

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T1N-R67W

NRC 27N-8HZ

Plan A

Plan: Rev A0 Permit

Sperry Drilling Services

Proposal Report

04 November, 2013

Well Coordinates: 1,264,982.37 N, 3,165,629.19 E (40° 03' 33.30" N, 104° 54' 29.78" W)

Ground Level: 5,074.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well NRC 27N-8HZ

RKB = 17' @ 5091.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 8-T1N-R67W
Well: NRC 27N-8HZ
Wellbore: Plan A
Design: Rev A0 Permit

Anadarko Petroleum Corp.

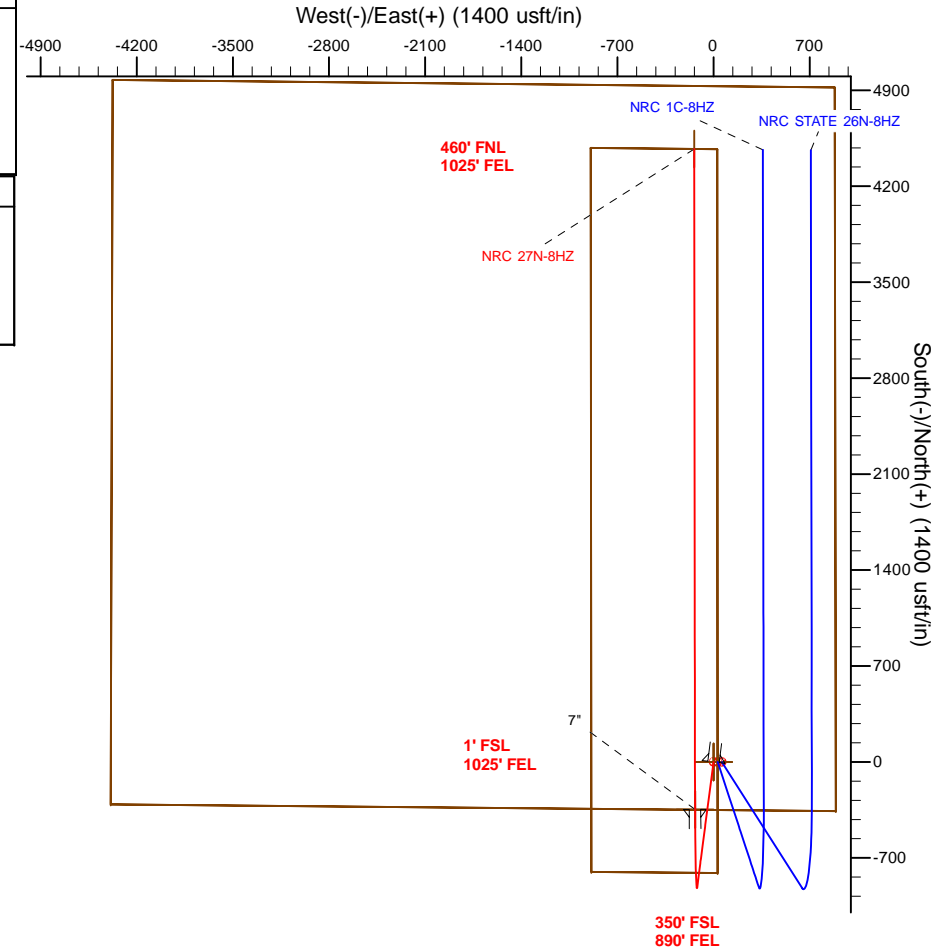
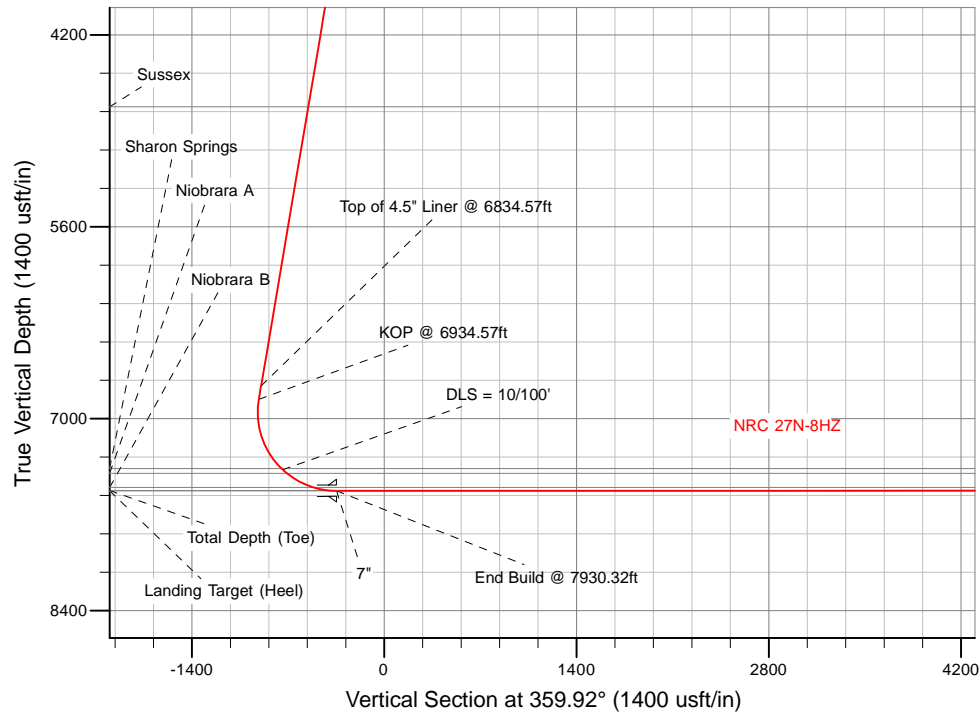
HALLIBURTON
Sperry Drilling

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 | 1200.00 | 0.00 | 0.00 | 1200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 1682.37 | 9.65 | 187.43 | 1680.09 | -40.17 | -5.24 | 2.00 | 187.43 | -40.17 | |
| 4 | 6934.57 | 9.65 | 187.43 | 6858.01 | -912.98 | -118.99 | 0.00 | 0.00 | -912.81 | |
| 5 | 7930.32 | 90.01 | 359.92 | 7526.00 | -347.89 | -134.64 | 10.00 | 172.39 | -347.70 | NRC 27N-8HZ_CP |
| 6 | 12749.88 | 90.01 | 359.92 | 7525.00 | 4471.67 | -141.61 | 0.00 | 0.00 | 4471.86 | |

WELLBORE TARGET DETAILS (LAT/LONG)

| Name | TVD | +N/-S | +E/-W | Latitude | Longitude | Polygon |
|-----------------|---------|---------|---------|-----------|-------------|---------|
| NRC 27N-8HZ_LD | 0.00 | 0.00 | 0.00 | 40.059249 | -104.908273 | Polygon |
| NRC 27N-8HZ_SEC | 0.00 | 0.00 | 0.00 | 40.059249 | -104.908273 | Polygon |
| NRC 27N-8HZ_SHL | 0.00 | 0.00 | 0.00 | 40.059249 | -104.908273 | Polygon |
| NRC 27N-8HZ_BHL | 7525.00 | 4471.67 | -141.61 | 40.071524 | -104.908779 | Point |
| NRC 27N-8HZ_CP | 7526.00 | -347.89 | -134.64 | 40.058294 | -104.908754 | Point |



TVD MD

6759.43 6834.57 Top of 4.5" Liner @ 6834.57ft
6858.02 6934.57 KOP @ 6934.57ft

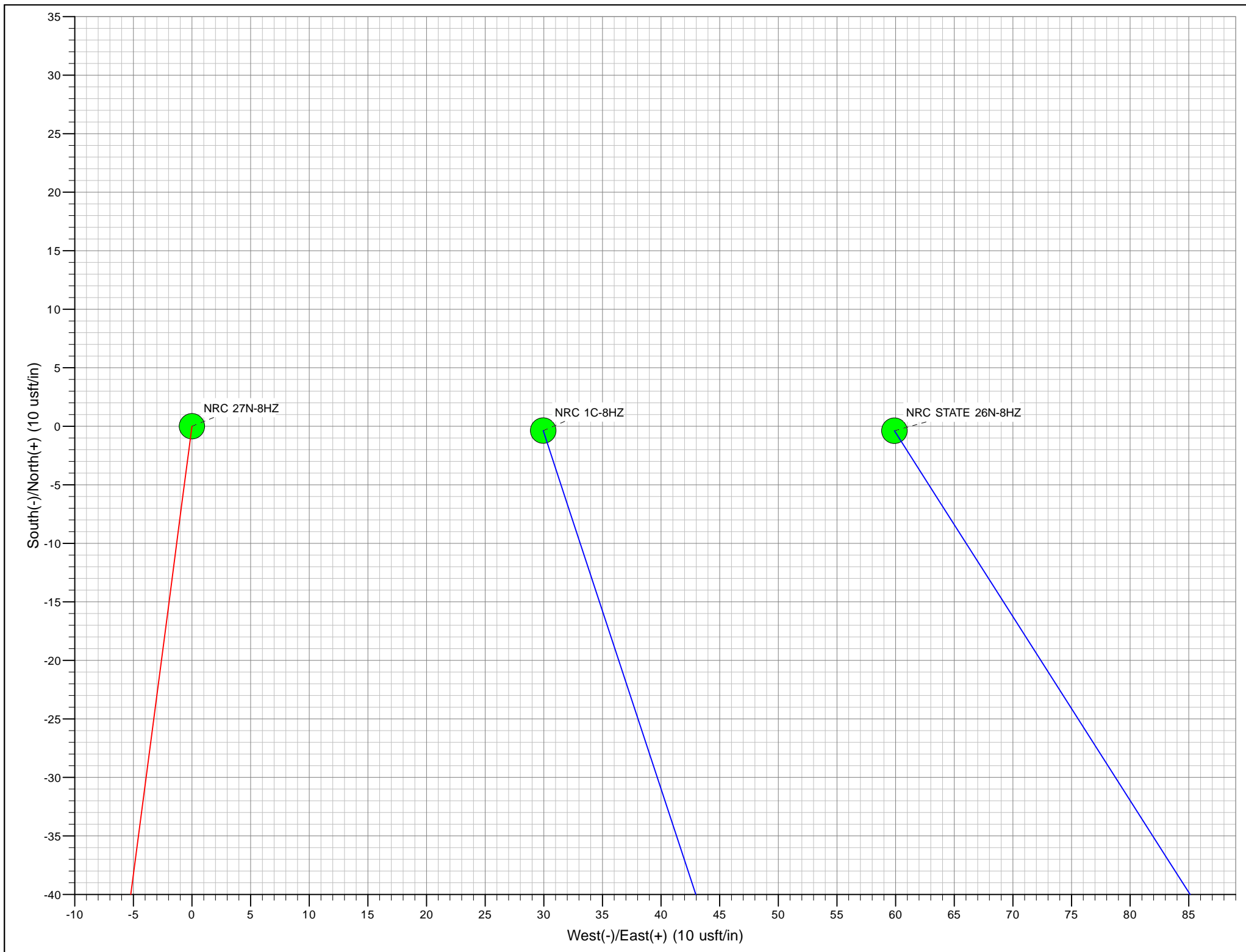
WELL DETAILS: NRC 27N-8HZ

Ground Level: 5074.00

RKB = 17' @ 5091.00usft (Drilling Rig)

Plan: Rev A0 Permit (NRC 27N-8HZ/Plan A)

Created By: Clint Eshelman Date: 11/04/2013
Reviewed: _____ Date: _____



Plan Report for NRC 27N-8HZ - Rev A0 Permit

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | Toolface Azimuth (°) |
|---|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NRC 27N-8HZ_SHL - NRC 27N-8HZ_LD - NRC 27N-8HZ_SEC | | | | | | | | | | |
| 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 |
| 691.00 | 0.00 | 0.00 | 691.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fox Hills Base | | | | | | | | | | |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 741.00 | 0.00 | 0.00 | 741.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 5/8" | | | | | | | | | | |
| 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 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Begin Nudge @ 1200.00ft | | | | | | | | | | |
| 1,300.00 | 2.00 | 187.43 | 1,299.98 | -1.73 | -0.23 | -1.73 | 2.00 | 2.00 | 0.00 | 187.43 |
| 1,400.00 | 4.00 | 187.43 | 1,399.84 | -6.92 | -0.90 | -6.92 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,500.00 | 6.00 | 187.43 | 1,499.45 | -15.56 | -2.03 | -15.56 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,600.00 | 8.00 | 187.43 | 1,598.70 | -27.65 | -3.60 | -27.64 | 2.00 | 2.00 | 0.00 | 0.00 |
| 1,682.37 | 9.65 | 187.43 | 1,680.09 | -40.17 | -5.24 | -40.17 | 2.00 | 2.00 | 0.00 | 0.00 |
| End Nudge @ 1682.37ft | | | | | | | | | | |
| 1,700.00 | 9.65 | 187.43 | 1,697.47 | -43.10 | -5.62 | -43.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 9.65 | 187.43 | 1,796.06 | -59.72 | -7.78 | -59.71 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 9.65 | 187.43 | 1,894.65 | -76.34 | -9.95 | -76.33 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 9.65 | 187.43 | 1,993.23 | -92.96 | -12.11 | -92.94 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 9.65 | 187.43 | 2,091.82 | -109.58 | -14.28 | -109.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 9.65 | 187.43 | 2,190.40 | -126.19 | -16.45 | -126.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 9.65 | 187.43 | 2,288.99 | -142.81 | -18.61 | -142.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 9.65 | 187.43 | 2,387.58 | -159.43 | -20.78 | -159.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 9.65 | 187.43 | 2,486.16 | -176.05 | -22.94 | -176.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 9.65 | 187.43 | 2,584.75 | -192.67 | -25.11 | -192.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 9.65 | 187.43 | 2,683.33 | -209.28 | -27.28 | -209.25 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 9.65 | 187.43 | 2,781.92 | -225.90 | -29.44 | -225.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 9.65 | 187.43 | 2,880.50 | -242.52 | -31.61 | -242.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 9.65 | 187.43 | 2,979.09 | -259.14 | -33.77 | -259.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 9.65 | 187.43 | 3,077.68 | -275.76 | -35.94 | -275.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 9.65 | 187.43 | 3,176.26 | -292.37 | -38.10 | -292.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 9.65 | 187.43 | 3,274.85 | -308.99 | -40.27 | -308.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 9.65 | 187.43 | 3,373.43 | -325.61 | -42.44 | -325.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 9.65 | 187.43 | 3,472.02 | -342.23 | -44.60 | -342.16 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 9.65 | 187.43 | 3,570.60 | -358.84 | -46.77 | -358.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 9.65 | 187.43 | 3,669.19 | -375.46 | -48.93 | -375.39 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 9.65 | 187.43 | 3,767.78 | -392.08 | -51.10 | -392.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 9.65 | 187.43 | 3,866.36 | -408.70 | -53.26 | -408.62 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 9.65 | 187.43 | 3,964.95 | -425.32 | -55.43 | -425.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 9.65 | 187.43 | 4,063.53 | -441.93 | -57.60 | -441.85 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 9.65 | 187.43 | 4,162.12 | -458.55 | -59.76 | -458.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 9.65 | 187.43 | 4,260.70 | -475.17 | -61.93 | -475.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 9.65 | 187.43 | 4,359.29 | -491.79 | -64.09 | -491.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 9.65 | 187.43 | 4,457.88 | -508.41 | -66.26 | -508.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 9.65 | 187.43 | 4,556.46 | -525.02 | -68.42 | -524.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 9.65 | 187.43 | 4,655.05 | -541.64 | -70.59 | -541.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,770.96 | 9.65 | 187.43 | 4,725.00 | -553.43 | -72.13 | -553.33 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sussex | | | | | | | | | | |

Plan Report for NRC 27N-8HZ - Rev A0 Permit

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | Toolface Azimuth (°) |
|--|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 4,800.00 | 9.65 | 187.43 | 4,753.63 | -558.26 | -72.76 | -558.16 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 9.65 | 187.43 | 4,852.22 | -574.88 | -74.92 | -574.77 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 9.65 | 187.43 | 4,950.81 | -591.50 | -77.09 | -591.39 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 9.65 | 187.43 | 5,049.39 | -608.11 | -79.25 | -608.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 9.65 | 187.43 | 5,147.98 | -624.73 | -81.42 | -624.62 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 9.65 | 187.43 | 5,246.56 | -641.35 | -83.59 | -641.23 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 9.65 | 187.43 | 5,345.15 | -657.97 | -85.75 | -657.85 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 9.65 | 187.43 | 5,443.73 | -674.58 | -87.92 | -674.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 9.65 | 187.43 | 5,542.32 | -691.20 | -90.08 | -691.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 9.65 | 187.43 | 5,640.91 | -707.82 | -92.25 | -707.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 9.65 | 187.43 | 5,739.49 | -724.44 | -94.41 | -724.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 9.65 | 187.43 | 5,838.08 | -741.06 | -96.58 | -740.92 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 9.65 | 187.43 | 5,936.66 | -757.67 | -98.75 | -757.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 9.65 | 187.43 | 6,035.25 | -774.29 | -100.91 | -774.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 9.65 | 187.43 | 6,133.83 | -790.91 | -103.08 | -790.77 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 9.65 | 187.43 | 6,232.42 | -807.53 | -105.24 | -807.38 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 9.65 | 187.43 | 6,331.01 | -824.15 | -107.41 | -823.99 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 9.65 | 187.43 | 6,429.59 | -840.76 | -109.57 | -840.61 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 9.65 | 187.43 | 6,528.18 | -857.38 | -111.74 | -857.22 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 9.65 | 187.43 | 6,626.76 | -874.00 | -113.91 | -873.84 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 9.65 | 187.43 | 6,725.35 | -890.62 | -116.07 | -890.45 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,834.57 | 9.65 | 187.43 | 6,759.43 | -896.36 | -116.82 | -896.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| Top of 4.5" Liner @ 6834.57ft | | | | | | | | | | |
| 6,900.00 | 9.65 | 187.43 | 6,823.93 | -907.23 | -118.24 | -907.07 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,934.57 | 9.65 | 187.43 | 6,858.02 | -912.98 | -118.99 | -912.81 | 0.00 | 0.00 | 0.00 | 0.00 |
| KOP @ 6934.57ft | | | | | | | | | | |
| 7,000.00 | 3.28 | 202.74 | 6,923.00 | -920.15 | -120.42 | -919.98 | 10.00 | -9.74 | 23.41 | 172.39 |
| 7,100.00 | 7.09 | 349.64 | 7,022.79 | -916.70 | -122.64 | -916.53 | 10.00 | 3.82 | 146.89 | 157.14 |
| 7,200.00 | 17.03 | 355.76 | 7,120.46 | -895.98 | -124.84 | -895.80 | 10.00 | 9.93 | 6.12 | 10.36 |
| 7,300.00 | 27.01 | 357.42 | 7,213.05 | -858.60 | -126.95 | -858.42 | 10.00 | 9.98 | 1.66 | 4.35 |
| 7,400.00 | 37.00 | 358.23 | 7,297.75 | -805.71 | -128.91 | -805.53 | 10.00 | 9.99 | 0.81 | 2.80 |
| 7,487.00 | 45.69 | 358.67 | 7,363.00 | -748.31 | -130.44 | -748.13 | 10.00 | 9.99 | 0.51 | 2.11 |
| Sharon Springs | | | | | | | | | | |
| 7,500.00 | 46.99 | 358.73 | 7,371.98 | -738.91 | -130.66 | -738.72 | 10.00 | 10.00 | 0.42 | 1.78 |
| DLS = 10/100' | | | | | | | | | | |
| 7,539.66 | 50.96 | 358.88 | 7,398.00 | -709.00 | -131.28 | -708.82 | 10.00 | 10.00 | 0.39 | 1.74 |
| Niobrara A | | | | | | | | | | |
| 7,600.00 | 56.99 | 359.09 | 7,433.48 | -660.23 | -132.14 | -660.05 | 10.00 | 10.00 | 0.34 | 1.64 |
| 7,700.00 | 66.99 | 359.38 | 7,480.38 | -572.07 | -133.31 | -571.88 | 10.00 | 10.00 | 0.29 | 1.52 |
| 7,760.30 | 73.01 | 359.53 | 7,501.00 | -515.43 | -133.85 | -515.24 | 10.00 | 10.00 | 0.25 | 1.38 |
| Niobrara B | | | | | | | | | | |
| 7,800.00 | 76.98 | 359.62 | 7,511.27 | -477.09 | -134.13 | -476.91 | 10.00 | 10.00 | 0.24 | 1.33 |
| 7,900.00 | 86.98 | 359.85 | 7,525.20 | -378.20 | -134.58 | -378.01 | 10.00 | 10.00 | 0.23 | 1.31 |
| 7,930.32 | 90.01 | 359.92 | 7,526.00 | -347.89 | -134.64 | -347.70 | 10.00 | 10.00 | 0.22 | 1.27 |
| End Build @ 7930.32ft - Landing Target (Heel) - 7" - NRC 27N-8HZ_CP | | | | | | | | | | |
| 8,000.00 | 90.01 | 359.92 | 7,525.99 | -278.21 | -134.74 | -278.02 | 0.00 | 0.00 | 0.00 | 1.27 |
| 8,100.00 | 90.01 | 359.92 | 7,525.96 | -178.21 | -134.89 | -178.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 90.01 | 359.92 | 7,525.94 | -78.21 | -135.03 | -78.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 90.01 | 359.92 | 7,525.92 | 21.79 | -135.18 | 21.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 90.01 | 359.92 | 7,525.90 | 121.79 | -135.32 | 121.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 90.01 | 359.92 | 7,525.88 | 221.79 | -135.47 | 221.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 90.01 | 359.92 | 7,525.86 | 321.79 | -135.61 | 321.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 90.01 | 359.92 | 7,525.84 | 421.79 | -135.76 | 421.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 90.01 | 359.92 | 7,525.82 | 521.79 | -135.90 | 521.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 90.01 | 359.92 | 7,525.80 | 621.79 | -136.05 | 621.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 90.01 | 359.92 | 7,525.78 | 721.79 | -136.19 | 721.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 90.01 | 359.92 | 7,525.76 | 821.79 | -136.34 | 821.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 90.01 | 359.92 | 7,525.74 | 921.79 | -136.48 | 921.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 90.01 | 359.92 | 7,525.72 | 1,021.79 | -136.62 | 1,021.98 | 0.00 | 0.00 | 0.00 | 0.00 |

Plan Report for NRC 27N-8HZ - Rev A0 Permit

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | Toolface Azimuth (°) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|----------------------|
| 9,400.00 | 90.01 | 359.92 | 7,525.70 | 1,121.79 | -136.77 | 1,121.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 90.01 | 359.92 | 7,525.67 | 1,221.79 | -136.91 | 1,221.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 90.01 | 359.92 | 7,525.65 | 1,321.79 | -137.06 | 1,321.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.01 | 359.92 | 7,525.63 | 1,421.79 | -137.20 | 1,421.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.01 | 359.92 | 7,525.61 | 1,521.79 | -137.35 | 1,521.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.01 | 359.92 | 7,525.59 | 1,621.79 | -137.49 | 1,621.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.01 | 359.92 | 7,525.57 | 1,721.79 | -137.64 | 1,721.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.01 | 359.92 | 7,525.55 | 1,821.79 | -137.78 | 1,821.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.01 | 359.92 | 7,525.53 | 1,921.79 | -137.93 | 1,921.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.01 | 359.92 | 7,525.51 | 2,021.79 | -138.07 | 2,021.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 90.01 | 359.92 | 7,525.49 | 2,121.79 | -138.22 | 2,121.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.01 | 359.92 | 7,525.47 | 2,221.79 | -138.36 | 2,221.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.01 | 359.92 | 7,525.45 | 2,321.79 | -138.50 | 2,321.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.01 | 359.92 | 7,525.43 | 2,421.79 | -138.65 | 2,421.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.01 | 359.92 | 7,525.40 | 2,521.79 | -138.79 | 2,521.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.01 | 359.92 | 7,525.38 | 2,621.79 | -138.94 | 2,621.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.01 | 359.92 | 7,525.36 | 2,721.79 | -139.08 | 2,721.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.01 | 359.92 | 7,525.34 | 2,821.79 | -139.23 | 2,821.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.01 | 359.92 | 7,525.32 | 2,921.79 | -139.37 | 2,921.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.01 | 359.92 | 7,525.30 | 3,021.79 | -139.52 | 3,021.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 90.01 | 359.92 | 7,525.28 | 3,121.78 | -139.66 | 3,121.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.01 | 359.92 | 7,525.26 | 3,221.78 | -139.81 | 3,221.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.01 | 359.92 | 7,525.24 | 3,321.78 | -139.95 | 3,321.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.01 | 359.92 | 7,525.22 | 3,421.78 | -140.10 | 3,421.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.01 | 359.92 | 7,525.20 | 3,521.78 | -140.24 | 3,521.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.01 | 359.92 | 7,525.18 | 3,621.78 | -140.39 | 3,621.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.01 | 359.92 | 7,525.16 | 3,721.78 | -140.53 | 3,721.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.01 | 359.92 | 7,525.13 | 3,821.78 | -140.67 | 3,821.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.01 | 359.92 | 7,525.11 | 3,921.78 | -140.82 | 3,921.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.01 | 359.92 | 7,525.09 | 4,021.78 | -140.96 | 4,021.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 90.01 | 359.92 | 7,525.07 | 4,121.78 | -141.11 | 4,121.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.01 | 359.92 | 7,525.05 | 4,221.78 | -141.25 | 4,221.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.01 | 359.92 | 7,525.03 | 4,321.78 | -141.40 | 4,321.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.01 | 359.92 | 7,525.01 | 4,421.78 | -141.54 | 4,421.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12,749.88 | 90.01 | 359.92 | 7,525.00 | 4,471.66 | -141.61 | 4,471.86 | 0.00 | 0.00 | 0.00 | 0.00 |

TD Well @ 12749.88ft - Total Depth (Toe) - NRC 27N-8HZ_BHL

Plan Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|-------------------------------|
| | | +N/-S (usft) | +E/-W (usft) | |
| 1,200.00 | 1,200.00 | 0.00 | 0.00 | Begin Nudge @ 1200.00ft |
| 1,682.37 | 1,680.09 | -40.17 | -5.24 | End Nudge @ 1682.37ft |
| 6,834.57 | 6,759.43 | -896.36 | -116.82 | Top of 4.5" Liner @ 6834.57ft |
| 6,934.57 | 6,858.02 | -912.98 | -118.99 | KOP @ 6934.57ft |
| 7,500.00 | 7,371.98 | -738.91 | -130.66 | DLS = 10/100' |
| 7,930.32 | 7,526.00 | -347.89 | -134.64 | End Build @ 7930.32ft |
| 12,749.88 | 7,525.00 | 4,471.66 | -141.61 | TD Well @ 12749.88ft |

Vertical Section Information

| Angle Type | Target | Azimuth (°) | Origin Type | Origin | | Start TVD (usft) |
|------------|----------------------|-------------|-------------|--------------|--------------|------------------|
| | | | | +N/_S (usft) | +E/-W (usft) | |
| User | No Target (Freehand) | 359.92 | Slot | 0.00 | 0.00 | 0.00 |

Plan Report for NRC 27N-8HZ - Rev A0 Permit

Survey tool program

| From (usft) | To (usft) | Survey/Plan | Survey Tool |
|----------------|--------------|---------------|-------------|
| 0.00 | 7,930.32 | Rev A0 Permit | MWD |
| 7,930.32 | 12,749.88 | Rev A0 Permit | MWD |

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------------|-----------------------------|--------|---------------------------|-------------------------|
| 741.00 | 741.00 | 9 5/8" | 9-5/8 | 13-1/2 |
| 7,930.32 | 7,526.00 | 7" | 7 | 8-3/4 |

Formation Details

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------------|-----------------------------|-----------------------|-----------|------------|-------------------------|
| 691.00 | 691.00 | Fox Hills Base | | 0.00 | |
| 4,770.96 | 4,725.00 | Sussex | | 0.00 | |
| 7,487.00 | 7,363.00 | Sharon Springs | | 0.00 | |
| 7,539.66 | 7,398.00 | Niobrara A | | 0.00 | |
| 7,760.30 | 7,501.00 | Niobrara B | | 0.00 | |
| 7,930.32 | 7,526.00 | Landing Target (Heel) | | 0.00 | |
| 12,749.88 | 7,525.00 | Total Depth (Toe) | | 0.00 | |

Targets associated with this wellbore

| Target Name | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Shape |
|-----------------|---------------|-----------------|-----------------|---------|
| NRC 27N-8HZ_SHL | 0.00 | 0.00 | 0.00 | Point |
| NRC 27N-8HZ_LD | 0.00 | 0.00 | 0.00 | Polygon |
| NRC 27N-8HZ_SEC | 0.00 | 0.00 | 0.00 | Polygon |
| NRC 27N-8HZ_BHL | 7,525.00 | 4,471.67 | -141.61 | Point |
| NRC 27N-8HZ_CP | 7,526.00 | -347.89 | -134.64 | Point |

Directional Difficulty Index

| | | | |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey: | 0.86 °/100usft | Maximum Dogleg over Survey: | 10.00 °/100usft at 7,930.32 usft |
| Net Tortousity applicable to Plans: | 0.86 °/100usft | Directional Difficulty Index: | 6.181 |

Audit Info

North Reference Sheet for Sec. 8-T1N-R67W - NRC 27N-8HZ - Plan A

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' @ 5091.00usft (Drilling Rig). Northing and Easting are relative to NRC 27N-8HZ
 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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996240

Grid Coordinates of Well: 1,264,982.37 usft N, 3,165,629.19 usft E
 Geographical Coordinates of Well: 40° 03' 33.30" N, 104° 54' 29.78" W
 Grid Convergence at Surface is: 0.38°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,749.88usft
 the Bottom Hole Displacement is 4,473.91usft in the Direction of 358.19° (True).
 Magnetic Convergence at surface is: -8.25° (24 October 2013, , BGGM2013)

