Project: Mustang
Site: DD Section 30
Well: Guttersen YY06-775
Wellbore: Guttersen YY06-775
Design: Plan #1

# 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

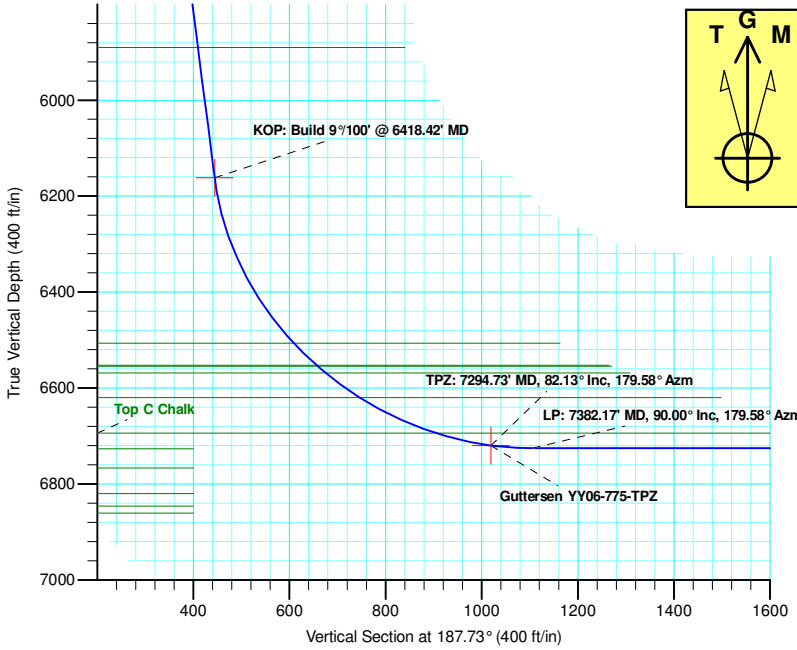
SECTION DETAILS

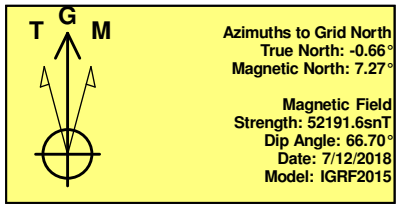
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 2100.00 | 0.00 | 0.00 | 2100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 3188.42 | 21.77 | 259.25 | 3162.43 | -38.11 | -200.70 | 2.00 | 259.25 | 64.75 | |
| 4 | 6418.42 | 21.77 | 259.25 | 6162.09 | -261.60 | -1377.53 | 0.00 | 0.00 | 444.43 | |
| 5 | 7294.73 | 82.13 | 179.58 | 6720.00 | -816.43 | -1564.51 | 9.00 | -83.31 | 1019.37 | Guttersen YY06-775-TPZ |
| 6 | 7382.17 | 90.00 | 179.58 | 6726.00 | -903.60 | -1563.88 | 9.00 | 0.00 | 1105.66 | |
| 7 | 17463.99 | 90.00 | 179.58 | 6726.00 | -10985.15 | -1490.46 | 0.00 | 0.00 | 11085.80 | Guttersen YY06-775-BHL |

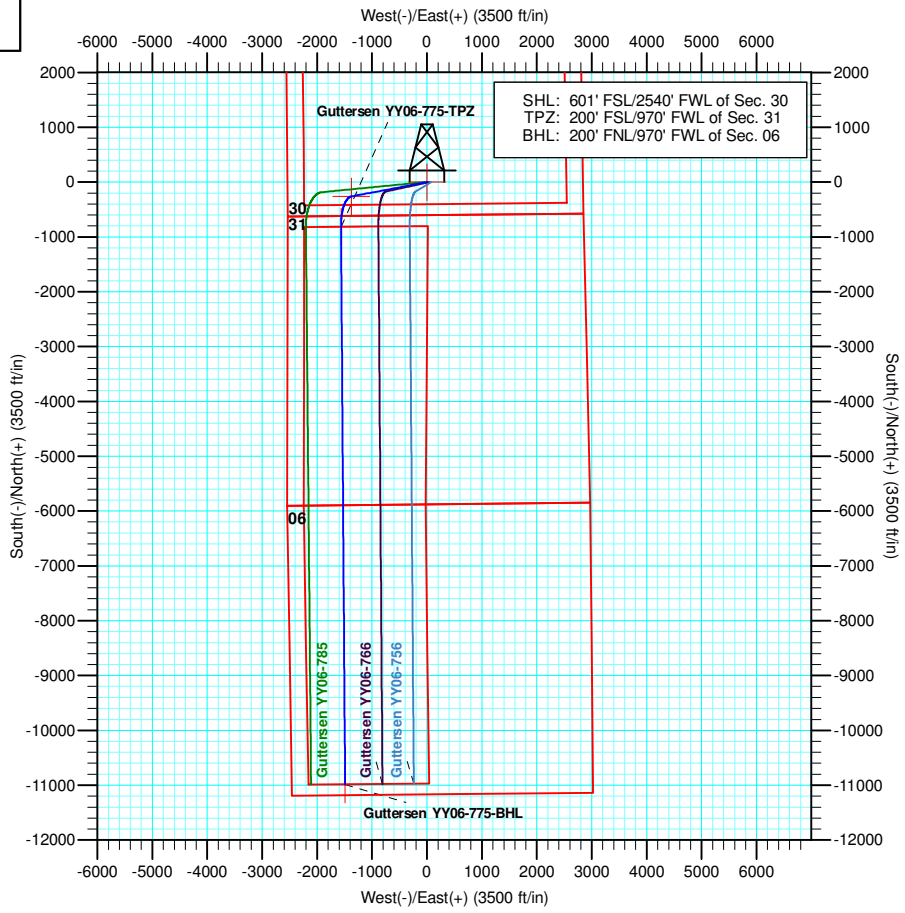
WELL DETAILS: Guttersen YY06-775

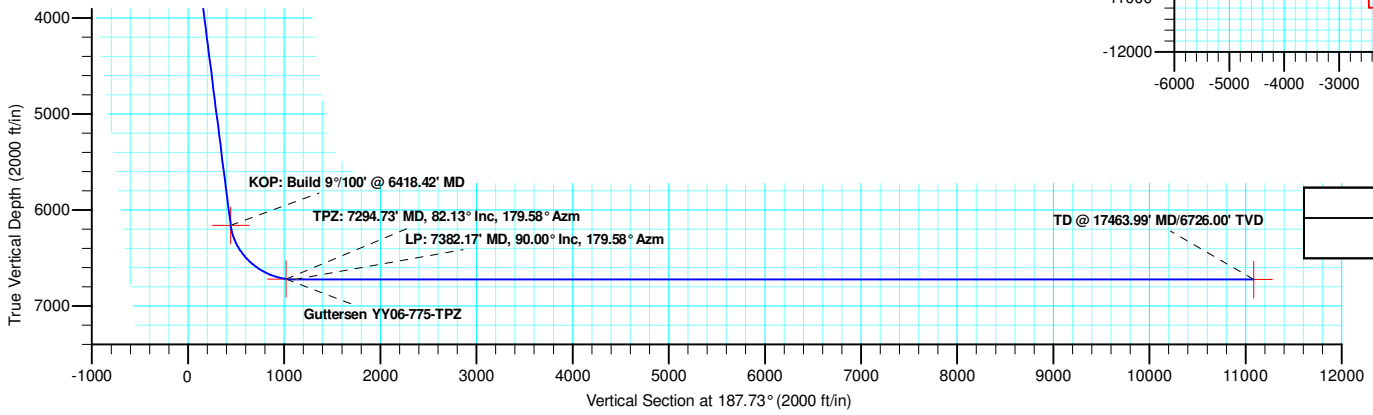
Ground Level: 4791.00

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 1313985.26 | 3284598.26 | 40.1907983 | -104.4812624 | |




Plan: Plan #1 (Guttersen YY06-775/Guttersen YY06-775)

Created By: Keith Noack Date: 14:20, August 28 2018

# Northern Region - DJ Basin

**Mustang**
**DD Section 30**
**Guttersen YY06-775**

**Guttersen YY06-775**

**Plan: Plan #1**

# Standard Planning Report

**28 August, 2018**

| | | | |
|---|---|---|---|
| **Database:** | EDMP | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**Project** Mustang, 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** DD Section 30

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 1,316,013.13 usft | **Latitude:** | 40.1963600 |
| **From:** | Lat/Long | **Easting:** | 3,284,747.15 usft | **Longitude:** | -104.4806460 |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | 13.200 in | **Grid Convergence:** | 0.66 ° |

**Well** Guttersen YY06-775

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | -2,027.87 ft | **Northing:** | 1,313,985.26 usft | **Latitude:** | 40.1907983 |
| | **+E/-W** | -148.89 ft | **Easting:** | 3,284,598.26 usft | **Longitude:** | -104.4812623 |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | | **Ground Level:** | 4,791.00 ft |

**Wellbore** Guttersen YY06-775

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2015 | 7/12/2018 | 7.93 | 66.70 | 52,191.56064915 |

**Design** Plan #1

**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 | 187.73 |

**Plan Sections**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 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 | |
| 3,188.42 | 21.77 | 259.25 | 3,162.43 | -38.11 | -200.70 | 2.00 | 2.00 | 0.00 | 259.25 | |
| 6,418.42 | 21.77 | 259.25 | 6,162.09 | -261.60 | -1,377.53 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,294.73 | 82.13 | 179.58 | 6,720.00 | -816.43 | -1,564.51 | 9.00 | 6.89 | -9.09 | -83.31 | Guttersen YY06-77 |
| 7,382.17 | 90.00 | 179.58 | 6,726.00 | -903.60 | -1,563.88 | 9.00 | 9.00 | 0.00 | 0.00 | |
| 17,463.99 | 90.00 | 179.58 | 6,726.00 | -10,985.15 | -1,490.46 | 0.00 | 0.00 | 0.00 | 0.00 | Guttersen YY06-77 |

| | | | |
|---|---|---|---|
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| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**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 |
| 612.00 | 0.00 | 0.00 | 612.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Pierre** | | | | | | | | | |
| 684.00 | 0.00 | 0.00 | 684.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Upper Pierre Aquifer Top** | | | | | | | | | |
| 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 |
| 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 |
| 1,621.00 | 0.00 | 0.00 | 1,621.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Upper Pierre Aquifer Base** | | | | | | | | | |
| 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 |
| **Build: 2°/100'** | | | | | | | | | |
| 2,200.00 | 2.00 | 259.25 | 2,199.98 | -0.33 | -1.71 | 0.55 | 2.00 | 2.00 | 0.00 |
| 2,300.00 | 4.00 | 259.25 | 2,299.84 | -1.30 | -6.86 | 2.21 | 2.00 | 2.00 | 0.00 |
| 2,400.00 | 6.00 | 259.25 | 2,399.45 | -2.93 | -15.42 | 4.97 | 2.00 | 2.00 | 0.00 |
| 2,500.00 | 8.00 | 259.25 | 2,498.70 | -5.20 | -27.39 | 8.84 | 2.00 | 2.00 | 0.00 |
| 2,600.00 | 10.00 | 259.25 | 2,597.47 | -8.12 | -42.76 | 13.79 | 2.00 | 2.00 | 0.00 |
| 2,700.00 | 12.00 | 259.25 | 2,695.62 | -11.68 | -61.50 | 19.84 | 2.00 | 2.00 | 0.00 |
| 2,800.00 | 14.00 | 259.25 | 2,793.06 | -15.88 | -83.60 | 26.97 | 2.00 | 2.00 | 0.00 |
| 2,900.00 | 16.00 | 259.25 | 2,889.64 | -20.70 | -109.03 | 35.18 | 2.00 | 2.00 | 0.00 |
| 3,000.00 | 18.00 | 259.25 | 2,985.27 | -26.16 | -137.75 | 44.44 | 2.00 | 2.00 | 0.00 |
| 3,100.00 | 20.00 | 259.25 | 3,079.82 | -32.23 | -169.73 | 54.76 | 2.00 | 2.00 | 0.00 |
| 3,188.42 | 21.77 | 259.25 | 3,162.43 | -38.11 | -200.70 | 64.75 | 2.00 | 2.00 | 0.00 |
| **Hold: 21.77° Inc, 259.25° Azm** | | | | | | | | | |
| 3,200.00 | 21.77 | 259.25 | 3,173.18 | -38.91 | -204.92 | 66.11 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 21.77 | 259.25 | 3,266.05 | -45.83 | -241.35 | 77.87 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 21.77 | 259.25 | 3,358.92 | -52.75 | -277.79 | 89.62 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 21.77 | 259.25 | 3,451.78 | -59.67 | -314.22 | 101.38 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 21.77 | 259.25 | 3,544.65 | -66.59 | -350.66 | 113.13 | 0.00 | 0.00 | 0.00 |
| 3,675.75 | 21.77 | 259.25 | 3,615.00 | -71.83 | -378.26 | 122.03 | 0.00 | 0.00 | 0.00 |
| **Parkman** | | | | | | | | | |
| 3,700.00 | 21.77 | 259.25 | 3,637.52 | -73.51 | -387.09 | 124.89 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 21.77 | 259.25 | 3,730.39 | -80.43 | -423.53 | 136.64 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 21.77 | 259.25 | 3,823.26 | -87.35 | -459.96 | 148.40 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 21.77 | 259.25 | 3,916.13 | -94.27 | -496.40 | 160.15 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 21.77 | 259.25 | 4,009.00 | -101.19 | -532.83 | 171.90 | 0.00 | 0.00 | 0.00 |

| | | | |
|---|---|---|---|
| **Database:** | EDMP | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 4,130.15 | 21.77 | 259.25 | 4,037.00 | -103.27 | -543.82 | 175.45 | 0.00 | 0.00 | 0.00 |
| **Sussex** | | | | | | | | | |
| 4,200.00 | 21.77 | 259.25 | 4,101.87 | -108.10 | -569.26 | 183.66 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 21.77 | 259.25 | 4,194.74 | -115.02 | -605.70 | 195.41 | 0.00 | 0.00 | 0.00 |
| 4,329.36 | 21.77 | 259.25 | 4,222.00 | -117.05 | -616.40 | 198.86 | 0.00 | 0.00 | 0.00 |
| **Shannon** | | | | | | | | | |
| 4,400.00 | 21.77 | 259.25 | 4,287.61 | -121.94 | -642.13 | 207.17 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 21.77 | 259.25 | 4,380.47 | -128.86 | -678.57 | 218.92 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 21.77 | 259.25 | 4,473.34 | -135.78 | -715.00 | 230.68 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 21.77 | 259.25 | 4,566.21 | -142.70 | -751.44 | 242.43 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 21.77 | 259.25 | 4,659.08 | -149.62 | -787.87 | 254.19 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 21.77 | 259.25 | 4,751.95 | -156.54 | -824.31 | 265.94 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 21.77 | 259.25 | 4,844.82 | -163.46 | -860.74 | 277.70 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 21.77 | 259.25 | 4,937.69 | -170.38 | -897.18 | 289.45 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 21.77 | 259.25 | 5,030.56 | -177.29 | -933.61 | 301.21 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 21.77 | 259.25 | 5,123.43 | -184.21 | -970.04 | 312.96 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 21.77 | 259.25 | 5,216.30 | -191.13 | -1,006.48 | 324.72 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 21.77 | 259.25 | 5,309.16 | -198.05 | -1,042.91 | 336.47 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 21.77 | 259.25 | 5,402.03 | -204.97 | -1,079.35 | 348.23 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 21.77 | 259.25 | 5,494.90 | -211.89 | -1,115.78 | 359.98 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 21.77 | 259.25 | 5,587.77 | -218.81 | -1,152.22 | 371.73 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 21.77 | 259.25 | 5,680.64 | -225.73 | -1,188.65 | 383.49 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 21.77 | 259.25 | 5,773.51 | -232.65 | -1,225.09 | 395.24 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 21.77 | 259.25 | 5,866.38 | -239.57 | -1,261.52 | 407.00 | 0.00 | 0.00 | 0.00 |
| 6,125.44 | 21.77 | 259.25 | 5,890.00 | -241.33 | -1,270.79 | 409.99 | 0.00 | 0.00 | 0.00 |
| **Teepee Buttes** | | | | | | | | | |
| 6,200.00 | 21.77 | 259.25 | 5,959.25 | -246.48 | -1,297.96 | 418.75 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 21.77 | 259.25 | 6,052.12 | -253.40 | -1,334.39 | 430.51 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 21.77 | 259.25 | 6,144.99 | -260.32 | -1,370.82 | 442.26 | 0.00 | 0.00 | 0.00 |
| 6,418.42 | 21.77 | 259.25 | 6,162.09 | -261.60 | -1,377.53 | 444.43 | 0.00 | 0.00 | 0.00 |
| **KOP: Build 9°/100' @ 6418.42' MD** | | | | | | | | | |
| 6,450.00 | 22.27 | 251.78 | 6,191.37 | -264.56 | -1,388.98 | 448.90 | 9.00 | 1.59 | -23.64 |
| 6,500.00 | 23.72 | 240.85 | 6,237.42 | -272.42 | -1,406.77 | 459.09 | 9.00 | 2.89 | -21.86 |
| 6,550.00 | 25.83 | 231.36 | 6,282.84 | -284.13 | -1,424.07 | 473.01 | 9.00 | 4.24 | -18.98 |
| 6,600.00 | 28.48 | 223.36 | 6,327.34 | -299.61 | -1,440.77 | 490.60 | 9.00 | 5.28 | -15.99 |
| 6,650.00 | 31.51 | 216.70 | 6,370.65 | -318.76 | -1,456.77 | 511.72 | 9.00 | 6.07 | -13.32 |
| 6,700.00 | 34.83 | 211.15 | 6,412.50 | -341.47 | -1,471.97 | 536.27 | 9.00 | 6.64 | -11.11 |
| 6,750.00 | 38.37 | 206.47 | 6,452.65 | -367.59 | -1,486.28 | 564.08 | 9.00 | 7.07 | -9.35 |
| 6,800.00 | 42.06 | 202.49 | 6,490.83 | -396.97 | -1,499.61 | 594.99 | 9.00 | 7.39 | -7.97 |
| 6,822.08 | 43.73 | 200.91 | 6,507.00 | -410.93 | -1,505.17 | 609.57 | 9.00 | 7.57 | -7.16 |
| **Sharon Springs** | | | | | | | | | |
| 6,850.00 | 45.87 | 199.04 | 6,526.81 | -429.42 | -1,511.88 | 628.79 | 9.00 | 7.67 | -6.68 |
| 6,888.68 | 48.89 | 196.67 | 6,553.00 | -456.51 | -1,520.59 | 656.81 | 9.00 | 7.79 | -6.13 |
| **Top A Chalk** | | | | | | | | | |
| 6,891.72 | 49.13 | 196.50 | 6,555.00 | -458.72 | -1,521.25 | 659.08 | 9.00 | 7.86 | -5.82 |
| **Top A Marl** | | | | | | | | | |
| 6,900.00 | 49.78 | 196.02 | 6,560.38 | -464.75 | -1,523.01 | 665.30 | 9.00 | 7.87 | -5.74 |
| 6,913.50 | 50.84 | 195.26 | 6,569.00 | -474.76 | -1,525.81 | 675.59 | 9.00 | 7.90 | -5.60 |
| **Top B Chalk** | | | | | | | | | |
| 6,950.00 | 53.75 | 193.33 | 6,591.32 | -502.74 | -1,532.93 | 704.27 | 9.00 | 7.96 | -5.30 |
| 7,000.00 | 57.78 | 190.90 | 6,619.45 | -543.15 | -1,541.59 | 745.48 | 9.00 | 8.06 | -4.86 |
| 7,001.04 | 57.86 | 190.85 | 6,620.00 | -544.01 | -1,541.75 | 746.35 | 9.00 | 8.10 | -4.63 |
| **Top B Marl** | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Database:** | EDMP | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 7,050.00 | 61.85 | 188.68 | 6,644.59 | -585.73 | -1,548.92 | 788.66 | 9.00 | 8.14 | -4.44 |
| 7,100.00 | 65.95 | 186.63 | 6,666.58 | -630.22 | -1,554.88 | 833.55 | 9.00 | 8.21 | -4.11 |
| 7,150.00 | 70.08 | 184.70 | 6,685.29 | -676.34 | -1,559.44 | 879.87 | 9.00 | 8.26 | -3.86 |
| 7,177.03 | 72.32 | 183.70 | 6,694.00 | -701.86 | -1,561.31 | 905.41 | 9.00 | 8.29 | -3.70 |
| **Top C Chalk** | | | | | | | | | |
| 7,200.00 | 74.23 | 182.87 | 6,700.61 | -723.82 | -1,562.57 | 927.34 | 9.00 | 8.31 | -3.61 |
| 7,250.00 | 78.40 | 181.11 | 6,712.44 | -772.36 | -1,564.25 | 975.66 | 9.00 | 8.33 | -3.51 |
| 7,294.73 | 82.13 | 179.58 | 6,720.00 | -816.43 | -1,564.51 | 1,019.37 | 9.00 | 8.35 | -3.41 |
| **TPZ: 7294.73' MD, 82.13° Inc, 179.58° Azm** | | | | | | | | | |
| 7,300.00 | 82.60 | 179.58 | 6,720.70 | -821.66 | -1,564.48 | 1,024.54 | 9.00 | 9.00 | 0.00 |
| 7,350.00 | 87.10 | 179.58 | 6,725.18 | -871.45 | -1,564.11 | 1,073.82 | 9.00 | 9.00 | 0.00 |
| 7,382.17 | 90.00 | 179.58 | 6,726.00 | -903.60 | -1,563.88 | 1,105.66 | 9.00 | 9.00 | 0.00 |
| **LP: 7382.17' MD, 90.00° Inc, 179.58° Azm** | | | | | | | | | |
| 7,400.00 | 90.00 | 179.58 | 6,726.00 | -921.43 | -1,563.75 | 1,123.31 | 0.00 | 0.00 | 0.00 |
| 7,500.00 | 90.00 | 179.58 | 6,726.00 | -1,021.43 | -1,563.02 | 1,222.30 | 0.00 | 0.00 | 0.00 |
| 7,600.00 | 90.00 | 179.58 | 6,726.00 | -1,121.43 | -1,562.29 | 1,321.29 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 90.00 | 179.58 | 6,726.00 | -1,221.42 | -1,561.56 | 1,420.28 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 90.00 | 179.58 | 6,726.00 | -1,321.42 | -1,560.84 | 1,519.27 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 90.00 | 179.58 | 6,726.00 | -1,421.42 | -1,560.11 | 1,618.26 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 90.00 | 179.58 | 6,726.00 | -1,521.41 | -1,559.38 | 1,717.26 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 90.00 | 179.58 | 6,726.00 | -1,621.41 | -1,558.65 | 1,816.25 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 90.00 | 179.58 | 6,726.00 | -1,721.41 | -1,557.92 | 1,915.24 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 90.00 | 179.58 | 6,726.00 | -1,821.41 | -1,557.20 | 2,014.23 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 90.00 | 179.58 | 6,726.00 | -1,921.40 | -1,556.47 | 2,113.22 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 90.00 | 179.58 | 6,726.00 | -2,021.40 | -1,555.74 | 2,212.21 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 90.00 | 179.58 | 6,726.00 | -2,121.40 | -1,555.01 | 2,311.21 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 90.00 | 179.58 | 6,726.00 | -2,221.40 | -1,554.28 | 2,410.20 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 90.00 | 179.58 | 6,726.00 | -2,321.39 | -1,553.55 | 2,509.19 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 90.00 | 179.58 | 6,726.00 | -2,421.39 | -1,552.83 | 2,608.18 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 90.00 | 179.58 | 6,726.00 | -2,521.39 | -1,552.10 | 2,707.17 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 90.00 | 179.58 | 6,726.00 | -2,621.39 | -1,551.37 | 2,806.16 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 90.00 | 179.58 | 6,726.00 | -2,721.38 | -1,550.64 | 2,905.15 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 90.00 | 179.58 | 6,726.00 | -2,821.38 | -1,549.91 | 3,004.15 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 90.00 | 179.58 | 6,726.00 | -2,921.38 | -1,549.19 | 3,103.14 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 90.00 | 179.58 | 6,726.00 | -3,021.37 | -1,548.46 | 3,202.13 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 90.00 | 179.58 | 6,726.00 | -3,121.37 | -1,547.73 | 3,301.12 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.00 | 179.58 | 6,726.00 | -3,221.37 | -1,547.00 | 3,400.11 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.00 | 179.58 | 6,726.00 | -3,321.37 | -1,546.27 | 3,499.10 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.00 | 179.58 | 6,726.00 | -3,421.36 | -1,545.54 | 3,598.10 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.00 | 179.58 | 6,726.00 | -3,521.36 | -1,544.82 | 3,697.09 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.00 | 179.58 | 6,726.00 | -3,621.36 | -1,544.09 | 3,796.08 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.00 | 179.58 | 6,726.00 | -3,721.36 | -1,543.36 | 3,895.07 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.00 | 179.58 | 6,726.00 | -3,821.35 | -1,542.63 | 3,994.06 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.00 | 179.58 | 6,726.00 | -3,921.35 | -1,541.90 | 4,093.05 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.00 | 179.58 | 6,726.00 | -4,021.35 | -1,541.18 | 4,192.04 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.00 | 179.58 | 6,726.00 | -4,121.35 | -1,540.45 | 4,291.04 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.00 | 179.58 | 6,726.00 | -4,221.34 | -1,539.72 | 4,390.03 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.00 | 179.58 | 6,726.00 | -4,321.34 | -1,538.99 | 4,489.02 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.00 | 179.58 | 6,726.00 | -4,421.34 | -1,538.26 | 4,588.01 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.00 | 179.58 | 6,726.00 | -4,521.33 | -1,537.53 | 4,687.00 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.00 | 179.58 | 6,726.00 | -4,621.33 | -1,536.81 | 4,785.99 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.00 | 179.58 | 6,726.00 | -4,721.33 | -1,536.08 | 4,884.99 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.00 | 179.58 | 6,726.00 | -4,821.33 | -1,535.35 | 4,983.98 | 0.00 | 0.00 | 0.00 |

| | | | |
|---|---|---|---|
| **Database:** | EDMP | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 11,400.00 | 90.00 | 179.58 | 6,726.00 | -4,921.32 | -1,534.62 | 5,082.97 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.00 | 179.58 | 6,726.00 | -5,021.32 | -1,533.89 | 5,181.96 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.00 | 179.58 | 6,726.00 | -5,121.32 | -1,533.16 | 5,280.95 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.00 | 179.58 | 6,726.00 | -5,221.32 | -1,532.44 | 5,379.94 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.00 | 179.58 | 6,726.00 | -5,321.31 | -1,531.71 | 5,478.93 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.00 | 179.58 | 6,726.00 | -5,421.31 | -1,530.98 | 5,577.93 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.00 | 179.58 | 6,726.00 | -5,521.31 | -1,530.25 | 5,676.92 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.00 | 179.58 | 6,726.00 | -5,621.31 | -1,529.52 | 5,775.91 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.00 | 179.58 | 6,726.00 | -5,721.30 | -1,528.80 | 5,874.90 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.00 | 179.58 | 6,726.00 | -5,821.30 | -1,528.07 | 5,973.89 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 90.00 | 179.58 | 6,726.00 | -5,921.30 | -1,527.34 | 6,072.88 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.00 | 179.58 | 6,726.00 | -6,021.30 | -1,526.61 | 6,171.88 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.00 | 179.58 | 6,726.00 | -6,121.29 | -1,525.88 | 6,270.87 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.00 | 179.58 | 6,726.00 | -6,221.29 | -1,525.15 | 6,369.86 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 90.00 | 179.58 | 6,726.00 | -6,321.29 | -1,524.43 | 6,468.85 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 90.00 | 179.58 | 6,726.00 | -6,421.28 | -1,523.70 | 6,567.84 | 0.00 | 0.00 | 0.00 |
| 13,000.00 | 90.00 | 179.58 | 6,726.00 | -6,521.28 | -1,522.97 | 6,666.83 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 90.00 | 179.58 | 6,726.00 | -6,621.28 | -1,522.24 | 6,765.82 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 90.00 | 179.58 | 6,726.00 | -6,721.28 | -1,521.51 | 6,864.82 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 90.00 | 179.58 | 6,726.00 | -6,821.27 | -1,520.79 | 6,963.81 | 0.00 | 0.00 | 0.00 |
| 13,400.00 | 90.00 | 179.58 | 6,726.00 | -6,921.27 | -1,520.06 | 7,062.80 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 90.00 | 179.58 | 6,726.00 | -7,021.27 | -1,519.33 | 7,161.79 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 90.00 | 179.58 | 6,726.00 | -7,121.27 | -1,518.60 | 7,260.78 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 90.00 | 179.58 | 6,726.00 | -7,221.26 | -1,517.87 | 7,359.77 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 90.00 | 179.58 | 6,726.00 | -7,321.26 | -1,517.14 | 7,458.77 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 90.00 | 179.58 | 6,726.00 | -7,421.26 | -1,516.42 | 7,557.76 | 0.00 | 0.00 | 0.00 |
| 14,000.00 | 90.00 | 179.58 | 6,726.00 | -7,521.26 | -1,515.69 | 7,656.75 | 0.00 | 0.00 | 0.00 |
| 14,100.00 | 90.00 | 179.58 | 6,726.00 | -7,621.25 | -1,514.96 | 7,755.74 | 0.00 | 0.00 | 0.00 |
| 14,200.00 | 90.00 | 179.58 | 6,726.00 | -7,721.25 | -1,514.23 | 7,854.73 | 0.00 | 0.00 | 0.00 |
| 14,300.00 | 90.00 | 179.58 | 6,726.00 | -7,821.25 | -1,513.50 | 7,953.72 | 0.00 | 0.00 | 0.00 |
| 14,400.00 | 90.00 | 179.58 | 6,726.00 | -7,921.24 | -1,512.78 | 8,052.71 | 0.00 | 0.00 | 0.00 |
| 14,500.00 | 90.00 | 179.58 | 6,726.00 | -8,021.24 | -1,512.05 | 8,151.71 | 0.00 | 0.00 | 0.00 |
| 14,600.00 | 90.00 | 179.58 | 6,726.00 | -8,121.24 | -1,511.32 | 8,250.70 | 0.00 | 0.00 | 0.00 |
| 14,700.00 | 90.00 | 179.58 | 6,726.00 | -8,221.24 | -1,510.59 | 8,349.69 | 0.00 | 0.00 | 0.00 |
| 14,800.00 | 90.00 | 179.58 | 6,726.00 | -8,321.23 | -1,509.86 | 8,448.68 | 0.00 | 0.00 | 0.00 |
| 14,900.00 | 90.00 | 179.58 | 6,726.00 | -8,421.23 | -1,509.13 | 8,547.67 | 0.00 | 0.00 | 0.00 |
| 15,000.00 | 90.00 | 179.58 | 6,726.00 | -8,521.23 | -1,508.41 | 8,646.66 | 0.00 | 0.00 | 0.00 |
| 15,100.00 | 90.00 | 179.58 | 6,726.00 | -8,621.23 | -1,507.68 | 8,745.66 | 0.00 | 0.00 | 0.00 |
| 15,200.00 | 90.00 | 179.58 | 6,726.00 | -8,721.22 | -1,506.95 | 8,844.65 | 0.00 | 0.00 | 0.00 |
| 15,300.00 | 90.00 | 179.58 | 6,726.00 | -8,821.22 | -1,506.22 | 8,943.64 | 0.00 | 0.00 | 0.00 |
| 15,400.00 | 90.00 | 179.58 | 6,726.00 | -8,921.22 | -1,505.49 | 9,042.63 | 0.00 | 0.00 | 0.00 |
| 15,500.00 | 90.00 | 179.58 | 6,726.00 | -9,021.22 | -1,504.76 | 9,141.62 | 0.00 | 0.00 | 0.00 |
| 15,600.00 | 90.00 | 179.58 | 6,726.00 | -9,121.21 | -1,504.04 | 9,240.61 | 0.00 | 0.00 | 0.00 |
| 15,700.00 | 90.00 | 179.58 | 6,726.00 | -9,221.21 | -1,503.31 | 9,339.60 | 0.00 | 0.00 | 0.00 |
| 15,800.00 | 90.00 | 179.58 | 6,726.00 | -9,321.21 | -1,502.58 | 9,438.60 | 0.00 | 0.00 | 0.00 |
| 15,900.00 | 90.00 | 179.58 | 6,726.00 | -9,421.21 | -1,501.85 | 9,537.59 | 0.00 | 0.00 | 0.00 |
| 16,000.00 | 90.00 | 179.58 | 6,726.00 | -9,521.20 | -1,501.12 | 9,636.58 | 0.00 | 0.00 | 0.00 |
| 16,100.00 | 90.00 | 179.58 | 6,726.00 | -9,621.20 | -1,500.40 | 9,735.57 | 0.00 | 0.00 | 0.00 |
| 16,200.00 | 90.00 | 179.58 | 6,726.00 | -9,721.20 | -1,499.67 | 9,834.56 | 0.00 | 0.00 | 0.00 |
| 16,300.00 | 90.00 | 179.58 | 6,726.00 | -9,821.19 | -1,498.94 | 9,933.55 | 0.00 | 0.00 | 0.00 |
| 16,400.00 | 90.00 | 179.58 | 6,726.00 | -9,921.19 | -1,498.21 | 10,032.55 | 0.00 | 0.00 | 0.00 |
| 16,500.00 | 90.00 | 179.58 | 6,726.00 | -10,021.19 | -1,497.48 | 10,131.54 | 0.00 | 0.00 | 0.00 |
| 16,600.00 | 90.00 | 179.58 | 6,726.00 | -10,121.19 | -1,496.75 | 10,230.53 | 0.00 | 0.00 | 0.00 |
| 16,700.00 | 90.00 | 179.58 | 6,726.00 | -10,221.18 | -1,496.03 | 10,329.52 | 0.00 | 0.00 | 0.00 |

| | | | |
|---|---|---|---|
| **Database:** | EDMP | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 16,800.00 | 90.00 | 179.58 | 6,726.00 | -10,321.18 | -1,495.30 | 10,428.51 | 0.00 | 0.00 | 0.00 |
| 16,900.00 | 90.00 | 179.58 | 6,726.00 | -10,421.18 | -1,494.57 | 10,527.50 | 0.00 | 0.00 | 0.00 |
| 17,000.00 | 90.00 | 179.58 | 6,726.00 | -10,521.18 | -1,493.84 | 10,626.49 | 0.00 | 0.00 | 0.00 |
| 17,100.00 | 90.00 | 179.58 | 6,726.00 | -10,621.17 | -1,493.11 | 10,725.49 | 0.00 | 0.00 | 0.00 |
| 17,200.00 | 90.00 | 179.58 | 6,726.00 | -10,721.17 | -1,492.39 | 10,824.48 | 0.00 | 0.00 | 0.00 |
| 17,300.00 | 90.00 | 179.58 | 6,726.00 | -10,821.17 | -1,491.66 | 10,923.47 | 0.00 | 0.00 | 0.00 |
| 17,400.00 | 90.00 | 179.58 | 6,726.00 | -10,921.17 | -1,490.93 | 11,022.46 | 0.00 | 0.00 | 0.00 |
| 17,463.99 | 90.00 | 179.58 | 6,726.00 | -10,985.15 | -1,490.46 | 11,085.80 | 0.00 | 0.00 | 0.00 |
| **TD @ 17463.99' MD/6726.00' TVD** | | | | | | | | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Guttersen YY06-775-S<br>- plan hits target center<br>- Point | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 1,313,985.26 | 3,284,598.26 | 40.1907983 | -104.4812623 |
| Guttersen YY06-775-I<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 6,162.09 | -261.60 | -1,377.54 | 1,313,723.67 | 3,283,220.73 | 40.1901236 | -104.4862036 |
| Guttersen YY06-775-<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 6,720.00 | -816.43 | -1,564.51 | 1,313,168.83 | 3,283,033.75 | 40.1886065 | -104.4868955 |
| Guttersen YY06-775-I<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 6,726.00 | -10,985.15 | -1,490.46 | 1,303,000.13 | 3,283,107.80 | 40.1606916 | -104.4870462 |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 612.00 | 612.00 | Pierre | | | |
| 684.00 | 684.00 | Upper Pierre Aquifer Top | | | |
| 1,621.00 | 1,621.00 | Upper Pierre Aquifer Base | | | |
| 3,675.75 | 3,615.00 | Parkman | | | |
| 4,130.15 | 4,037.00 | Sussex | | | |
| 4,329.36 | 4,222.00 | Shannon | | | |
| 6,125.44 | 5,890.00 | Teepee Buttes | | | |
| 6,822.08 | 6,507.00 | Sharon Springs | | | |
| 6,888.68 | 6,553.00 | Top A Chalk | | | |
| 6,891.72 | 6,555.00 | Top A Marl | | | |
| 6,913.50 | 6,569.00 | Top B Chalk | | | |
| 7,001.04 | 6,620.00 | Top B Marl | | | |
| 7,177.03 | 6,694.00 | Top C Chalk | | | |

| | | | |
|---|---|---|---|
| **Database:** | EDMP | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Company:** | Northern Region - DJ Basin | **TVD Reference:** | KB @ 4821.00ft |
| **Project:** | Mustang | **MD Reference:** | KB @ 4821.00ft |
| **Site:** | DD Section 30 | **North Reference:** | Grid |
| **Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Guttersen YY06-775 | | |
| **Design:** | Plan #1 | | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 2,100.00 | 2,100.00 | 0.00 | 0.00 | Build: 2°/100' |
| 3,188.42 | 3,162.43 | -38.11 | -200.70 | Hold: 21.77° Inc, 259.25° Azm |
| 6,418.42 | 6,162.09 | -261.60 | -1,377.53 | KOP: Build 9°/100' @ 6418.42' MD |
| 7,294.73 | 6,720.00 | -816.43 | -1,564.51 | TPZ: 7294.73' MD, 82.13° Inc, 179.58° Azm |
| 7,382.17 | 6,726.00 | -903.60 | -1,563.88 | LP: 7382.17' MD, 90.00° Inc, 179.58° Azm |
| 17,463.99 | 6,726.00 | -10,985.15 | -1,490.46 | TD @ 17463.99' MD/6726.00' TVD |

# Northern Region - DJ Basin

**Mustang**
**DD Section 30**
**Guttersen YY06-775**

**Guttersen YY06-775**
**Plan #1**

# Anticollision Summary Report

**28 August, 2018**

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Reference** | Plan #1 | | |
| **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** 8/20/2018

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 17,463.99 | Plan #1 (Guttersen YY06-775) | 2_MWD+IFR1+MS | A008Mb: IFR dec & multi-station analysis |

**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 |
|---|---|---|---|---|---|---|
| D Section 25 | | | | | | |
| Coors Energy 13-25D (PR) - Wellbore #1 - MWD Survey | 6,869.12 | 6,650.20 | 5,898.34 | 5,845.02 | 110.606 | CC, ES |
| Coors Energy 13-25D (PR) - Wellbore #1 - MWD Survey | 7,200.00 | 6,798.77 | 5,946.12 | 5,891.55 | 108.979 | SF |
| Coors Energy 14-25D (PR) - Wellbore #1 - MWD Survey | 7,112.39 | 6,908.39 | 5,645.72 | 5,595.97 | 113.480 | CC, ES |
| Coors Energy 14-25D (PR) - Wellbore #1 - MWD Survey | 10,000.00 | 6,931.66 | 6,637.10 | 6,572.76 | 103.155 | SF |
| Coors Energy 23-25D (PR) - Wellbore #1 - MWD Survey | 6,808.49 | 6,628.67 | 4,654.37 | 4,599.61 | 85.008 | CC, ES |
| Coors Energy 23-25D (PR) - Wellbore #1 - MWD Survey | 7,150.00 | 6,831.78 | 4,709.87 | 4,653.35 | 83.336 | SF |
| Coors Energy 24-25 (PR) - Wellbore #1 - Gyro Surveys | 7,132.82 | 6,708.96 | 4,137.02 | 4,087.65 | 83.793 | CC, ES |
| Coors Energy 24-25 (PR) - Wellbore #1 - Gyro Surveys | 8,400.00 | 6,745.61 | 4,440.72 | 4,386.35 | 81.668 | SF |
| Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys | 7,003.15 | 6,888.69 | 6,203.34 | 6,152.03 | 120.909 | CC, ES |
| Coors Energy 25HD (PR) - Wellbore #1 - MWD Surveys | 10,100.00 | 7,003.30 | 7,431.67 | 7,366.26 | 113.620 | SF |
| Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys | 7,212.71 | 6,936.33 | 4,910.86 | 4,859.41 | 95.456 | CC, ES |
| Coors Energy 25LD (PR) - Wellbore #1 - MWD Surveys | 9,300.00 | 6,909.70 | 5,443.61 | 5,382.91 | 89.673 | SF |
| Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys | 7,179.48 | 6,709.87 | 2,204.06 | 2,154.01 | 44.033 | CC, ES |
| Coors Energy 25TD (PR) - Wellbore #1 - MWD Surveys | 7,350.00 | 6,739.71 | 2,218.17 | 2,167.53 | 43.806 | SF |
| Coors Energy 25XD (PR) - Wellbore #1 - MWD Surveys | 6,623.82 | 6,545.98 | 1,561.36 | 1,504.22 | 27.327 | CC, ES |
| Coors Energy 25XD (PR) - Wellbore #1 - MWD Surveys | 6,800.00 | 6,709.74 | 1,581.37 | 1,522.64 | 26.926 | SF |
| Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys | 7,100.00 | 6,842.64 | 1,063.98 | 1,012.66 | 20.734 | SF |
| Coors Energy 25YD (PR) - Wellbore #1 - MWD Surveys | 7,119.20 | 6,849.44 | 1,063.71 | 1,012.42 | 20.737 | CC, ES |
| Coors Energy 33-25D (PR) - Wellbore #1 - MWD Survey | 6,713.51 | 6,526.55 | 3,460.99 | 3,408.52 | 65.955 | CC, ES |
| Coors Energy 33-25D (PR) - Wellbore #1 - MWD Survey | 6,950.00 | 6,714.03 | 3,490.89 | 3,437.26 | 65.087 | SF |
| Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys | 7,099.56 | 6,642.18 | 3,144.88 | 3,095.76 | 64.025 | CC |
| Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys | 7,100.00 | 6,642.35 | 3,144.88 | 3,095.75 | 64.022 | ES |
| Coors Energy 34-25 (PR) - Wellbore #1 - Gyro Surveys | 7,382.17 | 6,697.79 | 3,179.24 | 3,129.00 | 63.275 | SF |
| Coors Energy 43-25D (PR) - Wellbore #1 - MWD Survey | 6,592.51 | 6,476.84 | 2,410.45 | 2,353.29 | 42.172 | CC |
| Coors Energy 43-25D (PR) - Wellbore #1 - MWD Survey | 6,600.00 | 6,484.08 | 2,410.49 | 2,353.28 | 42.137 | ES |
| Coors Energy 43-25D (PR) - Wellbore #1 - MWD Survey | 6,750.00 | 6,618.10 | 2,426.33 | 2,368.24 | 41.771 | SF |
| Coors Energy 44-25D (PR) - Wellbore #1 - MWD Survey | 6,899.56 | 6,615.35 | 1,737.89 | 1,689.61 | 35.997 | CC |
| Coors Energy 44-25D (PR) - Wellbore #1 - MWD Survey | 6,900.00 | 6,615.63 | 1,737.89 | 1,689.61 | 35.995 | ES |
| Coors Energy 44-25D (PR) - Wellbore #1 - MWD Survey | 7,100.00 | 6,723.54 | 1,761.19 | 1,711.51 | 35.456 | SF |
| Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys | 6,676.69 | 6,779.98 | 6,124.62 | 6,075.78 | 125.418 | CC, ES |
| Dalbey D 25-03 (SI) - Wellbore #1 - Gyro Surveys | 7,100.00 | 6,967.27 | 6,235.67 | 6,184.49 | 121.833 | SF |
| Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys | 6,809.50 | 7,067.95 | 6,601.64 | 6,550.87 | 130.035 | CC, ES |
| Dalbey D 25-05 (SI) - Wellbore #1 - Gyro Surveys | 7,200.00 | 7,070.00 | 6,687.12 | 6,634.71 | 127.593 | SF |
| Guttersen 11-25 (PR) - Wellbore #1 - MWD Surveys | 6,657.66 | 6,448.89 | 7,159.52 | 7,112.77 | 153.139 | CC, ES |
| Guttersen 11-25 (PR) - Wellbore #1 - MWD Surveys | 7,200.00 | 6,818.78 | 7,323.76 | 7,273.79 | 146.554 | SF |
| Guttersen 22-25 (PR) - Wellbore #1 - MWD Surveys | 6,668.30 | 6,603.38 | 5,265.00 | 5,217.99 | 111.985 | CC, ES |
| Guttersen 22-25 (PR) - Wellbore #1 - MWD Surveys | 7,100.00 | 6,818.37 | 5,364.65 | 5,315.16 | 108.386 | 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 Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **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 |
|---|---|---|---|---|---|---|
| D Section 25 | | | | | | |
| Guttersen 25E (PR) - Wellbore #1 - MWD Surveys | 6,634.29 | 6,330.70 | 7,841.31 | 7,794.74 | 168.348 | CC, ES |
| Guttersen 25E (PR) - Wellbore #1 - MWD Surveys | 7,200.00 | 6,750.08 | 8,019.30 | 7,969.25 | 160.247 | SF |
| Guttersen 25KD (PR) - Wellbore #1 - MWD Surveys | 6,773.13 | 6,776.80 | 5,589.72 | 5,537.60 | 107.253 | CC, ES |
| Guttersen 25KD (PR) - Wellbore #1 - MWD Surveys | 7,250.00 | 6,980.00 | 5,706.04 | 5,651.04 | 103.745 | SF |
| Guttersen 25O (PR) - Wellbore #1 - MWD Surveys | 6,669.17 | 6,321.02 | 4,616.71 | 4,570.27 | 99.404 | CC, ES |
| Guttersen 25O (PR) - Wellbore #1 - MWD Surveys | 7,100.00 | 6,617.93 | 4,720.02 | 4,670.83 | 95.963 | SF |
| Guttersen D 25-17 (SI) - Wellbore #1 - Gyro Surveys | 6,534.30 | 6,208.12 | 4,483.13 | 4,436.19 | 95.506 | CC, ES |
| Guttersen D 25-17 (SI) - Wellbore #1 - Gyro Surveys | 6,900.00 | 6,490.16 | 4,575.87 | 4,526.42 | 92.541 | SF |
| Guttersen D25-715 - Wellbore #1 - Plan #1 | 6,543.09 | 6,450.00 | 2,410.87 | 2,362.29 | 49.631 | CC, ES |
| Guttersen D25-715 - Wellbore #1 - Plan #1 | 6,700.00 | 6,500.00 | 2,430.61 | 2,381.34 | 49.338 | SF |
| Guttersen D25-724 - Wellbore #1 - Plan #1 | 6,566.52 | 6,300.00 | 2,800.55 | 2,752.47 | 58.240 | CC, ES |
| Guttersen D25-724 - Wellbore #1 - Plan #1 | 6,700.00 | 6,319.11 | 2,813.61 | 2,765.00 | 57.883 | SF |
| Guttersen D25-734 - Wellbore #1 - Plan #1 | 6,615.95 | 6,350.00 | 3,321.93 | 3,273.17 | 68.136 | CC, ES |
| Guttersen D25-734 - Wellbore #1 - Plan #1 | 6,800.00 | 6,400.00 | 3,344.82 | 3,295.10 | 67.269 | SF |
| Guttersen D25-743 - Wellbore #1 - Plan #1 | 6,613.71 | 6,222.01 | 3,658.85 | 3,609.45 | 74.072 | CC, ES |
| Guttersen D25-743 - Wellbore #1 - Plan #1 | 6,900.00 | 6,300.00 | 3,705.06 | 3,654.18 | 72.816 | SF |
| Guttersen D25-753 - Wellbore #1 - Plan #1 | 6,734.73 | 6,700.00 | 4,385.83 | 4,334.99 | 86.283 | CC, ES |
| Guttersen D25-753 - Wellbore #1 - Plan #1 | 7,050.00 | 6,750.00 | 4,439.90 | 4,387.89 | 85.364 | SF |
| Guttersen D25-762 - Wellbore #1 - Plan #1 | 6,735.72 | 6,500.00 | 4,870.32 | 4,819.73 | 96.270 | CC, ES |
| Guttersen D25-762 - Wellbore #1 - Plan #1 | 7,050.00 | 6,550.00 | 4,918.45 | 4,866.60 | 94.862 | SF |
| Guttersen D25-772 - Wellbore #1 - Plan #1 | 6,749.51 | 6,450.00 | 5,366.60 | 5,315.34 | 104.692 | CC |
| Guttersen D25-772 - Wellbore #1 - Plan #1 | 6,750.00 | 6,450.00 | 5,366.60 | 5,315.34 | 104.688 | ES |
| Guttersen D25-772 - Wellbore #1 - Plan #1 | 7,250.00 | 6,520.40 | 5,476.27 | 5,422.93 | 102.668 | SF |
| Guttersen D25-781 - Wellbore #1 - Plan #1 | 6,709.79 | 6,186.62 | 5,867.48 | 5,816.52 | 115.153 | CC, ES |
| Guttersen D25-781 - Wellbore #1 - Plan #1 | 7,400.00 | 6,450.00 | 6,038.75 | 5,983.97 | 110.244 | SF |
| Guttersen State D36-714 - Wellbore #1 - Plan #1 | 7,292.79 | 9,810.98 | 1,269.25 | 1,204.21 | 19.513 | CC |
| Guttersen State D36-714 - Wellbore #1 - Plan #1 | 12,200.00 | 14,702.49 | 1,294.04 | 1,166.87 | 10.176 | ES, SF |
| Guttersen State D36-724 - Wellbore #1 - Plan #1 | 7,290.72 | 9,733.39 | 1,894.09 | 1,829.17 | 29.175 | CC |
| Guttersen State D36-724 - Wellbore #1 - Plan #1 | 12,200.00 | 14,633.39 | 1,918.90 | 1,791.40 | 15.050 | ES |
| Guttersen State D36-724 - Wellbore #1 - Plan #1 | 12,400.00 | 14,633.39 | 1,931.22 | 1,802.23 | 14.972 | SF |
| Guttersen State D36-733 - Wellbore #1 - Plan #1 | 7,289.62 | 9,734.24 | 2,519.00 | 2,454.19 | 38.868 | CC |
| Guttersen State D36-733 - Wellbore #1 - Plan #1 | 12,200.00 | 14,644.22 | 2,543.85 | 2,416.46 | 19.968 | ES |
| Guttersen State D36-733 - Wellbore #1 - Plan #1 | 12,500.00 | 14,641.76 | 2,563.29 | 2,433.20 | 19.704 | SF |
| Guttersen State D36-743 - Wellbore #1 - Plan #1 | 7,283.26 | 9,807.56 | 3,149.24 | 3,084.46 | 48.610 | CC |
| Guttersen State D36-743 - Wellbore #1 - Plan #1 | 12,200.00 | 14,708.63 | 3,188.95 | 3,062.01 | 25.121 | ES |
| Guttersen State D36-743 - Wellbore #1 - Plan #1 | 12,700.00 | 14,719.96 | 3,230.17 | 3,098.61 | 24.552 | SF |
| Guttersen State D36-752 - Wellbore #1 - Plan #1 | 7,286.90 | 9,811.27 | 3,758.84 | 3,691.34 | 55.689 | CC |
| Guttersen State D36-752 - Wellbore #1 - Plan #1 | 12,200.00 | 14,723.92 | 3,788.55 | 3,658.03 | 29.026 | ES |
| Guttersen State D36-752 - Wellbore #1 - Plan #1 | 12,700.00 | 14,738.86 | 3,822.48 | 3,688.45 | 28.520 | SF |
| Guttersen State D36-762 - Wellbore #1 - Plan #1 | 7,379.25 | 9,943.19 | 4,390.62 | 4,322.08 | 64.059 | CC |
| Guttersen State D36-762 - Wellbore #1 - Plan #1 | 12,200.00 | 14,763.94 | 4,390.92 | 4,260.11 | 33.566 | ES |
| Guttersen State D36-762 - Wellbore #1 - Plan #1 | 13,000.00 | 14,758.69 | 4,464.20 | 4,327.62 | 32.687 | SF |
| Guttersen State D36-771 - Wellbore #1 - Plan #1 | 7,292.79 | 9,902.02 | 5,003.22 | 4,935.39 | 73.760 | CC |
| Guttersen State D36-771 - Wellbore #1 - Plan #1 | 12,200.00 | 14,804.89 | 5,015.74 | 4,885.16 | 38.411 | ES |
| Guttersen State D36-771 - Wellbore #1 - Plan #1 | 13,200.00 | 14,816.36 | 5,114.74 | 4,976.25 | 36.933 | SF |
| Guttersen State D36-781 - Wellbore #1 - Plan #1 | 7,281.58 | 10,002.70 | 5,638.51 | 5,570.55 | 82.960 | CC |
| Guttersen State D36-781 - Wellbore #1 - Plan #1 | 12,300.00 | 14,970.23 | 5,687.69 | 5,556.17 | 43.247 | ES |
| Guttersen State D36-781 - Wellbore #1 - Plan #1 | 13,600.00 | 14,970.23 | 5,857.90 | 5,716.22 | 41.344 | SF |
| Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys | 6,538.43 | 6,212.40 | 5,253.01 | 5,103.35 | 35.100 | CC |
| Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys | 6,550.00 | 6,222.84 | 5,253.10 | 5,103.18 | 35.040 | ES |
| Karch Blue D 25-02 (DA) - Wellbore #1 - No Surveys | 6,950.00 | 6,531.32 | 5,368.38 | 5,210.68 | 34.041 | SF |
| Karch Blue D 25-08 (SI) - Wellbore #1 - Gyro Surveys | 6,515.81 | 6,216.40 | 3,482.26 | 3,435.34 | 74.216 | CC, ES |
| Karch Blue D 25-08 (SI) - Wellbore #1 - Gyro Surveys | 6,800.00 | 6,526.59 | 3,540.13 | 3,490.95 | 71.975 | 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 Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **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 |
|---|---|---|---|---|---|---|
| D Section 25 | | | | | | |
| Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys | 6,590.93 | 6,215.91 | 4,314.16 | 4,267.17 | 91.817 | CC |
| Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys | 6,600.00 | 6,222.15 | 4,314.22 | 4,267.16 | 91.693 | ES |
| Karch Blue D25-07 (SI) - Wellbore #1 - Gyro Surveys | 6,950.00 | 6,593.66 | 4,392.54 | 4,342.82 | 88.347 | SF |
| L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys | 6,483.62 | 6,222.78 | 4,585.87 | 4,538.99 | 97.811 | CC, ES |
| L F Ranch 2-25 (PR) - Wellbore #1 - Gyro Surveys | 6,900.00 | 6,579.96 | 4,714.66 | 4,664.85 | 94.667 | SF |
| LF Ranches 1 (PA) - Wellbore #1 - No Surveys | 6,499.05 | 6,180.55 | 4,444.69 | 4,295.72 | 29.836 | CC |
| LF Ranches 1 (PA) - Wellbore #1 - No Surveys | 6,500.00 | 6,181.42 | 4,444.70 | 4,295.70 | 29.831 | ES |
| LF Ranches 1 (PA) - Wellbore #1 - No Surveys | 6,850.00 | 6,470.81 | 4,534.31 | 4,378.07 | 29.021 | SF |

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## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **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 |
|---|---|---|---|---|---|---|
| D Section 26 | | | | | | |
| Adam Red D 26-11 (PR) - Wellbore #1 - Gyro Surveys | 7,020.36 | 6,853.53 | 9,902.88 | 9,853.29 | 199.670 | CC, ES |
| Adam Red D 26-11 (PR) - Wellbore #1 - Gyro Surveys | 7,500.00 | 6,948.61 | 9,978.45 | 9,927.37 | 195.358 | SF |
| Adam Red D 26-12 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Adam Red D 26-13 (PR) - Wellbore #1 - Gyro Surveys | | | | | | Out of range |
| Adam Red D 26-14 (PR) - Wellbore #1 - Gyro Surveys | 7,152.10 | 6,823.77 | 9,403.97 | 9,349.55 | 172.784 | CC, ES |
| Adam Red D 26-14 (PR) - Wellbore #1 - Gyro Surveys | 9,800.00 | 6,894.45 | 9,991.70 | 9,925.09 | 150.010 | SF |
| Coors Energy 14-25H (PR) - Wellbore #1 - MWD Survey | 6,744.83 | 11,093.00 | 1,885.04 | 1,785.40 | 18.918 | CC |
| Coors Energy 14-25H (PR) - Wellbore #1 - MWD Survey | 6,750.00 | 11,093.00 | 1,885.06 | 1,785.21 | 18.878 | ES |
| Coors Energy 14-25H (PR) - Wellbore #1 - MWD Survey | 7,200.00 | 11,093.00 | 2,040.07 | 1,922.52 | 17.355 | SF |
| Heyde 1-26 (PR) - Wellbore #1 - Gyro Surveys | 6,731.01 | 6,455.82 | 8,327.35 | 8,279.45 | 173.857 | CC, ES |
| Heyde 1-26 (PR) - Wellbore #1 - Gyro Surveys | 7,300.00 | 6,686.09 | 8,486.83 | 8,436.10 | 167.302 | SF |
| Heyde 26ND (PR) - Wellbore #1 - MWD Surveys | 6,817.43 | 6,842.08 | 9,585.29 | 9,535.16 | 191.206 | CC, ES |
| Heyde 26ND (PR) - Wellbore #1 - MWD Surveys | 7,900.00 | 7,020.70 | 9,960.84 | 9,906.50 | 183.327 | SF |
| Heyde 26RD (PR) - Wellbore #1 - MWD Surveys | 6,698.19 | 6,594.91 | 9,051.15 | 9,001.97 | 184.060 | CC |
| Heyde 26RD (PR) - Wellbore #1 - MWD Surveys | 6,700.00 | 6,596.16 | 9,051.15 | 9,001.96 | 184.017 | ES |
| Heyde 26RD (PR) - Wellbore #1 - MWD Surveys | 7,250.00 | 6,882.17 | 9,209.80 | 9,157.84 | 177.227 | SF |
| Heyde 26VD (PR) - Wellbore #1 - MWD Surveys | 6,727.79 | 6,661.10 | 7,344.78 | 7,296.22 | 151.242 | CC, ES |
| Heyde 26VD (PR) - Wellbore #1 - MWD Surveys | 7,250.00 | 6,842.00 | 7,485.03 | 7,434.04 | 146.790 | SF |
| Heyde 31-26 (PR) - Wellbore #1 - No Surveys | 6,757.66 | 6,529.91 | 9,574.36 | 9,526.18 | 198.720 | CC, ES |
| Heyde 31-26 (PR) - Wellbore #1 - No Surveys | 7,800.00 | 6,845.55 | 9,968.53 | 9,915.94 | 189.544 | SF |
| Heyde 32-26 (SI) - Wellbore #1 - Gyro Surveys | 6,857.98 | 6,759.74 | 8,912.62 | 8,863.59 | 181.766 | CC, ES |
| Heyde 32-26 (SI) - Wellbore #1 - Gyro Surveys | 9,400.00 | 6,900.00 | 9,997.70 | 9,938.40 | 168.579 | SF |
| Heyde 41-26 (PR) - Wellbore #1 - Gyro Surveys | 6,707.10 | 6,625.93 | 8,259.77 | 8,211.32 | 170.487 | CC, ES |
| Heyde 41-26 (PR) - Wellbore #1 - Gyro Surveys | 7,250.00 | 6,805.94 | 8,417.79 | 8,366.71 | 164.808 | SF |
| Heyde 42-26 (PR) - Wellbore #1 - Gyro Surveys | 6,783.94 | 6,442.21 | 7,624.59 | 7,576.66 | 159.074 | CC, ES |
| Heyde 42-26 (PR) - Wellbore #1 - Gyro Surveys | 9,100.00 | 6,693.34 | 8,711.23 | 8,654.04 | 152.333 | SF |
| HSR-Waste Services 10-26 (SI) - Wellbore #1 - No Surve | 6,992.77 | 6,640.56 | 8,185.52 | 8,026.81 | 51.576 | CC |
| HSR-Waste Services 10-26 (SI) - Wellbore #1 - No Surve | 7,000.00 | 6,644.45 | 8,185.54 | 8,026.73 | 51.543 | ES |
| HSR-Waste Services 10-26 (SI) - Wellbore #1 - No Surve | 7,300.00 | 6,745.70 | 8,222.27 | 8,060.50 | 50.829 | SF |
| HSR-Waste Services 15-26 (SI) - Wellbore #1 - No Surve | 7,140.74 | 6,723.08 | 8,285.51 | 8,124.93 | 51.595 | CC |
| HSR-Waste Services 15-26 (SI) - Wellbore #1 - No Surve | 7,150.00 | 6,726.29 | 8,285.54 | 8,124.87 | 51.566 | ES |
| HSR-Waste Services 15-26 (SI) - Wellbore #1 - No Surve | 8,400.00 | 6,767.00 | 8,490.33 | 8,324.38 | 51.160 | SF |
| HSR-Waste Services 16-26 (SI) - Wellbore #1 - Gyro Su | 7,116.16 | 6,614.33 | 7,036.79 | 6,987.61 | 143.078 | CC, ES |
| HSR-Waste Services 16-26 (SI) - Wellbore #1 - Gyro Su | 11,900.00 | 11,900.00 | 8,909.89 | 8,820.40 | 99.557 | SF |
| HSR-Waste Services 9-26 (PA) - Wellbore #1 - Gyro Sur | 6,925.55 | 6,594.79 | 7,095.48 | 7,046.83 | 145.849 | CC, ES |
| HSR-Waste Services 9-26 (PA) - Wellbore #1 - Gyro Sur | 11,000.00 | 11,000.00 | 9,001.20 | 8,920.59 | 111.659 | SF |
| Waste Management 11-26 (PR) - Wellbore #1 - Gyro Sur | | | | | | Out of range |
| Waste Management 12-26 (PR) - Wellbore #1 - Gyro Sur | | | | | | Out of range |
| Waste Management 12-26A (PR) - Wellbore #1 - Gyro S | | | | | | Out of range |
| Waste Management 21-26 (PR) - Wellbore #1 - Gyro Sur | | | | | | Out of range |
| Waste Management 22-26 (PR) - Wellbore #1 - Gyro Sur | | | | | | Out of range |
| Waste Management 26FD (PR) - Wellbore #1 - MWD Su | | | | | | Out of range |
| Waste Management 26KD (PR) - Wellbore #1 - MWD Su | | | | | | Out of range |
| Waste Management D 26-25 (SI) - Wellbore #1 - Gyro S | | | | | | Out of range |
| Waste Mangement 26JD (PR) - Wellbore #1 - MWD Surv | | | | | | Out of range |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **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 |
|---|---|---|---|---|---|---|
| D Section 36 | | | | | | |
| Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys | 7,841.28 | 6,682.02 | 1,614.56 | 1,563.68 | 31.736 | CC, ES |
| Kanga State D 36-1JI (SI) - Wellbore #1 - Gyro Surveys | 8,100.00 | 6,671.34 | 1,635.12 | 1,582.78 | 31.238 | SF |
| Kanga State D 36-2JI - Wellbore #1 - Gyro Surveys | 7,475.34 | 6,734.97 | 3,058.37 | 3,008.23 | 60.991 | CC, ES |
| Kanga State D 36-2JI - Wellbore #1 - Gyro Surveys | 8,400.00 | 6,718.56 | 3,195.06 | 3,140.83 | 58.917 | SF |
| Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys | 10,493.99 | 6,667.53 | 4,209.14 | 4,101.34 | 39.046 | CC |
| Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys | 10,500.00 | 6,667.55 | 4,209.15 | 4,101.30 | 39.028 | ES |
| Kanga State D36-11JI (PR) - Wellbore #1 - Gyro Surveys | 11,600.00 | 6,670.59 | 4,352.03 | 4,235.87 | 37.466 | SF |
| Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys | 8,917.41 | 6,672.37 | 3,052.59 | 2,997.27 | 55.181 | CC, ES |
| Rhoo State D36-07JI (SI) - Wellbore #1 - Gyro Surveys | 9,900.00 | 6,610.62 | 3,206.17 | 3,144.37 | 51.876 | SF |
| Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1 | 7,731.04 | 6,820.07 | 5,615.71 | 5,564.86 | 110.440 | CC, ES |
| Spike State D 36-04 (SI) - Gyro Surveys - Wellbore #1 | 10,600.00 | 6,827.11 | 6,305.94 | 6,239.94 | 95.540 | SF |
| Spike State D 36-3 (SI) - Wellbore #1 - No Surveys | 7,919.62 | 6,730.00 | 4,416.64 | 4,254.14 | 27.181 | CC, ES |
| Spike State D 36-3 (SI) - Wellbore #1 - No Surveys | 8,600.00 | 6,730.00 | 4,468.73 | 4,302.94 | 26.953 | SF |
| Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys | 9,083.98 | 6,831.76 | 5,723.11 | 5,666.68 | 101.414 | CC |
| Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys | 9,100.00 | 6,831.29 | 5,723.13 | 5,666.60 | 101.240 | ES |
| Spike State D36-05 (SI) - Wellbore #1 - Gyro Surveys | 13,200.00 | 13,200.00 | 7,048.50 | 6,946.12 | 68.849 | SF |
| Spike State D36-06 (PA) - Wellbore #1 - Gyro Surveys | 9,117.71 | 6,712.18 | 4,453.48 | 4,397.05 | 78.916 | CC, ES |
| Spike State D36-06 (PA) - Wellbore #1 - Gyro Surveys | 11,000.00 | 6,589.42 | 4,833.61 | 4,765.26 | 70.715 | SF |
| State 09 (SI) - Wellbore #1 - Gyro Surveys | 8,378.05 | 6,755.67 | 2,299.81 | 2,247.05 | 43.585 | CC |
| State 09 (SI) - Wellbore #1 - Gyro Surveys | 8,400.00 | 6,754.20 | 2,299.92 | 2,247.02 | 43.477 | ES |
| State 09 (SI) - Wellbore #1 - Gyro Surveys | 9,000.00 | 6,716.74 | 2,382.21 | 2,325.45 | 41.972 | SF |
| State 30 (SI) - Wellbore #1 - Gyro Surveys | 11,097.53 | 6,662.01 | 4,664.42 | 4,595.98 | 68.152 | CC |
| State 30 (SI) - Wellbore #1 - Gyro Surveys | 11,100.00 | 6,661.99 | 4,664.42 | 4,595.96 | 68.132 | ES |
| State 30 (SI) - Wellbore #1 - Gyro Surveys | 12,800.00 | 6,648.64 | 4,965.39 | 4,884.74 | 61.568 | SF |
| DD Section 18 | | | | | | |
| Guttersen 18D - Wellbore #1 - Wellbore #1 - As Drilled | | | | | | Out of range |
| Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled | | | | | | Out of range |
| Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled | | | | | | Out of range |
| Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled | | | | | | Out of range |
| Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled | | | | | | Out of range |
| Guttersen 44-18 - Wellbore #1 - Wellbore #1 - As Drilled | | | | | | Out of range |
| Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D | | | | | | Out of range |
| Karch Blue DD18-12 - Original Drilling - Original Drilling - | | | | | | Out of range |
| Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr | | | | | | Out of range |
| DD Section 19 | | | | | | |
| Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv | 2,000.96 | 2,000.00 | 8,463.26 | 8,449.50 | 615.180 | CC |
| Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv | 2,100.00 | 2,067.00 | 8,463.45 | 8,449.10 | 589.981 | ES |
| Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv | 7,050.00 | 7,067.20 | 9,405.77 | 9,354.66 | 184.051 | SF |
| Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey | 2,100.00 | 2,064.00 | 5,705.45 | 5,656.88 | 117.456 | CC |
| Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey | 3,200.00 | 3,137.18 | 5,714.14 | 5,640.20 | 77.284 | ES |
| Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey | 6,850.00 | 6,490.81 | 6,085.67 | 5,929.35 | 38.931 | SF |
| Guttersen 31-19 (PR) - Wellbore #1 - Gyro Surveys | 0.00 | 0.00 | 9,253.08 | | | |
| Guttersen 31-19 (PR) - Wellbore #1 - Gyro Surveys | 2,200.00 | 2,194.85 | 9,259.35 | 9,244.21 | 611.695 | ES |
| Guttersen 31-19 (PR) - Wellbore #1 - Gyro Surveys | 6,900.00 | 6,683.82 | 9,968.48 | 9,918.88 | 200.974 | SF |
| Guttersen 44-19 (SI) - Wellbore #1 - No Surveys | 2,100.00 | 2,109.00 | 5,788.05 | 5,738.58 | 116.989 | CC |
| Guttersen 44-19 (SI) - Wellbore #1 - No Surveys | 2,200.00 | 2,208.98 | 5,788.98 | 5,737.16 | 111.707 | ES |
| Guttersen 44-19 (SI) - Wellbore #1 - No Surveys | 6,850.00 | 6,535.81 | 6,852.49 | 6,696.13 | 43.824 | 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 Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **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 |
|---|---|---|---|---|---|---|
| DD Section 20 | | | | | | |
| Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey | 0.00 | 0.00 | 9,733.54 | | | |
| Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey | 2,100.00 | 2,044.21 | 9,740.74 | 9,726.47 | 682.790 | ES |
| Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey | 3,800.00 | 3,658.29 | 9,992.38 | 9,966.34 | 383.662 | SF |
| Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey | 2,105.18 | 2,133.59 | 7,181.66 | 7,167.07 | 492.096 | CC, ES |
| Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey | 6,900.00 | 6,504.96 | 8,507.20 | 8,459.23 | 177.341 | SF |
| DD Section 29 | | | | | | |
| Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro | 2,130.52 | 2,242.92 | 7,490.76 | 7,475.68 | 496.627 | CC, ES |
| Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro | 7,000.00 | 6,839.22 | 9,007.83 | 8,958.64 | 183.129 | SF |
| Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys | 2,100.00 | 2,141.01 | 4,218.78 | 4,168.67 | 84.182 | CC |
| Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys | 2,200.00 | 2,240.99 | 4,220.53 | 4,168.07 | 80.448 | ES |
| Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys | 7,150.00 | 6,726.30 | 5,886.27 | 5,726.11 | 36.751 | SF |
| Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys | 2,124.89 | 2,227.45 | 8,013.33 | 7,998.33 | 534.299 | CC, ES |
| Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys | 7,300.00 | 7,216.44 | 9,606.73 | 9,522.90 | 114.602 | SF |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **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 |
|---|---|---|---|---|---|---|
| DD Section 30 | | | | | | |
| Guttersen 11-30 (PR) - Wellbore #1 - Gyro Surveys | 5,273.63 | 4,973.81 | 4,306.01 | 4,268.86 | 115.914 | CC |
| Guttersen 11-30 (PR) - Wellbore #1 - Gyro Surveys | 5,400.00 | 5,077.66 | 4,306.43 | 4,268.36 | 113.115 | ES |
| Guttersen 11-30 (PR) - Wellbore #1 - Gyro Surveys | 6,750.00 | 6,483.16 | 4,409.32 | 4,360.43 | 90.195 | SF |
| Guttersen 12-30 (PR) - Wellbore #1 - Gyro Surveys | 6,452.62 | 6,285.57 | 2,947.62 | 2,900.67 | 62.780 | CC, ES |
| Guttersen 12-30 (PR) - Wellbore #1 - Gyro Surveys | 6,700.00 | 6,497.71 | 2,996.73 | 2,947.98 | 61.466 | SF |
| Guttersen 22-30 (PR) - Wellbore #1 - Gyro Surveys | 589.53 | 558.55 | 2,763.15 | 2,759.49 | 754.526 | CC |
| Guttersen 22-30 (PR) - Wellbore #1 - Gyro Surveys | 2,400.00 | 2,346.69 | 2,771.74 | 2,755.39 | 169.550 | ES |
| Guttersen 22-30 (PR) - Wellbore #1 - Gyro Surveys | 6,600.00 | 6,391.23 | 3,108.44 | 3,060.89 | 65.370 | SF |
| Guttersen 30 A (PR) - Wellbore #1 - Gyro Surveys | 4,350.90 | 4,216.96 | 3,498.75 | 3,468.27 | 114.816 | CC |
| Guttersen 30 A (PR) - Wellbore #1 - Gyro Surveys | 4,600.00 | 4,451.39 | 3,499.90 | 3,467.54 | 108.155 | ES |
| Guttersen 30 A (PR) - Wellbore #1 - Gyro Surveys | 6,650.00 | 6,330.54 | 3,630.22 | 3,582.39 | 75.897 | SF |
| Guttersen State DD30-715 - Guttersen State DD30-715 - | 2,100.00 | 2,132.00 | 2,026.37 | 2,011.67 | 137.806 | CC, ES |
| Guttersen State DD30-715 - Guttersen State DD30-715 - | 7,050.00 | 6,581.71 | 4,056.20 | 4,007.02 | 82.470 | SF |
| Guttersen State DD30-725 - Guttersen State DD30-725 - | 2,100.00 | 2,132.00 | 1,989.44 | 1,974.73 | 135.294 | CC, ES |
| Guttersen State DD30-725 - Guttersen State DD30-725 - | 6,500.00 | 7,269.28 | 3,282.12 | 3,233.76 | 67.865 | SF |
| Guttersen State DD30-735 - Guttersen State DD30-735 - | 2,100.00 | 2,132.00 | 1,951.44 | 1,936.73 | 132.710 | CC, ES |
| Guttersen State DD30-735 - Guttersen State DD30-735 - | 6,500.00 | 7,440.83 | 2,646.48 | 2,596.85 | 53.316 | SF |
| Guttersen State DD30-745 - Guttersen State DD30-745 - | 2,979.21 | 3,609.87 | 1,892.91 | 1,870.64 | 85.005 | CC |
| Guttersen State DD30-745 - Guttersen State DD30-745 - | 3,000.00 | 3,610.48 | 1,892.98 | 1,870.64 | 84.706 | ES |
| Guttersen State DD30-745 - Guttersen State DD30-745 - | 6,500.00 | 7,602.69 | 2,000.91 | 1,949.61 | 39.007 | SF |
| Guttersen State DD30-755 - Guttersen State DD30-755 - | 2,000.00 | 2,002.00 | 167.71 | 153.83 | 12.083 | CC, ES |
| Guttersen State DD30-755 - Guttersen State DD30-755 - | 2,200.00 | 2,193.30 | 173.28 | 158.08 | 11.395 | SF |
| Guttersen State DD30-766 - Guttersen State DD30-766 - | 2,100.00 | 2,102.00 | 155.23 | 140.63 | 10.634 | CC, ES |
| Guttersen State DD30-766 - Guttersen State DD30-766 - | 2,400.00 | 2,393.67 | 163.96 | 147.37 | 9.884 | SF |
| Guttersen State DD30-775 - Guttersen State DD30-775 - | 6,987.49 | 7,245.52 | 67.20 | 14.28 | 1.270 | Level 3, CC, ES, SF |
| Guttersen State DD30-785 - Guttersen State DD30-785 - | 1,913.37 | 1,916.37 | 154.99 | 141.73 | 11.687 | CC |
| Guttersen State DD30-785 - Guttersen State DD30-785 - | 2,000.00 | 2,002.62 | 155.00 | 141.12 | 11.167 | ES |
| Guttersen State DD30-785 - Guttersen State DD30-785 - | 7,419.08 | 7,068.18 | 502.25 | 446.73 | 9.045 | SF |
| Guttersen YY06-756 - Guttersen YY06-756 - Plan #1 | 2,100.00 | 2,101.00 | 75.01 | 60.42 | 5.140 | CC, ES |
| Guttersen YY06-756 - Guttersen YY06-756 - Plan #1 | 2,200.00 | 2,201.02 | 76.72 | 61.42 | 5.015 | SF |
| Guttersen YY06-766 - Guttersen YY06-766 - Plan #1 | 2,100.00 | 2,101.00 | 37.01 | 22.42 | 2.536 | CC, ES |
| Guttersen YY06-766 - Guttersen YY06-766 - Plan #1 | 2,200.00 | 2,201.02 | 38.72 | 23.42 | 2.531 | SF |
| Guttersen YY06-785 - Guttersen YY06-785 - Plan #1 | 2,000.00 | 2,000.00 | 38.00 | 24.13 | 2.739 | CC, ES |
| Guttersen YY06-785 - Guttersen YY06-785 - Plan #1 | 2,100.00 | 2,098.66 | 39.72 | 25.15 | 2.726 | SF |
| Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys | 6,459.85 | 6,155.48 | 1,856.90 | 1,708.52 | 12.515 | CC, ES |
| Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys | 6,650.00 | 6,325.65 | 1,885.67 | 1,733.06 | 12.356 | SF |
| Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys | 4,003.62 | 3,880.49 | 83.41 | -8.63 | 0.906 | Level 1, CC, ES, SF |
| Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys | 4,468.13 | 4,310.88 | 1,076.11 | 973.49 | 10.486 | CC |
| Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys | 4,600.00 | 4,433.34 | 1,077.22 | 971.59 | 10.198 | ES |
| Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys | 6,300.00 | 6,012.12 | 1,272.62 | 1,128.45 | 8.828 | SF |
| L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys | 0.00 | 0.00 | 3,734.79 | | | |
| L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys | 3,100.00 | 3,116.98 | 3,743.84 | 3,722.31 | 173.953 | ES |
| L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys | 6,700.00 | 6,501.39 | 4,117.86 | 4,069.44 | 85.060 | SF |
| State 19 (PA) - Wellbore #1 - NO Surveys | 2,100.00 | 2,111.00 | 3,710.71 | 3,661.19 | 74.941 | CC |
| State 19 (PA) - Wellbore #1 - NO Surveys | 2,200.00 | 2,210.98 | 3,711.75 | 3,659.88 | 71.568 | ES |
| State 19 (PA) - Wellbore #1 - NO Surveys | 6,750.00 | 6,463.65 | 4,832.21 | 4,677.83 | 31.300 | SF |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

**Summary**

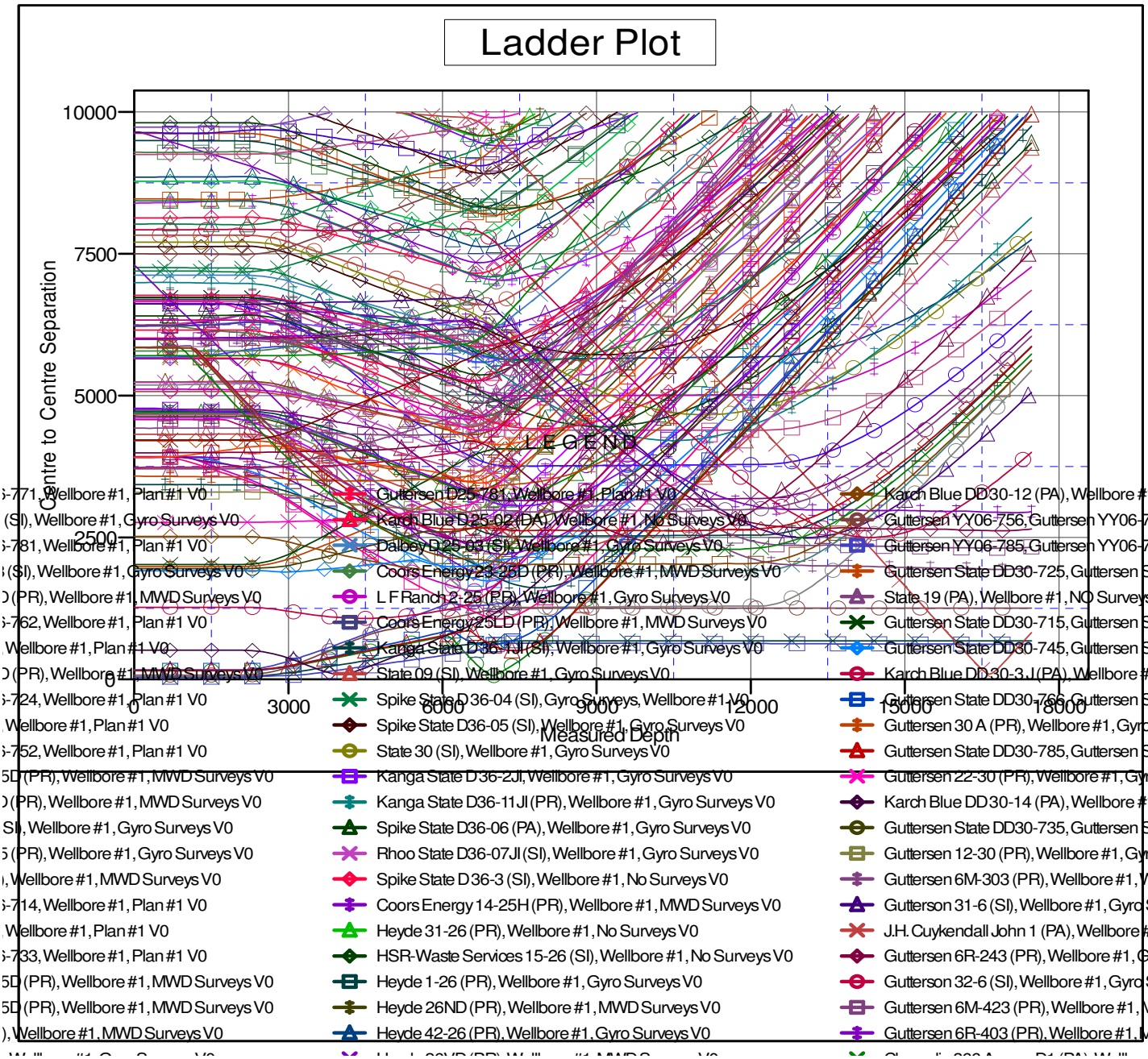
| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| DD Section 31 | | | | | | |
| Guttersen 31Q-221 (PR) - Wellbore #1 - MWD Surveys | 7,500.00 | 10,956.00 | 2,308.63 | 2,196.12 | 20.519 | SF |
| Guttersen 31Q-221 (PR) - Wellbore #1 - MWD Surveys | 9,200.00 | 9,338.05 | 2,281.12 | 2,189.04 | 24.773 | ES |
| Guttersen 31Q-221 (PR) - Wellbore #1 - MWD Surveys | 9,222.97 | 9,325.57 | 2,281.07 | 2,189.09 | 24.800 | CC |
| Guttersen 31Q-401 (PR) - Wellbore #1 - MWD Surveys | 7,587.67 | 11,132.00 | 2,021.02 | 1,907.23 | 17.761 | CC, ES |
| Guttersen 31Q-401 (PR) - Wellbore #1 - MWD Surveys | 7,600.00 | 11,132.00 | 2,021.06 | 1,907.24 | 17.756 | SF |
| Guttersen 31T-301 (PR) - Wellbore #1 - MWD Surveys | 5,972.62 | 11,048.00 | 2,908.30 | 2,806.17 | 28.476 | CC |
| Guttersen 31T-301 (PR) - Wellbore #1 - MWD Surveys | 6,000.00 | 11,048.00 | 2,908.43 | 2,805.91 | 28.368 | ES |
| Guttersen 31T-301 (PR) - Wellbore #1 - MWD Surveys | 11,300.00 | 11,300.00 | 2,990.91 | 2,871.32 | 25.010 | SF |
| Guttersen 31T-441 (PR) - Wellbore #1 - MWD Surveys | 7,591.44 | 11,127.00 | 2,620.70 | 2,507.23 | 23.096 | ES |
| Guttersen 31T-441 (PR) - Wellbore #1 - MWD Surveys | 7,600.00 | 11,127.00 | 2,620.71 | 2,507.24 | 23.096 | SF |
| Guttersen 31T-441 (PR) - Wellbore #1 - MWD Surveys | 10,512.53 | 8,205.00 | 2,616.37 | 2,535.50 | 32.352 | CC |
| Guttersen 33-31 (PR) - Wellbore #1 - Gyro Surveys | 10,303.64 | 6,697.33 | 2,411.05 | 2,348.05 | 38.267 | CC, ES |
| Guttersen 33-31 (PR) - Wellbore #1 - Gyro Surveys | 10,500.00 | 6,699.11 | 2,419.04 | 2,355.44 | 38.037 | SF |
| YY Section 6 | | | | | | |
| Guttersen 6M-303 (PR) - Wellbore #1 - Wellbore #1 | 14,300.00 | 14,300.00 | 1,991.16 | 1,793.99 | 10.099 | SF |
| Guttersen 6M-303 (PR) - Wellbore #1 - Wellbore #1 | 16,827.35 | 10,785.63 | 1,936.47 | 1,767.47 | 11.458 | CC |
| Guttersen 6M-303 (PR) - Wellbore #1 - Wellbore #1 | 16,900.00 | 10,835.00 | 1,936.97 | 1,766.76 | 11.380 | ES |
| Guttersen 6M-423 (PR) - Wellbore #1 - MWD Surveys | 16,766.05 | 10,811.91 | 2,311.88 | 2,143.50 | 13.730 | CC |
| Guttersen 6M-423 (PR) - Wellbore #1 - MWD Surveys | 17,147.10 | 11,193.00 | 2,312.87 | 2,135.03 | 13.005 | ES |
| Guttersen 6M-423 (PR) - Wellbore #1 - MWD Surveys | 17,200.00 | 11,193.00 | 2,313.48 | 2,135.47 | 12.996 | SF |
| Guttersen 6R-243 (PR) - Wellbore #1 - Gyro Surveys | 15,200.00 | 15,200.00 | 2,651.85 | 2,425.63 | 11.722 | ES, SF |
| Guttersen 6R-243 (PR) - Wellbore #1 - Gyro Surveys | 16,894.62 | 10,820.78 | 2,621.02 | 2,450.73 | 15.392 | CC |
| Guttersen 6R-403 (PR) - Wellbore #1 - MWD Surveys | 16,100.00 | 16,100.00 | 2,965.62 | 2,715.16 | 11.841 | ES, SF |
| Guttersen 6R-403 (PR) - Wellbore #1 - MWD Surveys | 17,151.12 | 11,233.00 | 2,939.46 | 2,761.61 | 16.528 | CC |
| Gutterson 31-6 (SI) - Wellbore #1 - Gyro Surveys | 13,066.80 | 6,768.69 | 2,497.91 | 2,415.25 | 30.219 | CC, ES |
| Gutterson 31-6 (SI) - Wellbore #1 - Gyro Surveys | 13,300.00 | 6,768.49 | 2,508.77 | 2,425.37 | 30.081 | SF |
| Gutterson 32-6 (SI) - Wellbore #1 - Gyro Surveys | 14,339.98 | 6,657.09 | 2,502.51 | 2,411.27 | 27.429 | CC, ES |
| Gutterson 32-6 (SI) - Wellbore #1 - Gyro Surveys | 14,500.00 | 6,653.42 | 2,507.62 | 2,415.87 | 27.333 | SF |
| J.H. Cuykendall John 1 (PA) - Wellbore #1 - Gyro Survey | 16,645.83 | 6,756.73 | 92.32 | -17.23 | 0.843 | Level 1, CC, ES, SF |

# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

| | |
|---|---|
| Reference Depths are relative to KB @ 4821.00ft | Coordinates are relative to: Guttersen YY06-775 |
| 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: 0.66° |



# Noble Energy, Inc.

## Anticollision Summary Report

| | | | |
|---|---|---|---|
| **Company:** | Northern Region - DJ Basin | **Local Co-ordinate Reference:** | Well Guttersen YY06-775 |
| **Project:** | Mustang | **TVD Reference:** | KB @ 4821.00ft |
| **Reference Site:** | DD Section 30 | **MD Reference:** | KB @ 4821.00ft |
| **Site Error:** | 0.00 ft | **North Reference:** | Grid |
| **Reference Well:** | Guttersen YY06-775 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 ft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | Guttersen YY06-775 | **Database:** | EDMP |
| **Reference Design:** | Plan #1 | **Offset TVD Reference:** | Offset Datum |

| | |
|---|---|
| Reference Depths are relative to KB @ 4821.00ft | Coordinates are relative to: Guttersen YY06-775 |
| 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: 0.66° |