

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

Cream 27-28HZ Pad

Cream State 2N-21HZ

Plan C

Plan: Permit Rev-1

## Sperry Drilling Services Proposal Report

22 October, 2014

Well Coordinates: 14,600,660.60 N, 1,734,139.24 E (40° 12' 09.10" N, 104° 39' 51.64" W)

Ground Level: 4,826.00 usft

Local Coordinate Origin:

Centered on Well Cream State 2N-21HZ

Viewing Datum:

RKB = 17' @ 4843.00usft (D Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Version: 5000.1 Build: 70

**HALLIBURTON**

Project: WELD-NAD83-UTMFT13N  
Site: Cream 27-28HZ Pad  
Well: Cream State 2N-21HZ  
Wellbore: Plan C  
Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

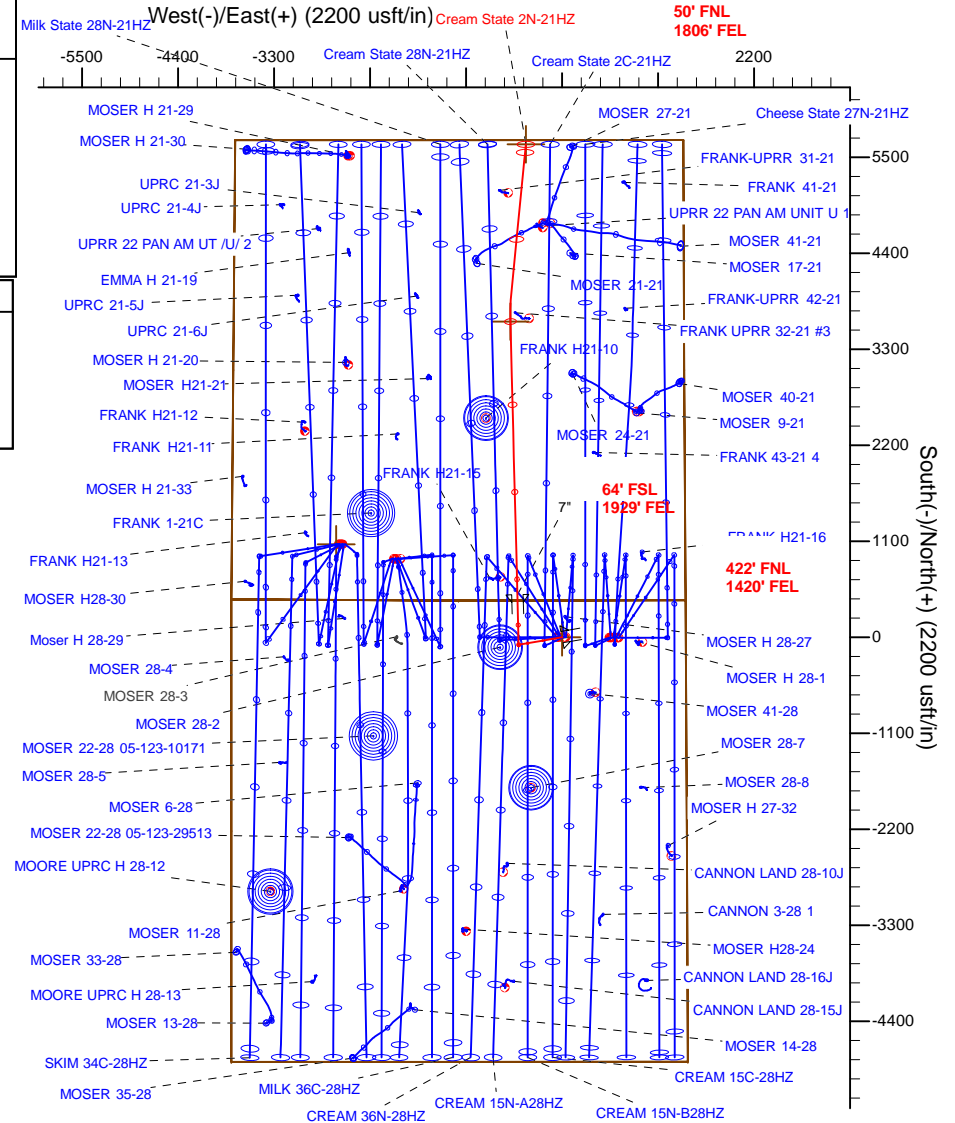
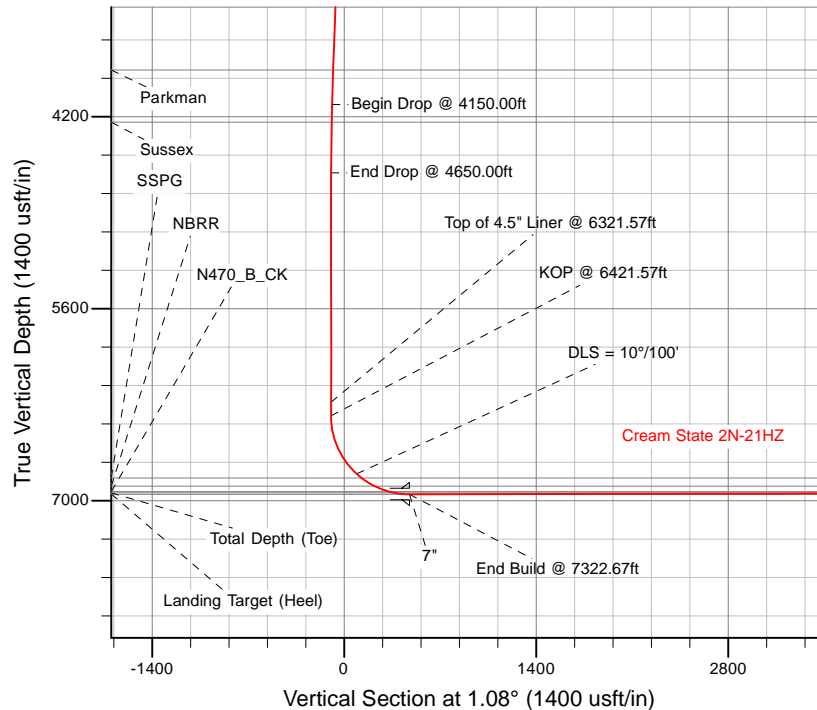
**HALLIBURTON**  
Sperry Drilling

## 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   | 1250.00  | 0.00  | 0.00   | 1250.00 | 0.00    | 0.00    | 0.00  | 0.00   | 0.00    |                                    |
| 3   | 1750.00  | 10.00 | 260.00 | 1747.47 | -7.56   | -42.86  | 2.00  | 260.00 | -8.36   |                                    |
| 4   | 4150.00  | 10.00 | 260.00 | 4111.00 | -79.93  | -453.29 | 0.00  | 0.00   | -88.46  |                                    |
| 5   | 4650.00  | 0.00  | 0.00   | 4608.47 | -87.48  | -496.15 | 2.00  | 180.00 | -96.82  |                                    |
| 6   | 6421.57  | 0.00  | 0.00   | 6380.04 | -87.48  | -496.15 | 0.00  | 0.00   | -96.82  |                                    |
| 7   | 7322.67  | 90.11 | 358.54 | 6953.00 | 486.39  | -510.79 | 10.00 | 358.54 | 476.68  |                                    |
| 8   | 10454.31 | 90.11 | 358.54 | 6946.96 | 3617.00 | -590.69 | 0.00  | 0.00   | 3605.22 | Cream State 2N-21HZ_Lateral Target |
| 9   | 10807.54 | 90.11 | 5.60   | 6946.28 | 3969.78 | -577.94 | 2.00  | 89.99  | 3958.18 |                                    |
| 10  | 12492.44 | 90.11 | 5.60   | 6943.00 | 5646.63 | -413.44 | 0.00  | 0.00   | 5637.83 | Cream State 2N-21HZ_BHL            |

## WELLBORE TARGET DETAILS (LAT/LONG)

| Name                               | TVD     | +N/-S   | +E/-W    | Latitude  | Longitude   | Polygon |
|------------------------------------|---------|---------|----------|-----------|-------------|---------|
| Sec. 28 and 21-T3N-R65W            | -21.00  | 1064.93 | -2586.90 | 40.205452 | -104.673609 | Polygon |
| Cream State 2N-21HZ_SHL            | 0.00    | 0.00    | 0.00     | 40.202528 | -104.664344 |         |
| Cream State 2N-21HZ_BHL            | 6943.00 | 5646.63 | -413.44  | 40.218034 | -104.665825 |         |
| Cream State 2N-21HZ_Lateral Target | 6946.96 | 3617.00 | -590.69  | 40.212461 | -104.666460 | Point   |



| TVD MD  |         |                               | WELL DETAILS: Cream State 2N-21HZ               |                  |
|---------|---------|-------------------------------|---|------------------|
|         |         |                               | Ground Level:                                   | 4826.00          |
|         |         |                               | RKB = 17' @ 4843.00usft (D Rig)                 |                  |
|         |         |                               | Plan: Permit Rev-1 (Cream State 2N-21HZ/Plan C) |                  |
|         |         |                               | Created By: Clint Eshelman                      | Date: 10/22/2014 |
|         |         |                               | Reviewed:                                       | Date:            |
| 6280.04 | 6321.57 | Top of 4.5" Liner @ 6321.57ft |   |                  |
| 6380.04 | 6421.57 | KOP @ 6421.57ft               |   |                  |

## Plan Report for Cream State 2N-21HZ - Permit Rev-1

| Measured<br>Depth<br>(usft)                              | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | Toolface<br>Azimuth<br>(°) |
|--|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 0.00   | 0.00               | 0.00           | 0.00                        | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Cream State 2N-21HZ_SHL - Sec. 28 and 21-T3N-R65W</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 100.00   | 0.00               | 0.00           | 100.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 200.00   | 0.00               | 0.00           | 200.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 300.00   | 0.00               | 0.00           | 300.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 400.00   | 0.00               | 0.00           | 400.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 500.00   | 0.00               | 0.00           | 500.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 600.00   | 0.00               | 0.00           | 600.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 602.00   | 0.00               | 0.00           | 602.00                      | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Base Fox Hills</b>                                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 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                       |
| 1,115.00   | 0.00               | 0.00           | 1,115.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Surface Csg Setting Depth - 9 5/8"</b>                |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 1,200.00   | 0.00               | 0.00           | 1,200.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 1,250.00   | 0.00               | 0.00           | 1,250.00                    | 0.00            | 0.00            | 0.00                          | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Begin Nudge @ 1250.00ft</b>                           |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 1,300.00   | 1.00               | 260.00         | 1,300.00                    | -0.08           | -0.43           | -0.08                         | 2.00                          | 2.00                         | 0.00                        | 260.00                     |
| 1,400.00   | 3.00               | 260.00         | 1,399.93                    | -0.68           | -3.87           | -0.75                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 1,500.00   | 5.00               | 260.00         | 1,499.68                    | -1.89           | -10.74          | -2.10                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 1,600.00   | 7.00               | 260.00         | 1,599.13                    | -3.71           | -21.03          | -4.10                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 1,700.00   | 9.00               | 260.00         | 1,698.15                    | -6.12           | -34.73          | -6.78                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| 1,750.00   | 10.00              | 260.00         | 1,747.47                    | -7.56           | -42.86          | -8.36                         | 2.00                          | 2.00                         | 0.00                        | 0.00                       |
| <b>End Nudge @ 1750.00ft</b>                             |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 1,800.00   | 10.00              | 260.00         | 1,796.71                    | -9.07           | -51.41          | -10.03                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 1,900.00   | 10.00              | 260.00         | 1,895.19                    | -12.08          | -68.51          | -13.37                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,000.00   | 10.00              | 260.00         | 1,993.67                    | -15.10          | -85.61          | -16.71                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,100.00   | 10.00              | 260.00         | 2,092.15                    | -18.11          | -102.71         | -20.04                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,200.00   | 10.00              | 260.00         | 2,190.63                    | -21.13          | -119.82         | -23.38                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,300.00   | 10.00              | 260.00         | 2,289.11                    | -24.14          | -136.92         | -26.72                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,400.00   | 10.00              | 260.00         | 2,387.59                    | -27.16          | -154.02         | -30.06                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,500.00   | 10.00              | 260.00         | 2,486.07                    | -30.17          | -171.12         | -33.39                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,600.00   | 10.00              | 260.00         | 2,584.55                    | -33.19          | -188.22         | -36.73                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,700.00   | 10.00              | 260.00         | 2,683.03                    | -36.20          | -205.32         | -40.07                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,800.00   | 10.00              | 260.00         | 2,781.51                    | -39.22          | -222.42         | -43.40                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 2,900.00   | 10.00              | 260.00         | 2,879.99                    | -42.23          | -239.52         | -46.74                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,000.00   | 10.00              | 260.00         | 2,978.48                    | -45.25          | -256.62         | -50.08                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,100.00   | 10.00              | 260.00         | 3,076.96                    | -48.27          | -273.72         | -53.42                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,200.00   | 10.00              | 260.00         | 3,175.44                    | -51.28          | -290.83         | -56.75                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,300.00   | 10.00              | 260.00         | 3,273.92                    | -54.30          | -307.93         | -60.09                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,400.00   | 10.00              | 260.00         | 3,372.40                    | -57.31          | -325.03         | -63.43                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,500.00   | 10.00              | 260.00         | 3,470.88                    | -60.33          | -342.13         | -66.76                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,600.00   | 10.00              | 260.00         | 3,569.36                    | -63.34          | -359.23         | -70.10                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,700.00   | 10.00              | 260.00         | 3,667.84                    | -66.36          | -376.33         | -73.44                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,800.00   | 10.00              | 260.00         | 3,766.32                    | -69.37          | -393.43         | -76.78                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 3,894.11   | 10.00              | 260.00         | 3,859.00                    | -72.21          | -409.53         | -79.92                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Parkman</b>   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 3,900.00   | 10.00              | 260.00         | 3,864.80                    | -72.39          | -410.53         | -80.11                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,000.00   | 10.00              | 260.00         | 3,963.28                    | -75.40          | -427.63         | -83.45                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,100.00   | 10.00              | 260.00         | 4,061.76                    | -78.42          | -444.74         | -86.79                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,150.00   | 10.00              | 260.00         | 4,111.00                    | -79.93          | -453.29         | -88.46                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Begin Drop @ 4150.00ft</b>                            |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 4,200.00   | 9.00               | 260.00         | 4,160.32                    | -81.36          | -461.41         | -90.04                        | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 4,279.50   | 7.41               | 260.00         | 4,239.00                    | -83.33          | -472.59         | -92.22                        | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| <b>Sussex</b>  |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |

## Plan Report for Cream State 2N-21HZ - Permit Rev-1

| Measured<br>Depth<br>(usft)                               | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | Toolface<br>Azimuth<br>(°) |
|---|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 4,300.00  | 7.00               | 260.00         | 4,259.34                    | -83.78          | -475.12         | -92.72                        | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 4,400.00  | 5.00               | 260.00         | 4,358.79                    | -85.59          | -485.41         | -94.73                        | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 4,500.00  | 3.00               | 260.00         | 4,458.54                    | -86.80          | -492.28         | -96.07                        | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 4,600.00  | 1.00               | 260.00         | 4,558.47                    | -87.41          | -495.72         | -96.74                        | 2.00                          | -2.00                        | 0.00                        | 180.00                     |
| 4,650.00  | 0.00               | 0.00           | 4,608.47                    | -87.48          | -496.15         | -96.82                        | 2.00                          | -2.00                        | 200.00                      | 180.00                     |
| <b>End Drop @ 4650.00ft</b>                               |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 4,700.00  | 0.00               | 0.00           | 4,658.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 180.00                     |
| 4,800.00  | 0.00               | 0.00           | 4,758.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 4,900.00  | 0.00               | 0.00           | 4,858.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,000.00  | 0.00               | 0.00           | 4,958.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,100.00  | 0.00               | 0.00           | 5,058.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,200.00  | 0.00               | 0.00           | 5,158.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,300.00  | 0.00               | 0.00           | 5,258.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,400.00  | 0.00               | 0.00           | 5,358.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,500.00  | 0.00               | 0.00           | 5,458.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,600.00  | 0.00               | 0.00           | 5,558.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,700.00  | 0.00               | 0.00           | 5,658.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,800.00  | 0.00               | 0.00           | 5,758.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 5,900.00  | 0.00               | 0.00           | 5,858.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,000.00  | 0.00               | 0.00           | 5,958.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,100.00  | 0.00               | 0.00           | 6,058.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,200.00  | 0.00               | 0.00           | 6,158.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,300.00  | 0.00               | 0.00           | 6,258.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,321.57  | 0.00               | 0.00           | 6,280.04                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>Top of 4.5" Liner @ 6321.57ft</b>                      |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 6,400.00  | 0.00               | 0.00           | 6,358.47                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 6,421.57  | 0.00               | 0.00           | 6,380.04                    | -87.48          | -496.15         | -96.82                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| <b>KOP @ 6421.57ft</b>                                    |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 6,500.00  | 7.84               | 358.54         | 6,458.22                    | -82.13          | -496.28         | -91.47                        | 10.00                         | 10.00                        | 0.00                        | 358.54                     |
| 6,600.00  | 17.84              | 358.54         | 6,555.60                    | -59.93          | -496.85         | -69.29                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 6,700.00  | 27.84              | 358.54         | 6,647.64                    | -21.17          | -497.84         | -30.55                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 6,800.00  | 37.84              | 358.54         | 6,731.55                    | 32.97           | -499.22         | 23.56                         | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 6,900.00  | 47.84              | 358.54         | 6,804.78                    | 100.86          | -500.95         | 91.40                         | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>DLS = 10°/100'</b>                                     |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 6,943.95  | 52.24              | 358.54         | 6,833.00                    | 134.53          | -501.81         | 125.05                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>SSPG</b>   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,000.00  | 57.84              | 358.54         | 6,865.10                    | 180.43          | -502.98         | 170.92                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,057.02  | 63.55              | 358.54         | 6,893.00                    | 230.12          | -504.25         | 220.58                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>NBRR</b>   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,100.00  | 67.84              | 358.54         | 6,910.69                    | 269.27          | -505.25         | 259.70                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,169.75  | 74.82              | 358.54         | 6,933.00                    | 335.29          | -506.94         | 325.67                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>N470_B_CK</b>  |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,200.00  | 77.84              | 358.54         | 6,940.15                    | 364.67          | -507.69         | 355.03                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,300.00  | 87.84              | 358.54         | 6,952.59                    | 463.73          | -510.21         | 454.03                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| 7,322.67  | 90.11              | 358.54         | 6,953.00                    | 486.39          | -510.79         | 476.67                        | 10.00                         | 10.00                        | 0.00                        | 0.00                       |
| <b>End Build @ 7322.67ft - Landing Target (Heel) - 7"</b> |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 7,400.00  | 90.11              | 358.54         | 6,952.85                    | 563.69          | -512.77         | 553.93                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 7,500.00  | 90.11              | 358.54         | 6,952.65                    | 663.66          | -515.32         | 653.83                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 7,600.00  | 90.11              | 358.54         | 6,952.46                    | 763.63          | -517.87         | 753.73                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 7,700.00  | 90.11              | 358.54         | 6,952.27                    | 863.59          | -520.42         | 853.63                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 7,800.00  | 90.11              | 358.54         | 6,952.08                    | 963.56          | -522.97         | 953.53                        | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 7,900.00  | 90.11              | 358.54         | 6,951.88                    | 1,063.53        | -525.52         | 1,053.43                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,000.00  | 90.11              | 358.54         | 6,951.69                    | 1,163.50        | -528.07         | 1,153.34                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,100.00  | 90.11              | 358.54         | 6,951.50                    | 1,263.46        | -530.62         | 1,253.24                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,200.00  | 90.11              | 358.54         | 6,951.31                    | 1,363.43        | -533.18         | 1,353.14                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,300.00  | 90.11              | 358.54         | 6,951.11                    | 1,463.40        | -535.73         | 1,453.04                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,400.00  | 90.11              | 358.54         | 6,950.92                    | 1,563.36        | -538.28         | 1,552.94                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,500.00  | 90.11              | 358.54         | 6,950.73                    | 1,663.33        | -540.83         | 1,652.84                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |

## Plan Report for Cream State 2N-21HZ - Permit Rev-1

| 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>(°) |
|---|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|
| 8,600.00  | 90.11              | 358.54         | 6,950.53                    | 1,763.30        | -543.38         | 1,752.74                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,700.00  | 90.11              | 358.54         | 6,950.34                    | 1,863.27        | -545.93         | 1,852.64                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,800.00  | 90.11              | 358.54         | 6,950.15                    | 1,963.23        | -548.48         | 1,952.55                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 8,900.00  | 90.11              | 358.54         | 6,949.96                    | 2,063.20        | -551.04         | 2,052.45                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,000.00  | 90.11              | 358.54         | 6,949.76                    | 2,163.17        | -553.59         | 2,152.35                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,100.00  | 90.11              | 358.54         | 6,949.57                    | 2,263.13        | -556.14         | 2,252.25                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,200.00  | 90.11              | 358.54         | 6,949.38                    | 2,363.10        | -558.69         | 2,352.15                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,300.00  | 90.11              | 358.54         | 6,949.18                    | 2,463.07        | -561.24         | 2,452.05                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,400.00  | 90.11              | 358.54         | 6,948.99                    | 2,563.04        | -563.79         | 2,551.95                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,500.00  | 90.11              | 358.54         | 6,948.80                    | 2,663.00        | -566.34         | 2,651.86                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,600.00  | 90.11              | 358.54         | 6,948.61                    | 2,762.97        | -568.89         | 2,751.76                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,700.00  | 90.11              | 358.54         | 6,948.41                    | 2,862.94        | -571.45         | 2,851.66                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,800.00  | 90.11              | 358.54         | 6,948.22                    | 2,962.91        | -574.00         | 2,951.56                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 9,900.00  | 90.11              | 358.54         | 6,948.03                    | 3,062.87        | -576.55         | 3,051.46                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,000.00   | 90.11              | 358.54         | 6,947.84                    | 3,162.84        | -579.10         | 3,151.36                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,100.00   | 90.11              | 358.54         | 6,947.64                    | 3,262.81        | -581.65         | 3,251.26                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,200.00   | 90.11              | 358.54         | 6,947.45                    | 3,362.77        | -584.20         | 3,351.17                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,300.00   | 90.11              | 358.54         | 6,947.26                    | 3,462.74        | -586.75         | 3,451.07                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,400.00   | 90.11              | 358.54         | 6,947.06                    | 3,562.71        | -589.30         | 3,550.97                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 10,454.31   | 90.11              | 358.54         | 6,946.96                    | 3,617.00        | -590.69         | 3,605.22                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| Turn to BHL @ 10454.31ft - Cream State 2N-21HZ_Lateral Target |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 10,500.00   | 90.11              | 359.45         | 6,946.87                    | 3,662.68        | -591.49         | 3,650.88                      | 2.00                          | 0.00                         | 2.00                        | 89.99                      |
| 10,600.00   | 90.11              | 1.45           | 6,946.68                    | 3,762.68        | -590.70         | 3,750.87                      | 2.00                          | 0.00                         | 2.00                        | 89.99                      |
| 10,700.00   | 90.11              | 3.45           | 6,946.48                    | 3,862.58        | -586.42         | 3,850.84                      | 2.00                          | 0.00                         | 2.00                        | 89.99                      |
| 10,800.00   | 90.11              | 5.45           | 6,946.29                    | 3,962.27        | -578.66         | 3,950.66                      | 2.00                          | 0.00                         | 2.00                        | 90.00                      |
| 10,807.54   | 90.11              | 5.60           | 6,946.28                    | 3,969.78        | -577.94         | 3,958.18                      | 2.00                          | 0.00                         | 2.00                        | 90.00                      |
| End Turn @ 10807.54ft   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 10,900.00   | 90.11              | 5.60           | 6,946.10                    | 4,061.79        | -568.91         | 4,050.35                      | 0.00                          | 0.00                         | 0.00                        | 90.00                      |
| 11,000.00   | 90.11              | 5.60           | 6,945.90                    | 4,161.32        | -559.15         | 4,150.04                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,100.00   | 90.11              | 5.60           | 6,945.71                    | 4,260.84        | -549.38         | 4,249.73                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,200.00   | 90.11              | 5.60           | 6,945.51                    | 4,360.36        | -539.62         | 4,349.42                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,300.00   | 90.11              | 5.60           | 6,945.32                    | 4,459.88        | -529.86         | 4,449.10                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,400.00   | 90.11              | 5.60           | 6,945.12                    | 4,559.41        | -520.09         | 4,548.79                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,500.00   | 90.11              | 5.60           | 6,944.93                    | 4,658.93        | -510.33         | 4,648.48                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,600.00   | 90.11              | 5.60           | 6,944.73                    | 4,758.45        | -500.57         | 4,748.17                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,700.00   | 90.11              | 5.60           | 6,944.54                    | 4,857.97        | -490.81         | 4,847.86                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,800.00   | 90.11              | 5.60           | 6,944.35                    | 4,957.49        | -481.04         | 4,947.55                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 11,900.00   | 90.11              | 5.60           | 6,944.15                    | 5,057.02        | -471.28         | 5,047.23                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,000.00   | 90.11              | 5.60           | 6,943.96                    | 5,156.54        | -461.52         | 5,146.92                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,100.00   | 90.11              | 5.60           | 6,943.76                    | 5,256.06        | -451.75         | 5,246.61                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,200.00   | 90.11              | 5.60           | 6,943.57                    | 5,355.58        | -441.99         | 5,346.30                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,300.00   | 90.11              | 5.60           | 6,943.37                    | 5,455.10        | -432.23         | 5,445.99                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,400.00   | 90.11              | 5.60           | 6,943.18                    | 5,554.63        | -422.46         | 5,545.68                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| 12,485.44   | 90.11              | 5.60           | 6,943.01                    | 5,639.66        | -414.12         | 5,630.85                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| Total Depth (Toe)   |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |
| 12,492.44   | 90.11              | 5.60           | 6,943.00                    | 5,646.62        | -413.44         | 5,637.83                      | 0.00                          | 0.00                         | 0.00                        | 0.00                       |
| TD Well @ 12492.44ft - Cream State 2N-21HZ_BHL                |                    |                |                             |                 |                 |                               |                               |                              |                             |                            |

## Plan Report for Cream State 2N-21HZ - Permit Rev-1

Plan Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                       |
|-----------------------------|-----------------------------|-------------------|-----------------|-------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                               |
| 1,250.00                    | 1,250.00                    | 0.00              | 0.00            | Begin Nudge @ 1250.00ft       |
| 1,750.00                    | 1,747.47                    | -7.56             | -42.86          | End Nudge @ 1750.00ft         |
| 4,150.00                    | 4,111.00                    | -79.93            | -453.29         | Begin Drop @ 4150.00ft        |
| 4,650.00                    | 4,608.47                    | -87.48            | -496.15         | End Drop @ 4650.00ft          |
| 6,321.57                    | 6,280.04                    | -87.48            | -496.15         | Top of 4.5" Liner @ 6321.57ft |
| 6,421.57                    | 6,380.04                    | -87.48            | -496.15         | KOP @ 6421.57ft               |
| 6,900.00                    | 6,804.78                    | 100.86            | -500.95         | DLS = 10°/100'                |
| 7,322.67                    | 6,953.00                    | 486.39            | -510.79         | End Build @ 7322.67ft         |
| 10,454.31                   | 6,946.96                    | 3,617.00          | -590.69         | Turn to BHL @ 10454.31ft      |
| 10,807.54                   | 6,946.28                    | 3,969.78          | -577.94         | End Turn @ 10807.54ft         |
| 12,492.44                   | 6,943.00                    | 5,646.62          | -413.44         | TD Well @ 12492.44ft          |

Vertical Section Information

| Angle<br>Type | Target               | Azimuth<br>(°) | Origin<br>Type | Origin          |                 | Start<br>TVD<br>(usft) |
|---------------|----------------------|----------------|----------------|-----------------|-----------------|------------------------|
|               |                      |                |                | +N/_S<br>(usft) | +E/-W<br>(usft) |                        |
| User          | No Target (Freehand) | 1.08           | Slot           | 0.00            | 0.00            | 6,943.00               |

Survey tool program

| From<br>(usft) | To<br>(usft) | Survey/Plan  | Survey Tool |
|----------------|--------------|--------------|-------------|
| 0.00           | 7,322.67     | Permit Rev-1 | MWD+IFR1    |
| 7,322.67       | 12,492.44    | Permit Rev-1 | MWD+IFR1    |

Casing Details

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name   | Casing<br>Diameter<br>(") | Hole<br>Diameter<br>(") |
|-----------------------------|-----------------------------|--------|---------------------------|-------------------------|
| 1,115.00                    | 1,115.00                    | 9 5/8" | 9-5/8                     | 13-1/2                  |
| 7,322.67                    | 6,953.00                    | 7"     | 7                         | 8-3/4                   |

Formation Details

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name                      | Lithology | Dip<br>(°) | Dip<br>Direction<br>(°) |
|-----------------------------|-----------------------------|---------------------------|-----------|------------|-------------------------|
| 602.00                      | 602.00                      | Base Fox Hills            |           | 0.00       |                         |
| 1,115.00                    | 1,115.00                    | Surface Csg Setting Depth |           | 0.00       |                         |
| 3,894.11                    | 3,859.00                    | Parkman                   |           | 0.00       |                         |
| 4,279.50                    | 4,239.00                    | Sussex                    |           | 0.00       |                         |
| 6,943.95                    | 6,833.00                    | SSPG                      |           | 0.00       |                         |
| 7,057.02                    | 6,893.00                    | NBRR                      |           | 0.00       |                         |
| 7,169.75                    | 6,933.00                    | N470_B_CK                 |           | 0.00       |                         |
| 7,322.67                    | 6,953.00                    | Landing Target (Heel)     |           | 0.00       |                         |
| 12,485.44                   | 6,943.01                    | Total Depth (Toe)         |           | 0.00       |                         |

**Plan Report for Cream State 2N-21HZ - Permit Rev-1**

*Targets associated with this wellbore*

| Target Name                        | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Shape   |
|------------------------------------|---------------|-----------------|-----------------|---------|
| Cream State 2N-21HZ_Lateral Target | 6,946.96      | 3,617.00        | -590.69         | Point   |
| Cream State 2N-21HZ_SHL            | 0.00          | 0.00            | 0.00            | Point   |
| Cream State 2N-21HZ_BHL            | 6,943.00      | 5,646.63        | -413.44         | Point   |
| Sec. 28 and 21-T3N-R65W            | -21.00        | 1,064.93        | -2,586.90       | Polygon |

**North Reference Sheet for Cream 27-28HZ Pad - Cream State 2N-21HZ - Plan C**

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

Vertical Depths are relative to RKB = 17' @ 4843.00usft (D Rig). Northing and Easting are relative to Cream State 2N-21HZ

Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N (108 W to 102 W) using datum North American Datum 1983, ellipsoid

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -105.00°, Longitude Origin:0.000000°, Latitude Origin:0.000000°

False Easting: 1,640,416.67usft, False Northing: 0.00usft, Scale Reduction: 0.99961005

Grid Coordinates of Well: 14,600,660.60 usft N, 1,734,139.24 usft E

Geographical Coordinates of Well: 40° 12' 09.10" N, 104° 39' 51.64" W

Grid Convergence at Surface is: 0.22°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,492.44usft  
the Bottom Hole Displacement is 5,661.74usft in the Direction of 355.81° ( True).

Magnetic Convergence at surface is: -8.13° (13 October 2014, , IGRF2010)

