

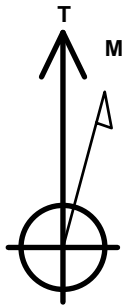
# PDC Energy Inc. DJ Basin

Well Name: **Fern 11U-434**

Surface Location: Fern 5N65W11EJ Pad Sec.11-T5N-R65W  
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone  
 Ground Elevation: 4619.0  
 +N/-S +E/-W Northing Easting Longitude Slot  
 0.0 0.0 1397214.23 3240103.78 40.420550 -104.637625  
 Original Well Elev WELL @ 4642.0ft (Original Well Elev)

## DESIGN TARGET DETAILS

| Name                         | TVD    | +N/-S  | +E/-W   | Shape |
|------------------------------|--------|--------|---------|-------|
| SHL 276'FNL, 689'FWL, SEC.11 | 1.0    | 0.0    | 0.0     | Point |
| BHL 485'FNL, 2530'FEL, SEC.9 | 6872.0 | -397.1 | -8477.0 | Point |
| LPL 485'FNL, 0'FEL, SEC.10   | 6922.0 | -207.0 | -688.3  | Point |



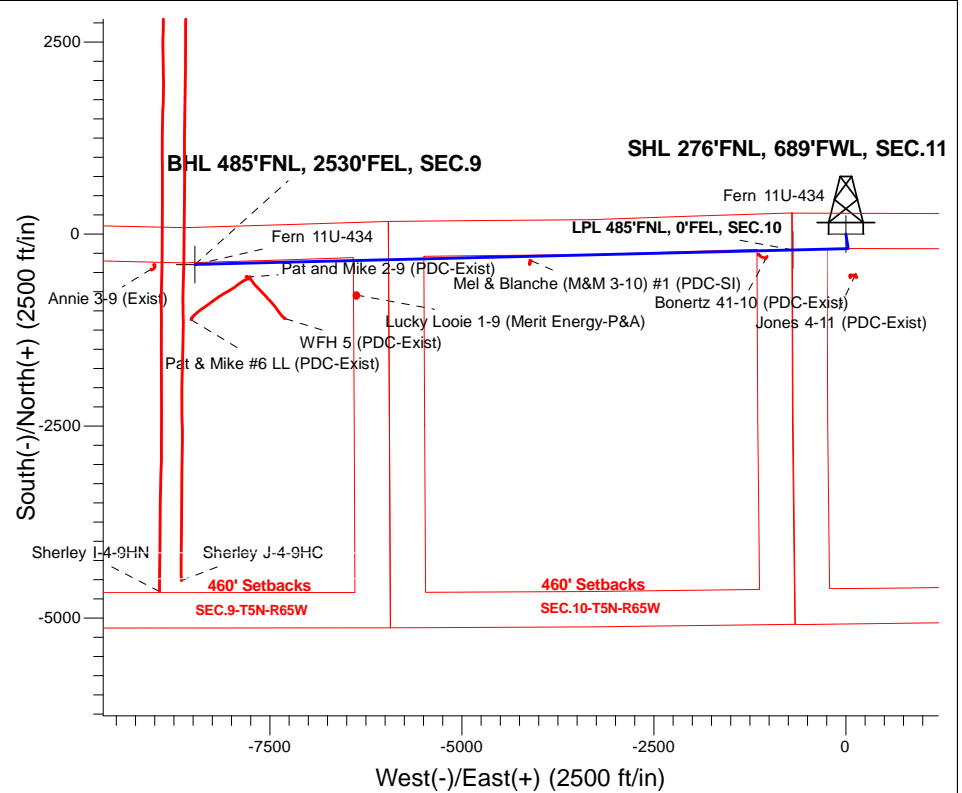
Azimuths to True North  
 Magnetic North: 7.99°

Magnetic Field  
 Strength: 52530.4snT  
 Dip Angle: 66.88°  
 Date: 5/26/2017  
 Model: IGRF2010

Fern 5N65W11EJ Pad Sec.11-T5N-R65W  
 Fern 11U-434  
 Plan #4 (9-15-17)  
 15:07, September 15 2017

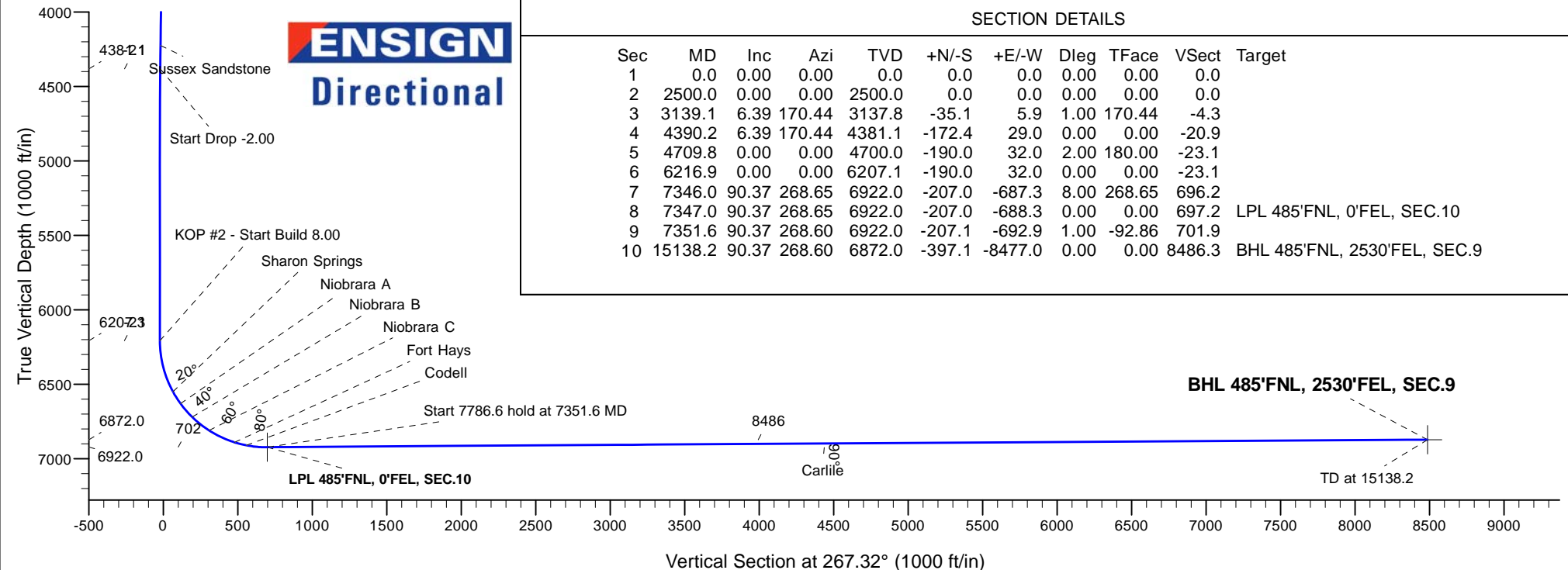
## ANNOTATIONS

| TVD    | MD      | Annotation                     |
|--------|---------|--------------------------------|
| 2500.0 | 2500.0  | KOP - Start Build 1.00         |
| 4381.1 | 4390.2  | Start Drop -2.00               |
| 6207.1 | 6216.9  | KOP #2 - Start Build 8.00      |
| 6922.0 | 7351.6  | Start 7786.6 hold at 7351.6 MD |
| 6872.0 | 15138.2 | TD at 15138.2                  |



## SECTION DETAILS

| Sec | MD      | Inc   | Azi    | TVD    | +N/-S  | +E/-W   | Dleg | TFace  | Vsect  | Target                       |
|-----|---------|-------|--------|--------|--------|---------|------|--------|--------|------------------------------|
| 1   | 0.0     | 0.00  | 0.00   | 0.0    | 0.0    | 0.0     | 0.00 | 0.00   | 0.0    |                              |
| 2   | 2500.0  | 0.00  | 0.00   | 2500.0 | 0.0    | 0.0     | 0.00 | 0.00   | 0.0    |                              |
| 3   | 3139.1  | 6.39  | 170.44 | 3137.8 | -35.1  | 5.9     | 1.00 | 170.44 | -4.3   |                              |
| 4   | 4390.2  | 6.39  | 170.44 | 4381.1 | -172.4 | 29.0    | 0.00 | 0.00   | -20.9  |                              |
| 5   | 4709.8  | 0.00  | 0.00   | 4700.0 | -190.0 | 32.0    | 2.00 | 180.00 | -23.1  |                              |
| 6   | 6216.9  | 0.00  | 0.00   | 6207.1 | -190.0 | 32.0    | 0.00 | 0.00   | -23.1  |                              |
| 7   | 7346.0  | 90.37 | 268.65 | 6922.0 | -207.0 | -687.3  | 8.00 | 268.65 | 696.2  |                              |
| 8   | 7347.0  | 90.37 | 268.65 | 6922.0 | -207.0 | -688.3  | 0.00 | 0.00   | 697.2  | LPL 485'FNL, 0'FEL, SEC.10   |
| 9   | 7351.6  | 90.37 | 268.60 | 6922.0 | -207.1 | -692.9  | 1.00 | -92.86 | 701.9  |                              |
| 10  | 15138.2 | 90.37 | 268.60 | 6872.0 | -397.1 | -8477.0 | 0.00 | 0.00   | 8486.3 | BHL 485'FNL, 2530'FEL, SEC.9 |





# Directional

## **PDC Energy Inc. DJ Basin**

**SEC.11-T5N-R65W**

**Fern 5N65W11EJ Pad Sec.11-T5N-R65W**

**Fern 11U-434**

**Wellbore #1**

**Plan #4 (9-15-17)**

## **Anticollision Summary Report**

**15 September, 2017**



|                           |                                    |                                     |                                      |
|---------------------------|------------------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>           | PDC Energy Inc. DJ Basin           | <b>Local Co-ordinate Reference:</b> | Well Fern 11U-434                    |
| <b>Project:</b>           | SEC.11-T5N-R65W                    | <b>TVD Reference:</b>               | WELL @ 4642.0ft (Original Well Elev) |
| <b>Reference Site:</b>    | Fern 5N65W11EJ Pad Sec.11-T5N-R65W | <b>MD Reference:</b>                | WELL @ 4642.0ft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0 ft                             | <b>North Reference:</b>             | True                                 |
| <b>Reference Well:</b>    | Fern 11U-434                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Well Error:</b>        | 0.0 ft                             | <b>Output errors are at</b>         | 2.45 sigma                           |
| <b>Reference Wellbore</b> | Wellbore #1                        | <b>Database:</b>                    | US_EDM                               |
| <b>Reference Design:</b>  | Plan #4 (9-15-17)                  | <b>Offset TVD Reference:</b>        | Offset Datum                         |

|                                     |   |                       |                     |
|-------------------------------------|---|-----------------------|---------------------|
| <b>Reference</b>                    | Plan #4 (9-15-17)   |                       |                     |
| <b>Filter type:</b>                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |                       |                     |
| <b>Interpolation Method:</b>        | MD Interval 100.0ft   | <b>Error Model:</b>   | ISCWSA              |
| <b>Depth Range:</b>                 | Unlimited   | <b>Scan Method:</b>   | Closest Approach 3D |
| <b>Results Limited by:</b>          | Maximum center-center distance of 1,000.0 ft                        | <b>Error Surface:</b> | Elliptical Conic    |
| <b>Warning Levels Evaluated at:</b> | 2.45 Sigma  | <b>Casing Method:</b> | Not applied         |

|                            |                |                                 |                  |                    |
|----------------------------|----------------|---------------------------------|------------------|--------------------|
| <b>Survey Tool Program</b> | <b>Date</b>    | 9/15/2017                       |                  |                    |
| <b>From (ft)</b>           | <b>To (ft)</b> | <b>Survey (Wellbore)</b>        | <b>Tool Name</b> | <b>Description</b> |
| 0.0                        | 15,138.2       | Plan #4 (9-15-17) (Wellbore #1) | MWD              | MWD - Standard     |

| Site Name   | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning             |
|---|-------------------------------|----------------------------|-------------------------------|--------------------------------|-------------------|---------------------|
| <b>Existing Wells Sec.10-T5N-R65W</b>                   |                               |                            |                               |                                |                   |                     |
| Bonertz 41-10 (PDC-Exist) - Wellbore #1 - Wellbore #1   | 7,691.9                       | 6,897.2                    | 86.4                          | 31.3                           | 1.569             | CC, ES              |
| Bonertz 41-10 (PDC-Exist) - Wellbore #1 - Wellbore #1   | 7,700.0                       | 6,896.9                    | 86.8                          | 31.4                           | 1.568             | SF                  |
| Mel & Blanche (M&M 3-10) #1 (PDC-SI) - Wellbore #1 - W  | 10,759.5                      | 6,880.4                    | 57.2                          | -97.7                          | 0.369             | Level 1, CC, ES, SF |
| <b>Existing Wells Sec.11-T5N-R65W</b>                   |                               |                            |                               |                                |                   |                     |
| Jones 4-11 (PDC-Exist) - Wellbore #1 - Wellbore #1      | 4,666.4                       | 4,625.3                    | 361.5                         | 338.5                          | 15.755            | CC, ES              |
| Jones 4-11 (PDC-Exist) - Wellbore #1 - Wellbore #1      | 6,400.0                       | 6,376.9                    | 381.7                         | 350.3                          | 12.183            | SF                  |
| <b>Existing Wells Sec.4-T5N-R65W</b>                    |                               |                            |                               |                                |                   |                     |
| Annie 3-9 (Exist) - Wellbore #1 - Wellbore #1           | 15,138.2                      | 6,851.8                    | 566.0                         | 261.6                          | 1.859             | CC, ES, SF          |
| <b>Existing Wells Sec.9-T5N-R65W</b>                    |                               |                            |                               |                                |                   |                     |
| Lucky Looie 1-9 (Merit Energy-P&A) - Wellbore #1 - Well | 13,046.0                      | 6,862.4                    | 449.3                         | 63.3                           | 1.164             | Level 2, CC, ES, SF |
| Pat & Mike #6 LL (PDC-Exist) - Wellbore #1 - Wellbore # | 15,138.2                      | 6,938.0                    | 711.3                         | 397.8                          | 2.269             | CC, ES, SF          |
| Pat and Mike 2-9 (PDC-Exist) - Wellbore #1 - Wellbore # | 14,474.9                      | 6,861.6                    | 178.6                         | -104.8                         | 0.630             | Level 1, CC, ES, SF |
| WFH 5 (PDC-Exist) - Wellbore #1 - Wellbore #1           | 13,976.7                      | 6,917.4                    | 735.5                         | 465.6                          | 2.725             | CC                  |
| WFH 5 (PDC-Exist) - Wellbore #1 - Wellbore #1           | 14,000.0                      | 6,917.1                    | 735.8                         | 465.2                          | 2.719             | ES, SF              |
| <b>Fern 5N65W11EJ Pad Sec.11-T5N-R65W</b>               |                               |                            |                               |                                |                   |                     |
| Fern 11U-204 - Wellbore #1 - Plan #3 (8-10-17)          | 2,000.0                       | 2,000.0                    | 14.9                          | 4.2                            | 1.391             | Level 3, CC         |
| Fern 11U-204 - Wellbore #1 - Plan #3 (8-10-17)          | 15,138.2                      | 14,986.5                   | 335.7                         | -194.7                         | 0.633             | Level 1, ES, SF     |
| Fern 11U-334 - Wellbore #1 - Plan #4 (8-10-17)          | 1,800.0                       | 1,800.0                    | 14.9                          | 5.3                            | 1.551             | CC                  |
| Fern 11U-334 - Wellbore #1 - Plan #4 (8-10-17)          | 15,138.2                      | 15,071.7                   | 228.1                         | -324.2                         | 0.413             | Level 1, ES, SF     |
| Fern 11V-204 - Wellbore #1 - Plan #3 (8-10-17)          | 1,000.0                       | 1,000.0                    | 60.1                          | 54.9                           | 11.491            | CC, ES              |
| Fern 11V-204 - Wellbore #1 - Plan #3 (8-10-17)          | 15,138.2                      | 15,057.5                   | 917.9                         | 345.4                          | 1.603             | SF                  |
| Fern 11V-214 - Wellbore #1 - Plan #4 (8-11-17)          | 1,400.0                       | 1,400.0                    | 30.2                          | 22.8                           | 4.068             | CC                  |
| Fern 11V-214 - Wellbore #1 - Plan #4 (8-11-17)          | 15,138.2                      | 15,006.1                   | 468.5                         | -85.9                          | 0.845             | Level 1, ES, SF     |
| Fern 11V-234 - Wellbore #1 - Plan #3 (8-11-17)          | 600.0                         | 600.0                      | 90.0                          | 87.0                           | 29.712            | CC, ES              |
| Fern 11V-234 - Wellbore #1 - Plan #3 (8-11-17)          | 1,100.0                       | 1,085.9                    | 121.8                         | 116.2                          | 21.799            | SF                  |
| Fern 11V-304 - Wellbore #1 - Plan #3 (8-11-17)          | 1,200.0                       | 1,200.0                    | 45.2                          | 38.8                           | 7.134             | CC, ES              |
| Fern 11V-304 - Wellbore #1 - Plan #3 (8-11-17)          | 15,138.2                      | 15,103.5                   | 680.8                         | 104.8                          | 1.182             | Level 2, SF         |
| Fern 11V-334 - Wellbore #1 - Plan #3 (8-11-17)          | 800.0                         | 800.0                      | 75.0                          | 70.9                           | 18.171            | CC, ES              |
| Fern 11V-334 - Wellbore #1 - Plan #3 (8-11-17)          | 1,100.0                       | 1,093.6                    | 86.6                          | 80.9                           | 15.365            | SF                  |
| Fern 11W-214 - Wellbore #1 - Plan #3 (8-11-17)          | 200.0                         | 200.0                      | 120.2                         | 119.4                          | 145.553           | CC, ES              |
| Fern 11W-214 - Wellbore #1 - Plan #3 (8-11-17)          | 1,100.0                       | 1,057.8                    | 221.7                         | 215.9                          | 38.603            | SF                  |
| Fern 11W-314 - Wellbore #1 - Plan #3 (8-11-17)          | 400.0                         | 400.0                      | 104.9                         | 103.0                          | 54.439            | CC, ES              |
| Fern 11W-314 - Wellbore #1 - Plan #3 (8-11-17)          | 4,800.0                       | 4,659.2                    | 974.9                         | 935.0                          | 24.429            | SF                  |

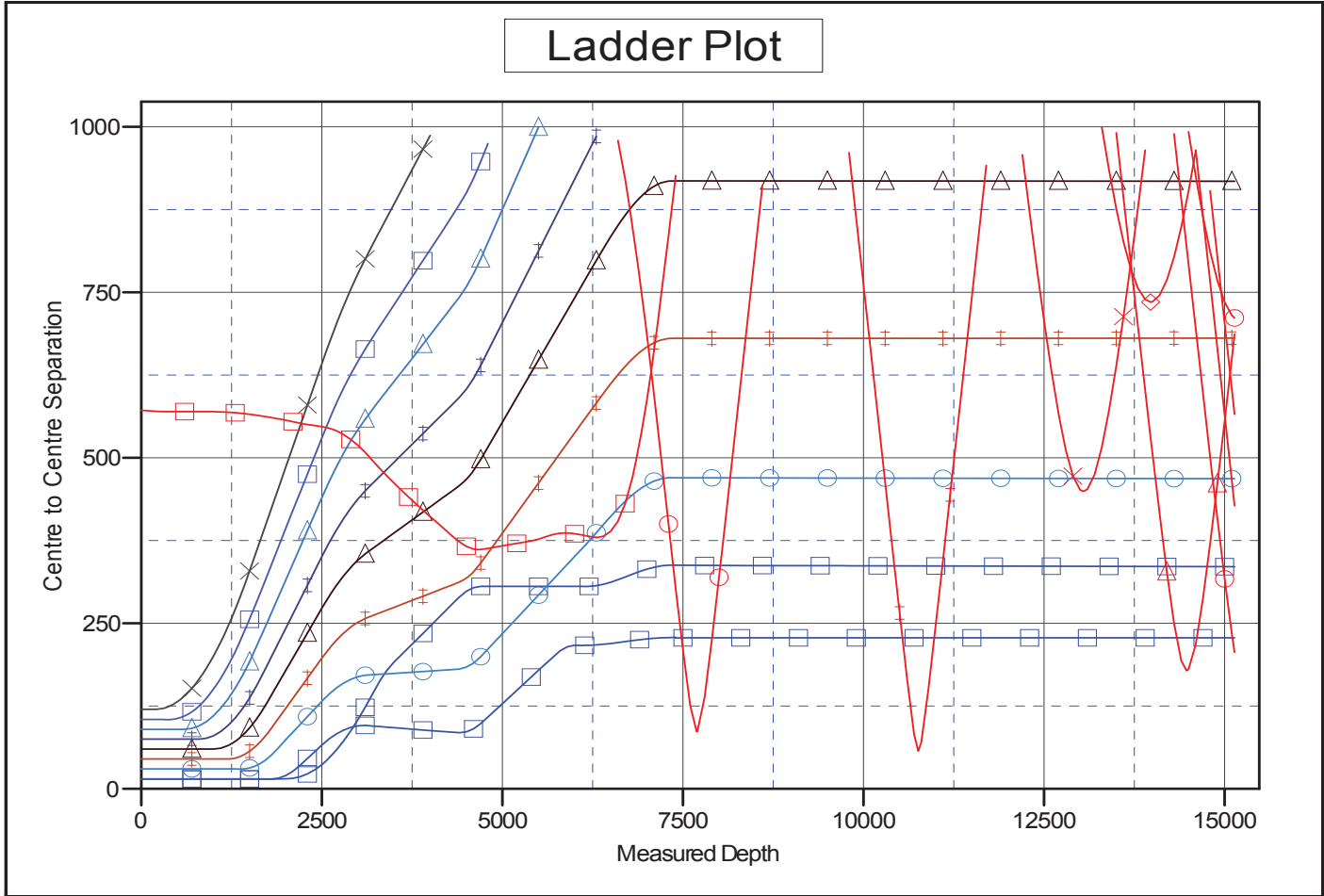
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

|                           |                                    |                                     |                                      |
|---------------------------|------------------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>           | PDC Energy Inc. DJ Basin           | <b>Local Co-ordinate Reference:</b> | Well Fern 11U-434                    |
| <b>Project:</b>           | SEC.11-T5N-R65W                    | <b>TVD Reference:</b>               | WELL @ 4642.0ft (Original Well Elev) |
| <b>Reference Site:</b>    | Fern 5N65W11EJ Pad Sec.11-T5N-R65W | <b>MD Reference:</b>                | WELL @ 4642.0ft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0 ft                             | <b>North Reference:</b>             | True                                 |
| <b>Reference Well:</b>    | Fern 11U-434                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Well Error:</b>        | 0.0 ft                             | <b>Output errors are at</b>         | 2.45 sigma                           |
| <b>Reference Wellbore</b> | Wellbore #1                        | <b>Database:</b>                    | US_EDM                               |
| <b>Reference Design:</b>  | Plan #4 (9-15-17)                  | <b>Offset TVD Reference:</b>        | Offset Datum                         |

| Summary                                     |                               |                            |                               |                                |                   |            |
|---|-------------------------------|----------------------------|-------------------------------|--------------------------------|-------------------|------------|
| Site Name                                   | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning    |
| Sherley Pad Sec.4-T5N-R65W                  |                               |                            |                               |                                |                   |            |
| Sherley I-4-9HN - Wellbore #1 - Wellbore #1 | 15,138.2                      | 12,646.8                   | 427.8                         | 168.3                          | 1.648             | CC, ES, SF |
| Sherley J-4-9HC - Wellbore #1 - Wellbore #1 | 15,138.2                      | 12,896.5                   | 206.4                         | 71.2                           | 1.526             | CC, ES, SF |

|                           |                                    |                                     |                                      |
|---------------------------|------------------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>           | PDC Energy Inc. DJ Basin           | <b>Local Co-ordinate Reference:</b> | Well Fern 11U-434                    |
| <b>Project:</b>           | SEC.11-T5N-R65W                    | <b>TVD Reference:</b>               | WELL @ 4642.0ft (Original Well Elev) |
| <b>Reference Site:</b>    | Fern 5N65W11EJ Pad Sec.11-T5N-R65W | <b>MD Reference:</b>                | WELL @ 4642.0ft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0 ft                             | <b>North Reference:</b>             | True                                 |
| <b>Reference Well:</b>    | Fern 11U-434                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Well Error:</b>        | 0.0 ft                             | <b>Output errors are at</b>         | 2.45 sigma                           |
| <b>Reference Wellbore</b> | Wellbore #1                        | <b>Database:</b>                    | US_EDM                               |
| <b>Reference Design:</b>  | Plan #4 (9-15-17)                  | <b>Offset TVD Reference:</b>        | Offset Datum                         |

Reference Depths are relative to WELL @ 4642.0ft (Original Well Elev)      Coordinates are relative to: Fern 11U-434  
 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: 0.56°

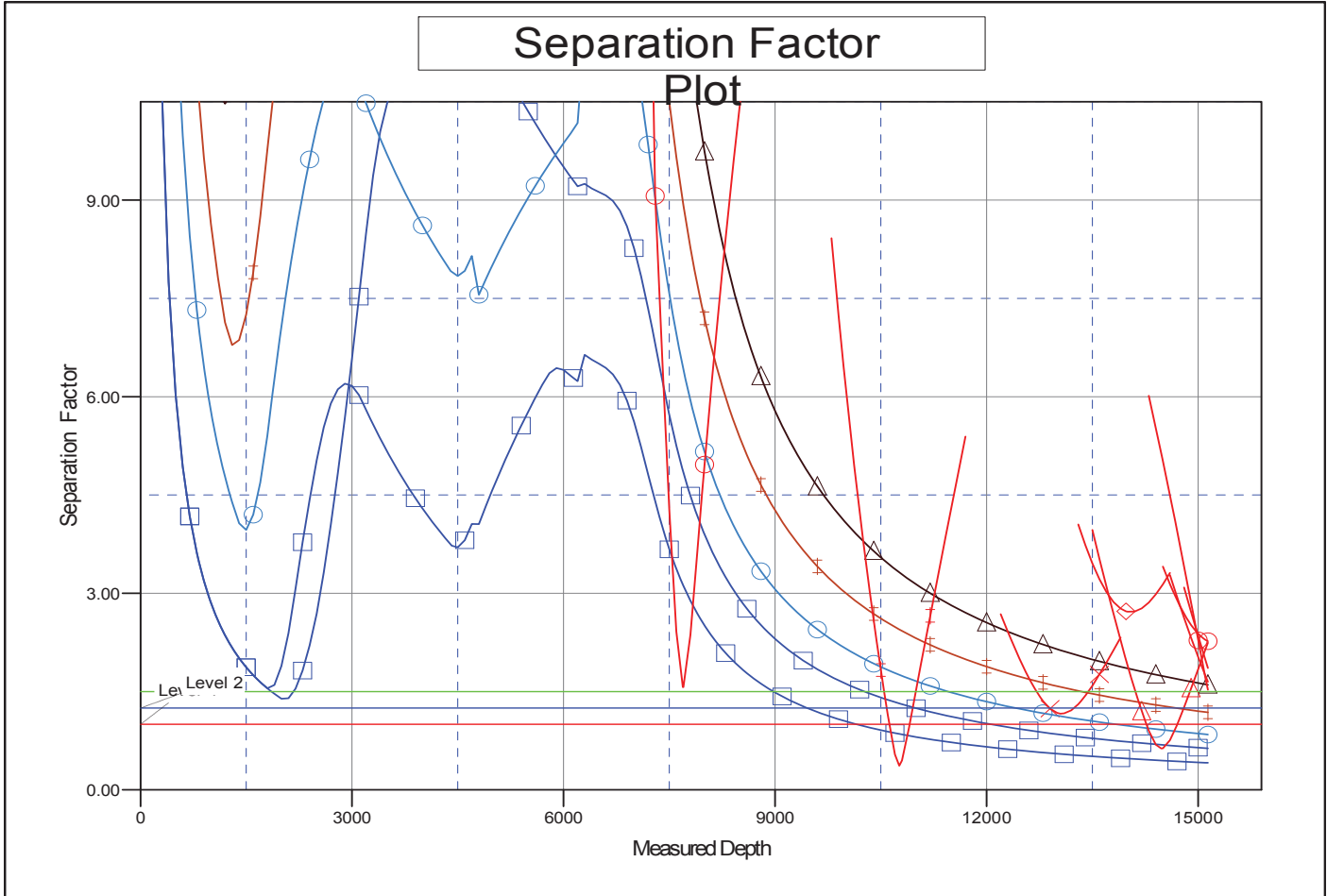


**LEGEND**

- #1, Wellbore #1 V0
- #1, Plan #3 (8-10-17) V0
- #1, Plan #3 (8-10-17) V0
- #1, Plan #3 (8-11-17) V0
- #1, Plan #3 (8-11-17) V0
- #1, Plan #3 (8-11-17) V0
- #1, Plan #4 (8-11-17) V0
- #1, Plan #4 (8-10-17) V0
- \* Fern 11W-214, Wellbore #1, Plan #3 (8-11-17) V0
- ▲ Fern 11V-234, Wellbore #1, Plan #3 (8-11-17) V0
- + Fern 11V-304, Wellbore #1, Plan #3 (8-11-17) V0
- Sherley J-4-9HC, Wellbore #1, Wellbore #1 V0
- ◆ Sherley I-4-9HN, Wellbore #1, Wellbore #1 V0
- + Mel & Blanche (M&M 3-10) #1 (PDC-SI), Wellbore #1, Wellbore #1 V0
- Bonertz 41-10 (PDC-Exist), Wellbore #1, Wellbore #1 V0
- Pat & Mike #6 LL (PDC-Exist), Wellbor
- ◆ WFH5 (PDC-Exist), Wellbore #1, Well
- ▲ Pat and Mike 2-9 (PDC-Exist), Wellbor
- \* Lucky Looie 1-9 (Merit Energy-P&A), V
- + Jones 4-11 (PDC-Exist), Wellbore #1, V

|                           |                                    |                                     |                                      |
|---------------------------|------------------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>           | PDC Energy Inc. DJ Basin           | <b>Local Co-ordinate Reference:</b> | Well Fern 11U-434                    |
| <b>Project:</b>           | SEC.11-T5N-R65W                    | <b>TVD Reference:</b>               | WELL @ 4642.0ft (Original Well Elev) |
| <b>Reference Site:</b>    | Fern 5N65W11EJ Pad Sec.11-T5N-R65W | <b>MD Reference:</b>                | WELL @ 4642.0ft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0 ft                             | <b>North Reference:</b>             | True                                 |
| <b>Reference Well:</b>    | Fern 11U-434                       | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Well Error:</b>        | 0.0 ft                             | <b>Output errors are at</b>         | 2.45 sigma                           |
| <b>Reference Wellbore</b> | Wellbore #1                        | <b>Database:</b>                    | US_EDM                               |
| <b>Reference Design:</b>  | Plan #4 (9-15-17)                  | <b>Offset TVD Reference:</b>        | Offset Datum                         |

Reference Depths are relative to WELL @ 4642.0ft (Original Well Elev)      Coordinates are relative to: Fern 11U-434  
 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: 0.56°



**LEGEND**

- |                         |   |  |
|-------------------------|---|--|
| #1, Wellbore #1 V0      | ✱ Fem 11W-214, Wellbore #1, Plan #3 (8-11-17) V0                    | ⊖ Pat & Mike #6 LL (PDC-Exist), Wellbor  |
| 1, Plan #3 (8-10-17) V0 | ▲ Fem 11V-234, Wellbore #1, Plan #3 (8-11-17) V0                    | ◆ WFH5 (PDC-Exist), Wellbore #1, Well    |
| 1, Plan #3 (8-10-17) V0 | ✚ Fem 11V-304, Wellbore #1, Plan #3 (8-11-17) V0                    | ▲ Pat and Mike 2-9 (PDC-Exist), Wellbor  |
| 1, Plan #3 (8-11-17) V0 | ⊖ Sherley J-4-9HC, Wellbore #1, Wellbore #1 V0                      | ✱ Lucky Looie 1-9 (Merit Energy-P&A), V  |
| 1, Plan #3 (8-11-17) V0 | ◆ Sherley I-4-9HN, Wellbore #1, Wellbore #1 V0                      | ⊖ Jones 4-11 (PDC-Exist), Wellbore #1, V |
| 1, Plan #4 (8-11-17) V0 | ✚ Mel & Blanche (M&M 3-10) #1 (PDC-SI), Wellbore #1, Wellbore #1 V0 |  |
| 1, Plan #4 (8-10-17) V0 | ⊖ Bonertz 41-10 (PDC-Exist), Wellbore #1, Wellbore #1 V0            |  |