

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-8HZ**

Plan B

Plan: Permit Rev-1

Standard Planning Report

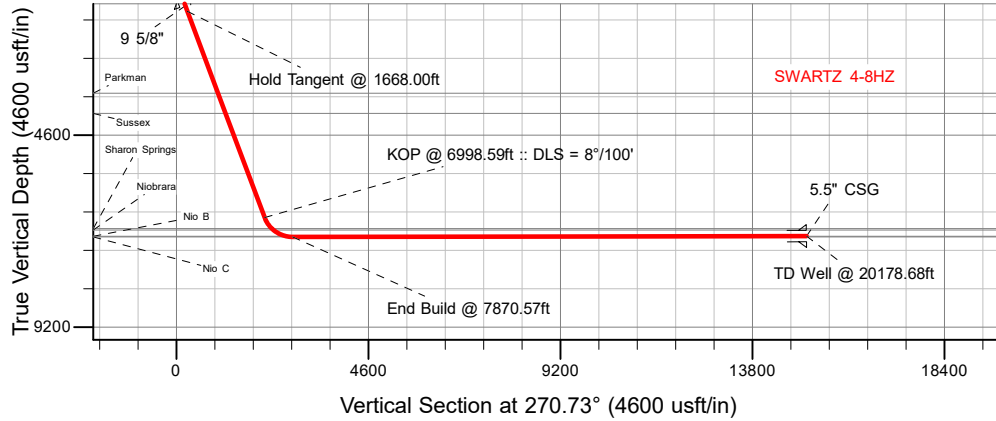
26 June, 2023

Project: WELD-NAD83-UTMFT13N
Site: 3N-67W-04 SWARTZ 2-4HZ PAD
Well: SWARTZ 4-8HZ
Wellbore: Plan B
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1526.50	9 5/8"	9-5/8
7019.00	20178.68	5.5" CSG	5-1/2



SHL
693' FNL
1565' FEL

LP
228' FSL
916' FWL

BHL
169' FSL
1115' FEL

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
1668.00	22.02	292.88	1632.13	108.33	-256.71	1.50	292.88	258.07	
6998.59	22.02	292.88	6573.87	885.39	-2098.07	0.00	0.00	2109.18	
7870.57	90.08	270.73	7036.00	964.55	-2769.71	8.00	-23.69	2781.78	
20178.68	90.08	270.73	7019.00	1121.86	-15076.81	0.00	0.00	15089.88	SWARTZ 4-8HZ BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
SWARTZ 4-8HZ SHL	0.00	14621517.56	1670640.21	40.260239	-104.891666
SWARTZ 4-8HZ LP	7036.00	14622478.72	1667869.32	40.262887	-104.901594
SWARTZ 4-8HZ BHL	7019.00	14622621.00	1655562.04	40.263307	-104.945710

WELL DETAILS: SWARTZ 4-8HZ

GL = 4825'

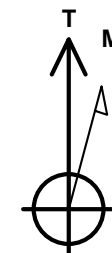
RKB = 17' @ 4842.00usft (RIG)

Plan: Permit Rev-1 (SWARTZ 4-8HZ/Plan B)

Date: 6/26/2023

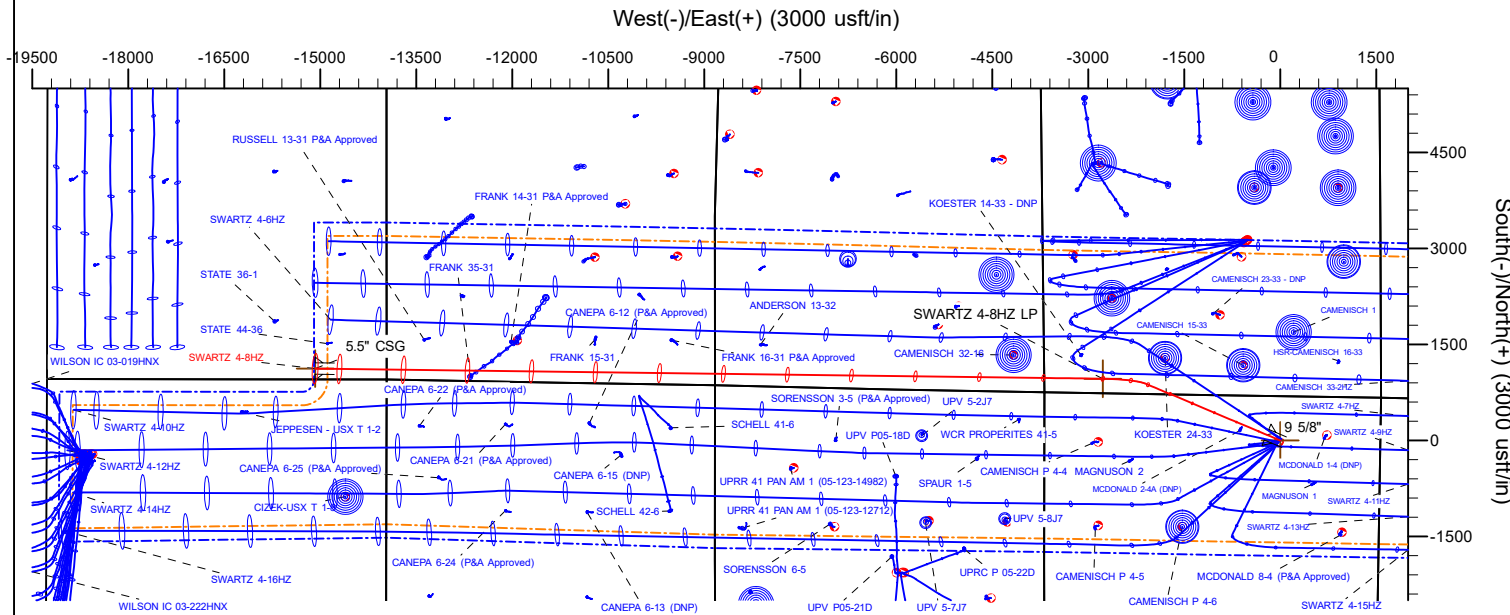
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
707.00	708.50	Fox Hills
3598.00	3788.56	Parkman
4080.00	4308.49	Sussex
6841.00	7325.00	Sharon Springs
6871.00	7370.59	Niobrara
7023.00	7732.12	Nio B
7036.00	7868.16	Nio C



Azimuths to True North
Magnetic North: 7.71°

Magnetic Field
Strength: 51668.5nT
Dip Angle: 66.45°
Date: 5/5/2023
Model: IGRF2020



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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 4-8HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,621,517.56 usft	Latitude:	40.260239
	+E/-W	0.00 usft	Easting:	1,670,640.21 usft	Longitude:	-104.891666
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,825.00 usft
Grid Convergence:		0.07 °				

Wellbore	Plan B				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	5/5/2023	7.71	66.45	51,668.51010648

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	270.73	

Plan Survey Tool Program		Date	6/17/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	2,000.00	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination
2	2,000.00	20,178.68	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+I	Fixed:v2:Rockies, crustal dec +

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,668.00	22.02	292.88	1,632.13	108.33	-256.71	1.50	1.50	0.00	292.88	
6,998.59	22.02	292.88	6,573.87	885.39	-2,098.07	0.00	0.00	0.00	0.00	
7,870.57	90.08	270.73	7,036.00	964.55	-2,769.71	8.00	7.81	-2.54	-23.69	
20,178.68	90.08	270.73	7,019.00	1,121.86	-15,076.81	0.00	0.00	0.00	0.00	SWARTZ 4-8HZ BHL

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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
Begin Nudge @ 200.00ft									
300.00	1.50	292.88	299.99	0.51	-1.21	1.21	1.50	1.50	0.00
400.00	3.00	292.88	399.91	2.04	-4.82	4.85	1.50	1.50	0.00
500.00	4.50	292.88	499.69	4.58	-10.85	10.91	1.50	1.50	0.00
600.00	6.00	292.88	599.27	8.14	-19.28	19.38	1.50	1.50	0.00
700.00	7.50	292.88	698.57	12.71	-30.11	30.27	1.50	1.50	0.00
708.50	7.63	292.88	707.00	13.14	-31.14	31.30	1.50	1.50	0.00
Fox Hills									
800.00	9.00	292.88	797.54	18.28	-43.33	43.56	1.50	1.50	0.00
900.00	10.50	292.88	896.09	24.87	-58.93	59.24	1.50	1.50	0.00
1,000.00	12.00	292.88	994.16	32.45	-76.90	77.31	1.50	1.50	0.00
1,100.00	13.50	292.88	1,091.70	41.03	-97.24	97.75	1.50	1.50	0.00
1,200.00	15.00	292.88	1,188.62	50.60	-119.91	120.55	1.50	1.50	0.00
1,300.00	16.50	292.88	1,284.86	61.16	-144.92	145.69	1.50	1.50	0.00
1,400.00	18.00	292.88	1,380.36	72.69	-172.24	173.15	1.50	1.50	0.00
1,500.00	19.50	292.88	1,475.05	85.18	-201.86	202.92	1.50	1.50	0.00
1,526.50	19.90	292.88	1,500.00	88.66	-210.09	211.20	1.50	1.50	0.00
9 5/8"									
1,600.00	21.00	292.88	1,568.86	98.64	-233.74	234.98	1.50	1.50	0.00
1,668.00	22.02	292.88	1,632.13	108.33	-256.71	258.07	1.50	1.50	0.00
Hold Tangent @ 1668.00ft									
1,700.00	22.02	292.88	1,661.79	113.00	-267.77	269.19	0.00	0.00	0.00
1,800.00	22.02	292.88	1,754.50	127.58	-302.31	303.91	0.00	0.00	0.00
1,900.00	22.02	292.88	1,847.20	142.15	-336.85	338.64	0.00	0.00	0.00
2,000.00	22.02	292.88	1,939.91	156.73	-371.40	373.36	0.00	0.00	0.00
2,100.00	22.02	292.88	2,032.61	171.31	-405.94	408.09	0.00	0.00	0.00
2,200.00	22.02	292.88	2,125.32	185.89	-440.48	442.82	0.00	0.00	0.00
2,300.00	22.02	292.88	2,218.03	200.46	-475.03	477.54	0.00	0.00	0.00
2,400.00	22.02	292.88	2,310.73	215.04	-509.57	512.27	0.00	0.00	0.00
2,500.00	22.02	292.88	2,403.44	229.62	-544.11	546.99	0.00	0.00	0.00
2,600.00	22.02	292.88	2,496.14	244.20	-578.66	581.72	0.00	0.00	0.00
2,700.00	22.02	292.88	2,588.85	258.77	-613.20	616.45	0.00	0.00	0.00
2,800.00	22.02	292.88	2,681.55	273.35	-647.74	651.17	0.00	0.00	0.00
2,900.00	22.02	292.88	2,774.26	287.93	-682.29	685.90	0.00	0.00	0.00
3,000.00	22.02	292.88	2,866.96	302.51	-716.83	720.62	0.00	0.00	0.00
3,100.00	22.02	292.88	2,959.67	317.08	-751.37	755.35	0.00	0.00	0.00
3,200.00	22.02	292.88	3,052.37	331.66	-785.91	790.08	0.00	0.00	0.00
3,300.00	22.02	292.88	3,145.08	346.24	-820.46	824.80	0.00	0.00	0.00
3,400.00	22.02	292.88	3,237.78	360.81	-855.00	859.53	0.00	0.00	0.00
3,500.00	22.02	292.88	3,330.49	375.39	-889.54	894.25	0.00	0.00	0.00
3,600.00	22.02	292.88	3,423.19	389.97	-924.09	928.98	0.00	0.00	0.00
3,700.00	22.02	292.88	3,515.90	404.55	-958.63	963.71	0.00	0.00	0.00
3,788.56	22.02	292.88	3,598.00	417.46	-989.22	994.46	0.00	0.00	0.00
Parkman									
3,800.00	22.02	292.88	3,608.61	419.12	-993.17	998.43	0.00	0.00	0.00
3,900.00	22.02	292.88	3,701.31	433.70	-1,027.72	1,033.16	0.00	0.00	0.00
4,000.00	22.02	292.88	3,794.02	448.28	-1,062.26	1,067.88	0.00	0.00	0.00
4,100.00	22.02	292.88	3,886.72	462.86	-1,096.80	1,102.61	0.00	0.00	0.00
4,200.00	22.02	292.88	3,979.43	477.43	-1,131.35	1,137.34	0.00	0.00	0.00
4,300.00	22.02	292.88	4,072.13	492.01	-1,165.89	1,172.06	0.00	0.00	0.00
4,308.49	22.02	292.88	4,080.00	493.25	-1,168.82	1,175.01	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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									
4,400.00	22.02	292.88	4,164.84	506.59	-1,200.43	1,206.79	0.00	0.00	0.00
4,500.00	22.02	292.88	4,257.54	521.17	-1,234.98	1,241.51	0.00	0.00	0.00
4,600.00	22.02	292.88	4,350.25	535.74	-1,269.52	1,276.24	0.00	0.00	0.00
4,700.00	22.02	292.88	4,442.95	550.32	-1,304.06	1,310.97	0.00	0.00	0.00
4,800.00	22.02	292.88	4,535.66	564.90	-1,338.60	1,345.69	0.00	0.00	0.00
4,900.00	22.02	292.88	4,628.36	579.48	-1,373.15	1,380.42	0.00	0.00	0.00
5,000.00	22.02	292.88	4,721.07	594.05	-1,407.69	1,415.15	0.00	0.00	0.00
5,100.00	22.02	292.88	4,813.77	608.63	-1,442.23	1,449.87	0.00	0.00	0.00
5,200.00	22.02	292.88	4,906.48	623.21	-1,476.78	1,484.60	0.00	0.00	0.00
5,300.00	22.02	292.88	4,999.18	637.78	-1,511.32	1,519.32	0.00	0.00	0.00
5,400.00	22.02	292.88	5,091.89	652.36	-1,545.86	1,554.05	0.00	0.00	0.00
5,500.00	22.02	292.88	5,184.60	666.94	-1,580.41	1,588.78	0.00	0.00	0.00
5,600.00	22.02	292.88	5,277.30	681.52	-1,614.95	1,623.50	0.00	0.00	0.00
5,700.00	22.02	292.88	5,370.01	696.09	-1,649.49	1,658.23	0.00	0.00	0.00
5,800.00	22.02	292.88	5,462.71	710.67	-1,684.04	1,692.95	0.00	0.00	0.00
5,900.00	22.02	292.88	5,555.42	725.25	-1,718.58	1,727.68	0.00	0.00	0.00
6,000.00	22.02	292.88	5,648.12	739.83	-1,753.12	1,762.41	0.00	0.00	0.00
6,100.00	22.02	292.88	5,740.83	754.40	-1,787.66	1,797.13	0.00	0.00	0.00
6,200.00	22.02	292.88	5,833.53	768.98	-1,822.21	1,831.86	0.00	0.00	0.00
6,300.00	22.02	292.88	5,926.24	783.56	-1,856.75	1,866.58	0.00	0.00	0.00
6,400.00	22.02	292.88	6,018.94	798.14	-1,891.29	1,901.31	0.00	0.00	0.00
6,500.00	22.02	292.88	6,111.65	812.71	-1,925.84	1,936.04	0.00	0.00	0.00
6,600.00	22.02	292.88	6,204.35	827.29	-1,960.38	1,970.76	0.00	0.00	0.00
6,700.00	22.02	292.88	6,297.06	841.87	-1,994.92	2,005.49	0.00	0.00	0.00
6,800.00	22.02	292.88	6,389.76	856.45	-2,029.47	2,040.21	0.00	0.00	0.00
6,900.00	22.02	292.88	6,482.47	871.02	-2,064.01	2,074.94	0.00	0.00	0.00
6,998.59	22.02	292.88	6,573.87	885.39	-2,098.07	2,109.18	0.00	0.00	0.00
KOP @ 6998.59ft :: DLS = 8°/100'									
7,000.00	22.12	292.76	6,575.17	885.60	-2,098.55	2,109.67	8.00	7.33	-8.54
7,050.00	25.84	289.09	6,620.85	892.81	-2,117.54	2,128.74	8.00	7.43	-7.34
7,100.00	29.62	286.29	6,665.11	899.84	-2,139.70	2,151.00	8.00	7.57	-5.59
7,150.00	33.45	284.08	6,707.72	906.66	-2,164.94	2,176.32	8.00	7.66	-4.42
7,200.00	37.31	282.28	6,748.47	913.24	-2,193.13	2,204.58	8.00	7.72	-3.60
7,250.00	41.20	280.77	6,787.19	919.54	-2,224.12	2,235.66	8.00	7.77	-3.02
7,300.00	45.10	279.48	6,823.66	925.54	-2,257.78	2,269.39	8.00	7.80	-2.58
7,325.00	47.05	278.90	6,841.00	928.41	-2,275.55	2,287.19	8.00	7.82	-2.32
Sharon Springs									
7,350.00	49.01	278.35	6,857.72	931.20	-2,293.93	2,305.61	8.00	7.83	-2.18
7,370.59	50.63	277.93	6,871.00	933.43	-2,309.50	2,321.20	8.00	7.84	-2.07
Niobrara									
7,400.00	52.94	277.35	6,889.20	936.50	-2,332.40	2,344.14	8.00	7.85	-1.95
7,450.00	56.87	276.45	6,917.94	941.40	-2,373.00	2,384.81	8.00	7.86	-1.80
7,500.00	60.81	275.63	6,943.81	945.90	-2,415.54	2,427.40	8.00	7.87	-1.65
7,550.00	64.75	274.87	6,966.68	949.96	-2,459.81	2,471.71	8.00	7.88	-1.53
7,600.00	68.69	274.15	6,986.44	953.57	-2,505.59	2,517.53	8.00	7.89	-1.43
7,650.00	72.64	273.47	7,002.99	956.70	-2,552.65	2,564.64	8.00	7.90	-1.35
7,700.00	76.59	272.83	7,016.25	959.35	-2,600.78	2,612.79	8.00	7.90	-1.30
7,732.12	79.13	272.42	7,023.00	960.78	-2,632.15	2,644.18	8.00	7.90	-1.26
Nio B									
7,750.00	80.54	272.20	7,026.15	961.49	-2,649.73	2,661.77	8.00	7.91	-1.24
7,800.00	84.50	271.59	7,032.66	963.13	-2,699.27	2,711.32	8.00	7.91	-1.23
7,850.00	88.45	270.98	7,035.73	964.24	-2,749.15	2,761.21	8.00	7.91	-1.21

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)	
7,868.16	90.08	270.73	7,036.00	964.52	-2,767.31	2,779.37	9.06	8.95	-1.36	
Nio C										
7,870.57	90.08	270.73	7,036.00	964.55	-2,769.71	2,781.78	0.00	0.00	0.00	
End Build @ 7870.57ft										
7,900.00	90.08	270.73	7,035.96	964.93	-2,799.14	2,811.21	0.00	0.00	0.00	
8,000.00	90.08	270.73	7,035.82	966.21	-2,899.14	2,911.21	0.00	0.00	0.00	
8,100.00	90.08	270.73	7,035.68	967.48	-2,999.13	3,011.21	0.00	0.00	0.00	
8,200.00	90.08	270.73	7,035.54	968.76	-3,099.12	3,111.21	0.00	0.00	0.00	
8,300.00	90.08	270.73	7,035.40	970.04	-3,199.11	3,211.21	0.00	0.00	0.00	
8,400.00	90.08	270.73	7,035.27	971.32	-3,299.10	3,311.21	0.00	0.00	0.00	
8,500.00	90.08	270.73	7,035.13	972.60	-3,399.10	3,411.21	0.00	0.00	0.00	
8,600.00	90.08	270.73	7,034.99	973.87	-3,499.09	3,511.21	0.00	0.00	0.00	
8,700.00	90.08	270.73	7,034.85	975.15	-3,599.08	3,611.21	0.00	0.00	0.00	
8,800.00	90.08	270.73	7,034.71	976.43	-3,699.07	3,711.21	0.00	0.00	0.00	
8,900.00	90.08	270.73	7,034.58	977.71	-3,799.06	3,811.21	0.00	0.00	0.00	
9,000.00	90.08	270.73	7,034.44	978.99	-3,899.05	3,911.21	0.00	0.00	0.00	
9,100.00	90.08	270.73	7,034.30	980.26	-3,999.05	4,011.21	0.00	0.00	0.00	
9,200.00	90.08	270.73	7,034.16	981.54	-4,099.04	4,111.21	0.00	0.00	0.00	
9,300.00	90.08	270.73	7,034.02	982.82	-4,199.03	4,211.21	0.00	0.00	0.00	
9,400.00	90.08	270.73	7,033.88	984.10	-4,299.02	4,311.21	0.00	0.00	0.00	
9,500.00	90.08	270.73	7,033.75	985.38	-4,399.01	4,411.21	0.00	0.00	0.00	
9,600.00	90.08	270.73	7,033.61	986.65	-4,499.00	4,511.21	0.00	0.00	0.00	
9,700.00	90.08	270.73	7,033.47	987.93	-4,599.00	4,611.21	0.00	0.00	0.00	
9,800.00	90.08	270.73	7,033.33	989.21	-4,698.99	4,711.21	0.00	0.00	0.00	
9,900.00	90.08	270.73	7,033.19	990.49	-4,798.98	4,811.21	0.00	0.00	0.00	
10,000.00	90.08	270.73	7,033.06	991.77	-4,898.97	4,911.21	0.00	0.00	0.00	
10,100.00	90.08	270.73	7,032.92	993.05	-4,998.96	5,011.21	0.00	0.00	0.00	
10,200.00	90.08	270.73	7,032.78	994.32	-5,098.95	5,111.21	0.00	0.00	0.00	
10,300.00	90.08	270.73	7,032.64	995.60	-5,198.95	5,211.21	0.00	0.00	0.00	
10,400.00	90.08	270.73	7,032.50	996.88	-5,298.94	5,311.21	0.00	0.00	0.00	
10,500.00	90.08	270.73	7,032.37	998.16	-5,398.93	5,411.21	0.00	0.00	0.00	
10,600.00	90.08	270.73	7,032.23	999.44	-5,498.92	5,511.21	0.00	0.00	0.00	
10,700.00	90.08	270.73	7,032.09	1,000.71	-5,598.91	5,611.21	0.00	0.00	0.00	
10,800.00	90.08	270.73	7,031.95	1,001.99	-5,698.91	5,711.21	0.00	0.00	0.00	
10,900.00	90.08	270.73	7,031.81	1,003.27	-5,798.90	5,811.21	0.00	0.00	0.00	
11,000.00	90.08	270.73	7,031.68	1,004.55	-5,898.89	5,911.21	0.00	0.00	0.00	
11,100.00	90.08	270.73	7,031.54	1,005.83	-5,998.88	6,011.21	0.00	0.00	0.00	
11,200.00	90.08	270.73	7,031.40	1,007.10	-6,098.87	6,111.21	0.00	0.00	0.00	
11,300.00	90.08	270.73	7,031.26	1,008.38	-6,198.86	6,211.21	0.00	0.00	0.00	
11,400.00	90.08	270.73	7,031.12	1,009.66	-6,298.86	6,311.21	0.00	0.00	0.00	
11,500.00	90.08	270.73	7,030.98	1,010.94	-6,398.85	6,411.21	0.00	0.00	0.00	
11,600.00	90.08	270.73	7,030.85	1,012.22	-6,498.84	6,511.21	0.00	0.00	0.00	
11,700.00	90.08	270.73	7,030.71	1,013.49	-6,598.83	6,611.21	0.00	0.00	0.00	
11,800.00	90.08	270.73	7,030.57	1,014.77	-6,698.82	6,711.21	0.00	0.00	0.00	
11,900.00	90.08	270.73	7,030.43	1,016.05	-6,798.81	6,811.21	0.00	0.00	0.00	
12,000.00	90.08	270.73	7,030.29	1,017.33	-6,898.81	6,911.21	0.00	0.00	0.00	
12,100.00	90.08	270.73	7,030.16	1,018.61	-6,998.80	7,011.21	0.00	0.00	0.00	
12,200.00	90.08	270.73	7,030.02	1,019.89	-7,098.79	7,111.21	0.00	0.00	0.00	
12,300.00	90.08	270.73	7,029.88	1,021.16	-7,198.78	7,211.21	0.00	0.00	0.00	
12,400.00	90.08	270.73	7,029.74	1,022.44	-7,298.77	7,311.21	0.00	0.00	0.00	
12,500.00	90.08	270.73	7,029.60	1,023.72	-7,398.76	7,411.21	0.00	0.00	0.00	
12,600.00	90.08	270.73	7,029.47	1,025.00	-7,498.76	7,511.21	0.00	0.00	0.00	
12,700.00	90.08	270.73	7,029.33	1,026.28	-7,598.75	7,611.21	0.00	0.00	0.00	
12,800.00	90.08	270.73	7,029.19	1,027.55	-7,698.74	7,711.21	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)
12,900.00	90.08	270.73	7,029.05	1,028.83	-7,798.73	7,811.21	0.00	0.00	0.00
13,000.00	90.08	270.73	7,028.91	1,030.11	-7,898.72	7,911.21	0.00	0.00	0.00
13,100.00	90.08	270.73	7,028.78	1,031.39	-7,998.72	8,011.21	0.00	0.00	0.00
13,200.00	90.08	270.73	7,028.64	1,032.67	-8,098.71	8,111.21	0.00	0.00	0.00
13,300.00	90.08	270.73	7,028.50	1,033.94	-8,198.70	8,211.21	0.00	0.00	0.00
13,400.00	90.08	270.73	7,028.36	1,035.22	-8,298.69	8,311.21	0.00	0.00	0.00
13,500.00	90.08	270.73	7,028.22	1,036.50	-8,398.68	8,411.21	0.00	0.00	0.00
13,600.00	90.08	270.73	7,028.08	1,037.78	-8,498.67	8,511.21	0.00	0.00	0.00
13,700.00	90.08	270.73	7,027.95	1,039.06	-8,598.67	8,611.21	0.00	0.00	0.00
13,800.00	90.08	270.73	7,027.81	1,040.33	-8,698.66	8,711.21	0.00	0.00	0.00
13,900.00	90.08	270.73	7,027.67	1,041.61	-8,798.65	8,811.21	0.00	0.00	0.00
14,000.00	90.08	270.73	7,027.53	1,042.89	-8,898.64	8,911.21	0.00	0.00	0.00
14,100.00	90.08	270.73	7,027.39	1,044.17	-8,998.63	9,011.21	0.00	0.00	0.00
14,200.00	90.08	270.73	7,027.26	1,045.45	-9,098.62	9,111.21	0.00	0.00	0.00
14,300.00	90.08	270.73	7,027.12	1,046.73	-9,198.62	9,211.21	0.00	0.00	0.00
14,400.00	90.08	270.73	7,026.98	1,048.00	-9,298.61	9,311.21	0.00	0.00	0.00
14,500.00	90.08	270.73	7,026.84	1,049.28	-9,398.60	9,411.21	0.00	0.00	0.00
14,600.00	90.08	270.73	7,026.70	1,050.56	-9,498.59	9,511.21	0.00	0.00	0.00
14,700.00	90.08	270.73	7,026.57	1,051.84	-9,598.58	9,611.21	0.00	0.00	0.00
14,800.00	90.08	270.73	7,026.43	1,053.12	-9,698.57	9,711.20	0.00	0.00	0.00
14,900.00	90.08	270.73	7,026.29	1,054.39	-9,798.57	9,811.20	0.00	0.00	0.00
15,000.00	90.08	270.73	7,026.15	1,055.67	-9,898.56	9,911.20	0.00	0.00	0.00
15,100.00	90.08	270.73	7,026.01	1,056.95	-9,998.55	10,011.20	0.00	0.00	0.00
15,200.00	90.08	270.73	7,025.88	1,058.23	-10,098.54	10,111.20	0.00	0.00	0.00
15,300.00	90.08	270.73	7,025.74	1,059.51	-10,198.53	10,211.20	0.00	0.00	0.00
15,400.00	90.08	270.73	7,025.60	1,060.78	-10,298.53	10,311.20	0.00	0.00	0.00
15,500.00	90.08	270.73	7,025.46	1,062.06	-10,398.52	10,411.20	0.00	0.00	0.00
15,600.00	90.08	270.73	7,025.32	1,063.34	-10,498.51	10,511.20	0.00	0.00	0.00
15,700.00	90.08	270.73	7,025.18	1,064.62	-10,598.50	10,611.20	0.00	0.00	0.00
15,800.00	90.08	270.73	7,025.05	1,065.90	-10,698.49	10,711.20	0.00	0.00	0.00
15,900.00	90.08	270.73	7,024.91	1,067.17	-10,798.48	10,811.20	0.00	0.00	0.00
16,000.00	90.08	270.73	7,024.77	1,068.45	-10,898.48	10,911.20	0.00	0.00	0.00
16,100.00	90.08	270.73	7,024.63	1,069.73	-10,998.47	11,011.20	0.00	0.00	0.00
16,200.00	90.08	270.73	7,024.49	1,071.01	-11,098.46	11,111.20	0.00	0.00	0.00
16,300.00	90.08	270.73	7,024.36	1,072.29	-11,198.45	11,211.20	0.00	0.00	0.00
16,400.00	90.08	270.73	7,024.22	1,073.57	-11,298.44	11,311.20	0.00	0.00	0.00
16,500.00	90.08	270.73	7,024.08	1,074.84	-11,398.43	11,411.20	0.00	0.00	0.00
16,600.00	90.08	270.73	7,023.94	1,076.12	-11,498.43	11,511.20	0.00	0.00	0.00
16,700.00	90.08	270.73	7,023.80	1,077.40	-11,598.42	11,611.20	0.00	0.00	0.00
16,800.00	90.08	270.73	7,023.67	1,078.68	-11,698.41	11,711.20	0.00	0.00	0.00
16,900.00	90.08	270.73	7,023.53	1,079.96	-11,798.40	11,811.20	0.00	0.00	0.00
17,000.00	90.08	270.73	7,023.39	1,081.23	-11,898.39	11,911.20	0.00	0.00	0.00
17,100.00	90.08	270.73	7,023.25	1,082.51	-11,998.38	12,011.20	0.00	0.00	0.00
17,200.00	90.08	270.73	7,023.11	1,083.79	-12,098.38	12,111.20	0.00	0.00	0.00
17,300.00	90.08	270.73	7,022.98	1,085.07	-12,198.37	12,211.20	0.00	0.00	0.00
17,400.00	90.08	270.73	7,022.84	1,086.35	-12,298.36	12,311.20	0.00	0.00	0.00
17,500.00	90.08	270.73	7,022.70	1,087.62	-12,398.35	12,411.20	0.00	0.00	0.00
17,600.00	90.08	270.73	7,022.56	1,088.90	-12,498.34	12,511.20	0.00	0.00	0.00
17,700.00	90.08	270.73	7,022.42	1,090.18	-12,598.34	12,611.20	0.00	0.00	0.00
17,800.00	90.08	270.73	7,022.28	1,091.46	-12,698.33	12,711.20	0.00	0.00	0.00
17,900.00	90.08	270.73	7,022.15	1,092.74	-12,798.32	12,811.20	0.00	0.00	0.00
18,000.00	90.08	270.73	7,022.01	1,094.01	-12,898.31	12,911.20	0.00	0.00	0.00
18,100.00	90.08	270.73	7,021.87	1,095.29	-12,998.30	13,011.20	0.00	0.00	0.00
18,200.00	90.08	270.73	7,021.73	1,096.57	-13,098.29	13,111.20	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
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)	
18,300.00	90.08	270.73	7,021.59	1,097.85	-13,198.29	13,211.20	0.00	0.00	0.00	
18,400.00	90.08	270.73	7,021.46	1,099.13	-13,298.28	13,311.20	0.00	0.00	0.00	
18,500.00	90.08	270.73	7,021.32	1,100.40	-13,398.27	13,411.20	0.00	0.00	0.00	
18,600.00	90.08	270.73	7,021.18	1,101.68	-13,498.26	13,511.20	0.00	0.00	0.00	
18,700.00	90.08	270.73	7,021.04	1,102.96	-13,598.25	13,611.20	0.00	0.00	0.00	
18,800.00	90.08	270.73	7,020.90	1,104.24	-13,698.24	13,711.20	0.00	0.00	0.00	
18,900.00	90.08	270.73	7,020.77	1,105.52	-13,798.24	13,811.20	0.00	0.00	0.00	
19,000.00	90.08	270.73	7,020.63	1,106.80	-13,898.23	13,911.20	0.00	0.00	0.00	
19,100.00	90.08	270.73	7,020.49	1,108.07	-13,998.22	14,011.20	0.00	0.00	0.00	
19,200.00	90.08	270.73	7,020.35	1,109.35	-14,098.21	14,111.20	0.00	0.00	0.00	
19,300.00	90.08	270.73	7,020.21	1,110.63	-14,198.20	14,211.20	0.00	0.00	0.00	
19,400.00	90.08	270.73	7,020.08	1,111.91	-14,298.19	14,311.20	0.00	0.00	0.00	
19,500.00	90.08	270.73	7,019.94	1,113.19	-14,398.19	14,411.20	0.00	0.00	0.00	
19,600.00	90.08	270.73	7,019.80	1,114.46	-14,498.18	14,511.20	0.00	0.00	0.00	
19,700.00	90.08	270.73	7,019.66	1,115.74	-14,598.17	14,611.20	0.00	0.00	0.00	
19,800.00	90.08	270.73	7,019.52	1,117.02	-14,698.16	14,711.20	0.00	0.00	0.00	
19,900.00	90.08	270.73	7,019.38	1,118.30	-14,798.15	14,811.20	0.00	0.00	0.00	
20,000.00	90.08	270.73	7,019.25	1,119.58	-14,898.15	14,911.20	0.00	0.00	0.00	
20,100.00	90.08	270.73	7,019.11	1,120.85	-14,998.14	15,011.20	0.00	0.00	0.00	
20,178.68	90.08	270.73	7,019.00	1,121.86	-15,076.81	15,089.88	0.00	0.00	0.00	
TD Well @ 20178.68ft - 5.5" CSG										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,526.50	1,500.00	9 5/8"	9-5/8	13-1/2	
20,178.68	7,019.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
708.50	707.00	Fox Hills				
3,788.56	3,598.00	Parkman				
4,308.49	4,080.00	Sussex				
7,325.00	6,841.00	Sharon Springs				
7,370.59	6,871.00	Niobrara				
7,732.12	7,023.00	Nio B				
7,868.16	7,036.00	Nio C		0.00		

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-8HZ
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 4-8HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft
1,668.00	1,632.13	108.33	-256.71	Hold Tangent @ 1668.00ft
6,998.59	6,573.87	885.39	-2,098.07	KOP @ 6998.59ft :: DLS = 8"/100'
7,870.57	7,036.00	964.55	-2,769.71	End Build @ 7870.57ft
20,178.68	7,019.00	1,121.86	-15,076.81	TD Well @ 20178.68ft