# Anadarko Petroleum Corp.

**Weld County, CO (NAD 83)**
**Sec. 10-T2N-R66W**
**Cannon 36N-10HZ**

**Plan A Rev 0**

**Plan: Plan A Rev 0 Permit**

## Sperry Drilling Services

# Proposal Report

**14 December, 2012**

Well Coordinates: 1,301,462.25 N, 3,204,580.36 E (40° 09' 30.93" N, 104° 46' 04.97" W)
Ground Level: 4,954.00 ft

| | |
|---|---|
| Local Coordinate Origin: | Centered on Well Cannon 36N-10HZ |
| Viewing Datum: | RKB= 17 @ 4971.00ft (Drilling Rig) |
| TVDs to System: | N |
| North Reference: | True |
| Unit System: | API - US Survey Feet - Custom |

Geodetic Scale Factor Applied
Version: 2003.16 Build: 43I

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 10-T2N-R66W
Well: Cannon 36N-10HZ
Wellbore: Plan A Rev 0
Design: Plan A Rev 0 Permit

# Anadarko Petroleum Corp.

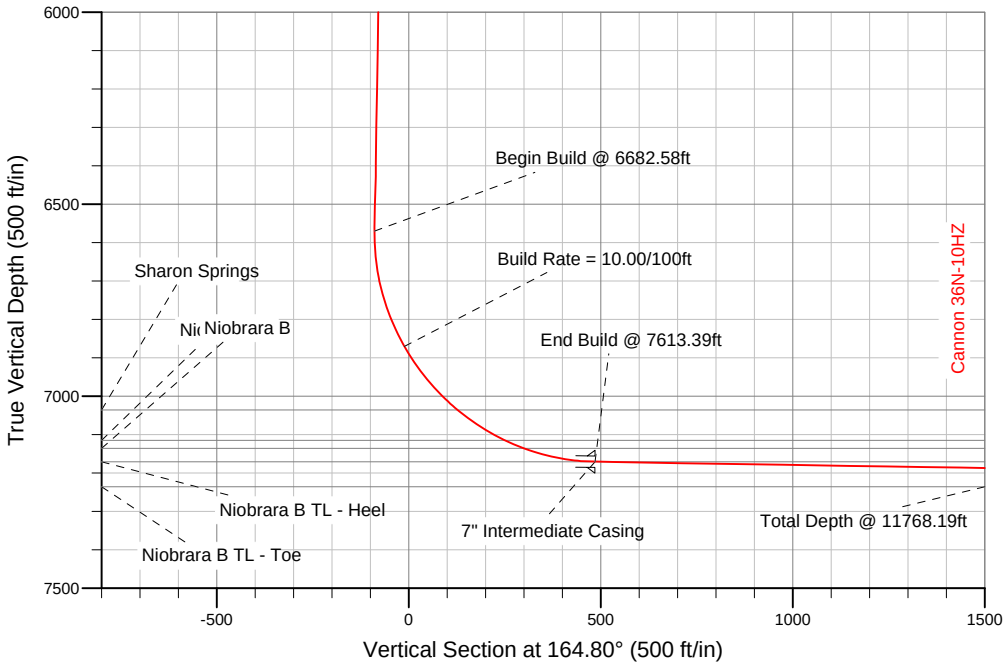
HALLIBURTON
Sperry Drilling

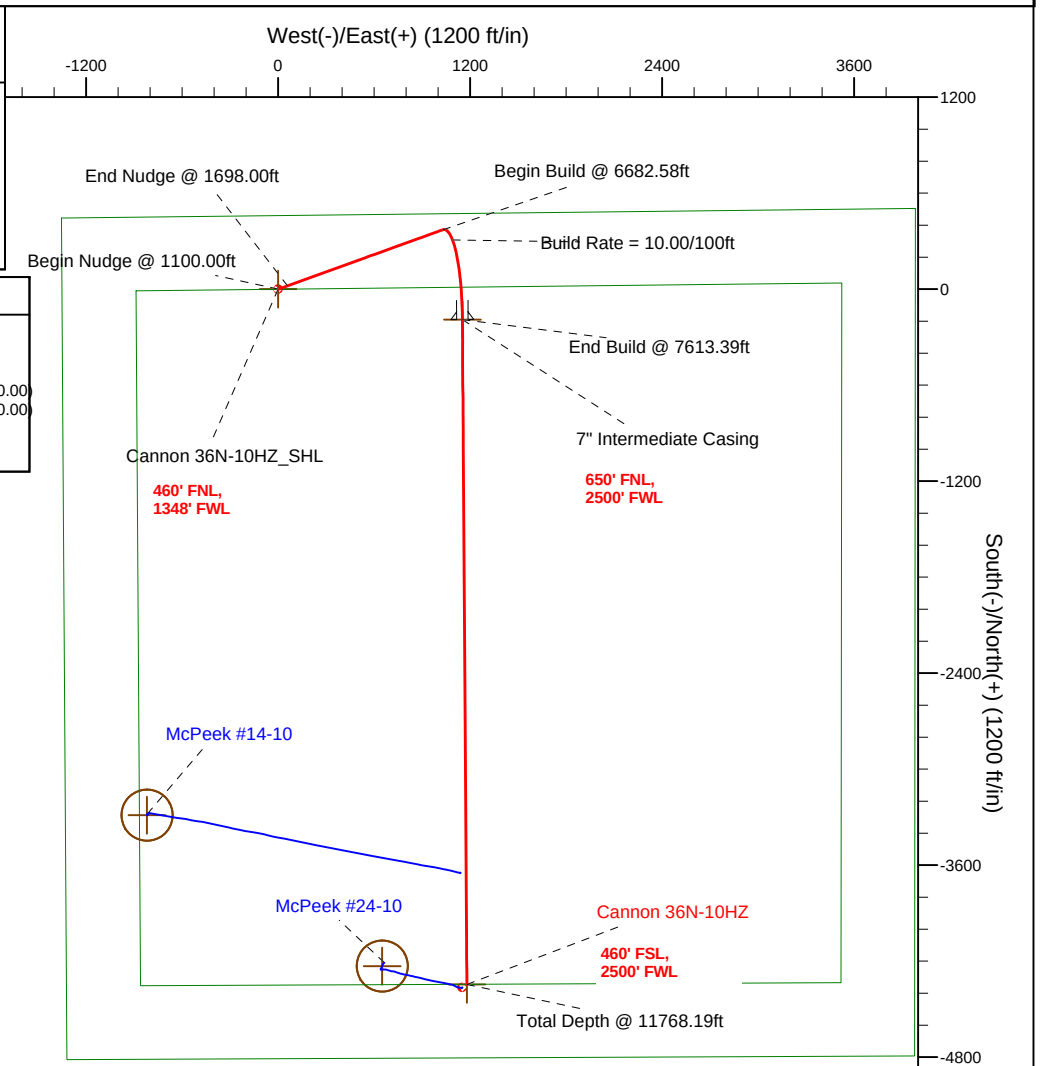
SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | DLeg | TFace | VSec | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 1100.00 | 0.00 | 0.00 | 1100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 1698.00 | 11.96 | 70.14 | 1693.67 | 21.12 | 58.49 | 2.00 | 70.14 | -5.05 | |
| 4 | 6682.58 | 11.96 | 70.14 | 6570.04 | 371.98 | 1030.03 | 0.00 | 0.00 | -88.90 | |
| 5 | 7613.39 | 89.10 | 179.61 | 7171.00 | -190.00 | 1152.00 | 10.00 | 109.25 | 485.40 | Cannon 36N-10HZ_CP |
| 6 | 11768.19 | 89.10 | 179.61 | 7236.00 | -4344.20 | 1180.31 | 0.00 | 0.00 | 4501.69 | Cannon 36N-10HZ_BHL |

WELLBORE TARGET DETAILS (LAT/LONG)

| Name | TVD | +N/-S | +E/-W | Latitude | Longitude | Shape |
|---|---|---|---|---|---|---|
| Cannon 36N-10HZ_SHL | 0.00 | 0.00 | 0.00 | 40.158591 | -104.768046 | Point |
| Cannon 36N-10HZ_CP | 7171.00 | -190.00 | 1152.00 | 40.158069 | -104.763925 | Point |
| McPeek 14-10 - 160' | 7219.24 | -3287.02 | -818.80 | 40.149568 | -104.770975 | Circle (Radius: 160.00) |
| McPeek 24-10 - 160' | 7234.13 | -4230.19 | 651.10 | 40.146979 | -104.765717 | Circle (Radius: 160.00) |
| Cannon 36N-10HZ_BHL | 7236.00 | -4344.20 | 1180.31 | 40.146666 | -104.763824 | Point |




WELL DETAILS: Cannon 36N-10HZ

Ground Level: 4954.00 RKB= 17 @ 4971.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Cannon 36N-10HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 12/14/2012
Reviewed: _____ Date: _____

## Plan Report for Cannon 36N-10HZ - Plan A Rev 0 Permit

| 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) | Toolface Azimuth (°) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 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 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 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 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 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 | 0.00 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 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 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 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 | 0.00 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 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 | 0.00 |
| **Begin Nudge @ 1100.00ft** | | | | | | | | | | |
| 1,200.00 | 2.00 | 70.14 | 1,199.98 | 0.59 | 1.64 | -0.14 | 2.00 | 2.00 | 0.00 | 70.14 |
| 1,300.00 | 4.00 | 70.14 | 1,299.84 | 2.37 | 6.56 | -0.57 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,400.00 | 6.00 | 70.14 | 1,399.45 | 5.33 | 14.76 | -1.27 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,500.00 | 8.00 | 70.14 | 1,498.70 | 9.47 | 26.22 | -2.26 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,600.00 | 10.00 | 70.14 | 1,597.47 | 14.78 | 40.94 | -3.53 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,698.00 | 11.96 | 70.14 | 1,693.67 | 21.12 | 58.49 | -5.05 | 2.00 | 2.00 | 0.00 | 0.00 |
| **End Nudge @ 1698.00ft** | | | | | | | | | | |
| 1,700.00 | 11.96 | 70.14 | 1,695.62 | 21.26 | 58.88 | -5.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 11.96 | 70.14 | 1,793.45 | 28.30 | 78.37 | -6.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 11.96 | 70.14 | 1,891.28 | 35.34 | 97.86 | -8.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 11.96 | 70.14 | 1,989.11 | 42.38 | 117.35 | -10.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 11.96 | 70.14 | 2,086.94 | 49.42 | 136.84 | -11.81 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 11.96 | 70.14 | 2,184.77 | 56.46 | 156.33 | -13.49 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 11.96 | 70.14 | 2,282.60 | 63.50 | 175.83 | -15.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 11.96 | 70.14 | 2,380.43 | 70.54 | 195.32 | -16.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 11.96 | 70.14 | 2,478.26 | 77.57 | 214.81 | -18.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 11.96 | 70.14 | 2,576.09 | 84.61 | 234.30 | -20.22 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 11.96 | 70.14 | 2,673.92 | 91.65 | 253.79 | -21.90 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 11.96 | 70.14 | 2,771.74 | 98.69 | 273.28 | -23.59 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 11.96 | 70.14 | 2,869.57 | 105.73 | 292.77 | -25.27 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 11.96 | 70.14 | 2,967.40 | 112.77 | 312.26 | -26.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 11.96 | 70.14 | 3,065.23 | 119.81 | 331.75 | -28.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 11.96 | 70.14 | 3,163.06 | 126.85 | 351.24 | -30.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 11.96 | 70.14 | 3,260.89 | 133.88 | 370.74 | -32.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 11.96 | 70.14 | 3,358.72 | 140.92 | 390.23 | -33.68 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 11.96 | 70.14 | 3,456.55 | 147.96 | 409.72 | -35.36 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 11.96 | 70.14 | 3,554.38 | 155.00 | 429.21 | -37.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 11.96 | 70.14 | 3,652.21 | 162.04 | 448.70 | -38.72 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 11.96 | 70.14 | 3,750.04 | 169.08 | 468.19 | -40.41 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 11.96 | 70.14 | 3,847.87 | 176.12 | 487.68 | -42.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 11.96 | 70.14 | 3,945.70 | 183.16 | 507.17 | -43.77 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,058.58 | 11.96 | 70.14 | 4,003.00 | 187.28 | 518.59 | -44.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Parkman** | | | | | | | | | | |
| 4,100.00 | 11.96 | 70.14 | 4,043.52 | 190.20 | 526.66 | -45.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 11.96 | 70.14 | 4,141.35 | 197.23 | 546.15 | -47.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 11.96 | 70.14 | 4,239.18 | 204.27 | 565.64 | -48.82 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 11.96 | 70.14 | 4,337.01 | 211.31 | 585.14 | -50.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,474.61 | 11.96 | 70.14 | 4,410.00 | 216.56 | 599.68 | -51.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Sussex** | | | | | | | | | | |
| 4,500.00 | 11.96 | 70.14 | 4,434.84 | 218.35 | 604.63 | -52.18 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 11.96 | 70.14 | 4,532.67 | 225.39 | 624.12 | -53.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 11.96 | 70.14 | 4,630.50 | 232.43 | 643.61 | -55.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 11.96 | 70.14 | 4,728.33 | 239.47 | 663.10 | -57.23 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 11.96 | 70.14 | 4,826.16 | 246.51 | 682.59 | -58.91 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 11.96 | 70.14 | 4,923.99 | 253.54 | 702.08 | -60.59 | 0.00 | 0.00 | 0.00 | 0.00 |

## Plan Report for Cannon 36N-10HZ - Plan A Rev 0 Permit

| 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) | Toolface Azimuth (°) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.00 | 11.96 | 70.14 | 5,021.82 | 260.58 | 721.57 | -62.28 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 11.96 | 70.14 | 5,119.65 | 267.62 | 741.06 | -63.96 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 11.96 | 70.14 | 5,217.48 | 274.66 | 760.55 | -65.64 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 11.96 | 70.14 | 5,315.30 | 281.70 | 780.05 | -67.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 11.96 | 70.14 | 5,413.13 | 288.74 | 799.54 | -69.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 11.96 | 70.14 | 5,510.96 | 295.78 | 819.03 | -70.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 11.96 | 70.14 | 5,608.79 | 302.82 | 838.52 | -72.37 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 11.96 | 70.14 | 5,706.62 | 309.86 | 858.01 | -74.05 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 11.96 | 70.14 | 5,804.45 | 316.89 | 877.50 | -75.73 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 11.96 | 70.14 | 5,902.28 | 323.93 | 896.99 | -77.41 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 11.96 | 70.14 | 6,000.11 | 330.97 | 916.48 | -79.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 11.96 | 70.14 | 6,097.94 | 338.01 | 935.97 | -80.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 11.96 | 70.14 | 6,195.77 | 345.05 | 955.46 | -82.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 11.96 | 70.14 | 6,293.60 | 352.09 | 974.96 | -84.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 11.96 | 70.14 | 6,391.43 | 359.13 | 994.45 | -85.83 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 11.96 | 70.14 | 6,489.26 | 366.17 | 1,013.94 | -87.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,682.58 | 11.96 | 70.14 | 6,570.04 | 371.98 | 1,030.03 | -88.90 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Begin Build @ 6682.58ft** | | | | | | | | | | |
| 6,700.00 | 11.50 | 78.42 | 6,587.10 | 372.94 | 1,033.43 | -88.93 | 10.00 | -2.63 | 47.51 | 109.25 |
| 6,800.00 | 13.66 | 124.60 | 6,684.93 | 368.23 | 1,052.97 | -79.26 | 10.00 | 2.16 | 46.18 | 101.15 |
| 6,900.00 | 20.93 | 148.35 | 6,780.46 | 346.26 | 1,072.11 | -53.05 | 10.00 | 7.27 | 23.75 | 55.95 |
| 7,000.00 | 29.78 | 159.39 | 6,870.78 | 307.71 | 1,090.27 | -11.08 | 10.00 | 8.85 | 11.04 | 33.20 |
| **Build Rate = 10.00/100ft** | | | | | | | | | | |
| 7,100.00 | 39.16 | 165.61 | 6,953.16 | 253.74 | 1,106.90 | 45.36 | 10.00 | 9.37 | 6.22 | 23.20 |
| 7,200.00 | 48.75 | 169.71 | 7,025.09 | 186.01 | 1,121.50 | 114.55 | 10.00 | 9.59 | 4.10 | 18.05 |
| 7,216.83 | 50.37 | 170.28 | 7,036.00 | 173.40 | 1,123.72 | 127.30 | 10.00 | 9.66 | 3.38 | 15.08 |
| **Sharon Springs** | | | | | | | | | | |
| 7,300.00 | 58.44 | 172.75 | 7,084.37 | 106.56 | 1,133.62 | 194.40 | 10.00 | 9.70 | 2.97 | 14.72 |
| 7,364.38 | 64.72 | 174.38 | 7,115.00 | 50.32 | 1,139.94 | 250.33 | 10.00 | 9.75 | 2.53 | 13.27 |
| **Niobrara A** | | | | | | | | | | |
| 7,400.00 | 68.20 | 175.21 | 7,129.22 | 17.80 | 1,142.90 | 282.48 | 10.00 | 9.77 | 2.33 | 12.50 |
| 7,419.02 | 70.06 | 175.64 | 7,136.00 | 0.09 | 1,144.32 | 299.95 | 10.00 | 9.78 | 2.24 | 12.16 |
| **Niobrara B** | | | | | | | | | | |
| 7,500.00 | 77.99 | 177.36 | 7,158.27 | -77.56 | 1,149.05 | 376.11 | 10.00 | 9.79 | 2.12 | 12.01 |
| 7,600.00 | 87.79 | 179.35 | 7,170.64 | -176.62 | 1,151.88 | 472.46 | 10.00 | 9.80 | 1.99 | 11.54 |
| 7,613.39 | 89.10 | 179.61 | 7,171.00 | -190.00 | 1,152.00 | 485.40 | 10.00 | 9.80 | 1.96 | 11.29 |
| **End Build @ 7613.39ft - Niobrara B TL - Heel - 7" Intermediate Casing - Cannon 36N-10HZ_CP** | | | | | | | | | | |
| 7,700.00 | 89.10 | 179.61 | 7,172.36 | -276.60 | 1,152.59 | 569.13 | 0.00 | 0.00 | 0.00 | 11.28 |
| 7,800.00 | 89.10 | 179.61 | 7,173.92 | -376.59 | 1,153.27 | 665.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 89.10 | 179.61 | 7,175.48 | -476.57 | 1,153.95 | 762.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 89.10 | 179.61 | 7,177.05 | -576.56 | 1,154.63 | 859.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 89.10 | 179.61 | 7,178.61 | -676.54 | 1,155.32 | 955.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 89.10 | 179.61 | 7,180.18 | -776.53 | 1,156.00 | 1,052.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 89.10 | 179.61 | 7,181.74 | -876.51 | 1,156.68 | 1,149.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 89.10 | 179.61 | 7,183.31 | -976.50 | 1,157.36 | 1,245.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 89.10 | 179.61 | 7,184.87 | -1,076.48 | 1,158.04 | 1,342.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 89.10 | 179.61 | 7,186.44 | -1,176.47 | 1,158.72 | 1,439.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 89.10 | 179.61 | 7,188.00 | -1,276.46 | 1,159.41 | 1,535.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 89.10 | 179.61 | 7,189.56 | -1,376.44 | 1,160.09 | 1,632.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 89.10 | 179.61 | 7,191.13 | -1,476.43 | 1,160.77 | 1,729.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 89.10 | 179.61 | 7,192.69 | -1,576.41 | 1,161.45 | 1,825.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 89.10 | 179.61 | 7,194.26 | -1,676.40 | 1,162.13 | 1,922.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 89.10 | 179.61 | 7,195.82 | -1,776.38 | 1,162.81 | 2,019.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 89.10 | 179.61 | 7,197.39 | -1,876.37 | 1,163.49 | 2,115.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 89.10 | 179.61 | 7,198.95 | -1,976.35 | 1,164.18 | 2,212.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 89.10 | 179.61 | 7,200.52 | -2,076.34 | 1,164.86 | 2,309.12 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 89.10 | 179.61 | 7,202.08 | -2,176.32 | 1,165.54 | 2,405.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 89.10 | 179.61 | 7,203.64 | -2,276.31 | 1,166.22 | 2,502.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 89.10 | 179.61 | 7,205.21 | -2,376.30 | 1,166.90 | 2,599.12 | 0.00 | 0.00 | 0.00 | 0.00 |

## Plan Report for Cannon 36N-10HZ - Plan A Rev 0 Permit

| 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) | Toolface Azimuth (°) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9,900.00 | 89.10 | 179.61 | 7,206.77 | -2,476.28 | 1,167.58 | 2,695.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 89.10 | 179.61 | 7,208.34 | -2,576.27 | 1,168.26 | 2,792.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 89.10 | 179.61 | 7,209.90 | -2,676.25 | 1,168.95 | 2,889.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 89.10 | 179.61 | 7,211.47 | -2,776.24 | 1,169.63 | 2,985.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 89.10 | 179.61 | 7,213.03 | -2,876.22 | 1,170.31 | 3,082.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 89.10 | 179.61 | 7,214.60 | -2,976.21 | 1,170.99 | 3,179.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 89.10 | 179.61 | 7,216.16 | -3,076.19 | 1,171.67 | 3,275.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 89.10 | 179.61 | 7,217.72 | -3,176.18 | 1,172.35 | 3,372.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 89.10 | 179.61 | 7,219.29 | -3,276.16 | 1,173.03 | 3,469.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 89.10 | 179.61 | 7,220.85 | -3,376.15 | 1,173.72 | 3,565.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 89.10 | 179.61 | 7,222.42 | -3,476.14 | 1,174.40 | 3,662.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 89.10 | 179.61 | 7,223.98 | -3,576.12 | 1,175.08 | 3,759.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 89.10 | 179.61 | 7,225.55 | -3,676.11 | 1,175.76 | 3,855.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 89.10 | 179.61 | 7,227.11 | -3,776.09 | 1,176.44 | 3,952.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 89.10 | 179.61 | 7,228.68 | -3,876.08 | 1,177.12 | 4,049.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 89.10 | 179.61 | 7,230.24 | -3,976.06 | 1,177.80 | 4,145.77 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 89.10 | 179.61 | 7,231.80 | -4,076.05 | 1,178.49 | 4,242.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 89.10 | 179.61 | 7,233.37 | -4,176.03 | 1,179.17 | 4,339.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 89.10 | 179.61 | 7,234.93 | -4,276.02 | 1,179.85 | 4,435.77 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,768.19 | 89.10 | 179.61 | 7,236.00 | -4,344.20 | 1,180.31 | 4,501.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Niobrara B TL - Toe - Cannon 36N-10HZ_BHL** | | | | | | | | | | |

### *Plan Annotations*

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 1,100.00 | 1,100.00 | 0.00 | 0.00 | Begin Nudge @ 1100.00ft |
| 1,698.00 | 1,693.67 | 21.12 | 58.49 | End Nudge @ 1698.00ft |
| 6,682.58 | 6,570.04 | 371.98 | 1,030.03 | Begin Build @ 6682.58ft |
| 7,000.00 | 6,870.78 | 307.71 | 1,090.27 | Build Rate = 10.00/100ft |
| 7,613.39 | 7,171.00 | -190.00 | 1,152.00 | End Build @ 7613.39ft |
| 11,768.19 | 7,236.00 | -4,344.20 | 1,180.31 | Total Depth @ 11768.19ft |

### *Vertical Section Information*

| | Angle Type | Target | Azimuth (°) | Origin Type | Origin +N/_S (ft) | Origin +E/-W (ft) | Start TVD (ft) |
|---|---|---|---|---|---|---|---|
| Target | | Cannon 36N-10HZ_BHL | 164.80 | Slot | 0.00 | 0.00 | 0.00 |

### *Survey tool program*

| From (ft) | To (ft) | Survey/Plan | Survey Tool |
|---|---|---|---|
| 0.00 | 11,768.19 | Plan A Rev 0 Permit | MWD |

### *Casing Details*

| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (") | Hole Diameter (") |
|---|---|---|---|---|
| 7,613.39 | 7,171.00 | 7" Intermediate Casing | 7 | 8-3/4 |

# Plan Report for Cannon 36N-10HZ - Plan A Rev 0 Permit

## *Formation Details*

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 4,058.58 | 4,003.00 | Parkman | | 0.00 | |
| 4,474.61 | 4,410.00 | Sussex | | 0.00 | |
| 7,216.83 | 7,036.00 | Sharon Springs | | 0.00 | |
| 7,364.38 | 7,115.00 | Niobrara A | | 0.00 | |
| 7,419.02 | 7,136.00 | Niobrara B | | 0.00 | |
| 7,613.39 | 7,171.00 | Niobrara B TL - Heel | | 0.00 | |
| 11,768.19 | 7,236.00 | Niobrara B TL - Toe | | 0.00 | |

## *Targets associated with this wellbore*

| Target Name | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Shape |
|---|---|---|---|---|
| Cannon 36N-10HZ_SHL | 0.00 | 0.00 | 0.00 | Point |
| McPeek 14-10 - 160' | 7,219.24 | -3,287.02 | -818.80 | Circle |
| McPeek 24-10 - 160' | 7,234.13 | -4,230.19 | 651.10 | Circle |
| Cannon 36N-10HZ_BHL | 7,236.00 | -4,344.20 | 1,180.31 | Point |
| Cannon 36N-10HZ_CP | 7,171.00 | -190.00 | 1,152.00 | Point |

# North Reference Sheet for Sec. 10-T2N-R66W - Cannon 36N-10HZ - Plan A Rev 0

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
Vertical Depths are relative to RKB= 17 @ 4971.00ft (Drilling Rig). Northing and Easting are relative to Cannon 36N-10HZ
Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)
Central Meridian is -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°
False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995813

Grid Coordinates of Well: 1,301,462.25 ft N, 3,204,580.36 ft E
Geographical Coordinates of Well: 40° 09' 30.93" N, 104° 46' 04.97" W
Grid Convergence at Surface is: 0.47°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,768.19ft
the Bottom Hole Displacement is 4,501.69ft in the Direction of 164.80° (True).

Magnetic Convergence at surface is: -8.22° (12 December 2012, , BGGM2012)