# PDC Energy Inc. DJ Basin

Well Name: **Josephine 19N-204**

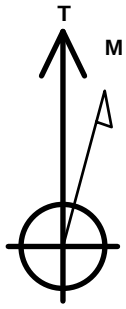
Surface Location: Josephine 5N64W19N Pad Sec.19-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4626.0

| +N/-S | +E/-W | Northing | Easting | Latittude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 1385110.60 | 3253129.36 | 40.386970 | -104.591290 | |

Original Well Elev WELL @ 4649.0ft (Original Well Elev)

## DESIGN TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Shape |
|---|---|---|---|---|
| SHL 1789'FNL, 2215'FEL, SEC.19 | 1.0 | 0.0 | 0.0 | Point |
| BHL 1515'FNL, 2460'FEL, SEC.24 | 6708.0 | 284.8 | -5412.7 | Point |
| LPL 1528'FNL, 2048'FEL, SEC.19 | 6728.0 | 260.2 | 166.9 | Point |



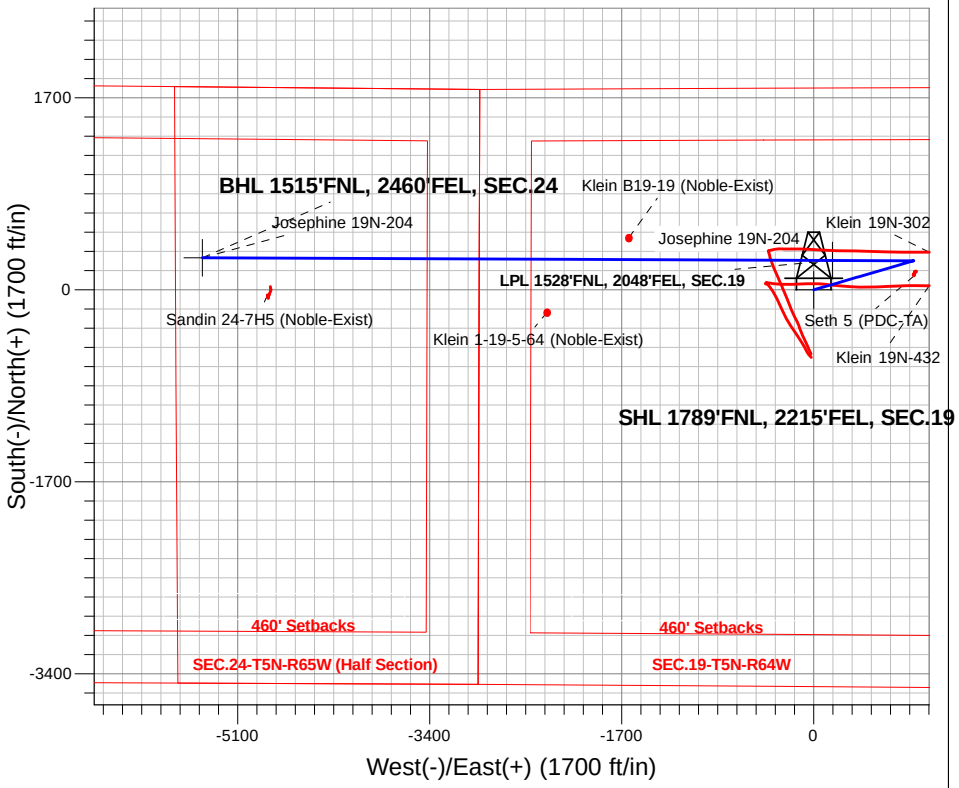

Azimuths to True North
Magnetic North: 7.99°

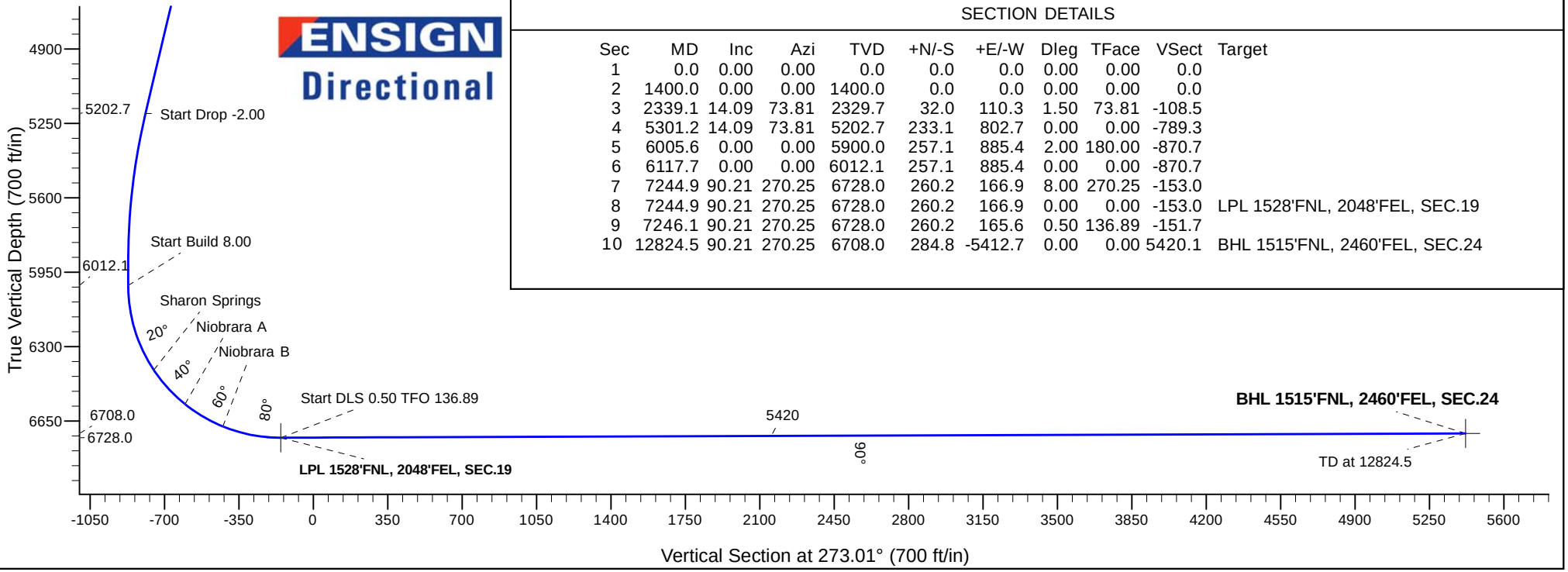
Magnetic Field
Strength: 52539.8snT
Dip Angle: 66.87°
Date: 3/10/2017
Model: IGRF2010

Josephine 5N64W19N Pad Sec.19-T5N-R64W
Josephine 19N-204
Plan #3 (3-09-17)
10:06, March 10 2017

## ANNOTATIONS

| TVD | MD | Annotation |
|---|---|---|
| 1400.0 | 1400.0 | KOP - Start Build 1.50 |
| 5202.7 | 5301.2 | Start Drop -2.00 |
| 6012.1 | 6117.7 | Start Build 8.00 |
| 6728.0 | 7244.9 | Start DLS 0.50 TFO 136.89 |
| 6728.0 | 7246.1 | Start 5578.3 hold at 7246.1 MD |
| 6708.0 | 12824.5 | TD at 12824.5 |




## 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 | 1400.0 | 0.00 | 0.00 | 1400.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 2339.1 | 14.09 | 73.81 | 2329.7 | 32.0 | 110.3 | 1.50 | 73.81 | -108.5 | |
| 4 | 5301.2 | 14.09 | 73.81 | 5202.7 | 233.1 | 802.7 | 0.00 | 0.00 | -789.3 | |
| 5 | 6005.6 | 0.00 | 0.00 | 5900.0 | 257.1 | 885.4 | 2.00 | 180.00 | -870.7 | |
| 6 | 6117.7 | 0.00 | 0.00 | 6012.1 | 257.1 | 885.4 | 0.00 | 0.00 | -870.7 | |
| 7 | 7244.9 | 90.21 | 270.25 | 6728.0 | 260.2 | 166.9 | 8.00 | 270.25 | -153.0 | |
| 8 | 7244.9 | 90.21 | 270.25 | 6728.0 | 260.2 | 166.9 | 0.00 | 0.00 | -153.0 | LPL 1528'FNL, 2048'FEL, SEC.19 |
| 9 | 7246.1 | 90.21 | 270.25 | 6728.0 | 260.2 | 165.6 | 0.50 | 136.89 | -151.7 | |
| 10 | 12824.5 | 90.21 | 270.25 | 6708.0 | 284.8 | -5412.7 | 0.00 | 0.00 | 5420.1 | BHL 1515'FNL, 2460'FEL, SEC.24 |

ENSIGN Directional

# PDC Energy Inc. DJ Basin

**SEC.19-T5N-R64W**
**Josephine 5N64W19N Pad Sec.19-T5N-R64W**
**Josephine 19N-204**

**Wellbore #1**
**Plan #3 (3-09-17)**

# Anticollision Report

**10 March, 2017**

PDC ENERGY
Growing E&P Value

| | | | |
|---|---|---|---|
| **Company:** | PDC Energy Inc. DJ Basin | **Local Co-ordinate Reference:** | Well Josephine 19N-204 |
| **Project:** | SEC.19-T5N-R64W | **TVD Reference:** | WELL @ 4649.0ft (Original Well Elev) |
| **Reference Site:** | Josephine 5N64W19N Pad<br>Sec.19-T5N-R64W | **MD Reference:** | WELL @ 4649.0ft (Original Well Elev) |
| **Site Error:** | 0.0 ft | **North Reference:** | True |
| **Reference Well:** | Josephine 19N-204 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.0 ft | **Output errors are at** | 2.45 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | US_EDM |
| **Reference Design:** | Plan #3 (3-09-17) | **Offset TVD Reference:** | Offset Datum |

**Reference** Plan #3 (3-09-17)

| | | | |
|---|---|---|---|
| **Filter type:** | NO GLOBAL FILTER: Using user defined selection & filtering criteria | | |
| **Interpolation Method:** | Stations | **Error Model:** | ISCWSA |
| **Depth Range:** | Unlimited | **Scan Method:** | Closest Approach 3D |
| **Results Limited by:** | Maximum center-center distance of 800.0 ft | **Error Surface:** | Elliptical Conic |
| **Warning Levels Evaluated at:** | 2.45 **Sigma** | **Casing Method:** | Not applied |

**Survey Tool Program** **Date** 3/10/2017

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.0 | 12,824.5 | Plan #3 (3-09-17) (Wellbore #1) | MWD | MWD - Standard |

**Summary**

| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Existing Wells Sec.19-T5N-R64W | | | | | | |
| Klein 1-19-5-64 (Noble-Exist) - Wellbore #1 - Wellbore #1 | 9,769.3 | 6,702.0 | 467.9 | 200.1 | 1.747 | CC |
| Klein 1-19-5-64 (Noble-Exist) - Wellbore #1 - Wellbore #1 | 9,800.0 | 6,701.8 | 469.0 | 200.1 | 1.744 | ES, SF |
| Klein B19-19 (Noble-Exist) - Wellbore #1 - Wellbore #1 | 9,047.8 | 6,703.5 | 194.6 | 103.9 | 2.145 | CC, ES, SF |
| Seth 5 (PDC-TA) - Wellbore #1 - Wellbore #1 | 5,647.6 | 5,518.3 | 106.1 | 68.4 | 2.811 | CC, ES |
| Seth 5 (PDC-TA) - Wellbore #1 - Wellbore #1 | 5,700.0 | 5,569.8 | 106.5 | 68.4 | 2.798 | SF |
| Existing Wells Sec.24-T5N-R65W (GRID) | | | | | | |
| Sandin 24-7H5 (Noble-Exist) - Wellbore #1 - Wellbore #1 | 12,240.5 | 6,700.0 | 328.9 | 125.2 | 1.614 | CC, ES, SF |
| Josephine 5N64W19N Pad Sec.19-T5N-R64W | | | | | | |
| Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17) | 400.0 | 400.0 | 76.5 | 74.6 | 39.690 | CC, ES |
| Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17) | 1,000.0 | 985.3 | 118.2 | 112.9 | 22.094 | SF |
| Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17) | 600.0 | 600.0 | 61.9 | 58.9 | 20.449 | CC, ES |
| Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17) | 1,000.0 | 993.4 | 79.6 | 74.4 | 15.231 | SF |
| Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17) | 200.0 | 200.0 | 91.1 | 90.3 | 110.262 | CC, ES |
| Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17) | 1,100.0 | 1,066.6 | 187.1 | 180.7 | 29.100 | SF |
| Josephine 19N-214 - Wellbore #1 - Plan #3 (3-09-17) | 800.0 | 800.0 | 43.7 | 39.6 | 10.586 | CC, ES |
| Josephine 19N-214 - Wellbore #1 - Plan #3 (3-09-17) | 12,824.5 | 12,899.8 | 761.4 | 347.3 | 1.839 | SF |
| Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17) | 1,000.0 | 1,000.0 | 29.1 | 23.9 | 5.570 | CC, ES |
| Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17) | 12,824.5 | 12,963.7 | 539.5 | 132.2 | 1.325 | Level 3, SF |
| Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17) | 1,400.0 | 1,400.0 | 14.6 | 7.1 | 1.960 | CC |
| Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17) | 12,824.5 | 12,950.2 | 229.7 | -156.7 | 0.594 | Level 1, ES, SF |
| Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17) | 1,200.0 | 1,200.0 | 14.6 | 8.2 | 2.301 | CC |
| Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17) | 12,824.5 | 13,024.7 | 332.8 | -12.0 | 0.965 | Level 1, ES, SF |
| Josephine 19O-204 - Wellbore #1 - Plan #3 (3-09-17) | 500.0 | 500.0 | 58.4 | 55.9 | 23.549 | CC, ES |
| Josephine 19O-204 - Wellbore #1 - Plan #3 (3-09-17) | 900.0 | 894.2 | 74.7 | 70.1 | 16.331 | SF |
| Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17) | 1,400.0 | 1,400.0 | 29.1 | 21.7 | 3.921 | CC |
| Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17) | 1,500.0 | 1,500.0 | 29.5 | 21.6 | 3.705 | ES |
| Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17) | 12,824.5 | 12,827.3 | 557.4 | 142.7 | 1.344 | Level 3, SF |
| Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17) | 1,000.0 | 1,000.0 | 43.7 | 38.5 | 8.357 | CC, ES |
| Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17) | 1,200.0 | 1,198.6 | 46.7 | 40.4 | 7.457 | SF |
| Klein 19O-HZ Pad Sec.19-T5N-R64W | | | | | | |
| Klein 19N-302 - Wellbore #1 - Wellbore #1 | 7,533.0 | 6,918.6 | 100.3 | 45.5 | 1.831 | CC, ES, SF |
| Klein 19N-432 - Wellbore #1 - Wellbore #1 | 7,509.3 | 6,914.0 | 207.8 | 154.0 | 3.862 | CC, ES, SF |