

US ROCKIES WATTENBERG PLANNING

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

Plan A

Plan: Permit Rev-1

Standard Planning Report

15 December, 2021

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-3HZ
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 4-3HZ	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
From:	Map	Easting:	1,670,705.29 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	40.260465
		Longitude:	-104.891433

Well SWARTZ 4-3HZ						
Well Position	+N/-S	0.00 usft	Northing:	14,621,576.38 usft	Latitude:	40.260400
	+E/-W	0.00 usft	Easting:	1,670,686.70 usft	Longitude:	-104.891499
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	51,820.24212116

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	270.14

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	20,128.43	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I	Fixed:v2:Rockies, crustal dec +

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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	
249.65	0.00	0.00	249.65	0.00	0.00	0.00	0.00	0.00	0.00	
1,742.98	22.40	294.50	1,705.23	119.52	-262.26	1.50	1.50	0.00	294.50	
7,169.24	22.40	294.50	6,722.06	977.02	-2,143.87	0.00	0.00	0.00	0.00	
8,041.39	90.09	270.14	7,183.00	1,057.12	-2,816.39	8.00	7.76	-2.79	-26.08	
20,128.43	90.09	270.14	7,165.00	1,085.86	-14,903.38	0.00	0.00	0.00	0.00	SWARTZ 4-3HZ_BHL

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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	
249.65	0.00	0.00	249.65	0.00	0.00	0.00	0.00	0.00	0.00	
Begin Nudge @ 249.65ft										
300.00	0.76	294.50	300.00	0.14	-0.30	0.30	1.50	1.50	0.00	
400.00	2.26	294.50	399.96	1.23	-2.69	2.70	1.50	1.50	0.00	
500.00	3.76	294.50	499.82	3.40	-7.46	7.47	1.50	1.50	0.00	
600.00	5.26	294.50	599.51	6.66	-14.61	14.63	1.50	1.50	0.00	
700.00	6.76	294.50	698.96	11.00	-24.13	24.16	1.50	1.50	0.00	
708.10	6.88	294.50	707.00	11.40	-25.00	25.03	1.50	1.50	0.00	
Fox Hills										
800.00	8.26	294.50	798.10	16.41	-36.02	36.06	1.50	1.50	0.00	
900.00	9.76	294.50	896.86	22.90	-50.26	50.31	1.50	1.50	0.00	
1,000.00	11.26	294.50	995.18	30.46	-66.85	66.92	1.50	1.50	0.00	
1,100.00	12.76	294.50	1,092.99	39.09	-85.78	85.87	1.50	1.50	0.00	
1,200.00	14.26	294.50	1,190.23	48.77	-107.03	107.14	1.50	1.50	0.00	
1,300.00	15.76	294.50	1,286.81	59.51	-130.58	130.73	1.50	1.50	0.00	
1,400.00	17.26	294.50	1,382.69	71.29	-156.44	156.61	1.50	1.50	0.00	
1,500.00	18.76	294.50	1,477.79	84.11	-184.56	184.77	1.50	1.50	0.00	
1,523.48	19.11	294.50	1,500.00	87.27	-191.49	191.71	1.50	1.50	0.00	
9 5/8"										
1,600.00	20.26	294.50	1,572.05	97.96	-214.94	215.18	1.50	1.50	0.00	
1,700.00	21.76	294.50	1,665.40	112.82	-247.56	247.84	1.50	1.50	0.00	
1,742.98	22.40	294.50	1,705.23	119.52	-262.26	262.55	1.50	1.50	0.00	
Hold Tangent @ 1742.98ft										
1,800.00	22.40	294.50	1,757.95	128.53	-282.03	282.35	0.00	0.00	0.00	
1,900.00	22.40	294.50	1,850.40	144.33	-316.71	317.06	0.00	0.00	0.00	
2,000.00	22.40	294.50	1,942.86	160.14	-351.39	351.78	0.00	0.00	0.00	
2,100.00	22.40	294.50	2,035.31	175.94	-386.06	386.49	0.00	0.00	0.00	
2,200.00	22.40	294.50	2,127.76	191.74	-420.74	421.20	0.00	0.00	0.00	
2,300.00	22.40	294.50	2,220.22	207.54	-455.41	455.92	0.00	0.00	0.00	
2,400.00	22.40	294.50	2,312.67	223.35	-490.09	490.63	0.00	0.00	0.00	
2,500.00	22.40	294.50	2,405.13	239.15	-524.77	525.35	0.00	0.00	0.00	
2,600.00	22.40	294.50	2,497.58	254.95	-559.44	560.06	0.00	0.00	0.00	
2,700.00	22.40	294.50	2,590.04	270.75	-594.12	594.78	0.00	0.00	0.00	
2,800.00	22.40	294.50	2,682.49	286.56	-628.79	629.49	0.00	0.00	0.00	
2,900.00	22.40	294.50	2,774.95	302.36	-663.47	664.21	0.00	0.00	0.00	
3,000.00	22.40	294.50	2,867.40	318.16	-698.14	698.92	0.00	0.00	0.00	
3,100.00	22.40	294.50	2,959.86	333.97	-732.82	733.63	0.00	0.00	0.00	
3,200.00	22.40	294.50	3,052.31	349.77	-767.50	768.35	0.00	0.00	0.00	
3,300.00	22.40	294.50	3,144.77	365.57	-802.17	803.06	0.00	0.00	0.00	
3,400.00	22.40	294.50	3,237.22	381.37	-836.85	837.78	0.00	0.00	0.00	
3,500.00	22.40	294.50	3,329.67	397.18	-871.52	872.49	0.00	0.00	0.00	
3,600.00	22.40	294.50	3,422.13	412.98	-906.20	907.21	0.00	0.00	0.00	
3,700.00	22.40	294.50	3,514.58	428.78	-940.88	941.92	0.00	0.00	0.00	
3,790.22	22.40	294.50	3,598.00	443.04	-972.16	973.24	0.00	0.00	0.00	
Parkman										
3,800.00	22.40	294.50	3,607.04	444.58	-975.55	976.64	0.00	0.00	0.00	
3,900.00	22.40	294.50	3,699.49	460.39	-1,010.23	1,011.35	0.00	0.00	0.00	
4,000.00	22.40	294.50	3,791.95	476.19	-1,044.90	1,046.06	0.00	0.00	0.00	
4,100.00	22.40	294.50	3,884.40	491.99	-1,079.58	1,080.78	0.00	0.00	0.00	
4,200.00	22.40	294.50	3,976.86	507.80	-1,114.26	1,115.49	0.00	0.00	0.00	
4,300.00	22.40	294.50	4,069.31	523.60	-1,148.93	1,150.21	0.00	0.00	0.00	

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Wellbore:	Plan A		
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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,311.56	22.40	294.50	4,080.00	525.43	-1,152.94	1,154.22	0.00	0.00	0.00	
Sussex										
4,400.00	22.40	294.50	4,161.77	539.40	-1,183.61	1,184.92	0.00	0.00	0.00	
4,500.00	22.40	294.50	4,254.22	555.20	-1,218.28	1,219.64	0.00	0.00	0.00	
4,600.00	22.40	294.50	4,346.68	571.01	-1,252.96	1,254.35	0.00	0.00	0.00	
4,700.00	22.40	294.50	4,439.13	586.81	-1,287.64	1,289.07	0.00	0.00	0.00	
4,800.00	22.40	294.50	4,531.58	602.61	-1,322.31	1,323.78	0.00	0.00	0.00	
4,900.00	22.40	294.50	4,624.04	618.41	-1,356.99	1,358.49	0.00	0.00	0.00	
5,000.00	22.40	294.50	4,716.49	634.22	-1,391.66	1,393.21	0.00	0.00	0.00	
5,100.00	22.40	294.50	4,808.95	650.02	-1,426.34	1,427.92	0.00	0.00	0.00	
5,200.00	22.40	294.50	4,901.40	665.82	-1,461.02	1,462.64	0.00	0.00	0.00	
5,300.00	22.40	294.50	4,993.86	681.63	-1,495.69	1,497.35	0.00	0.00	0.00	
5,400.00	22.40	294.50	5,086.31	697.43	-1,530.37	1,532.07	0.00	0.00	0.00	
5,500.00	22.40	294.50	5,178.77	713.23	-1,565.04	1,566.78	0.00	0.00	0.00	
5,600.00	22.40	294.50	5,271.22	729.03	-1,599.72	1,601.50	0.00	0.00	0.00	
5,700.00	22.40	294.50	5,363.68	744.84	-1,634.39	1,636.21	0.00	0.00	0.00	
5,800.00	22.40	294.50	5,456.13	760.64	-1,669.07	1,670.92	0.00	0.00	0.00	
5,900.00	22.40	294.50	5,548.59	776.44	-1,703.75	1,705.64	0.00	0.00	0.00	
6,000.00	22.40	294.50	5,641.04	792.24	-1,738.42	1,740.35	0.00	0.00	0.00	
6,100.00	22.40	294.50	5,733.49	808.05	-1,773.10	1,775.07	0.00	0.00	0.00	
6,200.00	22.40	294.50	5,825.95	823.85	-1,807.77	1,809.78	0.00	0.00	0.00	
6,300.00	22.40	294.50	5,918.40	839.65	-1,842.45	1,844.50	0.00	0.00	0.00	
6,400.00	22.40	294.50	6,010.86	855.46	-1,877.13	1,879.21	0.00	0.00	0.00	
6,500.00	22.40	294.50	6,103.31	871.26	-1,911.80	1,913.93	0.00	0.00	0.00	
6,600.00	22.40	294.50	6,195.77	887.06	-1,946.48	1,948.64	0.00	0.00	0.00	
6,700.00	22.40	294.50	6,288.22	902.86	-1,981.15	1,983.35	0.00	0.00	0.00	
6,800.00	22.40	294.50	6,380.68	918.67	-2,015.83	2,018.07	0.00	0.00	0.00	
6,900.00	22.40	294.50	6,473.13	934.47	-2,050.51	2,052.78	0.00	0.00	0.00	
7,000.00	22.40	294.50	6,565.59	950.27	-2,085.18	2,087.50	0.00	0.00	0.00	
7,100.00	22.40	294.50	6,658.04	966.07	-2,119.86	2,122.21	0.00	0.00	0.00	
7,169.24	22.40	294.50	6,722.06	977.02	-2,143.87	2,146.25	0.00	0.00	0.00	
KOP @ 7169.24ft :: DLS = 8°/100'										
7,200.00	24.63	291.90	6,750.26	981.84	-2,155.15	2,157.54	8.00	7.26	-8.44	
7,250.00	28.34	288.52	6,795.01	989.50	-2,176.08	2,178.49	8.00	7.41	-6.77	
7,300.00	32.11	285.86	6,838.20	996.90	-2,200.12	2,202.55	8.00	7.54	-5.31	
7,303.30	32.36	285.71	6,841.00	997.38	-2,201.82	2,204.25	8.00	7.60	-4.71	
Sharon Springs										
7,339.38	35.11	284.14	6,871.00	1,002.53	-2,221.18	2,223.62	8.00	7.63	-4.35	
Niobrara										
7,350.00	35.93	283.72	6,879.64	1,004.02	-2,227.17	2,229.61	8.00	7.66	-3.97	
7,400.00	39.77	281.93	6,919.12	1,010.80	-2,257.08	2,259.54	8.00	7.70	-3.57	
7,450.00	43.64	280.41	6,956.44	1,017.23	-2,289.71	2,292.19	8.00	7.74	-3.03	
7,500.00	47.53	279.10	6,991.42	1,023.27	-2,324.90	2,327.39	8.00	7.78	-2.63	
7,548.56	51.32	277.97	7,023.00	1,028.73	-2,361.37	2,363.87	8.00	7.80	-2.33	
Nio B										
7,550.00	51.43	277.94	7,023.90	1,028.89	-2,362.49	2,364.99	8.00	7.81	-2.20	
7,600.00	55.35	276.90	7,053.72	1,034.06	-2,402.28	2,404.80	8.00	7.82	-2.08	
7,602.26	55.52	276.85	7,055.00	1,034.28	-2,404.13	2,406.65	8.00	7.83	-1.98	
Nio C										
7,650.00	59.27	275.95	7,080.72	1,038.76	-2,444.08	2,446.61	8.00	7.84	-1.89	
7,700.00	63.19	275.08	7,104.78	1,042.96	-2,487.70	2,490.24	8.00	7.85	-1.75	
7,750.00	67.12	274.26	7,125.78	1,046.65	-2,532.91	2,535.46	8.00	7.86	-1.63	
7,800.00	71.06	273.49	7,143.63	1,049.80	-2,579.50	2,582.06	8.00	7.87	-1.54	

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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)
7,845.35	74.63	272.83	7,157.00	1,052.19	-2,622.76	2,625.32	8.00	7.88	-1.47
Fort Hayes									
7,850.00	75.00	272.76	7,158.22	1,052.41	-2,627.24	2,629.81	8.00	7.88	-1.44
7,900.00	78.94	272.06	7,169.49	1,054.45	-2,675.90	2,678.47	8.00	7.88	-1.41
7,950.00	82.88	271.37	7,177.39	1,055.93	-2,725.24	2,727.82	8.00	7.88	-1.38
7,955.03	83.27	271.30	7,178.00	1,056.04	-2,730.23	2,732.81	8.00	7.89	-1.36
Codell									
8,000.00	86.82	270.69	7,181.88	1,056.82	-2,775.02	2,777.60	8.00	7.89	-1.35
8,041.39	90.09	270.14	7,183.00	1,057.12	-2,816.39	2,818.97	8.00	7.89	-1.34
End Build @ 8041.39ft									
8,100.00	90.09	270.14	7,182.91	1,057.26	-2,875.00	2,877.58	0.00	0.00	0.00
8,200.00	90.09	270.14	7,182.76	1,057.49	-2,975.00	2,977.58	0.00	0.00	0.00
8,300.00	90.09	270.14	7,182.61	1,057.73	-3,075.00	3,077.58	0.00	0.00	0.00
8,400.00	90.09	270.14	7,182.47	1,057.97	-3,175.00	3,177.58	0.00	0.00	0.00
8,500.00	90.09	270.14	7,182.32	1,058.21	-3,275.00	3,277.58	0.00	0.00	0.00
8,600.00	90.09	270.14	7,182.17	1,058.45	-3,375.00	3,377.58	0.00	0.00	0.00
8,700.00	90.09	270.14	7,182.02	1,058.68	-3,475.00	3,477.58	0.00	0.00	0.00
8,800.00	90.09	270.14	7,181.87	1,058.92	-3,575.00	3,577.58	0.00	0.00	0.00
8,900.00	90.09	270.14	7,181.72	1,059.16	-3,675.00	3,677.58	0.00	0.00	0.00
9,000.00	90.09	270.14	7,181.57	1,059.40	-3,775.00	3,777.57	0.00	0.00	0.00
9,100.00	90.09	270.14	7,181.42	1,059.64	-3,875.00	3,877.57	0.00	0.00	0.00
9,200.00	90.09	270.14	7,181.27	1,059.87	-3,975.00	3,977.57	0.00	0.00	0.00
9,300.00	90.09	270.14	7,181.12	1,060.11	-4,075.00	4,077.57	0.00	0.00	0.00
9,400.00	90.09	270.14	7,180.98	1,060.35	-4,175.00	4,177.57	0.00	0.00	0.00
9,500.00	90.09	270.14	7,180.83	1,060.59	-4,275.00	4,277.57	0.00	0.00	0.00
9,600.00	90.09	270.14	7,180.68	1,060.82	-4,375.00	4,377.57	0.00	0.00	0.00
9,700.00	90.09	270.14	7,180.53	1,061.06	-4,474.99	4,477.57	0.00	0.00	0.00
9,800.00	90.09	270.14	7,180.38	1,061.30	-4,574.99	4,577.57	0.00	0.00	0.00
9,900.00	90.09	270.14	7,180.23	1,061.54	-4,674.99	4,677.57	0.00	0.00	0.00
10,000.00	90.09	270.14	7,180.08	1,061.78	-4,774.99	4,777.57	0.00	0.00	0.00
10,100.00	90.09	270.14	7,179.93	1,062.01	-4,874.99	4,877.57	0.00	0.00	0.00
10,200.00	90.09	270.14	7,179.78	1,062.25	-4,974.99	4,977.57	0.00	0.00	0.00
10,300.00	90.09	270.14	7,179.64	1,062.49	-5,074.99	5,077.57	0.00	0.00	0.00
10,400.00	90.09	270.14	7,179.49	1,062.73	-5,174.99	5,177.57	0.00	0.00	0.00
10,500.00	90.09	270.14	7,179.34	1,062.96	-5,274.99	5,277.57	0.00	0.00	0.00
10,600.00	90.09	270.14	7,179.19	1,063.20	-5,374.99	5,377.57	0.00	0.00	0.00
10,700.00	90.09	270.14	7,179.04	1,063.44	-5,474.99	5,477.57	0.00	0.00	0.00
10,800.00	90.09	270.14	7,178.89	1,063.68	-5,574.99	5,577.57	0.00	0.00	0.00
10,900.00	90.09	270.14	7,178.74	1,063.92	-5,674.99	5,677.57	0.00	0.00	0.00
11,000.00	90.09	270.14	7,178.59	1,064.15	-5,774.99	5,777.57	0.00	0.00	0.00
11,100.00	90.09	270.14	7,178.44	1,064.39	-5,874.99	5,877.57	0.00	0.00	0.00
11,200.00	90.09	270.14	7,178.30	1,064.63	-5,974.99	5,977.57	0.00	0.00	0.00
11,300.00	90.09	270.14	7,178.15	1,064.87	-6,074.99	6,077.57	0.00	0.00	0.00
11,400.00	90.09	270.14	7,178.00	1,065.10	-6,174.99	6,177.57	0.00	0.00	0.00
11,500.00	90.09	270.14	7,177.85	1,065.34	-6,274.99	6,277.57	0.00	0.00	0.00
11,600.00	90.09	270.14	7,177.70	1,065.58	-6,374.99	6,377.57	0.00	0.00	0.00
11,700.00	90.09	270.14	7,177.55	1,065.82	-6,474.99	6,477.57	0.00	0.00	0.00
11,800.00	90.09	270.14	7,177.40	1,066.06	-6,574.99	6,577.57	0.00	0.00	0.00
11,900.00	90.09	270.14	7,177.25	1,066.29	-6,674.99	6,677.57	0.00	0.00	0.00
12,000.00	90.09	270.14	7,177.10	1,066.53	-6,774.99	6,777.57	0.00	0.00	0.00
12,100.00	90.09	270.14	7,176.96	1,066.77	-6,874.99	6,877.57	0.00	0.00	0.00
12,200.00	90.09	270.14	7,176.81	1,067.01	-6,974.99	6,977.57	0.00	0.00	0.00
12,300.00	90.09	270.14	7,176.66	1,067.24	-7,074.98	7,077.57	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-3HZ
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 4-3HZ	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)	
12,400.00	90.09	270.14	7,176.51	1,067.48	-7,174.98	7,177.57	0.00	0.00	0.00	
12,500.00	90.09	270.14	7,176.36	1,067.72	-7,274.98	7,277.57	0.00	0.00	0.00	
12,600.00	90.09	270.14	7,176.21	1,067.96	-7,374.98	7,377.57	0.00	0.00	0.00	
12,700.00	90.09	270.14	7,176.06	1,068.20	-7,474.98	7,477.57	0.00	0.00	0.00	
12,800.00	90.09	270.14	7,175.91	1,068.43	-7,574.98	7,577.57	0.00	0.00	0.00	
12,900.00	90.09	270.14	7,175.76	1,068.67	-7,674.98	7,677.57	0.00	0.00	0.00	
13,000.00	90.09	270.14	7,175.62	1,068.91	-7,774.98	7,777.57	0.00	0.00	0.00	
13,100.00	90.09	270.14	7,175.47	1,069.15	-7,874.98	7,877.57	0.00	0.00	0.00	
13,200.00	90.09	270.14	7,175.32	1,069.39	-7,974.98	7,977.57	0.00	0.00	0.00	
13,300.00	90.09	270.14	7,175.17	1,069.62	-8,074.98	8,077.57	0.00	0.00	0.00	
13,400.00	90.09	270.14	7,175.02	1,069.86	-8,174.98	8,177.57	0.00	0.00	0.00	
13,500.00	90.09	270.14	7,174.87	1,070.10	-8,274.98	8,277.57	0.00	0.00	0.00	
13,600.00	90.09	270.14	7,174.72	1,070.34	-8,374.98	8,377.57	0.00	0.00	0.00	
13,700.00	90.09	270.14	7,174.57	1,070.57	-8,474.98	8,477.57	0.00	0.00	0.00	
13,800.00	90.09	270.14	7,174.42	1,070.81	-8,574.98	8,577.57	0.00	0.00	0.00	
13,900.00	90.09	270.14	7,174.27	1,071.05	-8,674.98	8,677.57	0.00	0.00	0.00	
14,000.00	90.09	270.14	7,174.13	1,071.29	-8,774.98	8,777.57	0.00	0.00	0.00	
14,100.00	90.09	270.14	7,173.98	1,071.53	-8,874.98	8,877.57	0.00	0.00	0.00	
14,200.00	90.09	270.14	7,173.83	1,071.76	-8,974.98	8,977.57	0.00	0.00	0.00	
14,300.00	90.09	270.14	7,173.68	1,072.00	-9,074.98	9,077.57	0.00	0.00	0.00	
14,400.00	90.09	270.14	7,173.53	1,072.24	-9,174.98	9,177.57	0.00	0.00	0.00	
14,500.00	90.09	270.14	7,173.38	1,072.48	-9,274.98	9,277.57	0.00	0.00	0.00	
14,600.00	90.09	270.14	7,173.23	1,072.71	-9,374.98	9,377.57	0.00	0.00	0.00	
14,700.00	90.09	270.14	7,173.08	1,072.95	-9,474.98	9,477.57	0.00	0.00	0.00	
14,800.00	90.09	270.14	7,172.93	1,073.19	-9,574.97	9,577.57	0.00	0.00	0.00	
14,900.00	90.09	270.14	7,172.79	1,073.43	-9,674.97	9,677.57	0.00	0.00	0.00	
15,000.00	90.09	270.14	7,172.64	1,073.67	-9,774.97	9,777.57	0.00	0.00	0.00	
15,100.00	90.09	270.14	7,172.49	1,073.90	-9,874.97	9,877.57	0.00	0.00	0.00	
15,200.00	90.09	270.14	7,172.34	1,074.14	-9,974.97	9,977.57	0.00	0.00	0.00	
15,300.00	90.09	270.14	7,172.19	1,074.38	-10,074.97	10,077.57	0.00	0.00	0.00	
15,400.00	90.09	270.14	7,172.04	1,074.62	-10,174.97	10,177.57	0.00	0.00	0.00	
15,500.00	90.09	270.14	7,171.89	1,074.85	-10,274.97	10,277.57	0.00	0.00	0.00	
15,600.00	90.09	270.14	7,171.74	1,075.09	-10,374.97	10,377.57	0.00	0.00	0.00	
15,700.00	90.09	270.14	7,171.59	1,075.33	-10,474.97	10,477.57	0.00	0.00	0.00	
15,800.00	90.09	270.14	7,171.45	1,075.57	-10,574.97	10,577.57	0.00	0.00	0.00	
15,900.00	90.09	270.14	7,171.30	1,075.81	-10,674.97	10,677.57	0.00	0.00	0.00	
16,000.00	90.09	270.14	7,171.15	1,076.04	-10,774.97	10,777.57	0.00	0.00	0.00	
16,100.00	90.09	270.14	7,171.00	1,076.28	-10,874.97	10,877.57	0.00	0.00	0.00	
16,200.00	90.09	270.14	7,170.85	1,076.52	-10,974.97	10,977.57	0.00	0.00	0.00	
16,300.00	90.09	270.14	7,170.70	1,076.76	-11,074.97	11,077.57	0.00	0.00	0.00	
16,400.00	90.09	270.14	7,170.55	1,076.99	-11,174.97	11,177.57	0.00	0.00	0.00	
16,500.00	90.09	270.14	7,170.40	1,077.23	-11,274.97	11,277.57	0.00	0.00	0.00	
16,600.00	90.09	270.14	7,170.25	1,077.47	-11,374.97	11,377.57	0.00	0.00	0.00	
16,700.00	90.09	270.14	7,170.11	1,077.71	-11,474.97	11,477.57	0.00	0.00	0.00	
16,800.00	90.09	270.14	7,169.96	1,077.95	-11,574.97	11,577.57	0.00	0.00	0.00	
16,900.00	90.09	270.14	7,169.81	1,078.18	-11,674.97	11,677.57	0.00	0.00	0.00	
17,000.00	90.09	270.14	7,169.66	1,078.42	-11,774.97	11,777.57	0.00	0.00	0.00	
17,100.00	90.09	270.14	7,169.51	1,078.66	-11,874.97	11,877.57	0.00	0.00	0.00	
17,200.00	90.09	270.14	7,169.36	1,078.90	-11,974.97	11,977.57	0.00	0.00	0.00	
17,300.00	90.09	270.14	7,169.21	1,079.13	-12,074.97	12,077.57	0.00	0.00	0.00	
17,400.00	90.09	270.14	7,169.06	1,079.37	-12,174.96	12,177.57	0.00	0.00	0.00	
17,500.00	90.09	270.14	7,168.91	1,079.61	-12,274.96	12,277.57	0.00	0.00	0.00	
17,600.00	90.09	270.14	7,168.77	1,079.85	-12,374.96	12,377.57	0.00	0.00	0.00	
17,700.00	90.09	270.14	7,168.62	1,080.09	-12,474.96	12,477.57	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-3HZ
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 4-3HZ	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)
17,800.00	90.09	270.14	7,168.47	1,080.32	-12,574.96	12,577.57	0.00	0.00	0.00
17,900.00	90.09	270.14	7,168.32	1,080.56	-12,674.96	12,677.57	0.00	0.00	0.00
18,000.00	90.09	270.14	7,168.17	1,080.80	-12,774.96	12,777.57	0.00	0.00	0.00
18,100.00	90.09	270.14	7,168.02	1,081.04	-12,874.96	12,877.57	0.00	0.00	0.00
18,200.00	90.09	270.14	7,167.87	1,081.28	-12,974.96	12,977.56	0.00	0.00	0.00
18,300.00	90.09	270.14	7,167.72	1,081.51	-13,074.96	13,077.56	0.00	0.00	0.00
18,400.00	90.09	270.14	7,167.57	1,081.75	-13,174.96	13,177.56	0.00	0.00	0.00
18,500.00	90.09	270.14	7,167.43	1,081.99	-13,274.96	13,277.56	0.00	0.00	0.00
18,600.00	90.09	270.14	7,167.28	1,082.23	-13,374.96	13,377.56	0.00	0.00	0.00
18,700.00	90.09	270.14	7,167.13	1,082.46	-13,474.96	13,477.56	0.00	0.00	0.00
18,800.00	90.09	270.14	7,166.98	1,082.70	-13,574.96	13,577.56	0.00	0.00	0.00
18,900.00	90.09	270.14	7,166.83	1,082.94	-13,674.96	13,677.56	0.00	0.00	0.00
19,000.00	90.09	270.14	7,166.68	1,083.18	-13,774.96	13,777.56	0.00	0.00	0.00
19,100.00	90.09	270.14	7,166.53	1,083.42	-13,874.96	13,877.56	0.00	0.00	0.00
19,200.00	90.09	270.14	7,166.38	1,083.65	-13,974.96	13,977.56	0.00	0.00	0.00
19,300.00	90.09	270.14	7,166.23	1,083.89	-14,074.96	14,077.56	0.00	0.00	0.00
19,400.00	90.09	270.14	7,166.08	1,084.13	-14,174.96	14,177.56	0.00	0.00	0.00
19,500.00	90.09	270.14	7,165.94	1,084.37	-14,274.96	14,277.56	0.00	0.00	0.00
19,600.00	90.09	270.14	7,165.79	1,084.60	-14,374.96	14,377.56	0.00	0.00	0.00
19,700.00	90.09	270.14	7,165.64	1,084.84	-14,474.96	14,477.56	0.00	0.00	0.00
19,800.00	90.09	270.14	7,165.49	1,085.08	-14,574.96	14,577.56	0.00	0.00	0.00
19,900.00	90.09	270.14	7,165.34	1,085.32	-14,674.95	14,677.56	0.00	0.00	0.00
20,000.00	90.09	270.14	7,165.19	1,085.56	-14,774.95	14,777.56	0.00	0.00	0.00
20,100.00	90.09	270.14	7,165.04	1,085.79	-14,874.95	14,877.56	0.00	0.00	0.00
20,128.43	90.09	270.14	7,165.00	1,085.86	-14,903.38	14,905.99	0.00	0.00	0.00
TD Well @ 20128.43ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,523.48	1,500.00	9 5/8"	9-5/8	13-1/2	
20,128.43	7,165.00	5.5" CSG	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
708.10	707.00	Fox Hills			
3,790.22	3,598.00	Parkman			
4,311.56	4,080.00	Sussex			
7,303.30	6,841.00	Sharon Springs			
7,339.38	6,871.00	Niobrara			
7,548.56	7,023.00	Nio B			
7,602.26	7,055.00	Nio C			
7,845.35	7,157.00	Fort Hayes			
7,955.03	7,178.00	Codell			

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-3HZ
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 4-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
249.65	249.65	0.00	0.00	Begin Nudge @ 249.65ft
1,742.98	1,705.23	119.52	-262.26	Hold Tangent @ 1742.98ft
7,169.24	6,722.06	977.02	-2,143.87	KOP @ 7169.24ft :: DLS = 8°/100'
8,041.39	7,183.00	1,057.12	-2,816.39	End Build @ 8041.39ft
20,128.43	7,165.00	1,085.86	-14,903.38	TD Well @ 20128.43ft