

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)  
Sec. 22 T2N-R66W  
TURKEY SPRINGS 1G-15HZ

## Plan B

Plan: Rev B0 Permit

## Sperry Drilling Services

## Proposal Report

29 July, 2014

Well Coordinates: 1,290,601.97 N, 3,208,345.80 E (40° 07' 43.29" N, 104° 45' 17.64" W)

Ground Level: 5,091.00 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 TURKEY SPRINGS 1G-15HZ

RKB = 25' @ 5116.00usft (D Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
 Site: Sec. 22 T2N-R66W  
 Well: TURKEY SPRINGS 1G-15HZ  
 Wellbore: Plan B  
 Design: Rev B0 Permit

# Anadarko Petroleum Corp.

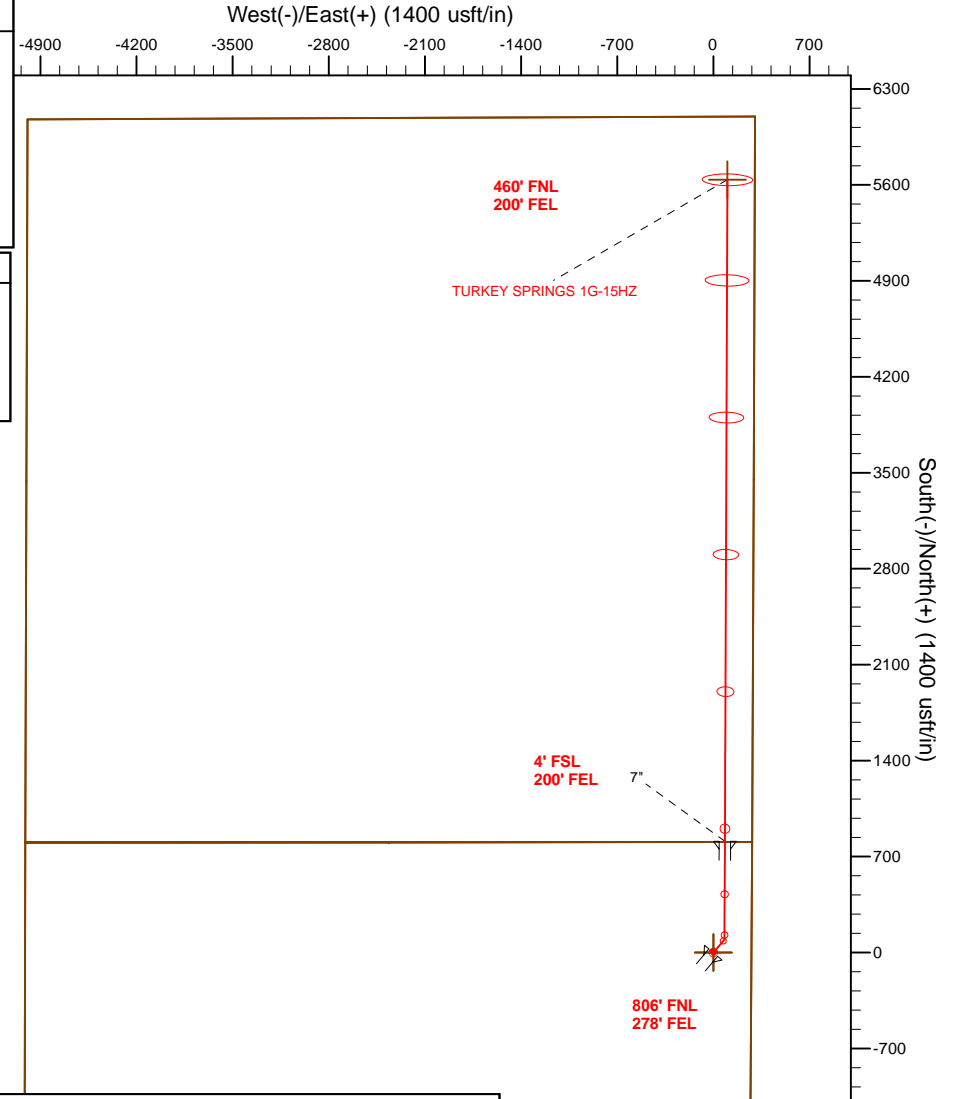
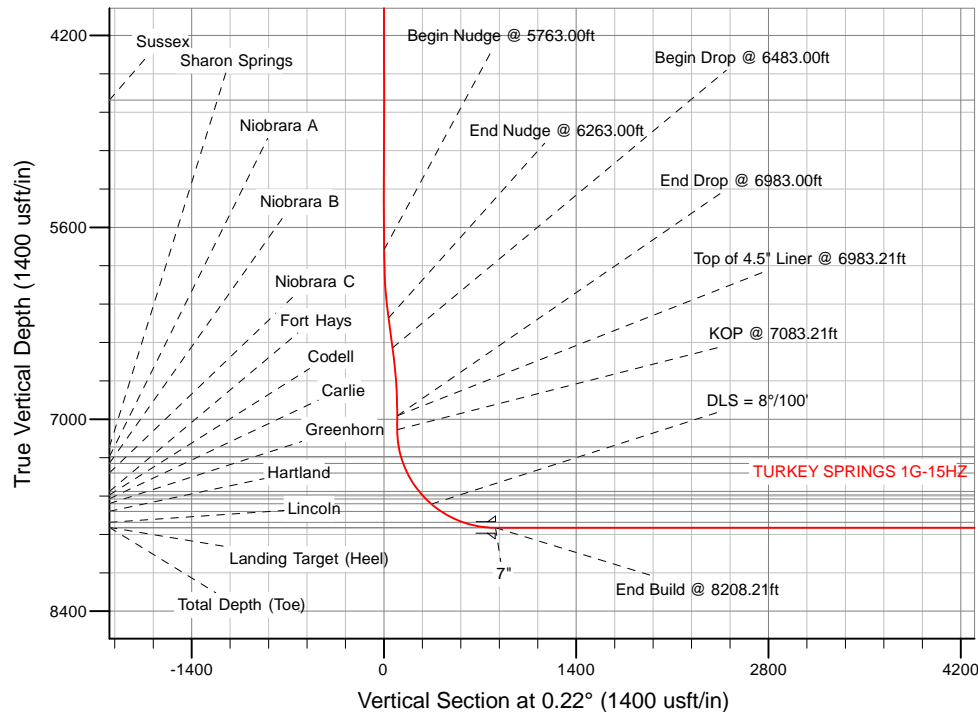
**HALLIBURTON**  
 Sperry Drilling

## 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   | 5763.00  | 0.00  | 0.00  | 5763.00 | 0.00    | 0.00   | 0.00 | 0.00   | 0.00    |                            |
| 3   | 6263.00  | 10.00 | 40.00 | 6260.47 | 33.34   | 27.98  | 2.00 | 40.00  | 33.45   |                            |
| 4   | 6483.00  | 10.00 | 40.00 | 6477.12 | 62.60   | 52.53  | 0.00 | 0.00   | 62.81   |                            |
| 5   | 6983.00  | 0.00  | 0.00  | 6974.59 | 95.94   | 80.51  | 2.00 | 180.00 | 96.25   |                            |
| 6   | 7083.21  | 0.00  | 0.00  | 7074.80 | 95.94   | 80.51  | 0.00 | 0.00   | 96.25   |                            |
| 7   | 8208.21  | 90.00 | 0.22  | 7791.00 | 812.13  | 83.29  | 8.00 | 0.22   | 812.45  |                            |
| 8   | 13034.32 | 90.00 | 0.22  | 7791.00 | 5638.20 | 102.04 | 0.00 | 0.00   | 5638.56 | Turkey Springs 1G-15HZ_BHL |

## WELLBORE TARGET DETAILS (LAT/LONG)

| Name                       | TVD     | +N/-S   | +E/-W  | Latitude  | Longitude   | Polygon |
|----------------------------|---------|---------|--------|-----------|-------------|---------|
| Turkey Springs 1G-15HZ_SEC | 0.00    | 0.00    | 0.00   | 40.128693 | -104.754901 | Polygon |
| Turkey Springs 1G-15HZ_SHL | 0.00    | 0.00    | 0.00   | 40.128693 | -104.754901 |         |
| Turkey Springs 1G-15HZ_BHL | 7791.00 | 5638.20 | 102.04 | 40.144170 | -104.754536 |         |



TVD MD

6974.80 6983.21 Top of 4.5" Liner @ 6983.21ft  
 7074.80 7083.21 KOP @ 7083.21ft

WELL DETAILS: TURKEY SPRINGS 1G-15HZ

Ground Level: 5091.00

RKB = 25' @ 5116.00usft (D Rig)

Plan: Rev B0 Permit (TURKEY SPRINGS 1G-15HZ/Plan B)

Created By: Clint Eshelman Date: 7/29/2014  
 Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for TURKEY SPRINGS 1G-15HZ - Rev B0 Permit**

| Measured<br>Depth<br>(usft)                                    | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | Toolface<br>Azimuth<br>(°) |
|--|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 0.00   | 0.00               | 0.00           | 0.00                        | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Turkey Springs 1G-15HZ_SEC - Turkey Springs 1G-15HZ_SHL</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 951.00   | 0.00               | 0.00           | 951.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Base Fox Hills</b>  |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 1,300.00   | 0.00               | 0.00           | 1,300.00                    | 0.00            | 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                        | 0.00                       |
| 1,500.00   | 0.00               | 0.00           | 1,500.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 1,516.00   | 0.00               | 0.00           | 1,516.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Surface Csg Setting Depth - 9 5/8"</b>                      |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 1,600.00   | 0.00               | 0.00           | 1,600.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 1,700.00   | 0.00               | 0.00           | 1,700.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 1,800.00   | 0.00               | 0.00           | 1,800.00                    | 0.00            | 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                        | 0.00                       |
| 2,000.00   | 0.00               | 0.00           | 2,000.00                    | 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                        | 0.00                       |
| 2,200.00   | 0.00               | 0.00           | 2,200.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,300.00   | 0.00               | 0.00           | 2,300.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,400.00   | 0.00               | 0.00           | 2,400.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,500.00   | 0.00               | 0.00           | 2,500.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,600.00   | 0.00               | 0.00           | 2,600.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,700.00   | 0.00               | 0.00           | 2,700.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,800.00   | 0.00               | 0.00           | 2,800.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,900.00   | 0.00               | 0.00           | 2,900.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,000.00   | 0.00               | 0.00           | 3,000.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,100.00   | 0.00               | 0.00           | 3,100.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,200.00   | 0.00               | 0.00           | 3,200.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,300.00   | 0.00               | 0.00           | 3,300.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,400.00   | 0.00               | 0.00           | 3,400.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,500.00   | 0.00               | 0.00           | 3,500.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,506.00   | 0.00               | 0.00           | 3,506.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Parkman</b>   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 3,600.00   | 0.00               | 0.00           | 3,600.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,700.00   | 0.00               | 0.00           | 3,700.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,800.00   | 0.00               | 0.00           | 3,800.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,900.00   | 0.00               | 0.00           | 3,900.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,000.00   | 0.00               | 0.00           | 4,000.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,100.00   | 0.00               | 0.00           | 4,100.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,200.00   | 0.00               | 0.00           | 4,200.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,300.00   | 0.00               | 0.00           | 4,300.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,400.00   | 0.00               | 0.00           | 4,400.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,500.00   | 0.00               | 0.00           | 4,500.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,600.00   | 0.00               | 0.00           | 4,600.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,671.00   | 0.00               | 0.00           | 4,671.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Sussex</b>  |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 4,700.00   | 0.00               | 0.00           | 4,700.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,800.00   | 0.00               | 0.00           | 4,800.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |

**Plan Report for TURKEY SPRINGS 1G-15HZ - Rev B0 Permit**

| Measured<br>Depth<br>(usft)          | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | Toolface<br>Azimuth<br>(°) |
|--------------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 4,900.00                             | 0.00               | 0.00           | 4,900.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,000.00                             | 0.00               | 0.00           | 5,000.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,100.00                             | 0.00               | 0.00           | 5,100.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,200.00                             | 0.00               | 0.00           | 5,200.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,300.00                             | 0.00               | 0.00           | 5,300.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,400.00                             | 0.00               | 0.00           | 5,400.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,500.00                             | 0.00               | 0.00           | 5,500.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,600.00                             | 0.00               | 0.00           | 5,600.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,700.00                             | 0.00               | 0.00           | 5,700.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,763.00                             | 0.00               | 0.00           | 5,763.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Begin Nudge @ 5763.00ft</b>       |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 5,800.00                             | 0.74               | 40.00          | 5,800.00                    | 0.18            | 0.15            | 0.18                          | 2.00                          | 2.00                         | 0.00                        | 40.00                      |
| 5,900.00                             | 2.74               | 40.00          | 5,899.95                    | 2.50            | 2.11            | 2.52                          | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 6,000.00                             | 4.74               | 40.00          | 5,999.73                    | 7.50            | 6.30            | 7.53                          | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 6,100.00                             | 6.74               | 40.00          | 6,099.22                    | 15.16           | 12.73           | 15.22                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 6,200.00                             | 8.74               | 40.00          | 6,198.31                    | 25.48           | 21.38           | 25.56                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 6,263.00                             | 10.00              | 40.00          | 6,260.47                    | 33.34           | 27.98           | 33.45                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| <b>End Nudge @ 6263.00ft</b>         |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 6,300.00                             | 10.00              | 40.00          | 6,296.90                    | 38.26           | 32.11           | 38.39                         | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,400.00                             | 10.00              | 40.00          | 6,395.38                    | 51.56           | 43.27           | 51.73                         | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,483.00                             | 10.00              | 40.00          | 6,477.12                    | 62.60           | 52.53           | 62.81                         | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Begin Drop @ 6483.00ft</b>        |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 6,500.00                             | 9.66               | 40.00          | 6,493.87                    | 64.82           | 54.40           | 65.04                         | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 6,600.00                             | 7.66               | 40.00          | 6,592.73                    | 76.36           | 64.08           | 76.61                         | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 6,700.00                             | 5.66               | 40.00          | 6,692.05                    | 85.24           | 71.53           | 85.52                         | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 6,800.00                             | 3.66               | 40.00          | 6,791.71                    | 91.47           | 76.75           | 91.76                         | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 6,900.00                             | 1.66               | 40.00          | 6,891.60                    | 95.02           | 79.73           | 95.33                         | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 6,983.00                             | 0.00               | 0.00           | 6,974.59                    | 95.94           | 80.51           | 96.25                         | 2.00                          | -2.00                        | 0.00                        | -180.00                    |
| <b>End Drop @ 6983.00ft</b>          |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 6,983.21                             | 0.00               | 0.00           | 6,974.80                    | 95.94           | 80.51           | 96.25                         | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Top of 4.5" Liner @ 6983.21ft</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,000.00                             | 0.00               | 0.00           | 6,991.59                    | 95.94           | 80.51           | 96.25                         | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 7,083.21                             | 0.00               | 0.00           | 7,074.80                    | 95.94           | 80.51           | 96.25                         | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>KOP @ 7083.21ft</b>               |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,100.00                             | 1.34               | 0.22           | 7,091.59                    | 96.14           | 80.51           | 96.45                         | 8.00                          | 8.00                         | 0.00                        | 0.22                       |
| 7,200.00                             | 9.34               | 0.22           | 7,191.07                    | 105.44          | 80.54           | 105.76                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,210.07                             | 10.15              | 0.22           | 7,201.00                    | 107.15          | 80.55           | 107.46                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Sharon Springs</b>                |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,281.95                             | 15.90              | 0.22           | 7,271.00                    | 123.34          | 80.61           | 123.65                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Niobrara A</b>                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,300.00                             | 17.34              | 0.22           | 7,288.29                    | 128.50          | 80.63           | 128.81                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,334.54                             | 20.11              | 0.22           | 7,321.00                    | 139.59          | 80.68           | 139.90                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Niobrara B</b>                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,400.00                             | 25.34              | 0.22           | 7,381.36                    | 164.87          | 80.78           | 165.18                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,410.71                             | 26.20              | 0.22           | 7,391.00                    | 169.52          | 80.79           | 169.84                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Niobrara C</b>                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,500.00                             | 33.34              | 0.22           | 7,468.46                    | 213.83          | 80.97           | 214.14                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,571.33                             | 39.05              | 0.22           | 7,526.00                    | 255.94          | 81.13           | 256.25                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Fort Hays</b>                     |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,600.00                             | 41.34              | 0.22           | 7,547.90                    | 274.44          | 81.20           | 274.75                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,604.15                             | 41.67              | 0.22           | 7,551.00                    | 277.19          | 81.21           | 277.50                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Codell</b>                        |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,645.39                             | 44.97              | 0.22           | 7,581.00                    | 305.48          | 81.32           | 305.80                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Carlisle</b>                      |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,696.75                             | 49.08              | 0.22           | 7,616.00                    | 343.05          | 81.47           | 343.37                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Greenhorn</b>                     |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,700.00                             | 49.34              | 0.22           | 7,618.12                    | 345.51          | 81.48           | 345.83                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |

**Plan Report for TURKEY SPRINGS 1G-15HZ - Rev B0 Permit**

| Measured<br>Depth<br>(usft)                               | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | Toolface<br>Azimuth<br>(°) |
|---|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| <b>DLS = 8°/100'</b>                                      |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,787.61  | 56.35              | 0.22           | 7,671.00                    | 415.30          | 81.75           | 415.61                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Hartland</b>   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,800.00  | 57.34              | 0.22           | 7,677.78                    | 425.67          | 81.79           | 425.99                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,900.00  | 65.34              | 0.22           | 7,725.69                    | 513.35          | 82.13           | 513.67                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 7,967.73  | 70.76              | 0.22           | 7,751.00                    | 576.15          | 82.37           | 576.46                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>Lincoln</b>  |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 8,000.00  | 73.34              | 0.22           | 7,760.94                    | 606.85          | 82.49           | 607.16                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 8,100.00  | 81.34              | 0.22           | 7,782.84                    | 704.34          | 82.87           | 704.65                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 8,200.00  | 89.34              | 0.22           | 7,790.95                    | 803.92          | 83.26           | 804.24                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| 8,208.21  | 90.00              | 0.22           | 7,791.00                    | 812.13          | 83.29           | 812.45                        | 8.00                          | 8.00                         | 0.00                        | 0.00                       |
| <b>End Build @ 8208.21ft - Landing Target (Heel) - 7"</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 8,300.00  | 90.00              | 0.22           | 7,791.00                    | 903.92          | 83.65           | 904.24                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,400.00  | 90.00              | 0.22           | 7,791.00                    | 1,003.92        | 84.04           | 1,004.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,500.00  | 90.00              | 0.22           | 7,791.00                    | 1,103.92        | 84.42           | 1,104.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,600.00  | 90.00              | 0.22           | 7,791.00                    | 1,203.92        | 84.81           | 1,204.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,700.00  | 90.00              | 0.22           | 7,791.00                    | 1,303.92        | 85.20           | 1,304.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,800.00  | 90.00              | 0.22           | 7,791.00                    | 1,403.92        | 85.59           | 1,404.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,900.00  | 90.00              | 0.22           | 7,791.00                    | 1,503.92        | 85.98           | 1,504.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,000.00  | 90.00              | 0.22           | 7,791.00                    | 1,603.92        | 86.37           | 1,604.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,100.00  | 90.00              | 0.22           | 7,791.00                    | 1,703.92        | 86.76           | 1,704.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,200.00  | 90.00              | 0.22           | 7,791.00                    | 1,803.92        | 87.14           | 1,804.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,300.00  | 90.00              | 0.22           | 7,791.00                    | 1,903.91        | 87.53           | 1,904.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,400.00  | 90.00              | 0.22           | 7,791.00                    | 2,003.91        | 87.92           | 2,004.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,500.00  | 90.00              | 0.22           | 7,791.00                    | 2,103.91        | 88.31           | 2,104.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,600.00  | 90.00              | 0.22           | 7,791.00                    | 2,203.91        | 88.70           | 2,204.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,700.00  | 90.00              | 0.22           | 7,791.00                    | 2,303.91        | 89.09           | 2,304.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,800.00  | 90.00              | 0.22           | 7,791.00                    | 2,403.91        | 89.48           | 2,404.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,900.00  | 90.00              | 0.22           | 7,791.00                    | 2,503.91        | 89.86           | 2,504.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,000.00   | 90.00              | 0.22           | 7,791.00                    | 2,603.91        | 90.25           | 2,604.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,100.00   | 90.00              | 0.22           | 7,791.00                    | 2,703.91        | 90.64           | 2,704.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,200.00   | 90.00              | 0.22           | 7,791.00                    | 2,803.91        | 91.03           | 2,804.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,300.00   | 90.00              | 0.22           | 7,791.00                    | 2,903.91        | 91.42           | 2,904.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,400.00   | 90.00              | 0.22           | 7,791.00                    | 3,003.91        | 91.81           | 3,004.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,500.00   | 90.00              | 0.22           | 7,791.00                    | 3,103.91        | 92.20           | 3,104.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,600.00   | 90.00              | 0.22           | 7,791.00                    | 3,203.90        | 92.58           | 3,204.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,700.00   | 90.00              | 0.22           | 7,791.00                    | 3,303.90        | 92.97           | 3,304.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,800.00   | 90.00              | 0.22           | 7,791.00                    | 3,403.90        | 93.36           | 3,404.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,900.00   | 90.00              | 0.22           | 7,791.00                    | 3,503.90        | 93.75           | 3,504.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,000.00   | 90.00              | 0.22           | 7,791.00                    | 3,603.90        | 94.14           | 3,604.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,100.00   | 90.00              | 0.22           | 7,791.00                    | 3,703.90        | 94.53           | 3,704.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,200.00   | 90.00              | 0.22           | 7,791.00                    | 3,803.90        | 94.92           | 3,804.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,300.00   | 90.00              | 0.22           | 7,791.00                    | 3,903.90        | 95.30           | 3,904.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,400.00   | 90.00              | 0.22           | 7,791.00                    | 4,003.90        | 95.69           | 4,004.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,500.00   | 90.00              | 0.22           | 7,791.00                    | 4,103.90        | 96.08           | 4,104.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,600.00   | 90.00              | 0.22           | 7,791.00                    | 4,203.90        | 96.47           | 4,204.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,700.00   | 90.00              | 0.22           | 7,791.00                    | 4,303.90        | 96.86           | 4,304.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,800.00   | 90.00              | 0.22           | 7,791.00                    | 4,403.90        | 97.25           | 4,404.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,900.00   | 90.00              | 0.22           | 7,791.00                    | 4,503.90        | 97.64           | 4,504.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,000.00   | 90.00              | 0.22           | 7,791.00                    | 4,603.89        | 98.02           | 4,604.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,100.00   | 90.00              | 0.22           | 7,791.00                    | 4,703.89        | 98.41           | 4,704.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,200.00   | 90.00              | 0.22           | 7,791.00                    | 4,803.89        | 98.80           | 4,804.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,300.00   | 90.00              | 0.22           | 7,791.00                    | 4,903.89        | 99.19           | 4,904.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,400.00   | 90.00              | 0.22           | 7,791.00                    | 5,003.89        | 99.58           | 5,004.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,500.00   | 90.00              | 0.22           | 7,791.00                    | 5,103.89        | 99.97           | 5,104.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,600.00   | 90.00              | 0.22           | 7,791.00                    | 5,203.89        | 100.36          | 5,204.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,700.00   | 90.00              | 0.22           | 7,791.00                    | 5,303.89        | 100.74          | 5,304.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,800.00   | 90.00              | 0.22           | 7,791.00                    | 5,403.89        | 101.13          | 5,404.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,900.00   | 90.00              | 0.22           | 7,791.00                    | 5,503.89        | 101.52          | 5,504.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |

## Plan Report for TURKEY SPRINGS 1G-15HZ - Rev B0 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 (°) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|----------------------|
| 13,000.00  | 90.00           | 0.22        | 7,791.00              | 5,603.89     | 101.91       | 5,604.24                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 13,034.31  | 90.00           | 0.22        | 7,791.00              | 5,638.20     | 102.04       | 5,638.55                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Total Depth (Toe)</b>                                 |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 13,034.32  | 90.00           | 0.22        | 7,791.00              | 5,638.20     | 102.04       | 5,638.56                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>TD Well @ 13034.32ft - Turkey Springs 1G-15HZ_BHL</b> |                 |             |                       |              |              |                         |                         |                        |                       |                      |

Plan Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                       |
|-----------------------|-----------------------|-------------------|--------------|-------------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                               |
| 5,763.00              | 5,763.00              | 0.00              | 0.00         | Begin Nudge @ 5763.00ft       |
| 6,263.00              | 6,260.47              | 33.34             | 27.98        | End Nudge @ 6263.00ft         |
| 6,483.00              | 6,477.12              | 62.60             | 52.53        | Begin Drop @ 6483.00ft        |
| 6,983.00              | 6,974.59              | 95.94             | 80.51        | End Drop @ 6983.00ft          |
| 6,983.21              | 6,974.80              | 95.94             | 80.51        | Top of 4.5" Liner @ 6983.21ft |
| 7,083.21              | 7,074.80              | 95.94             | 80.51        | KOP @ 7083.21ft               |
| 7,700.00              | 7,618.12              | 345.51            | 81.48        | DLS = 8°/100'                 |
| 8,208.21              | 7,791.00              | 812.13            | 83.29        | End Build @ 8208.21ft         |
| 13,034.32             | 7,791.00              | 5,638.20          | 102.04       | TD Well @ 13034.32ft          |

Vertical Section Information

| Angle Type | Target               | Azimuth (°) | Origin Type | Origin       |              | Start TVD (usft) |
|------------|----------------------|-------------|-------------|--------------|--------------|------------------|
|            |                      |             |             | +N/_S (usft) | +E/-W (usft) |                  |
| User       | No Target (Freehand) | 0.22        | Slot        | 0.00         | 0.00         | 0.00             |

Survey tool program

| From (usft) | To (usft) | Survey/Plan   | Survey Tool |
|-------------|-----------|---------------|-------------|
| 0.00        | 8,208.21  | Rev B0 Permit | MWD         |
| 8,208.21    | 13,034.32 | Rev B0 Permit | MWD         |

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name   | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|--------|---------------------|-------------------|
| 1,516.00              | 1,516.00              | 9 5/8" | 9-5/8               | 13-1/2            |
| 8,208.21              | 7,791.00              | 7"     | 7                   | 8-3/4             |

**Plan Report for TURKEY SPRINGS 1G-15HZ - Rev B0 Permit****Formation Details**

| Measured Depth (usft) | Vertical Depth (usft) | Name                      | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|---------------------------|-----------|---------|-------------------|
| 951.00                | 951.00                | Base Fox Hills            |           | 0.00    |                   |
| 1,516.00              | 1,516.00              | Surface Csg Setting Depth |           | 0.00    |                   |
| 3,506.00              | 3,506.00              | Parkman                   |           | 0.00    |                   |
| 4,671.00              | 4,671.00              | Sussex                    |           | 0.00    |                   |
| 7,210.07              | 7,201.00              | Sharon Springs            |           | 0.00    |                   |
| 7,281.95              | 7,271.00              | Niobrara A                |           | 0.00    |                   |
| 7,334.54              | 7,321.00              | Niobrara B                |           | 0.00    |                   |
| 7,410.71              | 7,391.00              | Niobrara C                |           | 0.00    |                   |
| 7,571.33              | 7,526.00              | Fort Hays                 |           | 0.00    |                   |
| 7,604.15              | 7,551.00              | Codell                    |           | 0.00    |                   |
| 7,645.39              | 7,581.00              | Carlie                    |           | 0.00    |                   |
| 7,696.75              | 7,616.00              | Greenhorn                 |           | 0.00    |                   |
| 7,787.61              | 7,671.00              | Hartland                  |           | 0.00    |                   |
| 7,967.73              | 7,751.00              | Lincoln                   |           | 0.00    |                   |
| 8,208.21              | 7,791.00              | Landing Target (Heel)     |           | 0.00    |                   |
| 13,034.31             | 7,791.00              | Total Depth (Toe)         |           | 0.00    |                   |

***Targets associated with this wellbore***

| Target Name                | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Shape   |
|----------------------------|------------|--------------|--------------|---------|
| Turkey Springs 1G-15HZ_SEC | 0.00       | 0.00         | 0.00         | Polygon |
| Turkey Springs 1G-15HZ_SHL | 0.00       | 0.00         | 0.00         | Point   |
| Turkey Springs 1G-15HZ_BHL | 7,791.00   | 5,638.20     | 102.04       | Point   |

**Directional Difficulty Index**

|                                     |                |                               |                                 |
|-------------------------------------|----------------|-------------------------------|---------------------------------|
| Average Dogleg over Survey:         | 0.84 °/100usft | Maximum Dogleg over Survey:   | 8.00 °/100usft at 8,207.91 usft |
| Net Tortousity applicable to Plans: | 0.84 °/100usft | Directional Difficulty Index: | 6.193                           |

**Audit Info**

North Reference Sheet for Sec. 22 T2N-R66W - TURKEY SPRINGS 1G-15HZ - Plan

B

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference .

Vertical Depths are relative to RKB = 25' @ 5116.00usft (D Rig). Northing and Easting are relative to TURKEY SPRINGS 1G-15HZ

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: 0.99995910

Grid Coordinates of Well: 1,290,601.97 usft N, 3,208,345.80 usft E

Geographical Coordinates of Well: 40° 07' 43.29" N, 104° 45' 17.64" W

Grid Convergence at Surface is: 0.48°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,034.32usft the Bottom Hole Displacement is 5,639.13usft in the Direction of 1.04° (True).

Magnetic Convergence at surface is: -8.02° (25 July 2014, , BGGM2014)

