

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-13HZ**

Plan B

Plan: Permit Rev-1

Standard Planning Report

26 June, 2023

US ROCKIES WATTENBERG PLANNING

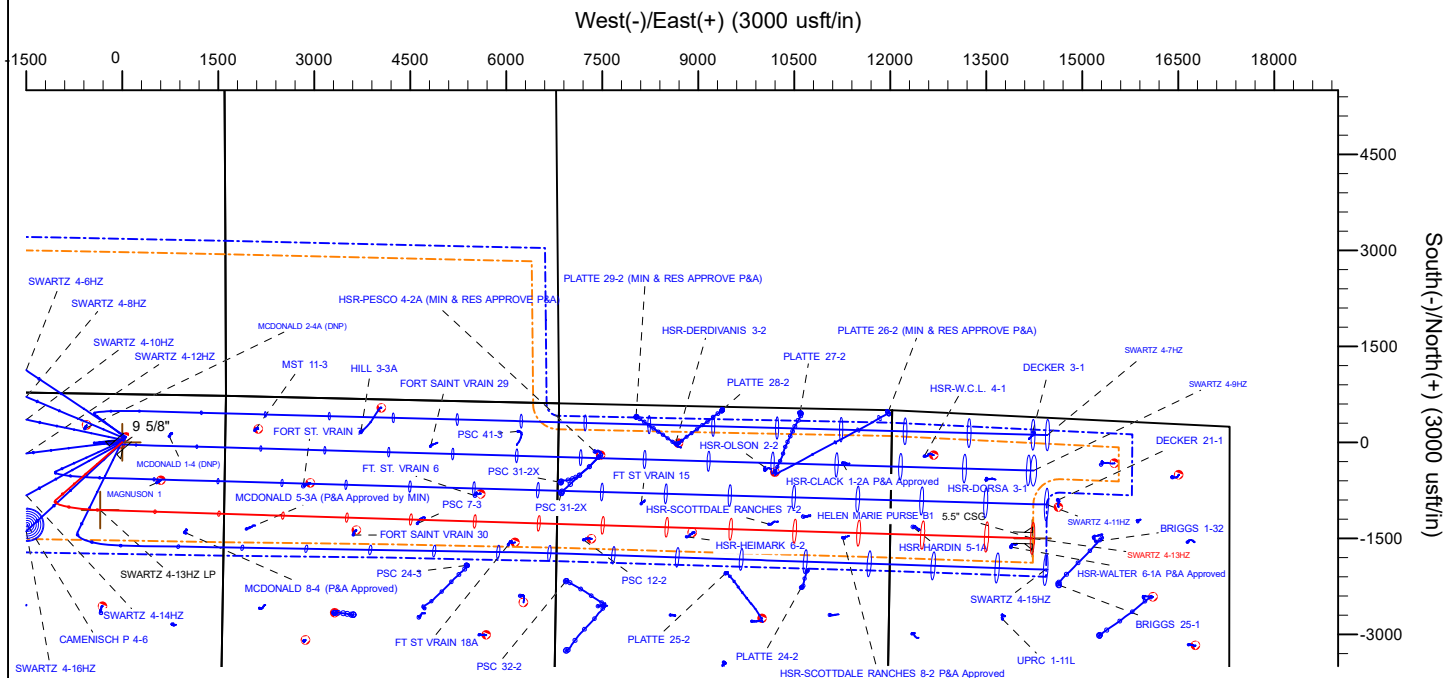
CASING DETAILS			
TVD	MD	Name	Size
1500.00	1518.04	9 5/8"	9-5/8
7334.00	22319.27	5.5" CSG	5-1/2



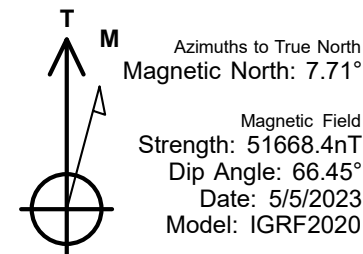
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	
1199.33	13.79	229.00	1190.48	-72.23	-83.09	1.50	229.00	-80.86	
6499.26	13.79	229.00	6337.64	-901.04	-1036.53	0.00	0.00	-1008.69	
7742.25	89.35	91.74	7168.00	-1058.84	-343.91	8.00	-136.53	-311.60	
22319.27	89.35	91.74	7334.00	-1501.10	14225.46	0.00	0.00	14264.48	SWARTZ 4-13HZ BHL

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	Northing	Easting	Latitude	Longitude
SWARTZ 4-13HZ SHL	0.00	14621458.74	1670593.72	40.260077	-104.891833
SWARTZ 4-13HZ LP	7168.00	14620399.48	1670251.10	40.257170	-104.893066
SWARTZ 4-13HZ BHL	7334.00	14619975.00	1684821.00	40.255944	-104.840846

WELL DETAILS: SWARTZ 4-13HZ
GL = 4825'
RKB = 17' @ 4842.00usft (RIG)
Plan: Permit Rev-1 (SWARTZ 4-13HZ/Plan B)
Date: 6/27/2023



FORMATION TOP DETAILS		
TVDPPath	MDPath	Formation
707.00	707.89	Fox Hills
3598.00	3678.30	Parkman
4080.00	4174.61	Sussex
6841.00	7031.58	Sharon Springs
6871.00	7066.25	Niobrara
7023.00	7283.34	Nio B
7055.00	7339.75	Nio C
7157.00	7623.68	Fort Hayes
7178.00	8620.19	Codell



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	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 4-13HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,621,458.74 usft	Latitude:	40.260078
	+E/-W	0.00 usft	Easting:	1,670,593.72 usft	Longitude:	-104.891833
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	51,668.40818474

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	91.74	

Plan Survey Tool Program		Date	6/26/2023		
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+I Fixed:v2:crustal field declinatio	
2	2,000.00	22,319.27	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 4-13HZ
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 4-13HZ	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	
280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,199.33	13.79	229.00	1,190.48	-72.23	-83.09	1.50	1.50	0.00	229.00	
6,499.26	13.79	229.00	6,337.64	-901.04	-1,036.53	0.00	0.00	0.00	0.00	
7,742.25	89.35	91.74	7,168.00	-1,058.84	-343.91	8.00	6.08	-11.04	-136.53	
22,319.27	89.35	91.74	7,334.00	-1,501.10	14,225.46	0.00	0.00	0.00	0.00	SWARTZ 4-13HZ BHI

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

Planned Survey

Measured			Vertical			Vertical	Dogleg	Build	Turn
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/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
280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 280.00ft									
300.00	0.30	229.00	300.00	-0.03	-0.04	-0.04	1.50	1.50	0.00
400.00	1.80	229.00	399.98	-1.24	-1.42	-1.38	1.50	1.50	0.00
500.00	3.30	229.00	499.88	-4.16	-4.78	-4.65	1.50	1.50	0.00
600.00	4.80	229.00	599.63	-8.79	-10.11	-9.84	1.50	1.50	0.00
700.00	6.30	229.00	699.15	-15.13	-17.41	-16.94	1.50	1.50	0.00
707.89	6.42	229.00	707.00	-15.71	-18.07	-17.58	1.50	1.50	0.00
Fox Hills									
800.00	7.80	229.00	798.40	-23.19	-26.67	-25.96	1.50	1.50	0.00
900.00	9.30	229.00	897.28	-32.94	-37.89	-36.87	1.50	1.50	0.00
1,000.00	10.80	229.00	995.74	-44.39	-51.06	-49.69	1.50	1.50	0.00
1,100.00	12.30	229.00	1,093.72	-57.52	-66.17	-64.40	1.50	1.50	0.00
1,199.33	13.79	229.00	1,190.48	-72.23	-83.09	-80.86	1.50	1.50	0.00
Hold Tangent @ 1199.33ft									
1,300.00	13.79	229.00	1,288.25	-87.97	-101.20	-98.49	0.00	0.00	0.00
1,400.00	13.79	229.00	1,385.37	-103.61	-119.19	-115.99	0.00	0.00	0.00
1,500.00	13.79	229.00	1,482.48	-119.25	-137.18	-133.50	0.00	0.00	0.00
1,518.04	13.79	229.00	1,500.00	-122.07	-140.43	-136.66	0.00	0.00	0.00
9 5/8"									
1,600.00	13.79	229.00	1,579.60	-134.89	-155.17	-151.00	0.00	0.00	0.00
1,700.00	13.79	229.00	1,676.72	-150.53	-173.16	-168.51	0.00	0.00	0.00
1,800.00	13.79	229.00	1,773.84	-166.16	-191.15	-186.02	0.00	0.00	0.00
1,900.00	13.79	229.00	1,870.95	-181.80	-209.14	-203.52	0.00	0.00	0.00
2,000.00	13.79	229.00	1,968.07	-197.44	-227.13	-221.03	0.00	0.00	0.00
2,100.00	13.79	229.00	2,065.19	-213.08	-245.12	-238.54	0.00	0.00	0.00
2,200.00	13.79	229.00	2,162.31	-228.72	-263.11	-256.04	0.00	0.00	0.00
2,300.00	13.79	229.00	2,259.42	-244.36	-281.10	-273.55	0.00	0.00	0.00
2,400.00	13.79	229.00	2,356.54	-259.99	-299.09	-291.06	0.00	0.00	0.00
2,500.00	13.79	229.00	2,453.66	-275.63	-317.08	-308.56	0.00	0.00	0.00
2,600.00	13.79	229.00	2,550.78	-291.27	-335.07	-326.07	0.00	0.00	0.00
2,700.00	13.79	229.00	2,647.89	-306.91	-353.06	-343.58	0.00	0.00	0.00
2,800.00	13.79	229.00	2,745.01	-322.55	-371.05	-361.08	0.00	0.00	0.00
2,900.00	13.79	229.00	2,842.13	-338.18	-389.04	-378.59	0.00	0.00	0.00
3,000.00	13.79	229.00	2,939.25	-353.82	-407.03	-396.09	0.00	0.00	0.00
3,100.00	13.79	229.00	3,036.36	-369.46	-425.02	-413.60	0.00	0.00	0.00
3,200.00	13.79	229.00	3,133.48	-385.10	-443.00	-431.11	0.00	0.00	0.00
3,300.00	13.79	229.00	3,230.60	-400.74	-460.99	-448.61	0.00	0.00	0.00
3,400.00	13.79	229.00	3,327.72	-416.37	-478.98	-466.12	0.00	0.00	0.00
3,500.00	13.79	229.00	3,424.84	-432.01	-496.97	-483.63	0.00	0.00	0.00
3,600.00	13.79	229.00	3,521.95	-447.65	-514.96	-501.13	0.00	0.00	0.00
3,678.30	13.79	229.00	3,598.00	-459.90	-529.05	-514.84	0.00	0.00	0.00
Parkman									
3,700.00	13.79	229.00	3,619.07	-463.29	-532.95	-518.64	0.00	0.00	0.00
3,800.00	13.79	229.00	3,716.19	-478.93	-550.94	-536.15	0.00	0.00	0.00
3,900.00	13.79	229.00	3,813.31	-494.56	-568.93	-553.65	0.00	0.00	0.00
4,000.00	13.79	229.00	3,910.42	-510.20	-586.92	-571.16	0.00	0.00	0.00
4,100.00	13.79	229.00	4,007.54	-525.84	-604.91	-588.66	0.00	0.00	0.00
4,174.61	13.79	229.00	4,080.00	-537.51	-618.33	-601.73	0.00	0.00	0.00
Sussex									

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	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)
4,200.00	13.79	229.00	4,104.66	-541.48	-622.90	-606.17	0.00	0.00	0.00
4,300.00	13.79	229.00	4,201.78	-557.12	-640.89	-623.68	0.00	0.00	0.00
4,400.00	13.79	229.00	4,298.89	-572.75	-658.88	-641.18	0.00	0.00	0.00
4,500.00	13.79	229.00	4,396.01	-588.39	-676.87	-658.69	0.00	0.00	0.00
4,600.00	13.79	229.00	4,493.13	-604.03	-694.86	-676.20	0.00	0.00	0.00
4,700.00	13.79	229.00	4,590.25	-619.67	-712.85	-693.70	0.00	0.00	0.00
4,800.00	13.79	229.00	4,687.36	-635.31	-730.84	-711.21	0.00	0.00	0.00
4,900.00	13.79	229.00	4,784.48	-650.95	-748.83	-728.72	0.00	0.00	0.00
5,000.00	13.79	229.00	4,881.60	-666.58	-766.82	-746.22	0.00	0.00	0.00
5,100.00	13.79	229.00	4,978.72	-682.22	-784.81	-763.73	0.00	0.00	0.00
5,200.00	13.79	229.00	5,075.83	-697.86	-802.80	-781.24	0.00	0.00	0.00
5,300.00	13.79	229.00	5,172.95	-713.50	-820.79	-798.74	0.00	0.00	0.00
5,400.00	13.79	229.00	5,270.07	-729.14	-838.77	-816.25	0.00	0.00	0.00
5,500.00	13.79	229.00	5,367.19	-744.77	-856.76	-833.75	0.00	0.00	0.00
5,600.00	13.79	229.00	5,464.30	-760.41	-874.75	-851.26	0.00	0.00	0.00
5,700.00	13.79	229.00	5,561.42	-776.05	-892.74	-868.77	0.00	0.00	0.00
5,800.00	13.79	229.00	5,658.54	-791.69	-910.73	-886.27	0.00	0.00	0.00
5,900.00	13.79	229.00	5,755.66	-807.33	-928.72	-903.78	0.00	0.00	0.00
6,000.00	13.79	229.00	5,852.78	-822.96	-946.71	-921.29	0.00	0.00	0.00
6,100.00	13.79	229.00	5,949.89	-838.60	-964.70	-938.79	0.00	0.00	0.00
6,200.00	13.79	229.00	6,047.01	-854.24	-982.69	-956.30	0.00	0.00	0.00
6,300.00	13.79	229.00	6,144.13	-869.88	-1,000.68	-973.81	0.00	0.00	0.00
6,400.00	13.79	229.00	6,241.25	-885.52	-1,018.67	-991.31	0.00	0.00	0.00
6,499.26	13.79	229.00	6,337.64	-901.04	-1,036.53	-1,008.69	0.00	0.00	0.00
KOP @ 6499.26ft :: DLS = 8°/100'									
6,550.00	11.19	214.47	6,387.19	-909.07	-1,043.88	-1,015.80	8.00	-5.12	-28.64
6,600.00	9.65	193.89	6,436.38	-917.14	-1,047.63	-1,019.30	8.00	-3.07	-41.15
6,650.00	9.64	169.85	6,485.70	-925.34	-1,047.90	-1,019.32	8.00	-0.03	-48.09
6,700.00	11.15	149.15	6,534.89	-933.61	-1,044.69	-1,015.86	8.00	3.02	-41.39
6,750.00	13.69	134.67	6,583.73	-941.92	-1,038.00	-1,008.92	8.00	5.08	-28.96
6,800.00	16.80	125.04	6,631.97	-950.23	-1,027.87	-998.55	8.00	6.22	-19.26
6,850.00	20.22	118.47	6,679.38	-958.50	-1,014.36	-984.79	8.00	6.84	-13.16
6,900.00	23.81	113.76	6,725.74	-966.69	-997.52	-967.71	8.00	7.19	-9.41
6,950.00	27.51	110.24	6,770.80	-974.75	-977.44	-947.39	8.00	7.40	-7.03
7,000.00	31.28	107.51	6,814.36	-982.66	-954.22	-923.94	8.00	7.54	-5.47
7,031.58	33.68	106.07	6,841.00	-987.55	-937.98	-907.56	8.00	7.62	-4.55
Sharon Springs									
7,050.00	35.09	105.31	6,856.20	-990.36	-927.97	-897.47	8.00	7.66	-4.11
7,068.25	36.50	104.61	6,871.00	-993.12	-917.66	-887.08	8.00	7.68	-3.84
Niobrara									
7,100.00	38.94	103.50	6,896.11	-997.83	-898.82	-868.10	8.00	7.71	-3.51
7,150.00	42.81	101.97	6,933.91	-1,005.02	-866.90	-835.99	8.00	7.74	-3.07
7,200.00	46.70	100.64	6,969.41	-1,011.91	-832.38	-801.27	8.00	7.78	-2.65
7,250.00	50.61	99.48	7,002.43	-1,018.45	-795.43	-764.14	8.00	7.81	-2.33
7,283.34	53.22	98.77	7,023.00	-1,022.61	-769.52	-738.11	8.00	7.82	-2.12
Nio B									
7,300.00	54.52	98.43	7,032.82	-1,024.62	-756.22	-724.76	8.00	7.83	-2.01
7,339.75	57.64	97.68	7,055.00	-1,029.24	-723.56	-691.98	8.00	7.84	-1.91
Nio C									
7,350.00	58.44	97.49	7,060.43	-1,030.39	-714.94	-683.33	8.00	7.85	-1.82
7,400.00	62.37	96.62	7,085.11	-1,035.72	-671.80	-640.04	8.00	7.86	-1.74
7,450.00	66.30	95.81	7,106.76	-1,040.59	-627.01	-595.12	8.00	7.87	-1.62
7,500.00	70.24	95.05	7,125.27	-1,044.99	-580.78	-548.78	8.00	7.87	-1.52

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	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)	
7,550.00	74.18	94.33	7,140.54	-1,048.88	-533.34	-501.24	8.00	7.88	-1.45	
7,600.00	78.12	93.63	7,152.50	-1,052.24	-484.92	-452.74	8.00	7.89	-1.39	
7,623.68	79.99	93.31	7,157.00	-1,053.65	-461.71	-429.50	8.00	7.89	-1.36	
Fort Hayes										
7,650.00	82.07	92.96	7,161.10	-1,055.07	-435.75	-403.52	8.00	7.89	-1.34	
7,700.00	86.01	92.29	7,166.29	-1,057.35	-386.09	-353.80	8.00	7.89	-1.33	
7,742.25	89.35	91.74	7,168.00	-1,058.84	-343.91	-311.60	8.00	7.89	-1.31	
End Build @ 7742.25ft										
7,800.00	89.35	91.74	7,168.66	-1,060.59	-286.18	-253.85	0.00	0.00	0.00	
7,900.00	89.35	91.74	7,169.80	-1,063.62	-186.24	-153.85	0.00	0.00	0.00	
8,000.00	89.35	91.74	7,170.94	-1,066.66	-86.29	-53.86	0.00	0.00	0.00	
8,100.00	89.35	91.74	7,172.08	-1,069.69	13.66	46.13	0.00	0.00	0.00	
8,200.00	89.35	91.74	7,173.22	-1,072.72	113.61	146.13	0.00	0.00	0.00	
8,300.00	89.35	91.74	7,174.35	-1,075.76	213.55	246.12	0.00	0.00	0.00	
8,400.00	89.35	91.74	7,175.49	-1,078.79	313.50	346.11	0.00	0.00	0.00	
8,500.00	89.35	91.74	7,176.63	-1,081.83	413.45	446.11	0.00	0.00	0.00	
8,600.00	89.35	91.74	7,177.77	-1,084.86	513.40	546.10	0.00	0.00	0.00	
8,620.19	89.35	91.74	7,178.00	-1,085.47	533.58	566.29	0.00	0.00	0.00	
Codell										
8,700.00	89.35	91.74	7,178.91	-1,087.89	613.34	646.09	0.00	0.00	0.00	
8,800.00	89.35	91.74	7,180.05	-1,090.93	713.29	746.09	0.00	0.00	0.00	
8,900.00	89.35	91.74	7,181.19	-1,093.96	813.24	846.08	0.00	0.00	0.00	
9,000.00	89.35	91.74	7,182.33	-1,097.00	913.19	946.07	0.00	0.00	0.00	
9,100.00	89.35	91.74	7,183.46	-1,100.03	1,013.13	1,046.07	0.00	0.00	0.00	
9,200.00	89.35	91.74	7,184.60	-1,103.06	1,113.08	1,146.06	0.00	0.00	0.00	
9,300.00	89.35	91.74	7,185.74	-1,106.10	1,213.03	1,246.06	0.00	0.00	0.00	
9,400.00	89.35	91.74	7,186.88	-1,109.13	1,312.98	1,346.05	0.00	0.00	0.00	
9,500.00	89.35	91.74	7,188.02	-1,112.17	1,412.92	1,446.04	0.00	0.00	0.00	
9,600.00	89.35	91.74	7,189.16	-1,115.20	1,512.87	1,546.04	0.00	0.00	0.00	
9,700.00	89.35	91.74	7,190.30	-1,118.23	1,612.82	1,646.03	0.00	0.00	0.00	
9,800.00	89.35	91.74	7,191.44	-1,121.27	1,712.77	1,746.02	0.00	0.00	0.00	
9,900.00	89.35	91.74	7,192.57	-1,124.30	1,812.71	1,846.02	0.00	0.00	0.00	
10,000.00	89.35	91.74	7,193.71	-1,127.33	1,912.66	1,946.01	0.00	0.00	0.00	
10,100.00	89.35	91.74	7,194.85	-1,130.37	2,012.61	2,046.00	0.00	0.00	0.00	
10,200.00	89.35	91.74	7,195.99	-1,133.40	2,112.56	2,146.00	0.00	0.00	0.00	
10,300.00	89.35	91.74	7,197.13	-1,136.44	2,212.50	2,245.99	0.00	0.00	0.00	
10,400.00	89.35	91.74	7,198.27	-1,139.47	2,312.45	2,345.98	0.00	0.00	0.00	
10,500.00	89.35	91.74	7,199.41	-1,142.50	2,412.40	2,445.98	0.00	0.00	0.00	
10,600.00	89.35	91.74	7,200.55	-1,145.54	2,512.35	2,545.97	0.00	0.00	0.00	
10,700.00	89.35	91.74	7,201.68	-1,148.57	2,612.29	2,645.96	0.00	0.00	0.00	
10,800.00	89.35	91.74	7,202.82	-1,151.61	2,712.24	2,745.96	0.00	0.00	0.00	
10,900.00	89.35	91.74	7,203.96	-1,154.64	2,812.19	2,845.95	0.00	0.00	0.00	
11,000.00	89.35	91.74	7,205.10	-1,157.67	2,912.14	2,945.94	0.00	0.00	0.00	
11,100.00	89.35	91.74	7,206.24	-1,160.71	3,012.08	3,045.94	0.00	0.00	0.00	
11,200.00	89.35	91.74	7,207.38	-1,163.74	3,112.03	3,145.93	0.00	0.00	0.00	
11,300.00	89.35	91.74	7,208.52	-1,166.78	3,211.98	3,245.93	0.00	0.00	0.00	
11,400.00	89.35	91.74	7,209.66	-1,169.81	3,311.93	3,345.92	0.00	0.00	0.00	
11,500.00	89.35	91.74	7,210.79	-1,172.84	3,411.87	3,445.91	0.00	0.00	0.00	
11,600.00	89.35	91.74	7,211.93	-1,175.88	3,511.82	3,545.91	0.00	0.00	0.00	
11,700.00	89.35	91.74	7,213.07	-1,178.91	3,611.77	3,645.90	0.00	0.00	0.00	
11,800.00	89.35	91.74	7,214.21	-1,181.95	3,711.72	3,745.89	0.00	0.00	0.00	
11,900.00	89.35	91.74	7,215.35	-1,184.98	3,811.66	3,845.89	0.00	0.00	0.00	
12,000.00	89.35	91.74	7,216.49	-1,188.01	3,911.61	3,945.88	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	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)	
12,100.00	89.35	91.74	7,217.63	-1,191.05	4,011.56	4,045.87	0.00	0.00	0.00	
12,200.00	89.35	91.74	7,218.77	-1,194.08	4,111.51	4,145.87	0.00	0.00	0.00	
12,300.00	89.35	91.74	7,219.90	-1,197.12	4,211.45	4,245.86	0.00	0.00	0.00	
12,400.00	89.35	91.74	7,221.04	-1,200.15	4,311.40	4,345.85	0.00	0.00	0.00	
12,500.00	89.35	91.74	7,222.18	-1,203.18	4,411.35	4,445.85	0.00	0.00	0.00	
12,600.00	89.35	91.74	7,223.32	-1,206.22	4,511.30	4,545.84	0.00	0.00	0.00	
12,700.00	89.35	91.74	7,224.46	-1,209.25	4,611.24	4,645.83	0.00	0.00	0.00	
12,800.00	89.35	91.74	7,225.60	-1,212.29	4,711.19	4,745.83	0.00	0.00	0.00	
12,900.00	89.35	91.74	7,226.74	-1,215.32	4,811.14	4,845.82	0.00	0.00	0.00	
13,000.00	89.35	91.74	7,227.88	-1,218.35	4,911.09	4,945.82	0.00	0.00	0.00	
13,100.00	89.35	91.74	7,229.01	-1,221.39	5,011.03	5,045.81	0.00	0.00	0.00	
13,200.00	89.35	91.74	7,230.15	-1,224.42	5,110.98	5,145.80	0.00	0.00	0.00	
13,300.00	89.35	91.74	7,231.29	-1,227.46	5,210.93	5,245.80	0.00	0.00	0.00	
13,400.00	89.35	91.74	7,232.43	-1,230.49	5,310.88	5,345.79	0.00	0.00	0.00	
13,500.00	89.35	91.74	7,233.57	-1,233.52	5,410.82	5,445.78	0.00	0.00	0.00	
13,600.00	89.35	91.74	7,234.71	-1,236.56	5,510.77	5,545.78	0.00	0.00	0.00	
13,700.00	89.35	91.74	7,235.85	-1,239.59	5,610.72	5,645.77	0.00	0.00	0.00	
13,800.00	89.35	91.74	7,236.99	-1,242.63	5,710.67	5,745.76	0.00	0.00	0.00	
13,900.00	89.35	91.74	7,238.12	-1,245.66	5,810.61	5,845.76	0.00	0.00	0.00	
14,000.00	89.35	91.74	7,239.26	-1,248.69	5,910.56	5,945.75	0.00	0.00	0.00	
14,100.00	89.35	91.74	7,240.40	-1,251.73	6,010.51	6,045.74	0.00	0.00	0.00	
14,200.00	89.35	91.74	7,241.54	-1,254.76	6,110.46	6,145.74	0.00	0.00	0.00	
14,300.00	89.35	91.74	7,242.68	-1,257.80	6,210.40	6,245.73	0.00	0.00	0.00	
14,400.00	89.35	91.74	7,243.82	-1,260.83	6,310.35	6,345.72	0.00	0.00	0.00	
14,500.00	89.35	91.74	7,244.96	-1,263.86	6,410.30	6,445.72	0.00	0.00	0.00	
14,600.00	89.35	91.74	7,246.10	-1,266.90	6,510.25	6,545.71	0.00	0.00	0.00	
14,700.00	89.35	91.74	7,247.23	-1,269.93	6,610.19	6,645.71	0.00	0.00	0.00	
14,800.00	89.35	91.74	7,248.37	-1,272.97	6,710.14	6,745.70	0.00	0.00	0.00	
14,900.00	89.35	91.74	7,249.51	-1,276.00	6,810.09	6,845.69	0.00	0.00	0.00	
15,000.00	89.35	91.74	7,250.65	-1,279.03	6,910.04	6,945.69	0.00	0.00	0.00	
15,100.00	89.35	91.74	7,251.79	-1,282.07	7,009.98	7,045.68	0.00	0.00	0.00	
15,200.00	89.35	91.74	7,252.93	-1,285.10	7,109.93	7,145.67	0.00	0.00	0.00	
15,300.00	89.35	91.74	7,254.07	-1,288.14	7,209.88	7,245.67	0.00	0.00	0.00	
15,400.00	89.35	91.74	7,255.21	-1,291.17	7,309.83	7,345.66	0.00	0.00	0.00	
15,500.00	89.35	91.74	7,256.34	-1,294.20	7,409.77	7,445.65	0.00	0.00	0.00	
15,600.00	89.35	91.74	7,257.48	-1,297.24	7,509.72	7,545.65	0.00	0.00	0.00	
15,700.00	89.35	91.74	7,258.62	-1,300.27	7,609.67	7,645.64	0.00	0.00	0.00	
15,800.00	89.35	91.74	7,259.76	-1,303.31	7,709.61	7,745.63	0.00	0.00	0.00	
15,900.00	89.35	91.74	7,260.90	-1,306.34	7,809.56	7,845.63	0.00	0.00	0.00	
16,000.00	89.35	91.74	7,262.04	-1,309.37	7,909.51	7,945.62	0.00	0.00	0.00	
16,100.00	89.35	91.74	7,263.18	-1,312.41	8,009.46	8,045.61	0.00	0.00	0.00	
16,200.00	89.35	91.74	7,264.32	-1,315.44	8,109.40	8,145.61	0.00	0.00	0.00	
16,300.00	89.35	91.74	7,265.45	-1,318.48	8,209.35	8,245.60	0.00	0.00	0.00	
16,400.00	89.35	91.74	7,266.59	-1,321.51	8,309.30	8,345.59	0.00	0.00	0.00	
16,500.00	89.35	91.74	7,267.73	-1,324.54	8,409.25	8,445.59	0.00	0.00	0.00	
16,600.00	89.35	91.74	7,268.87	-1,327.58	8,509.19	8,545.58	0.00	0.00	0.00	
16,700.00	89.35	91.74	7,270.01	-1,330.61	8,609.14	8,645.58	0.00	0.00	0.00	
16,800.00	89.35	91.74	7,271.15	-1,333.64	8,709.09	8,745.57	0.00	0.00	0.00	
16,900.00	89.35	91.74	7,272.29	-1,336.68	8,809.04	8,845.56	0.00	0.00	0.00	
17,000.00	89.35	91.74	7,273.43	-1,339.71	8,908.98	8,945.56	0.00	0.00	0.00	
17,100.00	89.35	91.74	7,274.57	-1,342.75	9,008.93	9,045.55	0.00	0.00	0.00	
17,200.00	89.35	91.74	7,275.70	-1,345.78	9,108.88	9,145.54	0.00	0.00	0.00	
17,300.00	89.35	91.74	7,276.84	-1,348.81	9,208.83	9,245.54	0.00	0.00	0.00	
17,400.00	89.35	91.74	7,277.98	-1,351.85	9,308.77	9,345.53	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	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)
17,500.00	89.35	91.74	7,279.12	-1,354.88	9,408.72	9,445.52	0.00	0.00	0.00
17,600.00	89.35	91.74	7,280.26	-1,357.92	9,508.67	9,545.52	0.00	0.00	0.00
17,700.00	89.35	91.74	7,281.40	-1,360.95	9,608.62	9,645.51	0.00	0.00	0.00
17,800.00	89.35	91.74	7,282.54	-1,363.98	9,708.56	9,745.50	0.00	0.00	0.00
17,900.00	89.35	91.74	7,283.68	-1,367.02	9,808.51	9,845.50	0.00	0.00	0.00
18,000.00	89.35	91.74	7,284.81	-1,370.05	9,908.46	9,945.49	0.00	0.00	0.00
18,100.00	89.35	91.74	7,285.95	-1,373.09	10,008.41	10,045.48	0.00	0.00	0.00
18,200.00	89.35	91.74	7,287.09	-1,376.12	10,108.35	10,145.48	0.00	0.00	0.00
18,300.00	89.35	91.74	7,288.23	-1,379.15	10,208.30	10,245.47	0.00	0.00	0.00
18,400.00	89.35	91.74	7,289.37	-1,382.19	10,308.25	10,345.47	0.00	0.00	0.00
18,500.00	89.35	91.74	7,290.51	-1,385.22	10,408.20	10,445.46	0.00	0.00	0.00
18,600.00	89.35	91.74	7,291.65	-1,388.26	10,508.14	10,545.45	0.00	0.00	0.00
18,700.00	89.35	91.74	7,292.79	-1,391.29	10,608.09	10,645.45	0.00	0.00	0.00
18,800.00	89.35	91.74	7,293.92	-1,394.32	10,708.04	10,745.44	0.00	0.00	0.00
18,900.00	89.35	91.74	7,295.06	-1,397.36	10,807.99	10,845.43	0.00	0.00	0.00
19,000.00	89.35	91.74	7,296.20	-1,400.39	10,907.93	10,945.43	0.00	0.00	0.00
19,100.00	89.35	91.74	7,297.34	-1,403.43	11,007.88	11,045.42	0.00	0.00	0.00
19,200.00	89.35	91.74	7,298.48	-1,406.46	11,107.83	11,145.41	0.00	0.00	0.00
19,300.00	89.35	91.74	7,299.62	-1,409.49	11,207.78	11,245.41	0.00	0.00	0.00
19,400.00	89.35	91.74	7,300.76	-1,412.53	11,307.72	11,345.40	0.00	0.00	0.00
19,500.00	89.35	91.74	7,301.90	-1,415.56	11,407.67	11,445.39	0.00	0.00	0.00
19,600.00	89.35	91.74	7,303.03	-1,418.60	11,507.62	11,545.39	0.00	0.00	0.00
19,700.00	89.35	91.74	7,304.17	-1,421.63	11,607.57	11,645.38	0.00	0.00	0.00
19,800.00	89.35	91.74	7,305.31	-1,424.66	11,707.51	11,745.37	0.00	0.00	0.00
19,900.00	89.35	91.74	7,306.45	-1,427.70	11,807.46	11,845.37	0.00	0.00	0.00
20,000.00	89.35	91.74	7,307.59	-1,430.73	11,907.41	11,945.36	0.00	0.00	0.00
20,100.00	89.35	91.74	7,308.73	-1,433.77	12,007.36	12,045.36	0.00	0.00	0.00
20,200.00	89.35	91.74	7,309.87	-1,436.80	12,107.30	12,145.35	0.00	0.00	0.00
20,300.00	89.35	91.74	7,311.01	-1,439.83	12,207.25	12,245.34	0.00	0.00	0.00
20,400.00	89.35	91.74	7,312.14	-1,442.87	12,307.20	12,345.34	0.00	0.00	0.00
20,500.00	89.35	91.74	7,313.28	-1,445.90	12,407.15	12,445.33	0.00	0.00	0.00
20,600.00	89.35	91.74	7,314.42	-1,448.94	12,507.09	12,545.32	0.00	0.00	0.00
20,700.00	89.35	91.74	7,315.56	-1,451.97	12,607.04	12,645.32	0.00	0.00	0.00
20,800.00	89.35	91.74	7,316.70	-1,455.00	12,706.99	12,745.31	0.00	0.00	0.00
20,900.00	89.35	91.74	7,317.84	-1,458.04	12,806.94	12,845.30	0.00	0.00	0.00
21,000.00	89.35	91.74	7,318.98	-1,461.07	12,906.88	12,945.30	0.00	0.00	0.00
21,100.00	89.35	91.74	7,320.12	-1,464.11	13,006.83	13,045.29	0.00	0.00	0.00
21,200.00	89.35	91.74	7,321.25	-1,467.14	13,106.78	13,145.28	0.00	0.00	0.00
21,300.00	89.35	91.74	7,322.39	-1,470.17	13,206.73	13,245.28	0.00	0.00	0.00
21,400.00	89.35	91.74	7,323.53	-1,473.21	13,306.67	13,345.27	0.00	0.00	0.00
21,500.00	89.35	91.74	7,324.67	-1,476.24	13,406.62	13,445.26	0.00	0.00	0.00
21,600.00	89.35	91.74	7,325.81	-1,479.28	13,506.57	13,545.26	0.00	0.00	0.00
21,700.00	89.35	91.74	7,326.95	-1,482.31	13,606.52	13,645.25	0.00	0.00	0.00
21,800.00	89.35	91.74	7,328.09	-1,485.34	13,706.46	13,745.24	0.00	0.00	0.00
21,900.00	89.35	91.74	7,329.23	-1,488.38	13,806.41	13,845.24	0.00	0.00	0.00
22,000.00	89.35	91.74	7,330.36	-1,491.41	13,906.36	13,945.23	0.00	0.00	0.00
22,100.00	89.35	91.74	7,331.50	-1,494.45	14,006.31	14,045.23	0.00	0.00	0.00
22,200.00	89.35	91.74	7,332.64	-1,497.48	14,106.25	14,145.22	0.00	0.00	0.00
22,300.00	89.35	91.74	7,333.78	-1,500.51	14,206.20	14,245.21	0.00	0.00	0.00
22,319.27	89.35	91.74	7,334.00	-1,501.10	14,225.46	14,264.48	0.00	0.00	0.00
TD Well @ 22319.27ft									

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-13HZ
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 4-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan B		
Design:	Permit Rev-1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,518.04	1,500.00	9 5/8"	9-5/8	13-1/2	
22,319.27	7,334.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
707.89	707.00	Fox Hills				
3,678.30	3,598.00	Parkman				
4,174.61	4,080.00	Sussex				
7,031.58	6,841.00	Sharon Springs				
7,068.25	6,871.00	Niobrara				
7,283.34	7,023.00	Nio B				
7,339.75	7,055.00	Nio C				
7,623.68	7,157.00	Fort Hayes				
8,620.19	7,178.00	Codell				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
280.00	280.00	0.00	0.00	Begin Nudge @ 280.00ft	
1,199.33	1,190.48	-72.23	-83.09	Hold Tangent @ 1199.33ft	
6,499.26	6,337.64	-901.04	-1,036.53	KOP @ 6499.26ft :: DLS = 8°/100'	
7,742.25	7,168.00	-1,058.84	-343.91	End Build @ 7742.25ft	
22,319.27	7,334.00	-1,501.10	14,225.46	TD Well @ 22319.27ft	