

# Conoco Phillips Company

Arapahoe County, Colorado

Sec. 10-T4S-R65W

Sky Ranch 4-65 9-10 1H

Plan A

Plan: Rev A0

## Sperry Drilling Services

### Proposal Report

18 February, 2014

Well Coordinates: 1,689,668.40 N, 3,241,340.69 E (39° 43' 25.73" N, 104° 38' 31.20" W)

Ground Level: 5,674.40 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 Sky Ranch 4-65 9-10 1H

KB 24 ft @ 5698.40usft (H&P 280)

N

True

API - US Survey Feet - Custom

**HALLIBURTON**

Project: Arapahoe County, Colorado  
Site: Sec. 10-T4S-R65W  
Well: Sky Ranch 4-65 9-10 1H  
Wellbore: Plan A  
Plan: Rev A0

Conoco Phillips Company

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   | 7264.08  | 0.00  | 0.00   | 7264.08 | 0.00   | 0.00     | 0.00  | 0.00   | 0.00    |                                |
| 3   | 8157.15  | 89.31 | 269.94 | 7837.00 | -0.59  | -566.03  | 10.00 | 269.94 | 566.03  |                                |
| 4   | 17333.10 | 89.31 | 269.94 | 7948.00 | -10.16 | -9741.31 | 0.00  | 0.00   | 9741.31 | Sky Ranch 4-65 9-10 1H_BHL Tgt |

Plan: Rev A0 (Sky Ranch 4-65 9-10 1H/Plan A)

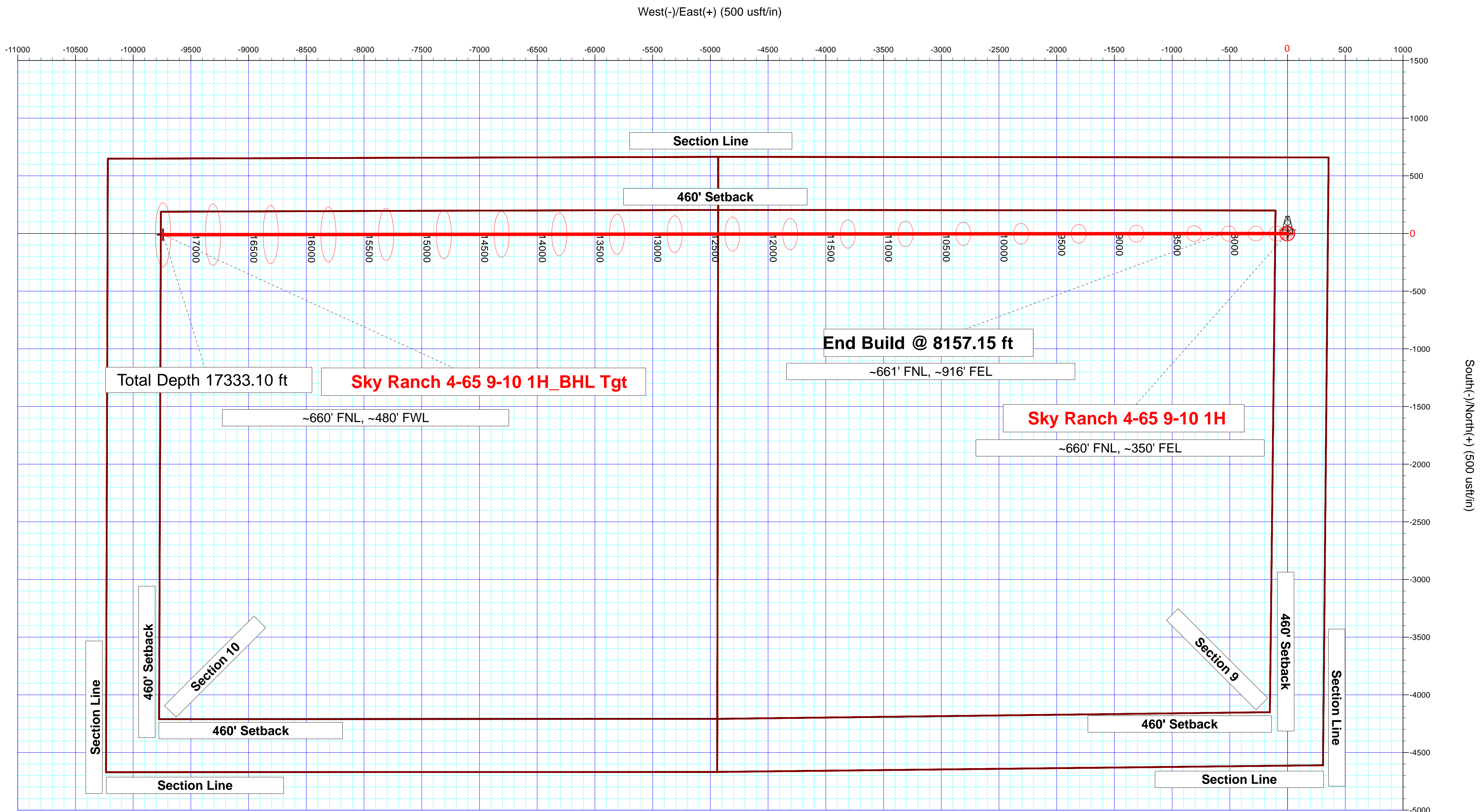
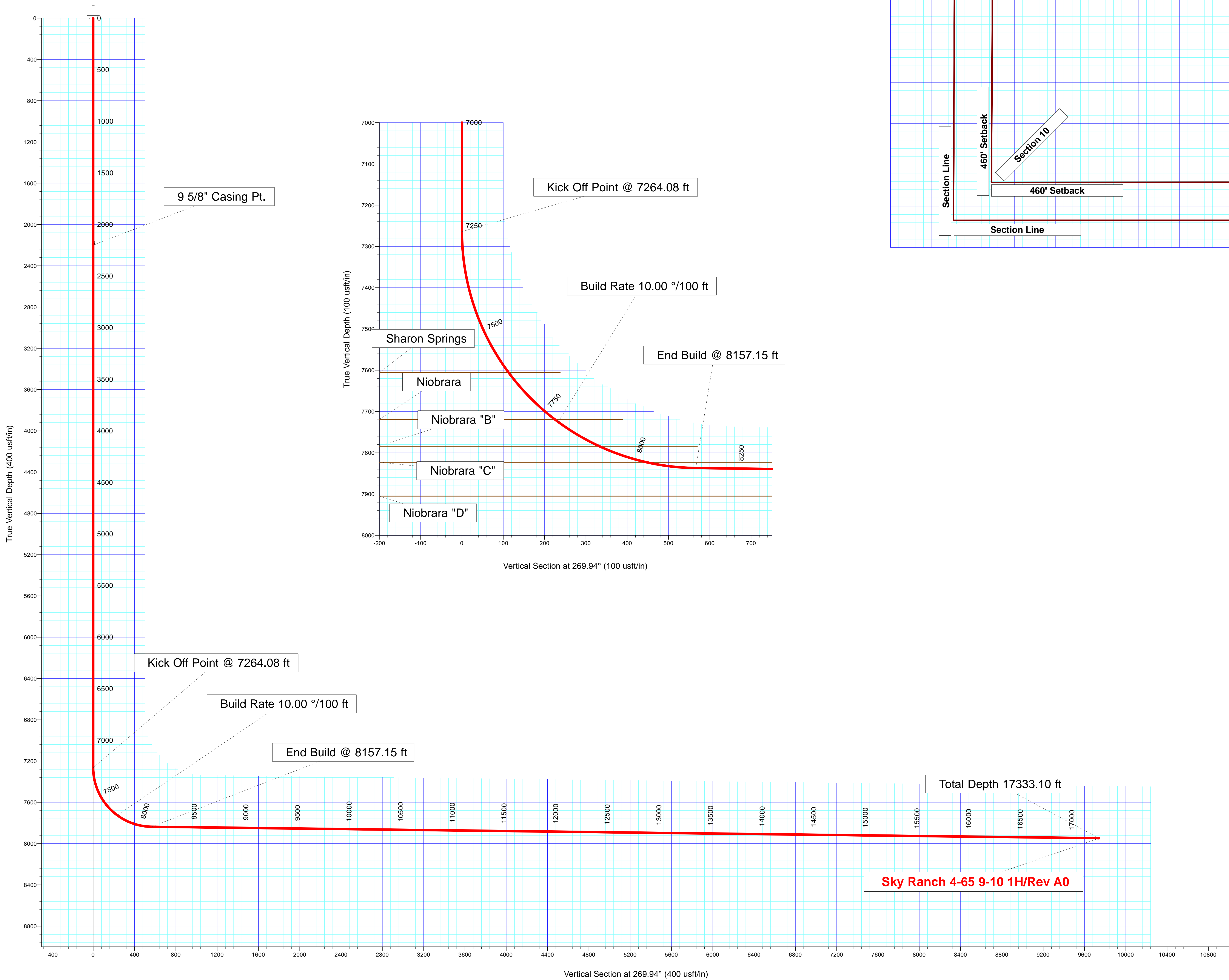
Created By: Kansa B. Becker      Date: 16:59, February 18 2014

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

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

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

Azimuths to True North  
Magnetic Field  
Magnetic North: 8.40°  
Strength: 52382.6snT  
Dip Angle: 66.41°  
Date: 5/20/2014  
Model: BGGM2013



## Plan Report for Sky Ranch 4-65 9-10 1H - Rev A0

| 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                       |
| 1,769.00                                  | 0.00               | 0.00           | 1,769.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Fox Hills</b>                          |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 1,999.00                                  | 0.00               | 0.00           | 1,999.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Pierre Shale</b>                       |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 2,199.00                                  | 0.00               | 0.00           | 2,199.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Surface Casing - 9 5/8" Casing Pt.</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 3,600.00                                  | 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                       |
| 4,700.00                                  | 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                       |
| 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                       |

## Plan Report for Sky Ranch 4-65 9-10 1H - Rev A0

| 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>(°) |
|------------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 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                       |
| 7,264.08                           | 0.00               | 0.00           | 7,264.08                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Kick Off Point @ 7264.08 ft</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,300.00                           | 3.59               | 269.94         | 7,299.98                    | 0.00            | -1.13           | 1.13                          | 10.00                         | 10.00                        | 0.00                        | 269.94                     |
| 7,400.00                           | 13.59              | 269.94         | 7,398.73                    | -0.02           | -16.05          | 16.05                         | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,500.00                           | 23.59              | 269.94         | 7,493.39                    | -0.05           | -47.89          | 47.89                         | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,600.00                           | 33.59              | 269.94         | 7,581.08                    | -0.10           | -95.68          | 95.68                         | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,630.46                           | 36.64              | 269.94         | 7,606.00                    | -0.12           | -113.21         | 113.21                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>Sharon Springs</b>              |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,700.00                           | 43.59              | 269.94         | 7,659.14                    | -0.16           | -157.98         | 157.98                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,789.68                           | 52.56              | 269.94         | 7,719.00                    | -0.23           | -224.64         | 224.64                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>Niobrara</b>                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,800.00                           | 53.59              | 269.94         | 7,725.20                    | -0.24           | -232.89         | 232.89                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>Build Rate 10.00 °/100 ft</b>   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,900.00                           | 63.59              | 269.94         | 7,777.25                    | -0.33           | -318.13         | 318.13                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,915.61                           | 65.15              | 269.94         | 7,784.00                    | -0.35           | -332.20         | 332.20                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>Niobrara "B"</b>                |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 8,000.00                           | 73.59              | 269.94         | 7,813.70                    | -0.43           | -411.11         | 411.11                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 8,036.99                           | 77.29              | 269.94         | 7,823.00                    | -0.47           | -446.91         | 446.91                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>Niobrara "C"</b>                |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 8,100.00                           | 83.59              | 269.94         | 7,833.46                    | -0.53           | -509.01         | 509.01                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 8,157.15                           | 89.31              | 269.94         | 7,837.00                    | -0.59           | -566.03         | 566.03                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>End Build @ 8157.15 ft</b>      |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 8,200.00                           | 89.31              | 269.94         | 7,837.51                    | -0.64           | -608.87         | 608.87                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,300.00                           | 89.31              | 269.94         | 7,838.72                    | -0.74           | -708.87         | 708.87                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,400.00                           | 89.31              | 269.94         | 7,839.93                    | -0.84           | -808.86         | 808.86                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,500.00                           | 89.31              | 269.94         | 7,841.14                    | -0.95           | -908.85         | 908.85                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,600.00                           | 89.31              | 269.94         | 7,842.35                    | -1.05           | -1,008.85       | 1,008.85                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,700.00                           | 89.31              | 269.94         | 7,843.56                    | -1.16           | -1,108.84       | 1,108.84                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,800.00                           | 89.31              | 269.94         | 7,844.77                    | -1.26           | -1,208.83       | 1,208.83                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,900.00                           | 89.31              | 269.94         | 7,845.98                    | -1.37           | -1,308.82       | 1,308.82                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,000.00                           | 89.31              | 269.94         | 7,847.19                    | -1.47           | -1,408.82       | 1,408.82                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,100.00                           | 89.31              | 269.94         | 7,848.40                    | -1.57           | -1,508.81       | 1,508.81                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,200.00                           | 89.31              | 269.94         | 7,849.61                    | -1.68           | -1,608.80       | 1,608.80                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,300.00                           | 89.31              | 269.94         | 7,850.82                    | -1.78           | -1,708.79       | 1,708.79                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,400.00                           | 89.31              | 269.94         | 7,852.03                    | -1.89           | -1,808.79       | 1,808.79                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,500.00                           | 89.31              | 269.94         | 7,853.24                    | -1.99           | -1,908.78       | 1,908.78                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,600.00                           | 89.31              | 269.94         | 7,854.45                    | -2.10           | -2,008.77       | 2,008.77                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,700.00                           | 89.31              | 269.94         | 7,855.66                    | -2.20           | -2,108.76       | 2,108.77                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |

## Plan Report for Sky Ranch 4-65 9-10 1H - Rev A0

| 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>(°) |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 9,800.00                    | 89.31              | 269.94         | 7,856.87                    | -2.30           | -2,208.76       | 2,208.76                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,900.00                    | 89.31              | 269.94         | 7,858.08                    | -2.41           | -2,308.75       | 2,308.75                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,000.00                   | 89.31              | 269.94         | 7,859.29                    | -2.51           | -2,408.74       | 2,408.74                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,100.00                   | 89.31              | 269.94         | 7,860.50                    | -2.62           | -2,508.73       | 2,508.74                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,200.00                   | 89.31              | 269.94         | 7,861.71                    | -2.72           | -2,608.73       | 2,608.73                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,300.00                   | 89.31              | 269.94         | 7,862.92                    | -2.83           | -2,708.72       | 2,708.72                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,400.00                   | 89.31              | 269.94         | 7,864.13                    | -2.93           | -2,808.71       | 2,808.71                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,500.00                   | 89.31              | 269.94         | 7,865.34                    | -3.03           | -2,908.70       | 2,908.71                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,600.00                   | 89.31              | 269.94         | 7,866.55                    | -3.14           | -3,008.70       | 3,008.70                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,700.00                   | 89.31              | 269.94         | 7,867.76                    | -3.24           | -3,108.69       | 3,108.69                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,800.00                   | 89.31              | 269.94         | 7,868.97                    | -3.35           | -3,208.68       | 3,208.68                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,900.00                   | 89.31              | 269.94         | 7,870.18                    | -3.45           | -3,308.68       | 3,308.68                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,000.00                   | 89.31              | 269.94         | 7,871.39                    | -3.56           | -3,408.67       | 3,408.67                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,100.00                   | 89.31              | 269.94         | 7,872.60                    | -3.66           | -3,508.66       | 3,508.66                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,200.00                   | 89.31              | 269.94         | 7,873.81                    | -3.76           | -3,608.65       | 3,608.66                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,300.00                   | 89.31              | 269.94         | 7,875.02                    | -3.87           | -3,708.65       | 3,708.65                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,400.00                   | 89.31              | 269.94         | 7,876.23                    | -3.97           | -3,808.64       | 3,808.64                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,500.00                   | 89.31              | 269.94         | 7,877.44                    | -4.08           | -3,908.63       | 3,908.63                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,600.00                   | 89.31              | 269.94         | 7,878.65                    | -4.18           | -4,008.62       | 4,008.63                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,700.00                   | 89.31              | 269.94         | 7,879.85                    | -4.29           | -4,108.62       | 4,108.62                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,800.00                   | 89.31              | 269.94         | 7,881.06                    | -4.39           | -4,208.61       | 4,208.61                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,900.00                   | 89.31              | 269.94         | 7,882.27                    | -4.49           | -4,308.60       | 4,308.60                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,000.00                   | 89.31              | 269.94         | 7,883.48                    | -4.60           | -4,408.59       | 4,408.60                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,100.00                   | 89.31              | 269.94         | 7,884.69                    | -4.70           | -4,508.59       | 4,508.59                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,200.00                   | 89.31              | 269.94         | 7,885.90                    | -4.81           | -4,608.58       | 4,608.58                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,300.00                   | 89.31              | 269.94         | 7,887.11                    | -4.91           | -4,708.57       | 4,708.57                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,400.00                   | 89.31              | 269.94         | 7,888.32                    | -5.02           | -4,808.56       | 4,808.57                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,500.00                   | 89.31              | 269.94         | 7,889.53                    | -5.12           | -4,908.56       | 4,908.56                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,600.00                   | 89.31              | 269.94         | 7,890.74                    | -5.22           | -5,008.55       | 5,008.55                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,700.00                   | 89.31              | 269.94         | 7,891.95                    | -5.33           | -5,108.54       | 5,108.55                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,800.00                   | 89.31              | 269.94         | 7,893.16                    | -5.43           | -5,208.54       | 5,208.54                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,900.00                   | 89.31              | 269.94         | 7,894.37                    | -5.54           | -5,308.53       | 5,308.53                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,000.00                   | 89.31              | 269.94         | 7,895.58                    | -5.64           | -5,408.52       | 5,408.52                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,100.00                   | 89.31              | 269.94         | 7,896.79                    | -5.75           | -5,508.51       | 5,508.52                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,200.00                   | 89.31              | 269.94         | 7,898.00                    | -5.85           | -5,608.51       | 5,608.51                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,300.00                   | 89.31              | 269.94         | 7,899.21                    | -5.95           | -5,708.50       | 5,708.50                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,400.00                   | 89.31              | 269.94         | 7,900.42                    | -6.06           | -5,808.49       | 5,808.49                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,500.00                   | 89.31              | 269.94         | 7,901.63                    | -6.16           | -5,908.48       | 5,908.49                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,600.00                   | 89.31              | 269.94         | 7,902.84                    | -6.27           | -6,008.48       | 6,008.48                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,700.00                   | 89.31              | 269.94         | 7,904.05                    | -6.37           | -6,108.47       | 6,108.47                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,778.59                   | 89.31              | 269.94         | 7,905.00                    | -6.45           | -6,187.05       | 6,187.05                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Niobrara "D"</b>         |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 13,800.00                   | 89.31              | 269.94         | 7,905.26                    | -6.48           | -6,208.46       | 6,208.47                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 13,900.00                   | 89.31              | 269.94         | 7,906.47                    | -6.58           | -6,308.45       | 6,308.46                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,000.00                   | 89.31              | 269.94         | 7,907.68                    | -6.68           | -6,408.45       | 6,408.45                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,100.00                   | 89.31              | 269.94         | 7,908.89                    | -6.79           | -6,508.44       | 6,508.44                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,200.00                   | 89.31              | 269.94         | 7,910.10                    | -6.89           | -6,608.43       | 6,608.44                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,300.00                   | 89.31              | 269.94         | 7,911.31                    | -7.00           | -6,708.42       | 6,708.43                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,400.00                   | 89.31              | 269.94         | 7,912.52                    | -7.10           | -6,808.42       | 6,808.42                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,500.00                   | 89.31              | 269.94         | 7,913.73                    | -7.21           | -6,908.41       | 6,908.41                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,600.00                   | 89.31              | 269.94         | 7,914.94                    | -7.31           | -7,008.40       | 7,008.41                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,700.00                   | 89.31              | 269.94         | 7,916.15                    | -7.41           | -7,108.40       | 7,108.40                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,800.00                   | 89.31              | 269.94         | 7,917.36                    | -7.52           | -7,208.39       | 7,208.39                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 14,900.00                   | 89.31              | 269.94         | 7,918.57                    | -7.62           | -7,308.38       | 7,308.38                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 15,000.00                   | 89.31              | 269.94         | 7,919.78                    | -7.73           | -7,408.37       | 7,408.38                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 15,100.00                   | 89.31              | 269.94         | 7,920.99                    | -7.83           | -7,508.37       | 7,508.37                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 15,200.00                   | 89.31              | 269.94         | 7,922.20                    | -7.94           | -7,608.36       | 7,608.36                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 15,300.00                   | 89.31              | 269.94         | 7,923.40                    | -8.04           | -7,708.35       | 7,708.36                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 15,400.00                   | 89.31              | 269.94         | 7,924.61                    | -8.14           | -7,808.34       | 7,808.35                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |

## Plan Report for Sky Ranch 4-65 9-10 1H - Rev A0

| 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 (°) |
|-------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|----------------------|
| 15,500.00               | 89.31           | 269.94      | 7,925.82              | -8.25        | -7,908.34    | 7,908.34                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 15,600.00               | 89.31           | 269.94      | 7,927.03              | -8.35        | -8,008.33    | 8,008.33                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 15,700.00               | 89.31           | 269.94      | 7,928.24              | -8.46        | -8,108.32    | 8,108.33                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 15,800.00               | 89.31           | 269.94      | 7,929.45              | -8.56        | -8,208.31    | 8,208.32                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 15,900.00               | 89.31           | 269.94      | 7,930.66              | -8.67        | -8,308.31    | 8,308.31                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,000.00               | 89.31           | 269.94      | 7,931.87              | -8.77        | -8,408.30    | 8,408.30                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,100.00               | 89.31           | 269.94      | 7,933.08              | -8.87        | -8,508.29    | 8,508.30                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,200.00               | 89.31           | 269.94      | 7,934.29              | -8.98        | -8,608.28    | 8,608.29                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,300.00               | 89.31           | 269.94      | 7,935.50              | -9.08        | -8,708.28    | 8,708.28                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,400.00               | 89.31           | 269.94      | 7,936.71              | -9.19        | -8,808.27    | 8,808.27                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,500.00               | 89.31           | 269.94      | 7,937.92              | -9.29        | -8,908.26    | 8,908.27                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,600.00               | 89.31           | 269.94      | 7,939.13              | -9.40        | -9,008.26    | 9,008.26                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,700.00               | 89.31           | 269.94      | 7,940.34              | -9.50        | -9,108.25    | 9,108.25                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,800.00               | 89.31           | 269.94      | 7,941.55              | -9.60        | -9,208.24    | 9,208.25                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 16,900.00               | 89.31           | 269.94      | 7,942.76              | -9.71        | -9,308.23    | 9,308.24                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 17,000.00               | 89.31           | 269.94      | 7,943.97              | -9.81        | -9,408.23    | 9,408.23                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 17,100.00               | 89.31           | 269.94      | 7,945.18              | -9.92        | -9,508.22    | 9,508.22                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 17,200.00               | 89.31           | 269.94      | 7,946.39              | -10.02       | -9,608.21    | 9,608.22                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 17,300.00               | 89.31           | 269.94      | 7,947.60              | -10.13       | -9,708.20    | 9,708.21                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| 17,333.10               | 89.31           | 269.94      | 7,948.00              | -10.16       | -9,741.31    | 9,741.31                | 0.00                    | 0.00                   | 0.00                  | 0.00                 |
| Total Depth 17333.10 ft |                 |             |                       |              |              |                         |                         |                        |                       |                      |

Plan Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                     |
|-----------------------|-----------------------|-------------------|--------------|-----------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                             |
| 7,264.08              | 7,264.08              | 0.00              | 0.00         | Kick Off Point @ 7264.08 ft |
| 7,800.00              | 7,725.20              | -0.24             | -232.89      | Build Rate 10.00 °/100 ft   |
| 8,157.15              | 7,837.00              | -0.59             | -566.03      | End Build @ 8157.15 ft      |
| 17,333.10             | 7,948.00              | -10.16            | -9,741.31    | Total Depth 17333.10 ft     |

Vertical Section Information

| Angle Type | Target                         | Azimuth (°) | Origin Type | Origin       |              | Start TVD (usft) |
|------------|--------------------------------|-------------|-------------|--------------|--------------|------------------|
|            |                                |             |             | +N/_S (usft) | +E/-W (usft) |                  |
| Target     | Sky Ranch 4-65 9-10 1H_BHL Tgt | 269.94      | Slot        | 0.00         | 0.00         | 0.00             |

Survey tool program

| From (usft) | To (usft) | Survey/Plan | Survey Tool           |
|-------------|-----------|-------------|-----------------------|
| 0.00        | 2,199.00  | Rev A0      | Assumed Vertical - 30 |
| 2,199.00    | 17,333.10 | Rev A0      | Inclinometer          |
|             |           |             | MWD                   |

Casing Details

| Measured Depth (usft) | Vertical Depth (usft) | Name              | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|-------------------|---------------------|-------------------|
| 2,199.00              | 2,199.00              | 9 5/8" Casing Pt. | 9-5/8               | 13-1/2            |

## Plan Report for Sky Ranch 4-65 9-10 1H - Rev A0

### Formation Details

| Measured Depth (usft) | Vertical Depth (usft) | Name           | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|----------------|-----------|---------|-------------------|
| 1,769.00              | 1,769.00              | Fox Hills      |           |         |                   |
| 1,999.00              | 1,999.00              | Pierre Shale   |           |         |                   |
| 2,199.00              | 2,199.00              | Surface Casing |           |         |                   |
| 7,630.46              | 7,606.00              | Sharon Springs |           |         |                   |
| 7,789.68              | 7,719.00              | Niobrara       |           |         |                   |
| 7,915.61              | 7,784.00              | Niobrara "B"   |           |         |                   |
| 8,036.99              | 7,823.00              | Niobrara "C"   |           |         |                   |
| 13,778.59             | 7,905.00              | Niobrara "D"   |           |         |                   |

### Targets associated with this wellbore

| Target Name                    | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Shape   |
|--------------------------------|------------|--------------|--------------|---------|
| Sky Ranch 4-65 9-10 1H_SB      | 0.00       | 0.00         | 0.00         | Polygon |
| Sky Ranch 4-65 9-10 1H_SL      | 0.00       | 0.00         | 0.00         | Polygon |
| Sky Ranch 4-65 9-10 1H_BHL Tgt | 7,948.00   | -10.16       | -9,741.31    | Point   |

### Directional Difficulty Index

|                                     |                |                               |                                  |
|-------------------------------------|----------------|-------------------------------|----------------------------------|
| Average Dogleg over Survey:         | 0.52 °/100usft | Maximum Dogleg over Survey:   | 10.00 °/100usft at 8,157.15 usft |
| Net Tortousity applicable to Plans: | 0.52 °/100usft | Directional Difficulty Index: | 6.562                            |

### Audit Info



**North Reference Sheet for Sec. 10-T4S-R65W - Sky Ranch 4-65 9-10 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 @ 5698.40usft (H&P 280). Northing and Easting are relative to Sky Ranch 4-65 9-10 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: 0.99999492

Grid Coordinates of Well: 1,689,668.40 usft N, 3,241,340.69 usft E  
 Geographical Coordinates of Well: 39° 43' 25.73" N, 104° 38' 31.20" W  
 Grid Convergence at Surface is: 0.54°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,333.10usft  
 the Bottom Hole Displacement is 9,741.31usft in the Direction of 269.94° ( True).  
 Magnetic Convergence at surface is: -7.86° (20 May 2014, , BGGM2013)

