

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

**3N-66W-23 FARLEY 34-23HZ PAD**

**FARLEY 23-5HZ**

**Plan A**

**Plan: Permit Rev-1**

SHL Lat/Long: 40.205343/-104.752022

Survey Program: MWD+IFR+MSA

## **Standard Planning Report**

**02 October, 2018**

Project: WELD-NAD83-UTMFT13N  
Site: 3N-66W-23 FARLEY 34-23HZ PAD  
Well: FARLEY 23-5HZ  
Wellbore: Plan A  
Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

| CASING DETAILS     |                    |                | WELL DETAILS: FARLEY 23-5HZ<br>GL = 4939.00<br>RKB = 17' @ 4956.00usft (Drilling Rig) |
|--------------------|--------------------|----------------|---|
| TVD                | MD                 | Size           |   |
| 1500.00<br>7247.00 | 1520.67<br>7888.04 | 9-5/8<br>5-1/2 |   |

## SECTION DETAILS

| Sec | MD       | Inc   | Azi    | TVD     | +N/-S    | +E/-W   | Dleg | TFace  | VSect   | Target            |
|-----|----------|-------|--------|---------|----------|---------|------|--------|---------|-------------------|
| 1   | 0.00     | 0.00  | 0.00   | 0.00    | 0.00     | 0.00    | 0.00 | 0.00   | 0.00    |                   |
| 2   | 300.00   | 0.00  | 0.00   | 300.00  | 0.00     | 0.00    | 0.00 | 0.00   | 0.00    |                   |
| 3   | 1690.00  | 20.85 | 76.80  | 1659.52 | 57.12    | 243.52  | 1.50 | 76.80  | -58.39  |                   |
| 4   | 4490.00  | 20.85 | 76.80  | 4276.17 | 284.69   | 1213.78 | 0.00 | 0.00   | -291.04 |                   |
| 5   | 5532.50  | 0.00  | 0.00   | 5295.81 | 327.53   | 1396.42 | 2.00 | 180.00 | -334.83 |                   |
| 6   | 6767.51  | 0.00  | 0.00   | 6530.82 | 327.53   | 1396.42 | 0.00 | 0.00   | -334.83 |                   |
| 7   | 7888.04  | 89.64 | 180.30 | 7247.00 | -384.19  | 1392.69 | 8.00 | 180.30 | 376.90  |                   |
| 8   | 13019.01 | 89.64 | 180.30 | 7279.00 | -5514.99 | 1365.78 | 0.00 | 0.00   | 5507.76 | FARLEY 23-5HZ_BHL |

## WELLBORE TARGET DETAILS (LAT/LONG)

| Name              | TVD     | +N/-S    | +E/-W   | Latitude  | Longitude   |
|-------------------|---------|----------|---------|-----------|-------------|
| FARLEY 23-5HZ_SHL | 0.00    | 0.00     | 0.00    | 40.205343 | -104.752022 |
| FARLEY 23-5HZ_BHL | 7279.00 | -5514.99 | 1365.78 | 40.190198 | -104.747132 |

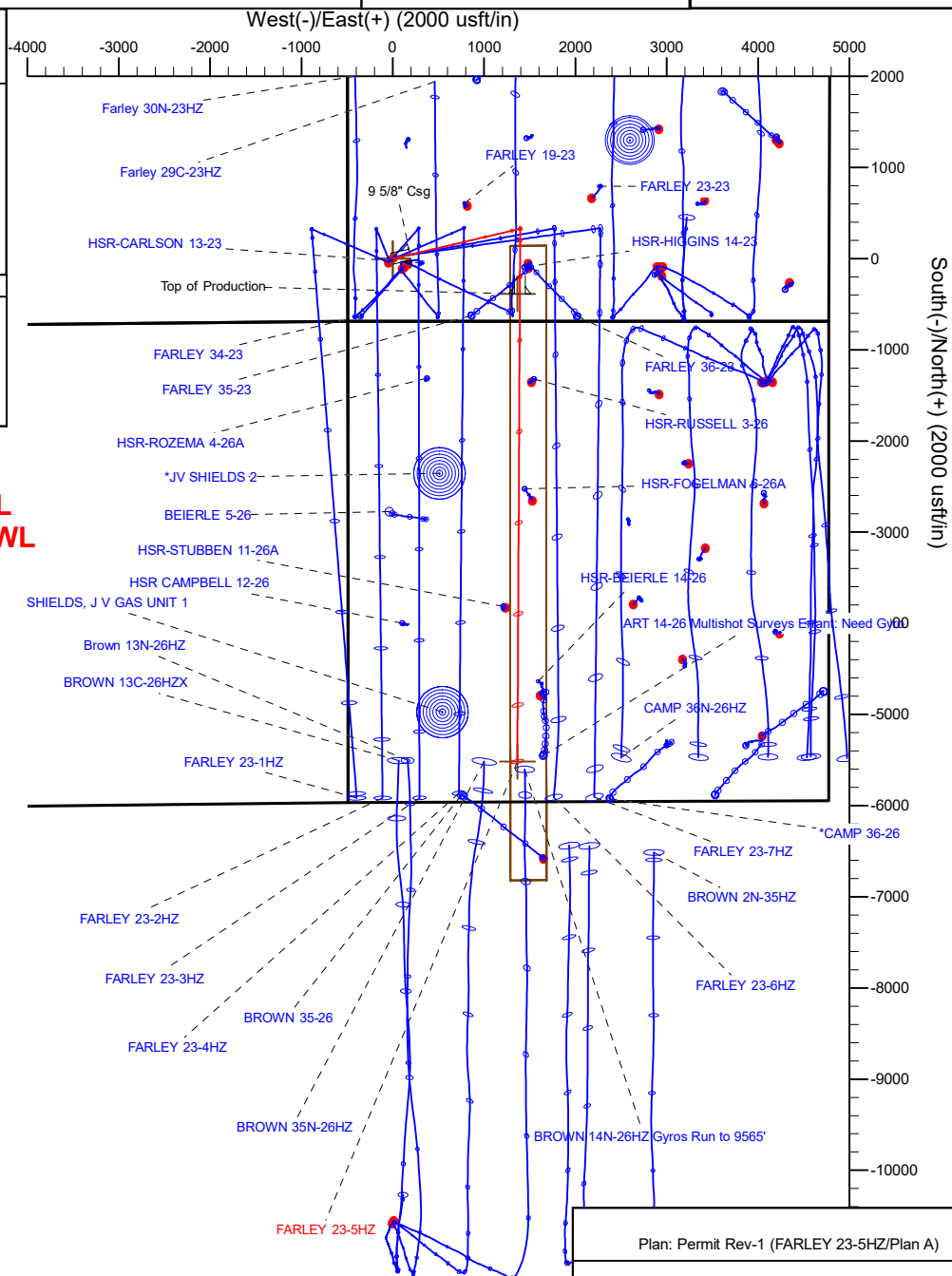
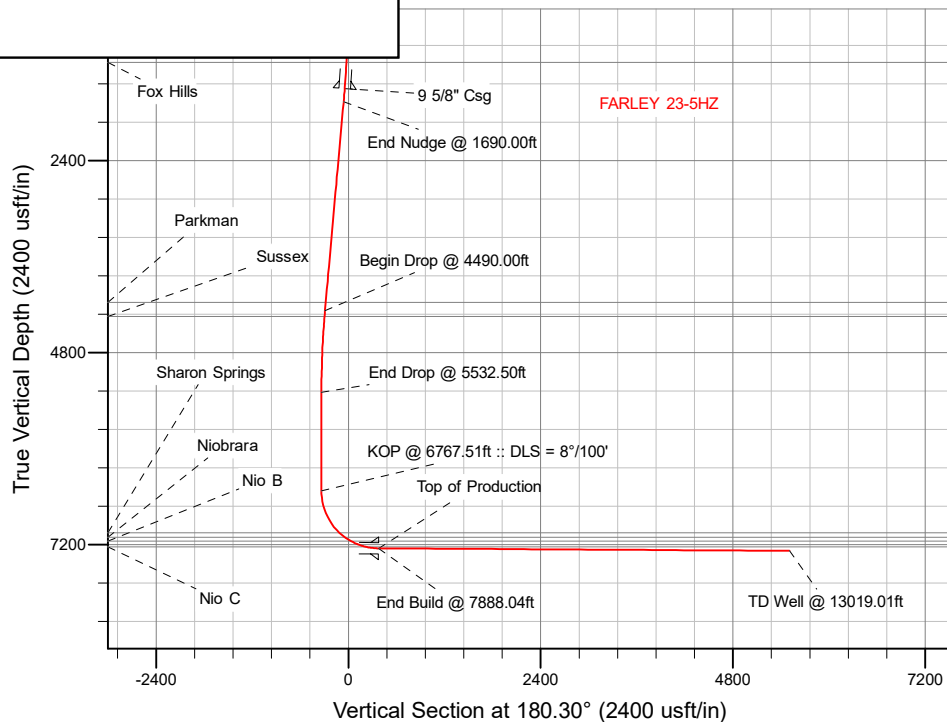
## FORMATION TOP DETAILS

| TVDPath | MDPath  | Formation      |
|---------|---------|----------------|
| 1171.00 | 1178.73 | Fox Hills      |
| 4171.00 | 4377.46 | Parkman        |
| 4349.00 | 4567.55 | Sussex         |
| 7054.00 | 7354.11 | Sharon Springs |
| 7111.00 | 7443.81 | Niobrara       |
| 7156.00 | 7527.50 | Nio B          |
| 7228.00 | 7727.09 | Nio C          |

**SHL**  
**686' FSL**  
**492' FWL**

**HEEL**  
**300' FSL**  
**1882' FWL**

**TOE**  
**445' FSL**  
**1854' FWL**



Plan: Permit Rev-1 (FARLEY 23-5HZ/Plan A)

Date: 10/02/2018

## Corporate Planning Report

|                  |                                |                                     |  |
|------------------|--------------------------------|-------------------------------------|--|
| <b>Database:</b> | PLANNING                       | <b>Local Co-ordinate Reference:</b> | Well FARLEY 23-5HZ                     |
| <b>Company:</b>  | US ROCKIES WATTENBERG PLANNING | <b>TVD Reference:</b>               | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Project:</b>  | WELD-NAD83-UTMFT13N            | <b>MD Reference:</b>                | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Site:</b>     | 3N-66W-23 FARLEY 34-23HZ PAD   | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | FARLEY 23-5HZ                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | Plan A                         |                                     |  |
| <b>Design:</b>   | Permit Rev-1                   |                                     |  |

|                    |  |                      |                |
|--------------------|--|----------------------|----------------|
| <b>Project</b>     | WELD-NAD83-UTMFT13N                            |                      |                |
| <b>Map System:</b> | Universal Transverse Mercator (US Survey Feet) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983                      |                      |                |
| <b>Map Zone:</b>   | Zone 13N (108 W to 102 W)                      |                      |                |

|                       |           |                              |                    |                   |             |
|-----------------------|-----------|------------------------------|--------------------|-------------------|-------------|
| Site                  |           | 3N-66W-23 FARLEY 34-23HZ PAD |                    |                   |             |
| Site Position:        |           | Northing:                    | 14,601,565.02 usft | Latitude:         | 40.205233   |
| From:                 | Lat/Long  | Easting:                     | 1,709,610.42 usft  | Longitude:        | -104.752181 |
| Position Uncertainty: | 0.00 usft | Slot Radius:                 | 13-3/16 "          | Grid Convergence: | 0.16 °      |

| Well                 | FARLEY 23-5HZ |            |                     |                    |               |               |
|----------------------|---------------|------------|---------------------|--------------------|---------------|---------------|
| Well Position        | +N-S          | 40.06 usft | Northing:           | 14,601,605.21 usft | Latitude:     | 40.205343     |
|                      | +E-W          | 44.39 usft | Easting:            | 1,709,654.71 usft  | Longitude:    | -104.752022   |
| Position Uncertainty |               | 3.28 usft  | Wellhead Elevation: |                    | Ground Level: | 4,939.00 usft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Plan A            |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2015          | 9/25/2018          | 8.05                   | 66.67                | 52,146.36599019            |

|                          |                                |                     |                      |                      |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | Permit Rev-1                   |                     |                      |                      |
| <b>Audit Notes:</b>      |                                |                     |                      |                      |
| <b>Version:</b>          | <b>Phase:</b>                  | PLAN                | <b>Tie On Depth:</b> | 0.00                 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b>  | <b>Direction (°)</b> |
|                          | 0.00                           | 0.00                | 0.00                 | 180.30               |

|                                 |                        |                          |                       |  |
|---------------------------------|------------------------|--------------------------|-----------------------|--|
| <b>Plan Survey Tool Program</b> | <b>Date</b>            | 10/2/2018                |                       |  |
| <b>Depth From (usft)</b>        | <b>Depth To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b>      | <b>Remarks</b>   |
| 1                               | 0.00                   | 1,500.00                 | Permit Rev-1 (Plan A) | APC_ISCWSA REV 2 MWD+II<br>Fixed:v2:crustal field declinatio |
| 2                               | 1,500.00               | 13,019.01                | Permit Rev-1 (Plan A) | APC_ISCWSA REV 2 MWD+II<br>Fixed:v2:Rockies, crustal dec +   |

Corporate  
Planning Report

|           |                                |                              |  |
|-----------|--------------------------------|------------------------------|--|
| Database: | PLANNING                       | Local Co-ordinate Reference: | Well FARLEY 23-5HZ                     |
| Company:  | US ROCKIES WATTENBERG PLANNING | TVD Reference:               | RKB = 17' @ 4956.00usft (Drilling Rig) |
| Project:  | WELD-NAD83-UTMFT13N            | MD Reference:                | RKB = 17' @ 4956.00usft (Drilling Rig) |
| Site:     | 3N-66W-23 FARLEY 34-23HZ PAD   | North Reference:             | True                                   |
| Well:     | FARLEY 23-5HZ                  | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | Plan A                         |                              |  |
| Design:   | Permit Rev-1                   |                              |  |

| Plan Sections               |                    |                |                             |                 |                 |                               |                              |                             |            |                   |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|------------------------------|-----------------------------|------------|-------------------|
| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | TFO<br>(°) | Target            |
| 0.00                        | 0.00               | 0.00           | 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       |                   |
| 1,690.00                    | 20.85              | 76.80          | 1,659.52                    | 57.12           | 243.52          | 1.50                          | 1.50                         | 0.00                        | 76.80      |                   |
| 4,490.00                    | 20.85              | 76.80          | 4,276.17                    | 284.69          | 1,213.78        | 0.00                          | 0.00                         | 0.00                        | 0.00       |                   |
| 5,532.50                    | 0.00               | 0.00           | 5,295.81                    | 327.53          | 1,396.42        | 2.00                          | -2.00                        | 0.00                        | 180.00     |                   |
| 6,767.51                    | 0.00               | 0.00           | 6,530.82                    | 327.53          | 1,396.42        | 0.00                          | 0.00                         | 0.00                        | 0.00       |                   |
| 7,888.04                    | 89.64              | 180.30         | 7,247.00                    | -384.19         | 1,392.69        | 8.00                          | 8.00                         | -16.04                      | 180.30     |                   |
| 13,019.01                   | 89.64              | 180.30         | 7,279.00                    | -5,514.99       | 1,365.78        | 0.00                          | 0.00                         | 0.00                        | 0.00       | FARLEY 23-5HZ_BHI |

# Corporate Planning Report

|                  |                                |                                     |  |
|------------------|--------------------------------|-------------------------------------|--|
| <b>Database:</b> | PLANNING                       | <b>Local Co-ordinate Reference:</b> | Well FARLEY 23-5HZ                     |
| <b>Company:</b>  | US ROCKIES WATTENBERG PLANNING | <b>TVD Reference:</b>               | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Project:</b>  | WELD-NAD83-UTMFT13N            | <b>MD Reference:</b>                | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Site:</b>     | 3N-66W-23 FARLEY 34-23HZ PAD   | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | FARLEY 23-5HZ                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | Plan A                         |                                     |  |
| <b>Design:</b>   | Permit Rev-1                   |                                     |  |

| Planned Survey         |                 |             |                       |              |              |                         |                         |                        |                       |
|------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 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) |
| 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                  |
| 200.00                 | 0.00            | 0.00        | 200.00                | 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                  |
| Begin Nudge @ 300.00ft |                 |             |                       |              |              |                         |                         |                        |                       |
| 400.00                 | 1.50            | 76.80       | 399.99                | 0.30         | 1.27         | -0.31                   | 1.50                    | 1.50                   | 0.00                  |
| 500.00                 | 3.00            | 76.80       | 499.91                | 1.20         | 5.10         | -1.22                   | 1.50                    | 1.50                   | 0.00                  |
| 600.00                 | 4.50            | 76.80       | 599.69                | 2.69         | 11.46        | -2.75                   | 1.50                    | 1.50                   | 0.00                  |
| 700.00                 | 6.00            | 76.80       | 699.27                | 4.78         | 20.37        | -4.88                   | 1.50                    | 1.50                   | 0.00                  |
| 800.00                 | 7.50            | 76.80       | 798.57                | 7.46         | 31.81        | -7.63                   | 1.50                    | 1.50                   | 0.00                  |
| 900.00                 | 9.00            | 76.80       | 897.54                | 10.74        | 45.78        | -10.98                  | 1.50                    | 1.50                   | 0.00                  |
| 1,000.00               | 10.50           | 76.80       | 996.09                | 14.61        | 62.27        | -14.93                  | 1.50                    | 1.50                   | 0.00                  |
| 1,100.00               | 12.00           | 76.80       | 1,094.16              | 19.06        | 81.26        | -19.49                  | 1.50                    | 1.50                   | 0.00                  |
| 1,178.73               | 13.18           | 76.80       | 1,171.00              | 22.98        | 97.97        | -23.49                  | 1.50                    | 1.50                   | 0.00                  |
| Fox Hills              |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,200.00               | 13.50           | 76.80       | 1,191.70              | 24.10        | 102.75       | -24.64                  | 1.50                    | 1.50                   | 0.00                  |
| 1,300.00               | 15.00           | 76.80       | 1,288.62              | 29.72        | 126.71       | -30.38                  | 1.50                    | 1.50                   | 0.00                  |
| 1,400.00               | 16.50           | 76.80       | 1,384.86              | 35.92        | 153.14       | -36.72                  | 1.50                    | 1.50                   | 0.00                  |
| 1,500.00               | 18.00           | 76.80       | 1,480.36              | 42.69        | 182.01       | -43.64                  | 1.50                    | 1.50                   | 0.00                  |
| 1,520.67               | 18.31           | 76.80       | 1,500.00              | 44.16        | 188.28       | -45.15                  | 1.50                    | 1.50                   | 0.00                  |
| 9 5/8" Csg             |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,600.00               | 19.50           | 76.80       | 1,575.05              | 50.03        | 213.30       | -51.15                  | 1.50                    | 1.50                   | 0.00                  |
| 1,690.00               | 20.85           | 76.80       | 1,659.52              | 57.12        | 243.52       | -58.39                  | 1.50                    | 1.50                   | 0.00                  |
| End Nudge @ 1690.00ft  |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,700.00               | 20.85           | 76.80       | 1,668.87              | 57.93        | 246.99       | -59.22                  | 0.00                    | 0.00                   | 0.00                  |
| 1,800.00               | 20.85           | 76.80       | 1,762.32              | 66.06        | 281.64       | -67.53                  | 0.00                    | 0.00                   | 0.00                  |
| 1,900.00               | 20.85           | 76.80       | 1,855.77              | 74.19        | 316.29       | -75.84                  | 0.00                    | 0.00                   | 0.00                  |
| 2,000.00               | 20.85           | 76.80       | 1,949.22              | 82.31        | 350.94       | -84.15                  | 0.00                    | 0.00                   | 0.00                  |
| 2,100.00               | 20.85           | 76.80       | 2,042.68              | 90.44        | 385.60       | -92.46                  | 0.00                    | 0.00                   | 0.00                  |
| 2,200.00               | 20.85           | 76.80       | 2,136.13              | 98.57        | 420.25       | -100.77                 | 0.00                    | 0.00                   | 0.00                  |
| 2,300.00               | 20.85           | 76.80       | 2,229.58              | 106.70       | 454.90       | -109.08                 | 0.00                    | 0.00                   | 0.00                  |
| 2,400.00               | 20.85           | 76.80       | 2,323.03              | 114.82       | 489.55       | -117.39                 | 0.00                    | 0.00                   | 0.00                  |
| 2,500.00               | 20.85           | 76.80       | 2,416.48              | 122.95       | 524.20       | -125.69                 | 0.00                    | 0.00                   | 0.00                  |
| 2,600.00               | 20.85           | 76.80       | 2,509.93              | 131.08       | 558.86       | -134.00                 | 0.00                    | 0.00                   | 0.00                  |
| 2,700.00               | 20.85           | 76.80       | 2,603.38              | 139.21       | 593.51       | -142.31                 | 0.00                    | 0.00                   | 0.00                  |
| 2,800.00               | 20.85           | 76.80       | 2,696.84              | 147.33       | 628.16       | -150.62                 | 0.00                    | 0.00                   | 0.00                  |
| 2,900.00               | 20.85           | 76.80       | 2,790.29              | 155.46       | 662.81       | -158.93                 | 0.00                    | 0.00                   | 0.00                  |
| 3,000.00               | 20.85           | 76.80       | 2,883.74              | 163.59       | 697.46       | -167.24                 | 0.00                    | 0.00                   | 0.00                  |
| 3,100.00               | 20.85           | 76.80       | 2,977.19              | 171.72       | 732.12       | -175.55                 | 0.00                    | 0.00                   | 0.00                  |
| 3,200.00               | 20.85           | 76.80       | 3,070.64              | 179.84       | 766.77       | -183.86                 | 0.00                    | 0.00                   | 0.00                  |
| 3,300.00               | 20.85           | 76.80       | 3,164.09              | 187.97       | 801.42       | -192.16                 | 0.00                    | 0.00                   | 0.00                  |
| 3,400.00               | 20.85           | 76.80       | 3,257.55              | 196.10       | 836.07       | -200.47                 | 0.00                    | 0.00                   | 0.00                  |
| 3,500.00               | 20.85           | 76.80       | 3,351.00              | 204.23       | 870.72       | -208.78                 | 0.00                    | 0.00                   | 0.00                  |
| 3,600.00               | 20.85           | 76.80       | 3,444.45              | 212.35       | 905.37       | -217.09                 | 0.00                    | 0.00                   | 0.00                  |
| 3,700.00               | 20.85           | 76.80       | 3,537.90              | 220.48       | 940.03       | -225.40                 | 0.00                    | 0.00                   | 0.00                  |
| 3,800.00               | 20.85           | 76.80       | 3,631.35              | 228.61       | 974.68       | -233.71                 | 0.00                    | 0.00                   | 0.00                  |
| 3,900.00               | 20.85           | 76.80       | 3,724.80              | 236.74       | 1,009.33     | -242.02                 | 0.00                    | 0.00                   | 0.00                  |
| 4,000.00               | 20.85           | 76.80       | 3,818.25              | 244.86       | 1,043.98     | -250.33                 | 0.00                    | 0.00                   | 0.00                  |
| 4,100.00               | 20.85           | 76.80       | 3,911.71              | 252.99       | 1,078.63     | -258.64                 | 0.00                    | 0.00                   | 0.00                  |
| 4,200.00               | 20.85           | 76.80       | 4,005.16              | 261.12       | 1,113.29     | -266.94                 | 0.00                    | 0.00                   | 0.00                  |
| 4,300.00               | 20.85           | 76.80       | 4,098.61              | 269.25       | 1,147.94     | -275.25                 | 0.00                    | 0.00                   | 0.00                  |
| 4,377.46               | 20.85           | 76.80       | 4,171.00              | 275.54       | 1,174.78     | -281.69                 | 0.00                    | 0.00                   | 0.00                  |
| Parkman                |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,400.00               | 20.85           | 76.80       | 4,192.06              | 277.37       | 1,182.59     | -283.56                 | 0.00                    | 0.00                   | 0.00                  |

# Corporate Planning Report

|                  |                                |                                     |  |
|------------------|--------------------------------|-------------------------------------|--|
| <b>Database:</b> | PLANNING                       | <b>Local Co-ordinate Reference:</b> | Well FARLEY 23-5HZ                     |
| <b>Company:</b>  | US ROCKIES WATTENBERG PLANNING | <b>TVD Reference:</b>               | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Project:</b>  | WELD-NAD83-UTMFT13N            | <b>MD Reference:</b>                | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Site:</b>     | 3N-66W-23 FARLEY 34-23HZ PAD   | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | FARLEY 23-5HZ                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | Plan A                         |                                     |  |
| <b>Design:</b>   | Permit Rev-1                   |                                     |  |

| Planned Survey                            |                 |             |                       |              |              |                         |                         |                        |                       |
|---|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 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) |
| 4,490.00                                  | 20.85           | 76.80       | 4,276.17              | 284.69       | 1,213.78     | -291.04                 | 0.00                    | 0.00                   | 0.00                  |
| Begin Drop @ 4490.00ft                    |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,500.00                                  | 20.65           | 76.80       | 4,285.52              | 285.50       | 1,217.23     | -291.87                 | 2.00                    | -2.00                  | 0.00                  |
| 4,567.55                                  | 19.30           | 76.80       | 4,349.00              | 290.77       | 1,239.69     | -297.25                 | 2.00                    | -2.00                  | 0.00                  |
| Sussex                                    |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,600.00                                  | 18.65           | 76.80       | 4,379.69              | 293.18       | 1,249.96     | -299.72                 | 2.00                    | -2.00                  | 0.00                  |
| 4,700.00                                  | 16.65           | 76.80       | 4,474.98              | 300.10       | 1,279.48     | -306.79                 | 2.00                    | -2.00                  | 0.00                  |
| 4,800.00                                  | 14.65           | 76.80       | 4,571.27              | 306.26       | 1,305.74     | -313.09                 | 2.00                    | -2.00                  | 0.00                  |
| 4,900.00                                  | 12.65           | 76.80       | 4,668.44              | 311.65       | 1,328.72     | -318.60                 | 2.00                    | -2.00                  | 0.00                  |
| 5,000.00                                  | 10.65           | 76.80       | 4,766.37              | 316.26       | 1,348.38     | -323.31                 | 2.00                    | -2.00                  | 0.00                  |
| 5,100.00                                  | 8.65            | 76.80       | 4,864.95              | 320.09       | 1,364.69     | -327.23                 | 2.00                    | -2.00                  | 0.00                  |
| 5,200.00                                  | 6.65            | 76.80       | 4,964.06              | 323.13       | 1,377.65     | -330.33                 | 2.00                    | -2.00                  | 0.00                  |
| 5,300.00                                  | 4.65            | 76.80       | 5,063.57              | 325.37       | 1,387.24     | -332.63                 | 2.00                    | -2.00                  | 0.00                  |
| 5,400.00                                  | 2.65            | 76.80       | 5,163.36              | 326.83       | 1,393.44     | -334.12                 | 2.00                    | -2.00                  | 0.00                  |
| 5,500.00                                  | 0.65            | 76.80       | 5,263.31              | 327.49       | 1,396.24     | -334.79                 | 2.00                    | -2.00                  | 0.00                  |
| 5,532.50                                  | 0.00            | 0.00        | 5,295.81              | 327.53       | 1,396.42     | -334.83                 | 2.00                    | -2.00                  | 0.00                  |
| End Drop @ 5532.50ft                      |                 |             |                       |              |              |                         |                         |                        |                       |
| 5,600.00                                  | 0.00            | 0.00        | 5,363.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 5,700.00                                  | 0.00            | 0.00        | 5,463.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 5,800.00                                  | 0.00            | 0.00        | 5,563.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 5,900.00                                  | 0.00            | 0.00        | 5,663.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,000.00                                  | 0.00            | 0.00        | 5,763.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,100.00                                  | 0.00            | 0.00        | 5,863.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,200.00                                  | 0.00            | 0.00        | 5,963.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,300.00                                  | 0.00            | 0.00        | 6,063.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,400.00                                  | 0.00            | 0.00        | 6,163.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,500.00                                  | 0.00            | 0.00        | 6,263.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,600.00                                  | 0.00            | 0.00        | 6,363.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,700.00                                  | 0.00            | 0.00        | 6,463.31              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| 6,767.51                                  | 0.00            | 0.00        | 6,530.82              | 327.53       | 1,396.42     | -334.83                 | 0.00                    | 0.00                   | 0.00                  |
| KOP @ 6767.51ft :: DLS = 8°/100'          |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,800.00                                  | 2.60            | 180.30      | 6,563.30              | 326.79       | 1,396.42     | -334.10                 | 8.00                    | 8.00                   | 0.00                  |
| 6,900.00                                  | 10.60           | 180.30      | 6,662.56              | 315.31       | 1,396.36     | -322.61                 | 8.00                    | 8.00                   | 0.00                  |
| 7,000.00                                  | 18.60           | 180.30      | 6,759.25              | 290.12       | 1,396.22     | -297.43                 | 8.00                    | 8.00                   | 0.00                  |
| 7,100.00                                  | 26.60           | 180.30      | 6,851.50              | 251.73       | 1,396.02     | -259.03                 | 8.00                    | 8.00                   | 0.00                  |
| 7,200.00                                  | 34.60           | 180.30      | 6,937.50              | 200.87       | 1,395.76     | -208.17                 | 8.00                    | 8.00                   | 0.00                  |
| 7,300.00                                  | 42.60           | 180.30      | 7,015.59              | 138.53       | 1,395.43     | -145.83                 | 8.00                    | 8.00                   | 0.00                  |
| 7,354.11                                  | 46.93           | 180.30      | 7,054.00              | 100.44       | 1,395.23     | -107.74                 | 8.00                    | 8.00                   | 0.00                  |
| Sharon Springs                            |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,400.00                                  | 50.60           | 180.30      | 7,084.24              | 65.93        | 1,395.05     | -73.24                  | 8.00                    | 8.00                   | 0.00                  |
| 7,443.81                                  | 54.10           | 180.30      | 7,111.00              | 31.25        | 1,394.87     | -38.55                  | 8.00                    | 8.00                   | 0.00                  |
| Niobrara                                  |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,500.00                                  | 58.60           | 180.30      | 7,142.13              | -15.51       | 1,394.62     | 8.21                    | 8.00                    | 8.00                   | 0.00                  |
| 7,527.50                                  | 60.80           | 180.30      | 7,156.00              | -39.25       | 1,394.50     | 31.95                   | 8.00                    | 8.00                   | 0.00                  |
| Nio B                                     |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,600.00                                  | 66.60           | 180.30      | 7,188.11              | -104.22      | 1,394.16     | 96.92                   | 8.00                    | 8.00                   | 0.00                  |
| 7,700.00                                  | 74.60           | 180.30      | 7,221.30              | -198.46      | 1,393.66     | 191.16                  | 8.00                    | 8.00                   | 0.00                  |
| 7,727.09                                  | 76.77           | 180.30      | 7,228.00              | -224.71      | 1,393.52     | 217.41                  | 8.00                    | 8.00                   | 0.00                  |
| Nio C                                     |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,800.00                                  | 82.60           | 180.30      | 7,241.05              | -296.41      | 1,393.15     | 289.11                  | 8.00                    | 8.00                   | 0.00                  |
| 7,888.04                                  | 89.64           | 180.30      | 7,247.00              | -384.19      | 1,392.69     | 376.89                  | 8.00                    | 8.00                   | 0.00                  |
| End Build @ 7888.04ft - Top of Production |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,900.00                                  | 89.64           | 180.30      | 7,247.08              | -396.15      | 1,392.62     | 388.85                  | 0.00                    | 0.00                   | 0.00                  |

## Planning Report

|                  |                                |                                     |  |
|------------------|--------------------------------|-------------------------------------|--|
| <b>Database:</b> | PLANNING                       | <b>Local Co-ordinate Reference:</b> | Well FARLEY 23-5HZ                     |
| <b>Company:</b>  | US ROCKIES WATTENBERG PLANNING | <b>TVD Reference:</b>               | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Project:</b>  | WELD-NAD83-UTMFT13N            | <b>MD Reference:</b>                | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Site:</b>     | 3N-66W-23 FARLEY 34-23HZ PAD   | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | FARLEY 23-5HZ                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | Plan A                         |                                     |  |
| <b>Design:</b>   | Permit Rev-1                   |                                     |  |

| Planned Survey              |                    |                |                             |                 |                 |                               |                               |                              |                             |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| 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) |
| 8,000.00                    | 89.64              | 180.30         | 7,247.70                    | -496.15         | 1,392.10        | 488.85                        | 0.00                          | 0.00                         | 0.00                        |
| 8,100.00                    | 89.64              | 180.30         | 7,248.33                    | -596.14         | 1,391.58        | 588.85                        | 0.00                          | 0.00                         | 0.00                        |
| 8,200.00                    | 89.64              | 180.30         | 7,248.95                    | -696.14         | 1,391.05        | 688.85                        | 0.00                          | 0.00                         | 0.00                        |
| 8,300.00                    | 89.64              | 180.30         | 7,249.57                    | -796.14         | 1,390.53        | 788.84                        | 0.00                          | 0.00                         | 0.00                        |
| 8,400.00                    | 89.64              | 180.30         | 7,250.20                    | -896.13         | 1,390.00        | 888.84                        | 0.00                          | 0.00                         | 0.00                        |
| 8,500.00                    | 89.64              | 180.30         | 7,250.82                    | -996.13         | 1,389.48        | 988.84                        | 0.00                          | 0.00                         | 0.00                        |
| 8,600.00                    | 89.64              | 180.30         | 7,251.44                    | -1,096.13       | 1,388.95        | 1,088.84                      | 0.00                          | 0.00                         | 0.00                        |
| 8,700.00                    | 89.64              | 180.30         | 7,252.07                    | -1,196.12       | 1,388.43        | 1,188.84                      | 0.00                          | 0.00                         | 0.00                        |
| 8,800.00                    | 89.64              | 180.30         | 7,252.69                    | -1,296.12       | 1,387.90        | 1,288.84                      | 0.00                          | 0.00                         | 0.00                        |
| 8,900.00                    | 89.64              | 180.30         | 7,253.31                    | -1,396.12       | 1,387.38        | 1,388.83                      | 0.00                          | 0.00                         | 0.00                        |
| 9,000.00                    | 89.64              | 180.30         | 7,253.94                    | -1,496.11       | 1,386.86        | 1,488.83                      | 0.00                          | 0.00                         | 0.00                        |
| 9,100.00                    | 89.64              | 180.30         | 7,254.56                    | -1,596.11       | 1,386.33        | 1,588.83                      | 0.00                          | 0.00                         | 0.00                        |
| 9,200.00                    | 89.64              | 180.30         | 7,255.19                    | -1,696.11       | 1,385.81        | 1,688.83                      | 0.00                          | 0.00                         | 0.00                        |
| 9,300.00                    | 89.64              | 180.30         | 7,255.81                    | -1,796.10       | 1,385.28        | 1,788.83                      | 0.00                          | 0.00                         | 0.00                        |
| 9,400.00                    | 89.64              | 180.30         | 7,256.43                    | -1,896.10       | 1,384.76        | 1,888.82                      | 0.00                          | 0.00                         | 0.00                        |
| 9,500.00                    | 89.64              | 180.30         | 7,257.06                    | -1,996.10       | 1,384.23        | 1,988.82                      | 0.00                          | 0.00                         | 0.00                        |
| 9,600.00                    | 89.64              | 180.30         | 7,257.68                    | -2,096.09       | 1,383.71        | 2,088.82                      | 0.00                          | 0.00                         | 0.00                        |
| 9,700.00                    | 89.64              | 180.30         | 7,258.30                    | -2,196.09       | 1,383.18        | 2,188.82                      | 0.00                          | 0.00                         | 0.00                        |
| 9,800.00                    | 89.64              | 180.30         | 7,258.93                    | -2,296.09       | 1,382.66        | 2,288.82                      | 0.00                          | 0.00                         | 0.00                        |
| 9,900.00                    | 89.64              | 180.30         | 7,259.55                    | -2,396.08       | 1,382.14        | 2,388.81                      | 0.00                          | 0.00                         | 0.00                        |
| 10,000.00                   | 89.64              | 180.30         | 7,260.17                    | -2,496.08       | 1,381.61        | 2,488.81                      | 0.00                          | 0.00                         | 0.00                        |
| 10,100.00                   | 89.64              | 180.30         | 7,260.80                    | -2,596.08       | 1,381.09        | 2,588.81                      | 0.00                          | 0.00                         | 0.00                        |
| 10,200.00                   | 89.64              | 180.30         | 7,261.42                    | -2,696.07       | 1,380.56        | 2,688.81                      | 0.00                          | 0.00                         | 0.00                        |
| 10,300.00                   | 89.64              | 180.30         | 7,262.04                    | -2,796.07       | 1,380.04        | 2,788.81                      | 0.00                          | 0.00                         | 0.00                        |
| 10,400.00                   | 89.64              | 180.30         | 7,262.67                    | -2,896.07       | 1,379.51        | 2,888.80                      | 0.00                          | 0.00                         | 0.00                        |
| 10,500.00                   | 89.64              | 180.30         | 7,263.29                    | -2,996.06       | 1,378.99        | 2,988.80                      | 0.00                          | 0.00                         | 0.00                        |
| 10,600.00                   | 89.64              | 180.30         | 7,263.92                    | -3,096.06       | 1,378.47        | 3,088.80                      | 0.00                          | 0.00                         | 0.00                        |
| 10,700.00                   | 89.64              | 180.30         | 7,264.54                    | -3,196.06       | 1,377.94        | 3,188.80                      | 0.00                          | 0.00                         | 0.00                        |
| 10,800.00                   | 89.64              | 180.30         | 7,265.16                    | -3,296.05       | 1,377.42        | 3,288.80                      | 0.00                          | 0.00                         | 0.00                        |
| 10,900.00                   | 89.64              | 180.30         | 7,265.79                    | -3,396.05       | 1,376.89        | 3,388.79                      | 0.00                          | 0.00                         | 0.00                        |
| 11,000.00                   | 89.64              | 180.30         | 7,266.41                    | -3,496.05       | 1,376.37        | 3,488.79                      | 0.00                          | 0.00                         | 0.00                        |
| 11,100.00                   | 89.64              | 180.30         | 7,267.03                    | -3,596.04       | 1,375.84        | 3,588.79                      | 0.00                          | 0.00                         | 0.00                        |
| 11,200.00                   | 89.64              | 180.30         | 7,267.66                    | -3,696.04       | 1,375.32        | 3,688.79                      | 0.00                          | 0.00                         | 0.00                        |
| 11,300.00                   | 89.64              | 180.30         | 7,268.28                    | -3,796.04       | 1,374.79        | 3,788.79                      | 0.00                          | 0.00                         | 0.00                        |
| 11,400.00                   | 89.64              | 180.30         | 7,268.90                    | -3,896.03       | 1,374.27        | 3,888.78                      | 0.00                          | 0.00                         | 0.00                        |
| 11,500.00                   | 89.64              | 180.30         | 7,269.53                    | -3,996.03       | 1,373.75        | 3,988.78                      | 0.00                          | 0.00                         | 0.00                        |
| 11,600.00                   | 89.64              | 180.30         | 7,270.15                    | -4,096.03       | 1,373.22        | 4,088.78                      | 0.00                          | 0.00                         | 0.00                        |
| 11,700.00                   | 89.64              | 180.30         | 7,270.77                    | -4,196.02       | 1,372.70        | 4,188.78                      | 0.00                          | 0.00                         | 0.00                        |
| 11,800.00                   | 89.64              | 180.30         | 7,271.40                    | -4,296.02       | 1,372.17        | 4,288.78                      | 0.00                          | 0.00                         | 0.00                        |
| 11,900.00                   | 89.64              | 180.30         | 7,272.02                    | -4,396.02       | 1,371.65        | 4,388.78                      | 0.00                          | 0.00                         | 0.00                        |
| 12,000.00                   | 89.64              | 180.30         | 7,272.65                    | -4,496.01       | 1,371.12        | 4,488.77                      | 0.00                          | 0.00                         | 0.00                        |
| 12,100.00                   | 89.64              | 180.30         | 7,273.27                    | -4,596.01       | 1,370.60        | 4,588.77                      | 0.00                          | 0.00                         | 0.00                        |
| 12,200.00                   | 89.64              | 180.30         | 7,273.89                    | -4,696.01       | 1,370.07        | 4,688.77                      | 0.00                          | 0.00                         | 0.00                        |
| 12,300.00                   | 89.64              | 180.30         | 7,274.52                    | -4,796.00       | 1,369.55        | 4,788.77                      | 0.00                          | 0.00                         | 0.00                        |
| 12,400.00                   | 89.64              | 180.30         | 7,275.14                    | -4,896.00       | 1,369.03        | 4,888.77                      | 0.00                          | 0.00                         | 0.00                        |
| 12,500.00                   | 89.64              | 180.30         | 7,275.76                    | -4,996.00       | 1,368.50        | 4,988.76                      | 0.00                          | 0.00                         | 0.00                        |
| 12,600.00                   | 89.64              | 180.30         | 7,276.39                    | -5,095.99       | 1,367.98        | 5,088.76                      | 0.00                          | 0.00                         | 0.00                        |
| 12,700.00                   | 89.64              | 180.30         | 7,277.01                    | -5,195.99       | 1,367.45        | 5,188.76                      | 0.00                          | 0.00                         | 0.00                        |
| 12,800.00                   | 89.64              | 180.30         | 7,277.63                    | -5,295.99       | 1,366.93        | 5,288.76                      | 0.00                          | 0.00                         | 0.00                        |
| 12,900.00                   | 89.64              | 180.30         | 7,278.26                    | -5,395.98       | 1,366.40        | 5,388.76                      | 0.00                          | 0.00                         | 0.00                        |
| 13,000.00                   | 89.64              | 180.30         | 7,278.88                    | -5,495.98       | 1,365.88        | 5,488.75                      | 0.00                          | 0.00                         | 0.00                        |
| 13,019.01                   | 89.64              | 180.30         | 7,279.00                    | -5,514.99       | 1,365.78        | 5,507.76                      | 0.00                          | 0.00                         | 0.00                        |
| TD Well @ 13019.01ft        |                    |                |                             |                 |                 |                               |                               |                              |                             |

# Corporate Planning Report

|                  |                                |                                     |  |
|------------------|--------------------------------|-------------------------------------|--|
| <b>Database:</b> | PLANNING                       | <b>Local Co-ordinate Reference:</b> | Well FARLEY 23-5HZ                     |
| <b>Company:</b>  | US ROCKIES WATTENBERG PLANNING | <b>TVD Reference:</b>               | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Project:</b>  | WELD-NAD83-UTMFT13N            | <b>MD Reference:</b>                | RKB = 17' @ 4956.00usft (Drilling Rig) |
| <b>Site:</b>     | 3N-66W-23 FARLEY 34-23HZ PAD   | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | FARLEY 23-5HZ                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | Plan A                         |                                     |  |
| <b>Design:</b>   | Permit Rev-1                   |                                     |  |

| Casing Points         |                       |                   |                     |                   |  |
|-----------------------|-----------------------|-------------------|---------------------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name              | Casing Diameter (") | Hole Diameter (") |  |
| 1,520.67              | 1,500.00              | 9 5/8" Csg        | 9-5/8               | 13-1/2            |  |
| 7,888.04              | 7,247.00              | Top of Production | 5-1/2               | 7-7/8             |  |

| Formations            |                       |                |           |         |                   |  |
|-----------------------|-----------------------|----------------|-----------|---------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name           | Lithology | Dip (°) | Dip Direction (°) |  |
| 1,178.73              | 1,171.00              | Fox Hills      |           |         |                   |  |
| 4,377.46              | 4,171.00              | Parkman        |           |         |                   |  |
| 4,567.55              | 4,349.00              | Sussex         |           |         |                   |  |
| 7,354.11              | 7,054.00              | Sharon Springs |           |         |                   |  |
| 7,443.81              | 7,111.00              | Niobrara       |           |         |                   |  |
| 7,527.50              | 7,156.00              | Nio B          |           |         |                   |  |
| 7,727.09              | 7,228.00              | Nio C          |           |         |                   |  |

| Plan Annotations      |                       |                   |              |                                  |  |
|-----------------------|-----------------------|-------------------|--------------|----------------------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              |                                  |  |
|                       |                       | +N/-S (usft)      | +E/-W (usft) | Comment                          |  |
| 300.00                | 300.00                | 0.00              | 0.00         | Begin Nudge @ 300.00ft           |  |
| 1,690.00              | 1,659.52              | 57.12             | 243.52       | End Nudge @ 1690.00ft            |  |
| 4,490.00              | 4,276.17              | 284.69            | 1,213.78     | Begin Drop @ 4490.00ft           |  |
| 5,532.50              | 5,295.81              | 327.53            | 1,396.42     | End Drop @ 5532.50ft             |  |
| 6,767.51              | 6,530.82              | 327.53            | 1,396.42     | KOP @ 6767.51ft :: DLS = 8°/100' |  |
| 7,888.04              | 7,247.00              | -384.19           | 1,392.69     | End Build @ 7888.04ft            |  |
| 13,019.01             | 7,279.00              | -5,514.99         | 1,365.78     | TD Well @ 13019.01ft             |  |