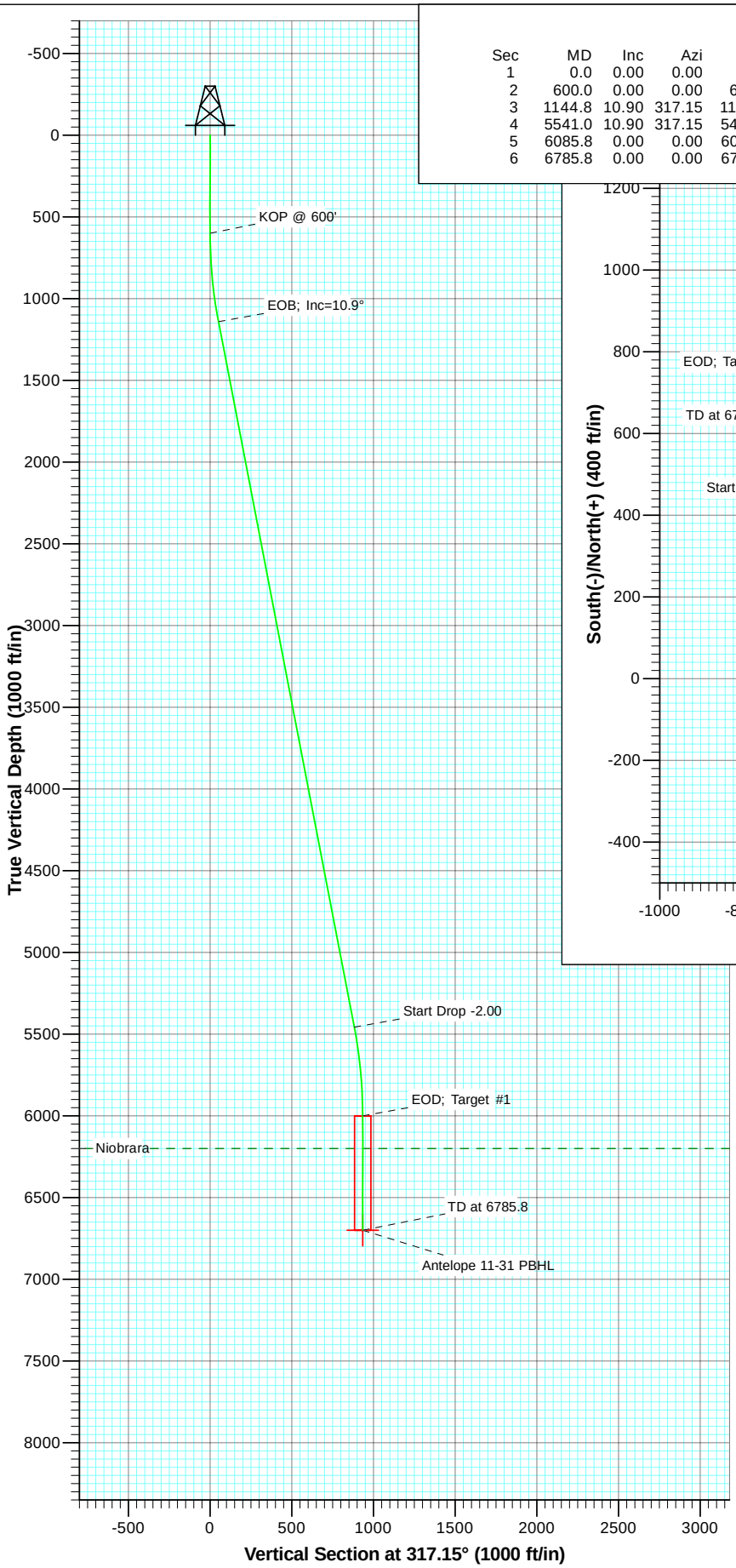
BONANZA CREEK ENERGY COMPANY

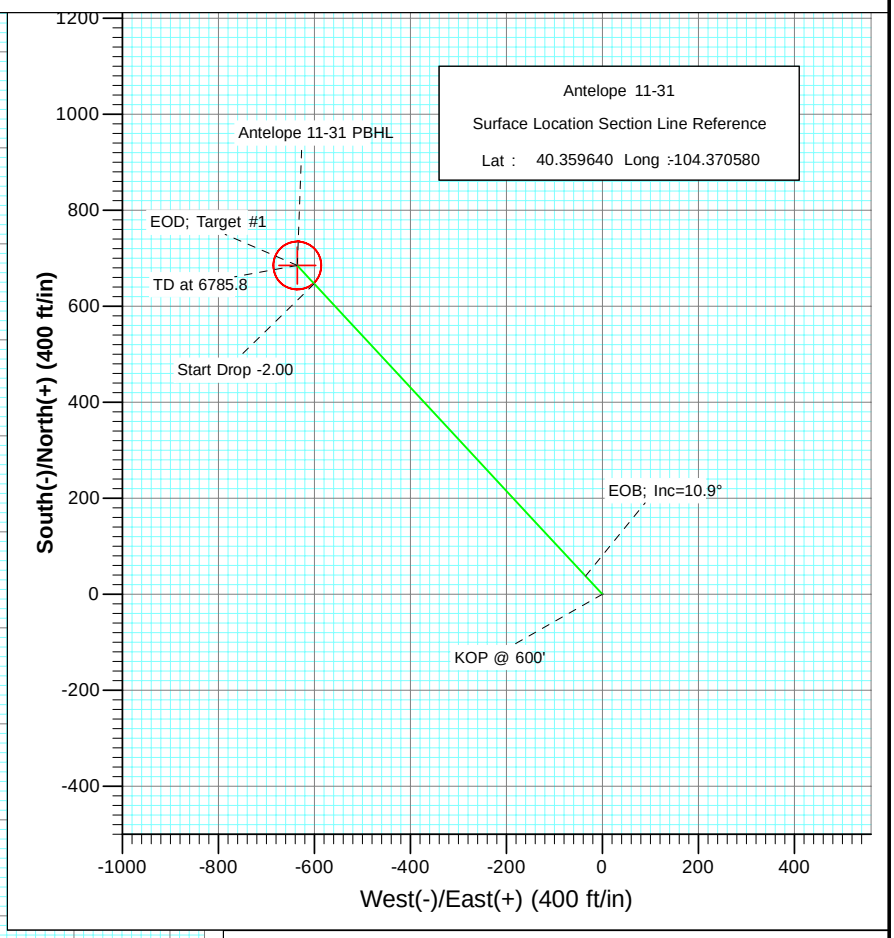
Project: Weld County
Site: Antelope 31 A Pad
Well: Antelope 11-31
Wellbore: DD
Plan: Plan #1

CATHEDRAL

SECTION DETAILS

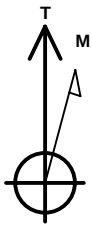
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 1144.8 | 10.90 | 317.15 | 1141.5 | 37.9 | -35.1 | 2.00 | 317.15 | 51.6 | |
| 4 | 5541.0 | 10.90 | 317.15 | 5458.5 | 647.0 | -600.2 | 0.00 | 0.00 | 882.6 | |
| 5 | 6085.8 | 0.00 | 0.00 | 6000.0 | 684.9 | -635.4 | 2.00 | 180.00 | 934.2 | |
| 6 | 6785.8 | 0.00 | 0.00 | 6700.0 | 684.9 | -635.4 | 0.00 | 0.00 | 934.2 | Antelope 11-31 PBHL |




FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---|---|---|
| 6200.0 | 6285.8 | Niobrara |




Azimuths to True North
Magnetic North: 8.72°

Magnetic Field
Strength: 53209.6snT
Dip Angle: 67.10°
Date: 12/7/2010
Model: IGRF2010

Plan #1
Antelope 11-31

WELL @ 4600.0ft (Original Well Elev)
North American Datum 1983
Well Antelope 11-31, True North

| Type | Target | Azimuth | Origin Type | N/S | E/W | From TVD |
|---|---|---|---|---|---|---|
| TD | No Target (Freehand) | 317.15 | Slot | 0.0 | 0.0 | 0.0 |

| Name | TVD | +N/-S | +E/-W | Latitude | Longitude |
|---|---|---|---|---|---|
| Antelope 11-31 PBHL | 6700.0 | 684.9 | -635.4 | 40.361520 | -104.372860 |

# Cathedral Energy Services

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 US Multi Users DB | **Local Co-ordinate Reference:** | Well Antelope 11-31 |
| **Company:** | Bonanza Creek Energy Operating Company, LLC | **TVD Reference:** | WELL @ 4600.0ft (Original Well Elev) |
| **Project:** | Weld County | **MD Reference:** | WELL @ 4600.0ft (Original Well Elev) |
| **Site:** | Antelope 31 A Pad | **North Reference:** | True |
| **Well:** | Antelope 11-31 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | DD | | |
| **Design:** | Plan #1 | | |

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

| **Site** | Antelope 31 A Pad | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 1,375,882.75 ft | **Latitude:** | 40.359690 |
| **From:** | Lat/Long | **Easting:** | 3,314,740.32 ft | **Longitude:** | -104.370580 |
| **Position Uncertainty:** | 0.0 ft | **Slot Radius:** | 13.200 in | **Grid Convergence:** | 0.73 ° |

| **Well** | Antelope 11-31 | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 ft | **Northing:** | 1,375,864.53 ft | **Latitude:** | 40.359640 |
| | **+E/-W** | 0.0 ft | **Easting:** | 3,314,740.55 ft | **Longitude:** | -104.370580 |
| **Position Uncertainty** | | 0.0 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 4,590.0 ft |

| **Wellbore** | DD | | | | |
|---|---|---|---|---|---|
| **Magnetics** | **Model Name** | **Sample Date** | **Declination (°)** | **Dip Angle (°)** | **Field Strength (nT)** |
| | IGRF2010 | 12/7/2010 | 8.72 | 67.10 | 53,210 |

| **Design** | Plan #1 | | | | |
|---|---|---|---|---|---|
| **Audit Notes:** | | | | | |
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.0 |
| **Vertical Section:** | **Depth From (TVD) (ft)** | **+N/-S (ft)** | **+E/-W (ft)** | **Direction (°)** | |
| | 0.0 | 0.0 | 0.0 | 317.15 | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,144.8 | 10.90 | 317.15 | 1,141.5 | 37.9 | -35.1 | 2.00 | 2.00 | 0.00 | 317.15 | |
| 5,541.0 | 10.90 | 317.15 | 5,458.5 | 647.0 | -600.2 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,085.8 | 0.00 | 0.00 | 6,000.0 | 684.9 | -635.4 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 6,785.8 | 0.00 | 0.00 | 6,700.0 | 684.9 | -635.4 | 0.00 | 0.00 | 0.00 | 0.00 | Antelope 11-31 PBHL |

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 US Multi Users DB | **Local Co-ordinate Reference:** | Well Antelope 11-31 |
| **Company:** | Bonanza Creek Energy Operating Company, LLC | **TVD Reference:** | WELL @ 4600.0ft (Original Well Elev) |
| **Project:** | Weld County | **MD Reference:** | WELL @ 4600.0ft (Original Well Elev) |
| **Site:** | Antelope 31 A Pad | **North Reference:** | True |
| **Well:** | Antelope 11-31 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | DD | | |
| **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) | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | KOP @ 600' |
| 700.0 | 2.00 | 317.15 | 700.0 | 1.3 | -1.2 | 1.7 | 2.00 | 2.00 | |
| 800.0 | 4.00 | 317.15 | 799.8 | 5.1 | -4.7 | 7.0 | 2.00 | 2.00 | |
| 900.0 | 6.00 | 317.15 | 899.5 | 11.5 | -10.7 | 15.7 | 2.00 | 2.00 | |
| 1,000.0 | 8.00 | 317.15 | 998.7 | 20.4 | -19.0 | 27.9 | 2.00 | 2.00 | |
| 1,100.0 | 10.00 | 317.15 | 1,097.5 | 31.9 | -29.6 | 43.5 | 2.00 | 2.00 | |
| 1,144.8 | 10.90 | 317.15 | 1,141.5 | 37.9 | -35.1 | 51.6 | 2.00 | 2.00 | EOB; Inc=10.9° |
| 1,200.0 | 10.90 | 317.15 | 1,195.7 | 45.5 | -42.2 | 62.1 | 0.00 | 0.00 | |
| 1,300.0 | 10.90 | 317.15 | 1,293.9 | 59.4 | -55.1 | 81.0 | 0.00 | 0.00 | |
| 1,400.0 | 10.90 | 317.15 | 1,392.1 | 73.2 | -67.9 | 99.9 | 0.00 | 0.00 | |
| 1,500.0 | 10.90 | 317.15 | 1,490.3 | 87.1 | -80.8 | 118.8 | 0.00 | 0.00 | |
| 1,600.0 | 10.90 | 317.15 | 1,588.5 | 100.9 | -93.6 | 137.7 | 0.00 | 0.00 | |
| 1,700.0 | 10.90 | 317.15 | 1,686.7 | 114.8 | -106.5 | 156.6 | 0.00 | 0.00 | |
| 1,800.0 | 10.90 | 317.15 | 1,784.9 | 128.7 | -119.3 | 175.5 | 0.00 | 0.00 | |
| 1,900.0 | 10.90 | 317.15 | 1,883.1 | 142.5 | -132.2 | 194.4 | 0.00 | 0.00 | |
| 2,000.0 | 10.90 | 317.15 | 1,981.3 | 156.4 | -145.1 | 213.3 | 0.00 | 0.00 | |
| 2,100.0 | 10.90 | 317.15 | 2,079.5 | 170.2 | -157.9 | 232.2 | 0.00 | 0.00 | |
| 2,200.0 | 10.90 | 317.15 | 2,177.7 | 184.1 | -170.8 | 251.1 | 0.00 | 0.00 | |
| 2,300.0 | 10.90 | 317.15 | 2,275.9 | 197.9 | -183.6 | 270.0 | 0.00 | 0.00 | |
| 2,400.0 | 10.90 | 317.15 | 2,374.1 | 211.8 | -196.5 | 288.9 | 0.00 | 0.00 | |
| 2,500.0 | 10.90 | 317.15 | 2,472.3 | 225.6 | -209.3 | 307.8 | 0.00 | 0.00 | |
| 2,600.0 | 10.90 | 317.15 | 2,570.5 | 239.5 | -222.2 | 326.7 | 0.00 | 0.00 | |
| 2,700.0 | 10.90 | 317.15 | 2,668.7 | 253.4 | -235.0 | 345.6 | 0.00 | 0.00 | |
| 2,800.0 | 10.90 | 317.15 | 2,766.9 | 267.2 | -247.9 | 364.5 | 0.00 | 0.00 | |
| 2,900.0 | 10.90 | 317.15 | 2,865.1 | 281.1 | -260.7 | 383.4 | 0.00 | 0.00 | |
| 3,000.0 | 10.90 | 317.15 | 2,963.3 | 294.9 | -273.6 | 402.3 | 0.00 | 0.00 | |
| 3,100.0 | 10.90 | 317.15 | 3,061.5 | 308.8 | -286.5 | 421.2 | 0.00 | 0.00 | |
| 3,200.0 | 10.90 | 317.15 | 3,159.7 | 322.6 | -299.3 | 440.1 | 0.00 | 0.00 | |
| 3,300.0 | 10.90 | 317.15 | 3,257.9 | 336.5 | -312.2 | 459.0 | 0.00 | 0.00 | |
| 3,400.0 | 10.90 | 317.15 | 3,356.1 | 350.4 | -325.0 | 477.9 | 0.00 | 0.00 | |
| 3,500.0 | 10.90 | 317.15 | 3,454.3 | 364.2 | -337.9 | 496.8 | 0.00 | 0.00 | |
| 3,600.0 | 10.90 | 317.15 | 3,552.5 | 378.1 | -350.7 | 515.7 | 0.00 | 0.00 | |
| 3,700.0 | 10.90 | 317.15 | 3,650.7 | 391.9 | -363.6 | 534.6 | 0.00 | 0.00 | |
| 3,800.0 | 10.90 | 317.15 | 3,748.9 | 405.8 | -376.4 | 553.5 | 0.00 | 0.00 | |
| 3,900.0 | 10.90 | 317.15 | 3,847.1 | 419.6 | -389.3 | 572.4 | 0.00 | 0.00 | |
| 4,000.0 | 10.90 | 317.15 | 3,945.3 | 433.5 | -402.2 | 591.3 | 0.00 | 0.00 | |
| 4,100.0 | 10.90 | 317.15 | 4,043.5 | 447.4 | -415.0 | 610.2 | 0.00 | 0.00 | |
| 4,200.0 | 10.90 | 317.15 | 4,141.7 | 461.2 | -427.9 | 629.1 | 0.00 | 0.00 | |
| 4,300.0 | 10.90 | 317.15 | 4,239.9 | 475.1 | -440.7 | 648.0 | 0.00 | 0.00 | |
| 4,400.0 | 10.90 | 317.15 | 4,338.0 | 488.9 | -453.6 | 666.9 | 0.00 | 0.00 | |
| 4,500.0 | 10.90 | 317.15 | 4,436.2 | 502.8 | -466.4 | 685.8 | 0.00 | 0.00 | |
| 4,600.0 | 10.90 | 317.15 | 4,534.4 | 516.6 | -479.3 | 704.7 | 0.00 | 0.00 | |
| 4,700.0 | 10.90 | 317.15 | 4,632.6 | 530.5 | -492.1 | 723.6 | 0.00 | 0.00 | |
| 4,800.0 | 10.90 | 317.15 | 4,730.8 | 544.4 | -505.0 | 742.5 | 0.00 | 0.00 | |
| 4,900.0 | 10.90 | 317.15 | 4,829.0 | 558.2 | -517.8 | 761.4 | 0.00 | 0.00 | |
| 5,000.0 | 10.90 | 317.15 | 4,927.2 | 572.1 | -530.7 | 780.3 | 0.00 | 0.00 | |

| | | | |
|---|---|---|---|
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| **Project:** | Weld County | **MD Reference:** | WELL @ 4600.0ft (Original Well Elev) |
| **Site:** | Antelope 31 A Pad | **North Reference:** | True |
| **Well:** | Antelope 11-31 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | DD | | |
| **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) | Comments / Formations |
|---|---|---|---|---|---|---|---|---|---|
| 5,100.0 | 10.90 | 317.15 | 5,025.4 | 585.9 | -543.6 | 799.2 | 0.00 | 0.00 | |
| 5,200.0 | 10.90 | 317.15 | 5,123.6 | 599.8 | -556.4 | 818.1 | 0.00 | 0.00 | |
| 5,300.0 | 10.90 | 317.15 | 5,221.8 | 613.6 | -569.3 | 837.0 | 0.00 | 0.00 | |
| 5,400.0 | 10.90 | 317.15 | 5,320.0 | 627.5 | -582.1 | 855.9 | 0.00 | 0.00 | |
| 5,500.0 | 10.90 | 317.15 | 5,418.2 | 641.3 | -595.0 | 874.8 | 0.00 | 0.00 | |
| 5,541.0 | 10.90 | 317.15 | 5,458.5 | 647.0 | -600.2 | 882.6 | 0.00 | 0.00 | Start Drop -2.00 |
| 5,600.0 | 9.72 | 317.15 | 5,516.5 | 654.8 | -607.4 | 893.1 | 2.00 | -2.00 | |
| 5,700.0 | 7.72 | 317.15 | 5,615.4 | 665.9 | -617.7 | 908.3 | 2.00 | -2.00 | |
| 5,800.0 | 5.72 | 317.15 | 5,714.7 | 674.4 | -625.7 | 920.0 | 2.00 | -2.00 | |
| 5,900.0 | 3.72 | 317.15 | 5,814.3 | 680.5 | -631.3 | 928.2 | 2.00 | -2.00 | |
| 6,000.0 | 1.72 | 317.15 | 5,914.2 | 683.9 | -634.5 | 932.9 | 2.00 | -2.00 | |
| 6,085.8 | 0.00 | 0.00 | 6,000.0 | 684.9 | -635.4 | 934.2 | 2.00 | -2.00 | EOD; Target #1 |
| 6,100.0 | 0.00 | 0.00 | 6,014.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,200.0 | 0.00 | 0.00 | 6,114.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,285.8 | 0.00 | 0.00 | 6,200.0 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | Niobrara |
| 6,300.0 | 0.00 | 0.00 | 6,214.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,400.0 | 0.00 | 0.00 | 6,314.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,500.0 | 0.00 | 0.00 | 6,414.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,600.0 | 0.00 | 0.00 | 6,514.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,700.0 | 0.00 | 0.00 | 6,614.2 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | |
| 6,785.8 | 0.00 | 0.00 | 6,700.0 | 684.9 | -635.4 | 934.2 | 0.00 | 0.00 | TD at 6785.8 - Antelope 11-31 PBHL |

**Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Antelope 11-31 PBHL<br>- plan hits target center<br>- Circle (radius 50.0) | 0.00 | 0.00 | 6,700.0 | 684.9 | -635.4 | 1,376,541.27 | 3,314,096.52 | 40.361520 | -104.372860 |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 6,285.8 | 6,200.0 | Niobrara | | 0.00 | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 600.0 | 600.0 | 0.0 | 0.0 | KOP @ 600' |
| 1,144.8 | 1,141.5 | 37.9 | -35.1 | EOB; Inc=10.9° |
| 5,541.0 | 5,458.5 | 647.0 | -600.2 | Start Drop -2.00 |
| 6,085.8 | 6,000.0 | 684.9 | -635.4 | EOD; Target #1 |
| 6,785.8 | 6,700.0 | 684.9 | -635.4 | TD at 6785.8 |