

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-9HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

16 December, 2021

US ROCKIES WATTENBERG PLANNING

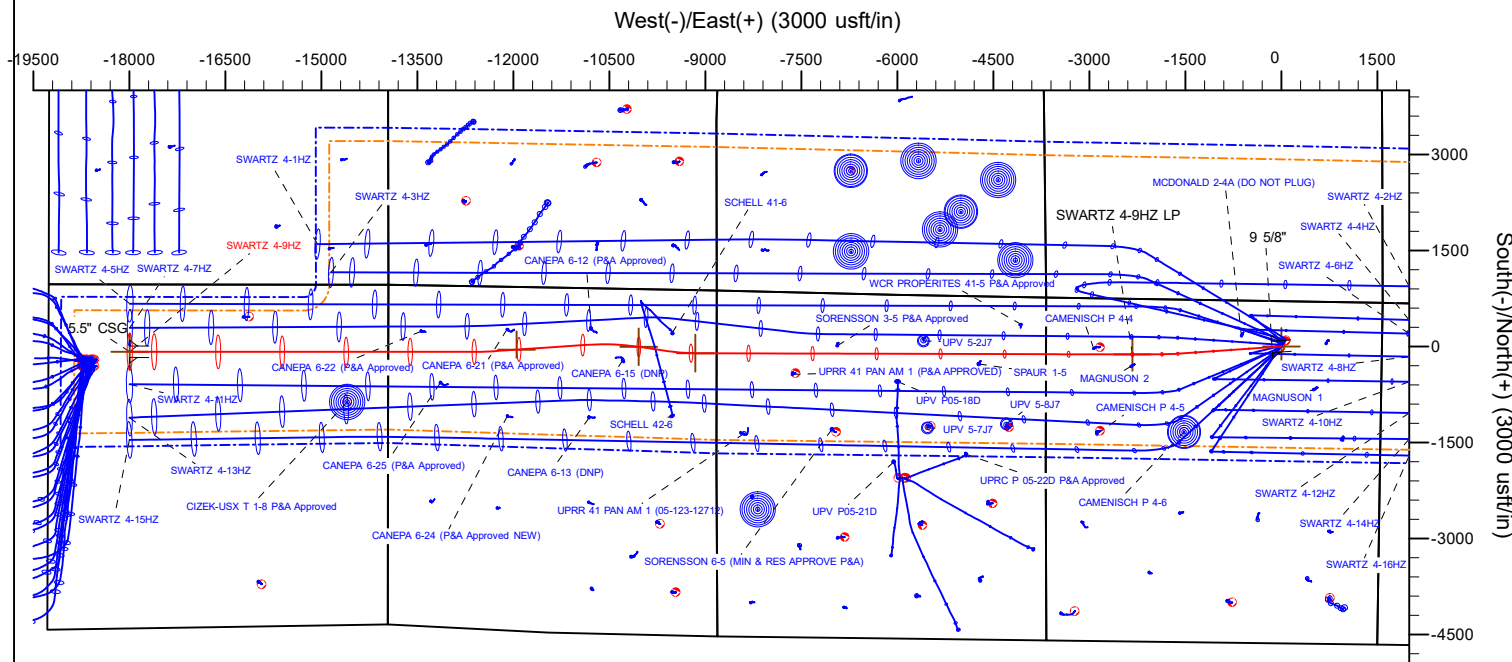
CASING DETAILS			
TVD	MD	Name	Size
1500.00	1513.57	9 5/8"	9-5/8
7162.00	23482.53	5.5" CSG	5-1/2



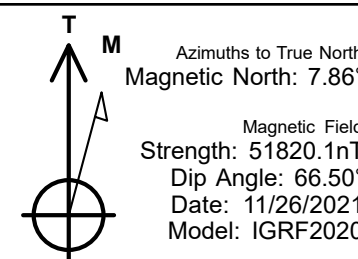
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
453.00	0.00	0.00	453.00	0.00	0.00	0.00	0.00	0.00	
1532.33	16.19	265.96	1518.03	-10.67	-151.10	1.50	265.96	151.08	
6880.48	16.19	265.96	6654.08	-115.73	-1638.59	0.00	0.00	1638.28	
7804.07	90.03	270.15	7171.00	-124.90	-2326.98	8.00	4.36	2326.64	
14633.02	90.03	270.15	7167.08	-106.97	-9155.90	0.00	0.00	9155.59	SWARTZ 4-9HZ_Lat Tgt
15042.72	90.03	278.34	7166.85	-76.65	-9564.12	2.00	90.00	9563.89	
15522.68	90.03	278.34	7166.58	-7.00	-10039.00	0.00	0.00	10038.95	SWARTZ 4-9HZ_Lat Tgt 2
16338.83	90.03	266.10	7166.11	24.60	-10852.99	1.50	-89.99	10853.01	
17436.24	90.03	266.10	7165.48	-50.00	-11947.86	0.00	0.00	11947.69	SWARTZ 4-9HZ_Lat Tgt 3
17836.24	90.03	266.10	7165.25	-77.19	-12346.94	0.00	0.00	12346.69	
18097.68	90.03	270.02	7165.10	-86.03	-12608.17	1.50	90.00	12607.90	
23482.53	90.03	270.02	7162.00	-83.81	-17993.03	0.00	0.00	17992.74	SWARTZ 4-9HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	Northing	Easting	Latitude	Longitude
SWARTZ 4-9HZ_SHL	0.00	14621505.79	1670630.91	40.260207	-104.891699
SWARTZ 4-9HZ_LP	7171.00	14621378.05	1668304.08	40.259863	-104.900040
SWARTZ 4-9HZ_BHL	7162.00	14621400.00	1652638.00	40.259958	-104.956194

WELL DETAILS: SWARTZ 4-9HZ	
GL = 4825'	
RKB = 17' @ 4842.00usft (R/G)	
Plan: Permit Rev-1 (SWARTZ 4-9HZ/Plan A)	
Date:	12/16/2021



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
707.00	707.19	Fox Hills
3598.00	3698.20	Parkman
4080.00	4200.10	Sussex
6841.00	7086.46	Sharon Springs
6871.00	7122.69	Niobrara
7023.00	7334.85	Nio B
7055.00	7390.27	Nio C
7157.00	7661.80	Fort Hayes



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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	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 4-9HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,621,505.79 usft	Latitude:	40.260207
	+E/-W	0.00 usft	Easting:	1,670,630.91 usft	Longitude:	-104.891700
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	51,820.11967900

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	270.15	

Plan Survey Tool Program	Date	12/15/2021			
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	23,482.53	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+I	
				Fixed:v2:Rockies, crustal dec +	

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4842.00usft (RIG)
Site:	3N-67W-04 SWARTZ 2-4HZ PAD	North Reference:	True
Well:	SWARTZ 4-9HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
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	
453.00	0.00	0.00	453.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,532.33	16.19	265.96	1,518.03	-10.67	-151.10	1.50	1.50	0.00	265.96	
6,880.48	16.19	265.96	6,654.08	-115.73	-1,638.59	0.00	0.00	0.00	0.00	
7,804.07	90.03	270.15	7,171.00	-124.90	-2,326.98	8.00	8.00	0.45	4.36	
14,633.02	90.03	270.15	7,167.08	-106.97	-9,155.90	0.00	0.00	0.00	0.00	SWARTZ 4-9HZ_Lat`
15,042.72	90.03	278.34	7,166.85	-76.65	-9,564.12	2.00	0.00	2.00	90.00	
15,522.68	90.03	278.34	7,166.58	-7.00	-10,039.00	0.00	0.00	0.00	0.00	SWARTZ 4-9HZ_Lat`
16,338.83	90.03	266.10	7,166.11	24.60	-10,852.99	1.50	0.00	-1.50	-89.99	
17,436.24	90.03	266.10	7,165.48	-50.00	-11,947.86	0.00	0.00	0.00	0.00	SWARTZ 4-9HZ_Lat`
17,836.24	90.03	266.10	7,165.25	-77.19	-12,346.94	0.00	0.00	0.00	0.00	
18,097.68	90.03	270.02	7,165.10	-86.03	-12,608.17	1.50	0.00	1.50	90.00	
23,482.53	90.03	270.02	7,162.00	-83.81	-17,993.03	0.00	0.00	0.00	0.00	SWARTZ 4-9HZ_BHL

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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)
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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
453.00	0.00	0.00	453.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 453.00ft									
500.00	0.71	265.96	500.00	-0.02	-0.29	0.29	1.50	1.50	0.00
600.00	2.21	265.96	599.96	-0.20	-2.82	2.82	1.50	1.50	0.00
700.00	3.71	265.96	699.83	-0.56	-7.96	7.96	1.50	1.50	0.00
707.19	3.81	265.96	707.00	-0.60	-8.43	8.43	1.50	1.50	0.00
Fox Hills									
800.00	5.21	265.96	799.52	-1.11	-15.71	15.71	1.50	1.50	0.00
900.00	6.71	265.96	898.98	-1.84	-26.06	26.06	1.50	1.50	0.00
1,000.00	8.21	265.96	998.13	-2.75	-39.00	38.99	1.50	1.50	0.00
1,100.00	9.71	265.96	1,096.91	-3.85	-54.53	54.52	1.50	1.50	0.00
1,200.00	11.21	265.96	1,195.25	-5.13	-72.63	72.62	1.50	1.50	0.00
1,300.00	12.71	265.96	1,293.08	-6.59	-93.29	93.27	1.50	1.50	0.00
1,400.00	14.21	265.96	1,390.33	-8.23	-116.50	116.48	1.50	1.50	0.00
1,500.00	15.71	265.96	1,486.94	-10.05	-142.24	142.22	1.50	1.50	0.00
1,513.57	15.91	265.96	1,500.00	-10.31	-145.93	145.90	1.50	1.50	0.00
9 5/8"									
1,532.33	16.19	265.96	1,518.03	-10.67	-151.10	151.08	1.50	1.50	0.00
Hold Tangent @ 1532.33ft									
1,600.00	16.19	265.96	1,583.01	-12.00	-169.92	169.89	0.00	0.00	0.00
1,700.00	16.19	265.96	1,679.04	-13.97	-197.74	197.70	0.00	0.00	0.00
1,800.00	16.19	265.96	1,775.08	-15.93	-225.55	225.51	0.00	0.00	0.00
1,900.00	16.19	265.96	1,871.11	-17.89	-253.36	253.32	0.00	0.00	0.00
2,000.00	16.19	265.96	1,967.15	-19.86	-281.18	281.12	0.00	0.00	0.00
2,100.00	16.19	265.96	2,063.18	-21.82	-308.99	308.93	0.00	0.00	0.00
2,200.00	16.19	265.96	2,159.22	-23.79	-336.80	336.74	0.00	0.00	0.00
2,300.00	16.19	265.96	2,255.25	-25.75	-364.62	364.55	0.00	0.00	0.00
2,400.00	16.19	265.96	2,351.28	-27.72	-392.43	392.36	0.00	0.00	0.00
2,500.00	16.19	265.96	2,447.32	-29.68	-420.24	420.16	0.00	0.00	0.00
2,600.00	16.19	265.96	2,543.35	-31.65	-448.06	447.97	0.00	0.00	0.00
2,700.00	16.19	265.96	2,639.39	-33.61	-475.87	475.78	0.00	0.00	0.00
2,800.00	16.19	265.96	2,735.42	-35.57	-503.68	503.59	0.00	0.00	0.00
2,900.00	16.19	265.96	2,831.46	-37.54	-531.49	531.39	0.00	0.00	0.00
3,000.00	16.19	265.96	2,927.49	-39.50	-559.31	559.20	0.00	0.00	0.00
3,100.00	16.19	265.96	3,023.52	-41.47	-587.12	587.01	0.00	0.00	0.00
3,200.00	16.19	265.96	3,119.56	-43.43	-614.93	614.82	0.00	0.00	0.00
3,300.00	16.19	265.96	3,215.59	-45.40	-642.75	642.63	0.00	0.00	0.00
3,400.00	16.19	265.96	3,311.63	-47.36	-670.56	670.43	0.00	0.00	0.00
3,500.00	16.19	265.96	3,407.66	-49.32	-698.37	698.24	0.00	0.00	0.00
3,600.00	16.19	265.96	3,503.70	-51.29	-726.19	726.05	0.00	0.00	0.00
3,698.20	16.19	265.96	3,598.00	-53.22	-753.50	753.36	0.00	0.00	0.00
Parkman									
3,700.00	16.19	265.96	3,599.73	-53.25	-754.00	753.86	0.00	0.00	0.00
3,800.00	16.19	265.96	3,695.76	-55.22	-781.81	781.66	0.00	0.00	0.00
3,900.00	16.19	265.96	3,791.80	-57.18	-809.63	809.47	0.00	0.00	0.00
4,000.00	16.19	265.96	3,887.83	-59.15	-837.44	837.28	0.00	0.00	0.00
4,100.00	16.19	265.96	3,983.87	-61.11	-865.25	865.09	0.00	0.00	0.00
4,200.00	16.19	265.96	4,079.90	-63.08	-893.06	892.90	0.00	0.00	0.00
4,200.10	16.19	265.96	4,080.00	-63.08	-893.09	892.93	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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)
Sussex									
4,300.00	16.19	265.96	4,175.93	-65.04	-920.88	920.70	0.00	0.00	0.00
4,400.00	16.19	265.96	4,271.97	-67.00	-948.69	948.51	0.00	0.00	0.00
4,500.00	16.19	265.96	4,368.00	-68.97	-976.50	976.32	0.00	0.00	0.00
4,600.00	16.19	265.96	4,464.04	-70.93	-1,004.32	1,004.13	0.00	0.00	0.00
4,700.00	16.19	265.96	4,560.07	-72.90	-1,032.13	1,031.94	0.00	0.00	0.00
4,800.00	16.19	265.96	4,656.11	-74.86	-1,059.94	1,059.74	0.00	0.00	0.00
4,900.00	16.19	265.96	4,752.14	-76.83	-1,087.76	1,087.55	0.00	0.00	0.00
5,000.00	16.19	265.96	4,848.17	-78.79	-1,115.57	1,115.36	0.00	0.00	0.00
5,100.00	16.19	265.96	4,944.21	-80.76	-1,143.38	1,143.17	0.00	0.00	0.00
5,200.00	16.19	265.96	5,040.24	-82.72	-1,171.20	1,170.97	0.00	0.00	0.00
5,300.00	16.19	265.96	5,136.28	-84.68	-1,199.01	1,198.78	0.00	0.00	0.00
5,400.00	16.19	265.96	5,232.31	-86.65	-1,226.82	1,226.59	0.00	0.00	0.00
5,500.00	16.19	265.96	5,328.35	-88.61	-1,254.63	1,254.40	0.00	0.00	0.00
5,600.00	16.19	265.96	5,424.38	-90.58	-1,282.45	1,282.21	0.00	0.00	0.00
5,700.00	16.19	265.96	5,520.41	-92.54	-1,310.26	1,310.01	0.00	0.00	0.00
5,800.00	16.19	265.96	5,616.45	-94.51	-1,338.07	1,337.82	0.00	0.00	0.00
5,900.00	16.19	265.96	5,712.48	-96.47	-1,365.89	1,365.63	0.00	0.00	0.00
6,000.00	16.19	265.96	5,808.52	-98.43	-1,393.70	1,393.44	0.00	0.00	0.00
6,100.00	16.19	265.96	5,904.55	-100.40	-1,421.51	1,421.25	0.00	0.00	0.00
6,200.00	16.19	265.96	6,000.59	-102.36	-1,449.33	1,449.05	0.00	0.00	0.00
6,300.00	16.19	265.96	6,096.62	-104.33	-1,477.14	1,476.86	0.00	0.00	0.00
6,400.00	16.19	265.96	6,192.65	-106.29	-1,504.95	1,504.67	0.00	0.00	0.00
6,500.00	16.19	265.96	6,288.69	-108.26	-1,532.77	1,532.48	0.00	0.00	0.00
6,600.00	16.19	265.96	6,384.72	-110.22	-1,560.58	1,560.28	0.00	0.00	0.00
6,700.00	16.19	265.96	6,480.76	-112.19	-1,588.39	1,588.09	0.00	0.00	0.00
6,800.00	16.19	265.96	6,576.79	-114.15	-1,616.20	1,615.90	0.00	0.00	0.00
6,880.48	16.19	265.96	6,654.08	-115.73	-1,638.59	1,638.28	0.00	0.00	0.00
KOP @ 6880.48ft ::DS = 8°/100'									
6,900.00	17.75	266.35	6,672.75	-116.11	-1,644.27	1,643.96	8.00	7.98	2.00
6,950.00	21.74	267.10	6,719.80	-117.07	-1,661.13	1,660.82	8.00	7.98	1.50
7,000.00	25.73	267.63	6,765.56	-117.98	-1,681.23	1,680.92	8.00	7.99	1.05
7,050.00	29.73	268.02	6,809.81	-118.86	-1,704.48	1,704.16	8.00	7.99	0.79
7,086.46	32.64	268.25	6,841.00	-119.47	-1,723.35	1,723.03	8.00	7.99	0.63
Sharon Springs									
7,100.00	33.73	268.33	6,852.33	-119.70	-1,730.75	1,730.44	8.00	7.99	0.57
7,122.69	35.54	268.45	6,871.00	-120.06	-1,743.65	1,743.33	8.00	7.99	0.53
Niobrara									
7,150.00	37.72	268.58	6,892.91	-120.48	-1,759.93	1,759.61	8.00	7.99	0.48
7,200.00	41.72	268.79	6,931.36	-121.21	-1,791.87	1,791.55	8.00	8.00	0.42
7,250.00	45.72	268.96	6,967.49	-121.89	-1,826.42	1,826.09	8.00	8.00	0.36
7,300.00	49.72	269.12	7,001.12	-122.50	-1,863.40	1,863.07	8.00	8.00	0.31
7,334.85	52.51	269.22	7,023.00	-122.90	-1,890.52	1,890.19	8.00	8.00	0.28
Nio B									
7,350.00	53.72	269.26	7,032.09	-123.06	-1,902.63	1,902.30	8.00	8.00	0.27
7,390.27	56.94	269.36	7,055.00	-123.46	-1,935.75	1,935.42	8.00	8.00	0.25
Nio C									
7,400.00	57.72	269.38	7,060.25	-123.55	-1,943.93	1,943.60	8.00	8.00	0.24
7,450.00	61.71	269.50	7,085.46	-123.97	-1,987.10	1,986.77	8.00	8.00	0.23
7,500.00	65.71	269.60	7,107.60	-124.32	-2,031.92	2,031.58	8.00	8.00	0.21
7,550.00	69.71	269.70	7,126.56	-124.60	-2,078.17	2,077.84	8.00	8.00	0.20
7,600.00	73.71	269.79	7,142.25	-124.81	-2,125.64	2,125.30	8.00	8.00	0.19
7,650.00	77.71	269.88	7,154.58	-124.95	-2,174.08	2,173.74	8.00	8.00	0.18

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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)
7,661.80	78.65	269.91	7,157.00	-124.97	-2,185.63	2,185.29	8.00	8.00	0.18
Fort Hayes									
7,700.00	81.71	269.97	7,163.51	-125.01	-2,223.26	2,222.93	8.00	8.00	0.17
7,750.00	85.71	270.06	7,168.99	-125.00	-2,272.95	2,272.62	8.00	8.00	0.17
7,804.07	90.03	270.15	7,171.00	-124.90	-2,326.98	2,326.64	8.00	8.00	0.17
End Build @ 7804.07ft									
7,900.00	90.03	270.15	7,170.95	-124.65	-2,422.90	2,422.57	0.00	0.00	0.00
8,000.00	90.03	270.15	7,170.89	-124.38	-2,522.90	2,522.57	0.00	0.00	0.00
8,100.00	90.03	270.15	7,170.83	-124.12	-2,622.90	2,622.57	0.00	0.00	0.00
8,200.00	90.03	270.15	7,170.77	-123.86	-2,722.90	2,722.57	0.00	0.00	0.00
8,300.00	90.03	270.15	7,170.72	-123.60	-2,822.90	2,822.57	0.00	0.00	0.00
8,400.00	90.03	270.15	7,170.66	-123.33	-2,922.90	2,922.57	0.00	0.00	0.00
8,500.00	90.03	270.15	7,170.60	-123.07	-3,022.90	3,022.57	0.00	0.00	0.00
8,600.00	90.03	270.15	7,170.54	-122.81	-3,122.90	3,122.57	0.00	0.00	0.00
8,700.00	90.03	270.15	7,170.49	-122.55	-3,222.90	3,222.57	0.00	0.00	0.00
8,800.00	90.03	270.15	7,170.43	-122.28	-3,322.90	3,322.57	0.00	0.00	0.00
8,900.00	90.03	270.15	7,170.37	-122.02	-3,422.90	3,422.57	0.00	0.00	0.00
9,000.00	90.03	270.15	7,170.31	-121.76	-3,522.90	3,522.57	0.00	0.00	0.00
9,100.00	90.03	270.15	7,170.26	-121.49	-3,622.90	3,622.57	0.00	0.00	0.00
9,200.00	90.03	270.15	7,170.20	-121.23	-3,722.90	3,722.57	0.00	0.00	0.00
9,300.00	90.03	270.15	7,170.14	-120.97	-3,822.90	3,822.57	0.00	0.00	0.00
9,400.00	90.03	270.15	7,170.08	-120.71	-3,922.90	3,922.57	0.00	0.00	0.00
9,500.00	90.03	270.15	7,170.03	-120.44	-4,022.90	4,022.57	0.00	0.00	0.00
9,600.00	90.03	270.15	7,169.97	-120.18	-4,122.90	4,122.57	0.00	0.00	0.00
9,700.00	90.03	270.15	7,169.91	-119.92	-4,222.90	4,222.57	0.00	0.00	0.00
9,800.00	90.03	270.15	7,169.86	-119.66	-4,322.90	4,322.57	0.00	0.00	0.00
9,900.00	90.03	270.15	7,169.80	-119.39	-4,422.90	4,422.57	0.00	0.00	0.00
10,000.00	90.03	270.15	7,169.74	-119.13	-4,522.90	4,522.57	0.00	0.00	0.00
10,100.00	90.03	270.15	7,169.68	-118.87	-4,622.89	4,622.57	0.00	0.00	0.00
10,200.00	90.03	270.15	7,169.63	-118.61	-4,722.89	4,722.57	0.00	0.00	0.00
10,300.00	90.03	270.15	7,169.57	-118.34	-4,822.89	4,822.57	0.00	0.00	0.00
10,400.00	90.03	270.15	7,169.51	-118.08	-4,922.89	4,922.57	0.00	0.00	0.00
10,500.00	90.03	270.15	7,169.45	-117.82	-5,022.89	5,022.57	0.00	0.00	0.00
10,600.00	90.03	270.15	7,169.40	-117.56	-5,122.89	5,122.57	0.00	0.00	0.00
10,700.00	90.03	270.15	7,169.34	-117.29	-5,222.89	5,222.57	0.00	0.00	0.00
10,800.00	90.03	270.15	7,169.28	-117.03	-5,322.89	5,322.57	0.00	0.00	0.00
10,900.00	90.03	270.15	7,169.22	-116.77	-5,422.89	5,422.57	0.00	0.00	0.00
11,000.00	90.03	270.15	7,169.17	-116.51	-5,522.89	5,522.57	0.00	0.00	0.00
11,100.00	90.03	270.15	7,169.11	-116.24	-5,622.89	5,622.57	0.00	0.00	0.00
11,200.00	90.03	270.15	7,169.05	-115.98	-5,722.89	5,722.57	0.00	0.00	0.00
11,300.00	90.03	270.15	7,168.99	-115.72	-5,822.89	5,822.57	0.00	0.00	0.00
11,400.00	90.03	270.15	7,168.94	-115.46	-5,922.89	5,922.57	0.00	0.00	0.00
11,500.00	90.03	270.15	7,168.88	-115.19	-6,022.89	6,022.57	0.00	0.00	0.00
11,600.00	90.03	270.15	7,168.82	-114.93	-6,122.89	6,122.57	0.00	0.00	0.00
11,700.00	90.03	270.15	7,168.76	-114.67	-6,222.89	6,222.57	0.00	0.00	0.00
11,800.00	90.03	270.15	7,168.71	-114.41	-6,322.89	6,322.57	0.00	0.00	0.00
11,900.00	90.03	270.15	7,168.65	-114.14	-6,422.89	6,422.57	0.00	0.00	0.00
12,000.00	90.03	270.15	7,168.59	-113.88	-6,522.89	6,522.57	0.00	0.00	0.00
12,100.00	90.03	270.15	7,168.53	-113.62	-6,622.89	6,622.57	0.00	0.00	0.00
12,200.00	90.03	270.15	7,168.48	-113.36	-6,722.89	6,722.57	0.00	0.00	0.00
12,300.00	90.03	270.15	7,168.42	-113.09	-6,822.89	6,822.57	0.00	0.00	0.00
12,400.00	90.03	270.15	7,168.36	-112.83	-6,922.89	6,922.57	0.00	0.00	0.00
12,500.00	90.03	270.15	7,168.30	-112.57	-7,022.89	7,022.57	0.00	0.00	0.00
12,600.00	90.03	270.15	7,168.25	-112.31	-7,122.89	7,122.57	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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)
12,700.00	90.03	270.15	7,168.19	-112.04	-7,222.89	7,222.57	0.00	0.00	0.00
12,800.00	90.03	270.15	7,168.13	-111.78	-7,322.89	7,322.57	0.00	0.00	0.00
12,900.00	90.03	270.15	7,168.08	-111.52	-7,422.88	7,422.57	0.00	0.00	0.00
13,000.00	90.03	270.15	7,168.02	-111.26	-7,522.88	7,522.57	0.00	0.00	0.00
13,100.00	90.03	270.15	7,167.96	-110.99	-7,622.88	7,622.57	0.00	0.00	0.00
13,200.00	90.03	270.15	7,167.90	-110.73	-7,722.88	7,722.57	0.00	0.00	0.00
13,300.00	90.03	270.15	7,167.85	-110.47	-7,822.88	7,822.57	0.00	0.00	0.00
13,400.00	90.03	270.15	7,167.79	-110.21	-7,922.88	7,922.57	0.00	0.00	0.00
13,500.00	90.03	270.15	7,167.73	-109.94	-8,022.88	8,022.57	0.00	0.00	0.00
13,600.00	90.03	270.15	7,167.67	-109.68	-8,122.88	8,122.57	0.00	0.00	0.00
13,700.00	90.03	270.15	7,167.62	-109.42	-8,222.88	8,222.57	0.00	0.00	0.00
13,800.00	90.03	270.15	7,167.56	-109.16	-8,322.88	8,322.57	0.00	0.00	0.00
13,900.00	90.03	270.15	7,167.50	-108.89	-8,422.88	8,422.57	0.00	0.00	0.00
14,000.00	90.03	270.15	7,167.44	-108.63	-8,522.88	8,522.57	0.00	0.00	0.00
14,100.00	90.03	270.15	7,167.39	-108.37	-8,622.88	8,622.57	0.00	0.00	0.00
14,200.00	90.03	270.15	7,167.33	-108.11	-8,722.88	8,722.57	0.00	0.00	0.00
14,300.00	90.03	270.15	7,167.27	-107.84	-8,822.88	8,822.57	0.00	0.00	0.00
14,400.00	90.03	270.15	7,167.21	-107.58	-8,922.88	8,922.57	0.00	0.00	0.00
14,500.00	90.03	270.15	7,167.16	-107.32	-9,022.88	9,022.57	0.00	0.00	0.00
14,600.00	90.03	270.15	7,167.10	-107.06	-9,122.88	9,122.57	0.00	0.00	0.00
14,633.02	90.03	270.15	7,167.08	-106.97	-9,155.90	9,155.59	0.00	0.00	0.00
Begin Turn for AC @ 14633.02ft									
14,700.00	90.03	271.49	7,167.04	-106.01	-9,222.87	9,222.56	2.00	0.00	2.00
14,800.00	90.03	273.49	7,166.98	-101.67	-9,322.77	9,322.47	2.00	0.00	2.00
14,900.00	90.03	275.49	7,166.93	-93.84	-9,422.46	9,422.18	2.00	0.00	2.00
15,000.00	90.03	277.49	7,166.87	-82.54	-9,521.81	9,521.56	2.00	0.00	2.00
15,042.72	90.03	278.34	7,166.85	-76.65	-9,564.12	9,563.89	2.00	0.00	2.00
End Turn @ 15042.72ft									
15,100.00	90.03	278.34	7,166.82	-68.34	-9,620.80	9,620.59	0.00	0.00	0.00
15,200.00	90.03	278.34	7,166.76	-53.83	-9,719.74	9,719.57	0.00	0.00	0.00
15,300.00	90.03	278.34	7,166.70	-39.32	-9,818.68	9,818.54	0.00	0.00	0.00
15,400.00	90.03	278.34	7,166.65	-24.80	-9,917.62	9,917.52	0.00	0.00	0.00
15,500.00	90.03	278.34	7,166.59	-10.29	-10,016.56	10,016.50	0.00	0.00	0.00
15,522.68	90.03	278.34	7,166.58	-7.00	-10,039.00	10,038.95	0.00	0.00	0.00
Begin Turn for 3-D Spacing @ 15522.68ft									
15,600.00	90.03	277.18	7,166.54	3.45	-10,115.61	10,115.59	1.50	0.00	-1.50
15,700.00	90.03	275.68	7,166.48	14.65	-10,214.98	10,214.98	1.50	0.00	-1.50
15,800.00	90.03	274.18	7,166.42	23.25	-10,314.61	10,314.63	1.50	0.00	-1.50
15,900.00	90.03	272.68	7,166.37	29.24	-10,414.43	10,414.47	1.50	0.00	-1.50
16,000.00	90.03	271.18	7,166.31	32.62	-10,514.37	10,514.41	1.50	0.00	-1.50
16,100.00	90.03	269.68	7,166.25	33.38	-10,614.36	10,614.41	1.50	0.00	-1.50
16,200.00	90.03	268.18	7,166.19	31.52	-10,714.34	10,714.39	1.50	0.00	-1.50
16,300.00	90.03	266.68	7,166.14	27.04	-10,814.24	10,814.27	1.50	0.00	-1.50
16,338.83	90.03	266.10	7,166.11	24.60	-10,852.99	10,853.01	1.50	0.00	-1.50
End Turn @ 16338.83ft									
16,400.00	90.03	266.10	7,166.08	20.44	-10,914.02	10,914.03	0.00	0.00	0.00
16,500.00	90.03	266.10	7,166.02	13.64	-11,013.79	11,013.78	0.00	0.00	0.00
16,600.00	90.03	266.10	7,165.96	6.85	-11,113.56	11,113.53	0.00	0.00	0.00
16,700.00	90.03	266.10	7,165.91	0.05	-11,213.32	11,213.29	0.00	0.00	0.00
16,800.00	90.03	266.10	7,165.85	-6.75	-11,313.09	11,313.04	0.00	0.00	0.00
16,900.00	90.03	266.10	7,165.79	-13.55	-11,412.86	11,412.79	0.00	0.00	0.00
17,000.00	90.03	266.10	7,165.73	-20.34	-11,512.63	11,512.54	0.00	0.00	0.00
17,100.00	90.03	266.10	7,165.67	-27.14	-11,612.40	11,612.29	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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)
17,200.00	90.03	266.10	7,165.62	-33.94	-11,712.17	11,712.04	0.00	0.00	0.00
17,300.00	90.03	266.10	7,165.56	-40.74	-11,811.94	11,811.79	0.00	0.00	0.00
17,400.00	90.03	266.10	7,165.50	-47.54	-11,911.70	11,911.54	0.00	0.00	0.00
17,436.24	90.03	266.10	7,165.48	-50.00	-11,947.86	11,947.69	0.00	0.00	0.00
Hold @ 17436.24ft									
17,500.00	90.03	266.10	7,165.44	-54.33	-12,011.47	12,011.29	0.00	0.00	0.00
17,600.00	90.03	266.10	7,165.39	-61.13	-12,111.24	12,111.04	0.00	0.00	0.00
17,700.00	90.03	266.10	7,165.33	-67.93	-12,211.01	12,210.79	0.00	0.00	0.00
17,800.00	90.03	266.10	7,165.27	-74.73	-12,310.78	12,310.54	0.00	0.00	0.00
17,836.24	90.03	266.10	7,165.25	-77.19	-12,346.94	12,346.69	0.00	0.00	0.00
Begin Turn to BHL @ 17836.24ft									
17,900.00	90.03	267.06	7,165.21	-80.99	-12,410.58	12,410.33	1.50	0.00	1.50
18,000.00	90.03	268.56	7,165.15	-84.82	-12,510.50	12,510.24	1.50	0.00	1.50
18,097.68	90.03	270.02	7,165.10	-86.03	-12,608.17	12,607.90	1.50	0.00	1.50
End Turn @ 18097.68ft									
18,100.00	90.03	270.02	7,165.10	-86.03	-12,610.49	12,610.23	0.00	0.00	0.00
18,200.00	90.03	270.02	7,165.04	-85.99	-12,710.49	12,710.23	0.00	0.00	0.00
18,300.00	90.03	270.02	7,164.98	-85.94	-12,810.49	12,810.23	0.00	0.00	0.00
18,400.00	90.03	270.02	7,164.92	-85.90	-12,910.49	12,910.23	0.00	0.00	0.00
18,500.00	90.03	270.02	7,164.87	-85.86	-13,010.49	13,010.23	0.00	0.00	0.00
18,600.00	90.03	270.02	7,164.81	-85.82	-13,110.49	13,110.23	0.00	0.00	0.00
18,700.00	90.03	270.02	7,164.75	-85.78	-13,210.49	13,210.22	0.00	0.00	0.00
18,800.00	90.03	270.02	7,164.69	-85.74	-13,310.49	13,310.22	0.00	0.00	0.00
18,900.00	90.03	270.02	7,164.64	-85.70	-13,410.49	13,410.22	0.00	0.00	0.00
19,000.00	90.03	270.02	7,164.58	-85.66	-13,510.49	13,510.22	0.00	0.00	0.00
19,100.00	90.03	270.02	7,164.52	-85.61	-13,610.49	13,610.22	0.00	0.00	0.00
19,200.00	90.03	270.02	7,164.46	-85.57	-13,710.49	13,710.22	0.00	0.00	0.00
19,300.00	90.03	270.02	7,164.41	-85.53	-13,810.49	13,810.22	0.00	0.00	0.00
19,400.00	90.03	270.02	7,164.35	-85.49	-13,910.49	13,910.22	0.00	0.00	0.00
19,500.00	90.03	270.02	7,164.29	-85.45	-14,010.49	14,010.22	0.00	0.00	0.00
19,600.00	90.03	270.02	7,164.23	-85.41	-14,110.49	14,110.22	0.00	0.00	0.00
19,700.00	90.03	270.02	7,164.18	-85.37	-14,210.49	14,210.22	0.00	0.00	0.00
19,800.00	90.03	270.02	7,164.12	-85.33	-14,310.49	14,310.22	0.00	0.00	0.00
19,900.00	90.03	270.02	7,164.06	-85.28	-14,410.49	14,410.22	0.00	0.00	0.00
20,000.00	90.03	270.02	7,164.00	-85.24	-14,510.49	14,510.22	0.00	0.00	0.00
20,100.00	90.03	270.02	7,163.95	-85.20	-14,610.49	14,610.22	0.00	0.00	0.00
20,200.00	90.03	270.02	7,163.89	-85.16	-14,710.49	14,710.22	0.00	0.00	0.00
20,300.00	90.03	270.02	7,163.83	-85.12	-14,810.49	14,810.22	0.00	0.00	0.00
20,400.00	90.03	270.02	7,163.77	-85.08	-14,910.49	14,910.22	0.00	0.00	0.00
20,500.00	90.03	270.02	7,163.72	-85.04	-15,010.49	15,010.22	0.00	0.00	0.00
20,600.00	90.03	270.02	7,163.66	-85.00	-15,110.49	15,110.22	0.00	0.00	0.00
20,700.00	90.03	270.02	7,163.60	-84.96	-15,210.49	15,210.22	0.00	0.00	0.00
20,800.00	90.03	270.02	7,163.54	-84.91	-15,310.49	15,310.22	0.00	0.00	0.00
20,900.00	90.03	270.02	7,163.49	-84.87	-15,410.49	15,410.22	0.00	0.00	0.00
21,000.00	90.03	270.02	7,163.43	-84.83	-15,510.49	15,510.22	0.00	0.00	0.00
21,100.00	90.03	270.02	7,163.37	-84.79	-15,610.49	15,610.22	0.00	0.00	0.00
21,200.00	90.03	270.02	7,163.31	-84.75	-15,710.49	15,710.22	0.00	0.00	0.00
21,300.00	90.03	270.02	7,163.26	-84.71	-15,810.49	15,810.22	0.00	0.00	0.00
21,400.00	90.03	270.02	7,163.20	-84.67	-15,910.49	15,910.22	0.00	0.00	0.00
21,500.00	90.03	270.02	7,163.14	-84.63	-16,010.49	16,010.22	0.00	0.00	0.00
21,600.00	90.03	270.02	7,163.08	-84.58	-16,110.49	16,110.22	0.00	0.00	0.00
21,700.00	90.03	270.02	7,163.03	-84.54	-16,210.49	16,210.22	0.00	0.00	0.00
21,800.00	90.03	270.02	7,162.97	-84.50	-16,310.49	16,310.22	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-9HZ
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 4-9HZ	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)
21,900.00	90.03	270.02	7,162.91	-84.46	-16,410.49	16,410.22	0.00	0.00	0.00
22,000.00	90.03	270.02	7,162.85	-84.42	-16,510.49	16,510.22	0.00	0.00	0.00
22,100.00	90.03	270.02	7,162.80	-84.38	-16,610.49	16,610.22	0.00	0.00	0.00
22,200.00	90.03	270.02	7,162.74	-84.34	-16,710.49	16,710.22	0.00	0.00	0.00
22,300.00	90.03	270.02	7,162.68	-84.30	-16,810.49	16,810.22	0.00	0.00	0.00
22,400.00	90.03	270.02	7,162.62	-84.26	-16,910.49	16,910.22	0.00	0.00	0.00
22,500.00	90.03	270.02	7,162.57	-84.21	-17,010.49	17,010.22	0.00	0.00	0.00
22,600.00	90.03	270.02	7,162.51	-84.17	-17,110.49	17,110.21	0.00	0.00	0.00
22,700.00	90.03	270.02	7,162.45	-84.13	-17,210.49	17,210.21	0.00	0.00	0.00
22,800.00	90.03	270.02	7,162.39	-84.09	-17,310.49	17,310.21	0.00	0.00	0.00
22,900.00	90.03	270.02	7,162.34	-84.05	-17,410.49	17,410.21	0.00	0.00	0.00
23,000.00	90.03	270.02	7,162.28	-84.01	-17,510.49	17,510.21	0.00	0.00	0.00
23,100.00	90.03	270.02	7,162.22	-83.97	-17,610.49	17,610.21	0.00	0.00	0.00
23,200.00	90.03	270.02	7,162.16	-83.93	-17,710.49	17,710.21	0.00	0.00	0.00
23,300.00	90.03	270.02	7,162.11	-83.88	-17,810.49	17,810.21	0.00	0.00	0.00
23,400.00	90.03	270.02	7,162.05	-83.84	-17,910.49	17,910.21	0.00	0.00	0.00
23,482.53	90.03	270.02	7,162.00	-83.81	-17,993.02	17,992.74	0.00	0.00	0.00
TD Well @ 23482.53ft - 5.5" CSG									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,513.57	1,500.00	9 5/8"	9-5/8	13-1/2	
23,482.53	7,162.00	5.5" CSG	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
707.19	707.00	Fox Hills				
3,698.20	3,598.00	Parkman				
4,200.10	4,080.00	Sussex				
7,086.46	6,841.00	Sharon Springs				
7,122.69	6,871.00	Niobrara				
7,334.85	7,023.00	Nio B				
7,390.27	7,055.00	Nio C				
7,661.80	7,157.00	Fort Hayes				

Planning Report

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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 4-9HZ	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)	
453.00	453.00	0.00	0.00	Begin Nudge @ 453.00ft
1,532.33	1,518.03	-10.67	-151.10	Hold Tangent @ 1532.33ft
6,880.48	6,654.08	-115.73	-1,638.59	KOP @ 6880.48ft ::DS = 8"/100'
7,804.07	7,171.00	-124.90	-2,326.98	End Build @ 7804.07ft
14,633.02	7,167.08	-106.97	-9,155.90	Begin Turn for AC @ 14633.02ft
15,042.72	7,166.85	-76.65	-9,564.12	End Turn @ 15042.72ft
15,522.68	7,166.58	-7.00	-10,039.00	Begin Turn for 3-D Spacing @ 15522.68ft
16,338.83	7,166.11	24.60	-10,852.99	End Turn @ 16338.83ft
17,436.24	7,165.48	-50.00	-11,947.86	Hold @ 17436.24ft
17,836.24	7,165.25	-77.19	-12,346.94	Begin Turn to BHL @ 17836.24ft
18,097.68	7,165.10	-86.03	-12,608.17	End Turn @ 18097.68ft
23,482.53	7,162.00	-83.81	-17,993.03	TD Well @ 23482.53ft