143.1 | 126.9 | 90.16 | -1,306.1 | 3,862.4 | 1,450.3 | 1,180.4 | 269.95 | 5.373 | ES, SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,991.3 | 0.20 | N/A | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,991.3 | 0.20 | 9,844.997 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,990.9 | 0.64 | 3,123.195 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,990.9 | 0.65 | 3,055.346 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,990.5 | 1.08 | 1,843.826 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,990.4 | 1.10 | 1,808.266 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,990.0 | 1.52 | 1,308.017 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,990.0 | 1.55 | 1,284.131 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,989.6 | 1.97 | 1,013.498 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,989.5 | 2.00 | 995.562 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,989.1 | 2.41 | 827.234 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,989.1 | 2.45 | 812.890 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,988.7 | 2.85 | 698.806 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,988.6 | 2.90 | 686.861 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,988.2 | 3.29 | 604.895 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,988.2 | 3.35 | 594.665 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,987.8 | 3.73 | 533.235 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,987.7 | 3.80 | 524.290 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,987.4 | 4.18 | 476.756 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.65 | -1,989.9 | -81.6 | 1,991.5 | 1,987.3 | 4.25 | 468.810 | |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.25 | -1,989.9 | -81.6 | 1,991.6 | 1,987.0 | 4.61 | 431.995 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.26 | -1,989.9 | -81.6 | 1,991.6 | 1,987.0 | 4.69 | 425.007 | |
| 1,181.1 | 1,181.0 | 1,184.0 | 1,184.0 | 2.5 | 2.5 | -93.37 | -1,989.9 | -81.6 | 1,991.9 | 1,986.8 | 5.04 | 395.425 | |
| 1,200.0 | 1,199.8 | 1,202.8 | 1,202.8 | 2.5 | 2.6 | -93.40 | -1,989.9 | -81.6 | 1,991.9 | 1,986.8 | 5.12 | 389.121 | |
| 1,279.5 | 1,279.1 | 1,282.1 | 1,282.1 | 2.7 | 2.8 | -93.59 | -1,989.9 | -81.6 | 1,992.4 | 1,986.9 | 5.47 | 363.955 | |
| 1,300.0 | 1,299.5 | 1,302.5 | 1,302.5 | 2.8 | 2.8 | -93.64 | -1,989.9 | -81.6 | 1,992.5 | 1,986.9 | 5.57 | 358.005 | |
| 1,377.9 | 1,376.9 | 1,379.9 | 1,379.9 | 3.0 | 3.0 | -93.89 | -1,989.9 | -81.6 | 1,993.1 | 1,987.2 | 5.93 | 336.110 | |
| 1,400.0 | 1,398.7 | 1,401.7 | 1,401.7 | 3.0 | 3.0 | -93.97 | -1,989.9 | -81.6 | 1,993.3 | 1,987.3 | 6.03 | 330.408 | |
| 1,476.4 | 1,474.2 | 1,477.2 | 1,477.2 | 3.2 | 3.2 | -94.29 | -1,989.9 | -81.6 | 1,994.1 | 1,987.7 | 6.41 | 310.968 | |
| 1,500.0 | 1,497.5 | 1,500.5 | 1,500.5 | 3.3 | 3.2 | -94.39 | -1,989.9 | -81.6 | 1,994.5 | 1,987.9 | 6.53 | 305.427 | |
| 1,574.8 | 1,571.0 | 1,585.0 | 1,585.0 | 3.5 | 3.4 | -94.82 | -1,989.8 | -81.8 | 1,995.5 | 1,988.6 | 6.95 | 286.972 | |
| 1,600.0 | 1,595.6 | 1,621.1 | 1,621.1 | 3.6 | 3.5 | -95.01 | -1,989.5 | -82.4 | 1,995.8 | 1,988.6 | 7.11 | 280.662 | |
| 1,673.2 | 1,667.0 | 1,726.8 | 1,726.7 | 3.9 | 3.7 | -95.56 | -1,987.3 | -86.4 | 1,995.8 | 1,988.2 | 7.61 | 262.431 | |
| 1,700.0 | 1,693.1 | 1,765.6 | 1,765.4 | 4.0 | 3.8 | -95.76 | -1,986.1 | -88.8 | 1,995.6 | 1,987.8 | 7.79 | 256.240 | |
| 1,771.6 | 1,762.4 | 1,870.0 | 1,869.3 | 4.3 | 4.1 | -96.30 | -1,981.6 | -97.4 | 1,994.3 | 1,986.0 | 8.33 | 239.492 | |
| 1,800.0 | 1,789.6 | 1,911.5 | 1,910.5 | 4.4 | 4.2 | -96.52 | -1,979.3 | -101.8 | 1,993.6 | 1,985.0 | 8.54 | 233.327 | |
| 1,870.1 | 1,856.8 | 2,014.4 | 2,012.4 | 4.7 | 4.4 | -97.05 | -1,972.5 | -114.9 | 1,991.1 | 1,982.0 | 9.14 | 217.803 | |
| 1,900.0 | 1,885.3 | 2,058.5 | 2,055.9 | 4.9 | 4.5 | -97.27 | -1,969.0 | -121.5 | 1,989.8 | 1,980.4 | 9.41 | 211.555 | |
| 1,968.5 | 1,950.2 | 2,159.8 | 2,155.2 | 5.3 | 4.8 | -97.79 | -1,959.9 | -138.9 | 1,986.1 | 1,976.0 | 10.08 | 197.120 | |
| 2,000.0 | 1,979.8 | 2,206.5 | 2,200.8 | 5.5 | 5.0 | -98.03 | -1,955.2 | -148.0 | 1,984.1 | 1,973.7 | 10.39 | 190.953 | |
| 2,044.9 | 2,021.9 | 2,260.0 | 2,252.7 | 5.7 | 5.2 | -98.32 | -1,949.4 | -159.1 | 1,981.0 | 1,970.2 | 10.84 | 182.762 | |
| 2,066.9 | 2,042.5 | 2,281.6 | 2,273.8 | 5.9 | 5.2 | -98.41 | -1,947.0 | -163.6 | 1,979.5 | 1,968.5 | 11.05 | 179.118 | |
| 2,100.0 | 2,073.4 | 2,314.2 | 2,305.5 | 6.1 | 5.4 | -98.56 | -1,943.4 | -170.5 | 1,977.3 | 1,965.9 | 11.37 | 173.867 | |
| 2,165.3 | 2,134.4 | 2,378.7 | 2,368.1 | 6.5 | 5.6 | -98.85 | -1,936.4 | -183.9 | 1,972.9 | 1,960.9 | 12.02 | 164.070 | |
| 2,200.0 | 2,166.8 | 2,412.8 | 2,401.3 | 6.8 | 5.7 | -99.00 | -1,932.7 | -191.1 | 1,970.6 | 1,958.2 | 12.37 | 159.274 | |
| 2,263.8 | 2,226.4 | 2,475.7 | 2,462.4 | 7.2 | 6.0 | -99.28 | -1,925.8 | -204.3 | 1,966.4 | 1,953.4 | 13.03 | 150.916 | |
| 2,300.0 | 2,260.2 | 2,511.4 | 2,497.1 | 7.4 | 6.1 | -99.44 | -1,921.9 | -211.8 | 1,964.0 | 1,950.6 | 13.40 | 146.525 | |
| 2,362.2 | 2,318.3 | 2,572.8 | 2,556.7 | 7.9 | 6.4 | -99.72 | -1,915.1 | -224.6 | 1,960.0 | 1,946.0 | 14.06 | 139.399 | |
| 2,400.0 | 2,353.6 | 2,610.0 | 2,592.9 | 8.1 | 6.5 | -99.89 | -1,911.1 | -232.4 | 1,957.6 | 1,943.2 | 14.46 | 135.383 | |
| 2,460.6 | 2,410.3 | 2,669.8 | 2,651.0 | 8.6 | 6.8 | -100.16 | -1,904.5 | -244.9 | 1,953.8 | 1,938.7 | 15.11 | 129.298 | |
| 2,500.0 | 2,447.0 | 2,708.6 | 2,688.7 | 8.9 | 7.0 | -100.34 | -1,900.3 | -253.1 | 1,951.3 | 1,935.8 | 15.53 | 125.620 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,766.8 | 2,745.2 | 9.3 | 7.2 | -100.61 | -1,893.9 | -265.3 | 1,947.6 | 1,931.5 | 16.18 | 120.407 | |
| 2,600.0 | 2,540.5 | 2,807.2 | 2,784.5 | 9.6 | 7.4 | -100.79 | -1,889.5 | -273.7 | 1,945.1 | 1,928.5 | 16.62 | 117.033 | |
| 2,657.5 | 2,594.2 | 2,863.9 | 2,839.5 | 10.0 | 7.6 | -101.05 | -1,883.3 | -285.6 | 1,941.6 | 1,924.4 | 17.25 | 112.551 | |
| 2,700.0 | 2,633.9 | 2,905.8 | 2,880.3 | 10.3 | 7.8 | -101.25 | -1,878.7 | -294.4 | 1,939.0 | 1,921.3 | 17.72 | 109.446 | |
| 2,755.9 | 2,686.1 | 2,960.9 | 2,933.8 | 10.7 | 8.1 | -101.50 | -1,872.7 | -305.9 | 1,935.7 | 1,917.4 | 18.33 | 105.578 | |
| 2,800.0 | 2,727.3 | 3,004.4 | 2,976.1 | 11.0 | 8.3 | -101.71 | -1,867.9 | -315.0 | 1,933.1 | 1,914.3 | 18.82 | 102.711 | |
| 2,854.3 | 2,778.1 | 3,057.9 | 3,028.1 | 11.4 | 8.5 | -101.96 | -1,862.0 | -326.3 | 1,929.9 | 1,910.5 | 19.42 | 99.360 | |
| 2,900.0 | 2,820.7 | 3,103.0 | 3,071.9 | 11.8 | 8.7 | -102.17 | -1,857.1 | -335.7 | 1,927.3 | 1,907.4 | 19.93 | 96.706 | |
| 2,952.7 | 2,870.0 | 3,155.0 | 3,122.4 | 12.2 | 9.0 | -102.41 | -1,851.4 | -346.6 | 1,924.3 | 1,903.8 | 20.52 | 93.791 | |
| 3,000.0 | 2,914.2 | 3,201.6 | 3,167.7 | 12.5 | 9.2 | -102.63 | -1,846.3 | -356.3 | 1,921.6 | 1,900.6 | 21.04 | 91.326 | |
| 3,051.2 | 2,962.0 | 3,252.0 | 3,216.7 | 12.9 | 9.4 | -102.87 | -1,840.8 | -366.9 | 1,918.8 | 1,897.1 | 21.61 | 88.783 | |
| 3,100.0 | 3,007.6 | 3,300.2 | 3,263.5 | 13.3 | 9.7 | -103.10 | -1,835.5 | -377.0 | 1,916.1 | 1,893.9 | 22.15 | 86.486 | |
| 3,149.6 | 3,053.9 | 3,349.1 | 3,311.0 | 13.6 | 9.9 | -103.33 | -1,830.2 | -387.2 | 1,913.4 | 1,890.6 | 22.71 | 84.260 | |
| 3,200.0 | 3,101.0 | 3,398.7 | 3,359.3 | 14.0 | 10.1 | -103.56 | -1,824.7 | -397.7 | 1,910.6 | 1,887.4 | 23.27 | 82.114 | |
| 3,248.0 | 3,145.9 | 3,446.1 | 3,405.3 | 14.4 | 10.3 | -103.79 | -1,819.5 | -407.6 | 1,908.1 | 1,884.3 | 23.80 | 80.160 | |
| 3,300.0 | 3,194.4 | 3,497.3 | 3,455.1 | 14.8 | 10.6 | -104.04 | -1,813.9 | -418.3 | 1,905.3 | 1,881.0 | 24.38 | 78.149 | |
| 3,346.4 | 3,237.8 | 3,543.1 | 3,499.5 | 15.1 | 10.8 | -104.26 | -1,808.9 | -427.9 | 1,902.9 | 1,878.0 | 24.90 | 76.429 | |
| 3,400.0 | 3,287.8 | 3,595.9 | 3,550.8 | 15.5 | 11.1 | -104.51 | -1,803.1 | -439.0 | 1,900.2 | 1,874.7 | 25.49 | 74.540 | |
| 3,444.9 | 3,329.8 | 3,640.2 | 3,593.8 | 15.9 | 11.3 | -104.72 | -1,798.3 | -448.2 | 1,897.9 | 1,871.9 | 25.99 | 73.023 | |
| 3,500.0 | 3,381.3 | 3,694.5 | 3,646.6 | 16.3 | 11.5 | -104.99 | -1,792.3 | -459.6 | 1,895.2 | 1,868.6 | 26.60 | 71.244 | |
| 3,543.3 | 3,421.7 | 3,737.2 | 3,688.1 | 16.6 | 11.7 | -105.19 | -1,787.7 | -468.6 | 1,893.0 | 1,865.9 | 27.08 | 69.904 | |
| 3,600.0 | 3,474.7 | 3,793.1 | 3,742.4 | 17.0 | 12.0 | -105.46 | -1,781.6 | -480.3 | 1,890.3 | 1,862.6 | 27.71 | 68.225 | |
| 3,641.7 | 3,513.7 | 3,834.2 | 3,782.4 | 17.3 | 12.2 | -105.67 | -1,777.1 | -488.9 | 1,888.3 | 1,860.1 | 28.17 | 67.039 | |
| 3,700.0 | 3,568.1 | 3,891.7 | 3,838.2 | 17.8 | 12.5 | -105.95 | -1,770.8 | -500.9 | 1,885.5 | 1,856.7 | 28.81 | 65.451 | |
| 3,740.1 | 3,605.6 | 3,931.3 | 3,876.7 | 18.1 | 12.7 | -106.14 | -1,766.4 | -509.2 | 1,883.6 | 1,854.4 | 29.25 | 64.399 | |
| 3,800.0 | 3,661.5 | 3,990.3 | 3,934.0 | 18.5 | 13.0 | -106.43 | -1,760.0 | -521.6 | 1,880.9 | 1,851.0 | 29.91 | 62.895 | |
| 3,838.6 | 3,697.6 | 4,028.3 | 3,971.0 | 18.8 | 13.2 | -106.62 | -1,755.8 | -529.5 | 1,879.2 | 1,848.8 | 30.33 | 61.962 | |
| 3,900.0 | 3,754.9 | 4,088.9 | 4,029.8 | 19.3 | 13.5 | -106.92 | -1,749.2 | -542.2 | 1,876.4 | 1,845.4 | 31.00 | 60.534 | |
| 3,937.0 | 3,789.5 | 4,125.4 | 4,065.3 | 19.6 | 13.6 | -107.10 | -1,745.2 | -549.9 | 1,874.8 | 1,843.4 | 31.40 | 59.706 | |
| 4,000.0 | 3,848.4 | 4,187.5 | 4,125.6 | 20.1 | 13.9 | -107.40 | -1,738.4 | -562.9 | 1,872.1 | 1,840.0 | 32.08 | 58.348 | |
| 4,035.4 | 3,881.5 | 4,222.4 | 4,159.6 | 20.3 | 14.1 | -107.58 | -1,734.6 | -570.2 | 1,870.6 | 1,838.1 | 32.47 | 57.612 | |
| 4,100.0 | 3,941.8 | 4,286.1 | 4,221.4 | 20.8 | 14.4 | -107.89 | -1,727.6 | -583.5 | 1,867.9 | 1,834.7 | 33.17 | 56.320 | |
| 4,133.8 | 3,973.4 | 4,319.4 | 4,253.8 | 21.1 | 14.6 | -108.06 | -1,723.9 | -590.5 | 1,866.5 | 1,833.0 | 33.53 | 55.666 | |
| 4,200.0 | 4,035.2 | 4,384.6 | 4,317.2 | 21.6 | 14.9 | -108.39 | -1,716.8 | -604.2 | 1,863.8 | 1,829.6 | 34.24 | 54.433 | |
| 4,232.3 | 4,065.4 | 4,416.5 | 4,348.1 | 21.8 | 15.1 | -108.54 | -1,713.3 | -610.9 | 1,862.5 | 1,827.9 | 34.59 | 53.852 | |
| 4,300.0 | 4,128.6 | 4,483.2 | 4,413.0 | 22.3 | 15.4 | -108.88 | -1,706.0 | -624.9 | 1,859.9 | 1,824.6 | 35.31 | 52.675 | |
| 4,330.7 | 4,157.3 | 4,513.5 | 4,442.4 | 22.6 | 15.6 | -109.03 | -1,702.7 | -631.2 | 1,858.7 | 1,823.1 | 35.64 | 52.159 | |
| 4,400.0 | 4,222.0 | 4,581.8 | 4,508.8 | 23.1 | 15.9 | -109.38 | -1,695.2 | -645.5 | 1,856.1 | 1,819.7 | 36.37 | 51.034 | |
| 4,429.1 | 4,249.3 | 4,610.5 | 4,536.7 | 23.3 | 16.0 | -109.52 | -1,692.1 | -651.5 | 1,855.0 | 1,818.4 | 36.68 | 50.577 | |
| 4,500.0 | 4,315.5 | 4,680.4 | 4,604.6 | 23.9 | 16.4 | -109.87 | -1,684.4 | -666.2 | 1,852.5 | 1,815.1 | 37.42 | 49.500 | |
| 4,527.5 | 4,341.2 | 4,707.6 | 4,631.0 | 24.1 | 16.5 | -110.01 | -1,681.5 | -671.9 | 1,851.5 | 1,813.8 | 37.71 | 49.095 | |
| 4,600.0 | 4,408.9 | 4,779.0 | 4,700.4 | 24.6 | 16.9 | -110.37 | -1,673.6 | -686.8 | 1,849.0 | 1,810.5 | 38.47 | 48.063 | |
| 4,626.0 | 4,433.2 | 4,804.6 | 4,725.3 | 24.8 | 17.0 | -110.50 | -1,670.8 | -692.2 | 1,848.1 | 1,809.4 | 38.74 | 47.704 | |
| 4,700.0 | 4,502.3 | 4,877.6 | 4,796.2 | 25.4 | 17.4 | -110.88 | -1,662.8 | -707.5 | 1,845.7 | 1,806.1 | 39.51 | 46.715 | |
| 4,724.4 | 4,525.1 | 4,901.7 | 4,819.6 | 25.6 | 17.5 | -111.00 | -1,660.2 | -712.5 | 1,844.9 | 1,805.1 | 39.76 | 46.399 | |
| 4,800.0 | 4,595.7 | 4,976.2 | 4,892.0 | 26.2 | 17.9 | -111.38 | -1,652.0 | -728.1 | 1,842.5 | 1,801.9 | 40.54 | 45.449 | |
| 4,822.8 | 4,617.1 | 4,998.7 | 4,913.9 | 26.3 | 18.0 | -111.49 | -1,649.6 | -732.8 | 1,841.7 | 1,801.0 | 40.77 | 45.171 | |
| 4,900.0 | 4,689.2 | 5,074.8 | 4,987.8 | 26.9 | 18.4 | -111.89 | -1,641.3 | -748.8 | 1,839.4 | 1,797.8 | 41.56 | 44.258 | |
| 4,921.2 | 4,709.0 | 5,095.7 | 5,008.1 | 27.1 | 18.5 | -111.99 | -1,639.0 | -753.2 | 1,838.8 | 1,797.0 | 41.78 | 44.014 | |
| 5,000.0 | 4,782.6 | 5,173.4 | 5,083.6 | 27.7 | 18.9 | -112.39 | -1,630.5 | -769.4 | 1,836.5 | 1,793.9 | 42.57 | 43.137 | |
| 5,019.7 | 4,801.0 | 5,192.8 | 5,102.4 | 27.8 | 18.9 | -112.49 | -1,628.3 | -773.5 | 1,835.9 | 1,793.2 | 42.77 | 42.924 | |
| 5,100.0 | 4,876.0 | 5,272.0 | 5,179.4 | 28.4 | 19.3 | -112.90 | -1,619.7 | -790.1 | 1,833.7 | 1,790.2 | 43.58 | 42.079 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,289.8 | 5,196.7 | 28.6 | 19.4 | -112.99 | -1,617.7 | -793.8 | 1,833.3 | 1,789.5 | 43.76 | 41.895 | |
| 5,159.9 | 4,932.0 | 5,331.0 | 5,236.8 | 28.9 | 19.6 | -113.21 | -1,613.2 | -802.5 | 1,832.2 | 1,788.0 | 44.18 | 41.475 | |
| 5,200.0 | 4,969.5 | 5,370.6 | 5,275.2 | 29.2 | 19.8 | -113.38 | -1,608.9 | -810.8 | 1,831.0 | 1,786.5 | 44.54 | 41.110 | |
| 5,216.5 | 4,985.1 | 5,386.9 | 5,291.1 | 29.3 | 19.9 | -113.45 | -1,607.1 | -814.2 | 1,830.5 | 1,785.8 | 44.67 | 40.976 | |
| 5,300.0 | 5,064.0 | 5,465.5 | 5,367.5 | 29.7 | 20.3 | -113.72 | -1,598.5 | -830.6 | 1,827.3 | 1,782.0 | 45.33 | 40.308 | |
| 5,314.9 | 5,078.2 | 5,475.8 | 5,377.4 | 29.8 | 20.4 | -113.75 | -1,597.4 | -832.7 | 1,826.7 | 1,781.3 | 45.43 | 40.209 | |
| 5,400.0 | 5,159.6 | 5,533.9 | 5,434.2 | 30.2 | 20.6 | -113.90 | -1,591.5 | -844.1 | 1,823.3 | 1,777.4 | 45.95 | 39.678 | |
| 5,413.4 | 5,172.4 | 5,543.1 | 5,443.1 | 30.3 | 20.6 | -113.92 | -1,590.6 | -845.8 | 1,822.8 | 1,776.8 | 46.03 | 39.604 | |
| 5,500.0 | 5,256.1 | 5,600.0 | 5,498.9 | 30.7 | 20.8 | -114.04 | -1,585.4 | -855.7 | 1,819.7 | 1,773.2 | 46.50 | 39.135 | |
| 5,511.8 | 5,267.6 | 5,600.0 | 5,498.9 | 30.7 | 20.8 | -114.04 | -1,585.4 | -855.7 | 1,819.3 | 1,772.8 | 46.54 | 39.091 | |
| 5,600.0 | 5,353.5 | 5,670.9 | 5,568.7 | 31.1 | 21.0 | -114.18 | -1,579.6 | -866.7 | 1,816.3 | 1,769.3 | 46.99 | 38.655 | |
| 5,610.2 | 5,363.5 | 5,677.9 | 5,575.6 | 31.1 | 21.0 | -114.19 | -1,579.1 | -867.7 | 1,816.0 | 1,769.0 | 47.03 | 38.611 | |
| 5,700.0 | 5,451.6 | 5,739.4 | 5,636.5 | 31.4 | 21.2 | -114.28 | -1,574.8 | -875.9 | 1,813.3 | 1,765.9 | 47.42 | 38.238 | |
| 5,708.6 | 5,460.2 | 5,745.4 | 5,642.3 | 31.4 | 21.2 | -114.28 | -1,574.4 | -876.6 | 1,813.1 | 1,765.6 | 47.45 | 38.207 | |
| 5,800.0 | 5,550.4 | 5,800.0 | 5,696.5 | 31.7 | 21.4 | -114.34 | -1,571.2 | -882.8 | 1,810.6 | 1,762.8 | 47.79 | 37.887 | |
| 5,807.1 | 5,557.4 | 5,800.0 | 5,696.5 | 31.7 | 21.4 | -114.33 | -1,571.2 | -882.8 | 1,810.5 | 1,762.7 | 47.80 | 37.872 | |
| 5,900.0 | 5,649.6 | 5,876.6 | 5,772.7 | 31.9 | 21.6 | -114.39 | -1,567.5 | -890.0 | 1,808.2 | 1,760.1 | 48.13 | 37.571 | |
| 5,905.5 | 5,655.1 | 5,880.4 | 5,776.5 | 31.9 | 21.6 | -114.40 | -1,567.3 | -890.3 | 1,808.1 | 1,759.9 | 48.14 | 37.556 | |
| 6,000.0 | 5,749.2 | 5,945.2 | 5,841.1 | 32.1 | 21.7 | -114.41 | -1,564.9 | -894.8 | 1,806.1 | 1,757.7 | 48.40 | 37.314 | |
| 6,003.9 | 5,753.1 | 5,947.9 | 5,843.8 | 32.1 | 21.7 | -114.41 | -1,564.9 | -895.0 | 1,806.0 | 1,757.6 | 48.41 | 37.306 | |
| 6,100.0 | 5,849.1 | 6,000.0 | 5,895.8 | 32.3 | 21.8 | -114.40 | -1,563.5 | -897.7 | 1,804.3 | 1,755.7 | 48.61 | 37.119 | |
| 6,102.3 | 5,851.4 | 6,000.0 | 5,895.8 | 32.3 | 21.8 | -114.40 | -1,563.5 | -897.7 | 1,804.3 | 1,755.7 | 48.61 | 37.117 | |
| 6,200.8 | 5,949.8 | 6,083.1 | 5,978.8 | 32.4 | 21.9 | -114.36 | -1,562.1 | -900.2 | 1,802.7 | 1,753.9 | 48.81 | 36.933 | |
| 6,202.6 | 5,951.6 | 6,084.3 | 5,980.0 | 32.4 | 21.9 | -114.36 | -1,562.1 | -900.2 | 1,802.7 | 1,753.8 | 48.81 | 36.930 | |
| 6,204.9 | 5,953.9 | 6,100.0 | 5,995.7 | 32.4 | 21.9 | 161.21 | -1,562.0 | -900.5 | 1,802.7 | 1,764.5 | 38.22 | 47.168 | |
| 6,234.9 | 5,983.9 | 6,106.5 | 6,002.2 | 32.4 | 21.9 | 161.21 | -1,562.0 | -900.5 | 1,802.3 | 1,764.0 | 38.27 | 47.100 | |
| 6,250.0 | 5,999.0 | 6,116.9 | 6,012.6 | 32.4 | 22.0 | 71.23 | -1,561.9 | -900.6 | 1,802.1 | 1,753.2 | 48.89 | 36.862 | |
| 6,299.2 | 6,048.2 | 6,155.4 | 6,051.2 | 32.4 | 22.0 | 71.37 | -1,561.9 | -900.7 | 1,801.2 | 1,752.2 | 48.94 | 36.801 | |
| 6,300.0 | 6,048.9 | 6,156.2 | 6,051.9 | 32.4 | 22.0 | 71.37 | -1,561.9 | -900.7 | 1,801.1 | 1,752.2 | 48.95 | 36.799 | |
| 6,350.0 | 6,098.5 | 6,190.0 | 6,085.7 | 32.4 | 22.0 | 71.63 | -1,561.9 | -900.4 | 1,799.3 | 1,750.3 | 48.99 | 36.725 | |
| 6,397.6 | 6,145.3 | 6,216.3 | 6,112.0 | 32.3 | 22.1 | 71.91 | -1,561.9 | -899.2 | 1,797.1 | 1,748.1 | 49.01 | 36.668 | |
| 6,400.0 | 6,147.6 | 6,217.6 | 6,113.3 | 32.3 | 22.1 | 71.93 | -1,561.9 | -899.1 | 1,796.9 | 1,747.9 | 49.01 | 36.665 | |
| 6,450.0 | 6,195.8 | 6,250.0 | 6,145.6 | 32.2 | 22.1 | 72.32 | -1,561.9 | -896.3 | 1,794.2 | 1,745.1 | 49.03 | 36.593 | |
| 6,496.0 | 6,239.3 | 6,270.6 | 6,166.0 | 32.1 | 22.1 | 72.68 | -1,561.9 | -893.7 | 1,791.2 | 1,742.2 | 49.02 | 36.542 | |
| 6,500.0 | 6,243.0 | 6,272.8 | 6,168.2 | 32.1 | 22.1 | 72.72 | -1,561.9 | -893.4 | 1,790.9 | 1,741.9 | 49.02 | 36.536 | |
| 6,550.0 | 6,289.0 | 6,300.0 | 6,195.0 | 32.0 | 22.1 | 73.19 | -1,561.9 | -889.0 | 1,787.3 | 1,738.3 | 49.02 | 36.458 | |
| 6,594.5 | 6,328.6 | 6,325.2 | 6,219.7 | 31.8 | 22.0 | 73.67 | -1,561.9 | -884.0 | 1,783.8 | 1,734.8 | 49.03 | 36.382 | |
| 6,600.0 | 6,333.4 | 6,328.3 | 6,222.7 | 31.8 | 22.0 | 73.74 | -1,561.9 | -883.3 | 1,783.3 | 1,734.3 | 49.03 | 36.372 | |
| 6,650.0 | 6,376.2 | 6,350.0 | 6,243.8 | 31.7 | 22.0 | 74.27 | -1,561.9 | -878.3 | 1,779.1 | 1,730.0 | 49.04 | 36.275 | |
| 6,692.9 | 6,411.3 | 6,380.0 | 6,272.7 | 31.6 | 22.0 | 74.88 | -1,561.9 | -870.2 | 1,775.1 | 1,726.0 | 49.09 | 36.163 | |
| 6,700.0 | 6,417.0 | 6,384.0 | 6,276.5 | 31.5 | 22.0 | 74.97 | -1,561.9 | -869.0 | 1,774.4 | 1,725.3 | 49.09 | 36.145 | |
| 6,750.0 | 6,455.7 | 6,411.9 | 6,303.1 | 31.4 | 21.9 | 75.66 | -1,561.9 | -860.3 | 1,769.6 | 1,720.4 | 49.15 | 36.000 | |
| 6,791.3 | 6,486.0 | 6,435.1 | 6,324.9 | 31.3 | 21.9 | 76.27 | -1,561.9 | -852.3 | 1,765.4 | 1,716.2 | 49.23 | 35.863 | |
| 6,800.0 | 6,492.2 | 6,440.0 | 6,329.4 | 31.3 | 21.9 | 76.40 | -1,561.9 | -850.5 | 1,764.6 | 1,715.3 | 49.24 | 35.833 | |
| 6,850.0 | 6,526.1 | 6,468.2 | 6,355.4 | 31.2 | 21.8 | 77.18 | -1,561.9 | -839.6 | 1,759.4 | 1,710.0 | 49.36 | 35.641 | |
| 6,889.7 | 6,551.2 | 6,490.7 | 6,375.8 | 31.2 | 21.8 | 77.82 | -1,561.9 | -830.2 | 1,755.2 | 1,705.7 | 49.49 | 35.468 | |
| 6,900.0 | 6,557.4 | 6,500.0 | 6,384.2 | 31.2 | 21.8 | 78.04 | -1,561.9 | -826.1 | 1,754.1 | 1,704.6 | 49.53 | 35.418 | |
| 6,950.0 | 6,586.0 | 6,524.9 | 6,406.3 | 31.1 | 21.7 | 78.84 | -1,561.9 | -814.6 | 1,748.8 | 1,699.1 | 49.71 | 35.179 | |
| 6,988.2 | 6,605.8 | 6,550.0 | 6,428.2 | 31.2 | 21.7 | 79.56 | -1,561.9 | -802.3 | 1,744.8 | 1,694.9 | 49.89 | 34.970 | |
| 7,000.0 | 6,611.5 | 6,550.0 | 6,428.2 | 31.2 | 21.7 | 79.66 | -1,561.9 | -802.3 | 1,743.5 | 1,693.6 | 49.94 | 34.915 | |
| 7,050.0 | 6,634.1 | 6,582.2 | 6,455.6 | 31.2 | 21.6 | 80.61 | -1,561.9 | -785.4 | 1,738.3 | 1,688.1 | 50.21 | 34.619 | |
| 7,086.6 | 6,648.6 | 6,600.0 | 6,470.4 | 31.3 | 21.6 | 81.22 | -1,561.9 | -775.5 | 1,734.7 | 1,684.2 | 50.44 | 34.392 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,611.2 | 6,479.6 | 31.4 | 21.5 | 81.53 | -1,561.9 | -769.1 | 1,733.3 | 1,682.8 | 50.53 | 34.306 | |
| 7,150.0 | 6,669.5 | 6,640.4 | 6,503.0 | 31.6 | 21.5 | 82.46 | -1,561.9 | -751.8 | 1,728.5 | 1,677.6 | 50.88 | 33.976 | |
| 7,185.0 | 6,678.8 | 6,661.0 | 6,519.2 | 31.7 | 21.4 | 83.12 | -1,561.9 | -739.0 | 1,725.3 | 1,674.2 | 51.15 | 33.731 | |
| 7,200.0 | 6,682.3 | 6,669.8 | 6,526.0 | 31.8 | 21.4 | 83.40 | -1,561.9 | -733.4 | 1,724.0 | 1,672.7 | 51.26 | 33.630 | |
| 7,250.0 | 6,691.6 | 6,700.0 | 6,548.7 | 32.1 | 21.4 | 84.35 | -1,561.9 | -713.5 | 1,719.8 | 1,668.1 | 51.68 | 33.276 | |
| 7,283.4 | 6,696.0 | 6,719.6 | 6,563.0 | 32.3 | 21.3 | 84.97 | -1,561.9 | -700.1 | 1,717.3 | 1,665.3 | 51.99 | 33.029 | |
| 7,300.0 | 6,697.5 | 6,729.6 | 6,570.1 | 32.4 | 21.3 | 85.28 | -1,561.9 | -693.1 | 1,716.1 | 1,663.9 | 52.14 | 32.913 | |
| 7,350.0 | 6,699.9 | 6,760.0 | 6,591.3 | 32.8 | 21.3 | 86.21 | -1,561.9 | -671.3 | 1,712.8 | 1,660.2 | 52.62 | 32.550 | |
| 7,364.4 | 6,700.0 | 6,768.8 | 6,597.2 | 32.9 | 21.2 | 86.47 | -1,561.9 | -664.7 | 1,712.0 | 1,659.2 | 52.77 | 32.444 | |
| 7,381.9 | 6,699.9 | 6,779.7 | 6,604.5 | 33.1 | 21.2 | 86.72 | -1,561.9 | -656.6 | 1,711.1 | 1,658.1 | 52.94 | 32.324 | |
| 7,400.0 | 6,699.8 | 6,791.3 | 6,612.1 | 33.2 | 21.2 | 86.97 | -1,561.9 | -647.8 | 1,710.2 | 1,657.1 | 53.11 | 32.202 | |
| 7,480.3 | 6,699.2 | 6,847.0 | 6,646.4 | 34.0 | 21.2 | 88.13 | -1,561.9 | -604.0 | 1,707.5 | 1,653.4 | 54.03 | 31.602 | |
| 7,500.0 | 6,699.1 | 6,861.7 | 6,654.8 | 34.2 | 21.2 | 88.42 | -1,561.9 | -592.0 | 1,707.0 | 1,652.8 | 54.27 | 31.454 | |
| 7,578.7 | 6,698.6 | 6,924.9 | 6,688.5 | 35.2 | 21.2 | 89.56 | -1,561.9 | -538.5 | 1,706.1 | 1,650.7 | 55.43 | 30.778 | |
| 7,600.0 | 6,698.5 | 6,943.2 | 6,697.3 | 35.4 | 21.3 | 89.86 | -1,561.9 | -522.5 | 1,706.1 | 1,650.3 | 55.76 | 30.595 | |
| 7,610.0 | 6,698.4 | 6,951.9 | 6,701.4 | 35.6 | 21.3 | 90.00 | -1,561.9 | -514.8 | 1,706.1 | 1,650.1 | 55.94 | 30.499 | CC |
| 7,677.1 | 6,698.0 | 7,013.9 | 6,727.6 | 36.5 | 21.5 | 90.89 | -1,561.9 | -458.6 | 1,706.3 | 1,649.1 | 57.21 | 29.824 | |
| 7,700.0 | 6,697.8 | 7,036.1 | 6,735.7 | 36.8 | 21.6 | 91.17 | -1,561.9 | -437.9 | 1,706.5 | 1,648.8 | 57.68 | 29.587 | |
| 7,775.6 | 6,697.3 | 7,113.3 | 6,759.1 | 38.0 | 22.0 | 91.97 | -1,561.9 | -364.4 | 1,707.1 | 1,647.7 | 59.46 | 28.710 | |
| 7,800.0 | 6,697.2 | 7,139.3 | 6,765.2 | 38.3 | 22.2 | 92.18 | -1,561.9 | -339.1 | 1,707.4 | 1,647.3 | 60.08 | 28.416 | |
| 7,874.0 | 6,696.7 | 7,220.6 | 6,778.2 | 39.6 | 23.0 | 92.63 | -1,561.9 | -258.9 | 1,707.9 | 1,645.7 | 62.22 | 27.449 | |
| 7,900.0 | 6,696.5 | 7,249.8 | 6,780.6 | 40.0 | 23.3 | 92.72 | -1,561.9 | -229.9 | 1,708.0 | 1,645.0 | 63.01 | 27.106 | |
| 7,972.4 | 6,696.1 | 7,328.5 | 6,781.7 | 41.3 | 24.2 | 92.77 | -1,561.9 | -151.2 | 1,708.1 | 1,642.7 | 65.40 | 26.117 | |
| 8,000.0 | 6,695.9 | 7,356.1 | 6,781.3 | 41.8 | 24.6 | 92.77 | -1,561.9 | -123.6 | 1,708.1 | 1,641.7 | 66.31 | 25.759 | |
| 8,070.8 | 6,695.4 | 7,426.9 | 6,780.3 | 43.1 | 25.7 | 92.75 | -1,561.9 | -52.8 | 1,708.0 | 1,639.3 | 68.78 | 24.834 | |
| 8,100.0 | 6,695.2 | 7,456.1 | 6,779.9 | 43.7 | 26.2 | 92.74 | -1,561.9 | -23.6 | 1,708.0 | 1,638.2 | 69.83 | 24.460 | |
| 8,169.3 | 6,694.8 | 7,525.3 | 6,779.0 | 45.1 | 27.4 | 92.73 | -1,561.9 | 45.6 | 1,708.0 | 1,635.6 | 72.44 | 23.579 | |
| 8,200.0 | 6,694.6 | 7,556.1 | 6,778.6 | 45.7 | 27.9 | 92.72 | -1,561.9 | 76.4 | 1,708.0 | 1,634.4 | 73.63 | 23.197 | |
| 8,267.7 | 6,694.1 | 7,623.7 | 6,777.7 | 47.1 | 29.2 | 92.70 | -1,561.9 | 144.1 | 1,708.0 | 1,631.6 | 76.34 | 22.373 | |
| 8,300.0 | 6,693.9 | 7,656.0 | 6,777.2 | 47.8 | 29.9 | 92.69 | -1,561.9 | 176.3 | 1,708.0 | 1,630.3 | 77.67 | 21.991 | |
| 8,366.1 | 6,693.5 | 7,722.2 | 6,776.3 | 49.2 | 31.2 | 92.68 | -1,561.9 | 242.5 | 1,707.9 | 1,627.5 | 80.45 | 21.230 | |
| 8,400.0 | 6,693.3 | 7,756.0 | 6,775.9 | 49.9 | 32.0 | 92.67 | -1,561.9 | 276.3 | 1,707.9 | 1,626.0 | 81.90 | 20.854 | |
| 8,464.5 | 6,692.9 | 7,820.6 | 6,775.0 | 51.4 | 33.4 | 92.66 | -1,561.9 | 340.9 | 1,707.9 | 1,623.2 | 84.73 | 20.158 | |
| 8,500.0 | 6,692.6 | 7,856.0 | 6,774.5 | 52.1 | 34.2 | 92.65 | -1,561.9 | 376.3 | 1,707.9 | 1,621.6 | 86.30 | 19.789 | |
| 8,563.0 | 6,692.2 | 7,919.0 | 6,773.7 | 53.6 | 35.6 | 92.63 | -1,561.9 | 439.3 | 1,707.9 | 1,618.7 | 89.15 | 19.157 | |
| 8,600.0 | 6,692.0 | 7,956.0 | 6,773.1 | 54.4 | 36.4 | 92.62 | -1,561.9 | 476.3 | 1,707.9 | 1,617.0 | 90.85 | 18.800 | |
| 8,661.4 | 6,691.6 | 8,017.4 | 6,772.3 | 55.8 | 37.9 | 92.61 | -1,561.9 | 537.7 | 1,707.8 | 1,614.1 | 93.70 | 18.227 | |
| 8,700.0 | 6,691.3 | 8,056.0 | 6,771.8 | 56.7 | 38.8 | 92.60 | -1,561.9 | 576.3 | 1,707.8 | 1,612.3 | 95.51 | 17.882 | |
| 8,759.8 | 6,690.9 | 8,115.9 | 6,771.0 | 58.1 | 40.2 | 92.59 | -1,561.9 | 636.1 | 1,707.8 | 1,609.5 | 98.35 | 17.365 | |
| 8,800.0 | 6,690.7 | 8,156.0 | 6,770.4 | 59.1 | 41.2 | 92.58 | -1,561.9 | 676.3 | 1,707.8 | 1,607.5 | 100.27 | 17.032 | |
| 8,858.2 | 6,690.3 | 8,214.3 | 6,769.6 | 60.5 | 42.6 | 92.56 | -1,561.9 | 734.5 | 1,707.8 | 1,604.7 | 103.08 | 16.567 | |
| 8,900.0 | 6,690.0 | 8,256.0 | 6,769.1 | 61.5 | 43.6 | 92.55 | -1,561.9 | 776.3 | 1,707.8 | 1,602.6 | 105.12 | 16.246 | |
| 8,956.7 | 6,689.7 | 8,312.7 | 6,768.3 | 62.9 | 45.0 | 92.54 | -1,561.9 | 832.9 | 1,707.7 | 1,599.8 | 107.90 | 15.827 | |
| 9,000.0 | 6,689.4 | 8,356.0 | 6,767.7 | 63.9 | 46.1 | 92.53 | -1,561.9 | 876.3 | 1,707.7 | 1,597.7 | 110.04 | 15.519 | |
| 9,055.1 | 6,689.0 | 8,411.1 | 6,767.0 | 65.3 | 47.5 | 92.52 | -1,561.9 | 931.4 | 1,707.7 | 1,594.9 | 112.78 | 15.142 | |
| 9,100.0 | 6,688.7 | 8,456.0 | 6,766.4 | 66.4 | 48.7 | 92.50 | -1,561.9 | 976.3 | 1,707.7 | 1,592.7 | 115.03 | 14.846 | |
| 9,153.5 | 6,688.4 | 8,509.6 | 6,765.6 | 67.7 | 50.0 | 92.49 | -1,561.9 | 1,029.8 | 1,707.7 | 1,590.0 | 117.72 | 14.506 | |
| 9,200.0 | 6,688.1 | 8,556.0 | 6,765.0 | 68.9 | 51.2 | 92.48 | -1,561.9 | 1,076.2 | 1,707.7 | 1,587.6 | 120.07 | 14.222 | |
| 9,251.9 | 6,687.8 | 8,608.0 | 6,764.3 | 70.2 | 52.6 | 92.47 | -1,561.9 | 1,128.2 | 1,707.7 | 1,584.9 | 122.71 | 13.916 | |
| 9,300.0 | 6,687.4 | 8,656.0 | 6,763.6 | 71.4 | 53.8 | 92.46 | -1,561.9 | 1,176.2 | 1,707.6 | 1,582.5 | 125.16 | 13.644 | |
| 9,350.4 | 6,687.1 | 8,706.4 | 6,763.0 | 72.7 | 55.1 | 92.44 | -1,561.9 | 1,226.6 | 1,707.6 | 1,579.9 | 127.74 | 13.368 | |
| 9,400.0 | 6,686.8 | 8,756.0 | 6,762.3 | 73.9 | 56.4 | 92.43 | -1,561.9 | 1,276.2 | 1,707.6 | 1,577.3 | 130.30 | 13.106 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-332 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 8,804.8 | 6,761.6 | 75.2 | 57.7 | 92.42 | -1,561.9 | 1,325.0 | 1,707.6 | 1,574.8 | 132.82 | 12.857 | |
| 9,500.0 | 6,686.1 | 8,856.0 | 6,760.9 | 76.5 | 59.0 | 92.41 | -1,561.9 | 1,376.2 | 1,707.6 | 1,572.1 | 135.47 | 12.605 | |
| 9,547.2 | 6,685.8 | 8,903.2 | 6,760.3 | 77.7 | 60.3 | 92.40 | -1,561.9 | 1,423.4 | 1,707.6 | 1,569.6 | 137.93 | 12.380 | |
| 9,600.0 | 6,685.5 | 8,956.0 | 6,759.6 | 79.0 | 61.7 | 92.39 | -1,561.9 | 1,476.2 | 1,707.6 | 1,566.9 | 140.68 | 12.138 | |
| 9,645.6 | 6,685.2 | 9,001.7 | 6,758.9 | 80.2 | 62.9 | 92.37 | -1,561.9 | 1,521.8 | 1,707.5 | 1,564.5 | 143.07 | 11.935 | |
| 9,700.0 | 6,684.8 | 9,056.0 | 6,758.2 | 81.6 | 64.3 | 92.36 | -1,561.9 | 1,576.2 | 1,707.5 | 1,561.6 | 145.92 | 11.702 | |
| 9,744.1 | 6,684.6 | 9,100.1 | 6,757.6 | 82.8 | 65.5 | 92.35 | -1,561.9 | 1,620.3 | 1,707.5 | 1,559.3 | 148.24 | 11.519 | |
| 9,800.0 | 6,684.2 | 9,156.0 | 6,756.8 | 84.2 | 67.0 | 92.34 | -1,561.9 | 1,676.2 | 1,707.5 | 1,556.3 | 151.18 | 11.294 | |
| 9,842.5 | 6,683.9 | 9,198.5 | 6,756.3 | 85.3 | 68.1 | 92.33 | -1,561.9 | 1,718.7 | 1,707.5 | 1,554.1 | 153.43 | 11.129 | |
| 9,900.0 | 6,683.5 | 9,256.0 | 6,755.5 | 86.8 | 69.7 | 92.31 | -1,561.9 | 1,776.2 | 1,707.5 | 1,551.0 | 156.47 | 10.912 | |
| 9,940.9 | 6,683.3 | 9,296.9 | 6,754.9 | 87.9 | 70.8 | 92.30 | -1,561.9 | 1,817.1 | 1,707.5 | 1,548.8 | 158.64 | 10.763 | |
| 10,000.0 | 6,682.9 | 9,356.0 | 6,754.1 | 89.5 | 72.4 | 92.29 | -1,561.9 | 1,876.2 | 1,707.4 | 1,545.7 | 161.79 | 10.554 | |
| 10,039.3 | 6,682.6 | 9,395.4 | 6,753.6 | 90.5 | 73.4 | 92.28 | -1,561.9 | 1,915.5 | 1,707.4 | 1,543.5 | 163.88 | 10.419 | |
| 10,100.0 | 6,682.2 | 9,456.0 | 6,752.8 | 92.1 | 75.1 | 92.27 | -1,561.9 | 1,976.1 | 1,707.4 | 1,540.3 | 167.12 | 10.217 | |
| 10,137.8 | 6,682.0 | 9,493.8 | 6,752.2 | 93.1 | 76.1 | 92.26 | -1,561.9 | 2,013.9 | 1,707.4 | 1,538.3 | 169.14 | 10.095 | |
| 10,200.0 | 6,681.6 | 9,556.0 | 6,751.4 | 94.8 | 77.8 | 92.24 | -1,561.9 | 2,076.1 | 1,707.4 | 1,534.9 | 172.47 | 9.900 | |
| 10,236.2 | 6,681.4 | 9,592.2 | 6,750.9 | 95.7 | 78.8 | 92.23 | -1,561.9 | 2,112.3 | 1,707.4 | 1,533.0 | 174.41 | 9.790 | |
| 10,300.0 | 6,680.9 | 9,656.0 | 6,750.0 | 97.4 | 80.5 | 92.22 | -1,561.9 | 2,176.1 | 1,707.4 | 1,529.5 | 177.83 | 9.601 | |
| 10,334.6 | 6,680.7 | 9,690.6 | 6,749.6 | 98.3 | 81.4 | 92.21 | -1,561.9 | 2,210.7 | 1,707.3 | 1,527.7 | 179.70 | 9.501 | |
| 10,400.0 | 6,680.3 | 9,756.0 | 6,748.7 | 100.1 | 83.2 | 92.19 | -1,561.9 | 2,276.1 | 1,707.3 | 1,524.1 | 183.21 | 9.319 | |
| 10,433.0 | 6,680.1 | 9,789.0 | 6,748.2 | 101.0 | 84.1 | 92.19 | -1,561.9 | 2,309.1 | 1,707.3 | 1,522.3 | 185.00 | 9.229 | |
| 10,500.0 | 6,679.7 | 9,856.0 | 6,747.3 | 102.8 | 85.9 | 92.17 | -1,561.9 | 2,376.1 | 1,707.3 | 1,518.7 | 188.61 | 9.052 | |
| 10,531.5 | 6,679.4 | 9,887.5 | 6,746.9 | 103.6 | 86.8 | 92.16 | -1,561.9 | 2,407.6 | 1,707.3 | 1,517.0 | 190.31 | 8.971 | |
| 10,600.0 | 6,679.0 | 9,956.0 | 6,746.0 | 105.4 | 88.7 | 92.15 | -1,561.9 | 2,476.1 | 1,707.3 | 1,513.3 | 194.02 | 8.800 | |
| 10,629.9 | 6,678.8 | 9,985.9 | 6,745.6 | 106.2 | 89.5 | 92.14 | -1,561.9 | 2,506.0 | 1,707.3 | 1,511.6 | 195.64 | 8.727 | |
| 10,700.0 | 6,678.4 | 10,056.0 | 6,744.6 | 108.1 | 91.4 | 92.12 | -1,561.9 | 2,576.1 | 1,707.2 | 1,507.8 | 199.44 | 8.560 | |
| 10,728.3 | 6,678.2 | 10,084.3 | 6,744.2 | 108.9 | 92.2 | 92.12 | -1,561.9 | 2,604.4 | 1,707.2 | 1,506.3 | 200.98 | 8.495 | |
| 10,800.0 | 6,677.7 | 10,156.0 | 6,743.2 | 110.8 | 94.1 | 92.10 | -1,561.9 | 2,676.1 | 1,707.2 | 1,502.4 | 204.87 | 8.333 | |
| 10,826.7 | 6,677.5 | 10,182.7 | 6,742.9 | 111.5 | 94.9 | 92.09 | -1,561.9 | 2,702.8 | 1,707.2 | 1,500.9 | 206.32 | 8.275 | |
| 10,900.0 | 6,677.1 | 10,256.0 | 6,741.9 | 113.5 | 96.9 | 92.08 | -1,561.9 | 2,776.0 | 1,707.2 | 1,496.9 | 210.31 | 8.118 | |
| 10,925.2 | 6,676.9 | 10,281.2 | 6,741.5 | 114.2 | 97.6 | 92.07 | -1,561.9 | 2,801.2 | 1,707.2 | 1,495.5 | 211.68 | 8.065 | |
| 11,000.0 | 6,676.4 | 10,356.0 | 6,740.5 | 116.2 | 99.6 | 92.05 | -1,561.9 | 2,876.0 | 1,707.2 | 1,491.4 | 215.76 | 7.912 | |
| 11,023.6 | 6,676.3 | 10,379.6 | 6,740.2 | 116.8 | 100.3 | 92.05 | -1,561.9 | 2,899.6 | 1,707.2 | 1,490.1 | 217.04 | 7.865 | |
| 11,100.0 | 6,675.8 | 10,456.0 | 6,739.2 | 118.9 | 102.4 | 92.03 | -1,561.9 | 2,976.0 | 1,707.1 | 1,485.9 | 221.22 | 7.717 | |
| 11,122.0 | 6,675.6 | 10,478.0 | 6,738.9 | 119.5 | 103.0 | 92.02 | -1,561.9 | 2,998.0 | 1,707.1 | 1,484.7 | 222.42 | 7.675 | |
| 11,200.0 | 6,675.1 | 10,556.0 | 6,737.8 | 121.6 | 105.1 | 92.00 | -1,561.9 | 3,076.0 | 1,707.1 | 1,480.4 | 226.68 | 7.531 | |
| 11,220.4 | 6,675.0 | 10,576.4 | 6,737.5 | 122.2 | 105.7 | 92.00 | -1,561.9 | 3,096.5 | 1,707.1 | 1,479.3 | 227.80 | 7.494 | |
| 11,300.0 | 6,674.5 | 10,656.0 | 6,736.5 | 124.3 | 107.9 | 91.98 | -1,561.9 | 3,176.0 | 1,707.1 | 1,474.9 | 232.15 | 7.353 | |
| 11,318.9 | 6,674.3 | 10,674.8 | 6,736.2 | 124.9 | 108.4 | 91.98 | -1,561.9 | 3,194.9 | 1,707.1 | 1,473.9 | 233.19 | 7.321 | |
| 11,400.0 | 6,673.8 | 10,756.0 | 6,735.1 | 127.1 | 110.7 | 91.96 | -1,561.9 | 3,276.0 | 1,707.1 | 1,469.4 | 237.63 | 7.184 | |
| 11,417.3 | 6,673.7 | 10,773.3 | 6,734.9 | 127.5 | 111.1 | 91.95 | -1,561.9 | 3,293.3 | 1,707.1 | 1,468.5 | 238.58 | 7.155 | |
| 11,500.0 | 6,673.2 | 10,856.0 | 6,733.7 | 129.8 | 113.4 | 91.93 | -1,561.9 | 3,376.0 | 1,707.1 | 1,463.9 | 243.12 | 7.021 | |
| 11,515.7 | 6,673.1 | 10,871.7 | 6,733.5 | 130.2 | 113.8 | 91.93 | -1,561.9 | 3,391.7 | 1,707.0 | 1,463.1 | 243.98 | 6.997 | |
| 11,600.0 | 6,672.5 | 10,956.0 | 6,732.4 | 132.5 | 116.2 | 91.91 | -1,561.9 | 3,476.0 | 1,707.0 | 1,458.4 | 248.61 | 6.866 | |
| 11,614.1 | 6,672.4 | 10,970.1 | 6,732.2 | 132.9 | 116.6 | 91.91 | -1,561.9 | 3,490.1 | 1,707.0 | 1,457.6 | 249.39 | 6.845 | |
| 11,700.0 | 6,671.9 | 11,056.0 | 6,731.0 | 135.3 | 118.9 | 91.89 | -1,561.9 | 3,576.0 | 1,707.0 | 1,452.9 | 254.11 | 6.718 | |
| 11,712.6 | 6,671.8 | 11,068.5 | 6,730.8 | 135.6 | 119.3 | 91.88 | -1,561.9 | 3,588.5 | 1,707.0 | 1,452.2 | 254.80 | 6.699 | |
| 11,800.0 | 6,671.2 | 11,156.0 | 6,729.7 | 138.0 | 121.7 | 91.86 | -1,561.9 | 3,675.9 | 1,707.0 | 1,447.4 | 259.61 | 6.575 | |
| 11,811.0 | 6,671.1 | 11,167.0 | 6,729.5 | 138.3 | 122.0 | 91.86 | -1,561.9 | 3,686.9 | 1,707.0 | 1,446.8 | 260.22 | 6.560 | |
| 11,900.0 | 6,670.6 | 11,256.0 | 6,728.3 | 140.7 | 124.5 | 91.84 | -1,561.9 | 3,775.9 | 1,707.0 | 1,441.8 | 265.12 | 6.438 | |
| 11,909.4 | 6,670.5 | 11,265.4 | 6,728.2 | 141.0 | 124.7 | 91.84 | -1,561.9 | 3,785.4 | 1,707.0 | 1,441.3 | 265.64 | 6.426 | |
| 11,987.2 | 6,670.0 | 11,344.0 | 6,727.1 | 143.1 | 126.9 | 91.82 | -1,561.9 | 3,864.0 | 1,706.9 | 1,437.0 | 269.95 | 6.323 | ES, SF |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,976.4 | 0.20 | N/A | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,976.4 | 0.20 | 9,770.939 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,975.9 | 0.64 | 3,099.701 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,975.9 | 0.65 | 3,032.363 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,975.5 | 1.08 | 1,829.956 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,975.5 | 1.10 | 1,794.664 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,975.0 | 1.52 | 1,298.177 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,975.0 | 1.55 | 1,274.472 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,974.6 | 1.97 | 1,005.874 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,974.6 | 2.00 | 988.073 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,974.2 | 2.41 | 821.011 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,974.1 | 2.45 | 806.776 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,973.7 | 2.85 | 693.549 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,973.7 | 2.90 | 681.694 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,973.3 | 3.29 | 600.345 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,973.2 | 3.35 | 590.192 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,972.8 | 3.73 | 529.224 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,972.8 | 3.80 | 520.346 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,972.4 | 4.18 | 473.169 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.67 | -1,974.9 | -80.2 | 1,976.6 | 1,972.3 | 4.25 | 465.283 | |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.27 | -1,974.9 | -80.2 | 1,976.6 | 1,972.0 | 4.61 | 428.746 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.28 | -1,974.9 | -80.2 | 1,976.7 | 1,972.0 | 4.69 | 421.810 | |
| 1,181.1 | 1,181.0 | 1,184.0 | 1,184.0 | 2.5 | 2.5 | -93.39 | -1,974.9 | -80.2 | 1,976.9 | 1,971.9 | 5.04 | 392.451 | |
| 1,200.0 | 1,199.8 | 1,202.8 | 1,202.8 | 2.5 | 2.6 | -93.43 | -1,974.9 | -80.2 | 1,977.0 | 1,971.8 | 5.12 | 386.195 | |
| 1,279.5 | 1,279.1 | 1,282.1 | 1,282.1 | 2.7 | 2.8 | -93.61 | -1,974.9 | -80.2 | 1,977.4 | 1,971.9 | 5.47 | 361.219 | |
| 1,300.0 | 1,299.5 | 1,302.5 | 1,302.5 | 2.8 | 2.8 | -93.67 | -1,974.9 | -80.2 | 1,977.5 | 1,971.9 | 5.57 | 355.314 | |
| 1,377.9 | 1,376.9 | 1,379.9 | 1,379.9 | 3.0 | 3.0 | -93.92 | -1,974.9 | -80.2 | 1,978.1 | 1,972.2 | 5.93 | 333.585 | |
| 1,400.0 | 1,398.7 | 1,401.7 | 1,401.7 | 3.0 | 3.0 | -94.00 | -1,974.9 | -80.2 | 1,978.3 | 1,972.3 | 6.03 | 327.927 | |
| 1,476.4 | 1,474.2 | 1,501.2 | 1,501.2 | 3.2 | 3.2 | -94.44 | -1,974.6 | -79.9 | 1,979.0 | 1,972.6 | 6.46 | 306.154 | |
| 1,500.0 | 1,497.5 | 1,544.8 | 1,544.8 | 3.3 | 3.3 | -94.68 | -1,973.9 | -79.0 | 1,978.9 | 1,972.3 | 6.62 | 298.754 | |
| 1,574.8 | 1,571.0 | 1,681.0 | 1,680.7 | 3.5 | 3.6 | -95.61 | -1,968.8 | -73.3 | 1,977.3 | 1,970.1 | 7.16 | 276.170 | |
| 1,600.0 | 1,595.6 | 1,726.1 | 1,725.7 | 3.6 | 3.7 | -95.98 | -1,966.1 | -70.3 | 1,976.3 | 1,968.9 | 7.34 | 269.211 | |
| 1,673.2 | 1,667.0 | 1,854.4 | 1,853.1 | 3.9 | 4.0 | -97.20 | -1,956.0 | -58.9 | 1,972.3 | 1,964.4 | 7.91 | 249.370 | |
| 1,700.0 | 1,693.1 | 1,900.2 | 1,898.4 | 4.0 | 4.2 | -97.69 | -1,951.5 | -53.8 | 1,970.4 | 1,962.3 | 8.12 | 242.747 | |
| 1,771.6 | 1,762.4 | 2,019.6 | 2,015.9 | 4.3 | 4.5 | -99.14 | -1,937.5 | -38.0 | 1,964.6 | 1,955.9 | 8.73 | 224.978 | |
| 1,800.0 | 1,789.6 | 2,058.6 | 2,054.0 | 4.4 | 4.6 | -99.67 | -1,932.2 | -32.0 | 1,962.0 | 1,953.1 | 8.96 | 218.959 | |
| 1,870.1 | 1,856.8 | 2,121.4 | 2,115.4 | 4.7 | 4.8 | -100.59 | -1,923.6 | -22.3 | 1,956.1 | 1,946.6 | 9.48 | 206.260 | |
| 1,900.0 | 1,885.3 | 2,148.0 | 2,141.4 | 4.9 | 4.9 | -100.99 | -1,919.9 | -18.1 | 1,953.8 | 1,944.1 | 9.71 | 201.262 | |
| 1,968.5 | 1,950.2 | 2,208.3 | 2,200.5 | 5.3 | 5.1 | -101.91 | -1,911.6 | -8.7 | 1,949.1 | 1,938.8 | 10.27 | 189.831 | |
| 2,000.0 | 1,979.8 | 2,235.8 | 2,227.4 | 5.5 | 5.2 | -102.34 | -1,907.8 | -4.5 | 1,947.2 | 1,936.7 | 10.53 | 184.990 | |
| 2,044.9 | 2,021.9 | 2,274.8 | 2,265.5 | 5.7 | 5.3 | -102.96 | -1,902.4 | 1.6 | 1,944.9 | 1,934.0 | 10.92 | 178.126 | |
| 2,066.9 | 2,042.5 | 2,293.8 | 2,284.1 | 5.9 | 5.4 | -103.24 | -1,899.8 | 4.5 | 1,943.9 | 1,932.8 | 11.12 | 174.852 | |
| 2,100.0 | 2,073.4 | 2,322.3 | 2,312.0 | 6.1 | 5.5 | -103.66 | -1,895.9 | 9.0 | 1,942.5 | 1,931.1 | 11.42 | 170.133 | |
| 2,165.3 | 2,134.4 | 2,378.8 | 2,367.2 | 6.5 | 5.7 | -104.50 | -1,888.1 | 17.8 | 1,940.2 | 1,928.2 | 12.02 | 161.367 | |
| 2,200.0 | 2,166.8 | 2,408.7 | 2,396.5 | 6.8 | 5.8 | -104.95 | -1,884.0 | 22.4 | 1,939.2 | 1,926.9 | 12.34 | 157.084 | |
| 2,263.8 | 2,226.4 | 2,463.7 | 2,450.3 | 7.2 | 6.0 | -105.77 | -1,876.4 | 31.0 | 1,937.8 | 1,924.8 | 12.95 | 149.627 | |
| 2,300.0 | 2,260.2 | 2,495.0 | 2,480.9 | 7.4 | 6.1 | -106.23 | -1,872.1 | 35.8 | 1,937.2 | 1,923.9 | 13.29 | 145.719 | |
| 2,362.2 | 2,318.3 | 2,548.7 | 2,533.4 | 7.9 | 6.3 | -107.04 | -1,864.7 | 44.2 | 1,936.6 | 1,922.7 | 13.89 | 139.382 | |
| 2,400.0 | 2,353.6 | 2,581.4 | 2,565.4 | 8.1 | 6.5 | -107.52 | -1,860.2 | 49.3 | 1,936.5 | 1,922.2 | 14.26 | 135.816 | |
| 2,403.2 | 2,356.6 | 2,584.1 | 2,568.1 | 8.2 | 6.5 | -107.56 | -1,859.8 | 49.7 | 1,936.5 | 1,922.2 | 14.29 | 135.521 | |
| 2,460.6 | 2,410.3 | 2,633.7 | 2,616.6 | 8.6 | 6.7 | -108.30 | -1,852.9 | 57.4 | 1,936.7 | 1,921.9 | 14.85 | 130.429 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,667.7 | 2,649.8 | 8.9 | 6.8 | -108.81 | -1,848.3 | 62.7 | 1,937.1 | 1,921.9 | 15.23 | 127.176 | |
| 2,559.0 | 2,502.2 | 2,718.7 | 2,699.7 | 9.3 | 7.0 | -109.57 | -1,841.2 | 70.6 | 1,938.1 | 1,922.3 | 15.81 | 122.587 | |
| 2,600.0 | 2,540.5 | 2,754.0 | 2,734.3 | 9.6 | 7.1 | -110.10 | -1,836.4 | 76.1 | 1,939.0 | 1,922.8 | 16.21 | 119.617 | |
| 2,657.5 | 2,594.2 | 2,803.6 | 2,782.8 | 10.0 | 7.3 | -110.84 | -1,829.5 | 83.8 | 1,940.7 | 1,924.0 | 16.77 | 115.697 | |
| 2,700.0 | 2,633.9 | 2,840.4 | 2,818.7 | 10.3 | 7.5 | -111.38 | -1,824.5 | 89.6 | 1,942.3 | 1,925.1 | 17.19 | 112.982 | |
| 2,755.9 | 2,686.1 | 2,888.6 | 2,865.9 | 10.7 | 7.7 | -112.10 | -1,817.8 | 97.1 | 1,944.7 | 1,926.9 | 17.74 | 109.624 | |
| 2,800.0 | 2,727.3 | 2,926.7 | 2,903.2 | 11.0 | 7.8 | -112.67 | -1,812.6 | 103.0 | 1,946.8 | 1,928.6 | 18.17 | 107.141 | |
| 2,854.3 | 2,778.1 | 2,973.6 | 2,949.1 | 11.4 | 8.0 | -113.36 | -1,806.1 | 110.3 | 1,949.8 | 1,931.1 | 18.70 | 104.256 | |
| 2,900.0 | 2,820.7 | 3,013.0 | 2,987.6 | 11.8 | 8.2 | -113.94 | -1,800.7 | 116.4 | 1,952.7 | 1,933.5 | 19.15 | 101.982 | |
| 2,952.7 | 2,870.0 | 3,058.6 | 3,032.2 | 12.2 | 8.4 | -114.61 | -1,794.4 | 123.5 | 1,956.2 | 1,936.6 | 19.66 | 99.500 | |
| 3,000.0 | 2,914.2 | 3,099.4 | 3,072.1 | 12.5 | 8.5 | -115.21 | -1,788.8 | 129.8 | 1,959.8 | 1,939.7 | 20.12 | 97.412 | |
| 3,051.2 | 2,962.0 | 3,143.5 | 3,115.3 | 12.9 | 8.7 | -115.86 | -1,782.7 | 136.7 | 1,963.9 | 1,943.3 | 20.61 | 95.273 | |
| 3,100.0 | 3,007.6 | 3,185.7 | 3,156.5 | 13.3 | 8.9 | -116.47 | -1,776.9 | 143.3 | 1,968.2 | 1,947.1 | 21.08 | 93.354 | |
| 3,149.6 | 3,053.9 | 3,228.5 | 3,198.4 | 13.6 | 9.1 | -117.10 | -1,770.9 | 149.9 | 1,972.8 | 1,951.2 | 21.56 | 91.509 | |
| 3,200.0 | 3,101.0 | 3,272.0 | 3,241.0 | 14.0 | 9.3 | -117.73 | -1,764.9 | 156.7 | 1,977.8 | 1,955.8 | 22.04 | 89.743 | |
| 3,248.0 | 3,145.9 | 3,313.5 | 3,281.5 | 14.4 | 9.4 | -118.33 | -1,759.2 | 163.1 | 1,982.9 | 1,960.4 | 22.49 | 88.150 | |
| 3,300.0 | 3,194.4 | 3,358.4 | 3,325.4 | 14.8 | 9.6 | -118.97 | -1,753.0 | 170.1 | 1,988.7 | 1,965.7 | 22.98 | 86.523 | |
| 3,346.4 | 3,237.8 | 3,398.5 | 3,364.7 | 15.1 | 9.8 | -119.54 | -1,747.5 | 176.4 | 1,994.1 | 1,970.7 | 23.42 | 85.146 | |
| 3,400.0 | 3,287.8 | 3,444.7 | 3,409.9 | 15.5 | 10.0 | -120.20 | -1,741.1 | 183.6 | 2,000.8 | 1,976.8 | 23.92 | 83.646 | |
| 3,444.9 | 3,329.8 | 3,483.5 | 3,447.8 | 15.9 | 10.2 | -120.75 | -1,735.8 | 189.6 | 2,006.6 | 1,982.2 | 24.33 | 82.456 | |
| 3,500.0 | 3,381.3 | 3,531.0 | 3,494.3 | 16.3 | 10.4 | -121.42 | -1,729.2 | 197.0 | 2,014.0 | 1,989.2 | 24.84 | 81.074 | |
| 3,543.3 | 3,421.7 | 3,568.4 | 3,530.9 | 16.6 | 10.5 | -121.95 | -1,724.1 | 202.8 | 2,020.1 | 1,994.9 | 25.24 | 80.045 | |
| 3,600.0 | 3,474.7 | 3,617.4 | 3,578.8 | 17.0 | 10.7 | -122.63 | -1,717.3 | 210.4 | 2,028.5 | 2,002.7 | 25.75 | 78.770 | |
| 3,641.7 | 3,513.7 | 3,653.4 | 3,614.0 | 17.3 | 10.9 | -123.13 | -1,712.4 | 216.0 | 2,034.8 | 2,008.7 | 26.13 | 77.881 | |
| 3,700.0 | 3,568.1 | 3,703.7 | 3,663.2 | 17.8 | 11.1 | -123.83 | -1,705.4 | 223.8 | 2,044.1 | 2,017.4 | 26.65 | 76.706 | |
| 3,740.1 | 3,605.6 | 3,738.4 | 3,697.1 | 18.1 | 11.3 | -124.30 | -1,700.7 | 229.2 | 2,050.6 | 2,023.6 | 27.00 | 75.937 | |
| 3,800.0 | 3,661.5 | 3,790.1 | 3,747.7 | 18.5 | 11.5 | -125.01 | -1,693.5 | 237.3 | 2,060.8 | 2,033.2 | 27.53 | 74.854 | |
| 3,838.6 | 3,697.6 | 3,823.4 | 3,780.3 | 18.8 | 11.6 | -125.46 | -1,688.9 | 242.4 | 2,067.5 | 2,039.6 | 27.87 | 74.192 | |
| 3,900.0 | 3,754.9 | 3,876.4 | 3,832.1 | 19.3 | 11.9 | -126.17 | -1,681.6 | 250.7 | 2,078.6 | 2,050.2 | 28.40 | 73.194 | |
| 3,937.0 | 3,789.5 | 3,908.3 | 3,863.4 | 19.6 | 12.0 | -126.60 | -1,677.2 | 255.7 | 2,085.4 | 2,056.7 | 28.72 | 72.624 | |
| 4,000.0 | 3,848.4 | 3,962.7 | 3,916.6 | 20.1 | 12.2 | -127.32 | -1,669.7 | 264.1 | 2,097.4 | 2,068.2 | 29.25 | 71.704 | |
| 4,035.4 | 3,881.5 | 3,993.3 | 3,946.5 | 20.3 | 12.4 | -127.73 | -1,665.5 | 268.9 | 2,104.4 | 2,074.8 | 29.55 | 71.215 | |
| 4,100.0 | 3,941.8 | 4,049.1 | 4,001.0 | 20.8 | 12.6 | -128.46 | -1,657.8 | 277.5 | 2,117.3 | 2,087.2 | 30.09 | 70.369 | |
| 4,133.8 | 3,973.4 | 4,078.3 | 4,029.6 | 21.1 | 12.7 | -128.84 | -1,653.8 | 282.1 | 2,124.3 | 2,093.9 | 30.37 | 69.949 | |
| 4,200.0 | 4,035.2 | 4,135.4 | 4,085.5 | 21.6 | 13.0 | -129.57 | -1,645.9 | 291.0 | 2,138.2 | 2,107.3 | 30.91 | 69.173 | |
| 4,232.3 | 4,065.4 | 4,163.3 | 4,112.7 | 21.8 | 13.1 | -129.93 | -1,642.1 | 295.3 | 2,145.2 | 2,114.0 | 31.17 | 68.814 | |
| 4,300.0 | 4,128.6 | 4,221.7 | 4,169.9 | 22.3 | 13.4 | -130.67 | -1,634.0 | 304.4 | 2,160.1 | 2,128.4 | 31.72 | 68.103 | |
| 4,330.7 | 4,157.3 | 4,248.2 | 4,195.9 | 22.6 | 13.5 | -131.01 | -1,630.4 | 308.5 | 2,167.0 | 2,135.1 | 31.96 | 67.797 | |
| 4,400.0 | 4,222.0 | 4,308.1 | 4,254.4 | 23.1 | 13.7 | -131.75 | -1,622.1 | 317.8 | 2,182.9 | 2,150.4 | 32.51 | 67.146 | |
| 4,429.1 | 4,249.3 | 4,333.2 | 4,279.0 | 23.3 | 13.8 | -132.07 | -1,618.7 | 321.7 | 2,189.8 | 2,157.0 | 32.74 | 66.887 | |
| 4,500.0 | 4,315.5 | 4,394.4 | 4,338.8 | 23.9 | 14.1 | -132.82 | -1,610.2 | 331.3 | 2,206.7 | 2,173.4 | 33.29 | 66.292 | |
| 4,527.5 | 4,341.2 | 4,418.2 | 4,362.1 | 24.1 | 14.2 | -133.11 | -1,607.0 | 335.0 | 2,213.4 | 2,179.9 | 33.50 | 66.074 | |
| 4,600.0 | 4,408.9 | 4,480.7 | 4,423.3 | 24.6 | 14.5 | -133.86 | -1,598.3 | 344.7 | 2,231.3 | 2,197.3 | 34.05 | 65.532 | |
| 4,626.0 | 4,433.2 | 4,503.2 | 4,445.2 | 24.8 | 14.6 | -134.13 | -1,595.2 | 348.2 | 2,237.9 | 2,203.6 | 34.24 | 65.349 | |
| 4,700.0 | 4,502.3 | 4,567.1 | 4,507.7 | 25.4 | 14.9 | -134.89 | -1,586.4 | 358.1 | 2,256.8 | 2,222.0 | 34.80 | 64.858 | |
| 4,724.4 | 4,525.1 | 4,588.1 | 4,528.3 | 25.6 | 15.0 | -135.14 | -1,583.5 | 361.4 | 2,263.2 | 2,228.2 | 34.98 | 64.706 | |
| 4,800.0 | 4,595.7 | 4,653.4 | 4,592.2 | 26.2 | 15.3 | -135.90 | -1,574.5 | 371.5 | 2,283.1 | 2,247.6 | 35.53 | 64.262 | |
| 4,822.8 | 4,617.1 | 4,673.1 | 4,611.5 | 26.3 | 15.3 | -136.13 | -1,571.8 | 374.6 | 2,289.3 | 2,253.6 | 35.69 | 64.136 | |
| 4,900.0 | 4,689.2 | 4,739.7 | 4,676.6 | 26.9 | 15.6 | -136.89 | -1,562.6 | 385.0 | 2,310.3 | 2,274.0 | 36.25 | 63.736 | |
| 4,921.2 | 4,709.0 | 4,758.1 | 4,694.6 | 27.1 | 15.7 | -137.09 | -1,560.1 | 387.8 | 2,316.1 | 2,279.7 | 36.40 | 63.633 | |
| 5,000.0 | 4,782.6 | 4,826.1 | 4,761.1 | 27.7 | 16.0 | -137.86 | -1,550.7 | 398.4 | 2,338.2 | 2,301.2 | 36.95 | 63.276 | |
| 5,019.7 | 4,801.0 | 4,843.1 | 4,777.7 | 27.8 | 16.1 | -138.05 | -1,548.4 | 401.0 | 2,343.7 | 2,306.6 | 37.09 | 63.192 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,912.4 | 4,845.5 | 28.4 | 16.4 | -138.81 | -1,538.8 | 411.8 | 2,366.8 | 2,329.2 | 37.64 | 62.874 | |
| 5,118.1 | 4,892.9 | 4,928.0 | 4,860.8 | 28.6 | 16.5 | -138.98 | -1,536.7 | 414.3 | 2,372.1 | 2,334.3 | 37.77 | 62.808 | |
| 5,159.9 | 4,932.0 | 4,964.2 | 4,896.2 | 28.9 | 16.6 | -139.37 | -1,531.7 | 419.9 | 2,384.3 | 2,346.3 | 38.05 | 62.660 | |
| 5,200.0 | 4,969.5 | 4,998.9 | 4,930.1 | 29.2 | 16.8 | -139.90 | -1,526.9 | 425.3 | 2,396.0 | 2,357.7 | 38.30 | 62.564 | |
| 5,216.5 | 4,985.1 | 8,390.0 | 6,789.1 | 29.3 | 47.2 | -115.45 | -1,452.5 | -1,317.9 | 2,396.1 | 2,324.9 | 71.15 | 33.676 | |
| 5,300.0 | 5,064.0 | 8,416.7 | 6,789.0 | 29.7 | 47.9 | -113.23 | -1,452.5 | -1,344.6 | 2,339.0 | 2,265.9 | 73.16 | 31.973 | |
| 5,314.9 | 5,078.2 | 8,421.3 | 6,789.0 | 29.8 | 48.0 | -112.84 | -1,452.5 | -1,349.2 | 2,328.9 | 2,255.4 | 73.50 | 31.687 | |
| 5,400.0 | 5,159.6 | 8,445.7 | 6,788.9 | 30.2 | 48.6 | -110.63 | -1,452.5 | -1,373.6 | 2,271.5 | 2,196.2 | 75.34 | 30.150 | |
| 5,413.4 | 5,172.4 | 8,449.4 | 6,788.9 | 30.3 | 48.7 | -110.29 | -1,452.5 | -1,377.2 | 2,262.6 | 2,187.0 | 75.61 | 29.924 | |
| 5,500.0 | 5,256.1 | 8,471.4 | 6,788.8 | 30.7 | 49.3 | -108.14 | -1,452.5 | -1,399.3 | 2,205.2 | 2,127.9 | 77.27 | 28.540 | |
| 5,511.8 | 5,267.6 | 8,474.2 | 6,788.8 | 30.7 | 49.4 | -107.85 | -1,452.5 | -1,402.1 | 2,197.5 | 2,120.0 | 77.47 | 28.364 | |
| 5,600.0 | 5,353.5 | 8,493.7 | 6,788.8 | 31.1 | 49.9 | -105.77 | -1,452.5 | -1,421.6 | 2,140.4 | 2,061.5 | 78.93 | 27.119 | |
| 5,610.2 | 5,363.5 | 8,495.8 | 6,788.8 | 31.1 | 50.0 | -105.54 | -1,452.5 | -1,423.7 | 2,133.9 | 2,054.8 | 79.08 | 26.984 | |
| 5,700.0 | 5,451.6 | 8,512.6 | 6,788.7 | 31.4 | 50.4 | -103.56 | -1,452.5 | -1,440.5 | 2,077.4 | 1,997.1 | 80.32 | 25.863 | |
| 5,708.6 | 5,460.2 | 8,514.1 | 6,788.7 | 31.4 | 50.4 | -103.38 | -1,452.5 | -1,441.9 | 2,072.1 | 1,991.6 | 80.43 | 25.762 | |
| 5,800.0 | 5,550.4 | 8,528.1 | 6,788.7 | 31.7 | 50.8 | -101.53 | -1,452.5 | -1,455.9 | 2,016.6 | 1,935.2 | 81.46 | 24.756 | |
| 5,807.1 | 5,557.4 | 8,529.0 | 6,788.7 | 31.7 | 50.8 | -101.39 | -1,452.5 | -1,456.9 | 2,012.4 | 1,930.9 | 81.53 | 24.683 | |
| 5,900.0 | 5,649.6 | 8,540.1 | 6,788.7 | 31.9 | 51.1 | -99.70 | -1,452.5 | -1,468.0 | 1,958.4 | 1,876.0 | 82.35 | 23.782 | |
| 5,905.5 | 5,655.1 | 8,540.7 | 6,788.7 | 31.9 | 51.1 | -99.60 | -1,452.5 | -1,468.5 | 1,955.2 | 1,872.8 | 82.39 | 23.732 | |
| 6,000.0 | 5,749.2 | 8,548.7 | 6,788.6 | 32.1 | 51.3 | -98.08 | -1,452.5 | -1,476.6 | 1,903.0 | 1,820.0 | 83.00 | 22.927 | |
| 6,003.9 | 5,753.1 | 8,549.0 | 6,788.6 | 32.1 | 51.3 | -98.02 | -1,452.5 | -1,476.8 | 1,900.9 | 1,817.9 | 83.02 | 22.896 | |
| 6,100.0 | 5,849.1 | 8,553.8 | 6,788.6 | 32.3 | 51.5 | -96.69 | -1,452.5 | -1,481.7 | 1,851.0 | 1,767.5 | 83.45 | 22.181 | |
| 6,102.3 | 5,851.4 | 8,553.9 | 6,788.6 | 32.3 | 51.5 | -96.66 | -1,452.5 | -1,481.7 | 1,849.8 | 1,766.3 | 83.45 | 22.165 | |
| 6,200.8 | 5,949.8 | 8,555.4 | 6,788.6 | 32.4 | 51.5 | -95.52 | -1,452.5 | -1,483.3 | 1,802.3 | 1,718.6 | 83.70 | 21.533 | |
| 6,204.9 | 5,953.9 | 8,555.4 | 6,788.6 | 32.4 | 51.5 | -179.92 | -1,452.5 | -1,483.3 | 1,800.4 | 1,766.7 | 33.62 | 53.545 | |
| 6,234.9 | 5,983.9 | 8,555.4 | 6,788.6 | 32.4 | 51.5 | -179.92 | -1,452.5 | -1,483.2 | 1,786.7 | 1,753.0 | 33.67 | 53.065 | |
| 6,250.0 | 5,999.0 | 8,555.2 | 6,788.6 | 32.4 | 51.5 | 90.67 | -1,452.5 | -1,483.0 | 1,780.0 | 1,696.2 | 83.78 | 21.246 | |
| 6,299.2 | 6,048.2 | 8,552.3 | 6,788.6 | 32.4 | 51.4 | 92.44 | -1,452.5 | -1,480.2 | 1,758.8 | 1,675.0 | 83.81 | 20.985 | |
| 6,300.0 | 6,048.9 | 8,552.2 | 6,788.6 | 32.4 | 51.4 | 92.47 | -1,452.5 | -1,480.1 | 1,758.5 | 1,674.7 | 83.81 | 20.981 | |
| 6,350.0 | 6,098.5 | 8,545.8 | 6,788.7 | 32.4 | 51.3 | 94.01 | -1,452.5 | -1,473.7 | 1,738.3 | 1,654.6 | 83.65 | 20.781 | |
| 6,397.6 | 6,145.3 | 8,536.5 | 6,788.7 | 32.3 | 51.0 | 95.22 | -1,452.5 | -1,464.4 | 1,720.4 | 1,637.0 | 83.34 | 20.644 | |
| 6,400.0 | 6,147.6 | 8,536.0 | 6,788.7 | 32.3 | 51.0 | 95.28 | -1,452.5 | -1,463.8 | 1,719.5 | 1,636.2 | 83.32 | 20.638 | |
| 6,450.0 | 6,195.8 | 8,522.7 | 6,788.7 | 32.2 | 50.7 | 96.29 | -1,452.5 | -1,450.6 | 1,702.2 | 1,619.4 | 82.85 | 20.546 | |
| 6,496.0 | 6,239.3 | 8,507.6 | 6,788.8 | 32.1 | 50.3 | 97.01 | -1,452.5 | -1,435.4 | 1,687.6 | 1,605.3 | 82.31 | 20.504 | |
| 6,500.0 | 6,243.0 | 8,506.2 | 6,788.8 | 32.1 | 50.2 | 97.06 | -1,452.5 | -1,434.0 | 1,686.4 | 1,604.2 | 82.26 | 20.502 | |
| 6,550.0 | 6,289.0 | 8,486.3 | 6,788.8 | 32.0 | 49.7 | 97.59 | -1,452.5 | -1,414.2 | 1,672.2 | 1,590.7 | 81.57 | 20.501 | |
| 6,594.5 | 6,328.6 | 8,466.0 | 6,788.9 | 31.8 | 49.2 | 97.89 | -1,452.5 | -1,393.9 | 1,660.9 | 1,580.0 | 80.89 | 20.534 | |
| 6,600.0 | 6,333.4 | 8,463.3 | 6,788.9 | 31.8 | 49.1 | 97.91 | -1,452.5 | -1,391.2 | 1,659.6 | 1,578.8 | 80.80 | 20.540 | |
| 6,650.0 | 6,376.2 | 8,437.3 | 6,788.9 | 31.7 | 48.4 | 98.03 | -1,452.5 | -1,365.2 | 1,648.5 | 1,568.5 | 79.95 | 20.618 | |
| 6,692.9 | 6,411.3 | 8,412.7 | 6,789.0 | 31.6 | 47.8 | 98.00 | -1,452.5 | -1,340.5 | 1,640.1 | 1,560.9 | 79.18 | 20.713 | |
| 6,700.0 | 6,417.0 | 8,408.4 | 6,789.0 | 31.5 | 47.7 | 97.98 | -1,452.5 | -1,336.3 | 1,638.8 | 1,559.8 | 79.05 | 20.732 | |
| 6,750.0 | 6,455.7 | 8,376.7 | 6,789.1 | 31.4 | 46.8 | 97.79 | -1,452.5 | -1,304.5 | 1,630.5 | 1,552.4 | 78.10 | 20.879 | |
| 6,791.3 | 6,486.0 | 8,348.5 | 6,789.2 | 31.3 | 46.1 | 97.53 | -1,452.5 | -1,276.4 | 1,624.7 | 1,547.4 | 77.28 | 21.024 | |
| 6,800.0 | 6,492.2 | 8,342.4 | 6,789.2 | 31.3 | 46.0 | 97.47 | -1,452.5 | -1,270.2 | 1,623.6 | 1,546.5 | 77.10 | 21.057 | |
| 6,850.0 | 6,526.1 | 8,305.6 | 6,789.3 | 31.2 | 45.0 | 97.05 | -1,452.5 | -1,233.4 | 1,617.8 | 1,541.7 | 76.08 | 21.265 | |
| 6,889.7 | 6,551.2 | 8,274.7 | 6,789.4 | 31.2 | 44.2 | 96.67 | -1,452.5 | -1,202.6 | 1,613.9 | 1,538.7 | 75.25 | 21.448 | |
| 6,900.0 | 6,557.4 | 8,266.5 | 6,789.4 | 31.2 | 44.0 | 96.56 | -1,452.5 | -1,194.4 | 1,613.1 | 1,538.0 | 75.03 | 21.498 | |
| 6,950.0 | 6,586.0 | 8,225.4 | 6,789.5 | 31.1 | 42.9 | 96.04 | -1,452.5 | -1,153.3 | 1,609.3 | 1,535.3 | 73.97 | 21.755 | |
| 6,988.2 | 6,605.8 | 8,192.7 | 6,789.6 | 31.2 | 42.1 | 95.62 | -1,452.5 | -1,120.6 | 1,606.9 | 1,533.8 | 73.17 | 21.962 | |
| 7,000.0 | 6,611.5 | 8,182.4 | 6,789.6 | 31.2 | 41.8 | 95.50 | -1,452.5 | -1,110.2 | 1,606.3 | 1,533.4 | 72.92 | 22.030 | |
| 7,050.0 | 6,634.1 | 8,137.7 | 6,789.7 | 31.2 | 40.7 | 94.97 | -1,452.5 | -1,065.6 | 1,604.0 | 1,532.1 | 71.87 | 22.319 | |
| 7,086.6 | 6,648.6 | 8,104.0 | 6,789.8 | 31.3 | 39.9 | 94.60 | -1,452.5 | -1,031.9 | 1,602.7 | 1,531.6 | 71.12 | 22.537 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 8,091.6 | 6,789.9 | 31.4 | 39.5 | 94.47 | -1,452.5 | -1,019.4 | 1,602.3 | 1,531.5 | 70.84 | 22.619 | |
| 7,150.0 | 6,669.5 | 8,044.2 | 6,790.0 | 31.6 | 38.4 | 94.03 | -1,452.5 | -972.0 | 1,601.0 | 1,531.2 | 69.84 | 22.924 | |
| 7,185.0 | 6,678.8 | 8,010.4 | 6,790.1 | 31.7 | 37.5 | 93.77 | -1,452.5 | -938.3 | 1,600.4 | 1,531.2 | 69.17 | 23.138 | |
| 7,200.0 | 6,682.3 | 7,995.8 | 6,790.1 | 31.8 | 37.2 | 93.67 | -1,452.5 | -923.7 | 1,600.2 | 1,531.3 | 68.88 | 23.233 | |
| 7,250.0 | 6,691.6 | 7,946.7 | 6,790.2 | 32.1 | 36.0 | 93.39 | -1,452.5 | -874.5 | 1,599.6 | 1,531.6 | 67.96 | 23.536 | |
| 7,283.4 | 6,696.0 | 7,913.5 | 6,790.3 | 32.3 | 35.2 | 93.26 | -1,452.5 | -841.4 | 1,599.3 | 1,532.0 | 67.38 | 23.737 | |
| 7,300.0 | 6,697.5 | 7,897.0 | 6,790.4 | 32.4 | 34.8 | 93.21 | -1,452.5 | -824.9 | 1,599.3 | 1,532.2 | 67.09 | 23.839 | |
| 7,350.0 | 6,699.9 | 7,847.1 | 6,790.5 | 32.8 | 33.6 | 93.14 | -1,452.5 | -775.0 | 1,599.1 | 1,532.9 | 66.27 | 24.129 | |
| 7,357.8 | 6,700.0 | 7,839.3 | 6,790.5 | 32.9 | 33.4 | 93.14 | -1,452.5 | -767.2 | 1,599.1 | 1,533.0 | 66.15 | 24.174 | |
| 7,364.4 | 6,700.0 | 7,832.7 | 6,790.5 | 32.9 | 33.2 | 93.14 | -1,452.5 | -760.6 | 1,599.1 | 1,533.1 | 66.05 | 24.212 | |
| 7,381.9 | 6,699.9 | 7,815.2 | 6,790.6 | 33.1 | 32.8 | 93.14 | -1,452.5 | -743.1 | 1,599.1 | 1,533.4 | 65.78 | 24.309 | |
| 7,400.0 | 6,699.8 | 7,797.1 | 6,790.6 | 33.2 | 32.4 | 93.15 | -1,452.5 | -725.0 | 1,599.1 | 1,533.6 | 65.51 | 24.410 | |
| 7,480.3 | 6,699.2 | 7,716.8 | 6,790.8 | 34.0 | 30.5 | 93.18 | -1,452.5 | -644.7 | 1,599.2 | 1,534.7 | 64.48 | 24.802 | |
| 7,500.0 | 6,699.1 | 7,697.1 | 6,790.9 | 34.2 | 30.1 | 93.18 | -1,452.5 | -625.0 | 1,599.2 | 1,535.0 | 64.23 | 24.899 | |
| 7,578.7 | 6,698.6 | 7,618.4 | 6,791.1 | 35.2 | 28.3 | 93.21 | -1,452.5 | -546.2 | 1,599.2 | 1,535.8 | 63.44 | 25.208 | |
| 7,600.0 | 6,698.5 | 7,597.1 | 6,791.2 | 35.4 | 27.8 | 93.21 | -1,452.5 | -525.0 | 1,599.2 | 1,536.0 | 63.23 | 25.292 | |
| 7,677.1 | 6,698.0 | 7,520.0 | 6,791.4 | 36.5 | 26.2 | 93.24 | -1,452.5 | -447.8 | 1,599.3 | 1,536.6 | 62.70 | 25.509 | |
| 7,700.0 | 6,697.8 | 7,497.1 | 6,791.4 | 36.8 | 25.7 | 93.25 | -1,452.5 | -425.0 | 1,599.3 | 1,536.8 | 62.54 | 25.572 | |
| 7,775.6 | 6,697.3 | 7,421.5 | 6,791.6 | 38.0 | 24.3 | 93.27 | -1,452.5 | -349.4 | 1,599.3 | 1,537.1 | 62.25 | 25.694 | |
| 7,800.0 | 6,697.2 | 7,397.1 | 6,791.7 | 38.3 | 23.8 | 93.28 | -1,452.5 | -325.0 | 1,599.4 | 1,537.2 | 62.16 | 25.731 | |
| 7,874.0 | 6,696.7 | 7,323.1 | 6,791.9 | 39.6 | 22.5 | 93.30 | -1,452.5 | -251.0 | 1,599.4 | 1,537.3 | 62.10 | 25.755 | |
| 7,900.0 | 6,696.5 | 7,297.1 | 6,792.0 | 40.0 | 22.1 | 93.31 | -1,452.5 | -225.0 | 1,599.4 | 1,537.3 | 62.08 | 25.762 | |
| 7,972.4 | 6,696.1 | 7,216.4 | 6,789.3 | 41.3 | 20.9 | 93.24 | -1,452.5 | -144.4 | 1,599.3 | 1,537.2 | 62.14 | 25.737 | |
| 8,000.0 | 6,695.9 | 7,185.1 | 6,785.8 | 41.8 | 20.5 | 93.12 | -1,452.5 | -113.3 | 1,599.1 | 1,536.9 | 62.19 | 25.713 | |
| 8,070.8 | 6,695.4 | 7,106.4 | 6,771.3 | 43.1 | 19.7 | 92.62 | -1,452.5 | -36.0 | 1,598.5 | 1,536.0 | 62.54 | 25.559 | |
| 8,100.0 | 6,695.2 | 7,075.1 | 6,763.1 | 43.7 | 19.4 | 92.33 | -1,452.5 | -5.7 | 1,598.2 | 1,535.4 | 62.76 | 25.466 | |
| 8,169.3 | 6,694.8 | 7,003.9 | 6,739.8 | 45.1 | 19.1 | 91.51 | -1,452.5 | 61.5 | 1,597.4 | 1,533.9 | 63.46 | 25.170 | |
| 8,200.0 | 6,694.6 | 6,973.9 | 6,727.9 | 45.7 | 19.0 | 91.09 | -1,452.5 | 89.0 | 1,597.1 | 1,533.2 | 63.85 | 25.012 | |
| 8,267.7 | 6,694.1 | 6,911.8 | 6,699.8 | 47.1 | 19.0 | 90.10 | -1,452.5 | 144.5 | 1,596.7 | 1,531.9 | 64.85 | 24.620 | |
| 8,274.0 | 6,694.1 | 6,906.3 | 6,697.1 | 47.2 | 19.0 | 90.00 | -1,452.5 | 149.2 | 1,596.7 | 1,531.8 | 64.95 | 24.583 | CC |
| 8,300.0 | 6,693.9 | 6,884.0 | 6,685.7 | 47.8 | 19.0 | 89.60 | -1,452.5 | 168.4 | 1,596.8 | 1,531.4 | 65.38 | 24.423 | |
| 8,366.1 | 6,693.5 | 6,831.1 | 6,656.4 | 49.2 | 19.0 | 88.55 | -1,452.5 | 212.4 | 1,597.5 | 1,530.9 | 66.57 | 23.996 | ES |
| 8,400.0 | 6,693.3 | 6,805.9 | 6,641.3 | 49.9 | 19.0 | 88.02 | -1,452.5 | 232.5 | 1,598.3 | 1,531.0 | 67.21 | 23.781 | |
| 8,464.5 | 6,692.9 | 6,761.5 | 6,613.0 | 51.4 | 19.1 | 87.01 | -1,452.5 | 266.7 | 1,600.6 | 1,532.1 | 68.50 | 23.367 | |
| 8,500.0 | 6,692.6 | 6,739.0 | 6,597.8 | 52.1 | 19.1 | 86.47 | -1,452.5 | 283.4 | 1,602.4 | 1,533.2 | 69.21 | 23.151 | |
| 8,563.0 | 6,692.2 | 6,700.0 | 6,570.3 | 53.6 | 19.2 | 85.50 | -1,452.5 | 311.0 | 1,606.7 | 1,536.1 | 70.53 | 22.780 | |
| 8,600.0 | 6,692.0 | 6,682.0 | 6,557.1 | 54.4 | 19.2 | 85.03 | -1,452.5 | 323.3 | 1,609.9 | 1,538.5 | 71.32 | 22.572 | |
| 8,661.4 | 6,691.6 | 6,650.0 | 6,533.0 | 55.8 | 19.3 | 84.18 | -1,452.5 | 344.3 | 1,616.4 | 1,543.7 | 72.64 | 22.251 | |
| 8,700.0 | 6,691.3 | 6,633.3 | 6,520.0 | 56.7 | 19.3 | 83.72 | -1,452.5 | 354.8 | 1,621.3 | 1,547.8 | 73.48 | 22.063 | |
| 8,759.8 | 6,690.9 | 6,600.0 | 6,493.4 | 58.1 | 19.4 | 82.78 | -1,452.5 | 374.8 | 1,630.2 | 1,555.4 | 74.77 | 21.803 | |
| 8,800.0 | 6,690.7 | 6,600.0 | 6,493.4 | 59.1 | 19.4 | 82.78 | -1,452.5 | 374.8 | 1,637.0 | 1,561.3 | 75.71 | 21.622 | |
| 8,858.2 | 6,690.3 | 6,570.2 | 6,468.9 | 60.5 | 19.5 | 81.92 | -1,452.5 | 391.7 | 1,648.3 | 1,571.3 | 76.98 | 21.412 | |
| 8,900.0 | 6,690.0 | 6,550.0 | 6,451.8 | 61.5 | 19.5 | 81.32 | -1,452.5 | 402.5 | 1,657.3 | 1,579.4 | 77.88 | 21.281 | |
| 8,956.7 | 6,689.7 | 6,537.9 | 6,441.4 | 62.9 | 19.5 | 80.96 | -1,452.5 | 408.8 | 1,670.8 | 1,591.7 | 79.18 | 21.101 | |
| 9,000.0 | 6,689.4 | 6,525.0 | 6,430.3 | 63.9 | 19.5 | 80.58 | -1,452.5 | 415.3 | 1,682.2 | 1,602.0 | 80.15 | 20.987 | |
| 9,055.1 | 6,689.0 | 6,500.0 | 6,408.4 | 65.3 | 19.6 | 79.81 | -1,452.5 | 427.3 | 1,698.0 | 1,616.6 | 81.34 | 20.874 | |
| 9,100.0 | 6,688.7 | 6,500.0 | 6,408.4 | 66.4 | 19.6 | 79.81 | -1,452.5 | 427.3 | 1,711.8 | 1,629.3 | 82.43 | 20.765 | |
| 9,153.5 | 6,688.4 | 6,485.1 | 6,395.1 | 67.7 | 19.6 | 79.36 | -1,452.5 | 434.0 | 1,729.5 | 1,645.8 | 83.65 | 20.676 | |
| 9,200.0 | 6,688.1 | 6,474.6 | 6,385.6 | 68.9 | 19.6 | 79.03 | -1,452.5 | 438.7 | 1,745.9 | 1,661.2 | 84.71 | 20.610 | |
| 9,251.9 | 6,687.8 | 6,463.5 | 6,375.6 | 70.2 | 19.6 | 78.68 | -1,452.5 | 443.4 | 1,765.3 | 1,679.4 | 85.91 | 20.549 | |
| 9,300.0 | 6,687.4 | 6,450.0 | 6,363.3 | 71.4 | 19.7 | 78.26 | -1,452.5 | 448.9 | 1,784.4 | 1,697.4 | 86.99 | 20.514 | |
| 9,350.4 | 6,687.1 | 6,450.0 | 6,363.3 | 72.7 | 19.7 | 78.26 | -1,452.5 | 448.9 | 1,805.4 | 1,717.2 | 88.24 | 20.461 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 6,686.8 | 6,435.4 | 6,349.9 | 73.9 | 19.7 | 77.80 | -1,452.5 | 454.7 | 1,827.1 | 1,737.8 | 89.34 | 20.451 | |
| 9,448.8 | 6,686.5 | 6,427.2 | 6,342.3 | 75.2 | 19.7 | 77.54 | -1,452.5 | 457.8 | 1,849.5 | 1,759.0 | 90.49 | 20.440 | |
| 9,500.0 | 6,686.1 | 6,419.0 | 6,334.7 | 76.5 | 19.7 | 77.28 | -1,452.5 | 460.8 | 1,873.9 | 1,782.2 | 91.68 | 20.438 | SF |
| 9,547.2 | 6,685.8 | 6,400.0 | 6,316.9 | 77.7 | 19.7 | 76.68 | -1,452.5 | 467.4 | 1,897.4 | 1,804.7 | 92.68 | 20.473 | |
| 9,600.0 | 6,685.5 | 6,400.0 | 6,316.9 | 79.0 | 19.7 | 76.68 | -1,452.5 | 467.4 | 1,924.4 | 1,830.4 | 94.00 | 20.473 | |
| 9,645.6 | 6,685.2 | 6,400.0 | 6,316.9 | 80.2 | 19.7 | 76.68 | -1,452.5 | 467.4 | 1,948.7 | 1,853.5 | 95.15 | 20.480 | |
| 9,700.0 | 6,684.8 | 6,400.0 | 6,316.9 | 81.6 | 19.7 | 76.68 | -1,452.5 | 467.4 | 1,978.5 | 1,882.0 | 96.52 | 20.498 | |
| 9,744.1 | 6,684.6 | 6,400.0 | 6,316.9 | 82.8 | 19.7 | 76.68 | -1,452.5 | 467.4 | 2,003.5 | 1,905.8 | 97.64 | 20.519 | |
| 9,800.0 | 6,684.2 | 6,379.1 | 6,297.1 | 84.2 | 19.8 | 76.01 | -1,452.5 | 474.1 | 2,035.8 | 1,937.0 | 98.81 | 20.603 | |
| 9,842.5 | 6,683.9 | 6,374.3 | 6,292.5 | 85.3 | 19.8 | 75.85 | -1,452.5 | 475.6 | 2,061.1 | 1,961.2 | 99.83 | 20.646 | |
| 9,900.0 | 6,683.5 | 6,368.2 | 6,286.7 | 86.8 | 19.8 | 75.66 | -1,452.5 | 477.4 | 2,096.1 | 1,994.9 | 101.21 | 20.710 | |
| 9,940.9 | 6,683.3 | 6,350.0 | 6,269.2 | 87.9 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,121.8 | 2,019.8 | 102.01 | 20.799 | |
| 10,000.0 | 6,682.9 | 6,350.0 | 6,269.2 | 89.5 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,159.3 | 2,055.8 | 103.51 | 20.860 | |
| 10,039.3 | 6,682.6 | 6,350.0 | 6,269.2 | 90.5 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,184.9 | 2,080.3 | 104.52 | 20.904 | |
| 10,100.0 | 6,682.2 | 6,350.0 | 6,269.2 | 92.1 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,225.0 | 2,118.9 | 106.07 | 20.977 | |
| 10,137.8 | 6,682.0 | 6,350.0 | 6,269.2 | 93.1 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,250.5 | 2,143.4 | 107.04 | 21.025 | |
| 10,200.0 | 6,681.6 | 6,350.0 | 6,269.2 | 94.8 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,293.2 | 2,184.5 | 108.63 | 21.110 | |
| 10,236.2 | 6,681.4 | 6,350.0 | 6,269.2 | 95.7 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,318.4 | 2,208.9 | 109.56 | 21.161 | |
| 10,300.0 | 6,680.9 | 6,350.0 | 6,269.2 | 97.4 | 19.8 | 75.07 | -1,452.5 | 482.6 | 2,363.6 | 2,252.4 | 111.20 | 21.255 | |
| 10,334.6 | 6,680.7 | 6,330.6 | 6,250.5 | 98.3 | 19.8 | 74.45 | -1,452.5 | 487.5 | 2,388.2 | 2,276.4 | 111.79 | 21.363 | |
| 10,400.0 | 6,680.3 | 6,326.0 | 6,246.1 | 100.1 | 19.8 | 74.30 | -1,452.5 | 488.7 | 2,435.7 | 2,322.3 | 113.40 | 21.479 | |
| 10,433.0 | 6,680.1 | 6,323.8 | 6,243.9 | 101.0 | 19.8 | 74.23 | -1,452.5 | 489.2 | 2,460.0 | 2,345.8 | 114.21 | 21.538 | |
| 10,500.0 | 6,679.7 | 6,319.5 | 6,239.7 | 102.8 | 19.8 | 74.09 | -1,452.5 | 490.2 | 2,509.8 | 2,393.9 | 115.87 | 21.661 | |
| 10,531.5 | 6,679.4 | 6,300.0 | 6,220.6 | 103.6 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,533.7 | 2,417.4 | 116.34 | 21.779 | |
| 10,600.0 | 6,679.0 | 6,300.0 | 6,220.6 | 105.4 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,585.7 | 2,467.6 | 118.10 | 21.894 | |
| 10,629.9 | 6,678.8 | 6,300.0 | 6,220.6 | 106.2 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,608.7 | 2,489.8 | 118.88 | 21.945 | |
| 10,700.0 | 6,678.4 | 6,300.0 | 6,220.6 | 108.1 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,663.0 | 2,542.3 | 120.69 | 22.066 | |
| 10,728.3 | 6,678.2 | 6,300.0 | 6,220.6 | 108.9 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,685.2 | 2,563.8 | 121.42 | 22.115 | |
| 10,800.0 | 6,677.7 | 6,300.0 | 6,220.6 | 110.8 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,741.8 | 2,618.5 | 123.27 | 22.241 | |
| 10,826.7 | 6,677.5 | 6,300.0 | 6,220.6 | 111.5 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,763.1 | 2,639.1 | 123.97 | 22.288 | |
| 10,900.0 | 6,677.1 | 6,300.0 | 6,220.6 | 113.5 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,821.8 | 2,696.0 | 125.87 | 22.419 | |
| 10,925.2 | 6,676.9 | 6,300.0 | 6,220.6 | 114.2 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,842.2 | 2,715.7 | 126.52 | 22.464 | |
| 11,000.0 | 6,676.4 | 6,300.0 | 6,220.6 | 116.2 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,903.2 | 2,774.7 | 128.47 | 22.599 | |
| 11,023.6 | 6,676.3 | 6,300.0 | 6,220.6 | 116.8 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,922.5 | 2,793.4 | 129.08 | 22.641 | |
| 11,100.0 | 6,675.8 | 6,300.0 | 6,220.6 | 118.9 | 19.8 | 73.46 | -1,452.5 | 494.4 | 2,985.6 | 2,854.5 | 131.07 | 22.779 | |
| 11,122.0 | 6,675.6 | 6,300.0 | 6,220.6 | 119.5 | 19.8 | 73.46 | -1,452.5 | 494.4 | 3,003.9 | 2,872.3 | 131.64 | 22.819 | |
| 11,200.0 | 6,675.1 | 6,300.0 | 6,220.6 | 121.6 | 19.8 | 73.46 | -1,452.5 | 494.4 | 3,069.1 | 2,935.4 | 133.68 | 22.959 | |
| 11,220.4 | 6,675.0 | 6,300.0 | 6,220.6 | 122.2 | 19.8 | 73.46 | -1,452.5 | 494.4 | 3,086.3 | 2,952.1 | 134.21 | 22.996 | |
| 11,300.0 | 6,674.5 | 6,300.0 | 6,220.6 | 124.3 | 19.8 | 73.46 | -1,452.5 | 494.4 | 3,153.6 | 3,017.3 | 136.29 | 23.139 | |
| 11,318.9 | 6,674.3 | 6,279.5 | 6,200.5 | 124.9 | 19.8 | 72.80 | -1,452.5 | 498.2 | 3,169.3 | 3,033.0 | 136.33 | 23.246 | |
| 11,400.0 | 6,673.8 | 6,276.6 | 6,197.6 | 127.1 | 19.8 | 72.70 | -1,452.5 | 498.7 | 3,238.5 | 3,100.1 | 138.38 | 23.403 | |
| 11,417.3 | 6,673.7 | 6,275.9 | 6,197.0 | 127.5 | 19.8 | 72.68 | -1,452.5 | 498.9 | 3,253.3 | 3,114.5 | 138.82 | 23.436 | |
| 11,500.0 | 6,673.2 | 6,273.1 | 6,194.2 | 129.8 | 19.8 | 72.59 | -1,452.5 | 499.3 | 3,324.5 | 3,183.6 | 140.91 | 23.593 | |
| 11,515.7 | 6,673.1 | 6,272.5 | 6,193.7 | 130.2 | 19.8 | 72.57 | -1,452.5 | 499.4 | 3,338.1 | 3,196.8 | 141.31 | 23.623 | |
| 11,600.0 | 6,672.5 | 6,250.0 | 6,171.4 | 132.5 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,411.6 | 3,268.6 | 142.97 | 23.863 | |
| 11,614.1 | 6,672.4 | 6,250.0 | 6,171.4 | 132.9 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,423.9 | 3,280.6 | 143.34 | 23.887 | |
| 11,700.0 | 6,671.9 | 6,250.0 | 6,171.4 | 135.3 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,499.0 | 3,353.4 | 145.57 | 24.036 | |
| 11,712.6 | 6,671.8 | 6,250.0 | 6,171.4 | 135.6 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,510.0 | 3,364.1 | 145.90 | 24.058 | |
| 11,800.0 | 6,671.2 | 6,250.0 | 6,171.4 | 138.0 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,587.0 | 3,438.8 | 148.18 | 24.207 | |
| 11,811.0 | 6,671.1 | 6,250.0 | 6,171.4 | 138.3 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,596.7 | 3,448.3 | 148.47 | 24.226 | |
| 11,900.0 | 6,670.6 | 6,250.0 | 6,171.4 | 140.7 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,675.7 | 3,524.9 | 150.79 | 24.376 | |
| 11,909.4 | 6,670.5 | 6,250.0 | 6,171.4 | 141.0 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,684.0 | 3,533.0 | 151.04 | 24.392 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-334 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,987.2 | 6,670.0 | 6,250.0 | 6,171.4 | 143.1 | 19.8 | 71.85 | -1,452.5 | 502.8 | 3,753.4 | 3,600.4 | 153.07 | 24.521 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,931.4 | 0.20 | 9,806.187 | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,931.4 | 0.20 | 9,548.775 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,931.0 | 0.64 | 3,029.222 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,931.0 | 0.65 | 2,963.415 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,930.5 | 1.08 | 1,788.348 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,930.5 | 1.10 | 1,753.858 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,930.1 | 1.52 | 1,268.660 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,930.1 | 1.55 | 1,245.494 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,929.7 | 1.97 | 983.003 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,929.6 | 2.00 | 965.607 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,929.2 | 2.41 | 802.344 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,929.2 | 2.45 | 788.432 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,928.8 | 2.85 | 677.780 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,928.7 | 2.90 | 666.194 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,928.3 | 3.29 | 586.695 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,928.3 | 3.35 | 576.772 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,927.9 | 3.73 | 517.191 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,927.8 | 3.80 | 508.515 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,927.4 | 4.18 | 462.411 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.74 | -1,930.1 | -76.0 | 1,931.6 | 1,927.4 | 4.25 | 454.704 | |
| 1,082.7 | 1,082.7 | 1,085.7 | 1,085.7 | 2.3 | 2.3 | -93.34 | -1,930.1 | -76.0 | 1,931.7 | 1,927.1 | 4.61 | 418.998 | |
| 1,100.0 | 1,100.0 | 1,103.0 | 1,103.0 | 2.3 | 2.4 | -93.35 | -1,930.1 | -76.0 | 1,931.7 | 1,927.0 | 4.69 | 412.220 | |
| 1,181.1 | 1,181.0 | 1,213.7 | 1,213.7 | 2.5 | 2.6 | -93.51 | -1,929.6 | -76.5 | 1,931.7 | 1,926.6 | 5.10 | 378.642 | |
| 1,200.0 | 1,199.8 | 1,249.2 | 1,249.1 | 2.5 | 2.7 | -93.56 | -1,928.9 | -77.2 | 1,931.4 | 1,926.2 | 5.22 | 370.082 | |
| 1,279.5 | 1,279.1 | 1,398.2 | 1,397.9 | 2.7 | 3.0 | -93.80 | -1,922.4 | -83.5 | 1,928.5 | 1,922.7 | 5.73 | 336.640 | |
| 1,300.0 | 1,299.5 | 1,436.5 | 1,436.0 | 2.8 | 3.1 | -93.86 | -1,919.8 | -86.0 | 1,927.3 | 1,921.4 | 5.86 | 328.686 | |
| 1,377.9 | 1,376.9 | 1,582.1 | 1,580.5 | 3.0 | 3.5 | -94.10 | -1,906.8 | -98.7 | 1,921.1 | 1,914.7 | 6.41 | 299.931 | |
| 1,400.0 | 1,398.7 | 1,623.2 | 1,621.0 | 3.0 | 3.6 | -94.18 | -1,902.1 | -103.2 | 1,918.9 | 1,912.3 | 6.56 | 292.312 | |
| 1,476.4 | 1,474.2 | 1,764.8 | 1,760.1 | 3.2 | 4.0 | -94.43 | -1,882.9 | -121.8 | 1,909.6 | 1,902.5 | 7.16 | 266.529 | |
| 1,500.0 | 1,497.5 | 1,808.3 | 1,802.6 | 3.3 | 4.1 | -94.52 | -1,876.0 | -128.4 | 1,906.3 | 1,898.9 | 7.36 | 259.084 | |
| 1,574.8 | 1,571.0 | 1,945.3 | 1,935.1 | 3.5 | 4.7 | -94.79 | -1,851.3 | -152.3 | 1,894.1 | 1,886.1 | 8.04 | 235.599 | |
| 1,600.0 | 1,595.6 | 1,970.1 | 1,958.9 | 3.6 | 4.8 | -94.88 | -1,846.5 | -157.1 | 1,889.6 | 1,881.4 | 8.21 | 230.284 | |
| 1,673.2 | 1,667.0 | 2,042.1 | 2,028.2 | 3.9 | 5.1 | -95.20 | -1,832.3 | -170.8 | 1,876.7 | 1,868.0 | 8.73 | 215.011 | |
| 1,700.0 | 1,693.1 | 2,068.5 | 2,053.6 | 4.0 | 5.2 | -95.32 | -1,827.1 | -175.8 | 1,872.1 | 1,863.1 | 8.92 | 209.858 | |
| 1,771.6 | 1,762.4 | 2,138.9 | 2,121.3 | 4.3 | 5.6 | -95.70 | -1,813.2 | -189.3 | 1,859.7 | 1,850.2 | 9.48 | 196.144 | |
| 1,800.0 | 1,789.6 | 2,166.8 | 2,148.1 | 4.4 | 5.7 | -95.87 | -1,807.8 | -194.6 | 1,854.8 | 1,845.1 | 9.70 | 191.144 | |
| 1,870.1 | 1,856.8 | 2,235.5 | 2,214.2 | 4.7 | 6.0 | -96.31 | -1,794.2 | -207.7 | 1,843.0 | 1,832.7 | 10.30 | 178.889 | |
| 1,900.0 | 1,885.3 | 2,264.8 | 2,242.4 | 4.9 | 6.2 | -96.52 | -1,788.4 | -213.3 | 1,838.0 | 1,827.4 | 10.56 | 174.078 | |
| 1,968.5 | 1,950.2 | 2,331.8 | 2,306.8 | 5.3 | 6.5 | -97.02 | -1,775.3 | -226.0 | 1,826.7 | 1,815.5 | 11.19 | 163.190 | |
| 2,000.0 | 1,979.8 | 2,362.6 | 2,336.4 | 5.5 | 6.7 | -97.27 | -1,769.2 | -231.9 | 1,821.6 | 1,810.1 | 11.49 | 158.596 | |
| 2,044.9 | 2,021.9 | 2,406.3 | 2,378.5 | 5.7 | 6.9 | -97.64 | -1,760.6 | -240.2 | 1,814.4 | 1,802.5 | 11.93 | 152.145 | |
| 2,066.9 | 2,042.5 | 2,427.7 | 2,399.1 | 5.9 | 7.0 | -97.76 | -1,756.4 | -244.3 | 1,810.9 | 1,798.8 | 12.15 | 149.065 | |
| 2,100.0 | 2,073.4 | 2,459.9 | 2,430.0 | 6.1 | 7.2 | -97.93 | -1,750.1 | -250.5 | 1,805.7 | 1,793.2 | 12.48 | 144.646 | |
| 2,165.3 | 2,134.4 | 2,523.5 | 2,491.2 | 6.5 | 7.5 | -98.29 | -1,737.5 | -262.6 | 1,795.5 | 1,782.3 | 13.16 | 136.454 | |
| 2,200.0 | 2,166.8 | 2,557.2 | 2,523.6 | 6.8 | 7.7 | -98.47 | -1,730.9 | -269.0 | 1,790.0 | 1,776.5 | 13.52 | 132.441 | |
| 2,263.8 | 2,226.4 | 2,619.2 | 2,583.3 | 7.2 | 8.0 | -98.82 | -1,718.7 | -280.8 | 1,780.1 | 1,765.9 | 14.19 | 125.488 | |
| 2,300.0 | 2,260.2 | 2,654.5 | 2,617.2 | 7.4 | 8.2 | -99.02 | -1,711.8 | -287.5 | 1,774.5 | 1,760.0 | 14.57 | 121.826 | |
| 2,362.2 | 2,318.3 | 2,715.0 | 2,675.4 | 7.9 | 8.5 | -99.37 | -1,699.9 | -299.1 | 1,765.0 | 1,749.7 | 15.23 | 115.909 | |
| 2,400.0 | 2,353.6 | 2,751.8 | 2,710.7 | 8.1 | 8.7 | -99.58 | -1,692.6 | -306.1 | 1,759.2 | 1,743.5 | 15.63 | 112.561 | |
| 2,460.6 | 2,410.3 | 2,810.8 | 2,767.5 | 8.6 | 9.0 | -99.92 | -1,681.0 | -317.3 | 1,750.0 | 1,733.7 | 16.28 | 107.507 | |
| 2,500.0 | 2,447.0 | 2,849.1 | 2,804.3 | 8.9 | 9.2 | -100.15 | -1,673.5 | -324.6 | 1,744.0 | 1,727.3 | 16.70 | 104.439 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,906.5 | 2,859.6 | 9.3 | 9.5 | -100.49 | -1,662.2 | -335.6 | 1,735.1 | 1,717.8 | 17.33 | 100.103 | |
| 2,600.0 | 2,540.5 | 2,946.4 | 2,897.9 | 9.6 | 9.8 | -100.72 | -1,654.3 | -343.2 | 1,729.0 | 1,711.2 | 17.77 | 97.283 | |
| 2,657.5 | 2,594.2 | 3,002.3 | 2,951.7 | 10.0 | 10.1 | -101.06 | -1,643.3 | -353.9 | 1,720.4 | 1,702.1 | 18.39 | 93.547 | |
| 2,700.0 | 2,633.9 | 3,043.7 | 2,991.5 | 10.3 | 10.3 | -101.31 | -1,635.2 | -361.7 | 1,714.2 | 1,695.3 | 18.85 | 90.947 | |
| 2,755.9 | 2,686.1 | 3,098.1 | 3,043.8 | 10.7 | 10.6 | -101.64 | -1,624.5 | -372.1 | 1,706.0 | 1,686.5 | 19.45 | 87.713 | |
| 2,800.0 | 2,727.3 | 3,141.0 | 3,085.0 | 11.0 | 10.8 | -101.91 | -1,616.0 | -380.3 | 1,699.5 | 1,679.6 | 19.92 | 85.307 | |
| 2,854.3 | 2,778.1 | 3,193.8 | 3,135.9 | 11.4 | 11.1 | -102.24 | -1,605.6 | -390.4 | 1,691.6 | 1,671.1 | 20.51 | 82.498 | |
| 2,900.0 | 2,820.7 | 3,238.3 | 3,178.6 | 11.8 | 11.4 | -102.51 | -1,596.9 | -398.8 | 1,685.1 | 1,664.1 | 20.99 | 80.264 | |
| 2,952.7 | 2,870.0 | 3,289.6 | 3,228.0 | 12.2 | 11.7 | -102.84 | -1,586.8 | -408.6 | 1,677.5 | 1,656.0 | 21.56 | 77.814 | |
| 3,000.0 | 2,914.2 | 3,335.6 | 3,272.2 | 12.5 | 11.9 | -103.13 | -1,577.7 | -417.4 | 1,670.8 | 1,648.8 | 22.06 | 75.734 | |
| 3,051.2 | 2,962.0 | 3,385.3 | 3,320.1 | 12.9 | 12.2 | -103.45 | -1,567.9 | -426.9 | 1,663.6 | 1,641.0 | 22.61 | 73.590 | |
| 3,100.0 | 3,007.6 | 3,432.8 | 3,365.7 | 13.3 | 12.4 | -103.76 | -1,558.6 | -435.9 | 1,656.8 | 1,633.6 | 23.12 | 71.648 | |
| 3,149.6 | 3,053.9 | 3,481.1 | 3,412.2 | 13.6 | 12.7 | -104.07 | -1,549.1 | -445.1 | 1,649.9 | 1,626.2 | 23.65 | 69.767 | |
| 3,200.0 | 3,101.0 | 3,530.1 | 3,459.3 | 14.0 | 13.0 | -104.39 | -1,539.4 | -454.5 | 1,642.9 | 1,618.7 | 24.18 | 67.948 | |
| 3,248.0 | 3,145.9 | 3,576.9 | 3,504.3 | 14.4 | 13.3 | -104.70 | -1,530.2 | -463.4 | 1,636.3 | 1,611.6 | 24.68 | 66.293 | |
| 3,300.0 | 3,194.4 | 3,627.4 | 3,552.9 | 14.8 | 13.5 | -105.04 | -1,520.3 | -473.0 | 1,629.3 | 1,604.0 | 25.23 | 64.585 | |
| 3,346.4 | 3,237.8 | 3,672.6 | 3,596.3 | 15.1 | 13.8 | -105.35 | -1,511.4 | -481.6 | 1,623.0 | 1,597.3 | 25.71 | 63.126 | |
| 3,400.0 | 3,287.8 | 3,724.7 | 3,646.5 | 15.5 | 14.1 | -105.70 | -1,501.1 | -491.6 | 1,615.8 | 1,589.6 | 26.27 | 61.520 | |
| 3,444.9 | 3,329.8 | 3,768.4 | 3,688.4 | 15.9 | 14.3 | -106.00 | -1,492.5 | -499.9 | 1,609.9 | 1,583.1 | 26.73 | 60.231 | |
| 3,500.0 | 3,381.3 | 3,822.0 | 3,740.0 | 16.3 | 14.6 | -106.37 | -1,482.0 | -510.1 | 1,602.6 | 1,575.3 | 27.29 | 58.716 | |
| 3,543.3 | 3,421.7 | 3,864.2 | 3,780.5 | 16.6 | 14.9 | -106.66 | -1,473.7 | -518.1 | 1,597.0 | 1,569.2 | 27.74 | 57.575 | |
| 3,600.0 | 3,474.7 | 3,919.3 | 3,833.6 | 17.0 | 15.2 | -107.05 | -1,462.8 | -528.7 | 1,589.6 | 1,561.3 | 28.31 | 56.145 | |
| 3,641.7 | 3,513.7 | 3,959.9 | 3,872.6 | 17.3 | 15.4 | -107.33 | -1,454.8 | -536.4 | 1,584.3 | 1,555.6 | 28.74 | 55.134 | |
| 3,700.0 | 3,568.1 | 4,016.6 | 3,927.2 | 17.8 | 15.7 | -107.74 | -1,443.7 | -547.2 | 1,576.9 | 1,547.6 | 29.32 | 53.780 | |
| 3,740.1 | 3,605.6 | 4,055.7 | 3,964.7 | 18.1 | 15.9 | -108.02 | -1,436.0 | -554.7 | 1,571.8 | 1,542.1 | 29.72 | 52.884 | |
| 3,800.0 | 3,661.5 | 4,113.9 | 4,020.7 | 18.5 | 16.3 | -108.44 | -1,424.5 | -565.8 | 1,564.4 | 1,534.1 | 30.32 | 51.601 | |
| 3,838.6 | 3,697.6 | 4,151.4 | 4,056.8 | 18.8 | 16.5 | -108.71 | -1,417.1 | -572.9 | 1,559.6 | 1,528.9 | 30.70 | 50.806 | |
| 3,900.0 | 3,754.9 | 4,211.2 | 4,114.3 | 19.3 | 16.8 | -109.15 | -1,405.4 | -584.3 | 1,552.1 | 1,520.8 | 31.30 | 49.589 | |
| 3,937.0 | 3,789.5 | 4,247.2 | 4,148.9 | 19.6 | 17.0 | -109.41 | -1,398.3 | -591.2 | 1,547.6 | 1,516.0 | 31.66 | 48.883 | |
| 4,000.0 | 3,848.4 | 4,308.5 | 4,207.9 | 20.1 | 17.4 | -109.87 | -1,386.2 | -602.9 | 1,540.1 | 1,507.8 | 32.27 | 47.726 | |
| 4,035.4 | 3,881.5 | 4,343.0 | 4,241.0 | 20.3 | 17.6 | -110.13 | -1,379.5 | -609.4 | 1,535.9 | 1,503.3 | 32.61 | 47.099 | |
| 4,100.0 | 3,941.8 | 4,405.8 | 4,301.5 | 20.8 | 17.9 | -110.60 | -1,367.1 | -621.4 | 1,528.3 | 1,495.1 | 33.23 | 45.999 | |
| 4,133.8 | 3,973.4 | 4,438.7 | 4,333.1 | 21.1 | 18.1 | -110.85 | -1,360.6 | -627.7 | 1,524.4 | 1,490.9 | 33.55 | 45.443 | |
| 4,200.0 | 4,035.2 | 4,503.1 | 4,395.0 | 21.6 | 18.5 | -111.34 | -1,347.9 | -639.9 | 1,516.8 | 1,482.7 | 34.17 | 44.395 | |
| 4,232.3 | 4,065.4 | 4,534.5 | 4,425.2 | 21.8 | 18.7 | -111.59 | -1,341.8 | -645.9 | 1,513.2 | 1,478.7 | 34.47 | 43.902 | |
| 4,300.0 | 4,128.6 | 4,600.4 | 4,488.6 | 22.3 | 19.0 | -112.10 | -1,328.8 | -658.5 | 1,505.6 | 1,470.5 | 35.09 | 42.903 | |
| 4,330.7 | 4,157.3 | 4,630.3 | 4,517.3 | 22.6 | 19.2 | -112.33 | -1,322.9 | -664.2 | 1,502.2 | 1,466.8 | 35.37 | 42.466 | |
| 4,400.0 | 4,222.0 | 4,697.7 | 4,582.2 | 23.1 | 19.6 | -112.86 | -1,309.6 | -677.0 | 1,494.6 | 1,458.6 | 36.00 | 41.514 | |
| 4,429.1 | 4,249.3 | 4,726.0 | 4,609.4 | 23.3 | 19.7 | -113.09 | -1,304.1 | -682.4 | 1,491.5 | 1,455.2 | 36.26 | 41.127 | |
| 4,500.0 | 4,315.5 | 4,795.0 | 4,675.7 | 23.9 | 20.1 | -113.64 | -1,290.5 | -695.6 | 1,483.9 | 1,447.0 | 36.90 | 40.219 | |
| 4,527.5 | 4,341.2 | 4,821.8 | 4,701.5 | 24.1 | 20.3 | -113.86 | -1,285.2 | -700.7 | 1,481.0 | 1,443.9 | 37.14 | 39.877 | |
| 4,600.0 | 4,408.9 | 4,892.3 | 4,769.3 | 24.6 | 20.7 | -114.43 | -1,271.3 | -714.1 | 1,473.5 | 1,435.8 | 37.77 | 39.010 | |
| 4,626.0 | 4,433.2 | 4,917.5 | 4,793.6 | 24.8 | 20.8 | -114.63 | -1,266.4 | -719.0 | 1,470.9 | 1,432.9 | 38.00 | 38.709 | |
| 4,700.0 | 4,502.3 | 4,989.6 | 4,862.9 | 25.4 | 21.2 | -115.22 | -1,252.2 | -732.7 | 1,463.4 | 1,424.8 | 38.63 | 37.880 | |
| 4,724.4 | 4,525.1 | 5,013.3 | 4,885.7 | 25.6 | 21.4 | -115.42 | -1,247.5 | -737.2 | 1,461.0 | 1,422.2 | 38.84 | 37.615 | |
| 4,800.0 | 4,595.7 | 5,086.9 | 4,956.5 | 26.2 | 21.8 | -116.03 | -1,233.1 | -751.2 | 1,453.6 | 1,414.1 | 39.48 | 36.823 | |
| 4,822.8 | 4,617.1 | 5,109.1 | 4,977.8 | 26.3 | 21.9 | -116.22 | -1,228.7 | -755.5 | 1,451.4 | 1,411.7 | 39.66 | 36.592 | |
| 4,900.0 | 4,689.2 | 5,184.1 | 5,050.0 | 26.9 | 22.4 | -116.85 | -1,213.9 | -769.8 | 1,444.1 | 1,403.8 | 40.30 | 35.834 | |
| 4,921.2 | 4,709.0 | 5,204.8 | 5,069.9 | 27.1 | 22.5 | -117.02 | -1,209.8 | -773.7 | 1,442.1 | 1,401.6 | 40.47 | 35.633 | |
| 5,000.0 | 4,782.6 | 5,281.4 | 5,143.6 | 27.7 | 22.9 | -117.67 | -1,194.8 | -788.3 | 1,434.9 | 1,393.8 | 41.10 | 34.908 | |
| 5,019.7 | 4,801.0 | 5,300.6 | 5,162.0 | 27.8 | 23.0 | -117.84 | -1,191.0 | -792.0 | 1,433.1 | 1,391.9 | 41.26 | 34.733 | |
| 5,100.0 | 4,876.0 | 5,378.7 | 5,237.2 | 28.4 | 23.5 | -118.51 | -1,175.6 | -806.9 | 1,426.0 | 1,384.1 | 41.89 | 34.041 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,396.3 | 5,254.1 | 28.6 | 23.6 | -118.67 | -1,172.1 | -810.2 | 1,424.4 | 1,382.4 | 42.03 | 33.890 | |
| 5,159.9 | 4,932.0 | 5,437.0 | 5,293.2 | 28.9 | 23.8 | -119.02 | -1,164.1 | -818.0 | 1,420.8 | 1,378.5 | 42.35 | 33.547 | |
| 5,200.0 | 4,969.5 | 5,473.8 | 5,328.6 | 29.2 | 24.0 | -119.27 | -1,156.9 | -825.0 | 1,417.3 | 1,374.7 | 42.63 | 33.249 | |
| 5,216.5 | 4,985.1 | 5,484.9 | 5,339.3 | 29.3 | 24.1 | -119.34 | -1,154.7 | -827.1 | 1,415.8 | 1,373.1 | 42.72 | 33.145 | |
| 5,300.0 | 5,064.0 | 5,540.9 | 5,393.4 | 29.7 | 24.3 | -119.65 | -1,144.3 | -837.2 | 1,408.7 | 1,365.6 | 43.15 | 32.648 | |
| 5,314.9 | 5,078.2 | 5,551.0 | 5,403.1 | 29.8 | 24.3 | -119.71 | -1,142.5 | -838.9 | 1,407.5 | 1,364.3 | 43.22 | 32.566 | |
| 5,400.0 | 5,159.6 | 5,600.0 | 5,450.7 | 30.2 | 24.5 | -119.94 | -1,134.1 | -847.0 | 1,400.8 | 1,357.2 | 43.62 | 32.117 | |
| 5,413.4 | 5,172.4 | 5,617.4 | 5,467.7 | 30.3 | 24.6 | -120.04 | -1,131.3 | -849.8 | 1,399.8 | 1,356.1 | 43.67 | 32.050 | |
| 5,500.0 | 5,256.1 | 5,676.0 | 5,525.0 | 30.7 | 24.8 | -120.29 | -1,122.3 | -858.5 | 1,393.4 | 1,349.4 | 44.04 | 31.640 | |
| 5,511.8 | 5,267.6 | 5,684.1 | 5,532.8 | 30.7 | 24.9 | -120.32 | -1,121.1 | -859.6 | 1,392.6 | 1,348.5 | 44.09 | 31.589 | |
| 5,600.0 | 5,353.5 | 5,744.0 | 5,591.7 | 31.1 | 25.1 | -120.54 | -1,112.9 | -867.6 | 1,386.7 | 1,342.3 | 44.42 | 31.218 | |
| 5,610.2 | 5,363.5 | 5,751.0 | 5,598.5 | 31.1 | 25.1 | -120.57 | -1,112.0 | -868.5 | 1,386.0 | 1,341.6 | 44.45 | 31.179 | |
| 5,700.0 | 5,451.6 | 5,800.0 | 5,646.8 | 31.4 | 25.2 | -120.70 | -1,106.0 | -874.3 | 1,380.6 | 1,335.8 | 44.75 | 30.850 | |
| 5,708.6 | 5,460.2 | 5,818.1 | 5,664.7 | 31.4 | 25.3 | -120.77 | -1,104.0 | -876.2 | 1,380.0 | 1,335.2 | 44.78 | 30.814 | |
| 5,800.0 | 5,550.4 | 5,880.6 | 5,726.6 | 31.7 | 25.5 | -120.90 | -1,097.5 | -882.5 | 1,374.8 | 1,329.7 | 45.06 | 30.512 | |
| 5,807.1 | 5,557.4 | 5,900.0 | 5,745.8 | 31.7 | 25.5 | -120.96 | -1,095.7 | -884.3 | 1,374.5 | 1,329.4 | 45.09 | 30.484 | |
| 5,900.0 | 5,649.6 | 5,949.2 | 5,794.7 | 31.9 | 25.6 | -121.01 | -1,091.5 | -888.3 | 1,369.6 | 1,324.3 | 45.32 | 30.222 | |
| 5,905.5 | 5,655.1 | 5,953.0 | 5,798.4 | 31.9 | 25.6 | -121.01 | -1,091.2 | -888.6 | 1,369.3 | 1,324.0 | 45.33 | 30.208 | |
| 6,000.0 | 5,749.2 | 6,018.0 | 5,863.1 | 32.1 | 25.8 | -121.06 | -1,086.7 | -893.0 | 1,364.9 | 1,319.4 | 45.55 | 29.968 | |
| 6,003.9 | 5,753.1 | 6,020.7 | 5,865.8 | 32.1 | 25.8 | -121.06 | -1,086.5 | -893.2 | 1,364.7 | 1,319.2 | 45.55 | 29.959 | |
| 6,100.0 | 5,849.1 | 6,100.0 | 5,944.9 | 32.3 | 25.9 | -121.06 | -1,082.5 | -897.1 | 1,360.8 | 1,315.0 | 45.76 | 29.737 | |
| 6,102.3 | 5,851.4 | 6,100.0 | 5,944.9 | 32.3 | 25.9 | -121.05 | -1,082.5 | -897.1 | 1,360.7 | 1,314.9 | 45.76 | 29.733 | |
| 6,200.8 | 5,949.8 | 6,156.3 | 6,001.1 | 32.4 | 26.0 | -120.99 | -1,080.6 | -898.9 | 1,357.0 | 1,311.0 | 45.91 | 29.559 | |
| 6,204.9 | 5,953.9 | 6,159.1 | 6,004.0 | 32.4 | 26.0 | 154.58 | -1,080.5 | -899.0 | 1,356.8 | 1,310.3 | 46.48 | 29.189 | |
| 6,234.9 | 5,983.9 | 6,179.8 | 6,024.6 | 32.4 | 26.0 | 154.59 | -1,080.0 | -899.5 | 1,355.9 | 1,309.3 | 46.55 | 29.130 | |
| 6,250.0 | 5,999.0 | 6,200.0 | 6,044.8 | 32.4 | 26.1 | 64.64 | -1,079.6 | -899.8 | 1,355.5 | 1,309.5 | 46.00 | 29.465 | |
| 6,299.2 | 6,048.2 | 6,224.2 | 6,069.0 | 32.4 | 26.1 | 64.86 | -1,079.3 | -900.1 | 1,353.3 | 1,307.3 | 46.02 | 29.410 | |
| 6,300.0 | 6,048.9 | 6,224.7 | 6,069.5 | 32.4 | 26.1 | 64.87 | -1,079.3 | -900.2 | 1,353.3 | 1,307.3 | 46.02 | 29.409 | |
| 6,350.0 | 6,098.5 | 6,264.0 | 6,108.8 | 32.4 | 26.1 | 65.29 | -1,079.1 | -900.3 | 1,350.3 | 1,304.2 | 46.09 | 29.294 | |
| 6,397.6 | 6,145.3 | 6,300.0 | 6,144.8 | 32.3 | 26.2 | 65.84 | -1,079.1 | -900.3 | 1,346.4 | 1,300.2 | 46.21 | 29.138 | |
| 6,400.0 | 6,147.6 | 6,300.0 | 6,144.8 | 32.3 | 26.2 | 65.86 | -1,079.1 | -900.3 | 1,346.2 | 1,300.0 | 46.21 | 29.134 | |
| 6,450.0 | 6,195.8 | 6,327.9 | 6,172.7 | 32.2 | 26.2 | 66.47 | -1,079.1 | -899.5 | 1,341.3 | 1,295.0 | 46.30 | 28.968 | |
| 6,496.0 | 6,239.3 | 6,350.0 | 6,194.8 | 32.1 | 26.2 | 67.07 | -1,079.1 | -898.1 | 1,336.4 | 1,290.0 | 46.40 | 28.803 | |
| 6,500.0 | 6,243.0 | 6,350.0 | 6,194.8 | 32.1 | 26.2 | 67.10 | -1,079.1 | -898.1 | 1,335.9 | 1,289.5 | 46.40 | 28.794 | |
| 6,550.0 | 6,289.0 | 6,382.8 | 6,227.4 | 32.0 | 26.2 | 67.92 | -1,079.1 | -894.8 | 1,330.1 | 1,283.5 | 46.57 | 28.563 | |
| 6,594.5 | 6,328.6 | 6,400.0 | 6,244.4 | 31.8 | 26.2 | 68.56 | -1,079.1 | -892.5 | 1,324.5 | 1,277.8 | 46.68 | 28.372 | |
| 6,600.0 | 6,333.4 | 6,400.0 | 6,244.4 | 31.8 | 26.2 | 68.61 | -1,079.1 | -892.5 | 1,323.8 | 1,277.1 | 46.69 | 28.355 | |
| 6,650.0 | 6,376.2 | 6,437.9 | 6,281.8 | 31.7 | 26.2 | 69.66 | -1,079.1 | -885.9 | 1,317.1 | 1,270.1 | 46.96 | 28.047 | |
| 6,692.9 | 6,411.3 | 6,461.7 | 6,304.9 | 31.6 | 26.2 | 70.49 | -1,079.1 | -880.8 | 1,311.1 | 1,263.9 | 47.18 | 27.789 | |
| 6,700.0 | 6,417.0 | 6,465.6 | 6,308.8 | 31.5 | 26.2 | 70.64 | -1,079.1 | -879.9 | 1,310.1 | 1,262.8 | 47.22 | 27.745 | |
| 6,750.0 | 6,455.7 | 6,500.0 | 6,342.0 | 31.4 | 26.1 | 71.79 | -1,079.1 | -870.9 | 1,302.9 | 1,255.3 | 47.56 | 27.393 | |
| 6,791.3 | 6,486.0 | 6,516.4 | 6,357.6 | 31.3 | 26.1 | 72.57 | -1,079.1 | -866.1 | 1,296.7 | 1,248.9 | 47.80 | 27.126 | |
| 6,800.0 | 6,492.2 | 6,521.2 | 6,362.2 | 31.3 | 26.1 | 72.76 | -1,079.1 | -864.6 | 1,295.4 | 1,247.5 | 47.86 | 27.065 | |
| 6,850.0 | 6,526.1 | 6,550.0 | 6,389.4 | 31.2 | 26.1 | 73.93 | -1,079.1 | -855.1 | 1,287.9 | 1,239.6 | 48.26 | 26.689 | |
| 6,889.7 | 6,551.2 | 6,571.5 | 6,409.5 | 31.2 | 26.0 | 74.85 | -1,079.1 | -847.2 | 1,281.9 | 1,233.3 | 48.59 | 26.383 | |
| 6,900.0 | 6,557.4 | 6,577.3 | 6,414.8 | 31.2 | 26.0 | 75.10 | -1,079.1 | -845.0 | 1,280.4 | 1,231.7 | 48.67 | 26.305 | |
| 6,950.0 | 6,586.0 | 6,600.0 | 6,435.6 | 31.1 | 26.0 | 76.20 | -1,079.1 | -836.0 | 1,272.9 | 1,223.8 | 49.10 | 25.924 | |
| 6,988.2 | 6,605.8 | 6,627.3 | 6,460.2 | 31.2 | 25.9 | 77.30 | -1,079.1 | -824.2 | 1,267.3 | 1,217.8 | 49.51 | 25.598 | |
| 7,000.0 | 6,611.5 | 6,634.0 | 6,466.2 | 31.2 | 25.9 | 77.60 | -1,079.1 | -821.1 | 1,265.6 | 1,216.0 | 49.62 | 25.505 | |
| 7,050.0 | 6,634.1 | 6,662.6 | 6,491.4 | 31.2 | 25.9 | 78.89 | -1,079.1 | -807.5 | 1,258.6 | 1,208.5 | 50.13 | 25.105 | |
| 7,086.6 | 6,648.6 | 6,683.7 | 6,509.6 | 31.3 | 25.8 | 79.84 | -1,079.1 | -796.9 | 1,253.7 | 1,203.2 | 50.52 | 24.813 | |
| 7,100.0 | 6,653.4 | 6,691.5 | 6,516.2 | 31.4 | 25.8 | 80.20 | -1,079.1 | -792.8 | 1,251.9 | 1,201.3 | 50.66 | 24.712 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,720.5 | 6,540.6 | 31.6 | 25.7 | 81.51 | -1,079.1 | -777.0 | 1,245.7 | 1,194.5 | 51.20 | 24.330 | |
| 7,185.0 | 6,678.8 | 6,741.1 | 6,557.4 | 31.7 | 25.7 | 82.44 | -1,079.1 | -765.3 | 1,241.7 | 1,190.1 | 51.59 | 24.070 | |
| 7,200.0 | 6,682.3 | 6,750.0 | 6,564.6 | 31.8 | 25.7 | 82.83 | -1,079.1 | -760.0 | 1,240.1 | 1,188.3 | 51.74 | 23.966 | |
| 7,250.0 | 6,691.6 | 6,779.6 | 6,588.0 | 32.1 | 25.6 | 84.14 | -1,079.1 | -741.9 | 1,235.1 | 1,182.8 | 52.29 | 23.621 | |
| 7,283.4 | 6,696.0 | 6,800.0 | 6,603.8 | 32.3 | 25.5 | 85.02 | -1,079.1 | -728.9 | 1,232.1 | 1,179.5 | 52.65 | 23.402 | |
| 7,300.0 | 6,697.5 | 6,809.6 | 6,611.0 | 32.4 | 25.5 | 85.43 | -1,079.1 | -722.6 | 1,230.8 | 1,178.0 | 52.82 | 23.301 | |
| 7,350.0 | 6,699.9 | 6,840.1 | 6,633.5 | 32.8 | 25.4 | 86.71 | -1,079.1 | -702.0 | 1,227.4 | 1,174.1 | 53.35 | 23.006 | |
| 7,364.4 | 6,700.0 | 6,850.0 | 6,640.6 | 32.9 | 25.4 | 87.10 | -1,079.1 | -695.1 | 1,226.6 | 1,173.1 | 53.50 | 22.927 | |
| 7,381.9 | 6,699.9 | 6,859.9 | 6,647.7 | 33.1 | 25.4 | 87.43 | -1,079.1 | -688.1 | 1,225.8 | 1,172.1 | 53.67 | 22.838 | |
| 7,400.0 | 6,699.8 | 6,871.7 | 6,655.8 | 33.2 | 25.4 | 87.82 | -1,079.1 | -679.7 | 1,225.0 | 1,171.2 | 53.85 | 22.749 | |
| 7,480.3 | 6,699.2 | 6,928.4 | 6,693.5 | 34.0 | 25.2 | 89.59 | -1,079.1 | -637.2 | 1,223.4 | 1,168.6 | 54.75 | 22.344 | |
| 7,498.3 | 6,699.1 | 6,942.3 | 6,702.1 | 34.2 | 25.2 | 90.00 | -1,079.1 | -626.4 | 1,223.3 | 1,168.4 | 54.96 | 22.260 | CC |
| 7,500.0 | 6,699.1 | 6,943.6 | 6,703.0 | 34.2 | 25.2 | 90.04 | -1,079.1 | -625.4 | 1,223.3 | 1,168.3 | 54.97 | 22.252 | |
| 7,578.7 | 6,698.6 | 7,009.8 | 6,741.2 | 35.2 | 25.1 | 91.85 | -1,079.1 | -571.5 | 1,224.2 | 1,168.2 | 56.07 | 21.835 | |
| 7,600.0 | 6,698.5 | 7,029.2 | 6,751.5 | 35.4 | 25.0 | 92.33 | -1,079.1 | -555.0 | 1,224.7 | 1,168.3 | 56.38 | 21.723 | |
| 7,677.1 | 6,698.0 | 7,105.1 | 6,787.3 | 36.5 | 24.9 | 94.03 | -1,079.1 | -488.1 | 1,227.0 | 1,169.3 | 57.72 | 21.260 | |
| 7,700.0 | 6,697.8 | 7,129.3 | 6,797.2 | 36.8 | 24.9 | 94.49 | -1,079.1 | -466.0 | 1,227.8 | 1,169.7 | 58.15 | 21.113 | |
| 7,775.6 | 6,697.3 | 7,214.3 | 6,826.0 | 38.0 | 24.9 | 95.85 | -1,079.1 | -386.1 | 1,230.3 | 1,170.5 | 59.85 | 20.557 | |
| 7,800.0 | 6,697.2 | 7,243.2 | 6,833.6 | 38.3 | 24.9 | 96.21 | -1,079.1 | -358.1 | 1,231.0 | 1,170.6 | 60.45 | 20.364 | |
| 7,874.0 | 6,696.7 | 7,334.4 | 6,850.0 | 39.6 | 25.1 | 97.00 | -1,079.1 | -268.6 | 1,232.7 | 1,170.1 | 62.58 | 19.699 | |
| 7,900.0 | 6,696.5 | 7,367.2 | 6,853.2 | 40.0 | 25.2 | 97.15 | -1,079.1 | -235.9 | 1,233.0 | 1,169.6 | 63.39 | 19.452 | |
| 7,972.4 | 6,696.1 | 7,452.1 | 6,854.8 | 41.3 | 25.7 | 97.25 | -1,079.1 | -151.0 | 1,233.2 | 1,167.4 | 65.79 | 18.744 | |
| 8,000.0 | 6,695.9 | 7,479.7 | 6,854.6 | 41.8 | 25.9 | 97.25 | -1,079.1 | -123.5 | 1,233.2 | 1,166.5 | 66.68 | 18.495 | |
| 8,070.8 | 6,695.4 | 7,550.5 | 6,854.0 | 43.1 | 26.6 | 97.25 | -1,079.1 | -52.6 | 1,233.2 | 1,164.0 | 69.13 | 17.838 | |
| 8,100.0 | 6,695.2 | 7,579.7 | 6,853.7 | 43.7 | 27.0 | 97.24 | -1,079.1 | -23.5 | 1,233.2 | 1,163.0 | 70.16 | 17.578 | |
| 8,169.3 | 6,694.8 | 7,649.0 | 6,853.2 | 45.1 | 28.0 | 97.24 | -1,079.1 | 45.8 | 1,233.2 | 1,160.4 | 72.74 | 16.952 | |
| 8,200.0 | 6,694.6 | 7,679.7 | 6,852.9 | 45.7 | 28.5 | 97.24 | -1,079.1 | 76.5 | 1,233.1 | 1,159.2 | 73.91 | 16.685 | |
| 8,267.7 | 6,694.1 | 7,747.4 | 6,852.4 | 47.1 | 29.7 | 97.23 | -1,079.1 | 144.2 | 1,233.1 | 1,156.5 | 76.60 | 16.099 | |
| 8,300.0 | 6,693.9 | 7,779.7 | 6,852.1 | 47.8 | 30.3 | 97.23 | -1,079.1 | 176.5 | 1,233.1 | 1,155.2 | 77.90 | 15.830 | |
| 8,366.1 | 6,693.5 | 7,845.8 | 6,851.5 | 49.2 | 31.6 | 97.22 | -1,079.1 | 242.7 | 1,233.1 | 1,152.5 | 80.65 | 15.289 | |
| 8,400.0 | 6,693.3 | 7,879.7 | 6,851.3 | 49.9 | 32.3 | 97.22 | -1,079.1 | 276.5 | 1,233.1 | 1,151.0 | 82.08 | 15.023 | |
| 8,464.5 | 6,692.9 | 7,944.2 | 6,850.7 | 51.4 | 33.7 | 97.22 | -1,079.1 | 341.1 | 1,233.1 | 1,148.2 | 84.88 | 14.527 | |
| 8,500.0 | 6,692.6 | 7,979.7 | 6,850.5 | 52.1 | 34.5 | 97.21 | -1,079.1 | 376.5 | 1,233.1 | 1,146.6 | 86.43 | 14.266 | |
| 8,563.0 | 6,692.2 | 8,042.7 | 6,849.9 | 53.6 | 35.9 | 97.21 | -1,079.1 | 439.5 | 1,233.1 | 1,143.8 | 89.26 | 13.815 | |
| 8,600.0 | 6,692.0 | 8,079.7 | 6,849.6 | 54.4 | 36.7 | 97.21 | -1,079.1 | 476.5 | 1,233.1 | 1,142.1 | 90.93 | 13.561 | |
| 8,661.4 | 6,691.6 | 8,141.1 | 6,849.1 | 55.8 | 38.2 | 97.20 | -1,079.1 | 537.9 | 1,233.0 | 1,139.3 | 93.75 | 13.152 | |
| 8,700.0 | 6,691.3 | 8,179.7 | 6,848.8 | 56.7 | 39.1 | 97.20 | -1,079.1 | 576.5 | 1,233.0 | 1,137.5 | 95.54 | 12.906 | |
| 8,759.8 | 6,690.9 | 8,239.5 | 6,848.3 | 58.1 | 40.5 | 97.19 | -1,079.1 | 636.3 | 1,233.0 | 1,134.7 | 98.35 | 12.537 | |
| 8,800.0 | 6,690.7 | 8,279.7 | 6,848.0 | 59.1 | 41.5 | 97.19 | -1,079.1 | 676.5 | 1,233.0 | 1,132.8 | 100.25 | 12.299 | |
| 8,858.2 | 6,690.3 | 8,337.9 | 6,847.5 | 60.5 | 42.9 | 97.19 | -1,079.1 | 734.8 | 1,233.0 | 1,130.0 | 103.04 | 11.966 | |
| 8,900.0 | 6,690.0 | 8,379.7 | 6,847.2 | 61.5 | 43.9 | 97.18 | -1,079.1 | 776.5 | 1,233.0 | 1,127.9 | 105.05 | 11.737 | |
| 8,956.7 | 6,689.7 | 8,436.4 | 6,846.7 | 62.9 | 45.3 | 97.18 | -1,079.1 | 833.2 | 1,233.0 | 1,125.2 | 107.81 | 11.437 | |
| 9,000.0 | 6,689.4 | 8,479.7 | 6,846.4 | 63.9 | 46.4 | 97.17 | -1,079.1 | 876.5 | 1,233.0 | 1,123.1 | 109.93 | 11.216 | |
| 9,055.1 | 6,689.0 | 8,534.8 | 6,845.9 | 65.3 | 47.8 | 97.17 | -1,079.1 | 931.6 | 1,233.0 | 1,120.3 | 112.65 | 10.945 | |
| 9,100.0 | 6,688.7 | 8,579.7 | 6,845.5 | 66.4 | 48.9 | 97.17 | -1,079.1 | 976.5 | 1,233.0 | 1,118.1 | 114.87 | 10.734 | |
| 9,153.5 | 6,688.4 | 8,633.2 | 6,845.1 | 67.7 | 50.3 | 97.16 | -1,079.1 | 1,030.0 | 1,232.9 | 1,115.4 | 117.54 | 10.489 | |
| 9,200.0 | 6,688.1 | 8,679.7 | 6,844.7 | 68.9 | 51.5 | 97.16 | -1,079.1 | 1,076.5 | 1,232.9 | 1,113.1 | 119.87 | 10.286 | |
| 9,251.9 | 6,687.8 | 8,731.6 | 6,844.3 | 70.2 | 52.8 | 97.15 | -1,079.1 | 1,128.4 | 1,232.9 | 1,110.4 | 122.49 | 10.066 | |
| 9,300.0 | 6,687.4 | 8,779.7 | 6,843.9 | 71.4 | 54.1 | 97.15 | -1,079.1 | 1,176.5 | 1,232.9 | 1,108.0 | 124.92 | 9.870 | |
| 9,350.4 | 6,687.1 | 8,830.1 | 6,843.5 | 72.7 | 55.4 | 97.15 | -1,079.1 | 1,226.9 | 1,232.9 | 1,105.4 | 127.48 | 9.671 | |
| 9,400.0 | 6,686.8 | 8,879.7 | 6,843.1 | 73.9 | 56.7 | 97.14 | -1,079.1 | 1,276.5 | 1,232.9 | 1,102.9 | 130.01 | 9.483 | |
| 9,448.8 | 6,686.5 | 8,928.5 | 6,842.7 | 75.2 | 58.0 | 97.14 | -1,079.1 | 1,325.3 | 1,232.9 | 1,100.4 | 132.51 | 9.304 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-402 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 8,979.7 | 6,842.3 | 76.5 | 59.3 | 97.14 | -1,079.1 | 1,376.5 | 1,232.9 | 1,097.7 | 135.14 | 9.123 | |
| 9,547.2 | 6,685.8 | 9,026.9 | 6,841.9 | 77.7 | 60.6 | 97.13 | -1,079.1 | 1,423.7 | 1,232.9 | 1,095.3 | 137.58 | 8.961 | |
| 9,600.0 | 6,685.5 | 9,079.7 | 6,841.5 | 79.0 | 61.9 | 97.13 | -1,079.1 | 1,476.5 | 1,232.9 | 1,092.5 | 140.30 | 8.787 | |
| 9,645.6 | 6,685.2 | 9,125.3 | 6,841.1 | 80.2 | 63.2 | 97.12 | -1,079.1 | 1,522.1 | 1,232.8 | 1,090.2 | 142.68 | 8.641 | |
| 9,700.0 | 6,684.8 | 9,179.7 | 6,840.6 | 81.6 | 64.6 | 97.12 | -1,079.1 | 1,576.5 | 1,232.8 | 1,087.3 | 145.50 | 8.473 | |
| 9,744.1 | 6,684.6 | 9,223.8 | 6,840.3 | 82.8 | 65.8 | 97.12 | -1,079.1 | 1,620.5 | 1,232.8 | 1,085.0 | 147.80 | 8.341 | |
| 9,800.0 | 6,684.2 | 9,279.7 | 6,839.8 | 84.2 | 67.3 | 97.11 | -1,079.1 | 1,676.5 | 1,232.8 | 1,082.1 | 150.73 | 8.179 | |
| 9,842.5 | 6,683.9 | 9,322.2 | 6,839.5 | 85.3 | 68.4 | 97.11 | -1,079.1 | 1,719.0 | 1,232.8 | 1,079.9 | 152.96 | 8.060 | |
| 9,900.0 | 6,683.5 | 9,379.7 | 6,839.0 | 86.8 | 69.9 | 97.10 | -1,079.1 | 1,776.5 | 1,232.8 | 1,076.8 | 155.98 | 7.904 | |
| 9,940.9 | 6,683.3 | 9,420.6 | 6,838.7 | 87.9 | 71.0 | 97.10 | -1,079.1 | 1,817.4 | 1,232.8 | 1,074.7 | 158.13 | 7.796 | |
| 10,000.0 | 6,682.9 | 9,479.7 | 6,838.2 | 89.5 | 72.6 | 97.10 | -1,079.1 | 1,876.5 | 1,232.8 | 1,071.5 | 161.25 | 7.645 | |
| 10,039.3 | 6,682.6 | 9,519.0 | 6,837.9 | 90.5 | 73.7 | 97.09 | -1,079.1 | 1,915.8 | 1,232.8 | 1,069.4 | 163.33 | 7.548 | |
| 10,100.0 | 6,682.2 | 9,579.7 | 6,837.4 | 92.1 | 75.3 | 97.09 | -1,079.1 | 1,976.5 | 1,232.8 | 1,066.2 | 166.54 | 7.402 | |
| 10,137.8 | 6,682.0 | 9,617.5 | 6,837.1 | 93.1 | 76.3 | 97.09 | -1,079.1 | 2,014.2 | 1,232.7 | 1,064.2 | 168.54 | 7.314 | |
| 10,200.0 | 6,681.6 | 9,679.7 | 6,836.6 | 94.8 | 78.0 | 97.08 | -1,079.1 | 2,076.5 | 1,232.7 | 1,060.9 | 171.85 | 7.173 | |
| 10,236.2 | 6,681.4 | 9,715.9 | 6,836.3 | 95.7 | 79.0 | 97.08 | -1,079.1 | 2,112.7 | 1,232.7 | 1,058.9 | 173.78 | 7.094 | |
| 10,300.0 | 6,680.9 | 9,779.7 | 6,835.8 | 97.4 | 80.7 | 97.07 | -1,079.1 | 2,176.5 | 1,232.7 | 1,055.5 | 177.18 | 6.958 | |
| 10,334.6 | 6,680.7 | 9,814.3 | 6,835.5 | 98.3 | 81.7 | 97.07 | -1,079.1 | 2,211.1 | 1,232.7 | 1,053.7 | 179.03 | 6.886 | |
| 10,400.0 | 6,680.3 | 9,879.7 | 6,834.9 | 100.1 | 83.4 | 97.07 | -1,079.1 | 2,276.4 | 1,232.7 | 1,050.2 | 182.52 | 6.754 | |
| 10,433.0 | 6,680.1 | 9,912.7 | 6,834.7 | 101.0 | 84.3 | 97.06 | -1,079.1 | 2,309.5 | 1,232.7 | 1,048.4 | 184.29 | 6.689 | |
| 10,500.0 | 6,679.7 | 9,979.7 | 6,834.1 | 102.8 | 86.2 | 97.06 | -1,079.1 | 2,376.4 | 1,232.7 | 1,044.8 | 187.88 | 6.561 | |
| 10,531.5 | 6,679.4 | 10,011.1 | 6,833.9 | 103.6 | 87.0 | 97.06 | -1,079.1 | 2,407.9 | 1,232.7 | 1,043.1 | 189.57 | 6.503 | |
| 10,600.0 | 6,679.0 | 10,079.7 | 6,833.3 | 105.4 | 88.9 | 97.05 | -1,079.1 | 2,476.4 | 1,232.7 | 1,039.4 | 193.25 | 6.379 | |
| 10,629.9 | 6,678.8 | 10,109.6 | 6,833.1 | 106.2 | 89.7 | 97.05 | -1,079.1 | 2,506.3 | 1,232.6 | 1,037.8 | 194.85 | 6.326 | |
| 10,700.0 | 6,678.4 | 10,179.7 | 6,832.5 | 108.1 | 91.6 | 97.04 | -1,079.1 | 2,576.4 | 1,232.6 | 1,034.0 | 198.63 | 6.206 | |
| 10,728.3 | 6,678.2 | 10,208.0 | 6,832.3 | 108.9 | 92.4 | 97.04 | -1,079.1 | 2,604.8 | 1,232.6 | 1,032.5 | 200.15 | 6.158 | |
| 10,800.0 | 6,677.7 | 10,279.7 | 6,831.7 | 110.8 | 94.4 | 97.04 | -1,079.1 | 2,676.4 | 1,232.6 | 1,028.6 | 204.02 | 6.042 | |
| 10,826.7 | 6,677.5 | 10,306.4 | 6,831.5 | 111.5 | 95.1 | 97.03 | -1,079.1 | 2,703.2 | 1,232.6 | 1,027.1 | 205.46 | 5.999 | |
| 10,900.0 | 6,677.1 | 10,379.7 | 6,830.9 | 113.5 | 97.1 | 97.03 | -1,079.1 | 2,776.4 | 1,232.6 | 1,023.2 | 209.42 | 5.886 | |
| 10,925.2 | 6,676.9 | 10,404.8 | 6,830.7 | 114.2 | 97.8 | 97.03 | -1,079.1 | 2,801.6 | 1,232.6 | 1,021.8 | 210.78 | 5.848 | |
| 11,000.0 | 6,676.4 | 10,479.7 | 6,830.1 | 116.2 | 99.8 | 97.02 | -1,079.1 | 2,876.4 | 1,232.6 | 1,017.7 | 214.83 | 5.737 | |
| 11,023.6 | 6,676.3 | 10,503.3 | 6,829.9 | 116.8 | 100.5 | 97.02 | -1,079.1 | 2,900.0 | 1,232.6 | 1,016.5 | 216.11 | 5.703 | |
| 11,100.0 | 6,675.8 | 10,579.7 | 6,829.2 | 118.9 | 102.6 | 97.01 | -1,079.1 | 2,976.4 | 1,232.6 | 1,012.3 | 220.26 | 5.596 | |
| 11,122.0 | 6,675.6 | 10,601.7 | 6,829.1 | 119.5 | 103.2 | 97.01 | -1,079.1 | 2,998.4 | 1,232.6 | 1,011.1 | 221.45 | 5.566 | |
| 11,200.0 | 6,675.1 | 10,679.7 | 6,828.4 | 121.6 | 105.3 | 97.01 | -1,079.1 | 3,076.4 | 1,232.5 | 1,006.9 | 225.68 | 5.461 | |
| 11,220.4 | 6,675.0 | 10,700.1 | 6,828.3 | 122.2 | 105.9 | 97.00 | -1,079.1 | 3,096.9 | 1,232.5 | 1,005.7 | 226.80 | 5.435 | |
| 11,300.0 | 6,674.5 | 10,779.7 | 6,827.6 | 124.3 | 108.1 | 97.00 | -1,079.1 | 3,176.4 | 1,232.5 | 1,001.4 | 231.12 | 5.333 | |
| 11,318.9 | 6,674.3 | 10,798.5 | 6,827.5 | 124.9 | 108.6 | 97.00 | -1,079.1 | 3,195.3 | 1,232.5 | 1,000.4 | 232.15 | 5.309 | |
| 11,400.0 | 6,673.8 | 10,879.7 | 6,826.8 | 127.1 | 110.8 | 96.99 | -1,079.1 | 3,276.4 | 1,232.5 | 995.9 | 236.56 | 5.210 | |
| 11,417.3 | 6,673.7 | 10,897.0 | 6,826.7 | 127.5 | 111.3 | 96.99 | -1,079.1 | 3,293.7 | 1,232.5 | 995.0 | 237.51 | 5.189 | |
| 11,500.0 | 6,673.2 | 10,979.7 | 6,826.0 | 129.8 | 113.6 | 96.98 | -1,079.1 | 3,376.4 | 1,232.5 | 990.5 | 242.01 | 5.093 | |
| 11,515.7 | 6,673.1 | 10,995.4 | 6,825.9 | 130.2 | 114.0 | 96.98 | -1,079.1 | 3,392.1 | 1,232.5 | 989.6 | 242.87 | 5.075 | |
| 11,600.0 | 6,672.5 | 11,079.7 | 6,825.2 | 132.5 | 116.4 | 96.98 | -1,079.1 | 3,476.4 | 1,232.5 | 985.0 | 247.47 | 4.980 | |
| 11,614.1 | 6,672.4 | 11,093.8 | 6,825.1 | 132.9 | 116.8 | 96.97 | -1,079.1 | 3,490.5 | 1,232.5 | 984.2 | 248.24 | 4.965 | |
| 11,700.0 | 6,671.9 | 11,179.7 | 6,824.4 | 135.3 | 119.1 | 96.97 | -1,079.1 | 3,576.4 | 1,232.4 | 979.5 | 252.93 | 4.873 | |
| 11,712.6 | 6,671.8 | 11,192.2 | 6,824.3 | 135.6 | 119.5 | 96.97 | -1,079.1 | 3,589.0 | 1,232.4 | 978.8 | 253.62 | 4.859 | |
| 11,800.0 | 6,671.2 | 11,279.7 | 6,823.6 | 138.0 | 121.9 | 96.96 | -1,079.1 | 3,676.4 | 1,232.4 | 974.0 | 258.40 | 4.769 | |
| 11,811.0 | 6,671.1 | 11,290.7 | 6,823.5 | 138.3 | 122.2 | 96.96 | -1,079.1 | 3,687.4 | 1,232.4 | 973.4 | 259.00 | 4.758 | |
| 11,900.0 | 6,670.6 | 11,379.7 | 6,822.8 | 140.7 | 124.7 | 96.95 | -1,079.1 | 3,776.4 | 1,232.4 | 968.5 | 263.87 | 4.670 | |
| 11,909.4 | 6,670.5 | 11,389.1 | 6,822.7 | 141.0 | 124.9 | 96.95 | -1,079.1 | 3,785.8 | 1,232.4 | 968.0 | 264.39 | 4.661 | |
| 11,933.4 | 6,670.3 | 11,413.1 | 6,822.5 | 141.6 | 125.6 | 96.95 | -1,079.1 | 3,809.8 | 1,232.4 | 966.7 | 265.70 | 4.638 | |
| 11,987.2 | 6,670.0 | 11,466.9 | 6,822.0 | 143.1 | 127.1 | 96.95 | -1,079.1 | 3,863.6 | 1,232.4 | 963.8 | 268.65 | 4.587 | ES, SF |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | | | | |
| 98.4 | 98.4 | 101.4 | 101.4 | 0.1 | 0.1 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,916.4 | 0.20 | 9,730.098 | |
| 100.0 | 100.0 | 103.0 | 103.0 | 0.1 | 0.1 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,916.4 | 0.20 | 9,474.683 | |
| 196.8 | 196.8 | 199.8 | 199.8 | 0.3 | 0.3 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,916.0 | 0.64 | 3,005.718 | |
| 200.0 | 200.0 | 203.0 | 203.0 | 0.3 | 0.3 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,916.0 | 0.65 | 2,940.421 | |
| 295.3 | 295.3 | 298.3 | 298.3 | 0.5 | 0.5 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,915.6 | 1.08 | 1,774.471 | |
| 300.0 | 300.0 | 303.0 | 303.0 | 0.5 | 0.6 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,915.5 | 1.10 | 1,740.250 | |
| 393.7 | 393.7 | 396.7 | 396.7 | 0.8 | 0.8 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,915.1 | 1.52 | 1,258.817 | |
| 400.0 | 400.0 | 403.0 | 403.0 | 0.8 | 0.8 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,915.1 | 1.55 | 1,235.829 | |
| 492.1 | 492.1 | 495.1 | 495.1 | 1.0 | 1.0 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,914.7 | 1.97 | 975.376 | |
| 500.0 | 500.0 | 503.0 | 503.0 | 1.0 | 1.0 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,914.6 | 2.00 | 958.115 | |
| 590.5 | 590.5 | 593.5 | 593.5 | 1.2 | 1.2 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,914.2 | 2.41 | 796.118 | |
| 600.0 | 600.0 | 603.0 | 603.0 | 1.2 | 1.2 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,914.2 | 2.45 | 782.314 | |
| 689.0 | 689.0 | 692.0 | 692.0 | 1.4 | 1.4 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,913.8 | 2.85 | 672.521 | |
| 700.0 | 700.0 | 703.0 | 703.0 | 1.4 | 1.5 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,913.7 | 2.90 | 661.025 | |
| 787.4 | 787.4 | 790.4 | 790.4 | 1.6 | 1.6 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,913.3 | 3.29 | 582.143 | |
| 800.0 | 800.0 | 803.0 | 803.0 | 1.7 | 1.7 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,913.3 | 3.35 | 572.297 | |
| 885.8 | 885.8 | 888.8 | 888.8 | 1.9 | 1.9 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,912.9 | 3.73 | 513.178 | |
| 900.0 | 900.0 | 903.0 | 903.0 | 1.9 | 1.9 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,912.8 | 3.80 | 504.569 | |
| 984.2 | 984.2 | 987.2 | 987.2 | 2.1 | 2.1 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,912.5 | 4.18 | 458.823 | |
| 1,000.0 | 1,000.0 | 1,003.0 | 1,003.0 | 2.1 | 2.1 | -177.77 | -1,915.2 | -74.6 | 1,916.6 | 1,912.4 | 4.25 | 451.176 | |
| 1,082.7 | 1,082.7 | 1,136.1 | 1,136.1 | 2.3 | 2.4 | -93.43 | -1,914.1 | -74.0 | 1,916.2 | 1,911.5 | 4.72 | 405.805 | |
| 1,100.0 | 1,100.0 | 1,177.8 | 1,177.8 | 2.3 | 2.5 | -93.50 | -1,912.7 | -73.2 | 1,915.7 | 1,910.8 | 4.85 | 394.825 | |
| 1,181.1 | 1,181.0 | 1,371.6 | 1,371.0 | 2.5 | 3.0 | -94.11 | -1,899.7 | -65.3 | 1,910.4 | 1,904.9 | 5.46 | 349.651 | |
| 1,200.0 | 1,199.8 | 1,416.3 | 1,415.3 | 2.5 | 3.1 | -94.32 | -1,895.1 | -62.6 | 1,908.5 | 1,902.9 | 5.61 | 340.321 | |
| 1,279.5 | 1,279.1 | 1,601.0 | 1,597.6 | 2.7 | 3.6 | -95.44 | -1,869.9 | -47.4 | 1,898.0 | 1,891.7 | 6.24 | 304.151 | |
| 1,300.0 | 1,299.5 | 1,647.6 | 1,643.3 | 2.8 | 3.7 | -95.80 | -1,862.0 | -42.6 | 1,894.6 | 1,888.2 | 6.41 | 295.557 | |
| 1,377.9 | 1,376.9 | 1,791.5 | 1,783.3 | 3.0 | 4.2 | -97.14 | -1,833.5 | -25.4 | 1,879.7 | 1,872.7 | 7.01 | 268.274 | |
| 1,400.0 | 1,398.7 | 1,812.4 | 1,803.5 | 3.0 | 4.3 | -97.40 | -1,829.1 | -22.8 | 1,875.3 | 1,868.2 | 7.12 | 263.282 | |
| 1,476.4 | 1,474.2 | 1,884.3 | 1,873.1 | 3.2 | 4.6 | -98.33 | -1,813.8 | -13.5 | 1,860.4 | 1,852.9 | 7.55 | 246.411 | |
| 1,500.0 | 1,497.5 | 1,906.4 | 1,894.5 | 3.3 | 4.7 | -98.63 | -1,809.1 | -10.7 | 1,855.9 | 1,848.2 | 7.68 | 241.553 | |
| 1,574.8 | 1,571.0 | 1,976.1 | 1,962.1 | 3.5 | 5.0 | -99.61 | -1,794.2 | -1.8 | 1,842.0 | 1,833.9 | 8.14 | 226.253 | |
| 1,600.0 | 1,595.6 | 1,999.4 | 1,984.7 | 3.6 | 5.1 | -99.95 | -1,789.3 | 1.2 | 1,837.5 | 1,829.2 | 8.30 | 221.466 | |
| 1,673.2 | 1,667.0 | 2,066.9 | 2,050.0 | 3.9 | 5.4 | -100.96 | -1,774.9 | 9.9 | 1,824.7 | 1,815.9 | 8.79 | 207.584 | |
| 1,700.0 | 1,693.1 | 2,091.4 | 2,073.8 | 4.0 | 5.5 | -101.34 | -1,769.7 | 13.0 | 1,820.2 | 1,811.3 | 8.97 | 202.897 | |
| 1,771.6 | 1,762.4 | 2,156.6 | 2,136.9 | 4.3 | 5.8 | -102.37 | -1,755.8 | 21.4 | 1,808.8 | 1,799.3 | 9.50 | 190.374 | |
| 1,800.0 | 1,789.6 | 2,182.2 | 2,161.7 | 4.4 | 5.9 | -102.79 | -1,750.4 | 24.7 | 1,804.4 | 1,794.7 | 9.71 | 185.814 | |
| 1,870.1 | 1,856.8 | 2,245.0 | 2,222.6 | 4.7 | 6.2 | -103.85 | -1,737.0 | 32.7 | 1,794.4 | 1,784.1 | 10.28 | 174.591 | |
| 1,900.0 | 1,885.3 | 2,271.7 | 2,248.4 | 4.9 | 6.3 | -104.30 | -1,731.3 | 36.1 | 1,790.3 | 1,779.8 | 10.52 | 170.193 | |
| 1,968.5 | 1,950.2 | 2,332.2 | 2,307.0 | 5.3 | 6.6 | -105.36 | -1,718.4 | 43.9 | 1,781.8 | 1,770.6 | 11.12 | 160.217 | |
| 2,000.0 | 1,979.8 | 2,359.8 | 2,333.7 | 5.5 | 6.7 | -105.85 | -1,712.6 | 47.4 | 1,778.1 | 1,766.7 | 11.40 | 156.019 | |
| 2,044.9 | 2,021.9 | 2,398.9 | 2,371.6 | 5.7 | 6.9 | -106.56 | -1,704.2 | 52.5 | 1,773.4 | 1,761.6 | 11.81 | 150.117 | |
| 2,066.9 | 2,042.5 | 2,417.9 | 2,390.1 | 5.9 | 7.0 | -106.86 | -1,700.2 | 54.9 | 1,771.2 | 1,759.2 | 12.02 | 147.303 | |
| 2,100.0 | 2,073.4 | 2,446.6 | 2,417.8 | 6.1 | 7.1 | -107.32 | -1,694.1 | 58.6 | 1,768.0 | 1,755.7 | 12.34 | 143.260 | |
| 2,165.3 | 2,134.4 | 2,503.2 | 2,472.7 | 6.5 | 7.4 | -108.23 | -1,682.0 | 65.8 | 1,762.2 | 1,749.2 | 12.98 | 135.757 | |
| 2,200.0 | 2,166.8 | 2,533.3 | 2,501.8 | 6.8 | 7.5 | -108.71 | -1,675.6 | 69.7 | 1,759.3 | 1,746.0 | 13.32 | 132.083 | |
| 2,263.8 | 2,226.4 | 2,588.6 | 2,555.3 | 7.2 | 7.8 | -109.61 | -1,663.9 | 76.8 | 1,754.5 | 1,740.6 | 13.96 | 125.717 | |
| 2,300.0 | 2,260.2 | 2,620.0 | 2,585.7 | 7.4 | 8.0 | -110.12 | -1,657.2 | 80.8 | 1,752.0 | 1,737.7 | 14.32 | 122.370 | |
| 2,362.2 | 2,318.3 | 2,673.9 | 2,638.0 | 7.9 | 8.2 | -110.99 | -1,645.7 | 87.7 | 1,748.2 | 1,733.3 | 14.95 | 116.967 | |
| 2,400.0 | 2,353.6 | 2,706.6 | 2,669.7 | 8.1 | 8.4 | -111.53 | -1,638.8 | 91.9 | 1,746.1 | 1,730.8 | 15.33 | 113.922 | |
| 2,460.6 | 2,410.3 | 2,759.2 | 2,720.6 | 8.6 | 8.6 | -112.39 | -1,627.6 | 98.7 | 1,743.2 | 1,727.3 | 15.95 | 109.328 | |
| 2,500.0 | 2,447.0 | 2,793.3 | 2,753.7 | 8.9 | 8.8 | -112.95 | -1,620.3 | 103.0 | 1,741.6 | 1,725.3 | 16.35 | 106.555 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,844.5 | 2,803.2 | 9.3 | 9.0 | -113.78 | -1,609.4 | 109.6 | 1,739.7 | 1,722.7 | 16.95 | 102.643 | |
| 2,600.0 | 2,540.5 | 2,880.0 | 2,837.6 | 9.6 | 9.2 | -114.37 | -1,601.9 | 114.1 | 1,738.6 | 1,721.2 | 17.37 | 100.114 | |
| 2,657.5 | 2,594.2 | 2,929.8 | 2,885.9 | 10.0 | 9.5 | -115.19 | -1,591.3 | 120.5 | 1,737.5 | 1,719.5 | 17.95 | 96.775 | |
| 2,700.0 | 2,633.9 | 2,966.6 | 2,921.6 | 10.3 | 9.7 | -115.79 | -1,583.4 | 125.3 | 1,736.9 | 1,718.5 | 18.39 | 94.467 | |
| 2,755.9 | 2,686.1 | 3,015.1 | 2,968.5 | 10.7 | 9.9 | -116.59 | -1,573.1 | 131.5 | 1,736.6 | 1,717.7 | 18.96 | 91.611 | |
| 2,765.0 | 2,694.6 | 3,022.9 | 2,976.1 | 10.8 | 9.9 | -116.72 | -1,571.4 | 132.5 | 1,736.6 | 1,717.6 | 19.05 | 91.167 | |
| 2,800.0 | 2,727.3 | 3,053.3 | 3,005.5 | 11.0 | 10.1 | -117.22 | -1,565.0 | 136.4 | 1,736.7 | 1,717.3 | 19.40 | 89.501 | |
| 2,854.3 | 2,778.1 | 3,100.4 | 3,051.1 | 11.4 | 10.3 | -117.99 | -1,554.9 | 142.4 | 1,737.2 | 1,717.2 | 19.96 | 87.053 | |
| 2,900.0 | 2,820.7 | 3,140.0 | 3,089.5 | 11.8 | 10.5 | -118.64 | -1,546.5 | 147.5 | 1,737.9 | 1,717.5 | 20.42 | 85.122 | |
| 2,952.7 | 2,870.0 | 3,185.7 | 3,133.8 | 12.2 | 10.7 | -119.40 | -1,536.8 | 153.4 | 1,739.2 | 1,718.2 | 20.95 | 83.021 | |
| 3,000.0 | 2,914.2 | 3,226.7 | 3,173.4 | 12.5 | 10.9 | -120.07 | -1,528.1 | 158.6 | 1,740.6 | 1,719.2 | 21.42 | 81.253 | |
| 3,051.2 | 2,962.0 | 3,271.0 | 3,216.4 | 12.9 | 11.2 | -120.79 | -1,518.6 | 164.3 | 1,742.5 | 1,720.6 | 21.93 | 79.447 | |
| 3,100.0 | 3,007.6 | 3,313.3 | 3,257.4 | 13.3 | 11.4 | -121.49 | -1,509.6 | 169.7 | 1,744.7 | 1,722.2 | 22.42 | 77.827 | |
| 3,149.6 | 3,053.9 | 3,356.3 | 3,299.0 | 13.6 | 11.6 | -122.19 | -1,500.5 | 175.2 | 1,747.2 | 1,724.3 | 22.91 | 76.273 | |
| 3,200.0 | 3,101.0 | 3,400.0 | 3,341.3 | 14.0 | 11.8 | -122.90 | -1,491.2 | 180.8 | 1,750.1 | 1,726.7 | 23.40 | 74.788 | |
| 3,248.0 | 3,145.9 | 3,441.6 | 3,381.7 | 14.4 | 12.0 | -123.58 | -1,482.3 | 186.2 | 1,753.3 | 1,729.4 | 23.87 | 73.451 | |
| 3,300.0 | 3,194.4 | 3,486.7 | 3,425.3 | 14.8 | 12.2 | -124.31 | -1,472.7 | 192.0 | 1,757.0 | 1,732.6 | 24.37 | 72.089 | |
| 3,346.4 | 3,237.8 | 3,527.0 | 3,464.3 | 15.1 | 12.4 | -124.96 | -1,464.2 | 197.1 | 1,760.7 | 1,735.9 | 24.82 | 70.939 | |
| 3,400.0 | 3,287.8 | 3,573.4 | 3,509.3 | 15.5 | 12.7 | -125.70 | -1,454.3 | 203.1 | 1,765.3 | 1,739.9 | 25.33 | 69.689 | |
| 3,444.9 | 3,329.8 | 3,612.3 | 3,546.9 | 15.9 | 12.9 | -126.33 | -1,446.0 | 208.1 | 1,769.4 | 1,743.7 | 25.76 | 68.700 | |
| 3,500.0 | 3,381.3 | 3,660.0 | 3,593.2 | 16.3 | 13.1 | -127.09 | -1,435.8 | 214.2 | 1,774.9 | 1,748.6 | 26.27 | 67.555 | |
| 3,543.3 | 3,421.7 | 3,697.6 | 3,629.6 | 16.6 | 13.3 | -127.68 | -1,427.9 | 219.0 | 1,779.5 | 1,752.8 | 26.68 | 66.705 | |
| 3,600.0 | 3,474.7 | 3,746.7 | 3,677.2 | 17.0 | 13.6 | -128.46 | -1,417.4 | 225.3 | 1,785.9 | 1,758.7 | 27.20 | 65.656 | |
| 3,641.7 | 3,513.7 | 3,782.9 | 3,712.2 | 17.3 | 13.7 | -129.03 | -1,409.7 | 229.9 | 1,790.8 | 1,763.3 | 27.58 | 64.927 | |
| 3,700.0 | 3,568.1 | 3,833.4 | 3,761.1 | 17.8 | 14.0 | -129.82 | -1,398.9 | 236.4 | 1,798.2 | 1,770.0 | 28.11 | 63.967 | |
| 3,740.1 | 3,605.6 | 3,868.2 | 3,794.8 | 18.1 | 14.2 | -130.36 | -1,391.5 | 240.9 | 1,803.5 | 1,775.0 | 28.47 | 63.342 | |
| 3,800.0 | 3,661.5 | 3,920.1 | 3,845.1 | 18.5 | 14.4 | -131.17 | -1,380.5 | 247.5 | 1,811.7 | 1,782.7 | 29.00 | 62.465 | |
| 3,838.6 | 3,697.6 | 3,953.5 | 3,877.5 | 18.8 | 14.6 | -131.68 | -1,373.4 | 251.8 | 1,817.3 | 1,788.0 | 29.34 | 61.931 | |
| 3,900.0 | 3,754.9 | 4,006.7 | 3,929.0 | 19.3 | 14.9 | -132.50 | -1,362.1 | 258.6 | 1,826.6 | 1,796.7 | 29.88 | 61.131 | |
| 3,937.0 | 3,789.5 | 4,038.8 | 3,960.1 | 19.6 | 15.0 | -132.98 | -1,355.2 | 262.8 | 1,832.4 | 1,802.2 | 30.20 | 60.676 | |
| 4,000.0 | 3,848.4 | 4,093.4 | 4,013.0 | 20.1 | 15.3 | -133.81 | -1,343.6 | 269.8 | 1,842.6 | 1,811.9 | 30.74 | 59.948 | |
| 4,035.4 | 3,881.5 | 4,124.1 | 4,042.7 | 20.3 | 15.5 | -134.27 | -1,337.1 | 273.7 | 1,848.6 | 1,817.6 | 31.04 | 59.562 | |
| 4,100.0 | 3,941.8 | 4,180.1 | 4,096.9 | 20.8 | 15.8 | -135.10 | -1,325.2 | 280.9 | 1,859.9 | 1,828.3 | 31.58 | 58.900 | |
| 4,133.8 | 3,973.4 | 4,209.4 | 4,125.4 | 21.1 | 15.9 | -135.54 | -1,318.9 | 284.6 | 1,866.0 | 1,834.2 | 31.86 | 58.574 | |
| 4,200.0 | 4,035.2 | 4,266.8 | 4,180.9 | 21.6 | 16.2 | -136.38 | -1,306.7 | 292.0 | 1,878.3 | 1,845.9 | 32.40 | 57.975 | |
| 4,232.3 | 4,065.4 | 4,294.7 | 4,208.0 | 21.8 | 16.3 | -136.78 | -1,300.8 | 295.6 | 1,884.5 | 1,851.9 | 32.66 | 57.701 | |
| 4,300.0 | 4,128.6 | 4,353.4 | 4,264.9 | 22.3 | 16.6 | -137.63 | -1,288.3 | 303.1 | 1,897.9 | 1,864.7 | 33.20 | 57.161 | |
| 4,330.7 | 4,157.3 | 4,380.0 | 4,290.6 | 22.6 | 16.8 | -138.01 | -1,282.6 | 306.5 | 1,904.1 | 1,870.7 | 33.45 | 56.931 | |
| 4,400.0 | 4,222.0 | 4,440.1 | 4,348.8 | 23.1 | 17.1 | -138.87 | -1,269.8 | 314.2 | 1,918.6 | 1,884.6 | 33.99 | 56.447 | |
| 4,429.1 | 4,249.3 | 4,465.4 | 4,373.3 | 23.3 | 17.2 | -139.22 | -1,264.5 | 317.5 | 1,924.8 | 1,890.6 | 34.21 | 56.256 | |
| 4,500.0 | 4,315.5 | 4,526.8 | 4,432.8 | 23.9 | 17.5 | -140.08 | -1,251.4 | 325.3 | 1,940.3 | 1,905.5 | 34.76 | 55.823 | |
| 4,527.5 | 4,341.2 | 4,550.7 | 4,455.9 | 24.1 | 17.6 | -140.41 | -1,246.3 | 328.4 | 1,946.5 | 1,911.5 | 34.97 | 55.666 | |
| 4,600.0 | 4,408.9 | 4,613.5 | 4,516.7 | 24.6 | 18.0 | -141.27 | -1,232.9 | 336.4 | 1,963.0 | 1,927.5 | 35.51 | 55.282 | |
| 4,626.0 | 4,433.2 | 4,636.0 | 4,538.5 | 24.8 | 18.1 | -141.58 | -1,228.1 | 339.3 | 1,969.1 | 1,933.4 | 35.70 | 55.153 | |
| 4,700.0 | 4,502.3 | 4,700.1 | 4,600.7 | 25.4 | 18.4 | -142.44 | -1,214.5 | 347.6 | 1,986.8 | 1,950.5 | 36.25 | 54.815 | |
| 4,724.4 | 4,525.1 | 4,721.3 | 4,621.2 | 25.6 | 18.5 | -142.72 | -1,210.0 | 350.3 | 1,992.7 | 1,956.3 | 36.42 | 54.711 | |
| 4,800.0 | 4,595.7 | 4,786.8 | 4,684.6 | 26.2 | 18.8 | -143.58 | -1,196.0 | 358.7 | 2,011.5 | 1,974.5 | 36.97 | 54.416 | |
| 4,822.8 | 4,617.1 | 4,806.6 | 4,703.8 | 26.3 | 18.9 | -143.84 | -1,191.8 | 361.2 | 2,017.3 | 1,980.1 | 37.13 | 54.333 | |
| 4,900.0 | 4,689.2 | 4,873.5 | 4,768.6 | 26.9 | 19.3 | -144.71 | -1,177.6 | 369.8 | 2,037.1 | 1,999.4 | 37.67 | 54.078 | |
| 4,921.2 | 4,709.0 | 4,891.9 | 4,786.4 | 27.1 | 19.4 | -144.94 | -1,173.7 | 372.2 | 2,042.7 | 2,004.9 | 37.82 | 54.014 | |
| 5,000.0 | 4,782.6 | 4,960.2 | 4,852.6 | 27.7 | 19.7 | -145.81 | -1,159.1 | 380.9 | 2,063.6 | 2,025.3 | 38.36 | 53.796 | |
| 5,019.7 | 4,801.0 | 4,977.2 | 4,869.1 | 27.8 | 19.8 | -146.02 | -1,155.5 | 383.1 | 2,068.9 | 2,030.4 | 38.49 | 53.747 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 5,046.8 | 4,936.5 | 28.4 | 20.2 | -146.89 | -1,140.7 | 392.0 | 2,091.0 | 2,052.0 | 39.04 | 53.565 | |
| 5,118.1 | 4,892.9 | 5,062.5 | 4,951.7 | 28.6 | 20.3 | -147.08 | -1,137.4 | 394.0 | 2,096.0 | 2,056.9 | 39.16 | 53.529 | |
| 5,159.9 | 4,932.0 | 5,098.8 | 4,986.8 | 28.9 | 20.4 | -147.52 | -1,129.6 | 398.7 | 2,107.8 | 2,068.3 | 39.44 | 53.449 | |
| 5,200.0 | 4,969.5 | 5,133.6 | 5,020.6 | 29.2 | 20.6 | -148.06 | -1,122.2 | 403.2 | 2,118.9 | 2,079.2 | 39.72 | 53.350 | |
| 5,216.5 | 4,985.1 | 5,148.1 | 5,034.6 | 29.3 | 20.7 | -148.28 | -1,119.2 | 405.0 | 2,123.5 | 2,083.6 | 39.82 | 53.323 | |
| 5,300.0 | 5,064.0 | 8,509.7 | 6,861.3 | 29.7 | 47.7 | -121.56 | -962.6 | -1,330.0 | 2,101.0 | 2,032.9 | 68.11 | 30.848 | |
| 5,314.9 | 5,078.2 | 8,514.4 | 6,861.3 | 29.8 | 47.8 | -121.04 | -962.6 | -1,334.7 | 2,089.1 | 2,020.6 | 68.55 | 30.476 | |
| 5,400.0 | 5,159.6 | 8,539.5 | 6,861.4 | 30.2 | 48.5 | -118.11 | -962.6 | -1,359.8 | 2,021.7 | 1,950.7 | 70.99 | 28.477 | |
| 5,413.4 | 5,172.4 | 8,543.3 | 6,861.5 | 30.3 | 48.6 | -117.65 | -962.6 | -1,363.5 | 2,011.1 | 1,939.7 | 71.36 | 28.182 | |
| 5,500.0 | 5,256.1 | 8,566.0 | 6,861.6 | 30.7 | 49.2 | -114.69 | -962.6 | -1,386.2 | 1,942.8 | 1,869.1 | 73.64 | 26.382 | |
| 5,511.8 | 5,267.6 | 8,568.9 | 6,861.6 | 30.7 | 49.2 | -114.29 | -962.6 | -1,389.1 | 1,933.5 | 1,859.6 | 73.93 | 26.153 | |
| 5,600.0 | 5,353.5 | 8,589.1 | 6,861.7 | 31.1 | 49.8 | -111.35 | -962.6 | -1,409.3 | 1,864.7 | 1,788.7 | 75.99 | 24.537 | |
| 5,610.2 | 5,363.5 | 8,591.3 | 6,861.7 | 31.1 | 49.8 | -111.02 | -962.6 | -1,411.5 | 1,856.7 | 1,780.5 | 76.22 | 24.362 | |
| 5,700.0 | 5,451.6 | 8,608.8 | 6,861.8 | 31.4 | 50.3 | -108.16 | -962.6 | -1,429.0 | 1,787.6 | 1,709.6 | 78.03 | 22.911 | |
| 5,708.6 | 5,460.2 | 8,610.3 | 6,861.8 | 31.4 | 50.3 | -107.89 | -962.6 | -1,430.6 | 1,781.0 | 1,702.8 | 78.18 | 22.780 | |
| 5,800.0 | 5,550.4 | 8,625.1 | 6,861.9 | 31.7 | 50.7 | -105.16 | -962.6 | -1,445.3 | 1,712.0 | 1,632.3 | 79.72 | 21.477 | |
| 5,807.1 | 5,557.4 | 8,626.1 | 6,861.9 | 31.7 | 50.7 | -104.95 | -962.6 | -1,446.4 | 1,706.8 | 1,626.9 | 79.82 | 21.383 | |
| 5,900.0 | 5,649.6 | 8,637.9 | 6,862.0 | 31.9 | 51.0 | -102.40 | -962.6 | -1,458.2 | 1,638.3 | 1,557.3 | 81.06 | 20.210 | |
| 5,905.5 | 5,655.1 | 8,638.5 | 6,862.0 | 31.9 | 51.0 | -102.25 | -962.6 | -1,458.8 | 1,634.3 | 1,553.2 | 81.13 | 20.146 | |
| 6,000.0 | 5,749.2 | 8,647.3 | 6,862.0 | 32.1 | 51.3 | -99.92 | -962.6 | -1,467.6 | 1,566.9 | 1,484.8 | 82.09 | 19.088 | |
| 6,003.9 | 5,753.1 | 8,647.6 | 6,862.0 | 32.1 | 51.3 | -99.83 | -962.6 | -1,467.9 | 1,564.1 | 1,482.0 | 82.12 | 19.047 | |
| 6,100.0 | 5,849.1 | 8,653.3 | 6,862.1 | 32.3 | 51.4 | -97.75 | -962.6 | -1,473.5 | 1,498.2 | 1,415.4 | 82.81 | 18.093 | |
| 6,102.3 | 5,851.4 | 8,653.4 | 6,862.1 | 32.3 | 51.4 | -97.70 | -962.6 | -1,473.6 | 1,496.6 | 1,413.8 | 82.82 | 18.071 | |
| 6,200.8 | 5,949.8 | 8,655.8 | 6,862.1 | 32.4 | 51.5 | -95.89 | -962.6 | -1,476.0 | 1,432.4 | 1,349.1 | 83.27 | 17.202 | |
| 6,204.9 | 5,953.9 | 8,655.8 | 6,862.1 | 32.4 | 51.5 | 179.74 | -962.6 | -1,476.0 | 1,429.8 | 1,390.6 | 39.22 | 36.457 | |
| 6,234.9 | 5,983.9 | 8,655.9 | 6,862.1 | 32.4 | 51.5 | 179.75 | -962.6 | -1,476.2 | 1,411.0 | 1,371.7 | 39.26 | 35.939 | |
| 6,250.0 | 5,999.0 | 8,655.9 | 6,862.1 | 32.4 | 51.5 | 90.69 | -962.6 | -1,476.1 | 1,401.7 | 1,318.2 | 83.45 | 16.796 | |
| 6,299.2 | 6,048.2 | 8,653.4 | 6,862.1 | 32.4 | 51.4 | 93.53 | -962.6 | -1,473.7 | 1,372.1 | 1,288.4 | 83.69 | 16.395 | |
| 6,300.0 | 6,048.9 | 8,653.4 | 6,862.1 | 32.4 | 51.4 | 93.57 | -962.6 | -1,473.6 | 1,371.6 | 1,287.9 | 83.69 | 16.389 | |
| 6,350.0 | 6,098.5 | 8,647.4 | 6,862.0 | 32.4 | 51.3 | 96.06 | -962.6 | -1,467.6 | 1,342.9 | 1,259.2 | 83.64 | 16.056 | |
| 6,397.6 | 6,145.3 | 8,638.4 | 6,862.0 | 32.3 | 51.0 | 98.07 | -962.6 | -1,458.7 | 1,316.9 | 1,233.6 | 83.36 | 15.798 | |
| 6,400.0 | 6,147.6 | 8,637.9 | 6,862.0 | 32.3 | 51.0 | 98.16 | -962.6 | -1,458.2 | 1,315.7 | 1,232.4 | 83.34 | 15.786 | |
| 6,450.0 | 6,195.8 | 8,625.1 | 6,861.9 | 32.2 | 50.7 | 99.88 | -962.6 | -1,445.3 | 1,290.2 | 1,207.4 | 82.86 | 15.571 | |
| 6,496.0 | 6,239.3 | 8,610.3 | 6,861.8 | 32.1 | 50.3 | 101.13 | -962.6 | -1,430.5 | 1,268.4 | 1,186.1 | 82.29 | 15.414 | |
| 6,500.0 | 6,243.0 | 8,608.9 | 6,861.8 | 32.1 | 50.3 | 101.22 | -962.6 | -1,429.1 | 1,266.6 | 1,184.3 | 82.23 | 15.402 | |
| 6,550.0 | 6,289.0 | 8,589.4 | 6,861.7 | 32.0 | 49.8 | 102.23 | -962.6 | -1,409.7 | 1,244.8 | 1,163.3 | 81.49 | 15.275 | |
| 6,594.5 | 6,328.6 | 8,569.5 | 6,861.6 | 31.8 | 49.2 | 102.85 | -962.6 | -1,389.7 | 1,227.1 | 1,146.4 | 80.76 | 15.194 | |
| 6,600.0 | 6,333.4 | 8,566.8 | 6,861.6 | 31.8 | 49.2 | 102.91 | -962.6 | -1,387.1 | 1,225.0 | 1,144.4 | 80.67 | 15.186 | |
| 6,650.0 | 6,376.2 | 8,541.2 | 6,861.4 | 31.7 | 48.5 | 103.31 | -962.6 | -1,361.4 | 1,207.3 | 1,127.5 | 79.78 | 15.132 | |
| 6,692.9 | 6,411.3 | 8,516.8 | 6,861.3 | 31.6 | 47.9 | 103.45 | -962.6 | -1,337.0 | 1,193.6 | 1,114.6 | 78.98 | 15.113 | |
| 6,700.0 | 6,417.0 | 8,512.6 | 6,861.3 | 31.5 | 47.8 | 103.46 | -962.6 | -1,332.8 | 1,191.5 | 1,112.7 | 78.84 | 15.113 SF | |
| 6,750.0 | 6,455.7 | 8,481.2 | 6,861.1 | 31.4 | 47.0 | 103.39 | -962.6 | -1,301.4 | 1,177.6 | 1,099.8 | 77.86 | 15.124 | |
| 6,791.3 | 6,486.0 | 8,453.2 | 6,860.9 | 31.3 | 46.2 | 103.19 | -962.6 | -1,273.5 | 1,167.6 | 1,090.6 | 77.04 | 15.156 | |
| 6,800.0 | 6,492.2 | 8,447.1 | 6,860.9 | 31.3 | 46.1 | 103.13 | -962.6 | -1,267.4 | 1,165.6 | 1,088.8 | 76.86 | 15.166 | |
| 6,850.0 | 6,526.1 | 8,410.6 | 6,860.7 | 31.2 | 45.2 | 102.72 | -962.6 | -1,230.9 | 1,155.4 | 1,079.5 | 75.83 | 15.236 | |
| 6,889.7 | 6,551.2 | 8,380.0 | 6,860.5 | 31.2 | 44.4 | 102.31 | -962.6 | -1,200.2 | 1,148.4 | 1,073.4 | 75.01 | 15.310 | |
| 6,900.0 | 6,557.4 | 8,371.9 | 6,860.5 | 31.2 | 44.2 | 102.20 | -962.6 | -1,192.1 | 1,146.7 | 1,071.9 | 74.79 | 15.332 | |
| 6,950.0 | 6,586.0 | 8,331.0 | 6,860.3 | 31.1 | 43.1 | 101.60 | -962.6 | -1,151.2 | 1,139.5 | 1,065.8 | 73.75 | 15.452 | |
| 6,988.2 | 6,605.8 | 8,298.4 | 6,860.1 | 31.2 | 42.3 | 101.12 | -962.6 | -1,118.7 | 1,134.9 | 1,062.0 | 72.95 | 15.557 | |
| 7,000.0 | 6,611.5 | 8,288.2 | 6,860.0 | 31.2 | 42.0 | 100.97 | -962.6 | -1,108.4 | 1,133.7 | 1,061.0 | 72.71 | 15.593 | |
| 7,050.0 | 6,634.1 | 8,243.7 | 6,859.8 | 31.2 | 40.9 | 100.33 | -962.6 | -1,063.9 | 1,129.0 | 1,057.3 | 71.68 | 15.751 | |
| 7,086.6 | 6,648.6 | 8,210.1 | 6,859.6 | 31.3 | 40.1 | 99.87 | -962.6 | -1,030.4 | 1,126.2 | 1,055.2 | 70.93 | 15.876 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 8,197.7 | 6,859.5 | 31.4 | 39.8 | 99.71 | -962.6 | -1,017.9 | 1,125.3 | 1,054.6 | 70.66 | 15.925 | |
| 7,150.0 | 6,669.5 | 8,150.4 | 6,859.2 | 31.6 | 38.6 | 99.16 | -962.6 | -970.7 | 1,122.4 | 1,052.7 | 69.68 | 16.109 | |
| 7,185.0 | 6,678.8 | 8,116.7 | 6,859.1 | 31.7 | 37.8 | 98.82 | -962.6 | -937.0 | 1,120.9 | 1,051.9 | 69.01 | 16.243 | |
| 7,200.0 | 6,682.3 | 8,102.2 | 6,859.0 | 31.8 | 37.4 | 98.69 | -962.6 | -922.4 | 1,120.3 | 1,051.6 | 68.72 | 16.303 | |
| 7,250.0 | 6,691.6 | 8,053.1 | 6,858.7 | 32.1 | 36.2 | 98.33 | -962.6 | -873.4 | 1,118.9 | 1,051.1 | 67.81 | 16.501 | |
| 7,283.4 | 6,696.0 | 8,020.0 | 6,858.5 | 32.3 | 35.4 | 98.15 | -962.6 | -840.2 | 1,118.2 | 1,051.0 | 67.22 | 16.635 | |
| 7,300.0 | 6,697.5 | 8,003.5 | 6,858.4 | 32.4 | 35.0 | 98.09 | -962.6 | -823.8 | 1,118.0 | 1,051.1 | 66.93 | 16.704 | |
| 7,350.0 | 6,699.9 | 7,953.6 | 6,858.1 | 32.8 | 33.9 | 97.98 | -962.6 | -773.9 | 1,117.6 | 1,051.5 | 66.11 | 16.905 | |
| 7,363.7 | 6,700.0 | 7,939.9 | 6,858.1 | 32.9 | 33.5 | 97.98 | -962.6 | -760.1 | 1,117.6 | 1,051.7 | 65.89 | 16.961 | |
| 7,364.4 | 6,700.0 | 7,939.2 | 6,858.1 | 32.9 | 33.5 | 97.98 | -962.6 | -759.5 | 1,117.6 | 1,051.7 | 65.88 | 16.964 | |
| 7,381.9 | 6,699.9 | 7,921.7 | 6,858.0 | 33.1 | 33.1 | 97.98 | -962.6 | -742.0 | 1,117.6 | 1,052.0 | 65.63 | 17.029 | |
| 7,400.0 | 6,699.8 | 7,903.6 | 6,857.9 | 33.2 | 32.7 | 97.98 | -962.6 | -723.9 | 1,117.6 | 1,052.2 | 65.37 | 17.097 | |
| 7,480.3 | 6,699.2 | 7,823.3 | 6,857.4 | 34.0 | 30.9 | 97.98 | -962.6 | -643.6 | 1,117.6 | 1,053.2 | 64.38 | 17.360 | |
| 7,500.0 | 6,699.1 | 7,803.6 | 6,857.3 | 34.2 | 30.4 | 97.98 | -962.6 | -623.9 | 1,117.6 | 1,053.5 | 64.14 | 17.425 | |
| 7,578.7 | 6,698.6 | 7,724.9 | 6,856.9 | 35.2 | 28.7 | 97.99 | -962.6 | -545.1 | 1,117.6 | 1,054.2 | 63.40 | 17.628 | |
| 7,600.0 | 6,698.5 | 7,703.6 | 6,856.7 | 35.4 | 28.2 | 97.99 | -962.6 | -523.9 | 1,117.6 | 1,054.4 | 63.20 | 17.683 | |
| 7,677.1 | 6,698.0 | 7,626.4 | 6,856.3 | 36.5 | 26.6 | 97.99 | -962.6 | -446.7 | 1,117.6 | 1,054.9 | 62.72 | 17.820 | |
| 7,700.0 | 6,697.8 | 7,603.6 | 6,856.2 | 36.8 | 26.1 | 97.99 | -962.6 | -423.9 | 1,117.6 | 1,055.0 | 62.58 | 17.860 | |
| 7,775.6 | 6,697.3 | 7,528.0 | 6,855.8 | 38.0 | 24.6 | 97.99 | -962.6 | -348.3 | 1,117.6 | 1,055.3 | 62.34 | 17.928 | |
| 7,800.0 | 6,697.2 | 7,503.6 | 6,855.6 | 38.3 | 24.1 | 98.00 | -962.6 | -323.9 | 1,117.6 | 1,055.4 | 62.26 | 17.950 | |
| 7,874.0 | 6,696.7 | 7,429.6 | 6,855.2 | 39.6 | 22.8 | 98.00 | -962.6 | -249.9 | 1,117.6 | 1,055.4 | 62.26 | 17.950 | |
| 7,900.0 | 6,696.5 | 7,403.6 | 6,855.1 | 40.0 | 22.8 | 98.00 | -962.6 | -223.9 | 1,117.7 | 1,055.4 | 62.27 | 17.950 | |
| 7,972.4 | 6,696.1 | 7,314.4 | 6,850.3 | 41.3 | 23.0 | 97.79 | -962.6 | -134.9 | 1,117.2 | 1,054.9 | 62.28 | 17.939 | |
| 8,000.0 | 6,695.9 | 7,279.8 | 6,845.5 | 41.8 | 23.0 | 97.56 | -962.6 | -100.6 | 1,116.7 | 1,054.4 | 62.33 | 17.915 | |
| 8,070.8 | 6,695.4 | 7,193.6 | 6,826.4 | 43.1 | 23.2 | 96.61 | -962.6 | -16.6 | 1,114.8 | 1,052.0 | 62.74 | 17.768 | |
| 8,100.0 | 6,695.2 | 7,159.7 | 6,816.2 | 43.7 | 23.2 | 96.10 | -962.6 | 15.8 | 1,113.8 | 1,050.8 | 62.99 | 17.681 | |
| 8,169.3 | 6,694.8 | 7,083.3 | 6,787.6 | 45.1 | 23.4 | 94.65 | -962.6 | 86.5 | 1,111.2 | 1,047.4 | 63.83 | 17.408 | |
| 8,200.0 | 6,694.6 | 7,051.6 | 6,773.5 | 45.7 | 23.5 | 93.94 | -962.6 | 115.0 | 1,110.1 | 1,045.8 | 64.26 | 17.275 | |
| 8,267.7 | 6,694.1 | 6,986.6 | 6,740.8 | 47.1 | 23.6 | 92.27 | -962.6 | 171.1 | 1,108.0 | 1,042.6 | 65.38 | 16.947 | |
| 8,300.0 | 6,693.9 | 6,958.0 | 6,724.8 | 47.8 | 23.7 | 91.45 | -962.6 | 194.9 | 1,107.3 | 1,041.4 | 65.94 | 16.792 | |
| 8,357.2 | 6,693.6 | 6,910.9 | 6,696.6 | 49.0 | 23.8 | 90.00 | -962.6 | 232.4 | 1,106.8 | 1,039.8 | 67.02 | 16.514 | CC |
| 8,366.1 | 6,693.5 | 6,904.0 | 6,692.2 | 49.2 | 23.8 | 89.77 | -962.6 | 237.8 | 1,106.8 | 1,039.6 | 67.19 | 16.473 | |
| 8,400.0 | 6,693.3 | 6,878.6 | 6,675.7 | 49.9 | 23.9 | 88.93 | -962.6 | 257.1 | 1,107.1 | 1,039.3 | 67.84 | 16.319 | ES |
| 8,464.5 | 6,692.9 | 6,834.3 | 6,645.4 | 51.4 | 24.0 | 87.37 | -962.6 | 289.4 | 1,109.1 | 1,039.9 | 69.13 | 16.044 | |
| 8,500.0 | 6,692.6 | 6,812.1 | 6,629.5 | 52.1 | 24.0 | 86.55 | -962.6 | 304.9 | 1,111.0 | 1,041.2 | 69.83 | 15.910 | |
| 8,563.0 | 6,692.2 | 6,775.9 | 6,602.5 | 53.6 | 24.1 | 85.17 | -962.6 | 329.0 | 1,116.0 | 1,044.9 | 71.10 | 15.695 | |
| 8,600.0 | 6,692.0 | 6,756.4 | 6,587.4 | 54.4 | 24.1 | 84.41 | -962.6 | 341.4 | 1,120.0 | 1,048.2 | 71.85 | 15.589 | |
| 8,661.4 | 6,691.6 | 6,726.7 | 6,563.9 | 55.8 | 24.2 | 83.21 | -962.6 | 359.5 | 1,128.5 | 1,055.4 | 73.10 | 15.437 | |
| 8,700.0 | 6,691.3 | 6,709.6 | 6,550.0 | 56.7 | 24.2 | 82.50 | -962.6 | 369.5 | 1,134.9 | 1,061.1 | 73.88 | 15.363 | |
| 8,759.8 | 6,690.9 | 6,685.2 | 6,529.8 | 58.1 | 24.3 | 81.48 | -962.6 | 383.2 | 1,146.9 | 1,071.8 | 75.10 | 15.271 | |
| 8,800.0 | 6,690.7 | 6,670.1 | 6,517.1 | 59.1 | 24.3 | 80.84 | -962.6 | 391.3 | 1,156.2 | 1,080.3 | 75.92 | 15.230 | |
| 8,858.2 | 6,690.3 | 6,650.0 | 6,499.9 | 60.5 | 24.3 | 79.98 | -962.6 | 401.7 | 1,171.5 | 1,094.4 | 77.12 | 15.191 | |
| 8,900.0 | 6,690.0 | 6,636.4 | 6,488.1 | 61.5 | 24.3 | 79.39 | -962.6 | 408.4 | 1,183.9 | 1,105.9 | 77.97 | 15.183 | |
| 8,956.7 | 6,689.7 | 6,619.6 | 6,473.3 | 62.9 | 24.4 | 78.65 | -962.6 | 416.5 | 1,202.4 | 1,123.2 | 79.15 | 15.192 | |
| 9,000.0 | 6,689.4 | 6,600.0 | 6,455.8 | 63.9 | 24.4 | 77.79 | -962.6 | 425.4 | 1,217.9 | 1,138.0 | 79.95 | 15.233 | |
| 9,055.1 | 6,689.0 | 6,600.0 | 6,455.8 | 65.3 | 24.4 | 77.79 | -962.6 | 425.4 | 1,239.3 | 1,158.0 | 81.28 | 15.246 | |
| 9,100.0 | 6,688.7 | 6,582.6 | 6,440.2 | 66.4 | 24.4 | 77.02 | -962.6 | 432.9 | 1,257.9 | 1,175.8 | 82.14 | 15.315 | |
| 9,153.5 | 6,688.4 | 6,570.6 | 6,429.2 | 67.7 | 24.4 | 76.49 | -962.6 | 437.8 | 1,281.8 | 1,198.5 | 83.27 | 15.393 | |
| 9,200.0 | 6,688.1 | 6,550.0 | 6,410.3 | 68.9 | 24.5 | 75.57 | -962.6 | 445.9 | 1,303.8 | 1,219.7 | 84.09 | 15.505 | |
| 9,251.9 | 6,687.8 | 6,550.0 | 6,410.3 | 70.2 | 24.5 | 75.57 | -962.6 | 445.9 | 1,329.6 | 1,244.2 | 85.35 | 15.577 | |
| 9,300.0 | 6,687.4 | 6,550.0 | 6,410.3 | 71.4 | 24.5 | 75.57 | -962.6 | 445.9 | 1,354.8 | 1,268.2 | 86.53 | 15.657 | |
| 9,350.4 | 6,687.1 | 6,533.0 | 6,394.5 | 72.7 | 24.5 | 74.80 | -962.6 | 452.2 | 1,382.2 | 1,294.8 | 87.48 | 15.801 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 6,686.8 | 6,524.9 | 6,386.9 | 73.9 | 24.5 | 74.44 | -962.6 | 455.0 | 1,410.5 | 1,321.9 | 88.55 | 15.928 | |
| 9,448.8 | 6,686.5 | 6,517.4 | 6,379.8 | 75.2 | 24.5 | 74.10 | -962.6 | 457.6 | 1,439.3 | 1,349.7 | 89.62 | 16.060 | |
| 9,500.0 | 6,686.1 | 6,500.0 | 6,363.4 | 76.5 | 24.5 | 73.32 | -962.6 | 463.2 | 1,470.7 | 1,380.1 | 90.54 | 16.242 | |
| 9,547.2 | 6,685.8 | 6,500.0 | 6,363.4 | 77.7 | 24.5 | 73.32 | -962.6 | 463.2 | 1,500.3 | 1,408.6 | 91.71 | 16.359 | |
| 9,600.0 | 6,685.5 | 6,500.0 | 6,363.4 | 79.0 | 24.5 | 73.32 | -962.6 | 463.2 | 1,534.5 | 1,441.5 | 93.01 | 16.498 | |
| 9,645.6 | 6,685.2 | 6,500.0 | 6,363.4 | 80.2 | 24.5 | 73.32 | -962.6 | 463.2 | 1,565.0 | 1,470.8 | 94.15 | 16.622 | |
| 9,700.0 | 6,684.8 | 6,484.5 | 6,348.6 | 81.6 | 24.5 | 72.62 | -962.6 | 467.9 | 1,601.9 | 1,506.8 | 95.17 | 16.833 | |
| 9,744.1 | 6,684.6 | 6,479.6 | 6,343.9 | 82.8 | 24.5 | 72.40 | -962.6 | 469.4 | 1,632.6 | 1,536.5 | 96.15 | 16.979 | |
| 9,800.0 | 6,684.2 | 6,473.6 | 6,338.2 | 84.2 | 24.5 | 72.13 | -962.6 | 471.0 | 1,672.4 | 1,575.0 | 97.41 | 17.169 | |
| 9,842.5 | 6,683.9 | 6,469.3 | 6,334.0 | 85.3 | 24.5 | 71.94 | -962.6 | 472.2 | 1,703.2 | 1,604.8 | 98.37 | 17.314 | |
| 9,900.0 | 6,683.5 | 6,450.0 | 6,315.4 | 86.8 | 24.6 | 71.07 | -962.6 | 477.2 | 1,745.7 | 1,646.4 | 99.33 | 17.574 | |
| 9,940.9 | 6,683.3 | 6,450.0 | 6,315.4 | 87.9 | 24.6 | 71.07 | -962.6 | 477.2 | 1,776.3 | 1,675.9 | 100.35 | 17.700 | |
| 10,000.0 | 6,682.9 | 6,450.0 | 6,315.4 | 89.5 | 24.6 | 71.07 | -962.6 | 477.2 | 1,821.2 | 1,719.3 | 101.83 | 17.885 | |
| 10,039.3 | 6,682.6 | 6,450.0 | 6,315.4 | 90.5 | 24.6 | 71.07 | -962.6 | 477.2 | 1,851.5 | 1,748.7 | 102.81 | 18.008 | |
| 10,100.0 | 6,682.2 | 6,450.0 | 6,315.4 | 92.1 | 24.6 | 71.07 | -962.6 | 477.2 | 1,898.9 | 1,794.5 | 104.33 | 18.200 | |
| 10,137.8 | 6,682.0 | 6,450.0 | 6,315.4 | 93.1 | 24.6 | 71.07 | -962.6 | 477.2 | 1,928.8 | 1,823.5 | 105.28 | 18.320 | |
| 10,200.0 | 6,681.6 | 6,450.0 | 6,315.4 | 94.8 | 24.6 | 71.07 | -962.6 | 477.2 | 1,978.6 | 1,871.7 | 106.85 | 18.518 | |
| 10,236.2 | 6,681.4 | 6,450.0 | 6,315.4 | 95.7 | 24.6 | 71.07 | -962.6 | 477.2 | 2,007.9 | 1,900.1 | 107.76 | 18.633 | |
| 10,300.0 | 6,680.9 | 6,432.0 | 6,297.9 | 97.4 | 24.6 | 70.27 | -962.6 | 481.5 | 2,059.8 | 1,951.0 | 108.86 | 18.922 | |
| 10,334.6 | 6,680.7 | 6,429.8 | 6,295.7 | 98.3 | 24.6 | 70.17 | -962.6 | 482.0 | 2,088.3 | 1,978.7 | 109.67 | 19.043 | |
| 10,400.0 | 6,680.3 | 6,425.6 | 6,291.7 | 100.1 | 24.6 | 69.98 | -962.6 | 482.8 | 2,142.6 | 2,031.5 | 111.19 | 19.270 | |
| 10,433.0 | 6,680.1 | 6,423.6 | 6,289.7 | 101.0 | 24.6 | 69.89 | -962.6 | 483.3 | 2,170.3 | 2,058.4 | 111.96 | 19.384 | |
| 10,500.0 | 6,679.7 | 6,419.7 | 6,285.9 | 102.8 | 24.6 | 69.72 | -962.6 | 484.1 | 2,226.8 | 2,113.3 | 113.53 | 19.615 | |
| 10,531.5 | 6,679.4 | 6,400.0 | 6,266.5 | 103.6 | 24.6 | 68.84 | -962.6 | 487.9 | 2,253.8 | 2,140.1 | 113.71 | 19.822 | |
| 10,600.0 | 6,679.0 | 6,400.0 | 6,266.5 | 105.4 | 24.6 | 68.84 | -962.6 | 487.9 | 2,312.4 | 2,197.0 | 115.43 | 20.033 | |
| 10,629.9 | 6,678.8 | 6,400.0 | 6,266.5 | 106.2 | 24.6 | 68.84 | -962.6 | 487.9 | 2,338.1 | 2,221.9 | 116.18 | 20.125 | |
| 10,700.0 | 6,678.4 | 6,400.0 | 6,266.5 | 108.1 | 24.6 | 68.84 | -962.6 | 487.9 | 2,398.8 | 2,280.8 | 117.94 | 20.338 | |
| 10,728.3 | 6,678.2 | 6,400.0 | 6,266.5 | 108.9 | 24.6 | 68.84 | -962.6 | 487.9 | 2,423.4 | 2,304.8 | 118.66 | 20.423 | |
| 10,800.0 | 6,677.7 | 6,400.0 | 6,266.5 | 110.8 | 24.6 | 68.84 | -962.6 | 487.9 | 2,486.2 | 2,365.7 | 120.47 | 20.638 | |
| 10,826.7 | 6,677.5 | 6,400.0 | 6,266.5 | 111.5 | 24.6 | 68.84 | -962.6 | 487.9 | 2,509.7 | 2,388.5 | 121.14 | 20.717 | |
| 10,900.0 | 6,677.1 | 6,400.0 | 6,266.5 | 113.5 | 24.6 | 68.84 | -962.6 | 487.9 | 2,574.5 | 2,451.5 | 122.99 | 20.931 | |
| 10,925.2 | 6,676.9 | 6,400.0 | 6,266.5 | 114.2 | 24.6 | 68.84 | -962.6 | 487.9 | 2,596.8 | 2,473.2 | 123.63 | 21.004 | |
| 11,000.0 | 6,676.4 | 6,400.0 | 6,266.5 | 116.2 | 24.6 | 68.84 | -962.6 | 487.9 | 2,663.6 | 2,538.1 | 125.53 | 21.219 | |
| 11,023.6 | 6,676.3 | 6,400.0 | 6,266.5 | 116.8 | 24.6 | 68.84 | -962.6 | 487.9 | 2,684.8 | 2,558.6 | 126.13 | 21.286 | |
| 11,100.0 | 6,675.8 | 6,400.0 | 6,266.5 | 118.9 | 24.6 | 68.84 | -962.6 | 487.9 | 2,753.5 | 2,625.4 | 128.07 | 21.501 | |
| 11,122.0 | 6,675.6 | 6,400.0 | 6,266.5 | 119.5 | 24.6 | 68.84 | -962.6 | 487.9 | 2,773.4 | 2,644.8 | 128.63 | 21.562 | |
| 11,200.0 | 6,675.1 | 6,400.0 | 6,266.5 | 121.6 | 24.6 | 68.84 | -962.6 | 487.9 | 2,844.1 | 2,713.4 | 130.61 | 21.776 | |
| 11,220.4 | 6,675.0 | 6,400.0 | 6,266.5 | 122.2 | 24.6 | 68.84 | -962.6 | 487.9 | 2,862.6 | 2,731.5 | 131.13 | 21.831 | |
| 11,300.0 | 6,674.5 | 6,400.0 | 6,266.5 | 124.3 | 24.6 | 68.84 | -962.6 | 487.9 | 2,935.2 | 2,802.1 | 133.15 | 22.044 | |
| 11,318.9 | 6,674.3 | 6,400.0 | 6,266.5 | 124.9 | 24.6 | 68.84 | -962.6 | 487.9 | 2,952.5 | 2,818.9 | 133.63 | 22.094 | |
| 11,400.0 | 6,673.8 | 6,400.0 | 6,266.5 | 127.1 | 24.6 | 68.84 | -962.6 | 487.9 | 3,027.0 | 2,891.3 | 135.70 | 22.306 | |
| 11,417.3 | 6,673.7 | 6,400.0 | 6,266.5 | 127.5 | 24.6 | 68.84 | -962.6 | 487.9 | 3,042.9 | 2,906.7 | 136.14 | 22.350 | |
| 11,500.0 | 6,673.2 | 6,377.9 | 6,244.8 | 129.8 | 24.6 | 67.87 | -962.6 | 491.5 | 3,118.8 | 2,981.4 | 137.38 | 22.702 | |
| 11,515.7 | 6,673.1 | 6,377.4 | 6,244.3 | 130.2 | 24.6 | 67.85 | -962.6 | 491.5 | 3,133.3 | 2,995.6 | 137.76 | 22.745 | |
| 11,600.0 | 6,672.5 | 6,375.0 | 6,241.8 | 132.5 | 24.6 | 67.74 | -962.6 | 491.9 | 3,211.4 | 3,071.6 | 139.80 | 22.972 | |
| 11,614.1 | 6,672.4 | 6,374.6 | 6,241.4 | 132.9 | 24.6 | 67.72 | -962.6 | 492.0 | 3,224.5 | 3,084.4 | 140.14 | 23.010 | |
| 11,700.0 | 6,671.9 | 6,372.1 | 6,239.1 | 135.3 | 24.6 | 67.62 | -962.6 | 492.3 | 3,304.4 | 3,162.2 | 142.22 | 23.235 | |
| 11,712.6 | 6,671.8 | 6,371.8 | 6,238.7 | 135.6 | 24.6 | 67.60 | -962.6 | 492.4 | 3,316.1 | 3,173.6 | 142.52 | 23.267 | |
| 11,800.0 | 6,671.2 | 6,350.0 | 6,217.1 | 138.0 | 24.6 | 66.65 | -962.6 | 495.1 | 3,398.1 | 3,254.3 | 143.80 | 23.631 | |
| 11,811.0 | 6,671.1 | 6,350.0 | 6,217.1 | 138.3 | 24.6 | 66.65 | -962.6 | 495.1 | 3,408.4 | 3,264.3 | 144.08 | 23.657 | |
| 11,900.0 | 6,670.6 | 6,350.0 | 6,217.1 | 140.7 | 24.6 | 66.65 | -962.6 | 495.1 | 3,491.8 | 3,345.5 | 146.33 | 23.863 | |
| 11,909.4 | 6,670.5 | 6,350.0 | 6,217.1 | 141.0 | 24.6 | 66.65 | -962.6 | 495.1 | 3,500.6 | 3,354.1 | 146.56 | 23.885 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - CECIL'S KERSEY FARM 17K-404 - ORIGINAL WELLBORE - P

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,987.2 | 6,670.0 | 6,350.0 | 6,217.1 | 143.1 | 24.6 | 66.65 | -962.6 | 495.1 | 3,573.8 | 3,425.2 | 148.53 | 24.060 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 4.0 | 4.0 | 0.0 | 0.0 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | | | | |
| 98.4 | 98.4 | 102.4 | 102.4 | 0.1 | 1.2 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,867.3 | 1.30 | 4,525.468 | |
| 100.0 | 100.0 | 104.0 | 104.0 | 0.1 | 1.2 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,867.2 | 1.33 | 4,396.566 | |
| 196.8 | 196.8 | 200.8 | 200.8 | 0.3 | 3.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,864.8 | 3.78 | 1,552.658 | |
| 200.0 | 200.0 | 204.0 | 204.0 | 0.3 | 3.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,864.7 | 3.85 | 1,523.406 | |
| 295.3 | 295.3 | 299.3 | 299.3 | 0.5 | 5.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,862.5 | 6.05 | 970.428 | |
| 300.0 | 300.0 | 304.0 | 304.0 | 0.5 | 5.6 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,862.4 | 6.15 | 953.496 | |
| 393.7 | 393.7 | 397.7 | 397.7 | 0.8 | 7.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,860.3 | 8.28 | 708.838 | |
| 400.0 | 400.0 | 404.0 | 404.0 | 0.8 | 7.6 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,860.1 | 8.42 | 696.860 | |
| 492.1 | 492.1 | 496.1 | 496.1 | 1.0 | 9.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,858.1 | 10.50 | 559.026 | |
| 500.0 | 500.0 | 504.0 | 504.0 | 1.0 | 9.7 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,857.9 | 10.68 | 549.744 | |
| 590.5 | 590.5 | 594.5 | 594.5 | 1.2 | 11.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,855.8 | 12.71 | 461.719 | |
| 600.0 | 600.0 | 604.0 | 604.0 | 1.2 | 11.7 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,855.6 | 12.92 | 454.135 | |
| 689.0 | 689.0 | 693.0 | 693.0 | 1.4 | 13.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,853.6 | 14.92 | 393.357 | |
| 700.0 | 700.0 | 704.0 | 704.0 | 1.4 | 13.7 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,853.4 | 15.17 | 386.943 | |
| 787.4 | 787.4 | 791.4 | 791.4 | 1.6 | 15.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,851.4 | 17.13 | 342.672 | |
| 800.0 | 800.0 | 804.0 | 804.0 | 1.7 | 15.7 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,851.1 | 17.41 | 337.112 | |
| 885.8 | 885.8 | 889.8 | 889.8 | 1.9 | 17.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,849.2 | 19.33 | 303.579 | |
| 900.0 | 900.0 | 904.0 | 904.0 | 1.9 | 17.8 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,848.9 | 19.65 | 298.673 | |
| 984.2 | 984.2 | 988.2 | 988.2 | 2.1 | 19.5 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,847.0 | 21.54 | 272.505 | |
| 1,000.0 | 1,000.0 | 1,004.0 | 1,004.0 | 2.1 | 19.8 | -109.33 | -1,942.3 | -5,537.8 | 5,868.6 | 5,846.7 | 21.89 | 268.114 | |
| 1,082.7 | 1,082.7 | 1,086.7 | 1,086.7 | 2.3 | 21.4 | -24.90 | -1,942.3 | -5,537.8 | 5,867.5 | 5,843.8 | 23.72 | 247.352 | |
| 1,100.0 | 1,100.0 | 1,104.0 | 1,104.0 | 2.3 | 21.8 | -24.91 | -1,942.3 | -5,537.8 | 5,867.0 | 5,842.9 | 24.10 | 243.415 | |
| 1,181.1 | 1,181.0 | 1,185.0 | 1,185.0 | 2.5 | 23.4 | -24.96 | -1,942.3 | -5,537.8 | 5,863.4 | 5,837.5 | 25.87 | 226.647 | |
| 1,200.0 | 1,199.8 | 1,203.8 | 1,203.8 | 2.5 | 23.8 | -24.97 | -1,942.3 | -5,537.8 | 5,862.2 | 5,835.9 | 26.28 | 223.084 | |
| 1,279.5 | 1,279.1 | 1,283.1 | 1,283.1 | 2.7 | 25.4 | -25.05 | -1,942.3 | -5,537.8 | 5,856.2 | 5,828.2 | 27.99 | 209.260 | |
| 1,300.0 | 1,299.5 | 1,303.5 | 1,303.5 | 2.8 | 25.8 | -25.07 | -1,942.3 | -5,537.8 | 5,854.3 | 5,825.9 | 28.42 | 205.993 | |
| 1,377.9 | 1,376.9 | 1,380.9 | 1,380.9 | 3.0 | 27.4 | -25.18 | -1,942.3 | -5,537.8 | 5,846.0 | 5,815.9 | 30.06 | 194.456 | |
| 1,400.0 | 1,398.7 | 1,402.7 | 1,402.7 | 3.0 | 27.8 | -25.22 | -1,942.3 | -5,537.8 | 5,843.3 | 5,812.8 | 30.52 | 191.443 | |
| 1,476.4 | 1,474.2 | 1,478.2 | 1,478.2 | 3.2 | 29.3 | -25.36 | -1,942.3 | -5,537.8 | 5,832.7 | 5,800.6 | 32.10 | 181.711 | |
| 1,500.0 | 1,497.5 | 1,501.5 | 1,501.5 | 3.3 | 29.8 | -25.41 | -1,942.3 | -5,537.8 | 5,829.1 | 5,796.5 | 32.58 | 178.919 | |
| 1,574.8 | 1,571.0 | 1,575.0 | 1,575.0 | 3.5 | 31.3 | -25.58 | -1,942.3 | -5,537.8 | 5,816.5 | 5,782.4 | 34.09 | 170.629 | |
| 1,600.0 | 1,595.6 | 1,599.6 | 1,599.6 | 3.6 | 31.8 | -25.64 | -1,942.3 | -5,537.8 | 5,811.8 | 5,777.2 | 34.59 | 168.028 | |
| 1,673.2 | 1,667.0 | 1,671.0 | 1,671.0 | 3.9 | 33.2 | -25.84 | -1,942.3 | -5,537.8 | 5,797.2 | 5,761.2 | 36.03 | 160.904 | |
| 1,700.0 | 1,693.1 | 1,697.1 | 1,697.1 | 4.0 | 33.7 | -25.91 | -1,942.3 | -5,537.8 | 5,791.5 | 5,754.9 | 36.55 | 158.470 | |
| 1,771.6 | 1,762.4 | 1,766.4 | 1,766.4 | 4.3 | 35.1 | -26.14 | -1,942.3 | -5,537.8 | 5,775.0 | 5,737.1 | 37.92 | 152.299 | |
| 1,800.0 | 1,789.6 | 1,793.6 | 1,793.6 | 4.4 | 35.7 | -26.24 | -1,942.3 | -5,537.8 | 5,768.1 | 5,729.6 | 38.45 | 150.009 | |
| 1,870.1 | 1,856.8 | 1,860.8 | 1,860.8 | 4.7 | 37.0 | -26.49 | -1,942.3 | -5,537.8 | 5,749.9 | 5,710.1 | 39.76 | 144.621 | |
| 1,900.0 | 1,885.3 | 1,889.3 | 1,889.3 | 4.9 | 37.6 | -26.61 | -1,942.3 | -5,537.8 | 5,741.7 | 5,701.4 | 40.30 | 142.458 | |
| 1,968.5 | 1,950.2 | 1,954.2 | 1,954.2 | 5.3 | 38.9 | -26.89 | -1,942.3 | -5,537.8 | 5,721.9 | 5,680.3 | 41.55 | 137.726 | |
| 2,000.0 | 1,979.8 | 1,983.8 | 1,983.8 | 5.5 | 39.5 | -27.03 | -1,942.3 | -5,537.8 | 5,712.3 | 5,670.2 | 42.11 | 135.666 | |
| 2,044.9 | 2,021.9 | 2,025.9 | 2,025.9 | 5.7 | 40.3 | -27.24 | -1,942.3 | -5,537.8 | 5,698.1 | 5,655.2 | 42.90 | 132.827 | |
| 2,066.9 | 2,042.5 | 2,046.5 | 2,046.5 | 5.9 | 40.7 | -27.28 | -1,942.3 | -5,537.8 | 5,691.1 | 5,647.7 | 43.37 | 131.213 | |
| 2,100.0 | 2,073.4 | 2,077.4 | 2,077.4 | 6.1 | 41.4 | -27.33 | -1,942.3 | -5,537.8 | 5,680.4 | 5,636.4 | 44.09 | 128.845 | |
| 2,165.3 | 2,134.4 | 2,138.4 | 2,138.4 | 6.5 | 42.6 | -27.44 | -1,942.3 | -5,537.8 | 5,659.5 | 5,614.0 | 45.50 | 124.370 | |
| 2,200.0 | 2,166.8 | 2,170.8 | 2,170.8 | 6.8 | 43.2 | -27.49 | -1,942.3 | -5,537.8 | 5,648.3 | 5,602.1 | 46.26 | 122.102 | |
| 2,263.8 | 2,226.4 | 2,230.4 | 2,230.4 | 7.2 | 44.4 | -27.60 | -1,942.3 | -5,537.8 | 5,627.9 | 5,580.2 | 47.65 | 118.103 | |
| 2,300.0 | 2,260.2 | 2,264.2 | 2,264.2 | 7.4 | 45.1 | -27.66 | -1,942.3 | -5,537.8 | 5,616.3 | 5,567.8 | 48.45 | 115.930 | |
| 2,362.2 | 2,318.3 | 2,322.3 | 2,322.3 | 7.9 | 46.3 | -27.76 | -1,942.3 | -5,537.8 | 5,596.4 | 5,546.6 | 49.81 | 112.349 | |
| 2,400.0 | 2,353.6 | 2,357.6 | 2,357.6 | 8.1 | 47.0 | -27.83 | -1,942.3 | -5,537.8 | 5,584.3 | 5,533.6 | 50.64 | 110.264 | |
| 2,460.6 | 2,410.3 | 2,414.3 | 2,414.3 | 8.6 | 48.1 | -27.93 | -1,942.3 | -5,537.8 | 5,564.9 | 5,512.9 | 51.98 | 107.051 | |
| 2,500.0 | 2,447.0 | 2,451.0 | 2,451.0 | 8.9 | 48.9 | -28.00 | -1,942.3 | -5,537.8 | 5,552.3 | 5,499.4 | 52.85 | 105.049 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,506.2 | 2,506.2 | 9.3 | 50.0 | -28.10 | -1,942.3 | -5,537.8 | 5,533.4 | 5,479.3 | 54.16 | 102.160 | |
| 2,600.0 | 2,540.5 | 2,544.5 | 2,544.5 | 9.6 | 50.8 | -28.17 | -1,942.3 | -5,537.8 | 5,520.4 | 5,465.3 | 55.07 | 100.235 | |
| 2,657.5 | 2,594.2 | 2,598.2 | 2,598.2 | 10.0 | 51.8 | -28.27 | -1,942.3 | -5,537.8 | 5,502.0 | 5,445.7 | 56.35 | 97.633 | |
| 2,700.0 | 2,633.9 | 2,637.9 | 2,637.9 | 10.3 | 52.6 | -28.34 | -1,942.3 | -5,537.8 | 5,488.5 | 5,431.2 | 57.30 | 95.781 | |
| 2,755.9 | 2,686.1 | 2,690.1 | 2,690.1 | 10.7 | 53.7 | -28.44 | -1,942.3 | -5,537.8 | 5,470.7 | 5,412.1 | 58.55 | 93.433 | |
| 2,800.0 | 2,727.3 | 2,731.3 | 2,731.3 | 11.0 | 54.5 | -28.52 | -1,942.3 | -5,537.8 | 5,456.7 | 5,397.1 | 59.54 | 91.649 | |
| 2,854.3 | 2,778.1 | 2,782.1 | 2,782.1 | 11.4 | 55.5 | -28.61 | -1,942.3 | -5,537.8 | 5,439.4 | 5,378.6 | 60.76 | 89.527 | |
| 2,900.0 | 2,820.7 | 2,824.7 | 2,824.7 | 11.8 | 56.4 | -28.69 | -1,942.3 | -5,537.8 | 5,424.9 | 5,363.1 | 61.78 | 87.807 | |
| 2,952.7 | 2,870.0 | 2,874.0 | 2,874.0 | 12.2 | 57.4 | -28.79 | -1,942.3 | -5,537.8 | 5,408.1 | 5,345.2 | 62.97 | 85.886 | |
| 3,000.0 | 2,914.2 | 2,918.2 | 2,918.2 | 12.5 | 58.3 | -28.87 | -1,942.3 | -5,537.8 | 5,393.1 | 5,329.1 | 64.03 | 84.225 | |
| 3,051.2 | 2,962.0 | 2,966.0 | 2,966.0 | 12.9 | 59.2 | -28.97 | -1,942.3 | -5,537.8 | 5,376.9 | 5,311.7 | 65.19 | 82.485 | |
| 3,100.0 | 3,007.6 | 3,011.6 | 3,011.6 | 13.3 | 60.2 | -29.05 | -1,942.3 | -5,537.8 | 5,361.5 | 5,295.2 | 66.29 | 80.880 | |
| 3,149.6 | 3,053.9 | 3,057.9 | 3,057.9 | 13.6 | 61.1 | -29.14 | -1,942.3 | -5,537.8 | 5,345.8 | 5,278.3 | 67.41 | 79.301 | |
| 3,200.0 | 3,101.0 | 3,105.0 | 3,105.0 | 14.0 | 62.0 | -29.24 | -1,942.3 | -5,537.8 | 5,329.8 | 5,261.3 | 68.55 | 77.749 | |
| 3,248.0 | 3,145.9 | 3,149.9 | 3,149.9 | 14.4 | 62.9 | -29.33 | -1,942.3 | -5,537.8 | 5,314.6 | 5,245.0 | 69.64 | 76.315 | |
| 3,300.0 | 3,194.4 | 3,198.4 | 3,198.4 | 14.8 | 63.9 | -29.42 | -1,942.3 | -5,537.8 | 5,298.2 | 5,227.4 | 70.82 | 74.812 | |
| 3,346.4 | 3,237.8 | 3,241.8 | 3,241.8 | 15.1 | 64.8 | -29.51 | -1,942.3 | -5,537.8 | 5,283.6 | 5,211.7 | 71.88 | 73.509 | |
| 3,400.0 | 3,287.8 | 3,291.8 | 3,291.8 | 15.5 | 65.8 | -29.61 | -1,942.3 | -5,537.8 | 5,266.7 | 5,193.6 | 73.09 | 72.053 | |
| 3,444.9 | 3,329.8 | 3,333.8 | 3,333.8 | 15.9 | 66.6 | -29.70 | -1,942.3 | -5,537.8 | 5,252.6 | 5,178.5 | 74.12 | 70.868 | |
| 3,500.0 | 3,381.3 | 3,385.3 | 3,385.3 | 16.3 | 67.7 | -29.80 | -1,942.3 | -5,537.8 | 5,235.2 | 5,159.8 | 75.37 | 69.456 | |
| 3,543.3 | 3,421.7 | 3,425.7 | 3,425.7 | 16.6 | 68.5 | -29.88 | -1,942.3 | -5,537.8 | 5,221.6 | 5,145.2 | 76.36 | 68.378 | |
| 3,600.0 | 3,474.7 | 3,478.7 | 3,478.7 | 17.0 | 69.6 | -29.99 | -1,942.3 | -5,537.8 | 5,203.8 | 5,126.1 | 77.66 | 67.007 | |
| 3,641.7 | 3,513.7 | 3,517.7 | 3,517.7 | 17.3 | 70.3 | -30.07 | -1,942.3 | -5,537.8 | 5,190.7 | 5,112.1 | 78.62 | 66.027 | |
| 3,700.0 | 3,568.1 | 3,572.1 | 3,572.1 | 17.8 | 71.4 | -30.19 | -1,942.3 | -5,537.8 | 5,172.4 | 5,092.5 | 79.95 | 64.695 | |
| 3,740.1 | 3,605.6 | 3,609.6 | 3,609.6 | 18.1 | 72.2 | -30.27 | -1,942.3 | -5,537.8 | 5,159.8 | 5,079.0 | 80.87 | 63.802 | |
| 3,800.0 | 3,661.5 | 3,665.5 | 3,665.5 | 18.5 | 73.3 | -30.38 | -1,942.3 | -5,537.8 | 5,141.1 | 5,058.9 | 82.25 | 62.508 | |
| 3,838.6 | 3,697.6 | 3,701.6 | 3,701.6 | 18.8 | 74.0 | -30.46 | -1,942.3 | -5,537.8 | 5,129.0 | 5,045.9 | 83.13 | 61.696 | |
| 3,900.0 | 3,754.9 | 3,758.9 | 3,758.9 | 19.3 | 75.2 | -30.58 | -1,942.3 | -5,537.8 | 5,109.9 | 5,025.3 | 84.55 | 60.437 | |
| 3,937.0 | 3,789.5 | 3,793.5 | 3,793.5 | 19.6 | 75.9 | -30.66 | -1,942.3 | -5,537.8 | 5,098.3 | 5,012.9 | 85.40 | 59.698 | |
| 4,000.0 | 3,848.4 | 3,852.4 | 3,852.4 | 20.1 | 77.1 | -30.78 | -1,942.3 | -5,537.8 | 5,078.7 | 4,991.8 | 86.86 | 58.473 | |
| 4,035.4 | 3,881.5 | 3,885.5 | 3,885.5 | 20.3 | 77.7 | -30.86 | -1,942.3 | -5,537.8 | 5,067.6 | 4,979.9 | 87.67 | 57.801 | |
| 4,100.0 | 3,941.8 | 3,945.8 | 3,945.8 | 20.8 | 79.0 | -30.99 | -1,942.3 | -5,537.8 | 5,047.5 | 4,958.3 | 89.17 | 56.607 | |
| 4,133.8 | 3,973.4 | 3,977.4 | 3,977.4 | 21.1 | 79.6 | -31.06 | -1,942.3 | -5,537.8 | 5,037.0 | 4,947.0 | 89.95 | 55.997 | |
| 4,200.0 | 4,035.2 | 4,039.2 | 4,039.2 | 21.6 | 80.8 | -31.19 | -1,942.3 | -5,537.8 | 5,016.4 | 4,925.0 | 91.48 | 54.834 | |
| 4,232.3 | 4,065.4 | 4,069.4 | 4,069.4 | 21.8 | 81.4 | -31.26 | -1,942.3 | -5,537.8 | 5,006.4 | 4,914.2 | 92.23 | 54.280 | |
| 4,300.0 | 4,128.6 | 4,132.6 | 4,132.6 | 22.3 | 82.7 | -31.40 | -1,942.3 | -5,537.8 | 4,985.4 | 4,891.6 | 93.81 | 53.145 | |
| 4,330.7 | 4,157.3 | 4,161.3 | 4,161.3 | 22.6 | 83.3 | -31.47 | -1,942.3 | -5,537.8 | 4,975.9 | 4,881.4 | 94.52 | 52.643 | |
| 4,400.0 | 4,222.0 | 4,226.0 | 4,226.0 | 23.1 | 84.6 | -31.61 | -1,942.3 | -5,537.8 | 4,954.5 | 4,858.3 | 96.14 | 51.536 | |
| 4,429.1 | 4,249.3 | 4,253.3 | 4,253.3 | 23.3 | 85.1 | -31.68 | -1,942.3 | -5,537.8 | 4,945.5 | 4,848.6 | 96.81 | 51.082 | |
| 4,500.0 | 4,315.5 | 4,319.5 | 4,319.5 | 23.9 | 86.5 | -31.83 | -1,942.3 | -5,537.8 | 4,923.6 | 4,825.1 | 98.47 | 50.002 | |
| 4,527.5 | 4,341.2 | 4,345.2 | 4,345.2 | 24.1 | 87.0 | -31.89 | -1,942.3 | -5,537.8 | 4,915.1 | 4,816.0 | 99.11 | 49.591 | |
| 4,600.0 | 4,408.9 | 4,412.9 | 4,412.9 | 24.6 | 88.3 | -32.04 | -1,942.3 | -5,537.8 | 4,892.7 | 4,791.9 | 100.81 | 48.536 | |
| 4,626.0 | 4,433.2 | 4,437.2 | 4,437.2 | 24.8 | 88.8 | -32.10 | -1,942.3 | -5,537.8 | 4,884.7 | 4,783.3 | 101.42 | 48.166 | |
| 4,700.0 | 4,502.3 | 4,506.3 | 4,506.3 | 25.4 | 90.2 | -32.26 | -1,942.3 | -5,537.8 | 4,862.0 | 4,758.8 | 103.15 | 47.134 | |
| 4,724.4 | 4,525.1 | 4,529.1 | 4,529.1 | 25.6 | 90.7 | -32.32 | -1,942.3 | -5,537.8 | 4,854.5 | 4,750.8 | 103.72 | 46.802 | |
| 4,800.0 | 4,595.7 | 4,599.7 | 4,599.7 | 26.2 | 92.1 | -32.48 | -1,942.3 | -5,537.8 | 4,831.3 | 4,725.8 | 105.50 | 45.794 | |
| 4,822.8 | 4,617.1 | 4,621.1 | 4,621.1 | 26.3 | 92.5 | -32.53 | -1,942.3 | -5,537.8 | 4,824.3 | 4,718.3 | 106.04 | 45.496 | |
| 4,900.0 | 4,689.2 | 4,693.2 | 4,693.2 | 26.9 | 94.0 | -32.71 | -1,942.3 | -5,537.8 | 4,800.7 | 4,692.8 | 107.86 | 44.510 | |
| 4,921.2 | 4,709.0 | 4,713.0 | 4,713.0 | 27.1 | 94.4 | -32.76 | -1,942.3 | -5,537.8 | 4,794.2 | 4,685.8 | 108.36 | 44.244 | |
| 5,000.0 | 4,782.6 | 4,786.6 | 4,786.6 | 27.7 | 95.9 | -32.94 | -1,942.3 | -5,537.8 | 4,770.1 | 4,659.9 | 110.22 | 43.279 | |
| 5,019.7 | 4,801.0 | 4,805.0 | 4,805.0 | 27.8 | 96.2 | -32.98 | -1,942.3 | -5,537.8 | 4,764.1 | 4,653.4 | 110.68 | 43.043 | |
| 5,100.0 | 4,876.0 | 4,880.0 | 4,880.0 | 28.4 | 97.7 | -33.17 | -1,942.3 | -5,537.8 | 4,739.6 | 4,627.0 | 112.59 | 42.098 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,896.9 | 4,896.9 | 28.6 | 98.1 | -33.21 | -1,942.3 | -5,537.8 | 4,734.1 | 4,621.1 | 113.01 | 41.890 | |
| 5,159.9 | 4,932.0 | 4,936.0 | 4,936.0 | 28.9 | 98.9 | -33.30 | -1,942.3 | -5,537.8 | 4,721.4 | 4,607.4 | 114.01 | 41.413 | |
| 5,200.0 | 4,969.5 | 4,973.5 | 4,973.5 | 29.2 | 99.6 | -33.26 | -1,942.3 | -5,537.8 | 4,709.4 | 4,594.2 | 115.23 | 40.869 | |
| 5,216.5 | 4,985.1 | 4,989.1 | 4,989.1 | 29.3 | 99.9 | -33.24 | -1,942.3 | -5,537.8 | 4,704.6 | 4,588.9 | 115.73 | 40.653 | |
| 5,300.0 | 5,064.0 | 5,068.0 | 5,068.0 | 29.7 | 101.5 | -33.16 | -1,942.3 | -5,537.8 | 4,681.6 | 4,563.4 | 118.22 | 39.602 | |
| 5,314.9 | 5,078.2 | 5,082.2 | 5,082.2 | 29.8 | 101.8 | -33.14 | -1,942.3 | -5,537.8 | 4,677.7 | 4,559.1 | 118.66 | 39.422 | |
| 5,400.0 | 5,159.6 | 5,163.6 | 5,163.6 | 30.2 | 103.4 | -33.07 | -1,942.3 | -5,537.8 | 4,656.7 | 4,535.5 | 121.14 | 38.440 | |
| 5,413.4 | 5,172.4 | 5,176.4 | 5,176.4 | 30.3 | 103.7 | -33.06 | -1,942.3 | -5,537.8 | 4,653.6 | 4,532.0 | 121.53 | 38.293 | |
| 5,500.0 | 5,256.1 | 5,260.1 | 5,260.1 | 30.7 | 105.4 | -33.00 | -1,942.3 | -5,537.8 | 4,634.6 | 4,510.6 | 124.00 | 37.377 | |
| 5,511.8 | 5,267.6 | 5,271.6 | 5,271.6 | 30.7 | 105.6 | -32.99 | -1,942.3 | -5,537.8 | 4,632.2 | 4,507.9 | 124.33 | 37.259 | |
| 5,600.0 | 5,353.5 | 5,357.5 | 5,357.5 | 31.1 | 107.3 | -32.94 | -1,942.3 | -5,537.8 | 4,615.5 | 4,488.7 | 126.77 | 36.408 | |
| 5,610.2 | 5,363.5 | 5,367.5 | 5,367.5 | 31.1 | 107.5 | -32.93 | -1,942.3 | -5,537.8 | 4,613.7 | 4,486.6 | 127.05 | 36.314 | |
| 5,700.0 | 5,451.6 | 5,455.6 | 5,455.6 | 31.4 | 109.3 | -32.89 | -1,942.3 | -5,537.8 | 4,599.2 | 4,469.7 | 129.46 | 35.527 | |
| 5,708.6 | 5,460.2 | 5,464.2 | 5,464.2 | 31.4 | 109.5 | -32.88 | -1,942.3 | -5,537.8 | 4,597.9 | 4,468.3 | 129.68 | 35.455 | |
| 5,800.0 | 5,550.4 | 5,554.4 | 5,554.4 | 31.7 | 111.3 | -32.85 | -1,942.3 | -5,537.8 | 4,585.9 | 4,453.8 | 132.05 | 34.729 | |
| 5,807.1 | 5,557.4 | 5,561.4 | 5,561.4 | 31.7 | 111.4 | -32.84 | -1,942.3 | -5,537.8 | 4,585.0 | 4,452.8 | 132.22 | 34.676 | |
| 5,900.0 | 5,649.6 | 5,653.6 | 5,653.6 | 31.9 | 113.3 | -32.82 | -1,942.3 | -5,537.8 | 4,575.5 | 4,440.9 | 134.53 | 34.011 | |
| 5,905.5 | 5,655.1 | 5,659.1 | 5,659.1 | 31.9 | 113.4 | -32.81 | -1,942.3 | -5,537.8 | 4,575.0 | 4,440.3 | 134.66 | 33.974 | |
| 6,000.0 | 5,749.2 | 5,753.2 | 5,753.2 | 32.1 | 115.3 | -32.80 | -1,942.3 | -5,537.8 | 4,568.0 | 4,431.1 | 136.90 | 33.367 | |
| 6,003.9 | 5,753.1 | 5,757.1 | 5,757.1 | 32.1 | 115.4 | -32.79 | -1,942.3 | -5,537.8 | 4,567.8 | 4,430.8 | 136.99 | 33.344 | |
| 6,100.0 | 5,849.1 | 5,853.1 | 5,853.1 | 32.3 | 117.3 | -32.78 | -1,942.3 | -5,537.8 | 4,563.5 | 4,424.3 | 139.15 | 32.795 | |
| 6,102.3 | 5,851.4 | 5,855.4 | 5,855.4 | 32.3 | 117.4 | -32.78 | -1,942.3 | -5,537.8 | 4,563.4 | 4,424.2 | 139.20 | 32.783 | |
| 6,200.8 | 5,949.8 | 5,953.8 | 5,953.8 | 32.4 | 119.3 | -32.78 | -1,942.3 | -5,537.8 | 4,561.8 | 4,420.6 | 141.29 | 32.288 | |
| 6,204.9 | 5,953.9 | 5,957.9 | 5,957.9 | 32.4 | 119.4 | -117.22 | -1,942.3 | -5,537.8 | 4,561.8 | 4,413.7 | 148.12 | 30.799 | |
| 6,234.9 | 5,983.9 | 5,987.9 | 5,987.9 | 32.4 | 120.0 | -117.22 | -1,942.3 | -5,537.8 | 4,561.8 | 4,413.1 | 148.75 | 30.668 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 6,003.0 | 6,003.0 | 32.4 | 120.3 | 152.78 | -1,942.3 | -5,537.8 | 4,562.0 | 4,419.7 | 142.26 | 32.068 | |
| 6,299.2 | 6,048.2 | 6,052.2 | 6,052.2 | 32.4 | 121.3 | 152.70 | -1,942.3 | -5,537.8 | 4,564.4 | 4,421.7 | 142.76 | 31.973 | |
| 6,300.0 | 6,048.9 | 6,052.9 | 6,052.9 | 32.4 | 121.3 | 152.70 | -1,942.3 | -5,537.8 | 4,564.5 | 4,421.7 | 142.76 | 31.973 | |
| 6,350.0 | 6,098.5 | 6,102.5 | 6,102.5 | 32.4 | 122.3 | 152.53 | -1,942.3 | -5,537.8 | 4,570.1 | 4,427.3 | 142.75 | 32.014 | |
| 6,397.6 | 6,145.3 | 6,149.3 | 6,149.3 | 32.3 | 123.3 | 152.28 | -1,942.3 | -5,537.8 | 4,578.2 | 4,435.9 | 142.28 | 32.178 | |
| 6,400.0 | 6,147.6 | 6,151.6 | 6,151.6 | 32.3 | 123.3 | 152.26 | -1,942.3 | -5,537.8 | 4,578.7 | 4,436.5 | 142.24 | 32.189 | |
| 6,450.0 | 6,195.8 | 6,199.8 | 6,199.8 | 32.2 | 124.3 | 151.89 | -1,942.3 | -5,537.8 | 4,590.4 | 4,449.1 | 141.25 | 32.497 | |
| 6,496.0 | 6,239.3 | 6,243.3 | 6,243.3 | 32.1 | 125.2 | 151.44 | -1,942.3 | -5,537.8 | 4,603.8 | 4,463.8 | 139.95 | 32.896 | |
| 6,500.0 | 6,243.0 | 6,247.0 | 6,247.0 | 32.1 | 125.2 | 151.40 | -1,942.3 | -5,537.8 | 4,605.0 | 4,465.2 | 139.82 | 32.935 | |
| 6,550.0 | 6,289.0 | 6,293.0 | 6,293.0 | 32.0 | 126.2 | 150.79 | -1,942.3 | -5,537.8 | 4,622.6 | 4,484.6 | 138.00 | 33.497 | |
| 6,594.5 | 6,328.6 | 6,332.6 | 6,332.6 | 31.8 | 127.0 | 150.13 | -1,942.3 | -5,537.8 | 4,640.6 | 4,504.5 | 136.11 | 34.094 | |
| 6,600.0 | 6,333.4 | 6,337.4 | 6,337.4 | 31.8 | 127.0 | 150.04 | -1,942.3 | -5,537.8 | 4,643.0 | 4,507.2 | 135.86 | 34.174 | |
| 6,650.0 | 6,376.2 | 6,380.2 | 6,380.2 | 31.7 | 127.9 | 149.14 | -1,942.3 | -5,537.8 | 4,666.2 | 4,532.7 | 133.51 | 34.949 | |
| 6,692.9 | 6,411.3 | 6,415.3 | 6,415.3 | 31.6 | 128.6 | 148.23 | -1,942.3 | -5,537.8 | 4,688.2 | 4,556.7 | 131.43 | 35.671 | |
| 6,700.0 | 6,417.0 | 6,421.0 | 6,421.0 | 31.5 | 128.7 | 148.06 | -1,942.3 | -5,537.8 | 4,692.0 | 4,560.9 | 131.08 | 35.794 | |
| 6,750.0 | 6,455.7 | 6,459.7 | 6,459.7 | 31.4 | 129.5 | 146.77 | -1,942.3 | -5,537.8 | 4,720.3 | 4,591.6 | 128.74 | 36.667 | |
| 6,791.3 | 6,486.0 | 6,490.0 | 6,490.0 | 31.3 | 130.1 | 145.53 | -1,942.3 | -5,537.8 | 4,745.6 | 4,618.5 | 127.01 | 37.365 | |
| 6,800.0 | 6,492.2 | 6,496.2 | 6,496.2 | 31.3 | 130.2 | 145.24 | -1,942.3 | -5,537.8 | 4,751.1 | 4,624.4 | 126.68 | 37.505 | |
| 6,850.0 | 6,526.1 | 6,530.1 | 6,530.1 | 31.2 | 130.9 | 143.43 | -1,942.3 | -5,537.8 | 4,784.0 | 4,658.9 | 125.16 | 38.222 | |
| 6,889.7 | 6,551.2 | 6,555.2 | 6,555.2 | 31.2 | 131.4 | 141.74 | -1,942.3 | -5,537.8 | 4,811.8 | 4,687.2 | 124.54 | 38.637 | |
| 6,900.0 | 6,557.4 | 6,561.4 | 6,561.4 | 31.2 | 131.6 | 141.27 | -1,942.3 | -5,537.8 | 4,819.1 | 4,694.7 | 124.48 | 38.714 | |
| 6,950.0 | 6,586.0 | 6,590.0 | 6,590.0 | 31.1 | 132.1 | 138.69 | -1,942.3 | -5,537.8 | 4,856.2 | 4,731.2 | 124.94 | 38.869 | |
| 6,988.2 | 6,605.8 | 6,609.8 | 6,609.8 | 31.2 | 132.5 | 136.40 | -1,942.3 | -5,537.8 | 4,885.7 | 4,759.4 | 126.25 | 38.700 | |
| 7,000.0 | 6,611.5 | 6,615.5 | 6,615.5 | 31.2 | 132.6 | 135.62 | -1,942.3 | -5,537.8 | 4,895.0 | 4,768.2 | 126.84 | 38.593 | |
| 7,050.0 | 6,634.1 | 6,638.1 | 6,638.1 | 31.2 | 133.1 | 131.94 | -1,942.3 | -5,537.8 | 4,935.4 | 4,805.0 | 130.40 | 37.847 | |
| 7,086.6 | 6,648.6 | 6,652.6 | 6,652.6 | 31.3 | 133.4 | 128.80 | -1,942.3 | -5,537.8 | 4,965.9 | 4,831.8 | 134.12 | 37.025 | |
| 7,100.0 | 6,653.4 | 6,657.4 | 6,657.4 | 31.4 | 133.5 | 127.54 | -1,942.3 | -5,537.8 | 4,977.2 | 4,841.5 | 135.70 | 36.677 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,673.5 | 6,673.5 | 31.6 | 133.8 | 122.29 | -1,942.3 | -5,537.8 | 5,020.2 | 4,877.7 | 142.53 | 35.222 | |
| 7,185.0 | 6,678.8 | 6,682.8 | 6,682.8 | 31.7 | 134.0 | 118.04 | -1,942.3 | -5,537.8 | 5,051.0 | 4,903.0 | 147.93 | 34.143 | |
| 7,200.0 | 6,682.3 | 6,686.3 | 6,686.3 | 31.8 | 134.1 | 116.07 | -1,942.3 | -5,537.8 | 5,064.2 | 4,913.9 | 150.30 | 33.694 | |
| 7,250.0 | 6,691.6 | 6,695.6 | 6,695.6 | 32.1 | 134.3 | 108.84 | -1,942.3 | -5,537.8 | 5,109.0 | 4,951.0 | 157.96 | 32.344 | |
| 7,283.4 | 6,696.0 | 6,700.0 | 6,700.0 | 32.3 | 134.3 | 103.46 | -1,942.3 | -5,537.8 | 5,139.3 | 4,977.0 | 162.32 | 31.662 | |
| 7,300.0 | 6,697.5 | 6,701.5 | 6,701.5 | 32.4 | 134.4 | 100.66 | -1,942.3 | -5,537.8 | 5,154.4 | 4,990.3 | 164.06 | 31.417 | |
| 7,350.0 | 6,699.9 | 6,703.9 | 6,703.9 | 32.8 | 134.4 | 91.78 | -1,942.3 | -5,537.8 | 5,200.1 | 5,032.9 | 167.11 | 31.118 | |
| 7,364.4 | 6,700.0 | 6,704.0 | 6,704.0 | 32.9 | 134.4 | 89.15 | -1,942.3 | -5,537.8 | 5,213.2 | 5,046.0 | 167.26 | 31.168 | |
| 7,381.9 | 6,699.9 | 6,703.9 | 6,703.9 | 33.1 | 134.4 | 89.15 | -1,942.3 | -5,537.8 | 5,229.3 | 5,061.9 | 167.41 | 31.236 | |
| 7,400.0 | 6,699.8 | 6,703.8 | 6,703.8 | 33.2 | 134.4 | 89.14 | -1,942.3 | -5,537.8 | 5,245.9 | 5,078.3 | 167.57 | 31.306 | |
| 7,480.3 | 6,699.2 | 6,703.2 | 6,703.2 | 34.0 | 134.4 | 89.13 | -1,942.3 | -5,537.8 | 5,319.7 | 5,151.3 | 168.37 | 31.596 | |
| 7,500.0 | 6,699.1 | 6,703.1 | 6,703.1 | 34.2 | 134.4 | 89.12 | -1,942.3 | -5,537.8 | 5,337.8 | 5,169.2 | 168.56 | 31.666 | |
| 7,578.7 | 6,698.6 | 6,702.6 | 6,702.6 | 35.2 | 134.4 | 89.11 | -1,942.3 | -5,537.8 | 5,410.3 | 5,240.8 | 169.50 | 31.919 | |
| 7,600.0 | 6,698.5 | 6,702.5 | 6,702.5 | 35.4 | 134.4 | 89.11 | -1,942.3 | -5,537.8 | 5,430.0 | 5,260.2 | 169.75 | 31.987 | |
| 7,677.1 | 6,698.0 | 6,702.0 | 6,702.0 | 36.5 | 134.4 | 89.09 | -1,942.3 | -5,537.8 | 5,501.3 | 5,330.5 | 170.81 | 32.207 | |
| 7,700.0 | 6,697.8 | 6,701.8 | 6,701.8 | 36.8 | 134.4 | 89.09 | -1,942.3 | -5,537.8 | 5,522.4 | 5,351.3 | 171.12 | 32.272 | |
| 7,775.6 | 6,697.3 | 6,701.3 | 6,701.3 | 38.0 | 134.4 | 89.08 | -1,942.3 | -5,537.8 | 5,592.5 | 5,420.2 | 172.27 | 32.463 | |
| 7,800.0 | 6,697.2 | 6,701.2 | 6,701.2 | 38.3 | 134.4 | 89.07 | -1,942.3 | -5,537.8 | 5,615.1 | 5,442.5 | 172.65 | 32.524 | |
| 7,874.0 | 6,696.7 | 6,700.7 | 6,700.7 | 39.6 | 134.4 | 89.06 | -1,942.3 | -5,537.8 | 5,683.9 | 5,510.0 | 173.88 | 32.690 | |
| 7,900.0 | 6,696.5 | 6,700.5 | 6,700.5 | 40.0 | 134.3 | 89.05 | -1,942.3 | -5,537.8 | 5,708.1 | 5,533.8 | 174.31 | 32.747 | |
| 7,972.4 | 6,696.1 | 6,700.1 | 6,700.1 | 41.3 | 134.3 | 89.04 | -1,942.3 | -5,537.8 | 5,775.6 | 5,600.0 | 175.60 | 32.891 | |
| 8,000.0 | 6,695.9 | 6,699.9 | 6,699.9 | 41.8 | 134.3 | 89.04 | -1,942.3 | -5,537.8 | 5,801.3 | 5,625.2 | 176.09 | 32.945 | |
| 8,070.8 | 6,695.4 | 6,699.4 | 6,699.4 | 43.1 | 134.3 | 89.02 | -1,942.3 | -5,537.8 | 5,867.5 | 5,690.0 | 177.43 | 33.069 | |
| 8,100.0 | 6,695.2 | 6,699.2 | 6,699.2 | 43.7 | 134.3 | 89.02 | -1,942.3 | -5,537.8 | 5,894.7 | 5,716.7 | 177.98 | 33.120 | |
| 8,169.3 | 6,694.8 | 6,698.8 | 6,698.8 | 45.1 | 134.3 | 89.01 | -1,942.3 | -5,537.8 | 5,959.5 | 5,780.2 | 179.36 | 33.227 | |
| 8,200.0 | 6,694.6 | 6,698.6 | 6,698.6 | 45.7 | 134.3 | 89.00 | -1,942.3 | -5,537.8 | 5,988.3 | 5,808.4 | 179.97 | 33.275 | |
| 8,267.7 | 6,694.1 | 6,698.1 | 6,698.1 | 47.1 | 134.3 | 88.99 | -1,942.3 | -5,537.8 | 6,051.8 | 5,870.5 | 181.37 | 33.368 | |
| 8,300.0 | 6,693.9 | 6,697.9 | 6,697.9 | 47.8 | 134.3 | 88.98 | -1,942.3 | -5,537.8 | 6,082.2 | 5,900.1 | 182.03 | 33.412 | |
| 8,366.1 | 6,693.5 | 6,697.5 | 6,697.5 | 49.2 | 134.3 | 88.97 | -1,942.3 | -5,537.8 | 6,144.3 | 5,960.9 | 183.45 | 33.494 | |
| 8,400.0 | 6,693.3 | 6,697.3 | 6,697.3 | 49.9 | 134.3 | 88.96 | -1,942.3 | -5,537.8 | 6,176.2 | 5,992.0 | 184.17 | 33.535 | |
| 8,464.5 | 6,692.9 | 6,696.9 | 6,696.9 | 51.4 | 134.3 | 88.95 | -1,942.3 | -5,537.8 | 6,237.0 | 6,051.4 | 185.59 | 33.606 | |
| 8,500.0 | 6,692.6 | 6,696.6 | 6,696.6 | 52.1 | 134.3 | 88.95 | -1,942.3 | -5,537.8 | 6,270.4 | 6,084.0 | 186.37 | 33.645 | |
| 8,563.0 | 6,692.2 | 6,696.2 | 6,696.2 | 53.6 | 134.3 | 88.94 | -1,942.3 | -5,537.8 | 6,329.8 | 6,142.0 | 187.79 | 33.707 | |
| 8,600.0 | 6,692.0 | 6,696.0 | 6,696.0 | 54.4 | 134.3 | 88.93 | -1,942.3 | -5,537.8 | 6,364.8 | 6,176.2 | 188.63 | 33.743 | |
| 8,661.4 | 6,691.6 | 6,695.6 | 6,695.6 | 55.8 | 134.3 | 88.92 | -1,942.3 | -5,537.8 | 6,422.8 | 6,232.8 | 190.04 | 33.797 | |
| 8,700.0 | 6,691.3 | 6,695.3 | 6,695.3 | 56.7 | 134.2 | 88.91 | -1,942.3 | -5,537.8 | 6,459.3 | 6,268.4 | 190.93 | 33.831 | |
| 8,759.8 | 6,690.9 | 6,694.9 | 6,694.9 | 58.1 | 134.2 | 88.90 | -1,942.3 | -5,537.8 | 6,516.0 | 6,323.7 | 192.33 | 33.879 | |
| 8,800.0 | 6,690.7 | 6,694.7 | 6,694.7 | 59.1 | 134.2 | 88.89 | -1,942.3 | -5,537.8 | 6,554.1 | 6,360.8 | 193.28 | 33.910 | |
| 8,858.2 | 6,690.3 | 6,694.3 | 6,694.3 | 60.5 | 134.2 | 88.88 | -1,942.3 | -5,537.8 | 6,609.3 | 6,414.6 | 194.67 | 33.952 | |
| 8,900.0 | 6,690.0 | 6,694.0 | 6,694.0 | 61.5 | 134.2 | 88.88 | -1,942.3 | -5,537.8 | 6,648.9 | 6,453.3 | 195.66 | 33.982 | |
| 8,956.7 | 6,689.7 | 6,693.7 | 6,693.7 | 62.9 | 134.2 | 88.87 | -1,942.3 | -5,537.8 | 6,702.8 | 6,505.7 | 197.03 | 34.019 | |
| 9,000.0 | 6,689.4 | 6,693.4 | 6,693.4 | 63.9 | 134.2 | 88.86 | -1,942.3 | -5,537.8 | 6,744.0 | 6,545.9 | 198.08 | 34.047 | |
| 9,055.1 | 6,689.0 | 6,693.0 | 6,693.0 | 65.3 | 134.2 | 88.85 | -1,942.3 | -5,537.8 | 6,796.4 | 6,596.9 | 199.43 | 34.080 | |
| 9,100.0 | 6,688.7 | 6,692.7 | 6,692.7 | 66.4 | 134.2 | 88.84 | -1,942.3 | -5,537.8 | 6,839.1 | 6,638.6 | 200.53 | 34.106 | |
| 9,153.5 | 6,688.4 | 6,692.4 | 6,692.4 | 67.7 | 134.2 | 88.83 | -1,942.3 | -5,537.8 | 6,890.1 | 6,688.3 | 201.85 | 34.135 | |
| 9,200.0 | 6,688.1 | 6,692.1 | 6,692.1 | 68.9 | 134.2 | 88.82 | -1,942.3 | -5,537.8 | 6,934.4 | 6,731.4 | 203.00 | 34.160 | |
| 9,251.9 | 6,687.8 | 6,691.8 | 6,691.8 | 70.2 | 134.2 | 88.81 | -1,942.3 | -5,537.8 | 6,984.0 | 6,779.7 | 204.30 | 34.185 | |
| 9,300.0 | 6,687.4 | 6,691.4 | 6,691.4 | 71.4 | 134.2 | 88.80 | -1,942.3 | -5,537.8 | 7,029.8 | 6,824.3 | 205.50 | 34.209 | |
| 9,350.4 | 6,687.1 | 6,691.1 | 6,691.1 | 72.7 | 134.2 | 88.79 | -1,942.3 | -5,537.8 | 7,078.0 | 6,871.2 | 206.77 | 34.232 | |
| 9,400.0 | 6,686.8 | 6,690.8 | 6,690.8 | 73.9 | 134.2 | 88.79 | -1,942.3 | -5,537.8 | 7,125.4 | 6,917.4 | 208.02 | 34.254 | |
| 9,448.8 | 6,686.5 | 6,690.5 | 6,690.5 | 75.2 | 134.1 | 88.78 | -1,942.3 | -5,537.8 | 7,172.1 | 6,962.8 | 209.26 | 34.274 | |
| 9,500.0 | 6,686.1 | 6,690.1 | 6,690.1 | 76.5 | 134.1 | 88.77 | -1,942.3 | -5,537.8 | 7,221.1 | 7,010.5 | 210.55 | 34.295 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT B&H #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,689.8 | 6,689.8 | 77.7 | 134.1 | 88.76 | -1,942.3 | -5,537.8 | 7,266.3 | 7,054.5 | 211.76 | 34.314 | |
| 9,600.0 | 6,685.5 | 6,689.5 | 6,689.5 | 79.0 | 134.1 | 88.75 | -1,942.3 | -5,537.8 | 7,316.9 | 7,103.8 | 213.11 | 34.334 | |
| 9,645.6 | 6,685.2 | 6,689.2 | 6,689.2 | 80.2 | 134.1 | 88.74 | -1,942.3 | -5,537.8 | 7,360.6 | 7,146.3 | 214.28 | 34.350 | |
| 9,700.0 | 6,684.8 | 6,688.8 | 6,688.8 | 81.6 | 134.1 | 88.73 | -1,942.3 | -5,537.8 | 7,412.8 | 7,197.1 | 215.68 | 34.369 | |
| 9,744.1 | 6,684.6 | 6,688.6 | 6,688.6 | 82.8 | 134.1 | 88.72 | -1,942.3 | -5,537.8 | 7,455.1 | 7,238.2 | 216.82 | 34.383 | |
| 9,800.0 | 6,684.2 | 6,688.2 | 6,688.2 | 84.2 | 134.1 | 88.71 | -1,942.3 | -5,537.8 | 7,508.8 | 7,290.5 | 218.27 | 34.402 | |
| 9,842.5 | 6,683.9 | 6,687.9 | 6,687.9 | 85.3 | 134.1 | 88.71 | -1,942.3 | -5,537.8 | 7,549.6 | 7,330.2 | 219.37 | 34.415 | |
| 9,900.0 | 6,683.5 | 6,687.5 | 6,687.5 | 86.8 | 134.1 | 88.70 | -1,942.3 | -5,537.8 | 7,604.9 | 7,384.0 | 220.87 | 34.432 | |
| 9,940.9 | 6,683.3 | 6,687.3 | 6,687.3 | 87.9 | 134.1 | 88.69 | -1,942.3 | -5,537.8 | 7,644.2 | 7,422.3 | 221.93 | 34.444 | |
| 10,000.0 | 6,682.9 | 6,686.9 | 6,686.9 | 89.5 | 134.1 | 88.68 | -1,942.3 | -5,537.8 | 7,701.1 | 7,477.6 | 223.48 | 34.460 | |
| 10,039.3 | 6,682.6 | 6,686.6 | 6,686.6 | 90.5 | 134.1 | 88.67 | -1,942.3 | -5,537.8 | 7,739.0 | 7,514.5 | 224.51 | 34.471 | |
| 10,100.0 | 6,682.2 | 6,686.2 | 6,686.2 | 92.1 | 134.1 | 88.66 | -1,942.3 | -5,537.8 | 7,797.4 | 7,571.3 | 226.10 | 34.487 | |
| 10,137.8 | 6,682.0 | 6,686.0 | 6,686.0 | 93.1 | 134.1 | 88.65 | -1,942.3 | -5,537.8 | 7,833.8 | 7,606.7 | 227.09 | 34.496 | |
| 10,200.0 | 6,681.6 | 6,685.6 | 6,685.6 | 94.8 | 134.0 | 88.64 | -1,942.3 | -5,537.8 | 7,893.8 | 7,665.1 | 228.73 | 34.511 | |
| 10,236.2 | 6,681.4 | 6,685.4 | 6,685.4 | 95.7 | 134.0 | 88.64 | -1,942.3 | -5,537.8 | 7,928.7 | 7,699.0 | 229.69 | 34.520 | |
| 10,300.0 | 6,680.9 | 6,684.9 | 6,684.9 | 97.4 | 134.0 | 88.63 | -1,942.3 | -5,537.8 | 7,990.3 | 7,758.9 | 231.37 | 34.535 | |
| 10,334.6 | 6,680.7 | 6,684.7 | 6,684.7 | 98.3 | 134.0 | 88.62 | -1,942.3 | -5,537.8 | 8,023.7 | 7,791.4 | 232.29 | 34.542 | |
| 10,400.0 | 6,680.3 | 6,684.3 | 6,684.3 | 100.1 | 134.0 | 88.61 | -1,942.3 | -5,537.8 | 8,086.8 | 7,852.8 | 234.02 | 34.556 | |
| 10,433.0 | 6,680.1 | 6,684.1 | 6,684.1 | 101.0 | 134.0 | 88.60 | -1,942.3 | -5,537.8 | 8,118.8 | 7,883.9 | 234.90 | 34.563 | |
| 10,500.0 | 6,679.7 | 6,683.7 | 6,683.7 | 102.8 | 134.0 | 88.59 | -1,942.3 | -5,537.8 | 8,183.5 | 7,946.8 | 236.68 | 34.577 | |
| 10,531.5 | 6,679.4 | 6,683.4 | 6,683.4 | 103.6 | 134.0 | 88.58 | -1,942.3 | -5,537.8 | 8,213.9 | 7,976.4 | 237.51 | 34.583 | |
| 10,600.0 | 6,679.0 | 6,683.0 | 6,683.0 | 105.4 | 134.0 | 88.57 | -1,942.3 | -5,537.8 | 8,280.2 | 8,040.9 | 239.34 | 34.596 | |
| 10,629.9 | 6,678.8 | 6,682.8 | 6,682.8 | 106.2 | 134.0 | 88.57 | -1,942.3 | -5,537.8 | 8,309.2 | 8,069.0 | 240.14 | 34.602 | |
| 10,700.0 | 6,678.4 | 6,682.4 | 6,682.4 | 108.1 | 134.0 | 88.55 | -1,942.3 | -5,537.8 | 8,377.0 | 8,135.0 | 242.01 | 34.615 | |
| 10,728.3 | 6,678.2 | 6,682.2 | 6,682.2 | 108.9 | 134.0 | 88.55 | -1,942.3 | -5,537.8 | 8,404.5 | 8,161.7 | 242.77 | 34.619 | |
| 10,800.0 | 6,677.7 | 6,681.7 | 6,681.7 | 110.8 | 134.0 | 88.54 | -1,942.3 | -5,537.8 | 8,473.9 | 8,229.2 | 244.69 | 34.632 | |
| 10,826.7 | 6,677.5 | 6,681.5 | 6,681.5 | 111.5 | 134.0 | 88.53 | -1,942.3 | -5,537.8 | 8,499.9 | 8,254.5 | 245.40 | 34.636 | |
| 10,900.0 | 6,677.1 | 6,681.1 | 6,681.1 | 113.5 | 134.0 | 88.52 | -1,942.3 | -5,537.8 | 8,570.9 | 8,323.5 | 247.37 | 34.648 | |
| 10,925.2 | 6,676.9 | 6,680.9 | 6,680.9 | 114.2 | 134.0 | 88.51 | -1,942.3 | -5,537.8 | 8,595.3 | 8,347.3 | 248.04 | 34.652 | |
| 11,000.0 | 6,676.4 | 6,680.4 | 6,680.4 | 116.2 | 133.9 | 88.50 | -1,942.3 | -5,537.8 | 8,667.9 | 8,417.8 | 250.05 | 34.664 | |
| 11,023.6 | 6,676.3 | 6,680.3 | 6,680.3 | 116.8 | 133.9 | 88.50 | -1,942.3 | -5,537.8 | 8,690.8 | 8,440.1 | 250.69 | 34.668 | |
| 11,100.0 | 6,675.8 | 6,679.8 | 6,679.8 | 118.9 | 133.9 | 88.48 | -1,942.3 | -5,537.8 | 8,765.0 | 8,512.2 | 252.75 | 34.679 | |
| 11,122.0 | 6,675.6 | 6,679.6 | 6,679.6 | 119.5 | 133.9 | 88.48 | -1,942.3 | -5,537.8 | 8,786.4 | 8,533.0 | 253.34 | 34.682 | |
| 11,200.0 | 6,675.1 | 6,679.1 | 6,679.1 | 121.6 | 133.9 | 88.47 | -1,942.3 | -5,537.8 | 8,862.1 | 8,606.7 | 255.44 | 34.693 | |
| 11,220.4 | 6,675.0 | 6,679.0 | 6,679.0 | 122.2 | 133.9 | 88.46 | -1,942.3 | -5,537.8 | 8,882.0 | 8,626.0 | 256.00 | 34.696 | |
| 11,300.0 | 6,674.5 | 6,678.5 | 6,678.5 | 124.3 | 133.9 | 88.45 | -1,942.3 | -5,537.8 | 8,959.4 | 8,701.2 | 258.14 | 34.707 | |
| 11,318.9 | 6,674.3 | 6,678.3 | 6,678.3 | 124.9 | 133.9 | 88.44 | -1,942.3 | -5,537.8 | 8,977.7 | 8,719.1 | 258.66 | 34.709 | |
| 11,400.0 | 6,673.8 | 6,677.8 | 6,677.8 | 127.1 | 133.9 | 88.43 | -1,942.3 | -5,537.8 | 9,056.6 | 8,795.8 | 260.85 | 34.720 | |
| 11,417.3 | 6,673.7 | 6,677.7 | 6,677.7 | 127.5 | 133.9 | 88.43 | -1,942.3 | -5,537.8 | 9,073.5 | 8,812.2 | 261.32 | 34.722 | |
| 11,500.0 | 6,673.2 | 6,677.2 | 6,677.2 | 129.8 | 133.9 | 88.41 | -1,942.3 | -5,537.8 | 9,154.0 | 8,890.4 | 263.56 | 34.732 | |
| 11,515.7 | 6,673.1 | 6,677.1 | 6,677.1 | 130.2 | 133.9 | 88.41 | -1,942.3 | -5,537.8 | 9,169.3 | 8,905.3 | 263.98 | 34.734 | |
| 11,600.0 | 6,672.5 | 6,676.5 | 6,676.5 | 132.5 | 133.9 | 88.39 | -1,942.3 | -5,537.8 | 9,251.4 | 8,985.1 | 266.27 | 34.744 | |
| 11,614.1 | 6,672.4 | 6,676.4 | 6,676.4 | 132.9 | 133.9 | 88.39 | -1,942.3 | -5,537.8 | 9,265.2 | 8,998.5 | 266.65 | 34.746 | |
| 11,700.0 | 6,671.9 | 6,675.9 | 6,675.9 | 135.3 | 133.9 | 88.38 | -1,942.3 | -5,537.8 | 9,348.8 | 9,079.8 | 268.99 | 34.756 | |
| 11,712.6 | 6,671.8 | 6,675.8 | 6,675.8 | 135.6 | 133.9 | 88.37 | -1,942.3 | -5,537.8 | 9,361.1 | 9,091.8 | 269.33 | 34.757 | |
| 11,800.0 | 6,671.2 | 6,675.2 | 6,675.2 | 138.0 | 133.8 | 88.36 | -1,942.3 | -5,537.8 | 9,446.3 | 9,174.6 | 271.70 | 34.767 | |
| 11,811.0 | 6,671.1 | 6,675.1 | 6,675.1 | 138.3 | 133.8 | 88.36 | -1,942.3 | -5,537.8 | 9,457.1 | 9,185.1 | 272.00 | 34.768 | |
| 11,900.0 | 6,670.6 | 6,674.6 | 6,674.6 | 140.7 | 133.8 | 88.34 | -1,942.3 | -5,537.8 | 9,543.9 | 9,269.5 | 274.43 | 34.778 | |
| 11,909.4 | 6,670.5 | 6,674.5 | 6,674.5 | 141.0 | 133.8 | 88.34 | -1,942.3 | -5,537.8 | 9,553.1 | 9,278.4 | 274.68 | 34.779 | |
| 11,987.2 | 6,670.0 | 6,674.0 | 6,674.0 | 143.1 | 133.8 | 88.33 | -1,942.3 | -5,537.8 | 9,629.0 | 9,352.2 | 276.80 | 34.787 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 4.0 | 4.0 | 0.0 | 0.0 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | | | | |
| 98.4 | 98.4 | 102.4 | 102.4 | 0.1 | 1.2 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,384.6 | 1.30 | 4,153.292 | |
| 100.0 | 100.0 | 104.0 | 104.0 | 0.1 | 1.2 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,384.6 | 1.33 | 4,034.991 | |
| 196.8 | 196.8 | 200.8 | 200.8 | 0.3 | 3.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,382.1 | 3.78 | 1,424.967 | |
| 200.0 | 200.0 | 204.0 | 204.0 | 0.3 | 3.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,382.1 | 3.85 | 1,398.121 | |
| 295.3 | 295.3 | 299.3 | 299.3 | 0.5 | 5.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,379.9 | 6.05 | 890.620 | |
| 300.0 | 300.0 | 304.0 | 304.0 | 0.5 | 5.6 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,379.8 | 6.15 | 875.080 | |
| 393.7 | 393.7 | 397.7 | 397.7 | 0.8 | 7.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,377.6 | 8.28 | 650.543 | |
| 400.0 | 400.0 | 404.0 | 404.0 | 0.8 | 7.6 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,377.5 | 8.42 | 639.550 | |
| 492.1 | 492.1 | 496.1 | 496.1 | 1.0 | 9.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,375.4 | 10.50 | 513.052 | |
| 500.0 | 500.0 | 504.0 | 504.0 | 1.0 | 9.7 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,375.2 | 10.68 | 504.533 | |
| 590.5 | 590.5 | 594.5 | 594.5 | 1.2 | 11.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,373.2 | 12.71 | 423.747 | |
| 600.0 | 600.0 | 604.0 | 604.0 | 1.2 | 11.7 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,373.0 | 12.92 | 416.787 | |
| 689.0 | 689.0 | 693.0 | 693.0 | 1.4 | 13.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,371.0 | 14.92 | 361.008 | |
| 700.0 | 700.0 | 704.0 | 704.0 | 1.4 | 13.7 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,370.8 | 15.17 | 355.121 | |
| 787.4 | 787.4 | 791.4 | 791.4 | 1.6 | 15.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,368.8 | 17.13 | 314.490 | |
| 800.0 | 800.0 | 804.0 | 804.0 | 1.7 | 15.7 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,368.5 | 17.41 | 309.388 | |
| 885.8 | 885.8 | 889.8 | 889.8 | 1.9 | 17.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,366.6 | 19.33 | 278.613 | |
| 900.0 | 900.0 | 904.0 | 904.0 | 1.9 | 17.8 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,366.3 | 19.65 | 274.110 | |
| 984.2 | 984.2 | 988.2 | 988.2 | 2.1 | 19.5 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,364.4 | 21.54 | 250.094 | |
| 1,000.0 | 1,000.0 | 1,004.0 | 1,004.0 | 2.1 | 19.8 | -94.73 | -443.9 | -5,367.6 | 5,385.9 | 5,364.0 | 21.89 | 246.065 | |
| 1,082.7 | 1,082.7 | 1,086.7 | 1,086.7 | 2.3 | 21.4 | -10.29 | -443.9 | -5,367.6 | 5,384.8 | 5,361.0 | 23.72 | 227.016 | |
| 1,100.0 | 1,100.0 | 1,104.0 | 1,104.0 | 2.3 | 21.8 | -10.30 | -443.9 | -5,367.6 | 5,384.2 | 5,360.1 | 24.10 | 223.406 | |
| 1,181.1 | 1,181.0 | 1,185.0 | 1,185.0 | 2.5 | 23.4 | -10.32 | -443.9 | -5,367.6 | 5,380.3 | 5,354.4 | 25.86 | 208.037 | |
| 1,200.0 | 1,199.8 | 1,203.8 | 1,203.8 | 2.5 | 23.8 | -10.33 | -443.9 | -5,367.6 | 5,379.1 | 5,352.8 | 26.27 | 204.773 | |
| 1,279.5 | 1,279.1 | 1,283.1 | 1,283.1 | 2.7 | 25.4 | -10.36 | -443.9 | -5,367.6 | 5,372.5 | 5,344.6 | 27.96 | 192.121 | |
| 1,300.0 | 1,299.5 | 1,303.5 | 1,303.5 | 2.8 | 25.8 | -10.37 | -443.9 | -5,367.6 | 5,370.5 | 5,342.1 | 28.40 | 189.133 | |
| 1,377.9 | 1,376.9 | 1,380.9 | 1,380.9 | 3.0 | 27.4 | -10.42 | -443.9 | -5,367.6 | 5,361.4 | 5,331.4 | 30.02 | 178.596 | |
| 1,400.0 | 1,398.7 | 1,402.7 | 1,402.7 | 3.0 | 27.8 | -10.44 | -443.9 | -5,367.6 | 5,358.5 | 5,328.0 | 30.47 | 175.847 | |
| 1,476.4 | 1,474.2 | 1,478.2 | 1,478.2 | 3.2 | 29.3 | -10.51 | -443.9 | -5,367.6 | 5,347.0 | 5,315.0 | 32.02 | 166.984 | |
| 1,500.0 | 1,497.5 | 1,501.5 | 1,501.5 | 3.3 | 29.8 | -10.53 | -443.9 | -5,367.6 | 5,343.1 | 5,310.6 | 32.49 | 164.444 | |
| 1,574.8 | 1,571.0 | 1,575.0 | 1,575.0 | 3.5 | 31.3 | -10.61 | -443.9 | -5,367.6 | 5,329.4 | 5,295.4 | 33.96 | 156.925 | |
| 1,600.0 | 1,595.6 | 1,599.6 | 1,599.6 | 3.6 | 31.8 | -10.64 | -443.9 | -5,367.6 | 5,324.3 | 5,289.9 | 34.45 | 154.569 | |
| 1,673.2 | 1,667.0 | 1,671.0 | 1,671.0 | 3.9 | 33.2 | -10.73 | -443.9 | -5,367.6 | 5,308.5 | 5,272.6 | 35.83 | 148.143 | |
| 1,700.0 | 1,693.1 | 1,697.1 | 1,697.1 | 4.0 | 33.7 | -10.76 | -443.9 | -5,367.6 | 5,302.2 | 5,265.9 | 36.33 | 145.951 | |
| 1,771.6 | 1,762.4 | 1,766.4 | 1,766.4 | 4.3 | 35.1 | -10.87 | -443.9 | -5,367.6 | 5,284.3 | 5,246.7 | 37.63 | 140.423 | |
| 1,800.0 | 1,789.6 | 1,793.6 | 1,793.6 | 4.4 | 35.7 | -10.92 | -443.9 | -5,367.6 | 5,276.8 | 5,238.6 | 38.13 | 138.377 | |
| 1,870.1 | 1,856.8 | 1,860.8 | 1,860.8 | 4.7 | 37.0 | -11.04 | -443.9 | -5,367.6 | 5,257.0 | 5,217.6 | 39.35 | 133.594 | |
| 1,900.0 | 1,885.3 | 1,889.3 | 1,889.3 | 4.9 | 37.6 | -11.09 | -443.9 | -5,367.6 | 5,248.0 | 5,208.2 | 39.85 | 131.681 | |
| 1,968.5 | 1,950.2 | 1,954.2 | 1,954.2 | 5.3 | 38.9 | -11.23 | -443.9 | -5,367.6 | 5,226.5 | 5,185.5 | 40.98 | 127.530 | |
| 2,000.0 | 1,979.8 | 1,983.8 | 1,983.8 | 5.5 | 39.5 | -11.29 | -443.9 | -5,367.6 | 5,216.0 | 5,174.5 | 41.49 | 125.729 | |
| 2,044.9 | 2,021.9 | 2,025.9 | 2,025.9 | 5.7 | 40.3 | -11.39 | -443.9 | -5,367.6 | 5,200.6 | 5,158.4 | 42.19 | 123.267 | |
| 2,066.9 | 2,042.5 | 2,046.5 | 2,046.5 | 5.9 | 40.7 | -11.41 | -443.9 | -5,367.6 | 5,192.9 | 5,150.2 | 42.64 | 121.781 | |
| 2,100.0 | 2,073.4 | 2,077.4 | 2,077.4 | 6.1 | 41.4 | -11.43 | -443.9 | -5,367.6 | 5,181.3 | 5,138.0 | 43.32 | 119.598 | |
| 2,165.3 | 2,134.4 | 2,138.4 | 2,138.4 | 6.5 | 42.6 | -11.48 | -443.9 | -5,367.6 | 5,158.4 | 5,113.7 | 44.67 | 115.477 | |
| 2,200.0 | 2,166.8 | 2,170.8 | 2,170.8 | 6.8 | 43.2 | -11.51 | -443.9 | -5,367.6 | 5,146.2 | 5,100.9 | 45.39 | 113.386 | |
| 2,263.8 | 2,226.4 | 2,230.4 | 2,230.4 | 7.2 | 44.4 | -11.56 | -443.9 | -5,367.6 | 5,123.9 | 5,077.2 | 46.71 | 109.700 | |
| 2,300.0 | 2,260.2 | 2,264.2 | 2,264.2 | 7.4 | 45.1 | -11.59 | -443.9 | -5,367.6 | 5,111.2 | 5,063.7 | 47.46 | 107.695 | |
| 2,362.2 | 2,318.3 | 2,322.3 | 2,322.3 | 7.9 | 46.3 | -11.64 | -443.9 | -5,367.6 | 5,089.4 | 5,040.7 | 48.75 | 104.391 | |
| 2,400.0 | 2,353.6 | 2,357.6 | 2,357.6 | 8.1 | 47.0 | -11.67 | -443.9 | -5,367.6 | 5,076.2 | 5,026.6 | 49.54 | 102.465 | |
| 2,460.6 | 2,410.3 | 2,414.3 | 2,414.3 | 8.6 | 48.1 | -11.72 | -443.9 | -5,367.6 | 5,054.9 | 5,004.1 | 50.80 | 99.497 | |
| 2,500.0 | 2,447.0 | 2,451.0 | 2,451.0 | 8.9 | 48.9 | -11.75 | -443.9 | -5,367.6 | 5,041.2 | 4,989.5 | 51.63 | 97.646 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,506.2 | 2,506.2 | 9.3 | 50.0 | -11.80 | -443.9 | -5,367.6 | 5,020.5 | 4,967.6 | 52.86 | 94.974 | |
| 2,600.0 | 2,540.5 | 2,544.5 | 2,544.5 | 9.6 | 50.8 | -11.84 | -443.9 | -5,367.6 | 5,006.1 | 4,952.4 | 53.72 | 93.192 | |
| 2,657.5 | 2,594.2 | 2,598.2 | 2,598.2 | 10.0 | 51.8 | -11.89 | -443.9 | -5,367.6 | 4,986.0 | 4,931.1 | 54.92 | 90.782 | |
| 2,700.0 | 2,633.9 | 2,637.9 | 2,637.9 | 10.3 | 52.6 | -11.92 | -443.9 | -5,367.6 | 4,971.1 | 4,915.3 | 55.81 | 89.065 | |
| 2,755.9 | 2,686.1 | 2,690.1 | 2,690.1 | 10.7 | 53.7 | -11.97 | -443.9 | -5,367.6 | 4,951.6 | 4,894.6 | 56.99 | 86.887 | |
| 2,800.0 | 2,727.3 | 2,731.3 | 2,731.3 | 11.0 | 54.5 | -12.01 | -443.9 | -5,367.6 | 4,936.2 | 4,878.2 | 57.92 | 85.230 | |
| 2,854.3 | 2,778.1 | 2,782.1 | 2,782.1 | 11.4 | 55.5 | -12.05 | -443.9 | -5,367.6 | 4,917.1 | 4,858.1 | 59.06 | 83.259 | |
| 2,900.0 | 2,820.7 | 2,824.7 | 2,824.7 | 11.8 | 56.4 | -12.09 | -443.9 | -5,367.6 | 4,901.2 | 4,841.1 | 60.02 | 81.659 | |
| 2,952.7 | 2,870.0 | 2,874.0 | 2,874.0 | 12.2 | 57.4 | -12.14 | -443.9 | -5,367.6 | 4,882.7 | 4,821.6 | 61.13 | 79.872 | |
| 3,000.0 | 2,914.2 | 2,918.2 | 2,918.2 | 12.5 | 58.3 | -12.18 | -443.9 | -5,367.6 | 4,866.2 | 4,804.1 | 62.13 | 78.325 | |
| 3,051.2 | 2,962.0 | 2,966.0 | 2,966.0 | 12.9 | 59.2 | -12.23 | -443.9 | -5,367.6 | 4,848.3 | 4,785.1 | 63.21 | 76.704 | |
| 3,100.0 | 3,007.6 | 3,011.6 | 3,011.6 | 13.3 | 60.2 | -12.27 | -443.9 | -5,367.6 | 4,831.2 | 4,767.0 | 64.24 | 75.207 | |
| 3,149.6 | 3,053.9 | 3,057.9 | 3,057.9 | 13.6 | 61.1 | -12.31 | -443.9 | -5,367.6 | 4,813.9 | 4,748.6 | 65.29 | 73.734 | |
| 3,200.0 | 3,101.0 | 3,105.0 | 3,105.0 | 14.0 | 62.0 | -12.36 | -443.9 | -5,367.6 | 4,796.3 | 4,729.9 | 66.35 | 72.284 | |
| 3,248.0 | 3,145.9 | 3,149.9 | 3,149.9 | 14.4 | 62.9 | -12.40 | -443.9 | -5,367.6 | 4,779.5 | 4,712.1 | 67.37 | 70.945 | |
| 3,300.0 | 3,194.4 | 3,198.4 | 3,198.4 | 14.8 | 63.9 | -12.45 | -443.9 | -5,367.6 | 4,761.3 | 4,692.9 | 68.47 | 69.539 | |
| 3,346.4 | 3,237.8 | 3,241.8 | 3,241.8 | 15.1 | 64.8 | -12.49 | -443.9 | -5,367.6 | 4,745.1 | 4,675.7 | 69.45 | 68.320 | |
| 3,400.0 | 3,287.8 | 3,291.8 | 3,291.8 | 15.5 | 65.8 | -12.54 | -443.9 | -5,367.6 | 4,726.4 | 4,655.8 | 70.59 | 66.956 | |
| 3,444.9 | 3,329.8 | 3,333.8 | 3,333.8 | 15.9 | 66.6 | -12.59 | -443.9 | -5,367.6 | 4,710.7 | 4,639.2 | 71.54 | 65.846 | |
| 3,500.0 | 3,381.3 | 3,385.3 | 3,385.3 | 16.3 | 67.7 | -12.64 | -443.9 | -5,367.6 | 4,691.5 | 4,618.8 | 72.71 | 64.522 | |
| 3,543.3 | 3,421.7 | 3,425.7 | 3,425.7 | 16.6 | 68.5 | -12.68 | -443.9 | -5,367.6 | 4,676.4 | 4,602.7 | 73.63 | 63.511 | |
| 3,600.0 | 3,474.7 | 3,478.7 | 3,478.7 | 17.0 | 69.6 | -12.73 | -443.9 | -5,367.6 | 4,656.6 | 4,581.7 | 74.84 | 62.224 | |
| 3,641.7 | 3,513.7 | 3,517.7 | 3,517.7 | 17.3 | 70.3 | -12.77 | -443.9 | -5,367.6 | 4,642.0 | 4,566.3 | 75.72 | 61.303 | |
| 3,700.0 | 3,568.1 | 3,572.1 | 3,572.1 | 17.8 | 71.4 | -12.83 | -443.9 | -5,367.6 | 4,621.7 | 4,544.7 | 76.96 | 60.051 | |
| 3,740.1 | 3,605.6 | 3,609.6 | 3,609.6 | 18.1 | 72.2 | -12.87 | -443.9 | -5,367.6 | 4,607.7 | 4,529.9 | 77.82 | 59.212 | |
| 3,800.0 | 3,661.5 | 3,665.5 | 3,665.5 | 18.5 | 73.3 | -12.93 | -443.9 | -5,367.6 | 4,586.8 | 4,507.7 | 79.09 | 57.994 | |
| 3,838.6 | 3,697.6 | 3,701.6 | 3,701.6 | 18.8 | 74.0 | -12.97 | -443.9 | -5,367.6 | 4,573.3 | 4,493.4 | 79.91 | 57.229 | |
| 3,900.0 | 3,754.9 | 3,758.9 | 3,758.9 | 19.3 | 75.2 | -13.03 | -443.9 | -5,367.6 | 4,551.9 | 4,470.7 | 81.22 | 56.043 | |
| 3,937.0 | 3,789.5 | 3,793.5 | 3,793.5 | 19.6 | 75.9 | -13.07 | -443.9 | -5,367.6 | 4,539.0 | 4,457.0 | 82.01 | 55.346 | |
| 4,000.0 | 3,848.4 | 3,852.4 | 3,852.4 | 20.1 | 77.1 | -13.13 | -443.9 | -5,367.6 | 4,517.1 | 4,433.7 | 83.36 | 54.191 | |
| 4,035.4 | 3,881.5 | 3,885.5 | 3,885.5 | 20.3 | 77.7 | -13.17 | -443.9 | -5,367.6 | 4,504.7 | 4,420.6 | 84.11 | 53.557 | |
| 4,100.0 | 3,941.8 | 3,945.8 | 3,945.8 | 20.8 | 79.0 | -13.24 | -443.9 | -5,367.6 | 4,482.2 | 4,396.7 | 85.49 | 52.429 | |
| 4,133.8 | 3,973.4 | 3,977.4 | 3,977.4 | 21.1 | 79.6 | -13.27 | -443.9 | -5,367.6 | 4,470.4 | 4,384.2 | 86.21 | 51.853 | |
| 4,200.0 | 4,035.2 | 4,039.2 | 4,039.2 | 21.6 | 80.8 | -13.34 | -443.9 | -5,367.6 | 4,447.4 | 4,359.8 | 87.63 | 50.753 | |
| 4,232.3 | 4,065.4 | 4,069.4 | 4,069.4 | 21.8 | 81.4 | -13.37 | -443.9 | -5,367.6 | 4,436.1 | 4,347.8 | 88.32 | 50.229 | |
| 4,300.0 | 4,128.6 | 4,132.6 | 4,132.6 | 22.3 | 82.7 | -13.45 | -443.9 | -5,367.6 | 4,412.6 | 4,322.8 | 89.77 | 49.155 | |
| 4,330.7 | 4,157.3 | 4,161.3 | 4,161.3 | 22.6 | 83.3 | -13.48 | -443.9 | -5,367.6 | 4,401.9 | 4,311.5 | 90.43 | 48.680 | |
| 4,400.0 | 4,222.0 | 4,226.0 | 4,226.0 | 23.1 | 84.6 | -13.55 | -443.9 | -5,367.6 | 4,377.8 | 4,285.9 | 91.91 | 47.631 | |
| 4,429.1 | 4,249.3 | 4,253.3 | 4,253.3 | 23.3 | 85.1 | -13.59 | -443.9 | -5,367.6 | 4,367.6 | 4,275.1 | 92.53 | 47.200 | |
| 4,500.0 | 4,315.5 | 4,319.5 | 4,319.5 | 23.9 | 86.5 | -13.66 | -443.9 | -5,367.6 | 4,343.0 | 4,248.9 | 94.05 | 46.175 | |
| 4,527.5 | 4,341.2 | 4,345.2 | 4,345.2 | 24.1 | 87.0 | -13.70 | -443.9 | -5,367.6 | 4,333.4 | 4,238.7 | 94.64 | 45.786 | |
| 4,600.0 | 4,408.9 | 4,412.9 | 4,412.9 | 24.6 | 88.3 | -13.78 | -443.9 | -5,367.6 | 4,308.2 | 4,212.0 | 96.20 | 44.784 | |
| 4,626.0 | 4,433.2 | 4,437.2 | 4,437.2 | 24.8 | 88.8 | -13.81 | -443.9 | -5,367.6 | 4,299.2 | 4,202.4 | 96.76 | 44.432 | |
| 4,700.0 | 4,502.3 | 4,506.3 | 4,506.3 | 25.4 | 90.2 | -13.89 | -443.9 | -5,367.6 | 4,273.4 | 4,175.1 | 98.35 | 43.452 | |
| 4,724.4 | 4,525.1 | 4,529.1 | 4,529.1 | 25.6 | 90.7 | -13.92 | -443.9 | -5,367.6 | 4,264.9 | 4,166.1 | 98.87 | 43.136 | |
| 4,800.0 | 4,595.7 | 4,599.7 | 4,599.7 | 26.2 | 92.1 | -14.01 | -443.9 | -5,367.6 | 4,238.7 | 4,138.2 | 100.50 | 42.177 | |
| 4,822.8 | 4,617.1 | 4,621.1 | 4,621.1 | 26.3 | 92.5 | -14.03 | -443.9 | -5,367.6 | 4,230.7 | 4,129.8 | 100.99 | 41.893 | |
| 4,900.0 | 4,689.2 | 4,693.2 | 4,693.2 | 26.9 | 94.0 | -14.12 | -443.9 | -5,367.6 | 4,203.9 | 4,101.3 | 102.65 | 40.954 | |
| 4,921.2 | 4,709.0 | 4,713.0 | 4,713.0 | 27.1 | 94.4 | -14.15 | -443.9 | -5,367.6 | 4,196.6 | 4,093.5 | 103.11 | 40.700 | |
| 5,000.0 | 4,782.6 | 4,786.6 | 4,786.6 | 27.7 | 95.9 | -14.24 | -443.9 | -5,367.6 | 4,169.2 | 4,064.4 | 104.81 | 39.780 | |
| 5,019.7 | 4,801.0 | 4,805.0 | 4,805.0 | 27.8 | 96.2 | -14.27 | -443.9 | -5,367.6 | 4,162.4 | 4,057.2 | 105.23 | 39.555 | |
| 5,100.0 | 4,876.0 | 4,880.0 | 4,880.0 | 28.4 | 97.7 | -14.36 | -443.9 | -5,367.6 | 4,134.5 | 4,027.6 | 106.96 | 38.654 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,896.9 | 4,896.9 | 28.6 | 98.1 | -14.38 | -443.9 | -5,367.6 | 4,128.2 | 4,020.9 | 107.35 | 38.454 | |
| 5,159.9 | 4,932.0 | 4,936.0 | 4,936.0 | 28.9 | 98.9 | -14.44 | -443.9 | -5,367.6 | 4,113.7 | 4,005.5 | 108.26 | 37.999 | |
| 5,200.0 | 4,969.5 | 4,973.5 | 4,973.5 | 29.2 | 99.6 | -14.41 | -443.9 | -5,367.6 | 4,100.1 | 3,990.5 | 109.56 | 37.422 | |
| 5,216.5 | 4,985.1 | 4,989.1 | 4,989.1 | 29.3 | 99.9 | -14.40 | -443.9 | -5,367.6 | 4,094.6 | 3,984.5 | 110.10 | 37.191 | |
| 5,300.0 | 5,064.0 | 5,068.0 | 5,068.0 | 29.7 | 101.5 | -14.36 | -443.9 | -5,367.6 | 4,068.3 | 3,955.5 | 112.76 | 36.080 | |
| 5,314.9 | 5,078.2 | 5,082.2 | 5,082.2 | 29.8 | 101.8 | -14.35 | -443.9 | -5,367.6 | 4,063.8 | 3,950.6 | 113.23 | 35.891 | |
| 5,400.0 | 5,159.6 | 5,163.6 | 5,163.6 | 30.2 | 103.4 | -14.31 | -443.9 | -5,367.6 | 4,039.7 | 3,923.9 | 115.87 | 34.864 | |
| 5,413.4 | 5,172.4 | 5,176.4 | 5,176.4 | 30.3 | 103.7 | -14.31 | -443.9 | -5,367.6 | 4,036.2 | 3,919.9 | 116.28 | 34.711 | |
| 5,500.0 | 5,256.1 | 5,260.1 | 5,260.1 | 30.7 | 105.4 | -14.28 | -443.9 | -5,367.6 | 4,014.5 | 3,895.6 | 118.89 | 33.765 | |
| 5,511.8 | 5,267.6 | 5,271.6 | 5,271.6 | 30.7 | 105.6 | -14.27 | -443.9 | -5,367.6 | 4,011.7 | 3,892.4 | 119.24 | 33.643 | |
| 5,600.0 | 5,353.5 | 5,357.5 | 5,357.5 | 31.1 | 107.3 | -14.25 | -443.9 | -5,367.6 | 3,992.5 | 3,870.6 | 121.82 | 32.775 | |
| 5,610.2 | 5,363.5 | 5,367.5 | 5,367.5 | 31.1 | 107.5 | -14.24 | -443.9 | -5,367.6 | 3,990.4 | 3,868.3 | 122.11 | 32.679 | |
| 5,700.0 | 5,451.6 | 5,455.6 | 5,455.6 | 31.4 | 109.3 | -14.22 | -443.9 | -5,367.6 | 3,973.8 | 3,849.2 | 124.63 | 31.885 | |
| 5,708.6 | 5,460.2 | 5,464.2 | 5,464.2 | 31.4 | 109.5 | -14.22 | -443.9 | -5,367.6 | 3,972.3 | 3,847.5 | 124.86 | 31.813 | |
| 5,800.0 | 5,550.4 | 5,554.4 | 5,554.4 | 31.7 | 111.3 | -14.20 | -443.9 | -5,367.6 | 3,958.4 | 3,831.1 | 127.32 | 31.091 | |
| 5,807.1 | 5,557.4 | 5,561.4 | 5,561.4 | 31.7 | 111.4 | -14.20 | -443.9 | -5,367.6 | 3,957.5 | 3,830.0 | 127.50 | 31.038 | |
| 5,900.0 | 5,649.6 | 5,653.6 | 5,653.6 | 31.9 | 113.3 | -14.18 | -443.9 | -5,367.6 | 3,946.5 | 3,816.6 | 129.88 | 30.386 | |
| 5,905.5 | 5,655.1 | 5,659.1 | 5,659.1 | 31.9 | 113.4 | -14.18 | -443.9 | -5,367.6 | 3,945.9 | 3,815.9 | 130.01 | 30.350 | |
| 6,000.0 | 5,749.2 | 5,753.2 | 5,753.2 | 32.1 | 115.3 | -14.17 | -443.9 | -5,367.6 | 3,937.8 | 3,805.5 | 132.30 | 29.765 | |
| 6,003.9 | 5,753.1 | 5,757.1 | 5,757.1 | 32.1 | 115.4 | -14.17 | -443.9 | -5,367.6 | 3,937.6 | 3,805.2 | 132.39 | 29.742 | |
| 6,100.0 | 5,849.1 | 5,853.1 | 5,853.1 | 32.3 | 117.3 | -14.17 | -443.9 | -5,367.6 | 3,932.6 | 3,798.0 | 134.57 | 29.223 | |
| 6,102.3 | 5,851.4 | 5,855.4 | 5,855.4 | 32.3 | 117.4 | -14.17 | -443.9 | -5,367.6 | 3,932.5 | 3,797.9 | 134.62 | 29.212 | |
| 6,200.8 | 5,949.8 | 5,953.8 | 5,953.8 | 32.4 | 119.3 | -14.17 | -443.9 | -5,367.6 | 3,930.7 | 3,794.0 | 136.70 | 28.754 | |
| 6,204.9 | 5,953.9 | 5,957.9 | 5,957.9 | 32.4 | 119.4 | -98.60 | -443.9 | -5,367.6 | 3,930.7 | 3,779.6 | 151.10 | 26.014 | |
| 6,234.9 | 5,983.9 | 5,987.9 | 5,987.9 | 32.4 | 120.0 | -98.60 | -443.9 | -5,367.6 | 3,930.7 | 3,779.0 | 151.73 | 25.906 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 6,003.0 | 6,003.0 | 32.4 | 120.3 | 171.39 | -443.9 | -5,367.6 | 3,930.9 | 3,793.3 | 137.65 | 28.557 | |
| 6,299.2 | 6,048.2 | 6,052.2 | 6,052.2 | 32.4 | 121.3 | 171.37 | -443.9 | -5,367.6 | 3,933.6 | 3,795.6 | 137.95 | 28.515 | |
| 6,300.0 | 6,048.9 | 6,052.9 | 6,052.9 | 32.4 | 121.3 | 171.37 | -443.9 | -5,367.6 | 3,933.7 | 3,795.7 | 137.95 | 28.516 | |
| 6,350.0 | 6,098.5 | 6,102.5 | 6,102.5 | 32.4 | 122.3 | 171.31 | -443.9 | -5,367.6 | 3,939.9 | 3,802.3 | 137.58 | 28.636 | |
| 6,397.6 | 6,145.3 | 6,149.3 | 6,149.3 | 32.3 | 123.3 | 171.21 | -443.9 | -5,367.6 | 3,949.0 | 3,812.3 | 136.61 | 28.906 | |
| 6,400.0 | 6,147.6 | 6,151.6 | 6,151.6 | 32.3 | 123.3 | 171.21 | -443.9 | -5,367.6 | 3,949.5 | 3,812.9 | 136.55 | 28.923 | |
| 6,450.0 | 6,195.8 | 6,199.8 | 6,199.8 | 32.2 | 124.3 | 171.07 | -443.9 | -5,367.6 | 3,962.5 | 3,827.6 | 134.85 | 29.385 | |
| 6,496.0 | 6,239.3 | 6,243.3 | 6,243.3 | 32.1 | 125.2 | 170.91 | -443.9 | -5,367.6 | 3,977.3 | 3,844.6 | 132.69 | 29.974 | |
| 6,500.0 | 6,243.0 | 6,247.0 | 6,247.0 | 32.1 | 125.2 | 170.89 | -443.9 | -5,367.6 | 3,978.7 | 3,846.2 | 132.48 | 30.032 | |
| 6,550.0 | 6,289.0 | 6,293.0 | 6,293.0 | 32.0 | 126.2 | 170.67 | -443.9 | -5,367.6 | 3,998.2 | 3,868.7 | 129.47 | 30.881 | |
| 6,594.5 | 6,328.6 | 6,332.6 | 6,332.6 | 31.8 | 127.0 | 170.42 | -443.9 | -5,367.6 | 4,018.2 | 3,891.9 | 126.27 | 31.822 | |
| 6,600.0 | 6,333.4 | 6,337.4 | 6,337.4 | 31.8 | 127.0 | 170.39 | -443.9 | -5,367.6 | 4,020.8 | 3,895.0 | 125.84 | 31.952 | |
| 6,650.0 | 6,376.2 | 6,380.2 | 6,380.2 | 31.7 | 127.9 | 170.04 | -443.9 | -5,367.6 | 4,046.5 | 3,924.8 | 121.62 | 33.271 | |
| 6,692.9 | 6,411.3 | 6,415.3 | 6,415.3 | 31.6 | 128.6 | 169.69 | -443.9 | -5,367.6 | 4,070.8 | 3,953.2 | 117.57 | 34.623 | |
| 6,700.0 | 6,417.0 | 6,421.0 | 6,421.0 | 31.5 | 128.7 | 169.62 | -443.9 | -5,367.6 | 4,075.0 | 3,958.1 | 116.87 | 34.867 | |
| 6,750.0 | 6,455.7 | 6,459.7 | 6,459.7 | 31.4 | 129.5 | 169.11 | -443.9 | -5,367.6 | 4,106.3 | 3,994.6 | 111.66 | 36.774 | |
| 6,791.3 | 6,486.0 | 6,490.0 | 6,490.0 | 31.3 | 130.1 | 168.60 | -443.9 | -5,367.6 | 4,134.1 | 4,027.0 | 107.08 | 38.608 | |
| 6,800.0 | 6,492.2 | 6,496.2 | 6,496.2 | 31.3 | 130.2 | 168.49 | -443.9 | -5,367.6 | 4,140.1 | 4,034.1 | 106.09 | 39.024 | |
| 6,850.0 | 6,526.1 | 6,530.1 | 6,530.1 | 31.2 | 130.9 | 167.72 | -443.9 | -5,367.6 | 4,176.5 | 4,076.2 | 100.30 | 41.641 | |
| 6,889.7 | 6,551.2 | 6,555.2 | 6,555.2 | 31.2 | 131.4 | 166.97 | -443.9 | -5,367.6 | 4,207.0 | 4,111.3 | 95.66 | 43.980 | |
| 6,900.0 | 6,557.4 | 6,561.4 | 6,561.4 | 31.2 | 131.6 | 166.76 | -443.9 | -5,367.6 | 4,215.0 | 4,120.6 | 94.47 | 44.618 | |
| 6,950.0 | 6,586.0 | 6,590.0 | 6,590.0 | 31.1 | 132.1 | 165.55 | -443.9 | -5,367.6 | 4,255.7 | 4,166.8 | 88.89 | 47.876 | |
| 6,988.2 | 6,605.8 | 6,609.8 | 6,609.8 | 31.2 | 132.5 | 164.40 | -443.9 | -5,367.6 | 4,288.0 | 4,203.0 | 85.05 | 50.415 | |
| 7,000.0 | 6,611.5 | 6,615.5 | 6,615.5 | 31.2 | 132.6 | 163.99 | -443.9 | -5,367.6 | 4,298.2 | 4,214.3 | 83.98 | 51.179 | |
| 7,050.0 | 6,634.1 | 6,638.1 | 6,638.1 | 31.2 | 133.1 | 161.94 | -443.9 | -5,367.6 | 4,342.5 | 4,262.0 | 80.43 | 53.989 | |
| 7,086.6 | 6,648.6 | 6,652.6 | 6,652.6 | 31.3 | 133.4 | 159.98 | -443.9 | -5,367.6 | 4,375.8 | 4,296.5 | 79.31 | 55.176 | |
| 7,100.0 | 6,653.4 | 6,657.4 | 6,657.4 | 31.4 | 133.5 | 159.13 | -443.9 | -5,367.6 | 4,388.1 | 4,308.8 | 79.33 | 55.312 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,673.5 | 6,673.5 | 31.6 | 133.8 | 155.14 | -443.9 | -5,367.6 | 4,435.0 | 4,352.6 | 82.41 | 53.819 | |
| 7,185.0 | 6,678.8 | 6,682.8 | 6,682.8 | 31.7 | 134.0 | 151.21 | -443.9 | -5,367.6 | 4,468.5 | 4,380.2 | 88.33 | 50.586 | |
| 7,200.0 | 6,682.3 | 6,686.3 | 6,686.3 | 31.8 | 134.1 | 149.11 | -443.9 | -5,367.6 | 4,482.9 | 4,390.8 | 92.11 | 48.672 | |
| 7,250.0 | 6,691.6 | 6,695.6 | 6,695.6 | 32.1 | 134.3 | 139.39 | -443.9 | -5,367.6 | 4,531.6 | 4,420.2 | 111.41 | 40.674 | |
| 7,283.4 | 6,696.0 | 6,700.0 | 6,700.0 | 32.3 | 134.3 | 129.30 | -443.9 | -5,367.6 | 4,564.5 | 4,434.0 | 130.56 | 34.961 | |
| 7,300.0 | 6,697.5 | 6,701.5 | 6,701.5 | 32.4 | 134.4 | 122.77 | -443.9 | -5,367.6 | 4,580.9 | 4,439.6 | 141.30 | 32.420 | |
| 7,350.0 | 6,699.9 | 6,703.9 | 6,703.9 | 32.8 | 134.4 | 96.06 | -443.9 | -5,367.6 | 4,630.4 | 4,464.1 | 166.32 | 27.840 | |
| 7,364.4 | 6,700.0 | 6,704.0 | 6,704.0 | 32.9 | 134.4 | 87.09 | -443.9 | -5,367.6 | 4,644.6 | 4,477.6 | 167.05 | 27.804 | |
| 7,381.9 | 6,699.9 | 6,703.9 | 6,703.9 | 33.1 | 134.4 | 87.08 | -443.9 | -5,367.6 | 4,662.0 | 4,494.8 | 167.20 | 27.883 | |
| 7,400.0 | 6,699.8 | 6,703.8 | 6,703.8 | 33.2 | 134.4 | 87.07 | -443.9 | -5,367.6 | 4,680.0 | 4,512.6 | 167.35 | 27.965 | |
| 7,480.3 | 6,699.2 | 6,703.2 | 6,703.2 | 34.0 | 134.4 | 87.02 | -443.9 | -5,367.6 | 4,759.7 | 4,591.5 | 168.14 | 28.307 | |
| 7,500.0 | 6,699.1 | 6,703.1 | 6,703.1 | 34.2 | 134.4 | 87.00 | -443.9 | -5,367.6 | 4,779.2 | 4,610.9 | 168.34 | 28.391 | |
| 7,578.7 | 6,698.6 | 6,702.6 | 6,702.6 | 35.2 | 134.4 | 86.95 | -443.9 | -5,367.6 | 4,857.3 | 4,688.1 | 169.27 | 28.697 | |
| 7,600.0 | 6,698.5 | 6,702.5 | 6,702.5 | 35.4 | 134.4 | 86.94 | -443.9 | -5,367.6 | 4,878.5 | 4,708.9 | 169.52 | 28.779 | |
| 7,677.1 | 6,698.0 | 6,702.0 | 6,702.0 | 36.5 | 134.4 | 86.89 | -443.9 | -5,367.6 | 4,955.1 | 4,784.5 | 170.56 | 29.051 | |
| 7,700.0 | 6,697.8 | 6,701.8 | 6,701.8 | 36.8 | 134.4 | 86.88 | -443.9 | -5,367.6 | 4,977.7 | 4,806.9 | 170.87 | 29.131 | |
| 7,775.6 | 6,697.3 | 6,701.3 | 6,701.3 | 38.0 | 134.4 | 86.83 | -443.9 | -5,367.6 | 5,052.8 | 4,880.8 | 172.01 | 29.374 | |
| 7,800.0 | 6,697.2 | 6,701.2 | 6,701.2 | 38.3 | 134.4 | 86.81 | -443.9 | -5,367.6 | 5,077.1 | 4,904.7 | 172.38 | 29.452 | |
| 7,874.0 | 6,696.7 | 6,700.7 | 6,700.7 | 39.6 | 134.4 | 86.77 | -443.9 | -5,367.6 | 5,150.6 | 4,977.0 | 173.61 | 29.668 | |
| 7,900.0 | 6,696.5 | 6,700.5 | 6,700.5 | 40.0 | 134.3 | 86.75 | -443.9 | -5,367.6 | 5,176.4 | 5,002.4 | 174.03 | 29.744 | |
| 7,972.4 | 6,696.1 | 6,700.1 | 6,700.1 | 41.3 | 134.3 | 86.71 | -443.9 | -5,367.6 | 5,248.3 | 5,073.0 | 175.32 | 29.936 | |
| 8,000.0 | 6,695.9 | 6,699.9 | 6,699.9 | 41.8 | 134.3 | 86.69 | -443.9 | -5,367.6 | 5,275.8 | 5,099.9 | 175.81 | 30.009 | |
| 8,070.8 | 6,695.4 | 6,699.4 | 6,699.4 | 43.1 | 134.3 | 86.64 | -443.9 | -5,367.6 | 5,346.2 | 5,169.0 | 177.14 | 30.181 | |
| 8,100.0 | 6,695.2 | 6,699.2 | 6,699.2 | 43.7 | 134.3 | 86.63 | -443.9 | -5,367.6 | 5,375.1 | 5,197.5 | 177.68 | 30.251 | |
| 8,169.3 | 6,694.8 | 6,698.8 | 6,698.8 | 45.1 | 134.3 | 86.58 | -443.9 | -5,367.6 | 5,444.0 | 5,265.0 | 179.05 | 30.405 | |
| 8,200.0 | 6,694.6 | 6,698.6 | 6,698.6 | 45.7 | 134.3 | 86.56 | -443.9 | -5,367.6 | 5,474.5 | 5,294.9 | 179.65 | 30.473 | |
| 8,267.7 | 6,694.1 | 6,698.1 | 6,698.1 | 47.1 | 134.3 | 86.52 | -443.9 | -5,367.6 | 5,541.9 | 5,360.8 | 181.04 | 30.611 | |
| 8,300.0 | 6,693.9 | 6,697.9 | 6,697.9 | 47.8 | 134.3 | 86.50 | -443.9 | -5,367.6 | 5,574.0 | 5,392.3 | 181.71 | 30.676 | |
| 8,366.1 | 6,693.5 | 6,697.5 | 6,697.5 | 49.2 | 134.3 | 86.46 | -443.9 | -5,367.6 | 5,639.7 | 5,456.6 | 183.11 | 30.800 | |
| 8,400.0 | 6,693.3 | 6,697.3 | 6,697.3 | 49.9 | 134.3 | 86.44 | -443.9 | -5,367.6 | 5,673.4 | 5,489.6 | 183.83 | 30.863 | |
| 8,464.5 | 6,692.9 | 6,696.9 | 6,696.9 | 51.4 | 134.3 | 86.40 | -443.9 | -5,367.6 | 5,737.6 | 5,552.4 | 185.24 | 30.974 | |
| 8,500.0 | 6,692.6 | 6,696.6 | 6,696.6 | 52.1 | 134.3 | 86.37 | -443.9 | -5,367.6 | 5,772.9 | 5,586.9 | 186.01 | 31.035 | |
| 8,563.0 | 6,692.2 | 6,696.2 | 6,696.2 | 53.6 | 134.3 | 86.33 | -443.9 | -5,367.6 | 5,835.5 | 5,648.1 | 187.42 | 31.136 | |
| 8,600.0 | 6,692.0 | 6,696.0 | 6,696.0 | 54.4 | 134.3 | 86.31 | -443.9 | -5,367.6 | 5,872.4 | 5,684.1 | 188.25 | 31.194 | |
| 8,661.4 | 6,691.6 | 6,695.6 | 6,695.6 | 55.8 | 134.3 | 86.27 | -443.9 | -5,367.6 | 5,933.5 | 5,743.8 | 189.66 | 31.285 | |
| 8,700.0 | 6,691.3 | 6,695.3 | 6,695.3 | 56.7 | 134.2 | 86.25 | -443.9 | -5,367.6 | 5,971.9 | 5,781.3 | 190.54 | 31.342 | |
| 8,759.8 | 6,690.9 | 6,694.9 | 6,694.9 | 58.1 | 134.2 | 86.21 | -443.9 | -5,367.6 | 6,031.4 | 5,839.5 | 191.93 | 31.425 | |
| 8,800.0 | 6,690.7 | 6,694.7 | 6,694.7 | 59.1 | 134.2 | 86.18 | -443.9 | -5,367.6 | 6,071.4 | 5,878.5 | 192.87 | 31.479 | |
| 8,858.2 | 6,690.3 | 6,694.3 | 6,694.3 | 60.5 | 134.2 | 86.15 | -443.9 | -5,367.6 | 6,129.4 | 5,935.1 | 194.25 | 31.555 | |
| 8,900.0 | 6,690.0 | 6,694.0 | 6,694.0 | 61.5 | 134.2 | 86.12 | -443.9 | -5,367.6 | 6,170.9 | 5,975.7 | 195.24 | 31.608 | |
| 8,956.7 | 6,689.7 | 6,693.7 | 6,693.7 | 62.9 | 134.2 | 86.09 | -443.9 | -5,367.6 | 6,227.4 | 6,030.8 | 196.59 | 31.676 | |
| 9,000.0 | 6,689.4 | 6,693.4 | 6,693.4 | 63.9 | 134.2 | 86.06 | -443.9 | -5,367.6 | 6,270.5 | 6,072.9 | 197.63 | 31.728 | |
| 9,055.1 | 6,689.0 | 6,693.0 | 6,693.0 | 65.3 | 134.2 | 86.02 | -443.9 | -5,367.6 | 6,325.3 | 6,126.4 | 198.97 | 31.790 | |
| 9,100.0 | 6,688.7 | 6,692.7 | 6,692.7 | 66.4 | 134.2 | 86.00 | -443.9 | -5,367.6 | 6,370.1 | 6,170.0 | 200.06 | 31.840 | |
| 9,153.5 | 6,688.4 | 6,692.4 | 6,692.4 | 67.7 | 134.2 | 85.96 | -443.9 | -5,367.6 | 6,423.4 | 6,222.0 | 201.38 | 31.897 | |
| 9,200.0 | 6,688.1 | 6,692.1 | 6,692.1 | 68.9 | 134.2 | 85.93 | -443.9 | -5,367.6 | 6,469.6 | 6,267.1 | 202.52 | 31.946 | |
| 9,251.9 | 6,687.8 | 6,691.8 | 6,691.8 | 70.2 | 134.2 | 85.90 | -443.9 | -5,367.6 | 6,521.4 | 6,317.6 | 203.80 | 31.998 | |
| 9,300.0 | 6,687.4 | 6,691.4 | 6,691.4 | 71.4 | 134.2 | 85.87 | -443.9 | -5,367.6 | 6,569.2 | 6,364.2 | 204.99 | 32.046 | |
| 9,350.4 | 6,687.1 | 6,691.1 | 6,691.1 | 72.7 | 134.2 | 85.84 | -443.9 | -5,367.6 | 6,619.4 | 6,413.1 | 206.25 | 32.093 | |
| 9,400.0 | 6,686.8 | 6,690.8 | 6,690.8 | 73.9 | 134.2 | 85.81 | -443.9 | -5,367.6 | 6,668.8 | 6,461.3 | 207.49 | 32.140 | |
| 9,448.8 | 6,686.5 | 6,690.5 | 6,690.5 | 75.2 | 134.1 | 85.78 | -443.9 | -5,367.6 | 6,717.4 | 6,508.7 | 208.72 | 32.184 | |
| 9,500.0 | 6,686.1 | 6,690.1 | 6,690.1 | 76.5 | 134.1 | 85.74 | -443.9 | -5,367.6 | 6,768.4 | 6,558.4 | 210.01 | 32.229 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,689.8 | 6,689.8 | 77.7 | 134.1 | 85.71 | -443.9 | -5,367.6 | 6,815.5 | 6,604.3 | 211.21 | 32.269 | |
| 9,600.0 | 6,685.5 | 6,689.5 | 6,689.5 | 79.0 | 134.1 | 85.68 | -443.9 | -5,367.6 | 6,868.1 | 6,655.5 | 212.54 | 32.314 | |
| 9,645.6 | 6,685.2 | 6,689.2 | 6,689.2 | 80.2 | 134.1 | 85.65 | -443.9 | -5,367.6 | 6,913.5 | 6,699.8 | 213.71 | 32.350 | |
| 9,700.0 | 6,684.8 | 6,688.8 | 6,688.8 | 81.6 | 134.1 | 85.62 | -443.9 | -5,367.6 | 6,967.7 | 6,752.6 | 215.09 | 32.394 | |
| 9,744.1 | 6,684.6 | 6,688.6 | 6,688.6 | 82.8 | 134.1 | 85.59 | -443.9 | -5,367.6 | 7,011.6 | 6,795.4 | 216.22 | 32.428 | |
| 9,800.0 | 6,684.2 | 6,688.2 | 6,688.2 | 84.2 | 134.1 | 85.56 | -443.9 | -5,367.6 | 7,067.3 | 6,849.7 | 217.66 | 32.470 | |
| 9,842.5 | 6,683.9 | 6,687.9 | 6,687.9 | 85.3 | 134.1 | 85.53 | -443.9 | -5,367.6 | 7,109.7 | 6,890.9 | 218.75 | 32.501 | |
| 9,900.0 | 6,683.5 | 6,687.5 | 6,687.5 | 86.8 | 134.1 | 85.49 | -443.9 | -5,367.6 | 7,167.0 | 6,946.8 | 220.23 | 32.543 | |
| 9,940.9 | 6,683.3 | 6,687.3 | 6,687.3 | 87.9 | 134.1 | 85.47 | -443.9 | -5,367.6 | 7,207.8 | 6,986.5 | 221.29 | 32.572 | |
| 10,000.0 | 6,682.9 | 6,686.9 | 6,686.9 | 89.5 | 134.1 | 85.43 | -443.9 | -5,367.6 | 7,266.7 | 7,043.8 | 222.82 | 32.613 | |
| 10,039.3 | 6,682.6 | 6,686.6 | 6,686.6 | 90.5 | 134.1 | 85.41 | -443.9 | -5,367.6 | 7,305.9 | 7,082.0 | 223.84 | 32.639 | |
| 10,100.0 | 6,682.2 | 6,686.2 | 6,686.2 | 92.1 | 134.1 | 85.37 | -443.9 | -5,367.6 | 7,366.3 | 7,140.9 | 225.41 | 32.679 | |
| 10,137.8 | 6,682.0 | 6,686.0 | 6,686.0 | 93.1 | 134.1 | 85.34 | -443.9 | -5,367.6 | 7,404.0 | 7,177.6 | 226.40 | 32.704 | |
| 10,200.0 | 6,681.6 | 6,685.6 | 6,685.6 | 94.8 | 134.0 | 85.30 | -443.9 | -5,367.6 | 7,466.0 | 7,238.0 | 228.02 | 32.743 | |
| 10,236.2 | 6,681.4 | 6,685.4 | 6,685.4 | 95.7 | 134.0 | 85.28 | -443.9 | -5,367.6 | 7,502.1 | 7,273.1 | 228.96 | 32.765 | |
| 10,300.0 | 6,680.9 | 6,684.9 | 6,684.9 | 97.4 | 134.0 | 85.24 | -443.9 | -5,367.6 | 7,565.7 | 7,335.1 | 230.63 | 32.804 | |
| 10,334.6 | 6,680.7 | 6,684.7 | 6,684.7 | 98.3 | 134.0 | 85.22 | -443.9 | -5,367.6 | 7,600.2 | 7,368.7 | 231.54 | 32.825 | |
| 10,400.0 | 6,680.3 | 6,684.3 | 6,684.3 | 100.1 | 134.0 | 85.18 | -443.9 | -5,367.6 | 7,665.4 | 7,432.2 | 233.25 | 32.863 | |
| 10,433.0 | 6,680.1 | 6,684.1 | 6,684.1 | 101.0 | 134.0 | 85.16 | -443.9 | -5,367.6 | 7,698.4 | 7,464.2 | 234.12 | 32.882 | |
| 10,500.0 | 6,679.7 | 6,683.7 | 6,683.7 | 102.8 | 134.0 | 85.12 | -443.9 | -5,367.6 | 7,765.1 | 7,529.2 | 235.88 | 32.920 | |
| 10,531.5 | 6,679.4 | 6,683.4 | 6,683.4 | 103.6 | 134.0 | 85.10 | -443.9 | -5,367.6 | 7,796.5 | 7,559.8 | 236.71 | 32.937 | |
| 10,600.0 | 6,679.0 | 6,683.0 | 6,683.0 | 105.4 | 134.0 | 85.05 | -443.9 | -5,367.6 | 7,864.8 | 7,626.3 | 238.52 | 32.974 | |
| 10,629.9 | 6,678.8 | 6,682.8 | 6,682.8 | 106.2 | 134.0 | 85.03 | -443.9 | -5,367.6 | 7,894.7 | 7,655.3 | 239.31 | 32.990 | |
| 10,700.0 | 6,678.4 | 6,682.4 | 6,682.4 | 108.1 | 134.0 | 84.99 | -443.9 | -5,367.6 | 7,964.6 | 7,723.4 | 241.16 | 33.026 | |
| 10,728.3 | 6,678.2 | 6,682.2 | 6,682.2 | 108.9 | 134.0 | 84.97 | -443.9 | -5,367.6 | 7,992.8 | 7,750.9 | 241.91 | 33.041 | |
| 10,800.0 | 6,677.7 | 6,681.7 | 6,681.7 | 110.8 | 134.0 | 84.93 | -443.9 | -5,367.6 | 8,064.3 | 7,820.5 | 243.80 | 33.077 | |
| 10,826.7 | 6,677.5 | 6,681.5 | 6,681.5 | 111.5 | 134.0 | 84.91 | -443.9 | -5,367.6 | 8,091.0 | 7,846.5 | 244.51 | 33.090 | |
| 10,900.0 | 6,677.1 | 6,681.1 | 6,681.1 | 113.5 | 134.0 | 84.87 | -443.9 | -5,367.6 | 8,164.0 | 7,917.6 | 246.45 | 33.126 | |
| 10,925.2 | 6,676.9 | 6,680.9 | 6,680.9 | 114.2 | 134.0 | 84.85 | -443.9 | -5,367.6 | 8,189.1 | 7,942.0 | 247.12 | 33.138 | |
| 11,000.0 | 6,676.4 | 6,680.4 | 6,680.4 | 116.2 | 133.9 | 84.80 | -443.9 | -5,367.6 | 8,263.8 | 8,014.7 | 249.11 | 33.173 | |
| 11,023.6 | 6,676.3 | 6,680.3 | 6,680.3 | 116.8 | 133.9 | 84.79 | -443.9 | -5,367.6 | 8,287.3 | 8,037.6 | 249.74 | 33.184 | |
| 11,100.0 | 6,675.8 | 6,679.8 | 6,679.8 | 118.9 | 133.9 | 84.74 | -443.9 | -5,367.6 | 8,363.5 | 8,111.7 | 251.77 | 33.219 | |
| 11,122.0 | 6,675.6 | 6,679.6 | 6,679.6 | 119.5 | 133.9 | 84.73 | -443.9 | -5,367.6 | 8,385.5 | 8,133.1 | 252.36 | 33.229 | |
| 11,200.0 | 6,675.1 | 6,679.1 | 6,679.1 | 121.6 | 133.9 | 84.68 | -443.9 | -5,367.6 | 8,463.3 | 8,208.8 | 254.43 | 33.263 | |
| 11,220.4 | 6,675.0 | 6,679.0 | 6,679.0 | 122.2 | 133.9 | 84.66 | -443.9 | -5,367.6 | 8,483.7 | 8,228.7 | 254.98 | 33.272 | |
| 11,300.0 | 6,674.5 | 6,678.5 | 6,678.5 | 124.3 | 133.9 | 84.61 | -443.9 | -5,367.6 | 8,563.0 | 8,305.9 | 257.10 | 33.306 | |
| 11,318.9 | 6,674.3 | 6,678.3 | 6,678.3 | 124.9 | 133.9 | 84.60 | -443.9 | -5,367.6 | 8,581.9 | 8,324.2 | 257.61 | 33.314 | |
| 11,400.0 | 6,673.8 | 6,677.8 | 6,677.8 | 127.1 | 133.9 | 84.55 | -443.9 | -5,367.6 | 8,662.8 | 8,403.0 | 259.77 | 33.348 | |
| 11,417.3 | 6,673.7 | 6,677.7 | 6,677.7 | 127.5 | 133.9 | 84.54 | -443.9 | -5,367.6 | 8,680.0 | 8,419.8 | 260.23 | 33.355 | |
| 11,500.0 | 6,673.2 | 6,677.2 | 6,677.2 | 129.8 | 133.9 | 84.49 | -443.9 | -5,367.6 | 8,762.6 | 8,500.1 | 262.44 | 33.388 | |
| 11,515.7 | 6,673.1 | 6,677.1 | 6,677.1 | 130.2 | 133.9 | 84.48 | -443.9 | -5,367.6 | 8,778.2 | 8,515.4 | 262.87 | 33.394 | |
| 11,600.0 | 6,672.5 | 6,676.5 | 6,676.5 | 132.5 | 133.9 | 84.43 | -443.9 | -5,367.6 | 8,862.3 | 8,597.2 | 265.12 | 33.428 | |
| 11,614.1 | 6,672.4 | 6,676.4 | 6,676.4 | 132.9 | 133.9 | 84.42 | -443.9 | -5,367.6 | 8,876.4 | 8,610.9 | 265.50 | 33.433 | |
| 11,700.0 | 6,671.9 | 6,675.9 | 6,675.9 | 135.3 | 133.9 | 84.36 | -443.9 | -5,367.6 | 8,962.1 | 8,694.3 | 267.80 | 33.466 | |
| 11,712.6 | 6,671.8 | 6,675.8 | 6,675.8 | 135.6 | 133.9 | 84.36 | -443.9 | -5,367.6 | 8,974.7 | 8,706.5 | 268.14 | 33.470 | |
| 11,800.0 | 6,671.2 | 6,675.2 | 6,675.2 | 138.0 | 133.8 | 84.30 | -443.9 | -5,367.6 | 9,061.9 | 8,791.4 | 270.48 | 33.503 | |
| 11,811.0 | 6,671.1 | 6,675.1 | 6,675.1 | 138.3 | 133.8 | 84.29 | -443.9 | -5,367.6 | 9,072.9 | 8,802.1 | 270.78 | 33.507 | |
| 11,900.0 | 6,670.6 | 6,674.6 | 6,674.6 | 140.7 | 133.8 | 84.24 | -443.9 | -5,367.6 | 9,161.7 | 8,888.5 | 273.16 | 33.539 | |
| 11,909.4 | 6,670.5 | 6,674.5 | 6,674.5 | 141.0 | 133.8 | 84.23 | -443.9 | -5,367.6 | 9,171.1 | 8,897.7 | 273.42 | 33.543 | |
| 11,987.2 | 6,670.0 | 6,674.0 | 6,674.0 | 143.1 | 133.8 | 84.18 | -443.9 | -5,367.6 | 9,248.7 | 8,973.2 | 275.50 | 33.570 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | | | | |
| 98.4 | 98.4 | 99.4 | 99.4 | 0.1 | 1.2 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,188.7 | 1.27 | 3,288.550 | |
| 100.0 | 100.0 | 101.0 | 101.0 | 0.1 | 1.2 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,188.6 | 1.31 | 3,209.185 | |
| 196.8 | 196.8 | 197.8 | 197.8 | 0.3 | 3.4 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,186.2 | 3.74 | 1,119.203 | |
| 200.0 | 200.0 | 201.0 | 201.0 | 0.3 | 3.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,186.1 | 3.82 | 1,096.602 | |
| 295.3 | 295.3 | 296.3 | 296.3 | 0.5 | 5.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,183.9 | 6.02 | 696.543 | |
| 300.0 | 300.0 | 301.0 | 301.0 | 0.5 | 5.6 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,183.8 | 6.12 | 684.206 | |
| 393.7 | 393.7 | 394.7 | 394.7 | 0.8 | 7.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,181.7 | 8.25 | 507.995 | |
| 400.0 | 400.0 | 401.0 | 401.0 | 0.8 | 7.6 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,181.5 | 8.39 | 499.356 | |
| 492.1 | 492.1 | 493.1 | 493.1 | 1.0 | 9.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,179.5 | 10.47 | 400.298 | |
| 500.0 | 500.0 | 501.0 | 501.0 | 1.0 | 9.6 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,179.3 | 10.64 | 393.626 | |
| 590.5 | 590.5 | 591.5 | 591.5 | 1.2 | 11.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,177.3 | 12.68 | 330.447 | |
| 600.0 | 600.0 | 601.0 | 601.0 | 1.2 | 11.7 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,177.0 | 12.89 | 325.003 | |
| 689.0 | 689.0 | 690.0 | 690.0 | 1.4 | 13.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,175.0 | 14.89 | 281.419 | |
| 700.0 | 700.0 | 701.0 | 701.0 | 1.4 | 13.7 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,174.8 | 15.14 | 276.819 | |
| 787.4 | 787.4 | 788.4 | 788.4 | 1.6 | 15.5 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,172.8 | 17.10 | 245.091 | |
| 800.0 | 800.0 | 801.0 | 801.0 | 1.7 | 15.7 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,172.6 | 17.38 | 241.107 | |
| 885.8 | 885.8 | 886.8 | 886.8 | 1.9 | 17.4 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,170.6 | 19.30 | 217.086 | |
| 900.0 | 900.0 | 901.0 | 901.0 | 1.9 | 17.7 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,170.3 | 19.62 | 213.572 | |
| 984.2 | 984.2 | 985.2 | 985.2 | 2.1 | 19.4 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,168.4 | 21.51 | 194.834 | |
| 1,000.0 | 1,000.0 | 1,001.0 | 1,001.0 | 2.1 | 19.7 | -93.09 | -225.5 | -4,183.9 | 4,189.9 | 4,168.1 | 21.86 | 191.690 | |
| 1,082.7 | 1,082.7 | 1,083.7 | 1,083.7 | 2.3 | 21.4 | -8.65 | -225.5 | -4,183.9 | 4,188.8 | 4,165.1 | 23.69 | 176.821 | |
| 1,100.0 | 1,100.0 | 1,101.0 | 1,101.0 | 2.3 | 21.8 | -8.65 | -225.5 | -4,183.9 | 4,188.2 | 4,164.1 | 24.07 | 174.000 | |
| 1,181.1 | 1,181.0 | 1,182.0 | 1,182.0 | 2.5 | 23.4 | -8.68 | -225.5 | -4,183.9 | 4,184.3 | 4,158.4 | 25.83 | 161.984 | |
| 1,200.0 | 1,199.8 | 1,200.8 | 1,200.8 | 2.5 | 23.8 | -8.68 | -225.5 | -4,183.9 | 4,183.0 | 4,156.8 | 26.24 | 159.429 | |
| 1,279.5 | 1,279.1 | 1,280.1 | 1,280.1 | 2.7 | 25.4 | -8.72 | -225.5 | -4,183.9 | 4,176.5 | 4,148.5 | 27.93 | 149.519 | |
| 1,300.0 | 1,299.5 | 1,300.5 | 1,300.5 | 2.8 | 25.8 | -8.73 | -225.5 | -4,183.9 | 4,174.4 | 4,146.1 | 28.36 | 147.175 | |
| 1,377.9 | 1,376.9 | 1,377.9 | 1,377.9 | 3.0 | 27.3 | -8.77 | -225.5 | -4,183.9 | 4,165.3 | 4,135.3 | 29.99 | 138.904 | |
| 1,400.0 | 1,398.7 | 1,399.7 | 1,399.7 | 3.0 | 27.8 | -8.79 | -225.5 | -4,183.9 | 4,162.4 | 4,131.9 | 30.44 | 136.743 | |
| 1,476.4 | 1,474.2 | 1,475.2 | 1,475.2 | 3.2 | 29.3 | -8.85 | -225.5 | -4,183.9 | 4,150.9 | 4,118.9 | 31.99 | 129.769 | |
| 1,500.0 | 1,497.5 | 1,498.5 | 1,498.5 | 3.3 | 29.8 | -8.87 | -225.5 | -4,183.9 | 4,146.9 | 4,114.5 | 32.46 | 127.768 | |
| 1,574.8 | 1,571.0 | 1,572.0 | 1,572.0 | 3.5 | 31.2 | -8.94 | -225.5 | -4,183.9 | 4,133.1 | 4,099.2 | 33.92 | 121.836 | |
| 1,600.0 | 1,595.6 | 1,596.6 | 1,596.6 | 3.6 | 31.7 | -8.97 | -225.5 | -4,183.9 | 4,128.1 | 4,093.6 | 34.41 | 119.974 | |
| 1,673.2 | 1,667.0 | 1,668.0 | 1,668.0 | 3.9 | 33.2 | -9.06 | -225.5 | -4,183.9 | 4,112.1 | 4,076.3 | 35.79 | 114.890 | |
| 1,700.0 | 1,693.1 | 1,694.1 | 1,694.1 | 4.0 | 33.7 | -9.09 | -225.5 | -4,183.9 | 4,105.8 | 4,069.5 | 36.29 | 113.152 | |
| 1,771.6 | 1,762.4 | 1,763.4 | 1,763.4 | 4.3 | 35.1 | -9.19 | -225.5 | -4,183.9 | 4,087.8 | 4,050.3 | 37.58 | 108.764 | |
| 1,800.0 | 1,789.6 | 1,790.6 | 1,790.6 | 4.4 | 35.6 | -9.23 | -225.5 | -4,183.9 | 4,080.3 | 4,042.2 | 38.08 | 107.137 | |
| 1,870.1 | 1,856.8 | 1,857.8 | 1,857.8 | 4.7 | 37.0 | -9.34 | -225.5 | -4,183.9 | 4,060.4 | 4,021.1 | 39.30 | 103.327 | |
| 1,900.0 | 1,885.3 | 1,886.3 | 1,886.3 | 4.9 | 37.6 | -9.40 | -225.5 | -4,183.9 | 4,051.4 | 4,011.6 | 39.80 | 101.800 | |
| 1,968.5 | 1,950.2 | 1,951.2 | 1,951.2 | 5.3 | 38.9 | -9.52 | -225.5 | -4,183.9 | 4,029.7 | 3,988.8 | 40.92 | 98.481 | |
| 2,000.0 | 1,979.8 | 1,980.8 | 1,980.8 | 5.5 | 39.5 | -9.58 | -225.5 | -4,183.9 | 4,019.2 | 3,977.8 | 41.42 | 97.037 | |
| 2,044.9 | 2,021.9 | 2,022.9 | 2,022.9 | 5.7 | 40.3 | -9.68 | -225.5 | -4,183.9 | 4,003.7 | 3,961.6 | 42.12 | 95.061 | |
| 2,066.9 | 2,042.5 | 2,043.5 | 2,043.5 | 5.9 | 40.7 | -9.70 | -225.5 | -4,183.9 | 3,996.0 | 3,953.4 | 42.57 | 93.874 | |
| 2,100.0 | 2,073.4 | 2,074.4 | 2,074.4 | 6.1 | 41.3 | -9.72 | -225.5 | -4,183.9 | 3,984.3 | 3,941.1 | 43.25 | 92.130 | |
| 2,165.3 | 2,134.4 | 2,135.4 | 2,135.4 | 6.5 | 42.6 | -9.78 | -225.5 | -4,183.9 | 3,961.3 | 3,916.7 | 44.59 | 88.838 | |
| 2,200.0 | 2,166.8 | 2,167.8 | 2,167.8 | 6.8 | 43.2 | -9.81 | -225.5 | -4,183.9 | 3,949.1 | 3,903.8 | 45.30 | 87.167 | |
| 2,263.8 | 2,226.4 | 2,227.4 | 2,227.4 | 7.2 | 44.4 | -9.87 | -225.5 | -4,183.9 | 3,926.6 | 3,880.0 | 46.62 | 84.223 | |
| 2,300.0 | 2,260.2 | 2,261.2 | 2,261.2 | 7.4 | 45.1 | -9.90 | -225.5 | -4,183.9 | 3,913.9 | 3,866.5 | 47.37 | 82.621 | |
| 2,362.2 | 2,318.3 | 2,319.3 | 2,319.3 | 7.9 | 46.3 | -9.96 | -225.5 | -4,183.9 | 3,892.0 | 3,843.3 | 48.66 | 79.983 | |
| 2,400.0 | 2,353.6 | 2,354.6 | 2,354.6 | 8.1 | 47.0 | -9.99 | -225.5 | -4,183.9 | 3,878.7 | 3,829.2 | 49.44 | 78.445 | |
| 2,460.6 | 2,410.3 | 2,411.3 | 2,411.3 | 8.6 | 48.1 | -10.05 | -225.5 | -4,183.9 | 3,857.3 | 3,806.6 | 50.70 | 76.075 | |
| 2,500.0 | 2,447.0 | 2,448.0 | 2,448.0 | 8.9 | 48.9 | -10.08 | -225.5 | -4,183.9 | 3,843.5 | 3,792.0 | 51.52 | 74.596 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,503.2 | 2,503.2 | 9.3 | 50.0 | -10.14 | -225.5 | -4,183.9 | 3,822.7 | 3,770.0 | 52.75 | 72.462 | |
| 2,600.0 | 2,540.5 | 2,541.5 | 2,541.5 | 9.6 | 50.7 | -10.18 | -225.5 | -4,183.9 | 3,808.3 | 3,754.7 | 53.61 | 71.039 | |
| 2,657.5 | 2,594.2 | 2,595.2 | 2,595.2 | 10.0 | 51.8 | -10.23 | -225.5 | -4,183.9 | 3,788.1 | 3,733.3 | 54.81 | 69.115 | |
| 2,700.0 | 2,633.9 | 2,634.9 | 2,634.9 | 10.3 | 52.6 | -10.27 | -225.5 | -4,183.9 | 3,773.1 | 3,717.4 | 55.70 | 67.743 | |
| 2,755.9 | 2,686.1 | 2,687.1 | 2,687.1 | 10.7 | 53.7 | -10.33 | -225.5 | -4,183.9 | 3,753.5 | 3,696.6 | 56.87 | 66.004 | |
| 2,800.0 | 2,727.3 | 2,728.3 | 2,728.3 | 11.0 | 54.5 | -10.37 | -225.5 | -4,183.9 | 3,738.0 | 3,680.2 | 57.79 | 64.681 | |
| 2,854.3 | 2,778.1 | 2,779.1 | 2,779.1 | 11.4 | 55.5 | -10.42 | -225.5 | -4,183.9 | 3,718.9 | 3,659.9 | 58.93 | 63.107 | |
| 2,900.0 | 2,820.7 | 2,821.7 | 2,821.7 | 11.8 | 56.4 | -10.47 | -225.5 | -4,183.9 | 3,702.8 | 3,642.9 | 59.89 | 61.829 | |
| 2,952.7 | 2,870.0 | 2,871.0 | 2,871.0 | 12.2 | 57.4 | -10.52 | -225.5 | -4,183.9 | 3,684.3 | 3,623.3 | 61.00 | 60.403 | |
| 3,000.0 | 2,914.2 | 2,915.2 | 2,915.2 | 12.5 | 58.3 | -10.57 | -225.5 | -4,183.9 | 3,667.7 | 3,605.7 | 61.99 | 59.167 | |
| 3,051.2 | 2,962.0 | 2,963.0 | 2,963.0 | 12.9 | 59.2 | -10.62 | -225.5 | -4,183.9 | 3,649.7 | 3,586.6 | 63.06 | 57.873 | |
| 3,100.0 | 3,007.6 | 3,008.6 | 3,008.6 | 13.3 | 60.1 | -10.67 | -225.5 | -4,183.9 | 3,632.5 | 3,568.4 | 64.09 | 56.677 | |
| 3,149.6 | 3,053.9 | 3,054.9 | 3,054.9 | 13.6 | 61.1 | -10.72 | -225.5 | -4,183.9 | 3,615.1 | 3,550.0 | 65.14 | 55.501 | |
| 3,200.0 | 3,101.0 | 3,102.0 | 3,102.0 | 14.0 | 62.0 | -10.78 | -225.5 | -4,183.9 | 3,597.4 | 3,531.2 | 66.20 | 54.343 | |
| 3,248.0 | 3,145.9 | 3,146.9 | 3,146.9 | 14.4 | 62.9 | -10.83 | -225.5 | -4,183.9 | 3,580.5 | 3,513.3 | 67.21 | 53.273 | |
| 3,300.0 | 3,194.4 | 3,195.4 | 3,195.4 | 14.8 | 63.9 | -10.89 | -225.5 | -4,183.9 | 3,562.3 | 3,494.0 | 68.31 | 52.151 | |
| 3,346.4 | 3,237.8 | 3,238.8 | 3,238.8 | 15.1 | 64.8 | -10.94 | -225.5 | -4,183.9 | 3,546.0 | 3,476.7 | 69.29 | 51.177 | |
| 3,400.0 | 3,287.8 | 3,288.8 | 3,288.8 | 15.5 | 65.8 | -10.99 | -225.5 | -4,183.9 | 3,527.2 | 3,456.8 | 70.42 | 50.088 | |
| 3,444.9 | 3,329.8 | 3,330.8 | 3,330.8 | 15.9 | 66.6 | -11.04 | -225.5 | -4,183.9 | 3,511.4 | 3,440.1 | 71.37 | 49.202 | |
| 3,500.0 | 3,381.3 | 3,382.3 | 3,382.3 | 16.3 | 67.6 | -11.11 | -225.5 | -4,183.9 | 3,492.1 | 3,419.6 | 72.53 | 48.144 | |
| 3,543.3 | 3,421.7 | 3,422.7 | 3,422.7 | 16.6 | 68.5 | -11.15 | -225.5 | -4,183.9 | 3,476.9 | 3,403.4 | 73.45 | 47.337 | |
| 3,600.0 | 3,474.7 | 3,475.7 | 3,475.7 | 17.0 | 69.5 | -11.22 | -225.5 | -4,183.9 | 3,457.0 | 3,382.4 | 74.65 | 46.309 | |
| 3,641.7 | 3,513.7 | 3,514.7 | 3,514.7 | 17.3 | 70.3 | -11.27 | -225.5 | -4,183.9 | 3,442.4 | 3,366.8 | 75.53 | 45.573 | |
| 3,700.0 | 3,568.1 | 3,569.1 | 3,569.1 | 17.8 | 71.4 | -11.34 | -225.5 | -4,183.9 | 3,421.9 | 3,345.2 | 76.77 | 44.574 | |
| 3,740.1 | 3,605.6 | 3,606.6 | 3,606.6 | 18.1 | 72.2 | -11.38 | -225.5 | -4,183.9 | 3,407.9 | 3,330.2 | 77.62 | 43.903 | |
| 3,800.0 | 3,661.5 | 3,662.5 | 3,662.5 | 18.5 | 73.3 | -11.45 | -225.5 | -4,183.9 | 3,386.9 | 3,308.0 | 78.89 | 42.930 | |
| 3,838.6 | 3,697.6 | 3,698.6 | 3,698.6 | 18.8 | 74.0 | -11.50 | -225.5 | -4,183.9 | 3,373.4 | 3,293.6 | 79.71 | 42.320 | |
| 3,900.0 | 3,754.9 | 3,755.9 | 3,755.9 | 19.3 | 75.2 | -11.57 | -225.5 | -4,183.9 | 3,351.8 | 3,270.8 | 81.02 | 41.372 | |
| 3,937.0 | 3,789.5 | 3,790.5 | 3,790.5 | 19.6 | 75.9 | -11.62 | -225.5 | -4,183.9 | 3,338.9 | 3,257.1 | 81.80 | 40.816 | |
| 4,000.0 | 3,848.4 | 3,849.4 | 3,849.4 | 20.1 | 77.0 | -11.70 | -225.5 | -4,183.9 | 3,316.8 | 3,233.7 | 83.14 | 39.893 | |
| 4,035.4 | 3,881.5 | 3,882.5 | 3,882.5 | 20.3 | 77.7 | -11.74 | -225.5 | -4,183.9 | 3,304.4 | 3,220.5 | 83.90 | 39.386 | |
| 4,100.0 | 3,941.8 | 3,942.8 | 3,942.8 | 20.8 | 78.9 | -11.82 | -225.5 | -4,183.9 | 3,281.8 | 3,196.5 | 85.27 | 38.486 | |
| 4,133.8 | 3,973.4 | 3,974.4 | 3,974.4 | 21.1 | 79.6 | -11.87 | -225.5 | -4,183.9 | 3,269.9 | 3,183.9 | 85.99 | 38.025 | |
| 4,200.0 | 4,035.2 | 4,036.2 | 4,036.2 | 21.6 | 80.8 | -11.95 | -225.5 | -4,183.9 | 3,246.8 | 3,159.4 | 87.40 | 37.147 | |
| 4,232.3 | 4,065.4 | 4,066.4 | 4,066.4 | 21.8 | 81.4 | -11.99 | -225.5 | -4,183.9 | 3,235.5 | 3,147.4 | 88.09 | 36.728 | |
| 4,300.0 | 4,128.6 | 4,129.6 | 4,129.6 | 22.3 | 82.7 | -12.08 | -225.5 | -4,183.9 | 3,211.8 | 3,122.3 | 89.54 | 35.871 | |
| 4,330.7 | 4,157.3 | 4,158.3 | 4,158.3 | 22.6 | 83.3 | -12.12 | -225.5 | -4,183.9 | 3,201.1 | 3,110.9 | 90.19 | 35.491 | |
| 4,400.0 | 4,222.0 | 4,223.0 | 4,223.0 | 23.1 | 84.6 | -12.22 | -225.5 | -4,183.9 | 3,176.8 | 3,085.2 | 91.67 | 34.653 | |
| 4,429.1 | 4,249.3 | 4,250.3 | 4,250.3 | 23.3 | 85.1 | -12.26 | -225.5 | -4,183.9 | 3,166.7 | 3,074.4 | 92.30 | 34.309 | |
| 4,500.0 | 4,315.5 | 4,316.5 | 4,316.5 | 23.9 | 86.4 | -12.36 | -225.5 | -4,183.9 | 3,141.9 | 3,048.1 | 93.81 | 33.491 | |
| 4,527.5 | 4,341.2 | 4,342.2 | 4,342.2 | 24.1 | 87.0 | -12.39 | -225.5 | -4,183.9 | 3,132.3 | 3,037.8 | 94.40 | 33.179 | |
| 4,600.0 | 4,408.9 | 4,409.9 | 4,409.9 | 24.6 | 88.3 | -12.50 | -225.5 | -4,183.9 | 3,106.9 | 3,011.0 | 95.96 | 32.379 | |
| 4,626.0 | 4,433.2 | 4,434.2 | 4,434.2 | 24.8 | 88.8 | -12.53 | -225.5 | -4,183.9 | 3,097.9 | 3,001.4 | 96.51 | 32.098 | |
| 4,700.0 | 4,502.3 | 4,503.3 | 4,503.3 | 25.4 | 90.2 | -12.64 | -225.5 | -4,183.9 | 3,072.0 | 2,973.9 | 98.10 | 31.315 | |
| 4,724.4 | 4,525.1 | 4,526.1 | 4,526.1 | 25.6 | 90.7 | -12.67 | -225.5 | -4,183.9 | 3,063.5 | 2,964.9 | 98.62 | 31.063 | |
| 4,800.0 | 4,595.7 | 4,596.7 | 4,596.7 | 26.2 | 92.1 | -12.79 | -225.5 | -4,183.9 | 3,037.1 | 2,936.9 | 100.25 | 30.296 | |
| 4,822.8 | 4,617.1 | 4,618.1 | 4,618.1 | 26.3 | 92.5 | -12.82 | -225.5 | -4,183.9 | 3,029.1 | 2,928.4 | 100.74 | 30.070 | |
| 4,900.0 | 4,689.2 | 4,690.2 | 4,690.2 | 26.9 | 94.0 | -12.94 | -225.5 | -4,183.9 | 3,002.2 | 2,899.8 | 102.40 | 29.319 | |
| 4,921.2 | 4,709.0 | 4,710.0 | 4,710.0 | 27.1 | 94.3 | -12.97 | -225.5 | -4,183.9 | 2,994.8 | 2,892.0 | 102.85 | 29.117 | |
| 5,000.0 | 4,782.6 | 4,783.6 | 4,783.6 | 27.7 | 95.8 | -13.09 | -225.5 | -4,183.9 | 2,967.4 | 2,862.8 | 104.55 | 28.382 | |
| 5,019.7 | 4,801.0 | 4,802.0 | 4,802.0 | 27.8 | 96.2 | -13.12 | -225.5 | -4,183.9 | 2,960.5 | 2,855.5 | 104.97 | 28.202 | |
| 5,100.0 | 4,876.0 | 4,877.0 | 4,877.0 | 28.4 | 97.7 | -13.25 | -225.5 | -4,183.9 | 2,932.5 | 2,825.8 | 106.71 | 27.482 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,893.9 | 4,893.9 | 28.6 | 98.0 | -13.28 | -225.5 | -4,183.9 | 2,926.2 | 2,819.1 | 107.10 | 27.323 | |
| 5,159.9 | 4,932.0 | 4,933.0 | 4,933.0 | 28.9 | 98.8 | -13.34 | -225.5 | -4,183.9 | 2,911.6 | 2,803.6 | 108.00 | 26.960 | |
| 5,200.0 | 4,969.5 | 4,970.5 | 4,970.5 | 29.2 | 99.6 | -13.34 | -225.5 | -4,183.9 | 2,897.9 | 2,788.6 | 109.31 | 26.510 | |
| 5,216.5 | 4,985.1 | 4,986.1 | 4,986.1 | 29.3 | 99.9 | -13.34 | -225.5 | -4,183.9 | 2,892.4 | 2,782.6 | 109.85 | 26.331 | |
| 5,300.0 | 5,064.0 | 5,065.0 | 5,065.0 | 29.7 | 101.5 | -13.33 | -225.5 | -4,183.9 | 2,866.0 | 2,753.5 | 112.52 | 25.471 | |
| 5,314.9 | 5,078.2 | 5,079.2 | 5,079.2 | 29.8 | 101.8 | -13.33 | -225.5 | -4,183.9 | 2,861.5 | 2,748.5 | 112.99 | 25.325 | |
| 5,400.0 | 5,159.6 | 5,160.6 | 5,160.6 | 30.2 | 103.4 | -13.33 | -225.5 | -4,183.9 | 2,837.3 | 2,721.7 | 115.65 | 24.534 | |
| 5,413.4 | 5,172.4 | 5,173.4 | 5,173.4 | 30.3 | 103.7 | -13.33 | -225.5 | -4,183.9 | 2,833.8 | 2,717.7 | 116.06 | 24.416 | |
| 5,500.0 | 5,256.1 | 5,257.1 | 5,257.1 | 30.7 | 105.4 | -13.33 | -225.5 | -4,183.9 | 2,811.9 | 2,693.3 | 118.68 | 23.693 | |
| 5,511.8 | 5,267.6 | 5,268.6 | 5,268.6 | 30.7 | 105.6 | -13.33 | -225.5 | -4,183.9 | 2,809.2 | 2,690.1 | 119.03 | 23.600 | |
| 5,600.0 | 5,353.5 | 5,354.5 | 5,354.5 | 31.1 | 107.3 | -13.33 | -225.5 | -4,183.9 | 2,789.9 | 2,668.3 | 121.62 | 22.940 | |
| 5,610.2 | 5,363.5 | 5,364.5 | 5,364.5 | 31.1 | 107.5 | -13.33 | -225.5 | -4,183.9 | 2,787.8 | 2,665.9 | 121.91 | 22.868 | |
| 5,700.0 | 5,451.6 | 5,452.6 | 5,452.6 | 31.4 | 109.3 | -13.34 | -225.5 | -4,183.9 | 2,771.1 | 2,646.7 | 124.44 | 22.269 | |
| 5,708.6 | 5,460.2 | 5,461.2 | 5,461.2 | 31.4 | 109.5 | -13.34 | -225.5 | -4,183.9 | 2,769.7 | 2,645.0 | 124.67 | 22.215 | |
| 5,800.0 | 5,550.4 | 5,551.4 | 5,551.4 | 31.7 | 111.3 | -13.34 | -225.5 | -4,183.9 | 2,755.7 | 2,628.6 | 127.13 | 21.676 | |
| 5,807.1 | 5,557.4 | 5,558.4 | 5,558.4 | 31.7 | 111.4 | -13.34 | -225.5 | -4,183.9 | 2,754.8 | 2,627.4 | 127.32 | 21.637 | |
| 5,900.0 | 5,649.6 | 5,650.6 | 5,650.6 | 31.9 | 113.3 | -13.34 | -225.5 | -4,183.9 | 2,743.7 | 2,614.0 | 129.70 | 21.154 | |
| 5,905.5 | 5,655.1 | 5,656.1 | 5,656.1 | 31.9 | 113.4 | -13.34 | -225.5 | -4,183.9 | 2,743.1 | 2,613.3 | 129.84 | 21.128 | |
| 6,000.0 | 5,749.2 | 5,750.2 | 5,750.2 | 32.1 | 115.3 | -13.35 | -225.5 | -4,183.9 | 2,735.1 | 2,602.9 | 132.12 | 20.701 | |
| 6,003.9 | 5,753.1 | 5,754.1 | 5,754.1 | 32.1 | 115.3 | -13.35 | -225.5 | -4,183.9 | 2,734.8 | 2,602.6 | 132.22 | 20.684 | |
| 6,100.0 | 5,849.1 | 5,850.1 | 5,850.1 | 32.3 | 117.3 | -13.35 | -225.5 | -4,183.9 | 2,729.8 | 2,595.4 | 134.40 | 20.312 | |
| 6,102.3 | 5,851.4 | 5,852.4 | 5,852.4 | 32.3 | 117.3 | -13.35 | -225.5 | -4,183.9 | 2,729.7 | 2,595.3 | 134.45 | 20.303 | |
| 6,200.8 | 5,949.8 | 5,950.8 | 5,950.8 | 32.4 | 119.3 | -13.35 | -225.5 | -4,183.9 | 2,727.9 | 2,591.4 | 136.53 | 19.981 | |
| 6,204.9 | 5,953.9 | 5,954.9 | 5,954.9 | 32.4 | 119.4 | -97.79 | -225.5 | -4,183.9 | 2,727.9 | 2,576.8 | 151.15 | 18.048 | |
| 6,234.9 | 5,983.9 | 5,984.9 | 5,984.9 | 32.4 | 120.0 | -97.79 | -225.5 | -4,183.9 | 2,727.9 | 2,576.2 | 151.78 | 17.973 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 6,000.0 | 6,000.0 | 32.4 | 120.3 | 172.21 | -225.5 | -4,183.9 | 2,728.1 | 2,590.6 | 137.48 | 19.844 | |
| 6,299.2 | 6,048.2 | 6,049.2 | 6,049.2 | 32.4 | 121.3 | 172.19 | -225.5 | -4,183.9 | 2,730.8 | 2,593.0 | 137.77 | 19.822 | |
| 6,300.0 | 6,048.9 | 6,049.9 | 6,049.9 | 32.4 | 121.3 | 172.19 | -225.5 | -4,183.9 | 2,730.9 | 2,593.1 | 137.77 | 19.822 | |
| 6,350.0 | 6,098.5 | 6,099.5 | 6,099.5 | 32.4 | 122.3 | 172.14 | -225.5 | -4,183.9 | 2,737.1 | 2,599.7 | 137.39 | 19.922 | |
| 6,397.6 | 6,145.3 | 6,146.3 | 6,146.3 | 32.3 | 123.2 | 172.06 | -225.5 | -4,183.9 | 2,746.2 | 2,609.8 | 136.41 | 20.132 | |
| 6,400.0 | 6,147.6 | 6,148.6 | 6,148.6 | 32.3 | 123.3 | 172.06 | -225.5 | -4,183.9 | 2,746.7 | 2,610.4 | 136.34 | 20.146 | |
| 6,450.0 | 6,195.8 | 6,196.8 | 6,196.8 | 32.2 | 124.3 | 171.94 | -225.5 | -4,183.9 | 2,759.7 | 2,625.1 | 134.62 | 20.500 | |
| 6,496.0 | 6,239.3 | 6,240.3 | 6,240.3 | 32.1 | 125.1 | 171.81 | -225.5 | -4,183.9 | 2,774.6 | 2,642.2 | 132.44 | 20.951 | |
| 6,500.0 | 6,243.0 | 6,244.0 | 6,244.0 | 32.1 | 125.2 | 171.80 | -225.5 | -4,183.9 | 2,776.0 | 2,643.8 | 132.22 | 20.995 | |
| 6,550.0 | 6,289.0 | 6,290.0 | 6,290.0 | 32.0 | 126.1 | 171.61 | -225.5 | -4,183.9 | 2,795.5 | 2,666.4 | 129.17 | 21.642 | |
| 6,594.5 | 6,328.6 | 6,329.6 | 6,329.6 | 31.8 | 126.9 | 171.41 | -225.5 | -4,183.9 | 2,815.6 | 2,689.6 | 125.92 | 22.359 | |
| 6,600.0 | 6,333.4 | 6,334.4 | 6,334.4 | 31.8 | 127.0 | 171.38 | -225.5 | -4,183.9 | 2,818.2 | 2,692.7 | 125.49 | 22.458 | |
| 6,650.0 | 6,376.2 | 6,377.2 | 6,377.2 | 31.7 | 127.9 | 171.09 | -225.5 | -4,183.9 | 2,843.9 | 2,722.7 | 121.20 | 23.465 | |
| 6,692.9 | 6,411.3 | 6,412.3 | 6,412.3 | 31.6 | 128.6 | 170.80 | -225.5 | -4,183.9 | 2,868.3 | 2,751.2 | 117.08 | 24.499 | |
| 6,700.0 | 6,417.0 | 6,418.0 | 6,418.0 | 31.5 | 128.7 | 170.74 | -225.5 | -4,183.9 | 2,872.5 | 2,756.1 | 116.36 | 24.687 | |
| 6,750.0 | 6,455.7 | 6,456.7 | 6,456.7 | 31.4 | 129.5 | 170.32 | -225.5 | -4,183.9 | 2,903.8 | 2,792.8 | 111.03 | 26.154 | |
| 6,791.3 | 6,486.0 | 6,487.0 | 6,487.0 | 31.3 | 130.1 | 169.89 | -225.5 | -4,183.9 | 2,931.7 | 2,825.4 | 106.31 | 27.577 | |
| 6,800.0 | 6,492.2 | 6,493.2 | 6,493.2 | 31.3 | 130.2 | 169.79 | -225.5 | -4,183.9 | 2,937.8 | 2,832.5 | 105.29 | 27.902 | |
| 6,850.0 | 6,526.1 | 6,527.1 | 6,527.1 | 31.2 | 130.9 | 169.14 | -225.5 | -4,183.9 | 2,974.2 | 2,874.9 | 99.27 | 29.961 | |
| 6,889.7 | 6,551.2 | 6,552.2 | 6,552.2 | 31.2 | 131.4 | 168.51 | -225.5 | -4,183.9 | 3,004.7 | 2,910.4 | 94.39 | 31.835 | |
| 6,900.0 | 6,557.4 | 6,558.4 | 6,558.4 | 31.2 | 131.5 | 168.33 | -225.5 | -4,183.9 | 3,012.9 | 2,919.7 | 93.13 | 32.352 | |
| 6,950.0 | 6,586.0 | 6,587.0 | 6,587.0 | 31.1 | 132.1 | 167.30 | -225.5 | -4,183.9 | 3,053.6 | 2,966.5 | 87.10 | 35.058 | |
| 6,988.2 | 6,605.8 | 6,606.8 | 6,606.8 | 31.2 | 132.5 | 166.32 | -225.5 | -4,183.9 | 3,086.0 | 3,003.2 | 82.80 | 37.270 | |
| 7,000.0 | 6,611.5 | 6,612.5 | 6,612.5 | 31.2 | 132.6 | 165.97 | -225.5 | -4,183.9 | 3,096.2 | 3,014.7 | 81.56 | 37.963 | |
| 7,050.0 | 6,634.1 | 6,635.1 | 6,635.1 | 31.2 | 133.1 | 164.21 | -225.5 | -4,183.9 | 3,140.6 | 3,063.5 | 77.09 | 40.740 | |
| 7,086.6 | 6,648.6 | 6,649.6 | 6,649.6 | 31.3 | 133.4 | 162.51 | -225.5 | -4,183.9 | 3,173.9 | 3,098.9 | 75.05 | 42.292 | |
| 7,100.0 | 6,653.4 | 6,654.4 | 6,654.4 | 31.4 | 133.5 | 161.78 | -225.5 | -4,183.9 | 3,186.3 | 3,111.6 | 74.68 | 42.664 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,670.5 | 6,670.5 | 31.6 | 133.8 | 158.26 | -225.5 | -4,183.9 | 3,233.3 | 3,157.3 | 76.04 | 42.523 | |
| 7,185.0 | 6,678.8 | 6,679.8 | 6,679.8 | 31.7 | 134.0 | 154.75 | -225.5 | -4,183.9 | 3,266.9 | 3,186.3 | 80.62 | 40.521 | |
| 7,200.0 | 6,682.3 | 6,683.3 | 6,683.3 | 31.8 | 134.0 | 152.86 | -225.5 | -4,183.9 | 3,281.4 | 3,197.5 | 83.84 | 39.138 | |
| 7,250.0 | 6,691.6 | 6,692.6 | 6,692.6 | 32.1 | 134.2 | 143.80 | -225.5 | -4,183.9 | 3,330.2 | 3,228.2 | 102.01 | 32.645 | |
| 7,283.4 | 6,696.0 | 6,697.0 | 6,697.0 | 32.3 | 134.3 | 133.87 | -225.5 | -4,183.9 | 3,363.1 | 3,241.0 | 122.08 | 27.548 | |
| 7,300.0 | 6,697.5 | 6,698.5 | 6,698.5 | 32.4 | 134.3 | 127.12 | -225.5 | -4,183.9 | 3,379.5 | 3,245.2 | 134.27 | 25.169 | |
| 7,350.0 | 6,699.9 | 6,700.9 | 6,700.9 | 32.8 | 134.4 | 97.14 | -225.5 | -4,183.9 | 3,429.1 | 3,263.2 | 165.95 | 20.664 | |
| 7,364.4 | 6,700.0 | 6,701.0 | 6,701.0 | 32.9 | 134.4 | 86.56 | -225.5 | -4,183.9 | 3,443.4 | 3,276.5 | 166.93 | 20.628 | |
| 7,381.9 | 6,699.9 | 6,700.9 | 6,700.9 | 33.1 | 134.4 | 86.54 | -225.5 | -4,183.9 | 3,460.8 | 3,293.8 | 167.08 | 20.714 | |
| 7,400.0 | 6,699.8 | 6,700.8 | 6,700.8 | 33.2 | 134.4 | 86.53 | -225.5 | -4,183.9 | 3,478.8 | 3,311.6 | 167.23 | 20.803 | |
| 7,480.3 | 6,699.2 | 6,700.2 | 6,700.2 | 34.0 | 134.4 | 86.45 | -225.5 | -4,183.9 | 3,558.7 | 3,390.7 | 168.01 | 21.181 | |
| 7,500.0 | 6,699.1 | 6,700.1 | 6,700.1 | 34.2 | 134.4 | 86.43 | -225.5 | -4,183.9 | 3,578.3 | 3,410.1 | 168.20 | 21.273 | |
| 7,578.7 | 6,698.6 | 6,699.6 | 6,699.6 | 35.2 | 134.4 | 86.35 | -225.5 | -4,183.9 | 3,656.6 | 3,487.5 | 169.13 | 21.621 | |
| 7,600.0 | 6,698.5 | 6,699.5 | 6,699.5 | 35.4 | 134.4 | 86.33 | -225.5 | -4,183.9 | 3,677.8 | 3,508.4 | 169.38 | 21.714 | |
| 7,677.1 | 6,698.0 | 6,699.0 | 6,699.0 | 36.5 | 134.3 | 86.25 | -225.5 | -4,183.9 | 3,754.5 | 3,584.1 | 170.41 | 22.032 | |
| 7,700.0 | 6,697.8 | 6,698.8 | 6,698.8 | 36.8 | 134.3 | 86.22 | -225.5 | -4,183.9 | 3,777.3 | 3,606.6 | 170.72 | 22.125 | |
| 7,775.6 | 6,697.3 | 6,698.3 | 6,698.3 | 38.0 | 134.3 | 86.15 | -225.5 | -4,183.9 | 3,852.5 | 3,680.6 | 171.86 | 22.417 | |
| 7,800.0 | 6,697.2 | 6,698.2 | 6,698.2 | 38.3 | 134.3 | 86.12 | -225.5 | -4,183.9 | 3,876.8 | 3,704.6 | 172.22 | 22.510 | |
| 7,874.0 | 6,696.7 | 6,697.7 | 6,697.7 | 39.6 | 134.3 | 86.05 | -225.5 | -4,183.9 | 3,950.5 | 3,777.0 | 173.43 | 22.778 | |
| 7,900.0 | 6,696.5 | 6,697.5 | 6,697.5 | 40.0 | 134.3 | 86.02 | -225.5 | -4,183.9 | 3,976.4 | 3,802.5 | 173.86 | 22.871 | |
| 7,972.4 | 6,696.1 | 6,697.1 | 6,697.1 | 41.3 | 134.3 | 85.95 | -225.5 | -4,183.9 | 4,048.5 | 3,873.3 | 175.14 | 23.116 | |
| 8,000.0 | 6,695.9 | 6,696.9 | 6,696.9 | 41.8 | 134.3 | 85.92 | -225.5 | -4,183.9 | 4,075.9 | 3,900.3 | 175.62 | 23.209 | |
| 8,070.8 | 6,695.4 | 6,696.4 | 6,696.4 | 43.1 | 134.3 | 85.85 | -225.5 | -4,183.9 | 4,146.5 | 3,969.6 | 176.94 | 23.434 | |
| 8,100.0 | 6,695.2 | 6,696.2 | 6,696.2 | 43.7 | 134.3 | 85.82 | -225.5 | -4,183.9 | 4,175.5 | 3,998.0 | 177.49 | 23.526 | |
| 8,169.3 | 6,694.8 | 6,695.8 | 6,695.8 | 45.1 | 134.3 | 85.76 | -225.5 | -4,183.9 | 4,244.5 | 4,065.7 | 178.84 | 23.733 | |
| 8,200.0 | 6,694.6 | 6,695.6 | 6,695.6 | 45.7 | 134.3 | 85.72 | -225.5 | -4,183.9 | 4,275.1 | 4,095.7 | 179.44 | 23.825 | |
| 8,267.7 | 6,694.1 | 6,695.1 | 6,695.1 | 47.1 | 134.3 | 85.66 | -225.5 | -4,183.9 | 4,342.6 | 4,161.8 | 180.82 | 24.016 | |
| 8,300.0 | 6,693.9 | 6,694.9 | 6,694.9 | 47.8 | 134.3 | 85.62 | -225.5 | -4,183.9 | 4,374.8 | 4,193.3 | 181.48 | 24.106 | |
| 8,366.1 | 6,693.5 | 6,694.5 | 6,694.5 | 49.2 | 134.3 | 85.56 | -225.5 | -4,183.9 | 4,440.7 | 4,257.8 | 182.88 | 24.282 | |
| 8,400.0 | 6,693.3 | 6,694.3 | 6,694.3 | 49.9 | 134.3 | 85.52 | -225.5 | -4,183.9 | 4,474.4 | 4,290.8 | 183.59 | 24.372 | |
| 8,464.5 | 6,692.9 | 6,693.9 | 6,693.9 | 51.4 | 134.2 | 85.46 | -225.5 | -4,183.9 | 4,538.8 | 4,353.8 | 184.99 | 24.535 | |
| 8,500.0 | 6,692.6 | 6,693.6 | 6,693.6 | 52.1 | 134.2 | 85.42 | -225.5 | -4,183.9 | 4,574.1 | 4,388.3 | 185.76 | 24.624 | |
| 8,563.0 | 6,692.2 | 6,693.2 | 6,693.2 | 53.6 | 134.2 | 85.36 | -225.5 | -4,183.9 | 4,636.9 | 4,449.7 | 187.16 | 24.775 | |
| 8,600.0 | 6,692.0 | 6,693.0 | 6,693.0 | 54.4 | 134.2 | 85.32 | -225.5 | -4,183.9 | 4,673.8 | 4,485.8 | 187.98 | 24.863 | |
| 8,661.4 | 6,691.6 | 6,692.6 | 6,692.6 | 55.8 | 134.2 | 85.26 | -225.5 | -4,183.9 | 4,735.0 | 4,545.6 | 189.38 | 25.003 | |
| 8,700.0 | 6,691.3 | 6,692.3 | 6,692.3 | 56.7 | 134.2 | 85.22 | -225.5 | -4,183.9 | 4,773.5 | 4,583.2 | 190.25 | 25.090 | |
| 8,759.8 | 6,690.9 | 6,691.9 | 6,691.9 | 58.1 | 134.2 | 85.17 | -225.5 | -4,183.9 | 4,833.1 | 4,641.5 | 191.64 | 25.220 | |
| 8,800.0 | 6,690.7 | 6,691.7 | 6,691.7 | 59.1 | 134.2 | 85.13 | -225.5 | -4,183.9 | 4,873.2 | 4,680.6 | 192.57 | 25.306 | |
| 8,858.2 | 6,690.3 | 6,691.3 | 6,691.3 | 60.5 | 134.2 | 85.07 | -225.5 | -4,183.9 | 4,931.2 | 4,737.3 | 193.93 | 25.427 | |
| 8,900.0 | 6,690.0 | 6,691.0 | 6,691.0 | 61.5 | 134.2 | 85.03 | -225.5 | -4,183.9 | 4,972.9 | 4,778.0 | 194.91 | 25.513 | |
| 8,956.7 | 6,689.7 | 6,690.7 | 6,690.7 | 62.9 | 134.2 | 84.97 | -225.5 | -4,183.9 | 5,029.4 | 4,833.1 | 196.26 | 25.626 | |
| 9,000.0 | 6,689.4 | 6,690.4 | 6,690.4 | 63.9 | 134.2 | 84.93 | -225.5 | -4,183.9 | 5,072.6 | 4,875.3 | 197.30 | 25.711 | |
| 9,055.1 | 6,689.0 | 6,690.0 | 6,690.0 | 65.3 | 134.2 | 84.87 | -225.5 | -4,183.9 | 5,127.6 | 4,928.9 | 198.62 | 25.816 | |
| 9,100.0 | 6,688.7 | 6,689.7 | 6,689.7 | 66.4 | 134.2 | 84.83 | -225.5 | -4,183.9 | 5,172.3 | 4,972.6 | 199.70 | 25.900 | |
| 9,153.5 | 6,688.4 | 6,689.4 | 6,689.4 | 67.7 | 134.2 | 84.77 | -225.5 | -4,183.9 | 5,225.7 | 5,024.7 | 201.01 | 25.998 | |
| 9,200.0 | 6,688.1 | 6,689.1 | 6,689.1 | 68.9 | 134.1 | 84.73 | -225.5 | -4,183.9 | 5,272.1 | 5,069.9 | 202.14 | 26.082 | |
| 9,251.9 | 6,687.8 | 6,688.8 | 6,688.8 | 70.2 | 134.1 | 84.67 | -225.5 | -4,183.9 | 5,323.9 | 5,120.5 | 203.42 | 26.173 | |
| 9,300.0 | 6,687.4 | 6,688.4 | 6,688.4 | 71.4 | 134.1 | 84.63 | -225.5 | -4,183.9 | 5,371.8 | 5,167.2 | 204.60 | 26.256 | |
| 9,350.4 | 6,687.1 | 6,688.1 | 6,688.1 | 72.7 | 134.1 | 84.58 | -225.5 | -4,183.9 | 5,422.1 | 5,216.3 | 205.84 | 26.341 | |
| 9,400.0 | 6,686.8 | 6,687.8 | 6,687.8 | 73.9 | 134.1 | 84.53 | -225.5 | -4,183.9 | 5,471.6 | 5,264.5 | 207.07 | 26.424 | |
| 9,448.8 | 6,686.5 | 6,687.5 | 6,687.5 | 75.2 | 134.1 | 84.48 | -225.5 | -4,183.9 | 5,520.3 | 5,312.0 | 208.29 | 26.503 | |
| 9,500.0 | 6,686.1 | 6,687.1 | 6,687.1 | 76.5 | 134.1 | 84.43 | -225.5 | -4,183.9 | 5,571.4 | 5,361.8 | 209.57 | 26.585 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #22-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,686.8 | 6,686.8 | 77.7 | 134.1 | 84.38 | -225.5 | -4,183.9 | 5,618.5 | 5,407.8 | 210.75 | 26.659 | |
| 9,600.0 | 6,685.5 | 6,686.5 | 6,686.5 | 79.0 | 134.1 | 84.33 | -225.5 | -4,183.9 | 5,671.2 | 5,459.1 | 212.08 | 26.741 | |
| 9,645.6 | 6,685.2 | 6,686.2 | 6,686.2 | 80.2 | 134.1 | 84.28 | -225.5 | -4,183.9 | 5,716.7 | 5,503.5 | 213.23 | 26.810 | |
| 9,700.0 | 6,684.8 | 6,685.8 | 6,685.8 | 81.6 | 134.1 | 84.23 | -225.5 | -4,183.9 | 5,771.0 | 5,556.4 | 214.60 | 26.891 | |
| 9,744.1 | 6,684.6 | 6,685.6 | 6,685.6 | 82.8 | 134.1 | 84.18 | -225.5 | -4,183.9 | 5,814.9 | 5,599.2 | 215.72 | 26.956 | |
| 9,800.0 | 6,684.2 | 6,685.2 | 6,685.2 | 84.2 | 134.1 | 84.13 | -225.5 | -4,183.9 | 5,870.7 | 5,653.6 | 217.14 | 27.037 | |
| 9,842.5 | 6,683.9 | 6,684.9 | 6,684.9 | 85.3 | 134.1 | 84.09 | -225.5 | -4,183.9 | 5,913.2 | 5,694.9 | 218.22 | 27.097 | |
| 9,900.0 | 6,683.5 | 6,684.5 | 6,684.5 | 86.8 | 134.1 | 84.03 | -225.5 | -4,183.9 | 5,970.6 | 5,750.9 | 219.69 | 27.177 | |
| 9,940.9 | 6,683.3 | 6,684.3 | 6,684.3 | 87.9 | 134.1 | 83.99 | -225.5 | -4,183.9 | 6,011.4 | 5,790.7 | 220.74 | 27.233 | |
| 10,000.0 | 6,682.9 | 6,683.9 | 6,683.9 | 89.5 | 134.0 | 83.93 | -225.5 | -4,183.9 | 6,070.4 | 5,848.1 | 222.25 | 27.313 | |
| 10,039.3 | 6,682.6 | 6,683.6 | 6,683.6 | 90.5 | 134.0 | 83.89 | -225.5 | -4,183.9 | 6,109.6 | 5,886.4 | 223.26 | 27.366 | |
| 10,100.0 | 6,682.2 | 6,683.2 | 6,683.2 | 92.1 | 134.0 | 83.83 | -225.5 | -4,183.9 | 6,170.2 | 5,945.4 | 224.82 | 27.445 | |
| 10,137.8 | 6,682.0 | 6,683.0 | 6,683.0 | 93.1 | 134.0 | 83.79 | -225.5 | -4,183.9 | 6,207.9 | 5,982.1 | 225.79 | 27.494 | |
| 10,200.0 | 6,681.6 | 6,682.6 | 6,682.6 | 94.8 | 134.0 | 83.73 | -225.5 | -4,183.9 | 6,270.0 | 6,042.6 | 227.39 | 27.573 | |
| 10,236.2 | 6,681.4 | 6,682.4 | 6,682.4 | 95.7 | 134.0 | 83.69 | -225.5 | -4,183.9 | 6,306.1 | 6,077.8 | 228.33 | 27.618 | |
| 10,300.0 | 6,680.9 | 6,681.9 | 6,681.9 | 97.4 | 134.0 | 83.63 | -225.5 | -4,183.9 | 6,369.8 | 6,139.8 | 229.98 | 27.697 | |
| 10,334.6 | 6,680.7 | 6,681.7 | 6,681.7 | 98.3 | 134.0 | 83.60 | -225.5 | -4,183.9 | 6,404.4 | 6,173.5 | 230.88 | 27.739 | |
| 10,400.0 | 6,680.3 | 6,681.3 | 6,681.3 | 100.1 | 134.0 | 83.53 | -225.5 | -4,183.9 | 6,469.7 | 6,237.1 | 232.57 | 27.818 | |
| 10,433.0 | 6,680.1 | 6,681.1 | 6,681.1 | 101.0 | 134.0 | 83.50 | -225.5 | -4,183.9 | 6,502.7 | 6,269.2 | 233.43 | 27.857 | |
| 10,500.0 | 6,679.7 | 6,680.7 | 6,680.7 | 102.8 | 134.0 | 83.43 | -225.5 | -4,183.9 | 6,569.5 | 6,334.3 | 235.17 | 27.935 | |
| 10,531.5 | 6,679.4 | 6,680.4 | 6,680.4 | 103.6 | 134.0 | 83.40 | -225.5 | -4,183.9 | 6,600.9 | 6,364.9 | 235.99 | 27.971 | |
| 10,600.0 | 6,679.0 | 6,680.0 | 6,680.0 | 105.4 | 134.0 | 83.33 | -225.5 | -4,183.9 | 6,669.3 | 6,431.6 | 237.77 | 28.049 | |
| 10,629.9 | 6,678.8 | 6,679.8 | 6,679.8 | 106.2 | 134.0 | 83.30 | -225.5 | -4,183.9 | 6,699.2 | 6,460.6 | 238.55 | 28.083 | |
| 10,700.0 | 6,678.4 | 6,679.4 | 6,679.4 | 108.1 | 134.0 | 83.23 | -225.5 | -4,183.9 | 6,769.2 | 6,528.8 | 240.38 | 28.160 | |
| 10,728.3 | 6,678.2 | 6,679.2 | 6,679.2 | 108.9 | 134.0 | 83.21 | -225.5 | -4,183.9 | 6,797.5 | 6,556.3 | 241.12 | 28.191 | |
| 10,800.0 | 6,677.7 | 6,678.7 | 6,678.7 | 110.8 | 133.9 | 83.14 | -225.5 | -4,183.9 | 6,869.0 | 6,626.0 | 242.99 | 28.269 | |
| 10,826.7 | 6,677.5 | 6,678.5 | 6,678.5 | 111.5 | 133.9 | 83.11 | -225.5 | -4,183.9 | 6,895.7 | 6,652.1 | 243.69 | 28.297 | |
| 10,900.0 | 6,677.1 | 6,678.1 | 6,678.1 | 113.5 | 133.9 | 83.04 | -225.5 | -4,183.9 | 6,968.9 | 6,723.3 | 245.61 | 28.374 | |
| 10,925.2 | 6,676.9 | 6,677.9 | 6,677.9 | 114.2 | 133.9 | 83.01 | -225.5 | -4,183.9 | 6,994.0 | 6,747.8 | 246.27 | 28.400 | |
| 11,000.0 | 6,676.4 | 6,677.4 | 6,677.4 | 116.2 | 133.9 | 82.94 | -225.5 | -4,183.9 | 7,068.7 | 6,820.5 | 248.23 | 28.477 | |
| 11,023.6 | 6,676.3 | 6,677.3 | 6,677.3 | 116.8 | 133.9 | 82.91 | -225.5 | -4,183.9 | 7,092.3 | 6,843.5 | 248.85 | 28.501 | |
| 11,100.0 | 6,675.8 | 6,676.8 | 6,676.8 | 118.9 | 133.9 | 82.84 | -225.5 | -4,183.9 | 7,168.6 | 6,917.8 | 250.85 | 28.577 | |
| 11,122.0 | 6,675.6 | 6,676.6 | 6,676.6 | 119.5 | 133.9 | 82.82 | -225.5 | -4,183.9 | 7,190.6 | 6,939.2 | 251.43 | 28.599 | |
| 11,200.0 | 6,675.1 | 6,676.1 | 6,676.1 | 121.6 | 133.9 | 82.74 | -225.5 | -4,183.9 | 7,268.5 | 7,015.0 | 253.48 | 28.675 | |
| 11,220.4 | 6,675.0 | 6,676.0 | 6,676.0 | 122.2 | 133.9 | 82.72 | -225.5 | -4,183.9 | 7,288.9 | 7,034.9 | 254.01 | 28.695 | |
| 11,300.0 | 6,674.5 | 6,675.5 | 6,675.5 | 124.3 | 133.9 | 82.64 | -225.5 | -4,183.9 | 7,368.3 | 7,112.2 | 256.10 | 28.771 | |
| 11,318.9 | 6,674.3 | 6,675.3 | 6,675.3 | 124.9 | 133.9 | 82.62 | -225.5 | -4,183.9 | 7,387.2 | 7,130.6 | 256.60 | 28.789 | |
| 11,400.0 | 6,673.8 | 6,674.8 | 6,674.8 | 127.1 | 133.9 | 82.54 | -225.5 | -4,183.9 | 7,468.2 | 7,209.5 | 258.74 | 28.864 | |
| 11,417.3 | 6,673.7 | 6,674.7 | 6,674.7 | 127.5 | 133.9 | 82.52 | -225.5 | -4,183.9 | 7,485.5 | 7,226.3 | 259.19 | 28.880 | |
| 11,500.0 | 6,673.2 | 6,674.2 | 6,674.2 | 129.8 | 133.8 | 82.44 | -225.5 | -4,183.9 | 7,568.1 | 7,306.7 | 261.37 | 28.956 | |
| 11,515.7 | 6,673.1 | 6,674.1 | 6,674.1 | 130.2 | 133.8 | 82.43 | -225.5 | -4,183.9 | 7,583.8 | 7,322.0 | 261.78 | 28.970 | |
| 11,600.0 | 6,672.5 | 6,673.5 | 6,673.5 | 132.5 | 133.8 | 82.34 | -225.5 | -4,183.9 | 7,668.0 | 7,404.0 | 264.00 | 29.045 | |
| 11,614.1 | 6,672.4 | 6,673.4 | 6,673.4 | 132.9 | 133.8 | 82.33 | -225.5 | -4,183.9 | 7,682.1 | 7,417.7 | 264.37 | 29.058 | |
| 11,700.0 | 6,671.9 | 6,672.9 | 6,672.9 | 135.3 | 133.8 | 82.24 | -225.5 | -4,183.9 | 7,767.9 | 7,501.2 | 266.64 | 29.133 | |
| 11,712.6 | 6,671.8 | 6,672.8 | 6,672.8 | 135.6 | 133.8 | 82.23 | -225.5 | -4,183.9 | 7,780.4 | 7,513.5 | 266.97 | 29.144 | |
| 11,800.0 | 6,671.2 | 6,672.2 | 6,672.2 | 138.0 | 133.8 | 82.15 | -225.5 | -4,183.9 | 7,867.7 | 7,598.5 | 269.27 | 29.218 | |
| 11,811.0 | 6,671.1 | 6,672.1 | 6,672.1 | 138.3 | 133.8 | 82.14 | -225.5 | -4,183.9 | 7,878.7 | 7,609.2 | 269.56 | 29.228 | |
| 11,900.0 | 6,670.6 | 6,671.6 | 6,671.6 | 140.7 | 133.8 | 82.05 | -225.5 | -4,183.9 | 7,967.6 | 7,695.7 | 271.91 | 29.302 | |
| 11,909.4 | 6,670.5 | 6,671.5 | 6,671.5 | 141.0 | 133.8 | 82.04 | -225.5 | -4,183.9 | 7,977.0 | 7,704.9 | 272.16 | 29.310 | |
| 11,987.2 | 6,670.0 | 6,671.0 | 6,671.0 | 143.1 | 133.8 | 81.96 | -225.5 | -4,183.9 | 8,054.8 | 7,780.5 | 274.21 | 29.374 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -171.45 | -1,690.4 | -254.0 | 1,709.4 | | | | |
| 98.4 | 98.4 | 101.2 | 101.2 | 0.1 | 0.1 | -171.45 | -1,690.3 | -254.1 | 1,709.3 | 1,709.1 | 0.19 | 8,891.119 | |
| 100.0 | 100.0 | 102.7 | 102.7 | 0.1 | 0.1 | -171.45 | -1,690.3 | -254.1 | 1,709.3 | 1,709.1 | 0.20 | 8,715.840 | |
| 196.8 | 196.8 | 198.7 | 198.7 | 0.3 | 0.2 | -171.45 | -1,690.2 | -254.2 | 1,709.2 | 1,708.6 | 0.54 | 3,149.429 | |
| 200.0 | 200.0 | 201.9 | 201.9 | 0.3 | 0.2 | -171.45 | -1,690.2 | -254.2 | 1,709.2 | 1,708.6 | 0.55 | 3,090.382 | |
| 295.3 | 295.3 | 297.7 | 297.7 | 0.5 | 0.3 | -171.43 | -1,690.0 | -254.6 | 1,709.0 | 1,708.2 | 0.85 | 2,016.803 | |
| 300.0 | 300.0 | 302.4 | 302.4 | 0.5 | 0.3 | -171.43 | -1,690.0 | -254.7 | 1,709.0 | 1,708.2 | 0.86 | 1,983.377 | |
| 393.7 | 393.7 | 397.0 | 397.0 | 0.8 | 0.4 | -171.41 | -1,689.7 | -255.4 | 1,708.9 | 1,707.7 | 1.14 | 1,500.653 | |
| 400.0 | 400.0 | 403.3 | 403.3 | 0.8 | 0.4 | -171.40 | -1,689.7 | -255.4 | 1,708.9 | 1,707.7 | 1.16 | 1,476.886 | |
| 492.1 | 492.1 | 495.9 | 495.9 | 1.0 | 0.4 | -171.38 | -1,689.4 | -256.1 | 1,708.7 | 1,707.3 | 1.42 | 1,202.616 | |
| 500.0 | 500.0 | 503.9 | 503.9 | 1.0 | 0.5 | -171.38 | -1,689.3 | -256.2 | 1,708.7 | 1,707.2 | 1.44 | 1,183.974 | |
| 590.5 | 590.5 | 596.2 | 596.2 | 1.2 | 0.5 | -171.35 | -1,689.0 | -257.0 | 1,708.4 | 1,706.7 | 1.70 | 1,006.159 | |
| 600.0 | 600.0 | 605.7 | 605.7 | 1.2 | 0.5 | -171.34 | -1,688.9 | -257.1 | 1,708.4 | 1,706.7 | 1.72 | 990.814 | |
| 689.0 | 689.0 | 693.3 | 693.2 | 1.4 | 0.6 | -171.31 | -1,688.5 | -258.0 | 1,708.1 | 1,706.1 | 1.97 | 867.265 | |
| 700.0 | 700.0 | 704.2 | 704.1 | 1.4 | 0.6 | -171.31 | -1,688.5 | -258.1 | 1,708.1 | 1,706.1 | 2.00 | 854.107 | |
| 787.4 | 787.4 | 791.0 | 790.9 | 1.6 | 0.6 | -171.28 | -1,688.1 | -259.0 | 1,707.9 | 1,705.7 | 2.24 | 762.795 | |
| 800.0 | 800.0 | 803.5 | 803.4 | 1.7 | 0.6 | -171.27 | -1,688.1 | -259.1 | 1,707.9 | 1,705.6 | 2.27 | 751.240 | |
| 885.8 | 885.8 | 888.7 | 888.7 | 1.9 | 0.7 | -171.24 | -1,687.8 | -260.0 | 1,707.7 | 1,705.2 | 2.51 | 681.330 | |
| 900.0 | 900.0 | 902.9 | 902.9 | 1.9 | 0.7 | -171.24 | -1,687.8 | -260.1 | 1,707.7 | 1,705.1 | 2.54 | 671.020 | |
| 984.2 | 984.2 | 989.2 | 989.1 | 2.1 | 0.7 | -171.21 | -1,687.4 | -261.0 | 1,707.5 | 1,704.7 | 2.77 | 615.714 | |
| 1,000.0 | 1,000.0 | 1,005.3 | 1,005.3 | 2.1 | 0.7 | -171.20 | -1,687.3 | -261.2 | 1,707.4 | 1,704.6 | 2.82 | 606.385 | |
| 1,082.7 | 1,082.7 | 1,090.3 | 1,090.3 | 2.3 | 0.7 | -86.78 | -1,686.9 | -262.1 | 1,707.1 | 1,704.1 | 2.97 | 574.881 | |
| 1,100.0 | 1,100.0 | 1,108.2 | 1,108.2 | 2.3 | 0.8 | -86.79 | -1,686.8 | -262.3 | 1,707.0 | 1,703.9 | 3.01 | 566.605 | |
| 1,181.1 | 1,181.0 | 1,192.8 | 1,192.8 | 2.5 | 0.8 | -86.91 | -1,686.1 | -263.3 | 1,706.3 | 1,703.1 | 3.21 | 531.447 | |
| 1,200.0 | 1,199.8 | 1,211.8 | 1,211.7 | 2.5 | 0.8 | -86.94 | -1,685.9 | -263.6 | 1,706.1 | 1,702.8 | 3.26 | 523.916 | |
| 1,279.5 | 1,279.1 | 1,289.9 | 1,289.9 | 2.7 | 0.8 | -87.14 | -1,685.3 | -264.6 | 1,705.2 | 1,701.7 | 3.46 | 492.945 | |
| 1,300.0 | 1,299.5 | 1,310.2 | 1,310.2 | 2.8 | 0.8 | -87.21 | -1,685.1 | -264.8 | 1,705.0 | 1,701.4 | 3.51 | 485.553 | |
| 1,377.9 | 1,376.9 | 1,388.2 | 1,388.1 | 3.0 | 0.9 | -87.50 | -1,684.4 | -265.8 | 1,704.0 | 1,700.3 | 3.73 | 457.240 | |
| 1,400.0 | 1,398.7 | 1,410.2 | 1,410.1 | 3.0 | 0.9 | -87.60 | -1,684.3 | -266.1 | 1,703.7 | 1,700.0 | 3.79 | 449.813 | |
| 1,476.4 | 1,474.2 | 1,485.9 | 1,485.8 | 3.2 | 0.9 | -87.98 | -1,683.6 | -266.9 | 1,702.8 | 1,698.7 | 4.02 | 423.358 | |
| 1,500.0 | 1,497.5 | 1,509.8 | 1,509.7 | 3.3 | 0.9 | -88.11 | -1,683.4 | -267.1 | 1,702.5 | 1,698.4 | 4.09 | 415.767 | |
| 1,574.8 | 1,571.0 | 1,587.6 | 1,587.5 | 3.5 | 1.0 | -88.60 | -1,682.7 | -267.7 | 1,701.4 | 1,697.1 | 4.36 | 390.577 | |
| 1,600.0 | 1,595.6 | 1,612.7 | 1,612.6 | 3.6 | 1.0 | -88.77 | -1,682.4 | -267.8 | 1,701.0 | 1,696.6 | 4.44 | 382.744 | |
| 1,673.2 | 1,667.0 | 1,683.1 | 1,683.0 | 3.9 | 1.0 | -89.30 | -1,681.7 | -268.1 | 1,700.0 | 1,695.3 | 4.74 | 358.845 | |
| 1,700.0 | 1,693.1 | 1,709.0 | 1,708.9 | 4.0 | 1.0 | -89.51 | -1,681.4 | -268.2 | 1,699.7 | 1,694.9 | 4.84 | 350.823 | |
| 1,771.6 | 1,762.4 | 1,778.9 | 1,778.8 | 4.3 | 1.0 | -90.12 | -1,680.8 | -268.4 | 1,698.9 | 1,693.8 | 5.18 | 328.281 | |
| 1,800.0 | 1,789.6 | 1,806.5 | 1,806.4 | 4.4 | 1.0 | -90.37 | -1,680.5 | -268.5 | 1,698.7 | 1,693.4 | 5.31 | 320.138 | |
| 1,870.1 | 1,856.8 | 1,874.5 | 1,874.4 | 4.7 | 1.1 | -91.03 | -1,679.8 | -268.7 | 1,698.2 | 1,692.5 | 5.68 | 299.169 | |
| 1,900.0 | 1,885.3 | 1,903.4 | 1,903.3 | 4.9 | 1.1 | -91.33 | -1,679.5 | -268.8 | 1,698.1 | 1,692.2 | 5.83 | 291.033 | |
| 1,959.7 | 1,941.9 | 1,960.9 | 1,960.8 | 5.2 | 1.1 | -91.94 | -1,678.8 | -268.9 | 1,698.0 | 1,691.8 | 6.19 | 274.136 | CC |
| 1,968.5 | 1,950.2 | 1,969.3 | 1,969.2 | 5.3 | 1.1 | -92.03 | -1,678.7 | -268.9 | 1,698.0 | 1,691.7 | 6.25 | 271.825 | |
| 2,000.0 | 1,979.8 | 1,999.4 | 1,999.3 | 5.5 | 1.1 | -92.37 | -1,678.4 | -269.0 | 1,698.0 | 1,691.6 | 6.44 | 263.835 | |
| 2,044.9 | 2,021.9 | 2,038.2 | 2,038.1 | 5.7 | 1.1 | -92.82 | -1,678.0 | -269.1 | 1,698.3 | 1,691.5 | 6.73 | 252.372 | ES |
| 2,066.9 | 2,042.5 | 2,057.1 | 2,057.0 | 5.9 | 1.1 | -93.05 | -1,677.8 | -269.1 | 1,698.5 | 1,691.6 | 6.88 | 246.930 | |
| 2,100.0 | 2,073.4 | 2,085.5 | 2,085.3 | 6.1 | 1.1 | -93.39 | -1,677.6 | -269.1 | 1,698.9 | 1,691.8 | 7.10 | 239.192 | |
| 2,165.3 | 2,134.4 | 2,142.0 | 2,141.9 | 6.5 | 1.1 | -94.07 | -1,677.3 | -269.0 | 1,700.1 | 1,692.6 | 7.55 | 225.070 | |
| 2,200.0 | 2,166.8 | 2,172.1 | 2,171.9 | 6.8 | 1.1 | -94.43 | -1,677.1 | -268.9 | 1,701.0 | 1,693.2 | 7.79 | 218.303 | |
| 2,263.8 | 2,226.4 | 2,228.0 | 2,227.9 | 7.2 | 1.1 | -95.12 | -1,677.0 | -268.4 | 1,702.9 | 1,694.6 | 8.24 | 206.615 | |
| 2,300.0 | 2,260.2 | 2,260.1 | 2,260.0 | 7.4 | 1.1 | -95.51 | -1,677.0 | -268.1 | 1,704.1 | 1,695.6 | 8.50 | 200.561 | |
| 2,362.2 | 2,318.3 | 2,316.4 | 2,316.3 | 7.9 | 1.2 | -96.21 | -1,677.1 | -267.3 | 1,706.6 | 1,697.7 | 8.94 | 190.838 | |
| 2,400.0 | 2,353.6 | 2,352.5 | 2,352.4 | 8.1 | 1.2 | -96.66 | -1,677.1 | -266.7 | 1,708.3 | 1,699.1 | 9.21 | 185.422 | |
| 2,460.6 | 2,410.3 | 2,410.6 | 2,410.4 | 8.6 | 1.2 | -97.37 | -1,677.1 | -265.9 | 1,711.1 | 1,701.5 | 9.65 | 177.288 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,448.6 | 2,448.4 | 8.9 | 1.2 | -97.84 | -1,677.0 | -265.4 | 1,713.1 | 1,703.2 | 9.94 | 172.413 | |
| 2,559.0 | 2,502.2 | 2,505.5 | 2,505.4 | 9.3 | 1.2 | -98.53 | -1,676.9 | -264.7 | 1,716.2 | 1,705.8 | 10.37 | 165.565 | |
| 2,600.0 | 2,540.5 | 2,544.0 | 2,543.8 | 9.6 | 1.2 | -99.00 | -1,676.8 | -264.3 | 1,718.5 | 1,707.8 | 10.66 | 161.162 | |
| 2,657.5 | 2,594.2 | 2,597.9 | 2,597.8 | 10.0 | 1.2 | -99.65 | -1,676.7 | -263.8 | 1,721.9 | 1,710.8 | 11.08 | 155.369 | |
| 2,700.0 | 2,633.9 | 2,637.6 | 2,637.5 | 10.3 | 1.2 | -100.12 | -1,676.6 | -263.4 | 1,724.6 | 1,713.2 | 11.39 | 151.387 | |
| 2,755.9 | 2,686.1 | 2,689.9 | 2,689.7 | 10.7 | 1.2 | -100.75 | -1,676.4 | -262.8 | 1,728.3 | 1,716.5 | 11.80 | 146.470 | |
| 2,800.0 | 2,727.3 | 2,731.2 | 2,731.0 | 11.0 | 1.2 | -101.25 | -1,676.3 | -262.4 | 1,731.5 | 1,719.3 | 12.12 | 142.856 | |
| 2,854.3 | 2,778.1 | 2,782.2 | 2,782.0 | 11.4 | 1.2 | -101.85 | -1,676.1 | -261.9 | 1,735.5 | 1,723.0 | 12.52 | 138.666 | |
| 2,900.0 | 2,820.7 | 2,824.4 | 2,824.2 | 11.8 | 1.2 | -102.35 | -1,675.9 | -261.4 | 1,739.0 | 1,726.2 | 12.85 | 135.374 | |
| 2,952.7 | 2,870.0 | 2,872.6 | 2,872.4 | 12.2 | 1.2 | -102.92 | -1,675.8 | -261.0 | 1,743.3 | 1,730.1 | 13.23 | 131.793 | |
| 3,000.0 | 2,914.2 | 2,915.2 | 2,915.0 | 12.5 | 1.2 | -103.42 | -1,675.7 | -260.6 | 1,747.3 | 1,733.8 | 13.57 | 128.791 | |
| 3,051.2 | 2,962.0 | 2,960.1 | 2,960.0 | 12.9 | 1.2 | -103.95 | -1,675.6 | -260.1 | 1,752.0 | 1,738.0 | 13.93 | 125.732 | |
| 3,100.0 | 3,007.6 | 3,003.1 | 3,002.9 | 13.3 | 1.2 | -104.45 | -1,675.6 | -259.7 | 1,756.6 | 1,742.3 | 14.28 | 122.993 | |
| 3,149.6 | 3,053.9 | 3,047.2 | 3,047.1 | 13.6 | 1.2 | -104.96 | -1,675.7 | -259.3 | 1,761.6 | 1,746.9 | 14.63 | 120.384 | |
| 3,200.0 | 3,101.0 | 3,092.2 | 3,092.0 | 14.0 | 1.2 | -105.47 | -1,675.9 | -259.0 | 1,766.8 | 1,751.9 | 14.99 | 117.891 | |
| 3,248.0 | 3,145.9 | 3,135.1 | 3,134.9 | 14.4 | 1.2 | -105.96 | -1,676.1 | -258.7 | 1,772.1 | 1,756.7 | 15.32 | 115.649 | |
| 3,300.0 | 3,194.4 | 3,181.6 | 3,181.4 | 14.8 | 1.2 | -106.48 | -1,676.3 | -258.5 | 1,778.0 | 1,762.3 | 15.68 | 113.362 | |
| 3,346.4 | 3,237.8 | 3,222.5 | 3,222.3 | 15.1 | 1.3 | -106.94 | -1,676.6 | -258.3 | 1,783.4 | 1,767.4 | 16.01 | 111.422 | |
| 3,400.0 | 3,287.8 | 3,269.0 | 3,268.8 | 15.5 | 1.3 | -107.45 | -1,677.0 | -258.1 | 1,790.0 | 1,773.6 | 16.38 | 109.308 | |
| 3,444.9 | 3,329.8 | 3,300.0 | 3,299.8 | 15.9 | 1.3 | -107.80 | -1,677.4 | -258.0 | 1,795.7 | 1,779.0 | 16.69 | 107.605 | |
| 3,500.0 | 3,381.3 | 3,350.0 | 3,349.8 | 16.3 | 1.3 | -108.34 | -1,678.0 | -257.7 | 1,803.0 | 1,786.0 | 17.07 | 105.655 | |
| 3,543.3 | 3,421.7 | 3,383.5 | 3,383.3 | 16.6 | 1.3 | -108.71 | -1,678.7 | -257.4 | 1,809.1 | 1,791.8 | 17.36 | 104.191 | |
| 3,600.0 | 3,474.7 | 3,432.4 | 3,432.2 | 17.0 | 1.3 | -109.24 | -1,679.7 | -257.0 | 1,817.5 | 1,799.7 | 17.75 | 102.394 | |
| 3,641.7 | 3,513.7 | 3,470.5 | 3,470.3 | 17.3 | 1.3 | -109.66 | -1,680.5 | -256.5 | 1,823.8 | 1,805.8 | 18.03 | 101.143 | |
| 3,700.0 | 3,568.1 | 3,524.3 | 3,524.0 | 17.8 | 1.3 | -110.24 | -1,681.7 | -255.9 | 1,832.8 | 1,814.4 | 18.42 | 99.488 | |
| 3,740.1 | 3,605.6 | 3,561.7 | 3,561.4 | 18.1 | 1.3 | -110.64 | -1,682.5 | -255.5 | 1,839.1 | 1,820.4 | 18.69 | 98.405 | |
| 3,800.0 | 3,661.5 | 3,617.9 | 3,617.6 | 18.5 | 1.3 | -111.23 | -1,683.7 | -254.9 | 1,848.7 | 1,829.6 | 19.08 | 96.872 | |
| 3,838.6 | 3,697.6 | 3,654.9 | 3,654.6 | 18.8 | 1.3 | -111.62 | -1,684.5 | -254.4 | 1,855.0 | 1,835.6 | 19.34 | 95.931 | |
| 3,900.0 | 3,754.9 | 3,714.5 | 3,714.2 | 19.3 | 1.3 | -112.25 | -1,685.7 | -253.8 | 1,865.1 | 1,845.4 | 19.74 | 94.506 | |
| 3,937.0 | 3,789.5 | 3,752.1 | 3,751.8 | 19.6 | 1.3 | -112.63 | -1,686.4 | -253.5 | 1,871.3 | 1,851.3 | 19.97 | 93.690 | |
| 4,000.0 | 3,848.4 | 3,813.6 | 3,813.3 | 20.1 | 1.3 | -113.26 | -1,687.5 | -253.1 | 1,881.8 | 1,861.4 | 20.38 | 92.350 | |
| 4,035.4 | 3,881.5 | 3,843.9 | 3,843.6 | 20.3 | 1.3 | -113.57 | -1,688.1 | -252.9 | 1,887.8 | 1,867.2 | 20.61 | 91.613 | |
| 4,100.0 | 3,941.8 | 3,900.0 | 3,899.7 | 20.8 | 1.3 | -114.13 | -1,689.2 | -252.5 | 1,899.1 | 1,878.1 | 21.02 | 90.340 | |
| 4,133.8 | 3,973.4 | 3,931.2 | 3,930.9 | 21.1 | 1.3 | -114.44 | -1,689.9 | -252.3 | 1,905.1 | 1,883.9 | 21.24 | 89.707 | |
| 4,200.0 | 4,035.2 | 3,994.2 | 3,993.9 | 21.6 | 1.3 | -115.05 | -1,691.3 | -252.1 | 1,917.1 | 1,895.4 | 21.66 | 88.529 | |
| 4,232.3 | 4,065.4 | 4,025.9 | 4,025.6 | 21.8 | 1.3 | -115.35 | -1,692.0 | -252.1 | 1,923.0 | 1,901.1 | 21.86 | 87.982 | |
| 4,300.0 | 4,128.6 | 4,093.0 | 4,092.6 | 22.3 | 1.3 | -115.98 | -1,693.5 | -252.3 | 1,935.4 | 1,913.1 | 22.28 | 86.881 | |
| 4,330.7 | 4,157.3 | 4,124.9 | 4,124.5 | 22.6 | 1.3 | -116.28 | -1,694.2 | -252.4 | 1,941.1 | 1,918.6 | 22.46 | 86.407 | |
| 4,400.0 | 4,222.0 | 4,198.0 | 4,197.6 | 23.1 | 1.3 | -116.95 | -1,695.5 | -252.9 | 1,953.8 | 1,930.9 | 22.88 | 85.378 | |
| 4,429.1 | 4,249.3 | 4,228.4 | 4,228.0 | 23.3 | 1.3 | -117.23 | -1,696.0 | -253.2 | 1,959.2 | 1,936.1 | 23.06 | 84.960 | |
| 4,500.0 | 4,315.5 | 4,302.3 | 4,301.9 | 23.9 | 1.4 | -117.89 | -1,697.1 | -253.9 | 1,972.2 | 1,948.7 | 23.48 | 83.979 | |
| 4,527.5 | 4,341.2 | 4,330.3 | 4,329.9 | 24.1 | 1.4 | -118.14 | -1,697.4 | -254.2 | 1,977.2 | 1,953.5 | 23.65 | 83.607 | |
| 4,600.0 | 4,408.9 | 4,405.6 | 4,405.2 | 24.6 | 1.4 | -118.80 | -1,698.1 | -255.0 | 1,990.5 | 1,966.4 | 24.08 | 82.675 | |
| 4,626.0 | 4,433.2 | 4,443.1 | 4,442.7 | 24.8 | 1.4 | -119.13 | -1,698.2 | -255.5 | 1,995.2 | 1,971.0 | 24.22 | 82.393 | |
| 4,700.0 | 4,502.3 | 4,540.3 | 4,539.9 | 25.4 | 1.4 | -119.98 | -1,697.6 | -256.9 | 2,007.9 | 1,983.3 | 24.62 | 81.563 | |
| 4,724.4 | 4,525.1 | 4,568.7 | 4,568.3 | 25.6 | 1.4 | -120.22 | -1,697.2 | -257.5 | 2,012.0 | 1,987.2 | 24.76 | 81.274 | |
| 4,800.0 | 4,595.7 | 4,644.3 | 4,643.8 | 26.2 | 1.4 | -120.87 | -1,695.9 | -258.9 | 2,024.5 | 1,999.3 | 25.19 | 80.369 | |
| 4,822.8 | 4,617.1 | 4,665.0 | 4,664.5 | 26.3 | 1.4 | -121.05 | -1,695.6 | -259.3 | 2,028.4 | 2,003.0 | 25.32 | 80.098 | |
| 4,900.0 | 4,689.2 | 4,737.1 | 4,736.6 | 26.9 | 1.4 | -121.66 | -1,694.4 | -260.5 | 2,041.6 | 2,015.8 | 25.77 | 79.227 | |
| 4,921.2 | 4,709.0 | 4,757.6 | 4,757.1 | 27.1 | 1.4 | -121.84 | -1,694.0 | -260.9 | 2,045.2 | 2,019.4 | 25.89 | 78.998 | |
| 5,000.0 | 4,782.6 | 4,830.6 | 4,830.1 | 27.7 | 1.5 | -122.45 | -1,692.7 | -262.2 | 2,059.0 | 2,032.7 | 26.34 | 78.171 | |
| 5,019.7 | 4,801.0 | 4,848.0 | 4,847.4 | 27.8 | 1.5 | -122.59 | -1,692.5 | -262.5 | 2,062.5 | 2,036.0 | 26.45 | 77.970 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,921.0 | 4,920.5 | 28.4 | 1.5 | -123.19 | -1,691.3 | -263.7 | 2,077.0 | 2,050.1 | 26.91 | 77.193 | |
| 5,118.1 | 4,892.9 | 4,939.0 | 4,938.5 | 28.6 | 1.5 | -123.34 | -1,691.1 | -264.0 | 2,080.3 | 2,053.3 | 27.01 | 77.030 | |
| 5,159.9 | 4,932.0 | 4,980.7 | 4,980.1 | 28.9 | 1.5 | -123.68 | -1,690.4 | -264.8 | 2,088.0 | 2,060.7 | 27.24 | 76.661 | |
| 5,200.0 | 4,969.5 | 5,015.5 | 5,014.9 | 29.2 | 1.5 | -124.07 | -1,689.8 | -265.4 | 2,095.2 | 2,067.8 | 27.39 | 76.490 | |
| 5,216.5 | 4,985.1 | 5,027.8 | 5,027.2 | 29.3 | 1.5 | -124.22 | -1,689.7 | -265.6 | 2,098.2 | 2,070.7 | 27.44 | 76.459 | |
| 5,300.0 | 5,064.0 | 5,100.0 | 5,099.4 | 29.7 | 1.5 | -124.97 | -1,689.0 | -266.8 | 2,112.8 | 2,085.1 | 27.68 | 76.321 | |
| 5,314.9 | 5,078.2 | 5,100.0 | 5,099.4 | 29.8 | 1.5 | -125.01 | -1,689.0 | -266.8 | 2,115.3 | 2,087.5 | 27.73 | 76.274 | |
| 5,400.0 | 5,159.6 | 5,179.3 | 5,178.7 | 30.2 | 1.5 | -125.74 | -1,688.7 | -267.9 | 2,129.2 | 2,101.3 | 27.94 | 76.204 | |
| 5,413.4 | 5,172.4 | 5,191.5 | 5,190.9 | 30.3 | 1.5 | -125.85 | -1,688.7 | -268.0 | 2,131.3 | 2,103.3 | 27.97 | 76.204 | |
| 5,500.0 | 5,256.1 | 5,269.5 | 5,268.9 | 30.7 | 1.5 | -126.48 | -1,688.6 | -268.8 | 2,144.1 | 2,116.0 | 28.15 | 76.167 | |
| 5,511.8 | 5,267.6 | 5,280.1 | 5,279.5 | 30.7 | 1.5 | -126.56 | -1,688.5 | -268.9 | 2,145.8 | 2,117.6 | 28.17 | 76.171 | |
| 5,600.0 | 5,353.5 | 5,359.0 | 5,358.4 | 31.1 | 1.6 | -127.12 | -1,688.5 | -269.5 | 2,157.5 | 2,129.2 | 28.33 | 76.166 | |
| 5,610.2 | 5,363.5 | 5,368.2 | 5,367.5 | 31.1 | 1.6 | -127.18 | -1,688.5 | -269.6 | 2,158.8 | 2,130.5 | 28.34 | 76.172 | |
| 5,700.0 | 5,451.6 | 5,455.4 | 5,454.8 | 31.4 | 1.6 | -127.68 | -1,688.7 | -270.0 | 2,169.2 | 2,140.8 | 28.47 | 76.198 | |
| 5,708.6 | 5,460.2 | 5,464.2 | 5,463.6 | 31.4 | 1.6 | -127.73 | -1,688.7 | -270.0 | 2,170.1 | 2,141.7 | 28.48 | 76.206 | |
| 5,800.0 | 5,550.4 | 5,555.4 | 5,554.8 | 31.7 | 1.6 | -128.16 | -1,688.6 | -270.2 | 2,178.8 | 2,150.2 | 28.58 | 76.223 | |
| 5,807.1 | 5,557.4 | 5,562.4 | 5,561.8 | 31.7 | 1.6 | -128.19 | -1,688.6 | -270.3 | 2,179.4 | 2,150.8 | 28.59 | 76.227 | |
| 5,900.0 | 5,649.6 | 5,651.6 | 5,651.0 | 31.9 | 1.6 | -128.52 | -1,688.7 | -270.6 | 2,186.4 | 2,157.7 | 28.68 | 76.228 | |
| 5,905.5 | 5,655.1 | 5,656.8 | 5,656.2 | 31.9 | 1.6 | -128.53 | -1,688.7 | -270.6 | 2,186.7 | 2,158.0 | 28.69 | 76.230 | |
| 6,000.0 | 5,749.2 | 5,750.0 | 5,749.4 | 32.1 | 1.6 | -128.78 | -1,688.7 | -270.6 | 2,191.9 | 2,163.2 | 28.75 | 76.232 | |
| 6,003.9 | 5,753.1 | 5,754.1 | 5,753.4 | 32.1 | 1.6 | -128.79 | -1,688.7 | -270.6 | 2,192.1 | 2,163.4 | 28.76 | 76.234 | |
| 6,100.0 | 5,849.1 | 5,852.3 | 5,851.7 | 32.3 | 1.6 | -128.95 | -1,688.6 | -270.5 | 2,195.3 | 2,166.4 | 28.82 | 76.180 | |
| 6,102.3 | 5,851.4 | 5,854.7 | 5,854.0 | 32.3 | 1.6 | -128.95 | -1,688.6 | -270.5 | 2,195.3 | 2,166.5 | 28.82 | 76.178 | |
| 6,200.8 | 5,949.8 | 5,956.1 | 5,955.4 | 32.4 | 1.6 | -129.01 | -1,688.3 | -270.4 | 2,196.3 | 2,167.4 | 28.89 | 76.033 | |
| 6,204.9 | 5,953.9 | 5,960.3 | 5,959.7 | 32.4 | 1.6 | 146.55 | -1,688.3 | -270.4 | 2,196.3 | 2,171.0 | 25.31 | 86.777 | |
| 6,234.9 | 5,983.9 | 5,991.5 | 5,990.9 | 32.4 | 1.7 | 146.55 | -1,688.2 | -270.5 | 2,196.2 | 2,170.9 | 25.35 | 86.652 | |
| 6,250.0 | 5,999.0 | 6,007.2 | 6,006.5 | 32.4 | 1.7 | 56.56 | -1,688.1 | -270.5 | 2,196.1 | 2,167.1 | 28.92 | 75.925 | |
| 6,299.2 | 6,048.2 | 6,057.8 | 6,057.2 | 32.4 | 1.7 | 56.73 | -1,687.9 | -270.5 | 2,194.4 | 2,165.4 | 28.95 | 75.798 | |
| 6,300.0 | 6,048.9 | 6,058.6 | 6,058.0 | 32.4 | 1.7 | 56.74 | -1,687.9 | -270.5 | 2,194.3 | 2,165.4 | 28.95 | 75.793 | |
| 6,350.0 | 6,098.5 | 6,109.6 | 6,109.0 | 32.4 | 1.7 | 57.12 | -1,687.7 | -270.6 | 2,190.7 | 2,161.6 | 29.02 | 75.478 | |
| 6,397.6 | 6,145.3 | 6,156.8 | 6,156.2 | 32.3 | 1.7 | 57.68 | -1,687.5 | -270.7 | 2,185.4 | 2,156.3 | 29.13 | 75.012 | |
| 6,400.0 | 6,147.6 | 6,159.1 | 6,158.5 | 32.3 | 1.7 | 57.71 | -1,687.5 | -270.7 | 2,185.1 | 2,156.0 | 29.14 | 74.983 | |
| 6,450.0 | 6,195.8 | 6,207.5 | 6,206.9 | 32.2 | 1.7 | 58.50 | -1,687.3 | -270.8 | 2,177.7 | 2,148.4 | 29.30 | 74.323 | |
| 6,496.0 | 6,239.3 | 6,249.5 | 6,248.8 | 32.1 | 1.7 | 59.40 | -1,687.1 | -271.0 | 2,169.4 | 2,140.0 | 29.48 | 73.595 | |
| 6,500.0 | 6,243.0 | 6,253.0 | 6,252.4 | 32.1 | 1.7 | 59.48 | -1,687.1 | -271.0 | 2,168.7 | 2,139.2 | 29.50 | 73.526 | |
| 6,550.0 | 6,289.0 | 6,297.3 | 6,296.7 | 32.0 | 1.7 | 60.65 | -1,687.0 | -271.1 | 2,158.0 | 2,128.3 | 29.72 | 72.605 | |
| 6,594.5 | 6,328.6 | 6,337.2 | 6,336.5 | 31.8 | 1.7 | 61.86 | -1,686.9 | -271.2 | 2,147.2 | 2,117.3 | 29.95 | 71.688 | |
| 6,600.0 | 6,333.4 | 6,342.0 | 6,341.4 | 31.8 | 1.7 | 62.03 | -1,686.9 | -271.2 | 2,145.8 | 2,115.8 | 29.98 | 71.569 | |
| 6,650.0 | 6,376.2 | 6,385.2 | 6,384.6 | 31.7 | 1.7 | 63.58 | -1,686.7 | -271.3 | 2,132.3 | 2,102.0 | 30.26 | 70.453 | |
| 6,692.9 | 6,411.3 | 6,420.1 | 6,419.5 | 31.6 | 1.7 | 65.04 | -1,686.6 | -271.4 | 2,119.6 | 2,089.1 | 30.52 | 69.456 | |
| 6,700.0 | 6,417.0 | 6,425.7 | 6,425.1 | 31.5 | 1.7 | 65.29 | -1,686.6 | -271.4 | 2,117.5 | 2,086.9 | 30.56 | 69.290 | |
| 6,750.0 | 6,455.7 | 6,463.6 | 6,463.0 | 31.4 | 1.8 | 67.15 | -1,686.5 | -271.6 | 2,101.6 | 2,070.8 | 30.86 | 68.103 | |
| 6,791.3 | 6,486.0 | 6,493.2 | 6,492.6 | 31.3 | 1.8 | 68.77 | -1,686.5 | -271.7 | 2,087.9 | 2,056.8 | 31.11 | 67.114 | |
| 6,800.0 | 6,492.2 | 6,500.0 | 6,499.4 | 31.3 | 1.8 | 69.14 | -1,686.5 | -271.7 | 2,084.9 | 2,053.8 | 31.16 | 66.906 | |
| 6,850.0 | 6,526.1 | 6,535.2 | 6,534.6 | 31.2 | 1.8 | 71.26 | -1,686.4 | -271.9 | 2,067.5 | 2,036.0 | 31.46 | 65.714 | |
| 6,889.7 | 6,551.2 | 6,561.9 | 6,561.3 | 31.2 | 1.8 | 73.00 | -1,686.3 | -272.0 | 2,053.2 | 2,021.5 | 31.70 | 64.777 | |
| 6,900.0 | 6,557.4 | 6,568.5 | 6,567.9 | 31.2 | 1.8 | 73.46 | -1,686.3 | -272.0 | 2,049.5 | 2,017.8 | 31.75 | 64.547 | |
| 6,950.0 | 6,586.0 | 6,598.9 | 6,598.3 | 31.1 | 1.8 | 75.70 | -1,686.1 | -272.1 | 2,031.2 | 1,999.2 | 32.03 | 63.420 | |
| 6,988.2 | 6,605.8 | 6,620.1 | 6,619.5 | 31.2 | 1.8 | 77.42 | -1,686.0 | -272.1 | 2,017.2 | 1,984.9 | 32.24 | 62.575 | |
| 7,000.0 | 6,611.5 | 6,626.3 | 6,625.7 | 31.2 | 1.8 | 77.94 | -1,686.0 | -272.1 | 2,012.8 | 1,980.5 | 32.29 | 62.329 | |
| 7,050.0 | 6,634.1 | 6,650.3 | 6,649.7 | 31.2 | 1.8 | 80.14 | -1,685.8 | -272.2 | 1,994.5 | 1,961.9 | 32.55 | 61.271 | |
| 7,086.6 | 6,648.6 | 6,665.7 | 6,665.1 | 31.3 | 1.8 | 81.69 | -1,685.7 | -272.3 | 1,981.2 | 1,948.5 | 32.75 | 60.501 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,670.9 | 6,670.3 | 31.4 | 1.8 | 82.24 | -1,685.7 | -272.3 | 1,976.5 | 1,943.6 | 32.81 | 60.234 | |
| 7,150.0 | 6,669.5 | 6,687.9 | 6,687.3 | 31.6 | 1.8 | 84.23 | -1,685.5 | -272.4 | 1,958.9 | 1,925.8 | 33.09 | 59.204 | |
| 7,185.0 | 6,678.8 | 6,697.7 | 6,697.0 | 31.7 | 1.8 | 85.53 | -1,685.5 | -272.4 | 1,947.0 | 1,913.7 | 33.30 | 58.471 | |
| 7,200.0 | 6,682.3 | 6,701.3 | 6,700.6 | 31.8 | 1.8 | 86.06 | -1,685.4 | -272.4 | 1,942.1 | 1,908.7 | 33.39 | 58.170 | |
| 7,250.0 | 6,691.6 | 6,710.7 | 6,710.1 | 32.1 | 1.8 | 87.70 | -1,685.4 | -272.5 | 1,926.1 | 1,892.4 | 33.72 | 57.127 | |
| 7,283.4 | 6,696.0 | 6,715.0 | 6,714.4 | 32.3 | 1.8 | 88.68 | -1,685.3 | -272.5 | 1,915.9 | 1,882.0 | 33.96 | 56.416 | |
| 7,300.0 | 6,697.5 | 6,716.5 | 6,715.9 | 32.4 | 1.8 | 89.13 | -1,685.3 | -272.5 | 1,911.1 | 1,877.0 | 34.08 | 56.076 | |
| 7,350.0 | 6,699.9 | 6,718.7 | 6,718.1 | 32.8 | 1.8 | 90.35 | -1,685.3 | -272.5 | 1,897.3 | 1,862.8 | 34.48 | 55.026 | |
| 7,364.4 | 6,700.0 | 6,718.7 | 6,718.0 | 32.9 | 1.8 | 90.66 | -1,685.3 | -272.5 | 1,893.5 | 1,858.9 | 34.60 | 54.726 | |
| 7,381.9 | 6,699.9 | 6,718.4 | 6,717.8 | 33.1 | 1.8 | 90.66 | -1,685.3 | -272.5 | 1,889.1 | 1,854.3 | 34.75 | 54.359 | |
| 7,400.0 | 6,699.8 | 6,718.2 | 6,717.6 | 33.2 | 1.8 | 90.65 | -1,685.3 | -272.5 | 1,884.6 | 1,849.7 | 34.91 | 53.987 | |
| 7,480.3 | 6,699.2 | 6,717.2 | 6,716.5 | 34.0 | 1.8 | 90.62 | -1,685.3 | -272.5 | 1,867.0 | 1,831.3 | 35.72 | 52.267 | |
| 7,500.0 | 6,699.1 | 6,716.9 | 6,716.3 | 34.2 | 1.8 | 90.61 | -1,685.3 | -272.5 | 1,863.2 | 1,827.3 | 35.92 | 51.871 | |
| 7,578.7 | 6,698.6 | 6,715.9 | 6,715.3 | 35.2 | 1.8 | 90.58 | -1,685.3 | -272.5 | 1,849.9 | 1,813.0 | 36.87 | 50.177 | |
| 7,600.0 | 6,698.5 | 6,715.7 | 6,715.0 | 35.4 | 1.8 | 90.57 | -1,685.3 | -272.5 | 1,846.9 | 1,809.8 | 37.12 | 49.749 | |
| 7,677.1 | 6,698.0 | 6,714.7 | 6,714.1 | 36.5 | 1.8 | 90.54 | -1,685.3 | -272.5 | 1,838.0 | 1,799.8 | 38.19 | 48.127 | |
| 7,700.0 | 6,697.8 | 6,714.4 | 6,713.8 | 36.8 | 1.8 | 90.53 | -1,685.3 | -272.5 | 1,835.9 | 1,797.4 | 38.51 | 47.680 | |
| 7,775.6 | 6,697.3 | 6,713.5 | 6,712.9 | 38.0 | 1.8 | 90.50 | -1,685.3 | -272.5 | 1,831.2 | 1,791.5 | 39.67 | 46.164 | |
| 7,800.0 | 6,697.2 | 6,713.2 | 6,712.6 | 38.3 | 1.8 | 90.49 | -1,685.3 | -272.5 | 1,830.3 | 1,790.3 | 40.04 | 45.710 | |
| 7,852.1 | 6,696.8 | 6,712.6 | 6,711.9 | 39.2 | 1.8 | 90.47 | -1,685.3 | -272.5 | 1,829.6 | 1,788.7 | 40.92 | 44.716 | |
| 7,874.0 | 6,696.7 | 6,712.3 | 6,711.7 | 39.6 | 1.8 | 90.46 | -1,685.3 | -272.5 | 1,829.7 | 1,788.5 | 41.28 | 44.322 | |
| 7,900.0 | 6,696.5 | 6,712.0 | 6,711.3 | 40.0 | 1.8 | 90.45 | -1,685.3 | -272.5 | 1,830.2 | 1,788.5 | 41.72 | 43.871 | |
| 7,972.4 | 6,696.1 | 6,711.1 | 6,710.5 | 41.3 | 1.8 | 90.43 | -1,685.4 | -272.5 | 1,833.6 | 1,790.5 | 43.02 | 42.620 | |
| 8,000.0 | 6,695.9 | 6,710.8 | 6,710.1 | 41.8 | 1.8 | 90.42 | -1,685.4 | -272.5 | 1,835.6 | 1,792.1 | 43.52 | 42.181 | |
| 8,070.8 | 6,695.4 | 6,709.9 | 6,709.3 | 43.1 | 1.8 | 90.39 | -1,685.4 | -272.5 | 1,842.6 | 1,797.8 | 44.87 | 41.070 | |
| 8,100.0 | 6,695.2 | 6,709.6 | 6,709.0 | 43.7 | 1.8 | 90.38 | -1,685.4 | -272.5 | 1,846.3 | 1,800.9 | 45.42 | 40.649 | |
| 8,169.3 | 6,694.8 | 6,708.8 | 6,708.2 | 45.1 | 1.8 | 90.35 | -1,685.4 | -272.5 | 1,856.9 | 1,810.1 | 46.81 | 39.672 | |
| 8,200.0 | 6,694.6 | 6,708.4 | 6,707.8 | 45.7 | 1.8 | 90.34 | -1,685.4 | -272.5 | 1,862.4 | 1,815.0 | 47.42 | 39.274 | |
| 8,267.7 | 6,694.1 | 6,707.7 | 6,707.0 | 47.1 | 1.8 | 90.32 | -1,685.4 | -272.5 | 1,876.2 | 1,827.4 | 48.83 | 38.425 | |
| 8,300.0 | 6,693.9 | 6,707.3 | 6,706.7 | 47.8 | 1.8 | 90.31 | -1,685.4 | -272.5 | 1,883.6 | 1,834.1 | 49.50 | 38.053 | |
| 8,366.1 | 6,693.5 | 6,706.5 | 6,705.9 | 49.2 | 1.8 | 90.28 | -1,685.4 | -272.5 | 1,900.4 | 1,849.5 | 50.92 | 37.320 | |
| 8,400.0 | 6,693.3 | 6,706.2 | 6,705.5 | 49.9 | 1.8 | 90.27 | -1,685.4 | -272.5 | 1,909.9 | 1,858.2 | 51.65 | 36.976 | |
| 8,464.5 | 6,692.9 | 6,705.4 | 6,704.8 | 51.4 | 1.8 | 90.25 | -1,685.4 | -272.4 | 1,929.4 | 1,876.3 | 53.08 | 36.348 | |
| 8,500.0 | 6,692.6 | 6,705.0 | 6,704.4 | 52.1 | 1.8 | 90.24 | -1,685.4 | -272.4 | 1,940.9 | 1,887.0 | 53.87 | 36.032 | |
| 8,563.0 | 6,692.2 | 6,704.3 | 6,703.7 | 53.6 | 1.8 | 90.22 | -1,685.4 | -272.4 | 1,962.8 | 1,907.5 | 55.29 | 35.497 | |
| 8,600.0 | 6,692.0 | 6,703.9 | 6,703.3 | 54.4 | 1.8 | 90.20 | -1,685.4 | -272.4 | 1,976.5 | 1,920.4 | 56.14 | 35.210 | |
| 8,661.4 | 6,691.6 | 6,703.3 | 6,702.6 | 55.8 | 1.8 | 90.18 | -1,685.4 | -272.4 | 2,000.6 | 1,943.0 | 57.56 | 34.757 | |
| 8,700.0 | 6,691.3 | 6,700.0 | 6,699.4 | 56.7 | 1.8 | 90.08 | -1,685.4 | -272.4 | 2,016.5 | 1,958.0 | 58.45 | 34.499 | |
| 8,759.8 | 6,690.9 | 6,700.0 | 6,699.4 | 58.1 | 1.8 | 90.08 | -1,685.4 | -272.4 | 2,042.4 | 1,982.5 | 59.86 | 34.117 | |
| 8,800.0 | 6,690.7 | 6,700.0 | 6,699.4 | 59.1 | 1.8 | 90.08 | -1,685.4 | -272.4 | 2,060.5 | 1,999.7 | 60.81 | 33.883 | |
| 8,858.2 | 6,690.3 | 6,700.0 | 6,699.4 | 60.5 | 1.8 | 90.08 | -1,685.4 | -272.4 | 2,088.0 | 2,025.7 | 62.21 | 33.563 | |
| 8,900.0 | 6,690.0 | 6,700.0 | 6,699.4 | 61.5 | 1.8 | 90.08 | -1,685.4 | -272.4 | 2,108.4 | 2,045.2 | 63.21 | 33.355 | |
| 8,956.7 | 6,689.7 | 6,700.0 | 6,699.4 | 62.9 | 1.8 | 90.08 | -1,685.4 | -272.4 | 2,137.1 | 2,072.5 | 64.59 | 33.087 | |
| 9,000.0 | 6,689.4 | 6,699.6 | 6,699.0 | 63.9 | 1.8 | 90.07 | -1,685.4 | -272.4 | 2,159.8 | 2,094.2 | 65.64 | 32.902 | |
| 9,055.1 | 6,689.0 | 6,699.0 | 6,698.3 | 65.3 | 1.8 | 90.05 | -1,685.5 | -272.4 | 2,189.6 | 2,122.6 | 67.00 | 32.681 | |
| 9,100.0 | 6,688.7 | 6,698.5 | 6,697.8 | 66.4 | 1.8 | 90.03 | -1,685.5 | -272.4 | 2,214.6 | 2,146.5 | 68.11 | 32.517 | |
| 9,153.5 | 6,688.4 | 6,697.8 | 6,697.2 | 67.7 | 1.8 | 90.01 | -1,685.5 | -272.4 | 2,245.2 | 2,175.7 | 69.44 | 32.334 | |
| 9,200.0 | 6,688.1 | 6,697.3 | 6,696.7 | 68.9 | 1.8 | 90.00 | -1,685.5 | -272.4 | 2,272.4 | 2,201.8 | 70.59 | 32.190 | |
| 9,251.9 | 6,687.8 | 6,696.7 | 6,696.1 | 70.2 | 1.8 | 89.98 | -1,685.5 | -272.4 | 2,303.6 | 2,231.7 | 71.90 | 32.040 | |
| 9,300.0 | 6,687.4 | 6,696.2 | 6,695.5 | 71.4 | 1.8 | 89.96 | -1,685.5 | -272.4 | 2,333.1 | 2,260.0 | 73.11 | 31.914 | |
| 9,350.4 | 6,687.1 | 6,695.6 | 6,695.0 | 72.7 | 1.8 | 89.94 | -1,685.5 | -272.4 | 2,364.7 | 2,290.3 | 74.38 | 31.791 | |
| 9,400.0 | 6,686.8 | 6,695.0 | 6,694.4 | 73.9 | 1.8 | 89.92 | -1,685.5 | -272.4 | 2,396.5 | 2,320.8 | 75.64 | 31.683 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,694.5 | 6,693.9 | 75.2 | 1.8 | 89.91 | -1,685.5 | -272.4 | 2,428.3 | 2,351.4 | 76.89 | 31.583 | |
| 9,500.0 | 6,686.1 | 6,693.9 | 6,693.3 | 76.5 | 1.8 | 89.89 | -1,685.5 | -272.4 | 2,462.2 | 2,384.0 | 78.19 | 31.489 | |
| 9,547.2 | 6,685.8 | 6,693.4 | 6,692.8 | 77.7 | 1.8 | 89.87 | -1,685.5 | -272.4 | 2,494.1 | 2,414.7 | 79.41 | 31.409 | |
| 9,600.0 | 6,685.5 | 6,692.8 | 6,692.2 | 79.0 | 1.8 | 89.85 | -1,685.5 | -272.4 | 2,530.2 | 2,449.5 | 80.76 | 31.329 | |
| 9,645.6 | 6,685.2 | 6,692.3 | 6,691.7 | 80.2 | 1.8 | 89.84 | -1,685.5 | -272.4 | 2,562.0 | 2,480.0 | 81.94 | 31.265 | |
| 9,700.0 | 6,684.8 | 6,691.7 | 6,691.0 | 81.6 | 1.8 | 89.82 | -1,685.5 | -272.4 | 2,600.3 | 2,517.0 | 83.35 | 31.198 | |
| 9,744.1 | 6,684.6 | 6,691.2 | 6,690.6 | 82.8 | 1.8 | 89.80 | -1,685.5 | -272.4 | 2,631.8 | 2,547.3 | 84.49 | 31.148 | |
| 9,800.0 | 6,684.2 | 6,690.6 | 6,689.9 | 84.2 | 1.8 | 89.78 | -1,685.5 | -272.4 | 2,672.3 | 2,586.3 | 85.95 | 31.091 | |
| 9,842.5 | 6,683.9 | 6,690.1 | 6,689.5 | 85.3 | 1.8 | 89.77 | -1,685.5 | -272.4 | 2,703.4 | 2,616.4 | 87.06 | 31.052 | |
| 9,900.0 | 6,683.5 | 6,689.5 | 6,688.8 | 86.8 | 1.8 | 89.75 | -1,685.5 | -272.4 | 2,746.0 | 2,657.5 | 88.56 | 31.007 | |
| 9,940.9 | 6,683.3 | 6,689.0 | 6,688.4 | 87.9 | 1.8 | 89.74 | -1,685.5 | -272.4 | 2,776.7 | 2,687.0 | 89.64 | 30.977 | |
| 10,000.0 | 6,682.9 | 6,688.4 | 6,687.7 | 89.5 | 1.8 | 89.72 | -1,685.5 | -272.4 | 2,821.4 | 2,730.2 | 91.19 | 30.940 | |
| 10,039.3 | 6,682.6 | 6,687.9 | 6,687.3 | 90.5 | 1.8 | 89.70 | -1,685.5 | -272.4 | 2,851.4 | 2,759.2 | 92.23 | 30.918 | |
| 10,100.0 | 6,682.2 | 6,687.3 | 6,686.6 | 92.1 | 1.8 | 89.68 | -1,685.5 | -272.4 | 2,898.2 | 2,804.4 | 93.82 | 30.890 | |
| 10,137.8 | 6,682.0 | 6,686.9 | 6,686.2 | 93.1 | 1.8 | 89.67 | -1,685.6 | -272.4 | 2,927.6 | 2,832.8 | 94.82 | 30.874 | |
| 10,200.0 | 6,681.6 | 6,686.2 | 6,685.5 | 94.8 | 1.8 | 89.65 | -1,685.6 | -272.4 | 2,976.4 | 2,880.0 | 96.47 | 30.854 | |
| 10,236.2 | 6,681.4 | 6,685.8 | 6,685.2 | 95.7 | 1.8 | 89.63 | -1,685.6 | -272.4 | 3,005.1 | 2,907.6 | 97.43 | 30.843 | |
| 10,300.0 | 6,680.9 | 6,685.1 | 6,684.5 | 97.4 | 1.8 | 89.61 | -1,685.6 | -272.4 | 3,055.9 | 2,956.8 | 99.13 | 30.829 | |
| 10,334.6 | 6,680.7 | 6,684.7 | 6,684.1 | 98.3 | 1.8 | 89.60 | -1,685.6 | -272.4 | 3,083.7 | 2,983.7 | 100.05 | 30.823 | |
| 10,400.0 | 6,680.3 | 6,684.0 | 6,683.4 | 100.1 | 1.8 | 89.58 | -1,685.6 | -272.3 | 3,136.6 | 3,034.8 | 101.79 | 30.815 | |
| 10,433.0 | 6,680.1 | 6,683.7 | 6,683.0 | 101.0 | 1.8 | 89.57 | -1,685.6 | -272.3 | 3,163.5 | 3,060.8 | 102.67 | 30.812 | |
| 10,500.0 | 6,679.7 | 6,682.9 | 6,682.3 | 102.8 | 1.8 | 89.55 | -1,685.6 | -272.3 | 3,218.3 | 3,113.9 | 104.46 | 30.809 | |
| 10,531.5 | 6,679.4 | 6,682.6 | 6,682.0 | 103.6 | 1.8 | 89.53 | -1,685.6 | -272.3 | 3,244.3 | 3,139.0 | 105.30 | 30.809 | SF |
| 10,600.0 | 6,679.0 | 6,681.9 | 6,681.3 | 105.4 | 1.8 | 89.51 | -1,685.6 | -272.3 | 3,301.1 | 3,194.0 | 107.14 | 30.811 | |
| 10,629.9 | 6,678.8 | 6,681.6 | 6,680.9 | 106.2 | 1.8 | 89.50 | -1,685.6 | -272.3 | 3,326.0 | 3,218.1 | 107.94 | 30.813 | |
| 10,700.0 | 6,678.4 | 6,680.8 | 6,680.2 | 108.1 | 1.8 | 89.48 | -1,685.6 | -272.3 | 3,384.8 | 3,274.9 | 109.82 | 30.820 | |
| 10,728.3 | 6,678.2 | 6,680.5 | 6,679.9 | 108.9 | 1.8 | 89.47 | -1,685.6 | -272.3 | 3,408.6 | 3,298.1 | 110.59 | 30.823 | |
| 10,800.0 | 6,677.7 | 6,679.8 | 6,679.1 | 110.8 | 1.8 | 89.45 | -1,685.6 | -272.3 | 3,469.3 | 3,356.8 | 112.51 | 30.834 | |
| 10,826.7 | 6,677.5 | 6,679.5 | 6,678.9 | 111.5 | 1.8 | 89.44 | -1,685.6 | -272.3 | 3,492.1 | 3,378.8 | 113.24 | 30.839 | |
| 10,900.0 | 6,677.1 | 6,678.7 | 6,678.1 | 113.5 | 1.8 | 89.41 | -1,685.6 | -272.3 | 3,554.7 | 3,439.5 | 115.21 | 30.853 | |
| 10,925.2 | 6,676.9 | 6,678.5 | 6,677.8 | 114.2 | 1.8 | 89.40 | -1,685.6 | -272.3 | 3,576.3 | 3,460.4 | 115.89 | 30.859 | |
| 11,000.0 | 6,676.4 | 6,677.7 | 6,677.0 | 116.2 | 1.8 | 89.38 | -1,685.6 | -272.3 | 3,640.8 | 3,522.9 | 117.91 | 30.877 | |
| 11,023.6 | 6,676.3 | 6,677.4 | 6,676.8 | 116.8 | 1.8 | 89.37 | -1,685.6 | -272.3 | 3,661.2 | 3,542.6 | 118.55 | 30.882 | |
| 11,100.0 | 6,675.8 | 6,676.6 | 6,676.0 | 118.9 | 1.8 | 89.35 | -1,685.6 | -272.3 | 3,727.6 | 3,606.9 | 120.62 | 30.903 | |
| 11,122.0 | 6,675.6 | 6,676.4 | 6,675.8 | 119.5 | 1.8 | 89.34 | -1,685.6 | -272.3 | 3,746.8 | 3,625.5 | 121.22 | 30.909 | |
| 11,200.0 | 6,675.1 | 6,675.6 | 6,675.0 | 121.6 | 1.8 | 89.32 | -1,685.6 | -272.3 | 3,815.0 | 3,691.7 | 123.33 | 30.933 | |
| 11,220.4 | 6,675.0 | 6,675.4 | 6,674.7 | 122.2 | 1.8 | 89.31 | -1,685.6 | -272.3 | 3,832.9 | 3,709.1 | 123.89 | 30.939 | |
| 11,300.0 | 6,674.5 | 6,674.6 | 6,673.9 | 124.3 | 1.8 | 89.28 | -1,685.6 | -272.3 | 3,903.0 | 3,777.0 | 126.05 | 30.965 | |
| 11,318.9 | 6,674.3 | 6,674.4 | 6,673.7 | 124.9 | 1.8 | 89.28 | -1,685.6 | -272.3 | 3,919.7 | 3,793.2 | 126.56 | 30.971 | |
| 11,400.0 | 6,673.8 | 6,673.5 | 6,672.9 | 127.1 | 1.8 | 89.25 | -1,685.7 | -272.3 | 3,991.6 | 3,862.9 | 128.77 | 30.999 | |
| 11,417.3 | 6,673.7 | 6,673.4 | 6,672.7 | 127.5 | 1.8 | 89.25 | -1,685.7 | -272.3 | 4,007.0 | 3,877.8 | 129.24 | 31.005 | |
| 11,500.0 | 6,673.2 | 6,672.5 | 6,671.9 | 129.8 | 1.8 | 89.22 | -1,685.7 | -272.3 | 4,080.8 | 3,949.3 | 131.49 | 31.034 | |
| 11,515.7 | 6,673.1 | 6,672.4 | 6,671.7 | 130.2 | 1.8 | 89.21 | -1,685.7 | -272.3 | 4,094.8 | 3,962.9 | 131.92 | 31.040 | |
| 11,600.0 | 6,672.5 | 6,671.5 | 6,670.9 | 132.5 | 1.8 | 89.19 | -1,685.7 | -272.3 | 4,170.4 | 4,036.2 | 134.22 | 31.072 | |
| 11,614.1 | 6,672.4 | 6,671.4 | 6,670.7 | 132.9 | 1.8 | 89.18 | -1,685.7 | -272.3 | 4,183.1 | 4,048.5 | 134.60 | 31.077 | |
| 11,700.0 | 6,671.9 | 6,670.5 | 6,669.9 | 135.3 | 1.8 | 89.16 | -1,685.7 | -272.3 | 4,260.5 | 4,123.5 | 136.95 | 31.110 | |
| 11,712.6 | 6,671.8 | 6,670.4 | 6,669.7 | 135.6 | 1.8 | 89.15 | -1,685.7 | -272.3 | 4,271.8 | 4,134.5 | 137.29 | 31.115 | |
| 11,800.0 | 6,671.2 | 6,669.5 | 6,668.9 | 138.0 | 1.8 | 89.12 | -1,685.7 | -272.3 | 4,351.0 | 4,211.3 | 139.68 | 31.149 | |
| 11,811.0 | 6,671.1 | 6,669.4 | 6,668.7 | 138.3 | 1.8 | 89.12 | -1,685.7 | -272.3 | 4,361.0 | 4,221.0 | 139.98 | 31.153 | |
| 11,900.0 | 6,670.6 | 6,668.5 | 6,667.9 | 140.7 | 1.8 | 89.09 | -1,685.7 | -272.3 | 4,441.9 | 4,299.5 | 142.42 | 31.189 | |
| 11,909.4 | 6,670.5 | 6,668.4 | 6,667.8 | 141.0 | 1.8 | 89.09 | -1,685.7 | -272.3 | 4,450.5 | 4,307.8 | 142.68 | 31.193 | |
| 11,987.2 | 6,670.0 | 6,667.6 | 6,667.0 | 143.1 | 1.8 | 89.07 | -1,685.7 | -272.3 | 4,521.5 | 4,376.7 | 144.81 | 31.224 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 169.79 | -2,207.7 | 397.8 | 2,243.3 | | | | |
| 98.4 | 98.4 | 100.0 | 100.0 | 0.1 | 0.1 | 169.78 | -2,207.5 | 397.8 | 2,243.0 | 2,242.8 | 0.20 | N/A | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 169.78 | -2,207.5 | 397.8 | 2,243.0 | 2,242.8 | 0.20 | N/A | |
| 176.8 | 176.8 | 169.7 | 169.7 | 0.3 | 0.1 | 169.78 | -2,207.3 | 397.9 | 2,242.9 | 2,242.5 | 0.40 | 5,580.077 | |
| 196.8 | 196.8 | 187.1 | 187.1 | 0.3 | 0.1 | 169.78 | -2,207.3 | 397.9 | 2,242.9 | 2,242.4 | 0.45 | 4,936.034 | |
| 200.0 | 200.0 | 189.8 | 189.8 | 0.3 | 0.1 | 169.78 | -2,207.3 | 397.9 | 2,242.9 | 2,242.4 | 0.46 | 4,848.171 | |
| 295.3 | 295.3 | 294.8 | 294.8 | 0.5 | 0.2 | 169.78 | -2,207.2 | 398.1 | 2,242.9 | 2,242.1 | 0.73 | 3,084.946 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.2 | 169.77 | -2,207.2 | 398.1 | 2,242.8 | 2,242.1 | 0.74 | 3,030.248 | |
| 339.3 | 339.3 | 332.3 | 332.3 | 0.6 | 0.2 | 169.77 | -2,207.2 | 398.2 | 2,242.8 | 2,241.9 | 0.84 | 2,680.612 | CC |
| 393.7 | 393.7 | 376.8 | 376.8 | 0.8 | 0.2 | 169.77 | -2,207.2 | 398.3 | 2,242.9 | 2,241.9 | 0.97 | 2,312.350 | ES |
| 400.0 | 400.0 | 382.0 | 382.0 | 0.8 | 0.2 | 169.77 | -2,207.3 | 398.3 | 2,242.9 | 2,241.9 | 0.99 | 2,276.127 | |
| 492.1 | 492.1 | 465.3 | 465.3 | 1.0 | 0.3 | 169.76 | -2,207.8 | 398.6 | 2,243.6 | 2,242.4 | 1.25 | 1,790.788 | |
| 500.0 | 500.0 | 472.6 | 472.6 | 1.0 | 0.3 | 169.76 | -2,207.9 | 398.7 | 2,243.7 | 2,242.4 | 1.28 | 1,757.064 | |
| 590.5 | 590.5 | 564.7 | 564.7 | 1.2 | 0.3 | 169.75 | -2,208.6 | 399.3 | 2,244.5 | 2,243.0 | 1.55 | 1,451.083 | |
| 600.0 | 600.0 | 574.7 | 574.7 | 1.2 | 0.4 | 169.75 | -2,208.7 | 399.4 | 2,244.6 | 2,243.0 | 1.57 | 1,425.497 | |
| 689.0 | 689.0 | 667.6 | 667.6 | 1.4 | 0.4 | 169.73 | -2,209.3 | 400.1 | 2,245.2 | 2,243.4 | 1.83 | 1,227.576 | |
| 700.0 | 700.0 | 679.1 | 679.1 | 1.4 | 0.4 | 169.73 | -2,209.3 | 400.2 | 2,245.3 | 2,243.4 | 1.86 | 1,207.043 | |
| 787.4 | 787.4 | 767.7 | 767.7 | 1.6 | 0.5 | 169.73 | -2,209.8 | 400.4 | 2,245.8 | 2,243.7 | 2.10 | 1,068.267 | |
| 800.0 | 800.0 | 780.4 | 780.4 | 1.7 | 0.5 | 169.73 | -2,209.9 | 400.5 | 2,245.9 | 2,243.8 | 2.14 | 1,050.964 | |
| 885.8 | 885.8 | 864.0 | 864.0 | 1.9 | 0.5 | 169.72 | -2,210.3 | 400.8 | 2,246.4 | 2,244.0 | 2.37 | 948.340 | |
| 900.0 | 900.0 | 877.7 | 877.7 | 1.9 | 0.5 | 169.72 | -2,210.4 | 400.8 | 2,246.5 | 2,244.1 | 2.41 | 933.383 | |
| 984.2 | 984.2 | 962.4 | 962.4 | 2.1 | 0.6 | 169.71 | -2,210.9 | 401.3 | 2,247.1 | 2,244.4 | 2.63 | 853.363 | |
| 1,000.0 | 1,000.0 | 978.5 | 978.5 | 2.1 | 0.6 | 169.71 | -2,211.0 | 401.3 | 2,247.2 | 2,244.5 | 2.68 | 839.902 | |
| 1,082.7 | 1,082.7 | 1,064.4 | 1,064.4 | 2.3 | 0.6 | -105.87 | -2,211.5 | 401.6 | 2,248.0 | 2,245.1 | 2.90 | 775.124 | |
| 1,100.0 | 1,100.0 | 1,082.5 | 1,082.4 | 2.3 | 0.6 | -105.88 | -2,211.5 | 401.7 | 2,248.2 | 2,245.3 | 2.95 | 763.263 | |
| 1,181.1 | 1,181.0 | 1,164.0 | 1,164.0 | 2.5 | 0.7 | -105.95 | -2,211.9 | 401.9 | 2,249.7 | 2,246.5 | 3.15 | 713.820 | |
| 1,200.0 | 1,199.8 | 1,182.8 | 1,182.8 | 2.5 | 0.7 | -105.98 | -2,211.9 | 401.9 | 2,250.1 | 2,246.9 | 3.20 | 703.274 | |
| 1,279.5 | 1,279.1 | 1,262.3 | 1,262.3 | 2.7 | 0.7 | -106.10 | -2,212.3 | 402.0 | 2,252.3 | 2,248.9 | 3.41 | 660.394 | |
| 1,300.0 | 1,299.5 | 1,282.7 | 1,282.7 | 2.8 | 0.7 | -106.13 | -2,212.4 | 402.0 | 2,253.0 | 2,249.5 | 3.46 | 650.248 | |
| 1,377.9 | 1,376.9 | 1,357.8 | 1,357.8 | 3.0 | 0.7 | -106.29 | -2,212.8 | 401.9 | 2,255.9 | 2,252.2 | 3.69 | 611.862 | |
| 1,400.0 | 1,398.7 | 1,378.7 | 1,378.7 | 3.0 | 0.8 | -106.34 | -2,212.9 | 401.9 | 2,256.9 | 2,253.1 | 3.75 | 601.883 | |
| 1,476.4 | 1,474.2 | 1,453.5 | 1,453.5 | 3.2 | 0.8 | -106.54 | -2,213.3 | 401.9 | 2,260.7 | 2,256.7 | 3.99 | 566.701 | |
| 1,500.0 | 1,497.5 | 1,476.9 | 1,476.8 | 3.3 | 0.8 | -106.61 | -2,213.5 | 401.9 | 2,262.0 | 2,257.9 | 4.06 | 556.715 | |
| 1,574.8 | 1,571.0 | 1,556.2 | 1,556.2 | 3.5 | 0.8 | -106.89 | -2,213.9 | 402.1 | 2,266.5 | 2,262.1 | 4.32 | 524.278 | |
| 1,600.0 | 1,595.6 | 1,583.7 | 1,583.7 | 3.6 | 0.8 | -107.00 | -2,213.9 | 402.2 | 2,268.1 | 2,263.7 | 4.41 | 514.304 | |
| 1,673.2 | 1,667.0 | 1,660.1 | 1,660.1 | 3.9 | 0.8 | -107.31 | -2,213.9 | 402.4 | 2,273.0 | 2,268.3 | 4.68 | 485.861 | |
| 1,700.0 | 1,693.1 | 1,687.6 | 1,687.6 | 4.0 | 0.8 | -107.43 | -2,213.9 | 402.4 | 2,274.9 | 2,270.2 | 4.78 | 476.426 | |
| 1,771.6 | 1,762.4 | 1,752.6 | 1,752.5 | 4.3 | 0.8 | -107.72 | -2,214.0 | 402.3 | 2,280.6 | 2,275.5 | 5.08 | 449.080 | |
| 1,800.0 | 1,789.6 | 1,777.5 | 1,777.5 | 4.4 | 0.8 | -107.83 | -2,214.0 | 402.2 | 2,283.1 | 2,277.9 | 5.20 | 439.152 | |
| 1,870.1 | 1,856.8 | 1,840.8 | 1,840.7 | 4.7 | 0.9 | -108.13 | -2,214.3 | 401.9 | 2,289.8 | 2,284.2 | 5.55 | 412.533 | |
| 1,900.0 | 1,885.3 | 1,868.1 | 1,868.1 | 4.9 | 0.9 | -108.27 | -2,214.4 | 401.8 | 2,292.9 | 2,287.2 | 5.70 | 402.059 | |
| 1,968.5 | 1,950.2 | 1,934.3 | 1,934.3 | 5.3 | 0.9 | -108.62 | -2,214.8 | 401.7 | 2,300.5 | 2,294.4 | 6.10 | 377.215 | |
| 2,000.0 | 1,979.8 | 1,966.6 | 1,966.5 | 5.5 | 0.9 | -108.81 | -2,214.9 | 401.7 | 2,304.2 | 2,297.9 | 6.28 | 366.879 | |
| 2,044.9 | 2,021.9 | 2,013.0 | 2,012.9 | 5.7 | 0.9 | -109.08 | -2,215.0 | 401.6 | 2,309.7 | 2,303.1 | 6.56 | 352.151 | |
| 2,066.9 | 2,042.5 | 2,036.5 | 2,036.4 | 5.9 | 0.9 | -109.28 | -2,215.0 | 401.5 | 2,312.4 | 2,305.7 | 6.69 | 345.461 | |
| 2,100.0 | 2,073.4 | 2,071.8 | 2,071.8 | 6.1 | 0.9 | -109.58 | -2,215.0 | 401.5 | 2,316.5 | 2,309.7 | 6.90 | 335.866 | |
| 2,165.3 | 2,134.4 | 2,136.0 | 2,136.0 | 6.5 | 0.9 | -110.11 | -2,214.8 | 401.3 | 2,324.7 | 2,317.4 | 7.31 | 317.927 | |
| 2,200.0 | 2,166.8 | 2,168.1 | 2,168.1 | 6.8 | 0.9 | -110.38 | -2,214.7 | 401.3 | 2,329.1 | 2,321.6 | 7.53 | 309.235 | |
| 2,263.8 | 2,226.4 | 2,227.1 | 2,227.1 | 7.2 | 0.9 | -110.86 | -2,214.5 | 401.2 | 2,337.4 | 2,329.4 | 7.95 | 294.178 | |
| 2,300.0 | 2,260.2 | 2,260.5 | 2,260.5 | 7.4 | 0.9 | -111.14 | -2,214.4 | 401.2 | 2,342.2 | 2,334.0 | 8.18 | 286.375 | |
| 2,362.2 | 2,318.3 | 2,318.7 | 2,318.7 | 7.9 | 0.9 | -111.62 | -2,214.2 | 401.3 | 2,350.6 | 2,342.0 | 8.59 | 273.731 | |
| 2,400.0 | 2,353.6 | 2,355.2 | 2,355.2 | 8.1 | 0.9 | -111.92 | -2,214.0 | 401.4 | 2,355.7 | 2,346.9 | 8.84 | 266.614 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,460.6 | 2,410.3 | 2,412.3 | 2,412.2 | 8.6 | 0.9 | -112.39 | -2,213.8 | 401.4 | 2,364.1 | 2,354.9 | 9.24 | 255.877 | |
| 2,500.0 | 2,447.0 | 2,445.9 | 2,445.9 | 8.9 | 0.9 | -112.66 | -2,213.7 | 401.5 | 2,369.7 | 2,360.2 | 9.50 | 249.429 | |
| 2,559.0 | 2,502.2 | 2,500.0 | 2,500.0 | 9.3 | 0.9 | -113.10 | -2,213.5 | 401.6 | 2,378.3 | 2,368.4 | 9.90 | 240.349 | |
| 2,600.0 | 2,540.5 | 2,536.6 | 2,536.6 | 9.6 | 1.0 | -113.39 | -2,213.5 | 401.7 | 2,384.3 | 2,374.2 | 10.17 | 234.484 | |
| 2,657.5 | 2,594.2 | 2,594.1 | 2,594.0 | 10.0 | 1.0 | -113.85 | -2,213.3 | 401.8 | 2,392.9 | 2,382.3 | 10.55 | 226.740 | |
| 2,700.0 | 2,633.9 | 2,631.9 | 2,631.8 | 10.3 | 1.0 | -114.15 | -2,213.2 | 401.8 | 2,399.3 | 2,388.5 | 10.84 | 221.390 | |
| 2,755.9 | 2,686.1 | 2,680.5 | 2,680.5 | 10.7 | 1.0 | -114.53 | -2,213.1 | 401.9 | 2,407.9 | 2,396.7 | 11.21 | 214.758 | |
| 2,800.0 | 2,727.3 | 2,718.0 | 2,718.0 | 11.0 | 1.0 | -114.82 | -2,213.1 | 401.9 | 2,414.9 | 2,403.4 | 11.51 | 209.844 | |
| 2,854.3 | 2,778.1 | 2,763.1 | 2,763.0 | 11.4 | 1.0 | -115.18 | -2,213.2 | 402.0 | 2,423.6 | 2,411.8 | 11.87 | 204.125 | |
| 2,900.0 | 2,820.7 | 2,801.1 | 2,801.0 | 11.8 | 1.0 | -115.47 | -2,213.3 | 402.1 | 2,431.2 | 2,419.0 | 12.18 | 199.599 | |
| 2,952.7 | 2,870.0 | 2,850.8 | 2,850.8 | 12.2 | 1.0 | -115.85 | -2,213.5 | 402.2 | 2,440.1 | 2,427.5 | 12.54 | 194.589 | |
| 3,000.0 | 2,914.2 | 2,895.4 | 2,895.3 | 12.5 | 1.0 | -116.19 | -2,213.7 | 402.3 | 2,448.1 | 2,435.3 | 12.86 | 190.367 | |
| 3,051.2 | 2,962.0 | 2,944.4 | 2,944.3 | 12.9 | 1.0 | -116.56 | -2,214.0 | 402.4 | 2,456.9 | 2,443.7 | 13.20 | 186.098 | |
| 3,100.0 | 3,007.6 | 2,991.3 | 2,991.2 | 13.3 | 1.1 | -116.91 | -2,214.2 | 402.3 | 2,465.4 | 2,451.9 | 13.53 | 182.253 | |
| 3,149.6 | 3,053.9 | 3,036.2 | 3,036.2 | 13.6 | 1.1 | -117.24 | -2,214.5 | 402.1 | 2,474.1 | 2,460.3 | 13.86 | 178.512 | |
| 3,200.0 | 3,101.0 | 3,081.4 | 3,081.3 | 14.0 | 1.1 | -117.57 | -2,214.8 | 401.9 | 2,483.1 | 2,468.9 | 14.20 | 174.915 | |
| 3,248.0 | 3,145.9 | 3,129.4 | 3,129.3 | 14.4 | 1.1 | -117.92 | -2,215.1 | 401.7 | 2,491.7 | 2,477.2 | 14.51 | 171.688 | |
| 3,300.0 | 3,194.4 | 3,185.5 | 3,185.5 | 14.8 | 1.1 | -118.32 | -2,215.4 | 401.4 | 2,501.1 | 2,486.2 | 14.85 | 168.398 | |
| 3,346.4 | 3,237.8 | 3,243.8 | 3,243.8 | 15.1 | 1.1 | -118.74 | -2,215.4 | 401.1 | 2,509.3 | 2,494.2 | 15.14 | 165.708 | |
| 3,400.0 | 3,287.8 | 3,309.7 | 3,309.6 | 15.5 | 1.1 | -119.21 | -2,215.0 | 400.6 | 2,518.5 | 2,503.1 | 15.48 | 162.731 | |
| 3,444.9 | 3,329.8 | 3,347.9 | 3,347.9 | 15.9 | 1.1 | -119.48 | -2,214.7 | 400.3 | 2,526.3 | 2,510.5 | 15.76 | 160.254 | |
| 3,500.0 | 3,381.3 | 3,394.9 | 3,394.9 | 16.3 | 1.1 | -119.81 | -2,214.4 | 400.0 | 2,536.0 | 2,519.9 | 16.12 | 157.363 | |
| 3,543.3 | 3,421.7 | 3,437.2 | 3,437.1 | 16.6 | 1.1 | -120.11 | -2,214.1 | 399.7 | 2,543.8 | 2,527.4 | 16.39 | 155.202 | |
| 3,600.0 | 3,474.7 | 3,493.8 | 3,493.7 | 17.0 | 1.1 | -120.50 | -2,213.8 | 399.1 | 2,553.9 | 2,537.2 | 16.75 | 152.497 | |
| 3,641.7 | 3,513.7 | 3,529.2 | 3,529.2 | 17.3 | 1.1 | -120.74 | -2,213.7 | 398.6 | 2,561.5 | 2,544.5 | 17.01 | 150.549 | |
| 3,700.0 | 3,568.1 | 3,577.2 | 3,577.2 | 17.8 | 1.1 | -121.06 | -2,213.7 | 397.8 | 2,572.2 | 2,554.9 | 17.39 | 147.952 | |
| 3,740.1 | 3,605.6 | 3,610.9 | 3,610.9 | 18.1 | 1.1 | -121.28 | -2,213.8 | 397.2 | 2,579.8 | 2,562.2 | 17.64 | 146.243 | |
| 3,800.0 | 3,661.5 | 3,663.1 | 3,663.1 | 18.5 | 1.2 | -121.62 | -2,214.0 | 396.3 | 2,591.2 | 2,573.2 | 18.02 | 143.796 | |
| 3,838.6 | 3,697.6 | 3,700.0 | 3,699.9 | 18.8 | 1.2 | -121.86 | -2,214.2 | 395.7 | 2,598.7 | 2,580.5 | 18.26 | 142.285 | |
| 3,900.0 | 3,754.9 | 3,754.8 | 3,754.7 | 19.3 | 1.2 | -122.21 | -2,214.5 | 394.8 | 2,610.8 | 2,592.1 | 18.65 | 139.987 | |
| 3,937.0 | 3,789.5 | 3,789.9 | 3,789.8 | 19.6 | 1.2 | -122.43 | -2,214.8 | 394.2 | 2,618.1 | 2,599.2 | 18.88 | 138.664 | |
| 4,000.0 | 3,848.4 | 3,848.8 | 3,848.6 | 20.1 | 1.2 | -122.80 | -2,215.2 | 393.2 | 2,630.6 | 2,611.3 | 19.27 | 136.506 | |
| 4,035.4 | 3,881.5 | 3,881.8 | 3,881.6 | 20.3 | 1.2 | -123.01 | -2,215.4 | 392.6 | 2,637.7 | 2,618.2 | 19.49 | 135.332 | |
| 4,100.0 | 3,941.8 | 3,943.7 | 3,943.5 | 20.8 | 1.2 | -123.39 | -2,215.9 | 391.3 | 2,650.7 | 2,630.8 | 19.89 | 133.285 | |
| 4,133.8 | 3,973.4 | 3,976.6 | 3,976.4 | 21.1 | 1.2 | -123.59 | -2,216.2 | 390.6 | 2,657.6 | 2,637.5 | 20.09 | 132.254 | |
| 4,200.0 | 4,035.2 | 4,041.1 | 4,040.9 | 21.6 | 1.2 | -123.97 | -2,216.7 | 389.0 | 2,671.0 | 2,650.5 | 20.50 | 130.315 | |
| 4,232.3 | 4,065.4 | 4,072.6 | 4,072.5 | 21.8 | 1.2 | -124.16 | -2,217.0 | 388.2 | 2,677.6 | 2,656.9 | 20.69 | 129.402 | |
| 4,300.0 | 4,128.6 | 4,140.4 | 4,140.1 | 22.3 | 1.3 | -124.55 | -2,217.7 | 386.3 | 2,691.4 | 2,670.3 | 21.10 | 127.561 | |
| 4,330.7 | 4,157.3 | 4,171.5 | 4,171.3 | 22.6 | 1.3 | -124.73 | -2,218.0 | 385.4 | 2,697.7 | 2,676.4 | 21.28 | 126.757 | |
| 4,400.0 | 4,222.0 | 4,240.0 | 4,239.7 | 23.1 | 1.3 | -125.13 | -2,218.4 | 383.6 | 2,711.9 | 2,690.2 | 21.70 | 125.001 | |
| 4,429.1 | 4,249.3 | 4,268.2 | 4,268.0 | 23.3 | 1.3 | -125.29 | -2,218.6 | 382.8 | 2,717.9 | 2,696.0 | 21.87 | 124.286 | |
| 4,500.0 | 4,315.5 | 4,353.7 | 4,353.4 | 23.9 | 1.3 | -125.77 | -2,218.9 | 380.2 | 2,732.4 | 2,710.1 | 22.27 | 122.676 | |
| 4,527.5 | 4,341.2 | 4,392.6 | 4,392.2 | 24.1 | 1.3 | -125.99 | -2,218.9 | 379.0 | 2,737.9 | 2,715.5 | 22.43 | 122.087 | |
| 4,600.0 | 4,408.9 | 4,480.6 | 4,480.3 | 24.6 | 1.3 | -126.48 | -2,218.3 | 375.7 | 2,752.0 | 2,729.2 | 22.83 | 120.531 | |
| 4,626.0 | 4,433.2 | 4,510.6 | 4,510.2 | 24.8 | 1.3 | -126.64 | -2,218.0 | 374.5 | 2,757.0 | 2,734.0 | 22.98 | 119.982 | |
| 4,700.0 | 4,502.3 | 4,590.1 | 4,589.6 | 25.4 | 1.3 | -127.08 | -2,217.1 | 371.2 | 2,771.1 | 2,747.7 | 23.40 | 118.428 | |
| 4,724.4 | 4,525.1 | 4,612.6 | 4,612.1 | 25.6 | 1.4 | -127.20 | -2,216.8 | 370.2 | 2,775.7 | 2,752.2 | 23.54 | 117.916 | |
| 4,800.0 | 4,595.7 | 4,675.2 | 4,674.7 | 26.2 | 1.4 | -127.55 | -2,215.7 | 368.2 | 2,790.3 | 2,766.3 | 23.98 | 116.368 | |
| 4,822.8 | 4,617.1 | 4,700.0 | 4,699.4 | 26.3 | 1.4 | -127.69 | -2,215.2 | 367.7 | 2,794.7 | 2,770.6 | 24.10 | 115.946 | |
| 4,900.0 | 4,689.2 | 4,753.2 | 4,752.6 | 26.9 | 1.4 | -128.01 | -2,213.9 | 367.0 | 2,810.2 | 2,785.6 | 24.55 | 114.447 | |
| 4,921.2 | 4,709.0 | 4,769.2 | 4,768.6 | 27.1 | 1.4 | -128.11 | -2,213.4 | 367.0 | 2,814.5 | 2,789.8 | 24.68 | 114.058 | |
| 5,000.0 | 4,782.6 | 4,830.2 | 4,829.6 | 27.7 | 1.4 | -128.49 | -2,211.7 | 367.2 | 2,831.0 | 2,805.8 | 25.12 | 112.680 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,019.7 | 4,801.0 | 4,845.8 | 4,845.2 | 27.8 | 1.4 | -128.58 | -2,211.3 | 367.3 | 2,835.1 | 2,809.9 | 25.24 | 112.349 | |
| 5,100.0 | 4,876.0 | 4,910.0 | 4,909.3 | 28.4 | 1.4 | -128.98 | -2,209.6 | 367.9 | 2,852.5 | 2,826.8 | 25.69 | 111.050 | |
| 5,118.1 | 4,892.9 | 4,924.8 | 4,924.2 | 28.6 | 1.4 | -129.07 | -2,209.3 | 368.1 | 2,856.5 | 2,830.7 | 25.79 | 110.769 | |
| 5,159.9 | 4,932.0 | 4,959.0 | 4,958.4 | 28.9 | 1.4 | -129.28 | -2,208.5 | 368.4 | 2,865.8 | 2,839.7 | 26.02 | 110.134 | |
| 5,200.0 | 4,969.5 | 4,991.9 | 4,991.2 | 29.2 | 1.4 | -129.61 | -2,207.8 | 368.8 | 2,874.6 | 2,848.4 | 26.16 | 109.871 | |
| 5,216.5 | 4,985.1 | 5,000.0 | 4,999.3 | 29.3 | 1.4 | -129.72 | -2,207.6 | 368.9 | 2,878.2 | 2,851.9 | 26.21 | 109.807 | |
| 5,300.0 | 5,064.0 | 5,073.7 | 5,073.0 | 29.7 | 1.4 | -130.39 | -2,206.2 | 369.8 | 2,895.5 | 2,869.1 | 26.42 | 109.581 | |
| 5,314.9 | 5,078.2 | 5,086.0 | 5,085.3 | 29.8 | 1.4 | -130.50 | -2,206.0 | 370.0 | 2,898.5 | 2,872.1 | 26.46 | 109.558 | |
| 5,400.0 | 5,159.6 | 5,170.9 | 5,170.2 | 30.2 | 1.4 | -131.16 | -2,204.6 | 371.2 | 2,914.7 | 2,888.1 | 26.63 | 109.439 | |
| 5,413.4 | 5,172.4 | 5,184.9 | 5,184.2 | 30.3 | 1.4 | -131.26 | -2,204.4 | 371.4 | 2,917.1 | 2,890.5 | 26.66 | 109.437 | |
| 5,500.0 | 5,256.1 | 5,271.2 | 5,270.5 | 30.7 | 1.4 | -131.85 | -2,202.7 | 372.6 | 2,931.6 | 2,904.8 | 26.81 | 109.363 | |
| 5,511.8 | 5,267.6 | 5,282.9 | 5,282.2 | 30.7 | 1.4 | -131.93 | -2,202.5 | 372.8 | 2,933.5 | 2,906.7 | 26.82 | 109.364 | |
| 5,600.0 | 5,353.5 | 5,361.5 | 5,360.7 | 31.1 | 1.4 | -132.41 | -2,201.0 | 373.8 | 2,946.4 | 2,919.4 | 26.96 | 109.291 | |
| 5,610.2 | 5,363.5 | 5,370.4 | 5,369.6 | 31.1 | 1.4 | -132.46 | -2,200.9 | 373.9 | 2,947.8 | 2,920.8 | 26.97 | 109.292 | |
| 5,700.0 | 5,451.6 | 5,439.5 | 5,438.7 | 31.4 | 1.4 | -132.85 | -2,199.9 | 375.0 | 2,959.4 | 2,932.3 | 27.09 | 109.231 | |
| 5,708.6 | 5,460.2 | 5,445.6 | 5,444.9 | 31.4 | 1.4 | -132.89 | -2,199.9 | 375.1 | 2,960.4 | 2,933.3 | 27.10 | 109.233 | |
| 5,800.0 | 5,550.4 | 5,516.7 | 5,515.9 | 31.7 | 1.4 | -133.22 | -2,199.6 | 376.2 | 2,970.9 | 2,943.7 | 27.20 | 109.214 | |
| 5,807.1 | 5,557.4 | 5,524.6 | 5,523.8 | 31.7 | 1.4 | -133.25 | -2,199.6 | 376.4 | 2,971.6 | 2,944.4 | 27.21 | 109.222 | |
| 5,900.0 | 5,649.6 | 5,632.4 | 5,631.6 | 31.9 | 1.5 | -133.58 | -2,199.4 | 377.8 | 2,980.1 | 2,952.8 | 27.28 | 109.243 | |
| 5,905.5 | 5,655.1 | 5,639.4 | 5,638.6 | 31.9 | 1.5 | -133.60 | -2,199.4 | 377.8 | 2,980.5 | 2,953.2 | 27.28 | 109.248 | |
| 6,000.0 | 5,749.2 | 5,760.3 | 5,759.5 | 32.1 | 1.5 | -133.84 | -2,198.7 | 378.5 | 2,986.1 | 2,958.8 | 27.34 | 109.215 | |
| 6,003.9 | 5,753.1 | 5,765.4 | 5,764.6 | 32.1 | 1.5 | -133.85 | -2,198.6 | 378.5 | 2,986.3 | 2,959.0 | 27.34 | 109.215 | |
| 6,100.0 | 5,849.1 | 5,871.7 | 5,870.9 | 32.3 | 1.5 | -133.98 | -2,197.5 | 378.5 | 2,989.0 | 2,961.6 | 27.41 | 109.067 | |
| 6,102.3 | 5,851.4 | 5,874.2 | 5,873.4 | 32.3 | 1.5 | -133.99 | -2,197.5 | 378.4 | 2,989.1 | 2,961.7 | 27.41 | 109.064 | |
| 6,200.8 | 5,949.8 | 5,969.6 | 5,968.8 | 32.4 | 1.5 | -134.02 | -2,196.4 | 378.3 | 2,989.4 | 2,961.9 | 27.47 | 108.826 | |
| 6,204.9 | 5,953.9 | 5,973.5 | 5,972.7 | 32.4 | 1.5 | 141.54 | -2,196.4 | 378.3 | 2,989.4 | 2,962.8 | 26.62 | 112.304 | |
| 6,234.9 | 5,983.9 | 6,002.0 | 6,001.1 | 32.4 | 1.5 | 141.53 | -2,196.1 | 378.3 | 2,989.1 | 2,962.5 | 26.65 | 112.146 | |
| 6,250.0 | 5,999.0 | 6,016.7 | 6,015.9 | 32.4 | 1.5 | 51.55 | -2,195.9 | 378.3 | 2,988.9 | 2,961.4 | 27.50 | 108.675 | |
| 6,299.2 | 6,048.2 | 6,064.6 | 6,063.7 | 32.4 | 1.5 | 51.71 | -2,195.4 | 378.4 | 2,986.8 | 2,959.3 | 27.52 | 108.516 | |
| 6,300.0 | 6,048.9 | 6,065.3 | 6,064.5 | 32.4 | 1.5 | 51.71 | -2,195.4 | 378.4 | 2,986.8 | 2,959.2 | 27.53 | 108.511 | |
| 6,350.0 | 6,098.5 | 6,113.2 | 6,112.3 | 32.4 | 1.5 | 52.06 | -2,194.8 | 378.6 | 2,982.5 | 2,954.9 | 27.60 | 108.063 | |
| 6,397.6 | 6,145.3 | 6,157.0 | 6,156.1 | 32.3 | 1.5 | 52.57 | -2,194.2 | 378.8 | 2,976.5 | 2,948.8 | 27.72 | 107.389 | |
| 6,400.0 | 6,147.6 | 6,159.1 | 6,158.3 | 32.3 | 1.5 | 52.59 | -2,194.2 | 378.8 | 2,976.2 | 2,948.4 | 27.72 | 107.347 | |
| 6,450.0 | 6,195.8 | 6,204.4 | 6,203.6 | 32.2 | 1.5 | 53.31 | -2,193.7 | 379.1 | 2,967.8 | 2,939.9 | 27.90 | 106.380 | |
| 6,496.0 | 6,239.3 | 6,245.6 | 6,244.7 | 32.1 | 1.5 | 54.14 | -2,193.3 | 379.3 | 2,958.4 | 2,930.3 | 28.10 | 105.291 | |
| 6,500.0 | 6,243.0 | 6,249.0 | 6,248.2 | 32.1 | 1.5 | 54.22 | -2,193.2 | 379.3 | 2,957.5 | 2,929.4 | 28.12 | 105.187 | |
| 6,550.0 | 6,289.0 | 6,292.5 | 6,291.7 | 32.0 | 1.5 | 55.31 | -2,192.8 | 379.6 | 2,945.3 | 2,916.9 | 28.38 | 103.792 | |
| 6,594.5 | 6,328.6 | 6,327.3 | 6,326.4 | 31.8 | 1.6 | 56.42 | -2,192.5 | 379.8 | 2,932.9 | 2,904.3 | 28.63 | 102.431 | |
| 6,600.0 | 6,333.4 | 6,331.4 | 6,330.6 | 31.8 | 1.6 | 56.57 | -2,192.5 | 379.9 | 2,931.3 | 2,902.7 | 28.67 | 102.253 | |
| 6,650.0 | 6,376.2 | 6,368.3 | 6,367.4 | 31.7 | 1.6 | 58.00 | -2,192.3 | 380.1 | 2,915.7 | 2,886.7 | 28.99 | 100.577 | |
| 6,692.9 | 6,411.3 | 6,400.0 | 6,399.2 | 31.6 | 1.6 | 59.38 | -2,192.2 | 380.3 | 2,901.2 | 2,871.9 | 29.29 | 99.033 | |
| 6,700.0 | 6,417.0 | 6,403.9 | 6,403.0 | 31.5 | 1.6 | 59.60 | -2,192.2 | 380.3 | 2,898.6 | 2,869.3 | 29.34 | 98.784 | |
| 6,750.0 | 6,455.7 | 6,440.9 | 6,440.1 | 31.4 | 1.6 | 61.42 | -2,192.1 | 380.6 | 2,880.2 | 2,850.4 | 29.73 | 96.875 | |
| 6,791.3 | 6,486.0 | 6,470.0 | 6,469.2 | 31.3 | 1.6 | 63.05 | -2,192.1 | 380.8 | 2,863.9 | 2,833.8 | 30.07 | 95.253 | |
| 6,800.0 | 6,492.2 | 6,475.9 | 6,475.1 | 31.3 | 1.6 | 63.40 | -2,192.1 | 380.9 | 2,860.4 | 2,830.3 | 30.14 | 94.916 | |
| 6,850.0 | 6,526.1 | 6,509.5 | 6,508.6 | 31.2 | 1.6 | 65.55 | -2,192.0 | 381.1 | 2,839.5 | 2,809.0 | 30.55 | 92.936 | |
| 6,889.7 | 6,551.2 | 6,536.2 | 6,535.3 | 31.2 | 1.6 | 67.38 | -2,192.0 | 381.4 | 2,822.2 | 2,791.3 | 30.89 | 91.350 | |
| 6,900.0 | 6,557.4 | 6,542.7 | 6,541.9 | 31.2 | 1.6 | 67.87 | -2,192.0 | 381.4 | 2,817.6 | 2,786.7 | 30.98 | 90.956 | |
| 6,950.0 | 6,586.0 | 6,573.1 | 6,572.2 | 31.1 | 1.6 | 70.30 | -2,191.9 | 381.6 | 2,795.0 | 2,763.6 | 31.39 | 89.033 | |
| 6,988.2 | 6,605.8 | 6,594.2 | 6,593.3 | 31.2 | 1.6 | 72.21 | -2,191.9 | 381.8 | 2,777.2 | 2,745.5 | 31.70 | 87.604 | |
| 7,000.0 | 6,611.5 | 6,600.0 | 6,599.1 | 31.2 | 1.6 | 72.80 | -2,191.9 | 381.9 | 2,771.7 | 2,739.9 | 31.79 | 87.188 | |
| 7,050.0 | 6,634.1 | 6,622.9 | 6,622.0 | 31.2 | 1.6 | 75.34 | -2,191.8 | 382.0 | 2,748.0 | 2,715.8 | 32.17 | 85.433 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,086.6 | 6,648.6 | 6,637.5 | 6,636.6 | 31.3 | 1.6 | 77.20 | -2,191.8 | 382.2 | 2,730.4 | 2,698.0 | 32.43 | 84.186 | |
| 7,100.0 | 6,653.4 | 6,642.4 | 6,641.5 | 31.4 | 1.6 | 77.88 | -2,191.8 | 382.2 | 2,724.0 | 2,691.5 | 32.52 | 83.757 | |
| 7,150.0 | 6,669.5 | 6,658.7 | 6,657.9 | 31.6 | 1.6 | 80.39 | -2,191.7 | 382.3 | 2,700.0 | 2,667.1 | 32.87 | 82.145 | |
| 7,185.0 | 6,678.8 | 6,668.2 | 6,667.3 | 31.7 | 1.6 | 82.12 | -2,191.7 | 382.4 | 2,683.2 | 2,650.1 | 33.11 | 81.029 | |
| 7,200.0 | 6,682.3 | 6,671.8 | 6,670.9 | 31.8 | 1.6 | 82.85 | -2,191.7 | 382.5 | 2,676.1 | 2,642.9 | 33.21 | 80.574 | |
| 7,250.0 | 6,691.6 | 6,681.5 | 6,680.6 | 32.1 | 1.6 | 85.21 | -2,191.6 | 382.5 | 2,652.5 | 2,618.9 | 33.57 | 79.019 | |
| 7,283.4 | 6,696.0 | 6,686.1 | 6,685.2 | 32.3 | 1.6 | 86.72 | -2,191.6 | 382.6 | 2,636.9 | 2,603.1 | 33.82 | 77.964 | |
| 7,300.0 | 6,697.5 | 6,687.8 | 6,686.9 | 32.4 | 1.6 | 87.45 | -2,191.6 | 382.6 | 2,629.3 | 2,595.4 | 33.95 | 77.458 | |
| 7,350.0 | 6,699.9 | 6,690.7 | 6,689.8 | 32.8 | 1.6 | 89.54 | -2,191.6 | 382.6 | 2,606.8 | 2,572.4 | 34.35 | 75.886 | |
| 7,364.4 | 6,700.0 | 6,690.9 | 6,690.0 | 32.9 | 1.6 | 90.11 | -2,191.6 | 382.6 | 2,600.4 | 2,566.0 | 34.47 | 75.433 | |
| 7,381.9 | 6,699.9 | 6,690.9 | 6,690.1 | 33.1 | 1.6 | 90.11 | -2,191.6 | 382.6 | 2,592.8 | 2,558.2 | 34.63 | 74.881 | |
| 7,400.0 | 6,699.8 | 6,691.0 | 6,690.1 | 33.2 | 1.6 | 90.11 | -2,191.6 | 382.6 | 2,585.0 | 2,550.2 | 34.78 | 74.317 | |
| 7,480.3 | 6,699.2 | 6,691.2 | 6,690.4 | 34.0 | 1.6 | 90.12 | -2,191.6 | 382.6 | 2,551.6 | 2,516.0 | 35.60 | 71.685 | |
| 7,500.0 | 6,699.1 | 6,691.3 | 6,690.4 | 34.2 | 1.6 | 90.12 | -2,191.6 | 382.6 | 2,543.8 | 2,508.0 | 35.79 | 71.066 | |
| 7,578.7 | 6,698.6 | 6,691.6 | 6,690.7 | 35.2 | 1.6 | 90.13 | -2,191.6 | 382.6 | 2,513.6 | 2,476.9 | 36.74 | 68.410 | |
| 7,600.0 | 6,698.5 | 6,691.6 | 6,690.8 | 35.4 | 1.6 | 90.13 | -2,191.6 | 382.6 | 2,505.8 | 2,468.8 | 37.00 | 67.725 | |
| 7,677.1 | 6,698.0 | 6,691.9 | 6,691.0 | 36.5 | 1.6 | 90.13 | -2,191.6 | 382.6 | 2,478.9 | 2,440.9 | 38.07 | 65.123 | |
| 7,700.0 | 6,697.8 | 6,691.9 | 6,691.1 | 36.8 | 1.6 | 90.13 | -2,191.6 | 382.6 | 2,471.4 | 2,433.0 | 38.38 | 64.390 | |
| 7,775.6 | 6,697.3 | 6,692.2 | 6,691.3 | 38.0 | 1.6 | 90.14 | -2,191.6 | 382.6 | 2,447.7 | 2,408.2 | 39.54 | 61.899 | |
| 7,800.0 | 6,697.2 | 6,692.3 | 6,691.4 | 38.3 | 1.6 | 90.14 | -2,191.6 | 382.6 | 2,440.6 | 2,400.6 | 39.92 | 61.137 | |
| 7,874.0 | 6,696.7 | 6,692.5 | 6,691.6 | 39.6 | 1.6 | 90.15 | -2,191.6 | 382.6 | 2,420.1 | 2,379.0 | 41.16 | 58.798 | |
| 7,900.0 | 6,696.5 | 6,692.6 | 6,691.7 | 40.0 | 1.6 | 90.15 | -2,191.6 | 382.7 | 2,413.5 | 2,371.9 | 41.60 | 58.021 | |
| 7,972.4 | 6,696.1 | 6,692.8 | 6,692.0 | 41.3 | 1.6 | 90.16 | -2,191.6 | 382.7 | 2,396.3 | 2,353.4 | 42.90 | 55.858 | |
| 8,000.0 | 6,695.9 | 6,692.9 | 6,692.0 | 41.8 | 1.6 | 90.16 | -2,191.6 | 382.7 | 2,390.3 | 2,346.9 | 43.39 | 55.082 | |
| 8,070.8 | 6,695.4 | 6,693.1 | 6,692.3 | 43.1 | 1.6 | 90.16 | -2,191.6 | 382.7 | 2,376.2 | 2,331.5 | 44.74 | 53.106 | |
| 8,100.0 | 6,695.2 | 6,693.2 | 6,692.4 | 43.7 | 1.6 | 90.17 | -2,191.6 | 382.7 | 2,371.1 | 2,325.8 | 45.30 | 52.341 | |
| 8,169.3 | 6,694.8 | 6,693.5 | 6,692.6 | 45.1 | 1.6 | 90.17 | -2,191.6 | 382.7 | 2,360.1 | 2,313.5 | 46.69 | 50.554 | |
| 8,200.0 | 6,694.6 | 6,693.6 | 6,692.7 | 45.7 | 1.6 | 90.17 | -2,191.6 | 382.7 | 2,355.9 | 2,308.6 | 47.30 | 49.809 | |
| 8,267.7 | 6,694.1 | 6,693.8 | 6,692.9 | 47.1 | 1.6 | 90.18 | -2,191.6 | 382.7 | 2,348.1 | 2,299.4 | 48.71 | 48.207 | |
| 8,300.0 | 6,693.9 | 6,693.9 | 6,693.0 | 47.8 | 1.6 | 90.18 | -2,191.6 | 382.7 | 2,345.0 | 2,295.6 | 49.38 | 47.488 | |
| 8,366.1 | 6,693.5 | 6,694.1 | 6,693.2 | 49.2 | 1.6 | 90.19 | -2,191.6 | 382.7 | 2,340.1 | 2,289.3 | 50.80 | 46.061 | |
| 8,400.0 | 6,693.3 | 6,694.2 | 6,693.4 | 49.9 | 1.6 | 90.19 | -2,191.6 | 382.7 | 2,338.3 | 2,286.7 | 51.53 | 45.375 | |
| 8,464.5 | 6,692.9 | 6,694.4 | 6,693.6 | 51.4 | 1.6 | 90.20 | -2,191.6 | 382.7 | 2,336.2 | 2,283.2 | 52.96 | 44.110 | |
| 8,500.0 | 6,692.6 | 6,694.5 | 6,693.7 | 52.1 | 1.6 | 90.20 | -2,191.6 | 382.7 | 2,335.8 | 2,282.1 | 53.75 | 43.459 | |
| 8,507.4 | 6,692.6 | 6,694.6 | 6,693.7 | 52.3 | 1.6 | 90.20 | -2,191.6 | 382.7 | 2,335.8 | 2,281.9 | 53.91 | 43.324 | |
| 8,563.0 | 6,692.2 | 6,694.8 | 6,693.9 | 53.6 | 1.6 | 90.20 | -2,191.6 | 382.7 | 2,336.5 | 2,281.3 | 55.18 | 42.345 | |
| 8,600.0 | 6,692.0 | 6,694.9 | 6,694.0 | 54.4 | 1.6 | 90.21 | -2,191.6 | 382.7 | 2,337.6 | 2,281.6 | 56.02 | 41.730 | |
| 8,661.4 | 6,691.6 | 6,695.1 | 6,694.2 | 55.8 | 1.6 | 90.21 | -2,191.6 | 382.7 | 2,340.9 | 2,283.4 | 57.44 | 40.753 | |
| 8,700.0 | 6,691.3 | 6,695.2 | 6,694.3 | 56.7 | 1.6 | 90.22 | -2,191.6 | 382.7 | 2,343.7 | 2,285.4 | 58.34 | 40.176 | |
| 8,759.8 | 6,690.9 | 6,695.4 | 6,694.5 | 58.1 | 1.6 | 90.22 | -2,191.6 | 382.7 | 2,349.4 | 2,289.7 | 59.75 | 39.322 | |
| 8,800.0 | 6,690.7 | 6,695.5 | 6,694.7 | 59.1 | 1.6 | 90.22 | -2,191.6 | 382.7 | 2,354.1 | 2,293.4 | 60.70 | 38.784 | |
| 8,858.2 | 6,690.3 | 6,695.7 | 6,694.9 | 60.5 | 1.6 | 90.23 | -2,191.6 | 382.7 | 2,362.0 | 2,299.9 | 62.09 | 38.039 | |
| 8,900.0 | 6,690.0 | 6,695.9 | 6,695.0 | 61.5 | 1.6 | 90.23 | -2,191.6 | 382.7 | 2,368.6 | 2,305.5 | 63.10 | 37.539 | |
| 8,956.7 | 6,689.7 | 6,696.1 | 6,695.2 | 62.9 | 1.6 | 90.24 | -2,191.6 | 382.7 | 2,378.6 | 2,314.1 | 64.47 | 36.892 | |
| 9,000.0 | 6,689.4 | 6,696.2 | 6,695.4 | 63.9 | 1.6 | 90.24 | -2,191.6 | 382.7 | 2,387.2 | 2,321.7 | 65.53 | 36.430 | |
| 9,055.1 | 6,689.0 | 6,696.4 | 6,695.5 | 65.3 | 1.6 | 90.24 | -2,191.6 | 382.7 | 2,399.2 | 2,332.3 | 66.89 | 35.870 | |
| 9,100.0 | 6,688.7 | 6,696.6 | 6,695.7 | 66.4 | 1.6 | 90.25 | -2,191.6 | 382.7 | 2,409.8 | 2,341.8 | 67.99 | 35.443 | |
| 9,153.5 | 6,688.4 | 6,696.7 | 6,695.9 | 67.7 | 1.6 | 90.25 | -2,191.6 | 382.7 | 2,423.5 | 2,354.2 | 69.32 | 34.960 | |
| 9,200.0 | 6,688.1 | 6,696.9 | 6,696.0 | 68.9 | 1.6 | 90.26 | -2,191.6 | 382.7 | 2,436.3 | 2,365.8 | 70.48 | 34.568 | |
| 9,251.9 | 6,687.8 | 6,697.1 | 6,696.2 | 70.2 | 1.6 | 90.26 | -2,191.6 | 382.7 | 2,451.6 | 2,379.8 | 71.79 | 34.152 | |
| 9,300.0 | 6,687.4 | 6,697.2 | 6,696.4 | 71.4 | 1.6 | 90.26 | -2,191.6 | 382.7 | 2,466.6 | 2,393.6 | 72.99 | 33.793 | |
| 9,350.4 | 6,687.1 | 6,697.4 | 6,696.6 | 72.7 | 1.6 | 90.27 | -2,191.6 | 382.7 | 2,483.3 | 2,409.0 | 74.27 | 33.436 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 6,686.8 | 6,697.6 | 6,696.7 | 73.9 | 1.6 | 90.27 | -2,191.6 | 382.7 | 2,500.5 | 2,425.0 | 75.53 | 33.108 | |
| 9,448.8 | 6,686.5 | 6,697.8 | 6,696.9 | 75.2 | 1.6 | 90.28 | -2,191.6 | 382.7 | 2,518.4 | 2,441.6 | 76.77 | 32.803 | |
| 9,500.0 | 6,686.1 | 6,697.9 | 6,697.1 | 76.5 | 1.6 | 90.28 | -2,191.6 | 382.7 | 2,538.0 | 2,459.9 | 78.08 | 32.504 | |
| 9,547.2 | 6,685.8 | 6,698.1 | 6,697.2 | 77.7 | 1.6 | 90.29 | -2,191.6 | 382.7 | 2,556.8 | 2,477.5 | 79.29 | 32.244 | |
| 9,600.0 | 6,685.5 | 6,698.3 | 6,697.4 | 79.0 | 1.6 | 90.29 | -2,191.6 | 382.7 | 2,578.7 | 2,498.1 | 80.65 | 31.974 | |
| 9,645.6 | 6,685.2 | 6,698.4 | 6,697.6 | 80.2 | 1.6 | 90.29 | -2,191.6 | 382.7 | 2,598.4 | 2,516.6 | 81.83 | 31.753 | |
| 9,700.0 | 6,684.8 | 6,698.6 | 6,697.8 | 81.6 | 1.6 | 90.30 | -2,191.6 | 382.7 | 2,622.7 | 2,539.4 | 83.24 | 31.508 | |
| 9,744.1 | 6,684.6 | 6,698.8 | 6,697.9 | 82.8 | 1.6 | 90.30 | -2,191.6 | 382.7 | 2,643.0 | 2,558.6 | 84.39 | 31.321 | |
| 9,800.0 | 6,684.2 | 6,699.0 | 6,698.1 | 84.2 | 1.6 | 90.31 | -2,191.6 | 382.7 | 2,669.6 | 2,583.8 | 85.84 | 31.100 | |
| 9,842.5 | 6,683.9 | 6,699.1 | 6,698.3 | 85.3 | 1.6 | 90.31 | -2,191.6 | 382.7 | 2,690.5 | 2,603.5 | 86.95 | 30.942 | |
| 9,900.0 | 6,683.5 | 6,699.3 | 6,698.5 | 86.8 | 1.6 | 90.32 | -2,191.6 | 382.7 | 2,719.4 | 2,631.0 | 88.45 | 30.744 | |
| 9,940.9 | 6,683.3 | 6,699.5 | 6,698.6 | 87.9 | 1.6 | 90.32 | -2,191.6 | 382.7 | 2,740.6 | 2,651.1 | 89.53 | 30.612 | |
| 10,000.0 | 6,682.9 | 6,699.7 | 6,698.8 | 89.5 | 1.6 | 90.32 | -2,191.6 | 382.7 | 2,772.0 | 2,680.9 | 91.08 | 30.435 | |
| 10,039.3 | 6,682.6 | 6,699.8 | 6,699.0 | 90.5 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,793.4 | 2,701.3 | 92.12 | 30.324 | |
| 10,100.0 | 6,682.2 | 6,700.0 | 6,699.1 | 92.1 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,827.1 | 2,733.4 | 93.72 | 30.166 | |
| 10,137.8 | 6,682.0 | 6,700.0 | 6,699.1 | 93.1 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,848.5 | 2,753.8 | 94.72 | 30.074 | |
| 10,200.0 | 6,681.6 | 6,700.0 | 6,699.1 | 94.8 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,884.6 | 2,788.2 | 96.36 | 29.934 | |
| 10,236.2 | 6,681.4 | 6,700.0 | 6,699.1 | 95.7 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,906.0 | 2,808.7 | 97.33 | 29.859 | |
| 10,300.0 | 6,680.9 | 6,700.0 | 6,699.1 | 97.4 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,944.4 | 2,845.4 | 99.02 | 29.735 | |
| 10,334.6 | 6,680.7 | 6,700.0 | 6,699.1 | 98.3 | 1.6 | 90.33 | -2,191.6 | 382.7 | 2,965.6 | 2,865.7 | 99.94 | 29.673 | |
| 10,400.0 | 6,680.3 | 6,700.0 | 6,699.1 | 100.1 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,006.3 | 2,904.6 | 101.68 | 29.565 | |
| 10,433.0 | 6,680.1 | 6,700.0 | 6,699.1 | 101.0 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,027.2 | 2,924.7 | 102.57 | 29.515 | |
| 10,500.0 | 6,679.7 | 6,700.0 | 6,699.1 | 102.8 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,070.3 | 2,965.9 | 104.36 | 29.421 | |
| 10,531.5 | 6,679.4 | 6,700.0 | 6,699.1 | 103.6 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,090.8 | 2,985.6 | 105.20 | 29.380 | |
| 10,600.0 | 6,679.0 | 6,700.0 | 6,699.1 | 105.4 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,136.1 | 3,029.1 | 107.04 | 29.299 | |
| 10,629.9 | 6,678.8 | 6,700.0 | 6,699.1 | 106.2 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,156.1 | 3,048.3 | 107.84 | 29.267 | |
| 10,700.0 | 6,678.4 | 6,700.0 | 6,699.1 | 108.1 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,203.7 | 3,094.0 | 109.72 | 29.198 | |
| 10,728.3 | 6,678.2 | 6,700.0 | 6,699.1 | 108.9 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,223.1 | 3,112.6 | 110.48 | 29.173 | |
| 10,800.0 | 6,677.7 | 6,700.0 | 6,699.1 | 110.8 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,272.9 | 3,160.5 | 112.41 | 29.115 | |
| 10,826.7 | 6,677.5 | 6,700.0 | 6,699.1 | 111.5 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,291.7 | 3,178.6 | 113.14 | 29.095 | |
| 10,900.0 | 6,677.1 | 6,700.0 | 6,699.1 | 113.5 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,343.7 | 3,228.6 | 115.11 | 29.048 | |
| 10,925.2 | 6,676.9 | 6,700.0 | 6,699.1 | 114.2 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,361.8 | 3,246.0 | 115.79 | 29.033 | |
| 11,000.0 | 6,676.4 | 6,700.0 | 6,699.1 | 116.2 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,416.0 | 3,298.2 | 117.82 | 28.995 | |
| 11,023.6 | 6,676.3 | 6,700.0 | 6,699.1 | 116.8 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,433.3 | 3,314.8 | 118.45 | 28.984 | |
| 11,100.0 | 6,675.8 | 6,700.0 | 6,699.1 | 118.9 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,489.7 | 3,369.1 | 120.52 | 28.954 | |
| 11,122.0 | 6,675.6 | 6,700.0 | 6,699.1 | 119.5 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,506.0 | 3,384.9 | 121.12 | 28.947 | |
| 11,200.0 | 6,675.1 | 6,700.0 | 6,699.1 | 121.6 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,564.6 | 3,441.3 | 123.24 | 28.925 | |
| 11,220.4 | 6,675.0 | 6,700.0 | 6,699.1 | 122.2 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,580.0 | 3,456.3 | 123.79 | 28.920 | |
| 11,300.0 | 6,674.5 | 6,700.0 | 6,699.1 | 124.3 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,640.7 | 3,514.7 | 125.95 | 28.905 | |
| 11,318.9 | 6,674.3 | 6,700.0 | 6,699.1 | 124.9 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,655.2 | 3,528.7 | 126.47 | 28.902 | |
| 11,400.0 | 6,673.8 | 6,700.0 | 6,699.1 | 127.1 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,718.0 | 3,589.3 | 128.68 | 28.894 | |
| 11,417.3 | 6,673.7 | 6,700.0 | 6,699.1 | 127.5 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,731.4 | 3,602.3 | 129.15 | 28.893 | |
| 11,500.0 | 6,673.2 | 6,700.0 | 6,699.1 | 129.8 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,796.3 | 3,664.9 | 131.40 | 28.891 | SF |
| 11,515.7 | 6,673.1 | 6,700.0 | 6,699.1 | 130.2 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,808.7 | 3,676.9 | 131.83 | 28.891 | |
| 11,600.0 | 6,672.5 | 6,700.0 | 6,699.1 | 132.5 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,875.6 | 3,741.5 | 134.13 | 28.895 | |
| 11,614.1 | 6,672.4 | 6,700.0 | 6,699.1 | 132.9 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,886.9 | 3,752.4 | 134.52 | 28.896 | |
| 11,700.0 | 6,671.9 | 6,700.0 | 6,699.1 | 135.3 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,955.9 | 3,819.0 | 136.86 | 28.904 | |
| 11,712.6 | 6,671.8 | 6,700.0 | 6,699.1 | 135.6 | 1.6 | 90.33 | -2,191.6 | 382.7 | 3,966.0 | 3,828.8 | 137.21 | 28.906 | |
| 11,800.0 | 6,671.2 | 6,700.0 | 6,699.1 | 138.0 | 1.6 | 90.33 | -2,191.6 | 382.7 | 4,037.0 | 3,897.4 | 139.60 | 28.919 | |
| 11,811.0 | 6,671.1 | 6,700.0 | 6,699.1 | 138.3 | 1.6 | 90.33 | -2,191.6 | 382.7 | 4,046.0 | 3,906.1 | 139.90 | 28.921 | |
| 11,900.0 | 6,670.6 | 6,700.0 | 6,699.1 | 140.7 | 1.6 | 90.33 | -2,191.6 | 382.7 | 4,119.0 | 3,976.6 | 142.33 | 28.939 | |
| 11,909.4 | 6,670.5 | 6,700.0 | 6,699.1 | 141.0 | 1.6 | 90.33 | -2,191.6 | 382.7 | 4,126.7 | 3,984.1 | 142.59 | 28.941 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #17B - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,987.2 | 6,670.0 | 6,700.0 | 6,699.1 | 143.1 | 1.6 | 90.33 | -2,191.6 | 382.7 | 4,191.1 | 4,046.4 | 144.72 | 28.959 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | | | | |
| 98.4 | 98.4 | 89.4 | 89.4 | 0.1 | 1.2 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,867.6 | 1.27 | 1,466.204 | |
| 100.0 | 100.0 | 91.0 | 91.0 | 0.1 | 1.2 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,867.6 | 1.30 | 1,440.740 | |
| 196.8 | 196.8 | 187.8 | 187.8 | 0.3 | 3.3 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,865.3 | 3.62 | 515.936 | |
| 200.0 | 200.0 | 191.0 | 191.0 | 0.3 | 3.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,865.2 | 3.70 | 505.006 | |
| 295.3 | 295.3 | 286.3 | 286.3 | 0.5 | 5.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,863.0 | 5.91 | 316.247 | |
| 300.0 | 300.0 | 291.0 | 291.0 | 0.5 | 5.5 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,862.9 | 6.02 | 310.535 | |
| 393.7 | 393.7 | 384.7 | 384.7 | 0.8 | 7.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,860.8 | 8.14 | 229.457 | |
| 400.0 | 400.0 | 391.0 | 391.0 | 0.8 | 7.5 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,860.6 | 8.29 | 225.504 | |
| 492.1 | 492.1 | 483.1 | 483.1 | 1.0 | 9.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,858.6 | 10.36 | 180.311 | |
| 500.0 | 500.0 | 491.0 | 491.0 | 1.0 | 9.5 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,858.4 | 10.54 | 177.276 | |
| 590.5 | 590.5 | 581.5 | 581.5 | 1.2 | 11.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,856.3 | 12.58 | 148.586 | |
| 600.0 | 600.0 | 591.0 | 591.0 | 1.2 | 11.6 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,856.1 | 12.79 | 146.119 | |
| 689.0 | 689.0 | 680.0 | 680.0 | 1.4 | 13.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,854.1 | 14.79 | 126.387 | |
| 700.0 | 700.0 | 691.0 | 691.0 | 1.4 | 13.6 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,853.9 | 15.03 | 124.307 | |
| 787.4 | 787.4 | 778.4 | 778.4 | 1.6 | 15.4 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,851.9 | 16.99 | 109.973 | |
| 800.0 | 800.0 | 791.0 | 791.0 | 1.7 | 15.6 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,851.6 | 17.28 | 108.175 | |
| 885.8 | 885.8 | 876.8 | 876.8 | 1.9 | 17.3 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,849.7 | 19.20 | 97.341 | |
| 900.0 | 900.0 | 891.0 | 891.0 | 1.9 | 17.6 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,849.4 | 19.52 | 95.757 | |
| 984.2 | 984.2 | 975.2 | 975.2 | 2.1 | 19.3 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,847.5 | 21.40 | 87.315 | |
| 1,000.0 | 1,000.0 | 991.0 | 991.0 | 2.1 | 19.6 | 145.94 | -1,548.3 | 1,046.7 | 1,868.9 | 1,847.2 | 21.76 | 85.900 | |
| 1,082.7 | 1,082.7 | 1,073.7 | 1,073.7 | 2.3 | 21.3 | -129.64 | -1,548.3 | 1,046.7 | 1,869.7 | 1,846.1 | 23.59 | 79.243 | |
| 1,100.0 | 1,100.0 | 1,091.0 | 1,091.0 | 2.3 | 21.6 | -129.65 | -1,548.3 | 1,046.7 | 1,870.0 | 1,846.1 | 23.98 | 77.990 | |
| 1,181.1 | 1,181.0 | 1,172.0 | 1,172.0 | 2.5 | 23.3 | -129.70 | -1,548.3 | 1,046.7 | 1,872.6 | 1,846.8 | 25.76 | 72.687 | |
| 1,200.0 | 1,199.8 | 1,190.8 | 1,190.8 | 2.5 | 23.7 | -129.72 | -1,548.3 | 1,046.7 | 1,873.4 | 1,847.2 | 26.18 | 71.568 | |
| 1,279.5 | 1,279.1 | 1,270.1 | 1,270.1 | 2.7 | 25.3 | -129.81 | -1,548.3 | 1,046.7 | 1,877.6 | 1,849.7 | 27.92 | 67.258 | |
| 1,300.0 | 1,299.5 | 1,290.5 | 1,290.5 | 2.8 | 25.7 | -129.83 | -1,548.3 | 1,046.7 | 1,879.0 | 1,850.6 | 28.36 | 66.249 | |
| 1,377.9 | 1,376.9 | 1,367.9 | 1,367.9 | 3.0 | 27.2 | -129.96 | -1,548.3 | 1,046.7 | 1,884.9 | 1,854.8 | 30.06 | 62.705 | |
| 1,400.0 | 1,398.7 | 1,389.7 | 1,389.7 | 3.0 | 27.7 | -130.00 | -1,548.3 | 1,046.7 | 1,886.8 | 1,856.3 | 30.54 | 61.790 | |
| 1,476.4 | 1,474.2 | 1,465.2 | 1,465.2 | 3.2 | 29.2 | -130.15 | -1,548.3 | 1,046.7 | 1,894.4 | 1,862.2 | 32.19 | 58.849 | |
| 1,500.0 | 1,497.5 | 1,488.5 | 1,488.5 | 3.3 | 29.7 | -130.20 | -1,548.3 | 1,046.7 | 1,897.0 | 1,864.3 | 32.70 | 58.016 | |
| 1,574.8 | 1,571.0 | 1,562.0 | 1,562.0 | 3.5 | 31.1 | -130.38 | -1,548.3 | 1,046.7 | 1,906.1 | 1,871.8 | 34.31 | 55.556 | |
| 1,600.0 | 1,595.6 | 1,586.6 | 1,586.6 | 3.6 | 31.6 | -130.44 | -1,548.3 | 1,046.7 | 1,909.4 | 1,874.6 | 34.85 | 54.797 | |
| 1,673.2 | 1,667.0 | 1,658.0 | 1,658.0 | 3.9 | 33.1 | -130.64 | -1,548.3 | 1,046.7 | 1,920.1 | 1,883.7 | 36.42 | 52.727 | |
| 1,700.0 | 1,693.1 | 1,684.1 | 1,684.1 | 4.0 | 33.6 | -130.72 | -1,548.3 | 1,046.7 | 1,924.3 | 1,887.3 | 36.98 | 52.032 | |
| 1,771.6 | 1,762.4 | 1,753.4 | 1,753.4 | 4.3 | 35.0 | -130.93 | -1,548.3 | 1,046.7 | 1,936.4 | 1,897.9 | 38.51 | 50.282 | |
| 1,800.0 | 1,789.6 | 1,780.6 | 1,780.6 | 4.4 | 35.5 | -131.02 | -1,548.3 | 1,046.7 | 1,941.6 | 1,902.5 | 39.11 | 49.647 | |
| 1,870.1 | 1,856.8 | 1,847.8 | 1,847.8 | 4.7 | 36.9 | -131.25 | -1,548.3 | 1,046.7 | 1,955.1 | 1,914.5 | 40.59 | 48.164 | |
| 1,900.0 | 1,885.3 | 1,876.3 | 1,876.3 | 4.9 | 37.5 | -131.35 | -1,548.3 | 1,046.7 | 1,961.3 | 1,920.1 | 41.22 | 47.584 | |
| 1,968.5 | 1,950.2 | 1,941.2 | 1,941.2 | 5.3 | 38.8 | -131.58 | -1,548.3 | 1,046.7 | 1,976.3 | 1,933.6 | 42.66 | 46.326 | |
| 2,000.0 | 1,979.8 | 1,970.8 | 1,970.8 | 5.5 | 39.4 | -131.69 | -1,548.3 | 1,046.7 | 1,983.6 | 1,940.2 | 43.31 | 45.796 | |
| 2,044.9 | 2,021.9 | 2,012.9 | 2,012.9 | 5.7 | 40.2 | -131.85 | -1,548.3 | 1,046.7 | 1,994.4 | 1,950.1 | 44.25 | 45.072 | |
| 2,066.9 | 2,042.5 | 2,033.5 | 2,033.5 | 5.9 | 40.6 | -132.01 | -1,548.3 | 1,046.7 | 1,999.8 | 1,955.1 | 44.75 | 44.688 | |
| 2,100.0 | 2,073.4 | 2,064.4 | 2,064.4 | 6.1 | 41.2 | -132.25 | -1,548.3 | 1,046.7 | 2,008.0 | 1,962.5 | 45.51 | 44.127 | |
| 2,165.3 | 2,134.4 | 2,125.4 | 2,125.4 | 6.5 | 42.5 | -132.73 | -1,548.3 | 1,046.7 | 2,024.4 | 1,977.4 | 47.00 | 43.068 | |
| 2,200.0 | 2,166.8 | 2,157.8 | 2,157.8 | 6.8 | 43.1 | -132.97 | -1,548.3 | 1,046.7 | 2,033.1 | 1,985.3 | 47.80 | 42.536 | |
| 2,263.8 | 2,226.4 | 2,217.4 | 2,217.4 | 7.2 | 44.3 | -133.42 | -1,548.3 | 1,046.7 | 2,049.2 | 1,999.9 | 49.26 | 41.598 | |
| 2,300.0 | 2,260.2 | 2,251.2 | 2,251.2 | 7.4 | 45.0 | -133.67 | -1,548.3 | 1,046.7 | 2,058.4 | 2,008.3 | 50.09 | 41.092 | |
| 2,362.2 | 2,318.3 | 2,309.3 | 2,309.3 | 7.9 | 46.2 | -134.10 | -1,548.3 | 1,046.7 | 2,074.3 | 2,022.8 | 51.52 | 40.261 | |
| 2,400.0 | 2,353.6 | 2,344.6 | 2,344.6 | 8.1 | 46.9 | -134.36 | -1,548.3 | 1,046.7 | 2,084.1 | 2,031.7 | 52.39 | 39.780 | |
| 2,460.6 | 2,410.3 | 2,401.3 | 2,401.3 | 8.6 | 48.0 | -134.77 | -1,548.3 | 1,046.7 | 2,099.8 | 2,046.0 | 53.78 | 39.041 | |
| 2,500.0 | 2,447.0 | 2,438.0 | 2,438.0 | 8.9 | 48.8 | -135.03 | -1,548.3 | 1,046.7 | 2,110.0 | 2,055.3 | 54.69 | 38.584 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,493.2 | 2,493.2 | 9.3 | 49.9 | -135.42 | -1,548.3 | 1,046.7 | 2,125.4 | 2,069.4 | 56.04 | 37.926 | |
| 2,600.0 | 2,540.5 | 2,531.5 | 2,531.5 | 9.6 | 50.6 | -135.69 | -1,548.3 | 1,046.7 | 2,136.2 | 2,079.2 | 56.98 | 37.490 | |
| 2,657.5 | 2,594.2 | 2,585.2 | 2,585.2 | 10.0 | 51.7 | -136.06 | -1,548.3 | 1,046.7 | 2,151.4 | 2,093.1 | 58.30 | 36.904 | |
| 2,700.0 | 2,633.9 | 2,624.9 | 2,624.9 | 10.3 | 52.5 | -136.33 | -1,548.3 | 1,046.7 | 2,162.7 | 2,103.4 | 59.27 | 36.489 | |
| 2,755.9 | 2,686.1 | 2,677.1 | 2,677.1 | 10.7 | 53.6 | -136.68 | -1,548.3 | 1,046.7 | 2,177.6 | 2,117.1 | 60.55 | 35.965 | |
| 2,800.0 | 2,727.3 | 2,718.3 | 2,718.3 | 11.0 | 54.4 | -136.95 | -1,548.3 | 1,046.7 | 2,189.5 | 2,127.9 | 61.56 | 35.569 | |
| 2,854.3 | 2,778.1 | 2,769.1 | 2,769.1 | 11.4 | 55.4 | -137.28 | -1,548.3 | 1,046.7 | 2,204.1 | 2,141.3 | 62.79 | 35.100 | |
| 2,900.0 | 2,820.7 | 2,811.7 | 2,811.7 | 11.8 | 56.3 | -137.56 | -1,548.3 | 1,046.7 | 2,216.5 | 2,152.6 | 63.84 | 34.722 | |
| 2,952.7 | 2,870.0 | 2,861.0 | 2,861.0 | 12.2 | 57.3 | -137.88 | -1,548.3 | 1,046.7 | 2,230.8 | 2,165.8 | 65.04 | 34.301 | |
| 3,000.0 | 2,914.2 | 2,905.2 | 2,905.2 | 12.5 | 58.2 | -138.16 | -1,548.3 | 1,046.7 | 2,243.7 | 2,177.6 | 66.11 | 33.939 | |
| 3,051.2 | 2,962.0 | 2,953.0 | 2,953.0 | 12.9 | 59.1 | -138.46 | -1,548.3 | 1,046.7 | 2,257.7 | 2,190.5 | 67.27 | 33.562 | |
| 3,100.0 | 3,007.6 | 2,998.6 | 2,998.6 | 13.3 | 60.0 | -138.74 | -1,548.3 | 1,046.7 | 2,271.2 | 2,202.8 | 68.38 | 33.216 | |
| 3,149.6 | 3,053.9 | 3,044.9 | 3,044.9 | 13.6 | 61.0 | -139.03 | -1,548.3 | 1,046.7 | 2,284.9 | 2,215.4 | 69.50 | 32.876 | |
| 3,200.0 | 3,101.0 | 3,092.0 | 3,092.0 | 14.0 | 61.9 | -139.31 | -1,548.3 | 1,046.7 | 2,298.9 | 2,228.2 | 70.64 | 32.544 | |
| 3,248.0 | 3,145.9 | 3,136.9 | 3,136.9 | 14.4 | 62.8 | -139.58 | -1,548.3 | 1,046.7 | 2,312.3 | 2,240.5 | 71.72 | 32.239 | |
| 3,300.0 | 3,194.4 | 3,185.4 | 3,185.4 | 14.8 | 63.8 | -139.87 | -1,548.3 | 1,046.7 | 2,326.8 | 2,253.9 | 72.89 | 31.920 | |
| 3,346.4 | 3,237.8 | 3,228.8 | 3,228.8 | 15.1 | 64.7 | -140.12 | -1,548.3 | 1,046.7 | 2,339.8 | 2,265.9 | 73.94 | 31.645 | |
| 3,400.0 | 3,287.8 | 3,278.8 | 3,278.8 | 15.5 | 65.7 | -140.41 | -1,548.3 | 1,046.7 | 2,354.9 | 2,279.8 | 75.14 | 31.339 | |
| 3,444.9 | 3,329.8 | 3,320.8 | 3,320.8 | 15.9 | 66.5 | -140.66 | -1,548.3 | 1,046.7 | 2,367.6 | 2,291.5 | 76.15 | 31.091 | |
| 3,500.0 | 3,381.3 | 3,372.3 | 3,372.3 | 16.3 | 67.5 | -140.95 | -1,548.3 | 1,046.7 | 2,383.3 | 2,305.9 | 77.39 | 30.797 | |
| 3,543.3 | 3,421.7 | 3,412.7 | 3,412.7 | 16.6 | 68.4 | -141.17 | -1,548.3 | 1,046.7 | 2,395.6 | 2,317.2 | 78.35 | 30.574 | |
| 3,600.0 | 3,474.7 | 3,465.7 | 3,465.7 | 17.0 | 69.4 | -141.47 | -1,548.3 | 1,046.7 | 2,411.8 | 2,332.2 | 79.62 | 30.290 | |
| 3,641.7 | 3,513.7 | 3,504.7 | 3,504.7 | 17.3 | 70.2 | -141.68 | -1,548.3 | 1,046.7 | 2,423.7 | 2,343.2 | 80.55 | 30.089 | |
| 3,700.0 | 3,568.1 | 3,559.1 | 3,559.1 | 17.8 | 71.3 | -141.98 | -1,548.3 | 1,046.7 | 2,440.5 | 2,358.6 | 81.85 | 29.816 | |
| 3,740.1 | 3,605.6 | 3,596.6 | 3,596.6 | 18.1 | 72.1 | -142.18 | -1,548.3 | 1,046.7 | 2,452.1 | 2,369.3 | 82.75 | 29.634 | |
| 3,800.0 | 3,661.5 | 3,652.5 | 3,652.5 | 18.5 | 73.2 | -142.47 | -1,548.3 | 1,046.7 | 2,469.4 | 2,385.3 | 84.08 | 29.371 | |
| 3,838.6 | 3,697.6 | 3,688.6 | 3,688.6 | 18.8 | 73.9 | -142.66 | -1,548.3 | 1,046.7 | 2,480.6 | 2,395.6 | 84.93 | 29.206 | |
| 3,900.0 | 3,754.9 | 3,745.9 | 3,745.9 | 19.3 | 75.1 | -142.96 | -1,548.3 | 1,046.7 | 2,498.5 | 2,412.2 | 86.30 | 28.952 | |
| 3,937.0 | 3,789.5 | 3,780.5 | 3,780.5 | 19.6 | 75.8 | -143.14 | -1,548.3 | 1,046.7 | 2,509.3 | 2,422.1 | 87.12 | 28.804 | |
| 4,000.0 | 3,848.4 | 3,839.4 | 3,839.4 | 20.1 | 76.9 | -143.44 | -1,548.3 | 1,046.7 | 2,527.7 | 2,439.2 | 88.51 | 28.559 | |
| 4,035.4 | 3,881.5 | 3,872.5 | 3,872.5 | 20.3 | 77.6 | -143.60 | -1,548.3 | 1,046.7 | 2,538.1 | 2,448.8 | 89.29 | 28.425 | |
| 4,100.0 | 3,941.8 | 3,932.8 | 3,932.8 | 20.8 | 78.8 | -143.90 | -1,548.3 | 1,046.7 | 2,557.1 | 2,466.4 | 90.72 | 28.188 | |
| 4,133.8 | 3,973.4 | 3,964.4 | 3,964.4 | 21.1 | 79.5 | -144.06 | -1,548.3 | 1,046.7 | 2,567.1 | 2,475.6 | 91.46 | 28.067 | |
| 4,200.0 | 4,035.2 | 4,026.2 | 4,026.2 | 21.6 | 80.7 | -144.36 | -1,548.3 | 1,046.7 | 2,586.7 | 2,493.7 | 92.92 | 27.838 | |
| 4,232.3 | 4,065.4 | 4,056.4 | 4,056.4 | 21.8 | 81.3 | -144.50 | -1,548.3 | 1,046.7 | 2,596.2 | 2,502.6 | 93.63 | 27.729 | |
| 4,300.0 | 4,128.6 | 4,119.6 | 4,119.6 | 22.3 | 82.6 | -144.80 | -1,548.3 | 1,046.7 | 2,616.4 | 2,521.3 | 95.12 | 27.507 | |
| 4,330.7 | 4,157.3 | 4,148.3 | 4,148.3 | 22.6 | 83.2 | -144.94 | -1,548.3 | 1,046.7 | 2,625.5 | 2,529.7 | 95.79 | 27.409 | |
| 4,400.0 | 4,222.0 | 4,213.0 | 4,213.0 | 23.1 | 84.5 | -145.24 | -1,548.3 | 1,046.7 | 2,646.2 | 2,548.9 | 97.31 | 27.194 | |
| 4,429.1 | 4,249.3 | 4,240.3 | 4,240.3 | 23.3 | 85.0 | -145.36 | -1,548.3 | 1,046.7 | 2,654.9 | 2,557.0 | 97.95 | 27.106 | |
| 4,500.0 | 4,315.5 | 4,306.5 | 4,306.5 | 23.9 | 86.3 | -145.67 | -1,548.3 | 1,046.7 | 2,676.2 | 2,576.7 | 99.50 | 26.898 | |
| 4,527.5 | 4,341.2 | 4,332.2 | 4,332.2 | 24.1 | 86.9 | -145.78 | -1,548.3 | 1,046.7 | 2,684.5 | 2,584.4 | 100.10 | 26.819 | |
| 4,600.0 | 4,408.9 | 4,399.9 | 4,399.9 | 24.6 | 88.2 | -146.08 | -1,548.3 | 1,046.7 | 2,706.4 | 2,604.7 | 101.68 | 26.617 | |
| 4,626.0 | 4,433.2 | 4,424.2 | 4,424.2 | 24.8 | 88.7 | -146.19 | -1,548.3 | 1,046.7 | 2,714.2 | 2,612.0 | 102.24 | 26.546 | |
| 4,700.0 | 4,502.3 | 4,493.3 | 4,493.3 | 25.4 | 90.1 | -146.49 | -1,548.3 | 1,046.7 | 2,736.6 | 2,632.8 | 103.86 | 26.350 | |
| 4,724.4 | 4,525.1 | 4,516.1 | 4,516.1 | 25.6 | 90.6 | -146.59 | -1,548.3 | 1,046.7 | 2,744.0 | 2,639.7 | 104.39 | 26.287 | |
| 4,800.0 | 4,595.7 | 4,586.7 | 4,586.7 | 26.2 | 92.0 | -146.89 | -1,548.3 | 1,046.7 | 2,767.0 | 2,661.0 | 106.03 | 26.097 | |
| 4,822.8 | 4,617.1 | 4,608.1 | 4,608.1 | 26.3 | 92.4 | -146.98 | -1,548.3 | 1,046.7 | 2,774.0 | 2,667.5 | 106.53 | 26.041 | |
| 4,900.0 | 4,689.2 | 4,680.2 | 4,680.2 | 26.9 | 93.8 | -147.28 | -1,548.3 | 1,046.7 | 2,797.6 | 2,689.4 | 108.20 | 25.856 | |
| 4,921.2 | 4,709.0 | 4,700.0 | 4,700.0 | 27.1 | 94.2 | -147.37 | -1,548.3 | 1,046.7 | 2,804.1 | 2,695.4 | 108.66 | 25.806 | |
| 5,000.0 | 4,782.6 | 4,773.6 | 4,773.6 | 27.7 | 95.7 | -147.67 | -1,548.3 | 1,046.7 | 2,828.2 | 2,717.8 | 110.37 | 25.626 | |
| 5,019.7 | 4,801.0 | 4,792.0 | 4,792.0 | 27.8 | 96.1 | -147.74 | -1,548.3 | 1,046.7 | 2,834.3 | 2,723.5 | 110.79 | 25.582 | |
| 5,100.0 | 4,876.0 | 4,867.0 | 4,867.0 | 28.4 | 97.6 | -148.04 | -1,548.3 | 1,046.7 | 2,859.0 | 2,746.4 | 112.53 | 25.407 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,883.9 | 4,883.9 | 28.6 | 97.9 | -148.11 | -1,548.3 | 1,046.7 | 2,864.6 | 2,751.6 | 112.92 | 25.368 | |
| 5,159.9 | 4,932.0 | 4,923.0 | 4,923.0 | 28.9 | 98.7 | -148.26 | -1,548.3 | 1,046.7 | 2,877.5 | 2,763.6 | 113.82 | 25.281 | |
| 5,200.0 | 4,969.5 | 4,960.5 | 4,960.5 | 29.2 | 99.5 | -148.54 | -1,548.3 | 1,046.7 | 2,889.6 | 2,774.7 | 114.97 | 25.134 | |
| 5,216.5 | 4,985.1 | 4,976.1 | 4,976.1 | 29.3 | 99.8 | -148.65 | -1,548.3 | 1,046.7 | 2,894.5 | 2,779.1 | 115.43 | 25.075 | |
| 5,300.0 | 5,064.0 | 5,055.0 | 5,055.0 | 29.7 | 101.4 | -149.18 | -1,548.3 | 1,046.7 | 2,918.0 | 2,800.3 | 117.78 | 24.776 | |
| 5,314.9 | 5,078.2 | 5,069.2 | 5,069.2 | 29.8 | 101.7 | -149.26 | -1,548.3 | 1,046.7 | 2,922.0 | 2,803.8 | 118.19 | 24.723 | |
| 5,400.0 | 5,159.6 | 5,150.6 | 5,150.6 | 30.2 | 103.3 | -149.73 | -1,548.3 | 1,046.7 | 2,943.6 | 2,823.1 | 120.56 | 24.417 | |
| 5,413.4 | 5,172.4 | 5,163.4 | 5,163.4 | 30.3 | 103.6 | -149.80 | -1,548.3 | 1,046.7 | 2,946.8 | 2,825.9 | 120.92 | 24.369 | |
| 5,500.0 | 5,256.1 | 5,247.1 | 5,247.1 | 30.7 | 105.3 | -150.22 | -1,548.3 | 1,046.7 | 2,966.4 | 2,843.1 | 123.29 | 24.060 | |
| 5,511.8 | 5,267.6 | 5,258.6 | 5,258.6 | 30.7 | 105.5 | -150.27 | -1,548.3 | 1,046.7 | 2,968.9 | 2,845.3 | 123.61 | 24.018 | |
| 5,600.0 | 5,353.5 | 5,344.5 | 5,344.5 | 31.1 | 107.2 | -150.63 | -1,548.3 | 1,046.7 | 2,986.2 | 2,860.2 | 125.97 | 23.705 | |
| 5,610.2 | 5,363.5 | 5,354.5 | 5,354.5 | 31.1 | 107.4 | -150.67 | -1,548.3 | 1,046.7 | 2,988.1 | 2,861.8 | 126.24 | 23.669 | |
| 5,700.0 | 5,451.6 | 5,442.6 | 5,442.6 | 31.4 | 109.2 | -150.98 | -1,548.3 | 1,046.7 | 3,003.1 | 2,874.5 | 128.59 | 23.355 | |
| 5,708.6 | 5,460.2 | 5,451.2 | 5,451.2 | 31.4 | 109.4 | -151.00 | -1,548.3 | 1,046.7 | 3,004.4 | 2,875.6 | 128.81 | 23.325 | |
| 5,800.0 | 5,550.4 | 5,541.4 | 5,541.4 | 31.7 | 111.2 | -151.26 | -1,548.3 | 1,046.7 | 3,017.0 | 2,885.9 | 131.12 | 23.010 | |
| 5,807.1 | 5,557.4 | 5,548.4 | 5,548.4 | 31.7 | 111.3 | -151.28 | -1,548.3 | 1,046.7 | 3,017.8 | 2,886.6 | 131.29 | 22.986 | |
| 5,900.0 | 5,649.6 | 5,640.6 | 5,640.6 | 31.9 | 113.2 | -151.48 | -1,548.3 | 1,046.7 | 3,027.8 | 2,894.3 | 133.55 | 22.671 | |
| 5,905.5 | 5,655.1 | 5,646.1 | 5,646.1 | 31.9 | 113.3 | -151.49 | -1,548.3 | 1,046.7 | 3,028.4 | 2,894.7 | 133.68 | 22.653 | |
| 6,000.0 | 5,749.2 | 5,740.2 | 5,740.2 | 32.1 | 115.2 | -151.63 | -1,548.3 | 1,046.7 | 3,035.7 | 2,899.8 | 135.89 | 22.340 | |
| 6,003.9 | 5,753.1 | 5,744.1 | 5,744.1 | 32.1 | 115.2 | -151.63 | -1,548.3 | 1,046.7 | 3,035.9 | 2,899.9 | 135.98 | 22.327 | |
| 6,100.0 | 5,849.1 | 5,840.1 | 5,840.1 | 32.3 | 117.2 | -151.72 | -1,548.3 | 1,046.7 | 3,040.4 | 2,902.3 | 138.11 | 22.015 | |
| 6,102.3 | 5,851.4 | 5,842.4 | 5,842.4 | 32.3 | 117.2 | -151.72 | -1,548.3 | 1,046.7 | 3,040.5 | 2,902.3 | 138.16 | 22.007 | |
| 6,200.8 | 5,949.8 | 5,940.8 | 5,940.8 | 32.4 | 119.2 | -151.76 | -1,548.3 | 1,046.7 | 3,042.1 | 2,901.9 | 140.23 | 21.694 | |
| 6,204.9 | 5,953.9 | 5,944.9 | 5,944.9 | 32.4 | 119.3 | 123.80 | -1,548.3 | 1,046.7 | 3,042.1 | 2,893.4 | 148.67 | 20.462 | |
| 6,234.9 | 5,983.9 | 5,974.9 | 5,974.9 | 32.4 | 119.9 | 123.80 | -1,548.3 | 1,046.7 | 3,042.1 | 2,892.8 | 149.30 | 20.375 | |
| 6,250.0 | 5,999.0 | 5,990.0 | 5,990.0 | 32.4 | 120.2 | 33.81 | -1,548.3 | 1,046.7 | 3,042.0 | 2,900.8 | 141.20 | 21.543 | |
| 6,299.2 | 6,048.2 | 6,039.2 | 6,039.2 | 32.4 | 121.2 | 33.94 | -1,548.3 | 1,046.7 | 3,039.7 | 2,898.0 | 141.76 | 21.443 | |
| 6,300.0 | 6,048.9 | 6,039.9 | 6,039.9 | 32.4 | 121.2 | 33.95 | -1,548.3 | 1,046.7 | 3,039.6 | 2,897.9 | 141.76 | 21.442 | |
| 6,350.0 | 6,098.5 | 6,089.5 | 6,089.5 | 32.4 | 122.2 | 34.25 | -1,548.3 | 1,046.7 | 3,034.4 | 2,892.5 | 141.92 | 21.382 | |
| 6,397.6 | 6,145.3 | 6,136.3 | 6,136.3 | 32.3 | 123.1 | 34.69 | -1,548.3 | 1,046.7 | 3,026.8 | 2,885.1 | 141.71 | 21.360 | |
| 6,400.0 | 6,147.6 | 6,138.6 | 6,138.6 | 32.3 | 123.2 | 34.72 | -1,548.3 | 1,046.7 | 3,026.4 | 2,884.7 | 141.69 | 21.360 | |
| 6,450.0 | 6,195.8 | 6,186.8 | 6,186.8 | 32.2 | 124.1 | 35.37 | -1,548.3 | 1,046.7 | 3,015.5 | 2,874.4 | 141.11 | 21.370 | |
| 6,496.0 | 6,239.3 | 6,230.3 | 6,230.3 | 32.1 | 125.0 | 36.14 | -1,548.3 | 1,046.7 | 3,003.1 | 2,862.8 | 140.32 | 21.401 | |
| 6,500.0 | 6,243.0 | 6,234.0 | 6,234.0 | 32.1 | 125.1 | 36.21 | -1,548.3 | 1,046.7 | 3,001.9 | 2,861.7 | 140.25 | 21.404 | |
| 6,550.0 | 6,289.0 | 6,280.0 | 6,280.0 | 32.0 | 126.0 | 37.26 | -1,548.3 | 1,046.7 | 2,985.7 | 2,846.5 | 139.19 | 21.450 | |
| 6,594.5 | 6,328.6 | 6,319.6 | 6,319.6 | 31.8 | 126.8 | 38.36 | -1,548.3 | 1,046.7 | 2,969.0 | 2,830.9 | 138.17 | 21.489 | |
| 6,600.0 | 6,333.4 | 6,324.4 | 6,324.4 | 31.8 | 126.9 | 38.51 | -1,548.3 | 1,046.7 | 2,966.8 | 2,828.8 | 138.04 | 21.492 | |
| 6,650.0 | 6,376.2 | 6,367.2 | 6,367.2 | 31.7 | 127.8 | 40.00 | -1,548.3 | 1,046.7 | 2,945.6 | 2,808.7 | 136.94 | 21.510 | |
| 6,692.9 | 6,411.3 | 6,402.3 | 6,402.3 | 31.6 | 128.5 | 41.48 | -1,548.3 | 1,046.7 | 2,925.5 | 2,789.4 | 136.16 | 21.487 | |
| 6,700.0 | 6,417.0 | 6,408.0 | 6,408.0 | 31.5 | 128.6 | 41.74 | -1,548.3 | 1,046.7 | 2,922.1 | 2,786.0 | 136.05 | 21.478 | |
| 6,750.0 | 6,455.7 | 6,446.7 | 6,446.7 | 31.4 | 129.4 | 43.75 | -1,548.3 | 1,046.7 | 2,896.4 | 2,760.8 | 135.54 | 21.369 | |
| 6,791.3 | 6,486.0 | 6,477.0 | 6,477.0 | 31.3 | 130.0 | 45.63 | -1,548.3 | 1,046.7 | 2,873.6 | 2,738.1 | 135.54 | 21.201 | |
| 6,800.0 | 6,492.2 | 6,483.2 | 6,483.2 | 31.3 | 130.1 | 46.05 | -1,548.3 | 1,046.7 | 2,868.6 | 2,733.1 | 135.60 | 21.156 | |
| 6,850.0 | 6,526.1 | 6,517.1 | 6,517.1 | 31.2 | 130.8 | 48.66 | -1,548.3 | 1,046.7 | 2,839.1 | 2,702.7 | 136.38 | 20.817 | |
| 6,889.7 | 6,551.2 | 6,542.2 | 6,542.2 | 31.2 | 131.3 | 50.97 | -1,548.3 | 1,046.7 | 2,814.4 | 2,676.8 | 137.62 | 20.451 | |
| 6,900.0 | 6,557.4 | 6,548.4 | 6,548.4 | 31.2 | 131.4 | 51.60 | -1,548.3 | 1,046.7 | 2,807.9 | 2,669.9 | 138.02 | 20.344 | |
| 6,950.0 | 6,586.0 | 6,577.0 | 6,577.0 | 31.1 | 132.0 | 54.87 | -1,548.3 | 1,046.7 | 2,775.3 | 2,634.7 | 140.56 | 19.745 | |
| 6,988.2 | 6,605.8 | 6,596.8 | 6,596.8 | 31.2 | 132.4 | 57.59 | -1,548.3 | 1,046.7 | 2,749.5 | 2,606.4 | 143.06 | 19.219 | |
| 7,000.0 | 6,611.5 | 6,602.5 | 6,602.5 | 31.2 | 132.5 | 58.47 | -1,548.3 | 1,046.7 | 2,741.4 | 2,597.4 | 143.92 | 19.048 | |
| 7,050.0 | 6,634.1 | 6,625.1 | 6,625.1 | 31.2 | 133.0 | 62.39 | -1,548.3 | 1,046.7 | 2,706.4 | 2,558.5 | 147.92 | 18.297 | |
| 7,086.6 | 6,648.6 | 6,639.6 | 6,639.6 | 31.3 | 133.3 | 65.44 | -1,548.3 | 1,046.7 | 2,680.2 | 2,529.2 | 151.09 | 17.739 | |
| 7,100.0 | 6,653.4 | 6,644.4 | 6,644.4 | 31.4 | 133.4 | 66.59 | -1,548.3 | 1,046.7 | 2,670.6 | 2,518.3 | 152.27 | 17.539 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,660.5 | 6,660.5 | 31.6 | 133.7 | 71.00 | -1,548.3 | 1,046.7 | 2,634.1 | 2,477.6 | 156.59 | 16.822 | |
| 7,185.0 | 6,678.8 | 6,669.8 | 6,669.8 | 31.7 | 133.9 | 74.19 | -1,548.3 | 1,046.7 | 2,608.4 | 2,449.0 | 159.39 | 16.364 | |
| 7,200.0 | 6,682.3 | 6,673.3 | 6,673.3 | 31.8 | 133.9 | 75.56 | -1,548.3 | 1,046.7 | 2,597.3 | 2,436.8 | 160.49 | 16.183 | |
| 7,250.0 | 6,691.6 | 6,682.6 | 6,682.6 | 32.1 | 134.1 | 80.17 | -1,548.3 | 1,046.7 | 2,560.2 | 2,396.6 | 163.66 | 15.644 | |
| 7,283.4 | 6,696.0 | 6,687.0 | 6,687.0 | 32.3 | 134.2 | 83.24 | -1,548.3 | 1,046.7 | 2,535.4 | 2,370.2 | 165.25 | 15.343 | |
| 7,300.0 | 6,697.5 | 6,688.5 | 6,688.5 | 32.4 | 134.2 | 84.74 | -1,548.3 | 1,046.7 | 2,523.2 | 2,357.3 | 165.86 | 15.213 | |
| 7,350.0 | 6,699.9 | 6,690.9 | 6,690.9 | 32.8 | 134.3 | 89.16 | -1,548.3 | 1,046.7 | 2,486.4 | 2,319.4 | 167.01 | 14.887 | |
| 7,364.4 | 6,700.0 | 6,691.0 | 6,691.0 | 32.9 | 134.3 | 90.40 | -1,548.3 | 1,046.7 | 2,475.9 | 2,308.7 | 167.16 | 14.812 | |
| 7,381.9 | 6,699.9 | 6,690.9 | 6,690.9 | 33.1 | 134.3 | 90.39 | -1,548.3 | 1,046.7 | 2,463.1 | 2,295.8 | 167.31 | 14.722 | |
| 7,400.0 | 6,699.8 | 6,690.8 | 6,690.8 | 33.2 | 134.3 | 90.39 | -1,548.3 | 1,046.7 | 2,450.0 | 2,282.5 | 167.46 | 14.630 | |
| 7,480.3 | 6,699.2 | 6,690.2 | 6,690.2 | 34.0 | 134.3 | 90.37 | -1,548.3 | 1,046.7 | 2,392.6 | 2,224.3 | 168.26 | 14.219 | |
| 7,500.0 | 6,699.1 | 6,690.1 | 6,690.1 | 34.2 | 134.3 | 90.37 | -1,548.3 | 1,046.7 | 2,378.7 | 2,210.2 | 168.46 | 14.120 | |
| 7,578.7 | 6,698.6 | 6,689.6 | 6,689.6 | 35.2 | 134.3 | 90.35 | -1,548.3 | 1,046.7 | 2,324.1 | 2,154.7 | 169.40 | 13.719 | |
| 7,600.0 | 6,698.5 | 6,689.5 | 6,689.5 | 35.4 | 134.3 | 90.35 | -1,548.3 | 1,046.7 | 2,309.5 | 2,139.9 | 169.65 | 13.613 | |
| 7,677.1 | 6,698.0 | 6,689.0 | 6,689.0 | 36.5 | 134.2 | 90.33 | -1,548.3 | 1,046.7 | 2,257.8 | 2,087.0 | 170.71 | 13.226 | |
| 7,700.0 | 6,697.8 | 6,688.8 | 6,688.8 | 36.8 | 134.2 | 90.32 | -1,548.3 | 1,046.7 | 2,242.7 | 2,071.7 | 171.02 | 13.113 | |
| 7,775.6 | 6,697.3 | 6,688.3 | 6,688.3 | 38.0 | 134.2 | 90.31 | -1,548.3 | 1,046.7 | 2,193.9 | 2,021.7 | 172.18 | 12.742 | |
| 7,800.0 | 6,697.2 | 6,688.2 | 6,688.2 | 38.3 | 134.2 | 90.30 | -1,548.3 | 1,046.7 | 2,178.4 | 2,005.9 | 172.55 | 12.625 | |
| 7,874.0 | 6,696.7 | 6,687.7 | 6,687.7 | 39.6 | 134.2 | 90.29 | -1,548.3 | 1,046.7 | 2,132.6 | 1,958.8 | 173.78 | 12.272 | |
| 7,900.0 | 6,696.5 | 6,687.5 | 6,687.5 | 40.0 | 134.2 | 90.28 | -1,548.3 | 1,046.7 | 2,116.9 | 1,942.7 | 174.21 | 12.151 | |
| 7,972.4 | 6,696.1 | 6,687.1 | 6,687.1 | 41.3 | 134.2 | 90.26 | -1,548.3 | 1,046.7 | 2,074.2 | 1,898.7 | 175.50 | 11.818 | |
| 8,000.0 | 6,695.9 | 6,686.9 | 6,686.9 | 41.8 | 134.2 | 90.26 | -1,548.3 | 1,046.7 | 2,058.4 | 1,882.4 | 176.00 | 11.695 | |
| 8,070.8 | 6,695.4 | 6,686.4 | 6,686.4 | 43.1 | 134.2 | 90.24 | -1,548.3 | 1,046.7 | 2,018.9 | 1,841.5 | 177.34 | 11.384 | |
| 8,100.0 | 6,695.2 | 6,686.2 | 6,686.2 | 43.7 | 134.2 | 90.24 | -1,548.3 | 1,046.7 | 2,003.1 | 1,825.2 | 177.89 | 11.261 | |
| 8,169.3 | 6,694.8 | 6,685.8 | 6,685.8 | 45.1 | 134.2 | 90.22 | -1,548.3 | 1,046.7 | 1,967.0 | 1,787.7 | 179.26 | 10.972 | |
| 8,200.0 | 6,694.6 | 6,685.6 | 6,685.6 | 45.7 | 134.2 | 90.21 | -1,548.3 | 1,046.7 | 1,951.5 | 1,771.6 | 179.87 | 10.849 | |
| 8,267.7 | 6,694.1 | 6,685.1 | 6,685.1 | 47.1 | 134.2 | 90.20 | -1,548.3 | 1,046.7 | 1,918.7 | 1,737.4 | 181.27 | 10.584 | |
| 8,300.0 | 6,693.9 | 6,684.9 | 6,684.9 | 47.8 | 134.2 | 90.19 | -1,548.3 | 1,046.7 | 1,903.7 | 1,721.7 | 181.94 | 10.463 | |
| 8,366.1 | 6,693.5 | 6,684.5 | 6,684.5 | 49.2 | 134.2 | 90.18 | -1,548.3 | 1,046.7 | 1,874.3 | 1,691.0 | 183.36 | 10.222 | |
| 8,400.0 | 6,693.3 | 6,684.3 | 6,684.3 | 49.9 | 134.2 | 90.17 | -1,548.3 | 1,046.7 | 1,860.0 | 1,675.9 | 184.08 | 10.104 | |
| 8,464.5 | 6,692.9 | 6,683.9 | 6,683.9 | 51.4 | 134.1 | 90.16 | -1,548.3 | 1,046.7 | 1,834.2 | 1,648.7 | 185.50 | 9.888 | |
| 8,500.0 | 6,692.6 | 6,683.6 | 6,683.6 | 52.1 | 134.1 | 90.15 | -1,548.3 | 1,046.7 | 1,820.8 | 1,634.5 | 186.28 | 9.775 | |
| 8,563.0 | 6,692.2 | 6,683.2 | 6,683.2 | 53.6 | 134.1 | 90.13 | -1,548.3 | 1,046.7 | 1,798.6 | 1,610.9 | 187.70 | 9.582 | |
| 8,600.0 | 6,692.0 | 6,683.0 | 6,683.0 | 54.4 | 134.1 | 90.13 | -1,548.3 | 1,046.7 | 1,786.4 | 1,597.8 | 188.54 | 9.475 | |
| 8,661.4 | 6,691.6 | 6,682.6 | 6,682.6 | 55.8 | 134.1 | 90.11 | -1,548.3 | 1,046.7 | 1,767.7 | 1,577.7 | 189.96 | 9.306 | |
| 8,700.0 | 6,691.3 | 6,682.3 | 6,682.3 | 56.7 | 134.1 | 90.10 | -1,548.3 | 1,046.7 | 1,756.9 | 1,566.1 | 190.85 | 9.206 | |
| 8,759.8 | 6,690.9 | 6,681.9 | 6,681.9 | 58.1 | 134.1 | 90.09 | -1,548.3 | 1,046.7 | 1,741.8 | 1,549.6 | 192.25 | 9.060 | |
| 8,800.0 | 6,690.7 | 6,681.7 | 6,681.7 | 59.1 | 134.1 | 90.08 | -1,548.3 | 1,046.7 | 1,732.8 | 1,539.6 | 193.19 | 8.969 | |
| 8,858.2 | 6,690.3 | 6,681.3 | 6,681.3 | 60.5 | 134.1 | 90.07 | -1,548.3 | 1,046.7 | 1,721.2 | 1,526.7 | 194.58 | 8.846 | |
| 8,900.0 | 6,690.0 | 6,681.0 | 6,681.0 | 61.5 | 134.1 | 90.06 | -1,548.3 | 1,046.7 | 1,714.1 | 1,518.6 | 195.58 | 8.764 | |
| 8,956.7 | 6,689.7 | 6,680.7 | 6,680.7 | 62.9 | 134.1 | 90.05 | -1,548.3 | 1,046.7 | 1,706.1 | 1,509.1 | 196.95 | 8.662 | |
| 9,000.0 | 6,689.4 | 6,680.4 | 6,680.4 | 63.9 | 134.1 | 90.04 | -1,548.3 | 1,046.7 | 1,701.2 | 1,503.2 | 198.00 | 8.592 | |
| 9,055.1 | 6,689.0 | 6,680.0 | 6,680.0 | 65.3 | 134.1 | 90.03 | -1,548.3 | 1,046.7 | 1,696.5 | 1,497.1 | 199.35 | 8.510 | |
| 9,100.0 | 6,688.7 | 6,679.7 | 6,679.7 | 66.4 | 134.1 | 90.02 | -1,548.3 | 1,046.7 | 1,694.0 | 1,493.6 | 200.45 | 8.451 | |
| 9,153.5 | 6,688.4 | 6,679.4 | 6,679.4 | 67.7 | 134.1 | 90.00 | -1,548.3 | 1,046.7 | 1,692.6 | 1,490.8 | 201.77 | 8.389 | |
| 9,171.5 | 6,688.3 | 6,679.3 | 6,679.3 | 68.2 | 134.1 | 90.00 | -1,548.3 | 1,046.7 | 1,692.5 | 1,490.3 | 202.22 | 8.370 | CC |
| 9,200.0 | 6,688.1 | 6,679.1 | 6,679.1 | 68.9 | 134.0 | 89.99 | -1,548.3 | 1,046.7 | 1,692.7 | 1,489.8 | 202.92 | 8.342 | ES |
| 9,251.9 | 6,687.8 | 6,678.8 | 6,678.8 | 70.2 | 134.0 | 89.98 | -1,548.3 | 1,046.7 | 1,694.4 | 1,490.2 | 204.22 | 8.297 | |
| 9,300.0 | 6,687.4 | 6,678.4 | 6,678.4 | 71.4 | 134.0 | 89.97 | -1,548.3 | 1,046.7 | 1,697.4 | 1,492.0 | 205.42 | 8.263 | |
| 9,350.4 | 6,687.1 | 6,678.1 | 6,678.1 | 72.7 | 134.0 | 89.96 | -1,548.3 | 1,046.7 | 1,701.9 | 1,495.2 | 206.69 | 8.234 | |
| 9,400.0 | 6,686.8 | 6,677.8 | 6,677.8 | 73.9 | 134.0 | 89.95 | -1,548.3 | 1,046.7 | 1,707.9 | 1,499.9 | 207.94 | 8.213 | |
| 9,448.8 | 6,686.5 | 6,677.5 | 6,677.5 | 75.2 | 134.0 | 89.94 | -1,548.3 | 1,046.7 | 1,715.1 | 1,505.9 | 209.18 | 8.199 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN/MILLER #23-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,677.1 | 6,677.1 | 76.5 | 134.0 | 89.93 | -1,548.3 | 1,046.7 | 1,724.1 | 1,513.6 | 210.48 | 8.191 | |
| 9,547.2 | 6,685.8 | 6,676.8 | 6,676.8 | 77.7 | 134.0 | 89.92 | -1,548.3 | 1,046.7 | 1,733.7 | 1,522.0 | 211.69 | 8.190 | SF |
| 9,600.0 | 6,685.5 | 6,676.5 | 6,676.5 | 79.0 | 134.0 | 89.91 | -1,548.3 | 1,046.7 | 1,745.9 | 1,532.9 | 213.04 | 8.195 | |
| 9,645.6 | 6,685.2 | 6,676.2 | 6,676.2 | 80.2 | 134.0 | 89.90 | -1,548.3 | 1,046.7 | 1,757.7 | 1,543.5 | 214.22 | 8.205 | |
| 9,700.0 | 6,684.8 | 6,675.8 | 6,675.8 | 81.6 | 134.0 | 89.88 | -1,548.3 | 1,046.7 | 1,773.1 | 1,557.5 | 215.61 | 8.223 | |
| 9,744.1 | 6,684.6 | 6,675.6 | 6,675.6 | 82.8 | 134.0 | 89.87 | -1,548.3 | 1,046.7 | 1,786.7 | 1,570.0 | 216.75 | 8.243 | |
| 9,800.0 | 6,684.2 | 6,675.2 | 6,675.2 | 84.2 | 134.0 | 89.86 | -1,548.3 | 1,046.7 | 1,805.4 | 1,587.2 | 218.20 | 8.274 | |
| 9,842.5 | 6,683.9 | 6,674.9 | 6,674.9 | 85.3 | 134.0 | 89.85 | -1,548.3 | 1,046.7 | 1,820.7 | 1,601.4 | 219.31 | 8.302 | |
| 9,900.0 | 6,683.5 | 6,674.5 | 6,674.5 | 86.8 | 134.0 | 89.84 | -1,548.3 | 1,046.7 | 1,842.6 | 1,621.8 | 220.80 | 8.345 | |
| 9,940.9 | 6,683.3 | 6,674.3 | 6,674.3 | 87.9 | 134.0 | 89.83 | -1,548.3 | 1,046.7 | 1,859.2 | 1,637.3 | 221.87 | 8.380 | |
| 10,000.0 | 6,682.9 | 6,673.9 | 6,673.9 | 89.5 | 133.9 | 89.82 | -1,548.3 | 1,046.7 | 1,884.4 | 1,661.0 | 223.41 | 8.435 | |
| 10,039.3 | 6,682.6 | 6,673.6 | 6,673.6 | 90.5 | 133.9 | 89.81 | -1,548.3 | 1,046.7 | 1,902.0 | 1,677.6 | 224.45 | 8.474 | |
| 10,100.0 | 6,682.2 | 6,673.2 | 6,673.2 | 92.1 | 133.9 | 89.80 | -1,548.3 | 1,046.7 | 1,930.5 | 1,704.4 | 226.04 | 8.540 | |
| 10,137.8 | 6,682.0 | 6,673.0 | 6,673.0 | 93.1 | 133.9 | 89.79 | -1,548.3 | 1,046.7 | 1,948.9 | 1,721.9 | 227.03 | 8.584 | |
| 10,200.0 | 6,681.6 | 6,672.6 | 6,672.6 | 94.8 | 133.9 | 89.77 | -1,548.3 | 1,046.7 | 1,980.5 | 1,751.8 | 228.67 | 8.661 | |
| 10,236.2 | 6,681.4 | 6,672.4 | 6,672.4 | 95.7 | 133.9 | 89.77 | -1,548.3 | 1,046.7 | 1,999.5 | 1,769.9 | 229.63 | 8.708 | |
| 10,300.0 | 6,680.9 | 6,671.9 | 6,671.9 | 97.4 | 133.9 | 89.75 | -1,548.3 | 1,046.7 | 2,034.2 | 1,802.9 | 231.31 | 8.794 | |
| 10,334.6 | 6,680.7 | 6,671.7 | 6,671.7 | 98.3 | 133.9 | 89.74 | -1,548.3 | 1,046.7 | 2,053.6 | 1,821.4 | 232.23 | 8.843 | |
| 10,400.0 | 6,680.3 | 6,671.3 | 6,671.3 | 100.1 | 133.9 | 89.73 | -1,548.3 | 1,046.7 | 2,091.4 | 1,857.4 | 233.96 | 8.939 | |
| 10,433.0 | 6,680.1 | 6,671.1 | 6,671.1 | 101.0 | 133.9 | 89.72 | -1,548.3 | 1,046.7 | 2,110.9 | 1,876.1 | 234.84 | 8.989 | |
| 10,500.0 | 6,679.7 | 6,670.7 | 6,670.7 | 102.8 | 133.9 | 89.71 | -1,548.3 | 1,046.7 | 2,151.6 | 1,915.0 | 236.62 | 9.093 | |
| 10,531.5 | 6,679.4 | 6,670.4 | 6,670.4 | 103.6 | 133.9 | 89.70 | -1,548.3 | 1,046.7 | 2,171.2 | 1,933.7 | 237.46 | 9.143 | |
| 10,600.0 | 6,679.0 | 6,670.0 | 6,670.0 | 105.4 | 133.9 | 89.69 | -1,548.3 | 1,046.7 | 2,214.8 | 1,975.5 | 239.29 | 9.256 | |
| 10,629.9 | 6,678.8 | 6,669.8 | 6,669.8 | 106.2 | 133.9 | 89.68 | -1,548.3 | 1,046.7 | 2,234.2 | 1,994.1 | 240.09 | 9.306 | |
| 10,700.0 | 6,678.4 | 6,669.4 | 6,669.4 | 108.1 | 133.9 | 89.66 | -1,548.3 | 1,046.7 | 2,280.5 | 2,038.6 | 241.96 | 9.425 | |
| 10,728.3 | 6,678.2 | 6,669.2 | 6,669.2 | 108.9 | 133.8 | 89.66 | -1,548.3 | 1,046.7 | 2,299.6 | 2,056.9 | 242.72 | 9.474 | |
| 10,800.0 | 6,677.7 | 6,668.7 | 6,668.7 | 110.8 | 133.8 | 89.64 | -1,548.3 | 1,046.7 | 2,348.7 | 2,104.1 | 244.64 | 9.601 | |
| 10,826.7 | 6,677.5 | 6,668.5 | 6,668.5 | 111.5 | 133.8 | 89.64 | -1,548.3 | 1,046.7 | 2,367.4 | 2,122.0 | 245.36 | 9.649 | |
| 10,900.0 | 6,677.1 | 6,668.1 | 6,668.1 | 113.5 | 133.8 | 89.62 | -1,548.3 | 1,046.7 | 2,419.1 | 2,171.8 | 247.32 | 9.781 | |
| 10,925.2 | 6,676.9 | 6,667.9 | 6,667.9 | 114.2 | 133.8 | 89.61 | -1,548.3 | 1,046.7 | 2,437.2 | 2,189.2 | 248.00 | 9.827 | |
| 11,000.0 | 6,676.4 | 6,667.4 | 6,667.4 | 116.2 | 133.8 | 89.60 | -1,548.3 | 1,046.7 | 2,491.6 | 2,241.6 | 250.01 | 9.966 | |
| 11,023.6 | 6,676.3 | 6,667.3 | 6,667.3 | 116.8 | 133.8 | 89.59 | -1,548.3 | 1,046.7 | 2,508.9 | 2,258.3 | 250.65 | 10.010 | |
| 11,100.0 | 6,675.8 | 6,666.8 | 6,666.8 | 118.9 | 133.8 | 89.58 | -1,548.3 | 1,046.7 | 2,565.9 | 2,313.1 | 252.71 | 10.153 | |
| 11,122.0 | 6,675.6 | 6,666.6 | 6,666.6 | 119.5 | 133.8 | 89.57 | -1,548.3 | 1,046.7 | 2,582.5 | 2,329.1 | 253.30 | 10.195 | |
| 11,200.0 | 6,675.1 | 6,666.1 | 6,666.1 | 121.6 | 133.8 | 89.55 | -1,548.3 | 1,046.7 | 2,641.8 | 2,386.4 | 255.41 | 10.344 | |
| 11,220.4 | 6,675.0 | 6,666.0 | 6,666.0 | 122.2 | 133.8 | 89.55 | -1,548.3 | 1,046.7 | 2,657.6 | 2,401.6 | 255.96 | 10.383 | |
| 11,300.0 | 6,674.5 | 6,665.5 | 6,665.5 | 124.3 | 133.8 | 89.53 | -1,548.3 | 1,046.7 | 2,719.4 | 2,461.3 | 258.11 | 10.536 | |
| 11,318.9 | 6,674.3 | 6,665.3 | 6,665.3 | 124.9 | 133.8 | 89.53 | -1,548.3 | 1,046.7 | 2,734.2 | 2,475.6 | 258.62 | 10.572 | |
| 11,400.0 | 6,673.8 | 6,664.8 | 6,664.8 | 127.1 | 133.8 | 89.51 | -1,548.3 | 1,046.7 | 2,798.3 | 2,537.5 | 260.82 | 10.729 | |
| 11,417.3 | 6,673.7 | 6,664.7 | 6,664.7 | 127.5 | 133.8 | 89.51 | -1,548.3 | 1,046.7 | 2,812.1 | 2,550.8 | 261.29 | 10.763 | |
| 11,500.0 | 6,673.2 | 6,664.2 | 6,664.2 | 129.8 | 133.7 | 89.49 | -1,548.3 | 1,046.7 | 2,878.6 | 2,615.1 | 263.53 | 10.923 | |
| 11,515.7 | 6,673.1 | 6,664.1 | 6,664.1 | 130.2 | 133.7 | 89.49 | -1,548.3 | 1,046.7 | 2,891.3 | 2,627.4 | 263.95 | 10.954 | |
| 11,600.0 | 6,672.5 | 6,663.5 | 6,663.5 | 132.5 | 133.7 | 89.47 | -1,548.3 | 1,046.7 | 2,960.1 | 2,693.8 | 266.24 | 11.118 | |
| 11,614.1 | 6,672.4 | 6,663.4 | 6,663.4 | 132.9 | 133.7 | 89.46 | -1,548.3 | 1,046.7 | 2,971.7 | 2,705.1 | 266.63 | 11.146 | |
| 11,700.0 | 6,671.9 | 6,662.9 | 6,662.9 | 135.3 | 133.7 | 89.44 | -1,548.3 | 1,046.7 | 3,042.7 | 2,773.7 | 268.96 | 11.313 | |
| 11,712.6 | 6,671.8 | 6,662.8 | 6,662.8 | 135.6 | 133.7 | 89.44 | -1,548.3 | 1,046.7 | 3,053.1 | 2,783.8 | 269.30 | 11.337 | |
| 11,800.0 | 6,671.2 | 6,662.2 | 6,662.2 | 138.0 | 133.7 | 89.42 | -1,548.3 | 1,046.7 | 3,126.2 | 2,854.6 | 271.68 | 11.507 | |
| 11,811.0 | 6,671.1 | 6,662.1 | 6,662.1 | 138.3 | 133.7 | 89.42 | -1,548.3 | 1,046.7 | 3,135.5 | 2,863.5 | 271.98 | 11.528 | |
| 11,900.0 | 6,670.6 | 6,661.6 | 6,661.6 | 140.7 | 133.7 | 89.40 | -1,548.3 | 1,046.7 | 3,210.8 | 2,936.4 | 274.40 | 11.701 | |
| 11,909.4 | 6,670.5 | 6,661.5 | 6,661.5 | 141.0 | 133.7 | 89.40 | -1,548.3 | 1,046.7 | 3,218.8 | 2,944.1 | 274.66 | 11.719 | |
| 11,987.2 | 6,670.0 | 6,661.0 | 6,661.0 | 143.1 | 133.7 | 89.38 | -1,548.3 | 1,046.7 | 3,285.2 | 3,008.4 | 276.78 | 11.869 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | | | | |
| 98.4 | 98.4 | 95.4 | 95.4 | 0.1 | 1.2 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,630.8 | 1.28 | 1,277.548 | |
| 100.0 | 100.0 | 97.0 | 97.0 | 0.1 | 1.2 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,630.8 | 1.30 | 1,256.625 | |
| 196.8 | 196.8 | 193.8 | 193.8 | 0.3 | 3.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,628.4 | 3.69 | 441.792 | |
| 200.0 | 200.0 | 197.0 | 197.0 | 0.3 | 3.5 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,628.3 | 3.77 | 432.550 | |
| 295.3 | 295.3 | 292.3 | 292.3 | 0.5 | 5.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,626.1 | 5.97 | 273.253 | |
| 300.0 | 300.0 | 297.0 | 297.0 | 0.5 | 5.5 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,626.0 | 6.08 | 268.365 | |
| 393.7 | 393.7 | 390.7 | 390.7 | 0.8 | 7.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,623.9 | 8.21 | 198.875 | |
| 400.0 | 400.0 | 397.0 | 397.0 | 0.8 | 7.6 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,623.7 | 8.35 | 195.473 | |
| 492.1 | 492.1 | 489.1 | 489.1 | 1.0 | 9.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,621.7 | 10.43 | 156.539 | |
| 500.0 | 500.0 | 497.0 | 497.0 | 1.0 | 9.6 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,621.5 | 10.60 | 153.919 | |
| 590.5 | 590.5 | 587.5 | 587.5 | 1.2 | 11.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,619.5 | 12.64 | 129.133 | |
| 600.0 | 600.0 | 597.0 | 597.0 | 1.2 | 11.6 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,619.2 | 12.85 | 126.998 | |
| 689.0 | 689.0 | 686.0 | 686.0 | 1.4 | 13.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,617.2 | 14.85 | 109.920 | |
| 700.0 | 700.0 | 697.0 | 697.0 | 1.4 | 13.6 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,617.0 | 15.10 | 108.118 | |
| 787.4 | 787.4 | 784.4 | 784.4 | 1.6 | 15.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,615.0 | 17.05 | 95.696 | |
| 800.0 | 800.0 | 797.0 | 797.0 | 1.7 | 15.7 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,614.8 | 17.34 | 94.137 | |
| 885.8 | 885.8 | 882.8 | 882.8 | 1.9 | 17.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,612.8 | 19.26 | 84.739 | |
| 900.0 | 900.0 | 897.0 | 897.0 | 1.9 | 17.7 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,612.5 | 19.58 | 83.364 | |
| 984.2 | 984.2 | 981.2 | 981.2 | 2.1 | 19.4 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,610.6 | 21.46 | 76.036 | |
| 1,000.0 | 1,000.0 | 997.0 | 997.0 | 2.1 | 19.7 | -101.76 | -332.6 | -1,597.9 | 1,632.1 | 1,610.3 | 21.82 | 74.807 | |
| 1,082.7 | 1,082.7 | 1,079.7 | 1,079.7 | 2.3 | 21.4 | -17.34 | -332.6 | -1,597.9 | 1,631.0 | 1,607.3 | 23.65 | 68.963 | |
| 1,100.0 | 1,100.0 | 1,097.0 | 1,097.0 | 2.3 | 21.7 | -17.35 | -332.6 | -1,597.9 | 1,630.4 | 1,606.4 | 24.03 | 67.848 | |
| 1,181.1 | 1,181.0 | 1,178.0 | 1,178.0 | 2.5 | 23.3 | -17.41 | -332.6 | -1,597.9 | 1,626.6 | 1,600.8 | 25.79 | 63.061 | |
| 1,200.0 | 1,199.8 | 1,196.8 | 1,196.8 | 2.5 | 23.7 | -17.43 | -332.6 | -1,597.9 | 1,625.4 | 1,599.2 | 26.20 | 62.035 | |
| 1,279.5 | 1,279.1 | 1,276.1 | 1,276.1 | 2.7 | 25.3 | -17.54 | -332.6 | -1,597.9 | 1,619.1 | 1,591.2 | 27.90 | 58.028 | |
| 1,300.0 | 1,299.5 | 1,296.5 | 1,296.5 | 2.8 | 25.7 | -17.57 | -332.6 | -1,597.9 | 1,617.1 | 1,588.8 | 28.33 | 57.072 | |
| 1,377.9 | 1,376.9 | 1,373.9 | 1,373.9 | 3.0 | 27.3 | -17.73 | -332.6 | -1,597.9 | 1,608.3 | 1,578.4 | 29.97 | 53.670 | |
| 1,400.0 | 1,398.7 | 1,395.7 | 1,395.7 | 3.0 | 27.7 | -17.78 | -332.6 | -1,597.9 | 1,605.5 | 1,575.1 | 30.42 | 52.773 | |
| 1,476.4 | 1,474.2 | 1,471.2 | 1,471.2 | 3.2 | 29.2 | -17.97 | -332.6 | -1,597.9 | 1,594.4 | 1,562.4 | 31.98 | 49.851 | |
| 1,500.0 | 1,497.5 | 1,494.5 | 1,494.5 | 3.3 | 29.7 | -18.04 | -332.6 | -1,597.9 | 1,590.6 | 1,558.1 | 32.46 | 49.004 | |
| 1,574.8 | 1,571.0 | 1,568.0 | 1,568.0 | 3.5 | 31.2 | -18.28 | -332.6 | -1,597.9 | 1,577.3 | 1,543.4 | 33.95 | 46.467 | |
| 1,600.0 | 1,595.6 | 1,592.6 | 1,592.6 | 3.6 | 31.7 | -18.37 | -332.6 | -1,597.9 | 1,572.4 | 1,538.0 | 34.44 | 45.661 | |
| 1,673.2 | 1,667.0 | 1,664.0 | 1,664.0 | 3.9 | 33.1 | -18.66 | -332.6 | -1,597.9 | 1,557.1 | 1,521.2 | 35.85 | 43.435 | |
| 1,700.0 | 1,693.1 | 1,690.1 | 1,690.1 | 4.0 | 33.6 | -18.77 | -332.6 | -1,597.9 | 1,551.1 | 1,514.7 | 36.36 | 42.664 | |
| 1,771.6 | 1,762.4 | 1,759.4 | 1,759.4 | 4.3 | 35.0 | -19.11 | -332.6 | -1,597.9 | 1,533.8 | 1,496.1 | 37.69 | 40.692 | |
| 1,800.0 | 1,789.6 | 1,786.6 | 1,786.6 | 4.4 | 35.6 | -19.25 | -332.6 | -1,597.9 | 1,526.5 | 1,488.3 | 38.21 | 39.951 | |
| 1,870.1 | 1,856.8 | 1,853.8 | 1,853.8 | 4.7 | 36.9 | -19.64 | -332.6 | -1,597.9 | 1,507.4 | 1,468.0 | 39.47 | 38.188 | |
| 1,900.0 | 1,885.3 | 1,882.3 | 1,882.3 | 4.9 | 37.5 | -19.81 | -332.6 | -1,597.9 | 1,498.8 | 1,458.8 | 40.00 | 37.470 | |
| 1,968.5 | 1,950.2 | 1,947.2 | 1,947.2 | 5.3 | 38.8 | -20.25 | -332.6 | -1,597.9 | 1,478.1 | 1,436.9 | 41.19 | 35.883 | |
| 2,000.0 | 1,979.8 | 1,976.8 | 1,976.8 | 5.5 | 39.4 | -20.47 | -332.6 | -1,597.9 | 1,468.1 | 1,426.3 | 41.73 | 35.182 | |
| 2,044.9 | 2,021.9 | 2,018.9 | 2,018.9 | 5.7 | 40.3 | -20.79 | -332.6 | -1,597.9 | 1,453.3 | 1,410.8 | 42.49 | 34.206 | |
| 2,066.9 | 2,042.5 | 2,039.5 | 2,039.5 | 5.9 | 40.7 | -20.90 | -332.6 | -1,597.9 | 1,445.9 | 1,402.9 | 42.95 | 33.662 | |
| 2,100.0 | 2,073.4 | 2,070.4 | 2,070.4 | 6.1 | 41.3 | -21.07 | -332.6 | -1,597.9 | 1,434.8 | 1,391.1 | 43.66 | 32.864 | |
| 2,165.3 | 2,134.4 | 2,131.4 | 2,131.4 | 6.5 | 42.5 | -21.40 | -332.6 | -1,597.9 | 1,412.8 | 1,367.8 | 45.06 | 31.357 | |
| 2,200.0 | 2,166.8 | 2,163.8 | 2,163.8 | 6.8 | 43.2 | -21.59 | -332.6 | -1,597.9 | 1,401.2 | 1,355.4 | 45.80 | 30.593 | |
| 2,263.8 | 2,226.4 | 2,223.4 | 2,223.4 | 7.2 | 44.4 | -21.93 | -332.6 | -1,597.9 | 1,379.9 | 1,332.7 | 47.18 | 29.248 | |
| 2,300.0 | 2,260.2 | 2,257.2 | 2,257.2 | 7.4 | 45.1 | -22.13 | -332.6 | -1,597.9 | 1,367.8 | 1,319.9 | 47.97 | 28.516 | |
| 2,362.2 | 2,318.3 | 2,315.3 | 2,315.3 | 7.9 | 46.2 | -22.48 | -332.6 | -1,597.9 | 1,347.1 | 1,297.8 | 49.32 | 27.312 | |
| 2,400.0 | 2,353.6 | 2,350.6 | 2,350.6 | 8.1 | 46.9 | -22.70 | -332.6 | -1,597.9 | 1,334.6 | 1,284.4 | 50.15 | 26.611 | |
| 2,460.6 | 2,410.3 | 2,407.3 | 2,407.3 | 8.6 | 48.1 | -23.06 | -332.6 | -1,597.9 | 1,314.4 | 1,263.0 | 51.48 | 25.531 | |
| 2,500.0 | 2,447.0 | 2,444.0 | 2,444.0 | 8.9 | 48.8 | -23.30 | -332.6 | -1,597.9 | 1,301.4 | 1,249.0 | 52.35 | 24.858 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,499.2 | 2,499.2 | 9.3 | 49.9 | -23.67 | -332.6 | -1,597.9 | 1,281.9 | 1,228.2 | 53.66 | 23.887 | |
| 2,600.0 | 2,540.5 | 2,537.5 | 2,537.5 | 9.6 | 50.7 | -23.93 | -332.6 | -1,597.9 | 1,268.4 | 1,213.8 | 54.58 | 23.240 | |
| 2,657.5 | 2,594.2 | 2,591.2 | 2,591.2 | 10.0 | 51.8 | -24.31 | -332.6 | -1,597.9 | 1,249.5 | 1,193.6 | 55.86 | 22.367 | |
| 2,700.0 | 2,633.9 | 2,630.9 | 2,630.9 | 10.3 | 52.6 | -24.60 | -332.6 | -1,597.9 | 1,235.5 | 1,178.7 | 56.82 | 21.745 | |
| 2,755.9 | 2,686.1 | 2,683.1 | 2,683.1 | 10.7 | 53.6 | -24.98 | -332.6 | -1,597.9 | 1,217.2 | 1,159.1 | 58.08 | 20.957 | |
| 2,800.0 | 2,727.3 | 2,724.3 | 2,724.3 | 11.0 | 54.5 | -25.30 | -332.6 | -1,597.9 | 1,202.8 | 1,143.7 | 59.08 | 20.358 | |
| 2,854.3 | 2,778.1 | 2,775.1 | 2,775.1 | 11.4 | 55.5 | -25.69 | -332.6 | -1,597.9 | 1,185.1 | 1,124.8 | 60.32 | 19.647 | |
| 2,900.0 | 2,820.7 | 2,817.7 | 2,817.7 | 11.8 | 56.3 | -26.03 | -332.6 | -1,597.9 | 1,170.2 | 1,108.9 | 61.37 | 19.070 | |
| 2,952.7 | 2,870.0 | 2,867.0 | 2,867.0 | 12.2 | 57.3 | -26.44 | -332.6 | -1,597.9 | 1,153.1 | 1,090.6 | 62.58 | 18.427 | |
| 3,000.0 | 2,914.2 | 2,911.2 | 2,911.2 | 12.5 | 58.2 | -26.81 | -332.6 | -1,597.9 | 1,137.9 | 1,074.2 | 63.67 | 17.871 | |
| 3,051.2 | 2,962.0 | 2,959.0 | 2,959.0 | 12.9 | 59.2 | -27.23 | -332.6 | -1,597.9 | 1,121.4 | 1,056.5 | 64.86 | 17.288 | |
| 3,100.0 | 3,007.6 | 3,004.6 | 3,004.6 | 13.3 | 60.1 | -27.64 | -332.6 | -1,597.9 | 1,105.7 | 1,039.7 | 66.01 | 16.752 | |
| 3,149.6 | 3,053.9 | 3,050.9 | 3,050.9 | 13.6 | 61.0 | -28.06 | -332.6 | -1,597.9 | 1,089.9 | 1,022.7 | 67.17 | 16.225 | |
| 3,200.0 | 3,101.0 | 3,098.0 | 3,098.0 | 14.0 | 62.0 | -28.51 | -332.6 | -1,597.9 | 1,073.8 | 1,005.4 | 68.37 | 15.707 | |
| 3,248.0 | 3,145.9 | 3,142.9 | 3,142.9 | 14.4 | 62.9 | -28.94 | -332.6 | -1,597.9 | 1,058.6 | 989.0 | 69.51 | 15.229 | |
| 3,300.0 | 3,194.4 | 3,191.4 | 3,191.4 | 14.8 | 63.8 | -29.43 | -332.6 | -1,597.9 | 1,042.1 | 971.4 | 70.75 | 14.729 | |
| 3,346.4 | 3,237.8 | 3,234.8 | 3,234.8 | 15.1 | 64.7 | -29.87 | -332.6 | -1,597.9 | 1,027.5 | 955.6 | 71.87 | 14.296 | |
| 3,400.0 | 3,287.8 | 3,284.8 | 3,284.8 | 15.5 | 65.7 | -30.40 | -332.6 | -1,597.9 | 1,010.7 | 937.5 | 73.17 | 13.812 | |
| 3,444.9 | 3,329.8 | 3,326.8 | 3,326.8 | 15.9 | 66.6 | -30.86 | -332.6 | -1,597.9 | 996.7 | 922.4 | 74.27 | 13.420 | |
| 3,500.0 | 3,381.3 | 3,378.3 | 3,378.3 | 16.3 | 67.6 | -31.44 | -332.6 | -1,597.9 | 979.6 | 903.9 | 75.63 | 12.953 | |
| 3,543.3 | 3,421.7 | 3,418.7 | 3,418.7 | 16.6 | 68.4 | -31.91 | -332.6 | -1,597.9 | 966.2 | 889.5 | 76.70 | 12.597 | |
| 3,600.0 | 3,474.7 | 3,471.7 | 3,471.7 | 17.0 | 69.5 | -32.54 | -332.6 | -1,597.9 | 948.8 | 870.6 | 78.12 | 12.145 | |
| 3,641.7 | 3,513.7 | 3,510.7 | 3,510.7 | 17.3 | 70.3 | -33.03 | -332.6 | -1,597.9 | 936.0 | 856.8 | 79.17 | 11.823 | |
| 3,700.0 | 3,568.1 | 3,565.1 | 3,565.1 | 17.8 | 71.4 | -33.72 | -332.6 | -1,597.9 | 918.3 | 837.6 | 80.65 | 11.386 | |
| 3,740.1 | 3,605.6 | 3,602.6 | 3,602.6 | 18.1 | 72.1 | -34.21 | -332.6 | -1,597.9 | 906.2 | 824.5 | 81.68 | 11.095 | |
| 3,800.0 | 3,661.5 | 3,658.5 | 3,658.5 | 18.5 | 73.2 | -34.97 | -332.6 | -1,597.9 | 888.2 | 805.0 | 83.22 | 10.673 | |
| 3,838.6 | 3,697.6 | 3,694.6 | 3,694.6 | 18.8 | 74.0 | -35.47 | -332.6 | -1,597.9 | 876.7 | 792.5 | 84.23 | 10.409 | |
| 3,900.0 | 3,754.9 | 3,751.9 | 3,751.9 | 19.3 | 75.1 | -36.30 | -332.6 | -1,597.9 | 858.6 | 772.7 | 85.84 | 10.002 | |
| 3,937.0 | 3,789.5 | 3,786.5 | 3,786.5 | 19.6 | 75.8 | -36.82 | -332.6 | -1,597.9 | 847.7 | 760.9 | 86.83 | 9.764 | |
| 4,000.0 | 3,848.4 | 3,845.4 | 3,845.4 | 20.1 | 77.0 | -37.73 | -332.6 | -1,597.9 | 829.4 | 740.9 | 88.52 | 9.370 | |
| 4,035.4 | 3,881.5 | 3,878.5 | 3,878.5 | 20.3 | 77.7 | -38.25 | -332.6 | -1,597.9 | 819.2 | 729.7 | 89.48 | 9.156 | |
| 4,100.0 | 3,941.8 | 3,938.8 | 3,938.8 | 20.8 | 78.9 | -39.25 | -332.6 | -1,597.9 | 800.8 | 709.5 | 91.24 | 8.776 | |
| 4,133.8 | 3,973.4 | 3,970.4 | 3,970.4 | 21.1 | 79.5 | -39.79 | -332.6 | -1,597.9 | 791.2 | 699.0 | 92.18 | 8.583 | |
| 4,200.0 | 4,035.2 | 4,032.2 | 4,032.2 | 21.6 | 80.8 | -40.87 | -332.6 | -1,597.9 | 772.7 | 678.7 | 94.03 | 8.218 | |
| 4,232.3 | 4,065.4 | 4,062.4 | 4,062.4 | 21.8 | 81.4 | -41.42 | -332.6 | -1,597.9 | 763.8 | 668.9 | 94.94 | 8.045 | |
| 4,300.0 | 4,128.6 | 4,125.6 | 4,125.6 | 22.3 | 82.6 | -42.62 | -332.6 | -1,597.9 | 745.3 | 648.4 | 96.88 | 7.693 | |
| 4,330.7 | 4,157.3 | 4,154.3 | 4,154.3 | 22.6 | 83.2 | -43.18 | -332.6 | -1,597.9 | 737.1 | 639.3 | 97.77 | 7.539 | |
| 4,400.0 | 4,222.0 | 4,219.0 | 4,219.0 | 23.1 | 84.5 | -44.48 | -332.6 | -1,597.9 | 718.6 | 618.9 | 99.79 | 7.201 | |
| 4,429.1 | 4,249.3 | 4,246.3 | 4,246.3 | 23.3 | 85.1 | -45.05 | -332.6 | -1,597.9 | 711.0 | 610.4 | 100.65 | 7.064 | |
| 4,500.0 | 4,315.5 | 4,312.5 | 4,312.5 | 23.9 | 86.4 | -46.48 | -332.6 | -1,597.9 | 692.8 | 590.0 | 102.77 | 6.741 | |
| 4,527.5 | 4,341.2 | 4,338.2 | 4,338.2 | 24.1 | 86.9 | -47.05 | -332.6 | -1,597.9 | 685.8 | 582.2 | 103.61 | 6.619 | |
| 4,600.0 | 4,408.9 | 4,405.9 | 4,405.9 | 24.6 | 88.3 | -48.62 | -332.6 | -1,597.9 | 667.8 | 562.0 | 105.82 | 6.311 | |
| 4,626.0 | 4,433.2 | 4,430.2 | 4,430.2 | 24.8 | 88.8 | -49.20 | -332.6 | -1,597.9 | 661.5 | 554.9 | 106.63 | 6.204 | |
| 4,700.0 | 4,502.3 | 4,499.3 | 4,499.3 | 25.4 | 90.2 | -50.91 | -332.6 | -1,597.9 | 643.9 | 534.9 | 108.95 | 5.910 | |
| 4,724.4 | 4,525.1 | 4,522.1 | 4,522.1 | 25.6 | 90.6 | -51.49 | -332.6 | -1,597.9 | 638.2 | 528.5 | 109.72 | 5.817 | |
| 4,800.0 | 4,595.7 | 4,592.7 | 4,592.7 | 26.2 | 92.0 | -53.35 | -332.6 | -1,597.9 | 621.0 | 508.9 | 112.13 | 5.539 | |
| 4,822.8 | 4,617.1 | 4,614.1 | 4,614.1 | 26.3 | 92.5 | -53.94 | -332.6 | -1,597.9 | 616.0 | 503.1 | 112.87 | 5.458 | |
| 4,900.0 | 4,689.2 | 4,686.2 | 4,686.2 | 26.9 | 93.9 | -55.97 | -332.6 | -1,597.9 | 599.5 | 484.1 | 115.38 | 5.196 | |
| 4,921.2 | 4,709.0 | 4,706.0 | 4,706.0 | 27.1 | 94.3 | -56.55 | -332.6 | -1,597.9 | 595.1 | 479.0 | 116.08 | 5.126 | |
| 5,000.0 | 4,782.6 | 4,779.6 | 4,779.6 | 27.7 | 95.8 | -58.75 | -332.6 | -1,597.9 | 579.3 | 460.6 | 118.68 | 4.881 | |
| 5,019.7 | 4,801.0 | 4,798.0 | 4,798.0 | 27.8 | 96.2 | -59.32 | -332.6 | -1,597.9 | 575.5 | 456.2 | 119.34 | 4.823 | |
| 5,100.0 | 4,876.0 | 4,873.0 | 4,873.0 | 28.4 | 97.7 | -61.71 | -332.6 | -1,597.9 | 560.7 | 438.6 | 122.02 | 4.595 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,889.9 | 4,889.9 | 28.6 | 98.0 | -62.27 | -332.6 | -1,597.9 | 557.5 | 434.8 | 122.63 | 4.546 | |
| 5,159.9 | 4,932.0 | 4,929.0 | 4,929.0 | 28.9 | 98.8 | -63.57 | -332.6 | -1,597.9 | 550.3 | 426.3 | 124.03 | 4.437 | |
| 5,200.0 | 4,969.5 | 4,966.5 | 4,966.5 | 29.2 | 99.5 | -64.71 | -332.6 | -1,597.9 | 543.9 | 418.5 | 125.40 | 4.337 | |
| 5,216.5 | 4,985.1 | 4,982.1 | 4,982.1 | 29.3 | 99.9 | -65.18 | -332.6 | -1,597.9 | 541.4 | 415.4 | 125.95 | 4.298 | |
| 5,300.0 | 5,064.0 | 5,061.0 | 5,061.0 | 29.7 | 101.4 | -67.50 | -332.6 | -1,597.9 | 530.0 | 401.3 | 128.63 | 4.120 | |
| 5,314.9 | 5,078.2 | 5,075.2 | 5,075.2 | 29.8 | 101.7 | -67.91 | -332.6 | -1,597.9 | 528.1 | 399.0 | 129.10 | 4.091 | |
| 5,400.0 | 5,159.6 | 5,156.6 | 5,156.6 | 30.2 | 103.4 | -70.17 | -332.6 | -1,597.9 | 518.9 | 387.2 | 131.68 | 3.941 | |
| 5,413.4 | 5,172.4 | 5,169.4 | 5,169.4 | 30.3 | 103.6 | -70.52 | -332.6 | -1,597.9 | 517.6 | 385.6 | 132.08 | 3.919 | |
| 5,500.0 | 5,256.1 | 5,253.1 | 5,253.1 | 30.7 | 105.3 | -72.67 | -332.6 | -1,597.9 | 510.4 | 375.8 | 134.57 | 3.793 | |
| 5,511.8 | 5,267.6 | 5,264.6 | 5,264.6 | 30.7 | 105.5 | -72.95 | -332.6 | -1,597.9 | 509.5 | 374.6 | 134.89 | 3.777 | |
| 5,600.0 | 5,353.5 | 5,350.5 | 5,350.5 | 31.1 | 107.3 | -74.95 | -332.6 | -1,597.9 | 503.9 | 366.6 | 137.30 | 3.670 | |
| 5,610.2 | 5,363.5 | 5,360.5 | 5,360.5 | 31.1 | 107.5 | -75.17 | -332.6 | -1,597.9 | 503.3 | 365.8 | 137.56 | 3.659 | |
| 5,700.0 | 5,451.6 | 5,448.6 | 5,448.6 | 31.4 | 109.2 | -76.95 | -332.6 | -1,597.9 | 499.1 | 359.2 | 139.89 | 3.568 | |
| 5,708.6 | 5,460.2 | 5,457.2 | 5,457.2 | 31.4 | 109.4 | -77.11 | -332.6 | -1,597.9 | 498.8 | 358.7 | 140.10 | 3.560 | |
| 5,800.0 | 5,550.4 | 5,547.4 | 5,547.4 | 31.7 | 111.2 | -78.64 | -332.6 | -1,597.9 | 495.7 | 353.4 | 142.36 | 3.482 | |
| 5,807.1 | 5,557.4 | 5,554.4 | 5,554.4 | 31.7 | 111.4 | -78.75 | -332.6 | -1,597.9 | 495.5 | 353.0 | 142.53 | 3.477 | |
| 5,900.0 | 5,649.6 | 5,646.6 | 5,646.6 | 31.9 | 113.2 | -79.99 | -332.6 | -1,597.9 | 493.4 | 348.7 | 144.72 | 3.409 | |
| 5,905.5 | 5,655.1 | 5,652.1 | 5,652.1 | 31.9 | 113.3 | -80.06 | -332.6 | -1,597.9 | 493.3 | 348.5 | 144.85 | 3.406 | |
| 6,000.0 | 5,749.2 | 5,746.2 | 5,746.2 | 32.1 | 115.2 | -80.98 | -332.6 | -1,597.9 | 491.9 | 344.9 | 147.00 | 3.347 | |
| 6,003.9 | 5,753.1 | 5,750.1 | 5,750.1 | 32.1 | 115.3 | -81.01 | -332.6 | -1,597.9 | 491.9 | 344.8 | 147.09 | 3.344 | |
| 6,100.0 | 5,849.1 | 5,846.1 | 5,846.1 | 32.3 | 117.2 | -81.58 | -332.6 | -1,597.9 | 491.1 | 341.9 | 149.20 | 3.292 | |
| 6,102.3 | 5,851.4 | 5,848.4 | 5,848.4 | 32.3 | 117.3 | -81.59 | -332.6 | -1,597.9 | 491.1 | 341.9 | 149.25 | 3.291 | |
| 6,200.8 | 5,949.8 | 5,946.8 | 5,946.8 | 32.4 | 119.3 | -81.80 | -332.6 | -1,597.9 | 490.9 | 339.5 | 151.34 | 3.243 | |
| 6,204.9 | 5,953.9 | 5,950.9 | 5,950.9 | 32.4 | 119.3 | -166.24 | -332.6 | -1,597.9 | 490.9 | 354.9 | 135.98 | 3.610 | |
| 6,234.9 | 5,983.9 | 5,980.9 | 5,980.9 | 32.4 | 119.9 | -166.24 | -332.6 | -1,597.9 | 490.9 | 354.2 | 136.63 | 3.593 CC | |
| 6,250.0 | 5,999.0 | 5,996.0 | 5,996.0 | 32.4 | 120.3 | 103.78 | -332.6 | -1,597.9 | 490.9 | 338.5 | 152.36 | 3.222 | |
| 6,299.2 | 6,048.2 | 6,045.2 | 6,045.2 | 32.4 | 121.2 | 104.03 | -332.6 | -1,597.9 | 491.5 | 338.2 | 153.30 | 3.206 ES | |
| 6,300.0 | 6,048.9 | 6,045.9 | 6,045.9 | 32.4 | 121.3 | 104.04 | -332.6 | -1,597.9 | 491.6 | 338.2 | 153.32 | 3.206 | |
| 6,350.0 | 6,098.5 | 6,095.5 | 6,095.5 | 32.4 | 122.3 | 104.62 | -332.6 | -1,597.9 | 493.1 | 339.0 | 154.16 | 3.199 SF | |
| 6,397.6 | 6,145.3 | 6,142.3 | 6,142.3 | 32.3 | 123.2 | 105.44 | -332.6 | -1,597.9 | 495.6 | 340.7 | 154.84 | 3.200 | |
| 6,400.0 | 6,147.6 | 6,144.6 | 6,144.6 | 32.3 | 123.2 | 105.49 | -332.6 | -1,597.9 | 495.7 | 340.8 | 154.87 | 3.201 | |
| 6,450.0 | 6,195.8 | 6,192.8 | 6,192.8 | 32.2 | 124.2 | 106.60 | -332.6 | -1,597.9 | 499.5 | 344.0 | 155.42 | 3.214 | |
| 6,496.0 | 6,239.3 | 6,236.3 | 6,236.3 | 32.1 | 125.1 | 107.80 | -332.6 | -1,597.9 | 504.1 | 348.4 | 155.75 | 3.237 | |
| 6,500.0 | 6,243.0 | 6,240.0 | 6,240.0 | 32.1 | 125.2 | 107.91 | -332.6 | -1,597.9 | 504.6 | 348.8 | 155.77 | 3.239 | |
| 6,550.0 | 6,289.0 | 6,286.0 | 6,286.0 | 32.0 | 126.1 | 109.34 | -332.6 | -1,597.9 | 511.4 | 355.5 | 155.89 | 3.281 | |
| 6,594.5 | 6,328.6 | 6,325.6 | 6,325.6 | 31.8 | 126.9 | 110.67 | -332.6 | -1,597.9 | 519.0 | 363.3 | 155.78 | 3.332 | |
| 6,600.0 | 6,333.4 | 6,330.4 | 6,330.4 | 31.8 | 127.0 | 110.83 | -332.6 | -1,597.9 | 520.1 | 364.4 | 155.75 | 3.339 | |
| 6,650.0 | 6,376.2 | 6,373.2 | 6,373.2 | 31.7 | 127.8 | 112.30 | -332.6 | -1,597.9 | 531.0 | 375.6 | 155.35 | 3.418 | |
| 6,692.9 | 6,411.3 | 6,408.3 | 6,408.3 | 31.6 | 128.5 | 113.49 | -332.6 | -1,597.9 | 542.2 | 387.4 | 154.81 | 3.503 | |
| 6,700.0 | 6,417.0 | 6,414.0 | 6,414.0 | 31.5 | 128.7 | 113.68 | -332.6 | -1,597.9 | 544.3 | 389.6 | 154.70 | 3.518 | |
| 6,750.0 | 6,455.7 | 6,452.7 | 6,452.7 | 31.4 | 129.4 | 114.90 | -332.6 | -1,597.9 | 560.2 | 406.4 | 153.86 | 3.641 | |
| 6,791.3 | 6,486.0 | 6,483.0 | 6,483.0 | 31.3 | 130.0 | 115.73 | -332.6 | -1,597.9 | 575.5 | 422.4 | 153.09 | 3.759 | |
| 6,800.0 | 6,492.2 | 6,489.2 | 6,489.2 | 31.3 | 130.2 | 115.88 | -332.6 | -1,597.9 | 578.9 | 426.0 | 152.92 | 3.786 | |
| 6,850.0 | 6,526.1 | 6,523.1 | 6,523.1 | 31.2 | 130.9 | 116.57 | -332.6 | -1,597.9 | 600.5 | 448.5 | 151.99 | 3.951 | |
| 6,889.7 | 6,551.2 | 6,548.2 | 6,548.2 | 31.2 | 131.4 | 116.87 | -332.6 | -1,597.9 | 619.7 | 468.4 | 151.36 | 4.094 | |
| 6,900.0 | 6,557.4 | 6,554.4 | 6,554.4 | 31.2 | 131.5 | 116.91 | -332.6 | -1,597.9 | 625.0 | 473.7 | 151.23 | 4.133 | |
| 6,950.0 | 6,586.0 | 6,583.0 | 6,583.0 | 31.1 | 132.1 | 116.82 | -332.6 | -1,597.9 | 652.3 | 501.4 | 150.81 | 4.325 | |
| 6,988.2 | 6,605.8 | 6,602.8 | 6,602.8 | 31.2 | 132.5 | 116.42 | -332.6 | -1,597.9 | 675.0 | 524.1 | 150.84 | 4.475 | |
| 7,000.0 | 6,611.5 | 6,608.5 | 6,608.5 | 31.2 | 132.6 | 116.24 | -332.6 | -1,597.9 | 682.3 | 531.4 | 150.92 | 4.521 | |
| 7,050.0 | 6,634.1 | 6,631.1 | 6,631.1 | 31.2 | 133.0 | 115.10 | -332.6 | -1,597.9 | 714.9 | 563.2 | 151.72 | 4.712 | |
| 7,086.6 | 6,648.6 | 6,645.6 | 6,645.6 | 31.3 | 133.3 | 113.85 | -332.6 | -1,597.9 | 740.3 | 587.5 | 152.82 | 4.844 | |
| 7,100.0 | 6,653.4 | 6,650.4 | 6,650.4 | 31.4 | 133.4 | 113.30 | -332.6 | -1,597.9 | 749.9 | 596.5 | 153.33 | 4.891 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,666.5 | 6,666.5 | 31.6 | 133.7 | 110.76 | -332.6 | -1,597.9 | 787.0 | 631.2 | 155.76 | 5.053 | |
| 7,185.0 | 6,678.8 | 6,675.8 | 6,675.8 | 31.7 | 133.9 | 108.49 | -332.6 | -1,597.9 | 814.1 | 656.2 | 157.88 | 5.156 | |
| 7,200.0 | 6,682.3 | 6,679.3 | 6,679.3 | 31.8 | 134.0 | 107.38 | -332.6 | -1,597.9 | 826.0 | 667.1 | 158.86 | 5.199 | |
| 7,250.0 | 6,691.6 | 6,688.6 | 6,688.6 | 32.1 | 134.2 | 103.04 | -332.6 | -1,597.9 | 866.5 | 704.3 | 162.26 | 5.340 | |
| 7,283.4 | 6,696.0 | 6,693.0 | 6,693.0 | 32.3 | 134.3 | 99.58 | -332.6 | -1,597.9 | 894.4 | 730.0 | 164.39 | 5.441 | |
| 7,300.0 | 6,697.5 | 6,694.5 | 6,694.5 | 32.4 | 134.3 | 97.69 | -332.6 | -1,597.9 | 908.4 | 743.1 | 165.30 | 5.495 | |
| 7,350.0 | 6,699.9 | 6,696.9 | 6,696.9 | 32.8 | 134.3 | 91.34 | -332.6 | -1,597.9 | 951.2 | 784.2 | 167.07 | 5.694 | |
| 7,364.4 | 6,700.0 | 6,697.0 | 6,697.0 | 32.9 | 134.3 | 89.35 | -332.6 | -1,597.9 | 963.7 | 796.5 | 167.20 | 5.764 | |
| 7,381.9 | 6,699.9 | 6,696.9 | 6,696.9 | 33.1 | 134.3 | 89.33 | -332.6 | -1,597.9 | 979.0 | 811.6 | 167.35 | 5.850 | |
| 7,400.0 | 6,699.8 | 6,696.8 | 6,696.8 | 33.2 | 134.3 | 89.32 | -332.6 | -1,597.9 | 994.8 | 827.3 | 167.50 | 5.939 | |
| 7,480.3 | 6,699.2 | 6,696.2 | 6,696.2 | 34.0 | 134.3 | 89.26 | -332.6 | -1,597.9 | 1,066.0 | 897.7 | 168.30 | 6.334 | |
| 7,500.0 | 6,699.1 | 6,696.1 | 6,696.1 | 34.2 | 134.3 | 89.24 | -332.6 | -1,597.9 | 1,083.6 | 915.1 | 168.50 | 6.431 | |
| 7,578.7 | 6,698.6 | 6,695.6 | 6,695.6 | 35.2 | 134.3 | 89.18 | -332.6 | -1,597.9 | 1,154.9 | 985.4 | 169.43 | 6.816 | |
| 7,600.0 | 6,698.5 | 6,695.5 | 6,695.5 | 35.4 | 134.3 | 89.16 | -332.6 | -1,597.9 | 1,174.3 | 1,004.6 | 169.69 | 6.920 | |
| 7,677.1 | 6,698.0 | 6,695.0 | 6,695.0 | 36.5 | 134.3 | 89.10 | -332.6 | -1,597.9 | 1,245.2 | 1,074.4 | 170.74 | 7.293 | |
| 7,700.0 | 6,697.8 | 6,694.8 | 6,694.8 | 36.8 | 134.3 | 89.09 | -332.6 | -1,597.9 | 1,266.3 | 1,095.3 | 171.05 | 7.403 | |
| 7,775.6 | 6,697.3 | 6,694.3 | 6,694.3 | 38.0 | 134.3 | 89.03 | -332.6 | -1,597.9 | 1,336.6 | 1,164.4 | 172.20 | 7.762 | |
| 7,800.0 | 6,697.2 | 6,694.2 | 6,694.2 | 38.3 | 134.3 | 89.01 | -332.6 | -1,597.9 | 1,359.5 | 1,186.9 | 172.57 | 7.878 | |
| 7,874.0 | 6,696.7 | 6,693.7 | 6,693.7 | 39.6 | 134.3 | 88.95 | -332.6 | -1,597.9 | 1,429.0 | 1,255.2 | 173.80 | 8.222 | |
| 7,900.0 | 6,696.5 | 6,693.5 | 6,693.5 | 40.0 | 134.3 | 88.93 | -332.6 | -1,597.9 | 1,453.5 | 1,279.3 | 174.23 | 8.343 | |
| 7,972.4 | 6,696.1 | 6,693.1 | 6,693.1 | 41.3 | 134.3 | 88.87 | -332.6 | -1,597.9 | 1,522.1 | 1,346.6 | 175.52 | 8.672 | |
| 8,000.0 | 6,695.9 | 6,692.9 | 6,692.9 | 41.8 | 134.3 | 88.85 | -332.6 | -1,597.9 | 1,548.4 | 1,372.3 | 176.01 | 8.797 | |
| 8,070.8 | 6,695.4 | 6,692.4 | 6,692.4 | 43.1 | 134.3 | 88.80 | -332.6 | -1,597.9 | 1,615.9 | 1,438.6 | 177.35 | 9.112 | |
| 8,100.0 | 6,695.2 | 6,692.2 | 6,692.2 | 43.7 | 134.3 | 88.77 | -332.6 | -1,597.9 | 1,643.8 | 1,465.9 | 177.90 | 9.240 | |
| 8,169.3 | 6,694.8 | 6,691.8 | 6,691.8 | 45.1 | 134.2 | 88.72 | -332.6 | -1,597.9 | 1,710.2 | 1,530.9 | 179.27 | 9.540 | |
| 8,200.0 | 6,694.6 | 6,691.6 | 6,691.6 | 45.7 | 134.2 | 88.70 | -332.6 | -1,597.9 | 1,739.7 | 1,559.8 | 179.87 | 9.672 | |
| 8,267.7 | 6,694.1 | 6,691.1 | 6,691.1 | 47.1 | 134.2 | 88.64 | -332.6 | -1,597.9 | 1,804.9 | 1,623.7 | 181.27 | 9.957 | |
| 8,300.0 | 6,693.9 | 6,690.9 | 6,690.9 | 47.8 | 134.2 | 88.62 | -332.6 | -1,597.9 | 1,836.1 | 1,654.2 | 181.94 | 10.092 | |
| 8,366.1 | 6,693.5 | 6,690.5 | 6,690.5 | 49.2 | 134.2 | 88.57 | -332.6 | -1,597.9 | 1,900.0 | 1,716.7 | 183.35 | 10.363 | |
| 8,400.0 | 6,693.3 | 6,690.3 | 6,690.3 | 49.9 | 134.2 | 88.54 | -332.6 | -1,597.9 | 1,932.8 | 1,748.8 | 184.07 | 10.501 | |
| 8,464.5 | 6,692.9 | 6,689.9 | 6,689.9 | 51.4 | 134.2 | 88.49 | -332.6 | -1,597.9 | 1,995.5 | 1,810.0 | 185.48 | 10.758 | |
| 8,500.0 | 6,692.6 | 6,689.6 | 6,689.6 | 52.1 | 134.2 | 88.46 | -332.6 | -1,597.9 | 2,029.9 | 1,843.6 | 186.26 | 10.898 | |
| 8,563.0 | 6,692.2 | 6,689.2 | 6,689.2 | 53.6 | 134.2 | 88.41 | -332.6 | -1,597.9 | 2,091.2 | 1,903.5 | 187.68 | 11.142 | |
| 8,600.0 | 6,692.0 | 6,689.0 | 6,689.0 | 54.4 | 134.2 | 88.38 | -332.6 | -1,597.9 | 2,127.2 | 1,938.7 | 188.51 | 11.284 | |
| 8,661.4 | 6,691.6 | 6,688.6 | 6,688.6 | 55.8 | 134.2 | 88.34 | -332.6 | -1,597.9 | 2,187.1 | 1,997.2 | 189.92 | 11.516 | |
| 8,700.0 | 6,691.3 | 6,688.3 | 6,688.3 | 56.7 | 134.2 | 88.31 | -332.6 | -1,597.9 | 2,224.8 | 2,034.0 | 190.81 | 11.660 | |
| 8,759.8 | 6,690.9 | 6,687.9 | 6,687.9 | 58.1 | 134.2 | 88.26 | -332.6 | -1,597.9 | 2,283.3 | 2,091.1 | 192.20 | 11.879 | |
| 8,800.0 | 6,690.7 | 6,687.7 | 6,687.7 | 59.1 | 134.2 | 88.23 | -332.6 | -1,597.9 | 2,322.6 | 2,129.4 | 193.14 | 12.025 | |
| 8,858.2 | 6,690.3 | 6,687.3 | 6,687.3 | 60.5 | 134.2 | 88.18 | -332.6 | -1,597.9 | 2,379.6 | 2,185.1 | 194.53 | 12.233 | |
| 8,900.0 | 6,690.0 | 6,687.0 | 6,687.0 | 61.5 | 134.1 | 88.15 | -332.6 | -1,597.9 | 2,420.5 | 2,225.0 | 195.52 | 12.380 | |
| 8,956.7 | 6,689.7 | 6,686.7 | 6,686.7 | 62.9 | 134.1 | 88.11 | -332.6 | -1,597.9 | 2,476.1 | 2,279.2 | 196.89 | 12.576 | |
| 9,000.0 | 6,689.4 | 6,686.4 | 6,686.4 | 63.9 | 134.1 | 88.07 | -332.6 | -1,597.9 | 2,518.6 | 2,320.7 | 197.93 | 12.725 | |
| 9,055.1 | 6,689.0 | 6,686.0 | 6,686.0 | 65.3 | 134.1 | 88.03 | -332.6 | -1,597.9 | 2,572.8 | 2,373.5 | 199.27 | 12.911 | |
| 9,100.0 | 6,688.7 | 6,685.7 | 6,685.7 | 66.4 | 134.1 | 87.99 | -332.6 | -1,597.9 | 2,616.9 | 2,416.5 | 200.37 | 13.061 | |
| 9,153.5 | 6,688.4 | 6,685.4 | 6,685.4 | 67.7 | 134.1 | 87.95 | -332.6 | -1,597.9 | 2,669.5 | 2,467.9 | 201.69 | 13.236 | |
| 9,200.0 | 6,688.1 | 6,685.1 | 6,685.1 | 68.9 | 134.1 | 87.92 | -332.6 | -1,597.9 | 2,715.3 | 2,512.4 | 202.83 | 13.387 | |
| 9,251.9 | 6,687.8 | 6,684.8 | 6,684.8 | 70.2 | 134.1 | 87.88 | -332.6 | -1,597.9 | 2,766.4 | 2,562.3 | 204.12 | 13.553 | |
| 9,300.0 | 6,687.4 | 6,684.4 | 6,684.4 | 71.4 | 134.1 | 87.84 | -332.6 | -1,597.9 | 2,813.8 | 2,608.5 | 205.32 | 13.704 | |
| 9,350.4 | 6,687.1 | 6,684.1 | 6,684.1 | 72.7 | 134.1 | 87.80 | -332.6 | -1,597.9 | 2,863.4 | 2,656.9 | 206.58 | 13.861 | |
| 9,400.0 | 6,686.8 | 6,683.8 | 6,683.8 | 73.9 | 134.1 | 87.76 | -332.6 | -1,597.9 | 2,912.4 | 2,704.6 | 207.83 | 14.014 | |
| 9,448.8 | 6,686.5 | 6,683.5 | 6,683.5 | 75.2 | 134.1 | 87.72 | -332.6 | -1,597.9 | 2,960.5 | 2,751.5 | 209.06 | 14.161 | |
| 9,500.0 | 6,686.1 | 6,683.1 | 6,683.1 | 76.5 | 134.1 | 87.68 | -332.6 | -1,597.9 | 3,011.1 | 2,800.7 | 210.35 | 14.314 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-2 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,682.8 | 6,682.8 | 77.7 | 134.1 | 87.65 | -332.6 | -1,597.9 | 3,057.7 | 2,846.2 | 211.55 | 14.454 | |
| 9,600.0 | 6,685.5 | 6,682.5 | 6,682.5 | 79.0 | 134.1 | 87.60 | -332.6 | -1,597.9 | 3,109.9 | 2,897.0 | 212.90 | 14.607 | |
| 9,645.6 | 6,685.2 | 6,682.2 | 6,682.2 | 80.2 | 134.1 | 87.57 | -332.6 | -1,597.9 | 3,155.0 | 2,940.9 | 214.07 | 14.738 | |
| 9,700.0 | 6,684.8 | 6,681.8 | 6,681.8 | 81.6 | 134.0 | 87.53 | -332.6 | -1,597.9 | 3,208.7 | 2,993.2 | 215.46 | 14.893 | |
| 9,744.1 | 6,684.6 | 6,681.6 | 6,681.6 | 82.8 | 134.0 | 87.49 | -332.6 | -1,597.9 | 3,252.3 | 3,035.7 | 216.59 | 15.016 | |
| 9,800.0 | 6,684.2 | 6,681.2 | 6,681.2 | 84.2 | 134.0 | 87.45 | -332.6 | -1,597.9 | 3,307.6 | 3,089.6 | 218.03 | 15.171 | |
| 9,842.5 | 6,683.9 | 6,680.9 | 6,680.9 | 85.3 | 134.0 | 87.42 | -332.6 | -1,597.9 | 3,349.7 | 3,130.6 | 219.13 | 15.287 | |
| 9,900.0 | 6,683.5 | 6,680.5 | 6,680.5 | 86.8 | 134.0 | 87.37 | -332.6 | -1,597.9 | 3,406.6 | 3,186.0 | 220.61 | 15.442 | |
| 9,940.9 | 6,683.3 | 6,680.3 | 6,680.3 | 87.9 | 134.0 | 87.34 | -332.6 | -1,597.9 | 3,447.1 | 3,225.5 | 221.68 | 15.550 | |
| 10,000.0 | 6,682.9 | 6,679.9 | 6,679.9 | 89.5 | 134.0 | 87.29 | -332.6 | -1,597.9 | 3,505.7 | 3,282.4 | 223.21 | 15.706 | |
| 10,039.3 | 6,682.6 | 6,679.6 | 6,679.6 | 90.5 | 134.0 | 87.26 | -332.6 | -1,597.9 | 3,544.6 | 3,320.4 | 224.23 | 15.808 | |
| 10,100.0 | 6,682.2 | 6,679.2 | 6,679.2 | 92.1 | 134.0 | 87.22 | -332.6 | -1,597.9 | 3,604.7 | 3,378.9 | 225.82 | 15.963 | |
| 10,137.8 | 6,682.0 | 6,679.0 | 6,679.0 | 93.1 | 134.0 | 87.19 | -332.6 | -1,597.9 | 3,642.2 | 3,415.4 | 226.80 | 16.059 | |
| 10,200.0 | 6,681.6 | 6,678.6 | 6,678.6 | 94.8 | 134.0 | 87.14 | -332.6 | -1,597.9 | 3,703.9 | 3,475.5 | 228.43 | 16.215 | |
| 10,236.2 | 6,681.4 | 6,678.4 | 6,678.4 | 95.7 | 134.0 | 87.11 | -332.6 | -1,597.9 | 3,739.8 | 3,510.4 | 229.38 | 16.304 | |
| 10,300.0 | 6,680.9 | 6,677.9 | 6,677.9 | 97.4 | 134.0 | 87.06 | -332.6 | -1,597.9 | 3,803.1 | 3,572.0 | 231.05 | 16.460 | |
| 10,334.6 | 6,680.7 | 6,677.7 | 6,677.7 | 98.3 | 134.0 | 87.03 | -332.6 | -1,597.9 | 3,837.4 | 3,605.5 | 231.97 | 16.543 | |
| 10,400.0 | 6,680.3 | 6,677.3 | 6,677.3 | 100.1 | 134.0 | 86.98 | -332.6 | -1,597.9 | 3,902.3 | 3,668.6 | 233.69 | 16.699 | |
| 10,433.0 | 6,680.1 | 6,677.1 | 6,677.1 | 101.0 | 133.9 | 86.96 | -332.6 | -1,597.9 | 3,935.1 | 3,700.6 | 234.56 | 16.777 | |
| 10,500.0 | 6,679.7 | 6,676.7 | 6,676.7 | 102.8 | 133.9 | 86.90 | -332.6 | -1,597.9 | 4,001.6 | 3,765.2 | 236.32 | 16.933 | |
| 10,531.5 | 6,679.4 | 6,676.4 | 6,676.4 | 103.6 | 133.9 | 86.88 | -332.6 | -1,597.9 | 4,032.8 | 3,795.7 | 237.16 | 17.005 | |
| 10,600.0 | 6,679.0 | 6,676.0 | 6,676.0 | 105.4 | 133.9 | 86.83 | -332.6 | -1,597.9 | 4,100.9 | 3,861.9 | 238.97 | 17.161 | |
| 10,629.9 | 6,678.8 | 6,675.8 | 6,675.8 | 106.2 | 133.9 | 86.80 | -332.6 | -1,597.9 | 4,130.6 | 3,890.8 | 239.76 | 17.228 | |
| 10,700.0 | 6,678.4 | 6,675.4 | 6,675.4 | 108.1 | 133.9 | 86.75 | -332.6 | -1,597.9 | 4,200.2 | 3,958.6 | 241.62 | 17.384 | |
| 10,728.3 | 6,678.2 | 6,675.2 | 6,675.2 | 108.9 | 133.9 | 86.73 | -332.6 | -1,597.9 | 4,228.4 | 3,986.0 | 242.37 | 17.446 | |
| 10,800.0 | 6,677.7 | 6,674.7 | 6,674.7 | 110.8 | 133.9 | 86.67 | -332.6 | -1,597.9 | 4,299.6 | 4,055.3 | 244.28 | 17.601 | |
| 10,826.7 | 6,677.5 | 6,674.5 | 6,674.5 | 111.5 | 133.9 | 86.65 | -332.6 | -1,597.9 | 4,326.2 | 4,081.2 | 244.99 | 17.659 | |
| 10,900.0 | 6,677.1 | 6,674.1 | 6,674.1 | 113.5 | 133.9 | 86.59 | -332.6 | -1,597.9 | 4,399.0 | 4,152.0 | 246.94 | 17.814 | |
| 10,925.2 | 6,676.9 | 6,673.9 | 6,673.9 | 114.2 | 133.9 | 86.57 | -332.6 | -1,597.9 | 4,424.0 | 4,176.4 | 247.61 | 17.867 | |
| 11,000.0 | 6,676.4 | 6,673.4 | 6,673.4 | 116.2 | 133.9 | 86.52 | -332.6 | -1,597.9 | 4,498.4 | 4,248.8 | 249.60 | 18.022 | |
| 11,023.6 | 6,676.3 | 6,673.3 | 6,673.3 | 116.8 | 133.9 | 86.50 | -332.6 | -1,597.9 | 4,521.9 | 4,271.6 | 250.23 | 18.071 | |
| 11,100.0 | 6,675.8 | 6,672.8 | 6,672.8 | 118.9 | 133.9 | 86.44 | -332.6 | -1,597.9 | 4,597.8 | 4,345.6 | 252.27 | 18.226 | |
| 11,122.0 | 6,675.6 | 6,672.6 | 6,672.6 | 119.5 | 133.9 | 86.42 | -332.6 | -1,597.9 | 4,619.7 | 4,366.9 | 252.86 | 18.270 | |
| 11,200.0 | 6,675.1 | 6,672.1 | 6,672.1 | 121.6 | 133.8 | 86.36 | -332.6 | -1,597.9 | 4,697.3 | 4,442.4 | 254.94 | 18.425 | |
| 11,220.4 | 6,675.0 | 6,672.0 | 6,672.0 | 122.2 | 133.8 | 86.34 | -332.6 | -1,597.9 | 4,717.7 | 4,462.2 | 255.49 | 18.465 | |
| 11,300.0 | 6,674.5 | 6,671.5 | 6,671.5 | 124.3 | 133.8 | 86.28 | -332.6 | -1,597.9 | 4,796.8 | 4,539.2 | 257.62 | 18.620 | |
| 11,318.9 | 6,674.3 | 6,671.3 | 6,671.3 | 124.9 | 133.8 | 86.27 | -332.6 | -1,597.9 | 4,815.6 | 4,557.5 | 258.13 | 18.656 | |
| 11,400.0 | 6,673.8 | 6,670.8 | 6,670.8 | 127.1 | 133.8 | 86.21 | -332.6 | -1,597.9 | 4,896.3 | 4,636.0 | 260.30 | 18.810 | |
| 11,417.3 | 6,673.7 | 6,670.7 | 6,670.7 | 127.5 | 133.8 | 86.19 | -332.6 | -1,597.9 | 4,913.5 | 4,652.8 | 260.76 | 18.843 | |
| 11,500.0 | 6,673.2 | 6,670.2 | 6,670.2 | 129.8 | 133.8 | 86.13 | -332.6 | -1,597.9 | 4,995.8 | 4,732.9 | 262.98 | 18.997 | |
| 11,515.7 | 6,673.1 | 6,670.1 | 6,670.1 | 130.2 | 133.8 | 86.12 | -332.6 | -1,597.9 | 5,011.5 | 4,748.1 | 263.40 | 19.026 | |
| 11,600.0 | 6,672.5 | 6,669.5 | 6,669.5 | 132.5 | 133.8 | 86.05 | -332.6 | -1,597.9 | 5,095.4 | 4,829.7 | 265.67 | 19.180 | |
| 11,614.1 | 6,672.4 | 6,669.4 | 6,669.4 | 132.9 | 133.8 | 86.04 | -332.6 | -1,597.9 | 5,109.5 | 4,843.4 | 266.05 | 19.205 | |
| 11,700.0 | 6,671.9 | 6,668.9 | 6,668.9 | 135.3 | 133.8 | 85.97 | -332.6 | -1,597.9 | 5,195.0 | 4,926.6 | 268.36 | 19.359 | |
| 11,712.6 | 6,671.8 | 6,668.8 | 6,668.8 | 135.6 | 133.8 | 85.96 | -332.6 | -1,597.9 | 5,207.5 | 4,938.8 | 268.69 | 19.381 | |
| 11,800.0 | 6,671.2 | 6,668.2 | 6,668.2 | 138.0 | 133.8 | 85.89 | -332.6 | -1,597.9 | 5,294.6 | 5,023.5 | 271.05 | 19.534 | |
| 11,811.0 | 6,671.1 | 6,668.1 | 6,668.1 | 138.3 | 133.8 | 85.89 | -332.6 | -1,597.9 | 5,305.5 | 5,034.2 | 271.34 | 19.553 | |
| 11,900.0 | 6,670.6 | 6,667.6 | 6,667.6 | 140.7 | 133.8 | 85.82 | -332.6 | -1,597.9 | 5,394.2 | 5,120.4 | 273.74 | 19.706 | |
| 11,909.4 | 6,670.5 | 6,667.5 | 6,667.5 | 141.0 | 133.8 | 85.81 | -332.6 | -1,597.9 | 5,403.5 | 5,129.5 | 273.99 | 19.722 | |
| 11,987.2 | 6,670.0 | 6,667.0 | 6,667.0 | 143.1 | 133.7 | 85.75 | -332.6 | -1,597.9 | 5,481.0 | 5,204.9 | 276.09 | 19.853 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -94.42 | -225.7 | -2,919.4 | 2,928.1 | | | | |
| 98.4 | 98.4 | 103.4 | 103.4 | 0.1 | 0.1 | -94.43 | -226.1 | -2,919.2 | 2,928.0 | 2,927.8 | 0.20 | N/A | |
| 100.0 | 100.0 | 104.9 | 104.9 | 0.1 | 0.1 | -94.43 | -226.1 | -2,919.2 | 2,928.0 | 2,927.8 | 0.20 | N/A | |
| 196.8 | 196.8 | 200.0 | 200.0 | 0.3 | 0.2 | -94.45 | -227.0 | -2,918.9 | 2,927.8 | 2,927.2 | 0.55 | 5,306.489 | |
| 200.0 | 200.0 | 201.9 | 201.9 | 0.3 | 0.2 | -94.45 | -227.0 | -2,918.9 | 2,927.8 | 2,927.2 | 0.56 | 5,224.263 | |
| 295.3 | 295.3 | 296.2 | 296.2 | 0.5 | 0.3 | -94.47 | -227.9 | -2,918.7 | 2,927.6 | 2,926.8 | 0.86 | 3,420.358 | |
| 300.0 | 300.0 | 300.9 | 300.9 | 0.5 | 0.3 | -94.47 | -228.0 | -2,918.7 | 2,927.6 | 2,926.7 | 0.87 | 3,363.205 | |
| 393.7 | 393.7 | 397.6 | 397.6 | 0.8 | 0.4 | -94.49 | -228.9 | -2,918.5 | 2,927.4 | 2,926.3 | 1.15 | 2,548.197 | |
| 400.0 | 400.0 | 404.1 | 404.0 | 0.8 | 0.4 | -94.49 | -229.0 | -2,918.4 | 2,927.4 | 2,926.3 | 1.17 | 2,508.116 | |
| 492.1 | 492.1 | 498.7 | 498.7 | 1.0 | 0.5 | -94.50 | -229.8 | -2,918.1 | 2,927.2 | 2,925.7 | 1.43 | 2,043.508 | |
| 500.0 | 500.0 | 507.0 | 507.0 | 1.0 | 0.5 | -94.50 | -229.9 | -2,918.1 | 2,927.1 | 2,925.7 | 1.45 | 2,012.071 | |
| 590.5 | 590.5 | 602.1 | 602.1 | 1.2 | 0.5 | -94.52 | -230.6 | -2,917.6 | 2,926.7 | 2,925.0 | 1.71 | 1,710.346 | |
| 600.0 | 600.0 | 611.4 | 611.3 | 1.2 | 0.5 | -94.52 | -230.7 | -2,917.6 | 2,926.7 | 2,925.0 | 1.74 | 1,684.706 | |
| 689.0 | 689.0 | 698.1 | 698.1 | 1.4 | 0.6 | -94.53 | -231.4 | -2,917.1 | 2,926.3 | 2,924.3 | 1.98 | 1,476.284 | |
| 700.0 | 700.0 | 708.7 | 708.6 | 1.4 | 0.6 | -94.54 | -231.5 | -2,917.1 | 2,926.3 | 2,924.2 | 2.01 | 1,454.250 | |
| 787.4 | 787.4 | 791.8 | 791.8 | 1.6 | 0.6 | -94.55 | -232.1 | -2,916.7 | 2,926.0 | 2,923.7 | 2.25 | 1,300.736 | |
| 800.0 | 800.0 | 804.0 | 803.9 | 1.7 | 0.6 | -94.55 | -232.2 | -2,916.7 | 2,925.9 | 2,923.7 | 2.28 | 1,281.228 | |
| 885.8 | 885.8 | 888.7 | 888.6 | 1.9 | 0.7 | -94.57 | -232.9 | -2,916.5 | 2,925.8 | 2,923.2 | 2.52 | 1,162.359 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 0.7 | -94.57 | -233.0 | -2,916.4 | 2,925.7 | 2,923.2 | 2.55 | 1,145.387 | |
| 984.2 | 984.2 | 982.2 | 982.1 | 2.1 | 0.7 | -94.58 | -233.8 | -2,916.3 | 2,925.6 | 2,922.9 | 2.78 | 1,051.843 | |
| 1,000.0 | 1,000.0 | 997.1 | 997.0 | 2.1 | 0.7 | -94.59 | -233.9 | -2,916.3 | 2,925.6 | 2,922.8 | 2.82 | 1,036.110 | |
| 1,082.7 | 1,082.7 | 1,061.8 | 1,061.8 | 2.3 | 0.7 | -10.16 | -234.5 | -2,916.4 | 2,924.7 | 2,921.7 | 2.95 | 990.023 | |
| 1,100.0 | 1,100.0 | 1,075.3 | 1,075.3 | 2.3 | 0.7 | -10.17 | -234.6 | -2,916.5 | 2,924.3 | 2,921.3 | 2.99 | 976.460 | |
| 1,181.1 | 1,181.0 | 1,153.2 | 1,153.1 | 2.5 | 0.8 | -10.20 | -235.2 | -2,917.2 | 2,921.1 | 2,917.9 | 3.19 | 916.893 | |
| 1,200.0 | 1,199.8 | 1,173.5 | 1,173.5 | 2.5 | 0.8 | -10.22 | -235.4 | -2,917.3 | 2,920.0 | 2,916.8 | 3.23 | 903.676 | |
| 1,279.5 | 1,279.1 | 1,254.5 | 1,254.4 | 2.7 | 0.8 | -10.28 | -236.4 | -2,917.8 | 2,914.1 | 2,910.6 | 3.43 | 849.666 | |
| 1,300.0 | 1,299.5 | 1,274.8 | 1,274.7 | 2.8 | 0.8 | -10.30 | -236.6 | -2,918.0 | 2,912.2 | 2,908.7 | 3.48 | 836.606 | |
| 1,377.9 | 1,376.9 | 1,348.7 | 1,348.7 | 3.0 | 0.8 | -10.38 | -237.6 | -2,918.5 | 2,903.7 | 2,900.1 | 3.68 | 789.044 | |
| 1,400.0 | 1,398.7 | 1,369.2 | 1,369.1 | 3.0 | 0.8 | -10.40 | -237.9 | -2,918.6 | 2,901.0 | 2,897.3 | 3.74 | 776.484 | |
| 1,476.4 | 1,474.2 | 1,440.1 | 1,440.1 | 3.2 | 0.9 | -10.50 | -238.8 | -2,919.3 | 2,890.3 | 2,886.4 | 3.94 | 734.403 | |
| 1,500.0 | 1,497.5 | 1,462.1 | 1,462.0 | 3.3 | 0.9 | -10.53 | -239.1 | -2,919.5 | 2,886.6 | 2,882.6 | 4.00 | 722.186 | |
| 1,574.8 | 1,571.0 | 1,533.1 | 1,533.0 | 3.5 | 0.9 | -10.64 | -239.9 | -2,920.3 | 2,873.8 | 2,869.6 | 4.20 | 684.392 | |
| 1,600.0 | 1,595.6 | 1,557.7 | 1,557.6 | 3.6 | 0.9 | -10.69 | -240.2 | -2,920.5 | 2,869.0 | 2,864.8 | 4.27 | 672.348 | |
| 1,673.2 | 1,667.0 | 1,629.0 | 1,628.9 | 3.9 | 0.9 | -10.82 | -240.9 | -2,921.3 | 2,854.0 | 2,849.6 | 4.47 | 638.118 | |
| 1,700.0 | 1,693.1 | 1,655.0 | 1,654.9 | 4.0 | 0.9 | -10.87 | -241.2 | -2,921.6 | 2,848.1 | 2,843.6 | 4.55 | 626.280 | |
| 1,771.6 | 1,762.4 | 1,723.4 | 1,723.3 | 4.3 | 1.0 | -11.01 | -241.8 | -2,922.4 | 2,831.1 | 2,826.3 | 4.76 | 595.153 | |
| 1,800.0 | 1,789.6 | 1,749.7 | 1,749.6 | 4.4 | 1.0 | -11.07 | -241.9 | -2,922.8 | 2,823.9 | 2,819.1 | 4.84 | 583.645 | |
| 1,870.1 | 1,856.8 | 1,816.2 | 1,816.1 | 4.7 | 1.0 | -11.23 | -241.9 | -2,923.7 | 2,805.0 | 2,800.0 | 5.05 | 555.278 | |
| 1,900.0 | 1,885.3 | 1,847.1 | 1,847.0 | 4.9 | 1.0 | -11.30 | -241.8 | -2,924.1 | 2,796.4 | 2,791.3 | 5.14 | 543.749 | |
| 1,968.5 | 1,950.2 | 1,915.3 | 1,915.1 | 5.3 | 1.0 | -11.47 | -241.6 | -2,924.9 | 2,775.7 | 2,770.3 | 5.36 | 517.648 | |
| 2,000.0 | 1,979.8 | 1,943.4 | 1,943.3 | 5.5 | 1.0 | -11.55 | -241.5 | -2,925.3 | 2,765.6 | 2,760.1 | 5.46 | 506.160 | |
| 2,044.9 | 2,021.9 | 1,983.4 | 1,983.3 | 5.7 | 1.0 | -11.67 | -241.4 | -2,925.8 | 2,750.7 | 2,745.1 | 5.61 | 490.118 | |
| 2,066.9 | 2,042.5 | 2,003.0 | 2,002.8 | 5.9 | 1.0 | -11.70 | -241.3 | -2,926.0 | 2,743.3 | 2,737.6 | 5.68 | 482.807 | |
| 2,100.0 | 2,073.4 | 2,033.0 | 2,032.8 | 6.1 | 1.0 | -11.75 | -241.2 | -2,926.5 | 2,732.1 | 2,726.3 | 5.79 | 472.004 | |
| 2,165.3 | 2,134.4 | 2,092.3 | 2,092.1 | 6.5 | 1.0 | -11.84 | -241.0 | -2,927.3 | 2,710.1 | 2,704.1 | 6.00 | 451.646 | |
| 2,200.0 | 2,166.8 | 2,124.4 | 2,124.2 | 6.8 | 1.1 | -11.89 | -240.9 | -2,927.8 | 2,698.5 | 2,692.3 | 6.12 | 441.213 | |
| 2,263.8 | 2,226.4 | 2,183.8 | 2,183.6 | 7.2 | 1.1 | -11.98 | -240.5 | -2,928.7 | 2,677.0 | 2,670.7 | 6.33 | 422.857 | |
| 2,300.0 | 2,260.2 | 2,219.6 | 2,219.4 | 7.4 | 1.1 | -12.03 | -240.3 | -2,929.3 | 2,664.9 | 2,658.4 | 6.46 | 412.802 | |
| 2,362.2 | 2,318.3 | 2,284.3 | 2,284.1 | 7.9 | 1.1 | -12.13 | -239.9 | -2,930.2 | 2,643.9 | 2,637.2 | 6.67 | 396.136 | |
| 2,400.0 | 2,353.6 | 2,321.8 | 2,321.6 | 8.1 | 1.1 | -12.19 | -239.6 | -2,930.6 | 2,631.0 | 2,624.2 | 6.81 | 386.485 | |
| 2,460.6 | 2,410.3 | 2,379.9 | 2,379.7 | 8.6 | 1.1 | -12.28 | -239.1 | -2,931.3 | 2,610.5 | 2,603.4 | 7.02 | 371.666 | |
| 2,500.0 | 2,447.0 | 2,417.4 | 2,417.2 | 8.9 | 1.1 | -12.34 | -238.8 | -2,931.7 | 2,597.1 | 2,589.9 | 7.16 | 362.495 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,473.4 | 2,473.2 | 9.3 | 1.1 | -12.42 | -238.4 | -2,932.3 | 2,577.0 | 2,569.6 | 7.38 | 349.318 | |
| 2,600.0 | 2,540.5 | 2,511.4 | 2,511.2 | 9.6 | 1.1 | -12.48 | -238.1 | -2,932.8 | 2,563.1 | 2,555.6 | 7.53 | 340.605 | |
| 2,657.5 | 2,594.2 | 2,562.2 | 2,562.0 | 10.0 | 1.1 | -12.57 | -237.6 | -2,933.4 | 2,543.6 | 2,535.9 | 7.73 | 328.924 | |
| 2,700.0 | 2,633.9 | 2,600.0 | 2,599.8 | 10.3 | 1.1 | -12.62 | -237.1 | -2,933.9 | 2,529.2 | 2,521.3 | 7.89 | 320.657 | |
| 2,755.9 | 2,686.1 | 2,653.8 | 2,653.5 | 10.7 | 1.2 | -12.71 | -236.5 | -2,934.6 | 2,510.4 | 2,502.3 | 8.09 | 310.136 | |
| 2,800.0 | 2,727.3 | 2,696.3 | 2,696.1 | 11.0 | 1.2 | -12.78 | -236.0 | -2,935.1 | 2,495.4 | 2,487.2 | 8.26 | 302.179 | |
| 2,854.3 | 2,778.1 | 2,747.5 | 2,747.3 | 11.4 | 1.2 | -12.86 | -235.4 | -2,935.8 | 2,477.1 | 2,468.6 | 8.46 | 292.729 | |
| 2,900.0 | 2,820.7 | 2,790.5 | 2,790.3 | 11.8 | 1.2 | -12.93 | -234.9 | -2,936.3 | 2,461.6 | 2,453.0 | 8.63 | 285.111 | |
| 2,952.7 | 2,870.0 | 2,848.0 | 2,847.7 | 12.2 | 1.2 | -13.02 | -234.1 | -2,937.0 | 2,443.7 | 2,434.9 | 8.84 | 276.510 | |
| 3,000.0 | 2,914.2 | 2,900.0 | 2,899.7 | 12.5 | 1.2 | -13.11 | -233.4 | -2,937.4 | 2,427.5 | 2,418.5 | 9.02 | 269.092 | |
| 3,051.2 | 2,962.0 | 2,947.4 | 2,947.2 | 12.9 | 1.2 | -13.19 | -232.7 | -2,937.7 | 2,409.9 | 2,400.7 | 9.22 | 261.452 | |
| 3,100.0 | 3,007.6 | 2,991.9 | 2,991.7 | 13.3 | 1.2 | -13.27 | -232.2 | -2,938.0 | 2,393.1 | 2,383.7 | 9.40 | 254.456 | |
| 3,149.6 | 3,053.9 | 3,042.4 | 3,042.2 | 13.6 | 1.2 | -13.36 | -231.6 | -2,938.3 | 2,376.1 | 2,366.5 | 9.60 | 247.557 | |
| 3,200.0 | 3,101.0 | 3,094.8 | 3,094.5 | 14.0 | 1.2 | -13.45 | -231.0 | -2,938.5 | 2,358.6 | 2,348.8 | 9.80 | 240.793 | |
| 3,248.0 | 3,145.9 | 3,143.0 | 3,142.7 | 14.4 | 1.2 | -13.55 | -230.6 | -2,938.6 | 2,342.0 | 2,332.0 | 9.98 | 234.572 | |
| 3,300.0 | 3,194.4 | 3,194.9 | 3,194.6 | 14.8 | 1.2 | -13.65 | -230.2 | -2,938.6 | 2,323.8 | 2,313.6 | 10.19 | 228.081 | |
| 3,346.4 | 3,237.8 | 3,247.7 | 3,247.4 | 15.1 | 1.2 | -13.76 | -229.9 | -2,938.5 | 2,307.5 | 2,297.2 | 10.38 | 222.392 | |
| 3,400.0 | 3,287.8 | 3,308.0 | 3,307.7 | 15.5 | 1.2 | -13.89 | -229.5 | -2,938.0 | 2,288.5 | 2,277.9 | 10.59 | 216.110 | |
| 3,444.9 | 3,329.8 | 3,352.8 | 3,352.5 | 15.9 | 1.2 | -13.99 | -229.3 | -2,937.6 | 2,272.5 | 2,261.7 | 10.77 | 211.038 | |
| 3,500.0 | 3,381.3 | 3,407.3 | 3,407.1 | 16.3 | 1.3 | -14.11 | -229.2 | -2,936.9 | 2,252.7 | 2,241.7 | 10.99 | 204.993 | |
| 3,543.3 | 3,421.7 | 3,448.5 | 3,448.2 | 16.6 | 1.3 | -14.22 | -229.2 | -2,936.4 | 2,237.1 | 2,226.0 | 11.16 | 200.423 | |
| 3,600.0 | 3,474.7 | 3,500.0 | 3,499.7 | 17.0 | 1.3 | -14.35 | -229.6 | -2,935.6 | 2,216.7 | 2,205.4 | 11.39 | 194.631 | |
| 3,641.7 | 3,513.7 | 3,537.8 | 3,537.5 | 17.3 | 1.3 | -14.46 | -229.9 | -2,935.1 | 2,201.8 | 2,190.2 | 11.56 | 190.499 | |
| 3,700.0 | 3,568.1 | 3,587.6 | 3,587.3 | 17.8 | 1.3 | -14.60 | -230.5 | -2,934.5 | 2,181.0 | 2,169.2 | 11.79 | 184.939 | |
| 3,740.1 | 3,605.6 | 3,622.8 | 3,622.5 | 18.1 | 1.3 | -14.71 | -231.0 | -2,934.0 | 2,166.7 | 2,154.7 | 11.96 | 181.216 | |
| 3,800.0 | 3,661.5 | 3,676.1 | 3,675.8 | 18.5 | 1.3 | -14.87 | -231.7 | -2,933.5 | 2,145.5 | 2,133.3 | 12.20 | 175.832 | |
| 3,838.6 | 3,697.6 | 3,710.7 | 3,710.4 | 18.8 | 1.3 | -14.97 | -232.1 | -2,933.1 | 2,131.8 | 2,119.5 | 12.36 | 172.459 | |
| 3,900.0 | 3,754.9 | 3,766.9 | 3,766.6 | 19.3 | 1.3 | -15.14 | -232.8 | -2,932.6 | 2,110.2 | 2,097.5 | 12.62 | 167.232 | |
| 3,937.0 | 3,789.5 | 3,800.0 | 3,799.7 | 19.6 | 1.3 | -15.24 | -233.1 | -2,932.4 | 2,097.1 | 2,084.4 | 12.77 | 164.180 | |
| 4,000.0 | 3,848.4 | 3,856.8 | 3,856.5 | 20.1 | 1.3 | -15.42 | -233.7 | -2,931.9 | 2,075.0 | 2,062.0 | 13.04 | 159.130 | |
| 4,035.4 | 3,881.5 | 3,888.4 | 3,888.0 | 20.3 | 1.3 | -15.52 | -234.0 | -2,931.7 | 2,062.6 | 2,049.4 | 13.19 | 156.374 | |
| 4,100.0 | 3,941.8 | 3,946.3 | 3,946.0 | 20.8 | 1.3 | -15.70 | -234.6 | -2,931.4 | 2,040.1 | 2,026.6 | 13.47 | 151.491 | |
| 4,133.8 | 3,973.4 | 3,976.8 | 3,976.4 | 21.1 | 1.3 | -15.80 | -234.8 | -2,931.3 | 2,028.3 | 2,014.7 | 13.61 | 149.002 | |
| 4,200.0 | 4,035.2 | 4,032.7 | 4,032.4 | 21.6 | 1.4 | -15.98 | -235.3 | -2,931.1 | 2,005.4 | 1,991.5 | 13.90 | 144.317 | |
| 4,232.3 | 4,065.4 | 4,059.0 | 4,058.6 | 21.8 | 1.4 | -16.07 | -235.6 | -2,931.0 | 1,994.3 | 1,980.2 | 14.03 | 142.094 | |
| 4,300.0 | 4,128.6 | 4,115.0 | 4,114.6 | 22.3 | 1.4 | -16.26 | -236.5 | -2,931.1 | 1,971.2 | 1,956.9 | 14.33 | 137.566 | |
| 4,330.7 | 4,157.3 | 4,141.6 | 4,141.2 | 22.6 | 1.4 | -16.36 | -236.9 | -2,931.2 | 1,960.8 | 1,946.4 | 14.46 | 135.557 | |
| 4,400.0 | 4,222.0 | 4,200.0 | 4,199.6 | 23.1 | 1.4 | -16.57 | -237.8 | -2,931.5 | 1,937.5 | 1,922.7 | 14.77 | 131.171 | |
| 4,429.1 | 4,249.3 | 4,224.5 | 4,224.1 | 23.3 | 1.4 | -16.66 | -238.1 | -2,931.7 | 1,927.8 | 1,912.9 | 14.90 | 129.380 | |
| 4,500.0 | 4,315.5 | 4,280.8 | 4,280.4 | 23.9 | 1.4 | -16.85 | -238.5 | -2,932.5 | 1,904.4 | 1,889.2 | 15.21 | 125.192 | |
| 4,527.5 | 4,341.2 | 4,304.2 | 4,303.8 | 24.1 | 1.4 | -16.92 | -238.6 | -2,932.9 | 1,895.4 | 1,880.1 | 15.33 | 123.604 | |
| 4,600.0 | 4,408.9 | 4,391.0 | 4,390.6 | 24.6 | 1.4 | -17.20 | -238.3 | -2,934.1 | 1,871.5 | 1,855.8 | 15.69 | 119.313 | |
| 4,626.0 | 4,433.2 | 4,420.6 | 4,420.2 | 24.8 | 1.4 | -17.30 | -238.2 | -2,934.3 | 1,862.7 | 1,846.9 | 15.81 | 117.809 | |
| 4,700.0 | 4,502.3 | 4,502.9 | 4,502.5 | 25.4 | 1.4 | -17.56 | -237.4 | -2,934.6 | 1,837.5 | 1,821.4 | 16.17 | 113.622 | |
| 4,724.4 | 4,525.1 | 4,529.3 | 4,528.9 | 25.6 | 1.4 | -17.65 | -237.1 | -2,934.6 | 1,829.1 | 1,812.8 | 16.29 | 112.278 | |
| 4,800.0 | 4,595.7 | 4,610.5 | 4,610.1 | 26.2 | 1.4 | -17.91 | -235.9 | -2,934.3 | 1,802.8 | 1,786.1 | 16.66 | 108.219 | |
| 4,822.8 | 4,617.1 | 4,633.9 | 4,633.5 | 26.3 | 1.4 | -17.99 | -235.6 | -2,934.1 | 1,794.8 | 1,778.0 | 16.77 | 107.029 | |
| 4,900.0 | 4,689.2 | 4,712.8 | 4,712.4 | 26.9 | 1.5 | -18.26 | -234.6 | -2,933.2 | 1,767.5 | 1,750.4 | 17.15 | 103.086 | |
| 4,921.2 | 4,709.0 | 4,734.3 | 4,733.8 | 27.1 | 1.5 | -18.33 | -234.3 | -2,933.0 | 1,760.0 | 1,742.7 | 17.25 | 102.025 | |
| 5,000.0 | 4,782.6 | 4,813.2 | 4,812.7 | 27.7 | 1.5 | -18.63 | -233.5 | -2,931.7 | 1,731.8 | 1,714.2 | 17.64 | 98.170 | |
| 5,019.7 | 4,801.0 | 4,832.3 | 4,831.9 | 27.8 | 1.5 | -18.70 | -233.3 | -2,931.4 | 1,724.8 | 1,707.1 | 17.74 | 97.230 | |
| 5,100.0 | 4,876.0 | 4,909.5 | 4,909.0 | 28.4 | 1.5 | -19.01 | -232.7 | -2,929.9 | 1,695.9 | 1,677.8 | 18.14 | 93.476 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,925.5 | 4,925.0 | 28.6 | 1.5 | -19.08 | -232.6 | -2,929.6 | 1,689.4 | 1,671.2 | 18.23 | 92.657 | |
| 5,159.9 | 4,932.0 | 4,962.4 | 4,961.9 | 28.9 | 1.5 | -19.24 | -232.5 | -2,928.8 | 1,674.4 | 1,656.0 | 18.44 | 90.790 | |
| 5,200.0 | 4,969.5 | 5,000.0 | 4,999.5 | 29.2 | 1.5 | -19.30 | -232.5 | -2,928.1 | 1,660.4 | 1,641.8 | 18.59 | 89.330 | |
| 5,216.5 | 4,985.1 | 5,013.5 | 5,013.0 | 29.3 | 1.5 | -19.32 | -232.5 | -2,927.8 | 1,654.7 | 1,636.1 | 18.64 | 88.785 | |
| 5,300.0 | 5,064.0 | 5,093.3 | 5,092.8 | 29.7 | 1.5 | -19.46 | -232.6 | -2,926.2 | 1,627.5 | 1,608.6 | 18.90 | 86.112 | |
| 5,314.9 | 5,078.2 | 5,100.0 | 5,099.5 | 29.8 | 1.5 | -19.46 | -232.6 | -2,926.1 | 1,622.9 | 1,603.9 | 18.93 | 85.713 | |
| 5,400.0 | 5,159.6 | 5,175.6 | 5,175.1 | 30.2 | 1.5 | -19.57 | -232.5 | -2,924.9 | 1,598.1 | 1,579.0 | 19.16 | 83.402 | |
| 5,413.4 | 5,172.4 | 5,186.6 | 5,186.1 | 30.3 | 1.5 | -19.58 | -232.5 | -2,924.8 | 1,594.5 | 1,575.3 | 19.19 | 83.079 | |
| 5,500.0 | 5,256.1 | 5,265.0 | 5,264.5 | 30.7 | 1.5 | -19.69 | -232.5 | -2,924.1 | 1,572.7 | 1,553.3 | 19.39 | 81.090 | |
| 5,511.8 | 5,267.6 | 5,276.0 | 5,275.5 | 30.7 | 1.5 | -19.70 | -232.5 | -2,924.0 | 1,569.9 | 1,550.5 | 19.42 | 80.845 | |
| 5,600.0 | 5,353.5 | 5,360.7 | 5,360.1 | 31.1 | 1.5 | -19.82 | -232.6 | -2,923.4 | 1,550.6 | 1,531.0 | 19.60 | 79.112 | |
| 5,610.2 | 5,363.5 | 5,370.6 | 5,370.1 | 31.1 | 1.5 | -19.84 | -232.6 | -2,923.4 | 1,548.6 | 1,529.0 | 19.62 | 78.932 | |
| 5,700.0 | 5,451.6 | 5,457.6 | 5,457.1 | 31.4 | 1.5 | -19.95 | -232.8 | -2,922.8 | 1,531.9 | 1,512.1 | 19.78 | 77.465 | |
| 5,708.6 | 5,460.2 | 5,466.0 | 5,465.5 | 31.4 | 1.5 | -19.96 | -232.8 | -2,922.7 | 1,530.5 | 1,510.7 | 19.79 | 77.342 | |
| 5,800.0 | 5,550.4 | 5,557.5 | 5,557.0 | 31.7 | 1.5 | -20.05 | -232.9 | -2,922.2 | 1,516.5 | 1,496.6 | 19.92 | 76.132 | |
| 5,807.1 | 5,557.4 | 5,564.7 | 5,564.2 | 31.7 | 1.5 | -20.06 | -232.9 | -2,922.2 | 1,515.5 | 1,495.6 | 19.93 | 76.051 | |
| 5,900.0 | 5,649.6 | 5,656.5 | 5,656.0 | 31.9 | 1.6 | -20.14 | -233.0 | -2,921.5 | 1,504.2 | 1,484.2 | 20.03 | 75.088 | |
| 5,905.5 | 5,655.1 | 5,661.8 | 5,661.3 | 31.9 | 1.6 | -20.14 | -233.0 | -2,921.5 | 1,503.6 | 1,483.6 | 20.04 | 75.042 | |
| 6,000.0 | 5,749.2 | 5,754.4 | 5,753.9 | 32.1 | 1.6 | -20.21 | -233.3 | -2,920.9 | 1,495.3 | 1,475.2 | 20.12 | 74.324 | |
| 6,003.9 | 5,753.1 | 5,758.3 | 5,757.7 | 32.1 | 1.6 | -20.21 | -233.3 | -2,920.8 | 1,495.0 | 1,474.9 | 20.12 | 74.301 | |
| 6,100.0 | 5,849.1 | 5,853.3 | 5,852.8 | 32.3 | 1.6 | -20.28 | -234.1 | -2,920.1 | 1,489.8 | 1,469.6 | 20.19 | 73.796 | |
| 6,102.3 | 5,851.4 | 5,855.7 | 5,855.1 | 32.3 | 1.6 | -20.28 | -234.2 | -2,920.1 | 1,489.7 | 1,469.5 | 20.19 | 73.787 | |
| 6,200.8 | 5,949.8 | 5,951.9 | 5,951.3 | 32.4 | 1.6 | -20.35 | -235.5 | -2,919.4 | 1,487.6 | 1,467.3 | 20.24 | 73.487 | |
| 6,204.9 | 5,953.9 | 5,955.8 | 5,955.3 | 32.4 | 1.6 | -104.79 | -235.6 | -2,919.3 | 1,487.5 | 1,455.0 | 32.56 | 45.683 | |
| 6,234.9 | 5,983.9 | 5,984.8 | 5,984.3 | 32.4 | 1.6 | -104.81 | -236.0 | -2,919.1 | 1,487.5 | 1,454.9 | 32.59 | 45.640 | ES, SF |
| 6,236.5 | 5,985.5 | 5,986.4 | 5,985.9 | 32.4 | 1.6 | 165.19 | -236.1 | -2,919.1 | 1,487.5 | 1,467.2 | 20.29 | 73.314 | CC |
| 6,250.0 | 5,999.0 | 6,000.0 | 5,999.5 | 32.4 | 1.6 | 165.18 | -236.3 | -2,919.0 | 1,487.6 | 1,467.3 | 20.25 | 73.454 | |
| 6,299.2 | 6,048.2 | 6,047.5 | 6,047.0 | 32.4 | 1.6 | 165.12 | -237.1 | -2,918.8 | 1,490.1 | 1,470.0 | 20.13 | 74.013 | |
| 6,300.0 | 6,048.9 | 6,048.3 | 6,047.7 | 32.4 | 1.6 | 165.12 | -237.1 | -2,918.7 | 1,490.2 | 1,470.1 | 20.13 | 74.022 | |
| 6,350.0 | 6,098.5 | 6,096.8 | 6,096.3 | 32.4 | 1.6 | 165.02 | -238.0 | -2,918.5 | 1,496.2 | 1,476.2 | 20.04 | 74.663 | |
| 6,397.6 | 6,145.3 | 6,142.9 | 6,142.3 | 32.3 | 1.7 | 164.88 | -238.9 | -2,918.2 | 1,505.1 | 1,485.1 | 19.96 | 75.388 | |
| 6,400.0 | 6,147.6 | 6,145.2 | 6,144.6 | 32.3 | 1.7 | 164.87 | -239.0 | -2,918.2 | 1,505.6 | 1,485.7 | 19.96 | 75.426 | |
| 6,450.0 | 6,195.8 | 6,192.8 | 6,192.2 | 32.2 | 1.7 | 164.69 | -240.0 | -2,918.0 | 1,518.3 | 1,498.4 | 19.88 | 76.359 | |
| 6,496.0 | 6,239.3 | 6,235.7 | 6,235.1 | 32.1 | 1.7 | 164.47 | -240.8 | -2,917.8 | 1,532.9 | 1,513.1 | 19.81 | 77.392 | |
| 6,500.0 | 6,243.0 | 6,239.3 | 6,238.7 | 32.1 | 1.7 | 164.45 | -240.8 | -2,917.8 | 1,534.3 | 1,514.5 | 19.80 | 77.487 | |
| 6,550.0 | 6,289.0 | 6,284.6 | 6,284.0 | 32.0 | 1.7 | 164.17 | -241.6 | -2,917.6 | 1,553.4 | 1,533.7 | 19.71 | 78.818 | |
| 6,594.5 | 6,328.6 | 6,325.4 | 6,324.7 | 31.8 | 1.7 | 163.87 | -242.1 | -2,917.5 | 1,573.0 | 1,553.4 | 19.62 | 80.159 | |
| 6,600.0 | 6,333.4 | 6,330.5 | 6,329.8 | 31.8 | 1.7 | 163.83 | -242.2 | -2,917.5 | 1,575.6 | 1,556.0 | 19.61 | 80.332 | |
| 6,650.0 | 6,376.2 | 6,375.6 | 6,375.0 | 31.7 | 1.7 | 163.43 | -242.8 | -2,917.3 | 1,600.7 | 1,581.2 | 19.53 | 81.972 | |
| 6,692.9 | 6,411.3 | 6,412.1 | 6,411.5 | 31.6 | 1.7 | 163.00 | -243.3 | -2,917.2 | 1,624.5 | 1,605.0 | 19.47 | 83.416 | |
| 6,700.0 | 6,417.0 | 6,417.7 | 6,417.1 | 31.5 | 1.7 | 162.92 | -243.3 | -2,917.1 | 1,628.6 | 1,609.2 | 19.47 | 83.652 | |
| 6,750.0 | 6,455.7 | 6,456.4 | 6,455.7 | 31.4 | 1.7 | 162.29 | -243.9 | -2,916.9 | 1,659.3 | 1,639.8 | 19.46 | 85.255 | |
| 6,791.3 | 6,486.0 | 6,486.6 | 6,486.0 | 31.3 | 1.7 | 161.66 | -244.5 | -2,916.7 | 1,686.6 | 1,667.0 | 19.51 | 86.429 | |
| 6,800.0 | 6,492.2 | 6,492.7 | 6,492.1 | 31.3 | 1.7 | 161.51 | -244.6 | -2,916.7 | 1,692.5 | 1,673.0 | 19.53 | 86.649 | |
| 6,850.0 | 6,526.1 | 6,525.2 | 6,524.6 | 31.2 | 1.7 | 160.52 | -245.2 | -2,916.5 | 1,728.2 | 1,708.5 | 19.72 | 87.649 | |
| 6,889.7 | 6,551.2 | 6,548.9 | 6,548.3 | 31.2 | 1.7 | 159.57 | -245.6 | -2,916.4 | 1,758.2 | 1,738.2 | 19.97 | 88.047 | |
| 6,900.0 | 6,557.4 | 6,554.8 | 6,554.1 | 31.2 | 1.8 | 159.29 | -245.6 | -2,916.4 | 1,766.2 | 1,746.1 | 20.05 | 88.086 | |
| 6,950.0 | 6,586.0 | 6,581.6 | 6,580.9 | 31.1 | 1.8 | 157.74 | -246.0 | -2,916.3 | 1,806.2 | 1,785.7 | 20.58 | 87.787 | |
| 6,988.2 | 6,605.8 | 6,600.1 | 6,599.4 | 31.2 | 1.8 | 156.27 | -246.2 | -2,916.3 | 1,838.2 | 1,817.0 | 21.14 | 86.962 | |
| 7,000.0 | 6,611.5 | 6,606.0 | 6,605.4 | 31.2 | 1.8 | 155.76 | -246.2 | -2,916.3 | 1,848.2 | 1,826.9 | 21.34 | 86.616 | |
| 7,050.0 | 6,634.1 | 6,629.1 | 6,628.4 | 31.2 | 1.8 | 153.20 | -246.4 | -2,916.3 | 1,891.9 | 1,869.5 | 22.39 | 84.511 | |
| 7,086.6 | 6,648.6 | 6,643.9 | 6,643.3 | 31.3 | 1.8 | 150.81 | -246.6 | -2,916.3 | 1,924.8 | 1,901.5 | 23.38 | 82.325 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,648.9 | 6,648.3 | 31.4 | 1.8 | 149.78 | -246.6 | -2,916.3 | 1,937.1 | 1,913.3 | 23.80 | 81.404 | |
| 7,150.0 | 6,669.5 | 6,665.4 | 6,664.8 | 31.6 | 1.8 | 145.06 | -246.8 | -2,916.3 | 1,983.5 | 1,957.8 | 25.65 | 77.343 | |
| 7,185.0 | 6,678.8 | 6,675.0 | 6,674.4 | 31.7 | 1.8 | 140.62 | -246.9 | -2,916.3 | 2,016.6 | 1,989.3 | 27.25 | 74.011 | |
| 7,200.0 | 6,682.3 | 6,678.6 | 6,677.9 | 31.8 | 1.8 | 138.33 | -247.0 | -2,916.2 | 2,030.9 | 2,002.9 | 28.01 | 72.517 | |
| 7,250.0 | 6,691.6 | 6,688.2 | 6,687.6 | 32.1 | 1.8 | 128.45 | -247.1 | -2,916.2 | 2,079.1 | 2,048.3 | 30.82 | 67.469 | |
| 7,283.4 | 6,696.0 | 6,692.8 | 6,692.1 | 32.3 | 1.8 | 119.32 | -247.1 | -2,916.2 | 2,111.7 | 2,079.0 | 32.69 | 64.589 | |
| 7,300.0 | 6,697.5 | 6,694.4 | 6,693.7 | 32.4 | 1.8 | 113.91 | -247.2 | -2,916.2 | 2,127.9 | 2,094.4 | 33.47 | 63.571 | |
| 7,350.0 | 6,699.9 | 6,697.0 | 6,696.3 | 32.8 | 1.8 | 94.16 | -247.2 | -2,916.2 | 2,177.0 | 2,142.4 | 34.57 | 62.972 | |
| 7,364.4 | 6,700.0 | 6,697.1 | 6,696.4 | 32.9 | 1.8 | 87.87 | -247.2 | -2,916.2 | 2,191.1 | 2,156.5 | 34.62 | 63.294 | |
| 7,381.9 | 6,699.9 | 6,697.0 | 6,696.3 | 33.1 | 1.8 | 87.85 | -247.2 | -2,916.2 | 2,208.3 | 2,173.6 | 34.77 | 63.513 | |
| 7,400.0 | 6,699.8 | 6,696.9 | 6,696.2 | 33.2 | 1.8 | 87.84 | -247.2 | -2,916.2 | 2,226.2 | 2,191.2 | 34.93 | 63.738 | |
| 7,480.3 | 6,699.2 | 6,696.5 | 6,695.9 | 34.0 | 1.8 | 87.79 | -247.2 | -2,916.2 | 2,305.3 | 2,269.5 | 35.74 | 64.507 | |
| 7,500.0 | 6,699.1 | 6,696.4 | 6,695.8 | 34.2 | 1.8 | 87.77 | -247.2 | -2,916.2 | 2,324.7 | 2,288.7 | 35.94 | 64.691 | |
| 7,578.7 | 6,698.6 | 6,696.0 | 6,695.4 | 35.2 | 1.8 | 87.72 | -247.2 | -2,916.2 | 2,402.3 | 2,365.4 | 36.88 | 65.134 | |
| 7,600.0 | 6,698.5 | 6,695.9 | 6,695.3 | 35.4 | 1.8 | 87.70 | -247.2 | -2,916.2 | 2,423.3 | 2,386.2 | 37.14 | 65.250 | |
| 7,677.1 | 6,698.0 | 6,695.6 | 6,694.9 | 36.5 | 1.8 | 87.65 | -247.2 | -2,916.2 | 2,499.5 | 2,461.3 | 38.20 | 65.427 | |
| 7,700.0 | 6,697.8 | 6,695.4 | 6,694.8 | 36.8 | 1.8 | 87.63 | -247.2 | -2,916.2 | 2,522.0 | 2,483.5 | 38.52 | 65.478 | |
| 7,775.6 | 6,697.3 | 6,695.1 | 6,694.4 | 38.0 | 1.8 | 87.58 | -247.2 | -2,916.2 | 2,596.7 | 2,557.1 | 39.68 | 65.445 | |
| 7,800.0 | 6,697.2 | 6,695.0 | 6,694.3 | 38.3 | 1.8 | 87.56 | -247.2 | -2,916.2 | 2,620.9 | 2,580.8 | 40.05 | 65.436 | |
| 7,874.0 | 6,696.7 | 6,694.6 | 6,694.0 | 39.6 | 1.8 | 87.51 | -247.2 | -2,916.2 | 2,694.1 | 2,652.8 | 41.29 | 65.245 | |
| 7,900.0 | 6,696.5 | 6,694.5 | 6,693.8 | 40.0 | 1.8 | 87.49 | -247.2 | -2,916.2 | 2,719.8 | 2,678.1 | 41.73 | 65.182 | |
| 7,972.4 | 6,696.1 | 6,694.1 | 6,693.5 | 41.3 | 1.8 | 87.44 | -247.1 | -2,916.2 | 2,791.5 | 2,748.5 | 43.03 | 64.878 | |
| 8,000.0 | 6,695.9 | 6,694.0 | 6,693.3 | 41.8 | 1.8 | 87.42 | -247.1 | -2,916.2 | 2,818.8 | 2,775.3 | 43.52 | 64.767 | |
| 8,070.8 | 6,695.4 | 6,693.6 | 6,693.0 | 43.1 | 1.8 | 87.37 | -247.1 | -2,916.2 | 2,889.0 | 2,844.1 | 44.87 | 64.386 | |
| 8,100.0 | 6,695.2 | 6,693.5 | 6,692.9 | 43.7 | 1.8 | 87.35 | -247.1 | -2,916.2 | 2,917.9 | 2,872.4 | 45.42 | 64.236 | |
| 8,169.3 | 6,694.8 | 6,693.2 | 6,692.5 | 45.1 | 1.8 | 87.30 | -247.1 | -2,916.2 | 2,986.5 | 2,939.7 | 46.81 | 63.807 | |
| 8,200.0 | 6,694.6 | 6,693.0 | 6,692.4 | 45.7 | 1.8 | 87.27 | -247.1 | -2,916.2 | 3,017.0 | 2,969.6 | 47.42 | 63.624 | |
| 8,267.7 | 6,694.1 | 6,692.7 | 6,692.0 | 47.1 | 1.8 | 87.23 | -247.1 | -2,916.2 | 3,084.1 | 3,035.3 | 48.82 | 63.167 | |
| 8,300.0 | 6,693.9 | 6,692.5 | 6,691.9 | 47.8 | 1.8 | 87.20 | -247.1 | -2,916.2 | 3,116.2 | 3,066.7 | 49.50 | 62.959 | |
| 8,366.1 | 6,693.5 | 6,692.2 | 6,691.5 | 49.2 | 1.8 | 87.15 | -247.1 | -2,916.2 | 3,181.8 | 3,130.9 | 50.92 | 62.491 | |
| 8,400.0 | 6,693.3 | 6,692.0 | 6,691.4 | 49.9 | 1.8 | 87.13 | -247.1 | -2,916.2 | 3,215.4 | 3,163.7 | 51.64 | 62.262 | |
| 8,464.5 | 6,692.9 | 6,691.7 | 6,691.1 | 51.4 | 1.8 | 87.08 | -247.1 | -2,916.2 | 3,279.5 | 3,226.4 | 53.07 | 61.796 | |
| 8,500.0 | 6,692.6 | 6,691.5 | 6,690.9 | 52.1 | 1.8 | 87.06 | -247.1 | -2,916.2 | 3,314.7 | 3,260.8 | 53.85 | 61.550 | |
| 8,563.0 | 6,692.2 | 6,691.2 | 6,690.6 | 53.6 | 1.8 | 87.01 | -247.1 | -2,916.2 | 3,377.2 | 3,321.9 | 55.28 | 61.094 | |
| 8,600.0 | 6,692.0 | 6,691.0 | 6,690.4 | 54.4 | 1.8 | 86.98 | -247.1 | -2,916.2 | 3,414.0 | 3,357.9 | 56.12 | 60.836 | |
| 8,661.4 | 6,691.6 | 6,690.7 | 6,690.1 | 55.8 | 1.8 | 86.94 | -247.1 | -2,916.2 | 3,475.0 | 3,417.4 | 57.54 | 60.395 | |
| 8,700.0 | 6,691.3 | 6,690.5 | 6,689.9 | 56.7 | 1.8 | 86.91 | -247.1 | -2,916.2 | 3,513.3 | 3,454.9 | 58.43 | 60.129 | |
| 8,759.8 | 6,690.9 | 6,690.2 | 6,689.6 | 58.1 | 1.8 | 86.87 | -247.1 | -2,916.2 | 3,572.8 | 3,513.0 | 59.84 | 59.707 | |
| 8,800.0 | 6,690.7 | 6,690.0 | 6,689.4 | 59.1 | 1.8 | 86.84 | -247.1 | -2,916.2 | 3,612.7 | 3,551.9 | 60.79 | 59.434 | |
| 8,858.2 | 6,690.3 | 6,689.7 | 6,689.1 | 60.5 | 1.8 | 86.80 | -247.1 | -2,916.2 | 3,670.6 | 3,608.5 | 62.18 | 59.033 | |
| 8,900.0 | 6,690.0 | 6,689.5 | 6,688.9 | 61.5 | 1.8 | 86.77 | -247.1 | -2,916.2 | 3,712.2 | 3,649.0 | 63.18 | 58.757 | |
| 8,956.7 | 6,689.7 | 6,689.2 | 6,688.6 | 62.9 | 1.8 | 86.72 | -247.1 | -2,916.2 | 3,768.5 | 3,704.0 | 64.55 | 58.379 | |
| 9,000.0 | 6,689.4 | 6,689.0 | 6,688.4 | 63.9 | 1.8 | 86.69 | -247.1 | -2,916.2 | 3,811.6 | 3,746.0 | 65.60 | 58.101 | |
| 9,055.1 | 6,689.0 | 6,688.7 | 6,688.1 | 65.3 | 1.8 | 86.65 | -247.1 | -2,916.2 | 3,866.4 | 3,799.5 | 66.96 | 57.746 | |
| 9,100.0 | 6,688.7 | 6,688.5 | 6,687.9 | 66.4 | 1.8 | 86.62 | -247.1 | -2,916.2 | 3,911.1 | 3,843.0 | 68.06 | 57.467 | |
| 9,153.5 | 6,688.4 | 6,688.2 | 6,687.6 | 67.7 | 1.8 | 86.58 | -247.1 | -2,916.2 | 3,964.4 | 3,895.0 | 69.39 | 57.135 | |
| 9,200.0 | 6,688.1 | 6,688.0 | 6,687.4 | 68.9 | 1.8 | 86.54 | -247.1 | -2,916.2 | 4,010.6 | 3,940.1 | 70.54 | 56.856 | |
| 9,251.9 | 6,687.8 | 6,687.7 | 6,687.1 | 70.2 | 1.8 | 86.50 | -247.1 | -2,916.2 | 4,062.3 | 3,990.5 | 71.84 | 56.546 | |
| 9,300.0 | 6,687.4 | 6,687.5 | 6,686.8 | 71.4 | 1.8 | 86.47 | -247.1 | -2,916.2 | 4,110.1 | 4,037.1 | 73.04 | 56.269 | |
| 9,350.4 | 6,687.1 | 6,687.2 | 6,686.6 | 72.7 | 1.8 | 86.43 | -247.1 | -2,916.2 | 4,160.3 | 4,086.0 | 74.32 | 55.981 | |
| 9,400.0 | 6,686.8 | 6,687.0 | 6,686.3 | 73.9 | 1.8 | 86.39 | -247.1 | -2,916.2 | 4,209.7 | 4,134.1 | 75.57 | 55.706 | |
| 9,448.8 | 6,686.5 | 6,686.7 | 6,686.1 | 75.2 | 1.8 | 86.36 | -247.1 | -2,916.2 | 4,258.3 | 4,181.5 | 76.81 | 55.439 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER-PM B #18-7 - Wellbore #1 - Wellbore — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,686.5 | 6,685.8 | 76.5 | 1.8 | 86.32 | -247.1 | -2,916.2 | 4,309.3 | 4,231.2 | 78.11 | 55.167 | |
| 9,547.2 | 6,685.8 | 6,686.2 | 6,685.6 | 77.7 | 1.8 | 86.28 | -247.1 | -2,916.2 | 4,356.3 | 4,277.0 | 79.32 | 54.919 | |
| 9,600.0 | 6,685.5 | 6,685.9 | 6,685.3 | 79.0 | 1.8 | 86.24 | -247.1 | -2,916.2 | 4,408.9 | 4,328.2 | 80.67 | 54.650 | |
| 9,645.6 | 6,685.2 | 6,685.7 | 6,685.1 | 80.2 | 1.8 | 86.21 | -247.1 | -2,916.2 | 4,454.3 | 4,372.5 | 81.85 | 54.420 | |
| 9,700.0 | 6,684.8 | 6,685.4 | 6,684.8 | 81.6 | 1.8 | 86.17 | -247.0 | -2,916.2 | 4,508.5 | 4,425.2 | 83.25 | 54.155 | |
| 9,744.1 | 6,684.6 | 6,685.2 | 6,684.6 | 82.8 | 1.8 | 86.13 | -247.0 | -2,916.2 | 4,552.4 | 4,468.0 | 84.39 | 53.943 | |
| 9,800.0 | 6,684.2 | 6,684.9 | 6,684.3 | 84.2 | 1.8 | 86.09 | -247.0 | -2,916.2 | 4,608.1 | 4,522.3 | 85.84 | 53.682 | |
| 9,842.5 | 6,683.9 | 6,684.7 | 6,684.0 | 85.3 | 1.8 | 86.06 | -247.0 | -2,916.2 | 4,650.5 | 4,563.5 | 86.95 | 53.486 | |
| 9,900.0 | 6,683.5 | 6,684.4 | 6,683.7 | 86.8 | 1.8 | 86.02 | -247.0 | -2,916.2 | 4,707.8 | 4,619.3 | 88.44 | 53.229 | |
| 9,940.9 | 6,683.3 | 6,684.2 | 6,683.5 | 87.9 | 1.8 | 85.98 | -247.0 | -2,916.2 | 4,748.5 | 4,659.0 | 89.51 | 53.048 | |
| 10,000.0 | 6,682.9 | 6,683.9 | 6,683.2 | 89.5 | 1.8 | 85.94 | -247.0 | -2,916.2 | 4,807.4 | 4,716.4 | 91.06 | 52.796 | |
| 10,039.3 | 6,682.6 | 6,683.7 | 6,683.0 | 90.5 | 1.8 | 85.91 | -247.0 | -2,916.2 | 4,846.6 | 4,754.5 | 92.09 | 52.629 | |
| 10,100.0 | 6,682.2 | 6,683.3 | 6,682.7 | 92.1 | 1.8 | 85.86 | -247.0 | -2,916.2 | 4,907.1 | 4,813.4 | 93.68 | 52.381 | |
| 10,137.8 | 6,682.0 | 6,683.1 | 6,682.5 | 93.1 | 1.8 | 85.83 | -247.0 | -2,916.2 | 4,944.7 | 4,850.1 | 94.68 | 52.228 | |
| 10,200.0 | 6,681.6 | 6,682.8 | 6,682.2 | 94.8 | 1.8 | 85.79 | -247.0 | -2,916.2 | 5,006.8 | 4,910.5 | 96.31 | 51.984 | |
| 10,236.2 | 6,681.4 | 6,682.6 | 6,682.0 | 95.7 | 1.8 | 85.76 | -247.0 | -2,916.2 | 5,042.9 | 4,945.6 | 97.27 | 51.843 | |
| 10,300.0 | 6,680.9 | 6,682.3 | 6,681.6 | 97.4 | 1.8 | 85.71 | -247.0 | -2,916.2 | 5,106.5 | 5,007.5 | 98.96 | 51.603 | |
| 10,334.6 | 6,680.7 | 6,682.1 | 6,681.4 | 98.3 | 1.8 | 85.68 | -247.0 | -2,916.2 | 5,141.0 | 5,041.1 | 99.87 | 51.475 | |
| 10,400.0 | 6,680.3 | 6,681.7 | 6,681.1 | 100.1 | 1.8 | 85.63 | -247.0 | -2,916.2 | 5,206.2 | 5,104.6 | 101.61 | 51.239 | |
| 10,433.0 | 6,680.1 | 6,681.6 | 6,680.9 | 101.0 | 1.8 | 85.61 | -247.0 | -2,916.2 | 5,239.1 | 5,136.7 | 102.48 | 51.121 | |
| 10,500.0 | 6,679.7 | 6,681.2 | 6,680.6 | 102.8 | 1.8 | 85.55 | -247.0 | -2,916.2 | 5,305.9 | 5,201.6 | 104.26 | 50.890 | |
| 10,531.5 | 6,679.4 | 6,681.0 | 6,680.4 | 103.6 | 1.8 | 85.53 | -247.0 | -2,916.2 | 5,337.3 | 5,232.2 | 105.10 | 50.782 | |
| 10,600.0 | 6,679.0 | 6,680.7 | 6,680.0 | 105.4 | 1.8 | 85.47 | -247.0 | -2,916.2 | 5,405.6 | 5,298.7 | 106.93 | 50.555 | |
| 10,629.9 | 6,678.8 | 6,680.5 | 6,679.9 | 106.2 | 1.8 | 85.45 | -247.0 | -2,916.2 | 5,435.5 | 5,327.7 | 107.72 | 50.457 | |
| 10,700.0 | 6,678.4 | 6,680.1 | 6,679.5 | 108.1 | 1.8 | 85.40 | -247.0 | -2,916.2 | 5,505.4 | 5,395.8 | 109.60 | 50.234 | |
| 10,728.3 | 6,678.2 | 6,680.0 | 6,679.3 | 108.9 | 1.8 | 85.37 | -247.0 | -2,916.2 | 5,533.6 | 5,423.3 | 110.35 | 50.145 | |
| 10,800.0 | 6,677.7 | 6,679.6 | 6,679.0 | 110.8 | 1.8 | 85.32 | -247.0 | -2,916.2 | 5,605.1 | 5,492.9 | 112.27 | 49.926 | |
| 10,826.7 | 6,677.5 | 6,679.5 | 6,678.8 | 111.5 | 1.8 | 85.30 | -247.0 | -2,916.2 | 5,631.8 | 5,518.8 | 112.99 | 49.845 | |
| 10,900.0 | 6,677.1 | 6,679.1 | 6,678.4 | 113.5 | 1.8 | 85.24 | -247.0 | -2,916.2 | 5,704.9 | 5,589.9 | 114.95 | 49.630 | |
| 10,925.2 | 6,676.9 | 6,678.9 | 6,678.3 | 114.2 | 1.8 | 85.22 | -247.0 | -2,916.2 | 5,730.0 | 5,614.4 | 115.62 | 49.557 | |
| 11,000.0 | 6,676.4 | 6,678.5 | 6,677.9 | 116.2 | 1.8 | 85.16 | -247.0 | -2,916.2 | 5,804.6 | 5,687.0 | 117.63 | 49.345 | |
| 11,023.6 | 6,676.3 | 6,678.4 | 6,677.7 | 116.8 | 1.8 | 85.14 | -247.0 | -2,916.2 | 5,828.2 | 5,709.9 | 118.27 | 49.280 | |
| 11,100.0 | 6,675.8 | 6,678.0 | 6,677.3 | 118.9 | 1.8 | 85.08 | -247.0 | -2,916.2 | 5,904.4 | 5,784.1 | 120.32 | 49.072 | |
| 11,122.0 | 6,675.6 | 6,677.8 | 6,677.2 | 119.5 | 1.8 | 85.06 | -247.0 | -2,916.2 | 5,926.4 | 5,805.5 | 120.91 | 49.013 | |
| 11,200.0 | 6,675.1 | 6,677.4 | 6,676.8 | 121.6 | 1.8 | 85.00 | -247.0 | -2,916.2 | 6,004.2 | 5,881.2 | 123.01 | 48.810 | |
| 11,220.4 | 6,675.0 | 6,677.3 | 6,676.7 | 122.2 | 1.8 | 84.98 | -247.0 | -2,916.2 | 6,024.6 | 5,901.0 | 123.56 | 48.757 | |
| 11,300.0 | 6,674.5 | 6,676.9 | 6,676.2 | 124.3 | 1.8 | 84.92 | -247.0 | -2,916.2 | 6,104.0 | 5,978.3 | 125.71 | 48.557 | |
| 11,318.9 | 6,674.3 | 6,676.8 | 6,676.1 | 124.9 | 1.8 | 84.91 | -247.0 | -2,916.2 | 6,122.8 | 5,996.6 | 126.22 | 48.510 | |
| 11,400.0 | 6,673.8 | 6,676.3 | 6,675.7 | 127.1 | 1.8 | 84.84 | -246.9 | -2,916.2 | 6,203.8 | 6,075.4 | 128.41 | 48.314 | |
| 11,417.3 | 6,673.7 | 6,676.2 | 6,675.6 | 127.5 | 1.8 | 84.83 | -246.9 | -2,916.2 | 6,221.1 | 6,092.2 | 128.87 | 48.272 | |
| 11,500.0 | 6,673.2 | 6,675.8 | 6,675.1 | 129.8 | 1.8 | 84.76 | -246.9 | -2,916.2 | 6,303.6 | 6,172.5 | 131.11 | 48.079 | |
| 11,515.7 | 6,673.1 | 6,675.7 | 6,675.0 | 130.2 | 1.8 | 84.75 | -246.9 | -2,916.2 | 6,319.3 | 6,187.8 | 131.53 | 48.043 | |
| 11,600.0 | 6,672.5 | 6,675.2 | 6,674.6 | 132.5 | 1.8 | 84.68 | -246.9 | -2,916.3 | 6,403.4 | 6,269.6 | 133.81 | 47.854 | |
| 11,614.1 | 6,672.4 | 6,675.1 | 6,674.5 | 132.9 | 1.8 | 84.67 | -246.9 | -2,916.3 | 6,417.5 | 6,283.3 | 134.20 | 47.822 | |
| 11,700.0 | 6,671.9 | 6,674.7 | 6,674.0 | 135.3 | 1.8 | 84.60 | -246.9 | -2,916.3 | 6,503.2 | 6,366.7 | 136.52 | 47.636 | |
| 11,712.6 | 6,671.8 | 6,674.6 | 6,673.9 | 135.6 | 1.8 | 84.59 | -246.9 | -2,916.3 | 6,515.8 | 6,378.9 | 136.86 | 47.609 | |
| 11,800.0 | 6,671.2 | 6,674.1 | 6,673.4 | 138.0 | 1.8 | 84.52 | -246.9 | -2,916.3 | 6,603.0 | 6,463.8 | 139.23 | 47.426 | |
| 11,811.0 | 6,671.1 | 6,674.0 | 6,673.4 | 138.3 | 1.8 | 84.51 | -246.9 | -2,916.3 | 6,614.0 | 6,474.5 | 139.53 | 47.403 | |
| 11,900.0 | 6,670.6 | 6,673.5 | 6,672.9 | 140.7 | 1.8 | 84.44 | -246.9 | -2,916.3 | 6,702.9 | 6,560.9 | 141.94 | 47.224 | |
| 11,909.4 | 6,670.5 | 6,673.5 | 6,672.8 | 141.0 | 1.8 | 84.43 | -246.9 | -2,916.3 | 6,712.3 | 6,570.1 | 142.19 | 47.205 | |
| 11,987.2 | 6,670.0 | 6,673.0 | 6,672.4 | 143.1 | 1.8 | 84.36 | -246.9 | -2,916.3 | 6,789.9 | 6,645.6 | 144.30 | 47.053 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 125.46 | -1,841.8 | 2,586.2 | 3,175.0 | | | | |
| 98.4 | 98.4 | 96.0 | 96.0 | 0.1 | 0.1 | 125.46 | -1,841.9 | 2,586.1 | 3,175.0 | 3,174.8 | 0.19 | N/A | |
| 100.0 | 100.0 | 97.6 | 97.6 | 0.1 | 0.1 | 125.46 | -1,841.9 | 2,586.1 | 3,175.0 | 3,174.8 | 0.20 | N/A | |
| 126.0 | 126.0 | 121.0 | 121.0 | 0.2 | 0.1 | 125.46 | -1,841.9 | 2,586.0 | 3,175.0 | 3,174.7 | 0.28 | N/A | |
| 196.8 | 196.8 | 183.8 | 183.8 | 0.3 | 0.2 | 125.46 | -1,842.2 | 2,586.0 | 3,175.0 | 3,174.5 | 0.51 | 6,237.206 | |
| 200.0 | 200.0 | 186.6 | 186.6 | 0.3 | 0.2 | 125.46 | -1,842.2 | 2,586.0 | 3,175.1 | 3,174.5 | 0.52 | 6,114.981 | |
| 295.3 | 295.3 | 276.2 | 276.2 | 0.5 | 0.2 | 125.47 | -1,842.4 | 2,586.2 | 3,175.4 | 3,174.6 | 0.78 | 4,084.865 | |
| 300.0 | 300.0 | 280.6 | 280.6 | 0.5 | 0.2 | 125.46 | -1,842.4 | 2,586.3 | 3,175.4 | 3,174.6 | 0.79 | 4,020.984 | |
| 393.7 | 393.7 | 364.9 | 364.9 | 0.8 | 0.3 | 125.46 | -1,842.3 | 2,586.9 | 3,176.0 | 3,174.9 | 1.05 | 3,015.310 | |
| 400.0 | 400.0 | 370.5 | 370.5 | 0.8 | 0.3 | 125.46 | -1,842.3 | 2,587.0 | 3,176.0 | 3,174.9 | 1.07 | 2,964.664 | |
| 492.1 | 492.1 | 458.2 | 458.2 | 1.0 | 0.4 | 125.45 | -1,842.5 | 2,587.8 | 3,176.8 | 3,175.5 | 1.33 | 2,380.322 | |
| 500.0 | 500.0 | 466.0 | 466.0 | 1.0 | 0.4 | 125.45 | -1,842.5 | 2,587.9 | 3,176.9 | 3,175.5 | 1.36 | 2,340.852 | |
| 590.5 | 590.5 | 559.3 | 559.3 | 1.2 | 0.4 | 125.44 | -1,842.6 | 2,588.8 | 3,177.7 | 3,176.1 | 1.61 | 1,971.484 | |
| 600.0 | 600.0 | 569.2 | 569.2 | 1.2 | 0.4 | 125.44 | -1,842.6 | 2,588.9 | 3,177.8 | 3,176.1 | 1.64 | 1,939.879 | |
| 689.0 | 689.0 | 651.8 | 651.8 | 1.4 | 0.5 | 125.43 | -1,842.5 | 2,589.8 | 3,178.5 | 3,176.7 | 1.88 | 1,692.276 | |
| 700.0 | 700.0 | 661.3 | 661.3 | 1.4 | 0.5 | 125.43 | -1,842.5 | 2,589.9 | 3,178.7 | 3,176.8 | 1.91 | 1,666.342 | |
| 787.4 | 787.4 | 750.2 | 750.1 | 1.6 | 0.5 | 125.42 | -1,842.6 | 2,591.1 | 3,179.7 | 3,177.5 | 2.14 | 1,482.931 | |
| 800.0 | 800.0 | 764.9 | 764.9 | 1.7 | 0.5 | 125.42 | -1,842.6 | 2,591.3 | 3,179.8 | 3,177.6 | 2.18 | 1,459.331 | |
| 885.8 | 885.8 | 852.1 | 852.0 | 1.9 | 0.6 | 125.40 | -1,842.5 | 2,592.3 | 3,180.5 | 3,178.1 | 2.41 | 1,320.306 | |
| 900.0 | 900.0 | 865.3 | 865.2 | 1.9 | 0.6 | 125.40 | -1,842.5 | 2,592.5 | 3,180.6 | 3,178.2 | 2.45 | 1,300.182 | |
| 984.2 | 984.2 | 942.8 | 942.8 | 2.1 | 0.6 | 125.39 | -1,842.5 | 2,593.5 | 3,181.5 | 3,178.8 | 2.67 | 1,193.728 | |
| 1,000.0 | 1,000.0 | 957.2 | 957.1 | 2.1 | 0.6 | 125.39 | -1,842.5 | 2,593.6 | 3,181.7 | 3,179.0 | 2.71 | 1,175.962 | |
| 1,082.7 | 1,082.7 | 1,037.7 | 1,037.7 | 2.3 | 0.7 | -150.16 | -1,843.0 | 2,594.6 | 3,183.8 | 3,180.8 | 2.95 | 1,078.721 | |
| 1,100.0 | 1,100.0 | 1,056.0 | 1,056.0 | 2.3 | 0.7 | -150.16 | -1,843.1 | 2,594.7 | 3,184.5 | 3,181.5 | 3.00 | 1,062.319 | |
| 1,181.1 | 1,181.0 | 1,138.7 | 1,138.7 | 2.5 | 0.7 | -150.15 | -1,843.7 | 2,595.5 | 3,188.9 | 3,185.7 | 3.21 | 993.992 | |
| 1,200.0 | 1,199.8 | 1,157.3 | 1,157.2 | 2.5 | 0.7 | -150.15 | -1,843.8 | 2,595.7 | 3,190.2 | 3,186.9 | 3.26 | 979.587 | |
| 1,279.5 | 1,279.1 | 1,240.5 | 1,240.4 | 2.7 | 0.7 | -150.15 | -1,844.4 | 2,596.5 | 3,196.9 | 3,193.4 | 3.47 | 921.364 | |
| 1,300.0 | 1,299.5 | 1,263.5 | 1,263.5 | 2.8 | 0.8 | -150.15 | -1,844.5 | 2,596.7 | 3,198.9 | 3,195.4 | 3.52 | 907.517 | |
| 1,377.9 | 1,376.9 | 1,342.5 | 1,342.5 | 3.0 | 0.8 | -150.14 | -1,845.0 | 2,597.2 | 3,207.6 | 3,203.8 | 3.74 | 857.810 | |
| 1,400.0 | 1,398.7 | 1,363.1 | 1,363.0 | 3.0 | 0.8 | -150.14 | -1,845.1 | 2,597.3 | 3,210.4 | 3,206.6 | 3.80 | 845.103 | |
| 1,476.4 | 1,474.2 | 1,433.2 | 1,433.1 | 3.2 | 0.8 | -150.13 | -1,845.4 | 2,598.0 | 3,221.3 | 3,217.3 | 4.02 | 801.920 | |
| 1,500.0 | 1,497.5 | 1,454.5 | 1,454.4 | 3.3 | 0.8 | -150.12 | -1,845.5 | 2,598.3 | 3,225.0 | 3,220.9 | 4.08 | 789.581 | |
| 1,574.8 | 1,571.0 | 1,524.5 | 1,524.4 | 3.5 | 0.9 | -150.11 | -1,845.9 | 2,599.1 | 3,238.1 | 3,233.8 | 4.31 | 750.864 | |
| 1,600.0 | 1,595.6 | 1,549.9 | 1,549.8 | 3.6 | 0.9 | -150.11 | -1,846.0 | 2,599.3 | 3,242.9 | 3,238.5 | 4.39 | 738.813 | |
| 1,673.2 | 1,667.0 | 1,622.4 | 1,622.3 | 3.9 | 0.9 | -150.10 | -1,846.4 | 2,600.2 | 3,257.9 | 3,253.2 | 4.63 | 704.043 | |
| 1,700.0 | 1,693.1 | 1,648.1 | 1,648.0 | 4.0 | 0.9 | -150.10 | -1,846.6 | 2,600.4 | 3,263.7 | 3,259.0 | 4.71 | 692.439 | |
| 1,771.6 | 1,762.4 | 1,718.7 | 1,718.6 | 4.3 | 0.9 | -150.09 | -1,847.2 | 2,601.1 | 3,280.5 | 3,275.5 | 4.96 | 661.116 | |
| 1,800.0 | 1,789.6 | 1,748.9 | 1,748.8 | 4.4 | 0.9 | -150.08 | -1,847.4 | 2,601.3 | 3,287.5 | 3,282.5 | 5.06 | 649.651 | |
| 1,870.1 | 1,856.8 | 1,819.9 | 1,819.8 | 4.7 | 1.0 | -150.08 | -1,847.9 | 2,601.8 | 3,305.8 | 3,300.5 | 5.32 | 620.976 | |
| 1,900.0 | 1,885.3 | 1,846.8 | 1,846.7 | 4.9 | 1.0 | -150.06 | -1,848.1 | 2,602.0 | 3,314.1 | 3,308.7 | 5.43 | 609.894 | |
| 1,968.5 | 1,950.2 | 1,913.1 | 1,913.0 | 5.3 | 1.0 | -150.04 | -1,848.7 | 2,602.5 | 3,334.1 | 3,328.4 | 5.71 | 584.108 | |
| 2,000.0 | 1,979.8 | 1,958.0 | 1,957.9 | 5.5 | 1.0 | -150.07 | -1,849.1 | 2,602.6 | 3,343.6 | 3,337.8 | 5.83 | 573.184 | |
| 2,044.9 | 2,021.9 | 2,013.8 | 2,013.7 | 5.7 | 1.0 | -150.09 | -1,849.7 | 2,602.4 | 3,357.5 | 3,351.5 | 6.02 | 557.485 | |
| 2,066.9 | 2,042.5 | 2,033.5 | 2,033.4 | 5.9 | 1.0 | -150.15 | -1,849.8 | 2,602.3 | 3,364.5 | 3,358.4 | 6.11 | 550.420 | |
| 2,100.0 | 2,073.4 | 2,063.1 | 2,063.0 | 6.1 | 1.0 | -150.24 | -1,850.1 | 2,602.2 | 3,374.9 | 3,368.7 | 6.25 | 540.161 | |
| 2,165.3 | 2,134.4 | 2,125.5 | 2,125.3 | 6.5 | 1.1 | -150.42 | -1,850.8 | 2,601.9 | 3,395.6 | 3,389.1 | 6.52 | 520.875 | |
| 2,200.0 | 2,166.8 | 2,162.2 | 2,162.1 | 6.8 | 1.1 | -150.53 | -1,851.1 | 2,601.6 | 3,406.6 | 3,399.9 | 6.67 | 511.078 | |
| 2,263.8 | 2,226.4 | 2,227.5 | 2,227.4 | 7.2 | 1.1 | -150.72 | -1,851.8 | 2,601.1 | 3,426.6 | 3,419.7 | 6.94 | 493.877 | |
| 2,300.0 | 2,260.2 | 2,262.9 | 2,262.7 | 7.4 | 1.1 | -150.82 | -1,852.2 | 2,600.8 | 3,438.0 | 3,430.9 | 7.09 | 484.746 | |
| 2,362.2 | 2,318.3 | 2,323.0 | 2,322.8 | 7.9 | 1.1 | -150.99 | -1,852.7 | 2,600.3 | 3,457.5 | 3,450.2 | 7.36 | 469.706 | |
| 2,400.0 | 2,353.6 | 2,358.8 | 2,358.7 | 8.1 | 1.1 | -151.09 | -1,853.0 | 2,600.0 | 3,469.4 | 3,461.9 | 7.52 | 461.086 | |
| 2,460.6 | 2,410.3 | 2,414.6 | 2,414.4 | 8.6 | 1.1 | -151.24 | -1,853.4 | 2,599.5 | 3,488.5 | 3,480.7 | 7.79 | 447.822 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,447.8 | 2,447.7 | 8.9 | 1.1 | -151.34 | -1,853.6 | 2,599.3 | 3,500.9 | 3,492.9 | 7.96 | 439.663 | |
| 2,559.0 | 2,502.2 | 2,500.0 | 2,499.9 | 9.3 | 1.1 | -151.49 | -1,853.9 | 2,599.0 | 3,519.6 | 3,511.4 | 8.22 | 427.959 | |
| 2,600.0 | 2,540.5 | 2,537.2 | 2,537.0 | 9.6 | 1.1 | -151.59 | -1,854.1 | 2,598.9 | 3,532.6 | 3,524.2 | 8.41 | 420.267 | |
| 2,657.5 | 2,594.2 | 2,593.2 | 2,593.0 | 10.0 | 1.1 | -151.74 | -1,854.5 | 2,598.6 | 3,550.9 | 3,542.3 | 8.66 | 409.919 | |
| 2,700.0 | 2,633.9 | 2,637.6 | 2,637.5 | 10.3 | 1.2 | -151.87 | -1,854.7 | 2,598.4 | 3,564.4 | 3,555.6 | 8.85 | 402.862 | |
| 2,755.9 | 2,686.1 | 2,696.8 | 2,696.7 | 10.7 | 1.2 | -152.03 | -1,854.8 | 2,598.1 | 3,582.1 | 3,573.0 | 9.09 | 394.016 | |
| 2,800.0 | 2,727.3 | 2,733.1 | 2,732.9 | 11.0 | 1.2 | -152.13 | -1,854.8 | 2,597.9 | 3,596.0 | 3,586.7 | 9.28 | 387.314 | |
| 2,854.3 | 2,778.1 | 2,776.8 | 2,776.6 | 11.4 | 1.2 | -152.25 | -1,854.9 | 2,597.8 | 3,613.3 | 3,603.8 | 9.52 | 379.398 | |
| 2,900.0 | 2,820.7 | 2,818.9 | 2,818.7 | 11.8 | 1.2 | -152.36 | -1,855.0 | 2,597.7 | 3,627.9 | 3,618.2 | 9.72 | 373.056 | |
| 2,952.7 | 2,870.0 | 2,878.3 | 2,878.2 | 12.2 | 1.2 | -152.52 | -1,855.1 | 2,597.5 | 3,644.7 | 3,634.8 | 9.96 | 365.998 | |
| 3,000.0 | 2,914.2 | 2,927.2 | 2,927.0 | 12.5 | 1.2 | -152.65 | -1,855.1 | 2,597.2 | 3,659.7 | 3,649.5 | 10.17 | 360.002 | |
| 3,051.2 | 2,962.0 | 2,976.8 | 2,976.6 | 12.9 | 1.2 | -152.78 | -1,855.2 | 2,596.9 | 3,675.9 | 3,665.5 | 10.39 | 353.792 | |
| 3,100.0 | 3,007.6 | 3,019.5 | 3,019.4 | 13.3 | 1.2 | -152.89 | -1,855.2 | 2,596.6 | 3,691.3 | 3,680.7 | 10.60 | 348.078 | |
| 3,149.6 | 3,053.9 | 3,058.5 | 3,058.3 | 13.6 | 1.2 | -153.00 | -1,855.3 | 2,596.4 | 3,707.1 | 3,696.3 | 10.83 | 342.449 | |
| 3,200.0 | 3,101.0 | 3,100.0 | 3,099.8 | 14.0 | 1.2 | -153.10 | -1,855.4 | 2,596.2 | 3,723.3 | 3,712.2 | 11.05 | 336.987 | |
| 3,248.0 | 3,145.9 | 3,153.2 | 3,153.0 | 14.4 | 1.2 | -153.24 | -1,855.5 | 2,596.0 | 3,738.7 | 3,727.4 | 11.26 | 332.030 | |
| 3,300.0 | 3,194.4 | 3,209.8 | 3,209.7 | 14.8 | 1.2 | -153.38 | -1,855.6 | 2,595.7 | 3,755.2 | 3,743.8 | 11.49 | 326.890 | |
| 3,346.4 | 3,237.8 | 3,247.6 | 3,247.5 | 15.1 | 1.2 | -153.48 | -1,855.6 | 2,595.5 | 3,770.1 | 3,758.4 | 11.69 | 322.474 | |
| 3,400.0 | 3,287.8 | 3,291.1 | 3,290.9 | 15.5 | 1.2 | -153.59 | -1,855.5 | 2,595.4 | 3,787.2 | 3,775.3 | 11.92 | 317.591 | |
| 3,444.9 | 3,329.8 | 3,326.0 | 3,325.9 | 15.9 | 1.2 | -153.68 | -1,855.5 | 2,595.4 | 3,801.7 | 3,789.6 | 12.12 | 313.583 | |
| 3,500.0 | 3,381.3 | 3,368.2 | 3,368.1 | 16.3 | 1.2 | -153.78 | -1,855.3 | 2,595.5 | 3,819.6 | 3,807.2 | 12.37 | 308.898 | |
| 3,543.3 | 3,421.7 | 3,401.9 | 3,401.7 | 16.6 | 1.2 | -153.87 | -1,855.2 | 2,595.7 | 3,833.8 | 3,821.2 | 12.56 | 305.322 | |
| 3,600.0 | 3,474.7 | 3,463.1 | 3,463.0 | 17.0 | 1.2 | -154.03 | -1,855.0 | 2,596.0 | 3,852.3 | 3,839.5 | 12.81 | 300.766 | |
| 3,641.7 | 3,513.7 | 3,500.0 | 3,499.8 | 17.3 | 1.3 | -154.12 | -1,854.8 | 2,596.1 | 3,865.9 | 3,852.9 | 12.99 | 297.518 | |
| 3,700.0 | 3,568.1 | 3,553.5 | 3,553.3 | 17.8 | 1.3 | -154.26 | -1,854.7 | 2,596.3 | 3,884.9 | 3,871.7 | 13.25 | 293.161 | |
| 3,740.1 | 3,605.6 | 3,586.0 | 3,585.8 | 18.1 | 1.3 | -154.34 | -1,854.5 | 2,596.5 | 3,898.1 | 3,884.7 | 13.43 | 290.264 | |
| 3,800.0 | 3,661.5 | 3,646.2 | 3,646.0 | 18.5 | 1.3 | -154.49 | -1,854.2 | 2,597.0 | 3,917.8 | 3,904.1 | 13.69 | 286.113 | |
| 3,838.6 | 3,697.6 | 3,688.1 | 3,687.9 | 18.8 | 1.3 | -154.59 | -1,854.0 | 2,597.2 | 3,930.5 | 3,916.6 | 13.86 | 283.524 | |
| 3,900.0 | 3,754.9 | 3,746.4 | 3,746.2 | 19.3 | 1.3 | -154.74 | -1,853.7 | 2,597.4 | 3,950.6 | 3,936.4 | 14.13 | 279.540 | |
| 3,937.0 | 3,789.5 | 3,780.4 | 3,780.3 | 19.6 | 1.3 | -154.82 | -1,853.6 | 2,597.5 | 3,962.7 | 3,948.4 | 14.29 | 277.213 | |
| 4,000.0 | 3,848.4 | 3,829.7 | 3,829.5 | 20.1 | 1.3 | -154.93 | -1,853.6 | 2,597.6 | 3,983.4 | 3,968.8 | 14.57 | 273.351 | |
| 4,035.4 | 3,881.5 | 3,854.9 | 3,854.7 | 20.3 | 1.3 | -154.99 | -1,853.7 | 2,597.7 | 3,995.1 | 3,980.4 | 14.73 | 271.245 | |
| 4,100.0 | 3,941.8 | 3,900.0 | 3,899.8 | 20.8 | 1.3 | -155.09 | -1,854.0 | 2,597.9 | 4,016.7 | 4,001.7 | 15.02 | 267.494 | |
| 4,133.8 | 3,973.4 | 3,930.3 | 3,930.1 | 21.1 | 1.3 | -155.15 | -1,854.3 | 2,598.0 | 4,028.0 | 4,012.9 | 15.17 | 265.562 | |
| 4,200.0 | 4,035.2 | 3,987.8 | 3,987.6 | 21.6 | 1.3 | -155.28 | -1,854.8 | 2,598.4 | 4,050.3 | 4,034.9 | 15.46 | 261.910 | |
| 4,232.3 | 4,065.4 | 4,013.5 | 4,013.3 | 21.8 | 1.3 | -155.34 | -1,855.1 | 2,598.6 | 4,061.3 | 4,045.7 | 15.61 | 260.186 | |
| 4,300.0 | 4,128.6 | 4,063.5 | 4,063.4 | 22.3 | 1.4 | -155.44 | -1,855.6 | 2,599.1 | 4,084.3 | 4,068.4 | 15.91 | 256.690 | |
| 4,330.7 | 4,157.3 | 4,086.2 | 4,086.0 | 22.6 | 1.4 | -155.49 | -1,855.9 | 2,599.3 | 4,094.8 | 4,078.8 | 16.05 | 255.154 | |
| 4,400.0 | 4,222.0 | 4,151.2 | 4,151.0 | 23.1 | 1.4 | -155.63 | -1,856.8 | 2,600.0 | 4,118.7 | 4,102.3 | 16.36 | 251.791 | |
| 4,429.1 | 4,249.3 | 4,180.6 | 4,180.4 | 23.3 | 1.4 | -155.69 | -1,857.3 | 2,600.3 | 4,128.7 | 4,112.2 | 16.49 | 250.413 | |
| 4,500.0 | 4,315.5 | 4,259.6 | 4,259.4 | 23.9 | 1.4 | -155.84 | -1,858.7 | 2,600.8 | 4,153.0 | 4,136.2 | 16.80 | 247.190 | |
| 4,527.5 | 4,341.2 | 4,291.4 | 4,291.2 | 24.1 | 1.4 | -155.91 | -1,859.1 | 2,601.0 | 4,162.3 | 4,145.4 | 16.92 | 245.975 | |
| 4,600.0 | 4,408.9 | 4,357.4 | 4,357.2 | 24.6 | 1.4 | -156.04 | -1,860.0 | 2,601.3 | 4,186.9 | 4,169.7 | 17.24 | 242.854 | |
| 4,626.0 | 4,433.2 | 4,380.4 | 4,380.2 | 24.8 | 1.4 | -156.08 | -1,860.3 | 2,601.5 | 4,195.8 | 4,178.4 | 17.35 | 241.766 | |
| 4,700.0 | 4,502.3 | 4,447.4 | 4,447.1 | 25.4 | 1.5 | -156.21 | -1,861.1 | 2,601.9 | 4,221.0 | 4,203.3 | 17.68 | 238.731 | |
| 4,724.4 | 4,525.1 | 4,469.7 | 4,469.4 | 25.6 | 1.5 | -156.26 | -1,861.4 | 2,602.0 | 4,229.3 | 4,211.5 | 17.79 | 237.754 | |
| 4,800.0 | 4,595.7 | 4,530.7 | 4,530.4 | 26.2 | 1.5 | -156.38 | -1,862.3 | 2,602.5 | 4,255.2 | 4,237.1 | 18.12 | 234.801 | |
| 4,822.8 | 4,617.1 | 4,547.2 | 4,546.9 | 26.3 | 1.5 | -156.41 | -1,862.6 | 2,602.6 | 4,263.0 | 4,244.8 | 18.22 | 233.931 | |
| 4,900.0 | 4,689.2 | 4,604.5 | 4,604.2 | 26.9 | 1.5 | -156.51 | -1,863.7 | 2,603.1 | 4,289.8 | 4,271.2 | 18.56 | 231.074 | |
| 4,921.2 | 4,709.0 | 4,628.3 | 4,628.0 | 27.1 | 1.5 | -156.56 | -1,864.1 | 2,603.4 | 4,297.2 | 4,278.5 | 18.66 | 230.304 | |
| 5,000.0 | 4,782.6 | 4,711.4 | 4,711.1 | 27.7 | 1.5 | -156.71 | -1,865.6 | 2,604.1 | 4,324.4 | 4,305.4 | 19.01 | 227.525 | |
| 5,019.7 | 4,801.0 | 4,726.6 | 4,726.3 | 27.8 | 1.6 | -156.74 | -1,865.9 | 2,604.2 | 4,331.3 | 4,312.2 | 19.09 | 226.851 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,788.6 | 4,788.3 | 28.4 | 1.6 | -156.85 | -1,867.0 | 2,604.9 | 4,359.2 | 4,339.7 | 19.45 | 224.175 | |
| 5,118.1 | 4,892.9 | 4,800.0 | 4,799.7 | 28.6 | 1.6 | -156.87 | -1,867.3 | 2,605.0 | 4,365.5 | 4,346.0 | 19.52 | 223.589 | |
| 5,159.9 | 4,932.0 | 4,835.2 | 4,834.9 | 28.9 | 1.6 | -156.93 | -1,868.0 | 2,605.4 | 4,380.2 | 4,360.5 | 19.71 | 222.234 | |
| 5,200.0 | 4,969.5 | 4,866.5 | 4,866.2 | 29.2 | 1.6 | -157.10 | -1,868.7 | 2,605.8 | 4,394.1 | 4,374.2 | 19.81 | 221.757 | |
| 5,216.5 | 4,985.1 | 4,879.5 | 4,879.2 | 29.3 | 1.6 | -157.17 | -1,869.0 | 2,606.0 | 4,399.6 | 4,379.8 | 19.85 | 221.660 | |
| 5,300.0 | 5,064.0 | 4,956.9 | 4,956.6 | 29.7 | 1.6 | -157.51 | -1,870.7 | 2,607.2 | 4,426.7 | 4,406.7 | 20.02 | 221.130 | |
| 5,314.9 | 5,078.2 | 4,971.8 | 4,971.5 | 29.8 | 1.6 | -157.57 | -1,871.0 | 2,607.4 | 4,431.3 | 4,411.3 | 20.05 | 221.063 | |
| 5,400.0 | 5,159.6 | 5,062.8 | 5,062.4 | 30.2 | 1.7 | -157.89 | -1,872.9 | 2,608.7 | 4,456.2 | 4,436.0 | 20.20 | 220.642 | |
| 5,413.4 | 5,172.4 | 5,077.6 | 5,077.2 | 30.3 | 1.7 | -157.93 | -1,873.2 | 2,608.9 | 4,459.9 | 4,439.7 | 20.22 | 220.600 | |
| 5,500.0 | 5,256.1 | 5,173.7 | 5,173.3 | 30.7 | 1.7 | -158.22 | -1,874.7 | 2,610.2 | 4,482.3 | 4,462.0 | 20.35 | 220.274 | |
| 5,511.8 | 5,267.6 | 5,186.8 | 5,186.4 | 30.7 | 1.7 | -158.26 | -1,874.8 | 2,610.3 | 4,485.2 | 4,464.8 | 20.36 | 220.251 | |
| 5,600.0 | 5,353.5 | 5,297.5 | 5,297.1 | 31.1 | 1.7 | -158.52 | -1,876.1 | 2,611.5 | 4,504.9 | 4,484.4 | 20.48 | 219.988 | |
| 5,610.2 | 5,363.5 | 5,308.6 | 5,308.2 | 31.1 | 1.7 | -158.54 | -1,876.3 | 2,611.5 | 4,507.0 | 4,486.5 | 20.49 | 219.974 | |
| 5,700.0 | 5,451.6 | 5,400.0 | 5,399.6 | 31.4 | 1.8 | -158.74 | -1,877.1 | 2,612.2 | 4,523.9 | 4,503.4 | 20.58 | 219.787 | |
| 5,708.6 | 5,460.2 | 5,409.2 | 5,408.7 | 31.4 | 1.8 | -158.76 | -1,877.2 | 2,612.3 | 4,525.4 | 4,504.8 | 20.59 | 219.779 | |
| 5,800.0 | 5,550.4 | 5,486.1 | 5,485.7 | 31.7 | 1.8 | -158.92 | -1,877.9 | 2,612.9 | 4,539.8 | 4,519.2 | 20.67 | 219.652 | |
| 5,807.1 | 5,557.4 | 5,492.1 | 5,491.7 | 31.7 | 1.8 | -158.93 | -1,878.0 | 2,612.9 | 4,540.9 | 4,520.2 | 20.67 | 219.653 | |
| 5,900.0 | 5,649.6 | 5,577.7 | 5,577.2 | 31.9 | 1.8 | -159.05 | -1,879.0 | 2,613.8 | 4,552.8 | 4,532.1 | 20.74 | 219.549 | |
| 5,905.5 | 5,655.1 | 5,582.8 | 5,582.4 | 31.9 | 1.8 | -159.06 | -1,879.1 | 2,613.8 | 4,553.4 | 4,532.7 | 20.74 | 219.550 | |
| 6,000.0 | 5,749.2 | 5,684.7 | 5,684.2 | 32.1 | 1.8 | -159.16 | -1,879.9 | 2,615.0 | 4,562.5 | 4,541.7 | 20.79 | 219.420 | |
| 6,003.9 | 5,753.1 | 5,689.1 | 5,688.6 | 32.1 | 1.8 | -159.17 | -1,880.0 | 2,615.1 | 4,562.8 | 4,542.0 | 20.80 | 219.418 | |
| 6,100.0 | 5,849.1 | 5,798.8 | 5,798.4 | 32.3 | 1.9 | -159.23 | -1,880.8 | 2,616.1 | 4,568.7 | 4,547.9 | 20.84 | 219.222 | |
| 6,102.3 | 5,851.4 | 5,800.0 | 5,799.5 | 32.3 | 1.9 | -159.23 | -1,880.8 | 2,616.1 | 4,568.8 | 4,548.0 | 20.84 | 219.223 | |
| 6,200.8 | 5,949.8 | 5,891.5 | 5,891.0 | 32.4 | 1.9 | -159.26 | -1,881.6 | 2,616.8 | 4,571.6 | 4,550.7 | 20.88 | 218.971 | |
| 6,204.9 | 5,953.9 | 5,895.2 | 5,894.7 | 32.4 | 1.9 | 116.31 | -1,881.6 | 2,616.9 | 4,571.7 | 4,539.3 | 32.33 | 141.393 | |
| 6,234.9 | 5,983.9 | 5,922.4 | 5,921.9 | 32.4 | 1.9 | 116.31 | -1,881.9 | 2,617.1 | 4,572.0 | 4,539.7 | 32.36 | 141.276 | |
| 6,250.0 | 5,999.0 | 5,936.1 | 5,935.6 | 32.4 | 1.9 | 26.31 | -1,882.1 | 2,617.2 | 4,572.1 | 4,551.2 | 20.88 | 218.918 | |
| 6,299.2 | 6,048.2 | 5,980.6 | 5,980.1 | 32.4 | 1.9 | 26.39 | -1,882.5 | 2,617.6 | 4,570.3 | 4,549.5 | 20.77 | 220.049 | |
| 6,300.0 | 6,048.9 | 5,981.3 | 5,980.8 | 32.4 | 1.9 | 26.39 | -1,882.5 | 2,617.7 | 4,570.2 | 4,549.5 | 20.77 | 220.061 | |
| 6,350.0 | 6,098.5 | 6,027.3 | 6,026.8 | 32.4 | 1.9 | 26.60 | -1,882.9 | 2,618.2 | 4,565.3 | 4,544.6 | 20.70 | 220.589 | |
| 6,397.6 | 6,145.3 | 6,071.4 | 6,070.9 | 32.3 | 2.0 | 26.92 | -1,883.2 | 2,618.8 | 4,557.8 | 4,537.1 | 20.67 | 220.518 | |
| 6,400.0 | 6,147.6 | 6,073.5 | 6,073.0 | 32.3 | 2.0 | 26.94 | -1,883.3 | 2,618.8 | 4,557.3 | 4,536.7 | 20.67 | 220.496 | |
| 6,450.0 | 6,195.8 | 6,122.1 | 6,121.6 | 32.2 | 2.0 | 27.43 | -1,883.7 | 2,619.4 | 4,546.4 | 4,525.7 | 20.69 | 219.759 | |
| 6,496.0 | 6,239.3 | 6,169.8 | 6,169.3 | 32.1 | 2.0 | 28.03 | -1,884.2 | 2,619.9 | 4,533.5 | 4,512.8 | 20.75 | 218.465 | |
| 6,500.0 | 6,243.0 | 6,173.8 | 6,173.3 | 32.1 | 2.0 | 28.09 | -1,884.3 | 2,620.0 | 4,532.3 | 4,511.6 | 20.76 | 218.320 | |
| 6,550.0 | 6,289.0 | 6,222.6 | 6,222.1 | 32.0 | 2.0 | 28.90 | -1,884.8 | 2,620.5 | 4,515.4 | 4,494.5 | 20.89 | 216.174 | |
| 6,594.5 | 6,328.6 | 6,263.2 | 6,262.6 | 31.8 | 2.0 | 29.77 | -1,885.3 | 2,620.8 | 4,497.9 | 4,476.8 | 21.06 | 213.612 | |
| 6,600.0 | 6,333.4 | 6,268.1 | 6,267.6 | 31.8 | 2.0 | 29.89 | -1,885.3 | 2,620.9 | 4,495.6 | 4,474.5 | 21.08 | 213.240 | |
| 6,650.0 | 6,376.2 | 6,311.2 | 6,310.7 | 31.7 | 2.0 | 31.08 | -1,885.8 | 2,621.3 | 4,473.0 | 4,451.7 | 21.36 | 209.406 | |
| 6,692.9 | 6,411.3 | 6,345.2 | 6,344.7 | 31.6 | 2.0 | 32.27 | -1,886.2 | 2,621.6 | 4,451.6 | 4,430.0 | 21.68 | 205.346 | |
| 6,700.0 | 6,417.0 | 6,350.7 | 6,350.2 | 31.5 | 2.0 | 32.49 | -1,886.3 | 2,621.7 | 4,447.9 | 4,426.2 | 21.74 | 204.600 | |
| 6,750.0 | 6,455.7 | 6,388.2 | 6,387.7 | 31.4 | 2.1 | 34.14 | -1,886.7 | 2,622.0 | 4,420.4 | 4,398.1 | 22.24 | 198.738 | |
| 6,791.3 | 6,486.0 | 6,415.9 | 6,415.3 | 31.3 | 2.1 | 35.72 | -1,887.1 | 2,622.3 | 4,395.9 | 4,373.1 | 22.76 | 193.143 | |
| 6,800.0 | 6,492.2 | 6,421.3 | 6,420.7 | 31.3 | 2.1 | 36.07 | -1,887.1 | 2,622.4 | 4,390.5 | 4,367.7 | 22.88 | 191.898 | |
| 6,850.0 | 6,526.1 | 6,451.1 | 6,450.6 | 31.2 | 2.1 | 38.31 | -1,887.5 | 2,622.7 | 4,358.6 | 4,334.9 | 23.67 | 184.165 | |
| 6,889.7 | 6,551.2 | 6,473.3 | 6,472.8 | 31.2 | 2.1 | 40.35 | -1,887.8 | 2,623.0 | 4,331.8 | 4,307.4 | 24.41 | 177.475 | |
| 6,900.0 | 6,557.4 | 6,478.8 | 6,478.2 | 31.2 | 2.1 | 40.91 | -1,887.8 | 2,623.0 | 4,324.7 | 4,300.1 | 24.61 | 175.710 | |
| 6,950.0 | 6,586.0 | 6,504.6 | 6,504.1 | 31.1 | 2.1 | 43.94 | -1,888.1 | 2,623.4 | 4,289.0 | 4,263.3 | 25.71 | 166.795 | |
| 6,988.2 | 6,605.8 | 6,524.4 | 6,523.9 | 31.2 | 2.1 | 46.58 | -1,888.4 | 2,623.7 | 4,260.6 | 4,234.0 | 26.66 | 159.823 | |
| 7,000.0 | 6,611.5 | 6,530.2 | 6,529.6 | 31.2 | 2.1 | 47.46 | -1,888.5 | 2,623.7 | 4,251.7 | 4,224.7 | 26.96 | 157.701 | |
| 7,050.0 | 6,634.1 | 6,552.7 | 6,552.1 | 31.2 | 2.1 | 51.52 | -1,888.8 | 2,624.0 | 4,213.0 | 4,184.7 | 28.30 | 148.853 | |
| 7,086.6 | 6,648.6 | 6,567.2 | 6,566.7 | 31.3 | 2.1 | 54.84 | -1,889.0 | 2,624.2 | 4,183.8 | 4,154.5 | 29.32 | 142.703 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,572.1 | 6,571.6 | 31.4 | 2.1 | 56.14 | -1,889.1 | 2,624.3 | 4,173.0 | 4,143.3 | 29.68 | 140.582 | |
| 7,150.0 | 6,669.5 | 6,588.3 | 6,587.7 | 31.6 | 2.1 | 61.33 | -1,889.4 | 2,624.5 | 4,132.1 | 4,101.0 | 31.03 | 133.174 | |
| 7,185.0 | 6,678.8 | 6,597.7 | 6,597.1 | 31.7 | 2.1 | 65.31 | -1,889.5 | 2,624.6 | 4,102.9 | 4,071.0 | 31.91 | 128.596 | |
| 7,200.0 | 6,682.3 | 6,600.0 | 6,599.4 | 31.8 | 2.1 | 67.06 | -1,889.6 | 2,624.6 | 4,090.3 | 4,058.1 | 32.24 | 126.860 | |
| 7,250.0 | 6,691.6 | 6,600.0 | 6,599.4 | 32.1 | 2.1 | 73.04 | -1,889.6 | 2,624.6 | 4,048.0 | 4,014.7 | 33.24 | 121.793 | |
| 7,283.4 | 6,696.0 | 6,600.0 | 6,599.4 | 32.3 | 2.1 | 77.27 | -1,889.6 | 2,624.6 | 4,019.4 | 3,985.6 | 33.79 | 118.950 | |
| 7,300.0 | 6,697.5 | 6,600.0 | 6,599.4 | 32.4 | 2.1 | 79.41 | -1,889.6 | 2,624.6 | 4,005.3 | 3,971.2 | 34.02 | 117.719 | |
| 7,350.0 | 6,699.9 | 6,600.0 | 6,599.4 | 32.8 | 2.1 | 86.01 | -1,889.6 | 2,624.6 | 3,962.4 | 3,927.8 | 34.64 | 114.395 | |
| 7,364.4 | 6,700.0 | 6,600.0 | 6,599.4 | 32.9 | 2.1 | 87.93 | -1,889.6 | 2,624.6 | 3,950.1 | 3,915.3 | 34.79 | 113.525 | |
| 7,381.9 | 6,699.9 | 6,600.0 | 6,599.4 | 33.1 | 2.1 | 87.93 | -1,889.6 | 2,624.6 | 3,935.1 | 3,900.2 | 34.95 | 112.603 | |
| 7,400.0 | 6,699.8 | 6,600.0 | 6,599.4 | 33.2 | 2.1 | 87.93 | -1,889.6 | 2,624.6 | 3,919.6 | 3,884.5 | 35.10 | 111.657 | |
| 7,480.3 | 6,699.2 | 6,600.0 | 6,599.4 | 34.0 | 2.1 | 87.93 | -1,889.6 | 2,624.6 | 3,851.2 | 3,815.3 | 35.91 | 107.231 | |
| 7,500.0 | 6,699.1 | 6,600.0 | 6,599.4 | 34.2 | 2.1 | 87.93 | -1,889.6 | 2,624.6 | 3,834.5 | 3,798.4 | 36.11 | 106.178 | |
| 7,578.7 | 6,698.6 | 6,615.2 | 6,614.6 | 35.2 | 2.1 | 88.36 | -1,889.9 | 2,624.8 | 3,767.9 | 3,730.9 | 37.07 | 101.633 | |
| 7,600.0 | 6,698.5 | 6,615.3 | 6,614.7 | 35.4 | 2.1 | 88.36 | -1,889.9 | 2,624.8 | 3,750.1 | 3,712.7 | 37.33 | 100.455 | |
| 7,677.1 | 6,698.0 | 6,615.6 | 6,615.0 | 36.5 | 2.1 | 88.37 | -1,889.9 | 2,624.8 | 3,685.5 | 3,647.1 | 38.40 | 95.986 | |
| 7,700.0 | 6,697.8 | 6,615.7 | 6,615.1 | 36.8 | 2.1 | 88.37 | -1,889.9 | 2,624.8 | 3,666.5 | 3,627.8 | 38.71 | 94.712 | |
| 7,775.6 | 6,697.3 | 6,616.0 | 6,615.5 | 38.0 | 2.1 | 88.38 | -1,889.9 | 2,624.8 | 3,603.8 | 3,564.0 | 39.87 | 90.382 | |
| 7,800.0 | 6,697.2 | 6,616.1 | 6,615.6 | 38.3 | 2.1 | 88.38 | -1,889.9 | 2,624.8 | 3,583.7 | 3,543.5 | 40.25 | 89.038 | |
| 7,874.0 | 6,696.7 | 6,616.5 | 6,615.9 | 39.6 | 2.1 | 88.39 | -1,889.9 | 2,624.8 | 3,523.0 | 3,481.6 | 41.49 | 84.914 | |
| 7,900.0 | 6,696.5 | 6,616.6 | 6,616.0 | 40.0 | 2.1 | 88.39 | -1,889.9 | 2,624.8 | 3,501.9 | 3,459.9 | 41.93 | 83.526 | |
| 7,972.4 | 6,696.1 | 6,616.9 | 6,616.3 | 41.3 | 2.1 | 88.40 | -1,889.9 | 2,624.8 | 3,443.2 | 3,399.9 | 43.23 | 79.652 | |
| 8,000.0 | 6,695.9 | 6,617.0 | 6,616.4 | 41.8 | 2.1 | 88.41 | -1,889.9 | 2,624.8 | 3,421.0 | 3,377.2 | 43.72 | 78.241 | |
| 8,070.8 | 6,695.4 | 6,617.3 | 6,616.7 | 43.1 | 2.1 | 88.41 | -1,889.9 | 2,624.8 | 3,364.3 | 3,319.2 | 45.07 | 74.640 | |
| 8,100.0 | 6,695.2 | 6,617.4 | 6,616.9 | 43.7 | 2.1 | 88.42 | -1,889.9 | 2,624.8 | 3,341.1 | 3,295.5 | 45.63 | 73.224 | |
| 8,169.3 | 6,694.8 | 6,617.7 | 6,617.2 | 45.1 | 2.1 | 88.43 | -1,889.9 | 2,624.8 | 3,286.4 | 3,239.4 | 47.01 | 69.905 | |
| 8,200.0 | 6,694.6 | 6,617.9 | 6,617.3 | 45.7 | 2.1 | 88.43 | -1,889.9 | 2,624.8 | 3,262.4 | 3,214.7 | 47.63 | 68.498 | |
| 8,267.7 | 6,694.1 | 6,618.2 | 6,617.6 | 47.1 | 2.1 | 88.44 | -1,889.9 | 2,624.8 | 3,209.7 | 3,160.7 | 49.04 | 65.457 | |
| 8,300.0 | 6,693.9 | 6,618.3 | 6,617.8 | 47.8 | 2.1 | 88.44 | -1,889.9 | 2,624.8 | 3,184.8 | 3,135.1 | 49.71 | 64.071 | |
| 8,366.1 | 6,693.5 | 6,618.6 | 6,618.1 | 49.2 | 2.1 | 88.45 | -1,889.9 | 2,624.8 | 3,134.2 | 3,083.1 | 51.13 | 61.299 | |
| 8,400.0 | 6,693.3 | 6,618.8 | 6,618.2 | 49.9 | 2.1 | 88.46 | -1,889.9 | 2,624.8 | 3,108.5 | 3,056.7 | 51.86 | 59.942 | |
| 8,464.5 | 6,692.9 | 6,619.1 | 6,618.5 | 51.4 | 2.1 | 88.46 | -1,889.9 | 2,624.8 | 3,060.0 | 3,006.7 | 53.29 | 57.423 | |
| 8,500.0 | 6,692.6 | 6,619.2 | 6,618.7 | 52.1 | 2.1 | 88.47 | -1,889.9 | 2,624.8 | 3,033.7 | 2,979.6 | 54.07 | 56.102 | |
| 8,563.0 | 6,692.2 | 6,619.5 | 6,619.0 | 53.6 | 2.1 | 88.48 | -1,890.0 | 2,624.8 | 2,987.2 | 2,931.7 | 55.50 | 53.821 | |
| 8,600.0 | 6,692.0 | 6,619.7 | 6,619.1 | 54.4 | 2.1 | 88.48 | -1,890.0 | 2,624.8 | 2,960.2 | 2,903.9 | 56.34 | 52.539 | |
| 8,661.4 | 6,691.6 | 6,620.0 | 6,619.4 | 55.8 | 2.1 | 88.49 | -1,890.0 | 2,624.8 | 2,916.0 | 2,858.2 | 57.77 | 50.478 | |
| 8,700.0 | 6,691.3 | 6,620.2 | 6,619.6 | 56.7 | 2.1 | 88.50 | -1,890.0 | 2,624.8 | 2,888.4 | 2,829.8 | 58.66 | 49.239 | |
| 8,759.8 | 6,690.9 | 6,620.5 | 6,619.9 | 58.1 | 2.1 | 88.50 | -1,890.0 | 2,624.8 | 2,846.3 | 2,786.2 | 60.07 | 47.380 | |
| 8,800.0 | 6,690.7 | 6,620.7 | 6,620.1 | 59.1 | 2.1 | 88.51 | -1,890.0 | 2,624.8 | 2,818.3 | 2,757.3 | 61.02 | 46.185 | |
| 8,858.2 | 6,690.3 | 6,620.9 | 6,620.4 | 60.5 | 2.1 | 88.52 | -1,890.0 | 2,624.8 | 2,778.4 | 2,715.9 | 62.42 | 44.511 | |
| 8,900.0 | 6,690.0 | 6,621.1 | 6,620.6 | 61.5 | 2.1 | 88.52 | -1,890.0 | 2,624.8 | 2,750.1 | 2,686.7 | 63.42 | 43.362 | |
| 8,956.7 | 6,689.7 | 6,621.4 | 6,620.8 | 62.9 | 2.1 | 88.53 | -1,890.0 | 2,624.8 | 2,712.3 | 2,647.5 | 64.80 | 41.857 | |
| 9,000.0 | 6,689.4 | 6,621.6 | 6,621.1 | 63.9 | 2.1 | 88.54 | -1,890.0 | 2,624.9 | 2,683.9 | 2,618.0 | 65.85 | 40.755 | |
| 9,055.1 | 6,689.0 | 6,621.9 | 6,621.3 | 65.3 | 2.1 | 88.54 | -1,890.0 | 2,624.9 | 2,648.3 | 2,581.0 | 67.21 | 39.403 | |
| 9,100.0 | 6,688.7 | 6,622.1 | 6,621.6 | 66.4 | 2.1 | 88.55 | -1,890.0 | 2,624.9 | 2,619.7 | 2,551.4 | 68.32 | 38.348 | |
| 9,153.5 | 6,688.4 | 6,622.4 | 6,621.8 | 67.7 | 2.1 | 88.56 | -1,890.0 | 2,624.9 | 2,586.4 | 2,516.7 | 69.65 | 37.135 | |
| 9,200.0 | 6,688.1 | 6,622.6 | 6,622.1 | 68.9 | 2.1 | 88.56 | -1,890.0 | 2,624.9 | 2,557.9 | 2,487.1 | 70.80 | 36.127 | |
| 9,251.9 | 6,687.8 | 6,622.9 | 6,622.3 | 70.2 | 2.1 | 88.57 | -1,890.0 | 2,624.9 | 2,526.8 | 2,454.7 | 72.11 | 35.041 | |
| 9,300.0 | 6,687.4 | 6,623.1 | 6,622.6 | 71.4 | 2.1 | 88.58 | -1,890.0 | 2,624.9 | 2,498.6 | 2,425.3 | 73.32 | 34.080 | |
| 9,350.4 | 6,687.1 | 6,623.4 | 6,622.8 | 72.7 | 2.1 | 88.59 | -1,890.0 | 2,624.9 | 2,469.7 | 2,395.1 | 74.59 | 33.109 | |
| 9,400.0 | 6,686.8 | 6,623.7 | 6,623.1 | 73.9 | 2.1 | 88.59 | -1,890.0 | 2,624.9 | 2,441.9 | 2,366.1 | 75.85 | 32.194 | |
| 9,448.8 | 6,686.5 | 6,623.9 | 6,623.3 | 75.2 | 2.1 | 88.60 | -1,890.0 | 2,624.9 | 2,415.3 | 2,338.2 | 77.10 | 31.328 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT H&S #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,624.2 | 6,623.6 | 76.5 | 2.1 | 88.61 | -1,890.0 | 2,624.9 | 2,388.1 | 2,309.7 | 78.40 | 30.459 | |
| 9,547.2 | 6,685.8 | 6,624.4 | 6,623.9 | 77.7 | 2.1 | 88.62 | -1,890.1 | 2,624.9 | 2,363.7 | 2,284.1 | 79.62 | 29.688 | |
| 9,600.0 | 6,685.5 | 6,624.7 | 6,624.1 | 79.0 | 2.1 | 88.62 | -1,890.1 | 2,624.9 | 2,337.3 | 2,256.3 | 80.98 | 28.865 | |
| 9,645.6 | 6,685.2 | 6,625.0 | 6,624.4 | 80.2 | 2.1 | 88.63 | -1,890.1 | 2,624.9 | 2,315.2 | 2,233.0 | 82.16 | 28.181 | |
| 9,700.0 | 6,684.8 | 6,625.2 | 6,624.7 | 81.6 | 2.1 | 88.64 | -1,890.1 | 2,624.9 | 2,289.8 | 2,206.2 | 83.56 | 27.402 | |
| 9,744.1 | 6,684.6 | 6,625.5 | 6,624.9 | 82.8 | 2.1 | 88.64 | -1,890.1 | 2,624.9 | 2,269.9 | 2,185.2 | 84.71 | 26.797 | |
| 9,800.0 | 6,684.2 | 6,625.8 | 6,625.2 | 84.2 | 2.1 | 88.65 | -1,890.1 | 2,624.9 | 2,245.7 | 2,159.5 | 86.16 | 26.063 | |
| 9,842.5 | 6,683.9 | 6,626.0 | 6,625.4 | 85.3 | 2.1 | 88.66 | -1,890.1 | 2,624.9 | 2,228.0 | 2,140.8 | 87.27 | 25.529 | |
| 9,900.0 | 6,683.5 | 6,626.3 | 6,625.8 | 86.8 | 2.1 | 88.67 | -1,890.1 | 2,624.9 | 2,205.2 | 2,116.5 | 88.78 | 24.840 | |
| 9,940.9 | 6,683.3 | 6,626.6 | 6,626.0 | 87.9 | 2.1 | 88.68 | -1,890.1 | 2,624.9 | 2,189.8 | 2,099.9 | 89.85 | 24.371 | |
| 10,000.0 | 6,682.9 | 6,626.9 | 6,626.3 | 89.5 | 2.1 | 88.68 | -1,890.1 | 2,624.9 | 2,168.7 | 2,077.3 | 91.40 | 23.726 | |
| 10,039.3 | 6,682.6 | 6,627.1 | 6,626.5 | 90.5 | 2.1 | 88.69 | -1,890.1 | 2,624.9 | 2,155.4 | 2,062.9 | 92.44 | 23.316 | |
| 10,100.0 | 6,682.2 | 6,627.5 | 6,626.9 | 92.1 | 2.1 | 88.70 | -1,890.1 | 2,624.9 | 2,136.1 | 2,042.1 | 94.04 | 22.715 | |
| 10,137.8 | 6,682.0 | 6,627.7 | 6,627.1 | 93.1 | 2.1 | 88.71 | -1,890.1 | 2,624.9 | 2,124.9 | 2,029.9 | 95.04 | 22.358 | |
| 10,200.0 | 6,681.6 | 6,628.0 | 6,627.5 | 94.8 | 2.1 | 88.72 | -1,890.1 | 2,624.9 | 2,107.9 | 2,011.2 | 96.69 | 21.801 | |
| 10,236.2 | 6,681.4 | 6,628.2 | 6,627.7 | 95.7 | 2.1 | 88.72 | -1,890.1 | 2,624.9 | 2,098.7 | 2,001.1 | 97.65 | 21.492 | |
| 10,300.0 | 6,680.9 | 6,628.6 | 6,628.0 | 97.4 | 2.1 | 88.73 | -1,890.1 | 2,624.9 | 2,084.0 | 1,984.7 | 99.34 | 20.978 | |
| 10,334.6 | 6,680.7 | 6,628.8 | 6,628.2 | 98.3 | 2.1 | 88.74 | -1,890.1 | 2,624.9 | 2,076.8 | 1,976.5 | 100.27 | 20.713 | |
| 10,400.0 | 6,680.3 | 6,629.2 | 6,628.6 | 100.1 | 2.1 | 88.75 | -1,890.1 | 2,625.0 | 2,064.7 | 1,962.7 | 102.01 | 20.241 | |
| 10,433.0 | 6,680.1 | 6,629.4 | 6,628.8 | 101.0 | 2.1 | 88.76 | -1,890.2 | 2,625.0 | 2,059.4 | 1,956.5 | 102.89 | 20.015 | |
| 10,500.0 | 6,679.7 | 6,629.8 | 6,629.2 | 102.8 | 2.1 | 88.77 | -1,890.2 | 2,625.0 | 2,050.1 | 1,945.5 | 104.68 | 19.585 | |
| 10,531.5 | 6,679.4 | 6,630.0 | 6,629.4 | 103.6 | 2.1 | 88.77 | -1,890.2 | 2,625.0 | 2,046.5 | 1,941.0 | 105.52 | 19.394 | |
| 10,600.0 | 6,679.0 | 6,630.4 | 6,629.8 | 105.4 | 2.1 | 88.78 | -1,890.2 | 2,625.0 | 2,040.4 | 1,933.0 | 107.36 | 19.005 | |
| 10,629.9 | 6,678.8 | 6,630.6 | 6,630.0 | 106.2 | 2.1 | 88.79 | -1,890.2 | 2,625.0 | 2,038.4 | 1,930.2 | 108.16 | 18.845 | |
| 10,700.0 | 6,678.4 | 6,631.0 | 6,630.4 | 108.1 | 2.1 | 88.80 | -1,890.2 | 2,625.0 | 2,035.4 | 1,925.4 | 110.05 | 18.496 | |
| 10,728.3 | 6,678.2 | 6,631.2 | 6,630.6 | 108.9 | 2.1 | 88.81 | -1,890.2 | 2,625.0 | 2,034.9 | 1,924.1 | 110.81 | 18.364 | |
| 10,750.0 | 6,678.0 | 6,631.3 | 6,630.8 | 109.5 | 2.1 | 88.81 | -1,890.2 | 2,625.0 | 2,034.8 | 1,923.4 | 111.39 | 18.267 | CC |
| 10,800.0 | 6,677.7 | 6,631.6 | 6,631.1 | 110.8 | 2.1 | 88.82 | -1,890.2 | 2,625.0 | 2,035.4 | 1,922.7 | 112.74 | 18.054 | ES |
| 10,826.7 | 6,677.5 | 6,631.8 | 6,631.2 | 111.5 | 2.1 | 88.82 | -1,890.2 | 2,625.0 | 2,036.3 | 1,922.8 | 113.46 | 17.947 | |
| 10,900.0 | 6,677.1 | 6,632.3 | 6,631.7 | 113.5 | 2.1 | 88.84 | -1,890.2 | 2,625.0 | 2,040.4 | 1,924.9 | 115.44 | 17.675 | |
| 10,925.2 | 6,676.9 | 6,632.4 | 6,631.9 | 114.2 | 2.1 | 88.84 | -1,890.2 | 2,625.0 | 2,042.4 | 1,926.2 | 116.12 | 17.589 | |
| 11,000.0 | 6,676.4 | 6,632.9 | 6,632.3 | 116.2 | 2.1 | 88.85 | -1,890.2 | 2,625.0 | 2,050.1 | 1,932.0 | 118.14 | 17.353 | |
| 11,023.6 | 6,676.3 | 6,633.1 | 6,632.5 | 116.8 | 2.1 | 88.86 | -1,890.2 | 2,625.0 | 2,053.1 | 1,934.4 | 118.78 | 17.285 | |
| 11,100.0 | 6,675.8 | 6,633.6 | 6,633.0 | 118.9 | 2.1 | 88.87 | -1,890.2 | 2,625.0 | 2,064.7 | 1,943.9 | 120.85 | 17.085 | |
| 11,122.0 | 6,675.6 | 6,633.7 | 6,633.1 | 119.5 | 2.1 | 88.88 | -1,890.2 | 2,625.0 | 2,068.6 | 1,947.1 | 121.45 | 17.032 | |
| 11,200.0 | 6,675.1 | 6,634.2 | 6,633.6 | 121.6 | 2.1 | 88.89 | -1,890.3 | 2,625.0 | 2,084.0 | 1,960.4 | 123.56 | 16.866 | |
| 11,220.4 | 6,675.0 | 6,634.4 | 6,633.8 | 122.2 | 2.1 | 88.89 | -1,890.3 | 2,625.0 | 2,088.5 | 1,964.4 | 124.12 | 16.827 | |
| 11,300.0 | 6,674.5 | 6,634.9 | 6,634.3 | 124.3 | 2.1 | 88.91 | -1,890.3 | 2,625.0 | 2,107.8 | 1,981.6 | 126.28 | 16.692 | |
| 11,318.9 | 6,674.3 | 6,635.0 | 6,634.4 | 124.9 | 2.1 | 88.91 | -1,890.3 | 2,625.0 | 2,112.8 | 1,986.0 | 126.80 | 16.663 | |
| 11,400.0 | 6,673.8 | 6,635.6 | 6,635.0 | 127.1 | 2.1 | 88.93 | -1,890.3 | 2,625.0 | 2,136.1 | 2,007.1 | 129.00 | 16.559 | |
| 11,417.3 | 6,673.7 | 6,635.7 | 6,635.1 | 127.5 | 2.1 | 88.93 | -1,890.3 | 2,625.0 | 2,141.4 | 2,012.0 | 129.47 | 16.539 | |
| 11,500.0 | 6,673.2 | 6,636.3 | 6,635.7 | 129.8 | 2.1 | 88.95 | -1,890.3 | 2,625.1 | 2,168.6 | 2,036.9 | 131.73 | 16.463 | |
| 11,515.7 | 6,673.1 | 6,636.4 | 6,635.8 | 130.2 | 2.1 | 88.95 | -1,890.3 | 2,625.1 | 2,174.1 | 2,042.0 | 132.16 | 16.451 | |
| 11,600.0 | 6,672.5 | 6,637.0 | 6,636.4 | 132.5 | 2.1 | 88.97 | -1,890.3 | 2,625.1 | 2,205.2 | 2,070.7 | 134.46 | 16.401 | |
| 11,614.1 | 6,672.4 | 6,637.1 | 6,636.5 | 132.9 | 2.1 | 88.97 | -1,890.3 | 2,625.1 | 2,210.7 | 2,075.9 | 134.84 | 16.394 | |
| 11,700.0 | 6,671.9 | 6,637.7 | 6,637.1 | 135.3 | 2.1 | 88.99 | -1,890.3 | 2,625.1 | 2,245.6 | 2,108.5 | 137.19 | 16.369 | |
| 11,712.6 | 6,671.8 | 6,637.8 | 6,637.2 | 135.6 | 2.1 | 88.99 | -1,890.3 | 2,625.1 | 2,251.0 | 2,113.5 | 137.53 | 16.367 | |
| 11,800.0 | 6,671.2 | 6,638.4 | 6,637.8 | 138.0 | 2.1 | 89.01 | -1,890.3 | 2,625.1 | 2,289.7 | 2,149.8 | 139.93 | 16.364 | SF |
| 11,811.0 | 6,671.1 | 6,638.5 | 6,637.9 | 138.3 | 2.1 | 89.01 | -1,890.3 | 2,625.1 | 2,294.8 | 2,154.6 | 140.23 | 16.365 | |
| 11,900.0 | 6,670.6 | 6,639.1 | 6,638.5 | 140.7 | 2.1 | 89.03 | -1,890.4 | 2,625.1 | 2,337.3 | 2,194.6 | 142.67 | 16.383 | |
| 11,909.4 | 6,670.5 | 6,639.2 | 6,638.6 | 141.0 | 2.1 | 89.03 | -1,890.4 | 2,625.1 | 2,341.9 | 2,199.0 | 142.92 | 16.386 | |
| 11,987.2 | 6,670.0 | 6,639.8 | 6,639.2 | 143.1 | 2.1 | 89.05 | -1,890.4 | 2,625.1 | 2,381.4 | 2,236.4 | 145.06 | 16.417 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | | | | |
| 98.4 | 98.4 | 99.4 | 99.4 | 0.1 | 1.2 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,295.1 | 1.27 | 1,802.315 | |
| 100.0 | 100.0 | 101.0 | 101.0 | 0.1 | 1.2 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,295.0 | 1.31 | 1,758.819 | |
| 196.8 | 196.8 | 197.8 | 197.8 | 0.3 | 3.4 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,292.6 | 3.74 | 613.388 | |
| 200.0 | 200.0 | 201.0 | 201.0 | 0.3 | 3.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,292.5 | 3.82 | 601.001 | |
| 295.3 | 295.3 | 296.3 | 296.3 | 0.5 | 5.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,290.3 | 6.02 | 381.746 | |
| 300.0 | 300.0 | 301.0 | 301.0 | 0.5 | 5.6 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,290.2 | 6.12 | 374.984 | |
| 393.7 | 393.7 | 394.7 | 394.7 | 0.8 | 7.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,288.1 | 8.25 | 278.411 | |
| 400.0 | 400.0 | 401.0 | 401.0 | 0.8 | 7.6 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,287.9 | 8.39 | 273.676 | |
| 492.1 | 492.1 | 493.1 | 493.1 | 1.0 | 9.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,285.9 | 10.47 | 219.387 | |
| 500.0 | 500.0 | 501.0 | 501.0 | 1.0 | 9.6 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,285.7 | 10.64 | 215.730 | |
| 590.5 | 590.5 | 591.5 | 591.5 | 1.2 | 11.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,283.6 | 12.68 | 181.104 | |
| 600.0 | 600.0 | 601.0 | 601.0 | 1.2 | 11.7 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,283.4 | 12.89 | 178.121 | |
| 689.0 | 689.0 | 690.0 | 690.0 | 1.4 | 13.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,281.4 | 14.89 | 154.234 | |
| 700.0 | 700.0 | 701.0 | 701.0 | 1.4 | 13.7 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,281.2 | 15.14 | 151.713 | |
| 787.4 | 787.4 | 788.4 | 788.4 | 1.6 | 15.5 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,279.2 | 17.10 | 134.324 | |
| 800.0 | 800.0 | 801.0 | 801.0 | 1.7 | 15.7 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,278.9 | 17.38 | 132.141 | |
| 885.8 | 885.8 | 886.8 | 886.8 | 1.9 | 17.4 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,277.0 | 19.30 | 118.976 | |
| 900.0 | 900.0 | 901.0 | 901.0 | 1.9 | 17.7 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,276.7 | 19.62 | 117.050 | |
| 984.2 | 984.2 | 985.2 | 985.2 | 2.1 | 19.4 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,274.8 | 21.51 | 106.780 | |
| 1,000.0 | 1,000.0 | 1,001.0 | 1,001.0 | 2.1 | 19.7 | -136.34 | -1,661.2 | -1,585.4 | 2,296.3 | 2,274.5 | 21.86 | 105.057 | |
| 1,082.7 | 1,082.7 | 1,083.7 | 1,083.7 | 2.3 | 21.4 | -51.93 | -1,661.2 | -1,585.4 | 2,295.6 | 2,271.9 | 23.70 | 96.880 | |
| 1,100.0 | 1,100.0 | 1,101.0 | 1,101.0 | 2.3 | 21.8 | -51.95 | -1,661.2 | -1,585.4 | 2,295.3 | 2,271.2 | 24.08 | 95.321 | |
| 1,181.1 | 1,181.0 | 1,182.0 | 1,182.0 | 2.5 | 23.4 | -52.07 | -1,661.2 | -1,585.4 | 2,292.8 | 2,266.9 | 25.86 | 88.649 | |
| 1,200.0 | 1,199.8 | 1,200.8 | 1,200.8 | 2.5 | 23.8 | -52.10 | -1,661.2 | -1,585.4 | 2,292.0 | 2,265.7 | 26.28 | 87.222 | |
| 1,279.5 | 1,279.1 | 1,280.1 | 1,280.1 | 2.7 | 25.4 | -52.30 | -1,661.2 | -1,585.4 | 2,287.9 | 2,259.9 | 28.02 | 81.653 | |
| 1,300.0 | 1,299.5 | 1,300.5 | 1,300.5 | 2.8 | 25.8 | -52.36 | -1,661.2 | -1,585.4 | 2,286.7 | 2,258.2 | 28.47 | 80.329 | |
| 1,377.9 | 1,376.9 | 1,377.9 | 1,377.9 | 3.0 | 27.3 | -52.63 | -1,661.2 | -1,585.4 | 2,281.0 | 2,250.9 | 30.17 | 75.613 | |
| 1,400.0 | 1,398.7 | 1,399.7 | 1,399.7 | 3.0 | 27.8 | -52.72 | -1,661.2 | -1,585.4 | 2,279.2 | 2,248.6 | 30.65 | 74.373 | |
| 1,476.4 | 1,474.2 | 1,475.2 | 1,475.2 | 3.2 | 29.3 | -53.07 | -1,661.2 | -1,585.4 | 2,272.2 | 2,239.8 | 32.31 | 70.326 | |
| 1,500.0 | 1,497.5 | 1,498.5 | 1,498.5 | 3.3 | 29.8 | -53.18 | -1,661.2 | -1,585.4 | 2,269.7 | 2,236.9 | 32.82 | 69.157 | |
| 1,574.8 | 1,571.0 | 1,572.0 | 1,572.0 | 3.5 | 31.2 | -53.60 | -1,661.2 | -1,585.4 | 2,261.3 | 2,226.9 | 34.45 | 65.643 | |
| 1,600.0 | 1,595.6 | 1,596.6 | 1,596.6 | 3.6 | 31.7 | -53.75 | -1,661.2 | -1,585.4 | 2,258.2 | 2,223.2 | 34.99 | 64.531 | |
| 1,673.2 | 1,667.0 | 1,668.0 | 1,668.0 | 3.9 | 33.2 | -54.24 | -1,661.2 | -1,585.4 | 2,248.6 | 2,212.0 | 36.60 | 61.445 | |
| 1,700.0 | 1,693.1 | 1,694.1 | 1,694.1 | 4.0 | 33.7 | -54.43 | -1,661.2 | -1,585.4 | 2,244.8 | 2,207.6 | 37.18 | 60.382 | |
| 1,771.6 | 1,762.4 | 1,763.4 | 1,763.4 | 4.3 | 35.1 | -54.98 | -1,661.2 | -1,585.4 | 2,234.1 | 2,195.3 | 38.76 | 57.645 | |
| 1,800.0 | 1,789.6 | 1,790.6 | 1,790.6 | 4.4 | 35.6 | -55.21 | -1,661.2 | -1,585.4 | 2,229.6 | 2,190.2 | 39.38 | 56.621 | |
| 1,870.1 | 1,856.8 | 1,857.8 | 1,857.8 | 4.7 | 37.0 | -55.82 | -1,661.2 | -1,585.4 | 2,217.8 | 2,176.9 | 40.94 | 54.173 | |
| 1,900.0 | 1,885.3 | 1,886.3 | 1,886.3 | 4.9 | 37.6 | -56.10 | -1,661.2 | -1,585.4 | 2,212.6 | 2,171.0 | 41.60 | 53.181 | |
| 1,968.5 | 1,950.2 | 1,951.2 | 1,951.2 | 5.3 | 38.9 | -56.77 | -1,661.2 | -1,585.4 | 2,200.0 | 2,156.8 | 43.16 | 50.976 | |
| 2,000.0 | 1,979.8 | 1,980.8 | 1,980.8 | 5.5 | 39.5 | -57.10 | -1,661.2 | -1,585.4 | 2,193.9 | 2,150.1 | 43.87 | 50.010 | |
| 2,044.9 | 2,021.9 | 2,022.9 | 2,022.9 | 5.7 | 40.3 | -57.58 | -1,661.2 | -1,585.4 | 2,185.1 | 2,140.2 | 44.90 | 48.661 | |
| 2,066.9 | 2,042.5 | 2,043.5 | 2,043.5 | 5.9 | 40.7 | -57.75 | -1,661.2 | -1,585.4 | 2,180.7 | 2,135.2 | 45.44 | 47.989 | |
| 2,100.0 | 2,073.4 | 2,074.4 | 2,074.4 | 6.1 | 41.3 | -58.00 | -1,661.2 | -1,585.4 | 2,174.1 | 2,127.8 | 46.25 | 47.006 | |
| 2,165.3 | 2,134.4 | 2,135.4 | 2,135.4 | 6.5 | 42.6 | -58.50 | -1,661.2 | -1,585.4 | 2,161.2 | 2,113.3 | 47.87 | 45.152 | |
| 2,200.0 | 2,166.8 | 2,167.8 | 2,167.8 | 6.8 | 43.2 | -58.76 | -1,661.2 | -1,585.4 | 2,154.5 | 2,105.7 | 48.72 | 44.217 | |
| 2,263.8 | 2,226.4 | 2,227.4 | 2,227.4 | 7.2 | 44.4 | -59.26 | -1,661.2 | -1,585.4 | 2,142.2 | 2,091.8 | 50.32 | 42.572 | |
| 2,300.0 | 2,260.2 | 2,261.2 | 2,261.2 | 7.4 | 45.1 | -59.54 | -1,661.2 | -1,585.4 | 2,135.2 | 2,084.0 | 51.23 | 41.682 | |
| 2,362.2 | 2,318.3 | 2,319.3 | 2,319.3 | 7.9 | 46.3 | -60.03 | -1,661.2 | -1,585.4 | 2,123.5 | 2,070.7 | 52.80 | 40.220 | |
| 2,400.0 | 2,353.6 | 2,354.6 | 2,354.6 | 8.1 | 47.0 | -60.33 | -1,661.2 | -1,585.4 | 2,116.5 | 2,062.7 | 53.75 | 39.372 | |
| 2,460.6 | 2,410.3 | 2,411.3 | 2,411.3 | 8.6 | 48.1 | -60.82 | -1,661.2 | -1,585.4 | 2,105.3 | 2,050.0 | 55.30 | 38.071 | |
| 2,500.0 | 2,447.0 | 2,448.0 | 2,448.0 | 8.9 | 48.9 | -61.14 | -1,661.2 | -1,585.4 | 2,098.1 | 2,041.8 | 56.30 | 37.263 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,503.2 | 2,503.2 | 9.3 | 50.0 | -61.62 | -1,661.2 | -1,585.4 | 2,087.5 | 2,029.7 | 57.82 | 36.103 | |
| 2,600.0 | 2,540.5 | 2,541.5 | 2,541.5 | 9.6 | 50.7 | -61.95 | -1,661.2 | -1,585.4 | 2,080.2 | 2,021.3 | 58.87 | 35.333 | |
| 2,657.5 | 2,594.2 | 2,595.2 | 2,595.2 | 10.0 | 51.8 | -62.43 | -1,661.2 | -1,585.4 | 2,070.1 | 2,009.8 | 60.36 | 34.297 | |
| 2,700.0 | 2,633.9 | 2,634.9 | 2,634.9 | 10.3 | 52.6 | -62.78 | -1,661.2 | -1,585.4 | 2,062.8 | 2,001.3 | 61.46 | 33.562 | |
| 2,755.9 | 2,686.1 | 2,687.1 | 2,687.1 | 10.7 | 53.7 | -63.25 | -1,661.2 | -1,585.4 | 2,053.2 | 1,990.3 | 62.91 | 32.635 | |
| 2,800.0 | 2,727.3 | 2,728.3 | 2,728.3 | 11.0 | 54.5 | -63.62 | -1,661.2 | -1,585.4 | 2,045.8 | 1,981.7 | 64.06 | 31.934 | |
| 2,854.3 | 2,778.1 | 2,779.1 | 2,779.1 | 11.4 | 55.5 | -64.09 | -1,661.2 | -1,585.4 | 2,036.8 | 1,971.3 | 65.48 | 31.103 | |
| 2,900.0 | 2,820.7 | 2,821.7 | 2,821.7 | 11.8 | 56.4 | -64.48 | -1,661.2 | -1,585.4 | 2,029.3 | 1,962.6 | 66.68 | 30.433 | |
| 2,952.7 | 2,870.0 | 2,871.0 | 2,871.0 | 12.2 | 57.4 | -64.93 | -1,661.2 | -1,585.4 | 2,020.8 | 1,952.8 | 68.07 | 29.688 | |
| 3,000.0 | 2,914.2 | 2,915.2 | 2,915.2 | 12.5 | 58.3 | -65.35 | -1,661.2 | -1,585.4 | 2,013.3 | 1,944.0 | 69.31 | 29.047 | |
| 3,051.2 | 2,962.0 | 2,963.0 | 2,963.0 | 12.9 | 59.2 | -65.79 | -1,661.2 | -1,585.4 | 2,005.4 | 1,934.7 | 70.67 | 28.378 | |
| 3,100.0 | 3,007.6 | 3,008.6 | 3,008.6 | 13.3 | 60.1 | -66.22 | -1,661.2 | -1,585.4 | 1,997.9 | 1,925.9 | 71.96 | 27.765 | |
| 3,149.6 | 3,053.9 | 3,054.9 | 3,054.9 | 13.6 | 61.1 | -66.66 | -1,661.2 | -1,585.4 | 1,990.4 | 1,917.1 | 73.27 | 27.164 | |
| 3,200.0 | 3,101.0 | 3,102.0 | 3,102.0 | 14.0 | 62.0 | -67.12 | -1,661.2 | -1,585.4 | 1,982.9 | 1,908.3 | 74.61 | 26.576 | |
| 3,248.0 | 3,145.9 | 3,146.9 | 3,146.9 | 14.4 | 62.9 | -67.55 | -1,661.2 | -1,585.4 | 1,975.9 | 1,900.0 | 75.89 | 26.036 | |
| 3,300.0 | 3,194.4 | 3,195.4 | 3,195.4 | 14.8 | 63.9 | -68.02 | -1,661.2 | -1,585.4 | 1,968.5 | 1,891.2 | 77.28 | 25.473 | |
| 3,346.4 | 3,237.8 | 3,238.8 | 3,238.8 | 15.1 | 64.8 | -68.44 | -1,661.2 | -1,585.4 | 1,962.0 | 1,883.5 | 78.52 | 24.987 | |
| 3,400.0 | 3,287.8 | 3,288.8 | 3,288.8 | 15.5 | 65.8 | -68.93 | -1,661.2 | -1,585.4 | 1,954.6 | 1,874.7 | 79.96 | 24.446 | |
| 3,444.9 | 3,329.8 | 3,330.8 | 3,330.8 | 15.9 | 66.6 | -69.35 | -1,661.2 | -1,585.4 | 1,948.6 | 1,867.4 | 81.16 | 24.009 | |
| 3,500.0 | 3,381.3 | 3,382.3 | 3,382.3 | 16.3 | 67.6 | -69.86 | -1,661.2 | -1,585.4 | 1,941.3 | 1,858.7 | 82.64 | 23.491 | |
| 3,543.3 | 3,421.7 | 3,422.7 | 3,422.7 | 16.6 | 68.5 | -70.26 | -1,661.2 | -1,585.4 | 1,935.7 | 1,851.9 | 83.81 | 23.098 | |
| 3,600.0 | 3,474.7 | 3,475.7 | 3,475.7 | 17.0 | 69.5 | -70.79 | -1,661.2 | -1,585.4 | 1,928.5 | 1,843.2 | 85.33 | 22.600 | |
| 3,641.7 | 3,513.7 | 3,514.7 | 3,514.7 | 17.3 | 70.3 | -71.19 | -1,661.2 | -1,585.4 | 1,923.4 | 1,836.9 | 86.46 | 22.246 | |
| 3,700.0 | 3,568.1 | 3,569.1 | 3,569.1 | 17.8 | 71.4 | -71.74 | -1,661.2 | -1,585.4 | 1,916.4 | 1,828.3 | 88.03 | 21.769 | |
| 3,740.1 | 3,605.6 | 3,606.6 | 3,606.6 | 18.1 | 72.2 | -72.13 | -1,661.2 | -1,585.4 | 1,911.7 | 1,822.5 | 89.12 | 21.451 | |
| 3,800.0 | 3,661.5 | 3,662.5 | 3,662.5 | 18.5 | 73.3 | -72.70 | -1,661.2 | -1,585.4 | 1,904.8 | 1,814.1 | 90.74 | 20.992 | |
| 3,838.6 | 3,697.6 | 3,698.6 | 3,698.6 | 18.8 | 74.0 | -73.07 | -1,661.2 | -1,585.4 | 1,900.5 | 1,808.7 | 91.79 | 20.706 | |
| 3,900.0 | 3,754.9 | 3,755.9 | 3,755.9 | 19.3 | 75.2 | -73.67 | -1,661.2 | -1,585.4 | 1,893.8 | 1,800.4 | 93.45 | 20.265 | |
| 3,937.0 | 3,789.5 | 3,790.5 | 3,790.5 | 19.6 | 75.9 | -74.03 | -1,661.2 | -1,585.4 | 1,889.9 | 1,795.5 | 94.46 | 20.008 | |
| 4,000.0 | 3,848.4 | 3,849.4 | 3,849.4 | 20.1 | 77.0 | -74.65 | -1,661.2 | -1,585.4 | 1,883.4 | 1,787.3 | 96.17 | 19.585 | |
| 4,035.4 | 3,881.5 | 3,882.5 | 3,882.5 | 20.3 | 77.7 | -75.00 | -1,661.2 | -1,585.4 | 1,879.9 | 1,782.8 | 97.13 | 19.355 | |
| 4,100.0 | 3,941.8 | 3,942.8 | 3,942.8 | 20.8 | 78.9 | -75.63 | -1,661.2 | -1,585.4 | 1,873.7 | 1,774.8 | 98.89 | 18.948 | |
| 4,133.8 | 3,973.4 | 3,974.4 | 3,974.4 | 21.1 | 79.6 | -75.97 | -1,661.2 | -1,585.4 | 1,870.5 | 1,770.7 | 99.81 | 18.741 | |
| 4,200.0 | 4,035.2 | 4,036.2 | 4,036.2 | 21.6 | 80.8 | -76.63 | -1,661.2 | -1,585.4 | 1,864.6 | 1,763.0 | 101.61 | 18.351 | |
| 4,232.3 | 4,065.4 | 4,066.4 | 4,066.4 | 21.8 | 81.4 | -76.95 | -1,661.2 | -1,585.4 | 1,861.8 | 1,759.3 | 102.49 | 18.166 | |
| 4,300.0 | 4,128.6 | 4,129.6 | 4,129.6 | 22.3 | 82.7 | -77.63 | -1,661.2 | -1,585.4 | 1,856.1 | 1,751.8 | 104.33 | 17.790 | |
| 4,330.7 | 4,157.3 | 4,158.3 | 4,158.3 | 22.6 | 83.3 | -77.94 | -1,661.2 | -1,585.4 | 1,853.6 | 1,748.5 | 105.17 | 17.626 | |
| 4,400.0 | 4,222.0 | 4,223.0 | 4,223.0 | 23.1 | 84.6 | -78.65 | -1,661.2 | -1,585.4 | 1,848.3 | 1,741.2 | 107.06 | 17.265 | |
| 4,429.1 | 4,249.3 | 4,250.3 | 4,250.3 | 23.3 | 85.1 | -78.94 | -1,661.2 | -1,585.4 | 1,846.1 | 1,738.3 | 107.85 | 17.118 | |
| 4,500.0 | 4,315.5 | 4,316.5 | 4,316.5 | 23.9 | 86.4 | -79.66 | -1,661.2 | -1,585.4 | 1,841.1 | 1,731.3 | 109.78 | 16.771 | |
| 4,527.5 | 4,341.2 | 4,342.2 | 4,342.2 | 24.1 | 87.0 | -79.95 | -1,661.2 | -1,585.4 | 1,839.3 | 1,728.7 | 110.53 | 16.641 | |
| 4,600.0 | 4,408.9 | 4,409.9 | 4,409.9 | 24.6 | 88.3 | -80.69 | -1,661.2 | -1,585.4 | 1,834.6 | 1,722.1 | 112.50 | 16.308 | |
| 4,626.0 | 4,433.2 | 4,434.2 | 4,434.2 | 24.8 | 88.8 | -80.96 | -1,661.2 | -1,585.4 | 1,833.0 | 1,719.8 | 113.21 | 16.192 | |
| 4,700.0 | 4,502.3 | 4,503.3 | 4,503.3 | 25.4 | 90.2 | -81.72 | -1,661.2 | -1,585.4 | 1,828.8 | 1,713.6 | 115.22 | 15.873 | |
| 4,724.4 | 4,525.1 | 4,526.1 | 4,526.1 | 25.6 | 90.7 | -81.98 | -1,661.2 | -1,585.4 | 1,827.5 | 1,711.6 | 115.88 | 15.771 | |
| 4,800.0 | 4,595.7 | 4,596.7 | 4,596.7 | 26.2 | 92.1 | -82.76 | -1,661.2 | -1,585.4 | 1,823.7 | 1,705.7 | 117.93 | 15.464 | |
| 4,822.8 | 4,617.1 | 4,618.1 | 4,618.1 | 26.3 | 92.5 | -83.00 | -1,661.2 | -1,585.4 | 1,822.6 | 1,704.0 | 118.55 | 15.374 | |
| 4,900.0 | 4,689.2 | 4,690.2 | 4,690.2 | 26.9 | 94.0 | -83.80 | -1,661.2 | -1,585.4 | 1,819.2 | 1,698.5 | 120.64 | 15.080 | |
| 4,921.2 | 4,709.0 | 4,710.0 | 4,710.0 | 27.1 | 94.3 | -84.02 | -1,661.2 | -1,585.4 | 1,818.3 | 1,697.1 | 121.21 | 15.001 | |
| 5,000.0 | 4,782.6 | 4,783.6 | 4,783.6 | 27.7 | 95.8 | -84.85 | -1,661.2 | -1,585.4 | 1,815.4 | 1,692.1 | 123.34 | 14.719 | |
| 5,019.7 | 4,801.0 | 4,802.0 | 4,802.0 | 27.8 | 96.2 | -85.05 | -1,661.2 | -1,585.4 | 1,814.8 | 1,690.9 | 123.87 | 14.650 | |
| 5,100.0 | 4,876.0 | 4,877.0 | 4,877.0 | 28.4 | 97.7 | -85.90 | -1,661.2 | -1,585.4 | 1,812.3 | 1,686.3 | 126.04 | 14.379 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,893.9 | 4,893.9 | 28.6 | 98.0 | -86.09 | -1,661.2 | -1,585.4 | 1,811.9 | 1,685.3 | 126.52 | 14.320 | |
| 5,159.9 | 4,932.0 | 4,933.0 | 4,933.0 | 28.9 | 98.8 | -86.53 | -1,661.2 | -1,585.4 | 1,810.8 | 1,683.2 | 127.65 | 14.186 | |
| 5,200.0 | 4,969.5 | 4,970.5 | 4,970.5 | 29.2 | 99.6 | -86.93 | -1,661.2 | -1,585.4 | 1,810.0 | 1,681.3 | 128.69 | 14.065 | |
| 5,216.5 | 4,985.1 | 4,986.1 | 4,986.1 | 29.3 | 99.9 | -87.09 | -1,661.2 | -1,585.4 | 1,809.7 | 1,680.6 | 129.10 | 14.017 | |
| 5,300.0 | 5,064.0 | 5,065.0 | 5,065.0 | 29.7 | 101.5 | -87.87 | -1,661.2 | -1,585.4 | 1,808.4 | 1,677.2 | 131.18 | 13.786 | |
| 5,314.9 | 5,078.2 | 5,079.2 | 5,079.2 | 29.8 | 101.8 | -88.01 | -1,661.2 | -1,585.4 | 1,808.2 | 1,676.7 | 131.54 | 13.746 | |
| 5,400.0 | 5,159.6 | 5,160.6 | 5,160.6 | 30.2 | 103.4 | -88.75 | -1,661.2 | -1,585.4 | 1,807.5 | 1,673.9 | 133.62 | 13.527 | |
| 5,413.4 | 5,172.4 | 5,173.4 | 5,173.4 | 30.3 | 103.7 | -88.86 | -1,661.2 | -1,585.4 | 1,807.4 | 1,673.5 | 133.94 | 13.494 | |
| 5,500.0 | 5,256.1 | 5,257.1 | 5,257.1 | 30.7 | 105.4 | -89.53 | -1,661.2 | -1,585.4 | 1,807.1 | 1,671.1 | 136.02 | 13.285 | |
| 5,511.8 | 5,267.6 | 5,268.6 | 5,268.6 | 30.7 | 105.6 | -89.62 | -1,661.2 | -1,585.4 | 1,807.1 | 1,670.8 | 136.30 | 13.258 | |
| 5,565.1 | 5,319.5 | 5,320.5 | 5,320.5 | 30.9 | 106.6 | -90.00 | -1,661.2 | -1,585.4 | 1,807.0 | 1,669.5 | 137.55 | 13.137 | CC |
| 5,600.0 | 5,353.5 | 5,354.5 | 5,354.5 | 31.1 | 107.3 | -90.23 | -1,661.2 | -1,585.4 | 1,807.0 | 1,668.7 | 138.38 | 13.059 | |
| 5,610.2 | 5,363.5 | 5,364.5 | 5,364.5 | 31.1 | 107.5 | -90.30 | -1,661.2 | -1,585.4 | 1,807.0 | 1,668.4 | 138.61 | 13.037 | |
| 5,700.0 | 5,451.6 | 5,452.6 | 5,452.6 | 31.4 | 109.3 | -90.84 | -1,661.2 | -1,585.4 | 1,807.2 | 1,666.5 | 140.69 | 12.845 | |
| 5,708.6 | 5,460.2 | 5,461.2 | 5,461.2 | 31.4 | 109.5 | -90.88 | -1,661.2 | -1,585.4 | 1,807.2 | 1,666.4 | 140.89 | 12.828 | |
| 5,800.0 | 5,550.4 | 5,551.4 | 5,551.4 | 31.7 | 111.3 | -91.34 | -1,661.2 | -1,585.4 | 1,807.5 | 1,664.6 | 142.96 | 12.643 | |
| 5,807.1 | 5,557.4 | 5,558.4 | 5,558.4 | 31.7 | 111.4 | -91.37 | -1,661.2 | -1,585.4 | 1,807.5 | 1,664.4 | 143.12 | 12.630 | |
| 5,900.0 | 5,649.6 | 5,650.6 | 5,650.6 | 31.9 | 113.3 | -91.73 | -1,661.2 | -1,585.4 | 1,807.9 | 1,662.7 | 145.19 | 12.451 | |
| 5,905.5 | 5,655.1 | 5,656.1 | 5,656.1 | 31.9 | 113.4 | -91.75 | -1,661.2 | -1,585.4 | 1,807.9 | 1,662.6 | 145.31 | 12.441 | |
| 6,000.0 | 5,749.2 | 5,750.2 | 5,750.2 | 32.1 | 115.3 | -92.02 | -1,661.2 | -1,585.4 | 1,808.1 | 1,660.8 | 147.38 | 12.268 | |
| 6,003.9 | 5,753.1 | 5,754.1 | 5,754.1 | 32.1 | 115.3 | -92.03 | -1,661.2 | -1,585.4 | 1,808.2 | 1,660.7 | 147.47 | 12.261 | |
| 6,100.0 | 5,849.1 | 5,850.1 | 5,850.1 | 32.3 | 117.3 | -92.19 | -1,661.2 | -1,585.4 | 1,808.3 | 1,658.8 | 149.53 | 12.093 | |
| 6,102.3 | 5,851.4 | 5,852.4 | 5,852.4 | 32.3 | 117.3 | -92.19 | -1,661.2 | -1,585.4 | 1,808.3 | 1,658.8 | 149.58 | 12.089 | |
| 6,200.8 | 5,949.8 | 5,950.8 | 5,950.8 | 32.4 | 119.3 | -92.25 | -1,661.2 | -1,585.4 | 1,808.4 | 1,656.8 | 151.65 | 11.925 | |
| 6,204.9 | 5,953.9 | 5,954.9 | 5,954.9 | 32.4 | 119.4 | -176.69 | -1,661.2 | -1,585.4 | 1,808.4 | 1,672.9 | 135.48 | 13.349 | |
| 6,234.9 | 5,983.9 | 5,984.9 | 5,984.9 | 32.4 | 120.0 | -176.69 | -1,661.2 | -1,585.4 | 1,808.4 | 1,672.3 | 136.13 | 13.285 | |
| 6,250.0 | 5,999.0 | 6,000.0 | 6,000.0 | 32.4 | 120.3 | 93.31 | -1,661.2 | -1,585.4 | 1,808.4 | 1,655.7 | 152.68 | 11.844 | |
| 6,299.2 | 6,048.2 | 6,049.2 | 6,049.2 | 32.4 | 121.3 | 93.38 | -1,661.2 | -1,585.4 | 1,808.6 | 1,654.9 | 153.67 | 11.769 | |
| 6,300.0 | 6,048.9 | 6,049.9 | 6,049.9 | 32.4 | 121.3 | 93.39 | -1,661.2 | -1,585.4 | 1,808.6 | 1,654.9 | 153.69 | 11.768 | |
| 6,350.0 | 6,098.5 | 6,099.5 | 6,099.5 | 32.4 | 122.3 | 93.55 | -1,661.2 | -1,585.4 | 1,809.0 | 1,654.3 | 154.65 | 11.697 | |
| 6,397.6 | 6,145.3 | 6,146.3 | 6,146.3 | 32.3 | 123.2 | 93.79 | -1,661.2 | -1,585.4 | 1,809.6 | 1,654.1 | 155.52 | 11.636 | |
| 6,400.0 | 6,147.6 | 6,148.6 | 6,148.6 | 32.3 | 123.3 | 93.80 | -1,661.2 | -1,585.4 | 1,809.6 | 1,654.0 | 155.56 | 11.633 | ES |
| 6,450.0 | 6,195.8 | 6,196.8 | 6,196.8 | 32.2 | 124.3 | 94.13 | -1,661.2 | -1,585.4 | 1,810.6 | 1,654.1 | 156.43 | 11.574 | |
| 6,496.0 | 6,239.3 | 6,240.3 | 6,240.3 | 32.1 | 125.1 | 94.48 | -1,661.2 | -1,585.4 | 1,811.7 | 1,654.6 | 157.17 | 11.527 | |
| 6,500.0 | 6,243.0 | 6,244.0 | 6,244.0 | 32.1 | 125.2 | 94.51 | -1,661.2 | -1,585.4 | 1,811.9 | 1,654.6 | 157.24 | 11.523 | |
| 6,550.0 | 6,289.0 | 6,290.0 | 6,290.0 | 32.0 | 126.1 | 94.94 | -1,661.2 | -1,585.4 | 1,813.6 | 1,655.6 | 157.99 | 11.480 | |
| 6,594.5 | 6,328.6 | 6,329.6 | 6,329.6 | 31.8 | 126.9 | 95.35 | -1,661.2 | -1,585.4 | 1,815.7 | 1,657.1 | 158.61 | 11.447 | |
| 6,600.0 | 6,333.4 | 6,334.4 | 6,334.4 | 31.8 | 127.0 | 95.40 | -1,661.2 | -1,585.4 | 1,816.0 | 1,657.3 | 158.68 | 11.444 | |
| 6,650.0 | 6,376.2 | 6,377.2 | 6,377.2 | 31.7 | 127.9 | 95.86 | -1,661.2 | -1,585.4 | 1,818.9 | 1,659.6 | 159.32 | 11.417 | |
| 6,692.9 | 6,411.3 | 6,412.3 | 6,412.3 | 31.6 | 128.6 | 96.24 | -1,661.2 | -1,585.4 | 1,822.1 | 1,662.3 | 159.82 | 11.401 | |
| 6,700.0 | 6,417.0 | 6,418.0 | 6,418.0 | 31.5 | 128.7 | 96.30 | -1,661.2 | -1,585.4 | 1,822.7 | 1,662.8 | 159.90 | 11.399 | |
| 6,750.0 | 6,455.7 | 6,456.7 | 6,456.7 | 31.4 | 129.5 | 96.70 | -1,661.2 | -1,585.4 | 1,827.3 | 1,666.8 | 160.43 | 11.390 | |
| 6,791.3 | 6,486.0 | 6,487.0 | 6,487.0 | 31.3 | 130.1 | 96.98 | -1,661.2 | -1,585.4 | 1,831.8 | 1,671.0 | 160.84 | 11.389 | SF |
| 6,800.0 | 6,492.2 | 6,493.2 | 6,493.2 | 31.3 | 130.2 | 97.03 | -1,661.2 | -1,585.4 | 1,832.8 | 1,671.9 | 160.92 | 11.390 | |
| 6,850.0 | 6,526.1 | 6,527.1 | 6,527.1 | 31.2 | 130.9 | 97.27 | -1,661.2 | -1,585.4 | 1,839.5 | 1,678.1 | 161.39 | 11.398 | |
| 6,889.7 | 6,551.2 | 6,552.2 | 6,552.2 | 31.2 | 131.4 | 97.38 | -1,661.2 | -1,585.4 | 1,845.7 | 1,683.9 | 161.76 | 11.410 | |
| 6,900.0 | 6,557.4 | 6,558.4 | 6,558.4 | 31.2 | 131.5 | 97.40 | -1,661.2 | -1,585.4 | 1,847.4 | 1,685.5 | 161.85 | 11.414 | |
| 6,950.0 | 6,586.0 | 6,587.0 | 6,587.0 | 31.1 | 132.1 | 97.39 | -1,661.2 | -1,585.4 | 1,856.5 | 1,694.2 | 162.32 | 11.437 | |
| 6,988.2 | 6,605.8 | 6,606.8 | 6,606.8 | 31.2 | 132.5 | 97.28 | -1,661.2 | -1,585.4 | 1,864.4 | 1,701.7 | 162.71 | 11.459 | |
| 7,000.0 | 6,611.5 | 6,612.5 | 6,612.5 | 31.2 | 132.6 | 97.23 | -1,661.2 | -1,585.4 | 1,867.0 | 1,704.2 | 162.83 | 11.466 | |
| 7,050.0 | 6,634.1 | 6,635.1 | 6,635.1 | 31.2 | 133.1 | 96.89 | -1,661.2 | -1,585.4 | 1,878.9 | 1,715.5 | 163.38 | 11.500 | |
| 7,086.6 | 6,648.6 | 6,649.6 | 6,649.6 | 31.3 | 133.4 | 96.51 | -1,661.2 | -1,585.4 | 1,888.5 | 1,724.6 | 163.82 | 11.527 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,654.4 | 6,654.4 | 31.4 | 133.5 | 96.35 | -1,661.2 | -1,585.4 | 1,892.2 | 1,728.2 | 163.99 | 11.538 | |
| 7,150.0 | 6,669.5 | 6,670.5 | 6,670.5 | 31.6 | 133.8 | 95.60 | -1,661.2 | -1,585.4 | 1,906.9 | 1,742.2 | 164.64 | 11.582 | |
| 7,185.0 | 6,678.8 | 6,679.8 | 6,679.8 | 31.7 | 134.0 | 94.95 | -1,661.2 | -1,585.4 | 1,918.0 | 1,752.9 | 165.13 | 11.615 | |
| 7,200.0 | 6,682.3 | 6,683.3 | 6,683.3 | 31.8 | 134.0 | 94.64 | -1,661.2 | -1,585.4 | 1,923.0 | 1,757.6 | 165.33 | 11.631 | |
| 7,250.0 | 6,691.6 | 6,692.6 | 6,692.6 | 32.1 | 134.2 | 93.44 | -1,661.2 | -1,585.4 | 1,940.4 | 1,774.4 | 166.01 | 11.689 | |
| 7,283.4 | 6,696.0 | 6,697.0 | 6,697.0 | 32.3 | 134.3 | 92.51 | -1,661.2 | -1,585.4 | 1,952.8 | 1,786.4 | 166.44 | 11.733 | |
| 7,300.0 | 6,697.5 | 6,698.5 | 6,698.5 | 32.4 | 134.3 | 92.01 | -1,661.2 | -1,585.4 | 1,959.1 | 1,792.5 | 166.63 | 11.757 | |
| 7,350.0 | 6,699.9 | 6,700.9 | 6,700.9 | 32.8 | 134.4 | 90.35 | -1,661.2 | -1,585.4 | 1,979.1 | 1,811.9 | 167.14 | 11.841 | |
| 7,364.4 | 6,700.0 | 6,701.0 | 6,701.0 | 32.9 | 134.4 | 89.83 | -1,661.2 | -1,585.4 | 1,985.0 | 1,817.7 | 167.26 | 11.868 | |
| 7,381.9 | 6,699.9 | 6,700.9 | 6,700.9 | 33.1 | 134.4 | 89.83 | -1,661.2 | -1,585.4 | 1,992.3 | 1,824.9 | 167.41 | 11.901 | |
| 7,400.0 | 6,699.8 | 6,700.8 | 6,700.8 | 33.2 | 134.4 | 89.82 | -1,661.2 | -1,585.4 | 2,000.1 | 1,832.5 | 167.56 | 11.936 | |
| 7,480.3 | 6,699.2 | 6,700.2 | 6,700.2 | 34.0 | 134.4 | 89.81 | -1,661.2 | -1,585.4 | 2,035.9 | 1,867.6 | 168.36 | 12.092 | |
| 7,500.0 | 6,699.1 | 6,700.1 | 6,700.1 | 34.2 | 134.4 | 89.80 | -1,661.2 | -1,585.4 | 2,045.1 | 1,876.5 | 168.56 | 12.133 | |
| 7,578.7 | 6,698.6 | 6,699.6 | 6,699.6 | 35.2 | 134.4 | 89.79 | -1,661.2 | -1,585.4 | 2,083.2 | 1,913.7 | 169.50 | 12.291 | |
| 7,600.0 | 6,698.5 | 6,699.5 | 6,699.5 | 35.4 | 134.4 | 89.78 | -1,661.2 | -1,585.4 | 2,093.9 | 1,924.2 | 169.75 | 12.335 | |
| 7,677.1 | 6,698.0 | 6,699.0 | 6,699.0 | 36.5 | 134.3 | 89.77 | -1,661.2 | -1,585.4 | 2,134.0 | 1,963.2 | 170.81 | 12.494 | |
| 7,700.0 | 6,697.8 | 6,698.8 | 6,698.8 | 36.8 | 134.3 | 89.76 | -1,661.2 | -1,585.4 | 2,146.3 | 1,975.2 | 171.12 | 12.543 | |
| 7,775.6 | 6,697.3 | 6,698.3 | 6,698.3 | 38.0 | 134.3 | 89.75 | -1,661.2 | -1,585.4 | 2,188.1 | 2,015.8 | 172.27 | 12.702 | |
| 7,800.0 | 6,697.2 | 6,698.2 | 6,698.2 | 38.3 | 134.3 | 89.74 | -1,661.2 | -1,585.4 | 2,202.0 | 2,029.4 | 172.64 | 12.755 | |
| 7,874.0 | 6,696.7 | 6,697.7 | 6,697.7 | 39.6 | 134.3 | 89.73 | -1,661.2 | -1,585.4 | 2,245.2 | 2,071.3 | 173.87 | 12.913 | |
| 7,900.0 | 6,696.5 | 6,697.5 | 6,697.5 | 40.0 | 134.3 | 89.72 | -1,661.2 | -1,585.4 | 2,260.7 | 2,086.4 | 174.31 | 12.970 | |
| 7,972.4 | 6,696.1 | 6,697.1 | 6,697.1 | 41.3 | 134.3 | 89.70 | -1,661.2 | -1,585.4 | 2,305.1 | 2,129.5 | 175.60 | 13.127 | |
| 8,000.0 | 6,695.9 | 6,696.9 | 6,696.9 | 41.8 | 134.3 | 89.70 | -1,661.2 | -1,585.4 | 2,322.3 | 2,146.2 | 176.09 | 13.188 | |
| 8,070.8 | 6,695.4 | 6,696.4 | 6,696.4 | 43.1 | 134.3 | 89.68 | -1,661.2 | -1,585.4 | 2,367.5 | 2,190.1 | 177.43 | 13.343 | |
| 8,100.0 | 6,695.2 | 6,696.2 | 6,696.2 | 43.7 | 134.3 | 89.68 | -1,661.2 | -1,585.4 | 2,386.5 | 2,208.5 | 177.98 | 13.408 | |
| 8,169.3 | 6,694.8 | 6,695.8 | 6,695.8 | 45.1 | 134.3 | 89.66 | -1,661.2 | -1,585.4 | 2,432.3 | 2,253.0 | 179.36 | 13.561 | |
| 8,200.0 | 6,694.6 | 6,695.6 | 6,695.6 | 45.7 | 134.3 | 89.66 | -1,661.2 | -1,585.4 | 2,453.0 | 2,273.1 | 179.97 | 13.630 | |
| 8,267.7 | 6,694.1 | 6,695.1 | 6,695.1 | 47.1 | 134.3 | 89.64 | -1,661.2 | -1,585.4 | 2,499.4 | 2,318.0 | 181.37 | 13.781 | |
| 8,300.0 | 6,693.9 | 6,694.9 | 6,694.9 | 47.8 | 134.3 | 89.64 | -1,661.2 | -1,585.4 | 2,521.8 | 2,339.8 | 182.03 | 13.853 | |
| 8,366.1 | 6,693.5 | 6,694.5 | 6,694.5 | 49.2 | 134.3 | 89.62 | -1,661.2 | -1,585.4 | 2,568.4 | 2,384.9 | 183.45 | 14.001 | |
| 8,400.0 | 6,693.3 | 6,694.3 | 6,694.3 | 49.9 | 134.3 | 89.62 | -1,661.2 | -1,585.4 | 2,592.6 | 2,408.4 | 184.17 | 14.077 | |
| 8,464.5 | 6,692.9 | 6,693.9 | 6,693.9 | 51.4 | 134.2 | 89.60 | -1,661.2 | -1,585.4 | 2,639.3 | 2,453.7 | 185.59 | 14.221 | |
| 8,500.0 | 6,692.6 | 6,693.6 | 6,693.6 | 52.1 | 134.2 | 89.60 | -1,661.2 | -1,585.4 | 2,665.3 | 2,478.9 | 186.37 | 14.301 | |
| 8,563.0 | 6,692.2 | 6,693.2 | 6,693.2 | 53.6 | 134.2 | 89.58 | -1,661.2 | -1,585.4 | 2,711.9 | 2,524.1 | 187.79 | 14.441 | |
| 8,600.0 | 6,692.0 | 6,693.0 | 6,693.0 | 54.4 | 134.2 | 89.58 | -1,661.2 | -1,585.4 | 2,739.7 | 2,551.0 | 188.63 | 14.524 | |
| 8,661.4 | 6,691.6 | 6,692.6 | 6,692.6 | 55.8 | 134.2 | 89.56 | -1,661.2 | -1,585.4 | 2,786.2 | 2,596.1 | 190.05 | 14.660 | |
| 8,700.0 | 6,691.3 | 6,692.3 | 6,692.3 | 56.7 | 134.2 | 89.56 | -1,661.2 | -1,585.4 | 2,815.7 | 2,624.7 | 190.93 | 14.747 | |
| 8,759.8 | 6,690.9 | 6,691.9 | 6,691.9 | 58.1 | 134.2 | 89.54 | -1,661.2 | -1,585.4 | 2,861.8 | 2,669.5 | 192.34 | 14.879 | |
| 8,800.0 | 6,690.7 | 6,691.7 | 6,691.7 | 59.1 | 134.2 | 89.53 | -1,661.2 | -1,585.4 | 2,893.1 | 2,699.8 | 193.28 | 14.968 | |
| 8,858.2 | 6,690.3 | 6,691.3 | 6,691.3 | 60.5 | 134.2 | 89.52 | -1,661.2 | -1,585.4 | 2,938.8 | 2,744.2 | 194.67 | 15.096 | |
| 8,900.0 | 6,690.0 | 6,691.0 | 6,691.0 | 61.5 | 134.2 | 89.51 | -1,661.2 | -1,585.4 | 2,971.9 | 2,776.2 | 195.67 | 15.189 | |
| 8,956.7 | 6,689.7 | 6,690.7 | 6,690.7 | 62.9 | 134.2 | 89.50 | -1,661.2 | -1,585.4 | 3,017.1 | 2,820.1 | 197.04 | 15.312 | |
| 9,000.0 | 6,689.4 | 6,690.4 | 6,690.4 | 63.9 | 134.2 | 89.49 | -1,661.2 | -1,585.4 | 3,051.9 | 2,853.9 | 198.09 | 15.407 | |
| 9,055.1 | 6,689.0 | 6,690.0 | 6,690.0 | 65.3 | 134.2 | 89.48 | -1,661.2 | -1,585.4 | 3,096.5 | 2,897.1 | 199.43 | 15.527 | |
| 9,100.0 | 6,688.7 | 6,689.7 | 6,689.7 | 66.4 | 134.2 | 89.47 | -1,661.2 | -1,585.4 | 3,133.1 | 2,932.6 | 200.53 | 15.624 | |
| 9,153.5 | 6,688.4 | 6,689.4 | 6,689.4 | 67.7 | 134.2 | 89.46 | -1,661.2 | -1,585.4 | 3,177.0 | 2,975.2 | 201.86 | 15.739 | |
| 9,200.0 | 6,688.1 | 6,689.1 | 6,689.1 | 68.9 | 134.1 | 89.45 | -1,661.2 | -1,585.4 | 3,215.4 | 3,012.4 | 203.01 | 15.839 | |
| 9,251.9 | 6,687.8 | 6,688.8 | 6,688.8 | 70.2 | 134.1 | 89.44 | -1,661.2 | -1,585.4 | 3,258.5 | 3,054.2 | 204.31 | 15.949 | |
| 9,300.0 | 6,687.4 | 6,688.4 | 6,688.4 | 71.4 | 134.1 | 89.43 | -1,661.2 | -1,585.4 | 3,298.6 | 3,093.1 | 205.51 | 16.051 | |
| 9,350.4 | 6,687.1 | 6,688.1 | 6,688.1 | 72.7 | 134.1 | 89.42 | -1,661.2 | -1,585.4 | 3,340.9 | 3,134.1 | 206.78 | 16.157 | |
| 9,400.0 | 6,686.8 | 6,687.8 | 6,687.8 | 73.9 | 134.1 | 89.41 | -1,661.2 | -1,585.4 | 3,382.7 | 3,174.7 | 208.03 | 16.261 | |
| 9,448.8 | 6,686.5 | 6,687.5 | 6,687.5 | 75.2 | 134.1 | 89.40 | -1,661.2 | -1,585.4 | 3,424.1 | 3,214.8 | 209.27 | 16.362 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,687.1 | 6,687.1 | 76.5 | 134.1 | 89.39 | -1,661.2 | -1,585.4 | 3,467.7 | 3,257.1 | 210.57 | 16.468 | |
| 9,547.2 | 6,685.8 | 6,686.8 | 6,686.8 | 77.7 | 134.1 | 89.38 | -1,661.2 | -1,585.4 | 3,508.1 | 3,296.3 | 211.77 | 16.565 | |
| 9,600.0 | 6,685.5 | 6,686.5 | 6,686.5 | 79.0 | 134.1 | 89.37 | -1,661.2 | -1,585.4 | 3,553.5 | 3,340.3 | 213.12 | 16.673 | |
| 9,645.6 | 6,685.2 | 6,686.2 | 6,686.2 | 80.2 | 134.1 | 89.36 | -1,661.2 | -1,585.4 | 3,592.8 | 3,378.5 | 214.30 | 16.766 | |
| 9,700.0 | 6,684.8 | 6,685.8 | 6,685.8 | 81.6 | 134.1 | 89.35 | -1,661.2 | -1,585.4 | 3,639.9 | 3,424.2 | 215.70 | 16.875 | |
| 9,744.1 | 6,684.6 | 6,685.6 | 6,685.6 | 82.8 | 134.1 | 89.34 | -1,661.2 | -1,585.4 | 3,678.3 | 3,461.4 | 216.84 | 16.963 | |
| 9,800.0 | 6,684.2 | 6,685.2 | 6,685.2 | 84.2 | 134.1 | 89.33 | -1,661.2 | -1,585.4 | 3,727.1 | 3,508.8 | 218.28 | 17.075 | |
| 9,842.5 | 6,683.9 | 6,684.9 | 6,684.9 | 85.3 | 134.1 | 89.32 | -1,661.2 | -1,585.4 | 3,764.3 | 3,544.9 | 219.39 | 17.158 | |
| 9,900.0 | 6,683.5 | 6,684.5 | 6,684.5 | 86.8 | 134.1 | 89.31 | -1,661.2 | -1,585.4 | 3,814.9 | 3,594.0 | 220.88 | 17.271 | |
| 9,940.9 | 6,683.3 | 6,684.3 | 6,684.3 | 87.9 | 134.1 | 89.30 | -1,661.2 | -1,585.4 | 3,851.0 | 3,629.0 | 221.95 | 17.351 | |
| 10,000.0 | 6,682.9 | 6,683.9 | 6,683.9 | 89.5 | 134.0 | 89.29 | -1,661.2 | -1,585.4 | 3,903.3 | 3,679.8 | 223.49 | 17.465 | |
| 10,039.3 | 6,682.6 | 6,683.6 | 6,683.6 | 90.5 | 134.0 | 89.28 | -1,661.2 | -1,585.4 | 3,938.2 | 3,713.7 | 224.53 | 17.540 | |
| 10,100.0 | 6,682.2 | 6,683.2 | 6,683.2 | 92.1 | 134.0 | 89.27 | -1,661.2 | -1,585.4 | 3,992.2 | 3,766.1 | 226.12 | 17.655 | |
| 10,137.8 | 6,682.0 | 6,683.0 | 6,683.0 | 93.1 | 134.0 | 89.26 | -1,661.2 | -1,585.4 | 4,025.9 | 3,798.8 | 227.11 | 17.727 | |
| 10,200.0 | 6,681.6 | 6,682.6 | 6,682.6 | 94.8 | 134.0 | 89.25 | -1,661.2 | -1,585.4 | 4,081.6 | 3,852.9 | 228.75 | 17.843 | |
| 10,236.2 | 6,681.4 | 6,682.4 | 6,682.4 | 95.7 | 134.0 | 89.24 | -1,661.2 | -1,585.4 | 4,114.1 | 3,884.4 | 229.71 | 17.910 | |
| 10,300.0 | 6,680.9 | 6,681.9 | 6,681.9 | 97.4 | 134.0 | 89.23 | -1,661.2 | -1,585.4 | 4,171.5 | 3,940.2 | 231.39 | 18.028 | |
| 10,334.6 | 6,680.7 | 6,681.7 | 6,681.7 | 98.3 | 134.0 | 89.22 | -1,661.2 | -1,585.4 | 4,202.8 | 3,970.5 | 232.31 | 18.091 | |
| 10,400.0 | 6,680.3 | 6,681.3 | 6,681.3 | 100.1 | 134.0 | 89.20 | -1,661.2 | -1,585.4 | 4,261.9 | 4,027.9 | 234.04 | 18.210 | |
| 10,433.0 | 6,680.1 | 6,681.1 | 6,681.1 | 101.0 | 134.0 | 89.20 | -1,661.2 | -1,585.4 | 4,291.9 | 4,057.0 | 234.92 | 18.270 | |
| 10,500.0 | 6,679.7 | 6,680.7 | 6,680.7 | 102.8 | 134.0 | 89.18 | -1,661.2 | -1,585.4 | 4,352.7 | 4,116.0 | 236.70 | 18.389 | |
| 10,531.5 | 6,679.4 | 6,680.4 | 6,680.4 | 103.6 | 134.0 | 89.18 | -1,661.2 | -1,585.4 | 4,381.4 | 4,143.8 | 237.54 | 18.445 | |
| 10,600.0 | 6,679.0 | 6,680.0 | 6,680.0 | 105.4 | 134.0 | 89.16 | -1,661.2 | -1,585.4 | 4,443.9 | 4,204.5 | 239.36 | 18.566 | |
| 10,629.9 | 6,678.8 | 6,679.8 | 6,679.8 | 106.2 | 134.0 | 89.16 | -1,661.2 | -1,585.4 | 4,471.2 | 4,231.1 | 240.16 | 18.618 | |
| 10,700.0 | 6,678.4 | 6,679.4 | 6,679.4 | 108.1 | 134.0 | 89.14 | -1,661.2 | -1,585.4 | 4,535.4 | 4,293.4 | 242.03 | 18.739 | |
| 10,728.3 | 6,678.2 | 6,679.2 | 6,679.2 | 108.9 | 134.0 | 89.14 | -1,661.2 | -1,585.4 | 4,561.4 | 4,318.6 | 242.79 | 18.787 | |
| 10,800.0 | 6,677.7 | 6,678.7 | 6,678.7 | 110.8 | 133.9 | 89.12 | -1,661.2 | -1,585.4 | 4,627.3 | 4,382.6 | 244.71 | 18.909 | |
| 10,826.7 | 6,677.5 | 6,678.5 | 6,678.5 | 111.5 | 133.9 | 89.12 | -1,661.2 | -1,585.4 | 4,652.0 | 4,406.6 | 245.43 | 18.955 | |
| 10,900.0 | 6,677.1 | 6,678.1 | 6,678.1 | 113.5 | 133.9 | 89.10 | -1,661.2 | -1,585.4 | 4,719.6 | 4,472.2 | 247.39 | 19.077 | |
| 10,925.2 | 6,676.9 | 6,677.9 | 6,677.9 | 114.2 | 133.9 | 89.10 | -1,661.2 | -1,585.4 | 4,742.9 | 4,494.8 | 248.07 | 19.119 | |
| 11,000.0 | 6,676.4 | 6,677.4 | 6,677.4 | 116.2 | 133.9 | 89.08 | -1,661.2 | -1,585.4 | 4,812.1 | 4,562.0 | 250.08 | 19.242 | |
| 11,023.6 | 6,676.3 | 6,677.3 | 6,677.3 | 116.8 | 133.9 | 89.08 | -1,661.2 | -1,585.4 | 4,834.0 | 4,583.3 | 250.72 | 19.281 | |
| 11,100.0 | 6,675.8 | 6,676.8 | 6,676.8 | 118.9 | 133.9 | 89.06 | -1,661.2 | -1,585.4 | 4,905.0 | 4,652.2 | 252.78 | 19.404 | |
| 11,122.0 | 6,675.6 | 6,676.6 | 6,676.6 | 119.5 | 133.9 | 89.06 | -1,661.2 | -1,585.4 | 4,925.4 | 4,672.1 | 253.37 | 19.440 | |
| 11,200.0 | 6,675.1 | 6,676.1 | 6,676.1 | 121.6 | 133.9 | 89.04 | -1,661.2 | -1,585.4 | 4,998.1 | 4,742.6 | 255.47 | 19.564 | |
| 11,220.4 | 6,675.0 | 6,676.0 | 6,676.0 | 122.2 | 133.9 | 89.04 | -1,661.2 | -1,585.4 | 5,017.1 | 4,761.1 | 256.03 | 19.596 | |
| 11,300.0 | 6,674.5 | 6,675.5 | 6,675.5 | 124.3 | 133.9 | 89.02 | -1,661.2 | -1,585.4 | 5,091.4 | 4,833.3 | 258.18 | 19.721 | |
| 11,318.9 | 6,674.3 | 6,675.3 | 6,675.3 | 124.9 | 133.9 | 89.02 | -1,661.2 | -1,585.4 | 5,109.1 | 4,850.4 | 258.69 | 19.750 | |
| 11,400.0 | 6,673.8 | 6,674.8 | 6,674.8 | 127.1 | 133.9 | 89.00 | -1,661.2 | -1,585.4 | 5,185.1 | 4,924.2 | 260.88 | 19.875 | |
| 11,417.3 | 6,673.7 | 6,674.7 | 6,674.7 | 127.5 | 133.9 | 89.00 | -1,661.2 | -1,585.4 | 5,201.3 | 4,939.9 | 261.35 | 19.902 | |
| 11,500.0 | 6,673.2 | 6,674.2 | 6,674.2 | 129.8 | 133.8 | 88.98 | -1,661.2 | -1,585.4 | 5,278.9 | 5,015.3 | 263.59 | 20.027 | |
| 11,515.7 | 6,673.1 | 6,674.1 | 6,674.1 | 130.2 | 133.8 | 88.98 | -1,661.2 | -1,585.4 | 5,293.7 | 5,029.7 | 264.02 | 20.051 | |
| 11,600.0 | 6,672.5 | 6,673.5 | 6,673.5 | 132.5 | 133.8 | 88.96 | -1,661.2 | -1,585.4 | 5,373.0 | 5,106.7 | 266.30 | 20.176 | |
| 11,614.1 | 6,672.4 | 6,673.4 | 6,673.4 | 132.9 | 133.8 | 88.95 | -1,661.2 | -1,585.4 | 5,386.3 | 5,119.6 | 266.69 | 20.197 | |
| 11,700.0 | 6,671.9 | 6,672.9 | 6,672.9 | 135.3 | 133.8 | 88.94 | -1,661.2 | -1,585.4 | 5,467.3 | 5,198.3 | 269.02 | 20.323 | |
| 11,712.6 | 6,671.8 | 6,672.8 | 6,672.8 | 135.6 | 133.8 | 88.93 | -1,661.2 | -1,585.4 | 5,479.2 | 5,209.8 | 269.36 | 20.341 | |
| 11,800.0 | 6,671.2 | 6,672.2 | 6,672.2 | 138.0 | 133.8 | 88.92 | -1,661.2 | -1,585.4 | 5,561.8 | 5,290.0 | 271.74 | 20.467 | |
| 11,811.0 | 6,671.1 | 6,672.1 | 6,672.1 | 138.3 | 133.8 | 88.91 | -1,661.2 | -1,585.4 | 5,572.2 | 5,300.1 | 272.04 | 20.483 | |
| 11,900.0 | 6,670.6 | 6,671.6 | 6,671.6 | 140.7 | 133.8 | 88.90 | -1,661.2 | -1,585.4 | 5,656.5 | 5,382.0 | 274.46 | 20.609 | |
| 11,909.4 | 6,670.5 | 6,671.5 | 6,671.5 | 141.0 | 133.8 | 88.89 | -1,661.2 | -1,585.4 | 5,665.4 | 5,390.7 | 274.72 | 20.622 | |
| 11,987.2 | 6,670.0 | 6,671.0 | 6,671.0 | 143.1 | 133.8 | 88.88 | -1,661.2 | -1,585.4 | 5,739.2 | 5,462.3 | 276.84 | 20.731 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -121.44 | -1,779.1 | -2,909.8 | 3,410.6 | | | | |
| 98.4 | 98.4 | 83.7 | 83.7 | 0.1 | 0.1 | -121.44 | -1,779.3 | -2,909.9 | 3,410.8 | 3,410.6 | 0.18 | N/A | |
| 100.0 | 100.0 | 85.1 | 85.1 | 0.1 | 0.1 | -121.44 | -1,779.3 | -2,909.9 | 3,410.8 | 3,410.6 | 0.18 | N/A | |
| 196.8 | 196.8 | 174.9 | 174.9 | 0.3 | 0.2 | -121.45 | -1,779.8 | -2,910.0 | 3,411.2 | 3,410.6 | 0.52 | 6,614.783 | |
| 200.0 | 200.0 | 177.8 | 177.8 | 0.3 | 0.2 | -121.45 | -1,779.8 | -2,910.0 | 3,411.2 | 3,410.7 | 0.53 | 6,476.617 | |
| 295.3 | 295.3 | 265.7 | 265.7 | 0.5 | 0.3 | -121.46 | -1,780.4 | -2,910.3 | 3,411.8 | 3,410.9 | 0.82 | 4,139.399 | |
| 300.0 | 300.0 | 270.1 | 270.0 | 0.5 | 0.3 | -121.46 | -1,780.5 | -2,910.3 | 3,411.8 | 3,411.0 | 0.84 | 4,069.488 | |
| 393.7 | 393.7 | 356.6 | 356.6 | 0.8 | 0.4 | -121.46 | -1,781.1 | -2,910.7 | 3,412.6 | 3,411.5 | 1.11 | 3,084.996 | |
| 400.0 | 400.0 | 362.5 | 362.5 | 0.8 | 0.4 | -121.46 | -1,781.1 | -2,910.8 | 3,412.6 | 3,411.5 | 1.12 | 3,036.939 | |
| 492.1 | 492.1 | 455.9 | 455.9 | 1.0 | 0.4 | -121.46 | -1,781.6 | -2,911.6 | 3,413.5 | 3,412.2 | 1.38 | 2,468.800 | |
| 500.0 | 500.0 | 464.5 | 464.4 | 1.0 | 0.4 | -121.46 | -1,781.6 | -2,911.7 | 3,413.6 | 3,412.2 | 1.40 | 2,429.641 | |
| 590.5 | 590.5 | 552.1 | 552.1 | 1.2 | 0.5 | -121.46 | -1,782.0 | -2,912.3 | 3,414.4 | 3,412.8 | 1.65 | 2,065.983 | |
| 600.0 | 600.0 | 560.7 | 560.6 | 1.2 | 0.5 | -121.46 | -1,782.0 | -2,912.4 | 3,414.5 | 3,412.8 | 1.68 | 2,034.865 | |
| 689.0 | 689.0 | 645.4 | 645.3 | 1.4 | 0.5 | -121.46 | -1,782.5 | -2,913.2 | 3,415.5 | 3,413.6 | 1.92 | 1,781.995 | |
| 700.0 | 700.0 | 656.4 | 656.3 | 1.4 | 0.5 | -121.46 | -1,782.6 | -2,913.3 | 3,415.6 | 3,413.7 | 1.95 | 1,754.954 | |
| 787.4 | 787.4 | 741.2 | 741.1 | 1.6 | 0.6 | -121.46 | -1,783.1 | -2,914.1 | 3,416.6 | 3,414.4 | 2.18 | 1,568.390 | |
| 800.0 | 800.0 | 753.0 | 753.0 | 1.7 | 0.6 | -121.46 | -1,783.1 | -2,914.3 | 3,416.8 | 3,414.6 | 2.21 | 1,544.980 | |
| 885.8 | 885.8 | 836.7 | 836.6 | 1.9 | 0.6 | -121.46 | -1,783.6 | -2,915.3 | 3,417.9 | 3,415.4 | 2.44 | 1,402.408 | |
| 900.0 | 900.0 | 851.1 | 851.1 | 1.9 | 0.6 | -121.46 | -1,783.7 | -2,915.4 | 3,418.1 | 3,415.6 | 2.47 | 1,381.348 | |
| 984.2 | 984.2 | 933.3 | 933.3 | 2.1 | 0.7 | -121.46 | -1,784.2 | -2,916.3 | 3,419.1 | 3,416.4 | 2.69 | 1,269.201 | |
| 1,000.0 | 1,000.0 | 947.8 | 947.7 | 2.1 | 0.7 | -121.46 | -1,784.3 | -2,916.5 | 3,419.4 | 3,416.6 | 2.73 | 1,250.476 | |
| 1,082.7 | 1,082.7 | 1,024.1 | 1,024.1 | 2.3 | 0.7 | -37.02 | -1,784.8 | -2,917.5 | 3,419.6 | 3,416.6 | 3.00 | 1,138.908 | |
| 1,100.0 | 1,100.0 | 1,040.3 | 1,040.3 | 2.3 | 0.7 | -37.03 | -1,784.9 | -2,917.8 | 3,419.5 | 3,416.4 | 3.05 | 1,122.368 | |
| 1,181.1 | 1,181.0 | 1,116.8 | 1,116.7 | 2.5 | 0.7 | -37.09 | -1,785.3 | -2,919.0 | 3,417.6 | 3,414.4 | 3.25 | 1,052.053 | |
| 1,200.0 | 1,199.8 | 1,135.0 | 1,135.0 | 2.5 | 0.8 | -37.11 | -1,785.5 | -2,919.3 | 3,417.0 | 3,413.7 | 3.30 | 1,036.841 | |
| 1,279.5 | 1,279.1 | 1,210.4 | 1,210.3 | 2.7 | 0.8 | -37.21 | -1,786.0 | -2,920.6 | 3,413.1 | 3,409.6 | 3.50 | 975.100 | |
| 1,300.0 | 1,299.5 | 1,227.9 | 1,227.8 | 2.8 | 0.8 | -37.25 | -1,786.1 | -2,920.9 | 3,411.8 | 3,408.3 | 3.55 | 960.565 | |
| 1,377.9 | 1,376.9 | 1,300.0 | 1,299.9 | 3.0 | 0.8 | -37.40 | -1,786.6 | -2,922.3 | 3,406.1 | 3,402.4 | 3.76 | 905.965 | |
| 1,400.0 | 1,398.7 | 1,315.9 | 1,315.8 | 3.0 | 0.8 | -37.44 | -1,786.8 | -2,922.7 | 3,404.3 | 3,400.4 | 3.82 | 891.956 | |
| 1,476.4 | 1,474.2 | 1,393.7 | 1,393.5 | 3.2 | 0.9 | -37.65 | -1,787.4 | -2,924.4 | 3,396.7 | 3,392.7 | 4.03 | 841.963 | |
| 1,500.0 | 1,497.5 | 1,416.2 | 1,416.0 | 3.3 | 0.9 | -37.72 | -1,787.6 | -2,924.9 | 3,394.1 | 3,390.0 | 4.10 | 827.593 | |
| 1,574.8 | 1,571.0 | 1,485.5 | 1,485.3 | 3.5 | 0.9 | -37.96 | -1,788.1 | -2,926.5 | 3,384.7 | 3,380.4 | 4.33 | 782.274 | |
| 1,600.0 | 1,595.6 | 1,509.5 | 1,509.3 | 3.6 | 0.9 | -38.06 | -1,788.2 | -2,927.0 | 3,381.2 | 3,376.8 | 4.40 | 767.903 | |
| 1,673.2 | 1,667.0 | 1,582.4 | 1,582.2 | 3.9 | 0.9 | -38.36 | -1,788.7 | -2,928.8 | 3,370.2 | 3,365.5 | 4.64 | 725.620 | |
| 1,700.0 | 1,693.1 | 1,608.7 | 1,608.5 | 4.0 | 1.0 | -38.48 | -1,788.9 | -2,929.4 | 3,365.8 | 3,361.0 | 4.73 | 711.145 | |
| 1,771.6 | 1,762.4 | 1,677.9 | 1,677.7 | 4.3 | 1.0 | -38.82 | -1,789.3 | -2,931.1 | 3,353.0 | 3,348.1 | 4.99 | 671.759 | |
| 1,800.0 | 1,789.6 | 1,704.9 | 1,704.7 | 4.4 | 1.0 | -38.96 | -1,789.5 | -2,931.7 | 3,347.7 | 3,342.6 | 5.09 | 657.164 | |
| 1,870.1 | 1,856.8 | 1,768.4 | 1,768.2 | 4.7 | 1.0 | -39.34 | -1,789.9 | -2,933.3 | 3,333.5 | 3,328.1 | 5.37 | 620.494 | |
| 1,900.0 | 1,885.3 | 1,795.5 | 1,795.2 | 4.9 | 1.0 | -39.51 | -1,790.1 | -2,934.0 | 3,327.1 | 3,321.6 | 5.49 | 605.854 | |
| 1,968.5 | 1,950.2 | 1,871.9 | 1,871.6 | 5.3 | 1.1 | -39.98 | -1,790.6 | -2,935.8 | 3,311.5 | 3,305.7 | 5.80 | 570.866 | |
| 2,000.0 | 1,979.8 | 1,906.4 | 1,906.1 | 5.5 | 1.1 | -40.21 | -1,790.7 | -2,936.7 | 3,303.8 | 3,297.9 | 5.95 | 555.648 | |
| 2,044.9 | 2,021.9 | 1,950.1 | 1,949.8 | 5.7 | 1.1 | -40.53 | -1,790.8 | -2,937.7 | 3,292.5 | 3,286.3 | 6.17 | 534.025 | |
| 2,066.9 | 2,042.5 | 1,971.4 | 1,971.1 | 5.9 | 1.1 | -40.62 | -1,790.9 | -2,938.1 | 3,286.8 | 3,280.5 | 6.27 | 523.947 | |
| 2,100.0 | 2,073.4 | 2,003.8 | 2,003.5 | 6.1 | 1.1 | -40.75 | -1,790.9 | -2,938.9 | 3,278.2 | 3,271.8 | 6.44 | 509.261 | |
| 2,165.3 | 2,134.4 | 2,073.2 | 2,072.9 | 6.5 | 1.1 | -41.03 | -1,790.9 | -2,940.5 | 3,261.3 | 3,254.5 | 6.77 | 481.632 | |
| 2,200.0 | 2,166.8 | 2,110.7 | 2,110.4 | 6.8 | 1.1 | -41.18 | -1,790.8 | -2,941.3 | 3,252.3 | 3,245.3 | 6.95 | 467.833 | |
| 2,263.8 | 2,226.4 | 2,183.3 | 2,182.9 | 7.2 | 1.2 | -41.47 | -1,790.4 | -2,942.7 | 3,235.6 | 3,228.3 | 7.29 | 443.574 | |
| 2,300.0 | 2,260.2 | 2,220.3 | 2,219.9 | 7.4 | 1.2 | -41.62 | -1,790.2 | -2,943.4 | 3,226.0 | 3,218.6 | 7.49 | 430.792 | |
| 2,362.2 | 2,318.3 | 2,278.9 | 2,278.6 | 7.9 | 1.2 | -41.86 | -1,789.8 | -2,944.4 | 3,209.7 | 3,201.8 | 7.83 | 410.116 | |
| 2,400.0 | 2,353.6 | 2,316.9 | 2,316.5 | 8.1 | 1.2 | -42.02 | -1,789.5 | -2,945.1 | 3,199.7 | 3,191.7 | 8.03 | 398.274 | |
| 2,460.6 | 2,410.3 | 2,383.1 | 2,382.7 | 8.6 | 1.2 | -42.30 | -1,789.0 | -2,946.2 | 3,183.7 | 3,175.4 | 8.38 | 380.137 | |
| 2,500.0 | 2,447.0 | 2,422.0 | 2,421.6 | 8.9 | 1.2 | -42.46 | -1,788.6 | -2,946.8 | 3,173.3 | 3,164.7 | 8.60 | 369.140 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,476.4 | 2,476.0 | 9.3 | 1.3 | -42.69 | -1,788.1 | -2,947.6 | 3,157.7 | 3,148.8 | 8.93 | 353.554 | |
| 2,600.0 | 2,540.5 | 2,514.1 | 2,513.7 | 9.6 | 1.3 | -42.85 | -1,787.7 | -2,948.2 | 3,146.9 | 3,137.8 | 9.16 | 343.368 | |
| 2,657.5 | 2,594.2 | 2,567.1 | 2,566.7 | 10.0 | 1.3 | -43.08 | -1,787.2 | -2,949.0 | 3,131.9 | 3,122.4 | 9.50 | 329.788 | |
| 2,700.0 | 2,633.9 | 2,606.8 | 2,606.3 | 10.3 | 1.3 | -43.25 | -1,786.8 | -2,949.6 | 3,120.8 | 3,111.0 | 9.74 | 320.275 | |
| 2,755.9 | 2,686.1 | 2,662.2 | 2,661.7 | 10.7 | 1.3 | -43.49 | -1,786.2 | -2,950.5 | 3,106.2 | 3,096.1 | 10.08 | 308.293 | |
| 2,800.0 | 2,727.3 | 2,705.8 | 2,705.4 | 11.0 | 1.3 | -43.68 | -1,785.9 | -2,951.1 | 3,094.7 | 3,084.4 | 10.34 | 299.329 | |
| 2,854.3 | 2,778.1 | 2,759.4 | 2,758.9 | 11.4 | 1.3 | -43.92 | -1,785.4 | -2,951.8 | 3,080.5 | 3,069.9 | 10.67 | 288.798 | |
| 2,900.0 | 2,820.7 | 2,804.4 | 2,803.9 | 11.8 | 1.4 | -44.12 | -1,785.0 | -2,952.3 | 3,068.6 | 3,057.7 | 10.94 | 280.389 | |
| 2,952.7 | 2,870.0 | 2,856.4 | 2,855.9 | 12.2 | 1.4 | -44.36 | -1,784.5 | -2,952.9 | 3,054.9 | 3,043.6 | 11.27 | 271.125 | |
| 3,000.0 | 2,914.2 | 2,902.9 | 2,902.4 | 12.5 | 1.4 | -44.58 | -1,784.1 | -2,953.3 | 3,042.6 | 3,031.0 | 11.56 | 263.227 | |
| 3,051.2 | 2,962.0 | 2,952.2 | 2,951.8 | 12.9 | 1.4 | -44.81 | -1,783.7 | -2,953.7 | 3,029.3 | 3,017.4 | 11.88 | 255.074 | |
| 3,100.0 | 3,007.6 | 2,999.3 | 2,998.8 | 13.3 | 1.4 | -45.03 | -1,783.3 | -2,954.1 | 3,016.6 | 3,004.4 | 12.18 | 247.654 | |
| 3,149.6 | 3,053.9 | 3,044.6 | 3,044.2 | 13.6 | 1.4 | -45.25 | -1,782.9 | -2,954.5 | 3,003.8 | 2,991.3 | 12.49 | 240.479 | |
| 3,200.0 | 3,101.0 | 3,090.7 | 3,090.2 | 14.0 | 1.4 | -45.47 | -1,782.5 | -2,954.9 | 2,990.8 | 2,978.0 | 12.81 | 233.516 | |
| 3,248.0 | 3,145.9 | 3,133.7 | 3,133.2 | 14.4 | 1.4 | -45.67 | -1,782.1 | -2,955.4 | 2,978.5 | 2,965.4 | 13.11 | 227.170 | |
| 3,300.0 | 3,194.4 | 3,179.9 | 3,179.4 | 14.8 | 1.5 | -45.90 | -1,781.7 | -2,955.9 | 2,965.3 | 2,951.9 | 13.44 | 220.605 | |
| 3,346.4 | 3,237.8 | 3,223.7 | 3,223.2 | 15.1 | 1.5 | -46.11 | -1,781.2 | -2,956.4 | 2,953.5 | 2,939.8 | 13.74 | 214.948 | |
| 3,400.0 | 3,287.8 | 3,276.8 | 3,276.3 | 15.5 | 1.5 | -46.36 | -1,780.6 | -2,957.2 | 2,940.0 | 2,925.9 | 14.09 | 208.668 | |
| 3,444.9 | 3,329.8 | 3,319.3 | 3,318.8 | 15.9 | 1.5 | -46.57 | -1,779.9 | -2,957.8 | 2,928.7 | 2,914.3 | 14.38 | 203.635 | |
| 3,500.0 | 3,381.3 | 3,369.0 | 3,368.5 | 16.3 | 1.5 | -46.80 | -1,779.1 | -2,958.6 | 2,914.9 | 2,900.1 | 14.74 | 197.735 | |
| 3,543.3 | 3,421.7 | 3,408.5 | 3,408.0 | 16.6 | 1.5 | -47.00 | -1,778.4 | -2,959.3 | 2,904.1 | 2,889.0 | 15.03 | 193.272 | |
| 3,600.0 | 3,474.7 | 3,463.0 | 3,462.4 | 17.0 | 1.5 | -47.26 | -1,777.5 | -2,960.2 | 2,890.0 | 2,874.5 | 15.40 | 187.636 | |
| 3,641.7 | 3,513.7 | 3,502.9 | 3,502.4 | 17.3 | 1.5 | -47.46 | -1,776.9 | -2,960.9 | 2,879.6 | 2,863.9 | 15.68 | 183.640 | |
| 3,700.0 | 3,568.1 | 3,556.8 | 3,556.3 | 17.8 | 1.6 | -47.73 | -1,776.0 | -2,961.8 | 2,865.2 | 2,849.1 | 16.07 | 178.296 | |
| 3,740.1 | 3,605.6 | 3,594.0 | 3,593.4 | 18.1 | 1.6 | -47.91 | -1,775.5 | -2,962.4 | 2,855.3 | 2,839.0 | 16.34 | 174.723 | |
| 3,800.0 | 3,661.5 | 3,648.6 | 3,648.0 | 18.5 | 1.6 | -48.19 | -1,774.8 | -2,963.2 | 2,840.7 | 2,823.9 | 16.75 | 169.614 | |
| 3,838.6 | 3,697.6 | 3,683.8 | 3,683.2 | 18.8 | 1.6 | -48.37 | -1,774.4 | -2,963.7 | 2,831.3 | 2,814.3 | 17.01 | 166.444 | |
| 3,900.0 | 3,754.9 | 3,742.0 | 3,741.4 | 19.3 | 1.6 | -48.68 | -1,773.7 | -2,964.5 | 2,816.5 | 2,799.0 | 17.43 | 161.552 | |
| 3,937.0 | 3,789.5 | 3,777.6 | 3,777.0 | 19.6 | 1.6 | -48.87 | -1,773.3 | -2,965.0 | 2,807.5 | 2,789.8 | 17.69 | 158.699 | |
| 4,000.0 | 3,848.4 | 3,839.4 | 3,838.8 | 20.1 | 1.6 | -49.20 | -1,772.6 | -2,965.8 | 2,792.4 | 2,774.2 | 18.13 | 153.997 | |
| 4,035.4 | 3,881.5 | 3,874.5 | 3,873.9 | 20.3 | 1.7 | -49.38 | -1,772.2 | -2,966.2 | 2,783.9 | 2,765.5 | 18.38 | 151.437 | |
| 4,100.0 | 3,941.8 | 3,934.1 | 3,933.4 | 20.8 | 1.7 | -49.71 | -1,771.5 | -2,966.9 | 2,768.4 | 2,749.5 | 18.84 | 146.965 | |
| 4,133.8 | 3,973.4 | 3,963.8 | 3,963.1 | 21.1 | 1.7 | -49.87 | -1,771.2 | -2,967.3 | 2,760.3 | 2,741.3 | 19.07 | 144.712 | |
| 4,200.0 | 4,035.2 | 4,023.5 | 4,022.8 | 21.6 | 1.7 | -50.20 | -1,770.6 | -2,968.0 | 2,744.7 | 2,725.2 | 19.54 | 140.443 | |
| 4,232.3 | 4,065.4 | 4,053.9 | 4,053.2 | 21.8 | 1.7 | -50.37 | -1,770.3 | -2,968.4 | 2,737.2 | 2,717.4 | 19.78 | 138.416 | |
| 4,300.0 | 4,128.6 | 4,114.9 | 4,114.3 | 22.3 | 1.7 | -50.71 | -1,769.7 | -2,969.2 | 2,721.4 | 2,701.1 | 20.26 | 134.322 | |
| 4,330.7 | 4,157.3 | 4,139.3 | 4,138.7 | 22.6 | 1.7 | -50.85 | -1,769.5 | -2,969.5 | 2,714.3 | 2,693.8 | 20.48 | 132.550 | |
| 4,400.0 | 4,222.0 | 4,200.0 | 4,199.3 | 23.1 | 1.8 | -51.19 | -1,768.9 | -2,970.7 | 2,698.6 | 2,677.6 | 20.98 | 128.651 | |
| 4,429.1 | 4,249.3 | 4,217.0 | 4,216.3 | 23.3 | 1.8 | -51.28 | -1,768.7 | -2,971.1 | 2,692.1 | 2,670.9 | 21.18 | 127.125 | |
| 4,500.0 | 4,315.5 | 4,271.1 | 4,270.4 | 23.9 | 1.8 | -51.58 | -1,768.1 | -2,972.7 | 2,676.6 | 2,654.9 | 21.68 | 123.456 | |
| 4,527.5 | 4,341.2 | 4,300.0 | 4,299.3 | 24.1 | 1.8 | -51.74 | -1,767.7 | -2,973.7 | 2,670.7 | 2,648.8 | 21.89 | 122.029 | |
| 4,600.0 | 4,408.9 | 4,347.0 | 4,346.3 | 24.6 | 1.8 | -51.99 | -1,767.1 | -2,975.6 | 2,655.5 | 2,633.1 | 22.39 | 118.578 | |
| 4,626.0 | 4,433.2 | 4,366.7 | 4,365.9 | 24.8 | 1.8 | -52.10 | -1,766.9 | -2,976.4 | 2,650.1 | 2,627.6 | 22.58 | 117.365 | |
| 4,700.0 | 4,502.3 | 4,420.7 | 4,419.8 | 25.4 | 1.8 | -52.39 | -1,766.2 | -2,979.1 | 2,635.3 | 2,612.2 | 23.11 | 114.034 | |
| 4,724.4 | 4,525.1 | 4,437.5 | 4,436.6 | 25.6 | 1.8 | -52.48 | -1,766.1 | -2,980.0 | 2,630.5 | 2,607.2 | 23.28 | 112.977 | |
| 4,800.0 | 4,595.7 | 4,500.0 | 4,499.0 | 26.2 | 1.9 | -52.81 | -1,765.6 | -2,983.7 | 2,616.2 | 2,592.3 | 23.84 | 109.759 | |
| 4,822.8 | 4,617.1 | 4,500.0 | 4,499.0 | 26.3 | 1.9 | -52.81 | -1,765.6 | -2,983.7 | 2,612.0 | 2,588.0 | 23.98 | 108.920 | |
| 4,900.0 | 4,689.2 | 4,564.6 | 4,563.4 | 26.9 | 1.9 | -53.15 | -1,765.3 | -2,988.0 | 2,598.1 | 2,573.6 | 24.55 | 105.832 | |
| 4,921.2 | 4,709.0 | 4,580.8 | 4,579.6 | 27.1 | 1.9 | -53.23 | -1,765.3 | -2,989.2 | 2,594.4 | 2,569.7 | 24.70 | 105.017 | |
| 5,000.0 | 4,782.6 | 4,661.3 | 4,659.9 | 27.7 | 1.9 | -53.65 | -1,765.1 | -2,995.0 | 2,580.8 | 2,555.5 | 25.31 | 101.967 | |
| 5,019.7 | 4,801.0 | 4,683.8 | 4,682.3 | 27.8 | 1.9 | -53.77 | -1,764.9 | -2,996.7 | 2,577.4 | 2,551.9 | 25.47 | 101.211 | |
| 5,100.0 | 4,876.0 | 4,788.4 | 4,786.8 | 28.4 | 2.0 | -54.34 | -1,764.3 | -3,003.4 | 2,563.0 | 2,536.9 | 26.13 | 98.102 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,809.9 | 4,808.1 | 28.6 | 2.0 | -54.46 | -1,764.1 | -3,004.5 | 2,559.6 | 2,533.4 | 26.27 | 97.424 | |
| 5,159.9 | 4,932.0 | 4,853.6 | 4,851.9 | 28.9 | 2.0 | -54.71 | -1,764.0 | -3,006.7 | 2,551.9 | 2,525.3 | 26.61 | 95.910 | |
| 5,200.0 | 4,969.5 | 4,895.6 | 4,893.8 | 29.2 | 2.0 | -54.83 | -1,763.8 | -3,008.6 | 2,544.6 | 2,517.8 | 26.87 | 94.717 | |
| 5,216.5 | 4,985.1 | 4,913.1 | 4,911.3 | 29.3 | 2.0 | -54.89 | -1,763.8 | -3,009.3 | 2,541.7 | 2,514.8 | 26.96 | 94.287 | |
| 5,300.0 | 5,064.0 | 5,002.9 | 5,001.0 | 29.7 | 2.0 | -55.14 | -1,763.6 | -3,012.9 | 2,527.7 | 2,500.3 | 27.42 | 92.187 | |
| 5,314.9 | 5,078.2 | 5,020.1 | 5,018.2 | 29.8 | 2.0 | -55.19 | -1,763.6 | -3,013.5 | 2,525.4 | 2,497.9 | 27.50 | 91.841 | |
| 5,400.0 | 5,159.6 | 5,117.6 | 5,115.6 | 30.2 | 2.1 | -55.46 | -1,763.6 | -3,016.3 | 2,512.4 | 2,484.5 | 27.94 | 89.935 | |
| 5,413.4 | 5,172.4 | 5,132.5 | 5,130.5 | 30.3 | 2.1 | -55.50 | -1,763.6 | -3,016.6 | 2,510.5 | 2,482.5 | 28.00 | 89.665 | |
| 5,500.0 | 5,256.1 | 5,228.2 | 5,226.3 | 30.7 | 2.1 | -55.75 | -1,763.8 | -3,018.3 | 2,498.7 | 2,470.3 | 28.40 | 87.981 | |
| 5,511.8 | 5,267.6 | 5,241.0 | 5,239.1 | 30.7 | 2.1 | -55.78 | -1,763.8 | -3,018.4 | 2,497.1 | 2,468.7 | 28.45 | 87.777 | |
| 5,600.0 | 5,353.5 | 5,331.6 | 5,329.6 | 31.1 | 2.1 | -55.99 | -1,764.2 | -3,019.0 | 2,486.5 | 2,457.7 | 28.81 | 86.316 | |
| 5,610.2 | 5,363.5 | 5,341.1 | 5,339.2 | 31.1 | 2.1 | -56.01 | -1,764.3 | -3,019.1 | 2,485.4 | 2,456.6 | 28.84 | 86.170 | |
| 5,700.0 | 5,451.6 | 5,423.2 | 5,421.2 | 31.4 | 2.2 | -56.17 | -1,764.9 | -3,019.4 | 2,476.5 | 2,447.4 | 29.15 | 84.945 | |
| 5,708.6 | 5,460.2 | 5,430.7 | 5,428.7 | 31.4 | 2.2 | -56.18 | -1,765.0 | -3,019.4 | 2,475.8 | 2,446.6 | 29.18 | 84.845 | |
| 5,800.0 | 5,550.4 | 5,511.2 | 5,509.3 | 31.7 | 2.2 | -56.33 | -1,766.2 | -3,019.6 | 2,468.9 | 2,439.5 | 29.45 | 83.831 | |
| 5,807.1 | 5,557.4 | 5,518.2 | 5,516.2 | 31.7 | 2.2 | -56.34 | -1,766.3 | -3,019.6 | 2,468.5 | 2,439.0 | 29.47 | 83.763 | |
| 5,900.0 | 5,649.6 | 5,611.2 | 5,609.2 | 31.9 | 2.2 | -56.50 | -1,768.1 | -3,019.6 | 2,463.5 | 2,433.8 | 29.71 | 82.910 | |
| 5,905.5 | 5,655.1 | 5,617.5 | 5,615.5 | 31.9 | 2.2 | -56.51 | -1,768.2 | -3,019.6 | 2,463.3 | 2,433.6 | 29.73 | 82.866 | |
| 6,000.0 | 5,749.2 | 5,725.2 | 5,723.2 | 32.1 | 2.2 | -56.66 | -1,769.8 | -3,019.6 | 2,459.8 | 2,429.8 | 29.94 | 82.161 | |
| 6,003.9 | 5,753.1 | 5,729.5 | 5,727.5 | 32.1 | 2.2 | -56.67 | -1,769.9 | -3,019.5 | 2,459.6 | 2,429.7 | 29.95 | 82.138 | |
| 6,100.0 | 5,849.1 | 5,831.2 | 5,829.2 | 32.3 | 2.2 | -56.76 | -1,771.0 | -3,019.2 | 2,457.5 | 2,427.4 | 30.10 | 81.645 | |
| 6,102.3 | 5,851.4 | 5,833.5 | 5,831.4 | 32.3 | 2.2 | -56.76 | -1,771.0 | -3,019.2 | 2,457.4 | 2,427.3 | 30.10 | 81.636 | |
| 6,169.3 | 5,918.4 | 5,898.8 | 5,896.8 | 32.3 | 2.2 | -56.80 | -1,771.8 | -3,018.9 | 2,457.0 | 2,426.8 | 30.18 | 81.409 | CC, ES |
| 6,200.8 | 5,949.8 | 5,935.4 | 5,933.3 | 32.4 | 2.2 | -56.82 | -1,772.2 | -3,018.8 | 2,457.0 | 2,426.8 | 30.22 | 81.316 | |
| 6,204.9 | 5,953.9 | 5,940.1 | 5,938.1 | 32.4 | 2.2 | -141.26 | -1,772.2 | -3,018.7 | 2,457.1 | 2,432.7 | 24.38 | 100.787 | |
| 6,234.9 | 5,983.9 | 5,975.3 | 5,973.2 | 32.4 | 2.2 | -141.27 | -1,772.5 | -3,018.6 | 2,457.2 | 2,432.8 | 24.41 | 100.670 | |
| 6,250.0 | 5,999.0 | 5,993.0 | 5,991.0 | 32.4 | 2.2 | 128.73 | -1,772.6 | -3,018.5 | 2,457.3 | 2,427.0 | 30.26 | 81.207 | |
| 6,299.2 | 6,048.2 | 6,042.8 | 6,040.8 | 32.4 | 2.2 | 128.66 | -1,772.8 | -3,018.3 | 2,459.0 | 2,428.8 | 30.26 | 81.255 | |
| 6,300.0 | 6,048.9 | 6,043.6 | 6,041.6 | 32.4 | 2.2 | 128.66 | -1,772.8 | -3,018.3 | 2,459.1 | 2,428.8 | 30.26 | 81.255 | |
| 6,350.0 | 6,098.5 | 6,092.9 | 6,090.9 | 32.4 | 2.2 | 128.51 | -1,773.1 | -3,018.1 | 2,463.1 | 2,432.8 | 30.27 | 81.379 | |
| 6,397.6 | 6,145.3 | 6,140.4 | 6,138.4 | 32.3 | 2.2 | 128.31 | -1,773.3 | -3,017.8 | 2,468.9 | 2,438.6 | 30.27 | 81.562 | |
| 6,400.0 | 6,147.6 | 6,142.8 | 6,140.8 | 32.3 | 2.2 | 128.29 | -1,773.3 | -3,017.8 | 2,469.2 | 2,439.0 | 30.27 | 81.571 | |
| 6,450.0 | 6,195.8 | 6,192.1 | 6,190.1 | 32.2 | 2.2 | 128.00 | -1,773.6 | -3,017.6 | 2,477.5 | 2,447.3 | 30.28 | 81.818 | |
| 6,496.0 | 6,239.3 | 6,237.0 | 6,234.9 | 32.1 | 2.2 | 127.64 | -1,773.8 | -3,017.3 | 2,487.1 | 2,456.8 | 30.29 | 82.098 | |
| 6,500.0 | 6,243.0 | 6,240.8 | 6,238.7 | 32.1 | 2.2 | 127.61 | -1,773.8 | -3,017.3 | 2,488.0 | 2,457.7 | 30.30 | 82.122 | |
| 6,550.0 | 6,289.0 | 6,288.2 | 6,286.1 | 32.0 | 2.2 | 127.13 | -1,773.9 | -3,017.2 | 2,500.6 | 2,470.2 | 30.32 | 82.465 | |
| 6,594.5 | 6,328.6 | 6,327.8 | 6,325.8 | 31.8 | 2.2 | 126.61 | -1,773.9 | -3,017.1 | 2,513.5 | 2,483.2 | 30.36 | 82.788 | |
| 6,600.0 | 6,333.4 | 6,332.6 | 6,330.5 | 31.8 | 2.2 | 126.54 | -1,773.9 | -3,017.1 | 2,515.3 | 2,484.9 | 30.37 | 82.827 | |
| 6,650.0 | 6,376.2 | 6,374.8 | 6,372.8 | 31.7 | 2.2 | 125.81 | -1,773.9 | -3,017.0 | 2,532.1 | 2,501.6 | 30.43 | 83.196 | |
| 6,692.9 | 6,411.3 | 6,409.8 | 6,407.8 | 31.6 | 2.2 | 125.07 | -1,774.0 | -3,016.9 | 2,548.1 | 2,517.6 | 30.51 | 83.505 | |
| 6,700.0 | 6,417.0 | 6,415.6 | 6,413.5 | 31.5 | 2.2 | 124.94 | -1,774.0 | -3,016.9 | 2,550.9 | 2,520.4 | 30.53 | 83.556 | |
| 6,750.0 | 6,455.7 | 6,455.0 | 6,453.0 | 31.4 | 2.2 | 123.92 | -1,774.1 | -3,016.8 | 2,571.9 | 2,541.2 | 30.66 | 83.889 | |
| 6,791.3 | 6,486.0 | 6,485.9 | 6,483.8 | 31.3 | 2.2 | 122.95 | -1,774.1 | -3,016.7 | 2,590.6 | 2,559.8 | 30.79 | 84.128 | |
| 6,800.0 | 6,492.2 | 6,492.1 | 6,490.1 | 31.3 | 2.2 | 122.73 | -1,774.1 | -3,016.7 | 2,594.7 | 2,563.9 | 30.82 | 84.178 | |
| 6,850.0 | 6,526.1 | 6,526.1 | 6,524.1 | 31.2 | 2.2 | 121.32 | -1,774.2 | -3,016.5 | 2,619.6 | 2,588.5 | 31.04 | 84.402 | |
| 6,889.7 | 6,551.2 | 6,551.1 | 6,549.0 | 31.2 | 2.2 | 120.04 | -1,774.2 | -3,016.4 | 2,640.6 | 2,609.4 | 31.24 | 84.526 | |
| 6,900.0 | 6,557.4 | 6,557.2 | 6,555.2 | 31.2 | 2.2 | 119.68 | -1,774.2 | -3,016.4 | 2,646.2 | 2,614.9 | 31.29 | 84.559 | |
| 6,950.0 | 6,586.0 | 6,585.6 | 6,583.5 | 31.1 | 2.2 | 117.79 | -1,774.3 | -3,016.3 | 2,674.6 | 2,643.0 | 31.60 | 84.649 | |
| 6,988.2 | 6,605.8 | 6,605.5 | 6,603.4 | 31.2 | 2.2 | 116.16 | -1,774.4 | -3,016.2 | 2,697.4 | 2,665.6 | 31.86 | 84.671 | |
| 7,000.0 | 6,611.5 | 6,611.4 | 6,609.4 | 31.2 | 2.1 | 115.63 | -1,774.4 | -3,016.2 | 2,704.7 | 2,672.8 | 31.94 | 84.686 | |
| 7,050.0 | 6,634.1 | 6,634.7 | 6,632.7 | 31.2 | 2.1 | 113.17 | -1,774.4 | -3,016.1 | 2,736.3 | 2,704.0 | 32.31 | 84.691 | |
| 7,086.6 | 6,648.6 | 6,649.8 | 6,647.7 | 31.3 | 2.1 | 111.16 | -1,774.4 | -3,016.1 | 2,760.4 | 2,727.8 | 32.60 | 84.677 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,654.8 | 6,652.8 | 31.4 | 2.1 | 110.37 | -1,774.5 | -3,016.0 | 2,769.3 | 2,736.6 | 32.70 | 84.692 | |
| 7,150.0 | 6,669.5 | 6,671.5 | 6,669.5 | 31.6 | 2.1 | 107.23 | -1,774.5 | -3,016.0 | 2,803.6 | 2,770.5 | 33.09 | 84.729 | |
| 7,185.0 | 6,678.8 | 6,681.2 | 6,679.2 | 31.7 | 2.1 | 104.81 | -1,774.5 | -3,015.9 | 2,828.3 | 2,795.0 | 33.36 | 84.784 | |
| 7,200.0 | 6,682.3 | 6,684.8 | 6,682.8 | 31.8 | 2.1 | 103.72 | -1,774.5 | -3,015.9 | 2,839.0 | 2,805.6 | 33.46 | 84.840 | |
| 7,250.0 | 6,691.6 | 6,694.7 | 6,692.6 | 32.1 | 2.1 | 99.84 | -1,774.5 | -3,015.9 | 2,875.4 | 2,841.6 | 33.81 | 85.043 | |
| 7,283.4 | 6,696.0 | 6,699.2 | 6,697.2 | 32.3 | 2.1 | 97.05 | -1,774.5 | -3,015.9 | 2,900.2 | 2,866.1 | 34.04 | 85.209 | |
| 7,300.0 | 6,697.5 | 6,700.0 | 6,698.0 | 32.4 | 2.1 | 95.60 | -1,774.5 | -3,015.9 | 2,912.6 | 2,878.4 | 34.14 | 85.315 | |
| 7,350.0 | 6,699.9 | 6,700.0 | 6,698.0 | 32.8 | 2.1 | 91.00 | -1,774.5 | -3,015.9 | 2,950.3 | 2,915.8 | 34.48 | 85.575 | |
| 7,364.4 | 6,700.0 | 6,700.0 | 6,698.0 | 32.9 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 2,961.2 | 2,926.7 | 34.58 | 85.632 | |
| 7,381.9 | 6,699.9 | 6,700.0 | 6,698.0 | 33.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 2,974.6 | 2,939.9 | 34.73 | 85.642 | |
| 7,400.0 | 6,699.8 | 6,700.0 | 6,698.0 | 33.2 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 2,988.5 | 2,953.6 | 34.89 | 85.653 | |
| 7,480.3 | 6,699.2 | 6,700.0 | 6,698.0 | 34.0 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,050.5 | 3,014.8 | 35.70 | 85.442 | |
| 7,500.0 | 6,699.1 | 6,700.0 | 6,698.0 | 34.2 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,065.8 | 3,029.9 | 35.90 | 85.396 | |
| 7,578.7 | 6,698.6 | 6,700.0 | 6,698.0 | 35.2 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,127.6 | 3,090.7 | 36.85 | 84.873 | |
| 7,600.0 | 6,698.5 | 6,700.0 | 6,698.0 | 35.4 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,144.4 | 3,107.3 | 37.11 | 84.740 | |
| 7,677.1 | 6,698.0 | 6,700.0 | 6,698.0 | 36.5 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,205.9 | 3,167.7 | 38.17 | 83.985 | |
| 7,700.0 | 6,697.8 | 6,700.0 | 6,698.0 | 36.8 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,224.2 | 3,185.7 | 38.49 | 83.772 | |
| 7,775.6 | 6,697.3 | 6,700.0 | 6,698.0 | 38.0 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,285.3 | 3,245.6 | 39.65 | 82.856 | |
| 7,800.0 | 6,697.2 | 6,700.0 | 6,698.0 | 38.3 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,305.1 | 3,265.1 | 40.03 | 82.575 | |
| 7,874.0 | 6,696.7 | 6,700.0 | 6,698.0 | 39.6 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,365.6 | 3,324.4 | 41.27 | 81.559 | |
| 7,900.0 | 6,696.5 | 6,700.0 | 6,698.0 | 40.0 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,387.0 | 3,345.3 | 41.70 | 81.219 | |
| 7,972.4 | 6,696.1 | 6,700.0 | 6,698.0 | 41.3 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,447.0 | 3,404.0 | 43.00 | 80.153 | |
| 8,000.0 | 6,695.9 | 6,700.0 | 6,698.0 | 41.8 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,469.9 | 3,426.4 | 43.50 | 79.766 | |
| 8,070.8 | 6,695.4 | 6,700.0 | 6,698.0 | 43.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,529.2 | 3,484.3 | 44.85 | 78.687 | |
| 8,100.0 | 6,695.2 | 6,700.0 | 6,698.0 | 43.7 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,553.7 | 3,508.2 | 45.41 | 78.264 | |
| 8,169.3 | 6,694.8 | 6,700.0 | 6,698.0 | 45.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,612.2 | 3,565.4 | 46.79 | 77.198 | |
| 8,200.0 | 6,694.6 | 6,700.0 | 6,698.0 | 45.7 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,638.2 | 3,590.8 | 47.41 | 76.748 | |
| 8,267.7 | 6,694.1 | 6,700.0 | 6,698.0 | 47.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,695.9 | 3,647.1 | 48.81 | 75.715 | |
| 8,300.0 | 6,693.9 | 6,700.0 | 6,698.0 | 47.8 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,723.6 | 3,674.1 | 49.49 | 75.245 | |
| 8,366.1 | 6,693.5 | 6,700.0 | 6,698.0 | 49.2 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,780.4 | 3,729.5 | 50.91 | 74.258 | |
| 8,400.0 | 6,693.3 | 6,700.0 | 6,698.0 | 49.9 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,809.6 | 3,758.0 | 51.64 | 73.776 | |
| 8,464.5 | 6,692.9 | 6,700.0 | 6,698.0 | 51.4 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,865.5 | 3,812.4 | 53.07 | 72.841 | |
| 8,500.0 | 6,692.6 | 6,700.0 | 6,698.0 | 52.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,896.3 | 3,842.5 | 53.85 | 72.352 | |
| 8,563.0 | 6,692.2 | 6,700.0 | 6,698.0 | 53.6 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,951.3 | 3,896.0 | 55.28 | 71.474 | |
| 8,600.0 | 6,692.0 | 6,700.0 | 6,698.0 | 54.4 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 3,983.7 | 3,927.5 | 56.12 | 70.982 | |
| 8,661.4 | 6,691.6 | 6,700.0 | 6,698.0 | 55.8 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,037.6 | 3,980.0 | 57.55 | 70.163 | |
| 8,700.0 | 6,691.3 | 6,700.0 | 6,698.0 | 56.7 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,071.6 | 4,013.1 | 58.44 | 69.670 | |
| 8,759.8 | 6,690.9 | 6,700.0 | 6,698.0 | 58.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,124.4 | 4,064.6 | 59.85 | 68.909 | |
| 8,800.0 | 6,690.7 | 6,700.0 | 6,698.0 | 59.1 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,160.1 | 4,099.2 | 60.80 | 68.420 | |
| 8,858.2 | 6,690.3 | 6,700.0 | 6,698.0 | 60.5 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,211.8 | 4,149.6 | 62.20 | 67.715 | |
| 8,900.0 | 6,690.0 | 6,700.0 | 6,698.0 | 61.5 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,249.0 | 4,185.8 | 63.20 | 67.231 | |
| 8,956.7 | 6,689.7 | 6,699.9 | 6,697.8 | 62.9 | 2.1 | 89.65 | -1,774.5 | -3,015.9 | 4,299.7 | 4,235.1 | 64.58 | 66.580 | |
| 9,000.0 | 6,689.4 | 6,699.8 | 6,697.7 | 63.9 | 2.1 | 89.64 | -1,774.5 | -3,015.9 | 4,338.5 | 4,272.9 | 65.63 | 66.102 | |
| 9,055.1 | 6,689.0 | 6,699.6 | 6,697.6 | 65.3 | 2.1 | 89.64 | -1,774.5 | -3,015.9 | 4,388.0 | 4,321.0 | 66.99 | 65.502 | |
| 9,100.0 | 6,688.7 | 6,699.5 | 6,697.5 | 66.4 | 2.1 | 89.64 | -1,774.5 | -3,015.9 | 4,428.4 | 4,360.3 | 68.09 | 65.033 | |
| 9,153.5 | 6,688.4 | 6,699.4 | 6,697.4 | 67.7 | 2.1 | 89.63 | -1,774.5 | -3,015.9 | 4,476.7 | 4,407.3 | 69.43 | 64.481 | |
| 9,200.0 | 6,688.1 | 6,699.3 | 6,697.2 | 68.9 | 2.1 | 89.63 | -1,774.5 | -3,015.9 | 4,518.7 | 4,448.1 | 70.58 | 64.019 | |
| 9,251.9 | 6,687.8 | 6,699.2 | 6,697.1 | 70.2 | 2.1 | 89.63 | -1,774.5 | -3,015.9 | 4,565.8 | 4,493.9 | 71.89 | 63.512 | |
| 9,300.0 | 6,687.4 | 6,699.0 | 6,697.0 | 71.4 | 2.1 | 89.62 | -1,774.5 | -3,015.9 | 4,609.5 | 4,536.4 | 73.10 | 63.060 | |
| 9,350.4 | 6,687.1 | 6,698.9 | 6,696.9 | 72.7 | 2.1 | 89.62 | -1,774.5 | -3,015.9 | 4,655.3 | 4,580.9 | 74.37 | 62.594 | |
| 9,400.0 | 6,686.8 | 6,698.8 | 6,696.8 | 73.9 | 2.1 | 89.62 | -1,774.5 | -3,015.9 | 4,700.6 | 4,624.9 | 75.63 | 62.152 | |
| 9,448.8 | 6,686.5 | 6,698.7 | 6,696.6 | 75.2 | 2.1 | 89.61 | -1,774.5 | -3,015.9 | 4,745.2 | 4,668.3 | 76.88 | 61.725 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #33-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,698.5 | 6,696.5 | 76.5 | 2.1 | 89.61 | -1,774.5 | -3,015.9 | 4,792.0 | 4,713.9 | 78.18 | 61.292 | |
| 9,547.2 | 6,685.8 | 6,698.4 | 6,696.4 | 77.7 | 2.1 | 89.60 | -1,774.5 | -3,015.9 | 4,835.3 | 4,755.9 | 79.40 | 60.900 | |
| 9,600.0 | 6,685.5 | 6,698.3 | 6,696.3 | 79.0 | 2.1 | 89.60 | -1,774.5 | -3,015.9 | 4,883.8 | 4,803.1 | 80.75 | 60.478 | |
| 9,645.6 | 6,685.2 | 6,698.2 | 6,696.1 | 80.2 | 2.1 | 89.60 | -1,774.5 | -3,015.9 | 4,925.8 | 4,843.9 | 81.94 | 60.119 | |
| 9,700.0 | 6,684.8 | 6,698.1 | 6,696.0 | 81.6 | 2.1 | 89.59 | -1,774.5 | -3,015.9 | 4,975.9 | 4,892.6 | 83.34 | 59.706 | |
| 9,744.1 | 6,684.6 | 6,697.9 | 6,695.9 | 82.8 | 2.1 | 89.59 | -1,774.5 | -3,015.9 | 5,016.6 | 4,932.2 | 84.49 | 59.377 | |
| 9,800.0 | 6,684.2 | 6,697.8 | 6,695.8 | 84.2 | 2.1 | 89.59 | -1,774.5 | -3,015.9 | 5,068.4 | 4,982.4 | 85.94 | 58.974 | |
| 9,842.5 | 6,683.9 | 6,697.7 | 6,695.7 | 85.3 | 2.1 | 89.58 | -1,774.5 | -3,015.9 | 5,107.7 | 5,020.7 | 87.05 | 58.674 | |
| 9,900.0 | 6,683.5 | 6,697.6 | 6,695.5 | 86.8 | 2.1 | 89.58 | -1,774.5 | -3,015.9 | 5,161.1 | 5,072.5 | 88.56 | 58.280 | |
| 9,940.9 | 6,683.3 | 6,697.5 | 6,695.4 | 87.9 | 2.1 | 89.58 | -1,774.5 | -3,015.9 | 5,199.1 | 5,109.4 | 89.63 | 58.006 | |
| 10,000.0 | 6,682.9 | 6,697.3 | 6,695.3 | 89.5 | 2.1 | 89.57 | -1,774.5 | -3,015.9 | 5,254.0 | 5,162.8 | 91.18 | 57.621 | |
| 10,039.3 | 6,682.6 | 6,697.2 | 6,695.2 | 90.5 | 2.1 | 89.57 | -1,774.5 | -3,015.9 | 5,290.7 | 5,198.5 | 92.22 | 57.371 | |
| 10,100.0 | 6,682.2 | 6,697.1 | 6,695.0 | 92.1 | 2.1 | 89.56 | -1,774.5 | -3,015.9 | 5,347.2 | 5,253.4 | 93.82 | 56.996 | |
| 10,137.8 | 6,682.0 | 6,697.0 | 6,694.9 | 93.1 | 2.1 | 89.56 | -1,774.5 | -3,015.9 | 5,382.5 | 5,287.7 | 94.82 | 56.767 | |
| 10,200.0 | 6,681.6 | 6,696.8 | 6,694.8 | 94.8 | 2.1 | 89.56 | -1,774.5 | -3,015.9 | 5,440.7 | 5,344.2 | 96.46 | 56.401 | |
| 10,236.2 | 6,681.4 | 6,696.7 | 6,694.7 | 95.7 | 2.1 | 89.55 | -1,774.5 | -3,015.9 | 5,474.6 | 5,377.2 | 97.43 | 56.192 | |
| 10,300.0 | 6,680.9 | 6,696.6 | 6,694.5 | 97.4 | 2.1 | 89.55 | -1,774.5 | -3,015.9 | 5,534.4 | 5,435.3 | 99.12 | 55.835 | |
| 10,334.6 | 6,680.7 | 6,696.5 | 6,694.4 | 98.3 | 2.1 | 89.55 | -1,774.5 | -3,015.9 | 5,566.9 | 5,466.8 | 100.04 | 55.645 | |
| 10,400.0 | 6,680.3 | 6,696.3 | 6,694.3 | 100.1 | 2.1 | 89.54 | -1,774.5 | -3,015.9 | 5,628.3 | 5,526.5 | 101.78 | 55.296 | |
| 10,433.0 | 6,680.1 | 6,696.2 | 6,694.2 | 101.0 | 2.1 | 89.54 | -1,774.5 | -3,015.9 | 5,659.4 | 5,556.7 | 102.67 | 55.123 | |
| 10,500.0 | 6,679.7 | 6,696.1 | 6,694.0 | 102.8 | 2.1 | 89.53 | -1,774.5 | -3,015.9 | 5,722.4 | 5,617.9 | 104.46 | 54.782 | |
| 10,531.5 | 6,679.4 | 6,696.0 | 6,693.9 | 103.6 | 2.1 | 89.53 | -1,774.5 | -3,015.9 | 5,752.1 | 5,646.8 | 105.30 | 54.625 | |
| 10,600.0 | 6,679.0 | 6,695.8 | 6,693.8 | 105.4 | 2.1 | 89.53 | -1,774.5 | -3,015.9 | 5,816.7 | 5,709.6 | 107.14 | 54.293 | |
| 10,629.9 | 6,678.8 | 6,695.7 | 6,693.7 | 106.2 | 2.1 | 89.52 | -1,774.5 | -3,015.9 | 5,844.9 | 5,737.0 | 107.94 | 54.150 | |
| 10,700.0 | 6,678.4 | 6,695.6 | 6,693.5 | 108.1 | 2.1 | 89.52 | -1,774.5 | -3,015.9 | 5,911.2 | 5,801.4 | 109.82 | 53.825 | |
| 10,728.3 | 6,678.2 | 6,695.5 | 6,693.5 | 108.9 | 2.1 | 89.52 | -1,774.5 | -3,015.9 | 5,938.0 | 5,827.4 | 110.58 | 53.697 | |
| 10,800.0 | 6,677.7 | 6,695.3 | 6,693.3 | 110.8 | 2.1 | 89.51 | -1,774.5 | -3,015.9 | 6,005.9 | 5,893.4 | 112.51 | 53.379 | |
| 10,826.7 | 6,677.5 | 6,695.2 | 6,693.2 | 111.5 | 2.1 | 89.51 | -1,774.5 | -3,015.9 | 6,031.2 | 5,918.0 | 113.24 | 53.263 | |
| 10,900.0 | 6,677.1 | 6,695.1 | 6,693.0 | 113.5 | 2.1 | 89.50 | -1,774.5 | -3,015.9 | 6,100.7 | 5,985.5 | 115.21 | 52.952 | |
| 10,925.2 | 6,676.9 | 6,695.0 | 6,693.0 | 114.2 | 2.1 | 89.50 | -1,774.5 | -3,015.9 | 6,124.6 | 6,008.7 | 115.89 | 52.848 | |
| 11,000.0 | 6,676.4 | 6,694.8 | 6,692.8 | 116.2 | 2.1 | 89.50 | -1,774.5 | -3,015.9 | 6,195.7 | 6,077.8 | 117.91 | 52.544 | |
| 11,023.6 | 6,676.3 | 6,694.8 | 6,692.7 | 116.8 | 2.1 | 89.49 | -1,774.5 | -3,015.9 | 6,218.2 | 6,099.6 | 118.55 | 52.450 | |
| 11,100.0 | 6,675.8 | 6,694.6 | 6,692.5 | 118.9 | 2.1 | 89.49 | -1,774.5 | -3,015.9 | 6,290.9 | 6,170.3 | 120.62 | 52.153 | |
| 11,122.0 | 6,675.6 | 6,694.5 | 6,692.5 | 119.5 | 2.1 | 89.49 | -1,774.5 | -3,015.9 | 6,311.9 | 6,190.6 | 121.22 | 52.069 | |
| 11,200.0 | 6,675.1 | 6,694.3 | 6,692.3 | 121.6 | 2.1 | 89.48 | -1,774.5 | -3,015.9 | 6,386.2 | 6,262.9 | 123.34 | 51.779 | |
| 11,220.4 | 6,675.0 | 6,694.3 | 6,692.2 | 122.2 | 2.1 | 89.48 | -1,774.5 | -3,015.9 | 6,405.7 | 6,281.8 | 123.89 | 51.704 | |
| 11,300.0 | 6,674.5 | 6,694.1 | 6,692.0 | 124.3 | 2.1 | 89.47 | -1,774.5 | -3,015.9 | 6,481.6 | 6,355.6 | 126.05 | 51.420 | |
| 11,318.9 | 6,674.3 | 6,694.0 | 6,692.0 | 124.9 | 2.1 | 89.47 | -1,774.5 | -3,015.9 | 6,499.7 | 6,373.1 | 126.57 | 51.354 | |
| 11,400.0 | 6,673.8 | 6,693.8 | 6,691.8 | 127.1 | 2.1 | 89.47 | -1,774.5 | -3,015.9 | 6,577.2 | 6,448.4 | 128.77 | 51.076 | |
| 11,417.3 | 6,673.7 | 6,693.8 | 6,691.7 | 127.5 | 2.1 | 89.47 | -1,774.5 | -3,015.9 | 6,593.8 | 6,464.5 | 129.24 | 51.018 | |
| 11,500.0 | 6,673.2 | 6,693.6 | 6,691.5 | 129.8 | 2.1 | 89.46 | -1,774.5 | -3,015.9 | 6,672.9 | 6,541.4 | 131.50 | 50.746 | |
| 11,515.7 | 6,673.1 | 6,693.5 | 6,691.5 | 130.2 | 2.1 | 89.46 | -1,774.5 | -3,015.9 | 6,688.0 | 6,556.1 | 131.93 | 50.695 | |
| 11,600.0 | 6,672.5 | 6,693.3 | 6,691.3 | 132.5 | 2.1 | 89.45 | -1,774.5 | -3,015.9 | 6,768.8 | 6,634.5 | 134.23 | 50.428 | |
| 11,614.1 | 6,672.4 | 6,693.3 | 6,691.2 | 132.9 | 2.1 | 89.45 | -1,774.5 | -3,015.9 | 6,782.3 | 6,647.7 | 134.61 | 50.384 | |
| 11,700.0 | 6,671.9 | 6,693.0 | 6,691.0 | 135.3 | 2.1 | 89.44 | -1,774.5 | -3,015.9 | 6,864.7 | 6,727.8 | 136.96 | 50.123 | |
| 11,712.6 | 6,671.8 | 6,693.0 | 6,691.0 | 135.6 | 2.1 | 89.44 | -1,774.5 | -3,015.9 | 6,876.8 | 6,739.5 | 137.30 | 50.085 | |
| 11,800.0 | 6,671.2 | 6,692.8 | 6,690.8 | 138.0 | 2.1 | 89.44 | -1,774.5 | -3,015.9 | 6,960.8 | 6,821.1 | 139.69 | 49.830 | |
| 11,811.0 | 6,671.1 | 6,692.8 | 6,690.7 | 138.3 | 2.1 | 89.44 | -1,774.5 | -3,015.9 | 6,971.4 | 6,831.4 | 139.99 | 49.798 | |
| 11,900.0 | 6,670.6 | 6,692.5 | 6,690.5 | 140.7 | 2.1 | 89.43 | -1,774.5 | -3,015.9 | 7,057.0 | 6,914.5 | 142.43 | 49.547 | |
| 11,909.4 | 6,670.5 | 6,692.5 | 6,690.5 | 141.0 | 2.1 | 89.43 | -1,774.5 | -3,015.9 | 7,066.0 | 6,923.4 | 142.69 | 49.521 | |
| 11,987.2 | 6,670.0 | 6,692.3 | 6,690.3 | 143.1 | 2.1 | 89.42 | -1,774.5 | -3,015.9 | 7,140.9 | 6,996.1 | 144.82 | 49.309 | SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 1.2 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,169.5 | 1.28 | 3,270.289 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 1.2 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,169.5 | 1.30 | 3,218.202 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 3.4 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,167.0 | 3.73 | 1,117.808 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 3.5 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,167.0 | 3.81 | 1,094.573 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 5.5 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,164.8 | 6.00 | 694.588 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 5.6 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,164.7 | 6.11 | 682.224 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 7.5 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,162.5 | 8.24 | 506.307 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 7.6 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,162.4 | 8.38 | 497.679 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 9.5 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,160.3 | 10.46 | 398.858 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 9.6 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,160.1 | 10.63 | 392.201 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 11.5 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,158.1 | 12.67 | 329.200 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 11.7 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,157.9 | 12.88 | 323.772 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 13.5 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,155.9 | 14.88 | 280.323 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 13.7 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,155.6 | 15.13 | 275.738 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 15.4 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,153.7 | 17.09 | 244.115 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 15.7 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,153.4 | 17.37 | 240.144 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 17.4 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,151.5 | 19.29 | 216.207 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 17.7 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,151.2 | 19.61 | 212.705 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 19.4 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,149.3 | 21.50 | 194.034 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 19.7 | -136.10 | -3,005.4 | -2,891.9 | 4,170.8 | 4,148.9 | 21.85 | 190.901 | |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 21.4 | -51.69 | -3,005.4 | -2,891.9 | 4,170.0 | 4,146.3 | 23.69 | 176.061 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 21.7 | -51.70 | -3,005.4 | -2,891.9 | 4,169.7 | 4,145.6 | 24.07 | 173.240 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 23.4 | -51.78 | -3,005.4 | -2,891.9 | 4,167.2 | 4,141.4 | 25.85 | 161.186 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 23.8 | -51.81 | -3,005.4 | -2,891.9 | 4,166.4 | 4,140.2 | 26.27 | 158.616 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 25.3 | -51.94 | -3,005.4 | -2,891.9 | 4,162.3 | 4,134.3 | 28.01 | 148.605 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 25.8 | -51.99 | -3,005.4 | -2,891.9 | 4,161.1 | 4,132.6 | 28.46 | 146.231 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 27.3 | -52.18 | -3,005.4 | -2,891.9 | 4,155.4 | 4,125.2 | 30.16 | 137.800 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 27.8 | -52.24 | -3,005.4 | -2,891.9 | 4,153.5 | 4,122.9 | 30.63 | 135.590 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 29.3 | -52.48 | -3,005.4 | -2,891.9 | 4,146.4 | 4,114.1 | 32.29 | 128.397 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 29.7 | -52.56 | -3,005.4 | -2,891.9 | 4,143.9 | 4,111.1 | 32.80 | 126.325 | |
| 1,574.8 | 1,571.0 | 1,571.0 | 1,571.0 | 3.5 | 31.2 | -52.85 | -3,005.4 | -2,891.9 | 4,135.4 | 4,100.9 | 34.43 | 120.116 | |
| 1,600.0 | 1,595.6 | 1,595.6 | 1,595.6 | 3.6 | 31.7 | -52.95 | -3,005.4 | -2,891.9 | 4,132.2 | 4,097.3 | 34.97 | 118.159 | |
| 1,673.2 | 1,667.0 | 1,667.0 | 1,667.0 | 3.9 | 33.2 | -53.29 | -3,005.4 | -2,891.9 | 4,122.4 | 4,085.8 | 36.57 | 112.741 | |
| 1,700.0 | 1,693.1 | 1,693.1 | 1,693.1 | 4.0 | 33.7 | -53.42 | -3,005.4 | -2,891.9 | 4,118.5 | 4,081.4 | 37.14 | 110.882 | |
| 1,771.6 | 1,762.4 | 1,762.4 | 1,762.4 | 4.3 | 35.1 | -53.80 | -3,005.4 | -2,891.9 | 4,107.5 | 4,068.8 | 38.71 | 106.109 | |
| 1,800.0 | 1,789.6 | 1,789.6 | 1,789.6 | 4.4 | 35.6 | -53.96 | -3,005.4 | -2,891.9 | 4,102.9 | 4,063.5 | 39.33 | 104.329 | |
| 1,870.1 | 1,856.8 | 1,856.8 | 1,856.8 | 4.7 | 37.0 | -54.38 | -3,005.4 | -2,891.9 | 4,090.7 | 4,049.9 | 40.87 | 100.088 | |
| 1,900.0 | 1,885.3 | 1,885.3 | 1,885.3 | 4.9 | 37.5 | -54.58 | -3,005.4 | -2,891.9 | 4,085.3 | 4,043.8 | 41.53 | 98.376 | |
| 1,968.5 | 1,950.2 | 1,950.2 | 1,950.2 | 5.3 | 38.9 | -55.04 | -3,005.4 | -2,891.9 | 4,072.2 | 4,029.1 | 43.06 | 94.580 | |
| 2,000.0 | 1,979.8 | 1,979.8 | 1,979.8 | 5.5 | 39.4 | -55.26 | -3,005.4 | -2,891.9 | 4,065.9 | 4,022.1 | 43.76 | 92.923 | |
| 2,044.9 | 2,021.9 | 2,021.9 | 2,021.9 | 5.7 | 40.3 | -55.59 | -3,005.4 | -2,891.9 | 4,056.6 | 4,011.8 | 44.77 | 90.614 | |
| 2,066.9 | 2,042.5 | 2,042.5 | 2,042.5 | 5.9 | 40.7 | -55.68 | -3,005.4 | -2,891.9 | 4,051.9 | 4,006.6 | 45.30 | 89.453 | |
| 2,100.0 | 2,073.4 | 2,073.4 | 2,073.4 | 6.1 | 41.3 | -55.81 | -3,005.4 | -2,891.9 | 4,045.0 | 3,998.9 | 46.09 | 87.754 | |
| 2,165.3 | 2,134.4 | 2,134.4 | 2,134.4 | 6.5 | 42.6 | -56.07 | -3,005.4 | -2,891.9 | 4,031.3 | 3,983.6 | 47.68 | 84.546 | |
| 2,200.0 | 2,166.8 | 2,166.8 | 2,166.8 | 6.8 | 43.2 | -56.21 | -3,005.4 | -2,891.9 | 4,024.1 | 3,975.6 | 48.53 | 82.927 | |
| 2,263.8 | 2,226.4 | 2,226.4 | 2,226.4 | 7.2 | 44.4 | -56.47 | -3,005.4 | -2,891.9 | 4,010.9 | 3,960.8 | 50.09 | 80.072 | |
| 2,300.0 | 2,260.2 | 2,260.2 | 2,260.2 | 7.4 | 45.1 | -56.62 | -3,005.4 | -2,891.9 | 4,003.4 | 3,952.5 | 50.98 | 78.527 | |
| 2,362.2 | 2,318.3 | 2,318.3 | 2,318.3 | 7.9 | 46.3 | -56.87 | -3,005.4 | -2,891.9 | 3,990.7 | 3,938.2 | 52.52 | 75.983 | |
| 2,400.0 | 2,353.6 | 2,353.6 | 2,353.6 | 8.1 | 47.0 | -57.03 | -3,005.4 | -2,891.9 | 3,983.0 | 3,929.5 | 53.46 | 74.507 | |
| 2,460.6 | 2,410.3 | 2,410.3 | 2,410.3 | 8.6 | 48.1 | -57.28 | -3,005.4 | -2,891.9 | 3,970.7 | 3,915.7 | 54.97 | 72.236 | |
| 2,500.0 | 2,447.0 | 2,447.0 | 2,447.0 | 8.9 | 48.8 | -57.44 | -3,005.4 | -2,891.9 | 3,962.7 | 3,906.8 | 55.95 | 70.826 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,502.2 | 2,502.2 | 9.3 | 50.0 | -57.68 | -3,005.4 | -2,891.9 | 3,950.9 | 3,893.5 | 57.43 | 68.795 | |
| 2,600.0 | 2,540.5 | 2,540.5 | 2,540.5 | 9.6 | 50.7 | -57.85 | -3,005.4 | -2,891.9 | 3,942.7 | 3,884.3 | 58.46 | 67.445 | |
| 2,657.5 | 2,594.2 | 2,594.2 | 2,594.2 | 10.0 | 51.8 | -58.10 | -3,005.4 | -2,891.9 | 3,931.3 | 3,871.4 | 59.91 | 65.625 | |
| 2,700.0 | 2,633.9 | 2,633.9 | 2,633.9 | 10.3 | 52.6 | -58.28 | -3,005.4 | -2,891.9 | 3,922.9 | 3,862.0 | 60.98 | 64.333 | |
| 2,755.9 | 2,686.1 | 2,686.1 | 2,686.1 | 10.7 | 53.7 | -58.51 | -3,005.4 | -2,891.9 | 3,912.0 | 3,849.6 | 62.39 | 62.698 | |
| 2,800.0 | 2,727.3 | 2,727.3 | 2,727.3 | 11.0 | 54.5 | -58.70 | -3,005.4 | -2,891.9 | 3,903.4 | 3,839.8 | 63.51 | 61.459 | |
| 2,854.3 | 2,778.1 | 2,778.1 | 2,778.1 | 11.4 | 55.5 | -58.93 | -3,005.4 | -2,891.9 | 3,892.8 | 3,827.9 | 64.89 | 59.989 | |
| 2,900.0 | 2,820.7 | 2,820.7 | 2,820.7 | 11.8 | 56.4 | -59.13 | -3,005.4 | -2,891.9 | 3,884.0 | 3,818.0 | 66.05 | 58.800 | |
| 2,952.7 | 2,870.0 | 2,870.0 | 2,870.0 | 12.2 | 57.4 | -59.35 | -3,005.4 | -2,891.9 | 3,873.9 | 3,806.5 | 67.40 | 57.476 | |
| 3,000.0 | 2,914.2 | 2,914.2 | 2,914.2 | 12.5 | 58.2 | -59.56 | -3,005.4 | -2,891.9 | 3,864.9 | 3,796.3 | 68.61 | 56.333 | |
| 3,051.2 | 2,962.0 | 2,962.0 | 2,962.0 | 12.9 | 59.2 | -59.78 | -3,005.4 | -2,891.9 | 3,855.2 | 3,785.3 | 69.92 | 55.138 | |
| 3,100.0 | 3,007.6 | 3,007.6 | 3,007.6 | 13.3 | 60.1 | -59.99 | -3,005.4 | -2,891.9 | 3,846.0 | 3,774.9 | 71.17 | 54.039 | |
| 3,149.6 | 3,053.9 | 3,053.9 | 3,053.9 | 13.6 | 61.1 | -60.21 | -3,005.4 | -2,891.9 | 3,836.8 | 3,764.3 | 72.45 | 52.960 | |
| 3,200.0 | 3,101.0 | 3,101.0 | 3,101.0 | 14.0 | 62.0 | -60.43 | -3,005.4 | -2,891.9 | 3,827.4 | 3,753.7 | 73.74 | 51.902 | |
| 3,248.0 | 3,145.9 | 3,145.9 | 3,145.9 | 14.4 | 62.9 | -60.65 | -3,005.4 | -2,891.9 | 3,818.5 | 3,743.5 | 74.98 | 50.927 | |
| 3,300.0 | 3,194.4 | 3,194.4 | 3,194.4 | 14.8 | 63.9 | -60.88 | -3,005.4 | -2,891.9 | 3,809.0 | 3,732.7 | 76.32 | 49.906 | |
| 3,346.4 | 3,237.8 | 3,237.8 | 3,237.8 | 15.1 | 64.8 | -61.09 | -3,005.4 | -2,891.9 | 3,800.5 | 3,723.0 | 77.52 | 49.024 | |
| 3,400.0 | 3,287.8 | 3,287.8 | 3,287.8 | 15.5 | 65.8 | -61.33 | -3,005.4 | -2,891.9 | 3,790.9 | 3,711.9 | 78.91 | 48.040 | |
| 3,444.9 | 3,329.8 | 3,329.8 | 3,329.8 | 15.9 | 66.6 | -61.53 | -3,005.4 | -2,891.9 | 3,782.8 | 3,702.7 | 80.08 | 47.241 | |
| 3,500.0 | 3,381.3 | 3,381.3 | 3,381.3 | 16.3 | 67.6 | -61.78 | -3,005.4 | -2,891.9 | 3,773.0 | 3,691.5 | 81.51 | 46.290 | |
| 3,543.3 | 3,421.7 | 3,421.7 | 3,421.7 | 16.6 | 68.5 | -61.97 | -3,005.4 | -2,891.9 | 3,765.3 | 3,682.7 | 82.63 | 45.566 | |
| 3,600.0 | 3,474.7 | 3,474.7 | 3,474.7 | 17.0 | 69.5 | -62.23 | -3,005.4 | -2,891.9 | 3,755.3 | 3,671.2 | 84.11 | 44.648 | |
| 3,641.7 | 3,513.7 | 3,513.7 | 3,513.7 | 17.3 | 70.3 | -62.42 | -3,005.4 | -2,891.9 | 3,748.0 | 3,662.8 | 85.20 | 43.992 | |
| 3,700.0 | 3,568.1 | 3,568.1 | 3,568.1 | 17.8 | 71.4 | -62.69 | -3,005.4 | -2,891.9 | 3,737.9 | 3,651.2 | 86.72 | 43.103 | |
| 3,740.1 | 3,605.6 | 3,605.6 | 3,605.6 | 18.1 | 72.1 | -62.88 | -3,005.4 | -2,891.9 | 3,731.0 | 3,643.3 | 87.77 | 42.509 | |
| 3,800.0 | 3,661.5 | 3,661.5 | 3,661.5 | 18.5 | 73.3 | -63.15 | -3,005.4 | -2,891.9 | 3,720.8 | 3,631.5 | 89.34 | 41.649 | |
| 3,838.6 | 3,697.6 | 3,697.6 | 3,697.6 | 18.8 | 74.0 | -63.33 | -3,005.4 | -2,891.9 | 3,714.3 | 3,623.9 | 90.35 | 41.110 | |
| 3,900.0 | 3,754.9 | 3,754.9 | 3,754.9 | 19.3 | 75.2 | -63.62 | -3,005.4 | -2,891.9 | 3,703.9 | 3,612.0 | 91.96 | 40.277 | |
| 3,937.0 | 3,789.5 | 3,789.5 | 3,789.5 | 19.6 | 75.8 | -63.79 | -3,005.4 | -2,891.9 | 3,697.8 | 3,604.8 | 92.93 | 39.789 | |
| 4,000.0 | 3,848.4 | 3,848.4 | 3,848.4 | 20.1 | 77.0 | -64.09 | -3,005.4 | -2,891.9 | 3,687.4 | 3,592.8 | 94.59 | 38.981 | |
| 4,035.4 | 3,881.5 | 3,881.5 | 3,881.5 | 20.3 | 77.7 | -64.26 | -3,005.4 | -2,891.9 | 3,681.5 | 3,586.0 | 95.53 | 38.539 | |
| 4,100.0 | 3,941.8 | 3,941.8 | 3,941.8 | 20.8 | 78.9 | -64.56 | -3,005.4 | -2,891.9 | 3,671.0 | 3,573.8 | 97.23 | 37.756 | |
| 4,133.8 | 3,973.4 | 3,973.4 | 3,973.4 | 21.1 | 79.5 | -64.73 | -3,005.4 | -2,891.9 | 3,665.6 | 3,567.4 | 98.12 | 37.356 | |
| 4,200.0 | 4,035.2 | 4,035.2 | 4,035.2 | 21.6 | 80.8 | -65.04 | -3,005.4 | -2,891.9 | 3,655.0 | 3,555.1 | 99.87 | 36.596 | |
| 4,232.3 | 4,065.4 | 4,065.4 | 4,065.4 | 21.8 | 81.4 | -65.20 | -3,005.4 | -2,891.9 | 3,649.9 | 3,549.1 | 100.73 | 36.235 | |
| 4,300.0 | 4,128.6 | 4,128.6 | 4,128.6 | 22.3 | 82.7 | -65.52 | -3,005.4 | -2,891.9 | 3,639.2 | 3,536.7 | 102.52 | 35.497 | |
| 4,330.7 | 4,157.3 | 4,157.3 | 4,157.3 | 22.6 | 83.2 | -65.67 | -3,005.4 | -2,891.9 | 3,634.4 | 3,531.1 | 103.34 | 35.171 | |
| 4,400.0 | 4,222.0 | 4,222.0 | 4,222.0 | 23.1 | 84.5 | -66.01 | -3,005.4 | -2,891.9 | 3,623.7 | 3,518.6 | 105.18 | 34.454 | |
| 4,429.1 | 4,249.3 | 4,249.3 | 4,249.3 | 23.3 | 85.1 | -66.15 | -3,005.4 | -2,891.9 | 3,619.3 | 3,513.3 | 105.95 | 34.160 | |
| 4,500.0 | 4,315.5 | 4,315.5 | 4,315.5 | 23.9 | 86.4 | -66.50 | -3,005.4 | -2,891.9 | 3,608.5 | 3,500.7 | 107.84 | 33.463 | |
| 4,527.5 | 4,341.2 | 4,341.2 | 4,341.2 | 24.1 | 86.9 | -66.63 | -3,005.4 | -2,891.9 | 3,604.4 | 3,495.8 | 108.57 | 33.198 | |
| 4,600.0 | 4,408.9 | 4,408.9 | 4,408.9 | 24.6 | 88.3 | -66.99 | -3,005.4 | -2,891.9 | 3,593.6 | 3,483.1 | 110.50 | 32.521 | |
| 4,626.0 | 4,433.2 | 4,433.2 | 4,433.2 | 24.8 | 88.8 | -67.12 | -3,005.4 | -2,891.9 | 3,589.8 | 3,478.6 | 111.20 | 32.283 | |
| 4,700.0 | 4,502.3 | 4,502.3 | 4,502.3 | 25.4 | 90.2 | -67.49 | -3,005.4 | -2,891.9 | 3,579.0 | 3,465.8 | 113.17 | 31.624 | |
| 4,724.4 | 4,525.1 | 4,525.1 | 4,525.1 | 25.6 | 90.6 | -67.61 | -3,005.4 | -2,891.9 | 3,575.5 | 3,461.7 | 113.83 | 31.412 | |
| 4,800.0 | 4,595.7 | 4,595.7 | 4,595.7 | 26.2 | 92.1 | -67.99 | -3,005.4 | -2,891.9 | 3,564.7 | 3,448.8 | 115.85 | 30.770 | |
| 4,822.8 | 4,617.1 | 4,617.1 | 4,617.1 | 26.3 | 92.5 | -68.10 | -3,005.4 | -2,891.9 | 3,561.5 | 3,445.0 | 116.46 | 30.581 | |
| 4,900.0 | 4,689.2 | 4,689.2 | 4,689.2 | 26.9 | 93.9 | -68.49 | -3,005.4 | -2,891.9 | 3,550.7 | 3,432.2 | 118.53 | 29.956 | |
| 4,921.2 | 4,709.0 | 4,709.0 | 4,709.0 | 27.1 | 94.3 | -68.60 | -3,005.4 | -2,891.9 | 3,547.7 | 3,428.6 | 119.10 | 29.788 | |
| 5,000.0 | 4,782.6 | 4,782.6 | 4,782.6 | 27.7 | 95.8 | -69.00 | -3,005.4 | -2,891.9 | 3,537.0 | 3,415.8 | 121.22 | 29.179 | |
| 5,019.7 | 4,801.0 | 4,801.0 | 4,801.0 | 27.8 | 96.2 | -69.10 | -3,005.4 | -2,891.9 | 3,534.3 | 3,412.6 | 121.74 | 29.031 | |
| 5,100.0 | 4,876.0 | 4,876.0 | 4,876.0 | 28.4 | 97.7 | -69.51 | -3,005.4 | -2,891.9 | 3,523.6 | 3,399.7 | 123.90 | 28.438 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,892.9 | 4,892.9 | 28.6 | 98.0 | -69.60 | -3,005.4 | -2,891.9 | 3,521.2 | 3,396.8 | 124.39 | 28.307 | |
| 5,159.9 | 4,932.0 | 4,932.0 | 4,932.0 | 28.9 | 98.8 | -69.81 | -3,005.4 | -2,891.9 | 3,515.7 | 3,390.2 | 125.52 | 28.009 | |
| 5,200.0 | 4,969.5 | 4,969.5 | 4,969.5 | 29.2 | 99.6 | -69.92 | -3,005.4 | -2,891.9 | 3,510.6 | 3,384.0 | 126.60 | 27.729 | |
| 5,216.5 | 4,985.1 | 4,985.1 | 4,985.1 | 29.3 | 99.9 | -69.96 | -3,005.4 | -2,891.9 | 3,508.5 | 3,381.5 | 127.03 | 27.620 | |
| 5,300.0 | 5,064.0 | 5,064.0 | 5,064.0 | 29.7 | 101.5 | -70.18 | -3,005.4 | -2,891.9 | 3,498.8 | 3,369.6 | 129.20 | 27.080 | |
| 5,314.9 | 5,078.2 | 5,078.2 | 5,078.2 | 29.8 | 101.8 | -70.21 | -3,005.4 | -2,891.9 | 3,497.2 | 3,367.6 | 129.58 | 26.988 | |
| 5,400.0 | 5,159.6 | 5,159.6 | 5,159.6 | 30.2 | 103.4 | -70.42 | -3,005.4 | -2,891.9 | 3,488.5 | 3,356.8 | 131.76 | 26.477 | |
| 5,413.4 | 5,172.4 | 5,172.4 | 5,172.4 | 30.3 | 103.7 | -70.45 | -3,005.4 | -2,891.9 | 3,487.2 | 3,355.1 | 132.09 | 26.400 | |
| 5,500.0 | 5,256.1 | 5,256.1 | 5,256.1 | 30.7 | 105.3 | -70.64 | -3,005.4 | -2,891.9 | 3,479.6 | 3,345.3 | 134.27 | 25.915 | |
| 5,511.8 | 5,267.6 | 5,267.6 | 5,267.6 | 30.7 | 105.6 | -70.66 | -3,005.4 | -2,891.9 | 3,478.6 | 3,344.0 | 134.56 | 25.852 | |
| 5,600.0 | 5,353.5 | 5,353.5 | 5,353.5 | 31.1 | 107.3 | -70.84 | -3,005.4 | -2,891.9 | 3,471.9 | 3,335.2 | 136.72 | 25.394 | |
| 5,610.2 | 5,363.5 | 5,363.5 | 5,363.5 | 31.1 | 107.5 | -70.86 | -3,005.4 | -2,891.9 | 3,471.2 | 3,334.2 | 136.97 | 25.343 | |
| 5,700.0 | 5,451.6 | 5,451.6 | 5,451.6 | 31.4 | 109.3 | -71.01 | -3,005.4 | -2,891.9 | 3,465.5 | 3,326.4 | 139.13 | 24.909 | |
| 5,708.6 | 5,460.2 | 5,460.2 | 5,460.2 | 31.4 | 109.4 | -71.03 | -3,005.4 | -2,891.9 | 3,465.0 | 3,325.7 | 139.33 | 24.869 | |
| 5,800.0 | 5,550.4 | 5,550.4 | 5,550.4 | 31.7 | 111.3 | -71.16 | -3,005.4 | -2,891.9 | 3,460.3 | 3,318.8 | 141.48 | 24.459 | |
| 5,807.1 | 5,557.4 | 5,557.4 | 5,557.4 | 31.7 | 111.4 | -71.17 | -3,005.4 | -2,891.9 | 3,460.0 | 3,318.4 | 141.64 | 24.428 | |
| 5,900.0 | 5,649.6 | 5,649.6 | 5,649.6 | 31.9 | 113.3 | -71.28 | -3,005.4 | -2,891.9 | 3,456.3 | 3,312.5 | 143.77 | 24.041 | |
| 5,905.5 | 5,655.1 | 5,655.1 | 5,655.1 | 31.9 | 113.4 | -71.28 | -3,005.4 | -2,891.9 | 3,456.1 | 3,312.2 | 143.89 | 24.019 | |
| 6,000.0 | 5,749.2 | 5,749.2 | 5,749.2 | 32.1 | 115.3 | -71.36 | -3,005.4 | -2,891.9 | 3,453.5 | 3,307.5 | 146.00 | 23.653 | |
| 6,003.9 | 5,753.1 | 5,753.1 | 5,753.1 | 32.1 | 115.3 | -71.36 | -3,005.4 | -2,891.9 | 3,453.4 | 3,307.3 | 146.09 | 23.639 | |
| 6,100.0 | 5,849.1 | 5,849.1 | 5,849.1 | 32.3 | 117.3 | -71.41 | -3,005.4 | -2,891.9 | 3,451.7 | 3,303.6 | 148.18 | 23.294 | |
| 6,102.3 | 5,851.4 | 5,851.4 | 5,851.4 | 32.3 | 117.3 | -71.41 | -3,005.4 | -2,891.9 | 3,451.7 | 3,303.5 | 148.23 | 23.286 | |
| 6,200.8 | 5,949.8 | 5,949.8 | 5,949.8 | 32.4 | 119.3 | -71.43 | -3,005.4 | -2,891.9 | 3,451.1 | 3,300.8 | 150.31 | 22.960 | |
| 6,204.9 | 5,953.9 | 5,953.9 | 5,953.9 | 32.4 | 119.4 | -155.87 | -3,005.4 | -2,891.9 | 3,451.1 | 3,313.2 | 137.91 | 25.025 | |
| 6,234.9 | 5,983.9 | 5,983.9 | 5,983.9 | 32.4 | 120.0 | -155.87 | -3,005.4 | -2,891.9 | 3,451.1 | 3,312.6 | 138.55 | 24.909 | CC |
| 6,250.0 | 5,999.0 | 5,999.0 | 5,999.0 | 32.4 | 120.3 | 114.13 | -3,005.4 | -2,891.9 | 3,451.2 | 3,299.9 | 151.33 | 22.805 | ES |
| 6,299.2 | 6,048.2 | 6,048.2 | 6,048.2 | 32.4 | 121.3 | 114.09 | -3,005.4 | -2,891.9 | 3,452.3 | 3,300.1 | 152.23 | 22.678 | |
| 6,300.0 | 6,048.9 | 6,048.9 | 6,048.9 | 32.4 | 121.3 | 114.08 | -3,005.4 | -2,891.9 | 3,452.3 | 3,300.1 | 152.25 | 22.676 | |
| 6,350.0 | 6,098.5 | 6,098.5 | 6,098.5 | 32.4 | 122.3 | 113.99 | -3,005.4 | -2,891.9 | 3,454.9 | 3,301.9 | 153.02 | 22.578 | |
| 6,397.6 | 6,145.3 | 6,145.3 | 6,145.3 | 32.3 | 123.2 | 113.85 | -3,005.4 | -2,891.9 | 3,458.7 | 3,305.1 | 153.64 | 22.512 | |
| 6,400.0 | 6,147.6 | 6,147.6 | 6,147.6 | 32.3 | 123.3 | 113.84 | -3,005.4 | -2,891.9 | 3,458.9 | 3,305.3 | 153.67 | 22.509 | |
| 6,450.0 | 6,195.8 | 6,195.8 | 6,195.8 | 32.2 | 124.2 | 113.63 | -3,005.4 | -2,891.9 | 3,464.4 | 3,310.2 | 154.19 | 22.469 | |
| 6,496.0 | 6,239.3 | 6,239.3 | 6,239.3 | 32.1 | 125.1 | 113.39 | -3,005.4 | -2,891.9 | 3,470.6 | 3,316.1 | 154.57 | 22.453 | |
| 6,500.0 | 6,243.0 | 6,243.0 | 6,243.0 | 32.1 | 125.2 | 113.36 | -3,005.4 | -2,891.9 | 3,471.2 | 3,316.6 | 154.60 | 22.453 | SF |
| 6,550.0 | 6,289.0 | 6,289.0 | 6,289.0 | 32.0 | 126.1 | 113.02 | -3,005.4 | -2,891.9 | 3,479.6 | 3,324.6 | 154.93 | 22.459 | |
| 6,594.5 | 6,328.6 | 6,328.6 | 6,328.6 | 31.8 | 126.9 | 112.65 | -3,005.4 | -2,891.9 | 3,488.2 | 3,333.0 | 155.18 | 22.479 | |
| 6,600.0 | 6,333.4 | 6,333.4 | 6,333.4 | 31.8 | 127.0 | 112.60 | -3,005.4 | -2,891.9 | 3,489.4 | 3,334.1 | 155.21 | 22.482 | |
| 6,650.0 | 6,376.2 | 6,376.2 | 6,376.2 | 31.7 | 127.9 | 112.09 | -3,005.4 | -2,891.9 | 3,500.6 | 3,345.1 | 155.46 | 22.517 | |
| 6,692.9 | 6,411.3 | 6,411.3 | 6,411.3 | 31.6 | 128.6 | 111.58 | -3,005.4 | -2,891.9 | 3,511.4 | 3,355.7 | 155.69 | 22.554 | |
| 6,700.0 | 6,417.0 | 6,417.0 | 6,417.0 | 31.5 | 128.7 | 111.48 | -3,005.4 | -2,891.9 | 3,513.3 | 3,357.5 | 155.73 | 22.561 | |
| 6,750.0 | 6,455.7 | 6,455.7 | 6,455.7 | 31.4 | 129.5 | 110.77 | -3,005.4 | -2,891.9 | 3,527.4 | 3,371.3 | 156.04 | 22.606 | |
| 6,791.3 | 6,486.0 | 6,486.0 | 6,486.0 | 31.3 | 130.1 | 110.10 | -3,005.4 | -2,891.9 | 3,540.1 | 3,383.8 | 156.36 | 22.640 | |
| 6,800.0 | 6,492.2 | 6,492.2 | 6,492.2 | 31.3 | 130.2 | 109.94 | -3,005.4 | -2,891.9 | 3,542.9 | 3,386.5 | 156.44 | 22.647 | |
| 6,850.0 | 6,526.1 | 6,526.1 | 6,526.1 | 31.2 | 130.9 | 108.99 | -3,005.4 | -2,891.9 | 3,559.9 | 3,402.9 | 156.96 | 22.680 | |
| 6,889.7 | 6,551.2 | 6,551.2 | 6,551.2 | 31.2 | 131.4 | 108.13 | -3,005.4 | -2,891.9 | 3,574.3 | 3,416.8 | 157.48 | 22.696 | |
| 6,900.0 | 6,557.4 | 6,557.4 | 6,557.4 | 31.2 | 131.5 | 107.89 | -3,005.4 | -2,891.9 | 3,578.2 | 3,420.6 | 157.63 | 22.700 | |
| 6,950.0 | 6,586.0 | 6,586.0 | 6,586.0 | 31.1 | 132.1 | 106.65 | -3,005.4 | -2,891.9 | 3,597.9 | 3,439.4 | 158.46 | 22.705 | |
| 6,988.2 | 6,605.8 | 6,605.8 | 6,605.8 | 31.2 | 132.5 | 105.59 | -3,005.4 | -2,891.9 | 3,613.7 | 3,454.5 | 159.21 | 22.698 | |
| 7,000.0 | 6,611.5 | 6,611.5 | 6,611.5 | 31.2 | 132.6 | 105.24 | -3,005.4 | -2,891.9 | 3,618.8 | 3,459.4 | 159.46 | 22.694 | |
| 7,050.0 | 6,634.1 | 6,634.1 | 6,634.1 | 31.2 | 133.1 | 103.66 | -3,005.4 | -2,891.9 | 3,641.0 | 3,480.4 | 160.60 | 22.672 | |
| 7,086.6 | 6,648.6 | 6,648.6 | 6,648.6 | 31.3 | 133.3 | 102.40 | -3,005.4 | -2,891.9 | 3,658.0 | 3,496.5 | 161.51 | 22.649 | |
| 7,100.0 | 6,653.4 | 6,653.4 | 6,653.4 | 31.4 | 133.4 | 101.91 | -3,005.4 | -2,891.9 | 3,664.3 | 3,502.5 | 161.84 | 22.641 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,669.5 | 6,669.5 | 31.6 | 133.8 | 99.98 | -3,005.4 | -2,891.9 | 3,688.8 | 3,525.6 | 163.14 | 22.611 | |
| 7,185.0 | 6,678.8 | 6,678.8 | 6,678.8 | 31.7 | 134.0 | 98.52 | -3,005.4 | -2,891.9 | 3,706.4 | 3,542.4 | 164.04 | 22.595 | |
| 7,200.0 | 6,682.3 | 6,682.3 | 6,682.3 | 31.8 | 134.0 | 97.87 | -3,005.4 | -2,891.9 | 3,714.1 | 3,549.7 | 164.41 | 22.591 | |
| 7,250.0 | 6,691.6 | 6,691.6 | 6,691.6 | 32.1 | 134.2 | 95.58 | -3,005.4 | -2,891.9 | 3,740.4 | 3,574.9 | 165.55 | 22.593 | |
| 7,283.4 | 6,696.0 | 6,696.0 | 6,696.0 | 32.3 | 134.3 | 93.96 | -3,005.4 | -2,891.9 | 3,758.4 | 3,592.2 | 166.22 | 22.611 | |
| 7,300.0 | 6,697.5 | 6,697.5 | 6,697.5 | 32.4 | 134.3 | 93.13 | -3,005.4 | -2,891.9 | 3,767.4 | 3,600.9 | 166.49 | 22.628 | |
| 7,350.0 | 6,699.9 | 6,699.9 | 6,699.9 | 32.8 | 134.4 | 90.52 | -3,005.4 | -2,891.9 | 3,795.0 | 3,627.9 | 167.13 | 22.707 | |
| 7,364.4 | 6,700.0 | 6,700.0 | 6,700.0 | 32.9 | 134.4 | 89.75 | -3,005.4 | -2,891.9 | 3,803.1 | 3,635.8 | 167.24 | 22.740 | |
| 7,381.9 | 6,699.9 | 6,699.9 | 6,699.9 | 33.1 | 134.4 | 89.75 | -3,005.4 | -2,891.9 | 3,812.9 | 3,645.5 | 167.39 | 22.778 | |
| 7,400.0 | 6,699.8 | 6,699.8 | 6,699.8 | 33.2 | 134.4 | 89.74 | -3,005.4 | -2,891.9 | 3,823.2 | 3,655.6 | 167.55 | 22.818 | |
| 7,480.3 | 6,699.2 | 6,699.2 | 6,699.2 | 34.0 | 134.4 | 89.73 | -3,005.4 | -2,891.9 | 3,869.2 | 3,700.9 | 168.35 | 22.983 | |
| 7,500.0 | 6,699.1 | 6,699.1 | 6,699.1 | 34.2 | 134.4 | 89.73 | -3,005.4 | -2,891.9 | 3,880.7 | 3,712.2 | 168.55 | 23.025 | |
| 7,578.7 | 6,698.6 | 6,698.6 | 6,698.6 | 35.2 | 134.4 | 89.72 | -3,005.4 | -2,891.9 | 3,927.2 | 3,757.7 | 169.49 | 23.171 | |
| 7,600.0 | 6,698.5 | 6,698.5 | 6,698.5 | 35.4 | 134.3 | 89.72 | -3,005.4 | -2,891.9 | 3,940.0 | 3,770.2 | 169.74 | 23.212 | |
| 7,677.1 | 6,698.0 | 6,698.0 | 6,698.0 | 36.5 | 134.3 | 89.71 | -3,005.4 | -2,891.9 | 3,986.8 | 3,816.0 | 170.79 | 23.343 | |
| 7,700.0 | 6,697.8 | 6,697.8 | 6,697.8 | 36.8 | 134.3 | 89.71 | -3,005.4 | -2,891.9 | 4,000.9 | 3,829.7 | 171.11 | 23.382 | |
| 7,775.6 | 6,697.3 | 6,697.3 | 6,697.3 | 38.0 | 134.3 | 89.70 | -3,005.4 | -2,891.9 | 4,047.9 | 3,875.6 | 172.26 | 23.499 | |
| 7,800.0 | 6,697.2 | 6,697.2 | 6,697.2 | 38.3 | 134.3 | 89.70 | -3,005.4 | -2,891.9 | 4,063.3 | 3,890.6 | 172.63 | 23.537 | |
| 7,874.0 | 6,696.7 | 6,696.7 | 6,696.7 | 39.6 | 134.3 | 89.69 | -3,005.4 | -2,891.9 | 4,110.4 | 3,936.6 | 173.86 | 23.642 | |
| 7,900.0 | 6,696.5 | 6,696.5 | 6,696.5 | 40.0 | 134.3 | 89.69 | -3,005.4 | -2,891.9 | 4,127.2 | 3,952.9 | 174.29 | 23.679 | |
| 7,972.4 | 6,696.1 | 6,696.1 | 6,696.1 | 41.3 | 134.3 | 89.68 | -3,005.4 | -2,891.9 | 4,174.4 | 3,998.8 | 175.59 | 23.774 | |
| 8,000.0 | 6,695.9 | 6,695.9 | 6,695.9 | 41.8 | 134.3 | 89.67 | -3,005.4 | -2,891.9 | 4,192.5 | 4,016.4 | 176.08 | 23.810 | |
| 8,070.8 | 6,695.4 | 6,695.4 | 6,695.4 | 43.1 | 134.3 | 89.66 | -3,005.4 | -2,891.9 | 4,239.6 | 4,062.2 | 177.42 | 23.896 | |
| 8,100.0 | 6,695.2 | 6,695.2 | 6,695.2 | 43.7 | 134.3 | 89.66 | -3,005.4 | -2,891.9 | 4,259.2 | 4,081.2 | 177.97 | 23.932 | |
| 8,169.3 | 6,694.8 | 6,694.8 | 6,694.8 | 45.1 | 134.3 | 89.65 | -3,005.4 | -2,891.9 | 4,306.1 | 4,126.8 | 179.35 | 24.010 | |
| 8,200.0 | 6,694.6 | 6,694.6 | 6,694.6 | 45.7 | 134.3 | 89.65 | -3,005.4 | -2,891.9 | 4,327.1 | 4,147.2 | 179.96 | 24.045 | |
| 8,267.7 | 6,694.1 | 6,694.1 | 6,694.1 | 47.1 | 134.3 | 89.64 | -3,005.4 | -2,891.9 | 4,373.8 | 4,192.5 | 181.36 | 24.117 | |
| 8,300.0 | 6,693.9 | 6,693.9 | 6,693.9 | 47.8 | 134.3 | 89.64 | -3,005.4 | -2,891.9 | 4,396.3 | 4,214.3 | 182.02 | 24.152 | |
| 8,366.1 | 6,693.5 | 6,693.5 | 6,693.5 | 49.2 | 134.2 | 89.63 | -3,005.4 | -2,891.9 | 4,442.7 | 4,259.2 | 183.44 | 24.219 | |
| 8,400.0 | 6,693.3 | 6,693.3 | 6,693.3 | 49.9 | 134.2 | 89.63 | -3,005.4 | -2,891.9 | 4,466.6 | 4,282.5 | 184.16 | 24.254 | |
| 8,464.5 | 6,692.9 | 6,692.9 | 6,692.9 | 51.4 | 134.2 | 89.62 | -3,005.4 | -2,891.9 | 4,512.6 | 4,327.0 | 185.58 | 24.316 | |
| 8,500.0 | 6,692.6 | 6,692.6 | 6,692.6 | 52.1 | 134.2 | 89.61 | -3,005.4 | -2,891.9 | 4,538.1 | 4,351.7 | 186.36 | 24.351 | |
| 8,563.0 | 6,692.2 | 6,692.2 | 6,692.2 | 53.6 | 134.2 | 89.61 | -3,005.4 | -2,891.9 | 4,583.6 | 4,395.8 | 187.79 | 24.409 | |
| 8,600.0 | 6,692.0 | 6,692.0 | 6,692.0 | 54.4 | 134.2 | 89.60 | -3,005.4 | -2,891.9 | 4,610.6 | 4,422.0 | 188.62 | 24.444 | |
| 8,661.4 | 6,691.6 | 6,691.6 | 6,691.6 | 55.8 | 134.2 | 89.60 | -3,005.4 | -2,891.9 | 4,655.6 | 4,465.6 | 190.04 | 24.499 | |
| 8,700.0 | 6,691.3 | 6,691.3 | 6,691.3 | 56.7 | 134.2 | 89.59 | -3,005.4 | -2,891.9 | 4,684.1 | 4,493.2 | 190.93 | 24.534 | |
| 8,759.8 | 6,690.9 | 6,690.9 | 6,690.9 | 58.1 | 134.2 | 89.58 | -3,005.4 | -2,891.9 | 4,728.6 | 4,536.2 | 192.33 | 24.586 | |
| 8,800.0 | 6,690.7 | 6,690.7 | 6,690.7 | 59.1 | 134.2 | 89.58 | -3,005.4 | -2,891.9 | 4,758.6 | 4,565.3 | 193.27 | 24.621 | |
| 8,858.2 | 6,690.3 | 6,690.3 | 6,690.3 | 60.5 | 134.2 | 89.57 | -3,005.4 | -2,891.9 | 4,802.4 | 4,607.8 | 194.66 | 24.670 | |
| 8,900.0 | 6,690.0 | 6,690.0 | 6,690.0 | 61.5 | 134.2 | 89.57 | -3,005.4 | -2,891.9 | 4,834.0 | 4,638.4 | 195.66 | 24.706 | |
| 8,956.7 | 6,689.7 | 6,689.7 | 6,689.7 | 62.9 | 134.2 | 89.56 | -3,005.4 | -2,891.9 | 4,877.2 | 4,680.1 | 197.03 | 24.753 | |
| 9,000.0 | 6,689.4 | 6,689.4 | 6,689.4 | 63.9 | 134.2 | 89.56 | -3,005.4 | -2,891.9 | 4,910.3 | 4,712.2 | 198.08 | 24.790 | |
| 9,055.1 | 6,689.0 | 6,689.0 | 6,689.0 | 65.3 | 134.2 | 89.55 | -3,005.4 | -2,891.9 | 4,952.7 | 4,753.3 | 199.43 | 24.835 | |
| 9,100.0 | 6,688.7 | 6,688.7 | 6,688.7 | 66.4 | 134.2 | 89.54 | -3,005.4 | -2,891.9 | 4,987.4 | 4,786.9 | 200.53 | 24.872 | |
| 9,153.5 | 6,688.4 | 6,688.4 | 6,688.4 | 67.7 | 134.1 | 89.54 | -3,005.4 | -2,891.9 | 5,029.1 | 4,827.2 | 201.85 | 24.915 | |
| 9,200.0 | 6,688.1 | 6,688.1 | 6,688.1 | 68.9 | 134.1 | 89.53 | -3,005.4 | -2,891.9 | 5,065.4 | 4,862.4 | 203.00 | 24.952 | |
| 9,251.9 | 6,687.8 | 6,687.8 | 6,687.8 | 70.2 | 134.1 | 89.53 | -3,005.4 | -2,891.9 | 5,106.2 | 4,901.9 | 204.30 | 24.993 | |
| 9,300.0 | 6,687.4 | 6,687.4 | 6,687.4 | 71.4 | 134.1 | 89.52 | -3,005.4 | -2,891.9 | 5,144.1 | 4,938.6 | 205.50 | 25.032 | |
| 9,350.4 | 6,687.1 | 6,687.1 | 6,687.1 | 72.7 | 134.1 | 89.51 | -3,005.4 | -2,891.9 | 5,184.0 | 4,977.2 | 206.77 | 25.071 | |
| 9,400.0 | 6,686.8 | 6,686.8 | 6,686.8 | 73.9 | 134.1 | 89.51 | -3,005.4 | -2,891.9 | 5,223.5 | 5,015.5 | 208.02 | 25.110 | |
| 9,448.8 | 6,686.5 | 6,686.5 | 6,686.5 | 75.2 | 134.1 | 89.50 | -3,005.4 | -2,891.9 | 5,262.5 | 5,053.2 | 209.26 | 25.148 | |
| 9,500.0 | 6,686.1 | 6,686.1 | 6,686.1 | 76.5 | 134.1 | 89.50 | -3,005.4 | -2,891.9 | 5,303.6 | 5,093.0 | 210.56 | 25.188 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #34-18 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,685.8 | 6,685.8 | 77.7 | 134.1 | 89.49 | -3,005.4 | -2,891.9 | 5,341.7 | 5,129.9 | 211.77 | 25.224 | |
| 9,600.0 | 6,685.5 | 6,685.5 | 6,685.5 | 79.0 | 134.1 | 89.48 | -3,005.4 | -2,891.9 | 5,384.4 | 5,171.3 | 213.12 | 25.265 | |
| 9,645.6 | 6,685.2 | 6,685.2 | 6,685.2 | 80.2 | 134.1 | 89.48 | -3,005.4 | -2,891.9 | 5,421.5 | 5,207.2 | 214.29 | 25.299 | |
| 9,700.0 | 6,684.8 | 6,684.8 | 6,684.8 | 81.6 | 134.1 | 89.47 | -3,005.4 | -2,891.9 | 5,465.8 | 5,250.1 | 215.69 | 25.341 | |
| 9,744.1 | 6,684.6 | 6,684.6 | 6,684.6 | 82.8 | 134.1 | 89.47 | -3,005.4 | -2,891.9 | 5,501.9 | 5,285.1 | 216.83 | 25.374 | |
| 9,800.0 | 6,684.2 | 6,684.2 | 6,684.2 | 84.2 | 134.1 | 89.46 | -3,005.4 | -2,891.9 | 5,547.8 | 5,329.6 | 218.28 | 25.416 | |
| 9,842.5 | 6,683.9 | 6,683.9 | 6,683.9 | 85.3 | 134.1 | 89.46 | -3,005.4 | -2,891.9 | 5,582.9 | 5,363.5 | 219.38 | 25.448 | |
| 9,900.0 | 6,683.5 | 6,683.5 | 6,683.5 | 86.8 | 134.0 | 89.45 | -3,005.4 | -2,891.9 | 5,630.4 | 5,409.6 | 220.88 | 25.491 | |
| 9,940.9 | 6,683.3 | 6,683.3 | 6,683.3 | 87.9 | 134.0 | 89.44 | -3,005.4 | -2,891.9 | 5,664.4 | 5,442.5 | 221.95 | 25.521 | |
| 10,000.0 | 6,682.9 | 6,682.9 | 6,682.9 | 89.5 | 134.0 | 89.44 | -3,005.4 | -2,891.9 | 5,713.6 | 5,490.1 | 223.49 | 25.565 | |
| 10,039.3 | 6,682.6 | 6,682.6 | 6,682.6 | 90.5 | 134.0 | 89.43 | -3,005.4 | -2,891.9 | 5,746.5 | 5,521.9 | 224.52 | 25.594 | |
| 10,100.0 | 6,682.2 | 6,682.2 | 6,682.2 | 92.1 | 134.0 | 89.43 | -3,005.4 | -2,891.9 | 5,797.3 | 5,571.2 | 226.12 | 25.639 | |
| 10,137.8 | 6,682.0 | 6,682.0 | 6,682.0 | 93.1 | 134.0 | 89.42 | -3,005.4 | -2,891.9 | 5,829.0 | 5,601.9 | 227.11 | 25.666 | |
| 10,200.0 | 6,681.6 | 6,681.6 | 6,681.6 | 94.8 | 134.0 | 89.41 | -3,005.4 | -2,891.9 | 5,881.5 | 5,652.8 | 228.75 | 25.712 | |
| 10,236.2 | 6,681.4 | 6,681.4 | 6,681.4 | 95.7 | 134.0 | 89.41 | -3,005.4 | -2,891.9 | 5,912.1 | 5,682.4 | 229.70 | 25.738 | |
| 10,300.0 | 6,680.9 | 6,680.9 | 6,680.9 | 97.4 | 134.0 | 89.40 | -3,005.4 | -2,891.9 | 5,966.2 | 5,734.8 | 231.39 | 25.784 | |
| 10,334.6 | 6,680.7 | 6,680.7 | 6,680.7 | 98.3 | 134.0 | 89.40 | -3,005.4 | -2,891.9 | 5,995.6 | 5,763.3 | 232.31 | 25.809 | |
| 10,400.0 | 6,680.3 | 6,680.3 | 6,680.3 | 100.1 | 134.0 | 89.39 | -3,005.4 | -2,891.9 | 6,051.4 | 5,817.3 | 234.04 | 25.856 | |
| 10,433.0 | 6,680.1 | 6,680.1 | 6,680.1 | 101.0 | 134.0 | 89.39 | -3,005.4 | -2,891.9 | 6,079.6 | 5,844.7 | 234.92 | 25.879 | |
| 10,500.0 | 6,679.7 | 6,679.7 | 6,679.7 | 102.8 | 134.0 | 89.38 | -3,005.4 | -2,891.9 | 6,137.0 | 5,900.3 | 236.70 | 25.927 | |
| 10,531.5 | 6,679.4 | 6,679.4 | 6,679.4 | 103.6 | 134.0 | 89.37 | -3,005.4 | -2,891.9 | 6,164.0 | 5,926.5 | 237.54 | 25.949 | |
| 10,600.0 | 6,679.0 | 6,679.0 | 6,679.0 | 105.4 | 134.0 | 89.37 | -3,005.4 | -2,891.9 | 6,223.0 | 5,983.6 | 239.37 | 25.998 | |
| 10,629.9 | 6,678.8 | 6,678.8 | 6,678.8 | 106.2 | 134.0 | 89.36 | -3,005.4 | -2,891.9 | 6,248.8 | 6,008.6 | 240.16 | 26.019 | |
| 10,700.0 | 6,678.4 | 6,678.4 | 6,678.4 | 108.1 | 133.9 | 89.35 | -3,005.4 | -2,891.9 | 6,309.4 | 6,067.4 | 242.04 | 26.068 | |
| 10,728.3 | 6,678.2 | 6,678.2 | 6,678.2 | 108.9 | 133.9 | 89.35 | -3,005.4 | -2,891.9 | 6,334.0 | 6,091.2 | 242.80 | 26.088 | |
| 10,800.0 | 6,677.7 | 6,677.7 | 6,677.7 | 110.8 | 133.9 | 89.34 | -3,005.4 | -2,891.9 | 6,396.3 | 6,151.6 | 244.72 | 26.138 | |
| 10,826.7 | 6,677.5 | 6,677.5 | 6,677.5 | 111.5 | 133.9 | 89.34 | -3,005.4 | -2,891.9 | 6,419.6 | 6,174.1 | 245.43 | 26.156 | |
| 10,900.0 | 6,677.1 | 6,677.1 | 6,677.1 | 113.5 | 133.9 | 89.33 | -3,005.4 | -2,891.9 | 6,483.5 | 6,236.1 | 247.40 | 26.207 | |
| 10,925.2 | 6,676.9 | 6,676.9 | 6,676.9 | 114.2 | 133.9 | 89.33 | -3,005.4 | -2,891.9 | 6,505.5 | 6,257.4 | 248.08 | 26.224 | |
| 11,000.0 | 6,676.4 | 6,676.4 | 6,676.4 | 116.2 | 133.9 | 89.32 | -3,005.4 | -2,891.9 | 6,571.1 | 6,321.0 | 250.09 | 26.275 | |
| 11,023.6 | 6,676.3 | 6,676.3 | 6,676.3 | 116.8 | 133.9 | 89.32 | -3,005.4 | -2,891.9 | 6,591.8 | 6,341.1 | 250.72 | 26.291 | |
| 11,100.0 | 6,675.8 | 6,675.8 | 6,675.8 | 118.9 | 133.9 | 89.31 | -3,005.4 | -2,891.9 | 6,659.0 | 6,406.2 | 252.78 | 26.343 | |
| 11,122.0 | 6,675.6 | 6,675.6 | 6,675.6 | 119.5 | 133.9 | 89.30 | -3,005.4 | -2,891.9 | 6,678.4 | 6,425.1 | 253.38 | 26.358 | |
| 11,200.0 | 6,675.1 | 6,675.1 | 6,675.1 | 121.6 | 133.9 | 89.30 | -3,005.4 | -2,891.9 | 6,747.3 | 6,491.8 | 255.48 | 26.410 | |
| 11,220.4 | 6,675.0 | 6,675.0 | 6,675.0 | 122.2 | 133.9 | 89.29 | -3,005.4 | -2,891.9 | 6,765.4 | 6,509.4 | 256.04 | 26.424 | |
| 11,300.0 | 6,674.5 | 6,674.5 | 6,674.5 | 124.3 | 133.9 | 89.28 | -3,005.4 | -2,891.9 | 6,835.9 | 6,577.7 | 258.19 | 26.477 | |
| 11,318.9 | 6,674.3 | 6,674.3 | 6,674.3 | 124.9 | 133.9 | 89.28 | -3,005.4 | -2,891.9 | 6,852.6 | 6,594.0 | 258.70 | 26.489 | |
| 11,400.0 | 6,673.8 | 6,673.8 | 6,673.8 | 127.1 | 133.9 | 89.27 | -3,005.4 | -2,891.9 | 6,924.8 | 6,663.9 | 260.89 | 26.543 | |
| 11,417.3 | 6,673.7 | 6,673.7 | 6,673.7 | 127.5 | 133.9 | 89.27 | -3,005.4 | -2,891.9 | 6,940.2 | 6,678.8 | 261.36 | 26.554 | |
| 11,500.0 | 6,673.2 | 6,673.2 | 6,673.2 | 129.8 | 133.8 | 89.26 | -3,005.4 | -2,891.9 | 7,014.0 | 6,750.4 | 263.60 | 26.608 | |
| 11,515.7 | 6,673.1 | 6,673.1 | 6,673.1 | 130.2 | 133.8 | 89.26 | -3,005.4 | -2,891.9 | 7,028.1 | 6,764.0 | 264.03 | 26.618 | |
| 11,600.0 | 6,672.5 | 6,672.5 | 6,672.5 | 132.5 | 133.8 | 89.25 | -3,005.4 | -2,891.9 | 7,103.5 | 6,837.2 | 266.32 | 26.673 | |
| 11,614.1 | 6,672.4 | 6,672.4 | 6,672.4 | 132.9 | 133.8 | 89.25 | -3,005.4 | -2,891.9 | 7,116.2 | 6,849.5 | 266.70 | 26.682 | |
| 11,700.0 | 6,671.9 | 6,671.9 | 6,671.9 | 135.3 | 133.8 | 89.24 | -3,005.4 | -2,891.9 | 7,193.3 | 6,924.2 | 269.04 | 26.737 | |
| 11,712.6 | 6,671.8 | 6,671.8 | 6,671.8 | 135.6 | 133.8 | 89.24 | -3,005.4 | -2,891.9 | 7,204.6 | 6,935.2 | 269.38 | 26.745 | |
| 11,800.0 | 6,671.2 | 6,671.2 | 6,671.2 | 138.0 | 133.8 | 89.22 | -3,005.4 | -2,891.9 | 7,283.3 | 7,011.5 | 271.76 | 26.801 | |
| 11,811.0 | 6,671.1 | 6,671.1 | 6,671.1 | 138.3 | 133.8 | 89.22 | -3,005.4 | -2,891.9 | 7,293.2 | 7,021.2 | 272.06 | 26.808 | |
| 11,900.0 | 6,670.6 | 6,670.6 | 6,670.6 | 140.7 | 133.8 | 89.21 | -3,005.4 | -2,891.9 | 7,373.6 | 7,099.1 | 274.48 | 26.864 | |
| 11,909.4 | 6,670.5 | 6,670.5 | 6,670.5 | 141.0 | 133.8 | 89.21 | -3,005.4 | -2,891.9 | 7,382.1 | 7,107.4 | 274.74 | 26.870 | |
| 11,987.2 | 6,670.0 | 6,670.0 | 6,670.0 | 143.1 | 133.8 | 89.20 | -3,005.4 | -2,891.9 | 7,452.5 | 7,175.7 | 276.86 | 26.918 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -152.21 | -2,976.4 | -1,568.8 | 3,364.5 | | | | |
| 98.4 | 98.4 | 109.6 | 109.6 | 0.1 | 0.1 | -152.21 | -2,976.1 | -1,568.7 | 3,364.3 | 3,364.0 | 0.21 | N/A | |
| 100.0 | 100.0 | 111.1 | 111.1 | 0.1 | 0.1 | -152.21 | -2,976.1 | -1,568.7 | 3,364.2 | 3,364.0 | 0.21 | N/A | |
| 196.8 | 196.8 | 202.2 | 202.2 | 0.3 | 0.2 | -152.21 | -2,975.8 | -1,568.5 | 3,363.9 | 3,363.3 | 0.55 | 6,131.810 | |
| 200.0 | 200.0 | 205.3 | 205.3 | 0.3 | 0.2 | -152.21 | -2,975.8 | -1,568.5 | 3,363.9 | 3,363.3 | 0.56 | 6,026.555 | |
| 295.3 | 295.3 | 300.0 | 300.0 | 0.5 | 0.3 | -152.21 | -2,975.6 | -1,568.4 | 3,363.6 | 3,362.8 | 0.85 | 3,965.052 | |
| 300.0 | 300.0 | 304.5 | 304.5 | 0.5 | 0.3 | -152.21 | -2,975.6 | -1,568.4 | 3,363.6 | 3,362.8 | 0.86 | 3,905.444 | |
| 393.7 | 393.7 | 405.8 | 405.8 | 0.8 | 0.4 | -152.20 | -2,975.0 | -1,568.7 | 3,363.3 | 3,362.2 | 1.12 | 2,989.735 | |
| 400.0 | 400.0 | 412.6 | 412.6 | 0.8 | 0.4 | -152.20 | -2,974.9 | -1,568.7 | 3,363.3 | 3,362.1 | 1.14 | 2,942.340 | |
| 492.1 | 492.1 | 511.6 | 511.6 | 1.0 | 0.4 | -152.18 | -2,974.0 | -1,569.3 | 3,362.7 | 3,361.3 | 1.41 | 2,390.232 | |
| 500.0 | 500.0 | 520.2 | 520.2 | 1.0 | 0.5 | -152.18 | -2,973.9 | -1,569.4 | 3,362.7 | 3,361.2 | 1.43 | 2,353.077 | |
| 590.5 | 590.5 | 617.3 | 617.3 | 1.2 | 0.5 | -152.16 | -2,972.7 | -1,569.8 | 3,361.9 | 3,360.2 | 1.68 | 1,999.882 | |
| 600.0 | 600.0 | 626.7 | 626.7 | 1.2 | 0.5 | -152.16 | -2,972.6 | -1,569.8 | 3,361.8 | 3,360.1 | 1.71 | 1,969.817 | |
| 689.0 | 689.0 | 713.3 | 713.3 | 1.4 | 0.6 | -152.15 | -2,971.6 | -1,570.0 | 3,361.0 | 3,359.1 | 1.95 | 1,726.579 | |
| 700.0 | 700.0 | 722.9 | 722.9 | 1.4 | 0.6 | -152.15 | -2,971.5 | -1,570.0 | 3,360.9 | 3,358.9 | 1.98 | 1,701.290 | |
| 787.4 | 787.4 | 800.0 | 800.0 | 1.6 | 0.6 | -152.14 | -2,970.8 | -1,570.3 | 3,360.4 | 3,358.2 | 2.21 | 1,523.889 | |
| 800.0 | 800.0 | 810.6 | 810.6 | 1.7 | 0.6 | -152.14 | -2,970.8 | -1,570.3 | 3,360.3 | 3,358.1 | 2.24 | 1,501.539 | |
| 885.8 | 885.8 | 890.1 | 890.1 | 1.9 | 0.6 | -152.13 | -2,970.2 | -1,570.8 | 3,360.0 | 3,357.6 | 2.46 | 1,363.265 | |
| 900.0 | 900.0 | 903.3 | 903.3 | 1.9 | 0.6 | -152.13 | -2,970.2 | -1,570.9 | 3,360.0 | 3,357.5 | 2.50 | 1,342.816 | |
| 984.2 | 984.2 | 983.3 | 983.3 | 2.1 | 0.7 | -152.11 | -2,969.7 | -1,571.5 | 3,359.9 | 3,357.1 | 2.73 | 1,232.803 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 0.7 | -152.11 | -2,969.6 | -1,571.6 | 3,359.8 | 3,357.1 | 2.77 | 1,213.856 | |
| 1,082.7 | 1,082.7 | 1,076.4 | 1,076.3 | 2.3 | 0.7 | -67.69 | -2,969.3 | -1,572.2 | 3,359.4 | 3,356.4 | 2.98 | 1,126.711 | |
| 1,100.0 | 1,100.0 | 1,092.8 | 1,092.7 | 2.3 | 0.7 | -67.70 | -2,969.2 | -1,572.4 | 3,359.2 | 3,356.2 | 3.02 | 1,110.915 | |
| 1,181.1 | 1,181.0 | 1,170.2 | 1,170.2 | 2.5 | 0.8 | -67.77 | -2,969.0 | -1,573.0 | 3,357.8 | 3,354.6 | 3.22 | 1,044.106 | |
| 1,200.0 | 1,199.8 | 1,188.3 | 1,188.2 | 2.5 | 0.8 | -67.79 | -2,969.0 | -1,573.2 | 3,357.4 | 3,354.1 | 3.26 | 1,029.665 | |
| 1,279.5 | 1,279.1 | 1,272.1 | 1,272.1 | 2.7 | 0.8 | -67.93 | -2,968.7 | -1,574.0 | 3,355.0 | 3,351.5 | 3.46 | 969.376 | |
| 1,300.0 | 1,299.5 | 1,294.0 | 1,294.0 | 2.8 | 0.8 | -67.98 | -2,968.6 | -1,574.3 | 3,354.2 | 3,350.7 | 3.51 | 954.891 | |
| 1,377.9 | 1,376.9 | 1,375.4 | 1,375.4 | 3.0 | 0.8 | -68.18 | -2,968.2 | -1,575.0 | 3,350.8 | 3,347.0 | 3.72 | 899.576 | |
| 1,400.0 | 1,398.7 | 1,398.4 | 1,398.3 | 3.0 | 0.8 | -68.25 | -2,968.1 | -1,575.2 | 3,349.6 | 3,345.8 | 3.78 | 884.979 | |
| 1,476.4 | 1,474.2 | 1,472.7 | 1,472.6 | 3.2 | 0.9 | -68.50 | -2,967.7 | -1,575.7 | 3,345.2 | 3,341.2 | 4.01 | 833.770 | |
| 1,500.0 | 1,497.5 | 1,495.6 | 1,495.5 | 3.3 | 0.9 | -68.59 | -2,967.7 | -1,575.8 | 3,343.7 | 3,339.6 | 4.08 | 819.016 | |
| 1,574.8 | 1,571.0 | 1,565.7 | 1,565.6 | 3.5 | 0.9 | -68.89 | -2,967.5 | -1,576.1 | 3,338.6 | 3,334.3 | 4.33 | 771.017 | |
| 1,600.0 | 1,595.6 | 1,589.2 | 1,589.1 | 3.6 | 0.9 | -69.00 | -2,967.4 | -1,576.3 | 3,336.7 | 3,332.3 | 4.41 | 755.983 | |
| 1,673.2 | 1,667.0 | 1,660.3 | 1,660.2 | 3.9 | 0.9 | -69.35 | -2,967.3 | -1,576.7 | 3,330.9 | 3,326.2 | 4.69 | 710.206 | |
| 1,700.0 | 1,693.1 | 1,686.3 | 1,686.3 | 4.0 | 0.9 | -69.49 | -2,967.2 | -1,576.8 | 3,328.7 | 3,323.9 | 4.79 | 694.711 | |
| 1,771.6 | 1,762.4 | 1,756.0 | 1,756.0 | 4.3 | 1.0 | -69.89 | -2,967.1 | -1,577.1 | 3,322.2 | 3,317.1 | 5.10 | 651.199 | |
| 1,800.0 | 1,789.6 | 1,783.5 | 1,783.4 | 4.4 | 1.0 | -70.06 | -2,967.1 | -1,577.3 | 3,319.5 | 3,314.3 | 5.23 | 635.312 | |
| 1,870.1 | 1,856.8 | 1,862.5 | 1,862.4 | 4.7 | 1.0 | -70.56 | -2,966.8 | -1,577.7 | 3,312.4 | 3,306.8 | 5.58 | 594.025 | |
| 1,900.0 | 1,885.3 | 1,897.6 | 1,897.5 | 4.9 | 1.0 | -70.80 | -2,966.6 | -1,577.7 | 3,309.1 | 3,303.4 | 5.73 | 577.767 | |
| 1,968.5 | 1,950.2 | 2,000.1 | 2,000.0 | 5.3 | 1.1 | -71.49 | -2,965.5 | -1,577.6 | 3,300.9 | 3,294.8 | 6.14 | 537.728 | |
| 2,000.0 | 1,979.8 | 2,035.8 | 2,035.7 | 5.5 | 1.1 | -71.77 | -2,964.9 | -1,577.4 | 3,296.8 | 3,290.5 | 6.33 | 521.189 | |
| 2,044.9 | 2,021.9 | 2,086.3 | 2,086.2 | 5.7 | 1.1 | -72.18 | -2,964.0 | -1,577.0 | 3,290.8 | 3,284.2 | 6.62 | 497.362 | |
| 2,066.9 | 2,042.5 | 2,110.3 | 2,110.2 | 5.9 | 1.1 | -72.32 | -2,963.5 | -1,576.8 | 3,287.7 | 3,281.0 | 6.76 | 486.193 | |
| 2,100.0 | 2,073.4 | 2,145.2 | 2,145.1 | 6.1 | 1.1 | -72.53 | -2,962.9 | -1,576.4 | 3,283.2 | 3,276.2 | 6.98 | 470.303 | |
| 2,165.3 | 2,134.4 | 2,211.4 | 2,211.3 | 6.5 | 1.1 | -72.94 | -2,961.6 | -1,575.4 | 3,274.1 | 3,266.7 | 7.43 | 440.954 | |
| 2,200.0 | 2,166.8 | 2,241.3 | 2,241.2 | 6.8 | 1.1 | -73.12 | -2,961.0 | -1,574.9 | 3,269.4 | 3,261.8 | 7.66 | 426.888 | |
| 2,263.8 | 2,226.4 | 2,296.2 | 2,296.0 | 7.2 | 1.1 | -73.46 | -2,960.1 | -1,573.8 | 3,260.9 | 3,252.8 | 8.10 | 402.514 | |
| 2,300.0 | 2,260.2 | 2,327.0 | 2,326.8 | 7.4 | 1.1 | -73.66 | -2,959.6 | -1,573.2 | 3,256.1 | 3,247.8 | 8.35 | 389.828 | |
| 2,362.2 | 2,318.3 | 2,379.8 | 2,379.6 | 7.9 | 1.1 | -73.99 | -2,958.9 | -1,572.1 | 3,248.2 | 3,239.4 | 8.79 | 369.365 | |
| 2,400.0 | 2,353.6 | 2,411.1 | 2,410.9 | 8.1 | 1.2 | -74.19 | -2,958.5 | -1,571.4 | 3,243.5 | 3,234.4 | 9.06 | 357.902 | |
| 2,460.6 | 2,410.3 | 2,459.1 | 2,458.9 | 8.6 | 1.2 | -74.49 | -2,958.0 | -1,570.5 | 3,236.1 | 3,226.6 | 9.50 | 340.677 | |
| 2,500.0 | 2,447.0 | 2,490.3 | 2,490.1 | 8.9 | 1.2 | -74.69 | -2,957.7 | -1,570.0 | 3,231.5 | 3,221.7 | 9.78 | 330.304 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,539.0 | 2,538.8 | 9.3 | 1.2 | -75.00 | -2,957.2 | -1,569.2 | 3,224.8 | 3,214.6 | 10.22 | 315.648 | |
| 2,600.0 | 2,540.5 | 2,573.1 | 2,572.9 | 9.6 | 1.2 | -75.21 | -2,957.0 | -1,568.8 | 3,220.3 | 3,209.8 | 10.52 | 306.181 | |
| 2,657.5 | 2,594.2 | 2,627.0 | 2,626.8 | 10.0 | 1.2 | -75.55 | -2,956.6 | -1,568.3 | 3,214.1 | 3,203.2 | 10.95 | 293.568 | |
| 2,700.0 | 2,633.9 | 2,672.6 | 2,672.3 | 10.3 | 1.2 | -75.84 | -2,956.1 | -1,567.8 | 3,209.6 | 3,198.3 | 11.27 | 284.754 | |
| 2,755.9 | 2,686.1 | 2,727.3 | 2,727.1 | 10.7 | 1.2 | -76.19 | -2,955.5 | -1,567.2 | 3,203.6 | 3,191.9 | 11.70 | 273.874 | |
| 2,800.0 | 2,727.3 | 2,767.1 | 2,766.9 | 11.0 | 1.2 | -76.44 | -2,955.1 | -1,566.8 | 3,199.0 | 3,186.9 | 12.03 | 265.861 | |
| 2,854.3 | 2,778.1 | 2,816.0 | 2,815.8 | 11.4 | 1.3 | -76.75 | -2,954.6 | -1,566.3 | 3,193.4 | 3,181.0 | 12.45 | 256.537 | |
| 2,900.0 | 2,820.7 | 2,857.1 | 2,856.9 | 11.8 | 1.3 | -77.01 | -2,954.2 | -1,565.8 | 3,188.8 | 3,176.0 | 12.80 | 249.172 | |
| 2,952.7 | 2,870.0 | 2,904.4 | 2,904.2 | 12.2 | 1.3 | -77.32 | -2,953.8 | -1,565.3 | 3,183.7 | 3,170.5 | 13.20 | 241.117 | |
| 3,000.0 | 2,914.2 | 2,946.0 | 2,945.8 | 12.5 | 1.3 | -77.58 | -2,953.4 | -1,564.9 | 3,179.2 | 3,165.6 | 13.57 | 234.319 | |
| 3,051.2 | 2,962.0 | 2,991.1 | 2,990.9 | 12.9 | 1.3 | -77.87 | -2,953.1 | -1,564.4 | 3,174.5 | 3,160.5 | 13.96 | 227.334 | |
| 3,100.0 | 3,007.6 | 3,037.7 | 3,037.5 | 13.3 | 1.3 | -78.17 | -2,952.7 | -1,564.0 | 3,170.1 | 3,155.7 | 14.34 | 220.994 | |
| 3,149.6 | 3,053.9 | 3,086.1 | 3,085.8 | 13.6 | 1.3 | -78.48 | -2,952.2 | -1,563.7 | 3,165.7 | 3,151.0 | 14.73 | 214.860 | |
| 3,200.0 | 3,101.0 | 3,137.4 | 3,137.2 | 14.0 | 1.3 | -78.81 | -2,951.7 | -1,563.5 | 3,161.3 | 3,146.1 | 15.13 | 208.932 | |
| 3,248.0 | 3,145.9 | 3,187.3 | 3,187.1 | 14.4 | 1.4 | -79.12 | -2,951.0 | -1,563.5 | 3,157.1 | 3,141.6 | 15.51 | 203.541 | |
| 3,300.0 | 3,194.4 | 3,250.5 | 3,250.2 | 14.8 | 1.4 | -79.52 | -2,949.8 | -1,563.8 | 3,152.5 | 3,136.6 | 15.93 | 197.918 | |
| 3,346.4 | 3,237.8 | 3,308.9 | 3,308.5 | 15.1 | 1.4 | -79.88 | -2,948.3 | -1,564.2 | 3,148.3 | 3,132.0 | 16.30 | 193.099 | |
| 3,400.0 | 3,287.8 | 3,372.0 | 3,371.7 | 15.5 | 1.4 | -80.26 | -2,946.5 | -1,564.7 | 3,143.3 | 3,126.6 | 16.74 | 187.822 | |
| 3,444.9 | 3,329.8 | 3,419.3 | 3,418.9 | 15.9 | 1.4 | -80.55 | -2,944.9 | -1,565.2 | 3,139.0 | 3,121.9 | 17.09 | 183.627 | |
| 3,500.0 | 3,381.3 | 3,469.7 | 3,469.3 | 16.3 | 1.4 | -80.86 | -2,943.2 | -1,565.6 | 3,133.9 | 3,116.4 | 17.53 | 178.758 | |
| 3,543.3 | 3,421.7 | 3,509.1 | 3,508.7 | 16.6 | 1.5 | -81.11 | -2,941.9 | -1,566.1 | 3,130.0 | 3,112.1 | 17.88 | 175.100 | |
| 3,600.0 | 3,474.7 | 3,560.0 | 3,559.5 | 17.0 | 1.5 | -81.42 | -2,940.2 | -1,566.6 | 3,125.0 | 3,106.6 | 18.33 | 170.528 | |
| 3,641.7 | 3,513.7 | 3,597.4 | 3,596.9 | 17.3 | 1.5 | -81.65 | -2,939.1 | -1,566.9 | 3,121.4 | 3,102.7 | 18.66 | 167.304 | |
| 3,700.0 | 3,568.1 | 3,646.3 | 3,645.8 | 17.8 | 1.5 | -81.96 | -2,937.6 | -1,567.3 | 3,116.5 | 3,097.4 | 19.12 | 163.011 | |
| 3,740.1 | 3,605.6 | 3,679.9 | 3,679.4 | 18.1 | 1.5 | -82.17 | -2,936.6 | -1,567.6 | 3,113.3 | 3,093.9 | 19.44 | 160.174 | |
| 3,800.0 | 3,661.5 | 3,732.0 | 3,731.5 | 18.5 | 1.5 | -82.49 | -2,935.2 | -1,568.2 | 3,108.7 | 3,088.8 | 19.91 | 156.115 | |
| 3,838.6 | 3,697.6 | 3,766.6 | 3,766.0 | 18.8 | 1.5 | -82.71 | -2,934.2 | -1,568.6 | 3,105.8 | 3,085.6 | 20.22 | 153.598 | |
| 3,900.0 | 3,754.9 | 3,820.7 | 3,820.1 | 19.3 | 1.6 | -83.04 | -2,932.8 | -1,569.2 | 3,101.4 | 3,080.7 | 20.71 | 149.756 | |
| 3,937.0 | 3,789.5 | 3,852.5 | 3,851.9 | 19.6 | 1.6 | -83.24 | -2,932.0 | -1,569.6 | 3,098.9 | 3,077.9 | 21.00 | 147.534 | |
| 4,000.0 | 3,848.4 | 3,900.0 | 3,899.4 | 20.1 | 1.6 | -83.54 | -2,930.8 | -1,570.3 | 3,094.7 | 3,073.2 | 21.50 | 143.920 | |
| 4,035.4 | 3,881.5 | 3,935.0 | 3,934.3 | 20.3 | 1.6 | -83.76 | -2,930.0 | -1,570.7 | 3,092.5 | 3,070.7 | 21.79 | 141.941 | |
| 4,100.0 | 3,941.8 | 3,987.4 | 3,986.8 | 20.8 | 1.6 | -84.09 | -2,929.0 | -1,571.5 | 3,088.7 | 3,066.4 | 22.30 | 138.507 | |
| 4,133.8 | 3,973.4 | 4,014.4 | 4,013.7 | 21.1 | 1.6 | -84.26 | -2,928.5 | -1,571.8 | 3,086.9 | 3,064.3 | 22.57 | 136.777 | |
| 4,200.0 | 4,035.2 | 4,066.1 | 4,065.5 | 21.6 | 1.6 | -84.58 | -2,927.6 | -1,572.6 | 3,083.5 | 3,060.4 | 23.09 | 133.531 | |
| 4,232.3 | 4,065.4 | 4,091.4 | 4,090.7 | 21.8 | 1.7 | -84.74 | -2,927.3 | -1,572.9 | 3,082.0 | 3,058.7 | 23.35 | 132.004 | |
| 4,300.0 | 4,128.6 | 4,153.9 | 4,153.2 | 22.3 | 1.7 | -85.14 | -2,926.5 | -1,573.8 | 3,079.1 | 3,055.2 | 23.89 | 128.897 | |
| 4,330.7 | 4,157.3 | 4,183.1 | 4,182.5 | 22.6 | 1.7 | -85.32 | -2,926.2 | -1,574.3 | 3,077.8 | 3,053.7 | 24.13 | 127.534 | |
| 4,400.0 | 4,222.0 | 4,254.3 | 4,253.6 | 23.1 | 1.7 | -85.77 | -2,925.2 | -1,575.5 | 3,075.0 | 3,050.3 | 24.69 | 124.549 | |
| 4,429.1 | 4,249.3 | 4,285.0 | 4,284.3 | 23.3 | 1.7 | -85.96 | -2,924.7 | -1,576.1 | 3,073.8 | 3,048.9 | 24.92 | 123.333 | |
| 4,500.0 | 4,315.5 | 4,348.9 | 4,348.2 | 23.9 | 1.7 | -86.36 | -2,923.6 | -1,577.5 | 3,071.0 | 3,045.5 | 25.49 | 120.494 | |
| 4,527.5 | 4,341.2 | 4,372.7 | 4,372.0 | 24.1 | 1.7 | -86.51 | -2,923.3 | -1,578.0 | 3,070.0 | 3,044.3 | 25.71 | 119.430 | |
| 4,600.0 | 4,408.9 | 4,439.3 | 4,438.5 | 24.6 | 1.7 | -86.92 | -2,922.3 | -1,579.7 | 3,067.6 | 3,041.3 | 26.28 | 116.719 | |
| 4,626.0 | 4,433.2 | 4,464.2 | 4,463.5 | 24.8 | 1.8 | -87.07 | -2,921.9 | -1,580.3 | 3,066.8 | 3,040.3 | 26.49 | 115.777 | |
| 4,700.0 | 4,502.3 | 4,551.5 | 4,550.7 | 25.4 | 1.8 | -87.61 | -2,920.4 | -1,582.6 | 3,064.4 | 3,037.4 | 27.08 | 113.143 | |
| 4,724.4 | 4,525.1 | 4,585.6 | 4,584.8 | 25.6 | 1.8 | -87.82 | -2,919.6 | -1,583.6 | 3,063.6 | 3,036.3 | 27.28 | 112.289 | |
| 4,800.0 | 4,595.7 | 4,673.6 | 4,672.7 | 26.2 | 1.8 | -88.35 | -2,917.1 | -1,586.3 | 3,060.7 | 3,032.8 | 27.89 | 109.732 | |
| 4,822.8 | 4,617.1 | 4,699.3 | 4,698.4 | 26.3 | 1.8 | -88.51 | -2,916.2 | -1,587.3 | 3,059.8 | 3,031.7 | 28.08 | 108.982 | |
| 4,900.0 | 4,689.2 | 4,760.1 | 4,759.1 | 26.9 | 1.8 | -88.87 | -2,914.4 | -1,589.3 | 3,056.9 | 3,028.3 | 28.69 | 106.566 | |
| 4,921.2 | 4,709.0 | 4,776.7 | 4,775.7 | 27.1 | 1.9 | -88.97 | -2,913.9 | -1,589.9 | 3,056.3 | 3,027.4 | 28.85 | 105.922 | |
| 5,000.0 | 4,782.6 | 4,845.9 | 4,844.8 | 27.7 | 1.9 | -89.40 | -2,912.1 | -1,591.9 | 3,054.0 | 3,024.5 | 29.48 | 103.600 | |
| 5,019.7 | 4,801.0 | 4,864.3 | 4,863.2 | 27.8 | 1.9 | -89.51 | -2,911.7 | -1,592.4 | 3,053.4 | 3,023.8 | 29.63 | 103.036 | |
| 5,100.0 | 4,876.0 | 4,940.4 | 4,939.3 | 28.4 | 1.9 | -89.98 | -2,909.8 | -1,594.3 | 3,051.4 | 3,021.2 | 30.27 | 100.798 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,957.8 | 4,956.6 | 28.6 | 1.9 | -90.09 | -2,909.3 | -1,594.8 | 3,051.0 | 3,020.6 | 30.42 | 100.307 | |
| 5,159.9 | 4,932.0 | 4,997.9 | 4,996.7 | 28.9 | 1.9 | -90.34 | -2,908.3 | -1,595.9 | 3,050.1 | 3,019.3 | 30.75 | 99.194 | |
| 5,200.0 | 4,969.5 | 5,027.7 | 5,026.5 | 29.2 | 1.9 | -90.50 | -2,907.6 | -1,596.7 | 3,049.3 | 3,018.2 | 31.03 | 98.281 | |
| 5,216.5 | 4,985.1 | 5,039.8 | 5,038.6 | 29.3 | 1.9 | -90.57 | -2,907.3 | -1,597.1 | 3,049.0 | 3,017.9 | 31.12 | 97.973 | |
| 5,300.0 | 5,064.0 | 5,101.5 | 5,100.3 | 29.7 | 1.9 | -90.89 | -2,906.2 | -1,598.7 | 3,047.9 | 3,016.3 | 31.60 | 96.458 | |
| 5,314.9 | 5,078.2 | 5,115.5 | 5,114.2 | 29.8 | 2.0 | -90.96 | -2,906.0 | -1,599.1 | 3,047.8 | 3,016.1 | 31.68 | 96.217 | |
| 5,400.0 | 5,159.6 | 5,195.2 | 5,193.9 | 30.2 | 2.0 | -91.35 | -2,904.8 | -1,601.2 | 3,047.2 | 3,015.1 | 32.12 | 94.872 | |
| 5,413.4 | 5,172.4 | 5,207.5 | 5,206.2 | 30.3 | 2.0 | -91.40 | -2,904.6 | -1,601.6 | 3,047.1 | 3,014.9 | 32.18 | 94.686 | |
| 5,500.0 | 5,256.1 | 5,286.7 | 5,285.4 | 30.7 | 2.0 | -91.74 | -2,903.5 | -1,604.0 | 3,046.7 | 3,014.1 | 32.58 | 93.505 | |
| 5,511.8 | 5,267.6 | 5,300.0 | 5,298.7 | 30.7 | 2.0 | -91.79 | -2,903.3 | -1,604.4 | 3,046.6 | 3,014.0 | 32.63 | 93.364 | |
| 5,600.0 | 5,353.5 | 5,382.0 | 5,380.6 | 31.1 | 2.0 | -92.07 | -2,902.3 | -1,607.2 | 3,046.4 | 3,013.4 | 32.99 | 92.336 | |
| 5,610.2 | 5,363.5 | 5,391.9 | 5,390.5 | 31.1 | 2.0 | -92.10 | -2,902.2 | -1,607.6 | 3,046.4 | 3,013.3 | 33.03 | 92.234 | |
| 5,699.1 | 5,450.8 | 5,470.0 | 5,468.5 | 31.4 | 2.0 | -92.32 | -2,901.3 | -1,610.8 | 3,046.2 | 3,012.9 | 33.34 | 91.362 | CC |
| 5,700.0 | 5,451.6 | 5,470.7 | 5,469.2 | 31.4 | 2.0 | -92.32 | -2,901.3 | -1,610.8 | 3,046.2 | 3,012.9 | 33.35 | 91.353 | |
| 5,708.6 | 5,460.2 | 5,478.2 | 5,476.8 | 31.4 | 2.0 | -92.34 | -2,901.2 | -1,611.1 | 3,046.2 | 3,012.9 | 33.37 | 91.282 | |
| 5,800.0 | 5,550.4 | 5,558.0 | 5,556.4 | 31.7 | 2.1 | -92.52 | -2,900.6 | -1,614.3 | 3,046.4 | 3,012.7 | 33.65 | 90.544 | |
| 5,807.1 | 5,557.4 | 5,564.2 | 5,562.6 | 31.7 | 2.1 | -92.53 | -2,900.6 | -1,614.5 | 3,046.4 | 3,012.7 | 33.66 | 90.498 | |
| 5,900.0 | 5,649.6 | 5,654.4 | 5,652.8 | 31.9 | 2.1 | -92.70 | -2,900.3 | -1,617.1 | 3,046.7 | 3,012.8 | 33.89 | 89.888 | |
| 5,905.5 | 5,655.1 | 5,660.2 | 5,658.6 | 31.9 | 2.1 | -92.71 | -2,900.3 | -1,617.3 | 3,046.7 | 3,012.8 | 33.91 | 89.859 | |
| 6,000.0 | 5,749.2 | 5,757.7 | 5,756.1 | 32.1 | 2.1 | -92.83 | -2,899.9 | -1,619.2 | 3,046.9 | 3,012.8 | 34.10 | 89.356 | |
| 6,003.9 | 5,753.1 | 5,761.8 | 5,760.2 | 32.1 | 2.1 | -92.84 | -2,899.9 | -1,619.2 | 3,046.9 | 3,012.7 | 34.10 | 89.339 | |
| 6,083.4 | 5,832.5 | 5,836.6 | 5,835.0 | 32.2 | 2.1 | -92.90 | -2,899.6 | -1,620.0 | 3,046.8 | 3,012.6 | 34.23 | 89.017 | |
| 6,100.0 | 5,849.1 | 5,851.1 | 5,849.5 | 32.3 | 2.1 | -92.91 | -2,899.5 | -1,620.1 | 3,046.8 | 3,012.6 | 34.25 | 88.952 | |
| 6,102.3 | 5,851.4 | 5,853.1 | 5,851.5 | 32.3 | 2.1 | -92.91 | -2,899.5 | -1,620.1 | 3,046.8 | 3,012.6 | 34.25 | 88.945 | |
| 6,200.8 | 5,949.8 | 5,951.1 | 5,949.5 | 32.4 | 2.2 | -92.94 | -2,899.5 | -1,620.7 | 3,046.9 | 3,012.5 | 34.36 | 88.671 | |
| 6,204.9 | 5,953.9 | 5,955.8 | 5,954.2 | 32.4 | 2.2 | -177.37 | -2,899.5 | -1,620.7 | 3,046.9 | 3,029.0 | 17.88 | 170.397 | |
| 6,234.9 | 5,983.9 | 5,990.2 | 5,988.6 | 32.4 | 2.2 | -177.37 | -2,899.4 | -1,620.8 | 3,046.8 | 3,028.9 | 17.93 | 169.894 | |
| 6,250.0 | 5,999.0 | 6,007.0 | 6,005.4 | 32.4 | 2.2 | 92.63 | -2,899.4 | -1,620.8 | 3,046.8 | 3,012.4 | 34.41 | 88.545 | |
| 6,299.2 | 6,048.2 | 6,058.9 | 6,057.3 | 32.4 | 2.2 | 92.69 | -2,899.1 | -1,620.8 | 3,046.7 | 3,012.3 | 34.43 | 88.493 | |
| 6,300.0 | 6,048.9 | 6,059.7 | 6,058.1 | 32.4 | 2.2 | 92.70 | -2,899.1 | -1,620.8 | 3,046.7 | 3,012.3 | 34.43 | 88.492 | ES |
| 6,301.1 | 6,050.0 | 6,060.9 | 6,059.3 | 32.4 | 2.2 | 92.70 | -2,899.1 | -1,620.8 | 3,046.7 | 3,012.3 | 34.43 | 88.493 | |
| 6,350.0 | 6,098.5 | 6,109.7 | 6,108.1 | 32.4 | 2.2 | 92.81 | -2,898.9 | -1,620.8 | 3,046.8 | 3,012.4 | 34.41 | 88.549 | |
| 6,397.6 | 6,145.3 | 6,149.1 | 6,147.5 | 32.3 | 2.2 | 92.92 | -2,898.8 | -1,620.8 | 3,047.1 | 3,012.8 | 34.35 | 88.720 | |
| 6,400.0 | 6,147.6 | 6,151.1 | 6,149.5 | 32.3 | 2.2 | 92.93 | -2,898.8 | -1,620.8 | 3,047.1 | 3,012.8 | 34.34 | 88.729 | |
| 6,450.0 | 6,195.8 | 6,191.8 | 6,190.2 | 32.2 | 2.2 | 93.08 | -2,898.8 | -1,620.8 | 3,047.8 | 3,013.5 | 34.25 | 88.991 | |
| 6,496.0 | 6,239.3 | 6,234.4 | 6,232.8 | 32.1 | 2.2 | 93.27 | -2,898.8 | -1,620.8 | 3,048.7 | 3,014.6 | 34.14 | 89.302 | |
| 6,500.0 | 6,243.0 | 6,238.1 | 6,236.5 | 32.1 | 2.2 | 93.28 | -2,898.8 | -1,620.8 | 3,048.8 | 3,014.7 | 34.13 | 89.329 | |
| 6,550.0 | 6,289.0 | 6,284.9 | 6,283.3 | 32.0 | 2.2 | 93.53 | -2,898.8 | -1,620.8 | 3,050.1 | 3,016.1 | 33.99 | 89.723 | |
| 6,594.5 | 6,328.6 | 6,330.9 | 6,329.3 | 31.8 | 2.2 | 93.80 | -2,898.8 | -1,620.9 | 3,051.6 | 3,017.7 | 33.87 | 90.099 | |
| 6,600.0 | 6,333.4 | 6,337.0 | 6,335.4 | 31.8 | 2.2 | 93.84 | -2,898.8 | -1,620.9 | 3,051.8 | 3,017.9 | 33.85 | 90.146 | |
| 6,650.0 | 6,376.2 | 6,390.4 | 6,388.8 | 31.7 | 2.2 | 94.21 | -2,898.6 | -1,620.8 | 3,053.7 | 3,020.0 | 33.71 | 90.586 | |
| 6,692.9 | 6,411.3 | 6,426.9 | 6,425.3 | 31.6 | 2.2 | 94.44 | -2,898.4 | -1,620.7 | 3,055.6 | 3,022.0 | 33.60 | 90.951 | |
| 6,700.0 | 6,417.0 | 6,432.5 | 6,430.9 | 31.5 | 2.2 | 94.47 | -2,898.4 | -1,620.7 | 3,056.0 | 3,022.4 | 33.58 | 91.012 | |
| 6,750.0 | 6,455.7 | 6,470.4 | 6,468.8 | 31.4 | 2.2 | 94.69 | -2,898.2 | -1,620.6 | 3,058.9 | 3,025.4 | 33.46 | 91.427 | |
| 6,791.3 | 6,486.0 | 6,500.0 | 6,498.4 | 31.3 | 2.2 | 94.84 | -2,898.0 | -1,620.6 | 3,061.7 | 3,028.4 | 33.37 | 91.746 | |
| 6,800.0 | 6,492.2 | 6,506.0 | 6,504.3 | 31.3 | 2.2 | 94.86 | -2,898.0 | -1,620.6 | 3,062.4 | 3,029.1 | 33.35 | 91.815 | |
| 6,850.0 | 6,526.1 | 6,538.2 | 6,536.6 | 31.2 | 2.2 | 94.96 | -2,897.8 | -1,620.5 | 3,066.7 | 3,033.4 | 33.28 | 92.159 | |
| 6,889.7 | 6,551.2 | 6,562.1 | 6,560.5 | 31.2 | 2.2 | 94.99 | -2,897.7 | -1,620.4 | 3,070.6 | 3,037.4 | 33.24 | 92.378 | |
| 6,900.0 | 6,557.4 | 6,568.0 | 6,566.4 | 31.2 | 2.2 | 94.99 | -2,897.7 | -1,620.4 | 3,071.7 | 3,038.5 | 33.23 | 92.438 | |
| 6,950.0 | 6,586.0 | 6,595.2 | 6,593.6 | 31.1 | 2.3 | 94.94 | -2,897.6 | -1,620.3 | 3,077.5 | 3,044.3 | 33.22 | 92.634 | |
| 6,988.2 | 6,605.8 | 6,615.5 | 6,613.9 | 31.2 | 2.3 | 94.86 | -2,897.5 | -1,620.3 | 3,082.6 | 3,049.3 | 33.25 | 92.707 | |
| 7,000.0 | 6,611.5 | 6,621.6 | 6,620.0 | 31.2 | 2.3 | 94.82 | -2,897.5 | -1,620.2 | 3,084.3 | 3,051.0 | 33.26 | 92.732 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,050.0 | 6,634.1 | 6,645.2 | 6,643.6 | 31.2 | 2.3 | 94.60 | -2,897.4 | -1,620.2 | 3,091.9 | 3,058.5 | 33.35 | 92.722 | |
| 7,086.6 | 6,648.6 | 6,660.5 | 6,658.8 | 31.3 | 2.3 | 94.37 | -2,897.4 | -1,620.1 | 3,098.0 | 3,064.6 | 33.45 | 92.628 | |
| 7,100.0 | 6,653.4 | 6,665.6 | 6,664.0 | 31.4 | 2.3 | 94.27 | -2,897.3 | -1,620.1 | 3,100.4 | 3,066.9 | 33.48 | 92.598 | |
| 7,150.0 | 6,669.5 | 6,682.5 | 6,680.9 | 31.6 | 2.3 | 93.80 | -2,897.3 | -1,620.1 | 3,109.8 | 3,076.2 | 33.67 | 92.359 | |
| 7,185.0 | 6,678.8 | 6,692.3 | 6,690.7 | 31.7 | 2.3 | 93.39 | -2,897.2 | -1,620.0 | 3,117.0 | 3,083.2 | 33.84 | 92.110 | |
| 7,200.0 | 6,682.3 | 6,696.0 | 6,694.4 | 31.8 | 2.3 | 93.20 | -2,897.2 | -1,620.0 | 3,120.2 | 3,086.3 | 33.91 | 92.008 | |
| 7,250.0 | 6,691.6 | 6,705.5 | 6,703.9 | 32.1 | 2.3 | 92.45 | -2,897.2 | -1,620.0 | 3,131.5 | 3,097.3 | 34.20 | 91.555 | |
| 7,283.4 | 6,696.0 | 6,709.8 | 6,708.2 | 32.3 | 2.3 | 91.86 | -2,897.1 | -1,620.0 | 3,139.5 | 3,105.1 | 34.43 | 91.188 | |
| 7,300.0 | 6,697.5 | 6,711.4 | 6,709.7 | 32.4 | 2.3 | 91.55 | -2,897.1 | -1,620.0 | 3,143.6 | 3,109.1 | 34.54 | 91.013 | |
| 7,350.0 | 6,699.9 | 6,713.8 | 6,712.2 | 32.8 | 2.3 | 90.52 | -2,897.1 | -1,620.0 | 3,156.6 | 3,121.7 | 34.92 | 90.397 | |
| 7,364.4 | 6,700.0 | 6,713.9 | 6,712.3 | 32.9 | 2.3 | 90.20 | -2,897.1 | -1,620.0 | 3,160.5 | 3,125.5 | 35.04 | 90.208 | |
| 7,381.9 | 6,699.9 | 6,713.8 | 6,712.2 | 33.1 | 2.3 | 90.20 | -2,897.1 | -1,620.0 | 3,165.3 | 3,130.1 | 35.19 | 89.955 | |
| 7,400.0 | 6,699.8 | 6,713.7 | 6,712.1 | 33.2 | 2.3 | 90.20 | -2,897.1 | -1,620.0 | 3,170.4 | 3,135.0 | 35.35 | 89.698 | |
| 7,480.3 | 6,699.2 | 6,713.4 | 6,711.8 | 34.0 | 2.3 | 90.19 | -2,897.1 | -1,620.0 | 3,194.0 | 3,157.8 | 36.16 | 88.337 | |
| 7,500.0 | 6,699.1 | 6,713.3 | 6,711.7 | 34.2 | 2.3 | 90.19 | -2,897.1 | -1,620.0 | 3,200.1 | 3,163.7 | 36.36 | 88.020 | |
| 7,578.7 | 6,698.6 | 6,713.0 | 6,711.3 | 35.2 | 2.3 | 90.18 | -2,897.1 | -1,620.0 | 3,225.4 | 3,188.1 | 37.31 | 86.461 | |
| 7,600.0 | 6,698.5 | 6,712.9 | 6,711.2 | 35.4 | 2.3 | 90.18 | -2,897.1 | -1,620.0 | 3,232.6 | 3,195.0 | 37.56 | 86.061 | |
| 7,677.1 | 6,698.0 | 6,712.5 | 6,710.9 | 36.5 | 2.3 | 90.18 | -2,897.1 | -1,620.0 | 3,259.5 | 3,220.9 | 38.63 | 84.384 | |
| 7,700.0 | 6,697.8 | 6,712.4 | 6,710.8 | 36.8 | 2.3 | 90.17 | -2,897.1 | -1,620.0 | 3,267.8 | 3,228.9 | 38.94 | 83.913 | |
| 7,775.6 | 6,697.3 | 6,712.1 | 6,710.5 | 38.0 | 2.3 | 90.17 | -2,897.1 | -1,620.0 | 3,296.2 | 3,256.1 | 40.11 | 82.189 | |
| 7,800.0 | 6,697.2 | 6,712.0 | 6,710.4 | 38.3 | 2.3 | 90.17 | -2,897.1 | -1,620.0 | 3,305.7 | 3,265.2 | 40.48 | 81.661 | |
| 7,874.0 | 6,696.7 | 6,711.7 | 6,710.1 | 39.6 | 2.3 | 90.16 | -2,897.1 | -1,620.0 | 3,335.4 | 3,293.7 | 41.72 | 79.945 | |
| 7,900.0 | 6,696.5 | 6,711.6 | 6,709.9 | 40.0 | 2.3 | 90.16 | -2,897.1 | -1,620.0 | 3,346.2 | 3,304.0 | 42.16 | 79.373 | |
| 7,972.4 | 6,696.1 | 6,711.3 | 6,709.6 | 41.3 | 2.3 | 90.15 | -2,897.1 | -1,620.0 | 3,377.0 | 3,333.5 | 43.46 | 77.704 | |
| 8,000.0 | 6,695.9 | 6,711.1 | 6,709.5 | 41.8 | 2.3 | 90.15 | -2,897.1 | -1,620.0 | 3,389.1 | 3,345.1 | 43.96 | 77.102 | |
| 8,070.8 | 6,695.4 | 6,710.9 | 6,709.2 | 43.1 | 2.3 | 90.14 | -2,897.1 | -1,620.0 | 3,420.9 | 3,375.6 | 45.31 | 75.508 | |
| 8,100.0 | 6,695.2 | 6,710.7 | 6,709.1 | 43.7 | 2.3 | 90.14 | -2,897.1 | -1,620.0 | 3,434.4 | 3,388.5 | 45.86 | 74.887 | |
| 8,169.3 | 6,694.8 | 6,710.4 | 6,708.8 | 45.1 | 2.3 | 90.14 | -2,897.1 | -1,620.0 | 3,467.1 | 3,419.8 | 47.25 | 73.385 | |
| 8,200.0 | 6,694.6 | 6,710.3 | 6,708.7 | 45.7 | 2.3 | 90.13 | -2,897.1 | -1,620.0 | 3,481.9 | 3,434.1 | 47.86 | 72.754 | |
| 8,267.7 | 6,694.1 | 6,710.0 | 6,708.4 | 47.1 | 2.3 | 90.13 | -2,897.1 | -1,620.0 | 3,515.4 | 3,466.1 | 49.27 | 71.353 | |
| 8,300.0 | 6,693.9 | 6,709.9 | 6,708.3 | 47.8 | 2.3 | 90.13 | -2,897.1 | -1,620.0 | 3,531.7 | 3,481.8 | 49.94 | 70.719 | |
| 8,366.1 | 6,693.5 | 6,709.6 | 6,708.0 | 49.2 | 2.3 | 90.12 | -2,897.1 | -1,620.0 | 3,565.8 | 3,514.4 | 51.36 | 69.423 | |
| 8,400.0 | 6,693.3 | 6,709.5 | 6,707.9 | 49.9 | 2.3 | 90.12 | -2,897.1 | -1,620.0 | 3,583.6 | 3,531.5 | 52.09 | 68.794 | |
| 8,464.5 | 6,692.9 | 6,709.2 | 6,707.6 | 51.4 | 2.3 | 90.11 | -2,897.1 | -1,620.0 | 3,618.1 | 3,564.6 | 53.52 | 67.602 | |
| 8,500.0 | 6,692.6 | 6,709.1 | 6,707.5 | 52.1 | 2.3 | 90.11 | -2,897.1 | -1,620.0 | 3,637.5 | 3,583.2 | 54.31 | 66.980 | |
| 8,563.0 | 6,692.2 | 6,708.8 | 6,707.2 | 53.6 | 2.3 | 90.11 | -2,897.1 | -1,620.0 | 3,672.4 | 3,616.7 | 55.74 | 65.889 | |
| 8,600.0 | 6,692.0 | 6,708.7 | 6,707.1 | 54.4 | 2.3 | 90.10 | -2,897.1 | -1,620.0 | 3,693.3 | 3,636.7 | 56.58 | 65.279 | |
| 8,661.4 | 6,691.6 | 6,708.5 | 6,706.8 | 55.8 | 2.3 | 90.10 | -2,897.1 | -1,620.0 | 3,728.4 | 3,670.4 | 58.00 | 64.284 | |
| 8,700.0 | 6,691.3 | 6,708.3 | 6,706.7 | 56.7 | 2.3 | 90.10 | -2,897.1 | -1,620.0 | 3,750.9 | 3,692.0 | 58.89 | 63.688 | |
| 8,759.8 | 6,690.9 | 6,708.1 | 6,706.4 | 58.1 | 2.3 | 90.09 | -2,897.1 | -1,620.0 | 3,786.2 | 3,725.9 | 60.31 | 62.783 | |
| 8,800.0 | 6,690.7 | 6,707.9 | 6,706.3 | 59.1 | 2.3 | 90.09 | -2,897.1 | -1,620.0 | 3,810.3 | 3,749.0 | 61.26 | 62.203 | |
| 8,858.2 | 6,690.3 | 6,707.7 | 6,706.1 | 60.5 | 2.3 | 90.08 | -2,897.1 | -1,620.0 | 3,845.7 | 3,783.0 | 62.65 | 61.381 | |
| 8,900.0 | 6,690.0 | 6,707.5 | 6,705.9 | 61.5 | 2.3 | 90.08 | -2,897.1 | -1,620.0 | 3,871.4 | 3,807.7 | 63.65 | 60.819 | |
| 8,956.7 | 6,689.7 | 6,707.3 | 6,705.7 | 62.9 | 2.3 | 90.08 | -2,897.1 | -1,620.0 | 3,906.7 | 3,841.6 | 65.03 | 60.073 | |
| 9,000.0 | 6,689.4 | 6,707.1 | 6,705.5 | 63.9 | 2.3 | 90.07 | -2,897.1 | -1,620.0 | 3,934.0 | 3,867.9 | 66.09 | 59.528 | |
| 9,055.1 | 6,689.0 | 6,706.9 | 6,705.3 | 65.3 | 2.3 | 90.07 | -2,897.1 | -1,620.0 | 3,969.2 | 3,901.8 | 67.44 | 58.853 | |
| 9,100.0 | 6,688.7 | 6,706.8 | 6,705.1 | 66.4 | 2.3 | 90.07 | -2,897.1 | -1,620.0 | 3,998.2 | 3,929.6 | 68.55 | 58.326 | |
| 9,153.5 | 6,688.4 | 6,706.6 | 6,704.9 | 67.7 | 2.3 | 90.06 | -2,897.1 | -1,620.0 | 4,033.1 | 3,963.3 | 69.88 | 57.715 | |
| 9,200.0 | 6,688.1 | 6,706.4 | 6,704.8 | 68.9 | 2.3 | 90.06 | -2,897.1 | -1,620.0 | 4,063.8 | 3,992.8 | 71.04 | 57.207 | |
| 9,251.9 | 6,687.8 | 6,706.2 | 6,704.6 | 70.2 | 2.3 | 90.06 | -2,897.2 | -1,620.0 | 4,098.5 | 4,026.1 | 72.34 | 56.653 | |
| 9,300.0 | 6,687.4 | 6,706.0 | 6,704.4 | 71.4 | 2.3 | 90.05 | -2,897.2 | -1,620.0 | 4,130.8 | 4,057.3 | 73.55 | 56.163 | |
| 9,350.4 | 6,687.1 | 6,705.8 | 6,704.2 | 72.7 | 2.3 | 90.05 | -2,897.2 | -1,620.0 | 4,165.1 | 4,090.3 | 74.83 | 55.663 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 6,686.8 | 6,700.0 | 6,698.4 | 73.9 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,199.1 | 4,123.1 | 76.08 | 55.192 | |
| 9,448.8 | 6,686.5 | 6,700.0 | 6,698.4 | 75.2 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,232.9 | 4,155.6 | 77.33 | 54.740 | |
| 9,500.0 | 6,686.1 | 6,700.0 | 6,698.4 | 76.5 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,268.7 | 4,190.1 | 78.64 | 54.285 | |
| 9,547.2 | 6,685.8 | 6,700.0 | 6,698.4 | 77.7 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,302.0 | 4,222.1 | 79.85 | 53.876 | |
| 9,600.0 | 6,685.5 | 6,700.0 | 6,698.4 | 79.0 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,339.5 | 4,258.3 | 81.21 | 53.437 | |
| 9,645.6 | 6,685.2 | 6,700.0 | 6,698.4 | 80.2 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,372.1 | 4,289.8 | 82.39 | 53.068 | |
| 9,700.0 | 6,684.8 | 6,700.0 | 6,698.4 | 81.6 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,411.3 | 4,327.6 | 83.79 | 52.646 | |
| 9,744.1 | 6,684.6 | 6,700.0 | 6,698.4 | 82.8 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,443.4 | 4,358.4 | 84.94 | 52.312 | |
| 9,800.0 | 6,684.2 | 6,700.0 | 6,698.4 | 84.2 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,484.3 | 4,397.9 | 86.39 | 51.905 | |
| 9,842.5 | 6,683.9 | 6,700.0 | 6,698.4 | 85.3 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,515.6 | 4,428.1 | 87.51 | 51.604 | |
| 9,900.0 | 6,683.5 | 6,700.0 | 6,698.4 | 86.8 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,558.3 | 4,469.3 | 89.01 | 51.212 | |
| 9,940.9 | 6,683.3 | 6,700.0 | 6,698.4 | 87.9 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,588.9 | 4,498.8 | 90.08 | 50.940 | |
| 10,000.0 | 6,682.9 | 6,700.0 | 6,698.4 | 89.5 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,633.3 | 4,541.6 | 91.63 | 50.563 | |
| 10,039.3 | 6,682.6 | 6,700.0 | 6,698.4 | 90.5 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,663.0 | 4,570.4 | 92.67 | 50.317 | |
| 10,100.0 | 6,682.2 | 6,700.0 | 6,698.4 | 92.1 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,709.2 | 4,614.9 | 94.27 | 49.953 | |
| 10,137.8 | 6,682.0 | 6,700.0 | 6,698.4 | 93.1 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,738.1 | 4,642.8 | 95.27 | 49.732 | |
| 10,200.0 | 6,681.6 | 6,700.0 | 6,698.4 | 94.8 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,785.9 | 4,689.0 | 96.92 | 49.381 | |
| 10,236.2 | 6,681.4 | 6,700.0 | 6,698.4 | 95.7 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,814.0 | 4,716.1 | 97.88 | 49.182 | |
| 10,300.0 | 6,680.9 | 6,700.0 | 6,698.4 | 97.4 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,863.6 | 4,764.0 | 99.57 | 48.844 | |
| 10,334.6 | 6,680.7 | 6,700.0 | 6,698.4 | 98.3 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,890.6 | 4,790.1 | 100.50 | 48.665 | |
| 10,400.0 | 6,680.3 | 6,700.0 | 6,698.4 | 100.1 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,942.0 | 4,839.8 | 102.24 | 48.338 | |
| 10,433.0 | 6,680.1 | 6,700.0 | 6,698.4 | 101.0 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 4,968.1 | 4,865.0 | 103.12 | 48.177 | |
| 10,500.0 | 6,679.7 | 6,700.0 | 6,698.4 | 102.8 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,021.2 | 4,916.3 | 104.91 | 47.862 | |
| 10,531.5 | 6,679.4 | 6,700.0 | 6,698.4 | 103.6 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,046.3 | 4,940.5 | 105.75 | 47.717 | |
| 10,600.0 | 6,679.0 | 6,700.0 | 6,698.4 | 105.4 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,101.1 | 4,993.5 | 107.59 | 47.412 | |
| 10,629.9 | 6,678.8 | 6,700.0 | 6,698.4 | 106.2 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,125.2 | 5,016.8 | 108.39 | 47.283 | |
| 10,700.0 | 6,678.4 | 6,700.0 | 6,698.4 | 108.1 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,181.8 | 5,071.5 | 110.28 | 46.989 | |
| 10,728.3 | 6,678.2 | 6,700.0 | 6,698.4 | 108.9 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,204.7 | 5,093.7 | 111.04 | 46.873 | |
| 10,800.0 | 6,677.7 | 6,700.0 | 6,698.4 | 110.8 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,263.0 | 5,150.1 | 112.97 | 46.588 | |
| 10,826.7 | 6,677.5 | 6,700.0 | 6,698.4 | 111.5 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,284.9 | 5,171.2 | 113.69 | 46.485 | |
| 10,900.0 | 6,677.1 | 6,700.0 | 6,698.4 | 113.5 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,345.0 | 5,229.3 | 115.67 | 46.210 | |
| 10,925.2 | 6,676.9 | 6,700.0 | 6,698.4 | 114.2 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,365.7 | 5,249.3 | 116.35 | 46.118 | |
| 11,000.0 | 6,676.4 | 6,700.0 | 6,698.4 | 116.2 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,427.5 | 5,309.1 | 118.37 | 45.852 | |
| 11,023.6 | 6,676.3 | 6,700.0 | 6,698.4 | 116.8 | 2.3 | 89.94 | -2,897.2 | -1,620.0 | 5,447.1 | 5,328.1 | 119.01 | 45.770 | |
| 11,100.0 | 6,675.8 | 6,699.7 | 6,698.1 | 118.9 | 2.3 | 89.93 | -2,897.2 | -1,620.0 | 5,510.6 | 5,389.5 | 121.08 | 45.513 | |
| 11,122.0 | 6,675.6 | 6,699.7 | 6,698.0 | 119.5 | 2.3 | 89.93 | -2,897.2 | -1,620.0 | 5,529.0 | 5,407.3 | 121.68 | 45.440 | |
| 11,200.0 | 6,675.1 | 6,699.3 | 6,697.7 | 121.6 | 2.3 | 89.93 | -2,897.2 | -1,620.0 | 5,594.3 | 5,470.5 | 123.79 | 45.191 | |
| 11,220.4 | 6,675.0 | 6,699.3 | 6,697.6 | 122.2 | 2.3 | 89.93 | -2,897.2 | -1,620.0 | 5,611.4 | 5,487.1 | 124.35 | 45.127 | |
| 11,300.0 | 6,674.5 | 6,698.9 | 6,697.3 | 124.3 | 2.3 | 89.92 | -2,897.2 | -1,620.0 | 5,678.5 | 5,552.0 | 126.51 | 44.886 | |
| 11,318.9 | 6,674.3 | 6,698.9 | 6,697.3 | 124.9 | 2.3 | 89.92 | -2,897.2 | -1,620.0 | 5,694.4 | 5,567.4 | 127.02 | 44.830 | |
| 11,400.0 | 6,673.8 | 6,698.6 | 6,696.9 | 127.1 | 2.3 | 89.91 | -2,897.2 | -1,620.0 | 5,763.2 | 5,633.9 | 129.23 | 44.596 | |
| 11,417.3 | 6,673.7 | 6,698.5 | 6,696.9 | 127.5 | 2.3 | 89.91 | -2,897.2 | -1,620.0 | 5,777.9 | 5,648.2 | 129.70 | 44.548 | |
| 11,500.0 | 6,673.2 | 6,698.2 | 6,696.5 | 129.8 | 2.3 | 89.91 | -2,897.2 | -1,620.0 | 5,848.3 | 5,716.4 | 131.95 | 44.321 | |
| 11,515.7 | 6,673.1 | 6,698.1 | 6,696.5 | 130.2 | 2.3 | 89.90 | -2,897.2 | -1,620.0 | 5,861.8 | 5,729.4 | 132.38 | 44.279 | |
| 11,600.0 | 6,672.5 | 6,697.8 | 6,696.1 | 132.5 | 2.3 | 89.90 | -2,897.2 | -1,620.0 | 5,934.0 | 5,799.3 | 134.68 | 44.059 | |
| 11,614.1 | 6,672.4 | 6,697.7 | 6,696.1 | 132.9 | 2.3 | 89.90 | -2,897.2 | -1,620.0 | 5,946.1 | 5,811.1 | 135.07 | 44.023 | |
| 11,700.0 | 6,671.9 | 6,697.4 | 6,695.7 | 135.3 | 2.3 | 89.89 | -2,897.2 | -1,620.0 | 6,020.1 | 5,882.7 | 137.41 | 43.810 | |
| 11,712.6 | 6,671.8 | 6,697.3 | 6,695.7 | 135.6 | 2.3 | 89.89 | -2,897.2 | -1,620.0 | 6,030.9 | 5,893.2 | 137.76 | 43.779 | |
| 11,800.0 | 6,671.2 | 6,697.0 | 6,695.4 | 138.0 | 2.3 | 89.88 | -2,897.2 | -1,620.0 | 6,106.6 | 5,966.4 | 140.15 | 43.572 | |
| 11,811.0 | 6,671.1 | 6,696.9 | 6,695.3 | 138.3 | 2.3 | 89.88 | -2,897.2 | -1,620.0 | 6,116.1 | 5,975.7 | 140.45 | 43.546 | |
| 11,900.0 | 6,670.6 | 6,696.6 | 6,695.0 | 140.7 | 2.3 | 89.88 | -2,897.2 | -1,620.0 | 6,193.5 | 6,050.6 | 142.89 | 43.345 | |
| 11,909.4 | 6,670.5 | 6,696.5 | 6,694.9 | 141.0 | 2.3 | 89.87 | -2,897.2 | -1,620.0 | 6,201.7 | 6,058.6 | 143.15 | 43.324 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HETTINGER #44-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,987.2 | 6,670.0 | 6,696.2 | 6,694.6 | 143.1 | 2.3 | 89.87 | -2,897.2 | -1,620.0 | 6,269.6 | 6,124.3 | 145.28 | 43.156 | SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | | | | |
| 98.4 | 98.4 | 91.4 | 91.4 | 0.1 | 1.2 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,398.7 | 1.28 | 1,879.846 | |
| 100.0 | 100.0 | 93.0 | 93.0 | 0.1 | 1.2 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,398.7 | 1.30 | 1,847.845 | |
| 196.8 | 196.8 | 189.8 | 189.8 | 0.3 | 3.3 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,396.3 | 3.65 | 658.237 | |
| 200.0 | 200.0 | 193.0 | 193.0 | 0.3 | 3.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,396.2 | 3.72 | 644.351 | |
| 295.3 | 295.3 | 288.3 | 288.3 | 0.5 | 5.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,394.0 | 5.93 | 404.671 | |
| 300.0 | 300.0 | 293.0 | 293.0 | 0.5 | 5.5 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,393.9 | 6.04 | 397.385 | |
| 393.7 | 393.7 | 386.7 | 386.7 | 0.8 | 7.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,391.8 | 8.17 | 293.916 | |
| 400.0 | 400.0 | 393.0 | 393.0 | 0.8 | 7.5 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,391.7 | 8.31 | 288.865 | |
| 492.1 | 492.1 | 485.1 | 485.1 | 1.0 | 9.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,389.6 | 10.39 | 231.092 | |
| 500.0 | 500.0 | 493.0 | 493.0 | 1.0 | 9.6 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,389.4 | 10.56 | 227.210 | |
| 590.5 | 590.5 | 583.5 | 583.5 | 1.2 | 11.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,387.4 | 12.60 | 190.499 | |
| 600.0 | 600.0 | 593.0 | 593.0 | 1.2 | 11.6 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,387.2 | 12.81 | 187.341 | |
| 689.0 | 689.0 | 682.0 | 682.0 | 1.4 | 13.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,385.2 | 14.81 | 162.078 | |
| 700.0 | 700.0 | 693.0 | 693.0 | 1.4 | 13.6 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,384.9 | 15.05 | 159.414 | |
| 787.4 | 787.4 | 780.4 | 780.4 | 1.6 | 15.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,382.9 | 17.01 | 141.054 | |
| 800.0 | 800.0 | 793.0 | 793.0 | 1.7 | 15.6 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,382.7 | 17.30 | 138.751 | |
| 885.8 | 885.8 | 878.8 | 878.8 | 1.9 | 17.4 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,380.7 | 19.22 | 124.869 | |
| 900.0 | 900.0 | 893.0 | 893.0 | 1.9 | 17.6 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,380.4 | 19.54 | 122.839 | |
| 984.2 | 984.2 | 977.2 | 977.2 | 2.1 | 19.3 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,378.5 | 21.42 | 112.020 | |
| 1,000.0 | 1,000.0 | 993.0 | 993.0 | 2.1 | 19.7 | 97.76 | -324.1 | 2,378.0 | 2,400.0 | 2,378.2 | 21.78 | 110.206 | |
| 1,082.7 | 1,082.7 | 1,075.7 | 1,075.7 | 2.3 | 21.3 | -177.80 | -324.1 | 2,378.0 | 2,401.2 | 2,377.5 | 23.61 | 101.708 | |
| 1,100.0 | 1,100.0 | 1,093.0 | 1,093.0 | 2.3 | 21.7 | -177.80 | -324.1 | 2,378.0 | 2,401.7 | 2,377.7 | 23.99 | 100.116 | |
| 1,181.1 | 1,181.0 | 1,174.0 | 1,174.0 | 2.5 | 23.3 | -177.80 | -324.1 | 2,378.0 | 2,405.7 | 2,379.9 | 25.75 | 93.425 | |
| 1,200.0 | 1,199.8 | 1,192.8 | 1,192.8 | 2.5 | 23.7 | -177.80 | -324.1 | 2,378.0 | 2,406.9 | 2,380.8 | 26.16 | 92.023 | |
| 1,279.5 | 1,279.1 | 1,272.1 | 1,272.1 | 2.7 | 25.3 | -177.80 | -324.1 | 2,378.0 | 2,413.6 | 2,385.7 | 27.85 | 86.664 | |
| 1,300.0 | 1,299.5 | 1,292.5 | 1,292.5 | 2.8 | 25.7 | -177.80 | -324.1 | 2,378.0 | 2,415.6 | 2,387.4 | 28.28 | 85.418 | |
| 1,377.9 | 1,376.9 | 1,369.9 | 1,369.9 | 3.0 | 27.2 | -177.80 | -324.1 | 2,378.0 | 2,424.8 | 2,394.9 | 29.90 | 81.094 | |
| 1,400.0 | 1,398.7 | 1,391.7 | 1,391.7 | 3.0 | 27.7 | -177.80 | -324.1 | 2,378.0 | 2,427.8 | 2,397.5 | 30.35 | 79.986 | |
| 1,476.4 | 1,474.2 | 1,467.2 | 1,467.2 | 3.2 | 29.2 | -177.80 | -324.1 | 2,378.0 | 2,439.5 | 2,407.6 | 31.90 | 76.478 | |
| 1,500.0 | 1,497.5 | 1,490.5 | 1,490.5 | 3.3 | 29.7 | -177.80 | -324.1 | 2,378.0 | 2,443.5 | 2,411.1 | 32.37 | 75.494 | |
| 1,574.8 | 1,571.0 | 1,564.0 | 1,564.0 | 3.5 | 31.2 | -177.81 | -324.1 | 2,378.0 | 2,457.4 | 2,423.6 | 33.83 | 72.642 | |
| 1,600.0 | 1,595.6 | 1,588.6 | 1,588.6 | 3.6 | 31.6 | -177.81 | -324.1 | 2,378.0 | 2,462.5 | 2,428.2 | 34.31 | 71.771 | |
| 1,673.2 | 1,667.0 | 1,660.0 | 1,660.0 | 3.9 | 33.1 | -177.81 | -324.1 | 2,378.0 | 2,478.6 | 2,443.0 | 35.69 | 69.453 | |
| 1,700.0 | 1,693.1 | 1,686.1 | 1,686.1 | 4.0 | 33.6 | -177.81 | -324.1 | 2,378.0 | 2,485.0 | 2,448.8 | 36.18 | 68.685 | |
| 1,771.6 | 1,762.4 | 1,755.4 | 1,755.4 | 4.3 | 35.0 | -177.81 | -324.1 | 2,378.0 | 2,503.2 | 2,465.7 | 37.47 | 66.806 | |
| 1,800.0 | 1,789.6 | 1,782.6 | 1,782.6 | 4.4 | 35.6 | -177.81 | -324.1 | 2,378.0 | 2,510.9 | 2,472.9 | 37.97 | 66.136 | |
| 1,870.1 | 1,856.8 | 1,849.8 | 1,849.8 | 4.7 | 36.9 | -177.81 | -324.1 | 2,378.0 | 2,531.0 | 2,491.8 | 39.16 | 64.624 | |
| 1,900.0 | 1,885.3 | 1,878.3 | 1,878.3 | 4.9 | 37.5 | -177.81 | -324.1 | 2,378.0 | 2,540.1 | 2,500.4 | 39.66 | 64.046 | |
| 1,968.5 | 1,950.2 | 1,943.2 | 1,943.2 | 5.3 | 38.8 | -177.81 | -324.1 | 2,378.0 | 2,562.0 | 2,521.2 | 40.77 | 62.847 | |
| 2,000.0 | 1,979.8 | 1,972.8 | 1,972.8 | 5.5 | 39.4 | -177.82 | -324.1 | 2,378.0 | 2,572.6 | 2,531.4 | 41.26 | 62.354 | |
| 2,044.9 | 2,021.9 | 2,014.9 | 2,014.9 | 5.7 | 40.2 | -177.82 | -324.1 | 2,378.0 | 2,588.3 | 2,546.4 | 41.94 | 61.711 | |
| 2,066.9 | 2,042.5 | 2,035.5 | 2,035.5 | 5.9 | 40.6 | -177.82 | -324.1 | 2,378.0 | 2,596.1 | 2,553.8 | 42.39 | 61.245 | |
| 2,100.0 | 2,073.4 | 2,066.4 | 2,066.4 | 6.1 | 41.3 | -177.83 | -324.1 | 2,378.0 | 2,607.9 | 2,564.9 | 43.06 | 60.559 | |
| 2,165.3 | 2,134.4 | 2,127.4 | 2,127.4 | 6.5 | 42.5 | -177.85 | -324.1 | 2,378.0 | 2,631.2 | 2,586.8 | 44.40 | 59.265 | |
| 2,200.0 | 2,166.8 | 2,159.8 | 2,159.8 | 6.8 | 43.1 | -177.86 | -324.1 | 2,378.0 | 2,643.6 | 2,598.5 | 45.11 | 58.608 | |
| 2,263.8 | 2,226.4 | 2,219.4 | 2,219.4 | 7.2 | 44.3 | -177.88 | -324.1 | 2,378.0 | 2,666.3 | 2,619.9 | 46.41 | 57.448 | |
| 2,300.0 | 2,260.2 | 2,253.2 | 2,253.2 | 7.4 | 45.0 | -177.89 | -324.1 | 2,378.0 | 2,679.2 | 2,632.1 | 47.16 | 56.817 | |
| 2,362.2 | 2,318.3 | 2,311.3 | 2,311.3 | 7.9 | 46.2 | -177.91 | -324.1 | 2,378.0 | 2,701.4 | 2,653.0 | 48.43 | 55.776 | |
| 2,400.0 | 2,353.6 | 2,346.6 | 2,346.6 | 8.1 | 46.9 | -177.92 | -324.1 | 2,378.0 | 2,714.9 | 2,665.7 | 49.21 | 55.169 | |
| 2,460.6 | 2,410.3 | 2,403.3 | 2,403.3 | 8.6 | 48.0 | -177.93 | -324.1 | 2,378.0 | 2,736.5 | 2,686.0 | 50.46 | 54.233 | |
| 2,500.0 | 2,447.0 | 2,440.0 | 2,440.0 | 8.9 | 48.8 | -177.94 | -324.1 | 2,378.0 | 2,750.5 | 2,699.3 | 51.27 | 53.649 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,495.2 | 2,495.2 | 9.3 | 49.9 | -177.96 | -324.1 | 2,378.0 | 2,771.6 | 2,719.1 | 52.49 | 52.805 | |
| 2,600.0 | 2,540.5 | 2,533.5 | 2,533.5 | 9.6 | 50.7 | -177.97 | -324.1 | 2,378.0 | 2,786.2 | 2,732.9 | 53.33 | 52.242 | |
| 2,657.5 | 2,594.2 | 2,587.2 | 2,587.2 | 10.0 | 51.7 | -177.99 | -324.1 | 2,378.0 | 2,806.7 | 2,752.2 | 54.52 | 51.480 | |
| 2,700.0 | 2,633.9 | 2,626.9 | 2,626.9 | 10.3 | 52.5 | -178.00 | -324.1 | 2,378.0 | 2,821.8 | 2,766.4 | 55.40 | 50.937 | |
| 2,755.9 | 2,686.1 | 2,679.1 | 2,679.1 | 10.7 | 53.6 | -178.01 | -324.1 | 2,378.0 | 2,841.8 | 2,785.2 | 56.55 | 50.248 | |
| 2,800.0 | 2,727.3 | 2,720.3 | 2,720.3 | 11.0 | 54.4 | -178.02 | -324.1 | 2,378.0 | 2,857.5 | 2,800.0 | 57.47 | 49.724 | |
| 2,854.3 | 2,778.1 | 2,771.1 | 2,771.1 | 11.4 | 55.4 | -178.03 | -324.1 | 2,378.0 | 2,876.9 | 2,818.3 | 58.59 | 49.099 | |
| 2,900.0 | 2,820.7 | 2,813.7 | 2,813.7 | 11.8 | 56.3 | -178.05 | -324.1 | 2,378.0 | 2,893.1 | 2,833.6 | 59.54 | 48.593 | |
| 2,952.7 | 2,870.0 | 2,863.0 | 2,863.0 | 12.2 | 57.3 | -178.06 | -324.1 | 2,378.0 | 2,912.0 | 2,851.3 | 60.63 | 48.026 | |
| 3,000.0 | 2,914.2 | 2,907.2 | 2,907.2 | 12.5 | 58.2 | -178.07 | -324.1 | 2,378.0 | 2,928.8 | 2,867.2 | 61.61 | 47.536 | |
| 3,051.2 | 2,962.0 | 2,955.0 | 2,955.0 | 12.9 | 59.1 | -178.08 | -324.1 | 2,378.0 | 2,947.0 | 2,884.4 | 62.67 | 47.021 | |
| 3,100.0 | 3,007.6 | 3,000.6 | 3,000.6 | 13.3 | 60.1 | -178.09 | -324.1 | 2,378.0 | 2,964.5 | 2,900.8 | 63.69 | 46.547 | |
| 3,149.6 | 3,053.9 | 3,046.9 | 3,046.9 | 13.6 | 61.0 | -178.10 | -324.1 | 2,378.0 | 2,982.1 | 2,917.4 | 64.72 | 46.079 | |
| 3,200.0 | 3,101.0 | 3,094.0 | 3,094.0 | 14.0 | 61.9 | -178.12 | -324.1 | 2,378.0 | 3,000.1 | 2,934.3 | 65.76 | 45.619 | |
| 3,248.0 | 3,145.9 | 3,138.9 | 3,138.9 | 14.4 | 62.8 | -178.13 | -324.1 | 2,378.0 | 3,017.2 | 2,950.5 | 66.76 | 45.193 | |
| 3,300.0 | 3,194.4 | 3,187.4 | 3,187.4 | 14.8 | 63.8 | -178.14 | -324.1 | 2,378.0 | 3,035.8 | 2,967.9 | 67.84 | 44.747 | |
| 3,346.4 | 3,237.8 | 3,230.8 | 3,230.8 | 15.1 | 64.7 | -178.15 | -324.1 | 2,378.0 | 3,052.3 | 2,983.5 | 68.81 | 44.359 | |
| 3,400.0 | 3,287.8 | 3,280.8 | 3,280.8 | 15.5 | 65.7 | -178.16 | -324.1 | 2,378.0 | 3,071.4 | 3,001.5 | 69.92 | 43.926 | |
| 3,444.9 | 3,329.8 | 3,322.8 | 3,322.8 | 15.9 | 66.5 | -178.17 | -324.1 | 2,378.0 | 3,087.4 | 3,016.6 | 70.86 | 43.572 | |
| 3,500.0 | 3,381.3 | 3,374.3 | 3,374.3 | 16.3 | 67.6 | -178.18 | -324.1 | 2,378.0 | 3,107.1 | 3,035.1 | 72.00 | 43.151 | |
| 3,543.3 | 3,421.7 | 3,414.7 | 3,414.7 | 16.6 | 68.4 | -178.19 | -324.1 | 2,378.0 | 3,122.5 | 3,049.6 | 72.91 | 42.829 | |
| 3,600.0 | 3,474.7 | 3,467.7 | 3,467.7 | 17.0 | 69.4 | -178.20 | -324.1 | 2,378.0 | 3,142.7 | 3,068.6 | 74.09 | 42.420 | |
| 3,641.7 | 3,513.7 | 3,506.7 | 3,506.7 | 17.3 | 70.2 | -178.21 | -324.1 | 2,378.0 | 3,157.6 | 3,082.7 | 74.96 | 42.127 | |
| 3,700.0 | 3,568.1 | 3,561.1 | 3,561.1 | 17.8 | 71.3 | -178.22 | -324.1 | 2,378.0 | 3,178.4 | 3,102.2 | 76.17 | 41.728 | |
| 3,740.1 | 3,605.6 | 3,598.6 | 3,598.6 | 18.1 | 72.1 | -178.23 | -324.1 | 2,378.0 | 3,192.7 | 3,115.7 | 77.01 | 41.461 | |
| 3,800.0 | 3,661.5 | 3,654.5 | 3,654.5 | 18.5 | 73.2 | -178.24 | -324.1 | 2,378.0 | 3,214.0 | 3,135.8 | 78.25 | 41.073 | |
| 3,838.6 | 3,697.6 | 3,690.6 | 3,690.6 | 18.8 | 73.9 | -178.25 | -324.1 | 2,378.0 | 3,227.8 | 3,148.7 | 79.06 | 40.829 | |
| 3,900.0 | 3,754.9 | 3,747.9 | 3,747.9 | 19.3 | 75.1 | -178.26 | -324.1 | 2,378.0 | 3,249.7 | 3,169.4 | 80.34 | 40.451 | |
| 3,937.0 | 3,789.5 | 3,782.5 | 3,782.5 | 19.6 | 75.8 | -178.27 | -324.1 | 2,378.0 | 3,262.9 | 3,181.8 | 81.11 | 40.229 | |
| 4,000.0 | 3,848.4 | 3,841.4 | 3,841.4 | 20.1 | 77.0 | -178.28 | -324.1 | 2,378.0 | 3,285.4 | 3,202.9 | 82.42 | 39.860 | |
| 4,035.4 | 3,881.5 | 3,874.5 | 3,874.5 | 20.3 | 77.6 | -178.29 | -324.1 | 2,378.0 | 3,298.0 | 3,214.8 | 83.16 | 39.658 | |
| 4,100.0 | 3,941.8 | 3,934.8 | 3,934.8 | 20.8 | 78.8 | -178.30 | -324.1 | 2,378.0 | 3,321.0 | 3,236.5 | 84.51 | 39.298 | |
| 4,133.8 | 3,973.4 | 3,966.4 | 3,966.4 | 21.1 | 79.5 | -178.30 | -324.1 | 2,378.0 | 3,333.1 | 3,247.9 | 85.21 | 39.114 | |
| 4,200.0 | 4,035.2 | 4,028.2 | 4,028.2 | 21.6 | 80.7 | -178.32 | -324.1 | 2,378.0 | 3,356.7 | 3,270.1 | 86.59 | 38.763 | |
| 4,232.3 | 4,065.4 | 4,058.4 | 4,058.4 | 21.8 | 81.3 | -178.32 | -324.1 | 2,378.0 | 3,368.2 | 3,280.9 | 87.27 | 38.596 | |
| 4,300.0 | 4,128.6 | 4,121.6 | 4,121.6 | 22.3 | 82.6 | -178.33 | -324.1 | 2,378.0 | 3,392.3 | 3,303.7 | 88.68 | 38.253 | |
| 4,330.7 | 4,157.3 | 4,150.3 | 4,150.3 | 22.6 | 83.2 | -178.34 | -324.1 | 2,378.0 | 3,403.3 | 3,314.0 | 89.32 | 38.102 | |
| 4,400.0 | 4,222.0 | 4,215.0 | 4,215.0 | 23.1 | 84.5 | -178.35 | -324.1 | 2,378.0 | 3,428.0 | 3,337.2 | 90.77 | 37.767 | |
| 4,429.1 | 4,249.3 | 4,242.3 | 4,242.3 | 23.3 | 85.0 | -178.36 | -324.1 | 2,378.0 | 3,438.4 | 3,347.0 | 91.38 | 37.629 | |
| 4,500.0 | 4,315.5 | 4,308.5 | 4,308.5 | 23.9 | 86.4 | -178.37 | -324.1 | 2,378.0 | 3,463.7 | 3,370.8 | 92.86 | 37.302 | |
| 4,527.5 | 4,341.2 | 4,334.2 | 4,334.2 | 24.1 | 86.9 | -178.37 | -324.1 | 2,378.0 | 3,473.5 | 3,380.0 | 93.43 | 37.177 | |
| 4,600.0 | 4,408.9 | 4,401.9 | 4,401.9 | 24.6 | 88.2 | -178.38 | -324.1 | 2,378.0 | 3,499.3 | 3,404.4 | 94.94 | 36.857 | |
| 4,626.0 | 4,433.2 | 4,426.2 | 4,426.2 | 24.8 | 88.7 | -178.39 | -324.1 | 2,378.0 | 3,508.6 | 3,413.1 | 95.49 | 36.745 | |
| 4,700.0 | 4,502.3 | 4,495.3 | 4,495.3 | 25.4 | 90.1 | -178.40 | -324.1 | 2,378.0 | 3,535.0 | 3,437.9 | 97.03 | 36.431 | |
| 4,724.4 | 4,525.1 | 4,518.1 | 4,518.1 | 25.6 | 90.6 | -178.40 | -324.1 | 2,378.0 | 3,543.7 | 3,446.1 | 97.54 | 36.330 | |
| 4,800.0 | 4,595.7 | 4,588.7 | 4,588.7 | 26.2 | 92.0 | -178.42 | -324.1 | 2,378.0 | 3,570.6 | 3,471.5 | 99.12 | 36.023 | |
| 4,822.8 | 4,617.1 | 4,610.1 | 4,610.1 | 26.3 | 92.4 | -178.42 | -324.1 | 2,378.0 | 3,578.8 | 3,479.2 | 99.60 | 35.933 | |
| 4,900.0 | 4,689.2 | 4,682.2 | 4,682.2 | 26.9 | 93.9 | -178.43 | -324.1 | 2,378.0 | 3,606.3 | 3,505.1 | 101.21 | 35.632 | |
| 4,921.2 | 4,709.0 | 4,702.0 | 4,702.0 | 27.1 | 94.3 | -178.44 | -324.1 | 2,378.0 | 3,613.9 | 3,512.2 | 101.65 | 35.551 | |
| 5,000.0 | 4,782.6 | 4,775.6 | 4,775.6 | 27.7 | 95.7 | -178.45 | -324.1 | 2,378.0 | 3,641.9 | 3,538.7 | 103.30 | 35.257 | |
| 5,019.7 | 4,801.0 | 4,794.0 | 4,794.0 | 27.8 | 96.1 | -178.45 | -324.1 | 2,378.0 | 3,649.0 | 3,545.3 | 103.71 | 35.185 | |
| 5,100.0 | 4,876.0 | 4,869.0 | 4,869.0 | 28.4 | 97.6 | -178.46 | -324.1 | 2,378.0 | 3,677.6 | 3,572.2 | 105.39 | 34.896 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,885.9 | 4,885.9 | 28.6 | 98.0 | -178.47 | -324.1 | 2,378.0 | 3,684.1 | 3,578.3 | 105.77 | 34.832 | |
| 5,159.9 | 4,932.0 | 4,925.0 | 4,925.0 | 28.9 | 98.8 | -178.47 | -324.1 | 2,378.0 | 3,699.0 | 3,592.3 | 106.64 | 34.687 | |
| 5,200.0 | 4,969.5 | 4,962.5 | 4,962.5 | 29.2 | 99.5 | -178.49 | -324.1 | 2,378.0 | 3,713.0 | 3,605.0 | 107.97 | 34.390 | |
| 5,216.5 | 4,985.1 | 4,978.1 | 4,978.1 | 29.3 | 99.8 | -178.49 | -324.1 | 2,378.0 | 3,718.6 | 3,610.1 | 108.51 | 34.271 | |
| 5,300.0 | 5,064.0 | 5,057.0 | 5,057.0 | 29.7 | 101.4 | -178.52 | -324.1 | 2,378.0 | 3,745.7 | 3,634.5 | 111.21 | 33.682 | |
| 5,314.9 | 5,078.2 | 5,071.2 | 5,071.2 | 29.8 | 101.7 | -178.52 | -324.1 | 2,378.0 | 3,750.3 | 3,638.6 | 111.68 | 33.580 | |
| 5,400.0 | 5,159.6 | 5,152.6 | 5,152.6 | 30.2 | 103.3 | -178.54 | -324.1 | 2,378.0 | 3,775.1 | 3,660.7 | 114.36 | 33.010 | |
| 5,413.4 | 5,172.4 | 5,165.4 | 5,165.4 | 30.3 | 103.6 | -178.55 | -324.1 | 2,378.0 | 3,778.8 | 3,664.0 | 114.78 | 32.923 | |
| 5,500.0 | 5,256.1 | 5,249.1 | 5,249.1 | 30.7 | 105.3 | -178.57 | -324.1 | 2,378.0 | 3,801.1 | 3,683.7 | 117.42 | 32.371 | |
| 5,511.8 | 5,267.6 | 5,260.6 | 5,260.6 | 30.7 | 105.5 | -178.57 | -324.1 | 2,378.0 | 3,804.0 | 3,686.2 | 117.78 | 32.298 | |
| 5,600.0 | 5,353.5 | 5,346.5 | 5,346.5 | 31.1 | 107.2 | -178.59 | -324.1 | 2,378.0 | 3,823.8 | 3,703.4 | 120.38 | 31.765 | |
| 5,610.2 | 5,363.5 | 5,356.5 | 5,356.5 | 31.1 | 107.4 | -178.59 | -324.1 | 2,378.0 | 3,825.9 | 3,705.2 | 120.67 | 31.705 | |
| 5,700.0 | 5,451.6 | 5,444.6 | 5,444.6 | 31.4 | 109.2 | -178.60 | -324.1 | 2,378.0 | 3,843.0 | 3,719.8 | 123.21 | 31.190 | |
| 5,708.6 | 5,460.2 | 5,453.2 | 5,453.2 | 31.4 | 109.4 | -178.61 | -324.1 | 2,378.0 | 3,844.5 | 3,721.1 | 123.45 | 31.142 | |
| 5,800.0 | 5,550.4 | 5,543.4 | 5,543.4 | 31.7 | 111.2 | -178.62 | -324.1 | 2,378.0 | 3,858.8 | 3,732.9 | 125.93 | 30.644 | |
| 5,807.1 | 5,557.4 | 5,550.4 | 5,550.4 | 31.7 | 111.3 | -178.62 | -324.1 | 2,378.0 | 3,859.8 | 3,733.7 | 126.11 | 30.606 | |
| 5,900.0 | 5,649.6 | 5,642.6 | 5,642.6 | 31.9 | 113.2 | -178.63 | -324.1 | 2,378.0 | 3,871.2 | 3,742.7 | 128.50 | 30.126 | |
| 5,905.5 | 5,655.1 | 5,648.1 | 5,648.1 | 31.9 | 113.3 | -178.63 | -324.1 | 2,378.0 | 3,871.8 | 3,743.1 | 128.64 | 30.098 | |
| 6,000.0 | 5,749.2 | 5,742.2 | 5,742.2 | 32.1 | 115.2 | -178.64 | -324.1 | 2,378.0 | 3,880.1 | 3,749.1 | 130.93 | 29.635 | |
| 6,003.9 | 5,753.1 | 5,746.1 | 5,746.1 | 32.1 | 115.3 | -178.64 | -324.1 | 2,378.0 | 3,880.3 | 3,749.3 | 131.02 | 29.617 | |
| 6,100.0 | 5,849.1 | 5,842.1 | 5,842.1 | 32.3 | 117.2 | -178.64 | -324.1 | 2,378.0 | 3,885.5 | 3,752.3 | 133.20 | 29.170 | |
| 6,102.3 | 5,851.4 | 5,844.4 | 5,844.4 | 32.3 | 117.2 | -178.64 | -324.1 | 2,378.0 | 3,885.6 | 3,752.3 | 133.25 | 29.160 | |
| 6,200.8 | 5,949.8 | 5,942.8 | 5,942.8 | 32.4 | 119.2 | -178.64 | -324.1 | 2,378.0 | 3,887.4 | 3,752.1 | 135.32 | 28.727 | |
| 6,204.9 | 5,953.9 | 5,946.9 | 5,946.9 | 32.4 | 119.3 | 96.92 | -324.1 | 2,378.0 | 3,887.4 | 3,735.7 | 151.66 | 25.633 | |
| 6,234.9 | 5,983.9 | 5,976.9 | 5,976.9 | 32.4 | 119.9 | 96.92 | -324.1 | 2,378.0 | 3,887.4 | 3,735.1 | 152.28 | 25.527 | |
| 6,250.0 | 5,999.0 | 5,992.0 | 5,992.0 | 32.4 | 120.2 | 6.92 | -324.1 | 2,378.0 | 3,887.2 | 3,751.0 | 136.27 | 28.527 | |
| 6,299.2 | 6,048.2 | 6,041.2 | 6,041.2 | 32.4 | 121.2 | 6.95 | -324.1 | 2,378.0 | 3,884.5 | 3,748.0 | 136.53 | 28.452 | |
| 6,300.0 | 6,048.9 | 6,041.9 | 6,041.9 | 32.4 | 121.2 | 6.95 | -324.1 | 2,378.0 | 3,884.5 | 3,747.9 | 136.53 | 28.452 | |
| 6,350.0 | 6,098.5 | 6,091.5 | 6,091.5 | 32.4 | 122.2 | 7.03 | -324.1 | 2,378.0 | 3,878.2 | 3,742.1 | 136.12 | 28.492 | |
| 6,397.6 | 6,145.3 | 6,138.3 | 6,138.3 | 32.3 | 123.2 | 7.13 | -324.1 | 2,378.0 | 3,869.1 | 3,734.0 | 135.09 | 28.641 | |
| 6,400.0 | 6,147.6 | 6,140.6 | 6,140.6 | 32.3 | 123.2 | 7.14 | -324.1 | 2,378.0 | 3,868.6 | 3,733.5 | 135.02 | 28.651 | |
| 6,450.0 | 6,195.8 | 6,188.8 | 6,188.8 | 32.2 | 124.2 | 7.30 | -324.1 | 2,378.0 | 3,855.6 | 3,722.3 | 133.25 | 28.935 | |
| 6,496.0 | 6,239.3 | 6,232.3 | 6,232.3 | 32.1 | 125.0 | 7.49 | -324.1 | 2,378.0 | 3,840.6 | 3,709.6 | 131.02 | 29.313 | |
| 6,500.0 | 6,243.0 | 6,236.0 | 6,236.0 | 32.1 | 125.1 | 7.51 | -324.1 | 2,378.0 | 3,839.2 | 3,708.4 | 130.80 | 29.351 | |
| 6,550.0 | 6,289.0 | 6,282.0 | 6,282.0 | 32.0 | 126.0 | 7.78 | -324.1 | 2,378.0 | 3,819.7 | 3,692.0 | 127.69 | 29.913 | |
| 6,594.5 | 6,328.6 | 6,321.6 | 6,321.6 | 31.8 | 126.8 | 8.06 | -324.1 | 2,378.0 | 3,799.6 | 3,675.2 | 124.39 | 30.547 | |
| 6,600.0 | 6,333.4 | 6,326.4 | 6,326.4 | 31.8 | 126.9 | 8.10 | -324.1 | 2,378.0 | 3,797.0 | 3,673.0 | 123.94 | 30.635 | |
| 6,650.0 | 6,376.2 | 6,369.2 | 6,369.2 | 31.7 | 127.8 | 8.51 | -324.1 | 2,378.0 | 3,771.3 | 3,651.7 | 119.60 | 31.534 | |
| 6,692.9 | 6,411.3 | 6,404.3 | 6,404.3 | 31.6 | 128.5 | 8.92 | -324.1 | 2,378.0 | 3,746.9 | 3,631.5 | 115.43 | 32.462 | |
| 6,700.0 | 6,417.0 | 6,410.0 | 6,410.0 | 31.5 | 128.6 | 9.00 | -324.1 | 2,378.0 | 3,742.7 | 3,628.0 | 114.70 | 32.630 | |
| 6,750.0 | 6,455.7 | 6,448.7 | 6,448.7 | 31.4 | 129.4 | 9.60 | -324.1 | 2,378.0 | 3,711.3 | 3,602.0 | 109.34 | 33.944 | |
| 6,791.3 | 6,486.0 | 6,479.0 | 6,479.0 | 31.3 | 130.0 | 10.19 | -324.1 | 2,378.0 | 3,683.4 | 3,578.8 | 104.62 | 35.207 | |
| 6,800.0 | 6,492.2 | 6,485.2 | 6,485.2 | 31.3 | 130.1 | 10.33 | -324.1 | 2,378.0 | 3,677.4 | 3,573.8 | 103.61 | 35.493 | |
| 6,850.0 | 6,526.1 | 6,519.1 | 6,519.1 | 31.2 | 130.8 | 11.23 | -324.1 | 2,378.0 | 3,641.0 | 3,543.3 | 97.67 | 37.277 | |
| 6,889.7 | 6,551.2 | 6,544.2 | 6,544.2 | 31.2 | 131.3 | 12.10 | -324.1 | 2,378.0 | 3,610.4 | 3,517.5 | 92.95 | 38.841 | |
| 6,900.0 | 6,557.4 | 6,550.4 | 6,550.4 | 31.2 | 131.4 | 12.35 | -324.1 | 2,378.0 | 3,602.3 | 3,510.6 | 91.76 | 39.260 | |
| 6,950.0 | 6,586.0 | 6,579.0 | 6,579.0 | 31.1 | 132.0 | 13.77 | -324.1 | 2,378.0 | 3,561.6 | 3,475.4 | 86.18 | 41.328 | |
| 6,988.2 | 6,605.8 | 6,598.8 | 6,598.8 | 31.2 | 132.4 | 15.11 | -324.1 | 2,378.0 | 3,529.3 | 3,446.8 | 82.46 | 42.802 | |
| 7,000.0 | 6,611.5 | 6,604.5 | 6,604.5 | 31.2 | 132.5 | 15.58 | -324.1 | 2,378.0 | 3,519.1 | 3,437.6 | 81.45 | 43.207 | |
| 7,050.0 | 6,634.1 | 6,627.1 | 6,627.1 | 31.2 | 133.0 | 17.98 | -324.1 | 2,378.0 | 3,474.8 | 3,396.5 | 78.35 | 44.351 | |
| 7,086.6 | 6,648.6 | 6,641.6 | 6,641.6 | 31.3 | 133.3 | 20.25 | -324.1 | 2,378.0 | 3,441.5 | 3,363.7 | 77.82 | 44.224 | |
| 7,100.0 | 6,653.4 | 6,646.4 | 6,646.4 | 31.4 | 133.4 | 21.23 | -324.1 | 2,378.0 | 3,429.2 | 3,351.0 | 78.14 | 43.884 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,662.5 | 6,662.5 | 31.6 | 133.7 | 25.84 | -324.1 | 2,378.0 | 3,382.3 | 3,299.6 | 82.71 | 40.894 | |
| 7,185.0 | 6,678.8 | 6,671.8 | 6,671.8 | 31.7 | 133.9 | 30.31 | -324.1 | 2,378.0 | 3,348.8 | 3,258.8 | 90.05 | 37.189 | |
| 7,200.0 | 6,682.3 | 6,675.3 | 6,675.3 | 31.8 | 134.0 | 32.67 | -324.1 | 2,378.0 | 3,334.4 | 3,239.9 | 94.48 | 35.292 | |
| 7,250.0 | 6,691.6 | 6,684.6 | 6,684.6 | 32.1 | 134.1 | 43.33 | -324.1 | 2,378.0 | 3,285.8 | 3,170.1 | 115.73 | 28.393 | |
| 7,283.4 | 6,696.0 | 6,689.0 | 6,689.0 | 32.3 | 134.2 | 53.84 | -324.1 | 2,378.0 | 3,253.0 | 3,118.0 | 134.97 | 24.101 | |
| 7,300.0 | 6,697.5 | 6,690.5 | 6,690.5 | 32.4 | 134.3 | 60.33 | -324.1 | 2,378.0 | 3,236.7 | 3,091.7 | 145.02 | 22.319 | |
| 7,350.0 | 6,699.9 | 6,692.9 | 6,692.9 | 32.8 | 134.3 | 84.77 | -324.1 | 2,378.0 | 3,187.3 | 3,021.0 | 166.33 | 19.163 | |
| 7,364.4 | 6,700.0 | 6,693.0 | 6,693.0 | 32.9 | 134.3 | 92.49 | -324.1 | 2,378.0 | 3,173.1 | 3,006.0 | 167.05 | 18.995 | |
| 7,381.9 | 6,699.9 | 6,692.9 | 6,692.9 | 33.1 | 134.3 | 92.48 | -324.1 | 2,378.0 | 3,155.8 | 2,988.6 | 167.20 | 18.874 | |
| 7,400.0 | 6,699.8 | 6,692.8 | 6,692.8 | 33.2 | 134.3 | 92.46 | -324.1 | 2,378.0 | 3,137.8 | 2,970.5 | 167.36 | 18.749 | |
| 7,480.3 | 6,699.2 | 6,692.2 | 6,692.2 | 34.0 | 134.3 | 92.40 | -324.1 | 2,378.0 | 3,058.5 | 2,890.3 | 168.16 | 18.187 | |
| 7,500.0 | 6,699.1 | 6,692.1 | 6,692.1 | 34.2 | 134.3 | 92.38 | -324.1 | 2,378.0 | 3,039.0 | 2,870.6 | 168.36 | 18.050 | |
| 7,578.7 | 6,698.6 | 6,691.6 | 6,691.6 | 35.2 | 134.3 | 92.32 | -324.1 | 2,378.0 | 2,961.2 | 2,791.9 | 169.31 | 17.490 | |
| 7,600.0 | 6,698.5 | 6,691.5 | 6,691.5 | 35.4 | 134.3 | 92.30 | -324.1 | 2,378.0 | 2,940.2 | 2,770.7 | 169.56 | 17.340 | |
| 7,677.1 | 6,698.0 | 6,691.0 | 6,691.0 | 36.5 | 134.3 | 92.24 | -324.1 | 2,378.0 | 2,864.1 | 2,693.5 | 170.63 | 16.786 | |
| 7,700.0 | 6,697.8 | 6,690.8 | 6,690.8 | 36.8 | 134.3 | 92.22 | -324.1 | 2,378.0 | 2,841.6 | 2,670.6 | 170.94 | 16.623 | |
| 7,775.6 | 6,697.3 | 6,690.3 | 6,690.3 | 38.0 | 134.3 | 92.16 | -324.1 | 2,378.0 | 2,767.0 | 2,594.9 | 172.10 | 16.078 | |
| 7,800.0 | 6,697.2 | 6,690.2 | 6,690.2 | 38.3 | 134.3 | 92.14 | -324.1 | 2,378.0 | 2,743.0 | 2,570.5 | 172.47 | 15.904 | |
| 7,874.0 | 6,696.7 | 6,689.7 | 6,689.7 | 39.6 | 134.2 | 92.09 | -324.1 | 2,378.0 | 2,670.1 | 2,496.4 | 173.71 | 15.371 | |
| 7,900.0 | 6,696.5 | 6,689.5 | 6,689.5 | 40.0 | 134.2 | 92.07 | -324.1 | 2,378.0 | 2,644.5 | 2,470.4 | 174.14 | 15.186 | |
| 7,972.4 | 6,696.1 | 6,689.1 | 6,689.1 | 41.3 | 134.2 | 92.01 | -324.1 | 2,378.0 | 2,573.3 | 2,397.8 | 175.44 | 14.667 | |
| 8,000.0 | 6,695.9 | 6,688.9 | 6,688.9 | 41.8 | 134.2 | 91.99 | -324.1 | 2,378.0 | 2,546.1 | 2,370.2 | 175.93 | 14.472 | |
| 8,070.8 | 6,695.4 | 6,688.4 | 6,688.4 | 43.1 | 134.2 | 91.93 | -324.1 | 2,378.0 | 2,476.5 | 2,299.3 | 177.28 | 13.970 | |
| 8,100.0 | 6,695.2 | 6,688.2 | 6,688.2 | 43.7 | 134.2 | 91.91 | -324.1 | 2,378.0 | 2,447.9 | 2,270.1 | 177.83 | 13.765 | |
| 8,169.3 | 6,694.8 | 6,687.8 | 6,687.8 | 45.1 | 134.2 | 91.85 | -324.1 | 2,378.0 | 2,380.0 | 2,200.8 | 179.21 | 13.280 | |
| 8,200.0 | 6,694.6 | 6,687.6 | 6,687.6 | 45.7 | 134.2 | 91.83 | -324.1 | 2,378.0 | 2,349.9 | 2,170.0 | 179.83 | 13.067 | |
| 8,267.7 | 6,694.1 | 6,687.1 | 6,687.1 | 47.1 | 134.2 | 91.77 | -324.1 | 2,378.0 | 2,283.6 | 2,102.3 | 181.23 | 12.600 | |
| 8,300.0 | 6,693.9 | 6,686.9 | 6,686.9 | 47.8 | 134.2 | 91.75 | -324.1 | 2,378.0 | 2,251.9 | 2,070.0 | 181.90 | 12.380 | |
| 8,366.1 | 6,693.5 | 6,686.5 | 6,686.5 | 49.2 | 134.2 | 91.70 | -324.1 | 2,378.0 | 2,187.3 | 2,004.0 | 183.32 | 11.932 | |
| 8,400.0 | 6,693.3 | 6,686.3 | 6,686.3 | 49.9 | 134.2 | 91.67 | -324.1 | 2,378.0 | 2,154.2 | 1,970.2 | 184.04 | 11.705 | |
| 8,464.5 | 6,692.9 | 6,685.9 | 6,685.9 | 51.4 | 134.2 | 91.62 | -324.1 | 2,378.0 | 2,091.3 | 1,905.8 | 185.47 | 11.276 | |
| 8,500.0 | 6,692.6 | 6,685.6 | 6,685.6 | 52.1 | 134.2 | 91.59 | -324.1 | 2,378.0 | 2,056.7 | 1,870.5 | 186.25 | 11.043 | |
| 8,563.0 | 6,692.2 | 6,685.2 | 6,685.2 | 53.6 | 134.2 | 91.54 | -324.1 | 2,378.0 | 1,995.5 | 1,807.8 | 187.68 | 10.633 | |
| 8,600.0 | 6,692.0 | 6,685.0 | 6,685.0 | 54.4 | 134.1 | 91.51 | -324.1 | 2,378.0 | 1,959.5 | 1,771.0 | 188.51 | 10.395 | |
| 8,661.4 | 6,691.6 | 6,684.6 | 6,684.6 | 55.8 | 134.1 | 91.46 | -324.1 | 2,378.0 | 1,899.9 | 1,710.0 | 189.93 | 10.003 | |
| 8,700.0 | 6,691.3 | 6,684.3 | 6,684.3 | 56.7 | 134.1 | 91.43 | -324.1 | 2,378.0 | 1,862.6 | 1,671.7 | 190.82 | 9.761 | |
| 8,759.8 | 6,690.9 | 6,683.9 | 6,683.9 | 58.1 | 134.1 | 91.38 | -324.1 | 2,378.0 | 1,804.7 | 1,612.5 | 192.23 | 9.388 | |
| 8,800.0 | 6,690.7 | 6,683.7 | 6,683.7 | 59.1 | 134.1 | 91.35 | -324.1 | 2,378.0 | 1,766.0 | 1,572.8 | 193.18 | 9.142 | |
| 8,858.2 | 6,690.3 | 6,683.3 | 6,683.3 | 60.5 | 134.1 | 91.31 | -324.1 | 2,378.0 | 1,709.9 | 1,515.3 | 194.57 | 8.788 | |
| 8,900.0 | 6,690.0 | 6,683.0 | 6,683.0 | 61.5 | 134.1 | 91.27 | -324.1 | 2,378.0 | 1,669.7 | 1,474.2 | 195.57 | 8.538 | |
| 8,956.7 | 6,689.7 | 6,682.7 | 6,682.7 | 62.9 | 134.1 | 91.23 | -324.1 | 2,378.0 | 1,615.4 | 1,418.5 | 196.94 | 8.203 | |
| 9,000.0 | 6,689.4 | 6,682.4 | 6,682.4 | 63.9 | 134.1 | 91.19 | -324.1 | 2,378.0 | 1,574.0 | 1,376.0 | 197.99 | 7.950 | |
| 9,055.1 | 6,689.0 | 6,682.0 | 6,682.0 | 65.3 | 134.1 | 91.15 | -324.1 | 2,378.0 | 1,521.5 | 1,322.2 | 199.34 | 7.633 | |
| 9,100.0 | 6,688.7 | 6,681.7 | 6,681.7 | 66.4 | 134.1 | 91.11 | -324.1 | 2,378.0 | 1,478.8 | 1,278.4 | 200.44 | 7.378 | |
| 9,153.5 | 6,688.4 | 6,681.4 | 6,681.4 | 67.7 | 134.1 | 91.07 | -324.1 | 2,378.0 | 1,428.2 | 1,226.4 | 201.77 | 7.078 | |
| 9,200.0 | 6,688.1 | 6,681.1 | 6,681.1 | 68.9 | 134.1 | 91.03 | -324.1 | 2,378.0 | 1,384.4 | 1,181.4 | 202.92 | 6.822 | |
| 9,251.9 | 6,687.8 | 6,680.8 | 6,680.8 | 70.2 | 134.1 | 90.99 | -324.1 | 2,378.0 | 1,335.6 | 1,131.4 | 204.22 | 6.540 | |
| 9,300.0 | 6,687.4 | 6,680.4 | 6,680.4 | 71.4 | 134.1 | 90.95 | -324.1 | 2,378.0 | 1,290.7 | 1,085.3 | 205.43 | 6.283 | |
| 9,350.4 | 6,687.1 | 6,680.1 | 6,680.1 | 72.7 | 134.0 | 90.91 | -324.1 | 2,378.0 | 1,243.9 | 1,037.2 | 206.70 | 6.018 | |
| 9,400.0 | 6,686.8 | 6,679.8 | 6,679.8 | 73.9 | 134.0 | 90.88 | -324.1 | 2,378.0 | 1,198.1 | 990.1 | 207.95 | 5.761 | |
| 9,448.8 | 6,686.5 | 6,679.5 | 6,679.5 | 75.2 | 134.0 | 90.84 | -324.1 | 2,378.0 | 1,153.3 | 944.1 | 209.19 | 5.513 | |
| 9,500.0 | 6,686.1 | 6,679.1 | 6,679.1 | 76.5 | 134.0 | 90.80 | -324.1 | 2,378.0 | 1,106.7 | 896.2 | 210.49 | 5.258 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #32-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,678.8 | 6,678.8 | 77.7 | 134.0 | 90.76 | -324.1 | 2,378.0 | 1,064.1 | 852.4 | 211.70 | 5.026 | |
| 9,600.0 | 6,685.5 | 6,678.5 | 6,678.5 | 79.0 | 134.0 | 90.72 | -324.1 | 2,378.0 | 1,017.0 | 803.9 | 213.05 | 4.773 | |
| 9,645.6 | 6,685.2 | 6,678.2 | 6,678.2 | 80.2 | 134.0 | 90.68 | -324.1 | 2,378.0 | 976.7 | 762.5 | 214.23 | 4.559 | |
| 9,700.0 | 6,684.8 | 6,677.8 | 6,677.8 | 81.6 | 134.0 | 90.64 | -324.1 | 2,378.0 | 929.4 | 713.7 | 215.63 | 4.310 | |
| 9,744.1 | 6,684.6 | 6,677.6 | 6,677.6 | 82.8 | 134.0 | 90.60 | -324.1 | 2,378.0 | 891.6 | 674.8 | 216.77 | 4.113 | |
| 9,800.0 | 6,684.2 | 6,677.2 | 6,677.2 | 84.2 | 134.0 | 90.56 | -324.1 | 2,378.0 | 844.5 | 626.3 | 218.22 | 3.870 | |
| 9,842.5 | 6,683.9 | 6,676.9 | 6,676.9 | 85.3 | 134.0 | 90.52 | -324.1 | 2,378.0 | 809.5 | 590.1 | 219.33 | 3.691 | |
| 9,900.0 | 6,683.5 | 6,676.5 | 6,676.5 | 86.8 | 134.0 | 90.48 | -324.1 | 2,378.0 | 763.3 | 542.5 | 220.82 | 3.457 | |
| 9,940.9 | 6,683.3 | 6,676.3 | 6,676.3 | 87.9 | 134.0 | 90.45 | -324.1 | 2,378.0 | 731.4 | 509.5 | 221.89 | 3.296 | |
| 10,000.0 | 6,682.9 | 6,675.9 | 6,675.9 | 89.5 | 134.0 | 90.40 | -324.1 | 2,378.0 | 687.1 | 463.6 | 223.44 | 3.075 | |
| 10,039.3 | 6,682.6 | 6,675.6 | 6,675.6 | 90.5 | 134.0 | 90.37 | -324.1 | 2,378.0 | 658.8 | 434.4 | 224.47 | 2.935 | |
| 10,100.0 | 6,682.2 | 6,675.2 | 6,675.2 | 92.1 | 134.0 | 90.32 | -324.1 | 2,378.0 | 617.7 | 391.6 | 226.06 | 2.732 | |
| 10,137.8 | 6,682.0 | 6,675.0 | 6,675.0 | 93.1 | 133.9 | 90.29 | -324.1 | 2,378.0 | 593.7 | 366.7 | 227.06 | 2.615 | |
| 10,200.0 | 6,681.6 | 6,674.6 | 6,674.6 | 94.8 | 133.9 | 90.24 | -324.1 | 2,378.0 | 557.7 | 329.0 | 228.70 | 2.438 | |
| 10,236.2 | 6,681.4 | 6,674.4 | 6,674.4 | 95.7 | 133.9 | 90.21 | -324.1 | 2,378.0 | 538.9 | 309.2 | 229.65 | 2.346 | |
| 10,300.0 | 6,680.9 | 6,673.9 | 6,673.9 | 97.4 | 133.9 | 90.16 | -324.1 | 2,378.0 | 510.3 | 279.0 | 231.34 | 2.206 | |
| 10,334.6 | 6,680.7 | 6,673.7 | 6,673.7 | 98.3 | 133.9 | 90.13 | -324.1 | 2,378.0 | 497.6 | 265.3 | 232.26 | 2.142 | |
| 10,400.0 | 6,680.3 | 6,673.3 | 6,673.3 | 100.1 | 133.9 | 90.08 | -324.1 | 2,378.0 | 479.5 | 245.5 | 233.99 | 2.049 | |
| 10,433.0 | 6,680.1 | 6,673.1 | 6,673.1 | 101.0 | 133.9 | 90.06 | -324.1 | 2,378.0 | 473.5 | 238.6 | 234.87 | 2.016 | |
| 10,500.0 | 6,679.7 | 6,672.7 | 6,672.7 | 102.8 | 133.9 | 90.00 | -324.1 | 2,378.0 | 468.3 | 231.7 | 236.65 | 1.979 | |
| 10,502.8 | 6,679.6 | 6,672.6 | 6,672.6 | 102.8 | 133.9 | 90.00 | -324.1 | 2,378.0 | 468.3 | 231.6 | 236.72 | 1.978 | CC, ES |
| 10,531.5 | 6,679.4 | 6,672.4 | 6,672.4 | 103.6 | 133.9 | 89.98 | -324.1 | 2,378.0 | 469.2 | 231.7 | 237.49 | 1.976 | SF |
| 10,600.0 | 6,679.0 | 6,672.0 | 6,672.0 | 105.4 | 133.9 | 89.92 | -324.1 | 2,378.0 | 478.3 | 239.0 | 239.31 | 1.999 | |
| 10,629.9 | 6,678.8 | 6,671.8 | 6,671.8 | 106.2 | 133.9 | 89.90 | -324.1 | 2,378.0 | 485.3 | 245.2 | 240.11 | 2.021 | |
| 10,700.0 | 6,678.4 | 6,671.4 | 6,671.4 | 108.1 | 133.9 | 89.84 | -324.1 | 2,378.0 | 508.2 | 266.2 | 241.99 | 2.100 | |
| 10,728.3 | 6,678.2 | 6,671.2 | 6,671.2 | 108.9 | 133.9 | 89.82 | -324.1 | 2,378.0 | 519.8 | 277.1 | 242.74 | 2.141 | |
| 10,800.0 | 6,677.7 | 6,670.7 | 6,670.7 | 110.8 | 133.9 | 89.76 | -324.1 | 2,378.0 | 554.7 | 310.0 | 244.66 | 2.267 | |
| 10,826.7 | 6,677.5 | 6,670.5 | 6,670.5 | 111.5 | 133.9 | 89.74 | -324.1 | 2,378.0 | 569.5 | 324.1 | 245.38 | 2.321 | |
| 10,900.0 | 6,677.1 | 6,670.1 | 6,670.1 | 113.5 | 133.8 | 89.68 | -324.1 | 2,378.0 | 614.1 | 366.8 | 247.35 | 2.483 | |
| 10,925.2 | 6,676.9 | 6,669.9 | 6,669.9 | 114.2 | 133.8 | 89.66 | -324.1 | 2,378.0 | 630.7 | 382.7 | 248.02 | 2.543 | |
| 11,000.0 | 6,676.4 | 6,669.4 | 6,669.4 | 116.2 | 133.8 | 89.61 | -324.1 | 2,378.0 | 683.1 | 433.0 | 250.03 | 2.732 | |
| 11,023.6 | 6,676.3 | 6,669.3 | 6,669.3 | 116.8 | 133.8 | 89.59 | -324.1 | 2,378.0 | 700.4 | 449.8 | 250.67 | 2.794 | |
| 11,100.0 | 6,675.8 | 6,668.8 | 6,668.8 | 118.9 | 133.8 | 89.53 | -324.1 | 2,378.0 | 759.0 | 506.2 | 252.72 | 3.003 | |
| 11,122.0 | 6,675.6 | 6,668.6 | 6,668.6 | 119.5 | 133.8 | 89.51 | -324.1 | 2,378.0 | 776.4 | 523.1 | 253.32 | 3.065 | |
| 11,200.0 | 6,675.1 | 6,668.1 | 6,668.1 | 121.6 | 133.8 | 89.45 | -324.1 | 2,378.0 | 839.9 | 584.5 | 255.42 | 3.288 | |
| 11,220.4 | 6,675.0 | 6,668.0 | 6,668.0 | 122.2 | 133.8 | 89.43 | -324.1 | 2,378.0 | 857.0 | 601.0 | 255.97 | 3.348 | |
| 11,300.0 | 6,674.5 | 6,667.5 | 6,667.5 | 124.3 | 133.8 | 89.37 | -324.1 | 2,378.0 | 924.6 | 666.5 | 258.12 | 3.582 | |
| 11,318.9 | 6,674.3 | 6,667.3 | 6,667.3 | 124.9 | 133.8 | 89.35 | -324.1 | 2,378.0 | 940.9 | 682.3 | 258.63 | 3.638 | |
| 11,400.0 | 6,673.8 | 6,666.8 | 6,666.8 | 127.1 | 133.8 | 89.29 | -324.1 | 2,378.0 | 1,012.1 | 751.3 | 260.82 | 3.880 | |
| 11,417.3 | 6,673.7 | 6,666.7 | 6,666.7 | 127.5 | 133.8 | 89.27 | -324.1 | 2,378.0 | 1,027.5 | 766.2 | 261.29 | 3.932 | |
| 11,500.0 | 6,673.2 | 6,666.2 | 6,666.2 | 129.8 | 133.8 | 89.21 | -324.1 | 2,378.0 | 1,101.7 | 838.2 | 263.53 | 4.181 | |
| 11,515.7 | 6,673.1 | 6,666.1 | 6,666.1 | 130.2 | 133.8 | 89.20 | -324.1 | 2,378.0 | 1,116.0 | 852.0 | 263.96 | 4.228 | |
| 11,600.0 | 6,672.5 | 6,665.5 | 6,665.5 | 132.5 | 133.8 | 89.13 | -324.1 | 2,378.0 | 1,193.0 | 926.7 | 266.24 | 4.481 | |
| 11,614.1 | 6,672.4 | 6,665.4 | 6,665.4 | 132.9 | 133.8 | 89.12 | -324.1 | 2,378.0 | 1,206.0 | 939.4 | 266.62 | 4.523 | |
| 11,700.0 | 6,671.9 | 6,664.9 | 6,664.9 | 135.3 | 133.7 | 89.05 | -324.1 | 2,378.0 | 1,285.6 | 1,016.6 | 268.95 | 4.780 | |
| 11,712.6 | 6,671.8 | 6,664.8 | 6,664.8 | 135.6 | 133.7 | 89.04 | -324.1 | 2,378.0 | 1,297.3 | 1,028.0 | 269.29 | 4.817 | |
| 11,800.0 | 6,671.2 | 6,664.2 | 6,664.2 | 138.0 | 133.7 | 88.97 | -324.1 | 2,378.0 | 1,379.2 | 1,107.5 | 271.67 | 5.077 | |
| 11,811.0 | 6,671.1 | 6,664.1 | 6,664.1 | 138.3 | 133.7 | 88.96 | -324.1 | 2,378.0 | 1,389.5 | 1,117.5 | 271.96 | 5.109 | |
| 11,900.0 | 6,670.6 | 6,663.6 | 6,663.6 | 140.7 | 133.7 | 88.89 | -324.1 | 2,378.0 | 1,473.6 | 1,199.2 | 274.38 | 5.371 | |
| 11,909.4 | 6,670.5 | 6,663.5 | 6,663.5 | 141.0 | 133.7 | 88.88 | -324.1 | 2,378.0 | 1,482.5 | 1,207.9 | 274.64 | 5.398 | |
| 11,987.2 | 6,670.0 | 6,663.0 | 6,663.0 | 143.1 | 133.7 | 88.82 | -324.1 | 2,378.0 | 1,556.5 | 1,279.8 | 276.75 | 5.624 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | | | | |
| 98.4 | 98.4 | 91.4 | 91.4 | 0.1 | 1.2 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,718.4 | 1.28 | 2,913.566 | |
| 100.0 | 100.0 | 93.0 | 93.0 | 0.1 | 1.2 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,718.4 | 1.30 | 2,863.967 | |
| 196.8 | 196.8 | 189.8 | 189.8 | 0.3 | 3.3 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,716.0 | 3.65 | 1,020.199 | |
| 200.0 | 200.0 | 193.0 | 193.0 | 0.3 | 3.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,716.0 | 3.72 | 998.678 | |
| 295.3 | 295.3 | 288.3 | 288.3 | 0.5 | 5.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,713.8 | 5.93 | 627.198 | |
| 300.0 | 300.0 | 293.0 | 293.0 | 0.5 | 5.5 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,713.7 | 6.04 | 615.906 | |
| 393.7 | 393.7 | 386.7 | 386.7 | 0.8 | 7.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,711.5 | 8.17 | 455.539 | |
| 400.0 | 400.0 | 393.0 | 393.0 | 0.8 | 7.5 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,711.4 | 8.31 | 447.710 | |
| 492.1 | 492.1 | 485.1 | 485.1 | 1.0 | 9.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,709.3 | 10.39 | 358.169 | |
| 500.0 | 500.0 | 493.0 | 493.0 | 1.0 | 9.6 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,709.1 | 10.56 | 352.151 | |
| 590.5 | 590.5 | 583.5 | 583.5 | 1.2 | 11.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,707.1 | 12.60 | 295.254 | |
| 600.0 | 600.0 | 593.0 | 593.0 | 1.2 | 11.6 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,706.9 | 12.81 | 290.359 | |
| 689.0 | 689.0 | 682.0 | 682.0 | 1.4 | 13.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,704.9 | 14.81 | 251.203 | |
| 700.0 | 700.0 | 693.0 | 693.0 | 1.4 | 13.6 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,704.6 | 15.05 | 247.075 | |
| 787.4 | 787.4 | 780.4 | 780.4 | 1.6 | 15.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,702.7 | 17.01 | 218.620 | |
| 800.0 | 800.0 | 793.0 | 793.0 | 1.7 | 15.6 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,702.4 | 17.30 | 215.049 | |
| 885.8 | 885.8 | 878.8 | 878.8 | 1.9 | 17.4 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,700.5 | 19.22 | 193.533 | |
| 900.0 | 900.0 | 893.0 | 893.0 | 1.9 | 17.6 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,700.2 | 19.54 | 190.387 | |
| 984.2 | 984.2 | 977.2 | 977.2 | 2.1 | 19.3 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,698.3 | 21.42 | 173.620 | |
| 1,000.0 | 1,000.0 | 993.0 | 993.0 | 2.1 | 19.7 | 94.83 | -313.0 | 3,706.5 | 3,719.7 | 3,697.9 | 21.78 | 170.808 | |
| 1,082.7 | 1,082.7 | 1,075.7 | 1,075.7 | 2.3 | 21.3 | 179.27 | -313.0 | 3,706.5 | 3,720.9 | 3,697.3 | 23.61 | 157.609 | |
| 1,100.0 | 1,100.0 | 1,093.0 | 1,093.0 | 2.3 | 21.7 | 179.27 | -313.0 | 3,706.5 | 3,721.4 | 3,697.5 | 23.99 | 155.130 | |
| 1,181.1 | 1,181.0 | 1,174.0 | 1,174.0 | 2.5 | 23.3 | 179.27 | -313.0 | 3,706.5 | 3,725.4 | 3,699.7 | 25.75 | 144.678 | |
| 1,200.0 | 1,199.8 | 1,192.8 | 1,192.8 | 2.5 | 23.7 | 179.27 | -313.0 | 3,706.5 | 3,726.7 | 3,700.5 | 26.16 | 142.481 | |
| 1,279.5 | 1,279.1 | 1,272.1 | 1,272.1 | 2.7 | 25.3 | 179.27 | -313.0 | 3,706.5 | 3,733.3 | 3,705.5 | 27.85 | 134.054 | |
| 1,300.0 | 1,299.5 | 1,292.5 | 1,292.5 | 2.8 | 25.7 | 179.27 | -313.0 | 3,706.5 | 3,735.4 | 3,707.1 | 28.28 | 132.087 | |
| 1,377.9 | 1,376.9 | 1,369.9 | 1,369.9 | 3.0 | 27.2 | 179.27 | -313.0 | 3,706.5 | 3,744.6 | 3,714.7 | 29.90 | 125.233 | |
| 1,400.0 | 1,398.7 | 1,391.7 | 1,391.7 | 3.0 | 27.7 | 179.26 | -313.0 | 3,706.5 | 3,747.6 | 3,717.2 | 30.35 | 123.468 | |
| 1,476.4 | 1,474.2 | 1,467.2 | 1,467.2 | 3.2 | 29.2 | 179.26 | -313.0 | 3,706.5 | 3,759.2 | 3,727.3 | 31.90 | 117.858 | |
| 1,500.0 | 1,497.5 | 1,490.5 | 1,490.5 | 3.3 | 29.7 | 179.26 | -313.0 | 3,706.5 | 3,763.2 | 3,730.8 | 32.36 | 116.275 | |
| 1,574.8 | 1,571.0 | 1,564.0 | 1,564.0 | 3.5 | 31.2 | 179.26 | -313.0 | 3,706.5 | 3,777.2 | 3,743.3 | 33.83 | 111.662 | |
| 1,600.0 | 1,595.6 | 1,588.6 | 1,588.6 | 3.6 | 31.6 | 179.26 | -313.0 | 3,706.5 | 3,782.3 | 3,748.0 | 34.31 | 110.243 | |
| 1,673.2 | 1,667.0 | 1,660.0 | 1,660.0 | 3.9 | 33.1 | 179.26 | -313.0 | 3,706.5 | 3,798.4 | 3,762.7 | 35.69 | 106.443 | |
| 1,700.0 | 1,693.1 | 1,686.1 | 1,686.1 | 4.0 | 33.6 | 179.26 | -313.0 | 3,706.5 | 3,804.8 | 3,768.6 | 36.18 | 105.173 | |
| 1,771.6 | 1,762.4 | 1,755.4 | 1,755.4 | 4.3 | 35.0 | 179.26 | -313.0 | 3,706.5 | 3,823.0 | 3,785.5 | 37.46 | 102.042 | |
| 1,800.0 | 1,789.6 | 1,782.6 | 1,782.6 | 4.4 | 35.6 | 179.26 | -313.0 | 3,706.5 | 3,830.7 | 3,792.7 | 37.96 | 100.913 | |
| 1,870.1 | 1,856.8 | 1,849.8 | 1,849.8 | 4.7 | 36.9 | 179.26 | -313.0 | 3,706.5 | 3,850.8 | 3,811.6 | 39.16 | 98.338 | |
| 1,900.0 | 1,885.3 | 1,878.3 | 1,878.3 | 4.9 | 37.5 | 179.26 | -313.0 | 3,706.5 | 3,859.9 | 3,820.2 | 39.65 | 97.341 | |
| 1,968.5 | 1,950.2 | 1,943.2 | 1,943.2 | 5.3 | 38.8 | 179.26 | -313.0 | 3,706.5 | 3,881.8 | 3,841.1 | 40.76 | 95.242 | |
| 2,000.0 | 1,979.8 | 1,972.8 | 1,972.8 | 5.5 | 39.4 | 179.25 | -313.0 | 3,706.5 | 3,892.4 | 3,851.2 | 41.25 | 94.364 | |
| 2,044.9 | 2,021.9 | 2,014.9 | 2,014.9 | 5.7 | 40.2 | 179.25 | -313.0 | 3,706.5 | 3,908.1 | 3,866.2 | 41.93 | 93.200 | |
| 2,066.9 | 2,042.5 | 2,035.5 | 2,035.5 | 5.9 | 40.6 | 179.25 | -313.0 | 3,706.5 | 3,916.0 | 3,873.6 | 42.38 | 92.403 | |
| 2,100.0 | 2,073.4 | 2,066.4 | 2,066.4 | 6.1 | 41.3 | 179.26 | -313.0 | 3,706.5 | 3,927.8 | 3,884.7 | 43.05 | 91.231 | |
| 2,165.3 | 2,134.4 | 2,127.4 | 2,127.4 | 6.5 | 42.5 | 179.26 | -313.0 | 3,706.5 | 3,951.1 | 3,906.7 | 44.39 | 89.017 | |
| 2,200.0 | 2,166.8 | 2,159.8 | 2,159.8 | 6.8 | 43.1 | 179.26 | -313.0 | 3,706.5 | 3,963.5 | 3,918.4 | 45.09 | 87.893 | |
| 2,263.8 | 2,226.4 | 2,219.4 | 2,219.4 | 7.2 | 44.3 | 179.27 | -313.0 | 3,706.5 | 3,986.2 | 3,939.8 | 46.40 | 85.911 | |
| 2,300.0 | 2,260.2 | 2,253.2 | 2,253.2 | 7.4 | 45.0 | 179.27 | -313.0 | 3,706.5 | 3,999.1 | 3,952.0 | 47.14 | 84.832 | |
| 2,362.2 | 2,318.3 | 2,311.3 | 2,311.3 | 7.9 | 46.2 | 179.27 | -313.0 | 3,706.5 | 4,021.3 | 3,972.9 | 48.42 | 83.054 | |
| 2,400.0 | 2,353.6 | 2,346.6 | 2,346.6 | 8.1 | 46.9 | 179.28 | -313.0 | 3,706.5 | 4,034.8 | 3,985.6 | 49.19 | 82.017 | |
| 2,460.6 | 2,410.3 | 2,403.3 | 2,403.3 | 8.6 | 48.0 | 179.28 | -313.0 | 3,706.5 | 4,056.4 | 4,006.0 | 50.44 | 80.418 | |
| 2,500.0 | 2,447.0 | 2,440.0 | 2,440.0 | 8.9 | 48.8 | 179.28 | -313.0 | 3,706.5 | 4,070.5 | 4,019.2 | 51.25 | 79.420 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,495.2 | 2,495.2 | 9.3 | 49.9 | 179.29 | -313.0 | 3,706.5 | 4,091.5 | 4,039.1 | 52.47 | 77.980 | |
| 2,600.0 | 2,540.5 | 2,533.5 | 2,533.5 | 9.6 | 50.7 | 179.29 | -313.0 | 3,706.5 | 4,106.1 | 4,052.8 | 53.31 | 77.018 | |
| 2,657.5 | 2,594.2 | 2,587.2 | 2,587.2 | 10.0 | 51.7 | 179.29 | -313.0 | 3,706.5 | 4,126.6 | 4,072.1 | 54.50 | 75.718 | |
| 2,700.0 | 2,633.9 | 2,626.9 | 2,626.9 | 10.3 | 52.5 | 179.29 | -313.0 | 3,706.5 | 4,141.8 | 4,086.4 | 55.38 | 74.791 | |
| 2,755.9 | 2,686.1 | 2,679.1 | 2,679.1 | 10.7 | 53.6 | 179.30 | -313.0 | 3,706.5 | 4,161.7 | 4,105.2 | 56.53 | 73.615 | |
| 2,800.0 | 2,727.3 | 2,720.3 | 2,720.3 | 11.0 | 54.4 | 179.30 | -313.0 | 3,706.5 | 4,177.5 | 4,120.0 | 57.45 | 72.720 | |
| 2,854.3 | 2,778.1 | 2,771.1 | 2,771.1 | 11.4 | 55.4 | 179.30 | -313.0 | 3,706.5 | 4,196.9 | 4,138.3 | 58.57 | 71.655 | |
| 2,900.0 | 2,820.7 | 2,813.7 | 2,813.7 | 11.8 | 56.3 | 179.31 | -313.0 | 3,706.5 | 4,213.1 | 4,153.6 | 59.52 | 70.790 | |
| 2,952.7 | 2,870.0 | 2,863.0 | 2,863.0 | 12.2 | 57.3 | 179.31 | -313.0 | 3,706.5 | 4,232.0 | 4,171.3 | 60.61 | 69.824 | |
| 3,000.0 | 2,914.2 | 2,907.2 | 2,907.2 | 12.5 | 58.2 | 179.31 | -313.0 | 3,706.5 | 4,248.8 | 4,187.2 | 61.59 | 68.987 | |
| 3,051.2 | 2,962.0 | 2,955.0 | 2,955.0 | 12.9 | 59.1 | 179.32 | -313.0 | 3,706.5 | 4,267.1 | 4,204.4 | 62.65 | 68.110 | |
| 3,100.0 | 3,007.6 | 3,000.6 | 3,000.6 | 13.3 | 60.1 | 179.32 | -313.0 | 3,706.5 | 4,284.5 | 4,220.8 | 63.66 | 67.300 | |
| 3,149.6 | 3,053.9 | 3,046.9 | 3,046.9 | 13.6 | 61.0 | 179.32 | -313.0 | 3,706.5 | 4,302.2 | 4,237.5 | 64.69 | 66.502 | |
| 3,200.0 | 3,101.0 | 3,094.0 | 3,094.0 | 14.0 | 61.9 | 179.32 | -313.0 | 3,706.5 | 4,320.2 | 4,254.4 | 65.74 | 65.717 | |
| 3,248.0 | 3,145.9 | 3,138.9 | 3,138.9 | 14.4 | 62.8 | 179.33 | -313.0 | 3,706.5 | 4,337.3 | 4,270.5 | 66.74 | 64.992 | |
| 3,300.0 | 3,194.4 | 3,187.4 | 3,187.4 | 14.8 | 63.8 | 179.33 | -313.0 | 3,706.5 | 4,355.8 | 4,288.0 | 67.82 | 64.230 | |
| 3,346.4 | 3,237.8 | 3,230.8 | 3,230.8 | 15.1 | 64.7 | 179.33 | -313.0 | 3,706.5 | 4,372.4 | 4,303.6 | 68.78 | 63.570 | |
| 3,400.0 | 3,287.8 | 3,280.8 | 3,280.8 | 15.5 | 65.7 | 179.34 | -313.0 | 3,706.5 | 4,391.5 | 4,321.6 | 69.89 | 62.830 | |
| 3,444.9 | 3,329.8 | 3,322.8 | 3,322.8 | 15.9 | 66.5 | 179.34 | -313.0 | 3,706.5 | 4,407.5 | 4,336.7 | 70.83 | 62.229 | |
| 3,500.0 | 3,381.3 | 3,374.3 | 3,374.3 | 16.3 | 67.6 | 179.34 | -313.0 | 3,706.5 | 4,427.2 | 4,355.2 | 71.97 | 61.510 | |
| 3,543.3 | 3,421.7 | 3,414.7 | 3,414.7 | 16.6 | 68.4 | 179.34 | -313.0 | 3,706.5 | 4,442.6 | 4,369.7 | 72.88 | 60.962 | |
| 3,600.0 | 3,474.7 | 3,467.7 | 3,467.7 | 17.0 | 69.4 | 179.35 | -313.0 | 3,706.5 | 4,462.8 | 4,388.8 | 74.05 | 60.264 | |
| 3,641.7 | 3,513.7 | 3,506.7 | 3,506.7 | 17.3 | 70.2 | 179.35 | -313.0 | 3,706.5 | 4,477.7 | 4,402.8 | 74.92 | 59.764 | |
| 3,700.0 | 3,568.1 | 3,561.1 | 3,561.1 | 17.8 | 71.3 | 179.35 | -313.0 | 3,706.5 | 4,498.5 | 4,422.4 | 76.14 | 59.085 | |
| 3,740.1 | 3,605.6 | 3,598.6 | 3,598.6 | 18.1 | 72.1 | 179.35 | -313.0 | 3,706.5 | 4,512.8 | 4,435.8 | 76.97 | 58.629 | |
| 3,800.0 | 3,661.5 | 3,654.5 | 3,654.5 | 18.5 | 73.2 | 179.36 | -313.0 | 3,706.5 | 4,534.2 | 4,455.9 | 78.22 | 57.968 | |
| 3,838.6 | 3,697.6 | 3,690.6 | 3,690.6 | 18.8 | 73.9 | 179.36 | -313.0 | 3,706.5 | 4,547.9 | 4,468.9 | 79.02 | 57.552 | |
| 3,900.0 | 3,754.9 | 3,747.9 | 3,747.9 | 19.3 | 75.1 | 179.36 | -313.0 | 3,706.5 | 4,569.8 | 4,489.5 | 80.30 | 56.908 | |
| 3,937.0 | 3,789.5 | 3,782.5 | 3,782.5 | 19.6 | 75.8 | 179.36 | -313.0 | 3,706.5 | 4,583.0 | 4,502.0 | 81.07 | 56.529 | |
| 4,000.0 | 3,848.4 | 3,841.4 | 3,841.4 | 20.1 | 77.0 | 179.37 | -313.0 | 3,706.5 | 4,605.5 | 4,523.1 | 82.39 | 55.901 | |
| 4,035.4 | 3,881.5 | 3,874.5 | 3,874.5 | 20.3 | 77.6 | 179.37 | -313.0 | 3,706.5 | 4,618.1 | 4,535.0 | 83.12 | 55.557 | |
| 4,100.0 | 3,941.8 | 3,934.8 | 3,934.8 | 20.8 | 78.8 | 179.37 | -313.0 | 3,706.5 | 4,641.2 | 4,556.7 | 84.47 | 54.944 | |
| 4,133.8 | 3,973.4 | 3,966.4 | 3,966.4 | 21.1 | 79.5 | 179.37 | -313.0 | 3,706.5 | 4,653.3 | 4,568.1 | 85.18 | 54.630 | |
| 4,200.0 | 4,035.2 | 4,028.2 | 4,028.2 | 21.6 | 80.7 | 179.38 | -313.0 | 3,706.5 | 4,676.8 | 4,590.3 | 86.56 | 54.032 | |
| 4,232.3 | 4,065.4 | 4,058.4 | 4,058.4 | 21.8 | 81.3 | 179.38 | -313.0 | 3,706.5 | 4,688.4 | 4,601.1 | 87.23 | 53.747 | |
| 4,300.0 | 4,128.6 | 4,121.6 | 4,121.6 | 22.3 | 82.6 | 179.38 | -313.0 | 3,706.5 | 4,712.5 | 4,623.9 | 88.64 | 53.163 | |
| 4,330.7 | 4,157.3 | 4,150.3 | 4,150.3 | 22.6 | 83.2 | 179.38 | -313.0 | 3,706.5 | 4,723.5 | 4,634.2 | 89.28 | 52.905 | |
| 4,400.0 | 4,222.0 | 4,215.0 | 4,215.0 | 23.1 | 84.5 | 179.39 | -313.0 | 3,706.5 | 4,748.2 | 4,657.5 | 90.73 | 52.334 | |
| 4,429.1 | 4,249.3 | 4,242.3 | 4,242.3 | 23.3 | 85.0 | 179.39 | -313.0 | 3,706.5 | 4,758.6 | 4,667.2 | 91.34 | 52.100 | |
| 4,500.0 | 4,315.5 | 4,308.5 | 4,308.5 | 23.9 | 86.4 | 179.39 | -313.0 | 3,706.5 | 4,783.9 | 4,691.0 | 92.82 | 51.542 | |
| 4,527.5 | 4,341.2 | 4,334.2 | 4,334.2 | 24.1 | 86.9 | 179.39 | -313.0 | 3,706.5 | 4,793.7 | 4,700.3 | 93.39 | 51.330 | |
| 4,600.0 | 4,408.9 | 4,401.9 | 4,401.9 | 24.6 | 88.2 | 179.39 | -313.0 | 3,706.5 | 4,819.5 | 4,724.6 | 94.90 | 50.784 | |
| 4,626.0 | 4,433.2 | 4,426.2 | 4,426.2 | 24.8 | 88.7 | 179.40 | -313.0 | 3,706.5 | 4,828.8 | 4,733.3 | 95.44 | 50.593 | |
| 4,700.0 | 4,502.3 | 4,495.3 | 4,495.3 | 25.4 | 90.1 | 179.40 | -313.0 | 3,706.5 | 4,855.2 | 4,758.2 | 96.99 | 50.059 | |
| 4,724.4 | 4,525.1 | 4,518.1 | 4,518.1 | 25.6 | 90.6 | 179.40 | -313.0 | 3,706.5 | 4,863.9 | 4,766.4 | 97.50 | 49.887 | |
| 4,800.0 | 4,595.7 | 4,588.7 | 4,588.7 | 26.2 | 92.0 | 179.40 | -313.0 | 3,706.5 | 4,890.9 | 4,791.8 | 99.08 | 49.364 | |
| 4,822.8 | 4,617.1 | 4,610.1 | 4,610.1 | 26.3 | 92.4 | 179.40 | -313.0 | 3,706.5 | 4,899.0 | 4,799.5 | 99.55 | 49.210 | |
| 4,900.0 | 4,689.2 | 4,682.2 | 4,682.2 | 26.9 | 93.9 | 179.41 | -313.0 | 3,706.5 | 4,926.5 | 4,825.4 | 101.17 | 48.698 | |
| 4,921.2 | 4,709.0 | 4,702.0 | 4,702.0 | 27.1 | 94.3 | 179.41 | -313.0 | 3,706.5 | 4,934.1 | 4,832.5 | 101.61 | 48.560 | |
| 5,000.0 | 4,782.6 | 4,775.6 | 4,775.6 | 27.7 | 95.7 | 179.41 | -313.0 | 3,706.5 | 4,962.2 | 4,859.0 | 103.25 | 48.058 | |
| 5,019.7 | 4,801.0 | 4,794.0 | 4,794.0 | 27.8 | 96.1 | 179.41 | -313.0 | 3,706.5 | 4,969.2 | 4,865.6 | 103.67 | 47.935 | |
| 5,100.0 | 4,876.0 | 4,869.0 | 4,869.0 | 28.4 | 97.6 | 179.42 | -313.0 | 3,706.5 | 4,997.9 | 4,892.5 | 105.34 | 47.444 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,885.9 | 4,885.9 | 28.6 | 98.0 | 179.42 | -313.0 | 3,706.5 | 5,004.3 | 4,898.6 | 105.72 | 47.335 | |
| 5,159.9 | 4,932.0 | 4,925.0 | 4,925.0 | 28.9 | 98.8 | 179.42 | -313.0 | 3,706.5 | 5,019.3 | 4,912.7 | 106.59 | 47.087 | |
| 5,200.0 | 4,969.5 | 4,962.5 | 4,962.5 | 29.2 | 99.5 | 179.42 | -313.0 | 3,706.5 | 5,033.3 | 4,925.4 | 107.92 | 46.638 | |
| 5,216.5 | 4,985.1 | 4,978.1 | 4,978.1 | 29.3 | 99.8 | 179.42 | -313.0 | 3,706.5 | 5,038.9 | 4,930.5 | 108.46 | 46.457 | |
| 5,300.0 | 5,064.0 | 5,057.0 | 5,057.0 | 29.7 | 101.4 | 179.43 | -313.0 | 3,706.5 | 5,066.0 | 4,954.8 | 111.17 | 45.571 | |
| 5,314.9 | 5,078.2 | 5,071.2 | 5,071.2 | 29.8 | 101.7 | 179.43 | -313.0 | 3,706.5 | 5,070.6 | 4,959.0 | 111.64 | 45.418 | |
| 5,400.0 | 5,159.6 | 5,152.6 | 5,152.6 | 30.2 | 103.3 | 179.44 | -313.0 | 3,706.5 | 5,095.4 | 4,981.1 | 114.32 | 44.570 | |
| 5,413.4 | 5,172.4 | 5,165.4 | 5,165.4 | 30.3 | 103.6 | 179.44 | -313.0 | 3,706.5 | 5,099.1 | 4,984.3 | 114.74 | 44.441 | |
| 5,500.0 | 5,256.1 | 5,249.1 | 5,249.1 | 30.7 | 105.3 | 179.45 | -313.0 | 3,706.5 | 5,121.4 | 5,004.1 | 117.39 | 43.629 | |
| 5,511.8 | 5,267.6 | 5,260.6 | 5,260.6 | 30.7 | 105.5 | 179.45 | -313.0 | 3,706.5 | 5,124.3 | 5,006.5 | 117.74 | 43.522 | |
| 5,600.0 | 5,353.5 | 5,346.5 | 5,346.5 | 31.1 | 107.2 | 179.46 | -313.0 | 3,706.5 | 5,144.1 | 5,023.8 | 120.34 | 42.746 | |
| 5,610.2 | 5,363.5 | 5,356.5 | 5,356.5 | 31.1 | 107.4 | 179.46 | -313.0 | 3,706.5 | 5,146.2 | 5,025.6 | 120.64 | 42.659 | |
| 5,700.0 | 5,451.6 | 5,444.6 | 5,444.6 | 31.4 | 109.2 | 179.46 | -313.0 | 3,706.5 | 5,163.3 | 5,040.2 | 123.18 | 41.917 | |
| 5,708.6 | 5,460.2 | 5,453.2 | 5,453.2 | 31.4 | 109.4 | 179.46 | -313.0 | 3,706.5 | 5,164.8 | 5,041.4 | 123.42 | 41.848 | |
| 5,800.0 | 5,550.4 | 5,543.4 | 5,543.4 | 31.7 | 111.2 | 179.47 | -313.0 | 3,706.5 | 5,179.2 | 5,053.3 | 125.89 | 41.139 | |
| 5,807.1 | 5,557.4 | 5,550.4 | 5,550.4 | 31.7 | 111.3 | 179.47 | -313.0 | 3,706.5 | 5,180.1 | 5,054.1 | 126.08 | 41.086 | |
| 5,900.0 | 5,649.6 | 5,642.6 | 5,642.6 | 31.9 | 113.2 | 179.47 | -313.0 | 3,706.5 | 5,191.5 | 5,063.0 | 128.47 | 40.411 | |
| 5,905.5 | 5,655.1 | 5,648.1 | 5,648.1 | 31.9 | 113.3 | 179.47 | -313.0 | 3,706.5 | 5,192.1 | 5,063.5 | 128.61 | 40.372 | |
| 6,000.0 | 5,749.2 | 5,742.2 | 5,742.2 | 32.1 | 115.2 | 179.47 | -313.0 | 3,706.5 | 5,200.4 | 5,069.5 | 130.90 | 39.729 | |
| 6,003.9 | 5,753.1 | 5,746.1 | 5,746.1 | 32.1 | 115.3 | 179.47 | -313.0 | 3,706.5 | 5,200.7 | 5,069.7 | 130.99 | 39.703 | |
| 6,100.0 | 5,849.1 | 5,842.1 | 5,842.1 | 32.3 | 117.2 | 179.48 | -313.0 | 3,706.5 | 5,205.8 | 5,072.6 | 133.17 | 39.092 | |
| 6,102.3 | 5,851.4 | 5,844.4 | 5,844.4 | 32.3 | 117.2 | 179.48 | -313.0 | 3,706.5 | 5,205.9 | 5,072.7 | 133.22 | 39.077 | |
| 6,200.8 | 5,949.8 | 5,942.8 | 5,942.8 | 32.4 | 119.2 | 179.48 | -313.0 | 3,706.5 | 5,207.7 | 5,072.4 | 135.29 | 38.492 | |
| 6,204.9 | 5,953.9 | 5,946.9 | 5,946.9 | 32.4 | 119.3 | 95.04 | -313.0 | 3,706.5 | 5,207.7 | 5,056.0 | 151.67 | 34.336 | |
| 6,234.9 | 5,983.9 | 5,976.9 | 5,976.9 | 32.4 | 119.9 | 95.04 | -313.0 | 3,706.5 | 5,207.7 | 5,055.4 | 152.30 | 34.194 | |
| 6,250.0 | 5,999.0 | 5,992.0 | 5,992.0 | 32.4 | 120.2 | 5.04 | -313.0 | 3,706.5 | 5,207.6 | 5,071.3 | 136.24 | 38.224 | |
| 6,299.2 | 6,048.2 | 6,041.2 | 6,041.2 | 32.4 | 121.2 | 5.06 | -313.0 | 3,706.5 | 5,204.8 | 5,068.3 | 136.49 | 38.133 | |
| 6,300.0 | 6,048.9 | 6,041.9 | 6,041.9 | 32.4 | 121.2 | 5.06 | -313.0 | 3,706.5 | 5,204.8 | 5,068.3 | 136.49 | 38.133 | |
| 6,350.0 | 6,098.5 | 6,091.5 | 6,091.5 | 32.4 | 122.2 | 5.11 | -313.0 | 3,706.5 | 5,198.5 | 5,062.4 | 136.07 | 38.205 | |
| 6,397.6 | 6,145.3 | 6,138.3 | 6,138.3 | 32.3 | 123.2 | 5.19 | -313.0 | 3,706.5 | 5,189.4 | 5,054.3 | 135.02 | 38.433 | |
| 6,400.0 | 6,147.6 | 6,140.6 | 6,140.6 | 32.3 | 123.2 | 5.19 | -313.0 | 3,706.5 | 5,188.8 | 5,053.9 | 134.96 | 38.448 | |
| 6,450.0 | 6,195.8 | 6,188.8 | 6,188.8 | 32.2 | 124.2 | 5.30 | -313.0 | 3,706.5 | 5,175.8 | 5,042.6 | 133.15 | 38.871 | |
| 6,496.0 | 6,239.3 | 6,232.3 | 6,232.3 | 32.1 | 125.0 | 5.44 | -313.0 | 3,706.5 | 5,160.8 | 5,029.9 | 130.88 | 39.431 | |
| 6,500.0 | 6,243.0 | 6,236.0 | 6,236.0 | 32.1 | 125.1 | 5.45 | -313.0 | 3,706.5 | 5,159.4 | 5,028.7 | 130.66 | 39.487 | |
| 6,550.0 | 6,289.0 | 6,282.0 | 6,282.0 | 32.0 | 126.0 | 5.64 | -313.0 | 3,706.5 | 5,139.7 | 5,012.3 | 127.49 | 40.315 | |
| 6,594.5 | 6,328.6 | 6,321.6 | 6,321.6 | 31.8 | 126.8 | 5.84 | -313.0 | 3,706.5 | 5,119.6 | 4,995.5 | 124.11 | 41.251 | |
| 6,600.0 | 6,333.4 | 6,326.4 | 6,326.4 | 31.8 | 126.9 | 5.87 | -313.0 | 3,706.5 | 5,117.0 | 4,993.3 | 123.66 | 41.381 | |
| 6,650.0 | 6,376.2 | 6,369.2 | 6,369.2 | 31.7 | 127.8 | 6.15 | -313.0 | 3,706.5 | 5,091.2 | 4,972.0 | 119.19 | 42.714 | |
| 6,692.9 | 6,411.3 | 6,404.3 | 6,404.3 | 31.6 | 128.5 | 6.44 | -313.0 | 3,706.5 | 5,066.7 | 4,951.8 | 114.89 | 44.102 | |
| 6,700.0 | 6,417.0 | 6,410.0 | 6,410.0 | 31.5 | 128.6 | 6.50 | -313.0 | 3,706.5 | 5,062.5 | 4,948.3 | 114.13 | 44.355 | |
| 6,750.0 | 6,455.7 | 6,448.7 | 6,448.7 | 31.4 | 129.4 | 6.92 | -313.0 | 3,706.5 | 5,031.0 | 4,922.4 | 108.54 | 46.351 | |
| 6,791.3 | 6,486.0 | 6,479.0 | 6,479.0 | 31.3 | 130.0 | 7.33 | -313.0 | 3,706.5 | 5,003.0 | 4,899.4 | 103.57 | 48.306 | |
| 6,800.0 | 6,492.2 | 6,485.2 | 6,485.2 | 31.3 | 130.1 | 7.43 | -313.0 | 3,706.5 | 4,996.9 | 4,894.4 | 102.49 | 48.755 | |
| 6,850.0 | 6,526.1 | 6,519.1 | 6,519.1 | 31.2 | 130.8 | 8.07 | -313.0 | 3,706.5 | 4,960.4 | 4,864.3 | 96.09 | 51.622 | |
| 6,889.7 | 6,551.2 | 6,544.2 | 6,544.2 | 31.2 | 131.3 | 8.68 | -313.0 | 3,706.5 | 4,929.7 | 4,838.8 | 90.85 | 54.260 | |
| 6,900.0 | 6,557.4 | 6,550.4 | 6,550.4 | 31.2 | 131.4 | 8.86 | -313.0 | 3,706.5 | 4,921.6 | 4,832.1 | 89.50 | 54.993 | |
| 6,950.0 | 6,586.0 | 6,579.0 | 6,579.0 | 31.1 | 132.0 | 9.86 | -313.0 | 3,706.5 | 4,880.7 | 4,797.8 | 82.93 | 58.854 | |
| 6,988.2 | 6,605.8 | 6,598.8 | 6,598.8 | 31.2 | 132.4 | 10.82 | -313.0 | 3,706.5 | 4,848.2 | 4,770.1 | 78.14 | 62.044 | |
| 7,000.0 | 6,611.5 | 6,604.5 | 6,604.5 | 31.2 | 132.5 | 11.15 | -313.0 | 3,706.5 | 4,837.9 | 4,761.2 | 76.73 | 63.048 | |
| 7,050.0 | 6,634.1 | 6,627.1 | 6,627.1 | 31.2 | 133.0 | 12.88 | -313.0 | 3,706.5 | 4,793.5 | 4,722.0 | 71.47 | 67.073 | |
| 7,086.6 | 6,648.6 | 6,641.6 | 6,641.6 | 31.3 | 133.3 | 14.53 | -313.0 | 3,706.5 | 4,760.1 | 4,691.3 | 68.74 | 69.245 | |
| 7,100.0 | 6,653.4 | 6,646.4 | 6,646.4 | 31.4 | 133.4 | 15.25 | -313.0 | 3,706.5 | 4,747.6 | 4,679.5 | 68.11 | 69.706 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,662.5 | 6,662.5 | 31.6 | 133.7 | 18.70 | -313.0 | 3,706.5 | 4,700.5 | 4,632.1 | 68.44 | 68.680 | |
| 7,185.0 | 6,678.8 | 6,671.8 | 6,671.8 | 31.7 | 133.9 | 22.17 | -313.0 | 3,706.5 | 4,666.9 | 4,594.5 | 72.45 | 64.417 | |
| 7,200.0 | 6,682.3 | 6,675.3 | 6,675.3 | 31.8 | 134.0 | 24.06 | -313.0 | 3,706.5 | 4,652.4 | 4,576.9 | 75.52 | 61.606 | |
| 7,250.0 | 6,691.6 | 6,684.6 | 6,684.6 | 32.1 | 134.1 | 33.18 | -313.0 | 3,706.5 | 4,603.6 | 4,509.5 | 94.03 | 48.959 | |
| 7,283.4 | 6,696.0 | 6,689.0 | 6,689.0 | 32.3 | 134.2 | 43.40 | -313.0 | 3,706.5 | 4,570.6 | 4,454.9 | 115.61 | 39.533 | |
| 7,300.0 | 6,697.5 | 6,690.5 | 6,690.5 | 32.4 | 134.3 | 50.46 | -313.0 | 3,706.5 | 4,554.2 | 4,425.0 | 129.14 | 35.267 | |
| 7,350.0 | 6,699.9 | 6,692.9 | 6,692.9 | 32.8 | 134.3 | 82.41 | -313.0 | 3,706.5 | 4,504.5 | 4,338.9 | 165.55 | 27.209 | |
| 7,364.4 | 6,700.0 | 6,693.0 | 6,693.0 | 32.9 | 134.3 | 93.63 | -313.0 | 3,706.5 | 4,490.2 | 4,323.3 | 166.89 | 26.906 | |
| 7,381.9 | 6,699.9 | 6,692.9 | 6,692.9 | 33.1 | 134.3 | 93.61 | -313.0 | 3,706.5 | 4,472.8 | 4,305.7 | 167.04 | 26.777 | |
| 7,400.0 | 6,699.8 | 6,692.8 | 6,692.8 | 33.2 | 134.3 | 93.60 | -313.0 | 3,706.5 | 4,454.7 | 4,287.5 | 167.20 | 26.644 | |
| 7,480.3 | 6,699.2 | 6,692.2 | 6,692.2 | 34.0 | 134.3 | 93.53 | -313.0 | 3,706.5 | 4,374.9 | 4,206.9 | 168.01 | 26.040 | |
| 7,500.0 | 6,699.1 | 6,692.1 | 6,692.1 | 34.2 | 134.3 | 93.52 | -313.0 | 3,706.5 | 4,355.3 | 4,187.1 | 168.21 | 25.892 | |
| 7,578.7 | 6,698.6 | 6,691.6 | 6,691.6 | 35.2 | 134.3 | 93.45 | -313.0 | 3,706.5 | 4,277.0 | 4,107.9 | 169.16 | 25.284 | |
| 7,600.0 | 6,698.5 | 6,691.5 | 6,691.5 | 35.4 | 134.3 | 93.44 | -313.0 | 3,706.5 | 4,255.9 | 4,086.4 | 169.41 | 25.121 | |
| 7,677.1 | 6,698.0 | 6,691.0 | 6,691.0 | 36.5 | 134.3 | 93.37 | -313.0 | 3,706.5 | 4,179.2 | 4,008.7 | 170.48 | 24.515 | |
| 7,700.0 | 6,697.8 | 6,690.8 | 6,690.8 | 36.8 | 134.3 | 93.36 | -313.0 | 3,706.5 | 4,156.4 | 3,985.7 | 170.79 | 24.336 | |
| 7,775.6 | 6,697.3 | 6,690.3 | 6,690.3 | 38.0 | 134.3 | 93.29 | -313.0 | 3,706.5 | 4,081.3 | 3,909.4 | 171.95 | 23.735 | |
| 7,800.0 | 6,697.2 | 6,690.2 | 6,690.2 | 38.3 | 134.3 | 93.27 | -313.0 | 3,706.5 | 4,057.1 | 3,884.7 | 172.33 | 23.543 | |
| 7,874.0 | 6,696.7 | 6,689.7 | 6,689.7 | 39.6 | 134.2 | 93.21 | -313.0 | 3,706.5 | 3,983.6 | 3,810.0 | 173.57 | 22.951 | |
| 7,900.0 | 6,696.5 | 6,689.5 | 6,689.5 | 40.0 | 134.2 | 93.19 | -313.0 | 3,706.5 | 3,957.7 | 3,783.7 | 174.00 | 22.745 | |
| 7,972.4 | 6,696.1 | 6,689.1 | 6,689.1 | 41.3 | 134.2 | 93.13 | -313.0 | 3,706.5 | 3,885.8 | 3,710.5 | 175.30 | 22.166 | |
| 8,000.0 | 6,695.9 | 6,688.9 | 6,688.9 | 41.8 | 134.2 | 93.11 | -313.0 | 3,706.5 | 3,858.4 | 3,682.6 | 175.80 | 21.948 | |
| 8,070.8 | 6,695.4 | 6,688.4 | 6,688.4 | 43.1 | 134.2 | 93.06 | -313.0 | 3,706.5 | 3,788.1 | 3,610.9 | 177.15 | 21.384 | |
| 8,100.0 | 6,695.2 | 6,688.2 | 6,688.2 | 43.7 | 134.2 | 93.03 | -313.0 | 3,706.5 | 3,759.1 | 3,581.4 | 177.70 | 21.154 | |
| 8,169.3 | 6,694.8 | 6,687.8 | 6,687.8 | 45.1 | 134.2 | 92.98 | -313.0 | 3,706.5 | 3,690.4 | 3,511.3 | 179.08 | 20.607 | |
| 8,200.0 | 6,694.6 | 6,687.6 | 6,687.6 | 45.7 | 134.2 | 92.95 | -313.0 | 3,706.5 | 3,659.9 | 3,480.2 | 179.70 | 20.367 | |
| 8,267.7 | 6,694.1 | 6,687.1 | 6,687.1 | 47.1 | 134.2 | 92.90 | -313.0 | 3,706.5 | 3,592.7 | 3,411.6 | 181.10 | 19.838 | |
| 8,300.0 | 6,693.9 | 6,686.9 | 6,686.9 | 47.8 | 134.2 | 92.87 | -313.0 | 3,706.5 | 3,560.7 | 3,378.9 | 181.77 | 19.589 | |
| 8,366.1 | 6,693.5 | 6,686.5 | 6,686.5 | 49.2 | 134.2 | 92.82 | -313.0 | 3,706.5 | 3,495.1 | 3,312.0 | 183.19 | 19.079 | |
| 8,400.0 | 6,693.3 | 6,686.3 | 6,686.3 | 49.9 | 134.2 | 92.79 | -313.0 | 3,706.5 | 3,461.6 | 3,277.6 | 183.92 | 18.821 | |
| 8,464.5 | 6,692.9 | 6,685.9 | 6,685.9 | 51.4 | 134.2 | 92.74 | -313.0 | 3,706.5 | 3,397.6 | 3,212.2 | 185.35 | 18.331 | |
| 8,500.0 | 6,692.6 | 6,685.6 | 6,685.6 | 52.1 | 134.2 | 92.71 | -313.0 | 3,706.5 | 3,362.5 | 3,176.3 | 186.13 | 18.065 | |
| 8,563.0 | 6,692.2 | 6,685.2 | 6,685.2 | 53.6 | 134.2 | 92.66 | -313.0 | 3,706.5 | 3,300.1 | 3,112.5 | 187.56 | 17.595 | |
| 8,600.0 | 6,692.0 | 6,685.0 | 6,685.0 | 54.4 | 134.1 | 92.63 | -313.0 | 3,706.5 | 3,263.4 | 3,075.0 | 188.40 | 17.322 | |
| 8,661.4 | 6,691.6 | 6,684.6 | 6,684.6 | 55.8 | 134.1 | 92.58 | -313.0 | 3,706.5 | 3,202.7 | 3,012.8 | 189.82 | 16.872 | |
| 8,700.0 | 6,691.3 | 6,684.3 | 6,684.3 | 56.7 | 134.1 | 92.54 | -313.0 | 3,706.5 | 3,164.5 | 2,973.7 | 190.71 | 16.593 | |
| 8,759.8 | 6,690.9 | 6,683.9 | 6,683.9 | 58.1 | 134.1 | 92.50 | -313.0 | 3,706.5 | 3,105.3 | 2,913.1 | 192.12 | 16.163 | |
| 8,800.0 | 6,690.7 | 6,683.7 | 6,683.7 | 59.1 | 134.1 | 92.46 | -313.0 | 3,706.5 | 3,065.5 | 2,872.5 | 193.07 | 15.878 | |
| 8,858.2 | 6,690.3 | 6,683.3 | 6,683.3 | 60.5 | 134.1 | 92.42 | -313.0 | 3,706.5 | 3,008.0 | 2,813.5 | 194.46 | 15.468 | |
| 8,900.0 | 6,690.0 | 6,683.0 | 6,683.0 | 61.5 | 134.1 | 92.38 | -313.0 | 3,706.5 | 2,966.7 | 2,771.2 | 195.46 | 15.178 | |
| 8,956.7 | 6,689.7 | 6,682.7 | 6,682.7 | 62.9 | 134.1 | 92.34 | -313.0 | 3,706.5 | 2,910.7 | 2,713.9 | 196.84 | 14.787 | |
| 9,000.0 | 6,689.4 | 6,682.4 | 6,682.4 | 63.9 | 134.1 | 92.30 | -313.0 | 3,706.5 | 2,867.9 | 2,670.0 | 197.89 | 14.493 | |
| 9,055.1 | 6,689.0 | 6,682.0 | 6,682.0 | 65.3 | 134.1 | 92.26 | -313.0 | 3,706.5 | 2,813.6 | 2,614.3 | 199.24 | 14.121 | |
| 9,100.0 | 6,688.7 | 6,681.7 | 6,681.7 | 66.4 | 134.1 | 92.22 | -313.0 | 3,706.5 | 2,769.3 | 2,568.9 | 200.35 | 13.822 | |
| 9,153.5 | 6,688.4 | 6,681.4 | 6,681.4 | 67.7 | 134.1 | 92.18 | -313.0 | 3,706.5 | 2,716.5 | 2,514.8 | 201.68 | 13.470 | |
| 9,200.0 | 6,688.1 | 6,681.1 | 6,681.1 | 68.9 | 134.1 | 92.14 | -313.0 | 3,706.5 | 2,670.7 | 2,467.9 | 202.83 | 13.167 | |
| 9,251.9 | 6,687.8 | 6,680.8 | 6,680.8 | 70.2 | 134.1 | 92.10 | -313.0 | 3,706.5 | 2,619.5 | 2,415.4 | 204.13 | 12.832 | |
| 9,300.0 | 6,687.4 | 6,680.4 | 6,680.4 | 71.4 | 134.1 | 92.06 | -313.0 | 3,706.5 | 2,572.2 | 2,366.9 | 205.34 | 12.527 | |
| 9,350.4 | 6,687.1 | 6,680.1 | 6,680.1 | 72.7 | 134.0 | 92.02 | -313.0 | 3,706.5 | 2,522.7 | 2,316.1 | 206.61 | 12.210 | |
| 9,400.0 | 6,686.8 | 6,679.8 | 6,679.8 | 73.9 | 134.0 | 91.98 | -313.0 | 3,706.5 | 2,473.9 | 2,266.0 | 207.87 | 11.901 | |
| 9,448.8 | 6,686.5 | 6,679.5 | 6,679.5 | 75.2 | 134.0 | 91.94 | -313.0 | 3,706.5 | 2,425.9 | 2,216.8 | 209.11 | 11.601 | |
| 9,500.0 | 6,686.1 | 6,679.1 | 6,679.1 | 76.5 | 134.0 | 91.90 | -313.0 | 3,706.5 | 2,375.7 | 2,165.3 | 210.41 | 11.290 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #42-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,678.8 | 6,678.8 | 77.7 | 134.0 | 91.86 | -313.0 | 3,706.5 | 2,329.4 | 2,117.7 | 211.63 | 11.007 | |
| 9,600.0 | 6,685.5 | 6,678.5 | 6,678.5 | 79.0 | 134.0 | 91.81 | -313.0 | 3,706.5 | 2,277.6 | 2,064.6 | 212.98 | 10.694 | |
| 9,645.6 | 6,685.2 | 6,678.2 | 6,678.2 | 80.2 | 134.0 | 91.78 | -313.0 | 3,706.5 | 2,232.9 | 2,018.8 | 214.16 | 10.427 | |
| 9,700.0 | 6,684.8 | 6,677.8 | 6,677.8 | 81.6 | 134.0 | 91.73 | -313.0 | 3,706.5 | 2,179.8 | 1,964.2 | 215.56 | 10.112 | |
| 9,744.1 | 6,684.6 | 6,677.6 | 6,677.6 | 82.8 | 134.0 | 91.70 | -313.0 | 3,706.5 | 2,136.7 | 1,920.0 | 216.70 | 9.860 | |
| 9,800.0 | 6,684.2 | 6,677.2 | 6,677.2 | 84.2 | 134.0 | 91.65 | -313.0 | 3,706.5 | 2,082.1 | 1,863.9 | 218.16 | 9.544 | |
| 9,842.5 | 6,683.9 | 6,676.9 | 6,676.9 | 85.3 | 134.0 | 91.62 | -313.0 | 3,706.5 | 2,040.7 | 1,821.4 | 219.26 | 9.307 | |
| 9,900.0 | 6,683.5 | 6,676.5 | 6,676.5 | 86.8 | 134.0 | 91.57 | -313.0 | 3,706.5 | 1,984.7 | 1,763.9 | 220.76 | 8.990 | |
| 9,940.9 | 6,683.3 | 6,676.3 | 6,676.3 | 87.9 | 134.0 | 91.54 | -313.0 | 3,706.5 | 1,944.9 | 1,723.0 | 221.84 | 8.767 | |
| 10,000.0 | 6,682.9 | 6,675.9 | 6,675.9 | 89.5 | 134.0 | 91.49 | -313.0 | 3,706.5 | 1,887.5 | 1,664.1 | 223.38 | 8.450 | |
| 10,039.3 | 6,682.6 | 6,675.6 | 6,675.6 | 90.5 | 134.0 | 91.46 | -313.0 | 3,706.5 | 1,849.3 | 1,624.9 | 224.42 | 8.241 | |
| 10,100.0 | 6,682.2 | 6,675.2 | 6,675.2 | 92.1 | 134.0 | 91.41 | -313.0 | 3,706.5 | 1,790.6 | 1,564.6 | 226.01 | 7.923 | |
| 10,137.8 | 6,682.0 | 6,675.0 | 6,675.0 | 93.1 | 133.9 | 91.38 | -313.0 | 3,706.5 | 1,754.1 | 1,527.1 | 227.01 | 7.727 | |
| 10,200.0 | 6,681.6 | 6,674.6 | 6,674.6 | 94.8 | 133.9 | 91.33 | -313.0 | 3,706.5 | 1,694.1 | 1,465.5 | 228.65 | 7.409 | |
| 10,236.2 | 6,681.4 | 6,674.4 | 6,674.4 | 95.7 | 133.9 | 91.30 | -313.0 | 3,706.5 | 1,659.3 | 1,429.7 | 229.61 | 7.227 | |
| 10,300.0 | 6,680.9 | 6,673.9 | 6,673.9 | 97.4 | 133.9 | 91.25 | -313.0 | 3,706.5 | 1,598.1 | 1,366.8 | 231.30 | 6.909 | |
| 10,334.6 | 6,680.7 | 6,673.7 | 6,673.7 | 98.3 | 133.9 | 91.22 | -313.0 | 3,706.5 | 1,564.9 | 1,332.7 | 232.22 | 6.739 | |
| 10,400.0 | 6,680.3 | 6,673.3 | 6,673.3 | 100.1 | 133.9 | 91.16 | -313.0 | 3,706.5 | 1,502.5 | 1,268.6 | 233.96 | 6.422 | |
| 10,433.0 | 6,680.1 | 6,673.1 | 6,673.1 | 101.0 | 133.9 | 91.14 | -313.0 | 3,706.5 | 1,471.1 | 1,236.3 | 234.84 | 6.264 | |
| 10,500.0 | 6,679.7 | 6,672.7 | 6,672.7 | 102.8 | 133.9 | 91.08 | -313.0 | 3,706.5 | 1,407.6 | 1,171.0 | 236.62 | 5.949 | |
| 10,531.5 | 6,679.4 | 6,672.4 | 6,672.4 | 103.6 | 133.9 | 91.06 | -313.0 | 3,706.5 | 1,377.9 | 1,140.4 | 237.46 | 5.803 | |
| 10,600.0 | 6,679.0 | 6,672.0 | 6,672.0 | 105.4 | 133.9 | 91.00 | -313.0 | 3,706.5 | 1,313.4 | 1,074.1 | 239.29 | 5.489 | |
| 10,629.9 | 6,678.8 | 6,671.8 | 6,671.8 | 106.2 | 133.9 | 90.98 | -313.0 | 3,706.5 | 1,285.5 | 1,045.4 | 240.09 | 5.354 | |
| 10,700.0 | 6,678.4 | 6,671.4 | 6,671.4 | 108.1 | 133.9 | 90.92 | -313.0 | 3,706.5 | 1,220.2 | 978.2 | 241.97 | 5.043 | |
| 10,728.3 | 6,678.2 | 6,671.2 | 6,671.2 | 108.9 | 133.9 | 90.90 | -313.0 | 3,706.5 | 1,194.0 | 951.2 | 242.73 | 4.919 | |
| 10,800.0 | 6,677.7 | 6,670.7 | 6,670.7 | 110.8 | 133.9 | 90.84 | -313.0 | 3,706.5 | 1,128.1 | 883.4 | 244.65 | 4.611 | |
| 10,826.7 | 6,677.5 | 6,670.5 | 6,670.5 | 111.5 | 133.9 | 90.82 | -313.0 | 3,706.5 | 1,103.7 | 858.3 | 245.37 | 4.498 | |
| 10,900.0 | 6,677.1 | 6,670.1 | 6,670.1 | 113.5 | 133.8 | 90.76 | -313.0 | 3,706.5 | 1,037.5 | 790.1 | 247.34 | 4.195 | |
| 10,925.2 | 6,676.9 | 6,669.9 | 6,669.9 | 114.2 | 133.8 | 90.74 | -313.0 | 3,706.5 | 1,014.9 | 766.9 | 248.02 | 4.092 | |
| 11,000.0 | 6,676.4 | 6,669.4 | 6,669.4 | 116.2 | 133.8 | 90.68 | -313.0 | 3,706.5 | 948.7 | 698.7 | 250.03 | 3.794 | |
| 11,023.6 | 6,676.3 | 6,669.3 | 6,669.3 | 116.8 | 133.8 | 90.66 | -313.0 | 3,706.5 | 928.1 | 677.5 | 250.67 | 3.703 | |
| 11,100.0 | 6,675.8 | 6,668.8 | 6,668.8 | 118.9 | 133.8 | 90.59 | -313.0 | 3,706.5 | 862.5 | 609.7 | 252.73 | 3.413 | |
| 11,122.0 | 6,675.6 | 6,668.6 | 6,668.6 | 119.5 | 133.8 | 90.58 | -313.0 | 3,706.5 | 843.9 | 590.5 | 253.33 | 3.331 | |
| 11,200.0 | 6,675.1 | 6,668.1 | 6,668.1 | 121.6 | 133.8 | 90.51 | -313.0 | 3,706.5 | 779.5 | 524.0 | 255.43 | 3.052 | |
| 11,220.4 | 6,675.0 | 6,668.0 | 6,668.0 | 122.2 | 133.8 | 90.50 | -313.0 | 3,706.5 | 763.0 | 507.0 | 255.99 | 2.981 | |
| 11,300.0 | 6,674.5 | 6,667.5 | 6,667.5 | 124.3 | 133.8 | 90.43 | -313.0 | 3,706.5 | 701.0 | 442.8 | 258.14 | 2.715 | |
| 11,318.9 | 6,674.3 | 6,667.3 | 6,667.3 | 124.9 | 133.8 | 90.42 | -313.0 | 3,706.5 | 686.8 | 428.1 | 258.65 | 2.655 | |
| 11,400.0 | 6,673.8 | 6,666.8 | 6,666.8 | 127.1 | 133.8 | 90.35 | -313.0 | 3,706.5 | 628.6 | 367.7 | 260.85 | 2.410 | |
| 11,417.3 | 6,673.7 | 6,666.7 | 6,666.7 | 127.5 | 133.8 | 90.34 | -313.0 | 3,706.5 | 616.8 | 355.5 | 261.32 | 2.360 | |
| 11,500.0 | 6,673.2 | 6,666.2 | 6,666.2 | 129.8 | 133.8 | 90.27 | -313.0 | 3,706.5 | 564.6 | 301.1 | 263.56 | 2.142 | |
| 11,515.7 | 6,673.1 | 6,666.1 | 6,666.1 | 130.2 | 133.8 | 90.26 | -313.0 | 3,706.5 | 555.6 | 291.6 | 263.99 | 2.104 | |
| 11,600.0 | 6,672.5 | 6,665.5 | 6,665.5 | 132.5 | 133.8 | 90.19 | -313.0 | 3,706.5 | 512.4 | 246.1 | 266.28 | 1.924 | |
| 11,614.1 | 6,672.4 | 6,665.4 | 6,665.4 | 132.9 | 133.8 | 90.18 | -313.0 | 3,706.5 | 506.2 | 239.5 | 266.66 | 1.898 | |
| 11,700.0 | 6,671.9 | 6,664.9 | 6,664.9 | 135.3 | 133.7 | 90.11 | -313.0 | 3,706.5 | 475.7 | 206.7 | 269.00 | 1.768 | |
| 11,712.6 | 6,671.8 | 6,664.8 | 6,664.8 | 135.6 | 133.7 | 90.10 | -313.0 | 3,706.5 | 472.4 | 203.1 | 269.34 | 1.754 | |
| 11,800.0 | 6,671.2 | 6,664.2 | 6,664.2 | 138.0 | 133.7 | 90.03 | -313.0 | 3,706.5 | 458.3 | 186.6 | 271.72 | 1.687 | |
| 11,811.0 | 6,671.1 | 6,664.1 | 6,664.1 | 138.3 | 133.7 | 90.02 | -313.0 | 3,706.5 | 457.7 | 185.7 | 272.02 | 1.683 | |
| 11,831.3 | 6,671.0 | 6,664.0 | 6,664.0 | 138.8 | 133.7 | 90.00 | -313.0 | 3,706.5 | 457.2 | 184.7 | 272.57 | 1.677 | CC, ES, SF |
| 11,900.0 | 6,670.6 | 6,663.6 | 6,663.6 | 140.7 | 133.7 | 89.94 | -313.0 | 3,706.5 | 462.4 | 187.9 | 274.44 | 1.685 | |
| 11,909.4 | 6,670.5 | 6,663.5 | 6,663.5 | 141.0 | 133.7 | 89.94 | -313.0 | 3,706.5 | 463.9 | 189.2 | 274.70 | 1.689 | |
| 11,987.2 | 6,670.0 | 6,663.0 | 6,663.0 | 143.1 | 133.7 | 89.87 | -313.0 | 3,706.5 | 483.1 | 206.3 | 276.82 | 1.745 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 143.29 | -3,157.4 | 2,354.0 | 3,938.3 | | | | |
| 98.4 | 98.4 | 89.5 | 89.5 | 0.1 | 0.1 | 143.29 | -3,157.4 | 2,354.0 | 3,938.4 | 3,938.2 | 0.19 | N/A | |
| 100.0 | 100.0 | 91.0 | 91.0 | 0.1 | 0.1 | 143.29 | -3,157.4 | 2,354.0 | 3,938.4 | 3,938.2 | 0.19 | N/A | |
| 196.8 | 196.8 | 181.7 | 181.7 | 0.3 | 0.2 | 143.30 | -3,157.6 | 2,354.0 | 3,938.5 | 3,938.0 | 0.52 | 7,554.614 | |
| 200.0 | 200.0 | 184.7 | 184.7 | 0.3 | 0.2 | 143.30 | -3,157.7 | 2,354.0 | 3,938.6 | 3,938.0 | 0.53 | 7,400.157 | |
| 295.3 | 295.3 | 273.4 | 273.4 | 0.5 | 0.3 | 143.29 | -3,157.8 | 2,354.3 | 3,938.9 | 3,938.1 | 0.81 | 4,892.141 | |
| 300.0 | 300.0 | 277.8 | 277.8 | 0.5 | 0.3 | 143.29 | -3,157.8 | 2,354.3 | 3,938.9 | 3,938.1 | 0.82 | 4,815.194 | |
| 393.7 | 393.7 | 364.8 | 364.8 | 0.8 | 0.3 | 143.29 | -3,157.9 | 2,355.0 | 3,939.4 | 3,938.3 | 1.08 | 3,633.587 | |
| 400.0 | 400.0 | 370.6 | 370.6 | 0.8 | 0.3 | 143.29 | -3,157.9 | 2,355.1 | 3,939.4 | 3,938.3 | 1.10 | 3,573.798 | |
| 492.1 | 492.1 | 457.6 | 457.6 | 1.0 | 0.4 | 143.28 | -3,158.0 | 2,356.0 | 3,940.1 | 3,938.7 | 1.36 | 2,891.006 | |
| 500.0 | 500.0 | 465.1 | 465.1 | 1.0 | 0.4 | 143.27 | -3,158.0 | 2,356.0 | 3,940.1 | 3,938.7 | 1.38 | 2,845.009 | |
| 590.5 | 590.5 | 554.7 | 554.6 | 1.2 | 0.5 | 143.26 | -3,158.1 | 2,357.0 | 3,940.8 | 3,939.2 | 1.64 | 2,407.454 | |
| 600.0 | 600.0 | 564.2 | 564.2 | 1.2 | 0.5 | 143.26 | -3,158.1 | 2,357.2 | 3,940.9 | 3,939.2 | 1.66 | 2,369.591 | |
| 689.0 | 689.0 | 654.5 | 654.4 | 1.4 | 0.5 | 143.25 | -3,158.2 | 2,358.2 | 3,941.6 | 3,939.7 | 1.91 | 2,066.358 | |
| 700.0 | 700.0 | 665.6 | 665.6 | 1.4 | 0.5 | 143.25 | -3,158.2 | 2,358.4 | 3,941.7 | 3,939.7 | 1.94 | 2,034.295 | |
| 787.4 | 787.4 | 753.0 | 753.0 | 1.6 | 0.6 | 143.24 | -3,158.3 | 2,359.3 | 3,942.3 | 3,940.1 | 2.17 | 1,813.439 | |
| 800.0 | 800.0 | 765.4 | 765.4 | 1.7 | 0.6 | 143.24 | -3,158.3 | 2,359.5 | 3,942.4 | 3,940.2 | 2.21 | 1,785.671 | |
| 885.8 | 885.8 | 852.0 | 852.0 | 1.9 | 0.6 | 143.23 | -3,158.3 | 2,360.5 | 3,943.1 | 3,940.6 | 2.44 | 1,617.421 | |
| 900.0 | 900.0 | 866.5 | 866.4 | 1.9 | 0.6 | 143.22 | -3,158.3 | 2,360.7 | 3,943.2 | 3,940.7 | 2.48 | 1,592.682 | |
| 984.2 | 984.2 | 945.6 | 945.6 | 2.1 | 0.6 | 143.22 | -3,158.5 | 2,361.5 | 3,943.8 | 3,941.1 | 2.70 | 1,462.625 | |
| 1,000.0 | 1,000.0 | 959.6 | 959.6 | 2.1 | 0.7 | 143.21 | -3,158.5 | 2,361.6 | 3,943.9 | 3,941.2 | 2.74 | 1,440.952 | |
| 1,082.7 | 1,082.7 | 1,036.5 | 1,036.5 | 2.3 | 0.7 | -132.34 | -3,158.9 | 2,362.4 | 3,945.6 | 3,942.6 | 2.97 | 1,327.473 | |
| 1,100.0 | 1,100.0 | 1,053.6 | 1,053.5 | 2.3 | 0.7 | -132.34 | -3,159.0 | 2,362.6 | 3,946.1 | 3,943.1 | 3.02 | 1,307.888 | |
| 1,181.1 | 1,181.0 | 1,137.3 | 1,137.2 | 2.5 | 0.7 | -132.34 | -3,159.5 | 2,363.4 | 3,949.6 | 3,946.4 | 3.22 | 1,224.857 | |
| 1,200.0 | 1,199.8 | 1,158.1 | 1,158.0 | 2.5 | 0.7 | -132.34 | -3,159.6 | 2,363.6 | 3,950.7 | 3,947.4 | 3.27 | 1,206.996 | |
| 1,279.5 | 1,279.1 | 1,242.1 | 1,242.0 | 2.7 | 0.8 | -132.34 | -3,159.9 | 2,364.3 | 3,955.8 | 3,952.3 | 3.48 | 1,135.200 | |
| 1,300.0 | 1,299.5 | 1,262.9 | 1,262.8 | 2.8 | 0.8 | -132.34 | -3,160.0 | 2,364.5 | 3,957.4 | 3,953.9 | 3.54 | 1,118.340 | |
| 1,377.9 | 1,376.9 | 1,339.1 | 1,339.0 | 3.0 | 0.8 | -132.34 | -3,160.4 | 2,365.0 | 3,964.2 | 3,960.5 | 3.76 | 1,055.542 | |
| 1,400.0 | 1,398.7 | 1,359.9 | 1,359.8 | 3.0 | 0.8 | -132.34 | -3,160.5 | 2,365.1 | 3,966.4 | 3,962.6 | 3.82 | 1,039.235 | |
| 1,476.4 | 1,474.2 | 1,431.4 | 1,431.3 | 3.2 | 0.9 | -132.33 | -3,160.9 | 2,365.6 | 3,975.0 | 3,971.0 | 4.04 | 982.789 | |
| 1,500.0 | 1,497.5 | 1,453.3 | 1,453.2 | 3.3 | 0.9 | -132.33 | -3,161.0 | 2,365.8 | 3,978.0 | 3,973.9 | 4.11 | 966.738 | |
| 1,574.8 | 1,571.0 | 1,525.3 | 1,525.3 | 3.5 | 0.9 | -132.32 | -3,161.4 | 2,366.5 | 3,988.2 | 3,983.9 | 4.36 | 914.959 | |
| 1,600.0 | 1,595.6 | 1,551.5 | 1,551.5 | 3.6 | 0.9 | -132.32 | -3,161.6 | 2,366.7 | 3,992.0 | 3,987.5 | 4.44 | 898.837 | |
| 1,673.2 | 1,667.0 | 1,624.2 | 1,624.1 | 3.9 | 0.9 | -132.32 | -3,162.0 | 2,367.4 | 4,003.7 | 3,999.0 | 4.70 | 851.018 | |
| 1,700.0 | 1,693.1 | 1,648.6 | 1,648.5 | 4.0 | 0.9 | -132.32 | -3,162.1 | 2,367.5 | 4,008.3 | 4,003.5 | 4.80 | 835.054 | |
| 1,771.6 | 1,762.4 | 1,713.5 | 1,713.4 | 4.3 | 1.0 | -132.30 | -3,162.6 | 2,368.1 | 4,021.5 | 4,016.4 | 5.08 | 790.946 | |
| 1,800.0 | 1,789.6 | 1,738.8 | 1,738.7 | 4.4 | 1.0 | -132.29 | -3,162.8 | 2,368.3 | 4,027.1 | 4,021.9 | 5.20 | 774.903 | |
| 1,870.1 | 1,856.8 | 1,801.2 | 1,801.1 | 4.7 | 1.0 | -132.26 | -3,163.3 | 2,368.8 | 4,041.8 | 4,036.3 | 5.51 | 733.819 | |
| 1,900.0 | 1,885.3 | 1,831.9 | 1,831.8 | 4.9 | 1.0 | -132.26 | -3,163.6 | 2,369.0 | 4,048.4 | 4,042.8 | 5.64 | 717.691 | |
| 1,968.5 | 1,950.2 | 1,902.1 | 1,902.0 | 5.3 | 1.0 | -132.26 | -3,164.3 | 2,369.4 | 4,064.4 | 4,058.4 | 5.98 | 679.626 | |
| 2,000.0 | 1,979.8 | 1,938.5 | 1,938.4 | 5.5 | 1.0 | -132.27 | -3,164.7 | 2,369.5 | 4,072.1 | 4,066.0 | 6.13 | 663.752 | |
| 2,044.9 | 2,021.9 | 1,990.4 | 1,990.3 | 5.7 | 1.1 | -132.29 | -3,165.2 | 2,369.5 | 4,083.4 | 4,077.0 | 6.37 | 640.705 | |
| 2,066.9 | 2,042.5 | 2,014.3 | 2,014.2 | 5.9 | 1.1 | -132.37 | -3,165.5 | 2,369.4 | 4,089.0 | 4,082.5 | 6.49 | 630.086 | |
| 2,100.0 | 2,073.4 | 2,049.0 | 2,048.9 | 6.1 | 1.1 | -132.50 | -3,165.8 | 2,369.2 | 4,097.4 | 4,090.7 | 6.66 | 614.829 | |
| 2,165.3 | 2,134.4 | 2,117.2 | 2,117.1 | 6.5 | 1.1 | -132.75 | -3,166.5 | 2,368.9 | 4,114.0 | 4,107.0 | 7.01 | 586.474 | |
| 2,200.0 | 2,166.8 | 2,152.9 | 2,152.8 | 6.8 | 1.1 | -132.88 | -3,166.8 | 2,368.6 | 4,122.8 | 4,115.6 | 7.20 | 572.566 | |
| 2,263.8 | 2,226.4 | 2,218.7 | 2,218.6 | 7.2 | 1.1 | -133.12 | -3,167.3 | 2,368.2 | 4,139.0 | 4,131.4 | 7.55 | 548.229 | |
| 2,300.0 | 2,260.2 | 2,256.2 | 2,256.1 | 7.4 | 1.1 | -133.25 | -3,167.5 | 2,367.9 | 4,148.1 | 4,140.4 | 7.75 | 535.463 | |
| 2,362.2 | 2,318.3 | 2,317.4 | 2,317.3 | 7.9 | 1.1 | -133.47 | -3,167.9 | 2,367.4 | 4,163.9 | 4,155.8 | 8.09 | 514.622 | |
| 2,400.0 | 2,353.6 | 2,350.3 | 2,350.2 | 8.1 | 1.1 | -133.59 | -3,168.0 | 2,367.2 | 4,173.4 | 4,165.1 | 8.30 | 502.827 | |
| 2,460.6 | 2,410.3 | 2,403.7 | 2,403.6 | 8.6 | 1.1 | -133.77 | -3,168.3 | 2,366.8 | 4,188.9 | 4,180.3 | 8.64 | 484.872 | |
| 2,500.0 | 2,447.0 | 2,444.7 | 2,444.6 | 8.9 | 1.1 | -133.92 | -3,168.6 | 2,366.6 | 4,199.0 | 4,190.1 | 8.86 | 473.981 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,505.1 | 2,505.0 | 9.3 | 1.2 | -134.13 | -3,168.8 | 2,366.1 | 4,214.0 | 4,204.9 | 9.19 | 458.482 | |
| 2,600.0 | 2,540.5 | 2,540.9 | 2,540.8 | 9.6 | 1.2 | -134.25 | -3,169.0 | 2,365.9 | 4,224.5 | 4,215.1 | 9.42 | 448.423 | |
| 2,657.5 | 2,594.2 | 2,591.2 | 2,591.0 | 10.0 | 1.2 | -134.43 | -3,169.2 | 2,365.6 | 4,239.3 | 4,229.5 | 9.75 | 435.014 | |
| 2,700.0 | 2,633.9 | 2,632.4 | 2,632.3 | 10.3 | 1.2 | -134.57 | -3,169.4 | 2,365.3 | 4,250.3 | 4,240.3 | 9.98 | 425.705 | |
| 2,755.9 | 2,686.1 | 2,688.2 | 2,688.1 | 10.7 | 1.2 | -134.76 | -3,169.5 | 2,365.0 | 4,264.7 | 4,254.4 | 10.30 | 414.077 | |
| 2,800.0 | 2,727.3 | 2,729.9 | 2,729.8 | 11.0 | 1.2 | -134.91 | -3,169.6 | 2,364.9 | 4,276.1 | 4,265.5 | 10.55 | 405.446 | |
| 2,854.3 | 2,778.1 | 2,780.3 | 2,780.2 | 11.4 | 1.2 | -135.08 | -3,169.6 | 2,364.6 | 4,290.1 | 4,279.3 | 10.85 | 395.326 | |
| 2,900.0 | 2,820.7 | 2,822.7 | 2,822.6 | 11.8 | 1.2 | -135.23 | -3,169.7 | 2,364.4 | 4,302.0 | 4,290.9 | 11.11 | 387.263 | |
| 2,952.7 | 2,870.0 | 2,871.8 | 2,871.7 | 12.2 | 1.2 | -135.39 | -3,169.8 | 2,364.2 | 4,315.7 | 4,304.3 | 11.41 | 378.368 | |
| 3,000.0 | 2,914.2 | 2,916.5 | 2,916.3 | 12.5 | 1.2 | -135.54 | -3,169.9 | 2,364.0 | 4,328.1 | 4,316.4 | 11.67 | 370.828 | |
| 3,051.2 | 2,962.0 | 2,966.2 | 2,966.1 | 12.9 | 1.2 | -135.71 | -3,170.0 | 2,363.8 | 4,341.4 | 4,329.5 | 11.96 | 363.053 | |
| 3,100.0 | 3,007.6 | 3,013.3 | 3,013.2 | 13.3 | 1.2 | -135.87 | -3,170.1 | 2,363.5 | 4,354.2 | 4,342.0 | 12.23 | 356.007 | |
| 3,149.6 | 3,053.9 | 3,060.4 | 3,060.2 | 13.6 | 1.2 | -136.02 | -3,170.1 | 2,363.3 | 4,367.2 | 4,354.7 | 12.51 | 349.167 | |
| 3,200.0 | 3,101.0 | 3,107.7 | 3,107.6 | 14.0 | 1.3 | -136.18 | -3,170.2 | 2,363.1 | 4,380.5 | 4,367.7 | 12.79 | 342.538 | |
| 3,248.0 | 3,145.9 | 3,150.5 | 3,150.4 | 14.4 | 1.3 | -136.32 | -3,170.2 | 2,362.9 | 4,393.1 | 4,380.1 | 13.06 | 336.461 | |
| 3,300.0 | 3,194.4 | 3,196.8 | 3,196.7 | 14.8 | 1.3 | -136.47 | -3,170.3 | 2,362.7 | 4,406.9 | 4,393.5 | 13.35 | 330.185 | |
| 3,346.4 | 3,237.8 | 3,243.2 | 3,243.1 | 15.1 | 1.3 | -136.62 | -3,170.3 | 2,362.5 | 4,419.2 | 4,405.6 | 13.60 | 324.862 | |
| 3,400.0 | 3,287.8 | 3,297.3 | 3,297.1 | 15.5 | 1.3 | -136.80 | -3,170.3 | 2,362.3 | 4,433.4 | 4,419.5 | 13.90 | 318.995 | |
| 3,444.9 | 3,329.8 | 3,333.9 | 3,333.8 | 15.9 | 1.3 | -136.92 | -3,170.2 | 2,362.2 | 4,445.3 | 4,431.2 | 14.14 | 314.282 | |
| 3,500.0 | 3,381.3 | 3,378.2 | 3,378.0 | 16.3 | 1.3 | -137.06 | -3,170.2 | 2,362.2 | 4,460.1 | 4,445.6 | 14.45 | 308.745 | |
| 3,543.3 | 3,421.7 | 3,414.3 | 3,414.1 | 16.6 | 1.3 | -137.18 | -3,170.1 | 2,362.3 | 4,471.7 | 4,457.1 | 14.68 | 304.536 | |
| 3,600.0 | 3,474.7 | 3,464.7 | 3,464.5 | 17.0 | 1.3 | -137.35 | -3,169.9 | 2,362.6 | 4,487.1 | 4,472.1 | 15.00 | 299.155 | |
| 3,641.7 | 3,513.7 | 3,502.0 | 3,501.9 | 17.3 | 1.3 | -137.47 | -3,169.8 | 2,362.8 | 4,498.4 | 4,483.2 | 15.23 | 295.336 | |
| 3,700.0 | 3,568.1 | 3,561.1 | 3,560.9 | 17.8 | 1.3 | -137.66 | -3,169.5 | 2,363.1 | 4,514.3 | 4,498.8 | 15.55 | 290.276 | |
| 3,740.1 | 3,605.6 | 3,600.0 | 3,599.9 | 18.1 | 1.3 | -137.79 | -3,169.4 | 2,363.3 | 4,525.2 | 4,509.5 | 15.77 | 286.909 | |
| 3,800.0 | 3,661.5 | 3,652.0 | 3,651.9 | 18.5 | 1.3 | -137.96 | -3,169.2 | 2,363.5 | 4,541.6 | 4,525.5 | 16.10 | 282.048 | |
| 3,838.6 | 3,697.6 | 3,684.6 | 3,684.5 | 18.8 | 1.3 | -138.06 | -3,169.1 | 2,363.7 | 4,552.2 | 4,535.8 | 16.31 | 279.025 | |
| 3,900.0 | 3,754.9 | 3,740.7 | 3,740.6 | 19.3 | 1.3 | -138.24 | -3,169.0 | 2,364.0 | 4,569.1 | 4,552.4 | 16.65 | 274.380 | |
| 3,937.0 | 3,789.5 | 3,775.6 | 3,775.4 | 19.6 | 1.3 | -138.35 | -3,168.9 | 2,364.1 | 4,579.3 | 4,562.4 | 16.86 | 271.679 | |
| 4,000.0 | 3,848.4 | 3,826.7 | 3,826.5 | 20.1 | 1.3 | -138.51 | -3,168.8 | 2,364.4 | 4,596.8 | 4,579.6 | 17.20 | 267.232 | |
| 4,035.4 | 3,881.5 | 3,852.2 | 3,852.0 | 20.3 | 1.3 | -138.59 | -3,168.9 | 2,364.5 | 4,606.7 | 4,589.3 | 17.40 | 264.804 | |
| 4,100.0 | 3,941.8 | 3,900.0 | 3,899.9 | 20.8 | 1.3 | -138.73 | -3,169.2 | 2,364.7 | 4,624.9 | 4,607.1 | 17.75 | 260.519 | |
| 4,133.8 | 3,973.4 | 3,923.2 | 3,923.0 | 21.1 | 1.4 | -138.80 | -3,169.3 | 2,364.8 | 4,634.5 | 4,616.6 | 17.94 | 258.312 | |
| 4,200.0 | 4,035.2 | 3,971.0 | 3,970.8 | 21.6 | 1.4 | -138.94 | -3,169.8 | 2,365.1 | 4,653.6 | 4,635.2 | 18.31 | 254.151 | |
| 4,232.3 | 4,065.4 | 4,000.0 | 3,999.8 | 21.8 | 1.4 | -139.03 | -3,170.2 | 2,365.3 | 4,662.9 | 4,644.4 | 18.49 | 252.194 | |
| 4,300.0 | 4,128.6 | 4,056.6 | 4,056.5 | 22.3 | 1.4 | -139.20 | -3,170.9 | 2,365.7 | 4,682.7 | 4,663.8 | 18.86 | 248.244 | |
| 4,330.7 | 4,157.3 | 4,085.7 | 4,085.6 | 22.6 | 1.4 | -139.28 | -3,171.3 | 2,365.9 | 4,691.6 | 4,672.6 | 19.03 | 246.514 | |
| 4,400.0 | 4,222.0 | 4,145.8 | 4,145.6 | 23.1 | 1.4 | -139.46 | -3,172.2 | 2,366.3 | 4,711.9 | 4,692.5 | 19.41 | 242.732 | |
| 4,429.1 | 4,249.3 | 4,170.3 | 4,170.2 | 23.3 | 1.4 | -139.53 | -3,172.5 | 2,366.5 | 4,720.5 | 4,700.9 | 19.57 | 241.192 | |
| 4,500.0 | 4,315.5 | 4,235.7 | 4,235.6 | 23.9 | 1.4 | -139.71 | -3,173.5 | 2,367.0 | 4,741.4 | 4,721.4 | 19.96 | 237.576 | |
| 4,527.5 | 4,341.2 | 4,263.3 | 4,263.2 | 24.1 | 1.5 | -139.79 | -3,173.9 | 2,367.2 | 4,749.5 | 4,729.4 | 20.11 | 236.215 | |
| 4,600.0 | 4,408.9 | 4,330.9 | 4,330.7 | 24.6 | 1.5 | -139.98 | -3,174.9 | 2,367.6 | 4,770.9 | 4,750.4 | 20.50 | 232.732 | |
| 4,626.0 | 4,433.2 | 4,353.3 | 4,353.1 | 24.8 | 1.5 | -140.04 | -3,175.3 | 2,367.8 | 4,778.6 | 4,758.0 | 20.64 | 231.515 | |
| 4,700.0 | 4,502.3 | 4,418.4 | 4,418.1 | 25.4 | 1.5 | -140.22 | -3,176.4 | 2,368.2 | 4,800.6 | 4,779.6 | 21.04 | 228.152 | |
| 4,724.4 | 4,525.1 | 4,441.0 | 4,440.8 | 25.6 | 1.5 | -140.29 | -3,176.8 | 2,368.3 | 4,807.9 | 4,786.7 | 21.17 | 227.075 | |
| 4,800.0 | 4,595.7 | 4,510.6 | 4,510.4 | 26.2 | 1.5 | -140.48 | -3,177.9 | 2,368.9 | 4,830.4 | 4,808.8 | 21.58 | 223.836 | |
| 4,822.8 | 4,617.1 | 4,530.7 | 4,530.4 | 26.3 | 1.5 | -140.53 | -3,178.2 | 2,369.0 | 4,837.2 | 4,815.5 | 21.70 | 222.883 | |
| 4,900.0 | 4,689.2 | 4,600.0 | 4,599.8 | 26.9 | 1.6 | -140.72 | -3,179.4 | 2,369.5 | 4,860.4 | 4,838.3 | 22.12 | 219.753 | |
| 4,921.2 | 4,709.0 | 4,616.5 | 4,616.2 | 27.1 | 1.6 | -140.77 | -3,179.8 | 2,369.6 | 4,866.8 | 4,844.6 | 22.23 | 218.907 | |
| 5,000.0 | 4,782.6 | 4,682.6 | 4,682.3 | 27.7 | 1.6 | -140.94 | -3,181.1 | 2,370.1 | 4,890.6 | 4,868.0 | 22.66 | 215.869 | |
| 5,019.7 | 4,801.0 | 4,700.0 | 4,699.7 | 27.8 | 1.6 | -140.99 | -3,181.4 | 2,370.2 | 4,896.6 | 4,873.8 | 22.76 | 215.132 | |
| 5,100.0 | 4,876.0 | 4,766.5 | 4,766.3 | 28.4 | 1.6 | -141.16 | -3,182.7 | 2,370.9 | 4,921.1 | 4,897.9 | 23.19 | 212.195 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,781.7 | 4,781.4 | 28.6 | 1.6 | -141.20 | -3,183.0 | 2,371.0 | 4,926.6 | 4,903.3 | 23.29 | 211.552 | |
| 5,159.9 | 4,932.0 | 4,816.3 | 4,816.0 | 28.9 | 1.6 | -141.30 | -3,183.7 | 2,371.5 | 4,939.5 | 4,915.9 | 23.51 | 210.087 | |
| 5,200.0 | 4,969.5 | 4,849.0 | 4,848.7 | 29.2 | 1.6 | -141.54 | -3,184.4 | 2,371.9 | 4,951.6 | 4,928.0 | 23.64 | 209.470 | |
| 5,216.5 | 4,985.1 | 4,862.5 | 4,862.2 | 29.3 | 1.6 | -141.64 | -3,184.7 | 2,372.1 | 4,956.5 | 4,932.8 | 23.68 | 209.332 | |
| 5,300.0 | 5,064.0 | 4,935.8 | 4,935.4 | 29.7 | 1.7 | -142.11 | -3,186.2 | 2,373.1 | 4,980.3 | 4,956.4 | 23.87 | 208.597 | |
| 5,314.9 | 5,078.2 | 4,949.9 | 4,949.6 | 29.8 | 1.7 | -142.20 | -3,186.5 | 2,373.3 | 4,984.3 | 4,960.4 | 23.91 | 208.502 | |
| 5,400.0 | 5,159.6 | 5,043.9 | 5,043.5 | 30.2 | 1.7 | -142.66 | -3,188.5 | 2,374.6 | 5,006.3 | 4,982.2 | 24.08 | 207.920 | |
| 5,413.4 | 5,172.4 | 5,062.1 | 5,061.8 | 30.3 | 1.7 | -142.74 | -3,188.8 | 2,374.8 | 5,009.6 | 4,985.5 | 24.10 | 207.860 | |
| 5,500.0 | 5,256.1 | 5,169.3 | 5,168.9 | 30.7 | 1.7 | -143.17 | -3,190.4 | 2,376.0 | 5,029.2 | 5,005.0 | 24.25 | 207.385 | |
| 5,511.8 | 5,267.6 | 5,183.2 | 5,182.8 | 30.7 | 1.7 | -143.23 | -3,190.6 | 2,376.2 | 5,031.7 | 5,007.5 | 24.27 | 207.341 | |
| 5,600.0 | 5,353.5 | 5,281.0 | 5,280.6 | 31.1 | 1.8 | -143.58 | -3,191.8 | 2,377.0 | 5,049.0 | 5,024.6 | 24.40 | 206.918 | |
| 5,610.2 | 5,363.5 | 5,292.3 | 5,291.9 | 31.1 | 1.8 | -143.62 | -3,192.0 | 2,377.1 | 5,050.9 | 5,026.5 | 24.41 | 206.887 | |
| 5,700.0 | 5,451.6 | 5,385.6 | 5,385.2 | 31.4 | 1.8 | -143.92 | -3,192.9 | 2,377.8 | 5,065.9 | 5,041.4 | 24.53 | 206.518 | |
| 5,708.6 | 5,460.2 | 5,394.5 | 5,394.1 | 31.4 | 1.8 | -143.95 | -3,193.0 | 2,377.9 | 5,067.3 | 5,042.7 | 24.54 | 206.497 | |
| 5,800.0 | 5,550.4 | 5,483.9 | 5,483.5 | 31.7 | 1.8 | -144.19 | -3,193.9 | 2,378.5 | 5,080.0 | 5,055.3 | 24.64 | 206.177 | |
| 5,807.1 | 5,557.4 | 5,490.8 | 5,490.4 | 31.7 | 1.8 | -144.21 | -3,194.0 | 2,378.6 | 5,080.9 | 5,056.2 | 24.64 | 206.163 | |
| 5,900.0 | 5,649.6 | 5,582.1 | 5,581.6 | 31.9 | 1.8 | -144.40 | -3,195.0 | 2,379.2 | 5,091.3 | 5,066.5 | 24.73 | 205.879 | |
| 5,905.5 | 5,655.1 | 5,587.5 | 5,587.1 | 31.9 | 1.9 | -144.41 | -3,195.0 | 2,379.2 | 5,091.8 | 5,067.1 | 24.73 | 205.869 | |
| 6,000.0 | 5,749.2 | 5,674.5 | 5,674.0 | 32.1 | 1.9 | -144.55 | -3,196.1 | 2,379.8 | 5,099.8 | 5,075.0 | 24.80 | 205.607 | |
| 6,003.9 | 5,753.1 | 5,678.0 | 5,677.6 | 32.1 | 1.9 | -144.55 | -3,196.1 | 2,379.8 | 5,100.1 | 5,075.3 | 24.81 | 205.601 | |
| 6,100.0 | 5,849.1 | 5,780.2 | 5,779.7 | 32.3 | 1.9 | -144.65 | -3,197.2 | 2,380.7 | 5,105.6 | 5,080.7 | 24.87 | 205.309 | |
| 6,102.3 | 5,851.4 | 5,782.8 | 5,782.3 | 32.3 | 1.9 | -144.65 | -3,197.3 | 2,380.7 | 5,105.7 | 5,080.8 | 24.87 | 205.303 | |
| 6,200.8 | 5,949.8 | 5,885.0 | 5,884.5 | 32.4 | 1.9 | -144.69 | -3,198.2 | 2,381.5 | 5,108.3 | 5,083.4 | 24.93 | 204.942 | |
| 6,204.9 | 5,953.9 | 5,889.1 | 5,888.7 | 32.4 | 1.9 | 130.87 | -3,198.3 | 2,381.5 | 5,108.4 | 5,078.9 | 29.46 | 173.379 | |
| 6,234.9 | 5,983.9 | 5,917.6 | 5,917.2 | 32.4 | 2.0 | 130.87 | -3,198.6 | 2,381.7 | 5,108.7 | 5,079.3 | 29.50 | 173.205 | |
| 6,250.0 | 5,999.0 | 5,931.4 | 5,930.9 | 32.4 | 2.0 | 40.87 | -3,198.7 | 2,381.8 | 5,108.8 | 5,083.9 | 24.95 | 204.775 | |
| 6,299.2 | 6,048.2 | 5,976.0 | 5,975.5 | 32.4 | 2.0 | 40.96 | -3,199.1 | 2,382.2 | 5,107.4 | 5,082.5 | 24.90 | 205.097 | |
| 6,300.0 | 6,048.9 | 5,976.7 | 5,976.3 | 32.4 | 2.0 | 40.97 | -3,199.1 | 2,382.2 | 5,107.3 | 5,082.4 | 24.90 | 205.096 | |
| 6,350.0 | 6,098.5 | 6,025.9 | 6,025.5 | 32.4 | 2.0 | 41.23 | -3,199.6 | 2,382.7 | 5,103.3 | 5,078.4 | 24.91 | 204.876 | |
| 6,397.6 | 6,145.3 | 6,076.4 | 6,076.0 | 32.3 | 2.0 | 41.64 | -3,200.1 | 2,383.1 | 5,096.9 | 5,072.0 | 24.97 | 204.125 | |
| 6,400.0 | 6,147.6 | 6,078.9 | 6,078.5 | 32.3 | 2.0 | 41.67 | -3,200.1 | 2,383.1 | 5,096.6 | 5,071.6 | 24.97 | 204.070 | |
| 6,450.0 | 6,195.8 | 6,126.1 | 6,125.7 | 32.2 | 2.0 | 42.27 | -3,200.6 | 2,383.5 | 5,087.3 | 5,062.2 | 25.09 | 202.740 | |
| 6,496.0 | 6,239.3 | 6,165.7 | 6,165.3 | 32.1 | 2.0 | 42.97 | -3,201.0 | 2,383.9 | 5,076.5 | 5,051.3 | 25.25 | 201.070 | |
| 6,500.0 | 6,243.0 | 6,169.1 | 6,168.6 | 32.1 | 2.0 | 43.03 | -3,201.0 | 2,383.9 | 5,075.5 | 5,050.3 | 25.26 | 200.901 | |
| 6,550.0 | 6,289.0 | 6,215.0 | 6,214.5 | 32.0 | 2.0 | 44.00 | -3,201.5 | 2,384.4 | 5,061.4 | 5,035.9 | 25.50 | 198.482 | |
| 6,594.5 | 6,328.6 | 6,264.4 | 6,263.9 | 31.8 | 2.1 | 45.05 | -3,201.9 | 2,384.8 | 5,046.7 | 5,021.0 | 25.78 | 195.744 | |
| 6,600.0 | 6,333.4 | 6,270.4 | 6,269.9 | 31.8 | 2.1 | 45.20 | -3,202.0 | 2,384.8 | 5,044.8 | 5,019.0 | 25.82 | 195.370 | |
| 6,650.0 | 6,376.2 | 6,316.7 | 6,316.2 | 31.7 | 2.1 | 46.58 | -3,202.4 | 2,385.1 | 5,025.9 | 4,999.7 | 26.20 | 191.819 | |
| 6,692.9 | 6,411.3 | 6,347.7 | 6,347.2 | 31.6 | 2.1 | 47.90 | -3,202.7 | 2,385.3 | 5,008.0 | 4,981.4 | 26.57 | 188.492 | |
| 6,700.0 | 6,417.0 | 6,352.7 | 6,352.3 | 31.5 | 2.1 | 48.14 | -3,202.8 | 2,385.4 | 5,004.9 | 4,978.3 | 26.63 | 187.912 | |
| 6,750.0 | 6,455.7 | 6,387.0 | 6,386.5 | 31.4 | 2.1 | 49.91 | -3,203.2 | 2,385.6 | 4,981.9 | 4,954.8 | 27.14 | 183.581 | |
| 6,791.3 | 6,486.0 | 6,414.2 | 6,413.7 | 31.3 | 2.1 | 51.55 | -3,203.5 | 2,385.8 | 4,961.6 | 4,933.9 | 27.61 | 179.716 | |
| 6,800.0 | 6,492.2 | 6,419.8 | 6,419.3 | 31.3 | 2.1 | 51.92 | -3,203.5 | 2,385.9 | 4,957.1 | 4,929.4 | 27.71 | 178.887 | |
| 6,850.0 | 6,526.1 | 6,450.9 | 6,450.4 | 31.2 | 2.1 | 54.17 | -3,203.9 | 2,386.1 | 4,930.6 | 4,902.3 | 28.35 | 173.932 | |
| 6,889.7 | 6,551.2 | 6,474.0 | 6,473.5 | 31.2 | 2.1 | 56.13 | -3,204.2 | 2,386.3 | 4,908.4 | 4,879.5 | 28.89 | 169.872 | |
| 6,900.0 | 6,557.4 | 6,479.7 | 6,479.2 | 31.2 | 2.1 | 56.67 | -3,204.2 | 2,386.4 | 4,902.5 | 4,873.5 | 29.04 | 168.837 | |
| 6,950.0 | 6,586.0 | 6,500.0 | 6,499.5 | 31.1 | 2.1 | 59.34 | -3,204.5 | 2,386.6 | 4,873.1 | 4,843.3 | 29.74 | 163.829 | |
| 6,988.2 | 6,605.8 | 6,522.6 | 6,522.1 | 31.2 | 2.1 | 61.65 | -3,204.8 | 2,386.8 | 4,849.7 | 4,819.4 | 30.33 | 159.910 | |
| 7,000.0 | 6,611.5 | 6,527.6 | 6,527.1 | 31.2 | 2.1 | 62.37 | -3,204.8 | 2,386.8 | 4,842.4 | 4,811.9 | 30.50 | 158.773 | |
| 7,050.0 | 6,634.1 | 6,547.1 | 6,546.6 | 31.2 | 2.1 | 65.56 | -3,205.1 | 2,387.0 | 4,810.6 | 4,779.4 | 31.23 | 154.030 | |
| 7,086.6 | 6,648.6 | 6,559.7 | 6,559.2 | 31.3 | 2.2 | 68.04 | -3,205.3 | 2,387.2 | 4,786.8 | 4,755.1 | 31.76 | 150.730 | |
| 7,100.0 | 6,653.4 | 6,563.9 | 6,563.4 | 31.4 | 2.2 | 68.97 | -3,205.4 | 2,387.2 | 4,778.0 | 4,746.1 | 31.94 | 149.602 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,578.0 | 6,577.5 | 31.6 | 2.2 | 72.55 | -3,205.6 | 2,387.3 | 4,744.7 | 4,712.1 | 32.60 | 145.543 | |
| 7,185.0 | 6,678.8 | 6,586.2 | 6,585.6 | 31.7 | 2.2 | 75.14 | -3,205.7 | 2,387.4 | 4,721.0 | 4,688.0 | 33.04 | 142.905 | |
| 7,200.0 | 6,682.3 | 6,589.2 | 6,588.7 | 31.8 | 2.2 | 76.27 | -3,205.7 | 2,387.5 | 4,710.8 | 4,677.6 | 33.21 | 141.866 | |
| 7,250.0 | 6,691.6 | 6,600.0 | 6,599.5 | 32.1 | 2.2 | 80.11 | -3,205.9 | 2,387.6 | 4,676.6 | 4,642.8 | 33.76 | 138.526 | |
| 7,283.4 | 6,696.0 | 6,600.0 | 6,599.5 | 32.3 | 2.2 | 82.61 | -3,205.9 | 2,387.6 | 4,653.6 | 4,619.5 | 34.10 | 136.452 | |
| 7,300.0 | 6,697.5 | 6,600.0 | 6,599.5 | 32.4 | 2.2 | 83.86 | -3,205.9 | 2,387.6 | 4,642.2 | 4,608.0 | 34.26 | 135.487 | |
| 7,350.0 | 6,699.9 | 6,600.0 | 6,599.5 | 32.8 | 2.2 | 87.63 | -3,205.9 | 2,387.6 | 4,607.9 | 4,573.1 | 34.75 | 132.609 | |
| 7,364.4 | 6,700.0 | 6,600.0 | 6,599.5 | 32.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,598.0 | 4,563.1 | 34.89 | 131.803 | |
| 7,381.9 | 6,699.9 | 6,600.0 | 6,599.5 | 33.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,586.1 | 4,551.0 | 35.04 | 130.890 | |
| 7,400.0 | 6,699.8 | 6,600.0 | 6,599.5 | 33.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,573.7 | 4,538.5 | 35.19 | 129.954 | |
| 7,480.3 | 6,699.2 | 6,600.0 | 6,599.5 | 34.0 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,519.4 | 4,483.4 | 36.01 | 125.518 | |
| 7,500.0 | 6,699.1 | 6,600.0 | 6,599.5 | 34.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,506.2 | 4,470.0 | 36.21 | 124.464 | |
| 7,578.7 | 6,698.6 | 6,600.0 | 6,599.5 | 35.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,454.0 | 4,416.8 | 37.15 | 119.879 | |
| 7,600.0 | 6,698.5 | 6,600.0 | 6,599.5 | 35.4 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,440.0 | 4,402.6 | 37.41 | 118.684 | |
| 7,677.1 | 6,698.0 | 6,600.0 | 6,599.5 | 36.5 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,389.8 | 4,351.3 | 38.48 | 114.092 | |
| 7,700.0 | 6,697.8 | 6,600.0 | 6,599.5 | 36.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,375.0 | 4,336.3 | 38.79 | 112.785 | |
| 7,775.6 | 6,697.3 | 6,600.0 | 6,599.5 | 38.0 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,326.8 | 4,286.9 | 39.95 | 108.298 | |
| 7,800.0 | 6,697.2 | 6,600.0 | 6,599.5 | 38.3 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,311.4 | 4,271.1 | 40.33 | 106.907 | |
| 7,874.0 | 6,696.7 | 6,600.0 | 6,599.5 | 39.6 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,265.3 | 4,223.7 | 41.57 | 102.607 | |
| 7,900.0 | 6,696.5 | 6,600.0 | 6,599.5 | 40.0 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,249.2 | 4,207.2 | 42.00 | 101.160 | |
| 7,972.4 | 6,696.1 | 6,600.0 | 6,599.5 | 41.3 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,205.1 | 4,161.8 | 43.31 | 97.099 | |
| 8,000.0 | 6,695.9 | 6,600.0 | 6,599.5 | 41.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,188.5 | 4,144.7 | 43.80 | 95.621 | |
| 8,070.8 | 6,695.4 | 6,600.0 | 6,599.5 | 43.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,146.4 | 4,101.2 | 45.15 | 91.830 | |
| 8,100.0 | 6,695.2 | 6,600.0 | 6,599.5 | 43.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,129.3 | 4,083.5 | 45.71 | 90.340 | |
| 8,169.3 | 6,694.8 | 6,600.0 | 6,599.5 | 45.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,089.2 | 4,042.1 | 47.09 | 86.833 | |
| 8,200.0 | 6,694.6 | 6,600.0 | 6,599.5 | 45.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,071.6 | 4,023.9 | 47.71 | 85.348 | |
| 8,267.7 | 6,694.1 | 6,600.0 | 6,599.5 | 47.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,033.6 | 3,984.4 | 49.11 | 82.126 | |
| 8,300.0 | 6,693.9 | 6,600.0 | 6,599.5 | 47.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 4,015.7 | 3,965.9 | 49.79 | 80.658 | |
| 8,366.1 | 6,693.5 | 6,600.0 | 6,599.5 | 49.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,979.6 | 3,928.4 | 51.21 | 77.713 | |
| 8,400.0 | 6,693.3 | 6,600.0 | 6,599.5 | 49.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,961.4 | 3,909.5 | 51.94 | 76.272 | |
| 8,464.5 | 6,692.9 | 6,600.0 | 6,599.5 | 51.4 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,927.4 | 3,874.0 | 53.37 | 73.592 | |
| 8,500.0 | 6,692.6 | 6,600.0 | 6,599.5 | 52.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,909.0 | 3,854.9 | 54.15 | 72.186 | |
| 8,563.0 | 6,692.2 | 6,600.0 | 6,599.5 | 53.6 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,877.0 | 3,821.4 | 55.58 | 69.753 | |
| 8,600.0 | 6,692.0 | 6,600.0 | 6,599.5 | 54.4 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,858.5 | 3,802.1 | 56.42 | 68.386 | |
| 8,661.4 | 6,691.6 | 6,600.0 | 6,599.5 | 55.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,828.4 | 3,770.6 | 57.84 | 66.184 | |
| 8,700.0 | 6,691.3 | 6,600.0 | 6,599.5 | 56.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,809.9 | 3,751.2 | 58.74 | 64.861 | |
| 8,759.8 | 6,690.9 | 6,600.0 | 6,599.5 | 58.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,781.8 | 3,721.6 | 60.15 | 62.871 | |
| 8,800.0 | 6,690.7 | 6,600.0 | 6,599.5 | 59.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,763.3 | 3,702.2 | 61.10 | 61.593 | |
| 8,858.2 | 6,690.3 | 6,600.0 | 6,599.5 | 60.5 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,737.2 | 3,674.7 | 62.50 | 59.798 | |
| 8,900.0 | 6,690.0 | 6,600.0 | 6,599.5 | 61.5 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,718.9 | 3,655.4 | 63.50 | 58.567 | |
| 8,956.7 | 6,689.7 | 6,600.0 | 6,599.5 | 62.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,694.7 | 3,629.8 | 64.88 | 56.949 | |
| 9,000.0 | 6,689.4 | 6,600.0 | 6,599.5 | 63.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,676.6 | 3,610.7 | 65.93 | 55.766 | |
| 9,055.1 | 6,689.0 | 6,600.0 | 6,599.5 | 65.3 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,654.3 | 3,587.0 | 67.29 | 54.310 | |
| 9,100.0 | 6,688.7 | 6,600.0 | 6,599.5 | 66.4 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,636.6 | 3,568.2 | 68.39 | 53.173 | |
| 9,153.5 | 6,688.4 | 6,600.0 | 6,599.5 | 67.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,616.2 | 3,546.4 | 69.72 | 51.864 | |
| 9,200.0 | 6,688.1 | 6,600.0 | 6,599.5 | 68.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,599.0 | 3,528.1 | 70.88 | 50.775 | |
| 9,251.9 | 6,687.8 | 6,600.0 | 6,599.5 | 70.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,580.3 | 3,508.2 | 72.19 | 49.599 | |
| 9,300.0 | 6,687.4 | 6,600.0 | 6,599.5 | 71.4 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,563.7 | 3,490.3 | 73.39 | 48.557 | |
| 9,350.4 | 6,687.1 | 6,600.0 | 6,599.5 | 72.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,546.9 | 3,472.2 | 74.67 | 47.501 | |
| 9,400.0 | 6,686.8 | 6,600.0 | 6,599.5 | 73.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,530.9 | 3,455.0 | 75.93 | 46.505 | |
| 9,448.8 | 6,686.5 | 6,600.0 | 6,599.5 | 75.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,515.8 | 3,438.7 | 77.17 | 45.559 | |
| 9,500.0 | 6,686.1 | 6,600.0 | 6,599.5 | 76.5 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,500.7 | 3,422.2 | 78.48 | 44.607 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO/SOLIS #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,600.0 | 6,599.5 | 77.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,487.3 | 3,407.6 | 79.69 | 43.759 | |
| 9,600.0 | 6,685.5 | 6,600.0 | 6,599.5 | 79.0 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,473.1 | 3,392.0 | 81.05 | 42.851 | |
| 9,645.6 | 6,685.2 | 6,600.0 | 6,599.5 | 80.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,461.4 | 3,379.1 | 82.23 | 42.094 | |
| 9,700.0 | 6,684.8 | 6,600.0 | 6,599.5 | 81.6 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,448.1 | 3,364.5 | 83.64 | 41.228 | |
| 9,744.1 | 6,684.6 | 6,600.0 | 6,599.5 | 82.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,438.0 | 3,353.2 | 84.78 | 40.551 | |
| 9,800.0 | 6,684.2 | 6,600.0 | 6,599.5 | 84.2 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,425.9 | 3,339.7 | 86.24 | 39.728 | |
| 9,842.5 | 6,683.9 | 6,600.0 | 6,599.5 | 85.3 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,417.4 | 3,330.0 | 87.35 | 39.124 | |
| 9,900.0 | 6,683.5 | 6,600.0 | 6,599.5 | 86.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,406.5 | 3,317.7 | 88.85 | 38.341 | |
| 9,940.9 | 6,683.3 | 6,600.0 | 6,599.5 | 87.9 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,399.4 | 3,309.5 | 89.92 | 37.803 | |
| 10,000.0 | 6,682.9 | 6,600.0 | 6,599.5 | 89.5 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,390.0 | 3,298.5 | 91.47 | 37.059 | |
| 10,039.3 | 6,682.6 | 6,600.0 | 6,599.5 | 90.5 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,384.3 | 3,291.7 | 92.51 | 36.582 | |
| 10,100.0 | 6,682.2 | 6,600.0 | 6,599.5 | 92.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,376.3 | 3,282.2 | 94.11 | 35.876 | |
| 10,137.8 | 6,682.0 | 6,600.0 | 6,599.5 | 93.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,371.9 | 3,276.8 | 95.11 | 35.452 | |
| 10,200.0 | 6,681.6 | 6,600.0 | 6,599.5 | 94.8 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,365.5 | 3,268.8 | 96.76 | 34.783 | |
| 10,236.2 | 6,681.4 | 6,600.0 | 6,599.5 | 95.7 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,362.4 | 3,264.6 | 97.72 | 34.409 | |
| 10,300.0 | 6,680.9 | 6,600.0 | 6,599.5 | 97.4 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,357.7 | 3,258.3 | 99.41 | 33.776 | |
| 10,334.6 | 6,680.7 | 6,600.0 | 6,599.5 | 98.3 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,355.7 | 3,255.4 | 100.34 | 33.445 | |
| 10,400.0 | 6,680.3 | 6,600.0 | 6,599.5 | 100.1 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,352.9 | 3,250.8 | 102.08 | 32.847 | |
| 10,433.0 | 6,680.1 | 6,600.0 | 6,599.5 | 101.0 | 2.2 | 88.72 | -3,205.9 | 2,387.6 | 3,351.9 | 3,249.0 | 102.96 | 32.556 | |
| 10,500.0 | 6,679.7 | 6,613.7 | 6,613.2 | 102.8 | 2.2 | 88.95 | -3,206.2 | 2,387.7 | 3,351.0 | 3,246.2 | 104.76 | 31.987 | |
| 10,512.9 | 6,679.6 | 6,613.7 | 6,613.2 | 103.1 | 2.2 | 88.95 | -3,206.2 | 2,387.7 | 3,350.9 | 3,245.8 | 105.11 | 31.881 | CC |
| 10,531.5 | 6,679.4 | 6,613.8 | 6,613.3 | 103.6 | 2.2 | 88.95 | -3,206.2 | 2,387.7 | 3,351.0 | 3,245.4 | 105.60 | 31.731 | |
| 10,600.0 | 6,679.0 | 6,614.0 | 6,613.5 | 105.4 | 2.2 | 88.96 | -3,206.2 | 2,387.7 | 3,352.1 | 3,244.6 | 107.44 | 31.199 | ES |
| 10,629.9 | 6,678.8 | 6,614.1 | 6,613.6 | 106.2 | 2.2 | 88.96 | -3,206.2 | 2,387.7 | 3,353.0 | 3,244.7 | 108.24 | 30.976 | |
| 10,700.0 | 6,678.4 | 6,614.4 | 6,613.9 | 108.1 | 2.2 | 88.96 | -3,206.2 | 2,387.7 | 3,356.1 | 3,246.0 | 110.13 | 30.475 | |
| 10,728.3 | 6,678.2 | 6,614.5 | 6,614.0 | 108.9 | 2.2 | 88.96 | -3,206.2 | 2,387.7 | 3,357.8 | 3,247.0 | 110.89 | 30.281 | |
| 10,800.0 | 6,677.7 | 6,614.8 | 6,614.3 | 110.8 | 2.2 | 88.97 | -3,206.2 | 2,387.7 | 3,363.2 | 3,250.4 | 112.82 | 29.811 | |
| 10,826.7 | 6,677.5 | 6,614.9 | 6,614.4 | 111.5 | 2.2 | 88.97 | -3,206.2 | 2,387.7 | 3,365.6 | 3,252.1 | 113.54 | 29.642 | |
| 10,900.0 | 6,677.1 | 6,615.2 | 6,614.6 | 113.5 | 2.2 | 88.98 | -3,206.2 | 2,387.7 | 3,373.2 | 3,257.7 | 115.52 | 29.201 | |
| 10,925.2 | 6,676.9 | 6,615.3 | 6,614.7 | 114.2 | 2.2 | 88.98 | -3,206.2 | 2,387.7 | 3,376.2 | 3,260.0 | 116.20 | 29.056 | |
| 11,000.0 | 6,676.4 | 6,615.5 | 6,615.0 | 116.2 | 2.2 | 88.98 | -3,206.2 | 2,387.7 | 3,386.1 | 3,267.9 | 118.22 | 28.643 | |
| 11,023.6 | 6,676.3 | 6,615.6 | 6,615.1 | 116.8 | 2.2 | 88.98 | -3,206.2 | 2,387.7 | 3,389.6 | 3,270.8 | 118.86 | 28.518 | |
| 11,100.0 | 6,675.8 | 6,615.9 | 6,615.4 | 118.9 | 2.2 | 88.99 | -3,206.2 | 2,387.7 | 3,402.0 | 3,281.0 | 120.93 | 28.132 | |
| 11,122.0 | 6,675.6 | 6,616.0 | 6,615.5 | 119.5 | 2.2 | 88.99 | -3,206.2 | 2,387.7 | 3,405.8 | 3,284.3 | 121.53 | 28.026 | |
| 11,200.0 | 6,675.1 | 6,616.3 | 6,615.8 | 121.6 | 2.2 | 88.99 | -3,206.2 | 2,387.7 | 3,420.6 | 3,297.0 | 123.64 | 27.666 | |
| 11,220.4 | 6,675.0 | 6,616.4 | 6,615.9 | 122.2 | 2.2 | 89.00 | -3,206.2 | 2,387.7 | 3,424.8 | 3,300.6 | 124.20 | 27.576 | |
| 11,300.0 | 6,674.5 | 6,616.7 | 6,616.2 | 124.3 | 2.2 | 89.00 | -3,206.2 | 2,387.7 | 3,442.1 | 3,315.8 | 126.36 | 27.241 | |
| 11,318.9 | 6,674.3 | 6,616.8 | 6,616.3 | 124.9 | 2.2 | 89.00 | -3,206.2 | 2,387.7 | 3,446.5 | 3,319.6 | 126.87 | 27.165 | |
| 11,400.0 | 6,673.8 | 6,617.1 | 6,616.6 | 127.1 | 2.2 | 89.01 | -3,206.2 | 2,387.8 | 3,466.4 | 3,337.3 | 129.08 | 26.854 | |
| 11,417.3 | 6,673.7 | 6,617.2 | 6,616.7 | 127.5 | 2.2 | 89.01 | -3,206.2 | 2,387.8 | 3,470.8 | 3,341.3 | 129.55 | 26.791 | |
| 11,500.0 | 6,673.2 | 6,617.5 | 6,617.0 | 129.8 | 2.2 | 89.02 | -3,206.2 | 2,387.8 | 3,493.3 | 3,361.5 | 131.80 | 26.504 | |
| 11,515.7 | 6,673.1 | 6,617.6 | 6,617.1 | 130.2 | 2.2 | 89.02 | -3,206.2 | 2,387.8 | 3,497.8 | 3,365.5 | 132.23 | 26.451 | |
| 11,600.0 | 6,672.5 | 6,617.9 | 6,617.4 | 132.5 | 2.2 | 89.02 | -3,206.2 | 2,387.8 | 3,522.9 | 3,388.3 | 134.53 | 26.186 | |
| 11,614.1 | 6,672.4 | 6,618.0 | 6,617.5 | 132.9 | 2.2 | 89.02 | -3,206.2 | 2,387.8 | 3,527.2 | 3,392.3 | 134.92 | 26.143 | |
| 11,700.0 | 6,671.9 | 6,618.3 | 6,617.8 | 135.3 | 2.2 | 89.03 | -3,206.3 | 2,387.8 | 3,555.0 | 3,417.7 | 137.27 | 25.899 | |
| 11,712.6 | 6,671.8 | 6,618.4 | 6,617.9 | 135.6 | 2.2 | 89.03 | -3,206.3 | 2,387.8 | 3,559.2 | 3,421.6 | 137.61 | 25.865 | |
| 11,800.0 | 6,671.2 | 6,618.8 | 6,618.2 | 138.0 | 2.2 | 89.04 | -3,206.3 | 2,387.8 | 3,589.6 | 3,449.6 | 140.00 | 25.640 | |
| 11,811.0 | 6,671.1 | 6,618.8 | 6,618.3 | 138.3 | 2.2 | 89.04 | -3,206.3 | 2,387.8 | 3,593.6 | 3,453.3 | 140.30 | 25.613 | |
| 11,900.0 | 6,670.6 | 6,619.2 | 6,618.7 | 140.7 | 2.2 | 89.04 | -3,206.3 | 2,387.8 | 3,626.7 | 3,483.9 | 142.74 | 25.408 | |
| 11,909.4 | 6,670.5 | 6,619.2 | 6,618.7 | 141.0 | 2.2 | 89.04 | -3,206.3 | 2,387.8 | 3,630.3 | 3,487.3 | 143.00 | 25.387 | |
| 11,987.2 | 6,670.0 | 6,619.6 | 6,619.0 | 143.1 | 2.2 | 89.05 | -3,206.3 | 2,387.8 | 3,660.9 | 3,515.8 | 145.13 | 25.225 | SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 2.2 | 2.2 | 0.0 | 0.0 | -119.07 | -3,096.0 | -5,568.7 | 6,371.5 | | | | |
| 98.4 | 98.4 | 109.5 | 109.5 | 0.1 | 0.1 | -119.07 | -3,096.0 | -5,568.6 | 6,371.4 | 6,371.2 | 0.20 | N/A | |
| 100.0 | 100.0 | 111.0 | 111.0 | 0.1 | 0.1 | -119.07 | -3,096.0 | -5,568.6 | 6,371.4 | 6,371.2 | 0.20 | N/A | |
| 196.8 | 196.8 | 200.0 | 200.0 | 0.3 | 0.2 | -119.07 | -3,095.9 | -5,568.6 | 6,371.3 | 6,370.8 | 0.52 | N/A | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.2 | -119.07 | -3,095.9 | -5,568.6 | 6,371.3 | 6,370.8 | 0.53 | N/A | |
| 203.0 | 203.0 | 205.4 | 205.4 | 0.3 | 0.2 | -119.07 | -3,095.9 | -5,568.6 | 6,371.3 | 6,370.8 | 0.54 | N/A | |
| 295.3 | 295.3 | 292.1 | 292.1 | 0.5 | 0.2 | -119.07 | -3,096.0 | -5,568.6 | 6,371.4 | 6,370.6 | 0.75 | 8,522.838 | |
| 300.0 | 300.0 | 296.5 | 296.5 | 0.5 | 0.2 | -119.07 | -3,096.0 | -5,568.6 | 6,371.4 | 6,370.6 | 0.76 | 8,402.391 | |
| 393.7 | 393.7 | 383.6 | 383.6 | 0.8 | 0.3 | -119.07 | -3,096.2 | -5,568.6 | 6,371.5 | 6,370.5 | 1.03 | 6,157.326 | |
| 400.0 | 400.0 | 389.4 | 389.4 | 0.8 | 0.3 | -119.08 | -3,096.3 | -5,568.6 | 6,371.5 | 6,370.5 | 1.05 | 6,048.390 | |
| 492.1 | 492.1 | 486.8 | 486.8 | 1.0 | 0.4 | -119.08 | -3,096.9 | -5,568.4 | 6,371.7 | 6,370.4 | 1.33 | 4,793.585 | |
| 500.0 | 500.0 | 495.2 | 495.2 | 1.0 | 0.4 | -119.08 | -3,097.0 | -5,568.4 | 6,371.7 | 6,370.3 | 1.35 | 4,709.695 | |
| 590.5 | 590.5 | 591.0 | 591.0 | 1.2 | 0.4 | -119.09 | -3,097.6 | -5,568.1 | 6,371.7 | 6,370.1 | 1.62 | 3,944.251 | |
| 600.0 | 600.0 | 601.0 | 601.0 | 1.2 | 0.4 | -119.09 | -3,097.6 | -5,568.1 | 6,371.7 | 6,370.1 | 1.64 | 3,878.691 | |
| 689.0 | 689.0 | 693.3 | 693.3 | 1.4 | 0.5 | -119.09 | -3,098.3 | -5,567.7 | 6,371.7 | 6,369.8 | 1.89 | 3,363.593 | |
| 700.0 | 700.0 | 705.9 | 705.9 | 1.4 | 0.5 | -119.10 | -3,098.4 | -5,567.7 | 6,371.7 | 6,369.8 | 1.93 | 3,308.452 | |
| 787.4 | 787.4 | 818.2 | 818.2 | 1.6 | 0.5 | -119.11 | -3,099.4 | -5,566.8 | 6,371.5 | 6,369.3 | 2.18 | 2,923.161 | |
| 800.0 | 800.0 | 833.8 | 833.8 | 1.7 | 0.5 | -119.11 | -3,099.5 | -5,566.6 | 6,371.4 | 6,369.2 | 2.22 | 2,875.763 | |
| 885.8 | 885.8 | 941.3 | 941.3 | 1.9 | 0.6 | -119.12 | -3,100.4 | -5,565.3 | 6,370.9 | 6,368.4 | 2.46 | 2,590.374 | |
| 900.0 | 900.0 | 959.4 | 959.4 | 1.9 | 0.6 | -119.12 | -3,100.5 | -5,565.1 | 6,370.8 | 6,368.3 | 2.50 | 2,548.804 | |
| 984.2 | 984.2 | 1,048.6 | 1,048.6 | 2.1 | 0.6 | -119.13 | -3,101.1 | -5,563.7 | 6,369.9 | 6,367.2 | 2.73 | 2,334.641 | |
| 1,000.0 | 1,000.0 | 1,063.2 | 1,063.2 | 2.1 | 0.7 | -119.14 | -3,101.2 | -5,563.5 | 6,369.8 | 6,367.0 | 2.77 | 2,299.395 | |
| 1,082.7 | 1,082.7 | 1,150.9 | 1,150.8 | 2.3 | 0.7 | -34.73 | -3,101.8 | -5,562.2 | 6,368.0 | 6,365.0 | 2.95 | 2,161.410 | |
| 1,100.0 | 1,100.0 | 1,171.3 | 1,171.3 | 2.3 | 0.7 | -34.75 | -3,101.9 | -5,561.9 | 6,367.4 | 6,364.4 | 2.99 | 2,128.451 | |
| 1,181.1 | 1,181.0 | 1,263.2 | 1,263.2 | 2.5 | 0.7 | -34.83 | -3,102.2 | -5,560.5 | 6,363.1 | 6,359.9 | 3.20 | 1,989.722 | |
| 1,200.0 | 1,199.8 | 1,284.2 | 1,284.2 | 2.5 | 0.7 | -34.85 | -3,102.2 | -5,560.2 | 6,361.9 | 6,358.6 | 3.25 | 1,959.937 | |
| 1,279.5 | 1,279.1 | 1,363.8 | 1,363.7 | 2.7 | 0.8 | -34.96 | -3,102.2 | -5,559.0 | 6,355.4 | 6,351.9 | 3.45 | 1,840.995 | |
| 1,300.0 | 1,299.5 | 1,383.8 | 1,383.7 | 2.8 | 0.8 | -35.00 | -3,102.2 | -5,558.7 | 6,353.4 | 6,349.9 | 3.50 | 1,812.710 | |
| 1,377.9 | 1,376.9 | 1,465.6 | 1,465.5 | 3.0 | 0.8 | -35.15 | -3,102.1 | -5,557.5 | 6,344.8 | 6,341.1 | 3.72 | 1,707.158 | |
| 1,400.0 | 1,398.7 | 1,489.1 | 1,489.0 | 3.0 | 0.8 | -35.20 | -3,102.1 | -5,557.1 | 6,342.1 | 6,338.3 | 3.78 | 1,679.290 | |
| 1,476.4 | 1,474.2 | 1,562.7 | 1,562.6 | 3.2 | 0.9 | -35.39 | -3,102.0 | -5,556.0 | 6,331.5 | 6,327.5 | 3.99 | 1,585.854 | |
| 1,500.0 | 1,497.5 | 1,585.0 | 1,584.9 | 3.3 | 0.9 | -35.45 | -3,102.0 | -5,555.7 | 6,327.9 | 6,323.8 | 4.06 | 1,558.912 | |
| 1,574.8 | 1,571.0 | 1,638.6 | 1,638.5 | 3.5 | 0.9 | -35.66 | -3,101.9 | -5,555.0 | 6,315.6 | 6,311.3 | 4.28 | 1,477.052 | |
| 1,600.0 | 1,595.6 | 1,655.0 | 1,654.9 | 3.6 | 0.9 | -35.73 | -3,102.0 | -5,554.8 | 6,311.1 | 6,306.8 | 4.35 | 1,451.394 | |
| 1,673.2 | 1,667.0 | 1,700.0 | 1,699.9 | 3.9 | 0.9 | -35.95 | -3,102.0 | -5,554.4 | 6,297.4 | 6,292.8 | 4.58 | 1,376.334 | |
| 1,700.0 | 1,693.1 | 1,724.5 | 1,724.4 | 4.0 | 0.9 | -36.04 | -3,102.1 | -5,554.2 | 6,292.1 | 6,287.4 | 4.66 | 1,350.308 | |
| 1,771.6 | 1,762.4 | 1,781.0 | 1,780.9 | 4.3 | 0.9 | -36.31 | -3,102.2 | -5,553.9 | 6,277.0 | 6,272.1 | 4.90 | 1,279.994 | |
| 1,800.0 | 1,789.6 | 1,800.0 | 1,799.9 | 4.4 | 0.9 | -36.41 | -3,102.2 | -5,553.8 | 6,270.6 | 6,265.6 | 5.00 | 1,254.108 | |
| 1,870.1 | 1,856.8 | 1,855.9 | 1,855.8 | 4.7 | 1.0 | -36.71 | -3,102.4 | -5,553.7 | 6,254.2 | 6,248.9 | 5.26 | 1,189.434 | |
| 1,900.0 | 1,885.3 | 1,878.4 | 1,878.2 | 4.9 | 1.0 | -36.84 | -3,102.4 | -5,553.7 | 6,246.8 | 6,241.4 | 5.37 | 1,163.569 | |
| 1,968.5 | 1,950.2 | 1,929.5 | 1,929.4 | 5.3 | 1.0 | -37.15 | -3,102.6 | -5,553.7 | 6,229.1 | 6,223.4 | 5.65 | 1,102.718 | |
| 2,000.0 | 1,979.8 | 1,953.0 | 1,952.9 | 5.5 | 1.0 | -37.30 | -3,102.7 | -5,553.8 | 6,220.6 | 6,214.8 | 5.78 | 1,075.988 | |
| 2,044.9 | 2,021.9 | 1,986.3 | 1,986.2 | 5.7 | 1.0 | -37.53 | -3,102.8 | -5,553.9 | 6,208.1 | 6,202.1 | 5.98 | 1,037.845 | |
| 2,066.9 | 2,042.5 | 2,000.0 | 1,999.9 | 5.9 | 1.0 | -37.56 | -3,102.9 | -5,554.0 | 6,201.8 | 6,195.8 | 6.08 | 1,020.520 | |
| 2,100.0 | 2,073.4 | 2,024.6 | 2,024.5 | 6.1 | 1.0 | -37.61 | -3,103.0 | -5,554.1 | 6,192.5 | 6,186.3 | 6.22 | 994.872 | |
| 2,165.3 | 2,134.4 | 2,068.8 | 2,068.7 | 6.5 | 1.0 | -37.71 | -3,103.2 | -5,554.5 | 6,174.2 | 6,167.7 | 6.52 | 946.760 | |
| 2,200.0 | 2,166.8 | 2,100.0 | 2,099.9 | 6.8 | 1.0 | -37.77 | -3,103.3 | -5,554.8 | 6,164.6 | 6,157.9 | 6.68 | 922.537 | |
| 2,263.8 | 2,226.4 | 2,134.4 | 2,134.2 | 7.2 | 1.0 | -37.84 | -3,103.5 | -5,555.3 | 6,147.0 | 6,140.1 | 6.98 | 880.436 | |
| 2,300.0 | 2,260.2 | 2,158.2 | 2,158.0 | 7.4 | 1.0 | -37.89 | -3,103.6 | -5,555.7 | 6,137.2 | 6,130.0 | 7.15 | 857.835 | |
| 2,362.2 | 2,318.3 | 2,200.0 | 2,199.9 | 7.9 | 1.0 | -37.98 | -3,103.8 | -5,556.5 | 6,120.3 | 6,112.9 | 7.46 | 820.858 | |
| 2,400.0 | 2,353.6 | 2,229.1 | 2,229.0 | 8.1 | 1.0 | -38.04 | -3,104.0 | -5,557.1 | 6,110.2 | 6,102.6 | 7.64 | 799.470 | |
| 2,460.6 | 2,410.3 | 2,277.7 | 2,277.6 | 8.6 | 1.0 | -38.14 | -3,104.1 | -5,558.2 | 6,094.0 | 6,086.1 | 7.95 | 766.788 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,311.1 | 2,310.9 | 8.9 | 1.0 | -38.21 | -3,104.1 | -5,559.1 | 6,083.6 | 6,075.4 | 8.15 | 746.651 | |
| 2,559.0 | 2,502.2 | 2,367.5 | 2,367.3 | 9.3 | 1.0 | -38.32 | -3,104.1 | -5,560.6 | 6,068.0 | 6,059.5 | 8.46 | 717.617 | |
| 2,600.0 | 2,540.5 | 2,407.2 | 2,407.0 | 9.6 | 1.0 | -38.40 | -3,104.0 | -5,561.7 | 6,057.1 | 6,048.4 | 8.67 | 698.571 | |
| 2,657.5 | 2,594.2 | 2,466.6 | 2,466.3 | 10.0 | 1.0 | -38.52 | -3,103.7 | -5,563.4 | 6,041.9 | 6,032.9 | 8.98 | 672.895 | |
| 2,700.0 | 2,633.9 | 2,510.7 | 2,510.5 | 10.3 | 1.1 | -38.61 | -3,103.4 | -5,564.6 | 6,030.6 | 6,021.4 | 9.21 | 654.895 | |
| 2,755.9 | 2,686.1 | 2,569.7 | 2,569.4 | 10.7 | 1.1 | -38.73 | -3,103.0 | -5,566.3 | 6,015.8 | 6,006.2 | 9.51 | 632.294 | |
| 2,800.0 | 2,727.3 | 2,613.9 | 2,613.6 | 11.0 | 1.1 | -38.81 | -3,102.6 | -5,567.6 | 6,004.0 | 5,994.3 | 9.76 | 615.459 | |
| 2,854.3 | 2,778.1 | 2,663.1 | 2,662.8 | 11.4 | 1.1 | -38.91 | -3,102.1 | -5,569.0 | 5,989.6 | 5,979.5 | 10.05 | 595.821 | |
| 2,900.0 | 2,820.7 | 2,706.2 | 2,705.8 | 11.8 | 1.1 | -39.00 | -3,101.6 | -5,570.3 | 5,977.5 | 5,967.2 | 10.30 | 580.094 | |
| 2,952.7 | 2,870.0 | 2,772.8 | 2,772.4 | 12.2 | 1.1 | -39.13 | -3,100.7 | -5,572.3 | 5,963.4 | 5,952.8 | 10.61 | 562.315 | |
| 3,000.0 | 2,914.2 | 2,825.6 | 2,825.2 | 12.5 | 1.1 | -39.23 | -3,099.8 | -5,573.8 | 5,950.7 | 5,939.9 | 10.87 | 547.301 | |
| 3,051.2 | 2,962.0 | 2,876.5 | 2,876.0 | 12.9 | 1.1 | -39.33 | -3,098.9 | -5,575.3 | 5,937.0 | 5,925.8 | 11.16 | 531.873 | |
| 3,100.0 | 3,007.6 | 2,923.5 | 2,923.0 | 13.3 | 1.1 | -39.42 | -3,097.9 | -5,576.7 | 5,923.9 | 5,912.4 | 11.44 | 517.894 | |
| 3,149.6 | 3,053.9 | 2,969.7 | 2,969.2 | 13.6 | 1.1 | -39.51 | -3,097.0 | -5,578.1 | 5,910.6 | 5,898.8 | 11.72 | 504.348 | |
| 3,200.0 | 3,101.0 | 3,016.9 | 3,016.4 | 14.0 | 1.1 | -39.61 | -3,096.0 | -5,579.5 | 5,897.1 | 5,885.1 | 12.01 | 491.199 | |
| 3,248.0 | 3,145.9 | 3,062.3 | 3,061.8 | 14.4 | 1.1 | -39.70 | -3,095.2 | -5,580.8 | 5,884.2 | 5,871.9 | 12.28 | 479.173 | |
| 3,300.0 | 3,194.4 | 3,111.8 | 3,111.3 | 14.8 | 1.1 | -39.80 | -3,094.7 | -5,582.0 | 5,870.3 | 5,857.7 | 12.58 | 466.695 | |
| 3,346.4 | 3,237.8 | 3,157.7 | 3,157.2 | 15.1 | 1.1 | -39.90 | -3,094.4 | -5,583.0 | 5,857.9 | 5,845.1 | 12.85 | 455.936 | |
| 3,400.0 | 3,287.8 | 3,210.3 | 3,209.7 | 15.5 | 1.2 | -40.01 | -3,094.2 | -5,584.0 | 5,843.6 | 5,830.4 | 13.16 | 444.036 | |
| 3,444.9 | 3,329.8 | 3,253.4 | 3,252.8 | 15.9 | 1.2 | -40.11 | -3,094.1 | -5,584.8 | 5,831.6 | 5,818.2 | 13.42 | 434.459 | |
| 3,500.0 | 3,381.3 | 3,306.7 | 3,306.1 | 16.3 | 1.2 | -40.23 | -3,093.9 | -5,585.7 | 5,816.9 | 5,803.2 | 13.75 | 423.130 | |
| 3,543.3 | 3,421.7 | 3,351.2 | 3,350.6 | 16.6 | 1.2 | -40.33 | -3,093.8 | -5,586.5 | 5,805.4 | 5,791.4 | 14.01 | 414.516 | |
| 3,600.0 | 3,474.7 | 3,413.9 | 3,413.3 | 17.0 | 1.2 | -40.47 | -3,093.6 | -5,587.5 | 5,790.2 | 5,775.9 | 14.35 | 403.583 | |
| 3,641.7 | 3,513.7 | 3,476.9 | 3,476.2 | 17.3 | 1.2 | -40.61 | -3,093.4 | -5,588.3 | 5,778.9 | 5,764.3 | 14.61 | 395.519 | |
| 3,700.0 | 3,568.1 | 3,541.8 | 3,541.2 | 17.8 | 1.2 | -40.76 | -3,093.1 | -5,588.9 | 5,763.0 | 5,748.1 | 14.97 | 385.043 | |
| 3,740.1 | 3,605.6 | 3,581.0 | 3,580.3 | 18.1 | 1.2 | -40.85 | -3,092.9 | -5,589.3 | 5,752.1 | 5,736.9 | 15.21 | 378.169 | |
| 3,800.0 | 3,661.5 | 3,636.0 | 3,635.4 | 18.5 | 1.2 | -40.98 | -3,092.6 | -5,589.8 | 5,735.8 | 5,720.2 | 15.57 | 368.371 | |
| 3,838.6 | 3,697.6 | 3,670.5 | 3,669.9 | 18.8 | 1.2 | -41.06 | -3,092.5 | -5,590.1 | 5,725.3 | 5,709.5 | 15.80 | 362.295 | |
| 3,900.0 | 3,754.9 | 3,725.8 | 3,725.1 | 19.3 | 1.2 | -41.19 | -3,092.2 | -5,590.6 | 5,708.6 | 5,692.5 | 16.17 | 352.956 | |
| 3,937.0 | 3,789.5 | 3,759.3 | 3,758.7 | 19.6 | 1.3 | -41.27 | -3,092.0 | -5,591.0 | 5,698.6 | 5,682.2 | 16.40 | 347.514 | |
| 4,000.0 | 3,848.4 | 3,816.5 | 3,815.9 | 20.1 | 1.3 | -41.41 | -3,091.7 | -5,591.6 | 5,681.6 | 5,664.9 | 16.78 | 338.560 | |
| 4,035.4 | 3,881.5 | 3,848.9 | 3,848.2 | 20.3 | 1.3 | -41.48 | -3,091.6 | -5,591.9 | 5,672.1 | 5,655.1 | 17.00 | 333.683 | |
| 4,100.0 | 3,941.8 | 3,909.1 | 3,908.4 | 20.8 | 1.3 | -41.63 | -3,091.3 | -5,592.6 | 5,654.8 | 5,637.4 | 17.40 | 325.070 | |
| 4,133.8 | 3,973.4 | 3,944.8 | 3,944.2 | 21.1 | 1.3 | -41.71 | -3,091.0 | -5,593.0 | 5,645.7 | 5,628.1 | 17.61 | 320.641 | |
| 4,200.0 | 4,035.2 | 4,012.5 | 4,011.8 | 21.6 | 1.3 | -41.87 | -3,090.5 | -5,593.8 | 5,627.9 | 5,609.9 | 18.02 | 312.288 | |
| 4,232.3 | 4,065.4 | 4,041.4 | 4,040.7 | 21.8 | 1.3 | -41.94 | -3,090.2 | -5,594.1 | 5,619.2 | 5,601.0 | 18.22 | 308.387 | |
| 4,300.0 | 4,128.6 | 4,102.8 | 4,102.1 | 22.3 | 1.3 | -42.09 | -3,089.7 | -5,594.8 | 5,601.1 | 5,582.4 | 18.64 | 300.448 | |
| 4,330.7 | 4,157.3 | 4,137.8 | 4,137.1 | 22.6 | 1.3 | -42.17 | -3,089.4 | -5,595.3 | 5,592.8 | 5,574.0 | 18.84 | 296.875 | |
| 4,400.0 | 4,222.0 | 4,223.6 | 4,222.9 | 23.1 | 1.3 | -42.37 | -3,088.1 | -5,596.4 | 5,574.2 | 5,554.9 | 19.29 | 288.976 | |
| 4,429.1 | 4,249.3 | 4,269.8 | 4,269.1 | 23.3 | 1.4 | -42.48 | -3,087.0 | -5,597.1 | 5,566.2 | 5,546.7 | 19.49 | 285.632 | |
| 4,500.0 | 4,315.5 | 4,395.3 | 4,394.4 | 23.9 | 1.4 | -42.74 | -3,081.7 | -5,599.5 | 5,546.5 | 5,526.5 | 19.98 | 277.586 | |
| 4,527.5 | 4,341.2 | 4,449.9 | 4,448.9 | 24.1 | 1.4 | -42.85 | -3,078.6 | -5,600.6 | 5,538.6 | 5,518.4 | 20.18 | 274.492 | |
| 4,600.0 | 4,408.9 | 4,599.2 | 4,597.9 | 24.6 | 1.4 | -43.15 | -3,068.6 | -5,602.9 | 5,517.2 | 5,496.5 | 20.70 | 266.516 | |
| 4,626.0 | 4,433.2 | 4,625.4 | 4,624.0 | 24.8 | 1.4 | -43.20 | -3,066.7 | -5,603.1 | 5,509.4 | 5,488.5 | 20.87 | 264.008 | |
| 4,700.0 | 4,502.3 | 4,698.9 | 4,697.3 | 25.4 | 1.4 | -43.34 | -3,061.2 | -5,603.8 | 5,487.0 | 5,465.7 | 21.34 | 257.075 | |
| 4,724.4 | 4,525.1 | 4,700.0 | 4,698.4 | 25.6 | 1.4 | -43.35 | -3,061.1 | -5,603.9 | 5,479.7 | 5,458.2 | 21.48 | 255.061 | |
| 4,800.0 | 4,595.7 | 4,762.0 | 4,760.3 | 26.2 | 1.5 | -43.47 | -3,056.8 | -5,604.5 | 5,457.1 | 5,435.1 | 21.96 | 248.526 | |
| 4,822.8 | 4,617.1 | 4,776.3 | 4,774.5 | 26.3 | 1.5 | -43.50 | -3,055.9 | -5,604.6 | 5,450.3 | 5,428.2 | 22.10 | 246.640 | |
| 4,900.0 | 4,689.2 | 4,833.8 | 4,832.0 | 26.9 | 1.5 | -43.62 | -3,052.5 | -5,605.2 | 5,427.7 | 5,405.1 | 22.58 | 240.365 | |
| 4,921.2 | 4,709.0 | 4,852.1 | 4,850.2 | 27.1 | 1.5 | -43.66 | -3,051.4 | -5,605.4 | 5,421.5 | 5,398.8 | 22.72 | 238.663 | |
| 5,000.0 | 4,782.6 | 4,917.6 | 4,915.5 | 27.7 | 1.5 | -43.81 | -3,047.8 | -5,605.9 | 5,398.6 | 5,375.4 | 23.22 | 232.528 | |
| 5,019.7 | 4,801.0 | 4,932.6 | 4,930.6 | 27.8 | 1.5 | -43.84 | -3,047.0 | -5,606.1 | 5,392.9 | 5,369.5 | 23.34 | 231.040 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 5,000.0 | 4,997.9 | 28.4 | 1.5 | -43.99 | -3,043.7 | -5,606.6 | 5,369.8 | 5,345.9 | 23.86 | 225.075 | |
| 5,118.1 | 4,892.9 | 5,000.0 | 4,997.9 | 28.6 | 1.5 | -43.99 | -3,043.7 | -5,606.6 | 5,364.6 | 5,340.7 | 23.96 | 223.881 | |
| 5,159.9 | 4,932.0 | 5,025.9 | 5,023.7 | 28.9 | 1.5 | -44.05 | -3,042.6 | -5,606.8 | 5,352.8 | 5,328.6 | 24.22 | 220.981 | |
| 5,200.0 | 4,969.5 | 5,045.7 | 5,043.6 | 29.2 | 1.5 | -43.94 | -3,041.8 | -5,607.0 | 5,341.8 | 5,317.4 | 24.39 | 219.052 | |
| 5,216.5 | 4,985.1 | 5,054.0 | 5,051.8 | 29.3 | 1.5 | -43.89 | -3,041.5 | -5,607.1 | 5,337.4 | 5,312.9 | 24.44 | 218.379 | |
| 5,300.0 | 5,064.0 | 5,100.0 | 5,097.8 | 29.7 | 1.5 | -43.70 | -3,040.1 | -5,607.7 | 5,316.6 | 5,291.9 | 24.72 | 215.043 | |
| 5,314.9 | 5,078.2 | 5,100.0 | 5,097.8 | 29.8 | 1.5 | -43.65 | -3,040.1 | -5,607.7 | 5,313.1 | 5,288.4 | 24.76 | 214.561 | |
| 5,400.0 | 5,159.6 | 5,158.7 | 5,156.5 | 30.2 | 1.5 | -43.50 | -3,038.8 | -5,608.5 | 5,294.6 | 5,269.6 | 25.03 | 211.544 | |
| 5,413.4 | 5,172.4 | 5,167.4 | 5,165.1 | 30.3 | 1.5 | -43.48 | -3,038.6 | -5,608.7 | 5,291.9 | 5,266.9 | 25.07 | 211.129 | |
| 5,500.0 | 5,256.1 | 5,228.3 | 5,226.0 | 30.7 | 1.6 | -43.36 | -3,037.8 | -5,609.6 | 5,275.8 | 5,250.5 | 25.31 | 208.469 | |
| 5,511.8 | 5,267.6 | 5,237.5 | 5,235.3 | 30.7 | 1.6 | -43.34 | -3,037.7 | -5,609.7 | 5,273.8 | 5,248.4 | 25.34 | 208.146 | |
| 5,600.0 | 5,353.5 | 5,300.0 | 5,297.8 | 31.1 | 1.6 | -43.25 | -3,037.2 | -5,610.8 | 5,259.9 | 5,234.3 | 25.55 | 205.828 | |
| 5,610.2 | 5,363.5 | 5,300.0 | 5,297.8 | 31.1 | 1.6 | -43.23 | -3,037.2 | -5,610.8 | 5,258.5 | 5,232.9 | 25.57 | 205.629 | |
| 5,700.0 | 5,451.6 | 5,376.9 | 5,374.7 | 31.4 | 1.6 | -43.17 | -3,036.9 | -5,612.1 | 5,247.0 | 5,221.2 | 25.77 | 203.587 | |
| 5,708.6 | 5,460.2 | 5,383.1 | 5,380.8 | 31.4 | 1.6 | -43.16 | -3,036.9 | -5,612.3 | 5,246.0 | 5,220.2 | 25.79 | 203.426 | |
| 5,800.0 | 5,550.4 | 5,448.8 | 5,446.5 | 31.7 | 1.6 | -43.11 | -3,037.2 | -5,613.5 | 5,237.1 | 5,211.2 | 25.96 | 201.755 | |
| 5,807.1 | 5,557.4 | 5,453.9 | 5,451.7 | 31.7 | 1.6 | -43.11 | -3,037.3 | -5,613.6 | 5,236.6 | 5,210.6 | 25.97 | 201.648 | |
| 5,900.0 | 5,649.6 | 5,526.4 | 5,524.1 | 31.9 | 1.6 | -43.09 | -3,038.3 | -5,614.9 | 5,230.4 | 5,204.2 | 26.12 | 200.247 | |
| 5,905.5 | 5,655.1 | 5,531.3 | 5,529.0 | 31.9 | 1.6 | -43.09 | -3,038.4 | -5,615.0 | 5,230.1 | 5,203.9 | 26.13 | 200.178 | |
| 6,000.0 | 5,749.2 | 5,630.1 | 5,627.8 | 32.1 | 1.6 | -43.11 | -3,040.4 | -5,616.6 | 5,226.4 | 5,200.1 | 26.27 | 198.973 | |
| 6,003.9 | 5,753.1 | 5,636.6 | 5,634.3 | 32.1 | 1.6 | -43.11 | -3,040.5 | -5,616.7 | 5,226.3 | 5,200.0 | 26.27 | 198.927 | |
| 6,100.0 | 5,849.1 | 5,785.4 | 5,783.0 | 32.3 | 1.7 | -43.15 | -3,042.6 | -5,618.4 | 5,224.2 | 5,197.8 | 26.40 | 197.874 | |
| 6,102.3 | 5,851.4 | 5,788.8 | 5,786.5 | 32.3 | 1.7 | -43.15 | -3,042.7 | -5,618.4 | 5,224.2 | 5,197.8 | 26.40 | 197.856 | |
| 6,171.9 | 5,921.0 | 5,881.6 | 5,879.2 | 32.3 | 1.7 | -43.17 | -3,043.5 | -5,619.0 | 5,223.7 | 5,197.2 | 26.47 | 197.350 | CC |
| 6,200.8 | 5,949.8 | 5,923.0 | 5,920.7 | 32.4 | 1.7 | -43.17 | -3,043.9 | -5,619.1 | 5,223.8 | 5,197.3 | 26.50 | 197.150 | |
| 6,204.9 | 5,953.9 | 5,929.4 | 5,927.1 | 32.4 | 1.7 | -127.61 | -3,043.9 | -5,619.1 | 5,223.8 | 5,195.9 | 27.85 | 187.582 | ES |
| 6,234.9 | 5,983.9 | 5,976.1 | 5,973.7 | 32.4 | 1.7 | -127.62 | -3,044.3 | -5,619.0 | 5,223.9 | 5,196.0 | 27.88 | 187.386 | |
| 6,250.0 | 5,999.0 | 5,999.6 | 5,997.3 | 32.4 | 1.7 | 142.38 | -3,044.5 | -5,618.9 | 5,224.1 | 5,197.5 | 26.53 | 196.916 | |
| 6,299.2 | 6,048.2 | 6,071.4 | 6,069.1 | 32.4 | 1.7 | 142.29 | -3,045.1 | -5,618.3 | 5,226.2 | 5,199.6 | 26.51 | 197.116 | |
| 6,300.0 | 6,048.9 | 6,072.6 | 6,070.2 | 32.4 | 1.7 | 142.29 | -3,045.1 | -5,618.3 | 5,226.2 | 5,199.7 | 26.51 | 197.116 | |
| 6,350.0 | 6,098.5 | 6,131.2 | 6,128.8 | 32.4 | 1.7 | 142.10 | -3,045.5 | -5,617.7 | 5,230.9 | 5,204.4 | 26.53 | 197.170 | |
| 6,397.6 | 6,145.3 | 6,178.5 | 6,176.1 | 32.3 | 1.7 | 141.80 | -3,045.8 | -5,617.1 | 5,238.0 | 5,211.4 | 26.58 | 197.084 | |
| 6,400.0 | 6,147.6 | 6,180.8 | 6,178.4 | 32.3 | 1.7 | 141.78 | -3,045.8 | -5,617.1 | 5,238.4 | 5,211.8 | 26.58 | 197.072 | |
| 6,450.0 | 6,195.8 | 6,231.6 | 6,229.2 | 32.2 | 1.7 | 141.35 | -3,046.2 | -5,616.4 | 5,248.5 | 5,221.8 | 26.66 | 196.851 | |
| 6,496.0 | 6,239.3 | 6,278.7 | 6,276.3 | 32.1 | 1.7 | 140.85 | -3,046.6 | -5,615.7 | 5,260.2 | 5,233.4 | 26.76 | 196.556 | |
| 6,500.0 | 6,243.0 | 6,282.6 | 6,280.3 | 32.1 | 1.7 | 140.80 | -3,046.6 | -5,615.7 | 5,261.3 | 5,234.5 | 26.77 | 196.522 | |
| 6,550.0 | 6,289.0 | 6,327.9 | 6,325.6 | 32.0 | 1.7 | 140.10 | -3,047.0 | -5,615.0 | 5,276.6 | 5,249.7 | 26.91 | 196.065 | |
| 6,594.5 | 6,328.6 | 6,365.0 | 6,362.6 | 31.8 | 1.7 | 139.34 | -3,047.3 | -5,614.5 | 5,292.5 | 5,265.4 | 27.07 | 195.533 | |
| 6,600.0 | 6,333.4 | 6,369.5 | 6,367.1 | 31.8 | 1.7 | 139.24 | -3,047.3 | -5,614.5 | 5,294.6 | 5,267.5 | 27.09 | 195.455 | |
| 6,650.0 | 6,376.2 | 6,411.3 | 6,408.9 | 31.7 | 1.7 | 138.22 | -3,047.6 | -5,613.9 | 5,315.0 | 5,287.7 | 27.30 | 194.659 | |
| 6,692.9 | 6,411.3 | 6,450.6 | 6,448.2 | 31.6 | 1.7 | 137.22 | -3,047.9 | -5,613.4 | 5,334.5 | 5,307.0 | 27.53 | 193.802 | |
| 6,700.0 | 6,417.0 | 6,457.0 | 6,454.6 | 31.5 | 1.7 | 137.04 | -3,048.0 | -5,613.3 | 5,337.9 | 5,310.3 | 27.57 | 193.643 | |
| 6,750.0 | 6,455.7 | 6,500.3 | 6,497.9 | 31.4 | 1.7 | 135.67 | -3,048.3 | -5,612.7 | 5,362.9 | 5,335.1 | 27.88 | 192.340 | |
| 6,791.3 | 6,486.0 | 6,531.2 | 6,528.8 | 31.3 | 1.7 | 134.35 | -3,048.5 | -5,612.3 | 5,385.3 | 5,357.1 | 28.20 | 190.993 | |
| 6,800.0 | 6,492.2 | 6,537.4 | 6,535.0 | 31.3 | 1.7 | 134.05 | -3,048.5 | -5,612.2 | 5,390.2 | 5,361.9 | 28.27 | 190.689 | |
| 6,850.0 | 6,526.1 | 6,572.1 | 6,569.6 | 31.2 | 1.7 | 132.17 | -3,048.7 | -5,611.7 | 5,419.6 | 5,390.8 | 28.72 | 188.691 | |
| 6,889.7 | 6,551.2 | 6,597.7 | 6,595.2 | 31.2 | 1.7 | 130.47 | -3,048.8 | -5,611.4 | 5,444.3 | 5,415.1 | 29.14 | 186.848 | |
| 6,900.0 | 6,557.4 | 6,604.3 | 6,601.9 | 31.2 | 1.7 | 130.00 | -3,048.8 | -5,611.3 | 5,450.9 | 5,421.6 | 29.25 | 186.359 | |
| 6,950.0 | 6,586.0 | 6,635.5 | 6,633.1 | 31.1 | 1.7 | 127.52 | -3,049.0 | -5,610.9 | 5,483.9 | 5,454.1 | 29.84 | 183.751 | |
| 6,988.2 | 6,605.8 | 6,657.3 | 6,654.9 | 31.2 | 1.7 | 125.38 | -3,049.0 | -5,610.6 | 5,510.3 | 5,480.0 | 30.34 | 181.600 | |
| 7,000.0 | 6,611.5 | 6,663.7 | 6,661.3 | 31.2 | 1.7 | 124.67 | -3,049.1 | -5,610.5 | 5,518.7 | 5,488.2 | 30.50 | 180.945 | |
| 7,050.0 | 6,634.1 | 6,688.7 | 6,686.3 | 31.2 | 1.7 | 121.42 | -3,049.2 | -5,610.2 | 5,555.0 | 5,523.8 | 31.20 | 178.072 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,086.6 | 6,648.6 | 6,704.3 | 6,701.9 | 31.3 | 1.7 | 118.75 | -3,049.3 | -5,609.9 | 5,582.4 | 5,550.6 | 31.72 | 175.992 | |
| 7,100.0 | 6,653.4 | 6,709.2 | 6,706.7 | 31.4 | 1.7 | 117.70 | -3,049.3 | -5,609.9 | 5,592.6 | 5,560.6 | 31.90 | 175.291 | |
| 7,150.0 | 6,669.5 | 6,725.2 | 6,722.8 | 31.6 | 1.7 | 113.49 | -3,049.4 | -5,609.6 | 5,631.3 | 5,598.7 | 32.59 | 172.801 | |
| 7,185.0 | 6,678.8 | 6,734.6 | 6,732.2 | 31.7 | 1.7 | 110.25 | -3,049.4 | -5,609.5 | 5,659.1 | 5,626.0 | 33.03 | 171.314 | |
| 7,200.0 | 6,682.3 | 6,738.1 | 6,735.7 | 31.8 | 1.7 | 108.79 | -3,049.4 | -5,609.5 | 5,671.1 | 5,637.9 | 33.20 | 170.805 | |
| 7,250.0 | 6,691.6 | 6,747.7 | 6,745.3 | 32.1 | 1.7 | 103.62 | -3,049.5 | -5,609.3 | 5,711.6 | 5,677.9 | 33.71 | 169.441 | |
| 7,283.4 | 6,696.0 | 6,752.3 | 6,749.9 | 32.3 | 1.7 | 99.92 | -3,049.5 | -5,609.3 | 5,739.1 | 5,705.1 | 33.99 | 168.854 | |
| 7,300.0 | 6,697.5 | 6,754.0 | 6,751.6 | 32.4 | 1.7 | 98.03 | -3,049.5 | -5,609.2 | 5,752.8 | 5,718.7 | 34.11 | 168.679 | |
| 7,350.0 | 6,699.9 | 6,757.0 | 6,754.5 | 32.8 | 1.7 | 92.12 | -3,049.5 | -5,609.2 | 5,794.4 | 5,759.9 | 34.45 | 168.178 | |
| 7,364.4 | 6,700.0 | 6,757.2 | 6,754.8 | 32.9 | 1.7 | 90.38 | -3,049.5 | -5,609.2 | 5,806.4 | 5,771.8 | 34.56 | 168.010 | |
| 7,381.9 | 6,699.9 | 6,757.3 | 6,754.9 | 33.1 | 1.7 | 90.38 | -3,049.5 | -5,609.2 | 5,821.0 | 5,786.3 | 34.71 | 167.695 | |
| 7,400.0 | 6,699.8 | 6,757.5 | 6,755.0 | 33.2 | 1.7 | 90.39 | -3,049.5 | -5,609.2 | 5,836.2 | 5,801.3 | 34.87 | 167.372 | |
| 7,480.3 | 6,699.2 | 6,758.0 | 6,755.6 | 34.0 | 1.7 | 90.40 | -3,049.5 | -5,609.2 | 5,903.5 | 5,867.9 | 35.68 | 165.452 | |
| 7,500.0 | 6,699.1 | 6,758.2 | 6,755.7 | 34.2 | 1.7 | 90.40 | -3,049.5 | -5,609.2 | 5,920.1 | 5,884.2 | 35.88 | 164.995 | |
| 7,578.7 | 6,698.6 | 6,758.7 | 6,756.3 | 35.2 | 1.7 | 90.41 | -3,049.5 | -5,609.2 | 5,986.5 | 5,949.7 | 36.83 | 162.546 | |
| 7,600.0 | 6,698.5 | 6,758.9 | 6,756.4 | 35.4 | 1.7 | 90.41 | -3,049.5 | -5,609.2 | 6,004.6 | 5,967.5 | 37.09 | 161.907 | |
| 7,677.1 | 6,698.0 | 6,759.4 | 6,757.0 | 36.5 | 1.7 | 90.42 | -3,049.5 | -5,609.2 | 6,070.0 | 6,031.9 | 38.15 | 159.100 | |
| 7,700.0 | 6,697.8 | 6,759.6 | 6,757.1 | 36.8 | 1.7 | 90.42 | -3,049.5 | -5,609.2 | 6,089.5 | 6,051.0 | 38.47 | 158.300 | |
| 7,775.6 | 6,697.3 | 6,760.1 | 6,757.6 | 38.0 | 1.7 | 90.43 | -3,049.5 | -5,609.1 | 6,153.9 | 6,114.3 | 39.63 | 155.283 | |
| 7,800.0 | 6,697.2 | 6,760.2 | 6,757.8 | 38.3 | 1.7 | 90.44 | -3,049.5 | -5,609.1 | 6,174.8 | 6,134.8 | 40.01 | 154.347 | |
| 7,874.0 | 6,696.7 | 6,760.8 | 6,758.3 | 39.6 | 1.7 | 90.45 | -3,049.5 | -5,609.1 | 6,238.3 | 6,197.0 | 41.25 | 151.242 | |
| 7,900.0 | 6,696.5 | 6,760.9 | 6,758.5 | 40.0 | 1.7 | 90.45 | -3,049.5 | -5,609.1 | 6,260.6 | 6,218.9 | 41.68 | 150.197 | |
| 7,972.4 | 6,696.1 | 6,761.4 | 6,759.0 | 41.3 | 1.7 | 90.46 | -3,049.6 | -5,609.1 | 6,323.0 | 6,280.0 | 42.99 | 147.097 | |
| 8,000.0 | 6,695.9 | 6,761.6 | 6,759.2 | 41.8 | 1.7 | 90.46 | -3,049.6 | -5,609.1 | 6,346.8 | 6,303.4 | 43.48 | 145.966 | |
| 8,070.8 | 6,695.4 | 6,762.1 | 6,759.7 | 43.1 | 1.7 | 90.47 | -3,049.6 | -5,609.1 | 6,408.2 | 6,363.3 | 44.83 | 142.939 | |
| 8,100.0 | 6,695.2 | 6,762.3 | 6,759.9 | 43.7 | 1.7 | 90.47 | -3,049.6 | -5,609.1 | 6,433.5 | 6,388.1 | 45.39 | 141.746 | |
| 8,169.3 | 6,694.8 | 6,762.8 | 6,760.3 | 45.1 | 1.7 | 90.48 | -3,049.6 | -5,609.1 | 6,493.7 | 6,446.9 | 46.77 | 138.837 | |
| 8,200.0 | 6,694.6 | 6,763.0 | 6,760.5 | 45.7 | 1.7 | 90.49 | -3,049.6 | -5,609.1 | 6,520.5 | 6,473.1 | 47.39 | 137.603 | |
| 8,267.7 | 6,694.1 | 6,763.4 | 6,761.0 | 47.1 | 1.7 | 90.49 | -3,049.6 | -5,609.1 | 6,579.6 | 6,530.8 | 48.79 | 134.842 | |
| 8,300.0 | 6,693.9 | 6,763.7 | 6,761.2 | 47.8 | 1.7 | 90.50 | -3,049.6 | -5,609.1 | 6,607.8 | 6,558.3 | 49.47 | 133.581 | |
| 8,366.1 | 6,693.5 | 6,764.1 | 6,761.7 | 49.2 | 1.7 | 90.51 | -3,049.6 | -5,609.1 | 6,665.8 | 6,614.9 | 50.89 | 130.984 | |
| 8,400.0 | 6,693.3 | 6,764.3 | 6,761.9 | 49.9 | 1.7 | 90.51 | -3,049.6 | -5,609.1 | 6,695.5 | 6,643.9 | 51.62 | 129.710 | |
| 8,464.5 | 6,692.9 | 6,764.8 | 6,762.3 | 51.4 | 1.7 | 90.52 | -3,049.6 | -5,609.1 | 6,752.3 | 6,699.3 | 53.05 | 127.285 | |
| 8,500.0 | 6,692.6 | 6,765.0 | 6,762.6 | 52.1 | 1.7 | 90.52 | -3,049.6 | -5,609.1 | 6,783.6 | 6,729.8 | 53.83 | 126.009 | |
| 8,563.0 | 6,692.2 | 6,765.4 | 6,763.0 | 53.6 | 1.7 | 90.53 | -3,049.6 | -5,609.1 | 6,839.2 | 6,783.9 | 55.26 | 123.756 | |
| 8,600.0 | 6,692.0 | 6,765.7 | 6,763.2 | 54.4 | 1.7 | 90.53 | -3,049.6 | -5,609.1 | 6,872.0 | 6,815.9 | 56.10 | 122.486 | |
| 8,661.4 | 6,691.6 | 6,766.1 | 6,763.6 | 55.8 | 1.7 | 90.54 | -3,049.6 | -5,609.1 | 6,926.4 | 6,868.9 | 57.53 | 120.402 | |
| 8,700.0 | 6,691.3 | 6,766.3 | 6,763.9 | 56.7 | 1.7 | 90.55 | -3,049.6 | -5,609.1 | 6,960.7 | 6,902.2 | 58.42 | 119.144 | |
| 8,759.8 | 6,690.9 | 6,766.7 | 6,764.3 | 58.1 | 1.7 | 90.55 | -3,049.6 | -5,609.1 | 7,013.9 | 6,954.0 | 59.83 | 117.221 | |
| 8,800.0 | 6,690.7 | 6,767.0 | 6,764.6 | 59.1 | 1.7 | 90.56 | -3,049.6 | -5,609.1 | 7,049.7 | 6,988.9 | 60.78 | 115.980 | |
| 8,858.2 | 6,690.3 | 6,767.4 | 6,765.0 | 60.5 | 1.7 | 90.56 | -3,049.6 | -5,609.0 | 7,101.6 | 7,039.5 | 62.18 | 114.210 | |
| 8,900.0 | 6,690.0 | 6,767.7 | 6,765.2 | 61.5 | 1.7 | 90.57 | -3,049.6 | -5,609.0 | 7,139.0 | 7,075.8 | 63.18 | 112.990 | |
| 8,956.7 | 6,689.7 | 6,768.1 | 6,765.6 | 62.9 | 1.7 | 90.58 | -3,049.6 | -5,609.0 | 7,189.7 | 7,125.1 | 64.56 | 111.363 | |
| 9,000.0 | 6,689.4 | 6,768.3 | 6,765.9 | 63.9 | 1.7 | 90.58 | -3,049.6 | -5,609.0 | 7,228.5 | 7,162.9 | 65.61 | 110.166 | |
| 9,055.1 | 6,689.0 | 6,768.7 | 6,766.3 | 65.3 | 1.7 | 90.59 | -3,049.6 | -5,609.0 | 7,278.0 | 7,211.0 | 66.97 | 108.673 | |
| 9,100.0 | 6,688.7 | 6,769.0 | 6,766.6 | 66.4 | 1.7 | 90.59 | -3,049.6 | -5,609.0 | 7,318.4 | 7,250.3 | 68.08 | 107.501 | |
| 9,153.5 | 6,688.4 | 6,769.4 | 6,766.9 | 67.7 | 1.7 | 90.60 | -3,049.6 | -5,609.0 | 7,366.6 | 7,297.2 | 69.41 | 106.133 | |
| 9,200.0 | 6,688.1 | 6,769.7 | 6,767.2 | 68.9 | 1.7 | 90.61 | -3,049.6 | -5,609.0 | 7,408.5 | 7,337.9 | 70.57 | 104.987 | |
| 9,251.9 | 6,687.8 | 6,770.0 | 6,767.6 | 70.2 | 1.7 | 90.61 | -3,049.6 | -5,609.0 | 7,455.4 | 7,383.5 | 71.87 | 103.732 | |
| 9,300.0 | 6,687.4 | 6,770.3 | 6,767.9 | 71.4 | 1.7 | 90.62 | -3,049.6 | -5,609.0 | 7,498.8 | 7,425.8 | 73.08 | 102.613 | |
| 9,350.4 | 6,687.1 | 6,770.6 | 6,768.2 | 72.7 | 1.7 | 90.62 | -3,049.6 | -5,609.0 | 7,544.4 | 7,470.1 | 74.36 | 101.465 | |
| 9,400.0 | 6,686.8 | 6,771.0 | 6,768.5 | 73.9 | 1.7 | 90.63 | -3,049.6 | -5,609.0 | 7,589.4 | 7,513.8 | 75.61 | 100.372 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOWARD #14-18 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,771.3 | 6,768.8 | 75.2 | 1.7 | 90.63 | -3,049.6 | -5,609.0 | 7,633.7 | 7,556.9 | 76.86 | 99.321 | |
| 9,500.0 | 6,686.1 | 6,771.6 | 6,769.2 | 76.5 | 1.7 | 90.64 | -3,049.6 | -5,609.0 | 7,680.3 | 7,602.1 | 78.17 | 98.255 | |
| 9,547.2 | 6,685.8 | 6,771.9 | 6,769.5 | 77.7 | 1.7 | 90.65 | -3,049.6 | -5,609.0 | 7,723.2 | 7,643.8 | 79.38 | 97.294 | |
| 9,600.0 | 6,685.5 | 6,772.3 | 6,769.8 | 79.0 | 1.7 | 90.65 | -3,049.6 | -5,609.0 | 7,771.3 | 7,690.6 | 80.74 | 96.254 | |
| 9,645.6 | 6,685.2 | 6,772.6 | 6,770.1 | 80.2 | 1.7 | 90.66 | -3,049.6 | -5,609.0 | 7,812.9 | 7,731.0 | 81.92 | 95.375 | |
| 9,700.0 | 6,684.8 | 6,772.9 | 6,770.5 | 81.6 | 1.7 | 90.66 | -3,049.6 | -5,609.0 | 7,862.6 | 7,779.3 | 83.32 | 94.362 | |
| 9,744.1 | 6,684.6 | 6,773.2 | 6,770.8 | 82.8 | 1.7 | 90.67 | -3,049.6 | -5,609.0 | 7,902.9 | 7,818.4 | 84.47 | 93.558 | |
| 9,800.0 | 6,684.2 | 6,773.6 | 6,771.1 | 84.2 | 1.7 | 90.68 | -3,049.6 | -5,609.0 | 7,954.1 | 7,868.1 | 85.93 | 92.570 | |
| 9,842.5 | 6,683.9 | 6,773.8 | 6,771.4 | 85.3 | 1.7 | 90.68 | -3,049.6 | -5,609.0 | 7,993.0 | 7,906.0 | 87.04 | 91.836 | |
| 9,900.0 | 6,683.5 | 6,774.2 | 6,771.8 | 86.8 | 1.7 | 90.69 | -3,049.6 | -5,609.0 | 8,045.7 | 7,957.2 | 88.54 | 90.872 | |
| 9,940.9 | 6,683.3 | 6,774.5 | 6,772.0 | 87.9 | 1.7 | 90.69 | -3,049.6 | -5,609.0 | 8,083.3 | 7,993.7 | 89.61 | 90.202 | |
| 10,000.0 | 6,682.9 | 6,774.8 | 6,772.4 | 89.5 | 1.7 | 90.70 | -3,049.6 | -5,608.9 | 8,137.6 | 8,046.5 | 91.17 | 89.263 | |
| 10,039.3 | 6,682.6 | 6,775.1 | 6,772.7 | 90.5 | 1.7 | 90.70 | -3,049.6 | -5,608.9 | 8,173.8 | 8,081.6 | 92.20 | 88.651 | |
| 10,100.0 | 6,682.2 | 6,775.5 | 6,773.0 | 92.1 | 1.7 | 90.71 | -3,049.6 | -5,608.9 | 8,229.7 | 8,135.9 | 93.80 | 87.735 | |
| 10,137.8 | 6,682.0 | 6,775.7 | 6,773.3 | 93.1 | 1.7 | 90.71 | -3,049.6 | -5,608.9 | 8,264.5 | 8,169.7 | 94.80 | 87.177 | |
| 10,200.0 | 6,681.6 | 6,776.1 | 6,773.7 | 94.8 | 1.7 | 90.72 | -3,049.6 | -5,608.9 | 8,321.9 | 8,225.5 | 96.45 | 86.284 | |
| 10,236.2 | 6,681.4 | 6,776.3 | 6,773.9 | 95.7 | 1.7 | 90.73 | -3,049.6 | -5,608.9 | 8,355.4 | 8,258.0 | 97.41 | 85.775 | |
| 10,300.0 | 6,680.9 | 6,776.7 | 6,774.3 | 97.4 | 1.7 | 90.73 | -3,049.6 | -5,608.9 | 8,414.4 | 8,315.3 | 99.10 | 84.904 | |
| 10,334.6 | 6,680.7 | 6,777.0 | 6,774.5 | 98.3 | 1.7 | 90.74 | -3,049.6 | -5,608.9 | 8,446.4 | 8,346.4 | 100.03 | 84.441 | |
| 10,400.0 | 6,680.3 | 6,777.4 | 6,774.9 | 100.1 | 1.7 | 90.74 | -3,049.6 | -5,608.9 | 8,507.0 | 8,405.2 | 101.77 | 83.591 | |
| 10,433.0 | 6,680.1 | 6,777.6 | 6,775.2 | 101.0 | 1.7 | 90.75 | -3,049.6 | -5,608.9 | 8,537.6 | 8,435.0 | 102.65 | 83.170 | |
| 10,500.0 | 6,679.7 | 6,778.0 | 6,775.6 | 102.8 | 1.7 | 90.76 | -3,049.6 | -5,608.9 | 8,599.7 | 8,495.3 | 104.44 | 82.341 | |
| 10,531.5 | 6,679.4 | 6,778.2 | 6,775.8 | 103.6 | 1.7 | 90.76 | -3,049.6 | -5,608.9 | 8,629.0 | 8,523.7 | 105.28 | 81.959 | |
| 10,600.0 | 6,679.0 | 6,778.6 | 6,776.2 | 105.4 | 1.7 | 90.77 | -3,049.6 | -5,608.9 | 8,692.7 | 8,585.5 | 107.12 | 81.149 | |
| 10,629.9 | 6,678.8 | 6,778.8 | 6,776.4 | 106.2 | 1.7 | 90.77 | -3,049.6 | -5,608.9 | 8,720.5 | 8,612.6 | 107.92 | 80.803 | |
| 10,700.0 | 6,678.4 | 6,779.3 | 6,776.8 | 108.1 | 1.7 | 90.78 | -3,049.6 | -5,608.9 | 8,785.7 | 8,675.9 | 109.81 | 80.011 | |
| 10,728.3 | 6,678.2 | 6,779.4 | 6,777.0 | 108.9 | 1.7 | 90.78 | -3,049.6 | -5,608.9 | 8,812.1 | 8,701.6 | 110.57 | 79.698 | |
| 10,800.0 | 6,677.7 | 6,779.9 | 6,777.4 | 110.8 | 1.7 | 90.79 | -3,049.6 | -5,608.9 | 8,879.0 | 8,766.5 | 112.50 | 78.925 | |
| 10,826.7 | 6,677.5 | 6,780.1 | 6,777.6 | 111.5 | 1.7 | 90.79 | -3,049.6 | -5,608.9 | 8,903.9 | 8,790.7 | 113.22 | 78.643 | |
| 10,900.0 | 6,677.1 | 6,780.5 | 6,778.1 | 113.5 | 1.7 | 90.80 | -3,049.6 | -5,608.9 | 8,972.4 | 8,857.2 | 115.20 | 77.888 | |
| 10,925.2 | 6,676.9 | 6,780.7 | 6,778.2 | 114.2 | 1.7 | 90.80 | -3,049.6 | -5,608.9 | 8,995.9 | 8,880.0 | 115.88 | 77.633 | |
| 11,000.0 | 6,676.4 | 6,781.1 | 6,778.7 | 116.2 | 1.7 | 90.81 | -3,049.6 | -5,608.9 | 9,065.9 | 8,948.0 | 117.90 | 76.895 | |
| 11,023.6 | 6,676.3 | 6,781.3 | 6,778.8 | 116.8 | 1.7 | 90.81 | -3,049.6 | -5,608.9 | 9,088.0 | 8,969.4 | 118.54 | 76.667 | |
| 11,100.0 | 6,675.8 | 6,781.7 | 6,779.3 | 118.9 | 1.7 | 90.82 | -3,049.6 | -5,608.9 | 9,159.5 | 9,038.9 | 120.61 | 75.945 | |
| 11,122.0 | 6,675.6 | 6,781.9 | 6,779.4 | 119.5 | 1.7 | 90.82 | -3,049.6 | -5,608.9 | 9,180.2 | 9,059.0 | 121.20 | 75.741 | |
| 11,200.0 | 6,675.1 | 6,782.4 | 6,779.9 | 121.6 | 1.7 | 90.83 | -3,049.6 | -5,608.8 | 9,253.3 | 9,130.0 | 123.32 | 75.035 | |
| 11,220.4 | 6,675.0 | 6,782.5 | 6,780.1 | 122.2 | 1.7 | 90.84 | -3,049.6 | -5,608.8 | 9,272.5 | 9,148.6 | 123.88 | 74.854 | |
| 11,300.0 | 6,674.5 | 6,783.0 | 6,780.5 | 124.3 | 1.7 | 90.84 | -3,049.6 | -5,608.8 | 9,347.2 | 9,221.2 | 126.04 | 74.163 | |
| 11,318.9 | 6,674.3 | 6,783.1 | 6,780.7 | 124.9 | 1.7 | 90.85 | -3,049.6 | -5,608.8 | 9,365.0 | 9,238.4 | 126.55 | 74.002 | |
| 11,400.0 | 6,673.8 | 6,783.6 | 6,781.2 | 127.1 | 1.7 | 90.86 | -3,049.6 | -5,608.8 | 9,441.3 | 9,312.5 | 128.76 | 73.326 | |
| 11,417.3 | 6,673.7 | 6,783.7 | 6,781.3 | 127.5 | 1.7 | 90.86 | -3,049.6 | -5,608.8 | 9,457.6 | 9,328.3 | 129.23 | 73.184 | |
| 11,500.0 | 6,673.2 | 6,784.2 | 6,781.8 | 129.8 | 1.7 | 90.87 | -3,049.6 | -5,608.8 | 9,535.4 | 9,404.0 | 131.48 | 72.522 | |
| 11,515.7 | 6,673.1 | 6,784.3 | 6,781.9 | 130.2 | 1.7 | 90.87 | -3,049.6 | -5,608.8 | 9,550.3 | 9,418.3 | 131.91 | 72.399 | |
| 11,600.0 | 6,672.5 | 6,784.8 | 6,782.4 | 132.5 | 1.7 | 90.88 | -3,049.7 | -5,608.8 | 9,629.7 | 9,495.5 | 134.21 | 71.751 | |
| 11,614.1 | 6,672.4 | 6,784.9 | 6,782.5 | 132.9 | 1.7 | 90.88 | -3,049.7 | -5,608.8 | 9,643.1 | 9,508.5 | 134.60 | 71.644 | |
| 11,700.0 | 6,671.9 | 6,785.4 | 6,783.0 | 135.3 | 1.7 | 90.89 | -3,049.7 | -5,608.8 | 9,724.1 | 9,587.2 | 136.94 | 71.009 | |
| 11,712.6 | 6,671.8 | 6,785.5 | 6,783.1 | 135.6 | 1.7 | 90.89 | -3,049.7 | -5,608.8 | 9,736.0 | 9,598.7 | 137.29 | 70.917 | |
| 11,800.0 | 6,671.2 | 6,786.0 | 6,783.6 | 138.0 | 1.7 | 90.90 | -3,049.7 | -5,608.8 | 9,818.6 | 9,678.9 | 139.68 | 70.295 | |
| 11,811.0 | 6,671.1 | 6,786.1 | 6,783.6 | 138.3 | 1.7 | 90.90 | -3,049.7 | -5,608.8 | 9,829.0 | 9,689.0 | 139.98 | 70.218 | |
| 11,900.0 | 6,670.6 | 6,786.6 | 6,784.2 | 140.7 | 1.7 | 90.91 | -3,049.7 | -5,608.8 | 9,913.2 | 9,770.8 | 142.42 | 69.608 | |
| 11,909.4 | 6,670.5 | 6,786.7 | 6,784.2 | 141.0 | 1.7 | 90.91 | -3,049.7 | -5,608.8 | 9,922.2 | 9,779.5 | 142.67 | 69.545 | |
| 11,987.2 | 6,670.0 | 6,787.1 | 6,784.7 | 143.1 | 1.7 | 90.92 | -3,049.7 | -5,608.8 | 9,995.8 | 9,851.0 | 144.81 | 69.030 SF | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | | | | |
| 98.4 | 98.4 | 99.4 | 99.4 | 0.1 | 1.2 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,618.0 | 1.27 | 3,625.556 | |
| 100.0 | 100.0 | 101.0 | 101.0 | 0.1 | 1.2 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,618.0 | 1.31 | 3,538.057 | |
| 196.8 | 196.8 | 197.8 | 197.8 | 0.3 | 3.4 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,615.6 | 3.74 | 1,233.897 | |
| 200.0 | 200.0 | 201.0 | 201.0 | 0.3 | 3.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,615.5 | 3.82 | 1,208.980 | |
| 295.3 | 295.3 | 296.3 | 296.3 | 0.5 | 5.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,613.3 | 6.02 | 767.924 | |
| 300.0 | 300.0 | 301.0 | 301.0 | 0.5 | 5.6 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,613.2 | 6.12 | 754.322 | |
| 393.7 | 393.7 | 394.7 | 394.7 | 0.8 | 7.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,611.1 | 8.25 | 560.053 | |
| 400.0 | 400.0 | 401.0 | 401.0 | 0.8 | 7.6 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,610.9 | 8.39 | 550.529 | |
| 492.1 | 492.1 | 493.1 | 493.1 | 1.0 | 9.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,608.8 | 10.47 | 441.320 | |
| 500.0 | 500.0 | 501.0 | 501.0 | 1.0 | 9.6 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,608.7 | 10.64 | 433.964 | |
| 590.5 | 590.5 | 591.5 | 591.5 | 1.2 | 11.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,606.6 | 12.68 | 364.310 | |
| 600.0 | 600.0 | 601.0 | 601.0 | 1.2 | 11.7 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,606.4 | 12.89 | 358.309 | |
| 689.0 | 689.0 | 690.0 | 690.0 | 1.4 | 13.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,604.4 | 14.89 | 310.258 | |
| 700.0 | 700.0 | 701.0 | 701.0 | 1.4 | 13.7 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,604.2 | 15.14 | 305.187 | |
| 787.4 | 787.4 | 788.4 | 788.4 | 1.6 | 15.5 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,602.2 | 17.10 | 270.207 | |
| 800.0 | 800.0 | 801.0 | 801.0 | 1.7 | 15.7 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,601.9 | 17.38 | 265.815 | |
| 885.8 | 885.8 | 886.8 | 886.8 | 1.9 | 17.4 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,600.0 | 19.30 | 239.333 | |
| 900.0 | 900.0 | 901.0 | 901.0 | 1.9 | 17.7 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,599.7 | 19.62 | 235.458 | |
| 984.2 | 984.2 | 985.2 | 985.2 | 2.1 | 19.4 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,597.8 | 21.51 | 214.800 | |
| 1,000.0 | 1,000.0 | 1,001.0 | 1,001.0 | 2.1 | 19.7 | -114.16 | -1,890.4 | -4,214.8 | 4,619.3 | 4,597.5 | 21.86 | 211.334 | |
| 1,082.7 | 1,082.7 | 1,083.7 | 1,083.7 | 2.3 | 21.4 | -29.74 | -1,890.4 | -4,214.8 | 4,618.3 | 4,594.6 | 23.69 | 194.934 | |
| 1,100.0 | 1,100.0 | 1,101.0 | 1,101.0 | 2.3 | 21.8 | -29.74 | -1,890.4 | -4,214.8 | 4,617.8 | 4,593.7 | 24.07 | 191.821 | |
| 1,181.1 | 1,181.0 | 1,182.0 | 1,182.0 | 2.5 | 23.4 | -29.80 | -1,890.4 | -4,214.8 | 4,614.3 | 4,588.5 | 25.84 | 178.550 | |
| 1,200.0 | 1,199.8 | 1,200.8 | 1,200.8 | 2.5 | 23.8 | -29.82 | -1,890.4 | -4,214.8 | 4,613.3 | 4,587.0 | 26.25 | 175.726 | |
| 1,279.5 | 1,279.1 | 1,280.1 | 1,280.1 | 2.7 | 25.4 | -29.92 | -1,890.4 | -4,214.8 | 4,607.5 | 4,579.5 | 27.97 | 164.758 | |
| 1,300.0 | 1,299.5 | 1,300.5 | 1,300.5 | 2.8 | 25.8 | -29.95 | -1,890.4 | -4,214.8 | 4,605.7 | 4,577.3 | 28.40 | 162.162 | |
| 1,377.9 | 1,376.9 | 1,377.9 | 1,377.9 | 3.0 | 27.3 | -30.09 | -1,890.4 | -4,214.8 | 4,597.7 | 4,567.7 | 30.05 | 152.982 | |
| 1,400.0 | 1,398.7 | 1,399.7 | 1,399.7 | 3.0 | 27.8 | -30.13 | -1,890.4 | -4,214.8 | 4,595.1 | 4,564.6 | 30.52 | 150.581 | |
| 1,476.4 | 1,474.2 | 1,475.2 | 1,475.2 | 3.2 | 29.3 | -30.31 | -1,890.4 | -4,214.8 | 4,585.0 | 4,552.9 | 32.11 | 142.808 | |
| 1,500.0 | 1,497.5 | 1,498.5 | 1,498.5 | 3.3 | 29.8 | -30.37 | -1,890.4 | -4,214.8 | 4,581.6 | 4,549.0 | 32.59 | 140.574 | |
| 1,574.8 | 1,571.0 | 1,572.0 | 1,572.0 | 3.5 | 31.2 | -30.58 | -1,890.4 | -4,214.8 | 4,569.5 | 4,535.4 | 34.12 | 133.925 | |
| 1,600.0 | 1,595.6 | 1,596.6 | 1,596.6 | 3.6 | 31.7 | -30.66 | -1,890.4 | -4,214.8 | 4,565.1 | 4,530.4 | 34.63 | 131.835 | |
| 1,673.2 | 1,667.0 | 1,668.0 | 1,668.0 | 3.9 | 33.2 | -30.91 | -1,890.4 | -4,214.8 | 4,551.1 | 4,515.0 | 36.09 | 126.092 | |
| 1,700.0 | 1,693.1 | 1,694.1 | 1,694.1 | 4.0 | 33.7 | -31.01 | -1,890.4 | -4,214.8 | 4,545.6 | 4,509.0 | 36.62 | 124.125 | |
| 1,771.6 | 1,762.4 | 1,763.4 | 1,763.4 | 4.3 | 35.1 | -31.29 | -1,890.4 | -4,214.8 | 4,529.9 | 4,491.9 | 38.03 | 119.121 | |
| 1,800.0 | 1,789.6 | 1,790.6 | 1,790.6 | 4.4 | 35.6 | -31.41 | -1,890.4 | -4,214.8 | 4,523.3 | 4,484.7 | 38.57 | 117.260 | |
| 1,870.1 | 1,856.8 | 1,857.8 | 1,857.8 | 4.7 | 37.0 | -31.73 | -1,890.4 | -4,214.8 | 4,505.9 | 4,466.0 | 39.92 | 112.861 | |
| 1,900.0 | 1,885.3 | 1,886.3 | 1,886.3 | 4.9 | 37.6 | -31.88 | -1,890.4 | -4,214.8 | 4,498.1 | 4,457.6 | 40.49 | 111.090 | |
| 1,968.5 | 1,950.2 | 1,951.2 | 1,951.2 | 5.3 | 38.9 | -32.23 | -1,890.4 | -4,214.8 | 4,479.2 | 4,437.4 | 41.79 | 107.196 | |
| 2,000.0 | 1,979.8 | 1,980.8 | 1,980.8 | 5.5 | 39.5 | -32.41 | -1,890.4 | -4,214.8 | 4,470.1 | 4,427.7 | 42.37 | 105.496 | |
| 2,044.9 | 2,021.9 | 2,022.9 | 2,022.9 | 5.7 | 40.3 | -32.66 | -1,890.4 | -4,214.8 | 4,456.6 | 4,413.4 | 43.21 | 103.143 | |
| 2,066.9 | 2,042.5 | 2,043.5 | 2,043.5 | 5.9 | 40.7 | -32.72 | -1,890.4 | -4,214.8 | 4,449.9 | 4,406.2 | 43.69 | 101.845 | |
| 2,100.0 | 2,073.4 | 2,074.4 | 2,074.4 | 6.1 | 41.3 | -32.80 | -1,890.4 | -4,214.8 | 4,439.8 | 4,395.4 | 44.42 | 99.941 | |
| 2,165.3 | 2,134.4 | 2,135.4 | 2,135.4 | 6.5 | 42.6 | -32.96 | -1,890.4 | -4,214.8 | 4,419.8 | 4,373.9 | 45.88 | 96.343 | |
| 2,200.0 | 2,166.8 | 2,167.8 | 2,167.8 | 6.8 | 43.2 | -33.05 | -1,890.4 | -4,214.8 | 4,409.3 | 4,362.6 | 46.65 | 94.521 | |
| 2,263.8 | 2,226.4 | 2,227.4 | 2,227.4 | 7.2 | 44.4 | -33.20 | -1,890.4 | -4,214.8 | 4,389.8 | 4,341.8 | 48.08 | 91.308 | |
| 2,300.0 | 2,260.2 | 2,261.2 | 2,261.2 | 7.4 | 45.1 | -33.29 | -1,890.4 | -4,214.8 | 4,378.8 | 4,329.9 | 48.89 | 89.562 | |
| 2,362.2 | 2,318.3 | 2,319.3 | 2,319.3 | 7.9 | 46.3 | -33.45 | -1,890.4 | -4,214.8 | 4,359.9 | 4,309.6 | 50.29 | 86.688 | |
| 2,400.0 | 2,353.6 | 2,354.6 | 2,354.6 | 8.1 | 47.0 | -33.55 | -1,890.4 | -4,214.8 | 4,348.4 | 4,297.3 | 51.15 | 85.015 | |
| 2,460.6 | 2,410.3 | 2,411.3 | 2,411.3 | 8.6 | 48.1 | -33.70 | -1,890.4 | -4,214.8 | 4,330.1 | 4,277.5 | 52.53 | 82.437 | |
| 2,500.0 | 2,447.0 | 2,448.0 | 2,448.0 | 8.9 | 48.9 | -33.80 | -1,890.4 | -4,214.8 | 4,318.2 | 4,264.7 | 53.42 | 80.832 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,503.2 | 2,503.2 | 9.3 | 50.0 | -33.96 | -1,890.4 | -4,214.8 | 4,300.3 | 4,245.5 | 54.77 | 78.517 | |
| 2,600.0 | 2,540.5 | 2,541.5 | 2,541.5 | 9.6 | 50.7 | -34.06 | -1,890.4 | -4,214.8 | 4,288.0 | 4,232.3 | 55.71 | 76.976 | |
| 2,657.5 | 2,594.2 | 2,595.2 | 2,595.2 | 10.0 | 51.8 | -34.22 | -1,890.4 | -4,214.8 | 4,270.6 | 4,213.6 | 57.02 | 74.892 | |
| 2,700.0 | 2,633.9 | 2,634.9 | 2,634.9 | 10.3 | 52.6 | -34.33 | -1,890.4 | -4,214.8 | 4,257.8 | 4,199.8 | 58.00 | 73.410 | |
| 2,755.9 | 2,686.1 | 2,687.1 | 2,687.1 | 10.7 | 53.7 | -34.48 | -1,890.4 | -4,214.8 | 4,241.0 | 4,181.8 | 59.29 | 71.532 | |
| 2,800.0 | 2,727.3 | 2,728.3 | 2,728.3 | 11.0 | 54.5 | -34.59 | -1,890.4 | -4,214.8 | 4,227.8 | 4,167.5 | 60.31 | 70.106 | |
| 2,854.3 | 2,778.1 | 2,779.1 | 2,779.1 | 11.4 | 55.5 | -34.74 | -1,890.4 | -4,214.8 | 4,211.5 | 4,150.0 | 61.56 | 68.410 | |
| 2,900.0 | 2,820.7 | 2,821.7 | 2,821.7 | 11.8 | 56.4 | -34.87 | -1,890.4 | -4,214.8 | 4,197.9 | 4,135.3 | 62.62 | 67.035 | |
| 2,952.7 | 2,870.0 | 2,871.0 | 2,871.0 | 12.2 | 57.4 | -35.01 | -1,890.4 | -4,214.8 | 4,182.1 | 4,118.3 | 63.85 | 65.502 | |
| 3,000.0 | 2,914.2 | 2,915.2 | 2,915.2 | 12.5 | 58.3 | -35.14 | -1,890.4 | -4,214.8 | 4,168.0 | 4,103.1 | 64.95 | 64.176 | |
| 3,051.2 | 2,962.0 | 2,963.0 | 2,963.0 | 12.9 | 59.2 | -35.28 | -1,890.4 | -4,214.8 | 4,152.8 | 4,086.6 | 66.14 | 62.788 | |
| 3,100.0 | 3,007.6 | 3,008.6 | 3,008.6 | 13.3 | 60.1 | -35.42 | -1,890.4 | -4,214.8 | 4,138.3 | 4,071.0 | 67.28 | 61.508 | |
| 3,149.6 | 3,053.9 | 3,054.9 | 3,054.9 | 13.6 | 61.1 | -35.56 | -1,890.4 | -4,214.8 | 4,123.5 | 4,055.1 | 68.44 | 60.250 | |
| 3,200.0 | 3,101.0 | 3,102.0 | 3,102.0 | 14.0 | 62.0 | -35.70 | -1,890.4 | -4,214.8 | 4,108.6 | 4,039.0 | 69.62 | 59.013 | |
| 3,248.0 | 3,145.9 | 3,146.9 | 3,146.9 | 14.4 | 62.9 | -35.84 | -1,890.4 | -4,214.8 | 4,094.4 | 4,023.6 | 70.75 | 57.872 | |
| 3,300.0 | 3,194.4 | 3,195.4 | 3,195.4 | 14.8 | 63.9 | -35.99 | -1,890.4 | -4,214.8 | 4,079.0 | 4,007.1 | 71.97 | 56.675 | |
| 3,346.4 | 3,237.8 | 3,238.8 | 3,238.8 | 15.1 | 64.8 | -36.12 | -1,890.4 | -4,214.8 | 4,065.3 | 3,992.3 | 73.07 | 55.639 | |
| 3,400.0 | 3,287.8 | 3,288.8 | 3,288.8 | 15.5 | 65.8 | -36.28 | -1,890.4 | -4,214.8 | 4,049.6 | 3,975.2 | 74.33 | 54.480 | |
| 3,444.9 | 3,329.8 | 3,330.8 | 3,330.8 | 15.9 | 66.6 | -36.41 | -1,890.4 | -4,214.8 | 4,036.4 | 3,961.0 | 75.39 | 53.539 | |
| 3,500.0 | 3,381.3 | 3,382.3 | 3,382.3 | 16.3 | 67.6 | -36.57 | -1,890.4 | -4,214.8 | 4,020.2 | 3,943.5 | 76.70 | 52.416 | |
| 3,543.3 | 3,421.7 | 3,422.7 | 3,422.7 | 16.6 | 68.5 | -36.70 | -1,890.4 | -4,214.8 | 4,007.5 | 3,929.8 | 77.72 | 51.560 | |
| 3,600.0 | 3,474.7 | 3,475.7 | 3,475.7 | 17.0 | 69.5 | -36.87 | -1,890.4 | -4,214.8 | 3,990.9 | 3,911.8 | 79.07 | 50.472 | |
| 3,641.7 | 3,513.7 | 3,514.7 | 3,514.7 | 17.3 | 70.3 | -36.99 | -1,890.4 | -4,214.8 | 3,978.7 | 3,898.7 | 80.07 | 49.694 | |
| 3,700.0 | 3,568.1 | 3,569.1 | 3,569.1 | 17.8 | 71.4 | -37.17 | -1,890.4 | -4,214.8 | 3,961.8 | 3,880.3 | 81.45 | 48.638 | |
| 3,740.1 | 3,605.6 | 3,606.6 | 3,606.6 | 18.1 | 72.2 | -37.29 | -1,890.4 | -4,214.8 | 3,950.1 | 3,867.7 | 82.41 | 47.930 | |
| 3,800.0 | 3,661.5 | 3,662.5 | 3,662.5 | 18.5 | 73.3 | -37.48 | -1,890.4 | -4,214.8 | 3,932.7 | 3,848.9 | 83.85 | 46.904 | |
| 3,838.6 | 3,697.6 | 3,698.6 | 3,698.6 | 18.8 | 74.0 | -37.60 | -1,890.4 | -4,214.8 | 3,921.5 | 3,836.8 | 84.77 | 46.261 | |
| 3,900.0 | 3,754.9 | 3,755.9 | 3,755.9 | 19.3 | 75.2 | -37.79 | -1,890.4 | -4,214.8 | 3,903.8 | 3,817.5 | 86.24 | 45.264 | |
| 3,937.0 | 3,789.5 | 3,790.5 | 3,790.5 | 19.6 | 75.9 | -37.90 | -1,890.4 | -4,214.8 | 3,893.1 | 3,805.9 | 87.13 | 44.680 | |
| 4,000.0 | 3,848.4 | 3,849.4 | 3,849.4 | 20.1 | 77.0 | -38.10 | -1,890.4 | -4,214.8 | 3,874.9 | 3,786.3 | 88.65 | 43.710 | |
| 4,035.4 | 3,881.5 | 3,882.5 | 3,882.5 | 20.3 | 77.7 | -38.21 | -1,890.4 | -4,214.8 | 3,864.7 | 3,775.2 | 89.50 | 43.179 | |
| 4,100.0 | 3,941.8 | 3,942.8 | 3,942.8 | 20.8 | 78.9 | -38.42 | -1,890.4 | -4,214.8 | 3,846.2 | 3,755.1 | 91.06 | 42.236 | |
| 4,133.8 | 3,973.4 | 3,974.4 | 3,974.4 | 21.1 | 79.6 | -38.53 | -1,890.4 | -4,214.8 | 3,836.5 | 3,744.6 | 91.88 | 41.754 | |
| 4,200.0 | 4,035.2 | 4,036.2 | 4,036.2 | 21.6 | 80.8 | -38.75 | -1,890.4 | -4,214.8 | 3,817.6 | 3,724.1 | 93.49 | 40.835 | |
| 4,232.3 | 4,065.4 | 4,066.4 | 4,066.4 | 21.8 | 81.4 | -38.85 | -1,890.4 | -4,214.8 | 3,808.4 | 3,714.1 | 94.27 | 40.398 | |
| 4,300.0 | 4,128.6 | 4,129.6 | 4,129.6 | 22.3 | 82.7 | -39.08 | -1,890.4 | -4,214.8 | 3,789.1 | 3,693.2 | 95.92 | 39.503 | |
| 4,330.7 | 4,157.3 | 4,158.3 | 4,158.3 | 22.6 | 83.3 | -39.18 | -1,890.4 | -4,214.8 | 3,780.4 | 3,683.7 | 96.67 | 39.108 | |
| 4,400.0 | 4,222.0 | 4,223.0 | 4,223.0 | 23.1 | 84.6 | -39.41 | -1,890.4 | -4,214.8 | 3,760.8 | 3,662.4 | 98.36 | 38.235 | |
| 4,429.1 | 4,249.3 | 4,250.3 | 4,250.3 | 23.3 | 85.1 | -39.51 | -1,890.4 | -4,214.8 | 3,752.5 | 3,653.5 | 99.07 | 37.878 | |
| 4,500.0 | 4,315.5 | 4,316.5 | 4,316.5 | 23.9 | 86.4 | -39.75 | -1,890.4 | -4,214.8 | 3,732.5 | 3,631.7 | 100.81 | 37.027 | |
| 4,527.5 | 4,341.2 | 4,342.2 | 4,342.2 | 24.1 | 87.0 | -39.84 | -1,890.4 | -4,214.8 | 3,724.8 | 3,623.3 | 101.48 | 36.704 | |
| 4,600.0 | 4,408.9 | 4,409.9 | 4,409.9 | 24.6 | 88.3 | -40.09 | -1,890.4 | -4,214.8 | 3,704.4 | 3,601.2 | 103.26 | 35.874 | |
| 4,626.0 | 4,433.2 | 4,434.2 | 4,434.2 | 24.8 | 88.8 | -40.18 | -1,890.4 | -4,214.8 | 3,697.1 | 3,593.2 | 103.90 | 35.583 | |
| 4,700.0 | 4,502.3 | 4,503.3 | 4,503.3 | 25.4 | 90.2 | -40.44 | -1,890.4 | -4,214.8 | 3,676.5 | 3,570.7 | 105.73 | 34.773 | |
| 4,724.4 | 4,525.1 | 4,526.1 | 4,526.1 | 25.6 | 90.7 | -40.52 | -1,890.4 | -4,214.8 | 3,669.6 | 3,563.3 | 106.33 | 34.512 | |
| 4,800.0 | 4,595.7 | 4,596.7 | 4,596.7 | 26.2 | 92.1 | -40.79 | -1,890.4 | -4,214.8 | 3,648.6 | 3,540.4 | 108.20 | 33.721 | |
| 4,822.8 | 4,617.1 | 4,618.1 | 4,618.1 | 26.3 | 92.5 | -40.87 | -1,890.4 | -4,214.8 | 3,642.3 | 3,533.5 | 108.77 | 33.487 | |
| 4,900.0 | 4,689.2 | 4,690.2 | 4,690.2 | 26.9 | 94.0 | -41.15 | -1,890.4 | -4,214.8 | 3,620.9 | 3,510.2 | 110.68 | 32.715 | |
| 4,921.2 | 4,709.0 | 4,710.0 | 4,710.0 | 27.1 | 94.3 | -41.23 | -1,890.4 | -4,214.8 | 3,615.0 | 3,503.8 | 111.21 | 32.506 | |
| 5,000.0 | 4,782.6 | 4,783.6 | 4,783.6 | 27.7 | 95.8 | -41.51 | -1,890.4 | -4,214.8 | 3,593.3 | 3,480.2 | 113.17 | 31.751 | |
| 5,019.7 | 4,801.0 | 4,802.0 | 4,802.0 | 27.8 | 96.2 | -41.59 | -1,890.4 | -4,214.8 | 3,587.9 | 3,474.3 | 113.66 | 31.566 | |
| 5,100.0 | 4,876.0 | 4,877.0 | 4,877.0 | 28.4 | 97.7 | -41.88 | -1,890.4 | -4,214.8 | 3,565.9 | 3,450.3 | 115.67 | 30.828 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,893.9 | 4,893.9 | 28.6 | 98.0 | -41.95 | -1,890.4 | -4,214.8 | 3,561.0 | 3,444.9 | 116.13 | 30.665 | |
| 5,159.9 | 4,932.0 | 4,933.0 | 4,933.0 | 28.9 | 98.8 | -42.11 | -1,890.4 | -4,214.8 | 3,549.6 | 3,432.4 | 117.17 | 30.293 | |
| 5,200.0 | 4,969.5 | 4,970.5 | 4,970.5 | 29.2 | 99.6 | -42.11 | -1,890.4 | -4,214.8 | 3,538.9 | 3,420.5 | 118.37 | 29.897 | |
| 5,216.5 | 4,985.1 | 4,986.1 | 4,986.1 | 29.3 | 99.9 | -42.11 | -1,890.4 | -4,214.8 | 3,534.6 | 3,415.7 | 118.85 | 29.740 | |
| 5,300.0 | 5,064.0 | 5,065.0 | 5,065.0 | 29.7 | 101.5 | -42.11 | -1,890.4 | -4,214.8 | 3,514.0 | 3,392.7 | 121.27 | 28.976 | |
| 5,314.9 | 5,078.2 | 5,079.2 | 5,079.2 | 29.8 | 101.8 | -42.11 | -1,890.4 | -4,214.8 | 3,510.5 | 3,388.8 | 121.70 | 28.846 | |
| 5,400.0 | 5,159.6 | 5,160.6 | 5,160.6 | 30.2 | 103.4 | -42.12 | -1,890.4 | -4,214.8 | 3,491.7 | 3,367.6 | 124.12 | 28.133 | |
| 5,413.4 | 5,172.4 | 5,173.4 | 5,173.4 | 30.3 | 103.7 | -42.12 | -1,890.4 | -4,214.8 | 3,489.0 | 3,364.5 | 124.49 | 28.026 | |
| 5,500.0 | 5,256.1 | 5,257.1 | 5,257.1 | 30.7 | 105.4 | -42.13 | -1,890.4 | -4,214.8 | 3,472.1 | 3,345.2 | 126.90 | 27.362 | |
| 5,511.8 | 5,267.6 | 5,268.6 | 5,268.6 | 30.7 | 105.6 | -42.14 | -1,890.4 | -4,214.8 | 3,470.0 | 3,342.8 | 127.22 | 27.276 | |
| 5,600.0 | 5,353.5 | 5,354.5 | 5,354.5 | 31.1 | 107.3 | -42.15 | -1,890.4 | -4,214.8 | 3,455.1 | 3,325.5 | 129.60 | 26.659 | |
| 5,610.2 | 5,363.5 | 5,364.5 | 5,364.5 | 31.1 | 107.5 | -42.15 | -1,890.4 | -4,214.8 | 3,453.5 | 3,323.7 | 129.87 | 26.592 | |
| 5,700.0 | 5,451.6 | 5,452.6 | 5,452.6 | 31.4 | 109.3 | -42.17 | -1,890.4 | -4,214.8 | 3,440.7 | 3,308.5 | 132.23 | 26.021 | |
| 5,708.6 | 5,460.2 | 5,461.2 | 5,461.2 | 31.4 | 109.5 | -42.17 | -1,890.4 | -4,214.8 | 3,439.6 | 3,307.2 | 132.45 | 25.969 | |
| 5,800.0 | 5,550.4 | 5,551.4 | 5,551.4 | 31.7 | 111.3 | -42.19 | -1,890.4 | -4,214.8 | 3,428.9 | 3,294.2 | 134.77 | 25.444 | |
| 5,807.1 | 5,557.4 | 5,558.4 | 5,558.4 | 31.7 | 111.4 | -42.19 | -1,890.4 | -4,214.8 | 3,428.2 | 3,293.3 | 134.94 | 25.405 | |
| 5,900.0 | 5,649.6 | 5,650.6 | 5,650.6 | 31.9 | 113.3 | -42.20 | -1,890.4 | -4,214.8 | 3,419.8 | 3,282.6 | 137.21 | 24.924 | |
| 5,905.5 | 5,655.1 | 5,656.1 | 5,656.1 | 31.9 | 113.4 | -42.20 | -1,890.4 | -4,214.8 | 3,419.3 | 3,282.0 | 137.34 | 24.897 | |
| 6,000.0 | 5,749.2 | 5,750.2 | 5,750.2 | 32.1 | 115.3 | -42.21 | -1,890.4 | -4,214.8 | 3,413.2 | 3,273.6 | 139.55 | 24.458 | |
| 6,003.9 | 5,753.1 | 5,754.1 | 5,754.1 | 32.1 | 115.3 | -42.21 | -1,890.4 | -4,214.8 | 3,413.0 | 3,273.3 | 139.64 | 24.441 | |
| 6,100.0 | 5,849.1 | 5,850.1 | 5,850.1 | 32.3 | 117.3 | -42.22 | -1,890.4 | -4,214.8 | 3,409.2 | 3,267.4 | 141.79 | 24.044 | |
| 6,102.3 | 5,851.4 | 5,852.4 | 5,852.4 | 32.3 | 117.3 | -42.22 | -1,890.4 | -4,214.8 | 3,409.1 | 3,267.3 | 141.84 | 24.035 | |
| 6,200.8 | 5,949.8 | 5,950.8 | 5,950.8 | 32.4 | 119.3 | -42.22 | -1,890.4 | -4,214.8 | 3,407.7 | 3,263.8 | 143.92 | 23.677 | |
| 6,204.9 | 5,953.9 | 5,954.9 | 5,954.9 | 32.4 | 119.4 | -126.66 | -1,890.4 | -4,214.8 | 3,407.7 | 3,261.9 | 145.83 | 23.367 | |
| 6,234.9 | 5,983.9 | 5,984.9 | 5,984.9 | 32.4 | 120.0 | -126.66 | -1,890.4 | -4,214.8 | 3,407.7 | 3,261.3 | 146.46 | 23.267 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 6,000.0 | 6,000.0 | 32.4 | 120.3 | 143.34 | -1,890.4 | -4,214.8 | 3,407.9 | 3,263.0 | 144.91 | 23.517 | |
| 6,299.2 | 6,048.2 | 6,049.2 | 6,049.2 | 32.4 | 121.3 | 143.26 | -1,890.4 | -4,214.8 | 3,410.1 | 3,264.5 | 145.52 | 23.433 | |
| 6,300.0 | 6,048.9 | 6,049.9 | 6,049.9 | 32.4 | 121.3 | 143.26 | -1,890.4 | -4,214.8 | 3,410.1 | 3,264.6 | 145.53 | 23.432 | |
| 6,350.0 | 6,098.5 | 6,099.5 | 6,099.5 | 32.4 | 122.3 | 143.08 | -1,890.4 | -4,214.8 | 3,415.2 | 3,269.4 | 145.73 | 23.434 | |
| 6,397.6 | 6,145.3 | 6,146.3 | 6,146.3 | 32.3 | 123.2 | 142.81 | -1,890.4 | -4,214.8 | 3,422.5 | 3,277.0 | 145.56 | 23.514 | |
| 6,400.0 | 6,147.6 | 6,148.6 | 6,148.6 | 32.3 | 123.3 | 142.79 | -1,890.4 | -4,214.8 | 3,423.0 | 3,277.4 | 145.54 | 23.519 | |
| 6,450.0 | 6,195.8 | 6,196.8 | 6,196.8 | 32.2 | 124.3 | 142.40 | -1,890.4 | -4,214.8 | 3,433.5 | 3,288.6 | 144.97 | 23.685 | |
| 6,496.0 | 6,239.3 | 6,240.3 | 6,240.3 | 32.1 | 125.1 | 141.93 | -1,890.4 | -4,214.8 | 3,445.6 | 3,301.5 | 144.15 | 23.904 | |
| 6,500.0 | 6,243.0 | 6,244.0 | 6,244.0 | 32.1 | 125.2 | 141.89 | -1,890.4 | -4,214.8 | 3,446.8 | 3,302.7 | 144.07 | 23.925 | |
| 6,550.0 | 6,289.0 | 6,290.0 | 6,290.0 | 32.0 | 126.1 | 141.25 | -1,890.4 | -4,214.8 | 3,462.7 | 3,319.8 | 142.89 | 24.234 | |
| 6,594.5 | 6,328.6 | 6,329.6 | 6,329.6 | 31.8 | 126.9 | 140.56 | -1,890.4 | -4,214.8 | 3,479.1 | 3,337.4 | 141.67 | 24.557 | |
| 6,600.0 | 6,333.4 | 6,334.4 | 6,334.4 | 31.8 | 127.0 | 140.47 | -1,890.4 | -4,214.8 | 3,481.2 | 3,339.7 | 141.52 | 24.600 | |
| 6,650.0 | 6,376.2 | 6,377.2 | 6,377.2 | 31.7 | 127.9 | 139.53 | -1,890.4 | -4,214.8 | 3,502.3 | 3,362.2 | 140.05 | 25.008 | |
| 6,692.9 | 6,411.3 | 6,412.3 | 6,412.3 | 31.6 | 128.6 | 138.59 | -1,890.4 | -4,214.8 | 3,522.3 | 3,383.5 | 138.80 | 25.376 | |
| 6,700.0 | 6,417.0 | 6,418.0 | 6,418.0 | 31.5 | 128.7 | 138.42 | -1,890.4 | -4,214.8 | 3,525.8 | 3,387.2 | 138.60 | 25.438 | |
| 6,750.0 | 6,455.7 | 6,456.7 | 6,456.7 | 31.4 | 129.5 | 137.10 | -1,890.4 | -4,214.8 | 3,551.7 | 3,414.3 | 137.33 | 25.861 | |
| 6,791.3 | 6,486.0 | 6,487.0 | 6,487.0 | 31.3 | 130.1 | 135.85 | -1,890.4 | -4,214.8 | 3,574.7 | 3,438.2 | 136.53 | 26.182 | |
| 6,800.0 | 6,492.2 | 6,493.2 | 6,493.2 | 31.3 | 130.2 | 135.56 | -1,890.4 | -4,214.8 | 3,579.8 | 3,443.4 | 136.40 | 26.244 | |
| 6,850.0 | 6,526.1 | 6,527.1 | 6,527.1 | 31.2 | 130.9 | 133.75 | -1,890.4 | -4,214.8 | 3,610.0 | 3,474.0 | 136.00 | 26.545 | |
| 6,889.7 | 6,551.2 | 6,552.2 | 6,552.2 | 31.2 | 131.4 | 132.10 | -1,890.4 | -4,214.8 | 3,635.5 | 3,499.3 | 136.17 | 26.698 | |
| 6,900.0 | 6,557.4 | 6,558.4 | 6,558.4 | 31.2 | 131.5 | 131.64 | -1,890.4 | -4,214.8 | 3,642.3 | 3,506.0 | 136.30 | 26.723 | |
| 6,950.0 | 6,586.0 | 6,587.0 | 6,587.0 | 31.1 | 132.1 | 129.18 | -1,890.4 | -4,214.8 | 3,676.4 | 3,538.9 | 137.48 | 26.742 | |
| 6,988.2 | 6,605.8 | 6,606.8 | 6,606.8 | 31.2 | 132.5 | 127.03 | -1,890.4 | -4,214.8 | 3,703.6 | 3,564.6 | 139.05 | 26.636 | |
| 7,000.0 | 6,611.5 | 6,612.5 | 6,612.5 | 31.2 | 132.6 | 126.31 | -1,890.4 | -4,214.8 | 3,712.2 | 3,572.6 | 139.65 | 26.582 | |
| 7,050.0 | 6,634.1 | 6,635.1 | 6,635.1 | 31.2 | 133.1 | 122.98 | -1,890.4 | -4,214.8 | 3,749.6 | 3,606.8 | 142.86 | 26.247 | |
| 7,086.6 | 6,648.6 | 6,649.6 | 6,649.6 | 31.3 | 133.4 | 120.21 | -1,890.4 | -4,214.8 | 3,777.9 | 3,632.1 | 145.82 | 25.908 | |
| 7,100.0 | 6,653.4 | 6,654.4 | 6,654.4 | 31.4 | 133.5 | 119.13 | -1,890.4 | -4,214.8 | 3,788.4 | 3,641.4 | 147.01 | 25.770 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,670.5 | 6,670.5 | 31.6 | 133.8 | 114.71 | -1,890.4 | -4,214.8 | 3,828.5 | 3,676.6 | 151.85 | 25.213 | |
| 7,185.0 | 6,678.8 | 6,679.8 | 6,679.8 | 31.7 | 134.0 | 111.26 | -1,890.4 | -4,214.8 | 3,857.1 | 3,701.7 | 155.42 | 24.818 | |
| 7,200.0 | 6,682.3 | 6,683.3 | 6,683.3 | 31.8 | 134.0 | 109.69 | -1,890.4 | -4,214.8 | 3,869.5 | 3,712.6 | 156.93 | 24.658 | |
| 7,250.0 | 6,691.6 | 6,692.6 | 6,692.6 | 32.1 | 134.2 | 104.07 | -1,890.4 | -4,214.8 | 3,911.3 | 3,749.7 | 161.64 | 24.198 | |
| 7,283.4 | 6,696.0 | 6,697.0 | 6,697.0 | 32.3 | 134.3 | 100.00 | -1,890.4 | -4,214.8 | 3,939.7 | 3,775.5 | 164.23 | 23.989 | |
| 7,300.0 | 6,697.5 | 6,698.5 | 6,698.5 | 32.4 | 134.3 | 97.90 | -1,890.4 | -4,214.8 | 3,953.8 | 3,788.6 | 165.26 | 23.925 | |
| 7,350.0 | 6,699.9 | 6,700.9 | 6,700.9 | 32.8 | 134.4 | 91.32 | -1,890.4 | -4,214.8 | 3,996.7 | 3,829.6 | 167.11 | 23.917 | |
| 7,364.4 | 6,700.0 | 6,701.0 | 6,701.0 | 32.9 | 134.4 | 89.37 | -1,890.4 | -4,214.8 | 4,009.1 | 3,841.9 | 167.24 | 23.972 | |
| 7,381.9 | 6,699.9 | 6,700.9 | 6,700.9 | 33.1 | 134.4 | 89.37 | -1,890.4 | -4,214.8 | 4,024.2 | 3,856.8 | 167.39 | 24.040 | |
| 7,400.0 | 6,699.8 | 6,700.8 | 6,700.8 | 33.2 | 134.4 | 89.36 | -1,890.4 | -4,214.8 | 4,039.8 | 3,872.3 | 167.55 | 24.112 | |
| 7,480.3 | 6,699.2 | 6,700.2 | 6,700.2 | 34.0 | 134.4 | 89.35 | -1,890.4 | -4,214.8 | 4,109.4 | 3,941.1 | 168.35 | 24.410 | |
| 7,500.0 | 6,699.1 | 6,700.1 | 6,700.1 | 34.2 | 134.4 | 89.34 | -1,890.4 | -4,214.8 | 4,126.5 | 3,958.0 | 168.54 | 24.483 | |
| 7,578.7 | 6,698.6 | 6,699.6 | 6,699.6 | 35.2 | 134.4 | 89.33 | -1,890.4 | -4,214.8 | 4,195.2 | 4,025.7 | 169.48 | 24.753 | |
| 7,600.0 | 6,698.5 | 6,699.5 | 6,699.5 | 35.4 | 134.4 | 89.33 | -1,890.4 | -4,214.8 | 4,213.8 | 4,044.1 | 169.74 | 24.826 | |
| 7,677.1 | 6,698.0 | 6,699.0 | 6,699.0 | 36.5 | 134.3 | 89.31 | -1,890.4 | -4,214.8 | 4,281.5 | 4,110.7 | 170.79 | 25.069 | |
| 7,700.0 | 6,697.8 | 6,698.8 | 6,698.8 | 36.8 | 134.3 | 89.31 | -1,890.4 | -4,214.8 | 4,301.7 | 4,130.6 | 171.10 | 25.141 | |
| 7,775.6 | 6,697.3 | 6,698.3 | 6,698.3 | 38.0 | 134.3 | 89.29 | -1,890.4 | -4,214.8 | 4,368.4 | 4,196.1 | 172.25 | 25.360 | |
| 7,800.0 | 6,697.2 | 6,698.2 | 6,698.2 | 38.3 | 134.3 | 89.29 | -1,890.4 | -4,214.8 | 4,390.0 | 4,217.4 | 172.63 | 25.431 | |
| 7,874.0 | 6,696.7 | 6,697.7 | 6,697.7 | 39.6 | 134.3 | 89.28 | -1,890.4 | -4,214.8 | 4,455.7 | 4,281.9 | 173.86 | 25.629 | |
| 7,900.0 | 6,696.5 | 6,697.5 | 6,697.5 | 40.0 | 134.3 | 89.27 | -1,890.4 | -4,214.8 | 4,478.9 | 4,304.6 | 174.29 | 25.698 | |
| 7,972.4 | 6,696.1 | 6,697.1 | 6,697.1 | 41.3 | 134.3 | 89.26 | -1,890.4 | -4,214.8 | 4,543.5 | 4,367.9 | 175.58 | 25.877 | |
| 8,000.0 | 6,695.9 | 6,696.9 | 6,696.9 | 41.8 | 134.3 | 89.25 | -1,890.4 | -4,214.8 | 4,568.2 | 4,392.1 | 176.07 | 25.945 | |
| 8,070.8 | 6,695.4 | 6,696.4 | 6,696.4 | 43.1 | 134.3 | 89.24 | -1,890.4 | -4,214.8 | 4,631.7 | 4,454.3 | 177.41 | 26.107 | |
| 8,100.0 | 6,695.2 | 6,696.2 | 6,696.2 | 43.7 | 134.3 | 89.23 | -1,890.4 | -4,214.8 | 4,657.9 | 4,480.0 | 177.96 | 26.173 | |
| 8,169.3 | 6,694.8 | 6,695.8 | 6,695.8 | 45.1 | 134.3 | 89.22 | -1,890.4 | -4,214.8 | 4,720.3 | 4,541.0 | 179.34 | 26.321 | |
| 8,200.0 | 6,694.6 | 6,695.6 | 6,695.6 | 45.7 | 134.3 | 89.22 | -1,890.4 | -4,214.8 | 4,748.1 | 4,568.1 | 179.95 | 26.386 | |
| 8,267.7 | 6,694.1 | 6,695.1 | 6,695.1 | 47.1 | 134.3 | 89.20 | -1,890.4 | -4,214.8 | 4,809.3 | 4,628.0 | 181.35 | 26.520 | |
| 8,300.0 | 6,693.9 | 6,694.9 | 6,694.9 | 47.8 | 134.3 | 89.20 | -1,890.4 | -4,214.8 | 4,838.6 | 4,656.6 | 182.02 | 26.583 | |
| 8,366.1 | 6,693.5 | 6,694.5 | 6,694.5 | 49.2 | 134.3 | 89.19 | -1,890.4 | -4,214.8 | 4,898.7 | 4,715.3 | 183.43 | 26.706 | |
| 8,400.0 | 6,693.3 | 6,694.3 | 6,694.3 | 49.9 | 134.3 | 89.18 | -1,890.4 | -4,214.8 | 4,929.5 | 4,745.4 | 184.15 | 26.768 | |
| 8,464.5 | 6,692.9 | 6,693.9 | 6,693.9 | 51.4 | 134.2 | 89.17 | -1,890.4 | -4,214.8 | 4,988.4 | 4,802.8 | 185.57 | 26.881 | |
| 8,500.0 | 6,692.6 | 6,693.6 | 6,693.6 | 52.1 | 134.2 | 89.16 | -1,890.4 | -4,214.8 | 5,020.8 | 4,834.4 | 186.35 | 26.942 | |
| 8,563.0 | 6,692.2 | 6,693.2 | 6,693.2 | 53.6 | 134.2 | 89.15 | -1,890.4 | -4,214.8 | 5,078.4 | 4,890.6 | 187.78 | 27.045 | |
| 8,600.0 | 6,692.0 | 6,693.0 | 6,693.0 | 54.4 | 134.2 | 89.14 | -1,890.4 | -4,214.8 | 5,112.4 | 4,923.7 | 188.61 | 27.105 | |
| 8,661.4 | 6,691.6 | 6,692.6 | 6,692.6 | 55.8 | 134.2 | 89.13 | -1,890.4 | -4,214.8 | 5,168.7 | 4,978.7 | 190.02 | 27.200 | |
| 8,700.0 | 6,691.3 | 6,692.3 | 6,692.3 | 56.7 | 134.2 | 89.12 | -1,890.4 | -4,214.8 | 5,204.2 | 5,013.3 | 190.91 | 27.260 | |
| 8,759.8 | 6,690.9 | 6,691.9 | 6,691.9 | 58.1 | 134.2 | 89.11 | -1,890.4 | -4,214.8 | 5,259.4 | 5,067.0 | 192.32 | 27.347 | |
| 8,800.0 | 6,690.7 | 6,691.7 | 6,691.7 | 59.1 | 134.2 | 89.11 | -1,890.4 | -4,214.8 | 5,296.4 | 5,103.2 | 193.26 | 27.406 | |
| 8,858.2 | 6,690.3 | 6,691.3 | 6,691.3 | 60.5 | 134.2 | 89.10 | -1,890.4 | -4,214.8 | 5,350.3 | 5,155.6 | 194.65 | 27.487 | |
| 8,900.0 | 6,690.0 | 6,691.0 | 6,691.0 | 61.5 | 134.2 | 89.09 | -1,890.4 | -4,214.8 | 5,388.9 | 5,193.2 | 195.65 | 27.544 | |
| 8,956.7 | 6,689.7 | 6,690.7 | 6,690.7 | 62.9 | 134.2 | 89.08 | -1,890.4 | -4,214.8 | 5,441.4 | 5,244.4 | 197.02 | 27.619 | |
| 9,000.0 | 6,689.4 | 6,690.4 | 6,690.4 | 63.9 | 134.2 | 89.07 | -1,890.4 | -4,214.8 | 5,481.6 | 5,283.6 | 198.06 | 27.676 | |
| 9,055.1 | 6,689.0 | 6,690.0 | 6,690.0 | 65.3 | 134.2 | 89.06 | -1,890.4 | -4,214.8 | 5,532.8 | 5,333.4 | 199.41 | 27.746 | |
| 9,100.0 | 6,688.7 | 6,689.7 | 6,689.7 | 66.4 | 134.2 | 89.05 | -1,890.4 | -4,214.8 | 5,574.6 | 5,374.1 | 200.51 | 27.802 | |
| 9,153.5 | 6,688.4 | 6,689.4 | 6,689.4 | 67.7 | 134.2 | 89.04 | -1,890.4 | -4,214.8 | 5,624.5 | 5,422.6 | 201.84 | 27.867 | |
| 9,200.0 | 6,688.1 | 6,689.1 | 6,689.1 | 68.9 | 134.1 | 89.03 | -1,890.4 | -4,214.8 | 5,667.8 | 5,464.8 | 202.99 | 27.922 | |
| 9,251.9 | 6,687.8 | 6,688.8 | 6,688.8 | 70.2 | 134.1 | 89.02 | -1,890.4 | -4,214.8 | 5,716.3 | 5,512.0 | 204.28 | 27.982 | |
| 9,300.0 | 6,687.4 | 6,688.4 | 6,688.4 | 71.4 | 134.1 | 89.02 | -1,890.4 | -4,214.8 | 5,761.3 | 5,555.8 | 205.48 | 28.038 | |
| 9,350.4 | 6,687.1 | 6,688.1 | 6,688.1 | 72.7 | 134.1 | 89.01 | -1,890.4 | -4,214.8 | 5,808.4 | 5,601.7 | 206.75 | 28.094 | |
| 9,400.0 | 6,686.8 | 6,687.8 | 6,687.8 | 73.9 | 134.1 | 89.00 | -1,890.4 | -4,214.8 | 5,854.9 | 5,646.9 | 208.00 | 28.148 | |
| 9,448.8 | 6,686.5 | 6,687.5 | 6,687.5 | 75.2 | 134.1 | 88.99 | -1,890.4 | -4,214.8 | 5,900.7 | 5,691.5 | 209.24 | 28.200 | |
| 9,500.0 | 6,686.1 | 6,687.1 | 6,687.1 | 76.5 | 134.1 | 88.98 | -1,890.4 | -4,214.8 | 5,948.8 | 5,738.2 | 210.54 | 28.255 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MASON #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,686.8 | 6,686.8 | 77.7 | 134.1 | 88.97 | -1,890.4 | -4,214.8 | 5,993.2 | 5,781.4 | 211.75 | 28.303 | |
| 9,600.0 | 6,685.5 | 6,686.5 | 6,686.5 | 79.0 | 134.1 | 88.96 | -1,890.4 | -4,214.8 | 6,042.8 | 5,829.7 | 213.10 | 28.357 | |
| 9,645.6 | 6,685.2 | 6,686.2 | 6,686.2 | 80.2 | 134.1 | 88.95 | -1,890.4 | -4,214.8 | 6,085.9 | 5,871.6 | 214.27 | 28.402 | |
| 9,700.0 | 6,684.8 | 6,685.8 | 6,685.8 | 81.6 | 134.1 | 88.94 | -1,890.4 | -4,214.8 | 6,137.1 | 5,921.4 | 215.67 | 28.456 | |
| 9,744.1 | 6,684.6 | 6,685.6 | 6,685.6 | 82.8 | 134.1 | 88.93 | -1,890.4 | -4,214.8 | 6,178.7 | 5,961.9 | 216.81 | 28.498 | |
| 9,800.0 | 6,684.2 | 6,685.2 | 6,685.2 | 84.2 | 134.1 | 88.92 | -1,890.4 | -4,214.8 | 6,231.5 | 6,013.3 | 218.26 | 28.552 | |
| 9,842.5 | 6,683.9 | 6,684.9 | 6,684.9 | 85.3 | 134.1 | 88.92 | -1,890.4 | -4,214.8 | 6,271.7 | 6,052.4 | 219.36 | 28.591 | |
| 9,900.0 | 6,683.5 | 6,684.5 | 6,684.5 | 86.8 | 134.1 | 88.91 | -1,890.4 | -4,214.8 | 6,326.1 | 6,105.3 | 220.85 | 28.644 | |
| 9,940.9 | 6,683.3 | 6,684.3 | 6,684.3 | 87.9 | 134.1 | 88.90 | -1,890.4 | -4,214.8 | 6,364.9 | 6,143.0 | 221.92 | 28.681 | |
| 10,000.0 | 6,682.9 | 6,683.9 | 6,683.9 | 89.5 | 134.0 | 88.89 | -1,890.4 | -4,214.8 | 6,420.9 | 6,197.4 | 223.47 | 28.733 | |
| 10,039.3 | 6,682.6 | 6,683.6 | 6,683.6 | 90.5 | 134.0 | 88.88 | -1,890.4 | -4,214.8 | 6,458.2 | 6,233.7 | 224.50 | 28.767 | |
| 10,100.0 | 6,682.2 | 6,683.2 | 6,683.2 | 92.1 | 134.0 | 88.87 | -1,890.4 | -4,214.8 | 6,515.8 | 6,289.7 | 226.09 | 28.820 | |
| 10,137.8 | 6,682.0 | 6,683.0 | 6,683.0 | 93.1 | 134.0 | 88.86 | -1,890.4 | -4,214.8 | 6,551.7 | 6,324.6 | 227.08 | 28.852 | |
| 10,200.0 | 6,681.6 | 6,682.6 | 6,682.6 | 94.8 | 134.0 | 88.85 | -1,890.4 | -4,214.8 | 6,610.9 | 6,382.2 | 228.72 | 28.904 | |
| 10,236.2 | 6,681.4 | 6,682.4 | 6,682.4 | 95.7 | 134.0 | 88.84 | -1,890.4 | -4,214.8 | 6,645.3 | 6,415.7 | 229.68 | 28.934 | |
| 10,300.0 | 6,680.9 | 6,681.9 | 6,681.9 | 97.4 | 134.0 | 88.83 | -1,890.4 | -4,214.8 | 6,706.1 | 6,474.7 | 231.36 | 28.986 | |
| 10,334.6 | 6,680.7 | 6,681.7 | 6,681.7 | 98.3 | 134.0 | 88.83 | -1,890.4 | -4,214.8 | 6,739.1 | 6,506.8 | 232.28 | 29.013 | |
| 10,400.0 | 6,680.3 | 6,681.3 | 6,681.3 | 100.1 | 134.0 | 88.81 | -1,890.4 | -4,214.8 | 6,801.5 | 6,567.4 | 234.01 | 29.065 | |
| 10,433.0 | 6,680.1 | 6,681.1 | 6,681.1 | 101.0 | 134.0 | 88.81 | -1,890.4 | -4,214.8 | 6,833.0 | 6,598.1 | 234.89 | 29.091 | |
| 10,500.0 | 6,679.7 | 6,680.7 | 6,680.7 | 102.8 | 134.0 | 88.80 | -1,890.4 | -4,214.8 | 6,896.9 | 6,660.3 | 236.67 | 29.142 | |
| 10,531.5 | 6,679.4 | 6,680.4 | 6,680.4 | 103.6 | 134.0 | 88.79 | -1,890.4 | -4,214.8 | 6,927.0 | 6,689.5 | 237.50 | 29.166 | |
| 10,600.0 | 6,679.0 | 6,680.0 | 6,680.0 | 105.4 | 134.0 | 88.78 | -1,890.4 | -4,214.8 | 6,992.6 | 6,753.2 | 239.33 | 29.217 | |
| 10,629.9 | 6,678.8 | 6,679.8 | 6,679.8 | 106.2 | 134.0 | 88.77 | -1,890.4 | -4,214.8 | 7,021.2 | 6,781.0 | 240.13 | 29.239 | |
| 10,700.0 | 6,678.4 | 6,679.4 | 6,679.4 | 108.1 | 134.0 | 88.76 | -1,890.4 | -4,214.8 | 7,088.3 | 6,846.3 | 242.00 | 29.290 | |
| 10,728.3 | 6,678.2 | 6,679.2 | 6,679.2 | 108.9 | 134.0 | 88.75 | -1,890.4 | -4,214.8 | 7,115.4 | 6,872.7 | 242.76 | 29.311 | |
| 10,800.0 | 6,677.7 | 6,678.7 | 6,678.7 | 110.8 | 133.9 | 88.74 | -1,890.4 | -4,214.8 | 7,184.1 | 6,939.5 | 244.68 | 29.362 | |
| 10,826.7 | 6,677.5 | 6,678.5 | 6,678.5 | 111.5 | 133.9 | 88.74 | -1,890.4 | -4,214.8 | 7,209.8 | 6,964.4 | 245.40 | 29.380 | |
| 10,900.0 | 6,677.1 | 6,678.1 | 6,678.1 | 113.5 | 133.9 | 88.72 | -1,890.4 | -4,214.8 | 7,280.1 | 7,032.7 | 247.36 | 29.431 | |
| 10,925.2 | 6,676.9 | 6,677.9 | 6,677.9 | 114.2 | 133.9 | 88.72 | -1,890.4 | -4,214.8 | 7,304.3 | 7,056.2 | 248.04 | 29.448 | |
| 11,000.0 | 6,676.4 | 6,677.4 | 6,677.4 | 116.2 | 133.9 | 88.70 | -1,890.4 | -4,214.8 | 7,376.2 | 7,126.1 | 250.05 | 29.499 | |
| 11,023.6 | 6,676.3 | 6,677.3 | 6,677.3 | 116.8 | 133.9 | 88.70 | -1,890.4 | -4,214.8 | 7,398.8 | 7,148.2 | 250.68 | 29.515 | |
| 11,100.0 | 6,675.8 | 6,676.8 | 6,676.8 | 118.9 | 133.9 | 88.69 | -1,890.4 | -4,214.8 | 7,472.3 | 7,219.6 | 252.74 | 29.565 | |
| 11,122.0 | 6,675.6 | 6,676.6 | 6,676.6 | 119.5 | 133.9 | 88.68 | -1,890.4 | -4,214.8 | 7,493.5 | 7,240.2 | 253.33 | 29.580 | |
| 11,200.0 | 6,675.1 | 6,676.1 | 6,676.1 | 121.6 | 133.9 | 88.67 | -1,890.4 | -4,214.8 | 7,568.6 | 7,313.2 | 255.44 | 29.630 | |
| 11,220.4 | 6,675.0 | 6,676.0 | 6,676.0 | 122.2 | 133.9 | 88.66 | -1,890.4 | -4,214.8 | 7,588.3 | 7,332.3 | 255.99 | 29.643 | |
| 11,300.0 | 6,674.5 | 6,675.5 | 6,675.5 | 124.3 | 133.9 | 88.65 | -1,890.4 | -4,214.8 | 7,665.0 | 7,406.8 | 258.14 | 29.693 | |
| 11,318.9 | 6,674.3 | 6,675.3 | 6,675.3 | 124.9 | 133.9 | 88.65 | -1,890.4 | -4,214.8 | 7,683.2 | 7,424.5 | 258.65 | 29.705 | |
| 11,400.0 | 6,673.8 | 6,674.8 | 6,674.8 | 127.1 | 133.9 | 88.63 | -1,890.4 | -4,214.8 | 7,761.4 | 7,500.6 | 260.84 | 29.755 | |
| 11,417.3 | 6,673.7 | 6,674.7 | 6,674.7 | 127.5 | 133.9 | 88.63 | -1,890.4 | -4,214.8 | 7,778.1 | 7,516.8 | 261.31 | 29.765 | |
| 11,500.0 | 6,673.2 | 6,674.2 | 6,674.2 | 129.8 | 133.8 | 88.61 | -1,890.4 | -4,214.8 | 7,858.0 | 7,594.4 | 263.55 | 29.815 | |
| 11,515.7 | 6,673.1 | 6,674.1 | 6,674.1 | 130.2 | 133.8 | 88.61 | -1,890.4 | -4,214.8 | 7,873.1 | 7,609.2 | 263.98 | 29.825 | |
| 11,600.0 | 6,672.5 | 6,673.5 | 6,673.5 | 132.5 | 133.8 | 88.59 | -1,890.4 | -4,214.8 | 7,954.6 | 7,688.3 | 266.27 | 29.875 | |
| 11,614.1 | 6,672.4 | 6,673.4 | 6,673.4 | 132.9 | 133.8 | 88.59 | -1,890.4 | -4,214.8 | 7,968.3 | 7,701.6 | 266.65 | 29.883 | |
| 11,700.0 | 6,671.9 | 6,672.9 | 6,672.9 | 135.3 | 133.8 | 88.58 | -1,890.4 | -4,214.8 | 8,051.3 | 7,782.3 | 268.98 | 29.932 | |
| 11,712.6 | 6,671.8 | 6,672.8 | 6,672.8 | 135.6 | 133.8 | 88.57 | -1,890.4 | -4,214.8 | 8,063.5 | 7,794.1 | 269.32 | 29.940 | |
| 11,800.0 | 6,671.2 | 6,672.2 | 6,672.2 | 138.0 | 133.8 | 88.56 | -1,890.4 | -4,214.8 | 8,148.1 | 7,876.4 | 271.70 | 29.989 | |
| 11,811.0 | 6,671.1 | 6,672.1 | 6,672.1 | 138.3 | 133.8 | 88.56 | -1,890.4 | -4,214.8 | 8,158.7 | 7,886.7 | 272.00 | 29.995 | |
| 11,900.0 | 6,670.6 | 6,671.6 | 6,671.6 | 140.7 | 133.8 | 88.54 | -1,890.4 | -4,214.8 | 8,245.0 | 7,970.5 | 274.42 | 30.045 | |
| 11,909.4 | 6,670.5 | 6,671.5 | 6,671.5 | 141.0 | 133.8 | 88.54 | -1,890.4 | -4,214.8 | 8,254.1 | 7,979.4 | 274.68 | 30.050 | |
| 11,987.2 | 6,670.0 | 6,671.0 | 6,671.0 | 143.1 | 133.8 | 88.52 | -1,890.4 | -4,214.8 | 8,329.5 | 8,052.7 | 276.80 | 30.092 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -175.37 | -3,034.7 | -245.7 | 3,044.6 | | | | |
| 98.4 | 98.4 | 84.1 | 84.1 | 0.1 | 0.1 | -175.37 | -3,034.9 | -245.9 | 3,044.9 | 3,044.7 | 0.18 | N/A | |
| 100.0 | 100.0 | 85.4 | 85.4 | 0.1 | 0.1 | -175.37 | -3,034.9 | -245.9 | 3,044.9 | 3,044.7 | 0.18 | N/A | |
| 196.8 | 196.8 | 183.0 | 183.0 | 0.3 | 0.2 | -175.35 | -3,035.3 | -246.7 | 3,045.4 | 3,044.8 | 0.53 | 5,795.257 | |
| 200.0 | 200.0 | 186.3 | 186.2 | 0.3 | 0.2 | -175.35 | -3,035.3 | -246.7 | 3,045.4 | 3,044.8 | 0.54 | 5,670.564 | |
| 295.3 | 295.3 | 286.2 | 286.1 | 0.5 | 0.3 | -175.34 | -3,035.6 | -247.7 | 3,045.7 | 3,044.9 | 0.84 | 3,610.890 | |
| 300.0 | 300.0 | 291.1 | 291.1 | 0.5 | 0.3 | -175.33 | -3,035.7 | -247.7 | 3,045.8 | 3,044.9 | 0.86 | 3,548.425 | |
| 393.7 | 393.7 | 377.9 | 377.9 | 0.8 | 0.4 | -175.32 | -3,035.9 | -248.7 | 3,046.1 | 3,045.0 | 1.13 | 2,694.341 | |
| 400.0 | 400.0 | 383.7 | 383.7 | 0.8 | 0.4 | -175.32 | -3,035.9 | -248.8 | 3,046.2 | 3,045.0 | 1.15 | 2,651.789 | |
| 492.1 | 492.1 | 485.9 | 485.9 | 1.0 | 0.4 | -175.30 | -3,036.3 | -249.7 | 3,046.6 | 3,045.1 | 1.42 | 2,147.025 | |
| 500.0 | 500.0 | 495.0 | 495.0 | 1.0 | 0.4 | -175.30 | -3,036.3 | -249.8 | 3,046.6 | 3,045.1 | 1.44 | 2,112.497 | |
| 590.5 | 590.5 | 584.2 | 584.2 | 1.2 | 0.5 | -175.29 | -3,036.4 | -250.3 | 3,046.7 | 3,045.0 | 1.70 | 1,797.049 | |
| 600.0 | 600.0 | 593.5 | 593.4 | 1.2 | 0.5 | -175.29 | -3,036.4 | -250.3 | 3,046.7 | 3,045.0 | 1.72 | 1,769.550 | |
| 689.0 | 689.0 | 681.6 | 681.5 | 1.4 | 0.5 | -175.28 | -3,036.6 | -250.7 | 3,046.9 | 3,045.0 | 1.97 | 1,549.362 | |
| 700.0 | 700.0 | 692.5 | 692.5 | 1.4 | 0.6 | -175.28 | -3,036.6 | -250.7 | 3,047.0 | 3,045.0 | 2.00 | 1,525.865 | |
| 787.4 | 787.4 | 785.1 | 785.1 | 1.6 | 0.6 | -175.27 | -3,036.8 | -251.0 | 3,047.1 | 3,044.9 | 2.24 | 1,363.113 | |
| 800.0 | 800.0 | 798.6 | 798.6 | 1.7 | 0.6 | -175.27 | -3,036.8 | -251.1 | 3,047.1 | 3,044.9 | 2.27 | 1,342.479 | |
| 885.8 | 885.8 | 881.5 | 881.4 | 1.9 | 0.6 | -175.27 | -3,036.8 | -251.5 | 3,047.2 | 3,044.7 | 2.50 | 1,218.113 | |
| 900.0 | 900.0 | 895.1 | 895.1 | 1.9 | 0.7 | -175.26 | -3,036.8 | -251.6 | 3,047.2 | 3,044.7 | 2.54 | 1,199.763 | |
| 984.2 | 984.2 | 977.5 | 977.5 | 2.1 | 0.7 | -175.26 | -3,037.0 | -251.9 | 3,047.4 | 3,044.6 | 2.77 | 1,101.865 | |
| 1,000.0 | 1,000.0 | 992.9 | 992.9 | 2.1 | 0.7 | -175.26 | -3,037.0 | -251.9 | 3,047.4 | 3,044.6 | 2.81 | 1,085.321 | |
| 1,082.7 | 1,082.7 | 1,083.5 | 1,083.4 | 2.3 | 0.7 | -90.84 | -3,037.1 | -252.1 | 3,047.5 | 3,044.6 | 2.96 | 1,029.743 | |
| 1,100.0 | 1,100.0 | 1,102.3 | 1,102.3 | 2.3 | 0.7 | -90.85 | -3,037.1 | -252.2 | 3,047.5 | 3,044.5 | 3.00 | 1,015.351 | |
| 1,116.5 | 1,116.5 | 1,118.4 | 1,118.4 | 2.4 | 0.7 | -90.86 | -3,037.1 | -252.2 | 3,047.5 | 3,044.5 | 3.04 | 1,002.222 | |
| 1,181.1 | 1,181.0 | 1,181.1 | 1,181.1 | 2.5 | 0.8 | -90.92 | -3,037.0 | -252.4 | 3,047.6 | 3,044.4 | 3.19 | 954.116 | |
| 1,200.0 | 1,199.8 | 1,200.0 | 1,200.0 | 2.5 | 0.8 | -90.94 | -3,037.0 | -252.5 | 3,047.6 | 3,044.4 | 3.24 | 940.856 | |
| 1,279.5 | 1,279.1 | 1,277.6 | 1,277.6 | 2.7 | 0.8 | -91.05 | -3,037.0 | -252.7 | 3,047.7 | 3,044.3 | 3.44 | 886.313 | |
| 1,300.0 | 1,299.5 | 1,297.7 | 1,297.6 | 2.8 | 0.8 | -91.09 | -3,037.0 | -252.7 | 3,047.8 | 3,044.3 | 3.49 | 873.277 | |
| 1,377.9 | 1,376.9 | 1,381.9 | 1,381.8 | 3.0 | 0.8 | -91.27 | -3,037.0 | -252.6 | 3,047.9 | 3,044.3 | 3.68 | 827.998 | |
| 1,400.0 | 1,398.7 | 1,405.1 | 1,405.1 | 3.0 | 0.8 | -91.33 | -3,037.0 | -252.6 | 3,048.0 | 3,044.2 | 3.74 | 815.789 | |
| 1,476.4 | 1,474.2 | 1,479.3 | 1,479.3 | 3.2 | 0.8 | -91.55 | -3,036.8 | -252.4 | 3,048.1 | 3,044.1 | 3.96 | 768.778 | ES |
| 1,500.0 | 1,497.5 | 1,502.2 | 1,502.2 | 3.3 | 0.8 | -91.62 | -3,036.8 | -252.4 | 3,048.2 | 3,044.2 | 4.04 | 755.327 | |
| 1,574.8 | 1,571.0 | 1,573.1 | 1,573.1 | 3.5 | 0.8 | -91.86 | -3,036.7 | -252.3 | 3,048.5 | 3,044.2 | 4.29 | 710.978 | |
| 1,600.0 | 1,595.6 | 1,596.9 | 1,596.9 | 3.6 | 0.8 | -91.95 | -3,036.7 | -252.2 | 3,048.7 | 3,044.3 | 4.37 | 697.193 | |
| 1,673.2 | 1,667.0 | 1,663.6 | 1,663.6 | 3.9 | 0.8 | -92.22 | -3,036.7 | -252.0 | 3,049.3 | 3,044.7 | 4.66 | 654.506 | |
| 1,700.0 | 1,693.1 | 1,687.9 | 1,687.9 | 4.0 | 0.8 | -92.32 | -3,036.8 | -251.9 | 3,049.6 | 3,044.9 | 4.76 | 640.182 | |
| 1,771.6 | 1,762.4 | 1,758.0 | 1,757.9 | 4.3 | 0.9 | -92.64 | -3,036.9 | -251.7 | 3,050.6 | 3,045.5 | 5.09 | 599.405 | |
| 1,800.0 | 1,789.6 | 1,786.1 | 1,786.0 | 4.4 | 0.9 | -92.78 | -3,037.0 | -251.6 | 3,051.0 | 3,045.8 | 5.22 | 584.653 | |
| 1,870.1 | 1,856.8 | 1,851.5 | 1,851.5 | 4.7 | 0.9 | -93.11 | -3,037.0 | -251.5 | 3,052.2 | 3,046.6 | 5.58 | 547.100 | |
| 1,900.0 | 1,885.3 | 1,879.0 | 1,878.9 | 4.9 | 0.9 | -93.25 | -3,037.1 | -251.5 | 3,052.7 | 3,047.0 | 5.73 | 532.572 | |
| 1,968.5 | 1,950.2 | 1,941.4 | 1,941.4 | 5.3 | 0.9 | -93.60 | -3,037.3 | -251.6 | 3,054.3 | 3,048.2 | 6.14 | 497.711 | |
| 2,000.0 | 1,979.8 | 1,970.0 | 1,969.9 | 5.5 | 0.9 | -93.76 | -3,037.3 | -251.6 | 3,055.1 | 3,048.8 | 6.32 | 483.125 | |
| 2,044.9 | 2,021.9 | 2,011.6 | 2,011.5 | 5.7 | 0.9 | -94.00 | -3,037.5 | -251.6 | 3,056.4 | 3,049.8 | 6.61 | 462.072 | |
| 2,066.9 | 2,042.5 | 2,033.3 | 2,033.3 | 5.9 | 0.9 | -94.15 | -3,037.6 | -251.7 | 3,057.1 | 3,050.3 | 6.76 | 452.116 | |
| 2,100.0 | 2,073.4 | 2,066.1 | 2,066.0 | 6.1 | 0.9 | -94.37 | -3,037.6 | -251.7 | 3,058.1 | 3,051.2 | 6.98 | 437.939 | |
| 2,165.3 | 2,134.4 | 2,129.6 | 2,129.6 | 6.5 | 1.0 | -94.79 | -3,037.8 | -252.0 | 3,060.3 | 3,052.8 | 7.43 | 411.718 | |
| 2,200.0 | 2,166.8 | 2,162.6 | 2,162.6 | 6.8 | 1.0 | -95.00 | -3,037.8 | -252.2 | 3,061.4 | 3,053.8 | 7.67 | 399.074 | |
| 2,263.8 | 2,226.4 | 2,222.7 | 2,222.6 | 7.2 | 1.0 | -95.39 | -3,037.9 | -252.6 | 3,063.7 | 3,055.6 | 8.12 | 377.213 | |
| 2,300.0 | 2,260.2 | 2,256.2 | 2,256.1 | 7.4 | 1.0 | -95.61 | -3,037.9 | -252.8 | 3,065.1 | 3,056.7 | 8.38 | 365.876 | |
| 2,362.2 | 2,318.3 | 2,313.2 | 2,313.2 | 7.9 | 1.0 | -95.98 | -3,038.0 | -253.3 | 3,067.6 | 3,058.8 | 8.82 | 347.620 | |
| 2,400.0 | 2,353.6 | 2,346.9 | 2,346.8 | 8.1 | 1.0 | -96.20 | -3,038.1 | -253.6 | 3,069.2 | 3,060.1 | 9.10 | 337.429 | |
| 2,460.6 | 2,410.3 | 2,401.0 | 2,400.9 | 8.6 | 1.0 | -96.55 | -3,038.2 | -254.0 | 3,072.0 | 3,062.4 | 9.54 | 322.099 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,438.2 | 2,438.1 | 8.9 | 1.1 | -96.79 | -3,038.4 | -254.4 | 3,073.8 | 3,064.0 | 9.82 | 312.888 | |
| 2,559.0 | 2,502.2 | 2,494.0 | 2,493.9 | 9.3 | 1.1 | -97.15 | -3,038.5 | -254.9 | 3,076.7 | 3,066.5 | 10.26 | 299.916 | |
| 2,600.0 | 2,540.5 | 2,531.0 | 2,531.0 | 9.6 | 1.1 | -97.39 | -3,038.6 | -255.2 | 3,078.8 | 3,068.3 | 10.56 | 291.577 | |
| 2,657.5 | 2,594.2 | 2,582.5 | 2,582.5 | 10.0 | 1.1 | -97.72 | -3,038.8 | -255.6 | 3,081.9 | 3,070.9 | 10.98 | 280.571 | |
| 2,700.0 | 2,633.9 | 2,622.1 | 2,622.0 | 10.3 | 1.1 | -97.98 | -3,039.0 | -255.9 | 3,084.3 | 3,073.0 | 11.30 | 272.976 | |
| 2,755.9 | 2,686.1 | 2,675.8 | 2,675.8 | 10.7 | 1.1 | -98.32 | -3,039.2 | -256.4 | 3,087.6 | 3,075.8 | 11.71 | 263.559 | |
| 2,800.0 | 2,727.3 | 2,717.1 | 2,717.0 | 11.0 | 1.2 | -98.59 | -3,039.4 | -256.7 | 3,090.2 | 3,078.1 | 12.04 | 256.613 | |
| 2,854.3 | 2,778.1 | 2,766.1 | 2,766.0 | 11.4 | 1.2 | -98.90 | -3,039.6 | -257.2 | 3,093.5 | 3,081.1 | 12.45 | 248.541 | |
| 2,900.0 | 2,820.7 | 2,807.0 | 2,806.9 | 11.8 | 1.2 | -99.16 | -3,039.8 | -257.7 | 3,096.5 | 3,083.7 | 12.79 | 242.169 | |
| 2,952.7 | 2,870.0 | 2,852.5 | 2,852.4 | 12.2 | 1.2 | -99.44 | -3,040.1 | -258.2 | 3,100.0 | 3,086.8 | 13.18 | 235.205 | |
| 3,000.0 | 2,914.2 | 2,893.3 | 2,893.2 | 12.5 | 1.2 | -99.70 | -3,040.4 | -258.7 | 3,103.3 | 3,089.8 | 13.53 | 229.331 | |
| 3,051.2 | 2,962.0 | 2,938.7 | 2,938.7 | 12.9 | 1.2 | -99.99 | -3,040.7 | -259.2 | 3,107.0 | 3,093.1 | 13.91 | 223.292 | |
| 3,100.0 | 3,007.6 | 2,982.3 | 2,982.2 | 13.3 | 1.2 | -100.26 | -3,041.1 | -259.7 | 3,110.7 | 3,096.4 | 14.28 | 217.850 | |
| 3,149.6 | 3,053.9 | 3,025.9 | 3,025.8 | 13.6 | 1.3 | -100.53 | -3,041.6 | -260.2 | 3,114.6 | 3,099.9 | 14.65 | 212.598 | |
| 3,200.0 | 3,101.0 | 3,069.8 | 3,069.7 | 14.0 | 1.3 | -100.81 | -3,042.0 | -260.7 | 3,118.6 | 3,103.6 | 15.03 | 207.545 | |
| 3,248.0 | 3,145.9 | 3,111.6 | 3,111.5 | 14.4 | 1.3 | -101.07 | -3,042.5 | -261.2 | 3,122.6 | 3,107.3 | 15.39 | 202.962 | |
| 3,300.0 | 3,194.4 | 3,156.6 | 3,156.5 | 14.8 | 1.3 | -101.35 | -3,043.1 | -261.7 | 3,127.1 | 3,111.4 | 15.77 | 198.254 | |
| 3,346.4 | 3,237.8 | 3,200.0 | 3,199.9 | 15.1 | 1.3 | -101.62 | -3,043.7 | -262.2 | 3,131.3 | 3,115.2 | 16.12 | 194.241 | |
| 3,400.0 | 3,287.8 | 3,246.2 | 3,246.1 | 15.5 | 1.3 | -101.90 | -3,044.4 | -262.7 | 3,136.2 | 3,119.7 | 16.52 | 189.845 | |
| 3,444.9 | 3,329.8 | 3,287.8 | 3,287.7 | 15.9 | 1.3 | -102.16 | -3,045.0 | -263.3 | 3,140.4 | 3,123.5 | 16.85 | 186.326 | |
| 3,500.0 | 3,381.3 | 3,334.7 | 3,334.5 | 16.3 | 1.4 | -102.45 | -3,045.8 | -263.9 | 3,145.7 | 3,128.4 | 17.26 | 182.205 | |
| 3,543.3 | 3,421.7 | 3,370.4 | 3,370.3 | 16.6 | 1.4 | -102.66 | -3,046.4 | -264.4 | 3,150.0 | 3,132.4 | 17.59 | 179.112 | |
| 3,600.0 | 3,474.7 | 3,416.6 | 3,416.4 | 17.0 | 1.4 | -102.94 | -3,047.3 | -265.1 | 3,155.8 | 3,137.8 | 18.01 | 175.244 | |
| 3,641.7 | 3,513.7 | 3,449.6 | 3,449.5 | 17.3 | 1.4 | -103.14 | -3,048.1 | -265.6 | 3,160.2 | 3,141.9 | 18.32 | 172.518 | |
| 3,700.0 | 3,568.1 | 3,500.0 | 3,499.8 | 17.8 | 1.4 | -103.44 | -3,049.3 | -266.4 | 3,166.7 | 3,147.9 | 18.75 | 168.880 | |
| 3,740.1 | 3,605.6 | 3,529.2 | 3,529.0 | 18.1 | 1.4 | -103.62 | -3,050.1 | -266.9 | 3,171.2 | 3,152.2 | 19.05 | 166.477 | |
| 3,800.0 | 3,661.5 | 3,579.3 | 3,579.1 | 18.5 | 1.4 | -103.91 | -3,051.5 | -267.7 | 3,178.2 | 3,158.7 | 19.49 | 163.049 | |
| 3,838.6 | 3,697.6 | 3,612.2 | 3,612.0 | 18.8 | 1.5 | -104.11 | -3,052.5 | -268.2 | 3,182.9 | 3,163.1 | 19.78 | 160.929 | |
| 3,900.0 | 3,754.9 | 3,666.5 | 3,666.2 | 19.3 | 1.5 | -104.43 | -3,054.1 | -269.0 | 3,190.4 | 3,170.2 | 20.23 | 157.695 | |
| 3,937.0 | 3,789.5 | 3,700.0 | 3,699.7 | 19.6 | 1.5 | -104.63 | -3,055.2 | -269.4 | 3,195.0 | 3,174.5 | 20.50 | 155.824 | |
| 4,000.0 | 3,848.4 | 3,766.1 | 3,765.7 | 20.1 | 1.5 | -105.02 | -3,057.1 | -270.3 | 3,203.0 | 3,182.0 | 20.97 | 152.772 | |
| 4,035.4 | 3,881.5 | 3,803.9 | 3,803.6 | 20.3 | 1.5 | -105.24 | -3,058.2 | -270.8 | 3,207.4 | 3,186.2 | 21.22 | 151.119 | |
| 4,100.0 | 3,941.8 | 3,875.0 | 3,874.6 | 20.8 | 1.5 | -105.66 | -3,060.0 | -271.7 | 3,215.5 | 3,193.8 | 21.69 | 148.226 | |
| 4,133.8 | 3,973.4 | 3,914.6 | 3,914.2 | 21.1 | 1.6 | -105.89 | -3,060.9 | -272.3 | 3,219.7 | 3,197.8 | 21.94 | 146.767 | |
| 4,200.0 | 4,035.2 | 4,002.0 | 4,001.5 | 21.6 | 1.6 | -106.40 | -3,062.6 | -273.8 | 3,227.7 | 3,205.3 | 22.41 | 144.032 | |
| 4,232.3 | 4,065.4 | 4,044.4 | 4,044.0 | 21.8 | 1.6 | -106.64 | -3,063.1 | -274.7 | 3,231.5 | 3,208.8 | 22.64 | 142.748 | |
| 4,300.0 | 4,128.6 | 4,132.0 | 4,131.5 | 22.3 | 1.6 | -107.14 | -3,063.8 | -276.7 | 3,239.1 | 3,216.0 | 23.11 | 140.141 | |
| 4,330.7 | 4,157.3 | 4,170.5 | 4,170.1 | 22.6 | 1.6 | -107.36 | -3,063.9 | -277.6 | 3,242.5 | 3,219.2 | 23.33 | 138.997 | |
| 4,400.0 | 4,222.0 | 4,249.7 | 4,249.2 | 23.1 | 1.7 | -107.80 | -3,063.9 | -279.6 | 3,250.0 | 3,226.2 | 23.81 | 136.483 | |
| 4,429.1 | 4,249.3 | 4,281.3 | 4,280.7 | 23.3 | 1.7 | -107.98 | -3,063.8 | -280.5 | 3,253.1 | 3,229.1 | 24.02 | 135.456 | |
| 4,500.0 | 4,315.5 | 4,357.4 | 4,356.9 | 23.9 | 1.7 | -108.40 | -3,063.4 | -282.6 | 3,260.6 | 3,236.1 | 24.51 | 133.036 | |
| 4,527.5 | 4,341.2 | 4,386.9 | 4,386.4 | 24.1 | 1.7 | -108.57 | -3,063.2 | -283.4 | 3,263.6 | 3,238.9 | 24.70 | 132.124 | |
| 4,600.0 | 4,408.9 | 4,464.5 | 4,463.9 | 24.6 | 1.7 | -109.00 | -3,062.5 | -285.5 | 3,271.2 | 3,246.0 | 25.20 | 129.804 | |
| 4,626.0 | 4,433.2 | 4,492.3 | 4,491.7 | 24.8 | 1.7 | -109.15 | -3,062.2 | -286.3 | 3,274.0 | 3,248.6 | 25.38 | 128.996 | |
| 4,700.0 | 4,502.3 | 4,578.2 | 4,577.5 | 25.4 | 1.7 | -109.63 | -3,061.0 | -288.5 | 3,281.7 | 3,255.8 | 25.88 | 126.784 | |
| 4,724.4 | 4,525.1 | 4,605.3 | 4,604.7 | 25.6 | 1.7 | -109.78 | -3,060.5 | -289.0 | 3,284.2 | 3,258.2 | 26.05 | 126.075 | |
| 4,800.0 | 4,595.7 | 4,675.8 | 4,675.2 | 26.2 | 1.8 | -110.18 | -3,059.1 | -290.5 | 3,292.1 | 3,265.5 | 26.57 | 123.911 | |
| 4,822.8 | 4,617.1 | 4,697.1 | 4,696.5 | 26.3 | 1.8 | -110.30 | -3,058.7 | -290.9 | 3,294.5 | 3,267.7 | 26.72 | 123.277 | |
| 4,900.0 | 4,689.2 | 4,756.0 | 4,755.3 | 26.9 | 1.8 | -110.63 | -3,057.6 | -291.9 | 3,302.9 | 3,275.6 | 27.26 | 121.170 | |
| 4,921.2 | 4,709.0 | 4,772.1 | 4,771.4 | 27.1 | 1.8 | -110.72 | -3,057.3 | -292.1 | 3,305.3 | 3,277.9 | 27.40 | 120.609 | |
| 5,000.0 | 4,782.6 | 4,835.4 | 4,834.6 | 27.7 | 1.8 | -111.08 | -3,056.4 | -292.9 | 3,314.5 | 3,286.6 | 27.95 | 118.603 | |
| 5,019.7 | 4,801.0 | 4,852.0 | 4,851.3 | 27.8 | 1.8 | -111.18 | -3,056.2 | -293.0 | 3,316.9 | 3,288.8 | 28.08 | 118.119 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,920.2 | 4,919.5 | 28.4 | 1.8 | -111.57 | -3,055.4 | -293.7 | 3,326.7 | 3,298.1 | 28.63 | 116.205 | |
| 5,118.1 | 4,892.9 | 4,935.6 | 4,934.9 | 28.6 | 1.8 | -111.65 | -3,055.2 | -293.8 | 3,329.0 | 3,300.3 | 28.75 | 115.787 | |
| 5,159.9 | 4,932.0 | 4,971.2 | 4,970.5 | 28.9 | 1.8 | -111.86 | -3,054.9 | -294.1 | 3,334.4 | 3,305.3 | 29.04 | 114.838 | |
| 5,200.0 | 4,969.5 | 5,000.0 | 4,999.3 | 29.2 | 1.8 | -112.11 | -3,054.6 | -294.3 | 3,339.5 | 3,310.2 | 29.25 | 114.155 | |
| 5,216.5 | 4,985.1 | 5,018.9 | 5,018.2 | 29.3 | 1.8 | -112.25 | -3,054.5 | -294.5 | 3,341.5 | 3,312.2 | 29.32 | 113.961 | |
| 5,300.0 | 5,064.0 | 5,088.3 | 5,087.6 | 29.7 | 1.8 | -112.79 | -3,054.0 | -294.9 | 3,351.7 | 3,322.0 | 29.68 | 112.938 | |
| 5,314.9 | 5,078.2 | 5,100.9 | 5,100.2 | 29.8 | 1.8 | -112.89 | -3,053.9 | -295.0 | 3,353.4 | 3,323.7 | 29.73 | 112.782 | |
| 5,400.0 | 5,159.6 | 5,186.6 | 5,185.8 | 30.2 | 1.8 | -113.45 | -3,053.4 | -295.4 | 3,362.9 | 3,332.9 | 30.05 | 111.917 | |
| 5,413.4 | 5,172.4 | 5,200.1 | 5,199.3 | 30.3 | 1.9 | -113.54 | -3,053.3 | -295.5 | 3,364.3 | 3,334.2 | 30.09 | 111.803 | |
| 5,500.0 | 5,256.1 | 5,285.6 | 5,284.9 | 30.7 | 1.9 | -114.04 | -3,052.7 | -296.0 | 3,372.9 | 3,342.5 | 30.37 | 111.044 | |
| 5,511.8 | 5,267.6 | 5,297.3 | 5,296.6 | 30.7 | 1.9 | -114.10 | -3,052.7 | -296.1 | 3,374.0 | 3,343.5 | 30.41 | 110.959 | |
| 5,600.0 | 5,353.5 | 5,384.4 | 5,383.7 | 31.1 | 1.9 | -114.53 | -3,052.1 | -296.6 | 3,381.5 | 3,350.8 | 30.66 | 110.296 | |
| 5,610.2 | 5,363.5 | 5,394.6 | 5,393.8 | 31.1 | 1.9 | -114.58 | -3,052.0 | -296.7 | 3,382.3 | 3,351.6 | 30.68 | 110.233 | |
| 5,700.0 | 5,451.6 | 5,516.4 | 5,515.6 | 31.4 | 1.9 | -115.04 | -3,050.6 | -297.9 | 3,388.3 | 3,357.4 | 30.89 | 109.672 | |
| 5,708.6 | 5,460.2 | 5,525.9 | 5,525.2 | 31.4 | 1.9 | -115.07 | -3,050.4 | -298.0 | 3,388.8 | 3,357.9 | 30.91 | 109.625 | |
| 5,800.0 | 5,550.4 | 5,623.6 | 5,622.8 | 31.7 | 1.9 | -115.38 | -3,048.6 | -298.9 | 3,393.1 | 3,361.9 | 31.10 | 109.084 | |
| 5,807.1 | 5,557.4 | 5,630.5 | 5,629.7 | 31.7 | 1.9 | -115.40 | -3,048.5 | -299.0 | 3,393.3 | 3,362.2 | 31.12 | 109.050 | |
| 5,900.0 | 5,649.6 | 5,719.7 | 5,718.9 | 31.9 | 1.9 | -115.62 | -3,046.7 | -299.6 | 3,396.3 | 3,365.0 | 31.29 | 108.560 | |
| 5,905.5 | 5,655.1 | 5,724.9 | 5,724.1 | 31.9 | 1.9 | -115.63 | -3,046.6 | -299.6 | 3,396.4 | 3,365.1 | 31.29 | 108.537 | |
| 6,000.0 | 5,749.2 | 5,813.8 | 5,813.0 | 32.1 | 2.0 | -115.78 | -3,045.0 | -300.1 | 3,398.2 | 3,366.8 | 31.43 | 108.103 | |
| 6,003.9 | 5,753.1 | 5,817.6 | 5,816.8 | 32.1 | 2.0 | -115.79 | -3,044.9 | -300.2 | 3,398.2 | 3,366.8 | 31.44 | 108.089 | |
| 6,100.0 | 5,849.1 | 5,909.4 | 5,908.6 | 32.3 | 2.0 | -115.88 | -3,043.2 | -300.4 | 3,398.7 | 3,367.2 | 31.56 | 107.705 | |
| 6,102.3 | 5,851.4 | 5,911.8 | 5,910.9 | 32.3 | 2.0 | -115.88 | -3,043.2 | -300.4 | 3,398.7 | 3,367.2 | 31.56 | 107.698 | |
| 6,200.8 | 5,949.8 | 6,009.8 | 6,009.0 | 32.4 | 2.0 | -115.90 | -3,041.4 | -300.6 | 3,397.8 | 3,366.2 | 31.65 | 107.343 | |
| 6,204.9 | 5,953.9 | 6,014.4 | 6,013.6 | 32.4 | 2.0 | 159.67 | -3,041.4 | -300.6 | 3,397.8 | 3,375.7 | 22.02 | 154.317 | |
| 6,234.9 | 5,983.9 | 6,048.2 | 6,047.3 | 32.4 | 2.0 | 159.66 | -3,040.7 | -300.7 | 3,397.2 | 3,375.2 | 22.06 | 154.011 | |
| 6,250.0 | 5,999.0 | 6,065.2 | 6,064.3 | 32.4 | 2.0 | 69.69 | -3,040.4 | -300.7 | 3,396.9 | 3,365.2 | 31.70 | 107.147 | |
| 6,299.2 | 6,048.2 | 6,119.2 | 6,118.3 | 32.4 | 2.0 | 69.88 | -3,039.3 | -300.8 | 3,395.0 | 3,363.2 | 31.74 | 106.958 | |
| 6,300.0 | 6,048.9 | 6,120.0 | 6,119.1 | 32.4 | 2.0 | 69.88 | -3,039.2 | -300.8 | 3,394.9 | 3,363.2 | 31.74 | 106.954 | |
| 6,350.0 | 6,098.5 | 6,172.3 | 6,171.4 | 32.4 | 2.0 | 70.22 | -3,038.1 | -300.8 | 3,391.7 | 3,359.9 | 31.78 | 106.713 | |
| 6,397.6 | 6,145.3 | 6,220.6 | 6,219.7 | 32.3 | 2.0 | 70.68 | -3,037.0 | -300.8 | 3,387.5 | 3,355.7 | 31.83 | 106.438 | |
| 6,400.0 | 6,147.6 | 6,223.0 | 6,222.1 | 32.3 | 2.0 | 70.71 | -3,036.9 | -300.8 | 3,387.3 | 3,355.4 | 31.83 | 106.421 | |
| 6,450.0 | 6,195.8 | 6,271.6 | 6,270.7 | 32.2 | 2.0 | 71.33 | -3,035.7 | -300.7 | 3,381.7 | 3,349.9 | 31.88 | 106.083 | |
| 6,496.0 | 6,239.3 | 6,318.0 | 6,317.1 | 32.1 | 2.0 | 72.03 | -3,034.6 | -300.6 | 3,375.7 | 3,343.8 | 31.93 | 105.725 | |
| 6,500.0 | 6,243.0 | 6,322.3 | 6,321.4 | 32.1 | 2.0 | 72.10 | -3,034.5 | -300.6 | 3,375.1 | 3,343.2 | 31.93 | 105.689 | |
| 6,550.0 | 6,289.0 | 6,376.2 | 6,375.2 | 32.0 | 2.0 | 73.03 | -3,033.0 | -300.5 | 3,367.4 | 3,335.4 | 32.00 | 105.232 | |
| 6,594.5 | 6,328.6 | 6,418.0 | 6,417.0 | 31.8 | 2.0 | 73.93 | -3,031.9 | -300.4 | 3,359.8 | 3,327.7 | 32.05 | 104.815 | |
| 6,600.0 | 6,333.4 | 6,422.5 | 6,421.5 | 31.8 | 2.0 | 74.04 | -3,031.7 | -300.4 | 3,358.8 | 3,326.7 | 32.06 | 104.763 | |
| 6,650.0 | 6,376.2 | 6,462.3 | 6,461.3 | 31.7 | 2.0 | 75.13 | -3,030.7 | -300.5 | 3,349.4 | 3,317.3 | 32.11 | 104.297 | |
| 6,692.9 | 6,411.3 | 6,494.8 | 6,493.8 | 31.6 | 2.0 | 76.12 | -3,029.9 | -300.6 | 3,340.8 | 3,308.6 | 32.16 | 103.887 | |
| 6,700.0 | 6,417.0 | 6,500.0 | 6,499.0 | 31.5 | 2.0 | 76.29 | -3,029.7 | -300.7 | 3,339.3 | 3,307.1 | 32.16 | 103.820 | |
| 6,750.0 | 6,455.7 | 6,522.4 | 6,521.4 | 31.4 | 2.0 | 77.37 | -3,029.2 | -300.8 | 3,328.8 | 3,296.6 | 32.20 | 103.391 | |
| 6,791.3 | 6,486.0 | 6,540.0 | 6,539.0 | 31.3 | 2.0 | 78.29 | -3,028.9 | -300.9 | 3,319.9 | 3,287.7 | 32.23 | 103.013 | |
| 6,800.0 | 6,492.2 | 6,543.6 | 6,542.6 | 31.3 | 2.0 | 78.48 | -3,028.9 | -300.9 | 3,318.0 | 3,285.8 | 32.23 | 102.937 | |
| 6,850.0 | 6,526.1 | 6,563.3 | 6,562.3 | 31.2 | 2.0 | 79.62 | -3,028.6 | -300.9 | 3,307.0 | 3,274.8 | 32.28 | 102.447 | |
| 6,889.7 | 6,551.2 | 6,577.9 | 6,576.9 | 31.2 | 2.0 | 80.53 | -3,028.5 | -300.9 | 3,298.3 | 3,265.9 | 32.33 | 102.013 | |
| 6,900.0 | 6,557.4 | 6,600.0 | 6,599.0 | 31.2 | 2.0 | 81.02 | -3,028.4 | -301.0 | 3,296.1 | 3,263.7 | 32.36 | 101.849 | |
| 6,950.0 | 6,586.0 | 6,600.0 | 6,599.0 | 31.1 | 2.0 | 81.92 | -3,028.4 | -301.0 | 3,285.0 | 3,252.5 | 32.43 | 101.300 | |
| 6,988.2 | 6,605.8 | 6,612.7 | 6,611.7 | 31.2 | 2.0 | 82.79 | -3,028.3 | -300.9 | 3,276.6 | 3,244.1 | 32.51 | 100.779 | |
| 7,000.0 | 6,611.5 | 6,617.0 | 6,616.0 | 31.2 | 2.0 | 83.07 | -3,028.3 | -300.9 | 3,274.0 | 3,241.5 | 32.54 | 100.623 | |
| 7,050.0 | 6,634.1 | 6,634.1 | 6,633.0 | 31.2 | 2.0 | 84.22 | -3,028.3 | -300.9 | 3,263.3 | 3,230.6 | 32.68 | 99.853 | |
| 7,086.6 | 6,648.6 | 6,645.0 | 6,644.0 | 31.3 | 2.0 | 85.02 | -3,028.3 | -300.9 | 3,255.6 | 3,222.8 | 32.81 | 99.212 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,648.7 | 6,647.7 | 31.4 | 2.0 | 85.31 | -3,028.3 | -300.9 | 3,252.8 | 3,219.9 | 32.86 | 98.985 | |
| 7,150.0 | 6,669.5 | 6,660.9 | 6,659.9 | 31.6 | 2.0 | 86.34 | -3,028.4 | -300.9 | 3,242.7 | 3,209.6 | 33.08 | 98.015 | |
| 7,185.0 | 6,678.8 | 6,668.0 | 6,667.0 | 31.7 | 2.0 | 87.02 | -3,028.4 | -300.9 | 3,235.9 | 3,202.7 | 33.27 | 97.259 | |
| 7,200.0 | 6,682.3 | 6,670.6 | 6,669.6 | 31.8 | 2.0 | 87.29 | -3,028.4 | -300.9 | 3,233.1 | 3,199.8 | 33.35 | 96.944 | |
| 7,250.0 | 6,691.6 | 6,677.8 | 6,676.8 | 32.1 | 2.0 | 88.16 | -3,028.4 | -300.8 | 3,224.1 | 3,190.4 | 33.66 | 95.781 | |
| 7,283.4 | 6,696.0 | 6,681.1 | 6,680.1 | 32.3 | 2.0 | 88.68 | -3,028.4 | -300.8 | 3,218.3 | 3,184.4 | 33.90 | 94.943 | |
| 7,300.0 | 6,697.5 | 6,682.4 | 6,681.3 | 32.4 | 2.0 | 88.92 | -3,028.4 | -300.8 | 3,215.6 | 3,181.6 | 34.01 | 94.538 | |
| 7,350.0 | 6,699.9 | 6,684.3 | 6,683.3 | 32.8 | 2.0 | 89.58 | -3,028.4 | -300.8 | 3,207.9 | 3,173.5 | 34.41 | 93.236 | |
| 7,364.4 | 6,700.0 | 6,684.3 | 6,683.3 | 32.9 | 2.0 | 89.75 | -3,028.4 | -300.8 | 3,205.8 | 3,171.3 | 34.53 | 92.853 | |
| 7,381.9 | 6,699.9 | 6,684.3 | 6,683.3 | 33.1 | 2.0 | 89.75 | -3,028.4 | -300.8 | 3,203.3 | 3,168.7 | 34.68 | 92.375 | |
| 7,400.0 | 6,699.8 | 6,684.2 | 6,683.2 | 33.2 | 2.0 | 89.75 | -3,028.4 | -300.8 | 3,200.9 | 3,166.0 | 34.84 | 91.887 | |
| 7,480.3 | 6,699.2 | 6,684.0 | 6,683.0 | 34.0 | 2.0 | 89.75 | -3,028.4 | -300.8 | 3,191.2 | 3,155.6 | 35.65 | 89.524 | |
| 7,500.0 | 6,699.1 | 6,683.9 | 6,682.9 | 34.2 | 2.0 | 89.75 | -3,028.4 | -300.8 | 3,189.2 | 3,153.3 | 35.85 | 88.969 | |
| 7,578.7 | 6,698.6 | 6,683.7 | 6,682.7 | 35.2 | 2.0 | 89.74 | -3,028.4 | -300.8 | 3,182.1 | 3,145.3 | 36.79 | 86.483 | |
| 7,600.0 | 6,698.5 | 6,683.6 | 6,682.6 | 35.4 | 2.0 | 89.74 | -3,028.4 | -300.8 | 3,180.6 | 3,143.5 | 37.05 | 85.842 | |
| 7,677.1 | 6,698.0 | 6,683.4 | 6,682.3 | 36.5 | 2.0 | 89.74 | -3,028.4 | -300.8 | 3,176.1 | 3,138.0 | 38.12 | 83.324 | |
| 7,700.0 | 6,697.8 | 6,683.3 | 6,682.3 | 36.8 | 2.0 | 89.73 | -3,028.4 | -300.8 | 3,175.1 | 3,136.7 | 38.43 | 82.615 | |
| 7,775.6 | 6,697.3 | 6,683.0 | 6,682.0 | 38.0 | 2.0 | 89.73 | -3,028.4 | -300.8 | 3,173.0 | 3,133.4 | 39.59 | 80.138 | |
| 7,800.0 | 6,697.2 | 6,683.0 | 6,682.0 | 38.3 | 2.0 | 89.73 | -3,028.4 | -300.8 | 3,172.8 | 3,132.8 | 39.97 | 79.378 | |
| 7,824.0 | 6,697.0 | 6,682.9 | 6,681.9 | 38.7 | 2.0 | 89.73 | -3,028.4 | -300.8 | 3,172.7 | 3,132.3 | 40.37 | 78.585 | |
| 7,874.0 | 6,696.7 | 6,682.7 | 6,681.7 | 39.6 | 2.0 | 89.72 | -3,028.4 | -300.8 | 3,173.1 | 3,131.9 | 41.21 | 76.996 | |
| 7,900.0 | 6,696.5 | 6,682.7 | 6,681.6 | 40.0 | 2.0 | 89.72 | -3,028.4 | -300.8 | 3,173.6 | 3,131.9 | 41.65 | 76.202 | |
| 7,972.4 | 6,696.1 | 6,682.4 | 6,681.4 | 41.3 | 2.0 | 89.72 | -3,028.4 | -300.8 | 3,176.1 | 3,133.2 | 42.95 | 73.951 | |
| 8,000.0 | 6,695.9 | 6,682.3 | 6,681.3 | 41.8 | 2.0 | 89.72 | -3,028.4 | -300.8 | 3,177.6 | 3,134.1 | 43.45 | 73.139 | |
| 8,070.8 | 6,695.4 | 6,682.1 | 6,681.1 | 43.1 | 2.0 | 89.71 | -3,028.4 | -300.8 | 3,182.3 | 3,137.5 | 44.80 | 71.040 | |
| 8,100.0 | 6,695.2 | 6,682.0 | 6,681.0 | 43.7 | 2.0 | 89.71 | -3,028.4 | -300.8 | 3,184.7 | 3,139.3 | 45.35 | 70.223 | |
| 8,169.3 | 6,694.8 | 6,681.8 | 6,680.8 | 45.1 | 2.0 | 89.71 | -3,028.4 | -300.8 | 3,191.4 | 3,144.7 | 46.74 | 68.287 | |
| 8,200.0 | 6,694.6 | 6,681.7 | 6,680.7 | 45.7 | 2.0 | 89.70 | -3,028.4 | -300.8 | 3,194.9 | 3,147.5 | 47.35 | 67.474 | |
| 8,267.7 | 6,694.1 | 6,681.5 | 6,680.5 | 47.1 | 2.0 | 89.70 | -3,028.4 | -300.8 | 3,203.6 | 3,154.8 | 48.76 | 65.703 | |
| 8,300.0 | 6,693.9 | 6,681.4 | 6,680.4 | 47.8 | 2.0 | 89.70 | -3,028.4 | -300.8 | 3,208.2 | 3,158.8 | 49.43 | 64.904 | |
| 8,366.1 | 6,693.5 | 6,681.2 | 6,680.1 | 49.2 | 2.0 | 89.70 | -3,028.4 | -300.8 | 3,218.7 | 3,167.8 | 50.85 | 63.293 | |
| 8,400.0 | 6,693.3 | 6,681.0 | 6,680.0 | 49.9 | 2.0 | 89.69 | -3,028.4 | -300.8 | 3,224.5 | 3,173.0 | 51.58 | 62.513 | |
| 8,464.5 | 6,692.9 | 6,680.8 | 6,679.8 | 51.4 | 2.0 | 89.69 | -3,028.4 | -300.8 | 3,236.7 | 3,183.7 | 53.01 | 61.056 | |
| 8,500.0 | 6,692.6 | 6,680.7 | 6,679.7 | 52.1 | 2.0 | 89.69 | -3,028.4 | -300.8 | 3,243.9 | 3,190.1 | 53.80 | 60.299 | |
| 8,563.0 | 6,692.2 | 6,680.5 | 6,679.5 | 53.6 | 2.0 | 89.68 | -3,028.4 | -300.8 | 3,257.6 | 3,202.4 | 55.23 | 58.986 | |
| 8,600.0 | 6,692.0 | 6,680.4 | 6,679.4 | 54.4 | 2.0 | 89.68 | -3,028.4 | -300.8 | 3,266.2 | 3,210.1 | 56.07 | 58.256 | |
| 8,661.4 | 6,691.6 | 6,680.2 | 6,679.2 | 55.8 | 2.0 | 89.68 | -3,028.4 | -300.8 | 3,281.3 | 3,223.8 | 57.49 | 57.076 | |
| 8,700.0 | 6,691.3 | 6,680.1 | 6,679.1 | 56.7 | 2.0 | 89.68 | -3,028.4 | -300.8 | 3,291.4 | 3,233.0 | 58.38 | 56.374 | |
| 8,759.8 | 6,690.9 | 6,679.9 | 6,678.9 | 58.1 | 2.0 | 89.67 | -3,028.4 | -300.8 | 3,307.8 | 3,248.0 | 59.80 | 55.317 | |
| 8,800.0 | 6,690.7 | 6,679.7 | 6,678.7 | 59.1 | 2.0 | 89.67 | -3,028.4 | -300.8 | 3,319.4 | 3,258.7 | 60.75 | 54.644 | |
| 8,858.2 | 6,690.3 | 6,679.5 | 6,678.5 | 60.5 | 2.0 | 89.67 | -3,028.4 | -300.8 | 3,337.0 | 3,274.9 | 62.14 | 53.698 | |
| 8,900.0 | 6,690.0 | 6,679.4 | 6,678.4 | 61.5 | 2.0 | 89.66 | -3,028.4 | -300.8 | 3,350.2 | 3,287.0 | 63.14 | 53.055 | |
| 8,956.7 | 6,689.7 | 6,679.2 | 6,678.2 | 62.9 | 2.0 | 89.66 | -3,028.4 | -300.8 | 3,368.8 | 3,304.3 | 64.52 | 52.211 | |
| 9,000.0 | 6,689.4 | 6,679.1 | 6,678.1 | 63.9 | 2.0 | 89.66 | -3,028.4 | -300.8 | 3,383.6 | 3,318.0 | 65.58 | 51.598 | |
| 9,055.1 | 6,689.0 | 6,678.9 | 6,677.9 | 65.3 | 2.0 | 89.65 | -3,028.4 | -300.8 | 3,403.2 | 3,336.2 | 66.93 | 50.844 | |
| 9,100.0 | 6,688.7 | 6,678.7 | 6,677.7 | 66.4 | 2.0 | 89.65 | -3,028.4 | -300.8 | 3,419.7 | 3,351.6 | 68.04 | 50.260 | |
| 9,153.5 | 6,688.4 | 6,678.6 | 6,677.6 | 67.7 | 2.0 | 89.65 | -3,028.4 | -300.8 | 3,440.0 | 3,370.6 | 69.37 | 49.588 | |
| 9,200.0 | 6,688.1 | 6,678.4 | 6,677.4 | 68.9 | 2.0 | 89.65 | -3,028.4 | -300.8 | 3,458.2 | 3,387.7 | 70.53 | 49.033 | |
| 9,251.9 | 6,687.8 | 6,678.2 | 6,677.2 | 70.2 | 2.0 | 89.64 | -3,028.4 | -300.8 | 3,479.2 | 3,407.4 | 71.83 | 48.435 | |
| 9,300.0 | 6,687.4 | 6,678.1 | 6,677.1 | 71.4 | 2.0 | 89.64 | -3,028.4 | -300.8 | 3,499.2 | 3,426.2 | 73.04 | 47.908 | |
| 9,350.4 | 6,687.1 | 6,677.9 | 6,676.9 | 72.7 | 2.0 | 89.64 | -3,028.4 | -300.8 | 3,520.8 | 3,446.4 | 74.32 | 47.375 | |
| 9,400.0 | 6,686.8 | 6,677.7 | 6,676.7 | 73.9 | 2.0 | 89.63 | -3,028.4 | -300.8 | 3,542.5 | 3,467.0 | 75.57 | 46.875 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,677.6 | 6,676.6 | 75.2 | 2.0 | 89.63 | -3,028.4 | -300.8 | 3,564.5 | 3,487.7 | 76.82 | 46.401 | |
| 9,500.0 | 6,686.1 | 6,677.4 | 6,676.4 | 76.5 | 2.0 | 89.63 | -3,028.4 | -300.8 | 3,588.2 | 3,510.0 | 78.13 | 45.927 | |
| 9,547.2 | 6,685.8 | 6,677.2 | 6,676.2 | 77.7 | 2.0 | 89.62 | -3,028.4 | -300.8 | 3,610.5 | 3,531.1 | 79.34 | 45.505 | |
| 9,600.0 | 6,685.5 | 6,677.1 | 6,676.1 | 79.0 | 2.0 | 89.62 | -3,028.4 | -300.8 | 3,635.9 | 3,555.2 | 80.70 | 45.056 | |
| 9,645.6 | 6,685.2 | 6,676.9 | 6,675.9 | 80.2 | 2.0 | 89.62 | -3,028.4 | -300.8 | 3,658.5 | 3,576.6 | 81.88 | 44.681 | |
| 9,700.0 | 6,684.8 | 6,676.7 | 6,675.7 | 81.6 | 2.0 | 89.62 | -3,028.4 | -300.8 | 3,685.8 | 3,602.5 | 83.29 | 44.255 | |
| 9,744.1 | 6,684.6 | 6,676.6 | 6,675.6 | 82.8 | 2.0 | 89.61 | -3,028.4 | -300.8 | 3,708.4 | 3,624.0 | 84.43 | 43.922 | |
| 9,800.0 | 6,684.2 | 6,676.4 | 6,675.4 | 84.2 | 2.0 | 89.61 | -3,028.4 | -300.8 | 3,737.7 | 3,651.8 | 85.89 | 43.519 | |
| 9,842.5 | 6,683.9 | 6,676.2 | 6,675.2 | 85.3 | 2.0 | 89.61 | -3,028.4 | -300.8 | 3,760.3 | 3,673.3 | 87.00 | 43.224 | |
| 9,900.0 | 6,683.5 | 6,676.1 | 6,675.0 | 86.8 | 2.0 | 89.60 | -3,028.4 | -300.8 | 3,791.5 | 3,703.0 | 88.50 | 42.842 | |
| 9,940.9 | 6,683.3 | 6,675.9 | 6,674.9 | 87.9 | 2.0 | 89.60 | -3,028.4 | -300.8 | 3,814.1 | 3,724.5 | 89.58 | 42.580 | |
| 10,000.0 | 6,682.9 | 6,675.7 | 6,674.7 | 89.5 | 2.0 | 89.60 | -3,028.4 | -300.8 | 3,847.2 | 3,756.1 | 91.13 | 42.218 | |
| 10,039.3 | 6,682.6 | 6,675.6 | 6,674.6 | 90.5 | 2.0 | 89.59 | -3,028.4 | -300.9 | 3,869.6 | 3,777.4 | 92.16 | 41.986 | |
| 10,100.0 | 6,682.2 | 6,675.4 | 6,674.4 | 92.1 | 2.0 | 89.59 | -3,028.4 | -300.9 | 3,904.6 | 3,810.9 | 93.76 | 41.643 | |
| 10,137.8 | 6,682.0 | 6,675.2 | 6,674.2 | 93.1 | 2.0 | 89.59 | -3,028.4 | -300.9 | 3,926.8 | 3,832.0 | 94.76 | 41.438 | |
| 10,200.0 | 6,681.6 | 6,675.0 | 6,674.0 | 94.8 | 2.0 | 89.58 | -3,028.4 | -300.9 | 3,963.7 | 3,867.3 | 96.41 | 41.113 | |
| 10,236.2 | 6,681.4 | 6,674.9 | 6,673.9 | 95.7 | 2.0 | 89.58 | -3,028.4 | -300.9 | 3,985.5 | 3,888.2 | 97.37 | 40.931 | |
| 10,300.0 | 6,680.9 | 6,674.7 | 6,673.7 | 97.4 | 2.0 | 89.58 | -3,028.4 | -300.9 | 4,024.5 | 3,925.4 | 99.07 | 40.624 | |
| 10,334.6 | 6,680.7 | 6,674.6 | 6,673.5 | 98.3 | 2.0 | 89.58 | -3,028.4 | -300.9 | 4,045.9 | 3,945.9 | 99.99 | 40.463 | |
| 10,400.0 | 6,680.3 | 6,674.3 | 6,673.3 | 100.1 | 2.0 | 89.57 | -3,028.4 | -300.9 | 4,086.8 | 3,985.0 | 101.73 | 40.173 | |
| 10,433.0 | 6,680.1 | 6,674.2 | 6,673.2 | 101.0 | 2.0 | 89.57 | -3,028.4 | -300.9 | 4,107.7 | 4,005.1 | 102.61 | 40.031 | |
| 10,500.0 | 6,679.7 | 6,674.0 | 6,673.0 | 102.8 | 2.0 | 89.57 | -3,028.4 | -300.9 | 4,150.5 | 4,046.1 | 104.40 | 39.755 | |
| 10,531.5 | 6,679.4 | 6,673.9 | 6,672.9 | 103.6 | 2.0 | 89.56 | -3,028.4 | -300.9 | 4,170.9 | 4,065.6 | 105.25 | 39.630 | |
| 10,600.0 | 6,679.0 | 6,673.6 | 6,672.6 | 105.4 | 2.0 | 89.56 | -3,028.4 | -300.9 | 4,215.7 | 4,108.6 | 107.08 | 39.369 | |
| 10,629.9 | 6,678.8 | 6,673.5 | 6,672.5 | 106.2 | 2.0 | 89.56 | -3,028.4 | -300.9 | 4,235.4 | 4,127.5 | 107.88 | 39.259 | |
| 10,700.0 | 6,678.4 | 6,673.3 | 6,672.3 | 108.1 | 2.0 | 89.55 | -3,028.4 | -300.9 | 4,282.2 | 4,172.4 | 109.77 | 39.012 | |
| 10,728.3 | 6,678.2 | 6,673.2 | 6,672.2 | 108.9 | 2.0 | 89.55 | -3,028.4 | -300.9 | 4,301.3 | 4,190.7 | 110.53 | 38.915 | |
| 10,800.0 | 6,677.7 | 6,672.9 | 6,671.9 | 110.8 | 2.0 | 89.55 | -3,028.4 | -300.9 | 4,350.0 | 4,237.5 | 112.46 | 38.681 | |
| 10,826.7 | 6,677.5 | 6,672.8 | 6,671.8 | 111.5 | 2.0 | 89.54 | -3,028.4 | -300.9 | 4,368.3 | 4,255.1 | 113.18 | 38.596 | |
| 10,900.0 | 6,677.1 | 6,672.6 | 6,671.6 | 113.5 | 2.0 | 89.54 | -3,028.4 | -300.9 | 4,419.0 | 4,303.8 | 115.16 | 38.374 | |
| 10,925.2 | 6,676.9 | 6,672.5 | 6,671.5 | 114.2 | 2.0 | 89.54 | -3,028.4 | -300.9 | 4,436.6 | 4,320.7 | 115.84 | 38.300 | |
| 11,000.0 | 6,676.4 | 6,672.2 | 6,671.2 | 116.2 | 2.0 | 89.53 | -3,028.4 | -300.9 | 4,489.2 | 4,371.3 | 117.86 | 38.089 | |
| 11,023.6 | 6,676.3 | 6,672.1 | 6,671.1 | 116.8 | 2.0 | 89.53 | -3,028.4 | -300.9 | 4,505.9 | 4,387.4 | 118.50 | 38.025 | |
| 11,100.0 | 6,675.8 | 6,671.9 | 6,670.8 | 118.9 | 2.0 | 89.53 | -3,028.4 | -300.9 | 4,560.5 | 4,439.9 | 120.57 | 37.825 | |
| 11,122.0 | 6,675.6 | 6,671.8 | 6,670.8 | 119.5 | 2.0 | 89.53 | -3,028.4 | -300.9 | 4,576.3 | 4,455.2 | 121.17 | 37.769 | |
| 11,200.0 | 6,675.1 | 6,671.5 | 6,670.5 | 121.6 | 2.0 | 89.52 | -3,028.4 | -300.9 | 4,632.8 | 4,509.6 | 123.28 | 37.580 | |
| 11,220.4 | 6,675.0 | 6,671.4 | 6,670.4 | 122.2 | 2.0 | 89.52 | -3,028.4 | -300.9 | 4,647.8 | 4,523.9 | 123.84 | 37.531 | |
| 11,300.0 | 6,674.5 | 6,671.1 | 6,670.1 | 124.3 | 2.0 | 89.51 | -3,028.4 | -300.9 | 4,706.2 | 4,580.2 | 126.00 | 37.351 | |
| 11,318.9 | 6,674.3 | 6,671.1 | 6,670.1 | 124.9 | 2.0 | 89.51 | -3,028.4 | -300.9 | 4,720.2 | 4,593.6 | 126.51 | 37.310 | |
| 11,400.0 | 6,673.8 | 6,670.8 | 6,669.8 | 127.1 | 2.0 | 89.51 | -3,028.4 | -300.9 | 4,780.5 | 4,651.8 | 128.72 | 37.139 | |
| 11,417.3 | 6,673.7 | 6,670.7 | 6,669.7 | 127.5 | 2.0 | 89.51 | -3,028.4 | -300.9 | 4,793.5 | 4,664.3 | 129.19 | 37.104 | |
| 11,500.0 | 6,673.2 | 6,670.4 | 6,669.4 | 129.8 | 2.0 | 89.50 | -3,028.4 | -300.9 | 4,855.8 | 4,724.3 | 131.44 | 36.942 | |
| 11,515.7 | 6,673.1 | 6,670.4 | 6,669.4 | 130.2 | 2.0 | 89.50 | -3,028.4 | -300.9 | 4,867.7 | 4,735.8 | 131.87 | 36.912 | |
| 11,600.0 | 6,672.5 | 6,670.1 | 6,669.0 | 132.5 | 2.0 | 89.49 | -3,028.4 | -300.9 | 4,931.9 | 4,797.8 | 134.17 | 36.758 | |
| 11,614.1 | 6,672.4 | 6,670.0 | 6,669.0 | 132.9 | 2.0 | 89.49 | -3,028.4 | -300.9 | 4,942.8 | 4,808.2 | 134.56 | 36.733 | |
| 11,700.0 | 6,671.9 | 6,669.7 | 6,668.7 | 135.3 | 2.0 | 89.49 | -3,028.4 | -300.9 | 5,008.9 | 4,872.0 | 136.90 | 36.587 | |
| 11,712.6 | 6,671.8 | 6,669.7 | 6,668.6 | 135.6 | 2.0 | 89.49 | -3,028.4 | -300.9 | 5,018.6 | 4,881.4 | 137.25 | 36.566 | |
| 11,800.0 | 6,671.2 | 6,669.3 | 6,668.3 | 138.0 | 2.0 | 89.48 | -3,028.4 | -300.9 | 5,086.7 | 4,947.0 | 139.64 | 36.427 | |
| 11,811.0 | 6,671.1 | 6,669.3 | 6,668.3 | 138.3 | 2.0 | 89.48 | -3,028.4 | -300.9 | 5,095.3 | 4,955.3 | 139.94 | 36.410 | |
| 11,900.0 | 6,670.6 | 6,669.0 | 6,668.0 | 140.7 | 2.0 | 89.48 | -3,028.4 | -300.9 | 5,165.2 | 5,022.8 | 142.38 | 36.279 | |
| 11,909.4 | 6,670.5 | 6,668.9 | 6,667.9 | 141.0 | 2.0 | 89.47 | -3,028.4 | -300.9 | 5,172.7 | 5,030.0 | 142.63 | 36.265 | |
| 11,987.2 | 6,670.0 | 6,668.6 | 6,667.6 | 143.1 | 2.0 | 89.47 | -3,028.4 | -300.9 | 5,234.3 | 5,089.6 | 144.77 | 36.157 | SF |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 160.15 | -2,983.7 | 1,077.4 | 3,172.3 | | | | |
| 98.4 | 98.4 | 85.2 | 85.2 | 0.1 | 0.1 | 160.14 | -2,983.8 | 1,077.5 | 3,172.4 | 3,172.2 | 0.18 | N/A | |
| 100.0 | 100.0 | 86.6 | 86.6 | 0.1 | 0.1 | 160.14 | -2,983.8 | 1,077.5 | 3,172.4 | 3,172.2 | 0.18 | N/A | |
| 196.8 | 196.8 | 194.1 | 194.1 | 0.3 | 0.1 | 160.14 | -2,984.0 | 1,077.6 | 3,172.6 | 3,172.2 | 0.44 | 7,243.804 | |
| 200.0 | 200.0 | 197.8 | 197.8 | 0.3 | 0.1 | 160.14 | -2,984.0 | 1,077.6 | 3,172.6 | 3,172.2 | 0.45 | 7,113.209 | |
| 295.3 | 295.3 | 308.4 | 308.4 | 0.5 | 0.3 | 160.15 | -2,983.8 | 1,077.2 | 3,172.4 | 3,171.6 | 0.79 | 4,028.815 | |
| 300.0 | 300.0 | 313.3 | 313.3 | 0.5 | 0.3 | 160.15 | -2,983.8 | 1,077.2 | 3,172.3 | 3,171.5 | 0.80 | 3,955.844 | |
| 393.7 | 393.7 | 410.2 | 410.2 | 0.8 | 0.3 | 160.16 | -2,983.5 | 1,076.4 | 3,171.8 | 3,170.7 | 1.09 | 2,911.451 | |
| 400.0 | 400.0 | 417.1 | 417.0 | 0.8 | 0.3 | 160.16 | -2,983.5 | 1,076.4 | 3,171.8 | 3,170.7 | 1.11 | 2,862.498 | |
| 492.1 | 492.1 | 514.2 | 514.2 | 1.0 | 0.4 | 160.17 | -2,983.0 | 1,075.4 | 3,171.1 | 3,169.7 | 1.38 | 2,302.646 | |
| 500.0 | 500.0 | 521.5 | 521.5 | 1.0 | 0.4 | 160.18 | -2,983.0 | 1,075.4 | 3,171.0 | 3,169.6 | 1.40 | 2,266.648 | |
| 590.5 | 590.5 | 606.5 | 606.4 | 1.2 | 0.5 | 160.19 | -2,982.7 | 1,074.6 | 3,170.4 | 3,168.8 | 1.65 | 1,921.241 | |
| 600.0 | 600.0 | 616.7 | 616.6 | 1.2 | 0.5 | 160.19 | -2,982.7 | 1,074.5 | 3,170.4 | 3,168.7 | 1.68 | 1,890.931 | |
| 689.0 | 689.0 | 711.0 | 711.0 | 1.4 | 0.5 | 160.20 | -2,982.2 | 1,073.6 | 3,169.7 | 3,167.8 | 1.92 | 1,647.461 | |
| 700.0 | 700.0 | 721.4 | 721.4 | 1.4 | 0.5 | 160.20 | -2,982.2 | 1,073.5 | 3,169.6 | 3,167.7 | 1.95 | 1,622.429 | |
| 787.4 | 787.4 | 803.8 | 803.7 | 1.6 | 0.6 | 160.21 | -2,981.8 | 1,072.9 | 3,169.0 | 3,166.8 | 2.19 | 1,448.172 | |
| 800.0 | 800.0 | 816.8 | 816.8 | 1.7 | 0.6 | 160.21 | -2,981.8 | 1,072.8 | 3,168.9 | 3,166.7 | 2.22 | 1,426.370 | |
| 885.8 | 885.8 | 905.5 | 905.4 | 1.9 | 0.6 | 160.22 | -2,981.3 | 1,072.3 | 3,168.4 | 3,165.9 | 2.45 | 1,293.955 | |
| 900.0 | 900.0 | 918.9 | 918.9 | 1.9 | 0.6 | 160.22 | -2,981.2 | 1,072.3 | 3,168.3 | 3,165.8 | 2.49 | 1,274.844 | |
| 984.2 | 984.2 | 1,000.0 | 1,000.0 | 2.1 | 0.6 | 160.22 | -2,980.7 | 1,072.1 | 3,167.7 | 3,165.0 | 2.70 | 1,171.876 | |
| 1,000.0 | 1,000.0 | 1,014.8 | 1,014.7 | 2.1 | 0.7 | 160.22 | -2,980.7 | 1,072.1 | 3,167.7 | 3,164.9 | 2.74 | 1,154.740 | |
| 1,038.4 | 1,038.4 | 1,053.6 | 1,053.6 | 2.2 | 0.7 | -115.35 | -2,980.4 | 1,072.1 | 3,167.5 | 3,164.7 | 2.85 | 1,111.430 | CC |
| 1,082.7 | 1,082.7 | 1,098.4 | 1,098.3 | 2.3 | 0.7 | -115.37 | -2,980.2 | 1,072.1 | 3,167.7 | 3,164.7 | 2.96 | 1,068.902 | |
| 1,100.0 | 1,100.0 | 1,115.5 | 1,115.4 | 2.3 | 0.7 | -115.37 | -2,980.0 | 1,072.1 | 3,167.8 | 3,164.8 | 3.01 | 1,053.288 | |
| 1,181.1 | 1,181.0 | 1,195.2 | 1,195.1 | 2.5 | 0.7 | -115.42 | -2,979.6 | 1,072.0 | 3,169.1 | 3,165.9 | 3.21 | 987.278 | |
| 1,200.0 | 1,199.8 | 1,214.0 | 1,214.0 | 2.5 | 0.7 | -115.43 | -2,979.5 | 1,072.0 | 3,169.5 | 3,166.3 | 3.26 | 973.148 | |
| 1,279.5 | 1,279.1 | 1,293.8 | 1,293.7 | 2.7 | 0.8 | -115.50 | -2,979.0 | 1,072.0 | 3,171.9 | 3,168.5 | 3.47 | 915.324 | |
| 1,300.0 | 1,299.5 | 1,314.1 | 1,314.0 | 2.8 | 0.8 | -115.52 | -2,978.9 | 1,072.0 | 3,172.7 | 3,169.2 | 3.52 | 901.629 | |
| 1,377.9 | 1,376.9 | 1,391.0 | 1,390.9 | 3.0 | 0.8 | -115.60 | -2,978.4 | 1,072.0 | 3,176.3 | 3,172.5 | 3.74 | 849.788 | |
| 1,400.0 | 1,398.7 | 1,412.5 | 1,412.5 | 3.0 | 0.8 | -115.63 | -2,978.3 | 1,072.0 | 3,177.5 | 3,173.7 | 3.80 | 836.274 | |
| 1,476.4 | 1,474.2 | 1,486.4 | 1,486.4 | 3.2 | 0.8 | -115.73 | -2,978.0 | 1,072.0 | 3,182.2 | 3,178.1 | 4.03 | 788.667 | |
| 1,500.0 | 1,497.5 | 1,508.4 | 1,508.3 | 3.3 | 0.8 | -115.76 | -2,977.8 | 1,072.0 | 3,183.8 | 3,179.7 | 4.11 | 775.291 | |
| 1,574.8 | 1,571.0 | 1,573.8 | 1,573.7 | 3.5 | 0.9 | -115.85 | -2,977.6 | 1,072.0 | 3,189.8 | 3,185.4 | 4.36 | 732.149 | |
| 1,600.0 | 1,595.6 | 1,600.0 | 1,600.0 | 3.6 | 0.9 | -115.90 | -2,977.6 | 1,072.1 | 3,192.0 | 3,187.6 | 4.44 | 718.565 | |
| 1,673.2 | 1,667.0 | 1,668.3 | 1,668.3 | 3.9 | 0.9 | -116.02 | -2,977.4 | 1,072.2 | 3,199.1 | 3,194.4 | 4.72 | 677.771 | |
| 1,700.0 | 1,693.1 | 1,695.0 | 1,694.9 | 4.0 | 0.9 | -116.07 | -2,977.4 | 1,072.3 | 3,201.9 | 3,197.1 | 4.82 | 663.999 | |
| 1,771.6 | 1,762.4 | 1,760.0 | 1,759.9 | 4.3 | 0.9 | -116.20 | -2,977.2 | 1,072.4 | 3,210.1 | 3,205.0 | 5.12 | 626.632 | |
| 1,800.0 | 1,789.6 | 1,785.4 | 1,785.3 | 4.4 | 0.9 | -116.24 | -2,977.2 | 1,072.5 | 3,213.6 | 3,208.4 | 5.24 | 613.133 | |
| 1,870.1 | 1,856.8 | 1,851.5 | 1,851.5 | 4.7 | 0.9 | -116.38 | -2,977.2 | 1,072.6 | 3,222.9 | 3,217.3 | 5.58 | 577.937 | |
| 1,900.0 | 1,885.3 | 1,880.1 | 1,880.0 | 4.9 | 0.9 | -116.45 | -2,977.2 | 1,072.6 | 3,227.1 | 3,221.4 | 5.72 | 564.251 | |
| 1,968.5 | 1,950.2 | 1,940.1 | 1,940.0 | 5.3 | 0.9 | -116.57 | -2,977.3 | 1,072.7 | 3,237.4 | 3,231.4 | 6.08 | 532.055 | |
| 2,000.0 | 1,979.8 | 1,966.5 | 1,966.5 | 5.5 | 0.9 | -116.62 | -2,977.3 | 1,072.8 | 3,242.5 | 3,236.3 | 6.25 | 518.622 | |
| 2,044.9 | 2,021.9 | 2,004.3 | 2,004.3 | 5.7 | 0.9 | -116.70 | -2,977.5 | 1,072.8 | 3,250.1 | 3,243.6 | 6.51 | 499.001 | |
| 2,066.9 | 2,042.5 | 2,023.9 | 2,023.9 | 5.9 | 0.9 | -116.81 | -2,977.5 | 1,072.8 | 3,253.9 | 3,247.3 | 6.64 | 489.728 | |
| 2,100.0 | 2,073.4 | 2,053.4 | 2,053.3 | 6.1 | 0.9 | -116.97 | -2,977.7 | 1,072.9 | 3,259.7 | 3,252.9 | 6.84 | 476.463 | |
| 2,165.3 | 2,134.4 | 2,111.8 | 2,111.8 | 6.5 | 0.9 | -117.31 | -2,978.0 | 1,073.0 | 3,271.3 | 3,264.1 | 7.24 | 451.748 | |
| 2,200.0 | 2,166.8 | 2,143.5 | 2,143.4 | 6.8 | 0.9 | -117.48 | -2,978.2 | 1,073.1 | 3,277.5 | 3,270.1 | 7.45 | 439.768 | |
| 2,263.8 | 2,226.4 | 2,201.7 | 2,201.7 | 7.2 | 1.0 | -117.81 | -2,978.5 | 1,073.2 | 3,289.1 | 3,281.2 | 7.85 | 418.887 | |
| 2,300.0 | 2,260.2 | 2,234.9 | 2,234.9 | 7.4 | 1.0 | -117.99 | -2,978.8 | 1,073.2 | 3,295.7 | 3,287.6 | 8.08 | 407.971 | |
| 2,362.2 | 2,318.3 | 2,291.9 | 2,291.8 | 7.9 | 1.0 | -118.31 | -2,979.2 | 1,073.3 | 3,307.2 | 3,298.7 | 8.47 | 390.279 | |
| 2,400.0 | 2,353.6 | 2,327.0 | 2,327.0 | 8.1 | 1.0 | -118.50 | -2,979.4 | 1,073.3 | 3,314.2 | 3,305.5 | 8.71 | 380.359 | |
| 2,460.6 | 2,410.3 | 2,383.8 | 2,383.7 | 8.6 | 1.0 | -118.81 | -2,979.9 | 1,073.3 | 3,325.6 | 3,316.5 | 9.10 | 365.336 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,421.4 | 2,421.3 | 8.9 | 1.0 | -119.01 | -2,980.2 | 1,073.2 | 3,333.0 | 3,323.7 | 9.36 | 356.274 | |
| 2,559.0 | 2,502.2 | 2,478.8 | 2,478.7 | 9.3 | 1.0 | -119.32 | -2,980.7 | 1,073.0 | 3,344.2 | 3,334.5 | 9.74 | 343.437 | |
| 2,600.0 | 2,540.5 | 2,518.0 | 2,517.9 | 9.6 | 1.0 | -119.53 | -2,981.0 | 1,072.9 | 3,352.0 | 3,342.0 | 10.00 | 335.145 | |
| 2,657.5 | 2,594.2 | 2,572.0 | 2,572.0 | 10.0 | 1.0 | -119.81 | -2,981.5 | 1,072.7 | 3,363.0 | 3,352.7 | 10.38 | 324.146 | |
| 2,700.0 | 2,633.9 | 2,611.5 | 2,611.5 | 10.3 | 1.0 | -120.02 | -2,981.8 | 1,072.5 | 3,371.2 | 3,360.6 | 10.65 | 316.533 | |
| 2,755.9 | 2,686.1 | 2,661.9 | 2,661.8 | 10.7 | 1.0 | -120.28 | -2,982.3 | 1,072.3 | 3,382.1 | 3,371.1 | 11.01 | 307.052 | |
| 2,800.0 | 2,727.3 | 2,701.7 | 2,701.7 | 11.0 | 1.0 | -120.49 | -2,982.6 | 1,072.1 | 3,390.8 | 3,379.5 | 11.30 | 300.036 | |
| 2,854.3 | 2,778.1 | 2,754.8 | 2,754.7 | 11.4 | 1.0 | -120.76 | -2,983.1 | 1,071.9 | 3,401.5 | 3,389.9 | 11.65 | 291.855 | |
| 2,900.0 | 2,820.7 | 2,799.4 | 2,799.3 | 11.8 | 1.1 | -120.99 | -2,983.6 | 1,071.6 | 3,410.6 | 3,398.6 | 11.95 | 285.380 | |
| 2,952.7 | 2,870.0 | 2,846.2 | 2,846.1 | 12.2 | 1.1 | -121.22 | -2,984.0 | 1,071.4 | 3,421.1 | 3,408.8 | 12.29 | 278.270 | |
| 3,000.0 | 2,914.2 | 2,888.1 | 2,888.0 | 12.5 | 1.1 | -121.44 | -2,984.4 | 1,071.2 | 3,430.6 | 3,418.0 | 12.60 | 272.259 | |
| 3,051.2 | 2,962.0 | 2,936.9 | 2,936.8 | 12.9 | 1.1 | -121.68 | -2,984.9 | 1,070.9 | 3,441.0 | 3,428.0 | 12.93 | 266.079 | |
| 3,100.0 | 3,007.6 | 2,984.6 | 2,984.6 | 13.3 | 1.1 | -121.92 | -2,985.4 | 1,070.7 | 3,450.9 | 3,437.7 | 13.25 | 260.496 | |
| 3,149.6 | 3,053.9 | 3,030.2 | 3,030.1 | 13.6 | 1.1 | -122.15 | -2,985.8 | 1,070.4 | 3,461.1 | 3,447.5 | 13.57 | 255.079 | |
| 3,200.0 | 3,101.0 | 3,075.0 | 3,074.9 | 14.0 | 1.1 | -122.37 | -2,986.2 | 1,070.2 | 3,471.4 | 3,457.6 | 13.89 | 249.860 | |
| 3,248.0 | 3,145.9 | 3,118.3 | 3,118.2 | 14.4 | 1.1 | -122.58 | -2,986.7 | 1,070.0 | 3,481.4 | 3,467.2 | 14.20 | 245.123 | |
| 3,300.0 | 3,194.4 | 3,166.2 | 3,166.1 | 14.8 | 1.1 | -122.82 | -2,987.2 | 1,069.8 | 3,492.3 | 3,477.8 | 14.54 | 240.239 | |
| 3,346.4 | 3,237.8 | 3,208.7 | 3,208.6 | 15.1 | 1.1 | -123.02 | -2,987.7 | 1,069.6 | 3,502.1 | 3,487.3 | 14.84 | 236.068 | |
| 3,400.0 | 3,287.8 | 3,256.2 | 3,256.1 | 15.5 | 1.2 | -123.25 | -2,988.2 | 1,069.3 | 3,513.5 | 3,498.3 | 15.18 | 231.483 | |
| 3,444.9 | 3,329.8 | 3,296.1 | 3,296.0 | 15.9 | 1.2 | -123.45 | -2,988.7 | 1,069.2 | 3,523.1 | 3,507.6 | 15.47 | 227.808 | |
| 3,500.0 | 3,381.3 | 3,346.1 | 3,346.0 | 16.3 | 1.2 | -123.69 | -2,989.3 | 1,069.1 | 3,535.0 | 3,519.2 | 15.82 | 223.498 | |
| 3,543.3 | 3,421.7 | 3,385.5 | 3,385.4 | 16.6 | 1.2 | -123.87 | -2,989.8 | 1,068.9 | 3,544.4 | 3,528.3 | 16.09 | 220.254 | |
| 3,600.0 | 3,474.7 | 3,431.7 | 3,431.6 | 17.0 | 1.2 | -124.09 | -2,990.4 | 1,068.8 | 3,556.8 | 3,540.3 | 16.45 | 216.169 | |
| 3,641.7 | 3,513.7 | 3,464.0 | 3,463.9 | 17.3 | 1.2 | -124.25 | -2,990.9 | 1,068.7 | 3,566.1 | 3,549.3 | 16.72 | 213.282 | |
| 3,700.0 | 3,568.1 | 3,510.4 | 3,510.2 | 17.8 | 1.2 | -124.46 | -2,991.7 | 1,068.8 | 3,579.2 | 3,562.1 | 17.09 | 209.427 | |
| 3,740.1 | 3,605.6 | 3,545.5 | 3,545.4 | 18.1 | 1.2 | -124.63 | -2,992.3 | 1,068.8 | 3,588.3 | 3,571.0 | 17.34 | 206.880 | |
| 3,800.0 | 3,661.5 | 3,600.0 | 3,599.9 | 18.5 | 1.2 | -124.88 | -2,993.3 | 1,068.8 | 3,602.1 | 3,584.3 | 17.72 | 203.247 | |
| 3,838.6 | 3,697.6 | 3,630.7 | 3,630.6 | 18.8 | 1.2 | -125.02 | -2,994.0 | 1,068.8 | 3,611.0 | 3,593.0 | 17.97 | 200.984 | |
| 3,900.0 | 3,754.9 | 3,682.8 | 3,682.7 | 19.3 | 1.3 | -125.26 | -2,995.1 | 1,068.8 | 3,625.3 | 3,607.0 | 18.35 | 197.535 | |
| 3,937.0 | 3,789.5 | 3,716.0 | 3,715.8 | 19.6 | 1.3 | -125.41 | -2,995.8 | 1,068.9 | 3,634.0 | 3,615.5 | 18.58 | 195.541 | |
| 4,000.0 | 3,848.4 | 3,776.3 | 3,776.1 | 20.1 | 1.3 | -125.69 | -2,997.2 | 1,068.9 | 3,648.9 | 3,629.9 | 18.98 | 192.289 | |
| 4,035.4 | 3,881.5 | 3,809.2 | 3,809.0 | 20.3 | 1.3 | -125.83 | -2,997.9 | 1,068.9 | 3,657.3 | 3,638.1 | 19.20 | 190.522 | |
| 4,100.0 | 3,941.8 | 3,865.1 | 3,864.9 | 20.8 | 1.3 | -126.08 | -2,999.2 | 1,068.9 | 3,672.7 | 3,653.1 | 19.60 | 187.407 | |
| 4,133.8 | 3,973.4 | 3,894.4 | 3,894.2 | 21.1 | 1.3 | -126.21 | -2,999.9 | 1,068.9 | 3,680.9 | 3,661.1 | 19.81 | 185.831 | |
| 4,200.0 | 4,035.2 | 3,957.4 | 3,957.2 | 21.6 | 1.3 | -126.49 | -3,001.5 | 1,068.8 | 3,696.9 | 3,676.6 | 20.21 | 182.877 | |
| 4,232.3 | 4,065.4 | 3,988.5 | 3,988.3 | 21.8 | 1.3 | -126.62 | -3,002.3 | 1,068.7 | 3,704.7 | 3,684.3 | 20.41 | 181.486 | |
| 4,300.0 | 4,128.6 | 4,050.9 | 4,050.6 | 22.3 | 1.3 | -126.89 | -3,003.9 | 1,068.5 | 3,721.1 | 3,700.3 | 20.83 | 178.657 | |
| 4,330.7 | 4,157.3 | 4,078.9 | 4,078.6 | 22.6 | 1.4 | -127.01 | -3,004.7 | 1,068.4 | 3,728.6 | 3,707.6 | 21.02 | 177.416 | |
| 4,400.0 | 4,222.0 | 4,146.1 | 4,145.8 | 23.1 | 1.4 | -127.29 | -3,006.8 | 1,067.8 | 3,745.6 | 3,724.2 | 21.44 | 174.714 | |
| 4,429.1 | 4,249.3 | 4,175.2 | 4,174.8 | 23.3 | 1.4 | -127.40 | -3,007.7 | 1,067.4 | 3,752.8 | 3,731.1 | 21.62 | 173.615 | |
| 4,500.0 | 4,315.5 | 4,240.1 | 4,239.8 | 23.9 | 1.4 | -127.66 | -3,009.8 | 1,066.5 | 3,770.2 | 3,748.1 | 22.05 | 171.007 | |
| 4,527.5 | 4,341.2 | 4,264.1 | 4,263.8 | 24.1 | 1.4 | -127.76 | -3,010.6 | 1,066.2 | 3,777.0 | 3,754.8 | 22.21 | 170.021 | |
| 4,600.0 | 4,408.9 | 4,330.9 | 4,330.5 | 24.6 | 1.4 | -128.02 | -3,012.8 | 1,065.3 | 3,795.0 | 3,772.3 | 22.65 | 167.522 | |
| 4,626.0 | 4,433.2 | 4,356.5 | 4,356.1 | 24.8 | 1.4 | -128.12 | -3,013.7 | 1,064.9 | 3,801.5 | 3,778.7 | 22.81 | 166.658 | |
| 4,700.0 | 4,502.3 | 4,427.0 | 4,426.5 | 25.4 | 1.4 | -128.40 | -3,015.9 | 1,064.0 | 3,819.9 | 3,796.7 | 23.25 | 164.265 | |
| 4,724.4 | 4,525.1 | 4,449.1 | 4,448.6 | 25.6 | 1.5 | -128.48 | -3,016.6 | 1,063.8 | 3,826.0 | 3,802.6 | 23.40 | 163.496 | |
| 4,800.0 | 4,595.7 | 4,517.8 | 4,517.3 | 26.2 | 1.5 | -128.75 | -3,018.9 | 1,062.9 | 3,845.0 | 3,821.2 | 23.85 | 161.188 | |
| 4,822.8 | 4,617.1 | 4,538.9 | 4,538.4 | 26.3 | 1.5 | -128.83 | -3,019.6 | 1,062.7 | 3,850.8 | 3,826.8 | 23.99 | 160.512 | |
| 4,900.0 | 4,689.2 | 4,613.5 | 4,612.9 | 26.9 | 1.5 | -129.12 | -3,022.0 | 1,061.8 | 3,870.4 | 3,845.9 | 24.45 | 158.304 | |
| 4,921.2 | 4,709.0 | 4,639.0 | 4,638.4 | 27.1 | 1.5 | -129.22 | -3,022.8 | 1,061.5 | 3,875.7 | 3,851.2 | 24.57 | 157.730 | |
| 5,000.0 | 4,782.6 | 4,729.4 | 4,728.7 | 27.7 | 1.5 | -129.56 | -3,025.3 | 1,060.4 | 3,895.5 | 3,870.4 | 25.03 | 155.648 | |
| 5,019.7 | 4,801.0 | 4,750.0 | 4,749.4 | 27.8 | 1.5 | -129.64 | -3,025.8 | 1,060.1 | 3,900.4 | 3,875.2 | 25.14 | 155.138 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,834.2 | 4,833.5 | 28.4 | 1.6 | -129.96 | -3,027.6 | 1,059.2 | 3,920.4 | 3,894.7 | 25.61 | 153.109 | |
| 5,118.1 | 4,892.9 | 4,853.1 | 4,852.5 | 28.6 | 1.6 | -130.03 | -3,028.0 | 1,059.0 | 3,924.8 | 3,899.1 | 25.71 | 152.663 | |
| 5,159.9 | 4,932.0 | 4,896.9 | 4,896.2 | 28.9 | 1.6 | -130.20 | -3,028.9 | 1,058.5 | 3,935.2 | 3,909.3 | 25.95 | 151.649 | |
| 5,200.0 | 4,969.5 | 4,932.2 | 4,931.5 | 29.2 | 1.6 | -130.48 | -3,029.5 | 1,058.1 | 3,945.0 | 3,918.9 | 26.10 | 151.148 | |
| 5,216.5 | 4,985.1 | 4,946.6 | 4,945.9 | 29.3 | 1.6 | -130.60 | -3,029.8 | 1,058.0 | 3,948.9 | 3,922.8 | 26.15 | 151.031 | |
| 5,300.0 | 5,064.0 | 5,023.6 | 5,022.9 | 29.7 | 1.6 | -131.15 | -3,031.3 | 1,057.3 | 3,968.0 | 3,941.6 | 26.38 | 150.422 | |
| 5,314.9 | 5,078.2 | 5,039.4 | 5,038.7 | 29.8 | 1.6 | -131.25 | -3,031.6 | 1,057.1 | 3,971.3 | 3,944.9 | 26.41 | 150.345 | |
| 5,400.0 | 5,159.6 | 5,130.4 | 5,129.6 | 30.2 | 1.6 | -131.79 | -3,033.0 | 1,056.4 | 3,988.8 | 3,962.2 | 26.62 | 149.865 | |
| 5,413.4 | 5,172.4 | 5,145.0 | 5,144.2 | 30.3 | 1.6 | -131.87 | -3,033.2 | 1,056.3 | 3,991.4 | 3,964.8 | 26.64 | 149.813 | |
| 5,500.0 | 5,256.1 | 5,241.3 | 5,240.5 | 30.7 | 1.7 | -132.37 | -3,034.2 | 1,055.8 | 4,007.1 | 3,980.3 | 26.82 | 149.429 | |
| 5,511.8 | 5,267.6 | 5,254.7 | 5,254.0 | 30.7 | 1.7 | -132.43 | -3,034.3 | 1,055.8 | 4,009.1 | 3,982.3 | 26.84 | 149.395 | |
| 5,600.0 | 5,353.5 | 5,348.7 | 5,347.9 | 31.1 | 1.7 | -132.85 | -3,034.6 | 1,055.6 | 4,022.8 | 3,995.8 | 26.99 | 149.073 | |
| 5,610.2 | 5,363.5 | 5,359.0 | 5,358.2 | 31.1 | 1.7 | -132.90 | -3,034.6 | 1,055.6 | 4,024.3 | 3,997.3 | 27.00 | 149.049 | |
| 5,700.0 | 5,451.6 | 5,444.5 | 5,443.7 | 31.4 | 1.7 | -133.24 | -3,034.8 | 1,055.4 | 4,036.1 | 4,009.0 | 27.13 | 148.776 | |
| 5,708.6 | 5,460.2 | 5,452.3 | 5,451.6 | 31.4 | 1.7 | -133.27 | -3,034.8 | 1,055.4 | 4,037.2 | 4,010.1 | 27.14 | 148.762 | |
| 5,800.0 | 5,550.4 | 5,540.6 | 5,539.8 | 31.7 | 1.7 | -133.56 | -3,035.0 | 1,055.5 | 4,047.3 | 4,020.0 | 27.25 | 148.542 | |
| 5,807.1 | 5,557.4 | 5,548.0 | 5,547.2 | 31.7 | 1.7 | -133.58 | -3,035.0 | 1,055.5 | 4,048.0 | 4,020.7 | 27.25 | 148.533 | |
| 5,900.0 | 5,649.6 | 5,641.7 | 5,640.9 | 31.9 | 1.7 | -133.82 | -3,034.9 | 1,055.8 | 4,056.0 | 4,028.6 | 27.34 | 148.328 | |
| 5,905.5 | 5,655.1 | 5,647.0 | 5,646.2 | 31.9 | 1.7 | -133.83 | -3,034.9 | 1,055.8 | 4,056.4 | 4,029.0 | 27.35 | 148.321 | |
| 6,000.0 | 5,749.2 | 5,741.2 | 5,740.4 | 32.1 | 1.7 | -134.00 | -3,034.8 | 1,056.2 | 4,062.3 | 4,034.9 | 27.42 | 148.126 | |
| 6,003.9 | 5,753.1 | 5,745.3 | 5,744.5 | 32.1 | 1.7 | -134.01 | -3,034.8 | 1,056.2 | 4,062.5 | 4,035.1 | 27.43 | 148.122 | |
| 6,100.0 | 5,849.1 | 5,842.1 | 5,841.3 | 32.3 | 1.7 | -134.12 | -3,034.5 | 1,056.7 | 4,066.2 | 4,038.7 | 27.49 | 147.914 | |
| 6,102.3 | 5,851.4 | 5,844.3 | 5,843.6 | 32.3 | 1.7 | -134.12 | -3,034.5 | 1,056.7 | 4,066.3 | 4,038.8 | 27.49 | 147.911 | |
| 6,200.8 | 5,949.8 | 5,937.1 | 5,936.3 | 32.4 | 1.7 | -134.17 | -3,034.3 | 1,057.3 | 4,067.7 | 4,040.1 | 27.55 | 147.667 | |
| 6,204.9 | 5,953.9 | 5,940.8 | 5,940.0 | 32.4 | 1.7 | 141.39 | -3,034.2 | 1,057.3 | 4,067.7 | 4,040.8 | 26.86 | 151.421 | |
| 6,234.9 | 5,983.9 | 5,967.9 | 5,967.2 | 32.4 | 1.7 | 141.38 | -3,034.2 | 1,057.5 | 4,067.8 | 4,040.9 | 26.89 | 151.249 | |
| 6,250.0 | 5,999.0 | 5,981.7 | 5,980.9 | 32.4 | 1.7 | 51.39 | -3,034.1 | 1,057.7 | 4,067.8 | 4,040.2 | 27.57 | 147.526 | |
| 6,299.2 | 6,048.2 | 6,028.5 | 6,027.7 | 32.4 | 1.7 | 51.51 | -3,034.1 | 1,058.1 | 4,066.3 | 4,038.7 | 27.57 | 147.498 | |
| 6,300.0 | 6,048.9 | 6,029.2 | 6,028.5 | 32.4 | 1.7 | 51.51 | -3,034.1 | 1,058.1 | 4,066.2 | 4,038.6 | 27.57 | 147.493 | |
| 6,350.0 | 6,098.5 | 6,078.1 | 6,077.4 | 32.4 | 1.8 | 51.80 | -3,033.9 | 1,058.6 | 4,062.5 | 4,034.9 | 27.61 | 147.123 | |
| 6,397.6 | 6,145.3 | 6,122.9 | 6,122.2 | 32.3 | 1.8 | 52.24 | -3,033.8 | 1,059.1 | 4,057.0 | 4,029.3 | 27.70 | 146.466 | |
| 6,400.0 | 6,147.6 | 6,125.1 | 6,124.3 | 32.3 | 1.8 | 52.27 | -3,033.8 | 1,059.1 | 4,056.7 | 4,029.0 | 27.71 | 146.423 | |
| 6,450.0 | 6,195.8 | 6,170.2 | 6,169.5 | 32.2 | 1.8 | 52.90 | -3,033.7 | 1,059.6 | 4,048.8 | 4,021.0 | 27.84 | 145.412 | |
| 6,496.0 | 6,239.3 | 6,209.7 | 6,208.9 | 32.1 | 1.8 | 53.64 | -3,033.6 | 1,060.1 | 4,039.8 | 4,011.8 | 28.01 | 144.235 | |
| 6,500.0 | 6,243.0 | 6,212.7 | 6,211.9 | 32.1 | 1.8 | 53.70 | -3,033.6 | 1,060.1 | 4,038.9 | 4,010.9 | 28.02 | 144.122 | |
| 6,550.0 | 6,289.0 | 6,250.7 | 6,249.9 | 32.0 | 1.8 | 54.66 | -3,033.6 | 1,060.6 | 4,027.2 | 3,998.9 | 28.24 | 142.599 | |
| 6,594.5 | 6,328.6 | 6,283.5 | 6,282.7 | 31.8 | 1.8 | 55.65 | -3,033.7 | 1,061.1 | 4,015.2 | 3,986.7 | 28.47 | 141.050 | |
| 6,600.0 | 6,333.4 | 6,287.5 | 6,286.7 | 31.8 | 1.8 | 55.79 | -3,033.7 | 1,061.2 | 4,013.6 | 3,985.1 | 28.50 | 140.844 | |
| 6,650.0 | 6,376.2 | 6,324.3 | 6,323.5 | 31.7 | 1.8 | 57.09 | -3,033.7 | 1,061.8 | 3,998.3 | 3,969.5 | 28.79 | 138.870 | |
| 6,692.9 | 6,411.3 | 6,355.1 | 6,354.3 | 31.6 | 1.8 | 58.34 | -3,033.8 | 1,062.4 | 3,983.9 | 3,954.9 | 29.08 | 137.023 | |
| 6,700.0 | 6,417.0 | 6,360.1 | 6,359.3 | 31.5 | 1.8 | 58.56 | -3,033.8 | 1,062.5 | 3,981.5 | 3,952.3 | 29.12 | 136.708 | |
| 6,750.0 | 6,455.7 | 6,400.0 | 6,399.2 | 31.4 | 1.8 | 60.26 | -3,034.0 | 1,063.2 | 3,963.1 | 3,933.6 | 29.50 | 134.336 | |
| 6,791.3 | 6,486.0 | 6,422.6 | 6,421.8 | 31.3 | 1.8 | 61.71 | -3,034.1 | 1,063.7 | 3,946.8 | 3,917.0 | 29.82 | 132.375 | |
| 6,800.0 | 6,492.2 | 6,428.5 | 6,427.7 | 31.3 | 1.8 | 62.04 | -3,034.1 | 1,063.8 | 3,943.3 | 3,913.4 | 29.88 | 131.950 | |
| 6,850.0 | 6,526.1 | 6,460.8 | 6,460.0 | 31.2 | 1.8 | 64.03 | -3,034.3 | 1,064.4 | 3,922.2 | 3,891.9 | 30.30 | 129.429 | |
| 6,889.7 | 6,551.2 | 6,484.7 | 6,483.9 | 31.2 | 1.8 | 65.72 | -3,034.5 | 1,064.8 | 3,904.6 | 3,874.0 | 30.65 | 127.395 | |
| 6,900.0 | 6,557.4 | 6,490.6 | 6,489.8 | 31.2 | 1.8 | 66.17 | -3,034.5 | 1,064.9 | 3,900.0 | 3,869.3 | 30.74 | 126.885 | |
| 6,950.0 | 6,586.0 | 6,522.5 | 6,521.6 | 31.1 | 1.8 | 68.50 | -3,034.8 | 1,065.4 | 3,876.8 | 3,845.7 | 31.19 | 124.314 | |
| 6,988.2 | 6,605.8 | 6,546.0 | 6,545.2 | 31.2 | 1.8 | 70.37 | -3,035.1 | 1,065.6 | 3,858.6 | 3,827.0 | 31.53 | 122.364 | |
| 7,000.0 | 6,611.5 | 6,552.9 | 6,552.0 | 31.2 | 1.8 | 70.96 | -3,035.2 | 1,065.7 | 3,852.8 | 3,821.2 | 31.63 | 121.792 | |
| 7,050.0 | 6,634.1 | 6,579.3 | 6,578.4 | 31.2 | 1.8 | 73.51 | -3,035.5 | 1,065.8 | 3,828.1 | 3,796.1 | 32.07 | 119.367 | |
| 7,086.6 | 6,648.6 | 6,596.0 | 6,595.1 | 31.3 | 1.8 | 75.41 | -3,035.8 | 1,065.8 | 3,809.7 | 3,777.3 | 32.38 | 117.640 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,601.3 | 6,600.5 | 31.4 | 1.8 | 76.11 | -3,035.9 | 1,065.8 | 3,802.9 | 3,770.4 | 32.49 | 117.048 | |
| 7,150.0 | 6,669.5 | 6,617.1 | 6,616.3 | 31.6 | 1.8 | 78.68 | -3,036.1 | 1,065.8 | 3,777.4 | 3,744.5 | 32.90 | 114.829 | |
| 7,185.0 | 6,678.8 | 6,626.3 | 6,625.4 | 31.7 | 1.8 | 80.49 | -3,036.3 | 1,065.8 | 3,759.4 | 3,726.2 | 33.18 | 113.296 | |
| 7,200.0 | 6,682.3 | 6,629.7 | 6,628.9 | 31.8 | 1.8 | 81.26 | -3,036.3 | 1,065.8 | 3,751.7 | 3,718.4 | 33.30 | 112.676 | |
| 7,250.0 | 6,691.6 | 6,639.0 | 6,638.2 | 32.1 | 1.8 | 83.79 | -3,036.5 | 1,065.8 | 3,726.0 | 3,692.3 | 33.70 | 110.561 | |
| 7,283.4 | 6,696.0 | 6,643.4 | 6,642.5 | 32.3 | 1.8 | 85.45 | -3,036.5 | 1,065.8 | 3,708.9 | 3,675.0 | 33.98 | 109.140 | |
| 7,300.0 | 6,697.5 | 6,645.0 | 6,644.1 | 32.4 | 1.8 | 86.26 | -3,036.6 | 1,065.8 | 3,700.5 | 3,666.4 | 34.12 | 108.462 | |
| 7,350.0 | 6,699.9 | 6,647.5 | 6,646.6 | 32.8 | 1.8 | 88.64 | -3,036.6 | 1,065.9 | 3,675.3 | 3,640.7 | 34.55 | 106.366 | |
| 7,364.4 | 6,700.0 | 6,647.6 | 6,646.7 | 32.9 | 1.8 | 89.31 | -3,036.6 | 1,065.9 | 3,668.1 | 3,633.4 | 34.68 | 105.764 | |
| 7,381.9 | 6,699.9 | 6,647.5 | 6,646.6 | 33.1 | 1.8 | 89.31 | -3,036.6 | 1,065.9 | 3,659.4 | 3,624.6 | 34.83 | 105.053 | |
| 7,400.0 | 6,699.8 | 6,647.4 | 6,646.6 | 33.2 | 1.8 | 89.31 | -3,036.6 | 1,065.9 | 3,650.5 | 3,615.5 | 34.99 | 104.326 | |
| 7,480.3 | 6,699.2 | 6,647.1 | 6,646.2 | 34.0 | 1.8 | 89.30 | -3,036.6 | 1,065.9 | 3,611.8 | 3,576.0 | 35.80 | 100.880 | |
| 7,500.0 | 6,699.1 | 6,647.0 | 6,646.1 | 34.2 | 1.8 | 89.30 | -3,036.6 | 1,065.9 | 3,602.5 | 3,566.5 | 36.00 | 100.065 | |
| 7,578.7 | 6,698.6 | 6,646.6 | 6,645.8 | 35.2 | 1.8 | 89.29 | -3,036.6 | 1,065.9 | 3,566.2 | 3,529.3 | 36.95 | 96.513 | |
| 7,600.0 | 6,698.5 | 6,646.5 | 6,645.7 | 35.4 | 1.8 | 89.29 | -3,036.6 | 1,065.9 | 3,556.7 | 3,519.5 | 37.21 | 95.591 | |
| 7,677.1 | 6,698.0 | 6,646.2 | 6,645.3 | 36.5 | 1.8 | 89.28 | -3,036.6 | 1,065.9 | 3,522.8 | 3,484.6 | 38.27 | 92.046 | |
| 7,700.0 | 6,697.8 | 6,646.1 | 6,645.2 | 36.8 | 1.8 | 89.28 | -3,036.6 | 1,065.9 | 3,513.1 | 3,474.5 | 38.59 | 91.041 | |
| 7,775.6 | 6,697.3 | 6,645.7 | 6,644.9 | 38.0 | 1.8 | 89.28 | -3,036.6 | 1,065.8 | 3,481.7 | 3,441.9 | 39.75 | 87.589 | |
| 7,800.0 | 6,697.2 | 6,645.6 | 6,644.8 | 38.3 | 1.8 | 89.27 | -3,036.6 | 1,065.8 | 3,471.8 | 3,431.7 | 40.13 | 86.524 | |
| 7,874.0 | 6,696.7 | 6,645.3 | 6,644.5 | 39.6 | 1.8 | 89.27 | -3,036.6 | 1,065.8 | 3,442.8 | 3,401.5 | 41.37 | 83.229 | |
| 7,900.0 | 6,696.5 | 6,645.2 | 6,644.3 | 40.0 | 1.8 | 89.26 | -3,036.6 | 1,065.8 | 3,433.0 | 3,391.2 | 41.80 | 82.125 | |
| 7,972.4 | 6,696.1 | 6,644.8 | 6,644.0 | 41.3 | 1.8 | 89.26 | -3,036.6 | 1,065.8 | 3,406.4 | 3,363.3 | 43.10 | 79.028 | |
| 8,000.0 | 6,695.9 | 6,644.7 | 6,643.9 | 41.8 | 1.8 | 89.26 | -3,036.6 | 1,065.8 | 3,396.6 | 3,353.0 | 43.60 | 77.905 | |
| 8,070.8 | 6,695.4 | 6,644.4 | 6,643.5 | 43.1 | 1.8 | 89.25 | -3,036.6 | 1,065.8 | 3,372.4 | 3,327.5 | 44.95 | 75.028 | |
| 8,100.0 | 6,695.2 | 6,644.2 | 6,643.4 | 43.7 | 1.8 | 89.25 | -3,036.6 | 1,065.8 | 3,362.9 | 3,317.4 | 45.50 | 73.902 | |
| 8,169.3 | 6,694.8 | 6,643.9 | 6,643.1 | 45.1 | 1.8 | 89.24 | -3,036.6 | 1,065.8 | 3,341.1 | 3,294.2 | 46.89 | 71.254 | |
| 8,200.0 | 6,694.6 | 6,643.8 | 6,642.9 | 45.7 | 1.8 | 89.24 | -3,036.6 | 1,065.8 | 3,331.8 | 3,284.3 | 47.50 | 70.138 | |
| 8,267.7 | 6,694.1 | 6,643.4 | 6,642.6 | 47.1 | 1.8 | 89.23 | -3,036.5 | 1,065.8 | 3,312.3 | 3,263.4 | 48.91 | 67.720 | |
| 8,300.0 | 6,693.9 | 6,643.3 | 6,642.4 | 47.8 | 1.8 | 89.23 | -3,036.5 | 1,065.8 | 3,303.4 | 3,253.8 | 49.58 | 66.624 | |
| 8,366.1 | 6,693.5 | 6,643.0 | 6,642.1 | 49.2 | 1.8 | 89.22 | -3,036.5 | 1,065.8 | 3,286.2 | 3,235.2 | 51.01 | 64.428 | |
| 8,400.0 | 6,693.3 | 6,642.8 | 6,641.9 | 49.9 | 1.8 | 89.22 | -3,036.5 | 1,065.8 | 3,277.9 | 3,226.1 | 51.73 | 63.359 | |
| 8,464.5 | 6,692.9 | 6,642.5 | 6,641.6 | 51.4 | 1.8 | 89.22 | -3,036.5 | 1,065.8 | 3,262.9 | 3,209.7 | 53.16 | 61.374 | |
| 8,500.0 | 6,692.6 | 6,642.3 | 6,641.4 | 52.1 | 1.8 | 89.21 | -3,036.5 | 1,065.8 | 3,255.2 | 3,201.2 | 53.95 | 60.338 | |
| 8,563.0 | 6,692.2 | 6,642.0 | 6,641.1 | 53.6 | 1.8 | 89.21 | -3,036.5 | 1,065.8 | 3,242.4 | 3,187.0 | 55.38 | 58.550 | |
| 8,600.0 | 6,692.0 | 6,641.8 | 6,640.9 | 54.4 | 1.8 | 89.20 | -3,036.5 | 1,065.8 | 3,235.4 | 3,179.2 | 56.22 | 57.551 | |
| 8,661.4 | 6,691.6 | 6,641.5 | 6,640.6 | 55.8 | 1.8 | 89.20 | -3,036.5 | 1,065.8 | 3,224.8 | 3,167.2 | 57.64 | 55.945 | |
| 8,700.0 | 6,691.3 | 6,641.3 | 6,640.4 | 56.7 | 1.8 | 89.19 | -3,036.5 | 1,065.8 | 3,218.7 | 3,160.1 | 58.54 | 54.986 | |
| 8,759.8 | 6,690.9 | 6,641.0 | 6,640.1 | 58.1 | 1.8 | 89.19 | -3,036.5 | 1,065.8 | 3,210.1 | 3,150.2 | 59.95 | 53.547 | |
| 8,800.0 | 6,690.7 | 6,640.7 | 6,639.9 | 59.1 | 1.8 | 89.19 | -3,036.5 | 1,065.8 | 3,205.0 | 3,144.1 | 60.90 | 52.629 | |
| 8,858.2 | 6,690.3 | 6,640.4 | 6,639.6 | 60.5 | 1.8 | 89.18 | -3,036.5 | 1,065.8 | 3,198.4 | 3,136.1 | 62.29 | 51.343 | |
| 8,900.0 | 6,690.0 | 6,640.2 | 6,639.4 | 61.5 | 1.8 | 89.18 | -3,036.5 | 1,065.8 | 3,194.3 | 3,131.0 | 63.30 | 50.467 | |
| 8,956.7 | 6,689.7 | 6,639.9 | 6,639.1 | 62.9 | 1.8 | 89.17 | -3,036.5 | 1,065.8 | 3,189.6 | 3,125.0 | 64.67 | 49.319 | |
| 9,000.0 | 6,689.4 | 6,639.7 | 6,638.8 | 63.9 | 1.8 | 89.17 | -3,036.5 | 1,065.8 | 3,186.7 | 3,121.0 | 65.73 | 48.485 | |
| 9,055.1 | 6,689.0 | 6,639.4 | 6,638.5 | 65.3 | 1.8 | 89.16 | -3,036.5 | 1,065.8 | 3,183.9 | 3,116.8 | 67.08 | 47.462 | |
| 9,100.0 | 6,688.7 | 6,639.1 | 6,638.3 | 66.4 | 1.8 | 89.16 | -3,036.5 | 1,065.8 | 3,182.3 | 3,114.1 | 68.19 | 46.669 | |
| 9,153.5 | 6,688.4 | 6,638.8 | 6,638.0 | 67.7 | 1.8 | 89.15 | -3,036.5 | 1,065.8 | 3,181.2 | 3,111.7 | 69.52 | 45.760 | |
| 9,190.9 | 6,688.1 | 6,638.6 | 6,637.8 | 68.6 | 1.8 | 89.15 | -3,036.5 | 1,065.8 | 3,181.0 | 3,110.6 | 70.45 | 45.153 | |
| 9,200.0 | 6,688.1 | 6,638.6 | 6,637.7 | 68.9 | 1.8 | 89.15 | -3,036.5 | 1,065.8 | 3,181.0 | 3,110.4 | 70.68 | 45.008 | |
| 9,251.9 | 6,687.8 | 6,638.3 | 6,637.4 | 70.2 | 1.8 | 89.14 | -3,036.5 | 1,065.8 | 3,181.6 | 3,109.6 | 71.98 | 44.200 ES | |
| 9,300.0 | 6,687.4 | 6,638.0 | 6,637.2 | 71.4 | 1.8 | 89.14 | -3,036.5 | 1,065.8 | 3,182.9 | 3,109.7 | 73.19 | 43.489 | |
| 9,350.4 | 6,687.1 | 6,637.7 | 6,636.9 | 72.7 | 1.8 | 89.13 | -3,036.5 | 1,065.8 | 3,185.0 | 3,110.6 | 74.47 | 42.772 | |
| 9,400.0 | 6,686.8 | 6,637.4 | 6,636.6 | 73.9 | 1.8 | 89.13 | -3,036.5 | 1,065.8 | 3,187.9 | 3,112.2 | 75.72 | 42.099 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT MILLER #2 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,637.2 | 6,636.3 | 75.2 | 1.8 | 89.12 | -3,036.5 | 1,065.8 | 3,191.5 | 3,114.5 | 76.97 | 41.465 | |
| 9,500.0 | 6,686.1 | 6,636.9 | 6,636.0 | 76.5 | 1.8 | 89.12 | -3,036.4 | 1,065.8 | 3,196.0 | 3,117.7 | 78.28 | 40.830 | |
| 9,547.2 | 6,685.8 | 6,636.6 | 6,635.7 | 77.7 | 1.8 | 89.11 | -3,036.4 | 1,065.8 | 3,200.9 | 3,121.4 | 79.49 | 40.269 | |
| 9,600.0 | 6,685.5 | 6,636.3 | 6,635.4 | 79.0 | 1.8 | 89.10 | -3,036.4 | 1,065.8 | 3,207.2 | 3,126.4 | 80.85 | 39.671 | |
| 9,645.6 | 6,685.2 | 6,636.0 | 6,635.2 | 80.2 | 1.8 | 89.10 | -3,036.4 | 1,065.8 | 3,213.4 | 3,131.3 | 82.03 | 39.175 | |
| 9,700.0 | 6,684.8 | 6,635.7 | 6,634.8 | 81.6 | 1.8 | 89.09 | -3,036.4 | 1,065.8 | 3,221.5 | 3,138.1 | 83.43 | 38.612 | |
| 9,744.1 | 6,684.6 | 6,635.4 | 6,634.6 | 82.8 | 1.8 | 89.09 | -3,036.4 | 1,065.8 | 3,228.8 | 3,144.2 | 84.58 | 38.175 | |
| 9,800.0 | 6,684.2 | 6,635.1 | 6,634.2 | 84.2 | 1.8 | 89.08 | -3,036.4 | 1,065.8 | 3,238.8 | 3,152.8 | 86.03 | 37.647 | |
| 9,842.5 | 6,683.9 | 6,634.8 | 6,634.0 | 85.3 | 1.8 | 89.08 | -3,036.4 | 1,065.8 | 3,247.1 | 3,159.9 | 87.14 | 37.262 | |
| 9,900.0 | 6,683.5 | 6,634.4 | 6,633.6 | 86.8 | 1.8 | 89.07 | -3,036.4 | 1,065.8 | 3,259.1 | 3,170.5 | 88.65 | 36.766 | |
| 9,940.9 | 6,683.3 | 6,634.2 | 6,633.3 | 87.9 | 1.8 | 89.07 | -3,036.4 | 1,065.8 | 3,268.2 | 3,178.5 | 89.72 | 36.427 | |
| 10,000.0 | 6,682.9 | 6,633.8 | 6,633.0 | 89.5 | 1.8 | 89.06 | -3,036.4 | 1,065.8 | 3,282.3 | 3,191.0 | 91.27 | 35.962 | |
| 10,039.3 | 6,682.6 | 6,633.6 | 6,632.7 | 90.5 | 1.8 | 89.06 | -3,036.4 | 1,065.8 | 3,292.2 | 3,199.9 | 92.31 | 35.666 | |
| 10,100.0 | 6,682.2 | 6,633.2 | 6,632.3 | 92.1 | 1.8 | 89.05 | -3,036.4 | 1,065.8 | 3,308.4 | 3,214.5 | 93.91 | 35.231 | |
| 10,137.8 | 6,682.0 | 6,632.9 | 6,632.1 | 93.1 | 1.8 | 89.04 | -3,036.4 | 1,065.8 | 3,319.0 | 3,224.1 | 94.91 | 34.971 | |
| 10,200.0 | 6,681.6 | 6,632.5 | 6,631.7 | 94.8 | 1.8 | 89.04 | -3,036.4 | 1,065.8 | 3,337.2 | 3,240.7 | 96.55 | 34.564 | |
| 10,236.2 | 6,681.4 | 6,632.3 | 6,631.4 | 95.7 | 1.8 | 89.03 | -3,036.4 | 1,065.8 | 3,348.4 | 3,250.9 | 97.51 | 34.337 | |
| 10,300.0 | 6,680.9 | 6,631.9 | 6,631.0 | 97.4 | 1.8 | 89.02 | -3,036.4 | 1,065.8 | 3,368.8 | 3,269.6 | 99.21 | 33.957 | |
| 10,334.6 | 6,680.7 | 6,631.6 | 6,630.8 | 98.3 | 1.8 | 89.02 | -3,036.4 | 1,065.8 | 3,380.4 | 3,280.3 | 100.13 | 33.760 | |
| 10,400.0 | 6,680.3 | 6,631.2 | 6,630.3 | 100.1 | 1.8 | 89.01 | -3,036.4 | 1,065.8 | 3,403.1 | 3,301.2 | 101.87 | 33.406 | |
| 10,433.0 | 6,680.1 | 6,631.0 | 6,630.1 | 101.0 | 1.8 | 89.01 | -3,036.4 | 1,065.8 | 3,414.9 | 3,312.2 | 102.75 | 33.234 | |
| 10,500.0 | 6,679.7 | 6,630.5 | 6,629.7 | 102.8 | 1.8 | 89.00 | -3,036.4 | 1,065.8 | 3,439.9 | 3,335.3 | 104.54 | 32.904 | |
| 10,531.5 | 6,679.4 | 6,630.3 | 6,629.4 | 103.6 | 1.8 | 89.00 | -3,036.3 | 1,065.8 | 3,452.0 | 3,346.6 | 105.39 | 32.756 | |
| 10,600.0 | 6,679.0 | 6,629.8 | 6,629.0 | 105.4 | 1.8 | 88.99 | -3,036.3 | 1,065.8 | 3,479.1 | 3,371.9 | 107.22 | 32.448 | |
| 10,629.9 | 6,678.8 | 6,629.6 | 6,628.8 | 106.2 | 1.8 | 88.98 | -3,036.3 | 1,065.8 | 3,491.4 | 3,383.3 | 108.02 | 32.320 | |
| 10,700.0 | 6,678.4 | 6,629.1 | 6,628.3 | 108.1 | 1.8 | 88.98 | -3,036.3 | 1,065.8 | 3,520.8 | 3,410.9 | 109.91 | 32.035 | |
| 10,728.3 | 6,678.2 | 6,628.9 | 6,628.1 | 108.9 | 1.8 | 88.97 | -3,036.3 | 1,065.8 | 3,533.1 | 3,422.4 | 110.67 | 31.925 | |
| 10,800.0 | 6,677.7 | 6,628.4 | 6,627.5 | 110.8 | 1.8 | 88.96 | -3,036.3 | 1,065.8 | 3,564.8 | 3,452.2 | 112.60 | 31.660 | |
| 10,826.7 | 6,677.5 | 6,628.2 | 6,627.3 | 111.5 | 1.8 | 88.96 | -3,036.3 | 1,065.8 | 3,577.0 | 3,463.7 | 113.32 | 31.566 | |
| 10,900.0 | 6,677.1 | 6,627.6 | 6,626.8 | 113.5 | 1.8 | 88.95 | -3,036.3 | 1,065.8 | 3,611.1 | 3,495.8 | 115.29 | 31.321 | |
| 10,925.2 | 6,676.9 | 6,627.5 | 6,626.6 | 114.2 | 1.8 | 88.95 | -3,036.3 | 1,065.8 | 3,623.1 | 3,507.1 | 115.97 | 31.240 | |
| 11,000.0 | 6,676.4 | 6,626.9 | 6,626.1 | 116.2 | 1.8 | 88.94 | -3,036.3 | 1,065.8 | 3,659.5 | 3,541.5 | 118.00 | 31.013 | |
| 11,023.6 | 6,676.3 | 6,626.7 | 6,625.9 | 116.8 | 1.8 | 88.93 | -3,036.3 | 1,065.8 | 3,671.2 | 3,552.6 | 118.63 | 30.945 | |
| 11,100.0 | 6,675.8 | 6,626.1 | 6,625.3 | 118.9 | 1.8 | 88.92 | -3,036.3 | 1,065.8 | 3,709.9 | 3,589.2 | 120.70 | 30.736 | |
| 11,122.0 | 6,675.6 | 6,626.0 | 6,625.1 | 119.5 | 1.8 | 88.92 | -3,036.3 | 1,065.8 | 3,721.3 | 3,600.0 | 121.30 | 30.678 | |
| 11,200.0 | 6,675.1 | 6,625.4 | 6,624.5 | 121.6 | 1.8 | 88.91 | -3,036.3 | 1,065.8 | 3,762.4 | 3,638.9 | 123.41 | 30.485 | |
| 11,220.4 | 6,675.0 | 6,625.2 | 6,624.4 | 122.2 | 1.8 | 88.90 | -3,036.3 | 1,065.8 | 3,773.3 | 3,649.3 | 123.97 | 30.437 | |
| 11,300.0 | 6,674.5 | 6,624.6 | 6,623.7 | 124.3 | 1.8 | 88.89 | -3,036.3 | 1,065.8 | 3,816.7 | 3,690.6 | 126.13 | 30.260 | |
| 11,318.9 | 6,674.3 | 6,624.4 | 6,623.6 | 124.9 | 1.8 | 88.89 | -3,036.3 | 1,065.8 | 3,827.1 | 3,700.5 | 126.64 | 30.220 | |
| 11,400.0 | 6,673.8 | 6,623.8 | 6,622.9 | 127.1 | 1.8 | 88.88 | -3,036.2 | 1,065.8 | 3,872.8 | 3,744.0 | 128.85 | 30.057 | |
| 11,417.3 | 6,673.7 | 6,623.6 | 6,622.8 | 127.5 | 1.8 | 88.88 | -3,036.2 | 1,065.8 | 3,882.7 | 3,753.4 | 129.32 | 30.024 | |
| 11,500.0 | 6,673.2 | 6,622.9 | 6,622.1 | 129.8 | 1.8 | 88.86 | -3,036.2 | 1,065.8 | 3,930.7 | 3,799.2 | 131.57 | 29.875 | |
| 11,515.7 | 6,673.1 | 6,622.8 | 6,622.0 | 130.2 | 1.8 | 88.86 | -3,036.2 | 1,065.8 | 3,940.0 | 3,808.0 | 132.00 | 29.848 | |
| 11,600.0 | 6,672.5 | 6,622.1 | 6,621.3 | 132.5 | 1.8 | 88.85 | -3,036.2 | 1,065.8 | 3,990.3 | 3,856.0 | 134.30 | 29.712 | |
| 11,614.1 | 6,672.4 | 6,622.0 | 6,621.1 | 132.9 | 1.8 | 88.85 | -3,036.2 | 1,065.8 | 3,998.9 | 3,864.2 | 134.69 | 29.690 | |
| 11,700.0 | 6,671.9 | 6,621.3 | 6,620.4 | 135.3 | 1.8 | 88.83 | -3,036.2 | 1,065.8 | 4,051.5 | 3,914.4 | 137.03 | 29.566 | |
| 11,712.6 | 6,671.8 | 6,621.1 | 6,620.3 | 135.6 | 1.8 | 88.83 | -3,036.2 | 1,065.8 | 4,059.3 | 3,921.9 | 137.38 | 29.549 | |
| 11,800.0 | 6,671.2 | 6,620.4 | 6,619.6 | 138.0 | 1.8 | 88.82 | -3,036.2 | 1,065.8 | 4,114.1 | 3,974.4 | 139.77 | 29.436 | |
| 11,811.0 | 6,671.1 | 6,620.3 | 6,619.5 | 138.3 | 1.8 | 88.82 | -3,036.2 | 1,065.8 | 4,121.1 | 3,981.1 | 140.07 | 29.423 | |
| 11,900.0 | 6,670.6 | 6,619.5 | 6,618.7 | 140.7 | 1.8 | 88.80 | -3,036.2 | 1,065.8 | 4,178.3 | 4,035.8 | 142.50 | 29.321 | |
| 11,909.4 | 6,670.5 | 6,619.4 | 6,618.6 | 141.0 | 1.8 | 88.80 | -3,036.2 | 1,065.8 | 4,184.4 | 4,041.6 | 142.76 | 29.311 | |
| 11,987.2 | 6,670.0 | 6,618.7 | 6,617.9 | 143.1 | 1.8 | 88.79 | -3,036.2 | 1,065.8 | 4,235.3 | 4,090.5 | 144.89 | 29.231 | SF |

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|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -162.52 | -364.3 | -114.7 | 382.0 | | | | |
| 98.4 | 98.4 | 93.4 | 93.4 | 0.1 | 1.2 | -162.52 | -364.3 | -114.7 | 382.0 | 380.7 | 1.28 | 298.956 | |
| 100.0 | 100.0 | 95.0 | 95.0 | 0.1 | 1.2 | -162.52 | -364.3 | -114.7 | 382.0 | 380.7 | 1.30 | 293.965 | |
| 196.8 | 196.8 | 191.8 | 191.8 | 0.3 | 3.4 | -162.52 | -364.3 | -114.7 | 382.0 | 378.3 | 3.67 | 104.075 | |
| 200.0 | 200.0 | 195.0 | 195.0 | 0.3 | 3.4 | -162.52 | -364.3 | -114.7 | 382.0 | 378.2 | 3.75 | 101.889 | |
| 295.3 | 295.3 | 290.3 | 290.3 | 0.5 | 5.4 | -162.52 | -364.3 | -114.7 | 382.0 | 376.0 | 5.95 | 64.176 | |
| 300.0 | 300.0 | 295.0 | 295.0 | 0.5 | 5.5 | -162.52 | -364.3 | -114.7 | 382.0 | 375.9 | 6.06 | 63.024 | |
| 393.7 | 393.7 | 388.7 | 388.7 | 0.8 | 7.4 | -162.52 | -364.3 | -114.7 | 382.0 | 373.8 | 8.19 | 46.659 | |
| 400.0 | 400.0 | 395.0 | 395.0 | 0.8 | 7.6 | -162.52 | -364.3 | -114.7 | 382.0 | 373.6 | 8.33 | 45.859 | |
| 492.1 | 492.1 | 487.1 | 487.1 | 1.0 | 9.4 | -162.52 | -364.3 | -114.7 | 382.0 | 371.5 | 10.41 | 36.706 | |
| 500.0 | 500.0 | 495.0 | 495.0 | 1.0 | 9.6 | -162.52 | -364.3 | -114.7 | 382.0 | 371.4 | 10.58 | 36.091 | |
| 590.5 | 590.5 | 585.5 | 585.5 | 1.2 | 11.4 | -162.52 | -364.3 | -114.7 | 382.0 | 369.3 | 12.62 | 30.269 | |
| 600.0 | 600.0 | 595.0 | 595.0 | 1.2 | 11.6 | -162.52 | -364.3 | -114.7 | 382.0 | 369.1 | 12.83 | 29.768 | |
| 689.0 | 689.0 | 684.0 | 684.0 | 1.4 | 13.4 | -162.52 | -364.3 | -114.7 | 382.0 | 367.1 | 14.83 | 25.760 | |
| 700.0 | 700.0 | 695.0 | 695.0 | 1.4 | 13.6 | -162.52 | -364.3 | -114.7 | 382.0 | 366.9 | 15.08 | 25.337 | |
| 787.4 | 787.4 | 782.4 | 782.4 | 1.6 | 15.4 | -162.52 | -364.3 | -114.7 | 382.0 | 364.9 | 17.03 | 22.422 | |
| 800.0 | 800.0 | 795.0 | 795.0 | 1.7 | 15.6 | -162.52 | -364.3 | -114.7 | 382.0 | 364.6 | 17.32 | 22.056 | |
| 885.8 | 885.8 | 880.8 | 880.8 | 1.9 | 17.4 | -162.52 | -364.3 | -114.7 | 382.0 | 362.7 | 19.24 | 19.852 | |
| 900.0 | 900.0 | 895.0 | 895.0 | 1.9 | 17.7 | -162.52 | -364.3 | -114.7 | 382.0 | 362.4 | 19.56 | 19.530 | |
| 984.2 | 984.2 | 979.2 | 979.2 | 2.1 | 19.4 | -162.52 | -364.3 | -114.7 | 382.0 | 360.5 | 21.44 | 17.811 | |
| 1,000.0 | 1,000.0 | 995.0 | 995.0 | 2.1 | 19.7 | -162.52 | -364.3 | -114.7 | 382.0 | 360.2 | 21.80 | 17.523 | |
| 1,082.7 | 1,082.7 | 1,077.7 | 1,077.7 | 2.3 | 21.3 | -78.26 | -364.3 | -114.7 | 381.7 | 358.1 | 23.64 | 16.148 | |
| 1,100.0 | 1,100.0 | 1,095.0 | 1,095.0 | 2.3 | 21.7 | -78.34 | -364.3 | -114.7 | 381.6 | 357.6 | 24.02 | 15.884 | |
| 1,181.1 | 1,181.0 | 1,176.0 | 1,176.0 | 2.5 | 23.3 | -78.94 | -364.3 | -114.7 | 380.8 | 355.0 | 25.82 | 14.748 | |
| 1,200.0 | 1,199.8 | 1,194.8 | 1,194.8 | 2.5 | 23.7 | -79.13 | -364.3 | -114.7 | 380.6 | 354.3 | 26.24 | 14.503 | |
| 1,279.5 | 1,279.1 | 1,274.1 | 1,274.1 | 2.7 | 25.3 | -80.14 | -364.3 | -114.7 | 379.4 | 351.4 | 28.01 | 13.544 | |
| 1,300.0 | 1,299.5 | 1,294.5 | 1,294.5 | 2.8 | 25.7 | -80.45 | -364.3 | -114.7 | 379.0 | 350.6 | 28.47 | 13.315 | |
| 1,377.9 | 1,376.9 | 1,371.9 | 1,371.9 | 3.0 | 27.3 | -81.85 | -364.3 | -114.7 | 377.6 | 347.4 | 30.21 | 12.498 | |
| 1,400.0 | 1,398.7 | 1,393.7 | 1,393.7 | 3.0 | 27.7 | -82.30 | -364.3 | -114.7 | 377.2 | 346.5 | 30.71 | 12.284 | |
| 1,476.4 | 1,474.2 | 1,469.2 | 1,469.2 | 3.2 | 29.2 | -84.07 | -364.3 | -114.7 | 375.8 | 343.4 | 32.44 | 11.585 | |
| 1,500.0 | 1,497.5 | 1,492.5 | 1,492.5 | 3.3 | 29.7 | -84.67 | -364.3 | -114.7 | 375.4 | 342.4 | 32.97 | 11.386 | |
| 1,574.8 | 1,571.0 | 1,566.0 | 1,566.0 | 3.5 | 31.2 | -86.78 | -364.3 | -114.7 | 374.3 | 339.6 | 34.69 | 10.791 | |
| 1,600.0 | 1,595.6 | 1,590.6 | 1,590.6 | 3.6 | 31.7 | -87.56 | -364.3 | -114.7 | 374.1 | 338.8 | 35.27 | 10.607 | |
| 1,673.2 | 1,667.0 | 1,662.0 | 1,662.0 | 3.9 | 33.1 | -89.98 | -364.3 | -114.7 | 373.7 | 336.7 | 36.97 | 10.108 | |
| 1,673.9 | 1,667.7 | 1,662.7 | 1,662.7 | 3.9 | 33.1 | -90.00 | -364.3 | -114.7 | 373.7 | 336.7 | 36.99 | 10.103 | CC |
| 1,700.0 | 1,693.1 | 1,688.1 | 1,688.1 | 4.0 | 33.6 | -90.92 | -364.3 | -114.7 | 373.8 | 336.2 | 37.60 | 9.942 | |
| 1,771.6 | 1,762.4 | 1,757.4 | 1,757.4 | 4.3 | 35.0 | -93.60 | -364.3 | -114.7 | 374.5 | 335.2 | 39.29 | 9.532 | |
| 1,800.0 | 1,789.6 | 1,784.6 | 1,784.6 | 4.4 | 35.6 | -94.72 | -364.3 | -114.7 | 375.1 | 335.1 | 39.96 | 9.388 | |
| 1,870.1 | 1,856.8 | 1,851.8 | 1,851.8 | 4.7 | 36.9 | -97.59 | -364.3 | -114.7 | 377.3 | 335.7 | 41.63 | 9.065 | |
| 1,900.0 | 1,885.3 | 1,880.3 | 1,880.3 | 4.9 | 37.5 | -98.87 | -364.3 | -114.7 | 378.7 | 336.4 | 42.33 | 8.947 | |
| 1,968.5 | 1,950.2 | 1,945.2 | 1,945.2 | 5.3 | 38.8 | -101.87 | -364.3 | -114.7 | 382.9 | 338.9 | 43.95 | 8.711 | |
| 2,000.0 | 1,979.8 | 1,974.8 | 1,974.8 | 5.5 | 39.4 | -103.28 | -364.3 | -114.7 | 385.3 | 340.6 | 44.69 | 8.623 | |
| 2,044.9 | 2,021.9 | 2,016.9 | 2,016.9 | 5.7 | 40.2 | -105.32 | -364.3 | -114.7 | 389.4 | 343.7 | 45.73 | 8.516 | |
| 2,066.9 | 2,042.5 | 2,037.5 | 2,037.5 | 5.9 | 40.7 | -106.36 | -364.3 | -114.7 | 391.7 | 345.5 | 46.24 | 8.471 | |
| 2,100.0 | 2,073.4 | 2,068.4 | 2,068.4 | 6.1 | 41.3 | -107.90 | -364.3 | -114.7 | 395.4 | 348.4 | 47.01 | 8.412 | |
| 2,165.3 | 2,134.4 | 2,129.4 | 2,129.4 | 6.5 | 42.5 | -110.87 | -364.3 | -114.7 | 403.6 | 355.1 | 48.51 | 8.320 | |
| 2,200.0 | 2,166.8 | 2,161.8 | 2,161.8 | 6.8 | 43.2 | -112.40 | -364.3 | -114.7 | 408.5 | 359.2 | 49.30 | 8.286 | |
| 2,263.8 | 2,226.4 | 2,221.4 | 2,221.4 | 7.2 | 44.4 | -115.13 | -364.3 | -114.7 | 418.2 | 367.4 | 50.73 | 8.243 | |
| 2,300.0 | 2,260.2 | 2,255.2 | 2,255.2 | 7.4 | 45.0 | -116.63 | -364.3 | -114.7 | 424.1 | 372.6 | 51.53 | 8.230 | |
| 2,362.2 | 2,318.3 | 2,313.3 | 2,313.3 | 7.9 | 46.2 | -119.11 | -364.3 | -114.7 | 435.1 | 382.2 | 52.90 | 8.225 | |
| 2,400.0 | 2,353.6 | 2,348.6 | 2,348.6 | 8.1 | 46.9 | -120.56 | -364.3 | -114.7 | 442.1 | 388.4 | 53.72 | 8.231 | |
| 2,460.6 | 2,410.3 | 2,405.3 | 2,405.3 | 8.6 | 48.1 | -122.80 | -364.3 | -114.7 | 454.0 | 399.0 | 55.02 | 8.252 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,442.0 | 2,442.0 | 8.9 | 48.8 | -124.20 | -364.3 | -114.7 | 462.2 | 406.3 | 55.86 | 8.274 | |
| 2,559.0 | 2,502.2 | 2,497.2 | 2,497.2 | 9.3 | 49.9 | -126.22 | -364.3 | -114.7 | 474.9 | 417.8 | 57.10 | 8.316 | |
| 2,600.0 | 2,540.5 | 2,535.5 | 2,535.5 | 9.6 | 50.7 | -127.55 | -364.3 | -114.7 | 484.0 | 426.0 | 57.96 | 8.351 | |
| 2,657.5 | 2,594.2 | 2,589.2 | 2,589.2 | 10.0 | 51.8 | -129.35 | -364.3 | -114.7 | 497.3 | 438.1 | 59.15 | 8.407 | |
| 2,700.0 | 2,633.9 | 2,628.9 | 2,628.9 | 10.3 | 52.6 | -130.63 | -364.3 | -114.7 | 507.4 | 447.4 | 60.03 | 8.453 | |
| 2,755.9 | 2,686.1 | 2,681.1 | 2,681.1 | 10.7 | 53.6 | -132.23 | -364.3 | -114.7 | 521.1 | 459.9 | 61.17 | 8.518 | |
| 2,800.0 | 2,727.3 | 2,722.3 | 2,722.3 | 11.0 | 54.4 | -133.45 | -364.3 | -114.7 | 532.2 | 470.1 | 62.07 | 8.574 | |
| 2,854.3 | 2,778.1 | 2,773.1 | 2,773.1 | 11.4 | 55.5 | -134.87 | -364.3 | -114.7 | 546.2 | 483.0 | 63.18 | 8.645 | |
| 2,900.0 | 2,820.7 | 2,815.7 | 2,815.7 | 11.8 | 56.3 | -136.02 | -364.3 | -114.7 | 558.2 | 494.1 | 64.10 | 8.708 | |
| 2,952.7 | 2,870.0 | 2,865.0 | 2,865.0 | 12.2 | 57.3 | -137.29 | -364.3 | -114.7 | 572.3 | 507.1 | 65.16 | 8.782 | |
| 3,000.0 | 2,914.2 | 2,909.2 | 2,909.2 | 12.5 | 58.2 | -138.38 | -364.3 | -114.7 | 585.1 | 519.0 | 66.11 | 8.851 | |
| 3,051.2 | 2,962.0 | 2,957.0 | 2,957.0 | 12.9 | 59.2 | -139.51 | -364.3 | -114.7 | 599.3 | 532.2 | 67.14 | 8.926 | |
| 3,100.0 | 3,007.6 | 3,002.6 | 3,002.6 | 13.3 | 60.1 | -140.54 | -364.3 | -114.7 | 613.0 | 544.9 | 68.12 | 8.999 | |
| 3,149.6 | 3,053.9 | 3,048.9 | 3,048.9 | 13.6 | 61.0 | -141.54 | -364.3 | -114.7 | 627.1 | 558.0 | 69.11 | 9.075 | |
| 3,200.0 | 3,101.0 | 3,096.0 | 3,096.0 | 14.0 | 61.9 | -142.51 | -364.3 | -114.7 | 641.7 | 571.5 | 70.11 | 9.152 | |
| 3,248.0 | 3,145.9 | 3,140.9 | 3,140.9 | 14.4 | 62.9 | -143.40 | -364.3 | -114.7 | 655.7 | 584.6 | 71.07 | 9.226 | |
| 3,300.0 | 3,194.4 | 3,189.4 | 3,189.4 | 14.8 | 63.8 | -144.33 | -364.3 | -114.7 | 671.0 | 598.9 | 72.10 | 9.306 | |
| 3,346.4 | 3,237.8 | 3,232.8 | 3,232.8 | 15.1 | 64.7 | -145.12 | -364.3 | -114.7 | 684.8 | 611.8 | 73.03 | 9.377 | |
| 3,400.0 | 3,287.8 | 3,282.8 | 3,282.8 | 15.5 | 65.7 | -145.99 | -364.3 | -114.7 | 700.9 | 626.8 | 74.10 | 9.459 | |
| 3,444.9 | 3,329.8 | 3,324.8 | 3,324.8 | 15.9 | 66.6 | -146.70 | -364.3 | -114.7 | 714.5 | 639.5 | 74.99 | 9.528 | |
| 3,500.0 | 3,381.3 | 3,376.3 | 3,376.3 | 16.3 | 67.6 | -147.53 | -364.3 | -114.7 | 731.3 | 655.2 | 76.09 | 9.612 | |
| 3,543.3 | 3,421.7 | 3,416.7 | 3,416.7 | 16.6 | 68.4 | -148.15 | -364.3 | -114.7 | 744.6 | 667.7 | 76.95 | 9.677 | |
| 3,600.0 | 3,474.7 | 3,469.7 | 3,469.7 | 17.0 | 69.5 | -148.94 | -364.3 | -114.7 | 762.2 | 684.1 | 78.08 | 9.762 | |
| 3,641.7 | 3,513.7 | 3,508.7 | 3,508.7 | 17.3 | 70.2 | -149.50 | -364.3 | -114.7 | 775.2 | 696.3 | 78.91 | 9.824 | |
| 3,700.0 | 3,568.1 | 3,563.1 | 3,563.1 | 17.8 | 71.3 | -150.25 | -364.3 | -114.7 | 793.5 | 713.4 | 80.07 | 9.910 | |
| 3,740.1 | 3,605.6 | 3,600.6 | 3,600.6 | 18.1 | 72.1 | -150.75 | -364.3 | -114.7 | 806.1 | 725.3 | 80.87 | 9.969 | |
| 3,800.0 | 3,661.5 | 3,656.5 | 3,656.5 | 18.5 | 73.2 | -151.46 | -364.3 | -114.7 | 825.1 | 743.0 | 82.06 | 10.055 | |
| 3,838.6 | 3,697.6 | 3,692.6 | 3,692.6 | 18.8 | 73.9 | -151.91 | -364.3 | -114.7 | 837.4 | 754.6 | 82.83 | 10.110 | |
| 3,900.0 | 3,754.9 | 3,749.9 | 3,749.9 | 19.3 | 75.1 | -152.59 | -364.3 | -114.7 | 857.1 | 773.0 | 84.06 | 10.196 | |
| 3,937.0 | 3,789.5 | 3,784.5 | 3,784.5 | 19.6 | 75.8 | -152.98 | -364.3 | -114.7 | 869.0 | 784.2 | 84.80 | 10.248 | |
| 4,000.0 | 3,848.4 | 3,843.4 | 3,843.4 | 20.1 | 77.0 | -153.63 | -364.3 | -114.7 | 889.3 | 803.2 | 86.06 | 10.334 | |
| 4,035.4 | 3,881.5 | 3,876.5 | 3,876.5 | 20.3 | 77.6 | -153.98 | -364.3 | -114.7 | 900.8 | 814.0 | 86.77 | 10.382 | |
| 4,100.0 | 3,941.8 | 3,936.8 | 3,936.8 | 20.8 | 78.9 | -154.60 | -364.3 | -114.7 | 921.8 | 833.7 | 88.06 | 10.468 | |
| 4,133.8 | 3,973.4 | 3,968.4 | 3,968.4 | 21.1 | 79.5 | -154.92 | -364.3 | -114.7 | 932.8 | 844.1 | 88.74 | 10.512 | |
| 4,200.0 | 4,035.2 | 4,030.2 | 4,030.2 | 21.6 | 80.7 | -155.51 | -364.3 | -114.7 | 954.5 | 864.4 | 90.06 | 10.598 | |
| 4,232.3 | 4,065.4 | 4,060.4 | 4,060.4 | 21.8 | 81.3 | -155.79 | -364.3 | -114.7 | 965.1 | 874.4 | 90.71 | 10.639 | |
| 4,300.0 | 4,128.6 | 4,123.6 | 4,123.6 | 22.3 | 82.6 | -156.36 | -364.3 | -114.7 | 987.4 | 895.4 | 92.07 | 10.725 | |
| 4,330.7 | 4,157.3 | 4,152.3 | 4,152.3 | 22.6 | 83.2 | -156.61 | -364.3 | -114.7 | 997.6 | 904.9 | 92.69 | 10.763 | |
| 4,400.0 | 4,222.0 | 4,217.0 | 4,217.0 | 23.1 | 84.5 | -157.16 | -364.3 | -114.7 | 1,020.5 | 926.5 | 94.08 | 10.847 | |
| 4,429.1 | 4,249.3 | 4,244.3 | 4,244.3 | 23.3 | 85.0 | -157.38 | -364.3 | -114.7 | 1,030.2 | 935.5 | 94.67 | 10.882 | |
| 4,500.0 | 4,315.5 | 4,310.5 | 4,310.5 | 23.9 | 86.4 | -157.90 | -364.3 | -114.7 | 1,053.8 | 957.7 | 96.10 | 10.966 | |
| 4,527.5 | 4,341.2 | 4,336.2 | 4,336.2 | 24.1 | 86.9 | -158.10 | -364.3 | -114.7 | 1,063.0 | 966.4 | 96.65 | 10.998 | |
| 4,600.0 | 4,408.9 | 4,403.9 | 4,403.9 | 24.6 | 88.3 | -158.60 | -364.3 | -114.7 | 1,087.2 | 989.1 | 98.11 | 11.082 | |
| 4,626.0 | 4,433.2 | 4,428.2 | 4,428.2 | 24.8 | 88.7 | -158.78 | -364.3 | -114.7 | 1,095.9 | 997.3 | 98.64 | 11.111 | |
| 4,700.0 | 4,502.3 | 4,497.3 | 4,497.3 | 25.4 | 90.1 | -159.26 | -364.3 | -114.7 | 1,120.8 | 1,020.7 | 100.13 | 11.193 | |
| 4,724.4 | 4,525.1 | 4,520.1 | 4,520.1 | 25.6 | 90.6 | -159.42 | -364.3 | -114.7 | 1,129.0 | 1,028.4 | 100.63 | 11.220 | |
| 4,800.0 | 4,595.7 | 4,590.7 | 4,590.7 | 26.2 | 92.0 | -159.89 | -364.3 | -114.7 | 1,154.5 | 1,052.3 | 102.15 | 11.301 | |
| 4,822.8 | 4,617.1 | 4,612.1 | 4,612.1 | 26.3 | 92.4 | -160.02 | -364.3 | -114.7 | 1,162.2 | 1,059.6 | 102.62 | 11.326 | |
| 4,900.0 | 4,689.2 | 4,684.2 | 4,684.2 | 26.9 | 93.9 | -160.47 | -364.3 | -114.7 | 1,188.3 | 1,084.1 | 104.18 | 11.406 | |
| 4,921.2 | 4,709.0 | 4,704.0 | 4,704.0 | 27.1 | 94.3 | -160.59 | -364.3 | -114.7 | 1,195.5 | 1,090.9 | 104.61 | 11.428 | |
| 5,000.0 | 4,782.6 | 4,777.6 | 4,777.6 | 27.7 | 95.8 | -161.03 | -364.3 | -114.7 | 1,222.2 | 1,116.0 | 106.21 | 11.508 | |
| 5,019.7 | 4,801.0 | 4,796.0 | 4,796.0 | 27.8 | 96.1 | -161.13 | -364.3 | -114.7 | 1,228.9 | 1,122.3 | 106.61 | 11.527 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,871.0 | 4,871.0 | 28.4 | 97.6 | -161.55 | -364.3 | -114.7 | 1,256.2 | 1,148.0 | 108.24 | 11.606 | |
| 5,118.1 | 4,892.9 | 4,887.9 | 4,887.9 | 28.6 | 98.0 | -161.65 | -364.3 | -114.7 | 1,262.4 | 1,153.8 | 108.61 | 11.624 | |
| 5,159.9 | 4,932.0 | 4,927.0 | 4,927.0 | 28.9 | 98.8 | -161.86 | -364.3 | -114.7 | 1,276.7 | 1,167.2 | 109.46 | 11.664 | |
| 5,200.0 | 4,969.5 | 4,964.5 | 4,964.5 | 29.2 | 99.5 | -162.14 | -364.3 | -114.7 | 1,290.1 | 1,179.4 | 110.68 | 11.656 | |
| 5,216.5 | 4,985.1 | 4,980.1 | 4,980.1 | 29.3 | 99.8 | -162.25 | -364.3 | -114.7 | 1,295.5 | 1,184.3 | 111.18 | 11.652 | |
| 5,300.0 | 5,064.0 | 5,059.0 | 5,059.0 | 29.7 | 101.4 | -162.77 | -364.3 | -114.7 | 1,321.4 | 1,207.7 | 113.68 | 11.624 | |
| 5,314.9 | 5,078.2 | 5,073.2 | 5,073.2 | 29.8 | 101.7 | -162.85 | -364.3 | -114.7 | 1,325.8 | 1,211.7 | 114.12 | 11.617 | |
| 5,400.0 | 5,159.6 | 5,154.6 | 5,154.6 | 30.2 | 103.4 | -163.30 | -364.3 | -114.7 | 1,349.6 | 1,233.0 | 116.64 | 11.571 | |
| 5,413.4 | 5,172.4 | 5,167.4 | 5,167.4 | 30.3 | 103.6 | -163.37 | -364.3 | -114.7 | 1,353.2 | 1,236.2 | 117.03 | 11.563 | |
| 5,500.0 | 5,256.1 | 5,251.1 | 5,251.1 | 30.7 | 105.3 | -163.76 | -364.3 | -114.7 | 1,374.7 | 1,255.2 | 119.53 | 11.500 | |
| 5,511.8 | 5,267.6 | 5,262.6 | 5,262.6 | 30.7 | 105.5 | -163.81 | -364.3 | -114.7 | 1,377.4 | 1,257.6 | 119.87 | 11.491 | |
| 5,600.0 | 5,353.5 | 5,348.5 | 5,348.5 | 31.1 | 107.3 | -164.14 | -364.3 | -114.7 | 1,396.5 | 1,274.2 | 122.35 | 11.414 | |
| 5,610.2 | 5,363.5 | 5,358.5 | 5,358.5 | 31.1 | 107.5 | -164.18 | -364.3 | -114.7 | 1,398.6 | 1,275.9 | 122.64 | 11.404 | |
| 5,700.0 | 5,451.6 | 5,446.6 | 5,446.6 | 31.4 | 109.2 | -164.46 | -364.3 | -114.7 | 1,415.1 | 1,290.0 | 125.08 | 11.313 | |
| 5,708.6 | 5,460.2 | 5,455.2 | 5,455.2 | 31.4 | 109.4 | -164.48 | -364.3 | -114.7 | 1,416.5 | 1,291.2 | 125.32 | 11.304 | |
| 5,800.0 | 5,550.4 | 5,545.4 | 5,545.4 | 31.7 | 111.2 | -164.71 | -364.3 | -114.7 | 1,430.3 | 1,302.6 | 127.71 | 11.200 | |
| 5,807.1 | 5,557.4 | 5,552.4 | 5,552.4 | 31.7 | 111.4 | -164.72 | -364.3 | -114.7 | 1,431.3 | 1,303.4 | 127.89 | 11.191 | |
| 5,900.0 | 5,649.6 | 5,644.6 | 5,644.6 | 31.9 | 113.2 | -164.90 | -364.3 | -114.7 | 1,442.3 | 1,312.0 | 130.22 | 11.075 | |
| 5,905.5 | 5,655.1 | 5,650.1 | 5,650.1 | 31.9 | 113.3 | -164.91 | -364.3 | -114.7 | 1,442.8 | 1,312.5 | 130.36 | 11.068 | |
| 6,000.0 | 5,749.2 | 5,744.2 | 5,744.2 | 32.1 | 115.2 | -165.04 | -364.3 | -114.7 | 1,450.8 | 1,318.2 | 132.61 | 10.941 | |
| 6,003.9 | 5,753.1 | 5,748.1 | 5,748.1 | 32.1 | 115.3 | -165.04 | -364.3 | -114.7 | 1,451.1 | 1,318.4 | 132.70 | 10.935 | |
| 6,100.0 | 5,849.1 | 5,844.1 | 5,844.1 | 32.3 | 117.2 | -165.12 | -364.3 | -114.7 | 1,456.1 | 1,321.2 | 134.85 | 10.797 | |
| 6,102.3 | 5,851.4 | 5,846.4 | 5,846.4 | 32.3 | 117.3 | -165.12 | -364.3 | -114.7 | 1,456.1 | 1,321.2 | 134.90 | 10.794 | |
| 6,200.8 | 5,949.8 | 5,944.8 | 5,944.8 | 32.4 | 119.2 | -165.15 | -364.3 | -114.7 | 1,457.9 | 1,320.9 | 136.97 | 10.644 | |
| 6,204.9 | 5,953.9 | 5,948.9 | 5,948.9 | 32.4 | 119.3 | 110.41 | -364.3 | -114.7 | 1,457.9 | 1,307.1 | 150.81 | 9.667 | |
| 6,234.9 | 5,983.9 | 5,978.9 | 5,978.9 | 32.4 | 119.9 | 110.41 | -364.3 | -114.7 | 1,457.9 | 1,306.5 | 151.44 | 9.627 | |
| 6,250.0 | 5,999.0 | 5,994.0 | 5,994.0 | 32.4 | 120.2 | 20.42 | -364.3 | -114.7 | 1,457.8 | 1,319.8 | 137.93 | 10.569 | |
| 6,299.2 | 6,048.2 | 6,043.2 | 6,043.2 | 32.4 | 121.2 | 20.53 | -364.3 | -114.7 | 1,455.2 | 1,316.9 | 138.31 | 10.521 | |
| 6,300.0 | 6,048.9 | 6,043.9 | 6,043.9 | 32.4 | 121.2 | 20.53 | -364.3 | -114.7 | 1,455.1 | 1,316.8 | 138.31 | 10.521 | |
| 6,350.0 | 6,098.5 | 6,093.5 | 6,093.5 | 32.4 | 122.2 | 20.79 | -364.3 | -114.7 | 1,449.3 | 1,311.1 | 138.14 | 10.491 | |
| 6,397.6 | 6,145.3 | 6,140.3 | 6,140.3 | 32.3 | 123.2 | 21.17 | -364.3 | -114.7 | 1,440.7 | 1,303.2 | 137.46 | 10.480 | |
| 6,400.0 | 6,147.6 | 6,142.6 | 6,142.6 | 32.3 | 123.2 | 21.19 | -364.3 | -114.7 | 1,440.2 | 1,302.7 | 137.42 | 10.480 | |
| 6,450.0 | 6,195.8 | 6,190.8 | 6,190.8 | 32.2 | 124.2 | 21.75 | -364.3 | -114.7 | 1,427.9 | 1,291.7 | 136.18 | 10.486 | |
| 6,496.0 | 6,239.3 | 6,234.3 | 6,234.3 | 32.1 | 125.1 | 22.42 | -364.3 | -114.7 | 1,413.9 | 1,279.2 | 134.62 | 10.503 | |
| 6,500.0 | 6,243.0 | 6,238.0 | 6,238.0 | 32.1 | 125.1 | 22.49 | -364.3 | -114.7 | 1,412.5 | 1,278.1 | 134.47 | 10.504 | |
| 6,550.0 | 6,289.0 | 6,284.0 | 6,284.0 | 32.0 | 126.1 | 23.41 | -364.3 | -114.7 | 1,394.2 | 1,261.8 | 132.37 | 10.533 | |
| 6,594.5 | 6,328.6 | 6,323.6 | 6,323.6 | 31.8 | 126.9 | 24.42 | -364.3 | -114.7 | 1,375.4 | 1,245.1 | 130.25 | 10.560 | |
| 6,600.0 | 6,333.4 | 6,328.4 | 6,328.4 | 31.8 | 127.0 | 24.55 | -364.3 | -114.7 | 1,372.9 | 1,242.9 | 129.97 | 10.563 | |
| 6,650.0 | 6,376.2 | 6,371.2 | 6,371.2 | 31.7 | 127.8 | 25.94 | -364.3 | -114.7 | 1,348.9 | 1,221.4 | 127.44 | 10.584 | |
| 6,692.9 | 6,411.3 | 6,406.3 | 6,406.3 | 31.6 | 128.5 | 27.36 | -364.3 | -114.7 | 1,326.2 | 1,200.9 | 125.30 | 10.584 | |
| 6,700.0 | 6,417.0 | 6,412.0 | 6,412.0 | 31.5 | 128.6 | 27.62 | -364.3 | -114.7 | 1,322.2 | 1,197.3 | 124.96 | 10.582 | |
| 6,750.0 | 6,455.7 | 6,450.7 | 6,450.7 | 31.4 | 129.4 | 29.62 | -364.3 | -114.7 | 1,293.1 | 1,170.3 | 122.77 | 10.532 | |
| 6,791.3 | 6,486.0 | 6,481.0 | 6,481.0 | 31.3 | 130.0 | 31.57 | -364.3 | -114.7 | 1,267.3 | 1,145.9 | 121.42 | 10.437 | |
| 6,800.0 | 6,492.2 | 6,487.2 | 6,487.2 | 31.3 | 130.1 | 32.01 | -364.3 | -114.7 | 1,261.7 | 1,140.5 | 121.21 | 10.409 | |
| 6,850.0 | 6,526.1 | 6,521.1 | 6,521.1 | 31.2 | 130.8 | 34.85 | -364.3 | -114.7 | 1,228.2 | 1,107.6 | 120.64 | 10.181 | |
| 6,889.7 | 6,551.2 | 6,546.2 | 6,546.2 | 31.2 | 131.3 | 37.47 | -364.3 | -114.7 | 1,200.2 | 1,079.1 | 121.14 | 9.908 | |
| 6,900.0 | 6,557.4 | 6,552.4 | 6,552.4 | 31.2 | 131.5 | 38.20 | -364.3 | -114.7 | 1,192.9 | 1,071.4 | 121.44 | 9.823 | |
| 6,950.0 | 6,586.0 | 6,581.0 | 6,581.0 | 31.1 | 132.0 | 42.14 | -364.3 | -114.7 | 1,155.8 | 1,031.9 | 123.95 | 9.325 | |
| 6,988.2 | 6,605.8 | 6,600.8 | 6,600.8 | 31.2 | 132.4 | 45.57 | -364.3 | -114.7 | 1,126.6 | 999.5 | 127.14 | 8.861 | |
| 7,000.0 | 6,611.5 | 6,606.5 | 6,606.5 | 31.2 | 132.6 | 46.71 | -364.3 | -114.7 | 1,117.4 | 989.1 | 128.34 | 8.707 | |
| 7,050.0 | 6,634.1 | 6,629.1 | 6,629.1 | 31.2 | 133.0 | 51.92 | -364.3 | -114.7 | 1,077.9 | 943.4 | 134.48 | 8.015 | |
| 7,086.6 | 6,648.6 | 6,643.6 | 6,643.6 | 31.3 | 133.3 | 56.13 | -364.3 | -114.7 | 1,048.4 | 908.6 | 139.79 | 7.499 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,648.4 | 6,648.4 | 31.4 | 133.4 | 57.75 | -364.3 | -114.7 | 1,037.5 | 895.6 | 141.84 | 7.315 | |
| 7,150.0 | 6,669.5 | 6,664.5 | 6,664.5 | 31.6 | 133.7 | 64.05 | -364.3 | -114.7 | 996.5 | 847.0 | 149.53 | 6.664 | |
| 7,185.0 | 6,678.8 | 6,673.8 | 6,673.8 | 31.7 | 133.9 | 68.64 | -364.3 | -114.7 | 967.6 | 813.0 | 154.58 | 6.260 | |
| 7,200.0 | 6,682.3 | 6,677.3 | 6,677.3 | 31.8 | 134.0 | 70.62 | -364.3 | -114.7 | 955.2 | 798.7 | 156.54 | 6.102 | |
| 7,250.0 | 6,691.6 | 6,686.6 | 6,686.6 | 32.1 | 134.2 | 77.16 | -364.3 | -114.7 | 914.0 | 752.0 | 162.00 | 5.642 | |
| 7,283.4 | 6,696.0 | 6,691.0 | 6,691.0 | 32.3 | 134.2 | 81.36 | -364.3 | -114.7 | 886.7 | 722.1 | 164.56 | 5.388 | |
| 7,300.0 | 6,697.5 | 6,692.5 | 6,692.5 | 32.4 | 134.3 | 83.37 | -364.3 | -114.7 | 873.2 | 707.8 | 165.48 | 5.277 | |
| 7,350.0 | 6,699.9 | 6,694.9 | 6,694.9 | 32.8 | 134.3 | 88.99 | -364.3 | -114.7 | 833.2 | 666.1 | 167.04 | 4.988 | |
| 7,364.4 | 6,700.0 | 6,695.0 | 6,695.0 | 32.9 | 134.3 | 90.47 | -364.3 | -114.7 | 821.8 | 654.6 | 167.20 | 4.915 | |
| 7,381.9 | 6,699.9 | 6,694.9 | 6,694.9 | 33.1 | 134.3 | 90.46 | -364.3 | -114.7 | 808.1 | 640.8 | 167.35 | 4.829 | |
| 7,400.0 | 6,699.8 | 6,694.8 | 6,694.8 | 33.2 | 134.3 | 90.45 | -364.3 | -114.7 | 794.1 | 626.6 | 167.50 | 4.741 | |
| 7,480.3 | 6,699.2 | 6,694.2 | 6,694.2 | 34.0 | 134.3 | 90.39 | -364.3 | -114.7 | 734.3 | 566.0 | 168.30 | 4.363 | |
| 7,500.0 | 6,699.1 | 6,694.1 | 6,694.1 | 34.2 | 134.3 | 90.37 | -364.3 | -114.7 | 720.2 | 551.7 | 168.50 | 4.274 | |
| 7,578.7 | 6,698.6 | 6,693.6 | 6,693.6 | 35.2 | 134.3 | 90.32 | -364.3 | -114.7 | 666.8 | 497.3 | 169.44 | 3.935 | |
| 7,600.0 | 6,698.5 | 6,693.5 | 6,693.5 | 35.4 | 134.3 | 90.30 | -364.3 | -114.7 | 653.2 | 483.5 | 169.69 | 3.849 | |
| 7,677.1 | 6,698.0 | 6,693.0 | 6,693.0 | 36.5 | 134.3 | 90.24 | -364.3 | -114.7 | 607.7 | 437.0 | 170.75 | 3.559 | |
| 7,700.0 | 6,697.8 | 6,692.8 | 6,692.8 | 36.8 | 134.3 | 90.23 | -364.3 | -114.7 | 595.5 | 424.5 | 171.06 | 3.481 | |
| 7,775.6 | 6,697.3 | 6,692.3 | 6,692.3 | 38.0 | 134.3 | 90.17 | -364.3 | -114.7 | 559.9 | 387.7 | 172.22 | 3.251 | |
| 7,800.0 | 6,697.2 | 6,692.2 | 6,692.2 | 38.3 | 134.3 | 90.15 | -364.3 | -114.7 | 550.2 | 377.6 | 172.59 | 3.188 | |
| 7,874.0 | 6,696.7 | 6,691.7 | 6,691.7 | 39.6 | 134.3 | 90.10 | -364.3 | -114.7 | 526.4 | 352.6 | 173.82 | 3.028 | |
| 7,900.0 | 6,696.5 | 6,691.5 | 6,691.5 | 40.0 | 134.3 | 90.08 | -364.3 | -114.7 | 520.3 | 346.0 | 174.25 | 2.986 | |
| 7,972.4 | 6,696.1 | 6,691.1 | 6,691.1 | 41.3 | 134.2 | 90.03 | -364.3 | -114.7 | 509.9 | 334.4 | 175.54 | 2.905 | |
| 8,000.0 | 6,695.9 | 6,690.9 | 6,690.9 | 41.8 | 134.2 | 90.01 | -364.3 | -114.7 | 508.6 | 332.6 | 176.04 | 2.889 | |
| 8,010.0 | 6,695.8 | 6,690.8 | 6,690.8 | 42.0 | 134.2 | 90.00 | -364.3 | -114.7 | 508.5 | 332.3 | 176.22 | 2.886 | ES, SF |
| 8,070.8 | 6,695.4 | 6,690.4 | 6,690.4 | 43.1 | 134.2 | 89.96 | -364.3 | -114.7 | 512.1 | 334.8 | 177.38 | 2.887 | |
| 8,100.0 | 6,695.2 | 6,690.2 | 6,690.2 | 43.7 | 134.2 | 89.93 | -364.3 | -114.7 | 516.4 | 338.5 | 177.93 | 2.902 | |
| 8,169.3 | 6,694.8 | 6,689.8 | 6,689.8 | 45.1 | 134.2 | 89.88 | -364.3 | -114.7 | 532.9 | 353.6 | 179.30 | 2.972 | |
| 8,200.0 | 6,694.6 | 6,689.6 | 6,689.6 | 45.7 | 134.2 | 89.86 | -364.3 | -114.7 | 542.9 | 362.9 | 179.91 | 3.017 | |
| 8,267.7 | 6,694.1 | 6,689.1 | 6,689.1 | 47.1 | 134.2 | 89.81 | -364.3 | -114.7 | 570.1 | 388.8 | 181.31 | 3.144 | |
| 8,300.0 | 6,693.9 | 6,688.9 | 6,688.9 | 47.8 | 134.2 | 89.79 | -364.3 | -114.7 | 585.4 | 403.4 | 181.98 | 3.217 | |
| 8,366.1 | 6,693.5 | 6,688.5 | 6,688.5 | 49.2 | 134.2 | 89.74 | -364.3 | -114.7 | 620.8 | 437.4 | 183.39 | 3.385 | |
| 8,400.0 | 6,693.3 | 6,688.3 | 6,688.3 | 49.9 | 134.2 | 89.71 | -364.3 | -114.7 | 640.9 | 456.7 | 184.12 | 3.481 | |
| 8,464.5 | 6,692.9 | 6,687.9 | 6,687.9 | 51.4 | 134.2 | 89.67 | -364.3 | -114.7 | 682.1 | 496.5 | 185.54 | 3.676 | |
| 8,500.0 | 6,692.6 | 6,687.6 | 6,687.6 | 52.1 | 134.2 | 89.64 | -364.3 | -114.7 | 706.2 | 519.9 | 186.32 | 3.790 | |
| 8,563.0 | 6,692.2 | 6,687.2 | 6,687.2 | 53.6 | 134.2 | 89.60 | -364.3 | -114.7 | 751.2 | 563.5 | 187.73 | 4.002 | |
| 8,600.0 | 6,692.0 | 6,687.0 | 6,687.0 | 54.4 | 134.2 | 89.57 | -364.3 | -114.7 | 778.9 | 590.3 | 188.57 | 4.131 | |
| 8,661.4 | 6,691.6 | 6,686.6 | 6,686.6 | 55.8 | 134.2 | 89.52 | -364.3 | -114.7 | 826.4 | 636.4 | 189.98 | 4.350 | |
| 8,700.0 | 6,691.3 | 6,686.3 | 6,686.3 | 56.7 | 134.2 | 89.50 | -364.3 | -114.7 | 857.1 | 666.3 | 190.87 | 4.491 | |
| 8,759.8 | 6,690.9 | 6,685.9 | 6,685.9 | 58.1 | 134.1 | 89.45 | -364.3 | -114.7 | 906.0 | 713.7 | 192.28 | 4.712 | |
| 8,800.0 | 6,690.7 | 6,685.7 | 6,685.7 | 59.1 | 134.1 | 89.42 | -364.3 | -114.7 | 939.5 | 746.3 | 193.22 | 4.862 | |
| 8,858.2 | 6,690.3 | 6,685.3 | 6,685.3 | 60.5 | 134.1 | 89.38 | -364.3 | -114.7 | 989.0 | 794.4 | 194.60 | 5.082 | |
| 8,900.0 | 6,690.0 | 6,685.0 | 6,685.0 | 61.5 | 134.1 | 89.35 | -364.3 | -114.7 | 1,025.0 | 829.4 | 195.60 | 5.240 | |
| 8,956.7 | 6,689.7 | 6,684.7 | 6,684.7 | 62.9 | 134.1 | 89.31 | -364.3 | -114.7 | 1,074.6 | 877.6 | 196.97 | 5.456 | |
| 9,000.0 | 6,689.4 | 6,684.4 | 6,684.4 | 63.9 | 134.1 | 89.28 | -364.3 | -114.7 | 1,113.0 | 914.9 | 198.01 | 5.621 | |
| 9,055.1 | 6,689.0 | 6,684.0 | 6,684.0 | 65.3 | 134.1 | 89.24 | -364.3 | -114.7 | 1,162.2 | 962.9 | 199.36 | 5.830 | |
| 9,100.0 | 6,688.7 | 6,683.7 | 6,683.7 | 66.4 | 134.1 | 89.20 | -364.3 | -114.7 | 1,202.8 | 1,002.3 | 200.46 | 6.000 | |
| 9,153.5 | 6,688.4 | 6,683.4 | 6,683.4 | 67.7 | 134.1 | 89.16 | -364.3 | -114.7 | 1,251.5 | 1,049.7 | 201.78 | 6.202 | |
| 9,200.0 | 6,688.1 | 6,683.1 | 6,683.1 | 68.9 | 134.1 | 89.13 | -364.3 | -114.7 | 1,294.1 | 1,091.2 | 202.93 | 6.377 | |
| 9,251.9 | 6,687.8 | 6,682.8 | 6,682.8 | 70.2 | 134.1 | 89.09 | -364.3 | -114.7 | 1,342.0 | 1,137.8 | 204.23 | 6.571 | |
| 9,300.0 | 6,687.4 | 6,682.4 | 6,682.4 | 71.4 | 134.1 | 89.06 | -364.3 | -114.7 | 1,386.6 | 1,181.2 | 205.43 | 6.750 | |
| 9,350.4 | 6,687.1 | 6,682.1 | 6,682.1 | 72.7 | 134.1 | 89.02 | -364.3 | -114.7 | 1,433.6 | 1,226.9 | 206.69 | 6.936 | |
| 9,400.0 | 6,686.8 | 6,681.8 | 6,681.8 | 73.9 | 134.1 | 88.98 | -364.3 | -114.7 | 1,480.1 | 1,272.1 | 207.94 | 7.118 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #12-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,681.5 | 6,681.5 | 75.2 | 134.1 | 88.95 | -364.3 | -114.7 | 1,526.0 | 1,316.8 | 209.18 | 7.295 | |
| 9,500.0 | 6,686.1 | 6,681.1 | 6,681.1 | 76.5 | 134.1 | 88.91 | -364.3 | -114.7 | 1,574.4 | 1,363.9 | 210.48 | 7.480 | |
| 9,547.2 | 6,685.8 | 6,680.8 | 6,680.8 | 77.7 | 134.0 | 88.88 | -364.3 | -114.7 | 1,619.1 | 1,407.5 | 211.68 | 7.649 | |
| 9,600.0 | 6,685.5 | 6,680.5 | 6,680.5 | 79.0 | 134.0 | 88.84 | -364.3 | -114.7 | 1,669.3 | 1,456.3 | 213.03 | 7.836 | |
| 9,645.6 | 6,685.2 | 6,680.2 | 6,680.2 | 80.2 | 134.0 | 88.80 | -364.3 | -114.7 | 1,712.9 | 1,498.7 | 214.20 | 7.997 | |
| 9,700.0 | 6,684.8 | 6,679.8 | 6,679.8 | 81.6 | 134.0 | 88.76 | -364.3 | -114.7 | 1,764.8 | 1,549.2 | 215.59 | 8.186 | |
| 9,744.1 | 6,684.6 | 6,679.6 | 6,679.6 | 82.8 | 134.0 | 88.73 | -364.3 | -114.7 | 1,807.1 | 1,590.3 | 216.73 | 8.338 | |
| 9,800.0 | 6,684.2 | 6,679.2 | 6,679.2 | 84.2 | 134.0 | 88.69 | -364.3 | -114.7 | 1,860.8 | 1,642.6 | 218.18 | 8.529 | |
| 9,842.5 | 6,683.9 | 6,678.9 | 6,678.9 | 85.3 | 134.0 | 88.66 | -364.3 | -114.7 | 1,901.7 | 1,682.5 | 219.28 | 8.673 | |
| 9,900.0 | 6,683.5 | 6,678.5 | 6,678.5 | 86.8 | 134.0 | 88.62 | -364.3 | -114.7 | 1,957.2 | 1,736.4 | 220.77 | 8.865 | |
| 9,940.9 | 6,683.3 | 6,678.3 | 6,678.3 | 87.9 | 134.0 | 88.59 | -364.3 | -114.7 | 1,996.7 | 1,774.9 | 221.83 | 9.001 | |
| 10,000.0 | 6,682.9 | 6,677.9 | 6,677.9 | 89.5 | 134.0 | 88.55 | -364.3 | -114.7 | 2,053.9 | 1,830.5 | 223.37 | 9.195 | |
| 10,039.3 | 6,682.6 | 6,677.6 | 6,677.6 | 90.5 | 134.0 | 88.52 | -364.3 | -114.7 | 2,092.1 | 1,867.7 | 224.40 | 9.323 | |
| 10,100.0 | 6,682.2 | 6,677.2 | 6,677.2 | 92.1 | 134.0 | 88.47 | -364.3 | -114.7 | 2,150.9 | 1,925.0 | 225.99 | 9.518 | |
| 10,137.8 | 6,682.0 | 6,677.0 | 6,677.0 | 93.1 | 134.0 | 88.44 | -364.3 | -114.7 | 2,187.7 | 1,960.7 | 226.98 | 9.638 | |
| 10,200.0 | 6,681.6 | 6,676.6 | 6,676.6 | 94.8 | 134.0 | 88.40 | -364.3 | -114.7 | 2,248.2 | 2,019.6 | 228.61 | 9.834 | |
| 10,236.2 | 6,681.4 | 6,676.4 | 6,676.4 | 95.7 | 134.0 | 88.37 | -364.3 | -114.7 | 2,283.5 | 2,053.9 | 229.57 | 9.947 | |
| 10,300.0 | 6,680.9 | 6,675.9 | 6,675.9 | 97.4 | 133.9 | 88.33 | -364.3 | -114.7 | 2,345.8 | 2,114.5 | 231.25 | 10.144 | |
| 10,334.6 | 6,680.7 | 6,675.7 | 6,675.7 | 98.3 | 133.9 | 88.30 | -364.3 | -114.7 | 2,379.6 | 2,147.4 | 232.16 | 10.250 | |
| 10,400.0 | 6,680.3 | 6,675.3 | 6,675.3 | 100.1 | 133.9 | 88.25 | -364.3 | -114.7 | 2,443.5 | 2,209.6 | 233.89 | 10.447 | |
| 10,433.0 | 6,680.1 | 6,675.1 | 6,675.1 | 101.0 | 133.9 | 88.23 | -364.3 | -114.7 | 2,475.8 | 2,241.0 | 234.76 | 10.546 | |
| 10,500.0 | 6,679.7 | 6,674.7 | 6,674.7 | 102.8 | 133.9 | 88.18 | -364.3 | -114.7 | 2,541.4 | 2,304.8 | 236.53 | 10.744 | |
| 10,531.5 | 6,679.4 | 6,674.4 | 6,674.4 | 103.6 | 133.9 | 88.16 | -364.3 | -114.7 | 2,572.2 | 2,334.8 | 237.37 | 10.836 | |
| 10,600.0 | 6,679.0 | 6,674.0 | 6,674.0 | 105.4 | 133.9 | 88.11 | -364.3 | -114.7 | 2,639.4 | 2,400.2 | 239.19 | 11.035 | |
| 10,629.9 | 6,678.8 | 6,673.8 | 6,673.8 | 106.2 | 133.9 | 88.09 | -364.3 | -114.7 | 2,668.8 | 2,428.8 | 239.99 | 11.121 | |
| 10,700.0 | 6,678.4 | 6,673.4 | 6,673.4 | 108.1 | 133.9 | 88.03 | -364.3 | -114.7 | 2,737.6 | 2,495.8 | 241.85 | 11.319 | |
| 10,728.3 | 6,678.2 | 6,673.2 | 6,673.2 | 108.9 | 133.9 | 88.01 | -364.3 | -114.7 | 2,765.4 | 2,522.8 | 242.61 | 11.399 | |
| 10,800.0 | 6,677.7 | 6,672.7 | 6,672.7 | 110.8 | 133.9 | 87.96 | -364.3 | -114.7 | 2,835.9 | 2,591.4 | 244.52 | 11.598 | |
| 10,826.7 | 6,677.5 | 6,672.5 | 6,672.5 | 111.5 | 133.9 | 87.94 | -364.3 | -114.7 | 2,862.2 | 2,617.0 | 245.23 | 11.672 | |
| 10,900.0 | 6,677.1 | 6,672.1 | 6,672.1 | 113.5 | 133.9 | 87.89 | -364.3 | -114.7 | 2,934.4 | 2,687.2 | 247.19 | 11.871 | |
| 10,925.2 | 6,676.9 | 6,671.9 | 6,671.9 | 114.2 | 133.9 | 87.87 | -364.3 | -114.7 | 2,959.2 | 2,711.3 | 247.86 | 11.939 | |
| 11,000.0 | 6,676.4 | 6,671.4 | 6,671.4 | 116.2 | 133.9 | 87.81 | -364.3 | -114.7 | 3,032.9 | 2,783.0 | 249.86 | 12.138 | |
| 11,023.6 | 6,676.3 | 6,671.3 | 6,671.3 | 116.8 | 133.9 | 87.80 | -364.3 | -114.7 | 3,056.2 | 2,805.7 | 250.50 | 12.200 | |
| 11,100.0 | 6,675.8 | 6,670.8 | 6,670.8 | 118.9 | 133.8 | 87.74 | -364.3 | -114.7 | 3,131.5 | 2,879.0 | 252.54 | 12.400 | |
| 11,122.0 | 6,675.6 | 6,670.6 | 6,670.6 | 119.5 | 133.8 | 87.73 | -364.3 | -114.7 | 3,153.3 | 2,900.1 | 253.14 | 12.457 | |
| 11,200.0 | 6,675.1 | 6,670.1 | 6,670.1 | 121.6 | 133.8 | 87.67 | -364.3 | -114.7 | 3,230.2 | 2,975.0 | 255.23 | 12.656 | |
| 11,220.4 | 6,675.0 | 6,670.0 | 6,670.0 | 122.2 | 133.8 | 87.65 | -364.3 | -114.7 | 3,250.4 | 2,994.6 | 255.78 | 12.708 | |
| 11,300.0 | 6,674.5 | 6,669.5 | 6,669.5 | 124.3 | 133.8 | 87.60 | -364.3 | -114.7 | 3,329.0 | 3,071.1 | 257.92 | 12.907 | |
| 11,318.9 | 6,674.3 | 6,669.3 | 6,669.3 | 124.9 | 133.8 | 87.58 | -364.3 | -114.7 | 3,347.7 | 3,089.2 | 258.43 | 12.954 | |
| 11,400.0 | 6,673.8 | 6,668.8 | 6,668.8 | 127.1 | 133.8 | 87.52 | -364.3 | -114.7 | 3,427.9 | 3,167.3 | 260.61 | 13.153 | |
| 11,417.3 | 6,673.7 | 6,668.7 | 6,668.7 | 127.5 | 133.8 | 87.51 | -364.3 | -114.7 | 3,445.0 | 3,183.9 | 261.08 | 13.195 | |
| 11,500.0 | 6,673.2 | 6,668.2 | 6,668.2 | 129.8 | 133.8 | 87.45 | -364.3 | -114.7 | 3,526.8 | 3,263.5 | 263.30 | 13.394 | |
| 11,515.7 | 6,673.1 | 6,668.1 | 6,668.1 | 130.2 | 133.8 | 87.44 | -364.3 | -114.7 | 3,542.4 | 3,278.6 | 263.73 | 13.432 | |
| 11,600.0 | 6,672.5 | 6,667.5 | 6,667.5 | 132.5 | 133.8 | 87.38 | -364.3 | -114.7 | 3,625.8 | 3,359.8 | 266.00 | 13.631 | |
| 11,614.1 | 6,672.4 | 6,667.4 | 6,667.4 | 132.9 | 133.8 | 87.37 | -364.3 | -114.7 | 3,639.8 | 3,373.4 | 266.38 | 13.664 | |
| 11,700.0 | 6,671.9 | 6,666.9 | 6,666.9 | 135.3 | 133.8 | 87.30 | -364.3 | -114.7 | 3,724.8 | 3,456.1 | 268.70 | 13.862 | |
| 11,712.6 | 6,671.8 | 6,666.8 | 6,666.8 | 135.6 | 133.8 | 87.29 | -364.3 | -114.7 | 3,737.3 | 3,468.2 | 269.04 | 13.891 | |
| 11,800.0 | 6,671.2 | 6,666.2 | 6,666.2 | 138.0 | 133.8 | 87.23 | -364.3 | -114.7 | 3,823.9 | 3,552.5 | 271.40 | 14.089 | |
| 11,811.0 | 6,671.1 | 6,666.1 | 6,666.1 | 138.3 | 133.7 | 87.22 | -364.3 | -114.7 | 3,834.8 | 3,563.1 | 271.70 | 14.114 | |
| 11,900.0 | 6,670.6 | 6,665.6 | 6,665.6 | 140.7 | 133.7 | 87.16 | -364.3 | -114.7 | 3,923.0 | 3,648.9 | 274.11 | 14.312 | |
| 11,909.4 | 6,670.5 | 6,665.5 | 6,665.5 | 141.0 | 133.7 | 87.15 | -364.3 | -114.7 | 3,932.4 | 3,658.0 | 274.36 | 14.333 | |
| 11,987.2 | 6,670.0 | 6,665.0 | 6,665.0 | 143.1 | 133.7 | 87.09 | -364.3 | -114.7 | 4,009.5 | 3,733.1 | 276.47 | 14.503 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 5.0 | 5.0 | 0.0 | 0.1 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | | | | |
| 98.4 | 98.4 | 103.4 | 103.4 | 0.1 | 1.2 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,118.9 | 1.31 | 3,153.385 | |
| 100.0 | 100.0 | 105.0 | 105.0 | 0.1 | 1.2 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,118.8 | 1.34 | 3,064.111 | |
| 196.8 | 196.8 | 201.8 | 201.8 | 0.3 | 3.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,116.4 | 3.79 | 1,087.062 | |
| 200.0 | 200.0 | 205.0 | 205.0 | 0.3 | 3.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,116.3 | 3.86 | 1,066.636 | |
| 295.3 | 295.3 | 300.3 | 300.3 | 0.5 | 5.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,114.1 | 6.06 | 680.122 | |
| 300.0 | 300.0 | 305.0 | 305.0 | 0.5 | 5.6 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,114.0 | 6.17 | 668.304 | |
| 393.7 | 393.7 | 398.7 | 398.7 | 0.8 | 7.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,111.9 | 8.29 | 497.035 | |
| 400.0 | 400.0 | 405.0 | 405.0 | 0.8 | 7.7 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,111.8 | 8.43 | 488.654 | |
| 492.1 | 492.1 | 497.1 | 497.1 | 1.0 | 9.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,109.7 | 10.51 | 392.096 | |
| 500.0 | 500.0 | 505.0 | 505.0 | 1.0 | 9.7 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,109.5 | 10.69 | 385.594 | |
| 590.5 | 590.5 | 595.5 | 595.5 | 1.2 | 11.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,107.5 | 12.72 | 323.902 | |
| 600.0 | 600.0 | 605.0 | 605.0 | 1.2 | 11.7 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,107.3 | 12.93 | 318.587 | |
| 689.0 | 689.0 | 694.0 | 694.0 | 1.4 | 13.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,105.3 | 14.93 | 275.979 | |
| 700.0 | 700.0 | 705.0 | 705.0 | 1.4 | 13.7 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,105.0 | 15.18 | 271.482 | |
| 787.4 | 787.4 | 792.4 | 792.4 | 1.6 | 15.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,103.0 | 17.14 | 240.439 | |
| 800.0 | 800.0 | 805.0 | 805.0 | 1.7 | 15.7 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,102.8 | 17.42 | 236.541 | |
| 885.8 | 885.8 | 890.8 | 890.8 | 1.9 | 17.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,100.8 | 19.34 | 213.024 | |
| 900.0 | 900.0 | 905.0 | 905.0 | 1.9 | 17.8 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,100.5 | 19.66 | 209.584 | |
| 984.2 | 984.2 | 989.2 | 989.2 | 2.1 | 19.5 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,098.6 | 21.55 | 191.230 | |
| 1,000.0 | 1,000.0 | 1,005.0 | 1,005.0 | 2.1 | 19.8 | 116.06 | -1,810.3 | 3,701.2 | 4,120.2 | 4,098.3 | 21.90 | 188.150 | |
| 1,082.7 | 1,082.7 | 1,087.7 | 1,087.7 | 2.3 | 21.4 | -159.49 | -1,810.3 | 3,701.2 | 4,121.3 | 4,097.6 | 23.73 | 173.669 | |
| 1,100.0 | 1,100.0 | 1,105.0 | 1,105.0 | 2.3 | 21.8 | -159.49 | -1,810.3 | 3,701.2 | 4,121.8 | 4,097.7 | 24.11 | 170.944 | |
| 1,181.1 | 1,181.0 | 1,186.0 | 1,186.0 | 2.5 | 23.4 | -159.49 | -1,810.3 | 3,701.2 | 4,125.5 | 4,099.7 | 25.88 | 159.425 | |
| 1,200.0 | 1,199.8 | 1,204.8 | 1,204.8 | 2.5 | 23.8 | -159.48 | -1,810.3 | 3,701.2 | 4,126.7 | 4,100.4 | 26.29 | 156.998 | |
| 1,279.5 | 1,279.1 | 1,284.1 | 1,284.1 | 2.7 | 25.4 | -159.47 | -1,810.3 | 3,701.2 | 4,132.9 | 4,105.0 | 27.99 | 147.664 | |
| 1,300.0 | 1,299.5 | 1,304.5 | 1,304.5 | 2.8 | 25.8 | -159.47 | -1,810.3 | 3,701.2 | 4,134.9 | 4,106.5 | 28.42 | 145.480 | |
| 1,377.9 | 1,376.9 | 1,381.9 | 1,381.9 | 3.0 | 27.4 | -159.45 | -1,810.3 | 3,701.2 | 4,143.5 | 4,113.5 | 30.06 | 137.841 | |
| 1,400.0 | 1,398.7 | 1,403.7 | 1,403.7 | 3.0 | 27.8 | -159.45 | -1,810.3 | 3,701.2 | 4,146.3 | 4,115.8 | 30.52 | 135.869 | |
| 1,476.4 | 1,474.2 | 1,479.2 | 1,479.2 | 3.2 | 29.3 | -159.43 | -1,810.3 | 3,701.2 | 4,157.2 | 4,125.1 | 32.08 | 129.570 | |
| 1,500.0 | 1,497.5 | 1,502.5 | 1,502.5 | 3.3 | 29.8 | -159.42 | -1,810.3 | 3,701.2 | 4,161.0 | 4,128.4 | 32.56 | 127.786 | |
| 1,574.8 | 1,571.0 | 1,576.0 | 1,576.0 | 3.5 | 31.3 | -159.39 | -1,810.3 | 3,701.2 | 4,174.1 | 4,140.0 | 34.06 | 122.559 | |
| 1,600.0 | 1,595.6 | 1,600.6 | 1,600.6 | 3.6 | 31.8 | -159.38 | -1,810.3 | 3,701.2 | 4,178.9 | 4,144.3 | 34.55 | 120.944 | |
| 1,673.2 | 1,667.0 | 1,672.0 | 1,672.0 | 3.9 | 33.2 | -159.35 | -1,810.3 | 3,701.2 | 4,194.0 | 4,158.1 | 35.97 | 116.587 | |
| 1,700.0 | 1,693.1 | 1,698.1 | 1,698.1 | 4.0 | 33.7 | -159.34 | -1,810.3 | 3,701.2 | 4,200.0 | 4,163.5 | 36.48 | 115.124 | |
| 1,771.6 | 1,762.4 | 1,767.4 | 1,767.4 | 4.3 | 35.1 | -159.30 | -1,810.3 | 3,701.2 | 4,217.1 | 4,179.3 | 37.83 | 111.481 | |
| 1,800.0 | 1,789.6 | 1,794.6 | 1,794.6 | 4.4 | 35.7 | -159.29 | -1,810.3 | 3,701.2 | 4,224.3 | 4,186.0 | 38.35 | 110.159 | |
| 1,870.1 | 1,856.8 | 1,861.8 | 1,861.8 | 4.7 | 37.0 | -159.24 | -1,810.3 | 3,701.2 | 4,243.2 | 4,203.6 | 39.62 | 107.106 | |
| 1,900.0 | 1,885.3 | 1,890.3 | 1,890.3 | 4.9 | 37.6 | -159.22 | -1,810.3 | 3,701.2 | 4,251.8 | 4,211.7 | 40.14 | 105.913 | |
| 1,968.5 | 1,950.2 | 1,955.2 | 1,955.2 | 5.3 | 38.9 | -159.17 | -1,810.3 | 3,701.2 | 4,272.4 | 4,231.1 | 41.34 | 103.361 | |
| 2,000.0 | 1,979.8 | 1,984.8 | 1,984.8 | 5.5 | 39.5 | -159.15 | -1,810.3 | 3,701.2 | 4,282.4 | 4,240.6 | 41.87 | 102.283 | |
| 2,044.9 | 2,021.9 | 2,026.9 | 2,026.9 | 5.7 | 40.3 | -159.11 | -1,810.3 | 3,701.2 | 4,297.2 | 4,254.6 | 42.62 | 100.829 | |
| 2,066.9 | 2,042.5 | 2,047.5 | 2,047.5 | 5.9 | 40.8 | -159.15 | -1,810.3 | 3,701.2 | 4,304.6 | 4,261.5 | 43.08 | 99.918 | |
| 2,100.0 | 2,073.4 | 2,078.4 | 2,078.4 | 6.1 | 41.4 | -159.20 | -1,810.3 | 3,701.2 | 4,315.7 | 4,271.9 | 43.78 | 98.580 | |
| 2,165.3 | 2,134.4 | 2,139.4 | 2,139.4 | 6.5 | 42.6 | -159.31 | -1,810.3 | 3,701.2 | 4,337.7 | 4,292.5 | 45.16 | 96.053 | |
| 2,200.0 | 2,166.8 | 2,171.8 | 2,171.8 | 6.8 | 43.3 | -159.37 | -1,810.3 | 3,701.2 | 4,349.4 | 4,303.5 | 45.89 | 94.773 | |
| 2,263.8 | 2,226.4 | 2,231.4 | 2,231.4 | 7.2 | 44.5 | -159.47 | -1,810.3 | 3,701.2 | 4,370.8 | 4,323.6 | 47.25 | 92.513 | |
| 2,300.0 | 2,260.2 | 2,265.2 | 2,265.2 | 7.4 | 45.1 | -159.53 | -1,810.3 | 3,701.2 | 4,383.0 | 4,335.0 | 48.01 | 91.285 | |
| 2,362.2 | 2,318.3 | 2,323.3 | 2,323.3 | 7.9 | 46.3 | -159.63 | -1,810.3 | 3,701.2 | 4,404.0 | 4,354.6 | 49.34 | 89.262 | |
| 2,400.0 | 2,353.6 | 2,358.6 | 2,358.6 | 8.1 | 47.0 | -159.69 | -1,810.3 | 3,701.2 | 4,416.7 | 4,366.6 | 50.14 | 88.084 | |
| 2,460.6 | 2,410.3 | 2,415.3 | 2,415.3 | 8.6 | 48.2 | -159.79 | -1,810.3 | 3,701.2 | 4,437.2 | 4,385.7 | 51.44 | 86.267 | |
| 2,500.0 | 2,447.0 | 2,452.0 | 2,452.0 | 8.9 | 48.9 | -159.85 | -1,810.3 | 3,701.2 | 4,450.5 | 4,398.2 | 52.27 | 85.135 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,507.2 | 2,507.2 | 9.3 | 50.0 | -159.94 | -1,810.3 | 3,701.2 | 4,470.4 | 4,416.8 | 53.54 | 83.502 | |
| 2,600.0 | 2,540.5 | 2,545.5 | 2,545.5 | 9.6 | 50.8 | -160.01 | -1,810.3 | 3,701.2 | 4,484.2 | 4,429.8 | 54.41 | 82.414 | |
| 2,657.5 | 2,594.2 | 2,599.2 | 2,599.2 | 10.0 | 51.9 | -160.09 | -1,810.3 | 3,701.2 | 4,503.6 | 4,448.0 | 55.64 | 80.942 | |
| 2,700.0 | 2,633.9 | 2,638.9 | 2,638.9 | 10.3 | 52.7 | -160.16 | -1,810.3 | 3,701.2 | 4,518.0 | 4,461.5 | 56.55 | 79.895 | |
| 2,755.9 | 2,686.1 | 2,691.1 | 2,691.1 | 10.7 | 53.7 | -160.24 | -1,810.3 | 3,701.2 | 4,536.9 | 4,479.2 | 57.75 | 78.566 | |
| 2,800.0 | 2,727.3 | 2,732.3 | 2,732.3 | 11.0 | 54.5 | -160.31 | -1,810.3 | 3,701.2 | 4,551.8 | 4,493.1 | 58.69 | 77.557 | |
| 2,854.3 | 2,778.1 | 2,783.1 | 2,783.1 | 11.4 | 55.6 | -160.39 | -1,810.3 | 3,701.2 | 4,570.2 | 4,510.3 | 59.85 | 76.357 | |
| 2,900.0 | 2,820.7 | 2,825.7 | 2,825.7 | 11.8 | 56.4 | -160.46 | -1,810.3 | 3,701.2 | 4,585.7 | 4,524.8 | 60.83 | 75.383 | |
| 2,952.7 | 2,870.0 | 2,875.0 | 2,875.0 | 12.2 | 57.4 | -160.54 | -1,810.3 | 3,701.2 | 4,603.5 | 4,541.6 | 61.96 | 74.296 | |
| 3,000.0 | 2,914.2 | 2,919.2 | 2,919.2 | 12.5 | 58.3 | -160.61 | -1,810.3 | 3,701.2 | 4,619.5 | 4,556.6 | 62.97 | 73.356 | |
| 3,051.2 | 2,962.0 | 2,967.0 | 2,967.0 | 12.9 | 59.3 | -160.68 | -1,810.3 | 3,701.2 | 4,636.9 | 4,572.8 | 64.07 | 72.371 | |
| 3,100.0 | 3,007.6 | 3,012.6 | 3,012.6 | 13.3 | 60.2 | -160.75 | -1,810.3 | 3,701.2 | 4,653.4 | 4,588.3 | 65.12 | 71.463 | |
| 3,149.6 | 3,053.9 | 3,058.9 | 3,058.9 | 13.6 | 61.1 | -160.82 | -1,810.3 | 3,701.2 | 4,670.3 | 4,604.1 | 66.18 | 70.569 | |
| 3,200.0 | 3,101.0 | 3,106.0 | 3,106.0 | 14.0 | 62.1 | -160.89 | -1,810.3 | 3,701.2 | 4,687.4 | 4,620.1 | 67.26 | 69.690 | |
| 3,248.0 | 3,145.9 | 3,150.9 | 3,150.9 | 14.4 | 63.0 | -160.96 | -1,810.3 | 3,701.2 | 4,703.7 | 4,635.4 | 68.29 | 68.878 | |
| 3,300.0 | 3,194.4 | 3,199.4 | 3,199.4 | 14.8 | 63.9 | -161.03 | -1,810.3 | 3,701.2 | 4,721.3 | 4,651.9 | 69.40 | 68.027 | |
| 3,346.4 | 3,237.8 | 3,242.8 | 3,242.8 | 15.1 | 64.8 | -161.10 | -1,810.3 | 3,701.2 | 4,737.1 | 4,666.7 | 70.40 | 67.289 | |
| 3,400.0 | 3,287.8 | 3,292.8 | 3,292.8 | 15.5 | 65.8 | -161.17 | -1,810.3 | 3,701.2 | 4,755.3 | 4,683.7 | 71.55 | 66.464 | |
| 3,444.9 | 3,329.8 | 3,334.8 | 3,334.8 | 15.9 | 66.7 | -161.24 | -1,810.3 | 3,701.2 | 4,770.5 | 4,698.0 | 72.51 | 65.793 | |
| 3,500.0 | 3,381.3 | 3,386.3 | 3,386.3 | 16.3 | 67.7 | -161.31 | -1,810.3 | 3,701.2 | 4,789.3 | 4,715.6 | 73.69 | 64.993 | |
| 3,543.3 | 3,421.7 | 3,426.7 | 3,426.7 | 16.6 | 68.5 | -161.37 | -1,810.3 | 3,701.2 | 4,804.0 | 4,729.4 | 74.62 | 64.382 | |
| 3,600.0 | 3,474.7 | 3,479.7 | 3,479.7 | 17.0 | 69.6 | -161.45 | -1,810.3 | 3,701.2 | 4,823.3 | 4,747.5 | 75.83 | 63.606 | |
| 3,641.7 | 3,513.7 | 3,518.7 | 3,518.7 | 17.3 | 70.3 | -161.50 | -1,810.3 | 3,701.2 | 4,837.5 | 4,760.8 | 76.73 | 63.050 | |
| 3,700.0 | 3,568.1 | 3,573.1 | 3,573.1 | 17.8 | 71.4 | -161.58 | -1,810.3 | 3,701.2 | 4,857.4 | 4,779.4 | 77.97 | 62.295 | |
| 3,740.1 | 3,605.6 | 3,610.6 | 3,610.6 | 18.1 | 72.2 | -161.63 | -1,810.3 | 3,701.2 | 4,871.0 | 4,792.2 | 78.83 | 61.789 | |
| 3,800.0 | 3,661.5 | 3,666.5 | 3,666.5 | 18.5 | 73.3 | -161.71 | -1,810.3 | 3,701.2 | 4,891.4 | 4,811.3 | 80.11 | 61.055 | |
| 3,838.6 | 3,697.6 | 3,702.6 | 3,702.6 | 18.8 | 74.0 | -161.76 | -1,810.3 | 3,701.2 | 4,904.6 | 4,823.6 | 80.94 | 60.595 | |
| 3,900.0 | 3,754.9 | 3,759.9 | 3,759.9 | 19.3 | 75.2 | -161.84 | -1,810.3 | 3,701.2 | 4,925.5 | 4,843.3 | 82.26 | 59.881 | |
| 3,937.0 | 3,789.5 | 3,794.5 | 3,794.5 | 19.6 | 75.9 | -161.89 | -1,810.3 | 3,701.2 | 4,938.2 | 4,855.1 | 83.05 | 59.462 | |
| 4,000.0 | 3,848.4 | 3,853.4 | 3,853.4 | 20.1 | 77.1 | -161.97 | -1,810.3 | 3,701.2 | 4,959.6 | 4,875.3 | 84.39 | 58.767 | |
| 4,035.4 | 3,881.5 | 3,886.5 | 3,886.5 | 20.3 | 77.7 | -162.01 | -1,810.3 | 3,701.2 | 4,971.7 | 4,886.6 | 85.15 | 58.386 | |
| 4,100.0 | 3,941.8 | 3,946.8 | 3,946.8 | 20.8 | 79.0 | -162.09 | -1,810.3 | 3,701.2 | 4,993.8 | 4,907.3 | 86.53 | 57.709 | |
| 4,133.8 | 3,973.4 | 3,978.4 | 3,978.4 | 21.1 | 79.6 | -162.13 | -1,810.3 | 3,701.2 | 5,005.3 | 4,918.1 | 87.26 | 57.363 | |
| 4,200.0 | 4,035.2 | 4,040.2 | 4,040.2 | 21.6 | 80.8 | -162.22 | -1,810.3 | 3,701.2 | 5,027.9 | 4,939.3 | 88.67 | 56.703 | |
| 4,232.3 | 4,065.4 | 4,070.4 | 4,070.4 | 21.8 | 81.4 | -162.26 | -1,810.3 | 3,701.2 | 5,039.0 | 4,949.6 | 89.36 | 56.388 | |
| 4,300.0 | 4,128.6 | 4,133.6 | 4,133.6 | 22.3 | 82.7 | -162.34 | -1,810.3 | 3,701.2 | 5,062.1 | 4,971.3 | 90.81 | 55.744 | |
| 4,330.7 | 4,157.3 | 4,162.3 | 4,162.3 | 22.6 | 83.3 | -162.38 | -1,810.3 | 3,701.2 | 5,072.6 | 4,981.2 | 91.47 | 55.459 | |
| 4,400.0 | 4,222.0 | 4,227.0 | 4,227.0 | 23.1 | 84.6 | -162.46 | -1,810.3 | 3,701.2 | 5,096.3 | 5,003.4 | 92.95 | 54.831 | |
| 4,429.1 | 4,249.3 | 4,254.3 | 4,254.3 | 23.3 | 85.1 | -162.50 | -1,810.3 | 3,701.2 | 5,106.3 | 5,012.7 | 93.57 | 54.573 | |
| 4,500.0 | 4,315.5 | 4,320.5 | 4,320.5 | 23.9 | 86.5 | -162.58 | -1,810.3 | 3,701.2 | 5,130.6 | 5,035.5 | 95.08 | 53.959 | |
| 4,527.5 | 4,341.2 | 4,346.2 | 4,346.2 | 24.1 | 87.0 | -162.61 | -1,810.3 | 3,701.2 | 5,140.0 | 5,044.3 | 95.67 | 53.726 | |
| 4,600.0 | 4,408.9 | 4,413.9 | 4,413.9 | 24.6 | 88.4 | -162.70 | -1,810.3 | 3,701.2 | 5,164.8 | 5,067.6 | 97.22 | 53.126 | |
| 4,626.0 | 4,433.2 | 4,438.2 | 4,438.2 | 24.8 | 88.8 | -162.73 | -1,810.3 | 3,701.2 | 5,173.7 | 5,075.9 | 97.77 | 52.916 | |
| 4,700.0 | 4,502.3 | 4,507.3 | 4,507.3 | 25.4 | 90.2 | -162.81 | -1,810.3 | 3,701.2 | 5,199.1 | 5,099.7 | 99.35 | 52.330 | |
| 4,724.4 | 4,525.1 | 4,530.1 | 4,530.1 | 25.6 | 90.7 | -162.84 | -1,810.3 | 3,701.2 | 5,207.4 | 5,107.5 | 99.87 | 52.141 | |
| 4,800.0 | 4,595.7 | 4,600.7 | 4,600.7 | 26.2 | 92.1 | -162.93 | -1,810.3 | 3,701.2 | 5,233.3 | 5,131.8 | 101.48 | 51.568 | |
| 4,822.8 | 4,617.1 | 4,622.1 | 4,622.1 | 26.3 | 92.5 | -162.95 | -1,810.3 | 3,701.2 | 5,241.2 | 5,139.2 | 101.97 | 51.398 | |
| 4,900.0 | 4,689.2 | 4,694.2 | 4,694.2 | 26.9 | 94.0 | -163.04 | -1,810.3 | 3,701.2 | 5,267.6 | 5,164.0 | 103.62 | 50.838 | |
| 4,921.2 | 4,709.0 | 4,714.0 | 4,714.0 | 27.1 | 94.4 | -163.07 | -1,810.3 | 3,701.2 | 5,274.9 | 5,170.9 | 104.07 | 50.686 | |
| 5,000.0 | 4,782.6 | 4,787.6 | 4,787.6 | 27.7 | 95.9 | -163.15 | -1,810.3 | 3,701.2 | 5,301.9 | 5,196.2 | 105.75 | 50.137 | |
| 5,019.7 | 4,801.0 | 4,806.0 | 4,806.0 | 27.8 | 96.2 | -163.18 | -1,810.3 | 3,701.2 | 5,308.7 | 5,202.5 | 106.17 | 50.003 | |
| 5,100.0 | 4,876.0 | 4,881.0 | 4,881.0 | 28.4 | 97.7 | -163.26 | -1,810.3 | 3,701.2 | 5,336.3 | 5,228.4 | 107.88 | 49.465 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,897.9 | 4,897.9 | 28.6 | 98.1 | -163.28 | -1,810.3 | 3,701.2 | 5,342.5 | 5,234.2 | 108.26 | 49.347 | |
| 5,159.9 | 4,932.0 | 4,937.0 | 4,937.0 | 28.9 | 98.9 | -163.33 | -1,810.3 | 3,701.2 | 5,356.9 | 5,247.7 | 109.16 | 49.075 | |
| 5,200.0 | 4,969.5 | 4,974.5 | 4,974.5 | 29.2 | 99.6 | -163.45 | -1,810.3 | 3,701.2 | 5,370.4 | 5,259.9 | 110.43 | 48.632 | |
| 5,216.5 | 4,985.1 | 4,990.1 | 4,990.1 | 29.3 | 99.9 | -163.50 | -1,810.3 | 3,701.2 | 5,375.8 | 5,264.9 | 110.94 | 48.455 | |
| 5,300.0 | 5,064.0 | 5,069.0 | 5,069.0 | 29.7 | 101.5 | -163.74 | -1,810.3 | 3,701.2 | 5,401.9 | 5,288.4 | 113.53 | 47.580 | |
| 5,314.9 | 5,078.2 | 5,083.2 | 5,083.2 | 29.8 | 101.8 | -163.78 | -1,810.3 | 3,701.2 | 5,406.3 | 5,292.3 | 113.99 | 47.428 | |
| 5,400.0 | 5,159.6 | 5,164.6 | 5,164.6 | 30.2 | 103.5 | -163.99 | -1,810.3 | 3,701.2 | 5,430.2 | 5,313.7 | 116.57 | 46.583 | |
| 5,413.4 | 5,172.4 | 5,177.4 | 5,177.4 | 30.3 | 103.7 | -164.02 | -1,810.3 | 3,701.2 | 5,433.8 | 5,316.8 | 116.97 | 46.454 | |
| 5,500.0 | 5,256.1 | 5,261.1 | 5,261.1 | 30.7 | 105.4 | -164.21 | -1,810.3 | 3,701.2 | 5,455.3 | 5,335.8 | 119.53 | 45.640 | |
| 5,511.8 | 5,267.6 | 5,272.6 | 5,272.6 | 30.7 | 105.6 | -164.23 | -1,810.3 | 3,701.2 | 5,458.1 | 5,338.2 | 119.87 | 45.533 | |
| 5,600.0 | 5,353.5 | 5,358.5 | 5,358.5 | 31.1 | 107.4 | -164.39 | -1,810.3 | 3,701.2 | 5,477.2 | 5,354.8 | 122.40 | 44.749 | |
| 5,610.2 | 5,363.5 | 5,368.5 | 5,368.5 | 31.1 | 107.6 | -164.41 | -1,810.3 | 3,701.2 | 5,479.2 | 5,356.6 | 122.68 | 44.661 | |
| 5,700.0 | 5,451.6 | 5,456.6 | 5,456.6 | 31.4 | 109.3 | -164.55 | -1,810.3 | 3,701.2 | 5,495.8 | 5,370.6 | 125.16 | 43.908 | |
| 5,708.6 | 5,460.2 | 5,465.2 | 5,465.2 | 31.4 | 109.5 | -164.56 | -1,810.3 | 3,701.2 | 5,497.2 | 5,371.8 | 125.40 | 43.838 | |
| 5,800.0 | 5,550.4 | 5,555.4 | 5,555.4 | 31.7 | 111.3 | -164.67 | -1,810.3 | 3,701.2 | 5,511.0 | 5,383.2 | 127.82 | 43.116 | |
| 5,807.1 | 5,557.4 | 5,562.4 | 5,562.4 | 31.7 | 111.5 | -164.68 | -1,810.3 | 3,701.2 | 5,512.0 | 5,384.0 | 128.00 | 43.062 | |
| 5,900.0 | 5,649.6 | 5,654.6 | 5,654.6 | 31.9 | 113.3 | -164.77 | -1,810.3 | 3,701.2 | 5,522.9 | 5,392.6 | 130.35 | 42.370 | |
| 5,905.5 | 5,655.1 | 5,660.1 | 5,660.1 | 31.9 | 113.4 | -164.77 | -1,810.3 | 3,701.2 | 5,523.5 | 5,393.0 | 130.48 | 42.331 | |
| 6,000.0 | 5,749.2 | 5,754.2 | 5,754.2 | 32.1 | 115.3 | -164.84 | -1,810.3 | 3,701.2 | 5,531.5 | 5,398.8 | 132.75 | 41.670 | |
| 6,003.9 | 5,753.1 | 5,758.1 | 5,758.1 | 32.1 | 115.4 | -164.84 | -1,810.3 | 3,701.2 | 5,531.8 | 5,399.0 | 132.84 | 41.643 | |
| 6,100.0 | 5,849.1 | 5,854.1 | 5,854.1 | 32.3 | 117.3 | -164.88 | -1,810.3 | 3,701.2 | 5,536.7 | 5,401.7 | 135.00 | 41.012 | |
| 6,102.3 | 5,851.4 | 5,856.4 | 5,856.4 | 32.3 | 117.4 | -164.88 | -1,810.3 | 3,701.2 | 5,536.8 | 5,401.8 | 135.05 | 40.997 | |
| 6,200.8 | 5,949.8 | 5,954.8 | 5,954.8 | 32.4 | 119.3 | -164.90 | -1,810.3 | 3,701.2 | 5,538.6 | 5,401.5 | 137.12 | 40.391 | |
| 6,204.9 | 5,953.9 | 5,958.9 | 5,958.9 | 32.4 | 119.4 | 110.66 | -1,810.3 | 3,701.2 | 5,538.6 | 5,387.7 | 150.88 | 36.708 | |
| 6,234.9 | 5,983.9 | 5,988.9 | 5,988.9 | 32.4 | 120.0 | 110.66 | -1,810.3 | 3,701.2 | 5,538.6 | 5,387.1 | 151.51 | 36.555 | |
| 6,250.0 | 5,999.0 | 6,004.0 | 6,004.0 | 32.4 | 120.3 | 20.67 | -1,810.3 | 3,701.2 | 5,538.4 | 5,400.4 | 138.08 | 40.111 | |
| 6,299.2 | 6,048.2 | 6,053.2 | 6,053.2 | 32.4 | 121.3 | 20.75 | -1,810.3 | 3,701.2 | 5,535.9 | 5,397.4 | 138.46 | 39.983 | |
| 6,300.0 | 6,048.9 | 6,053.9 | 6,053.9 | 32.4 | 121.3 | 20.75 | -1,810.3 | 3,701.2 | 5,535.8 | 5,397.4 | 138.46 | 39.982 | |
| 6,350.0 | 6,098.5 | 6,103.5 | 6,103.5 | 32.4 | 122.3 | 20.95 | -1,810.3 | 3,701.2 | 5,530.0 | 5,391.7 | 138.27 | 39.993 | |
| 6,397.6 | 6,145.3 | 6,150.3 | 6,150.3 | 32.3 | 123.3 | 21.23 | -1,810.3 | 3,701.2 | 5,521.4 | 5,383.8 | 137.58 | 40.133 | |
| 6,400.0 | 6,147.6 | 6,152.6 | 6,152.6 | 32.3 | 123.3 | 21.25 | -1,810.3 | 3,701.2 | 5,520.9 | 5,383.3 | 137.53 | 40.143 | |
| 6,450.0 | 6,195.8 | 6,200.8 | 6,200.8 | 32.2 | 124.3 | 21.67 | -1,810.3 | 3,701.2 | 5,508.6 | 5,372.3 | 136.25 | 40.430 | |
| 6,496.0 | 6,239.3 | 6,244.3 | 6,244.3 | 32.1 | 125.2 | 22.17 | -1,810.3 | 3,701.2 | 5,494.5 | 5,359.9 | 134.62 | 40.814 | |
| 6,500.0 | 6,243.0 | 6,248.0 | 6,248.0 | 32.1 | 125.2 | 22.22 | -1,810.3 | 3,701.2 | 5,493.2 | 5,358.8 | 134.47 | 40.852 | |
| 6,550.0 | 6,289.0 | 6,294.0 | 6,294.0 | 32.0 | 126.2 | 22.90 | -1,810.3 | 3,701.2 | 5,474.8 | 5,342.6 | 132.24 | 41.401 | |
| 6,594.5 | 6,328.6 | 6,333.6 | 6,333.6 | 31.8 | 127.0 | 23.64 | -1,810.3 | 3,701.2 | 5,456.0 | 5,326.0 | 129.95 | 41.986 | |
| 6,600.0 | 6,333.4 | 6,338.4 | 6,338.4 | 31.8 | 127.1 | 23.74 | -1,810.3 | 3,701.2 | 5,453.5 | 5,323.8 | 129.65 | 42.064 | |
| 6,650.0 | 6,376.2 | 6,381.2 | 6,381.2 | 31.7 | 127.9 | 24.76 | -1,810.3 | 3,701.2 | 5,429.3 | 5,302.5 | 126.80 | 42.818 | |
| 6,692.9 | 6,411.3 | 6,416.3 | 6,416.3 | 31.6 | 128.6 | 25.79 | -1,810.3 | 3,701.2 | 5,406.4 | 5,282.1 | 124.26 | 43.507 | |
| 6,700.0 | 6,417.0 | 6,422.0 | 6,422.0 | 31.5 | 128.7 | 25.98 | -1,810.3 | 3,701.2 | 5,402.4 | 5,278.6 | 123.84 | 43.622 | |
| 6,750.0 | 6,455.7 | 6,460.7 | 6,460.7 | 31.4 | 129.5 | 27.44 | -1,810.3 | 3,701.2 | 5,372.9 | 5,252.0 | 120.97 | 44.414 | |
| 6,791.3 | 6,486.0 | 6,491.0 | 6,491.0 | 31.3 | 130.1 | 28.85 | -1,810.3 | 3,701.2 | 5,346.8 | 5,227.9 | 118.84 | 44.991 | |
| 6,800.0 | 6,492.2 | 6,497.2 | 6,497.2 | 31.3 | 130.3 | 29.17 | -1,810.3 | 3,701.2 | 5,341.1 | 5,222.6 | 118.43 | 45.097 | |
| 6,850.0 | 6,526.1 | 6,531.1 | 6,531.1 | 31.2 | 130.9 | 31.24 | -1,810.3 | 3,701.2 | 5,306.9 | 5,190.4 | 116.53 | 45.540 | |
| 6,889.7 | 6,551.2 | 6,556.2 | 6,556.2 | 31.2 | 131.4 | 33.16 | -1,810.3 | 3,701.2 | 5,278.3 | 5,162.6 | 115.72 | 45.612 | |
| 6,900.0 | 6,557.4 | 6,562.4 | 6,562.4 | 31.2 | 131.6 | 33.70 | -1,810.3 | 3,701.2 | 5,270.7 | 5,155.1 | 115.64 | 45.580 | |
| 6,950.0 | 6,586.0 | 6,591.0 | 6,591.0 | 31.1 | 132.1 | 36.64 | -1,810.3 | 3,701.2 | 5,232.6 | 5,116.5 | 116.16 | 45.048 | |
| 6,988.2 | 6,605.8 | 6,610.8 | 6,610.8 | 31.2 | 132.5 | 39.27 | -1,810.3 | 3,701.2 | 5,202.4 | 5,084.6 | 117.76 | 44.178 | |
| 7,000.0 | 6,611.5 | 6,616.5 | 6,616.5 | 31.2 | 132.7 | 40.16 | -1,810.3 | 3,701.2 | 5,192.8 | 5,074.3 | 118.49 | 43.824 | |
| 7,050.0 | 6,634.1 | 6,639.1 | 6,639.1 | 31.2 | 133.1 | 44.37 | -1,810.3 | 3,701.2 | 5,151.5 | 5,028.6 | 122.95 | 41.900 | |
| 7,086.6 | 6,648.6 | 6,653.6 | 6,653.6 | 31.3 | 133.4 | 47.97 | -1,810.3 | 3,701.2 | 5,120.4 | 4,992.8 | 127.61 | 40.127 | |
| 7,100.0 | 6,653.4 | 6,658.4 | 6,658.4 | 31.4 | 133.5 | 49.41 | -1,810.3 | 3,701.2 | 5,108.9 | 4,979.3 | 129.58 | 39.425 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,674.5 | 6,674.5 | 31.6 | 133.8 | 55.39 | -1,810.3 | 3,701.2 | 5,065.2 | 4,927.1 | 138.08 | 36.684 | |
| 7,185.0 | 6,678.8 | 6,683.8 | 6,683.8 | 31.7 | 134.0 | 60.17 | -1,810.3 | 3,701.2 | 5,034.1 | 4,889.3 | 144.70 | 34.789 | |
| 7,200.0 | 6,682.3 | 6,687.3 | 6,687.3 | 31.8 | 134.1 | 62.37 | -1,810.3 | 3,701.2 | 5,020.6 | 4,873.1 | 147.57 | 34.021 | |
| 7,250.0 | 6,691.6 | 6,696.6 | 6,696.6 | 32.1 | 134.3 | 70.34 | -1,810.3 | 3,701.2 | 4,975.4 | 4,818.8 | 156.68 | 31.756 | |
| 7,283.4 | 6,696.0 | 6,701.0 | 6,701.0 | 32.3 | 134.3 | 76.12 | -1,810.3 | 3,701.2 | 4,945.0 | 4,783.3 | 161.70 | 30.581 | |
| 7,300.0 | 6,697.5 | 6,702.5 | 6,702.5 | 32.4 | 134.4 | 79.08 | -1,810.3 | 3,701.2 | 4,929.8 | 4,766.2 | 163.67 | 30.120 | |
| 7,350.0 | 6,699.9 | 6,704.9 | 6,704.9 | 32.8 | 134.4 | 88.22 | -1,810.3 | 3,701.2 | 4,884.0 | 4,716.9 | 167.08 | 29.231 | |
| 7,364.4 | 6,700.0 | 6,705.0 | 6,705.0 | 32.9 | 134.4 | 90.85 | -1,810.3 | 3,701.2 | 4,870.8 | 4,703.6 | 167.29 | 29.116 | |
| 7,381.9 | 6,699.9 | 6,704.9 | 6,704.9 | 33.1 | 134.4 | 90.85 | -1,810.3 | 3,701.2 | 4,854.8 | 4,687.4 | 167.44 | 28.995 | |
| 7,400.0 | 6,699.8 | 6,704.8 | 6,704.8 | 33.2 | 134.4 | 90.84 | -1,810.3 | 3,701.2 | 4,838.2 | 4,670.6 | 167.59 | 28.869 | |
| 7,480.3 | 6,699.2 | 6,704.2 | 6,704.2 | 34.0 | 134.4 | 90.83 | -1,810.3 | 3,701.2 | 4,764.9 | 4,596.5 | 168.40 | 28.296 | |
| 7,500.0 | 6,699.1 | 6,704.1 | 6,704.1 | 34.2 | 134.4 | 90.82 | -1,810.3 | 3,701.2 | 4,746.9 | 4,578.3 | 168.59 | 28.156 | |
| 7,578.7 | 6,698.6 | 6,703.6 | 6,703.6 | 35.2 | 134.4 | 90.81 | -1,810.3 | 3,701.2 | 4,675.3 | 4,505.8 | 169.53 | 27.578 | |
| 7,600.0 | 6,698.5 | 6,703.5 | 6,703.5 | 35.4 | 134.4 | 90.80 | -1,810.3 | 3,701.2 | 4,656.0 | 4,486.2 | 169.79 | 27.423 | |
| 7,677.1 | 6,698.0 | 6,703.0 | 6,703.0 | 36.5 | 134.4 | 90.79 | -1,810.3 | 3,701.2 | 4,586.1 | 4,415.2 | 170.84 | 26.844 | |
| 7,700.0 | 6,697.8 | 6,702.8 | 6,702.8 | 36.8 | 134.4 | 90.78 | -1,810.3 | 3,701.2 | 4,565.4 | 4,394.3 | 171.16 | 26.674 | |
| 7,775.6 | 6,697.3 | 6,702.3 | 6,702.3 | 38.0 | 134.4 | 90.77 | -1,810.3 | 3,701.2 | 4,497.2 | 4,324.9 | 172.31 | 26.100 | |
| 7,800.0 | 6,697.2 | 6,702.2 | 6,702.2 | 38.3 | 134.4 | 90.77 | -1,810.3 | 3,701.2 | 4,475.3 | 4,302.6 | 172.68 | 25.916 | |
| 7,874.0 | 6,696.7 | 6,701.7 | 6,701.7 | 39.6 | 134.4 | 90.75 | -1,810.3 | 3,701.2 | 4,408.8 | 4,234.9 | 173.91 | 25.351 | |
| 7,900.0 | 6,696.5 | 6,701.5 | 6,701.5 | 40.0 | 134.4 | 90.75 | -1,810.3 | 3,701.2 | 4,385.5 | 4,211.2 | 174.34 | 25.154 | |
| 7,972.4 | 6,696.1 | 6,701.1 | 6,701.1 | 41.3 | 134.4 | 90.73 | -1,810.3 | 3,701.2 | 4,320.8 | 4,145.2 | 175.64 | 24.601 | |
| 8,000.0 | 6,695.9 | 6,700.9 | 6,700.9 | 41.8 | 134.3 | 90.73 | -1,810.3 | 3,701.2 | 4,296.2 | 4,120.1 | 176.13 | 24.392 | |
| 8,070.8 | 6,695.4 | 6,700.4 | 6,700.4 | 43.1 | 134.3 | 90.71 | -1,810.3 | 3,701.2 | 4,233.3 | 4,055.8 | 177.47 | 23.853 | |
| 8,100.0 | 6,695.2 | 6,700.2 | 6,700.2 | 43.7 | 134.3 | 90.71 | -1,810.3 | 3,701.2 | 4,207.4 | 4,029.4 | 178.02 | 23.634 | |
| 8,169.3 | 6,694.8 | 6,699.8 | 6,699.8 | 45.1 | 134.3 | 90.70 | -1,810.3 | 3,701.2 | 4,146.2 | 3,966.8 | 179.40 | 23.112 | |
| 8,200.0 | 6,694.6 | 6,699.6 | 6,699.6 | 45.7 | 134.3 | 90.69 | -1,810.3 | 3,701.2 | 4,119.1 | 3,939.1 | 180.01 | 22.883 | |
| 8,267.7 | 6,694.1 | 6,699.1 | 6,699.1 | 47.1 | 134.3 | 90.68 | -1,810.3 | 3,701.2 | 4,059.7 | 3,878.3 | 181.41 | 22.379 | |
| 8,300.0 | 6,693.9 | 6,698.9 | 6,698.9 | 47.8 | 134.3 | 90.67 | -1,810.3 | 3,701.2 | 4,031.4 | 3,849.3 | 182.08 | 22.141 | |
| 8,366.1 | 6,693.5 | 6,698.5 | 6,698.5 | 49.2 | 134.3 | 90.66 | -1,810.3 | 3,701.2 | 3,973.7 | 3,790.2 | 183.49 | 21.656 | |
| 8,400.0 | 6,693.3 | 6,698.3 | 6,698.3 | 49.9 | 134.3 | 90.65 | -1,810.3 | 3,701.2 | 3,944.2 | 3,760.0 | 184.22 | 21.411 | |
| 8,464.5 | 6,692.9 | 6,697.9 | 6,697.9 | 51.4 | 134.3 | 90.64 | -1,810.3 | 3,701.2 | 3,888.3 | 3,702.7 | 185.64 | 20.946 | |
| 8,500.0 | 6,692.6 | 6,697.6 | 6,697.6 | 52.1 | 134.3 | 90.63 | -1,810.3 | 3,701.2 | 3,857.7 | 3,671.3 | 186.42 | 20.694 | |
| 8,563.0 | 6,692.2 | 6,697.2 | 6,697.2 | 53.6 | 134.3 | 90.62 | -1,810.3 | 3,701.2 | 3,803.5 | 3,615.7 | 187.84 | 20.249 | |
| 8,600.0 | 6,692.0 | 6,697.0 | 6,697.0 | 54.4 | 134.3 | 90.61 | -1,810.3 | 3,701.2 | 3,771.8 | 3,583.2 | 188.68 | 19.991 | |
| 8,661.4 | 6,691.6 | 6,696.6 | 6,696.6 | 55.8 | 134.3 | 90.60 | -1,810.3 | 3,701.2 | 3,719.5 | 3,529.4 | 190.09 | 19.567 | |
| 8,700.0 | 6,691.3 | 6,696.3 | 6,696.3 | 56.7 | 134.3 | 90.59 | -1,810.3 | 3,701.2 | 3,686.7 | 3,495.7 | 190.98 | 19.304 | |
| 8,759.8 | 6,690.9 | 6,695.9 | 6,695.9 | 58.1 | 134.2 | 90.58 | -1,810.3 | 3,701.2 | 3,636.1 | 3,443.7 | 192.39 | 18.900 | |
| 8,800.0 | 6,690.7 | 6,695.7 | 6,695.7 | 59.1 | 134.2 | 90.58 | -1,810.3 | 3,701.2 | 3,602.3 | 3,408.9 | 193.33 | 18.633 | |
| 8,858.2 | 6,690.3 | 6,695.3 | 6,695.3 | 60.5 | 134.2 | 90.56 | -1,810.3 | 3,701.2 | 3,553.5 | 3,358.8 | 194.72 | 18.249 | |
| 8,900.0 | 6,690.0 | 6,695.0 | 6,695.0 | 61.5 | 134.2 | 90.56 | -1,810.3 | 3,701.2 | 3,518.7 | 3,323.0 | 195.72 | 17.979 | |
| 8,956.7 | 6,689.7 | 6,694.7 | 6,694.7 | 62.9 | 134.2 | 90.55 | -1,810.3 | 3,701.2 | 3,471.7 | 3,274.6 | 197.09 | 17.615 | |
| 9,000.0 | 6,689.4 | 6,694.4 | 6,694.4 | 63.9 | 134.2 | 90.54 | -1,810.3 | 3,701.2 | 3,436.0 | 3,237.9 | 198.14 | 17.342 | |
| 9,055.1 | 6,689.0 | 6,694.0 | 6,694.0 | 65.3 | 134.2 | 90.53 | -1,810.3 | 3,701.2 | 3,390.8 | 3,191.3 | 199.49 | 16.998 | |
| 9,100.0 | 6,688.7 | 6,693.7 | 6,693.7 | 66.4 | 134.2 | 90.52 | -1,810.3 | 3,701.2 | 3,354.2 | 3,153.6 | 200.59 | 16.722 | |
| 9,153.5 | 6,688.4 | 6,693.4 | 6,693.4 | 67.7 | 134.2 | 90.51 | -1,810.3 | 3,701.2 | 3,310.9 | 3,109.0 | 201.91 | 16.398 | |
| 9,200.0 | 6,688.1 | 6,693.1 | 6,693.1 | 68.9 | 134.2 | 90.50 | -1,810.3 | 3,701.2 | 3,273.5 | 3,070.4 | 203.06 | 16.121 | |
| 9,251.9 | 6,687.8 | 6,692.8 | 6,692.8 | 70.2 | 134.2 | 90.49 | -1,810.3 | 3,701.2 | 3,232.0 | 3,027.6 | 204.36 | 15.815 | |
| 9,300.0 | 6,687.4 | 6,692.4 | 6,692.4 | 71.4 | 134.2 | 90.48 | -1,810.3 | 3,701.2 | 3,193.8 | 2,988.3 | 205.56 | 15.537 | |
| 9,350.4 | 6,687.1 | 6,692.1 | 6,692.1 | 72.7 | 134.2 | 90.47 | -1,810.3 | 3,701.2 | 3,154.1 | 2,947.3 | 206.83 | 15.250 | |
| 9,400.0 | 6,686.8 | 6,691.8 | 6,691.8 | 73.9 | 134.2 | 90.46 | -1,810.3 | 3,701.2 | 3,115.3 | 2,907.3 | 208.08 | 14.972 | |
| 9,448.8 | 6,686.5 | 6,691.5 | 6,691.5 | 75.2 | 134.2 | 90.45 | -1,810.3 | 3,701.2 | 3,077.5 | 2,868.2 | 209.32 | 14.702 | |
| 9,500.0 | 6,686.1 | 6,691.1 | 6,691.1 | 76.5 | 134.2 | 90.44 | -1,810.3 | 3,701.2 | 3,038.1 | 2,827.5 | 210.62 | 14.424 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #43-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,690.8 | 6,690.8 | 77.7 | 134.1 | 90.43 | -1,810.3 | 3,701.2 | 3,002.1 | 2,790.3 | 211.83 | 14.172 | |
| 9,600.0 | 6,685.5 | 6,690.5 | 6,690.5 | 79.0 | 134.1 | 90.42 | -1,810.3 | 3,701.2 | 2,962.3 | 2,749.1 | 213.18 | 13.895 | |
| 9,645.6 | 6,685.2 | 6,690.2 | 6,690.2 | 80.2 | 134.1 | 90.41 | -1,810.3 | 3,701.2 | 2,928.1 | 2,713.8 | 214.36 | 13.660 | |
| 9,700.0 | 6,684.8 | 6,689.8 | 6,689.8 | 81.6 | 134.1 | 90.40 | -1,810.3 | 3,701.2 | 2,887.9 | 2,672.1 | 215.76 | 13.385 | |
| 9,744.1 | 6,684.6 | 6,689.6 | 6,689.6 | 82.8 | 134.1 | 90.40 | -1,810.3 | 3,701.2 | 2,855.6 | 2,638.7 | 216.90 | 13.166 | |
| 9,800.0 | 6,684.2 | 6,689.2 | 6,689.2 | 84.2 | 134.1 | 90.39 | -1,810.3 | 3,701.2 | 2,815.1 | 2,596.7 | 218.34 | 12.893 | |
| 9,842.5 | 6,683.9 | 6,688.9 | 6,688.9 | 85.3 | 134.1 | 90.38 | -1,810.3 | 3,701.2 | 2,784.6 | 2,565.2 | 219.45 | 12.689 | |
| 9,900.0 | 6,683.5 | 6,688.5 | 6,688.5 | 86.8 | 134.1 | 90.37 | -1,810.3 | 3,701.2 | 2,744.0 | 2,523.0 | 220.95 | 12.419 | |
| 9,940.9 | 6,683.3 | 6,688.3 | 6,688.3 | 87.9 | 134.1 | 90.36 | -1,810.3 | 3,701.2 | 2,715.4 | 2,493.4 | 222.02 | 12.231 | |
| 10,000.0 | 6,682.9 | 6,687.9 | 6,687.9 | 89.5 | 134.1 | 90.35 | -1,810.3 | 3,701.2 | 2,674.7 | 2,451.2 | 223.56 | 11.964 | |
| 10,039.3 | 6,682.6 | 6,687.6 | 6,687.6 | 90.5 | 134.1 | 90.34 | -1,810.3 | 3,701.2 | 2,648.0 | 2,423.4 | 224.59 | 11.790 | |
| 10,100.0 | 6,682.2 | 6,687.2 | 6,687.2 | 92.1 | 134.1 | 90.33 | -1,810.3 | 3,701.2 | 2,607.5 | 2,381.3 | 226.18 | 11.528 | |
| 10,137.8 | 6,682.0 | 6,687.0 | 6,687.0 | 93.1 | 134.1 | 90.32 | -1,810.3 | 3,701.2 | 2,582.7 | 2,355.5 | 227.18 | 11.368 | |
| 10,200.0 | 6,681.6 | 6,686.6 | 6,686.6 | 94.8 | 134.1 | 90.31 | -1,810.3 | 3,701.2 | 2,542.4 | 2,313.6 | 228.82 | 11.111 | |
| 10,236.2 | 6,681.4 | 6,686.4 | 6,686.4 | 95.7 | 134.1 | 90.30 | -1,810.3 | 3,701.2 | 2,519.4 | 2,289.7 | 229.77 | 10.965 | |
| 10,300.0 | 6,680.9 | 6,685.9 | 6,685.9 | 97.4 | 134.0 | 90.29 | -1,810.3 | 3,701.2 | 2,479.7 | 2,248.2 | 231.46 | 10.713 | |
| 10,334.6 | 6,680.7 | 6,685.7 | 6,685.7 | 98.3 | 134.0 | 90.28 | -1,810.3 | 3,701.2 | 2,458.5 | 2,226.1 | 232.38 | 10.580 | |
| 10,400.0 | 6,680.3 | 6,685.3 | 6,685.3 | 100.1 | 134.0 | 90.27 | -1,810.3 | 3,701.2 | 2,419.4 | 2,185.3 | 234.11 | 10.334 | |
| 10,433.0 | 6,680.1 | 6,685.1 | 6,685.1 | 101.0 | 134.0 | 90.26 | -1,810.3 | 3,701.2 | 2,400.1 | 2,165.1 | 234.99 | 10.214 | |
| 10,500.0 | 6,679.7 | 6,684.7 | 6,684.7 | 102.8 | 134.0 | 90.25 | -1,810.3 | 3,701.2 | 2,361.9 | 2,125.1 | 236.77 | 9.975 | |
| 10,531.5 | 6,679.4 | 6,684.4 | 6,684.4 | 103.6 | 134.0 | 90.25 | -1,810.3 | 3,701.2 | 2,344.3 | 2,106.7 | 237.61 | 9.866 | |
| 10,600.0 | 6,679.0 | 6,684.0 | 6,684.0 | 105.4 | 134.0 | 90.23 | -1,810.3 | 3,701.2 | 2,307.2 | 2,067.8 | 239.44 | 9.636 | |
| 10,629.9 | 6,678.8 | 6,683.8 | 6,683.8 | 106.2 | 134.0 | 90.23 | -1,810.3 | 3,701.2 | 2,291.5 | 2,051.2 | 240.24 | 9.538 | |
| 10,700.0 | 6,678.4 | 6,683.4 | 6,683.4 | 108.1 | 134.0 | 90.21 | -1,810.3 | 3,701.2 | 2,255.7 | 2,013.6 | 242.11 | 9.317 | |
| 10,728.3 | 6,678.2 | 6,683.2 | 6,683.2 | 108.9 | 134.0 | 90.21 | -1,810.3 | 3,701.2 | 2,241.7 | 1,998.8 | 242.87 | 9.230 | |
| 10,800.0 | 6,677.7 | 6,682.7 | 6,682.7 | 110.8 | 134.0 | 90.20 | -1,810.3 | 3,701.2 | 2,207.4 | 1,962.7 | 244.79 | 9.018 | |
| 10,826.7 | 6,677.5 | 6,682.5 | 6,682.5 | 111.5 | 134.0 | 90.19 | -1,810.3 | 3,701.2 | 2,195.1 | 1,949.6 | 245.51 | 8.941 | |
| 10,900.0 | 6,677.1 | 6,682.1 | 6,682.1 | 113.5 | 134.0 | 90.18 | -1,810.3 | 3,701.2 | 2,162.8 | 1,915.3 | 247.47 | 8.739 | |
| 10,925.2 | 6,676.9 | 6,681.9 | 6,681.9 | 114.2 | 134.0 | 90.17 | -1,810.3 | 3,701.2 | 2,152.1 | 1,904.0 | 248.15 | 8.673 | |
| 11,000.0 | 6,676.4 | 6,681.4 | 6,681.4 | 116.2 | 134.0 | 90.16 | -1,810.3 | 3,701.2 | 2,121.9 | 1,871.7 | 250.17 | 8.482 | |
| 11,023.6 | 6,676.3 | 6,681.3 | 6,681.3 | 116.8 | 134.0 | 90.15 | -1,810.3 | 3,701.2 | 2,112.8 | 1,862.0 | 250.80 | 8.424 | |
| 11,100.0 | 6,675.8 | 6,680.8 | 6,680.8 | 118.9 | 133.9 | 90.14 | -1,810.3 | 3,701.2 | 2,085.0 | 1,832.1 | 252.86 | 8.246 | |
| 11,122.0 | 6,675.6 | 6,680.6 | 6,680.6 | 119.5 | 133.9 | 90.13 | -1,810.3 | 3,701.2 | 2,077.4 | 1,824.0 | 253.46 | 8.196 | |
| 11,200.0 | 6,675.1 | 6,680.1 | 6,680.1 | 121.6 | 133.9 | 90.12 | -1,810.3 | 3,701.2 | 2,052.3 | 1,796.8 | 255.56 | 8.031 | |
| 11,220.4 | 6,675.0 | 6,680.0 | 6,680.0 | 122.2 | 133.9 | 90.12 | -1,810.3 | 3,701.2 | 2,046.2 | 1,790.1 | 256.11 | 7.989 | |
| 11,300.0 | 6,674.5 | 6,679.5 | 6,679.5 | 124.3 | 133.9 | 90.10 | -1,810.3 | 3,701.2 | 2,024.1 | 1,765.8 | 258.26 | 7.837 | |
| 11,318.9 | 6,674.3 | 6,679.3 | 6,679.3 | 124.9 | 133.9 | 90.10 | -1,810.3 | 3,701.2 | 2,019.3 | 1,760.5 | 258.78 | 7.803 | |
| 11,400.0 | 6,673.8 | 6,678.8 | 6,678.8 | 127.1 | 133.9 | 90.08 | -1,810.3 | 3,701.2 | 2,000.4 | 1,739.5 | 260.97 | 7.665 | |
| 11,417.3 | 6,673.7 | 6,678.7 | 6,678.7 | 127.5 | 133.9 | 90.08 | -1,810.3 | 3,701.2 | 1,996.8 | 1,735.4 | 261.44 | 7.638 | |
| 11,500.0 | 6,673.2 | 6,678.2 | 6,678.2 | 129.8 | 133.9 | 90.06 | -1,810.3 | 3,701.2 | 1,981.5 | 1,717.9 | 263.68 | 7.515 | |
| 11,515.7 | 6,673.1 | 6,678.1 | 6,678.1 | 130.2 | 133.9 | 90.06 | -1,810.3 | 3,701.2 | 1,979.0 | 1,714.9 | 264.11 | 7.493 | |
| 11,600.0 | 6,672.5 | 6,677.5 | 6,677.5 | 132.5 | 133.9 | 90.04 | -1,810.3 | 3,701.2 | 1,967.6 | 1,701.2 | 266.40 | 7.386 | |
| 11,614.1 | 6,672.4 | 6,677.4 | 6,677.4 | 132.9 | 133.9 | 90.04 | -1,810.3 | 3,701.2 | 1,966.0 | 1,699.2 | 266.78 | 7.369 | |
| 11,700.0 | 6,671.9 | 6,676.9 | 6,676.9 | 135.3 | 133.9 | 90.02 | -1,810.3 | 3,701.2 | 1,958.6 | 1,689.5 | 269.12 | 7.278 | |
| 11,712.6 | 6,671.8 | 6,676.8 | 6,676.8 | 135.6 | 133.9 | 90.02 | -1,810.3 | 3,701.2 | 1,957.8 | 1,688.4 | 269.46 | 7.266 | |
| 11,800.0 | 6,671.2 | 6,676.2 | 6,676.2 | 138.0 | 133.9 | 90.00 | -1,810.3 | 3,701.2 | 1,954.7 | 1,682.9 | 271.84 | 7.191 | |
| 11,811.0 | 6,671.1 | 6,676.1 | 6,676.1 | 138.3 | 133.8 | 90.00 | -1,810.3 | 3,701.2 | 1,954.6 | 1,682.5 | 272.14 | 7.182 | |
| 11,826.0 | 6,671.0 | 6,676.0 | 6,676.0 | 138.7 | 133.8 | 90.00 | -1,810.3 | 3,701.2 | 1,954.5 | 1,682.0 | 272.55 | 7.171 | CC |
| 11,900.0 | 6,670.6 | 6,675.6 | 6,675.6 | 140.7 | 133.8 | 89.99 | -1,810.3 | 3,701.2 | 1,956.0 | 1,681.4 | 274.57 | 7.124 | ES |
| 11,909.4 | 6,670.5 | 6,675.5 | 6,675.5 | 141.0 | 133.8 | 89.98 | -1,810.3 | 3,701.2 | 1,956.3 | 1,681.5 | 274.82 | 7.119 | |
| 11,987.2 | 6,670.0 | 6,675.0 | 6,675.0 | 143.1 | 133.8 | 89.97 | -1,810.3 | 3,701.2 | 1,961.2 | 1,684.3 | 276.94 | 7.082 | SF |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 6.8 | 6.8 | 0.0 | 0.0 | 124.69 | -2,710.2 | 3,915.8 | 4,762.2 | | | | |
| 98.4 | 98.4 | 157.3 | 157.3 | 0.1 | 0.2 | 124.70 | -2,710.0 | 3,914.4 | 4,761.2 | 4,761.0 | 0.27 | N/A | |
| 100.0 | 100.0 | 158.8 | 158.8 | 0.1 | 0.2 | 124.70 | -2,710.0 | 3,914.3 | 4,761.2 | 4,760.9 | 0.27 | N/A | |
| 196.8 | 196.8 | 250.5 | 250.5 | 0.3 | 0.3 | 124.70 | -2,709.8 | 3,913.2 | 4,760.1 | 4,759.5 | 0.59 | 8,115.332 | |
| 200.0 | 200.0 | 253.4 | 253.4 | 0.3 | 0.3 | 124.70 | -2,709.8 | 3,913.1 | 4,760.1 | 4,759.5 | 0.60 | 7,986.884 | |
| 295.3 | 295.3 | 345.0 | 345.0 | 0.5 | 0.4 | 124.71 | -2,709.6 | 3,912.2 | 4,759.1 | 4,758.3 | 0.88 | 5,424.517 | |
| 300.0 | 300.0 | 349.9 | 349.8 | 0.5 | 0.4 | 124.71 | -2,709.6 | 3,912.1 | 4,759.1 | 4,758.2 | 0.89 | 5,340.887 | |
| 393.7 | 393.7 | 446.6 | 446.6 | 0.8 | 0.4 | 124.71 | -2,709.3 | 3,911.2 | 4,758.1 | 4,757.0 | 1.16 | 4,106.651 | |
| 400.0 | 400.0 | 453.2 | 453.2 | 0.8 | 0.4 | 124.71 | -2,709.2 | 3,911.1 | 4,758.1 | 4,756.9 | 1.18 | 4,045.013 | |
| 492.1 | 492.1 | 547.2 | 547.1 | 1.0 | 0.5 | 124.71 | -2,708.6 | 3,910.3 | 4,757.1 | 4,755.6 | 1.43 | 3,324.874 | |
| 500.0 | 500.0 | 555.0 | 555.0 | 1.0 | 0.5 | 124.71 | -2,708.6 | 3,910.2 | 4,757.0 | 4,755.5 | 1.45 | 3,275.659 | |
| 590.5 | 590.5 | 644.8 | 644.8 | 1.2 | 0.5 | 124.71 | -2,707.9 | 3,909.5 | 4,756.0 | 4,754.3 | 1.70 | 2,802.802 | |
| 600.0 | 600.0 | 654.2 | 654.1 | 1.2 | 0.5 | 124.71 | -2,707.8 | 3,909.4 | 4,755.9 | 4,754.2 | 1.72 | 2,761.560 | |
| 689.0 | 689.0 | 745.8 | 745.7 | 1.4 | 0.6 | 124.71 | -2,707.1 | 3,908.7 | 4,754.9 | 4,753.0 | 1.96 | 2,425.275 | |
| 700.0 | 700.0 | 757.6 | 757.6 | 1.4 | 0.6 | 124.71 | -2,707.0 | 3,908.6 | 4,754.8 | 4,752.8 | 1.99 | 2,389.187 | |
| 787.4 | 787.4 | 848.2 | 848.1 | 1.6 | 0.6 | 124.70 | -2,706.1 | 3,907.9 | 4,753.8 | 4,751.5 | 2.22 | 2,139.532 | |
| 800.0 | 800.0 | 860.8 | 860.8 | 1.7 | 0.6 | 124.70 | -2,706.0 | 3,907.8 | 4,753.6 | 4,751.4 | 2.25 | 2,108.060 | |
| 885.8 | 885.8 | 948.4 | 948.4 | 1.9 | 0.7 | 124.70 | -2,705.2 | 3,907.1 | 4,752.6 | 4,750.1 | 2.48 | 1,916.382 | |
| 900.0 | 900.0 | 963.1 | 963.1 | 1.9 | 0.7 | 124.70 | -2,705.1 | 3,906.9 | 4,752.4 | 4,749.9 | 2.52 | 1,888.068 | |
| 984.2 | 984.2 | 1,052.1 | 1,052.0 | 2.1 | 0.7 | 124.70 | -2,704.3 | 3,906.1 | 4,751.3 | 4,748.5 | 2.74 | 1,735.838 | |
| 1,000.0 | 1,000.0 | 1,068.9 | 1,068.8 | 2.1 | 0.7 | 124.70 | -2,704.1 | 3,905.9 | 4,751.1 | 4,748.3 | 2.78 | 1,710.085 | |
| 1,046.9 | 1,046.9 | 1,117.8 | 1,117.8 | 2.2 | 0.8 | -150.87 | -2,703.7 | 3,905.4 | 4,750.7 | 4,747.8 | 2.97 | 1,597.877 | |
| 1,082.7 | 1,082.7 | 1,153.7 | 1,153.6 | 2.3 | 0.8 | -150.87 | -2,703.4 | 3,905.0 | 4,750.9 | 4,747.9 | 3.06 | 1,550.082 | |
| 1,100.0 | 1,100.0 | 1,171.0 | 1,170.9 | 2.3 | 0.8 | -150.88 | -2,703.2 | 3,904.8 | 4,751.2 | 4,748.1 | 3.11 | 1,527.985 | |
| 1,181.1 | 1,181.0 | 1,252.5 | 1,252.4 | 2.5 | 0.8 | -150.88 | -2,702.5 | 3,903.8 | 4,753.5 | 4,750.2 | 3.31 | 1,434.697 | |
| 1,200.0 | 1,199.8 | 1,271.5 | 1,271.5 | 2.5 | 0.8 | -150.88 | -2,702.4 | 3,903.6 | 4,754.3 | 4,750.9 | 3.36 | 1,414.689 | |
| 1,279.5 | 1,279.1 | 1,345.6 | 1,345.5 | 2.7 | 0.9 | -150.87 | -2,701.8 | 3,902.7 | 4,759.0 | 4,755.4 | 3.57 | 1,334.821 | |
| 1,300.0 | 1,299.5 | 1,363.8 | 1,363.7 | 2.8 | 0.9 | -150.86 | -2,701.6 | 3,902.5 | 4,760.5 | 4,756.9 | 3.62 | 1,315.963 | |
| 1,377.9 | 1,376.9 | 1,434.7 | 1,434.6 | 3.0 | 0.9 | -150.84 | -2,701.2 | 3,901.8 | 4,767.6 | 4,763.8 | 3.83 | 1,246.085 | |
| 1,400.0 | 1,398.7 | 1,455.2 | 1,455.1 | 3.0 | 0.9 | -150.83 | -2,701.1 | 3,901.6 | 4,770.0 | 4,766.1 | 3.89 | 1,227.761 | |
| 1,476.4 | 1,474.2 | 1,525.5 | 1,525.4 | 3.2 | 0.9 | -150.80 | -2,700.8 | 3,900.9 | 4,779.4 | 4,775.3 | 4.10 | 1,165.661 | |
| 1,500.0 | 1,497.5 | 1,546.9 | 1,546.8 | 3.3 | 0.9 | -150.79 | -2,700.8 | 3,900.6 | 4,782.7 | 4,778.5 | 4.17 | 1,147.976 | |
| 1,574.8 | 1,571.0 | 1,614.4 | 1,614.3 | 3.5 | 1.0 | -150.75 | -2,700.6 | 3,900.0 | 4,794.2 | 4,789.8 | 4.39 | 1,092.474 | |
| 1,600.0 | 1,595.6 | 1,636.8 | 1,636.7 | 3.6 | 1.0 | -150.73 | -2,700.5 | 3,899.8 | 4,798.5 | 4,794.0 | 4.46 | 1,075.233 | |
| 1,673.2 | 1,667.0 | 1,701.7 | 1,701.6 | 3.9 | 1.0 | -150.68 | -2,700.4 | 3,899.4 | 4,812.1 | 4,807.5 | 4.69 | 1,025.050 | |
| 1,700.0 | 1,693.1 | 1,727.4 | 1,727.3 | 4.0 | 1.0 | -150.66 | -2,700.4 | 3,899.2 | 4,817.6 | 4,812.8 | 4.78 | 1,007.923 | |
| 1,771.6 | 1,762.4 | 1,795.9 | 1,795.8 | 4.3 | 1.0 | -150.61 | -2,700.2 | 3,898.8 | 4,833.1 | 4,828.1 | 5.03 | 961.758 | |
| 1,800.0 | 1,789.6 | 1,820.2 | 1,820.1 | 4.4 | 1.0 | -150.58 | -2,700.2 | 3,898.6 | 4,839.7 | 4,834.6 | 5.12 | 945.042 | |
| 1,870.1 | 1,856.8 | 1,878.9 | 1,878.8 | 4.7 | 1.1 | -150.50 | -2,700.0 | 3,898.4 | 4,857.1 | 4,851.7 | 5.38 | 903.008 | |
| 1,900.0 | 1,885.3 | 1,900.0 | 1,899.9 | 4.9 | 1.1 | -150.46 | -2,700.0 | 3,898.3 | 4,865.0 | 4,859.5 | 5.49 | 886.728 | |
| 1,968.5 | 1,950.2 | 1,958.3 | 1,958.2 | 5.3 | 1.1 | -150.38 | -2,699.9 | 3,898.2 | 4,884.2 | 4,878.4 | 5.75 | 849.524 | |
| 2,000.0 | 1,979.8 | 1,983.3 | 1,983.2 | 5.5 | 1.1 | -150.33 | -2,699.9 | 3,898.2 | 4,893.5 | 4,887.6 | 5.87 | 833.491 | |
| 2,044.9 | 2,021.9 | 2,021.5 | 2,021.4 | 5.7 | 1.1 | -150.27 | -2,699.8 | 3,898.3 | 4,907.4 | 4,901.3 | 6.06 | 810.362 | |
| 2,066.9 | 2,042.5 | 2,041.4 | 2,041.3 | 5.9 | 1.1 | -150.31 | -2,699.8 | 3,898.3 | 4,914.3 | 4,908.1 | 6.14 | 799.748 | |
| 2,100.0 | 2,073.4 | 2,071.4 | 2,071.2 | 6.1 | 1.1 | -150.38 | -2,699.7 | 3,898.4 | 4,924.7 | 4,918.5 | 6.28 | 784.142 | |
| 2,165.3 | 2,134.4 | 2,131.8 | 2,131.7 | 6.5 | 1.1 | -150.51 | -2,699.5 | 3,898.6 | 4,945.4 | 4,938.9 | 6.55 | 754.550 | |
| 2,200.0 | 2,166.8 | 2,164.5 | 2,164.4 | 6.8 | 1.1 | -150.59 | -2,699.4 | 3,898.7 | 4,956.4 | 4,949.7 | 6.70 | 739.800 | |
| 2,263.8 | 2,226.4 | 2,224.4 | 2,224.2 | 7.2 | 1.1 | -150.72 | -2,699.1 | 3,899.0 | 4,976.6 | 4,969.6 | 6.97 | 713.758 | |
| 2,300.0 | 2,260.2 | 2,258.1 | 2,257.9 | 7.4 | 1.1 | -150.79 | -2,698.9 | 3,899.1 | 4,988.1 | 4,980.9 | 7.13 | 699.819 | |
| 2,362.2 | 2,318.3 | 2,316.0 | 2,315.9 | 7.9 | 1.1 | -150.92 | -2,698.7 | 3,899.4 | 5,007.8 | 5,000.4 | 7.40 | 676.874 | |
| 2,400.0 | 2,353.6 | 2,351.4 | 2,351.3 | 8.1 | 1.1 | -150.99 | -2,698.6 | 3,899.5 | 5,019.8 | 5,012.3 | 7.56 | 663.723 | |
| 2,460.6 | 2,410.3 | 2,409.1 | 2,409.0 | 8.6 | 1.2 | -151.12 | -2,698.4 | 3,899.7 | 5,039.1 | 5,031.3 | 7.83 | 643.510 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,450.4 | 2,450.2 | 8.9 | 1.2 | -151.20 | -2,698.2 | 3,899.8 | 5,051.6 | 5,043.6 | 8.00 | 631.056 | |
| 2,559.0 | 2,502.2 | 2,511.2 | 2,511.1 | 9.3 | 1.2 | -151.33 | -2,698.0 | 3,899.9 | 5,070.3 | 5,062.0 | 8.27 | 613.153 | |
| 2,600.0 | 2,540.5 | 2,550.4 | 2,550.2 | 9.6 | 1.2 | -151.41 | -2,697.8 | 3,900.0 | 5,083.3 | 5,074.8 | 8.45 | 601.346 | |
| 2,657.5 | 2,594.2 | 2,605.3 | 2,605.2 | 10.0 | 1.2 | -151.53 | -2,697.5 | 3,900.1 | 5,101.5 | 5,092.8 | 8.71 | 585.475 | |
| 2,700.0 | 2,633.9 | 2,646.1 | 2,646.0 | 10.3 | 1.2 | -151.61 | -2,697.3 | 3,900.1 | 5,114.9 | 5,106.0 | 8.91 | 574.295 | |
| 2,755.9 | 2,686.1 | 2,699.8 | 2,699.7 | 10.7 | 1.2 | -151.72 | -2,697.1 | 3,900.1 | 5,132.6 | 5,123.5 | 9.16 | 560.224 | |
| 2,800.0 | 2,727.3 | 2,746.1 | 2,746.0 | 11.0 | 1.2 | -151.82 | -2,696.9 | 3,900.1 | 5,146.6 | 5,137.2 | 9.36 | 549.596 | |
| 2,854.3 | 2,778.1 | 2,802.9 | 2,802.8 | 11.4 | 1.3 | -151.93 | -2,696.7 | 3,900.0 | 5,163.7 | 5,154.1 | 9.61 | 537.108 | |
| 2,900.0 | 2,820.7 | 2,847.0 | 2,846.8 | 11.8 | 1.3 | -152.02 | -2,696.5 | 3,899.9 | 5,178.1 | 5,168.3 | 9.83 | 526.984 | |
| 2,952.7 | 2,870.0 | 2,897.8 | 2,897.7 | 12.2 | 1.3 | -152.11 | -2,696.3 | 3,899.7 | 5,194.8 | 5,184.7 | 10.07 | 515.789 | |
| 3,000.0 | 2,914.2 | 2,946.0 | 2,945.9 | 12.5 | 1.3 | -152.21 | -2,696.2 | 3,899.5 | 5,209.7 | 5,199.4 | 10.29 | 506.189 | |
| 3,051.2 | 2,962.0 | 2,998.4 | 2,998.3 | 12.9 | 1.3 | -152.31 | -2,696.0 | 3,899.3 | 5,225.7 | 5,215.2 | 10.53 | 496.214 | |
| 3,100.0 | 3,007.6 | 3,049.2 | 3,049.0 | 13.3 | 1.3 | -152.41 | -2,695.7 | 3,899.0 | 5,241.1 | 5,230.3 | 10.76 | 487.123 | |
| 3,149.6 | 3,053.9 | 3,101.0 | 3,100.9 | 13.6 | 1.4 | -152.51 | -2,695.5 | 3,898.7 | 5,256.6 | 5,245.6 | 10.99 | 478.256 | |
| 3,200.0 | 3,101.0 | 3,165.5 | 3,165.4 | 14.0 | 1.4 | -152.63 | -2,695.2 | 3,898.1 | 5,272.3 | 5,261.1 | 11.23 | 469.595 | |
| 3,248.0 | 3,145.9 | 3,222.3 | 3,222.2 | 14.4 | 1.4 | -152.73 | -2,695.0 | 3,897.4 | 5,287.1 | 5,275.7 | 11.45 | 461.681 | |
| 3,300.0 | 3,194.4 | 3,277.3 | 3,277.1 | 14.8 | 1.4 | -152.83 | -2,695.0 | 3,896.4 | 5,303.1 | 5,291.4 | 11.69 | 453.534 | |
| 3,346.4 | 3,237.8 | 3,321.9 | 3,321.7 | 15.1 | 1.4 | -152.90 | -2,695.3 | 3,895.5 | 5,317.4 | 5,305.5 | 11.91 | 446.559 | |
| 3,400.0 | 3,287.8 | 3,368.8 | 3,368.6 | 15.5 | 1.4 | -152.98 | -2,695.6 | 3,894.5 | 5,333.8 | 5,321.7 | 12.15 | 438.823 | |
| 3,444.9 | 3,329.8 | 3,408.6 | 3,408.4 | 15.9 | 1.4 | -153.04 | -2,696.0 | 3,893.6 | 5,347.7 | 5,335.3 | 12.36 | 432.518 | |
| 3,500.0 | 3,381.3 | 3,459.9 | 3,459.7 | 16.3 | 1.5 | -153.12 | -2,696.5 | 3,892.4 | 5,364.7 | 5,352.1 | 12.62 | 425.098 | |
| 3,543.3 | 3,421.7 | 3,500.0 | 3,499.8 | 16.6 | 1.5 | -153.19 | -2,696.8 | 3,891.6 | 5,378.1 | 5,365.3 | 12.82 | 419.476 | |
| 3,600.0 | 3,474.7 | 3,539.5 | 3,539.3 | 17.0 | 1.5 | -153.25 | -2,697.1 | 3,890.8 | 5,395.7 | 5,382.6 | 13.08 | 412.409 | |
| 3,641.7 | 3,513.7 | 3,568.5 | 3,568.2 | 17.3 | 1.5 | -153.30 | -2,697.2 | 3,890.4 | 5,408.7 | 5,395.5 | 13.28 | 407.394 | |
| 3,700.0 | 3,568.1 | 3,609.9 | 3,609.7 | 17.8 | 1.5 | -153.37 | -2,697.3 | 3,890.0 | 5,427.1 | 5,413.5 | 13.55 | 400.655 | |
| 3,740.1 | 3,605.6 | 3,641.1 | 3,640.9 | 18.1 | 1.5 | -153.42 | -2,697.4 | 3,889.7 | 5,439.8 | 5,426.1 | 13.73 | 396.167 | |
| 3,800.0 | 3,661.5 | 3,687.7 | 3,687.5 | 18.5 | 1.5 | -153.50 | -2,697.7 | 3,889.2 | 5,458.9 | 5,444.9 | 14.01 | 389.712 | |
| 3,838.6 | 3,697.6 | 3,721.2 | 3,721.0 | 18.8 | 1.5 | -153.56 | -2,698.0 | 3,888.9 | 5,471.2 | 5,457.0 | 14.18 | 385.704 | |
| 3,900.0 | 3,754.9 | 3,778.4 | 3,778.1 | 19.3 | 1.5 | -153.65 | -2,698.6 | 3,888.3 | 5,490.9 | 5,476.4 | 14.47 | 379.552 | |
| 3,937.0 | 3,789.5 | 3,812.6 | 3,812.4 | 19.6 | 1.5 | -153.70 | -2,698.9 | 3,887.9 | 5,502.7 | 5,488.1 | 14.64 | 375.964 | |
| 4,000.0 | 3,848.4 | 3,870.2 | 3,870.0 | 20.1 | 1.5 | -153.79 | -2,699.6 | 3,887.3 | 5,522.9 | 5,508.0 | 14.92 | 370.074 | |
| 4,035.4 | 3,881.5 | 3,900.0 | 3,899.7 | 20.3 | 1.5 | -153.84 | -2,699.9 | 3,887.0 | 5,534.3 | 5,519.2 | 15.09 | 366.866 | |
| 4,100.0 | 3,941.8 | 3,933.5 | 3,933.2 | 20.8 | 1.5 | -153.89 | -2,700.3 | 3,886.8 | 5,555.2 | 5,539.8 | 15.38 | 361.243 | |
| 4,133.8 | 3,973.4 | 3,950.2 | 3,950.0 | 21.1 | 1.5 | -153.92 | -2,700.5 | 3,886.7 | 5,566.3 | 5,550.8 | 15.53 | 358.390 | |
| 4,200.0 | 4,035.2 | 4,000.0 | 3,999.7 | 21.6 | 1.5 | -153.99 | -2,701.3 | 3,886.7 | 5,588.3 | 5,572.4 | 15.83 | 352.994 | |
| 4,232.3 | 4,065.4 | 4,000.0 | 3,999.7 | 21.8 | 1.5 | -153.99 | -2,701.3 | 3,886.7 | 5,599.0 | 5,583.1 | 15.98 | 350.449 | |
| 4,300.0 | 4,128.6 | 4,000.0 | 3,999.7 | 22.3 | 1.5 | -153.99 | -2,701.3 | 3,886.7 | 5,622.2 | 5,605.9 | 16.28 | 345.287 | |
| 4,330.7 | 4,157.3 | 4,033.9 | 4,033.6 | 22.6 | 1.5 | -154.05 | -2,702.0 | 3,887.0 | 5,632.6 | 5,616.2 | 16.43 | 342.900 | |
| 4,400.0 | 4,222.0 | 4,058.3 | 4,058.0 | 23.1 | 1.5 | -154.08 | -2,702.7 | 3,887.4 | 5,656.9 | 5,640.1 | 16.74 | 337.933 | |
| 4,429.1 | 4,249.3 | 4,068.5 | 4,068.2 | 23.3 | 1.5 | -154.10 | -2,703.0 | 3,887.6 | 5,667.2 | 5,650.3 | 16.87 | 335.901 | |
| 4,500.0 | 4,315.5 | 4,100.0 | 4,099.7 | 23.9 | 1.5 | -154.15 | -2,704.0 | 3,888.3 | 5,692.6 | 5,675.4 | 17.20 | 331.035 | |
| 4,527.5 | 4,341.2 | 4,100.0 | 4,099.7 | 24.1 | 1.5 | -154.15 | -2,704.0 | 3,888.3 | 5,702.7 | 5,685.3 | 17.32 | 329.233 | |
| 4,600.0 | 4,408.9 | 4,138.3 | 4,137.9 | 24.6 | 1.5 | -154.20 | -2,705.5 | 3,889.5 | 5,729.3 | 5,711.7 | 17.65 | 324.566 | |
| 4,626.0 | 4,433.2 | 4,150.7 | 4,150.3 | 24.8 | 1.6 | -154.22 | -2,706.0 | 3,889.9 | 5,739.0 | 5,721.2 | 17.77 | 322.937 | |
| 4,700.0 | 4,502.3 | 4,328.1 | 4,327.4 | 25.4 | 1.5 | -154.46 | -2,714.2 | 3,894.3 | 5,766.7 | 5,748.6 | 18.10 | 318.634 | |
| 4,724.4 | 4,525.1 | 4,349.6 | 4,349.0 | 25.6 | 1.6 | -154.49 | -2,715.1 | 3,894.6 | 5,775.3 | 5,757.1 | 18.20 | 317.246 | |
| 4,800.0 | 4,595.7 | 4,400.0 | 4,399.3 | 26.2 | 1.6 | -154.56 | -2,717.1 | 3,895.3 | 5,802.3 | 5,783.7 | 18.54 | 313.001 | |
| 4,822.8 | 4,617.1 | 4,400.0 | 4,399.3 | 26.3 | 1.6 | -154.56 | -2,717.1 | 3,895.3 | 5,810.5 | 5,791.8 | 18.64 | 311.716 | |
| 4,900.0 | 4,689.2 | 4,450.0 | 4,449.3 | 26.9 | 1.6 | -154.62 | -2,719.3 | 3,896.2 | 5,838.4 | 5,819.4 | 18.99 | 307.432 | |
| 4,921.2 | 4,709.0 | 4,459.0 | 4,458.2 | 27.1 | 1.6 | -154.63 | -2,719.8 | 3,896.3 | 5,846.2 | 5,827.1 | 19.09 | 306.289 | |
| 5,000.0 | 4,782.6 | 4,500.0 | 4,499.2 | 27.7 | 1.6 | -154.68 | -2,722.0 | 3,897.4 | 5,875.4 | 5,855.9 | 19.44 | 302.158 | |
| 5,019.7 | 4,801.0 | 4,500.0 | 4,499.2 | 27.8 | 1.6 | -154.68 | -2,722.0 | 3,897.4 | 5,882.7 | 5,863.2 | 19.53 | 301.165 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,561.8 | 4,560.8 | 28.4 | 1.6 | -154.76 | -2,725.5 | 3,899.1 | 5,913.0 | 5,893.1 | 19.90 | 297.125 | |
| 5,118.1 | 4,892.9 | 4,575.6 | 4,574.6 | 28.6 | 1.6 | -154.78 | -2,726.3 | 3,899.5 | 5,919.8 | 5,899.8 | 19.98 | 296.235 | |
| 5,159.9 | 4,932.0 | 4,611.6 | 4,610.5 | 28.9 | 1.6 | -154.82 | -2,728.5 | 3,900.6 | 5,935.6 | 5,915.5 | 20.17 | 294.220 | |
| 5,200.0 | 4,969.5 | 4,658.6 | 4,657.4 | 29.2 | 1.6 | -155.01 | -2,731.2 | 3,902.0 | 5,950.5 | 5,930.3 | 20.28 | 293.435 | |
| 5,216.5 | 4,985.1 | 4,678.0 | 4,676.8 | 29.3 | 1.6 | -155.09 | -2,732.4 | 3,902.5 | 5,956.5 | 5,936.2 | 20.31 | 293.250 | |
| 5,300.0 | 5,064.0 | 4,792.1 | 4,790.6 | 29.7 | 1.6 | -155.46 | -2,738.5 | 3,905.5 | 5,985.3 | 5,964.8 | 20.48 | 292.321 | |
| 5,314.9 | 5,078.2 | 4,809.5 | 4,808.1 | 29.8 | 1.6 | -155.52 | -2,739.4 | 3,906.0 | 5,990.2 | 5,969.7 | 20.50 | 292.196 | |
| 5,400.0 | 5,159.6 | 4,896.6 | 4,895.0 | 30.2 | 1.6 | -155.83 | -2,743.7 | 3,908.1 | 6,016.6 | 5,996.0 | 20.64 | 291.443 | |
| 5,413.4 | 5,172.4 | 4,917.7 | 4,916.1 | 30.3 | 1.6 | -155.88 | -2,744.7 | 3,908.6 | 6,020.6 | 5,999.9 | 20.66 | 291.363 | |
| 5,500.0 | 5,256.1 | 5,095.2 | 5,093.4 | 30.7 | 1.6 | -156.21 | -2,751.9 | 3,911.9 | 6,044.2 | 6,023.4 | 20.78 | 290.812 | |
| 5,511.8 | 5,267.6 | 5,116.3 | 5,114.5 | 30.7 | 1.6 | -156.25 | -2,752.6 | 3,912.2 | 6,047.1 | 6,026.3 | 20.80 | 290.768 | |
| 5,600.0 | 5,353.5 | 5,303.4 | 5,301.5 | 31.1 | 1.6 | -156.55 | -2,756.9 | 3,913.7 | 6,067.0 | 6,046.1 | 20.89 | 290.372 | |
| 5,610.2 | 5,363.5 | 5,329.2 | 5,327.3 | 31.1 | 1.6 | -156.58 | -2,757.2 | 3,913.8 | 6,069.0 | 6,048.1 | 20.90 | 290.350 | |
| 5,700.0 | 5,451.6 | 5,452.3 | 5,450.4 | 31.4 | 1.6 | -156.79 | -2,758.2 | 3,913.5 | 6,084.9 | 6,063.9 | 20.99 | 289.963 | |
| 5,708.6 | 5,460.2 | 5,459.6 | 5,457.8 | 31.4 | 1.6 | -156.81 | -2,758.3 | 3,913.4 | 6,086.3 | 6,065.3 | 20.99 | 289.944 | |
| 5,800.0 | 5,550.4 | 5,532.0 | 5,530.1 | 31.7 | 1.6 | -156.95 | -2,758.8 | 3,913.3 | 6,099.7 | 6,078.6 | 21.06 | 289.684 | |
| 5,807.1 | 5,557.4 | 5,537.1 | 5,535.3 | 31.7 | 1.6 | -156.96 | -2,758.8 | 3,913.3 | 6,100.6 | 6,079.5 | 21.06 | 289.681 | |
| 5,900.0 | 5,649.6 | 5,600.0 | 5,598.1 | 31.9 | 1.6 | -157.07 | -2,759.3 | 3,913.5 | 6,111.6 | 6,090.5 | 21.11 | 289.535 | |
| 5,905.5 | 5,655.1 | 5,600.0 | 5,598.1 | 31.9 | 1.6 | -157.08 | -2,759.3 | 3,913.5 | 6,112.2 | 6,091.1 | 21.11 | 289.542 | |
| 6,000.0 | 5,749.2 | 5,677.5 | 5,675.6 | 32.1 | 1.6 | -157.17 | -2,760.1 | 3,913.9 | 6,120.9 | 6,099.7 | 21.14 | 289.502 | |
| 6,003.9 | 5,753.1 | 5,680.3 | 5,678.4 | 32.1 | 1.6 | -157.17 | -2,760.2 | 3,914.0 | 6,121.2 | 6,100.0 | 21.14 | 289.508 | |
| 6,100.0 | 5,849.1 | 5,758.4 | 5,756.5 | 32.3 | 1.6 | -157.23 | -2,761.2 | 3,914.7 | 6,127.3 | 6,106.1 | 21.16 | 289.525 | |
| 6,102.3 | 5,851.4 | 5,760.4 | 5,758.5 | 32.3 | 1.6 | -157.23 | -2,761.2 | 3,914.7 | 6,127.4 | 6,106.2 | 21.16 | 289.528 | |
| 6,200.8 | 5,949.8 | 5,845.5 | 5,843.5 | 32.4 | 1.7 | -157.25 | -2,762.4 | 3,915.7 | 6,130.7 | 6,109.5 | 21.18 | 289.486 | |
| 6,204.9 | 5,953.9 | 5,849.0 | 5,847.1 | 32.4 | 1.7 | 118.31 | -2,762.5 | 3,915.7 | 6,130.8 | 6,098.8 | 31.99 | 191.635 | |
| 6,234.9 | 5,983.9 | 5,875.4 | 5,873.5 | 32.4 | 1.7 | 118.31 | -2,762.9 | 3,916.1 | 6,131.3 | 6,099.3 | 32.02 | 191.476 | |
| 6,250.0 | 5,999.0 | 5,888.7 | 5,886.8 | 32.4 | 1.7 | 28.30 | -2,763.1 | 3,916.2 | 6,131.5 | 6,110.3 | 21.17 | 289.567 | |
| 6,299.2 | 6,048.2 | 5,938.1 | 5,936.1 | 32.4 | 1.7 | 28.38 | -2,763.8 | 3,916.9 | 6,130.0 | 6,109.0 | 21.06 | 291.090 | |
| 6,300.0 | 6,048.9 | 5,938.9 | 5,937.0 | 32.4 | 1.7 | 28.38 | -2,763.8 | 3,916.9 | 6,130.0 | 6,108.9 | 21.06 | 291.106 | |
| 6,350.0 | 6,098.5 | 5,990.9 | 5,989.0 | 32.4 | 1.7 | 28.59 | -2,764.7 | 3,917.5 | 6,125.4 | 6,104.4 | 21.00 | 291.744 | |
| 6,397.6 | 6,145.3 | 6,038.8 | 6,036.8 | 32.3 | 1.7 | 28.92 | -2,765.5 | 3,918.1 | 6,118.1 | 6,097.1 | 20.99 | 291.534 | |
| 6,400.0 | 6,147.6 | 6,041.2 | 6,039.2 | 32.3 | 1.7 | 28.94 | -2,765.5 | 3,918.1 | 6,117.7 | 6,096.7 | 20.99 | 291.498 | |
| 6,450.0 | 6,195.8 | 6,090.3 | 6,088.4 | 32.2 | 1.7 | 29.43 | -2,766.4 | 3,918.7 | 6,107.0 | 6,086.0 | 21.03 | 290.415 | |
| 6,496.0 | 6,239.3 | 6,140.7 | 6,138.7 | 32.1 | 1.7 | 30.02 | -2,767.2 | 3,919.2 | 6,094.6 | 6,073.5 | 21.12 | 288.607 | |
| 6,500.0 | 6,243.0 | 6,145.1 | 6,143.1 | 32.1 | 1.7 | 30.08 | -2,767.3 | 3,919.3 | 6,093.4 | 6,072.3 | 21.13 | 288.407 | |
| 6,550.0 | 6,289.0 | 6,200.0 | 6,198.0 | 32.0 | 1.7 | 30.91 | -2,768.2 | 3,919.8 | 6,076.9 | 6,055.6 | 21.29 | 285.456 | |
| 6,594.5 | 6,328.6 | 6,243.7 | 6,241.7 | 31.8 | 1.7 | 31.79 | -2,768.9 | 3,920.2 | 6,059.8 | 6,038.3 | 21.49 | 282.041 | |
| 6,600.0 | 6,333.4 | 6,249.0 | 6,247.0 | 31.8 | 1.7 | 31.91 | -2,769.0 | 3,920.2 | 6,057.5 | 6,036.0 | 21.51 | 281.553 | |
| 6,650.0 | 6,376.2 | 6,296.1 | 6,294.1 | 31.7 | 1.7 | 33.11 | -2,769.8 | 3,920.5 | 6,035.4 | 6,013.6 | 21.82 | 276.540 | |
| 6,692.9 | 6,411.3 | 6,330.3 | 6,328.3 | 31.6 | 1.7 | 34.31 | -2,770.5 | 3,920.7 | 6,014.4 | 5,992.2 | 22.16 | 271.389 | |
| 6,700.0 | 6,417.0 | 6,335.7 | 6,333.7 | 31.5 | 1.7 | 34.52 | -2,770.6 | 3,920.8 | 6,010.8 | 5,988.5 | 22.22 | 270.453 | |
| 6,750.0 | 6,455.7 | 6,372.8 | 6,370.8 | 31.4 | 1.7 | 36.17 | -2,771.3 | 3,921.0 | 5,983.7 | 5,961.0 | 22.74 | 263.147 | |
| 6,791.3 | 6,486.0 | 6,400.0 | 6,398.0 | 31.3 | 1.7 | 37.73 | -2,771.9 | 3,921.1 | 5,959.6 | 5,936.4 | 23.26 | 256.244 | |
| 6,800.0 | 6,492.2 | 6,400.0 | 6,398.0 | 31.3 | 1.7 | 38.05 | -2,771.9 | 3,921.1 | 5,954.4 | 5,931.0 | 23.36 | 254.867 | |
| 6,850.0 | 6,526.1 | 6,426.5 | 6,424.5 | 31.2 | 1.7 | 40.24 | -2,772.4 | 3,921.3 | 5,923.0 | 5,898.9 | 24.13 | 245.498 | |
| 6,889.7 | 6,551.2 | 6,442.5 | 6,440.5 | 31.2 | 1.7 | 42.20 | -2,772.6 | 3,921.5 | 5,896.7 | 5,871.9 | 24.82 | 237.532 | |
| 6,900.0 | 6,557.4 | 6,446.5 | 6,444.5 | 31.2 | 1.7 | 42.75 | -2,772.7 | 3,921.6 | 5,889.7 | 5,864.7 | 25.02 | 235.434 | |
| 6,950.0 | 6,586.0 | 6,465.0 | 6,462.9 | 31.1 | 1.7 | 45.63 | -2,772.9 | 3,921.9 | 5,854.7 | 5,828.6 | 26.04 | 224.833 | |
| 6,988.2 | 6,605.8 | 6,477.9 | 6,475.9 | 31.2 | 1.7 | 48.12 | -2,773.0 | 3,922.1 | 5,826.8 | 5,799.9 | 26.90 | 216.572 | |
| 7,000.0 | 6,611.5 | 6,481.8 | 6,479.7 | 31.2 | 1.7 | 48.94 | -2,773.1 | 3,922.2 | 5,818.1 | 5,790.9 | 27.18 | 214.054 | |
| 7,050.0 | 6,634.1 | 6,500.0 | 6,498.0 | 31.2 | 1.7 | 52.77 | -2,773.2 | 3,922.7 | 5,780.0 | 5,751.6 | 28.42 | 203.405 | |
| 7,086.6 | 6,648.6 | 6,508.7 | 6,506.6 | 31.3 | 1.7 | 55.85 | -2,773.3 | 3,922.9 | 5,751.4 | 5,722.1 | 29.34 | 196.030 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,513.0 | 6,510.9 | 31.4 | 1.7 | 57.07 | -2,773.3 | 3,923.0 | 5,740.8 | 5,711.1 | 29.68 | 193.446 | |
| 7,150.0 | 6,669.5 | 6,527.4 | 6,525.3 | 31.6 | 1.7 | 61.96 | -2,773.4 | 3,923.3 | 5,700.5 | 5,669.6 | 30.92 | 184.365 | |
| 7,185.0 | 6,678.8 | 6,535.8 | 6,533.8 | 31.7 | 1.7 | 65.69 | -2,773.5 | 3,923.6 | 5,671.8 | 5,640.1 | 31.74 | 178.716 | |
| 7,200.0 | 6,682.3 | 6,539.0 | 6,536.9 | 31.8 | 1.7 | 67.36 | -2,773.5 | 3,923.6 | 5,659.4 | 5,627.3 | 32.06 | 176.549 | |
| 7,250.0 | 6,691.6 | 6,547.8 | 6,545.7 | 32.1 | 1.7 | 73.23 | -2,773.6 | 3,923.8 | 5,617.6 | 5,584.6 | 33.02 | 170.153 | |
| 7,283.4 | 6,696.0 | 6,552.0 | 6,549.9 | 32.3 | 1.7 | 77.35 | -2,773.7 | 3,923.9 | 5,589.5 | 5,555.9 | 33.55 | 166.624 | |
| 7,300.0 | 6,697.5 | 6,553.6 | 6,551.6 | 32.4 | 1.7 | 79.44 | -2,773.7 | 3,924.0 | 5,575.5 | 5,541.7 | 33.77 | 165.114 | |
| 7,350.0 | 6,699.9 | 6,556.6 | 6,554.6 | 32.8 | 1.7 | 85.84 | -2,773.7 | 3,924.1 | 5,533.1 | 5,498.7 | 34.36 | 161.034 | |
| 7,364.4 | 6,700.0 | 6,557.0 | 6,554.9 | 32.9 | 1.7 | 87.69 | -2,773.7 | 3,924.1 | 5,520.9 | 5,486.3 | 34.52 | 159.951 | |
| 7,381.9 | 6,699.9 | 6,557.2 | 6,555.1 | 33.1 | 1.7 | 87.70 | -2,773.7 | 3,924.1 | 5,506.0 | 5,471.3 | 34.67 | 158.822 | |
| 7,400.0 | 6,699.8 | 6,557.5 | 6,555.4 | 33.2 | 1.7 | 87.70 | -2,773.7 | 3,924.1 | 5,490.7 | 5,455.8 | 34.83 | 157.663 | |
| 7,480.3 | 6,699.2 | 6,558.6 | 6,556.6 | 34.0 | 1.7 | 87.72 | -2,773.7 | 3,924.1 | 5,422.8 | 5,387.2 | 35.64 | 152.170 | |
| 7,500.0 | 6,699.1 | 6,558.9 | 6,556.8 | 34.2 | 1.7 | 87.73 | -2,773.7 | 3,924.1 | 5,406.2 | 5,370.4 | 35.84 | 150.862 | |
| 7,578.7 | 6,698.6 | 6,560.0 | 6,558.0 | 35.2 | 1.7 | 87.75 | -2,773.8 | 3,924.1 | 5,340.2 | 5,303.4 | 36.78 | 145.174 | |
| 7,600.0 | 6,698.5 | 6,560.3 | 6,558.3 | 35.4 | 1.7 | 87.76 | -2,773.8 | 3,924.1 | 5,322.4 | 5,285.3 | 37.04 | 143.688 | |
| 7,677.1 | 6,698.0 | 6,561.4 | 6,559.3 | 36.5 | 1.7 | 87.78 | -2,773.8 | 3,924.2 | 5,258.0 | 5,219.9 | 38.11 | 137.983 | |
| 7,700.0 | 6,697.8 | 6,561.7 | 6,559.7 | 36.8 | 1.7 | 87.78 | -2,773.8 | 3,924.2 | 5,239.0 | 5,200.6 | 38.42 | 136.356 | |
| 7,775.6 | 6,697.3 | 6,562.8 | 6,560.7 | 38.0 | 1.7 | 87.80 | -2,773.8 | 3,924.2 | 5,176.5 | 5,136.9 | 39.58 | 130.772 | |
| 7,800.0 | 6,697.2 | 6,563.1 | 6,561.1 | 38.3 | 1.7 | 87.81 | -2,773.8 | 3,924.2 | 5,156.3 | 5,116.4 | 39.96 | 129.038 | |
| 7,874.0 | 6,696.7 | 6,564.2 | 6,562.1 | 39.6 | 1.7 | 87.83 | -2,773.8 | 3,924.2 | 5,095.5 | 5,054.3 | 41.20 | 123.677 | |
| 7,900.0 | 6,696.5 | 6,564.5 | 6,562.5 | 40.0 | 1.7 | 87.84 | -2,773.8 | 3,924.2 | 5,074.2 | 5,032.6 | 41.64 | 121.872 | |
| 7,972.4 | 6,696.1 | 6,565.5 | 6,563.5 | 41.3 | 1.7 | 87.86 | -2,773.8 | 3,924.3 | 5,015.2 | 4,972.2 | 42.94 | 116.800 | |
| 8,000.0 | 6,695.9 | 6,565.9 | 6,563.9 | 41.8 | 1.7 | 87.87 | -2,773.8 | 3,924.3 | 4,992.8 | 4,949.3 | 43.43 | 114.951 | |
| 8,070.8 | 6,695.4 | 6,566.9 | 6,564.8 | 43.1 | 1.7 | 87.89 | -2,773.9 | 3,924.3 | 4,935.5 | 4,890.7 | 44.78 | 110.207 | |
| 8,100.0 | 6,695.2 | 6,567.3 | 6,565.2 | 43.7 | 1.7 | 87.89 | -2,773.9 | 3,924.3 | 4,912.0 | 4,866.7 | 45.34 | 108.340 | |
| 8,169.3 | 6,694.8 | 6,568.3 | 6,566.2 | 45.1 | 1.7 | 87.91 | -2,773.9 | 3,924.3 | 4,856.5 | 4,809.7 | 46.72 | 103.941 | |
| 8,200.0 | 6,694.6 | 6,568.7 | 6,566.6 | 45.7 | 1.7 | 87.92 | -2,773.9 | 3,924.3 | 4,831.9 | 4,784.6 | 47.34 | 102.075 | |
| 8,267.7 | 6,694.1 | 6,569.6 | 6,567.5 | 47.1 | 1.7 | 87.94 | -2,773.9 | 3,924.4 | 4,778.2 | 4,729.4 | 48.75 | 98.022 | |
| 8,300.0 | 6,693.9 | 6,570.1 | 6,568.0 | 47.8 | 1.7 | 87.95 | -2,773.9 | 3,924.4 | 4,752.7 | 4,703.2 | 49.42 | 96.173 | |
| 8,366.1 | 6,693.5 | 6,571.0 | 6,568.9 | 49.2 | 1.7 | 87.96 | -2,773.9 | 3,924.4 | 4,700.7 | 4,649.8 | 50.84 | 92.459 | |
| 8,400.0 | 6,693.3 | 6,571.4 | 6,569.3 | 49.9 | 1.7 | 87.97 | -2,773.9 | 3,924.4 | 4,674.2 | 4,622.6 | 51.57 | 90.638 | |
| 8,464.5 | 6,692.9 | 6,572.3 | 6,570.2 | 51.4 | 1.7 | 87.99 | -2,773.9 | 3,924.4 | 4,623.9 | 4,570.9 | 53.00 | 87.245 | |
| 8,500.0 | 6,692.6 | 6,572.8 | 6,570.7 | 52.1 | 1.7 | 88.00 | -2,773.9 | 3,924.4 | 4,596.5 | 4,542.7 | 53.78 | 85.462 | |
| 8,563.0 | 6,692.2 | 6,573.6 | 6,571.5 | 53.6 | 1.7 | 88.02 | -2,773.9 | 3,924.5 | 4,548.0 | 4,492.8 | 55.21 | 82.372 | |
| 8,600.0 | 6,692.0 | 6,574.1 | 6,572.0 | 54.4 | 1.7 | 88.03 | -2,774.0 | 3,924.5 | 4,519.7 | 4,463.7 | 56.05 | 80.632 | |
| 8,661.4 | 6,691.6 | 6,574.9 | 6,572.9 | 55.8 | 1.7 | 88.04 | -2,774.0 | 3,924.5 | 4,473.0 | 4,415.5 | 57.48 | 77.823 | |
| 8,700.0 | 6,691.3 | 6,575.5 | 6,573.4 | 56.7 | 1.7 | 88.05 | -2,774.0 | 3,924.5 | 4,443.9 | 4,385.5 | 58.37 | 76.130 | |
| 8,759.8 | 6,690.9 | 6,576.3 | 6,574.2 | 58.1 | 1.7 | 88.07 | -2,774.0 | 3,924.5 | 4,398.9 | 4,339.1 | 59.78 | 73.580 | |
| 8,800.0 | 6,690.7 | 6,576.8 | 6,574.7 | 59.1 | 1.7 | 88.08 | -2,774.0 | 3,924.5 | 4,369.0 | 4,308.2 | 60.73 | 71.937 | |
| 8,858.2 | 6,690.3 | 6,577.6 | 6,575.5 | 60.5 | 1.7 | 88.09 | -2,774.0 | 3,924.5 | 4,325.8 | 4,263.7 | 62.13 | 69.625 | |
| 8,900.0 | 6,690.0 | 6,578.1 | 6,576.1 | 61.5 | 1.7 | 88.11 | -2,774.0 | 3,924.6 | 4,295.1 | 4,232.0 | 63.13 | 68.034 | |
| 8,956.7 | 6,689.7 | 6,578.9 | 6,576.8 | 62.9 | 1.7 | 88.12 | -2,774.0 | 3,924.6 | 4,253.7 | 4,189.2 | 64.51 | 65.939 | |
| 9,000.0 | 6,689.4 | 6,579.4 | 6,577.4 | 63.9 | 1.7 | 88.13 | -2,774.0 | 3,924.6 | 4,222.3 | 4,156.7 | 65.56 | 64.400 | |
| 9,055.1 | 6,689.0 | 6,580.2 | 6,578.1 | 65.3 | 1.7 | 88.15 | -2,774.0 | 3,924.6 | 4,182.7 | 4,115.8 | 66.92 | 62.502 | |
| 9,100.0 | 6,688.7 | 6,580.8 | 6,578.7 | 66.4 | 1.7 | 88.16 | -2,774.1 | 3,924.6 | 4,150.6 | 4,082.6 | 68.03 | 61.015 | |
| 9,153.5 | 6,688.4 | 6,581.5 | 6,579.4 | 67.7 | 1.7 | 88.17 | -2,774.1 | 3,924.6 | 4,112.8 | 4,043.4 | 69.36 | 59.298 | |
| 9,200.0 | 6,688.1 | 6,582.1 | 6,580.0 | 68.9 | 1.7 | 88.18 | -2,774.1 | 3,924.7 | 4,080.2 | 4,009.7 | 70.51 | 57.863 | |
| 9,251.9 | 6,687.8 | 6,582.7 | 6,580.7 | 70.2 | 1.7 | 88.20 | -2,774.1 | 3,924.7 | 4,044.1 | 3,972.2 | 71.82 | 56.308 | |
| 9,300.0 | 6,687.4 | 6,583.4 | 6,581.3 | 71.4 | 1.7 | 88.21 | -2,774.1 | 3,924.7 | 4,011.0 | 3,937.9 | 73.03 | 54.924 | |
| 9,350.4 | 6,687.1 | 6,584.0 | 6,582.0 | 72.7 | 1.7 | 88.22 | -2,774.1 | 3,924.7 | 3,976.6 | 3,902.3 | 74.30 | 53.518 | |
| 9,400.0 | 6,686.8 | 6,584.7 | 6,582.6 | 73.9 | 1.7 | 88.23 | -2,774.1 | 3,924.7 | 3,943.1 | 3,867.5 | 75.56 | 52.183 | |
| 9,448.8 | 6,686.5 | 6,585.3 | 6,583.2 | 75.2 | 1.7 | 88.25 | -2,774.1 | 3,924.7 | 3,910.4 | 3,833.6 | 76.81 | 50.912 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SOLIS #44-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,586.0 | 6,583.9 | 76.5 | 1.7 | 88.26 | -2,774.1 | 3,924.7 | 3,876.6 | 3,798.4 | 78.12 | 49.626 | |
| 9,547.2 | 6,685.8 | 6,586.6 | 6,584.5 | 77.7 | 1.7 | 88.27 | -2,774.1 | 3,924.8 | 3,845.7 | 3,766.3 | 79.33 | 48.477 | |
| 9,600.0 | 6,685.5 | 6,587.2 | 6,585.2 | 79.0 | 1.7 | 88.28 | -2,774.2 | 3,924.8 | 3,811.5 | 3,730.8 | 80.69 | 47.239 | |
| 9,645.6 | 6,685.2 | 6,587.8 | 6,585.7 | 80.2 | 1.7 | 88.30 | -2,774.2 | 3,924.8 | 3,782.3 | 3,700.5 | 81.87 | 46.201 | |
| 9,700.0 | 6,684.8 | 6,588.5 | 6,586.4 | 81.6 | 1.7 | 88.31 | -2,774.2 | 3,924.8 | 3,748.0 | 3,664.8 | 83.27 | 45.009 | |
| 9,744.1 | 6,684.6 | 6,600.0 | 6,597.9 | 82.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,720.6 | 3,636.1 | 84.43 | 44.067 | |
| 9,800.0 | 6,684.2 | 6,600.0 | 6,597.9 | 84.2 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,686.2 | 3,600.3 | 85.88 | 42.920 | |
| 9,842.5 | 6,683.9 | 6,600.0 | 6,597.9 | 85.3 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,660.4 | 3,573.4 | 87.00 | 42.076 | |
| 9,900.0 | 6,683.5 | 6,600.0 | 6,597.9 | 86.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,626.0 | 3,537.5 | 88.50 | 40.973 | |
| 9,940.9 | 6,683.3 | 6,600.0 | 6,597.9 | 87.9 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,601.9 | 3,512.3 | 89.57 | 40.212 | |
| 10,000.0 | 6,682.9 | 6,600.0 | 6,597.9 | 89.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,567.6 | 3,476.5 | 91.12 | 39.151 | |
| 10,039.3 | 6,682.6 | 6,600.0 | 6,597.9 | 90.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,545.1 | 3,453.0 | 92.16 | 38.467 | |
| 10,100.0 | 6,682.2 | 6,600.0 | 6,597.9 | 92.1 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,511.1 | 3,417.3 | 93.76 | 37.448 | |
| 10,137.8 | 6,682.0 | 6,600.0 | 6,597.9 | 93.1 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,490.2 | 3,395.5 | 94.76 | 36.833 | |
| 10,200.0 | 6,681.6 | 6,600.0 | 6,597.9 | 94.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,456.5 | 3,360.1 | 96.41 | 35.854 | |
| 10,236.2 | 6,681.4 | 6,600.0 | 6,597.9 | 95.7 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,437.3 | 3,339.9 | 97.37 | 35.302 | |
| 10,300.0 | 6,680.9 | 6,600.0 | 6,597.9 | 97.4 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,404.0 | 3,305.0 | 99.06 | 34.363 | |
| 10,334.6 | 6,680.7 | 6,600.0 | 6,597.9 | 98.3 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,386.4 | 3,286.4 | 99.98 | 33.869 | |
| 10,400.0 | 6,680.3 | 6,600.0 | 6,597.9 | 100.1 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,353.7 | 3,252.0 | 101.72 | 32.969 | |
| 10,433.0 | 6,680.1 | 6,600.0 | 6,597.9 | 101.0 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,337.6 | 3,235.0 | 102.61 | 32.528 | |
| 10,500.0 | 6,679.7 | 6,600.0 | 6,597.9 | 102.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,305.6 | 3,201.2 | 104.40 | 31.665 | |
| 10,531.5 | 6,679.4 | 6,600.0 | 6,597.9 | 103.6 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,291.0 | 3,185.8 | 105.24 | 31.272 | |
| 10,600.0 | 6,679.0 | 6,600.0 | 6,597.9 | 105.4 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,259.9 | 3,152.9 | 107.07 | 30.446 | |
| 10,629.9 | 6,678.8 | 6,600.0 | 6,597.9 | 106.2 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,246.7 | 3,138.9 | 107.88 | 30.097 | |
| 10,700.0 | 6,678.4 | 6,600.0 | 6,597.9 | 108.1 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,216.7 | 3,106.9 | 109.76 | 29.307 | |
| 10,728.3 | 6,678.2 | 6,600.0 | 6,597.9 | 108.9 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,204.9 | 3,094.4 | 110.52 | 28.998 | |
| 10,800.0 | 6,677.7 | 6,600.0 | 6,597.9 | 110.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,176.0 | 3,063.6 | 112.45 | 28.244 | |
| 10,826.7 | 6,677.5 | 6,600.0 | 6,597.9 | 111.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,165.6 | 3,052.4 | 113.17 | 27.971 | |
| 10,900.0 | 6,677.1 | 6,600.0 | 6,597.9 | 113.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,138.0 | 3,022.8 | 115.15 | 27.252 | |
| 10,925.2 | 6,676.9 | 6,600.0 | 6,597.9 | 114.2 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,128.9 | 3,013.0 | 115.83 | 27.013 | |
| 11,000.0 | 6,676.4 | 6,600.0 | 6,597.9 | 116.2 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,102.7 | 2,984.9 | 117.85 | 26.328 | |
| 11,023.6 | 6,676.3 | 6,600.0 | 6,597.9 | 116.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,094.8 | 2,976.3 | 118.49 | 26.119 | |
| 11,100.0 | 6,675.8 | 6,600.0 | 6,597.9 | 118.9 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,070.3 | 2,949.8 | 120.56 | 25.468 | |
| 11,122.0 | 6,675.6 | 6,600.0 | 6,597.9 | 119.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,063.6 | 2,942.4 | 121.15 | 25.286 | |
| 11,200.0 | 6,675.1 | 6,600.0 | 6,597.9 | 121.6 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,040.9 | 2,917.6 | 123.27 | 24.668 | |
| 11,220.4 | 6,675.0 | 6,600.0 | 6,597.9 | 122.2 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,035.2 | 2,911.4 | 123.82 | 24.512 | |
| 11,300.0 | 6,674.5 | 6,600.0 | 6,597.9 | 124.3 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,014.4 | 2,888.4 | 125.99 | 23.927 | |
| 11,318.9 | 6,674.3 | 6,600.0 | 6,597.9 | 124.9 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 3,009.8 | 2,883.3 | 126.50 | 23.793 | |
| 11,400.0 | 6,673.8 | 6,600.0 | 6,597.9 | 127.1 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,991.1 | 2,862.4 | 128.71 | 23.240 | |
| 11,417.3 | 6,673.7 | 6,600.0 | 6,597.9 | 127.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,987.4 | 2,858.2 | 129.18 | 23.126 | |
| 11,500.0 | 6,673.2 | 6,600.0 | 6,597.9 | 129.8 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,971.0 | 2,839.5 | 131.43 | 22.605 | |
| 11,515.7 | 6,673.1 | 6,600.0 | 6,597.9 | 130.2 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,968.1 | 2,836.2 | 131.86 | 22.509 | |
| 11,600.0 | 6,672.5 | 6,600.0 | 6,597.9 | 132.5 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,954.1 | 2,819.9 | 134.16 | 22.019 | |
| 11,614.1 | 6,672.4 | 6,600.0 | 6,597.9 | 132.9 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,951.9 | 2,817.4 | 134.54 | 21.940 | |
| 11,700.0 | 6,671.9 | 6,600.0 | 6,597.9 | 135.3 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,940.5 | 2,803.6 | 136.89 | 21.481 | |
| 11,712.6 | 6,671.8 | 6,600.0 | 6,597.9 | 135.6 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,939.0 | 2,801.8 | 137.23 | 21.416 | |
| 11,800.0 | 6,671.2 | 6,600.0 | 6,597.9 | 138.0 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,930.2 | 2,790.6 | 139.62 | 20.987 | |
| 11,811.0 | 6,671.1 | 6,600.0 | 6,597.9 | 138.3 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,929.3 | 2,789.4 | 139.92 | 20.935 | |
| 11,900.0 | 6,670.6 | 6,600.0 | 6,597.9 | 140.7 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,923.4 | 2,781.0 | 142.36 | 20.535 | |
| 11,909.4 | 6,670.5 | 6,600.0 | 6,597.9 | 141.0 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,922.9 | 2,780.3 | 142.62 | 20.495 | |
| 11,987.2 | 6,670.0 | 6,600.0 | 6,597.9 | 143.1 | 1.7 | 88.53 | -2,774.4 | 3,925.1 | 2,920.2 | 2,775.5 | 144.75 | 20.174 | CC, ES, SF |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 108.27 | -345.7 | 1,046.9 | 1,102.6 | | | | |
| 98.4 | 98.4 | 94.4 | 94.4 | 0.1 | 1.2 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,101.3 | 1.28 | 862.909 | |
| 100.0 | 100.0 | 96.0 | 96.0 | 0.1 | 1.2 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,101.2 | 1.30 | 848.642 | |
| 196.8 | 196.8 | 192.8 | 192.8 | 0.3 | 3.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,098.9 | 3.68 | 299.435 | |
| 200.0 | 200.0 | 196.0 | 196.0 | 0.3 | 3.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,098.8 | 3.76 | 293.158 | |
| 295.3 | 295.3 | 291.3 | 291.3 | 0.5 | 5.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,096.6 | 5.96 | 184.921 | |
| 300.0 | 300.0 | 296.0 | 296.0 | 0.5 | 5.5 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,096.5 | 6.07 | 181.608 | |
| 393.7 | 393.7 | 389.7 | 389.7 | 0.8 | 7.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,094.4 | 8.20 | 134.517 | |
| 400.0 | 400.0 | 396.0 | 396.0 | 0.8 | 7.6 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,094.2 | 8.34 | 132.214 | |
| 492.1 | 492.1 | 488.1 | 488.1 | 1.0 | 9.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,092.1 | 10.42 | 105.852 | |
| 500.0 | 500.0 | 496.0 | 496.0 | 1.0 | 9.6 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,092.0 | 10.59 | 104.079 | |
| 590.5 | 590.5 | 586.5 | 586.5 | 1.2 | 11.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,089.9 | 12.63 | 87.305 | |
| 600.0 | 600.0 | 596.0 | 596.0 | 1.2 | 11.6 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,089.7 | 12.84 | 85.861 | |
| 689.0 | 689.0 | 685.0 | 685.0 | 1.4 | 13.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,087.7 | 14.84 | 74.306 | |
| 700.0 | 700.0 | 696.0 | 696.0 | 1.4 | 13.6 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,087.5 | 15.09 | 73.088 | |
| 787.4 | 787.4 | 783.4 | 783.4 | 1.6 | 15.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,085.5 | 17.04 | 64.685 | |
| 800.0 | 800.0 | 796.0 | 796.0 | 1.7 | 15.7 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,085.2 | 17.33 | 63.631 | |
| 885.8 | 885.8 | 881.8 | 881.8 | 1.9 | 17.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,083.3 | 19.25 | 57.275 | |
| 900.0 | 900.0 | 896.0 | 896.0 | 1.9 | 17.7 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,083.0 | 19.57 | 56.345 | |
| 984.2 | 984.2 | 980.2 | 980.2 | 2.1 | 19.4 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,081.1 | 21.45 | 51.390 | |
| 1,000.0 | 1,000.0 | 996.0 | 996.0 | 2.1 | 19.7 | 108.27 | -345.7 | 1,046.9 | 1,102.5 | 1,080.7 | 21.81 | 50.558 | |
| 1,082.7 | 1,082.7 | 1,078.7 | 1,078.7 | 2.3 | 21.4 | -167.30 | -345.7 | 1,046.9 | 1,103.7 | 1,080.1 | 23.64 | 46.690 | |
| 1,100.0 | 1,100.0 | 1,096.0 | 1,096.0 | 2.3 | 21.7 | -167.30 | -345.7 | 1,046.9 | 1,104.2 | 1,080.2 | 24.02 | 45.972 | |
| 1,181.1 | 1,181.0 | 1,177.0 | 1,177.0 | 2.5 | 23.3 | -167.33 | -345.7 | 1,046.9 | 1,108.1 | 1,082.3 | 25.78 | 42.980 | |
| 1,200.0 | 1,199.8 | 1,195.8 | 1,195.8 | 2.5 | 23.7 | -167.34 | -345.7 | 1,046.9 | 1,109.4 | 1,083.2 | 26.19 | 42.359 | |
| 1,279.5 | 1,279.1 | 1,275.1 | 1,275.1 | 2.7 | 25.3 | -167.38 | -345.7 | 1,046.9 | 1,115.8 | 1,088.0 | 27.89 | 40.013 | |
| 1,300.0 | 1,299.5 | 1,295.5 | 1,295.5 | 2.8 | 25.7 | -167.40 | -345.7 | 1,046.9 | 1,117.9 | 1,089.5 | 28.32 | 39.474 | |
| 1,377.9 | 1,376.9 | 1,372.9 | 1,372.9 | 3.0 | 27.3 | -167.46 | -345.7 | 1,046.9 | 1,126.8 | 1,096.9 | 29.95 | 37.629 | |
| 1,400.0 | 1,398.7 | 1,394.7 | 1,394.7 | 3.0 | 27.7 | -167.48 | -345.7 | 1,046.9 | 1,129.8 | 1,099.4 | 30.40 | 37.163 | |
| 1,476.4 | 1,474.2 | 1,470.2 | 1,470.2 | 3.2 | 29.2 | -167.56 | -345.7 | 1,046.9 | 1,141.1 | 1,109.2 | 31.95 | 35.713 | |
| 1,500.0 | 1,497.5 | 1,493.5 | 1,493.5 | 3.3 | 29.7 | -167.58 | -345.7 | 1,046.9 | 1,145.0 | 1,112.6 | 32.42 | 35.314 | |
| 1,574.8 | 1,571.0 | 1,567.0 | 1,567.0 | 3.5 | 31.2 | -167.67 | -345.7 | 1,046.9 | 1,158.7 | 1,124.8 | 33.90 | 34.180 | |
| 1,600.0 | 1,595.6 | 1,591.6 | 1,591.6 | 3.6 | 31.7 | -167.70 | -345.7 | 1,046.9 | 1,163.7 | 1,129.3 | 34.39 | 33.842 | |
| 1,673.2 | 1,667.0 | 1,663.0 | 1,663.0 | 3.9 | 33.1 | -167.80 | -345.7 | 1,046.9 | 1,179.5 | 1,143.7 | 35.78 | 32.966 | |
| 1,700.0 | 1,693.1 | 1,689.1 | 1,689.1 | 4.0 | 33.6 | -167.84 | -345.7 | 1,046.9 | 1,185.7 | 1,149.4 | 36.28 | 32.686 | |
| 1,771.6 | 1,762.4 | 1,758.4 | 1,758.4 | 4.3 | 35.0 | -167.95 | -345.7 | 1,046.9 | 1,203.5 | 1,165.9 | 37.58 | 32.023 | |
| 1,800.0 | 1,789.6 | 1,785.6 | 1,785.6 | 4.4 | 35.6 | -167.99 | -345.7 | 1,046.9 | 1,211.0 | 1,173.0 | 38.09 | 31.797 | |
| 1,870.1 | 1,856.8 | 1,852.8 | 1,852.8 | 4.7 | 36.9 | -168.10 | -345.7 | 1,046.9 | 1,230.8 | 1,191.5 | 39.31 | 31.311 | |
| 1,900.0 | 1,885.3 | 1,881.3 | 1,881.3 | 4.9 | 37.5 | -168.15 | -345.7 | 1,046.9 | 1,239.7 | 1,199.9 | 39.81 | 31.138 | |
| 1,968.5 | 1,950.2 | 1,946.2 | 1,946.2 | 5.3 | 38.8 | -168.26 | -345.7 | 1,046.9 | 1,261.2 | 1,220.3 | 40.95 | 30.803 | |
| 2,000.0 | 1,979.8 | 1,975.8 | 1,975.8 | 5.5 | 39.4 | -168.31 | -345.7 | 1,046.9 | 1,271.6 | 1,230.2 | 41.45 | 30.680 | |
| 2,044.9 | 2,021.9 | 2,017.9 | 2,017.9 | 5.7 | 40.3 | -168.39 | -345.7 | 1,046.9 | 1,287.1 | 1,244.9 | 42.15 | 30.533 | |
| 2,066.9 | 2,042.5 | 2,038.5 | 2,038.5 | 5.9 | 40.7 | -168.46 | -345.7 | 1,046.9 | 1,294.8 | 1,252.2 | 42.60 | 30.391 | |
| 2,100.0 | 2,073.4 | 2,069.4 | 2,069.4 | 6.1 | 41.3 | -168.56 | -345.7 | 1,046.9 | 1,306.4 | 1,263.1 | 43.28 | 30.182 | |
| 2,165.3 | 2,134.4 | 2,130.4 | 2,130.4 | 6.5 | 42.5 | -168.76 | -345.7 | 1,046.9 | 1,329.3 | 1,284.6 | 44.63 | 29.786 | |
| 2,200.0 | 2,166.8 | 2,162.8 | 2,162.8 | 6.8 | 43.2 | -168.86 | -345.7 | 1,046.9 | 1,341.4 | 1,296.1 | 45.34 | 29.585 | |
| 2,263.8 | 2,226.4 | 2,222.4 | 2,222.4 | 7.2 | 44.4 | -169.05 | -345.7 | 1,046.9 | 1,363.8 | 1,317.1 | 46.66 | 29.230 | |
| 2,300.0 | 2,260.2 | 2,256.2 | 2,256.2 | 7.4 | 45.0 | -169.15 | -345.7 | 1,046.9 | 1,376.5 | 1,329.1 | 47.41 | 29.037 | |
| 2,362.2 | 2,318.3 | 2,314.3 | 2,314.3 | 7.9 | 46.2 | -169.32 | -345.7 | 1,046.9 | 1,398.4 | 1,349.7 | 48.69 | 28.719 | |
| 2,400.0 | 2,353.6 | 2,349.6 | 2,349.6 | 8.1 | 46.9 | -169.42 | -345.7 | 1,046.9 | 1,411.7 | 1,362.2 | 49.47 | 28.533 | |
| 2,460.6 | 2,410.3 | 2,406.3 | 2,406.3 | 8.6 | 48.1 | -169.58 | -345.7 | 1,046.9 | 1,433.0 | 1,382.2 | 50.73 | 28.246 | |
| 2,500.0 | 2,447.0 | 2,443.0 | 2,443.0 | 8.9 | 48.8 | -169.68 | -345.7 | 1,046.9 | 1,446.8 | 1,395.3 | 51.55 | 28.068 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,498.2 | 2,498.2 | 9.3 | 49.9 | -169.83 | -345.7 | 1,046.9 | 1,467.6 | 1,414.8 | 52.77 | 27.809 | |
| 2,600.0 | 2,540.5 | 2,536.5 | 2,536.5 | 9.6 | 50.7 | -169.93 | -345.7 | 1,046.9 | 1,482.0 | 1,428.4 | 53.62 | 27.637 | |
| 2,657.5 | 2,594.2 | 2,590.2 | 2,590.2 | 10.0 | 51.8 | -170.06 | -345.7 | 1,046.9 | 1,502.2 | 1,447.4 | 54.82 | 27.404 | |
| 2,700.0 | 2,633.9 | 2,629.9 | 2,629.9 | 10.3 | 52.6 | -170.16 | -345.7 | 1,046.9 | 1,517.2 | 1,461.5 | 55.70 | 27.238 | |
| 2,755.9 | 2,686.1 | 2,682.1 | 2,682.1 | 10.7 | 53.6 | -170.29 | -345.7 | 1,046.9 | 1,536.9 | 1,480.0 | 56.86 | 27.028 | |
| 2,800.0 | 2,727.3 | 2,723.3 | 2,723.3 | 11.0 | 54.4 | -170.39 | -345.7 | 1,046.9 | 1,552.4 | 1,494.6 | 57.78 | 26.867 | |
| 2,854.3 | 2,778.1 | 2,774.1 | 2,774.1 | 11.4 | 55.5 | -170.50 | -345.7 | 1,046.9 | 1,571.6 | 1,512.6 | 58.91 | 26.677 | |
| 2,900.0 | 2,820.7 | 2,816.7 | 2,816.7 | 11.8 | 56.3 | -170.60 | -345.7 | 1,046.9 | 1,587.7 | 1,527.8 | 59.86 | 26.522 | |
| 2,952.7 | 2,870.0 | 2,866.0 | 2,866.0 | 12.2 | 57.3 | -170.71 | -345.7 | 1,046.9 | 1,606.2 | 1,545.3 | 60.96 | 26.349 | |
| 3,000.0 | 2,914.2 | 2,910.2 | 2,910.2 | 12.5 | 58.2 | -170.81 | -345.7 | 1,046.9 | 1,622.9 | 1,561.0 | 61.94 | 26.199 | |
| 3,051.2 | 2,962.0 | 2,958.0 | 2,958.0 | 12.9 | 59.2 | -170.91 | -345.7 | 1,046.9 | 1,641.0 | 1,578.0 | 63.01 | 26.043 | |
| 3,100.0 | 3,007.6 | 3,003.6 | 3,003.6 | 13.3 | 60.1 | -171.00 | -345.7 | 1,046.9 | 1,658.2 | 1,594.2 | 64.03 | 25.898 | |
| 3,149.6 | 3,053.9 | 3,049.9 | 3,049.9 | 13.6 | 61.0 | -171.10 | -345.7 | 1,046.9 | 1,675.7 | 1,610.6 | 65.06 | 25.755 | |
| 3,200.0 | 3,101.0 | 3,097.0 | 3,097.0 | 14.0 | 62.0 | -171.19 | -345.7 | 1,046.9 | 1,693.5 | 1,627.4 | 66.11 | 25.615 | |
| 3,248.0 | 3,145.9 | 3,141.9 | 3,141.9 | 14.4 | 62.9 | -171.28 | -345.7 | 1,046.9 | 1,710.4 | 1,643.3 | 67.11 | 25.485 | |
| 3,300.0 | 3,194.4 | 3,190.4 | 3,190.4 | 14.8 | 63.8 | -171.37 | -345.7 | 1,046.9 | 1,728.8 | 1,660.6 | 68.20 | 25.350 | |
| 3,346.4 | 3,237.8 | 3,233.8 | 3,233.8 | 15.1 | 64.7 | -171.45 | -345.7 | 1,046.9 | 1,745.2 | 1,676.0 | 69.17 | 25.232 | |
| 3,400.0 | 3,287.8 | 3,283.8 | 3,283.8 | 15.5 | 65.7 | -171.55 | -345.7 | 1,046.9 | 1,764.1 | 1,693.8 | 70.28 | 25.100 | |
| 3,444.9 | 3,329.8 | 3,325.8 | 3,325.8 | 15.9 | 66.6 | -171.62 | -345.7 | 1,046.9 | 1,780.0 | 1,708.8 | 71.22 | 24.992 | |
| 3,500.0 | 3,381.3 | 3,377.3 | 3,377.3 | 16.3 | 67.6 | -171.71 | -345.7 | 1,046.9 | 1,799.5 | 1,727.1 | 72.37 | 24.864 | |
| 3,543.3 | 3,421.7 | 3,417.7 | 3,417.7 | 16.6 | 68.4 | -171.78 | -345.7 | 1,046.9 | 1,814.8 | 1,741.5 | 73.27 | 24.767 | |
| 3,600.0 | 3,474.7 | 3,470.7 | 3,470.7 | 17.0 | 69.5 | -171.87 | -345.7 | 1,046.9 | 1,834.8 | 1,760.4 | 74.46 | 24.642 | |
| 3,641.7 | 3,513.7 | 3,509.7 | 3,509.7 | 17.3 | 70.3 | -171.94 | -345.7 | 1,046.9 | 1,849.6 | 1,774.2 | 75.33 | 24.553 | |
| 3,700.0 | 3,568.1 | 3,564.1 | 3,564.1 | 17.8 | 71.4 | -172.03 | -345.7 | 1,046.9 | 1,870.2 | 1,793.6 | 76.55 | 24.432 | |
| 3,740.1 | 3,605.6 | 3,601.6 | 3,601.6 | 18.1 | 72.1 | -172.09 | -345.7 | 1,046.9 | 1,884.4 | 1,807.0 | 77.38 | 24.351 | |
| 3,800.0 | 3,661.5 | 3,657.5 | 3,657.5 | 18.5 | 73.2 | -172.18 | -345.7 | 1,046.9 | 1,905.6 | 1,826.9 | 78.63 | 24.234 | |
| 3,838.6 | 3,697.6 | 3,693.6 | 3,693.6 | 18.8 | 74.0 | -172.23 | -345.7 | 1,046.9 | 1,919.2 | 1,839.8 | 79.44 | 24.160 | |
| 3,900.0 | 3,754.9 | 3,750.9 | 3,750.9 | 19.3 | 75.1 | -172.32 | -345.7 | 1,046.9 | 1,940.9 | 1,860.2 | 80.72 | 24.045 | |
| 3,937.0 | 3,789.5 | 3,785.5 | 3,785.5 | 19.6 | 75.8 | -172.37 | -345.7 | 1,046.9 | 1,954.0 | 1,872.5 | 81.49 | 23.978 | |
| 4,000.0 | 3,848.4 | 3,844.4 | 3,844.4 | 20.1 | 77.0 | -172.46 | -345.7 | 1,046.9 | 1,976.3 | 1,893.5 | 82.81 | 23.866 | |
| 4,035.4 | 3,881.5 | 3,877.5 | 3,877.5 | 20.3 | 77.7 | -172.50 | -345.7 | 1,046.9 | 1,988.9 | 1,905.3 | 83.55 | 23.805 | |
| 4,100.0 | 3,941.8 | 3,937.8 | 3,937.8 | 20.8 | 78.9 | -172.59 | -345.7 | 1,046.9 | 2,011.7 | 1,926.8 | 84.90 | 23.696 | |
| 4,133.8 | 3,973.4 | 3,969.4 | 3,969.4 | 21.1 | 79.5 | -172.63 | -345.7 | 1,046.9 | 2,023.7 | 1,938.1 | 85.60 | 23.640 | |
| 4,200.0 | 4,035.2 | 4,031.2 | 4,031.2 | 21.6 | 80.7 | -172.72 | -345.7 | 1,046.9 | 2,047.2 | 1,960.2 | 86.99 | 23.534 | |
| 4,232.3 | 4,065.4 | 4,061.4 | 4,061.4 | 21.8 | 81.4 | -172.76 | -345.7 | 1,046.9 | 2,058.6 | 1,970.9 | 87.66 | 23.484 | |
| 4,300.0 | 4,128.6 | 4,124.6 | 4,124.6 | 22.3 | 82.6 | -172.84 | -345.7 | 1,046.9 | 2,082.6 | 1,993.5 | 89.08 | 23.380 | |
| 4,330.7 | 4,157.3 | 4,153.3 | 4,153.3 | 22.6 | 83.2 | -172.88 | -345.7 | 1,046.9 | 2,093.5 | 2,003.7 | 89.72 | 23.334 | |
| 4,400.0 | 4,222.0 | 4,218.0 | 4,218.0 | 23.1 | 84.5 | -172.96 | -345.7 | 1,046.9 | 2,118.0 | 2,026.9 | 91.16 | 23.233 | |
| 4,429.1 | 4,249.3 | 4,245.3 | 4,245.3 | 23.3 | 85.1 | -173.00 | -345.7 | 1,046.9 | 2,128.3 | 2,036.6 | 91.77 | 23.191 | |
| 4,500.0 | 4,315.5 | 4,311.5 | 4,311.5 | 23.9 | 86.4 | -173.08 | -345.7 | 1,046.9 | 2,153.5 | 2,060.2 | 93.25 | 23.092 | |
| 4,527.5 | 4,341.2 | 4,337.2 | 4,337.2 | 24.1 | 86.9 | -173.11 | -345.7 | 1,046.9 | 2,163.2 | 2,069.4 | 93.83 | 23.055 | |
| 4,600.0 | 4,408.9 | 4,404.9 | 4,404.9 | 24.6 | 88.3 | -173.19 | -345.7 | 1,046.9 | 2,188.9 | 2,093.6 | 95.34 | 22.958 | |
| 4,626.0 | 4,433.2 | 4,429.2 | 4,429.2 | 24.8 | 88.8 | -173.22 | -345.7 | 1,046.9 | 2,198.1 | 2,102.2 | 95.89 | 22.924 | |
| 4,700.0 | 4,502.3 | 4,498.3 | 4,498.3 | 25.4 | 90.1 | -173.30 | -345.7 | 1,046.9 | 2,224.4 | 2,126.9 | 97.43 | 22.830 | |
| 4,724.4 | 4,525.1 | 4,521.1 | 4,521.1 | 25.6 | 90.6 | -173.33 | -345.7 | 1,046.9 | 2,233.0 | 2,135.1 | 97.94 | 22.799 | |
| 4,800.0 | 4,595.7 | 4,591.7 | 4,591.7 | 26.2 | 92.0 | -173.41 | -345.7 | 1,046.9 | 2,259.8 | 2,160.3 | 99.52 | 22.707 | |
| 4,822.8 | 4,617.1 | 4,613.1 | 4,613.1 | 26.3 | 92.5 | -173.43 | -345.7 | 1,046.9 | 2,267.9 | 2,167.9 | 100.00 | 22.679 | |
| 4,900.0 | 4,689.2 | 4,685.2 | 4,685.2 | 26.9 | 93.9 | -173.51 | -345.7 | 1,046.9 | 2,295.3 | 2,193.7 | 101.61 | 22.589 | |
| 4,921.2 | 4,709.0 | 4,705.0 | 4,705.0 | 27.1 | 94.3 | -173.53 | -345.7 | 1,046.9 | 2,302.8 | 2,200.8 | 102.06 | 22.564 | |
| 5,000.0 | 4,782.6 | 4,778.6 | 4,778.6 | 27.7 | 95.8 | -173.61 | -345.7 | 1,046.9 | 2,330.8 | 2,227.1 | 103.70 | 22.476 | |
| 5,019.7 | 4,801.0 | 4,797.0 | 4,797.0 | 27.8 | 96.1 | -173.63 | -345.7 | 1,046.9 | 2,337.8 | 2,233.6 | 104.11 | 22.454 | |
| 5,100.0 | 4,876.0 | 4,872.0 | 4,872.0 | 28.4 | 97.7 | -173.70 | -345.7 | 1,046.9 | 2,366.3 | 2,260.5 | 105.79 | 22.367 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,888.9 | 4,888.9 | 28.6 | 98.0 | -173.72 | -345.7 | 1,046.9 | 2,372.7 | 2,266.5 | 106.17 | 22.348 | |
| 5,159.9 | 4,932.0 | 4,928.0 | 4,928.0 | 28.9 | 98.8 | -173.76 | -345.7 | 1,046.9 | 2,387.5 | 2,280.5 | 107.04 | 22.304 | |
| 5,200.0 | 4,969.5 | 4,965.5 | 4,965.5 | 29.2 | 99.5 | -173.83 | -345.7 | 1,046.9 | 2,401.5 | 2,293.1 | 108.36 | 22.162 | |
| 5,216.5 | 4,985.1 | 4,981.1 | 4,981.1 | 29.3 | 99.9 | -173.86 | -345.7 | 1,046.9 | 2,407.1 | 2,298.2 | 108.90 | 22.104 | |
| 5,300.0 | 5,064.0 | 5,060.0 | 5,060.0 | 29.7 | 101.4 | -173.98 | -345.7 | 1,046.9 | 2,434.0 | 2,322.5 | 111.58 | 21.815 | |
| 5,314.9 | 5,078.2 | 5,074.2 | 5,074.2 | 29.8 | 101.7 | -174.00 | -345.7 | 1,046.9 | 2,438.6 | 2,326.6 | 112.05 | 21.764 | |
| 5,400.0 | 5,159.6 | 5,155.6 | 5,155.6 | 30.2 | 103.4 | -174.12 | -345.7 | 1,046.9 | 2,463.3 | 2,348.6 | 114.71 | 21.474 | |
| 5,413.4 | 5,172.4 | 5,168.4 | 5,168.4 | 30.3 | 103.6 | -174.13 | -345.7 | 1,046.9 | 2,466.9 | 2,351.8 | 115.12 | 21.429 | |
| 5,500.0 | 5,256.1 | 5,252.1 | 5,252.1 | 30.7 | 105.3 | -174.23 | -345.7 | 1,046.9 | 2,489.2 | 2,371.4 | 117.75 | 21.140 | |
| 5,511.8 | 5,267.6 | 5,263.6 | 5,263.6 | 30.7 | 105.5 | -174.25 | -345.7 | 1,046.9 | 2,492.0 | 2,373.9 | 118.10 | 21.101 | |
| 5,600.0 | 5,353.5 | 5,349.5 | 5,349.5 | 31.1 | 107.3 | -174.33 | -345.7 | 1,046.9 | 2,511.8 | 2,391.1 | 120.69 | 20.812 | |
| 5,610.2 | 5,363.5 | 5,359.5 | 5,359.5 | 31.1 | 107.5 | -174.34 | -345.7 | 1,046.9 | 2,513.9 | 2,392.9 | 120.98 | 20.779 | |
| 5,700.0 | 5,451.6 | 5,447.6 | 5,447.6 | 31.4 | 109.2 | -174.41 | -345.7 | 1,046.9 | 2,530.9 | 2,407.4 | 123.51 | 20.491 | |
| 5,708.6 | 5,460.2 | 5,456.2 | 5,456.2 | 31.4 | 109.4 | -174.42 | -345.7 | 1,046.9 | 2,532.4 | 2,408.7 | 123.75 | 20.464 | |
| 5,800.0 | 5,550.4 | 5,546.4 | 5,546.4 | 31.7 | 111.2 | -174.48 | -345.7 | 1,046.9 | 2,546.6 | 2,420.4 | 126.21 | 20.177 | |
| 5,807.1 | 5,557.4 | 5,553.4 | 5,553.4 | 31.7 | 111.4 | -174.48 | -345.7 | 1,046.9 | 2,547.6 | 2,421.2 | 126.40 | 20.156 | |
| 5,900.0 | 5,649.6 | 5,645.6 | 5,645.6 | 31.9 | 113.2 | -174.53 | -345.7 | 1,046.9 | 2,558.9 | 2,430.2 | 128.78 | 19.871 | |
| 5,905.5 | 5,655.1 | 5,651.1 | 5,651.1 | 31.9 | 113.3 | -174.53 | -345.7 | 1,046.9 | 2,559.5 | 2,430.6 | 128.92 | 19.854 | |
| 6,000.0 | 5,749.2 | 5,745.2 | 5,745.2 | 32.1 | 115.2 | -174.56 | -345.7 | 1,046.9 | 2,567.8 | 2,436.6 | 131.20 | 19.571 | |
| 6,003.9 | 5,753.1 | 5,749.1 | 5,749.1 | 32.1 | 115.3 | -174.57 | -345.7 | 1,046.9 | 2,568.1 | 2,436.8 | 131.29 | 19.560 | |
| 6,100.0 | 5,849.1 | 5,845.1 | 5,845.1 | 32.3 | 117.2 | -174.59 | -345.7 | 1,046.9 | 2,573.2 | 2,439.7 | 133.47 | 19.279 | |
| 6,102.3 | 5,851.4 | 5,847.4 | 5,847.4 | 32.3 | 117.3 | -174.59 | -345.7 | 1,046.9 | 2,573.3 | 2,439.7 | 133.52 | 19.272 | |
| 6,200.8 | 5,949.8 | 5,945.8 | 5,945.8 | 32.4 | 119.3 | -174.59 | -345.7 | 1,046.9 | 2,575.1 | 2,439.5 | 135.59 | 18.992 | |
| 6,204.9 | 5,953.9 | 5,949.9 | 5,949.9 | 32.4 | 119.3 | 100.97 | -345.7 | 1,046.9 | 2,575.1 | 2,423.5 | 151.57 | 16.990 | |
| 6,234.9 | 5,983.9 | 5,979.9 | 5,979.9 | 32.4 | 119.9 | 100.97 | -345.7 | 1,046.9 | 2,575.1 | 2,422.9 | 152.19 | 16.920 | |
| 6,250.0 | 5,999.0 | 5,995.0 | 5,995.0 | 32.4 | 120.2 | 10.97 | -345.7 | 1,046.9 | 2,574.9 | 2,438.4 | 136.54 | 18.859 | |
| 6,299.2 | 6,048.2 | 6,044.2 | 6,044.2 | 32.4 | 121.2 | 11.02 | -345.7 | 1,046.9 | 2,572.2 | 2,435.4 | 136.82 | 18.800 | |
| 6,300.0 | 6,048.9 | 6,044.9 | 6,044.9 | 32.4 | 121.2 | 11.02 | -345.7 | 1,046.9 | 2,572.2 | 2,435.4 | 136.82 | 18.800 | |
| 6,350.0 | 6,098.5 | 6,094.5 | 6,094.5 | 32.4 | 122.2 | 11.15 | -345.7 | 1,046.9 | 2,566.0 | 2,429.6 | 136.45 | 18.805 | |
| 6,397.6 | 6,145.3 | 6,141.3 | 6,141.3 | 32.3 | 123.2 | 11.33 | -345.7 | 1,046.9 | 2,557.0 | 2,421.5 | 135.50 | 18.871 | |
| 6,400.0 | 6,147.6 | 6,143.6 | 6,143.6 | 32.3 | 123.2 | 11.34 | -345.7 | 1,046.9 | 2,556.5 | 2,421.0 | 135.44 | 18.876 | |
| 6,450.0 | 6,195.8 | 6,191.8 | 6,191.8 | 32.2 | 124.2 | 11.61 | -345.7 | 1,046.9 | 2,543.6 | 2,409.8 | 133.77 | 19.015 | |
| 6,496.0 | 6,239.3 | 6,235.3 | 6,235.3 | 32.1 | 125.1 | 11.94 | -345.7 | 1,046.9 | 2,528.8 | 2,397.2 | 131.67 | 19.206 | |
| 6,500.0 | 6,243.0 | 6,239.0 | 6,239.0 | 32.1 | 125.1 | 11.97 | -345.7 | 1,046.9 | 2,527.5 | 2,396.0 | 131.47 | 19.225 | |
| 6,550.0 | 6,289.0 | 6,285.0 | 6,285.0 | 32.0 | 126.1 | 12.42 | -345.7 | 1,046.9 | 2,508.1 | 2,379.6 | 128.56 | 19.509 | |
| 6,594.5 | 6,328.6 | 6,324.6 | 6,324.6 | 31.8 | 126.9 | 12.90 | -345.7 | 1,046.9 | 2,488.3 | 2,362.8 | 125.50 | 19.827 | |
| 6,600.0 | 6,333.4 | 6,329.4 | 6,329.4 | 31.8 | 127.0 | 12.97 | -345.7 | 1,046.9 | 2,485.7 | 2,360.6 | 125.10 | 19.870 | |
| 6,650.0 | 6,376.2 | 6,372.2 | 6,372.2 | 31.7 | 127.8 | 13.65 | -345.7 | 1,046.9 | 2,460.3 | 2,339.2 | 121.13 | 20.311 | |
| 6,692.9 | 6,411.3 | 6,407.3 | 6,407.3 | 31.6 | 128.5 | 14.35 | -345.7 | 1,046.9 | 2,436.3 | 2,318.8 | 117.41 | 20.750 | |
| 6,700.0 | 6,417.0 | 6,413.0 | 6,413.0 | 31.5 | 128.6 | 14.48 | -345.7 | 1,046.9 | 2,432.1 | 2,315.3 | 116.77 | 20.828 | |
| 6,750.0 | 6,455.7 | 6,451.7 | 6,451.7 | 31.4 | 129.4 | 15.49 | -345.7 | 1,046.9 | 2,401.1 | 2,289.0 | 112.14 | 21.412 | |
| 6,791.3 | 6,486.0 | 6,482.0 | 6,482.0 | 31.3 | 130.0 | 16.48 | -345.7 | 1,046.9 | 2,373.6 | 2,265.4 | 108.24 | 21.930 | |
| 6,800.0 | 6,492.2 | 6,488.2 | 6,488.2 | 31.3 | 130.2 | 16.71 | -345.7 | 1,046.9 | 2,367.6 | 2,260.2 | 107.42 | 22.040 | |
| 6,850.0 | 6,526.1 | 6,522.1 | 6,522.1 | 31.2 | 130.8 | 18.21 | -345.7 | 1,046.9 | 2,331.7 | 2,228.8 | 102.89 | 22.661 | |
| 6,889.7 | 6,551.2 | 6,547.2 | 6,547.2 | 31.2 | 131.3 | 19.65 | -345.7 | 1,046.9 | 2,301.6 | 2,202.0 | 99.67 | 23.094 | |
| 6,900.0 | 6,557.4 | 6,553.4 | 6,553.4 | 31.2 | 131.5 | 20.06 | -345.7 | 1,046.9 | 2,293.7 | 2,194.7 | 98.92 | 23.188 | |
| 6,950.0 | 6,586.0 | 6,582.0 | 6,582.0 | 31.1 | 132.0 | 22.36 | -345.7 | 1,046.9 | 2,253.6 | 2,157.6 | 96.01 | 23.472 | |
| 6,988.2 | 6,605.8 | 6,601.8 | 6,601.8 | 31.2 | 132.4 | 24.51 | -345.7 | 1,046.9 | 2,221.7 | 2,126.8 | 94.94 | 23.401 | |
| 7,000.0 | 6,611.5 | 6,607.5 | 6,607.5 | 31.2 | 132.6 | 25.26 | -345.7 | 1,046.9 | 2,211.7 | 2,116.8 | 94.88 | 23.311 | |
| 7,050.0 | 6,634.1 | 6,630.1 | 6,630.1 | 31.2 | 133.0 | 28.96 | -345.7 | 1,046.9 | 2,168.2 | 2,071.7 | 96.44 | 22.483 | |
| 7,086.6 | 6,648.6 | 6,644.6 | 6,644.6 | 31.3 | 133.3 | 32.34 | -345.7 | 1,046.9 | 2,135.4 | 2,035.6 | 99.87 | 21.381 | |
| 7,100.0 | 6,653.4 | 6,649.4 | 6,649.4 | 31.4 | 133.4 | 33.76 | -345.7 | 1,046.9 | 2,123.3 | 2,021.6 | 101.70 | 20.878 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,665.5 | 6,665.5 | 31.6 | 133.7 | 40.05 | -345.7 | 1,046.9 | 2,077.3 | 1,965.8 | 111.50 | 18.631 | |
| 7,185.0 | 6,678.8 | 6,674.8 | 6,674.8 | 31.7 | 133.9 | 45.62 | -345.7 | 1,046.9 | 2,044.5 | 1,923.3 | 121.14 | 16.877 | |
| 7,200.0 | 6,682.3 | 6,678.3 | 6,678.3 | 31.8 | 134.0 | 48.34 | -345.7 | 1,046.9 | 2,030.3 | 1,904.5 | 125.86 | 16.131 | |
| 7,250.0 | 6,691.6 | 6,687.6 | 6,687.6 | 32.1 | 134.2 | 59.10 | -345.7 | 1,046.9 | 1,982.7 | 1,839.6 | 143.10 | 13.855 | |
| 7,283.4 | 6,696.0 | 6,692.0 | 6,692.0 | 32.3 | 134.3 | 67.72 | -345.7 | 1,046.9 | 1,950.6 | 1,796.4 | 154.16 | 12.653 | |
| 7,300.0 | 6,697.5 | 6,693.5 | 6,693.5 | 32.4 | 134.3 | 72.34 | -345.7 | 1,046.9 | 1,934.6 | 1,775.9 | 158.79 | 12.183 | |
| 7,350.0 | 6,699.9 | 6,695.9 | 6,695.9 | 32.8 | 134.3 | 87.11 | -345.7 | 1,046.9 | 1,886.4 | 1,719.5 | 166.85 | 11.306 | |
| 7,364.4 | 6,700.0 | 6,696.0 | 6,696.0 | 32.9 | 134.3 | 91.37 | -345.7 | 1,046.9 | 1,872.5 | 1,705.3 | 167.18 | 11.201 | |
| 7,381.9 | 6,699.9 | 6,695.9 | 6,695.9 | 33.1 | 134.3 | 91.36 | -345.7 | 1,046.9 | 1,855.6 | 1,688.3 | 167.33 | 11.090 | |
| 7,400.0 | 6,699.8 | 6,695.8 | 6,695.8 | 33.2 | 134.3 | 91.34 | -345.7 | 1,046.9 | 1,838.2 | 1,670.7 | 167.48 | 10.975 | |
| 7,480.3 | 6,699.2 | 6,695.2 | 6,695.2 | 34.0 | 134.3 | 91.28 | -345.7 | 1,046.9 | 1,760.9 | 1,592.6 | 168.29 | 10.464 | |
| 7,500.0 | 6,699.1 | 6,695.1 | 6,695.1 | 34.2 | 134.3 | 91.27 | -345.7 | 1,046.9 | 1,742.0 | 1,573.5 | 168.48 | 10.339 | |
| 7,578.7 | 6,698.6 | 6,694.6 | 6,694.6 | 35.2 | 134.3 | 91.21 | -345.7 | 1,046.9 | 1,666.6 | 1,497.1 | 169.43 | 9.837 | |
| 7,600.0 | 6,698.5 | 6,694.5 | 6,694.5 | 35.4 | 134.3 | 91.19 | -345.7 | 1,046.9 | 1,646.3 | 1,476.6 | 169.68 | 9.702 | |
| 7,677.1 | 6,698.0 | 6,694.0 | 6,694.0 | 36.5 | 134.3 | 91.13 | -345.7 | 1,046.9 | 1,572.8 | 1,402.0 | 170.74 | 9.212 | |
| 7,700.0 | 6,697.8 | 6,693.8 | 6,693.8 | 36.8 | 134.3 | 91.12 | -345.7 | 1,046.9 | 1,551.1 | 1,380.0 | 171.05 | 9.068 | |
| 7,775.6 | 6,697.3 | 6,693.3 | 6,693.3 | 38.0 | 134.3 | 91.06 | -345.7 | 1,046.9 | 1,479.6 | 1,307.4 | 172.21 | 8.592 | |
| 7,800.0 | 6,697.2 | 6,693.2 | 6,693.2 | 38.3 | 134.3 | 91.04 | -345.7 | 1,046.9 | 1,456.5 | 1,284.0 | 172.58 | 8.440 | |
| 7,874.0 | 6,696.7 | 6,692.7 | 6,692.7 | 39.6 | 134.3 | 90.98 | -345.7 | 1,046.9 | 1,387.1 | 1,213.3 | 173.81 | 7.980 | |
| 7,900.0 | 6,696.5 | 6,692.5 | 6,692.5 | 40.0 | 134.3 | 90.97 | -345.7 | 1,046.9 | 1,362.8 | 1,188.5 | 174.25 | 7.821 | |
| 7,972.4 | 6,696.1 | 6,692.1 | 6,692.1 | 41.3 | 134.3 | 90.91 | -345.7 | 1,046.9 | 1,295.5 | 1,119.9 | 175.54 | 7.380 | |
| 8,000.0 | 6,695.9 | 6,691.9 | 6,691.9 | 41.8 | 134.3 | 90.89 | -345.7 | 1,046.9 | 1,270.0 | 1,093.9 | 176.04 | 7.214 | |
| 8,070.8 | 6,695.4 | 6,691.4 | 6,691.4 | 43.1 | 134.2 | 90.84 | -345.7 | 1,046.9 | 1,204.9 | 1,027.5 | 177.38 | 6.793 | |
| 8,100.0 | 6,695.2 | 6,691.2 | 6,691.2 | 43.7 | 134.2 | 90.81 | -345.7 | 1,046.9 | 1,178.3 | 1,000.4 | 177.93 | 6.623 | |
| 8,169.3 | 6,694.8 | 6,690.8 | 6,690.8 | 45.1 | 134.2 | 90.76 | -345.7 | 1,046.9 | 1,115.7 | 936.4 | 179.31 | 6.222 | |
| 8,200.0 | 6,694.6 | 6,690.6 | 6,690.6 | 45.7 | 134.2 | 90.74 | -345.7 | 1,046.9 | 1,088.2 | 908.3 | 179.92 | 6.048 | |
| 8,267.7 | 6,694.1 | 6,690.1 | 6,690.1 | 47.1 | 134.2 | 90.69 | -345.7 | 1,046.9 | 1,028.2 | 846.9 | 181.32 | 5.671 | |
| 8,300.0 | 6,693.9 | 6,689.9 | 6,689.9 | 47.8 | 134.2 | 90.66 | -345.7 | 1,046.9 | 999.9 | 817.9 | 181.99 | 5.494 | |
| 8,366.1 | 6,693.5 | 6,689.5 | 6,689.5 | 49.2 | 134.2 | 90.61 | -345.7 | 1,046.9 | 942.8 | 759.4 | 183.40 | 5.141 | |
| 8,400.0 | 6,693.3 | 6,689.3 | 6,689.3 | 49.9 | 134.2 | 90.59 | -345.7 | 1,046.9 | 914.1 | 729.9 | 184.13 | 4.964 | |
| 8,464.5 | 6,692.9 | 6,688.9 | 6,688.9 | 51.4 | 134.2 | 90.54 | -345.7 | 1,046.9 | 860.3 | 674.7 | 185.55 | 4.636 | |
| 8,500.0 | 6,692.6 | 6,688.6 | 6,688.6 | 52.1 | 134.2 | 90.51 | -345.7 | 1,046.9 | 831.4 | 645.0 | 186.33 | 4.462 | |
| 8,563.0 | 6,692.2 | 6,688.2 | 6,688.2 | 53.6 | 134.2 | 90.46 | -345.7 | 1,046.9 | 781.4 | 593.6 | 187.75 | 4.162 | |
| 8,600.0 | 6,692.0 | 6,688.0 | 6,688.0 | 54.4 | 134.2 | 90.43 | -345.7 | 1,046.9 | 752.9 | 564.3 | 188.59 | 3.992 | |
| 8,661.4 | 6,691.6 | 6,687.6 | 6,687.6 | 55.8 | 134.2 | 90.39 | -345.7 | 1,046.9 | 707.4 | 517.4 | 190.01 | 3.723 | |
| 8,700.0 | 6,691.3 | 6,687.3 | 6,687.3 | 56.7 | 134.2 | 90.36 | -345.7 | 1,046.9 | 680.1 | 489.2 | 190.90 | 3.563 | |
| 8,759.8 | 6,690.9 | 6,686.9 | 6,686.9 | 58.1 | 134.2 | 90.31 | -345.7 | 1,046.9 | 640.0 | 447.7 | 192.30 | 3.328 | |
| 8,800.0 | 6,690.7 | 6,686.7 | 6,686.7 | 59.1 | 134.2 | 90.28 | -345.7 | 1,046.9 | 615.0 | 421.7 | 193.24 | 3.182 | |
| 8,858.2 | 6,690.3 | 6,686.3 | 6,686.3 | 60.5 | 134.1 | 90.24 | -345.7 | 1,046.9 | 581.6 | 387.0 | 194.63 | 2.988 | |
| 8,900.0 | 6,690.0 | 6,686.0 | 6,686.0 | 61.5 | 134.1 | 90.21 | -345.7 | 1,046.9 | 560.2 | 364.6 | 195.63 | 2.864 | |
| 8,956.7 | 6,689.7 | 6,685.7 | 6,685.7 | 62.9 | 134.1 | 90.16 | -345.7 | 1,046.9 | 535.0 | 338.0 | 197.00 | 2.716 | |
| 9,000.0 | 6,689.4 | 6,685.4 | 6,685.4 | 63.9 | 134.1 | 90.13 | -345.7 | 1,046.9 | 519.1 | 321.1 | 198.05 | 2.621 | |
| 9,055.1 | 6,689.0 | 6,685.0 | 6,685.0 | 65.3 | 134.1 | 90.09 | -345.7 | 1,046.9 | 503.6 | 304.2 | 199.40 | 2.526 | |
| 9,100.0 | 6,688.7 | 6,684.7 | 6,684.7 | 66.4 | 134.1 | 90.05 | -345.7 | 1,046.9 | 495.1 | 294.6 | 200.50 | 2.469 | |
| 9,153.5 | 6,688.4 | 6,684.4 | 6,684.4 | 67.7 | 134.1 | 90.01 | -345.7 | 1,046.9 | 490.2 | 288.4 | 201.82 | 2.429 | |
| 9,171.7 | 6,688.3 | 6,684.3 | 6,684.3 | 68.2 | 134.1 | 90.00 | -345.7 | 1,046.9 | 489.9 | 287.6 | 202.27 | 2.422 | CC, ES |
| 9,200.0 | 6,688.1 | 6,684.1 | 6,684.1 | 68.9 | 134.1 | 89.98 | -345.7 | 1,046.9 | 490.7 | 287.8 | 202.97 | 2.418 | SF |
| 9,251.9 | 6,687.8 | 6,683.8 | 6,683.8 | 70.2 | 134.1 | 89.94 | -345.7 | 1,046.9 | 496.4 | 292.2 | 204.27 | 2.430 | |
| 9,300.0 | 6,687.4 | 6,683.4 | 6,683.4 | 71.4 | 134.1 | 89.90 | -345.7 | 1,046.9 | 506.4 | 301.0 | 205.47 | 2.465 | |
| 9,350.4 | 6,687.1 | 6,683.1 | 6,683.1 | 72.7 | 134.1 | 89.86 | -345.7 | 1,046.9 | 521.5 | 314.7 | 206.74 | 2.522 | |
| 9,400.0 | 6,686.8 | 6,682.8 | 6,682.8 | 73.9 | 134.1 | 89.83 | -345.7 | 1,046.9 | 540.5 | 332.5 | 207.99 | 2.599 | |
| 9,448.8 | 6,686.5 | 6,682.5 | 6,682.5 | 75.2 | 134.1 | 89.79 | -345.7 | 1,046.9 | 562.8 | 353.6 | 209.23 | 2.690 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** NW SW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,682.1 | 6,682.1 | 76.5 | 134.1 | 89.75 | -345.7 | 1,046.9 | 589.7 | 379.2 | 210.53 | 2.801 | |
| 9,547.2 | 6,685.8 | 6,681.8 | 6,681.8 | 77.7 | 134.1 | 89.72 | -345.7 | 1,046.9 | 617.3 | 405.5 | 211.74 | 2.915 | |
| 9,600.0 | 6,685.5 | 6,681.5 | 6,681.5 | 79.0 | 134.0 | 89.67 | -345.7 | 1,046.9 | 650.7 | 437.6 | 213.09 | 3.054 | |
| 9,645.6 | 6,685.2 | 6,681.2 | 6,681.2 | 80.2 | 134.0 | 89.64 | -345.7 | 1,046.9 | 681.6 | 467.4 | 214.26 | 3.181 | |
| 9,700.0 | 6,684.8 | 6,680.8 | 6,680.8 | 81.6 | 134.0 | 89.60 | -345.7 | 1,046.9 | 720.5 | 504.8 | 215.66 | 3.341 | |
| 9,744.1 | 6,684.6 | 6,680.6 | 6,680.6 | 82.8 | 134.0 | 89.57 | -345.7 | 1,046.9 | 753.4 | 536.6 | 216.80 | 3.475 | |
| 9,800.0 | 6,684.2 | 6,680.2 | 6,680.2 | 84.2 | 134.0 | 89.52 | -345.7 | 1,046.9 | 796.7 | 578.5 | 218.24 | 3.651 | |
| 9,842.5 | 6,683.9 | 6,679.9 | 6,679.9 | 85.3 | 134.0 | 89.49 | -345.7 | 1,046.9 | 830.6 | 611.3 | 219.35 | 3.787 | |
| 9,900.0 | 6,683.5 | 6,679.5 | 6,679.5 | 86.8 | 134.0 | 89.45 | -345.7 | 1,046.9 | 877.7 | 656.9 | 220.84 | 3.975 | |
| 9,940.9 | 6,683.3 | 6,679.3 | 6,679.3 | 87.9 | 134.0 | 89.42 | -345.7 | 1,046.9 | 912.0 | 690.1 | 221.91 | 4.110 | |
| 10,000.0 | 6,682.9 | 6,678.9 | 6,678.9 | 89.5 | 134.0 | 89.37 | -345.7 | 1,046.9 | 962.3 | 738.9 | 223.45 | 4.307 | |
| 10,039.3 | 6,682.6 | 6,678.6 | 6,678.6 | 90.5 | 134.0 | 89.34 | -345.7 | 1,046.9 | 996.4 | 771.9 | 224.48 | 4.439 | |
| 10,100.0 | 6,682.2 | 6,678.2 | 6,678.2 | 92.1 | 134.0 | 89.30 | -345.7 | 1,046.9 | 1,049.6 | 823.6 | 226.07 | 4.643 | |
| 10,137.8 | 6,682.0 | 6,678.0 | 6,678.0 | 93.1 | 134.0 | 89.27 | -345.7 | 1,046.9 | 1,083.2 | 856.1 | 227.06 | 4.770 | |
| 10,200.0 | 6,681.6 | 6,677.6 | 6,677.6 | 94.8 | 134.0 | 89.22 | -345.7 | 1,046.9 | 1,139.0 | 910.3 | 228.70 | 4.980 | |
| 10,236.2 | 6,681.4 | 6,677.4 | 6,677.4 | 95.7 | 134.0 | 89.19 | -345.7 | 1,046.9 | 1,171.8 | 942.2 | 229.65 | 5.103 | |
| 10,300.0 | 6,680.9 | 6,676.9 | 6,676.9 | 97.4 | 134.0 | 89.14 | -345.7 | 1,046.9 | 1,230.0 | 998.7 | 231.33 | 5.317 | |
| 10,334.6 | 6,680.7 | 6,676.7 | 6,676.7 | 98.3 | 134.0 | 89.12 | -345.7 | 1,046.9 | 1,261.9 | 1,029.6 | 232.25 | 5.433 | |
| 10,400.0 | 6,680.3 | 6,676.3 | 6,676.3 | 100.1 | 133.9 | 89.07 | -345.7 | 1,046.9 | 1,322.4 | 1,088.4 | 233.98 | 5.652 | |
| 10,433.0 | 6,680.1 | 6,676.1 | 6,676.1 | 101.0 | 133.9 | 89.04 | -345.7 | 1,046.9 | 1,353.1 | 1,118.3 | 234.86 | 5.761 | |
| 10,500.0 | 6,679.7 | 6,675.7 | 6,675.7 | 102.8 | 133.9 | 88.99 | -345.7 | 1,046.9 | 1,415.7 | 1,179.1 | 236.63 | 5.983 | |
| 10,531.5 | 6,679.4 | 6,675.4 | 6,675.4 | 103.6 | 133.9 | 88.97 | -345.7 | 1,046.9 | 1,445.3 | 1,207.8 | 237.47 | 6.086 | |
| 10,600.0 | 6,679.0 | 6,675.0 | 6,675.0 | 105.4 | 133.9 | 88.92 | -345.7 | 1,046.9 | 1,510.0 | 1,270.7 | 239.29 | 6.310 | |
| 10,629.9 | 6,678.8 | 6,674.8 | 6,674.8 | 106.2 | 133.9 | 88.89 | -345.7 | 1,046.9 | 1,538.3 | 1,298.2 | 240.09 | 6.407 | |
| 10,700.0 | 6,678.4 | 6,674.4 | 6,674.4 | 108.1 | 133.9 | 88.84 | -345.7 | 1,046.9 | 1,604.9 | 1,362.9 | 241.96 | 6.633 | |
| 10,728.3 | 6,678.2 | 6,674.2 | 6,674.2 | 108.9 | 133.9 | 88.82 | -345.7 | 1,046.9 | 1,631.9 | 1,389.2 | 242.72 | 6.723 | |
| 10,800.0 | 6,677.7 | 6,673.7 | 6,673.7 | 110.8 | 133.9 | 88.76 | -345.7 | 1,046.9 | 1,700.4 | 1,455.7 | 244.63 | 6.951 | |
| 10,826.7 | 6,677.5 | 6,673.5 | 6,673.5 | 111.5 | 133.9 | 88.74 | -345.7 | 1,046.9 | 1,726.0 | 1,480.7 | 245.35 | 7.035 | |
| 10,900.0 | 6,677.1 | 6,673.1 | 6,673.1 | 113.5 | 133.9 | 88.69 | -345.7 | 1,046.9 | 1,796.4 | 1,549.1 | 247.31 | 7.264 | |
| 10,925.2 | 6,676.9 | 6,672.9 | 6,672.9 | 114.2 | 133.9 | 88.67 | -345.7 | 1,046.9 | 1,820.6 | 1,572.6 | 247.98 | 7.342 | |
| 11,000.0 | 6,676.4 | 6,672.4 | 6,672.4 | 116.2 | 133.9 | 88.61 | -345.7 | 1,046.9 | 1,892.8 | 1,642.8 | 249.99 | 7.571 | |
| 11,023.6 | 6,676.3 | 6,672.3 | 6,672.3 | 116.8 | 133.9 | 88.59 | -345.7 | 1,046.9 | 1,915.6 | 1,664.9 | 250.62 | 7.643 | |
| 11,100.0 | 6,675.8 | 6,671.8 | 6,671.8 | 118.9 | 133.9 | 88.54 | -345.7 | 1,046.9 | 1,989.5 | 1,736.8 | 252.67 | 7.874 | |
| 11,122.0 | 6,675.6 | 6,671.6 | 6,671.6 | 119.5 | 133.8 | 88.52 | -345.7 | 1,046.9 | 2,010.9 | 1,757.6 | 253.27 | 7.940 | |
| 11,200.0 | 6,675.1 | 6,671.1 | 6,671.1 | 121.6 | 133.8 | 88.46 | -345.7 | 1,046.9 | 2,086.6 | 1,831.2 | 255.36 | 8.171 | |
| 11,220.4 | 6,675.0 | 6,671.0 | 6,671.0 | 122.2 | 133.8 | 88.45 | -345.7 | 1,046.9 | 2,106.5 | 1,850.6 | 255.91 | 8.231 | |
| 11,300.0 | 6,674.5 | 6,670.5 | 6,670.5 | 124.3 | 133.8 | 88.39 | -345.7 | 1,046.9 | 2,183.9 | 1,925.9 | 258.06 | 8.463 | |
| 11,318.9 | 6,674.3 | 6,670.3 | 6,670.3 | 124.9 | 133.8 | 88.37 | -345.7 | 1,046.9 | 2,202.3 | 1,943.7 | 258.57 | 8.517 | |
| 11,400.0 | 6,673.8 | 6,669.8 | 6,669.8 | 127.1 | 133.8 | 88.31 | -345.7 | 1,046.9 | 2,281.5 | 2,020.7 | 260.75 | 8.750 | |
| 11,417.3 | 6,673.7 | 6,669.7 | 6,669.7 | 127.5 | 133.8 | 88.30 | -345.7 | 1,046.9 | 2,298.4 | 2,037.2 | 261.22 | 8.799 | |
| 11,500.0 | 6,673.2 | 6,669.2 | 6,669.2 | 129.8 | 133.8 | 88.23 | -345.7 | 1,046.9 | 2,379.2 | 2,115.8 | 263.45 | 9.031 | |
| 11,515.7 | 6,673.1 | 6,669.1 | 6,669.1 | 130.2 | 133.8 | 88.22 | -345.7 | 1,046.9 | 2,394.6 | 2,130.7 | 263.88 | 9.075 | |
| 11,600.0 | 6,672.5 | 6,668.5 | 6,668.5 | 132.5 | 133.8 | 88.16 | -345.7 | 1,046.9 | 2,477.2 | 2,211.0 | 266.16 | 9.307 | |
| 11,614.1 | 6,672.4 | 6,668.4 | 6,668.4 | 132.9 | 133.8 | 88.15 | -345.7 | 1,046.9 | 2,491.0 | 2,224.5 | 266.54 | 9.346 | |
| 11,700.0 | 6,671.9 | 6,667.9 | 6,667.9 | 135.3 | 133.8 | 88.08 | -345.7 | 1,046.9 | 2,575.3 | 2,306.4 | 268.86 | 9.578 | |
| 11,712.6 | 6,671.8 | 6,667.8 | 6,667.8 | 135.6 | 133.8 | 88.07 | -345.7 | 1,046.9 | 2,587.6 | 2,318.4 | 269.20 | 9.612 | |
| 11,800.0 | 6,671.2 | 6,667.2 | 6,667.2 | 138.0 | 133.8 | 88.01 | -345.7 | 1,046.9 | 2,673.5 | 2,401.9 | 271.57 | 9.845 | |
| 11,811.0 | 6,671.1 | 6,667.1 | 6,667.1 | 138.3 | 133.8 | 88.00 | -345.7 | 1,046.9 | 2,684.3 | 2,412.5 | 271.87 | 9.874 | |
| 11,900.0 | 6,670.6 | 6,666.6 | 6,666.6 | 140.7 | 133.7 | 87.93 | -345.7 | 1,046.9 | 2,771.9 | 2,497.6 | 274.28 | 10.106 | |
| 11,909.4 | 6,670.5 | 6,666.5 | 6,666.5 | 141.0 | 133.7 | 87.92 | -345.7 | 1,046.9 | 2,781.2 | 2,506.6 | 274.53 | 10.130 | |
| 11,987.2 | 6,670.0 | 6,666.0 | 6,666.0 | 143.1 | 133.7 | 87.86 | -345.7 | 1,046.9 | 2,857.8 | 2,581.1 | 276.64 | 10.330 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | | | | |
| 98.4 | 98.4 | 90.4 | 90.4 | 0.1 | 1.1 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,570.0 | 1.24 | 4,494.062 | |
| 100.0 | 100.0 | 92.0 | 92.0 | 0.1 | 1.2 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,570.0 | 1.26 | 4,416.783 | |
| 196.8 | 196.8 | 188.8 | 188.8 | 0.3 | 3.3 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,567.6 | 3.60 | 1,546.816 | |
| 200.0 | 200.0 | 192.0 | 192.0 | 0.3 | 3.4 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,567.6 | 3.68 | 1,513.720 | |
| 295.3 | 295.3 | 287.3 | 287.3 | 0.5 | 5.4 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,565.4 | 5.89 | 945.979 | |
| 300.0 | 300.0 | 292.0 | 292.0 | 0.5 | 5.5 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,565.2 | 6.00 | 928.826 | |
| 393.7 | 393.7 | 385.7 | 385.7 | 0.8 | 7.4 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,563.1 | 8.12 | 685.710 | |
| 400.0 | 400.0 | 392.0 | 392.0 | 0.8 | 7.5 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,563.0 | 8.27 | 673.866 | |
| 492.1 | 492.1 | 484.1 | 484.1 | 1.0 | 9.4 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,560.9 | 10.34 | 538.554 | |
| 500.0 | 500.0 | 492.0 | 492.0 | 1.0 | 9.5 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,560.7 | 10.52 | 529.470 | |
| 590.5 | 590.5 | 582.5 | 582.5 | 1.2 | 11.4 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,558.7 | 12.56 | 443.645 | |
| 600.0 | 600.0 | 592.0 | 592.0 | 1.2 | 11.5 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,558.5 | 12.77 | 436.266 | |
| 689.0 | 689.0 | 681.0 | 681.0 | 1.4 | 13.3 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,556.5 | 14.77 | 377.272 | |
| 700.0 | 700.0 | 692.0 | 692.0 | 1.4 | 13.6 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,556.2 | 15.01 | 371.056 | |
| 787.4 | 787.4 | 779.4 | 779.4 | 1.6 | 15.3 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,554.3 | 16.97 | 328.219 | |
| 800.0 | 800.0 | 792.0 | 792.0 | 1.7 | 15.6 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,554.0 | 17.26 | 322.846 | |
| 885.8 | 885.8 | 877.8 | 877.8 | 1.9 | 17.3 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,552.1 | 19.18 | 290.477 | |
| 900.0 | 900.0 | 892.0 | 892.0 | 1.9 | 17.6 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,551.7 | 19.50 | 285.745 | |
| 984.2 | 984.2 | 976.2 | 976.2 | 2.1 | 19.3 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,549.9 | 21.38 | 260.532 | |
| 1,000.0 | 1,000.0 | 992.0 | 992.0 | 2.1 | 19.6 | -79.86 | 980.6 | -5,484.3 | 5,571.2 | 5,549.5 | 21.74 | 256.304 | |
| 1,082.7 | 1,082.7 | 1,074.7 | 1,074.7 | 2.3 | 21.3 | 4.58 | 980.6 | -5,484.3 | 5,570.1 | 5,546.5 | 23.57 | 236.338 | |
| 1,100.0 | 1,100.0 | 1,092.0 | 1,092.0 | 2.3 | 21.6 | 4.58 | 980.6 | -5,484.3 | 5,569.5 | 5,545.6 | 23.95 | 232.557 | |
| 1,181.1 | 1,181.0 | 1,173.0 | 1,173.0 | 2.5 | 23.3 | 4.59 | 980.6 | -5,484.3 | 5,565.5 | 5,539.8 | 25.71 | 216.474 | |
| 1,200.0 | 1,199.8 | 1,191.8 | 1,191.8 | 2.5 | 23.6 | 4.59 | 980.6 | -5,484.3 | 5,564.3 | 5,538.2 | 26.12 | 213.061 | |
| 1,279.5 | 1,279.1 | 1,271.1 | 1,271.1 | 2.7 | 25.2 | 4.61 | 980.6 | -5,484.3 | 5,557.7 | 5,529.8 | 27.81 | 199.840 | |
| 1,300.0 | 1,299.5 | 1,291.5 | 1,291.5 | 2.8 | 25.6 | 4.61 | 980.6 | -5,484.3 | 5,555.6 | 5,527.4 | 28.24 | 196.720 | |
| 1,377.9 | 1,376.9 | 1,368.9 | 1,368.9 | 3.0 | 27.2 | 4.64 | 980.6 | -5,484.3 | 5,546.4 | 5,516.6 | 29.86 | 185.726 | |
| 1,400.0 | 1,398.7 | 1,390.7 | 1,390.7 | 3.0 | 27.6 | 4.64 | 980.6 | -5,484.3 | 5,543.5 | 5,513.1 | 30.32 | 182.859 | |
| 1,476.4 | 1,474.2 | 1,466.2 | 1,466.2 | 3.2 | 29.2 | 4.67 | 980.6 | -5,484.3 | 5,531.9 | 5,500.0 | 31.86 | 173.625 | |
| 1,500.0 | 1,497.5 | 1,489.5 | 1,489.5 | 3.3 | 29.6 | 4.68 | 980.6 | -5,484.3 | 5,527.9 | 5,495.5 | 32.33 | 170.981 | |
| 1,574.8 | 1,571.0 | 1,563.0 | 1,563.0 | 3.5 | 31.1 | 4.72 | 980.6 | -5,484.3 | 5,514.0 | 5,480.2 | 33.79 | 163.161 | |
| 1,600.0 | 1,595.6 | 1,587.6 | 1,587.6 | 3.6 | 31.6 | 4.73 | 980.6 | -5,484.3 | 5,508.8 | 5,474.6 | 34.28 | 160.713 | |
| 1,673.2 | 1,667.0 | 1,659.0 | 1,659.0 | 3.9 | 33.0 | 4.77 | 980.6 | -5,484.3 | 5,492.8 | 5,457.1 | 35.66 | 154.042 | |
| 1,700.0 | 1,693.1 | 1,685.1 | 1,685.1 | 4.0 | 33.6 | 4.79 | 980.6 | -5,484.3 | 5,486.4 | 5,450.3 | 36.15 | 151.769 | |
| 1,771.6 | 1,762.4 | 1,754.4 | 1,754.4 | 4.3 | 35.0 | 4.84 | 980.6 | -5,484.3 | 5,468.3 | 5,430.8 | 37.44 | 146.043 | |
| 1,800.0 | 1,789.6 | 1,781.6 | 1,781.6 | 4.4 | 35.5 | 4.86 | 980.6 | -5,484.3 | 5,460.6 | 5,422.7 | 37.94 | 143.928 | |
| 1,870.1 | 1,856.8 | 1,848.8 | 1,848.8 | 4.7 | 36.9 | 4.91 | 980.6 | -5,484.3 | 5,440.6 | 5,401.4 | 39.14 | 138.987 | |
| 1,900.0 | 1,885.3 | 1,877.3 | 1,877.3 | 4.9 | 37.4 | 4.94 | 980.6 | -5,484.3 | 5,431.5 | 5,391.8 | 39.64 | 137.016 | |
| 1,968.5 | 1,950.2 | 1,942.2 | 1,942.2 | 5.3 | 38.7 | 5.00 | 980.6 | -5,484.3 | 5,409.6 | 5,368.9 | 40.75 | 132.743 | |
| 2,000.0 | 1,979.8 | 1,971.8 | 1,971.8 | 5.5 | 39.3 | 5.02 | 980.6 | -5,484.3 | 5,399.0 | 5,357.8 | 41.25 | 130.893 | |
| 2,044.9 | 2,021.9 | 2,013.9 | 2,013.9 | 5.7 | 40.2 | 5.07 | 980.6 | -5,484.3 | 5,383.4 | 5,341.5 | 41.94 | 128.370 | |
| 2,066.9 | 2,042.5 | 2,034.5 | 2,034.5 | 5.9 | 40.6 | 5.08 | 980.6 | -5,484.3 | 5,375.6 | 5,333.2 | 42.39 | 126.827 | |
| 2,100.0 | 2,073.4 | 2,065.4 | 2,065.4 | 6.1 | 41.2 | 5.09 | 980.6 | -5,484.3 | 5,363.8 | 5,320.8 | 43.06 | 124.563 | |
| 2,165.3 | 2,134.4 | 2,126.4 | 2,126.4 | 6.5 | 42.4 | 5.11 | 980.6 | -5,484.3 | 5,340.6 | 5,296.2 | 44.40 | 120.288 | |
| 2,200.0 | 2,166.8 | 2,158.8 | 2,158.8 | 6.8 | 43.1 | 5.12 | 980.6 | -5,484.3 | 5,328.3 | 5,283.2 | 45.11 | 118.118 | |
| 2,263.8 | 2,226.4 | 2,218.4 | 2,218.4 | 7.2 | 44.3 | 5.14 | 980.6 | -5,484.3 | 5,305.6 | 5,259.2 | 46.42 | 114.296 | |
| 2,300.0 | 2,260.2 | 2,252.2 | 2,252.2 | 7.4 | 45.0 | 5.16 | 980.6 | -5,484.3 | 5,292.7 | 5,245.6 | 47.17 | 112.217 | |
| 2,362.2 | 2,318.3 | 2,310.3 | 2,310.3 | 7.9 | 46.1 | 5.18 | 980.6 | -5,484.3 | 5,270.6 | 5,222.2 | 48.45 | 108.792 | |
| 2,400.0 | 2,353.6 | 2,345.6 | 2,345.6 | 8.1 | 46.9 | 5.19 | 980.6 | -5,484.3 | 5,257.2 | 5,208.0 | 49.23 | 106.796 | |
| 2,460.6 | 2,410.3 | 2,402.3 | 2,402.3 | 8.6 | 48.0 | 5.21 | 980.6 | -5,484.3 | 5,235.6 | 5,185.2 | 50.48 | 103.720 | |
| 2,500.0 | 2,447.0 | 2,439.0 | 2,439.0 | 8.9 | 48.7 | 5.23 | 980.6 | -5,484.3 | 5,221.6 | 5,170.3 | 51.29 | 101.801 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,494.2 | 2,494.2 | 9.3 | 49.8 | 5.25 | 980.6 | -5,484.3 | 5,200.7 | 5,148.1 | 52.52 | 99.032 | |
| 2,600.0 | 2,540.5 | 2,532.5 | 2,532.5 | 9.6 | 50.6 | 5.26 | 980.6 | -5,484.3 | 5,186.1 | 5,132.7 | 53.36 | 97.185 | |
| 2,657.5 | 2,594.2 | 2,586.2 | 2,586.2 | 10.0 | 51.7 | 5.28 | 980.6 | -5,484.3 | 5,165.7 | 5,111.1 | 54.56 | 94.687 | |
| 2,700.0 | 2,633.9 | 2,625.9 | 2,625.9 | 10.3 | 52.5 | 5.30 | 980.6 | -5,484.3 | 5,150.6 | 5,095.1 | 55.44 | 92.908 | |
| 2,755.9 | 2,686.1 | 2,678.1 | 2,678.1 | 10.7 | 53.5 | 5.32 | 980.6 | -5,484.3 | 5,130.7 | 5,074.1 | 56.60 | 90.651 | |
| 2,800.0 | 2,727.3 | 2,719.3 | 2,719.3 | 11.0 | 54.4 | 5.34 | 980.6 | -5,484.3 | 5,115.0 | 5,057.5 | 57.51 | 88.934 | |
| 2,854.3 | 2,778.1 | 2,770.1 | 2,770.1 | 11.4 | 55.4 | 5.36 | 980.6 | -5,484.3 | 5,095.7 | 5,037.1 | 58.64 | 86.891 | |
| 2,900.0 | 2,820.7 | 2,812.7 | 2,812.7 | 11.8 | 56.3 | 5.37 | 980.6 | -5,484.3 | 5,079.5 | 5,019.9 | 59.60 | 85.233 | |
| 2,952.7 | 2,870.0 | 2,862.0 | 2,862.0 | 12.2 | 57.2 | 5.39 | 980.6 | -5,484.3 | 5,060.7 | 5,000.0 | 60.69 | 83.382 | |
| 3,000.0 | 2,914.2 | 2,906.2 | 2,906.2 | 12.5 | 58.1 | 5.41 | 980.6 | -5,484.3 | 5,044.0 | 4,982.3 | 61.68 | 81.779 | |
| 3,051.2 | 2,962.0 | 2,954.0 | 2,954.0 | 12.9 | 59.1 | 5.43 | 980.6 | -5,484.3 | 5,025.8 | 4,963.0 | 62.74 | 80.099 | |
| 3,100.0 | 3,007.6 | 2,999.6 | 2,999.6 | 13.3 | 60.0 | 5.45 | 980.6 | -5,484.3 | 5,008.4 | 4,944.7 | 63.76 | 78.548 | |
| 3,149.6 | 3,053.9 | 3,045.9 | 3,045.9 | 13.6 | 60.9 | 5.47 | 980.6 | -5,484.3 | 4,990.8 | 4,926.0 | 64.80 | 77.021 | |
| 3,200.0 | 3,101.0 | 3,093.0 | 3,093.0 | 14.0 | 61.9 | 5.49 | 980.6 | -5,484.3 | 4,972.9 | 4,907.0 | 65.85 | 75.519 | |
| 3,248.0 | 3,145.9 | 3,137.9 | 3,137.9 | 14.4 | 62.8 | 5.51 | 980.6 | -5,484.3 | 4,955.8 | 4,889.0 | 66.85 | 74.130 | |
| 3,300.0 | 3,194.4 | 3,186.4 | 3,186.4 | 14.8 | 63.8 | 5.53 | 980.6 | -5,484.3 | 4,937.4 | 4,869.4 | 67.94 | 72.674 | |
| 3,346.4 | 3,237.8 | 3,229.8 | 3,229.8 | 15.1 | 64.6 | 5.55 | 980.6 | -5,484.3 | 4,920.9 | 4,852.0 | 68.91 | 71.411 | |
| 3,400.0 | 3,287.8 | 3,279.8 | 3,279.8 | 15.5 | 65.6 | 5.57 | 980.6 | -5,484.3 | 4,901.8 | 4,831.8 | 70.03 | 69.997 | |
| 3,444.9 | 3,329.8 | 3,321.8 | 3,321.8 | 15.9 | 66.5 | 5.59 | 980.6 | -5,484.3 | 4,885.9 | 4,814.9 | 70.97 | 68.847 | |
| 3,500.0 | 3,381.3 | 3,373.3 | 3,373.3 | 16.3 | 67.5 | 5.61 | 980.6 | -5,484.3 | 4,866.3 | 4,794.2 | 72.12 | 67.475 | |
| 3,543.3 | 3,421.7 | 3,413.7 | 3,413.7 | 16.6 | 68.3 | 5.63 | 980.6 | -5,484.3 | 4,850.9 | 4,777.9 | 73.03 | 66.427 | |
| 3,600.0 | 3,474.7 | 3,466.7 | 3,466.7 | 17.0 | 69.4 | 5.65 | 980.6 | -5,484.3 | 4,830.8 | 4,756.6 | 74.21 | 65.093 | |
| 3,641.7 | 3,513.7 | 3,505.7 | 3,505.7 | 17.3 | 70.2 | 5.67 | 980.6 | -5,484.3 | 4,816.0 | 4,740.9 | 75.09 | 64.138 | |
| 3,700.0 | 3,568.1 | 3,560.1 | 3,560.1 | 17.8 | 71.3 | 5.69 | 980.6 | -5,484.3 | 4,795.3 | 4,719.0 | 76.31 | 62.841 | |
| 3,740.1 | 3,605.6 | 3,597.6 | 3,597.6 | 18.1 | 72.0 | 5.71 | 980.6 | -5,484.3 | 4,781.0 | 4,703.9 | 77.15 | 61.971 | |
| 3,800.0 | 3,661.5 | 3,653.5 | 3,653.5 | 18.5 | 73.2 | 5.73 | 980.6 | -5,484.3 | 4,759.8 | 4,681.4 | 78.40 | 60.708 | |
| 3,838.6 | 3,697.6 | 3,689.6 | 3,689.6 | 18.8 | 73.9 | 5.75 | 980.6 | -5,484.3 | 4,746.1 | 4,666.8 | 79.21 | 59.915 | |
| 3,900.0 | 3,754.9 | 3,746.9 | 3,746.9 | 19.3 | 75.0 | 5.78 | 980.6 | -5,484.3 | 4,724.2 | 4,643.7 | 80.50 | 58.686 | |
| 3,937.0 | 3,789.5 | 3,781.5 | 3,781.5 | 19.6 | 75.7 | 5.79 | 980.6 | -5,484.3 | 4,711.1 | 4,629.8 | 81.28 | 57.964 | |
| 4,000.0 | 3,848.4 | 3,840.4 | 3,840.4 | 20.1 | 76.9 | 5.82 | 980.6 | -5,484.3 | 4,688.7 | 4,606.1 | 82.60 | 56.765 | |
| 4,035.4 | 3,881.5 | 3,873.5 | 3,873.5 | 20.3 | 77.6 | 5.84 | 980.6 | -5,484.3 | 4,676.1 | 4,592.8 | 83.34 | 56.108 | |
| 4,100.0 | 3,941.8 | 3,933.8 | 3,933.8 | 20.8 | 78.8 | 5.87 | 980.6 | -5,484.3 | 4,653.2 | 4,568.5 | 84.70 | 54.940 | |
| 4,133.8 | 3,973.4 | 3,965.4 | 3,965.4 | 21.1 | 79.4 | 5.88 | 980.6 | -5,484.3 | 4,641.2 | 4,555.8 | 85.41 | 54.342 | |
| 4,200.0 | 4,035.2 | 4,027.2 | 4,027.2 | 21.6 | 80.7 | 5.91 | 980.6 | -5,484.3 | 4,617.7 | 4,530.9 | 86.80 | 53.201 | |
| 4,232.3 | 4,065.4 | 4,057.4 | 4,057.4 | 21.8 | 81.3 | 5.93 | 980.6 | -5,484.3 | 4,606.3 | 4,518.8 | 87.47 | 52.658 | |
| 4,300.0 | 4,128.6 | 4,120.6 | 4,120.6 | 22.3 | 82.6 | 5.96 | 980.6 | -5,484.3 | 4,582.2 | 4,493.3 | 88.90 | 51.545 | |
| 4,330.7 | 4,157.3 | 4,149.3 | 4,149.3 | 22.6 | 83.1 | 5.97 | 980.6 | -5,484.3 | 4,571.3 | 4,481.8 | 89.54 | 51.052 | |
| 4,400.0 | 4,222.0 | 4,214.0 | 4,214.0 | 23.1 | 84.4 | 6.00 | 980.6 | -5,484.3 | 4,546.7 | 4,455.7 | 91.00 | 49.964 | |
| 4,429.1 | 4,249.3 | 4,241.3 | 4,241.3 | 23.3 | 85.0 | 6.02 | 980.6 | -5,484.3 | 4,536.4 | 4,444.8 | 91.61 | 49.518 | |
| 4,500.0 | 4,315.5 | 4,307.5 | 4,307.5 | 23.9 | 86.3 | 6.05 | 980.6 | -5,484.3 | 4,511.2 | 4,418.1 | 93.10 | 48.455 | |
| 4,527.5 | 4,341.2 | 4,333.2 | 4,333.2 | 24.1 | 86.8 | 6.06 | 980.6 | -5,484.3 | 4,501.4 | 4,407.7 | 93.68 | 48.051 | |
| 4,600.0 | 4,408.9 | 4,400.9 | 4,400.9 | 24.6 | 88.2 | 6.10 | 980.6 | -5,484.3 | 4,475.7 | 4,380.5 | 95.20 | 47.012 | |
| 4,626.0 | 4,433.2 | 4,425.2 | 4,425.2 | 24.8 | 88.7 | 6.11 | 980.6 | -5,484.3 | 4,466.5 | 4,370.7 | 95.75 | 46.647 | |
| 4,700.0 | 4,502.3 | 4,494.3 | 4,494.3 | 25.4 | 90.1 | 6.15 | 980.6 | -5,484.3 | 4,440.2 | 4,342.9 | 97.31 | 45.630 | |
| 4,724.4 | 4,525.1 | 4,517.1 | 4,517.1 | 25.6 | 90.5 | 6.16 | 980.6 | -5,484.3 | 4,431.6 | 4,333.7 | 97.82 | 45.302 | |
| 4,800.0 | 4,595.7 | 4,587.7 | 4,587.7 | 26.2 | 92.0 | 6.20 | 980.6 | -5,484.3 | 4,404.7 | 4,305.3 | 99.41 | 44.307 | |
| 4,822.8 | 4,617.1 | 4,609.1 | 4,609.1 | 26.3 | 92.4 | 6.21 | 980.6 | -5,484.3 | 4,396.6 | 4,296.7 | 99.89 | 44.013 | |
| 4,900.0 | 4,689.2 | 4,681.2 | 4,681.2 | 26.9 | 93.8 | 6.25 | 980.6 | -5,484.3 | 4,369.2 | 4,267.7 | 101.52 | 43.039 | |
| 4,921.2 | 4,709.0 | 4,701.0 | 4,701.0 | 27.1 | 94.2 | 6.26 | 980.6 | -5,484.3 | 4,361.7 | 4,259.7 | 101.97 | 42.776 | |
| 5,000.0 | 4,782.6 | 4,774.6 | 4,774.6 | 27.7 | 95.7 | 6.30 | 980.6 | -5,484.3 | 4,333.8 | 4,230.1 | 103.63 | 41.821 | |
| 5,019.7 | 4,801.0 | 4,793.0 | 4,793.0 | 27.8 | 96.1 | 6.31 | 980.6 | -5,484.3 | 4,326.8 | 4,222.7 | 104.04 | 41.588 | |
| 5,100.0 | 4,876.0 | 4,868.0 | 4,868.0 | 28.4 | 97.6 | 6.35 | 980.6 | -5,484.3 | 4,298.3 | 4,192.5 | 105.73 | 40.652 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,884.9 | 4,884.9 | 28.6 | 97.9 | 6.36 | 980.6 | -5,484.3 | 4,291.8 | 4,185.7 | 106.11 | 40.446 | |
| 5,159.9 | 4,932.0 | 4,924.0 | 4,924.0 | 28.9 | 98.7 | 6.38 | 980.6 | -5,484.3 | 4,277.0 | 4,170.0 | 107.00 | 39.974 | |
| 5,200.0 | 4,969.5 | 4,961.5 | 4,961.5 | 29.2 | 99.5 | 6.37 | 980.6 | -5,484.3 | 4,263.1 | 4,154.7 | 108.32 | 39.357 | |
| 5,216.5 | 4,985.1 | 4,977.1 | 4,977.1 | 29.3 | 99.8 | 6.37 | 980.6 | -5,484.3 | 4,257.4 | 4,148.6 | 108.86 | 39.111 | |
| 5,300.0 | 5,064.0 | 5,056.0 | 5,056.0 | 29.7 | 101.4 | 6.34 | 980.6 | -5,484.3 | 4,230.5 | 4,119.0 | 111.55 | 37.926 | |
| 5,314.9 | 5,078.2 | 5,070.2 | 5,070.2 | 29.8 | 101.7 | 6.34 | 980.6 | -5,484.3 | 4,225.9 | 4,113.9 | 112.02 | 37.725 | |
| 5,400.0 | 5,159.6 | 5,151.6 | 5,151.6 | 30.2 | 103.3 | 6.32 | 980.6 | -5,484.3 | 4,201.3 | 4,086.6 | 114.69 | 36.632 | |
| 5,413.4 | 5,172.4 | 5,164.4 | 5,164.4 | 30.3 | 103.5 | 6.32 | 980.6 | -5,484.3 | 4,197.6 | 4,082.5 | 115.10 | 36.469 | |
| 5,500.0 | 5,256.1 | 5,248.1 | 5,248.1 | 30.7 | 105.2 | 6.30 | 980.6 | -5,484.3 | 4,175.4 | 4,057.6 | 117.74 | 35.464 | |
| 5,511.8 | 5,267.6 | 5,259.6 | 5,259.6 | 30.7 | 105.5 | 6.30 | 980.6 | -5,484.3 | 4,172.5 | 4,054.5 | 118.09 | 35.334 | |
| 5,600.0 | 5,353.5 | 5,345.5 | 5,345.5 | 31.1 | 107.2 | 6.28 | 980.6 | -5,484.3 | 4,152.9 | 4,032.2 | 120.68 | 34.412 | |
| 5,610.2 | 5,363.5 | 5,355.5 | 5,355.5 | 31.1 | 107.4 | 6.28 | 980.6 | -5,484.3 | 4,150.7 | 4,029.8 | 120.98 | 34.311 | |
| 5,700.0 | 5,451.6 | 5,443.6 | 5,443.6 | 31.4 | 109.2 | 6.27 | 980.6 | -5,484.3 | 4,133.7 | 4,010.2 | 123.51 | 33.469 | |
| 5,708.6 | 5,460.2 | 5,452.2 | 5,452.2 | 31.4 | 109.3 | 6.27 | 980.6 | -5,484.3 | 4,132.2 | 4,008.5 | 123.75 | 33.392 | |
| 5,800.0 | 5,550.4 | 5,542.4 | 5,542.4 | 31.7 | 111.1 | 6.26 | 980.6 | -5,484.3 | 4,118.0 | 3,991.8 | 126.21 | 32.627 | |
| 5,807.1 | 5,557.4 | 5,549.4 | 5,549.4 | 31.7 | 111.3 | 6.26 | 980.6 | -5,484.3 | 4,117.0 | 3,990.6 | 126.40 | 32.571 | |
| 5,900.0 | 5,649.6 | 5,641.6 | 5,641.6 | 31.9 | 113.1 | 6.25 | 980.6 | -5,484.3 | 4,105.7 | 3,976.9 | 128.78 | 31.881 | |
| 5,905.5 | 5,655.1 | 5,647.1 | 5,647.1 | 31.9 | 113.3 | 6.25 | 980.6 | -5,484.3 | 4,105.1 | 3,976.2 | 128.92 | 31.842 | |
| 6,000.0 | 5,749.2 | 5,741.2 | 5,741.2 | 32.1 | 115.1 | 6.25 | 980.6 | -5,484.3 | 4,096.9 | 3,965.7 | 131.21 | 31.225 | |
| 6,003.9 | 5,753.1 | 5,745.1 | 5,745.1 | 32.1 | 115.2 | 6.25 | 980.6 | -5,484.3 | 4,096.6 | 3,965.3 | 131.30 | 31.201 | |
| 6,100.0 | 5,849.1 | 5,841.1 | 5,841.1 | 32.3 | 117.2 | 6.24 | 980.6 | -5,484.3 | 4,091.5 | 3,958.0 | 133.48 | 30.654 | |
| 6,102.3 | 5,851.4 | 5,843.4 | 5,843.4 | 32.3 | 117.2 | 6.24 | 980.6 | -5,484.3 | 4,091.4 | 3,957.9 | 133.53 | 30.641 | |
| 6,200.8 | 5,949.8 | 5,941.8 | 5,941.8 | 32.4 | 119.2 | 6.24 | 980.6 | -5,484.3 | 4,089.6 | 3,954.0 | 135.60 | 30.160 | |
| 6,204.9 | 5,953.9 | 5,945.9 | 5,945.9 | 32.4 | 119.3 | -78.20 | 980.6 | -5,484.3 | 4,089.6 | 3,938.2 | 151.46 | 27.002 | |
| 6,234.9 | 5,983.9 | 5,975.9 | 5,975.9 | 32.4 | 119.9 | -78.20 | 980.6 | -5,484.3 | 4,089.6 | 3,937.5 | 152.08 | 26.891 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 5,991.0 | 5,991.0 | 32.4 | 120.2 | -168.20 | 980.6 | -5,484.3 | 4,089.8 | 3,953.2 | 136.54 | 29.952 | |
| 6,299.2 | 6,048.2 | 6,040.2 | 6,040.2 | 32.4 | 121.2 | -168.16 | 980.6 | -5,484.3 | 4,092.4 | 3,955.6 | 136.83 | 29.908 | |
| 6,300.0 | 6,048.9 | 6,040.9 | 6,040.9 | 32.4 | 121.2 | -168.16 | 980.6 | -5,484.3 | 4,092.5 | 3,955.7 | 136.83 | 29.909 | |
| 6,350.0 | 6,098.5 | 6,090.5 | 6,090.5 | 32.4 | 122.2 | -168.08 | 980.6 | -5,484.3 | 4,098.7 | 3,962.2 | 136.47 | 30.033 | |
| 6,397.6 | 6,145.3 | 6,137.3 | 6,137.3 | 32.3 | 123.1 | -167.95 | 980.6 | -5,484.3 | 4,107.6 | 3,972.1 | 135.53 | 30.309 | |
| 6,400.0 | 6,147.6 | 6,139.6 | 6,139.6 | 32.3 | 123.2 | -167.94 | 980.6 | -5,484.3 | 4,108.2 | 3,972.7 | 135.46 | 30.327 | |
| 6,450.0 | 6,195.8 | 6,187.8 | 6,187.8 | 32.2 | 124.1 | -167.76 | 980.6 | -5,484.3 | 4,121.0 | 3,987.2 | 133.80 | 30.799 | |
| 6,496.0 | 6,239.3 | 6,231.3 | 6,231.3 | 32.1 | 125.0 | -167.54 | 980.6 | -5,484.3 | 4,135.7 | 4,004.0 | 131.71 | 31.401 | |
| 6,500.0 | 6,243.0 | 6,235.0 | 6,235.0 | 32.1 | 125.1 | -167.51 | 980.6 | -5,484.3 | 4,137.1 | 4,005.6 | 131.50 | 31.460 | |
| 6,550.0 | 6,289.0 | 6,281.0 | 6,281.0 | 32.0 | 126.0 | -167.21 | 980.6 | -5,484.3 | 4,156.4 | 4,027.8 | 128.59 | 32.323 | |
| 6,594.5 | 6,328.6 | 6,320.6 | 6,320.6 | 31.8 | 126.8 | -166.87 | 980.6 | -5,484.3 | 4,176.2 | 4,050.7 | 125.51 | 33.274 | |
| 6,600.0 | 6,333.4 | 6,325.4 | 6,325.4 | 31.8 | 126.9 | -166.83 | 980.6 | -5,484.3 | 4,178.8 | 4,053.7 | 125.10 | 33.405 | |
| 6,650.0 | 6,376.2 | 6,368.2 | 6,368.2 | 31.7 | 127.8 | -166.36 | 980.6 | -5,484.3 | 4,204.2 | 4,083.1 | 121.07 | 34.725 | |
| 6,692.9 | 6,411.3 | 6,403.3 | 6,403.3 | 31.6 | 128.5 | -165.88 | 980.6 | -5,484.3 | 4,228.3 | 4,111.0 | 117.25 | 36.063 | |
| 6,700.0 | 6,417.0 | 6,409.0 | 6,409.0 | 31.5 | 128.6 | -165.79 | 980.6 | -5,484.3 | 4,232.5 | 4,115.9 | 116.59 | 36.303 | |
| 6,750.0 | 6,455.7 | 6,447.7 | 6,447.7 | 31.4 | 129.4 | -165.11 | 980.6 | -5,484.3 | 4,263.4 | 4,151.7 | 111.75 | 38.153 | |
| 6,791.3 | 6,486.0 | 6,478.0 | 6,478.0 | 31.3 | 130.0 | -164.42 | 980.6 | -5,484.3 | 4,291.0 | 4,183.4 | 107.57 | 39.889 | |
| 6,800.0 | 6,492.2 | 6,484.2 | 6,484.2 | 31.3 | 130.1 | -164.27 | 980.6 | -5,484.3 | 4,297.0 | 4,190.3 | 106.69 | 40.277 | |
| 6,850.0 | 6,526.1 | 6,518.1 | 6,518.1 | 31.2 | 130.8 | -163.24 | 980.6 | -5,484.3 | 4,333.0 | 4,231.4 | 101.60 | 42.647 | |
| 6,889.7 | 6,551.2 | 6,543.2 | 6,543.2 | 31.2 | 131.3 | -162.25 | 980.6 | -5,484.3 | 4,363.2 | 4,265.5 | 97.72 | 44.652 | |
| 6,900.0 | 6,557.4 | 6,549.4 | 6,549.4 | 31.2 | 131.4 | -161.97 | 980.6 | -5,484.3 | 4,371.2 | 4,274.5 | 96.76 | 45.176 | |
| 6,950.0 | 6,586.0 | 6,578.0 | 6,578.0 | 31.1 | 132.0 | -160.37 | 980.6 | -5,484.3 | 4,411.6 | 4,319.0 | 92.54 | 47.672 | |
| 6,988.2 | 6,605.8 | 6,597.8 | 6,597.8 | 31.2 | 132.4 | -158.87 | 980.6 | -5,484.3 | 4,443.6 | 4,353.5 | 90.07 | 49.335 | |
| 7,000.0 | 6,611.5 | 6,603.5 | 6,603.5 | 31.2 | 132.5 | -158.34 | 980.6 | -5,484.3 | 4,453.7 | 4,364.2 | 89.49 | 49.768 | |
| 7,050.0 | 6,634.1 | 6,626.1 | 6,626.1 | 31.2 | 132.9 | -155.70 | 980.6 | -5,484.3 | 4,497.6 | 4,409.2 | 88.40 | 50.876 | |
| 7,086.6 | 6,648.6 | 6,640.6 | 6,640.6 | 31.3 | 133.2 | -153.22 | 980.6 | -5,484.3 | 4,530.6 | 4,441.1 | 89.47 | 50.636 | |
| 7,100.0 | 6,653.4 | 6,645.4 | 6,645.4 | 31.4 | 133.3 | -152.17 | 980.6 | -5,484.3 | 4,542.9 | 4,452.5 | 90.37 | 50.267 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,661.5 | 6,661.5 | 31.6 | 133.7 | -147.30 | 980.6 | -5,484.3 | 4,589.4 | 4,492.6 | 96.81 | 47.408 | |
| 7,185.0 | 6,678.8 | 6,670.8 | 6,670.8 | 31.7 | 133.8 | -142.71 | 980.6 | -5,484.3 | 4,622.6 | 4,517.8 | 104.77 | 44.121 | |
| 7,200.0 | 6,682.3 | 6,674.3 | 6,674.3 | 31.8 | 133.9 | -140.34 | 980.6 | -5,484.3 | 4,636.9 | 4,527.8 | 109.17 | 42.476 | |
| 7,250.0 | 6,691.6 | 6,683.6 | 6,683.6 | 32.1 | 134.1 | -130.07 | 980.6 | -5,484.3 | 4,685.2 | 4,557.0 | 128.21 | 36.543 | |
| 7,283.4 | 6,696.0 | 6,688.0 | 6,688.0 | 32.3 | 134.2 | -120.55 | 980.6 | -5,484.3 | 4,717.9 | 4,574.2 | 143.65 | 32.842 | |
| 7,300.0 | 6,697.5 | 6,689.5 | 6,689.5 | 32.4 | 134.2 | -114.90 | 980.6 | -5,484.3 | 4,734.1 | 4,582.9 | 151.21 | 31.307 | |
| 7,350.0 | 6,699.9 | 6,691.9 | 6,691.9 | 32.8 | 134.3 | -94.38 | 980.6 | -5,484.3 | 4,783.2 | 4,616.7 | 166.50 | 28.729 | |
| 7,364.4 | 6,700.0 | 6,692.0 | 6,692.0 | 32.9 | 134.3 | -87.90 | 980.6 | -5,484.3 | 4,797.4 | 4,630.4 | 167.05 | 28.718 | |
| 7,381.9 | 6,699.9 | 6,691.9 | 6,691.9 | 33.1 | 134.3 | -87.89 | 980.6 | -5,484.3 | 4,814.6 | 4,647.4 | 167.20 | 28.796 | |
| 7,400.0 | 6,699.8 | 6,691.8 | 6,691.8 | 33.2 | 134.3 | -87.89 | 980.6 | -5,484.3 | 4,832.5 | 4,665.1 | 167.35 | 28.876 | |
| 7,480.3 | 6,699.2 | 6,691.2 | 6,691.2 | 34.0 | 134.3 | -87.85 | 980.6 | -5,484.3 | 4,911.6 | 4,743.4 | 168.15 | 29.209 | |
| 7,500.0 | 6,699.1 | 6,691.1 | 6,691.1 | 34.2 | 134.3 | -87.84 | 980.6 | -5,484.3 | 4,931.0 | 4,762.7 | 168.35 | 29.291 | |
| 7,578.7 | 6,698.6 | 6,690.6 | 6,690.6 | 35.2 | 134.2 | -87.81 | 980.6 | -5,484.3 | 5,008.6 | 4,839.3 | 169.28 | 29.587 | |
| 7,600.0 | 6,698.5 | 6,690.5 | 6,690.5 | 35.4 | 134.2 | -87.80 | 980.6 | -5,484.3 | 5,029.6 | 4,860.0 | 169.53 | 29.667 | |
| 7,677.1 | 6,698.0 | 6,690.0 | 6,690.0 | 36.5 | 134.2 | -87.76 | 980.6 | -5,484.3 | 5,105.7 | 4,935.1 | 170.59 | 29.930 | |
| 7,700.0 | 6,697.8 | 6,689.8 | 6,689.8 | 36.8 | 134.2 | -87.75 | 980.6 | -5,484.3 | 5,128.2 | 4,957.3 | 170.90 | 30.008 | |
| 7,775.6 | 6,697.3 | 6,689.3 | 6,689.3 | 38.0 | 134.2 | -87.72 | 980.6 | -5,484.3 | 5,202.8 | 5,030.7 | 172.05 | 30.241 | |
| 7,800.0 | 6,697.2 | 6,689.2 | 6,689.2 | 38.3 | 134.2 | -87.71 | 980.6 | -5,484.3 | 5,226.9 | 5,054.5 | 172.42 | 30.315 | |
| 7,874.0 | 6,696.7 | 6,688.7 | 6,688.7 | 39.6 | 134.2 | -87.67 | 980.6 | -5,484.3 | 5,300.0 | 5,126.3 | 173.64 | 30.522 | |
| 7,900.0 | 6,696.5 | 6,688.5 | 6,688.5 | 40.0 | 134.2 | -87.66 | 980.6 | -5,484.3 | 5,325.6 | 5,151.6 | 174.07 | 30.594 | |
| 7,972.4 | 6,696.1 | 6,688.1 | 6,688.1 | 41.3 | 134.2 | -87.63 | 980.6 | -5,484.3 | 5,397.2 | 5,221.8 | 175.36 | 30.777 | |
| 8,000.0 | 6,695.9 | 6,687.9 | 6,687.9 | 41.8 | 134.2 | -87.62 | 980.6 | -5,484.3 | 5,424.4 | 5,248.6 | 175.85 | 30.846 | |
| 8,070.8 | 6,695.4 | 6,687.4 | 6,687.4 | 43.1 | 134.2 | -87.59 | 980.6 | -5,484.3 | 5,494.4 | 5,317.2 | 177.19 | 31.009 | |
| 8,100.0 | 6,695.2 | 6,687.2 | 6,687.2 | 43.7 | 134.2 | -87.57 | 980.6 | -5,484.3 | 5,523.2 | 5,345.5 | 177.74 | 31.075 | |
| 8,169.3 | 6,694.8 | 6,686.8 | 6,686.8 | 45.1 | 134.2 | -87.54 | 980.6 | -5,484.3 | 5,591.7 | 5,412.6 | 179.11 | 31.219 | |
| 8,200.0 | 6,694.6 | 6,686.6 | 6,686.6 | 45.7 | 134.2 | -87.53 | 980.6 | -5,484.3 | 5,622.1 | 5,442.4 | 179.72 | 31.283 | |
| 8,267.7 | 6,694.1 | 6,686.1 | 6,686.1 | 47.1 | 134.2 | -87.50 | 980.6 | -5,484.3 | 5,689.0 | 5,507.9 | 181.11 | 31.411 | |
| 8,300.0 | 6,693.9 | 6,685.9 | 6,685.9 | 47.8 | 134.1 | -87.49 | 980.6 | -5,484.3 | 5,721.0 | 5,539.2 | 181.78 | 31.472 | |
| 8,366.1 | 6,693.5 | 6,685.5 | 6,685.5 | 49.2 | 134.1 | -87.46 | 980.6 | -5,484.3 | 5,786.4 | 5,603.2 | 183.19 | 31.587 | |
| 8,400.0 | 6,693.3 | 6,685.3 | 6,685.3 | 49.9 | 134.1 | -87.44 | 980.6 | -5,484.3 | 5,819.9 | 5,636.0 | 183.91 | 31.645 | |
| 8,464.5 | 6,692.9 | 6,684.9 | 6,684.9 | 51.4 | 134.1 | -87.41 | 980.6 | -5,484.3 | 5,883.8 | 5,698.5 | 185.33 | 31.748 | |
| 8,500.0 | 6,692.6 | 6,684.6 | 6,684.6 | 52.1 | 134.1 | -87.40 | 980.6 | -5,484.3 | 5,918.9 | 5,732.8 | 186.11 | 31.804 | |
| 8,563.0 | 6,692.2 | 6,684.2 | 6,684.2 | 53.6 | 134.1 | -87.37 | 980.6 | -5,484.3 | 5,981.3 | 5,793.7 | 187.52 | 31.896 | |
| 8,600.0 | 6,692.0 | 6,684.0 | 6,684.0 | 54.4 | 134.1 | -87.35 | 980.6 | -5,484.3 | 6,017.9 | 5,829.6 | 188.35 | 31.950 | |
| 8,661.4 | 6,691.6 | 6,683.6 | 6,683.6 | 55.8 | 134.1 | -87.33 | 980.6 | -5,484.3 | 6,078.7 | 5,889.0 | 189.76 | 32.033 | |
| 8,700.0 | 6,691.3 | 6,683.3 | 6,683.3 | 56.7 | 134.1 | -87.31 | 980.6 | -5,484.3 | 6,117.0 | 5,926.3 | 190.65 | 32.085 | |
| 8,759.8 | 6,690.9 | 6,682.9 | 6,682.9 | 58.1 | 134.1 | -87.28 | 980.6 | -5,484.3 | 6,176.2 | 5,984.2 | 192.05 | 32.159 | |
| 8,800.0 | 6,690.7 | 6,682.7 | 6,682.7 | 59.1 | 134.1 | -87.26 | 980.6 | -5,484.3 | 6,216.0 | 6,023.1 | 192.99 | 32.209 | |
| 8,858.2 | 6,690.3 | 6,682.3 | 6,682.3 | 60.5 | 134.1 | -87.24 | 980.6 | -5,484.3 | 6,273.8 | 6,079.4 | 194.37 | 32.277 | |
| 8,900.0 | 6,690.0 | 6,682.0 | 6,682.0 | 61.5 | 134.1 | -87.22 | 980.6 | -5,484.3 | 6,315.1 | 6,119.8 | 195.37 | 32.325 | |
| 8,956.7 | 6,689.7 | 6,681.7 | 6,681.7 | 62.9 | 134.1 | -87.19 | 980.6 | -5,484.3 | 6,371.3 | 6,174.6 | 196.73 | 32.386 | |
| 9,000.0 | 6,689.4 | 6,681.4 | 6,681.4 | 63.9 | 134.1 | -87.18 | 980.6 | -5,484.3 | 6,414.3 | 6,216.5 | 197.78 | 32.432 | |
| 9,055.1 | 6,689.0 | 6,681.0 | 6,681.0 | 65.3 | 134.0 | -87.15 | 980.6 | -5,484.3 | 6,468.9 | 6,269.8 | 199.12 | 32.487 | |
| 9,100.0 | 6,688.7 | 6,680.7 | 6,680.7 | 66.4 | 134.0 | -87.13 | 980.6 | -5,484.3 | 6,513.4 | 6,313.2 | 200.22 | 32.532 | |
| 9,153.5 | 6,688.4 | 6,680.4 | 6,680.4 | 67.7 | 134.0 | -87.11 | 980.6 | -5,484.3 | 6,566.5 | 6,365.0 | 201.54 | 32.582 | |
| 9,200.0 | 6,688.1 | 6,680.1 | 6,680.1 | 68.9 | 134.0 | -87.09 | 980.6 | -5,484.3 | 6,612.6 | 6,409.9 | 202.68 | 32.626 | |
| 9,251.9 | 6,687.8 | 6,679.8 | 6,679.8 | 70.2 | 134.0 | -87.06 | 980.6 | -5,484.3 | 6,664.2 | 6,460.2 | 203.98 | 32.671 | |
| 9,300.0 | 6,687.4 | 6,679.4 | 6,679.4 | 71.4 | 134.0 | -87.04 | 980.6 | -5,484.3 | 6,711.8 | 6,506.7 | 205.17 | 32.713 | |
| 9,350.4 | 6,687.1 | 6,679.1 | 6,679.1 | 72.7 | 134.0 | -87.02 | 980.6 | -5,484.3 | 6,761.8 | 6,555.4 | 206.44 | 32.755 | |
| 9,400.0 | 6,686.8 | 6,678.8 | 6,678.8 | 73.9 | 134.0 | -87.00 | 980.6 | -5,484.3 | 6,811.1 | 6,603.4 | 207.68 | 32.796 | |
| 9,448.8 | 6,686.5 | 6,678.5 | 6,678.5 | 75.2 | 134.0 | -86.98 | 980.6 | -5,484.3 | 6,859.5 | 6,650.6 | 208.92 | 32.834 | |
| 9,500.0 | 6,686.1 | 6,678.1 | 6,678.1 | 76.5 | 134.0 | -86.95 | 980.6 | -5,484.3 | 6,910.3 | 6,700.1 | 210.21 | 32.873 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT #1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,677.8 | 6,677.8 | 77.7 | 134.0 | -86.93 | 980.6 | -5,484.3 | 6,957.2 | 6,745.8 | 211.41 | 32.908 | |
| 9,600.0 | 6,685.5 | 6,677.5 | 6,677.5 | 79.0 | 134.0 | -86.91 | 980.6 | -5,484.3 | 7,009.6 | 6,796.8 | 212.76 | 32.946 | |
| 9,645.6 | 6,685.2 | 6,677.2 | 6,677.2 | 80.2 | 134.0 | -86.89 | 980.6 | -5,484.3 | 7,054.9 | 6,841.0 | 213.93 | 32.978 | |
| 9,700.0 | 6,684.8 | 6,676.8 | 6,676.8 | 81.6 | 134.0 | -86.86 | 980.6 | -5,484.3 | 7,108.9 | 6,893.6 | 215.32 | 33.015 | |
| 9,744.1 | 6,684.6 | 6,676.6 | 6,676.6 | 82.8 | 134.0 | -86.85 | 980.6 | -5,484.3 | 7,152.6 | 6,936.2 | 216.46 | 33.044 | |
| 9,800.0 | 6,684.2 | 6,676.2 | 6,676.2 | 84.2 | 134.0 | -86.82 | 980.6 | -5,484.3 | 7,208.2 | 6,990.3 | 217.90 | 33.081 | |
| 9,842.5 | 6,683.9 | 6,675.9 | 6,675.9 | 85.3 | 133.9 | -86.80 | 980.6 | -5,484.3 | 7,250.4 | 7,031.4 | 219.00 | 33.107 | |
| 9,900.0 | 6,683.5 | 6,675.5 | 6,675.5 | 86.8 | 133.9 | -86.78 | 980.6 | -5,484.3 | 7,307.5 | 7,087.0 | 220.49 | 33.143 | |
| 9,940.9 | 6,683.3 | 6,675.3 | 6,675.3 | 87.9 | 133.9 | -86.76 | 980.6 | -5,484.3 | 7,348.2 | 7,126.6 | 221.55 | 33.167 | |
| 10,000.0 | 6,682.9 | 6,674.9 | 6,674.9 | 89.5 | 133.9 | -86.73 | 980.6 | -5,484.3 | 7,406.9 | 7,183.8 | 223.09 | 33.202 | |
| 10,039.3 | 6,682.6 | 6,674.6 | 6,674.6 | 90.5 | 133.9 | -86.71 | 980.6 | -5,484.3 | 7,446.0 | 7,221.9 | 224.11 | 33.224 | |
| 10,100.0 | 6,682.2 | 6,674.2 | 6,674.2 | 92.1 | 133.9 | -86.69 | 980.6 | -5,484.3 | 7,506.2 | 7,280.5 | 225.70 | 33.258 | |
| 10,137.8 | 6,682.0 | 6,674.0 | 6,674.0 | 93.1 | 133.9 | -86.67 | 980.6 | -5,484.3 | 7,543.8 | 7,317.1 | 226.69 | 33.278 | |
| 10,200.0 | 6,681.6 | 6,673.6 | 6,673.6 | 94.8 | 133.9 | -86.64 | 980.6 | -5,484.3 | 7,605.6 | 7,377.3 | 228.32 | 33.312 | |
| 10,236.2 | 6,681.4 | 6,673.4 | 6,673.4 | 95.7 | 133.9 | -86.63 | 980.6 | -5,484.3 | 7,641.6 | 7,412.3 | 229.27 | 33.330 | |
| 10,300.0 | 6,680.9 | 6,672.9 | 6,672.9 | 97.4 | 133.9 | -86.60 | 980.6 | -5,484.3 | 7,705.0 | 7,474.1 | 230.95 | 33.363 | |
| 10,334.6 | 6,680.7 | 6,672.7 | 6,672.7 | 98.3 | 133.9 | -86.58 | 980.6 | -5,484.3 | 7,739.4 | 7,507.6 | 231.86 | 33.380 | |
| 10,400.0 | 6,680.3 | 6,672.3 | 6,672.3 | 100.1 | 133.9 | -86.55 | 980.6 | -5,484.3 | 7,804.4 | 7,570.8 | 233.58 | 33.412 | |
| 10,433.0 | 6,680.1 | 6,672.1 | 6,672.1 | 101.0 | 133.9 | -86.54 | 980.6 | -5,484.3 | 7,837.3 | 7,602.8 | 234.46 | 33.427 | |
| 10,500.0 | 6,679.7 | 6,671.7 | 6,671.7 | 102.8 | 133.9 | -86.51 | 980.6 | -5,484.3 | 7,903.9 | 7,667.6 | 236.23 | 33.458 | |
| 10,531.5 | 6,679.4 | 6,671.4 | 6,671.4 | 103.6 | 133.9 | -86.50 | 980.6 | -5,484.3 | 7,935.2 | 7,698.1 | 237.06 | 33.473 | |
| 10,600.0 | 6,679.0 | 6,671.0 | 6,671.0 | 105.4 | 133.8 | -86.47 | 980.6 | -5,484.3 | 8,003.3 | 7,764.4 | 238.88 | 33.503 | |
| 10,629.9 | 6,678.8 | 6,670.8 | 6,670.8 | 106.2 | 133.8 | -86.45 | 980.6 | -5,484.3 | 8,033.0 | 7,793.4 | 239.68 | 33.516 | |
| 10,700.0 | 6,678.4 | 6,670.4 | 6,670.4 | 108.1 | 133.8 | -86.42 | 980.6 | -5,484.3 | 8,102.8 | 7,861.2 | 241.54 | 33.546 | |
| 10,728.3 | 6,678.2 | 6,670.2 | 6,670.2 | 108.9 | 133.8 | -86.41 | 980.6 | -5,484.3 | 8,130.9 | 7,888.6 | 242.29 | 33.558 | |
| 10,800.0 | 6,677.7 | 6,669.7 | 6,669.7 | 110.8 | 133.8 | -86.38 | 980.6 | -5,484.3 | 8,202.2 | 7,958.0 | 244.20 | 33.588 | |
| 10,826.7 | 6,677.5 | 6,669.5 | 6,669.5 | 111.5 | 133.8 | -86.37 | 980.6 | -5,484.3 | 8,228.8 | 7,983.9 | 244.92 | 33.599 | |
| 10,900.0 | 6,677.1 | 6,669.1 | 6,669.1 | 113.5 | 133.8 | -86.33 | 980.6 | -5,484.3 | 8,301.7 | 8,054.8 | 246.87 | 33.628 | |
| 10,925.2 | 6,676.9 | 6,668.9 | 6,668.9 | 114.2 | 133.8 | -86.32 | 980.6 | -5,484.3 | 8,326.8 | 8,079.2 | 247.54 | 33.637 | |
| 11,000.0 | 6,676.4 | 6,668.4 | 6,668.4 | 116.2 | 133.8 | -86.29 | 980.6 | -5,484.3 | 8,401.2 | 8,151.7 | 249.55 | 33.666 | |
| 11,023.6 | 6,676.3 | 6,668.3 | 6,668.3 | 116.8 | 133.8 | -86.28 | 980.6 | -5,484.3 | 8,424.7 | 8,174.5 | 250.18 | 33.675 | |
| 11,100.0 | 6,675.8 | 6,667.8 | 6,667.8 | 118.9 | 133.8 | -86.24 | 980.6 | -5,484.3 | 8,500.7 | 8,248.5 | 252.22 | 33.703 | |
| 11,122.0 | 6,675.6 | 6,667.6 | 6,667.6 | 119.5 | 133.8 | -86.24 | 980.6 | -5,484.3 | 8,522.6 | 8,269.8 | 252.82 | 33.711 | |
| 11,200.0 | 6,675.1 | 6,667.1 | 6,667.1 | 121.6 | 133.8 | -86.20 | 980.6 | -5,484.3 | 8,600.2 | 8,345.3 | 254.91 | 33.739 | |
| 11,220.4 | 6,675.0 | 6,667.0 | 6,667.0 | 122.2 | 133.8 | -86.19 | 980.6 | -5,484.3 | 8,620.6 | 8,365.1 | 255.46 | 33.746 | |
| 11,300.0 | 6,674.5 | 6,666.5 | 6,666.5 | 124.3 | 133.8 | -86.16 | 980.6 | -5,484.3 | 8,699.8 | 8,442.2 | 257.59 | 33.773 | |
| 11,318.9 | 6,674.3 | 6,666.3 | 6,666.3 | 124.9 | 133.8 | -86.15 | 980.6 | -5,484.3 | 8,718.6 | 8,460.5 | 258.10 | 33.780 | |
| 11,400.0 | 6,673.8 | 6,665.8 | 6,665.8 | 127.1 | 133.7 | -86.11 | 980.6 | -5,484.3 | 8,799.3 | 8,539.0 | 260.28 | 33.807 | |
| 11,417.3 | 6,673.7 | 6,665.7 | 6,665.7 | 127.5 | 133.7 | -86.10 | 980.6 | -5,484.3 | 8,816.5 | 8,555.8 | 260.75 | 33.812 | |
| 11,500.0 | 6,673.2 | 6,665.2 | 6,665.2 | 129.8 | 133.7 | -86.07 | 980.6 | -5,484.3 | 8,898.9 | 8,635.9 | 262.98 | 33.839 | |
| 11,515.7 | 6,673.1 | 6,665.1 | 6,665.1 | 130.2 | 133.7 | -86.06 | 980.6 | -5,484.3 | 8,914.5 | 8,651.1 | 263.40 | 33.844 | |
| 11,600.0 | 6,672.5 | 6,664.5 | 6,664.5 | 132.5 | 133.7 | -86.02 | 980.6 | -5,484.3 | 8,998.4 | 8,732.7 | 265.67 | 33.870 | |
| 11,614.1 | 6,672.4 | 6,664.4 | 6,664.4 | 132.9 | 133.7 | -86.02 | 980.6 | -5,484.3 | 9,012.5 | 8,746.4 | 266.06 | 33.874 | |
| 11,700.0 | 6,671.9 | 6,663.9 | 6,663.9 | 135.3 | 133.7 | -85.98 | 980.6 | -5,484.3 | 9,098.0 | 8,829.6 | 268.37 | 33.900 | |
| 11,712.6 | 6,671.8 | 6,663.8 | 6,663.8 | 135.6 | 133.7 | -85.97 | 980.6 | -5,484.3 | 9,110.5 | 8,841.8 | 268.71 | 33.904 | |
| 11,800.0 | 6,671.2 | 6,663.2 | 6,663.2 | 138.0 | 133.7 | -85.94 | 980.6 | -5,484.3 | 9,197.6 | 8,926.5 | 271.08 | 33.930 | |
| 11,811.0 | 6,671.1 | 6,663.1 | 6,663.1 | 138.3 | 133.7 | -85.93 | 980.6 | -5,484.3 | 9,208.5 | 8,937.1 | 271.37 | 33.933 | |
| 11,900.0 | 6,670.6 | 6,662.6 | 6,662.6 | 140.7 | 133.7 | -85.89 | 980.6 | -5,484.3 | 9,297.2 | 9,023.4 | 273.78 | 33.958 | |
| 11,909.4 | 6,670.5 | 6,662.5 | 6,662.5 | 141.0 | 133.7 | -85.89 | 980.6 | -5,484.3 | 9,306.5 | 9,032.5 | 274.04 | 33.961 | |
| 11,987.2 | 6,670.0 | 6,662.0 | 6,662.0 | 143.1 | 133.7 | -85.85 | 980.6 | -5,484.3 | 9,384.0 | 9,107.9 | 276.14 | 33.982 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.9 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,730.8 | 0.97 | 4,858.239 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.9 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,730.8 | 0.99 | 4,780.592 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 3.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,728.3 | 3.50 | 1,353.461 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 3.3 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,728.2 | 3.58 | 1,322.622 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 5.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,726.0 | 5.78 | 819.323 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 5.3 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,725.9 | 5.88 | 804.147 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 7.3 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,723.7 | 8.01 | 590.824 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 7.4 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,723.6 | 8.15 | 580.470 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 9.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,721.5 | 10.23 | 462.634 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 9.4 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,721.3 | 10.41 | 454.743 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 11.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,719.3 | 12.44 | 380.356 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 11.4 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,719.1 | 12.65 | 373.971 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 13.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,717.1 | 14.65 | 323.004 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 13.5 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,716.9 | 14.90 | 317.640 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 15.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,714.9 | 16.86 | 280.718 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 15.5 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,714.6 | 17.14 | 276.092 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 17.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,712.7 | 19.06 | 248.241 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 17.5 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,712.4 | 19.38 | 244.173 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 19.2 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,710.5 | 21.27 | 222.510 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 19.5 | -85.71 | 353.8 | -4,718.5 | 4,731.8 | 4,710.1 | 21.62 | 218.879 | |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 21.2 | -1.27 | 353.8 | -4,718.5 | 4,730.6 | 4,707.1 | 23.45 | 201.736 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 21.5 | -1.27 | 353.8 | -4,718.5 | 4,730.0 | 4,706.2 | 23.83 | 198.489 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 23.1 | -1.28 | 353.8 | -4,718.5 | 4,726.0 | 4,700.4 | 25.59 | 184.677 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 23.5 | -1.28 | 353.8 | -4,718.5 | 4,724.8 | 4,698.8 | 26.00 | 181.745 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 25.1 | -1.28 | 353.8 | -4,718.5 | 4,718.1 | 4,690.4 | 27.69 | 170.386 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 25.5 | -1.28 | 353.8 | -4,718.5 | 4,716.1 | 4,687.9 | 28.12 | 167.704 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 27.1 | -1.29 | 353.8 | -4,718.5 | 4,706.9 | 4,677.1 | 29.74 | 158.251 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 27.5 | -1.29 | 353.8 | -4,718.5 | 4,703.9 | 4,673.7 | 30.19 | 155.786 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 29.0 | -1.30 | 353.8 | -4,718.5 | 4,692.2 | 4,660.5 | 31.74 | 147.840 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 29.5 | -1.30 | 353.8 | -4,718.5 | 4,688.2 | 4,656.0 | 32.21 | 145.562 | |
| 1,574.8 | 1,571.0 | 1,571.0 | 1,571.0 | 3.5 | 31.0 | -1.31 | 353.8 | -4,718.5 | 4,674.3 | 4,640.6 | 33.67 | 138.825 | |
| 1,600.0 | 1,595.6 | 1,595.6 | 1,595.6 | 3.6 | 31.5 | -1.32 | 353.8 | -4,718.5 | 4,669.2 | 4,635.0 | 34.15 | 136.714 | |
| 1,673.2 | 1,667.0 | 1,667.0 | 1,667.0 | 3.9 | 32.9 | -1.33 | 353.8 | -4,718.5 | 4,653.0 | 4,617.5 | 35.53 | 130.960 | |
| 1,700.0 | 1,693.1 | 1,693.1 | 1,693.1 | 4.0 | 33.4 | -1.34 | 353.8 | -4,718.5 | 4,646.7 | 4,610.7 | 36.02 | 128.997 | |
| 1,771.6 | 1,762.4 | 1,762.4 | 1,762.4 | 4.3 | 34.8 | -1.35 | 353.8 | -4,718.5 | 4,628.5 | 4,591.2 | 37.31 | 124.051 | |
| 1,800.0 | 1,789.6 | 1,789.6 | 1,789.6 | 4.4 | 35.4 | -1.36 | 353.8 | -4,718.5 | 4,620.8 | 4,583.0 | 37.81 | 122.221 | |
| 1,870.1 | 1,856.8 | 1,856.8 | 1,856.8 | 4.7 | 36.7 | -1.37 | 353.8 | -4,718.5 | 4,600.7 | 4,561.7 | 39.01 | 117.945 | |
| 1,900.0 | 1,885.3 | 1,885.3 | 1,885.3 | 4.9 | 37.3 | -1.38 | 353.8 | -4,718.5 | 4,591.6 | 4,552.1 | 39.50 | 116.237 | |
| 1,968.5 | 1,950.2 | 1,950.2 | 1,950.2 | 5.3 | 38.6 | -1.40 | 353.8 | -4,718.5 | 4,569.6 | 4,529.0 | 40.61 | 112.532 | |
| 2,000.0 | 1,979.8 | 1,979.8 | 1,979.8 | 5.5 | 39.2 | -1.41 | 353.8 | -4,718.5 | 4,559.0 | 4,517.9 | 41.10 | 110.926 | |
| 2,044.9 | 2,021.9 | 2,021.9 | 2,021.9 | 5.7 | 40.1 | -1.42 | 353.8 | -4,718.5 | 4,543.3 | 4,501.5 | 41.78 | 108.733 | |
| 2,066.9 | 2,042.5 | 2,042.5 | 2,042.5 | 5.9 | 40.5 | -1.42 | 353.8 | -4,718.5 | 4,535.5 | 4,493.3 | 42.23 | 107.397 | |
| 2,100.0 | 2,073.4 | 2,073.4 | 2,073.4 | 6.1 | 41.1 | -1.42 | 353.8 | -4,718.5 | 4,523.7 | 4,480.8 | 42.91 | 105.435 | |
| 2,165.3 | 2,134.4 | 2,134.4 | 2,134.4 | 6.5 | 42.3 | -1.43 | 353.8 | -4,718.5 | 4,500.4 | 4,456.2 | 44.24 | 101.733 | |
| 2,200.0 | 2,166.8 | 2,166.8 | 2,166.8 | 6.8 | 43.0 | -1.44 | 353.8 | -4,718.5 | 4,488.0 | 4,443.1 | 44.95 | 99.854 | |
| 2,263.8 | 2,226.4 | 2,226.4 | 2,226.4 | 7.2 | 44.2 | -1.44 | 353.8 | -4,718.5 | 4,465.3 | 4,419.0 | 46.25 | 96.545 | |
| 2,300.0 | 2,260.2 | 2,260.2 | 2,260.2 | 7.4 | 44.9 | -1.45 | 353.8 | -4,718.5 | 4,452.4 | 4,405.4 | 46.99 | 94.744 | |
| 2,362.2 | 2,318.3 | 2,318.3 | 2,318.3 | 7.9 | 46.0 | -1.45 | 353.8 | -4,718.5 | 4,430.2 | 4,381.9 | 48.27 | 91.779 | |
| 2,400.0 | 2,353.6 | 2,353.6 | 2,353.6 | 8.1 | 46.7 | -1.46 | 353.8 | -4,718.5 | 4,416.7 | 4,367.7 | 49.05 | 90.051 | |
| 2,460.6 | 2,410.3 | 2,410.3 | 2,410.3 | 8.6 | 47.9 | -1.47 | 353.8 | -4,718.5 | 4,395.1 | 4,344.8 | 50.29 | 87.389 | |
| 2,500.0 | 2,447.0 | 2,447.0 | 2,447.0 | 8.9 | 48.6 | -1.47 | 353.8 | -4,718.5 | 4,381.0 | 4,329.9 | 51.10 | 85.728 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,502.2 | 2,502.2 | 9.3 | 49.7 | -1.48 | 353.8 | -4,718.5 | 4,360.0 | 4,307.7 | 52.32 | 83.331 | |
| 2,600.0 | 2,540.5 | 2,540.5 | 2,540.5 | 9.6 | 50.5 | -1.48 | 353.8 | -4,718.5 | 4,345.4 | 4,292.2 | 53.17 | 81.733 | |
| 2,657.5 | 2,594.2 | 2,594.2 | 2,594.2 | 10.0 | 51.6 | -1.49 | 353.8 | -4,718.5 | 4,324.9 | 4,270.5 | 54.35 | 79.571 | |
| 2,700.0 | 2,633.9 | 2,633.9 | 2,633.9 | 10.3 | 52.4 | -1.50 | 353.8 | -4,718.5 | 4,309.7 | 4,254.5 | 55.23 | 78.032 | |
| 2,755.9 | 2,686.1 | 2,686.1 | 2,686.1 | 10.7 | 53.4 | -1.50 | 353.8 | -4,718.5 | 4,289.8 | 4,233.4 | 56.39 | 76.079 | |
| 2,800.0 | 2,727.3 | 2,727.3 | 2,727.3 | 11.0 | 54.3 | -1.51 | 353.8 | -4,718.5 | 4,274.1 | 4,216.8 | 57.30 | 74.593 | |
| 2,854.3 | 2,778.1 | 2,778.1 | 2,778.1 | 11.4 | 55.3 | -1.51 | 353.8 | -4,718.5 | 4,254.7 | 4,196.3 | 58.42 | 72.826 | |
| 2,900.0 | 2,820.7 | 2,820.7 | 2,820.7 | 11.8 | 56.1 | -1.52 | 353.8 | -4,718.5 | 4,238.4 | 4,179.0 | 59.37 | 71.391 | |
| 2,952.7 | 2,870.0 | 2,870.0 | 2,870.0 | 12.2 | 57.1 | -1.53 | 353.8 | -4,718.5 | 4,219.6 | 4,159.1 | 60.46 | 69.790 | |
| 3,000.0 | 2,914.2 | 2,914.2 | 2,914.2 | 12.5 | 58.0 | -1.53 | 353.8 | -4,718.5 | 4,202.7 | 4,141.3 | 61.44 | 68.403 | |
| 3,051.2 | 2,962.0 | 2,962.0 | 2,962.0 | 12.9 | 59.0 | -1.54 | 353.8 | -4,718.5 | 4,184.5 | 4,122.0 | 62.50 | 66.949 | |
| 3,100.0 | 3,007.6 | 3,007.6 | 3,007.6 | 13.3 | 59.9 | -1.55 | 353.8 | -4,718.5 | 4,167.1 | 4,103.6 | 63.52 | 65.607 | |
| 3,149.6 | 3,053.9 | 3,053.9 | 3,053.9 | 13.6 | 60.8 | -1.55 | 353.8 | -4,718.5 | 4,149.4 | 4,084.9 | 64.55 | 64.287 | |
| 3,200.0 | 3,101.0 | 3,101.0 | 3,101.0 | 14.0 | 61.8 | -1.56 | 353.8 | -4,718.5 | 4,131.4 | 4,065.8 | 65.59 | 62.987 | |
| 3,248.0 | 3,145.9 | 3,145.9 | 3,145.9 | 14.4 | 62.7 | -1.57 | 353.8 | -4,718.5 | 4,114.3 | 4,047.7 | 66.59 | 61.786 | |
| 3,300.0 | 3,194.4 | 3,194.4 | 3,194.4 | 14.8 | 63.6 | -1.57 | 353.8 | -4,718.5 | 4,095.8 | 4,028.1 | 67.67 | 60.527 | |
| 3,346.4 | 3,237.8 | 3,237.8 | 3,237.8 | 15.1 | 64.5 | -1.58 | 353.8 | -4,718.5 | 4,079.2 | 4,010.6 | 68.63 | 59.434 | |
| 3,400.0 | 3,287.8 | 3,287.8 | 3,287.8 | 15.5 | 65.5 | -1.59 | 353.8 | -4,718.5 | 4,060.1 | 3,990.4 | 69.75 | 58.211 | |
| 3,444.9 | 3,329.8 | 3,329.8 | 3,329.8 | 15.9 | 66.4 | -1.59 | 353.8 | -4,718.5 | 4,044.1 | 3,973.4 | 70.68 | 57.216 | |
| 3,500.0 | 3,381.3 | 3,381.3 | 3,381.3 | 16.3 | 67.4 | -1.60 | 353.8 | -4,718.5 | 4,024.4 | 3,952.6 | 71.83 | 56.029 | |
| 3,543.3 | 3,421.7 | 3,421.7 | 3,421.7 | 16.6 | 68.2 | -1.61 | 353.8 | -4,718.5 | 4,009.0 | 3,936.3 | 72.73 | 55.123 | |
| 3,600.0 | 3,474.7 | 3,474.7 | 3,474.7 | 17.0 | 69.3 | -1.62 | 353.8 | -4,718.5 | 3,988.8 | 3,914.9 | 73.91 | 53.969 | |
| 3,641.7 | 3,513.7 | 3,513.7 | 3,513.7 | 17.3 | 70.1 | -1.62 | 353.8 | -4,718.5 | 3,973.9 | 3,899.1 | 74.78 | 53.143 | |
| 3,700.0 | 3,568.1 | 3,568.1 | 3,568.1 | 17.8 | 71.2 | -1.63 | 353.8 | -4,718.5 | 3,953.1 | 3,877.1 | 75.99 | 52.021 | |
| 3,740.1 | 3,605.6 | 3,605.6 | 3,605.6 | 18.1 | 71.9 | -1.64 | 353.8 | -4,718.5 | 3,938.8 | 3,862.0 | 76.83 | 51.268 | |
| 3,800.0 | 3,661.5 | 3,661.5 | 3,661.5 | 18.5 | 73.0 | -1.64 | 353.8 | -4,718.5 | 3,917.5 | 3,839.4 | 78.07 | 50.177 | |
| 3,838.6 | 3,697.6 | 3,697.6 | 3,697.6 | 18.8 | 73.8 | -1.65 | 353.8 | -4,718.5 | 3,903.7 | 3,824.8 | 78.88 | 49.491 | |
| 3,900.0 | 3,754.9 | 3,754.9 | 3,754.9 | 19.3 | 74.9 | -1.66 | 353.8 | -4,718.5 | 3,881.8 | 3,801.6 | 80.16 | 48.427 | |
| 3,937.0 | 3,789.5 | 3,789.5 | 3,789.5 | 19.6 | 75.6 | -1.67 | 353.8 | -4,718.5 | 3,868.6 | 3,787.7 | 80.93 | 47.803 | |
| 4,000.0 | 3,848.4 | 3,848.4 | 3,848.4 | 20.1 | 76.8 | -1.68 | 353.8 | -4,718.5 | 3,846.1 | 3,763.9 | 82.24 | 46.766 | |
| 4,035.4 | 3,881.5 | 3,881.5 | 3,881.5 | 20.3 | 77.5 | -1.68 | 353.8 | -4,718.5 | 3,833.5 | 3,750.5 | 82.98 | 46.198 | |
| 4,100.0 | 3,941.8 | 3,941.8 | 3,941.8 | 20.8 | 78.7 | -1.69 | 353.8 | -4,718.5 | 3,810.5 | 3,726.2 | 84.33 | 45.187 | |
| 4,133.8 | 3,973.4 | 3,973.4 | 3,973.4 | 21.1 | 79.3 | -1.70 | 353.8 | -4,718.5 | 3,798.4 | 3,713.4 | 85.03 | 44.670 | |
| 4,200.0 | 4,035.2 | 4,035.2 | 4,035.2 | 21.6 | 80.6 | -1.71 | 353.8 | -4,718.5 | 3,774.8 | 3,688.4 | 86.41 | 43.684 | |
| 4,232.3 | 4,065.4 | 4,065.4 | 4,065.4 | 21.8 | 81.2 | -1.71 | 353.8 | -4,718.5 | 3,763.3 | 3,676.2 | 87.09 | 43.214 | |
| 4,300.0 | 4,128.6 | 4,128.6 | 4,128.6 | 22.3 | 82.4 | -1.72 | 353.8 | -4,718.5 | 3,739.2 | 3,650.7 | 88.50 | 42.251 | |
| 4,330.7 | 4,157.3 | 4,157.3 | 4,157.3 | 22.6 | 83.0 | -1.73 | 353.8 | -4,718.5 | 3,728.2 | 3,639.1 | 89.14 | 41.825 | |
| 4,400.0 | 4,222.0 | 4,222.0 | 4,222.0 | 23.1 | 84.3 | -1.74 | 353.8 | -4,718.5 | 3,703.5 | 3,612.9 | 90.59 | 40.884 | |
| 4,429.1 | 4,249.3 | 4,249.3 | 4,249.3 | 23.3 | 84.9 | -1.74 | 353.8 | -4,718.5 | 3,693.1 | 3,601.9 | 91.19 | 40.498 | |
| 4,500.0 | 4,315.5 | 4,315.5 | 4,315.5 | 23.9 | 86.2 | -1.76 | 353.8 | -4,718.5 | 3,667.9 | 3,575.2 | 92.67 | 39.579 | |
| 4,527.5 | 4,341.2 | 4,341.2 | 4,341.2 | 24.1 | 86.7 | -1.76 | 353.8 | -4,718.5 | 3,658.0 | 3,564.8 | 93.25 | 39.229 | |
| 4,600.0 | 4,408.9 | 4,408.9 | 4,408.9 | 24.6 | 88.1 | -1.77 | 353.8 | -4,718.5 | 3,632.2 | 3,537.4 | 94.76 | 38.331 | |
| 4,626.0 | 4,433.2 | 4,433.2 | 4,433.2 | 24.8 | 88.6 | -1.78 | 353.8 | -4,718.5 | 3,622.9 | 3,527.6 | 95.30 | 38.015 | |
| 4,700.0 | 4,502.3 | 4,502.3 | 4,502.3 | 25.4 | 90.0 | -1.79 | 353.8 | -4,718.5 | 3,596.5 | 3,499.7 | 96.85 | 37.136 | |
| 4,724.4 | 4,525.1 | 4,525.1 | 4,525.1 | 25.6 | 90.4 | -1.80 | 353.8 | -4,718.5 | 3,587.8 | 3,490.5 | 97.36 | 36.852 | |
| 4,800.0 | 4,595.7 | 4,595.7 | 4,595.7 | 26.2 | 91.8 | -1.81 | 353.8 | -4,718.5 | 3,560.9 | 3,462.0 | 98.94 | 35.992 | |
| 4,822.8 | 4,617.1 | 4,617.1 | 4,617.1 | 26.3 | 92.3 | -1.81 | 353.8 | -4,718.5 | 3,552.8 | 3,453.3 | 99.41 | 35.737 | |
| 4,900.0 | 4,689.2 | 4,689.2 | 4,689.2 | 26.9 | 93.7 | -1.83 | 353.8 | -4,718.5 | 3,525.2 | 3,424.2 | 101.02 | 34.895 | |
| 4,921.2 | 4,709.0 | 4,709.0 | 4,709.0 | 27.1 | 94.1 | -1.83 | 353.8 | -4,718.5 | 3,517.7 | 3,416.2 | 101.47 | 34.667 | |
| 5,000.0 | 4,782.6 | 4,782.6 | 4,782.6 | 27.7 | 95.6 | -1.85 | 353.8 | -4,718.5 | 3,489.6 | 3,386.5 | 103.11 | 33.842 | |
| 5,019.7 | 4,801.0 | 4,801.0 | 4,801.0 | 27.8 | 96.0 | -1.85 | 353.8 | -4,718.5 | 3,482.6 | 3,379.0 | 103.53 | 33.640 | |
| 5,100.0 | 4,876.0 | 4,876.0 | 4,876.0 | 28.4 | 97.5 | -1.87 | 353.8 | -4,718.5 | 3,453.9 | 3,348.7 | 105.20 | 32.831 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,892.9 | 4,892.9 | 28.6 | 97.8 | -1.87 | 353.8 | -4,718.5 | 3,447.5 | 3,341.9 | 105.58 | 32.652 | |
| 5,159.9 | 4,932.0 | 4,932.0 | 4,932.0 | 28.9 | 98.6 | -1.88 | 353.8 | -4,718.5 | 3,432.6 | 3,326.1 | 106.46 | 32.244 | |
| 5,200.0 | 4,969.5 | 4,969.5 | 4,969.5 | 29.2 | 99.3 | -1.88 | 353.8 | -4,718.5 | 3,418.5 | 3,310.7 | 107.78 | 31.717 | |
| 5,216.5 | 4,985.1 | 4,985.1 | 4,985.1 | 29.3 | 99.7 | -1.87 | 353.8 | -4,718.5 | 3,412.9 | 3,304.6 | 108.32 | 31.507 | |
| 5,300.0 | 5,064.0 | 5,064.0 | 5,064.0 | 29.7 | 101.2 | -1.87 | 353.8 | -4,718.5 | 3,385.8 | 3,274.8 | 111.02 | 30.496 | |
| 5,314.9 | 5,078.2 | 5,078.2 | 5,078.2 | 29.8 | 101.5 | -1.87 | 353.8 | -4,718.5 | 3,381.2 | 3,269.7 | 111.50 | 30.325 | |
| 5,400.0 | 5,159.6 | 5,159.6 | 5,159.6 | 30.2 | 103.2 | -1.87 | 353.8 | -4,718.5 | 3,356.4 | 3,242.3 | 114.18 | 29.396 | |
| 5,413.4 | 5,172.4 | 5,172.4 | 5,172.4 | 30.3 | 103.4 | -1.87 | 353.8 | -4,718.5 | 3,352.8 | 3,238.2 | 114.59 | 29.258 | |
| 5,500.0 | 5,256.1 | 5,256.1 | 5,256.1 | 30.7 | 105.1 | -1.86 | 353.8 | -4,718.5 | 3,330.4 | 3,213.2 | 117.24 | 28.407 | |
| 5,511.8 | 5,267.6 | 5,267.6 | 5,267.6 | 30.7 | 105.3 | -1.86 | 353.8 | -4,718.5 | 3,327.6 | 3,210.0 | 117.59 | 28.297 | |
| 5,600.0 | 5,353.5 | 5,353.5 | 5,353.5 | 31.1 | 107.1 | -1.86 | 353.8 | -4,718.5 | 3,307.8 | 3,187.6 | 120.19 | 27.520 | |
| 5,610.2 | 5,363.5 | 5,363.5 | 5,363.5 | 31.1 | 107.3 | -1.86 | 353.8 | -4,718.5 | 3,305.6 | 3,185.2 | 120.49 | 27.435 | |
| 5,700.0 | 5,451.6 | 5,451.6 | 5,451.6 | 31.4 | 109.0 | -1.86 | 353.8 | -4,718.5 | 3,288.5 | 3,165.5 | 123.03 | 26.729 | |
| 5,708.6 | 5,460.2 | 5,460.2 | 5,460.2 | 31.4 | 109.2 | -1.86 | 353.8 | -4,718.5 | 3,287.0 | 3,163.8 | 123.27 | 26.665 | |
| 5,800.0 | 5,550.4 | 5,550.4 | 5,550.4 | 31.7 | 111.0 | -1.86 | 353.8 | -4,718.5 | 3,272.7 | 3,147.0 | 125.74 | 26.027 | |
| 5,807.1 | 5,557.4 | 5,557.4 | 5,557.4 | 31.7 | 111.2 | -1.86 | 353.8 | -4,718.5 | 3,271.7 | 3,145.8 | 125.93 | 25.980 | |
| 5,900.0 | 5,649.6 | 5,649.6 | 5,649.6 | 31.9 | 113.0 | -1.86 | 353.8 | -4,718.5 | 3,260.4 | 3,132.1 | 128.32 | 25.408 | |
| 5,905.5 | 5,655.1 | 5,655.1 | 5,655.1 | 31.9 | 113.1 | -1.86 | 353.8 | -4,718.5 | 3,259.8 | 3,131.3 | 128.46 | 25.377 | |
| 6,000.0 | 5,749.2 | 5,749.2 | 5,749.2 | 32.1 | 115.0 | -1.86 | 353.8 | -4,718.5 | 3,251.5 | 3,120.8 | 130.75 | 24.868 | |
| 6,003.9 | 5,753.1 | 5,753.1 | 5,753.1 | 32.1 | 115.1 | -1.86 | 353.8 | -4,718.5 | 3,251.2 | 3,120.4 | 130.84 | 24.849 | |
| 6,100.0 | 5,849.1 | 5,849.1 | 5,849.1 | 32.3 | 117.0 | -1.86 | 353.8 | -4,718.5 | 3,246.1 | 3,113.1 | 133.02 | 24.403 | |
| 6,102.3 | 5,851.4 | 5,851.4 | 5,851.4 | 32.3 | 117.1 | -1.86 | 353.8 | -4,718.5 | 3,246.0 | 3,112.9 | 133.07 | 24.393 | |
| 6,200.8 | 5,949.8 | 5,949.8 | 5,949.8 | 32.4 | 119.1 | -1.86 | 353.8 | -4,718.5 | 3,244.2 | 3,109.0 | 135.14 | 24.005 | |
| 6,204.9 | 5,953.9 | 5,953.9 | 5,953.9 | 32.4 | 119.1 | -86.30 | 353.8 | -4,718.5 | 3,244.2 | 3,092.7 | 151.50 | 21.413 | |
| 6,234.9 | 5,983.9 | 5,983.9 | 5,983.9 | 32.4 | 119.7 | -86.30 | 353.8 | -4,718.5 | 3,244.2 | 3,092.1 | 152.13 | 21.325 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 5,999.0 | 5,999.0 | 32.4 | 120.1 | -176.29 | 353.8 | -4,718.5 | 3,244.3 | 3,108.3 | 136.09 | 23.840 | |
| 6,299.2 | 6,048.2 | 6,048.2 | 6,048.2 | 32.4 | 121.0 | -176.28 | 353.8 | -4,718.5 | 3,247.1 | 3,110.7 | 136.34 | 23.816 | |
| 6,300.0 | 6,048.9 | 6,048.9 | 6,048.9 | 32.4 | 121.1 | -176.28 | 353.8 | -4,718.5 | 3,247.1 | 3,110.8 | 136.34 | 23.816 | |
| 6,350.0 | 6,098.5 | 6,098.5 | 6,098.5 | 32.4 | 122.1 | -176.26 | 353.8 | -4,718.5 | 3,253.4 | 3,117.5 | 135.91 | 23.937 | |
| 6,397.6 | 6,145.3 | 6,145.3 | 6,145.3 | 32.3 | 123.0 | -176.22 | 353.8 | -4,718.5 | 3,262.6 | 3,127.7 | 134.86 | 24.192 | |
| 6,400.0 | 6,147.6 | 6,147.6 | 6,147.6 | 32.3 | 123.0 | -176.22 | 353.8 | -4,718.5 | 3,263.1 | 3,128.3 | 134.79 | 24.208 | |
| 6,450.0 | 6,195.8 | 6,195.8 | 6,195.8 | 32.2 | 124.0 | -176.16 | 353.8 | -4,718.5 | 3,276.2 | 3,143.2 | 132.98 | 24.637 | |
| 6,496.0 | 6,239.3 | 6,239.3 | 6,239.3 | 32.1 | 124.9 | -176.09 | 353.8 | -4,718.5 | 3,291.2 | 3,160.5 | 130.69 | 25.183 | |
| 6,500.0 | 6,243.0 | 6,243.0 | 6,243.0 | 32.1 | 125.0 | -176.09 | 353.8 | -4,718.5 | 3,292.6 | 3,162.1 | 130.47 | 25.237 | |
| 6,550.0 | 6,289.0 | 6,289.0 | 6,289.0 | 32.0 | 125.9 | -175.99 | 353.8 | -4,718.5 | 3,312.3 | 3,185.0 | 127.27 | 26.026 | |
| 6,594.5 | 6,328.6 | 6,328.6 | 6,328.6 | 31.8 | 126.7 | -175.89 | 353.8 | -4,718.5 | 3,332.4 | 3,208.6 | 123.86 | 26.905 | |
| 6,600.0 | 6,333.4 | 6,333.4 | 6,333.4 | 31.8 | 126.8 | -175.87 | 353.8 | -4,718.5 | 3,335.1 | 3,211.7 | 123.40 | 27.027 | |
| 6,650.0 | 6,376.2 | 6,376.2 | 6,376.2 | 31.7 | 127.6 | -175.73 | 353.8 | -4,718.5 | 3,360.9 | 3,242.1 | 118.88 | 28.273 | |
| 6,692.9 | 6,411.3 | 6,411.3 | 6,411.3 | 31.6 | 128.3 | -175.58 | 353.8 | -4,718.5 | 3,385.5 | 3,271.0 | 114.50 | 29.568 | |
| 6,700.0 | 6,417.0 | 6,417.0 | 6,417.0 | 31.5 | 128.5 | -175.55 | 353.8 | -4,718.5 | 3,389.7 | 3,276.0 | 113.73 | 29.805 | |
| 6,750.0 | 6,455.7 | 6,455.7 | 6,455.7 | 31.4 | 129.2 | -175.33 | 353.8 | -4,718.5 | 3,421.3 | 3,313.3 | 108.01 | 31.676 | |
| 6,791.3 | 6,486.0 | 6,486.0 | 6,486.0 | 31.3 | 129.8 | -175.12 | 353.8 | -4,718.5 | 3,449.3 | 3,346.4 | 102.88 | 33.527 | |
| 6,800.0 | 6,492.2 | 6,492.2 | 6,492.2 | 31.3 | 130.0 | -175.07 | 353.8 | -4,718.5 | 3,455.4 | 3,353.7 | 101.76 | 33.955 | |
| 6,850.0 | 6,526.1 | 6,526.1 | 6,526.1 | 31.2 | 130.7 | -174.74 | 353.8 | -4,718.5 | 3,492.1 | 3,397.0 | 95.07 | 36.732 | |
| 6,889.7 | 6,551.2 | 6,551.2 | 6,551.2 | 31.2 | 131.2 | -174.42 | 353.8 | -4,718.5 | 3,522.8 | 3,433.3 | 89.49 | 39.365 | |
| 6,900.0 | 6,557.4 | 6,557.4 | 6,557.4 | 31.2 | 131.3 | -174.33 | 353.8 | -4,718.5 | 3,530.9 | 3,442.9 | 88.02 | 40.115 | |
| 6,950.0 | 6,586.0 | 6,586.0 | 6,586.0 | 31.1 | 131.9 | -173.80 | 353.8 | -4,718.5 | 3,571.9 | 3,491.2 | 80.75 | 44.234 | |
| 6,988.2 | 6,605.8 | 6,605.8 | 6,605.8 | 31.2 | 132.3 | -173.30 | 353.8 | -4,718.5 | 3,604.5 | 3,529.4 | 75.16 | 47.959 | |
| 7,000.0 | 6,611.5 | 6,611.5 | 6,611.5 | 31.2 | 132.4 | -173.12 | 353.8 | -4,718.5 | 3,614.8 | 3,541.4 | 73.44 | 49.225 | |
| 7,050.0 | 6,634.1 | 6,634.1 | 6,634.1 | 31.2 | 132.8 | -172.20 | 353.8 | -4,718.5 | 3,659.4 | 3,593.0 | 66.34 | 55.157 | |
| 7,086.6 | 6,648.6 | 6,648.6 | 6,648.6 | 31.3 | 133.1 | -171.32 | 353.8 | -4,718.5 | 3,692.9 | 3,631.4 | 61.55 | 59.997 | |
| 7,100.0 | 6,653.4 | 6,653.4 | 6,653.4 | 31.4 | 133.2 | -170.93 | 353.8 | -4,718.5 | 3,705.4 | 3,645.4 | 59.94 | 61.814 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,669.5 | 6,669.5 | 31.6 | 133.5 | -169.03 | 353.8 | -4,718.5 | 3,752.6 | 3,697.4 | 55.20 | 67.988 | |
| 7,185.0 | 6,678.8 | 6,678.8 | 6,678.8 | 31.7 | 133.7 | -167.07 | 353.8 | -4,718.5 | 3,786.3 | 3,732.4 | 53.95 | 70.177 | |
| 7,200.0 | 6,682.3 | 6,682.3 | 6,682.3 | 31.8 | 133.8 | -165.98 | 353.8 | -4,718.5 | 3,800.9 | 3,746.6 | 54.32 | 69.972 | |
| 7,250.0 | 6,691.6 | 6,691.6 | 6,691.6 | 32.1 | 134.0 | -160.34 | 353.8 | -4,718.5 | 3,849.9 | 3,787.4 | 62.50 | 61.602 | |
| 7,283.4 | 6,696.0 | 6,696.0 | 6,696.0 | 32.3 | 134.1 | -153.05 | 353.8 | -4,718.5 | 3,883.0 | 3,804.4 | 78.66 | 49.366 | |
| 7,300.0 | 6,697.5 | 6,697.5 | 6,697.5 | 32.4 | 134.1 | -147.13 | 353.8 | -4,718.5 | 3,899.5 | 3,807.1 | 92.41 | 42.196 | |
| 7,350.0 | 6,699.9 | 6,699.9 | 6,699.9 | 32.8 | 134.1 | -104.34 | 353.8 | -4,718.5 | 3,949.4 | 3,787.7 | 161.67 | 24.429 | |
| 7,364.4 | 6,700.0 | 6,700.0 | 6,700.0 | 32.9 | 134.1 | -83.01 | 353.8 | -4,718.5 | 3,963.7 | 3,797.8 | 165.88 | 23.896 | |
| 7,381.9 | 6,699.9 | 6,699.9 | 6,699.9 | 33.1 | 134.1 | -82.98 | 353.8 | -4,718.5 | 3,981.2 | 3,815.2 | 166.01 | 23.981 | |
| 7,400.0 | 6,699.8 | 6,699.8 | 6,699.8 | 33.2 | 134.1 | -82.95 | 353.8 | -4,718.5 | 3,999.3 | 3,833.1 | 166.16 | 24.069 | |
| 7,480.3 | 6,699.2 | 6,699.2 | 6,699.2 | 34.0 | 134.1 | -82.81 | 353.8 | -4,718.5 | 4,079.5 | 3,912.6 | 166.91 | 24.441 | |
| 7,500.0 | 6,699.1 | 6,699.1 | 6,699.1 | 34.2 | 134.1 | -82.78 | 353.8 | -4,718.5 | 4,099.1 | 3,932.1 | 167.09 | 24.532 | |
| 7,578.7 | 6,698.6 | 6,698.6 | 6,698.6 | 35.2 | 134.1 | -82.64 | 353.8 | -4,718.5 | 4,177.8 | 4,009.8 | 167.98 | 24.871 | |
| 7,600.0 | 6,698.5 | 6,698.5 | 6,698.5 | 35.4 | 134.1 | -82.60 | 353.8 | -4,718.5 | 4,199.0 | 4,030.8 | 168.22 | 24.962 | |
| 7,677.1 | 6,698.0 | 6,698.0 | 6,698.0 | 36.5 | 134.1 | -82.47 | 353.8 | -4,718.5 | 4,276.1 | 4,106.9 | 169.22 | 25.270 | |
| 7,700.0 | 6,697.8 | 6,697.8 | 6,697.8 | 36.8 | 134.1 | -82.43 | 353.8 | -4,718.5 | 4,298.9 | 4,129.4 | 169.51 | 25.360 | |
| 7,775.6 | 6,697.3 | 6,697.3 | 6,697.3 | 38.0 | 134.1 | -82.30 | 353.8 | -4,718.5 | 4,374.4 | 4,203.8 | 170.61 | 25.640 | |
| 7,800.0 | 6,697.2 | 6,697.2 | 6,697.2 | 38.3 | 134.1 | -82.25 | 353.8 | -4,718.5 | 4,398.8 | 4,227.8 | 170.96 | 25.730 | |
| 7,874.0 | 6,696.7 | 6,696.7 | 6,696.7 | 39.6 | 134.1 | -82.13 | 353.8 | -4,718.5 | 4,472.7 | 4,300.6 | 172.13 | 25.984 | |
| 7,900.0 | 6,696.5 | 6,696.5 | 6,696.5 | 40.0 | 134.1 | -82.08 | 353.8 | -4,718.5 | 4,498.7 | 4,326.1 | 172.54 | 26.073 | |
| 7,972.4 | 6,696.1 | 6,696.1 | 6,696.1 | 41.3 | 134.1 | -81.95 | 353.8 | -4,718.5 | 4,571.0 | 4,397.2 | 173.78 | 26.304 | |
| 8,000.0 | 6,695.9 | 6,695.9 | 6,695.9 | 41.8 | 134.1 | -81.91 | 353.8 | -4,718.5 | 4,598.6 | 4,424.3 | 174.24 | 26.391 | |
| 8,070.8 | 6,695.4 | 6,695.4 | 6,695.4 | 43.1 | 134.1 | -81.78 | 353.8 | -4,718.5 | 4,669.3 | 4,493.8 | 175.52 | 26.602 | |
| 8,100.0 | 6,695.2 | 6,695.2 | 6,695.2 | 43.7 | 134.1 | -81.73 | 353.8 | -4,718.5 | 4,698.5 | 4,522.4 | 176.05 | 26.688 | |
| 8,169.3 | 6,694.8 | 6,694.8 | 6,694.8 | 45.1 | 134.0 | -81.61 | 353.8 | -4,718.5 | 4,767.7 | 4,590.3 | 177.36 | 26.881 | |
| 8,200.0 | 6,694.6 | 6,694.6 | 6,694.6 | 45.7 | 134.0 | -81.56 | 353.8 | -4,718.5 | 4,798.4 | 4,620.4 | 177.94 | 26.966 | |
| 8,267.7 | 6,694.1 | 6,694.1 | 6,694.1 | 47.1 | 134.0 | -81.44 | 353.8 | -4,718.5 | 4,866.0 | 4,686.7 | 179.28 | 27.143 | |
| 8,300.0 | 6,693.9 | 6,693.9 | 6,693.9 | 47.8 | 134.0 | -81.39 | 353.8 | -4,718.5 | 4,898.3 | 4,718.3 | 179.91 | 27.226 | |
| 8,366.1 | 6,693.5 | 6,693.5 | 6,693.5 | 49.2 | 134.0 | -81.27 | 353.8 | -4,718.5 | 4,964.3 | 4,783.1 | 181.26 | 27.388 | |
| 8,400.0 | 6,693.3 | 6,693.3 | 6,693.3 | 49.9 | 134.0 | -81.21 | 353.8 | -4,718.5 | 4,998.2 | 4,816.2 | 181.95 | 27.470 | |
| 8,464.5 | 6,692.9 | 6,692.9 | 6,692.9 | 51.4 | 134.0 | -81.10 | 353.8 | -4,718.5 | 5,062.7 | 4,879.4 | 183.30 | 27.619 | |
| 8,500.0 | 6,692.6 | 6,692.6 | 6,692.6 | 52.1 | 134.0 | -81.04 | 353.8 | -4,718.5 | 5,098.1 | 4,914.0 | 184.05 | 27.700 | |
| 8,563.0 | 6,692.2 | 6,692.2 | 6,692.2 | 53.6 | 134.0 | -80.93 | 353.8 | -4,718.5 | 5,161.0 | 4,975.6 | 185.40 | 27.837 | |
| 8,600.0 | 6,692.0 | 6,692.0 | 6,692.0 | 54.4 | 134.0 | -80.87 | 353.8 | -4,718.5 | 5,198.0 | 5,011.8 | 186.19 | 27.917 | |
| 8,661.4 | 6,691.6 | 6,691.6 | 6,691.6 | 55.8 | 134.0 | -80.76 | 353.8 | -4,718.5 | 5,259.3 | 5,071.8 | 187.54 | 28.044 | |
| 8,700.0 | 6,691.3 | 6,691.3 | 6,691.3 | 56.7 | 134.0 | -80.69 | 353.8 | -4,718.5 | 5,297.9 | 5,109.5 | 188.38 | 28.123 | |
| 8,759.8 | 6,690.9 | 6,690.9 | 6,690.9 | 58.1 | 134.0 | -80.59 | 353.8 | -4,718.5 | 5,357.7 | 5,168.0 | 189.72 | 28.240 | |
| 8,800.0 | 6,690.7 | 6,690.7 | 6,690.7 | 59.1 | 134.0 | -80.52 | 353.8 | -4,718.5 | 5,397.8 | 5,207.2 | 190.61 | 28.318 | |
| 8,858.2 | 6,690.3 | 6,690.3 | 6,690.3 | 60.5 | 134.0 | -80.42 | 353.8 | -4,718.5 | 5,456.0 | 5,264.1 | 191.93 | 28.427 | |
| 8,900.0 | 6,690.0 | 6,690.0 | 6,690.0 | 61.5 | 133.9 | -80.35 | 353.8 | -4,718.5 | 5,497.8 | 5,304.9 | 192.88 | 28.504 | |
| 8,956.7 | 6,689.7 | 6,689.7 | 6,689.7 | 62.9 | 133.9 | -80.25 | 353.8 | -4,718.5 | 5,554.4 | 5,360.2 | 194.18 | 28.605 | |
| 9,000.0 | 6,689.4 | 6,689.4 | 6,689.4 | 63.9 | 133.9 | -80.18 | 353.8 | -4,718.5 | 5,597.7 | 5,402.5 | 195.17 | 28.681 | |
| 9,055.1 | 6,689.0 | 6,689.0 | 6,689.0 | 65.3 | 133.9 | -80.08 | 353.8 | -4,718.5 | 5,652.7 | 5,456.3 | 196.45 | 28.775 | |
| 9,100.0 | 6,688.7 | 6,688.7 | 6,688.7 | 66.4 | 133.9 | -80.00 | 353.8 | -4,718.5 | 5,697.6 | 5,500.1 | 197.49 | 28.850 | |
| 9,153.5 | 6,688.4 | 6,688.4 | 6,688.4 | 67.7 | 133.9 | -79.91 | 353.8 | -4,718.5 | 5,751.1 | 5,552.4 | 198.74 | 28.937 | |
| 9,200.0 | 6,688.1 | 6,688.1 | 6,688.1 | 68.9 | 133.9 | -79.83 | 353.8 | -4,718.5 | 5,797.5 | 5,597.7 | 199.83 | 29.012 | |
| 9,251.9 | 6,687.8 | 6,687.8 | 6,687.8 | 70.2 | 133.9 | -79.74 | 353.8 | -4,718.5 | 5,849.5 | 5,648.4 | 201.06 | 29.094 | |
| 9,300.0 | 6,687.4 | 6,687.4 | 6,687.4 | 71.4 | 133.9 | -79.66 | 353.8 | -4,718.5 | 5,897.5 | 5,695.3 | 202.19 | 29.168 | |
| 9,350.4 | 6,687.1 | 6,687.1 | 6,687.1 | 72.7 | 133.9 | -79.57 | 353.8 | -4,718.5 | 5,947.8 | 5,744.4 | 203.39 | 29.244 | |
| 9,400.0 | 6,686.8 | 6,686.8 | 6,686.8 | 73.9 | 133.9 | -79.49 | 353.8 | -4,718.5 | 5,997.4 | 5,792.8 | 204.57 | 29.317 | |
| 9,448.8 | 6,686.5 | 6,686.5 | 6,686.5 | 75.2 | 133.9 | -79.40 | 353.8 | -4,718.5 | 6,046.2 | 5,840.4 | 205.74 | 29.388 | |
| 9,500.0 | 6,686.1 | 6,686.1 | 6,686.1 | 76.5 | 133.9 | -79.32 | 353.8 | -4,718.5 | 6,097.3 | 5,890.4 | 206.96 | 29.462 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT BRIGHT DUNN #18D - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,685.8 | 6,685.8 | 77.7 | 133.9 | -79.24 | 353.8 | -4,718.5 | 6,144.5 | 5,936.4 | 208.10 | 29.527 | |
| 9,600.0 | 6,685.5 | 6,685.5 | 6,685.5 | 79.0 | 133.9 | -79.15 | 353.8 | -4,718.5 | 6,197.3 | 5,987.9 | 209.36 | 29.600 | |
| 9,645.6 | 6,685.2 | 6,685.2 | 6,685.2 | 80.2 | 133.9 | -79.07 | 353.8 | -4,718.5 | 6,242.9 | 6,032.4 | 210.47 | 29.662 | |
| 9,700.0 | 6,684.8 | 6,684.8 | 6,684.8 | 81.6 | 133.8 | -78.98 | 353.8 | -4,718.5 | 6,297.2 | 6,085.4 | 211.78 | 29.735 | |
| 9,744.1 | 6,684.6 | 6,684.6 | 6,684.6 | 82.8 | 133.8 | -78.90 | 353.8 | -4,718.5 | 6,341.3 | 6,128.4 | 212.85 | 29.792 | |
| 9,800.0 | 6,684.2 | 6,684.2 | 6,684.2 | 84.2 | 133.8 | -78.80 | 353.8 | -4,718.5 | 6,397.2 | 6,183.0 | 214.21 | 29.865 | |
| 9,842.5 | 6,683.9 | 6,683.9 | 6,683.9 | 85.3 | 133.8 | -78.73 | 353.8 | -4,718.5 | 6,439.6 | 6,224.4 | 215.24 | 29.918 | |
| 9,900.0 | 6,683.5 | 6,683.5 | 6,683.5 | 86.8 | 133.8 | -78.63 | 353.8 | -4,718.5 | 6,497.1 | 6,280.5 | 216.64 | 29.990 | |
| 9,940.9 | 6,683.3 | 6,683.3 | 6,683.3 | 87.9 | 133.8 | -78.56 | 353.8 | -4,718.5 | 6,538.0 | 6,320.4 | 217.64 | 30.040 | |
| 10,000.0 | 6,682.9 | 6,682.9 | 6,682.9 | 89.5 | 133.8 | -78.46 | 353.8 | -4,718.5 | 6,597.1 | 6,378.0 | 219.08 | 30.112 | |
| 10,039.3 | 6,682.6 | 6,682.6 | 6,682.6 | 90.5 | 133.8 | -78.40 | 353.8 | -4,718.5 | 6,636.4 | 6,416.3 | 220.05 | 30.159 | |
| 10,100.0 | 6,682.2 | 6,682.2 | 6,682.2 | 92.1 | 133.8 | -78.29 | 353.8 | -4,718.5 | 6,697.0 | 6,475.5 | 221.53 | 30.231 | |
| 10,137.8 | 6,682.0 | 6,682.0 | 6,682.0 | 93.1 | 133.8 | -78.23 | 353.8 | -4,718.5 | 6,734.8 | 6,512.3 | 222.46 | 30.275 | |
| 10,200.0 | 6,681.6 | 6,681.6 | 6,681.6 | 94.8 | 133.8 | -78.12 | 353.8 | -4,718.5 | 6,797.0 | 6,573.0 | 223.98 | 30.346 | |
| 10,236.2 | 6,681.4 | 6,681.4 | 6,681.4 | 95.7 | 133.8 | -78.06 | 353.8 | -4,718.5 | 6,833.1 | 6,608.3 | 224.87 | 30.387 | |
| 10,300.0 | 6,680.9 | 6,680.9 | 6,680.9 | 97.4 | 133.8 | -77.95 | 353.8 | -4,718.5 | 6,896.9 | 6,670.5 | 226.44 | 30.458 | |
| 10,334.6 | 6,680.7 | 6,680.7 | 6,680.7 | 98.3 | 133.8 | -77.89 | 353.8 | -4,718.5 | 6,931.5 | 6,704.2 | 227.29 | 30.496 | |
| 10,400.0 | 6,680.3 | 6,680.3 | 6,680.3 | 100.1 | 133.8 | -77.78 | 353.8 | -4,718.5 | 6,996.9 | 6,768.0 | 228.90 | 30.567 | |
| 10,433.0 | 6,680.1 | 6,680.1 | 6,680.1 | 101.0 | 133.7 | -77.73 | 353.8 | -4,718.5 | 7,029.9 | 6,800.2 | 229.71 | 30.603 | |
| 10,500.0 | 6,679.7 | 6,679.7 | 6,679.7 | 102.8 | 133.7 | -77.61 | 353.8 | -4,718.5 | 7,096.8 | 6,865.5 | 231.36 | 30.674 | |
| 10,531.5 | 6,679.4 | 6,679.4 | 6,679.4 | 103.6 | 133.7 | -77.56 | 353.8 | -4,718.5 | 7,128.3 | 6,896.1 | 232.14 | 30.707 | |
| 10,600.0 | 6,679.0 | 6,679.0 | 6,679.0 | 105.4 | 133.7 | -77.45 | 353.8 | -4,718.5 | 7,196.8 | 6,962.9 | 233.83 | 30.778 | |
| 10,629.9 | 6,678.8 | 6,678.8 | 6,678.8 | 106.2 | 133.7 | -77.40 | 353.8 | -4,718.5 | 7,226.7 | 6,992.1 | 234.57 | 30.809 | |
| 10,700.0 | 6,678.4 | 6,678.4 | 6,678.4 | 108.1 | 133.7 | -77.28 | 353.8 | -4,718.5 | 7,296.7 | 7,060.4 | 236.30 | 30.880 | |
| 10,728.3 | 6,678.2 | 6,678.2 | 6,678.2 | 108.9 | 133.7 | -77.23 | 353.8 | -4,718.5 | 7,325.0 | 7,088.0 | 237.00 | 30.908 | |
| 10,800.0 | 6,677.7 | 6,677.7 | 6,677.7 | 110.8 | 133.7 | -77.11 | 353.8 | -4,718.5 | 7,396.7 | 7,157.9 | 238.76 | 30.979 | |
| 10,826.7 | 6,677.5 | 6,677.5 | 6,677.5 | 111.5 | 133.7 | -77.06 | 353.8 | -4,718.5 | 7,423.4 | 7,184.0 | 239.42 | 31.005 | |
| 10,900.0 | 6,677.1 | 6,677.1 | 6,677.1 | 113.5 | 133.7 | -76.94 | 353.8 | -4,718.5 | 7,496.6 | 7,255.4 | 241.23 | 31.076 | |
| 10,925.2 | 6,676.9 | 6,676.9 | 6,676.9 | 114.2 | 133.7 | -76.90 | 353.8 | -4,718.5 | 7,521.8 | 7,280.0 | 241.85 | 31.101 | |
| 11,000.0 | 6,676.4 | 6,676.4 | 6,676.4 | 116.2 | 133.7 | -76.77 | 353.8 | -4,718.5 | 7,596.6 | 7,352.9 | 243.70 | 31.172 | |
| 11,023.6 | 6,676.3 | 6,676.3 | 6,676.3 | 116.8 | 133.7 | -76.73 | 353.8 | -4,718.5 | 7,620.2 | 7,375.9 | 244.28 | 31.194 | |
| 11,100.0 | 6,675.8 | 6,675.8 | 6,675.8 | 118.9 | 133.7 | -76.60 | 353.8 | -4,718.5 | 7,696.6 | 7,450.4 | 246.17 | 31.265 | |
| 11,122.0 | 6,675.6 | 6,675.6 | 6,675.6 | 119.5 | 133.7 | -76.57 | 353.8 | -4,718.5 | 7,718.6 | 7,471.9 | 246.71 | 31.285 | |
| 11,200.0 | 6,675.1 | 6,675.1 | 6,675.1 | 121.6 | 133.6 | -76.44 | 353.8 | -4,718.5 | 7,796.5 | 7,547.9 | 248.64 | 31.357 | |
| 11,220.4 | 6,675.0 | 6,675.0 | 6,675.0 | 122.2 | 133.6 | -76.40 | 353.8 | -4,718.5 | 7,817.0 | 7,567.8 | 249.14 | 31.375 | |
| 11,300.0 | 6,674.5 | 6,674.5 | 6,674.5 | 124.3 | 133.6 | -76.27 | 353.8 | -4,718.5 | 7,896.5 | 7,645.4 | 251.11 | 31.447 | |
| 11,318.9 | 6,674.3 | 6,674.3 | 6,674.3 | 124.9 | 133.6 | -76.24 | 353.8 | -4,718.5 | 7,915.4 | 7,663.8 | 251.57 | 31.464 | |
| 11,400.0 | 6,673.8 | 6,673.8 | 6,673.8 | 127.1 | 133.6 | -76.10 | 353.8 | -4,718.5 | 7,996.4 | 7,742.9 | 253.57 | 31.535 | |
| 11,417.3 | 6,673.7 | 6,673.7 | 6,673.7 | 127.5 | 133.6 | -76.07 | 353.8 | -4,718.5 | 8,013.7 | 7,759.7 | 254.00 | 31.550 | |
| 11,500.0 | 6,673.2 | 6,673.2 | 6,673.2 | 129.8 | 133.6 | -75.93 | 353.8 | -4,718.5 | 8,096.4 | 7,840.4 | 256.04 | 31.622 | |
| 11,515.7 | 6,673.1 | 6,673.1 | 6,673.1 | 130.2 | 133.6 | -75.91 | 353.8 | -4,718.5 | 8,112.1 | 7,855.7 | 256.42 | 31.636 | |
| 11,600.0 | 6,672.5 | 6,672.5 | 6,672.5 | 132.5 | 133.6 | -75.77 | 353.8 | -4,718.5 | 8,196.4 | 7,937.9 | 258.50 | 31.708 | |
| 11,614.1 | 6,672.4 | 6,672.4 | 6,672.4 | 132.9 | 133.6 | -75.74 | 353.8 | -4,718.5 | 8,210.5 | 7,951.7 | 258.85 | 31.720 | |
| 11,700.0 | 6,671.9 | 6,671.9 | 6,671.9 | 135.3 | 133.6 | -75.60 | 353.8 | -4,718.5 | 8,296.3 | 8,035.4 | 260.96 | 31.792 | |
| 11,712.6 | 6,671.8 | 6,671.8 | 6,671.8 | 135.6 | 133.6 | -75.58 | 353.8 | -4,718.5 | 8,308.9 | 8,047.6 | 261.27 | 31.802 | |
| 11,800.0 | 6,671.2 | 6,671.2 | 6,671.2 | 138.0 | 133.6 | -75.43 | 353.8 | -4,718.5 | 8,396.3 | 8,132.9 | 263.42 | 31.875 | |
| 11,811.0 | 6,671.1 | 6,671.1 | 6,671.1 | 138.3 | 133.6 | -75.42 | 353.8 | -4,718.5 | 8,407.3 | 8,143.6 | 263.69 | 31.884 | |
| 11,900.0 | 6,670.6 | 6,670.6 | 6,670.6 | 140.7 | 133.6 | -75.27 | 353.8 | -4,718.5 | 8,496.3 | 8,230.4 | 265.87 | 31.956 | |
| 11,909.4 | 6,670.5 | 6,670.5 | 6,670.5 | 141.0 | 133.6 | -75.25 | 353.8 | -4,718.5 | 8,505.7 | 8,239.6 | 266.10 | 31.964 | |
| 11,987.2 | 6,670.0 | 6,670.0 | 6,670.0 | 143.1 | 133.5 | -75.12 | 353.8 | -4,718.5 | 8,583.5 | 8,315.5 | 268.01 | 32.027 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -76.55 | 1,013.1 | -4,236.6 | 4,356.0 | | | | |
| 98.4 | 98.4 | 80.0 | 80.0 | 0.1 | 0.1 | -76.55 | 1,013.1 | -4,236.7 | 4,356.1 | 4,356.0 | 0.16 | N/A | |
| 100.0 | 100.0 | 81.4 | 81.4 | 0.1 | 0.1 | -76.55 | 1,013.1 | -4,236.7 | 4,356.1 | 4,356.0 | 0.16 | N/A | |
| 196.8 | 196.8 | 172.2 | 172.2 | 0.3 | 0.2 | -76.55 | 1,013.0 | -4,237.0 | 4,356.4 | 4,355.9 | 0.50 | 8,743.211 | |
| 200.0 | 200.0 | 175.2 | 175.2 | 0.3 | 0.2 | -76.55 | 1,013.0 | -4,237.0 | 4,356.4 | 4,355.9 | 0.51 | 8,548.690 | |
| 295.3 | 295.3 | 266.9 | 266.9 | 0.5 | 0.3 | -76.56 | 1,012.9 | -4,237.4 | 4,356.8 | 4,356.0 | 0.82 | 5,344.912 | |
| 300.0 | 300.0 | 271.5 | 271.5 | 0.5 | 0.3 | -76.56 | 1,012.9 | -4,237.4 | 4,356.8 | 4,356.0 | 0.83 | 5,251.833 | |
| 393.7 | 393.7 | 369.2 | 369.2 | 0.8 | 0.4 | -76.56 | 1,012.8 | -4,237.9 | 4,357.2 | 4,356.1 | 1.11 | 3,934.703 | |
| 400.0 | 400.0 | 376.0 | 376.0 | 0.8 | 0.4 | -76.56 | 1,012.8 | -4,237.9 | 4,357.3 | 4,356.1 | 1.13 | 3,870.379 | |
| 492.1 | 492.1 | 475.5 | 475.4 | 1.0 | 0.4 | -76.56 | 1,012.4 | -4,238.2 | 4,357.5 | 4,356.1 | 1.39 | 3,133.143 | |
| 500.0 | 500.0 | 484.0 | 483.9 | 1.0 | 0.4 | -76.57 | 1,012.4 | -4,238.3 | 4,357.5 | 4,356.1 | 1.41 | 3,083.179 | |
| 590.5 | 590.5 | 578.7 | 578.7 | 1.2 | 0.5 | -76.57 | 1,011.9 | -4,238.5 | 4,357.6 | 4,355.9 | 1.67 | 2,611.129 | |
| 600.0 | 600.0 | 588.5 | 588.5 | 1.2 | 0.5 | -76.57 | 1,011.9 | -4,238.5 | 4,357.6 | 4,355.9 | 1.70 | 2,570.169 | |
| 689.0 | 689.0 | 683.7 | 683.7 | 1.4 | 0.5 | -76.58 | 1,011.4 | -4,238.6 | 4,357.6 | 4,355.7 | 1.94 | 2,241.845 | |
| 700.0 | 700.0 | 695.5 | 695.5 | 1.4 | 0.5 | -76.58 | 1,011.3 | -4,238.6 | 4,357.6 | 4,355.6 | 1.97 | 2,206.946 | |
| 787.4 | 787.4 | 789.9 | 789.9 | 1.6 | 0.6 | -76.59 | 1,010.8 | -4,238.6 | 4,357.4 | 4,355.2 | 2.22 | 1,966.426 | |
| 800.0 | 800.0 | 803.2 | 803.2 | 1.7 | 0.6 | -76.59 | 1,010.7 | -4,238.5 | 4,357.4 | 4,355.2 | 2.25 | 1,936.168 | |
| 885.8 | 885.8 | 889.1 | 889.1 | 1.9 | 0.6 | -76.59 | 1,010.3 | -4,238.4 | 4,357.2 | 4,354.7 | 2.48 | 1,754.928 | |
| 900.0 | 900.0 | 903.4 | 903.4 | 1.9 | 0.6 | -76.59 | 1,010.2 | -4,238.4 | 4,357.1 | 4,354.6 | 2.52 | 1,728.274 | |
| 984.2 | 984.2 | 989.1 | 989.1 | 2.1 | 0.7 | -76.60 | 1,009.8 | -4,238.2 | 4,356.9 | 4,354.1 | 2.75 | 1,586.244 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 0.7 | -76.60 | 1,009.8 | -4,238.2 | 4,356.8 | 4,354.0 | 2.79 | 1,563.446 | |
| 1,082.7 | 1,082.7 | 1,077.7 | 1,077.7 | 2.3 | 0.7 | 7.84 | 1,009.5 | -4,238.1 | 4,355.5 | 4,352.5 | 2.95 | 1,475.975 | |
| 1,100.0 | 1,100.0 | 1,093.1 | 1,093.1 | 2.3 | 0.7 | 7.84 | 1,009.4 | -4,238.1 | 4,354.9 | 4,351.9 | 2.99 | 1,454.997 | |
| 1,181.1 | 1,181.0 | 1,163.8 | 1,163.8 | 2.5 | 0.7 | 7.86 | 1,009.2 | -4,238.2 | 4,351.0 | 4,347.8 | 3.19 | 1,365.689 | |
| 1,200.0 | 1,199.8 | 1,180.2 | 1,180.2 | 2.5 | 0.7 | 7.86 | 1,009.2 | -4,238.2 | 4,349.8 | 4,346.6 | 3.23 | 1,346.379 | |
| 1,279.5 | 1,279.1 | 1,252.3 | 1,252.2 | 2.7 | 0.8 | 7.89 | 1,009.0 | -4,238.5 | 4,343.5 | 4,340.1 | 3.43 | 1,266.743 | |
| 1,300.0 | 1,299.5 | 1,271.1 | 1,271.1 | 2.8 | 0.8 | 7.90 | 1,008.9 | -4,238.6 | 4,341.5 | 4,338.1 | 3.48 | 1,247.507 | |
| 1,377.9 | 1,376.9 | 1,342.0 | 1,341.9 | 3.0 | 0.8 | 7.93 | 1,008.6 | -4,239.1 | 4,332.8 | 4,329.2 | 3.68 | 1,177.029 | |
| 1,400.0 | 1,398.7 | 1,361.9 | 1,361.8 | 3.0 | 0.8 | 7.94 | 1,008.5 | -4,239.2 | 4,330.0 | 4,326.3 | 3.74 | 1,158.434 | |
| 1,476.4 | 1,474.2 | 1,434.8 | 1,434.7 | 3.2 | 0.8 | 7.98 | 1,008.1 | -4,239.9 | 4,319.0 | 4,315.1 | 3.94 | 1,095.795 | |
| 1,500.0 | 1,497.5 | 1,458.9 | 1,458.8 | 3.3 | 0.8 | 8.00 | 1,008.0 | -4,240.1 | 4,315.2 | 4,311.2 | 4.00 | 1,077.542 | |
| 1,574.8 | 1,571.0 | 1,534.7 | 1,534.7 | 3.5 | 0.9 | 8.06 | 1,007.4 | -4,240.7 | 4,301.9 | 4,297.7 | 4.21 | 1,021.367 | |
| 1,600.0 | 1,595.6 | 1,560.1 | 1,560.0 | 3.6 | 0.9 | 8.08 | 1,007.2 | -4,240.9 | 4,297.0 | 4,292.7 | 4.28 | 1,003.632 | |
| 1,673.2 | 1,667.0 | 1,634.6 | 1,634.5 | 3.9 | 0.9 | 8.14 | 1,006.5 | -4,241.5 | 4,281.4 | 4,276.9 | 4.49 | 953.284 | |
| 1,700.0 | 1,693.1 | 1,662.1 | 1,662.1 | 4.0 | 0.9 | 8.17 | 1,006.3 | -4,241.7 | 4,275.2 | 4,270.7 | 4.57 | 936.001 | |
| 1,771.6 | 1,762.4 | 1,736.6 | 1,736.6 | 4.3 | 1.0 | 8.25 | 1,005.6 | -4,242.3 | 4,257.5 | 4,252.7 | 4.78 | 890.559 | |
| 1,800.0 | 1,789.6 | 1,766.3 | 1,766.3 | 4.4 | 1.0 | 8.28 | 1,005.3 | -4,242.4 | 4,250.0 | 4,245.2 | 4.86 | 873.699 | |
| 1,870.1 | 1,856.8 | 1,836.9 | 1,836.9 | 4.7 | 1.0 | 8.37 | 1,004.7 | -4,242.8 | 4,230.3 | 4,225.2 | 5.08 | 832.610 | |
| 1,900.0 | 1,885.3 | 1,866.0 | 1,865.9 | 4.9 | 1.0 | 8.42 | 1,004.5 | -4,242.9 | 4,221.3 | 4,216.2 | 5.17 | 816.325 | |
| 1,968.5 | 1,950.2 | 1,932.5 | 1,932.5 | 5.3 | 1.0 | 8.52 | 1,004.1 | -4,243.2 | 4,199.8 | 4,194.4 | 5.39 | 779.420 | |
| 2,000.0 | 1,979.8 | 1,963.1 | 1,963.1 | 5.5 | 1.0 | 8.57 | 1,003.9 | -4,243.3 | 4,189.3 | 4,183.8 | 5.49 | 763.146 | |
| 2,044.9 | 2,021.9 | 2,006.8 | 2,006.7 | 5.7 | 1.1 | 8.65 | 1,003.6 | -4,243.4 | 4,173.8 | 4,168.2 | 5.64 | 740.427 | |
| 2,066.9 | 2,042.5 | 2,028.6 | 2,028.5 | 5.9 | 1.1 | 8.67 | 1,003.5 | -4,243.5 | 4,166.1 | 4,160.4 | 5.71 | 730.080 | |
| 2,100.0 | 2,073.4 | 2,061.3 | 2,061.3 | 6.1 | 1.1 | 8.69 | 1,003.3 | -4,243.6 | 4,154.4 | 4,148.6 | 5.81 | 714.762 | |
| 2,165.3 | 2,134.4 | 2,122.7 | 2,122.6 | 6.5 | 1.1 | 8.73 | 1,002.9 | -4,243.7 | 4,131.4 | 4,125.4 | 6.02 | 686.008 | |
| 2,200.0 | 2,166.8 | 2,152.6 | 2,152.5 | 6.8 | 1.1 | 8.75 | 1,002.7 | -4,243.8 | 4,119.2 | 4,113.1 | 6.13 | 671.454 | |
| 2,263.8 | 2,226.4 | 2,209.3 | 2,209.2 | 7.2 | 1.1 | 8.79 | 1,002.4 | -4,244.0 | 4,096.8 | 4,090.4 | 6.34 | 645.781 | |
| 2,300.0 | 2,260.2 | 2,247.5 | 2,247.4 | 7.4 | 1.2 | 8.82 | 1,002.2 | -4,244.1 | 4,084.0 | 4,077.6 | 6.47 | 631.667 | |
| 2,362.2 | 2,318.3 | 2,312.3 | 2,312.2 | 7.9 | 1.2 | 8.87 | 1,001.8 | -4,244.2 | 4,062.1 | 4,055.4 | 6.68 | 608.381 | |
| 2,400.0 | 2,353.6 | 2,350.1 | 2,350.1 | 8.1 | 1.2 | 8.90 | 1,001.5 | -4,244.2 | 4,048.7 | 4,041.9 | 6.81 | 594.844 | |
| 2,460.6 | 2,410.3 | 2,410.3 | 2,410.2 | 8.6 | 1.2 | 8.94 | 1,001.1 | -4,244.2 | 4,027.2 | 4,020.2 | 7.02 | 574.042 | |
| 2,500.0 | 2,447.0 | 2,447.7 | 2,447.7 | 8.9 | 1.2 | 8.97 | 1,000.9 | -4,244.1 | 4,013.2 | 4,006.1 | 7.15 | 561.207 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,503.9 | 2,503.9 | 9.3 | 1.2 | 9.01 | 1,000.5 | -4,244.1 | 3,992.2 | 3,984.9 | 7.36 | 542.669 | |
| 2,600.0 | 2,540.5 | 2,543.4 | 2,543.3 | 9.6 | 1.2 | 9.04 | 1,000.3 | -4,244.0 | 3,977.7 | 3,970.2 | 7.50 | 530.385 | |
| 2,657.5 | 2,594.2 | 2,598.7 | 2,598.6 | 10.0 | 1.3 | 9.09 | 1,000.0 | -4,243.9 | 3,957.2 | 3,949.5 | 7.70 | 513.783 | |
| 2,700.0 | 2,633.9 | 2,637.5 | 2,637.5 | 10.3 | 1.3 | 9.12 | 999.8 | -4,243.9 | 3,942.1 | 3,934.3 | 7.85 | 502.068 | |
| 2,755.9 | 2,686.1 | 2,688.6 | 2,688.5 | 10.7 | 1.3 | 9.16 | 999.5 | -4,243.7 | 3,922.2 | 3,914.2 | 8.05 | 487.236 | |
| 2,800.0 | 2,727.3 | 2,727.5 | 2,727.4 | 11.0 | 1.3 | 9.19 | 999.4 | -4,243.7 | 3,906.6 | 3,898.4 | 8.21 | 476.117 | |
| 2,854.3 | 2,778.1 | 2,774.9 | 2,774.8 | 11.4 | 1.3 | 9.23 | 999.3 | -4,243.6 | 3,887.3 | 3,878.9 | 8.40 | 462.952 | |
| 2,900.0 | 2,820.7 | 2,815.3 | 2,815.2 | 11.8 | 1.3 | 9.27 | 999.3 | -4,243.6 | 3,871.2 | 3,862.6 | 8.56 | 452.294 | |
| 2,952.7 | 2,870.0 | 2,863.0 | 2,863.0 | 12.2 | 1.3 | 9.31 | 999.3 | -4,243.5 | 3,852.5 | 3,843.8 | 8.75 | 440.357 | |
| 3,000.0 | 2,914.2 | 2,906.2 | 2,906.1 | 12.5 | 1.3 | 9.35 | 999.3 | -4,243.5 | 3,835.8 | 3,826.9 | 8.92 | 430.057 | |
| 3,051.2 | 2,962.0 | 2,955.0 | 2,954.9 | 12.9 | 1.3 | 9.40 | 999.3 | -4,243.5 | 3,817.8 | 3,808.7 | 9.11 | 419.191 | |
| 3,100.0 | 3,007.6 | 3,000.0 | 2,999.9 | 13.3 | 1.3 | 9.44 | 999.4 | -4,243.4 | 3,800.5 | 3,791.3 | 9.29 | 409.242 | |
| 3,149.6 | 3,053.9 | 3,044.0 | 3,044.0 | 13.6 | 1.3 | 9.49 | 999.5 | -4,243.4 | 3,783.0 | 3,773.6 | 9.47 | 399.564 | |
| 3,200.0 | 3,101.0 | 3,087.4 | 3,087.4 | 14.0 | 1.3 | 9.53 | 999.5 | -4,243.4 | 3,765.3 | 3,755.7 | 9.65 | 390.118 | |
| 3,248.0 | 3,145.9 | 3,127.9 | 3,127.8 | 14.4 | 1.3 | 9.57 | 999.6 | -4,243.5 | 3,748.5 | 3,738.6 | 9.83 | 381.399 | |
| 3,300.0 | 3,194.4 | 3,171.3 | 3,171.3 | 14.8 | 1.3 | 9.61 | 999.7 | -4,243.6 | 3,730.3 | 3,720.3 | 10.02 | 372.306 | |
| 3,346.4 | 3,237.8 | 3,209.5 | 3,209.5 | 15.1 | 1.3 | 9.65 | 999.7 | -4,243.8 | 3,714.1 | 3,704.0 | 10.19 | 364.459 | |
| 3,400.0 | 3,287.8 | 3,251.6 | 3,251.6 | 15.5 | 1.3 | 9.69 | 999.7 | -4,244.0 | 3,695.6 | 3,685.2 | 10.39 | 355.738 | |
| 3,444.9 | 3,329.8 | 3,287.0 | 3,286.9 | 15.9 | 1.3 | 9.72 | 999.6 | -4,244.4 | 3,680.1 | 3,669.6 | 10.55 | 348.676 | |
| 3,500.0 | 3,381.3 | 3,329.5 | 3,329.5 | 16.3 | 1.4 | 9.76 | 999.5 | -4,244.9 | 3,661.3 | 3,650.5 | 10.76 | 340.305 | |
| 3,543.3 | 3,421.7 | 3,362.7 | 3,362.6 | 16.6 | 1.4 | 9.79 | 999.3 | -4,245.3 | 3,646.5 | 3,635.6 | 10.92 | 333.946 | |
| 3,600.0 | 3,474.7 | 3,400.0 | 3,399.9 | 17.0 | 1.4 | 9.82 | 999.2 | -4,245.9 | 3,627.4 | 3,616.2 | 11.13 | 325.966 | |
| 3,641.7 | 3,513.7 | 3,436.0 | 3,435.9 | 17.3 | 1.4 | 9.85 | 999.0 | -4,246.7 | 3,613.4 | 3,602.1 | 11.28 | 320.199 | |
| 3,700.0 | 3,568.1 | 3,478.3 | 3,478.2 | 17.8 | 1.4 | 9.89 | 998.7 | -4,247.6 | 3,594.0 | 3,582.5 | 11.50 | 312.494 | |
| 3,740.1 | 3,605.6 | 3,509.1 | 3,509.0 | 18.1 | 1.4 | 9.91 | 998.5 | -4,248.4 | 3,580.7 | 3,569.1 | 11.65 | 307.333 | |
| 3,800.0 | 3,661.5 | 3,562.0 | 3,561.9 | 18.5 | 1.4 | 9.95 | 998.1 | -4,249.9 | 3,561.1 | 3,549.2 | 11.88 | 299.795 | |
| 3,838.6 | 3,697.6 | 3,596.1 | 3,596.0 | 18.8 | 1.4 | 9.98 | 997.7 | -4,250.9 | 3,548.4 | 3,536.4 | 12.03 | 295.085 | |
| 3,900.0 | 3,754.9 | 3,652.1 | 3,651.9 | 19.3 | 1.4 | 10.02 | 997.1 | -4,252.6 | 3,528.4 | 3,516.1 | 12.26 | 287.745 | |
| 3,937.0 | 3,789.5 | 3,685.8 | 3,685.6 | 19.6 | 1.5 | 10.05 | 996.8 | -4,253.6 | 3,516.3 | 3,503.9 | 12.41 | 283.448 | |
| 4,000.0 | 3,848.4 | 3,745.7 | 3,745.5 | 20.1 | 1.5 | 10.10 | 996.2 | -4,255.5 | 3,495.7 | 3,483.0 | 12.65 | 276.310 | |
| 4,035.4 | 3,881.5 | 3,779.8 | 3,779.5 | 20.3 | 1.5 | 10.12 | 995.9 | -4,256.5 | 3,484.1 | 3,471.3 | 12.79 | 272.402 | |
| 4,100.0 | 3,941.8 | 3,849.5 | 3,849.3 | 20.8 | 1.5 | 10.18 | 995.3 | -4,258.5 | 3,463.0 | 3,449.9 | 13.05 | 265.378 | |
| 4,133.8 | 3,973.4 | 3,888.0 | 3,887.7 | 21.1 | 1.5 | 10.21 | 995.0 | -4,259.5 | 3,451.8 | 3,438.6 | 13.19 | 261.766 | |
| 4,200.0 | 4,035.2 | 3,979.2 | 3,978.9 | 21.6 | 1.5 | 10.30 | 994.4 | -4,261.4 | 3,429.7 | 3,416.2 | 13.47 | 254.661 | |
| 4,232.3 | 4,065.4 | 4,018.0 | 4,017.7 | 21.8 | 1.6 | 10.34 | 994.3 | -4,261.9 | 3,418.7 | 3,405.1 | 13.60 | 251.325 | |
| 4,300.0 | 4,128.6 | 4,087.3 | 4,087.0 | 22.3 | 1.6 | 10.41 | 994.0 | -4,262.8 | 3,395.6 | 3,381.7 | 13.88 | 244.635 | |
| 4,330.7 | 4,157.3 | 4,121.6 | 4,121.3 | 22.6 | 1.6 | 10.44 | 993.8 | -4,263.1 | 3,385.0 | 3,371.0 | 14.01 | 241.658 | |
| 4,400.0 | 4,222.0 | 4,202.6 | 4,202.3 | 23.1 | 1.6 | 10.53 | 993.6 | -4,263.7 | 3,361.0 | 3,346.7 | 14.30 | 235.076 | |
| 4,429.1 | 4,249.3 | 4,231.3 | 4,231.0 | 23.3 | 1.6 | 10.56 | 993.6 | -4,263.7 | 3,350.9 | 3,336.5 | 14.42 | 232.432 | |
| 4,500.0 | 4,315.5 | 4,301.1 | 4,300.8 | 23.9 | 1.6 | 10.65 | 993.7 | -4,263.9 | 3,326.1 | 3,311.4 | 14.71 | 226.166 | |
| 4,527.5 | 4,341.2 | 4,327.7 | 4,327.3 | 24.1 | 1.6 | 10.68 | 993.7 | -4,263.9 | 3,316.5 | 3,301.7 | 14.82 | 223.800 | |
| 4,600.0 | 4,408.9 | 4,397.5 | 4,397.2 | 24.6 | 1.6 | 10.77 | 993.9 | -4,263.9 | 3,291.1 | 3,276.0 | 15.12 | 217.734 | |
| 4,626.0 | 4,433.2 | 4,422.3 | 4,422.0 | 24.8 | 1.6 | 10.80 | 994.0 | -4,263.9 | 3,282.0 | 3,266.8 | 15.22 | 215.614 | |
| 4,700.0 | 4,502.3 | 4,493.0 | 4,492.7 | 25.4 | 1.6 | 10.90 | 994.4 | -4,263.9 | 3,256.0 | 3,240.5 | 15.53 | 209.723 | |
| 4,724.4 | 4,525.1 | 4,516.7 | 4,516.4 | 25.6 | 1.6 | 10.93 | 994.5 | -4,263.8 | 3,247.5 | 3,231.8 | 15.63 | 207.824 | |
| 4,800.0 | 4,595.7 | 4,590.5 | 4,590.2 | 26.2 | 1.6 | 11.04 | 994.9 | -4,263.7 | 3,220.9 | 3,205.0 | 15.94 | 202.076 | |
| 4,822.8 | 4,617.1 | 4,617.9 | 4,617.6 | 26.3 | 1.6 | 11.08 | 995.1 | -4,263.6 | 3,212.9 | 3,196.8 | 16.04 | 200.332 | |
| 4,900.0 | 4,689.2 | 4,719.5 | 4,719.2 | 26.9 | 1.6 | 11.23 | 996.1 | -4,262.5 | 3,185.2 | 3,168.8 | 16.38 | 194.468 | |
| 4,921.2 | 4,709.0 | 4,743.8 | 4,743.4 | 27.1 | 1.6 | 11.27 | 996.4 | -4,262.1 | 3,177.5 | 3,161.0 | 16.47 | 192.913 | |
| 5,000.0 | 4,782.6 | 4,825.7 | 4,825.4 | 27.7 | 1.6 | 11.41 | 997.2 | -4,260.5 | 3,148.7 | 3,131.9 | 16.81 | 187.323 | |
| 5,019.7 | 4,801.0 | 4,843.0 | 4,842.6 | 27.8 | 1.6 | 11.44 | 997.4 | -4,260.1 | 3,141.5 | 3,124.6 | 16.89 | 185.985 | |
| 5,100.0 | 4,876.0 | 4,915.3 | 4,914.9 | 28.4 | 1.6 | 11.56 | 998.2 | -4,258.7 | 3,112.2 | 3,095.0 | 17.23 | 180.638 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,933.4 | 4,933.0 | 28.6 | 1.6 | 11.59 | 998.3 | -4,258.4 | 3,105.6 | 3,088.3 | 17.31 | 179.449 | |
| 5,159.9 | 4,932.0 | 4,975.4 | 4,975.0 | 28.9 | 1.6 | 11.66 | 998.6 | -4,257.6 | 3,090.3 | 3,072.8 | 17.49 | 176.739 | |
| 5,200.0 | 4,969.5 | 5,015.3 | 5,014.9 | 29.2 | 1.6 | 11.66 | 998.8 | -4,256.8 | 3,075.9 | 3,058.3 | 17.60 | 174.734 | |
| 5,216.5 | 4,985.1 | 5,031.5 | 5,031.0 | 29.3 | 1.6 | 11.66 | 998.8 | -4,256.5 | 3,070.1 | 3,052.4 | 17.64 | 173.993 | |
| 5,300.0 | 5,064.0 | 5,112.4 | 5,112.0 | 29.7 | 1.6 | 11.66 | 999.0 | -4,254.9 | 3,042.0 | 3,024.2 | 17.85 | 170.463 | |
| 5,314.9 | 5,078.2 | 5,125.9 | 5,125.5 | 29.8 | 1.6 | 11.66 | 999.0 | -4,254.6 | 3,037.2 | 3,019.4 | 17.88 | 169.893 | |
| 5,400.0 | 5,159.6 | 5,203.3 | 5,202.8 | 30.2 | 1.6 | 11.65 | 999.2 | -4,253.1 | 3,011.5 | 2,993.4 | 18.05 | 166.832 | |
| 5,413.4 | 5,172.4 | 5,215.9 | 5,215.5 | 30.3 | 1.6 | 11.65 | 999.3 | -4,252.9 | 3,007.6 | 2,989.6 | 18.08 | 166.396 | |
| 5,500.0 | 5,256.1 | 5,298.2 | 5,297.8 | 30.7 | 1.6 | 11.65 | 999.5 | -4,251.3 | 2,984.3 | 2,966.0 | 18.23 | 163.738 | |
| 5,511.8 | 5,267.6 | 5,308.8 | 5,308.4 | 30.7 | 1.6 | 11.65 | 999.6 | -4,251.1 | 2,981.3 | 2,963.0 | 18.24 | 163.418 | |
| 5,600.0 | 5,353.5 | 5,387.7 | 5,387.2 | 31.1 | 1.6 | 11.65 | 999.7 | -4,249.8 | 2,960.5 | 2,942.1 | 18.37 | 161.194 | |
| 5,610.2 | 5,363.5 | 5,400.0 | 5,399.5 | 31.1 | 1.6 | 11.65 | 999.7 | -4,249.6 | 2,958.3 | 2,939.9 | 18.38 | 160.959 | |
| 5,700.0 | 5,451.6 | 5,474.0 | 5,473.5 | 31.4 | 1.6 | 11.63 | 999.4 | -4,248.8 | 2,940.4 | 2,921.9 | 18.47 | 159.181 | |
| 5,708.6 | 5,460.2 | 5,481.5 | 5,481.0 | 31.4 | 1.6 | 11.63 | 999.3 | -4,248.7 | 2,938.9 | 2,920.4 | 18.48 | 159.036 | |
| 5,800.0 | 5,550.4 | 5,567.1 | 5,566.6 | 31.7 | 1.6 | 11.61 | 998.4 | -4,248.2 | 2,924.0 | 2,905.5 | 18.55 | 157.600 | |
| 5,807.1 | 5,557.4 | 5,573.9 | 5,573.4 | 31.7 | 1.6 | 11.61 | 998.3 | -4,248.1 | 2,923.0 | 2,904.4 | 18.56 | 157.507 | |
| 5,900.0 | 5,649.6 | 5,662.4 | 5,661.9 | 31.9 | 1.7 | 11.59 | 997.4 | -4,247.7 | 2,911.1 | 2,892.5 | 18.61 | 156.401 | |
| 5,905.5 | 5,655.1 | 5,667.6 | 5,667.1 | 31.9 | 1.7 | 11.59 | 997.4 | -4,247.6 | 2,910.5 | 2,891.9 | 18.62 | 156.350 | |
| 6,000.0 | 5,749.2 | 5,759.3 | 5,758.8 | 32.1 | 1.7 | 11.58 | 996.8 | -4,247.2 | 2,901.7 | 2,883.1 | 18.65 | 155.553 | |
| 6,003.9 | 5,753.1 | 5,763.2 | 5,762.7 | 32.1 | 1.7 | 11.57 | 996.8 | -4,247.2 | 2,901.4 | 2,882.8 | 18.66 | 155.529 | |
| 6,100.0 | 5,849.1 | 5,856.4 | 5,855.9 | 32.3 | 1.7 | 11.57 | 996.4 | -4,246.7 | 2,895.8 | 2,877.2 | 18.68 | 155.020 | |
| 6,102.3 | 5,851.4 | 5,858.6 | 5,858.1 | 32.3 | 1.7 | 11.57 | 996.4 | -4,246.7 | 2,895.7 | 2,877.1 | 18.68 | 155.012 | |
| 6,200.8 | 5,949.8 | 5,948.3 | 5,947.8 | 32.4 | 1.7 | 11.57 | 996.4 | -4,246.3 | 2,893.5 | 2,874.8 | 18.70 | 154.759 | |
| 6,204.9 | 5,953.9 | 5,951.9 | 5,951.4 | 32.4 | 1.7 | -72.87 | 996.4 | -4,246.3 | 2,893.5 | 2,860.0 | 33.52 | 86.321 | |
| 6,234.9 | 5,983.9 | 5,978.0 | 5,977.5 | 32.4 | 1.7 | -72.87 | 996.4 | -4,246.2 | 2,893.5 | 2,859.9 | 33.54 | 86.258 | ES |
| 6,235.5 | 5,984.6 | 5,978.6 | 5,978.1 | 32.4 | 1.7 | -162.87 | 996.4 | -4,246.2 | 2,893.5 | 2,874.7 | 18.74 | 154.394 | CC |
| 6,250.0 | 5,999.0 | 5,991.2 | 5,990.7 | 32.4 | 1.7 | -162.87 | 996.4 | -4,246.2 | 2,893.6 | 2,874.9 | 18.69 | 154.825 | |
| 6,299.2 | 6,048.2 | 6,035.7 | 6,035.2 | 32.4 | 1.7 | -162.82 | 996.5 | -4,246.2 | 2,896.2 | 2,877.7 | 18.54 | 156.246 | |
| 6,300.0 | 6,048.9 | 6,036.5 | 6,035.9 | 32.4 | 1.7 | -162.82 | 996.5 | -4,246.2 | 2,896.3 | 2,877.8 | 18.53 | 156.267 | |
| 6,350.0 | 6,098.5 | 6,081.8 | 6,081.3 | 32.4 | 1.7 | -162.70 | 996.6 | -4,246.3 | 2,902.4 | 2,884.0 | 18.41 | 157.637 | |
| 6,397.6 | 6,145.3 | 6,124.8 | 6,124.2 | 32.3 | 1.7 | -162.53 | 996.7 | -4,246.4 | 2,911.4 | 2,893.0 | 18.31 | 158.967 | |
| 6,400.0 | 6,147.6 | 6,126.9 | 6,126.4 | 32.3 | 1.7 | -162.52 | 996.7 | -4,246.4 | 2,911.9 | 2,893.6 | 18.31 | 159.032 | |
| 6,450.0 | 6,195.8 | 6,171.4 | 6,170.9 | 32.2 | 1.7 | -162.27 | 996.9 | -4,246.6 | 2,924.7 | 2,906.4 | 18.22 | 160.546 | |
| 6,496.0 | 6,239.3 | 6,211.9 | 6,211.4 | 32.1 | 1.7 | -161.98 | 997.1 | -4,246.8 | 2,939.3 | 2,921.2 | 18.13 | 162.088 | |
| 6,500.0 | 6,243.0 | 6,215.4 | 6,214.9 | 32.1 | 1.7 | -161.95 | 997.1 | -4,246.8 | 2,940.7 | 2,922.6 | 18.13 | 162.222 | |
| 6,550.0 | 6,289.0 | 6,258.9 | 6,258.4 | 32.0 | 1.7 | -161.53 | 997.4 | -4,247.0 | 2,959.9 | 2,941.8 | 18.04 | 164.034 | |
| 6,594.5 | 6,328.6 | 6,296.4 | 6,295.9 | 31.8 | 1.7 | -161.09 | 997.6 | -4,247.3 | 2,979.5 | 2,961.5 | 17.98 | 165.691 | |
| 6,600.0 | 6,333.4 | 6,301.2 | 6,300.7 | 31.8 | 1.7 | -161.03 | 997.6 | -4,247.3 | 2,982.1 | 2,964.1 | 17.98 | 165.890 | |
| 6,650.0 | 6,376.2 | 6,349.3 | 6,348.8 | 31.7 | 1.7 | -160.43 | 998.0 | -4,247.5 | 3,007.2 | 2,989.3 | 17.94 | 167.641 | |
| 6,692.9 | 6,411.3 | 6,388.9 | 6,388.4 | 31.6 | 1.7 | -159.83 | 998.2 | -4,247.7 | 3,031.0 | 3,013.0 | 17.95 | 168.892 | |
| 6,700.0 | 6,417.0 | 6,395.3 | 6,394.8 | 31.5 | 1.7 | -159.72 | 998.2 | -4,247.7 | 3,035.1 | 3,017.1 | 17.95 | 169.062 | |
| 6,750.0 | 6,455.7 | 6,439.3 | 6,438.8 | 31.4 | 1.7 | -158.86 | 998.3 | -4,247.8 | 3,065.6 | 3,047.5 | 18.05 | 169.884 | |
| 6,791.3 | 6,486.0 | 6,473.8 | 6,473.3 | 31.3 | 1.7 | -158.02 | 998.3 | -4,247.9 | 3,092.6 | 3,074.4 | 18.21 | 169.869 | |
| 6,800.0 | 6,492.2 | 6,480.8 | 6,480.3 | 31.3 | 1.7 | -157.83 | 998.3 | -4,247.9 | 3,098.5 | 3,080.3 | 18.25 | 169.771 | |
| 6,850.0 | 6,526.1 | 6,517.3 | 6,516.8 | 31.2 | 1.7 | -156.55 | 998.3 | -4,247.9 | 3,133.8 | 3,115.2 | 18.61 | 168.359 | |
| 6,889.7 | 6,551.2 | 6,542.6 | 6,542.1 | 31.2 | 1.7 | -155.32 | 998.2 | -4,248.0 | 3,163.5 | 3,144.4 | 19.05 | 166.105 | |
| 6,900.0 | 6,557.4 | 6,548.8 | 6,548.3 | 31.2 | 1.7 | -154.97 | 998.2 | -4,248.0 | 3,171.3 | 3,152.2 | 19.18 | 165.367 | |
| 6,950.0 | 6,586.0 | 6,577.5 | 6,577.0 | 31.1 | 1.8 | -153.00 | 998.1 | -4,248.0 | 3,210.9 | 3,190.9 | 19.98 | 160.700 | |
| 6,988.2 | 6,605.8 | 6,597.4 | 6,596.9 | 31.2 | 1.8 | -151.17 | 998.0 | -4,248.0 | 3,242.4 | 3,221.6 | 20.78 | 156.013 | |
| 7,000.0 | 6,611.5 | 6,600.0 | 6,599.5 | 31.2 | 1.8 | -150.49 | 998.0 | -4,248.0 | 3,252.3 | 3,231.2 | 21.08 | 154.309 | |
| 7,050.0 | 6,634.1 | 6,619.8 | 6,619.3 | 31.2 | 1.8 | -147.28 | 997.9 | -4,248.1 | 3,295.4 | 3,272.9 | 22.50 | 146.485 | |
| 7,086.6 | 6,648.6 | 6,630.9 | 6,630.4 | 31.3 | 1.8 | -144.32 | 997.8 | -4,248.1 | 3,327.9 | 3,304.2 | 23.77 | 139.983 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,634.6 | 6,634.1 | 31.4 | 1.8 | -143.08 | 997.8 | -4,248.1 | 3,340.0 | 3,315.7 | 24.29 | 137.522 | |
| 7,150.0 | 6,669.5 | 6,646.8 | 6,646.3 | 31.6 | 1.8 | -137.52 | 997.8 | -4,248.2 | 3,385.8 | 3,359.4 | 26.45 | 128.001 | |
| 7,185.0 | 6,678.8 | 6,653.8 | 6,653.3 | 31.7 | 1.8 | -132.55 | 997.8 | -4,248.2 | 3,418.6 | 3,390.4 | 28.17 | 121.349 | |
| 7,200.0 | 6,682.3 | 6,656.4 | 6,655.9 | 31.8 | 1.8 | -130.09 | 997.8 | -4,248.2 | 3,432.7 | 3,403.8 | 28.94 | 118.634 | |
| 7,250.0 | 6,691.6 | 6,663.3 | 6,662.8 | 32.1 | 1.8 | -120.13 | 997.8 | -4,248.3 | 3,480.3 | 3,448.8 | 31.49 | 110.523 | |
| 7,283.4 | 6,696.0 | 6,666.5 | 6,666.0 | 32.3 | 1.8 | -111.80 | 997.7 | -4,248.3 | 3,512.5 | 3,479.6 | 32.96 | 106.573 | |
| 7,300.0 | 6,697.5 | 6,667.6 | 6,667.1 | 32.4 | 1.8 | -107.18 | 997.7 | -4,248.3 | 3,528.5 | 3,495.0 | 33.52 | 105.275 | |
| 7,350.0 | 6,699.9 | 6,669.2 | 6,668.7 | 32.8 | 1.8 | -91.67 | 997.7 | -4,248.3 | 3,577.0 | 3,542.5 | 34.47 | 103.775 | |
| 7,364.4 | 6,700.0 | 6,669.2 | 6,668.6 | 32.9 | 1.8 | -86.98 | 997.7 | -4,248.3 | 3,591.0 | 3,556.3 | 34.63 | 103.682 | |
| 7,381.9 | 6,699.9 | 6,669.0 | 6,668.5 | 33.1 | 1.8 | -86.97 | 997.7 | -4,248.3 | 3,608.0 | 3,573.2 | 34.79 | 103.717 | |
| 7,400.0 | 6,699.8 | 6,668.8 | 6,668.3 | 33.2 | 1.8 | -86.96 | 997.7 | -4,248.3 | 3,625.6 | 3,590.6 | 34.94 | 103.753 | |
| 7,480.3 | 6,699.2 | 6,668.0 | 6,667.5 | 34.0 | 1.8 | -86.91 | 997.7 | -4,248.3 | 3,703.7 | 3,667.9 | 35.76 | 103.581 | |
| 7,500.0 | 6,699.1 | 6,667.8 | 6,667.3 | 34.2 | 1.8 | -86.89 | 997.7 | -4,248.3 | 3,722.8 | 3,686.9 | 35.96 | 103.541 | |
| 7,578.7 | 6,698.6 | 6,667.0 | 6,666.5 | 35.2 | 1.8 | -86.84 | 997.7 | -4,248.3 | 3,799.5 | 3,762.6 | 36.90 | 102.956 | |
| 7,600.0 | 6,698.5 | 6,666.8 | 6,666.3 | 35.4 | 1.8 | -86.83 | 997.7 | -4,248.3 | 3,820.2 | 3,783.1 | 37.16 | 102.804 | |
| 7,677.1 | 6,698.0 | 6,666.1 | 6,665.6 | 36.5 | 1.8 | -86.78 | 997.7 | -4,248.3 | 3,895.5 | 3,857.2 | 38.23 | 101.908 | |
| 7,700.0 | 6,697.8 | 6,665.9 | 6,665.4 | 36.8 | 1.8 | -86.76 | 997.7 | -4,248.3 | 3,917.8 | 3,879.2 | 38.54 | 101.652 | |
| 7,775.6 | 6,697.3 | 6,665.2 | 6,664.6 | 38.0 | 1.8 | -86.71 | 997.7 | -4,248.3 | 3,991.5 | 3,951.8 | 39.70 | 100.538 | |
| 7,800.0 | 6,697.2 | 6,664.9 | 6,664.4 | 38.3 | 1.8 | -86.70 | 997.7 | -4,248.3 | 4,015.4 | 3,975.3 | 40.08 | 100.192 | |
| 7,874.0 | 6,696.7 | 6,664.2 | 6,663.7 | 39.6 | 1.8 | -86.65 | 997.8 | -4,248.3 | 4,087.7 | 4,046.4 | 41.32 | 98.938 | |
| 7,900.0 | 6,696.5 | 6,664.0 | 6,663.5 | 40.0 | 1.8 | -86.64 | 997.8 | -4,248.3 | 4,113.2 | 4,071.4 | 41.75 | 98.515 | |
| 7,972.4 | 6,696.1 | 6,663.3 | 6,662.8 | 41.3 | 1.8 | -86.59 | 997.8 | -4,248.3 | 4,184.0 | 4,141.0 | 43.05 | 97.185 | |
| 8,000.0 | 6,695.9 | 6,663.0 | 6,662.5 | 41.8 | 1.8 | -86.57 | 997.8 | -4,248.3 | 4,211.0 | 4,167.5 | 43.55 | 96.700 | |
| 8,070.8 | 6,695.4 | 6,662.4 | 6,661.9 | 43.1 | 1.8 | -86.53 | 997.8 | -4,248.3 | 4,280.4 | 4,235.5 | 44.90 | 95.342 | |
| 8,100.0 | 6,695.2 | 6,662.1 | 6,661.6 | 43.7 | 1.8 | -86.51 | 997.8 | -4,248.3 | 4,309.0 | 4,263.5 | 45.45 | 94.808 | |
| 8,169.3 | 6,694.8 | 6,661.5 | 6,661.0 | 45.1 | 1.8 | -86.47 | 997.8 | -4,248.3 | 4,376.9 | 4,330.1 | 46.83 | 93.460 | |
| 8,200.0 | 6,694.6 | 6,661.2 | 6,660.7 | 45.7 | 1.8 | -86.45 | 997.8 | -4,248.3 | 4,407.0 | 4,359.6 | 47.45 | 92.887 | |
| 8,267.7 | 6,694.1 | 6,660.6 | 6,660.1 | 47.1 | 1.8 | -86.41 | 997.8 | -4,248.3 | 4,473.5 | 4,424.6 | 48.85 | 91.574 | |
| 8,300.0 | 6,693.9 | 6,660.3 | 6,659.8 | 47.8 | 1.8 | -86.39 | 997.8 | -4,248.3 | 4,505.2 | 4,455.7 | 49.52 | 90.974 | |
| 8,366.1 | 6,693.5 | 6,659.7 | 6,659.2 | 49.2 | 1.8 | -86.35 | 997.8 | -4,248.3 | 4,570.1 | 4,519.2 | 50.94 | 89.712 | |
| 8,400.0 | 6,693.3 | 6,659.4 | 6,658.9 | 49.9 | 1.8 | -86.33 | 997.8 | -4,248.3 | 4,603.4 | 4,551.7 | 51.67 | 89.093 | |
| 8,464.5 | 6,692.9 | 6,658.8 | 6,658.3 | 51.4 | 1.8 | -86.29 | 997.8 | -4,248.2 | 4,666.9 | 4,613.8 | 53.10 | 87.894 | |
| 8,500.0 | 6,692.6 | 6,658.5 | 6,658.0 | 52.1 | 1.8 | -86.27 | 997.8 | -4,248.2 | 4,701.7 | 4,647.8 | 53.88 | 87.263 | |
| 8,563.0 | 6,692.2 | 6,658.0 | 6,657.5 | 53.6 | 1.8 | -86.24 | 997.8 | -4,248.2 | 4,763.6 | 4,708.3 | 55.31 | 86.133 | |
| 8,600.0 | 6,692.0 | 6,657.7 | 6,657.2 | 54.4 | 1.8 | -86.21 | 997.8 | -4,248.2 | 4,800.1 | 4,743.9 | 56.14 | 85.495 | |
| 8,661.4 | 6,691.6 | 6,657.1 | 6,656.6 | 55.8 | 1.8 | -86.18 | 997.8 | -4,248.2 | 4,860.5 | 4,802.9 | 57.56 | 84.436 | |
| 8,700.0 | 6,691.3 | 6,656.8 | 6,656.3 | 56.7 | 1.8 | -86.16 | 997.8 | -4,248.2 | 4,898.5 | 4,840.0 | 58.46 | 83.797 | |
| 8,759.8 | 6,690.9 | 6,656.3 | 6,655.8 | 58.1 | 1.8 | -86.12 | 997.8 | -4,248.2 | 4,957.4 | 4,897.6 | 59.87 | 82.809 | |
| 8,800.0 | 6,690.7 | 6,656.0 | 6,655.4 | 59.1 | 1.8 | -86.10 | 997.8 | -4,248.2 | 4,997.0 | 4,936.2 | 60.81 | 82.171 | |
| 8,858.2 | 6,690.3 | 6,655.5 | 6,654.9 | 60.5 | 1.8 | -86.07 | 997.8 | -4,248.2 | 5,054.4 | 4,992.2 | 62.21 | 81.253 | |
| 8,900.0 | 6,690.0 | 6,655.1 | 6,654.6 | 61.5 | 1.8 | -86.04 | 997.8 | -4,248.2 | 5,095.5 | 5,032.3 | 63.20 | 80.620 | |
| 8,956.7 | 6,689.7 | 6,654.6 | 6,654.1 | 62.9 | 1.8 | -86.01 | 997.8 | -4,248.2 | 5,151.4 | 5,086.8 | 64.58 | 79.769 | |
| 9,000.0 | 6,689.4 | 6,654.3 | 6,653.8 | 63.9 | 1.8 | -85.99 | 997.8 | -4,248.2 | 5,194.2 | 5,128.5 | 65.63 | 79.143 | |
| 9,055.1 | 6,689.0 | 6,653.8 | 6,653.3 | 65.3 | 1.8 | -85.96 | 997.8 | -4,248.2 | 5,248.5 | 5,181.5 | 66.98 | 78.356 | |
| 9,100.0 | 6,688.7 | 6,653.4 | 6,652.9 | 66.4 | 1.8 | -85.93 | 997.8 | -4,248.2 | 5,292.8 | 5,224.7 | 68.08 | 77.739 | |
| 9,153.5 | 6,688.4 | 6,653.0 | 6,652.5 | 67.7 | 1.8 | -85.90 | 997.8 | -4,248.2 | 5,345.6 | 5,276.2 | 69.41 | 77.012 | |
| 9,200.0 | 6,688.1 | 6,652.6 | 6,652.1 | 68.9 | 1.8 | -85.88 | 997.8 | -4,248.2 | 5,391.5 | 5,321.0 | 70.57 | 76.404 | |
| 9,251.9 | 6,687.8 | 6,652.2 | 6,651.7 | 70.2 | 1.8 | -85.85 | 997.8 | -4,248.2 | 5,442.8 | 5,371.0 | 71.87 | 75.734 | |
| 9,300.0 | 6,687.4 | 6,651.8 | 6,651.3 | 71.4 | 1.8 | -85.82 | 997.8 | -4,248.2 | 5,490.3 | 5,417.2 | 73.07 | 75.136 | |
| 9,350.4 | 6,687.1 | 6,651.4 | 6,650.9 | 72.7 | 1.8 | -85.80 | 997.8 | -4,248.2 | 5,540.0 | 5,465.7 | 74.34 | 74.520 | |
| 9,400.0 | 6,686.8 | 6,651.0 | 6,650.5 | 73.9 | 1.8 | -85.77 | 997.8 | -4,248.2 | 5,589.1 | 5,513.5 | 75.60 | 73.933 | |
| 9,448.8 | 6,686.5 | 6,650.6 | 6,650.1 | 75.2 | 1.8 | -85.74 | 997.8 | -4,248.2 | 5,637.3 | 5,560.5 | 76.84 | 73.366 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT DUNN #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,650.2 | 6,649.7 | 76.5 | 1.8 | -85.72 | 997.8 | -4,248.2 | 5,687.9 | 5,609.8 | 78.14 | 72.790 | |
| 9,547.2 | 6,685.8 | 6,649.9 | 6,649.3 | 77.7 | 1.8 | -85.69 | 997.8 | -4,248.2 | 5,734.6 | 5,655.3 | 79.35 | 72.269 | |
| 9,600.0 | 6,685.5 | 6,649.4 | 6,648.9 | 79.0 | 1.8 | -85.67 | 997.8 | -4,248.2 | 5,786.8 | 5,706.1 | 80.70 | 71.705 | |
| 9,645.6 | 6,685.2 | 6,649.1 | 6,648.6 | 80.2 | 1.8 | -85.64 | 997.8 | -4,248.2 | 5,832.0 | 5,750.1 | 81.88 | 71.226 | |
| 9,700.0 | 6,684.8 | 6,648.7 | 6,648.2 | 81.6 | 1.8 | -85.61 | 997.8 | -4,248.2 | 5,885.7 | 5,802.4 | 83.28 | 70.673 | |
| 9,744.1 | 6,684.6 | 6,648.3 | 6,647.8 | 82.8 | 1.8 | -85.59 | 997.8 | -4,248.2 | 5,929.3 | 5,844.9 | 84.42 | 70.234 | |
| 9,800.0 | 6,684.2 | 6,647.9 | 6,647.4 | 84.2 | 1.8 | -85.56 | 997.8 | -4,248.2 | 5,984.7 | 5,898.8 | 85.87 | 69.693 | |
| 9,842.5 | 6,683.9 | 6,647.6 | 6,647.1 | 85.3 | 1.8 | -85.54 | 997.8 | -4,248.2 | 6,026.7 | 5,939.8 | 86.98 | 69.290 | |
| 9,900.0 | 6,683.5 | 6,647.1 | 6,646.6 | 86.8 | 1.8 | -85.51 | 997.8 | -4,248.2 | 6,083.7 | 5,995.2 | 88.48 | 68.761 | |
| 9,940.9 | 6,683.3 | 6,646.8 | 6,646.3 | 87.9 | 1.8 | -85.49 | 997.8 | -4,248.2 | 6,124.2 | 6,034.6 | 89.55 | 68.391 | |
| 10,000.0 | 6,682.9 | 6,646.4 | 6,645.9 | 89.5 | 1.8 | -85.46 | 997.8 | -4,248.2 | 6,182.7 | 6,091.6 | 91.09 | 67.874 | |
| 10,039.3 | 6,682.6 | 6,646.1 | 6,645.6 | 90.5 | 1.8 | -85.44 | 997.8 | -4,248.2 | 6,221.7 | 6,129.5 | 92.12 | 67.535 | |
| 10,100.0 | 6,682.2 | 6,645.6 | 6,645.1 | 92.1 | 1.8 | -85.41 | 997.8 | -4,248.2 | 6,281.7 | 6,188.0 | 93.72 | 67.029 | |
| 10,137.8 | 6,682.0 | 6,645.4 | 6,644.8 | 93.1 | 1.8 | -85.39 | 997.8 | -4,248.2 | 6,319.2 | 6,224.4 | 94.71 | 66.719 | |
| 10,200.0 | 6,681.6 | 6,644.9 | 6,644.4 | 94.8 | 1.8 | -85.36 | 997.8 | -4,248.2 | 6,380.8 | 6,284.5 | 96.35 | 66.224 | |
| 10,236.2 | 6,681.4 | 6,644.6 | 6,644.1 | 95.7 | 1.8 | -85.34 | 997.8 | -4,248.2 | 6,416.7 | 6,319.4 | 97.31 | 65.941 | |
| 10,300.0 | 6,680.9 | 6,644.2 | 6,643.7 | 97.4 | 1.8 | -85.31 | 997.8 | -4,248.2 | 6,479.9 | 6,380.9 | 99.00 | 65.456 | |
| 10,334.6 | 6,680.7 | 6,643.9 | 6,643.4 | 98.3 | 1.8 | -85.30 | 997.8 | -4,248.2 | 6,514.2 | 6,414.3 | 99.92 | 65.198 | |
| 10,400.0 | 6,680.3 | 6,643.5 | 6,642.9 | 100.1 | 1.8 | -85.27 | 997.8 | -4,248.2 | 6,579.1 | 6,477.4 | 101.65 | 64.723 | |
| 10,433.0 | 6,680.1 | 6,643.2 | 6,642.7 | 101.0 | 1.8 | -85.25 | 997.8 | -4,248.2 | 6,611.8 | 6,509.3 | 102.53 | 64.488 | |
| 10,500.0 | 6,679.7 | 6,642.7 | 6,642.2 | 102.8 | 1.8 | -85.22 | 997.8 | -4,248.2 | 6,678.2 | 6,573.9 | 104.31 | 64.023 | |
| 10,531.5 | 6,679.4 | 6,642.5 | 6,642.0 | 103.6 | 1.8 | -85.20 | 997.8 | -4,248.2 | 6,709.4 | 6,604.3 | 105.15 | 63.809 | |
| 10,600.0 | 6,679.0 | 6,642.0 | 6,641.5 | 105.4 | 1.8 | -85.17 | 997.8 | -4,248.2 | 6,777.4 | 6,670.4 | 106.98 | 63.354 | |
| 10,629.9 | 6,678.8 | 6,641.8 | 6,641.3 | 106.2 | 1.8 | -85.16 | 997.8 | -4,248.2 | 6,807.1 | 6,699.3 | 107.78 | 63.160 | |
| 10,700.0 | 6,678.4 | 6,641.3 | 6,640.8 | 108.1 | 1.8 | -85.12 | 997.8 | -4,248.2 | 6,876.6 | 6,767.0 | 109.65 | 62.715 | |
| 10,728.3 | 6,678.2 | 6,641.1 | 6,640.6 | 108.9 | 1.8 | -85.11 | 997.8 | -4,248.2 | 6,904.7 | 6,794.3 | 110.41 | 62.538 | |
| 10,800.0 | 6,677.7 | 6,640.6 | 6,640.1 | 110.8 | 1.8 | -85.08 | 997.8 | -4,248.2 | 6,975.8 | 6,863.5 | 112.33 | 62.103 | |
| 10,826.7 | 6,677.5 | 6,640.4 | 6,639.9 | 111.5 | 1.8 | -85.07 | 997.8 | -4,248.2 | 7,002.4 | 6,889.4 | 113.05 | 61.943 | |
| 10,900.0 | 6,677.1 | 6,639.9 | 6,639.4 | 113.5 | 1.8 | -85.03 | 997.8 | -4,248.2 | 7,075.1 | 6,960.1 | 115.01 | 61.516 | |
| 10,925.2 | 6,676.9 | 6,639.8 | 6,639.3 | 114.2 | 1.8 | -85.02 | 997.8 | -4,248.2 | 7,100.1 | 6,984.4 | 115.69 | 61.372 | |
| 11,000.0 | 6,676.4 | 6,639.3 | 6,638.7 | 116.2 | 1.8 | -84.99 | 997.8 | -4,248.1 | 7,174.4 | 7,056.7 | 117.70 | 60.954 | |
| 11,023.6 | 6,676.3 | 6,639.1 | 6,638.6 | 116.8 | 1.8 | -84.98 | 997.8 | -4,248.1 | 7,197.8 | 7,079.5 | 118.34 | 60.825 | |
| 11,100.0 | 6,675.8 | 6,638.6 | 6,638.1 | 118.9 | 1.8 | -84.94 | 997.8 | -4,248.1 | 7,273.7 | 7,153.3 | 120.39 | 60.415 | |
| 11,122.0 | 6,675.6 | 6,638.4 | 6,637.9 | 119.5 | 1.8 | -84.93 | 997.8 | -4,248.1 | 7,295.5 | 7,174.6 | 120.99 | 60.299 | |
| 11,200.0 | 6,675.1 | 6,637.9 | 6,637.4 | 121.6 | 1.8 | -84.90 | 997.8 | -4,248.1 | 7,373.0 | 7,249.9 | 123.09 | 59.898 | |
| 11,220.4 | 6,675.0 | 6,637.8 | 6,637.3 | 122.2 | 1.8 | -84.89 | 997.8 | -4,248.1 | 7,393.3 | 7,269.6 | 123.65 | 59.794 | |
| 11,300.0 | 6,674.5 | 6,637.3 | 6,636.7 | 124.3 | 1.8 | -84.85 | 997.8 | -4,248.1 | 7,472.3 | 7,346.5 | 125.79 | 59.401 | |
| 11,318.9 | 6,674.3 | 6,637.1 | 6,636.6 | 124.9 | 1.8 | -84.84 | 997.8 | -4,248.1 | 7,491.1 | 7,364.8 | 126.31 | 59.309 | |
| 11,400.0 | 6,673.8 | 6,636.6 | 6,636.1 | 127.1 | 1.8 | -84.81 | 997.8 | -4,248.1 | 7,571.7 | 7,443.2 | 128.50 | 58.923 | |
| 11,417.3 | 6,673.7 | 6,636.5 | 6,636.0 | 127.5 | 1.8 | -84.80 | 997.8 | -4,248.1 | 7,588.9 | 7,459.9 | 128.97 | 58.842 | |
| 11,500.0 | 6,673.2 | 6,636.0 | 6,635.4 | 129.8 | 1.8 | -84.77 | 997.8 | -4,248.1 | 7,671.0 | 7,539.8 | 131.21 | 58.464 | |
| 11,515.7 | 6,673.1 | 6,635.9 | 6,635.3 | 130.2 | 1.8 | -84.76 | 997.8 | -4,248.1 | 7,686.7 | 7,555.0 | 131.64 | 58.393 | |
| 11,600.0 | 6,672.5 | 6,635.3 | 6,634.8 | 132.5 | 1.8 | -84.72 | 997.8 | -4,248.1 | 7,770.4 | 7,636.5 | 133.92 | 58.022 | |
| 11,614.1 | 6,672.4 | 6,635.2 | 6,634.7 | 132.9 | 1.8 | -84.72 | 997.8 | -4,248.1 | 7,784.5 | 7,650.2 | 134.31 | 57.961 | |
| 11,700.0 | 6,671.9 | 6,634.7 | 6,634.2 | 135.3 | 1.8 | -84.68 | 997.8 | -4,248.1 | 7,869.8 | 7,733.2 | 136.64 | 57.596 | |
| 11,712.6 | 6,671.8 | 6,634.6 | 6,634.1 | 135.6 | 1.8 | -84.68 | 997.8 | -4,248.1 | 7,882.3 | 7,745.3 | 136.98 | 57.544 | |
| 11,800.0 | 6,671.2 | 6,634.0 | 6,633.5 | 138.0 | 1.8 | -84.64 | 997.8 | -4,248.1 | 7,969.2 | 7,829.9 | 139.36 | 57.186 | |
| 11,811.0 | 6,671.1 | 6,634.0 | 6,633.5 | 138.3 | 1.8 | -84.63 | 997.8 | -4,248.1 | 7,980.2 | 7,840.5 | 139.65 | 57.142 | |
| 11,900.0 | 6,670.6 | 6,633.4 | 6,632.9 | 140.7 | 1.8 | -84.60 | 997.8 | -4,248.1 | 8,068.6 | 7,926.6 | 142.08 | 56.791 | |
| 11,909.4 | 6,670.5 | 6,633.4 | 6,632.8 | 141.0 | 1.8 | -84.59 | 997.8 | -4,248.1 | 8,078.0 | 7,935.7 | 142.33 | 56.755 | |
| 11,987.2 | 6,670.0 | 6,632.9 | 6,632.4 | 143.1 | 1.8 | -84.56 | 997.8 | -4,248.1 | 8,155.4 | 8,010.9 | 144.45 | 56.458 | SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -72.55 | 918.2 | -2,922.1 | 3,063.0 | | | | |
| 98.4 | 98.4 | 86.4 | 86.4 | 0.1 | 1.1 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,061.7 | 1.24 | 2,479.859 | |
| 100.0 | 100.0 | 88.0 | 88.0 | 0.1 | 1.2 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,061.7 | 1.26 | 2,435.436 | |
| 196.8 | 196.8 | 184.8 | 184.8 | 0.3 | 3.2 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,059.4 | 3.55 | 861.713 | |
| 200.0 | 200.0 | 188.0 | 188.0 | 0.3 | 3.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,059.3 | 3.63 | 843.118 | |
| 295.3 | 295.3 | 283.3 | 283.3 | 0.5 | 5.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,057.1 | 5.85 | 523.811 | |
| 300.0 | 300.0 | 288.0 | 288.0 | 0.5 | 5.4 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,057.0 | 5.96 | 514.251 | |
| 393.7 | 393.7 | 381.7 | 381.7 | 0.8 | 7.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,054.8 | 8.08 | 378.901 | |
| 400.0 | 400.0 | 388.0 | 388.0 | 0.8 | 7.5 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,054.7 | 8.23 | 372.325 | |
| 492.1 | 492.1 | 480.1 | 480.1 | 1.0 | 9.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,052.6 | 10.30 | 297.254 | |
| 500.0 | 500.0 | 488.0 | 488.0 | 1.0 | 9.5 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,052.4 | 10.48 | 292.221 | |
| 590.5 | 590.5 | 578.5 | 578.5 | 1.2 | 11.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,050.4 | 12.52 | 244.695 | |
| 600.0 | 600.0 | 588.0 | 588.0 | 1.2 | 11.5 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,050.2 | 12.73 | 240.613 | |
| 689.0 | 689.0 | 677.0 | 677.0 | 1.4 | 13.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,048.2 | 14.73 | 207.985 | |
| 700.0 | 700.0 | 688.0 | 688.0 | 1.4 | 13.5 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,048.0 | 14.97 | 204.549 | |
| 787.4 | 787.4 | 775.4 | 775.4 | 1.6 | 15.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,046.0 | 16.93 | 180.877 | |
| 800.0 | 800.0 | 788.0 | 788.0 | 1.7 | 15.5 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,045.7 | 17.22 | 177.910 | |
| 885.8 | 885.8 | 873.8 | 873.8 | 1.9 | 17.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,043.8 | 19.14 | 160.034 | |
| 900.0 | 900.0 | 888.0 | 888.0 | 1.9 | 17.6 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,043.5 | 19.46 | 157.422 | |
| 984.2 | 984.2 | 972.2 | 972.2 | 2.1 | 19.3 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,041.6 | 21.34 | 143.505 | |
| 1,000.0 | 1,000.0 | 988.0 | 988.0 | 2.1 | 19.6 | -72.55 | 918.2 | -2,922.1 | 3,062.9 | 3,041.2 | 21.70 | 141.172 | |
| 1,082.7 | 1,082.7 | 1,070.7 | 1,070.7 | 2.3 | 21.2 | 11.89 | 918.2 | -2,922.1 | 3,061.8 | 3,038.2 | 23.53 | 130.131 | |
| 1,100.0 | 1,100.0 | 1,088.0 | 1,088.0 | 2.3 | 21.6 | 11.90 | 918.2 | -2,922.1 | 3,061.2 | 3,037.3 | 23.91 | 128.035 | |
| 1,181.1 | 1,181.0 | 1,169.0 | 1,169.0 | 2.5 | 23.2 | 11.93 | 918.2 | -2,922.1 | 3,057.3 | 3,031.7 | 25.67 | 119.093 | |
| 1,200.0 | 1,199.8 | 1,187.8 | 1,187.8 | 2.5 | 23.6 | 11.94 | 918.2 | -2,922.1 | 3,056.1 | 3,030.0 | 26.08 | 117.189 | |
| 1,279.5 | 1,279.1 | 1,267.1 | 1,267.1 | 2.7 | 25.2 | 11.99 | 918.2 | -2,922.1 | 3,049.6 | 3,021.8 | 27.78 | 109.792 | |
| 1,300.0 | 1,299.5 | 1,287.5 | 1,287.5 | 2.8 | 25.6 | 12.01 | 918.2 | -2,922.1 | 3,047.6 | 3,019.4 | 28.21 | 108.040 | |
| 1,377.9 | 1,376.9 | 1,364.9 | 1,364.9 | 3.0 | 27.2 | 12.08 | 918.2 | -2,922.1 | 3,038.6 | 3,008.7 | 29.84 | 101.844 | |
| 1,400.0 | 1,398.7 | 1,386.7 | 1,386.7 | 3.0 | 27.6 | 12.11 | 918.2 | -2,922.1 | 3,035.7 | 3,005.4 | 30.29 | 100.222 | |
| 1,476.4 | 1,474.2 | 1,462.2 | 1,462.2 | 3.2 | 29.1 | 12.20 | 918.2 | -2,922.1 | 3,024.3 | 2,992.4 | 31.84 | 94.975 | |
| 1,500.0 | 1,497.5 | 1,485.5 | 1,485.5 | 3.3 | 29.6 | 12.23 | 918.2 | -2,922.1 | 3,020.4 | 2,988.0 | 32.31 | 93.466 | |
| 1,574.8 | 1,571.0 | 1,559.0 | 1,559.0 | 3.5 | 31.1 | 12.35 | 918.2 | -2,922.1 | 3,006.7 | 2,972.9 | 33.79 | 88.980 | |
| 1,600.0 | 1,595.6 | 1,583.6 | 1,583.6 | 3.6 | 31.6 | 12.39 | 918.2 | -2,922.1 | 3,001.7 | 2,967.4 | 34.28 | 87.569 | |
| 1,673.2 | 1,667.0 | 1,655.0 | 1,655.0 | 3.9 | 33.0 | 12.53 | 918.2 | -2,922.1 | 2,985.9 | 2,950.2 | 35.67 | 83.701 | |
| 1,700.0 | 1,693.1 | 1,681.1 | 1,681.1 | 4.0 | 33.5 | 12.58 | 918.2 | -2,922.1 | 2,979.7 | 2,943.5 | 36.17 | 82.375 | |
| 1,771.6 | 1,762.4 | 1,750.4 | 1,750.4 | 4.3 | 34.9 | 12.74 | 918.2 | -2,922.1 | 2,961.9 | 2,924.4 | 37.49 | 79.013 | |
| 1,800.0 | 1,789.6 | 1,777.6 | 1,777.6 | 4.4 | 35.5 | 12.81 | 918.2 | -2,922.1 | 2,954.4 | 2,916.4 | 37.99 | 77.762 | |
| 1,870.1 | 1,856.8 | 1,844.8 | 1,844.8 | 4.7 | 36.8 | 12.99 | 918.2 | -2,922.1 | 2,934.8 | 2,895.5 | 39.22 | 74.819 | |
| 1,900.0 | 1,885.3 | 1,873.3 | 1,873.3 | 4.9 | 37.4 | 13.07 | 918.2 | -2,922.1 | 2,925.9 | 2,886.1 | 39.73 | 73.635 | |
| 1,968.5 | 1,950.2 | 1,938.2 | 1,938.2 | 5.3 | 38.7 | 13.27 | 918.2 | -2,922.1 | 2,904.4 | 2,863.6 | 40.88 | 71.046 | |
| 2,000.0 | 1,979.8 | 1,967.8 | 1,967.8 | 5.5 | 39.3 | 13.37 | 918.2 | -2,922.1 | 2,894.1 | 2,852.7 | 41.39 | 69.915 | |
| 2,044.9 | 2,021.9 | 2,009.9 | 2,009.9 | 5.7 | 40.1 | 13.52 | 918.2 | -2,922.1 | 2,878.8 | 2,836.7 | 42.11 | 68.360 | |
| 2,066.9 | 2,042.5 | 2,030.5 | 2,030.5 | 5.9 | 40.6 | 13.55 | 918.2 | -2,922.1 | 2,871.1 | 2,828.5 | 42.57 | 67.447 | |
| 2,100.0 | 2,073.4 | 2,061.4 | 2,061.4 | 6.1 | 41.2 | 13.61 | 918.2 | -2,922.1 | 2,859.6 | 2,816.3 | 43.26 | 66.108 | |
| 2,165.3 | 2,134.4 | 2,122.4 | 2,122.4 | 6.5 | 42.4 | 13.72 | 918.2 | -2,922.1 | 2,836.9 | 2,792.3 | 44.62 | 63.580 | |
| 2,200.0 | 2,166.8 | 2,154.8 | 2,154.8 | 6.8 | 43.1 | 13.78 | 918.2 | -2,922.1 | 2,824.8 | 2,779.5 | 45.34 | 62.298 | |
| 2,263.8 | 2,226.4 | 2,214.4 | 2,214.4 | 7.2 | 44.3 | 13.89 | 918.2 | -2,922.1 | 2,802.7 | 2,756.0 | 46.68 | 60.039 | |
| 2,300.0 | 2,260.2 | 2,248.2 | 2,248.2 | 7.4 | 44.9 | 13.95 | 918.2 | -2,922.1 | 2,790.1 | 2,742.6 | 47.44 | 58.811 | |
| 2,362.2 | 2,318.3 | 2,306.3 | 2,306.3 | 7.9 | 46.1 | 14.06 | 918.2 | -2,922.1 | 2,768.5 | 2,719.7 | 48.75 | 56.787 | |
| 2,400.0 | 2,353.6 | 2,341.6 | 2,341.6 | 8.1 | 46.8 | 14.13 | 918.2 | -2,922.1 | 2,755.3 | 2,705.8 | 49.55 | 55.609 | |
| 2,460.6 | 2,410.3 | 2,398.3 | 2,398.3 | 8.6 | 48.0 | 14.24 | 918.2 | -2,922.1 | 2,734.3 | 2,683.4 | 50.83 | 53.793 | |
| 2,500.0 | 2,447.0 | 2,435.0 | 2,435.0 | 8.9 | 48.7 | 14.31 | 918.2 | -2,922.1 | 2,720.6 | 2,668.9 | 51.66 | 52.660 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,490.2 | 2,490.2 | 9.3 | 49.8 | 14.42 | 918.2 | -2,922.1 | 2,700.1 | 2,647.2 | 52.92 | 51.026 | |
| 2,600.0 | 2,540.5 | 2,528.5 | 2,528.5 | 9.6 | 50.6 | 14.50 | 918.2 | -2,922.1 | 2,685.9 | 2,632.1 | 53.79 | 49.937 | |
| 2,657.5 | 2,594.2 | 2,582.2 | 2,582.2 | 10.0 | 51.7 | 14.61 | 918.2 | -2,922.1 | 2,666.0 | 2,611.0 | 55.01 | 48.464 | |
| 2,700.0 | 2,633.9 | 2,621.9 | 2,621.9 | 10.3 | 52.5 | 14.69 | 918.2 | -2,922.1 | 2,651.3 | 2,595.3 | 55.92 | 47.415 | |
| 2,755.9 | 2,686.1 | 2,674.1 | 2,674.1 | 10.7 | 53.5 | 14.80 | 918.2 | -2,922.1 | 2,631.9 | 2,574.8 | 57.11 | 46.085 | |
| 2,800.0 | 2,727.3 | 2,715.3 | 2,715.3 | 11.0 | 54.3 | 14.89 | 918.2 | -2,922.1 | 2,616.6 | 2,558.6 | 58.05 | 45.074 | |
| 2,854.3 | 2,778.1 | 2,766.1 | 2,766.1 | 11.4 | 55.4 | 15.00 | 918.2 | -2,922.1 | 2,597.8 | 2,538.6 | 59.22 | 43.871 | |
| 2,900.0 | 2,820.7 | 2,808.7 | 2,808.7 | 11.8 | 56.2 | 15.09 | 918.2 | -2,922.1 | 2,582.0 | 2,521.8 | 60.19 | 42.895 | |
| 2,952.7 | 2,870.0 | 2,858.0 | 2,858.0 | 12.2 | 57.2 | 15.20 | 918.2 | -2,922.1 | 2,563.8 | 2,502.5 | 61.33 | 41.805 | |
| 3,000.0 | 2,914.2 | 2,902.2 | 2,902.2 | 12.5 | 58.1 | 15.30 | 918.2 | -2,922.1 | 2,547.5 | 2,485.1 | 62.34 | 40.862 | |
| 3,051.2 | 2,962.0 | 2,950.0 | 2,950.0 | 12.9 | 59.1 | 15.41 | 918.2 | -2,922.1 | 2,529.8 | 2,466.3 | 63.44 | 39.874 | |
| 3,100.0 | 3,007.6 | 2,995.6 | 2,995.6 | 13.3 | 60.0 | 15.51 | 918.2 | -2,922.1 | 2,512.9 | 2,448.4 | 64.50 | 38.962 | |
| 3,149.6 | 3,053.9 | 3,041.9 | 3,041.9 | 13.6 | 60.9 | 15.62 | 918.2 | -2,922.1 | 2,495.8 | 2,430.2 | 65.57 | 38.064 | |
| 3,200.0 | 3,101.0 | 3,089.0 | 3,089.0 | 14.0 | 61.8 | 15.73 | 918.2 | -2,922.1 | 2,478.4 | 2,411.7 | 66.66 | 37.182 | |
| 3,248.0 | 3,145.9 | 3,133.9 | 3,133.9 | 14.4 | 62.8 | 15.84 | 918.2 | -2,922.1 | 2,461.8 | 2,394.1 | 67.70 | 36.366 | |
| 3,300.0 | 3,194.4 | 3,182.4 | 3,182.4 | 14.8 | 63.7 | 15.96 | 918.2 | -2,922.1 | 2,443.9 | 2,375.1 | 68.82 | 35.511 | |
| 3,346.4 | 3,237.8 | 3,225.8 | 3,225.8 | 15.1 | 64.6 | 16.07 | 918.2 | -2,922.1 | 2,427.9 | 2,358.1 | 69.83 | 34.769 | |
| 3,400.0 | 3,287.8 | 3,275.8 | 3,275.8 | 15.5 | 65.6 | 16.19 | 918.2 | -2,922.1 | 2,409.5 | 2,338.5 | 70.99 | 33.939 | |
| 3,444.9 | 3,329.8 | 3,317.8 | 3,317.8 | 15.9 | 66.4 | 16.30 | 918.2 | -2,922.1 | 2,394.0 | 2,322.1 | 71.97 | 33.264 | |
| 3,500.0 | 3,381.3 | 3,369.3 | 3,369.3 | 16.3 | 67.5 | 16.43 | 918.2 | -2,922.1 | 2,375.1 | 2,301.9 | 73.17 | 32.459 | |
| 3,543.3 | 3,421.7 | 3,409.7 | 3,409.7 | 16.6 | 68.3 | 16.53 | 918.2 | -2,922.1 | 2,360.2 | 2,286.1 | 74.12 | 31.845 | |
| 3,600.0 | 3,474.7 | 3,462.7 | 3,462.7 | 17.0 | 69.4 | 16.67 | 918.2 | -2,922.1 | 2,340.7 | 2,265.3 | 75.35 | 31.063 | |
| 3,641.7 | 3,513.7 | 3,501.7 | 3,501.7 | 17.3 | 70.1 | 16.78 | 918.2 | -2,922.1 | 2,326.4 | 2,250.1 | 76.27 | 30.503 | |
| 3,700.0 | 3,568.1 | 3,556.1 | 3,556.1 | 17.8 | 71.2 | 16.93 | 918.2 | -2,922.1 | 2,306.4 | 2,228.8 | 77.54 | 29.743 | |
| 3,740.1 | 3,605.6 | 3,593.6 | 3,593.6 | 18.1 | 72.0 | 17.03 | 918.2 | -2,922.1 | 2,292.6 | 2,214.2 | 78.42 | 29.233 | |
| 3,800.0 | 3,661.5 | 3,649.5 | 3,649.5 | 18.5 | 73.1 | 17.19 | 918.2 | -2,922.1 | 2,272.1 | 2,192.3 | 79.74 | 28.494 | |
| 3,838.6 | 3,697.6 | 3,685.6 | 3,685.6 | 18.8 | 73.8 | 17.29 | 918.2 | -2,922.1 | 2,258.8 | 2,178.3 | 80.59 | 28.030 | |
| 3,900.0 | 3,754.9 | 3,742.9 | 3,742.9 | 19.3 | 75.0 | 17.46 | 918.2 | -2,922.1 | 2,237.8 | 2,155.9 | 81.94 | 27.310 | |
| 3,937.0 | 3,789.5 | 3,777.5 | 3,777.5 | 19.6 | 75.7 | 17.56 | 918.2 | -2,922.1 | 2,225.2 | 2,142.4 | 82.76 | 26.888 | |
| 4,000.0 | 3,848.4 | 3,836.4 | 3,836.4 | 20.1 | 76.9 | 17.73 | 918.2 | -2,922.1 | 2,203.6 | 2,119.5 | 84.15 | 26.187 | |
| 4,035.4 | 3,881.5 | 3,869.5 | 3,869.5 | 20.3 | 77.5 | 17.83 | 918.2 | -2,922.1 | 2,191.5 | 2,106.6 | 84.93 | 25.802 | |
| 4,100.0 | 3,941.8 | 3,929.8 | 3,929.8 | 20.8 | 78.8 | 18.02 | 918.2 | -2,922.1 | 2,169.5 | 2,083.1 | 86.37 | 25.119 | |
| 4,133.8 | 3,973.4 | 3,961.4 | 3,961.4 | 21.1 | 79.4 | 18.12 | 918.2 | -2,922.1 | 2,157.9 | 2,070.8 | 87.12 | 24.770 | |
| 4,200.0 | 4,035.2 | 4,023.2 | 4,023.2 | 21.6 | 80.6 | 18.31 | 918.2 | -2,922.1 | 2,135.4 | 2,046.8 | 88.59 | 24.104 | |
| 4,232.3 | 4,065.4 | 4,053.4 | 4,053.4 | 21.8 | 81.2 | 18.41 | 918.2 | -2,922.1 | 2,124.4 | 2,035.0 | 89.31 | 23.787 | |
| 4,300.0 | 4,128.6 | 4,116.6 | 4,116.6 | 22.3 | 82.5 | 18.62 | 918.2 | -2,922.1 | 2,101.3 | 2,010.5 | 90.82 | 23.137 | |
| 4,330.7 | 4,157.3 | 4,145.3 | 4,145.3 | 22.6 | 83.1 | 18.71 | 918.2 | -2,922.1 | 2,090.9 | 1,999.3 | 91.51 | 22.849 | |
| 4,400.0 | 4,222.0 | 4,210.0 | 4,210.0 | 23.1 | 84.4 | 18.93 | 918.2 | -2,922.1 | 2,067.3 | 1,974.2 | 93.06 | 22.215 | |
| 4,429.1 | 4,249.3 | 4,237.3 | 4,237.3 | 23.3 | 84.9 | 19.02 | 918.2 | -2,922.1 | 2,057.4 | 1,963.7 | 93.71 | 21.954 | |
| 4,500.0 | 4,315.5 | 4,303.5 | 4,303.5 | 23.9 | 86.3 | 19.25 | 918.2 | -2,922.1 | 2,033.4 | 1,938.1 | 95.31 | 21.335 | |
| 4,527.5 | 4,341.2 | 4,329.2 | 4,329.2 | 24.1 | 86.8 | 19.34 | 918.2 | -2,922.1 | 2,024.0 | 1,928.1 | 95.93 | 21.099 | |
| 4,600.0 | 4,408.9 | 4,396.9 | 4,396.9 | 24.6 | 88.2 | 19.59 | 918.2 | -2,922.1 | 1,999.5 | 1,901.9 | 97.56 | 20.494 | |
| 4,626.0 | 4,433.2 | 4,421.2 | 4,421.2 | 24.8 | 88.6 | 19.68 | 918.2 | -2,922.1 | 1,990.7 | 1,892.5 | 98.15 | 20.282 | |
| 4,700.0 | 4,502.3 | 4,490.3 | 4,490.3 | 25.4 | 90.0 | 19.93 | 918.2 | -2,922.1 | 1,965.7 | 1,865.8 | 99.83 | 19.690 | |
| 4,724.4 | 4,525.1 | 4,513.1 | 4,513.1 | 25.6 | 90.5 | 20.02 | 918.2 | -2,922.1 | 1,957.4 | 1,857.0 | 100.39 | 19.499 | |
| 4,800.0 | 4,595.7 | 4,583.7 | 4,583.7 | 26.2 | 91.9 | 20.29 | 918.2 | -2,922.1 | 1,931.9 | 1,829.8 | 102.11 | 18.920 | |
| 4,822.8 | 4,617.1 | 4,605.1 | 4,605.1 | 26.3 | 92.3 | 20.38 | 918.2 | -2,922.1 | 1,924.2 | 1,821.6 | 102.63 | 18.749 | |
| 4,900.0 | 4,689.2 | 4,677.2 | 4,677.2 | 26.9 | 93.8 | 20.66 | 918.2 | -2,922.1 | 1,898.2 | 1,793.8 | 104.39 | 18.183 | |
| 4,921.2 | 4,709.0 | 4,697.0 | 4,697.0 | 27.1 | 94.2 | 20.74 | 918.2 | -2,922.1 | 1,891.1 | 1,786.2 | 104.88 | 18.031 | |
| 5,000.0 | 4,782.6 | 4,770.6 | 4,770.6 | 27.7 | 95.7 | 21.05 | 918.2 | -2,922.1 | 1,864.6 | 1,757.9 | 106.69 | 17.477 | |
| 5,019.7 | 4,801.0 | 4,789.0 | 4,789.0 | 27.8 | 96.0 | 21.12 | 918.2 | -2,922.1 | 1,858.0 | 1,750.9 | 107.15 | 17.341 | |
| 5,100.0 | 4,876.0 | 4,864.0 | 4,864.0 | 28.4 | 97.5 | 21.44 | 918.2 | -2,922.1 | 1,831.1 | 1,722.1 | 109.00 | 16.799 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,880.9 | 4,880.9 | 28.6 | 97.9 | 21.52 | 918.2 | -2,922.1 | 1,825.0 | 1,715.6 | 109.42 | 16.679 | |
| 5,159.9 | 4,932.0 | 4,920.0 | 4,920.0 | 28.9 | 98.7 | 21.69 | 918.2 | -2,922.1 | 1,811.0 | 1,700.6 | 110.39 | 16.405 | |
| 5,200.0 | 4,969.5 | 4,957.5 | 4,957.5 | 29.2 | 99.4 | 21.75 | 918.2 | -2,922.1 | 1,797.9 | 1,686.2 | 111.70 | 16.096 | |
| 5,216.5 | 4,985.1 | 4,973.1 | 4,973.1 | 29.3 | 99.7 | 21.77 | 918.2 | -2,922.1 | 1,792.6 | 1,680.4 | 112.23 | 15.973 | |
| 5,300.0 | 5,064.0 | 5,052.0 | 5,052.0 | 29.7 | 101.3 | 21.90 | 918.2 | -2,922.1 | 1,767.3 | 1,652.4 | 114.87 | 15.385 | |
| 5,314.9 | 5,078.2 | 5,066.2 | 5,066.2 | 29.8 | 101.6 | 21.92 | 918.2 | -2,922.1 | 1,763.0 | 1,647.7 | 115.34 | 15.286 | |
| 5,400.0 | 5,159.6 | 5,147.6 | 5,147.6 | 30.2 | 103.3 | 22.04 | 918.2 | -2,922.1 | 1,739.9 | 1,621.9 | 117.96 | 14.749 | |
| 5,413.4 | 5,172.4 | 5,160.4 | 5,160.4 | 30.3 | 103.5 | 22.06 | 918.2 | -2,922.1 | 1,736.4 | 1,618.1 | 118.37 | 14.670 | |
| 5,500.0 | 5,256.1 | 5,244.1 | 5,244.1 | 30.7 | 105.2 | 22.18 | 918.2 | -2,922.1 | 1,715.6 | 1,594.7 | 120.96 | 14.183 | |
| 5,511.8 | 5,267.6 | 5,255.6 | 5,255.6 | 30.7 | 105.4 | 22.19 | 918.2 | -2,922.1 | 1,713.0 | 1,591.7 | 121.31 | 14.120 | |
| 5,600.0 | 5,353.5 | 5,341.5 | 5,341.5 | 31.1 | 107.2 | 22.30 | 918.2 | -2,922.1 | 1,694.6 | 1,570.7 | 123.87 | 13.681 | |
| 5,610.2 | 5,363.5 | 5,351.5 | 5,351.5 | 31.1 | 107.4 | 22.31 | 918.2 | -2,922.1 | 1,692.6 | 1,568.4 | 124.16 | 13.633 | |
| 5,700.0 | 5,451.6 | 5,439.6 | 5,439.6 | 31.4 | 109.1 | 22.41 | 918.2 | -2,922.1 | 1,676.7 | 1,550.1 | 126.66 | 13.238 | |
| 5,708.6 | 5,460.2 | 5,448.2 | 5,448.2 | 31.4 | 109.3 | 22.42 | 918.2 | -2,922.1 | 1,675.3 | 1,548.4 | 126.89 | 13.203 | |
| 5,800.0 | 5,550.4 | 5,538.4 | 5,538.4 | 31.7 | 111.1 | 22.51 | 918.2 | -2,922.1 | 1,662.1 | 1,532.7 | 129.33 | 12.851 | |
| 5,807.1 | 5,557.4 | 5,545.4 | 5,545.4 | 31.7 | 111.3 | 22.51 | 918.2 | -2,922.1 | 1,661.2 | 1,531.6 | 129.51 | 12.826 | |
| 5,900.0 | 5,649.6 | 5,637.6 | 5,637.6 | 31.9 | 113.1 | 22.58 | 918.2 | -2,922.1 | 1,650.7 | 1,518.8 | 131.88 | 12.517 | |
| 5,905.5 | 5,655.1 | 5,643.1 | 5,643.1 | 31.9 | 113.2 | 22.58 | 918.2 | -2,922.1 | 1,650.1 | 1,518.1 | 132.01 | 12.500 | |
| 6,000.0 | 5,749.2 | 5,737.2 | 5,737.2 | 32.1 | 115.1 | 22.64 | 918.2 | -2,922.1 | 1,642.4 | 1,508.2 | 134.28 | 12.231 | |
| 6,003.9 | 5,753.1 | 5,741.1 | 5,741.1 | 32.1 | 115.2 | 22.64 | 918.2 | -2,922.1 | 1,642.2 | 1,507.8 | 134.38 | 12.221 | |
| 6,100.0 | 5,849.1 | 5,837.1 | 5,837.1 | 32.3 | 117.1 | 22.67 | 918.2 | -2,922.1 | 1,637.5 | 1,500.9 | 136.55 | 11.992 | |
| 6,102.3 | 5,851.4 | 5,839.4 | 5,839.4 | 32.3 | 117.2 | 22.67 | 918.2 | -2,922.1 | 1,637.4 | 1,500.8 | 136.60 | 11.987 | |
| 6,200.8 | 5,949.8 | 5,937.8 | 5,937.8 | 32.4 | 119.1 | 22.68 | 918.2 | -2,922.1 | 1,635.7 | 1,497.0 | 138.68 | 11.795 | |
| 6,204.9 | 5,953.9 | 5,941.9 | 5,941.9 | 32.4 | 119.2 | -61.76 | 918.2 | -2,922.1 | 1,635.7 | 1,486.1 | 149.62 | 10.932 | |
| 6,234.9 | 5,983.9 | 5,971.9 | 5,971.9 | 32.4 | 119.8 | -61.76 | 918.2 | -2,922.1 | 1,635.7 | 1,485.4 | 150.25 | 10.886 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 5,987.0 | 5,987.0 | 32.4 | 120.1 | -151.75 | 918.2 | -2,922.1 | 1,635.8 | 1,496.2 | 139.64 | 11.714 | |
| 6,299.2 | 6,048.2 | 6,036.2 | 6,036.2 | 32.4 | 121.1 | -151.71 | 918.2 | -2,922.1 | 1,638.2 | 1,498.1 | 140.10 | 11.693 | |
| 6,300.0 | 6,048.9 | 6,036.9 | 6,036.9 | 32.4 | 121.1 | -151.71 | 918.2 | -2,922.1 | 1,638.3 | 1,498.2 | 140.11 | 11.693 | |
| 6,350.0 | 6,098.5 | 6,086.5 | 6,086.5 | 32.4 | 122.1 | -151.60 | 918.2 | -2,922.1 | 1,643.8 | 1,503.8 | 140.07 | 11.736 | |
| 6,397.6 | 6,145.3 | 6,133.3 | 6,133.3 | 32.3 | 123.1 | -151.44 | 918.2 | -2,922.1 | 1,651.9 | 1,512.4 | 139.57 | 11.836 | |
| 6,400.0 | 6,147.6 | 6,135.6 | 6,135.6 | 32.3 | 123.1 | -151.43 | 918.2 | -2,922.1 | 1,652.4 | 1,512.9 | 139.53 | 11.843 | |
| 6,450.0 | 6,195.8 | 6,183.8 | 6,183.8 | 32.2 | 124.1 | -151.18 | 918.2 | -2,922.1 | 1,664.0 | 1,525.5 | 138.51 | 12.014 | |
| 6,496.0 | 6,239.3 | 6,227.3 | 6,227.3 | 32.1 | 125.0 | -150.89 | 918.2 | -2,922.1 | 1,677.3 | 1,540.2 | 137.17 | 12.229 | |
| 6,500.0 | 6,243.0 | 6,231.0 | 6,231.0 | 32.1 | 125.0 | -150.86 | 918.2 | -2,922.1 | 1,678.6 | 1,541.6 | 137.03 | 12.249 | |
| 6,550.0 | 6,289.0 | 6,277.0 | 6,277.0 | 32.0 | 126.0 | -150.45 | 918.2 | -2,922.1 | 1,696.1 | 1,561.0 | 135.15 | 12.550 | |
| 6,594.5 | 6,328.6 | 6,316.6 | 6,316.6 | 31.8 | 126.8 | -150.00 | 918.2 | -2,922.1 | 1,714.1 | 1,580.9 | 133.18 | 12.870 | |
| 6,600.0 | 6,333.4 | 6,321.4 | 6,321.4 | 31.8 | 126.9 | -149.93 | 918.2 | -2,922.1 | 1,716.5 | 1,583.6 | 132.92 | 12.913 | |
| 6,650.0 | 6,376.2 | 6,364.2 | 6,364.2 | 31.7 | 127.7 | -149.30 | 918.2 | -2,922.1 | 1,739.6 | 1,609.2 | 130.44 | 13.337 | |
| 6,692.9 | 6,411.3 | 6,399.3 | 6,399.3 | 31.6 | 128.4 | -148.63 | 918.2 | -2,922.1 | 1,761.7 | 1,633.5 | 128.19 | 13.742 | |
| 6,700.0 | 6,417.0 | 6,405.0 | 6,405.0 | 31.5 | 128.5 | -148.51 | 918.2 | -2,922.1 | 1,765.5 | 1,637.7 | 127.82 | 13.813 | |
| 6,750.0 | 6,455.7 | 6,443.7 | 6,443.7 | 31.4 | 129.3 | -147.55 | 918.2 | -2,922.1 | 1,794.0 | 1,668.8 | 125.20 | 14.329 | |
| 6,791.3 | 6,486.0 | 6,474.0 | 6,474.0 | 31.3 | 129.9 | -146.60 | 918.2 | -2,922.1 | 1,819.4 | 1,696.2 | 123.17 | 14.771 | |
| 6,800.0 | 6,492.2 | 6,480.2 | 6,480.2 | 31.3 | 130.0 | -146.38 | 918.2 | -2,922.1 | 1,824.9 | 1,702.1 | 122.78 | 14.864 | |
| 6,850.0 | 6,526.1 | 6,514.1 | 6,514.1 | 31.2 | 130.7 | -144.95 | 918.2 | -2,922.1 | 1,858.2 | 1,737.4 | 120.79 | 15.384 | |
| 6,889.7 | 6,551.2 | 6,539.2 | 6,539.2 | 31.2 | 131.2 | -143.59 | 918.2 | -2,922.1 | 1,886.2 | 1,766.5 | 119.71 | 15.757 | |
| 6,900.0 | 6,557.4 | 6,545.4 | 6,545.4 | 31.2 | 131.4 | -143.20 | 918.2 | -2,922.1 | 1,893.7 | 1,774.2 | 119.52 | 15.844 | |
| 6,950.0 | 6,586.0 | 6,574.0 | 6,574.0 | 31.1 | 131.9 | -141.06 | 918.2 | -2,922.1 | 1,931.2 | 1,811.9 | 119.32 | 16.185 | |
| 6,988.2 | 6,605.8 | 6,593.8 | 6,593.8 | 31.2 | 132.3 | -139.10 | 918.2 | -2,922.1 | 1,961.2 | 1,841.1 | 120.11 | 16.329 | |
| 7,000.0 | 6,611.5 | 6,599.5 | 6,599.5 | 31.2 | 132.4 | -138.42 | 918.2 | -2,922.1 | 1,970.7 | 1,850.1 | 120.54 | 16.348 | |
| 7,050.0 | 6,634.1 | 6,622.1 | 6,622.1 | 31.2 | 132.9 | -135.16 | 918.2 | -2,922.1 | 2,011.8 | 1,888.2 | 123.55 | 16.283 | |
| 7,086.6 | 6,648.6 | 6,636.6 | 6,636.6 | 31.3 | 133.2 | -132.27 | 918.2 | -2,922.1 | 2,042.8 | 1,915.8 | 127.05 | 16.079 | |
| 7,100.0 | 6,653.4 | 6,641.4 | 6,641.4 | 31.4 | 133.3 | -131.10 | 918.2 | -2,922.1 | 2,054.4 | 1,925.8 | 128.61 | 15.974 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,657.5 | 6,657.5 | 31.6 | 133.6 | -126.03 | 918.2 | -2,922.1 | 2,098.3 | 1,962.5 | 135.76 | 15.456 | |
| 7,185.0 | 6,678.8 | 6,666.8 | 6,666.8 | 31.7 | 133.8 | -121.76 | 918.2 | -2,922.1 | 2,129.7 | 1,987.9 | 141.84 | 15.015 | |
| 7,200.0 | 6,682.3 | 6,670.3 | 6,670.3 | 31.8 | 133.9 | -119.73 | 918.2 | -2,922.1 | 2,143.3 | 1,998.7 | 144.63 | 14.820 | |
| 7,250.0 | 6,691.6 | 6,679.6 | 6,679.6 | 32.1 | 134.1 | -111.99 | 918.2 | -2,922.1 | 2,189.2 | 2,035.0 | 154.15 | 14.201 | |
| 7,283.4 | 6,696.0 | 6,684.0 | 6,684.0 | 32.3 | 134.1 | -105.95 | 918.2 | -2,922.1 | 2,220.2 | 2,060.3 | 159.97 | 13.879 | |
| 7,300.0 | 6,697.5 | 6,685.5 | 6,685.5 | 32.4 | 134.2 | -102.72 | 918.2 | -2,922.1 | 2,235.7 | 2,073.3 | 162.41 | 13.766 | |
| 7,350.0 | 6,699.9 | 6,687.9 | 6,687.9 | 32.8 | 134.2 | -92.16 | 918.2 | -2,922.1 | 2,282.6 | 2,115.7 | 166.84 | 13.681 | |
| 7,364.4 | 6,700.0 | 6,688.0 | 6,688.0 | 32.9 | 134.2 | -88.96 | 918.2 | -2,922.1 | 2,296.1 | 2,129.0 | 167.08 | 13.743 | |
| 7,381.9 | 6,699.9 | 6,687.9 | 6,687.9 | 33.1 | 134.2 | -88.95 | 918.2 | -2,922.1 | 2,312.6 | 2,145.4 | 167.23 | 13.829 | |
| 7,400.0 | 6,699.8 | 6,687.8 | 6,687.8 | 33.2 | 134.2 | -88.94 | 918.2 | -2,922.1 | 2,329.7 | 2,162.3 | 167.39 | 13.918 | |
| 7,480.3 | 6,699.2 | 6,687.2 | 6,687.2 | 34.0 | 134.2 | -88.91 | 918.2 | -2,922.1 | 2,405.6 | 2,237.4 | 168.19 | 14.303 | |
| 7,500.0 | 6,699.1 | 6,687.1 | 6,687.1 | 34.2 | 134.2 | -88.90 | 918.2 | -2,922.1 | 2,424.2 | 2,255.8 | 168.38 | 14.397 | |
| 7,578.7 | 6,698.6 | 6,686.6 | 6,686.6 | 35.2 | 134.2 | -88.86 | 918.2 | -2,922.1 | 2,499.0 | 2,329.6 | 169.32 | 14.759 | |
| 7,600.0 | 6,698.5 | 6,686.5 | 6,686.5 | 35.4 | 134.2 | -88.85 | 918.2 | -2,922.1 | 2,519.2 | 2,349.6 | 169.57 | 14.856 | |
| 7,677.1 | 6,698.0 | 6,686.0 | 6,686.0 | 36.5 | 134.2 | -88.81 | 918.2 | -2,922.1 | 2,592.7 | 2,422.1 | 170.63 | 15.195 | |
| 7,700.0 | 6,697.8 | 6,685.8 | 6,685.8 | 36.8 | 134.2 | -88.80 | 918.2 | -2,922.1 | 2,614.5 | 2,443.6 | 170.94 | 15.295 | |
| 7,775.6 | 6,697.3 | 6,685.3 | 6,685.3 | 38.0 | 134.2 | -88.76 | 918.2 | -2,922.1 | 2,686.8 | 2,514.7 | 172.09 | 15.613 | |
| 7,800.0 | 6,697.2 | 6,685.2 | 6,685.2 | 38.3 | 134.2 | -88.75 | 918.2 | -2,922.1 | 2,710.2 | 2,537.8 | 172.46 | 15.715 | |
| 7,874.0 | 6,696.7 | 6,684.7 | 6,684.7 | 39.6 | 134.2 | -88.72 | 918.2 | -2,922.1 | 2,781.2 | 2,607.5 | 173.69 | 16.013 | |
| 7,900.0 | 6,696.5 | 6,684.5 | 6,684.5 | 40.0 | 134.2 | -88.70 | 918.2 | -2,922.1 | 2,806.2 | 2,632.1 | 174.12 | 16.116 | |
| 7,972.4 | 6,696.1 | 6,684.1 | 6,684.1 | 41.3 | 134.1 | -88.67 | 918.2 | -2,922.1 | 2,875.9 | 2,700.5 | 175.41 | 16.395 | |
| 8,000.0 | 6,695.9 | 6,683.9 | 6,683.9 | 41.8 | 134.1 | -88.66 | 918.2 | -2,922.1 | 2,902.4 | 2,726.5 | 175.90 | 16.500 | |
| 8,070.8 | 6,695.4 | 6,683.4 | 6,683.4 | 43.1 | 134.1 | -88.62 | 918.2 | -2,922.1 | 2,970.8 | 2,793.5 | 177.24 | 16.761 | |
| 8,100.0 | 6,695.2 | 6,683.2 | 6,683.2 | 43.7 | 134.1 | -88.61 | 918.2 | -2,922.1 | 2,998.9 | 2,821.1 | 177.79 | 16.868 | |
| 8,169.3 | 6,694.8 | 6,682.8 | 6,682.8 | 45.1 | 134.1 | -88.58 | 918.2 | -2,922.1 | 3,065.9 | 2,886.7 | 179.17 | 17.112 | |
| 8,200.0 | 6,694.6 | 6,682.6 | 6,682.6 | 45.7 | 134.1 | -88.56 | 918.2 | -2,922.1 | 3,095.7 | 2,915.9 | 179.77 | 17.220 | |
| 8,267.7 | 6,694.1 | 6,682.1 | 6,682.1 | 47.1 | 134.1 | -88.53 | 918.2 | -2,922.1 | 3,161.2 | 2,980.1 | 181.17 | 17.449 | |
| 8,300.0 | 6,693.9 | 6,681.9 | 6,681.9 | 47.8 | 134.1 | -88.51 | 918.2 | -2,922.1 | 3,192.6 | 3,010.7 | 181.84 | 17.557 | |
| 8,366.1 | 6,693.5 | 6,681.5 | 6,681.5 | 49.2 | 134.1 | -88.48 | 918.2 | -2,922.1 | 3,256.8 | 3,073.5 | 183.25 | 17.772 | |
| 8,400.0 | 6,693.3 | 6,681.3 | 6,681.3 | 49.9 | 134.1 | -88.46 | 918.2 | -2,922.1 | 3,289.7 | 3,105.7 | 183.97 | 17.881 | |
| 8,464.5 | 6,692.9 | 6,680.9 | 6,680.9 | 51.4 | 134.1 | -88.43 | 918.2 | -2,922.1 | 3,352.4 | 3,167.1 | 185.39 | 18.083 | |
| 8,500.0 | 6,692.6 | 6,680.6 | 6,680.6 | 52.1 | 134.1 | -88.42 | 918.2 | -2,922.1 | 3,386.9 | 3,200.8 | 186.17 | 18.193 | |
| 8,563.0 | 6,692.2 | 6,680.2 | 6,680.2 | 53.6 | 134.1 | -88.39 | 918.2 | -2,922.1 | 3,448.3 | 3,260.7 | 187.59 | 18.382 | |
| 8,600.0 | 6,692.0 | 6,680.0 | 6,680.0 | 54.4 | 134.1 | -88.37 | 918.2 | -2,922.1 | 3,484.4 | 3,295.9 | 188.42 | 18.492 | |
| 8,661.4 | 6,691.6 | 6,679.6 | 6,679.6 | 55.8 | 134.1 | -88.34 | 918.2 | -2,922.1 | 3,544.3 | 3,354.4 | 189.84 | 18.670 | |
| 8,700.0 | 6,691.3 | 6,679.3 | 6,679.3 | 56.7 | 134.1 | -88.32 | 918.2 | -2,922.1 | 3,581.9 | 3,391.2 | 190.72 | 18.781 | |
| 8,759.8 | 6,690.9 | 6,678.9 | 6,678.9 | 58.1 | 134.0 | -88.29 | 918.2 | -2,922.1 | 3,640.4 | 3,448.2 | 192.13 | 18.948 | |
| 8,800.0 | 6,690.7 | 6,678.7 | 6,678.7 | 59.1 | 134.0 | -88.27 | 918.2 | -2,922.1 | 3,679.6 | 3,486.6 | 193.07 | 19.059 | |
| 8,858.2 | 6,690.3 | 6,678.3 | 6,678.3 | 60.5 | 134.0 | -88.24 | 918.2 | -2,922.1 | 3,736.6 | 3,542.2 | 194.45 | 19.216 | |
| 8,900.0 | 6,690.0 | 6,678.0 | 6,678.0 | 61.5 | 134.0 | -88.22 | 918.2 | -2,922.1 | 3,777.5 | 3,582.0 | 195.45 | 19.327 | |
| 8,956.7 | 6,689.7 | 6,677.7 | 6,677.7 | 62.9 | 134.0 | -88.20 | 918.2 | -2,922.1 | 3,832.9 | 3,636.1 | 196.82 | 19.475 | |
| 9,000.0 | 6,689.4 | 6,677.4 | 6,677.4 | 63.9 | 134.0 | -88.18 | 918.2 | -2,922.1 | 3,875.4 | 3,677.5 | 197.86 | 19.586 | |
| 9,055.1 | 6,689.0 | 6,677.0 | 6,677.0 | 65.3 | 134.0 | -88.15 | 918.2 | -2,922.1 | 3,929.4 | 3,730.2 | 199.21 | 19.725 | |
| 9,100.0 | 6,688.7 | 6,676.7 | 6,676.7 | 66.4 | 134.0 | -88.13 | 918.2 | -2,922.1 | 3,973.4 | 3,773.1 | 200.30 | 19.837 | |
| 9,153.5 | 6,688.4 | 6,676.4 | 6,676.4 | 67.7 | 134.0 | -88.10 | 918.2 | -2,922.1 | 4,025.9 | 3,824.3 | 201.63 | 19.967 | |
| 9,200.0 | 6,688.1 | 6,676.1 | 6,676.1 | 68.9 | 134.0 | -88.08 | 918.2 | -2,922.1 | 4,071.5 | 3,868.8 | 202.77 | 20.079 | |
| 9,251.9 | 6,687.8 | 6,675.8 | 6,675.8 | 70.2 | 134.0 | -88.06 | 918.2 | -2,922.1 | 4,122.6 | 3,918.5 | 204.07 | 20.202 | |
| 9,300.0 | 6,687.4 | 6,675.4 | 6,675.4 | 71.4 | 134.0 | -88.03 | 918.2 | -2,922.1 | 4,169.8 | 3,964.5 | 205.27 | 20.314 | |
| 9,350.4 | 6,687.1 | 6,675.1 | 6,675.1 | 72.7 | 134.0 | -88.01 | 918.2 | -2,922.1 | 4,219.3 | 4,012.7 | 206.53 | 20.429 | |
| 9,400.0 | 6,686.8 | 6,674.8 | 6,674.8 | 73.9 | 134.0 | -87.98 | 918.2 | -2,922.1 | 4,268.1 | 4,060.3 | 207.78 | 20.541 | |
| 9,448.8 | 6,686.5 | 6,674.5 | 6,674.5 | 75.2 | 134.0 | -87.96 | 918.2 | -2,922.1 | 4,316.1 | 4,107.0 | 209.02 | 20.649 | |
| 9,500.0 | 6,686.1 | 6,674.1 | 6,674.1 | 76.5 | 133.9 | -87.94 | 918.2 | -2,922.1 | 4,366.4 | 4,156.1 | 210.32 | 20.761 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER #18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,673.8 | 6,673.8 | 77.7 | 133.9 | -87.91 | 918.2 | -2,922.1 | 4,412.9 | 4,201.4 | 211.52 | 20.863 | |
| 9,600.0 | 6,685.5 | 6,673.5 | 6,673.5 | 79.0 | 133.9 | -87.89 | 918.2 | -2,922.1 | 4,464.9 | 4,252.0 | 212.87 | 20.975 | |
| 9,645.6 | 6,685.2 | 6,673.2 | 6,673.2 | 80.2 | 133.9 | -87.87 | 918.2 | -2,922.1 | 4,509.9 | 4,295.8 | 214.04 | 21.070 | |
| 9,700.0 | 6,684.8 | 6,672.8 | 6,672.8 | 81.6 | 133.9 | -87.84 | 918.2 | -2,922.1 | 4,563.4 | 4,348.0 | 215.43 | 21.183 | |
| 9,744.1 | 6,684.6 | 6,672.6 | 6,672.6 | 82.8 | 133.9 | -87.82 | 918.2 | -2,922.1 | 4,606.9 | 4,390.3 | 216.57 | 21.272 | |
| 9,800.0 | 6,684.2 | 6,672.2 | 6,672.2 | 84.2 | 133.9 | -87.79 | 918.2 | -2,922.1 | 4,662.0 | 4,444.0 | 218.01 | 21.384 | |
| 9,842.5 | 6,683.9 | 6,671.9 | 6,671.9 | 85.3 | 133.9 | -87.77 | 918.2 | -2,922.1 | 4,703.9 | 4,484.8 | 219.11 | 21.468 | |
| 9,900.0 | 6,683.5 | 6,671.5 | 6,671.5 | 86.8 | 133.9 | -87.74 | 918.2 | -2,922.1 | 4,760.6 | 4,540.0 | 220.61 | 21.580 | |
| 9,940.9 | 6,683.3 | 6,671.3 | 6,671.3 | 87.9 | 133.9 | -87.73 | 918.2 | -2,922.1 | 4,801.0 | 4,579.3 | 221.67 | 21.658 | |
| 10,000.0 | 6,682.9 | 6,670.9 | 6,670.9 | 89.5 | 133.9 | -87.70 | 918.2 | -2,922.1 | 4,859.3 | 4,636.1 | 223.21 | 21.770 | |
| 10,039.3 | 6,682.6 | 6,670.6 | 6,670.6 | 90.5 | 133.9 | -87.68 | 918.2 | -2,922.1 | 4,898.2 | 4,673.9 | 224.24 | 21.843 | |
| 10,100.0 | 6,682.2 | 6,670.2 | 6,670.2 | 92.1 | 133.9 | -87.65 | 918.2 | -2,922.1 | 4,958.1 | 4,732.2 | 225.83 | 21.955 | |
| 10,137.8 | 6,682.0 | 6,670.0 | 6,670.0 | 93.1 | 133.9 | -87.63 | 918.2 | -2,922.1 | 4,995.4 | 4,768.6 | 226.82 | 22.024 | |
| 10,200.0 | 6,681.6 | 6,669.6 | 6,669.6 | 94.8 | 133.9 | -87.60 | 918.2 | -2,922.1 | 5,056.9 | 4,828.4 | 228.45 | 22.135 | |
| 10,236.2 | 6,681.4 | 6,669.4 | 6,669.4 | 95.7 | 133.9 | -87.58 | 918.2 | -2,922.1 | 5,092.6 | 4,863.2 | 229.40 | 22.199 | |
| 10,300.0 | 6,680.9 | 6,668.9 | 6,668.9 | 97.4 | 133.8 | -87.55 | 918.2 | -2,922.1 | 5,155.7 | 4,924.6 | 231.08 | 22.311 | |
| 10,334.6 | 6,680.7 | 6,668.7 | 6,668.7 | 98.3 | 133.8 | -87.54 | 918.2 | -2,922.1 | 5,189.9 | 4,957.9 | 232.00 | 22.371 | |
| 10,400.0 | 6,680.3 | 6,668.3 | 6,668.3 | 100.1 | 133.8 | -87.51 | 918.2 | -2,922.1 | 5,254.6 | 5,020.9 | 233.73 | 22.482 | |
| 10,433.0 | 6,680.1 | 6,668.1 | 6,668.1 | 101.0 | 133.8 | -87.49 | 918.2 | -2,922.1 | 5,287.3 | 5,052.7 | 234.60 | 22.537 | |
| 10,500.0 | 6,679.7 | 6,667.7 | 6,667.7 | 102.8 | 133.8 | -87.46 | 918.2 | -2,922.1 | 5,353.5 | 5,117.1 | 236.38 | 22.648 | |
| 10,531.5 | 6,679.4 | 6,667.4 | 6,667.4 | 103.6 | 133.8 | -87.44 | 918.2 | -2,922.1 | 5,384.7 | 5,147.5 | 237.21 | 22.700 | |
| 10,600.0 | 6,679.0 | 6,667.0 | 6,667.0 | 105.4 | 133.8 | -87.41 | 918.2 | -2,922.1 | 5,452.5 | 5,213.5 | 239.03 | 22.811 | |
| 10,629.9 | 6,678.8 | 6,666.8 | 6,666.8 | 106.2 | 133.8 | -87.39 | 918.2 | -2,922.1 | 5,482.1 | 5,242.3 | 239.83 | 22.858 | |
| 10,700.0 | 6,678.4 | 6,666.4 | 6,666.4 | 108.1 | 133.8 | -87.36 | 918.2 | -2,922.1 | 5,551.5 | 5,309.8 | 241.69 | 22.969 | |
| 10,728.3 | 6,678.2 | 6,666.2 | 6,666.2 | 108.9 | 133.8 | -87.35 | 918.2 | -2,922.1 | 5,579.5 | 5,337.1 | 242.45 | 23.013 | |
| 10,800.0 | 6,677.7 | 6,665.7 | 6,665.7 | 110.8 | 133.8 | -87.31 | 918.2 | -2,922.1 | 5,650.5 | 5,406.2 | 244.36 | 23.124 | |
| 10,826.7 | 6,677.5 | 6,665.5 | 6,665.5 | 111.5 | 133.8 | -87.30 | 918.2 | -2,922.1 | 5,677.0 | 5,432.0 | 245.08 | 23.164 | |
| 10,900.0 | 6,677.1 | 6,665.1 | 6,665.1 | 113.5 | 133.8 | -87.27 | 918.2 | -2,922.1 | 5,749.6 | 5,502.6 | 247.04 | 23.274 | |
| 10,925.2 | 6,676.9 | 6,664.9 | 6,664.9 | 114.2 | 133.8 | -87.25 | 918.2 | -2,922.1 | 5,774.5 | 5,526.8 | 247.71 | 23.312 | |
| 11,000.0 | 6,676.4 | 6,664.4 | 6,664.4 | 116.2 | 133.8 | -87.22 | 918.2 | -2,922.1 | 5,848.7 | 5,599.0 | 249.71 | 23.422 | |
| 11,023.6 | 6,676.3 | 6,664.3 | 6,664.3 | 116.8 | 133.8 | -87.21 | 918.2 | -2,922.1 | 5,872.1 | 5,621.8 | 250.35 | 23.456 | |
| 11,100.0 | 6,675.8 | 6,663.8 | 6,663.8 | 118.9 | 133.7 | -87.17 | 918.2 | -2,922.1 | 5,947.8 | 5,695.4 | 252.40 | 23.565 | |
| 11,122.0 | 6,675.6 | 6,663.6 | 6,663.6 | 119.5 | 133.7 | -87.16 | 918.2 | -2,922.1 | 5,969.7 | 5,716.7 | 252.99 | 23.597 | |
| 11,200.0 | 6,675.1 | 6,663.1 | 6,663.1 | 121.6 | 133.7 | -87.12 | 918.2 | -2,922.1 | 6,047.0 | 5,791.9 | 255.08 | 23.706 | |
| 11,220.4 | 6,675.0 | 6,663.0 | 6,663.0 | 122.2 | 133.7 | -87.11 | 918.2 | -2,922.1 | 6,067.3 | 5,811.6 | 255.63 | 23.734 | |
| 11,300.0 | 6,674.5 | 6,662.5 | 6,662.5 | 124.3 | 133.7 | -87.07 | 918.2 | -2,922.1 | 6,146.2 | 5,888.4 | 257.78 | 23.843 | |
| 11,318.9 | 6,674.3 | 6,662.3 | 6,662.3 | 124.9 | 133.7 | -87.06 | 918.2 | -2,922.1 | 6,164.9 | 5,906.6 | 258.28 | 23.869 | |
| 11,400.0 | 6,673.8 | 6,661.8 | 6,661.8 | 127.1 | 133.7 | -87.03 | 918.2 | -2,922.1 | 6,245.4 | 5,984.9 | 260.47 | 23.977 | |
| 11,417.3 | 6,673.7 | 6,661.7 | 6,661.7 | 127.5 | 133.7 | -87.02 | 918.2 | -2,922.1 | 6,262.6 | 6,001.6 | 260.94 | 24.000 | |
| 11,500.0 | 6,673.2 | 6,661.2 | 6,661.2 | 129.8 | 133.7 | -86.98 | 918.2 | -2,922.1 | 6,344.6 | 6,081.5 | 263.17 | 24.109 | |
| 11,515.7 | 6,673.1 | 6,661.1 | 6,661.1 | 130.2 | 133.7 | -86.97 | 918.2 | -2,922.1 | 6,360.2 | 6,096.7 | 263.59 | 24.129 | |
| 11,600.0 | 6,672.5 | 6,660.5 | 6,660.5 | 132.5 | 133.7 | -86.93 | 918.2 | -2,922.1 | 6,443.9 | 6,178.0 | 265.87 | 24.237 | |
| 11,614.1 | 6,672.4 | 6,660.4 | 6,660.4 | 132.9 | 133.7 | -86.92 | 918.2 | -2,922.1 | 6,458.0 | 6,191.7 | 266.25 | 24.255 | |
| 11,700.0 | 6,671.9 | 6,659.9 | 6,659.9 | 135.3 | 133.7 | -86.88 | 918.2 | -2,922.1 | 6,543.2 | 6,274.6 | 268.58 | 24.363 | |
| 11,712.6 | 6,671.8 | 6,659.8 | 6,659.8 | 135.6 | 133.7 | -86.88 | 918.2 | -2,922.1 | 6,555.7 | 6,286.8 | 268.92 | 24.378 | |
| 11,800.0 | 6,671.2 | 6,659.2 | 6,659.2 | 138.0 | 133.6 | -86.83 | 918.2 | -2,922.1 | 6,642.5 | 6,371.2 | 271.28 | 24.486 | |
| 11,811.0 | 6,671.1 | 6,659.1 | 6,659.1 | 138.3 | 133.6 | -86.83 | 918.2 | -2,922.1 | 6,653.4 | 6,381.8 | 271.58 | 24.499 | |
| 11,900.0 | 6,670.6 | 6,658.6 | 6,658.6 | 140.7 | 133.6 | -86.79 | 918.2 | -2,922.1 | 6,741.8 | 6,467.8 | 273.99 | 24.606 | |
| 11,909.4 | 6,670.5 | 6,658.5 | 6,658.5 | 141.0 | 133.6 | -86.78 | 918.2 | -2,922.1 | 6,751.2 | 6,476.9 | 274.25 | 24.617 | |
| 11,987.2 | 6,670.0 | 6,658.0 | 6,658.0 | 143.1 | 133.6 | -86.74 | 918.2 | -2,922.1 | 6,828.5 | 6,552.1 | 276.36 | 24.709 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | | | | |
| 98.4 | 98.4 | 84.4 | 84.4 | 0.1 | 0.9 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,865.2 | 1.01 | 1,854.246 | |
| 100.0 | 100.0 | 86.0 | 86.0 | 0.1 | 0.9 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,865.2 | 1.03 | 1,820.325 | |
| 196.8 | 196.8 | 182.8 | 182.8 | 0.3 | 3.0 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,862.9 | 3.31 | 563.214 | |
| 200.0 | 200.0 | 186.0 | 186.0 | 0.3 | 3.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,862.8 | 3.39 | 549.926 | |
| 295.3 | 295.3 | 281.3 | 281.3 | 0.5 | 5.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,860.6 | 5.62 | 331.901 | |
| 300.0 | 300.0 | 286.0 | 286.0 | 0.5 | 5.2 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,860.5 | 5.73 | 325.595 | |
| 393.7 | 393.7 | 379.7 | 379.7 | 0.8 | 7.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,858.3 | 7.86 | 237.386 | |
| 400.0 | 400.0 | 386.0 | 386.0 | 0.8 | 7.2 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,858.2 | 8.00 | 233.149 | |
| 492.1 | 492.1 | 478.1 | 478.1 | 1.0 | 9.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,856.1 | 10.08 | 185.090 | |
| 500.0 | 500.0 | 486.0 | 486.0 | 1.0 | 9.3 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,855.9 | 10.26 | 181.888 | |
| 590.5 | 590.5 | 576.5 | 576.5 | 1.2 | 11.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,853.9 | 12.30 | 151.770 | |
| 600.0 | 600.0 | 586.0 | 586.0 | 1.2 | 11.3 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,853.7 | 12.51 | 149.193 | |
| 689.0 | 689.0 | 675.0 | 675.0 | 1.4 | 13.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,851.7 | 14.51 | 128.652 | |
| 700.0 | 700.0 | 686.0 | 686.0 | 1.4 | 13.3 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,851.4 | 14.75 | 126.495 | |
| 787.4 | 787.4 | 773.4 | 773.4 | 1.6 | 15.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,849.5 | 16.71 | 111.662 | |
| 800.0 | 800.0 | 786.0 | 786.0 | 1.7 | 15.3 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,849.2 | 17.00 | 109.806 | |
| 885.8 | 885.8 | 871.8 | 871.8 | 1.9 | 17.1 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,847.3 | 18.92 | 98.644 | |
| 900.0 | 900.0 | 886.0 | 886.0 | 1.9 | 17.3 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,847.0 | 19.24 | 97.016 | |
| 984.2 | 984.2 | 970.2 | 970.2 | 2.1 | 19.0 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,845.1 | 21.12 | 88.349 | |
| 1,000.0 | 1,000.0 | 986.0 | 986.0 | 2.1 | 19.4 | -59.41 | 949.8 | -1,606.4 | 1,866.2 | 1,844.7 | 21.48 | 86.898 | |
| 1,082.7 | 1,082.7 | 1,068.7 | 1,068.7 | 2.3 | 21.0 | 25.06 | 949.8 | -1,606.4 | 1,865.1 | 1,841.8 | 23.31 | 80.017 | |
| 1,100.0 | 1,100.0 | 1,086.0 | 1,086.0 | 2.3 | 21.4 | 25.07 | 949.8 | -1,606.4 | 1,864.6 | 1,840.9 | 23.69 | 78.707 | |
| 1,181.1 | 1,181.0 | 1,167.0 | 1,167.0 | 2.5 | 23.0 | 25.15 | 949.8 | -1,606.4 | 1,861.0 | 1,835.5 | 25.46 | 73.099 | |
| 1,200.0 | 1,199.8 | 1,185.8 | 1,185.8 | 2.5 | 23.4 | 25.18 | 949.8 | -1,606.4 | 1,859.9 | 1,834.0 | 25.87 | 71.900 | |
| 1,279.5 | 1,279.1 | 1,265.1 | 1,265.1 | 2.7 | 25.0 | 25.32 | 949.8 | -1,606.4 | 1,853.9 | 1,826.3 | 27.58 | 67.225 | |
| 1,300.0 | 1,299.5 | 1,285.5 | 1,285.5 | 2.8 | 25.4 | 25.36 | 949.8 | -1,606.4 | 1,852.0 | 1,824.0 | 28.01 | 66.113 | |
| 1,377.9 | 1,376.9 | 1,362.9 | 1,362.9 | 3.0 | 26.9 | 25.56 | 949.8 | -1,606.4 | 1,843.7 | 1,814.0 | 29.66 | 62.160 | |
| 1,400.0 | 1,398.7 | 1,384.7 | 1,384.7 | 3.0 | 27.4 | 25.62 | 949.8 | -1,606.4 | 1,841.0 | 1,810.8 | 30.12 | 61.121 | |
| 1,476.4 | 1,474.2 | 1,460.2 | 1,460.2 | 3.2 | 28.9 | 25.87 | 949.8 | -1,606.4 | 1,830.5 | 1,798.8 | 31.70 | 57.737 | |
| 1,500.0 | 1,497.5 | 1,483.5 | 1,483.5 | 3.3 | 29.4 | 25.95 | 949.8 | -1,606.4 | 1,826.9 | 1,794.7 | 32.19 | 56.759 | |
| 1,574.8 | 1,571.0 | 1,557.0 | 1,557.0 | 3.5 | 30.8 | 26.26 | 949.8 | -1,606.4 | 1,814.3 | 1,780.6 | 33.70 | 53.829 | |
| 1,600.0 | 1,595.6 | 1,581.6 | 1,581.6 | 3.6 | 31.3 | 26.37 | 949.8 | -1,606.4 | 1,809.7 | 1,775.5 | 34.21 | 52.901 | |
| 1,673.2 | 1,667.0 | 1,653.0 | 1,653.0 | 3.9 | 32.8 | 26.73 | 949.8 | -1,606.4 | 1,795.2 | 1,759.5 | 35.66 | 50.337 | |
| 1,700.0 | 1,693.1 | 1,679.1 | 1,679.1 | 4.0 | 33.3 | 26.88 | 949.8 | -1,606.4 | 1,789.5 | 1,753.3 | 36.19 | 49.452 | |
| 1,771.6 | 1,762.4 | 1,748.4 | 1,748.4 | 4.3 | 34.7 | 27.29 | 949.8 | -1,606.4 | 1,773.1 | 1,735.6 | 37.58 | 47.185 | |
| 1,800.0 | 1,789.6 | 1,775.6 | 1,775.6 | 4.4 | 35.2 | 27.47 | 949.8 | -1,606.4 | 1,766.3 | 1,728.1 | 38.12 | 46.335 | |
| 1,870.1 | 1,856.8 | 1,842.8 | 1,842.8 | 4.7 | 36.6 | 27.95 | 949.8 | -1,606.4 | 1,748.3 | 1,708.8 | 39.45 | 44.311 | |
| 1,900.0 | 1,885.3 | 1,871.3 | 1,871.3 | 4.9 | 37.2 | 28.17 | 949.8 | -1,606.4 | 1,740.2 | 1,700.1 | 40.01 | 43.489 | |
| 1,968.5 | 1,950.2 | 1,936.2 | 1,936.2 | 5.3 | 38.5 | 28.70 | 949.8 | -1,606.4 | 1,720.6 | 1,679.3 | 41.29 | 41.668 | |
| 2,000.0 | 1,979.8 | 1,965.8 | 1,965.8 | 5.5 | 39.1 | 28.97 | 949.8 | -1,606.4 | 1,711.2 | 1,669.3 | 41.87 | 40.866 | |
| 2,044.9 | 2,021.9 | 2,007.9 | 2,007.9 | 5.7 | 39.9 | 29.36 | 949.8 | -1,606.4 | 1,697.3 | 1,654.6 | 42.70 | 39.749 | |
| 2,066.9 | 2,042.5 | 2,028.5 | 2,028.5 | 5.9 | 40.3 | 29.49 | 949.8 | -1,606.4 | 1,690.4 | 1,647.2 | 43.19 | 39.140 | |
| 2,100.0 | 2,073.4 | 2,059.4 | 2,059.4 | 6.1 | 41.0 | 29.69 | 949.8 | -1,606.4 | 1,679.9 | 1,636.0 | 43.92 | 38.248 | |
| 2,165.3 | 2,134.4 | 2,120.4 | 2,120.4 | 6.5 | 42.2 | 30.08 | 949.8 | -1,606.4 | 1,659.4 | 1,614.0 | 45.38 | 36.564 | |
| 2,200.0 | 2,166.8 | 2,152.8 | 2,152.8 | 6.8 | 42.8 | 30.29 | 949.8 | -1,606.4 | 1,648.5 | 1,602.4 | 46.16 | 35.713 | |
| 2,263.8 | 2,226.4 | 2,212.4 | 2,212.4 | 7.2 | 44.0 | 30.69 | 949.8 | -1,606.4 | 1,628.6 | 1,581.0 | 47.60 | 34.212 | |
| 2,300.0 | 2,260.2 | 2,246.2 | 2,246.2 | 7.4 | 44.7 | 30.92 | 949.8 | -1,606.4 | 1,617.3 | 1,568.9 | 48.43 | 33.398 | |
| 2,362.2 | 2,318.3 | 2,304.3 | 2,304.3 | 7.9 | 45.9 | 31.32 | 949.8 | -1,606.4 | 1,598.0 | 1,548.1 | 49.85 | 32.058 | |
| 2,400.0 | 2,353.6 | 2,339.6 | 2,339.6 | 8.1 | 46.6 | 31.57 | 949.8 | -1,606.4 | 1,586.3 | 1,535.6 | 50.71 | 31.279 | |
| 2,460.6 | 2,410.3 | 2,396.3 | 2,396.3 | 8.6 | 47.7 | 31.97 | 949.8 | -1,606.4 | 1,567.6 | 1,515.5 | 52.11 | 30.080 | |
| 2,500.0 | 2,447.0 | 2,433.0 | 2,433.0 | 8.9 | 48.5 | 32.24 | 949.8 | -1,606.4 | 1,555.4 | 1,502.4 | 53.03 | 29.334 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,488.2 | 2,488.2 | 9.3 | 49.6 | 32.65 | 949.8 | -1,606.4 | 1,537.3 | 1,482.9 | 54.40 | 28.259 | |
| 2,600.0 | 2,540.5 | 2,526.5 | 2,526.5 | 9.6 | 50.4 | 32.94 | 949.8 | -1,606.4 | 1,524.8 | 1,469.5 | 55.36 | 27.544 | |
| 2,657.5 | 2,594.2 | 2,580.2 | 2,580.2 | 10.0 | 51.4 | 33.36 | 949.8 | -1,606.4 | 1,507.3 | 1,450.6 | 56.71 | 26.578 | |
| 2,700.0 | 2,633.9 | 2,619.9 | 2,619.9 | 10.3 | 52.2 | 33.67 | 949.8 | -1,606.4 | 1,494.4 | 1,436.7 | 57.72 | 25.892 | |
| 2,755.9 | 2,686.1 | 2,672.1 | 2,672.1 | 10.7 | 53.3 | 34.09 | 949.8 | -1,606.4 | 1,477.5 | 1,418.5 | 59.05 | 25.024 | |
| 2,800.0 | 2,727.3 | 2,713.3 | 2,713.3 | 11.0 | 54.1 | 34.43 | 949.8 | -1,606.4 | 1,464.3 | 1,404.2 | 60.10 | 24.365 | |
| 2,854.3 | 2,778.1 | 2,764.1 | 2,764.1 | 11.4 | 55.1 | 34.86 | 949.8 | -1,606.4 | 1,448.0 | 1,386.6 | 61.40 | 23.583 | |
| 2,900.0 | 2,820.7 | 2,806.7 | 2,806.7 | 11.8 | 56.0 | 35.22 | 949.8 | -1,606.4 | 1,434.3 | 1,371.8 | 62.50 | 22.949 | |
| 2,952.7 | 2,870.0 | 2,856.0 | 2,856.0 | 12.2 | 57.0 | 35.65 | 949.8 | -1,606.4 | 1,418.7 | 1,354.9 | 63.78 | 22.244 | |
| 3,000.0 | 2,914.2 | 2,900.2 | 2,900.2 | 12.5 | 57.9 | 36.04 | 949.8 | -1,606.4 | 1,404.7 | 1,339.8 | 64.93 | 21.635 | |
| 3,051.2 | 2,962.0 | 2,948.0 | 2,948.0 | 12.9 | 58.8 | 36.47 | 949.8 | -1,606.4 | 1,389.6 | 1,323.5 | 66.18 | 20.998 | |
| 3,100.0 | 3,007.6 | 2,993.6 | 2,993.6 | 13.3 | 59.7 | 36.89 | 949.8 | -1,606.4 | 1,375.4 | 1,308.0 | 67.38 | 20.412 | |
| 3,149.6 | 3,053.9 | 3,039.9 | 3,039.9 | 13.6 | 60.7 | 37.33 | 949.8 | -1,606.4 | 1,360.9 | 1,292.3 | 68.61 | 19.837 | |
| 3,200.0 | 3,101.0 | 3,087.0 | 3,087.0 | 14.0 | 61.6 | 37.78 | 949.8 | -1,606.4 | 1,346.3 | 1,276.4 | 69.86 | 19.272 | |
| 3,248.0 | 3,145.9 | 3,131.9 | 3,131.9 | 14.4 | 62.5 | 38.22 | 949.8 | -1,606.4 | 1,332.5 | 1,261.4 | 71.06 | 18.752 | |
| 3,300.0 | 3,194.4 | 3,180.4 | 3,180.4 | 14.8 | 63.5 | 38.71 | 949.8 | -1,606.4 | 1,317.6 | 1,245.2 | 72.36 | 18.209 | |
| 3,346.4 | 3,237.8 | 3,223.8 | 3,223.8 | 15.1 | 64.4 | 39.15 | 949.8 | -1,606.4 | 1,304.4 | 1,230.8 | 73.53 | 17.739 | |
| 3,400.0 | 3,287.8 | 3,273.8 | 3,273.8 | 15.5 | 65.4 | 39.68 | 949.8 | -1,606.4 | 1,289.2 | 1,214.3 | 74.89 | 17.215 | |
| 3,444.9 | 3,329.8 | 3,315.8 | 3,315.8 | 15.9 | 66.2 | 40.12 | 949.8 | -1,606.4 | 1,276.6 | 1,200.5 | 76.03 | 16.790 | |
| 3,500.0 | 3,381.3 | 3,367.3 | 3,367.3 | 16.3 | 67.3 | 40.68 | 949.8 | -1,606.4 | 1,261.2 | 1,183.7 | 77.45 | 16.284 | |
| 3,543.3 | 3,421.7 | 3,407.7 | 3,407.7 | 16.6 | 68.1 | 41.13 | 949.8 | -1,606.4 | 1,249.2 | 1,170.6 | 78.56 | 15.900 | |
| 3,600.0 | 3,474.7 | 3,460.7 | 3,460.7 | 17.0 | 69.1 | 41.73 | 949.8 | -1,606.4 | 1,233.6 | 1,153.5 | 80.04 | 15.413 | |
| 3,641.7 | 3,513.7 | 3,499.7 | 3,499.7 | 17.3 | 69.9 | 42.18 | 949.8 | -1,606.4 | 1,222.2 | 1,141.1 | 81.12 | 15.066 | |
| 3,700.0 | 3,568.1 | 3,554.1 | 3,554.1 | 17.8 | 71.0 | 42.83 | 949.8 | -1,606.4 | 1,206.4 | 1,123.7 | 82.65 | 14.596 | |
| 3,740.1 | 3,605.6 | 3,591.6 | 3,591.6 | 18.1 | 71.8 | 43.28 | 949.8 | -1,606.4 | 1,195.6 | 1,111.9 | 83.71 | 14.282 | |
| 3,800.0 | 3,661.5 | 3,647.5 | 3,647.5 | 18.5 | 72.9 | 43.97 | 949.8 | -1,606.4 | 1,179.7 | 1,094.4 | 85.30 | 13.829 | |
| 3,838.6 | 3,697.6 | 3,683.6 | 3,683.6 | 18.8 | 73.6 | 44.42 | 949.8 | -1,606.4 | 1,169.5 | 1,083.1 | 86.33 | 13.546 | |
| 3,900.0 | 3,754.9 | 3,740.9 | 3,740.9 | 19.3 | 74.8 | 45.16 | 949.8 | -1,606.4 | 1,153.4 | 1,065.4 | 87.98 | 13.110 | |
| 3,937.0 | 3,789.5 | 3,775.5 | 3,775.5 | 19.6 | 75.5 | 45.61 | 949.8 | -1,606.4 | 1,143.8 | 1,054.8 | 88.98 | 12.855 | |
| 4,000.0 | 3,848.4 | 3,834.4 | 3,834.4 | 20.1 | 76.7 | 46.40 | 949.8 | -1,606.4 | 1,127.7 | 1,037.0 | 90.69 | 12.434 | |
| 4,035.4 | 3,881.5 | 3,867.5 | 3,867.5 | 20.3 | 77.3 | 46.85 | 949.8 | -1,606.4 | 1,118.7 | 1,027.0 | 91.66 | 12.204 | |
| 4,100.0 | 3,941.8 | 3,927.8 | 3,927.8 | 20.8 | 78.5 | 47.69 | 949.8 | -1,606.4 | 1,102.5 | 1,009.0 | 93.44 | 11.799 | |
| 4,133.8 | 3,973.4 | 3,959.4 | 3,959.4 | 21.1 | 79.2 | 48.14 | 949.8 | -1,606.4 | 1,094.1 | 999.7 | 94.37 | 11.593 | |
| 4,200.0 | 4,035.2 | 4,021.2 | 4,021.2 | 21.6 | 80.4 | 49.04 | 949.8 | -1,606.4 | 1,077.9 | 981.7 | 96.22 | 11.203 | |
| 4,232.3 | 4,065.4 | 4,051.4 | 4,051.4 | 21.8 | 81.0 | 49.49 | 949.8 | -1,606.4 | 1,070.1 | 973.0 | 97.12 | 11.018 | |
| 4,300.0 | 4,128.6 | 4,114.6 | 4,114.6 | 22.3 | 82.3 | 50.45 | 949.8 | -1,606.4 | 1,053.9 | 954.9 | 99.03 | 10.643 | |
| 4,330.7 | 4,157.3 | 4,143.3 | 4,143.3 | 22.6 | 82.9 | 50.90 | 949.8 | -1,606.4 | 1,046.7 | 946.8 | 99.90 | 10.478 | |
| 4,400.0 | 4,222.0 | 4,208.0 | 4,208.0 | 23.1 | 84.2 | 51.92 | 949.8 | -1,606.4 | 1,030.7 | 928.8 | 101.87 | 10.117 | |
| 4,429.1 | 4,249.3 | 4,235.3 | 4,235.3 | 23.3 | 84.7 | 52.36 | 949.8 | -1,606.4 | 1,024.0 | 921.3 | 102.71 | 9.970 | |
| 4,500.0 | 4,315.5 | 4,301.5 | 4,301.5 | 23.9 | 86.1 | 53.45 | 949.8 | -1,606.4 | 1,008.1 | 903.4 | 104.75 | 9.624 | |
| 4,527.5 | 4,341.2 | 4,327.2 | 4,327.2 | 24.1 | 86.6 | 53.88 | 949.8 | -1,606.4 | 1,002.0 | 896.5 | 105.55 | 9.493 | |
| 4,600.0 | 4,408.9 | 4,394.9 | 4,394.9 | 24.6 | 87.9 | 55.04 | 949.8 | -1,606.4 | 986.3 | 878.7 | 107.66 | 9.162 | |
| 4,626.0 | 4,433.2 | 4,419.2 | 4,419.2 | 24.8 | 88.4 | 55.46 | 949.8 | -1,606.4 | 980.8 | 872.4 | 108.42 | 9.046 | |
| 4,700.0 | 4,502.3 | 4,488.3 | 4,488.3 | 25.4 | 89.8 | 56.70 | 949.8 | -1,606.4 | 965.4 | 854.8 | 110.60 | 8.729 | |
| 4,724.4 | 4,525.1 | 4,511.1 | 4,511.1 | 25.6 | 90.3 | 57.11 | 949.8 | -1,606.4 | 960.4 | 849.1 | 111.32 | 8.627 | |
| 4,800.0 | 4,595.7 | 4,581.7 | 4,581.7 | 26.2 | 91.7 | 58.42 | 949.8 | -1,606.4 | 945.3 | 831.7 | 113.56 | 8.324 | |
| 4,822.8 | 4,617.1 | 4,603.1 | 4,603.1 | 26.3 | 92.1 | 58.82 | 949.8 | -1,606.4 | 940.9 | 826.6 | 114.24 | 8.236 | |
| 4,900.0 | 4,689.2 | 4,675.2 | 4,675.2 | 26.9 | 93.6 | 60.21 | 949.8 | -1,606.4 | 926.2 | 809.6 | 116.55 | 7.946 | |
| 4,921.2 | 4,709.0 | 4,695.0 | 4,695.0 | 27.1 | 94.0 | 60.60 | 949.8 | -1,606.4 | 922.2 | 805.1 | 117.19 | 7.870 | |
| 5,000.0 | 4,782.6 | 4,768.6 | 4,768.6 | 27.7 | 95.4 | 62.06 | 949.8 | -1,606.4 | 908.1 | 788.5 | 119.56 | 7.595 | |
| 5,019.7 | 4,801.0 | 4,787.0 | 4,787.0 | 27.8 | 95.8 | 62.43 | 949.8 | -1,606.4 | 904.6 | 784.5 | 120.16 | 7.529 | |
| 5,100.0 | 4,876.0 | 4,862.0 | 4,862.0 | 28.4 | 97.3 | 63.98 | 949.8 | -1,606.4 | 891.0 | 768.4 | 122.59 | 7.268 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,878.9 | 4,878.9 | 28.6 | 97.7 | 64.34 | 949.8 | -1,606.4 | 888.0 | 764.9 | 123.14 | 7.212 | |
| 5,159.9 | 4,932.0 | 4,918.0 | 4,918.0 | 28.9 | 98.5 | 65.16 | 949.8 | -1,606.4 | 881.3 | 756.9 | 124.41 | 7.084 | |
| 5,200.0 | 4,969.5 | 4,955.5 | 4,955.5 | 29.2 | 99.2 | 65.84 | 949.8 | -1,606.4 | 875.1 | 749.5 | 125.64 | 6.966 | |
| 5,216.5 | 4,985.1 | 4,971.1 | 4,971.1 | 29.3 | 99.5 | 66.12 | 949.8 | -1,606.4 | 872.7 | 746.6 | 126.12 | 6.920 | |
| 5,300.0 | 5,064.0 | 5,050.0 | 5,050.0 | 29.7 | 101.1 | 67.48 | 949.8 | -1,606.4 | 861.6 | 733.0 | 128.56 | 6.702 | |
| 5,314.9 | 5,078.2 | 5,064.2 | 5,064.2 | 29.8 | 101.4 | 67.72 | 949.8 | -1,606.4 | 859.7 | 730.7 | 128.98 | 6.665 | |
| 5,400.0 | 5,159.6 | 5,145.6 | 5,145.6 | 30.2 | 103.0 | 69.02 | 949.8 | -1,606.4 | 850.2 | 718.9 | 131.37 | 6.472 | |
| 5,413.4 | 5,172.4 | 5,158.4 | 5,158.4 | 30.3 | 103.3 | 69.22 | 949.8 | -1,606.4 | 848.9 | 717.1 | 131.74 | 6.444 | |
| 5,500.0 | 5,256.1 | 5,242.1 | 5,242.1 | 30.7 | 105.0 | 70.45 | 949.8 | -1,606.4 | 840.9 | 706.8 | 134.08 | 6.272 | |
| 5,511.8 | 5,267.6 | 5,253.6 | 5,253.6 | 30.7 | 105.2 | 70.61 | 949.8 | -1,606.4 | 839.9 | 705.6 | 134.39 | 6.250 | |
| 5,600.0 | 5,353.5 | 5,339.5 | 5,339.5 | 31.1 | 106.9 | 71.74 | 949.8 | -1,606.4 | 833.4 | 696.7 | 136.69 | 6.097 | |
| 5,610.2 | 5,363.5 | 5,349.5 | 5,349.5 | 31.1 | 107.1 | 71.87 | 949.8 | -1,606.4 | 832.7 | 695.8 | 136.95 | 6.080 | |
| 5,700.0 | 5,451.6 | 5,437.6 | 5,437.6 | 31.4 | 108.9 | 72.87 | 949.8 | -1,606.4 | 827.5 | 688.2 | 139.21 | 5.944 | |
| 5,708.6 | 5,460.2 | 5,446.2 | 5,446.2 | 31.4 | 109.1 | 72.96 | 949.8 | -1,606.4 | 827.0 | 687.6 | 139.42 | 5.932 | |
| 5,800.0 | 5,550.4 | 5,536.4 | 5,536.4 | 31.7 | 110.9 | 73.83 | 949.8 | -1,606.4 | 822.9 | 681.2 | 141.64 | 5.810 | |
| 5,807.1 | 5,557.4 | 5,543.4 | 5,543.4 | 31.7 | 111.0 | 73.89 | 949.8 | -1,606.4 | 822.6 | 680.8 | 141.81 | 5.801 | |
| 5,900.0 | 5,649.6 | 5,635.6 | 5,635.6 | 31.9 | 112.9 | 74.58 | 949.8 | -1,606.4 | 819.5 | 675.5 | 143.99 | 5.691 | |
| 5,905.5 | 5,655.1 | 5,641.1 | 5,641.1 | 31.9 | 113.0 | 74.62 | 949.8 | -1,606.4 | 819.3 | 675.2 | 144.11 | 5.685 | |
| 6,000.0 | 5,749.2 | 5,735.2 | 5,735.2 | 32.1 | 114.9 | 75.14 | 949.8 | -1,606.4 | 817.2 | 670.9 | 146.25 | 5.587 | |
| 6,003.9 | 5,753.1 | 5,739.1 | 5,739.1 | 32.1 | 115.0 | 75.15 | 949.8 | -1,606.4 | 817.1 | 670.7 | 146.34 | 5.583 | |
| 6,100.0 | 5,849.1 | 5,835.1 | 5,835.1 | 32.3 | 116.9 | 75.48 | 949.8 | -1,606.4 | 815.8 | 667.3 | 148.45 | 5.495 | |
| 6,102.3 | 5,851.4 | 5,837.4 | 5,837.4 | 32.3 | 116.9 | 75.48 | 949.8 | -1,606.4 | 815.8 | 667.3 | 148.50 | 5.493 | |
| 6,200.8 | 5,949.8 | 5,935.8 | 5,935.8 | 32.4 | 118.9 | 75.60 | 949.8 | -1,606.4 | 815.3 | 664.7 | 150.58 | 5.414 | |
| 6,204.9 | 5,953.9 | 5,939.9 | 5,939.9 | 32.4 | 119.0 | -8.84 | 949.8 | -1,606.4 | 815.3 | 678.9 | 136.41 | 5.977 | |
| 6,234.9 | 5,983.9 | 5,969.9 | 5,969.9 | 32.4 | 119.6 | -8.84 | 949.8 | -1,606.4 | 815.3 | 678.2 | 137.06 | 5.948 CC | |
| 6,250.0 | 5,999.0 | 5,985.0 | 5,985.0 | 32.4 | 119.9 | -98.85 | 949.8 | -1,606.4 | 815.3 | 663.7 | 151.61 | 5.378 | |
| 6,299.2 | 6,048.2 | 6,034.2 | 6,034.2 | 32.4 | 120.9 | -99.01 | 949.8 | -1,606.4 | 815.7 | 663.2 | 152.57 | 5.347 | |
| 6,300.0 | 6,048.9 | 6,034.9 | 6,034.9 | 32.4 | 120.9 | -99.01 | 949.8 | -1,606.4 | 815.8 | 663.2 | 152.58 | 5.346 ES | |
| 6,350.0 | 6,098.5 | 6,084.5 | 6,084.5 | 32.4 | 121.9 | -99.36 | 949.8 | -1,606.4 | 816.8 | 663.3 | 153.47 | 5.322 | |
| 6,397.6 | 6,145.3 | 6,131.3 | 6,131.3 | 32.3 | 122.9 | -99.86 | 949.8 | -1,606.4 | 818.3 | 664.1 | 154.24 | 5.305 | |
| 6,400.0 | 6,147.6 | 6,133.6 | 6,133.6 | 32.3 | 122.9 | -99.89 | 949.8 | -1,606.4 | 818.4 | 664.1 | 154.28 | 5.305 | |
| 6,450.0 | 6,195.8 | 6,181.8 | 6,181.8 | 32.2 | 123.9 | -100.57 | 949.8 | -1,606.4 | 820.8 | 665.9 | 154.99 | 5.296 SF | |
| 6,496.0 | 6,239.3 | 6,225.3 | 6,225.3 | 32.1 | 124.7 | -101.31 | 949.8 | -1,606.4 | 823.9 | 668.3 | 155.55 | 5.297 | |
| 6,500.0 | 6,243.0 | 6,229.0 | 6,229.0 | 32.1 | 124.8 | -101.37 | 949.8 | -1,606.4 | 824.2 | 668.6 | 155.59 | 5.297 | |
| 6,550.0 | 6,289.0 | 6,275.0 | 6,275.0 | 32.0 | 125.7 | -102.26 | 949.8 | -1,606.4 | 828.5 | 672.5 | 156.07 | 5.309 | |
| 6,594.5 | 6,328.6 | 6,314.6 | 6,314.6 | 31.8 | 126.5 | -103.09 | 949.8 | -1,606.4 | 833.5 | 677.1 | 156.39 | 5.329 | |
| 6,600.0 | 6,333.4 | 6,319.4 | 6,319.4 | 31.8 | 126.6 | -103.19 | 949.8 | -1,606.4 | 834.2 | 677.7 | 156.43 | 5.333 | |
| 6,650.0 | 6,376.2 | 6,362.2 | 6,362.2 | 31.7 | 127.5 | -104.12 | 949.8 | -1,606.4 | 841.3 | 684.6 | 156.65 | 5.370 | |
| 6,692.9 | 6,411.3 | 6,397.3 | 6,397.3 | 31.6 | 128.2 | -104.88 | 949.8 | -1,606.4 | 848.7 | 691.9 | 156.76 | 5.414 | |
| 6,700.0 | 6,417.0 | 6,403.0 | 6,403.0 | 31.5 | 128.3 | -105.00 | 949.8 | -1,606.4 | 850.0 | 693.2 | 156.77 | 5.422 | |
| 6,750.0 | 6,455.7 | 6,441.7 | 6,441.7 | 31.4 | 129.1 | -105.78 | 949.8 | -1,606.4 | 860.6 | 703.8 | 156.79 | 5.489 | |
| 6,791.3 | 6,486.0 | 6,472.0 | 6,472.0 | 31.3 | 129.7 | -106.32 | 949.8 | -1,606.4 | 870.9 | 714.1 | 156.78 | 5.555 | |
| 6,800.0 | 6,492.2 | 6,478.2 | 6,478.2 | 31.3 | 129.8 | -106.42 | 949.8 | -1,606.4 | 873.2 | 716.5 | 156.77 | 5.570 | |
| 6,850.0 | 6,526.1 | 6,512.1 | 6,512.1 | 31.2 | 130.5 | -106.85 | 949.8 | -1,606.4 | 888.0 | 731.3 | 156.76 | 5.665 | |
| 6,889.7 | 6,551.2 | 6,537.2 | 6,537.2 | 31.2 | 131.0 | -107.03 | 949.8 | -1,606.4 | 901.4 | 744.6 | 156.81 | 5.748 | |
| 6,900.0 | 6,557.4 | 6,543.4 | 6,543.4 | 31.2 | 131.1 | -107.05 | 949.8 | -1,606.4 | 905.1 | 748.3 | 156.84 | 5.771 | |
| 6,950.0 | 6,586.0 | 6,572.0 | 6,572.0 | 31.1 | 131.7 | -106.96 | 949.8 | -1,606.4 | 924.6 | 767.5 | 157.08 | 5.886 | |
| 6,988.2 | 6,605.8 | 6,591.8 | 6,591.8 | 31.2 | 132.1 | -106.66 | 949.8 | -1,606.4 | 941.0 | 783.6 | 157.43 | 5.978 | |
| 7,000.0 | 6,611.5 | 6,597.5 | 6,597.5 | 31.2 | 132.2 | -106.53 | 949.8 | -1,606.4 | 946.4 | 788.8 | 157.56 | 6.006 | |
| 7,050.0 | 6,634.1 | 6,620.1 | 6,620.1 | 31.2 | 132.7 | -105.73 | 949.8 | -1,606.4 | 970.5 | 812.2 | 158.35 | 6.129 | |
| 7,086.6 | 6,648.6 | 6,634.6 | 6,634.6 | 31.3 | 133.0 | -104.87 | 949.8 | -1,606.4 | 989.7 | 830.5 | 159.14 | 6.219 | |
| 7,100.0 | 6,653.4 | 6,639.4 | 6,639.4 | 31.4 | 133.1 | -104.50 | 949.8 | -1,606.4 | 997.0 | 837.5 | 159.46 | 6.252 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,655.5 | 6,655.5 | 31.6 | 133.4 | -102.81 | 949.8 | -1,606.4 | 1,025.6 | 864.7 | 160.89 | 6.374 | |
| 7,185.0 | 6,678.8 | 6,664.8 | 6,664.8 | 31.7 | 133.6 | -101.33 | 949.8 | -1,606.4 | 1,046.8 | 884.8 | 162.03 | 6.460 | |
| 7,200.0 | 6,682.3 | 6,668.3 | 6,668.3 | 31.8 | 133.7 | -100.62 | 949.8 | -1,606.4 | 1,056.2 | 893.6 | 162.54 | 6.498 | |
| 7,250.0 | 6,691.6 | 6,677.6 | 6,677.6 | 32.1 | 133.8 | -97.90 | 949.8 | -1,606.4 | 1,088.6 | 924.3 | 164.24 | 6.628 | |
| 7,283.4 | 6,696.0 | 6,682.0 | 6,682.0 | 32.3 | 133.9 | -95.77 | 949.8 | -1,606.4 | 1,111.2 | 945.9 | 165.29 | 6.723 | |
| 7,300.0 | 6,697.5 | 6,683.5 | 6,683.5 | 32.4 | 134.0 | -94.62 | 949.8 | -1,606.4 | 1,122.6 | 956.8 | 165.74 | 6.773 | |
| 7,350.0 | 6,699.9 | 6,685.9 | 6,685.9 | 32.8 | 134.0 | -90.80 | 949.8 | -1,606.4 | 1,157.9 | 991.2 | 166.73 | 6.945 | |
| 7,364.4 | 6,700.0 | 6,686.0 | 6,686.0 | 32.9 | 134.0 | -89.61 | 949.8 | -1,606.4 | 1,168.3 | 1,001.4 | 166.88 | 7.001 | |
| 7,381.9 | 6,699.9 | 6,685.9 | 6,685.9 | 33.1 | 134.0 | -89.60 | 949.8 | -1,606.4 | 1,181.0 | 1,014.0 | 167.03 | 7.071 | |
| 7,400.0 | 6,699.8 | 6,685.8 | 6,685.8 | 33.2 | 134.0 | -89.59 | 949.8 | -1,606.4 | 1,194.3 | 1,027.1 | 167.18 | 7.144 | |
| 7,480.3 | 6,699.2 | 6,685.2 | 6,685.2 | 34.0 | 134.0 | -89.56 | 949.8 | -1,606.4 | 1,254.8 | 1,086.8 | 167.98 | 7.470 | |
| 7,500.0 | 6,699.1 | 6,685.1 | 6,685.1 | 34.2 | 134.0 | -89.55 | 949.8 | -1,606.4 | 1,269.9 | 1,101.7 | 168.18 | 7.551 | |
| 7,578.7 | 6,698.6 | 6,684.6 | 6,684.6 | 35.2 | 134.0 | -89.51 | 949.8 | -1,606.4 | 1,331.7 | 1,162.6 | 169.12 | 7.875 | |
| 7,600.0 | 6,698.5 | 6,684.5 | 6,684.5 | 35.4 | 134.0 | -89.50 | 949.8 | -1,606.4 | 1,348.7 | 1,179.3 | 169.37 | 7.963 | |
| 7,677.1 | 6,698.0 | 6,684.0 | 6,684.0 | 36.5 | 134.0 | -89.47 | 949.8 | -1,606.4 | 1,411.3 | 1,240.9 | 170.43 | 8.281 | |
| 7,700.0 | 6,697.8 | 6,683.8 | 6,683.8 | 36.8 | 134.0 | -89.45 | 949.8 | -1,606.4 | 1,430.2 | 1,259.4 | 170.74 | 8.376 | |
| 7,775.6 | 6,697.3 | 6,683.3 | 6,683.3 | 38.0 | 134.0 | -89.42 | 949.8 | -1,606.4 | 1,493.2 | 1,321.3 | 171.89 | 8.687 | |
| 7,800.0 | 6,697.2 | 6,683.2 | 6,683.2 | 38.3 | 134.0 | -89.41 | 949.8 | -1,606.4 | 1,513.8 | 1,341.6 | 172.26 | 8.788 | |
| 7,874.0 | 6,696.7 | 6,682.7 | 6,682.7 | 39.6 | 133.9 | -89.37 | 949.8 | -1,606.4 | 1,577.0 | 1,403.5 | 173.49 | 9.090 | |
| 7,900.0 | 6,696.5 | 6,682.5 | 6,682.5 | 40.0 | 133.9 | -89.36 | 949.8 | -1,606.4 | 1,599.4 | 1,425.5 | 173.93 | 9.196 | |
| 7,972.4 | 6,696.1 | 6,682.1 | 6,682.1 | 41.3 | 133.9 | -89.33 | 949.8 | -1,606.4 | 1,662.4 | 1,487.1 | 175.22 | 9.487 | |
| 8,000.0 | 6,695.9 | 6,681.9 | 6,681.9 | 41.8 | 133.9 | -89.32 | 949.8 | -1,606.4 | 1,686.5 | 1,510.8 | 175.71 | 9.598 | |
| 8,070.8 | 6,695.4 | 6,681.4 | 6,681.4 | 43.1 | 133.9 | -89.28 | 949.8 | -1,606.4 | 1,749.1 | 1,572.0 | 177.05 | 9.879 | |
| 8,100.0 | 6,695.2 | 6,681.2 | 6,681.2 | 43.7 | 133.9 | -89.27 | 949.8 | -1,606.4 | 1,775.0 | 1,597.4 | 177.60 | 9.994 | |
| 8,169.3 | 6,694.8 | 6,680.8 | 6,680.8 | 45.1 | 133.9 | -89.24 | 949.8 | -1,606.4 | 1,837.0 | 1,658.0 | 178.98 | 10.264 | |
| 8,200.0 | 6,694.6 | 6,680.6 | 6,680.6 | 45.7 | 133.9 | -89.22 | 949.8 | -1,606.4 | 1,864.7 | 1,685.1 | 179.58 | 10.383 | |
| 8,267.7 | 6,694.1 | 6,680.1 | 6,680.1 | 47.1 | 133.9 | -89.19 | 949.8 | -1,606.4 | 1,926.0 | 1,745.0 | 180.98 | 10.642 | |
| 8,300.0 | 6,693.9 | 6,679.9 | 6,679.9 | 47.8 | 133.9 | -89.18 | 949.8 | -1,606.4 | 1,955.3 | 1,773.7 | 181.65 | 10.764 | |
| 8,366.1 | 6,693.5 | 6,679.5 | 6,679.5 | 49.2 | 133.9 | -89.15 | 949.8 | -1,606.4 | 2,015.8 | 1,832.7 | 183.06 | 11.011 | |
| 8,400.0 | 6,693.3 | 6,679.3 | 6,679.3 | 49.9 | 133.9 | -89.13 | 949.8 | -1,606.4 | 2,046.9 | 1,863.1 | 183.79 | 11.137 | |
| 8,464.5 | 6,692.9 | 6,678.9 | 6,678.9 | 51.4 | 133.9 | -89.10 | 949.8 | -1,606.4 | 2,106.4 | 1,921.2 | 185.21 | 11.373 | |
| 8,500.0 | 6,692.6 | 6,678.6 | 6,678.6 | 52.1 | 133.9 | -89.09 | 949.8 | -1,606.4 | 2,139.2 | 1,953.2 | 185.99 | 11.502 | |
| 8,563.0 | 6,692.2 | 6,678.2 | 6,678.2 | 53.6 | 133.9 | -89.06 | 949.8 | -1,606.4 | 2,197.6 | 2,010.2 | 187.41 | 11.726 | |
| 8,600.0 | 6,692.0 | 6,678.0 | 6,678.0 | 54.4 | 133.8 | -89.04 | 949.8 | -1,606.4 | 2,232.1 | 2,043.9 | 188.24 | 11.858 | |
| 8,661.4 | 6,691.6 | 6,677.6 | 6,677.6 | 55.8 | 133.8 | -89.01 | 949.8 | -1,606.4 | 2,289.5 | 2,099.8 | 189.66 | 12.072 | |
| 8,700.0 | 6,691.3 | 6,677.3 | 6,677.3 | 56.7 | 133.8 | -88.99 | 949.8 | -1,606.4 | 2,325.6 | 2,135.1 | 190.55 | 12.205 | |
| 8,759.8 | 6,690.9 | 6,676.9 | 6,676.9 | 58.1 | 133.8 | -88.97 | 949.8 | -1,606.4 | 2,381.9 | 2,189.9 | 191.95 | 12.409 | |
| 8,800.0 | 6,690.7 | 6,676.7 | 6,676.7 | 59.1 | 133.8 | -88.95 | 949.8 | -1,606.4 | 2,419.7 | 2,226.8 | 192.89 | 12.544 | |
| 8,858.2 | 6,690.3 | 6,676.3 | 6,676.3 | 60.5 | 133.8 | -88.92 | 949.8 | -1,606.4 | 2,474.7 | 2,280.4 | 194.28 | 12.738 | |
| 8,900.0 | 6,690.0 | 6,676.0 | 6,676.0 | 61.5 | 133.8 | -88.90 | 949.8 | -1,606.4 | 2,514.2 | 2,318.9 | 195.27 | 12.875 | |
| 8,956.7 | 6,689.7 | 6,675.7 | 6,675.7 | 62.9 | 133.8 | -88.87 | 949.8 | -1,606.4 | 2,568.0 | 2,371.3 | 196.64 | 13.059 | |
| 9,000.0 | 6,689.4 | 6,675.4 | 6,675.4 | 63.9 | 133.8 | -88.85 | 949.8 | -1,606.4 | 2,609.1 | 2,411.4 | 197.69 | 13.198 | |
| 9,055.1 | 6,689.0 | 6,675.0 | 6,675.0 | 65.3 | 133.8 | -88.83 | 949.8 | -1,606.4 | 2,661.6 | 2,462.6 | 199.04 | 13.372 | |
| 9,100.0 | 6,688.7 | 6,674.7 | 6,674.7 | 66.4 | 133.8 | -88.81 | 949.8 | -1,606.4 | 2,704.4 | 2,504.3 | 200.14 | 13.513 | |
| 9,153.5 | 6,688.4 | 6,674.4 | 6,674.4 | 67.7 | 133.8 | -88.78 | 949.8 | -1,606.4 | 2,755.6 | 2,554.1 | 201.46 | 13.678 | |
| 9,200.0 | 6,688.1 | 6,674.1 | 6,674.1 | 68.9 | 133.8 | -88.76 | 949.8 | -1,606.4 | 2,800.0 | 2,597.4 | 202.61 | 13.820 | |
| 9,251.9 | 6,687.8 | 6,673.8 | 6,673.8 | 70.2 | 133.8 | -88.74 | 949.8 | -1,606.4 | 2,849.8 | 2,645.9 | 203.91 | 13.976 | |
| 9,300.0 | 6,687.4 | 6,673.4 | 6,673.4 | 71.4 | 133.8 | -88.72 | 949.8 | -1,606.4 | 2,896.0 | 2,690.9 | 205.11 | 14.119 | |
| 9,350.4 | 6,687.1 | 6,673.1 | 6,673.1 | 72.7 | 133.7 | -88.69 | 949.8 | -1,606.4 | 2,944.4 | 2,738.0 | 206.37 | 14.267 | |
| 9,400.0 | 6,686.8 | 6,672.8 | 6,672.8 | 73.9 | 133.7 | -88.67 | 949.8 | -1,606.4 | 2,992.1 | 2,784.5 | 207.62 | 14.411 | |
| 9,448.8 | 6,686.5 | 6,672.5 | 6,672.5 | 75.2 | 133.7 | -88.65 | 949.8 | -1,606.4 | 3,039.2 | 2,830.3 | 208.86 | 14.551 | |
| 9,500.0 | 6,686.1 | 6,672.1 | 6,672.1 | 76.5 | 133.7 | -88.62 | 949.8 | -1,606.4 | 3,088.6 | 2,878.4 | 210.16 | 14.696 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT GUNTHER B18-1 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,671.8 | 6,671.8 | 77.7 | 133.7 | -88.60 | 949.8 | -1,606.4 | 3,134.2 | 2,922.8 | 211.37 | 14.828 | |
| 9,600.0 | 6,685.5 | 6,671.5 | 6,671.5 | 79.0 | 133.7 | -88.58 | 949.8 | -1,606.4 | 3,185.2 | 2,972.5 | 212.71 | 14.974 | |
| 9,645.6 | 6,685.2 | 6,671.2 | 6,671.2 | 80.2 | 133.7 | -88.56 | 949.8 | -1,606.4 | 3,229.4 | 3,015.5 | 213.89 | 15.099 | |
| 9,700.0 | 6,684.8 | 6,670.8 | 6,670.8 | 81.6 | 133.7 | -88.53 | 949.8 | -1,606.4 | 3,282.0 | 3,066.8 | 215.28 | 15.245 | |
| 9,744.1 | 6,684.6 | 6,670.6 | 6,670.6 | 82.8 | 133.7 | -88.51 | 949.8 | -1,606.4 | 3,324.8 | 3,108.4 | 216.42 | 15.363 | |
| 9,800.0 | 6,684.2 | 6,670.2 | 6,670.2 | 84.2 | 133.7 | -88.49 | 949.8 | -1,606.4 | 3,379.1 | 3,161.2 | 217.87 | 15.510 | |
| 9,842.5 | 6,683.9 | 6,669.9 | 6,669.9 | 85.3 | 133.7 | -88.47 | 949.8 | -1,606.4 | 3,420.4 | 3,201.4 | 218.97 | 15.620 | |
| 9,900.0 | 6,683.5 | 6,669.5 | 6,669.5 | 86.8 | 133.7 | -88.44 | 949.8 | -1,606.4 | 3,476.3 | 3,255.8 | 220.46 | 15.768 | |
| 9,940.9 | 6,683.3 | 6,669.3 | 6,669.3 | 87.9 | 133.7 | -88.42 | 949.8 | -1,606.4 | 3,516.1 | 3,294.6 | 221.53 | 15.872 | |
| 10,000.0 | 6,682.9 | 6,668.9 | 6,668.9 | 89.5 | 133.7 | -88.39 | 949.8 | -1,606.4 | 3,573.6 | 3,350.5 | 223.07 | 16.020 | |
| 10,039.3 | 6,682.6 | 6,668.6 | 6,668.6 | 90.5 | 133.7 | -88.38 | 949.8 | -1,606.4 | 3,612.0 | 3,387.9 | 224.10 | 16.118 | |
| 10,100.0 | 6,682.2 | 6,668.2 | 6,668.2 | 92.1 | 133.7 | -88.35 | 949.8 | -1,606.4 | 3,671.1 | 3,445.4 | 225.69 | 16.266 | |
| 10,137.8 | 6,682.0 | 6,668.0 | 6,668.0 | 93.1 | 133.6 | -88.33 | 949.8 | -1,606.4 | 3,708.0 | 3,481.3 | 226.68 | 16.358 | |
| 10,200.0 | 6,681.6 | 6,667.6 | 6,667.6 | 94.8 | 133.6 | -88.30 | 949.8 | -1,606.4 | 3,768.7 | 3,540.4 | 228.32 | 16.507 | |
| 10,236.2 | 6,681.4 | 6,667.4 | 6,667.4 | 95.7 | 133.6 | -88.28 | 949.8 | -1,606.4 | 3,804.1 | 3,574.8 | 229.27 | 16.592 | |
| 10,300.0 | 6,680.9 | 6,666.9 | 6,666.9 | 97.4 | 133.6 | -88.26 | 949.8 | -1,606.4 | 3,866.5 | 3,635.5 | 230.95 | 16.741 | |
| 10,334.6 | 6,680.7 | 6,666.7 | 6,666.7 | 98.3 | 133.6 | -88.24 | 949.8 | -1,606.4 | 3,900.4 | 3,668.5 | 231.87 | 16.821 | |
| 10,400.0 | 6,680.3 | 6,666.3 | 6,666.3 | 100.1 | 133.6 | -88.21 | 949.8 | -1,606.4 | 3,964.3 | 3,730.7 | 233.60 | 16.971 | |
| 10,433.0 | 6,680.1 | 6,666.1 | 6,666.1 | 101.0 | 133.6 | -88.19 | 949.8 | -1,606.4 | 3,996.7 | 3,762.2 | 234.48 | 17.045 | |
| 10,500.0 | 6,679.7 | 6,665.7 | 6,665.7 | 102.8 | 133.6 | -88.16 | 949.8 | -1,606.4 | 4,062.3 | 3,826.1 | 236.25 | 17.195 | |
| 10,531.5 | 6,679.4 | 6,665.4 | 6,665.4 | 103.6 | 133.6 | -88.15 | 949.8 | -1,606.4 | 4,093.2 | 3,856.1 | 237.09 | 17.264 | |
| 10,600.0 | 6,679.0 | 6,665.0 | 6,665.0 | 105.4 | 133.6 | -88.12 | 949.8 | -1,606.4 | 4,160.4 | 3,921.5 | 238.91 | 17.414 | |
| 10,629.9 | 6,678.8 | 6,664.8 | 6,664.8 | 106.2 | 133.6 | -88.10 | 949.8 | -1,606.4 | 4,189.7 | 3,950.0 | 239.71 | 17.478 | |
| 10,700.0 | 6,678.4 | 6,664.4 | 6,664.4 | 108.1 | 133.6 | -88.07 | 949.8 | -1,606.4 | 4,258.5 | 4,016.9 | 241.58 | 17.628 | |
| 10,728.3 | 6,678.2 | 6,664.2 | 6,664.2 | 108.9 | 133.6 | -88.06 | 949.8 | -1,606.4 | 4,286.3 | 4,044.0 | 242.34 | 17.688 | |
| 10,800.0 | 6,677.7 | 6,663.7 | 6,663.7 | 110.8 | 133.6 | -88.02 | 949.8 | -1,606.4 | 4,356.7 | 4,112.5 | 244.25 | 17.837 | |
| 10,826.7 | 6,677.5 | 6,663.5 | 6,663.5 | 111.5 | 133.6 | -88.01 | 949.8 | -1,606.4 | 4,383.0 | 4,138.1 | 244.97 | 17.892 | |
| 10,900.0 | 6,677.1 | 6,663.1 | 6,663.1 | 113.5 | 133.5 | -87.98 | 949.8 | -1,606.4 | 4,455.1 | 4,208.1 | 246.93 | 18.042 | |
| 10,925.2 | 6,676.9 | 6,662.9 | 6,662.9 | 114.2 | 133.5 | -87.97 | 949.8 | -1,606.4 | 4,479.8 | 4,232.2 | 247.60 | 18.093 | |
| 11,000.0 | 6,676.4 | 6,662.4 | 6,662.4 | 116.2 | 133.5 | -87.93 | 949.8 | -1,606.4 | 4,553.4 | 4,303.8 | 249.61 | 18.242 | |
| 11,023.6 | 6,676.3 | 6,662.3 | 6,662.3 | 116.8 | 133.5 | -87.92 | 949.8 | -1,606.4 | 4,576.7 | 4,326.4 | 250.24 | 18.289 | |
| 11,100.0 | 6,675.8 | 6,661.8 | 6,661.8 | 118.9 | 133.5 | -87.89 | 949.8 | -1,606.4 | 4,651.9 | 4,399.6 | 252.30 | 18.438 | |
| 11,122.0 | 6,675.6 | 6,661.6 | 6,661.6 | 119.5 | 133.5 | -87.88 | 949.8 | -1,606.4 | 4,673.6 | 4,420.7 | 252.89 | 18.481 | |
| 11,200.0 | 6,675.1 | 6,661.1 | 6,661.1 | 121.6 | 133.5 | -87.84 | 949.8 | -1,606.4 | 4,750.4 | 4,495.4 | 254.99 | 18.630 | |
| 11,220.4 | 6,675.0 | 6,661.0 | 6,661.0 | 122.2 | 133.5 | -87.83 | 949.8 | -1,606.4 | 4,770.6 | 4,515.0 | 255.54 | 18.669 | |
| 11,300.0 | 6,674.5 | 6,660.5 | 6,660.5 | 124.3 | 133.5 | -87.79 | 949.8 | -1,606.4 | 4,849.0 | 4,591.3 | 257.69 | 18.818 | |
| 11,318.9 | 6,674.3 | 6,660.3 | 6,660.3 | 124.9 | 133.5 | -87.79 | 949.8 | -1,606.4 | 4,867.6 | 4,609.4 | 258.19 | 18.852 | |
| 11,400.0 | 6,673.8 | 6,659.8 | 6,659.8 | 127.1 | 133.5 | -87.75 | 949.8 | -1,606.4 | 4,947.6 | 4,687.2 | 260.38 | 19.001 | |
| 11,417.3 | 6,673.7 | 6,659.7 | 6,659.7 | 127.5 | 133.5 | -87.74 | 949.8 | -1,606.4 | 4,964.7 | 4,703.8 | 260.85 | 19.033 | |
| 11,500.0 | 6,673.2 | 6,659.2 | 6,659.2 | 129.8 | 133.5 | -87.70 | 949.8 | -1,606.4 | 5,046.3 | 4,783.2 | 263.09 | 19.181 | |
| 11,515.7 | 6,673.1 | 6,659.1 | 6,659.1 | 130.2 | 133.5 | -87.69 | 949.8 | -1,606.4 | 5,061.8 | 4,798.3 | 263.51 | 19.209 | |
| 11,600.0 | 6,672.5 | 6,658.5 | 6,658.5 | 132.5 | 133.5 | -87.66 | 949.8 | -1,606.4 | 5,145.1 | 4,879.3 | 265.79 | 19.357 | |
| 11,614.1 | 6,672.4 | 6,658.4 | 6,658.4 | 132.9 | 133.5 | -87.65 | 949.8 | -1,606.4 | 5,159.0 | 4,892.9 | 266.18 | 19.382 | |
| 11,700.0 | 6,671.9 | 6,657.9 | 6,657.9 | 135.3 | 133.4 | -87.61 | 949.8 | -1,606.4 | 5,243.8 | 4,975.3 | 268.50 | 19.530 | |
| 11,712.6 | 6,671.8 | 6,657.8 | 6,657.8 | 135.6 | 133.4 | -87.60 | 949.8 | -1,606.4 | 5,256.3 | 4,987.4 | 268.84 | 19.551 | |
| 11,800.0 | 6,671.2 | 6,657.2 | 6,657.2 | 138.0 | 133.4 | -87.56 | 949.8 | -1,606.4 | 5,342.7 | 5,071.5 | 271.21 | 19.699 | |
| 11,811.0 | 6,671.1 | 6,657.1 | 6,657.1 | 138.3 | 133.4 | -87.56 | 949.8 | -1,606.4 | 5,353.6 | 5,082.0 | 271.51 | 19.718 | |
| 11,900.0 | 6,670.6 | 6,656.6 | 6,656.6 | 140.7 | 133.4 | -87.52 | 949.8 | -1,606.4 | 5,441.6 | 5,167.6 | 273.93 | 19.865 | |
| 11,909.4 | 6,670.5 | 6,656.5 | 6,656.5 | 141.0 | 133.4 | -87.51 | 949.8 | -1,606.4 | 5,450.9 | 5,176.7 | 274.18 | 19.880 | |
| 11,987.2 | 6,670.0 | 6,656.0 | 6,656.0 | 143.1 | 133.4 | -87.48 | 949.8 | -1,606.4 | 5,527.8 | 5,251.5 | 276.30 | 20.007 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | | | | |
| 98.4 | 98.4 | 88.4 | 88.4 | 0.1 | 0.9 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,631.8 | 1.00 | 2,626.236 | |
| 100.0 | 100.0 | 90.0 | 90.0 | 0.1 | 0.9 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,631.8 | 1.02 | 2,580.125 | |
| 196.8 | 196.8 | 186.8 | 186.8 | 0.3 | 3.0 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,629.4 | 3.36 | 782.650 | |
| 200.0 | 200.0 | 190.0 | 190.0 | 0.3 | 3.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,629.3 | 3.44 | 764.367 | |
| 295.3 | 295.3 | 285.3 | 285.3 | 0.5 | 5.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,627.1 | 5.67 | 464.667 | |
| 300.0 | 300.0 | 290.0 | 290.0 | 0.5 | 5.2 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,627.0 | 5.77 | 455.901 | |
| 393.7 | 393.7 | 383.7 | 383.7 | 0.8 | 7.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,624.9 | 7.90 | 333.123 | |
| 400.0 | 400.0 | 390.0 | 390.0 | 0.8 | 7.3 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,624.7 | 8.05 | 327.209 | |
| 492.1 | 492.1 | 482.1 | 482.1 | 1.0 | 9.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,622.6 | 10.12 | 260.054 | |
| 500.0 | 500.0 | 490.0 | 490.0 | 1.0 | 9.3 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,622.5 | 10.30 | 255.574 | |
| 590.5 | 590.5 | 580.5 | 580.5 | 1.2 | 11.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,620.4 | 12.34 | 213.401 | |
| 600.0 | 600.0 | 590.0 | 590.0 | 1.2 | 11.3 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,620.2 | 12.55 | 209.789 | |
| 689.0 | 689.0 | 679.0 | 679.0 | 1.4 | 13.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,618.2 | 14.55 | 180.989 | |
| 700.0 | 700.0 | 690.0 | 690.0 | 1.4 | 13.3 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,618.0 | 14.79 | 177.962 | |
| 787.4 | 787.4 | 777.4 | 777.4 | 1.6 | 15.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,616.0 | 16.75 | 157.147 | |
| 800.0 | 800.0 | 790.0 | 790.0 | 1.7 | 15.4 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,615.7 | 17.04 | 154.541 | |
| 885.8 | 885.8 | 875.8 | 875.8 | 1.9 | 17.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,613.8 | 18.96 | 138.866 | |
| 900.0 | 900.0 | 890.0 | 890.0 | 1.9 | 17.4 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,613.5 | 19.28 | 136.578 | |
| 984.2 | 984.2 | 974.2 | 974.2 | 2.1 | 19.1 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,611.6 | 21.16 | 124.401 | |
| 1,000.0 | 1,000.0 | 990.0 | 990.0 | 2.1 | 19.4 | 70.26 | 889.0 | 2,478.1 | 2,632.8 | 2,611.3 | 21.52 | 122.362 | |
| 1,082.7 | 1,082.7 | 1,072.7 | 1,072.7 | 2.3 | 21.1 | 154.71 | 889.0 | 2,478.1 | 2,633.8 | 2,610.5 | 23.35 | 112.802 | |
| 1,100.0 | 1,100.0 | 1,090.0 | 1,090.0 | 2.3 | 21.4 | 154.71 | 889.0 | 2,478.1 | 2,634.3 | 2,610.6 | 23.73 | 111.009 | |
| 1,181.1 | 1,181.0 | 1,171.0 | 1,171.0 | 2.5 | 23.0 | 154.71 | 889.0 | 2,478.1 | 2,637.9 | 2,612.4 | 25.50 | 103.453 | |
| 1,200.0 | 1,199.8 | 1,189.8 | 1,189.8 | 2.5 | 23.4 | 154.71 | 889.0 | 2,478.1 | 2,639.1 | 2,613.2 | 25.91 | 101.867 | |
| 1,279.5 | 1,279.1 | 1,269.1 | 1,269.1 | 2.7 | 25.0 | 154.72 | 889.0 | 2,478.1 | 2,645.1 | 2,617.5 | 27.62 | 95.784 | |
| 1,300.0 | 1,299.5 | 1,289.5 | 1,289.5 | 2.8 | 25.4 | 154.73 | 889.0 | 2,478.1 | 2,647.0 | 2,618.9 | 28.05 | 94.365 | |
| 1,377.9 | 1,376.9 | 1,366.9 | 1,366.9 | 3.0 | 27.0 | 154.74 | 889.0 | 2,478.1 | 2,655.3 | 2,625.6 | 29.69 | 89.421 | |
| 1,400.0 | 1,398.7 | 1,388.7 | 1,388.7 | 3.0 | 27.4 | 154.74 | 889.0 | 2,478.1 | 2,658.0 | 2,627.9 | 30.15 | 88.149 | |
| 1,476.4 | 1,474.2 | 1,464.2 | 1,464.2 | 3.2 | 28.9 | 154.76 | 889.0 | 2,478.1 | 2,668.6 | 2,636.8 | 31.73 | 84.101 | |
| 1,500.0 | 1,497.5 | 1,487.5 | 1,487.5 | 3.3 | 29.4 | 154.77 | 889.0 | 2,478.1 | 2,672.2 | 2,640.0 | 32.21 | 82.959 | |
| 1,574.8 | 1,571.0 | 1,561.0 | 1,561.0 | 3.5 | 30.9 | 154.78 | 889.0 | 2,478.1 | 2,684.8 | 2,651.1 | 33.72 | 79.625 | |
| 1,600.0 | 1,595.6 | 1,585.6 | 1,585.6 | 3.6 | 31.4 | 154.79 | 889.0 | 2,478.1 | 2,689.5 | 2,655.3 | 34.22 | 78.599 | |
| 1,673.2 | 1,667.0 | 1,657.0 | 1,657.0 | 3.9 | 32.8 | 154.81 | 889.0 | 2,478.1 | 2,704.2 | 2,668.5 | 35.65 | 75.844 | |
| 1,700.0 | 1,693.1 | 1,683.1 | 1,683.1 | 4.0 | 33.3 | 154.81 | 889.0 | 2,478.1 | 2,710.0 | 2,673.8 | 36.17 | 74.923 | |
| 1,771.6 | 1,762.4 | 1,752.4 | 1,752.4 | 4.3 | 34.7 | 154.83 | 889.0 | 2,478.1 | 2,726.5 | 2,689.0 | 37.53 | 72.641 | |
| 1,800.0 | 1,789.6 | 1,779.6 | 1,779.6 | 4.4 | 35.3 | 154.84 | 889.0 | 2,478.1 | 2,733.5 | 2,695.5 | 38.06 | 71.817 | |
| 1,870.1 | 1,856.8 | 1,846.8 | 1,846.8 | 4.7 | 36.6 | 154.85 | 889.0 | 2,478.1 | 2,751.9 | 2,712.5 | 39.35 | 69.926 | |
| 1,900.0 | 1,885.3 | 1,875.3 | 1,875.3 | 4.9 | 37.2 | 154.86 | 889.0 | 2,478.1 | 2,760.2 | 2,720.3 | 39.89 | 69.192 | |
| 1,968.5 | 1,950.2 | 1,940.2 | 1,940.2 | 5.3 | 38.5 | 154.87 | 889.0 | 2,478.1 | 2,780.2 | 2,739.1 | 41.11 | 67.632 | |
| 2,000.0 | 1,979.8 | 1,969.8 | 1,969.8 | 5.5 | 39.1 | 154.88 | 889.0 | 2,478.1 | 2,789.9 | 2,748.3 | 41.66 | 66.977 | |
| 2,044.9 | 2,021.9 | 2,011.9 | 2,011.9 | 5.7 | 40.0 | 154.88 | 889.0 | 2,478.1 | 2,804.3 | 2,761.9 | 42.43 | 66.100 | |
| 2,066.9 | 2,042.5 | 2,032.5 | 2,032.5 | 5.9 | 40.4 | 154.95 | 889.0 | 2,478.1 | 2,811.5 | 2,768.6 | 42.89 | 65.552 | |
| 2,100.0 | 2,073.4 | 2,063.4 | 2,063.4 | 6.1 | 41.0 | 155.05 | 889.0 | 2,478.1 | 2,822.3 | 2,778.7 | 43.59 | 64.748 | |
| 2,165.3 | 2,134.4 | 2,124.4 | 2,124.4 | 6.5 | 42.2 | 155.25 | 889.0 | 2,478.1 | 2,843.7 | 2,798.7 | 44.98 | 63.229 | |
| 2,200.0 | 2,166.8 | 2,156.8 | 2,156.8 | 6.8 | 42.9 | 155.35 | 889.0 | 2,478.1 | 2,855.1 | 2,809.4 | 45.71 | 62.459 | |
| 2,263.8 | 2,226.4 | 2,216.4 | 2,216.4 | 7.2 | 44.1 | 155.54 | 889.0 | 2,478.1 | 2,876.0 | 2,828.9 | 47.07 | 61.102 | |
| 2,300.0 | 2,260.2 | 2,250.2 | 2,250.2 | 7.4 | 44.8 | 155.64 | 889.0 | 2,478.1 | 2,887.9 | 2,840.1 | 47.84 | 60.365 | |
| 2,362.2 | 2,318.3 | 2,308.3 | 2,308.3 | 7.9 | 45.9 | 155.82 | 889.0 | 2,478.1 | 2,908.3 | 2,859.2 | 49.17 | 59.152 | |
| 2,400.0 | 2,353.6 | 2,343.6 | 2,343.6 | 8.1 | 46.6 | 155.93 | 889.0 | 2,478.1 | 2,920.8 | 2,870.8 | 49.97 | 58.446 | |
| 2,460.6 | 2,410.3 | 2,400.3 | 2,400.3 | 8.6 | 47.8 | 156.10 | 889.0 | 2,478.1 | 2,940.8 | 2,889.5 | 51.27 | 57.358 | |
| 2,500.0 | 2,447.0 | 2,437.0 | 2,437.0 | 8.9 | 48.5 | 156.21 | 889.0 | 2,478.1 | 2,953.7 | 2,901.6 | 52.11 | 56.681 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,492.2 | 2,492.2 | 9.3 | 49.6 | 156.37 | 889.0 | 2,478.1 | 2,973.2 | 2,919.8 | 53.38 | 55.704 | |
| 2,600.0 | 2,540.5 | 2,530.5 | 2,530.5 | 9.6 | 50.4 | 156.48 | 889.0 | 2,478.1 | 2,986.7 | 2,932.5 | 54.25 | 55.054 | |
| 2,657.5 | 2,594.2 | 2,584.2 | 2,584.2 | 10.0 | 51.5 | 156.63 | 889.0 | 2,478.1 | 3,005.8 | 2,950.3 | 55.48 | 54.175 | |
| 2,700.0 | 2,633.9 | 2,623.9 | 2,623.9 | 10.3 | 52.3 | 156.75 | 889.0 | 2,478.1 | 3,019.8 | 2,963.4 | 56.39 | 53.550 | |
| 2,755.9 | 2,686.1 | 2,676.1 | 2,676.1 | 10.7 | 53.3 | 156.89 | 889.0 | 2,478.1 | 3,038.3 | 2,980.7 | 57.59 | 52.758 | |
| 2,800.0 | 2,727.3 | 2,717.3 | 2,717.3 | 11.0 | 54.2 | 157.01 | 889.0 | 2,478.1 | 3,053.0 | 2,994.4 | 58.53 | 52.156 | |
| 2,854.3 | 2,778.1 | 2,768.1 | 2,768.1 | 11.4 | 55.2 | 157.15 | 889.0 | 2,478.1 | 3,071.0 | 3,011.3 | 59.70 | 51.441 | |
| 2,900.0 | 2,820.7 | 2,810.7 | 2,810.7 | 11.8 | 56.0 | 157.26 | 889.0 | 2,478.1 | 3,086.1 | 3,025.5 | 60.68 | 50.862 | |
| 2,952.7 | 2,870.0 | 2,860.0 | 2,860.0 | 12.2 | 57.0 | 157.40 | 889.0 | 2,478.1 | 3,103.7 | 3,041.9 | 61.81 | 50.216 | |
| 3,000.0 | 2,914.2 | 2,904.2 | 2,904.2 | 12.5 | 57.9 | 157.52 | 889.0 | 2,478.1 | 3,119.4 | 3,056.6 | 62.82 | 49.657 | |
| 3,051.2 | 2,962.0 | 2,952.0 | 2,952.0 | 12.9 | 58.9 | 157.64 | 889.0 | 2,478.1 | 3,136.4 | 3,072.5 | 63.91 | 49.072 | |
| 3,100.0 | 3,007.6 | 2,997.6 | 2,997.6 | 13.3 | 59.8 | 157.76 | 889.0 | 2,478.1 | 3,152.7 | 3,087.7 | 64.96 | 48.533 | |
| 3,149.6 | 3,053.9 | 3,043.9 | 3,043.9 | 13.6 | 60.7 | 157.88 | 889.0 | 2,478.1 | 3,169.2 | 3,103.2 | 66.02 | 48.003 | |
| 3,200.0 | 3,101.0 | 3,091.0 | 3,091.0 | 14.0 | 61.7 | 158.00 | 889.0 | 2,478.1 | 3,186.0 | 3,118.9 | 67.10 | 47.482 | |
| 3,248.0 | 3,145.9 | 3,135.9 | 3,135.9 | 14.4 | 62.6 | 158.12 | 889.0 | 2,478.1 | 3,202.1 | 3,133.9 | 68.13 | 47.001 | |
| 3,300.0 | 3,194.4 | 3,184.4 | 3,184.4 | 14.8 | 63.5 | 158.24 | 889.0 | 2,478.1 | 3,219.4 | 3,150.2 | 69.24 | 46.498 | |
| 3,346.4 | 3,237.8 | 3,227.8 | 3,227.8 | 15.1 | 64.4 | 158.35 | 889.0 | 2,478.1 | 3,235.0 | 3,164.7 | 70.23 | 46.061 | |
| 3,400.0 | 3,287.8 | 3,277.8 | 3,277.8 | 15.5 | 65.4 | 158.47 | 889.0 | 2,478.1 | 3,252.9 | 3,181.5 | 71.38 | 45.573 | |
| 3,444.9 | 3,329.8 | 3,319.8 | 3,319.8 | 15.9 | 66.3 | 158.57 | 889.0 | 2,478.1 | 3,267.9 | 3,195.6 | 72.34 | 45.177 | |
| 3,500.0 | 3,381.3 | 3,371.3 | 3,371.3 | 16.3 | 67.3 | 158.69 | 889.0 | 2,478.1 | 3,286.4 | 3,212.9 | 73.51 | 44.704 | |
| 3,543.3 | 3,421.7 | 3,411.7 | 3,411.7 | 16.6 | 68.1 | 158.79 | 889.0 | 2,478.1 | 3,300.9 | 3,226.5 | 74.44 | 44.344 | |
| 3,600.0 | 3,474.7 | 3,464.7 | 3,464.7 | 17.0 | 69.2 | 158.92 | 889.0 | 2,478.1 | 3,319.9 | 3,244.3 | 75.65 | 43.886 | |
| 3,641.7 | 3,513.7 | 3,503.7 | 3,503.7 | 17.3 | 70.0 | 159.01 | 889.0 | 2,478.1 | 3,333.9 | 3,257.4 | 76.54 | 43.558 | |
| 3,700.0 | 3,568.1 | 3,558.1 | 3,558.1 | 17.8 | 71.1 | 159.13 | 889.0 | 2,478.1 | 3,353.5 | 3,275.7 | 77.78 | 43.113 | |
| 3,740.1 | 3,605.6 | 3,595.6 | 3,595.6 | 18.1 | 71.8 | 159.22 | 889.0 | 2,478.1 | 3,367.0 | 3,288.4 | 78.64 | 42.815 | |
| 3,800.0 | 3,661.5 | 3,651.5 | 3,651.5 | 18.5 | 72.9 | 159.35 | 889.0 | 2,478.1 | 3,387.1 | 3,307.2 | 79.92 | 42.383 | |
| 3,838.6 | 3,697.6 | 3,687.6 | 3,687.6 | 18.8 | 73.7 | 159.43 | 889.0 | 2,478.1 | 3,400.1 | 3,319.4 | 80.74 | 42.112 | |
| 3,900.0 | 3,754.9 | 3,744.9 | 3,744.9 | 19.3 | 74.8 | 159.56 | 889.0 | 2,478.1 | 3,420.8 | 3,338.7 | 82.05 | 41.693 | |
| 3,937.0 | 3,789.5 | 3,779.5 | 3,779.5 | 19.6 | 75.5 | 159.63 | 889.0 | 2,478.1 | 3,433.3 | 3,350.4 | 82.84 | 41.446 | |
| 4,000.0 | 3,848.4 | 3,838.4 | 3,838.4 | 20.1 | 76.7 | 159.76 | 889.0 | 2,478.1 | 3,454.5 | 3,370.3 | 84.18 | 41.038 | |
| 4,035.4 | 3,881.5 | 3,871.5 | 3,871.5 | 20.3 | 77.4 | 159.83 | 889.0 | 2,478.1 | 3,466.4 | 3,381.5 | 84.93 | 40.814 | |
| 4,100.0 | 3,941.8 | 3,931.8 | 3,931.8 | 20.8 | 78.6 | 159.96 | 889.0 | 2,478.1 | 3,488.2 | 3,401.9 | 86.31 | 40.417 | |
| 4,133.8 | 3,973.4 | 3,963.4 | 3,963.4 | 21.1 | 79.2 | 160.03 | 889.0 | 2,478.1 | 3,499.7 | 3,412.6 | 87.03 | 40.214 | |
| 4,200.0 | 4,035.2 | 4,025.2 | 4,025.2 | 21.6 | 80.5 | 160.16 | 889.0 | 2,478.1 | 3,522.0 | 3,433.6 | 88.43 | 39.827 | |
| 4,232.3 | 4,065.4 | 4,055.4 | 4,055.4 | 21.8 | 81.1 | 160.22 | 889.0 | 2,478.1 | 3,532.9 | 3,443.8 | 89.12 | 39.642 | |
| 4,300.0 | 4,128.6 | 4,118.6 | 4,118.6 | 22.3 | 82.3 | 160.35 | 889.0 | 2,478.1 | 3,555.8 | 3,465.3 | 90.56 | 39.265 | |
| 4,330.7 | 4,157.3 | 4,147.3 | 4,147.3 | 22.6 | 82.9 | 160.41 | 889.0 | 2,478.1 | 3,566.2 | 3,475.0 | 91.21 | 39.098 | |
| 4,400.0 | 4,222.0 | 4,212.0 | 4,212.0 | 23.1 | 84.2 | 160.54 | 889.0 | 2,478.1 | 3,589.7 | 3,497.0 | 92.68 | 38.730 | |
| 4,429.1 | 4,249.3 | 4,239.3 | 4,239.3 | 23.3 | 84.8 | 160.60 | 889.0 | 2,478.1 | 3,599.6 | 3,506.3 | 93.30 | 38.579 | |
| 4,500.0 | 4,315.5 | 4,305.5 | 4,305.5 | 23.9 | 86.1 | 160.73 | 889.0 | 2,478.1 | 3,623.6 | 3,528.8 | 94.81 | 38.220 | |
| 4,527.5 | 4,341.2 | 4,331.2 | 4,331.2 | 24.1 | 86.6 | 160.78 | 889.0 | 2,478.1 | 3,632.9 | 3,537.5 | 95.39 | 38.084 | |
| 4,600.0 | 4,408.9 | 4,398.9 | 4,398.9 | 24.6 | 88.0 | 160.91 | 889.0 | 2,478.1 | 3,657.5 | 3,560.6 | 96.93 | 37.733 | |
| 4,626.0 | 4,433.2 | 4,423.2 | 4,423.2 | 24.8 | 88.5 | 160.96 | 889.0 | 2,478.1 | 3,666.3 | 3,568.9 | 97.48 | 37.611 | |
| 4,700.0 | 4,502.3 | 4,492.3 | 4,492.3 | 25.4 | 89.9 | 161.09 | 889.0 | 2,478.1 | 3,691.5 | 3,592.4 | 99.05 | 37.268 | |
| 4,724.4 | 4,525.1 | 4,515.1 | 4,515.1 | 25.6 | 90.3 | 161.14 | 889.0 | 2,478.1 | 3,699.8 | 3,600.2 | 99.57 | 37.158 | |
| 4,800.0 | 4,595.7 | 4,585.7 | 4,585.7 | 26.2 | 91.7 | 161.27 | 889.0 | 2,478.1 | 3,725.5 | 3,624.3 | 101.17 | 36.823 | |
| 4,822.8 | 4,617.1 | 4,607.1 | 4,607.1 | 26.3 | 92.2 | 161.31 | 889.0 | 2,478.1 | 3,733.2 | 3,631.6 | 101.65 | 36.725 | |
| 4,900.0 | 4,689.2 | 4,623.0 | 4,623.0 | 26.9 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,759.9 | 3,657.7 | 102.25 | 36.772 | |
| 4,921.2 | 4,709.0 | 4,623.0 | 4,623.0 | 27.1 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,767.5 | 3,665.2 | 102.33 | 36.816 | |
| 5,000.0 | 4,782.6 | 4,623.0 | 4,623.0 | 27.7 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,796.5 | 3,693.9 | 102.64 | 36.988 | |
| 5,019.7 | 4,801.0 | 4,623.0 | 4,623.0 | 27.8 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,804.0 | 3,701.2 | 102.72 | 37.033 | |
| 5,100.0 | 4,876.0 | 4,623.0 | 4,623.0 | 28.4 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,835.3 | 3,732.3 | 103.04 | 37.224 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,623.0 | 4,623.0 | 28.6 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,842.6 | 3,739.5 | 103.11 | 37.268 | |
| 5,159.9 | 4,932.0 | 4,623.0 | 4,623.0 | 28.9 | 92.5 | 161.34 | 889.0 | 2,478.1 | 3,859.7 | 3,756.4 | 103.27 | 37.374 | |
| 5,200.0 | 4,969.5 | 4,623.0 | 4,623.0 | 29.2 | 92.5 | 161.45 | 889.0 | 2,478.1 | 3,876.1 | 3,772.3 | 103.80 | 37.342 | |
| 5,216.5 | 4,985.1 | 4,623.0 | 4,623.0 | 29.3 | 92.5 | 161.50 | 889.0 | 2,478.1 | 3,882.9 | 3,778.9 | 104.01 | 37.333 | |
| 5,300.0 | 5,064.0 | 4,623.0 | 4,623.0 | 29.7 | 92.5 | 161.73 | 889.0 | 2,478.1 | 3,916.6 | 3,811.6 | 105.02 | 37.295 | |
| 5,314.9 | 5,078.2 | 4,623.0 | 4,623.0 | 29.8 | 92.5 | 161.77 | 889.0 | 2,478.1 | 3,922.6 | 3,817.4 | 105.19 | 37.291 | |
| 5,400.0 | 5,159.6 | 4,623.0 | 4,623.0 | 30.2 | 92.5 | 162.00 | 889.0 | 2,478.1 | 3,956.2 | 3,850.0 | 106.11 | 37.283 | |
| 5,413.4 | 5,172.4 | 4,623.0 | 4,623.0 | 30.3 | 92.5 | 162.04 | 889.0 | 2,478.1 | 3,961.4 | 3,855.1 | 106.25 | 37.284 | |
| 5,500.0 | 5,256.1 | 4,623.0 | 4,623.0 | 30.7 | 92.5 | 162.26 | 889.0 | 2,478.1 | 3,994.8 | 3,887.7 | 107.08 | 37.306 | |
| 5,511.8 | 5,267.6 | 4,623.0 | 4,623.0 | 30.7 | 92.5 | 162.29 | 889.0 | 2,478.1 | 3,999.3 | 3,892.1 | 107.19 | 37.311 | |
| 5,600.0 | 5,353.5 | 4,623.0 | 4,623.0 | 31.1 | 92.5 | 162.51 | 889.0 | 2,478.1 | 4,032.5 | 3,924.6 | 107.93 | 37.363 | |
| 5,610.2 | 5,363.5 | 4,623.0 | 4,623.0 | 31.1 | 92.5 | 162.53 | 889.0 | 2,478.1 | 4,036.3 | 3,928.3 | 108.01 | 37.371 | |
| 5,700.0 | 5,451.6 | 4,623.0 | 4,623.0 | 31.4 | 92.5 | 162.74 | 889.0 | 2,478.1 | 4,069.3 | 3,960.6 | 108.64 | 37.455 | |
| 5,708.6 | 5,460.2 | 4,623.0 | 4,623.0 | 31.4 | 92.5 | 162.76 | 889.0 | 2,478.1 | 4,072.4 | 3,963.7 | 108.70 | 37.465 | |
| 5,800.0 | 5,550.4 | 4,623.0 | 4,623.0 | 31.7 | 92.5 | 162.97 | 889.0 | 2,478.1 | 4,105.1 | 3,995.9 | 109.23 | 37.583 | |
| 5,807.1 | 5,557.4 | 4,623.0 | 4,623.0 | 31.7 | 92.5 | 162.98 | 889.0 | 2,478.1 | 4,107.6 | 3,998.3 | 109.26 | 37.593 | |
| 5,900.0 | 5,649.6 | 4,623.0 | 4,623.0 | 31.9 | 92.5 | 163.18 | 889.0 | 2,478.1 | 4,139.9 | 4,030.2 | 109.68 | 37.745 | |
| 5,905.5 | 5,655.1 | 4,623.0 | 4,623.0 | 31.9 | 92.5 | 163.20 | 889.0 | 2,478.1 | 4,141.8 | 4,032.1 | 109.70 | 37.755 | |
| 6,000.0 | 5,749.2 | 4,623.0 | 4,623.0 | 32.1 | 92.5 | 163.39 | 889.0 | 2,478.1 | 4,173.7 | 4,063.7 | 110.00 | 37.943 | |
| 6,003.9 | 5,753.1 | 4,623.0 | 4,623.0 | 32.1 | 92.5 | 163.40 | 889.0 | 2,478.1 | 4,175.0 | 4,065.0 | 110.01 | 37.951 | |
| 6,100.0 | 5,849.1 | 4,623.0 | 4,623.0 | 32.3 | 92.5 | 163.59 | 889.0 | 2,478.1 | 4,206.4 | 4,096.3 | 110.18 | 38.176 | |
| 6,102.3 | 5,851.4 | 4,623.0 | 4,623.0 | 32.3 | 92.5 | 163.59 | 889.0 | 2,478.1 | 4,207.2 | 4,097.0 | 110.19 | 38.182 | |
| 6,200.8 | 5,949.8 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | 163.78 | 889.0 | 2,478.1 | 4,238.4 | 4,128.2 | 110.24 | 38.448 | |
| 6,204.9 | 5,953.9 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | 79.35 | 889.0 | 2,478.1 | 4,239.7 | 4,115.7 | 123.95 | 34.206 | |
| 6,234.9 | 5,983.9 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | 79.35 | 889.0 | 2,478.1 | 4,249.1 | 4,125.2 | 123.97 | 34.275 | |
| 6,250.0 | 5,999.0 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | -10.58 | 889.0 | 2,478.1 | 4,253.8 | 4,143.6 | 110.19 | 38.605 | |
| 6,299.2 | 6,048.2 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | -10.38 | 889.0 | 2,478.1 | 4,267.3 | 4,157.7 | 109.57 | 38.945 | |
| 6,300.0 | 6,048.9 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | -10.37 | 889.0 | 2,478.1 | 4,267.5 | 4,158.0 | 109.56 | 38.952 | |
| 6,350.0 | 6,098.5 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | -10.21 | 889.0 | 2,478.1 | 4,278.4 | 4,170.0 | 108.43 | 39.460 | |
| 6,397.6 | 6,145.3 | 4,623.0 | 4,623.0 | 32.3 | 92.5 | -10.10 | 889.0 | 2,478.1 | 4,286.2 | 4,179.3 | 106.89 | 40.101 | |
| 6,400.0 | 6,147.6 | 4,623.0 | 4,623.0 | 32.3 | 92.5 | -10.10 | 889.0 | 2,478.1 | 4,286.5 | 4,179.7 | 106.80 | 40.137 | |
| 6,450.0 | 6,195.8 | 4,623.0 | 4,623.0 | 32.2 | 92.5 | -10.02 | 889.0 | 2,478.1 | 4,291.8 | 4,187.1 | 104.69 | 40.996 | |
| 6,496.0 | 6,239.3 | 4,623.0 | 4,623.0 | 32.1 | 92.5 | -9.99 | 889.0 | 2,478.1 | 4,294.2 | 4,191.8 | 102.33 | 41.964 | |
| 6,500.0 | 6,243.0 | 4,623.0 | 4,623.0 | 32.1 | 92.5 | -9.99 | 889.0 | 2,478.1 | 4,294.2 | 4,192.1 | 102.11 | 42.055 | |
| 6,550.0 | 6,289.0 | 4,623.0 | 4,623.0 | 32.0 | 92.5 | -10.00 | 889.0 | 2,478.1 | 4,293.8 | 4,194.7 | 99.09 | 43.333 | |
| 6,594.5 | 6,328.6 | 4,623.0 | 4,623.0 | 31.8 | 92.5 | -10.04 | 889.0 | 2,478.1 | 4,291.0 | 4,195.0 | 96.05 | 44.676 | |
| 6,600.0 | 6,333.4 | 4,623.0 | 4,623.0 | 31.8 | 92.5 | -10.04 | 889.0 | 2,478.1 | 4,290.5 | 4,194.9 | 95.65 | 44.857 | |
| 6,650.0 | 6,376.2 | 4,623.0 | 4,623.0 | 31.7 | 92.5 | -10.13 | 889.0 | 2,478.1 | 4,284.4 | 4,192.6 | 91.82 | 46.659 | |
| 6,692.9 | 6,411.3 | 4,623.0 | 4,623.0 | 31.6 | 92.5 | -10.24 | 889.0 | 2,478.1 | 4,276.9 | 4,188.6 | 88.26 | 48.457 | |
| 6,700.0 | 6,417.0 | 4,623.0 | 4,623.0 | 31.5 | 92.5 | -10.26 | 889.0 | 2,478.1 | 4,275.5 | 4,187.8 | 87.65 | 48.779 | |
| 6,750.0 | 6,455.7 | 4,623.0 | 4,623.0 | 31.4 | 92.5 | -10.43 | 889.0 | 2,478.1 | 4,263.7 | 4,180.5 | 83.18 | 51.261 | |
| 6,791.3 | 6,486.0 | 4,623.0 | 4,623.0 | 31.3 | 92.5 | -10.61 | 889.0 | 2,478.1 | 4,251.9 | 4,172.6 | 79.29 | 53.625 | |
| 6,800.0 | 6,492.2 | 4,623.0 | 4,623.0 | 31.3 | 92.5 | -10.65 | 889.0 | 2,478.1 | 4,249.2 | 4,170.7 | 78.46 | 54.160 | |
| 6,850.0 | 6,526.1 | 4,623.0 | 4,623.0 | 31.2 | 92.5 | -10.93 | 889.0 | 2,478.1 | 4,231.9 | 4,158.4 | 73.56 | 57.533 | |
| 6,889.7 | 6,551.2 | 4,623.0 | 4,623.0 | 31.2 | 92.5 | -11.19 | 889.0 | 2,478.1 | 4,216.3 | 4,146.7 | 69.58 | 60.593 | |
| 6,900.0 | 6,557.4 | 4,623.0 | 4,623.0 | 31.2 | 92.5 | -11.26 | 889.0 | 2,478.1 | 4,212.0 | 4,143.5 | 68.55 | 61.440 | |
| 6,950.0 | 6,586.0 | 4,623.0 | 4,623.0 | 31.1 | 92.5 | -11.66 | 889.0 | 2,478.1 | 4,189.5 | 4,126.0 | 63.54 | 65.931 | |
| 6,988.2 | 6,605.8 | 4,623.0 | 4,623.0 | 31.2 | 92.5 | -12.02 | 889.0 | 2,478.1 | 4,170.6 | 4,110.8 | 59.78 | 69.763 | |
| 7,000.0 | 6,611.5 | 4,623.0 | 4,623.0 | 31.2 | 92.5 | -12.14 | 889.0 | 2,478.1 | 4,164.4 | 4,105.8 | 58.64 | 71.021 | |
| 7,050.0 | 6,634.1 | 4,623.0 | 4,623.0 | 31.2 | 92.5 | -12.71 | 889.0 | 2,478.1 | 4,136.9 | 4,082.9 | 53.97 | 76.649 | |
| 7,086.6 | 6,648.6 | 4,623.0 | 4,623.0 | 31.3 | 92.5 | -13.19 | 889.0 | 2,478.1 | 4,115.2 | 4,064.4 | 50.81 | 80.984 | |
| 7,100.0 | 6,653.4 | 4,623.0 | 4,623.0 | 31.4 | 92.5 | -13.39 | 889.0 | 2,478.1 | 4,107.0 | 4,057.2 | 49.73 | 82.583 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 4,623.0 | 4,623.0 | 31.6 | 92.5 | -14.19 | 889.0 | 2,478.1 | 4,074.8 | 4,028.6 | 46.16 | 88.267 | |
| 7,185.0 | 6,678.8 | 4,623.0 | 4,623.0 | 31.7 | 92.5 | -14.84 | 889.0 | 2,478.1 | 4,050.9 | 4,006.6 | 44.25 | 91.550 | |
| 7,200.0 | 6,682.3 | 4,623.0 | 4,623.0 | 31.8 | 92.5 | -15.15 | 889.0 | 2,478.1 | 4,040.4 | 3,996.8 | 43.61 | 92.641 | |
| 7,250.0 | 6,691.6 | 4,623.0 | 4,623.0 | 32.1 | 92.5 | -16.31 | 889.0 | 2,478.1 | 4,003.9 | 3,961.4 | 42.51 | 94.188 | |
| 7,283.4 | 6,696.0 | 4,623.0 | 4,623.0 | 32.3 | 92.5 | -17.21 | 889.0 | 2,478.1 | 3,978.4 | 3,935.6 | 42.80 | 92.962 | |
| 7,300.0 | 6,697.5 | 4,623.0 | 4,623.0 | 32.4 | 92.5 | -17.71 | 889.0 | 2,478.1 | 3,965.5 | 3,922.2 | 43.27 | 91.636 | |
| 7,350.0 | 6,699.9 | 4,623.0 | 4,623.0 | 32.8 | 92.5 | -19.44 | 889.0 | 2,478.1 | 3,925.3 | 3,879.2 | 46.13 | 85.094 | |
| 7,364.4 | 6,700.0 | 4,623.0 | 4,623.0 | 32.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,913.4 | 3,866.1 | 47.33 | 82.678 | |
| 7,381.9 | 6,699.9 | 4,623.0 | 4,623.0 | 33.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,898.9 | 3,851.5 | 47.43 | 82.198 | |
| 7,400.0 | 6,699.8 | 4,623.0 | 4,623.0 | 33.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,883.9 | 3,836.3 | 47.54 | 81.704 | |
| 7,480.3 | 6,699.2 | 4,623.0 | 4,623.0 | 34.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,817.6 | 3,769.6 | 48.03 | 79.488 | |
| 7,500.0 | 6,699.1 | 4,623.0 | 4,623.0 | 34.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,801.5 | 3,753.3 | 48.15 | 78.953 | |
| 7,578.7 | 6,698.6 | 4,623.0 | 4,623.0 | 35.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,737.2 | 3,688.5 | 48.68 | 76.772 | |
| 7,600.0 | 6,698.5 | 4,623.0 | 4,623.0 | 35.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,719.9 | 3,671.1 | 48.82 | 76.192 | |
| 7,677.1 | 6,698.0 | 4,623.0 | 4,623.0 | 36.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,657.7 | 3,608.3 | 49.39 | 74.064 | |
| 7,700.0 | 6,697.8 | 4,623.0 | 4,623.0 | 36.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,639.3 | 3,589.8 | 49.55 | 73.445 | |
| 7,775.6 | 6,697.3 | 4,623.0 | 4,623.0 | 38.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,579.1 | 3,528.9 | 50.14 | 71.384 | |
| 7,800.0 | 6,697.2 | 4,623.0 | 4,623.0 | 38.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,559.7 | 3,509.4 | 50.33 | 70.731 | |
| 7,874.0 | 6,696.7 | 4,623.0 | 4,623.0 | 39.6 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,501.5 | 3,450.5 | 50.93 | 68.746 | |
| 7,900.0 | 6,696.5 | 4,623.0 | 4,623.0 | 40.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,481.1 | 3,430.0 | 51.15 | 68.063 | |
| 7,972.4 | 6,696.1 | 4,623.0 | 4,623.0 | 41.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,424.9 | 3,373.2 | 51.77 | 66.163 | |
| 8,000.0 | 6,695.9 | 4,623.0 | 4,623.0 | 41.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,403.7 | 3,351.7 | 52.00 | 65.454 | |
| 8,070.8 | 6,695.4 | 4,623.0 | 4,623.0 | 43.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,349.5 | 3,296.9 | 52.63 | 63.644 | |
| 8,100.0 | 6,695.2 | 4,623.0 | 4,623.0 | 43.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,327.4 | 3,274.5 | 52.89 | 62.915 | |
| 8,169.3 | 6,694.8 | 4,623.0 | 4,623.0 | 45.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,275.4 | 3,221.8 | 53.52 | 61.196 | |
| 8,200.0 | 6,694.6 | 4,623.0 | 4,623.0 | 45.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,252.5 | 3,198.7 | 53.80 | 60.451 | |
| 8,267.7 | 6,694.1 | 4,623.0 | 4,623.0 | 47.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,202.5 | 3,148.1 | 54.44 | 58.826 | |
| 8,300.0 | 6,693.9 | 4,623.0 | 4,623.0 | 47.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,178.9 | 3,124.1 | 54.74 | 58.068 | |
| 8,366.1 | 6,693.5 | 4,623.0 | 4,623.0 | 49.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,131.0 | 3,075.7 | 55.38 | 56.536 | |
| 8,400.0 | 6,693.3 | 4,623.0 | 4,623.0 | 49.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,106.8 | 3,051.1 | 55.71 | 55.770 | |
| 8,464.5 | 6,692.9 | 4,623.0 | 4,623.0 | 51.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,061.1 | 3,004.7 | 56.34 | 54.331 | |
| 8,500.0 | 6,692.6 | 4,623.0 | 4,623.0 | 52.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 3,036.3 | 2,979.6 | 56.69 | 53.560 | |
| 8,563.0 | 6,692.2 | 4,623.0 | 4,623.0 | 53.6 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,992.7 | 2,935.4 | 57.32 | 52.212 | |
| 8,600.0 | 6,692.0 | 4,623.0 | 4,623.0 | 54.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,967.4 | 2,909.7 | 57.69 | 51.439 | |
| 8,661.4 | 6,691.6 | 4,623.0 | 4,623.0 | 55.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,926.1 | 2,867.8 | 58.31 | 50.180 | |
| 8,700.0 | 6,691.3 | 4,623.0 | 4,623.0 | 56.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,900.4 | 2,841.7 | 58.70 | 49.408 | |
| 8,759.8 | 6,690.9 | 4,623.0 | 4,623.0 | 58.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,861.2 | 2,801.9 | 59.32 | 48.235 | |
| 8,800.0 | 6,690.7 | 4,623.0 | 4,623.0 | 59.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,835.3 | 2,775.6 | 59.73 | 47.468 | |
| 8,858.2 | 6,690.3 | 4,623.0 | 4,623.0 | 60.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,798.4 | 2,738.1 | 60.34 | 46.379 | |
| 8,900.0 | 6,690.0 | 4,623.0 | 4,623.0 | 61.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,772.4 | 2,711.6 | 60.77 | 45.619 | |
| 8,956.7 | 6,689.7 | 4,623.0 | 4,623.0 | 62.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,737.6 | 2,676.3 | 61.37 | 44.610 | |
| 9,000.0 | 6,689.4 | 4,623.0 | 4,623.0 | 63.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,711.6 | 2,649.8 | 61.82 | 43.860 | |
| 9,055.1 | 6,689.0 | 4,623.0 | 4,623.0 | 65.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,679.1 | 2,616.7 | 62.41 | 42.929 | |
| 9,100.0 | 6,688.7 | 4,623.0 | 4,623.0 | 66.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,653.2 | 2,590.3 | 62.89 | 42.191 | |
| 9,153.5 | 6,688.4 | 4,623.0 | 4,623.0 | 67.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,623.0 | 2,559.5 | 63.46 | 41.334 | |
| 9,200.0 | 6,688.1 | 4,623.0 | 4,623.0 | 68.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,597.4 | 2,533.4 | 63.96 | 40.612 | |
| 9,251.9 | 6,687.8 | 4,623.0 | 4,623.0 | 70.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,569.4 | 2,504.9 | 64.52 | 39.826 | |
| 9,300.0 | 6,687.4 | 4,623.0 | 4,623.0 | 71.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,544.2 | 2,479.2 | 65.03 | 39.122 | |
| 9,350.4 | 6,687.1 | 4,623.0 | 4,623.0 | 72.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,518.5 | 2,452.9 | 65.58 | 38.404 | |
| 9,400.0 | 6,686.8 | 4,623.0 | 4,623.0 | 73.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,493.9 | 2,427.8 | 66.12 | 37.719 | |
| 9,448.8 | 6,686.5 | 4,623.0 | 4,623.0 | 75.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,470.5 | 2,403.9 | 66.65 | 37.066 | |
| 9,500.0 | 6,686.1 | 4,623.0 | 4,623.0 | 76.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,446.7 | 2,379.5 | 67.21 | 36.404 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #31-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 4,623.0 | 4,623.0 | 77.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,425.6 | 2,357.8 | 67.73 | 35.813 | |
| 9,600.0 | 6,685.5 | 4,623.0 | 4,623.0 | 79.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,402.8 | 2,334.5 | 68.31 | 35.175 | |
| 9,645.6 | 6,685.2 | 4,623.0 | 4,623.0 | 80.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,383.8 | 2,315.0 | 68.81 | 34.643 | |
| 9,700.0 | 6,684.8 | 4,623.0 | 4,623.0 | 81.6 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,362.2 | 2,292.8 | 69.41 | 34.032 | |
| 9,744.1 | 6,684.6 | 4,623.0 | 4,623.0 | 82.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,345.5 | 2,275.6 | 69.90 | 33.555 | |
| 9,800.0 | 6,684.2 | 4,623.0 | 4,623.0 | 84.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,325.3 | 2,254.7 | 70.52 | 32.973 | |
| 9,842.5 | 6,683.9 | 4,623.0 | 4,623.0 | 85.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,310.7 | 2,239.7 | 70.99 | 32.548 | |
| 9,900.0 | 6,683.5 | 4,623.0 | 4,623.0 | 86.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,292.1 | 2,220.4 | 71.63 | 31.998 | |
| 9,940.9 | 6,683.3 | 4,623.0 | 4,623.0 | 87.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,279.6 | 2,207.5 | 72.09 | 31.622 | |
| 10,000.0 | 6,682.9 | 4,623.0 | 4,623.0 | 89.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,262.8 | 2,190.1 | 72.75 | 31.104 | |
| 10,039.3 | 6,682.6 | 4,623.0 | 4,623.0 | 90.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,252.4 | 2,179.2 | 73.19 | 30.775 | |
| 10,100.0 | 6,682.2 | 4,623.0 | 4,623.0 | 92.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,237.7 | 2,163.8 | 73.87 | 30.292 | |
| 10,137.8 | 6,682.0 | 4,623.0 | 4,623.0 | 93.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,229.2 | 2,155.0 | 74.29 | 30.005 | |
| 10,200.0 | 6,681.6 | 4,623.0 | 4,623.0 | 94.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,216.7 | 2,141.7 | 74.99 | 29.558 | |
| 10,236.2 | 6,681.4 | 4,623.0 | 4,623.0 | 95.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,210.2 | 2,134.8 | 75.40 | 29.312 | |
| 10,300.0 | 6,680.9 | 4,623.0 | 4,623.0 | 97.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,200.1 | 2,124.0 | 76.12 | 28.903 | |
| 10,334.6 | 6,680.7 | 4,623.0 | 4,623.0 | 98.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,195.4 | 2,118.9 | 76.51 | 28.693 | |
| 10,400.0 | 6,680.3 | 4,623.0 | 4,623.0 | 100.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,188.0 | 2,110.8 | 77.25 | 28.323 | |
| 10,433.0 | 6,680.1 | 4,623.0 | 4,623.0 | 101.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,185.0 | 2,107.4 | 77.63 | 28.147 | |
| 10,500.0 | 6,679.7 | 4,623.0 | 4,623.0 | 102.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,180.4 | 2,102.0 | 78.39 | 27.816 | |
| 10,531.5 | 6,679.4 | 4,623.0 | 4,623.0 | 103.6 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,179.0 | 2,100.2 | 78.74 | 27.671 | |
| 10,600.0 | 6,679.0 | 4,623.0 | 4,623.0 | 105.4 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,177.4 | 2,097.8 | 79.52 | 27.381 | |
| 10,616.2 | 6,678.9 | 4,623.0 | 4,623.0 | 105.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,177.3 | 2,097.6 | 79.71 | 27.316 | CC |
| 10,629.9 | 6,678.8 | 4,623.0 | 4,623.0 | 106.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,177.4 | 2,097.5 | 79.86 | 27.264 | ES |
| 10,700.0 | 6,678.4 | 4,623.0 | 4,623.0 | 108.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,178.9 | 2,098.3 | 80.66 | 27.013 | |
| 10,728.3 | 6,678.2 | 4,623.0 | 4,623.0 | 108.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,180.2 | 2,099.2 | 80.98 | 26.921 | |
| 10,800.0 | 6,677.7 | 4,623.0 | 4,623.0 | 110.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,185.1 | 2,103.3 | 81.80 | 26.712 | |
| 10,826.7 | 6,677.5 | 4,623.0 | 4,623.0 | 111.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,187.5 | 2,105.4 | 82.11 | 26.641 | |
| 10,900.0 | 6,677.1 | 4,623.0 | 4,623.0 | 113.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,195.7 | 2,112.8 | 82.94 | 26.472 | |
| 10,925.2 | 6,676.9 | 4,623.0 | 4,623.0 | 114.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,199.1 | 2,115.9 | 83.23 | 26.421 | |
| 11,000.0 | 6,676.4 | 4,623.0 | 4,623.0 | 116.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,210.9 | 2,126.8 | 84.09 | 26.292 | |
| 11,023.6 | 6,676.3 | 4,623.0 | 4,623.0 | 116.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,215.1 | 2,130.7 | 84.36 | 26.258 | |
| 11,100.0 | 6,675.8 | 4,623.0 | 4,623.0 | 118.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,230.4 | 2,145.2 | 85.24 | 26.167 | |
| 11,122.0 | 6,675.6 | 4,623.0 | 4,623.0 | 119.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,235.3 | 2,149.8 | 85.49 | 26.147 | |
| 11,200.0 | 6,675.1 | 4,623.0 | 4,623.0 | 121.6 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,254.2 | 2,167.8 | 86.38 | 26.095 | |
| 11,220.4 | 6,675.0 | 4,623.0 | 4,623.0 | 122.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,259.6 | 2,173.0 | 86.62 | 26.086 | |
| 11,300.0 | 6,674.5 | 4,623.0 | 4,623.0 | 124.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,282.2 | 2,194.6 | 87.53 | 26.071 | SF |
| 11,318.9 | 6,674.3 | 4,623.0 | 4,623.0 | 124.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,287.9 | 2,200.1 | 87.75 | 26.072 | |
| 11,400.0 | 6,673.8 | 4,623.0 | 4,623.0 | 127.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,314.1 | 2,225.4 | 88.69 | 26.093 | |
| 11,417.3 | 6,673.7 | 4,623.0 | 4,623.0 | 127.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,320.0 | 2,231.1 | 88.89 | 26.101 | |
| 11,500.0 | 6,673.2 | 4,623.0 | 4,623.0 | 129.8 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,349.9 | 2,260.0 | 89.84 | 26.156 | |
| 11,515.7 | 6,673.1 | 4,623.0 | 4,623.0 | 130.2 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,355.8 | 2,265.8 | 90.02 | 26.170 | |
| 11,600.0 | 6,672.5 | 4,623.0 | 4,623.0 | 132.5 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,389.3 | 2,298.3 | 90.99 | 26.257 | |
| 11,614.1 | 6,672.4 | 4,623.0 | 4,623.0 | 132.9 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,395.1 | 2,304.0 | 91.16 | 26.275 | |
| 11,700.0 | 6,671.9 | 4,623.0 | 4,623.0 | 135.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,432.1 | 2,340.0 | 92.15 | 26.393 | |
| 11,712.6 | 6,671.8 | 4,623.0 | 4,623.0 | 135.6 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,437.8 | 2,345.5 | 92.30 | 26.413 | |
| 11,800.0 | 6,671.2 | 4,623.0 | 4,623.0 | 138.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,478.3 | 2,385.0 | 93.31 | 26.561 | |
| 11,811.0 | 6,671.1 | 4,623.0 | 4,623.0 | 138.3 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,483.6 | 2,390.2 | 93.43 | 26.581 | |
| 11,900.0 | 6,670.6 | 4,623.0 | 4,623.0 | 140.7 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,527.6 | 2,433.2 | 94.46 | 26.757 | |
| 11,909.4 | 6,670.5 | 4,623.0 | 4,623.0 | 141.0 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,532.4 | 2,437.8 | 94.57 | 26.777 | |
| 11,987.2 | 6,670.0 | 4,623.0 | 4,623.0 | 143.1 | 92.5 | -20.00 | 889.0 | 2,478.1 | 2,573.0 | 2,477.5 | 95.47 | 26.950 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | | | | |
| 98.4 | 98.4 | 85.4 | 85.4 | 0.1 | 0.9 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,713.1 | 1.01 | 3,692.456 | |
| 100.0 | 100.0 | 87.0 | 87.0 | 0.1 | 0.9 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,713.0 | 1.02 | 3,625.609 | |
| 196.8 | 196.8 | 183.8 | 183.8 | 0.3 | 3.0 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,710.7 | 3.33 | 1,116.692 | |
| 200.0 | 200.0 | 187.0 | 187.0 | 0.3 | 3.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,710.7 | 3.41 | 1,090.410 | |
| 295.3 | 295.3 | 282.3 | 282.3 | 0.5 | 5.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,708.4 | 5.63 | 659.282 | |
| 300.0 | 300.0 | 287.0 | 287.0 | 0.5 | 5.2 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,708.3 | 5.74 | 646.777 | |
| 393.7 | 393.7 | 380.7 | 380.7 | 0.8 | 7.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,706.2 | 7.87 | 471.815 | |
| 400.0 | 400.0 | 387.0 | 387.0 | 0.8 | 7.2 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,706.1 | 8.01 | 463.406 | |
| 492.1 | 492.1 | 479.1 | 479.1 | 1.0 | 9.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,704.0 | 10.09 | 367.988 | |
| 500.0 | 500.0 | 487.0 | 487.0 | 1.0 | 9.3 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,703.8 | 10.27 | 361.628 | |
| 590.5 | 590.5 | 577.5 | 577.5 | 1.2 | 11.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,701.8 | 12.31 | 301.800 | |
| 600.0 | 600.0 | 587.0 | 587.0 | 1.2 | 11.3 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,701.6 | 12.52 | 296.679 | |
| 689.0 | 689.0 | 676.0 | 676.0 | 1.4 | 13.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,699.6 | 14.52 | 255.862 | |
| 700.0 | 700.0 | 687.0 | 687.0 | 1.4 | 13.3 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,699.3 | 14.76 | 251.574 | |
| 787.4 | 787.4 | 774.4 | 774.4 | 1.6 | 15.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,697.3 | 16.72 | 222.094 | |
| 800.0 | 800.0 | 787.0 | 787.0 | 1.7 | 15.3 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,697.1 | 17.01 | 218.404 | |
| 885.8 | 885.8 | 872.8 | 872.8 | 1.9 | 17.1 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,695.1 | 18.93 | 196.215 | |
| 900.0 | 900.0 | 887.0 | 887.0 | 1.9 | 17.4 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,694.8 | 19.25 | 192.977 | |
| 984.2 | 984.2 | 971.2 | 971.2 | 2.1 | 19.0 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,692.9 | 21.13 | 175.747 | |
| 1,000.0 | 1,000.0 | 987.0 | 987.0 | 2.1 | 19.4 | 76.15 | 889.2 | 3,606.1 | 3,714.1 | 3,692.6 | 21.49 | 172.862 | |
| 1,082.7 | 1,082.7 | 1,069.7 | 1,069.7 | 2.3 | 21.0 | 160.59 | 889.2 | 3,606.1 | 3,715.2 | 3,691.9 | 23.32 | 159.326 | |
| 1,100.0 | 1,100.0 | 1,087.0 | 1,087.0 | 2.3 | 21.4 | 160.59 | 889.2 | 3,606.1 | 3,715.7 | 3,692.0 | 23.70 | 156.784 | |
| 1,181.1 | 1,181.0 | 1,168.0 | 1,168.0 | 2.5 | 23.0 | 160.58 | 889.2 | 3,606.1 | 3,719.5 | 3,694.0 | 25.46 | 146.063 | |
| 1,200.0 | 1,199.8 | 1,186.8 | 1,186.8 | 2.5 | 23.4 | 160.58 | 889.2 | 3,606.1 | 3,720.7 | 3,694.8 | 25.87 | 143.809 | |
| 1,279.5 | 1,279.1 | 1,266.1 | 1,266.1 | 2.7 | 25.0 | 160.57 | 889.2 | 3,606.1 | 3,726.9 | 3,699.3 | 27.57 | 135.157 | |
| 1,300.0 | 1,299.5 | 1,286.5 | 1,286.5 | 2.8 | 25.4 | 160.57 | 889.2 | 3,606.1 | 3,728.9 | 3,700.9 | 28.01 | 133.136 | |
| 1,377.9 | 1,376.9 | 1,363.9 | 1,363.9 | 3.0 | 27.0 | 160.56 | 889.2 | 3,606.1 | 3,737.6 | 3,707.9 | 29.64 | 126.084 | |
| 1,400.0 | 1,398.7 | 1,385.7 | 1,385.7 | 3.0 | 27.4 | 160.55 | 889.2 | 3,606.1 | 3,740.4 | 3,710.3 | 30.10 | 124.266 | |
| 1,476.4 | 1,474.2 | 1,461.2 | 1,461.2 | 3.2 | 28.9 | 160.54 | 889.2 | 3,606.1 | 3,751.4 | 3,719.7 | 31.66 | 118.474 | |
| 1,500.0 | 1,497.5 | 1,484.5 | 1,484.5 | 3.3 | 29.4 | 160.53 | 889.2 | 3,606.1 | 3,755.1 | 3,723.0 | 32.14 | 116.837 | |
| 1,574.8 | 1,571.0 | 1,558.0 | 1,558.0 | 3.5 | 30.9 | 160.52 | 889.2 | 3,606.1 | 3,768.3 | 3,734.7 | 33.63 | 112.051 | |
| 1,600.0 | 1,595.6 | 1,582.6 | 1,582.6 | 3.6 | 31.4 | 160.51 | 889.2 | 3,606.1 | 3,773.2 | 3,739.0 | 34.12 | 110.575 | |
| 1,673.2 | 1,667.0 | 1,654.0 | 1,654.0 | 3.9 | 32.8 | 160.49 | 889.2 | 3,606.1 | 3,788.4 | 3,752.9 | 35.54 | 106.604 | |
| 1,700.0 | 1,693.1 | 1,680.1 | 1,680.1 | 4.0 | 33.3 | 160.48 | 889.2 | 3,606.1 | 3,794.4 | 3,758.4 | 36.04 | 105.273 | |
| 1,771.6 | 1,762.4 | 1,749.4 | 1,749.4 | 4.3 | 34.7 | 160.45 | 889.2 | 3,606.1 | 3,811.6 | 3,774.3 | 37.38 | 101.970 | |
| 1,800.0 | 1,789.6 | 1,776.6 | 1,776.6 | 4.4 | 35.3 | 160.44 | 889.2 | 3,606.1 | 3,818.9 | 3,781.0 | 37.90 | 100.773 | |
| 1,870.1 | 1,856.8 | 1,843.8 | 1,843.8 | 4.7 | 36.6 | 160.41 | 889.2 | 3,606.1 | 3,838.0 | 3,798.8 | 39.15 | 98.022 | |
| 1,900.0 | 1,885.3 | 1,872.3 | 1,872.3 | 4.9 | 37.2 | 160.39 | 889.2 | 3,606.1 | 3,846.6 | 3,806.9 | 39.68 | 96.949 | |
| 1,968.5 | 1,950.2 | 1,937.2 | 1,937.2 | 5.3 | 38.5 | 160.35 | 889.2 | 3,606.1 | 3,867.4 | 3,826.5 | 40.85 | 94.665 | |
| 2,000.0 | 1,979.8 | 1,966.8 | 1,966.8 | 5.5 | 39.1 | 160.33 | 889.2 | 3,606.1 | 3,877.4 | 3,836.1 | 41.38 | 93.701 | |
| 2,044.9 | 2,021.9 | 2,008.9 | 2,008.9 | 5.7 | 39.9 | 160.30 | 889.2 | 3,606.1 | 3,892.3 | 3,850.2 | 42.12 | 92.408 | |
| 2,066.9 | 2,042.5 | 2,029.5 | 2,029.5 | 5.9 | 40.3 | 160.34 | 889.2 | 3,606.1 | 3,899.8 | 3,857.2 | 42.58 | 91.588 | |
| 2,100.0 | 2,073.4 | 2,060.4 | 2,060.4 | 6.1 | 41.0 | 160.40 | 889.2 | 3,606.1 | 3,911.0 | 3,867.7 | 43.27 | 90.384 | |
| 2,165.3 | 2,134.4 | 2,121.4 | 2,121.4 | 6.5 | 42.2 | 160.51 | 889.2 | 3,606.1 | 3,933.1 | 3,888.4 | 44.64 | 88.110 | |
| 2,200.0 | 2,166.8 | 2,153.8 | 2,153.8 | 6.8 | 42.8 | 160.57 | 889.2 | 3,606.1 | 3,944.8 | 3,899.5 | 45.37 | 86.957 | |
| 2,263.8 | 2,226.4 | 2,213.4 | 2,213.4 | 7.2 | 44.0 | 160.68 | 889.2 | 3,606.1 | 3,966.4 | 3,919.7 | 46.71 | 84.924 | |
| 2,300.0 | 2,260.2 | 2,247.2 | 2,247.2 | 7.4 | 44.7 | 160.74 | 889.2 | 3,606.1 | 3,978.7 | 3,931.3 | 47.47 | 83.819 | |
| 2,362.2 | 2,318.3 | 2,305.3 | 2,305.3 | 7.9 | 45.9 | 160.85 | 889.2 | 3,606.1 | 3,999.8 | 3,951.0 | 48.78 | 81.999 | |
| 2,400.0 | 2,353.6 | 2,340.6 | 2,340.6 | 8.1 | 46.6 | 160.91 | 889.2 | 3,606.1 | 4,012.6 | 3,963.1 | 49.58 | 80.939 | |
| 2,460.6 | 2,410.3 | 2,397.3 | 2,397.3 | 8.6 | 47.7 | 161.01 | 889.2 | 3,606.1 | 4,033.2 | 3,982.4 | 50.86 | 79.305 | |
| 2,500.0 | 2,447.0 | 2,434.0 | 2,434.0 | 8.9 | 48.5 | 161.07 | 889.2 | 3,606.1 | 4,046.6 | 3,994.9 | 51.69 | 78.287 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,489.2 | 2,489.2 | 9.3 | 49.6 | 161.17 | 889.2 | 3,606.1 | 4,066.7 | 4,013.7 | 52.94 | 76.819 | |
| 2,600.0 | 2,540.5 | 2,527.5 | 2,527.5 | 9.6 | 50.4 | 161.24 | 889.2 | 3,606.1 | 4,080.6 | 4,026.8 | 53.81 | 75.840 | |
| 2,657.5 | 2,594.2 | 2,581.2 | 2,581.2 | 10.0 | 51.4 | 161.33 | 889.2 | 3,606.1 | 4,100.1 | 4,045.1 | 55.02 | 74.517 | |
| 2,700.0 | 2,633.9 | 2,620.9 | 2,620.9 | 10.3 | 52.2 | 161.39 | 889.2 | 3,606.1 | 4,114.6 | 4,058.7 | 55.92 | 73.575 | |
| 2,755.9 | 2,686.1 | 2,673.1 | 2,673.1 | 10.7 | 53.3 | 161.48 | 889.2 | 3,606.1 | 4,133.6 | 4,076.5 | 57.11 | 72.381 | |
| 2,800.0 | 2,727.3 | 2,714.3 | 2,714.3 | 11.0 | 54.1 | 161.55 | 889.2 | 3,606.1 | 4,148.6 | 4,090.6 | 58.04 | 71.473 | |
| 2,854.3 | 2,778.1 | 2,765.1 | 2,765.1 | 11.4 | 55.1 | 161.63 | 889.2 | 3,606.1 | 4,167.2 | 4,108.0 | 59.20 | 70.394 | |
| 2,900.0 | 2,820.7 | 2,807.7 | 2,807.7 | 11.8 | 56.0 | 161.70 | 889.2 | 3,606.1 | 4,182.7 | 4,122.5 | 60.17 | 69.518 | |
| 2,952.7 | 2,870.0 | 2,857.0 | 2,857.0 | 12.2 | 57.0 | 161.78 | 889.2 | 3,606.1 | 4,200.7 | 4,139.4 | 61.29 | 68.541 | |
| 3,000.0 | 2,914.2 | 2,901.2 | 2,901.2 | 12.5 | 57.9 | 161.86 | 889.2 | 3,606.1 | 4,216.8 | 4,154.5 | 62.29 | 67.696 | |
| 3,051.2 | 2,962.0 | 2,949.0 | 2,949.0 | 12.9 | 58.8 | 161.93 | 889.2 | 3,606.1 | 4,234.3 | 4,170.9 | 63.38 | 66.811 | |
| 3,100.0 | 3,007.6 | 2,994.6 | 2,994.6 | 13.3 | 59.8 | 162.00 | 889.2 | 3,606.1 | 4,250.9 | 4,186.5 | 64.41 | 65.994 | |
| 3,149.6 | 3,053.9 | 3,040.9 | 3,040.9 | 13.6 | 60.7 | 162.08 | 889.2 | 3,606.1 | 4,267.9 | 4,202.4 | 65.47 | 65.191 | |
| 3,200.0 | 3,101.0 | 3,088.0 | 3,088.0 | 14.0 | 61.6 | 162.15 | 889.2 | 3,606.1 | 4,285.1 | 4,218.5 | 66.54 | 64.401 | |
| 3,248.0 | 3,145.9 | 3,132.9 | 3,132.9 | 14.4 | 62.5 | 162.22 | 889.2 | 3,606.1 | 4,301.5 | 4,233.9 | 67.56 | 63.671 | |
| 3,300.0 | 3,194.4 | 3,181.4 | 3,181.4 | 14.8 | 63.5 | 162.29 | 889.2 | 3,606.1 | 4,319.3 | 4,250.6 | 68.66 | 62.906 | |
| 3,346.4 | 3,237.8 | 3,224.8 | 3,224.8 | 15.1 | 64.4 | 162.36 | 889.2 | 3,606.1 | 4,335.1 | 4,265.5 | 69.65 | 62.243 | |
| 3,400.0 | 3,287.8 | 3,274.8 | 3,274.8 | 15.5 | 65.4 | 162.44 | 889.2 | 3,606.1 | 4,353.4 | 4,282.7 | 70.79 | 61.501 | |
| 3,444.9 | 3,329.8 | 3,316.8 | 3,316.8 | 15.9 | 66.2 | 162.50 | 889.2 | 3,606.1 | 4,368.8 | 4,297.1 | 71.74 | 60.898 | |
| 3,500.0 | 3,381.3 | 3,368.3 | 3,368.3 | 16.3 | 67.3 | 162.58 | 889.2 | 3,606.1 | 4,387.7 | 4,314.8 | 72.91 | 60.179 | |
| 3,543.3 | 3,421.7 | 3,408.7 | 3,408.7 | 16.6 | 68.1 | 162.64 | 889.2 | 3,606.1 | 4,402.5 | 4,328.7 | 73.83 | 59.630 | |
| 3,600.0 | 3,474.7 | 3,461.7 | 3,461.7 | 17.0 | 69.2 | 162.71 | 889.2 | 3,606.1 | 4,421.9 | 4,346.9 | 75.03 | 58.932 | |
| 3,641.7 | 3,513.7 | 3,500.7 | 3,500.7 | 17.3 | 69.9 | 162.77 | 889.2 | 3,606.1 | 4,436.2 | 4,360.3 | 75.92 | 58.433 | |
| 3,700.0 | 3,568.1 | 3,555.1 | 3,555.1 | 17.8 | 71.0 | 162.85 | 889.2 | 3,606.1 | 4,456.2 | 4,379.0 | 77.16 | 57.754 | |
| 3,740.1 | 3,605.6 | 3,592.6 | 3,592.6 | 18.1 | 71.8 | 162.90 | 889.2 | 3,606.1 | 4,469.9 | 4,391.9 | 78.01 | 57.300 | |
| 3,800.0 | 3,661.5 | 3,648.5 | 3,648.5 | 18.5 | 72.9 | 162.98 | 889.2 | 3,606.1 | 4,490.5 | 4,411.2 | 79.28 | 56.640 | |
| 3,838.6 | 3,697.6 | 3,684.6 | 3,684.6 | 18.8 | 73.6 | 163.03 | 889.2 | 3,606.1 | 4,503.7 | 4,423.6 | 80.10 | 56.226 | |
| 3,900.0 | 3,754.9 | 3,741.9 | 3,741.9 | 19.3 | 74.8 | 163.11 | 889.2 | 3,606.1 | 4,524.8 | 4,443.4 | 81.40 | 55.585 | |
| 3,937.0 | 3,789.5 | 3,776.5 | 3,776.5 | 19.6 | 75.5 | 163.16 | 889.2 | 3,606.1 | 4,537.5 | 4,455.3 | 82.19 | 55.208 | |
| 4,000.0 | 3,848.4 | 3,835.4 | 3,835.4 | 20.1 | 76.7 | 163.24 | 889.2 | 3,606.1 | 4,559.1 | 4,475.6 | 83.52 | 54.584 | |
| 4,035.4 | 3,881.5 | 3,868.5 | 3,868.5 | 20.3 | 77.3 | 163.29 | 889.2 | 3,606.1 | 4,571.3 | 4,487.0 | 84.28 | 54.241 | |
| 4,100.0 | 3,941.8 | 3,928.8 | 3,928.8 | 20.8 | 78.5 | 163.37 | 889.2 | 3,606.1 | 4,593.4 | 4,507.8 | 85.65 | 53.633 | |
| 4,133.8 | 3,973.4 | 3,960.4 | 3,960.4 | 21.1 | 79.2 | 163.41 | 889.2 | 3,606.1 | 4,605.1 | 4,518.7 | 86.36 | 53.322 | |
| 4,200.0 | 4,035.2 | 4,022.2 | 4,022.2 | 21.6 | 80.4 | 163.50 | 889.2 | 3,606.1 | 4,627.8 | 4,540.0 | 87.77 | 52.729 | |
| 4,232.3 | 4,065.4 | 4,052.4 | 4,052.4 | 21.8 | 81.0 | 163.54 | 889.2 | 3,606.1 | 4,638.9 | 4,550.5 | 88.45 | 52.446 | |
| 4,300.0 | 4,128.6 | 4,115.6 | 4,115.6 | 22.3 | 82.3 | 163.62 | 889.2 | 3,606.1 | 4,662.2 | 4,572.3 | 89.89 | 51.867 | |
| 4,330.7 | 4,157.3 | 4,144.3 | 4,144.3 | 22.6 | 82.9 | 163.66 | 889.2 | 3,606.1 | 4,672.8 | 4,582.2 | 90.54 | 51.611 | |
| 4,400.0 | 4,222.0 | 4,209.0 | 4,209.0 | 23.1 | 84.2 | 163.74 | 889.2 | 3,606.1 | 4,696.6 | 4,604.6 | 92.01 | 51.047 | |
| 4,429.1 | 4,249.3 | 4,236.3 | 4,236.3 | 23.3 | 84.7 | 163.78 | 889.2 | 3,606.1 | 4,706.6 | 4,614.0 | 92.62 | 50.815 | |
| 4,500.0 | 4,315.5 | 4,302.5 | 4,302.5 | 23.9 | 86.1 | 163.86 | 889.2 | 3,606.1 | 4,731.0 | 4,636.9 | 94.13 | 50.263 | |
| 4,527.5 | 4,341.2 | 4,328.2 | 4,328.2 | 24.1 | 86.6 | 163.90 | 889.2 | 3,606.1 | 4,740.5 | 4,645.8 | 94.71 | 50.054 | |
| 4,600.0 | 4,408.9 | 4,395.9 | 4,395.9 | 24.6 | 87.9 | 163.98 | 889.2 | 3,606.1 | 4,765.5 | 4,669.2 | 96.24 | 49.515 | |
| 4,626.0 | 4,433.2 | 4,420.2 | 4,420.2 | 24.8 | 88.4 | 164.01 | 889.2 | 3,606.1 | 4,774.4 | 4,677.6 | 96.79 | 49.326 | |
| 4,700.0 | 4,502.3 | 4,489.3 | 4,489.3 | 25.4 | 89.8 | 164.10 | 889.2 | 3,606.1 | 4,799.9 | 4,701.6 | 98.36 | 48.799 | |
| 4,724.4 | 4,525.1 | 4,512.1 | 4,512.1 | 25.6 | 90.3 | 164.13 | 889.2 | 3,606.1 | 4,808.4 | 4,709.5 | 98.88 | 48.629 | |
| 4,800.0 | 4,595.7 | 4,582.7 | 4,582.7 | 26.2 | 91.7 | 164.21 | 889.2 | 3,606.1 | 4,834.4 | 4,733.9 | 100.48 | 48.114 | |
| 4,822.8 | 4,617.1 | 4,604.1 | 4,604.1 | 26.3 | 92.1 | 164.24 | 889.2 | 3,606.1 | 4,842.3 | 4,741.3 | 100.96 | 47.962 | |
| 4,900.0 | 4,689.2 | 4,676.2 | 4,676.2 | 26.9 | 93.6 | 164.33 | 889.2 | 3,606.1 | 4,868.9 | 4,766.3 | 102.59 | 47.458 | |
| 4,921.2 | 4,709.0 | 4,696.0 | 4,696.0 | 27.1 | 94.0 | 164.35 | 889.2 | 3,606.1 | 4,876.3 | 4,773.2 | 103.04 | 47.322 | |
| 5,000.0 | 4,782.6 | 4,769.6 | 4,769.6 | 27.7 | 95.5 | 164.44 | 889.2 | 3,606.1 | 4,903.4 | 4,798.7 | 104.71 | 46.829 | |
| 5,019.7 | 4,801.0 | 4,788.0 | 4,788.0 | 27.8 | 95.8 | 164.46 | 889.2 | 3,606.1 | 4,910.2 | 4,805.1 | 105.13 | 46.708 | |
| 5,100.0 | 4,876.0 | 4,863.0 | 4,863.0 | 28.4 | 97.3 | 164.55 | 889.2 | 3,606.1 | 4,938.0 | 4,831.1 | 106.82 | 46.225 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,879.9 | 4,879.9 | 28.6 | 97.7 | 164.57 | 889.2 | 3,606.1 | 4,944.2 | 4,837.0 | 107.21 | 46.118 | |
| 5,159.9 | 4,932.0 | 4,919.0 | 4,919.0 | 28.9 | 98.5 | 164.62 | 889.2 | 3,606.1 | 4,958.7 | 4,850.6 | 108.09 | 45.875 | |
| 5,200.0 | 4,969.5 | 4,956.5 | 4,956.5 | 29.2 | 99.2 | 164.74 | 889.2 | 3,606.1 | 4,972.3 | 4,862.9 | 109.37 | 45.462 | |
| 5,216.5 | 4,985.1 | 4,972.1 | 4,972.1 | 29.3 | 99.5 | 164.78 | 889.2 | 3,606.1 | 4,977.7 | 4,867.8 | 109.89 | 45.296 | |
| 5,300.0 | 5,064.0 | 5,051.0 | 5,051.0 | 29.7 | 101.1 | 165.01 | 889.2 | 3,606.1 | 5,004.0 | 4,891.5 | 112.51 | 44.477 | |
| 5,314.9 | 5,078.2 | 5,065.2 | 5,065.2 | 29.8 | 101.4 | 165.05 | 889.2 | 3,606.1 | 5,008.4 | 4,895.5 | 112.97 | 44.334 | |
| 5,400.0 | 5,159.6 | 5,146.6 | 5,146.6 | 30.2 | 103.0 | 165.25 | 889.2 | 3,606.1 | 5,032.5 | 4,916.9 | 115.57 | 43.544 | |
| 5,413.4 | 5,172.4 | 5,159.4 | 5,159.4 | 30.3 | 103.3 | 165.28 | 889.2 | 3,606.1 | 5,036.0 | 4,920.0 | 115.98 | 43.423 | |
| 5,500.0 | 5,256.1 | 5,243.1 | 5,243.1 | 30.7 | 105.0 | 165.45 | 889.2 | 3,606.1 | 5,057.7 | 4,939.2 | 118.56 | 42.661 | |
| 5,511.8 | 5,267.6 | 5,254.6 | 5,254.6 | 30.7 | 105.2 | 165.48 | 889.2 | 3,606.1 | 5,060.5 | 4,941.6 | 118.90 | 42.561 | |
| 5,600.0 | 5,353.5 | 5,340.5 | 5,340.5 | 31.1 | 106.9 | 165.63 | 889.2 | 3,606.1 | 5,079.7 | 4,958.2 | 121.45 | 41.827 | |
| 5,610.2 | 5,363.5 | 5,350.5 | 5,350.5 | 31.1 | 107.1 | 165.65 | 889.2 | 3,606.1 | 5,081.7 | 4,960.0 | 121.73 | 41.745 | |
| 5,700.0 | 5,451.6 | 5,438.6 | 5,438.6 | 31.4 | 108.9 | 165.78 | 889.2 | 3,606.1 | 5,098.4 | 4,974.1 | 124.23 | 41.039 | |
| 5,708.6 | 5,460.2 | 5,447.2 | 5,447.2 | 31.4 | 109.1 | 165.79 | 889.2 | 3,606.1 | 5,099.8 | 4,975.3 | 124.47 | 40.974 | |
| 5,800.0 | 5,550.4 | 5,537.4 | 5,537.4 | 31.7 | 110.9 | 165.90 | 889.2 | 3,606.1 | 5,113.7 | 4,986.8 | 126.90 | 40.296 | |
| 5,807.1 | 5,557.4 | 5,544.4 | 5,544.4 | 31.7 | 111.0 | 165.90 | 889.2 | 3,606.1 | 5,114.7 | 4,987.6 | 127.09 | 40.246 | |
| 5,900.0 | 5,649.6 | 5,636.6 | 5,636.6 | 31.9 | 112.9 | 165.99 | 889.2 | 3,606.1 | 5,125.7 | 4,996.2 | 129.45 | 39.597 | |
| 5,905.5 | 5,655.1 | 5,642.1 | 5,642.1 | 31.9 | 113.0 | 165.99 | 889.2 | 3,606.1 | 5,126.3 | 4,996.7 | 129.58 | 39.560 | |
| 6,000.0 | 5,749.2 | 5,736.2 | 5,736.2 | 32.1 | 114.9 | 166.05 | 889.2 | 3,606.1 | 5,134.3 | 5,002.5 | 131.86 | 38.938 | |
| 6,003.9 | 5,753.1 | 5,740.1 | 5,740.1 | 32.1 | 115.0 | 166.06 | 889.2 | 3,606.1 | 5,134.6 | 5,002.6 | 131.95 | 38.914 | |
| 6,100.0 | 5,849.1 | 5,836.1 | 5,836.1 | 32.3 | 116.9 | 166.09 | 889.2 | 3,606.1 | 5,139.6 | 5,005.4 | 134.12 | 38.320 | |
| 6,102.3 | 5,851.4 | 5,838.4 | 5,838.4 | 32.3 | 117.0 | 166.09 | 889.2 | 3,606.1 | 5,139.6 | 5,005.5 | 134.17 | 38.306 | |
| 6,200.8 | 5,949.8 | 5,936.8 | 5,936.8 | 32.4 | 118.9 | 166.11 | 889.2 | 3,606.1 | 5,141.4 | 5,005.2 | 136.25 | 37.735 | |
| 6,204.9 | 5,953.9 | 5,940.9 | 5,940.9 | 32.4 | 119.0 | 81.67 | 889.2 | 3,606.1 | 5,141.4 | 4,990.7 | 150.73 | 34.110 | |
| 6,234.9 | 5,983.9 | 5,970.9 | 5,970.9 | 32.4 | 119.6 | 81.67 | 889.2 | 3,606.1 | 5,141.4 | 4,990.1 | 151.36 | 33.969 | |
| 6,250.0 | 5,999.0 | 5,986.0 | 5,986.0 | 32.4 | 119.9 | -8.33 | 889.2 | 3,606.1 | 5,141.3 | 5,004.1 | 137.20 | 37.473 | |
| 6,299.2 | 6,048.2 | 6,035.2 | 6,035.2 | 32.4 | 120.9 | -8.37 | 889.2 | 3,606.1 | 5,138.6 | 5,001.1 | 137.50 | 37.372 | |
| 6,300.0 | 6,048.9 | 6,035.9 | 6,035.9 | 32.4 | 120.9 | -8.37 | 889.2 | 3,606.1 | 5,138.5 | 5,001.0 | 137.50 | 37.371 | |
| 6,350.0 | 6,098.5 | 6,085.5 | 6,085.5 | 32.4 | 121.9 | -8.45 | 889.2 | 3,606.1 | 5,132.3 | 4,995.1 | 137.14 | 37.424 | |
| 6,397.6 | 6,145.3 | 6,132.3 | 6,132.3 | 32.3 | 122.9 | -8.58 | 889.2 | 3,606.1 | 5,123.2 | 4,987.0 | 136.18 | 37.621 | |
| 6,400.0 | 6,147.6 | 6,134.6 | 6,134.6 | 32.3 | 122.9 | -8.59 | 889.2 | 3,606.1 | 5,122.7 | 4,986.5 | 136.11 | 37.635 | |
| 6,450.0 | 6,195.8 | 6,182.8 | 6,182.8 | 32.2 | 123.9 | -8.77 | 889.2 | 3,606.1 | 5,109.7 | 4,975.3 | 134.43 | 38.011 | |
| 6,496.0 | 6,239.3 | 6,226.3 | 6,226.3 | 32.1 | 124.8 | -8.99 | 889.2 | 3,606.1 | 5,094.8 | 4,962.5 | 132.29 | 38.512 | |
| 6,500.0 | 6,243.0 | 6,230.0 | 6,230.0 | 32.1 | 124.8 | -9.01 | 889.2 | 3,606.1 | 5,093.4 | 4,961.3 | 132.08 | 38.562 | |
| 6,550.0 | 6,289.0 | 6,276.0 | 6,276.0 | 32.0 | 125.8 | -9.32 | 889.2 | 3,606.1 | 5,073.9 | 4,944.8 | 129.10 | 39.302 | |
| 6,594.5 | 6,328.6 | 6,315.6 | 6,315.6 | 31.8 | 126.5 | -9.65 | 889.2 | 3,606.1 | 5,054.0 | 4,928.0 | 125.94 | 40.131 | |
| 6,600.0 | 6,333.4 | 6,320.4 | 6,320.4 | 31.8 | 126.6 | -9.70 | 889.2 | 3,606.1 | 5,051.3 | 4,925.8 | 125.51 | 40.245 | |
| 6,650.0 | 6,376.2 | 6,363.2 | 6,363.2 | 31.7 | 127.5 | -10.16 | 889.2 | 3,606.1 | 5,025.7 | 4,904.3 | 121.36 | 41.412 | |
| 6,692.9 | 6,411.3 | 6,398.3 | 6,398.3 | 31.6 | 128.2 | -10.63 | 889.2 | 3,606.1 | 5,001.4 | 4,884.0 | 117.39 | 42.604 | |
| 6,700.0 | 6,417.0 | 6,404.0 | 6,404.0 | 31.5 | 128.3 | -10.72 | 889.2 | 3,606.1 | 4,997.2 | 4,880.5 | 116.70 | 42.819 | |
| 6,750.0 | 6,455.7 | 6,442.7 | 6,442.7 | 31.4 | 129.1 | -11.40 | 889.2 | 3,606.1 | 4,965.9 | 4,854.3 | 111.63 | 44.485 | |
| 6,791.3 | 6,486.0 | 6,473.0 | 6,473.0 | 31.3 | 129.7 | -12.08 | 889.2 | 3,606.1 | 4,938.1 | 4,830.9 | 107.21 | 46.061 | |
| 6,800.0 | 6,492.2 | 6,479.2 | 6,479.2 | 31.3 | 129.8 | -12.24 | 889.2 | 3,606.1 | 4,932.1 | 4,825.8 | 106.26 | 46.415 | |
| 6,850.0 | 6,526.1 | 6,513.1 | 6,513.1 | 31.2 | 130.5 | -13.26 | 889.2 | 3,606.1 | 4,895.8 | 4,795.1 | 100.76 | 48.587 | |
| 6,889.7 | 6,551.2 | 6,538.2 | 6,538.2 | 31.2 | 131.0 | -14.25 | 889.2 | 3,606.1 | 4,865.4 | 4,768.9 | 96.46 | 50.440 | |
| 6,900.0 | 6,557.4 | 6,544.4 | 6,544.4 | 31.2 | 131.2 | -14.53 | 889.2 | 3,606.1 | 4,857.3 | 4,761.9 | 95.38 | 50.926 | |
| 6,950.0 | 6,586.0 | 6,573.0 | 6,573.0 | 31.1 | 131.7 | -16.13 | 889.2 | 3,606.1 | 4,816.7 | 4,726.3 | 90.47 | 53.242 | |
| 6,988.2 | 6,605.8 | 6,592.8 | 6,592.8 | 31.2 | 132.1 | -17.63 | 889.2 | 3,606.1 | 4,784.5 | 4,697.1 | 87.37 | 54.761 | |
| 7,000.0 | 6,611.5 | 6,598.5 | 6,598.5 | 31.2 | 132.2 | -18.16 | 889.2 | 3,606.1 | 4,774.3 | 4,687.7 | 86.58 | 55.144 | |
| 7,050.0 | 6,634.1 | 6,621.1 | 6,621.1 | 31.2 | 132.7 | -20.83 | 889.2 | 3,606.1 | 4,730.2 | 4,645.7 | 84.55 | 55.945 | |
| 7,086.6 | 6,648.6 | 6,635.6 | 6,635.6 | 31.3 | 133.0 | -23.34 | 889.2 | 3,606.1 | 4,697.1 | 4,612.1 | 84.96 | 55.288 | |
| 7,100.0 | 6,653.4 | 6,640.4 | 6,640.4 | 31.4 | 133.1 | -24.42 | 889.2 | 3,606.1 | 4,684.7 | 4,599.1 | 85.64 | 54.702 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,656.5 | 6,656.5 | 31.6 | 133.4 | -29.41 | 889.2 | 3,606.1 | 4,638.0 | 4,546.5 | 91.55 | 50.662 | |
| 7,185.0 | 6,678.8 | 6,665.8 | 6,665.8 | 31.7 | 133.6 | -34.17 | 889.2 | 3,606.1 | 4,604.7 | 4,505.1 | 99.57 | 46.244 | |
| 7,200.0 | 6,682.3 | 6,669.3 | 6,669.3 | 31.8 | 133.7 | -36.63 | 889.2 | 3,606.1 | 4,590.3 | 4,486.2 | 104.15 | 44.075 | |
| 7,250.0 | 6,691.6 | 6,678.6 | 6,678.6 | 32.1 | 133.8 | -47.45 | 889.2 | 3,606.1 | 4,541.9 | 4,417.3 | 124.55 | 36.465 | |
| 7,283.4 | 6,696.0 | 6,683.0 | 6,683.0 | 32.3 | 133.9 | -57.60 | 889.2 | 3,606.1 | 4,509.1 | 4,367.7 | 141.48 | 31.871 | |
| 7,300.0 | 6,697.5 | 6,684.5 | 6,684.5 | 32.4 | 134.0 | -63.64 | 889.2 | 3,606.1 | 4,492.9 | 4,343.1 | 149.80 | 29.992 | |
| 7,350.0 | 6,699.9 | 6,686.9 | 6,686.9 | 32.8 | 134.0 | -85.43 | 889.2 | 3,606.1 | 4,443.7 | 4,277.4 | 166.30 | 26.721 | |
| 7,364.4 | 6,700.0 | 6,687.0 | 6,687.0 | 32.9 | 134.0 | -92.18 | 889.2 | 3,606.1 | 4,429.5 | 4,262.7 | 166.75 | 26.564 | |
| 7,381.9 | 6,699.9 | 6,686.9 | 6,686.9 | 33.1 | 134.0 | -92.17 | 889.2 | 3,606.1 | 4,412.2 | 4,245.4 | 166.90 | 26.437 | |
| 7,400.0 | 6,699.8 | 6,686.8 | 6,686.8 | 33.2 | 134.0 | -92.16 | 889.2 | 3,606.1 | 4,394.4 | 4,227.3 | 167.05 | 26.305 | |
| 7,480.3 | 6,699.2 | 6,686.2 | 6,686.2 | 34.0 | 134.0 | -92.12 | 889.2 | 3,606.1 | 4,315.3 | 4,147.4 | 167.86 | 25.708 | |
| 7,500.0 | 6,699.1 | 6,686.1 | 6,686.1 | 34.2 | 134.0 | -92.11 | 889.2 | 3,606.1 | 4,295.9 | 4,127.8 | 168.06 | 25.562 | |
| 7,578.7 | 6,698.6 | 6,685.6 | 6,685.6 | 35.2 | 134.0 | -92.07 | 889.2 | 3,606.1 | 4,218.4 | 4,049.4 | 169.00 | 24.961 | |
| 7,600.0 | 6,698.5 | 6,685.5 | 6,685.5 | 35.4 | 134.0 | -92.06 | 889.2 | 3,606.1 | 4,197.4 | 4,028.2 | 169.25 | 24.800 | |
| 7,677.1 | 6,698.0 | 6,685.0 | 6,685.0 | 36.5 | 134.0 | -92.02 | 889.2 | 3,606.1 | 4,121.5 | 3,951.2 | 170.31 | 24.200 | |
| 7,700.0 | 6,697.8 | 6,684.8 | 6,684.8 | 36.8 | 134.0 | -92.01 | 889.2 | 3,606.1 | 4,099.0 | 3,928.4 | 170.63 | 24.023 | |
| 7,775.6 | 6,697.3 | 6,684.3 | 6,684.3 | 38.0 | 134.0 | -91.97 | 889.2 | 3,606.1 | 4,024.8 | 3,853.0 | 171.78 | 23.429 | |
| 7,800.0 | 6,697.2 | 6,684.2 | 6,684.2 | 38.3 | 134.0 | -91.96 | 889.2 | 3,606.1 | 4,000.8 | 3,828.6 | 172.16 | 23.239 | |
| 7,874.0 | 6,696.7 | 6,683.7 | 6,683.7 | 39.6 | 134.0 | -91.92 | 889.2 | 3,606.1 | 3,928.1 | 3,754.7 | 173.39 | 22.655 | |
| 7,900.0 | 6,696.5 | 6,683.5 | 6,683.5 | 40.0 | 133.9 | -91.91 | 889.2 | 3,606.1 | 3,902.6 | 3,728.7 | 173.82 | 22.451 | |
| 7,972.4 | 6,696.1 | 6,683.1 | 6,683.1 | 41.3 | 133.9 | -91.88 | 889.2 | 3,606.1 | 3,831.5 | 3,656.4 | 175.12 | 21.879 | |
| 8,000.0 | 6,695.9 | 6,682.9 | 6,682.9 | 41.8 | 133.9 | -91.86 | 889.2 | 3,606.1 | 3,804.4 | 3,628.8 | 175.61 | 21.664 | |
| 8,070.8 | 6,695.4 | 6,682.4 | 6,682.4 | 43.1 | 133.9 | -91.83 | 889.2 | 3,606.1 | 3,735.0 | 3,558.0 | 176.96 | 21.107 | |
| 8,100.0 | 6,695.2 | 6,682.2 | 6,682.2 | 43.7 | 133.9 | -91.81 | 889.2 | 3,606.1 | 3,706.4 | 3,528.9 | 177.51 | 20.880 | |
| 8,169.3 | 6,694.8 | 6,681.8 | 6,681.8 | 45.1 | 133.9 | -91.78 | 889.2 | 3,606.1 | 3,638.6 | 3,459.7 | 178.89 | 20.340 | |
| 8,200.0 | 6,694.6 | 6,681.6 | 6,681.6 | 45.7 | 133.9 | -91.76 | 889.2 | 3,606.1 | 3,608.5 | 3,429.0 | 179.50 | 20.103 | |
| 8,267.7 | 6,694.1 | 6,681.1 | 6,681.1 | 47.1 | 133.9 | -91.73 | 889.2 | 3,606.1 | 3,542.3 | 3,361.4 | 180.90 | 19.581 | |
| 8,300.0 | 6,693.9 | 6,680.9 | 6,680.9 | 47.8 | 133.9 | -91.71 | 889.2 | 3,606.1 | 3,510.7 | 3,329.2 | 181.57 | 19.335 | |
| 8,366.1 | 6,693.5 | 6,680.5 | 6,680.5 | 49.2 | 133.9 | -91.68 | 889.2 | 3,606.1 | 3,446.2 | 3,263.2 | 182.99 | 18.832 | |
| 8,400.0 | 6,693.3 | 6,680.3 | 6,680.3 | 49.9 | 133.9 | -91.66 | 889.2 | 3,606.1 | 3,413.1 | 3,229.4 | 183.72 | 18.578 | |
| 8,464.5 | 6,692.9 | 6,679.9 | 6,679.9 | 51.4 | 133.9 | -91.63 | 889.2 | 3,606.1 | 3,350.1 | 3,165.0 | 185.14 | 18.095 | |
| 8,500.0 | 6,692.6 | 6,679.6 | 6,679.6 | 52.1 | 133.9 | -91.61 | 889.2 | 3,606.1 | 3,315.6 | 3,129.7 | 185.92 | 17.833 | |
| 8,563.0 | 6,692.2 | 6,679.2 | 6,679.2 | 53.6 | 133.9 | -91.58 | 889.2 | 3,606.1 | 3,254.2 | 3,066.9 | 187.35 | 17.370 | |
| 8,600.0 | 6,692.0 | 6,679.0 | 6,679.0 | 54.4 | 133.9 | -91.56 | 889.2 | 3,606.1 | 3,218.2 | 3,030.0 | 188.18 | 17.101 | |
| 8,661.4 | 6,691.6 | 6,678.6 | 6,678.6 | 55.8 | 133.8 | -91.53 | 889.2 | 3,606.1 | 3,158.5 | 2,968.9 | 189.60 | 16.659 | |
| 8,700.0 | 6,691.3 | 6,678.3 | 6,678.3 | 56.7 | 133.8 | -91.51 | 889.2 | 3,606.1 | 3,121.0 | 2,930.5 | 190.49 | 16.384 | |
| 8,759.8 | 6,690.9 | 6,677.9 | 6,677.9 | 58.1 | 133.8 | -91.48 | 889.2 | 3,606.1 | 3,063.0 | 2,871.1 | 191.90 | 15.961 | |
| 8,800.0 | 6,690.7 | 6,677.7 | 6,677.7 | 59.1 | 133.8 | -91.46 | 889.2 | 3,606.1 | 3,024.0 | 2,831.2 | 192.84 | 15.681 | |
| 8,858.2 | 6,690.3 | 6,677.3 | 6,677.3 | 60.5 | 133.8 | -91.43 | 889.2 | 3,606.1 | 2,967.6 | 2,773.4 | 194.24 | 15.278 | |
| 8,900.0 | 6,690.0 | 6,677.0 | 6,677.0 | 61.5 | 133.8 | -91.41 | 889.2 | 3,606.1 | 2,927.2 | 2,732.0 | 195.23 | 14.993 | |
| 8,956.7 | 6,689.7 | 6,676.7 | 6,676.7 | 62.9 | 133.8 | -91.38 | 889.2 | 3,606.1 | 2,872.4 | 2,675.8 | 196.61 | 14.610 | |
| 9,000.0 | 6,689.4 | 6,676.4 | 6,676.4 | 63.9 | 133.8 | -91.36 | 889.2 | 3,606.1 | 2,830.6 | 2,632.9 | 197.66 | 14.321 | |
| 9,055.1 | 6,689.0 | 6,676.0 | 6,676.0 | 65.3 | 133.8 | -91.34 | 889.2 | 3,606.1 | 2,777.5 | 2,578.5 | 199.01 | 13.957 | |
| 9,100.0 | 6,688.7 | 6,675.7 | 6,675.7 | 66.4 | 133.8 | -91.31 | 889.2 | 3,606.1 | 2,734.3 | 2,534.1 | 200.11 | 13.664 | |
| 9,153.5 | 6,688.4 | 6,675.4 | 6,675.4 | 67.7 | 133.8 | -91.29 | 889.2 | 3,606.1 | 2,682.8 | 2,481.4 | 201.44 | 13.318 | |
| 9,200.0 | 6,688.1 | 6,675.1 | 6,675.1 | 68.9 | 133.8 | -91.26 | 889.2 | 3,606.1 | 2,638.2 | 2,435.6 | 202.59 | 13.022 | |
| 9,251.9 | 6,687.8 | 6,674.8 | 6,674.8 | 70.2 | 133.8 | -91.24 | 889.2 | 3,606.1 | 2,588.4 | 2,384.5 | 203.89 | 12.695 | |
| 9,300.0 | 6,687.4 | 6,674.4 | 6,674.4 | 71.4 | 133.8 | -91.21 | 889.2 | 3,606.1 | 2,542.4 | 2,337.3 | 205.09 | 12.396 | |
| 9,350.4 | 6,687.1 | 6,674.1 | 6,674.1 | 72.7 | 133.8 | -91.19 | 889.2 | 3,606.1 | 2,494.3 | 2,287.9 | 206.37 | 12.087 | |
| 9,400.0 | 6,686.8 | 6,673.8 | 6,673.8 | 73.9 | 133.8 | -91.16 | 889.2 | 3,606.1 | 2,447.0 | 2,239.4 | 207.62 | 11.786 | |
| 9,448.8 | 6,686.5 | 6,673.5 | 6,673.5 | 75.2 | 133.7 | -91.14 | 889.2 | 3,606.1 | 2,400.5 | 2,191.7 | 208.86 | 11.494 | |
| 9,500.0 | 6,686.1 | 6,673.1 | 6,673.1 | 76.5 | 133.7 | -91.11 | 889.2 | 3,606.1 | 2,351.9 | 2,141.8 | 210.16 | 11.191 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT HOSHIKO #41-17 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,672.8 | 6,672.8 | 77.7 | 133.7 | -91.09 | 889.2 | 3,606.1 | 2,307.2 | 2,095.8 | 211.37 | 10.915 | |
| 9,600.0 | 6,685.5 | 6,672.5 | 6,672.5 | 79.0 | 133.7 | -91.06 | 889.2 | 3,606.1 | 2,257.3 | 2,044.6 | 212.72 | 10.611 | |
| 9,645.6 | 6,685.2 | 6,672.2 | 6,672.2 | 80.2 | 133.7 | -91.04 | 889.2 | 3,606.1 | 2,214.3 | 2,000.4 | 213.90 | 10.352 | |
| 9,700.0 | 6,684.8 | 6,671.8 | 6,671.8 | 81.6 | 133.7 | -91.01 | 889.2 | 3,606.1 | 2,163.2 | 1,947.9 | 215.30 | 10.047 | |
| 9,744.1 | 6,684.6 | 6,671.6 | 6,671.6 | 82.8 | 133.7 | -90.99 | 889.2 | 3,606.1 | 2,121.8 | 1,905.4 | 216.44 | 9.803 | |
| 9,800.0 | 6,684.2 | 6,671.2 | 6,671.2 | 84.2 | 133.7 | -90.96 | 889.2 | 3,606.1 | 2,069.6 | 1,851.7 | 217.89 | 9.498 | |
| 9,842.5 | 6,683.9 | 6,670.9 | 6,670.9 | 85.3 | 133.7 | -90.94 | 889.2 | 3,606.1 | 2,030.0 | 1,811.0 | 219.00 | 9.269 | |
| 9,900.0 | 6,683.5 | 6,670.5 | 6,670.5 | 86.8 | 133.7 | -90.91 | 889.2 | 3,606.1 | 1,976.6 | 1,756.1 | 220.50 | 8.964 | |
| 9,940.9 | 6,683.3 | 6,670.3 | 6,670.3 | 87.9 | 133.7 | -90.89 | 889.2 | 3,606.1 | 1,938.8 | 1,717.2 | 221.57 | 8.750 | |
| 10,000.0 | 6,682.9 | 6,669.9 | 6,669.9 | 89.5 | 133.7 | -90.86 | 889.2 | 3,606.1 | 1,884.4 | 1,661.2 | 223.11 | 8.446 | |
| 10,039.3 | 6,682.6 | 6,669.6 | 6,669.6 | 90.5 | 133.7 | -90.84 | 889.2 | 3,606.1 | 1,848.3 | 1,624.1 | 224.15 | 8.246 | |
| 10,100.0 | 6,682.2 | 6,669.2 | 6,669.2 | 92.1 | 133.7 | -90.81 | 889.2 | 3,606.1 | 1,792.9 | 1,567.2 | 225.74 | 7.942 | |
| 10,137.8 | 6,682.0 | 6,669.0 | 6,669.0 | 93.1 | 133.7 | -90.80 | 889.2 | 3,606.1 | 1,758.6 | 1,531.9 | 226.74 | 7.756 | |
| 10,200.0 | 6,681.6 | 6,668.6 | 6,668.6 | 94.8 | 133.6 | -90.76 | 889.2 | 3,606.1 | 1,702.5 | 1,474.1 | 228.38 | 7.455 | |
| 10,236.2 | 6,681.4 | 6,668.4 | 6,668.4 | 95.7 | 133.6 | -90.75 | 889.2 | 3,606.1 | 1,670.0 | 1,440.7 | 229.33 | 7.282 | |
| 10,300.0 | 6,680.9 | 6,667.9 | 6,667.9 | 97.4 | 133.6 | -90.71 | 889.2 | 3,606.1 | 1,613.2 | 1,382.1 | 231.02 | 6.983 | |
| 10,334.6 | 6,680.7 | 6,667.7 | 6,667.7 | 98.3 | 133.6 | -90.70 | 889.2 | 3,606.1 | 1,582.5 | 1,350.6 | 231.94 | 6.823 | |
| 10,400.0 | 6,680.3 | 6,667.3 | 6,667.3 | 100.1 | 133.6 | -90.66 | 889.2 | 3,606.1 | 1,525.2 | 1,291.5 | 233.68 | 6.527 | |
| 10,433.0 | 6,680.1 | 6,667.1 | 6,667.1 | 101.0 | 133.6 | -90.65 | 889.2 | 3,606.1 | 1,496.4 | 1,261.9 | 234.56 | 6.380 | |
| 10,500.0 | 6,679.7 | 6,666.7 | 6,666.7 | 102.8 | 133.6 | -90.61 | 889.2 | 3,606.1 | 1,438.7 | 1,202.4 | 236.34 | 6.088 | |
| 10,531.5 | 6,679.4 | 6,666.4 | 6,666.4 | 103.6 | 133.6 | -90.60 | 889.2 | 3,606.1 | 1,411.9 | 1,174.7 | 237.18 | 5.953 | |
| 10,600.0 | 6,679.0 | 6,666.0 | 6,666.0 | 105.4 | 133.6 | -90.56 | 889.2 | 3,606.1 | 1,354.2 | 1,115.2 | 239.01 | 5.666 | |
| 10,629.9 | 6,678.8 | 6,665.8 | 6,665.8 | 106.2 | 133.6 | -90.55 | 889.2 | 3,606.1 | 1,329.3 | 1,089.5 | 239.81 | 5.543 | |
| 10,700.0 | 6,678.4 | 6,665.4 | 6,665.4 | 108.1 | 133.6 | -90.51 | 889.2 | 3,606.1 | 1,271.9 | 1,030.2 | 241.68 | 5.263 | |
| 10,728.3 | 6,678.2 | 6,665.2 | 6,665.2 | 108.9 | 133.6 | -90.50 | 889.2 | 3,606.1 | 1,249.0 | 1,006.6 | 242.44 | 5.152 | |
| 10,800.0 | 6,677.7 | 6,664.7 | 6,664.7 | 110.8 | 133.6 | -90.46 | 889.2 | 3,606.1 | 1,192.3 | 947.9 | 244.36 | 4.879 | |
| 10,826.7 | 6,677.5 | 6,664.5 | 6,664.5 | 111.5 | 133.6 | -90.45 | 889.2 | 3,606.1 | 1,171.5 | 926.4 | 245.08 | 4.780 | |
| 10,900.0 | 6,677.1 | 6,664.1 | 6,664.1 | 113.5 | 133.6 | -90.41 | 889.2 | 3,606.1 | 1,115.9 | 868.9 | 247.05 | 4.517 | |
| 10,925.2 | 6,676.9 | 6,663.9 | 6,663.9 | 114.2 | 133.6 | -90.40 | 889.2 | 3,606.1 | 1,097.3 | 849.6 | 247.73 | 4.430 | |
| 11,000.0 | 6,676.4 | 6,663.4 | 6,663.4 | 116.2 | 133.5 | -90.36 | 889.2 | 3,606.1 | 1,043.6 | 793.9 | 249.74 | 4.179 | |
| 11,023.6 | 6,676.3 | 6,663.3 | 6,663.3 | 116.8 | 133.5 | -90.35 | 889.2 | 3,606.1 | 1,027.2 | 776.9 | 250.38 | 4.103 | |
| 11,100.0 | 6,675.8 | 6,662.8 | 6,662.8 | 118.9 | 133.5 | -90.31 | 889.2 | 3,606.1 | 976.2 | 723.8 | 252.44 | 3.867 | |
| 11,122.0 | 6,675.6 | 6,662.6 | 6,662.6 | 119.5 | 133.5 | -90.30 | 889.2 | 3,606.1 | 962.1 | 709.1 | 253.03 | 3.802 | |
| 11,200.0 | 6,675.1 | 6,662.1 | 6,662.1 | 121.6 | 133.5 | -90.26 | 889.2 | 3,606.1 | 914.8 | 659.6 | 255.14 | 3.585 | |
| 11,220.4 | 6,675.0 | 6,662.0 | 6,662.0 | 122.2 | 133.5 | -90.25 | 889.2 | 3,606.1 | 903.1 | 647.4 | 255.69 | 3.532 | |
| 11,300.0 | 6,674.5 | 6,661.5 | 6,661.5 | 124.3 | 133.5 | -90.22 | 889.2 | 3,606.1 | 860.6 | 602.8 | 257.85 | 3.338 | |
| 11,318.9 | 6,674.3 | 6,661.3 | 6,661.3 | 124.9 | 133.5 | -90.21 | 889.2 | 3,606.1 | 851.3 | 593.0 | 258.36 | 3.295 | |
| 11,400.0 | 6,673.8 | 6,660.8 | 6,660.8 | 127.1 | 133.5 | -90.17 | 889.2 | 3,606.1 | 815.1 | 554.6 | 260.56 | 3.128 | |
| 11,417.3 | 6,673.7 | 6,660.7 | 6,660.7 | 127.5 | 133.5 | -90.16 | 889.2 | 3,606.1 | 808.3 | 547.3 | 261.03 | 3.097 | |
| 11,500.0 | 6,673.2 | 6,660.2 | 6,660.2 | 129.8 | 133.5 | -90.12 | 889.2 | 3,606.1 | 779.9 | 516.7 | 263.27 | 2.962 | |
| 11,515.7 | 6,673.1 | 6,660.1 | 6,660.1 | 130.2 | 133.5 | -90.11 | 889.2 | 3,606.1 | 775.4 | 511.7 | 263.70 | 2.941 | |
| 11,600.0 | 6,672.5 | 6,659.5 | 6,659.5 | 132.5 | 133.5 | -90.07 | 889.2 | 3,606.1 | 756.4 | 490.4 | 265.99 | 2.844 | |
| 11,614.1 | 6,672.4 | 6,659.4 | 6,659.4 | 132.9 | 133.5 | -90.06 | 889.2 | 3,606.1 | 754.1 | 487.7 | 266.37 | 2.831 | |
| 11,700.0 | 6,671.9 | 6,658.9 | 6,658.9 | 135.3 | 133.5 | -90.02 | 889.2 | 3,606.1 | 745.6 | 476.9 | 268.71 | 2.775 | |
| 11,712.6 | 6,671.8 | 6,658.8 | 6,658.8 | 135.6 | 133.4 | -90.01 | 889.2 | 3,606.1 | 745.2 | 476.2 | 269.05 | 2.770 | |
| 11,730.9 | 6,671.7 | 6,658.7 | 6,658.7 | 136.1 | 133.4 | -90.00 | 889.2 | 3,606.1 | 745.0 | 475.4 | 269.55 | 2.764 | CC, ES |
| 11,800.0 | 6,671.2 | 6,658.2 | 6,658.2 | 138.0 | 133.4 | -89.97 | 889.2 | 3,606.1 | 748.2 | 476.8 | 271.43 | 2.756 | SF |
| 11,811.0 | 6,671.1 | 6,658.1 | 6,658.1 | 138.3 | 133.4 | -89.96 | 889.2 | 3,606.1 | 749.3 | 477.6 | 271.73 | 2.757 | |
| 11,900.0 | 6,670.6 | 6,657.6 | 6,657.6 | 140.7 | 133.4 | -89.92 | 889.2 | 3,606.1 | 763.9 | 489.8 | 274.15 | 2.787 | |
| 11,909.4 | 6,670.5 | 6,657.5 | 6,657.5 | 141.0 | 133.4 | -89.91 | 889.2 | 3,606.1 | 766.1 | 491.7 | 274.41 | 2.792 | |
| 11,987.2 | 6,670.0 | 6,657.0 | 6,657.0 | 143.1 | 133.4 | -89.87 | 889.2 | 3,606.1 | 787.8 | 511.3 | 276.53 | 2.849 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | | | | |
| 98.4 | 98.4 | 99.4 | 99.4 | 0.1 | 0.9 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,256.4 | 0.97 | 2,327.997 | |
| 100.0 | 100.0 | 101.0 | 101.0 | 0.1 | 0.9 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,256.3 | 1.00 | 2,257.033 | |
| 196.8 | 196.8 | 197.8 | 197.8 | 0.3 | 3.2 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,253.8 | 3.51 | 643.162 | |
| 200.0 | 200.0 | 201.0 | 201.0 | 0.3 | 3.3 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,253.7 | 3.59 | 629.043 | |
| 295.3 | 295.3 | 296.3 | 296.3 | 0.5 | 5.2 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,251.6 | 5.79 | 390.123 | |
| 300.0 | 300.0 | 301.0 | 301.0 | 0.5 | 5.3 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,251.4 | 5.89 | 382.936 | |
| 393.7 | 393.7 | 394.7 | 394.7 | 0.8 | 7.3 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,249.3 | 8.02 | 281.487 | |
| 400.0 | 400.0 | 401.0 | 401.0 | 0.8 | 7.4 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,249.2 | 8.16 | 276.565 | |
| 492.1 | 492.1 | 493.1 | 493.1 | 1.0 | 9.3 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,247.1 | 10.24 | 220.480 | |
| 500.0 | 500.0 | 501.0 | 501.0 | 1.0 | 9.4 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,246.9 | 10.42 | 216.724 | |
| 590.5 | 590.5 | 591.5 | 591.5 | 1.2 | 11.3 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,244.9 | 12.45 | 181.302 | |
| 600.0 | 600.0 | 601.0 | 601.0 | 1.2 | 11.4 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,244.7 | 12.66 | 178.262 | |
| 689.0 | 689.0 | 690.0 | 690.0 | 1.4 | 13.2 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,242.7 | 14.66 | 153.985 | |
| 700.0 | 700.0 | 701.0 | 701.0 | 1.4 | 13.5 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,242.4 | 14.91 | 151.429 | |
| 787.4 | 787.4 | 788.4 | 788.4 | 1.6 | 15.2 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,240.5 | 16.87 | 133.838 | |
| 800.0 | 800.0 | 801.0 | 801.0 | 1.7 | 15.5 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,240.2 | 17.15 | 131.634 | |
| 885.8 | 885.8 | 886.8 | 886.8 | 1.9 | 17.2 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,238.3 | 19.07 | 118.363 | |
| 900.0 | 900.0 | 901.0 | 901.0 | 1.9 | 17.5 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,237.9 | 19.39 | 116.424 | |
| 984.2 | 984.2 | 985.2 | 985.2 | 2.1 | 19.2 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,236.1 | 21.28 | 106.100 | |
| 1,000.0 | 1,000.0 | 1,001.0 | 1,001.0 | 2.1 | 19.5 | -82.20 | 306.5 | -2,236.4 | 2,257.3 | 2,235.7 | 21.63 | 104.370 | |
| 1,082.7 | 1,082.7 | 1,083.7 | 1,083.7 | 2.3 | 21.2 | 2.24 | 306.5 | -2,236.4 | 2,256.1 | 2,232.7 | 23.46 | 96.172 | |
| 1,100.0 | 1,100.0 | 1,101.0 | 1,101.0 | 2.3 | 21.5 | 2.25 | 306.5 | -2,236.4 | 2,255.6 | 2,231.8 | 23.84 | 94.613 | |
| 1,181.1 | 1,181.0 | 1,182.0 | 1,182.0 | 2.5 | 23.2 | 2.25 | 306.5 | -2,236.4 | 2,251.6 | 2,226.0 | 25.60 | 87.950 | |
| 1,200.0 | 1,199.8 | 1,200.8 | 1,200.8 | 2.5 | 23.5 | 2.26 | 306.5 | -2,236.4 | 2,250.4 | 2,224.4 | 26.01 | 86.529 | |
| 1,279.5 | 1,279.1 | 1,280.1 | 1,280.1 | 2.7 | 25.1 | 2.27 | 306.5 | -2,236.4 | 2,243.7 | 2,216.0 | 27.70 | 80.997 | |
| 1,300.0 | 1,299.5 | 1,300.5 | 1,300.5 | 2.8 | 25.5 | 2.27 | 306.5 | -2,236.4 | 2,241.7 | 2,213.5 | 28.13 | 79.684 | |
| 1,377.9 | 1,376.9 | 1,377.9 | 1,377.9 | 3.0 | 27.1 | 2.29 | 306.5 | -2,236.4 | 2,232.5 | 2,202.7 | 29.75 | 75.031 | |
| 1,400.0 | 1,398.7 | 1,399.7 | 1,399.7 | 3.0 | 27.5 | 2.29 | 306.5 | -2,236.4 | 2,229.5 | 2,199.3 | 30.21 | 73.811 | |
| 1,476.4 | 1,474.2 | 1,475.2 | 1,475.2 | 3.2 | 29.1 | 2.31 | 306.5 | -2,236.4 | 2,217.9 | 2,186.1 | 31.75 | 69.853 | |
| 1,500.0 | 1,497.5 | 1,498.5 | 1,498.5 | 3.3 | 29.5 | 2.32 | 306.5 | -2,236.4 | 2,213.8 | 2,181.6 | 32.22 | 68.712 | |
| 1,574.8 | 1,571.0 | 1,572.0 | 1,572.0 | 3.5 | 31.0 | 2.35 | 306.5 | -2,236.4 | 2,199.9 | 2,166.2 | 33.68 | 65.313 | |
| 1,600.0 | 1,595.6 | 1,596.6 | 1,596.6 | 3.6 | 31.5 | 2.36 | 306.5 | -2,236.4 | 2,194.8 | 2,160.6 | 34.16 | 64.241 | |
| 1,673.2 | 1,667.0 | 1,668.0 | 1,668.0 | 3.9 | 32.9 | 2.39 | 306.5 | -2,236.4 | 2,178.7 | 2,143.1 | 35.54 | 61.296 | |
| 1,700.0 | 1,693.1 | 1,694.1 | 1,694.1 | 4.0 | 33.5 | 2.40 | 306.5 | -2,236.4 | 2,172.3 | 2,136.3 | 36.04 | 60.283 | |
| 1,771.6 | 1,762.4 | 1,763.4 | 1,763.4 | 4.3 | 34.9 | 2.44 | 306.5 | -2,236.4 | 2,154.1 | 2,116.8 | 37.33 | 57.711 | |
| 1,800.0 | 1,789.6 | 1,790.6 | 1,790.6 | 4.4 | 35.4 | 2.45 | 306.5 | -2,236.4 | 2,146.4 | 2,108.6 | 37.82 | 56.751 | |
| 1,870.1 | 1,856.8 | 1,857.8 | 1,857.8 | 4.7 | 36.8 | 2.49 | 306.5 | -2,236.4 | 2,126.3 | 2,087.3 | 39.02 | 54.488 | |
| 1,900.0 | 1,885.3 | 1,886.3 | 1,886.3 | 4.9 | 37.3 | 2.51 | 306.5 | -2,236.4 | 2,117.2 | 2,077.7 | 39.52 | 53.575 | |
| 1,968.5 | 1,950.2 | 1,951.2 | 1,951.2 | 5.3 | 38.6 | 2.56 | 306.5 | -2,236.4 | 2,095.3 | 2,054.7 | 40.63 | 51.575 | |
| 2,000.0 | 1,979.8 | 1,980.8 | 1,980.8 | 5.5 | 39.2 | 2.58 | 306.5 | -2,236.4 | 2,084.7 | 2,043.6 | 41.12 | 50.698 | |
| 2,044.9 | 2,021.9 | 2,022.9 | 2,022.9 | 5.7 | 40.1 | 2.62 | 306.5 | -2,236.4 | 2,069.0 | 2,027.2 | 41.81 | 49.491 | |
| 2,066.9 | 2,042.5 | 2,043.5 | 2,043.5 | 5.9 | 40.5 | 2.63 | 306.5 | -2,236.4 | 2,061.2 | 2,018.9 | 42.25 | 48.782 | |
| 2,100.0 | 2,073.4 | 2,074.4 | 2,074.4 | 6.1 | 41.1 | 2.64 | 306.5 | -2,236.4 | 2,049.4 | 2,006.5 | 42.93 | 47.740 | |
| 2,165.3 | 2,134.4 | 2,135.4 | 2,135.4 | 6.5 | 42.3 | 2.67 | 306.5 | -2,236.4 | 2,026.1 | 1,981.9 | 44.26 | 45.775 | |
| 2,200.0 | 2,166.8 | 2,167.8 | 2,167.8 | 6.8 | 43.0 | 2.69 | 306.5 | -2,236.4 | 2,013.8 | 1,968.8 | 44.97 | 44.778 | |
| 2,263.8 | 2,226.4 | 2,227.4 | 2,227.4 | 7.2 | 44.2 | 2.72 | 306.5 | -2,236.4 | 1,991.0 | 1,944.8 | 46.28 | 43.022 | |
| 2,300.0 | 2,260.2 | 2,261.2 | 2,261.2 | 7.4 | 44.9 | 2.74 | 306.5 | -2,236.4 | 1,978.1 | 1,931.1 | 47.02 | 42.068 | |
| 2,362.2 | 2,318.3 | 2,319.3 | 2,319.3 | 7.9 | 46.0 | 2.77 | 306.5 | -2,236.4 | 1,956.0 | 1,907.7 | 48.30 | 40.495 | |
| 2,400.0 | 2,353.6 | 2,354.6 | 2,354.6 | 8.1 | 46.7 | 2.79 | 306.5 | -2,236.4 | 1,942.5 | 1,893.4 | 49.08 | 39.579 | |
| 2,460.6 | 2,410.3 | 2,411.3 | 2,411.3 | 8.6 | 47.9 | 2.82 | 306.5 | -2,236.4 | 1,920.9 | 1,870.6 | 50.33 | 38.167 | |
| 2,500.0 | 2,447.0 | 2,448.0 | 2,448.0 | 8.9 | 48.6 | 2.84 | 306.5 | -2,236.4 | 1,906.9 | 1,855.7 | 51.14 | 37.287 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,503.2 | 2,503.2 | 9.3 | 49.7 | 2.87 | 306.5 | -2,236.4 | 1,885.8 | 1,833.5 | 52.36 | 36.017 | |
| 2,600.0 | 2,540.5 | 2,541.5 | 2,541.5 | 9.6 | 50.5 | 2.90 | 306.5 | -2,236.4 | 1,871.2 | 1,818.0 | 53.21 | 35.170 | |
| 2,657.5 | 2,594.2 | 2,595.2 | 2,595.2 | 10.0 | 51.6 | 2.93 | 306.5 | -2,236.4 | 1,850.7 | 1,796.4 | 54.39 | 34.025 | |
| 2,700.0 | 2,633.9 | 2,634.9 | 2,634.9 | 10.3 | 52.4 | 2.95 | 306.5 | -2,236.4 | 1,835.6 | 1,780.3 | 55.27 | 33.209 | |
| 2,755.9 | 2,686.1 | 2,687.1 | 2,687.1 | 10.7 | 53.4 | 2.98 | 306.5 | -2,236.4 | 1,815.7 | 1,759.2 | 56.43 | 32.174 | |
| 2,800.0 | 2,727.3 | 2,728.3 | 2,728.3 | 11.0 | 54.3 | 3.01 | 306.5 | -2,236.4 | 1,800.0 | 1,742.6 | 57.35 | 31.388 | |
| 2,854.3 | 2,778.1 | 2,779.1 | 2,779.1 | 11.4 | 55.3 | 3.04 | 306.5 | -2,236.4 | 1,780.6 | 1,722.1 | 58.47 | 30.452 | |
| 2,900.0 | 2,820.7 | 2,821.7 | 2,821.7 | 11.8 | 56.1 | 3.07 | 306.5 | -2,236.4 | 1,764.3 | 1,704.9 | 59.42 | 29.692 | |
| 2,952.7 | 2,870.0 | 2,871.0 | 2,871.0 | 12.2 | 57.1 | 3.10 | 306.5 | -2,236.4 | 1,745.5 | 1,685.0 | 60.52 | 28.844 | |
| 3,000.0 | 2,914.2 | 2,915.2 | 2,915.2 | 12.5 | 58.0 | 3.13 | 306.5 | -2,236.4 | 1,728.7 | 1,667.2 | 61.50 | 28.110 | |
| 3,051.2 | 2,962.0 | 2,963.0 | 2,963.0 | 12.9 | 59.0 | 3.17 | 306.5 | -2,236.4 | 1,710.5 | 1,647.9 | 62.56 | 27.340 | |
| 3,100.0 | 3,007.6 | 3,008.6 | 3,008.6 | 13.3 | 59.9 | 3.20 | 306.5 | -2,236.4 | 1,693.1 | 1,629.5 | 63.58 | 26.630 | |
| 3,149.6 | 3,053.9 | 3,054.9 | 3,054.9 | 13.6 | 60.8 | 3.23 | 306.5 | -2,236.4 | 1,675.4 | 1,610.8 | 64.61 | 25.931 | |
| 3,200.0 | 3,101.0 | 3,102.0 | 3,102.0 | 14.0 | 61.8 | 3.27 | 306.5 | -2,236.4 | 1,657.5 | 1,591.8 | 65.66 | 25.243 | |
| 3,248.0 | 3,145.9 | 3,146.9 | 3,146.9 | 14.4 | 62.7 | 3.30 | 306.5 | -2,236.4 | 1,640.4 | 1,573.7 | 66.66 | 24.608 | |
| 3,300.0 | 3,194.4 | 3,195.4 | 3,195.4 | 14.8 | 63.7 | 3.34 | 306.5 | -2,236.4 | 1,621.8 | 1,554.1 | 67.74 | 23.941 | |
| 3,346.4 | 3,237.8 | 3,238.8 | 3,238.8 | 15.1 | 64.5 | 3.38 | 306.5 | -2,236.4 | 1,605.3 | 1,536.6 | 68.71 | 23.363 | |
| 3,400.0 | 3,287.8 | 3,288.8 | 3,288.8 | 15.5 | 65.5 | 3.42 | 306.5 | -2,236.4 | 1,586.2 | 1,516.4 | 69.83 | 22.716 | |
| 3,444.9 | 3,329.8 | 3,330.8 | 3,330.8 | 15.9 | 66.4 | 3.45 | 306.5 | -2,236.4 | 1,570.2 | 1,499.5 | 70.77 | 22.189 | |
| 3,500.0 | 3,381.3 | 3,382.3 | 3,382.3 | 16.3 | 67.4 | 3.50 | 306.5 | -2,236.4 | 1,550.6 | 1,478.7 | 71.92 | 21.561 | |
| 3,543.3 | 3,421.7 | 3,422.7 | 3,422.7 | 16.6 | 68.2 | 3.53 | 306.5 | -2,236.4 | 1,535.2 | 1,462.4 | 72.82 | 21.082 | |
| 3,600.0 | 3,474.7 | 3,475.7 | 3,475.7 | 17.0 | 69.3 | 3.58 | 306.5 | -2,236.4 | 1,515.0 | 1,441.0 | 74.00 | 20.472 | |
| 3,641.7 | 3,513.7 | 3,514.7 | 3,514.7 | 17.3 | 70.1 | 3.61 | 306.5 | -2,236.4 | 1,500.1 | 1,425.3 | 74.88 | 20.035 | |
| 3,700.0 | 3,568.1 | 3,569.1 | 3,569.1 | 17.8 | 71.2 | 3.66 | 306.5 | -2,236.4 | 1,479.4 | 1,403.3 | 76.09 | 19.441 | |
| 3,740.1 | 3,605.6 | 3,606.6 | 3,606.6 | 18.1 | 71.9 | 3.70 | 306.5 | -2,236.4 | 1,465.1 | 1,388.2 | 76.93 | 19.043 | |
| 3,800.0 | 3,661.5 | 3,662.5 | 3,662.5 | 18.5 | 73.1 | 3.75 | 306.5 | -2,236.4 | 1,443.8 | 1,365.6 | 78.19 | 18.466 | |
| 3,838.6 | 3,697.6 | 3,698.6 | 3,698.6 | 18.8 | 73.8 | 3.79 | 306.5 | -2,236.4 | 1,430.0 | 1,351.1 | 78.99 | 18.103 | |
| 3,900.0 | 3,754.9 | 3,755.9 | 3,755.9 | 19.3 | 74.9 | 3.85 | 306.5 | -2,236.4 | 1,408.2 | 1,327.9 | 80.28 | 17.541 | |
| 3,937.0 | 3,789.5 | 3,790.5 | 3,790.5 | 19.6 | 75.6 | 3.89 | 306.5 | -2,236.4 | 1,395.0 | 1,314.0 | 81.05 | 17.211 | |
| 4,000.0 | 3,848.4 | 3,849.4 | 3,849.4 | 20.1 | 76.8 | 3.95 | 306.5 | -2,236.4 | 1,372.6 | 1,290.2 | 82.37 | 16.663 | |
| 4,035.4 | 3,881.5 | 3,882.5 | 3,882.5 | 20.3 | 77.5 | 3.99 | 306.5 | -2,236.4 | 1,360.0 | 1,276.9 | 83.12 | 16.362 | |
| 4,100.0 | 3,941.8 | 3,942.8 | 3,942.8 | 20.8 | 78.7 | 4.05 | 306.5 | -2,236.4 | 1,337.0 | 1,252.5 | 84.47 | 15.828 | |
| 4,133.8 | 3,973.4 | 3,974.4 | 3,974.4 | 21.1 | 79.3 | 4.09 | 306.5 | -2,236.4 | 1,324.9 | 1,239.8 | 85.18 | 15.554 | |
| 4,200.0 | 4,035.2 | 4,036.2 | 4,036.2 | 21.6 | 80.6 | 4.16 | 306.5 | -2,236.4 | 1,301.4 | 1,214.8 | 86.57 | 15.033 | |
| 4,232.3 | 4,065.4 | 4,066.4 | 4,066.4 | 21.8 | 81.2 | 4.20 | 306.5 | -2,236.4 | 1,289.9 | 1,202.7 | 87.25 | 14.785 | |
| 4,300.0 | 4,128.6 | 4,129.6 | 4,129.6 | 22.3 | 82.4 | 4.28 | 306.5 | -2,236.4 | 1,265.8 | 1,177.1 | 88.67 | 14.276 | |
| 4,330.7 | 4,157.3 | 4,158.3 | 4,158.3 | 22.6 | 83.0 | 4.32 | 306.5 | -2,236.4 | 1,254.9 | 1,165.6 | 89.31 | 14.050 | |
| 4,400.0 | 4,222.0 | 4,223.0 | 4,223.0 | 23.1 | 84.3 | 4.41 | 306.5 | -2,236.4 | 1,230.2 | 1,139.5 | 90.77 | 13.553 | |
| 4,429.1 | 4,249.3 | 4,250.3 | 4,250.3 | 23.3 | 84.9 | 4.44 | 306.5 | -2,236.4 | 1,219.9 | 1,128.5 | 91.38 | 13.349 | |
| 4,500.0 | 4,315.5 | 4,316.5 | 4,316.5 | 23.9 | 86.2 | 4.54 | 306.5 | -2,236.4 | 1,194.6 | 1,101.8 | 92.87 | 12.863 | |
| 4,527.5 | 4,341.2 | 4,342.2 | 4,342.2 | 24.1 | 86.7 | 4.58 | 306.5 | -2,236.4 | 1,184.8 | 1,091.4 | 93.45 | 12.679 | |
| 4,600.0 | 4,408.9 | 4,409.9 | 4,409.9 | 24.6 | 88.1 | 4.68 | 306.5 | -2,236.4 | 1,159.1 | 1,064.1 | 94.98 | 12.204 | |
| 4,626.0 | 4,433.2 | 4,434.2 | 4,434.2 | 24.8 | 88.6 | 4.71 | 306.5 | -2,236.4 | 1,149.8 | 1,054.3 | 95.52 | 12.037 | |
| 4,700.0 | 4,502.3 | 4,503.3 | 4,503.3 | 25.4 | 90.0 | 4.83 | 306.5 | -2,236.4 | 1,123.5 | 1,026.4 | 97.08 | 11.573 | |
| 4,724.4 | 4,525.1 | 4,526.1 | 4,526.1 | 25.6 | 90.4 | 4.86 | 306.5 | -2,236.4 | 1,114.8 | 1,017.2 | 97.60 | 11.423 | |
| 4,800.0 | 4,595.7 | 4,596.7 | 4,596.7 | 26.2 | 91.8 | 4.98 | 306.5 | -2,236.4 | 1,088.0 | 988.8 | 99.19 | 10.968 | |
| 4,822.8 | 4,617.1 | 4,618.1 | 4,618.1 | 26.3 | 92.3 | 5.02 | 306.5 | -2,236.4 | 1,079.8 | 980.2 | 99.67 | 10.834 | |
| 4,900.0 | 4,689.2 | 4,690.2 | 4,690.2 | 26.9 | 93.7 | 5.15 | 306.5 | -2,236.4 | 1,052.4 | 951.1 | 101.30 | 10.389 | |
| 4,921.2 | 4,709.0 | 4,710.0 | 4,710.0 | 27.1 | 94.1 | 5.19 | 306.5 | -2,236.4 | 1,044.9 | 943.1 | 101.75 | 10.268 | |
| 5,000.0 | 4,782.6 | 4,783.6 | 4,783.6 | 27.7 | 95.6 | 5.33 | 306.5 | -2,236.4 | 1,016.9 | 913.4 | 103.42 | 9.832 | |
| 5,019.7 | 4,801.0 | 4,802.0 | 4,802.0 | 27.8 | 96.0 | 5.37 | 306.5 | -2,236.4 | 1,009.9 | 906.0 | 103.84 | 9.726 | |
| 5,100.0 | 4,876.0 | 4,877.0 | 4,877.0 | 28.4 | 97.5 | 5.53 | 306.5 | -2,236.4 | 981.3 | 875.8 | 105.54 | 9.298 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,893.9 | 4,893.9 | 28.6 | 97.8 | 5.56 | 306.5 | -2,236.4 | 974.9 | 869.0 | 105.92 | 9.204 | |
| 5,159.9 | 4,932.0 | 4,933.0 | 4,933.0 | 28.9 | 98.6 | 5.65 | 306.5 | -2,236.4 | 960.0 | 853.2 | 106.81 | 8.988 | |
| 5,200.0 | 4,969.5 | 4,970.5 | 4,970.5 | 29.2 | 99.4 | 5.70 | 306.5 | -2,236.4 | 946.1 | 837.9 | 108.14 | 8.749 | |
| 5,216.5 | 4,985.1 | 4,986.1 | 4,986.1 | 29.3 | 99.7 | 5.72 | 306.5 | -2,236.4 | 940.5 | 831.8 | 108.68 | 8.654 | |
| 5,300.0 | 5,064.0 | 5,065.0 | 5,065.0 | 29.7 | 101.3 | 5.84 | 306.5 | -2,236.4 | 913.5 | 802.1 | 111.38 | 8.201 | |
| 5,314.9 | 5,078.2 | 5,079.2 | 5,079.2 | 29.8 | 101.5 | 5.86 | 306.5 | -2,236.4 | 908.9 | 797.1 | 111.86 | 8.125 | |
| 5,400.0 | 5,159.6 | 5,160.6 | 5,160.6 | 30.2 | 103.2 | 5.97 | 306.5 | -2,236.4 | 884.2 | 769.7 | 114.54 | 7.720 | |
| 5,413.4 | 5,172.4 | 5,173.4 | 5,173.4 | 30.3 | 103.4 | 5.98 | 306.5 | -2,236.4 | 880.6 | 765.6 | 114.96 | 7.660 | |
| 5,500.0 | 5,256.1 | 5,257.1 | 5,257.1 | 30.7 | 105.1 | 6.09 | 306.5 | -2,236.4 | 858.3 | 740.7 | 117.61 | 7.298 | |
| 5,511.8 | 5,267.6 | 5,268.6 | 5,268.6 | 30.7 | 105.4 | 6.10 | 306.5 | -2,236.4 | 855.5 | 737.5 | 117.96 | 7.252 | |
| 5,600.0 | 5,353.5 | 5,354.5 | 5,354.5 | 31.1 | 107.1 | 6.20 | 306.5 | -2,236.4 | 835.8 | 715.2 | 120.56 | 6.932 | |
| 5,610.2 | 5,363.5 | 5,364.5 | 5,364.5 | 31.1 | 107.3 | 6.21 | 306.5 | -2,236.4 | 833.7 | 712.8 | 120.86 | 6.898 | |
| 5,700.0 | 5,451.6 | 5,452.6 | 5,452.6 | 31.4 | 109.1 | 6.31 | 306.5 | -2,236.4 | 816.7 | 693.3 | 123.41 | 6.618 | |
| 5,708.6 | 5,460.2 | 5,461.2 | 5,461.2 | 31.4 | 109.2 | 6.31 | 306.5 | -2,236.4 | 815.2 | 691.5 | 123.65 | 6.593 | |
| 5,800.0 | 5,550.4 | 5,551.4 | 5,551.4 | 31.7 | 111.0 | 6.39 | 306.5 | -2,236.4 | 801.0 | 674.8 | 126.12 | 6.351 | |
| 5,807.1 | 5,557.4 | 5,558.4 | 5,558.4 | 31.7 | 111.2 | 6.40 | 306.5 | -2,236.4 | 800.0 | 673.7 | 126.31 | 6.334 | |
| 5,900.0 | 5,649.6 | 5,650.6 | 5,650.6 | 31.9 | 113.0 | 6.47 | 306.5 | -2,236.4 | 788.7 | 660.0 | 128.70 | 6.128 | |
| 5,905.5 | 5,655.1 | 5,656.1 | 5,656.1 | 31.9 | 113.1 | 6.47 | 306.5 | -2,236.4 | 788.1 | 659.3 | 128.83 | 6.117 | |
| 6,000.0 | 5,749.2 | 5,750.2 | 5,750.2 | 32.1 | 115.0 | 6.52 | 306.5 | -2,236.4 | 779.8 | 648.7 | 131.13 | 5.947 | |
| 6,003.9 | 5,753.1 | 5,754.1 | 5,754.1 | 32.1 | 115.1 | 6.52 | 306.5 | -2,236.4 | 779.6 | 648.4 | 131.22 | 5.941 | |
| 6,100.0 | 5,849.1 | 5,850.1 | 5,850.1 | 32.3 | 117.0 | 6.55 | 306.5 | -2,236.4 | 774.5 | 641.1 | 133.40 | 5.806 | |
| 6,102.3 | 5,851.4 | 5,852.4 | 5,852.4 | 32.3 | 117.1 | 6.55 | 306.5 | -2,236.4 | 774.4 | 640.9 | 133.45 | 5.803 | |
| 6,200.8 | 5,949.8 | 5,950.8 | 5,950.8 | 32.4 | 119.1 | 6.57 | 306.5 | -2,236.4 | 772.6 | 637.1 | 135.52 | 5.701 | |
| 6,204.9 | 5,953.9 | 5,954.9 | 5,954.9 | 32.4 | 119.2 | -77.87 | 306.5 | -2,236.4 | 772.6 | 621.2 | 151.33 | 5.105 | |
| 6,234.9 | 5,983.9 | 5,984.9 | 5,984.9 | 32.4 | 119.8 | -77.87 | 306.5 | -2,236.4 | 772.6 | 620.6 | 151.96 | 5.084 | CC, ES, SF |
| 6,250.0 | 5,999.0 | 6,000.0 | 6,000.0 | 32.4 | 120.1 | -167.87 | 306.5 | -2,236.4 | 772.7 | 636.3 | 136.47 | 5.662 | |
| 6,299.2 | 6,048.2 | 6,049.2 | 6,049.2 | 32.4 | 121.0 | -167.87 | 306.5 | -2,236.4 | 775.4 | 638.6 | 136.75 | 5.670 | |
| 6,300.0 | 6,048.9 | 6,049.9 | 6,049.9 | 32.4 | 121.1 | -167.87 | 306.5 | -2,236.4 | 775.5 | 638.7 | 136.75 | 5.671 | |
| 6,350.0 | 6,098.5 | 6,099.5 | 6,099.5 | 32.4 | 122.1 | -167.86 | 306.5 | -2,236.4 | 781.6 | 645.2 | 136.39 | 5.731 | |
| 6,397.6 | 6,145.3 | 6,146.3 | 6,146.3 | 32.3 | 123.0 | -167.85 | 306.5 | -2,236.4 | 790.6 | 655.2 | 135.43 | 5.838 | |
| 6,400.0 | 6,147.6 | 6,148.6 | 6,148.6 | 32.3 | 123.0 | -167.85 | 306.5 | -2,236.4 | 791.1 | 655.7 | 135.37 | 5.844 | |
| 6,450.0 | 6,195.8 | 6,196.8 | 6,196.8 | 32.2 | 124.0 | -167.82 | 306.5 | -2,236.4 | 804.0 | 670.3 | 133.69 | 6.014 | |
| 6,496.0 | 6,239.3 | 6,240.3 | 6,240.3 | 32.1 | 124.9 | -167.78 | 306.5 | -2,236.4 | 818.7 | 687.1 | 131.56 | 6.223 | |
| 6,500.0 | 6,243.0 | 6,244.0 | 6,244.0 | 32.1 | 125.0 | -167.78 | 306.5 | -2,236.4 | 820.1 | 688.7 | 131.35 | 6.244 | |
| 6,550.0 | 6,289.0 | 6,290.0 | 6,290.0 | 32.0 | 125.9 | -167.71 | 306.5 | -2,236.4 | 839.4 | 711.0 | 128.37 | 6.539 | |
| 6,594.5 | 6,328.6 | 6,329.6 | 6,329.6 | 31.8 | 126.7 | -167.62 | 306.5 | -2,236.4 | 859.2 | 734.0 | 125.20 | 6.863 | |
| 6,600.0 | 6,333.4 | 6,334.4 | 6,334.4 | 31.8 | 126.8 | -167.61 | 306.5 | -2,236.4 | 861.8 | 737.1 | 124.77 | 6.907 | |
| 6,650.0 | 6,376.2 | 6,377.2 | 6,377.2 | 31.7 | 127.6 | -167.46 | 306.5 | -2,236.4 | 887.3 | 766.7 | 120.58 | 7.358 | |
| 6,692.9 | 6,411.3 | 6,412.3 | 6,412.3 | 31.6 | 128.4 | -167.29 | 306.5 | -2,236.4 | 911.5 | 794.9 | 116.56 | 7.819 | |
| 6,700.0 | 6,417.0 | 6,418.0 | 6,418.0 | 31.5 | 128.5 | -167.26 | 306.5 | -2,236.4 | 915.7 | 799.8 | 115.86 | 7.903 | |
| 6,750.0 | 6,455.7 | 6,456.7 | 6,456.7 | 31.4 | 129.2 | -166.98 | 306.5 | -2,236.4 | 946.8 | 836.1 | 110.68 | 8.554 | |
| 6,791.3 | 6,486.0 | 6,487.0 | 6,487.0 | 31.3 | 129.9 | -166.67 | 306.5 | -2,236.4 | 974.5 | 868.4 | 106.10 | 9.184 | |
| 6,800.0 | 6,492.2 | 6,493.2 | 6,493.2 | 31.3 | 130.0 | -166.60 | 306.5 | -2,236.4 | 980.5 | 875.4 | 105.12 | 9.328 | |
| 6,850.0 | 6,526.1 | 6,527.1 | 6,527.1 | 31.2 | 130.7 | -166.10 | 306.5 | -2,236.4 | 1,016.7 | 917.4 | 99.31 | 10.237 | |
| 6,889.7 | 6,551.2 | 6,552.2 | 6,552.2 | 31.2 | 131.2 | -165.58 | 306.5 | -2,236.4 | 1,047.1 | 952.5 | 94.65 | 11.064 | |
| 6,900.0 | 6,557.4 | 6,558.4 | 6,558.4 | 31.2 | 131.3 | -165.43 | 306.5 | -2,236.4 | 1,055.2 | 961.8 | 93.45 | 11.292 | |
| 6,950.0 | 6,586.0 | 6,587.0 | 6,587.0 | 31.1 | 131.9 | -164.54 | 306.5 | -2,236.4 | 1,095.8 | 1,008.0 | 87.78 | 12.484 | |
| 6,988.2 | 6,605.8 | 6,606.8 | 6,606.8 | 31.2 | 132.3 | -163.66 | 306.5 | -2,236.4 | 1,128.1 | 1,044.3 | 83.80 | 13.461 | |
| 7,000.0 | 6,611.5 | 6,612.5 | 6,612.5 | 31.2 | 132.4 | -163.34 | 306.5 | -2,236.4 | 1,138.3 | 1,055.6 | 82.68 | 13.768 | |
| 7,050.0 | 6,634.1 | 6,635.1 | 6,635.1 | 31.2 | 132.8 | -161.71 | 306.5 | -2,236.4 | 1,182.5 | 1,103.7 | 78.74 | 15.017 | |
| 7,086.6 | 6,648.6 | 6,649.6 | 6,649.6 | 31.3 | 133.1 | -160.11 | 306.5 | -2,236.4 | 1,215.8 | 1,138.6 | 77.13 | 15.762 | |
| 7,100.0 | 6,653.4 | 6,654.4 | 6,654.4 | 31.4 | 133.2 | -159.41 | 306.5 | -2,236.4 | 1,228.1 | 1,151.2 | 76.93 | 15.965 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 6,670.5 | 6,670.5 | 31.6 | 133.5 | -156.04 | 306.5 | -2,236.4 | 1,275.1 | 1,196.3 | 78.80 | 16.181 | |
| 7,185.0 | 6,678.8 | 6,679.8 | 6,679.8 | 31.7 | 133.7 | -152.64 | 306.5 | -2,236.4 | 1,308.6 | 1,225.0 | 83.57 | 15.658 | |
| 7,200.0 | 6,682.3 | 6,683.3 | 6,683.3 | 31.8 | 133.8 | -150.81 | 306.5 | -2,236.4 | 1,323.0 | 1,236.2 | 86.80 | 15.242 | |
| 7,250.0 | 6,691.6 | 6,692.6 | 6,692.6 | 32.1 | 134.0 | -142.03 | 306.5 | -2,236.4 | 1,371.8 | 1,267.3 | 104.50 | 13.128 | |
| 7,283.4 | 6,696.0 | 6,697.0 | 6,697.0 | 32.3 | 134.1 | -132.43 | 306.5 | -2,236.4 | 1,404.7 | 1,281.0 | 123.69 | 11.357 | |
| 7,300.0 | 6,697.5 | 6,698.5 | 6,698.5 | 32.4 | 134.1 | -125.93 | 306.5 | -2,236.4 | 1,421.1 | 1,285.8 | 135.27 | 10.506 | |
| 7,350.0 | 6,699.9 | 6,700.9 | 6,700.9 | 32.8 | 134.2 | -96.98 | 306.5 | -2,236.4 | 1,470.7 | 1,305.1 | 165.63 | 8.880 | |
| 7,364.4 | 6,700.0 | 6,701.0 | 6,701.0 | 32.9 | 134.2 | -86.62 | 306.5 | -2,236.4 | 1,485.0 | 1,318.2 | 166.78 | 8.904 | |
| 7,381.9 | 6,699.9 | 6,700.9 | 6,700.9 | 33.1 | 134.2 | -86.58 | 306.5 | -2,236.4 | 1,502.4 | 1,335.5 | 166.92 | 9.001 | |
| 7,400.0 | 6,699.8 | 6,700.8 | 6,700.8 | 33.2 | 134.2 | -86.54 | 306.5 | -2,236.4 | 1,520.4 | 1,353.3 | 167.07 | 9.100 | |
| 7,480.3 | 6,699.2 | 6,700.2 | 6,700.2 | 34.0 | 134.1 | -86.36 | 306.5 | -2,236.4 | 1,600.3 | 1,432.4 | 167.84 | 9.534 | |
| 7,500.0 | 6,699.1 | 6,700.1 | 6,700.1 | 34.2 | 134.1 | -86.31 | 306.5 | -2,236.4 | 1,619.9 | 1,451.8 | 168.03 | 9.640 | |
| 7,578.7 | 6,698.6 | 6,699.6 | 6,699.6 | 35.2 | 134.1 | -86.13 | 306.5 | -2,236.4 | 1,698.2 | 1,529.3 | 168.93 | 10.052 | |
| 7,600.0 | 6,698.5 | 6,699.5 | 6,699.5 | 35.4 | 134.1 | -86.08 | 306.5 | -2,236.4 | 1,719.4 | 1,550.2 | 169.18 | 10.163 | |
| 7,677.1 | 6,698.0 | 6,699.0 | 6,699.0 | 36.5 | 134.1 | -85.91 | 306.5 | -2,236.4 | 1,796.2 | 1,626.0 | 170.20 | 10.554 | |
| 7,700.0 | 6,697.8 | 6,698.8 | 6,698.8 | 36.8 | 134.1 | -85.86 | 306.5 | -2,236.4 | 1,819.0 | 1,648.5 | 170.50 | 10.668 | |
| 7,775.6 | 6,697.3 | 6,698.3 | 6,698.3 | 38.0 | 134.1 | -85.68 | 306.5 | -2,236.4 | 1,894.2 | 1,722.6 | 171.62 | 11.038 | |
| 7,800.0 | 6,697.2 | 6,698.2 | 6,698.2 | 38.3 | 134.1 | -85.63 | 306.5 | -2,236.4 | 1,918.6 | 1,746.6 | 171.98 | 11.156 | |
| 7,874.0 | 6,696.7 | 6,697.7 | 6,697.7 | 39.6 | 134.1 | -85.46 | 306.5 | -2,236.4 | 1,992.3 | 1,819.2 | 173.17 | 11.505 | |
| 7,900.0 | 6,696.5 | 6,697.5 | 6,697.5 | 40.0 | 134.1 | -85.40 | 306.5 | -2,236.4 | 2,018.2 | 1,844.7 | 173.59 | 11.627 | |
| 7,972.4 | 6,696.1 | 6,697.1 | 6,697.1 | 41.3 | 134.1 | -85.24 | 306.5 | -2,236.4 | 2,090.4 | 1,915.6 | 174.84 | 11.957 | |
| 8,000.0 | 6,695.9 | 6,696.9 | 6,696.9 | 41.8 | 134.1 | -85.17 | 306.5 | -2,236.4 | 2,117.9 | 1,942.6 | 175.31 | 12.081 | |
| 8,070.8 | 6,695.4 | 6,696.4 | 6,696.4 | 43.1 | 134.1 | -85.01 | 306.5 | -2,236.4 | 2,188.6 | 2,012.0 | 176.61 | 12.392 | |
| 8,100.0 | 6,695.2 | 6,696.2 | 6,696.2 | 43.7 | 134.1 | -84.95 | 306.5 | -2,236.4 | 2,217.6 | 2,040.5 | 177.14 | 12.519 | |
| 8,169.3 | 6,694.8 | 6,695.8 | 6,695.8 | 45.1 | 134.1 | -84.79 | 306.5 | -2,236.4 | 2,286.7 | 2,108.3 | 178.47 | 12.813 | |
| 8,200.0 | 6,694.6 | 6,695.6 | 6,695.6 | 45.7 | 134.0 | -84.72 | 306.5 | -2,236.4 | 2,317.4 | 2,138.3 | 179.06 | 12.942 | |
| 8,267.7 | 6,694.1 | 6,695.1 | 6,695.1 | 47.1 | 134.0 | -84.56 | 306.5 | -2,236.4 | 2,384.9 | 2,204.5 | 180.41 | 13.219 | |
| 8,300.0 | 6,693.9 | 6,694.9 | 6,694.9 | 47.8 | 134.0 | -84.49 | 306.5 | -2,236.4 | 2,417.2 | 2,236.1 | 181.06 | 13.350 | |
| 8,366.1 | 6,693.5 | 6,694.5 | 6,694.5 | 49.2 | 134.0 | -84.34 | 306.5 | -2,236.4 | 2,483.1 | 2,300.7 | 182.42 | 13.612 | |
| 8,400.0 | 6,693.3 | 6,694.3 | 6,694.3 | 49.9 | 134.0 | -84.26 | 306.5 | -2,236.4 | 2,516.9 | 2,333.8 | 183.12 | 13.744 | |
| 8,464.5 | 6,692.9 | 6,693.9 | 6,693.9 | 51.4 | 134.0 | -84.12 | 306.5 | -2,236.4 | 2,581.4 | 2,396.9 | 184.49 | 13.992 | |
| 8,500.0 | 6,692.6 | 6,693.6 | 6,693.6 | 52.1 | 134.0 | -84.04 | 306.5 | -2,236.4 | 2,616.7 | 2,431.5 | 185.24 | 14.126 | |
| 8,563.0 | 6,692.2 | 6,693.2 | 6,693.2 | 53.6 | 134.0 | -83.90 | 306.5 | -2,236.4 | 2,679.6 | 2,493.0 | 186.61 | 14.359 | |
| 8,600.0 | 6,692.0 | 6,693.0 | 6,693.0 | 54.4 | 134.0 | -83.81 | 306.5 | -2,236.4 | 2,716.5 | 2,529.1 | 187.42 | 14.495 | |
| 8,661.4 | 6,691.6 | 6,692.6 | 6,692.6 | 55.8 | 134.0 | -83.67 | 306.5 | -2,236.4 | 2,777.8 | 2,589.1 | 188.78 | 14.715 | |
| 8,700.0 | 6,691.3 | 6,692.3 | 6,692.3 | 56.7 | 134.0 | -83.59 | 306.5 | -2,236.4 | 2,816.4 | 2,626.7 | 189.63 | 14.852 | |
| 8,759.8 | 6,690.9 | 6,691.9 | 6,691.9 | 58.1 | 134.0 | -83.45 | 306.5 | -2,236.4 | 2,876.1 | 2,685.1 | 190.98 | 15.060 | |
| 8,800.0 | 6,690.7 | 6,691.7 | 6,691.7 | 59.1 | 134.0 | -83.36 | 306.5 | -2,236.4 | 2,916.2 | 2,724.3 | 191.89 | 15.198 | |
| 8,858.2 | 6,690.3 | 6,691.3 | 6,691.3 | 60.5 | 134.0 | -83.23 | 306.5 | -2,236.4 | 2,974.4 | 2,781.1 | 193.22 | 15.394 | |
| 8,900.0 | 6,690.0 | 6,691.0 | 6,691.0 | 61.5 | 134.0 | -83.13 | 306.5 | -2,236.4 | 3,016.1 | 2,821.9 | 194.17 | 15.533 | |
| 8,956.7 | 6,689.7 | 6,690.7 | 6,690.7 | 62.9 | 134.0 | -83.01 | 306.5 | -2,236.4 | 3,072.6 | 2,877.2 | 195.48 | 15.718 | |
| 9,000.0 | 6,689.4 | 6,690.4 | 6,690.4 | 63.9 | 133.9 | -82.91 | 306.5 | -2,236.4 | 3,115.9 | 2,919.4 | 196.49 | 15.858 | |
| 9,055.1 | 6,689.0 | 6,690.0 | 6,690.0 | 65.3 | 133.9 | -82.78 | 306.5 | -2,236.4 | 3,170.9 | 2,973.2 | 197.78 | 16.033 | |
| 9,100.0 | 6,688.7 | 6,689.7 | 6,689.7 | 66.4 | 133.9 | -82.68 | 306.5 | -2,236.4 | 3,215.8 | 3,017.0 | 198.83 | 16.174 | |
| 9,153.5 | 6,688.4 | 6,689.4 | 6,689.4 | 67.7 | 133.9 | -82.56 | 306.5 | -2,236.4 | 3,269.2 | 3,069.1 | 200.09 | 16.339 | |
| 9,200.0 | 6,688.1 | 6,689.1 | 6,689.1 | 68.9 | 133.9 | -82.46 | 306.5 | -2,236.4 | 3,315.7 | 3,114.5 | 201.19 | 16.480 | |
| 9,251.9 | 6,687.8 | 6,688.8 | 6,688.8 | 70.2 | 133.9 | -82.34 | 306.5 | -2,236.4 | 3,367.5 | 3,165.1 | 202.42 | 16.636 | |
| 9,300.0 | 6,687.4 | 6,688.4 | 6,688.4 | 71.4 | 133.9 | -82.23 | 306.5 | -2,236.4 | 3,415.5 | 3,212.0 | 203.57 | 16.779 | |
| 9,350.4 | 6,687.1 | 6,688.1 | 6,688.1 | 72.7 | 133.9 | -82.12 | 306.5 | -2,236.4 | 3,465.9 | 3,261.1 | 204.77 | 16.925 | |
| 9,400.0 | 6,686.8 | 6,687.8 | 6,687.8 | 73.9 | 133.9 | -82.01 | 306.5 | -2,236.4 | 3,515.4 | 3,309.5 | 205.96 | 17.068 | |
| 9,448.8 | 6,686.5 | 6,687.5 | 6,687.5 | 75.2 | 133.9 | -81.90 | 306.5 | -2,236.4 | 3,564.2 | 3,357.0 | 207.14 | 17.207 | |
| 9,500.0 | 6,686.1 | 6,687.1 | 6,687.1 | 76.5 | 133.9 | -81.78 | 306.5 | -2,236.4 | 3,615.3 | 3,406.9 | 208.37 | 17.351 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT PUYPE B #18-17 - Wellbore #1 - Design #1

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-INC

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,547.2 | 6,685.8 | 6,686.8 | 6,686.8 | 77.7 | 133.9 | -81.68 | 306.5 | -2,236.4 | 3,662.5 | 3,453.0 | 209.51 | 17.481 | |
| 9,600.0 | 6,685.5 | 6,686.5 | 6,686.5 | 79.0 | 133.9 | -81.56 | 306.5 | -2,236.4 | 3,715.2 | 3,504.4 | 210.79 | 17.625 | |
| 9,645.6 | 6,685.2 | 6,686.2 | 6,686.2 | 80.2 | 133.9 | -81.46 | 306.5 | -2,236.4 | 3,760.8 | 3,548.9 | 211.90 | 17.748 | |
| 9,700.0 | 6,684.8 | 6,685.8 | 6,685.8 | 81.6 | 133.9 | -81.33 | 306.5 | -2,236.4 | 3,815.1 | 3,601.9 | 213.22 | 17.893 | |
| 9,744.1 | 6,684.6 | 6,685.6 | 6,685.6 | 82.8 | 133.8 | -81.24 | 306.5 | -2,236.4 | 3,859.2 | 3,644.9 | 214.30 | 18.009 | |
| 9,800.0 | 6,684.2 | 6,685.2 | 6,685.2 | 84.2 | 133.8 | -81.11 | 306.5 | -2,236.4 | 3,915.0 | 3,699.4 | 215.66 | 18.154 | |
| 9,842.5 | 6,683.9 | 6,684.9 | 6,684.9 | 85.3 | 133.8 | -81.01 | 306.5 | -2,236.4 | 3,957.5 | 3,740.8 | 216.70 | 18.263 | |
| 9,900.0 | 6,683.5 | 6,684.5 | 6,684.5 | 86.8 | 133.8 | -80.89 | 306.5 | -2,236.4 | 4,014.9 | 3,796.8 | 218.10 | 18.408 | |
| 9,940.9 | 6,683.3 | 6,684.3 | 6,684.3 | 87.9 | 133.8 | -80.80 | 306.5 | -2,236.4 | 4,055.8 | 3,836.7 | 219.11 | 18.511 | |
| 10,000.0 | 6,682.9 | 6,683.9 | 6,683.9 | 89.5 | 133.8 | -80.66 | 306.5 | -2,236.4 | 4,114.9 | 3,894.3 | 220.56 | 18.657 | |
| 10,039.3 | 6,682.6 | 6,683.6 | 6,683.6 | 90.5 | 133.8 | -80.58 | 306.5 | -2,236.4 | 4,154.2 | 3,932.7 | 221.52 | 18.753 | |
| 10,100.0 | 6,682.2 | 6,683.2 | 6,683.2 | 92.1 | 133.8 | -80.44 | 306.5 | -2,236.4 | 4,214.8 | 3,991.8 | 223.01 | 18.899 | |
| 10,137.8 | 6,682.0 | 6,683.0 | 6,683.0 | 93.1 | 133.8 | -80.36 | 306.5 | -2,236.4 | 4,252.5 | 4,028.6 | 223.94 | 18.989 | |
| 10,200.0 | 6,681.6 | 6,682.6 | 6,682.6 | 94.8 | 133.8 | -80.22 | 306.5 | -2,236.4 | 4,314.7 | 4,089.2 | 225.47 | 19.136 | |
| 10,236.2 | 6,681.4 | 6,682.4 | 6,682.4 | 95.7 | 133.8 | -80.14 | 306.5 | -2,236.4 | 4,350.9 | 4,124.5 | 226.36 | 19.221 | |
| 10,300.0 | 6,680.9 | 6,681.9 | 6,681.9 | 97.4 | 133.8 | -80.00 | 306.5 | -2,236.4 | 4,414.6 | 4,186.7 | 227.93 | 19.368 | |
| 10,334.6 | 6,680.7 | 6,681.7 | 6,681.7 | 98.3 | 133.8 | -79.92 | 306.5 | -2,236.4 | 4,449.2 | 4,220.5 | 228.79 | 19.447 | |
| 10,400.0 | 6,680.3 | 6,681.3 | 6,681.3 | 100.1 | 133.8 | -79.77 | 306.5 | -2,236.4 | 4,514.6 | 4,284.2 | 230.40 | 19.595 | |
| 10,433.0 | 6,680.1 | 6,681.1 | 6,681.1 | 101.0 | 133.8 | -79.70 | 306.5 | -2,236.4 | 4,547.6 | 4,316.4 | 231.21 | 19.668 | |
| 10,500.0 | 6,679.7 | 6,680.7 | 6,680.7 | 102.8 | 133.7 | -79.55 | 306.5 | -2,236.4 | 4,614.5 | 4,381.6 | 232.86 | 19.816 | |
| 10,531.5 | 6,679.4 | 6,680.4 | 6,680.4 | 103.6 | 133.7 | -79.48 | 306.5 | -2,236.4 | 4,646.0 | 4,412.3 | 233.64 | 19.885 | |
| 10,600.0 | 6,679.0 | 6,680.0 | 6,680.0 | 105.4 | 133.7 | -79.33 | 306.5 | -2,236.4 | 4,714.4 | 4,479.1 | 235.33 | 20.033 | |
| 10,629.9 | 6,678.8 | 6,679.8 | 6,679.8 | 106.2 | 133.7 | -79.26 | 306.5 | -2,236.4 | 4,744.3 | 4,508.3 | 236.07 | 20.097 | |
| 10,700.0 | 6,678.4 | 6,679.4 | 6,679.4 | 108.1 | 133.7 | -79.11 | 306.5 | -2,236.4 | 4,814.4 | 4,576.6 | 237.80 | 20.246 | |
| 10,728.3 | 6,678.2 | 6,679.2 | 6,679.2 | 108.9 | 133.7 | -79.05 | 306.5 | -2,236.4 | 4,842.7 | 4,604.2 | 238.50 | 20.305 | |
| 10,800.0 | 6,677.7 | 6,678.7 | 6,678.7 | 110.8 | 133.7 | -78.89 | 306.5 | -2,236.4 | 4,914.3 | 4,674.1 | 240.26 | 20.454 | |
| 10,826.7 | 6,677.5 | 6,678.5 | 6,678.5 | 111.5 | 133.7 | -78.83 | 306.5 | -2,236.4 | 4,941.1 | 4,700.1 | 240.92 | 20.509 | |
| 10,900.0 | 6,677.1 | 6,678.1 | 6,678.1 | 113.5 | 133.7 | -78.67 | 306.5 | -2,236.4 | 5,014.3 | 4,771.5 | 242.73 | 20.658 | |
| 10,925.2 | 6,676.9 | 6,677.9 | 6,677.9 | 114.2 | 133.7 | -78.61 | 306.5 | -2,236.4 | 5,039.4 | 4,796.1 | 243.35 | 20.709 | |
| 11,000.0 | 6,676.4 | 6,677.4 | 6,677.4 | 116.2 | 133.7 | -78.45 | 306.5 | -2,236.4 | 5,114.2 | 4,869.0 | 245.19 | 20.858 | |
| 11,023.6 | 6,676.3 | 6,677.3 | 6,677.3 | 116.8 | 133.7 | -78.40 | 306.5 | -2,236.4 | 5,137.8 | 4,892.0 | 245.77 | 20.905 | |
| 11,100.0 | 6,675.8 | 6,676.8 | 6,676.8 | 118.9 | 133.7 | -78.23 | 306.5 | -2,236.4 | 5,214.2 | 4,966.5 | 247.65 | 21.054 | |
| 11,122.0 | 6,675.6 | 6,676.6 | 6,676.6 | 119.5 | 133.7 | -78.18 | 306.5 | -2,236.4 | 5,236.2 | 4,988.0 | 248.19 | 21.097 | |
| 11,200.0 | 6,675.1 | 6,676.1 | 6,676.1 | 121.6 | 133.7 | -78.01 | 306.5 | -2,236.4 | 5,314.1 | 5,064.0 | 250.11 | 21.247 | |
| 11,220.4 | 6,675.0 | 6,676.0 | 6,676.0 | 122.2 | 133.7 | -77.96 | 306.5 | -2,236.4 | 5,334.6 | 5,083.9 | 250.61 | 21.286 | |
| 11,300.0 | 6,674.5 | 6,675.5 | 6,675.5 | 124.3 | 133.6 | -77.79 | 306.5 | -2,236.4 | 5,414.1 | 5,161.5 | 252.56 | 21.436 | |
| 11,318.9 | 6,674.3 | 6,675.3 | 6,675.3 | 124.9 | 133.6 | -77.75 | 306.5 | -2,236.4 | 5,432.9 | 5,179.9 | 253.03 | 21.472 | |
| 11,400.0 | 6,673.8 | 6,674.8 | 6,674.8 | 127.1 | 133.6 | -77.57 | 306.5 | -2,236.4 | 5,514.0 | 5,259.0 | 255.02 | 21.622 | |
| 11,417.3 | 6,673.7 | 6,674.7 | 6,674.7 | 127.5 | 133.6 | -77.53 | 306.5 | -2,236.4 | 5,531.3 | 5,275.9 | 255.44 | 21.654 | |
| 11,500.0 | 6,673.2 | 6,674.2 | 6,674.2 | 129.8 | 133.6 | -77.35 | 306.5 | -2,236.4 | 5,614.0 | 5,356.5 | 257.47 | 21.805 | |
| 11,515.7 | 6,673.1 | 6,674.1 | 6,674.1 | 130.2 | 133.6 | -77.32 | 306.5 | -2,236.4 | 5,629.7 | 5,371.8 | 257.85 | 21.833 | |
| 11,600.0 | 6,672.5 | 6,673.5 | 6,673.5 | 132.5 | 133.6 | -77.13 | 306.5 | -2,236.4 | 5,713.9 | 5,454.0 | 259.91 | 21.984 | |
| 11,614.1 | 6,672.4 | 6,673.4 | 6,673.4 | 132.9 | 133.6 | -77.10 | 306.5 | -2,236.4 | 5,728.1 | 5,467.8 | 260.26 | 22.009 | |
| 11,700.0 | 6,671.9 | 6,672.9 | 6,672.9 | 135.3 | 133.6 | -76.92 | 306.5 | -2,236.4 | 5,813.9 | 5,551.5 | 262.35 | 22.161 | |
| 11,712.6 | 6,671.8 | 6,672.8 | 6,672.8 | 135.6 | 133.6 | -76.89 | 306.5 | -2,236.4 | 5,826.5 | 5,563.8 | 262.66 | 22.183 | |
| 11,800.0 | 6,671.2 | 6,672.2 | 6,672.2 | 138.0 | 133.6 | -76.70 | 306.5 | -2,236.4 | 5,913.9 | 5,649.1 | 264.79 | 22.334 | |
| 11,811.0 | 6,671.1 | 6,672.1 | 6,672.1 | 138.3 | 133.6 | -76.68 | 306.5 | -2,236.4 | 5,924.8 | 5,659.8 | 265.05 | 22.353 | |
| 11,900.0 | 6,670.6 | 6,671.6 | 6,671.6 | 140.7 | 133.6 | -76.48 | 306.5 | -2,236.4 | 6,013.8 | 5,746.6 | 267.22 | 22.505 | |
| 11,909.4 | 6,670.5 | 6,671.5 | 6,671.5 | 141.0 | 133.6 | -76.46 | 306.5 | -2,236.4 | 6,023.2 | 5,755.8 | 267.45 | 22.521 | |
| 11,987.2 | 6,670.0 | 6,671.0 | 6,671.0 | 143.1 | 133.6 | -76.29 | 306.5 | -2,236.4 | 6,101.0 | 5,831.7 | 269.33 | 22.652 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -14.73 | 870.7 | -228.9 | 900.4 | | | | |
| 98.4 | 98.4 | 85.8 | 85.8 | 0.1 | 0.1 | -14.74 | 870.6 | -229.0 | 900.2 | 900.0 | 0.17 | 5,293.082 | |
| 100.0 | 100.0 | 87.4 | 87.4 | 0.1 | 0.1 | -14.74 | 870.6 | -229.0 | 900.2 | 900.0 | 0.17 | 5,196.253 | |
| 196.8 | 196.8 | 184.0 | 184.0 | 0.3 | 0.2 | -14.74 | 870.3 | -229.0 | 899.9 | 899.4 | 0.52 | 1,738.876 | |
| 200.0 | 200.0 | 187.1 | 187.1 | 0.3 | 0.2 | -14.74 | 870.3 | -229.0 | 899.9 | 899.4 | 0.53 | 1,701.417 | |
| 295.3 | 295.3 | 282.7 | 282.7 | 0.5 | 0.3 | -14.74 | 870.1 | -229.0 | 899.7 | 898.9 | 0.83 | 1,085.227 | |
| 300.0 | 300.0 | 287.5 | 287.4 | 0.5 | 0.3 | -14.74 | 870.0 | -229.0 | 899.7 | 898.8 | 0.84 | 1,066.488 | |
| 393.7 | 393.7 | 381.2 | 381.2 | 0.8 | 0.4 | -14.74 | 869.8 | -228.9 | 899.4 | 898.3 | 1.12 | 806.546 | |
| 400.0 | 400.0 | 387.4 | 387.4 | 0.8 | 0.4 | -14.74 | 869.8 | -228.8 | 899.4 | 898.3 | 1.13 | 793.695 | |
| 492.1 | 492.1 | 478.9 | 478.9 | 1.0 | 0.4 | -14.73 | 869.6 | -228.7 | 899.2 | 897.8 | 1.39 | 646.277 | |
| 500.0 | 500.0 | 486.7 | 486.7 | 1.0 | 0.4 | -14.73 | 869.6 | -228.7 | 899.2 | 897.7 | 1.41 | 636.220 | |
| 590.5 | 590.5 | 577.0 | 577.0 | 1.2 | 0.5 | -14.73 | 869.4 | -228.6 | 899.0 | 897.3 | 1.65 | 544.116 | |
| 600.0 | 600.0 | 586.5 | 586.5 | 1.2 | 0.5 | -14.73 | 869.4 | -228.6 | 899.0 | 897.3 | 1.68 | 536.096 | |
| 657.6 | 657.6 | 642.6 | 642.6 | 1.4 | 0.5 | -14.74 | 869.3 | -228.7 | 898.9 | 897.1 | 1.82 | 494.153 | |
| 689.0 | 689.0 | 672.9 | 672.9 | 1.4 | 0.5 | -14.74 | 869.4 | -228.8 | 898.9 | 897.1 | 1.89 | 474.380 | |
| 700.0 | 700.0 | 683.6 | 683.6 | 1.4 | 0.5 | -14.74 | 869.4 | -228.8 | 899.0 | 897.0 | 1.92 | 467.805 | |
| 787.4 | 787.4 | 770.8 | 770.8 | 1.6 | 0.5 | -14.75 | 869.5 | -229.0 | 899.1 | 897.0 | 2.15 | 417.715 | |
| 800.0 | 800.0 | 783.5 | 783.5 | 1.7 | 0.5 | -14.75 | 869.5 | -229.0 | 899.2 | 897.0 | 2.19 | 411.274 | |
| 885.8 | 885.8 | 870.1 | 870.1 | 1.9 | 0.6 | -14.77 | 869.6 | -229.2 | 899.3 | 896.8 | 2.42 | 372.133 | |
| 900.0 | 900.0 | 884.4 | 884.4 | 1.9 | 0.6 | -14.77 | 869.6 | -229.2 | 899.3 | 896.8 | 2.45 | 366.364 | |
| 984.2 | 984.2 | 968.8 | 968.8 | 2.1 | 0.6 | -14.78 | 869.6 | -229.4 | 899.3 | 896.6 | 2.68 | 335.554 | |
| 1,000.0 | 1,000.0 | 984.5 | 984.5 | 2.1 | 0.6 | -14.78 | 869.6 | -229.4 | 899.3 | 896.6 | 2.72 | 330.362 | |
| 1,082.7 | 1,082.7 | 1,066.6 | 1,066.6 | 2.3 | 0.6 | 69.73 | 869.6 | -229.6 | 899.0 | 896.1 | 2.93 | 307.195 | |
| 1,100.0 | 1,100.0 | 1,083.8 | 1,083.8 | 2.3 | 0.6 | 69.76 | 869.6 | -229.6 | 898.8 | 895.8 | 2.97 | 302.745 | |
| 1,181.1 | 1,181.0 | 1,163.8 | 1,163.8 | 2.5 | 0.7 | 70.01 | 869.7 | -229.8 | 897.6 | 894.4 | 3.16 | 283.851 | |
| 1,200.0 | 1,199.8 | 1,182.4 | 1,182.4 | 2.5 | 0.7 | 70.09 | 869.8 | -229.8 | 897.2 | 894.0 | 3.21 | 279.754 | |
| 1,279.5 | 1,279.1 | 1,260.6 | 1,260.6 | 2.7 | 0.7 | 70.51 | 870.0 | -230.0 | 895.2 | 891.8 | 3.41 | 262.745 | |
| 1,300.0 | 1,299.5 | 1,280.8 | 1,280.7 | 2.8 | 0.7 | 70.64 | 870.0 | -230.1 | 894.6 | 891.2 | 3.46 | 258.658 | |
| 1,377.9 | 1,376.9 | 1,357.1 | 1,357.1 | 3.0 | 0.7 | 71.23 | 870.3 | -230.3 | 892.0 | 888.3 | 3.67 | 242.989 | |
| 1,400.0 | 1,398.7 | 1,378.7 | 1,378.7 | 3.0 | 0.7 | 71.42 | 870.5 | -230.4 | 891.1 | 887.4 | 3.73 | 238.860 | |
| 1,476.4 | 1,474.2 | 1,452.8 | 1,452.8 | 3.2 | 0.8 | 72.16 | 870.9 | -230.7 | 887.9 | 884.0 | 3.96 | 224.206 | |
| 1,500.0 | 1,497.5 | 1,475.6 | 1,475.6 | 3.3 | 0.8 | 72.42 | 871.0 | -230.7 | 886.9 | 882.9 | 4.03 | 220.002 | |
| 1,574.8 | 1,571.0 | 1,548.3 | 1,548.3 | 3.5 | 0.8 | 73.33 | 871.6 | -230.8 | 883.3 | 879.1 | 4.29 | 206.097 | |
| 1,600.0 | 1,595.6 | 1,572.9 | 1,572.8 | 3.6 | 0.8 | 73.67 | 871.9 | -230.9 | 882.1 | 877.7 | 4.37 | 201.760 | |
| 1,673.2 | 1,667.0 | 1,644.3 | 1,644.3 | 3.9 | 0.8 | 74.74 | 872.5 | -230.8 | 878.3 | 873.6 | 4.66 | 188.556 | |
| 1,700.0 | 1,693.1 | 1,670.4 | 1,670.3 | 4.0 | 0.8 | 75.16 | 872.8 | -230.8 | 876.8 | 872.0 | 4.76 | 184.087 | |
| 1,771.6 | 1,762.4 | 1,739.5 | 1,739.5 | 4.3 | 0.8 | 76.36 | 873.4 | -230.7 | 872.8 | 867.7 | 5.09 | 171.602 | |
| 1,800.0 | 1,789.6 | 1,766.7 | 1,766.6 | 4.4 | 0.9 | 76.87 | 873.6 | -230.7 | 871.3 | 866.0 | 5.21 | 167.081 | |
| 1,870.1 | 1,856.8 | 1,835.0 | 1,835.0 | 4.7 | 0.9 | 78.22 | 874.3 | -230.7 | 867.4 | 861.8 | 5.58 | 155.488 | |
| 1,900.0 | 1,885.3 | 1,864.7 | 1,864.7 | 4.9 | 0.9 | 78.84 | 874.5 | -230.7 | 865.7 | 860.0 | 5.73 | 150.968 | |
| 1,968.5 | 1,950.2 | 1,931.9 | 1,931.8 | 5.3 | 0.9 | 80.31 | 874.8 | -230.8 | 861.9 | 855.7 | 6.14 | 140.361 | |
| 2,000.0 | 1,979.8 | 1,962.3 | 1,962.2 | 5.5 | 0.9 | 81.01 | 874.9 | -230.9 | 860.2 | 853.8 | 6.33 | 135.949 | |
| 2,044.9 | 2,021.9 | 2,005.3 | 2,005.3 | 5.7 | 0.9 | 82.04 | 875.0 | -231.1 | 857.8 | 851.2 | 6.62 | 129.612 | |
| 2,066.9 | 2,042.5 | 2,025.9 | 2,025.9 | 5.9 | 0.9 | 82.52 | 875.0 | -231.2 | 856.7 | 850.0 | 6.77 | 126.616 | |
| 2,100.0 | 2,073.4 | 2,056.9 | 2,056.8 | 6.1 | 0.9 | 83.25 | 875.1 | -231.4 | 855.2 | 848.2 | 6.99 | 122.363 | |
| 2,165.3 | 2,134.4 | 2,117.8 | 2,117.8 | 6.5 | 1.0 | 84.68 | 875.2 | -231.7 | 852.7 | 845.3 | 7.44 | 114.574 | |
| 2,200.0 | 2,166.8 | 2,149.8 | 2,149.7 | 6.8 | 1.0 | 85.43 | 875.2 | -231.9 | 851.7 | 844.0 | 7.68 | 110.856 | |
| 2,263.8 | 2,226.4 | 2,208.7 | 2,208.7 | 7.2 | 1.0 | 86.82 | 875.4 | -232.3 | 850.2 | 842.1 | 8.14 | 104.493 | |
| 2,300.0 | 2,260.2 | 2,242.6 | 2,242.6 | 7.4 | 1.0 | 87.62 | 875.5 | -232.5 | 849.7 | 841.3 | 8.39 | 101.222 | |
| 2,362.2 | 2,318.3 | 2,301.0 | 2,300.9 | 7.9 | 1.0 | 88.98 | 875.7 | -233.1 | 849.2 | 840.3 | 8.84 | 96.015 | |
| 2,389.0 | 2,343.3 | 2,326.1 | 2,326.0 | 8.1 | 1.0 | 89.57 | 875.8 | -233.3 | 849.1 | 840.1 | 9.04 | 93.961 | |
| 2,400.0 | 2,353.6 | 2,336.4 | 2,336.4 | 8.1 | 1.0 | 89.81 | 875.9 | -233.5 | 849.1 | 840.0 | 9.12 | 93.143 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,460.6 | 2,410.3 | 2,393.4 | 2,393.3 | 8.6 | 1.0 | 91.14 | 876.1 | -234.1 | 849.5 | 839.9 | 9.56 | 88.878 | |
| 2,500.0 | 2,447.0 | 2,430.2 | 2,430.1 | 8.9 | 1.1 | 92.00 | 876.2 | -234.5 | 850.0 | 840.1 | 9.84 | 86.356 | |
| 2,559.0 | 2,502.2 | 2,485.3 | 2,485.2 | 9.3 | 1.1 | 93.29 | 876.4 | -235.0 | 851.2 | 840.9 | 10.27 | 82.858 | |
| 2,600.0 | 2,540.5 | 2,523.1 | 2,523.1 | 9.6 | 1.1 | 94.17 | 876.6 | -235.4 | 852.3 | 841.7 | 10.57 | 80.644 | |
| 2,657.5 | 2,594.2 | 2,576.0 | 2,575.9 | 10.0 | 1.1 | 95.40 | 876.8 | -235.9 | 854.3 | 843.3 | 10.98 | 77.774 | |
| 2,700.0 | 2,633.9 | 2,615.0 | 2,614.9 | 10.3 | 1.1 | 96.30 | 877.1 | -236.2 | 856.2 | 844.9 | 11.29 | 75.833 | |
| 2,755.9 | 2,686.1 | 2,666.2 | 2,666.2 | 10.7 | 1.1 | 97.48 | 877.5 | -236.7 | 859.0 | 847.4 | 11.69 | 73.477 | |
| 2,800.0 | 2,727.3 | 2,706.4 | 2,706.3 | 11.0 | 1.1 | 98.40 | 877.8 | -237.1 | 861.7 | 849.7 | 12.00 | 71.776 | |
| 2,854.3 | 2,778.1 | 2,754.5 | 2,754.4 | 11.4 | 1.2 | 99.49 | 878.4 | -237.5 | 865.4 | 853.0 | 12.39 | 69.843 | |
| 2,900.0 | 2,820.7 | 2,794.9 | 2,794.8 | 11.8 | 1.2 | 100.40 | 879.0 | -238.0 | 868.9 | 856.2 | 12.71 | 68.359 | |
| 2,952.7 | 2,870.0 | 2,841.0 | 2,841.0 | 12.2 | 1.2 | 101.42 | 879.8 | -238.4 | 873.5 | 860.4 | 13.08 | 66.781 | |
| 3,000.0 | 2,914.2 | 2,882.2 | 2,882.2 | 12.5 | 1.2 | 102.33 | 880.7 | -238.7 | 878.1 | 864.7 | 13.41 | 65.493 | |
| 3,051.2 | 2,962.0 | 2,927.3 | 2,927.1 | 12.9 | 1.2 | 103.32 | 881.8 | -239.0 | 883.6 | 869.8 | 13.76 | 64.213 | |
| 3,100.0 | 3,007.6 | 2,970.4 | 2,970.3 | 13.3 | 1.2 | 104.25 | 883.0 | -239.3 | 889.2 | 875.1 | 14.09 | 63.102 | |
| 3,149.6 | 3,053.9 | 3,014.9 | 3,014.7 | 13.6 | 1.2 | 105.21 | 884.3 | -239.4 | 895.4 | 881.0 | 14.43 | 62.071 | |
| 3,200.0 | 3,101.0 | 3,061.5 | 3,061.3 | 14.0 | 1.3 | 106.20 | 885.7 | -239.5 | 902.0 | 887.3 | 14.76 | 61.120 | |
| 3,248.0 | 3,145.9 | 3,106.7 | 3,106.5 | 14.4 | 1.3 | 107.14 | 887.1 | -239.6 | 908.7 | 893.6 | 15.07 | 60.291 | |
| 3,300.0 | 3,194.4 | 3,161.2 | 3,161.0 | 14.8 | 1.3 | 108.27 | 888.6 | -239.8 | 915.9 | 900.5 | 15.40 | 59.488 | |
| 3,346.4 | 3,237.8 | 3,208.9 | 3,208.6 | 15.1 | 1.3 | 109.25 | 889.6 | -240.0 | 922.4 | 906.8 | 15.68 | 58.814 | |
| 3,400.0 | 3,287.8 | 3,259.0 | 3,258.8 | 15.5 | 1.3 | 110.27 | 890.6 | -240.2 | 930.2 | 914.1 | 16.01 | 58.085 | |
| 3,444.9 | 3,329.8 | 3,301.1 | 3,300.9 | 15.9 | 1.3 | 111.11 | 891.4 | -240.3 | 936.9 | 920.6 | 16.29 | 57.525 | |
| 3,500.0 | 3,381.3 | 3,355.3 | 3,355.0 | 16.3 | 1.3 | 112.17 | 892.3 | -240.6 | 945.3 | 928.7 | 16.61 | 56.904 | |
| 3,543.3 | 3,421.7 | 3,397.9 | 3,397.6 | 16.6 | 1.3 | 112.99 | 893.1 | -241.0 | 952.1 | 935.2 | 16.87 | 56.453 | |
| 3,600.0 | 3,474.7 | 3,455.3 | 3,455.0 | 17.0 | 1.4 | 114.08 | 893.9 | -241.6 | 961.1 | 943.9 | 17.19 | 55.921 | |
| 3,641.7 | 3,513.7 | 3,497.6 | 3,497.4 | 17.3 | 1.4 | 114.86 | 894.4 | -242.1 | 967.7 | 950.3 | 17.42 | 55.559 | |
| 3,700.0 | 3,568.1 | 3,555.2 | 3,554.9 | 17.8 | 1.4 | 115.92 | 894.9 | -242.9 | 977.1 | 959.4 | 17.74 | 55.092 | |
| 3,740.1 | 3,605.6 | 3,594.7 | 3,594.4 | 18.1 | 1.4 | 116.64 | 895.0 | -243.3 | 983.7 | 965.7 | 17.95 | 54.799 | |
| 3,800.0 | 3,661.5 | 3,650.8 | 3,650.5 | 18.5 | 1.4 | 117.68 | 894.9 | -243.6 | 993.7 | 975.5 | 18.26 | 54.416 | |
| 3,838.6 | 3,697.6 | 3,686.5 | 3,686.3 | 18.8 | 1.4 | 118.35 | 894.7 | -243.5 | 1,000.4 | 981.9 | 18.46 | 54.199 | |
| 3,900.0 | 3,754.9 | 3,746.3 | 3,746.0 | 19.3 | 1.4 | 119.47 | 894.0 | -243.1 | 1,011.2 | 992.5 | 18.76 | 53.897 | |
| 3,937.0 | 3,789.5 | 3,782.9 | 3,782.6 | 19.6 | 1.4 | 120.14 | 893.6 | -242.8 | 1,017.9 | 998.9 | 18.94 | 53.738 | |
| 4,000.0 | 3,848.4 | 3,840.9 | 3,840.6 | 20.1 | 1.4 | 121.20 | 892.7 | -242.5 | 1,029.4 | 1,010.1 | 19.25 | 53.477 | |
| 4,035.4 | 3,881.5 | 3,872.6 | 3,872.3 | 20.3 | 1.4 | 121.77 | 892.3 | -242.3 | 1,036.1 | 1,016.7 | 19.42 | 53.347 | |
| 4,100.0 | 3,941.8 | 3,930.7 | 3,930.4 | 20.8 | 1.4 | 122.79 | 891.6 | -241.9 | 1,048.7 | 1,029.0 | 19.73 | 53.150 | |
| 4,133.8 | 3,973.4 | 3,961.4 | 3,961.1 | 21.1 | 1.4 | 123.32 | 891.3 | -241.7 | 1,055.5 | 1,035.6 | 19.89 | 53.065 | |
| 4,200.0 | 4,035.2 | 4,021.2 | 4,020.9 | 21.6 | 1.4 | 124.33 | 890.8 | -241.3 | 1,069.1 | 1,048.9 | 20.20 | 52.935 | |
| 4,232.3 | 4,065.4 | 4,050.3 | 4,050.0 | 21.8 | 1.4 | 124.81 | 890.6 | -241.0 | 1,076.0 | 1,055.6 | 20.34 | 52.887 | |
| 4,300.0 | 4,128.6 | 4,111.5 | 4,111.1 | 22.3 | 1.4 | 125.81 | 890.2 | -240.5 | 1,090.7 | 1,070.0 | 20.65 | 52.821 | |
| 4,330.7 | 4,157.3 | 4,139.4 | 4,139.1 | 22.6 | 1.4 | 126.26 | 890.1 | -240.2 | 1,097.5 | 1,076.7 | 20.78 | 52.806 | |
| 4,400.0 | 4,222.0 | 4,202.6 | 4,202.3 | 23.1 | 1.4 | 127.25 | 889.8 | -239.6 | 1,113.2 | 1,092.1 | 21.08 | 52.799 | |
| 4,429.1 | 4,249.3 | 4,231.2 | 4,230.9 | 23.3 | 1.4 | 127.69 | 889.7 | -239.4 | 1,119.9 | 1,098.7 | 21.20 | 52.819 | |
| 4,500.0 | 4,315.5 | 4,300.0 | 4,299.7 | 23.9 | 1.4 | 128.73 | 889.3 | -238.9 | 1,136.3 | 1,114.8 | 21.49 | 52.880 | |
| 4,527.5 | 4,341.2 | 4,325.7 | 4,325.4 | 24.1 | 1.4 | 129.11 | 889.2 | -238.7 | 1,142.7 | 1,121.1 | 21.60 | 52.904 | |
| 4,600.0 | 4,408.9 | 4,391.0 | 4,390.7 | 24.6 | 1.4 | 130.05 | 889.0 | -238.4 | 1,159.9 | 1,138.0 | 21.90 | 52.977 | |
| 4,626.0 | 4,433.2 | 4,415.1 | 4,414.8 | 24.8 | 1.4 | 130.39 | 888.9 | -238.2 | 1,166.2 | 1,144.2 | 22.00 | 53.013 | |
| 4,700.0 | 4,502.3 | 4,485.1 | 4,484.8 | 25.4 | 1.4 | 131.35 | 888.8 | -237.9 | 1,184.4 | 1,162.1 | 22.29 | 53.140 | |
| 4,724.4 | 4,525.1 | 4,507.6 | 4,507.3 | 25.6 | 1.4 | 131.66 | 888.7 | -237.8 | 1,190.4 | 1,168.0 | 22.38 | 53.184 | |
| 4,800.0 | 4,595.7 | 4,574.2 | 4,573.9 | 26.2 | 1.4 | 132.54 | 888.7 | -237.4 | 1,209.5 | 1,186.8 | 22.68 | 53.324 | |
| 4,822.8 | 4,617.1 | 4,594.3 | 4,594.0 | 26.3 | 1.4 | 132.80 | 888.8 | -237.3 | 1,215.3 | 1,192.5 | 22.77 | 53.373 | |
| 4,900.0 | 4,689.2 | 4,662.1 | 4,661.8 | 26.9 | 1.4 | 133.66 | 889.1 | -236.8 | 1,235.5 | 1,212.4 | 23.07 | 53.548 | |
| 4,921.2 | 4,709.0 | 4,680.8 | 4,680.4 | 27.1 | 1.4 | 133.89 | 889.2 | -236.6 | 1,241.1 | 1,218.0 | 23.16 | 53.601 | |
| 5,000.0 | 4,782.6 | 4,753.7 | 4,753.3 | 27.7 | 1.5 | 134.77 | 889.7 | -236.0 | 1,262.3 | 1,238.9 | 23.45 | 53.833 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,019.7 | 4,801.0 | 4,772.2 | 4,771.9 | 27.8 | 1.5 | 134.99 | 889.8 | -235.8 | 1,267.7 | 1,244.2 | 23.52 | 53.896 | |
| 5,100.0 | 4,876.0 | 4,845.6 | 4,845.2 | 28.4 | 1.5 | 135.85 | 890.4 | -235.2 | 1,289.7 | 1,265.9 | 23.82 | 54.149 | |
| 5,118.1 | 4,892.9 | 4,861.8 | 4,861.4 | 28.6 | 1.5 | 136.03 | 890.5 | -235.0 | 1,294.7 | 1,270.8 | 23.88 | 54.207 | |
| 5,159.9 | 4,932.0 | 4,900.0 | 4,899.7 | 28.9 | 1.5 | 136.46 | 890.8 | -234.6 | 1,306.4 | 1,282.3 | 24.04 | 54.350 | |
| 5,200.0 | 4,969.5 | 4,939.2 | 4,938.9 | 29.2 | 1.5 | 137.05 | 891.1 | -234.2 | 1,317.4 | 1,293.3 | 24.09 | 54.677 | |
| 5,216.5 | 4,985.1 | 4,955.9 | 4,955.5 | 29.3 | 1.5 | 137.28 | 891.3 | -234.1 | 1,321.8 | 1,297.7 | 24.11 | 54.835 | |
| 5,300.0 | 5,064.0 | 5,037.6 | 5,037.2 | 29.7 | 1.5 | 138.37 | 891.6 | -233.4 | 1,343.2 | 1,319.0 | 24.18 | 55.555 | |
| 5,314.9 | 5,078.2 | 5,051.8 | 5,051.4 | 29.8 | 1.5 | 138.55 | 891.7 | -233.3 | 1,346.8 | 1,322.6 | 24.19 | 55.684 | |
| 5,400.0 | 5,159.6 | 5,131.4 | 5,131.0 | 30.2 | 1.5 | 139.49 | 891.8 | -232.5 | 1,366.7 | 1,342.4 | 24.25 | 56.353 | |
| 5,413.4 | 5,172.4 | 5,143.6 | 5,143.3 | 30.3 | 1.5 | 139.63 | 891.9 | -232.4 | 1,369.6 | 1,345.4 | 24.26 | 56.458 | |
| 5,500.0 | 5,256.1 | 5,223.4 | 5,223.1 | 30.7 | 1.5 | 140.43 | 892.4 | -231.6 | 1,388.0 | 1,363.7 | 24.32 | 57.074 | |
| 5,511.8 | 5,267.6 | 5,234.3 | 5,233.9 | 30.7 | 1.5 | 140.53 | 892.5 | -231.5 | 1,390.4 | 1,366.1 | 24.33 | 57.158 | |
| 5,600.0 | 5,353.5 | 5,318.2 | 5,317.8 | 31.1 | 1.5 | 141.24 | 893.2 | -230.6 | 1,407.2 | 1,382.8 | 24.37 | 57.735 | |
| 5,610.2 | 5,363.5 | 5,329.0 | 5,328.6 | 31.1 | 1.5 | 141.32 | 893.3 | -230.4 | 1,409.0 | 1,384.7 | 24.38 | 57.806 | |
| 5,700.0 | 5,451.6 | 5,426.4 | 5,426.0 | 31.4 | 1.5 | 142.00 | 893.4 | -229.2 | 1,423.6 | 1,399.2 | 24.39 | 58.362 | |
| 5,708.6 | 5,460.2 | 5,436.3 | 5,435.9 | 31.4 | 1.5 | 142.06 | 893.4 | -229.1 | 1,424.8 | 1,400.4 | 24.39 | 58.416 | |
| 5,800.0 | 5,550.4 | 5,534.8 | 5,534.4 | 31.7 | 1.6 | 142.62 | 892.8 | -228.5 | 1,436.4 | 1,412.0 | 24.40 | 58.860 | |
| 5,807.1 | 5,557.4 | 5,541.6 | 5,541.3 | 31.7 | 1.6 | 142.65 | 892.8 | -228.4 | 1,437.2 | 1,412.8 | 24.40 | 58.891 | |
| 5,900.0 | 5,649.6 | 5,632.1 | 5,631.7 | 31.9 | 1.6 | 143.05 | 892.4 | -228.1 | 1,446.4 | 1,422.0 | 24.43 | 59.206 | |
| 5,905.5 | 5,655.1 | 5,637.4 | 5,637.0 | 31.9 | 1.6 | 143.07 | 892.4 | -228.0 | 1,446.9 | 1,422.5 | 24.43 | 59.224 | |
| 6,000.0 | 5,749.2 | 5,731.6 | 5,731.2 | 32.1 | 1.6 | 143.38 | 891.9 | -227.5 | 1,453.8 | 1,429.3 | 24.46 | 59.447 | |
| 6,003.9 | 5,753.1 | 5,735.7 | 5,735.3 | 32.1 | 1.6 | 143.39 | 891.9 | -227.4 | 1,454.0 | 1,429.6 | 24.46 | 59.455 | |
| 6,100.0 | 5,849.1 | 5,832.0 | 5,831.6 | 32.3 | 1.6 | 143.60 | 891.1 | -226.8 | 1,458.2 | 1,433.8 | 24.48 | 59.565 | |
| 6,102.3 | 5,851.4 | 5,834.2 | 5,833.8 | 32.3 | 1.6 | 143.60 | 891.1 | -226.8 | 1,458.3 | 1,433.8 | 24.48 | 59.567 | |
| 6,200.8 | 5,949.8 | 5,928.9 | 5,928.5 | 32.4 | 1.6 | 143.70 | 890.4 | -226.1 | 1,460.1 | 1,435.6 | 24.52 | 59.556 | |
| 6,204.9 | 5,953.9 | 5,933.0 | 5,932.5 | 32.4 | 1.6 | 59.27 | 890.4 | -226.0 | 1,460.1 | 1,430.7 | 29.49 | 49.521 | |
| 6,234.9 | 5,983.9 | 5,962.8 | 5,962.4 | 32.4 | 1.6 | 59.28 | 890.3 | -225.8 | 1,460.3 | 1,430.8 | 29.52 | 49.471 | |
| 6,250.0 | 5,999.0 | 5,977.9 | 5,977.5 | 32.4 | 1.6 | -30.73 | 890.2 | -225.7 | 1,460.2 | 1,435.7 | 24.53 | 59.521 | |
| 6,299.2 | 6,048.2 | 6,028.4 | 6,027.9 | 32.4 | 1.6 | -30.86 | 890.1 | -225.4 | 1,458.1 | 1,433.6 | 24.50 | 59.502 | |
| 6,300.0 | 6,048.9 | 6,029.2 | 6,028.8 | 32.4 | 1.6 | -30.86 | 890.1 | -225.4 | 1,458.0 | 1,433.5 | 24.51 | 59.499 | |
| 6,350.0 | 6,098.5 | 6,081.4 | 6,081.0 | 32.4 | 1.6 | -31.20 | 889.9 | -225.1 | 1,452.8 | 1,428.2 | 24.55 | 59.174 | |
| 6,397.6 | 6,145.3 | 6,128.7 | 6,128.3 | 32.3 | 1.6 | -31.72 | 889.8 | -225.0 | 1,444.9 | 1,420.3 | 24.65 | 58.608 | |
| 6,400.0 | 6,147.6 | 6,131.0 | 6,130.6 | 32.3 | 1.6 | -31.75 | 889.8 | -224.9 | 1,444.5 | 1,419.8 | 24.66 | 58.573 | |
| 6,450.0 | 6,195.8 | 6,178.6 | 6,178.2 | 32.2 | 1.6 | -32.50 | 889.7 | -224.8 | 1,433.3 | 1,408.5 | 24.83 | 57.722 | |
| 6,496.0 | 6,239.3 | 6,220.8 | 6,220.4 | 32.1 | 1.6 | -33.38 | 889.6 | -224.7 | 1,420.6 | 1,395.6 | 25.04 | 56.736 | |
| 6,500.0 | 6,243.0 | 6,224.3 | 6,223.9 | 32.1 | 1.6 | -33.47 | 889.6 | -224.7 | 1,419.4 | 1,394.4 | 25.06 | 56.642 | |
| 6,550.0 | 6,289.0 | 6,268.0 | 6,267.6 | 32.0 | 1.6 | -34.66 | 889.6 | -224.4 | 1,402.9 | 1,377.5 | 25.35 | 55.349 | |
| 6,594.5 | 6,328.6 | 6,306.1 | 6,305.6 | 31.8 | 1.6 | -35.94 | 889.5 | -224.2 | 1,386.0 | 1,360.4 | 25.66 | 54.020 | |
| 6,600.0 | 6,333.4 | 6,310.8 | 6,310.4 | 31.8 | 1.6 | -36.12 | 889.5 | -224.1 | 1,383.8 | 1,358.1 | 25.70 | 53.841 | |
| 6,650.0 | 6,376.2 | 6,353.2 | 6,352.8 | 31.7 | 1.6 | -37.86 | 889.5 | -223.8 | 1,362.3 | 1,336.1 | 26.14 | 52.115 | |
| 6,692.9 | 6,411.3 | 6,388.2 | 6,387.7 | 31.6 | 1.6 | -39.61 | 889.4 | -223.5 | 1,342.0 | 1,315.4 | 26.58 | 50.480 | |
| 6,700.0 | 6,417.0 | 6,393.8 | 6,393.4 | 31.5 | 1.6 | -39.92 | 889.4 | -223.5 | 1,338.5 | 1,311.8 | 26.66 | 50.198 | |
| 6,750.0 | 6,455.7 | 6,433.2 | 6,432.8 | 31.4 | 1.7 | -42.33 | 889.4 | -223.1 | 1,312.6 | 1,285.3 | 27.29 | 48.106 | |
| 6,791.3 | 6,486.0 | 6,464.2 | 6,463.8 | 31.3 | 1.7 | -44.60 | 889.3 | -222.8 | 1,289.7 | 1,261.9 | 27.87 | 46.282 | |
| 6,800.0 | 6,492.2 | 6,470.5 | 6,470.1 | 31.3 | 1.7 | -45.11 | 889.3 | -222.8 | 1,284.8 | 1,256.8 | 28.00 | 45.893 | |
| 6,850.0 | 6,526.1 | 6,505.3 | 6,504.9 | 31.2 | 1.7 | -48.26 | 889.1 | -222.5 | 1,255.3 | 1,226.5 | 28.78 | 43.618 | |
| 6,889.7 | 6,551.2 | 6,531.2 | 6,530.8 | 31.2 | 1.7 | -51.05 | 889.1 | -222.2 | 1,230.7 | 1,201.3 | 29.44 | 41.805 | |
| 6,900.0 | 6,557.4 | 6,537.6 | 6,537.1 | 31.2 | 1.7 | -51.80 | 889.0 | -222.2 | 1,224.3 | 1,194.6 | 29.61 | 41.346 | |
| 6,950.0 | 6,586.0 | 6,566.9 | 6,566.5 | 31.1 | 1.7 | -55.72 | 888.9 | -222.0 | 1,192.0 | 1,161.6 | 30.45 | 39.144 | |
| 6,988.2 | 6,605.8 | 6,587.3 | 6,586.8 | 31.2 | 1.7 | -58.92 | 888.9 | -221.8 | 1,166.8 | 1,135.7 | 31.08 | 37.545 | |
| 7,000.0 | 6,611.5 | 6,593.2 | 6,592.8 | 31.2 | 1.7 | -59.95 | 888.9 | -221.8 | 1,158.9 | 1,127.6 | 31.26 | 37.074 | |
| 7,050.0 | 6,634.1 | 6,615.5 | 6,615.1 | 31.2 | 1.7 | -64.37 | 888.8 | -221.6 | 1,125.2 | 1,093.2 | 31.98 | 35.184 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,086.6 | 6,648.6 | 6,629.7 | 6,629.2 | 31.3 | 1.7 | -67.69 | 888.8 | -221.5 | 1,100.2 | 1,067.8 | 32.44 | 33.916 | |
| 7,100.0 | 6,653.4 | 6,634.4 | 6,634.0 | 31.4 | 1.7 | -68.91 | 888.8 | -221.5 | 1,091.1 | 1,058.5 | 32.59 | 33.484 | |
| 7,150.0 | 6,669.5 | 6,650.3 | 6,649.9 | 31.6 | 1.7 | -73.46 | 888.7 | -221.4 | 1,057.1 | 1,024.0 | 33.07 | 31.963 | |
| 7,185.0 | 6,678.8 | 6,659.5 | 6,659.1 | 31.7 | 1.7 | -76.58 | 888.7 | -221.3 | 1,033.4 | 1,000.1 | 33.35 | 30.985 | |
| 7,200.0 | 6,682.3 | 6,663.0 | 6,662.6 | 31.8 | 1.7 | -77.88 | 888.7 | -221.3 | 1,023.4 | 989.9 | 33.45 | 30.592 | |
| 7,250.0 | 6,691.6 | 6,672.4 | 6,672.0 | 32.1 | 1.7 | -82.03 | 888.7 | -221.2 | 990.4 | 956.6 | 33.77 | 29.326 | |
| 7,283.4 | 6,696.0 | 6,676.9 | 6,676.5 | 32.3 | 1.7 | -84.60 | 888.7 | -221.1 | 968.8 | 934.9 | 33.98 | 28.510 | |
| 7,300.0 | 6,697.5 | 6,678.6 | 6,678.1 | 32.4 | 1.7 | -85.80 | 888.7 | -221.1 | 958.4 | 924.3 | 34.08 | 28.120 | |
| 7,350.0 | 6,699.9 | 6,681.4 | 6,680.9 | 32.8 | 1.7 | -89.11 | 888.7 | -221.1 | 927.8 | 893.3 | 34.43 | 26.946 | |
| 7,364.4 | 6,700.0 | 6,681.5 | 6,681.1 | 32.9 | 1.7 | -89.97 | 888.7 | -221.1 | 919.3 | 884.7 | 34.54 | 26.614 | |
| 7,381.9 | 6,699.9 | 6,681.6 | 6,681.2 | 33.1 | 1.7 | -89.97 | 888.7 | -221.1 | 909.1 | 874.4 | 34.69 | 26.205 | |
| 7,400.0 | 6,699.8 | 6,681.6 | 6,681.2 | 33.2 | 1.7 | -89.98 | 888.7 | -221.1 | 898.8 | 864.0 | 34.85 | 25.791 | |
| 7,480.3 | 6,699.2 | 6,681.8 | 6,681.4 | 34.0 | 1.7 | -89.99 | 888.7 | -221.1 | 856.4 | 820.8 | 35.66 | 24.015 | |
| 7,500.0 | 6,699.1 | 6,681.9 | 6,681.5 | 34.2 | 1.7 | -90.00 | 888.7 | -221.1 | 846.8 | 811.0 | 35.86 | 23.615 | |
| 7,578.7 | 6,698.6 | 6,682.1 | 6,681.7 | 35.2 | 1.7 | -90.01 | 888.7 | -221.1 | 812.3 | 775.5 | 36.81 | 22.067 | |
| 7,600.0 | 6,698.5 | 6,682.1 | 6,681.7 | 35.4 | 1.7 | -90.02 | 888.7 | -221.1 | 804.0 | 766.9 | 37.07 | 21.691 | |
| 7,677.1 | 6,698.0 | 6,682.3 | 6,681.9 | 36.5 | 1.7 | -90.03 | 888.7 | -221.1 | 778.2 | 740.0 | 38.13 | 20.407 | |
| 7,700.0 | 6,697.8 | 6,682.4 | 6,682.0 | 36.8 | 1.7 | -90.04 | 888.7 | -221.1 | 771.8 | 733.4 | 38.45 | 20.075 | |
| 7,775.6 | 6,697.3 | 6,682.6 | 6,682.2 | 38.0 | 1.7 | -90.05 | 888.7 | -221.1 | 755.4 | 715.8 | 39.61 | 19.071 | |
| 7,800.0 | 6,697.2 | 6,682.7 | 6,682.2 | 38.3 | 1.7 | -90.06 | 888.7 | -221.1 | 751.6 | 711.7 | 39.98 | 18.798 | |
| 7,874.0 | 6,696.7 | 6,682.9 | 6,682.4 | 39.6 | 1.7 | -90.07 | 888.7 | -221.1 | 745.1 | 703.8 | 41.23 | 18.073 | |
| 7,900.0 | 6,696.5 | 6,682.9 | 6,682.5 | 40.0 | 1.7 | -90.08 | 888.7 | -221.1 | 744.5 | 702.8 | 41.66 | 17.870 | |
| 7,903.6 | 6,696.5 | 6,682.9 | 6,682.5 | 40.1 | 1.7 | -90.08 | 888.7 | -221.1 | 744.5 | 702.7 | 41.73 | 17.842 | CC, ES |
| 7,972.4 | 6,696.1 | 6,683.1 | 6,682.7 | 41.3 | 1.7 | -90.09 | 888.7 | -221.1 | 747.6 | 704.7 | 42.96 | 17.402 | |
| 8,000.0 | 6,695.9 | 6,683.2 | 6,682.8 | 41.8 | 1.7 | -90.10 | 888.7 | -221.1 | 750.7 | 707.2 | 43.46 | 17.273 | |
| 8,070.8 | 6,695.4 | 6,683.4 | 6,683.0 | 43.1 | 1.7 | -90.11 | 888.7 | -221.1 | 763.0 | 718.2 | 44.81 | 17.028 | |
| 8,100.0 | 6,695.2 | 6,683.5 | 6,683.0 | 43.7 | 1.7 | -90.12 | 888.7 | -221.1 | 769.9 | 724.6 | 45.36 | 16.972 | |
| 8,169.3 | 6,694.8 | 6,683.7 | 6,683.2 | 45.1 | 1.7 | -90.13 | 888.7 | -221.1 | 790.4 | 743.7 | 46.75 | 16.908 | SF |
| 8,200.0 | 6,694.6 | 6,683.7 | 6,683.3 | 45.7 | 1.7 | -90.14 | 888.7 | -221.1 | 801.3 | 753.9 | 47.36 | 16.918 | |
| 8,267.7 | 6,694.1 | 6,683.9 | 6,683.5 | 47.1 | 1.7 | -90.15 | 888.7 | -221.1 | 828.7 | 779.9 | 48.77 | 16.992 | |
| 8,300.0 | 6,693.9 | 6,684.0 | 6,683.6 | 47.8 | 1.7 | -90.16 | 888.7 | -221.1 | 843.4 | 794.0 | 49.44 | 17.058 | |
| 8,366.1 | 6,693.5 | 6,684.2 | 6,683.8 | 49.2 | 1.7 | -90.17 | 888.7 | -221.1 | 876.4 | 825.6 | 50.87 | 17.230 | |
| 8,400.0 | 6,693.3 | 6,684.3 | 6,683.9 | 49.9 | 1.7 | -90.18 | 888.7 | -221.1 | 894.8 | 843.2 | 51.60 | 17.342 | |
| 8,464.5 | 6,692.9 | 6,684.5 | 6,684.0 | 51.4 | 1.7 | -90.19 | 888.7 | -221.1 | 932.1 | 879.1 | 53.03 | 17.579 | |
| 8,500.0 | 6,692.6 | 6,684.6 | 6,684.1 | 52.1 | 1.7 | -90.20 | 888.7 | -221.1 | 953.9 | 900.1 | 53.81 | 17.727 | |
| 8,563.0 | 6,692.2 | 6,684.7 | 6,684.3 | 53.6 | 1.7 | -90.22 | 888.7 | -221.1 | 994.5 | 939.2 | 55.24 | 18.003 | |
| 8,600.0 | 6,692.0 | 6,684.8 | 6,684.4 | 54.4 | 1.7 | -90.22 | 888.7 | -221.1 | 1,019.4 | 963.3 | 56.08 | 18.177 | |
| 8,661.4 | 6,691.6 | 6,685.0 | 6,684.6 | 55.8 | 1.7 | -90.24 | 888.7 | -221.1 | 1,062.3 | 1,004.8 | 57.50 | 18.473 | |
| 8,700.0 | 6,691.3 | 6,685.1 | 6,684.7 | 56.7 | 1.7 | -90.24 | 888.7 | -221.1 | 1,090.1 | 1,031.8 | 58.40 | 18.667 | |
| 8,759.8 | 6,690.9 | 6,685.3 | 6,684.8 | 58.1 | 1.7 | -90.26 | 888.7 | -221.1 | 1,134.6 | 1,074.8 | 59.81 | 18.970 | |
| 8,800.0 | 6,690.7 | 6,685.4 | 6,685.0 | 59.1 | 1.7 | -90.27 | 888.7 | -221.1 | 1,165.2 | 1,104.4 | 60.76 | 19.177 | |
| 8,858.2 | 6,690.3 | 6,685.6 | 6,685.1 | 60.5 | 1.7 | -90.28 | 888.7 | -221.1 | 1,210.6 | 1,148.4 | 62.16 | 19.476 | |
| 8,900.0 | 6,690.0 | 6,685.7 | 6,685.2 | 61.5 | 1.7 | -90.29 | 888.7 | -221.1 | 1,243.8 | 1,180.6 | 63.16 | 19.693 | |
| 8,956.7 | 6,689.7 | 6,685.8 | 6,685.4 | 62.9 | 1.7 | -90.30 | 888.7 | -221.1 | 1,289.6 | 1,225.1 | 64.54 | 19.983 | |
| 9,000.0 | 6,689.4 | 6,686.0 | 6,685.5 | 63.9 | 1.7 | -90.31 | 888.7 | -221.1 | 1,325.2 | 1,259.6 | 65.59 | 20.205 | |
| 9,055.1 | 6,689.0 | 6,686.1 | 6,685.7 | 65.3 | 1.7 | -90.32 | 888.7 | -221.1 | 1,371.2 | 1,304.2 | 66.95 | 20.482 | |
| 9,100.0 | 6,688.7 | 6,686.2 | 6,685.8 | 66.4 | 1.7 | -90.33 | 888.7 | -221.1 | 1,409.1 | 1,341.0 | 68.05 | 20.706 | |
| 9,153.5 | 6,688.4 | 6,686.4 | 6,686.0 | 67.7 | 1.7 | -90.34 | 888.7 | -221.1 | 1,454.8 | 1,385.4 | 69.38 | 20.967 | |
| 9,200.0 | 6,688.1 | 6,686.5 | 6,686.1 | 68.9 | 1.7 | -90.35 | 888.7 | -221.1 | 1,494.9 | 1,424.4 | 70.54 | 21.192 | |
| 9,251.9 | 6,687.8 | 6,686.7 | 6,686.2 | 70.2 | 1.7 | -90.37 | 888.7 | -221.1 | 1,540.2 | 1,468.3 | 71.85 | 21.437 | |
| 9,300.0 | 6,687.4 | 6,686.8 | 6,686.4 | 71.4 | 1.7 | -90.38 | 888.7 | -221.1 | 1,582.4 | 1,509.4 | 73.05 | 21.661 | |
| 9,350.4 | 6,687.1 | 6,687.0 | 6,686.5 | 72.7 | 1.7 | -90.39 | 888.7 | -221.0 | 1,627.0 | 1,552.7 | 74.33 | 21.890 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,400.0 | 6,686.8 | 6,687.1 | 6,686.7 | 73.9 | 1.7 | -90.40 | 888.7 | -221.0 | 1,671.3 | 1,595.7 | 75.59 | 22.111 | |
| 9,448.8 | 6,686.5 | 6,687.2 | 6,686.8 | 75.2 | 1.7 | -90.41 | 888.7 | -221.0 | 1,715.2 | 1,638.3 | 76.83 | 22.323 | |
| 9,500.0 | 6,686.1 | 6,687.4 | 6,687.0 | 76.5 | 1.7 | -90.42 | 888.7 | -221.0 | 1,761.4 | 1,683.3 | 78.14 | 22.542 | |
| 9,547.2 | 6,685.8 | 6,687.5 | 6,687.1 | 77.7 | 1.7 | -90.43 | 888.7 | -221.0 | 1,804.3 | 1,725.0 | 79.35 | 22.738 | |
| 9,600.0 | 6,685.5 | 6,687.7 | 6,687.3 | 79.0 | 1.7 | -90.44 | 888.7 | -221.0 | 1,852.5 | 1,771.8 | 80.71 | 22.953 | |
| 9,645.6 | 6,685.2 | 6,687.8 | 6,687.4 | 80.2 | 1.7 | -90.45 | 888.7 | -221.0 | 1,894.4 | 1,812.5 | 81.89 | 23.133 | |
| 9,700.0 | 6,684.8 | 6,688.0 | 6,687.6 | 81.6 | 1.7 | -90.47 | 888.7 | -221.0 | 1,944.5 | 1,861.2 | 83.30 | 23.344 | |
| 9,744.1 | 6,684.6 | 6,688.1 | 6,687.7 | 82.8 | 1.7 | -90.48 | 888.7 | -221.0 | 1,985.3 | 1,900.9 | 84.44 | 23.511 | |
| 9,800.0 | 6,684.2 | 6,688.3 | 6,687.9 | 84.2 | 1.7 | -90.49 | 888.7 | -221.0 | 2,037.3 | 1,951.4 | 85.90 | 23.717 | |
| 9,842.5 | 6,683.9 | 6,688.4 | 6,688.0 | 85.3 | 1.7 | -90.50 | 888.7 | -221.0 | 2,076.9 | 1,989.9 | 87.01 | 23.870 | |
| 9,900.0 | 6,683.5 | 6,688.6 | 6,688.2 | 86.8 | 1.7 | -90.51 | 888.7 | -221.0 | 2,130.7 | 2,042.1 | 88.51 | 24.072 | |
| 9,940.9 | 6,683.3 | 6,688.7 | 6,688.3 | 87.9 | 1.7 | -90.52 | 888.7 | -221.0 | 2,169.0 | 2,079.5 | 89.59 | 24.212 | |
| 10,000.0 | 6,682.9 | 6,688.9 | 6,688.5 | 89.5 | 1.7 | -90.54 | 888.7 | -221.0 | 2,224.6 | 2,133.5 | 91.14 | 24.410 | |
| 10,039.3 | 6,682.6 | 6,689.0 | 6,688.6 | 90.5 | 1.7 | -90.55 | 888.7 | -221.0 | 2,261.7 | 2,169.6 | 92.17 | 24.538 | |
| 10,100.0 | 6,682.2 | 6,689.2 | 6,688.8 | 92.1 | 1.7 | -90.56 | 888.7 | -221.0 | 2,319.1 | 2,225.3 | 93.77 | 24.731 | |
| 10,137.8 | 6,682.0 | 6,689.3 | 6,688.9 | 93.1 | 1.7 | -90.57 | 888.7 | -221.0 | 2,354.9 | 2,260.1 | 94.77 | 24.848 | |
| 10,200.0 | 6,681.6 | 6,689.5 | 6,689.1 | 94.8 | 1.7 | -90.58 | 888.7 | -221.0 | 2,414.0 | 2,317.6 | 96.42 | 25.037 | |
| 10,236.2 | 6,681.4 | 6,689.6 | 6,689.2 | 95.7 | 1.7 | -90.59 | 888.7 | -221.0 | 2,448.5 | 2,351.1 | 97.38 | 25.143 | |
| 10,300.0 | 6,680.9 | 6,689.8 | 6,689.4 | 97.4 | 1.7 | -90.61 | 888.7 | -221.0 | 2,509.3 | 2,410.3 | 99.07 | 25.328 | |
| 10,334.6 | 6,680.7 | 6,689.9 | 6,689.5 | 98.3 | 1.7 | -90.62 | 888.7 | -221.0 | 2,542.4 | 2,442.4 | 100.00 | 25.425 | |
| 10,400.0 | 6,680.3 | 6,690.1 | 6,689.7 | 100.1 | 1.7 | -90.63 | 888.7 | -221.0 | 2,605.0 | 2,503.3 | 101.74 | 25.605 | |
| 10,433.0 | 6,680.1 | 6,690.2 | 6,689.8 | 101.0 | 1.7 | -90.64 | 888.7 | -221.0 | 2,636.7 | 2,534.1 | 102.62 | 25.693 | |
| 10,500.0 | 6,679.7 | 6,690.4 | 6,690.0 | 102.8 | 1.7 | -90.65 | 888.7 | -221.0 | 2,701.0 | 2,596.6 | 104.41 | 25.869 | |
| 10,531.5 | 6,679.4 | 6,690.5 | 6,690.1 | 103.6 | 1.7 | -90.66 | 888.7 | -221.0 | 2,731.3 | 2,626.0 | 105.25 | 25.949 | |
| 10,600.0 | 6,679.0 | 6,690.8 | 6,690.3 | 105.4 | 1.7 | -90.68 | 888.7 | -221.0 | 2,797.2 | 2,690.2 | 107.09 | 26.121 | |
| 10,629.9 | 6,678.8 | 6,690.8 | 6,690.4 | 106.2 | 1.7 | -90.69 | 888.7 | -221.0 | 2,826.1 | 2,718.2 | 107.89 | 26.194 | |
| 10,700.0 | 6,678.4 | 6,691.1 | 6,690.6 | 108.1 | 1.7 | -90.70 | 888.7 | -221.0 | 2,893.8 | 2,784.0 | 109.77 | 26.361 | |
| 10,728.3 | 6,678.2 | 6,691.2 | 6,690.7 | 108.9 | 1.7 | -90.71 | 888.7 | -221.0 | 2,921.1 | 2,810.6 | 110.54 | 26.427 | |
| 10,800.0 | 6,677.7 | 6,691.4 | 6,691.0 | 110.8 | 1.7 | -90.73 | 888.7 | -221.0 | 2,990.5 | 2,878.0 | 112.47 | 26.590 | |
| 10,826.7 | 6,677.5 | 6,691.5 | 6,691.0 | 111.5 | 1.7 | -90.73 | 888.7 | -221.0 | 3,016.4 | 2,903.2 | 113.19 | 26.650 | |
| 10,900.0 | 6,677.1 | 6,691.7 | 6,691.3 | 113.5 | 1.7 | -90.75 | 888.7 | -221.0 | 3,087.5 | 2,972.3 | 115.16 | 26.809 | |
| 10,925.2 | 6,676.9 | 6,691.8 | 6,691.4 | 114.2 | 1.7 | -90.76 | 888.7 | -221.0 | 3,111.9 | 2,996.0 | 115.84 | 26.863 | |
| 11,000.0 | 6,676.4 | 6,692.0 | 6,691.6 | 116.2 | 1.7 | -90.78 | 888.7 | -221.0 | 3,184.6 | 3,066.7 | 117.87 | 27.019 | |
| 11,023.6 | 6,676.3 | 6,692.1 | 6,691.7 | 116.8 | 1.7 | -90.78 | 888.7 | -221.0 | 3,207.5 | 3,089.0 | 118.50 | 27.067 | |
| 11,100.0 | 6,675.8 | 6,692.4 | 6,691.9 | 118.9 | 1.7 | -90.80 | 888.7 | -221.0 | 3,281.9 | 3,161.3 | 120.57 | 27.219 | |
| 11,122.0 | 6,675.6 | 6,692.4 | 6,692.0 | 119.5 | 1.7 | -90.81 | 888.7 | -221.0 | 3,303.4 | 3,182.2 | 121.17 | 27.262 | |
| 11,200.0 | 6,675.1 | 6,692.7 | 6,692.3 | 121.6 | 1.7 | -90.83 | 888.7 | -221.0 | 3,379.4 | 3,256.1 | 123.28 | 27.411 | |
| 11,220.4 | 6,675.0 | 6,692.8 | 6,692.3 | 122.2 | 1.7 | -90.83 | 888.7 | -221.0 | 3,399.3 | 3,275.5 | 123.84 | 27.449 | |
| 11,300.0 | 6,674.5 | 6,693.0 | 6,692.6 | 124.3 | 1.7 | -90.85 | 888.7 | -221.0 | 3,477.0 | 3,351.0 | 126.00 | 27.595 | |
| 11,318.9 | 6,674.3 | 6,693.1 | 6,692.7 | 124.9 | 1.7 | -90.86 | 888.7 | -221.0 | 3,495.4 | 3,368.9 | 126.51 | 27.629 | |
| 11,400.0 | 6,673.8 | 6,693.4 | 6,692.9 | 127.1 | 1.7 | -90.88 | 888.7 | -221.0 | 3,574.7 | 3,446.0 | 128.72 | 27.771 | |
| 11,417.3 | 6,673.7 | 6,693.4 | 6,693.0 | 127.5 | 1.7 | -90.88 | 888.7 | -221.0 | 3,591.7 | 3,462.5 | 129.19 | 27.801 | |
| 11,500.0 | 6,673.2 | 6,693.7 | 6,693.3 | 129.8 | 1.7 | -90.90 | 888.7 | -221.0 | 3,672.6 | 3,541.2 | 131.44 | 27.940 | |
| 11,515.7 | 6,673.1 | 6,693.7 | 6,693.3 | 130.2 | 1.7 | -90.91 | 888.7 | -221.0 | 3,688.0 | 3,556.1 | 131.87 | 27.966 | |
| 11,600.0 | 6,672.5 | 6,694.0 | 6,693.6 | 132.5 | 1.7 | -90.93 | 888.7 | -221.0 | 3,770.6 | 3,636.4 | 134.17 | 28.103 | |
| 11,614.1 | 6,672.4 | 6,694.1 | 6,693.6 | 132.9 | 1.7 | -90.93 | 888.7 | -221.0 | 3,784.4 | 3,649.9 | 134.56 | 28.125 | |
| 11,700.0 | 6,671.9 | 6,694.4 | 6,693.9 | 135.3 | 1.7 | -90.96 | 888.7 | -221.0 | 3,868.7 | 3,731.8 | 136.90 | 28.258 | |
| 11,712.6 | 6,671.8 | 6,694.4 | 6,694.0 | 135.6 | 1.7 | -90.96 | 888.7 | -221.0 | 3,881.0 | 3,743.8 | 137.25 | 28.278 | |
| 11,800.0 | 6,671.2 | 6,694.7 | 6,694.3 | 138.0 | 1.7 | -90.98 | 888.7 | -221.0 | 3,966.8 | 3,827.2 | 139.64 | 28.408 | |
| 11,811.0 | 6,671.1 | 6,694.7 | 6,694.3 | 138.3 | 1.7 | -90.99 | 888.7 | -221.0 | 3,977.6 | 3,837.7 | 139.94 | 28.424 | |
| 11,900.0 | 6,670.6 | 6,695.1 | 6,694.6 | 140.7 | 1.7 | -91.01 | 888.7 | -221.0 | 4,065.1 | 3,922.7 | 142.37 | 28.552 | |
| 11,909.4 | 6,670.5 | 6,695.1 | 6,694.7 | 141.0 | 1.7 | -91.01 | 888.7 | -221.0 | 4,074.4 | 3,931.7 | 142.63 | 28.566 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT SCHAUMBERG #1 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11,987.2 | 6,670.0 | 6,695.4 | 6,694.9 | 143.1 | 1.7 | -91.03 | 888.7 | -221.0 | 4,150.9 | 4,006.1 | 144.76 | 28.674 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 51.46 | 888.9 | 1,116.0 | 1,426.8 | | | | |
| 98.4 | 98.4 | 86.0 | 86.0 | 0.1 | 0.1 | 51.46 | 888.8 | 1,116.0 | 1,426.7 | 1,426.5 | 0.17 | 8,404.182 | |
| 100.0 | 100.0 | 87.6 | 87.6 | 0.1 | 0.1 | 51.46 | 888.8 | 1,116.0 | 1,426.7 | 1,426.5 | 0.17 | 8,251.258 | |
| 196.8 | 196.8 | 183.3 | 183.3 | 0.3 | 0.2 | 51.47 | 888.6 | 1,116.1 | 1,426.6 | 1,426.1 | 0.52 | 2,758.959 | |
| 200.0 | 200.0 | 186.3 | 186.3 | 0.3 | 0.2 | 51.47 | 888.6 | 1,116.1 | 1,426.6 | 1,426.1 | 0.53 | 2,699.487 | |
| 295.3 | 295.3 | 281.5 | 281.5 | 0.5 | 0.3 | 51.48 | 888.5 | 1,116.2 | 1,426.6 | 1,425.8 | 0.83 | 1,711.205 | |
| 300.0 | 300.0 | 286.2 | 286.2 | 0.5 | 0.3 | 51.48 | 888.5 | 1,116.2 | 1,426.6 | 1,425.7 | 0.85 | 1,681.332 | |
| 393.7 | 393.7 | 384.1 | 384.1 | 0.8 | 0.4 | 51.49 | 888.2 | 1,116.2 | 1,426.5 | 1,425.3 | 1.12 | 1,270.826 | |
| 400.0 | 400.0 | 390.7 | 390.7 | 0.8 | 0.4 | 51.49 | 888.2 | 1,116.2 | 1,426.4 | 1,425.3 | 1.14 | 1,250.539 | |
| 492.1 | 492.1 | 486.2 | 486.2 | 1.0 | 0.4 | 51.50 | 887.7 | 1,116.1 | 1,426.0 | 1,424.6 | 1.40 | 1,015.833 | |
| 500.0 | 500.0 | 494.3 | 494.3 | 1.0 | 0.4 | 51.50 | 887.6 | 1,116.0 | 1,426.0 | 1,424.6 | 1.43 | 999.794 | |
| 590.5 | 590.5 | 587.1 | 587.1 | 1.2 | 0.5 | 51.52 | 887.0 | 1,115.7 | 1,425.4 | 1,423.7 | 1.68 | 849.805 | |
| 600.0 | 600.0 | 596.8 | 596.8 | 1.2 | 0.5 | 51.52 | 886.9 | 1,115.7 | 1,425.3 | 1,423.6 | 1.70 | 836.701 | |
| 689.0 | 689.0 | 688.7 | 688.6 | 1.4 | 0.5 | 51.53 | 886.2 | 1,115.2 | 1,424.6 | 1,422.6 | 1.94 | 732.463 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 0.5 | 51.53 | 886.1 | 1,115.2 | 1,424.4 | 1,422.5 | 1.97 | 721.282 | |
| 787.4 | 787.4 | 789.4 | 789.3 | 1.6 | 0.6 | 51.54 | 885.4 | 1,114.6 | 1,423.5 | 1,421.3 | 2.21 | 644.631 | |
| 800.0 | 800.0 | 802.2 | 802.2 | 1.7 | 0.6 | 51.54 | 885.2 | 1,114.5 | 1,423.4 | 1,421.1 | 2.24 | 634.968 | |
| 885.8 | 885.8 | 888.4 | 888.4 | 1.9 | 0.6 | 51.55 | 884.4 | 1,113.9 | 1,422.4 | 1,419.9 | 2.47 | 576.381 | |
| 900.0 | 900.0 | 902.7 | 902.7 | 1.9 | 0.6 | 51.55 | 884.3 | 1,113.8 | 1,422.2 | 1,419.7 | 2.51 | 567.745 | |
| 984.2 | 984.2 | 988.3 | 988.3 | 2.1 | 0.7 | 51.56 | 883.4 | 1,113.1 | 1,421.2 | 1,418.5 | 2.73 | 521.437 | |
| 1,000.0 | 1,000.0 | 1,004.4 | 1,004.4 | 2.1 | 0.7 | 51.56 | 883.3 | 1,113.0 | 1,421.0 | 1,418.2 | 2.77 | 513.605 | |
| 1,059.8 | 1,059.8 | 1,067.2 | 1,067.1 | 2.2 | 0.7 | 136.04 | 882.5 | 1,112.5 | 1,420.6 | 1,417.7 | 2.94 | 483.344 | |
| 1,082.7 | 1,082.7 | 1,091.2 | 1,091.1 | 2.3 | 0.7 | 136.06 | 882.2 | 1,112.2 | 1,420.7 | 1,417.7 | 3.00 | 473.866 | |
| 1,100.0 | 1,100.0 | 1,109.1 | 1,109.0 | 2.3 | 0.7 | 136.08 | 882.0 | 1,112.1 | 1,420.8 | 1,417.7 | 3.04 | 466.995 | |
| 1,181.1 | 1,181.0 | 1,191.5 | 1,191.5 | 2.5 | 0.8 | 136.19 | 880.7 | 1,111.3 | 1,422.3 | 1,419.1 | 3.24 | 438.379 | |
| 1,200.0 | 1,199.8 | 1,210.9 | 1,210.8 | 2.5 | 0.8 | 136.22 | 880.4 | 1,111.1 | 1,422.9 | 1,419.6 | 3.29 | 432.304 | |
| 1,279.5 | 1,279.1 | 1,292.8 | 1,292.7 | 2.7 | 0.8 | 136.39 | 878.9 | 1,110.3 | 1,426.2 | 1,422.7 | 3.50 | 407.871 | |
| 1,300.0 | 1,299.5 | 1,313.7 | 1,313.6 | 2.8 | 0.8 | 136.44 | 878.5 | 1,110.1 | 1,427.3 | 1,423.8 | 3.55 | 402.133 | |
| 1,377.9 | 1,376.9 | 1,393.0 | 1,392.9 | 3.0 | 0.9 | 136.67 | 876.9 | 1,109.4 | 1,432.4 | 1,428.7 | 3.76 | 381.025 | |
| 1,400.0 | 1,398.7 | 1,415.0 | 1,414.9 | 3.0 | 0.9 | 136.73 | 876.4 | 1,109.2 | 1,434.2 | 1,430.3 | 3.82 | 375.574 | |
| 1,476.4 | 1,474.2 | 1,490.2 | 1,490.1 | 3.2 | 0.9 | 137.00 | 874.6 | 1,108.6 | 1,441.1 | 1,437.1 | 4.04 | 357.074 | |
| 1,500.0 | 1,497.5 | 1,513.5 | 1,513.4 | 3.3 | 0.9 | 137.08 | 874.0 | 1,108.4 | 1,443.6 | 1,439.5 | 4.10 | 351.829 | |
| 1,574.8 | 1,571.0 | 1,587.5 | 1,587.3 | 3.5 | 0.9 | 137.39 | 872.0 | 1,108.0 | 1,452.3 | 1,448.0 | 4.33 | 335.276 | |
| 1,600.0 | 1,595.6 | 1,612.3 | 1,612.1 | 3.6 | 0.9 | 137.50 | 871.3 | 1,107.8 | 1,455.6 | 1,451.2 | 4.41 | 330.170 | |
| 1,673.2 | 1,667.0 | 1,684.4 | 1,684.2 | 3.9 | 1.0 | 137.83 | 869.3 | 1,107.4 | 1,466.1 | 1,461.5 | 4.65 | 315.203 | |
| 1,700.0 | 1,693.1 | 1,711.1 | 1,710.9 | 4.0 | 1.0 | 137.97 | 868.5 | 1,107.3 | 1,470.3 | 1,465.6 | 4.74 | 310.209 | |
| 1,771.6 | 1,762.4 | 1,783.9 | 1,783.6 | 4.3 | 1.0 | 138.34 | 866.5 | 1,106.7 | 1,482.5 | 1,477.5 | 5.00 | 296.549 | |
| 1,800.0 | 1,789.6 | 1,812.6 | 1,812.4 | 4.4 | 1.0 | 138.49 | 865.7 | 1,106.4 | 1,487.6 | 1,482.5 | 5.10 | 291.621 | |
| 1,870.1 | 1,856.8 | 1,883.5 | 1,883.2 | 4.7 | 1.1 | 138.88 | 863.7 | 1,105.6 | 1,501.2 | 1,495.9 | 5.38 | 279.119 | |
| 1,900.0 | 1,885.3 | 1,913.2 | 1,912.9 | 4.9 | 1.1 | 139.04 | 862.9 | 1,105.1 | 1,507.4 | 1,501.9 | 5.50 | 274.280 | |
| 1,968.5 | 1,950.2 | 1,979.8 | 1,979.4 | 5.3 | 1.1 | 139.41 | 861.1 | 1,104.1 | 1,522.5 | 1,516.7 | 5.79 | 262.904 | |
| 2,000.0 | 1,979.8 | 2,010.0 | 2,009.7 | 5.5 | 1.1 | 139.59 | 860.3 | 1,103.6 | 1,529.9 | 1,524.0 | 5.93 | 258.087 | |
| 2,044.9 | 2,021.9 | 2,052.5 | 2,052.1 | 5.7 | 1.1 | 139.83 | 859.1 | 1,102.9 | 1,540.9 | 1,534.8 | 6.14 | 251.165 | |
| 2,066.9 | 2,042.5 | 2,073.2 | 2,072.8 | 5.9 | 1.1 | 140.02 | 858.6 | 1,102.6 | 1,546.4 | 1,540.2 | 6.24 | 248.023 | |
| 2,100.0 | 2,073.4 | 2,104.3 | 2,103.8 | 6.1 | 1.1 | 140.31 | 857.8 | 1,102.0 | 1,554.8 | 1,548.4 | 6.39 | 243.464 | |
| 2,165.3 | 2,134.4 | 2,164.4 | 2,164.0 | 6.5 | 1.2 | 140.85 | 856.4 | 1,100.9 | 1,571.5 | 1,564.8 | 6.69 | 234.924 | |
| 2,200.0 | 2,166.8 | 2,196.3 | 2,195.9 | 6.8 | 1.2 | 141.13 | 855.6 | 1,100.3 | 1,580.4 | 1,573.5 | 6.85 | 230.710 | |
| 2,263.8 | 2,226.4 | 2,255.1 | 2,254.6 | 7.2 | 1.2 | 141.64 | 854.3 | 1,099.3 | 1,596.9 | 1,589.8 | 7.15 | 223.355 | |
| 2,300.0 | 2,260.2 | 2,288.4 | 2,288.0 | 7.4 | 1.2 | 141.92 | 853.6 | 1,098.7 | 1,606.4 | 1,599.1 | 7.32 | 219.474 | |
| 2,362.2 | 2,318.3 | 2,346.0 | 2,345.5 | 7.9 | 1.2 | 142.41 | 852.3 | 1,097.7 | 1,622.8 | 1,615.2 | 7.61 | 213.169 | |
| 2,400.0 | 2,353.6 | 2,381.0 | 2,380.5 | 8.1 | 1.2 | 142.70 | 851.6 | 1,097.1 | 1,632.8 | 1,625.0 | 7.79 | 209.606 | |
| 2,460.6 | 2,410.3 | 2,438.2 | 2,437.7 | 8.6 | 1.3 | 143.16 | 850.4 | 1,096.2 | 1,649.0 | 1,640.9 | 8.08 | 204.207 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,500.0 | 2,447.0 | 2,475.7 | 2,475.2 | 8.9 | 1.3 | 143.46 | 849.6 | 1,095.5 | 1,659.6 | 1,651.3 | 8.26 | 200.938 | |
| 2,559.0 | 2,502.2 | 2,532.2 | 2,531.6 | 9.3 | 1.3 | 143.91 | 848.5 | 1,094.5 | 1,675.4 | 1,666.9 | 8.54 | 196.299 | |
| 2,600.0 | 2,540.5 | 2,571.4 | 2,570.8 | 9.6 | 1.3 | 144.21 | 847.6 | 1,093.8 | 1,686.5 | 1,677.8 | 8.73 | 193.291 | |
| 2,657.5 | 2,594.2 | 2,627.8 | 2,627.2 | 10.0 | 1.3 | 144.64 | 846.4 | 1,092.8 | 1,702.0 | 1,693.0 | 8.99 | 189.299 | |
| 2,700.0 | 2,633.9 | 2,670.6 | 2,669.9 | 10.3 | 1.3 | 144.96 | 845.5 | 1,091.9 | 1,713.5 | 1,704.3 | 9.19 | 186.532 | |
| 2,755.9 | 2,686.1 | 2,725.3 | 2,724.7 | 10.7 | 1.4 | 145.37 | 844.2 | 1,090.7 | 1,728.6 | 1,719.1 | 9.44 | 183.066 | |
| 2,800.0 | 2,727.3 | 2,767.2 | 2,766.5 | 11.0 | 1.4 | 145.67 | 843.2 | 1,089.8 | 1,740.5 | 1,730.9 | 9.64 | 180.488 | |
| 2,854.3 | 2,778.1 | 2,818.8 | 2,818.1 | 11.4 | 1.4 | 146.04 | 842.0 | 1,088.6 | 1,755.2 | 1,745.4 | 9.89 | 177.468 | |
| 2,900.0 | 2,820.7 | 2,862.4 | 2,861.6 | 11.8 | 1.4 | 146.35 | 840.9 | 1,087.7 | 1,767.7 | 1,757.6 | 10.10 | 175.069 | |
| 2,952.7 | 2,870.0 | 2,912.8 | 2,912.1 | 12.2 | 1.4 | 146.71 | 839.6 | 1,086.6 | 1,782.1 | 1,771.7 | 10.33 | 172.438 | |
| 3,000.0 | 2,914.2 | 2,958.6 | 2,957.8 | 12.5 | 1.4 | 147.03 | 838.3 | 1,085.6 | 1,795.0 | 1,784.5 | 10.55 | 170.215 | |
| 3,051.2 | 2,962.0 | 3,008.0 | 3,007.2 | 12.9 | 1.5 | 147.37 | 837.0 | 1,084.4 | 1,809.0 | 1,798.2 | 10.77 | 167.920 | |
| 3,100.0 | 3,007.6 | 3,054.8 | 3,053.9 | 13.3 | 1.5 | 147.68 | 835.7 | 1,083.3 | 1,822.4 | 1,811.4 | 10.99 | 165.842 | |
| 3,149.6 | 3,053.9 | 3,102.2 | 3,101.4 | 13.6 | 1.5 | 148.00 | 834.4 | 1,082.2 | 1,836.1 | 1,824.9 | 11.21 | 163.827 | |
| 3,200.0 | 3,101.0 | 3,149.2 | 3,148.3 | 14.0 | 1.5 | 148.31 | 833.1 | 1,081.1 | 1,850.0 | 1,838.6 | 11.43 | 161.871 | |
| 3,248.0 | 3,145.9 | 3,194.0 | 3,193.0 | 14.4 | 1.5 | 148.60 | 831.9 | 1,080.0 | 1,863.3 | 1,851.7 | 11.64 | 160.092 | |
| 3,300.0 | 3,194.4 | 3,233.3 | 3,232.4 | 14.8 | 1.5 | 148.84 | 831.0 | 1,079.1 | 1,877.9 | 1,866.0 | 11.87 | 158.191 | |
| 3,346.4 | 3,237.8 | 3,267.3 | 3,266.3 | 15.1 | 1.6 | 149.05 | 830.3 | 1,078.5 | 1,891.2 | 1,879.1 | 12.08 | 156.572 | |
| 3,400.0 | 3,287.8 | 3,300.0 | 3,299.0 | 15.5 | 1.6 | 149.25 | 829.9 | 1,077.9 | 1,906.9 | 1,894.6 | 12.32 | 154.790 | |
| 3,444.9 | 3,329.8 | 3,339.2 | 3,338.2 | 15.9 | 1.6 | 149.48 | 829.5 | 1,077.5 | 1,920.3 | 1,907.7 | 12.52 | 153.402 | |
| 3,500.0 | 3,381.3 | 3,379.3 | 3,378.4 | 16.3 | 1.6 | 149.70 | 829.4 | 1,077.1 | 1,937.0 | 1,924.3 | 12.76 | 151.776 | |
| 3,543.3 | 3,421.7 | 3,411.1 | 3,410.1 | 16.6 | 1.6 | 149.87 | 829.5 | 1,077.0 | 1,950.5 | 1,937.5 | 12.95 | 150.576 | |
| 3,600.0 | 3,474.7 | 3,453.4 | 3,452.4 | 17.0 | 1.6 | 150.10 | 829.8 | 1,076.9 | 1,968.3 | 1,955.1 | 13.20 | 149.124 | |
| 3,641.7 | 3,513.7 | 3,484.4 | 3,483.4 | 17.3 | 1.6 | 150.26 | 830.1 | 1,077.0 | 1,981.7 | 1,968.3 | 13.38 | 148.117 | |
| 3,700.0 | 3,568.1 | 3,532.6 | 3,531.6 | 17.8 | 1.6 | 150.50 | 830.8 | 1,077.3 | 2,000.6 | 1,987.0 | 13.63 | 146.831 | |
| 3,740.1 | 3,605.6 | 3,567.8 | 3,566.8 | 18.1 | 1.6 | 150.67 | 831.3 | 1,077.5 | 2,013.8 | 2,000.0 | 13.79 | 146.002 | |
| 3,800.0 | 3,661.5 | 3,620.3 | 3,619.3 | 18.5 | 1.6 | 150.93 | 832.2 | 1,077.9 | 2,033.5 | 2,019.4 | 14.04 | 144.816 | |
| 3,838.6 | 3,697.6 | 3,654.3 | 3,653.2 | 18.8 | 1.6 | 151.09 | 832.8 | 1,078.2 | 2,046.2 | 2,032.0 | 14.20 | 144.098 | |
| 3,900.0 | 3,754.9 | 3,708.3 | 3,707.3 | 19.3 | 1.6 | 151.34 | 833.7 | 1,078.7 | 2,066.6 | 2,052.2 | 14.45 | 143.006 | |
| 3,937.0 | 3,789.5 | 3,741.0 | 3,740.0 | 19.6 | 1.6 | 151.50 | 834.3 | 1,079.1 | 2,079.0 | 2,064.4 | 14.60 | 142.374 | |
| 4,000.0 | 3,848.4 | 3,796.5 | 3,795.5 | 20.1 | 1.6 | 151.75 | 835.4 | 1,079.7 | 2,100.1 | 2,085.3 | 14.86 | 141.337 | |
| 4,035.4 | 3,881.5 | 3,829.9 | 3,828.8 | 20.3 | 1.6 | 151.90 | 836.0 | 1,080.1 | 2,112.0 | 2,097.0 | 15.00 | 140.790 | |
| 4,100.0 | 3,941.8 | 3,891.1 | 3,890.0 | 20.8 | 1.6 | 152.17 | 837.1 | 1,080.9 | 2,133.8 | 2,118.5 | 15.26 | 139.832 | |
| 4,133.8 | 3,973.4 | 3,919.9 | 3,918.8 | 21.1 | 1.6 | 152.30 | 837.5 | 1,081.3 | 2,145.2 | 2,129.8 | 15.40 | 139.332 | |
| 4,200.0 | 4,035.2 | 3,973.5 | 3,972.4 | 21.6 | 1.6 | 152.54 | 838.3 | 1,082.2 | 2,167.7 | 2,152.1 | 15.66 | 138.391 | |
| 4,232.3 | 4,065.4 | 4,000.0 | 3,998.9 | 21.8 | 1.6 | 152.66 | 838.6 | 1,082.7 | 2,178.8 | 2,163.0 | 15.79 | 137.955 | |
| 4,300.0 | 4,128.6 | 4,054.7 | 4,053.6 | 22.3 | 1.6 | 152.91 | 839.1 | 1,084.1 | 2,202.3 | 2,186.2 | 16.07 | 137.074 | |
| 4,330.7 | 4,157.3 | 4,079.6 | 4,078.5 | 22.6 | 1.6 | 153.02 | 839.3 | 1,084.8 | 2,213.0 | 2,196.8 | 16.19 | 136.689 | |
| 4,400.0 | 4,222.0 | 4,138.0 | 4,136.8 | 23.1 | 1.6 | 153.29 | 839.7 | 1,086.5 | 2,237.4 | 2,220.9 | 16.47 | 135.884 | |
| 4,429.1 | 4,249.3 | 4,163.0 | 4,161.8 | 23.3 | 1.6 | 153.40 | 839.8 | 1,087.4 | 2,247.7 | 2,231.1 | 16.58 | 135.563 | |
| 4,500.0 | 4,315.5 | 4,224.4 | 4,223.2 | 23.9 | 1.6 | 153.68 | 840.0 | 1,089.5 | 2,272.9 | 2,256.0 | 16.86 | 134.823 | |
| 4,527.5 | 4,341.2 | 4,248.7 | 4,247.5 | 24.1 | 1.6 | 153.79 | 840.0 | 1,090.3 | 2,282.7 | 2,265.7 | 16.97 | 134.548 | |
| 4,600.0 | 4,408.9 | 4,312.7 | 4,311.4 | 24.6 | 1.6 | 154.07 | 840.3 | 1,092.7 | 2,308.7 | 2,291.4 | 17.25 | 133.853 | |
| 4,626.0 | 4,433.2 | 4,335.9 | 4,334.6 | 24.8 | 1.6 | 154.17 | 840.4 | 1,093.5 | 2,318.0 | 2,300.7 | 17.35 | 133.613 | |
| 4,700.0 | 4,502.3 | 4,400.0 | 4,398.7 | 25.4 | 1.6 | 154.44 | 840.8 | 1,095.9 | 2,344.7 | 2,327.1 | 17.64 | 132.942 | |
| 4,724.4 | 4,525.1 | 4,422.5 | 4,421.1 | 25.6 | 1.6 | 154.53 | 840.9 | 1,096.7 | 2,353.5 | 2,335.8 | 17.73 | 132.730 | |
| 4,800.0 | 4,595.7 | 4,486.0 | 4,484.6 | 26.2 | 1.6 | 154.79 | 841.5 | 1,099.2 | 2,381.0 | 2,363.0 | 18.03 | 132.072 | |
| 4,822.8 | 4,617.1 | 4,500.0 | 4,498.6 | 26.3 | 1.6 | 154.85 | 841.7 | 1,099.7 | 2,389.4 | 2,371.2 | 18.12 | 131.862 | |
| 4,900.0 | 4,689.2 | 4,568.1 | 4,566.7 | 26.9 | 1.6 | 155.11 | 842.6 | 1,102.5 | 2,417.8 | 2,399.3 | 18.42 | 131.236 | |
| 4,921.2 | 4,709.0 | 4,585.5 | 4,584.0 | 27.1 | 1.6 | 155.18 | 842.8 | 1,103.3 | 2,425.6 | 2,407.1 | 18.51 | 131.065 | |
| 5,000.0 | 4,782.6 | 4,654.7 | 4,653.1 | 27.7 | 1.6 | 155.44 | 843.7 | 1,106.4 | 2,454.9 | 2,436.1 | 18.81 | 130.481 | |
| 5,019.7 | 4,801.0 | 4,672.3 | 4,670.7 | 27.8 | 1.6 | 155.51 | 843.7 | 1,107.2 | 2,462.3 | 2,443.4 | 18.89 | 130.345 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 4,876.0 | 4,744.1 | 4,742.4 | 28.4 | 1.6 | 155.81 | 843.4 | 1,110.9 | 2,492.3 | 2,473.1 | 19.20 | 129.839 | |
| 5,118.1 | 4,892.9 | 4,760.2 | 4,758.5 | 28.6 | 1.6 | 155.88 | 843.2 | 1,111.8 | 2,499.0 | 2,479.8 | 19.26 | 129.734 | |
| 5,159.9 | 4,932.0 | 4,797.5 | 4,795.7 | 28.9 | 1.6 | 156.04 | 842.6 | 1,113.8 | 2,514.7 | 2,495.3 | 19.42 | 129.505 | |
| 5,200.0 | 4,969.5 | 4,831.8 | 4,829.9 | 29.2 | 1.6 | 156.32 | 841.9 | 1,115.8 | 2,529.6 | 2,510.1 | 19.50 | 129.724 | |
| 5,216.5 | 4,985.1 | 4,845.9 | 4,844.1 | 29.3 | 1.6 | 156.43 | 841.6 | 1,116.6 | 2,535.6 | 2,516.0 | 19.53 | 129.855 | |
| 5,300.0 | 5,064.0 | 4,919.1 | 4,917.1 | 29.7 | 1.6 | 156.97 | 839.8 | 1,121.0 | 2,564.7 | 2,545.1 | 19.66 | 130.464 | |
| 5,314.9 | 5,078.2 | 4,933.1 | 4,931.0 | 29.8 | 1.6 | 157.06 | 839.5 | 1,121.9 | 2,569.7 | 2,550.1 | 19.68 | 130.589 | |
| 5,400.0 | 5,159.6 | 5,015.9 | 5,013.6 | 30.2 | 1.6 | 157.58 | 837.2 | 1,127.0 | 2,597.0 | 2,577.2 | 19.79 | 131.248 | |
| 5,413.4 | 5,172.4 | 5,031.4 | 5,029.1 | 30.3 | 1.6 | 157.67 | 836.8 | 1,127.9 | 2,601.1 | 2,581.3 | 19.80 | 131.372 | |
| 5,500.0 | 5,256.1 | 5,132.4 | 5,129.9 | 30.7 | 1.7 | 158.19 | 833.6 | 1,133.6 | 2,625.8 | 2,605.9 | 19.88 | 132.087 | |
| 5,511.8 | 5,267.6 | 5,146.2 | 5,143.7 | 30.7 | 1.7 | 158.26 | 833.2 | 1,134.4 | 2,628.9 | 2,609.0 | 19.89 | 132.191 | |
| 5,600.0 | 5,353.5 | 5,244.7 | 5,242.1 | 31.1 | 1.7 | 158.71 | 829.9 | 1,139.2 | 2,650.7 | 2,630.8 | 19.95 | 132.853 | |
| 5,610.2 | 5,363.5 | 5,255.5 | 5,252.8 | 31.1 | 1.7 | 158.75 | 829.5 | 1,139.7 | 2,653.1 | 2,633.1 | 19.96 | 132.931 | |
| 5,700.0 | 5,451.6 | 5,344.7 | 5,341.9 | 31.4 | 1.7 | 159.11 | 826.6 | 1,143.8 | 2,672.2 | 2,652.2 | 20.01 | 133.519 | |
| 5,708.6 | 5,460.2 | 5,352.8 | 5,350.0 | 31.4 | 1.7 | 159.14 | 826.4 | 1,144.2 | 2,674.0 | 2,653.9 | 20.02 | 133.579 | |
| 5,800.0 | 5,550.4 | 5,456.0 | 5,453.0 | 31.7 | 1.7 | 159.47 | 823.5 | 1,148.6 | 2,690.5 | 2,670.5 | 20.06 | 134.153 | |
| 5,807.1 | 5,557.4 | 5,465.7 | 5,462.7 | 31.7 | 1.7 | 159.50 | 823.3 | 1,149.0 | 2,691.7 | 2,671.6 | 20.06 | 134.202 | |
| 5,900.0 | 5,649.6 | 5,576.1 | 5,573.0 | 31.9 | 1.8 | 159.76 | 820.6 | 1,152.7 | 2,704.7 | 2,684.6 | 20.08 | 134.686 | |
| 5,905.5 | 5,655.1 | 5,582.3 | 5,579.2 | 31.9 | 1.8 | 159.78 | 820.4 | 1,152.8 | 2,705.4 | 2,685.3 | 20.08 | 134.715 | |
| 6,000.0 | 5,749.2 | 5,684.3 | 5,681.1 | 32.1 | 1.8 | 159.97 | 818.3 | 1,155.6 | 2,715.2 | 2,695.1 | 20.10 | 135.074 | |
| 6,003.9 | 5,753.1 | 5,688.5 | 5,685.3 | 32.1 | 1.8 | 159.98 | 818.3 | 1,155.7 | 2,715.5 | 2,695.4 | 20.10 | 135.089 | |
| 6,100.0 | 5,849.1 | 5,782.2 | 5,779.1 | 32.3 | 1.8 | 160.10 | 816.9 | 1,158.0 | 2,722.3 | 2,702.2 | 20.12 | 135.318 | |
| 6,102.3 | 5,851.4 | 5,784.5 | 5,781.3 | 32.3 | 1.8 | 160.10 | 816.9 | 1,158.1 | 2,722.4 | 2,702.3 | 20.12 | 135.324 | |
| 6,200.8 | 5,949.8 | 5,889.9 | 5,886.7 | 32.4 | 1.8 | 160.17 | 815.8 | 1,160.5 | 2,726.1 | 2,705.9 | 20.13 | 135.411 | |
| 6,204.9 | 5,953.9 | 5,894.4 | 5,891.1 | 32.4 | 1.8 | 75.74 | 815.8 | 1,160.6 | 2,726.1 | 2,693.3 | 32.85 | 82.990 | |
| 6,234.9 | 5,983.9 | 5,928.1 | 5,924.8 | 32.4 | 1.8 | 75.74 | 815.6 | 1,161.2 | 2,726.6 | 2,693.8 | 32.88 | 82.924 | |
| 6,250.0 | 5,999.0 | 5,945.2 | 5,942.0 | 32.4 | 1.8 | -14.25 | 815.5 | 1,161.5 | 2,726.7 | 2,706.6 | 20.12 | 135.490 | |
| 6,299.2 | 6,048.2 | 6,000.7 | 5,997.4 | 32.4 | 1.9 | -14.30 | 815.4 | 1,162.4 | 2,724.8 | 2,704.8 | 19.98 | 136.352 | |
| 6,300.0 | 6,048.9 | 6,001.4 | 5,998.2 | 32.4 | 1.9 | -14.30 | 815.4 | 1,162.4 | 2,724.8 | 2,704.8 | 19.98 | 136.362 | |
| 6,350.0 | 6,098.5 | 6,050.9 | 6,047.6 | 32.4 | 1.9 | -14.44 | 815.3 | 1,163.1 | 2,719.3 | 2,699.5 | 19.88 | 136.807 | |
| 6,397.6 | 6,145.3 | 6,097.5 | 6,094.3 | 32.3 | 1.9 | -14.65 | 815.3 | 1,163.8 | 2,711.1 | 2,691.3 | 19.80 | 136.897 | |
| 6,400.0 | 6,147.6 | 6,100.0 | 6,096.7 | 32.3 | 1.9 | -14.66 | 815.3 | 1,163.8 | 2,710.6 | 2,690.8 | 19.80 | 136.890 | |
| 6,450.0 | 6,195.8 | 6,148.3 | 6,145.1 | 32.2 | 1.9 | -14.99 | 815.4 | 1,164.5 | 2,698.5 | 2,678.8 | 19.74 | 136.682 | |
| 6,496.0 | 6,239.3 | 6,192.1 | 6,188.9 | 32.1 | 1.9 | -15.38 | 815.4 | 1,165.1 | 2,684.6 | 2,664.9 | 19.70 | 136.266 | |
| 6,500.0 | 6,243.0 | 6,195.9 | 6,192.6 | 32.1 | 1.9 | -15.41 | 815.5 | 1,165.1 | 2,683.3 | 2,663.6 | 19.70 | 136.216 | |
| 6,550.0 | 6,289.0 | 6,240.9 | 6,237.6 | 32.0 | 1.9 | -15.95 | 815.6 | 1,165.7 | 2,664.8 | 2,645.1 | 19.67 | 135.488 | |
| 6,594.5 | 6,328.6 | 6,279.7 | 6,276.4 | 31.8 | 1.9 | -16.54 | 815.7 | 1,166.3 | 2,645.9 | 2,626.2 | 19.66 | 134.574 | |
| 6,600.0 | 6,333.4 | 6,284.4 | 6,281.2 | 31.8 | 1.9 | -16.62 | 815.7 | 1,166.3 | 2,643.3 | 2,623.7 | 19.66 | 134.435 | |
| 6,650.0 | 6,376.2 | 6,326.1 | 6,322.8 | 31.7 | 1.9 | -17.43 | 815.8 | 1,166.9 | 2,618.9 | 2,599.2 | 19.70 | 132.958 | |
| 6,692.9 | 6,411.3 | 6,360.3 | 6,357.0 | 31.6 | 1.9 | -18.26 | 815.9 | 1,167.4 | 2,595.7 | 2,575.9 | 19.78 | 131.257 | |
| 6,700.0 | 6,417.0 | 6,365.8 | 6,362.5 | 31.5 | 1.9 | -18.41 | 815.9 | 1,167.5 | 2,591.7 | 2,571.9 | 19.79 | 130.928 | |
| 6,750.0 | 6,455.7 | 6,400.0 | 6,396.7 | 31.4 | 1.9 | -19.58 | 816.0 | 1,168.1 | 2,561.8 | 2,541.8 | 19.97 | 128.263 | |
| 6,791.3 | 6,486.0 | 6,431.4 | 6,428.1 | 31.3 | 1.9 | -20.75 | 816.1 | 1,168.6 | 2,535.2 | 2,515.0 | 20.23 | 125.336 | |
| 6,800.0 | 6,492.2 | 6,437.1 | 6,433.8 | 31.3 | 1.9 | -21.02 | 816.1 | 1,168.7 | 2,529.4 | 2,509.1 | 20.29 | 124.659 | |
| 6,850.0 | 6,526.1 | 6,468.7 | 6,465.4 | 31.2 | 1.9 | -22.73 | 816.2 | 1,169.3 | 2,494.7 | 2,473.9 | 20.76 | 120.179 | |
| 6,889.7 | 6,551.2 | 6,492.2 | 6,488.9 | 31.2 | 1.9 | -24.34 | 816.3 | 1,169.7 | 2,465.5 | 2,444.2 | 21.27 | 115.913 | |
| 6,900.0 | 6,557.4 | 6,500.0 | 6,496.7 | 31.2 | 1.9 | -24.83 | 816.3 | 1,169.9 | 2,457.8 | 2,436.3 | 21.43 | 114.664 | |
| 6,950.0 | 6,586.0 | 6,520.0 | 6,516.7 | 31.1 | 1.9 | -27.26 | 816.4 | 1,170.3 | 2,418.9 | 2,396.6 | 22.29 | 108.512 | |
| 6,988.2 | 6,605.8 | 6,520.0 | 6,516.7 | 31.2 | 1.9 | -29.24 | 816.4 | 1,170.3 | 2,388.1 | 2,365.1 | 23.01 | 103.778 | |
| 7,000.0 | 6,611.5 | 6,520.0 | 6,516.7 | 31.2 | 1.9 | -29.91 | 816.4 | 1,170.3 | 2,378.4 | 2,355.2 | 23.26 | 102.253 | |
| 7,050.0 | 6,634.1 | 6,520.0 | 6,516.7 | 31.2 | 1.9 | -33.11 | 816.4 | 1,170.3 | 2,336.6 | 2,312.1 | 24.47 | 95.492 | |
| 7,086.6 | 6,648.6 | 6,520.0 | 6,516.7 | 31.3 | 1.9 | -35.89 | 816.4 | 1,170.3 | 2,305.1 | 2,279.6 | 25.51 | 90.351 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 6,520.0 | 6,516.7 | 31.4 | 1.9 | -37.01 | 816.4 | 1,170.3 | 2,293.5 | 2,267.5 | 25.92 | 88.469 | |
| 7,150.0 | 6,669.5 | 6,520.0 | 6,516.7 | 31.6 | 1.9 | -41.82 | 816.4 | 1,170.3 | 2,249.3 | 2,221.6 | 27.61 | 81.459 | |
| 7,185.0 | 6,678.8 | 6,520.0 | 6,516.7 | 31.7 | 1.9 | -45.83 | 816.4 | 1,170.3 | 2,217.7 | 2,188.8 | 28.91 | 76.710 | |
| 7,200.0 | 6,682.3 | 6,520.0 | 6,516.7 | 31.8 | 1.9 | -47.73 | 816.4 | 1,170.3 | 2,204.1 | 2,174.6 | 29.48 | 74.770 | |
| 7,250.0 | 6,691.6 | 6,520.0 | 6,516.7 | 32.1 | 1.9 | -54.97 | 816.4 | 1,170.3 | 2,158.2 | 2,126.8 | 31.40 | 68.736 | |
| 7,283.4 | 6,696.0 | 6,520.0 | 6,516.7 | 32.3 | 1.9 | -60.64 | 816.4 | 1,170.3 | 2,127.1 | 2,094.5 | 32.61 | 65.233 | |
| 7,300.0 | 6,697.5 | 6,520.0 | 6,516.7 | 32.4 | 1.9 | -63.68 | 816.4 | 1,170.3 | 2,111.7 | 2,078.6 | 33.14 | 63.711 | |
| 7,350.0 | 6,699.9 | 6,520.0 | 6,516.7 | 32.8 | 1.9 | -73.77 | 816.4 | 1,170.3 | 2,064.8 | 2,030.4 | 34.42 | 59.980 | |
| 7,364.4 | 6,700.0 | 6,520.0 | 6,516.7 | 32.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,051.3 | 2,016.6 | 34.68 | 59.155 | |
| 7,381.9 | 6,699.9 | 6,520.0 | 6,516.7 | 33.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,034.8 | 2,000.0 | 34.83 | 58.427 | |
| 7,400.0 | 6,699.8 | 6,520.0 | 6,516.7 | 33.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,017.7 | 1,982.8 | 34.98 | 57.681 | |
| 7,480.3 | 6,699.2 | 6,520.0 | 6,516.7 | 34.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,942.5 | 1,906.7 | 35.78 | 54.290 | |
| 7,500.0 | 6,699.1 | 6,520.0 | 6,516.7 | 34.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,924.1 | 1,888.1 | 35.98 | 53.483 | |
| 7,578.7 | 6,698.6 | 6,520.0 | 6,516.7 | 35.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,850.8 | 1,813.9 | 36.91 | 50.147 | |
| 7,600.0 | 6,698.5 | 6,520.0 | 6,516.7 | 35.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,831.1 | 1,793.9 | 37.16 | 49.277 | |
| 7,677.1 | 6,698.0 | 6,520.0 | 6,516.7 | 36.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,759.9 | 1,721.7 | 38.20 | 46.066 | |
| 7,700.0 | 6,697.8 | 6,520.0 | 6,516.7 | 36.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,738.9 | 1,700.4 | 38.51 | 45.150 | |
| 7,775.6 | 6,697.3 | 6,520.0 | 6,516.7 | 38.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,669.8 | 1,630.1 | 39.65 | 42.112 | |
| 7,800.0 | 6,697.2 | 6,520.0 | 6,516.7 | 38.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,647.6 | 1,607.5 | 40.02 | 41.170 | |
| 7,874.0 | 6,696.7 | 6,520.0 | 6,516.7 | 39.6 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,580.7 | 1,539.4 | 41.23 | 38.336 | |
| 7,900.0 | 6,696.5 | 6,520.0 | 6,516.7 | 40.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,557.3 | 1,515.7 | 41.66 | 37.383 | |
| 7,972.4 | 6,696.1 | 6,520.0 | 6,516.7 | 41.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,492.7 | 1,449.8 | 42.93 | 34.771 | |
| 8,000.0 | 6,695.9 | 6,520.0 | 6,516.7 | 41.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,468.4 | 1,424.9 | 43.42 | 33.820 | |
| 8,070.8 | 6,695.4 | 6,520.0 | 6,516.7 | 43.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,406.2 | 1,361.5 | 44.74 | 31.434 | |
| 8,100.0 | 6,695.2 | 6,520.0 | 6,516.7 | 43.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,380.9 | 1,335.6 | 45.28 | 30.498 | |
| 8,169.3 | 6,694.8 | 6,520.0 | 6,516.7 | 45.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,321.3 | 1,274.7 | 46.63 | 28.336 | |
| 8,200.0 | 6,694.6 | 6,520.0 | 6,516.7 | 45.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,295.2 | 1,248.0 | 47.23 | 27.424 | |
| 8,267.7 | 6,694.1 | 6,520.0 | 6,516.7 | 47.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,238.5 | 1,189.9 | 48.61 | 25.480 | |
| 8,300.0 | 6,693.9 | 6,520.0 | 6,516.7 | 47.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,211.8 | 1,162.5 | 49.26 | 24.599 | |
| 8,366.1 | 6,693.5 | 6,520.0 | 6,516.7 | 49.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,158.1 | 1,107.4 | 50.65 | 22.863 | |
| 8,400.0 | 6,693.3 | 6,520.0 | 6,516.7 | 49.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,131.0 | 1,079.7 | 51.36 | 22.020 | |
| 8,464.5 | 6,692.9 | 6,520.0 | 6,516.7 | 51.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,080.6 | 1,027.9 | 52.76 | 20.482 | |
| 8,500.0 | 6,692.6 | 6,520.0 | 6,516.7 | 52.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,053.6 | 1,000.1 | 53.53 | 19.684 | |
| 8,563.0 | 6,692.2 | 6,520.0 | 6,516.7 | 53.6 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,006.8 | 951.9 | 54.92 | 18.333 | |
| 8,600.0 | 6,692.0 | 6,520.0 | 6,516.7 | 54.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 980.2 | 924.5 | 55.74 | 17.585 | |
| 8,661.4 | 6,691.6 | 6,520.0 | 6,516.7 | 55.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 937.6 | 880.5 | 57.13 | 16.412 | |
| 8,700.0 | 6,691.3 | 6,520.0 | 6,516.7 | 56.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 911.9 | 853.9 | 58.00 | 15.722 | |
| 8,759.8 | 6,690.9 | 6,520.0 | 6,516.7 | 58.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 874.0 | 814.6 | 59.38 | 14.718 | |
| 8,800.0 | 6,690.7 | 6,520.0 | 6,516.7 | 59.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 849.9 | 789.6 | 60.31 | 14.093 | |
| 8,858.2 | 6,690.3 | 6,520.0 | 6,516.7 | 60.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 817.3 | 755.7 | 61.67 | 13.253 | |
| 8,900.0 | 6,690.0 | 6,520.0 | 6,516.7 | 61.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 795.7 | 733.1 | 62.65 | 12.701 | |
| 8,956.7 | 6,689.7 | 6,520.0 | 6,516.7 | 62.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 769.1 | 705.1 | 64.00 | 12.018 | |
| 9,000.0 | 6,689.4 | 6,520.0 | 6,516.7 | 63.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 751.0 | 686.0 | 65.02 | 11.550 | |
| 9,055.1 | 6,689.0 | 6,520.0 | 6,516.7 | 65.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 731.0 | 664.7 | 66.35 | 11.018 | |
| 9,100.0 | 6,688.7 | 6,520.0 | 6,516.7 | 66.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 717.5 | 650.1 | 67.43 | 10.641 | |
| 9,153.5 | 6,688.4 | 6,520.0 | 6,516.7 | 67.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 704.7 | 636.0 | 68.73 | 10.254 | |
| 9,200.0 | 6,688.1 | 6,520.0 | 6,516.7 | 68.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 696.8 | 627.0 | 69.86 | 9.975 | |
| 9,251.9 | 6,687.8 | 6,520.0 | 6,516.7 | 70.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 691.6 | 620.5 | 71.13 | 9.723 | |
| 9,296.0 | 6,687.5 | 6,520.0 | 6,516.7 | 71.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 690.2 | 618.0 | 72.21 | 9.558 | CC |
| 9,300.0 | 6,687.4 | 6,520.0 | 6,516.7 | 71.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 690.2 | 617.9 | 72.31 | 9.545 | ES |
| 9,350.4 | 6,687.1 | 6,520.0 | 6,516.7 | 72.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 692.3 | 618.8 | 73.55 | 9.412 | |
| 9,400.0 | 6,686.8 | 6,520.0 | 6,516.7 | 73.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 698.0 | 623.2 | 74.78 | 9.334 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - EXIST VERT STEINMETZ #21-17 - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 usft

**Survey Program:** 100-GYD_CT — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,448.8 | 6,686.5 | 6,520.0 | 6,516.7 | 75.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 706.9 | 630.9 | 76.00 | 9.302 | SF |
| 9,500.0 | 6,686.1 | 6,520.0 | 6,516.7 | 76.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 719.7 | 642.4 | 77.27 | 9.314 | |
| 9,547.2 | 6,685.8 | 6,520.0 | 6,516.7 | 77.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 734.5 | 656.0 | 78.46 | 9.361 | |
| 9,600.0 | 6,685.5 | 6,520.0 | 6,516.7 | 79.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 754.2 | 674.4 | 79.78 | 9.453 | |
| 9,645.6 | 6,685.2 | 6,520.0 | 6,516.7 | 80.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 773.7 | 692.8 | 80.94 | 9.559 | |
| 9,700.0 | 6,684.8 | 6,520.0 | 6,516.7 | 81.6 | 1.9 | -76.87 | 816.4 | 1,170.3 | 799.7 | 717.4 | 82.31 | 9.716 | |
| 9,744.1 | 6,684.6 | 6,520.0 | 6,516.7 | 82.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 822.9 | 739.4 | 83.43 | 9.863 | |
| 9,800.0 | 6,684.2 | 6,520.0 | 6,516.7 | 84.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 854.6 | 769.8 | 84.85 | 10.072 | |
| 9,842.5 | 6,683.9 | 6,520.0 | 6,516.7 | 85.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 880.3 | 794.4 | 85.93 | 10.245 | |
| 9,900.0 | 6,683.5 | 6,520.0 | 6,516.7 | 86.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 917.1 | 829.7 | 87.40 | 10.494 | |
| 9,940.9 | 6,683.3 | 6,520.0 | 6,516.7 | 87.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 944.6 | 856.1 | 88.45 | 10.680 | |
| 10,000.0 | 6,682.9 | 6,520.0 | 6,516.7 | 89.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 985.9 | 895.9 | 89.96 | 10.959 | |
| 10,039.3 | 6,682.6 | 6,520.0 | 6,516.7 | 90.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,014.3 | 923.4 | 90.97 | 11.150 | |
| 10,100.0 | 6,682.2 | 6,520.0 | 6,516.7 | 92.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,059.6 | 967.1 | 92.53 | 11.451 | |
| 10,137.8 | 6,682.0 | 6,520.0 | 6,516.7 | 93.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,088.5 | 995.0 | 93.51 | 11.641 | |
| 10,200.0 | 6,681.6 | 6,520.0 | 6,516.7 | 94.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,137.3 | 1,042.2 | 95.12 | 11.957 | |
| 10,236.2 | 6,681.4 | 6,520.0 | 6,516.7 | 95.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,166.3 | 1,070.3 | 96.05 | 12.142 | |
| 10,300.0 | 6,680.9 | 6,520.0 | 6,516.7 | 97.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,218.3 | 1,120.6 | 97.71 | 12.469 | |
| 10,334.6 | 6,680.7 | 6,520.0 | 6,516.7 | 98.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,247.0 | 1,148.4 | 98.61 | 12.646 | |
| 10,400.0 | 6,680.3 | 6,520.0 | 6,516.7 | 100.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,302.0 | 1,201.7 | 100.31 | 12.980 | |
| 10,433.0 | 6,680.1 | 6,520.0 | 6,516.7 | 101.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,330.1 | 1,228.9 | 101.17 | 13.147 | |
| 10,500.0 | 6,679.7 | 6,520.0 | 6,516.7 | 102.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,387.8 | 1,284.9 | 102.92 | 13.484 | |
| 10,531.5 | 6,679.4 | 6,520.0 | 6,516.7 | 103.6 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,415.2 | 1,311.4 | 103.74 | 13.641 | |
| 10,600.0 | 6,679.0 | 6,520.0 | 6,516.7 | 105.4 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,475.4 | 1,369.8 | 105.53 | 13.980 | |
| 10,629.9 | 6,678.8 | 6,520.0 | 6,516.7 | 106.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,501.9 | 1,395.5 | 106.32 | 14.126 | |
| 10,700.0 | 6,678.4 | 6,520.0 | 6,516.7 | 108.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,564.4 | 1,456.3 | 108.15 | 14.465 | |
| 10,728.3 | 6,678.2 | 6,520.0 | 6,516.7 | 108.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,589.9 | 1,481.0 | 108.90 | 14.600 | |
| 10,800.0 | 6,677.7 | 6,520.0 | 6,516.7 | 110.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,654.8 | 1,544.0 | 110.78 | 14.937 | |
| 10,826.7 | 6,677.5 | 6,520.0 | 6,516.7 | 111.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,679.1 | 1,567.6 | 111.48 | 15.061 | |
| 10,900.0 | 6,677.1 | 6,520.0 | 6,516.7 | 113.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,746.2 | 1,632.7 | 113.41 | 15.396 | |
| 10,925.2 | 6,676.9 | 6,520.0 | 6,516.7 | 114.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,769.3 | 1,655.2 | 114.08 | 15.510 | |
| 11,000.0 | 6,676.4 | 6,520.0 | 6,516.7 | 116.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,838.4 | 1,722.4 | 116.05 | 15.842 | |
| 11,023.6 | 6,676.3 | 6,520.0 | 6,516.7 | 116.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,860.3 | 1,743.7 | 116.68 | 15.944 | |
| 11,100.0 | 6,675.8 | 6,520.0 | 6,516.7 | 118.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,931.5 | 1,812.8 | 118.70 | 16.273 | |
| 11,122.0 | 6,675.6 | 6,520.0 | 6,516.7 | 119.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 1,952.1 | 1,832.8 | 119.28 | 16.366 | |
| 11,200.0 | 6,675.1 | 6,520.0 | 6,516.7 | 121.6 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,025.2 | 1,903.9 | 121.34 | 16.690 | |
| 11,220.4 | 6,675.0 | 6,520.0 | 6,516.7 | 122.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,044.4 | 1,922.6 | 121.89 | 16.773 | |
| 11,300.0 | 6,674.5 | 6,520.0 | 6,516.7 | 124.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,119.5 | 1,995.5 | 123.99 | 17.093 | |
| 11,318.9 | 6,674.3 | 6,520.0 | 6,516.7 | 124.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,137.3 | 2,012.9 | 124.50 | 17.168 | |
| 11,400.0 | 6,673.8 | 6,520.0 | 6,516.7 | 127.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,214.3 | 2,087.6 | 126.65 | 17.483 | |
| 11,417.3 | 6,673.7 | 6,520.0 | 6,516.7 | 127.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,230.7 | 2,103.6 | 127.11 | 17.549 | |
| 11,500.0 | 6,673.2 | 6,520.0 | 6,516.7 | 129.8 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,309.5 | 2,180.2 | 129.31 | 17.860 | |
| 11,515.7 | 6,673.1 | 6,520.0 | 6,516.7 | 130.2 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,324.5 | 2,194.8 | 129.73 | 17.918 | |
| 11,600.0 | 6,672.5 | 6,520.0 | 6,516.7 | 132.5 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,405.1 | 2,273.2 | 131.97 | 18.224 | |
| 11,614.1 | 6,672.4 | 6,520.0 | 6,516.7 | 132.9 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,418.7 | 2,286.3 | 132.35 | 18.275 | |
| 11,700.0 | 6,671.9 | 6,520.0 | 6,516.7 | 135.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,501.1 | 2,366.4 | 134.64 | 18.576 | |
| 11,712.6 | 6,671.8 | 6,520.0 | 6,516.7 | 135.6 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,513.2 | 2,378.2 | 134.98 | 18.619 | |
| 11,800.0 | 6,671.2 | 6,520.0 | 6,516.7 | 138.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,597.3 | 2,460.0 | 137.31 | 18.916 | |
| 11,811.0 | 6,671.1 | 6,520.0 | 6,516.7 | 138.3 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,608.0 | 2,470.4 | 137.60 | 18.953 | |
| 11,900.0 | 6,670.6 | 6,520.0 | 6,516.7 | 140.7 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,693.9 | 2,553.9 | 139.98 | 19.245 | |
| 11,909.4 | 6,670.5 | 6,520.0 | 6,516.7 | 141.0 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,703.0 | 2,562.8 | 140.23 | 19.275 | |
| 11,987.2 | 6,670.0 | 6,520.0 | 6,516.7 | 143.1 | 1.9 | -76.87 | 816.4 | 1,170.3 | 2,778.3 | 2,636.0 | 142.31 | 19.522 | |

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|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.77 | 0.4 | 90.2 | 90.2 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.77 | 0.4 | 90.2 | 90.2 | 90.0 | 0.19 | 469.416 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.77 | 0.4 | 90.2 | 90.2 | 90.0 | 0.20 | 461.470 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.77 | 0.4 | 90.2 | 90.2 | 89.6 | 0.63 | 143.028 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.77 | 0.4 | 90.2 | 90.2 | 89.6 | 0.65 | 139.888 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.77 | 0.4 | 90.2 | 90.2 | 89.2 | 1.07 | 84.071 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.77 | 0.4 | 90.2 | 90.2 | 89.1 | 1.09 | 82.439 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.77 | 0.4 | 90.2 | 90.2 | 88.7 | 1.52 | 59.531 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.77 | 0.4 | 90.2 | 90.2 | 88.7 | 1.54 | 58.440 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.77 | 0.4 | 90.2 | 90.2 | 88.3 | 1.96 | 46.081 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.77 | 0.4 | 90.2 | 90.2 | 88.2 | 1.99 | 45.263 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.77 | 0.4 | 90.2 | 90.2 | 87.8 | 2.40 | 37.588 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.77 | 0.4 | 90.2 | 90.2 | 87.8 | 2.44 | 36.935 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.77 | 0.4 | 90.2 | 90.2 | 87.4 | 2.84 | 31.739 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.77 | 0.4 | 90.2 | 90.2 | 87.3 | 2.89 | 31.195 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.77 | 0.4 | 90.2 | 90.2 | 87.0 | 3.29 | 27.465 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.77 | 0.4 | 90.2 | 90.2 | 86.9 | 3.34 | 26.999 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.77 | 0.4 | 90.2 | 90.2 | 86.5 | 3.73 | 24.205 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.77 | 0.4 | 90.2 | 90.2 | 86.4 | 3.79 | 23.798 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.77 | 0.4 | 90.2 | 90.2 | 86.1 | 4.17 | 21.637 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.77 | 0.4 | 90.2 | 90.2 | 86.0 | 4.24 | 21.276 | CC |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.28 | 0.4 | 90.2 | 91.4 | 86.8 | 4.60 | 19.865 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.31 | 0.4 | 90.2 | 92.0 | 87.3 | 4.68 | 19.664 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.54 | 0.4 | 90.2 | 95.9 | 90.9 | 5.02 | 19.104 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.61 | 0.4 | 90.2 | 97.2 | 92.1 | 5.10 | 19.053 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 174.94 | 0.4 | 90.2 | 103.8 | 98.4 | 5.44 | 19.092 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 175.04 | 0.4 | 90.2 | 105.9 | 100.3 | 5.52 | 19.169 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 3.0 | 175.42 | 0.4 | 90.2 | 115.0 | 109.2 | 5.85 | 19.662 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 3.0 | 175.53 | 0.4 | 90.2 | 118.0 | 112.1 | 5.94 | 19.860 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 3.2 | 175.91 | 0.4 | 90.2 | 129.6 | 123.4 | 6.26 | 20.702 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 3.2 | 176.03 | 0.4 | 90.2 | 133.6 | 127.3 | 6.36 | 21.014 | |
| 1,574.8 | 1,571.0 | 1,571.0 | 1,571.0 | 3.5 | 3.4 | 176.39 | 0.4 | 90.2 | 147.5 | 140.9 | 6.67 | 22.124 | |
| 1,600.0 | 1,595.6 | 1,595.6 | 1,595.6 | 3.6 | 3.5 | 176.50 | 0.4 | 90.2 | 152.7 | 145.9 | 6.77 | 22.545 | |
| 1,673.2 | 1,667.0 | 1,669.5 | 1,669.5 | 3.9 | 3.6 | 176.59 | 1.1 | 89.8 | 168.3 | 161.2 | 7.07 | 23.789 | |
| 1,700.0 | 1,693.1 | 1,696.5 | 1,696.5 | 4.0 | 3.7 | 176.50 | 1.7 | 89.3 | 174.2 | 167.0 | 7.18 | 24.251 | |
| 1,771.6 | 1,762.4 | 1,769.0 | 1,768.9 | 4.3 | 3.8 | 175.99 | 4.5 | 87.5 | 190.5 | 183.0 | 7.48 | 25.479 | |
| 1,800.0 | 1,789.6 | 1,797.7 | 1,797.5 | 4.4 | 3.9 | 175.70 | 6.0 | 86.4 | 197.1 | 189.5 | 7.59 | 25.973 | |
| 1,870.1 | 1,856.8 | 1,868.5 | 1,868.1 | 4.7 | 4.1 | 174.80 | 10.8 | 83.2 | 214.0 | 206.1 | 7.88 | 27.163 | |
| 1,900.0 | 1,885.3 | 1,898.8 | 1,898.2 | 4.9 | 4.1 | 174.35 | 13.3 | 81.6 | 221.5 | 213.5 | 8.00 | 27.682 | |
| 1,968.5 | 1,950.2 | 1,967.9 | 1,966.9 | 5.3 | 4.3 | 173.20 | 19.9 | 77.1 | 239.1 | 230.8 | 8.29 | 28.830 | |
| 2,000.0 | 1,979.8 | 1,999.7 | 1,998.4 | 5.5 | 4.4 | 172.63 | 23.5 | 74.7 | 247.4 | 239.0 | 8.43 | 29.357 | |
| 2,044.9 | 2,021.9 | 2,044.9 | 2,043.1 | 5.7 | 4.5 | 171.77 | 29.0 | 71.0 | 259.7 | 251.0 | 8.63 | 30.083 | |
| 2,066.9 | 2,042.5 | 2,067.0 | 2,065.0 | 5.9 | 4.6 | 171.36 | 31.9 | 69.0 | 265.7 | 256.9 | 8.75 | 30.372 | |
| 2,100.0 | 2,073.4 | 2,100.4 | 2,097.9 | 6.1 | 4.6 | 170.70 | 36.5 | 65.9 | 274.6 | 265.7 | 8.93 | 30.764 | |
| 2,165.3 | 2,134.4 | 2,166.4 | 2,162.7 | 6.5 | 4.8 | 169.33 | 46.7 | 59.1 | 291.8 | 282.5 | 9.30 | 31.370 | |
| 2,200.0 | 2,166.8 | 2,201.4 | 2,197.0 | 6.8 | 4.9 | 168.57 | 52.6 | 55.1 | 300.7 | 291.2 | 9.51 | 31.623 | |
| 2,263.8 | 2,226.4 | 2,262.7 | 2,257.0 | 7.2 | 5.1 | 167.28 | 63.1 | 48.0 | 317.0 | 307.1 | 9.90 | 32.013 | |
| 2,300.0 | 2,260.2 | 2,297.5 | 2,291.0 | 7.4 | 5.2 | 166.60 | 69.1 | 44.0 | 326.3 | 316.2 | 10.13 | 32.213 | |
| 2,362.2 | 2,318.3 | 2,357.3 | 2,349.5 | 7.9 | 5.4 | 165.52 | 79.4 | 37.0 | 342.4 | 331.9 | 10.54 | 32.483 | |
| 2,400.0 | 2,353.6 | 2,393.6 | 2,385.0 | 8.1 | 5.5 | 164.92 | 85.7 | 32.8 | 352.2 | 341.4 | 10.79 | 32.641 | |
| 2,460.6 | 2,410.3 | 2,451.9 | 2,442.0 | 8.6 | 5.7 | 164.01 | 95.8 | 26.1 | 368.1 | 356.9 | 11.21 | 32.843 | |
| 2,500.0 | 2,447.0 | 2,489.7 | 2,479.0 | 8.9 | 5.9 | 163.46 | 102.3 | 21.7 | 378.4 | 366.9 | 11.48 | 32.951 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,546.4 | 2,534.5 | 9.3 | 6.1 | 162.70 | 112.1 | 15.1 | 394.0 | 382.1 | 11.91 | 33.082 | |
| 2,600.0 | 2,540.5 | 2,585.8 | 2,573.0 | 9.6 | 6.2 | 162.20 | 118.9 | 10.5 | 404.8 | 392.6 | 12.21 | 33.160 | |
| 2,657.5 | 2,594.2 | 2,641.0 | 2,627.0 | 10.0 | 6.4 | 161.54 | 128.4 | 4.1 | 420.0 | 407.4 | 12.63 | 33.245 | |
| 2,700.0 | 2,633.9 | 2,681.9 | 2,667.0 | 10.3 | 6.6 | 161.09 | 135.5 | -0.6 | 431.3 | 418.4 | 12.95 | 33.296 | |
| 2,755.9 | 2,686.1 | 2,735.6 | 2,719.5 | 10.7 | 6.8 | 160.52 | 144.7 | -6.9 | 446.2 | 432.8 | 13.38 | 33.346 | |
| 2,800.0 | 2,727.3 | 2,778.0 | 2,761.0 | 11.0 | 6.9 | 160.11 | 152.0 | -11.8 | 458.0 | 444.3 | 13.72 | 33.376 | |
| 2,854.3 | 2,778.1 | 2,830.2 | 2,812.0 | 11.4 | 7.2 | 159.62 | 161.0 | -17.8 | 472.5 | 458.4 | 14.15 | 33.400 | |
| 2,900.0 | 2,820.7 | 2,874.1 | 2,855.0 | 11.8 | 7.3 | 159.23 | 168.6 | -22.9 | 484.8 | 470.3 | 14.51 | 33.413 | |
| 2,952.7 | 2,870.0 | 2,924.8 | 2,904.6 | 12.2 | 7.5 | 158.81 | 177.4 | -28.8 | 498.9 | 484.0 | 14.93 | 33.418 | |
| 3,000.0 | 2,914.2 | 2,970.2 | 2,949.0 | 12.5 | 7.7 | 158.45 | 185.2 | -34.1 | 511.7 | 496.3 | 15.31 | 33.417 | |
| 3,051.2 | 2,962.0 | 3,019.4 | 2,997.1 | 12.9 | 7.9 | 158.08 | 193.7 | -39.8 | 525.4 | 509.7 | 15.73 | 33.411 | |
| 3,100.0 | 3,007.6 | 3,064.3 | 3,041.1 | 13.3 | 8.1 | 157.77 | 201.3 | -44.9 | 538.7 | 522.6 | 16.10 | 33.454 | |
| 3,149.6 | 3,053.9 | 3,109.3 | 3,085.2 | 13.6 | 8.2 | 157.56 | 208.3 | -49.6 | 552.4 | 535.9 | 16.46 | 33.548 | |
| 3,200.0 | 3,101.0 | 3,154.9 | 3,130.1 | 14.0 | 8.3 | 157.42 | 214.9 | -54.1 | 566.5 | 549.7 | 16.81 | 33.705 | |
| 3,248.0 | 3,145.9 | 3,200.0 | 3,174.7 | 14.4 | 8.5 | 157.35 | 220.8 | -58.0 | 580.2 | 563.1 | 17.13 | 33.865 | |
| 3,300.0 | 3,194.4 | 3,245.0 | 3,219.2 | 14.8 | 8.6 | 157.36 | 226.1 | -61.6 | 595.3 | 577.8 | 17.46 | 34.101 | |
| 3,346.4 | 3,237.8 | 3,286.6 | 3,260.5 | 15.1 | 8.7 | 157.43 | 230.5 | -64.6 | 609.0 | 591.2 | 17.74 | 34.322 | |
| 3,400.0 | 3,287.8 | 3,334.5 | 3,308.1 | 15.5 | 8.8 | 157.57 | 235.0 | -67.6 | 625.0 | 606.9 | 18.06 | 34.615 | |
| 3,444.9 | 3,329.8 | 3,374.4 | 3,347.8 | 15.9 | 8.9 | 157.74 | 238.2 | -69.7 | 638.6 | 620.3 | 18.31 | 34.882 | |
| 3,500.0 | 3,381.3 | 3,423.3 | 3,396.5 | 16.3 | 9.0 | 158.00 | 241.5 | -71.9 | 655.6 | 637.0 | 18.60 | 35.244 | |
| 3,543.3 | 3,421.7 | 3,461.4 | 3,434.6 | 16.6 | 9.1 | 158.25 | 243.6 | -73.3 | 669.2 | 650.4 | 18.82 | 35.553 | |
| 3,600.0 | 3,474.7 | 3,511.1 | 3,484.2 | 17.0 | 9.2 | 158.62 | 245.7 | -74.7 | 687.3 | 668.2 | 19.10 | 35.984 | |
| 3,641.7 | 3,513.7 | 3,547.5 | 3,520.6 | 17.3 | 9.3 | 158.92 | 246.7 | -75.5 | 700.8 | 681.5 | 19.29 | 36.330 | |
| 3,700.0 | 3,568.1 | 3,600.0 | 3,573.1 | 17.8 | 9.4 | 159.41 | 247.6 | -76.1 | 720.0 | 700.5 | 19.55 | 36.831 | |
| 3,740.1 | 3,605.6 | 3,632.5 | 3,605.6 | 18.1 | 9.4 | 159.73 | 247.8 | -76.2 | 733.5 | 713.8 | 19.72 | 37.202 | |
| 3,800.0 | 3,661.5 | 3,688.5 | 3,661.5 | 18.5 | 9.5 | 160.29 | 247.8 | -76.2 | 753.7 | 733.7 | 19.97 | 37.747 | |
| 3,838.6 | 3,697.6 | 3,724.5 | 3,697.6 | 18.8 | 9.6 | 160.63 | 247.8 | -76.2 | 766.7 | 746.6 | 20.13 | 38.085 | |
| 3,900.0 | 3,754.9 | 3,781.9 | 3,754.9 | 19.3 | 9.7 | 161.16 | 247.8 | -76.2 | 787.6 | 767.2 | 20.40 | 38.607 | |
| 3,937.0 | 3,789.5 | 3,816.4 | 3,789.5 | 19.6 | 9.7 | 161.46 | 247.8 | -76.2 | 800.2 | 779.6 | 20.56 | 38.914 | |
| 4,000.0 | 3,848.4 | 3,875.3 | 3,848.4 | 20.1 | 9.8 | 161.96 | 247.8 | -76.2 | 821.7 | 800.8 | 20.84 | 39.425 | |
| 4,035.4 | 3,881.5 | 3,908.4 | 3,881.5 | 20.3 | 9.9 | 162.22 | 247.8 | -76.2 | 833.7 | 812.8 | 21.00 | 39.706 | |
| 4,100.0 | 3,941.8 | 3,968.7 | 3,941.8 | 20.8 | 10.0 | 162.69 | 247.8 | -76.2 | 855.8 | 834.6 | 21.29 | 40.206 | |
| 4,133.8 | 3,973.4 | 4,000.3 | 3,973.4 | 21.1 | 10.1 | 162.93 | 247.8 | -76.2 | 867.4 | 846.0 | 21.44 | 40.463 | |
| 4,200.0 | 4,035.2 | 4,062.1 | 4,035.2 | 21.6 | 10.2 | 163.37 | 247.8 | -76.2 | 890.1 | 868.4 | 21.74 | 40.952 | |
| 4,232.3 | 4,065.4 | 4,092.3 | 4,065.4 | 21.8 | 10.2 | 163.58 | 247.8 | -76.2 | 901.2 | 879.4 | 21.88 | 41.185 | |
| 4,300.0 | 4,128.6 | 4,155.6 | 4,128.6 | 22.3 | 10.4 | 164.00 | 247.8 | -76.2 | 924.6 | 902.4 | 22.19 | 41.663 | |
| 4,330.7 | 4,157.3 | 4,184.2 | 4,157.3 | 22.6 | 10.4 | 164.19 | 247.8 | -76.2 | 935.1 | 912.8 | 22.33 | 41.875 | |
| 4,400.0 | 4,222.0 | 4,249.0 | 4,222.0 | 23.1 | 10.5 | 164.59 | 247.8 | -76.2 | 959.1 | 936.4 | 22.65 | 42.343 | |
| 4,429.1 | 4,249.3 | 4,276.2 | 4,249.3 | 23.3 | 10.6 | 164.75 | 247.8 | -76.2 | 969.1 | 946.3 | 22.78 | 42.535 | |
| 4,500.0 | 4,315.5 | 4,342.4 | 4,315.5 | 23.9 | 10.7 | 165.13 | 247.8 | -76.2 | 993.6 | 970.5 | 23.11 | 42.991 | |
| 4,527.5 | 4,341.2 | 4,368.1 | 4,341.2 | 24.1 | 10.8 | 165.27 | 247.8 | -76.2 | 1,003.2 | 979.9 | 23.24 | 43.165 | |
| 4,600.0 | 4,408.9 | 4,435.8 | 4,408.9 | 24.6 | 10.9 | 165.64 | 247.8 | -76.2 | 1,028.3 | 1,004.7 | 23.58 | 43.610 | |
| 4,626.0 | 4,433.2 | 4,460.1 | 4,433.2 | 24.8 | 11.0 | 165.76 | 247.8 | -76.2 | 1,037.3 | 1,013.6 | 23.70 | 43.767 | |
| 4,700.0 | 4,502.3 | 4,529.2 | 4,502.3 | 25.4 | 11.1 | 166.11 | 247.8 | -76.2 | 1,063.0 | 1,039.0 | 24.05 | 44.202 | |
| 4,724.4 | 4,525.1 | 4,552.0 | 4,525.1 | 25.6 | 11.1 | 166.22 | 247.8 | -76.2 | 1,071.5 | 1,047.3 | 24.16 | 44.342 | |
| 4,800.0 | 4,595.7 | 4,622.7 | 4,595.7 | 26.2 | 11.3 | 166.56 | 247.8 | -76.2 | 1,097.8 | 1,073.3 | 24.52 | 44.767 | |
| 4,822.8 | 4,617.1 | 4,644.0 | 4,617.1 | 26.3 | 11.3 | 166.66 | 247.8 | -76.2 | 1,105.8 | 1,081.1 | 24.63 | 44.893 | |
| 4,900.0 | 4,689.2 | 4,716.1 | 4,689.2 | 26.9 | 11.4 | 166.98 | 247.8 | -76.2 | 1,132.7 | 1,107.7 | 25.00 | 45.308 | |
| 4,921.2 | 4,709.0 | 4,735.9 | 4,709.0 | 27.1 | 11.5 | 167.06 | 247.8 | -76.2 | 1,140.1 | 1,115.0 | 25.10 | 45.419 | |
| 5,000.0 | 4,782.6 | 4,809.5 | 4,782.6 | 27.7 | 11.6 | 167.37 | 247.8 | -76.2 | 1,167.5 | 1,142.1 | 25.48 | 45.825 | |
| 5,019.7 | 4,801.0 | 4,827.9 | 4,801.0 | 27.8 | 11.7 | 167.44 | 247.8 | -76.2 | 1,174.4 | 1,148.8 | 25.57 | 45.924 | |
| 5,100.0 | 4,876.0 | 4,902.9 | 4,876.0 | 28.4 | 11.8 | 167.74 | 247.8 | -76.2 | 1,202.5 | 1,176.5 | 25.96 | 46.319 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,919.8 | 4,892.9 | 28.6 | 11.9 | 167.81 | 247.8 | -76.2 | 1,208.8 | 1,182.8 | 26.05 | 46.406 | |
| 5,159.9 | 4,932.0 | 4,958.9 | 4,932.0 | 28.9 | 11.9 | 167.95 | 247.8 | -76.2 | 1,223.4 | 1,197.2 | 26.25 | 46.605 | |
| 5,200.0 | 4,969.5 | 4,996.5 | 4,969.5 | 29.2 | 12.0 | 168.15 | 247.8 | -76.2 | 1,237.2 | 1,210.7 | 26.48 | 46.722 | |
| 5,216.5 | 4,985.1 | 5,012.0 | 4,985.1 | 29.3 | 12.0 | 168.23 | 247.8 | -76.2 | 1,242.7 | 1,216.2 | 26.57 | 46.772 | |
| 5,300.0 | 5,064.0 | 5,090.9 | 5,064.0 | 29.7 | 12.2 | 168.59 | 247.8 | -76.2 | 1,269.3 | 1,242.3 | 27.02 | 46.980 | |
| 5,314.9 | 5,078.2 | 5,105.2 | 5,078.2 | 29.8 | 12.2 | 168.65 | 247.8 | -76.2 | 1,273.8 | 1,246.7 | 27.10 | 47.013 | |
| 5,400.0 | 5,159.6 | 5,186.5 | 5,159.6 | 30.2 | 12.4 | 168.96 | 247.8 | -76.2 | 1,298.2 | 1,270.7 | 27.53 | 47.157 | |
| 5,413.4 | 5,172.4 | 5,199.4 | 5,172.4 | 30.3 | 12.4 | 169.00 | 247.8 | -76.2 | 1,301.8 | 1,274.2 | 27.59 | 47.177 | |
| 5,500.0 | 5,256.1 | 5,283.1 | 5,256.1 | 30.7 | 12.6 | 169.27 | 247.8 | -76.2 | 1,323.8 | 1,295.8 | 28.01 | 47.261 | |
| 5,511.8 | 5,267.6 | 5,294.5 | 5,267.6 | 30.7 | 12.6 | 169.31 | 247.8 | -76.2 | 1,326.6 | 1,298.5 | 28.06 | 47.270 | |
| 5,600.0 | 5,353.5 | 5,380.5 | 5,353.5 | 31.1 | 12.8 | 169.54 | 247.8 | -76.2 | 1,346.1 | 1,317.6 | 28.46 | 47.298 | |
| 5,610.2 | 5,363.5 | 5,390.5 | 5,363.5 | 31.1 | 12.8 | 169.56 | 247.8 | -76.2 | 1,348.2 | 1,319.7 | 28.50 | 47.300 | |
| 5,700.0 | 5,451.6 | 7,799.0 | 6,713.1 | 31.4 | 41.2 | 152.69 | 247.8 | -1,440.6 | 1,266.1 | 1,223.1 | 42.98 | 29.458 | |
| 5,708.6 | 5,460.2 | 7,800.5 | 6,713.1 | 31.4 | 41.2 | 152.13 | 247.8 | -1,442.1 | 1,257.6 | 1,214.2 | 43.40 | 28.974 | |
| 5,800.0 | 5,550.4 | 7,814.5 | 6,713.1 | 31.7 | 41.6 | 144.92 | 247.8 | -1,456.1 | 1,167.5 | 1,118.6 | 48.92 | 23.865 | |
| 5,807.1 | 5,557.4 | 7,815.4 | 6,713.1 | 31.7 | 41.6 | 144.25 | 247.8 | -1,457.0 | 1,160.5 | 1,111.1 | 49.43 | 23.477 | |
| 5,900.0 | 5,649.6 | 7,826.5 | 6,713.0 | 31.9 | 41.9 | 133.71 | 247.8 | -1,468.1 | 1,068.6 | 1,011.4 | 57.24 | 18.668 | |
| 5,905.5 | 5,655.1 | 7,827.0 | 6,713.0 | 31.9 | 41.9 | 132.98 | 247.8 | -1,468.6 | 1,063.2 | 1,005.4 | 57.76 | 18.407 | |
| 6,000.0 | 5,749.2 | 7,835.0 | 6,713.0 | 32.1 | 42.1 | 118.41 | 247.8 | -1,476.6 | 969.4 | 902.7 | 66.72 | 14.530 | |
| 6,003.9 | 5,753.1 | 7,835.3 | 6,713.0 | 32.1 | 42.2 | 117.73 | 247.8 | -1,476.9 | 965.5 | 898.5 | 67.06 | 14.397 | |
| 6,100.0 | 5,849.1 | 7,840.1 | 6,713.0 | 32.3 | 42.3 | 100.48 | 247.8 | -1,481.7 | 870.1 | 796.7 | 73.40 | 11.855 | |
| 6,102.3 | 5,851.4 | 7,840.2 | 6,713.0 | 32.3 | 42.3 | 100.06 | 247.8 | -1,481.8 | 867.8 | 794.3 | 73.49 | 11.809 | |
| 6,200.8 | 5,949.8 | 7,841.7 | 6,713.0 | 32.4 | 42.3 | 83.80 | 247.8 | -1,483.3 | 770.2 | 695.8 | 74.39 | 10.353 | |
| 6,204.9 | 5,953.9 | 7,841.7 | 6,713.0 | 32.4 | 42.3 | -1.23 | 247.8 | -1,483.3 | 766.1 | 734.0 | 32.13 | 23.844 | |
| 6,234.9 | 5,983.9 | 7,841.6 | 6,713.0 | 32.4 | 42.3 | -1.18 | 247.8 | -1,483.2 | 736.4 | 704.2 | 32.16 | 22.896 | |
| 6,250.0 | 5,999.0 | 7,841.4 | 6,713.0 | 32.4 | 42.3 | -99.42 | 247.8 | -1,483.0 | 721.4 | 648.6 | 72.80 | 9.910 | |
| 6,299.2 | 6,048.2 | 7,838.5 | 6,713.0 | 32.4 | 42.2 | -120.74 | 247.8 | -1,480.2 | 672.9 | 609.6 | 63.27 | 10.635 | |
| 6,300.0 | 6,048.9 | 7,838.5 | 6,713.0 | 32.4 | 42.2 | -121.01 | 247.8 | -1,480.1 | 672.1 | 609.0 | 63.10 | 10.651 | |
| 6,350.0 | 6,098.5 | 7,832.0 | 6,713.0 | 32.4 | 42.1 | -134.04 | 247.8 | -1,473.7 | 623.1 | 569.2 | 53.95 | 11.549 | |
| 6,397.6 | 6,145.3 | 7,822.7 | 6,713.0 | 32.3 | 41.8 | -141.36 | 247.8 | -1,464.3 | 577.1 | 529.2 | 47.97 | 12.033 | |
| 6,400.0 | 6,147.6 | 7,822.2 | 6,713.0 | 32.3 | 41.8 | -141.64 | 247.8 | -1,463.8 | 574.9 | 527.1 | 47.73 | 12.045 | |
| 6,450.0 | 6,195.8 | 7,808.9 | 6,713.1 | 32.2 | 41.5 | -146.17 | 247.8 | -1,450.5 | 527.5 | 483.9 | 43.64 | 12.088 | |
| 6,496.0 | 6,239.3 | 7,793.8 | 6,713.1 | 32.1 | 41.1 | -148.70 | 247.8 | -1,435.4 | 485.0 | 443.9 | 41.09 | 11.804 | |
| 6,500.0 | 6,243.0 | 7,792.3 | 6,713.1 | 32.1 | 41.0 | -148.86 | 247.8 | -1,434.0 | 481.4 | 440.5 | 40.91 | 11.768 | |
| 6,550.0 | 6,289.0 | 7,772.5 | 6,713.2 | 32.0 | 40.5 | -150.34 | 247.8 | -1,414.1 | 436.7 | 397.6 | 39.05 | 11.183 | |
| 6,594.5 | 6,328.6 | 7,752.2 | 6,713.2 | 31.8 | 40.0 | -150.91 | 247.8 | -1,393.8 | 398.4 | 360.4 | 37.93 | 10.504 | |
| 6,600.0 | 6,333.4 | 7,749.5 | 6,713.3 | 31.8 | 39.9 | -150.94 | 247.8 | -1,391.1 | 393.7 | 355.9 | 37.82 | 10.411 | |
| 6,650.0 | 6,376.2 | 7,723.5 | 6,713.3 | 31.7 | 39.3 | -150.83 | 247.8 | -1,365.1 | 352.7 | 315.6 | 37.11 | 9.505 | |
| 6,692.9 | 6,411.3 | 7,698.8 | 6,713.4 | 31.6 | 38.6 | -150.22 | 247.8 | -1,340.4 | 319.3 | 282.4 | 36.89 | 8.656 | |
| 6,700.0 | 6,417.0 | 7,694.5 | 6,713.4 | 31.5 | 38.5 | -150.08 | 247.8 | -1,336.1 | 314.0 | 277.1 | 36.89 | 8.511 | |
| 6,750.0 | 6,455.7 | 7,662.8 | 6,713.5 | 31.4 | 37.7 | -148.71 | 247.8 | -1,304.4 | 277.8 | 240.6 | 37.19 | 7.469 | |
| 6,791.3 | 6,486.0 | 7,634.6 | 6,713.6 | 31.3 | 37.0 | -147.09 | 247.8 | -1,276.2 | 250.0 | 212.2 | 37.86 | 6.604 | |
| 6,800.0 | 6,492.2 | 7,628.5 | 6,713.6 | 31.3 | 36.9 | -146.69 | 247.8 | -1,270.1 | 244.5 | 206.4 | 38.05 | 6.424 | |
| 6,850.0 | 6,526.1 | 7,591.7 | 6,713.7 | 31.2 | 35.9 | -143.97 | 247.8 | -1,233.3 | 214.3 | 174.8 | 39.52 | 5.422 | |
| 6,889.7 | 6,551.2 | 7,560.8 | 6,713.8 | 31.2 | 35.2 | -141.26 | 247.8 | -1,202.4 | 192.7 | 151.6 | 41.14 | 4.685 | |
| 6,900.0 | 6,557.4 | 7,552.6 | 6,713.8 | 31.2 | 35.0 | -140.48 | 247.8 | -1,194.2 | 187.6 | 146.0 | 41.61 | 4.507 | |
| 6,950.0 | 6,586.0 | 7,511.5 | 6,713.9 | 31.1 | 33.9 | -136.15 | 247.8 | -1,153.1 | 164.6 | 120.4 | 44.27 | 3.719 | |
| 6,988.2 | 6,605.8 | 7,478.8 | 6,714.0 | 31.2 | 33.1 | -132.29 | 247.8 | -1,120.4 | 149.8 | 103.2 | 46.60 | 3.215 | |
| 7,000.0 | 6,611.5 | 7,468.5 | 6,714.1 | 31.2 | 32.9 | -131.00 | 247.8 | -1,110.1 | 145.7 | 98.4 | 47.35 | 3.078 | |
| 7,050.0 | 6,634.1 | 7,423.8 | 6,714.2 | 31.2 | 31.8 | -125.13 | 247.8 | -1,065.4 | 130.9 | 80.4 | 50.52 | 2.592 | |
| 7,086.6 | 6,648.6 | 7,390.1 | 6,714.3 | 31.3 | 31.0 | -120.54 | 247.8 | -1,031.7 | 122.7 | 70.0 | 52.67 | 2.329 | |
| 7,100.0 | 6,653.4 | 7,377.6 | 6,714.3 | 31.4 | 30.7 | -118.83 | 247.8 | -1,019.2 | 120.1 | 66.8 | 53.39 | 2.250 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 7,330.2 | 6,714.5 | 31.6 | 29.6 | -112.59 | 247.8 | -971.9 | 112.9 | 57.3 | 55.59 | 2.031 | |
| 7,185.0 | 6,678.8 | 7,296.4 | 6,714.6 | 31.7 | 28.8 | -108.54 | 247.8 | -938.1 | 109.6 | 52.9 | 56.62 | 1.935 | |
| 7,200.0 | 6,682.3 | 7,281.9 | 6,714.6 | 31.8 | 28.5 | -106.95 | 247.8 | -923.5 | 108.5 | 51.6 | 56.93 | 1.906 | |
| 7,250.0 | 6,691.6 | 7,232.7 | 6,714.8 | 32.1 | 27.3 | -102.46 | 247.8 | -874.4 | 106.1 | 48.7 | 57.45 | 1.847 | |
| 7,283.4 | 6,696.0 | 7,199.6 | 6,714.9 | 32.3 | 26.6 | -100.29 | 247.8 | -841.2 | 105.3 | 47.8 | 57.44 | 1.833 | |
| 7,300.0 | 6,697.5 | 7,183.1 | 6,714.9 | 32.4 | 26.2 | -99.50 | 247.8 | -824.7 | 105.0 | 47.6 | 57.36 | 1.831 | SF |
| 7,350.0 | 6,699.9 | 7,132.7 | 6,714.8 | 32.8 | 25.1 | -98.14 | 247.8 | -774.3 | 104.6 | 47.7 | 56.93 | 1.838 | |
| 7,364.4 | 6,700.0 | 7,118.1 | 6,714.3 | 32.9 | 24.8 | -97.84 | 247.8 | -759.7 | 104.5 | 47.8 | 56.79 | 1.841 | |
| 7,381.9 | 6,699.9 | 7,100.2 | 6,713.2 | 33.1 | 24.4 | -97.34 | 247.8 | -741.9 | 104.4 | 47.8 | 56.63 | 1.844 | |
| 7,400.0 | 6,699.8 | 7,081.8 | 6,711.7 | 33.2 | 24.1 | -96.57 | 247.8 | -723.6 | 104.3 | 47.8 | 56.50 | 1.845 | |
| 7,480.3 | 6,699.2 | 7,001.7 | 6,699.5 | 34.0 | 22.4 | -90.16 | 247.8 | -644.4 | 103.6 | 47.4 | 56.13 | 1.845 | ES |
| 7,481.8 | 6,699.2 | 7,000.2 | 6,699.2 | 34.0 | 22.4 | -90.00 | 247.8 | -642.9 | 103.6 | 47.4 | 56.12 | 1.845 | |
| 7,500.0 | 6,699.1 | 6,982.5 | 6,695.3 | 34.2 | 22.1 | -87.90 | 247.8 | -625.6 | 103.6 | 47.7 | 55.97 | 1.852 | |
| 7,578.7 | 6,698.6 | 6,908.3 | 6,674.4 | 35.2 | 20.7 | -76.79 | 247.8 | -554.5 | 106.7 | 52.2 | 54.51 | 1.958 | |
| 7,600.0 | 6,698.5 | 6,889.1 | 6,667.7 | 35.4 | 20.4 | -73.43 | 247.8 | -536.5 | 108.7 | 54.9 | 53.77 | 2.021 | |
| 7,677.1 | 6,698.0 | 6,822.6 | 6,641.1 | 36.5 | 19.3 | -61.17 | 247.8 | -475.6 | 121.4 | 71.4 | 50.04 | 2.426 | |
| 7,700.0 | 6,697.8 | 6,804.0 | 6,632.7 | 36.8 | 19.0 | -57.74 | 247.8 | -459.0 | 127.1 | 78.4 | 48.68 | 2.610 | |
| 7,775.6 | 6,697.3 | 6,745.8 | 6,603.5 | 38.0 | 18.2 | -47.72 | 247.8 | -408.7 | 151.9 | 107.7 | 44.19 | 3.436 | |
| 7,800.0 | 6,697.2 | 6,728.2 | 6,593.9 | 38.3 | 18.0 | -44.96 | 247.8 | -393.9 | 161.8 | 119.0 | 42.82 | 3.778 | |
| 7,874.0 | 6,696.7 | 6,678.0 | 6,564.6 | 39.6 | 17.4 | -37.96 | 247.8 | -353.2 | 196.7 | 157.5 | 39.24 | 5.013 | |
| 7,900.0 | 6,696.5 | 6,661.6 | 6,554.4 | 40.0 | 17.3 | -35.93 | 247.8 | -340.4 | 210.5 | 172.3 | 38.18 | 5.514 | |
| 7,972.4 | 6,696.1 | 6,618.8 | 6,526.4 | 41.3 | 16.8 | -31.25 | 247.8 | -308.0 | 252.5 | 216.7 | 35.81 | 7.052 | |
| 8,000.0 | 6,695.9 | 6,600.0 | 6,513.5 | 41.8 | 16.7 | -29.44 | 247.8 | -294.3 | 269.7 | 234.9 | 34.84 | 7.741 | |
| 8,070.8 | 6,695.4 | 6,567.3 | 6,490.2 | 43.1 | 16.4 | -26.63 | 247.8 | -271.4 | 316.4 | 282.8 | 33.64 | 9.406 | |
| 8,100.0 | 6,695.2 | 6,550.0 | 6,477.5 | 43.7 | 16.2 | -25.28 | 247.8 | -259.6 | 336.6 | 303.6 | 33.00 | 10.201 | |
| 8,169.3 | 6,694.8 | 6,522.6 | 6,456.7 | 45.1 | 16.0 | -23.35 | 247.8 | -241.7 | 386.4 | 354.1 | 32.35 | 11.943 | |
| 8,200.0 | 6,694.6 | 6,509.8 | 6,446.9 | 45.7 | 15.9 | -22.53 | 247.8 | -233.6 | 409.3 | 377.2 | 32.08 | 12.758 | |
| 8,267.7 | 6,694.1 | 6,483.6 | 6,426.1 | 47.1 | 15.8 | -20.96 | 247.8 | -217.6 | 461.1 | 429.4 | 31.65 | 14.567 | |
| 8,300.0 | 6,693.9 | 6,471.9 | 6,416.7 | 47.8 | 15.7 | -20.31 | 247.8 | -210.7 | 486.4 | 454.9 | 31.51 | 15.436 | |
| 8,366.1 | 6,693.5 | 6,450.0 | 6,398.7 | 49.2 | 15.6 | -19.18 | 247.8 | -198.2 | 539.3 | 508.0 | 31.35 | 17.202 | |
| 8,400.0 | 6,693.3 | 6,438.8 | 6,389.3 | 49.9 | 15.5 | -18.64 | 247.8 | -192.0 | 567.0 | 535.7 | 31.29 | 18.118 | |
| 8,464.5 | 6,692.9 | 6,419.6 | 6,373.1 | 51.4 | 15.4 | -17.77 | 247.8 | -181.8 | 620.5 | 589.2 | 31.29 | 19.831 | |
| 8,500.0 | 6,692.6 | 6,400.0 | 6,356.3 | 52.1 | 15.3 | -16.94 | 247.8 | -171.7 | 650.5 | 619.4 | 31.04 | 20.958 | |
| 8,563.0 | 6,692.2 | 6,400.0 | 6,356.3 | 53.6 | 15.3 | -16.94 | 247.8 | -171.7 | 704.0 | 672.4 | 31.62 | 22.268 | |
| 8,600.0 | 6,692.0 | 6,384.1 | 6,342.4 | 54.4 | 15.2 | -16.32 | 247.8 | -164.0 | 735.9 | 704.4 | 31.51 | 23.352 | |
| 8,661.4 | 6,691.6 | 6,369.9 | 6,329.9 | 55.8 | 15.2 | -15.79 | 247.8 | -157.3 | 789.4 | 757.7 | 31.70 | 24.904 | |
| 8,700.0 | 6,691.3 | 6,350.0 | 6,312.1 | 56.7 | 15.1 | -15.10 | 247.8 | -148.3 | 823.5 | 791.9 | 31.55 | 26.101 | |
| 8,759.8 | 6,690.9 | 6,350.0 | 6,312.1 | 58.1 | 15.1 | -15.10 | 247.8 | -148.3 | 876.3 | 844.3 | 32.09 | 27.311 | |
| 8,800.0 | 6,690.7 | 6,350.0 | 6,312.1 | 59.1 | 15.1 | -15.10 | 247.8 | -148.3 | 912.3 | 879.9 | 32.45 | 28.116 | |
| 8,858.2 | 6,690.3 | 6,330.5 | 6,294.4 | 60.5 | 15.0 | -14.46 | 247.8 | -140.0 | 964.6 | 932.1 | 32.51 | 29.673 | |
| 8,900.0 | 6,690.0 | 6,323.2 | 6,287.8 | 61.5 | 14.9 | -14.24 | 247.8 | -137.0 | 1,002.4 | 969.7 | 32.71 | 30.642 | |
| 8,956.7 | 6,689.7 | 6,300.0 | 6,266.4 | 62.9 | 14.9 | -13.56 | 247.8 | -128.0 | 1,054.2 | 1,021.5 | 32.72 | 32.224 | |
| 9,000.0 | 6,689.4 | 6,300.0 | 6,266.4 | 63.9 | 14.9 | -13.56 | 247.8 | -128.0 | 1,093.7 | 1,060.6 | 33.10 | 33.047 | |
| 9,055.1 | 6,689.0 | 6,300.0 | 6,266.4 | 65.3 | 14.9 | -13.56 | 247.8 | -128.0 | 1,144.3 | 1,110.8 | 33.58 | 34.075 | |
| 9,100.0 | 6,688.7 | 6,300.0 | 6,266.4 | 66.4 | 14.9 | -13.56 | 247.8 | -128.0 | 1,185.9 | 1,151.9 | 33.98 | 34.900 | |
| 9,153.5 | 6,688.4 | 6,300.0 | 6,266.4 | 67.7 | 14.9 | -13.56 | 247.8 | -128.0 | 1,235.7 | 1,201.3 | 34.46 | 35.863 | |
| 9,200.0 | 6,688.1 | 6,279.0 | 6,246.8 | 68.9 | 14.8 | -12.99 | 247.8 | -120.5 | 1,278.7 | 1,244.3 | 34.42 | 37.150 | |
| 9,251.9 | 6,687.8 | 6,272.5 | 6,240.7 | 70.2 | 14.8 | -12.82 | 247.8 | -118.3 | 1,327.3 | 1,292.5 | 34.75 | 38.198 | |
| 9,300.0 | 6,687.4 | 6,266.9 | 6,235.4 | 71.4 | 14.7 | -12.68 | 247.8 | -116.4 | 1,372.3 | 1,337.3 | 35.05 | 39.149 | |
| 9,350.4 | 6,687.1 | 6,250.0 | 6,219.4 | 72.7 | 14.7 | -12.27 | 247.8 | -111.0 | 1,419.9 | 1,384.7 | 35.17 | 40.374 | |
| 9,400.0 | 6,686.8 | 6,250.0 | 6,219.4 | 73.9 | 14.7 | -12.27 | 247.8 | -111.0 | 1,466.6 | 1,431.0 | 35.60 | 41.198 | |
| 9,448.8 | 6,686.5 | 6,250.0 | 6,219.4 | 75.2 | 14.7 | -12.27 | 247.8 | -111.0 | 1,512.7 | 1,476.6 | 36.02 | 41.991 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-204 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,250.0 | 6,219.4 | 76.5 | 14.7 | -12.27 | 247.8 | -111.0 | 1,561.2 | 1,524.8 | 36.47 | 42.809 | |
| 9,547.2 | 6,685.8 | 6,250.0 | 6,219.4 | 77.7 | 14.7 | -12.27 | 247.8 | -111.0 | 1,606.2 | 1,569.3 | 36.88 | 43.547 | |
| 9,600.0 | 6,685.5 | 6,250.0 | 6,219.4 | 79.0 | 14.7 | -12.27 | 247.8 | -111.0 | 1,656.5 | 1,619.2 | 37.35 | 44.356 | |
| 9,645.6 | 6,685.2 | 6,232.3 | 6,202.5 | 80.2 | 14.6 | -11.86 | 247.8 | -105.8 | 1,699.9 | 1,662.5 | 37.40 | 45.456 | |
| 9,700.0 | 6,684.8 | 6,227.7 | 6,198.1 | 81.6 | 14.6 | -11.76 | 247.8 | -104.5 | 1,751.9 | 1,714.1 | 37.78 | 46.369 | |
| 9,744.1 | 6,684.6 | 6,224.1 | 6,194.7 | 82.8 | 14.6 | -11.68 | 247.8 | -103.5 | 1,794.1 | 1,756.0 | 38.10 | 47.094 | |
| 9,800.0 | 6,684.2 | 6,219.8 | 6,190.5 | 84.2 | 14.6 | -11.58 | 247.8 | -102.3 | 1,847.7 | 1,809.2 | 38.50 | 47.996 | |
| 9,842.5 | 6,683.9 | 6,200.0 | 6,171.4 | 85.3 | 14.5 | -11.17 | 247.8 | -97.3 | 1,888.8 | 1,850.3 | 38.50 | 49.057 | |
| 9,900.0 | 6,683.5 | 6,200.0 | 6,171.4 | 86.8 | 14.5 | -11.17 | 247.8 | -97.3 | 1,944.0 | 1,905.0 | 39.00 | 49.852 | |
| 9,940.9 | 6,683.3 | 6,200.0 | 6,171.4 | 87.9 | 14.5 | -11.17 | 247.8 | -97.3 | 1,983.4 | 1,944.1 | 39.35 | 50.407 | |
| 10,000.0 | 6,682.9 | 6,200.0 | 6,171.4 | 89.5 | 14.5 | -11.17 | 247.8 | -97.3 | 2,040.4 | 2,000.5 | 39.86 | 51.193 | |
| 10,039.3 | 6,682.6 | 6,200.0 | 6,171.4 | 90.5 | 14.5 | -11.17 | 247.8 | -97.3 | 2,078.4 | 2,038.2 | 40.20 | 51.706 | |
| 10,100.0 | 6,682.2 | 6,200.0 | 6,171.4 | 92.1 | 14.5 | -11.17 | 247.8 | -97.3 | 2,137.0 | 2,096.3 | 40.72 | 52.482 | |
| 10,137.8 | 6,682.0 | 6,200.0 | 6,171.4 | 93.1 | 14.5 | -11.17 | 247.8 | -97.3 | 2,173.6 | 2,132.6 | 41.05 | 52.955 | |
| 10,200.0 | 6,681.6 | 6,200.0 | 6,171.4 | 94.8 | 14.5 | -11.17 | 247.8 | -97.3 | 2,234.0 | 2,192.4 | 41.59 | 53.721 | |
| 10,236.2 | 6,681.4 | 6,200.0 | 6,171.4 | 95.7 | 14.5 | -11.17 | 247.8 | -97.3 | 2,269.2 | 2,227.3 | 41.90 | 54.158 | |
| 10,300.0 | 6,680.9 | 6,200.0 | 6,171.4 | 97.4 | 14.5 | -11.17 | 247.8 | -97.3 | 2,331.2 | 2,288.8 | 42.45 | 54.914 | |
| 10,334.6 | 6,680.7 | 6,200.0 | 6,171.4 | 98.3 | 14.5 | -11.17 | 247.8 | -97.3 | 2,364.9 | 2,322.2 | 42.75 | 55.316 | |
| 10,400.0 | 6,680.3 | 6,200.0 | 6,171.4 | 100.1 | 14.5 | -11.17 | 247.8 | -97.3 | 2,428.7 | 2,385.3 | 43.32 | 56.061 | |
| 10,433.0 | 6,680.1 | 6,200.0 | 6,171.4 | 101.0 | 14.5 | -11.17 | 247.8 | -97.3 | 2,460.9 | 2,417.3 | 43.61 | 56.431 | |
| 10,500.0 | 6,679.7 | 6,177.4 | 6,149.3 | 102.8 | 14.4 | -10.73 | 247.8 | -92.2 | 2,525.9 | 2,482.1 | 43.74 | 57.748 | |
| 10,531.5 | 6,679.4 | 6,175.9 | 6,147.8 | 103.6 | 14.4 | -10.71 | 247.8 | -91.8 | 2,556.6 | 2,512.6 | 43.98 | 58.128 | |
| 10,600.0 | 6,679.0 | 6,172.7 | 6,144.8 | 105.4 | 14.4 | -10.65 | 247.8 | -91.2 | 2,623.5 | 2,579.0 | 44.51 | 58.941 | |
| 10,629.9 | 6,678.8 | 6,171.4 | 6,143.5 | 106.2 | 14.4 | -10.62 | 247.8 | -90.9 | 2,652.7 | 2,607.9 | 44.74 | 59.289 | |
| 10,700.0 | 6,678.4 | 6,150.0 | 6,122.4 | 108.1 | 14.4 | -10.24 | 247.8 | -86.9 | 2,721.5 | 2,676.6 | 44.94 | 60.555 | |
| 10,728.3 | 6,678.2 | 6,150.0 | 6,122.4 | 108.9 | 14.4 | -10.24 | 247.8 | -86.9 | 2,749.2 | 2,704.0 | 45.18 | 60.844 | |
| 10,800.0 | 6,677.7 | 6,150.0 | 6,122.4 | 110.8 | 14.4 | -10.24 | 247.8 | -86.9 | 2,819.3 | 2,773.5 | 45.80 | 61.562 | |
| 10,826.7 | 6,677.5 | 6,150.0 | 6,122.4 | 111.5 | 14.4 | -10.24 | 247.8 | -86.9 | 2,845.5 | 2,799.4 | 46.02 | 61.826 | |
| 10,900.0 | 6,677.1 | 6,150.0 | 6,122.4 | 113.5 | 14.4 | -10.24 | 247.8 | -86.9 | 2,917.2 | 2,870.6 | 46.65 | 62.535 | |
| 10,925.2 | 6,676.9 | 6,150.0 | 6,122.4 | 114.2 | 14.4 | -10.24 | 247.8 | -86.9 | 2,941.9 | 2,895.0 | 46.86 | 62.774 | |
| 11,000.0 | 6,676.4 | 6,150.0 | 6,122.4 | 116.2 | 14.4 | -10.24 | 247.8 | -86.9 | 3,015.3 | 2,967.8 | 47.50 | 63.474 | |
| 11,023.6 | 6,676.3 | 6,150.0 | 6,122.4 | 116.8 | 14.4 | -10.24 | 247.8 | -86.9 | 3,038.4 | 2,990.7 | 47.71 | 63.690 | |
| 11,100.0 | 6,675.8 | 6,150.0 | 6,122.4 | 118.9 | 14.4 | -10.24 | 247.8 | -86.9 | 3,113.4 | 3,065.1 | 48.36 | 64.380 | |
| 11,122.0 | 6,675.6 | 6,150.0 | 6,122.4 | 119.5 | 14.4 | -10.24 | 247.8 | -86.9 | 3,135.1 | 3,086.5 | 48.55 | 64.576 | |
| 11,200.0 | 6,675.1 | 6,150.0 | 6,122.4 | 121.6 | 14.4 | -10.24 | 247.8 | -86.9 | 3,211.7 | 3,162.5 | 49.22 | 65.257 | |
| 11,220.4 | 6,675.0 | 6,150.0 | 6,122.4 | 122.2 | 14.4 | -10.24 | 247.8 | -86.9 | 3,231.8 | 3,182.4 | 49.39 | 65.432 | |
| 11,300.0 | 6,674.5 | 6,150.0 | 6,122.4 | 124.3 | 14.4 | -10.24 | 247.8 | -86.9 | 3,310.1 | 3,260.0 | 50.07 | 66.104 | |
| 11,318.9 | 6,674.3 | 6,150.0 | 6,122.4 | 124.9 | 14.4 | -10.24 | 247.8 | -86.9 | 3,328.7 | 3,278.5 | 50.24 | 66.260 | |
| 11,400.0 | 6,673.8 | 6,150.0 | 6,122.4 | 127.1 | 14.4 | -10.24 | 247.8 | -86.9 | 3,408.6 | 3,357.7 | 50.93 | 66.923 | |
| 11,417.3 | 6,673.7 | 6,150.0 | 6,122.4 | 127.5 | 14.4 | -10.24 | 247.8 | -86.9 | 3,425.6 | 3,374.6 | 51.08 | 67.062 | |
| 11,500.0 | 6,673.2 | 6,150.0 | 6,122.4 | 129.8 | 14.4 | -10.24 | 247.8 | -86.9 | 3,507.2 | 3,455.4 | 51.79 | 67.715 | |
| 11,515.7 | 6,673.1 | 6,150.0 | 6,122.4 | 130.2 | 14.4 | -10.24 | 247.8 | -86.9 | 3,522.7 | 3,470.7 | 51.93 | 67.837 | |
| 11,600.0 | 6,672.5 | 6,150.0 | 6,122.4 | 132.5 | 14.4 | -10.24 | 247.8 | -86.9 | 3,605.8 | 3,553.2 | 52.65 | 68.482 | |
| 11,614.1 | 6,672.4 | 6,150.0 | 6,122.4 | 132.9 | 14.4 | -10.24 | 247.8 | -86.9 | 3,619.8 | 3,567.0 | 52.78 | 68.589 | |
| 11,700.0 | 6,671.9 | 6,150.0 | 6,122.4 | 135.3 | 14.4 | -10.24 | 247.8 | -86.9 | 3,704.5 | 3,651.0 | 53.51 | 69.225 | |
| 11,712.6 | 6,671.8 | 6,150.0 | 6,122.4 | 135.6 | 14.4 | -10.24 | 247.8 | -86.9 | 3,717.0 | 3,663.3 | 53.62 | 69.316 | |
| 11,800.0 | 6,671.2 | 6,150.0 | 6,122.4 | 138.0 | 14.4 | -10.24 | 247.8 | -86.9 | 3,803.3 | 3,749.0 | 54.38 | 69.944 | |
| 11,811.0 | 6,671.1 | 6,150.0 | 6,122.4 | 138.3 | 14.4 | -10.24 | 247.8 | -86.9 | 3,814.2 | 3,759.7 | 54.47 | 70.022 | |
| 11,900.0 | 6,670.6 | 6,150.0 | 6,122.4 | 140.7 | 14.4 | -10.24 | 247.8 | -86.9 | 3,902.2 | 3,846.9 | 55.24 | 70.641 | |
| 11,909.4 | 6,670.5 | 6,150.0 | 6,122.4 | 141.0 | 14.4 | -10.24 | 247.8 | -86.9 | 3,911.5 | 3,856.2 | 55.32 | 70.706 | |
| 11,987.2 | 6,670.0 | 6,128.3 | 6,101.0 | 143.1 | 14.3 | -9.88 | 247.8 | -83.5 | 3,988.0 | 3,932.5 | 55.50 | 71.853 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 90.00 | 0.0 | 30.1 | 30.1 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 90.00 | 0.0 | 30.1 | 30.1 | 29.9 | 0.19 | 156.471 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 90.00 | 0.0 | 30.1 | 30.1 | 29.9 | 0.20 | 153.822 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 90.00 | 0.0 | 30.1 | 30.1 | 29.4 | 0.63 | 47.676 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 90.00 | 0.0 | 30.1 | 30.1 | 29.4 | 0.65 | 46.629 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 90.00 | 0.0 | 30.1 | 30.1 | 29.0 | 1.07 | 28.023 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 90.00 | 0.0 | 30.1 | 30.1 | 29.0 | 1.09 | 27.480 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 90.00 | 0.0 | 30.1 | 30.1 | 28.6 | 1.52 | 19.844 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 90.00 | 0.0 | 30.1 | 30.1 | 28.5 | 1.54 | 19.480 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 90.00 | 0.0 | 30.1 | 30.1 | 28.1 | 1.96 | 15.360 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 90.00 | 0.0 | 30.1 | 30.1 | 28.1 | 1.99 | 15.087 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 90.00 | 0.0 | 30.1 | 30.1 | 27.7 | 2.40 | 12.529 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 90.00 | 0.0 | 30.1 | 30.1 | 27.6 | 2.44 | 12.311 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 90.00 | 0.0 | 30.1 | 30.1 | 27.2 | 2.84 | 10.580 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 90.00 | 0.0 | 30.1 | 30.1 | 27.2 | 2.89 | 10.398 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 90.00 | 0.0 | 30.1 | 30.1 | 26.8 | 3.29 | 9.155 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 90.00 | 0.0 | 30.1 | 30.1 | 26.7 | 3.34 | 9.000 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 90.00 | 0.0 | 30.1 | 30.1 | 26.4 | 3.73 | 8.068 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 90.00 | 0.0 | 30.1 | 30.1 | 26.3 | 3.79 | 7.933 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 90.00 | 0.0 | 30.1 | 30.1 | 25.9 | 4.17 | 7.212 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 90.00 | 0.0 | 30.1 | 30.1 | 25.8 | 4.24 | 7.092 | CC, ES |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.65 | 0.0 | 30.1 | 31.3 | 26.7 | 4.60 | 6.794 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.74 | 0.0 | 30.1 | 31.8 | 27.1 | 4.68 | 6.802 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 175.32 | 0.0 | 30.1 | 35.8 | 30.8 | 5.02 | 7.125 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 175.47 | 0.0 | 30.1 | 37.0 | 31.9 | 5.10 | 7.260 | |
| 1,279.5 | 1,279.1 | 1,280.3 | 1,280.2 | 2.7 | 2.7 | 176.50 | -0.2 | 29.0 | 42.6 | 37.2 | 5.42 | 7.849 | |
| 1,300.0 | 1,299.5 | 1,301.0 | 1,301.0 | 2.8 | 2.8 | 176.85 | -0.3 | 28.3 | 44.0 | 38.5 | 5.51 | 7.994 | |
| 1,377.9 | 1,376.9 | 1,380.0 | 1,379.9 | 3.0 | 2.9 | 178.48 | -1.1 | 24.5 | 49.5 | 43.7 | 5.81 | 8.522 | |
| 1,400.0 | 1,398.7 | 1,402.3 | 1,402.2 | 3.0 | 3.0 | 179.00 | -1.4 | 23.1 | 51.1 | 45.2 | 5.90 | 8.666 | |
| 1,476.4 | 1,474.2 | 1,479.9 | 1,479.5 | 3.2 | 3.1 | -179.03 | -2.6 | 16.7 | 56.6 | 50.4 | 6.20 | 9.133 | |
| 1,500.0 | 1,497.5 | 1,503.9 | 1,503.3 | 3.3 | 3.2 | -178.37 | -3.0 | 14.3 | 58.3 | 52.0 | 6.29 | 9.274 | |
| 1,574.8 | 1,571.0 | 1,580.0 | 1,578.9 | 3.5 | 3.4 | -176.20 | -4.8 | 5.4 | 63.9 | 57.3 | 6.59 | 9.693 | |
| 1,600.0 | 1,595.6 | 1,605.7 | 1,604.3 | 3.6 | 3.4 | -175.44 | -5.4 | 1.9 | 65.8 | 59.1 | 6.70 | 9.832 | |
| 1,673.2 | 1,667.0 | 1,680.3 | 1,678.0 | 3.9 | 3.6 | -173.17 | -7.6 | -9.4 | 71.5 | 64.5 | 7.01 | 10.209 | |
| 1,700.0 | 1,693.1 | 1,707.6 | 1,704.9 | 4.0 | 3.7 | -172.33 | -8.5 | -14.0 | 73.7 | 66.5 | 7.12 | 10.343 | |
| 1,771.6 | 1,762.4 | 1,780.7 | 1,776.7 | 4.3 | 3.9 | -170.03 | -11.1 | -27.5 | 79.5 | 72.1 | 7.45 | 10.676 | |
| 1,800.0 | 1,789.6 | 1,809.6 | 1,805.1 | 4.4 | 4.0 | -169.11 | -12.2 | -33.4 | 81.9 | 74.3 | 7.58 | 10.803 | |
| 1,870.1 | 1,856.8 | 1,881.3 | 1,874.9 | 4.7 | 4.3 | -166.84 | -15.3 | -49.1 | 88.0 | 80.0 | 7.94 | 11.082 | |
| 1,900.0 | 1,885.3 | 1,911.9 | 1,904.6 | 4.9 | 4.4 | -165.87 | -16.7 | -56.3 | 90.6 | 82.5 | 8.10 | 11.195 | |
| 1,968.5 | 1,950.2 | 1,981.9 | 1,972.3 | 5.3 | 4.7 | -163.65 | -20.1 | -74.1 | 96.9 | 88.4 | 8.50 | 11.412 | |
| 2,000.0 | 1,979.8 | 2,014.2 | 2,003.3 | 5.5 | 4.8 | -162.64 | -21.8 | -82.8 | 99.9 | 91.2 | 8.69 | 11.498 | |
| 2,044.9 | 2,021.9 | 2,060.2 | 2,047.3 | 5.7 | 5.0 | -161.21 | -24.3 | -95.8 | 104.3 | 95.3 | 9.00 | 11.597 | |
| 2,066.9 | 2,042.5 | 2,082.7 | 2,068.8 | 5.9 | 5.1 | -160.51 | -25.6 | -102.4 | 106.4 | 97.3 | 9.16 | 11.615 | |
| 2,100.0 | 2,073.4 | 2,116.7 | 2,101.1 | 6.1 | 5.3 | -159.41 | -27.5 | -112.7 | 109.4 | 99.9 | 9.43 | 11.596 | |
| 2,165.3 | 2,134.4 | 2,183.7 | 2,164.5 | 6.5 | 5.7 | -157.04 | -31.7 | -134.1 | 114.4 | 104.4 | 10.01 | 11.424 | |
| 2,200.0 | 2,166.8 | 2,219.3 | 2,197.9 | 6.8 | 5.9 | -155.66 | -34.0 | -146.1 | 116.6 | 106.3 | 10.36 | 11.262 | |
| 2,263.8 | 2,226.4 | 2,284.8 | 2,259.1 | 7.2 | 6.3 | -152.91 | -38.4 | -169.2 | 120.1 | 109.1 | 11.05 | 10.866 | |
| 2,300.0 | 2,260.2 | 2,322.0 | 2,293.5 | 7.4 | 6.6 | -151.20 | -41.1 | -182.9 | 121.8 | 110.3 | 11.49 | 10.594 | |
| 2,362.2 | 2,318.3 | 2,385.0 | 2,351.5 | 7.9 | 7.0 | -148.07 | -45.7 | -207.1 | 124.1 | 111.8 | 12.32 | 10.073 | |
| 2,400.0 | 2,353.6 | 2,422.5 | 2,386.0 | 8.1 | 7.3 | -146.21 | -48.5 | -221.6 | 125.6 | 112.7 | 12.85 | 9.772 | |
| 2,460.6 | 2,410.3 | 2,482.7 | 2,441.3 | 8.6 | 7.7 | -143.31 | -53.0 | -245.0 | 128.2 | 114.5 | 13.75 | 9.329 | |
| 2,500.0 | 2,447.0 | 2,521.9 | 2,477.3 | 8.9 | 8.0 | -141.50 | -56.0 | -260.1 | 130.1 | 115.8 | 14.35 | 9.068 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,580.5 | 2,531.2 | 9.3 | 8.5 | -138.88 | -60.3 | -282.8 | 133.2 | 117.9 | 15.29 | 8.714 | |
| 2,600.0 | 2,540.5 | 2,621.2 | 2,568.6 | 9.6 | 8.8 | -137.14 | -63.4 | -298.6 | 135.5 | 119.5 | 15.95 | 8.495 | |
| 2,657.5 | 2,594.2 | 2,678.3 | 2,621.0 | 10.0 | 9.2 | -134.79 | -67.7 | -320.7 | 138.9 | 122.0 | 16.91 | 8.217 | |
| 2,700.0 | 2,633.9 | 2,720.5 | 2,659.8 | 10.3 | 9.5 | -133.12 | -70.8 | -337.1 | 141.6 | 124.0 | 17.62 | 8.035 | |
| 2,755.9 | 2,686.1 | 2,776.1 | 2,710.9 | 10.7 | 10.0 | -131.03 | -75.0 | -358.6 | 145.3 | 126.7 | 18.58 | 7.821 | |
| 2,800.0 | 2,727.3 | 2,819.9 | 2,751.1 | 11.0 | 10.3 | -129.45 | -78.2 | -375.6 | 148.3 | 129.0 | 19.34 | 7.671 | |
| 2,854.3 | 2,778.1 | 2,873.8 | 2,800.7 | 11.4 | 10.8 | -127.60 | -82.3 | -396.5 | 152.2 | 132.0 | 20.28 | 7.507 | |
| 2,900.0 | 2,820.7 | 2,919.2 | 2,842.4 | 11.8 | 11.1 | -126.11 | -85.7 | -414.1 | 155.6 | 134.6 | 21.08 | 7.385 | |
| 2,952.7 | 2,870.0 | 2,971.6 | 2,890.5 | 12.2 | 11.5 | -124.47 | -89.6 | -434.4 | 159.7 | 137.7 | 22.00 | 7.260 | |
| 3,000.0 | 2,914.2 | 3,018.5 | 2,933.7 | 12.5 | 11.9 | -123.08 | -93.1 | -452.6 | 163.4 | 140.6 | 22.82 | 7.161 | |
| 3,051.2 | 2,962.0 | 3,069.4 | 2,980.4 | 12.9 | 12.3 | -121.63 | -96.9 | -472.3 | 167.6 | 143.9 | 23.71 | 7.066 | |
| 3,100.0 | 3,007.6 | 3,117.9 | 3,024.9 | 13.3 | 12.7 | -120.32 | -100.5 | -491.1 | 171.6 | 147.1 | 24.57 | 6.986 | |
| 3,149.6 | 3,053.9 | 3,167.2 | 3,070.2 | 13.6 | 13.1 | -119.05 | -104.2 | -510.2 | 175.8 | 150.4 | 25.43 | 6.915 | |
| 3,200.0 | 3,101.0 | 3,217.2 | 3,116.2 | 14.0 | 13.5 | -117.83 | -107.9 | -529.6 | 180.2 | 153.9 | 26.30 | 6.851 | |
| 3,248.0 | 3,145.9 | 3,264.9 | 3,160.0 | 14.4 | 13.9 | -116.71 | -111.5 | -548.1 | 184.4 | 157.3 | 27.13 | 6.796 | |
| 3,300.0 | 3,194.4 | 3,316.6 | 3,207.5 | 14.8 | 14.4 | -115.56 | -115.4 | -568.1 | 189.0 | 161.0 | 28.03 | 6.745 | |
| 3,346.4 | 3,237.8 | 3,362.7 | 3,249.9 | 15.1 | 14.7 | -114.57 | -118.8 | -585.9 | 193.3 | 164.4 | 28.82 | 6.705 | |
| 3,400.0 | 3,287.8 | 3,415.9 | 3,298.8 | 15.5 | 15.2 | -113.49 | -122.8 | -606.6 | 198.2 | 168.4 | 29.74 | 6.664 | |
| 3,444.9 | 3,329.8 | 3,460.5 | 3,339.7 | 15.9 | 15.6 | -112.63 | -126.1 | -623.8 | 202.4 | 171.9 | 30.50 | 6.634 | |
| 3,500.0 | 3,381.3 | 3,515.2 | 3,390.0 | 16.3 | 16.0 | -111.61 | -130.2 | -645.1 | 207.6 | 176.1 | 31.44 | 6.602 | |
| 3,543.3 | 3,421.7 | 3,558.3 | 3,429.6 | 16.6 | 16.4 | -110.85 | -133.4 | -661.7 | 211.7 | 179.5 | 32.17 | 6.580 | |
| 3,600.0 | 3,474.7 | 3,614.6 | 3,481.3 | 17.0 | 16.8 | -109.89 | -137.6 | -683.6 | 217.1 | 184.0 | 33.12 | 6.555 | |
| 3,641.7 | 3,513.7 | 3,656.0 | 3,519.4 | 17.3 | 17.2 | -109.22 | -140.7 | -699.6 | 221.2 | 187.4 | 33.82 | 6.539 | |
| 3,700.0 | 3,568.1 | 3,713.9 | 3,572.6 | 17.8 | 17.7 | -108.32 | -145.0 | -722.0 | 226.9 | 192.1 | 34.79 | 6.521 | |
| 3,740.1 | 3,605.6 | 3,753.8 | 3,609.2 | 18.1 | 18.0 | -107.73 | -148.0 | -737.5 | 230.8 | 195.4 | 35.46 | 6.509 | |
| 3,800.0 | 3,661.5 | 3,813.3 | 3,663.9 | 18.5 | 18.5 | -106.88 | -152.5 | -760.5 | 236.8 | 200.3 | 36.45 | 6.496 | |
| 3,838.6 | 3,697.6 | 3,851.6 | 3,699.1 | 18.8 | 18.8 | -106.36 | -155.3 | -775.4 | 240.6 | 203.6 | 37.09 | 6.488 | |
| 3,900.0 | 3,754.9 | 3,912.6 | 3,755.1 | 19.3 | 19.3 | -105.55 | -159.9 | -799.0 | 246.8 | 208.7 | 38.10 | 6.478 | |
| 3,937.0 | 3,789.5 | 3,949.3 | 3,788.9 | 19.6 | 19.6 | -105.09 | -162.6 | -813.3 | 250.6 | 211.9 | 38.71 | 6.473 | |
| 4,000.0 | 3,848.4 | 4,011.9 | 3,846.4 | 20.1 | 20.2 | -104.33 | -167.3 | -837.5 | 257.0 | 217.3 | 39.74 | 6.467 | |
| 4,035.4 | 3,881.5 | 4,047.1 | 3,878.7 | 20.3 | 20.5 | -103.92 | -170.0 | -851.2 | 260.6 | 220.3 | 40.32 | 6.464 | |
| 4,100.0 | 3,941.8 | 4,111.3 | 3,937.7 | 20.8 | 21.0 | -103.20 | -174.7 | -876.0 | 267.3 | 225.9 | 41.37 | 6.461 | |
| 4,133.8 | 3,973.4 | 4,144.9 | 3,968.6 | 21.1 | 21.3 | -102.84 | -177.3 | -889.1 | 270.8 | 228.9 | 41.92 | 6.460 | |
| 4,200.0 | 4,035.2 | 4,210.6 | 4,029.0 | 21.6 | 21.8 | -102.16 | -182.2 | -914.5 | 277.6 | 234.6 | 42.99 | 6.459 | |
| 4,232.3 | 4,065.4 | 4,242.7 | 4,058.4 | 21.8 | 22.1 | -101.84 | -184.6 | -926.9 | 281.0 | 237.5 | 43.51 | 6.459 | |
| 4,300.0 | 4,128.6 | 4,309.9 | 4,120.2 | 22.3 | 22.7 | -101.19 | -189.6 | -953.0 | 288.1 | 243.5 | 44.60 | 6.460 | |
| 4,330.7 | 4,157.3 | 4,340.4 | 4,148.2 | 22.6 | 22.9 | -100.91 | -191.9 | -964.8 | 291.3 | 246.2 | 45.09 | 6.461 | |
| 4,400.0 | 4,222.0 | 4,409.3 | 4,211.5 | 23.1 | 23.5 | -100.29 | -197.0 | -991.5 | 298.6 | 252.4 | 46.20 | 6.464 | |
| 4,429.1 | 4,249.3 | 4,438.2 | 4,238.1 | 23.3 | 23.8 | -100.04 | -199.2 | -1,002.7 | 301.7 | 255.0 | 46.66 | 6.465 | |
| 4,500.0 | 4,315.5 | 4,508.6 | 4,302.8 | 23.9 | 24.4 | -99.45 | -204.4 | -1,030.0 | 309.2 | 261.4 | 47.80 | 6.470 | |
| 4,527.5 | 4,341.2 | 4,536.0 | 4,327.9 | 24.1 | 24.6 | -99.23 | -206.5 | -1,040.6 | 312.1 | 263.9 | 48.23 | 6.471 | |
| 4,600.0 | 4,408.9 | 4,608.0 | 4,394.1 | 24.6 | 25.2 | -98.67 | -211.9 | -1,068.5 | 319.9 | 270.5 | 49.39 | 6.477 | |
| 4,626.0 | 4,433.2 | 4,633.8 | 4,417.8 | 24.8 | 25.4 | -98.47 | -213.8 | -1,078.5 | 322.6 | 272.8 | 49.80 | 6.479 | |
| 4,700.0 | 4,502.3 | 4,707.3 | 4,485.3 | 25.4 | 26.0 | -97.93 | -219.3 | -1,107.0 | 330.6 | 279.6 | 50.97 | 6.486 | |
| 4,724.4 | 4,525.1 | 4,731.5 | 4,507.6 | 25.6 | 26.2 | -97.76 | -221.1 | -1,116.4 | 333.2 | 281.8 | 51.36 | 6.488 | |
| 4,800.0 | 4,595.7 | 4,806.6 | 4,576.6 | 26.2 | 26.9 | -97.24 | -226.7 | -1,145.5 | 341.3 | 288.8 | 52.55 | 6.496 | |
| 4,822.8 | 4,617.1 | 4,829.3 | 4,597.4 | 26.3 | 27.1 | -97.09 | -228.4 | -1,154.3 | 343.8 | 290.9 | 52.91 | 6.498 | |
| 4,900.0 | 4,689.2 | 4,906.0 | 4,667.9 | 26.9 | 27.7 | -96.60 | -234.1 | -1,184.0 | 352.2 | 298.0 | 54.12 | 6.506 | |
| 4,921.2 | 4,709.0 | 4,927.1 | 4,687.3 | 27.1 | 27.9 | -96.47 | -235.7 | -1,192.2 | 354.5 | 300.0 | 54.46 | 6.509 | |
| 5,000.0 | 4,782.6 | 5,005.3 | 4,759.2 | 27.7 | 28.6 | -95.99 | -241.6 | -1,222.5 | 363.0 | 307.3 | 55.69 | 6.518 | |
| 5,019.7 | 4,801.0 | 5,024.9 | 4,777.1 | 27.8 | 28.7 | -95.88 | -243.0 | -1,230.1 | 365.1 | 309.1 | 56.00 | 6.520 | |
| 5,100.0 | 4,876.0 | 5,105.3 | 4,851.1 | 28.4 | 29.4 | -95.44 | -249.0 | -1,261.1 | 373.9 | 316.6 | 57.23 | 6.532 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,123.7 | 4,868.1 | 28.6 | 29.5 | -95.38 | -250.3 | -1,268.0 | 375.8 | 318.3 | 57.48 | 6.538 | |
| 5,159.9 | 4,932.0 | 5,166.3 | 4,907.6 | 28.9 | 29.8 | -95.30 | -253.3 | -1,283.6 | 380.2 | 322.1 | 58.06 | 6.548 | |
| 5,200.0 | 4,969.5 | 5,207.1 | 4,945.8 | 29.2 | 30.0 | -95.35 | -256.1 | -1,297.9 | 384.3 | 325.7 | 58.59 | 6.559 | |
| 5,216.5 | 4,985.1 | 5,224.0 | 4,961.5 | 29.3 | 30.1 | -95.37 | -257.2 | -1,303.7 | 385.9 | 327.1 | 58.78 | 6.566 | |
| 5,300.0 | 5,064.0 | 5,309.1 | 5,041.8 | 29.7 | 30.6 | -95.48 | -262.6 | -1,331.5 | 393.8 | 334.0 | 59.73 | 6.593 | |
| 5,314.9 | 5,078.2 | 5,324.4 | 5,056.3 | 29.8 | 30.7 | -95.49 | -263.5 | -1,336.2 | 395.1 | 335.2 | 59.88 | 6.598 | |
| 5,400.0 | 5,159.6 | 5,411.3 | 5,139.2 | 30.2 | 31.1 | -95.58 | -268.4 | -1,361.7 | 402.3 | 341.6 | 60.76 | 6.622 | |
| 5,413.4 | 5,172.4 | 5,425.0 | 5,152.4 | 30.3 | 31.2 | -95.60 | -269.1 | -1,365.5 | 403.4 | 342.5 | 60.88 | 6.626 | |
| 5,500.0 | 5,256.1 | 5,513.6 | 5,237.8 | 30.7 | 31.6 | -95.68 | -273.6 | -1,388.5 | 409.9 | 348.2 | 61.68 | 6.645 | |
| 5,511.8 | 5,267.6 | 5,525.7 | 5,249.5 | 30.7 | 31.7 | -95.69 | -274.2 | -1,391.5 | 410.7 | 348.9 | 61.78 | 6.648 | |
| 5,600.0 | 5,353.5 | 5,616.0 | 5,337.4 | 31.1 | 32.0 | -95.76 | -278.1 | -1,411.9 | 416.5 | 354.0 | 62.49 | 6.664 | |
| 5,610.2 | 5,363.5 | 5,626.5 | 5,347.7 | 31.1 | 32.1 | -95.77 | -278.5 | -1,414.1 | 417.1 | 354.5 | 62.57 | 6.666 | |
| 5,700.0 | 5,451.6 | 5,718.5 | 5,437.9 | 31.4 | 32.4 | -95.83 | -281.9 | -1,431.8 | 422.1 | 358.9 | 63.20 | 6.679 | |
| 5,708.6 | 5,460.2 | 5,727.4 | 5,446.7 | 31.4 | 32.4 | -95.84 | -282.2 | -1,433.4 | 422.5 | 359.3 | 63.25 | 6.680 | |
| 5,800.0 | 5,550.4 | 5,821.2 | 5,539.2 | 31.7 | 32.7 | -95.89 | -285.1 | -1,448.2 | 426.7 | 362.9 | 63.80 | 6.688 | |
| 5,807.1 | 5,557.4 | 5,828.5 | 5,546.4 | 31.7 | 32.7 | -95.89 | -285.3 | -1,449.2 | 427.0 | 363.1 | 63.83 | 6.689 | |
| 5,900.0 | 5,649.6 | 5,923.9 | 5,641.1 | 31.9 | 32.9 | -95.93 | -287.6 | -1,461.0 | 430.3 | 366.0 | 64.29 | 6.693 | |
| 5,905.5 | 5,655.1 | 5,929.6 | 5,646.7 | 31.9 | 32.9 | -95.94 | -287.7 | -1,461.6 | 430.5 | 366.1 | 64.31 | 6.693 | |
| 6,000.0 | 5,749.2 | 6,026.7 | 5,743.4 | 32.1 | 33.1 | -95.97 | -289.3 | -1,470.2 | 432.9 | 368.2 | 64.68 | 6.693 | |
| 6,003.9 | 5,753.1 | 6,030.7 | 5,747.5 | 32.1 | 33.1 | -95.97 | -289.4 | -1,470.5 | 433.0 | 368.3 | 64.69 | 6.693 | |
| 6,100.0 | 5,849.1 | 6,129.5 | 5,846.1 | 32.3 | 33.3 | -95.99 | -290.4 | -1,475.8 | 434.5 | 369.5 | 64.97 | 6.687 | |
| 6,102.3 | 5,851.4 | 6,131.9 | 5,848.5 | 32.3 | 33.3 | -95.99 | -290.4 | -1,475.9 | 434.5 | 369.5 | 64.98 | 6.687 | |
| 6,200.8 | 5,949.8 | 6,233.1 | 5,949.7 | 32.4 | 33.4 | -95.99 | -290.8 | -1,477.8 | 435.0 | 369.8 | 65.18 | 6.674 | |
| 6,204.9 | 5,953.9 | 6,237.3 | 5,953.9 | 32.4 | 33.4 | 179.57 | -290.8 | -1,477.8 | 435.0 | 401.7 | 33.31 | 13.059 | |
| 6,224.8 | 5,973.9 | 6,257.3 | 5,973.9 | 32.4 | 33.4 | 179.57 | -290.8 | -1,477.8 | 435.0 | 401.6 | 33.37 | 13.036 | |
| 6,234.9 | 5,983.9 | 6,267.3 | 5,983.9 | 32.4 | 33.4 | 179.57 | -290.8 | -1,477.8 | 435.0 | 401.6 | 33.40 | 13.024 | |
| 6,250.0 | 5,999.0 | 6,282.4 | 5,999.0 | 32.4 | 33.4 | 89.57 | -290.8 | -1,477.7 | 435.0 | 369.8 | 65.25 | 6.667 | |
| 6,299.2 | 6,048.2 | 6,331.4 | 6,047.9 | 32.4 | 33.4 | 89.57 | -290.8 | -1,474.9 | 435.0 | 369.8 | 65.25 | 6.666 | |
| 6,300.0 | 6,048.9 | 6,332.2 | 6,048.7 | 32.4 | 33.4 | 89.57 | -290.8 | -1,474.9 | 435.0 | 369.8 | 65.25 | 6.666 | |
| 6,350.0 | 6,098.5 | 6,382.0 | 6,098.0 | 32.4 | 33.4 | 89.57 | -290.8 | -1,468.7 | 435.0 | 369.8 | 65.19 | 6.673 | |
| 6,397.6 | 6,145.3 | 6,429.4 | 6,144.5 | 32.3 | 33.3 | 89.58 | -290.8 | -1,459.5 | 435.0 | 370.0 | 65.06 | 6.686 | |
| 6,400.0 | 6,147.6 | 6,431.7 | 6,146.8 | 32.3 | 33.3 | 89.58 | -290.8 | -1,459.0 | 435.0 | 370.0 | 65.05 | 6.687 | |
| 6,450.0 | 6,195.8 | 6,481.5 | 6,194.9 | 32.2 | 33.2 | 89.58 | -290.8 | -1,446.0 | 435.0 | 370.2 | 64.86 | 6.707 | |
| 6,496.0 | 6,239.3 | 6,527.4 | 6,238.2 | 32.1 | 33.1 | 89.59 | -290.8 | -1,431.1 | 435.0 | 370.4 | 64.65 | 6.729 | |
| 6,500.0 | 6,243.0 | 6,531.3 | 6,241.9 | 32.1 | 33.1 | 89.59 | -290.8 | -1,429.7 | 435.0 | 370.4 | 64.63 | 6.731 | |
| 6,550.0 | 6,289.0 | 6,581.1 | 6,287.7 | 32.0 | 33.0 | 89.60 | -290.8 | -1,410.2 | 435.0 | 370.6 | 64.37 | 6.759 | |
| 6,594.5 | 6,328.6 | 6,625.4 | 6,327.2 | 31.8 | 32.9 | 89.62 | -290.8 | -1,390.1 | 435.0 | 370.9 | 64.11 | 6.785 | |
| 6,600.0 | 6,333.4 | 6,630.9 | 6,332.0 | 31.8 | 32.8 | 89.62 | -290.8 | -1,387.5 | 435.0 | 370.9 | 64.08 | 6.788 | |
| 6,650.0 | 6,376.2 | 6,680.7 | 6,374.7 | 31.7 | 32.7 | 89.63 | -290.8 | -1,361.8 | 435.0 | 371.2 | 63.79 | 6.819 | |
| 6,692.9 | 6,411.3 | 6,723.4 | 6,409.8 | 31.6 | 32.6 | 89.65 | -290.8 | -1,337.4 | 435.0 | 371.5 | 63.55 | 6.845 | |
| 6,700.0 | 6,417.0 | 6,730.5 | 6,415.4 | 31.5 | 32.6 | 89.65 | -290.8 | -1,333.2 | 435.0 | 371.5 | 63.51 | 6.850 | |
| 6,750.0 | 6,455.7 | 6,780.3 | 6,454.1 | 31.4 | 32.4 | 89.67 | -290.8 | -1,301.8 | 435.0 | 371.8 | 63.25 | 6.878 | |
| 6,791.3 | 6,486.0 | 6,821.5 | 6,484.4 | 31.3 | 32.3 | 89.69 | -290.8 | -1,273.9 | 435.0 | 371.9 | 63.06 | 6.898 | |
| 6,800.0 | 6,492.2 | 6,830.1 | 6,490.5 | 31.3 | 32.3 | 89.69 | -290.8 | -1,267.8 | 435.0 | 372.0 | 63.03 | 6.902 | |
| 6,850.0 | 6,526.1 | 6,880.0 | 6,524.5 | 31.2 | 32.2 | 89.71 | -290.8 | -1,231.3 | 435.0 | 372.2 | 62.85 | 6.921 | |
| 6,889.7 | 6,551.2 | 6,919.6 | 6,549.6 | 31.2 | 32.2 | 89.73 | -290.8 | -1,200.7 | 435.0 | 372.2 | 62.77 | 6.931 | |
| 6,900.0 | 6,557.4 | 6,929.8 | 6,555.8 | 31.2 | 32.2 | 89.74 | -290.8 | -1,192.6 | 435.0 | 372.3 | 62.75 | 6.933 | |
| 6,950.0 | 6,586.0 | 6,979.7 | 6,584.4 | 31.1 | 32.2 | 89.76 | -290.8 | -1,151.7 | 435.0 | 372.3 | 62.72 | 6.936 | |
| 6,988.2 | 6,605.8 | 7,017.8 | 6,604.3 | 31.2 | 32.2 | 89.78 | -290.8 | -1,119.3 | 435.0 | 372.2 | 62.76 | 6.931 | |
| 7,000.0 | 6,611.5 | 7,029.6 | 6,610.1 | 31.2 | 32.2 | 89.79 | -290.8 | -1,109.0 | 435.0 | 372.2 | 62.78 | 6.929 | |
| 7,050.0 | 6,634.1 | 7,079.5 | 6,632.8 | 31.2 | 32.2 | 89.81 | -290.8 | -1,064.6 | 435.0 | 372.1 | 62.94 | 6.911 | |
| 7,086.6 | 6,648.6 | 7,116.0 | 6,647.4 | 31.3 | 32.3 | 89.83 | -290.8 | -1,031.1 | 435.0 | 371.9 | 63.13 | 6.891 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 7,129.4 | 6,652.3 | 31.4 | 32.4 | 89.84 | -290.8 | -1,018.6 | 435.0 | 371.8 | 63.21 | 6.882 | |
| 7,150.0 | 6,669.5 | 7,179.3 | 6,668.6 | 31.6 | 32.5 | 89.87 | -290.8 | -971.4 | 435.0 | 371.4 | 63.58 | 6.842 | |
| 7,185.0 | 6,678.8 | 7,214.3 | 6,678.0 | 31.7 | 32.7 | 89.89 | -290.8 | -937.8 | 435.0 | 371.1 | 63.91 | 6.807 | |
| 7,200.0 | 6,682.3 | 7,229.2 | 6,681.5 | 31.8 | 32.7 | 89.90 | -290.8 | -923.2 | 435.0 | 370.9 | 64.06 | 6.791 | |
| 7,250.0 | 6,691.6 | 7,279.2 | 6,691.1 | 32.1 | 33.0 | 89.93 | -290.8 | -874.2 | 435.0 | 370.4 | 64.64 | 6.730 | |
| 7,283.4 | 6,696.0 | 7,312.6 | 6,695.6 | 32.3 | 33.2 | 89.95 | -290.8 | -841.1 | 435.0 | 369.9 | 65.09 | 6.684 | |
| 7,300.0 | 6,697.5 | 7,329.2 | 6,697.2 | 32.4 | 33.3 | 89.96 | -290.8 | -824.6 | 435.0 | 369.7 | 65.32 | 6.660 | |
| 7,350.0 | 6,699.9 | 7,379.2 | 6,699.9 | 32.8 | 33.7 | 89.99 | -290.8 | -774.7 | 435.0 | 368.9 | 66.08 | 6.583 | |
| 7,364.4 | 6,700.0 | 7,393.5 | 6,700.0 | 32.9 | 33.8 | 90.00 | -290.8 | -760.3 | 435.0 | 368.7 | 66.31 | 6.560 | |
| 7,381.9 | 6,699.9 | 7,411.0 | 6,699.9 | 33.1 | 33.9 | 90.00 | -290.8 | -742.8 | 435.0 | 368.4 | 66.62 | 6.530 | |
| 7,400.0 | 6,699.8 | 7,429.2 | 6,699.8 | 33.2 | 34.1 | 90.00 | -290.8 | -724.7 | 435.0 | 368.1 | 66.94 | 6.498 | |
| 7,480.3 | 6,699.2 | 7,509.5 | 6,699.3 | 34.0 | 34.8 | 90.00 | -290.8 | -644.4 | 435.0 | 366.5 | 68.53 | 6.348 | |
| 7,500.0 | 6,699.1 | 7,529.2 | 6,699.2 | 34.2 | 35.0 | 90.00 | -290.8 | -624.7 | 435.0 | 366.1 | 68.95 | 6.309 | |
| 7,578.7 | 6,698.6 | 7,607.9 | 6,698.6 | 35.2 | 35.9 | 90.01 | -290.8 | -546.0 | 435.0 | 364.2 | 70.81 | 6.143 | |
| 7,600.0 | 6,698.5 | 7,629.2 | 6,698.5 | 35.4 | 36.2 | 90.01 | -290.8 | -524.7 | 435.0 | 363.7 | 71.34 | 6.097 | |
| 7,677.1 | 6,698.0 | 7,706.3 | 6,698.0 | 36.5 | 37.2 | 90.01 | -290.8 | -447.6 | 435.0 | 361.6 | 73.43 | 5.924 | |
| 7,700.0 | 6,697.8 | 7,729.2 | 6,697.9 | 36.8 | 37.5 | 90.01 | -290.8 | -424.7 | 435.0 | 360.9 | 74.09 | 5.872 | |
| 7,775.6 | 6,697.3 | 7,804.7 | 6,697.4 | 38.0 | 38.6 | 90.01 | -290.8 | -349.1 | 435.0 | 358.6 | 76.37 | 5.696 | |
| 7,800.0 | 6,697.2 | 7,829.2 | 6,697.2 | 38.3 | 39.0 | 90.01 | -290.8 | -324.7 | 435.0 | 357.9 | 77.14 | 5.639 | |
| 7,874.0 | 6,696.7 | 7,903.2 | 6,696.8 | 39.6 | 40.2 | 90.01 | -290.8 | -250.7 | 435.0 | 355.4 | 79.58 | 5.466 | |
| 7,900.0 | 6,696.5 | 7,929.2 | 6,696.6 | 40.0 | 40.6 | 90.01 | -290.8 | -224.7 | 435.0 | 354.5 | 80.47 | 5.405 | |
| 7,972.4 | 6,696.1 | 8,001.6 | 6,696.1 | 41.3 | 41.9 | 90.01 | -290.8 | -152.3 | 435.0 | 352.0 | 83.04 | 5.238 | |
| 8,000.0 | 6,695.9 | 8,029.2 | 6,695.9 | 41.8 | 42.4 | 90.01 | -290.8 | -124.7 | 435.0 | 350.9 | 84.05 | 5.175 | |
| 8,070.8 | 6,695.4 | 8,100.0 | 6,695.5 | 43.1 | 43.7 | 90.01 | -290.8 | -53.9 | 435.0 | 348.3 | 86.72 | 5.016 | |
| 8,100.0 | 6,695.2 | 8,129.2 | 6,695.3 | 43.7 | 44.2 | 90.01 | -290.8 | -24.7 | 435.0 | 347.2 | 87.84 | 4.952 | |
| 8,169.3 | 6,694.8 | 8,198.4 | 6,694.9 | 45.1 | 45.6 | 90.01 | -290.8 | 44.5 | 435.0 | 344.4 | 90.58 | 4.802 | |
| 8,200.0 | 6,694.6 | 8,229.2 | 6,694.7 | 45.7 | 46.2 | 90.01 | -290.8 | 75.3 | 435.0 | 343.2 | 91.82 | 4.737 | |
| 8,267.7 | 6,694.1 | 8,296.9 | 6,694.2 | 47.1 | 47.6 | 90.01 | -290.8 | 143.0 | 435.0 | 340.4 | 94.61 | 4.598 | |
| 8,300.0 | 6,693.9 | 8,329.2 | 6,694.0 | 47.8 | 48.2 | 90.01 | -290.8 | 175.3 | 435.0 | 339.0 | 95.97 | 4.533 | |
| 8,366.1 | 6,693.5 | 8,395.3 | 6,693.6 | 49.2 | 49.6 | 90.01 | -290.8 | 241.4 | 435.0 | 336.2 | 98.79 | 4.403 | |
| 8,400.0 | 6,693.3 | 8,429.2 | 6,693.4 | 49.9 | 50.4 | 90.01 | -290.8 | 275.3 | 435.0 | 334.7 | 100.25 | 4.339 | |
| 8,464.5 | 6,692.9 | 8,493.7 | 6,693.0 | 51.4 | 51.8 | 90.01 | -290.8 | 339.8 | 435.0 | 331.9 | 103.09 | 4.220 | |
| 8,500.0 | 6,692.6 | 8,529.2 | 6,692.7 | 52.1 | 52.6 | 90.01 | -290.8 | 375.3 | 435.0 | 330.3 | 104.67 | 4.156 | |
| 8,563.0 | 6,692.2 | 8,592.1 | 6,692.3 | 53.6 | 54.0 | 90.01 | -290.8 | 438.2 | 435.0 | 327.5 | 107.51 | 4.046 | |
| 8,600.0 | 6,692.0 | 8,629.2 | 6,692.1 | 54.4 | 54.8 | 90.01 | -290.8 | 475.3 | 435.0 | 325.8 | 109.19 | 3.984 | |
| 8,661.4 | 6,691.6 | 8,690.6 | 6,691.7 | 55.8 | 56.2 | 90.01 | -290.8 | 536.7 | 435.0 | 323.0 | 112.02 | 3.883 | |
| 8,700.0 | 6,691.3 | 8,729.2 | 6,691.4 | 56.7 | 57.1 | 90.01 | -290.8 | 575.3 | 435.0 | 321.2 | 113.81 | 3.822 | |
| 8,759.8 | 6,690.9 | 8,789.0 | 6,691.1 | 58.1 | 58.5 | 90.01 | -290.8 | 635.1 | 435.0 | 318.4 | 116.62 | 3.730 | |
| 8,800.0 | 6,690.7 | 8,829.2 | 6,690.8 | 59.1 | 59.4 | 90.01 | -290.8 | 675.3 | 435.0 | 316.5 | 118.52 | 3.670 | |
| 8,858.2 | 6,690.3 | 8,887.4 | 6,690.4 | 60.5 | 60.8 | 90.01 | -290.8 | 733.5 | 435.0 | 313.7 | 121.30 | 3.586 | |
| 8,900.0 | 6,690.0 | 8,929.2 | 6,690.1 | 61.5 | 61.8 | 90.01 | -290.8 | 775.3 | 435.0 | 311.7 | 123.31 | 3.528 | |
| 8,956.7 | 6,689.7 | 8,985.8 | 6,689.8 | 62.9 | 63.2 | 90.01 | -290.8 | 831.9 | 435.0 | 308.9 | 126.05 | 3.451 | |
| 9,000.0 | 6,689.4 | 9,029.2 | 6,689.5 | 63.9 | 64.3 | 90.01 | -290.8 | 875.3 | 435.0 | 306.8 | 128.16 | 3.394 | |
| 9,055.1 | 6,689.0 | 9,084.3 | 6,689.1 | 65.3 | 65.6 | 90.02 | -290.8 | 930.4 | 435.0 | 304.1 | 130.86 | 3.324 | |
| 9,100.0 | 6,688.7 | 9,129.2 | 6,688.9 | 66.4 | 66.7 | 90.02 | -290.8 | 975.3 | 435.0 | 301.9 | 133.08 | 3.269 | |
| 9,153.5 | 6,688.4 | 9,182.7 | 6,688.5 | 67.7 | 68.0 | 90.02 | -290.8 | 1,028.8 | 435.0 | 299.3 | 135.73 | 3.205 | |
| 9,200.0 | 6,688.1 | 9,229.2 | 6,688.2 | 68.9 | 69.2 | 90.02 | -290.8 | 1,075.2 | 435.0 | 297.0 | 138.04 | 3.151 | |
| 9,251.9 | 6,687.8 | 9,281.1 | 6,687.9 | 70.2 | 70.5 | 90.02 | -290.8 | 1,127.2 | 435.0 | 294.3 | 140.65 | 3.093 | |
| 9,300.0 | 6,687.4 | 9,329.2 | 6,687.6 | 71.4 | 71.7 | 90.02 | -290.8 | 1,175.2 | 435.0 | 291.9 | 143.06 | 3.041 | |
| 9,350.4 | 6,687.1 | 9,379.5 | 6,687.2 | 72.7 | 72.9 | 90.02 | -290.8 | 1,225.6 | 435.0 | 289.4 | 145.61 | 2.987 | |
| 9,400.0 | 6,686.8 | 9,429.2 | 6,686.9 | 73.9 | 74.2 | 90.02 | -290.8 | 1,275.2 | 435.0 | 286.9 | 148.12 | 2.937 | |
| 9,448.8 | 6,686.5 | 9,478.0 | 6,686.6 | 75.2 | 75.4 | 90.02 | -290.8 | 1,324.0 | 435.0 | 284.4 | 150.60 | 2.888 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-232 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 9,529.2 | 6,686.3 | 76.5 | 76.7 | 90.02 | -290.8 | 1,375.2 | 435.0 | 281.8 | 153.22 | 2.839 | |
| 9,547.2 | 6,685.8 | 9,576.4 | 6,686.0 | 77.7 | 78.0 | 90.02 | -290.8 | 1,422.5 | 435.0 | 279.4 | 155.64 | 2.795 | |
| 9,600.0 | 6,685.5 | 9,629.2 | 6,685.6 | 79.0 | 79.3 | 90.02 | -290.8 | 1,475.2 | 435.0 | 276.6 | 158.35 | 2.747 | |
| 9,645.6 | 6,685.2 | 9,674.8 | 6,685.3 | 80.2 | 80.5 | 90.02 | -290.8 | 1,520.9 | 435.0 | 274.3 | 160.71 | 2.707 | |
| 9,700.0 | 6,684.8 | 9,729.2 | 6,685.0 | 81.6 | 81.9 | 90.02 | -290.8 | 1,575.2 | 435.0 | 271.5 | 163.52 | 2.660 | |
| 9,744.1 | 6,684.6 | 9,773.2 | 6,684.7 | 82.8 | 83.0 | 90.02 | -290.8 | 1,619.3 | 435.0 | 269.2 | 165.81 | 2.624 | |
| 9,800.0 | 6,684.2 | 9,829.2 | 6,684.3 | 84.2 | 84.5 | 90.02 | -290.8 | 1,675.2 | 435.0 | 266.3 | 168.71 | 2.578 | |
| 9,842.5 | 6,683.9 | 9,871.7 | 6,684.0 | 85.3 | 85.6 | 90.02 | -290.8 | 1,717.7 | 435.0 | 264.1 | 170.93 | 2.545 | |
| 9,900.0 | 6,683.5 | 9,929.2 | 6,683.7 | 86.8 | 87.1 | 90.02 | -290.8 | 1,775.2 | 435.0 | 261.1 | 173.93 | 2.501 | |
| 9,940.9 | 6,683.3 | 9,970.1 | 6,683.4 | 87.9 | 88.2 | 90.02 | -290.8 | 1,816.2 | 435.0 | 258.9 | 176.08 | 2.470 | |
| 10,000.0 | 6,682.9 | 10,029.2 | 6,683.0 | 89.5 | 89.7 | 90.02 | -290.8 | 1,875.2 | 435.0 | 255.8 | 179.18 | 2.428 | |
| 10,039.3 | 6,682.6 | 10,068.5 | 6,682.8 | 90.5 | 90.7 | 90.02 | -290.8 | 1,914.6 | 435.0 | 253.7 | 181.25 | 2.400 | |
| 10,100.0 | 6,682.2 | 10,129.2 | 6,682.4 | 92.1 | 92.3 | 90.02 | -290.8 | 1,975.2 | 435.0 | 250.5 | 184.45 | 2.358 | |
| 10,137.8 | 6,682.0 | 10,166.9 | 6,682.1 | 93.1 | 93.3 | 90.02 | -290.8 | 2,013.0 | 435.0 | 248.5 | 186.44 | 2.333 | |
| 10,200.0 | 6,681.6 | 10,229.2 | 6,681.7 | 94.8 | 95.0 | 90.02 | -290.8 | 2,075.2 | 435.0 | 245.3 | 189.74 | 2.293 | |
| 10,236.2 | 6,681.4 | 10,265.4 | 6,681.5 | 95.7 | 95.9 | 90.01 | -290.8 | 2,111.4 | 435.0 | 243.3 | 191.66 | 2.270 | |
| 10,300.0 | 6,680.9 | 10,329.2 | 6,681.1 | 97.4 | 97.6 | 90.01 | -290.8 | 2,175.2 | 435.0 | 239.9 | 195.04 | 2.230 | |
| 10,334.6 | 6,680.7 | 10,363.8 | 6,680.8 | 98.3 | 98.5 | 90.01 | -290.8 | 2,209.9 | 435.0 | 238.1 | 196.89 | 2.209 | |
| 10,400.0 | 6,680.3 | 10,429.2 | 6,680.4 | 100.1 | 100.3 | 90.01 | -290.8 | 2,275.2 | 435.0 | 234.6 | 200.37 | 2.171 | |
| 10,433.0 | 6,680.1 | 10,462.2 | 6,680.2 | 101.0 | 101.2 | 90.01 | -290.8 | 2,308.3 | 435.0 | 232.9 | 202.13 | 2.152 | |
| 10,500.0 | 6,679.7 | 10,529.2 | 6,679.8 | 102.8 | 103.0 | 90.01 | -290.8 | 2,375.2 | 435.0 | 229.3 | 205.71 | 2.115 | |
| 10,531.5 | 6,679.4 | 10,560.6 | 6,679.6 | 103.6 | 103.8 | 90.01 | -290.8 | 2,406.7 | 435.0 | 227.6 | 207.39 | 2.097 | |
| 10,600.0 | 6,679.0 | 10,629.2 | 6,679.1 | 105.4 | 105.6 | 90.01 | -290.8 | 2,475.2 | 435.0 | 223.9 | 211.06 | 2.061 | |
| 10,629.9 | 6,678.8 | 10,659.1 | 6,678.9 | 106.2 | 106.4 | 90.01 | -290.8 | 2,505.1 | 435.0 | 222.3 | 212.67 | 2.045 | |
| 10,700.0 | 6,678.4 | 10,729.2 | 6,678.5 | 108.1 | 108.3 | 90.01 | -290.8 | 2,575.2 | 435.0 | 218.6 | 216.43 | 2.010 | |
| 10,728.3 | 6,678.2 | 10,757.5 | 6,678.3 | 108.9 | 109.1 | 90.01 | -290.8 | 2,603.5 | 435.0 | 217.0 | 217.95 | 1.996 | |
| 10,800.0 | 6,677.7 | 10,829.2 | 6,677.8 | 110.8 | 111.0 | 90.01 | -290.8 | 2,675.2 | 435.0 | 213.2 | 221.81 | 1.961 | |
| 10,826.7 | 6,677.5 | 10,855.9 | 6,677.6 | 111.5 | 111.7 | 90.01 | -290.8 | 2,702.0 | 435.0 | 211.7 | 223.25 | 1.948 | |
| 10,900.0 | 6,677.1 | 10,929.2 | 6,677.1 | 113.5 | 113.7 | 90.01 | -290.8 | 2,775.2 | 435.0 | 207.8 | 227.20 | 1.915 | |
| 10,925.2 | 6,676.9 | 10,954.3 | 6,677.0 | 114.2 | 114.4 | 90.01 | -290.8 | 2,800.4 | 435.0 | 206.4 | 228.56 | 1.903 | |
| 11,000.0 | 6,676.4 | 11,029.2 | 6,676.5 | 116.2 | 116.4 | 90.01 | -290.8 | 2,875.2 | 435.0 | 202.4 | 232.60 | 1.870 | |
| 11,023.6 | 6,676.3 | 11,052.8 | 6,676.3 | 116.8 | 117.0 | 90.01 | -290.8 | 2,898.8 | 435.0 | 201.1 | 233.88 | 1.860 | |
| 11,100.0 | 6,675.8 | 11,129.2 | 6,675.8 | 118.9 | 119.1 | 90.01 | -290.8 | 2,975.2 | 435.0 | 197.0 | 238.02 | 1.828 | |
| 11,122.0 | 6,675.6 | 11,151.2 | 6,675.7 | 119.5 | 119.7 | 90.01 | -290.8 | 2,997.2 | 435.0 | 195.8 | 239.21 | 1.818 | |
| 11,200.0 | 6,675.1 | 11,229.2 | 6,675.2 | 121.6 | 121.8 | 90.01 | -290.8 | 3,075.2 | 435.0 | 191.5 | 243.44 | 1.787 | |
| 11,220.4 | 6,675.0 | 11,249.6 | 6,675.0 | 122.2 | 122.4 | 90.01 | -290.8 | 3,095.7 | 435.0 | 190.4 | 244.55 | 1.779 | |
| 11,300.0 | 6,674.5 | 11,329.2 | 6,674.5 | 124.3 | 124.5 | 90.01 | -290.8 | 3,175.2 | 435.0 | 186.1 | 248.87 | 1.748 | |
| 11,318.9 | 6,674.3 | 11,348.0 | 6,674.4 | 124.9 | 125.0 | 90.01 | -290.8 | 3,194.1 | 435.0 | 185.1 | 249.90 | 1.741 | |
| 11,400.0 | 6,673.8 | 11,429.2 | 6,673.9 | 127.1 | 127.2 | 90.01 | -290.8 | 3,275.2 | 435.0 | 180.7 | 254.31 | 1.710 | |
| 11,417.3 | 6,673.7 | 11,446.5 | 6,673.8 | 127.5 | 127.7 | 90.01 | -290.8 | 3,292.5 | 435.0 | 179.7 | 255.25 | 1.704 | |
| 11,500.0 | 6,673.2 | 11,529.2 | 6,673.2 | 129.8 | 130.0 | 90.01 | -290.8 | 3,375.2 | 435.0 | 175.2 | 259.76 | 1.675 | |
| 11,515.7 | 6,673.1 | 11,544.9 | 6,673.1 | 130.2 | 130.4 | 90.01 | -290.8 | 3,390.9 | 435.0 | 174.4 | 260.61 | 1.669 | |
| 11,600.0 | 6,672.5 | 11,629.2 | 6,672.6 | 132.5 | 132.7 | 90.01 | -290.8 | 3,475.2 | 435.0 | 169.8 | 265.21 | 1.640 | |
| 11,614.1 | 6,672.4 | 11,643.3 | 6,672.5 | 132.9 | 133.1 | 90.01 | -290.8 | 3,489.3 | 435.0 | 169.0 | 265.98 | 1.635 | |
| 11,700.0 | 6,671.9 | 11,729.2 | 6,671.9 | 135.3 | 135.4 | 90.01 | -290.8 | 3,575.2 | 435.0 | 164.3 | 270.67 | 1.607 | |
| 11,712.6 | 6,671.8 | 11,741.7 | 6,671.8 | 135.6 | 135.8 | 90.01 | -290.8 | 3,587.8 | 435.0 | 163.6 | 271.36 | 1.603 | |
| 11,800.0 | 6,671.2 | 11,829.2 | 6,671.2 | 138.0 | 138.2 | 90.00 | -290.8 | 3,675.2 | 435.0 | 158.8 | 276.14 | 1.575 | |
| 11,811.0 | 6,671.1 | 11,840.2 | 6,671.2 | 138.3 | 138.5 | 90.00 | -290.8 | 3,686.2 | 435.0 | 158.2 | 276.74 | 1.572 | |
| 11,900.0 | 6,670.6 | 11,929.2 | 6,670.6 | 140.7 | 140.9 | 90.00 | -290.8 | 3,775.2 | 435.0 | 153.4 | 281.61 | 1.545 | |
| 11,909.4 | 6,670.5 | 11,938.6 | 6,670.5 | 141.0 | 141.1 | 90.00 | -290.8 | 3,784.6 | 435.0 | 152.8 | 282.13 | 1.542 | |
| 11,915.2 | 6,670.5 | 11,944.4 | 6,670.5 | 141.1 | 141.3 | 90.00 | -290.8 | 3,790.4 | 435.0 | 152.5 | 282.45 | 1.540 | |
| 11,987.2 | 6,670.0 | 12,016.4 | 6,670.0 | 143.1 | 143.3 | 90.00 | -290.8 | 3,862.4 | 435.0 | 148.6 | 286.39 | 1.519 SF | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.61 | 0.7 | 105.0 | 105.0 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.61 | 0.7 | 105.0 | 105.0 | 104.8 | 0.19 | 546.211 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.61 | 0.7 | 105.0 | 105.0 | 104.8 | 0.20 | 536.966 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.61 | 0.7 | 105.0 | 105.0 | 104.4 | 0.63 | 166.427 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.61 | 0.7 | 105.0 | 105.0 | 104.4 | 0.65 | 162.774 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.61 | 0.7 | 105.0 | 105.0 | 103.9 | 1.07 | 97.824 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.61 | 0.7 | 105.0 | 105.0 | 103.9 | 1.09 | 95.926 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.61 | 0.7 | 105.0 | 105.0 | 103.5 | 1.52 | 69.271 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.61 | 0.7 | 105.0 | 105.0 | 103.5 | 1.54 | 68.000 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.61 | 0.7 | 105.0 | 105.0 | 103.0 | 1.96 | 53.620 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.61 | 0.7 | 105.0 | 105.0 | 103.0 | 1.99 | 52.667 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.61 | 0.7 | 105.0 | 105.0 | 102.6 | 2.40 | 43.738 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.61 | 0.7 | 105.0 | 105.0 | 102.6 | 2.44 | 42.977 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.61 | 0.7 | 105.0 | 105.0 | 102.2 | 2.84 | 36.931 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.61 | 0.7 | 105.0 | 105.0 | 102.1 | 2.89 | 36.298 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.61 | 0.7 | 105.0 | 105.0 | 101.7 | 3.29 | 31.958 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.61 | 0.7 | 105.0 | 105.0 | 101.7 | 3.34 | 31.416 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.61 | 0.7 | 105.0 | 105.0 | 101.3 | 3.73 | 28.165 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.61 | 0.7 | 105.0 | 105.0 | 101.2 | 3.79 | 27.692 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.61 | 0.7 | 105.0 | 105.0 | 100.8 | 4.17 | 25.177 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.61 | 0.7 | 105.0 | 105.0 | 100.8 | 4.24 | 24.757 | CC, ES |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.12 | 0.7 | 105.0 | 106.2 | 101.6 | 4.60 | 23.073 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.15 | 0.7 | 105.0 | 106.7 | 102.1 | 4.68 | 22.820 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.35 | 0.7 | 105.0 | 110.7 | 105.7 | 5.02 | 22.044 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.41 | 0.7 | 105.0 | 111.9 | 106.8 | 5.10 | 21.946 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 174.71 | 0.7 | 105.0 | 118.6 | 113.1 | 5.44 | 21.806 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 174.80 | 0.7 | 105.0 | 120.6 | 115.1 | 5.52 | 21.841 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 3.0 | 175.15 | 0.7 | 105.0 | 129.8 | 123.9 | 5.85 | 22.184 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 3.0 | 175.25 | 0.7 | 105.0 | 132.8 | 126.8 | 5.94 | 22.342 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 3.2 | 175.62 | 0.7 | 105.0 | 144.4 | 138.1 | 6.26 | 23.057 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 3.2 | 175.73 | 0.7 | 105.0 | 148.4 | 142.0 | 6.36 | 23.333 | |
| 1,574.8 | 1,571.0 | 1,571.0 | 1,571.0 | 3.5 | 3.4 | 176.08 | 0.7 | 105.0 | 162.3 | 155.6 | 6.67 | 24.335 | |
| 1,600.0 | 1,595.6 | 1,595.6 | 1,595.6 | 3.6 | 3.5 | 176.19 | 0.7 | 105.0 | 167.4 | 160.6 | 6.77 | 24.722 | |
| 1,673.2 | 1,667.0 | 1,667.0 | 1,667.0 | 3.9 | 3.6 | 176.51 | 0.7 | 105.0 | 183.5 | 176.4 | 7.07 | 25.946 | |
| 1,700.0 | 1,693.1 | 1,693.1 | 1,693.1 | 4.0 | 3.7 | 176.61 | 0.7 | 105.0 | 189.8 | 182.7 | 7.18 | 26.439 | |
| 1,771.6 | 1,762.4 | 1,765.4 | 1,765.4 | 4.3 | 3.8 | 177.06 | 0.2 | 104.5 | 207.6 | 200.1 | 7.46 | 27.813 | |
| 1,800.0 | 1,789.6 | 1,794.2 | 1,794.2 | 4.4 | 3.9 | 177.34 | -0.4 | 103.9 | 214.7 | 207.2 | 7.57 | 28.365 | |
| 1,870.1 | 1,856.8 | 1,865.4 | 1,865.3 | 4.7 | 4.0 | 178.19 | -2.8 | 101.7 | 232.9 | 225.1 | 7.83 | 29.747 | |
| 1,900.0 | 1,885.3 | 1,895.7 | 1,895.6 | 4.9 | 4.1 | 178.62 | -4.2 | 100.4 | 240.9 | 232.9 | 7.94 | 30.349 | |
| 1,968.5 | 1,950.2 | 1,965.3 | 1,964.9 | 5.3 | 4.2 | 179.74 | -8.3 | 96.6 | 259.5 | 251.4 | 8.19 | 31.678 | |
| 2,000.0 | 1,979.8 | 1,997.2 | 1,996.7 | 5.5 | 4.3 | -179.70 | -10.5 | 94.5 | 268.4 | 260.1 | 8.31 | 32.286 | |
| 2,044.9 | 2,021.9 | 2,042.7 | 2,041.9 | 5.7 | 4.4 | -178.86 | -14.3 | 91.0 | 281.2 | 272.7 | 8.49 | 33.129 | |
| 2,066.9 | 2,042.5 | 2,065.0 | 2,064.0 | 5.9 | 4.4 | -178.43 | -16.3 | 89.2 | 287.5 | 278.9 | 8.59 | 33.468 | |
| 2,100.0 | 2,073.4 | 2,098.6 | 2,097.3 | 6.1 | 4.5 | -177.77 | -19.5 | 86.1 | 296.9 | 288.1 | 8.75 | 33.933 | |
| 2,165.3 | 2,134.4 | 2,165.2 | 2,163.1 | 6.5 | 4.6 | -176.40 | -26.8 | 79.3 | 314.8 | 305.7 | 9.08 | 34.678 | |
| 2,200.0 | 2,166.8 | 2,200.5 | 2,198.0 | 6.8 | 4.7 | -175.64 | -31.2 | 75.2 | 324.1 | 314.8 | 9.26 | 35.001 | |
| 2,263.8 | 2,226.4 | 2,265.8 | 2,262.1 | 7.2 | 4.9 | -174.19 | -40.0 | 67.0 | 340.6 | 331.0 | 9.61 | 35.426 | |
| 2,300.0 | 2,260.2 | 2,302.7 | 2,298.3 | 7.4 | 5.0 | -173.34 | -45.5 | 61.9 | 349.8 | 339.9 | 9.82 | 35.604 | |
| 2,362.2 | 2,318.3 | 2,362.3 | 2,356.6 | 7.9 | 5.2 | -172.02 | -54.5 | 53.4 | 365.4 | 355.2 | 10.20 | 35.842 | |
| 2,400.0 | 2,353.6 | 2,398.6 | 2,392.1 | 8.1 | 5.3 | -171.27 | -60.0 | 48.3 | 375.1 | 364.6 | 10.43 | 35.970 | |
| 2,460.6 | 2,410.3 | 2,456.7 | 2,448.9 | 8.6 | 5.4 | -170.14 | -68.9 | 40.0 | 390.6 | 379.8 | 10.82 | 36.107 | |
| 2,500.0 | 2,447.0 | 2,494.5 | 2,485.9 | 8.9 | 5.6 | -169.45 | -74.6 | 34.7 | 400.8 | 389.7 | 11.07 | 36.192 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,551.1 | 2,541.2 | 9.3 | 5.8 | -168.48 | -83.2 | 26.6 | 416.1 | 404.6 | 11.47 | 36.267 | |
| 2,600.0 | 2,540.5 | 2,590.4 | 2,579.6 | 9.6 | 5.9 | -167.85 | -89.2 | 21.1 | 426.8 | 415.1 | 11.76 | 36.303 | |
| 2,657.5 | 2,594.2 | 2,645.5 | 2,633.6 | 10.0 | 6.1 | -167.01 | -97.6 | 13.3 | 441.9 | 429.8 | 12.17 | 36.327 | |
| 2,700.0 | 2,633.9 | 2,686.3 | 2,673.4 | 10.3 | 6.2 | -166.43 | -103.7 | 7.5 | 453.2 | 440.7 | 12.47 | 36.333 | |
| 2,755.9 | 2,686.1 | 2,739.9 | 2,725.9 | 10.7 | 6.4 | -165.71 | -111.9 | -0.1 | 468.0 | 455.1 | 12.89 | 36.319 | |
| 2,800.0 | 2,727.3 | 2,782.2 | 2,767.2 | 11.0 | 6.6 | -165.17 | -118.3 | -6.1 | 479.7 | 466.5 | 13.22 | 36.300 | |
| 2,854.3 | 2,778.1 | 2,834.3 | 2,818.2 | 11.4 | 6.8 | -164.54 | -126.2 | -13.5 | 494.2 | 480.6 | 13.63 | 36.261 | |
| 2,900.0 | 2,820.7 | 2,878.0 | 2,861.0 | 11.8 | 6.9 | -164.04 | -132.9 | -19.7 | 506.5 | 492.5 | 13.98 | 36.222 | |
| 2,952.7 | 2,870.0 | 2,928.6 | 2,910.5 | 12.2 | 7.1 | -163.49 | -140.6 | -26.9 | 520.7 | 506.3 | 14.40 | 36.168 | |
| 3,000.0 | 2,914.2 | 2,972.3 | 2,953.3 | 12.5 | 7.3 | -163.04 | -147.2 | -33.1 | 533.4 | 518.7 | 14.75 | 36.154 | |
| 3,051.2 | 2,962.0 | 3,018.2 | 2,998.3 | 12.9 | 7.4 | -162.67 | -153.6 | -39.1 | 547.6 | 532.4 | 15.12 | 36.212 | |
| 3,100.0 | 3,007.6 | 3,062.0 | 3,041.4 | 13.3 | 7.6 | -162.39 | -159.2 | -44.3 | 561.3 | 545.9 | 15.46 | 36.318 | |
| 3,149.6 | 3,053.9 | 3,106.3 | 3,085.1 | 13.6 | 7.7 | -162.19 | -164.5 | -49.2 | 575.6 | 559.8 | 15.79 | 36.452 | |
| 3,200.0 | 3,101.0 | 3,151.3 | 3,129.6 | 14.0 | 7.8 | -162.06 | -169.3 | -53.7 | 590.3 | 574.2 | 16.12 | 36.628 | |
| 3,248.0 | 3,145.9 | 3,194.0 | 3,172.0 | 14.4 | 8.0 | -162.01 | -173.4 | -57.5 | 604.6 | 588.2 | 16.42 | 36.817 | |
| 3,300.0 | 3,194.4 | 3,240.1 | 3,217.8 | 14.8 | 8.1 | -162.02 | -177.3 | -61.2 | 620.3 | 603.6 | 16.74 | 37.065 | |
| 3,346.4 | 3,237.8 | 3,281.1 | 3,258.6 | 15.1 | 8.2 | -162.08 | -180.3 | -64.0 | 634.6 | 617.6 | 17.01 | 37.308 | |
| 3,400.0 | 3,287.8 | 3,328.2 | 3,305.5 | 15.5 | 8.3 | -162.21 | -183.2 | -66.7 | 651.4 | 634.1 | 17.31 | 37.625 | |
| 3,444.9 | 3,329.8 | 3,367.5 | 3,344.7 | 15.9 | 8.4 | -162.37 | -185.2 | -68.6 | 665.7 | 648.1 | 17.56 | 37.916 | |
| 3,500.0 | 3,381.3 | 3,415.6 | 3,392.7 | 16.3 | 8.5 | -162.61 | -187.1 | -70.4 | 683.5 | 665.7 | 17.85 | 38.302 | |
| 3,543.3 | 3,421.7 | 3,453.1 | 3,430.2 | 16.6 | 8.6 | -162.84 | -188.2 | -71.4 | 697.8 | 679.7 | 18.06 | 38.635 | |
| 3,600.0 | 3,474.7 | 3,500.0 | 3,477.1 | 17.0 | 8.7 | -163.17 | -189.1 | -72.2 | 716.7 | 698.4 | 18.33 | 39.096 | |
| 3,641.7 | 3,513.7 | 3,537.6 | 3,514.7 | 17.3 | 8.7 | -163.46 | -189.4 | -72.5 | 730.9 | 712.4 | 18.52 | 39.458 | |
| 3,700.0 | 3,568.1 | 3,591.0 | 3,568.1 | 17.8 | 8.8 | -163.90 | -189.4 | -72.5 | 751.0 | 732.2 | 18.78 | 39.978 | |
| 3,740.1 | 3,605.6 | 3,628.5 | 3,605.6 | 18.1 | 8.9 | -164.19 | -189.4 | -72.5 | 764.8 | 745.8 | 18.97 | 40.323 | |
| 3,800.0 | 3,661.5 | 3,684.5 | 3,661.5 | 18.5 | 9.0 | -164.62 | -189.4 | -72.5 | 785.4 | 766.2 | 19.24 | 40.823 | |
| 3,838.6 | 3,697.6 | 3,720.5 | 3,697.6 | 18.8 | 9.1 | -164.88 | -189.4 | -72.5 | 798.8 | 779.4 | 19.42 | 41.137 | |
| 3,900.0 | 3,754.9 | 3,777.9 | 3,754.9 | 19.3 | 9.2 | -165.28 | -189.4 | -72.5 | 820.0 | 800.3 | 19.70 | 41.624 | |
| 3,937.0 | 3,789.5 | 3,812.4 | 3,789.5 | 19.6 | 9.2 | -165.51 | -189.4 | -72.5 | 832.9 | 813.0 | 19.87 | 41.910 | |
| 4,000.0 | 3,848.4 | 3,871.3 | 3,848.4 | 20.1 | 9.4 | -165.88 | -189.4 | -72.5 | 854.7 | 834.6 | 20.17 | 42.384 | |
| 4,035.4 | 3,881.5 | 3,904.4 | 3,881.5 | 20.3 | 9.4 | -166.08 | -189.4 | -72.5 | 867.0 | 846.7 | 20.33 | 42.644 | |
| 4,100.0 | 3,941.8 | 3,964.7 | 3,941.8 | 20.8 | 9.5 | -166.44 | -189.4 | -72.5 | 889.5 | 868.9 | 20.63 | 43.106 | |
| 4,133.8 | 3,973.4 | 3,996.3 | 3,973.4 | 21.1 | 9.6 | -166.62 | -189.4 | -72.5 | 901.3 | 880.5 | 20.79 | 43.342 | |
| 4,200.0 | 4,035.2 | 4,058.1 | 4,035.2 | 21.6 | 9.7 | -166.96 | -189.4 | -72.5 | 924.3 | 903.2 | 21.11 | 43.792 | |
| 4,232.3 | 4,065.4 | 4,088.3 | 4,065.4 | 21.8 | 9.8 | -167.11 | -189.4 | -72.5 | 935.6 | 914.3 | 21.26 | 44.006 | |
| 4,300.0 | 4,128.6 | 4,151.6 | 4,128.6 | 22.3 | 9.9 | -167.44 | -189.4 | -72.5 | 959.2 | 937.6 | 21.58 | 44.443 | |
| 4,330.7 | 4,157.3 | 4,180.2 | 4,157.3 | 22.6 | 9.9 | -167.58 | -189.4 | -72.5 | 969.9 | 948.2 | 21.73 | 44.637 | |
| 4,400.0 | 4,222.0 | 4,245.0 | 4,222.0 | 23.1 | 10.1 | -167.88 | -189.4 | -72.5 | 994.2 | 972.1 | 22.06 | 45.063 | |
| 4,429.1 | 4,249.3 | 4,272.2 | 4,249.3 | 23.3 | 10.1 | -168.01 | -189.4 | -72.5 | 1,004.4 | 982.2 | 22.20 | 45.237 | |
| 4,500.0 | 4,315.5 | 4,338.4 | 4,315.5 | 23.9 | 10.2 | -168.30 | -189.4 | -72.5 | 1,029.2 | 1,006.6 | 22.54 | 45.652 | |
| 4,527.5 | 4,341.2 | 4,364.1 | 4,341.2 | 24.1 | 10.3 | -168.41 | -189.4 | -72.5 | 1,038.8 | 1,016.1 | 22.68 | 45.809 | |
| 4,600.0 | 4,408.9 | 4,431.8 | 4,408.9 | 24.6 | 10.4 | -168.69 | -189.4 | -72.5 | 1,064.2 | 1,041.2 | 23.03 | 46.213 | |
| 4,626.0 | 4,433.2 | 4,456.1 | 4,433.2 | 24.8 | 10.5 | -168.78 | -189.4 | -72.5 | 1,073.3 | 1,050.2 | 23.15 | 46.354 | |
| 4,700.0 | 4,502.3 | 4,525.2 | 4,502.3 | 25.4 | 10.6 | -169.05 | -189.4 | -72.5 | 1,099.3 | 1,075.8 | 23.52 | 46.748 | |
| 4,724.4 | 4,525.1 | 4,548.0 | 4,525.1 | 25.6 | 10.7 | -169.14 | -189.4 | -72.5 | 1,107.9 | 1,084.2 | 23.63 | 46.874 | |
| 4,800.0 | 4,595.7 | 4,618.7 | 4,595.7 | 26.2 | 10.8 | -169.39 | -189.4 | -72.5 | 1,134.4 | 1,110.4 | 24.01 | 47.257 | |
| 4,822.8 | 4,617.1 | 4,640.0 | 4,617.1 | 26.3 | 10.8 | -169.47 | -189.4 | -72.5 | 1,142.4 | 1,118.3 | 24.12 | 47.370 | |
| 4,900.0 | 4,689.2 | 4,712.1 | 4,689.2 | 26.9 | 11.0 | -169.71 | -189.4 | -72.5 | 1,169.6 | 1,145.1 | 24.50 | 47.743 | |
| 4,921.2 | 4,709.0 | 4,731.9 | 4,709.0 | 27.1 | 11.0 | -169.78 | -189.4 | -72.5 | 1,177.0 | 1,152.4 | 24.60 | 47.843 | |
| 5,000.0 | 4,782.6 | 4,805.5 | 4,782.6 | 27.7 | 11.2 | -170.01 | -189.4 | -72.5 | 1,204.8 | 1,179.8 | 24.99 | 48.207 | |
| 5,019.7 | 4,801.0 | 4,823.9 | 4,801.0 | 27.8 | 11.2 | -170.07 | -189.4 | -72.5 | 1,211.7 | 1,186.6 | 25.09 | 48.295 | |
| 5,100.0 | 4,876.0 | 4,898.9 | 4,876.0 | 28.4 | 11.4 | -170.30 | -189.4 | -72.5 | 1,240.0 | 1,214.5 | 25.49 | 48.650 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,915.8 | 4,892.9 | 28.6 | 11.4 | -170.35 | -189.4 | -72.5 | 1,246.3 | 1,220.8 | 25.58 | 48.728 | |
| 5,159.9 | 4,932.0 | 4,954.9 | 4,932.0 | 28.9 | 11.5 | -170.46 | -189.4 | -72.5 | 1,261.1 | 1,235.3 | 25.79 | 48.906 | |
| 5,200.0 | 4,969.5 | 4,992.4 | 4,969.5 | 29.2 | 11.5 | -170.62 | -189.4 | -72.5 | 1,274.9 | 1,248.9 | 26.02 | 49.001 | |
| 5,216.5 | 4,985.1 | 5,008.0 | 4,985.1 | 29.3 | 11.6 | -170.68 | -189.4 | -72.5 | 1,280.5 | 1,254.4 | 26.11 | 49.045 | |
| 5,300.0 | 5,064.0 | 5,086.9 | 5,064.0 | 29.7 | 11.7 | -170.96 | -189.4 | -72.5 | 1,307.3 | 1,280.7 | 26.56 | 49.223 | |
| 5,314.9 | 5,078.2 | 5,101.2 | 5,078.2 | 29.8 | 11.8 | -171.00 | -189.4 | -72.5 | 1,311.8 | 1,285.2 | 26.64 | 49.251 | |
| 5,400.0 | 5,159.6 | 5,182.5 | 5,159.6 | 30.2 | 11.9 | -171.25 | -189.4 | -72.5 | 1,336.4 | 1,309.3 | 27.07 | 49.367 | |
| 5,413.4 | 5,172.4 | 5,195.4 | 5,172.4 | 30.3 | 12.0 | -171.28 | -189.4 | -72.5 | 1,340.0 | 1,312.9 | 27.14 | 49.382 | |
| 5,500.0 | 5,256.1 | 5,279.1 | 5,256.1 | 30.7 | 12.1 | -171.49 | -189.4 | -72.5 | 1,362.1 | 1,334.6 | 27.55 | 49.440 | |
| 5,511.8 | 5,267.6 | 5,290.5 | 5,267.6 | 30.7 | 12.1 | -171.52 | -189.4 | -72.5 | 1,364.9 | 1,337.3 | 27.60 | 49.446 | |
| 5,600.0 | 5,353.5 | 5,376.5 | 5,353.5 | 31.1 | 12.3 | -171.70 | -189.4 | -72.5 | 1,384.6 | 1,356.6 | 28.00 | 49.449 | |
| 5,610.2 | 5,363.5 | 5,386.5 | 5,363.5 | 31.1 | 12.3 | -171.72 | -189.4 | -72.5 | 1,386.7 | 1,358.6 | 28.04 | 49.448 | |
| 5,700.0 | 5,451.6 | 7,804.8 | 6,717.5 | 31.4 | 41.3 | -127.14 | -189.4 | -1,441.8 | 1,308.0 | 1,243.9 | 64.15 | 20.390 | |
| 5,708.6 | 5,460.2 | 7,806.3 | 6,717.5 | 31.4 | 41.4 | -126.55 | -189.4 | -1,443.2 | 1,299.8 | 1,235.3 | 64.51 | 20.150 | |
| 5,800.0 | 5,550.4 | 7,820.2 | 6,717.5 | 31.7 | 41.7 | -120.18 | -189.4 | -1,457.1 | 1,213.1 | 1,145.1 | 68.02 | 17.834 | |
| 5,807.1 | 5,557.4 | 7,821.1 | 6,717.5 | 31.7 | 41.7 | -119.68 | -189.4 | -1,458.1 | 1,206.4 | 1,138.1 | 68.27 | 17.671 | |
| 5,900.0 | 5,649.6 | 7,832.1 | 6,717.4 | 31.9 | 42.0 | -113.14 | -189.4 | -1,469.0 | 1,118.3 | 1,047.2 | 71.10 | 15.727 | |
| 5,905.5 | 5,655.1 | 7,832.6 | 6,717.4 | 31.9 | 42.0 | -112.76 | -189.4 | -1,469.6 | 1,113.1 | 1,041.8 | 71.24 | 15.623 | |
| 6,000.0 | 5,749.2 | 7,840.5 | 6,717.4 | 32.1 | 42.3 | -106.41 | -189.4 | -1,477.5 | 1,023.8 | 950.6 | 73.19 | 13.989 | |
| 6,003.9 | 5,753.1 | 7,840.8 | 6,717.4 | 32.1 | 42.3 | -106.16 | -189.4 | -1,477.8 | 1,020.1 | 946.9 | 73.25 | 13.927 | |
| 6,100.0 | 5,849.1 | 7,845.5 | 6,717.4 | 32.3 | 42.4 | -100.37 | -189.4 | -1,482.5 | 930.1 | 855.8 | 74.29 | 12.520 | |
| 6,102.3 | 5,851.4 | 7,845.6 | 6,717.4 | 32.3 | 42.4 | -100.24 | -189.4 | -1,482.6 | 927.9 | 853.6 | 74.31 | 12.488 | |
| 6,200.8 | 5,949.8 | 7,847.1 | 6,717.4 | 32.4 | 42.4 | -95.25 | -189.4 | -1,484.0 | 836.9 | 762.3 | 74.61 | 11.218 | |
| 6,204.9 | 5,953.9 | 7,847.0 | 6,717.4 | 32.4 | 42.4 | -179.50 | -189.4 | -1,484.0 | 833.2 | 801.7 | 31.47 | 26.476 | |
| 6,234.9 | 5,983.9 | 7,846.9 | 6,717.4 | 32.4 | 42.4 | -179.52 | -189.4 | -1,483.9 | 805.8 | 774.3 | 31.51 | 25.569 | |
| 6,250.0 | 5,999.0 | 7,846.7 | 6,717.4 | 32.4 | 42.4 | 93.07 | -189.4 | -1,483.7 | 792.0 | 717.5 | 74.53 | 10.627 | |
| 6,299.2 | 6,048.2 | 7,843.8 | 6,717.4 | 32.4 | 42.3 | 100.62 | -189.4 | -1,480.8 | 747.8 | 674.3 | 73.44 | 10.182 | |
| 6,300.0 | 6,048.9 | 7,843.7 | 6,717.4 | 32.4 | 42.3 | 100.74 | -189.4 | -1,480.7 | 747.1 | 673.6 | 73.42 | 10.176 | |
| 6,350.0 | 6,098.5 | 7,837.3 | 6,717.4 | 32.4 | 42.2 | 106.91 | -189.4 | -1,474.2 | 703.1 | 631.5 | 71.58 | 9.821 | |
| 6,397.6 | 6,145.3 | 7,827.9 | 6,717.5 | 32.3 | 41.9 | 111.45 | -189.4 | -1,464.9 | 662.3 | 592.7 | 69.64 | 9.511 | |
| 6,400.0 | 6,147.6 | 7,827.4 | 6,717.5 | 32.3 | 41.9 | 111.64 | -189.4 | -1,464.3 | 660.3 | 590.8 | 69.54 | 9.496 | |
| 6,450.0 | 6,195.8 | 7,814.1 | 6,717.5 | 32.2 | 41.6 | 115.10 | -189.4 | -1,451.0 | 619.2 | 551.6 | 67.60 | 9.161 | |
| 6,496.0 | 6,239.3 | 7,798.9 | 6,717.6 | 32.1 | 41.2 | 117.31 | -189.4 | -1,435.8 | 583.1 | 517.1 | 66.03 | 8.831 | |
| 6,500.0 | 6,243.0 | 7,797.4 | 6,717.6 | 32.1 | 41.1 | 117.46 | -189.4 | -1,434.4 | 580.1 | 514.2 | 65.91 | 8.801 | |
| 6,550.0 | 6,289.0 | 7,777.5 | 6,717.6 | 32.0 | 40.6 | 118.89 | -189.4 | -1,414.5 | 543.2 | 478.7 | 64.53 | 8.417 | |
| 6,594.5 | 6,328.6 | 7,757.2 | 6,717.7 | 31.8 | 40.1 | 119.48 | -189.4 | -1,394.2 | 512.6 | 449.0 | 63.58 | 8.061 | |
| 6,600.0 | 6,333.4 | 7,754.5 | 6,717.7 | 31.8 | 40.0 | 119.51 | -189.4 | -1,391.5 | 508.9 | 445.4 | 63.48 | 8.017 | |
| 6,650.0 | 6,376.2 | 7,728.4 | 6,717.8 | 31.7 | 39.4 | 119.43 | -189.4 | -1,365.4 | 477.5 | 414.8 | 62.73 | 7.613 | |
| 6,692.9 | 6,411.3 | 7,703.7 | 6,717.9 | 31.6 | 38.7 | 118.87 | -189.4 | -1,340.7 | 453.1 | 390.8 | 62.29 | 7.273 | |
| 6,700.0 | 6,417.0 | 7,699.5 | 6,717.9 | 31.5 | 38.6 | 118.74 | -189.4 | -1,336.4 | 449.3 | 387.0 | 62.24 | 7.219 | |
| 6,750.0 | 6,455.7 | 7,667.7 | 6,718.1 | 31.4 | 37.8 | 117.49 | -189.4 | -1,304.7 | 424.4 | 362.4 | 61.97 | 6.848 | |
| 6,791.3 | 6,486.0 | 7,639.5 | 6,718.2 | 31.3 | 37.1 | 116.10 | -189.4 | -1,276.4 | 406.4 | 344.5 | 61.87 | 6.569 | |
| 6,800.0 | 6,492.2 | 7,633.3 | 6,718.2 | 31.3 | 36.9 | 115.77 | -189.4 | -1,270.3 | 403.0 | 341.1 | 61.86 | 6.514 | |
| 6,850.0 | 6,526.1 | 7,596.5 | 6,718.3 | 31.2 | 36.0 | 113.64 | -189.4 | -1,233.5 | 385.0 | 323.2 | 61.84 | 6.226 | |
| 6,889.7 | 6,551.2 | 7,565.6 | 6,718.4 | 31.2 | 35.2 | 111.71 | -189.4 | -1,202.6 | 373.2 | 311.3 | 61.85 | 6.033 | |
| 6,900.0 | 6,557.4 | 7,557.4 | 6,718.5 | 31.2 | 35.0 | 111.19 | -189.4 | -1,194.4 | 370.4 | 308.6 | 61.85 | 5.989 | |
| 6,950.0 | 6,586.0 | 7,516.3 | 6,718.6 | 31.1 | 34.0 | 108.53 | -189.4 | -1,153.2 | 359.0 | 297.2 | 61.80 | 5.809 | |
| 6,988.2 | 6,605.8 | 7,483.6 | 6,718.8 | 31.2 | 33.2 | 106.42 | -189.4 | -1,120.5 | 352.2 | 290.5 | 61.71 | 5.708 | |
| 7,000.0 | 6,611.5 | 7,473.2 | 6,718.8 | 31.2 | 32.9 | 105.77 | -189.4 | -1,110.2 | 350.4 | 288.8 | 61.66 | 5.683 | |
| 7,050.0 | 6,634.1 | 7,428.5 | 6,719.0 | 31.2 | 31.8 | 103.03 | -189.4 | -1,065.5 | 344.2 | 282.8 | 61.38 | 5.608 | |
| 7,086.6 | 6,648.6 | 7,394.8 | 6,719.1 | 31.3 | 31.0 | 101.12 | -189.4 | -1,031.8 | 341.0 | 279.9 | 61.08 | 5.582 | |
| 7,100.0 | 6,653.4 | 7,382.3 | 6,719.1 | 31.4 | 30.7 | 100.45 | -189.4 | -1,019.3 | 340.0 | 279.1 | 60.95 | 5.578 SF | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 7,335.0 | 6,719.3 | 31.6 | 29.6 | 98.14 | -189.4 | -971.9 | 337.3 | 276.9 | 60.40 | 5.584 | |
| 7,185.0 | 6,678.8 | 7,301.2 | 6,719.4 | 31.7 | 28.8 | 96.75 | -189.4 | -938.1 | 336.1 | 276.1 | 59.95 | 5.606 | |
| 7,200.0 | 6,682.3 | 7,286.6 | 6,719.5 | 31.8 | 28.5 | 96.22 | -189.4 | -923.5 | 335.7 | 275.9 | 59.74 | 5.618 | |
| 7,250.0 | 6,691.6 | 7,237.4 | 6,719.7 | 32.1 | 27.3 | 94.76 | -189.4 | -874.4 | 334.8 | 275.7 | 59.05 | 5.670 | |
| 7,283.4 | 6,696.0 | 7,204.2 | 6,719.8 | 32.3 | 26.6 | 94.07 | -189.4 | -841.2 | 334.4 | 275.9 | 58.56 | 5.711 | |
| 7,300.0 | 6,697.5 | 7,187.8 | 6,719.9 | 32.4 | 26.2 | 93.82 | -189.4 | -824.7 | 334.3 | 276.0 | 58.32 | 5.733 | |
| 7,350.0 | 6,699.9 | 7,137.4 | 6,719.9 | 32.8 | 25.1 | 93.41 | -189.4 | -774.3 | 334.2 | 276.6 | 57.62 | 5.800 | |
| 7,364.4 | 6,700.0 | 7,122.6 | 6,719.4 | 32.9 | 24.8 | 93.33 | -189.4 | -759.5 | 334.2 | 276.7 | 57.42 | 5.819 | |
| 7,381.9 | 6,699.9 | 7,104.6 | 6,718.5 | 33.1 | 24.4 | 93.19 | -189.4 | -741.6 | 334.1 | 276.9 | 57.19 | 5.842 | |
| 7,400.0 | 6,699.8 | 7,086.1 | 6,717.0 | 33.2 | 24.0 | 92.96 | -189.4 | -723.1 | 334.0 | 277.1 | 56.96 | 5.864 | |
| 7,480.3 | 6,699.2 | 7,005.2 | 6,705.1 | 34.0 | 22.3 | 91.00 | -189.4 | -643.2 | 333.6 | 277.5 | 56.15 | 5.942 | |
| 7,500.0 | 6,699.1 | 6,985.9 | 6,700.9 | 34.2 | 22.0 | 90.30 | -189.4 | -624.3 | 333.6 | 277.6 | 55.97 | 5.960 | |
| 7,507.9 | 6,699.1 | 6,978.1 | 6,699.1 | 34.3 | 21.8 | 90.00 | -189.4 | -616.8 | 333.6 | 277.7 | 55.91 | 5.966 | |
| 7,578.7 | 6,698.6 | 6,911.0 | 6,679.9 | 35.2 | 20.6 | 86.79 | -189.4 | -552.5 | 334.2 | 278.8 | 55.41 | 6.031 | |
| 7,600.0 | 6,698.5 | 6,891.6 | 6,673.3 | 35.4 | 20.2 | 85.67 | -189.4 | -534.3 | 334.7 | 279.4 | 55.26 | 6.057 | |
| 7,677.1 | 6,698.0 | 6,824.6 | 6,646.6 | 36.5 | 19.1 | 81.22 | -189.4 | -472.8 | 338.5 | 283.7 | 54.75 | 6.182 | |
| 7,700.0 | 6,697.8 | 6,805.8 | 6,638.1 | 36.8 | 18.8 | 79.81 | -189.4 | -456.1 | 340.3 | 285.8 | 54.57 | 6.237 | |
| 7,775.6 | 6,697.3 | 6,750.0 | 6,610.3 | 38.0 | 18.1 | 75.31 | -189.4 | -407.7 | 349.7 | 295.6 | 54.08 | 6.467 | |
| 7,800.0 | 6,697.2 | 6,729.4 | 6,599.0 | 38.3 | 17.8 | 73.54 | -189.4 | -390.4 | 353.9 | 300.1 | 53.77 | 6.581 | |
| 7,874.0 | 6,696.7 | 6,678.9 | 6,569.5 | 39.6 | 17.2 | 69.03 | -189.4 | -349.5 | 370.4 | 317.3 | 53.12 | 6.973 | |
| 7,900.0 | 6,696.5 | 6,662.4 | 6,559.2 | 40.0 | 17.0 | 67.52 | -189.4 | -336.5 | 377.7 | 324.8 | 52.87 | 7.143 | |
| 7,972.4 | 6,696.1 | 6,619.3 | 6,531.1 | 41.3 | 16.6 | 63.55 | -189.4 | -304.0 | 401.9 | 349.7 | 52.24 | 7.693 | |
| 8,000.0 | 6,695.9 | 6,600.0 | 6,517.8 | 41.8 | 16.4 | 61.76 | -189.4 | -289.9 | 412.7 | 360.9 | 51.80 | 7.966 | |
| 8,070.8 | 6,695.4 | 6,567.5 | 6,494.7 | 43.1 | 16.1 | 58.79 | -189.4 | -267.2 | 443.9 | 392.5 | 51.46 | 8.627 | |
| 8,100.0 | 6,695.2 | 6,550.0 | 6,481.7 | 43.7 | 15.9 | 57.20 | -189.4 | -255.3 | 458.3 | 407.2 | 51.07 | 8.973 | |
| 8,169.3 | 6,694.8 | 6,522.6 | 6,461.0 | 45.1 | 15.7 | 54.77 | -189.4 | -237.4 | 495.4 | 444.5 | 50.87 | 9.740 | |
| 8,200.0 | 6,694.6 | 6,509.8 | 6,451.1 | 45.7 | 15.6 | 53.65 | -189.4 | -229.3 | 513.2 | 462.5 | 50.72 | 10.119 | |
| 8,267.7 | 6,694.1 | 6,483.5 | 6,430.2 | 47.1 | 15.4 | 51.41 | -189.4 | -213.3 | 554.8 | 504.4 | 50.49 | 10.990 | |
| 8,300.0 | 6,693.9 | 6,471.7 | 6,420.7 | 47.8 | 15.4 | 50.43 | -189.4 | -206.4 | 575.8 | 525.4 | 50.40 | 11.424 | |
| 8,366.1 | 6,693.5 | 6,450.0 | 6,402.9 | 49.2 | 15.2 | 48.66 | -189.4 | -194.0 | 620.7 | 570.4 | 50.36 | 12.326 | |
| 8,400.0 | 6,693.3 | 6,438.5 | 6,393.3 | 49.9 | 15.2 | 47.75 | -189.4 | -187.7 | 644.7 | 594.3 | 50.31 | 12.814 | |
| 8,464.5 | 6,692.9 | 6,419.3 | 6,377.0 | 51.4 | 15.0 | 46.27 | -189.4 | -177.4 | 691.8 | 641.4 | 50.36 | 13.738 | |
| 8,500.0 | 6,692.6 | 6,400.0 | 6,360.4 | 52.1 | 14.9 | 44.82 | -189.4 | -167.6 | 718.6 | 668.7 | 49.90 | 14.402 | |
| 8,563.0 | 6,692.2 | 6,400.0 | 6,360.4 | 53.6 | 14.9 | 44.82 | -189.4 | -167.6 | 767.1 | 716.1 | 50.95 | 15.057 | |
| 8,600.0 | 6,692.0 | 6,383.8 | 6,346.3 | 54.4 | 14.9 | 43.64 | -189.4 | -159.7 | 796.2 | 745.5 | 50.68 | 15.712 | |
| 8,661.4 | 6,691.6 | 6,369.6 | 6,333.7 | 55.8 | 14.8 | 42.63 | -189.4 | -153.0 | 845.6 | 794.7 | 50.92 | 16.606 | |
| 8,700.0 | 6,691.3 | 6,350.0 | 6,316.2 | 56.7 | 14.7 | 41.29 | -189.4 | -144.2 | 877.3 | 826.8 | 50.49 | 17.377 | |
| 8,759.8 | 6,690.9 | 6,350.0 | 6,316.2 | 58.1 | 14.7 | 41.29 | -189.4 | -144.2 | 926.8 | 875.4 | 51.47 | 18.009 | |
| 8,800.0 | 6,690.7 | 6,350.0 | 6,316.2 | 59.1 | 14.7 | 41.29 | -189.4 | -144.2 | 960.8 | 908.6 | 52.12 | 18.432 | |
| 8,858.2 | 6,690.3 | 6,330.2 | 6,298.2 | 60.5 | 14.6 | 39.99 | -189.4 | -135.8 | 1,010.3 | 958.3 | 51.99 | 19.433 | |
| 8,900.0 | 6,690.0 | 6,322.9 | 6,291.6 | 61.5 | 14.6 | 39.52 | -189.4 | -132.9 | 1,046.3 | 994.0 | 52.26 | 20.019 | |
| 8,956.7 | 6,689.7 | 6,300.0 | 6,270.5 | 62.9 | 14.5 | 38.10 | -189.4 | -124.0 | 1,095.8 | 1,043.9 | 51.93 | 21.100 | |
| 9,000.0 | 6,689.4 | 6,300.0 | 6,270.5 | 63.9 | 14.5 | 38.10 | -189.4 | -124.0 | 1,133.7 | 1,081.1 | 52.62 | 21.544 | |
| 9,055.1 | 6,689.0 | 6,300.0 | 6,270.5 | 65.3 | 14.5 | 38.10 | -189.4 | -124.0 | 1,182.4 | 1,128.9 | 53.51 | 22.097 | |
| 9,100.0 | 6,688.7 | 6,300.0 | 6,270.5 | 66.4 | 14.5 | 38.10 | -189.4 | -124.0 | 1,222.5 | 1,168.3 | 54.23 | 22.542 | |
| 9,153.5 | 6,688.4 | 6,300.0 | 6,270.5 | 67.7 | 14.5 | 38.10 | -189.4 | -124.0 | 1,270.8 | 1,215.7 | 55.10 | 23.061 | |
| 9,200.0 | 6,688.1 | 6,278.7 | 6,250.6 | 68.9 | 14.4 | 36.85 | -189.4 | -116.4 | 1,312.5 | 1,257.8 | 54.65 | 24.017 | |
| 9,251.9 | 6,687.8 | 6,272.3 | 6,244.6 | 70.2 | 14.4 | 36.48 | -189.4 | -114.2 | 1,359.7 | 1,304.6 | 55.12 | 24.668 | |
| 9,300.0 | 6,687.4 | 6,266.6 | 6,239.2 | 71.4 | 14.3 | 36.16 | -189.4 | -112.3 | 1,403.5 | 1,348.0 | 55.56 | 25.261 | |
| 9,350.4 | 6,687.1 | 6,250.0 | 6,223.5 | 72.7 | 14.3 | 35.24 | -189.4 | -107.0 | 1,449.9 | 1,394.5 | 55.43 | 26.158 | |
| 9,400.0 | 6,686.8 | 6,250.0 | 6,223.5 | 73.9 | 14.3 | 35.24 | -189.4 | -107.0 | 1,495.5 | 1,439.3 | 56.20 | 26.609 | |
| 9,448.8 | 6,686.5 | 6,250.0 | 6,223.5 | 75.2 | 14.3 | 35.24 | -189.4 | -107.0 | 1,540.6 | 1,483.7 | 56.97 | 27.041 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-234 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,250.0 | 6,223.5 | 76.5 | 14.3 | 35.24 | -189.4 | -107.0 | 1,588.2 | 1,530.4 | 57.78 | 27.487 | |
| 9,547.2 | 6,685.8 | 6,250.0 | 6,223.5 | 77.7 | 14.3 | 35.24 | -189.4 | -107.0 | 1,632.3 | 1,573.8 | 58.53 | 27.888 | |
| 9,600.0 | 6,685.5 | 6,250.0 | 6,223.5 | 79.0 | 14.3 | 35.24 | -189.4 | -107.0 | 1,681.8 | 1,622.4 | 59.37 | 28.328 | |
| 9,645.6 | 6,685.2 | 6,232.2 | 6,206.5 | 80.2 | 14.2 | 34.29 | -189.4 | -101.8 | 1,724.4 | 1,665.3 | 59.04 | 29.207 | |
| 9,700.0 | 6,684.8 | 6,227.6 | 6,202.1 | 81.6 | 14.2 | 34.05 | -189.4 | -100.5 | 1,775.5 | 1,715.9 | 59.62 | 29.780 | |
| 9,744.1 | 6,684.6 | 6,224.1 | 6,198.6 | 82.8 | 14.2 | 33.87 | -189.4 | -99.5 | 1,817.1 | 1,757.0 | 60.10 | 30.234 | |
| 9,800.0 | 6,684.2 | 6,219.7 | 6,194.4 | 84.2 | 14.2 | 33.64 | -189.4 | -98.3 | 1,869.9 | 1,809.2 | 60.71 | 30.801 | |
| 9,842.5 | 6,683.9 | 6,200.0 | 6,175.4 | 85.3 | 14.1 | 32.67 | -189.4 | -93.4 | 1,910.5 | 1,850.3 | 60.22 | 31.727 | |
| 9,900.0 | 6,683.5 | 6,200.0 | 6,175.4 | 86.8 | 14.1 | 32.67 | -189.4 | -93.4 | 1,965.0 | 1,903.9 | 61.09 | 32.163 | |
| 9,940.9 | 6,683.3 | 6,200.0 | 6,175.4 | 87.9 | 14.1 | 32.67 | -189.4 | -93.4 | 2,003.9 | 1,942.1 | 61.72 | 32.466 | |
| 10,000.0 | 6,682.9 | 6,200.0 | 6,175.4 | 89.5 | 14.1 | 32.67 | -189.4 | -93.4 | 2,060.1 | 1,997.5 | 62.63 | 32.896 | |
| 10,039.3 | 6,682.6 | 6,200.0 | 6,175.4 | 90.5 | 14.1 | 32.67 | -189.4 | -93.4 | 2,097.7 | 2,034.5 | 63.23 | 33.175 | |
| 10,100.0 | 6,682.2 | 6,200.0 | 6,175.4 | 92.1 | 14.1 | 32.67 | -189.4 | -93.4 | 2,155.7 | 2,091.6 | 64.17 | 33.597 | |
| 10,137.8 | 6,682.0 | 6,200.0 | 6,175.4 | 93.1 | 14.1 | 32.67 | -189.4 | -93.4 | 2,192.0 | 2,127.2 | 64.75 | 33.853 | |
| 10,200.0 | 6,681.6 | 6,200.0 | 6,175.4 | 94.8 | 14.1 | 32.67 | -189.4 | -93.4 | 2,251.7 | 2,186.0 | 65.71 | 34.268 | |
| 10,236.2 | 6,681.4 | 6,200.0 | 6,175.4 | 95.7 | 14.1 | 32.67 | -189.4 | -93.4 | 2,286.6 | 2,220.3 | 66.27 | 34.503 | |
| 10,300.0 | 6,680.9 | 6,200.0 | 6,175.4 | 97.4 | 14.1 | 32.67 | -189.4 | -93.4 | 2,348.0 | 2,280.8 | 67.26 | 34.911 | |
| 10,334.6 | 6,680.7 | 6,200.0 | 6,175.4 | 98.3 | 14.1 | 32.67 | -189.4 | -93.4 | 2,381.5 | 2,313.7 | 67.80 | 35.127 | |
| 10,400.0 | 6,680.3 | 6,200.0 | 6,175.4 | 100.1 | 14.1 | 32.67 | -189.4 | -93.4 | 2,444.7 | 2,375.9 | 68.81 | 35.526 | |
| 10,433.0 | 6,680.1 | 6,200.0 | 6,175.4 | 101.0 | 14.1 | 32.67 | -189.4 | -93.4 | 2,476.7 | 2,407.3 | 69.33 | 35.724 | |
| 10,500.0 | 6,679.7 | 6,177.5 | 6,153.4 | 102.8 | 14.0 | 31.60 | -189.4 | -88.3 | 2,541.1 | 2,472.2 | 68.87 | 36.896 | |
| 10,531.5 | 6,679.4 | 6,176.0 | 6,152.0 | 103.6 | 14.0 | 31.53 | -189.4 | -88.0 | 2,571.6 | 2,502.3 | 69.25 | 37.132 | |
| 10,600.0 | 6,679.0 | 6,172.8 | 6,148.9 | 105.4 | 14.0 | 31.39 | -189.4 | -87.3 | 2,638.0 | 2,567.9 | 70.09 | 37.637 | |
| 10,629.9 | 6,678.8 | 6,171.5 | 6,147.6 | 106.2 | 14.0 | 31.33 | -189.4 | -87.1 | 2,667.0 | 2,596.6 | 70.46 | 37.852 | |
| 10,700.0 | 6,678.4 | 6,150.0 | 6,126.5 | 108.1 | 14.0 | 30.38 | -189.4 | -83.1 | 2,735.4 | 2,665.3 | 70.11 | 39.014 | |
| 10,728.3 | 6,678.2 | 6,150.0 | 6,126.5 | 108.9 | 14.0 | 30.38 | -189.4 | -83.1 | 2,762.9 | 2,692.4 | 70.54 | 39.170 | |
| 10,800.0 | 6,677.7 | 6,150.0 | 6,126.5 | 110.8 | 14.0 | 30.38 | -189.4 | -83.1 | 2,832.5 | 2,760.9 | 71.60 | 39.558 | |
| 10,826.7 | 6,677.5 | 6,150.0 | 6,126.5 | 111.5 | 14.0 | 30.38 | -189.4 | -83.1 | 2,858.6 | 2,786.6 | 72.00 | 39.700 | |
| 10,900.0 | 6,677.1 | 6,150.0 | 6,126.5 | 113.5 | 14.0 | 30.38 | -189.4 | -83.1 | 2,929.9 | 2,856.8 | 73.10 | 40.082 | |
| 10,925.2 | 6,676.9 | 6,150.0 | 6,126.5 | 114.2 | 14.0 | 30.38 | -189.4 | -83.1 | 2,954.4 | 2,881.0 | 73.47 | 40.211 | |
| 11,000.0 | 6,676.4 | 6,150.0 | 6,126.5 | 116.2 | 14.0 | 30.38 | -189.4 | -83.1 | 3,027.4 | 2,952.8 | 74.59 | 40.586 | |
| 11,023.6 | 6,676.3 | 6,150.0 | 6,126.5 | 116.8 | 14.0 | 30.38 | -189.4 | -83.1 | 3,050.4 | 2,975.5 | 74.95 | 40.702 | |
| 11,100.0 | 6,675.8 | 6,150.0 | 6,126.5 | 118.9 | 14.0 | 30.38 | -189.4 | -83.1 | 3,125.1 | 3,049.0 | 76.09 | 41.070 | |
| 11,122.0 | 6,675.6 | 6,150.0 | 6,126.5 | 119.5 | 14.0 | 30.38 | -189.4 | -83.1 | 3,146.6 | 3,070.2 | 76.42 | 41.174 | |
| 11,200.0 | 6,675.1 | 6,150.0 | 6,126.5 | 121.6 | 14.0 | 30.38 | -189.4 | -83.1 | 3,222.9 | 3,145.3 | 77.59 | 41.536 | |
| 11,220.4 | 6,675.0 | 6,150.0 | 6,126.5 | 122.2 | 14.0 | 30.38 | -189.4 | -83.1 | 3,242.9 | 3,165.0 | 77.90 | 41.630 | |
| 11,300.0 | 6,674.5 | 6,150.0 | 6,126.5 | 124.3 | 14.0 | 30.38 | -189.4 | -83.1 | 3,320.8 | 3,241.7 | 79.09 | 41.986 | |
| 11,318.9 | 6,674.3 | 6,150.0 | 6,126.5 | 124.9 | 14.0 | 30.38 | -189.4 | -83.1 | 3,339.3 | 3,260.0 | 79.38 | 42.068 | |
| 11,400.0 | 6,673.8 | 6,150.0 | 6,126.5 | 127.1 | 14.0 | 30.38 | -189.4 | -83.1 | 3,418.9 | 3,338.3 | 80.60 | 42.418 | |
| 11,417.3 | 6,673.7 | 6,150.0 | 6,126.5 | 127.5 | 14.0 | 30.38 | -189.4 | -83.1 | 3,435.9 | 3,355.0 | 80.86 | 42.492 | |
| 11,500.0 | 6,673.2 | 6,150.0 | 6,126.5 | 129.8 | 14.0 | 30.38 | -189.4 | -83.1 | 3,517.1 | 3,435.0 | 82.11 | 42.836 | |
| 11,515.7 | 6,673.1 | 6,150.0 | 6,126.5 | 130.2 | 14.0 | 30.38 | -189.4 | -83.1 | 3,532.5 | 3,450.2 | 82.34 | 42.900 | |
| 11,600.0 | 6,672.5 | 6,150.0 | 6,126.5 | 132.5 | 14.0 | 30.38 | -189.4 | -83.1 | 3,615.4 | 3,531.7 | 83.62 | 43.238 | |
| 11,614.1 | 6,672.4 | 6,150.0 | 6,126.5 | 132.9 | 14.0 | 30.38 | -189.4 | -83.1 | 3,629.3 | 3,545.4 | 83.83 | 43.294 | |
| 11,700.0 | 6,671.9 | 6,150.0 | 6,126.5 | 135.3 | 14.0 | 30.38 | -189.4 | -83.1 | 3,713.7 | 3,628.6 | 85.13 | 43.626 | |
| 11,712.6 | 6,671.8 | 6,150.0 | 6,126.5 | 135.6 | 14.0 | 30.38 | -189.4 | -83.1 | 3,726.1 | 3,640.8 | 85.32 | 43.674 | |
| 11,800.0 | 6,671.2 | 6,150.0 | 6,126.5 | 138.0 | 14.0 | 30.38 | -189.4 | -83.1 | 3,812.2 | 3,725.5 | 86.64 | 44.001 | |
| 11,811.0 | 6,671.1 | 6,150.0 | 6,126.5 | 138.3 | 14.0 | 30.38 | -189.4 | -83.1 | 3,823.0 | 3,736.2 | 86.80 | 44.042 | |
| 11,900.0 | 6,670.6 | 6,150.0 | 6,126.5 | 140.7 | 14.0 | 30.38 | -189.4 | -83.1 | 3,910.7 | 3,822.5 | 88.15 | 44.364 | |
| 11,909.4 | 6,670.5 | 6,150.0 | 6,126.5 | 141.0 | 14.0 | 30.38 | -189.4 | -83.1 | 3,920.0 | 3,831.7 | 88.29 | 44.397 | |
| 11,987.2 | 6,670.0 | 6,128.6 | 6,105.3 | 143.1 | 13.9 | 29.48 | -189.4 | -79.7 | 3,996.3 | 3,908.6 | 87.74 | 45.549 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 90.00 | 0.0 | 15.0 | 15.0 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 90.00 | 0.0 | 15.0 | 15.0 | 14.8 | 0.19 | 78.235 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 90.00 | 0.0 | 15.0 | 15.0 | 14.8 | 0.20 | 76.911 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 90.00 | 0.0 | 15.0 | 15.0 | 14.4 | 0.63 | 23.838 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 90.00 | 0.0 | 15.0 | 15.0 | 14.4 | 0.65 | 23.315 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 90.00 | 0.0 | 15.0 | 15.0 | 14.0 | 1.07 | 14.012 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 90.00 | 0.0 | 15.0 | 15.0 | 13.9 | 1.09 | 13.740 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 90.00 | 0.0 | 15.0 | 15.0 | 13.5 | 1.52 | 9.922 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 90.00 | 0.0 | 15.0 | 15.0 | 13.5 | 1.54 | 9.740 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 90.00 | 0.0 | 15.0 | 15.0 | 13.1 | 1.96 | 7.680 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 90.00 | 0.0 | 15.0 | 15.0 | 13.0 | 1.99 | 7.544 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 90.00 | 0.0 | 15.0 | 15.0 | 12.6 | 2.40 | 6.265 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 90.00 | 0.0 | 15.0 | 15.0 | 12.6 | 2.44 | 6.156 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 90.00 | 0.0 | 15.0 | 15.0 | 12.2 | 2.84 | 5.290 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 90.00 | 0.0 | 15.0 | 15.0 | 12.1 | 2.89 | 5.199 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 90.00 | 0.0 | 15.0 | 15.0 | 11.8 | 3.29 | 4.577 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 90.00 | 0.0 | 15.0 | 15.0 | 11.7 | 3.34 | 4.500 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 90.00 | 0.0 | 15.0 | 15.0 | 11.3 | 3.73 | 4.034 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 90.00 | 0.0 | 15.0 | 15.0 | 11.2 | 3.79 | 3.966 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 90.00 | 0.0 | 15.0 | 15.0 | 10.9 | 4.17 | 3.606 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 90.00 | 0.0 | 15.0 | 15.0 | 10.8 | 4.24 | 3.546 | CC |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.85 | 0.0 | 15.0 | 16.2 | 11.6 | 4.60 | 3.526 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 175.01 | 0.0 | 15.0 | 16.8 | 12.1 | 4.68 | 3.587 | |
| 1,181.1 | 1,181.0 | 1,181.5 | 1,181.5 | 2.5 | 2.5 | 176.25 | -0.1 | 13.9 | 19.6 | 14.6 | 5.01 | 3.911 | |
| 1,200.0 | 1,199.8 | 1,200.6 | 1,200.5 | 2.5 | 2.6 | 176.63 | -0.1 | 13.3 | 20.3 | 15.2 | 5.09 | 3.982 | |
| 1,279.5 | 1,279.1 | 1,280.6 | 1,280.5 | 2.7 | 2.7 | 178.52 | -0.3 | 9.4 | 23.0 | 17.6 | 5.40 | 4.263 | |
| 1,300.0 | 1,299.5 | 1,301.3 | 1,301.1 | 2.8 | 2.8 | 179.07 | -0.4 | 8.0 | 23.7 | 18.3 | 5.48 | 4.332 | |
| 1,377.9 | 1,376.9 | 1,379.8 | 1,379.4 | 3.0 | 2.9 | -178.67 | -0.8 | 1.4 | 26.5 | 20.7 | 5.79 | 4.575 | |
| 1,400.0 | 1,398.7 | 1,402.1 | 1,401.5 | 3.0 | 3.0 | -177.99 | -0.9 | -0.8 | 27.3 | 21.4 | 5.88 | 4.641 | |
| 1,476.4 | 1,474.2 | 1,479.2 | 1,478.0 | 3.2 | 3.2 | -175.52 | -1.4 | -10.0 | 30.1 | 23.9 | 6.19 | 4.857 | |
| 1,500.0 | 1,497.5 | 1,503.0 | 1,501.7 | 3.3 | 3.2 | -174.73 | -1.6 | -13.2 | 30.9 | 24.7 | 6.29 | 4.922 | |
| 1,574.8 | 1,571.0 | 1,578.6 | 1,576.3 | 3.5 | 3.4 | -172.17 | -2.2 | -24.8 | 33.8 | 27.2 | 6.60 | 5.116 | |
| 1,600.0 | 1,595.6 | 1,604.0 | 1,601.4 | 3.6 | 3.5 | -171.29 | -2.4 | -29.1 | 34.8 | 28.0 | 6.71 | 5.181 | |
| 1,673.2 | 1,667.0 | 1,678.1 | 1,674.1 | 3.9 | 3.7 | -168.71 | -3.2 | -43.0 | 37.7 | 30.6 | 7.04 | 5.354 | |
| 1,700.0 | 1,693.1 | 1,705.1 | 1,700.7 | 4.0 | 3.8 | -167.76 | -3.5 | -48.5 | 38.8 | 31.6 | 7.16 | 5.416 | |
| 1,771.6 | 1,762.4 | 1,777.7 | 1,771.4 | 4.3 | 4.1 | -165.22 | -4.4 | -64.6 | 41.8 | 34.3 | 7.51 | 5.564 | |
| 1,800.0 | 1,789.6 | 1,806.4 | 1,799.2 | 4.4 | 4.2 | -164.22 | -4.8 | -71.5 | 43.1 | 35.4 | 7.66 | 5.621 | |
| 1,870.1 | 1,856.8 | 1,877.3 | 1,867.8 | 4.7 | 4.5 | -161.75 | -5.8 | -89.6 | 46.2 | 38.2 | 8.05 | 5.738 | |
| 1,900.0 | 1,885.3 | 1,907.7 | 1,897.0 | 4.9 | 4.6 | -160.71 | -6.3 | -97.9 | 47.6 | 39.4 | 8.23 | 5.785 | |
| 1,968.5 | 1,950.2 | 1,977.1 | 1,963.5 | 5.3 | 4.9 | -158.35 | -7.4 | -118.0 | 50.9 | 42.3 | 8.68 | 5.867 | |
| 2,000.0 | 1,979.8 | 2,009.0 | 1,993.9 | 5.5 | 5.1 | -157.28 | -7.9 | -127.8 | 52.5 | 43.6 | 8.90 | 5.898 | |
| 2,044.9 | 2,021.9 | 2,054.6 | 2,037.0 | 5.7 | 5.4 | -155.77 | -8.7 | -142.3 | 54.8 | 45.6 | 9.25 | 5.930 | |
| 2,066.9 | 2,042.5 | 2,076.9 | 2,058.1 | 5.9 | 5.5 | -155.02 | -9.1 | -149.7 | 55.9 | 46.5 | 9.44 | 5.926 | |
| 2,100.0 | 2,073.4 | 2,110.5 | 2,089.7 | 6.1 | 5.7 | -153.75 | -9.8 | -161.1 | 57.3 | 47.6 | 9.75 | 5.880 | |
| 2,165.3 | 2,134.4 | 2,176.6 | 2,151.4 | 6.5 | 6.1 | -150.80 | -11.1 | -184.5 | 59.2 | 48.8 | 10.43 | 5.680 | |
| 2,200.0 | 2,166.8 | 2,211.2 | 2,183.7 | 6.8 | 6.3 | -149.20 | -11.8 | -197.0 | 60.1 | 49.3 | 10.82 | 5.559 | |
| 2,263.8 | 2,226.4 | 2,274.9 | 2,243.1 | 7.2 | 6.7 | -146.37 | -13.0 | -220.0 | 61.9 | 50.4 | 11.59 | 5.346 | |
| 2,300.0 | 2,260.2 | 2,311.0 | 2,276.8 | 7.4 | 7.0 | -144.84 | -13.8 | -233.1 | 63.0 | 51.0 | 12.04 | 5.234 | |
| 2,362.2 | 2,318.3 | 2,373.1 | 2,334.7 | 7.9 | 7.4 | -142.34 | -15.0 | -255.5 | 65.0 | 52.1 | 12.86 | 5.053 | |
| 2,400.0 | 2,353.6 | 2,410.9 | 2,369.9 | 8.1 | 7.7 | -140.89 | -15.8 | -269.1 | 66.2 | 52.9 | 13.38 | 4.952 | |
| 2,460.6 | 2,410.3 | 2,471.4 | 2,426.3 | 8.6 | 8.1 | -138.68 | -17.0 | -291.0 | 68.3 | 54.1 | 14.23 | 4.802 | |
| 2,500.0 | 2,447.0 | 2,510.7 | 2,463.0 | 8.9 | 8.4 | -137.31 | -17.8 | -305.2 | 69.7 | 54.9 | 14.79 | 4.713 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,569.7 | 2,517.9 | 9.3 | 8.8 | -135.37 | -18.9 | -326.5 | 71.9 | 56.2 | 15.66 | 4.591 | |
| 2,600.0 | 2,540.5 | 2,610.6 | 2,556.0 | 9.6 | 9.1 | -134.09 | -19.7 | -341.3 | 73.5 | 57.2 | 16.28 | 4.514 | |
| 2,657.5 | 2,594.2 | 2,668.0 | 2,609.5 | 10.0 | 9.5 | -132.39 | -20.9 | -362.0 | 75.7 | 58.6 | 17.15 | 4.415 | |
| 2,700.0 | 2,633.9 | 2,710.4 | 2,649.1 | 10.3 | 9.8 | -131.19 | -21.7 | -377.3 | 77.4 | 59.6 | 17.80 | 4.348 | |
| 2,755.9 | 2,686.1 | 2,766.2 | 2,701.2 | 10.7 | 10.2 | -129.69 | -22.9 | -397.5 | 79.7 | 61.0 | 18.67 | 4.269 | |
| 2,800.0 | 2,727.3 | 2,810.3 | 2,742.2 | 11.0 | 10.6 | -128.57 | -23.7 | -413.4 | 81.5 | 62.2 | 19.36 | 4.212 | |
| 2,854.3 | 2,778.1 | 2,864.5 | 2,792.8 | 11.4 | 11.0 | -127.26 | -24.8 | -433.0 | 83.8 | 63.6 | 20.22 | 4.148 | |
| 2,900.0 | 2,820.7 | 2,910.1 | 2,835.3 | 11.8 | 11.3 | -126.21 | -25.7 | -449.4 | 85.8 | 64.9 | 20.94 | 4.099 | |
| 2,952.7 | 2,870.0 | 2,962.8 | 2,884.4 | 12.2 | 11.7 | -125.06 | -26.8 | -468.5 | 88.1 | 66.4 | 21.78 | 4.047 | |
| 3,000.0 | 2,914.2 | 3,010.0 | 2,928.4 | 12.5 | 12.1 | -124.08 | -27.7 | -485.5 | 90.2 | 67.7 | 22.53 | 4.005 | |
| 3,051.2 | 2,962.0 | 3,061.1 | 2,976.0 | 12.9 | 12.4 | -123.07 | -28.8 | -504.0 | 92.5 | 69.2 | 23.35 | 3.963 | |
| 3,100.0 | 3,007.6 | 3,109.8 | 3,021.5 | 13.3 | 12.8 | -122.15 | -29.7 | -521.6 | 94.8 | 70.6 | 24.13 | 3.927 | |
| 3,149.6 | 3,053.9 | 3,159.3 | 3,067.7 | 13.6 | 13.2 | -121.26 | -30.7 | -539.4 | 97.0 | 72.1 | 24.93 | 3.893 | |
| 3,200.0 | 3,101.0 | 3,209.7 | 3,114.6 | 14.0 | 13.6 | -120.40 | -31.7 | -557.6 | 99.4 | 73.6 | 25.74 | 3.862 | |
| 3,248.0 | 3,145.9 | 3,257.6 | 3,159.3 | 14.4 | 13.9 | -119.61 | -32.7 | -574.9 | 101.6 | 75.1 | 26.51 | 3.834 | |
| 3,300.0 | 3,194.4 | 3,309.5 | 3,207.7 | 14.8 | 14.3 | -118.80 | -33.7 | -593.7 | 104.1 | 76.7 | 27.34 | 3.807 | |
| 3,346.4 | 3,237.8 | 3,355.9 | 3,250.9 | 15.1 | 14.7 | -118.11 | -34.7 | -610.4 | 106.3 | 78.2 | 28.09 | 3.784 | |
| 3,400.0 | 3,287.8 | 3,409.4 | 3,300.8 | 15.5 | 15.1 | -117.34 | -35.7 | -629.7 | 108.9 | 79.9 | 28.95 | 3.761 | |
| 3,444.9 | 3,329.8 | 3,454.2 | 3,342.5 | 15.9 | 15.4 | -116.73 | -36.6 | -645.9 | 111.0 | 81.4 | 29.67 | 3.742 | |
| 3,500.0 | 3,381.3 | 3,509.2 | 3,393.8 | 16.3 | 15.8 | -116.01 | -37.7 | -665.8 | 113.7 | 83.2 | 30.56 | 3.722 | |
| 3,543.3 | 3,421.7 | 3,552.4 | 3,434.2 | 16.6 | 16.2 | -115.47 | -38.6 | -681.4 | 115.8 | 84.6 | 31.25 | 3.707 | |
| 3,600.0 | 3,474.7 | 3,609.1 | 3,486.9 | 17.0 | 16.6 | -114.79 | -39.7 | -701.9 | 118.6 | 86.5 | 32.16 | 3.688 | |
| 3,641.7 | 3,513.7 | 3,650.7 | 3,525.8 | 17.3 | 16.9 | -114.30 | -40.6 | -716.9 | 120.7 | 87.9 | 32.83 | 3.676 | |
| 3,700.0 | 3,568.1 | 3,708.9 | 3,580.0 | 17.8 | 17.4 | -113.66 | -41.7 | -737.9 | 123.6 | 89.8 | 33.76 | 3.660 | |
| 3,740.1 | 3,605.6 | 3,749.0 | 3,617.4 | 18.1 | 17.7 | -113.23 | -42.5 | -752.4 | 125.6 | 91.2 | 34.40 | 3.650 | |
| 3,800.0 | 3,661.5 | 3,808.8 | 3,673.1 | 18.5 | 18.1 | -112.62 | -43.7 | -774.0 | 128.6 | 93.2 | 35.36 | 3.636 | |
| 3,838.6 | 3,697.6 | 3,847.3 | 3,709.0 | 18.8 | 18.4 | -112.24 | -44.5 | -787.9 | 130.5 | 94.5 | 35.98 | 3.627 | |
| 3,900.0 | 3,754.9 | 3,908.6 | 3,766.2 | 19.3 | 18.9 | -111.66 | -45.7 | -810.0 | 133.6 | 96.6 | 36.96 | 3.615 | |
| 3,937.0 | 3,789.5 | 3,945.6 | 3,800.6 | 19.6 | 19.2 | -111.32 | -46.5 | -823.4 | 135.5 | 97.9 | 37.55 | 3.608 | |
| 4,000.0 | 3,848.4 | 4,008.5 | 3,859.3 | 20.1 | 19.7 | -110.77 | -47.7 | -846.1 | 138.7 | 100.1 | 38.55 | 3.597 | |
| 4,035.4 | 3,881.5 | 4,043.8 | 3,892.3 | 20.3 | 19.9 | -110.47 | -48.4 | -858.9 | 140.5 | 101.4 | 39.12 | 3.591 | |
| 4,100.0 | 3,941.8 | 4,108.3 | 3,952.4 | 20.8 | 20.4 | -109.94 | -49.7 | -882.1 | 143.8 | 103.6 | 40.14 | 3.582 | |
| 4,133.8 | 3,973.4 | 4,142.1 | 3,983.9 | 21.1 | 20.7 | -109.67 | -50.4 | -894.4 | 145.5 | 104.8 | 40.68 | 3.577 | |
| 4,200.0 | 4,035.2 | 4,208.2 | 4,045.5 | 21.6 | 21.2 | -109.17 | -51.7 | -918.2 | 148.9 | 107.2 | 41.73 | 3.568 | |
| 4,232.3 | 4,065.4 | 4,240.4 | 4,075.5 | 21.8 | 21.5 | -108.93 | -52.4 | -929.8 | 150.6 | 108.3 | 42.24 | 3.564 | |
| 4,300.0 | 4,128.6 | 4,308.0 | 4,138.6 | 22.3 | 22.0 | -108.45 | -53.7 | -954.3 | 154.1 | 110.7 | 43.32 | 3.556 | |
| 4,330.7 | 4,157.3 | 4,338.7 | 4,167.1 | 22.6 | 22.2 | -108.23 | -54.3 | -965.3 | 155.6 | 111.8 | 43.80 | 3.553 | |
| 4,400.0 | 4,222.0 | 4,407.9 | 4,231.6 | 23.1 | 22.7 | -107.77 | -55.7 | -990.3 | 159.2 | 114.3 | 44.90 | 3.546 | |
| 4,429.1 | 4,249.3 | 4,436.9 | 4,258.8 | 23.3 | 23.0 | -107.58 | -56.3 | -1,000.8 | 160.7 | 115.4 | 45.36 | 3.544 | |
| 4,500.0 | 4,315.5 | 4,507.7 | 4,324.7 | 23.9 | 23.5 | -107.14 | -57.7 | -1,026.4 | 164.4 | 117.9 | 46.48 | 3.537 | |
| 4,527.5 | 4,341.2 | 4,535.2 | 4,350.4 | 24.1 | 23.7 | -106.97 | -58.3 | -1,036.3 | 165.9 | 118.9 | 46.92 | 3.535 | |
| 4,600.0 | 4,408.9 | 4,607.6 | 4,417.8 | 24.6 | 24.3 | -106.55 | -59.7 | -1,062.4 | 169.6 | 121.6 | 48.06 | 3.530 | |
| 4,626.0 | 4,433.2 | 4,633.5 | 4,442.0 | 24.8 | 24.5 | -106.40 | -60.2 | -1,071.8 | 171.0 | 122.5 | 48.47 | 3.528 | |
| 4,700.0 | 4,502.3 | 4,707.4 | 4,510.9 | 25.4 | 25.1 | -105.99 | -61.7 | -1,098.5 | 174.9 | 125.2 | 49.64 | 3.523 | |
| 4,724.4 | 4,525.1 | 4,731.8 | 4,533.6 | 25.6 | 25.3 | -105.86 | -62.2 | -1,107.3 | 176.2 | 126.1 | 50.02 | 3.522 | |
| 4,800.0 | 4,595.7 | 4,807.3 | 4,604.0 | 26.2 | 25.8 | -105.47 | -63.7 | -1,134.6 | 180.1 | 128.9 | 51.21 | 3.517 | |
| 4,822.8 | 4,617.1 | 4,830.0 | 4,625.3 | 26.3 | 26.0 | -105.35 | -64.2 | -1,142.8 | 181.3 | 129.8 | 51.57 | 3.516 | |
| 4,900.0 | 4,689.2 | 4,907.1 | 4,697.1 | 26.9 | 26.6 | -104.97 | -65.7 | -1,170.6 | 185.4 | 132.6 | 52.79 | 3.512 | |
| 4,921.2 | 4,709.0 | 4,928.3 | 4,716.9 | 27.1 | 26.8 | -104.87 | -66.1 | -1,178.3 | 186.5 | 133.4 | 53.12 | 3.511 | |
| 5,000.0 | 4,782.6 | 5,006.9 | 4,790.2 | 27.7 | 27.4 | -104.51 | -67.7 | -1,206.7 | 190.7 | 136.3 | 54.36 | 3.508 | |
| 5,019.7 | 4,801.0 | 5,026.6 | 4,808.5 | 27.8 | 27.5 | -104.42 | -68.1 | -1,213.8 | 191.7 | 137.0 | 54.67 | 3.507 | |
| 5,100.0 | 4,876.0 | 5,106.8 | 4,883.3 | 28.4 | 28.2 | -104.06 | -69.7 | -1,242.7 | 196.0 | 140.0 | 55.93 | 3.504 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,124.9 | 4,900.1 | 28.6 | 28.3 | -103.99 | -70.1 | -1,249.3 | 196.9 | 140.7 | 56.21 | 3.503 | |
| 5,159.9 | 4,932.0 | 5,166.6 | 4,939.1 | 28.9 | 28.6 | -103.81 | -70.9 | -1,264.4 | 199.1 | 142.3 | 56.87 | 3.501 | |
| 5,200.0 | 4,969.5 | 5,206.6 | 4,976.4 | 29.2 | 28.9 | -103.61 | -71.7 | -1,278.8 | 201.2 | 143.7 | 57.47 | 3.501 | |
| 5,216.5 | 4,985.1 | 5,223.1 | 4,991.7 | 29.3 | 29.1 | -103.48 | -72.0 | -1,284.8 | 202.0 | 144.3 | 57.70 | 3.501 | |
| 5,300.0 | 5,064.0 | 5,306.0 | 5,069.4 | 29.7 | 29.6 | -102.78 | -73.6 | -1,313.6 | 205.9 | 147.1 | 58.79 | 3.502 | |
| 5,314.9 | 5,078.2 | 5,320.8 | 5,083.4 | 29.8 | 29.7 | -102.66 | -73.9 | -1,318.5 | 206.6 | 147.6 | 58.95 | 3.504 | |
| 5,400.0 | 5,159.6 | 5,405.3 | 5,163.6 | 30.2 | 30.1 | -101.99 | -75.4 | -1,345.2 | 210.1 | 150.2 | 59.89 | 3.508 | |
| 5,413.4 | 5,172.4 | 5,418.6 | 5,176.2 | 30.3 | 30.2 | -101.88 | -75.6 | -1,349.2 | 210.7 | 150.6 | 60.03 | 3.510 | |
| 5,500.0 | 5,256.1 | 5,504.8 | 5,258.9 | 30.7 | 30.6 | -101.23 | -77.0 | -1,373.5 | 213.9 | 153.0 | 60.89 | 3.513 | |
| 5,511.8 | 5,267.6 | 5,516.6 | 5,270.2 | 30.7 | 30.7 | -101.14 | -77.1 | -1,376.7 | 214.3 | 153.4 | 60.99 | 3.514 | |
| 5,600.0 | 5,353.5 | 5,604.4 | 5,355.3 | 31.1 | 31.1 | -100.50 | -78.4 | -1,398.6 | 217.2 | 155.5 | 61.77 | 3.517 | |
| 5,610.2 | 5,363.5 | 5,614.6 | 5,365.2 | 31.1 | 31.1 | -100.42 | -78.5 | -1,401.0 | 217.6 | 155.7 | 61.85 | 3.518 | |
| 5,700.0 | 5,451.6 | 5,704.1 | 5,452.6 | 31.4 | 31.4 | -99.79 | -79.6 | -1,420.3 | 220.1 | 157.6 | 62.54 | 3.519 | |
| 5,708.6 | 5,460.2 | 5,712.7 | 5,461.0 | 31.4 | 31.5 | -99.73 | -79.7 | -1,422.0 | 220.3 | 157.7 | 62.60 | 3.520 | |
| 5,800.0 | 5,550.4 | 5,803.9 | 5,550.7 | 31.7 | 31.8 | -99.10 | -80.6 | -1,438.6 | 222.5 | 159.3 | 63.20 | 3.520 | |
| 5,807.1 | 5,557.4 | 5,811.0 | 5,557.6 | 31.7 | 31.8 | -99.05 | -80.6 | -1,439.8 | 222.6 | 159.4 | 63.24 | 3.520 | |
| 5,900.0 | 5,649.6 | 5,903.9 | 5,649.5 | 31.9 | 32.0 | -98.42 | -81.4 | -1,453.6 | 224.3 | 160.6 | 63.75 | 3.519 | |
| 5,905.5 | 5,655.1 | 5,909.4 | 5,654.9 | 31.9 | 32.0 | -98.38 | -81.4 | -1,454.3 | 224.4 | 160.6 | 63.77 | 3.519 | |
| 6,000.0 | 5,749.2 | 6,003.9 | 5,748.8 | 32.1 | 32.3 | -97.75 | -82.0 | -1,465.1 | 225.7 | 161.5 | 64.19 | 3.516 | |
| 6,003.9 | 5,753.1 | 6,007.8 | 5,752.8 | 32.1 | 32.3 | -97.73 | -82.1 | -1,465.5 | 225.7 | 161.5 | 64.20 | 3.516 | |
| 6,100.0 | 5,849.1 | 6,104.0 | 5,848.7 | 32.3 | 32.4 | -97.09 | -82.5 | -1,473.1 | 226.6 | 162.1 | 64.53 | 3.511 | |
| 6,102.3 | 5,851.4 | 6,106.4 | 5,851.0 | 32.3 | 32.4 | -97.08 | -82.5 | -1,473.2 | 226.6 | 162.1 | 64.54 | 3.511 | |
| 6,200.8 | 5,949.8 | 6,205.1 | 5,949.6 | 32.4 | 32.6 | -96.43 | -82.7 | -1,477.7 | 227.0 | 162.2 | 64.78 | 3.504 | |
| 6,204.9 | 5,953.9 | 6,209.2 | 5,953.7 | 32.4 | 32.6 | 179.16 | -82.7 | -1,477.8 | 227.0 | 194.5 | 32.46 | 6.992 | |
| 6,234.9 | 5,983.9 | 6,239.2 | 5,983.7 | 32.4 | 32.6 | 179.32 | -82.8 | -1,478.4 | 227.0 | 194.4 | 32.55 | 6.974 | |
| 6,250.0 | 5,999.0 | 6,254.4 | 5,998.9 | 32.4 | 32.6 | 89.41 | -82.8 | -1,478.6 | 227.0 | 162.1 | 64.87 | 3.500 | |
| 6,292.7 | 6,041.7 | 6,297.2 | 6,041.7 | 32.4 | 32.7 | 90.00 | -82.8 | -1,478.8 | 227.0 | 162.1 | 64.92 | 3.497 | |
| 6,299.2 | 6,048.2 | 6,303.7 | 6,048.2 | 32.4 | 32.7 | 90.14 | -82.8 | -1,478.8 | 227.0 | 162.1 | 64.92 | 3.496 | |
| 6,300.0 | 6,048.9 | 6,304.5 | 6,048.9 | 32.4 | 32.7 | 90.16 | -82.8 | -1,478.8 | 227.0 | 162.1 | 64.92 | 3.496 | |
| 6,350.0 | 6,098.5 | 6,354.4 | 6,098.9 | 32.4 | 32.7 | 91.45 | -82.8 | -1,477.6 | 227.1 | 162.2 | 64.91 | 3.498 | |
| 6,397.6 | 6,145.3 | 6,402.3 | 6,146.6 | 32.3 | 32.7 | 92.70 | -82.8 | -1,473.4 | 227.3 | 162.4 | 64.81 | 3.507 | |
| 6,400.0 | 6,147.6 | 6,404.7 | 6,149.0 | 32.3 | 32.7 | 92.76 | -82.8 | -1,473.1 | 227.3 | 162.5 | 64.80 | 3.507 | |
| 6,450.0 | 6,195.8 | 6,455.4 | 6,199.0 | 32.2 | 32.6 | 94.06 | -82.8 | -1,464.9 | 227.6 | 163.0 | 64.60 | 3.523 | |
| 6,496.0 | 6,239.3 | 6,502.4 | 6,244.8 | 32.1 | 32.5 | 95.24 | -82.8 | -1,454.2 | 228.0 | 163.6 | 64.34 | 3.543 | |
| 6,500.0 | 6,243.0 | 6,506.5 | 6,248.7 | 32.1 | 32.5 | 95.34 | -82.8 | -1,453.1 | 228.0 | 163.7 | 64.32 | 3.545 | |
| 6,550.0 | 6,289.0 | 6,557.9 | 6,297.8 | 32.0 | 32.4 | 96.59 | -82.8 | -1,437.7 | 228.5 | 164.6 | 63.97 | 3.573 | |
| 6,594.5 | 6,328.6 | 6,604.0 | 6,340.7 | 31.8 | 32.3 | 97.68 | -82.8 | -1,421.0 | 229.1 | 165.5 | 63.61 | 3.601 | |
| 6,600.0 | 6,333.4 | 6,609.8 | 6,346.0 | 31.8 | 32.3 | 97.81 | -82.8 | -1,418.7 | 229.1 | 165.6 | 63.56 | 3.605 | |
| 6,650.0 | 6,376.2 | 6,662.0 | 6,393.0 | 31.7 | 32.2 | 98.99 | -82.8 | -1,396.0 | 229.8 | 166.7 | 63.11 | 3.642 | |
| 6,692.9 | 6,411.3 | 6,707.1 | 6,432.2 | 31.6 | 32.0 | 99.96 | -82.8 | -1,373.7 | 230.5 | 167.8 | 62.71 | 3.676 | |
| 6,700.0 | 6,417.0 | 6,714.6 | 6,438.6 | 31.5 | 32.0 | 100.12 | -82.8 | -1,369.8 | 230.6 | 168.0 | 62.64 | 3.682 | |
| 6,750.0 | 6,455.7 | 6,767.6 | 6,482.4 | 31.4 | 31.9 | 101.20 | -82.8 | -1,340.0 | 231.4 | 169.3 | 62.17 | 3.723 | |
| 6,791.3 | 6,486.0 | 6,811.7 | 6,517.1 | 31.3 | 31.7 | 102.04 | -82.8 | -1,312.9 | 232.1 | 170.4 | 61.79 | 3.757 | |
| 6,800.0 | 6,492.2 | 6,820.9 | 6,524.2 | 31.3 | 31.7 | 102.22 | -82.8 | -1,306.9 | 232.3 | 170.6 | 61.71 | 3.764 | |
| 6,850.0 | 6,526.1 | 6,874.6 | 6,563.7 | 31.2 | 31.6 | 103.17 | -82.8 | -1,270.5 | 233.2 | 171.9 | 61.29 | 3.804 | |
| 6,889.7 | 6,551.2 | 6,917.5 | 6,593.2 | 31.2 | 31.5 | 103.88 | -82.8 | -1,239.4 | 233.9 | 172.9 | 61.00 | 3.834 | |
| 6,900.0 | 6,557.4 | 6,928.6 | 6,600.5 | 31.2 | 31.5 | 104.05 | -82.8 | -1,231.0 | 234.0 | 173.1 | 60.93 | 3.841 | |
| 6,950.0 | 6,586.0 | 6,983.0 | 6,634.5 | 31.1 | 31.4 | 104.86 | -82.8 | -1,188.6 | 234.9 | 174.2 | 60.65 | 3.873 | |
| 6,988.2 | 6,605.8 | 7,024.7 | 6,658.3 | 31.2 | 31.4 | 105.43 | -82.8 | -1,154.4 | 235.5 | 175.0 | 60.51 | 3.892 | |
| 7,000.0 | 6,611.5 | 7,037.6 | 6,665.3 | 31.2 | 31.4 | 105.59 | -82.8 | -1,143.5 | 235.7 | 175.2 | 60.47 | 3.898 | |
| 7,050.0 | 6,634.1 | 7,092.5 | 6,692.7 | 31.2 | 31.5 | 106.24 | -82.8 | -1,096.0 | 236.5 | 176.1 | 60.41 | 3.914 | |
| 7,086.6 | 6,648.6 | 7,132.8 | 6,710.4 | 31.3 | 31.5 | 106.66 | -82.8 | -1,059.8 | 237.0 | 176.5 | 60.45 | 3.920 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 7,147.6 | 6,716.4 | 31.4 | 31.6 | 106.80 | -82.8 | -1,046.2 | 237.1 | 176.7 | 60.48 | 3.921 | |
| 7,150.0 | 6,669.5 | 7,203.0 | 6,736.4 | 31.6 | 31.7 | 107.28 | -82.8 | -994.6 | 237.7 | 177.1 | 60.69 | 3.917 | |
| 7,185.0 | 6,678.8 | 7,241.9 | 6,748.0 | 31.7 | 31.9 | 107.56 | -82.8 | -957.5 | 238.1 | 177.2 | 60.93 | 3.908 | |
| 7,200.0 | 6,682.3 | 7,258.5 | 6,752.3 | 31.8 | 32.0 | 107.66 | -82.8 | -941.5 | 238.2 | 177.2 | 61.05 | 3.903 | |
| 7,250.0 | 6,691.6 | 7,314.2 | 6,764.1 | 32.1 | 32.3 | 107.96 | -82.8 | -887.1 | 238.6 | 177.1 | 61.55 | 3.877 | |
| 7,283.4 | 6,696.0 | 7,351.4 | 6,769.6 | 32.3 | 32.5 | 108.11 | -82.8 | -850.2 | 238.8 | 176.9 | 61.97 | 3.854 | |
| 7,300.0 | 6,697.5 | 7,369.9 | 6,771.6 | 32.4 | 32.6 | 108.16 | -82.8 | -831.9 | 238.9 | 176.7 | 62.20 | 3.841 | |
| 7,350.0 | 6,699.9 | 7,425.7 | 6,774.9 | 32.8 | 33.0 | 108.27 | -82.8 | -776.1 | 239.1 | 176.1 | 62.97 | 3.797 | |
| 7,364.4 | 6,700.0 | 7,441.8 | 6,775.0 | 32.9 | 33.2 | 108.28 | -82.8 | -760.1 | 239.1 | 175.9 | 63.21 | 3.782 | |
| 7,381.9 | 6,699.9 | 7,459.4 | 6,774.9 | 33.1 | 33.3 | 108.29 | -82.8 | -742.4 | 239.1 | 175.6 | 63.50 | 3.765 | |
| 7,400.0 | 6,699.8 | 7,477.6 | 6,774.8 | 33.2 | 33.5 | 108.29 | -82.8 | -724.3 | 239.1 | 175.3 | 63.80 | 3.747 | |
| 7,480.3 | 6,699.2 | 7,557.9 | 6,774.4 | 34.0 | 34.3 | 108.31 | -82.8 | -644.0 | 239.1 | 173.8 | 65.35 | 3.659 | |
| 7,500.0 | 6,699.1 | 7,577.6 | 6,774.3 | 34.2 | 34.5 | 108.32 | -82.8 | -624.3 | 239.1 | 173.4 | 65.73 | 3.638 | |
| 7,578.7 | 6,698.6 | 7,656.3 | 6,773.8 | 35.2 | 35.4 | 108.34 | -82.8 | -545.6 | 239.1 | 171.6 | 67.53 | 3.541 | |
| 7,600.0 | 6,698.5 | 7,677.6 | 6,773.7 | 35.4 | 35.6 | 108.34 | -82.8 | -524.3 | 239.2 | 171.1 | 68.02 | 3.516 | |
| 7,677.1 | 6,698.0 | 7,754.7 | 6,773.3 | 36.5 | 36.7 | 108.36 | -82.8 | -447.2 | 239.2 | 169.1 | 70.04 | 3.415 | |
| 7,700.0 | 6,697.8 | 7,777.6 | 6,773.2 | 36.8 | 37.0 | 108.37 | -82.8 | -424.3 | 239.2 | 168.5 | 70.64 | 3.386 | |
| 7,775.6 | 6,697.3 | 7,853.1 | 6,772.8 | 38.0 | 38.1 | 108.39 | -82.8 | -348.7 | 239.2 | 166.4 | 72.84 | 3.284 | |
| 7,800.0 | 6,697.2 | 7,877.6 | 6,772.6 | 38.3 | 38.5 | 108.39 | -82.8 | -324.3 | 239.2 | 165.7 | 73.56 | 3.252 | |
| 7,874.0 | 6,696.7 | 7,951.6 | 6,772.2 | 39.6 | 39.7 | 108.41 | -82.8 | -250.3 | 239.2 | 163.3 | 75.91 | 3.152 | |
| 7,900.0 | 6,696.5 | 7,977.6 | 6,772.1 | 40.0 | 40.2 | 108.42 | -82.8 | -224.3 | 239.3 | 162.5 | 76.74 | 3.118 | |
| 7,972.4 | 6,696.1 | 8,050.0 | 6,771.7 | 41.3 | 41.4 | 108.43 | -82.8 | -151.9 | 239.3 | 160.1 | 79.20 | 3.021 | |
| 8,000.0 | 6,695.9 | 8,077.6 | 6,771.6 | 41.8 | 41.9 | 108.44 | -82.8 | -124.3 | 239.3 | 159.1 | 80.15 | 2.985 | |
| 8,070.8 | 6,695.4 | 8,148.4 | 6,771.2 | 43.1 | 43.3 | 108.46 | -82.8 | -53.5 | 239.3 | 156.6 | 82.70 | 2.894 | |
| 8,100.0 | 6,695.2 | 8,177.6 | 6,771.0 | 43.7 | 43.8 | 108.47 | -82.8 | -24.3 | 239.3 | 155.6 | 83.76 | 2.857 | |
| 8,169.3 | 6,694.8 | 8,246.8 | 6,770.7 | 45.1 | 45.2 | 108.48 | -82.8 | 45.0 | 239.3 | 153.0 | 86.38 | 2.771 | |
| 8,200.0 | 6,694.6 | 8,277.6 | 6,770.5 | 45.7 | 45.8 | 108.49 | -82.8 | 75.7 | 239.4 | 151.8 | 87.55 | 2.734 | |
| 8,267.7 | 6,694.1 | 8,345.3 | 6,770.1 | 47.1 | 47.2 | 108.51 | -82.8 | 143.4 | 239.4 | 149.2 | 90.22 | 2.653 | |
| 8,300.0 | 6,693.9 | 8,377.6 | 6,769.9 | 47.8 | 47.9 | 108.51 | -82.8 | 175.7 | 239.4 | 147.9 | 91.50 | 2.616 | |
| 8,366.1 | 6,693.5 | 8,443.7 | 6,769.6 | 49.2 | 49.3 | 108.53 | -82.8 | 241.8 | 239.4 | 145.2 | 94.19 | 2.542 | |
| 8,400.0 | 6,693.3 | 8,477.6 | 6,769.4 | 49.9 | 50.0 | 108.54 | -82.8 | 275.7 | 239.4 | 143.8 | 95.58 | 2.505 | |
| 8,464.5 | 6,692.9 | 8,542.1 | 6,769.1 | 51.4 | 51.4 | 108.55 | -82.8 | 340.2 | 239.4 | 141.2 | 98.28 | 2.436 | |
| 8,500.0 | 6,692.6 | 8,577.6 | 6,768.9 | 52.1 | 52.2 | 108.56 | -82.8 | 375.7 | 239.5 | 139.7 | 99.77 | 2.400 | |
| 8,563.0 | 6,692.2 | 8,640.5 | 6,768.5 | 53.6 | 53.6 | 108.58 | -82.8 | 438.6 | 239.5 | 137.0 | 102.48 | 2.337 | |
| 8,600.0 | 6,692.0 | 8,677.6 | 6,768.3 | 54.4 | 54.5 | 108.59 | -82.8 | 475.7 | 239.5 | 135.4 | 104.08 | 2.301 | |
| 8,661.4 | 6,691.6 | 8,739.0 | 6,768.0 | 55.8 | 55.9 | 108.60 | -82.8 | 537.1 | 239.5 | 132.7 | 106.77 | 2.243 | |
| 8,700.0 | 6,691.3 | 8,777.6 | 6,767.8 | 56.7 | 56.8 | 108.61 | -82.8 | 575.7 | 239.5 | 131.1 | 108.47 | 2.208 | |
| 8,759.8 | 6,690.9 | 8,837.4 | 6,767.5 | 58.1 | 58.2 | 108.63 | -82.8 | 635.5 | 239.5 | 128.4 | 111.14 | 2.155 | |
| 8,800.0 | 6,690.7 | 8,877.6 | 6,767.2 | 59.1 | 59.1 | 108.64 | -82.8 | 675.7 | 239.6 | 126.6 | 112.94 | 2.121 | |
| 8,858.2 | 6,690.3 | 8,935.8 | 6,766.9 | 60.5 | 60.5 | 108.65 | -82.8 | 733.9 | 239.6 | 124.0 | 115.59 | 2.073 | |
| 8,900.0 | 6,690.0 | 8,977.6 | 6,766.7 | 61.5 | 61.5 | 108.66 | -82.8 | 775.7 | 239.6 | 122.1 | 117.49 | 2.039 | |
| 8,956.7 | 6,689.7 | 9,034.2 | 6,766.4 | 62.9 | 62.9 | 108.67 | -82.8 | 832.3 | 239.6 | 119.5 | 120.10 | 1.995 | |
| 9,000.0 | 6,689.4 | 9,077.6 | 6,766.2 | 63.9 | 63.9 | 108.69 | -82.8 | 875.7 | 239.6 | 117.5 | 122.10 | 1.963 | |
| 9,055.1 | 6,689.0 | 9,132.7 | 6,765.9 | 65.3 | 65.3 | 108.70 | -82.8 | 930.8 | 239.6 | 115.0 | 124.66 | 1.922 | |
| 9,100.0 | 6,688.7 | 9,177.6 | 6,765.6 | 66.4 | 66.4 | 108.71 | -82.8 | 975.7 | 239.7 | 112.9 | 126.76 | 1.891 | |
| 9,153.5 | 6,688.4 | 9,231.1 | 6,765.3 | 67.7 | 67.7 | 108.72 | -82.8 | 1,029.2 | 239.7 | 110.4 | 129.28 | 1.854 | |
| 9,200.0 | 6,688.1 | 9,277.6 | 6,765.1 | 68.9 | 68.9 | 108.73 | -82.8 | 1,075.7 | 239.7 | 108.2 | 131.47 | 1.823 | |
| 9,251.9 | 6,687.8 | 9,329.5 | 6,764.8 | 70.2 | 70.2 | 108.75 | -82.8 | 1,127.6 | 239.7 | 105.8 | 133.94 | 1.790 | |
| 9,300.0 | 6,687.4 | 9,377.6 | 6,764.5 | 71.4 | 71.4 | 108.76 | -82.8 | 1,175.7 | 239.7 | 103.5 | 136.23 | 1.760 | |
| 9,350.4 | 6,687.1 | 9,427.9 | 6,764.3 | 72.7 | 72.7 | 108.77 | -82.8 | 1,226.0 | 239.8 | 101.1 | 138.65 | 1.729 | |
| 9,400.0 | 6,686.8 | 9,477.6 | 6,764.0 | 73.9 | 73.9 | 108.78 | -82.8 | 1,275.7 | 239.8 | 98.7 | 141.03 | 1.700 | |
| 9,448.8 | 6,686.5 | 9,526.4 | 6,763.7 | 75.2 | 75.2 | 108.79 | -82.8 | 1,324.5 | 239.8 | 96.4 | 143.39 | 1.672 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-332 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 9,577.6 | 6,763.4 | 76.5 | 76.5 | 108.81 | -82.8 | 1,375.7 | 239.8 | 93.9 | 145.86 | 1.644 | |
| 9,547.2 | 6,685.8 | 9,624.8 | 6,763.2 | 77.7 | 77.7 | 108.82 | -82.8 | 1,422.9 | 239.8 | 91.7 | 148.16 | 1.619 | |
| 9,600.0 | 6,685.5 | 9,677.6 | 6,762.9 | 79.0 | 79.0 | 108.83 | -82.8 | 1,475.7 | 239.8 | 89.1 | 150.73 | 1.591 | |
| 9,645.6 | 6,685.2 | 9,723.2 | 6,762.7 | 80.2 | 80.2 | 108.84 | -82.8 | 1,521.3 | 239.9 | 86.9 | 152.96 | 1.568 | |
| 9,700.0 | 6,684.8 | 9,777.6 | 6,762.4 | 81.6 | 81.6 | 108.86 | -82.8 | 1,575.7 | 239.9 | 84.2 | 155.62 | 1.541 | |
| 9,744.1 | 6,684.6 | 9,821.6 | 6,762.1 | 82.8 | 82.7 | 108.87 | -82.8 | 1,619.7 | 239.9 | 82.1 | 157.79 | 1.520 | |
| 9,800.0 | 6,684.2 | 9,877.6 | 6,761.8 | 84.2 | 84.2 | 108.88 | -82.8 | 1,675.7 | 239.9 | 79.4 | 160.54 | 1.494 | Level 3 |
| 9,842.5 | 6,683.9 | 9,920.1 | 6,761.6 | 85.3 | 85.3 | 108.89 | -82.8 | 1,718.2 | 239.9 | 77.3 | 162.64 | 1.475 | Level 3 |
| 9,900.0 | 6,683.5 | 9,977.6 | 6,761.3 | 86.8 | 86.8 | 108.90 | -82.8 | 1,775.7 | 239.9 | 74.5 | 165.49 | 1.450 | Level 3 |
| 9,940.9 | 6,683.3 | 10,018.5 | 6,761.1 | 87.9 | 87.9 | 108.91 | -82.8 | 1,816.6 | 240.0 | 72.4 | 167.52 | 1.432 | Level 3 |
| 10,000.0 | 6,682.9 | 10,077.6 | 6,760.7 | 89.5 | 89.4 | 108.93 | -82.8 | 1,875.6 | 240.0 | 69.5 | 170.45 | 1.408 | Level 3 |
| 10,039.3 | 6,682.6 | 10,116.9 | 6,760.5 | 90.5 | 90.5 | 108.94 | -82.8 | 1,915.0 | 240.0 | 67.6 | 172.41 | 1.392 | Level 3 |
| 10,100.0 | 6,682.2 | 10,177.6 | 6,760.2 | 92.1 | 92.1 | 108.95 | -82.8 | 1,975.6 | 240.0 | 64.6 | 175.44 | 1.368 | Level 3 |
| 10,137.8 | 6,682.0 | 10,215.3 | 6,760.0 | 93.1 | 93.1 | 108.96 | -82.8 | 2,013.4 | 240.0 | 62.7 | 177.33 | 1.354 | Level 3 |
| 10,200.0 | 6,681.6 | 10,277.6 | 6,759.7 | 94.8 | 94.7 | 108.98 | -82.8 | 2,075.6 | 240.0 | 59.6 | 180.44 | 1.330 | Level 3 |
| 10,236.2 | 6,681.4 | 10,313.8 | 6,759.5 | 95.7 | 95.7 | 108.99 | -82.8 | 2,111.8 | 240.1 | 57.8 | 182.26 | 1.317 | Level 3 |
| 10,300.0 | 6,680.9 | 10,377.6 | 6,759.1 | 97.4 | 97.4 | 109.00 | -82.8 | 2,175.6 | 240.1 | 54.6 | 185.46 | 1.295 | Level 3 |
| 10,334.6 | 6,680.7 | 10,412.2 | 6,758.9 | 98.3 | 98.3 | 109.01 | -82.8 | 2,210.3 | 240.1 | 52.9 | 187.20 | 1.283 | Level 3 |
| 10,400.0 | 6,680.3 | 10,477.6 | 6,758.6 | 100.1 | 100.0 | 109.03 | -82.8 | 2,275.6 | 240.1 | 49.6 | 190.50 | 1.260 | Level 3 |
| 10,433.0 | 6,680.1 | 10,510.6 | 6,758.4 | 101.0 | 100.9 | 109.03 | -82.8 | 2,308.7 | 240.1 | 48.0 | 192.16 | 1.250 | Level 2 |
| 10,500.0 | 6,679.7 | 10,577.6 | 6,758.0 | 102.8 | 102.7 | 109.05 | -82.8 | 2,375.6 | 240.2 | 44.6 | 195.54 | 1.228 | Level 2 |
| 10,531.5 | 6,679.4 | 10,609.0 | 6,757.9 | 103.6 | 103.5 | 109.06 | -82.8 | 2,407.1 | 240.2 | 43.0 | 197.14 | 1.218 | Level 2 |
| 10,600.0 | 6,679.0 | 10,677.6 | 6,757.5 | 105.4 | 105.4 | 109.07 | -82.8 | 2,475.6 | 240.2 | 39.6 | 200.60 | 1.197 | Level 2 |
| 10,629.9 | 6,678.8 | 10,707.5 | 6,757.3 | 106.2 | 106.2 | 109.08 | -82.8 | 2,505.5 | 240.2 | 38.1 | 202.12 | 1.188 | Level 2 |
| 10,700.0 | 6,678.4 | 10,777.6 | 6,757.0 | 108.1 | 108.1 | 109.10 | -82.8 | 2,575.6 | 240.2 | 34.5 | 205.68 | 1.168 | Level 2 |
| 10,728.3 | 6,678.2 | 10,805.9 | 6,756.8 | 108.9 | 108.8 | 109.11 | -82.8 | 2,604.0 | 240.2 | 33.1 | 207.11 | 1.160 | Level 2 |
| 10,800.0 | 6,677.7 | 10,877.6 | 6,756.4 | 110.8 | 110.7 | 109.12 | -82.8 | 2,675.6 | 240.3 | 29.5 | 210.76 | 1.140 | Level 2 |
| 10,826.7 | 6,677.5 | 10,904.3 | 6,756.3 | 111.5 | 111.5 | 109.13 | -82.8 | 2,702.4 | 240.3 | 28.1 | 212.12 | 1.133 | Level 2 |
| 10,900.0 | 6,677.1 | 10,977.6 | 6,755.9 | 113.5 | 113.4 | 109.15 | -82.8 | 2,775.6 | 240.3 | 24.4 | 215.85 | 1.113 | Level 2 |
| 10,925.2 | 6,676.9 | 11,002.7 | 6,755.7 | 114.2 | 114.1 | 109.15 | -82.8 | 2,800.8 | 240.3 | 23.2 | 217.13 | 1.107 | Level 2 |
| 11,000.0 | 6,676.4 | 11,077.6 | 6,755.3 | 116.2 | 116.1 | 109.17 | -82.8 | 2,875.6 | 240.3 | 19.4 | 220.95 | 1.088 | Level 2 |
| 11,023.6 | 6,676.3 | 11,101.2 | 6,755.2 | 116.8 | 116.8 | 109.18 | -82.8 | 2,899.2 | 240.3 | 18.2 | 222.15 | 1.082 | Level 2 |
| 11,100.0 | 6,675.8 | 11,177.6 | 6,754.8 | 118.9 | 118.8 | 109.20 | -82.8 | 2,975.6 | 240.4 | 14.3 | 226.06 | 1.063 | Level 2 |
| 11,122.0 | 6,675.6 | 11,199.6 | 6,754.7 | 119.5 | 119.4 | 109.20 | -82.8 | 2,997.7 | 240.4 | 13.2 | 227.18 | 1.058 | Level 2 |
| 11,200.0 | 6,675.1 | 11,277.6 | 6,754.2 | 121.6 | 121.6 | 109.22 | -82.8 | 3,075.6 | 240.4 | 9.2 | 231.17 | 1.040 | Level 2 |
| 11,220.4 | 6,675.0 | 11,298.0 | 6,754.1 | 122.2 | 122.1 | 109.23 | -82.8 | 3,096.1 | 240.4 | 8.2 | 232.22 | 1.035 | Level 2 |
| 11,300.0 | 6,674.5 | 11,377.6 | 6,753.7 | 124.3 | 124.3 | 109.24 | -82.8 | 3,175.6 | 240.4 | 4.1 | 236.30 | 1.018 | Level 2 |
| 11,318.9 | 6,674.3 | 11,396.4 | 6,753.6 | 124.9 | 124.8 | 109.25 | -82.8 | 3,194.5 | 240.4 | 3.2 | 237.26 | 1.013 | Level 2 |
| 11,400.0 | 6,673.8 | 11,477.6 | 6,753.2 | 127.1 | 127.0 | 109.27 | -82.8 | 3,275.6 | 240.5 | -1.0 | 241.43 | 0.996 | Level 1 |
| 11,417.3 | 6,673.7 | 11,494.9 | 6,753.1 | 127.5 | 127.5 | 109.27 | -82.8 | 3,292.9 | 240.5 | -1.8 | 242.31 | 0.992 | Level 1 |
| 11,500.0 | 6,673.2 | 11,577.6 | 6,752.6 | 129.8 | 129.7 | 109.29 | -82.8 | 3,375.6 | 240.5 | -6.1 | 246.56 | 0.975 | Level 1 |
| 11,515.7 | 6,673.1 | 11,593.3 | 6,752.5 | 130.2 | 130.1 | 109.30 | -82.8 | 3,391.4 | 240.5 | -6.9 | 247.37 | 0.972 | Level 1 |
| 11,600.0 | 6,672.5 | 11,677.6 | 6,752.1 | 132.5 | 132.4 | 109.32 | -82.8 | 3,475.6 | 240.5 | -11.2 | 251.70 | 0.956 | Level 1 |
| 11,614.1 | 6,672.4 | 11,691.7 | 6,752.0 | 132.9 | 132.8 | 109.32 | -82.8 | 3,489.8 | 240.5 | -11.9 | 252.43 | 0.953 | Level 1 |
| 11,700.0 | 6,671.9 | 11,777.6 | 6,751.5 | 135.3 | 135.2 | 109.34 | -82.8 | 3,575.6 | 240.6 | -16.3 | 256.85 | 0.937 | Level 1 |
| 11,712.6 | 6,671.8 | 11,790.1 | 6,751.5 | 135.6 | 135.5 | 109.34 | -82.8 | 3,588.2 | 240.6 | -16.9 | 257.49 | 0.934 | Level 1 |
| 11,800.0 | 6,671.2 | 11,877.6 | 6,751.0 | 138.0 | 137.9 | 109.37 | -82.8 | 3,675.6 | 240.6 | -21.4 | 262.00 | 0.918 | Level 1 |
| 11,811.0 | 6,671.1 | 11,888.6 | 6,750.9 | 138.3 | 138.2 | 109.37 | -82.8 | 3,686.6 | 240.6 | -21.9 | 262.56 | 0.916 | Level 1 |
| 11,900.0 | 6,670.6 | 11,977.6 | 6,750.5 | 140.7 | 140.6 | 109.39 | -82.8 | 3,775.6 | 240.6 | -26.5 | 267.15 | 0.901 | Level 1 |
| 11,909.4 | 6,670.5 | 11,987.0 | 6,750.4 | 141.0 | 140.9 | 109.39 | -82.8 | 3,785.0 | 240.7 | -27.0 | 267.64 | 0.899 | Level 1 |
| 11,987.2 | 6,670.0 | 12,064.9 | 6,750.0 | 143.1 | 143.0 | 109.42 | -82.8 | 3,863.0 | 240.7 | -31.0 | 271.64 | 0.886 | Level 1, ES, SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.73 | 0.4 | 75.2 | 75.2 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.73 | 0.4 | 75.2 | 75.2 | 75.0 | 0.19 | 391.181 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.73 | 0.4 | 75.2 | 75.2 | 75.0 | 0.20 | 384.560 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.73 | 0.4 | 75.2 | 75.2 | 74.6 | 0.63 | 119.190 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.73 | 0.4 | 75.2 | 75.2 | 74.6 | 0.65 | 116.574 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.73 | 0.4 | 75.2 | 75.2 | 74.1 | 1.07 | 70.059 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.73 | 0.4 | 75.2 | 75.2 | 74.1 | 1.09 | 68.700 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.73 | 0.4 | 75.2 | 75.2 | 73.7 | 1.52 | 49.610 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.73 | 0.4 | 75.2 | 75.2 | 73.7 | 1.54 | 48.700 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.73 | 0.4 | 75.2 | 75.2 | 73.2 | 1.96 | 38.401 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.73 | 0.4 | 75.2 | 75.2 | 73.2 | 1.99 | 37.719 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.73 | 0.4 | 75.2 | 75.2 | 72.8 | 2.40 | 31.324 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.73 | 0.4 | 75.2 | 75.2 | 72.8 | 2.44 | 30.779 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.73 | 0.4 | 75.2 | 75.2 | 72.4 | 2.84 | 26.449 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.73 | 0.4 | 75.2 | 75.2 | 72.3 | 2.89 | 25.996 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.73 | 0.4 | 75.2 | 75.2 | 71.9 | 3.29 | 22.887 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.73 | 0.4 | 75.2 | 75.2 | 71.9 | 3.34 | 22.499 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.73 | 0.4 | 75.2 | 75.2 | 71.5 | 3.73 | 20.171 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.73 | 0.4 | 75.2 | 75.2 | 71.4 | 3.79 | 19.832 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.73 | 0.4 | 75.2 | 75.2 | 71.0 | 4.17 | 18.031 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.73 | 0.4 | 75.2 | 75.2 | 71.0 | 4.24 | 17.730 | CC |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.26 | 0.4 | 75.2 | 76.4 | 71.8 | 4.60 | 16.597 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.30 | 0.4 | 75.2 | 76.9 | 72.3 | 4.68 | 16.448 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.57 | 0.4 | 75.2 | 80.9 | 75.9 | 5.02 | 16.109 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.65 | 0.4 | 75.2 | 82.1 | 77.0 | 5.10 | 16.104 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 175.04 | 0.4 | 75.2 | 88.8 | 83.3 | 5.44 | 16.326 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 175.15 | 0.4 | 75.2 | 90.8 | 85.3 | 5.52 | 16.446 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 3.0 | 175.58 | 0.4 | 75.2 | 100.0 | 94.1 | 5.85 | 17.092 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 3.0 | 175.70 | 0.4 | 75.2 | 103.0 | 97.0 | 5.94 | 17.329 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 3.2 | 176.12 | 0.4 | 75.2 | 114.6 | 108.3 | 6.26 | 18.301 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 3.2 | 176.25 | 0.4 | 75.2 | 118.6 | 112.2 | 6.36 | 18.650 | |
| 1,574.8 | 1,571.0 | 1,574.3 | 1,574.3 | 3.5 | 3.4 | 176.59 | 0.5 | 74.2 | 131.6 | 124.9 | 6.66 | 19.744 | |
| 1,600.0 | 1,595.6 | 1,600.4 | 1,600.4 | 3.6 | 3.5 | 176.68 | 0.6 | 73.5 | 136.0 | 129.2 | 6.77 | 20.097 | |
| 1,673.2 | 1,667.0 | 1,676.2 | 1,676.1 | 3.9 | 3.6 | 176.87 | 1.2 | 69.9 | 148.6 | 141.6 | 7.05 | 21.069 | |
| 1,700.0 | 1,693.1 | 1,704.1 | 1,703.9 | 4.0 | 3.7 | 176.92 | 1.5 | 68.0 | 153.3 | 146.1 | 7.16 | 21.409 | |
| 1,771.6 | 1,762.4 | 1,778.8 | 1,778.3 | 4.3 | 3.8 | 177.01 | 2.5 | 61.8 | 165.6 | 158.1 | 7.44 | 22.240 | |
| 1,800.0 | 1,789.6 | 1,808.4 | 1,807.8 | 4.4 | 3.9 | 177.02 | 3.0 | 58.8 | 170.4 | 162.9 | 7.56 | 22.554 | |
| 1,870.1 | 1,856.8 | 1,882.0 | 1,880.8 | 4.7 | 4.1 | 177.04 | 4.5 | 50.1 | 182.4 | 174.5 | 7.84 | 23.258 | |
| 1,900.0 | 1,885.3 | 1,913.5 | 1,912.1 | 4.9 | 4.2 | 177.03 | 5.2 | 45.8 | 187.5 | 179.5 | 7.96 | 23.547 | |
| 1,968.5 | 1,950.2 | 1,985.9 | 1,983.5 | 5.3 | 4.3 | 176.99 | 7.0 | 34.6 | 199.0 | 190.8 | 8.24 | 24.144 | |
| 2,000.0 | 1,979.8 | 2,019.2 | 2,016.4 | 5.5 | 4.4 | 176.96 | 7.9 | 28.9 | 204.3 | 196.0 | 8.38 | 24.396 | |
| 2,044.9 | 2,021.9 | 2,067.0 | 2,063.3 | 5.7 | 4.6 | 176.90 | 9.4 | 20.0 | 211.9 | 203.3 | 8.57 | 24.734 | |
| 2,066.9 | 2,042.5 | 2,090.4 | 2,086.2 | 5.9 | 4.6 | 176.88 | 10.2 | 15.4 | 215.4 | 206.8 | 8.68 | 24.834 | |
| 2,100.0 | 2,073.4 | 2,123.8 | 2,118.9 | 6.1 | 4.8 | 176.83 | 11.3 | 8.5 | 220.6 | 211.8 | 8.84 | 24.953 | |
| 2,165.3 | 2,134.4 | 2,188.4 | 2,182.1 | 6.5 | 5.0 | 176.75 | 13.4 | -4.7 | 230.8 | 221.6 | 9.17 | 25.173 | |
| 2,200.0 | 2,166.8 | 2,222.6 | 2,215.5 | 6.8 | 5.1 | 176.71 | 14.6 | -11.7 | 236.2 | 226.8 | 9.34 | 25.274 | |
| 2,263.8 | 2,226.4 | 2,280.8 | 2,272.5 | 7.2 | 5.2 | 176.66 | 16.5 | -23.1 | 246.7 | 237.0 | 9.66 | 25.539 | |
| 2,300.0 | 2,260.2 | 2,313.5 | 2,304.8 | 7.4 | 5.3 | 176.65 | 17.4 | -29.1 | 253.2 | 243.4 | 9.83 | 25.755 | |
| 2,362.2 | 2,318.3 | 2,369.5 | 2,360.0 | 7.9 | 5.5 | 176.66 | 18.9 | -38.3 | 265.4 | 255.3 | 10.13 | 26.191 | |
| 2,400.0 | 2,353.6 | 2,400.0 | 2,390.1 | 8.1 | 5.6 | 176.67 | 19.7 | -42.9 | 273.4 | 263.1 | 10.31 | 26.510 | |
| 2,460.6 | 2,410.3 | 2,457.1 | 2,446.7 | 8.6 | 5.7 | 176.72 | 21.0 | -50.7 | 287.0 | 276.4 | 10.61 | 27.043 | |
| 2,500.0 | 2,447.0 | 2,491.9 | 2,481.1 | 8.9 | 5.8 | 176.76 | 21.7 | -54.9 | 296.5 | 285.7 | 10.81 | 27.438 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,543.5 | 2,532.5 | 9.3 | 5.9 | 176.84 | 22.5 | -60.3 | 311.6 | 300.5 | 11.09 | 28.086 | |
| 2,600.0 | 2,540.5 | 2,579.0 | 2,567.9 | 9.6 | 6.0 | 176.89 | 23.1 | -63.5 | 322.6 | 311.3 | 11.29 | 28.569 | |
| 2,657.5 | 2,594.2 | 2,628.5 | 2,617.2 | 10.0 | 6.1 | 176.98 | 23.7 | -67.3 | 338.9 | 327.4 | 11.57 | 29.292 | |
| 2,700.0 | 2,633.9 | 2,664.7 | 2,653.3 | 10.3 | 6.2 | 177.06 | 24.0 | -69.5 | 351.6 | 339.8 | 11.78 | 29.859 | |
| 2,755.9 | 2,686.1 | 2,711.9 | 2,700.5 | 10.7 | 6.3 | 177.16 | 24.4 | -71.7 | 369.1 | 357.0 | 12.05 | 30.639 | |
| 2,800.0 | 2,727.3 | 2,748.8 | 2,737.3 | 11.0 | 6.4 | 177.24 | 24.6 | -72.9 | 383.4 | 371.2 | 12.26 | 31.285 | |
| 2,854.3 | 2,778.1 | 2,793.8 | 2,782.3 | 11.4 | 6.5 | 177.34 | 24.7 | -73.7 | 401.8 | 389.3 | 12.51 | 32.109 | |
| 2,900.0 | 2,820.7 | 2,832.2 | 2,820.7 | 11.8 | 6.5 | 177.43 | 24.8 | -73.9 | 417.9 | 405.2 | 12.74 | 32.817 | |
| 2,952.7 | 2,870.0 | 2,881.5 | 2,870.0 | 12.2 | 6.6 | 177.54 | 24.8 | -73.9 | 436.7 | 423.7 | 13.00 | 33.607 | |
| 3,000.0 | 2,914.2 | 2,925.6 | 2,914.2 | 12.5 | 6.7 | 177.63 | 24.8 | -73.9 | 453.6 | 440.3 | 13.23 | 34.280 | |
| 3,051.2 | 2,962.0 | 2,973.4 | 2,962.0 | 12.9 | 6.8 | 177.73 | 24.8 | -73.9 | 471.8 | 458.3 | 13.49 | 34.972 | |
| 3,100.0 | 3,007.6 | 3,019.0 | 3,007.6 | 13.3 | 6.9 | 177.81 | 24.8 | -73.9 | 489.2 | 475.5 | 13.74 | 35.607 | |
| 3,149.6 | 3,053.9 | 3,065.4 | 3,053.9 | 13.6 | 7.0 | 177.88 | 24.8 | -73.9 | 506.9 | 492.9 | 13.99 | 36.227 | |
| 3,200.0 | 3,101.0 | 3,112.5 | 3,101.0 | 14.0 | 7.1 | 177.96 | 24.8 | -73.9 | 524.9 | 510.6 | 14.25 | 36.834 | |
| 3,248.0 | 3,145.9 | 3,157.3 | 3,145.9 | 14.4 | 7.2 | 178.02 | 24.8 | -73.9 | 542.0 | 527.5 | 14.50 | 37.391 | |
| 3,300.0 | 3,194.4 | 3,205.9 | 3,194.4 | 14.8 | 7.3 | 178.09 | 24.8 | -73.9 | 560.5 | 545.8 | 14.76 | 37.971 | |
| 3,346.4 | 3,237.8 | 3,249.3 | 3,237.8 | 15.1 | 7.4 | 178.14 | 24.8 | -73.9 | 577.1 | 562.1 | 15.00 | 38.471 | |
| 3,400.0 | 3,287.8 | 3,299.3 | 3,287.8 | 15.5 | 7.5 | 178.20 | 24.8 | -73.9 | 596.2 | 580.9 | 15.28 | 39.027 | |
| 3,444.9 | 3,329.8 | 3,341.2 | 3,329.8 | 15.9 | 7.6 | 178.25 | 24.8 | -73.9 | 612.2 | 596.7 | 15.51 | 39.477 | |
| 3,500.0 | 3,381.3 | 3,392.7 | 3,381.3 | 16.3 | 7.7 | 178.30 | 24.8 | -73.9 | 631.8 | 616.0 | 15.79 | 40.010 | |
| 3,543.3 | 3,421.7 | 3,433.2 | 3,421.7 | 16.6 | 7.8 | 178.34 | 24.8 | -73.9 | 647.3 | 631.3 | 16.02 | 40.415 | |
| 3,600.0 | 3,474.7 | 3,486.1 | 3,474.7 | 17.0 | 7.9 | 178.39 | 24.8 | -73.9 | 667.5 | 651.2 | 16.31 | 40.927 | |
| 3,641.7 | 3,513.7 | 3,525.1 | 3,513.7 | 17.3 | 8.0 | 178.43 | 24.8 | -73.9 | 682.4 | 665.9 | 16.53 | 41.292 | |
| 3,700.0 | 3,568.1 | 3,579.6 | 3,568.1 | 17.8 | 8.1 | 178.47 | 24.8 | -73.9 | 703.2 | 686.3 | 16.83 | 41.784 | |
| 3,740.1 | 3,605.6 | 3,617.1 | 3,605.6 | 18.1 | 8.1 | 178.50 | 24.8 | -73.9 | 717.5 | 700.4 | 17.04 | 42.113 | |
| 3,800.0 | 3,661.5 | 3,673.0 | 3,661.5 | 18.5 | 8.3 | 178.55 | 24.8 | -73.9 | 738.8 | 721.5 | 17.35 | 42.587 | |
| 3,838.6 | 3,697.6 | 3,709.0 | 3,697.6 | 18.8 | 8.3 | 178.57 | 24.8 | -73.9 | 752.6 | 735.0 | 17.55 | 42.883 | |
| 3,900.0 | 3,754.9 | 3,766.4 | 3,754.9 | 19.3 | 8.5 | 178.61 | 24.8 | -73.9 | 774.5 | 756.6 | 17.87 | 43.341 | |
| 3,937.0 | 3,789.5 | 3,801.0 | 3,789.5 | 19.6 | 8.5 | 178.64 | 24.8 | -73.9 | 787.7 | 769.6 | 18.06 | 43.607 | |
| 4,000.0 | 3,848.4 | 3,859.8 | 3,848.4 | 20.1 | 8.7 | 178.68 | 24.8 | -73.9 | 810.1 | 791.8 | 18.39 | 44.049 | |
| 4,035.4 | 3,881.5 | 3,892.9 | 3,881.5 | 20.3 | 8.7 | 178.70 | 24.8 | -73.9 | 822.8 | 804.2 | 18.58 | 44.289 | |
| 4,100.0 | 3,941.8 | 3,953.3 | 3,941.8 | 20.8 | 8.9 | 178.73 | 24.8 | -73.9 | 845.8 | 826.9 | 18.92 | 44.715 | |
| 4,133.8 | 3,973.4 | 3,984.9 | 3,973.4 | 21.1 | 8.9 | 178.75 | 24.8 | -73.9 | 857.9 | 838.8 | 19.09 | 44.932 | |
| 4,200.0 | 4,035.2 | 4,046.7 | 4,035.2 | 21.6 | 9.1 | 178.78 | 24.8 | -73.9 | 881.5 | 862.0 | 19.44 | 45.344 | |
| 4,232.3 | 4,065.4 | 4,076.8 | 4,065.4 | 21.8 | 9.1 | 178.80 | 24.8 | -73.9 | 893.0 | 873.4 | 19.61 | 45.539 | |
| 4,300.0 | 4,128.6 | 4,140.1 | 4,128.6 | 22.3 | 9.3 | 178.83 | 24.8 | -73.9 | 917.1 | 897.2 | 19.96 | 45.937 | |
| 4,330.7 | 4,157.3 | 4,168.8 | 4,157.3 | 22.6 | 9.3 | 178.84 | 24.8 | -73.9 | 928.1 | 908.0 | 20.13 | 46.113 | |
| 4,400.0 | 4,222.0 | 4,233.5 | 4,222.0 | 23.1 | 9.5 | 178.87 | 24.8 | -73.9 | 952.8 | 932.3 | 20.49 | 46.499 | |
| 4,429.1 | 4,249.3 | 4,260.7 | 4,249.3 | 23.3 | 9.5 | 178.89 | 24.8 | -73.9 | 963.2 | 942.5 | 20.64 | 46.657 | |
| 4,500.0 | 4,315.5 | 4,326.9 | 4,315.5 | 23.9 | 9.7 | 178.91 | 24.8 | -73.9 | 988.5 | 967.5 | 21.02 | 47.031 | |
| 4,527.5 | 4,341.2 | 4,352.7 | 4,341.2 | 24.1 | 9.7 | 178.93 | 24.8 | -73.9 | 998.3 | 977.1 | 21.16 | 47.172 | |
| 4,600.0 | 4,408.9 | 4,420.4 | 4,408.9 | 24.6 | 9.9 | 178.95 | 24.8 | -73.9 | 1,024.1 | 1,002.6 | 21.55 | 47.535 | |
| 4,626.0 | 4,433.2 | 4,444.6 | 4,433.2 | 24.8 | 9.9 | 178.96 | 24.8 | -73.9 | 1,033.4 | 1,011.7 | 21.68 | 47.661 | |
| 4,700.0 | 4,502.3 | 4,513.8 | 4,502.3 | 25.4 | 10.1 | 178.99 | 24.8 | -73.9 | 1,059.8 | 1,037.7 | 22.07 | 48.013 | |
| 4,724.4 | 4,525.1 | 4,536.6 | 4,525.1 | 25.6 | 10.1 | 179.00 | 24.8 | -73.9 | 1,068.5 | 1,046.3 | 22.20 | 48.126 | |
| 4,800.0 | 4,595.7 | 4,607.2 | 4,595.7 | 26.2 | 10.3 | 179.02 | 24.8 | -73.9 | 1,095.5 | 1,072.9 | 22.60 | 48.468 | |
| 4,822.8 | 4,617.1 | 4,628.5 | 4,617.1 | 26.3 | 10.3 | 179.03 | 24.8 | -73.9 | 1,103.6 | 1,080.9 | 22.72 | 48.569 | |
| 4,900.0 | 4,689.2 | 4,700.6 | 4,689.2 | 26.9 | 10.5 | 179.05 | 24.8 | -73.9 | 1,131.1 | 1,108.0 | 23.13 | 48.901 | |
| 4,921.2 | 4,709.0 | 4,720.5 | 4,709.0 | 27.1 | 10.5 | 179.06 | 24.8 | -73.9 | 1,138.7 | 1,115.5 | 23.24 | 48.990 | |
| 5,000.0 | 4,782.6 | 4,794.0 | 4,782.6 | 27.7 | 10.7 | 179.08 | 24.8 | -73.9 | 1,166.8 | 1,143.1 | 23.66 | 49.313 | |
| 5,019.7 | 4,801.0 | 4,812.4 | 4,801.0 | 27.8 | 10.7 | 179.09 | 24.8 | -73.9 | 1,173.8 | 1,150.1 | 23.77 | 49.392 | |
| 5,100.0 | 4,876.0 | 4,887.5 | 4,876.0 | 28.4 | 10.9 | 179.11 | 24.8 | -73.9 | 1,202.5 | 1,178.3 | 24.19 | 49.706 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,904.4 | 4,892.9 | 28.6 | 10.9 | 179.11 | 24.8 | -73.9 | 1,208.9 | 1,184.6 | 24.29 | 49.776 | |
| 5,159.9 | 4,932.0 | 4,943.5 | 4,932.0 | 28.9 | 11.0 | 179.12 | 24.8 | -73.9 | 1,223.8 | 1,199.3 | 24.51 | 49.933 | |
| 5,200.0 | 4,969.5 | 4,981.0 | 4,969.5 | 29.2 | 11.1 | 179.14 | 24.8 | -73.9 | 1,237.9 | 1,213.1 | 24.76 | 49.987 | |
| 5,216.5 | 4,985.1 | 4,996.5 | 4,985.1 | 29.3 | 11.1 | 179.14 | 24.8 | -73.9 | 1,243.5 | 1,218.6 | 24.86 | 50.013 | |
| 5,300.0 | 5,064.0 | 5,075.5 | 5,064.0 | 29.7 | 11.3 | 179.17 | 24.8 | -73.9 | 1,270.6 | 1,245.2 | 25.36 | 50.104 | |
| 5,314.9 | 5,078.2 | 5,089.7 | 5,078.2 | 29.8 | 11.3 | 179.17 | 24.8 | -73.9 | 1,275.2 | 1,249.8 | 25.44 | 50.117 | |
| 5,400.0 | 5,159.6 | 5,171.1 | 5,159.6 | 30.2 | 11.5 | 179.20 | 24.8 | -73.9 | 1,300.0 | 1,274.1 | 25.92 | 50.154 | |
| 5,413.4 | 5,172.4 | 5,183.9 | 5,172.4 | 30.3 | 11.5 | 179.20 | 24.8 | -73.9 | 1,303.7 | 1,277.7 | 25.99 | 50.158 | |
| 5,500.0 | 5,256.1 | 5,267.6 | 5,256.1 | 30.7 | 11.7 | 179.22 | 24.8 | -73.9 | 1,326.0 | 1,299.6 | 26.44 | 50.145 | |
| 5,511.8 | 5,267.6 | 5,279.1 | 5,267.6 | 30.7 | 11.7 | 179.22 | 24.8 | -73.9 | 1,328.9 | 1,302.4 | 26.50 | 50.142 | |
| 5,600.0 | 5,353.5 | 5,365.0 | 5,353.5 | 31.1 | 11.9 | 179.24 | 24.8 | -73.9 | 1,348.7 | 1,321.8 | 26.93 | 50.081 | |
| 5,610.2 | 5,363.5 | 5,375.0 | 5,363.5 | 31.1 | 11.9 | 179.24 | 24.8 | -73.9 | 1,350.8 | 1,323.8 | 26.98 | 50.073 | |
| 5,700.0 | 5,451.6 | 7,862.2 | 6,787.5 | 31.4 | 41.0 | -154.40 | 24.8 | -1,442.0 | 1,340.9 | 1,296.3 | 44.52 | 30.121 | |
| 5,708.6 | 5,460.2 | 7,863.7 | 6,787.5 | 31.4 | 41.1 | -153.86 | 24.8 | -1,443.5 | 1,332.4 | 1,287.4 | 44.93 | 29.655 | |
| 5,800.0 | 5,550.4 | 7,877.6 | 6,787.5 | 31.7 | 41.4 | -147.19 | 24.8 | -1,457.4 | 1,242.6 | 1,192.5 | 50.07 | 24.816 | |
| 5,807.1 | 5,557.4 | 7,878.6 | 6,787.5 | 31.7 | 41.5 | -146.59 | 24.8 | -1,458.3 | 1,235.6 | 1,185.1 | 50.53 | 24.454 | |
| 5,900.0 | 5,649.6 | 7,889.5 | 6,787.4 | 31.9 | 41.7 | -137.38 | 24.8 | -1,469.3 | 1,143.9 | 1,086.6 | 57.31 | 19.960 | |
| 5,905.5 | 5,655.1 | 7,890.1 | 6,787.4 | 31.9 | 41.8 | -136.75 | 24.8 | -1,469.9 | 1,138.5 | 1,080.7 | 57.75 | 19.715 | |
| 6,000.0 | 5,749.2 | 7,898.0 | 6,787.4 | 32.1 | 42.0 | -124.58 | 24.8 | -1,477.8 | 1,045.0 | 979.6 | 65.38 | 15.982 | |
| 6,003.9 | 5,753.1 | 7,898.2 | 6,787.4 | 32.1 | 42.0 | -124.03 | 24.8 | -1,478.0 | 1,041.1 | 975.4 | 65.69 | 15.849 | |
| 6,100.0 | 5,849.1 | 7,903.0 | 6,787.4 | 32.3 | 42.1 | -109.58 | 24.8 | -1,482.8 | 945.9 | 874.0 | 71.88 | 13.159 | |
| 6,102.3 | 5,851.4 | 7,903.1 | 6,787.4 | 32.3 | 42.1 | -109.21 | 24.8 | -1,482.8 | 943.6 | 871.6 | 71.99 | 13.107 | |
| 6,200.8 | 5,949.8 | 7,904.5 | 6,787.4 | 32.4 | 42.1 | -94.60 | 24.8 | -1,484.3 | 846.0 | 771.6 | 74.43 | 11.367 | |
| 6,204.9 | 5,953.9 | 7,904.5 | 6,787.4 | 32.4 | 42.1 | -178.48 | 24.8 | -1,484.3 | 842.0 | 810.8 | 31.25 | 26.947 | |
| 6,234.9 | 5,983.9 | 7,904.4 | 6,787.4 | 32.4 | 42.1 | -178.53 | 24.8 | -1,484.2 | 812.3 | 781.0 | 31.29 | 25.958 | |
| 6,250.0 | 5,999.0 | 7,904.2 | 6,787.4 | 32.4 | 42.1 | 99.35 | 24.8 | -1,483.9 | 797.3 | 723.3 | 74.01 | 10.773 | |
| 6,299.2 | 6,048.2 | 7,901.2 | 6,787.4 | 32.4 | 42.0 | 120.06 | 24.8 | -1,481.0 | 748.8 | 681.4 | 67.40 | 11.111 | |
| 6,300.0 | 6,048.9 | 7,901.2 | 6,787.4 | 32.4 | 42.0 | 120.33 | 24.8 | -1,481.0 | 748.0 | 680.8 | 67.26 | 11.121 | |
| 6,350.0 | 6,098.5 | 7,894.7 | 6,787.4 | 32.4 | 41.9 | 133.38 | 24.8 | -1,474.5 | 699.2 | 639.8 | 59.36 | 11.779 | |
| 6,397.6 | 6,145.3 | 7,885.3 | 6,787.5 | 32.3 | 41.6 | 140.92 | 24.8 | -1,465.1 | 653.2 | 599.6 | 53.63 | 12.180 | |
| 6,400.0 | 6,147.6 | 7,884.8 | 6,787.5 | 32.3 | 41.6 | 141.21 | 24.8 | -1,464.6 | 650.9 | 597.5 | 53.39 | 12.191 | |
| 6,450.0 | 6,195.8 | 7,871.5 | 6,787.5 | 32.2 | 41.3 | 146.03 | 24.8 | -1,451.3 | 603.6 | 554.4 | 49.19 | 12.271 | |
| 6,496.0 | 6,239.3 | 7,856.3 | 6,787.6 | 32.1 | 40.9 | 148.84 | 24.8 | -1,436.1 | 561.1 | 514.7 | 46.40 | 12.092 | |
| 6,500.0 | 6,243.0 | 7,854.9 | 6,787.6 | 32.1 | 40.8 | 149.02 | 24.8 | -1,434.6 | 557.5 | 511.3 | 46.20 | 12.067 | |
| 6,550.0 | 6,289.0 | 7,835.0 | 6,787.6 | 32.0 | 40.3 | 150.85 | 24.8 | -1,414.8 | 512.8 | 468.8 | 44.01 | 11.651 | |
| 6,594.5 | 6,328.6 | 7,814.7 | 6,787.7 | 31.8 | 39.8 | 151.78 | 24.8 | -1,394.4 | 474.4 | 431.9 | 42.55 | 11.150 | |
| 6,600.0 | 6,333.4 | 7,812.0 | 6,787.7 | 31.8 | 39.7 | 151.85 | 24.8 | -1,391.7 | 469.8 | 427.4 | 42.39 | 11.080 | |
| 6,650.0 | 6,376.2 | 7,785.9 | 6,787.8 | 31.7 | 39.1 | 152.23 | 24.8 | -1,365.7 | 428.6 | 387.4 | 41.22 | 10.399 | |
| 6,692.9 | 6,411.3 | 7,761.2 | 6,787.9 | 31.6 | 38.4 | 152.14 | 24.8 | -1,341.0 | 395.1 | 354.6 | 40.51 | 9.753 | |
| 6,700.0 | 6,417.0 | 7,756.9 | 6,787.9 | 31.5 | 38.3 | 152.09 | 24.8 | -1,336.7 | 389.7 | 349.3 | 40.41 | 9.642 | |
| 6,750.0 | 6,455.7 | 7,725.1 | 6,788.1 | 31.4 | 37.5 | 151.49 | 24.8 | -1,304.9 | 353.1 | 313.2 | 39.95 | 8.839 | |
| 6,791.3 | 6,486.0 | 7,696.9 | 6,788.2 | 31.3 | 36.8 | 150.68 | 24.8 | -1,276.7 | 324.9 | 285.1 | 39.82 | 8.159 | |
| 6,800.0 | 6,492.2 | 7,690.8 | 6,788.2 | 31.3 | 36.6 | 150.47 | 24.8 | -1,270.6 | 319.2 | 279.4 | 39.82 | 8.016 | |
| 6,850.0 | 6,526.1 | 7,654.0 | 6,788.3 | 31.2 | 35.7 | 149.05 | 24.8 | -1,233.7 | 288.1 | 248.1 | 40.03 | 7.199 | |
| 6,889.7 | 6,551.2 | 7,623.1 | 6,788.5 | 31.2 | 34.9 | 147.64 | 24.8 | -1,202.8 | 265.6 | 225.2 | 40.42 | 6.570 | |
| 6,900.0 | 6,557.4 | 7,614.9 | 6,788.5 | 31.2 | 34.7 | 147.23 | 24.8 | -1,194.7 | 260.1 | 219.5 | 40.55 | 6.414 | |
| 6,950.0 | 6,586.0 | 7,573.7 | 6,788.6 | 31.1 | 33.7 | 145.04 | 24.8 | -1,153.5 | 235.3 | 193.9 | 41.39 | 5.684 | |
| 6,988.2 | 6,605.8 | 7,541.0 | 6,788.8 | 31.2 | 32.9 | 143.13 | 24.8 | -1,120.8 | 218.5 | 176.3 | 42.19 | 5.179 | |
| 7,000.0 | 6,611.5 | 7,530.7 | 6,788.8 | 31.2 | 32.6 | 142.50 | 24.8 | -1,110.4 | 213.7 | 171.3 | 42.47 | 5.033 | |
| 7,050.0 | 6,634.1 | 7,486.0 | 6,789.0 | 31.2 | 31.5 | 139.71 | 24.8 | -1,065.7 | 195.6 | 151.9 | 43.70 | 4.476 | |
| 7,086.6 | 6,648.6 | 7,452.3 | 6,789.1 | 31.3 | 30.7 | 137.56 | 24.8 | -1,032.1 | 184.4 | 139.8 | 44.65 | 4.130 | |
| 7,100.0 | 6,653.4 | 7,439.8 | 6,789.1 | 31.4 | 30.4 | 136.77 | 24.8 | -1,019.6 | 180.8 | 135.8 | 44.99 | 4.019 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 7,392.4 | 6,789.3 | 31.6 | 29.3 | 133.87 | 24.8 | -972.2 | 169.2 | 123.0 | 46.17 | 3.664 | |
| 7,185.0 | 6,678.8 | 7,358.6 | 6,789.5 | 31.7 | 28.5 | 131.98 | 24.8 | -938.4 | 162.8 | 115.9 | 46.87 | 3.473 | |
| 7,200.0 | 6,682.3 | 7,344.0 | 6,789.5 | 31.8 | 28.2 | 131.23 | 24.8 | -923.8 | 160.5 | 113.4 | 47.12 | 3.406 | |
| 7,250.0 | 6,691.6 | 7,294.9 | 6,789.7 | 32.1 | 27.0 | 129.07 | 24.8 | -874.7 | 154.5 | 106.8 | 47.73 | 3.238 | |
| 7,283.4 | 6,696.0 | 7,261.7 | 6,789.8 | 32.3 | 26.3 | 128.01 | 24.8 | -841.5 | 151.9 | 104.0 | 47.93 | 3.170 | |
| 7,300.0 | 6,697.5 | 7,245.2 | 6,789.9 | 32.4 | 25.9 | 127.62 | 24.8 | -825.0 | 151.0 | 103.0 | 47.94 | 3.149 | |
| 7,350.0 | 6,699.9 | 7,192.7 | 6,789.8 | 32.8 | 24.8 | 126.94 | 24.8 | -772.5 | 149.5 | 101.7 | 47.73 | 3.131 | |
| 7,364.4 | 6,700.0 | 7,176.3 | 6,789.2 | 32.9 | 24.4 | 126.76 | 24.8 | -756.1 | 149.1 | 101.5 | 47.65 | 3.129 | |
| 7,381.9 | 6,699.9 | 7,156.4 | 6,788.0 | 33.1 | 24.0 | 126.42 | 24.8 | -736.2 | 148.6 | 100.9 | 47.61 | 3.120 | |
| 7,400.0 | 6,699.8 | 7,135.8 | 6,786.1 | 33.2 | 23.6 | 125.89 | 24.8 | -715.7 | 147.7 | 100.0 | 47.67 | 3.098 | |
| 7,480.3 | 6,699.2 | 7,046.4 | 6,771.3 | 34.0 | 21.7 | 121.15 | 24.8 | -627.6 | 140.5 | 91.5 | 49.05 | 2.864 | |
| 7,500.0 | 6,699.1 | 7,025.1 | 6,766.2 | 34.2 | 21.3 | 119.36 | 24.8 | -607.0 | 138.1 | 88.5 | 49.63 | 2.783 | |
| 7,578.7 | 6,698.6 | 6,943.6 | 6,740.9 | 35.2 | 19.9 | 109.55 | 24.8 | -529.5 | 127.8 | 75.3 | 52.46 | 2.436 | |
| 7,600.0 | 6,698.5 | 6,922.6 | 6,733.0 | 35.4 | 19.5 | 106.17 | 24.8 | -510.1 | 125.2 | 72.0 | 53.21 | 2.353 | |
| 7,677.1 | 6,698.0 | 6,850.8 | 6,701.7 | 36.5 | 18.4 | 91.79 | 24.8 | -445.5 | 119.5 | 64.7 | 54.84 | 2.179 | |
| 7,686.0 | 6,697.9 | 6,843.1 | 6,697.9 | 36.6 | 18.3 | 90.00 | 24.8 | -438.7 | 119.4 | 64.6 | 54.86 | 2.177 | ES, SF |
| 7,700.0 | 6,697.8 | 6,830.9 | 6,691.9 | 36.8 | 18.1 | 87.14 | 24.8 | -428.2 | 119.6 | 64.9 | 54.79 | 2.184 | |
| 7,775.6 | 6,697.3 | 6,769.5 | 6,658.6 | 38.0 | 17.3 | 71.94 | 24.8 | -376.6 | 128.5 | 75.9 | 52.66 | 2.441 | |
| 7,800.0 | 6,697.2 | 6,750.0 | 6,647.1 | 38.3 | 17.1 | 67.17 | 24.8 | -360.8 | 134.4 | 83.1 | 51.36 | 2.618 | |
| 7,874.0 | 6,696.7 | 6,700.0 | 6,615.8 | 39.6 | 16.5 | 55.73 | 24.8 | -321.9 | 160.9 | 113.5 | 47.38 | 3.395 | |
| 7,900.0 | 6,696.5 | 6,682.3 | 6,604.1 | 40.0 | 16.3 | 52.10 | 24.8 | -308.7 | 172.8 | 127.0 | 45.82 | 3.771 | |
| 7,972.4 | 6,696.1 | 6,639.0 | 6,574.0 | 41.3 | 15.9 | 44.18 | 24.8 | -277.4 | 211.7 | 169.5 | 42.20 | 5.017 | |
| 8,000.0 | 6,695.9 | 6,623.7 | 6,562.9 | 41.8 | 15.8 | 41.74 | 24.8 | -266.9 | 228.4 | 187.3 | 41.03 | 5.566 | |
| 8,070.8 | 6,695.4 | 6,587.5 | 6,535.9 | 43.1 | 15.5 | 36.61 | 24.8 | -242.8 | 274.6 | 236.1 | 38.59 | 7.117 | |
| 8,100.0 | 6,695.2 | 6,573.7 | 6,525.3 | 43.7 | 15.4 | 34.88 | 24.8 | -234.1 | 294.9 | 257.1 | 37.78 | 7.805 | |
| 8,169.3 | 6,694.8 | 6,550.0 | 6,506.6 | 45.1 | 15.2 | 32.17 | 24.8 | -219.4 | 345.5 | 308.7 | 36.77 | 9.396 | |
| 8,200.0 | 6,694.6 | 6,531.0 | 6,491.3 | 45.7 | 15.1 | 30.21 | 24.8 | -208.1 | 368.7 | 332.9 | 35.76 | 10.308 | |
| 8,267.7 | 6,694.1 | 6,500.0 | 6,465.7 | 47.1 | 14.9 | 27.39 | 24.8 | -190.6 | 421.6 | 387.0 | 34.56 | 12.199 | |
| 8,300.0 | 6,693.9 | 6,500.0 | 6,465.7 | 47.8 | 14.9 | 27.39 | 24.8 | -190.6 | 447.4 | 412.5 | 34.92 | 12.814 | |
| 8,366.1 | 6,693.5 | 6,472.7 | 6,442.6 | 49.2 | 14.8 | 25.22 | 24.8 | -176.1 | 501.5 | 467.4 | 34.11 | 14.701 | |
| 8,400.0 | 6,693.3 | 6,462.5 | 6,433.8 | 49.9 | 14.7 | 24.48 | 24.8 | -170.9 | 529.8 | 495.8 | 33.95 | 15.606 | |
| 8,464.5 | 6,692.9 | 6,450.0 | 6,423.0 | 51.4 | 14.7 | 23.62 | 24.8 | -164.7 | 584.5 | 550.5 | 34.02 | 17.180 | |
| 8,500.0 | 6,692.6 | 6,434.9 | 6,409.7 | 52.1 | 14.6 | 22.64 | 24.8 | -157.5 | 615.0 | 581.3 | 33.69 | 18.253 | |
| 8,563.0 | 6,692.2 | 6,419.3 | 6,395.9 | 53.6 | 14.5 | 21.70 | 24.8 | -150.4 | 669.7 | 636.1 | 33.67 | 19.893 | |
| 8,600.0 | 6,692.0 | 6,400.0 | 6,378.5 | 54.4 | 14.4 | 20.62 | 24.8 | -141.9 | 702.4 | 669.2 | 33.26 | 21.123 | |
| 8,661.4 | 6,691.6 | 6,400.0 | 6,378.5 | 55.8 | 14.4 | 20.62 | 24.8 | -141.9 | 756.8 | 722.9 | 33.89 | 22.333 | |
| 8,700.0 | 6,691.3 | 6,400.0 | 6,378.5 | 56.7 | 14.4 | 20.62 | 24.8 | -141.9 | 791.5 | 757.2 | 34.28 | 23.086 | |
| 8,759.8 | 6,690.9 | 6,378.0 | 6,358.4 | 58.1 | 14.3 | 19.49 | 24.8 | -132.8 | 845.3 | 811.3 | 34.05 | 24.828 | |
| 8,800.0 | 6,690.7 | 6,370.7 | 6,351.7 | 59.1 | 14.3 | 19.14 | 24.8 | -130.0 | 881.8 | 847.6 | 34.18 | 25.796 | |
| 8,858.2 | 6,690.3 | 6,350.0 | 6,332.5 | 60.5 | 14.2 | 18.20 | 24.8 | -122.2 | 935.2 | 901.1 | 34.05 | 27.462 | |
| 8,900.0 | 6,690.0 | 6,350.0 | 6,332.5 | 61.5 | 14.2 | 18.20 | 24.8 | -122.2 | 973.4 | 939.0 | 34.46 | 28.244 | |
| 8,956.7 | 6,689.7 | 6,350.0 | 6,332.5 | 62.9 | 14.2 | 18.20 | 24.8 | -122.2 | 1,025.8 | 990.7 | 35.03 | 29.283 | |
| 9,000.0 | 6,689.4 | 6,350.0 | 6,332.5 | 63.9 | 14.2 | 18.20 | 24.8 | -122.2 | 1,066.1 | 1,030.6 | 35.46 | 30.063 | |
| 9,055.1 | 6,689.0 | 6,331.2 | 6,315.0 | 65.3 | 14.2 | 17.41 | 24.8 | -115.7 | 1,117.3 | 1,081.9 | 35.38 | 31.579 | |
| 9,100.0 | 6,688.7 | 6,325.3 | 6,309.4 | 66.4 | 14.1 | 17.18 | 24.8 | -113.7 | 1,159.3 | 1,123.7 | 35.63 | 32.536 | |
| 9,153.5 | 6,688.4 | 6,318.7 | 6,303.1 | 67.7 | 14.1 | 16.92 | 24.8 | -111.6 | 1,209.6 | 1,173.6 | 35.95 | 33.650 | |
| 9,200.0 | 6,688.1 | 6,300.0 | 6,285.3 | 68.9 | 14.0 | 16.23 | 24.8 | -105.8 | 1,253.5 | 1,217.7 | 35.83 | 34.984 | |
| 9,251.9 | 6,687.8 | 6,300.0 | 6,285.3 | 70.2 | 14.0 | 16.23 | 24.8 | -105.8 | 1,302.5 | 1,266.2 | 36.33 | 35.849 | |
| 9,300.0 | 6,687.4 | 6,300.0 | 6,285.3 | 71.4 | 14.0 | 16.23 | 24.8 | -105.8 | 1,348.0 | 1,311.2 | 36.80 | 36.634 | |
| 9,350.4 | 6,687.1 | 6,300.0 | 6,285.3 | 72.7 | 14.0 | 16.23 | 24.8 | -105.8 | 1,395.8 | 1,358.6 | 37.28 | 37.438 | |
| 9,400.0 | 6,686.8 | 6,300.0 | 6,285.3 | 73.9 | 14.0 | 16.23 | 24.8 | -105.8 | 1,443.2 | 1,405.4 | 37.77 | 38.214 | |
| 9,448.8 | 6,686.5 | 6,300.0 | 6,285.3 | 75.2 | 14.0 | 16.23 | 24.8 | -105.8 | 1,489.9 | 1,451.6 | 38.24 | 38.959 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17F-334 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,282.7 | 6,268.7 | 76.5 | 14.0 | 15.63 | 24.8 | -100.9 | 1,538.7 | 1,500.5 | 38.21 | 40.272 | |
| 9,547.2 | 6,685.8 | 6,278.6 | 6,264.7 | 77.7 | 14.0 | 15.49 | 24.8 | -99.8 | 1,583.9 | 1,545.4 | 38.54 | 41.099 | |
| 9,600.0 | 6,685.5 | 6,274.2 | 6,260.5 | 79.0 | 14.0 | 15.35 | 24.8 | -98.6 | 1,634.6 | 1,595.7 | 38.92 | 42.004 | |
| 9,645.6 | 6,685.2 | 6,270.5 | 6,257.0 | 80.2 | 13.9 | 15.23 | 24.8 | -97.7 | 1,678.5 | 1,639.3 | 39.25 | 42.769 | |
| 9,700.0 | 6,684.8 | 6,250.0 | 6,237.1 | 81.6 | 13.9 | 14.60 | 24.8 | -92.7 | 1,731.1 | 1,692.0 | 39.19 | 44.178 | |
| 9,744.1 | 6,684.6 | 6,250.0 | 6,237.1 | 82.8 | 13.9 | 14.60 | 24.8 | -92.7 | 1,773.6 | 1,734.0 | 39.60 | 44.787 | |
| 9,800.0 | 6,684.2 | 6,250.0 | 6,237.1 | 84.2 | 13.9 | 14.60 | 24.8 | -92.7 | 1,827.5 | 1,787.4 | 40.13 | 45.544 | |
| 9,842.5 | 6,683.9 | 6,250.0 | 6,237.1 | 85.3 | 13.9 | 14.60 | 24.8 | -92.7 | 1,868.6 | 1,828.1 | 40.53 | 46.107 | |
| 9,900.0 | 6,683.5 | 6,250.0 | 6,237.1 | 86.8 | 13.9 | 14.60 | 24.8 | -92.7 | 1,924.3 | 1,883.2 | 41.07 | 46.853 | |
| 9,940.9 | 6,683.3 | 6,250.0 | 6,237.1 | 87.9 | 13.9 | 14.60 | 24.8 | -92.7 | 1,964.0 | 1,922.5 | 41.46 | 47.372 | |
| 10,000.0 | 6,682.9 | 6,250.0 | 6,237.1 | 89.5 | 13.9 | 14.60 | 24.8 | -92.7 | 2,021.3 | 1,979.3 | 42.02 | 48.107 | |
| 10,039.3 | 6,682.6 | 6,250.0 | 6,237.1 | 90.5 | 13.9 | 14.60 | 24.8 | -92.7 | 2,059.6 | 2,017.2 | 42.39 | 48.585 | |
| 10,100.0 | 6,682.2 | 6,250.0 | 6,237.1 | 92.1 | 13.9 | 14.60 | 24.8 | -92.7 | 2,118.7 | 2,075.7 | 42.97 | 49.308 | |
| 10,137.8 | 6,682.0 | 6,250.0 | 6,237.1 | 93.1 | 13.9 | 14.60 | 24.8 | -92.7 | 2,155.5 | 2,112.2 | 43.33 | 49.749 | |
| 10,200.0 | 6,681.6 | 6,250.0 | 6,237.1 | 94.8 | 13.9 | 14.60 | 24.8 | -92.7 | 2,216.3 | 2,172.3 | 43.92 | 50.460 | |
| 10,236.2 | 6,681.4 | 6,250.0 | 6,237.1 | 95.7 | 13.9 | 14.60 | 24.8 | -92.7 | 2,251.6 | 2,207.4 | 44.27 | 50.865 | |
| 10,300.0 | 6,680.9 | 6,229.9 | 6,217.5 | 97.4 | 13.8 | 14.02 | 24.8 | -88.4 | 2,313.7 | 2,269.4 | 44.26 | 52.272 | |
| 10,334.6 | 6,680.7 | 6,228.2 | 6,215.8 | 98.3 | 13.8 | 13.98 | 24.8 | -88.1 | 2,347.5 | 2,303.0 | 44.54 | 52.707 | |
| 10,400.0 | 6,680.3 | 6,225.2 | 6,212.8 | 100.1 | 13.8 | 13.89 | 24.8 | -87.5 | 2,411.5 | 2,366.4 | 45.06 | 53.514 | |
| 10,433.0 | 6,680.1 | 6,223.7 | 6,211.3 | 101.0 | 13.8 | 13.85 | 24.8 | -87.2 | 2,443.8 | 2,398.5 | 45.33 | 53.913 | |
| 10,500.0 | 6,679.7 | 6,220.7 | 6,208.4 | 102.8 | 13.8 | 13.77 | 24.8 | -86.6 | 2,509.4 | 2,463.5 | 45.87 | 54.707 | |
| 10,531.5 | 6,679.4 | 6,200.0 | 6,188.0 | 103.6 | 13.7 | 13.24 | 24.8 | -83.0 | 2,540.6 | 2,495.0 | 45.58 | 55.743 | |
| 10,600.0 | 6,679.0 | 6,200.0 | 6,188.0 | 105.4 | 13.7 | 13.24 | 24.8 | -83.0 | 2,607.7 | 2,561.5 | 46.21 | 56.433 | |
| 10,629.9 | 6,678.8 | 6,200.0 | 6,188.0 | 106.2 | 13.7 | 13.24 | 24.8 | -83.0 | 2,637.0 | 2,590.5 | 46.48 | 56.728 | |
| 10,700.0 | 6,678.4 | 6,200.0 | 6,188.0 | 108.1 | 13.7 | 13.24 | 24.8 | -83.0 | 2,705.7 | 2,658.6 | 47.13 | 57.407 | |
| 10,728.3 | 6,678.2 | 6,200.0 | 6,188.0 | 108.9 | 13.7 | 13.24 | 24.8 | -83.0 | 2,733.5 | 2,686.1 | 47.39 | 57.675 | |
| 10,800.0 | 6,677.7 | 6,200.0 | 6,188.0 | 110.8 | 13.7 | 13.24 | 24.8 | -83.0 | 2,803.9 | 2,755.9 | 48.06 | 58.344 | |
| 10,826.7 | 6,677.5 | 6,200.0 | 6,188.0 | 111.5 | 13.7 | 13.24 | 24.8 | -83.0 | 2,830.2 | 2,781.9 | 48.31 | 58.588 | |
| 10,900.0 | 6,677.1 | 6,200.0 | 6,188.0 | 113.5 | 13.7 | 13.24 | 24.8 | -83.0 | 2,902.2 | 2,853.2 | 48.99 | 59.246 | |
| 10,925.2 | 6,676.9 | 6,200.0 | 6,188.0 | 114.2 | 13.7 | 13.24 | 24.8 | -83.0 | 2,927.0 | 2,877.8 | 49.22 | 59.468 | |
| 11,000.0 | 6,676.4 | 6,200.0 | 6,188.0 | 116.2 | 13.7 | 13.24 | 24.8 | -83.0 | 3,000.7 | 2,950.7 | 49.91 | 60.116 | |
| 11,023.6 | 6,676.3 | 6,200.0 | 6,188.0 | 116.8 | 13.7 | 13.24 | 24.8 | -83.0 | 3,023.9 | 2,973.8 | 50.13 | 60.317 | |
| 11,100.0 | 6,675.8 | 6,200.0 | 6,188.0 | 118.9 | 13.7 | 13.24 | 24.8 | -83.0 | 3,099.2 | 3,048.3 | 50.84 | 60.954 | |
| 11,122.0 | 6,675.6 | 6,200.0 | 6,188.0 | 119.5 | 13.7 | 13.24 | 24.8 | -83.0 | 3,120.9 | 3,069.8 | 51.05 | 61.135 | |
| 11,200.0 | 6,675.1 | 6,200.0 | 6,188.0 | 121.6 | 13.7 | 13.24 | 24.8 | -83.0 | 3,197.8 | 3,146.0 | 51.78 | 61.763 | |
| 11,220.4 | 6,675.0 | 6,200.0 | 6,188.0 | 122.2 | 13.7 | 13.24 | 24.8 | -83.0 | 3,218.0 | 3,166.0 | 51.97 | 61.925 | |
| 11,300.0 | 6,674.5 | 6,200.0 | 6,188.0 | 124.3 | 13.7 | 13.24 | 24.8 | -83.0 | 3,296.5 | 3,243.8 | 52.71 | 62.543 | |
| 11,318.9 | 6,674.3 | 6,200.0 | 6,188.0 | 124.9 | 13.7 | 13.24 | 24.8 | -83.0 | 3,315.1 | 3,262.3 | 52.88 | 62.688 | |
| 11,400.0 | 6,673.8 | 6,200.0 | 6,188.0 | 127.1 | 13.7 | 13.24 | 24.8 | -83.0 | 3,395.3 | 3,341.6 | 53.64 | 63.297 | |
| 11,417.3 | 6,673.7 | 6,200.0 | 6,188.0 | 127.5 | 13.7 | 13.24 | 24.8 | -83.0 | 3,412.4 | 3,358.6 | 53.80 | 63.425 | |
| 11,500.0 | 6,673.2 | 6,200.0 | 6,188.0 | 129.8 | 13.7 | 13.24 | 24.8 | -83.0 | 3,494.1 | 3,439.6 | 54.57 | 64.025 | |
| 11,515.7 | 6,673.1 | 6,200.0 | 6,188.0 | 130.2 | 13.7 | 13.24 | 24.8 | -83.0 | 3,509.7 | 3,455.0 | 54.72 | 64.137 | |
| 11,600.0 | 6,672.5 | 6,200.0 | 6,188.0 | 132.5 | 13.7 | 13.24 | 24.8 | -83.0 | 3,593.0 | 3,537.5 | 55.51 | 64.728 | |
| 11,614.1 | 6,672.4 | 6,200.0 | 6,188.0 | 132.9 | 13.7 | 13.24 | 24.8 | -83.0 | 3,607.0 | 3,551.4 | 55.64 | 64.826 | |
| 11,700.0 | 6,671.9 | 6,200.0 | 6,188.0 | 135.3 | 13.7 | 13.24 | 24.8 | -83.0 | 3,692.0 | 3,635.6 | 56.45 | 65.408 | |
| 11,712.6 | 6,671.8 | 6,200.0 | 6,188.0 | 135.6 | 13.7 | 13.24 | 24.8 | -83.0 | 3,704.5 | 3,647.9 | 56.56 | 65.492 | |
| 11,800.0 | 6,671.2 | 6,200.0 | 6,188.0 | 138.0 | 13.7 | 13.24 | 24.8 | -83.0 | 3,791.0 | 3,733.7 | 57.38 | 66.066 | |
| 11,811.0 | 6,671.1 | 6,200.0 | 6,188.0 | 138.3 | 13.7 | 13.24 | 24.8 | -83.0 | 3,801.9 | 3,744.4 | 57.49 | 66.137 | |
| 11,900.0 | 6,670.6 | 6,178.4 | 6,166.6 | 140.7 | 13.7 | 12.72 | 24.8 | -79.9 | 3,889.7 | 3,832.2 | 57.56 | 67.575 | |
| 11,909.4 | 6,670.5 | 6,178.2 | 6,166.4 | 141.0 | 13.7 | 12.72 | 24.8 | -79.9 | 3,899.1 | 3,841.4 | 57.64 | 67.643 | |
| 11,987.2 | 6,670.0 | 6,176.6 | 6,164.8 | 143.1 | 13.7 | 12.68 | 24.8 | -79.7 | 3,976.1 | 3,917.8 | 58.31 | 68.192 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.66 | 0.4 | 60.2 | 60.2 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.66 | 0.4 | 60.2 | 60.2 | 60.0 | 0.19 | 312.947 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.66 | 0.4 | 60.2 | 60.2 | 60.0 | 0.20 | 307.650 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.66 | 0.4 | 60.2 | 60.2 | 59.5 | 0.63 | 95.353 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.66 | 0.4 | 60.2 | 60.2 | 59.5 | 0.65 | 93.260 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.66 | 0.4 | 60.2 | 60.2 | 59.1 | 1.07 | 56.048 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.66 | 0.4 | 60.2 | 60.2 | 59.1 | 1.09 | 54.960 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.66 | 0.4 | 60.2 | 60.2 | 58.6 | 1.52 | 39.688 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.66 | 0.4 | 60.2 | 60.2 | 58.6 | 1.54 | 38.960 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.66 | 0.4 | 60.2 | 60.2 | 58.2 | 1.96 | 30.721 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.66 | 0.4 | 60.2 | 60.2 | 58.2 | 1.99 | 30.175 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.66 | 0.4 | 60.2 | 60.2 | 57.8 | 2.40 | 25.059 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.66 | 0.4 | 60.2 | 60.2 | 57.7 | 2.44 | 24.623 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.66 | 0.4 | 60.2 | 60.2 | 57.3 | 2.84 | 21.159 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.66 | 0.4 | 60.2 | 60.2 | 57.3 | 2.89 | 20.797 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.66 | 0.4 | 60.2 | 60.2 | 56.9 | 3.29 | 18.310 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.66 | 0.4 | 60.2 | 60.2 | 56.8 | 3.34 | 18.000 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.66 | 0.4 | 60.2 | 60.2 | 56.4 | 3.73 | 16.137 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.66 | 0.4 | 60.2 | 60.2 | 56.4 | 3.79 | 15.866 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.66 | 0.4 | 60.2 | 60.2 | 56.0 | 4.17 | 14.425 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.66 | 0.4 | 60.2 | 60.2 | 55.9 | 4.24 | 14.184 | CC, ES |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.22 | 0.4 | 60.2 | 61.3 | 56.7 | 4.60 | 13.330 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.27 | 0.4 | 60.2 | 61.9 | 57.2 | 4.68 | 13.233 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.60 | 0.4 | 60.2 | 65.9 | 60.8 | 5.02 | 13.114 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.70 | 0.4 | 60.2 | 67.1 | 62.0 | 5.10 | 13.156 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 175.17 | 0.4 | 60.2 | 73.7 | 68.3 | 5.44 | 13.560 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 175.30 | 0.4 | 60.2 | 75.8 | 70.3 | 5.52 | 13.723 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 3.0 | 175.79 | 0.4 | 60.2 | 85.0 | 79.1 | 5.85 | 14.522 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 3.0 | 175.93 | 0.4 | 60.2 | 87.9 | 82.0 | 5.94 | 14.799 | |
| 1,476.4 | 1,474.2 | 1,476.4 | 1,476.4 | 3.2 | 3.2 | 176.71 | -0.1 | 59.3 | 98.7 | 92.5 | 6.25 | 15.798 | |
| 1,500.0 | 1,497.5 | 1,500.5 | 1,500.5 | 3.3 | 3.2 | 177.06 | -0.5 | 58.6 | 102.1 | 95.7 | 6.34 | 16.101 | |
| 1,574.8 | 1,571.0 | 1,576.9 | 1,576.8 | 3.5 | 3.4 | 178.41 | -2.3 | 55.4 | 113.0 | 106.4 | 6.62 | 17.061 | |
| 1,600.0 | 1,595.6 | 1,602.7 | 1,602.5 | 3.6 | 3.4 | 178.94 | -3.1 | 53.9 | 116.8 | 110.0 | 6.72 | 17.381 | |
| 1,673.2 | 1,667.0 | 1,677.6 | 1,677.2 | 3.9 | 3.6 | -179.36 | -6.1 | 48.4 | 127.9 | 120.9 | 7.00 | 18.270 | |
| 1,700.0 | 1,693.1 | 1,705.0 | 1,704.5 | 4.0 | 3.6 | -178.69 | -7.5 | 45.9 | 132.1 | 125.0 | 7.10 | 18.594 | |
| 1,771.6 | 1,762.4 | 1,778.5 | 1,777.4 | 4.3 | 3.8 | -176.79 | -11.7 | 38.3 | 143.6 | 136.2 | 7.39 | 19.418 | |
| 1,800.0 | 1,789.6 | 1,807.6 | 1,806.2 | 4.4 | 3.9 | -176.01 | -13.6 | 34.8 | 148.2 | 140.7 | 7.51 | 19.743 | |
| 1,870.1 | 1,856.8 | 1,879.4 | 1,877.2 | 4.7 | 4.0 | -174.01 | -19.0 | 25.1 | 160.1 | 152.3 | 7.81 | 20.497 | |
| 1,900.0 | 1,885.3 | 1,910.1 | 1,907.4 | 4.9 | 4.1 | -173.14 | -21.5 | 20.5 | 165.3 | 157.4 | 7.94 | 20.816 | |
| 1,968.5 | 1,950.2 | 1,980.4 | 1,976.5 | 5.3 | 4.3 | -171.13 | -27.9 | 8.8 | 177.7 | 169.4 | 8.27 | 21.490 | |
| 2,000.0 | 1,979.8 | 2,012.7 | 2,008.1 | 5.5 | 4.4 | -170.19 | -31.2 | 3.0 | 183.6 | 175.1 | 8.43 | 21.783 | |
| 2,044.9 | 2,021.9 | 2,058.8 | 2,053.0 | 5.7 | 4.6 | -168.85 | -36.1 | -5.9 | 192.2 | 183.5 | 8.67 | 22.167 | |
| 2,066.9 | 2,042.5 | 2,081.4 | 2,075.0 | 5.9 | 4.6 | -168.21 | -38.6 | -10.5 | 196.4 | 187.6 | 8.81 | 22.301 | |
| 2,100.0 | 2,073.4 | 2,115.4 | 2,108.0 | 6.1 | 4.8 | -167.22 | -42.5 | -17.7 | 202.6 | 193.5 | 9.02 | 22.446 | |
| 2,165.3 | 2,134.4 | 2,182.6 | 2,172.9 | 6.5 | 5.0 | -165.20 | -50.9 | -32.9 | 214.1 | 204.6 | 9.49 | 22.568 | |
| 2,200.0 | 2,166.8 | 2,218.4 | 2,207.3 | 6.8 | 5.2 | -164.10 | -55.7 | -41.5 | 219.9 | 210.2 | 9.76 | 22.542 | |
| 2,263.8 | 2,226.4 | 2,284.1 | 2,270.2 | 7.2 | 5.5 | -161.98 | -65.0 | -58.4 | 230.2 | 219.9 | 10.29 | 22.373 | |
| 2,300.0 | 2,260.2 | 2,321.5 | 2,305.7 | 7.4 | 5.7 | -160.74 | -70.6 | -68.5 | 235.7 | 225.1 | 10.61 | 22.204 | |
| 2,362.2 | 2,318.3 | 2,385.6 | 2,366.3 | 7.9 | 6.0 | -158.52 | -80.7 | -86.9 | 244.7 | 233.5 | 11.23 | 21.800 | |
| 2,400.0 | 2,353.6 | 2,424.5 | 2,402.8 | 8.1 | 6.2 | -157.12 | -87.1 | -98.6 | 250.0 | 238.4 | 11.63 | 21.492 | |
| 2,460.6 | 2,410.3 | 2,486.8 | 2,460.9 | 8.6 | 6.6 | -154.81 | -98.0 | -118.2 | 258.2 | 245.9 | 12.33 | 20.935 | |
| 2,500.0 | 2,447.0 | 2,527.1 | 2,498.2 | 8.9 | 6.8 | -153.25 | -105.3 | -131.5 | 263.4 | 250.6 | 12.83 | 20.530 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,587.4 | 2,553.7 | 9.3 | 7.3 | -150.85 | -116.7 | -152.3 | 271.0 | 257.4 | 13.62 | 19.890 | |
| 2,600.0 | 2,540.5 | 2,629.1 | 2,591.7 | 9.6 | 7.6 | -149.13 | -125.0 | -167.2 | 276.2 | 262.0 | 14.22 | 19.423 | |
| 2,657.5 | 2,594.2 | 2,687.3 | 2,644.4 | 10.0 | 8.0 | -146.65 | -136.9 | -188.9 | 283.4 | 268.3 | 15.10 | 18.767 | |
| 2,700.0 | 2,633.9 | 2,730.1 | 2,682.9 | 10.3 | 8.3 | -144.77 | -146.0 | -205.5 | 288.9 | 273.1 | 15.80 | 18.279 | |
| 2,755.9 | 2,686.1 | 2,786.2 | 2,732.7 | 10.7 | 8.8 | -142.25 | -158.4 | -227.9 | 296.1 | 279.3 | 16.77 | 17.659 | |
| 2,800.0 | 2,727.3 | 2,830.1 | 2,771.4 | 11.0 | 9.2 | -140.22 | -168.4 | -246.0 | 301.9 | 284.4 | 17.57 | 17.185 | |
| 2,854.3 | 2,778.1 | 2,883.8 | 2,818.4 | 11.4 | 9.7 | -137.68 | -181.0 | -268.9 | 309.4 | 290.8 | 18.59 | 16.639 | |
| 2,900.0 | 2,820.7 | 2,928.2 | 2,856.8 | 11.8 | 10.1 | -135.55 | -191.8 | -288.4 | 315.9 | 296.4 | 19.47 | 16.222 | |
| 2,952.7 | 2,870.0 | 2,978.6 | 2,900.4 | 12.2 | 10.6 | -133.22 | -204.0 | -310.6 | 324.0 | 303.5 | 20.50 | 15.806 | |
| 3,000.0 | 2,914.2 | 3,023.8 | 2,939.4 | 12.5 | 11.0 | -131.22 | -215.0 | -330.5 | 331.6 | 310.2 | 21.42 | 15.487 | |
| 3,051.2 | 2,962.0 | 3,072.7 | 2,981.6 | 12.9 | 11.5 | -129.15 | -226.8 | -352.1 | 340.4 | 318.0 | 22.41 | 15.190 | |
| 3,100.0 | 3,007.6 | 3,119.3 | 3,021.9 | 13.3 | 12.0 | -127.27 | -238.2 | -372.6 | 349.2 | 325.8 | 23.35 | 14.951 | |
| 3,149.6 | 3,053.9 | 3,166.7 | 3,062.9 | 13.6 | 12.5 | -125.45 | -249.7 | -393.5 | 358.4 | 334.1 | 24.31 | 14.745 | |
| 3,200.0 | 3,101.0 | 3,214.8 | 3,104.5 | 14.0 | 13.0 | -123.69 | -261.4 | -414.7 | 368.2 | 343.0 | 25.27 | 14.571 | |
| 3,248.0 | 3,145.9 | 3,260.7 | 3,144.1 | 14.4 | 13.4 | -122.10 | -272.5 | -435.0 | 377.9 | 351.7 | 26.18 | 14.431 | |
| 3,300.0 | 3,194.4 | 3,310.4 | 3,187.0 | 14.8 | 13.9 | -120.46 | -284.6 | -456.9 | 388.6 | 361.5 | 27.16 | 14.308 | |
| 3,346.4 | 3,237.8 | 3,354.8 | 3,225.4 | 15.1 | 14.4 | -119.07 | -295.4 | -476.4 | 398.5 | 370.4 | 28.03 | 14.218 | |
| 3,400.0 | 3,287.8 | 3,405.9 | 3,269.6 | 15.5 | 14.9 | -117.55 | -307.8 | -499.0 | 410.1 | 381.1 | 29.01 | 14.136 | |
| 3,444.9 | 3,329.8 | 3,448.8 | 3,306.6 | 15.9 | 15.4 | -116.34 | -318.2 | -517.9 | 420.1 | 390.2 | 29.83 | 14.081 | |
| 3,500.0 | 3,381.3 | 3,501.5 | 3,352.1 | 16.3 | 15.9 | -114.92 | -331.0 | -541.1 | 432.6 | 401.7 | 30.83 | 14.031 | |
| 3,543.3 | 3,421.7 | 3,542.8 | 3,387.9 | 16.6 | 16.4 | -113.86 | -341.0 | -559.3 | 442.5 | 410.9 | 31.61 | 14.002 | |
| 3,600.0 | 3,474.7 | 3,597.0 | 3,434.7 | 17.0 | 16.9 | -112.55 | -354.2 | -583.2 | 455.8 | 423.2 | 32.61 | 13.977 | |
| 3,641.7 | 3,513.7 | 3,636.9 | 3,469.1 | 17.3 | 17.3 | -111.63 | -363.9 | -600.8 | 465.7 | 432.4 | 33.34 | 13.967 | |
| 3,700.0 | 3,568.1 | 3,692.5 | 3,517.2 | 17.8 | 17.9 | -110.40 | -377.4 | -625.3 | 479.8 | 445.4 | 34.36 | 13.963 | |
| 3,740.1 | 3,605.6 | 3,730.9 | 3,550.4 | 18.1 | 18.3 | -109.59 | -386.7 | -642.2 | 489.5 | 454.5 | 35.05 | 13.965 | |
| 3,800.0 | 3,661.5 | 3,788.1 | 3,599.8 | 18.5 | 18.9 | -108.45 | -400.6 | -667.4 | 504.3 | 468.2 | 36.08 | 13.977 | |
| 3,838.6 | 3,697.6 | 3,824.9 | 3,631.6 | 18.8 | 19.3 | -107.75 | -409.6 | -683.7 | 513.9 | 477.2 | 36.74 | 13.989 | |
| 3,900.0 | 3,754.9 | 3,883.6 | 3,682.4 | 19.3 | 20.0 | -106.68 | -423.8 | -709.5 | 529.3 | 491.6 | 37.77 | 14.014 | |
| 3,937.0 | 3,789.5 | 3,919.0 | 3,712.9 | 19.6 | 20.3 | -106.07 | -432.4 | -725.1 | 538.7 | 500.3 | 38.39 | 14.032 | |
| 4,000.0 | 3,848.4 | 3,979.1 | 3,764.9 | 20.1 | 21.0 | -105.07 | -447.0 | -751.6 | 554.8 | 515.4 | 39.44 | 14.067 | |
| 4,035.4 | 3,881.5 | 4,013.0 | 3,794.2 | 20.3 | 21.3 | -104.53 | -455.3 | -766.6 | 564.0 | 523.9 | 40.03 | 14.089 | |
| 4,100.0 | 3,941.8 | 4,074.7 | 3,847.5 | 20.8 | 22.0 | -103.60 | -470.2 | -793.7 | 580.7 | 539.6 | 41.09 | 14.132 | |
| 4,133.8 | 3,973.4 | 4,107.0 | 3,875.4 | 21.1 | 22.3 | -103.13 | -478.1 | -808.0 | 589.6 | 547.9 | 41.65 | 14.157 | |
| 4,200.0 | 4,035.2 | 4,170.2 | 3,930.0 | 21.6 | 23.0 | -102.25 | -493.5 | -835.9 | 606.9 | 564.2 | 42.72 | 14.206 | |
| 4,232.3 | 4,065.4 | 4,201.0 | 3,956.7 | 21.8 | 23.3 | -101.84 | -500.9 | -849.4 | 615.5 | 572.2 | 43.25 | 14.232 | |
| 4,300.0 | 4,128.6 | 4,265.7 | 4,012.6 | 22.3 | 24.0 | -101.01 | -516.7 | -878.0 | 633.4 | 589.1 | 44.34 | 14.287 | |
| 4,330.7 | 4,157.3 | 4,295.1 | 4,037.9 | 22.6 | 24.3 | -100.65 | -523.8 | -890.9 | 641.6 | 596.8 | 44.83 | 14.313 | |
| 4,400.0 | 4,222.0 | 4,361.3 | 4,095.1 | 23.1 | 25.1 | -99.87 | -539.9 | -920.1 | 660.2 | 614.3 | 45.94 | 14.372 | |
| 4,429.1 | 4,249.3 | 4,389.1 | 4,119.2 | 23.3 | 25.4 | -99.55 | -546.6 | -932.3 | 668.0 | 621.6 | 46.40 | 14.397 | |
| 4,500.0 | 4,315.5 | 4,456.8 | 4,177.7 | 23.9 | 26.1 | -98.82 | -563.1 | -962.2 | 687.2 | 639.7 | 47.53 | 14.459 | |
| 4,527.5 | 4,341.2 | 4,483.1 | 4,200.4 | 24.1 | 26.4 | -98.54 | -569.5 | -973.8 | 694.7 | 646.7 | 47.96 | 14.484 | |
| 4,600.0 | 4,408.9 | 4,552.4 | 4,260.2 | 24.6 | 27.1 | -97.84 | -586.3 | -1,004.3 | 714.4 | 665.3 | 49.10 | 14.549 | |
| 4,626.0 | 4,433.2 | 4,577.2 | 4,281.7 | 24.8 | 27.4 | -97.60 | -592.3 | -1,015.2 | 721.5 | 672.0 | 49.51 | 14.572 | |
| 4,700.0 | 4,502.3 | 4,647.9 | 4,342.8 | 25.4 | 28.1 | -96.94 | -609.5 | -1,046.4 | 741.8 | 691.1 | 50.67 | 14.639 | |
| 4,724.4 | 4,525.1 | 4,671.2 | 4,362.9 | 25.6 | 28.4 | -96.73 | -615.2 | -1,056.7 | 748.5 | 697.4 | 51.05 | 14.661 | |
| 4,800.0 | 4,595.7 | 4,743.4 | 4,425.3 | 26.2 | 29.2 | -96.10 | -632.7 | -1,088.5 | 769.3 | 717.1 | 52.23 | 14.729 | |
| 4,822.8 | 4,617.1 | 4,765.2 | 4,444.2 | 26.3 | 29.4 | -95.92 | -638.0 | -1,098.1 | 775.6 | 723.0 | 52.58 | 14.749 | |
| 4,900.0 | 4,689.2 | 4,839.0 | 4,507.9 | 26.9 | 30.2 | -95.32 | -655.9 | -1,130.6 | 797.0 | 743.2 | 53.78 | 14.819 | |
| 4,921.2 | 4,709.0 | 4,861.5 | 4,527.4 | 27.1 | 30.4 | -95.14 | -661.4 | -1,140.5 | 802.8 | 748.7 | 54.11 | 14.837 | |
| 5,000.0 | 4,782.6 | 4,948.4 | 4,603.4 | 27.7 | 31.2 | -94.61 | -681.7 | -1,177.4 | 824.0 | 768.7 | 55.29 | 14.903 | |
| 5,019.7 | 4,801.0 | 4,970.3 | 4,622.7 | 27.8 | 31.4 | -94.50 | -686.6 | -1,186.4 | 829.1 | 773.6 | 55.58 | 14.918 | |
| 5,100.0 | 4,876.0 | 5,060.2 | 4,703.0 | 28.4 | 32.1 | -94.20 | -706.2 | -1,221.9 | 849.4 | 792.6 | 56.75 | 14.966 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,080.5 | 4,721.3 | 28.6 | 32.2 | -94.15 | -710.4 | -1,229.6 | 853.8 | 796.8 | 57.02 | 14.973 | |
| 5,159.9 | 4,932.0 | 5,127.8 | 4,764.1 | 28.9 | 32.5 | -94.09 | -720.1 | -1,247.1 | 863.8 | 806.1 | 57.63 | 14.987 | |
| 5,200.0 | 4,969.5 | 5,173.2 | 4,805.6 | 29.2 | 32.9 | -94.24 | -729.0 | -1,263.3 | 873.0 | 814.8 | 58.22 | 14.994 | |
| 5,216.5 | 4,985.1 | 5,192.0 | 4,822.9 | 29.3 | 33.0 | -94.30 | -732.6 | -1,269.9 | 876.7 | 818.3 | 58.45 | 15.000 | |
| 5,300.0 | 5,064.0 | 5,287.4 | 4,911.1 | 29.7 | 33.6 | -94.59 | -750.1 | -1,301.5 | 894.6 | 835.0 | 59.53 | 15.027 | |
| 5,314.9 | 5,078.2 | 5,304.5 | 4,927.1 | 29.8 | 33.7 | -94.64 | -753.1 | -1,307.0 | 897.6 | 837.9 | 59.72 | 15.031 | |
| 5,400.0 | 5,159.6 | 5,402.5 | 5,019.2 | 30.2 | 34.3 | -94.89 | -769.3 | -1,336.4 | 914.1 | 853.3 | 60.73 | 15.051 | |
| 5,413.4 | 5,172.4 | 5,418.0 | 5,033.8 | 30.3 | 34.4 | -94.93 | -771.7 | -1,340.8 | 916.5 | 855.6 | 60.88 | 15.055 | |
| 5,500.0 | 5,256.1 | 5,518.7 | 5,129.7 | 30.7 | 34.9 | -95.15 | -786.5 | -1,367.6 | 931.4 | 869.6 | 61.80 | 15.070 | |
| 5,511.8 | 5,267.6 | 5,532.4 | 5,142.9 | 30.7 | 35.0 | -95.18 | -788.4 | -1,371.0 | 933.3 | 871.4 | 61.92 | 15.073 | |
| 5,600.0 | 5,353.5 | 5,635.6 | 5,242.4 | 31.1 | 35.5 | -95.38 | -801.6 | -1,395.0 | 946.5 | 883.7 | 62.76 | 15.082 | |
| 5,610.2 | 5,363.5 | 5,647.6 | 5,254.0 | 31.1 | 35.5 | -95.40 | -803.1 | -1,397.6 | 947.9 | 885.1 | 62.84 | 15.084 | |
| 5,700.0 | 5,451.6 | 5,753.3 | 5,356.9 | 31.4 | 36.0 | -95.57 | -814.6 | -1,418.6 | 959.4 | 895.8 | 63.59 | 15.088 | |
| 5,708.6 | 5,460.2 | 5,763.5 | 5,366.9 | 31.4 | 36.0 | -95.58 | -815.6 | -1,420.4 | 960.4 | 896.7 | 63.65 | 15.088 | |
| 5,800.0 | 5,550.4 | 5,871.6 | 5,473.1 | 31.7 | 36.4 | -95.72 | -825.4 | -1,438.1 | 970.0 | 905.7 | 64.29 | 15.086 | |
| 5,807.1 | 5,557.4 | 5,880.0 | 5,481.4 | 31.7 | 36.4 | -95.73 | -826.0 | -1,439.3 | 970.6 | 906.3 | 64.34 | 15.086 | |
| 5,900.0 | 5,649.6 | 5,990.5 | 5,590.7 | 31.9 | 36.7 | -95.84 | -833.8 | -1,453.4 | 978.3 | 913.4 | 64.88 | 15.078 | |
| 5,905.5 | 5,655.1 | 5,997.0 | 5,597.2 | 31.9 | 36.7 | -95.84 | -834.2 | -1,454.1 | 978.7 | 913.8 | 64.91 | 15.078 | |
| 6,000.0 | 5,749.2 | 6,109.7 | 5,709.2 | 32.1 | 37.0 | -95.92 | -839.9 | -1,464.5 | 984.3 | 918.9 | 65.34 | 15.063 | |
| 6,003.9 | 5,753.1 | 6,114.4 | 5,713.9 | 32.1 | 37.0 | -95.93 | -840.1 | -1,464.8 | 984.4 | 919.1 | 65.35 | 15.063 | |
| 6,100.0 | 5,849.1 | 6,229.2 | 5,828.5 | 32.3 | 37.1 | -95.97 | -843.6 | -1,471.2 | 987.9 | 922.2 | 65.68 | 15.041 | |
| 6,102.3 | 5,851.4 | 6,232.1 | 5,831.3 | 32.3 | 37.1 | -95.98 | -843.7 | -1,471.3 | 987.9 | 922.3 | 65.69 | 15.041 | |
| 6,200.8 | 5,949.8 | 6,349.8 | 5,949.0 | 32.4 | 37.3 | -95.99 | -844.9 | -1,473.6 | 989.2 | 923.3 | 65.91 | 15.008 | |
| 6,204.9 | 5,953.9 | 6,354.7 | 5,953.9 | 32.4 | 37.3 | 179.57 | -845.0 | -1,473.6 | 989.2 | 949.8 | 39.35 | 25.140 | |
| 6,224.8 | 5,973.9 | 6,374.7 | 5,973.9 | 32.4 | 37.3 | 179.57 | -845.0 | -1,473.6 | 989.2 | 949.8 | 39.40 | 25.107 | |
| 6,234.9 | 5,983.9 | 6,384.7 | 5,983.9 | 32.4 | 37.3 | 179.57 | -845.0 | -1,473.6 | 989.2 | 949.8 | 39.42 | 25.090 | |
| 6,250.0 | 5,999.0 | 6,399.7 | 5,998.9 | 32.4 | 37.3 | 89.57 | -845.0 | -1,473.5 | 989.2 | 923.2 | 65.98 | 14.991 | |
| 6,299.2 | 6,048.2 | 6,448.4 | 6,047.5 | 32.4 | 37.3 | 89.57 | -845.0 | -1,470.8 | 989.2 | 923.2 | 65.99 | 14.990 | |
| 6,300.0 | 6,048.9 | 6,449.2 | 6,048.3 | 32.4 | 37.3 | 89.57 | -845.0 | -1,470.7 | 989.2 | 923.2 | 65.99 | 14.990 | |
| 6,350.0 | 6,098.5 | 6,498.6 | 6,097.4 | 32.4 | 37.3 | 89.57 | -845.0 | -1,464.6 | 989.2 | 923.3 | 65.92 | 15.007 | |
| 6,397.6 | 6,145.3 | 6,545.8 | 6,143.6 | 32.3 | 37.2 | 89.58 | -845.0 | -1,455.6 | 989.2 | 923.4 | 65.78 | 15.037 | |
| 6,400.0 | 6,147.6 | 6,548.1 | 6,145.9 | 32.3 | 37.2 | 89.58 | -845.0 | -1,455.0 | 989.2 | 923.4 | 65.78 | 15.039 | |
| 6,450.0 | 6,195.8 | 6,597.6 | 6,193.7 | 32.2 | 37.1 | 89.59 | -845.0 | -1,442.2 | 989.2 | 923.6 | 65.58 | 15.084 | |
| 6,496.0 | 6,239.3 | 6,643.2 | 6,236.9 | 32.1 | 37.0 | 89.59 | -845.0 | -1,427.4 | 989.2 | 923.8 | 65.36 | 15.135 | |
| 6,500.0 | 6,243.0 | 6,647.1 | 6,240.5 | 32.1 | 37.0 | 89.60 | -845.0 | -1,426.0 | 989.2 | 923.8 | 65.34 | 15.140 | |
| 6,550.0 | 6,289.0 | 6,696.7 | 6,286.1 | 32.0 | 36.9 | 89.61 | -845.0 | -1,406.7 | 989.2 | 924.1 | 65.06 | 15.204 | |
| 6,594.5 | 6,328.6 | 6,740.7 | 6,325.4 | 31.8 | 36.7 | 89.62 | -845.0 | -1,386.9 | 989.2 | 924.4 | 64.80 | 15.266 | |
| 6,600.0 | 6,333.4 | 6,746.2 | 6,330.3 | 31.8 | 36.7 | 89.62 | -845.0 | -1,384.3 | 989.2 | 924.4 | 64.77 | 15.273 | |
| 6,650.0 | 6,376.2 | 6,795.8 | 6,372.8 | 31.7 | 36.6 | 89.64 | -845.0 | -1,358.8 | 989.2 | 924.7 | 64.46 | 15.345 | |
| 6,692.9 | 6,411.3 | 6,838.3 | 6,407.8 | 31.6 | 36.5 | 89.65 | -845.0 | -1,334.7 | 989.2 | 925.0 | 64.21 | 15.406 | |
| 6,700.0 | 6,417.0 | 6,845.3 | 6,413.4 | 31.5 | 36.4 | 89.65 | -845.0 | -1,330.5 | 989.2 | 925.0 | 64.16 | 15.416 | |
| 6,750.0 | 6,455.7 | 6,894.9 | 6,452.0 | 31.4 | 36.3 | 89.67 | -845.0 | -1,299.4 | 989.2 | 925.3 | 63.89 | 15.483 | |
| 6,791.3 | 6,486.0 | 6,935.9 | 6,482.3 | 31.3 | 36.2 | 89.69 | -845.0 | -1,271.7 | 989.2 | 925.5 | 63.69 | 15.531 | |
| 6,800.0 | 6,492.2 | 6,944.5 | 6,488.4 | 31.3 | 36.2 | 89.69 | -845.0 | -1,265.7 | 989.2 | 925.5 | 63.65 | 15.541 | |
| 6,850.0 | 6,526.1 | 6,994.2 | 6,522.4 | 31.2 | 36.1 | 89.71 | -845.0 | -1,229.5 | 989.2 | 925.7 | 63.46 | 15.588 | |
| 6,889.7 | 6,551.2 | 7,033.7 | 6,547.6 | 31.2 | 36.0 | 89.73 | -845.0 | -1,199.1 | 989.2 | 925.8 | 63.36 | 15.612 | |
| 6,900.0 | 6,557.4 | 7,043.9 | 6,553.8 | 31.2 | 36.0 | 89.74 | -845.0 | -1,191.0 | 989.2 | 925.8 | 63.33 | 15.618 | |
| 6,950.0 | 6,586.0 | 7,093.6 | 6,582.5 | 31.1 | 35.9 | 89.76 | -845.0 | -1,150.5 | 989.2 | 925.9 | 63.29 | 15.630 | |
| 6,988.2 | 6,605.8 | 7,131.5 | 6,602.5 | 31.2 | 35.9 | 89.78 | -845.0 | -1,118.2 | 989.2 | 925.8 | 63.32 | 15.622 | |
| 7,000.0 | 6,611.5 | 7,143.3 | 6,608.4 | 31.2 | 35.9 | 89.79 | -845.0 | -1,108.0 | 989.2 | 925.8 | 63.33 | 15.619 | |
| 7,050.0 | 6,634.1 | 7,193.0 | 6,631.2 | 31.2 | 35.9 | 89.82 | -845.0 | -1,063.8 | 989.2 | 925.7 | 63.47 | 15.584 | |
| 7,086.6 | 6,648.6 | 7,229.5 | 6,645.9 | 31.3 | 35.9 | 89.84 | -845.0 | -1,030.5 | 989.2 | 925.5 | 63.65 | 15.540 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 7,242.8 | 6,650.9 | 31.4 | 35.9 | 89.84 | -845.0 | -1,018.1 | 989.2 | 925.4 | 63.72 | 15.524 | |
| 7,150.0 | 6,669.5 | 7,292.7 | 6,667.4 | 31.6 | 35.9 | 89.87 | -845.0 | -971.1 | 989.2 | 925.1 | 64.07 | 15.438 | |
| 7,185.0 | 6,678.8 | 7,327.6 | 6,677.0 | 31.7 | 36.0 | 89.89 | -845.0 | -937.5 | 989.2 | 924.8 | 64.40 | 15.360 | |
| 7,200.0 | 6,682.3 | 7,342.5 | 6,680.6 | 31.8 | 36.0 | 89.90 | -845.0 | -923.0 | 989.2 | 924.6 | 64.54 | 15.327 | |
| 7,250.0 | 6,691.6 | 7,392.4 | 6,690.4 | 32.1 | 36.2 | 89.93 | -845.0 | -874.1 | 989.2 | 924.0 | 65.11 | 15.193 | |
| 7,283.4 | 6,696.0 | 7,425.8 | 6,695.1 | 32.3 | 36.3 | 89.95 | -845.0 | -841.0 | 989.2 | 923.6 | 65.55 | 15.090 | |
| 7,300.0 | 6,697.5 | 7,442.4 | 6,696.9 | 32.4 | 36.4 | 89.96 | -845.0 | -824.6 | 989.2 | 923.4 | 65.77 | 15.039 | |
| 7,350.0 | 6,699.9 | 7,492.3 | 6,699.8 | 32.8 | 36.6 | 89.99 | -844.9 | -774.7 | 989.1 | 922.6 | 66.53 | 14.868 | |
| 7,364.4 | 6,700.0 | 7,506.7 | 6,700.0 | 32.9 | 36.6 | 90.00 | -844.9 | -760.3 | 989.1 | 922.4 | 66.76 | 14.817 | |
| 7,381.9 | 6,699.9 | 7,524.2 | 6,699.9 | 33.1 | 36.7 | 90.00 | -844.9 | -742.8 | 989.1 | 922.1 | 67.06 | 14.750 | |
| 7,400.0 | 6,699.8 | 7,542.3 | 6,699.8 | 33.2 | 36.8 | 90.00 | -844.9 | -724.7 | 989.1 | 921.8 | 67.38 | 14.680 | |
| 7,480.3 | 6,699.2 | 7,622.6 | 6,699.3 | 34.0 | 37.3 | 90.00 | -844.9 | -644.4 | 989.1 | 920.2 | 68.97 | 14.343 | |
| 7,500.0 | 6,699.1 | 7,642.3 | 6,699.2 | 34.2 | 37.5 | 90.00 | -844.9 | -624.7 | 989.1 | 919.8 | 69.38 | 14.257 | |
| 7,578.7 | 6,698.6 | 7,721.0 | 6,698.7 | 35.2 | 38.1 | 90.00 | -844.9 | -546.0 | 989.1 | 917.9 | 71.23 | 13.887 | |
| 7,600.0 | 6,698.5 | 7,742.3 | 6,698.5 | 35.4 | 38.3 | 90.00 | -844.9 | -524.7 | 989.1 | 917.4 | 71.75 | 13.785 | |
| 7,677.1 | 6,698.0 | 7,819.5 | 6,698.0 | 36.5 | 39.1 | 90.00 | -844.9 | -447.6 | 989.1 | 915.3 | 73.83 | 13.397 | |
| 7,700.0 | 6,697.8 | 7,842.3 | 6,697.9 | 36.8 | 39.3 | 90.00 | -844.9 | -424.7 | 989.1 | 914.7 | 74.48 | 13.281 | |
| 7,775.6 | 6,697.3 | 7,917.9 | 6,697.4 | 38.0 | 40.2 | 90.00 | -844.9 | -349.1 | 989.1 | 912.4 | 76.75 | 12.887 | |
| 7,800.0 | 6,697.2 | 7,942.3 | 6,697.3 | 38.3 | 40.5 | 90.01 | -844.9 | -324.7 | 989.1 | 911.6 | 77.52 | 12.761 | |
| 7,874.0 | 6,696.7 | 8,016.3 | 6,696.8 | 39.6 | 41.6 | 90.01 | -844.9 | -250.7 | 989.1 | 909.2 | 79.95 | 12.372 | |
| 7,900.0 | 6,696.5 | 8,042.3 | 6,696.6 | 40.0 | 41.9 | 90.01 | -844.9 | -224.7 | 989.1 | 908.3 | 80.83 | 12.238 | |
| 7,972.4 | 6,696.1 | 8,114.8 | 6,696.2 | 41.3 | 43.0 | 90.01 | -844.9 | -152.3 | 989.1 | 905.8 | 83.39 | 11.862 | |
| 8,000.0 | 6,695.9 | 8,142.3 | 6,696.0 | 41.8 | 43.5 | 90.01 | -844.9 | -124.7 | 989.1 | 904.8 | 84.39 | 11.722 | |
| 8,070.8 | 6,695.4 | 8,213.2 | 6,695.5 | 43.1 | 44.7 | 90.01 | -844.9 | -53.9 | 989.1 | 902.1 | 87.04 | 11.364 | |
| 8,100.0 | 6,695.2 | 8,242.3 | 6,695.3 | 43.7 | 45.2 | 90.01 | -844.9 | -24.7 | 989.1 | 901.0 | 88.16 | 11.220 | |
| 8,169.3 | 6,694.8 | 8,311.6 | 6,694.9 | 45.1 | 46.4 | 90.01 | -844.9 | 44.5 | 989.1 | 898.3 | 90.89 | 10.883 | |
| 8,200.0 | 6,694.6 | 8,342.3 | 6,694.7 | 45.7 | 47.0 | 90.01 | -844.9 | 75.3 | 989.1 | 897.0 | 92.12 | 10.737 | |
| 8,267.7 | 6,694.1 | 8,410.0 | 6,694.3 | 47.1 | 48.3 | 90.01 | -844.9 | 143.0 | 989.1 | 894.2 | 94.90 | 10.423 | |
| 8,300.0 | 6,693.9 | 8,442.3 | 6,694.1 | 47.8 | 48.9 | 90.01 | -844.9 | 175.3 | 989.1 | 892.9 | 96.25 | 10.277 | |
| 8,366.1 | 6,693.5 | 8,508.5 | 6,693.6 | 49.2 | 50.3 | 90.01 | -844.9 | 241.4 | 989.1 | 890.1 | 99.06 | 9.985 | |
| 8,400.0 | 6,693.3 | 8,542.3 | 6,693.4 | 49.9 | 51.0 | 90.01 | -844.9 | 275.3 | 989.1 | 888.6 | 100.52 | 9.840 | |
| 8,464.5 | 6,692.9 | 8,606.9 | 6,693.0 | 51.4 | 52.3 | 90.01 | -844.9 | 339.8 | 989.1 | 885.8 | 103.35 | 9.571 | |
| 8,500.0 | 6,692.6 | 8,642.3 | 6,692.8 | 52.1 | 53.1 | 90.01 | -844.9 | 375.3 | 989.1 | 884.2 | 104.92 | 9.427 | |
| 8,563.0 | 6,692.2 | 8,705.3 | 6,692.4 | 53.6 | 54.4 | 90.01 | -844.9 | 438.2 | 989.1 | 881.4 | 107.75 | 9.180 | |
| 8,600.0 | 6,692.0 | 8,742.3 | 6,692.1 | 54.4 | 55.3 | 90.01 | -844.9 | 475.3 | 989.1 | 879.7 | 109.43 | 9.039 | |
| 8,661.4 | 6,691.6 | 8,803.7 | 6,691.7 | 55.8 | 56.6 | 90.01 | -844.9 | 536.7 | 989.1 | 876.9 | 112.25 | 8.812 | |
| 8,700.0 | 6,691.3 | 8,842.3 | 6,691.5 | 56.7 | 57.5 | 90.01 | -844.9 | 575.3 | 989.1 | 875.1 | 114.04 | 8.673 | |
| 8,759.8 | 6,690.9 | 8,902.2 | 6,691.1 | 58.1 | 58.9 | 90.01 | -844.9 | 635.1 | 989.1 | 872.3 | 116.84 | 8.465 | |
| 8,800.0 | 6,690.7 | 8,942.3 | 6,690.8 | 59.1 | 59.8 | 90.01 | -844.9 | 675.3 | 989.1 | 870.4 | 118.74 | 8.330 | |
| 8,858.2 | 6,690.3 | 9,000.6 | 6,690.5 | 60.5 | 61.2 | 90.01 | -844.9 | 733.5 | 989.1 | 867.6 | 121.51 | 8.140 | |
| 8,900.0 | 6,690.0 | 9,042.3 | 6,690.2 | 61.5 | 62.1 | 90.01 | -844.9 | 775.3 | 989.1 | 865.6 | 123.52 | 8.008 | |
| 8,956.7 | 6,689.7 | 9,099.0 | 6,689.8 | 62.9 | 63.5 | 90.01 | -844.9 | 831.9 | 989.1 | 862.9 | 126.25 | 7.835 | |
| 9,000.0 | 6,689.4 | 9,142.3 | 6,689.5 | 63.9 | 64.5 | 90.01 | -844.9 | 875.3 | 989.1 | 860.8 | 128.36 | 7.706 | |
| 9,055.1 | 6,689.0 | 9,197.4 | 6,689.2 | 65.3 | 65.9 | 90.01 | -844.9 | 930.4 | 989.1 | 858.1 | 131.05 | 7.548 | |
| 9,100.0 | 6,688.7 | 9,242.3 | 6,688.9 | 66.4 | 66.9 | 90.01 | -844.9 | 975.3 | 989.1 | 855.9 | 133.26 | 7.422 | |
| 9,153.5 | 6,688.4 | 9,295.9 | 6,688.5 | 67.7 | 68.3 | 90.01 | -844.9 | 1,028.8 | 989.1 | 853.2 | 135.91 | 7.278 | |
| 9,200.0 | 6,688.1 | 9,342.3 | 6,688.2 | 68.9 | 69.4 | 90.01 | -844.9 | 1,075.3 | 989.1 | 850.9 | 138.22 | 7.156 | |
| 9,251.9 | 6,687.8 | 9,394.3 | 6,687.9 | 70.2 | 70.7 | 90.01 | -844.9 | 1,127.2 | 989.1 | 848.3 | 140.82 | 7.024 | |
| 9,300.0 | 6,687.4 | 9,442.3 | 6,687.6 | 71.4 | 71.9 | 90.01 | -844.9 | 1,175.3 | 989.1 | 845.9 | 143.23 | 6.906 | |
| 9,350.4 | 6,687.1 | 9,492.7 | 6,687.3 | 72.7 | 73.1 | 90.01 | -844.9 | 1,225.6 | 989.1 | 843.4 | 145.77 | 6.786 | |
| 9,400.0 | 6,686.8 | 9,542.3 | 6,686.9 | 73.9 | 74.4 | 90.01 | -844.9 | 1,275.3 | 989.1 | 840.9 | 148.28 | 6.671 | |
| 9,448.8 | 6,686.5 | 9,591.1 | 6,686.6 | 75.2 | 75.6 | 90.01 | -844.9 | 1,324.1 | 989.1 | 838.4 | 150.76 | 6.561 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-202 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 9,642.3 | 6,686.3 | 76.5 | 76.9 | 90.01 | -844.9 | 1,375.3 | 989.1 | 835.8 | 153.37 | 6.449 | |
| 9,547.2 | 6,685.8 | 9,689.6 | 6,686.0 | 77.7 | 78.1 | 90.01 | -844.9 | 1,422.5 | 989.1 | 833.3 | 155.79 | 6.349 | |
| 9,600.0 | 6,685.5 | 9,742.3 | 6,685.7 | 79.0 | 79.5 | 90.01 | -844.9 | 1,475.2 | 989.1 | 830.6 | 158.50 | 6.241 | |
| 9,645.6 | 6,685.2 | 9,788.0 | 6,685.4 | 80.2 | 80.6 | 90.01 | -844.9 | 1,520.9 | 989.1 | 828.3 | 160.85 | 6.149 | |
| 9,700.0 | 6,684.8 | 9,842.3 | 6,685.0 | 81.6 | 82.0 | 90.01 | -844.9 | 1,575.2 | 989.1 | 825.5 | 163.66 | 6.044 | |
| 9,744.1 | 6,684.6 | 9,886.4 | 6,684.7 | 82.8 | 83.2 | 90.01 | -844.9 | 1,619.3 | 989.1 | 823.2 | 165.94 | 5.961 | |
| 9,800.0 | 6,684.2 | 9,942.3 | 6,684.4 | 84.2 | 84.6 | 90.01 | -844.9 | 1,675.2 | 989.1 | 820.3 | 168.85 | 5.858 | |
| 9,842.5 | 6,683.9 | 9,984.8 | 6,684.1 | 85.3 | 85.7 | 90.01 | -844.9 | 1,717.7 | 989.1 | 818.1 | 171.06 | 5.782 | |
| 9,900.0 | 6,683.5 | 10,042.3 | 6,683.7 | 86.8 | 87.2 | 90.01 | -844.9 | 1,775.2 | 989.1 | 815.1 | 174.06 | 5.683 | |
| 9,940.9 | 6,683.3 | 10,083.3 | 6,683.4 | 87.9 | 88.3 | 90.01 | -844.9 | 1,816.2 | 989.1 | 812.9 | 176.21 | 5.613 | |
| 10,000.0 | 6,682.9 | 10,142.3 | 6,683.1 | 89.5 | 89.8 | 90.01 | -844.9 | 1,875.2 | 989.1 | 809.8 | 179.31 | 5.516 | |
| 10,039.3 | 6,682.6 | 10,181.7 | 6,682.8 | 90.5 | 90.9 | 90.01 | -844.9 | 1,914.6 | 989.1 | 807.8 | 181.37 | 5.454 | |
| 10,100.0 | 6,682.2 | 10,242.3 | 6,682.4 | 92.1 | 92.5 | 90.01 | -844.9 | 1,975.2 | 989.1 | 804.6 | 184.57 | 5.359 | |
| 10,137.8 | 6,682.0 | 10,280.1 | 6,682.2 | 93.1 | 93.5 | 90.01 | -844.9 | 2,013.0 | 989.1 | 802.6 | 186.56 | 5.302 | |
| 10,200.0 | 6,681.6 | 10,342.3 | 6,681.8 | 94.8 | 95.1 | 90.01 | -844.9 | 2,075.2 | 989.1 | 799.3 | 189.85 | 5.210 | |
| 10,236.2 | 6,681.4 | 10,378.5 | 6,681.5 | 95.7 | 96.1 | 90.01 | -844.9 | 2,111.4 | 989.1 | 797.4 | 191.77 | 5.158 | |
| 10,300.0 | 6,680.9 | 10,442.3 | 6,681.1 | 97.4 | 97.7 | 90.01 | -844.9 | 2,175.2 | 989.1 | 794.0 | 195.15 | 5.068 | |
| 10,334.6 | 6,680.7 | 10,477.0 | 6,680.9 | 98.3 | 98.7 | 90.01 | -844.9 | 2,209.9 | 989.1 | 792.1 | 196.99 | 5.021 | |
| 10,400.0 | 6,680.3 | 10,542.3 | 6,680.4 | 100.1 | 100.4 | 90.01 | -844.9 | 2,275.2 | 989.1 | 788.6 | 200.47 | 4.934 | |
| 10,433.0 | 6,680.1 | 10,575.4 | 6,680.2 | 101.0 | 101.3 | 90.01 | -844.9 | 2,308.3 | 989.1 | 786.9 | 202.24 | 4.891 | |
| 10,500.0 | 6,679.7 | 10,642.3 | 6,679.8 | 102.8 | 103.1 | 90.01 | -844.9 | 2,375.2 | 989.1 | 783.3 | 205.81 | 4.806 | |
| 10,531.5 | 6,679.4 | 10,673.8 | 6,679.6 | 103.6 | 103.9 | 90.01 | -844.9 | 2,406.7 | 989.1 | 781.6 | 207.49 | 4.767 | |
| 10,600.0 | 6,679.0 | 10,742.3 | 6,679.1 | 105.4 | 105.7 | 90.01 | -844.9 | 2,475.2 | 989.1 | 778.0 | 211.16 | 4.684 | |
| 10,629.9 | 6,678.8 | 10,772.2 | 6,678.9 | 106.2 | 106.5 | 90.01 | -844.9 | 2,505.1 | 989.1 | 776.4 | 212.76 | 4.649 | |
| 10,700.0 | 6,678.4 | 10,842.3 | 6,678.5 | 108.1 | 108.4 | 90.01 | -844.9 | 2,575.2 | 989.1 | 772.6 | 216.52 | 4.568 | |
| 10,728.3 | 6,678.2 | 10,870.7 | 6,678.3 | 108.9 | 109.2 | 90.01 | -844.9 | 2,603.6 | 989.1 | 771.1 | 218.05 | 4.536 | |
| 10,800.0 | 6,677.7 | 10,942.3 | 6,677.8 | 110.8 | 111.1 | 90.01 | -844.9 | 2,675.2 | 989.1 | 767.2 | 221.90 | 4.457 | |
| 10,826.7 | 6,677.5 | 10,969.1 | 6,677.7 | 111.5 | 111.8 | 90.01 | -844.9 | 2,702.0 | 989.1 | 765.8 | 223.34 | 4.429 | |
| 10,900.0 | 6,677.1 | 11,042.3 | 6,677.2 | 113.5 | 113.8 | 90.01 | -844.9 | 2,775.2 | 989.1 | 761.8 | 227.29 | 4.352 | |
| 10,925.2 | 6,676.9 | 11,067.5 | 6,677.0 | 114.2 | 114.5 | 90.01 | -844.9 | 2,800.4 | 989.1 | 760.5 | 228.65 | 4.326 | |
| 11,000.0 | 6,676.4 | 11,142.3 | 6,676.5 | 116.2 | 116.5 | 90.01 | -844.9 | 2,875.2 | 989.1 | 756.4 | 232.69 | 4.251 | |
| 11,023.6 | 6,676.3 | 11,165.9 | 6,676.4 | 116.8 | 117.1 | 90.01 | -844.9 | 2,898.8 | 989.1 | 755.1 | 233.96 | 4.228 | |
| 11,100.0 | 6,675.8 | 11,242.3 | 6,675.9 | 118.9 | 119.2 | 90.01 | -844.9 | 2,975.2 | 989.1 | 751.0 | 238.10 | 4.154 | |
| 11,122.0 | 6,675.6 | 11,264.4 | 6,675.7 | 119.5 | 119.8 | 90.01 | -844.9 | 2,997.2 | 989.1 | 749.8 | 239.29 | 4.134 | |
| 11,200.0 | 6,675.1 | 11,342.3 | 6,675.2 | 121.6 | 121.9 | 90.01 | -844.9 | 3,075.2 | 989.1 | 745.6 | 243.52 | 4.062 | |
| 11,220.4 | 6,675.0 | 11,362.8 | 6,675.1 | 122.2 | 122.4 | 90.01 | -844.9 | 3,095.7 | 989.1 | 744.5 | 244.63 | 4.043 | |
| 11,300.0 | 6,674.5 | 11,442.3 | 6,674.6 | 124.3 | 124.6 | 90.01 | -844.9 | 3,175.2 | 989.1 | 740.2 | 248.95 | 3.973 | |
| 11,318.9 | 6,674.3 | 11,461.2 | 6,674.4 | 124.9 | 125.1 | 90.01 | -844.9 | 3,194.1 | 989.1 | 739.1 | 249.97 | 3.957 | |
| 11,400.0 | 6,673.8 | 11,542.3 | 6,673.9 | 127.1 | 127.3 | 90.01 | -844.9 | 3,275.2 | 989.1 | 734.7 | 254.38 | 3.888 | |
| 11,417.3 | 6,673.7 | 11,559.6 | 6,673.8 | 127.5 | 127.8 | 90.01 | -844.9 | 3,292.5 | 989.1 | 733.8 | 255.32 | 3.874 | |
| 11,500.0 | 6,673.2 | 11,642.3 | 6,673.2 | 129.8 | 130.0 | 90.00 | -844.9 | 3,375.2 | 989.1 | 729.3 | 259.83 | 3.807 | |
| 11,515.7 | 6,673.1 | 11,658.1 | 6,673.1 | 130.2 | 130.5 | 90.00 | -844.9 | 3,390.9 | 989.1 | 728.4 | 260.68 | 3.794 | |
| 11,600.0 | 6,672.5 | 11,742.3 | 6,672.6 | 132.5 | 132.8 | 90.00 | -844.9 | 3,475.2 | 989.1 | 723.8 | 265.28 | 3.729 | |
| 11,614.1 | 6,672.4 | 11,756.5 | 6,672.5 | 132.9 | 133.1 | 90.00 | -844.9 | 3,489.4 | 989.1 | 723.0 | 266.05 | 3.718 | |
| 11,700.0 | 6,671.9 | 11,842.3 | 6,671.9 | 135.3 | 135.5 | 90.00 | -844.9 | 3,575.2 | 989.1 | 718.4 | 270.74 | 3.653 | |
| 11,712.6 | 6,671.8 | 11,854.9 | 6,671.8 | 135.6 | 135.8 | 90.00 | -844.9 | 3,587.8 | 989.1 | 717.7 | 271.42 | 3.644 | |
| 11,800.0 | 6,671.2 | 11,942.3 | 6,671.3 | 138.0 | 138.2 | 90.00 | -844.9 | 3,675.2 | 989.1 | 712.9 | 276.20 | 3.581 | |
| 11,811.0 | 6,671.1 | 11,953.3 | 6,671.2 | 138.3 | 138.5 | 90.00 | -844.9 | 3,686.2 | 989.1 | 712.3 | 276.80 | 3.573 | |
| 11,900.0 | 6,670.6 | 12,042.3 | 6,670.6 | 140.7 | 140.9 | 90.00 | -844.9 | 3,775.2 | 989.1 | 707.4 | 281.67 | 3.511 | |
| 11,909.4 | 6,670.5 | 12,051.8 | 6,670.5 | 141.0 | 141.2 | 90.00 | -844.9 | 3,784.6 | 989.1 | 706.9 | 282.19 | 3.505 | |
| 11,916.2 | 6,670.5 | 12,058.5 | 6,670.5 | 141.2 | 141.4 | 90.00 | -844.9 | 3,791.4 | 989.1 | 706.5 | 282.56 | 3.500 | |
| 11,987.2 | 6,670.0 | 12,129.6 | 6,670.0 | 143.1 | 143.3 | 90.00 | -844.9 | 3,862.4 | 989.1 | 702.7 | 286.45 | 3.453 SF | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.69 | 0.7 | 135.1 | 135.1 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.69 | 0.7 | 135.1 | 135.1 | 134.9 | 0.19 | 702.680 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.69 | 0.7 | 135.1 | 135.1 | 134.9 | 0.20 | 690.786 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.69 | 0.7 | 135.1 | 135.1 | 134.4 | 0.63 | 214.102 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.69 | 0.7 | 135.1 | 135.1 | 134.4 | 0.65 | 209.402 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.69 | 0.7 | 135.1 | 135.1 | 134.0 | 1.07 | 125.847 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.69 | 0.7 | 135.1 | 135.1 | 134.0 | 1.09 | 123.405 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.69 | 0.7 | 135.1 | 135.1 | 133.6 | 1.52 | 89.114 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.69 | 0.7 | 135.1 | 135.1 | 133.5 | 1.54 | 87.480 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.69 | 0.7 | 135.1 | 135.1 | 133.1 | 1.96 | 68.980 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.69 | 0.7 | 135.1 | 135.1 | 133.1 | 1.99 | 67.755 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.69 | 0.7 | 135.1 | 135.1 | 132.7 | 2.40 | 56.267 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.69 | 0.7 | 135.1 | 135.1 | 132.6 | 2.44 | 55.288 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.69 | 0.7 | 135.1 | 135.1 | 132.2 | 2.84 | 47.511 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.69 | 0.7 | 135.1 | 135.1 | 132.2 | 2.89 | 46.697 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.69 | 0.7 | 135.1 | 135.1 | 131.8 | 3.29 | 41.113 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.69 | 0.7 | 135.1 | 135.1 | 131.7 | 3.34 | 40.416 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.69 | 0.7 | 135.1 | 135.1 | 131.4 | 3.73 | 36.233 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.69 | 0.7 | 135.1 | 135.1 | 131.3 | 3.79 | 35.624 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.69 | 0.7 | 135.1 | 135.1 | 130.9 | 4.17 | 32.389 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.69 | 0.7 | 135.1 | 135.1 | 130.8 | 4.24 | 31.849 | CC, ES |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.18 | 0.7 | 135.1 | 136.3 | 131.7 | 4.60 | 29.609 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.20 | 0.7 | 135.1 | 136.8 | 132.1 | 4.68 | 29.250 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.35 | 0.7 | 135.1 | 140.8 | 135.8 | 5.02 | 28.034 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.40 | 0.7 | 135.1 | 142.0 | 136.9 | 5.10 | 27.843 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 174.64 | 0.7 | 135.1 | 148.6 | 143.2 | 5.44 | 27.338 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 174.71 | 0.7 | 135.1 | 150.7 | 145.2 | 5.52 | 27.287 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 3.0 | 175.00 | 0.7 | 135.1 | 159.9 | 154.0 | 5.85 | 27.324 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 3.0 | 175.08 | 0.7 | 135.1 | 162.8 | 156.9 | 5.94 | 27.404 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 3.2 | 175.39 | 0.7 | 135.1 | 174.4 | 168.2 | 6.26 | 27.860 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 3.2 | 175.49 | 0.7 | 135.1 | 178.4 | 172.1 | 6.36 | 28.062 | |
| 1,574.8 | 1,571.0 | 1,571.0 | 1,571.0 | 3.5 | 3.4 | 175.79 | 0.7 | 135.1 | 192.3 | 185.7 | 6.67 | 28.843 | |
| 1,600.0 | 1,595.6 | 1,595.6 | 1,595.6 | 3.6 | 3.5 | 175.90 | 0.7 | 135.1 | 197.5 | 190.7 | 6.77 | 29.161 | |
| 1,673.2 | 1,667.0 | 1,667.0 | 1,667.0 | 3.9 | 3.6 | 176.18 | 0.7 | 135.1 | 213.6 | 206.5 | 7.07 | 30.196 | |
| 1,700.0 | 1,693.1 | 1,693.1 | 1,693.1 | 4.0 | 3.7 | 176.29 | 0.7 | 135.1 | 219.9 | 212.7 | 7.18 | 30.624 | |
| 1,771.6 | 1,762.4 | 1,762.4 | 1,762.4 | 4.3 | 3.8 | 176.55 | 0.7 | 135.1 | 238.1 | 230.6 | 7.47 | 31.855 | |
| 1,800.0 | 1,789.6 | 1,789.6 | 1,789.6 | 4.4 | 3.9 | 176.65 | 0.7 | 135.1 | 245.7 | 238.2 | 7.59 | 32.389 | |
| 1,870.1 | 1,856.8 | 1,856.8 | 1,856.8 | 4.7 | 4.0 | 176.88 | 0.7 | 135.1 | 265.8 | 258.0 | 7.87 | 33.770 | |
| 1,900.0 | 1,885.3 | 1,885.3 | 1,885.3 | 4.9 | 4.1 | 176.97 | 0.7 | 135.1 | 274.9 | 266.9 | 7.99 | 34.408 | |
| 1,968.5 | 1,950.2 | 1,951.3 | 1,951.3 | 5.3 | 4.2 | 177.27 | 0.3 | 135.0 | 296.8 | 288.5 | 8.25 | 35.955 | |
| 2,000.0 | 1,979.8 | 1,981.7 | 1,981.7 | 5.5 | 4.3 | 177.49 | -0.4 | 134.8 | 307.2 | 298.8 | 8.37 | 36.694 | |
| 2,044.9 | 2,021.9 | 2,024.9 | 2,024.8 | 5.7 | 4.4 | 177.89 | -1.9 | 134.4 | 322.6 | 314.0 | 8.54 | 37.793 | |
| 2,066.9 | 2,042.5 | 2,045.9 | 2,045.9 | 5.9 | 4.4 | 178.12 | -2.8 | 134.1 | 330.2 | 321.6 | 8.63 | 38.270 | |
| 2,100.0 | 2,073.4 | 2,077.7 | 2,077.5 | 6.1 | 4.5 | 178.50 | -4.6 | 133.6 | 341.7 | 332.9 | 8.77 | 38.954 | |
| 2,165.3 | 2,134.4 | 2,140.3 | 2,140.0 | 6.5 | 4.6 | 179.35 | -9.0 | 132.4 | 364.1 | 355.1 | 9.06 | 40.201 | |
| 2,200.0 | 2,166.8 | 2,173.5 | 2,173.1 | 6.8 | 4.6 | 179.84 | -11.8 | 131.6 | 375.9 | 366.7 | 9.21 | 40.807 | |
| 2,263.8 | 2,226.4 | 2,234.6 | 2,233.8 | 7.2 | 4.8 | -179.17 | -18.1 | 129.9 | 397.6 | 388.1 | 9.51 | 41.826 | |
| 2,300.0 | 2,260.2 | 2,269.2 | 2,268.2 | 7.4 | 4.8 | -178.58 | -22.2 | 128.7 | 409.9 | 400.2 | 9.68 | 42.354 | |
| 2,362.2 | 2,318.3 | 2,328.5 | 2,326.9 | 7.9 | 4.9 | -177.50 | -30.1 | 126.5 | 430.9 | 420.9 | 9.98 | 43.168 | |
| 2,400.0 | 2,353.6 | 2,364.5 | 2,362.4 | 8.1 | 5.0 | -176.82 | -35.5 | 125.0 | 443.7 | 433.5 | 10.17 | 43.608 | |
| 2,460.6 | 2,410.3 | 2,421.9 | 2,419.1 | 8.6 | 5.2 | -175.68 | -44.9 | 122.4 | 464.2 | 453.7 | 10.49 | 44.231 | |
| 2,500.0 | 2,447.0 | 2,459.1 | 2,455.6 | 8.9 | 5.2 | -174.92 | -51.7 | 120.5 | 477.5 | 466.8 | 10.71 | 44.576 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,514.7 | 2,510.0 | 9.3 | 5.4 | -173.76 | -62.6 | 117.5 | 497.5 | 486.5 | 11.05 | 45.032 | |
| 2,600.0 | 2,540.5 | 2,552.7 | 2,547.1 | 9.6 | 5.5 | -172.96 | -70.4 | 115.3 | 511.5 | 500.2 | 11.30 | 45.285 | |
| 2,657.5 | 2,594.2 | 2,605.9 | 2,599.0 | 10.0 | 5.6 | -171.91 | -81.4 | 112.2 | 531.3 | 519.6 | 11.65 | 45.601 | |
| 2,700.0 | 2,633.9 | 2,645.2 | 2,637.5 | 10.3 | 5.8 | -171.18 | -89.6 | 110.0 | 546.0 | 534.0 | 11.92 | 45.793 | |
| 2,755.9 | 2,686.1 | 2,697.0 | 2,688.0 | 10.7 | 5.9 | -170.28 | -100.3 | 107.0 | 565.4 | 553.1 | 12.29 | 46.022 | |
| 2,800.0 | 2,727.3 | 2,737.8 | 2,727.9 | 11.0 | 6.0 | -169.61 | -108.8 | 104.6 | 580.9 | 568.3 | 12.58 | 46.160 | |
| 2,854.3 | 2,778.1 | 2,788.1 | 2,777.0 | 11.4 | 6.2 | -168.83 | -119.2 | 101.8 | 600.0 | 587.0 | 12.95 | 46.315 | |
| 2,900.0 | 2,820.7 | 2,830.3 | 2,818.3 | 11.8 | 6.3 | -168.21 | -127.9 | 99.3 | 616.1 | 602.8 | 13.27 | 46.420 | |
| 2,952.7 | 2,870.0 | 2,879.2 | 2,865.9 | 12.2 | 6.5 | -167.54 | -138.1 | 96.5 | 634.8 | 621.1 | 13.65 | 46.517 | |
| 3,000.0 | 2,914.2 | 2,922.9 | 2,908.7 | 12.5 | 6.7 | -166.96 | -147.1 | 94.0 | 651.6 | 637.6 | 13.99 | 46.587 | |
| 3,051.2 | 2,962.0 | 2,970.3 | 2,954.9 | 12.9 | 6.8 | -166.38 | -156.9 | 91.3 | 669.9 | 655.5 | 14.36 | 46.643 | |
| 3,100.0 | 3,007.6 | 3,015.5 | 2,999.1 | 13.3 | 7.0 | -165.84 | -166.3 | 88.7 | 687.4 | 672.7 | 14.72 | 46.686 | |
| 3,149.6 | 3,053.9 | 3,061.4 | 3,043.9 | 13.6 | 7.2 | -165.33 | -175.8 | 86.0 | 705.2 | 690.1 | 15.10 | 46.711 | |
| 3,200.0 | 3,101.0 | 3,108.0 | 3,089.5 | 14.0 | 7.3 | -164.83 | -185.5 | 83.3 | 723.4 | 707.9 | 15.48 | 46.732 | |
| 3,248.0 | 3,145.9 | 3,152.5 | 3,132.9 | 14.4 | 7.5 | -164.38 | -194.7 | 80.8 | 740.7 | 724.9 | 15.85 | 46.736 | |
| 3,300.0 | 3,194.4 | 3,200.6 | 3,179.9 | 14.8 | 7.7 | -163.92 | -204.6 | 78.0 | 759.5 | 743.3 | 16.25 | 46.737 | |
| 3,346.4 | 3,237.8 | 3,243.6 | 3,221.8 | 15.1 | 7.9 | -163.52 | -213.5 | 75.5 | 776.4 | 759.8 | 16.62 | 46.726 | |
| 3,400.0 | 3,287.8 | 3,293.2 | 3,270.3 | 15.5 | 8.1 | -163.08 | -223.8 | 72.7 | 795.9 | 778.8 | 17.04 | 46.712 | |
| 3,444.9 | 3,329.8 | 3,334.7 | 3,310.8 | 15.9 | 8.2 | -162.73 | -232.4 | 70.3 | 812.2 | 794.8 | 17.39 | 46.692 | |
| 3,500.0 | 3,381.3 | 3,385.7 | 3,360.7 | 16.3 | 8.4 | -162.32 | -243.0 | 67.3 | 832.3 | 814.5 | 17.84 | 46.665 | |
| 3,543.3 | 3,421.7 | 3,425.8 | 3,399.8 | 16.6 | 8.6 | -162.01 | -251.3 | 65.0 | 848.1 | 830.0 | 18.19 | 46.639 | |
| 3,600.0 | 3,474.7 | 3,478.3 | 3,451.1 | 17.0 | 8.8 | -161.62 | -262.2 | 62.0 | 868.9 | 850.2 | 18.64 | 46.602 | |
| 3,641.7 | 3,513.7 | 3,516.9 | 3,488.8 | 17.3 | 9.0 | -161.35 | -270.2 | 59.8 | 884.2 | 865.2 | 18.99 | 46.572 | |
| 3,700.0 | 3,568.1 | 3,570.9 | 3,541.5 | 17.8 | 9.2 | -160.98 | -281.3 | 56.7 | 905.6 | 886.1 | 19.46 | 46.528 | |
| 3,740.1 | 3,605.6 | 3,608.0 | 3,577.7 | 18.1 | 9.3 | -160.73 | -289.0 | 54.6 | 920.3 | 900.5 | 19.79 | 46.496 | |
| 3,800.0 | 3,661.5 | 3,663.4 | 3,631.9 | 18.5 | 9.6 | -160.39 | -300.5 | 51.4 | 942.3 | 922.0 | 20.29 | 46.446 | |
| 3,838.6 | 3,697.6 | 3,699.1 | 3,666.7 | 18.8 | 9.7 | -160.17 | -307.9 | 49.3 | 956.5 | 935.9 | 20.61 | 46.413 | |
| 3,900.0 | 3,754.9 | 3,756.0 | 3,722.3 | 19.3 | 10.0 | -159.84 | -319.7 | 46.0 | 979.2 | 958.1 | 21.12 | 46.358 | |
| 3,937.0 | 3,789.5 | 3,790.2 | 3,755.7 | 19.6 | 10.1 | -159.64 | -326.8 | 44.1 | 992.8 | 971.4 | 21.43 | 46.325 | |
| 4,000.0 | 3,848.4 | 3,848.6 | 3,812.7 | 20.1 | 10.3 | -159.33 | -338.9 | 40.7 | 1,016.1 | 994.1 | 21.96 | 46.268 | |
| 4,035.4 | 3,881.5 | 3,881.3 | 3,844.7 | 20.3 | 10.5 | -159.16 | -345.7 | 38.8 | 1,029.2 | 1,006.9 | 22.26 | 46.235 | |
| 4,100.0 | 3,941.8 | 3,941.1 | 3,903.1 | 20.8 | 10.7 | -158.85 | -358.0 | 35.4 | 1,053.1 | 1,030.3 | 22.81 | 46.175 | |
| 4,133.8 | 3,973.4 | 3,972.4 | 3,933.7 | 21.1 | 10.9 | -158.70 | -364.5 | 33.6 | 1,065.6 | 1,042.5 | 23.09 | 46.144 | |
| 4,200.0 | 4,035.2 | 4,033.7 | 3,993.5 | 21.6 | 11.1 | -158.41 | -377.2 | 30.0 | 1,090.1 | 1,066.5 | 23.66 | 46.082 | |
| 4,232.3 | 4,065.4 | 4,063.6 | 4,022.6 | 21.8 | 11.3 | -158.28 | -383.4 | 28.3 | 1,102.1 | 1,078.2 | 23.93 | 46.052 | |
| 4,300.0 | 4,128.6 | 4,126.2 | 4,083.9 | 22.3 | 11.5 | -158.00 | -396.4 | 24.7 | 1,127.2 | 1,102.7 | 24.51 | 45.989 | |
| 4,330.7 | 4,157.3 | 4,154.7 | 4,111.6 | 22.6 | 11.7 | -157.88 | -402.3 | 23.1 | 1,138.6 | 1,113.9 | 24.77 | 45.961 | |
| 4,400.0 | 4,222.0 | 4,218.8 | 4,174.3 | 23.1 | 11.9 | -157.61 | -415.6 | 19.4 | 1,164.4 | 1,139.0 | 25.37 | 45.898 | |
| 4,429.1 | 4,249.3 | 4,245.8 | 4,200.6 | 23.3 | 12.1 | -157.50 | -421.1 | 17.8 | 1,175.2 | 1,149.6 | 25.62 | 45.871 | |
| 4,500.0 | 4,315.5 | 4,311.4 | 4,264.7 | 23.9 | 12.3 | -157.25 | -434.7 | 14.1 | 1,201.6 | 1,175.4 | 26.23 | 45.807 | |
| 4,527.5 | 4,341.2 | 4,336.9 | 4,289.6 | 24.1 | 12.5 | -157.15 | -440.0 | 12.6 | 1,211.8 | 1,185.4 | 26.47 | 45.783 | |
| 4,600.0 | 4,408.9 | 4,403.9 | 4,355.1 | 24.6 | 12.8 | -156.91 | -453.9 | 8.7 | 1,238.8 | 1,211.7 | 27.10 | 45.719 | |
| 4,626.0 | 4,433.2 | 4,428.0 | 4,378.5 | 24.8 | 12.9 | -156.82 | -458.9 | 7.3 | 1,248.5 | 1,221.2 | 27.32 | 45.696 | |
| 4,700.0 | 4,502.3 | 4,496.5 | 4,445.5 | 25.4 | 13.2 | -156.59 | -473.1 | 3.4 | 1,276.1 | 1,248.1 | 27.96 | 45.632 | |
| 4,724.4 | 4,525.1 | 4,519.1 | 4,467.5 | 25.6 | 13.3 | -156.51 | -477.8 | 2.1 | 1,285.2 | 1,257.0 | 28.18 | 45.611 | |
| 4,800.0 | 4,595.7 | 4,589.1 | 4,535.9 | 26.2 | 13.6 | -156.28 | -492.3 | -1.9 | 1,313.4 | 1,284.5 | 28.84 | 45.548 | |
| 4,822.8 | 4,617.1 | 4,610.2 | 4,556.5 | 26.3 | 13.7 | -156.22 | -496.6 | -3.1 | 1,321.9 | 1,292.9 | 29.03 | 45.529 | |
| 4,900.0 | 4,689.2 | 4,681.6 | 4,626.2 | 26.9 | 14.0 | -156.00 | -511.4 | -7.3 | 1,350.7 | 1,321.0 | 29.71 | 45.466 | |
| 4,921.2 | 4,709.0 | 4,701.3 | 4,645.5 | 27.1 | 14.1 | -155.94 | -515.5 | -8.4 | 1,358.6 | 1,328.8 | 29.89 | 45.448 | |
| 5,000.0 | 4,782.6 | 4,774.2 | 4,716.6 | 27.7 | 14.4 | -155.72 | -530.6 | -12.6 | 1,388.1 | 1,357.5 | 30.58 | 45.386 | |
| 5,019.7 | 4,801.0 | 4,792.4 | 4,734.4 | 27.8 | 14.5 | -155.67 | -534.4 | -13.6 | 1,395.4 | 1,364.7 | 30.76 | 45.370 | |
| 5,100.0 | 4,876.0 | 4,866.8 | 4,807.0 | 28.4 | 14.8 | -155.47 | -549.8 | -17.9 | 1,425.4 | 1,394.0 | 31.46 | 45.308 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,883.5 | 4,823.4 | 28.6 | 14.9 | -155.42 | -553.3 | -18.9 | 1,432.2 | 1,400.6 | 31.62 | 45.294 | |
| 5,159.9 | 4,932.0 | 4,922.2 | 4,861.2 | 28.9 | 15.1 | -155.32 | -561.3 | -21.1 | 1,447.9 | 1,415.9 | 31.99 | 45.263 | |
| 5,200.0 | 4,969.5 | 4,959.4 | 4,897.5 | 29.2 | 15.2 | -155.35 | -569.0 | -23.2 | 1,462.6 | 1,430.3 | 32.36 | 45.196 | |
| 5,216.5 | 4,985.1 | 4,974.8 | 4,912.6 | 29.3 | 15.3 | -155.36 | -572.2 | -24.1 | 1,468.6 | 1,436.1 | 32.51 | 45.178 | |
| 5,300.0 | 5,064.0 | 5,052.9 | 4,988.8 | 29.7 | 15.7 | -155.37 | -588.3 | -28.6 | 1,497.4 | 1,464.1 | 33.24 | 45.048 | |
| 5,314.9 | 5,078.2 | 5,067.0 | 5,002.6 | 29.8 | 15.7 | -155.37 | -591.3 | -29.4 | 1,502.3 | 1,469.0 | 33.37 | 45.023 | |
| 5,400.0 | 5,159.6 | 5,147.3 | 5,081.1 | 30.2 | 16.1 | -155.32 | -607.9 | -34.1 | 1,529.2 | 1,495.1 | 34.10 | 44.846 | |
| 5,413.4 | 5,172.4 | 5,160.0 | 5,093.5 | 30.3 | 16.1 | -155.31 | -610.5 | -34.8 | 1,533.2 | 1,499.0 | 34.21 | 44.818 | |
| 5,500.0 | 5,256.1 | 5,242.6 | 5,174.1 | 30.7 | 16.5 | -155.20 | -627.6 | -39.5 | 1,558.0 | 1,523.1 | 34.93 | 44.599 | |
| 5,511.8 | 5,267.6 | 5,253.9 | 5,185.1 | 30.7 | 16.6 | -155.18 | -630.0 | -40.2 | 1,561.3 | 1,526.2 | 35.03 | 44.569 | |
| 5,600.0 | 5,353.5 | 5,338.6 | 5,267.8 | 31.1 | 17.0 | -155.02 | -647.5 | -45.1 | 1,583.9 | 1,548.2 | 35.74 | 44.312 | |
| 5,610.2 | 5,363.5 | 5,348.4 | 5,277.4 | 31.1 | 17.0 | -154.99 | -649.6 | -45.6 | 1,586.4 | 1,550.6 | 35.82 | 44.282 | |
| 5,700.0 | 5,451.6 | 7,863.8 | 6,717.5 | 31.4 | 42.7 | -109.10 | -731.2 | -1,441.7 | 1,536.6 | 1,463.9 | 72.75 | 21.123 | |
| 5,708.6 | 5,460.2 | 7,865.2 | 6,717.5 | 31.4 | 42.7 | -108.79 | -731.2 | -1,443.2 | 1,529.7 | 1,456.8 | 72.85 | 20.998 | |
| 5,800.0 | 5,550.4 | 7,879.1 | 6,717.5 | 31.7 | 43.1 | -105.67 | -731.2 | -1,457.1 | 1,457.2 | 1,383.5 | 73.77 | 19.753 | |
| 5,807.1 | 5,557.4 | 7,880.1 | 6,717.5 | 31.7 | 43.1 | -105.44 | -731.2 | -1,458.1 | 1,451.7 | 1,377.9 | 73.83 | 19.662 | |
| 5,900.0 | 5,649.6 | 7,891.1 | 6,717.4 | 31.9 | 43.4 | -102.54 | -731.2 | -1,469.0 | 1,379.8 | 1,305.3 | 74.46 | 18.532 | |
| 5,905.5 | 5,655.1 | 7,891.6 | 6,717.4 | 31.9 | 43.4 | -102.38 | -731.2 | -1,469.6 | 1,375.6 | 1,301.1 | 74.48 | 18.468 | |
| 6,000.0 | 5,749.2 | 7,899.5 | 6,717.4 | 32.1 | 43.6 | -99.78 | -731.2 | -1,477.5 | 1,304.8 | 1,229.9 | 74.84 | 17.435 | |
| 6,003.9 | 5,753.1 | 7,899.8 | 6,717.4 | 32.1 | 43.6 | -99.68 | -731.2 | -1,477.7 | 1,301.9 | 1,227.0 | 74.84 | 17.394 | |
| 6,100.0 | 5,849.1 | 7,904.5 | 6,717.4 | 32.3 | 43.7 | -97.40 | -731.2 | -1,482.5 | 1,232.8 | 1,157.9 | 74.97 | 16.444 | |
| 6,102.3 | 5,851.4 | 7,904.6 | 6,717.4 | 32.3 | 43.7 | -97.35 | -731.2 | -1,482.6 | 1,231.2 | 1,156.2 | 74.97 | 16.422 | |
| 6,200.8 | 5,949.8 | 7,906.1 | 6,717.4 | 32.4 | 43.7 | -95.44 | -731.2 | -1,484.0 | 1,164.2 | 1,089.3 | 74.92 | 15.540 | |
| 6,204.9 | 5,953.9 | 7,906.0 | 6,717.4 | 32.4 | 43.7 | -179.81 | -731.2 | -1,484.0 | 1,161.5 | 1,125.2 | 36.33 | 31.970 | |
| 6,234.9 | 5,983.9 | 7,905.9 | 6,717.4 | 32.4 | 43.7 | -179.82 | -731.2 | -1,483.9 | 1,142.0 | 1,105.7 | 36.38 | 31.396 | |
| 6,250.0 | 5,999.0 | 7,905.7 | 6,717.4 | 32.4 | 43.7 | 91.17 | -731.2 | -1,483.7 | 1,132.4 | 1,057.6 | 74.81 | 15.137 | |
| 6,299.2 | 6,048.2 | 7,902.8 | 6,717.4 | 32.4 | 43.7 | 94.09 | -731.2 | -1,480.8 | 1,101.9 | 1,027.6 | 74.25 | 14.839 | |
| 6,300.0 | 6,048.9 | 7,902.7 | 6,717.4 | 32.4 | 43.7 | 94.13 | -731.2 | -1,480.7 | 1,101.4 | 1,027.2 | 74.24 | 14.835 | |
| 6,350.0 | 6,098.5 | 7,896.3 | 6,717.4 | 32.4 | 43.5 | 96.61 | -731.2 | -1,474.2 | 1,072.0 | 998.5 | 73.50 | 14.585 | |
| 6,397.6 | 6,145.3 | 7,886.9 | 6,717.4 | 32.3 | 43.3 | 98.51 | -731.2 | -1,464.9 | 1,045.8 | 973.1 | 72.71 | 14.383 | |
| 6,400.0 | 6,147.6 | 7,886.3 | 6,717.4 | 32.3 | 43.2 | 98.60 | -731.2 | -1,464.3 | 1,044.5 | 971.8 | 72.67 | 14.373 | |
| 6,450.0 | 6,195.8 | 7,873.0 | 6,717.5 | 32.2 | 42.9 | 100.12 | -731.2 | -1,451.0 | 1,019.0 | 947.2 | 71.80 | 14.193 | |
| 6,496.0 | 6,239.3 | 7,857.8 | 6,717.5 | 32.1 | 42.5 | 101.13 | -731.2 | -1,435.8 | 997.5 | 926.5 | 70.99 | 14.050 | |
| 6,500.0 | 6,243.0 | 7,856.4 | 6,717.6 | 32.1 | 42.5 | 101.20 | -731.2 | -1,434.4 | 995.7 | 924.8 | 70.93 | 14.039 | |
| 6,550.0 | 6,289.0 | 7,836.5 | 6,717.6 | 32.0 | 42.0 | 101.88 | -731.2 | -1,414.5 | 974.7 | 904.6 | 70.08 | 13.908 | |
| 6,594.5 | 6,328.6 | 7,816.2 | 6,717.7 | 31.8 | 41.5 | 102.16 | -731.2 | -1,394.2 | 958.0 | 888.6 | 69.36 | 13.812 | |
| 6,600.0 | 6,333.4 | 7,813.5 | 6,717.7 | 31.8 | 41.4 | 102.17 | -731.2 | -1,391.5 | 956.0 | 886.7 | 69.27 | 13.801 | |
| 6,650.0 | 6,376.2 | 7,787.4 | 6,717.8 | 31.7 | 40.8 | 102.14 | -731.2 | -1,365.4 | 939.7 | 871.2 | 68.51 | 13.717 | |
| 6,692.9 | 6,411.3 | 7,762.7 | 6,717.9 | 31.6 | 40.2 | 101.87 | -731.2 | -1,340.7 | 927.5 | 859.6 | 67.88 | 13.664 | |
| 6,700.0 | 6,417.0 | 7,758.5 | 6,717.9 | 31.5 | 40.1 | 101.80 | -731.2 | -1,336.4 | 925.6 | 857.9 | 67.78 | 13.657 | |
| 6,750.0 | 6,455.7 | 7,726.7 | 6,718.0 | 31.4 | 39.3 | 101.22 | -731.2 | -1,304.7 | 913.8 | 846.8 | 67.07 | 13.625 | |
| 6,791.3 | 6,486.0 | 7,698.5 | 6,718.2 | 31.3 | 38.6 | 100.57 | -731.2 | -1,276.4 | 905.6 | 839.1 | 66.49 | 13.620 | SF |
| 6,800.0 | 6,492.2 | 7,692.3 | 6,718.2 | 31.3 | 38.5 | 100.42 | -731.2 | -1,270.3 | 904.1 | 837.7 | 66.37 | 13.621 | |
| 6,850.0 | 6,526.1 | 7,655.5 | 6,718.3 | 31.2 | 37.6 | 99.47 | -731.2 | -1,233.5 | 896.2 | 830.5 | 65.68 | 13.645 | |
| 6,889.7 | 6,551.2 | 7,624.6 | 6,718.4 | 31.2 | 36.8 | 98.63 | -731.2 | -1,202.6 | 891.2 | 826.1 | 65.12 | 13.686 | |
| 6,900.0 | 6,557.4 | 7,616.4 | 6,718.5 | 31.2 | 36.6 | 98.40 | -731.2 | -1,194.4 | 890.1 | 825.1 | 64.97 | 13.700 | |
| 6,950.0 | 6,586.0 | 7,575.3 | 6,718.6 | 31.1 | 35.7 | 97.28 | -731.2 | -1,153.2 | 885.4 | 821.1 | 64.24 | 13.783 | |
| 6,988.2 | 6,605.8 | 7,542.6 | 6,718.7 | 31.2 | 34.9 | 96.41 | -731.2 | -1,120.5 | 882.6 | 819.0 | 63.67 | 13.864 | |
| 7,000.0 | 6,611.5 | 7,532.2 | 6,718.8 | 31.2 | 34.7 | 96.14 | -731.2 | -1,110.2 | 881.9 | 818.4 | 63.48 | 13.893 | |
| 7,050.0 | 6,634.1 | 7,487.5 | 6,719.0 | 31.2 | 33.6 | 95.04 | -731.2 | -1,065.5 | 879.5 | 816.8 | 62.69 | 14.028 | |
| 7,086.6 | 6,648.6 | 7,453.8 | 6,719.1 | 31.3 | 32.9 | 94.28 | -731.2 | -1,031.8 | 878.2 | 816.1 | 62.12 | 14.137 | |
| 7,100.0 | 6,653.4 | 7,441.3 | 6,719.1 | 31.4 | 32.6 | 94.02 | -731.2 | -1,019.3 | 877.8 | 815.9 | 61.90 | 14.182 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 7,394.0 | 6,719.3 | 31.6 | 31.6 | 93.12 | -731.2 | -971.9 | 876.8 | 815.7 | 61.09 | 14.353 | |
| 7,185.0 | 6,678.8 | 7,360.1 | 6,719.4 | 31.7 | 30.8 | 92.58 | -731.2 | -938.1 | 876.3 | 815.8 | 60.54 | 14.475 | |
| 7,200.0 | 6,682.3 | 7,345.6 | 6,719.5 | 31.8 | 30.5 | 92.38 | -731.2 | -923.5 | 876.2 | 815.9 | 60.29 | 14.531 | |
| 7,250.0 | 6,691.6 | 7,296.4 | 6,719.7 | 32.1 | 29.5 | 91.81 | -731.2 | -874.4 | 875.8 | 816.3 | 59.51 | 14.718 | |
| 7,283.4 | 6,696.0 | 7,263.2 | 6,719.8 | 32.3 | 28.8 | 91.55 | -731.2 | -841.2 | 875.7 | 816.7 | 59.02 | 14.837 | |
| 7,300.0 | 6,697.5 | 7,246.8 | 6,719.9 | 32.4 | 28.5 | 91.46 | -731.2 | -824.7 | 875.7 | 816.9 | 58.77 | 14.899 | |
| 7,350.0 | 6,699.9 | 7,196.5 | 6,719.9 | 32.8 | 27.5 | 91.31 | -731.2 | -774.4 | 875.6 | 817.5 | 58.06 | 15.081 | |
| 7,364.4 | 6,700.0 | 7,181.7 | 6,719.6 | 32.9 | 27.3 | 91.28 | -731.2 | -759.7 | 875.6 | 817.7 | 57.87 | 15.131 | |
| 7,381.9 | 6,699.9 | 7,163.7 | 6,718.7 | 33.1 | 26.9 | 91.23 | -731.2 | -741.7 | 875.6 | 817.9 | 57.63 | 15.192 | |
| 7,400.0 | 6,699.8 | 7,145.2 | 6,717.4 | 33.2 | 26.6 | 91.15 | -731.2 | -723.2 | 875.5 | 818.1 | 57.40 | 15.254 | |
| 7,480.3 | 6,699.2 | 7,064.2 | 6,705.9 | 34.0 | 25.2 | 90.44 | -731.2 | -643.1 | 875.4 | 818.8 | 56.58 | 15.473 | |
| 7,500.0 | 6,699.1 | 7,044.8 | 6,701.8 | 34.2 | 24.9 | 90.18 | -731.2 | -624.1 | 875.4 | 819.0 | 56.40 | 15.522 | |
| 7,512.3 | 6,699.0 | 7,032.8 | 6,699.0 | 34.4 | 24.7 | 90.00 | -731.2 | -612.4 | 875.4 | 819.0 | 56.32 | 15.542 | |
| 7,578.7 | 6,698.6 | 6,969.7 | 6,681.2 | 35.2 | 23.8 | 88.86 | -731.2 | -552.0 | 875.6 | 819.6 | 55.97 | 15.643 | |
| 7,600.0 | 6,698.5 | 6,950.0 | 6,674.5 | 35.4 | 23.5 | 88.43 | -731.2 | -533.4 | 875.7 | 819.9 | 55.87 | 15.673 | |
| 7,677.1 | 6,698.0 | 6,882.9 | 6,648.1 | 36.5 | 22.7 | 86.73 | -731.2 | -471.8 | 877.1 | 821.3 | 55.82 | 15.713 | |
| 7,700.0 | 6,697.8 | 6,864.0 | 6,639.6 | 36.8 | 22.5 | 86.18 | -731.2 | -454.9 | 877.8 | 822.0 | 55.83 | 15.723 | |
| 7,775.6 | 6,697.3 | 6,805.1 | 6,610.4 | 38.0 | 21.9 | 84.30 | -731.2 | -403.7 | 881.4 | 825.3 | 56.06 | 15.722 | |
| 7,800.0 | 6,697.2 | 6,787.2 | 6,600.7 | 38.3 | 21.8 | 83.68 | -731.2 | -388.7 | 883.0 | 826.8 | 56.16 | 15.722 | |
| 7,874.0 | 6,696.7 | 6,736.4 | 6,571.2 | 39.6 | 21.4 | 81.80 | -731.2 | -347.4 | 889.6 | 833.0 | 56.62 | 15.713 | |
| 7,900.0 | 6,696.5 | 6,719.8 | 6,560.9 | 40.0 | 21.3 | 81.14 | -731.2 | -334.4 | 892.6 | 835.8 | 56.79 | 15.716 | |
| 7,972.4 | 6,696.1 | 6,676.5 | 6,532.6 | 41.3 | 21.0 | 79.36 | -731.2 | -301.5 | 902.9 | 845.5 | 57.41 | 15.728 | |
| 8,000.0 | 6,695.9 | 6,661.1 | 6,522.2 | 41.8 | 20.9 | 78.71 | -731.2 | -290.3 | 907.7 | 850.0 | 57.65 | 15.744 | |
| 8,070.8 | 6,695.4 | 6,624.4 | 6,496.2 | 43.1 | 20.6 | 77.09 | -731.2 | -264.4 | 922.1 | 863.7 | 58.38 | 15.794 | |
| 8,100.0 | 6,695.2 | 6,610.3 | 6,485.8 | 43.7 | 20.6 | 76.46 | -731.2 | -254.8 | 929.0 | 870.3 | 58.69 | 15.830 | |
| 8,169.3 | 6,694.8 | 6,579.2 | 6,462.3 | 45.1 | 20.4 | 75.02 | -731.2 | -234.3 | 947.7 | 888.2 | 59.50 | 15.927 | |
| 8,200.0 | 6,694.6 | 6,566.3 | 6,452.4 | 45.7 | 20.3 | 74.42 | -731.2 | -226.2 | 957.0 | 897.1 | 59.87 | 15.985 | |
| 8,267.7 | 6,694.1 | 6,539.8 | 6,431.4 | 47.1 | 20.2 | 73.16 | -731.2 | -210.0 | 979.7 | 919.0 | 60.74 | 16.131 | |
| 8,300.0 | 6,693.9 | 6,528.0 | 6,421.9 | 47.8 | 20.2 | 72.59 | -731.2 | -203.0 | 991.6 | 930.5 | 61.16 | 16.214 | |
| 8,366.1 | 6,693.5 | 6,500.0 | 6,398.8 | 49.2 | 20.0 | 71.23 | -731.2 | -187.1 | 1,018.2 | 956.2 | 61.96 | 16.432 | |
| 8,400.0 | 6,693.3 | 6,500.0 | 6,398.8 | 49.9 | 20.0 | 71.23 | -731.2 | -187.1 | 1,032.8 | 970.2 | 62.66 | 16.484 | |
| 8,464.5 | 6,692.9 | 6,475.3 | 6,378.0 | 51.4 | 19.9 | 70.03 | -731.2 | -173.9 | 1,062.7 | 999.2 | 63.50 | 16.734 | |
| 8,500.0 | 6,692.6 | 6,465.4 | 6,369.5 | 52.1 | 19.9 | 69.54 | -731.2 | -168.7 | 1,080.1 | 1,016.1 | 64.03 | 16.868 | |
| 8,563.0 | 6,692.2 | 6,450.0 | 6,356.2 | 53.6 | 19.8 | 68.78 | -731.2 | -161.0 | 1,112.8 | 1,047.7 | 65.03 | 17.112 | |
| 8,600.0 | 6,692.0 | 6,450.0 | 6,356.2 | 54.4 | 19.8 | 68.78 | -731.2 | -161.0 | 1,133.1 | 1,067.3 | 65.82 | 17.215 | |
| 8,661.4 | 6,691.6 | 6,425.3 | 6,334.5 | 55.8 | 19.7 | 67.56 | -731.2 | -149.2 | 1,168.0 | 1,101.4 | 66.57 | 17.544 | |
| 8,700.0 | 6,691.3 | 6,416.8 | 6,327.0 | 56.7 | 19.7 | 67.14 | -731.2 | -145.4 | 1,190.9 | 1,123.7 | 67.20 | 17.722 | |
| 8,759.8 | 6,690.9 | 6,400.0 | 6,311.9 | 58.1 | 19.7 | 66.31 | -731.2 | -138.0 | 1,227.8 | 1,159.7 | 68.09 | 18.034 | |
| 8,800.0 | 6,690.7 | 6,400.0 | 6,311.9 | 59.1 | 19.7 | 66.31 | -731.2 | -138.0 | 1,253.4 | 1,184.5 | 68.96 | 18.176 | |
| 8,858.2 | 6,690.3 | 6,385.7 | 6,298.9 | 60.5 | 19.6 | 65.60 | -731.2 | -131.9 | 1,291.7 | 1,221.8 | 69.88 | 18.485 | |
| 8,900.0 | 6,690.0 | 6,378.4 | 6,292.2 | 61.5 | 19.6 | 65.24 | -731.2 | -129.0 | 1,319.9 | 1,249.3 | 70.60 | 18.695 | |
| 8,956.7 | 6,689.7 | 6,368.9 | 6,283.5 | 62.9 | 19.6 | 64.78 | -731.2 | -125.2 | 1,359.2 | 1,287.6 | 71.60 | 18.982 | |
| 9,000.0 | 6,689.4 | 6,350.0 | 6,266.0 | 63.9 | 19.5 | 63.85 | -731.2 | -118.0 | 1,390.0 | 1,318.0 | 72.03 | 19.299 | |
| 9,055.1 | 6,689.0 | 6,350.0 | 6,266.0 | 65.3 | 19.5 | 63.85 | -731.2 | -118.0 | 1,429.8 | 1,356.5 | 73.25 | 19.518 | |
| 9,100.0 | 6,688.7 | 6,350.0 | 6,266.0 | 66.4 | 19.5 | 63.85 | -731.2 | -118.0 | 1,463.0 | 1,388.7 | 74.26 | 19.702 | |
| 9,153.5 | 6,688.4 | 6,350.0 | 6,266.0 | 67.7 | 19.5 | 63.85 | -731.2 | -118.0 | 1,503.3 | 1,427.8 | 75.46 | 19.921 | |
| 9,200.0 | 6,688.1 | 6,350.0 | 6,266.0 | 68.9 | 19.5 | 63.85 | -731.2 | -118.0 | 1,538.9 | 1,462.4 | 76.51 | 20.114 | |
| 9,251.9 | 6,687.8 | 6,327.6 | 6,245.1 | 70.2 | 19.4 | 62.76 | -731.2 | -110.2 | 1,579.0 | 1,502.0 | 77.00 | 20.507 | |
| 9,300.0 | 6,687.4 | 6,321.9 | 6,239.7 | 71.4 | 19.4 | 62.48 | -731.2 | -108.3 | 1,616.8 | 1,538.9 | 77.90 | 20.754 | |
| 9,350.4 | 6,687.1 | 6,300.0 | 6,218.9 | 72.7 | 19.4 | 61.42 | -731.2 | -101.4 | 1,657.2 | 1,578.9 | 78.33 | 21.157 | |
| 9,400.0 | 6,686.8 | 6,300.0 | 6,218.9 | 73.9 | 19.4 | 61.42 | -731.2 | -101.4 | 1,697.1 | 1,617.7 | 79.45 | 21.362 | |
| 9,448.8 | 6,686.5 | 6,300.0 | 6,218.9 | 75.2 | 19.4 | 61.42 | -731.2 | -101.4 | 1,736.9 | 1,656.3 | 80.55 | 21.562 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-214 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,300.0 | 6,218.9 | 76.5 | 19.4 | 61.42 | -731.2 | -101.4 | 1,779.0 | 1,697.3 | 81.71 | 21.772 | |
| 9,547.2 | 6,685.8 | 6,300.0 | 6,218.9 | 77.7 | 19.4 | 61.42 | -731.2 | -101.4 | 1,818.3 | 1,735.6 | 82.79 | 21.963 | |
| 9,600.0 | 6,685.5 | 6,300.0 | 6,218.9 | 79.0 | 19.4 | 61.42 | -731.2 | -101.4 | 1,862.7 | 1,778.7 | 83.99 | 22.177 | |
| 9,645.6 | 6,685.2 | 6,300.0 | 6,218.9 | 80.2 | 19.4 | 61.42 | -731.2 | -101.4 | 1,901.4 | 1,816.4 | 85.04 | 22.359 | |
| 9,700.0 | 6,684.8 | 6,300.0 | 6,218.9 | 81.6 | 19.4 | 61.42 | -731.2 | -101.4 | 1,947.9 | 1,861.6 | 86.29 | 22.574 | |
| 9,744.1 | 6,684.6 | 6,279.2 | 6,199.0 | 82.8 | 19.3 | 60.43 | -731.2 | -95.4 | 1,985.5 | 1,899.0 | 86.54 | 22.943 | |
| 9,800.0 | 6,684.2 | 6,274.8 | 6,194.7 | 84.2 | 19.3 | 60.22 | -731.2 | -94.2 | 2,033.9 | 1,946.3 | 87.66 | 23.203 | |
| 9,842.5 | 6,683.9 | 6,271.6 | 6,191.7 | 85.3 | 19.3 | 60.07 | -731.2 | -93.4 | 2,070.9 | 1,982.4 | 88.51 | 23.398 | |
| 9,900.0 | 6,683.5 | 6,250.0 | 6,170.7 | 86.8 | 19.2 | 59.05 | -731.2 | -88.0 | 2,121.6 | 2,032.6 | 88.98 | 23.842 | |
| 9,940.9 | 6,683.3 | 6,250.0 | 6,170.7 | 87.9 | 19.2 | 59.05 | -731.2 | -88.0 | 2,157.5 | 2,067.6 | 89.92 | 23.995 | |
| 10,000.0 | 6,682.9 | 6,250.0 | 6,170.7 | 89.5 | 19.2 | 59.05 | -731.2 | -88.0 | 2,209.8 | 2,118.5 | 91.26 | 24.213 | |
| 10,039.3 | 6,682.6 | 6,250.0 | 6,170.7 | 90.5 | 19.2 | 59.05 | -731.2 | -88.0 | 2,244.7 | 2,152.6 | 92.16 | 24.356 | |
| 10,100.0 | 6,682.2 | 6,250.0 | 6,170.7 | 92.1 | 19.2 | 59.05 | -731.2 | -88.0 | 2,298.9 | 2,205.4 | 93.55 | 24.573 | |
| 10,137.8 | 6,682.0 | 6,250.0 | 6,170.7 | 93.1 | 19.2 | 59.05 | -731.2 | -88.0 | 2,332.8 | 2,238.4 | 94.42 | 24.707 | |
| 10,200.0 | 6,681.6 | 6,250.0 | 6,170.7 | 94.8 | 19.2 | 59.05 | -731.2 | -88.0 | 2,388.9 | 2,293.1 | 95.85 | 24.924 | |
| 10,236.2 | 6,681.4 | 6,250.0 | 6,170.7 | 95.7 | 19.2 | 59.05 | -731.2 | -88.0 | 2,421.7 | 2,325.0 | 96.68 | 25.048 | |
| 10,300.0 | 6,680.9 | 6,250.0 | 6,170.7 | 97.4 | 19.2 | 59.05 | -731.2 | -88.0 | 2,479.7 | 2,381.6 | 98.16 | 25.263 | |
| 10,334.6 | 6,680.7 | 6,250.0 | 6,170.7 | 98.3 | 19.2 | 59.05 | -731.2 | -88.0 | 2,511.3 | 2,412.3 | 98.96 | 25.378 | |
| 10,400.0 | 6,680.3 | 6,250.0 | 6,170.7 | 100.1 | 19.2 | 59.05 | -731.2 | -88.0 | 2,571.2 | 2,470.7 | 100.47 | 25.592 | |
| 10,433.0 | 6,680.1 | 6,250.0 | 6,170.7 | 101.0 | 19.2 | 59.05 | -731.2 | -88.0 | 2,601.5 | 2,500.3 | 101.23 | 25.698 | |
| 10,500.0 | 6,679.7 | 6,250.0 | 6,170.7 | 102.8 | 19.2 | 59.05 | -731.2 | -88.0 | 2,663.3 | 2,560.5 | 102.79 | 25.911 | |
| 10,531.5 | 6,679.4 | 6,250.0 | 6,170.7 | 103.6 | 19.2 | 59.05 | -731.2 | -88.0 | 2,692.4 | 2,588.8 | 103.52 | 26.008 | |
| 10,600.0 | 6,679.0 | 6,227.8 | 6,149.1 | 105.4 | 19.2 | 58.02 | -731.2 | -83.2 | 2,755.5 | 2,651.4 | 104.08 | 26.474 | |
| 10,629.9 | 6,678.8 | 6,226.5 | 6,147.8 | 106.2 | 19.2 | 57.96 | -731.2 | -82.9 | 2,783.2 | 2,678.5 | 104.71 | 26.580 | |
| 10,700.0 | 6,678.4 | 6,223.5 | 6,144.8 | 108.1 | 19.2 | 57.82 | -731.2 | -82.3 | 2,848.4 | 2,742.2 | 106.18 | 26.826 | |
| 10,728.3 | 6,678.2 | 6,222.3 | 6,143.6 | 108.9 | 19.2 | 57.77 | -731.2 | -82.1 | 2,874.8 | 2,768.1 | 106.78 | 26.924 | |
| 10,800.0 | 6,677.7 | 6,200.0 | 6,121.7 | 110.8 | 19.1 | 56.75 | -731.2 | -78.1 | 2,942.1 | 2,834.8 | 107.34 | 27.410 | |
| 10,826.7 | 6,677.5 | 6,200.0 | 6,121.7 | 111.5 | 19.1 | 56.75 | -731.2 | -78.1 | 2,967.1 | 2,859.2 | 107.95 | 27.486 | |
| 10,900.0 | 6,677.1 | 6,200.0 | 6,121.7 | 113.5 | 19.1 | 56.75 | -731.2 | -78.1 | 3,035.8 | 2,926.2 | 109.62 | 27.693 | |
| 10,925.2 | 6,676.9 | 6,200.0 | 6,121.7 | 114.2 | 19.1 | 56.75 | -731.2 | -78.1 | 3,059.4 | 2,949.2 | 110.20 | 27.762 | |
| 11,000.0 | 6,676.4 | 6,200.0 | 6,121.7 | 116.2 | 19.1 | 56.75 | -731.2 | -78.1 | 3,129.8 | 3,017.9 | 111.92 | 27.966 | |
| 11,023.6 | 6,676.3 | 6,200.0 | 6,121.7 | 116.8 | 19.1 | 56.75 | -731.2 | -78.1 | 3,152.1 | 3,039.6 | 112.46 | 28.029 | |
| 11,100.0 | 6,675.8 | 6,200.0 | 6,121.7 | 118.9 | 19.1 | 56.75 | -731.2 | -78.1 | 3,224.3 | 3,110.0 | 114.21 | 28.230 | |
| 11,122.0 | 6,675.6 | 6,200.0 | 6,121.7 | 119.5 | 19.1 | 56.75 | -731.2 | -78.1 | 3,245.1 | 3,130.4 | 114.72 | 28.287 | |
| 11,200.0 | 6,675.1 | 6,200.0 | 6,121.7 | 121.6 | 19.1 | 56.75 | -731.2 | -78.1 | 3,319.0 | 3,202.5 | 116.51 | 28.486 | |
| 11,220.4 | 6,675.0 | 6,200.0 | 6,121.7 | 122.2 | 19.1 | 56.75 | -731.2 | -78.1 | 3,338.4 | 3,221.4 | 116.99 | 28.537 | |
| 11,300.0 | 6,674.5 | 6,200.0 | 6,121.7 | 124.3 | 19.1 | 56.75 | -731.2 | -78.1 | 3,414.0 | 3,295.2 | 118.82 | 28.733 | |
| 11,318.9 | 6,674.3 | 6,200.0 | 6,121.7 | 124.9 | 19.1 | 56.75 | -731.2 | -78.1 | 3,432.0 | 3,312.8 | 119.25 | 28.779 | |
| 11,400.0 | 6,673.8 | 6,200.0 | 6,121.7 | 127.1 | 19.1 | 56.75 | -731.2 | -78.1 | 3,509.4 | 3,388.2 | 121.13 | 28.973 | |
| 11,417.3 | 6,673.7 | 6,200.0 | 6,121.7 | 127.5 | 19.1 | 56.75 | -731.2 | -78.1 | 3,525.9 | 3,404.4 | 121.52 | 29.014 | |
| 11,500.0 | 6,673.2 | 6,200.0 | 6,121.7 | 129.8 | 19.1 | 56.75 | -731.2 | -78.1 | 3,604.9 | 3,481.5 | 123.44 | 29.205 | |
| 11,515.7 | 6,673.1 | 6,200.0 | 6,121.7 | 130.2 | 19.1 | 56.75 | -731.2 | -78.1 | 3,620.0 | 3,496.2 | 123.80 | 29.241 | |
| 11,600.0 | 6,672.5 | 6,200.0 | 6,121.7 | 132.5 | 19.1 | 56.75 | -731.2 | -78.1 | 3,700.7 | 3,575.0 | 125.75 | 29.430 | |
| 11,614.1 | 6,672.4 | 6,200.0 | 6,121.7 | 132.9 | 19.1 | 56.75 | -731.2 | -78.1 | 3,714.3 | 3,588.2 | 126.08 | 29.461 | |
| 11,700.0 | 6,671.9 | 6,200.0 | 6,121.7 | 135.3 | 19.1 | 56.75 | -731.2 | -78.1 | 3,796.8 | 3,668.7 | 128.07 | 29.647 | |
| 11,712.6 | 6,671.8 | 6,200.0 | 6,121.7 | 135.6 | 19.1 | 56.75 | -731.2 | -78.1 | 3,808.9 | 3,680.5 | 128.36 | 29.674 | |
| 11,800.0 | 6,671.2 | 6,200.0 | 6,121.7 | 138.0 | 19.1 | 56.75 | -731.2 | -78.1 | 3,893.0 | 3,762.6 | 130.38 | 29.858 | |
| 11,811.0 | 6,671.1 | 6,200.0 | 6,121.7 | 138.3 | 19.1 | 56.75 | -731.2 | -78.1 | 3,903.6 | 3,772.9 | 130.64 | 29.881 | |
| 11,900.0 | 6,670.6 | 6,200.0 | 6,121.7 | 140.7 | 19.1 | 56.75 | -731.2 | -78.1 | 3,989.4 | 3,856.7 | 132.71 | 30.062 | |
| 11,909.4 | 6,670.5 | 6,200.0 | 6,121.7 | 141.0 | 19.1 | 56.75 | -731.2 | -78.1 | 3,998.5 | 3,865.6 | 132.92 | 30.081 | |
| 11,987.2 | 6,670.0 | 6,200.0 | 6,121.7 | 143.1 | 19.1 | 56.75 | -731.2 | -78.1 | 4,073.6 | 3,938.9 | 134.73 | 30.235 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS — **Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD — **Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.57 | 0.3 | 45.1 | 45.1 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.57 | 0.3 | 45.1 | 45.1 | 44.9 | 0.19 | 234.713 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.57 | 0.3 | 45.1 | 45.1 | 44.9 | 0.20 | 230.740 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.57 | 0.3 | 45.1 | 45.1 | 44.5 | 0.63 | 71.515 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.57 | 0.3 | 45.1 | 45.1 | 44.5 | 0.65 | 69.946 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.57 | 0.3 | 45.1 | 45.1 | 44.0 | 1.07 | 42.036 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.57 | 0.3 | 45.1 | 45.1 | 44.0 | 1.09 | 41.221 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.57 | 0.3 | 45.1 | 45.1 | 43.6 | 1.52 | 29.766 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.57 | 0.3 | 45.1 | 45.1 | 43.6 | 1.54 | 29.220 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.57 | 0.3 | 45.1 | 45.1 | 43.2 | 1.96 | 23.041 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.57 | 0.3 | 45.1 | 45.1 | 43.1 | 1.99 | 22.632 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.57 | 0.3 | 45.1 | 45.1 | 42.7 | 2.40 | 18.794 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.57 | 0.3 | 45.1 | 45.1 | 42.7 | 2.44 | 18.468 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.57 | 0.3 | 45.1 | 45.1 | 42.3 | 2.84 | 15.870 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.57 | 0.3 | 45.1 | 45.1 | 42.2 | 2.89 | 15.598 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.57 | 0.3 | 45.1 | 45.1 | 41.8 | 3.29 | 13.733 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.57 | 0.3 | 45.1 | 45.1 | 41.8 | 3.34 | 13.500 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.57 | 0.3 | 45.1 | 45.1 | 41.4 | 3.73 | 12.103 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.57 | 0.3 | 45.1 | 45.1 | 41.3 | 3.79 | 11.899 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.57 | 0.3 | 45.1 | 45.1 | 40.9 | 4.17 | 10.819 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.57 | 0.3 | 45.1 | 45.1 | 40.9 | 4.24 | 10.638 | CC, ES |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.16 | 0.3 | 45.1 | 46.3 | 41.7 | 4.60 | 10.062 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.23 | 0.3 | 45.1 | 46.9 | 42.2 | 4.68 | 10.017 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.67 | 0.3 | 45.1 | 50.8 | 45.8 | 5.02 | 10.119 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.80 | 0.3 | 45.1 | 52.1 | 47.0 | 5.10 | 10.207 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 175.37 | 0.3 | 45.1 | 58.7 | 53.3 | 5.44 | 10.794 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 175.53 | 0.3 | 45.1 | 60.8 | 55.2 | 5.52 | 11.000 | |
| 1,377.9 | 1,376.9 | 1,378.6 | 1,378.6 | 3.0 | 3.0 | 176.48 | -0.1 | 44.1 | 69.0 | 63.1 | 5.84 | 11.814 | |
| 1,400.0 | 1,398.7 | 1,401.0 | 1,401.0 | 3.0 | 3.0 | 176.85 | -0.3 | 43.5 | 71.3 | 65.4 | 5.92 | 12.038 | |
| 1,476.4 | 1,474.2 | 1,478.8 | 1,478.7 | 3.2 | 3.2 | 178.44 | -1.7 | 39.9 | 79.6 | 73.4 | 6.22 | 12.802 | |
| 1,500.0 | 1,497.5 | 1,502.8 | 1,502.7 | 3.3 | 3.2 | 179.01 | -2.3 | 38.5 | 82.2 | 75.9 | 6.31 | 13.034 | |
| 1,574.8 | 1,571.0 | 1,579.2 | 1,578.7 | 3.5 | 3.4 | -179.03 | -4.7 | 32.5 | 90.6 | 84.0 | 6.60 | 13.733 | |
| 1,600.0 | 1,595.6 | 1,604.9 | 1,604.3 | 3.6 | 3.4 | -178.31 | -5.7 | 30.1 | 93.5 | 86.8 | 6.70 | 13.966 | |
| 1,673.2 | 1,667.0 | 1,679.7 | 1,678.6 | 3.9 | 3.6 | -176.14 | -9.0 | 21.8 | 102.2 | 95.2 | 6.99 | 14.611 | |
| 1,700.0 | 1,693.1 | 1,707.1 | 1,705.8 | 4.0 | 3.6 | -175.31 | -10.4 | 18.3 | 105.4 | 98.3 | 7.10 | 14.846 | |
| 1,771.6 | 1,762.4 | 1,780.4 | 1,778.2 | 4.3 | 3.8 | -173.04 | -14.6 | 7.8 | 114.4 | 107.0 | 7.41 | 15.437 | |
| 1,800.0 | 1,789.6 | 1,809.5 | 1,806.8 | 4.4 | 3.9 | -172.13 | -16.4 | 3.2 | 118.1 | 110.5 | 7.54 | 15.669 | |
| 1,870.1 | 1,856.8 | 1,881.3 | 1,877.3 | 4.7 | 4.1 | -169.84 | -21.5 | -9.5 | 127.4 | 119.6 | 7.87 | 16.195 | |
| 1,900.0 | 1,885.3 | 1,911.9 | 1,907.3 | 4.9 | 4.2 | -168.85 | -23.8 | -15.3 | 131.6 | 123.6 | 8.02 | 16.414 | |
| 1,968.5 | 1,950.2 | 1,982.1 | 1,975.7 | 5.3 | 4.5 | -166.60 | -29.6 | -29.9 | 141.4 | 133.0 | 8.38 | 16.862 | |
| 2,000.0 | 1,979.8 | 2,014.4 | 2,007.0 | 5.5 | 4.6 | -165.57 | -32.5 | -37.2 | 146.1 | 137.5 | 8.57 | 17.050 | |
| 2,044.9 | 2,021.9 | 2,060.5 | 2,051.6 | 5.7 | 4.8 | -164.11 | -36.9 | -48.1 | 152.9 | 144.1 | 8.85 | 17.288 | |
| 2,066.9 | 2,042.5 | 2,083.0 | 2,073.3 | 5.9 | 4.9 | -163.41 | -39.1 | -53.6 | 156.3 | 147.3 | 9.00 | 17.361 | |
| 2,100.0 | 2,073.4 | 2,117.0 | 2,106.0 | 6.1 | 5.0 | -162.32 | -42.6 | -62.3 | 161.1 | 151.9 | 9.25 | 17.415 | |
| 2,165.3 | 2,134.4 | 2,184.2 | 2,170.2 | 6.5 | 5.3 | -160.08 | -49.9 | -80.6 | 170.1 | 160.3 | 9.79 | 17.375 | |
| 2,200.0 | 2,166.8 | 2,219.8 | 2,204.1 | 6.8 | 5.5 | -158.84 | -54.0 | -90.8 | 174.5 | 164.4 | 10.10 | 17.286 | |
| 2,263.8 | 2,226.4 | 2,285.4 | 2,266.1 | 7.2 | 5.8 | -156.43 | -61.9 | -110.7 | 182.1 | 171.4 | 10.72 | 16.987 | |
| 2,300.0 | 2,260.2 | 2,322.7 | 2,301.1 | 7.4 | 6.1 | -154.99 | -66.7 | -122.6 | 186.1 | 175.0 | 11.11 | 16.754 | |
| 2,362.2 | 2,318.3 | 2,386.6 | 2,360.7 | 7.9 | 6.4 | -152.41 | -75.2 | -144.0 | 192.7 | 180.8 | 11.84 | 16.276 | |
| 2,400.0 | 2,353.6 | 2,425.3 | 2,396.6 | 8.1 | 6.7 | -150.76 | -80.6 | -157.5 | 196.4 | 184.1 | 12.32 | 15.943 | |
| 2,460.6 | 2,410.3 | 2,487.4 | 2,453.7 | 8.6 | 7.1 | -148.00 | -89.6 | -180.1 | 202.2 | 189.0 | 13.16 | 15.367 | |
| 2,500.0 | 2,447.0 | 2,527.5 | 2,490.3 | 8.9 | 7.4 | -146.13 | -95.7 | -195.4 | 205.8 | 192.0 | 13.74 | 14.971 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,587.1 | 2,544.2 | 9.3 | 7.9 | -143.23 | -105.1 | -218.9 | 211.1 | 196.4 | 14.68 | 14.377 | |
| 2,600.0 | 2,540.5 | 2,627.2 | 2,580.4 | 9.6 | 8.2 | -141.31 | -111.5 | -234.9 | 215.0 | 199.6 | 15.35 | 14.001 | |
| 2,657.5 | 2,594.2 | 2,683.5 | 2,631.2 | 10.0 | 8.7 | -138.72 | -120.5 | -257.4 | 220.8 | 204.5 | 16.32 | 13.531 | |
| 2,700.0 | 2,633.9 | 2,725.1 | 2,668.9 | 10.3 | 9.0 | -136.89 | -127.1 | -274.0 | 225.4 | 208.4 | 17.05 | 13.224 | |
| 2,755.9 | 2,686.1 | 2,779.9 | 2,718.3 | 10.7 | 9.5 | -134.60 | -135.9 | -295.9 | 231.8 | 213.8 | 18.02 | 12.867 | |
| 2,800.0 | 2,727.3 | 2,823.1 | 2,757.3 | 11.0 | 9.8 | -132.87 | -142.8 | -313.2 | 237.1 | 218.3 | 18.79 | 12.619 | |
| 2,854.3 | 2,778.1 | 2,876.3 | 2,805.3 | 11.4 | 10.3 | -130.86 | -151.3 | -334.5 | 243.9 | 224.2 | 19.75 | 12.351 | |
| 2,900.0 | 2,820.7 | 2,921.1 | 2,845.7 | 11.8 | 10.7 | -129.24 | -158.4 | -352.3 | 249.9 | 229.3 | 20.56 | 12.155 | |
| 2,952.7 | 2,870.0 | 2,972.8 | 2,892.4 | 12.2 | 11.1 | -127.47 | -166.7 | -373.0 | 257.0 | 235.5 | 21.49 | 11.956 | |
| 3,000.0 | 2,914.2 | 3,019.0 | 2,934.2 | 12.5 | 11.5 | -125.97 | -174.0 | -391.5 | 263.5 | 241.2 | 22.33 | 11.802 | |
| 3,051.2 | 2,962.0 | 3,069.2 | 2,979.4 | 12.9 | 11.9 | -124.42 | -182.0 | -411.5 | 270.8 | 247.6 | 23.24 | 11.655 | |
| 3,100.0 | 3,007.6 | 3,117.0 | 3,022.6 | 13.3 | 12.4 | -123.02 | -189.7 | -430.6 | 278.0 | 253.9 | 24.10 | 11.535 | |
| 3,149.6 | 3,053.9 | 3,165.6 | 3,066.5 | 13.6 | 12.8 | -121.66 | -197.4 | -450.0 | 285.4 | 260.4 | 24.97 | 11.428 | |
| 3,200.0 | 3,101.0 | 3,215.0 | 3,111.0 | 14.0 | 13.2 | -120.36 | -205.3 | -469.8 | 293.1 | 267.2 | 25.86 | 11.335 | |
| 3,248.0 | 3,145.9 | 3,262.0 | 3,153.5 | 14.4 | 13.6 | -119.18 | -212.8 | -488.6 | 300.5 | 273.8 | 26.70 | 11.258 | |
| 3,300.0 | 3,194.4 | 3,312.9 | 3,199.5 | 14.8 | 14.1 | -117.96 | -221.0 | -508.9 | 308.8 | 281.2 | 27.60 | 11.187 | |
| 3,346.4 | 3,237.8 | 3,358.4 | 3,240.5 | 15.1 | 14.5 | -116.93 | -228.2 | -527.1 | 316.2 | 287.8 | 28.40 | 11.133 | |
| 3,400.0 | 3,287.8 | 3,410.9 | 3,287.9 | 15.5 | 15.0 | -115.80 | -236.6 | -548.1 | 324.9 | 295.6 | 29.32 | 11.080 | |
| 3,444.9 | 3,329.8 | 3,454.9 | 3,327.6 | 15.9 | 15.4 | -114.89 | -243.6 | -565.6 | 332.3 | 302.2 | 30.09 | 11.042 | |
| 3,500.0 | 3,381.3 | 3,508.9 | 3,376.3 | 16.3 | 15.8 | -113.84 | -252.2 | -587.2 | 341.5 | 310.5 | 31.03 | 11.004 | |
| 3,543.3 | 3,421.7 | 3,551.3 | 3,414.6 | 16.6 | 16.2 | -113.04 | -259.0 | -604.2 | 348.8 | 317.0 | 31.77 | 10.979 | |
| 3,600.0 | 3,474.7 | 3,606.8 | 3,464.8 | 17.0 | 16.7 | -112.06 | -267.9 | -626.4 | 358.4 | 325.7 | 32.72 | 10.952 | |
| 3,641.7 | 3,513.7 | 3,647.7 | 3,501.7 | 17.3 | 17.1 | -111.36 | -274.4 | -642.7 | 365.6 | 332.1 | 33.43 | 10.936 | |
| 3,700.0 | 3,568.1 | 3,704.8 | 3,553.2 | 17.8 | 17.6 | -110.44 | -283.5 | -665.5 | 375.7 | 341.2 | 34.40 | 10.919 | |
| 3,740.1 | 3,605.6 | 3,744.1 | 3,588.7 | 18.1 | 18.0 | -109.83 | -289.8 | -681.2 | 382.7 | 347.6 | 35.07 | 10.911 | |
| 3,800.0 | 3,661.5 | 3,802.8 | 3,641.6 | 18.5 | 18.5 | -108.96 | -299.1 | -704.6 | 393.2 | 357.1 | 36.07 | 10.901 | |
| 3,838.6 | 3,697.6 | 3,840.6 | 3,675.7 | 18.8 | 18.8 | -108.42 | -305.2 | -719.7 | 400.0 | 363.3 | 36.70 | 10.898 | |
| 3,900.0 | 3,754.9 | 3,900.7 | 3,730.1 | 19.3 | 19.4 | -107.61 | -314.8 | -743.8 | 410.9 | 373.2 | 37.72 | 10.895 | |
| 3,937.0 | 3,789.5 | 3,937.0 | 3,762.8 | 19.6 | 19.7 | -107.14 | -320.6 | -758.3 | 417.5 | 379.2 | 38.32 | 10.895 | |
| 4,000.0 | 3,848.4 | 3,998.7 | 3,818.5 | 20.1 | 20.3 | -106.37 | -330.4 | -782.9 | 428.8 | 389.5 | 39.35 | 10.897 | |
| 4,035.4 | 3,881.5 | 4,033.4 | 3,849.8 | 20.3 | 20.6 | -105.95 | -335.9 | -796.8 | 435.2 | 395.3 | 39.93 | 10.900 | |
| 4,100.0 | 3,941.8 | 4,096.7 | 3,906.9 | 20.8 | 21.2 | -105.23 | -346.0 | -822.1 | 447.0 | 406.0 | 40.98 | 10.907 | |
| 4,133.8 | 3,973.4 | 4,129.8 | 3,936.9 | 21.1 | 21.5 | -104.86 | -351.3 | -835.3 | 453.1 | 411.6 | 41.53 | 10.911 | |
| 4,200.0 | 4,035.2 | 4,194.6 | 3,995.4 | 21.6 | 22.1 | -104.17 | -361.7 | -861.2 | 465.3 | 422.7 | 42.60 | 10.922 | |
| 4,232.3 | 4,065.4 | 4,226.2 | 4,023.9 | 21.8 | 22.4 | -103.85 | -366.7 | -873.9 | 471.2 | 428.1 | 43.12 | 10.928 | |
| 4,300.0 | 4,128.6 | 4,292.6 | 4,083.8 | 22.3 | 23.0 | -103.20 | -377.3 | -900.4 | 483.7 | 439.5 | 44.21 | 10.941 | |
| 4,330.7 | 4,157.3 | 4,322.7 | 4,110.9 | 22.6 | 23.2 | -102.92 | -382.1 | -912.4 | 489.4 | 444.7 | 44.70 | 10.948 | |
| 4,400.0 | 4,222.0 | 4,390.6 | 4,172.2 | 23.1 | 23.9 | -102.30 | -392.9 | -939.5 | 502.2 | 456.4 | 45.81 | 10.964 | |
| 4,429.1 | 4,249.3 | 4,419.1 | 4,198.0 | 23.3 | 24.1 | -102.05 | -397.5 | -950.9 | 507.7 | 461.4 | 46.28 | 10.971 | |
| 4,500.0 | 4,315.5 | 4,488.5 | 4,260.7 | 23.9 | 24.8 | -101.46 | -408.6 | -978.7 | 520.9 | 473.5 | 47.40 | 10.989 | |
| 4,527.5 | 4,341.2 | 4,515.5 | 4,285.0 | 24.1 | 25.0 | -101.24 | -412.9 | -989.5 | 526.1 | 478.2 | 47.84 | 10.996 | |
| 4,600.0 | 4,408.9 | 4,586.5 | 4,349.1 | 24.6 | 25.7 | -100.68 | -424.2 | -1,017.8 | 539.7 | 490.7 | 48.99 | 11.015 | |
| 4,626.0 | 4,433.2 | 4,611.9 | 4,372.1 | 24.8 | 25.9 | -100.49 | -428.3 | -1,028.0 | 544.6 | 495.2 | 49.40 | 11.022 | |
| 4,700.0 | 4,502.3 | 4,684.5 | 4,437.5 | 25.4 | 26.6 | -99.95 | -439.9 | -1,057.0 | 558.5 | 508.0 | 50.58 | 11.043 | |
| 4,724.4 | 4,525.1 | 4,708.4 | 4,459.1 | 25.6 | 26.8 | -99.78 | -443.7 | -1,066.5 | 563.1 | 512.2 | 50.96 | 11.050 | |
| 4,800.0 | 4,595.7 | 4,782.4 | 4,526.0 | 26.2 | 27.5 | -99.27 | -455.5 | -1,096.1 | 577.5 | 525.3 | 52.15 | 11.073 | |
| 4,822.8 | 4,617.1 | 4,804.8 | 4,546.1 | 26.3 | 27.7 | -99.12 | -459.1 | -1,105.0 | 581.8 | 529.3 | 52.51 | 11.079 | |
| 4,900.0 | 4,689.2 | 4,880.4 | 4,614.4 | 26.9 | 28.4 | -98.64 | -471.1 | -1,135.3 | 596.5 | 542.8 | 53.73 | 11.102 | |
| 4,921.2 | 4,709.0 | 4,901.2 | 4,633.2 | 27.1 | 28.6 | -98.50 | -474.5 | -1,143.6 | 600.5 | 546.5 | 54.06 | 11.109 | |
| 5,000.0 | 4,782.6 | 4,978.4 | 4,702.8 | 27.7 | 29.3 | -98.04 | -486.8 | -1,174.4 | 615.6 | 560.3 | 55.29 | 11.132 | |
| 5,019.7 | 4,801.0 | 4,997.6 | 4,720.2 | 27.8 | 29.4 | -97.92 | -489.8 | -1,182.1 | 619.3 | 563.7 | 55.60 | 11.138 | |
| 5,100.0 | 4,876.0 | 5,076.3 | 4,791.3 | 28.4 | 30.2 | -97.48 | -502.4 | -1,213.5 | 634.7 | 577.8 | 56.86 | 11.163 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 5,095.0 | 4,808.1 | 28.6 | 30.3 | -97.37 | -505.4 | -1,221.0 | 638.2 | 581.0 | 57.14 | 11.169 | |
| 5,159.9 | 4,932.0 | 5,139.1 | 4,848.2 | 28.9 | 30.6 | -97.18 | -512.2 | -1,238.2 | 646.0 | 588.3 | 57.73 | 11.190 | |
| 5,200.0 | 4,969.5 | 5,181.5 | 4,886.9 | 29.2 | 30.9 | -97.18 | -518.6 | -1,254.1 | 653.3 | 595.1 | 58.29 | 11.209 | |
| 5,216.5 | 4,985.1 | 5,199.0 | 4,903.0 | 29.3 | 31.1 | -97.17 | -521.2 | -1,260.6 | 656.3 | 597.8 | 58.50 | 11.219 | |
| 5,300.0 | 5,064.0 | 5,287.8 | 4,985.2 | 29.7 | 31.6 | -97.15 | -533.6 | -1,291.8 | 670.5 | 611.0 | 59.51 | 11.267 | |
| 5,314.9 | 5,078.2 | 5,303.8 | 5,000.1 | 29.8 | 31.7 | -97.15 | -535.8 | -1,297.1 | 672.9 | 613.3 | 59.68 | 11.276 | |
| 5,400.0 | 5,159.6 | 5,394.8 | 5,085.5 | 30.2 | 32.3 | -97.11 | -547.4 | -1,326.2 | 686.1 | 625.5 | 60.62 | 11.317 | |
| 5,413.4 | 5,172.4 | 5,409.1 | 5,099.1 | 30.3 | 32.3 | -97.11 | -549.1 | -1,330.6 | 688.1 | 627.3 | 60.76 | 11.324 | |
| 5,500.0 | 5,256.1 | 5,502.3 | 5,187.7 | 30.7 | 32.8 | -97.06 | -559.8 | -1,357.3 | 700.1 | 638.4 | 61.63 | 11.359 | |
| 5,511.8 | 5,267.6 | 5,515.0 | 5,199.9 | 30.7 | 32.9 | -97.05 | -561.2 | -1,360.8 | 701.6 | 639.9 | 61.73 | 11.365 | |
| 5,600.0 | 5,353.5 | 5,610.4 | 5,291.6 | 31.1 | 33.4 | -96.99 | -570.9 | -1,385.0 | 712.4 | 649.9 | 62.52 | 11.395 | |
| 5,610.2 | 5,363.5 | 5,621.5 | 5,302.3 | 31.1 | 33.4 | -96.98 | -571.9 | -1,387.6 | 713.5 | 650.9 | 62.60 | 11.399 | |
| 5,700.0 | 5,451.6 | 5,719.1 | 5,397.1 | 31.4 | 33.8 | -96.90 | -580.5 | -1,409.1 | 723.0 | 659.7 | 63.29 | 11.423 | |
| 5,708.6 | 5,460.2 | 5,728.5 | 5,406.3 | 31.4 | 33.8 | -96.89 | -581.3 | -1,411.0 | 723.8 | 660.5 | 63.35 | 11.426 | |
| 5,800.0 | 5,550.4 | 5,828.1 | 5,503.9 | 31.7 | 34.2 | -96.79 | -588.7 | -1,429.5 | 732.0 | 668.0 | 63.95 | 11.445 | |
| 5,807.1 | 5,557.4 | 5,835.9 | 5,511.5 | 31.7 | 34.2 | -96.78 | -589.2 | -1,430.9 | 732.5 | 668.5 | 63.99 | 11.447 | |
| 5,900.0 | 5,649.6 | 5,937.6 | 5,611.9 | 31.9 | 34.5 | -96.67 | -595.4 | -1,446.3 | 739.2 | 674.7 | 64.50 | 11.460 | |
| 5,905.5 | 5,655.1 | 5,943.7 | 5,617.9 | 31.9 | 34.5 | -96.66 | -595.7 | -1,447.1 | 739.5 | 675.0 | 64.53 | 11.461 | |
| 6,000.0 | 5,749.2 | 6,047.5 | 5,720.8 | 32.1 | 34.8 | -96.52 | -600.5 | -1,459.2 | 744.7 | 679.7 | 64.94 | 11.467 | |
| 6,003.9 | 5,753.1 | 6,051.8 | 5,725.1 | 32.1 | 34.8 | -96.51 | -600.7 | -1,459.6 | 744.9 | 679.9 | 64.95 | 11.467 | |
| 6,100.0 | 5,849.1 | 6,157.6 | 5,830.5 | 32.3 | 35.0 | -96.35 | -604.1 | -1,468.2 | 748.4 | 683.2 | 65.27 | 11.467 | |
| 6,102.3 | 5,851.4 | 6,160.2 | 5,833.1 | 32.3 | 35.0 | -96.34 | -604.2 | -1,468.4 | 748.5 | 683.2 | 65.28 | 11.467 | |
| 6,200.8 | 5,949.8 | 6,268.7 | 5,941.6 | 32.4 | 35.1 | -96.15 | -606.2 | -1,473.3 | 750.5 | 685.0 | 65.50 | 11.458 | |
| 6,204.9 | 5,953.9 | 6,273.3 | 5,946.1 | 32.4 | 35.2 | 179.42 | -606.2 | -1,473.5 | 750.5 | 714.2 | 36.26 | 20.699 | |
| 6,234.9 | 5,983.9 | 6,306.4 | 5,979.2 | 32.4 | 35.2 | 179.47 | -606.5 | -1,474.2 | 750.8 | 714.4 | 36.36 | 20.647 | |
| 6,250.0 | 5,999.0 | 6,323.1 | 5,995.9 | 32.4 | 35.2 | 89.50 | -606.6 | -1,474.4 | 750.8 | 685.2 | 65.58 | 11.449 | |
| 6,299.2 | 6,048.2 | 6,375.4 | 6,048.2 | 32.4 | 35.2 | 89.72 | -606.7 | -1,474.6 | 750.9 | 685.3 | 65.60 | 11.447 | |
| 6,300.0 | 6,048.9 | 6,376.2 | 6,048.9 | 32.4 | 35.2 | 89.73 | -606.7 | -1,474.6 | 750.9 | 685.3 | 65.60 | 11.447 | |
| 6,334.7 | 6,083.4 | 6,410.6 | 6,083.4 | 32.4 | 35.3 | 90.00 | -606.7 | -1,474.2 | 750.9 | 685.3 | 65.55 | 11.454 | |
| 6,350.0 | 6,098.5 | 6,425.9 | 6,098.6 | 32.4 | 35.3 | 90.12 | -606.7 | -1,473.5 | 750.9 | 685.3 | 65.53 | 11.459 | |
| 6,397.6 | 6,145.3 | 6,473.5 | 6,146.1 | 32.3 | 35.2 | 90.50 | -606.7 | -1,469.2 | 750.9 | 685.5 | 65.39 | 11.482 | |
| 6,400.0 | 6,147.6 | 6,475.9 | 6,148.4 | 32.3 | 35.2 | 90.52 | -606.7 | -1,468.9 | 750.9 | 685.5 | 65.39 | 11.484 | |
| 6,450.0 | 6,195.8 | 6,526.3 | 6,198.2 | 32.2 | 35.2 | 90.92 | -606.7 | -1,460.9 | 751.0 | 685.8 | 65.18 | 11.521 | |
| 6,496.0 | 6,239.3 | 6,573.0 | 6,243.7 | 32.1 | 35.1 | 91.28 | -606.7 | -1,450.3 | 751.1 | 686.1 | 64.94 | 11.565 | |
| 6,500.0 | 6,243.0 | 6,577.0 | 6,247.6 | 32.1 | 35.1 | 91.31 | -606.7 | -1,449.3 | 751.1 | 686.1 | 64.92 | 11.568 | |
| 6,550.0 | 6,289.0 | 6,628.2 | 6,296.4 | 32.0 | 35.0 | 91.70 | -606.7 | -1,434.0 | 751.2 | 686.6 | 64.62 | 11.624 | |
| 6,594.5 | 6,328.6 | 6,674.0 | 6,339.1 | 31.8 | 34.9 | 92.04 | -606.7 | -1,417.4 | 751.3 | 687.0 | 64.33 | 11.680 | |
| 6,600.0 | 6,333.4 | 6,679.7 | 6,344.4 | 31.8 | 34.9 | 92.08 | -606.7 | -1,415.2 | 751.4 | 687.1 | 64.29 | 11.687 | |
| 6,650.0 | 6,376.2 | 6,731.7 | 6,391.2 | 31.7 | 34.7 | 92.46 | -606.7 | -1,392.8 | 751.6 | 687.6 | 63.95 | 11.753 | |
| 6,692.9 | 6,411.3 | 6,776.5 | 6,430.3 | 31.6 | 34.6 | 92.77 | -606.7 | -1,370.7 | 751.7 | 688.1 | 63.65 | 11.810 | |
| 6,700.0 | 6,417.0 | 6,784.0 | 6,436.6 | 31.5 | 34.6 | 92.82 | -606.7 | -1,366.8 | 751.8 | 688.2 | 63.60 | 11.820 | |
| 6,750.0 | 6,455.7 | 6,836.7 | 6,480.3 | 31.4 | 34.4 | 93.17 | -606.7 | -1,337.4 | 752.0 | 688.7 | 63.28 | 11.885 | |
| 6,791.3 | 6,486.0 | 6,880.5 | 6,514.9 | 31.3 | 34.3 | 93.45 | -606.7 | -1,310.5 | 752.2 | 689.2 | 63.03 | 11.934 | |
| 6,800.0 | 6,492.2 | 6,889.7 | 6,522.0 | 31.3 | 34.3 | 93.50 | -606.7 | -1,304.6 | 752.3 | 689.3 | 62.98 | 11.945 | |
| 6,850.0 | 6,526.1 | 6,943.2 | 6,561.4 | 31.2 | 34.1 | 93.82 | -606.7 | -1,268.6 | 752.5 | 689.8 | 62.74 | 11.996 | |
| 6,889.7 | 6,551.2 | 6,985.9 | 6,591.0 | 31.2 | 34.1 | 94.06 | -606.7 | -1,237.7 | 752.8 | 690.2 | 62.59 | 12.026 | |
| 6,900.0 | 6,557.4 | 6,996.9 | 6,598.3 | 31.2 | 34.0 | 94.12 | -606.7 | -1,229.4 | 752.8 | 690.3 | 62.56 | 12.034 | |
| 6,950.0 | 6,586.0 | 7,051.0 | 6,632.3 | 31.1 | 33.9 | 94.40 | -606.7 | -1,187.4 | 753.1 | 690.6 | 62.46 | 12.057 | |
| 6,988.2 | 6,605.8 | 7,092.5 | 6,656.2 | 31.2 | 33.9 | 94.59 | -606.7 | -1,153.4 | 753.3 | 690.8 | 62.46 | 12.060 | |
| 7,000.0 | 6,611.5 | 7,105.4 | 6,663.2 | 31.2 | 33.9 | 94.65 | -606.7 | -1,142.6 | 753.4 | 690.9 | 62.47 | 12.059 | |
| 7,050.0 | 6,634.1 | 7,160.1 | 6,690.8 | 31.2 | 33.9 | 94.88 | -606.7 | -1,095.4 | 753.6 | 691.0 | 62.59 | 12.041 | |
| 7,086.6 | 6,648.6 | 7,200.4 | 6,708.7 | 31.3 | 33.9 | 95.04 | -606.7 | -1,059.4 | 753.8 | 691.0 | 62.75 | 12.012 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,100.0 | 6,653.4 | 7,215.1 | 6,714.7 | 31.4 | 33.9 | 95.09 | -606.7 | -1,045.9 | 753.8 | 691.0 | 62.83 | 11.999 | |
| 7,150.0 | 6,669.5 | 7,270.3 | 6,734.9 | 31.6 | 34.0 | 95.27 | -606.7 | -994.6 | 754.1 | 690.9 | 63.19 | 11.933 | |
| 7,185.0 | 6,678.8 | 7,309.1 | 6,746.7 | 31.7 | 34.1 | 95.38 | -606.7 | -957.6 | 754.2 | 690.7 | 63.52 | 11.872 | |
| 7,200.0 | 6,682.3 | 7,325.7 | 6,751.2 | 31.8 | 34.2 | 95.42 | -606.7 | -941.6 | 754.2 | 690.6 | 63.68 | 11.844 | |
| 7,250.0 | 6,691.6 | 7,381.3 | 6,763.3 | 32.1 | 34.3 | 95.54 | -606.7 | -887.4 | 754.4 | 690.1 | 64.29 | 11.734 | |
| 7,283.4 | 6,696.0 | 7,418.5 | 6,769.0 | 32.3 | 34.5 | 95.60 | -606.7 | -850.6 | 754.5 | 689.7 | 64.77 | 11.648 | |
| 7,300.0 | 6,697.5 | 7,437.0 | 6,771.2 | 32.4 | 34.6 | 95.63 | -606.7 | -832.3 | 754.5 | 689.5 | 65.02 | 11.604 | |
| 7,350.0 | 6,699.9 | 7,492.8 | 6,774.8 | 32.8 | 34.9 | 95.69 | -606.7 | -776.6 | 754.6 | 688.7 | 65.85 | 11.459 | |
| 7,364.4 | 6,700.0 | 7,508.8 | 6,775.0 | 32.9 | 35.0 | 95.70 | -606.7 | -760.6 | 754.6 | 688.5 | 66.10 | 11.416 | |
| 7,381.9 | 6,699.9 | 7,527.0 | 6,774.9 | 33.1 | 35.1 | 95.71 | -606.7 | -742.4 | 754.6 | 688.2 | 66.41 | 11.363 | |
| 7,400.0 | 6,699.8 | 7,545.1 | 6,774.8 | 33.2 | 35.2 | 95.71 | -606.7 | -724.3 | 754.6 | 687.9 | 66.73 | 11.309 | |
| 7,480.3 | 6,699.2 | 7,625.4 | 6,774.4 | 34.0 | 35.9 | 95.72 | -606.7 | -644.0 | 754.6 | 686.3 | 68.29 | 11.049 | |
| 7,500.0 | 6,699.1 | 7,645.1 | 6,774.3 | 34.2 | 36.0 | 95.72 | -606.7 | -624.3 | 754.6 | 685.9 | 68.70 | 10.983 | |
| 7,578.7 | 6,698.6 | 7,723.8 | 6,773.9 | 35.2 | 36.8 | 95.72 | -606.7 | -545.6 | 754.6 | 684.1 | 70.54 | 10.698 | |
| 7,600.0 | 6,698.5 | 7,745.1 | 6,773.8 | 35.4 | 37.0 | 95.73 | -606.7 | -524.3 | 754.6 | 683.6 | 71.06 | 10.619 | |
| 7,677.1 | 6,698.0 | 7,822.2 | 6,773.3 | 36.5 | 37.9 | 95.73 | -606.7 | -447.2 | 754.6 | 681.5 | 73.13 | 10.319 | |
| 7,700.0 | 6,697.8 | 7,845.1 | 6,773.2 | 36.8 | 38.2 | 95.73 | -606.7 | -424.3 | 754.6 | 680.9 | 73.77 | 10.230 | |
| 7,775.6 | 6,697.3 | 7,920.7 | 6,772.8 | 38.0 | 39.2 | 95.74 | -606.7 | -348.7 | 754.6 | 678.6 | 76.03 | 9.926 | |
| 7,800.0 | 6,697.2 | 7,945.1 | 6,772.7 | 38.3 | 39.5 | 95.74 | -606.7 | -324.3 | 754.6 | 677.9 | 76.79 | 9.828 | |
| 7,874.0 | 6,696.7 | 8,019.1 | 6,772.3 | 39.6 | 40.6 | 95.75 | -606.7 | -250.3 | 754.7 | 675.4 | 79.21 | 9.527 | |
| 7,900.0 | 6,696.5 | 8,045.1 | 6,772.1 | 40.0 | 41.0 | 95.75 | -606.7 | -224.3 | 754.7 | 674.6 | 80.08 | 9.423 | |
| 7,972.4 | 6,696.1 | 8,117.5 | 6,771.8 | 41.3 | 42.2 | 95.76 | -606.7 | -151.9 | 754.7 | 672.0 | 82.63 | 9.133 | |
| 8,000.0 | 6,695.9 | 8,145.1 | 6,771.6 | 41.8 | 42.7 | 95.76 | -606.7 | -124.3 | 754.7 | 671.0 | 83.63 | 9.024 | |
| 8,070.8 | 6,695.4 | 8,215.9 | 6,771.2 | 43.1 | 43.9 | 95.77 | -606.7 | -53.5 | 754.7 | 668.4 | 86.27 | 8.748 | |
| 8,100.0 | 6,695.2 | 8,245.1 | 6,771.1 | 43.7 | 44.5 | 95.77 | -606.7 | -24.3 | 754.7 | 667.3 | 87.38 | 8.637 | |
| 8,169.3 | 6,694.8 | 8,314.4 | 6,770.7 | 45.1 | 45.8 | 95.77 | -606.7 | 45.0 | 754.7 | 664.6 | 90.10 | 8.376 | |
| 8,200.0 | 6,694.6 | 8,345.1 | 6,770.5 | 45.7 | 46.4 | 95.78 | -606.7 | 75.7 | 754.7 | 663.4 | 91.33 | 8.264 | |
| 8,267.7 | 6,694.1 | 8,412.8 | 6,770.2 | 47.1 | 47.7 | 95.78 | -606.7 | 143.4 | 754.7 | 660.6 | 94.10 | 8.021 | |
| 8,300.0 | 6,693.9 | 8,445.1 | 6,770.0 | 47.8 | 48.4 | 95.78 | -606.7 | 175.7 | 754.7 | 659.3 | 95.44 | 7.908 | |
| 8,366.1 | 6,693.5 | 8,511.2 | 6,769.6 | 49.2 | 49.7 | 95.79 | -606.7 | 241.8 | 754.7 | 656.5 | 98.24 | 7.682 | |
| 8,400.0 | 6,693.3 | 8,545.1 | 6,769.4 | 49.9 | 50.5 | 95.79 | -606.7 | 275.7 | 754.7 | 655.0 | 99.69 | 7.570 | |
| 8,464.5 | 6,692.9 | 8,609.6 | 6,769.1 | 51.4 | 51.8 | 95.80 | -606.7 | 340.2 | 754.7 | 652.2 | 102.51 | 7.363 | |
| 8,500.0 | 6,692.6 | 8,645.1 | 6,768.9 | 52.1 | 52.6 | 95.80 | -606.7 | 375.7 | 754.7 | 650.6 | 104.07 | 7.252 | |
| 8,563.0 | 6,692.2 | 8,708.1 | 6,768.6 | 53.6 | 54.0 | 95.81 | -606.7 | 438.6 | 754.7 | 647.8 | 106.89 | 7.061 | |
| 8,600.0 | 6,692.0 | 8,745.1 | 6,768.4 | 54.4 | 54.8 | 95.81 | -606.7 | 475.7 | 754.7 | 646.2 | 108.57 | 6.952 | |
| 8,661.4 | 6,691.6 | 8,806.5 | 6,768.0 | 55.8 | 56.2 | 95.81 | -606.7 | 537.1 | 754.7 | 643.4 | 111.37 | 6.777 | |
| 8,700.0 | 6,691.3 | 8,845.1 | 6,767.8 | 56.7 | 57.1 | 95.82 | -606.7 | 575.7 | 754.7 | 641.6 | 113.16 | 6.670 | |
| 8,759.8 | 6,690.9 | 8,904.9 | 6,767.5 | 58.1 | 58.5 | 95.82 | -606.7 | 635.5 | 754.8 | 638.8 | 115.95 | 6.510 | |
| 8,800.0 | 6,690.7 | 8,945.1 | 6,767.3 | 59.1 | 59.4 | 95.83 | -606.7 | 675.7 | 754.8 | 636.9 | 117.83 | 6.405 | |
| 8,858.2 | 6,690.3 | 9,003.3 | 6,767.0 | 60.5 | 60.8 | 95.83 | -606.7 | 733.9 | 754.8 | 634.2 | 120.59 | 6.259 | |
| 8,900.0 | 6,690.0 | 9,045.1 | 6,766.7 | 61.5 | 61.8 | 95.83 | -606.7 | 775.7 | 754.8 | 632.2 | 122.59 | 6.157 | |
| 8,956.7 | 6,689.7 | 9,101.8 | 6,766.4 | 62.9 | 63.1 | 95.84 | -606.7 | 832.3 | 754.8 | 629.5 | 125.31 | 6.023 | |
| 9,000.0 | 6,689.4 | 9,145.1 | 6,766.2 | 63.9 | 64.2 | 95.84 | -606.7 | 875.7 | 754.8 | 627.4 | 127.41 | 5.924 | |
| 9,055.1 | 6,689.0 | 9,200.2 | 6,765.9 | 65.3 | 65.5 | 95.85 | -606.7 | 930.8 | 754.8 | 624.7 | 130.09 | 5.802 | |
| 9,100.0 | 6,688.7 | 9,245.1 | 6,765.7 | 66.4 | 66.6 | 95.85 | -606.7 | 975.7 | 754.8 | 622.5 | 132.29 | 5.705 | |
| 9,153.5 | 6,688.4 | 9,298.6 | 6,765.4 | 67.7 | 67.9 | 95.85 | -606.7 | 1,029.2 | 754.8 | 619.9 | 134.93 | 5.594 | |
| 9,200.0 | 6,688.1 | 9,345.1 | 6,765.1 | 68.9 | 69.1 | 95.86 | -606.7 | 1,075.7 | 754.8 | 617.6 | 137.23 | 5.500 | |
| 9,251.9 | 6,687.8 | 9,397.0 | 6,764.8 | 70.2 | 70.4 | 95.86 | -606.7 | 1,127.6 | 754.8 | 615.0 | 139.81 | 5.399 | |
| 9,300.0 | 6,687.4 | 9,445.1 | 6,764.6 | 71.4 | 71.6 | 95.87 | -606.7 | 1,175.7 | 754.8 | 612.6 | 142.22 | 5.307 | |
| 9,350.4 | 6,687.1 | 9,495.5 | 6,764.3 | 72.7 | 72.8 | 95.87 | -606.7 | 1,226.0 | 754.8 | 610.1 | 144.74 | 5.215 | |
| 9,400.0 | 6,686.8 | 9,545.1 | 6,764.0 | 73.9 | 74.1 | 95.87 | -606.7 | 1,275.7 | 754.8 | 607.6 | 147.24 | 5.126 | |
| 9,448.8 | 6,686.5 | 9,593.9 | 6,763.8 | 75.2 | 75.3 | 95.88 | -606.7 | 1,324.5 | 754.8 | 605.1 | 149.71 | 5.042 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-312 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 9,645.1 | 6,763.5 | 76.5 | 76.6 | 95.88 | -606.7 | 1,375.7 | 754.8 | 602.5 | 152.31 | 4.956 | |
| 9,547.2 | 6,685.8 | 9,692.3 | 6,763.2 | 77.7 | 77.8 | 95.89 | -606.7 | 1,422.9 | 754.8 | 600.1 | 154.72 | 4.879 | |
| 9,600.0 | 6,685.5 | 9,745.1 | 6,763.0 | 79.0 | 79.2 | 95.89 | -606.7 | 1,475.7 | 754.8 | 597.4 | 157.42 | 4.795 | |
| 9,645.6 | 6,685.2 | 9,790.7 | 6,762.7 | 80.2 | 80.4 | 95.89 | -606.7 | 1,521.3 | 754.8 | 595.1 | 159.76 | 4.725 | |
| 9,700.0 | 6,684.8 | 9,845.1 | 6,762.4 | 81.6 | 81.8 | 95.90 | -606.7 | 1,575.7 | 754.8 | 592.3 | 162.55 | 4.644 | |
| 9,744.1 | 6,684.6 | 9,889.2 | 6,762.2 | 82.8 | 82.9 | 95.90 | -606.7 | 1,619.7 | 754.9 | 590.0 | 164.83 | 4.580 | |
| 9,800.0 | 6,684.2 | 9,945.1 | 6,761.9 | 84.2 | 84.3 | 95.91 | -606.7 | 1,675.7 | 754.9 | 587.1 | 167.72 | 4.501 | |
| 9,842.5 | 6,683.9 | 9,987.6 | 6,761.7 | 85.3 | 85.4 | 95.91 | -606.7 | 1,718.2 | 754.9 | 584.9 | 169.92 | 4.442 | |
| 9,900.0 | 6,683.5 | 10,045.1 | 6,761.3 | 86.8 | 86.9 | 95.92 | -606.7 | 1,775.7 | 754.9 | 582.0 | 172.91 | 4.366 | |
| 9,940.9 | 6,683.3 | 10,086.0 | 6,761.1 | 87.9 | 88.0 | 95.92 | -606.7 | 1,816.6 | 754.9 | 579.8 | 175.04 | 4.313 | |
| 10,000.0 | 6,682.9 | 10,145.1 | 6,760.8 | 89.5 | 89.6 | 95.92 | -606.6 | 1,875.7 | 754.9 | 576.8 | 178.12 | 4.238 | |
| 10,039.3 | 6,682.6 | 10,184.4 | 6,760.6 | 90.5 | 90.6 | 95.93 | -606.6 | 1,915.0 | 754.9 | 574.7 | 180.18 | 4.190 | |
| 10,100.0 | 6,682.2 | 10,245.1 | 6,760.3 | 92.1 | 92.2 | 95.93 | -606.6 | 1,975.7 | 754.9 | 571.5 | 183.36 | 4.117 | |
| 10,137.8 | 6,682.0 | 10,282.9 | 6,760.1 | 93.1 | 93.2 | 95.93 | -606.6 | 2,013.4 | 754.9 | 569.5 | 185.34 | 4.073 | |
| 10,200.0 | 6,681.6 | 10,345.1 | 6,759.7 | 94.8 | 94.8 | 95.94 | -606.6 | 2,075.7 | 754.9 | 566.3 | 188.62 | 4.002 | |
| 10,236.2 | 6,681.4 | 10,381.3 | 6,759.5 | 95.7 | 95.8 | 95.94 | -606.6 | 2,111.9 | 754.9 | 564.4 | 190.53 | 3.962 | |
| 10,300.0 | 6,680.9 | 10,445.1 | 6,759.2 | 97.4 | 97.5 | 95.95 | -606.6 | 2,175.7 | 754.9 | 561.0 | 193.89 | 3.893 | |
| 10,334.6 | 6,680.7 | 10,479.7 | 6,759.0 | 98.3 | 98.4 | 95.95 | -606.6 | 2,210.3 | 754.9 | 559.2 | 195.73 | 3.857 | |
| 10,400.0 | 6,680.3 | 10,545.1 | 6,758.6 | 100.1 | 100.1 | 95.96 | -606.6 | 2,275.7 | 754.9 | 555.7 | 199.19 | 3.790 | |
| 10,433.0 | 6,680.1 | 10,578.1 | 6,758.5 | 101.0 | 101.0 | 95.96 | -606.6 | 2,308.7 | 754.9 | 554.0 | 200.94 | 3.757 | |
| 10,500.0 | 6,679.7 | 10,645.1 | 6,758.1 | 102.8 | 102.8 | 95.96 | -606.6 | 2,375.6 | 754.9 | 550.4 | 204.50 | 3.692 | |
| 10,531.5 | 6,679.4 | 10,676.6 | 6,757.9 | 103.6 | 103.6 | 95.97 | -606.6 | 2,407.1 | 754.9 | 548.8 | 206.17 | 3.662 | |
| 10,600.0 | 6,679.0 | 10,745.1 | 6,757.5 | 105.4 | 105.5 | 95.97 | -606.6 | 2,475.6 | 754.9 | 545.1 | 209.82 | 3.598 | |
| 10,629.9 | 6,678.8 | 10,775.0 | 6,757.4 | 106.2 | 106.3 | 95.97 | -606.6 | 2,505.5 | 754.9 | 543.5 | 211.41 | 3.571 | |
| 10,700.0 | 6,678.4 | 10,845.1 | 6,757.0 | 108.1 | 108.1 | 95.98 | -606.6 | 2,575.6 | 755.0 | 539.8 | 215.16 | 3.509 | |
| 10,728.3 | 6,678.2 | 10,873.4 | 6,756.9 | 108.9 | 108.9 | 95.98 | -606.6 | 2,604.0 | 755.0 | 538.3 | 216.67 | 3.484 | |
| 10,800.0 | 6,677.7 | 10,945.1 | 6,756.5 | 110.8 | 110.8 | 95.99 | -606.6 | 2,675.6 | 755.0 | 534.5 | 220.51 | 3.424 | |
| 10,826.7 | 6,677.5 | 10,971.8 | 6,756.3 | 111.5 | 111.5 | 95.99 | -606.6 | 2,702.4 | 755.0 | 533.0 | 221.94 | 3.402 | |
| 10,900.0 | 6,677.1 | 11,045.1 | 6,755.9 | 113.5 | 113.5 | 96.00 | -606.6 | 2,775.6 | 755.0 | 529.1 | 225.87 | 3.343 | |
| 10,925.2 | 6,676.9 | 11,070.3 | 6,755.8 | 114.2 | 114.2 | 96.00 | -606.6 | 2,800.8 | 755.0 | 527.8 | 227.22 | 3.323 | |
| 11,000.0 | 6,676.4 | 11,145.1 | 6,755.4 | 116.2 | 116.2 | 96.00 | -606.6 | 2,875.6 | 755.0 | 523.7 | 231.24 | 3.265 | |
| 11,023.6 | 6,676.3 | 11,168.7 | 6,755.3 | 116.8 | 116.9 | 96.01 | -606.6 | 2,899.2 | 755.0 | 522.5 | 232.51 | 3.247 | |
| 11,100.0 | 6,675.8 | 11,245.1 | 6,754.8 | 118.9 | 118.9 | 96.01 | -606.6 | 2,975.6 | 755.0 | 518.4 | 236.62 | 3.191 | |
| 11,122.0 | 6,675.6 | 11,267.1 | 6,754.7 | 119.5 | 119.5 | 96.01 | -606.6 | 2,997.7 | 755.0 | 517.2 | 237.81 | 3.175 | |
| 11,200.0 | 6,675.1 | 11,345.1 | 6,754.3 | 121.6 | 121.6 | 96.02 | -606.6 | 3,075.6 | 755.0 | 513.0 | 242.01 | 3.120 | |
| 11,220.4 | 6,675.0 | 11,365.5 | 6,754.2 | 122.2 | 122.2 | 96.02 | -606.6 | 3,096.1 | 755.0 | 511.9 | 243.11 | 3.106 | |
| 11,300.0 | 6,674.5 | 11,445.1 | 6,753.8 | 124.3 | 124.3 | 96.03 | -606.6 | 3,175.6 | 755.0 | 507.6 | 247.41 | 3.052 | |
| 11,318.9 | 6,674.3 | 11,464.0 | 6,753.6 | 124.9 | 124.9 | 96.03 | -606.6 | 3,194.5 | 755.0 | 506.6 | 248.43 | 3.039 | |
| 11,400.0 | 6,673.8 | 11,545.1 | 6,753.2 | 127.1 | 127.1 | 96.04 | -606.6 | 3,275.6 | 755.0 | 502.2 | 252.82 | 2.986 | |
| 11,417.3 | 6,673.7 | 11,562.4 | 6,753.1 | 127.5 | 127.5 | 96.04 | -606.6 | 3,292.9 | 755.0 | 501.3 | 253.75 | 2.975 | |
| 11,500.0 | 6,673.2 | 11,645.1 | 6,752.7 | 129.8 | 129.8 | 96.04 | -606.6 | 3,375.6 | 755.0 | 496.8 | 258.23 | 2.924 | |
| 11,515.7 | 6,673.1 | 11,660.8 | 6,752.6 | 130.2 | 130.2 | 96.05 | -606.6 | 3,391.4 | 755.0 | 496.0 | 259.09 | 2.914 | |
| 11,600.0 | 6,672.5 | 11,745.1 | 6,752.1 | 132.5 | 132.5 | 96.05 | -606.6 | 3,475.6 | 755.0 | 491.4 | 263.66 | 2.864 | |
| 11,614.1 | 6,672.4 | 11,759.2 | 6,752.0 | 132.9 | 132.9 | 96.05 | -606.6 | 3,489.8 | 755.0 | 490.6 | 264.42 | 2.855 | |
| 11,700.0 | 6,671.9 | 11,845.1 | 6,751.6 | 135.3 | 135.2 | 96.06 | -606.6 | 3,575.6 | 755.1 | 486.0 | 269.09 | 2.806 | |
| 11,712.6 | 6,671.8 | 11,857.7 | 6,751.5 | 135.6 | 135.6 | 96.06 | -606.6 | 3,588.2 | 755.1 | 485.3 | 269.77 | 2.799 | |
| 11,800.0 | 6,671.2 | 11,945.1 | 6,751.0 | 138.0 | 138.0 | 96.07 | -606.6 | 3,675.6 | 755.1 | 480.5 | 274.52 | 2.750 | |
| 11,811.0 | 6,671.1 | 11,956.1 | 6,751.0 | 138.3 | 138.3 | 96.07 | -606.6 | 3,686.6 | 755.1 | 479.9 | 275.12 | 2.745 | |
| 11,900.0 | 6,670.6 | 12,045.1 | 6,750.5 | 140.7 | 140.7 | 96.08 | -606.6 | 3,775.6 | 755.1 | 475.1 | 279.96 | 2.697 | |
| 11,909.4 | 6,670.5 | 12,054.5 | 6,750.4 | 141.0 | 141.0 | 96.08 | -606.6 | 3,785.1 | 755.1 | 474.6 | 280.48 | 2.692 | |
| 11,987.2 | 6,670.0 | 12,132.3 | 6,750.0 | 143.1 | 143.1 | 96.08 | -606.6 | 3,862.8 | 755.1 | 470.4 | 284.71 | 2.652 | SF |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 89.66 | 0.7 | 120.0 | 120.0 | | | | |
| 98.4 | 98.4 | 98.4 | 98.4 | 0.1 | 0.1 | 89.66 | 0.7 | 120.0 | 120.0 | 119.8 | 0.19 | 624.446 | |
| 100.0 | 100.0 | 100.0 | 100.0 | 0.1 | 0.1 | 89.66 | 0.7 | 120.0 | 120.0 | 119.8 | 0.20 | 613.876 | |
| 196.8 | 196.8 | 196.8 | 196.8 | 0.3 | 0.3 | 89.66 | 0.7 | 120.0 | 120.0 | 119.4 | 0.63 | 190.264 | |
| 200.0 | 200.0 | 200.0 | 200.0 | 0.3 | 0.3 | 89.66 | 0.7 | 120.0 | 120.0 | 119.4 | 0.65 | 186.088 | |
| 295.3 | 295.3 | 295.3 | 295.3 | 0.5 | 0.5 | 89.66 | 0.7 | 120.0 | 120.0 | 119.0 | 1.07 | 111.836 | |
| 300.0 | 300.0 | 300.0 | 300.0 | 0.5 | 0.5 | 89.66 | 0.7 | 120.0 | 120.0 | 118.9 | 1.09 | 109.666 | |
| 393.7 | 393.7 | 393.7 | 393.7 | 0.8 | 0.8 | 89.66 | 0.7 | 120.0 | 120.0 | 118.5 | 1.52 | 79.192 | |
| 400.0 | 400.0 | 400.0 | 400.0 | 0.8 | 0.8 | 89.66 | 0.7 | 120.0 | 120.0 | 118.5 | 1.54 | 77.740 | |
| 492.1 | 492.1 | 492.1 | 492.1 | 1.0 | 1.0 | 89.66 | 0.7 | 120.0 | 120.0 | 118.1 | 1.96 | 61.300 | |
| 500.0 | 500.0 | 500.0 | 500.0 | 1.0 | 1.0 | 89.66 | 0.7 | 120.0 | 120.0 | 118.0 | 1.99 | 60.211 | |
| 590.5 | 590.5 | 590.5 | 590.5 | 1.2 | 1.2 | 89.66 | 0.7 | 120.0 | 120.0 | 117.6 | 2.40 | 50.002 | |
| 600.0 | 600.0 | 600.0 | 600.0 | 1.2 | 1.2 | 89.66 | 0.7 | 120.0 | 120.0 | 117.6 | 2.44 | 49.133 | |
| 689.0 | 689.0 | 689.0 | 689.0 | 1.4 | 1.4 | 89.66 | 0.7 | 120.0 | 120.0 | 117.2 | 2.84 | 42.221 | |
| 700.0 | 700.0 | 700.0 | 700.0 | 1.4 | 1.4 | 89.66 | 0.7 | 120.0 | 120.0 | 117.1 | 2.89 | 41.497 | |
| 787.4 | 787.4 | 787.4 | 787.4 | 1.6 | 1.6 | 89.66 | 0.7 | 120.0 | 120.0 | 116.8 | 3.29 | 36.535 | |
| 800.0 | 800.0 | 800.0 | 800.0 | 1.7 | 1.7 | 89.66 | 0.7 | 120.0 | 120.0 | 116.7 | 3.34 | 35.916 | |
| 885.8 | 885.8 | 885.8 | 885.8 | 1.9 | 1.9 | 89.66 | 0.7 | 120.0 | 120.0 | 116.3 | 3.73 | 32.199 | |
| 900.0 | 900.0 | 900.0 | 900.0 | 1.9 | 1.9 | 89.66 | 0.7 | 120.0 | 120.0 | 116.2 | 3.79 | 31.658 | |
| 984.2 | 984.2 | 984.2 | 984.2 | 2.1 | 2.1 | 89.66 | 0.7 | 120.0 | 120.0 | 115.9 | 4.17 | 28.783 | |
| 1,000.0 | 1,000.0 | 1,000.0 | 1,000.0 | 2.1 | 2.1 | 89.66 | 0.7 | 120.0 | 120.0 | 115.8 | 4.24 | 28.303 | CC, ES |
| 1,082.7 | 1,082.7 | 1,082.7 | 1,082.7 | 2.3 | 2.3 | 174.15 | 0.7 | 120.0 | 121.2 | 116.6 | 4.60 | 26.341 | |
| 1,100.0 | 1,100.0 | 1,100.0 | 1,100.0 | 2.3 | 2.3 | 174.18 | 0.7 | 120.0 | 121.8 | 117.1 | 4.68 | 26.035 | |
| 1,181.1 | 1,181.0 | 1,181.0 | 1,181.0 | 2.5 | 2.5 | 174.35 | 0.7 | 120.0 | 125.7 | 120.7 | 5.02 | 25.039 | |
| 1,200.0 | 1,199.8 | 1,199.8 | 1,199.8 | 2.5 | 2.6 | 174.41 | 0.7 | 120.0 | 127.0 | 121.9 | 5.10 | 24.895 | |
| 1,279.5 | 1,279.1 | 1,279.1 | 1,279.1 | 2.7 | 2.7 | 174.67 | 0.7 | 120.0 | 133.6 | 128.2 | 5.44 | 24.572 | |
| 1,300.0 | 1,299.5 | 1,299.5 | 1,299.5 | 2.8 | 2.8 | 174.75 | 0.7 | 120.0 | 135.7 | 130.1 | 5.52 | 24.564 | |
| 1,377.9 | 1,376.9 | 1,376.9 | 1,376.9 | 3.0 | 3.0 | 175.07 | 0.7 | 120.0 | 144.8 | 139.0 | 5.85 | 24.754 | |
| 1,400.0 | 1,398.7 | 1,398.7 | 1,398.7 | 3.0 | 3.0 | 175.16 | 0.7 | 120.0 | 147.8 | 141.9 | 5.94 | 24.873 | |
| 1,476.4 | 1,474.2 | 1,474.2 | 1,474.2 | 3.2 | 3.2 | 175.49 | 0.7 | 120.0 | 159.4 | 153.1 | 6.26 | 25.459 | |
| 1,500.0 | 1,497.5 | 1,497.5 | 1,497.5 | 3.3 | 3.2 | 175.60 | 0.7 | 120.0 | 163.4 | 157.0 | 6.36 | 25.697 | |
| 1,574.8 | 1,571.0 | 1,571.0 | 1,571.0 | 3.5 | 3.4 | 175.92 | 0.7 | 120.0 | 177.3 | 170.6 | 6.67 | 26.589 | |
| 1,600.0 | 1,595.6 | 1,595.6 | 1,595.6 | 3.6 | 3.5 | 176.03 | 0.7 | 120.0 | 182.4 | 175.7 | 6.77 | 26.941 | |
| 1,673.2 | 1,667.0 | 1,667.0 | 1,667.0 | 3.9 | 3.6 | 176.33 | 0.7 | 120.0 | 198.5 | 191.5 | 7.07 | 28.071 | |
| 1,700.0 | 1,693.1 | 1,693.1 | 1,693.1 | 4.0 | 3.7 | 176.44 | 0.7 | 120.0 | 204.9 | 197.7 | 7.18 | 28.531 | |
| 1,771.6 | 1,762.4 | 1,762.4 | 1,762.4 | 4.3 | 3.8 | 176.71 | 0.7 | 120.0 | 223.0 | 215.6 | 7.47 | 29.845 | |
| 1,800.0 | 1,789.6 | 1,789.6 | 1,789.6 | 4.4 | 3.9 | 176.81 | 0.7 | 120.0 | 230.7 | 223.1 | 7.59 | 30.409 | |
| 1,870.1 | 1,856.8 | 1,858.4 | 1,858.4 | 4.7 | 4.0 | 177.18 | 0.2 | 119.8 | 250.6 | 242.8 | 7.86 | 31.893 | |
| 1,900.0 | 1,885.3 | 1,887.7 | 1,887.7 | 4.9 | 4.1 | 177.44 | -0.5 | 119.6 | 259.5 | 251.5 | 7.97 | 32.559 | |
| 1,968.5 | 1,950.2 | 1,954.8 | 1,954.7 | 5.3 | 4.2 | 178.21 | -3.2 | 118.5 | 280.6 | 272.4 | 8.22 | 34.147 | |
| 2,000.0 | 1,979.8 | 1,985.4 | 1,985.3 | 5.5 | 4.3 | 178.63 | -4.9 | 117.9 | 290.7 | 282.4 | 8.33 | 34.899 | |
| 2,044.9 | 2,021.9 | 2,029.0 | 2,028.8 | 5.7 | 4.3 | 179.30 | -7.8 | 116.7 | 305.5 | 297.0 | 8.49 | 35.974 | |
| 2,066.9 | 2,042.5 | 2,050.3 | 2,050.0 | 5.9 | 4.4 | 179.65 | -9.5 | 116.1 | 312.9 | 304.3 | 8.59 | 36.429 | |
| 2,100.0 | 2,073.4 | 2,082.3 | 2,081.9 | 6.1 | 4.4 | -179.81 | -12.2 | 115.0 | 323.9 | 315.1 | 8.74 | 37.077 | |
| 2,165.3 | 2,134.4 | 2,145.6 | 2,144.8 | 6.5 | 4.6 | -178.65 | -18.7 | 112.5 | 345.5 | 336.4 | 9.04 | 38.232 | |
| 2,200.0 | 2,166.8 | 2,179.2 | 2,178.1 | 6.8 | 4.6 | -178.00 | -22.6 | 111.0 | 356.8 | 347.6 | 9.20 | 38.784 | |
| 2,263.8 | 2,226.4 | 2,240.8 | 2,239.1 | 7.2 | 4.8 | -176.75 | -30.8 | 107.8 | 377.6 | 368.1 | 9.52 | 39.681 | |
| 2,300.0 | 2,260.2 | 2,275.8 | 2,273.6 | 7.4 | 4.8 | -176.01 | -36.0 | 105.8 | 389.3 | 379.6 | 9.70 | 40.134 | |
| 2,362.2 | 2,318.3 | 2,335.7 | 2,332.6 | 7.9 | 5.0 | -174.71 | -45.8 | 102.0 | 409.4 | 399.4 | 10.04 | 40.794 | |
| 2,400.0 | 2,353.6 | 2,372.0 | 2,368.2 | 8.1 | 5.1 | -173.89 | -52.3 | 99.5 | 421.6 | 411.3 | 10.25 | 41.137 | |
| 2,460.6 | 2,410.3 | 2,429.3 | 2,424.3 | 8.6 | 5.2 | -172.59 | -63.3 | 95.2 | 441.2 | 430.6 | 10.60 | 41.601 | |
| 2,500.0 | 2,447.0 | 2,466.1 | 2,460.3 | 8.9 | 5.3 | -171.81 | -70.5 | 92.4 | 454.0 | 443.1 | 10.84 | 41.863 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,559.0 | 2,502.2 | 2,521.2 | 2,514.2 | 9.3 | 5.5 | -170.70 | -81.1 | 88.3 | 473.3 | 462.1 | 11.21 | 42.203 | |
| 2,600.0 | 2,540.5 | 2,559.5 | 2,551.6 | 9.6 | 5.6 | -169.99 | -88.6 | 85.4 | 486.8 | 475.3 | 11.48 | 42.408 | |
| 2,657.5 | 2,594.2 | 2,613.1 | 2,604.1 | 10.0 | 5.8 | -169.05 | -99.0 | 81.4 | 505.8 | 494.0 | 11.86 | 42.655 | |
| 2,700.0 | 2,633.9 | 2,652.9 | 2,643.0 | 10.3 | 5.9 | -168.40 | -106.7 | 78.4 | 520.0 | 507.9 | 12.15 | 42.802 | |
| 2,755.9 | 2,686.1 | 2,705.1 | 2,694.0 | 10.7 | 6.1 | -167.60 | -116.8 | 74.5 | 538.7 | 526.2 | 12.53 | 42.979 | |
| 2,800.0 | 2,727.3 | 2,746.2 | 2,734.3 | 11.0 | 6.2 | -167.00 | -124.8 | 71.4 | 553.6 | 540.7 | 12.85 | 43.088 | |
| 2,854.3 | 2,778.1 | 2,797.0 | 2,783.9 | 11.4 | 6.4 | -166.31 | -134.6 | 67.6 | 571.9 | 558.7 | 13.24 | 43.205 | |
| 2,900.0 | 2,820.7 | 2,839.6 | 2,825.6 | 11.8 | 6.5 | -165.76 | -142.9 | 64.4 | 587.4 | 573.8 | 13.57 | 43.280 | |
| 2,952.7 | 2,870.0 | 2,888.9 | 2,873.8 | 12.2 | 6.7 | -165.16 | -152.4 | 60.7 | 605.3 | 591.3 | 13.96 | 43.354 | |
| 3,000.0 | 2,914.2 | 2,933.0 | 2,917.0 | 12.5 | 6.9 | -164.65 | -161.0 | 57.3 | 621.4 | 607.1 | 14.32 | 43.403 | |
| 3,051.2 | 2,962.0 | 2,980.8 | 2,963.7 | 12.9 | 7.0 | -164.12 | -170.2 | 53.8 | 638.9 | 624.2 | 14.71 | 43.444 | |
| 3,100.0 | 3,007.6 | 3,026.4 | 3,008.3 | 13.3 | 7.2 | -163.65 | -179.1 | 50.3 | 655.6 | 640.5 | 15.08 | 43.473 | |
| 3,149.6 | 3,053.9 | 3,072.7 | 3,053.6 | 13.6 | 7.4 | -163.20 | -188.0 | 46.8 | 672.6 | 657.2 | 15.47 | 43.491 | |
| 3,200.0 | 3,101.0 | 3,119.7 | 3,099.6 | 14.0 | 7.6 | -162.75 | -197.2 | 43.3 | 690.0 | 674.1 | 15.86 | 43.502 | |
| 3,248.0 | 3,145.9 | 3,164.6 | 3,143.5 | 14.4 | 7.7 | -162.35 | -205.9 | 39.9 | 706.5 | 690.3 | 16.24 | 43.503 | |
| 3,300.0 | 3,194.4 | 3,213.1 | 3,191.0 | 14.8 | 7.9 | -161.94 | -215.3 | 36.3 | 724.5 | 707.8 | 16.65 | 43.500 | |
| 3,346.4 | 3,237.8 | 3,256.5 | 3,233.4 | 15.1 | 8.1 | -161.59 | -223.7 | 33.0 | 740.6 | 723.5 | 17.03 | 43.490 | |
| 3,400.0 | 3,287.8 | 3,306.5 | 3,282.3 | 15.5 | 8.3 | -161.20 | -233.4 | 29.3 | 759.1 | 741.7 | 17.46 | 43.476 | |
| 3,444.9 | 3,329.8 | 3,348.4 | 3,323.3 | 15.9 | 8.5 | -160.89 | -241.5 | 26.1 | 774.7 | 756.9 | 17.83 | 43.457 | |
| 3,500.0 | 3,381.3 | 3,399.9 | 3,373.7 | 16.3 | 8.7 | -160.53 | -251.5 | 22.3 | 793.8 | 775.6 | 18.28 | 43.434 | |
| 3,543.3 | 3,421.7 | 3,440.3 | 3,413.2 | 16.6 | 8.8 | -160.25 | -259.3 | 19.2 | 808.9 | 790.3 | 18.63 | 43.411 | |
| 3,600.0 | 3,474.7 | 3,493.3 | 3,465.0 | 17.0 | 9.0 | -159.91 | -269.6 | 15.2 | 828.7 | 809.6 | 19.10 | 43.380 | |
| 3,641.7 | 3,513.7 | 3,532.2 | 3,503.1 | 17.3 | 9.2 | -159.66 | -277.1 | 12.3 | 843.2 | 823.8 | 19.45 | 43.354 | |
| 3,700.0 | 3,568.1 | 3,586.6 | 3,556.3 | 17.8 | 9.4 | -159.34 | -287.7 | 8.2 | 863.6 | 843.6 | 19.94 | 43.318 | |
| 3,740.1 | 3,605.6 | 3,624.1 | 3,593.0 | 18.1 | 9.6 | -159.12 | -294.9 | 5.4 | 877.6 | 857.3 | 20.27 | 43.290 | |
| 3,800.0 | 3,661.5 | 3,680.0 | 3,647.7 | 18.5 | 9.8 | -158.81 | -305.8 | 1.2 | 898.5 | 877.8 | 20.78 | 43.249 | |
| 3,838.6 | 3,697.6 | 3,716.0 | 3,682.9 | 18.8 | 10.0 | -158.62 | -312.7 | -1.5 | 912.0 | 890.9 | 21.10 | 43.221 | |
| 3,900.0 | 3,754.9 | 3,773.4 | 3,739.0 | 19.3 | 10.2 | -158.33 | -323.9 | -5.8 | 933.6 | 911.9 | 21.62 | 43.176 | |
| 3,937.0 | 3,789.5 | 3,807.9 | 3,772.8 | 19.6 | 10.3 | -158.16 | -330.6 | -8.4 | 946.5 | 924.6 | 21.94 | 43.149 | |
| 4,000.0 | 3,848.4 | 3,866.8 | 3,830.4 | 20.1 | 10.6 | -157.87 | -342.0 | -12.8 | 968.6 | 946.2 | 22.47 | 43.101 | |
| 4,035.4 | 3,881.5 | 3,899.9 | 3,862.7 | 20.3 | 10.7 | -157.72 | -348.4 | -15.3 | 981.1 | 958.3 | 22.78 | 43.074 | |
| 4,100.0 | 3,941.8 | 3,960.2 | 3,921.7 | 20.8 | 11.0 | -157.45 | -360.1 | -19.9 | 1,003.8 | 980.4 | 23.33 | 43.024 | |
| 4,133.8 | 3,973.4 | 3,991.8 | 3,952.6 | 21.1 | 11.1 | -157.32 | -366.2 | -22.2 | 1,015.7 | 992.1 | 23.62 | 42.999 | |
| 4,200.0 | 4,035.2 | 4,053.5 | 4,013.0 | 21.6 | 11.4 | -157.06 | -378.2 | -26.9 | 1,039.0 | 1,014.8 | 24.19 | 42.948 | |
| 4,232.3 | 4,065.4 | 4,083.7 | 4,042.5 | 21.8 | 11.5 | -156.94 | -384.0 | -29.1 | 1,050.3 | 1,025.8 | 24.47 | 42.923 | |
| 4,300.0 | 4,128.6 | 4,146.9 | 4,104.4 | 22.3 | 11.8 | -156.70 | -396.3 | -33.9 | 1,074.2 | 1,049.1 | 25.06 | 42.871 | |
| 4,330.7 | 4,157.3 | 4,175.6 | 4,132.4 | 22.6 | 11.9 | -156.59 | -401.8 | -36.0 | 1,085.0 | 1,059.7 | 25.32 | 42.848 | |
| 4,400.0 | 4,222.0 | 4,240.3 | 4,195.7 | 23.1 | 12.2 | -156.35 | -414.4 | -40.9 | 1,109.4 | 1,083.5 | 25.92 | 42.795 | |
| 4,429.1 | 4,249.3 | 4,267.5 | 4,222.3 | 23.3 | 12.3 | -156.26 | -419.6 | -43.0 | 1,119.7 | 1,093.5 | 26.18 | 42.773 | |
| 4,500.0 | 4,315.5 | 4,334.1 | 4,287.4 | 23.9 | 12.6 | -156.03 | -432.5 | -48.0 | 1,144.7 | 1,117.9 | 26.79 | 42.726 | |
| 4,527.5 | 4,341.2 | 4,361.1 | 4,313.9 | 24.1 | 12.7 | -155.95 | -437.6 | -49.9 | 1,154.4 | 1,127.4 | 27.02 | 42.722 | |
| 4,600.0 | 4,408.9 | 4,432.5 | 4,384.1 | 24.6 | 12.9 | -155.81 | -449.8 | -54.7 | 1,179.8 | 1,152.2 | 27.59 | 42.759 | |
| 4,626.0 | 4,433.2 | 4,458.1 | 4,409.4 | 24.8 | 13.0 | -155.79 | -453.8 | -56.2 | 1,188.9 | 1,161.1 | 27.78 | 42.790 | |
| 4,700.0 | 4,502.3 | 4,531.3 | 4,481.8 | 25.4 | 13.2 | -155.78 | -464.0 | -60.2 | 1,214.5 | 1,186.2 | 28.31 | 42.903 | |
| 4,724.4 | 4,525.1 | 4,555.5 | 4,505.7 | 25.6 | 13.3 | -155.80 | -467.0 | -61.3 | 1,222.9 | 1,194.4 | 28.47 | 42.949 | |
| 4,800.0 | 4,595.7 | 4,630.5 | 4,580.2 | 26.2 | 13.5 | -155.91 | -475.1 | -64.5 | 1,248.8 | 1,219.8 | 28.96 | 43.115 | |
| 4,822.8 | 4,617.1 | 4,653.1 | 4,602.7 | 26.3 | 13.5 | -155.96 | -477.2 | -65.3 | 1,256.6 | 1,227.5 | 29.11 | 43.174 | |
| 4,900.0 | 4,689.2 | 4,729.6 | 4,678.9 | 26.9 | 13.7 | -156.20 | -483.0 | -67.5 | 1,282.7 | 1,253.2 | 29.56 | 43.395 | |
| 4,921.2 | 4,709.0 | 4,750.6 | 4,699.9 | 27.1 | 13.7 | -156.28 | -484.3 | -68.0 | 1,289.9 | 1,260.2 | 29.68 | 43.465 | |
| 5,000.0 | 4,782.6 | 4,828.5 | 4,777.7 | 27.7 | 13.9 | -156.63 | -487.7 | -69.4 | 1,316.3 | 1,286.2 | 30.09 | 43.746 | |
| 5,019.7 | 4,801.0 | 4,847.9 | 4,797.1 | 27.8 | 13.9 | -156.73 | -488.3 | -69.6 | 1,322.9 | 1,292.7 | 30.19 | 43.824 | |
| 5,100.0 | 4,876.0 | 4,926.8 | 4,876.0 | 28.4 | 14.1 | -157.18 | -489.3 | -70.0 | 1,349.6 | 1,319.0 | 30.56 | 44.161 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,118.1 | 4,892.9 | 4,943.7 | 4,892.9 | 28.6 | 14.1 | -157.28 | -489.3 | -70.0 | 1,355.6 | 1,325.0 | 30.64 | 44.242 | |
| 5,159.9 | 4,932.0 | 4,982.8 | 4,932.0 | 28.9 | 14.1 | -157.52 | -489.3 | -70.0 | 1,369.5 | 1,338.7 | 30.83 | 44.428 | |
| 5,200.0 | 4,969.5 | 5,020.3 | 4,969.5 | 29.2 | 14.2 | -157.85 | -489.3 | -70.0 | 1,382.6 | 1,351.6 | 31.02 | 44.566 | |
| 5,216.5 | 4,985.1 | 5,035.9 | 4,985.1 | 29.3 | 14.2 | -157.98 | -489.3 | -70.0 | 1,387.9 | 1,356.8 | 31.10 | 44.631 | |
| 5,300.0 | 5,064.0 | 5,114.8 | 5,064.0 | 29.7 | 14.3 | -158.58 | -489.3 | -70.0 | 1,413.2 | 1,381.8 | 31.47 | 44.913 | |
| 5,314.9 | 5,078.2 | 5,129.1 | 5,078.2 | 29.8 | 14.4 | -158.68 | -489.3 | -70.0 | 1,417.5 | 1,386.0 | 31.53 | 44.960 | |
| 5,400.0 | 5,159.6 | 5,210.4 | 5,159.6 | 30.2 | 14.5 | -159.21 | -489.3 | -70.0 | 1,440.8 | 1,408.9 | 31.89 | 45.184 | |
| 5,413.4 | 5,172.4 | 5,223.3 | 5,172.4 | 30.3 | 14.5 | -159.29 | -489.3 | -70.0 | 1,444.3 | 1,412.3 | 31.94 | 45.216 | |
| 5,500.0 | 5,256.1 | 5,307.0 | 5,256.1 | 30.7 | 14.6 | -159.75 | -489.3 | -70.0 | 1,465.3 | 1,433.0 | 32.29 | 45.385 | |
| 5,511.8 | 5,267.6 | 5,318.4 | 5,267.6 | 30.7 | 14.6 | -159.80 | -489.3 | -70.0 | 1,468.0 | 1,435.7 | 32.33 | 45.406 | |
| 5,600.0 | 5,353.5 | 5,404.4 | 5,353.5 | 31.1 | 14.8 | -160.20 | -489.3 | -70.0 | 1,486.7 | 1,454.0 | 32.66 | 45.522 | |
| 5,610.2 | 5,363.5 | 5,414.4 | 5,363.5 | 31.1 | 14.8 | -160.24 | -489.3 | -70.0 | 1,488.7 | 1,456.0 | 32.69 | 45.533 | |
| 5,700.0 | 5,451.6 | 7,905.5 | 6,787.5 | 31.4 | 41.8 | -114.78 | -489.3 | -1,442.0 | 1,476.6 | 1,406.0 | 70.62 | 20.910 | |
| 5,708.6 | 5,460.2 | 7,907.0 | 6,787.5 | 31.4 | 41.9 | -114.36 | -489.3 | -1,443.5 | 1,469.0 | 1,398.2 | 70.79 | 20.752 | |
| 5,800.0 | 5,550.4 | 7,920.9 | 6,787.5 | 31.7 | 42.2 | -110.12 | -489.3 | -1,457.4 | 1,388.6 | 1,316.2 | 72.38 | 19.185 | |
| 5,807.1 | 5,557.4 | 7,921.8 | 6,787.5 | 31.7 | 42.3 | -109.80 | -489.3 | -1,458.3 | 1,382.4 | 1,309.9 | 72.48 | 19.072 | |
| 5,900.0 | 5,649.6 | 7,932.8 | 6,787.4 | 31.9 | 42.5 | -105.75 | -489.3 | -1,469.3 | 1,301.5 | 1,227.9 | 73.61 | 17.681 | |
| 5,905.5 | 5,655.1 | 7,933.3 | 6,787.4 | 31.9 | 42.6 | -105.52 | -489.3 | -1,469.9 | 1,296.8 | 1,223.1 | 73.66 | 17.604 | |
| 6,000.0 | 5,749.2 | 7,941.2 | 6,787.4 | 32.1 | 42.8 | -101.78 | -489.3 | -1,477.8 | 1,215.8 | 1,141.5 | 74.35 | 16.352 | |
| 6,003.9 | 5,753.1 | 7,941.5 | 6,787.4 | 32.1 | 42.8 | -101.63 | -489.3 | -1,478.0 | 1,212.5 | 1,138.1 | 74.37 | 16.303 | |
| 6,100.0 | 5,849.1 | 7,946.2 | 6,787.4 | 32.3 | 42.9 | -98.31 | -489.3 | -1,482.8 | 1,132.0 | 1,057.4 | 74.68 | 15.158 | |
| 6,102.3 | 5,851.4 | 7,946.3 | 6,787.4 | 32.3 | 42.9 | -98.24 | -489.3 | -1,482.8 | 1,130.1 | 1,055.4 | 74.69 | 15.131 | |
| 6,200.8 | 5,949.8 | 7,947.8 | 6,787.4 | 32.4 | 42.9 | -95.38 | -489.3 | -1,484.3 | 1,050.1 | 975.5 | 74.69 | 14.060 | |
| 6,204.9 | 5,953.9 | 7,947.8 | 6,787.4 | 32.4 | 42.9 | -179.71 | -489.3 | -1,484.3 | 1,046.9 | 1,013.3 | 33.58 | 31.175 | |
| 6,234.9 | 5,983.9 | 7,947.6 | 6,787.4 | 32.4 | 42.9 | -179.72 | -489.3 | -1,484.2 | 1,023.2 | 989.5 | 33.63 | 30.429 | |
| 6,250.0 | 5,999.0 | 7,947.4 | 6,787.4 | 32.4 | 42.9 | 91.78 | -489.3 | -1,483.9 | 1,011.3 | 936.7 | 74.58 | 13.560 | |
| 6,299.2 | 6,048.2 | 7,944.5 | 6,787.4 | 32.4 | 42.8 | 96.23 | -489.3 | -1,481.0 | 973.5 | 899.7 | 73.88 | 13.178 | |
| 6,300.0 | 6,048.9 | 7,944.4 | 6,787.4 | 32.4 | 42.8 | 96.29 | -489.3 | -1,480.9 | 972.9 | 899.1 | 73.86 | 13.172 | |
| 6,350.0 | 6,098.5 | 7,938.0 | 6,787.4 | 32.4 | 42.7 | 100.10 | -489.3 | -1,474.5 | 935.9 | 863.0 | 72.82 | 12.852 | |
| 6,397.6 | 6,145.3 | 7,928.6 | 6,787.4 | 32.3 | 42.4 | 103.07 | -489.3 | -1,465.1 | 902.1 | 830.4 | 71.67 | 12.586 | |
| 6,400.0 | 6,147.6 | 7,928.1 | 6,787.4 | 32.3 | 42.4 | 103.20 | -489.3 | -1,464.6 | 900.4 | 828.8 | 71.61 | 12.573 | |
| 6,450.0 | 6,195.8 | 7,914.8 | 6,787.5 | 32.2 | 42.1 | 105.63 | -489.3 | -1,451.3 | 866.8 | 796.5 | 70.37 | 12.319 | |
| 6,496.0 | 6,239.3 | 7,899.6 | 6,787.6 | 32.1 | 41.7 | 107.32 | -489.3 | -1,436.1 | 837.8 | 768.5 | 69.25 | 12.098 | |
| 6,500.0 | 6,243.0 | 7,898.1 | 6,787.6 | 32.1 | 41.7 | 107.44 | -489.3 | -1,434.6 | 835.4 | 766.2 | 69.16 | 12.079 | |
| 6,550.0 | 6,289.0 | 7,878.2 | 6,787.6 | 32.0 | 41.1 | 108.68 | -489.3 | -1,414.8 | 806.2 | 738.2 | 68.04 | 11.849 | |
| 6,594.5 | 6,328.6 | 7,857.9 | 6,787.7 | 31.8 | 40.6 | 109.35 | -489.3 | -1,394.4 | 782.4 | 715.2 | 67.14 | 11.653 | |
| 6,600.0 | 6,333.4 | 7,855.2 | 6,787.7 | 31.8 | 40.6 | 109.41 | -489.3 | -1,391.7 | 779.5 | 712.5 | 67.03 | 11.629 | |
| 6,650.0 | 6,376.2 | 7,829.1 | 6,787.8 | 31.7 | 39.9 | 109.70 | -489.3 | -1,365.7 | 755.5 | 689.3 | 66.13 | 11.423 | |
| 6,692.9 | 6,411.3 | 7,804.5 | 6,787.9 | 31.6 | 39.3 | 109.63 | -489.3 | -1,341.0 | 737.0 | 671.5 | 65.45 | 11.260 | |
| 6,700.0 | 6,417.0 | 7,800.2 | 6,787.9 | 31.5 | 39.2 | 109.59 | -489.3 | -1,336.7 | 734.1 | 668.7 | 65.34 | 11.235 | |
| 6,750.0 | 6,455.7 | 7,768.4 | 6,788.1 | 31.4 | 38.4 | 109.14 | -489.3 | -1,304.9 | 715.4 | 650.7 | 64.65 | 11.065 | |
| 6,791.3 | 6,486.0 | 7,740.2 | 6,788.2 | 31.3 | 37.7 | 108.56 | -489.3 | -1,276.7 | 701.8 | 637.7 | 64.13 | 10.945 | |
| 6,800.0 | 6,492.2 | 7,734.0 | 6,788.2 | 31.3 | 37.5 | 108.41 | -489.3 | -1,270.6 | 699.2 | 635.2 | 64.02 | 10.922 | |
| 6,850.0 | 6,526.1 | 7,697.2 | 6,788.3 | 31.2 | 36.6 | 107.45 | -489.3 | -1,233.7 | 685.6 | 622.2 | 63.43 | 10.808 | |
| 6,889.7 | 6,551.2 | 7,666.3 | 6,788.4 | 31.2 | 35.8 | 106.57 | -489.3 | -1,202.8 | 676.4 | 613.4 | 62.99 | 10.738 | |
| 6,900.0 | 6,557.4 | 7,658.1 | 6,788.5 | 31.2 | 35.6 | 106.33 | -489.3 | -1,194.7 | 674.3 | 611.4 | 62.88 | 10.724 | |
| 6,950.0 | 6,586.0 | 7,617.0 | 6,788.6 | 31.1 | 34.6 | 105.09 | -489.3 | -1,153.5 | 665.1 | 602.8 | 62.32 | 10.673 | |
| 6,988.2 | 6,605.8 | 7,584.3 | 6,788.7 | 31.2 | 33.8 | 104.11 | -489.3 | -1,120.8 | 659.4 | 597.5 | 61.89 | 10.654 | |
| 7,000.0 | 6,611.5 | 7,573.9 | 6,788.8 | 31.2 | 33.6 | 103.81 | -489.3 | -1,110.4 | 657.8 | 596.1 | 61.75 | 10.653 | SF |
| 7,050.0 | 6,634.1 | 7,529.2 | 6,789.0 | 31.2 | 32.5 | 102.54 | -489.3 | -1,065.7 | 652.1 | 591.0 | 61.15 | 10.664 | |
| 7,086.6 | 6,648.6 | 7,495.5 | 6,789.1 | 31.3 | 31.7 | 101.65 | -489.3 | -1,032.1 | 648.9 | 588.2 | 60.70 | 10.690 | |
| 7,100.0 | 6,653.4 | 7,483.0 | 6,789.1 | 31.4 | 31.4 | 101.34 | -489.3 | -1,019.6 | 647.9 | 587.3 | 60.53 | 10.704 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7,150.0 | 6,669.5 | 7,435.7 | 6,789.3 | 31.6 | 30.4 | 100.27 | -489.3 | -972.2 | 644.7 | 584.8 | 59.88 | 10.766 | |
| 7,185.0 | 6,678.8 | 7,401.9 | 6,789.4 | 31.7 | 29.6 | 99.63 | -489.3 | -938.4 | 643.1 | 583.7 | 59.41 | 10.823 | |
| 7,200.0 | 6,682.3 | 7,387.3 | 6,789.5 | 31.8 | 29.3 | 99.38 | -489.3 | -923.8 | 642.5 | 583.3 | 59.21 | 10.850 | |
| 7,250.0 | 6,691.6 | 7,338.1 | 6,789.7 | 32.1 | 28.2 | 98.70 | -489.3 | -874.7 | 641.0 | 582.5 | 58.55 | 10.948 | |
| 7,283.4 | 6,696.0 | 7,305.0 | 6,789.8 | 32.3 | 27.4 | 98.38 | -489.3 | -841.5 | 640.4 | 582.3 | 58.10 | 11.022 | |
| 7,300.0 | 6,697.5 | 7,288.5 | 6,789.9 | 32.4 | 27.1 | 98.27 | -489.3 | -825.0 | 640.2 | 582.3 | 57.88 | 11.060 | |
| 7,350.0 | 6,699.9 | 7,236.5 | 6,789.9 | 32.8 | 26.0 | 98.08 | -489.3 | -773.1 | 639.8 | 582.6 | 57.20 | 11.186 | |
| 7,364.4 | 6,700.0 | 7,220.1 | 6,789.4 | 32.9 | 25.7 | 98.03 | -489.3 | -756.6 | 639.8 | 582.8 | 56.98 | 11.227 | |
| 7,381.9 | 6,699.9 | 7,200.2 | 6,788.3 | 33.1 | 25.3 | 97.95 | -489.3 | -736.7 | 639.6 | 582.9 | 56.72 | 11.278 | |
| 7,400.0 | 6,699.8 | 7,179.6 | 6,786.6 | 33.2 | 24.9 | 97.81 | -489.3 | -716.2 | 639.5 | 583.0 | 56.46 | 11.325 | |
| 7,480.3 | 6,699.2 | 7,090.0 | 6,772.3 | 34.0 | 23.2 | 96.59 | -489.3 | -627.9 | 637.9 | 582.3 | 55.60 | 11.473 | |
| 7,500.0 | 6,699.1 | 7,068.7 | 6,767.3 | 34.2 | 22.8 | 96.15 | -489.3 | -607.1 | 637.4 | 581.9 | 55.43 | 11.498 | |
| 7,578.7 | 6,698.6 | 6,986.8 | 6,742.3 | 35.2 | 21.4 | 93.96 | -489.3 | -529.2 | 635.2 | 580.1 | 55.07 | 11.534 | |
| 7,600.0 | 6,698.5 | 6,965.8 | 6,734.5 | 35.4 | 21.1 | 93.26 | -489.3 | -509.6 | 634.7 | 579.7 | 55.01 | 11.537 | |
| 7,677.1 | 6,698.0 | 6,893.7 | 6,703.3 | 36.5 | 20.1 | 90.49 | -489.3 | -444.7 | 633.5 | 578.5 | 55.04 | 11.511 | |
| 7,689.9 | 6,697.9 | 6,882.4 | 6,697.9 | 36.7 | 20.0 | 90.00 | -489.3 | -434.8 | 633.5 | 578.4 | 55.06 | 11.506 | |
| 7,700.0 | 6,697.8 | 6,873.6 | 6,693.6 | 36.8 | 19.9 | 89.61 | -489.3 | -427.2 | 633.5 | 578.4 | 55.07 | 11.503 | |
| 7,775.6 | 6,697.3 | 6,811.8 | 6,660.3 | 38.0 | 19.2 | 86.64 | -489.3 | -375.1 | 635.1 | 579.7 | 55.35 | 11.474 | |
| 7,800.0 | 6,697.2 | 6,793.3 | 6,649.5 | 38.3 | 19.0 | 85.67 | -489.3 | -360.0 | 636.3 | 580.8 | 55.45 | 11.474 | |
| 7,874.0 | 6,696.7 | 6,741.1 | 6,616.9 | 39.6 | 18.5 | 82.78 | -489.3 | -319.3 | 642.2 | 586.3 | 55.88 | 11.492 | |
| 7,900.0 | 6,696.5 | 6,724.2 | 6,605.7 | 40.0 | 18.4 | 81.80 | -489.3 | -306.6 | 645.2 | 589.1 | 56.04 | 11.513 | |
| 7,972.4 | 6,696.1 | 6,680.5 | 6,575.5 | 41.3 | 18.1 | 79.16 | -489.3 | -275.1 | 656.4 | 599.9 | 56.56 | 11.606 | |
| 8,000.0 | 6,695.9 | 6,665.2 | 6,564.5 | 41.8 | 18.0 | 78.20 | -489.3 | -264.4 | 661.9 | 605.1 | 56.76 | 11.662 | |
| 8,070.8 | 6,695.4 | 6,628.7 | 6,537.3 | 43.1 | 17.7 | 75.88 | -489.3 | -240.2 | 679.0 | 621.6 | 57.34 | 11.840 | |
| 8,100.0 | 6,695.2 | 6,614.9 | 6,526.6 | 43.7 | 17.6 | 74.98 | -489.3 | -231.3 | 687.3 | 629.7 | 57.59 | 11.935 | |
| 8,169.3 | 6,694.8 | 6,584.4 | 6,502.6 | 45.1 | 17.5 | 72.99 | -489.3 | -212.5 | 710.1 | 651.9 | 58.23 | 12.196 | |
| 8,200.0 | 6,694.6 | 6,571.9 | 6,492.5 | 45.7 | 17.4 | 72.16 | -489.3 | -205.1 | 721.6 | 663.1 | 58.52 | 12.332 | |
| 8,267.7 | 6,694.1 | 6,550.0 | 6,474.6 | 47.1 | 17.3 | 70.71 | -489.3 | -192.6 | 749.7 | 690.4 | 59.30 | 12.642 | |
| 8,300.0 | 6,693.9 | 6,534.9 | 6,462.0 | 47.8 | 17.2 | 69.71 | -489.3 | -184.3 | 764.4 | 704.9 | 59.55 | 12.838 | |
| 8,366.1 | 6,693.5 | 6,513.3 | 6,443.7 | 49.2 | 17.1 | 68.27 | -489.3 | -172.9 | 797.1 | 736.8 | 60.29 | 13.222 | |
| 8,400.0 | 6,693.3 | 6,500.0 | 6,432.2 | 49.9 | 17.0 | 67.38 | -489.3 | -166.1 | 815.0 | 754.4 | 60.58 | 13.454 | |
| 8,464.5 | 6,692.9 | 6,484.7 | 6,418.9 | 51.4 | 17.0 | 66.36 | -489.3 | -158.6 | 851.3 | 789.9 | 61.45 | 13.855 | |
| 8,500.0 | 6,692.6 | 6,475.3 | 6,410.6 | 52.1 | 16.9 | 65.74 | -489.3 | -154.1 | 872.4 | 810.5 | 61.88 | 14.098 | |
| 8,563.0 | 6,692.2 | 6,450.0 | 6,388.1 | 53.6 | 16.8 | 64.08 | -489.3 | -142.6 | 911.7 | 849.3 | 62.37 | 14.618 | |
| 8,600.0 | 6,692.0 | 6,450.0 | 6,388.1 | 54.4 | 16.8 | 64.08 | -489.3 | -142.6 | 935.6 | 872.5 | 63.13 | 14.820 | |
| 8,661.4 | 6,691.6 | 6,450.0 | 6,388.1 | 55.8 | 16.8 | 64.08 | -489.3 | -142.6 | 977.1 | 912.7 | 64.42 | 15.167 | |
| 8,700.0 | 6,691.3 | 6,429.6 | 6,369.7 | 56.7 | 16.8 | 62.75 | -489.3 | -133.9 | 1,003.8 | 939.3 | 64.53 | 15.557 | |
| 8,759.8 | 6,690.9 | 6,418.0 | 6,359.1 | 58.1 | 16.7 | 62.00 | -489.3 | -129.2 | 1,046.7 | 981.3 | 65.38 | 16.010 | |
| 8,800.0 | 6,690.7 | 6,400.0 | 6,342.4 | 59.1 | 16.6 | 60.84 | -489.3 | -122.2 | 1,076.4 | 1,010.8 | 65.55 | 16.420 | |
| 8,858.2 | 6,690.3 | 6,400.0 | 6,342.4 | 60.5 | 16.6 | 60.84 | -489.3 | -122.2 | 1,120.1 | 1,053.3 | 66.79 | 16.771 | |
| 8,900.0 | 6,690.0 | 6,400.0 | 6,342.4 | 61.5 | 16.6 | 60.84 | -489.3 | -122.2 | 1,152.2 | 1,084.6 | 67.67 | 17.026 | |
| 8,956.7 | 6,689.7 | 6,385.1 | 6,328.6 | 62.9 | 16.6 | 59.90 | -489.3 | -116.8 | 1,196.6 | 1,128.3 | 68.31 | 17.517 | |
| 9,000.0 | 6,689.4 | 6,378.8 | 6,322.6 | 63.9 | 16.6 | 59.50 | -489.3 | -114.6 | 1,231.1 | 1,162.1 | 68.98 | 17.848 | |
| 9,055.1 | 6,689.0 | 6,371.1 | 6,315.4 | 65.3 | 16.6 | 59.02 | -489.3 | -112.0 | 1,275.6 | 1,205.8 | 69.84 | 18.264 | |
| 9,100.0 | 6,688.7 | 6,350.0 | 6,295.5 | 66.4 | 16.5 | 57.71 | -489.3 | -105.1 | 1,312.7 | 1,242.8 | 69.92 | 18.775 | |
| 9,153.5 | 6,688.4 | 6,350.0 | 6,295.5 | 67.7 | 16.5 | 57.71 | -489.3 | -105.1 | 1,357.0 | 1,285.9 | 71.06 | 19.097 | |
| 9,200.0 | 6,688.1 | 6,350.0 | 6,295.5 | 68.9 | 16.5 | 57.71 | -489.3 | -105.1 | 1,396.0 | 1,323.9 | 72.05 | 19.375 | |
| 9,251.9 | 6,687.8 | 6,350.0 | 6,295.5 | 70.2 | 16.5 | 57.71 | -489.3 | -105.1 | 1,440.1 | 1,366.9 | 73.17 | 19.681 | |
| 9,300.0 | 6,687.4 | 6,350.0 | 6,295.5 | 71.4 | 16.5 | 57.71 | -489.3 | -105.1 | 1,481.3 | 1,407.1 | 74.21 | 19.962 | |
| 9,350.4 | 6,687.1 | 6,350.0 | 6,295.5 | 72.7 | 16.5 | 57.71 | -489.3 | -105.1 | 1,525.0 | 1,449.7 | 75.30 | 20.252 | |
| 9,400.0 | 6,686.8 | 6,331.6 | 6,277.9 | 73.9 | 16.4 | 56.60 | -489.3 | -99.7 | 1,568.1 | 1,492.5 | 75.53 | 20.761 | |
| 9,448.8 | 6,686.5 | 6,327.0 | 6,273.5 | 75.2 | 16.4 | 56.32 | -489.3 | -98.4 | 1,610.9 | 1,534.6 | 76.37 | 21.094 | |

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

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

**Offset Design** SW NW SEC. 17 T5N R64W 6th P.M. - SCHAUMBERG 17G-314 - ORIGINAL WELLBORE - PROPOS

**Offset Site Error:** 0.0 usft

**Survey Program:** 0-MWD

**Offset Well Error:** 0.0 usft

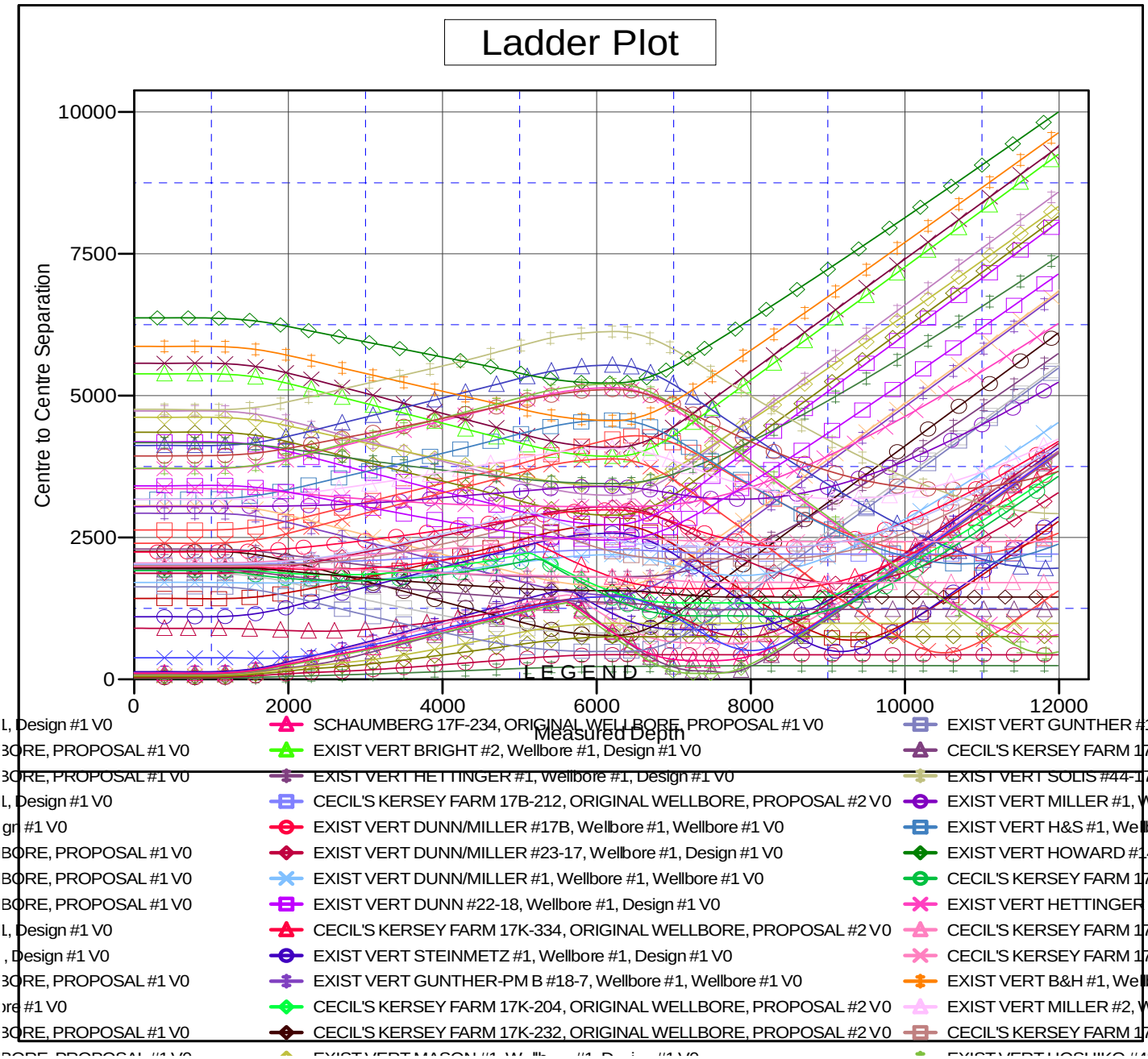
| Reference Measured Depth (usft) | Reference Vertical Depth (usft) | Offset Measured Depth (usft) | Offset Vertical Depth (usft) | Semi Major Axis Reference (usft) | Semi Major Axis Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Offset Wellbore Centre +E/-W (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9,500.0 | 6,686.1 | 6,322.4 | 6,269.0 | 76.5 | 16.4 | 56.04 | -489.3 | -97.1 | 1,656.2 | 1,579.0 | 77.25 | 21.439 | |
| 9,547.2 | 6,685.8 | 6,318.2 | 6,265.1 | 77.7 | 16.4 | 55.79 | -489.3 | -96.0 | 1,698.2 | 1,620.2 | 78.07 | 21.752 | |
| 9,600.0 | 6,685.5 | 6,300.0 | 6,247.4 | 79.0 | 16.3 | 54.72 | -489.3 | -91.3 | 1,745.7 | 1,667.3 | 78.31 | 22.292 | |
| 9,645.6 | 6,685.2 | 6,300.0 | 6,247.4 | 80.2 | 16.3 | 54.72 | -489.3 | -91.3 | 1,786.7 | 1,707.4 | 79.29 | 22.533 | |
| 9,700.0 | 6,684.8 | 6,300.0 | 6,247.4 | 81.6 | 16.3 | 54.72 | -489.3 | -91.3 | 1,835.8 | 1,755.3 | 80.46 | 22.816 | |
| 9,744.1 | 6,684.6 | 6,300.0 | 6,247.4 | 82.8 | 16.3 | 54.72 | -489.3 | -91.3 | 1,875.8 | 1,794.4 | 81.41 | 23.041 | |
| 9,800.0 | 6,684.2 | 6,300.0 | 6,247.4 | 84.2 | 16.3 | 54.72 | -489.3 | -91.3 | 1,926.9 | 1,844.2 | 82.62 | 23.322 | |
| 9,842.5 | 6,683.9 | 6,300.0 | 6,247.4 | 85.3 | 16.3 | 54.72 | -489.3 | -91.3 | 1,965.8 | 1,882.3 | 83.54 | 23.531 | |
| 9,900.0 | 6,683.5 | 6,300.0 | 6,247.4 | 86.8 | 16.3 | 54.72 | -489.3 | -91.3 | 2,018.8 | 1,934.0 | 84.79 | 23.810 | |
| 9,940.9 | 6,683.3 | 6,300.0 | 6,247.4 | 87.9 | 16.3 | 54.72 | -489.3 | -91.3 | 2,056.6 | 1,970.9 | 85.68 | 24.003 | |
| 10,000.0 | 6,682.9 | 6,300.0 | 6,247.4 | 89.5 | 16.3 | 54.72 | -489.3 | -91.3 | 2,111.5 | 2,024.5 | 86.97 | 24.278 | |
| 10,039.3 | 6,682.6 | 6,300.0 | 6,247.4 | 90.5 | 16.3 | 54.72 | -489.3 | -91.3 | 2,148.1 | 2,060.3 | 87.83 | 24.457 | |
| 10,100.0 | 6,682.2 | 6,280.0 | 6,227.9 | 92.1 | 16.3 | 53.56 | -489.3 | -86.7 | 2,204.4 | 2,116.4 | 88.03 | 25.042 | |
| 10,137.8 | 6,682.0 | 6,277.9 | 6,225.9 | 93.1 | 16.3 | 53.44 | -489.3 | -86.3 | 2,239.7 | 2,151.0 | 88.73 | 25.243 | |
| 10,200.0 | 6,681.6 | 6,274.5 | 6,222.6 | 94.8 | 16.3 | 53.25 | -489.3 | -85.6 | 2,298.1 | 2,208.2 | 89.88 | 25.568 | |
| 10,236.2 | 6,681.4 | 6,272.7 | 6,220.8 | 95.7 | 16.3 | 53.15 | -489.3 | -85.2 | 2,332.1 | 2,241.5 | 90.56 | 25.753 | |
| 10,300.0 | 6,680.9 | 6,269.5 | 6,217.6 | 97.4 | 16.3 | 52.97 | -489.3 | -84.6 | 2,392.2 | 2,300.4 | 91.75 | 26.073 | |
| 10,334.6 | 6,680.7 | 6,250.0 | 6,198.5 | 98.3 | 16.2 | 51.88 | -489.3 | -80.9 | 2,425.1 | 2,333.8 | 91.34 | 26.552 | |
| 10,400.0 | 6,680.3 | 6,250.0 | 6,198.5 | 100.1 | 16.2 | 51.88 | -489.3 | -80.9 | 2,486.9 | 2,394.2 | 92.73 | 26.818 | |
| 10,433.0 | 6,680.1 | 6,250.0 | 6,198.5 | 101.0 | 16.2 | 51.88 | -489.3 | -80.9 | 2,518.2 | 2,424.8 | 93.44 | 26.949 | |
| 10,500.0 | 6,679.7 | 6,250.0 | 6,198.5 | 102.8 | 16.2 | 51.88 | -489.3 | -80.9 | 2,581.7 | 2,486.8 | 94.88 | 27.211 | |
| 10,531.5 | 6,679.4 | 6,250.0 | 6,198.5 | 103.6 | 16.2 | 51.88 | -489.3 | -80.9 | 2,611.6 | 2,516.1 | 95.56 | 27.331 | |
| 10,600.0 | 6,679.0 | 6,250.0 | 6,198.5 | 105.4 | 16.2 | 51.88 | -489.3 | -80.9 | 2,676.9 | 2,579.9 | 97.03 | 27.589 | |
| 10,629.9 | 6,678.8 | 6,250.0 | 6,198.5 | 106.2 | 16.2 | 51.88 | -489.3 | -80.9 | 2,705.4 | 2,607.8 | 97.67 | 27.699 | |
| 10,700.0 | 6,678.4 | 6,250.0 | 6,198.5 | 108.1 | 16.2 | 51.88 | -489.3 | -80.9 | 2,772.4 | 2,673.3 | 99.19 | 27.952 | |
| 10,728.3 | 6,678.2 | 6,250.0 | 6,198.5 | 108.9 | 16.2 | 51.88 | -489.3 | -80.9 | 2,799.6 | 2,699.8 | 99.80 | 28.052 | |
| 10,800.0 | 6,677.7 | 6,250.0 | 6,198.5 | 110.8 | 16.2 | 51.88 | -489.3 | -80.9 | 2,868.3 | 2,766.9 | 101.35 | 28.302 | |
| 10,826.7 | 6,677.5 | 6,250.0 | 6,198.5 | 111.5 | 16.2 | 51.88 | -489.3 | -80.9 | 2,894.0 | 2,792.0 | 101.93 | 28.393 | |
| 10,900.0 | 6,677.1 | 6,250.0 | 6,198.5 | 113.5 | 16.2 | 51.88 | -489.3 | -80.9 | 2,964.4 | 2,860.9 | 103.51 | 28.638 | |
| 10,925.2 | 6,676.9 | 6,250.0 | 6,198.5 | 114.2 | 16.2 | 51.88 | -489.3 | -80.9 | 2,988.6 | 2,884.6 | 104.06 | 28.721 | |
| 11,000.0 | 6,676.4 | 6,250.0 | 6,198.5 | 116.2 | 16.2 | 51.88 | -489.3 | -80.9 | 3,060.8 | 2,955.1 | 105.68 | 28.962 | |
| 11,023.6 | 6,676.3 | 6,250.0 | 6,198.5 | 116.8 | 16.2 | 51.88 | -489.3 | -80.9 | 3,083.5 | 2,977.3 | 106.19 | 29.037 | |
| 11,100.0 | 6,675.8 | 6,250.0 | 6,198.5 | 118.9 | 16.2 | 51.88 | -489.3 | -80.9 | 3,157.3 | 3,049.5 | 107.86 | 29.274 | |
| 11,122.0 | 6,675.6 | 6,250.0 | 6,198.5 | 119.5 | 16.2 | 51.88 | -489.3 | -80.9 | 3,178.6 | 3,070.3 | 108.33 | 29.341 | |
| 11,200.0 | 6,675.1 | 6,250.0 | 6,198.5 | 121.6 | 16.2 | 51.88 | -489.3 | -80.9 | 3,254.1 | 3,144.1 | 110.03 | 29.574 | |
| 11,220.4 | 6,675.0 | 6,250.0 | 6,198.5 | 122.2 | 16.2 | 51.88 | -489.3 | -80.9 | 3,274.0 | 3,163.5 | 110.48 | 29.634 | |
| 11,300.0 | 6,674.5 | 6,250.0 | 6,198.5 | 124.3 | 16.2 | 51.88 | -489.3 | -80.9 | 3,351.1 | 3,238.9 | 112.21 | 29.864 | |
| 11,318.9 | 6,674.3 | 6,250.0 | 6,198.5 | 124.9 | 16.2 | 51.88 | -489.3 | -80.9 | 3,369.4 | 3,256.8 | 112.63 | 29.917 | |
| 11,400.0 | 6,673.8 | 6,250.0 | 6,198.5 | 127.1 | 16.2 | 51.88 | -489.3 | -80.9 | 3,448.3 | 3,333.9 | 114.40 | 30.143 | |
| 11,417.3 | 6,673.7 | 6,229.2 | 6,178.0 | 127.5 | 16.2 | 50.75 | -489.3 | -77.6 | 3,464.7 | 3,351.5 | 113.21 | 30.603 | |
| 11,500.0 | 6,673.2 | 6,227.1 | 6,175.9 | 129.8 | 16.2 | 50.64 | -489.3 | -77.3 | 3,545.2 | 3,430.3 | 114.83 | 30.872 | |
| 11,515.7 | 6,673.1 | 6,226.7 | 6,175.5 | 130.2 | 16.2 | 50.62 | -489.3 | -77.2 | 3,560.5 | 3,445.3 | 115.14 | 30.922 | |
| 11,600.0 | 6,672.5 | 6,224.6 | 6,173.4 | 132.5 | 16.1 | 50.50 | -489.3 | -76.9 | 3,642.5 | 3,525.7 | 116.80 | 31.187 | |
| 11,614.1 | 6,672.4 | 6,224.3 | 6,173.1 | 132.9 | 16.1 | 50.49 | -489.3 | -76.9 | 3,656.3 | 3,539.2 | 117.08 | 31.230 | |
| 11,700.0 | 6,671.9 | 6,222.2 | 6,171.1 | 135.3 | 16.1 | 50.38 | -489.3 | -76.6 | 3,740.0 | 3,621.2 | 118.77 | 31.491 | |
| 11,712.6 | 6,671.8 | 6,221.9 | 6,170.8 | 135.6 | 16.1 | 50.36 | -489.3 | -76.6 | 3,752.3 | 3,633.3 | 119.01 | 31.528 | |
| 11,800.0 | 6,671.2 | 6,200.0 | 6,149.0 | 138.0 | 16.1 | 49.22 | -489.3 | -73.9 | 3,837.9 | 3,718.8 | 119.14 | 32.214 | |
| 11,811.0 | 6,671.1 | 6,200.0 | 6,149.0 | 138.3 | 16.1 | 49.22 | -489.3 | -73.9 | 3,848.7 | 3,729.3 | 119.37 | 32.241 | |
| 11,900.0 | 6,670.6 | 6,200.0 | 6,149.0 | 140.7 | 16.1 | 49.22 | -489.3 | -73.9 | 3,935.6 | 3,814.3 | 121.26 | 32.455 | |
| 11,909.4 | 6,670.5 | 6,200.0 | 6,149.0 | 141.0 | 16.1 | 49.22 | -489.3 | -73.9 | 3,944.8 | 3,823.3 | 121.46 | 32.478 | |
| 11,987.2 | 6,670.0 | 6,200.0 | 6,149.0 | 143.1 | 16.1 | 49.22 | -489.3 | -73.9 | 4,020.9 | 3,897.7 | 123.12 | 32.659 | |

| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to KB-EST @ 4633.0usft (Original Well E
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: SCHAUMBERG 17F-202
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°

## Ladder Plot



| | | | |
|---|---|---|---|
| **Company:** | PDC ENERGY | **Local Co-ordinate Reference:** | Well SCHAUMBERG 17F-202 |
| **Project:** | WELD COUNTY, COLORADO | **TVD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Reference Site:** | SW NW SEC. 17 T5N R64W 6th P.M. | **MD Reference:** | KB-EST @ 4633.0usft (Original Well Elev) |
| **Site Error:** | 0.0 usft | **North Reference:** | True |
| **Reference Well:** | SCHAUMBERG 17F-202 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDM 5000.1 Single User Db |
| **Reference Design:** | PROPOSAL #1 | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to KB-EST @ 4633.0usft (Original Well E
Coordinates are relative to: SCHAUMBERG 17F-202
Offset Depths are relative to Offset Datum
Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000
Grid Convergence at Surface is: 0.59°

## Separation Factor Plot