

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
3N-67W-04 SWARTZ 2-4HZ PAD
SWARTZ 4-5HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

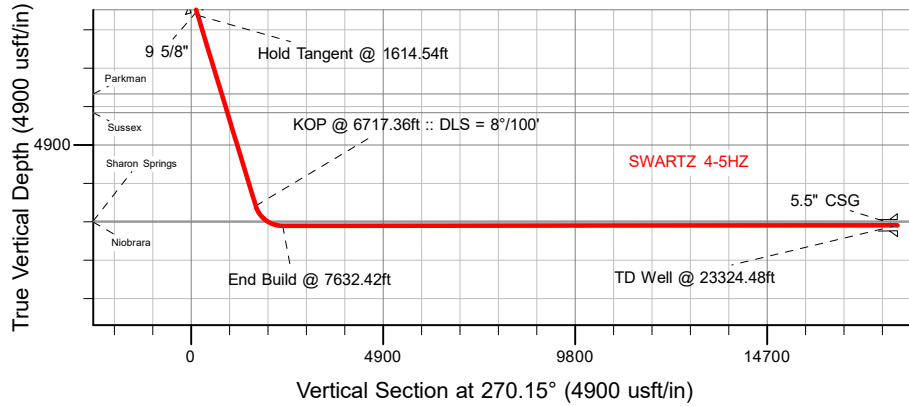
16 December, 2021

Project: WELD-NAD83-UTMFT13N
Site: 3N-67W-04 SWARTZ 2-4HZ PAD
Well: SWARTZ 4-5HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

CASING DETAILS

TVD	MD	Name	Size
1500.00	1514.34	9 5/8"	9-5/8
6950.00	23324.48	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	
379.00	0.00	0.00	379.00	0.00	0.00	0.00	0.00	0.00	
512.33	2.00	305.00	512.31	1.33	-1.91	1.50	305.00	1.91	
562.33	2.00	305.00	562.27	2.34	-3.34	0.00	0.00	3.34	
1614.54	17.68	287.55	1595.85	61.42	-171.78	1.50	-19.56	171.94	
6717.36	17.68	287.55	6457.66	528.72	-1649.38	0.00	0.00	1650.76	
7632.42	90.05	270.15	6964.00	578.81	-2335.35	8.00	-18.20	2336.86	
23324.48	90.05	270.15	6950.00	619.20	-18027.36	0.00	0.00	18028.92	SWARTZ 4-5HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	Northing	Easting	Latitude	Longitude
SWARTZ 4-5HZ_SHL	0.00	14621552.85	1670668.10	40.260336	-104.891566
SWARTZ 4-5HZ_LP	6964.00	14622128.80	1668332.04	40.261925	-104.899937
SWARTZ 4-5HZ_BHL	6950.00	14622150.00	1652640.00	40.262018	-104.956185

SHL
657' FNL
1538' FEL

LP
117' FNL
1377' FWL

BHL
303' FNL
1270' FWL

WELL DETAILS: SWARTZ 4-5HZ

GL = 4825'

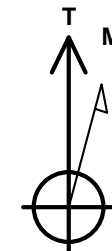
RKB = 17' @ 4842.00usft (RIG)

Plan: Permit Rev-1 (SWARTZ 4-5HZ/Plan A)

Date: 12/16/2021

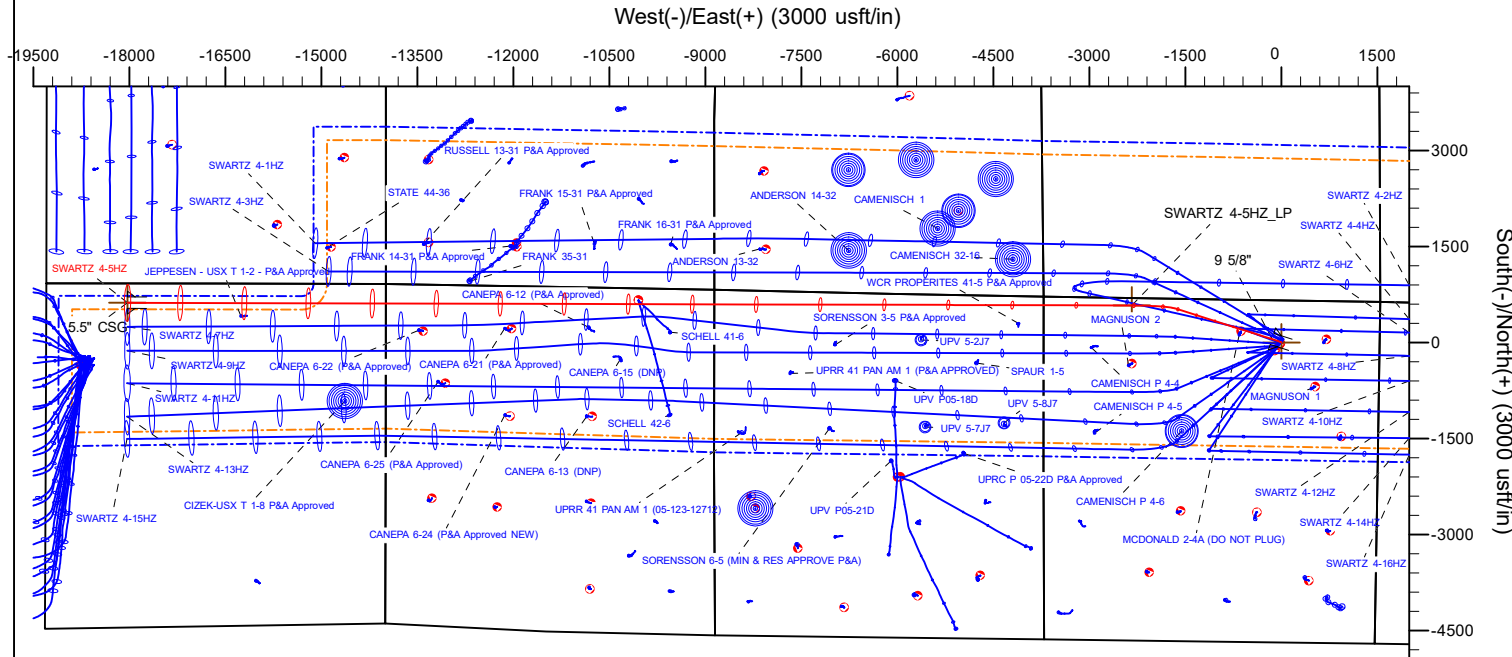
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
707.00	707.27	Fox Hills
3598.00	3715.94	Parkman
4080.00	4221.83	Sussex
6841.00	7204.79	Sharon Springs
6871.00	7261.87	Niobrara



Azimuths to True North
Magnetic North: 7.86°

Magnetic Field
Strength: 51820.2nT
Dip Angle: 66.50°
Date: 11/26/2021
Model: IGRF2020



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-5HZ
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 4-5HZ	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 4-5HZ				
Well Position	+N/-S	0.00 usft	Northing:	14,621,552.85 usft	Latitude:	40.260336
	+E/-W	0.00 usft	Easting:	1,670,668.10 usft	Longitude:	-104.891566
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	51,820.20130596

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	23,324.48	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 4-5HZ	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	
379.00	0.00	0.00	379.00	0.00	0.00	0.00	0.00	0.00	0.00	
512.33	2.00	305.00	512.31	1.33	-1.91	1.50	1.50	0.00	305.00	
562.33	2.00	305.00	562.27	2.34	-3.34	0.00	0.00	0.00	0.00	
1,614.54	17.68	287.55	1,595.85	61.42	-171.78	1.50	1.49	-1.66	-19.56	
6,717.36	17.68	287.55	6,457.66	528.72	-1,649.38	0.00	0.00	0.00	0.00	
7,632.42	90.05	270.15	6,964.00	578.81	-2,335.35	8.00	7.91	-1.90	-18.20	
23,324.48	90.05	270.15	6,950.00	619.20	-18,027.36	0.00	0.00	0.00	0.00	SWARTZ 4-5HZ_BHL

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-5HZ
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 4-5HZ	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
379.00	0.00	0.00	379.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 379.00ft									
400.00	0.32	305.00	400.00	0.03	-0.05	0.05	1.50	1.50	0.00
500.00	1.82	305.00	499.98	1.10	-1.57	1.57	1.50	1.50	0.00
512.33	2.00	305.00	512.31	1.33	-1.91	1.91	1.50	1.50	0.00
Hold Tangent @ 512.33ft									
562.33	2.00	305.00	562.27	2.34	-3.34	3.34	0.00	0.00	0.00
Change Tangent Direction @ 562.33ft									
600.00	2.54	300.73	599.91	3.14	-4.59	4.60	1.50	1.43	-11.35
700.00	4.01	295.05	699.75	5.75	-9.66	9.68	1.50	1.47	-5.67
707.27	4.11	294.80	707.00	5.97	-10.13	10.14	1.50	1.48	-3.50
Fox Hills									
800.00	5.49	292.43	799.40	9.06	-17.25	17.27	1.50	1.48	-2.55
900.00	6.98	290.92	898.81	13.05	-27.35	27.38	1.50	1.49	-1.51
1,000.00	8.48	289.95	997.90	17.74	-39.95	40.00	1.50	1.49	-0.98
1,100.00	9.97	289.26	1,096.60	23.11	-55.05	55.11	1.50	1.50	-0.69
1,200.00	11.47	288.75	1,194.85	29.16	-72.64	72.72	1.50	1.50	-0.51
1,300.00	12.97	288.36	1,292.58	35.89	-92.71	92.80	1.50	1.50	-0.39
1,400.00	14.46	288.05	1,389.73	43.29	-115.23	115.34	1.50	1.50	-0.31
1,500.00	15.96	287.79	1,486.22	51.36	-140.20	140.33	1.50	1.50	-0.26
1,514.34	16.18	287.76	1,500.00	52.57	-143.98	144.12	1.50	1.50	-0.23
9 5/8"									
1,600.00	17.46	287.58	1,582.00	60.10	-167.60	167.76	1.50	1.50	-0.21
1,614.54	17.68	287.55	1,595.85	61.42	-171.78	171.94	1.50	1.50	-0.19
Hold Tangent @ 1614.54ft									
1,700.00	17.68	287.55	1,677.28	69.25	-196.53	196.71	0.00	0.00	0.00
1,800.00	17.68	287.55	1,772.56	78.40	-225.49	225.69	0.00	0.00	0.00
1,900.00	17.68	287.55	1,867.83	87.56	-254.44	254.67	0.00	0.00	0.00
2,000.00	17.68	287.55	1,963.11	96.72	-283.40	283.65	0.00	0.00	0.00
2,100.00	17.68	287.55	2,058.39	105.88	-312.36	312.63	0.00	0.00	0.00
2,200.00	17.68	287.55	2,153.66	115.04	-341.31	341.61	0.00	0.00	0.00
2,300.00	17.68	287.55	2,248.94	124.19	-370.27	370.59	0.00	0.00	0.00
2,400.00	17.68	287.55	2,344.22	133.35	-399.23	399.57	0.00	0.00	0.00
2,500.00	17.68	287.55	2,439.49	142.51	-428.18	428.55	0.00	0.00	0.00
2,600.00	17.68	287.55	2,534.77	151.67	-457.14	457.53	0.00	0.00	0.00
2,700.00	17.68	287.55	2,630.05	160.82	-486.09	486.51	0.00	0.00	0.00
2,800.00	17.68	287.55	2,725.32	169.98	-515.05	515.49	0.00	0.00	0.00
2,900.00	17.68	287.55	2,820.60	179.14	-544.01	544.47	0.00	0.00	0.00
3,000.00	17.68	287.55	2,915.88	188.30	-572.96	573.46	0.00	0.00	0.00
3,100.00	17.68	287.55	3,011.15	197.45	-601.92	602.44	0.00	0.00	0.00
3,200.00	17.68	287.55	3,106.43	206.61	-630.88	631.42	0.00	0.00	0.00
3,300.00	17.68	287.55	3,201.71	215.77	-659.83	660.40	0.00	0.00	0.00
3,400.00	17.68	287.55	3,296.99	224.93	-688.79	689.38	0.00	0.00	0.00
3,500.00	17.68	287.55	3,392.26	234.09	-717.75	718.36	0.00	0.00	0.00
3,600.00	17.68	287.55	3,487.54	243.24	-746.70	747.34	0.00	0.00	0.00
3,700.00	17.68	287.55	3,582.82	252.40	-775.66	776.32	0.00	0.00	0.00
3,715.94	17.68	287.55	3,598.00	253.86	-780.27	780.94	0.00	0.00	0.00
Parkman									
3,800.00	17.68	287.55	3,678.09	261.56	-804.62	805.30	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-5HZ
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 4-5HZ	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)	
3,900.00	17.68	287.55	3,773.37	270.72	-833.57	834.28	0.00	0.00	0.00	
4,000.00	17.68	287.55	3,868.65	279.87	-862.53	863.26	0.00	0.00	0.00	
4,100.00	17.68	287.55	3,963.92	289.03	-891.49	892.24	0.00	0.00	0.00	
4,200.00	17.68	287.55	4,059.20	298.19	-920.44	921.22	0.00	0.00	0.00	
4,221.83	17.68	287.55	4,080.00	300.19	-926.76	927.55	0.00	0.00	0.00	
Sussex										
4,300.00	17.68	287.55	4,154.48	307.35	-949.40	950.20	0.00	0.00	0.00	
4,400.00	17.68	287.55	4,249.75	316.50	-978.35	979.18	0.00	0.00	0.00	
4,500.00	17.68	287.55	4,345.03	325.66	-1,007.31	1,008.16	0.00	0.00	0.00	
4,600.00	17.68	287.55	4,440.31	334.82	-1,036.27	1,037.14	0.00	0.00	0.00	
4,700.00	17.68	287.55	4,535.58	343.98	-1,065.22	1,066.12	0.00	0.00	0.00	
4,800.00	17.68	287.55	4,630.86	353.14	-1,094.18	1,095.10	0.00	0.00	0.00	
4,900.00	17.68	287.55	4,726.14	362.29	-1,123.14	1,124.08	0.00	0.00	0.00	
5,000.00	17.68	287.55	4,821.41	371.45	-1,152.09	1,153.06	0.00	0.00	0.00	
5,100.00	17.68	287.55	4,916.69	380.61	-1,181.05	1,182.04	0.00	0.00	0.00	
5,200.00	17.68	287.55	5,011.97	389.77	-1,210.01	1,211.02	0.00	0.00	0.00	
5,300.00	17.68	287.55	5,107.24	398.92	-1,238.96	1,240.00	0.00	0.00	0.00	
5,400.00	17.68	287.55	5,202.52	408.08	-1,267.92	1,268.98	0.00	0.00	0.00	
5,500.00	17.68	287.55	5,297.80	417.24	-1,296.88	1,297.96	0.00	0.00	0.00	
5,600.00	17.68	287.55	5,393.07	426.40	-1,325.83	1,326.94	0.00	0.00	0.00	
5,700.00	17.68	287.55	5,488.35	435.56	-1,354.79	1,355.92	0.00	0.00	0.00	
5,800.00	17.68	287.55	5,583.63	444.71	-1,383.74	1,384.90	0.00	0.00	0.00	
5,900.00	17.68	287.55	5,678.90	453.87	-1,412.70	1,413.88	0.00	0.00	0.00	
6,000.00	17.68	287.55	5,774.18	463.03	-1,441.66	1,442.87	0.00	0.00	0.00	
6,100.00	17.68	287.55	5,869.46	472.19	-1,470.61	1,471.85	0.00	0.00	0.00	
6,200.00	17.68	287.55	5,964.73	481.34	-1,499.57	1,500.83	0.00	0.00	0.00	
6,300.00	17.68	287.55	6,060.01	490.50	-1,528.53	1,529.81	0.00	0.00	0.00	
6,400.00	17.68	287.55	6,155.29	499.66	-1,557.48	1,558.79	0.00	0.00	0.00	
6,500.00	17.68	287.55	6,250.56	508.82	-1,586.44	1,587.77	0.00	0.00	0.00	
6,600.00	17.68	287.55	6,345.84	517.97	-1,615.40	1,616.75	0.00	0.00	0.00	
6,700.00	17.68	287.55	6,441.12	527.13	-1,644.35	1,645.73	0.00	0.00	0.00	
6,717.36	17.68	287.55	6,457.66	528.72	-1,649.38	1,650.76	0.00	0.00	0.00	
KOP @ 6717.36ft :: DLS = 8°/100'										
6,750.00	20.18	285.19	6,488.53	531.69	-1,659.54	1,660.93	8.00	7.65	-7.25	
6,800.00	24.05	282.49	6,534.85	536.15	-1,677.81	1,679.21	8.00	7.74	-5.40	
6,850.00	27.95	280.50	6,579.78	540.49	-1,699.29	1,700.70	8.00	7.81	-3.97	
6,900.00	31.88	278.97	6,623.11	544.69	-1,723.86	1,725.28	8.00	7.85	-3.06	
6,950.00	35.82	277.74	6,664.63	548.72	-1,751.41	1,752.84	8.00	7.88	-2.45	
7,000.00	39.77	276.73	6,704.13	552.57	-1,781.81	1,783.25	8.00	7.90	-2.03	
7,050.00	43.73	275.87	6,741.43	556.21	-1,814.89	1,816.34	8.00	7.92	-1.72	
7,100.00	47.69	275.13	6,776.33	559.63	-1,850.51	1,851.97	8.00	7.93	-1.48	
7,150.00	51.66	274.47	6,808.68	562.81	-1,888.49	1,889.96	8.00	7.94	-1.31	
7,200.00	55.64	273.89	6,838.31	565.74	-1,928.65	1,930.12	8.00	7.94	-1.17	
7,204.79	56.02	273.84	6,841.00	566.01	-1,932.60	1,934.08	8.00	7.95	-1.11	
Sharon Springs										
7,250.00	59.61	273.36	6,865.08	568.41	-1,970.78	1,972.26	8.00	7.95	-1.06	
7,261.87	60.55	273.24	6,871.00	569.00	-1,981.05	1,982.54	8.00	7.95	-1.01	
Niobrara										
7,300.00	63.59	272.87	6,888.86	570.79	-2,014.69	2,016.18	8.00	7.95	-0.97	
7,350.00	67.56	272.41	6,909.53	572.88	-2,060.16	2,061.65	8.00	7.96	-0.92	
7,400.00	71.54	271.98	6,926.99	574.67	-2,106.97	2,108.46	8.00	7.96	-0.87	
7,450.00	75.52	271.56	6,941.16	576.15	-2,154.88	2,156.38	8.00	7.96	-0.83	
7,500.00	79.51	271.16	6,951.97	577.31	-2,203.68	2,205.18	8.00	7.96	-0.80	

Planning Report

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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 4-5HZ	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)
7,550.00	83.49	270.78	6,959.36	578.14	-2,253.11	2,254.62	8.00	7.96	-0.78
7,600.00	87.47	270.39	6,963.30	578.65	-2,302.94	2,304.45	8.00	7.96	-0.76
7,632.42	90.05	270.15	6,964.00	578.81	-2,335.35	2,336.86	8.00	7.96	-0.76
End Build @ 7632.42ft									
7,700.00	90.05	270.15	6,963.94	578.98	-2,402.93	2,404.44	0.00	0.00	0.00
7,800.00	90.05	270.15	6,963.85	579.24	-2,502.93	2,504.44	0.00	0.00	0.00
7,900.00	90.05	270.15	6,963.76	579.49	-2,602.93	2,604.44	0.00	0.00	0.00
8,000.00	90.05	270.15	6,963.67	579.75	-2,702.93	2,704.44	0.00	0.00	0.00
8,100.00	90.05	270.15	6,963.58	580.01	-2,802.93	2,804.44	0.00	0.00	0.00
8,200.00	90.05	270.15	6,963.50	580.27	-2,902.93	2,904.44	0.00	0.00	0.00
8,300.00	90.05	270.15	6,963.41	580.52	-3,002.93	3,004.44	0.00	0.00	0.00
8,400.00	90.05	270.15	6,963.32	580.78	-3,102.93	3,104.44	0.00	0.00	0.00
8,500.00	90.05	270.15	6,963.23	581.04	-3,202.93	3,204.44	0.00	0.00	0.00
8,600.00	90.05	270.15	6,963.14	581.30	-3,302.93	3,304.44	0.00	0.00	0.00
8,700.00	90.05	270.15	6,963.05	581.55	-3,402.93	3,404.44	0.00	0.00	0.00
8,800.00	90.05	270.15	6,962.96	581.81	-3,502.93	3,504.44	0.00	0.00	0.00
8,900.00	90.05	270.15	6,962.87	582.07	-3,602.93	3,604.44	0.00	0.00	0.00
9,000.00	90.05	270.15	6,962.78	582.33	-3,702.93	3,704.44	0.00	0.00	0.00
9,100.00	90.05	270.15	6,962.69	582.58	-3,802.93	3,804.44	0.00	0.00	0.00
9,200.00	90.05	270.15	6,962.60	582.84	-3,902.92	3,904.44	0.00	0.00	0.00
9,300.00	90.05	270.15	6,962.51	583.10	-4,002.92	4,004.44	0.00	0.00	0.00
9,400.00	90.05	270.15	6,962.42	583.36	-4,102.92	4,104.44	0.00	0.00	0.00
9,500.00	90.05	270.15	6,962.34	583.61	-4,202.92	4,204.44	0.00	0.00	0.00
9,600.00	90.05	270.15	6,962.25	583.87	-4,302.92	4,304.44	0.00	0.00	0.00
9,700.00	90.05	270.15	6,962.16	584.13	-4,402.92	4,404.44	0.00	0.00	0.00
9,800.00	90.05	270.15	6,962.07	584.39	-4,502.92	4,504.44	0.00	0.00	0.00
9,900.00	90.05	270.15	6,961.98	584.64	-4,602.92	4,604.44	0.00	0.00	0.00
10,000.00	90.05	270.15	6,961.89	584.90	-4,702.92	4,704.44	0.00	0.00	0.00
10,100.00	90.05	270.15	6,961.80	585.16	-4,802.92	4,804.44	0.00	0.00	0.00
10,200.00	90.05	270.15	6,961.71	585.42	-4,902.92	4,904.44	0.00	0.00	0.00
10,300.00	90.05	270.15	6,961.62	585.67	-5,002.92	5,004.44	0.00	0.00	0.00
10,400.00	90.05	270.15	6,961.53	585.93	-5,102.92	5,104.44	0.00	0.00	0.00
10,500.00	90.05	270.15	6,961.44	586.19	-5,202.92	5,204.44	0.00	0.00	0.00
10,600.00	90.05	270.15	6,961.35	586.44	-5,302.92	5,304.44	0.00	0.00	0.00
10,700.00	90.05	270.15	6,961.26	586.70	-5,402.92	5,404.44	0.00	0.00	0.00
10,800.00	90.05	270.15	6,961.18	586.96	-5,502.92	5,504.44	0.00	0.00	0.00
10,900.00	90.05	270.15	6,961.09	587.22	-5,602.92	5,604.44	0.00	0.00	0.00
11,000.00	90.05	270.15	6,961.00	587.47	-5,702.92	5,704.44	0.00	0.00	0.00
11,100.00	90.05	270.15	6,960.91	587.73	-5,802.92	5,804.44	0.00	0.00	0.00
11,200.00	90.05	270.15	6,960.82	587.99	-5,902.92	5,904.44	0.00	0.00	0.00
11,300.00	90.05	270.15	6,960.73	588.25	-6,002.92	6,004.44	0.00	0.00	0.00
11,400.00	90.05	270.15	6,960.64	588.50	-6,102.92	6,104.44	0.00	0.00	0.00
11,500.00	90.05	270.15	6,960.55	588.76	-6,202.92	6,204.44	0.00	0.00	0.00
11,600.00	90.05	270.15	6,960.46	589.02	-6,302.92	6,304.44	0.00	0.00	0.00
11,700.00	90.05	270.15	6,960.37	589.28	-6,402.92	6,404.44	0.00	0.00	0.00
11,800.00	90.05	270.15	6,960.28	589.53	-6,502.92	6,504.44	0.00	0.00	0.00
11,900.00	90.05	270.15	6,960.19	589.79	-6,602.92	6,604.44	0.00	0.00	0.00
12,000.00	90.05	270.15	6,960.10	590.05	-6,702.91	6,704.44	0.00	0.00	0.00
12,100.00	90.05	270.15	6,960.02	590.31	-6,802.91	6,804.44	0.00	0.00	0.00
12,200.00	90.05	270.15	6,959.93	590.56	-6,902.91	6,904.44	0.00	0.00	0.00
12,300.00	90.05	270.15	6,959.84	590.82	-7,002.91	7,004.44	0.00	0.00	0.00
12,400.00	90.05	270.15	6,959.75	591.08	-7,102.91	7,104.44	0.00	0.00	0.00
12,500.00	90.05	270.15	6,959.66	591.34	-7,202.91	7,204.44	0.00	0.00	0.00
12,600.00	90.05	270.15	6,959.57	591.59	-7,302.91	7,304.44	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-5HZ
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 4-5HZ	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	90.05	270.15	6,959.48	591.85	-7,402.91	7,404.44	0.00	0.00	0.00
12,800.00	90.05	270.15	6,959.39	592.11	-7,502.91	7,504.44	0.00	0.00	0.00
12,900.00	90.05	270.15	6,959.30	592.37	-7,602.91	7,604.44	0.00	0.00	0.00
13,000.00	90.05	270.15	6,959.21	592.62	-7,702.91	7,704.44	0.00	0.00	0.00
13,100.00	90.05	270.15	6,959.12	592.88	-7,802.91	7,804.44	0.00	0.00	0.00
13,200.00	90.05	270.15	6,959.03	593.14	-7,902.91	7,904.44	0.00	0.00	0.00
13,300.00	90.05	270.15	6,958.94	593.40	-8,002.91	8,004.44	0.00	0.00	0.00
13,400.00	90.05	270.15	6,958.86	593.65	-8,102.91	8,104.44	0.00	0.00	0.00
13,500.00	90.05	270.15	6,958.77	593.91	-8,202.91	8,204.44	0.00	0.00	0.00
13,600.00	90.05	270.15	6,958.68	594.17	-8,302.91	8,304.44	0.00	0.00	0.00
13,700.00	90.05	270.15	6,958.59	594.42	-8,402.91	8,404.44	0.00	0.00	0.00
13,800.00	90.05	270.15	6,958.50	594.68	-8,502.91	8,504.44	0.00	0.00	0.00
13,900.00	90.05	270.15	6,958.41	594.94	-8,602.91	8,604.44	0.00	0.00	0.00
14,000.00	90.05	270.15	6,958.32	595.20	-8,702.91	8,704.44	0.00	0.00	0.00
14,100.00	90.05	270.15	6,958.23	595.45	-8,802.91	8,804.44	0.00	0.00	0.00
14,200.00	90.05	270.15	6,958.14	595.71	-8,902.91	8,904.44	0.00	0.00	0.00
14,300.00	90.05	270.15	6,958.05	595.97	-9,002.91	9,004.44	0.00	0.00	0.00
14,400.00	90.05	270.15	6,957.96	596.23	-9,102.91	9,104.44	0.00	0.00	0.00
14,500.00	90.05	270.15	6,957.87	596.48	-9,202.91	9,204.44	0.00	0.00	0.00
14,600.00	90.05	270.15	6,957.78	596.74	-9,302.91	9,304.44	0.00	0.00	0.00
14,700.00	90.05	270.15	6,957.70	597.00	-9,402.90	9,404.44	0.00	0.00	0.00
14,800.00	90.05	270.15	6,957.61	597.26	-9,502.90	9,504.44	0.00	0.00	0.00
14,900.00	90.05	270.15	6,957.52	597.51	-9,602.90	9,604.44	0.00	0.00	0.00
15,000.00	90.05	270.15	6,957.43	597.77	-9,702.90	9,704.44	0.00	0.00	0.00
15,100.00	90.05	270.15	6,957.34	598.03	-9,802.90	9,804.44	0.00	0.00	0.00
15,200.00	90.05	270.15	6,957.25	598.29	-9,902.90	9,904.44	0.00	0.00	0.00
15,300.00	90.05	270.15	6,957.16	598.54	-10,002.90	10,004.44	0.00	0.00	0.00
15,400.00	90.05	270.15	6,957.07	598.80	-10,102.90	10,104.44	0.00	0.00	0.00
15,500.00	90.05	270.15	6,956.98	599.06	-10,202.90	10,204.44	0.00	0.00	0.00
15,600.00	90.05	270.15	6,956.89	599.32	-10,302.90	10,304.44	0.00	0.00	0.00
15,700.00	90.05	270.15	6,956.80	599.57	-10,402.90	10,404.44	0.00	0.00	0.00
15,800.00	90.05	270.15	6,956.71	599.83	-10,502.90	10,504.43	0.00	0.00	0.00
15,900.00	90.05	270.15	6,956.62	600.09	-10,602.90	10,604.43	0.00	0.00	0.00
16,000.00	90.05	270.15	6,956.54	600.35	-10,702.90	10,704.43	0.00	0.00	0.00
16,100.00	90.05	270.15	6,956.45	600.60	-10,802.90	10,804.43	0.00	0.00	0.00
16,200.00	90.05	270.15	6,956.36	600.86	-10,902.90	10,904.43	0.00	0.00	0.00
16,300.00	90.05	270.15	6,956.27	601.12	-11,002.90	11,004.43	0.00	0.00	0.00
16,400.00	90.05	270.15	6,956.18	601.38	-11,102.90	11,104.43	0.00	0.00	0.00
16,500.00	90.05	270.15	6,956.09	601.63	-11,202.90	11,204.43	0.00	0.00	0.00
16,600.00	90.05	270.15	6,956.00	601.89	-11,302.90	11,304.43	0.00	0.00	0.00
16,700.00	90.05	270.15	6,955.91	602.15	-11,402.90	11,404.43	0.00	0.00	0.00
16,800.00	90.05	270.15	6,955.82	602.41	-11,502.90	11,504.43	0.00	0.00	0.00
16,900.00	90.05	270.15	6,955.73	602.66	-11,602.90	11,604.43	0.00	0.00	0.00
17,000.00	90.05	270.15	6,955.64	602.92	-11,702.90	11,704.43	0.00	0.00	0.00
17,100.00	90.05	270.15	6,955.55	603.18	-11,802.90	11,804.43	0.00	0.00	0.00
17,200.00	90.05	270.15	6,955.46	603.43	-11,902.90	11,904.43	0.00	0.00	0.00
17,300.00	90.05	270.15	6,955.38	603.69	-12,002.90	12,004.43	0.00	0.00	0.00
17,400.00	90.05	270.15	6,955.29	603.95	-12,102.89	12,104.43	0.00	0.00	0.00
17,500.00	90.05	270.15	6,955.20	604.21	-12,202.89	12,204.43	0.00	0.00	0.00
17,600.00	90.05	270.15	6,955.11	604.46	-12,302.89	12,304.43	0.00	0.00	0.00
17,700.00	90.05	270.15	6,955.02	604.72	-12,402.89	12,404.43	0.00	0.00	0.00
17,800.00	90.05	270.15	6,954.93	604.98	-12,502.89	12,504.43	0.00	0.00	0.00
17,900.00	90.05	270.15	6,954.84	605.24	-12,602.89	12,604.43	0.00	0.00	0.00
18,000.00	90.05	270.15	6,954.75	605.49	-12,702.89	12,704.43	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-5HZ
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 4-5HZ	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)
18,100.00	90.05	270.15	6,954.66	605.75	-12,802.89	12,804.43	0.00	0.00	0.00
18,200.00	90.05	270.15	6,954.57	606.01	-12,902.89	12,904.43	0.00	0.00	0.00
18,300.00	90.05	270.15	6,954.48	606.27	-13,002.89	13,004.43	0.00	0.00	0.00
18,400.00	90.05	270.15	6,954.39	606.52	-13,102.89	13,104.43	0.00	0.00	0.00
18,500.00	90.05	270.15	6,954.30	606.78	-13,202.89	13,204.43	0.00	0.00	0.00
18,600.00	90.05	270.15	6,954.22	607.04	-13,302.89	13,304.43	0.00	0.00	0.00
18,700.00	90.05	270.15	6,954.13	607.30	-13,402.89	13,404.43	0.00	0.00	0.00
18,800.00	90.05	270.15	6,954.04	607.55	-13,502.89	13,504.43	0.00	0.00	0.00
18,900.00	90.05	270.15	6,953.95	607.81	-13,602.89	13,604.43	0.00	0.00	0.00
19,000.00	90.05	270.15	6,953.86	608.07	-13,702.89	13,704.43	0.00	0.00	0.00
19,100.00	90.05	270.15	6,953.77	608.33	-13,802.89	13,804.43	0.00	0.00	0.00
19,200.00	90.05	270.15	6,953.68	608.58	-13,902.89	13,904.43	0.00	0.00	0.00
19,300.00	90.05	270.15	6,953.59	608.84	-14,002.89	14,004.43	0.00	0.00	0.00
19,400.00	90.05	270.15	6,953.50	609.10	-14,102.89	14,104.43	0.00	0.00	0.00
19,500.00	90.05	270.15	6,953.41	609.36	-14,202.89	14,204.43	0.00	0.00	0.00
19,600.00	90.05	270.15	6,953.32	609.61	-14,302.89	14,304.43	0.00	0.00	0.00
19,700.00	90.05	270.15	6,953.23	609.87	-14,402.89	14,404.43	0.00	0.00	0.00
19,800.00	90.05	270.15	6,953.14	610.13	-14,502.89	14,504.43	0.00	0.00	0.00
19,900.00	90.05	270.15	6,953.06	610.39	-14,602.89	14,604.43	0.00	0.00	0.00
20,000.00	90.05	270.15	6,952.97	610.64	-14,702.89	14,704.43	0.00	0.00	0.00
20,100.00	90.05	270.15	6,952.88	610.90	-14,802.88	14,804.43	0.00	0.00	0.00
20,200.00	90.05	270.15	6,952.79	611.16	-14,902.88	14,904.43	0.00	0.00	0.00
20,300.00	90.05	270.15	6,952.70	611.41	-15,002.88	15,004.43	0.00	0.00	0.00
20,400.00	90.05	270.15	6,952.61	611.67	-15,102.88	15,104.43	0.00	0.00	0.00
20,500.00	90.05	270.15	6,952.52	611.93	-15,202.88	15,204.43	0.00	0.00	0.00
20,600.00	90.05	270.15	6,952.43	612.19	-15,302.88	15,304.43	0.00	0.00	0.00
20,700.00	90.05	270.15	6,952.34	612.44	-15,402.88	15,404.43	0.00	0.00	0.00
20,800.00	90.05	270.15	6,952.25	612.70	-15,502.88	15,504.43	0.00	0.00	0.00
20,900.00	90.05	270.15	6,952.16	612.96	-15,602.88	15,604.43	0.00	0.00	0.00
21,000.00	90.05	270.15	6,952.07	613.22	-15,702.88	15,704.43	0.00	0.00	0.00
21,100.00	90.05	270.15	6,951.98	613.47	-15,802.88	15,804.43	0.00	0.00	0.00
21,200.00	90.05	270.15	6,951.90	613.73	-15,902.88	15,904.43	0.00	0.00	0.00
21,300.00	90.05	270.15	6,951.81	613.99	-16,002.88	16,004.43	0.00	0.00	0.00
21,400.00	90.05	270.15	6,951.72	614.25	-16,102.88	16,104.43	0.00	0.00	0.00
21,500.00	90.05	270.15	6,951.63	614.50	-16,202.88	16,204.43	0.00	0.00	0.00
21,600.00	90.05	270.15	6,951.54	614.76	-16,302.88	16,304.43	0.00	0.00	0.00
21,700.00	90.05	270.15	6,951.45	615.02	-16,402.88	16,404.43	0.00	0.00	0.00
21,800.00	90.05	270.15	6,951.36	615.28	-16,502.88	16,504.43	0.00	0.00	0.00
21,900.00	90.05	270.15	6,951.27	615.53	-16,602.88	16,604.43	0.00	0.00	0.00
22,000.00	90.05	270.15	6,951.18	615.79	-16,702.88	16,704.43	0.00	0.00	0.00
22,100.00	90.05	270.15	6,951.09	616.05	-16,802.88	16,804.43	0.00	0.00	0.00
22,200.00	90.05	270.15	6,951.00	616.31	-16,902.88	16,904.43	0.00	0.00	0.00
22,300.00	90.05	270.15	6,950.91	616.56	-17,002.88	17,004.43	0.00	0.00	0.00
22,400.00	90.05	270.15	6,950.83	616.82	-17,102.88	17,104.43	0.00	0.00	0.00
22,500.00	90.05	270.15	6,950.74	617.08	-17,202.88	17,204.43	0.00	0.00	0.00
22,600.00	90.05	270.15	6,950.65	617.34	-17,302.88	17,304.43	0.00	0.00	0.00
22,700.00	90.05	270.15	6,950.56	617.59	-17,402.88	17,404.43	0.00	0.00	0.00
22,800.00	90.05	270.15	6,950.47	617.85	-17,502.87	17,504.43	0.00	0.00	0.00
22,900.00	90.05	270.15	6,950.38	618.11	-17,602.87	17,604.43	0.00	0.00	0.00
23,000.00	90.05	270.15	6,950.29	618.37	-17,702.87	17,704.43	0.00	0.00	0.00
23,100.00	90.05	270.15	6,950.20	618.62	-17,802.87	17,804.43	0.00	0.00	0.00
23,200.00	90.05	270.15	6,950.11	618.88	-17,902.87	17,904.43	0.00	0.00	0.00
23,300.00	90.05	270.15	6,950.02	619.14	-18,002.87	18,004.43	0.00	0.00	0.00
23,324.48	90.05	270.15	6,950.00	619.20	-18,027.35	18,028.91	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well SWARTZ 4-5HZ
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 4-5HZ	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)
TD Well @ 23324.48ft - 5.5" CSG									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,514.34	1,500.00	9 5/8"	9-5/8	13-1/2	
23,324.48	6,950.00	5.5" CSG	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
707.27	707.00	Fox Hills			
3,715.94	3,598.00	Parkman			
4,221.83	4,080.00	Sussex			
7,204.79	6,841.00	Sharon Springs			
7,261.87	6,871.00	Niobrara			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
379.00	379.00	0.00	0.00	Begin Nudge @ 379.00ft	
512.33	512.31	1.33	-1.91	Hold Tangent @ 512.33ft	
562.33	562.27	2.34	-3.34	Change Tangent Direction @ 562.33ft	
1,614.54	1,595.85	61.42	-171.78	Hold Tangent @ 1614.54ft	
6,717.36	6,457.66	528.72	-1,649.38	KOP @ 6717.36ft :: DLS = 8°/100'	
7,632.42	6,964.00	578.81	-2,335.35	End Build @ 7632.42ft	
23,324.48	6,950.00	619.20	-18,027.36	TD Well @ 23324.48ft	