

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-15HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

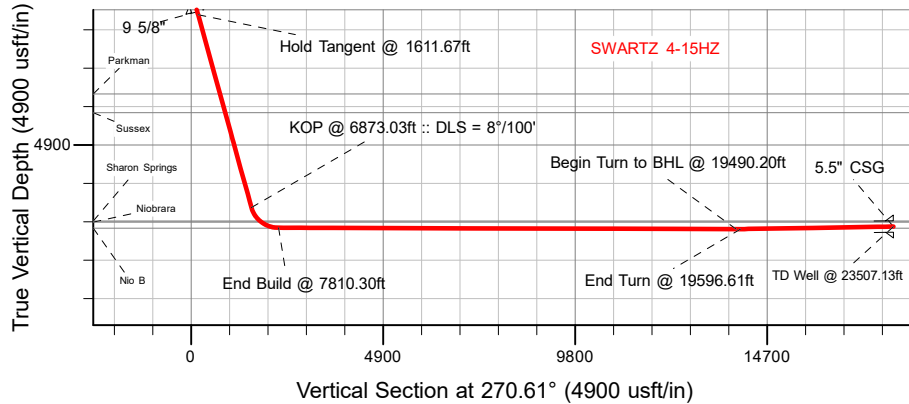
15 December, 2021

Project: WELD-NAD83-UTMFT13N
Site: 3N-67W-04 SWARTZ 2-4HZ PAD
Well: SWARTZ 4-15HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

| TVD | MD | Name | Size |
|---------|----------|----------|-------|
| 1500.00 | 1524.95 | 9 5/8" | 9-5/8 |
| 6984.00 | 23507.13 | 5.5" CSG | 5-1/2 |



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 | |
| 225.00 | 0.00 | 0.00 | 225.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1611.67 | 20.80 | 227.31 | 1581.41 | -168.79 | -182.98 | 1.50 | 227.31 | 181.18 | |
| 6873.03 | 20.80 | 227.31 | 6499.87 | -1435.59 | -1556.28 | 0.00 | 0.00 | 1540.91 | |
| 7810.30 | 89.84 | 271.07 | 7015.00 | -1557.60 | -2248.95 | 8.00 | 45.73 | 2232.24 | |
| 19490.20 | 89.84 | 271.07 | 7048.34 | -1339.23 | -13926.76 | 0.00 | 0.00 | 13911.72 | SWARTZ 4-15HZ_Deflection |
| 19596.61 | 90.93 | 269.25 | 7047.62 | -1338.93 | -14033.16 | 2.00 | -59.01 | 14018.11 | |
| 23507.13 | 90.93 | 269.25 | 6984.00 | -1390.33 | -17942.83 | 0.00 | 0.00 | 17927.01 | SWARTZ 4-15HZ_BHL |

WELLBORE TARGET DETAILS (LAT/LONG)

| Name | TVD | Northing | Easting | Latitude | Longitude |
|-------------------|---------|-------------|------------|-----------|-------------|
| SWARTZ 4-15HZ_SHL | 0.00 | 14621435.21 | 1670575.12 | 40.260013 | -104.891900 |
| SWARTZ 4-15HZ_LP | 7015.00 | 14619874.87 | 1668328.07 | 40.255735 | -104.899960 |
| SWARTZ 4-15HZ_BHL | 6984.00 | 14620023.00 | 1652634.00 | 40.256177 | -104.956211 |

SHL
776' FNL
1629' FEL

LP
2370' FNL
1373' FWL

BHL
2430' FNL
1270' FWL

WELL DETAILS: SWARTZ 4-15HZ

GL = 4825'

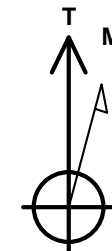
RKB = 17' @ 4842.00usft (RIG)

Plan: Permit Rev-1 (SWARTZ 4-15HZ/Plan A)

Date: 12/16/2021

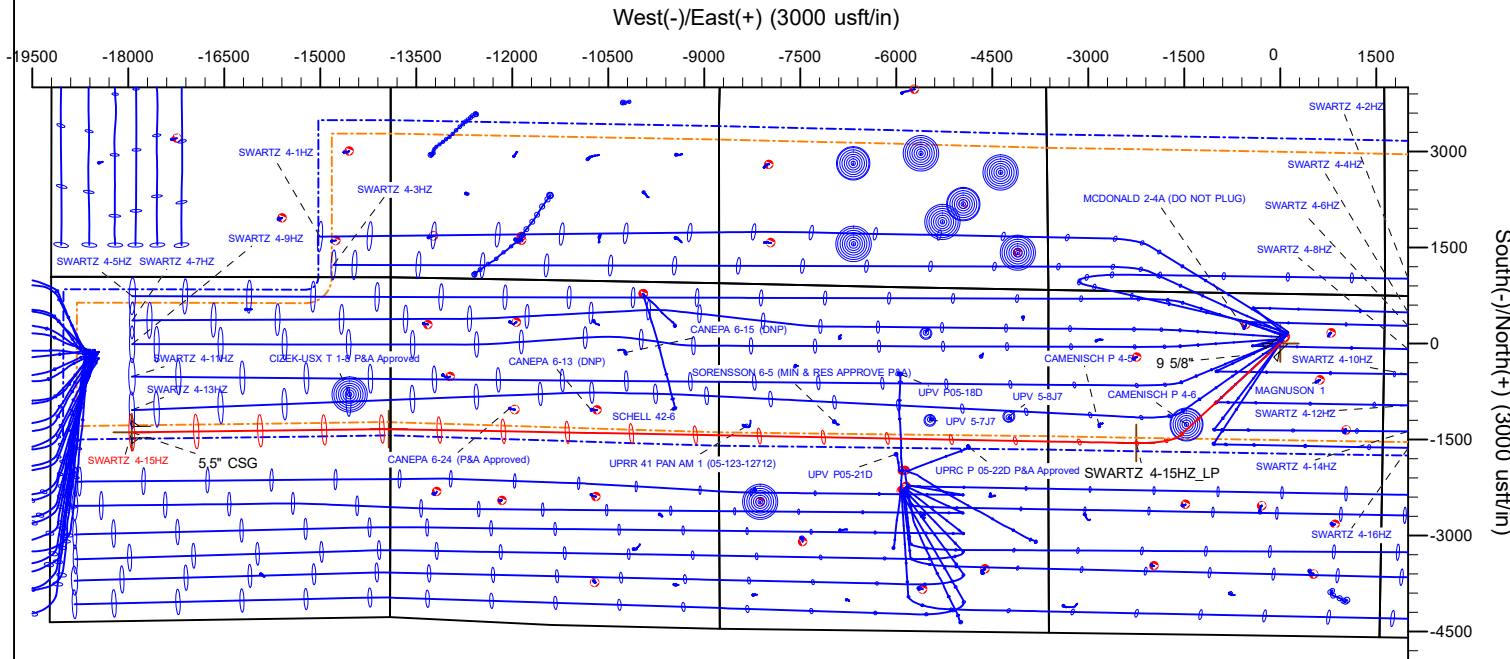
FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|----------|----------------|
| 707.00 | 708.29 | Fox Hills |
| 3598.00 | 3768.85 | Parkman |
| 4080.00 | 4284.46 | Sussex |
| 6841.00 | 7293.48 | Sharon Springs |
| 6871.00 | 7342.18 | Niobrara |
| 7023.00 | 10612.95 | Nio B |



Azimuths to True North
Magnetic North: 7.86°

Magnetic Field
Strength: 51820.0nT
Dip Angle: 66.50°
Date: 11/26/2021
Model: IGRF2020



Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | Permit Rev-1 | | |

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

| | | | | | |
|-----------------------|-----|----------------------------|--------------------|------------|-------------|
| Site | | 3N-67W-04 SWARTZ 2-4HZ PAD | | | |
| Site Position: | | Northing: | 14,621,599.90 usft | Latitude: | 40.260465 |
| From: | Map | Easting: | 1,670,705.29 usft | Longitude: | -104.891433 |
| Position Uncertainty: | | 0.00 usft | Slot Radius: | 13-3/16 " | |

| Well | | SWARTZ 4-15HZ | | | | |
|----------------------|-------|---------------|---------------------|--------------------|---------------|---------------|
| Well Position | +N/-S | 0.00 usft | Northing: | 14,621,435.21 usft | Latitude: | 40.260013 |
| | +E/-W | 0.00 usft | Easting: | 1,670,575.12 usft | Longitude: | -104.891900 |
| Position Uncertainty | | 3.28 usft | Wellhead Elevation: | usft | Ground Level: | 4,825.00 usft |
| Grid Convergence: | | 0.07 ° | | | | |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Plan A | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF202013 | 11/26/2021 | 7.86 | 66.50 | 51,819.99725028 |

| | | | | | |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| Design | Permit Rev-1 | | | | |
| Audit Notes: | | | | | |
| Version: | | Phase: | PLAN | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) | |
| | 0.00 | 0.00 | 0.00 | 270.61 | |

| | | | | | |
|---------------------------------|------------------------|--------------------------|-----------------------|--|--|
| Plan Survey Tool Program | Date | 12/8/2021 | | | |
| Depth From (usft) | Depth To (usft) | Survey (Wellbore) | Tool Name | Remarks | |
| 1 | 0.00 | 2,000.00 | Permit Rev-1 (Plan A) | APC_ISCWSA REV 2 MWD Fixed:v2:standard declination | |
| 2 | 2,000.00 | 23,507.13 | Permit Rev-1 (Plan A) | APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec + | |

Planning Report

| | | | |
|-----------|--------------------------------|------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | Permit Rev-1 | | |

| Plan Sections | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 225.00 | 0.00 | 0.00 | 225.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,611.67 | 20.80 | 227.31 | 1,581.41 | -168.79 | -182.98 | 1.50 | 1.50 | 0.00 | 227.31 | |
| 6,873.03 | 20.80 | 227.31 | 6,499.87 | -1,435.59 | -1,556.28 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,810.30 | 89.84 | 271.07 | 7,015.00 | -1,557.60 | -2,248.95 | 8.00 | 7.37 | 4.67 | 45.73 | |
| 19,490.20 | 89.84 | 271.07 | 7,048.34 | -1,339.23 | -13,926.76 | 0.00 | 0.00 | 0.00 | 0.00 | SWARTZ 4-15HZ_De |
| 19,596.61 | 90.93 | 269.25 | 7,047.62 | -1,338.93 | -14,033.16 | 2.00 | 1.03 | -1.71 | -59.01 | |
| 23,507.13 | 90.93 | 269.25 | 6,984.00 | -1,390.33 | -17,942.83 | 0.00 | 0.00 | 0.00 | 0.00 | SWARTZ 4-15HZ_BH |

Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | 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 |
| 225.00 | 0.00 | 0.00 | 225.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Begin Nudge @ 225.00ft | | | | | | | | | |
| 300.00 | 1.13 | 227.31 | 300.00 | -0.50 | -0.54 | 0.54 | 1.50 | 1.50 | 0.00 |
| 400.00 | 2.63 | 227.31 | 399.94 | -2.72 | -2.95 | 2.92 | 1.50 | 1.50 | 0.00 |
| 500.00 | 4.13 | 227.31 | 499.76 | -6.71 | -7.27 | 7.20 | 1.50 | 1.50 | 0.00 |
| 600.00 | 5.63 | 227.31 | 599.40 | -12.47 | -13.52 | 13.39 | 1.50 | 1.50 | 0.00 |
| 700.00 | 7.13 | 227.31 | 698.78 | -20.00 | -21.68 | 21.47 | 1.50 | 1.50 | 0.00 |
| 708.29 | 7.25 | 227.31 | 707.00 | -20.70 | -22.44 | 22.22 | 1.50 | 1.50 | 0.00 |
| Fox Hills | | | | | | | | | |
| 800.00 | 8.63 | 227.31 | 797.83 | -29.29 | -31.75 | 31.44 | 1.50 | 1.50 | 0.00 |
| 900.00 | 10.13 | 227.31 | 896.49 | -40.33 | -43.72 | 43.29 | 1.50 | 1.50 | 0.00 |
| 1,000.00 | 11.63 | 227.31 | 994.69 | -53.13 | -57.59 | 57.02 | 1.50 | 1.50 | 0.00 |
| 1,100.00 | 13.13 | 227.31 | 1,092.37 | -67.66 | -73.34 | 72.62 | 1.50 | 1.50 | 0.00 |
| 1,200.00 | 14.63 | 227.31 | 1,189.45 | -83.91 | -90.97 | 90.07 | 1.50 | 1.50 | 0.00 |
| 1,300.00 | 16.13 | 227.31 | 1,285.87 | -101.89 | -110.46 | 109.37 | 1.50 | 1.50 | 0.00 |
| 1,400.00 | 17.63 | 227.31 | 1,381.56 | -121.57 | -131.79 | 130.49 | 1.50 | 1.50 | 0.00 |
| 1,500.00 | 19.13 | 227.31 | 1,476.46 | -142.95 | -154.96 | 153.43 | 1.50 | 1.50 | 0.00 |
| 1,524.95 | 19.50 | 227.31 | 1,500.00 | -148.54 | -161.03 | 159.44 | 1.50 | 1.50 | 0.00 |
| 9 5/8" | | | | | | | | | |
| 1,600.00 | 20.63 | 227.31 | 1,570.50 | -166.00 | -179.95 | 178.17 | 1.50 | 1.50 | 0.00 |
| 1,611.67 | 20.80 | 227.31 | 1,581.41 | -168.79 | -182.98 | 181.18 | 1.50 | 1.50 | 0.00 |
| Hold Tangent @ 1611.67ft | | | | | | | | | |
| 1,700.00 | 20.80 | 227.31 | 1,663.98 | -190.06 | -206.04 | 204.01 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 20.80 | 227.31 | 1,757.47 | -214.14 | -232.14 | 229.85 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 20.80 | 227.31 | 1,850.95 | -238.22 | -258.24 | 255.69 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 20.80 | 227.31 | 1,944.43 | -262.29 | -284.35 | 281.54 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 20.80 | 227.31 | 2,037.92 | -286.37 | -310.45 | 307.38 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 20.80 | 227.31 | 2,131.40 | -310.45 | -336.55 | 333.22 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 20.80 | 227.31 | 2,224.88 | -334.53 | -362.65 | 359.07 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 20.80 | 227.31 | 2,318.36 | -358.60 | -388.75 | 384.91 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 20.80 | 227.31 | 2,411.85 | -382.68 | -414.85 | 410.76 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 20.80 | 227.31 | 2,505.33 | -406.76 | -440.95 | 436.60 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 20.80 | 227.31 | 2,598.81 | -430.84 | -467.06 | 462.44 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 20.80 | 227.31 | 2,692.29 | -454.91 | -493.16 | 488.29 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 20.80 | 227.31 | 2,785.78 | -478.99 | -519.26 | 514.13 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 20.80 | 227.31 | 2,879.26 | -503.07 | -545.36 | 539.97 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 20.80 | 227.31 | 2,972.74 | -527.15 | -571.46 | 565.82 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 20.80 | 227.31 | 3,066.22 | -551.22 | -597.56 | 591.66 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 20.80 | 227.31 | 3,159.71 | -575.30 | -623.67 | 617.51 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 20.80 | 227.31 | 3,253.19 | -599.38 | -649.77 | 643.35 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 20.80 | 227.31 | 3,346.67 | -623.46 | -675.87 | 669.19 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 20.80 | 227.31 | 3,440.15 | -647.53 | -701.97 | 695.04 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 20.80 | 227.31 | 3,533.64 | -671.61 | -728.07 | 720.88 | 0.00 | 0.00 | 0.00 |
| 3,768.85 | 20.80 | 227.31 | 3,598.00 | -688.19 | -746.04 | 738.67 | 0.00 | 0.00 | 0.00 |
| Parkman | | | | | | | | | |
| 3,800.00 | 20.80 | 227.31 | 3,627.12 | -695.69 | -754.17 | 746.72 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 20.80 | 227.31 | 3,720.60 | -719.76 | -780.27 | 772.57 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 20.80 | 227.31 | 3,814.08 | -743.84 | -806.38 | 798.41 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 20.80 | 227.31 | 3,907.57 | -767.92 | -832.48 | 824.26 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 20.80 | 227.31 | 4,001.05 | -792.00 | -858.58 | 850.10 | 0.00 | 0.00 | 0.00 |
| 4,284.46 | 20.80 | 227.31 | 4,080.00 | -812.33 | -880.62 | 871.93 | 0.00 | 0.00 | 0.00 |

Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | 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) |
| Sussex | | | | | | | | | |
| 4,300.00 | 20.80 | 227.31 | 4,094.53 | -816.07 | -884.68 | 875.94 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 20.80 | 227.31 | 4,188.01 | -840.15 | -910.78 | 901.79 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 20.80 | 227.31 | 4,281.50 | -864.23 | -936.88 | 927.63 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 20.80 | 227.31 | 4,374.98 | -888.31 | -962.99 | 953.47 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 20.80 | 227.31 | 4,468.46 | -912.38 | -989.09 | 979.32 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 20.80 | 227.31 | 4,561.94 | -936.46 | -1,015.19 | 1,005.16 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 20.80 | 227.31 | 4,655.43 | -960.54 | -1,041.29 | 1,031.00 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 20.80 | 227.31 | 4,748.91 | -984.62 | -1,067.39 | 1,056.85 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 20.80 | 227.31 | 4,842.39 | -1,008.69 | -1,093.49 | 1,082.69 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 20.80 | 227.31 | 4,935.87 | -1,032.77 | -1,119.59 | 1,108.54 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 20.80 | 227.31 | 5,029.36 | -1,056.85 | -1,145.70 | 1,134.38 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 20.80 | 227.31 | 5,122.84 | -1,080.93 | -1,171.80 | 1,160.22 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 20.80 | 227.31 | 5,216.32 | -1,105.00 | -1,197.90 | 1,186.07 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 20.80 | 227.31 | 5,309.81 | -1,129.08 | -1,224.00 | 1,211.91 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 20.80 | 227.31 | 5,403.29 | -1,153.16 | -1,250.10 | 1,237.75 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 20.80 | 227.31 | 5,496.77 | -1,177.23 | -1,276.20 | 1,263.60 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 20.80 | 227.31 | 5,590.25 | -1,201.31 | -1,302.31 | 1,289.44 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 20.80 | 227.31 | 5,683.74 | -1,225.39 | -1,328.41 | 1,315.29 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 20.80 | 227.31 | 5,777.22 | -1,249.47 | -1,354.51 | 1,341.13 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 20.80 | 227.31 | 5,870.70 | -1,273.54 | -1,380.61 | 1,366.97 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 20.80 | 227.31 | 5,964.18 | -1,297.62 | -1,406.71 | 1,392.82 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 20.80 | 227.31 | 6,057.67 | -1,321.70 | -1,432.81 | 1,418.66 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 20.80 | 227.31 | 6,151.15 | -1,345.78 | -1,458.91 | 1,444.50 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 20.80 | 227.31 | 6,244.63 | -1,369.85 | -1,485.02 | 1,470.35 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 20.80 | 227.31 | 6,338.11 | -1,393.93 | -1,511.12 | 1,496.19 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 20.80 | 227.31 | 6,431.60 | -1,418.01 | -1,537.22 | 1,522.04 | 0.00 | 0.00 | 0.00 |
| 6,873.03 | 20.80 | 227.31 | 6,499.87 | -1,435.59 | -1,556.28 | 1,540.91 | 0.00 | 0.00 | 0.00 |
| KOP @ 6873.03ft :: DLS = 8°/100' | | | | | | | | | |
| 6,900.00 | 22.36 | 231.37 | 6,524.95 | -1,442.04 | -1,563.81 | 1,548.37 | 8.00 | 5.77 | 15.07 |
| 6,950.00 | 25.47 | 237.60 | 6,570.66 | -1,453.74 | -1,580.32 | 1,564.75 | 8.00 | 6.22 | 12.45 |
| 7,000.00 | 28.78 | 242.52 | 6,615.16 | -1,465.06 | -1,600.08 | 1,584.39 | 8.00 | 6.63 | 9.83 |
| 7,050.00 | 32.24 | 246.48 | 6,658.23 | -1,475.94 | -1,623.00 | 1,607.19 | 8.00 | 6.92 | 7.92 |
| 7,100.00 | 35.80 | 249.74 | 6,699.67 | -1,486.34 | -1,648.96 | 1,633.04 | 8.00 | 7.12 | 6.52 |
| 7,150.00 | 39.44 | 252.47 | 6,739.27 | -1,496.19 | -1,677.83 | 1,661.81 | 8.00 | 7.27 | 5.47 |
| 7,200.00 | 43.13 | 254.81 | 6,776.84 | -1,505.45 | -1,709.48 | 1,693.36 | 8.00 | 7.38 | 4.68 |
| 7,250.00 | 46.86 | 256.85 | 6,812.19 | -1,514.08 | -1,743.76 | 1,727.54 | 8.00 | 7.46 | 4.08 |
| 7,293.48 | 50.13 | 258.43 | 6,841.00 | -1,521.04 | -1,775.56 | 1,759.26 | 8.00 | 7.52 | 3.63 |
| Sharon Springs | | | | | | | | | |
| 7,300.00 | 50.62 | 258.65 | 6,845.16 | -1,522.04 | -1,780.48 | 1,764.18 | 8.00 | 7.55 | 3.43 |
| 7,342.19 | 53.82 | 260.03 | 6,871.00 | -1,528.20 | -1,813.25 | 1,796.87 | 8.00 | 7.57 | 3.26 |
| Niobrara | | | | | | | | | |
| 7,350.00 | 54.41 | 260.27 | 6,875.58 | -1,529.28 | -1,819.48 | 1,803.10 | 8.00 | 7.60 | 3.10 |
| 7,400.00 | 58.22 | 261.74 | 6,903.31 | -1,535.77 | -1,860.57 | 1,844.12 | 8.00 | 7.62 | 2.94 |
| 7,450.00 | 62.05 | 263.09 | 6,928.20 | -1,541.49 | -1,903.54 | 1,887.02 | 8.00 | 7.65 | 2.71 |
| 7,500.00 | 65.88 | 264.35 | 6,950.14 | -1,546.39 | -1,948.19 | 1,931.62 | 8.00 | 7.67 | 2.52 |
| 7,550.00 | 69.73 | 265.54 | 6,969.03 | -1,550.46 | -1,994.30 | 1,977.68 | 8.00 | 7.69 | 2.37 |
| 7,600.00 | 73.58 | 266.67 | 6,984.76 | -1,553.68 | -2,041.64 | 2,024.98 | 8.00 | 7.71 | 2.26 |
| 7,650.00 | 77.44 | 267.76 | 6,997.27 | -1,556.02 | -2,089.98 | 2,073.30 | 8.00 | 7.72 | 2.17 |
| 7,700.00 | 81.31 | 268.81 | 7,006.49 | -1,557.49 | -2,139.09 | 2,122.39 | 8.00 | 7.73 | 2.11 |
| 7,750.00 | 85.17 | 269.84 | 7,012.38 | -1,558.08 | -2,188.73 | 2,172.02 | 8.00 | 7.73 | 2.06 |
| 7,800.00 | 89.04 | 270.86 | 7,014.90 | -1,557.77 | -2,238.65 | 2,221.94 | 8.00 | 7.74 | 2.04 |
| 7,810.30 | 89.84 | 271.07 | 7,015.00 | -1,557.60 | -2,248.95 | 2,232.24 | 8.00 | 7.74 | 2.03 |

Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | 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) |
| End Build @ 7810.30ft | | | | | | | | | |
| 7,900.00 | 89.84 | 271.07 | 7,015.26 | -1,555.92 | -2,338.64 | 2,321.94 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 89.84 | 271.07 | 7,015.54 | -1,554.05 | -2,438.62 | 2,421.94 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 89.84 | 271.07 | 7,015.83 | -1,552.18 | -2,538.60 | 2,521.93 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 89.84 | 271.07 | 7,016.11 | -1,550.31 | -2,638.58 | 2,621.93 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 89.84 | 271.07 | 7,016.40 | -1,548.44 | -2,738.57 | 2,721.92 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 89.84 | 271.07 | 7,016.68 | -1,546.57 | -2,838.55 | 2,821.92 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 89.84 | 271.07 | 7,016.97 | -1,544.70 | -2,938.53 | 2,921.92 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 89.84 | 271.07 | 7,017.25 | -1,542.83 | -3,038.51 | 3,021.91 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 89.84 | 271.07 | 7,017.54 | -1,540.96 | -3,138.49 | 3,121.91 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 89.84 | 271.07 | 7,017.83 | -1,539.09 | -3,238.48 | 3,221.91 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 89.84 | 271.07 | 7,018.11 | -1,537.22 | -3,338.46 | 3,321.90 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 89.84 | 271.07 | 7,018.40 | -1,535.35 | -3,438.44 | 3,421.90 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 89.84 | 271.07 | 7,018.68 | -1,533.48 | -3,538.42 | 3,521.90 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 89.84 | 271.07 | 7,018.97 | -1,531.61 | -3,638.40 | 3,621.89 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 89.84 | 271.07 | 7,019.25 | -1,529.74 | -3,738.39 | 3,721.89 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 89.84 | 271.07 | 7,019.54 | -1,527.87 | -3,838.37 | 3,821.88 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 89.84 | 271.07 | 7,019.82 | -1,526.00 | -3,938.35 | 3,921.88 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 89.84 | 271.07 | 7,020.11 | -1,524.14 | -4,038.33 | 4,021.88 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 89.84 | 271.07 | 7,020.39 | -1,522.27 | -4,138.31 | 4,121.87 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 89.84 | 271.07 | 7,020.68 | -1,520.40 | -4,238.30 | 4,221.87 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 89.84 | 271.07 | 7,020.97 | -1,518.53 | -4,338.28 | 4,321.87 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 89.84 | 271.07 | 7,021.25 | -1,516.66 | -4,438.26 | 4,421.86 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 89.84 | 271.07 | 7,021.54 | -1,514.79 | -4,538.24 | 4,521.86 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 89.84 | 271.07 | 7,021.82 | -1,512.92 | -4,638.23 | 4,621.86 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 89.84 | 271.07 | 7,022.11 | -1,511.05 | -4,738.21 | 4,721.85 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 89.84 | 271.07 | 7,022.39 | -1,509.18 | -4,838.19 | 4,821.85 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 89.84 | 271.07 | 7,022.68 | -1,507.31 | -4,938.17 | 4,921.84 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 89.84 | 271.07 | 7,022.96 | -1,505.44 | -5,038.15 | 5,021.84 | 0.00 | 0.00 | 0.00 |
| 10,612.95 | 89.84 | 271.07 | 7,023.00 | -1,505.20 | -5,051.10 | 5,034.79 | 0.00 | 0.00 | 0.00 |
| Nio B | | | | | | | | | |
| 10,700.00 | 89.84 | 271.07 | 7,023.25 | -1,503.57 | -5,138.14 | 5,121.84 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 89.84 | 271.07 | 7,023.53 | -1,501.70 | -5,238.12 | 5,221.83 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 89.84 | 271.07 | 7,023.82 | -1,499.83 | -5,338.10 | 5,321.83 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 89.84 | 271.07 | 7,024.10 | -1,497.96 | -5,438.08 | 5,421.83 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 89.84 | 271.07 | 7,024.39 | -1,496.09 | -5,538.06 | 5,521.82 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 89.84 | 271.07 | 7,024.68 | -1,494.22 | -5,638.05 | 5,621.82 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 89.84 | 271.07 | 7,024.96 | -1,492.35 | -5,738.03 | 5,721.82 | 0.00 | 0.00 | 0.00 |
| 11,400.00 | 89.84 | 271.07 | 7,025.25 | -1,490.48 | -5,838.01 | 5,821.81 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 89.84 | 271.07 | 7,025.53 | -1,488.61 | -5,937.99 | 5,921.81 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 89.84 | 271.07 | 7,025.82 | -1,486.74 | -6,037.98 | 6,021.80 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 89.84 | 271.07 | 7,026.10 | -1,484.87 | -6,137.96 | 6,121.80 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 89.84 | 271.07 | 7,026.39 | -1,483.00 | -6,237.94 | 6,221.80 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 89.84 | 271.07 | 7,026.67 | -1,481.13 | -6,337.92 | 6,321.79 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 89.84 | 271.07 | 7,026.96 | -1,479.26 | -6,437.90 | 6,421.79 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 89.84 | 271.07 | 7,027.24 | -1,477.40 | -6,537.89 | 6,521.79 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 89.84 | 271.07 | 7,027.53 | -1,475.53 | -6,637.87 | 6,621.78 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 89.84 | 271.07 | 7,027.82 | -1,473.66 | -6,737.85 | 6,721.78 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 89.84 | 271.07 | 7,028.10 | -1,471.79 | -6,837.83 | 6,821.78 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 89.84 | 271.07 | 7,028.39 | -1,469.92 | -6,937.81 | 6,921.77 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 89.84 | 271.07 | 7,028.67 | -1,468.05 | -7,037.80 | 7,021.77 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 89.84 | 271.07 | 7,028.96 | -1,466.18 | -7,137.78 | 7,121.76 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 89.84 | 271.07 | 7,029.24 | -1,464.31 | -7,237.76 | 7,221.76 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 89.84 | 271.07 | 7,029.53 | -1,462.44 | -7,337.74 | 7,321.76 | 0.00 | 0.00 | 0.00 |

Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | 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) |
| 13,000.00 | 89.84 | 271.07 | 7,029.81 | -1,460.57 | -7,437.72 | 7,421.75 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 89.84 | 271.07 | 7,030.10 | -1,458.70 | -7,537.71 | 7,521.75 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 89.84 | 271.07 | 7,030.38 | -1,456.83 | -7,637.69 | 7,621.75 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 89.84 | 271.07 | 7,030.67 | -1,454.96 | -7,737.67 | 7,721.74 | 0.00 | 0.00 | 0.00 |
| 13,400.00 | 89.84 | 271.07 | 7,030.96 | -1,453.09 | -7,837.65 | 7,821.74 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 89.84 | 271.07 | 7,031.24 | -1,451.22 | -7,937.64 | 7,921.74 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 89.84 | 271.07 | 7,031.53 | -1,449.35 | -8,037.62 | 8,021.73 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 89.84 | 271.07 | 7,031.81 | -1,447.48 | -8,137.60 | 8,121.73 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 89.84 | 271.07 | 7,032.10 | -1,445.61 | -8,237.58 | 8,221.72 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 89.84 | 271.07 | 7,032.38 | -1,443.74 | -8,337.56 | 8,321.72 | 0.00 | 0.00 | 0.00 |
| 14,000.00 | 89.84 | 271.07 | 7,032.67 | -1,441.87 | -8,437.55 | 8,421.72 | 0.00 | 0.00 | 0.00 |
| 14,100.00 | 89.84 | 271.07 | 7,032.95 | -1,440.00 | -8,537.53 | 8,521.71 | 0.00 | 0.00 | 0.00 |
| 14,200.00 | 89.84 | 271.07 | 7,033.24 | -1,438.13 | -8,637.51 | 8,621.71 | 0.00 | 0.00 | 0.00 |
| 14,300.00 | 89.84 | 271.07 | 7,033.52 | -1,436.26 | -8,737.49 | 8,721.71 | 0.00 | 0.00 | 0.00 |
| 14,400.00 | 89.84 | 271.07 | 7,033.81 | -1,434.39 | -8,837.47 | 8,821.70 | 0.00 | 0.00 | 0.00 |
| 14,500.00 | 89.84 | 271.07 | 7,034.09 | -1,432.53 | -8,937.46 | 8,921.70 | 0.00 | 0.00 | 0.00 |
| 14,600.00 | 89.84 | 271.07 | 7,034.38 | -1,430.66 | -9,037.44 | 9,021.70 | 0.00 | 0.00 | 0.00 |
| 14,700.00 | 89.84 | 271.07 | 7,034.67 | -1,428.79 | -9,137.42 | 9,121.69 | 0.00 | 0.00 | 0.00 |
| 14,800.00 | 89.84 | 271.07 | 7,034.95 | -1,426.92 | -9,237.40 | 9,221.69 | 0.00 | 0.00 | 0.00 |
| 14,900.00 | 89.84 | 271.07 | 7,035.24 | -1,425.05 | -9,337.39 | 9,321.68 | 0.00 | 0.00 | 0.00 |
| 15,000.00 | 89.84 | 271.07 | 7,035.52 | -1,423.18 | -9,437.37 | 9,421.68 | 0.00 | 0.00 | 0.00 |
| 15,100.00 | 89.84 | 271.07 | 7,035.81 | -1,421.31 | -9,537.35 | 9,521.68 | 0.00 | 0.00 | 0.00 |
| 15,200.00 | 89.84 | 271.07 | 7,036.09 | -1,419.44 | -9,637.33 | 9,621.67 | 0.00 | 0.00 | 0.00 |
| 15,300.00 | 89.84 | 271.07 | 7,036.38 | -1,417.57 | -9,737.31 | 9,721.67 | 0.00 | 0.00 | 0.00 |
| 15,400.00 | 89.84 | 271.07 | 7,036.66 | -1,415.70 | -9,837.30 | 9,821.67 | 0.00 | 0.00 | 0.00 |
| 15,500.00 | 89.84 | 271.07 | 7,036.95 | -1,413.83 | -9,937.28 | 9,921.66 | 0.00 | 0.00 | 0.00 |
| 15,600.00 | 89.84 | 271.07 | 7,037.23 | -1,411.96 | -10,037.26 | 10,021.66 | 0.00 | 0.00 | 0.00 |
| 15,700.00 | 89.84 | 271.07 | 7,037.52 | -1,410.09 | -10,137.24 | 10,121.66 | 0.00 | 0.00 | 0.00 |
| 15,800.00 | 89.84 | 271.07 | 7,037.81 | -1,408.22 | -10,237.22 | 10,221.65 | 0.00 | 0.00 | 0.00 |
| 15,900.00 | 89.84 | 271.07 | 7,038.09 | -1,406.35 | -10,337.21 | 10,321.65 | 0.00 | 0.00 | 0.00 |
| 16,000.00 | 89.84 | 271.07 | 7,038.38 | -1,404.48 | -10,437.19 | 10,421.64 | 0.00 | 0.00 | 0.00 |
| 16,100.00 | 89.84 | 271.07 | 7,038.66 | -1,402.61 | -10,537.17 | 10,521.64 | 0.00 | 0.00 | 0.00 |
| 16,200.00 | 89.84 | 271.07 | 7,038.95 | -1,400.74 | -10,637.15 | 10,621.64 | 0.00 | 0.00 | 0.00 |
| 16,300.00 | 89.84 | 271.07 | 7,039.23 | -1,398.87 | -10,737.13 | 10,721.63 | 0.00 | 0.00 | 0.00 |
| 16,400.00 | 89.84 | 271.07 | 7,039.52 | -1,397.00 | -10,837.12 | 10,821.63 | 0.00 | 0.00 | 0.00 |
| 16,500.00 | 89.84 | 271.07 | 7,039.80 | -1,395.13 | -10,937.10 | 10,921.63 | 0.00 | 0.00 | 0.00 |
| 16,600.00 | 89.84 | 271.07 | 7,040.09 | -1,393.26 | -11,037.08 | 11,021.62 | 0.00 | 0.00 | 0.00 |
| 16,700.00 | 89.84 | 271.07 | 7,040.37 | -1,391.39 | -11,137.06 | 11,121.62 | 0.00 | 0.00 | 0.00 |
| 16,800.00 | 89.84 | 271.07 | 7,040.66 | -1,389.52 | -11,237.05 | 11,221.62 | 0.00 | 0.00 | 0.00 |
| 16,900.00 | 89.84 | 271.07 | 7,040.94 | -1,387.66 | -11,337.03 | 11,321.61 | 0.00 | 0.00 | 0.00 |
| 17,000.00 | 89.84 | 271.07 | 7,041.23 | -1,385.79 | -11,437.01 | 11,421.61 | 0.00 | 0.00 | 0.00 |
| 17,100.00 | 89.84 | 271.07 | 7,041.52 | -1,383.92 | -11,536.99 | 11,521.60 | 0.00 | 0.00 | 0.00 |
| 17,200.00 | 89.84 | 271.07 | 7,041.80 | -1,382.05 | -11,636.97 | 11,621.60 | 0.00 | 0.00 | 0.00 |
| 17,300.00 | 89.84 | 271.07 | 7,042.09 | -1,380.18 | -11,736.96 | 11,721.60 | 0.00 | 0.00 | 0.00 |
| 17,400.00 | 89.84 | 271.07 | 7,042.37 | -1,378.31 | -11,836.94 | 11,821.59 | 0.00 | 0.00 | 0.00 |
| 17,500.00 | 89.84 | 271.07 | 7,042.66 | -1,376.44 | -11,936.92 | 11,921.59 | 0.00 | 0.00 | 0.00 |
| 17,600.00 | 89.84 | 271.07 | 7,042.94 | -1,374.57 | -12,036.90 | 12,021.59 | 0.00 | 0.00 | 0.00 |
| 17,700.00 | 89.84 | 271.07 | 7,043.23 | -1,372.70 | -12,136.88 | 12,121.58 | 0.00 | 0.00 | 0.00 |
| 17,800.00 | 89.84 | 271.07 | 7,043.51 | -1,370.83 | -12,236.87 | 12,221.58 | 0.00 | 0.00 | 0.00 |
| 17,900.00 | 89.84 | 271.07 | 7,043.80 | -1,368.96 | -12,336.85 | 12,321.57 | 0.00 | 0.00 | 0.00 |
| 18,000.00 | 89.84 | 271.07 | 7,044.08 | -1,367.09 | -12,436.83 | 12,421.57 | 0.00 | 0.00 | 0.00 |
| 18,100.00 | 89.84 | 271.07 | 7,044.37 | -1,365.22 | -12,536.81 | 12,521.57 | 0.00 | 0.00 | 0.00 |
| 18,200.00 | 89.84 | 271.07 | 7,044.66 | -1,363.35 | -12,636.79 | 12,621.56 | 0.00 | 0.00 | 0.00 |
| 18,300.00 | 89.84 | 271.07 | 7,044.94 | -1,361.48 | -12,736.78 | 12,721.56 | 0.00 | 0.00 | 0.00 |

Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | 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) |
| 18,400.00 | 89.84 | 271.07 | 7,045.23 | -1,359.61 | -12,836.76 | 12,821.56 | 0.00 | 0.00 | 0.00 |
| 18,500.00 | 89.84 | 271.07 | 7,045.51 | -1,357.74 | -12,936.74 | 12,921.55 | 0.00 | 0.00 | 0.00 |
| 18,600.00 | 89.84 | 271.07 | 7,045.80 | -1,355.87 | -13,036.72 | 13,021.55 | 0.00 | 0.00 | 0.00 |
| 18,700.00 | 89.84 | 271.07 | 7,046.08 | -1,354.00 | -13,136.71 | 13,121.55 | 0.00 | 0.00 | 0.00 |
| 18,800.00 | 89.84 | 271.07 | 7,046.37 | -1,352.13 | -13,236.69 | 13,221.54 | 0.00 | 0.00 | 0.00 |
| 18,900.00 | 89.84 | 271.07 | 7,046.65 | -1,350.26 | -13,336.67 | 13,321.54 | 0.00 | 0.00 | 0.00 |
| 19,000.00 | 89.84 | 271.07 | 7,046.94 | -1,348.39 | -13,436.65 | 13,421.53 | 0.00 | 0.00 | 0.00 |
| 19,100.00 | 89.84 | 271.07 | 7,047.22 | -1,346.52 | -13,536.63 | 13,521.53 | 0.00 | 0.00 | 0.00 |
| 19,200.00 | 89.84 | 271.07 | 7,047.51 | -1,344.65 | -13,636.62 | 13,621.53 | 0.00 | 0.00 | 0.00 |
| 19,300.00 | 89.84 | 271.07 | 7,047.80 | -1,342.79 | -13,736.60 | 13,721.52 | 0.00 | 0.00 | 0.00 |
| 19,400.00 | 89.84 | 271.07 | 7,048.08 | -1,340.92 | -13,836.58 | 13,821.52 | 0.00 | 0.00 | 0.00 |
| 19,490.20 | 89.84 | 271.07 | 7,048.34 | -1,339.23 | -13,926.76 | 13,911.72 | 0.00 | 0.00 | 0.00 |
| Begin Turn to BHL @ 19490.20ft | | | | | | | | | |
| 19,500.00 | 89.94 | 270.90 | 7,048.36 | -1,339.06 | -13,936.56 | 13,921.52 | 2.00 | 1.03 | -1.71 |
| 19,596.61 | 90.93 | 269.25 | 7,047.62 | -1,338.93 | -14,033.16 | 14,018.11 | 2.00 | 1.03 | -1.71 |
| End Turn @ 19596.61ft | | | | | | | | | |
| 19,600.00 | 90.93 | 269.25 | 7,047.57 | -1,338.98 | -14,036.55 | 14,021.50 | 0.00 | 0.00 | 0.00 |
| 19,700.00 | 90.93 | 269.25 | 7,045.94 | -1,340.29 | -14,136.53 | 14,121.46 | 0.00 | 0.00 | 0.00 |
| 19,800.00 | 90.93 | 269.25 | 7,044.32 | -1,341.61 | -14,236.51 | 14,221.42 | 0.00 | 0.00 | 0.00 |
| 19,900.00 | 90.93 | 269.25 | 7,042.69 | -1,342.92 | -14,336.49 | 14,321.38 | 0.00 | 0.00 | 0.00 |
| 20,000.00 | 90.93 | 269.25 | 7,041.06 | -1,344.24 | -14,436.47 | 14,421.34 | 0.00 | 0.00 | 0.00 |
| 20,100.00 | 90.93 | 269.25 | 7,039.43 | -1,345.55 | -14,536.45 | 14,521.30 | 0.00 | 0.00 | 0.00 |
| 20,200.00 | 90.93 | 269.25 | 7,037.81 | -1,346.86 | -14,636.42 | 14,621.25 | 0.00 | 0.00 | 0.00 |
| 20,300.00 | 90.93 | 269.25 | 7,036.18 | -1,348.18 | -14,736.40 | 14,721.21 | 0.00 | 0.00 | 0.00 |
| 20,400.00 | 90.93 | 269.25 | 7,034.55 | -1,349.49 | -14,836.38 | 14,821.17 | 0.00 | 0.00 | 0.00 |
| 20,500.00 | 90.93 | 269.25 | 7,032.93 | -1,350.81 | -14,936.36 | 14,921.13 | 0.00 | 0.00 | 0.00 |
| 20,600.00 | 90.93 | 269.25 | 7,031.30 | -1,352.12 | -15,036.34 | 15,021.09 | 0.00 | 0.00 | 0.00 |
| 20,700.00 | 90.93 | 269.25 | 7,029.67 | -1,353.44 | -15,136.31 | 15,121.05 | 0.00 | 0.00 | 0.00 |
| 20,800.00 | 90.93 | 269.25 | 7,028.05 | -1,354.75 | -15,236.29 | 15,221.01 | 0.00 | 0.00 | 0.00 |
| 20,900.00 | 90.93 | 269.25 | 7,026.42 | -1,356.06 | -15,336.27 | 15,320.96 | 0.00 | 0.00 | 0.00 |
| 21,000.00 | 90.93 | 269.25 | 7,024.79 | -1,357.38 | -15,436.25 | 15,420.92 | 0.00 | 0.00 | 0.00 |
| 21,100.00 | 90.93 | 269.25 | 7,023.16 | -1,358.69 | -15,536.23 | 15,520.88 | 0.00 | 0.00 | 0.00 |
| 21,200.00 | 90.93 | 269.25 | 7,021.54 | -1,360.01 | -15,636.20 | 15,620.84 | 0.00 | 0.00 | 0.00 |
| 21,300.00 | 90.93 | 269.25 | 7,019.91 | -1,361.32 | -15,736.18 | 15,720.80 | 0.00 | 0.00 | 0.00 |
| 21,400.00 | 90.93 | 269.25 | 7,018.28 | -1,362.64 | -15,836.16 | 15,820.76 | 0.00 | 0.00 | 0.00 |
| 21,500.00 | 90.93 | 269.25 | 7,016.66 | -1,363.95 | -15,936.14 | 15,920.71 | 0.00 | 0.00 | 0.00 |
| 21,600.00 | 90.93 | 269.25 | 7,015.03 | -1,365.27 | -16,036.12 | 16,020.67 | 0.00 | 0.00 | 0.00 |
| 21,700.00 | 90.93 | 269.25 | 7,013.40 | -1,366.58 | -16,136.10 | 16,120.63 | 0.00 | 0.00 | 0.00 |
| 21,800.00 | 90.93 | 269.25 | 7,011.78 | -1,367.89 | -16,236.07 | 16,220.59 | 0.00 | 0.00 | 0.00 |
| 21,900.00 | 90.93 | 269.25 | 7,010.15 | -1,369.21 | -16,336.05 | 16,320.55 | 0.00 | 0.00 | 0.00 |
| 22,000.00 | 90.93 | 269.25 | 7,008.52 | -1,370.52 | -16,436.03 | 16,420.51 | 0.00 | 0.00 | 0.00 |
| 22,100.00 | 90.93 | 269.25 | 7,006.89 | -1,371.84 | -16,536.01 | 16,520.47 | 0.00 | 0.00 | 0.00 |
| 22,200.00 | 90.93 | 269.25 | 7,005.27 | -1,373.15 | -16,635.99 | 16,620.42 | 0.00 | 0.00 | 0.00 |
| 22,300.00 | 90.93 | 269.25 | 7,003.64 | -1,374.47 | -16,735.96 | 16,720.38 | 0.00 | 0.00 | 0.00 |
| 22,400.00 | 90.93 | 269.25 | 7,002.01 | -1,375.78 | -16,835.94 | 16,820.34 | 0.00 | 0.00 | 0.00 |
| 22,500.00 | 90.93 | 269.25 | 7,000.39 | -1,377.09 | -16,935.92 | 16,920.30 | 0.00 | 0.00 | 0.00 |
| 22,600.00 | 90.93 | 269.25 | 6,998.76 | -1,378.41 | -17,035.90 | 17,020.26 | 0.00 | 0.00 | 0.00 |
| 22,700.00 | 90.93 | 269.25 | 6,997.13 | -1,379.72 | -17,135.88 | 17,120.22 | 0.00 | 0.00 | 0.00 |
| 22,800.00 | 90.93 | 269.25 | 6,995.51 | -1,381.04 | -17,235.85 | 17,220.17 | 0.00 | 0.00 | 0.00 |
| 22,900.00 | 90.93 | 269.25 | 6,993.88 | -1,382.35 | -17,335.83 | 17,320.13 | 0.00 | 0.00 | 0.00 |
| 23,000.00 | 90.93 | 269.25 | 6,992.25 | -1,383.67 | -17,435.81 | 17,420.09 | 0.00 | 0.00 | 0.00 |
| 23,100.00 | 90.93 | 269.25 | 6,990.62 | -1,384.98 | -17,535.79 | 17,520.05 | 0.00 | 0.00 | 0.00 |
| 23,200.00 | 90.93 | 269.25 | 6,989.00 | -1,386.30 | -17,635.77 | 17,620.01 | 0.00 | 0.00 | 0.00 |

Planning Report

| | | | |
|------------------|--------------------------------|-------------------------------------|-------------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well SWARTZ 4-15HZ |
| Company: | US ROCKIES WATTENBERG PLANNING | TVD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Project: | WELD-NAD83-UTMFT13N | MD Reference: | RKB = 17' @ 4842.00usft (RIG) |
| Site: | 3N-67W-04 SWARTZ 2-4HZ PAD | North Reference: | True |
| Well: | SWARTZ 4-15HZ | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Plan A | | |
| Design: | 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) |
| 23,300.00 | 90.93 | 269.25 | 6,987.37 | -1,387.61 | -17,735.75 | 17,719.97 | 0.00 | 0.00 | 0.00 |
| 23,400.00 | 90.93 | 269.25 | 6,985.74 | -1,388.92 | -17,835.72 | 17,819.93 | 0.00 | 0.00 | 0.00 |
| 23,507.13 | 90.93 | 269.25 | 6,984.00 | -1,390.33 | -17,942.83 | 17,927.01 | 0.00 | 0.00 | 0.00 |
| TD Well @ 23507.13ft | | | | | | | | | |

| Casing Points | | | | |
|-----------------------|-----------------------|----------|---------------------|-------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
| 1,524.95 | 1,500.00 | 9 5/8" | 9-5/8 | 13-1/2 |
| 23,507.13 | 6,984.00 | 5.5" CSG | 5-1/2 | 7-7/8 |

| Formations | | | | | |
|-----------------------|-----------------------|----------------|-----------|---------|-------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
| 708.29 | 707.00 | Fox Hills | | | |
| 3,768.85 | 3,598.00 | Parkman | | | |
| 4,284.46 | 4,080.00 | Sussex | | | |
| 7,293.48 | 6,841.00 | Sharon Springs | | | |
| 7,342.19 | 6,871.00 | Niobrara | | | |
| 10,612.95 | 7,023.00 | Nio B | | | |

| Plan Annotations | | | | |
|-----------------------|-----------------------|-------------------|--------------|----------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 225.00 | 225.00 | 0.00 | 0.00 | Begin Nudge @ 225.00ft |
| 1,611.67 | 1,581.41 | -168.79 | -182.98 | Hold Tangent @ 1611.67ft |
| 6,873.03 | 6,499.87 | -1,435.59 | -1,556.28 | KOP @ 6873.03ft :: DLS = 8°/100' |
| 7,810.30 | 7,015.00 | -1,557.60 | -2,248.95 | End Build @ 7810.30ft |
| 19,490.20 | 7,048.34 | -1,339.23 | -13,926.76 | Begin Turn to BHL @ 19490.20ft |
| 19,596.61 | 7,047.62 | -1,338.93 | -14,033.16 | End Turn @ 19596.61ft |
| 23,507.13 | 6,984.00 | -1,390.33 | -17,942.83 | TD Well @ 23507.13ft |