

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_PSC 12N-13HZ

PSC 12N-13HZ

PSC 12N-13HZ

Plan: PSC 12N-13HZ (wp01)

Standard Planning Report

07 March, 2011



Weatherford®



T

M

Azimuths to True North

Magnetic North: 8.98°

Magnetic Field

Strength: 53046.0snT

Dip Angle: 66.88°

Date: 3/7/2011

Model: IGRF2010

Project: COLORADO NORTHERN ZONE - 83

Site: WELD_PSC 12N-13HZ

Well: PSC 12N-13HZ

Wellbore: PSC 12N-13HZ

Section: SHL:

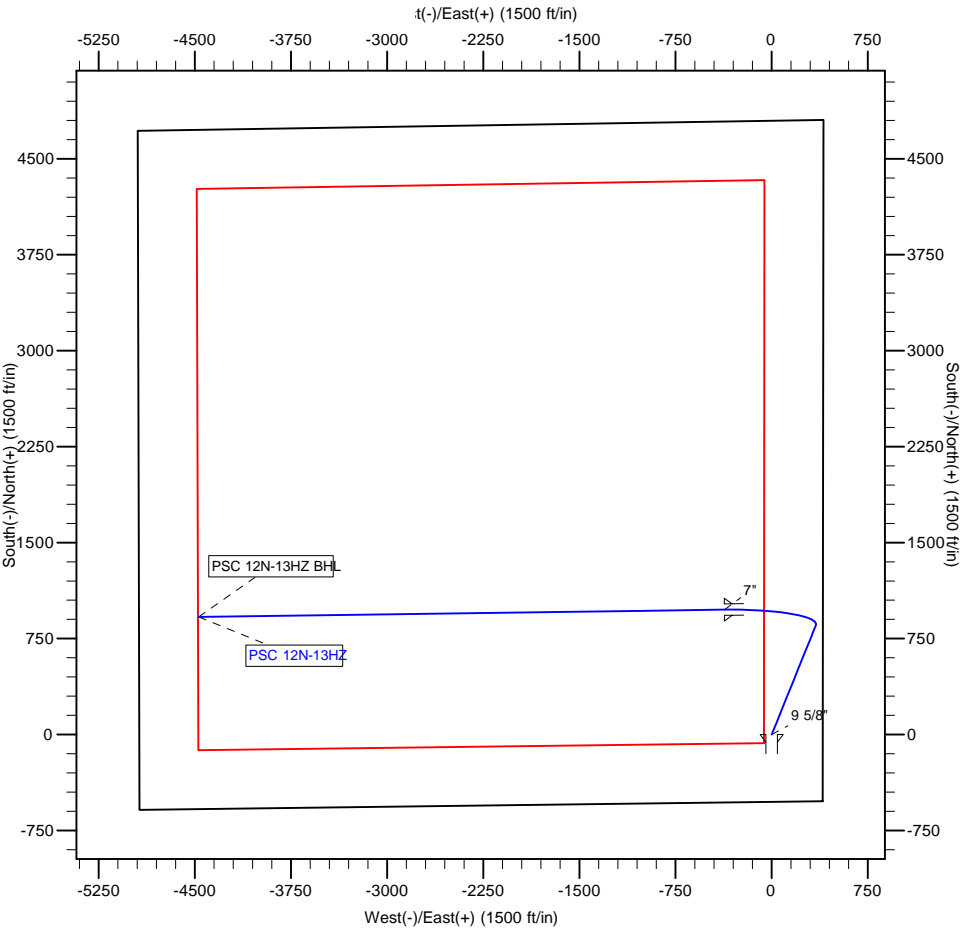
Design: PSC 12N-13HZ (wp01)

Latitude: 40.220528

Longitude: -104.943203

GL: 4872.00

KB: 17' RKB + 4872' GL @ 4889.00ft



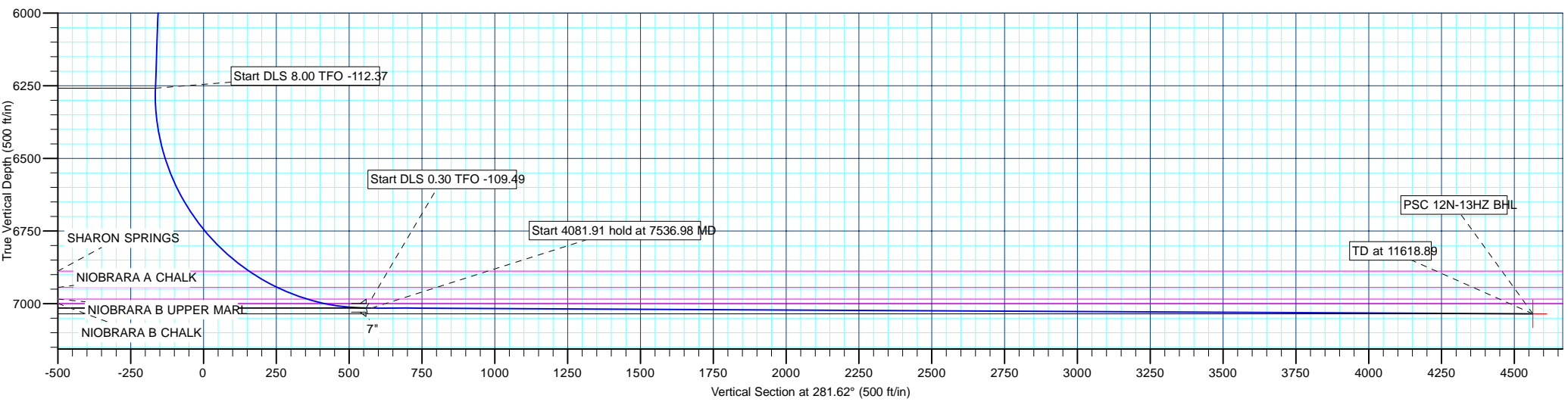
| WELL DETAILS: PSC 12N-13HZ | | | | | | |
|----------------------------|-------|------------|-----------------------|------------------|-------------|------|
| +N/-S | +E/-W | Northing | Ground Level: Easting | 4872.00 Latitude | Longitude | Slot |
| 0.00 | 0.00 | 1323668.62 | 3155483.24 | 40.220528 | -104.943203 | |

| SECTION DETAILS | | | | | | | | | |
|-----------------|-------|--------|---------|--------|----------|------|---------|---------|------------------|
| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1150.00 | 0.00 | 0.00 | 1150.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1688.11 | 10.76 | 21.95 | 1684.95 | 46.74 | 18.83 | 2.00 | 21.95 | -9.03 | |
| 6343.72 | 10.76 | 21.95 | 6258.68 | 853.08 | 343.77 | 0.00 | 0.00 | -164.85 | |
| 7517.14 | 89.74 | 269.27 | 7015.00 | 976.00 | -369.00 | 8.00 | -112.37 | 558.07 | |
| 7536.98 | 89.72 | 269.21 | 7015.09 | 975.74 | -388.83 | 0.30 | -109.49 | 577.44 | |
| 11618.89 | 89.72 | 269.21 | 7035.00 | 919.50 | -4470.31 | 0.00 | 0.00 | 4563.90 | PSC 12N-13HZ BHL |

| WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG) | | | | | | |
|---|---------|--------|----------|-----------|-------------|-------------|
| Name | TVD | +N/-S | +E/-W | Latitude | Longitude | Shape Point |
| PSC 12N-13HZ BHL | 7035.00 | 919.50 | -4470.31 | 40.223051 | -104.959212 | |

| FORMATION TOP DETAILS | | |
|-----------------------|---------|-----------------------|
| TVDPath | MDPath | Formation |
| 3636.00 | 3674.09 | PARKMAN |
| 4196.00 | 4244.12 | SUSSEX |
| 4574.00 | 4628.88 | SHANNON |
| 6888.00 | 7083.95 | SHARON SPRINGS |
| 6944.00 | 7196.34 | NIOBRARA A CHALK |
| 6984.00 | 7307.30 | NIOBRARA B UPPER MARL |
| 6999.00 | 7367.57 | NIOBRARA B CHALK |

| CASING DETAILS | | | |
|----------------|---------|--------|-------|
| TVD | MD | Name | Size |
| 1000.00 | 1000.00 | 9 5/8" | 9-5/8 |
| 7015.00 | 7517.14 | 7" | 7 |



| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| Database: | edm5000p | Local Co-ordinate Reference: | Well PSC 12N-13HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Site: | WELD_PSC 12N-13HZ | North Reference: | True |
| Well: | PSC 12N-13HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | PSC 12N-13HZ | | |
| Design: | PSC 12N-13HZ (wp01) | | |

| | | | |
|--------------------|-----------------------------|----------------------|----------------|
| Project | COLORADO NORTHERN ZONE - 83 | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Northern Zone | | |

| Site | | WELD_PSC 12N-13HZ | | | |
|-----------------------|----------|-------------------|-----------------|-------------------|-------------|
| Site Position: | | Northing: | 1,323,668.63 ft | Latitude: | 40.220528 |
| From: | Lat/Long | Easting: | 3,155,483.24 ft | Longitude: | -104.943203 |
| Position Uncertainty: | 0.00 ft | Slot Radius: | 0 " | Grid Convergence: | 0.36 |

| | | | | | | |
|----------------------|--------------|---------|---------------------|-----------------|---------------|-------------|
| Well | PSC 12N-13HZ | | | | | |
| Well Position | +N-S | 0.00 ft | Northing: | 1,323,668.62 ft | Latitude: | 40.220528 |
| | +E-W | 0.00 ft | Easting: | 3,155,483.24 ft | Longitude: | -104.943203 |
| Position Uncertainty | | 0.00 ft | Wellhead Elevation: | | Ground Level: | 4,872.00 ft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | PSC 12N-13HZ | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 3/7/2011 | 8.98 | 66.88 | 53,046 |

| | | | | | |
|--------------------------|------------------------------|-------------------|----------------------|----------------------|--|
| Design | PSC 12N-13HZ (wp01) | | | | |
| Audit Notes: | | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.00 | |
| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) | |
| | 0.00 | 0.00 | 0.00 | 281.62 | |

| Plan Sections | | | | | | | | | | |
|----------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|-----------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,150.00 | 0.00 | 0.00 | 1,150.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,688.11 | 10.76 | 21.95 | 1,684.95 | 46.74 | 18.83 | 2.00 | 2.00 | 0.00 | 21.95 | |
| 6,343.72 | 10.76 | 21.95 | 6,258.68 | 853.08 | 343.77 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,517.14 | 89.74 | 269.27 | 7,015.00 | 976.00 | -369.00 | 8.00 | 6.73 | -9.60 | -112.37 | |
| 7,536.98 | 89.72 | 269.21 | 7,015.09 | 975.74 | -388.83 | 0.30 | -0.10 | -0.28 | -109.49 | |
| 11,618.89 | 89.72 | 269.21 | 7,035.00 | 919.50 | -4,470.31 | 0.00 | 0.00 | 0.00 | 0.00 | PSC 12N-13HZ BH |

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| Database: | edm5000p | Local Co-ordinate Reference: | Well PSC 12N-13HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Site: | WELD_PSC 12N-13HZ | North Reference: | True |
| Well: | PSC 12N-13HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | PSC 12N-13HZ | | |
| Design: | PSC 12N-13HZ (wp01) | | |

| Planned Survey | | | | | | | | | |
|----------------------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 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 |
| 400.00 | 0.00 | 0.00 | 400.00 | 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 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 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 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 5/8" | | | | | | | | | |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,150.00 | 0.00 | 0.00 | 1,150.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start Build 2.00 | | | | | | | | | |
| 1,200.00 | 1.00 | 21.95 | 1,200.00 | 0.40 | 0.16 | -0.08 | 2.00 | 2.00 | 0.00 |
| 1,300.00 | 3.00 | 21.95 | 1,299.93 | 3.64 | 1.47 | -0.70 | 2.00 | 2.00 | 0.00 |
| 1,400.00 | 5.00 | 21.95 | 1,399.68 | 10.11 | 4.07 | -1.95 | 2.00 | 2.00 | 0.00 |
| 1,500.00 | 7.00 | 21.95 | 1,499.13 | 19.81 | 7.98 | -3.83 | 2.00 | 2.00 | 0.00 |
| 1,600.00 | 9.00 | 21.95 | 1,598.15 | 32.71 | 13.18 | -6.32 | 2.00 | 2.00 | 0.00 |
| 1,688.11 | 10.76 | 21.95 | 1,684.95 | 46.74 | 18.83 | -9.03 | 2.00 | 2.00 | 0.00 |
| Start 4655.62 hold at 1688.11 MD | | | | | | | | | |
| 1,700.00 | 10.76 | 21.95 | 1,696.63 | 48.80 | 19.66 | -9.43 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 10.76 | 21.95 | 1,794.87 | 66.12 | 26.64 | -12.78 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 10.76 | 21.95 | 1,893.11 | 83.44 | 33.62 | -16.12 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 10.76 | 21.95 | 1,991.36 | 100.76 | 40.60 | -19.47 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 10.76 | 21.95 | 2,089.60 | 118.08 | 47.58 | -22.82 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 10.76 | 21.95 | 2,187.84 | 135.40 | 54.56 | -26.16 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 10.76 | 21.95 | 2,286.08 | 152.72 | 61.54 | -29.51 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 10.76 | 21.95 | 2,384.32 | 170.04 | 68.52 | -32.86 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 10.76 | 21.95 | 2,482.56 | 187.36 | 75.50 | -36.21 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 10.76 | 21.95 | 2,580.80 | 204.68 | 82.48 | -39.55 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 10.76 | 21.95 | 2,679.04 | 221.99 | 89.46 | -42.90 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 10.76 | 21.95 | 2,777.28 | 239.31 | 96.44 | -46.25 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 10.76 | 21.95 | 2,875.53 | 256.63 | 103.42 | -49.59 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 10.76 | 21.95 | 2,973.77 | 273.95 | 110.40 | -52.94 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 10.76 | 21.95 | 3,072.01 | 291.27 | 117.38 | -56.29 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 10.76 | 21.95 | 3,170.25 | 308.59 | 124.36 | -59.63 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 10.76 | 21.95 | 3,268.49 | 325.91 | 131.34 | -62.98 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 10.76 | 21.95 | 3,366.73 | 343.23 | 138.32 | -66.33 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 10.76 | 21.95 | 3,464.97 | 360.55 | 145.30 | -69.67 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 10.76 | 21.95 | 3,563.21 | 377.87 | 152.27 | -73.02 | 0.00 | 0.00 | 0.00 |
| 3,674.09 | 10.76 | 21.95 | 3,636.00 | 390.71 | 157.45 | -75.50 | 0.00 | 0.00 | 0.00 |
| PARKMAN | | | | | | | | | |
| 3,700.00 | 10.76 | 21.95 | 3,661.45 | 395.19 | 159.25 | -76.37 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 10.76 | 21.95 | 3,759.69 | 412.51 | 166.23 | -79.72 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 10.76 | 21.95 | 3,857.94 | 429.83 | 173.21 | -83.06 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 10.76 | 21.95 | 3,956.18 | 447.15 | 180.19 | -86.41 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 10.76 | 21.95 | 4,054.42 | 464.47 | 187.17 | -89.76 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 10.76 | 21.95 | 4,152.66 | 481.79 | 194.15 | -93.10 | 0.00 | 0.00 | 0.00 |
| 4,244.12 | 10.76 | 21.95 | 4,196.00 | 489.43 | 197.23 | -94.58 | 0.00 | 0.00 | 0.00 |
| SUSSEX | | | | | | | | | |
| 4,300.00 | 10.76 | 21.95 | 4,250.90 | 499.11 | 201.13 | -96.45 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 10.76 | 21.95 | 4,349.14 | 516.43 | 208.11 | -99.80 | 0.00 | 0.00 | 0.00 |

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| Database: | edm5000p | Local Co-ordinate Reference: | Well PSC 12N-13HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Site: | WELD_PSC 12N-13HZ | North Reference: | True |
| Well: | PSC 12N-13HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | PSC 12N-13HZ | | |
| Design: | PSC 12N-13HZ (wp01) | | |

| Planned Survey | | | | | | | | | |
|---|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 4,500.00 | 10.76 | 21.95 | 4,447.38 | 533.75 | 215.09 | -103.14 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 10.76 | 21.95 | 4,545.62 | 551.07 | 222.07 | -106.49 | 0.00 | 0.00 | 0.00 |
| 4,628.88 | 10.76 | 21.95 | 4,574.00 | 556.07 | 224.09 | -107.46 | 0.00 | 0.00 | 0.00 |
| SHANNON | | | | | | | | | |
| 4,700.00 | 10.76 | 21.95 | 4,643.86 | 568.39 | 229.05 | -109.84 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 10.76 | 21.95 | 4,742.11 | 585.71 | 236.03 | -113.18 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 10.76 | 21.95 | 4,840.35 | 603.03 | 243.01 | -116.53 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 10.76 | 21.95 | 4,938.59 | 620.35 | 249.99 | -119.88 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 10.76 | 21.95 | 5,036.83 | 637.67 | 256.97 | -123.23 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 10.76 | 21.95 | 5,135.07 | 654.99 | 263.95 | -126.57 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 10.76 | 21.95 | 5,233.31 | 672.31 | 270.93 | -129.92 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 10.76 | 21.95 | 5,331.55 | 689.63 | 277.91 | -133.27 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 10.76 | 21.95 | 5,429.79 | 706.95 | 284.89 | -136.61 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 10.76 | 21.95 | 5,528.03 | 724.27 | 291.87 | -139.96 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 10.76 | 21.95 | 5,626.28 | 741.59 | 298.84 | -143.31 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 10.76 | 21.95 | 5,724.52 | 758.91 | 305.82 | -146.65 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 10.76 | 21.95 | 5,822.76 | 776.23 | 312.80 | -150.00 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 10.76 | 21.95 | 5,921.00 | 793.55 | 319.78 | -153.35 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 10.76 | 21.95 | 6,019.24 | 810.87 | 326.76 | -156.70 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 10.76 | 21.95 | 6,117.48 | 828.19 | 333.74 | -160.04 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 10.76 | 21.95 | 6,215.72 | 845.51 | 340.72 | -163.39 | 0.00 | 0.00 | 0.00 |
| 6,343.72 | 10.76 | 21.95 | 6,258.68 | 853.08 | 343.77 | -164.85 | 0.00 | 0.00 | 0.00 |
| Start DLS 8.00 TFO -112.37 | | | | | | | | | |
| 6,400.00 | 9.95 | 357.11 | 6,314.06 | 862.82 | 345.49 | -164.58 | 8.00 | -1.44 | -44.14 |
| 6,500.00 | 12.97 | 318.81 | 6,412.20 | 879.91 | 337.66 | -153.45 | 8.00 | 3.02 | -38.30 |
| 6,600.00 | 19.08 | 299.68 | 6,508.33 | 896.48 | 316.03 | -128.94 | 8.00 | 6.11 | -19.13 |
| 6,700.00 | 26.20 | 290.09 | 6,600.60 | 912.18 | 281.04 | -91.50 | 8.00 | 7.12 | -9.59 |
| 6,800.00 | 33.70 | 284.46 | 6,687.20 | 926.71 | 233.37 | -41.88 | 8.00 | 7.50 | -5.63 |
| 6,900.00 | 41.37 | 280.70 | 6,766.45 | 939.80 | 173.94 | 18.97 | 8.00 | 7.67 | -3.76 |
| 7,000.00 | 49.13 | 277.95 | 6,836.81 | 951.19 | 103.92 | 89.85 | 8.00 | 7.76 | -2.76 |
| 7,083.95 | 55.68 | 276.10 | 6,888.00 | 959.26 | 37.94 | 156.11 | 8.00 | 7.81 | -2.21 |
| SHARON SPRINGS | | | | | | | | | |
| 7,100.00 | 56.94 | 275.77 | 6,896.91 | 960.65 | 24.65 | 169.40 | 8.00 | 7.83 | -2.00 |
| 7,196.34 | 64.49 | 274.02 | 6,944.00 | 967.77 | -59.00 | 252.77 | 8.00 | 7.84 | -1.82 |
| NIOBRARA A CHALK | | | | | | | | | |
| 7,200.00 | 64.78 | 273.96 | 6,945.57 | 968.00 | -62.30 | 256.05 | 8.00 | 7.85 | -1.69 |
| 7,300.00 | 72.64 | 272.36 | 6,981.86 | 973.09 | -155.26 | 348.13 | 8.00 | 7.86 | -1.59 |
| 7,307.30 | 73.21 | 272.25 | 6,984.00 | 973.38 | -162.24 | 355.02 | 8.00 | 7.87 | -1.51 |
| NIOBRARA B UPPER MARL | | | | | | | | | |
| 7,367.57 | 77.96 | 271.36 | 6,999.00 | 975.21 | -220.56 | 412.52 | 8.00 | 7.87 | -1.47 |
| NIOBRARA B CHALK | | | | | | | | | |
| 7,400.00 | 80.51 | 270.90 | 7,005.06 | 975.84 | -252.41 | 443.84 | 8.00 | 7.88 | -1.43 |
| 7,500.00 | 88.39 | 269.50 | 7,014.72 | 976.18 | -351.86 | 541.32 | 8.00 | 7.88 | -1.40 |
| 7,517.14 | 89.74 | 269.27 | 7,015.00 | 976.00 | -369.00 | 558.07 | 8.00 | 7.88 | -1.38 |
| Start DLS 0.30 TFO -109.49 - 7" | | | | | | | | | |
| 7,536.98 | 89.72 | 269.21 | 7,015.09 | 975.74 | -388.83 | 577.44 | 0.30 | -0.10 | -0.28 |
| Start 4081.91 hold at 7536.98 MD | | | | | | | | | |
| 7,600.00 | 89.72 | 269.21 | 7,015.40 | 974.87 | -451.85 | 638.99 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 89.72 | 269.21 | 7,015.89 | 973.49 | -551.84 | 736.65 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 89.72 | 269.21 | 7,016.38 | 972.11 | -651.83 | 834.31 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 89.72 | 269.21 | 7,016.86 | 970.73 | -751.82 | 931.98 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 89.72 | 269.21 | 7,017.35 | 969.36 | -851.81 | 1,029.64 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 89.72 | 269.21 | 7,017.84 | 967.98 | -951.79 | 1,127.30 | 0.00 | 0.00 | 0.00 |

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| Database: | edm5000p | Local Co-ordinate Reference: | Well PSC 12N-13HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Site: | WELD_PSC 12N-13HZ | North Reference: | True |
| Well: | PSC 12N-13HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | PSC 12N-13HZ | | |
| Design: | PSC 12N-13HZ (wp01) | | |

| Planned Survey | | | | | | | | | |
|-----------------------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 8,200.00 | 89.72 | 269.21 | 7,018.33 | 966.60 | -1,051.78 | 1,224.96 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 89.72 | 269.21 | 7,018.81 | 965.22 | -1,151.77 | 1,322.62 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 89.72 | 269.21 | 7,019.30 | 963.85 | -1,251.76 | 1,420.28 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 89.72 | 269.21 | 7,019.79 | 962.47 | -1,351.75 | 1,517.94 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 89.72 | 269.21 | 7,020.28 | 961.09 | -1,451.74 | 1,615.60 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 89.72 | 269.21 | 7,020.77 | 959.71 | -1,551.73 | 1,713.27 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 89.72 | 269.21 | 7,021.25 | 958.34 | -1,651.72 | 1,810.93 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 89.72 | 269.21 | 7,021.74 | 956.96 | -1,751.71 | 1,908.59 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 89.72 | 269.21 | 7,022.23 | 955.58 | -1,851.70 | 2,006.25 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 89.72 | 269.21 | 7,022.72 | 954.20 | -1,951.69 | 2,103.91 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 89.72 | 269.21 | 7,023.20 | 952.82 | -2,051.68 | 2,201.57 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 89.72 | 269.21 | 7,023.69 | 951.45 | -2,151.67 | 2,299.23 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 89.72 | 269.21 | 7,024.18 | 950.07 | -2,251.66 | 2,396.90 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 89.72 | 269.21 | 7,024.67 | 948.69 | -2,351.64 | 2,494.56 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 89.72 | 269.21 | 7,025.15 | 947.31 | -2,451.63 | 2,592.22 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 89.72 | 269.21 | 7,025.64 | 945.94 | -2,551.62 | 2,689.88 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 89.72 | 269.21 | 7,026.13 | 944.56 | -2,651.61 | 2,787.54 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 89.72 | 269.21 | 7,026.62 | 943.18 | -2,751.60 | 2,885.20 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 89.72 | 269.21 | 7,027.11 | 941.80 | -2,851.59 | 2,982.86 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 89.72 | 269.21 | 7,027.59 | 940.42 | -2,951.58 | 3,080.53 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 89.72 | 269.21 | 7,028.08 | 939.05 | -3,051.57 | 3,178.19 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 89.72 | 269.21 | 7,028.57 | 937.67 | -3,151.56 | 3,275.85 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 89.72 | 269.21 | 7,029.06 | 936.29 | -3,251.55 | 3,373.51 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 89.72 | 269.21 | 7,029.54 | 934.91 | -3,351.54 | 3,471.17 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 89.72 | 269.21 | 7,030.03 | 933.54 | -3,451.53 | 3,568.83 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 89.72 | 269.21 | 7,030.52 | 932.16 | -3,551.52 | 3,666.49 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 89.72 | 269.21 | 7,031.01 | 930.78 | -3,651.51 | 3,764.16 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 89.72 | 269.21 | 7,031.49 | 929.40 | -3,751.50 | 3,861.82 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 89.72 | 269.21 | 7,031.98 | 928.02 | -3,851.48 | 3,959.48 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 89.72 | 269.21 | 7,032.47 | 926.65 | -3,951.47 | 4,057.14 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 89.72 | 269.21 | 7,032.96 | 925.27 | -4,051.46 | 4,154.80 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 89.72 | 269.21 | 7,033.44 | 923.89 | -4,151.45 | 4,252.46 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 89.72 | 269.21 | 7,033.93 | 922.51 | -4,251.44 | 4,350.12 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 89.72 | 269.21 | 7,034.42 | 921.14 | -4,351.43 | 4,447.79 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 89.72 | 269.21 | 7,034.91 | 919.76 | -4,451.42 | 4,545.45 | 0.00 | 0.00 | 0.00 |
| 11,618.89 | 89.72 | 269.21 | 7,035.00 | 919.50 | -4,470.31 | 4,563.90 | 0.00 | 0.00 | 0.00 |
| TD at 11618.89 - PSC 12N-13HZ BHL | | | | | | | | | |

| Design Targets | | | | | | | | | |
|---------------------------|---------------|--------------|----------|------------|------------|---------------|--------------|-----------|-------------|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
| - hit/miss target | | | | | | | | | |
| - Shape | | | | | | | | | |
| PSC 12N-13HZ BHL | 0.00 | 0.00 | 7,035.00 | 919.50 | -4,470.31 | 1,324,560.03 | 3,151,007.24 | 40.223051 | -104.959212 |
| - plan hits target center | | | | | | | | | |
| - Point | | | | | | | | | |

| | | | |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| Database: | edm5000p | Local Co-ordinate Reference: | Well PSC 12N-13HZ |
| Company: | US ROCKIES REGION PLANNING | TVD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Project: | COLORADO NORTHERN ZONE - 83 | MD Reference: | 17' RKB + 4872' GL @ 4889.00ft |
| Site: | WELD_PSC 12N-13HZ | North Reference: | True |
| Well: | PSC 12N-13HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | PSC 12N-13HZ | | |
| Design: | PSC 12N-13HZ (wp01) | | |

| Casing Points | | | | | |
|---------------------|---------------------|--------|---------------------|-------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (") | Hole Diameter (") | |
| 1,000.00 | 1,000.00 | 9 5/8" | 9-5/8 | 12-1/4 | |
| 7,517.14 | 7,015.00 | 7" | 7 | 8-3/4 | |

| Formations | | | | | | |
|---------------------|---------------------|-----------------------|-----------|---------|-------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) | |
| 3,674.09 | 3,636.00 | PARKMAN | | 0.00 | | |
| 4,244.12 | 4,196.00 | SUSSEX | | 0.00 | | |
| 4,628.88 | 4,574.00 | SHANNON | | 0.00 | | |
| 7,083.95 | 6,888.00 | SHARON SPRINGS | | 0.00 | | |
| 7,196.34 | 6,944.00 | NIOBRARA A CHALK | | 0.00 | | |
| 7,307.30 | 6,984.00 | NIOBRARA B UPPER MARL | | 0.00 | | |
| 7,367.57 | 6,999.00 | NIOBRARA B CHALK | | 0.00 | | |

| Plan Annotations | | | | | |
|---------------------|---------------------|-------------------|------------|----------------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | | |
| | | +N/-S (ft) | +E/-W (ft) | Comment | |
| 1,150.00 | 1,150.00 | 0.00 | 0.00 | Start Build 2.00 | |
| 1,688.11 | 1,684.95 | 46.74 | 18.83 | Start 4655.62 hold at 1688.11 MD | |
| 6,343.72 | 6,258.68 | 853.08 | 343.77 | Start DLS 8.00 TFO -112.37 | |
| 7,517.14 | 7,015.00 | 976.00 | -369.00 | Start DLS 0.30 TFO -109.49 | |
| 7,536.98 | 7,015.09 | 975.74 | -388.83 | Start 4081.91 hold at 7536.98 MD | |
| 11,618.89 | 7,035.00 | 919.50 | -4,470.31 | TD at 11618.89 | |