

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-14HZ**

Plan C

Plan: Permit Rev-1

Standard Planning Report

04 April, 2024

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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 4-14HZ		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	3.28 usft	Wellhead Elevation:	
Grid Convergence:	0.07 °		
		Latitude:	40.260045
		Longitude:	-104.891867
		Ground Level:	4,825.00 usft

Wellbore	Plan C				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF202013	4/3/2024	7.61	66.41	51,572.05575480

Design	Permit Rev-1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	1,842.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	270.56	

Plan Survey Tool Program	Date	4/3/2024			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	91.00	1,842.00	Total Surface MWD+IFR Surveys	APC_ISCWSA REV 2 MWD+I	
			Fixed:v2:crustal field declinatio		
2	1,842.00	24,682.29	Permit Rev-1 (Plan C)	APC_ISCWSA REV 2 MWD+I	
			Fixed:v2:Rockies, crustal dec +		

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Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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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
1,842.00	16.42	239.52	1,806.20	-145.67	-259.36	0.00	0.00	0.00	0.00	
2,042.00	16.42	239.52	1,998.04	-174.34	-308.08	0.00	0.00	0.00	0.00	
2,893.30	8.00	233.20	2,829.37	-271.04	-459.48	1.00	-0.99	-0.74	-174.06	
3,393.30	8.00	233.20	3,324.51	-312.72	-515.21	0.00	0.00	0.00	0.00	
3,859.97	15.00	233.20	3,781.52	-368.42	-589.66	1.50	1.50	0.00	0.00	
6,797.92	15.00	233.20	6,619.36	-823.91	-1,198.53	0.00	0.00	0.00	0.00	
7,774.97	90.02	270.66	7,181.00	-907.40	-1,900.71	8.00	7.68	3.83	38.42	
10,624.97	90.02	270.66	7,180.01	-874.57	-4,750.51	0.00	0.00	0.00	0.00	
10,657.64	90.02	271.15	7,180.00	-874.05	-4,783.18	1.50	0.00	1.50	90.00	
15,340.00	90.02	271.15	7,178.36	-780.08	-9,464.60	0.00	0.00	0.00	0.00	
15,583.33	90.02	267.50	7,178.28	-782.94	-9,707.87	1.50	0.00	-1.50	-90.00	
16,175.34	90.02	267.50	7,178.07	-808.77	-10,299.32	0.00	0.00	0.00	0.00	
16,342.01	90.02	270.00	7,178.01	-812.40	-10,465.93	1.50	0.00	1.50	90.00	
17,942.01	90.02	270.00	7,177.46	-812.40	-12,065.93	0.00	0.00	0.00	0.00	
18,142.01	90.02	267.00	7,177.39	-817.64	-12,265.84	1.50	0.00	-1.50	-90.00	
18,642.01	90.02	267.00	7,177.21	-843.80	-12,765.16	0.00	0.00	0.00	0.00	
18,913.08	90.03	271.07	7,177.09	-848.38	-13,036.13	1.50	0.00	1.50	89.85	
24,682.29	90.03	271.07	7,174.00	-741.04	-18,804.34	0.00	0.00	0.00	0.00	SWARTZ 4-14HZ BHI

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Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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
91.00	0.48	159.82	91.00	-0.32	0.12	-0.12	0.53	0.53	0.00
183.00	0.81	84.18	182.99	-0.62	0.90	-0.90	0.91	0.36	-82.22
275.00	0.48	210.48	274.99	-0.88	1.35	-1.36	1.26	-0.36	137.28
365.00	1.96	260.64	364.97	-1.46	-0.36	0.35	1.88	1.64	55.73
454.00	2.74	262.91	453.89	-1.97	-3.97	3.95	0.88	0.88	2.55
544.00	4.01	267.34	543.74	-2.38	-9.25	9.23	1.44	1.41	4.92
633.00	5.79	249.64	632.41	-4.09	-16.57	16.53	2.60	2.00	-19.89
723.00	8.20	238.23	721.74	-9.05	-26.28	26.19	3.08	2.68	-12.68
812.00	9.28	242.86	809.71	-15.66	-38.07	37.91	1.45	1.21	5.20
902.00	10.64	231.98	898.36	-24.09	-51.07	50.83	2.57	1.51	-12.09
991.00	11.80	231.22	985.65	-34.85	-64.64	64.30	1.31	1.30	-0.85
1,081.00	13.70	232.39	1,073.43	-47.12	-80.26	79.79	2.13	2.11	1.30
1,170.00	13.77	237.99	1,159.89	-59.17	-97.59	97.01	1.50	0.08	6.29
1,259.00	14.27	238.63	1,246.24	-70.49	-115.94	115.24	0.59	0.56	0.72
1,349.00	14.51	240.57	1,333.42	-81.81	-135.23	134.42	0.60	0.27	2.16
1,439.00	16.41	241.75	1,420.15	-93.37	-156.25	155.33	2.14	2.11	1.31
1,522.35	16.95	244.07	1,500.00	-104.25	-177.55	176.52	1.03	0.65	2.78
9 5/8"									
1,528.00	16.99	244.22	1,505.40	-104.97	-179.03	178.00	1.03	0.67	2.69
1,618.00	16.86	244.26	1,591.50	-116.36	-202.63	201.48	0.15	-0.14	0.04
1,707.00	16.78	244.73	1,676.70	-127.45	-225.87	224.61	0.18	-0.09	0.53
1,797.00	16.17	239.84	1,763.00	-139.29	-248.46	247.08	1.68	-0.68	-5.43
1,842.00	16.42	239.52	1,806.20	-145.67	-259.36	257.92	0.59	0.56	-0.71
Tie-onto Sfc Svys & Hold @ 1842.00ft									
1,900.00	16.42	239.52	1,861.83	-153.98	-273.48	271.97	0.00	0.00	0.00
2,000.00	16.42	239.52	1,957.75	-168.32	-297.85	296.19	0.00	0.00	0.00
2,042.00	16.42	239.52	1,998.04	-174.34	-308.08	306.36	0.00	0.00	0.00
Drop Sail Angle INC @ 2042.00ft									
2,100.00	15.84	239.30	2,053.76	-182.54	-321.95	320.15	1.00	-0.99	-0.38
2,200.00	14.85	238.88	2,150.19	-196.13	-344.66	342.72	1.00	-0.99	-0.42
2,300.00	13.86	238.41	2,247.07	-209.03	-365.83	363.77	1.00	-0.99	-0.48
2,400.00	12.86	237.86	2,344.36	-221.23	-385.45	383.27	1.00	-0.99	-0.55
2,500.00	11.87	237.22	2,442.04	-232.72	-403.53	401.24	1.00	-0.99	-0.64
2,600.00	10.88	236.47	2,540.07	-243.51	-420.05	417.65	1.00	-0.99	-0.75
2,700.00	9.90	235.56	2,638.43	-253.58	-435.01	432.51	1.00	-0.99	-0.90
2,800.00	8.91	234.47	2,737.08	-262.95	-448.40	445.81	1.00	-0.98	-1.10
2,893.30	8.00	233.20	2,829.37	-271.04	-459.48	456.81	1.00	-0.98	-1.36
Hold Tangent @ 2893.30ft									
2,900.00	8.00	233.20	2,836.00	-271.60	-460.23	457.55	0.00	0.00	0.00
3,000.00	8.00	233.20	2,935.03	-279.93	-471.38	468.62	0.00	0.00	0.00
3,100.00	8.00	233.20	3,034.06	-288.27	-482.52	479.68	0.00	0.00	0.00
3,200.00	8.00	233.20	3,133.08	-296.61	-493.66	490.74	0.00	0.00	0.00
3,300.00	8.00	233.20	3,232.11	-304.94	-504.81	501.80	0.00	0.00	0.00
3,393.30	8.00	233.20	3,324.51	-312.72	-515.21	512.12	0.00	0.00	0.00
Build Sail Angle INC @ 3393.30ft									
3,400.00	8.10	233.20	3,331.14	-313.28	-515.96	512.87	1.50	1.50	0.00
3,500.00	9.60	233.20	3,429.94	-322.50	-528.28	525.10	1.50	1.50	0.00
3,600.00	11.10	233.20	3,528.31	-333.26	-542.66	539.38	1.50	1.50	0.00
3,680.36	12.31	233.20	3,607.00	-343.03	-555.71	552.33	1.50	1.50	0.00
Parkman									
3,700.00	12.60	233.20	3,626.18	-345.56	-559.10	555.70	1.50	1.50	0.00
3,800.00	14.10	233.20	3,723.47	-359.39	-577.59	574.05	1.50	1.50	0.00

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Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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)	
3,859.97	15.00	233.20	3,781.52	-368.42	-589.66	586.03	1.50	1.50	0.00	
Hold Tangent @ 3859.97ft										
3,900.00	15.00	233.20	3,820.18	-374.63	-597.95	594.26	0.00	0.00	0.00	
4,000.00	15.00	233.20	3,916.78	-390.13	-618.68	614.84	0.00	0.00	0.00	
4,100.00	15.00	233.20	4,013.37	-405.63	-639.40	635.41	0.00	0.00	0.00	
4,178.30	15.00	233.20	4,089.00	-417.77	-655.63	651.51	0.00	0.00	0.00	
Sussex										
4,200.00	15.00	233.20	4,109.96	-421.14	-660.13	655.98	0.00	0.00	0.00	
4,300.00	15.00	233.20	4,206.56	-436.64	-680.85	676.55	0.00	0.00	0.00	
4,400.00	15.00	233.20	4,303.15	-452.14	-701.58	697.12	0.00	0.00	0.00	
4,500.00	15.00	233.20	4,399.74	-467.65	-722.30	717.69	0.00	0.00	0.00	
4,600.00	15.00	233.20	4,496.33	-483.15	-743.02	738.27	0.00	0.00	0.00	
4,700.00	15.00	233.20	4,592.93	-498.66	-763.75	758.84	0.00	0.00	0.00	
4,800.00	15.00	233.20	4,689.52	-514.16	-784.47	779.41	0.00	0.00	0.00	
4,900.00	15.00	233.20	4,786.11	-529.66	-805.20	799.98	0.00	0.00	0.00	
5,000.00	15.00	233.20	4,882.70	-545.17	-825.92	820.55	0.00	0.00	0.00	
5,100.00	15.00	233.20	4,979.30	-560.67	-846.65	841.13	0.00	0.00	0.00	
5,200.00	15.00	233.20	5,075.89	-576.18	-867.37	861.70	0.00	0.00	0.00	
5,300.00	15.00	233.20	5,172.48	-591.68	-888.10	882.27	0.00	0.00	0.00	
5,400.00	15.00	233.20	5,269.07	-607.18	-908.82	902.84	0.00	0.00	0.00	
5,500.00	15.00	233.20	5,365.67	-622.69	-929.54	923.41	0.00	0.00	0.00	
5,600.00	15.00	233.20	5,462.26	-638.19	-950.27	943.99	0.00	0.00	0.00	
5,700.00	15.00	233.20	5,558.85	-653.69	-970.99	964.56	0.00	0.00	0.00	
5,800.00	15.00	233.20	5,655.44	-669.20	-991.72	985.13	0.00	0.00	0.00	
5,900.00	15.00	233.20	5,752.04	-684.70	-1,012.44	1,005.70	0.00	0.00	0.00	
6,000.00	15.00	233.20	5,848.63	-700.21	-1,033.17	1,026.27	0.00	0.00	0.00	
6,100.00	15.00	233.20	5,945.22	-715.71	-1,053.89	1,046.85	0.00	0.00	0.00	
6,200.00	15.00	233.20	6,041.81	-731.21	-1,074.62	1,067.42	0.00	0.00	0.00	
6,300.00	15.00	233.20	6,138.41	-746.72	-1,095.34	1,087.99	0.00	0.00	0.00	
6,400.00	15.00	233.20	6,235.00	-762.22	-1,116.06	1,108.56	0.00	0.00	0.00	
6,500.00	15.00	233.20	6,331.59	-777.73	-1,136.79	1,129.13	0.00	0.00	0.00	
6,600.00	15.00	233.20	6,428.18	-793.23	-1,157.51	1,149.71	0.00	0.00	0.00	
6,700.00	15.00	233.20	6,524.78	-808.73	-1,178.24	1,170.28	0.00	0.00	0.00	
6,797.92	15.00	233.20	6,619.36	-823.91	-1,198.53	1,190.42	0.00	0.00	0.00	
KOP @ 6797.92ft :: DLS = 8°/100'										
6,800.00	15.13	233.60	6,621.37	-824.24	-1,198.97	1,190.85	8.00	6.28	19.05	
6,850.00	18.44	241.40	6,669.24	-831.90	-1,211.17	1,202.98	8.00	6.62	15.62	
6,900.00	21.98	246.84	6,716.16	-839.37	-1,226.72	1,218.46	8.00	7.07	10.87	
6,950.00	25.64	250.81	6,761.90	-846.60	-1,245.55	1,237.21	8.00	7.33	7.94	
7,000.00	29.39	253.84	6,806.23	-853.58	-1,267.56	1,259.16	8.00	7.50	6.06	
7,050.00	33.20	256.23	6,848.95	-860.25	-1,292.65	1,284.18	8.00	7.61	4.79	
7,051.25	33.29	256.29	6,850.00	-860.42	-1,293.32	1,284.85	8.00	7.65	4.28	
Sharon Springs										
7,087.74	36.09	257.74	6,880.00	-865.07	-1,313.56	1,305.04	8.00	7.67	3.98	
Niobrara										
7,100.00	37.04	258.18	6,889.84	-866.59	-1,320.70	1,312.16	8.00	7.70	3.63	
7,150.00	40.90	259.81	6,928.71	-872.58	-1,351.56	1,342.97	8.00	7.73	3.26	
7,200.00	44.79	261.21	6,965.37	-878.16	-1,385.09	1,376.44	8.00	7.77	2.79	
7,250.00	48.69	262.42	6,999.63	-883.33	-1,421.12	1,412.42	8.00	7.80	2.43	
7,300.00	52.60	263.50	7,031.33	-888.06	-1,459.49	1,450.74	8.00	7.82	2.15	
7,301.11	52.69	263.52	7,032.00	-888.16	-1,460.37	1,451.62	8.00	7.83	2.04	
Nio B										
7,350.00	56.52	264.47	7,060.31	-892.32	-1,499.99	1,491.20	8.00	7.84	1.94	

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Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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)
7,356.74	57.05	264.59	7,064.00	-892.86	-1,505.60	1,496.81	8.00	7.85	1.84
Nio C									
7,400.00	60.45	265.36	7,086.44	-896.09	-1,542.44	1,533.61	8.00	7.86	1.76
7,450.00	64.39	266.18	7,109.59	-899.36	-1,586.63	1,577.77	8.00	7.87	1.64
7,500.00	68.32	266.94	7,129.64	-902.10	-1,632.34	1,623.45	8.00	7.88	1.53
7,550.00	72.26	267.67	7,146.49	-904.31	-1,679.35	1,670.43	8.00	7.88	1.45
7,600.00	76.21	268.36	7,160.07	-905.97	-1,727.43	1,718.50	8.00	7.89	1.39
7,626.89	78.33	268.73	7,166.00	-906.64	-1,753.66	1,744.71	8.00	7.89	1.35
Fort Hayes									
7,650.00	80.15	269.04	7,170.31	-907.08	-1,776.35	1,767.40	8.00	7.89	1.33
7,700.00	84.10	269.69	7,177.16	-907.63	-1,825.87	1,816.91	8.00	7.89	1.31
7,750.00	88.05	270.34	7,180.58	-907.61	-1,875.74	1,866.78	8.00	7.90	1.29
7,772.29	89.81	270.63	7,181.00	-907.43	-1,898.02	1,889.06	8.00	7.90	1.29
Codell									
7,774.97	90.02	270.66	7,181.00	-907.40	-1,900.71	1,891.75	8.00	7.90	1.29
End Build @ 7774.97ft									
7,800.00	90.02	270.66	7,181.00	-907.11	-1,925.73	1,916.77	0.00	0.00	0.00
7,900.00	90.02	270.66	7,180.96	-905.96	-2,025.73	2,016.77	0.00	0.00	0.00
8,000.00	90.02	270.66	7,180.93	-904.80	-2,125.72	2,116.77	0.00	0.00	0.00
8,100.00	90.02	270.66	7,180.89	-903.65	-2,225.71	2,216.77	0.00	0.00	0.00
8,200.00	90.02	270.66	7,180.86	-902.50	-2,325.71	2,316.77	0.00	0.00	0.00
8,300.00	90.02	270.66	7,180.82	-901.35	-2,425.70	2,416.77	0.00	0.00	0.00
8,400.00	90.02	270.66	7,180.79	-900.20	-2,525.69	2,516.77	0.00	0.00	0.00
8,500.00	90.02	270.66	7,180.75	-899.04	-2,625.69	2,616.77	0.00	0.00	0.00
8,600.00	90.02	270.66	7,180.72	-897.89	-2,725.68	2,716.77	0.00	0.00	0.00
8,700.00	90.02	270.66	7,180.68	-896.74	-2,825.67	2,816.77	0.00	0.00	0.00
8,800.00	90.02	270.66	7,180.65	-895.59	-2,925.67	2,916.77	0.00	0.00	0.00
8,900.00	90.02	270.66	7,180.61	-894.44	-3,025.66	3,016.77	0.00	0.00	0.00
9,000.00	90.02	270.66	7,180.58	-893.28	-3,125.65	3,116.77	0.00	0.00	0.00
9,100.00	90.02	270.66	7,180.54	-892.13	-3,225.65	3,216.77	0.00	0.00	0.00
9,200.00	90.02	270.66	7,180.51	-890.98	-3,325.64	3,316.77	0.00	0.00	0.00
9,300.00	90.02	270.66	7,180.47	-889.83	-3,425.63	3,416.77	0.00	0.00	0.00
9,400.00	90.02	270.66	7,180.44	-888.68	-3,525.63	3,516.77	0.00	0.00	0.00
9,500.00	90.02	270.66	7,180.40	-887.53	-3,625.62	3,616.77	0.00	0.00	0.00
9,600.00	90.02	270.66	7,180.37	-886.37	-3,725.61	3,716.77	0.00	0.00	0.00
9,700.00	90.02	270.66	7,180.33	-885.22	-3,825.61	3,816.77	0.00	0.00	0.00
9,800.00	90.02	270.66	7,180.30	-884.07	-3,925.60	3,916.77	0.00	0.00	0.00
9,900.00	90.02	270.66	7,180.26	-882.92	-4,025.59	4,016.77	0.00	0.00	0.00
10,000.00	90.02	270.66	7,180.23	-881.77	-4,125.59	4,116.77	0.00	0.00	0.00
10,100.00	90.02	270.66	7,180.19	-880.61	-4,225.58	4,216.77	0.00	0.00	0.00
10,200.00	90.02	270.66	7,180.16	-879.46	-4,325.57	4,316.77	0.00	0.00	0.00
10,300.00	90.02	270.66	7,180.12	-878.31	-4,425.57	4,416.77	0.00	0.00	0.00
10,400.00	90.02	270.66	7,180.09	-877.16	-4,525.56	4,516.77	0.00	0.00	0.00
10,500.00	90.02	270.66	7,180.05	-876.01	-4,625.55	4,616.77	0.00	0.00	0.00
10,600.00	90.02	270.66	7,180.02	-874.85	-4,725.55	4,716.77	0.00	0.00	0.00
10,624.97	90.02	270.66	7,180.01	-874.57	-4,750.51	4,741.74	0.00	0.00	0.00
Begin Turn for AC @ 10624.97ft									
10,657.64	90.02	271.15	7,180.00	-874.05	-4,783.18	4,774.41	1.50	0.00	1.50
End Turn @ 10657.64ft									
10,700.00	90.02	271.15	7,179.98	-873.20	-4,825.53	4,816.77	0.00	0.00	0.00
10,800.00	90.02	271.15	7,179.95	-871.19	-4,925.51	4,916.76	0.00	0.00	0.00
10,900.00	90.02	271.15	7,179.91	-869.19	-5,025.49	5,016.76	0.00	0.00	0.00
11,000.00	90.02	271.15	7,179.88	-867.18	-5,125.47	5,116.75	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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)
11,100.00	90.02	271.15	7,179.84	-865.17	-5,225.45	5,216.75	0.00	0.00	0.00
11,200.00	90.02	271.15	7,179.81	-863.17	-5,325.43	5,316.74	0.00	0.00	0.00
11,300.00	90.02	271.15	7,179.77	-861.16	-5,425.41	5,416.74	0.00	0.00	0.00
11,400.00	90.02	271.15	7,179.74	-859.15	-5,525.39	5,516.73	0.00	0.00	0.00
11,500.00	90.02	271.15	7,179.70	-857.14	-5,625.37	5,616.72	0.00	0.00	0.00
11,600.00	90.02	271.15	7,179.67	-855.14	-5,725.35	5,716.72	0.00	0.00	0.00
11,700.00	90.02	271.15	7,179.63	-853.13	-5,825.33	5,816.71	0.00	0.00	0.00
11,800.00	90.02	271.15	7,179.60	-851.12	-5,925.31	5,916.71	0.00	0.00	0.00
11,900.00	90.02	271.15	7,179.56	-849.12	-6,025.29	6,016.70	0.00	0.00	0.00
12,000.00	90.02	271.15	7,179.53	-847.11	-6,125.27	6,116.70	0.00	0.00	0.00
12,100.00	90.02	271.15	7,179.49	-845.10	-6,225.25	6,216.69	0.00	0.00	0.00
12,200.00	90.02	271.15	7,179.46	-843.10	-6,325.23	6,316.69	0.00	0.00	0.00
12,300.00	90.02	271.15	7,179.42	-841.09	-6,425.21	6,416.68	0.00	0.00	0.00
12,400.00	90.02	271.15	7,179.39	-839.08	-6,525.19	6,516.68	0.00	0.00	0.00
12,500.00	90.02	271.15	7,179.35	-837.07	-6,625.17	6,616.67	0.00	0.00	0.00
12,600.00	90.02	271.15	7,179.32	-835.07	-6,725.15	6,716.67	0.00	0.00	0.00
12,700.00	90.02	271.15	7,179.29	-833.06	-6,825.13	6,816.66	0.00	0.00	0.00
12,800.00	90.02	271.15	7,179.25	-831.05	-6,925.11	6,916.66	0.00	0.00	0.00
12,900.00	90.02	271.15	7,179.22	-829.05	-7,025.09	7,016.65	0.00	0.00	0.00
13,000.00	90.02	271.15	7,179.18	-827.04	-7,125.07	7,116.64	0.00	0.00	0.00
13,100.00	90.02	271.15	7,179.15	-825.03	-7,225.05	7,216.64	0.00	0.00	0.00
13,200.00	90.02	271.15	7,179.11	-823.03	-7,325.03	7,316.63	0.00	0.00	0.00
13,300.00	90.02	271.15	7,179.08	-821.02	-7,425.01	7,416.63	0.00	0.00	0.00
13,400.00	90.02	271.15	7,179.04	-819.01	-7,524.99	7,516.62	0.00	0.00	0.00
13,500.00	90.02	271.15	7,179.01	-817.00	-7,624.97	7,616.62	0.00	0.00	0.00
13,600.00	90.02	271.15	7,178.97	-815.00	-7,724.95	7,716.61	0.00	0.00	0.00
13,700.00	90.02	271.15	7,178.94	-812.99	-7,824.93	7,816.61	0.00	0.00	0.00
13,800.00	90.02	271.15	7,178.90	-810.98	-7,924.91	7,916.60	0.00	0.00	0.00
13,900.00	90.02	271.15	7,178.87	-808.98	-8,024.89	8,016.60	0.00	0.00	0.00
14,000.00	90.02	271.15	7,178.83	-806.97	-8,124.87	8,116.59	0.00	0.00	0.00
14,100.00	90.02	271.15	7,178.80	-804.96	-8,224.85	8,216.59	0.00	0.00	0.00
14,200.00	90.02	271.15	7,178.76	-802.96	-8,324.83	8,316.58	0.00	0.00	0.00
14,300.00	90.02	271.15	7,178.73	-800.95	-8,424.81	8,416.58	0.00	0.00	0.00
14,400.00	90.02	271.15	7,178.69	-798.94	-8,524.79	8,516.57	0.00	0.00	0.00
14,500.00	90.02	271.15	7,178.66	-796.93	-8,624.77	8,616.57	0.00	0.00	0.00
14,600.00	90.02	271.15	7,178.62	-794.93	-8,724.75	8,716.56	0.00	0.00	0.00
14,700.00	90.02	271.15	7,178.59	-792.92	-8,824.73	8,816.55	0.00	0.00	0.00
14,800.00	90.02	271.15	7,178.55	-790.91	-8,924.71	8,916.55	0.00	0.00	0.00
14,900.00	90.02	271.15	7,178.52	-788.91	-9,024.69	9,016.54	0.00	0.00	0.00
15,000.00	90.02	271.15	7,178.48	-786.90	-9,124.67	9,116.54	0.00	0.00	0.00
15,100.00	90.02	271.15	7,178.45	-784.89	-9,224.65	9,216.53	0.00	0.00	0.00
15,200.00	90.02	271.15	7,178.41	-782.89	-9,324.63	9,316.53	0.00	0.00	0.00
15,300.00	90.02	271.15	7,178.38	-780.88	-9,424.61	9,416.52	0.00	0.00	0.00
15,340.00	90.02	271.15	7,178.36	-780.08	-9,464.60	9,456.52	0.00	0.00	0.00
Begin Turn for AC @ 15340.00ft									
15,400.00	90.02	270.25	7,178.34	-779.34	-9,524.59	9,516.52	1.50	0.00	-1.50
15,500.00	90.02	268.75	7,178.31	-780.22	-9,624.59	9,616.50	1.50	0.00	-1.50
15,583.33	90.02	267.50	7,178.28	-782.94	-9,707.87	9,699.76	1.50	0.00	-1.50
End Turn @ 15583.33ft									
15,600.00	90.02	267.50	7,178.27	-783.67	-9,724.52	9,716.40	0.00	0.00	0.00
15,700.00	90.02	267.50	7,178.24	-788.03	-9,824.43	9,816.26	0.00	0.00	0.00
15,800.00	90.02	267.50	7,178.20	-792.39	-9,924.33	9,916.11	0.00	0.00	0.00
15,900.00	90.02	267.50	7,178.17	-796.75	-10,024.24	10,015.97	0.00	0.00	0.00
16,000.00	90.02	267.50	7,178.13	-801.12	-10,124.14	10,115.83	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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)
16,100.00	90.02	267.50	7,178.10	-805.48	-10,224.05	10,215.69	0.00	0.00	0.00
16,175.34	90.02	267.50	7,178.07	-808.77	-10,299.32	10,290.92	0.00	0.00	0.00
Begin Turn for AC @ 16175.34ft									
16,200.00	90.02	267.87	7,178.06	-809.76	-10,323.96	10,315.55	1.50	0.00	1.50
16,300.00	90.02	269.37	7,178.03	-812.17	-10,423.92	10,415.49	1.50	0.00	1.50
16,342.01	90.02	270.00	7,178.01	-812.40	-10,465.93	10,457.49	1.50	0.00	1.50
End Turn @ 16342.01ft									
16,400.00	90.02	270.00	7,177.99	-812.40	-10,523.92	10,515.48	0.00	0.00	0.00
16,500.00	90.02	270.00	7,177.96	-812.40	-10,623.92	10,615.48	0.00	0.00	0.00
16,600.00	90.02	270.00	7,177.92	-812.40	-10,723.92	10,715.47	0.00	0.00	0.00
16,700.00	90.02	270.00	7,177.89	-812.40	-10,823.92	10,815.47	0.00	0.00	0.00
16,800.00	90.02	270.00	7,177.85	-812.40	-10,923.92	10,915.46	0.00	0.00	0.00
16,900.00	90.02	270.00	7,177.82	-812.40	-11,023.92	11,015.46	0.00	0.00	0.00
17,000.00	90.02	270.00	7,177.78	-812.40	-11,123.92	11,115.45	0.00	0.00	0.00
17,100.00	90.02	270.00	7,177.75	-812.40	-11,223.92	11,215.45	0.00	0.00	0.00
17,200.00	90.02	270.00	7,177.71	-812.40	-11,323.92	11,315.44	0.00	0.00	0.00
17,300.00	90.02	270.00	7,177.68	-812.40	-11,423.92	11,415.44	0.00	0.00	0.00
17,400.00	90.02	270.00	7,177.64	-812.40	-11,523.92	11,515.43	0.00	0.00	0.00
17,500.00	90.02	270.00	7,177.61	-812.40	-11,623.92	11,615.43	0.00	0.00	0.00
17,600.00	90.02	270.00	7,177.57	-812.40	-11,723.92	11,715.42	0.00	0.00	0.00
17,700.00	90.02	270.00	7,177.54	-812.40	-11,823.92	11,815.42	0.00	0.00	0.00
17,800.00	90.02	270.00	7,177.50	-812.40	-11,923.92	11,915.41	0.00	0.00	0.00
17,900.00	90.02	270.00	7,177.47	-812.40	-12,023.92	12,015.41	0.00	0.00	0.00
17,942.01	90.02	270.00	7,177.46	-812.40	-12,065.93	12,057.42	0.00	0.00	0.00
Begin Turn for AC @ 17942.01ft									
18,000.00	90.02	269.13	7,177.43	-812.84	-12,123.92	12,115.40	1.50	0.00	-1.50
18,100.00	90.02	267.63	7,177.40	-815.67	-12,223.88	12,215.32	1.50	0.00	-1.50
18,142.01	90.02	267.00	7,177.39	-817.64	-12,265.84	12,257.26	1.50	0.00	-1.50
End Turn @ 18142.01ft									
18,200.00	90.02	267.00	7,177.37	-820.67	-12,323.75	12,315.14	0.00	0.00	0.00
18,300.00	90.02	267.00	7,177.33	-825.90	-12,423.61	12,414.95	0.00	0.00	0.00
18,400.00	90.02	267.00	7,177.30	-831.14	-12,523.48	12,514.76	0.00	0.00	0.00
18,500.00	90.02	267.00	7,177.26	-836.37	-12,623.34	12,614.56	0.00	0.00	0.00
18,600.00	90.02	267.00	7,177.23	-841.60	-12,723.20	12,714.37	0.00	0.00	0.00
18,642.01	90.02	267.00	7,177.21	-843.80	-12,765.16	12,756.30	0.00	0.00	0.00
Begin Turn to BHL @ 18642.01ft									
18,700.00	90.02	267.87	7,177.19	-846.40	-12,823.09	12,814.20	1.50	0.00	1.50
18,800.00	90.03	269.37	7,177.15	-848.81	-12,923.06	12,914.14	1.50	0.00	1.50
18,900.00	90.03	270.87	7,177.10	-848.60	-13,023.05	13,014.14	1.50	0.00	1.50
18,913.08	90.03	271.07	7,177.09	-848.38	-13,036.13	13,027.22	1.50	0.00	1.50
End Turn @ 18913.08ft									
19,000.00	90.03	271.07	7,177.04	-846.76	-13,123.04	13,114.13	0.00	0.00	0.00
19,100.00	90.03	271.07	7,176.99	-844.90	-13,223.02	13,214.13	0.00	0.00	0.00
19,200.00	90.03	271.07	7,176.94	-843.04	-13,323.00	13,314.12	0.00	0.00	0.00
19,300.00	90.03	271.07	7,176.88	-841.18	-13,422.98	13,414.12	0.00	0.00	0.00
19,400.00	90.03	271.07	7,176.83	-839.32	-13,522.97	13,514.12	0.00	0.00	0.00
19,500.00	90.03	271.07	7,176.78	-837.46	-13,622.95	13,614.11	0.00	0.00	0.00
19,600.00	90.03	271.07	7,176.72	-835.60	-13,722.93	13,714.11	0.00	0.00	0.00
19,700.00	90.03	271.07	7,176.67	-833.74	-13,822.91	13,814.11	0.00	0.00	0.00
19,800.00	90.03	271.07	7,176.62	-831.88	-13,922.90	13,914.10	0.00	0.00	0.00
19,900.00	90.03	271.07	7,176.56	-830.02	-14,022.88	14,014.10	0.00	0.00	0.00
20,000.00	90.03	271.07	7,176.51	-828.16	-14,122.86	14,114.09	0.00	0.00	0.00
20,100.00	90.03	271.07	7,176.45	-826.30	-14,222.84	14,214.09	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
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)
20,200.00	90.03	271.07	7,176.40	-824.43	-14,322.83	14,314.09	0.00	0.00	0.00
20,300.00	90.03	271.07	7,176.35	-822.57	-14,422.81	14,414.08	0.00	0.00	0.00
20,400.00	90.03	271.07	7,176.29	-820.71	-14,522.79	14,514.08	0.00	0.00	0.00
20,500.00	90.03	271.07	7,176.24	-818.85	-14,622.78	14,614.07	0.00	0.00	0.00
20,600.00	90.03	271.07	7,176.19	-816.99	-14,722.76	14,714.07	0.00	0.00	0.00
20,700.00	90.03	271.07	7,176.13	-815.13	-14,822.74	14,814.07	0.00	0.00	0.00
20,800.00	90.03	271.07	7,176.08	-813.27	-14,922.72	14,914.06	0.00	0.00	0.00
20,900.00	90.03	271.07	7,176.03	-811.41	-15,022.71	15,014.06	0.00	0.00	0.00
21,000.00	90.03	271.07	7,175.97	-809.55	-15,122.69	15,114.05	0.00	0.00	0.00
21,100.00	90.03	271.07	7,175.92	-807.69	-15,222.67	15,214.05	0.00	0.00	0.00
21,200.00	90.03	271.07	7,175.87	-805.83	-15,322.65	15,314.05	0.00	0.00	0.00
21,300.00	90.03	271.07	7,175.81	-803.97	-15,422.64	15,414.04	0.00	0.00	0.00
21,400.00	90.03	271.07	7,175.76	-802.11	-15,522.62	15,514.04	0.00	0.00	0.00
21,500.00	90.03	271.07	7,175.70	-800.25	-15,622.60	15,614.03	0.00	0.00	0.00
21,600.00	90.03	271.07	7,175.65	-798.39	-15,722.59	15,714.03	0.00	0.00	0.00
21,700.00	90.03	271.07	7,175.60	-796.53	-15,822.57	15,814.03	0.00	0.00	0.00
21,800.00	90.03	271.07	7,175.54	-794.67	-15,922.55	15,914.02	0.00	0.00	0.00
21,900.00	90.03	271.07	7,175.49	-792.81	-16,022.53	16,014.02	0.00	0.00	0.00
22,000.00	90.03	271.07	7,175.44	-790.95	-16,122.52	16,114.02	0.00	0.00	0.00
22,100.00	90.03	271.07	7,175.38	-789.09	-16,222.50	16,214.01	0.00	0.00	0.00
22,200.00	90.03	271.07	7,175.33	-787.23	-16,322.48	16,314.01	0.00	0.00	0.00
22,300.00	90.03	271.07	7,175.28	-785.37	-16,422.46	16,414.00	0.00	0.00	0.00
22,400.00	90.03	271.07	7,175.22	-783.50	-16,522.45	16,514.00	0.00	0.00	0.00
22,500.00	90.03	271.07	7,175.17	-781.64	-16,622.43	16,614.00	0.00	0.00	0.00
22,600.00	90.03	271.07	7,175.12	-779.78	-16,722.41	16,713.99	0.00	0.00	0.00
22,700.00	90.03	271.07	7,175.06	-777.92	-16,822.39	16,813.99	0.00	0.00	0.00
22,800.00	90.03	271.07	7,175.01	-776.06	-16,922.38	16,913.98	0.00	0.00	0.00
22,900.00	90.03	271.07	7,174.95	-774.20	-17,022.36	17,013.98	0.00	0.00	0.00
23,000.00	90.03	271.07	7,174.90	-772.34	-17,122.34	17,113.98	0.00	0.00	0.00
23,100.00	90.03	271.07	7,174.85	-770.48	-17,222.33	17,213.97	0.00	0.00	0.00
23,200.00	90.03	271.07	7,174.79	-768.62	-17,322.31	17,313.97	0.00	0.00	0.00
23,300.00	90.03	271.07	7,174.74	-766.76	-17,422.29	17,413.96	0.00	0.00	0.00
23,400.00	90.03	271.07	7,174.69	-764.90	-17,522.27	17,513.96	0.00	0.00	0.00
23,500.00	90.03	271.07	7,174.63	-763.04	-17,622.26	17,613.96	0.00	0.00	0.00
23,600.00	90.03	271.07	7,174.58	-761.18	-17,722.24	17,713.95	0.00	0.00	0.00
23,700.00	90.03	271.07	7,174.53	-759.32	-17,822.22	17,813.95	0.00	0.00	0.00
23,800.00	90.03	271.07	7,174.47	-757.46	-17,922.20	17,913.94	0.00	0.00	0.00
23,900.00	90.03	271.07	7,174.42	-755.60	-18,022.19	18,013.94	0.00	0.00	0.00
24,000.00	90.03	271.07	7,174.37	-753.74	-18,122.17	18,113.94	0.00	0.00	0.00
24,100.00	90.03	271.07	7,174.31	-751.88	-18,222.15	18,213.93	0.00	0.00	0.00
24,200.00	90.03	271.07	7,174.26	-750.02	-18,322.13	18,313.93	0.00	0.00	0.00
24,300.00	90.03	271.07	7,174.20	-748.16	-18,422.12	18,413.93	0.00	0.00	0.00
24,400.00	90.03	271.07	7,174.15	-746.30	-18,522.10	18,513.92	0.00	0.00	0.00
24,500.00	90.03	271.07	7,174.10	-744.44	-18,622.08	18,613.92	0.00	0.00	0.00
24,600.00	90.03	271.07	7,174.04	-742.57	-18,722.07	18,713.91	0.00	0.00	0.00
24,682.29	90.03	271.07	7,174.00	-741.04	-18,804.34	18,796.20	0.00	0.00	0.00
TD Well @ 24682.29ft									

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-14HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 26' @ 4851.00usft (BIG RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-14HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan C		
Design:	Permit Rev-1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,522.35	1,500.00	9 5/8"	9-5/8	13-1/2	
24,682.29	7,174.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
717.20	716.00	Fox Hills				
3,680.36	3,607.00	Parkman				
4,178.30	4,089.00	Sussex				
7,051.25	6,850.00	Sharon Springs				
7,087.74	6,880.00	Niobrara				
7,301.11	7,032.00	Nio B				
7,356.74	7,064.00	Nio C				
7,626.89	7,166.00	Fort Hayes				
7,772.29	7,181.00	Codell		0.00		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,842.00	1,806.20	-145.67	-259.36	Tie-onto Sfc Svys & Hold @ 1842.00ft
2,042.00	1,998.04	-174.34	-308.08	Drop Sail Angle INC @ 2042.00ft
2,893.30	2,829.37	-271.04	-459.48	Hold Tangent @ 2893.30ft
3,393.30	3,324.51	-312.72	-515.21	Build Sail Angle INC @ 3393.30ft
3,859.97	3,781.52	-368.42	-589.66	Hold Tangent @ 3859.97ft
6,797.92	6,619.36	-823.91	-1,198.53	KOP @ 6797.92ft :: DLS = 8°/100'
7,774.97	7,181.00	-907.40	-1,900.71	End Build @ 7774.97ft
10,624.97	7,180.01	-874.57	-4,750.51	Begin Turn for AC @ 10624.97ft
10,657.64	7,180.00	-874.05	-4,783.18	End Turn @ 10657.64ft
15,340.00	7,178.36	-780.08	-9,464.60	Begin Turn for AC @ 15340.00ft
15,583.33	7,178.28	-782.94	-9,707.87	End Turn @ 15583.33ft
16,175.34	7,178.07	-808.77	-10,299.32	Begin Turn for AC @ 16175.34ft
16,342.01	7,178.01	-812.40	-10,465.93	End Turn @ 16342.01ft
17,942.01	7,177.46	-812.40	-12,065.93	Begin Turn for AC @ 17942.01ft
18,142.01	7,177.39	-817.64	-12,265.84	End Turn @ 18142.01ft
18,642.01	7,177.21	-843.80	-12,765.16	Begin Turn to BHL @ 18642.01ft
18,913.08	7,177.09	-848.38	-13,036.13	End Turn @ 18913.08ft
24,682.29	7,174.00	-741.04	-18,804.34	TD Well @ 24682.29ft