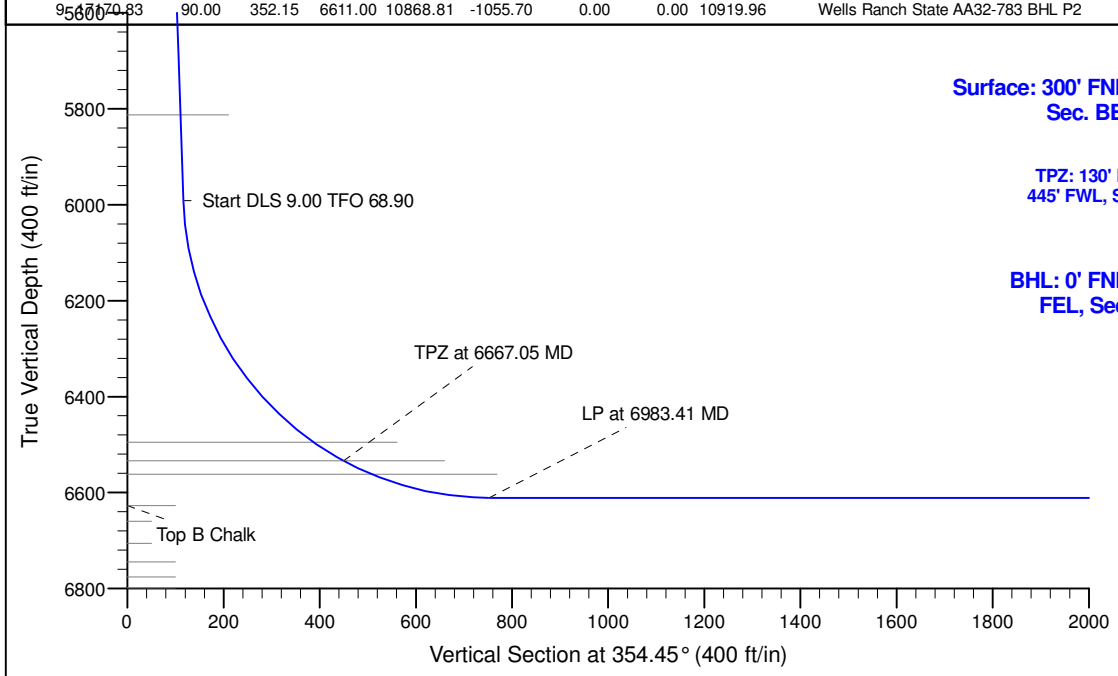
Project: Wells Ranch
Site: BB Section 05
Well: Wells Ranch State AA32-783
Wellbore: Wellbore #1
Design: Plan #2

# Northern Region - DJ Basin

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SECTION DETAILS

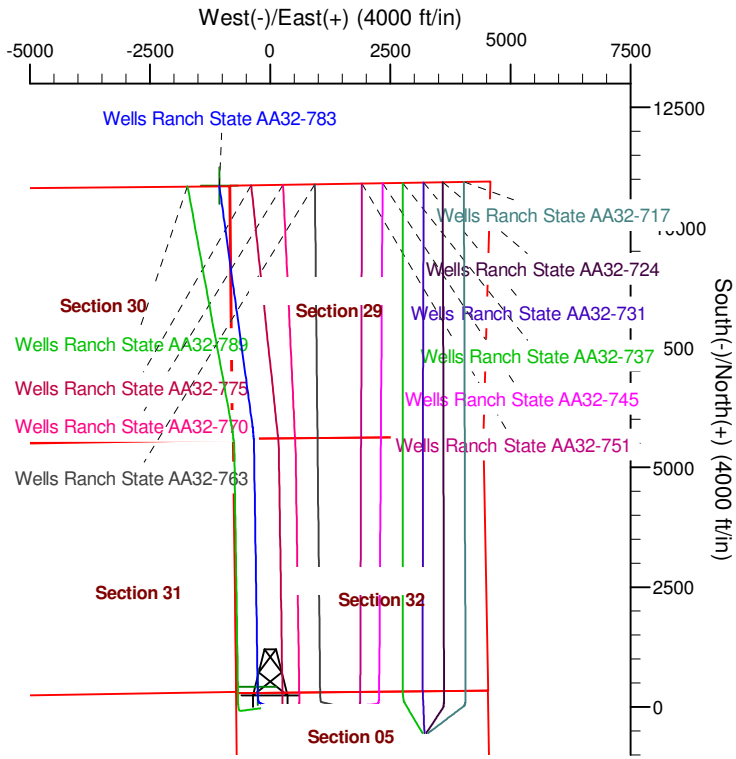
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 2200.00 | 0.00 | 0.00 | 2200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 2392.85 | 3.86 | 292.23 | 2392.71 | 2.45 | -6.01 | 2.00 | 292.23 | 3.02 | |
| 4 | 5999.54 | 3.86 | 292.23 | 5991.23 | 94.24 | -230.59 | 0.00 | 0.00 | 116.09 | |
| 5 | 6667.05 | 61.53 | 359.13 | 6534.00 | 427.17 | -258.42 | 9.00 | 68.90 | 450.15 | Wells Ranch State AA32-783 TPZ |
| 6 | 6983.41 | 90.00 | 359.13 | 6611.00 | 730.63 | -263.03 | 9.00 | 0.00 | 752.63 | |
| 7 | 11683.41 | 90.00 | 359.13 | 6611.00 | 5430.09 | -334.39 | 0.00 | 0.00 | 5436.98 | |
| 8 | 12148.77 | 90.00 | 352.15 | 6611.00 | 5893.81 | -369.75 | 1.50 | -90.00 | 5901.95 | |
| 9 | 17170.83 | 90.00 | 352.15 | 6611.00 | 10868.81 | -1055.70 | 0.00 | 0.00 | 10919.96 | Wells Ranch State AA32-783 BHL P2 |

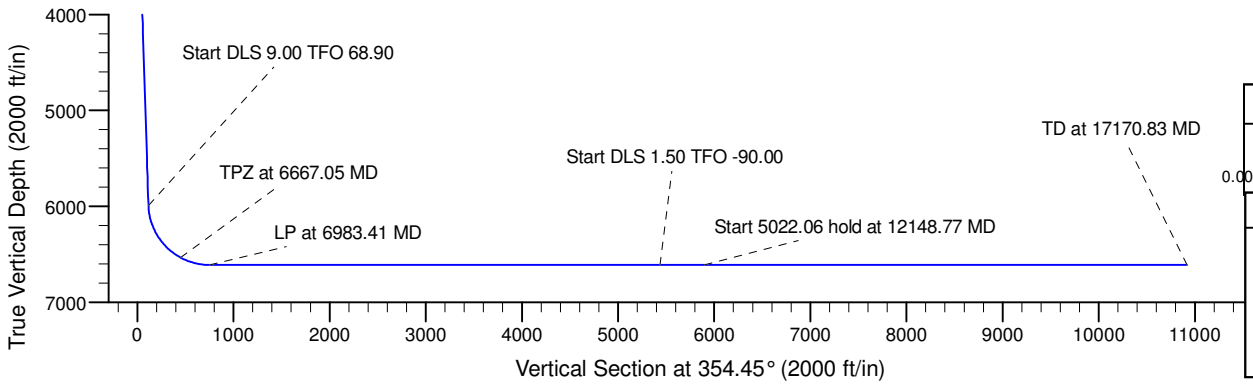


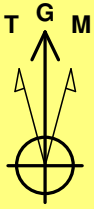

**Surface: 300' FNL, 700' FWL, Sec. BB05**

**TPZ: 130' FSL, 445' FWL, Sec.32**

**BHL: 0' FNL, 228' FEL, Sec.30**




Azimuths to Grid North
True North: -0.67°
Magnetic North: 7.36°

Magnetic Field
Strength: 52414.2snT
Dip Angle: 66.92°
Date: 9/15/2017
Model: IGRF2015

WELL DETAILS: Wells Ranch State AA32-783

| | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|
| 4673.00 | | | | |
| 0.00 | 1402944.73 | 3287354.02 | 40.4348937 | -104.4676919 |

Plan: Plan #2 (Wells Ranch State AA32-783/Wellbore #1)

Created By: Colby Baxter Date: 12:17, April 19 2018

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____

# Northern Region - DJ Basin

**Wells Ranch**
**BB Section 05**
**Wells Ranch State AA32-783**

**Wellbore #1**

**Plan: Plan #2**

# Standard Survey Report

**19 April, 2018**

# Noble Energy, Inc.

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Well:** | Wells Ranch State AA32-783 | **North Reference:** | Grid |
| **Wellbore:** | Wellbore #1 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #2 | **Database:** | EDMP |

**Project** Wells Ranch, Weld County Colorado

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | Colorado Northern Zone | | |

**Site** BB Section 05

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 1,398,574.18 usft | **Latitude:** | 40.4229000 |
| **From:** | Map | **Easting:** | 3,287,271.79 usft | **Longitude:** | -104.4681700 |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | 13.200 in | **Grid Convergence:** | 0.67 ° |

**Well** Wells Ranch State AA32-783

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 ft | **Northing:** | 1,402,944.74 usft | **Latitude:** | 40.4348937 |
| | **+E/-W** | 0.00 ft | **Easting:** | 3,287,354.03 usft | **Longitude:** | -104.4676919 |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 4,673.00 ft |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2015 | 9/15/2017 | 8.03 | 66.92 | 52,414.24950479 |

**Design** Plan #2

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 354.45 |

**Survey Tool Program** **Date** 4/19/2018

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 17,170.83 | Plan #2 (Wellbore #1) | 2_MWD+IFR1 | A005Mb: IFR declination correction only |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# Noble Energy, Inc.

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Well:** | Wells Ranch State AA32-783 | **North Reference:** | Grid |
| **Wellbore:** | Wellbore #1 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #2 | **Database:** | EDMP |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,500.00 | 0.00 | 0.00 | 1,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,600.00 | 0.00 | 0.00 | 1,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,700.00 | 0.00 | 0.00 | 1,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 0.00 | 0.00 | 1,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 0.00 | 0.00 | 1,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 0.00 | 0.00 | 2,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 0.00 | 0.00 | 2,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 0.00 | 0.00 | 2,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 2.00 | 292.23 | 2,299.98 | 0.66 | -1.62 | 0.81 | 2.00 | 2.00 | 0.00 |
| 2,392.85 | 3.86 | 292.23 | 2,392.71 | 2.45 | -6.01 | 3.02 | 2.00 | 2.00 | 0.00 |
| 2,400.00 | 3.86 | 292.23 | 2,399.84 | 2.64 | -6.45 | 3.25 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 3.86 | 292.23 | 2,499.61 | 5.18 | -12.68 | 6.38 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 3.86 | 292.23 | 2,599.39 | 7.73 | -18.91 | 9.52 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 3.86 | 292.23 | 2,699.16 | 10.27 | -25.13 | 12.65 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 3.86 | 292.23 | 2,798.93 | 12.82 | -31.36 | 15.79 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 3.86 | 292.23 | 2,898.71 | 15.36 | -37.59 | 18.92 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 3.86 | 292.23 | 2,998.48 | 17.91 | -43.81 | 22.06 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 3.86 | 292.23 | 3,098.25 | 20.45 | -50.04 | 25.19 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 3.86 | 292.23 | 3,198.03 | 23.00 | -56.27 | 28.33 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 3.86 | 292.23 | 3,297.80 | 25.54 | -62.49 | 31.46 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 3.86 | 292.23 | 3,397.57 | 28.09 | -68.72 | 34.60 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 3.86 | 292.23 | 3,497.35 | 30.63 | -74.95 | 37.73 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 3.86 | 292.23 | 3,597.12 | 33.18 | -81.17 | 40.87 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 3.86 | 292.23 | 3,696.89 | 35.72 | -87.40 | 44.00 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 3.86 | 292.23 | 3,796.67 | 38.27 | -93.63 | 47.14 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 3.86 | 292.23 | 3,896.44 | 40.81 | -99.85 | 50.27 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 3.86 | 292.23 | 3,996.21 | 43.36 | -106.08 | 53.41 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 3.86 | 292.23 | 4,095.99 | 45.90 | -112.31 | 56.54 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 3.86 | 292.23 | 4,195.76 | 48.45 | -118.53 | 59.68 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 3.86 | 292.23 | 4,295.53 | 50.99 | -124.76 | 62.81 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 3.86 | 292.23 | 4,395.31 | 53.54 | -130.99 | 65.95 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 3.86 | 292.23 | 4,495.08 | 56.08 | -137.21 | 69.08 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 3.86 | 292.23 | 4,594.86 | 58.63 | -143.44 | 72.22 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 3.86 | 292.23 | 4,694.63 | 61.17 | -149.67 | 75.35 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 3.86 | 292.23 | 4,794.40 | 63.72 | -155.89 | 78.49 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 3.86 | 292.23 | 4,894.18 | 66.26 | -162.12 | 81.62 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 3.86 | 292.23 | 4,993.95 | 68.81 | -168.35 | 84.76 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 3.86 | 292.23 | 5,093.72 | 71.35 | -174.57 | 87.89 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 3.86 | 292.23 | 5,193.50 | 73.90 | -180.80 | 91.03 | 0.00 | 0.00 | 0.00 |

# Noble Energy, Inc.

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Well:** | Wells Ranch State AA32-783 | **North Reference:** | Grid |
| **Wellbore:** | Wellbore #1 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #2 | **Database:** | EDMP |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,300.00 | 3.86 | 292.23 | 5,293.27 | 76.44 | -187.03 | 94.16 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 3.86 | 292.23 | 5,393.04 | 78.99 | -193.25 | 97.30 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 3.86 | 292.23 | 5,492.82 | 81.53 | -199.48 | 100.43 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 3.86 | 292.23 | 5,592.59 | 84.08 | -205.71 | 103.57 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 3.86 | 292.23 | 5,692.36 | 86.62 | -211.93 | 106.70 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 3.86 | 292.23 | 5,792.14 | 89.16 | -218.16 | 109.84 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 3.86 | 292.23 | 5,891.91 | 91.71 | -224.39 | 112.97 | 0.00 | 0.00 | 0.00 |
| 5,999.54 | 3.86 | 292.23 | 5,991.23 | 94.24 | -230.59 | 116.09 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 3.87 | 292.80 | 5,991.68 | 94.26 | -230.61 | 116.11 | 9.00 | 3.28 | 124.34 |
| 6,100.00 | 11.03 | 342.26 | 6,090.85 | 104.70 | -236.65 | 127.08 | 9.00 | 7.16 | 49.46 |
| 6,200.00 | 19.75 | 351.00 | 6,187.18 | 130.55 | -242.22 | 153.35 | 9.00 | 8.72 | 8.74 |
| 6,300.00 | 28.64 | 354.47 | 6,278.31 | 171.17 | -247.19 | 194.27 | 9.00 | 8.89 | 3.48 |
| 6,400.00 | 37.58 | 356.40 | 6,361.99 | 225.57 | -251.42 | 248.82 | 9.00 | 8.94 | 1.92 |
| 6,500.00 | 46.54 | 357.67 | 6,436.16 | 292.40 | -254.82 | 315.67 | 9.00 | 8.96 | 1.27 |
| 6,600.00 | 55.51 | 358.61 | 6,499.00 | 370.02 | -257.30 | 393.16 | 9.00 | 8.97 | 0.94 |
| 6,667.05 | 61.53 | 359.13 | 6,534.00 | 427.17 | -258.42 | 450.15 | 9.00 | 8.98 | 0.78 |
| 6,700.00 | 64.49 | 359.13 | 6,548.95 | 456.52 | -258.87 | 479.41 | 9.00 | 9.00 | 0.00 |
| 6,800.00 | 73.49 | 359.13 | 6,584.76 | 549.77 | -260.28 | 572.35 | 9.00 | 9.00 | 0.00 |
| 6,900.00 | 82.49 | 359.13 | 6,605.54 | 647.47 | -261.77 | 669.74 | 9.00 | 9.00 | 0.00 |
| 6,983.41 | 90.00 | 359.13 | 6,611.00 | 730.63 | -263.03 | 752.63 | 9.00 | 9.00 | 0.00 |
| 7,000.00 | 90.00 | 359.13 | 6,611.00 | 747.22 | -263.28 | 769.17 | 0.00 | 0.00 | 0.00 |
| 7,100.00 | 90.00 | 359.13 | 6,611.00 | 847.21 | -264.80 | 868.84 | 0.00 | 0.00 | 0.00 |
| 7,200.00 | 90.00 | 359.13 | 6,611.00 | 947.19 | -266.32 | 968.50 | 0.00 | 0.00 | 0.00 |
| 7,300.00 | 90.00 | 359.13 | 6,611.00 | 1,047.18 | -267.84 | 1,068.17 | 0.00 | 0.00 | 0.00 |
| 7,400.00 | 90.00 | 359.13 | 6,611.00 | 1,147.17 | -269.36 | 1,167.84 | 0.00 | 0.00 | 0.00 |
| 7,500.00 | 90.00 | 359.13 | 6,611.00 | 1,247.16 | -270.87 | 1,267.51 | 0.00 | 0.00 | 0.00 |
| 7,600.00 | 90.00 | 359.13 | 6,611.00 | 1,347.15 | -272.39 | 1,367.17 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 90.00 | 359.13 | 6,611.00 | 1,447.14 | -273.91 | 1,466.84 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 90.00 | 359.13 | 6,611.00 | 1,547.13 | -275.43 | 1,566.51 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 90.00 | 359.13 | 6,611.00 | 1,647.11 | -276.95 | 1,666.17 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 90.00 | 359.13 | 6,611.00 | 1,747.10 | -278.47 | 1,765.84 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 90.00 | 359.13 | 6,611.00 | 1,847.09 | -279.98 | 1,865.51 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 90.00 | 359.13 | 6,611.00 | 1,947.08 | -281.50 | 1,965.17 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 90.00 | 359.13 | 6,611.00 | 2,047.07 | -283.02 | 2,064.84 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 90.00 | 359.13 | 6,611.00 | 2,147.06 | -284.54 | 2,164.51 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 90.00 | 359.13 | 6,611.00 | 2,247.04 | -286.06 | 2,264.17 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 90.00 | 359.13 | 6,611.00 | 2,347.03 | -287.58 | 2,363.84 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 90.00 | 359.13 | 6,611.00 | 2,447.02 | -289.09 | 2,463.51 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 90.00 | 359.13 | 6,611.00 | 2,547.01 | -290.61 | 2,563.17 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 90.00 | 359.13 | 6,611.00 | 2,647.00 | -292.13 | 2,662.84 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 90.00 | 359.13 | 6,611.00 | 2,746.99 | -293.65 | 2,762.51 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 90.00 | 359.13 | 6,611.00 | 2,846.98 | -295.17 | 2,862.18 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 90.00 | 359.13 | 6,611.00 | 2,946.96 | -296.69 | 2,961.84 | 0.00 | 0.00 | 0.00 |

# Noble Energy, Inc.

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Well:** | Wells Ranch State AA32-783 | **North Reference:** | Grid |
| **Wellbore:** | Wellbore #1 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #2 | **Database:** | EDMP |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 9,300.00 | 90.00 | 359.13 | 6,611.00 | 3,046.95 | -298.20 | 3,061.51 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 90.00 | 359.13 | 6,611.00 | 3,146.94 | -299.72 | 3,161.18 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 90.00 | 359.13 | 6,611.00 | 3,246.93 | -301.24 | 3,260.84 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 90.00 | 359.13 | 6,611.00 | 3,346.92 | -302.76 | 3,360.51 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.00 | 359.13 | 6,611.00 | 3,446.91 | -304.28 | 3,460.18 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.00 | 359.13 | 6,611.00 | 3,546.89 | -305.80 | 3,559.84 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.00 | 359.13 | 6,611.00 | 3,646.88 | -307.31 | 3,659.51 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.00 | 359.13 | 6,611.00 | 3,746.87 | -308.83 | 3,759.18 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.00 | 359.13 | 6,611.00 | 3,846.86 | -310.35 | 3,858.84 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.00 | 359.13 | 6,611.00 | 3,946.85 | -311.87 | 3,958.51 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.00 | 359.13 | 6,611.00 | 4,046.84 | -313.39 | 4,058.18 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.00 | 359.13 | 6,611.00 | 4,146.83 | -314.91 | 4,157.85 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.00 | 359.13 | 6,611.00 | 4,246.81 | -316.42 | 4,257.51 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.00 | 359.13 | 6,611.00 | 4,346.80 | -317.94 | 4,357.18 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.00 | 359.13 | 6,611.00 | 4,446.79 | -319.46 | 4,456.85 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.00 | 359.13 | 6,611.00 | 4,546.78 | -320.98 | 4,556.51 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.00 | 359.13 | 6,611.00 | 4,646.77 | -322.50 | 4,656.18 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.00 | 359.13 | 6,611.00 | 4,746.76 | -324.02 | 4,755.85 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.00 | 359.13 | 6,611.00 | 4,846.74 | -325.54 | 4,855.51 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.00 | 359.13 | 6,611.00 | 4,946.73 | -327.05 | 4,955.18 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.00 | 359.13 | 6,611.00 | 5,046.72 | -328.57 | 5,054.85 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 90.00 | 359.13 | 6,611.00 | 5,146.71 | -330.09 | 5,154.51 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.00 | 359.13 | 6,611.00 | 5,246.70 | -331.61 | 5,254.18 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.00 | 359.13 | 6,611.00 | 5,346.69 | -333.13 | 5,353.85 | 0.00 | 0.00 | 0.00 |
| 11,683.41 | 90.00 | 359.13 | 6,611.00 | 5,430.09 | -334.39 | 5,436.98 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.00 | 358.88 | 6,611.00 | 5,446.68 | -334.68 | 5,453.52 | 1.50 | 0.00 | -1.50 |
| 11,800.00 | 90.00 | 357.38 | 6,611.00 | 5,546.62 | -337.94 | 5,553.31 | 1.50 | 0.00 | -1.50 |
| 11,900.00 | 90.00 | 355.88 | 6,611.00 | 5,646.44 | -343.82 | 5,653.23 | 1.50 | 0.00 | -1.50 |
| 12,000.00 | 90.00 | 354.38 | 6,611.00 | 5,746.08 | -352.31 | 5,753.22 | 1.50 | 0.00 | -1.50 |
| 12,100.00 | 90.00 | 352.88 | 6,611.00 | 5,845.46 | -363.40 | 5,853.21 | 1.50 | 0.00 | -1.50 |
| 12,148.77 | 90.00 | 352.15 | 6,611.00 | 5,893.81 | -369.75 | 5,901.95 | 1.50 | 0.00 | -1.50 |
| 12,200.00 | 90.00 | 352.15 | 6,611.00 | 5,944.56 | -376.75 | 5,953.14 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.00 | 352.15 | 6,611.00 | 6,043.63 | -390.41 | 6,053.06 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 90.00 | 352.15 | 6,611.00 | 6,142.69 | -404.07 | 6,152.98 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.00 | 352.15 | 6,611.00 | 6,241.75 | -417.72 | 6,252.90 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.00 | 352.15 | 6,611.00 | 6,340.82 | -431.38 | 6,352.82 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.00 | 352.15 | 6,611.00 | 6,439.88 | -445.04 | 6,452.74 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 90.00 | 352.15 | 6,611.00 | 6,538.94 | -458.70 | 6,552.66 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 90.00 | 352.15 | 6,611.00 | 6,638.00 | -472.36 | 6,652.58 | 0.00 | 0.00 | 0.00 |
| 13,000.00 | 90.00 | 352.15 | 6,611.00 | 6,737.07 | -486.02 | 6,752.50 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 90.00 | 352.15 | 6,611.00 | 6,836.13 | -499.68 | 6,852.41 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 90.00 | 352.15 | 6,611.00 | 6,935.19 | -513.34 | 6,952.33 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 90.00 | 352.15 | 6,611.00 | 7,034.25 | -526.99 | 7,052.25 | 0.00 | 0.00 | 0.00 |

# Noble Energy, Inc.

Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Well:** | Wells Ranch State AA32-783 | **North Reference:** | Grid |
| **Wellbore:** | Wellbore #1 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #2 | **Database:** | EDMP |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 13,400.00 | 90.00 | 352.15 | 6,611.00 | 7,133.32 | -540.65 | 7,152.17 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 90.00 | 352.15 | 6,611.00 | 7,232.38 | -554.31 | 7,252.09 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 90.00 | 352.15 | 6,611.00 | 7,331.44 | -567.97 | 7,352.01 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 90.00 | 352.15 | 6,611.00 | 7,430.51 | -581.63 | 7,451.93 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 90.00 | 352.15 | 6,611.00 | 7,529.57 | -595.29 | 7,551.85 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 90.00 | 352.15 | 6,611.00 | 7,628.63 | -608.95 | 7,651.77 | 0.00 | 0.00 | 0.00 |
| 14,000.00 | 90.00 | 352.15 | 6,611.00 | 7,727.69 | -622.61 | 7,751.69 | 0.00 | 0.00 | 0.00 |
| 14,100.00 | 90.00 | 352.15 | 6,611.00 | 7,826.76 | -636.26 | 7,851.61 | 0.00 | 0.00 | 0.00 |
| 14,200.00 | 90.00 | 352.15 | 6,611.00 | 7,925.82 | -649.92 | 7,951.53 | 0.00 | 0.00 | 0.00 |
| 14,300.00 | 90.00 | 352.15 | 6,611.00 | 8,024.88 | -663.58 | 8,051.45 | 0.00 | 0.00 | 0.00 |
| 14,400.00 | 90.00 | 352.15 | 6,611.00 | 8,123.95 | -677.24 | 8,151.37 | 0.00 | 0.00 | 0.00 |
| 14,500.00 | 90.00 | 352.15 | 6,611.00 | 8,223.01 | -690.90 | 8,251.28 | 0.00 | 0.00 | 0.00 |
| 14,600.00 | 90.00 | 352.15 | 6,611.00 | 8,322.07 | -704.56 | 8,351.20 | 0.00 | 0.00 | 0.00 |
| 14,700.00 | 90.00 | 352.15 | 6,611.00 | 8,421.13 | -718.22 | 8,451.12 | 0.00 | 0.00 | 0.00 |
| 14,800.00 | 90.00 | 352.15 | 6,611.00 | 8,520.20 | -731.88 | 8,551.04 | 0.00 | 0.00 | 0.00 |
| 14,900.00 | 90.00 | 352.15 | 6,611.00 | 8,619.26 | -745.53 | 8,650.96 | 0.00 | 0.00 | 0.00 |
| 15,000.00 | 90.00 | 352.15 | 6,611.00 | 8,718.32 | -759.19 | 8,750.88 | 0.00 | 0.00 | 0.00 |
| 15,100.00 | 90.00 | 352.15 | 6,611.00 | 8,817.39 | -772.85 | 8,850.80 | 0.00 | 0.00 | 0.00 |
| 15,200.00 | 90.00 | 352.15 | 6,611.00 | 8,916.45 | -786.51 | 8,950.72 | 0.00 | 0.00 | 0.00 |
| 15,300.00 | 90.00 | 352.15 | 6,611.00 | 9,015.51 | -800.17 | 9,050.64 | 0.00 | 0.00 | 0.00 |
| 15,400.00 | 90.00 | 352.15 | 6,611.00 | 9,114.57 | -813.83 | 9,150.56 | 0.00 | 0.00 | 0.00 |
| 15,500.00 | 90.00 | 352.15 | 6,611.00 | 9,213.64 | -827.49 | 9,250.48 | 0.00 | 0.00 | 0.00 |
| 15,600.00 | 90.00 | 352.15 | 6,611.00 | 9,312.70 | -841.14 | 9,350.40 | 0.00 | 0.00 | 0.00 |
| 15,700.00 | 90.00 | 352.15 | 6,611.00 | 9,411.76 | -854.80 | 9,450.32 | 0.00 | 0.00 | 0.00 |
| 15,800.00 | 90.00 | 352.15 | 6,611.00 | 9,510.82 | -868.46 | 9,550.23 | 0.00 | 0.00 | 0.00 |
| 15,900.00 | 90.00 | 352.15 | 6,611.00 | 9,609.89 | -882.12 | 9,650.15 | 0.00 | 0.00 | 0.00 |
| 16,000.00 | 90.00 | 352.15 | 6,611.00 | 9,708.95 | -895.78 | 9,750.07 | 0.00 | 0.00 | 0.00 |
| 16,100.00 | 90.00 | 352.15 | 6,611.00 | 9,808.01 | -909.44 | 9,849.99 | 0.00 | 0.00 | 0.00 |
| 16,200.00 | 90.00 | 352.15 | 6,611.00 | 9,907.08 | -923.10 | 9,949.91 | 0.00 | 0.00 | 0.00 |
| 16,300.00 | 90.00 | 352.15 | 6,611.00 | 10,006.14 | -936.76 | 10,049.83 | 0.00 | 0.00 | 0.00 |
| 16,400.00 | 90.00 | 352.15 | 6,611.00 | 10,105.20 | -950.41 | 10,149.75 | 0.00 | 0.00 | 0.00 |
| 16,500.00 | 90.00 | 352.15 | 6,611.00 | 10,204.26 | -964.07 | 10,249.67 | 0.00 | 0.00 | 0.00 |
| 16,600.00 | 90.00 | 352.15 | 6,611.00 | 10,303.33 | -977.73 | 10,349.59 | 0.00 | 0.00 | 0.00 |
| 16,700.00 | 90.00 | 352.15 | 6,611.00 | 10,402.39 | -991.39 | 10,449.51 | 0.00 | 0.00 | 0.00 |
| 16,800.00 | 90.00 | 352.15 | 6,611.00 | 10,501.45 | -1,005.05 | 10,549.43 | 0.00 | 0.00 | 0.00 |
| 16,900.00 | 90.00 | 352.15 | 6,611.00 | 10,600.52 | -1,018.71 | 10,649.35 | 0.00 | 0.00 | 0.00 |
| 17,000.00 | 90.00 | 352.15 | 6,611.00 | 10,699.58 | -1,032.37 | 10,749.27 | 0.00 | 0.00 | 0.00 |
| 17,100.00 | 90.00 | 352.15 | 6,611.00 | 10,798.64 | -1,046.03 | 10,849.19 | 0.00 | 0.00 | 0.00 |
| 17,170.83 | 90.00 | 352.15 | 6,611.00 | 10,868.81 | -1,055.70 | 10,919.96 | 0.00 | 0.00 | 0.00 |

# Noble Energy, Inc.

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Well:** | Wells Ranch State AA32-783 | **North Reference:** | Grid |
| **Wellbore:** | Wellbore #1 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #2 | **Database:** | EDMP |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Wells Ranch State AA32 - plan hits target center - Point | 0.00 | 0.00 | 6,534.00 | 427.17 | -258.42 | 1,403,371.90 | 3,287,095.61 | 40.4360744 | -104.4686023 |
| Wells Ranch State AA32 - plan hits target center - Point | 0.00 | 0.01 | 6,611.00 | 10,868.81 | -1,055.70 | 1,413,813.52 | 3,286,298.33 | 40.4647600 | -104.4710310 |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 235.00 | 235.00 | Pierre | | | |
| 474.00 | 474.00 | Upper Pierre Aquifer Top | | | |
| 1,535.00 | 1,535.00 | Upper Pierre Aquifer Base | | | |
| 4,340.56 | 4,336.00 | Sussex | | | |
| 4,763.52 | 4,758.00 | Parkman | | | |
| 4,798.59 | 4,793.00 | Shannon | | | |
| 5,820.91 | 5,813.00 | Teepee Buttes | | | |
| 6,592.99 | 6,495.00 | Sharon Springs | | | |
| 6,667.05 | 6,534.00 | Top A Chalk | | | |
| 6,732.00 | 6,562.00 | Top A Marl | | | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 2200 | 2200 | 0 | 0 | Start Build 2.00 |
| 6000 | 5991 | 2 | -6 | Start DLS 9.00 TFO 68.90 |
| 6667 | 6534 | 94 | -231 | TPZ at 6667.05 MD |
| 6983 | 6611 | 427 | -258 | LP at 6983.41 MD |
| 11,683 | 6611 | 731 | -263 | Start DLS 1.50 TFO -90.00 |
| 12,149 | 6611 | 5430 | -334 | Start 5022.06 hold at 12148.77 MD |
| 17,171 | 6611 | 5894 | -370 | TD at 17170.83 MD |

Checked By: _____ Approved By: _____ Date: _____

# Northern Region - DJ Basin

**Wells Ranch**
**BB Section 05**
**Wells Ranch State AA32-783**

**Wellbore #1**
**Plan #2**

# Anticollision Summary Report

**19 April, 2018**

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Reference** | Plan #2 | | |
| **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 10,000.00 ft | **Error Surface:** | Pedal Curve |
| **Warning Levels Evaluated at:** | 2.00 **Sigma** | **Casing Method:** | Not applied |

**Survey Tool Program** **Date** 4/19/2018

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 17,170.83 | Plan #2 (Wellbore #1) | 2_MWD+IFR1 | A005Mb: IFR declination correction only |

**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 |
|---|---|---|---|---|---|---|
| A Section 28 | | | | | | |
| Ankeney 2-28 (SI) - Wellbore #1 - No Surveys | | | | | | Out of range |
| Ankenney 28-01 (PA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Art Rohr 1 (PA) - Wellbore #1 - No Surveys | | | | | | Out of range |
| Danley 1 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Danley 12-28 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Danley 13-28 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Danley 14-28 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Dewey 21-28 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Dewey 22-28 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Hannan Rohr 1 (PA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Rohr A 28-25 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wardlaw 16-28 - Original Drilling - Original Drilling - As D | | | | | | Out of range |
| Wardlaw 16-28 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wardlaw 20-28 - Original Drilling - Original Drilling - As D | | | | | | Out of range |
| Wardlaw 20-28 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wardlaw 33-28 (PA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Webster 09-28 - Original Drilling - Original Drilling - As D | | | | | | Out of range |
| Webster 15-28 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Webster 9-28 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| A Section 29 | | | | | | |
| Amos 1 (DA) - Wellbore #1 - No Surveys | | | | | | Out of range |
| Anderson 3-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Andy 29-1 (PA) - Wellbore #1 - No Surveys | | | | | | Out of range |
| Andy 29-2 (PA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Capehart 1 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Capehart 31-29 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Capehart 41-29 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Capehart 42-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Miller 15-29 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Miller 16-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Miller 33-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Miller 43-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Rhine 15-29 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Uhrich 1 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Uhrich 13-29 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Uhrich 14-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Uhrich 19-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Uhrich 23-29 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| A Section 30 | | | | | | |
| Blehm 30-01 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Blehm 44-30 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Fairmeadows 03-30 - Original Drilling - Original Drilling - | 14,422.05 | 6,549.00 | 4,668.53 | 4,444.36 | 20.826 | CC |
| Fairmeadows 03-30 - Original Drilling - Original Drilling - | 14,500.00 | 6,549.00 | 4,669.18 | 4,444.22 | 20.756 | ES |
| Fairmeadows 03-30 - Original Drilling - Original Drilling - | 15,100.00 | 6,549.00 | 4,717.49 | 4,487.36 | 20.499 | SF |
| Francen 11-30 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Francen 14-30 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Francen 19-30 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| J&L Farms 32-30 - Original Drilling - Original Drilling - As | 15,386.99 | 6,569.28 | 1,914.06 | 1,786.95 | 15.059 | CC |
| J&L Farms 32-30 - Original Drilling - Original Drilling - As | 15,400.00 | 6,568.94 | 1,914.10 | 1,786.89 | 15.046 | ES |
| J&L Farms 32-30 - Original Drilling - Original Drilling - As | 15,500.00 | 6,566.30 | 1,917.39 | 1,789.51 | 14.994 | SF |
| Roth #21-30 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth #2-30-0 (PA) - Original Drilling - Original Drilling - As | | | | | | Out of range |
| Roth #4-30 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth #4-30P (PA) - Original Drilling - Original Drilling - As | | | | | | Out of range |
| Roth #5 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth #5-30 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth #6-30 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth 01-30 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth 02-30 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth 12-30 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth 14-30 (PA) - Original Drilling - Original Drilling - As D | | | | | | Out of range |
| Roth 2-30-0 (PA) - Wellbore #1 - No Surveys | | | | | | Out of range |
| Roth A30-07 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth A30-08 (PA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Roth A30-17 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Sander #1 (PA) - Original Drilling - Original Drilling - As D | | | | | | Out of range |
| Uhrich 33-30 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Uhrich 43-30 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wolfe 02-30G - Original Drilling - Original Drilling - As Dri | 15,724.36 | 6,576.31 | 4,529.95 | 4,398.93 | 34.575 | CC |
| Wolfe 02-30G - Original Drilling - Original Drilling - As Dri | 15,800.00 | 6,576.14 | 4,530.58 | 4,398.79 | 34.379 | ES |
| Wolfe 02-30G - Original Drilling - Original Drilling - As Dri | 16,600.00 | 6,574.40 | 4,613.80 | 4,475.77 | 33.426 | SF |

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

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| A Section 31 | | | | | | |
| Ceri 13-31H (PR) - Wellbore #1 - MWD Surveys | | | | | | Out of range |
| Ehrlich 31-1 (PA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Jason 1 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Jason 2 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Jason 34-31 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Marcy 1-31X (PR) - Original Hole - Original Hole | | | | | | Out of range |
| Marcy 1-31X (PR) - Surface Gyros - Gyros | | | | | | Out of range |
| Marcy 31-32 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Marcy 42-31 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Peak 1 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Printz 2-31 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Reba A 31-3 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| A Section 32 | | | | | | |
| Ehrlich 13-32 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Ehrlich 14-32 (TA) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Farmland 10-32 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Farmland 16-32 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Hoffner 1 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Hoffner 32-32 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Johnson 5-32 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Johnson A 32-06 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Larsen 1 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Larsen 2 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Larson A32-17 (PR) - Wellbore #1 - MWD Surveys | | | | | | Out of range |
| QC USX A32-19 (PR) - Wellbore #1 - MWD Surveys | | | | | | Out of range |
| Rubix A 32-03 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Webster 11-32 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Webster 15-32 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Webster 9-32 (SI) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| BB Section 03 | | | | | | |
| UPRR Pan Am 1 (PA) - Original Drilling - Original Drilling | | | | | | Out of range |
| Wells 43-3 PA - Wellbore #1 - No Surveys | | | | | | Out of range |
| Wells 34-3 - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wells Rach USX BB 3-14 - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wells Ranch 12-03 - Original Drilling - Original Drilling - A | | | | | | Out of range |
| Wells Ranch 21-3 TA - Wellbore #1 - No Surveys | | | | | | Out of range |
| Wells Ranch 32-3 SI - Wellbore #1 - No Surveys | | | | | | Out of range |
| Wells Ranch 41-3 - Wellbore #1 - No Surveys | | | | | | Out of range |
| WELLS RANCH BB03-627 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH BB03-651 - Wellbore #1 - Plan 3 | | | | | | Out of range |
| WELLS RANCH STATE BB03-612 - Wellbore #1 - Plan # | | | | | | Out of range |
| WELLS RANCH STATE BB03-620 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH STATE BB03-636 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH STATE BB03-643 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH STATE BB03-659 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH STATE BB03-668 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH STATE BB03-676 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| WELLS RANCH STATE BB03-684 - Wellbore #1 - Plan 1 | | | | | | Out of range |
| Wells Ranch State BB05-613 - Original Drilling - Original | 6,062.91 | 16,925.92 | 4,886.78 | 4,738.04 | 32.855 | CC, ES |
| Wells Ranch State BB05-613 - Original Drilling - Original | 6,200.00 | 16,933.97 | 4,903.33 | 4,753.69 | 32.767 | SF |
| Wells Ranch State BB05-617 - Original Drilling - Original | 6,059.87 | 16,953.00 | 4,588.07 | 4,437.73 | 30.517 | CC, ES |
| Wells Ranch State BB05-617 - Original Drilling - Original | 6,150.00 | 16,953.00 | 4,595.31 | 4,444.45 | 30.460 | SF |
| Wells Ranch State BB05-625 - Original Drilling - Original | 6,071.05 | 16,728.00 | 4,061.10 | 3,912.81 | 27.386 | CC, ES |
| Wells Ranch State BB05-625 - Original Drilling - Original | 6,150.00 | 16,728.00 | 4,066.74 | 3,917.98 | 27.339 | SF |
| Wells Ranch State BB05-630 - Original Drilling - Original | 6,073.25 | 17,015.00 | 3,814.25 | 3,664.16 | 25.413 | CC, ES |
| Wells Ranch State BB05-630 - Original Drilling - Original | 6,150.00 | 17,015.00 | 3,819.63 | 3,669.01 | 25.358 | SF |
| Wells Ranch State BB05-635 - Original Drilling - Original | 6,092.07 | 17,038.00 | 3,464.97 | 3,315.47 | 23.177 | CC |
| Wells Ranch State BB05-635 - Original Drilling - Original | 6,100.00 | 17,038.00 | 3,465.02 | 3,315.46 | 23.168 | ES |
| Wells Ranch State BB05-635 - Original Drilling - Original | 6,200.00 | 17,038.00 | 3,475.74 | 3,325.43 | 23.125 | SF |
| Wells Ranch State BB05-644 - Original Drilling - Original | 6,098.74 | 16,866.99 | 2,819.92 | 2,670.95 | 18.930 | CC |
| Wells Ranch State BB05-644 - Original Drilling - Original | 6,100.00 | 16,867.04 | 2,819.92 | 2,670.94 | 18.929 | ES |
| Wells Ranch State BB05-644 - Original Drilling - Original | 6,150.00 | 16,868.51 | 2,822.44 | 2,673.05 | 18.893 | SF |
| Wells Ranch State BB05-650 - Original Drilling - Original | 6,126.92 | 16,879.41 | 2,527.40 | 2,385.65 | 17.830 | CC, ES |
| Wells Ranch State BB05-650 - Original Drilling - Original | 6,200.00 | 16,881.08 | 2,532.61 | 2,390.20 | 17.784 | SF |
| Wells Ranch State BB05-656 - Original Drilling - Original | 6,125.04 | 16,618.00 | 2,191.35 | 2,045.74 | 15.049 | CC, ES |
| Wells Ranch State BB05-656 - Original Drilling - Original | 6,200.00 | 16,618.00 | 2,197.02 | 2,050.47 | 14.992 | SF |
| Wells Ranch State BB05-665 - Original Drilling - Original | 6,174.45 | 16,983.00 | 1,472.48 | 1,325.09 | 9.991 | CC, ES |
| Wells Ranch State BB05-665 - Original Drilling - Original | 6,250.00 | 16,983.00 | 1,478.85 | 1,330.07 | 9.939 | SF |
| Wells Ranch State BB05-669 - Original Drilling - Original | 6,267.93 | 17,049.00 | 1,220.03 | 1,076.56 | 8.504 | CC, ES |
| Wells Ranch State BB05-669 - Original Drilling - Original | 6,350.00 | 17,049.00 | 1,228.00 | 1,082.05 | 8.414 | SF |
| Wells Ranch State BB05-678 - Original Drilling - Original | 6,279.82 | 17,130.00 | 919.14 | 789.40 | 7.085 | CC |
| Wells Ranch State BB05-678 - Original Drilling - Original | 6,300.00 | 17,130.00 | 919.67 | 789.06 | 7.041 | ES |
| Wells Ranch State BB05-678 - Original Drilling - Original | 6,350.00 | 17,130.00 | 925.61 | 792.97 | 6.978 | SF |
| Wells Ranch State BB05-685 - Original Drilling - Original | 6,429.11 | 16,716.00 | 361.89 | 234.13 | 2.833 | CC |
| Wells Ranch State BB05-685 - Original Drilling - Original | 6,450.00 | 16,716.00 | 362.82 | 232.16 | 2.777 | ES |
| Wells Ranch State BB05-685 - Original Drilling - Original | 6,500.00 | 16,716.00 | 372.43 | 235.68 | 2.723 | SF |
| Wells Ranch State BB05-690 - Original Drilling - Original | 6,664.99 | 17,090.00 | 295.61 | 196.83 | 2.992 | CC |
| Wells Ranch State BB05-690 - Original Drilling - Original | 6,700.00 | 17,090.00 | 298.60 | 193.31 | 2.836 | ES |
| Wells Ranch State BB05-690 - Original Drilling - Original | 6,750.00 | 17,090.00 | 312.78 | 198.78 | 2.744 | SF |
| Wells Ranch USX BB 3-10 - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wells Ranch USX BB 3-11 SI - Wellbore #1 - Gyro Surve | | | | | | Out of range |
| Wells Ranch USX BB 3-16 SI - Wellbore #1 - Gyro Surve | | | | | | Out of range |
| Wells Ranch USX BB 3-2 SI - Wellbore #1 - No Surveys | | | | | | Out of range |

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

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| BB Section 03 | | | | | | |
| Wells Ranch USX BB 3-4 - Wellbore #1 - No Surveys | | | | | | Out of range |
| Wells Ranch USX BB 3-6 SI - Wellbore #1 - Gyro Survey | | | | | | Out of range |
| Wells Ranch USX BB 3-8 - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Wells Ranch USX BB03-04 - Original Drilling - Original D | | | | | | Out of range |
| Wells Ranch USX BB03-12 - Original Drilling - Original D | | | | | | Out of range |
| Wells Ranch USX BB03-13 - Original Drilling - Original D | | | | | | Out of range |
| Wells Ranch USX BB03-25 PA - Original Drilling - Gyro S | | | | | | Out of range |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| BB Section 05 | | | | | | |
| UPV 05-03H3 - Original Drilling - Original Drilling - As Dri | 100.00 | 70.46 | 1,339.37 | 1,339.12 | 5,372.250 | CC |
| UPV 05-03H3 - Original Drilling - Original Drilling - As Dri | 2,215.29 | 2,197.38 | 1,339.78 | 1,324.58 | 88.117 | ES |
| UPV 05-03H3 - Original Drilling - Original Drilling - As Dri | 6,400.00 | 6,411.38 | 1,595.83 | 1,551.11 | 35.681 | SF |
| UPV 05-04H3 - Original Drilling - Original Drilling - As Dri | 100.00 | 63.82 | 396.65 | 396.41 | 1,669.209 | CC |
| UPV 05-04H3 - Original Drilling - Original Drilling - As Dri | 2,300.00 | 2,264.69 | 405.72 | 389.96 | 25.751 | ES |
| UPV 05-04H3 - Original Drilling - Original Drilling - As Dri | 5,100.00 | 5,030.39 | 487.92 | 452.60 | 13.811 | SF |
| UPV 05-05H3 - Original Drilling - Original Drilling - As Dri | 454.54 | 427.54 | 1,867.18 | 1,864.46 | 687.075 | CC |
| UPV 05-05H3 - Original Drilling - Original Drilling - As Dri | 2,200.00 | 2,160.57 | 1,871.92 | 1,856.89 | 124.612 | ES |
| UPV 05-05H3 - Original Drilling - Original Drilling - As Dri | 6,200.00 | 6,144.47 | 2,068.36 | 2,025.07 | 47.781 | SF |
| UPV 05-06H3 - Original Drilling - Original Drilling - As Dri | 1,189.46 | 1,178.47 | 2,129.28 | 2,121.30 | 267.068 | CC |
| UPV 05-06H3 - Original Drilling - Original Drilling - As Dri | 2,200.00 | 2,183.31 | 2,130.80 | 2,115.70 | 141.109 | ES |
| UPV 05-06H3 - Original Drilling - Original Drilling - As Dri | 6,400.00 | 6,400.00 | 2,502.37 | 2,457.65 | 55.949 | SF |
| Wells Ranch 31-05 - Original Drilling - Original Drilling - A | 0.00 | 6.95 | 2,707.17 | | | |
| Wells Ranch 31-05 - Original Drilling - Original Drilling - A | 300.00 | 291.45 | 2,707.90 | 2,706.21 | 1,599.717 | ES |
| Wells Ranch 31-05 - Original Drilling - Original Drilling - A | 6,800.00 | 6,597.52 | 3,139.71 | 3,093.13 | 67.405 | SF |
| Wells Ranch 32-05 - Original Drilling - Original Drilling - A | 1,652.51 | 1,659.54 | 3,063.82 | 3,052.50 | 270.628 | CC |
| Wells Ranch 32-05 - Original Drilling - Original Drilling - A | 2,200.00 | 2,203.90 | 3,066.36 | 3,051.18 | 202.015 | ES |
| Wells Ranch 32-05 - Original Drilling - Original Drilling - A | 6,500.00 | 6,425.65 | 3,471.05 | 3,425.97 | 76.997 | SF |
| Wells Ranch 41-05 - Original Drilling - Original Drilling - A | 192.45 | 229.45 | 3,930.60 | 3,929.52 | 3,625.453 | CC |
| Wells Ranch 41-05 - Original Drilling - Original Drilling - A | 2,241.47 | 2,332.83 | 3,930.77 | 3,915.01 | 249.288 | ES |
| Wells Ranch 41-05 - Original Drilling - Original Drilling - A | 7,700.00 | 6,600.01 | 4,592.09 | 4,542.49 | 92.589 | SF |
| Wells Ranch 42-05 - Original Drilling - Original Drilling - A | 114.75 | 126.75 | 4,224.97 | 4,224.52 | 9,458.783 | CC |
| Wells Ranch 42-05 - Original Drilling - Original Drilling - A | 2,248.33 | 2,331.71 | 4,228.98 | 4,213.19 | 267.781 | ES |
| Wells Ranch 42-05 - Original Drilling - Original Drilling - A | 6,667.05 | 6,473.01 | 4,648.68 | 4,602.98 | 101.735 | SF |
| Wells Ranch BB01-611 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-615 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-624 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-624 - Original Drilling - ST01 - ST01 - | | | | | | Out of range |
| Wells Ranch BB01-638 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-649 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-655 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-669 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch BB01-675 - Original Drilling - Original Drillin | | | | | | Out of range |
| Wells Ranch State AA32-717 - Wellbore #1 - Plan 1 | 1,902.38 | 1,932.38 | 3,330.41 | 3,317.13 | 250.774 | CC |
| Wells Ranch State AA32-717 - Wellbore #1 - Plan 1 | 2,000.00 | 2,016.69 | 3,330.47 | 3,316.53 | 239.053 | ES |
| Wells Ranch State AA32-717 - Wellbore #1 - Plan 1 | 17,170.83 | 17,406.26 | 5,087.88 | 4,867.68 | 23.105 | SF |
| Wells Ranch State AA32-724 - Wellbore #1 - Plan 1 | 2,200.00 | 2,229.00 | 3,293.45 | 3,278.03 | 213.712 | CC, ES |
| Wells Ranch State AA32-724 - Wellbore #1 - Plan 1 | 17,170.83 | 17,314.35 | 4,647.24 | 4,427.06 | 21.106 | SF |
| Wells Ranch State AA32-731 - Wellbore #1 - Plan 1 | 2,210.98 | 2,252.16 | 3,256.45 | 3,240.92 | 209.662 | CC, ES |
| Wells Ranch State AA32-731 - Wellbore #1 - Plan 1 | 17,170.83 | 17,048.67 | 4,246.99 | 4,027.25 | 19.327 | SF |
| Wells Ranch State AA32-737 - Wellbore #1 - Plan 1 | 6,160.07 | 6,419.38 | 3,013.46 | 2,968.66 | 67.257 | CC |
| Wells Ranch State AA32-737 - Wellbore #1 - Plan 1 | 6,250.00 | 6,474.63 | 3,013.70 | 2,968.38 | 66.500 | ES |
| Wells Ranch State AA32-737 - Wellbore #1 - Plan 1 | 17,170.83 | 17,189.76 | 3,816.59 | 3,596.58 | 17.347 | SF |
| Wells Ranch State AA32-745 - Wellbore #1 - Plan 1 | 1,912.12 | 1,924.12 | 1,574.53 | 1,561.25 | 118.512 | CC |
| Wells Ranch State AA32-745 - Wellbore #1 - Plan 1 | 2,000.00 | 2,000.00 | 1,574.58 | 1,560.71 | 113.503 | ES |
| Wells Ranch State AA32-745 - Wellbore #1 - Plan 1 | 17,170.83 | 17,248.17 | 3,396.62 | 3,180.36 | 15.706 | SF |
| Wells Ranch State AA32-751 - Wellbore #1 - Plan 1 | 2,200.00 | 2,211.00 | 1,537.04 | 1,521.69 | 100.158 | CC, ES |
| Wells Ranch State AA32-751 - Wellbore #1 - Plan 1 | 17,170.83 | 17,269.28 | 2,966.32 | 2,749.79 | 13.699 | SF |
| Wells Ranch State AA32-759 (Killed) - Wellbore #1 - Plan | 2,200.00 | 2,210.00 | 1,499.63 | 1,484.28 | 97.743 | CC, ES |
| Wells Ranch State AA32-759 (Killed) - Wellbore #1 - Plan | 17,170.83 | 17,101.63 | 2,427.07 | 2,211.13 | 11.239 | SF |
| Wells Ranch State AA32-763 - Wellbore #1 - Plan 1 | 6,292.53 | 6,379.43 | 1,295.12 | 1,250.42 | 28.970 | CC |
| Wells Ranch State AA32-763 - Wellbore #1 - Plan 1 | 11,700.00 | 11,805.43 | 1,324.79 | 1,198.40 | 10.482 | ES |
| Wells Ranch State AA32-763 - Wellbore #1 - Plan 1 | 17,170.83 | 17,234.74 | 1,988.70 | 1,743.29 | 8.104 | SF |

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

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| BB Section 05 | | | | | | |
| Wells Ranch State AA32-770 - Wellbore #1 - Plan #2 | 2,000.00 | 2,001.00 | 74.94 | 61.06 | 5.400 | CC, ES |
| Wells Ranch State AA32-770 - Wellbore #1 - Plan #2 | 2,100.00 | 2,098.41 | 76.65 | 62.09 | 5.262 | SF |
| Wells Ranch State AA32-775 - Wellbore #1 - Plan #2 | 2,200.00 | 2,201.00 | 37.47 | 22.16 | 2.447 | CC, ES |
| Wells Ranch State AA32-775 - Wellbore #1 - Plan #2 | 2,300.00 | 2,300.98 | 39.08 | 23.06 | 2.439 | SF |
| Wells Ranch State AA32-789 - Wellbore #1 - Plan #2 | 2,000.00 | 1,999.00 | 37.50 | 23.63 | 2.704 | CC, ES |
| Wells Ranch State AA32-789 - Wellbore #1 - Plan #2 | 2,100.00 | 2,097.69 | 39.17 | 24.61 | 2.690 | SF |
| Wells Ranch State BB01-690 - Original Drilling - Original | | | | | | Out of range |
| Wells Ranch USX BB05-09 - Original Drilling - Original D | 1,951.23 | 1,968.47 | 4,896.55 | 4,883.06 | 363.161 | CC |
| Wells Ranch USX BB05-09 - Original Drilling - Original D | 2,200.00 | 2,192.19 | 4,897.35 | 4,882.20 | 323.259 | ES |
| Wells Ranch USX BB05-09 - Original Drilling - Original D | 6,600.00 | 6,473.34 | 5,406.23 | 5,360.73 | 118.829 | SF |
| Wells Ranch USX BB05-10 - Original Drilling - Original D | 1,608.82 | 1,631.12 | 4,044.18 | 4,033.09 | 364.871 | CC |
| Wells Ranch USX BB05-10 - Original Drilling - Original D | 2,200.00 | 2,214.94 | 4,047.05 | 4,031.81 | 265.580 | ES |
| Wells Ranch USX BB05-10 - Original Drilling - Original D | 6,550.00 | 6,411.58 | 4,517.45 | 4,472.31 | 100.079 | SF |
| Wells Ranch USX BB05-11 - Original Drilling - Original D | 1,515.56 | 1,516.59 | 3,139.56 | 3,129.24 | 304.054 | CC |
| Wells Ranch USX BB05-11 - Original Drilling - Original D | 2,223.08 | 2,243.22 | 3,141.15 | 3,125.76 | 204.013 | ES |
| Wells Ranch USX BB05-11 - Original Drilling - Original D | 6,400.00 | 6,397.82 | 3,444.26 | 3,399.53 | 76.986 | SF |
| Wells Ranch USX BB05-12 - Original Drilling - Original D | 260.05 | 249.08 | 3,028.33 | 3,026.91 | 2,139.808 | CC |
| Wells Ranch USX BB05-12 - Original Drilling - Original D | 500.00 | 466.66 | 3,029.08 | 3,026.04 | 997.356 | ES |
| Wells Ranch USX BB05-12 - Original Drilling - Original D | 6,300.00 | 6,289.72 | 3,292.88 | 3,248.74 | 74.605 | SF |
| Wells Ranch USX BB05-13 - Original Drilling - Original D | 2,385.34 | 2,494.27 | 4,355.23 | 4,338.36 | 258.296 | CC |
| Wells Ranch USX BB05-13 - Original Drilling - Original D | 2,700.00 | 2,793.05 | 4,356.02 | 4,337.00 | 229.062 | ES |
| Wells Ranch USX BB05-13 - Original Drilling - Original D | 6,350.00 | 6,326.97 | 4,529.83 | 4,485.44 | 102.045 | SF |
| Wells Ranch USX BB05-14 - Original Drilling - Original D | 1,030.03 | 1,065.04 | 4,350.21 | 4,343.21 | 621.221 | CC |
| Wells Ranch USX BB05-14 - Original Drilling - Original D | 2,300.00 | 2,415.73 | 4,355.04 | 4,338.77 | 267.671 | ES |
| Wells Ranch USX BB05-14 - Original Drilling - Original D | 6,350.00 | 6,432.05 | 4,657.91 | 4,613.17 | 104.103 | SF |
| Wells Ranch USX BB05-15 - Original Drilling - Original D | 1,792.74 | 1,816.15 | 4,941.28 | 4,928.90 | 399.065 | CC |
| Wells Ranch USX BB05-15 - Original Drilling - Original D | 1,900.00 | 1,879.27 | 4,941.80 | 4,928.81 | 380.569 | ES |
| Wells Ranch USX BB05-15 - Original Drilling - Original D | 6,400.00 | 6,206.87 | 5,305.88 | 5,261.87 | 120.544 | SF |
| Wells Ranch USX BB05-16 - Original Drilling - Original D | 1,860.80 | 1,900.00 | 5,611.65 | 5,598.73 | 434.237 | CC |
| Wells Ranch USX BB05-16 - Original Drilling - Original D | 2,200.00 | 2,195.64 | 5,612.61 | 5,597.45 | 370.105 | ES |
| Wells Ranch USX BB05-16 - Original Drilling - Original D | 6,550.00 | 6,439.22 | 6,132.45 | 6,087.20 | 135.525 | SF |
| Wells Ranch USX BB05-23 - Original Drilling - Original D | 384.11 | 416.11 | 4,882.40 | 4,879.98 | 2,012.723 | CC |
| Wells Ranch USX BB05-23 - Original Drilling - Original D | 500.00 | 500.00 | 4,882.81 | 4,879.68 | 1,558.342 | ES |
| Wells Ranch USX BB05-23 - Original Drilling - Original D | 6,600.00 | 6,507.74 | 5,433.05 | 5,387.39 | 118.969 | SF |
| Wells Ranch USX BB05-25 - Original Drilling - Original D | 1,761.26 | 1,753.35 | 3,601.82 | 3,589.77 | 298.986 | CC |
| Wells Ranch USX BB05-25 - Original Drilling - Original D | 1,900.00 | 1,867.01 | 3,602.40 | 3,589.46 | 278.410 | ES |
| Wells Ranch USX BB05-25 - Original Drilling - Original D | 6,350.00 | 6,302.93 | 3,888.08 | 3,843.79 | 87.789 | SF |

# Noble Energy, Inc.

## Anticollision Summary Report

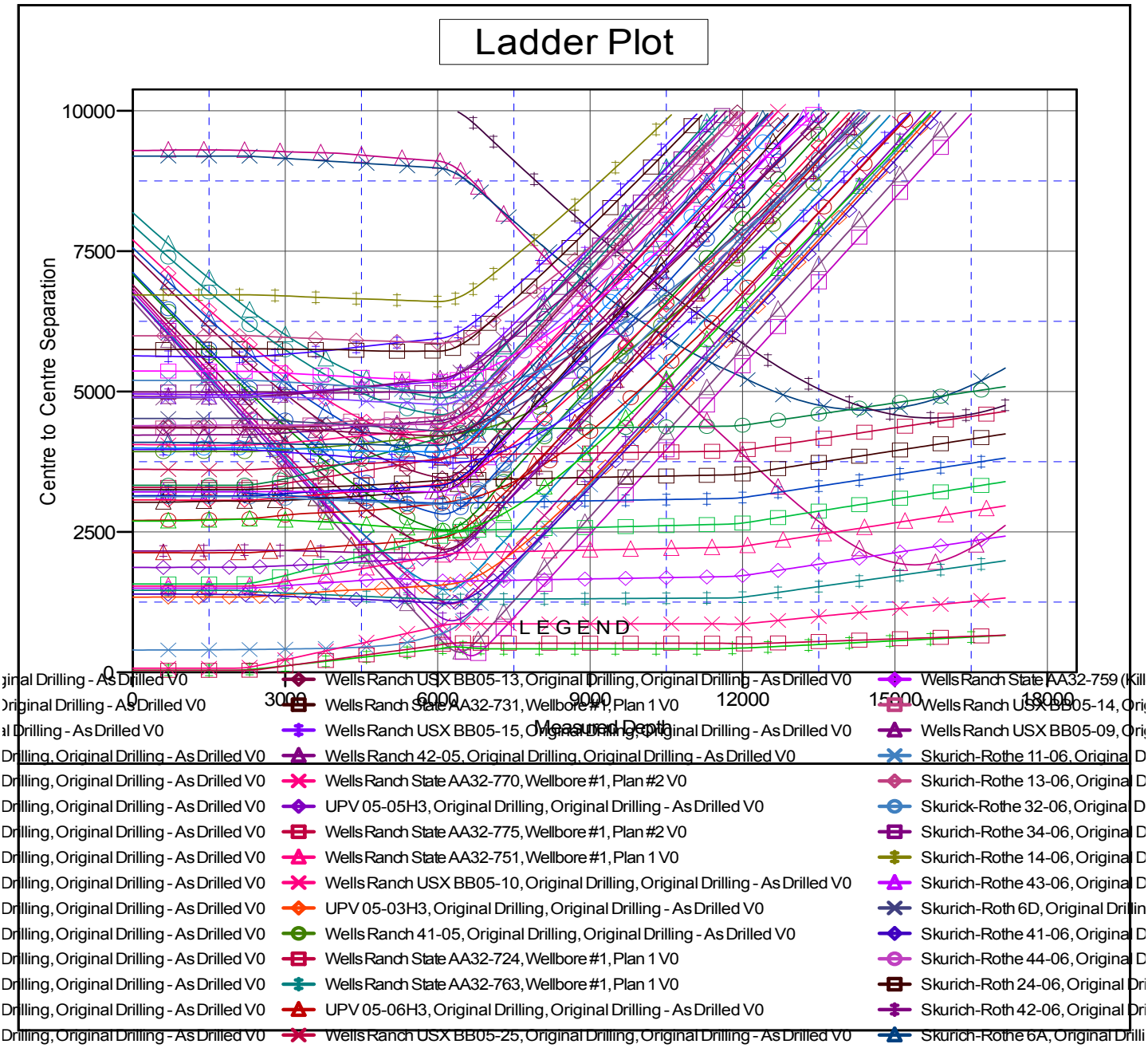
| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

**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 |
|---|---|---|---|---|---|---|
| BB Section 06 | | | | | | |
| Skurich-Roth 21-06 - Original Drilling - Original Drilling - A | 6,241.91 | 6,190.28 | 3,726.86 | 3,683.44 | 85.827 | CC |
| Skurich-Roth 21-06 - Original Drilling - Original Drilling - A | 6,250.00 | 6,196.27 | 3,726.88 | 3,683.40 | 85.731 | ES |
| Skurich-Roth 21-06 - Original Drilling - Original Drilling - A | 6,900.00 | 6,522.21 | 3,819.45 | 3,772.83 | 81.922 | SF |
| Skurich-Roth 23-06 - Original Drilling - Original Drilling - A | 6,030.42 | 5,962.43 | 4,771.67 | 4,729.73 | 113.750 | CC, ES |
| Skurich-Roth 23-06 - Original Drilling - Original Drilling - A | 6,550.00 | 6,499.26 | 4,907.78 | 4,862.28 | 107.865 | SF |
| Skurich-Roth 24-06 - Original Drilling - Original Drilling - A | 5,336.97 | 5,154.71 | 5,719.50 | 5,682.83 | 155.979 | CC |
| Skurich-Roth 24-06 - Original Drilling - Original Drilling - A | 6,002.85 | 5,845.60 | 5,719.77 | 5,678.29 | 137.867 | ES |
| Skurich-Roth 24-06 - Original Drilling - Original Drilling - A | 6,550.00 | 6,450.30 | 5,885.74 | 5,840.39 | 129.787 | SF |
| Skurich-Roth 33-06 - Original Drilling - Original Drilling - A | 6,005.20 | 5,901.80 | 3,927.72 | 3,886.04 | 94.247 | CC, ES |
| Skurich-Roth 33-06 - Original Drilling - Original Drilling - A | 6,400.00 | 6,289.13 | 4,024.26 | 3,979.90 | 90.710 | SF |
| Skurich-Roth 42-06 - Original Drilling - Original Drilling - A | 5,828.27 | 5,759.69 | 2,125.74 | 2,085.19 | 52.414 | CC |
| Skurich-Roth 42-06 - Original Drilling - Original Drilling - A | 5,999.54 | 5,924.30 | 2,126.24 | 2,084.49 | 50.927 | ES |
| Skurich-Roth 42-06 - Original Drilling - Original Drilling - A | 6,250.00 | 6,153.42 | 2,169.89 | 2,126.46 | 49.959 | SF |
| Skurich-Roth 6D - Original Drilling - Original Drilling - As | 6,124.64 | 6,055.77 | 4,293.19 | 4,250.61 | 100.819 | CC, ES |
| Skurich-Roth 6D - Original Drilling - Original Drilling - As | 10,500.00 | 10,500.00 | 6,692.67 | 6,618.73 | 90.524 | SF |
| Skurich-Rothe 11-06 - Original Drilling - Original Drilling - | 6,256.64 | 6,146.47 | 4,985.26 | 4,934.14 | 97.511 | CC |
| Skurich-Rothe 11-06 - Original Drilling - Original Drilling - | 6,300.00 | 6,185.09 | 4,985.52 | 4,933.77 | 96.334 | ES |
| Skurich-Rothe 11-06 - Original Drilling - Original Drilling - | 8,500.00 | 6,506.15 | 5,592.32 | 5,527.17 | 85.839 | SF |
| Skurich-Rothe 12-06 - Original Drilling - Original Drilling - | 6,078.99 | 5,963.45 | 5,184.26 | 5,142.18 | 123.192 | CC |
| Skurich-Rothe 12-06 - Original Drilling - Original Drilling - | 6,100.00 | 5,985.64 | 5,184.39 | 5,142.16 | 122.751 | ES |
| Skurich-Rothe 12-06 - Original Drilling - Original Drilling - | 6,850.00 | 6,528.94 | 5,353.41 | 5,306.96 | 115.253 | SF |
| Skurich-Rothe 13-06 - Original Drilling - Original Drilling - | 6,042.06 | 5,934.45 | 5,859.47 | 5,817.59 | 139.913 | CC |
| Skurich-Rothe 13-06 - Original Drilling - Original Drilling - | 6,050.00 | 5,941.52 | 5,859.50 | 5,817.56 | 139.736 | ES |
| Skurich-Rothe 13-06 - Original Drilling - Original Drilling - | 6,800.00 | 6,474.33 | 6,093.26 | 6,045.55 | 127.723 | SF |
| Skurich-Rothe 14-06 - Original Drilling - Original Drilling - | 6,027.62 | 5,950.69 | 6,603.06 | 6,561.15 | 157.561 | CC, ES |
| Skurich-Rothe 14-06 - Original Drilling - Original Drilling - | 6,667.05 | 6,661.39 | 6,803.34 | 6,756.97 | 146.733 | SF |
| Skurich-Rothe 22-06 - Original Drilling - Original Drilling - | 6,049.45 | 5,970.86 | 4,208.35 | 4,166.32 | 100.126 | CC |
| Skurich-Rothe 22-06 - Original Drilling - Original Drilling - | 6,050.00 | 5,971.45 | 4,208.35 | 4,166.32 | 100.117 | ES |
| Skurich-Rothe 22-06 - Original Drilling - Original Drilling - | 6,650.00 | 6,471.00 | 4,351.03 | 4,305.34 | 95.220 | SF |
| Skurich-Rothe 31-06 - Original Drilling - Original Drilling - | 6,197.74 | 6,166.22 | 2,515.05 | 2,471.86 | 58.243 | CC |
| Skurich-Rothe 31-06 - Original Drilling - Original Drilling - | 6,200.00 | 6,168.11 | 2,515.05 | 2,471.85 | 58.224 | ES |
| Skurich-Rothe 31-06 - Original Drilling - Original Drilling - | 6,600.00 | 6,400.00 | 2,559.48 | 2,514.16 | 56.481 | SF |
| Skurich-Rothe 34-06 - Original Drilling - Original Drilling - | 4,019.51 | 3,923.33 | 4,977.48 | 4,949.84 | 180.076 | CC |
| Skurich-Rothe 34-06 - Original Drilling - Original Drilling - | 5,900.00 | 5,784.69 | 4,982.40 | 4,941.49 | 121.792 | ES |
| Skurich-Rothe 34-06 - Original Drilling - Original Drilling - | 6,500.00 | 6,319.74 | 5,155.74 | 5,110.99 | 115.199 | SF |
| Skurich-Rothe 41-06 - Original Drilling - Original Drilling - | 6,124.44 | 6,119.02 | 1,228.43 | 1,185.69 | 28.739 | CC |
| Skurich-Rothe 41-06 - Original Drilling - Original Drilling - | 6,150.00 | 6,142.91 | 1,228.59 | 1,185.67 | 28.626 | ES |
| Skurich-Rothe 41-06 - Original Drilling - Original Drilling - | 6,350.00 | 6,326.90 | 1,246.87 | 1,202.63 | 28.184 | SF |
| Skurich-Rothe 43-06 - Original Drilling - Original Drilling - | 608.05 | 570.07 | 3,212.83 | 3,209.07 | 853.090 | CC |
| Skurich-Rothe 43-06 - Original Drilling - Original Drilling - | 5,999.54 | 5,948.47 | 3,213.00 | 3,171.14 | 76.752 | ES |
| Skurich-Rothe 43-06 - Original Drilling - Original Drilling - | 6,300.00 | 6,216.90 | 3,280.51 | 3,236.66 | 74.818 | SF |
| Skurich-Rothe 44-06 - Original Drilling - Original Drilling - | 100.00 | 61.38 | 4,394.37 | 4,394.13 | 10,000.000 | CC |
| Skurich-Rothe 44-06 - Original Drilling - Original Drilling - | 4,100.00 | 4,062.91 | 4,399.59 | 4,371.17 | 154.806 | ES |
| Skurich-Rothe 44-06 - Original Drilling - Original Drilling - | 6,400.00 | 6,378.63 | 4,533.64 | 4,488.95 | 101.429 | SF |
| Skurich-Rothe 6A - Original Drilling - Original Drilling - As | 6,001.96 | 5,957.34 | 4,043.04 | 4,001.14 | 96.499 | CC, ES |
| Skurich-Rothe 6A - Original Drilling - Original Drilling - As | 6,350.00 | 6,268.98 | 4,128.95 | 4,084.78 | 93.464 | SF |
| Skurick-Rothe 32-06 - Original Drilling - Original Drilling - | 6,036.44 | 5,974.99 | 2,989.61 | 2,848.80 | 21.231 | CC |
| Skurick-Rothe 32-06 - Original Drilling - Original Drilling - | 6,050.00 | 5,988.47 | 2,989.70 | 2,848.57 | 21.184 | ES |
| Skurick-Rothe 32-06 - Original Drilling - Original Drilling - | 6,450.00 | 6,347.39 | 3,071.73 | 2,922.08 | 20.526 | SF |

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

| | |
|---|---|
| Reference Depths are relative to Well @ 4703.00ft | Coordinates are relative to: Wells Ranch State AA32-783 |
| Offset Depths are relative to Offset Datum | Coordinate System is US State Plane 1983, Colorado Northern Zone |
| Central Meridian is -105.5000000 | Grid Convergence at Surface is: 0.67° |

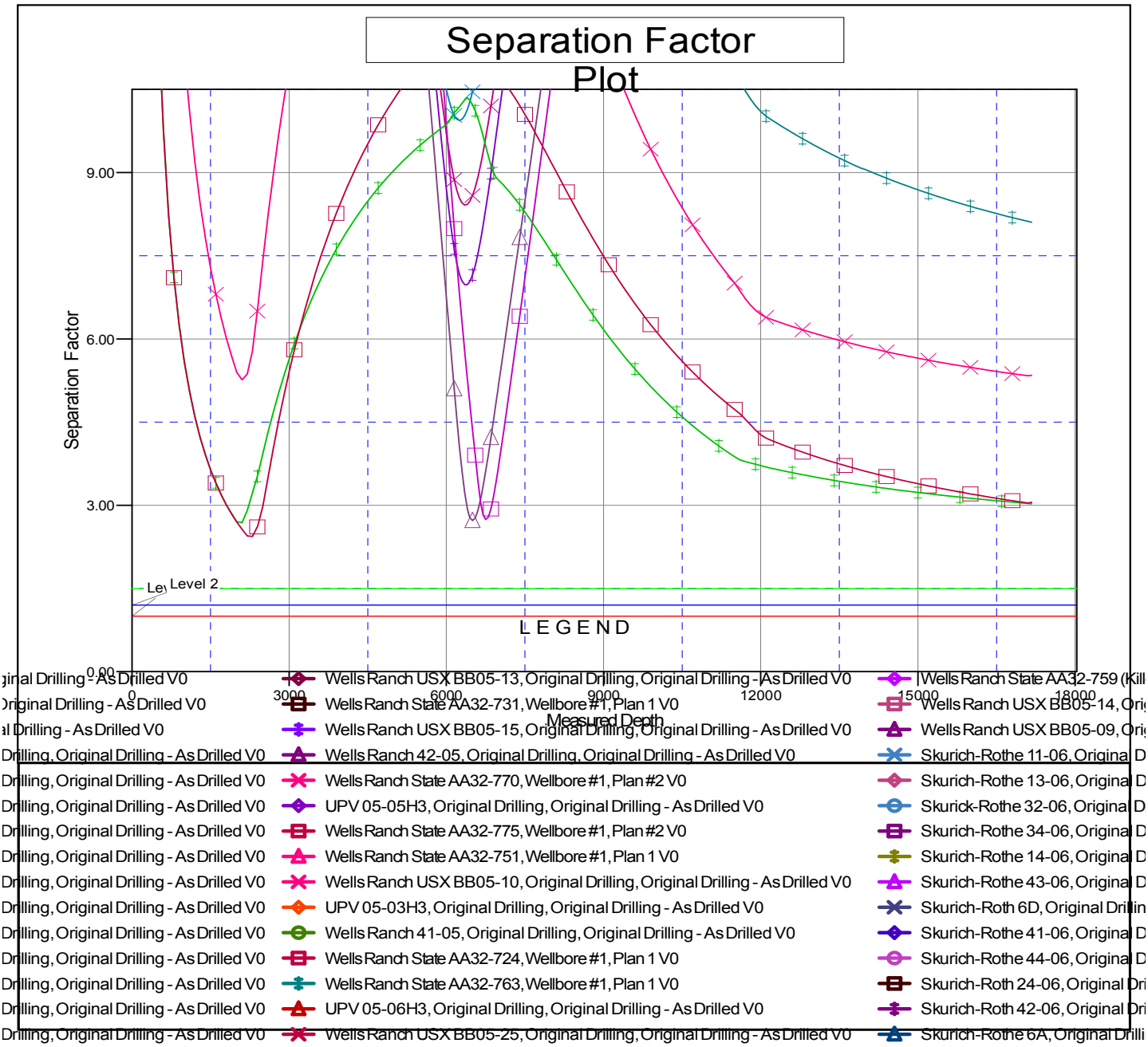


# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Wells Ranch State AA32-783 |
| **Project:** | Wells Ranch | **TVD Reference:** | Well @ 4703.00ft |
| **Reference Site:** | BB Section 05 | **MD Reference:** | Well @ 4703.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Wells Ranch State AA32-783 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Wellbore #1 | **Database:** | EDMP |
| **Reference Design:** | Plan #2 | **Offset TVD Reference:** | Offset Datum |

| | |
|---|---|
| Reference Depths are relative to Well @ 4703.00ft | Coordinates are relative to: Wells Ranch State AA32-783 |
| Offset Depths are relative to Offset Datum | Coordinate System is US State Plane 1983, Colorado Northern Zone |
| Central Meridian is -105.5000000 | Grid Convergence at Surface is: 0.67° |




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