

# Conoco Phillips Company

Arapahoe County, Colorado

Sec. 22-T4S-R65W

Sunset 4-65 21-22 1H

Plan A

Plan: Rev A0 (Pilot Hole)

## Sperry Drilling Services

### Proposal Report

08 October, 2013

Well Coordinates: 1,675,427.06 N, 3,241,439.17 E (39° 41' 04.98" N, 104° 38' 31.66" W)

Ground Level: 5,758.00 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 Sunset 4-65 21-22 1H

KB 24 ft @ 5782.00usft (H&P 280)

N

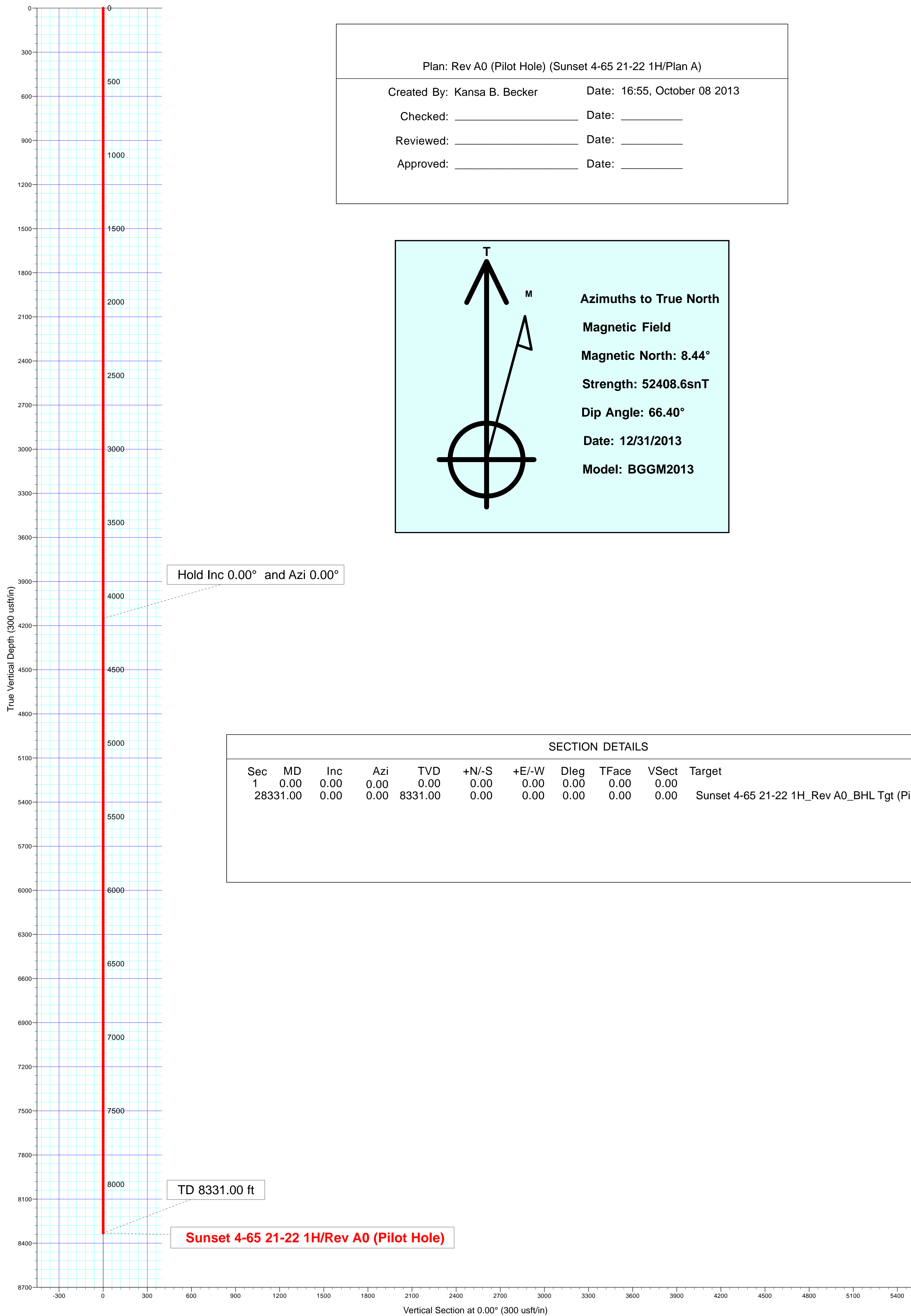
True

API - US Survey Feet - Custom

**HALLIBURTON**

Project: Arapahoe County, Colorado  
Site: Sec. 22-T4S-R65W  
Well: Sunset 4-65 21-22 1H  
Wellbore: Plan A  
Plan: Rev A0 (Pilot Hole)

Conoco Phillips Company



Plan: Rev A0 (Pilot Hole) (Sunset 4-65 21-22 1H/Plan A)

Created By: Kansa B. Becker

Date: 16:55, October 08 2013

Checked: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_

Date: \_\_\_\_\_

Approved: \_\_\_\_\_

Date: \_\_\_\_\_

T

M

Azimuths to True North

Magnetic Field

Magnetic North: 8.44°

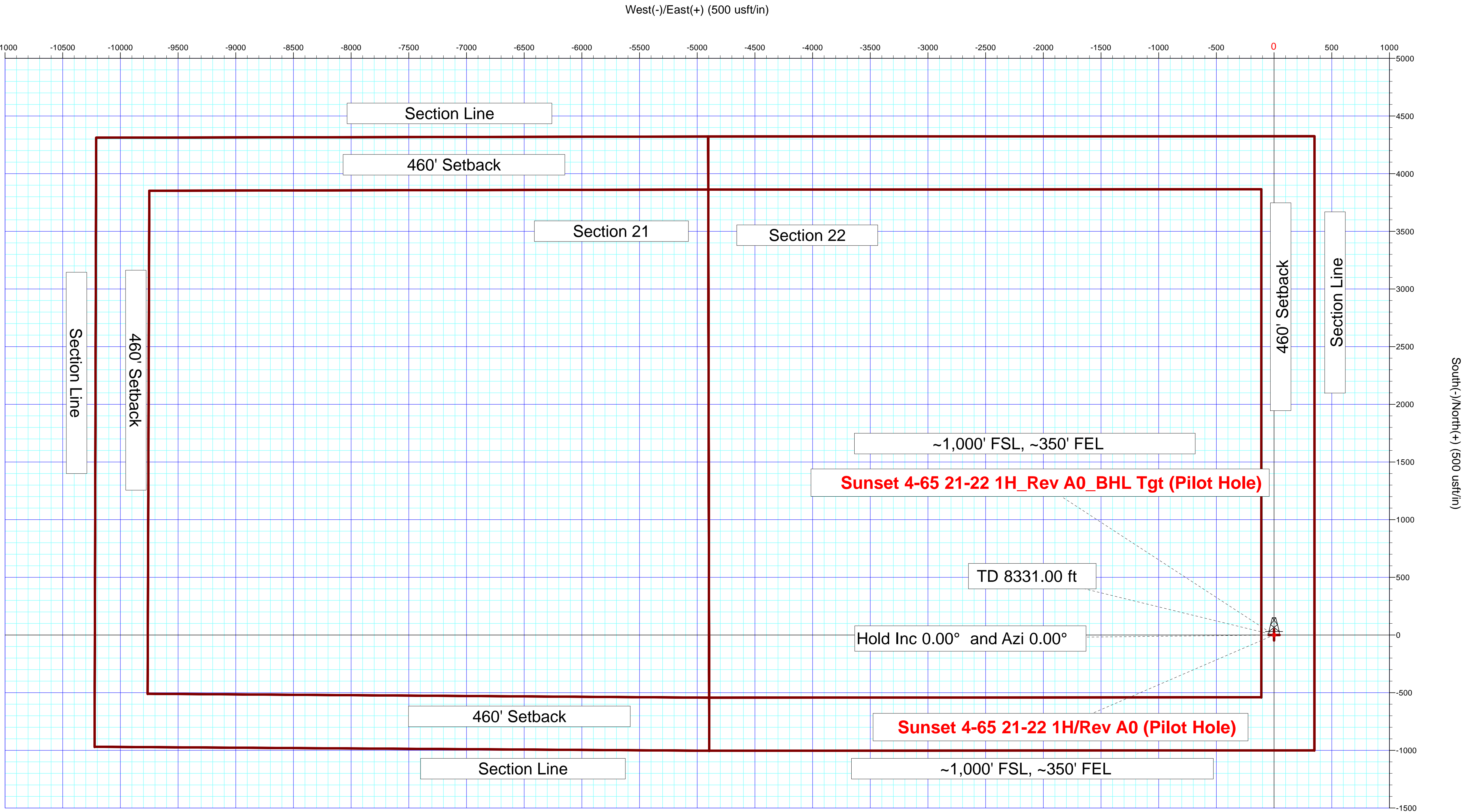
Strength: 52408.6snT

Dip Angle: 66.40°

Date: 12/31/2013

Model: BGGM2013

| 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  |  |
|                 | 28331.00 | 0.00 | 0.00 | 8331.00 | 0.00  | 0.00  | 0.00 | 0.00  | 0.00  | Sunset 4-65 21-22 1H_Rev A0_BHL Tgt (Pilot Hole) |



## Plan Report for Sunset 4-65 21-22 1H - Rev A0 (Pilot Hole)

| 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                       |
| 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                       |
| 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                       |
| 1,600.00                                     | 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                       |
| 1,822.00                                     | 0.00               | 0.00           | 1,822.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| Fox Hills                                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 2,062.00                                     | 0.00               | 0.00           | 2,062.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| Pierre Shale                                 |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 2,262.00                                     | 0.00               | 0.00           | 2,262.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| Surface Casing @ 2262.00 ft - Surface Casing |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 3,600.00                                     | 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                       |
| 4,150.00                                     | 0.00               | 0.00           | 4,150.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| Hold Inc 0.00° and Azi 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                       |
| 4,700.00                                     | 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                       |
| 4,900.00                                     | 0.00               | 0.00           | 4,900.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |

## Plan Report for Sunset 4-65 21-22 1H - Rev A0 (Pilot Hole)

| 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 (°) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|----------------------|
| 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                 |
| 5,800.00              | 0.00            | 0.00        | 5,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 5,900.00              | 0.00            | 0.00        | 5,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,000.00              | 0.00            | 0.00        | 6,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,100.00              | 0.00            | 0.00        | 6,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,200.00              | 0.00            | 0.00        | 6,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,300.00              | 0.00            | 0.00        | 6,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,400.00              | 0.00            | 0.00        | 6,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,500.00              | 0.00            | 0.00        | 6,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,600.00              | 0.00            | 0.00        | 6,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,700.00              | 0.00            | 0.00        | 6,700.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,800.00              | 0.00            | 0.00        | 6,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 6,900.00              | 0.00            | 0.00        | 6,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,000.00              | 0.00            | 0.00        | 7,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,100.00              | 0.00            | 0.00        | 7,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,200.00              | 0.00            | 0.00        | 7,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,300.00              | 0.00            | 0.00        | 7,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,400.00              | 0.00            | 0.00        | 7,400.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,500.00              | 0.00            | 0.00        | 7,500.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,600.00              | 0.00            | 0.00        | 7,600.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,626.00              | 0.00            | 0.00        | 7,626.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Sharon Springs</b> |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 7,696.00              | 0.00            | 0.00        | 7,696.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Niobrara</b>       |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 7,700.00              | 0.00            | 0.00        | 7,700.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,766.00              | 0.00            | 0.00        | 7,766.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Niobrara "B"</b>   |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 7,800.00              | 0.00            | 0.00        | 7,800.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 7,811.00              | 0.00            | 0.00        | 7,811.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Niobrara "C"</b>   |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 7,886.00              | 0.00            | 0.00        | 7,886.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Niobrara "D"</b>   |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 7,900.00              | 0.00            | 0.00        | 7,900.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 8,000.00              | 0.00            | 0.00        | 8,000.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 8,006.00              | 0.00            | 0.00        | 8,006.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Fort Hays</b>      |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 8,036.00              | 0.00            | 0.00        | 8,036.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Carlile Shale</b>  |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 8,096.00              | 0.00            | 0.00        | 8,096.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>Greenhorn</b>      |                 |             |                       |              |              |                         |                         |                        |                       |                      |
| 8,100.00              | 0.00            | 0.00        | 8,100.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 8,200.00              | 0.00            | 0.00        | 8,200.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 8,300.00              | 0.00            | 0.00        | 8,300.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 8,331.00              | 0.00            | 0.00        | 8,331.00              | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| <b>TD 8331.00 ft</b>  |                 |             |                       |              |              |                         |                         |                        |                       |                      |

## Plan Report for Sunset 4-65 21-22 1H - Rev A0 (Pilot Hole)

### Plan Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                      |
|-----------------------------|-----------------------------|-------------------|-----------------|------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                              |
| 2,262.00                    | 2,262.00                    | 0.00              | 0.00            | Surface Casing @ 2262.00 ft  |
| 4,150.00                    | 4,150.00                    | 0.00              | 0.00            | Hold Inc 0.00° and Azi 0.00° |
| 8,331.00                    | 8,331.00                    | 0.00              | 0.00            | TD 8331.00 ft                |

### Vertical Section Information

| Angle<br>Type | Target  | Azimuth<br>(°) | Origin<br>Type | Origin          |                 | Start<br>TVD<br>(usft) |
|---------------|---|----------------|----------------|-----------------|-----------------|------------------------|
|               |   |                |                | +N/_S<br>(usft) | +E/-W<br>(usft) |                        |
| Target        | Sunset 4-65 21-22 1H_Rev<br>A0_BHL Tgt (Pilot Hole) | 0.00           | Slot           | 0.00            | 0.00            | 0.00                   |

### Survey tool program

| From<br>(usft) | To<br>(usft) | Survey/Plan         | Survey Tool |
|----------------|--------------|---------------------|-------------|
| 0.00           | 2,262.00     | Rev A0 (Pilot Hole) | NSG-CT_D/P  |
| 2,262.00       | 8,331.00     | Rev A0 (Pilot Hole) | MWD         |

### Formation Details

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name           | Lithology | Dip<br>(°) | Dip<br>Direction<br>(°) |
|-----------------------------|-----------------------------|----------------|-----------|------------|-------------------------|
| 1,822.00                    | 1,822.00                    | Fox Hills      |           |            |                         |
| 2,062.00                    | 2,062.00                    | Pierre Shale   |           |            |                         |
| 2,262.00                    | 2,262.00                    | Surface Casing |           |            |                         |
| 7,626.00                    | 7,626.00                    | Sharon Springs |           |            |                         |
| 7,696.00                    | 7,696.00                    | Niobrara       |           |            |                         |
| 7,766.00                    | 7,766.00                    | Niobrara "B"   |           |            |                         |
| 7,811.00                    | 7,811.00                    | Niobrara "C"   |           |            |                         |
| 7,886.00                    | 7,886.00                    | Niobrara "D"   |           |            |                         |
| 8,006.00                    | 8,006.00                    | Fort Hays      |           |            |                         |
| 8,036.00                    | 8,036.00                    | Carlile Shale  |           |            |                         |
| 8,096.00                    | 8,096.00                    | Greenhorn      |           |            |                         |

### Targets associated with this wellbore

| Target Name                                | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Shape   |
|--|---------------|-----------------|-----------------|---------|
| Sunset 4-65 21-22 1H_SL                    | 0.00          | 0.00            | 0.00            | Polygon |
| Sunset 4-65 21-22 1H_SB                    | 0.00          | 0.00            | 0.00            | Polygon |
| Sunset 4-65 21-22 1H_Rev A0_BHL Tgt (Late  | 7,892.00      | 27.00           | -9,761.43       | Point   |
| Sunset 4-65 21-22 1H_Rev A0_BHL Tgt (Pilot | 8,331.00      | 0.00            | 0.00            | Point   |

Plan Report for Sunset 4-65 21-22 1H - Rev A0 (Pilot Hole)

Directional Difficulty Index

|                                     |                |                               |                             |
|-------------------------------------|----------------|-------------------------------|-----------------------------|
| Average Dogleg over Survey:         | 0.00 °/100usft | Maximum Dogleg over Survey:   | 0.00 °/100usft at 0.00 usft |
| Net Tortousity applicable to Plans: | 0.00 °/100usft | Directional Difficulty Index: | 0.000                       |

Audit Info

North Reference Sheet for Sec. 22-T4S-R65W - Sunset 4-65 21-22 1H - 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 KB 24 ft @ 5782.00usft (H&P 280). Northing and Easting are relative to Sunset 4-65 21-22 1H  
Coordinate System is US State Plane 1983, Colorado Central 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° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°  
False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99998774

Grid Coordinates of Well: 1,675,427.06 usft N, 3,241,439.17 usft E  
Geographical Coordinates of Well: 39° 41' 04.98" N, 104° 38' 31.66" W  
Grid Convergence at Surface is: 0.54°

Based upon Minimum Curvature type calculations, at a Measured Depth of 8,331.00usft  
the Bottom Hole Displacement is 0.00usft in the Direction of 0.00° ( True).

Magnetic Convergence at surface is: -7.90° (31 December 2013, , BGGM2013)

