

# **US ROCKIES WATTENBERG PLANNING**

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

**Plan B**

**Plan: Permit Rev-1**

## **Standard Planning Report**

**26 June, 2023**



## Planning Report

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

<b>Project</b>	WELD-NAD83-UTMFT13N		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 °				

<b>Wellbore</b>	Plan B				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF202013	5/5/2023	7.71	66.45	51,668.36741150

<b>Design</b>	Permit Rev-1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	91.48	

<b>Plan Survey Tool Program</b>		<b>Date</b>	6/26/2023		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	2,000.00	Permit Rev-1 (Plan B)	APC_ISCWSA REV 2 MWD+I Fixed:v2:crustal field declinatio	
2	2,000.00	21,957.40	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 4-15HZ
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 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	
239.00	0.00	0.00	239.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,310.33	16.07	206.14	1,296.34	-133.99	-65.76	1.50	1.50	0.00	206.14	
6,324.84	16.07	206.14	6,114.90	-1,380.09	-677.30	0.00	0.00	0.00	0.00	
7,527.55	89.44	90.97	6,890.00	-1,591.98	23.62	8.00	6.10	-9.58	-114.45	
13,933.93	89.44	90.97	6,953.03	-1,700.05	6,428.79	0.00	0.00	0.00	0.00	SWARTZ 4-15HZ INT
13,995.81	89.44	91.89	6,953.64	-1,701.59	6,490.64	1.50	0.00	1.50	90.02	
21,957.40	89.44	91.89	7,032.00	-1,964.83	14,447.50	0.00	0.00	0.00	0.00	SWARTZ 4-15HZ BHI

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<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4842.00usft (RIG)
<b>Site:</b>	3N-67W-04 SWARTZ 2-4HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	SWARTZ 4-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	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
239.00	0.00	0.00	239.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 239.00ft</b>									
300.00	0.92	206.14	300.00	-0.44	-0.21	-0.20	1.50	1.50	0.00
400.00	2.42	206.14	399.95	-3.05	-1.49	-1.42	1.50	1.50	0.00
500.00	3.92	206.14	499.80	-8.00	-3.93	-3.72	1.50	1.50	0.00
600.00	5.42	206.14	599.46	-15.30	-7.51	-7.11	1.50	1.50	0.00
700.00	6.92	206.14	698.88	-24.94	-12.24	-11.59	1.50	1.50	0.00
708.18	7.04	206.14	707.00	-25.84	-12.68	-12.01	1.50	1.50	0.00
<b>Fox Hills</b>									
800.00	8.42	206.14	797.99	-36.92	-18.12	-17.16	1.50	1.50	0.00
900.00	9.92	206.14	896.71	-51.22	-25.13	-23.80	1.50	1.50	0.00
1,000.00	11.42	206.14	994.98	-67.83	-33.29	-31.52	1.50	1.50	0.00
1,100.00	12.92	206.14	1,092.73	-86.75	-42.57	-40.32	1.50	1.50	0.00
1,200.00	14.42	206.14	1,189.89	-107.95	-52.98	-50.17	1.50	1.50	0.00
1,300.00	15.92	206.14	1,286.41	-131.44	-64.50	-61.09	1.50	1.50	0.00
1,310.33	16.07	206.14	1,296.34	-133.99	-65.76	-62.28	1.50	1.50	0.00
<b>Hold Tangent @ 1310.33ft</b>									
1,400.00	16.07	206.14	1,382.51	-156.27	-76.69	-72.63	0.00	0.00	0.00
1,500.00	16.07	206.14	1,478.60	-181.12	-88.89	-84.18	0.00	0.00	0.00
1,522.27	16.07	206.14	1,500.00	-186.66	-91.61	-86.75	0.00	0.00	0.00
<b>9 5/8"</b>									
1,600.00	16.07	206.14	1,574.69	-205.97	-101.08	-95.73	0.00	0.00	0.00
1,700.00	16.07	206.14	1,670.78	-230.82	-113.28	-107.28	0.00	0.00	0.00
1,800.00	16.07	206.14	1,766.87	-255.67	-125.47	-118.83	0.00	0.00	0.00
1,900.00	16.07	206.14	1,862.97	-280.52	-137.67	-130.38	0.00	0.00	0.00
2,000.00	16.07	206.14	1,959.06	-305.37	-149.87	-141.93	0.00	0.00	0.00
2,100.00	16.07	206.14	2,055.15	-330.22	-162.06	-153.48	0.00	0.00	0.00
2,200.00	16.07	206.14	2,151.24	-355.07	-174.26	-165.03	0.00	0.00	0.00
2,300.00	16.07	206.14	2,247.34	-379.92	-186.45	-176.58	0.00	0.00	0.00
2,400.00	16.07	206.14	2,343.43	-404.77	-198.65	-188.13	0.00	0.00	0.00
2,500.00	16.07	206.14	2,439.52	-429.62	-210.84	-199.68	0.00	0.00	0.00
2,600.00	16.07	206.14	2,535.61	-454.47	-223.04	-211.23	0.00	0.00	0.00
2,700.00	16.07	206.14	2,631.71	-479.32	-235.23	-222.77	0.00	0.00	0.00
2,800.00	16.07	206.14	2,727.80	-504.17	-247.43	-234.32	0.00	0.00	0.00
2,900.00	16.07	206.14	2,823.89	-529.02	-259.62	-245.87	0.00	0.00	0.00
3,000.00	16.07	206.14	2,919.98	-553.87	-271.82	-257.42	0.00	0.00	0.00
3,100.00	16.07	206.14	3,016.08	-578.72	-284.01	-268.97	0.00	0.00	0.00
3,200.00	16.07	206.14	3,112.17	-603.57	-296.21	-280.52	0.00	0.00	0.00
3,300.00	16.07	206.14	3,208.26	-628.42	-308.41	-292.07	0.00	0.00	0.00
3,400.00	16.07	206.14	3,304.35	-653.27	-320.60	-303.62	0.00	0.00	0.00
3,500.00	16.07	206.14	3,400.45	-678.12	-332.80	-315.17	0.00	0.00	0.00
3,600.00	16.07	206.14	3,496.54	-702.97	-344.99	-326.72	0.00	0.00	0.00
3,700.00	16.07	206.14	3,592.63	-727.82	-357.19	-338.27	0.00	0.00	0.00
3,705.59	16.07	206.14	3,598.00	-729.21	-357.87	-338.92	0.00	0.00	0.00
<b>Parkman</b>									
3,800.00	16.07	206.14	3,688.72	-752.67	-369.38	-349.82	0.00	0.00	0.00
3,900.00	16.07	206.14	3,784.82	-777.52	-381.58	-361.37	0.00	0.00	0.00
4,000.00	16.07	206.14	3,880.91	-802.37	-393.77	-372.92	0.00	0.00	0.00
4,100.00	16.07	206.14	3,977.00	-827.22	-405.97	-384.47	0.00	0.00	0.00
4,200.00	16.07	206.14	4,073.09	-852.07	-418.16	-396.02	0.00	0.00	0.00
4,207.19	16.07	206.14	4,080.00	-853.86	-419.04	-396.85	0.00	0.00	0.00

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<b>Well:</b>	SWARTZ 4-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	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)
<b>Sussex</b>									
4,300.00	16.07	206.14	4,169.19	-876.92	-430.36	-407.57	0.00	0.00	0.00
4,400.00	16.07	206.14	4,265.28	-901.77	-442.55	-419.12	0.00	0.00	0.00
4,500.00	16.07	206.14	4,361.37	-926.62	-454.75	-430.67	0.00	0.00	0.00
4,600.00	16.07	206.14	4,457.46	-951.47	-466.95	-442.22	0.00	0.00	0.00
4,700.00	16.07	206.14	4,553.56	-976.32	-479.14	-453.76	0.00	0.00	0.00
4,800.00	16.07	206.14	4,649.65	-1,001.17	-491.34	-465.31	0.00	0.00	0.00
4,900.00	16.07	206.14	4,745.74	-1,026.02	-503.53	-476.86	0.00	0.00	0.00
5,000.00	16.07	206.14	4,841.83	-1,050.87	-515.73	-488.41	0.00	0.00	0.00
5,100.00	16.07	206.14	4,937.92	-1,075.72	-527.92	-499.96	0.00	0.00	0.00
5,200.00	16.07	206.14	5,034.02	-1,100.57	-540.12	-511.51	0.00	0.00	0.00
5,300.00	16.07	206.14	5,130.11	-1,125.42	-552.31	-523.06	0.00	0.00	0.00
5,400.00	16.07	206.14	5,226.20	-1,150.27	-564.51	-534.61	0.00	0.00	0.00
5,500.00	16.07	206.14	5,322.29	-1,175.12	-576.70	-546.16	0.00	0.00	0.00
5,600.00	16.07	206.14	5,418.39	-1,199.97	-588.90	-557.71	0.00	0.00	0.00
5,700.00	16.07	206.14	5,514.48	-1,224.82	-601.09	-569.26	0.00	0.00	0.00
5,800.00	16.07	206.14	5,610.57	-1,249.67	-613.29	-580.81	0.00	0.00	0.00
5,900.00	16.07	206.14	5,706.66	-1,274.52	-625.49	-592.36	0.00	0.00	0.00
6,000.00	16.07	206.14	5,802.76	-1,299.37	-637.68	-603.91	0.00	0.00	0.00
6,100.00	16.07	206.14	5,898.85	-1,324.22	-649.88	-615.46	0.00	0.00	0.00
6,200.00	16.07	206.14	5,994.94	-1,349.07	-662.07	-627.01	0.00	0.00	0.00
6,300.00	16.07	206.14	6,091.03	-1,373.92	-674.27	-638.56	0.00	0.00	0.00
6,324.84	16.07	206.14	6,114.90	-1,380.09	-677.30	-641.43	0.00	0.00	0.00
<b>KOP @ 6324.84ft :: DLS = 8°/100'</b>									
6,350.00	15.34	199.20	6,139.13	-1,386.36	-679.93	-643.89	8.00	-2.89	-27.58
6,400.00	14.62	183.94	6,187.45	-1,398.91	-682.54	-646.18	8.00	-1.46	-30.53
6,450.00	14.94	168.26	6,235.81	-1,411.52	-681.66	-644.97	8.00	0.64	-31.36
6,500.00	16.25	154.15	6,283.99	-1,424.13	-677.29	-640.29	8.00	2.62	-28.22
6,550.00	18.33	142.63	6,331.74	-1,436.67	-669.47	-632.14	8.00	4.17	-23.05
6,600.00	20.96	133.64	6,378.84	-1,449.10	-658.22	-620.57	8.00	5.26	-17.98
6,650.00	23.96	126.69	6,425.05	-1,461.34	-643.60	-605.64	8.00	6.00	-13.90
6,700.00	27.20	121.26	6,470.14	-1,473.34	-625.68	-587.42	8.00	6.49	-10.87
6,750.00	30.62	116.93	6,513.91	-1,485.04	-604.55	-565.99	8.00	6.82	-8.66
6,800.00	34.14	113.40	6,556.13	-1,496.39	-580.31	-541.47	8.00	7.06	-7.05
6,850.00	37.75	110.47	6,596.61	-1,507.32	-553.08	-513.96	8.00	7.22	-5.86
6,900.00	41.43	107.98	6,635.13	-1,517.78	-522.99	-483.62	8.00	7.35	-4.97
6,950.00	45.15	105.83	6,671.53	-1,527.73	-490.20	-450.57	8.00	7.44	-4.30
7,000.00	48.90	103.95	6,705.61	-1,537.11	-454.85	-414.99	8.00	7.51	-3.77
7,050.00	52.68	102.27	6,737.21	-1,545.88	-417.12	-377.05	8.00	7.56	-3.36
7,100.00	56.49	100.75	6,766.18	-1,553.99	-377.19	-336.93	8.00	7.61	-3.04
7,150.00	60.31	99.36	6,792.37	-1,561.42	-335.27	-294.83	8.00	7.64	-2.78
7,200.00	64.14	98.07	6,815.67	-1,568.11	-291.55	-250.95	8.00	7.67	-2.58
7,250.00	67.99	96.86	6,835.95	-1,574.04	-246.24	-205.51	8.00	7.69	-2.41
7,263.79	69.05	96.54	6,841.00	-1,575.54	-233.50	-192.73	8.00	7.70	-2.33
<b>Sharon Springs</b>									
7,300.00	71.84	95.72	6,853.12	-1,579.18	-199.58	-158.72	8.00	7.71	-2.27
7,350.00	75.70	94.63	6,867.09	-1,583.50	-151.77	-110.82	8.00	7.72	-2.19
7,366.57	76.98	94.27	6,871.00	-1,584.75	-135.73	-94.75	8.00	7.73	-2.14
<b>Niobrara</b>									
7,400.00	79.57	93.57	6,877.79	-1,586.98	-103.07	-62.05	8.00	7.73	-2.10
7,450.00	83.43	92.54	6,885.18	-1,589.61	-53.70	-12.62	8.00	7.74	-2.06
7,500.00	87.30	91.52	6,889.22	-1,591.38	-3.90	37.20	8.00	7.74	-2.03
7,527.55	89.44	90.97	6,890.00	-1,591.98	23.62	64.73	8.00	7.74	-2.02

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<b>Site:</b>	3N-67W-04 SWARTZ 2-4HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	SWARTZ 4-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	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 @ 7527.55ft									
7,600.00	89.44	90.97	6,890.72	-1,593.20	96.06	137.18	0.00	0.00	0.00
7,700.00	89.44	90.97	6,891.70	-1,594.89	196.05	237.17	0.00	0.00	0.00
7,800.00	89.44	90.97	6,892.68	-1,596.57	296.03	337.16	0.00	0.00	0.00
7,900.00	89.44	90.97	6,893.67	-1,598.26	396.01	437.15	0.00	0.00	0.00
8,000.00	89.44	90.97	6,894.65	-1,599.95	495.99	537.15	0.00	0.00	0.00
8,100.00	89.44	90.97	6,895.64	-1,601.63	595.97	637.14	0.00	0.00	0.00
8,200.00	89.44	90.97	6,896.62	-1,603.32	695.95	737.13	0.00	0.00	0.00
8,300.00	89.44	90.97	6,897.60	-1,605.01	795.93	837.12	0.00	0.00	0.00
8,400.00	89.44	90.97	6,898.59	-1,606.69	895.91	937.11	0.00	0.00	0.00
8,500.00	89.44	90.97	6,899.57	-1,608.38	995.89	1,037.10	0.00	0.00	0.00
8,600.00	89.44	90.97	6,900.55	-1,610.07	1,095.87	1,137.09	0.00	0.00	0.00
8,700.00	89.44	90.97	6,901.54	-1,611.76	1,195.85	1,237.08	0.00	0.00	0.00
8,800.00	89.44	90.97	6,902.52	-1,613.44	1,295.84	1,337.08	0.00	0.00	0.00
8,900.00	89.44	90.97	6,903.51	-1,615.13	1,395.82	1,437.07	0.00	0.00	0.00
9,000.00	89.44	90.97	6,904.49	-1,616.82	1,495.80	1,537.06	0.00	0.00	0.00
9,100.00	89.44	90.97	6,905.47	-1,618.50	1,595.78	1,637.05	0.00	0.00	0.00
9,200.00	89.44	90.97	6,906.46	-1,620.19	1,695.76	1,737.04	0.00	0.00	0.00
9,300.00	89.44	90.97	6,907.44	-1,621.88	1,795.74	1,837.03	0.00	0.00	0.00
9,400.00	89.44	90.97	6,908.43	-1,623.56	1,895.72	1,937.02	0.00	0.00	0.00
9,500.00	89.44	90.97	6,909.41	-1,625.25	1,995.70	2,037.01	0.00	0.00	0.00
9,600.00	89.44	90.97	6,910.39	-1,626.94	2,095.68	2,137.00	0.00	0.00	0.00
9,700.00	89.44	90.97	6,911.38	-1,628.63	2,195.66	2,237.00	0.00	0.00	0.00
9,800.00	89.44	90.97	6,912.36	-1,630.31	2,295.64	2,336.99	0.00	0.00	0.00
9,900.00	89.44	90.97	6,913.34	-1,632.00	2,395.63	2,436.98	0.00	0.00	0.00
10,000.00	89.44	90.97	6,914.33	-1,633.69	2,495.61	2,536.97	0.00	0.00	0.00
10,100.00	89.44	90.97	6,915.31	-1,635.37	2,595.59	2,636.96	0.00	0.00	0.00
10,200.00	89.44	90.97	6,916.30	-1,637.06	2,695.57	2,736.95	0.00	0.00	0.00
10,300.00	89.44	90.97	6,917.28	-1,638.75	2,795.55	2,836.94	0.00	0.00	0.00
10,400.00	89.44	90.97	6,918.26	-1,640.43	2,895.53	2,936.93	0.00	0.00	0.00
10,500.00	89.44	90.97	6,919.25	-1,642.12	2,995.51	3,036.92	0.00	0.00	0.00
10,600.00	89.44	90.97	6,920.23	-1,643.81	3,095.49	3,136.92	0.00	0.00	0.00
10,700.00	89.44	90.97	6,921.21	-1,645.49	3,195.47	3,236.91	0.00	0.00	0.00
10,800.00	89.44	90.97	6,922.20	-1,647.18	3,295.45	3,336.90	0.00	0.00	0.00
10,900.00	89.44	90.97	6,923.18	-1,648.87	3,395.43	3,436.89	0.00	0.00	0.00
11,000.00	89.44	90.97	6,924.17	-1,650.56	3,495.42	3,536.88	0.00	0.00	0.00
11,100.00	89.44	90.97	6,925.15	-1,652.24	3,595.40	3,636.87	0.00	0.00	0.00
11,200.00	89.44	90.97	6,926.13	-1,653.93	3,695.38	3,736.86	0.00	0.00	0.00
11,300.00	89.44	90.97	6,927.12	-1,655.62	3,795.36	3,836.85	0.00	0.00	0.00
11,400.00	89.44	90.97	6,928.10	-1,657.30	3,895.34	3,936.84	0.00	0.00	0.00
11,500.00	89.44	90.97	6,929.09	-1,658.99	3,995.32	4,036.84	0.00	0.00	0.00
11,600.00	89.44	90.97	6,930.07	-1,660.68	4,095.30	4,136.83	0.00	0.00	0.00
11,700.00	89.44	90.97	6,931.05	-1,662.36	4,195.28	4,236.82	0.00	0.00	0.00
11,800.00	89.44	90.97	6,932.04	-1,664.05	4,295.26	4,336.81	0.00	0.00	0.00
11,900.00	89.44	90.97	6,933.02	-1,665.74	4,395.24	4,436.80	0.00	0.00	0.00
12,000.00	89.44	90.97	6,934.00	-1,667.43	4,495.23	4,536.79	0.00	0.00	0.00
12,100.00	89.44	90.97	6,934.99	-1,669.11	4,595.21	4,636.78	0.00	0.00	0.00
12,200.00	89.44	90.97	6,935.97	-1,670.80	4,695.19	4,736.77	0.00	0.00	0.00
12,300.00	89.44	90.97	6,936.96	-1,672.49	4,795.17	4,836.77	0.00	0.00	0.00
12,400.00	89.44	90.97	6,937.94	-1,674.17	4,895.15	4,936.76	0.00	0.00	0.00
12,500.00	89.44	90.97	6,938.92	-1,675.86	4,995.13	5,036.75	0.00	0.00	0.00
12,600.00	89.44	90.97	6,939.91	-1,677.55	5,095.11	5,136.74	0.00	0.00	0.00
12,700.00	89.44	90.97	6,940.89	-1,679.23	5,195.09	5,236.73	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SWARTZ 4-15HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4842.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4842.00usft (RIG)
<b>Site:</b>	3N-67W-04 SWARTZ 2-4HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	SWARTZ 4-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	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)
12,800.00	89.44	90.97	6,941.87	-1,680.92	5,295.07	5,336.72	0.00	0.00	0.00
12,900.00	89.44	90.97	6,942.86	-1,682.61	5,395.05	5,436.71	0.00	0.00	0.00
13,000.00	89.44	90.97	6,943.84	-1,684.29	5,495.03	5,536.70	0.00	0.00	0.00
13,100.00	89.44	90.97	6,944.83	-1,685.98	5,595.02	5,636.69	0.00	0.00	0.00
13,200.00	89.44	90.97	6,945.81	-1,687.67	5,695.00	5,736.69	0.00	0.00	0.00
13,300.00	89.44	90.97	6,946.79	-1,689.36	5,794.98	5,836.68	0.00	0.00	0.00
13,400.00	89.44	90.97	6,947.78	-1,691.04	5,894.96	5,936.67	0.00	0.00	0.00
13,500.00	89.44	90.97	6,948.76	-1,692.73	5,994.94	6,036.66	0.00	0.00	0.00
13,600.00	89.44	90.97	6,949.74	-1,694.42	6,094.92	6,136.65	0.00	0.00	0.00
13,700.00	89.44	90.97	6,950.73	-1,696.10	6,194.90	6,236.64	0.00	0.00	0.00
13,800.00	89.44	90.97	6,951.71	-1,697.79	6,294.88	6,336.63	0.00	0.00	0.00
13,900.00	89.44	90.97	6,952.70	-1,699.48	6,394.86	6,436.62	0.00	0.00	0.00
13,933.93	89.44	90.97	6,953.03	-1,700.05	6,428.79	6,470.55	0.00	0.00	0.00
<b>Begin Turn to BHL @ 13933.93ft</b>									
13,995.81	89.44	91.89	6,953.64	-1,701.59	6,490.64	6,532.42	1.50	0.00	1.50
<b>End Turn @ 13995.80ft</b>									
14,000.00	89.44	91.89	6,953.68	-1,701.73	6,494.83	6,536.62	0.00	0.00	0.00
14,100.00	89.44	91.89	6,954.66	-1,705.04	6,594.77	6,636.61	0.00	0.00	0.00
14,200.00	89.44	91.89	6,955.65	-1,708.35	6,694.71	6,736.60	0.00	0.00	0.00
14,300.00	89.44	91.89	6,956.63	-1,711.65	6,794.65	6,836.59	0.00	0.00	0.00
14,400.00	89.44	91.89	6,957.62	-1,714.96	6,894.59	6,936.59	0.00	0.00	0.00
14,500.00	89.44	91.89	6,958.60	-1,718.26	6,994.53	7,036.58	0.00	0.00	0.00
14,600.00	89.44	91.89	6,959.59	-1,721.57	7,094.47	7,136.57	0.00	0.00	0.00
14,700.00	89.44	91.89	6,960.57	-1,724.88	7,194.41	7,236.56	0.00	0.00	0.00
14,800.00	89.44	91.89	6,961.55	-1,728.18	7,294.35	7,336.56	0.00	0.00	0.00
14,900.00	89.44	91.89	6,962.54	-1,731.49	7,394.30	7,436.55	0.00	0.00	0.00
15,000.00	89.44	91.89	6,963.52	-1,734.80	7,494.24	7,536.54	0.00	0.00	0.00
15,100.00	89.44	91.89	6,964.51	-1,738.10	7,594.18	7,636.53	0.00	0.00	0.00
15,200.00	89.44	91.89	6,965.49	-1,741.41	7,694.12	7,736.53	0.00	0.00	0.00
15,300.00	89.44	91.89	6,966.48	-1,744.72	7,794.06	7,836.52	0.00	0.00	0.00
15,400.00	89.44	91.89	6,967.46	-1,748.02	7,894.00	7,936.51	0.00	0.00	0.00
15,500.00	89.44	91.89	6,968.44	-1,751.33	7,993.94	8,036.50	0.00	0.00	0.00
15,600.00	89.44	91.89	6,969.43	-1,754.63	8,093.88	8,136.50	0.00	0.00	0.00
15,700.00	89.44	91.89	6,970.41	-1,757.94	8,193.82	8,236.49	0.00	0.00	0.00
15,800.00	89.44	91.89	6,971.40	-1,761.25	8,293.76	8,336.48	0.00	0.00	0.00
15,900.00	89.44	91.89	6,972.38	-1,764.55	8,393.70	8,436.47	0.00	0.00	0.00
16,000.00	89.44	91.89	6,973.37	-1,767.86	8,493.64	8,536.47	0.00	0.00	0.00
16,100.00	89.44	91.89	6,974.35	-1,771.17	8,593.58	8,636.46	0.00	0.00	0.00
16,200.00	89.44	91.89	6,975.33	-1,774.47	8,693.52	8,736.45	0.00	0.00	0.00
16,300.00	89.44	91.89	6,976.32	-1,777.78	8,793.46	8,836.45	0.00	0.00	0.00
16,400.00	89.44	91.89	6,977.30	-1,781.08	8,893.40	8,936.44	0.00	0.00	0.00
16,500.00	89.44	91.89	6,978.29	-1,784.39	8,993.34	9,036.43	0.00	0.00	0.00
16,600.00	89.44	91.89	6,979.27	-1,787.70	9,093.28	9,136.42	0.00	0.00	0.00
16,700.00	89.44	91.89	6,980.25	-1,791.00	9,193.22	9,236.42	0.00	0.00	0.00
16,800.00	89.44	91.89	6,981.24	-1,794.31	9,293.16	9,336.41	0.00	0.00	0.00
16,900.00	89.44	91.89	6,982.22	-1,797.62	9,393.10	9,436.40	0.00	0.00	0.00
17,000.00	89.44	91.89	6,983.21	-1,800.92	9,493.05	9,536.39	0.00	0.00	0.00
17,100.00	89.44	91.89	6,984.19	-1,804.23	9,592.99	9,636.39	0.00	0.00	0.00
17,200.00	89.44	91.89	6,985.18	-1,807.53	9,692.93	9,736.38	0.00	0.00	0.00
17,300.00	89.44	91.89	6,986.16	-1,810.84	9,792.87	9,836.37	0.00	0.00	0.00
17,400.00	89.44	91.89	6,987.14	-1,814.15	9,892.81	9,936.36	0.00	0.00	0.00
17,500.00	89.44	91.89	6,988.13	-1,817.45	9,992.75	10,036.36	0.00	0.00	0.00
17,600.00	89.44	91.89	6,989.11	-1,820.76	10,092.69	10,136.35	0.00	0.00	0.00
17,700.00	89.44	91.89	6,990.10	-1,824.07	10,192.63	10,236.34	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SWARTZ 4-15HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4842.00usft (RIG)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4842.00usft (RIG)
<b>Site:</b>	3N-67W-04 SWARTZ 2-4HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	SWARTZ 4-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan B		
<b>Design:</b>	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	89.44	91.89	6,991.08	-1,827.37	10,292.57	10,336.33	0.00	0.00	0.00
17,900.00	89.44	91.89	6,992.07	-1,830.68	10,392.51	10,436.33	0.00	0.00	0.00
18,000.00	89.44	91.89	6,993.05	-1,833.99	10,492.45	10,536.32	0.00	0.00	0.00
18,100.00	89.44	91.89	6,994.03	-1,837.29	10,592.39	10,636.31	0.00	0.00	0.00
18,200.00	89.44	91.89	6,995.02	-1,840.60	10,692.33	10,736.30	0.00	0.00	0.00
18,300.00	89.44	91.89	6,996.00	-1,843.90	10,792.27	10,836.30	0.00	0.00	0.00
18,400.00	89.44	91.89	6,996.99	-1,847.21	10,892.21	10,936.29	0.00	0.00	0.00
18,500.00	89.44	91.89	6,997.97	-1,850.52	10,992.15	11,036.28	0.00	0.00	0.00
18,600.00	89.44	91.89	6,998.96	-1,853.82	11,092.09	11,136.27	0.00	0.00	0.00
18,700.00	89.44	91.89	6,999.94	-1,857.13	11,192.03	11,236.27	0.00	0.00	0.00
18,800.00	89.44	91.89	7,000.92	-1,860.44	11,291.97	11,336.26	0.00	0.00	0.00
18,900.00	89.44	91.89	7,001.91	-1,863.74	11,391.91	11,436.25	0.00	0.00	0.00
19,000.00	89.44	91.89	7,002.89	-1,867.05	11,491.86	11,536.24	0.00	0.00	0.00
19,100.00	89.44	91.89	7,003.88	-1,870.35	11,591.80	11,636.24	0.00	0.00	0.00
19,200.00	89.44	91.89	7,004.86	-1,873.66	11,691.74	11,736.23	0.00	0.00	0.00
19,300.00	89.44	91.89	7,005.84	-1,876.97	11,791.68	11,836.22	0.00	0.00	0.00
19,400.00	89.44	91.89	7,006.83	-1,880.27	11,891.62	11,936.21	0.00	0.00	0.00
19,500.00	89.44	91.89	7,007.81	-1,883.58	11,991.56	12,036.21	0.00	0.00	0.00
19,600.00	89.44	91.89	7,008.80	-1,886.89	12,091.50	12,136.20	0.00	0.00	0.00
19,700.00	89.44	91.89	7,009.78	-1,890.19	12,191.44	12,236.19	0.00	0.00	0.00
19,800.00	89.44	91.89	7,010.77	-1,893.50	12,291.38	12,336.18	0.00	0.00	0.00
19,900.00	89.44	91.89	7,011.75	-1,896.80	12,391.32	12,436.18	0.00	0.00	0.00
20,000.00	89.44	91.89	7,012.73	-1,900.11	12,491.26	12,536.17	0.00	0.00	0.00
20,100.00	89.44	91.89	7,013.72	-1,903.42	12,591.20	12,636.16	0.00	0.00	0.00
20,200.00	89.44	91.89	7,014.70	-1,906.72	12,691.14	12,736.15	0.00	0.00	0.00
20,300.00	89.44	91.89	7,015.69	-1,910.03	12,791.08	12,836.15	0.00	0.00	0.00
20,400.00	89.44	91.89	7,016.67	-1,913.34	12,891.02	12,936.14	0.00	0.00	0.00
20,500.00	89.44	91.89	7,017.66	-1,916.64	12,990.96	13,036.13	0.00	0.00	0.00
20,600.00	89.44	91.89	7,018.64	-1,919.95	13,090.90	13,136.12	0.00	0.00	0.00
20,700.00	89.44	91.89	7,019.62	-1,923.26	13,190.84	13,236.12	0.00	0.00	0.00
20,800.00	89.44	91.89	7,020.61	-1,926.56	13,290.78	13,336.11	0.00	0.00	0.00
20,900.00	89.44	91.89	7,021.59	-1,929.87	13,390.72	13,436.10	0.00	0.00	0.00
21,000.00	89.44	91.89	7,022.58	-1,933.17	13,490.66	13,536.09	0.00	0.00	0.00
21,100.00	89.44	91.89	7,023.56	-1,936.48	13,590.61	13,636.09	0.00	0.00	0.00
21,200.00	89.44	91.89	7,024.55	-1,939.79	13,690.55	13,736.08	0.00	0.00	0.00
21,300.00	89.44	91.89	7,025.53	-1,943.09	13,790.49	13,836.07	0.00	0.00	0.00
21,400.00	89.44	91.89	7,026.51	-1,946.40	13,890.43	13,936.06	0.00	0.00	0.00
21,500.00	89.44	91.89	7,027.50	-1,949.71	13,990.37	14,036.06	0.00	0.00	0.00
21,600.00	89.44	91.89	7,028.48	-1,953.01	14,090.31	14,136.05	0.00	0.00	0.00
21,700.00	89.44	91.89	7,029.47	-1,956.32	14,190.25	14,236.04	0.00	0.00	0.00
21,800.00	89.44	91.89	7,030.45	-1,959.62	14,290.19	14,336.03	0.00	0.00	0.00
21,900.00	89.44	91.89	7,031.44	-1,962.93	14,390.13	14,436.03	0.00	0.00	0.00
21,957.40	89.44	91.89	7,032.00	-1,964.83	14,447.50	14,493.42	0.00	0.00	0.00
TD Well @ 21957.40ft									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,522.27	1,500.00	9 5/8"	9-5/8	13-1/2	
21,957.40	7,032.00	5.5" CSG	5-1/2	7-7/8	

## Planning Report

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

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
708.18	707.00	Fox Hills				
3,705.59	3,598.00	Parkman				
4,207.19	4,080.00	Sussex				
7,263.79	6,841.00	Sharon Springs				
7,366.57	6,871.00	Niobrara				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
239.00	239.00	0.00	0.00	Begin Nudge @ 239.00ft	
1,310.33	1,296.34	-133.99	-65.76	Hold Tangent @ 1310.33ft	
6,324.84	6,114.90	-1,380.09	-677.30	KOP @ 6324.84ft :: DLS = 8°/100'	
7,527.55	6,890.00	-1,591.98	23.62	End Build @ 7527.55ft	
13,933.93	6,953.03	-1,700.05	6,428.79	Begin Turn to BHL @ 13933.93ft	
13,995.81	6,953.64	-1,701.59	6,490.64	End Turn @ 13995.80ft	
21,957.40	7,032.00	-1,964.83	14,447.50	TD Well @ 21957.40ft	