

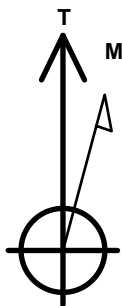
# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Josephine 19M-404**

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 Latitude Longitude Slot  
 0.0 0.0 1385202.34 3253192.49 40.387220 -104.591060  
 Original Well Elev WELL @ 4649.0ft (Original Well Elev)

## DESIGN TARGET DETAILS

| Name                           | TVD    | +N/-S  | +E/-W   | Shape |
|--------------------------------|--------|--------|---------|-------|
| SHL 1699'FNL, 2150'FEL, SEC.19 | 1.0    | 0.0    | 0.0     | Point |
| BHL 50'FNL, 2471'FEL, SEC.24   | 6898.0 | 1658.2 | -5484.8 | Point |
| LPL 50'FNL, 2288'FWL, SEC.19   | 6898.0 | 1646.7 | -727.0  | Point |



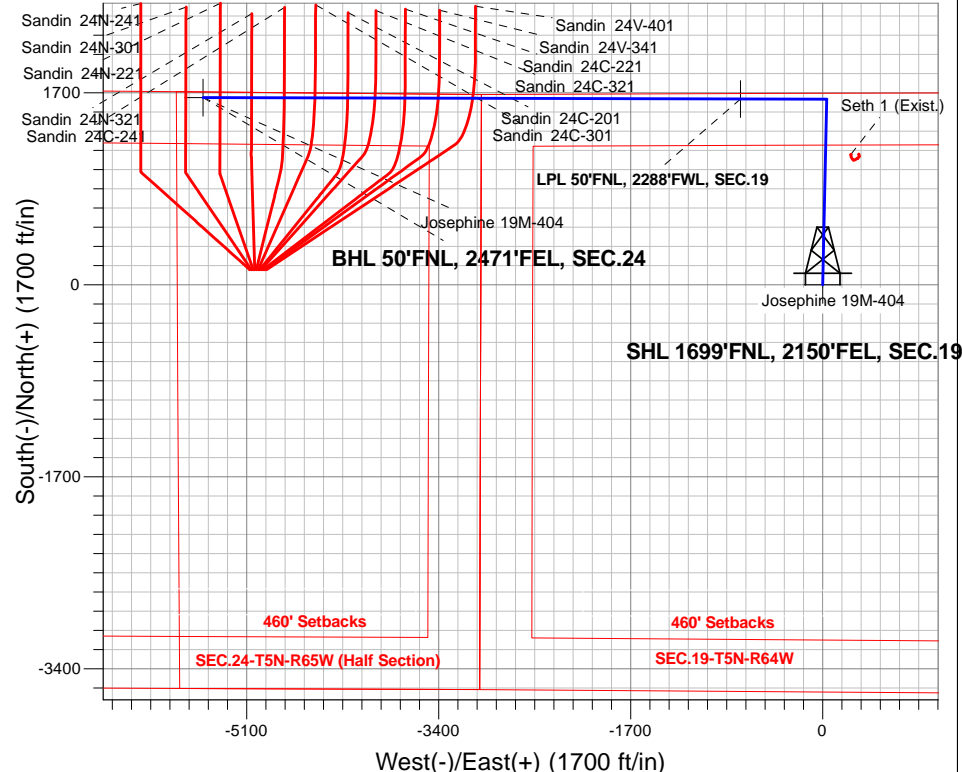
Azimuths to True North  
 Magnetic North: 8.02°

Magnetic Field  
 Strength: 52561.0snT  
 Dip Angle: 66.87°  
 Date: 12/27/2016  
 Model: IGRF2010

Josephine 5N64W19N Pad Sec.19-T5N-R64W  
 Josephine 19M-404  
 Plan #1 (12-20-16)  
 13:31, December 27 2016

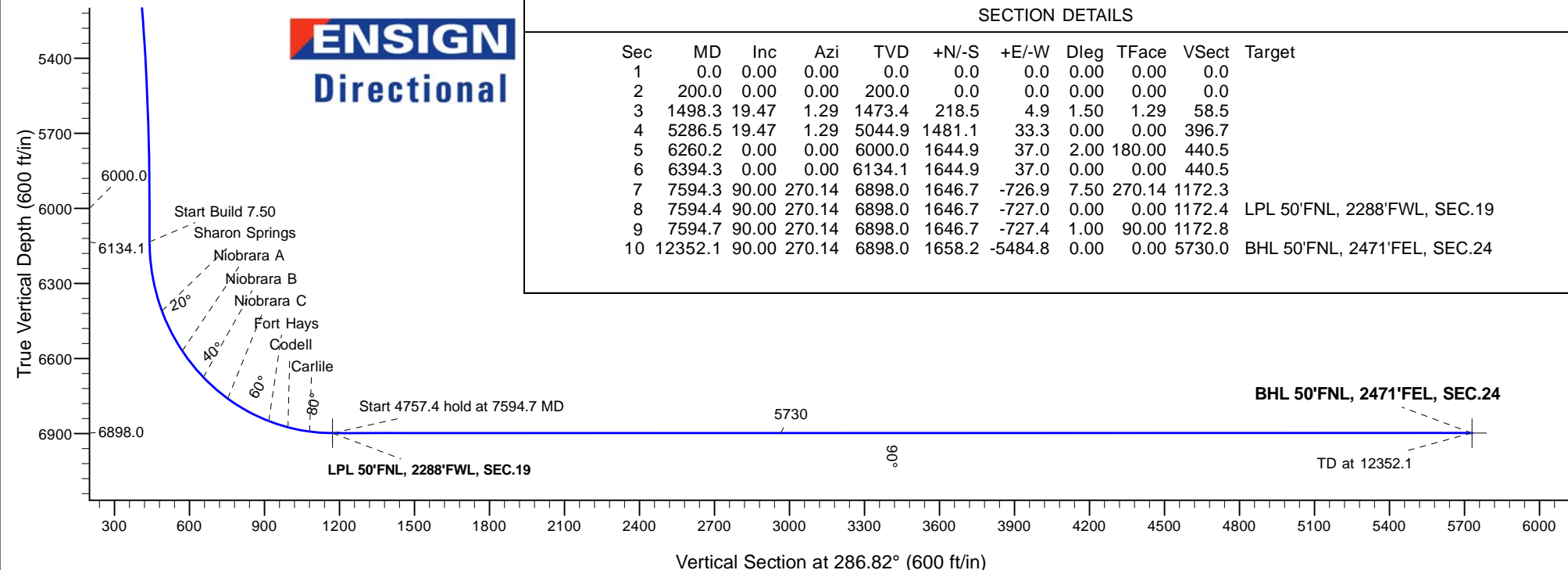
## ANNOTATIONS

| TVD    | MD      | Annotation                     |
|--------|---------|--------------------------------|
| 200.0  | 200.0   | KOP - Start Build 1.50         |
| 5044.9 | 5286.5  | Start Drop -2.00               |
| 6000.0 | 6260.2  | Start 134.1 hold at 6260.2 MD  |
| 6134.1 | 6394.3  | Start Build 7.50               |
| 6898.0 | 7594.7  | Start 4757.4 hold at 7594.7 MD |
| 6898.0 | 12352.1 | TD at 12352.1                  |



## SECTION DETAILS

| Sec | MD      | Inc   | Azi    | TVD    | +N/-S  | +E/-W   | Dleg | TFace  | VSec   | Target                       |
|-----|---------|-------|--------|--------|--------|---------|------|--------|--------|------------------------------|
| 1   | 0.0     | 0.00  | 0.00   | 0.0    | 0.0    | 0.0     | 0.00 | 0.00   | 0.0    |                              |
| 2   | 200.0   | 0.00  | 0.00   | 200.0  | 0.0    | 0.0     | 0.00 | 0.00   | 0.0    |                              |
| 3   | 1498.3  | 19.47 | 1.29   | 1473.4 | 218.5  | 4.9     | 1.50 | 1.29   | 58.5   |                              |
| 4   | 5286.5  | 19.47 | 1.29   | 5044.9 | 1481.1 | 33.3    | 0.00 | 0.00   | 396.7  |                              |
| 5   | 6260.2  | 0.00  | 0.00   | 6000.0 | 1644.9 | 37.0    | 2.00 | 180.00 | 440.5  |                              |
| 6   | 6394.3  | 0.00  | 0.00   | 6134.1 | 1644.9 | 37.0    | 0.00 | 0.00   | 440.5  |                              |
| 7   | 7594.3  | 90.00 | 270.14 | 6898.0 | 1646.7 | -726.9  | 7.50 | 270.14 | 1172.3 |                              |
| 8   | 7594.4  | 90.00 | 270.14 | 6898.0 | 1646.7 | -727.0  | 0.00 | 0.00   | 1172.4 | LPL 50'FNL, 2288'FWL, SEC.19 |
| 9   | 7594.7  | 90.00 | 270.14 | 6898.0 | 1646.7 | -727.4  | 1.00 | 90.00  | 1172.8 |                              |
| 10  | 12352.1 | 90.00 | 270.14 | 6898.0 | 1658.2 | -5484.8 | 0.00 | 0.00   | 5730.0 | BHL 50'FNL, 2471'FEL, SEC.24 |





# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.19-T5N-R64W**

**Josephine 5N64W19N Pad Sec.19-T5N-R64W**

**Josephine 19M-404**

**Wellbore #1**

**Plan #1 (12-20-16)**

## **Anticollision Report**

**27 December, 2016**



|                           |   |                                     |                                      |
|---------------------------|---|-------------------------------------|--------------------------------------|
| <b>Company:</b>           | PETROLEUM DEVELOPMENT CORP DJ<br>Basin    | <b>Local Co-ordinate Reference:</b> | Well Josephine 19M-404               |
| <b>Project:</b>           | SEC.19-T5N-R64W                           | <b>TVD Reference:</b>               | WELL @ 4649.0ft (Original Well Elev) |
| <b>Reference Site:</b>    | Josephine 5N64W19N Pad<br>Sec.19-T5N-R64W | <b>MD Reference:</b>                | WELL @ 4649.0ft (Original Well Elev) |
| <b>Site Error:</b>        | 0.0 ft                                    | <b>North Reference:</b>             | True                                 |
| <b>Reference Well:</b>    | Josephine 19M-404                         | <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 #1 (12-20-16)                        | <b>Offset TVD Reference:</b>        | Offset Datum                         |

|                                     |   |                       |                     |
|-------------------------------------|---|-----------------------|---------------------|
| <b>Reference</b>                    | Plan #1 (12-20-16)  |                       |                     |
| <b>Filter type:</b>                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |                       |                     |
| <b>Interpolation Method:</b>        | Stations  | <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 800.0 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>    | 12/22/2016                       |                  |                    |
| <b>From (ft)</b>           | <b>To (ft)</b> | <b>Survey (Wellbore)</b>         | <b>Tool Name</b> | <b>Description</b> |
| 0.0                        | 12,352.1       | Plan #1 (12-20-16) (Wellbore #1) | MWD              | MWD - Standard     |

| Summary  |                               |                            |                               |                                |                   |                 |
|--|-------------------------------|----------------------------|-------------------------------|--------------------------------|-------------------|-----------------|
| Site Name  | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning         |
| <b>Offset Well - Wellbore - Design</b>               |                               |                            |                               |                                |                   |                 |
| Josephine 5N64W19N Pad Sec.19-T5N-R64W               |                               |                            |                               |                                |                   |                 |
| Josephine 19M-234 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 201.0                      | 14.6                          | 13.7                           | 17.588            | CC              |
| Josephine 19M-234 - Wellbore #1 - Plan #1 (12-20-16) | 12,353.0                      | 12,225.0                   | 247.4                         | -94.5                          | 0.724             | Level 1, ES, SF |
| Josephine 19M-234 - Wellbore #1 - Spider Plot        | 200.0                         | 201.0                      | 14.6                          | 13.7                           | 17.588            | CC              |
| Josephine 19M-234 - Wellbore #1 - Spider Plot        | 12,353.0                      | 12,225.0                   | 247.4                         | -94.5                          | 0.724             | Level 1, ES, SF |
| Josephine 19M-334 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 29.1                          | 28.3                           | 35.284            | CC, ES          |
| Josephine 19M-334 - Wellbore #1 - Plan #1 (12-20-16) | 12,353.0                      | 12,168.1                   | 448.5                         | 83.7                           | 1.229             | Level 2, SF     |
| Josephine 19N-204 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 91.1                          | 90.3                           | 110.313           | CC, ES          |
| Josephine 19N-204 - Wellbore #1 - Plan #1 (12-20-16) | 900.0                         | 896.1                      | 155.0                         | 150.2                          | 32.190            | SF              |
| Josephine 19N-214 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 43.7                          | 42.9                           | 52.931            | CC, ES          |
| Josephine 19N-214 - Wellbore #1 - Plan #1 (12-20-16) | 12,353.0                      | 12,033.8                   | 728.2                         | 366.9                          | 2.015             | SF              |
| Josephine 19N-314 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 62.0                          | 61.2                           | 75.059            | CC, ES          |
| Josephine 19N-314 - Wellbore #1 - Plan #1 (12-20-16) | 4,800.0                       | 4,777.8                    | 784.4                         | 753.4                          | 25.260            | SF              |
| Josephine 19N-334 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 105.7                         | 104.9                          | 127.948           | CC, ES          |
| Josephine 19N-334 - Wellbore #1 - Plan #1 (12-20-16) | 1,000.0                       | 994.2                      | 189.1                         | 183.7                          | 35.094            | SF              |
| Josephine 19N-404 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 76.6                          | 75.7                           | 92.681            | CC, ES          |
| Josephine 19N-404 - Wellbore #1 - Plan #1 (12-20-16) | 800.0                         | 797.5                      | 123.5                         | 119.3                          | 29.105            | SF              |
| Josephine 19O-204 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 149.4                         | 148.6                          | 180.861           | CC, ES          |
| Josephine 19O-204 - Wellbore #1 - Plan #1 (12-20-16) | 900.0                         | 874.0                      | 232.7                         | 228.0                          | 49.662            | SF              |
| Josephine 19O-214 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 120.3                         | 119.4                          | 145.589           | CC, ES          |
| Josephine 19O-214 - Wellbore #1 - Plan #1 (12-20-16) | 1,000.0                       | 994.2                      | 203.7                         | 198.3                          | 37.800            | SF              |
| Josephine 19O-314 - Wellbore #1 - Plan #1 (12-20-16) | 200.0                         | 200.0                      | 134.8                         | 134.0                          | 163.222           | CC, ES          |
| Josephine 19O-314 - Wellbore #1 - Plan #1 (12-20-16) | 1,000.0                       | 994.2                      | 218.2                         | 212.9                          | 40.503            | SF              |
| <b>Klein (Existing) Sec.19-T5N-R64W</b>              |                               |                            |                               |                                |                   |                 |
| Seth 1 (Exist.) - Wellbore #1 - Wellbore #1          | 4,218.8                       | 4,021.2                    | 261.7                         | 222.2                          | 6.629             | CC, ES          |
| Seth 1 (Exist.) - Wellbore #1 - Wellbore #1          | 4,300.0                       | 4,096.2                    | 263.4                         | 223.2                          | 6.560             | SF              |