

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-65W-13 Swartz 15-13HZ Pad
SWARTZ 28N-12HZ**

Plan A

Plan: Permit Rev-2

Standard Planning Report

05 December, 2016



Azimuths to True North
Magnetic North: 8.20°

Magnetic Field
Strength: 52572.3snT
Dip Angle: 66.72°
Date: 7/29/2015
Model: IGRF2010

SITE: 2N-65W-13 Swartz 15-13HZ Pad

Well: SWARTZ 28N-12HZ
Wellbore: Plan A
Design: Permit Rev-2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1294.00	1298.97	Fox Hills Mkr
3971.00	3985.31	Parkman
4362.00	4376.31	Sussex
6771.00	6829.56	Sharon Springs
6823.00	6905.32	Niobrara
6886.00	7015.25	Nio B
6959.00	7222.07	Nio C

WELL DETAILS: SWARTZ 28N-12HZ

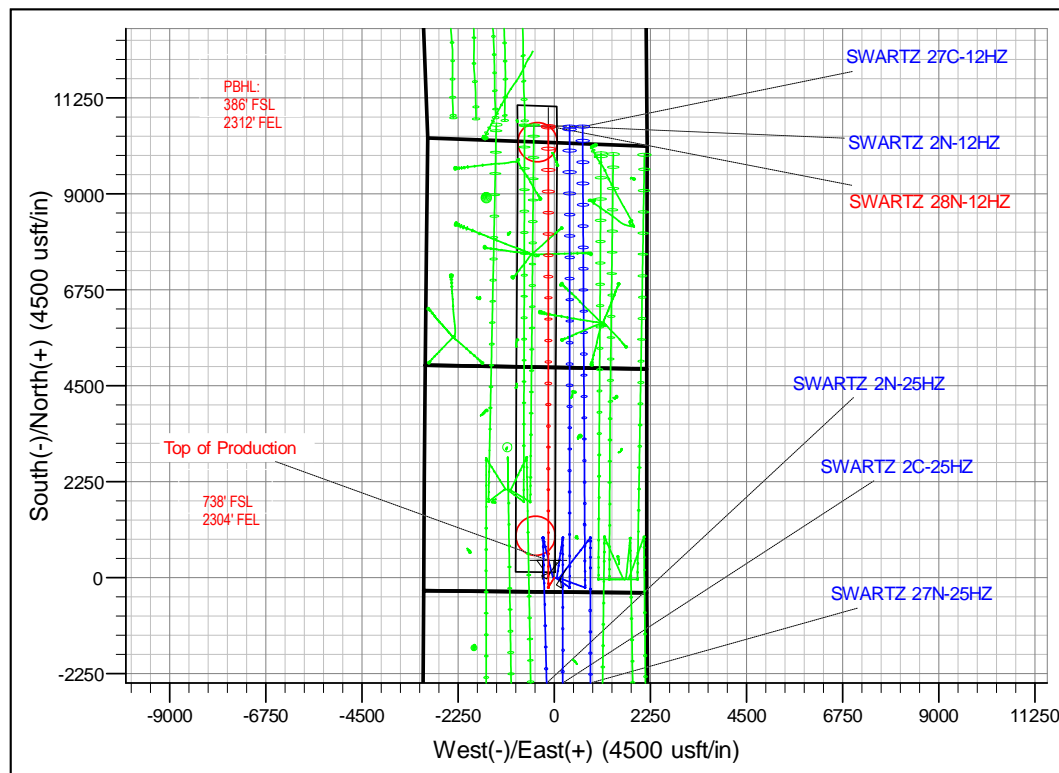
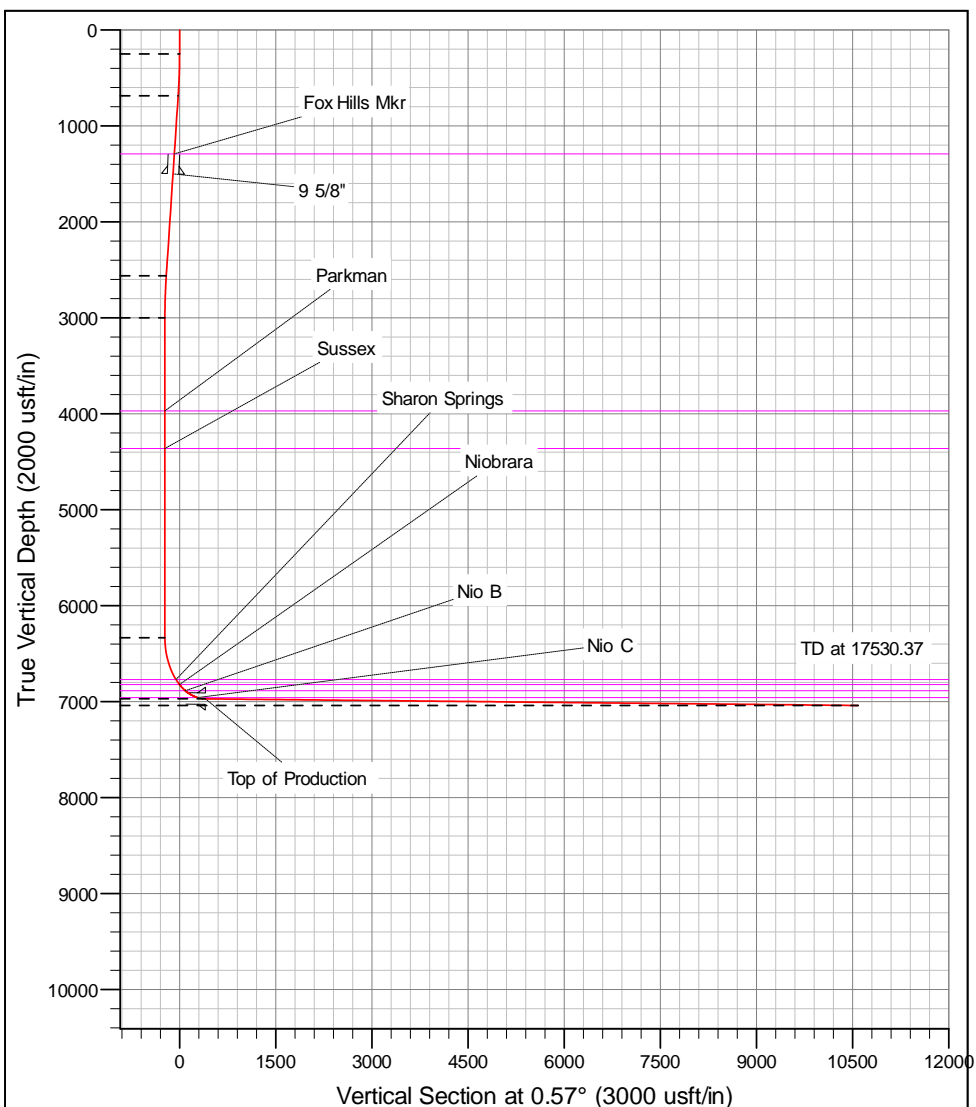
+N/-S	+E/-W	GL: 4878.00 Northing	RKB = 17' @ 4895.00usft (D Rig) Easting	Latitude 40.132087	Longitude -104.610687	Slot
0.00	0.00	14575070.53	1749233.92			

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00
687.77	6.57	211.38	686.81	-21.39	-13.05	1.50	-21.52
2576.54	6.57	211.38	2563.19	-205.81	-125.50	0.00	-207.04
3014.31	0.00	0.00	3000.00	-227.20	-138.55	1.50	-228.57
6349.37	0.00	0.00	6335.07	-227.20	-138.55	0.00	-228.57
7345.04	89.61	0.00	6971.67	405.09	-138.55	9.00	403.69
17530.37	89.61	0.00	7041.00	10590.18	-138.54	0.00	10588.28

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SWARTZ 28N-12HZ_PBHL	7041.00	10590.18	-138.54	14585660.00	1749049.00	40.161169	-104.611183



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 28N-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Site:	2N-65W-13 Swartz 15-13HZ Pad	North Reference:	True
Well:	SWARTZ 28N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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						2N-65W-13 Swartz 15-13HZ Pad											
Site Position:						Northing:			14,575,070.39 usft			Latitude:			40.132087		
From:			Lat/Long			Easting:			1,749,204.01 usft			Longitude:			-104.610794		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.25		

Well	SWARTZ 28N-12HZ					
Well Position	+N-S	0.00 usft	Northing:	14,575,070.52 usft	Latitude:	40.132087
	+E-W	29.91 usft	Easting:	1,749,233.92 usft	Longitude:	-104.610687
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,878.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/29/2015	8.20	66.72	52,572.31969939

Design	Permit Rev-2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.00	0.00	0.00	0.57

Plan Survey Tool Program	Date	12/5/2016			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	250.00	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWI Fixed:v2:crustal field declinat	
2	7,309.66	17,530.37	Permit Rev-2 (Plan A)	APC_ISCWSA REV 2 MWI Fixed:v2:crustal field declinat	

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rig)
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Well:	SWARTZ 28N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
687.77	6.57	211.38	686.81	-21.39	-13.05	1.50	1.50	0.00	211.38	
2,576.54	6.57	211.38	2,563.19	-205.81	-125.50	0.00	0.00	0.00	0.00	
3,014.31	0.00	0.00	3,000.00	-227.20	-138.55	1.50	-1.50	0.00	180.00	
6,349.37	0.00	0.00	6,335.07	-227.20	-138.55	0.00	0.00	0.00	0.00	
7,345.04	89.61	0.00	6,971.67	405.09	-138.55	9.00	9.00	0.00	0.00	
17,530.37	89.61	0.00	7,041.00	10,590.18	-138.54	0.00	0.00	0.00	0.00	SWARTZ 28N-12H

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 28N-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Site:	2N-65W-13 Swartz 15-13HZ Pad	North Reference:	True
Well:	SWARTZ 28N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.75	211.38	300.00	-0.28	-0.17	-0.28	1.50	1.50	0.00
400.00	2.25	211.38	399.96	-2.51	-1.53	-2.53	1.50	1.50	0.00
500.00	3.75	211.38	499.82	-6.98	-4.26	-7.02	1.50	1.50	0.00
600.00	5.25	211.38	599.51	-13.68	-8.34	-13.76	1.50	1.50	0.00
687.77	6.57	211.38	686.81	-21.39	-13.05	-21.52	1.50	1.50	0.00
700.00	6.57	211.38	698.96	-22.59	-13.77	-22.72	0.00	0.00	0.00
800.00	6.57	211.38	798.31	-32.35	-19.73	-32.55	0.00	0.00	0.00
900.00	6.57	211.38	897.65	-42.12	-25.68	-42.37	0.00	0.00	0.00
1,000.00	6.57	211.38	996.99	-51.88	-31.64	-52.19	0.00	0.00	0.00
1,100.00	6.57	211.38	1,096.34	-61.64	-37.59	-62.01	0.00	0.00	0.00
1,200.00	6.57	211.38	1,195.68	-71.41	-43.54	-71.84	0.00	0.00	0.00
1,298.97	6.57	211.38	1,294.00	-81.07	-49.44	-81.56	0.00	0.00	0.00
Fox Hills Mkr									
1,300.00	6.57	211.38	1,295.03	-81.17	-49.50	-81.66	0.00	0.00	0.00
1,400.00	6.57	211.38	1,394.37	-90.93	-55.45	-91.48	0.00	0.00	0.00
1,500.00	6.57	211.38	1,493.71	-100.70	-61.41	-101.30	0.00	0.00	0.00
1,506.33	6.57	211.38	1,500.00	-101.31	-61.78	-101.92	0.00	0.00	0.00
9 5/8"									
1,600.00	6.57	211.38	1,593.06	-110.46	-67.36	-111.13	0.00	0.00	0.00
1,700.00	6.57	211.38	1,692.40	-120.22	-73.31	-120.95	0.00	0.00	0.00
1,800.00	6.57	211.38	1,791.75	-129.99	-79.27	-130.77	0.00	0.00	0.00
1,900.00	6.57	211.38	1,891.09	-139.75	-85.22	-140.59	0.00	0.00	0.00
2,000.00	6.57	211.38	1,990.43	-149.52	-91.18	-150.41	0.00	0.00	0.00
2,100.00	6.57	211.38	2,089.78	-159.28	-97.13	-160.24	0.00	0.00	0.00
2,200.00	6.57	211.38	2,189.12	-169.04	-103.08	-170.06	0.00	0.00	0.00
2,300.00	6.57	211.38	2,288.47	-178.81	-109.04	-179.88	0.00	0.00	0.00
2,400.00	6.57	211.38	2,387.81	-188.57	-114.99	-189.70	0.00	0.00	0.00
2,500.00	6.57	211.38	2,487.15	-198.33	-120.94	-199.53	0.00	0.00	0.00
2,576.54	6.57	211.38	2,563.19	-205.81	-125.50	-207.04	0.00	0.00	0.00
2,600.00	6.21	211.38	2,586.51	-208.04	-126.86	-209.29	1.50	-1.50	0.00
2,700.00	4.71	211.38	2,686.05	-216.17	-131.82	-217.47	1.50	-1.50	0.00
2,800.00	3.21	211.38	2,785.81	-222.07	-135.42	-223.40	1.50	-1.50	0.00
2,900.00	1.71	211.38	2,885.71	-225.74	-137.66	-227.10	1.50	-1.50	0.00
3,000.00	0.21	211.38	2,985.69	-227.18	-138.53	-228.54	1.50	-1.50	0.00
3,014.31	0.00	0.00	3,000.00	-227.20	-138.55	-228.57	1.50	-1.50	0.00
3,100.00	0.00	0.00	3,085.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,200.00	0.00	0.00	3,185.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,300.00	0.00	0.00	3,285.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,400.00	0.00	0.00	3,385.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,500.00	0.00	0.00	3,485.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,600.00	0.00	0.00	3,585.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,700.00	0.00	0.00	3,685.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,800.00	0.00	0.00	3,785.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,900.00	0.00	0.00	3,885.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
3,985.31	0.00	0.00	3,971.00	-227.20	-138.55	-228.57	0.00	0.00	0.00
Parkman									
4,000.00	0.00	0.00	3,985.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,100.00	0.00	0.00	4,085.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,200.00	0.00	0.00	4,185.69	-227.20	-138.55	-228.57	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Site:	2N-65W-13 Swartz 15-13HZ Pad	North Reference:	True
Well:	SWARTZ 28N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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)
4,300.00	0.00	0.00	4,285.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,376.31	0.00	0.00	4,362.00	-227.20	-138.55	-228.57	0.00	0.00	0.00
Sussex									
4,400.00	0.00	0.00	4,385.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,500.00	0.00	0.00	4,485.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,600.00	0.00	0.00	4,585.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,700.00	0.00	0.00	4,685.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,800.00	0.00	0.00	4,785.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
4,900.00	0.00	0.00	4,885.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,000.00	0.00	0.00	4,985.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,100.00	0.00	0.00	5,085.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,200.00	0.00	0.00	5,185.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,300.00	0.00	0.00	5,285.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,400.00	0.00	0.00	5,385.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,500.00	0.00	0.00	5,485.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,600.00	0.00	0.00	5,585.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,700.00	0.00	0.00	5,685.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,800.00	0.00	0.00	5,785.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
5,900.00	0.00	0.00	5,885.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
6,000.00	0.00	0.00	5,985.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
6,100.00	0.00	0.00	6,085.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
6,200.00	0.00	0.00	6,185.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
6,300.00	0.00	0.00	6,285.69	-227.20	-138.55	-228.57	0.00	0.00	0.00
6,349.37	0.00	0.00	6,335.07	-227.20	-138.55	-228.57	0.00	0.00	0.00
6,400.00	4.56	0.00	6,385.64	-225.19	-138.55	-226.56	9.00	9.00	0.00
6,500.00	13.56	0.00	6,484.29	-209.46	-138.55	-210.83	9.00	9.00	0.00
6,600.00	22.56	0.00	6,579.27	-178.50	-138.55	-179.87	9.00	9.00	0.00
6,700.00	31.56	0.00	6,668.23	-133.06	-138.55	-134.43	9.00	9.00	0.00
6,800.00	40.56	0.00	6,748.99	-74.26	-138.55	-75.64	9.00	9.00	0.00
6,829.56	43.22	0.00	6,771.00	-54.53	-138.55	-55.90	9.00	9.00	0.00
Sharon Springs									
6,900.00	49.56	0.00	6,819.56	-3.55	-138.55	-4.93	9.00	9.00	0.00
6,905.32	50.04	0.00	6,823.00	0.51	-138.55	-0.87	9.00	9.00	0.00
Niobrara									
7,000.00	58.56	0.00	6,878.20	77.32	-138.55	75.94	9.00	9.00	0.00
7,015.25	59.93	0.00	6,886.00	90.43	-138.55	89.04	9.00	9.00	0.00
Nio B									
7,100.00	67.56	0.00	6,923.47	166.38	-138.55	164.99	9.00	9.00	0.00
7,200.00	76.56	0.00	6,954.24	261.41	-138.55	260.02	9.00	9.00	0.00
7,222.07	78.54	0.00	6,959.00	282.96	-138.55	281.57	9.00	9.00	0.00
Nio C									
7,300.00	85.56	0.00	6,969.77	360.10	-138.55	358.70	9.00	9.00	0.00
7,345.04	89.61	0.00	6,971.67	405.09	-138.55	403.69	9.00	9.00	0.00
Top of Production - SWARTZ 28N-12HZ_PHL									
7,400.00	89.61	0.00	6,972.05	460.05	-138.55	458.64	0.00	0.00	0.00
7,500.00	89.61	0.00	6,972.73	560.04	-138.55	558.64	0.00	0.00	0.00
7,600.00	89.61	0.00	6,973.41	660.04	-138.55	658.63	0.00	0.00	0.00
7,700.00	89.61	0.00	6,974.09	760.04	-138.55	758.62	0.00	0.00	0.00
7,800.00	89.61	0.00	6,974.77	860.04	-138.55	858.62	0.00	0.00	0.00
7,900.00	89.61	0.00	6,975.45	960.03	-138.55	958.61	0.00	0.00	0.00
8,000.00	89.61	0.00	6,976.13	1,060.03	-138.55	1,058.60	0.00	0.00	0.00
8,100.00	89.61	0.00	6,976.81	1,160.03	-138.55	1,158.59	0.00	0.00	0.00
8,200.00	89.61	0.00	6,977.49	1,260.03	-138.55	1,258.59	0.00	0.00	0.00

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rig)
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Well:	SWARTZ 28N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

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)
8,300.00	89.61	0.00	6,978.17	1,360.03	-138.55	1,358.58	0.00	0.00	0.00
8,400.00	89.61	0.00	6,978.85	1,460.02	-138.55	1,458.57	0.00	0.00	0.00
8,500.00	89.61	0.00	6,979.53	1,560.02	-138.55	1,558.57	0.00	0.00	0.00
8,600.00	89.61	0.00	6,980.21	1,660.02	-138.55	1,658.56	0.00	0.00	0.00
8,700.00	89.61	0.00	6,980.89	1,760.02	-138.55	1,758.55	0.00	0.00	0.00
8,800.00	89.61	0.00	6,981.57	1,860.01	-138.55	1,858.54	0.00	0.00	0.00
8,900.00	89.61	0.00	6,982.26	1,960.01	-138.55	1,958.54	0.00	0.00	0.00
9,000.00	89.61	0.00	6,982.94	2,060.01	-138.55	2,058.53	0.00	0.00	0.00
9,100.00	89.61	0.00	6,983.62	2,160.01	-138.55	2,158.52	0.00	0.00	0.00
9,200.00	89.61	0.00	6,984.30	2,260.00	-138.55	2,258.51	0.00	0.00	0.00
9,300.00	89.61	0.00	6,984.98	2,360.00	-138.55	2,358.51	0.00	0.00	0.00
9,400.00	89.61	0.00	6,985.66	2,460.00	-138.55	2,458.50	0.00	0.00	0.00
9,500.00	89.61	0.00	6,986.34	2,560.00	-138.55	2,558.49	0.00	0.00	0.00
9,600.00	89.61	0.00	6,987.02	2,660.00	-138.55	2,658.49	0.00	0.00	0.00
9,700.00	89.61	0.00	6,987.70	2,759.99	-138.55	2,758.48	0.00	0.00	0.00
9,800.00	89.61	0.00	6,988.38	2,859.99	-138.54	2,858.47	0.00	0.00	0.00
9,900.00	89.61	0.00	6,989.06	2,959.99	-138.54	2,958.46	0.00	0.00	0.00
10,000.00	89.61	0.00	6,989.74	3,059.99	-138.54	3,058.46	0.00	0.00	0.00
10,100.00	89.61	0.00	6,990.42	3,159.98	-138.54	3,158.45	0.00	0.00	0.00
10,200.00	89.61	0.00	6,991.10	3,259.98	-138.54	3,258.44	0.00	0.00	0.00
10,300.00	89.61	0.00	6,991.78	3,359.98	-138.54	3,358.43	0.00	0.00	0.00
10,400.00	89.61	0.00	6,992.47	3,459.98	-138.54	3,458.43	0.00	0.00	0.00
10,500.00	89.61	0.00	6,993.15	3,559.97	-138.54	3,558.42	0.00	0.00	0.00
10,600.00	89.61	0.00	6,993.83	3,659.97	-138.54	3,658.41	0.00	0.00	0.00
10,700.00	89.61	0.00	6,994.51	3,759.97	-138.54	3,758.41	0.00	0.00	0.00
10,800.00	89.61	0.00	6,995.19	3,859.97	-138.54	3,858.40	0.00	0.00	0.00
10,900.00	89.61	0.00	6,995.87	3,959.96	-138.54	3,958.39	0.00	0.00	0.00
11,000.00	89.61	0.00	6,996.55	4,059.96	-138.54	4,058.38	0.00	0.00	0.00
11,100.00	89.61	0.00	6,997.23	4,159.96	-138.54	4,158.38	0.00	0.00	0.00
11,200.00	89.61	0.00	6,997.91	4,259.96	-138.54	4,258.37	0.00	0.00	0.00
11,300.00	89.61	0.00	6,998.59	4,359.96	-138.54	4,358.36	0.00	0.00	0.00
11,400.00	89.61	0.00	6,999.27	4,459.95	-138.54	4,458.35	0.00	0.00	0.00
11,500.00	89.61	0.00	6,999.95	4,559.95	-138.54	4,558.35	0.00	0.00	0.00
11,600.00	89.61	0.00	7,000.63	4,659.95	-138.54	4,658.34	0.00	0.00	0.00
11,700.00	89.61	0.00	7,001.31	4,759.95	-138.54	4,758.33	0.00	0.00	0.00
11,800.00	89.61	0.00	7,002.00	4,859.94	-138.54	4,858.33	0.00	0.00	0.00
11,900.00	89.61	0.00	7,002.68	4,959.94	-138.54	4,958.32	0.00	0.00	0.00
12,000.00	89.61	0.00	7,003.36	5,059.94	-138.54	5,058.31	0.00	0.00	0.00
12,100.00	89.61	0.00	7,004.04	5,159.94	-138.54	5,158.30	0.00	0.00	0.00
12,200.00	89.61	0.00	7,004.72	5,259.93	-138.54	5,258.30	0.00	0.00	0.00
12,300.00	89.61	0.00	7,005.40	5,359.93	-138.54	5,358.29	0.00	0.00	0.00
12,400.00	89.61	0.00	7,006.08	5,459.93	-138.54	5,458.28	0.00	0.00	0.00
12,500.00	89.61	0.00	7,006.76	5,559.93	-138.54	5,558.27	0.00	0.00	0.00
12,600.00	89.61	0.00	7,007.44	5,659.93	-138.54	5,658.27	0.00	0.00	0.00
12,700.00	89.61	0.00	7,008.12	5,759.92	-138.54	5,758.26	0.00	0.00	0.00
12,800.00	89.61	0.00	7,008.80	5,859.92	-138.54	5,858.25	0.00	0.00	0.00
12,900.00	89.61	0.00	7,009.48	5,959.92	-138.54	5,958.25	0.00	0.00	0.00
13,000.00	89.61	0.00	7,010.16	6,059.92	-138.54	6,058.24	0.00	0.00	0.00
13,100.00	89.61	0.00	7,010.84	6,159.91	-138.54	6,158.23	0.00	0.00	0.00
13,200.00	89.61	0.00	7,011.52	6,259.91	-138.54	6,258.22	0.00	0.00	0.00
13,300.00	89.61	0.00	7,012.21	6,359.91	-138.54	6,358.22	0.00	0.00	0.00
13,400.00	89.61	0.00	7,012.89	6,459.91	-138.54	6,458.21	0.00	0.00	0.00
13,500.00	89.61	0.00	7,013.57	6,559.90	-138.54	6,558.20	0.00	0.00	0.00
13,600.00	89.61	0.00	7,014.25	6,659.90	-138.54	6,658.19	0.00	0.00	0.00

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 2N-65W-13 Swartz 15-13HZ Pad
Well: SWARTZ 28N-12HZ
Wellbore: Plan A
Design: Permit Rev-2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well SWARTZ 28N-12HZ
 RKB = 17' @ 4895.00usft (D Rig)
 RKB = 17' @ 4895.00usft (D Rig)
 True
 Minimum Curvature

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)
13,700.00	89.61	0.00	7,014.93	6,759.90	-138.54	6,758.19	0.00	0.00	0.00
13,800.00	89.61	0.00	7,015.61	6,859.90	-138.54	6,858.18	0.00	0.00	0.00
13,900.00	89.61	0.00	7,016.29	6,959.90	-138.54	6,958.17	0.00	0.00	0.00
14,000.00	89.61	0.00	7,016.97	7,059.89	-138.54	7,058.17	0.00	0.00	0.00
14,100.00	89.61	0.00	7,017.65	7,159.89	-138.54	7,158.16	0.00	0.00	0.00
14,200.00	89.61	0.00	7,018.33	7,259.89	-138.54	7,258.15	0.00	0.00	0.00
14,300.00	89.61	0.00	7,019.01	7,359.89	-138.54	7,358.14	0.00	0.00	0.00
14,400.00	89.61	0.00	7,019.69	7,459.88	-138.54	7,458.14	0.00	0.00	0.00
14,500.00	89.61	0.00	7,020.37	7,559.88	-138.54	7,558.13	0.00	0.00	0.00
14,600.00	89.61	0.00	7,021.05	7,659.88	-138.54	7,658.12	0.00	0.00	0.00
14,700.00	89.61	0.00	7,021.73	7,759.88	-138.54	7,758.11	0.00	0.00	0.00
14,800.00	89.61	0.00	7,022.42	7,859.87	-138.54	7,858.11	0.00	0.00	0.00
14,900.00	89.61	0.00	7,023.10	7,959.87	-138.54	7,958.10	0.00	0.00	0.00
15,000.00	89.61	0.00	7,023.78	8,059.87	-138.54	8,058.09	0.00	0.00	0.00
15,100.00	89.61	0.00	7,024.46	8,159.87	-138.54	8,158.09	0.00	0.00	0.00
15,200.00	89.61	0.00	7,025.14	8,259.87	-138.54	8,258.08	0.00	0.00	0.00
15,300.00	89.61	0.00	7,025.82	8,359.86	-138.54	8,358.07	0.00	0.00	0.00
15,400.00	89.61	0.00	7,026.50	8,459.86	-138.54	8,458.06	0.00	0.00	0.00
15,500.00	89.61	0.00	7,027.18	8,559.86	-138.54	8,558.06	0.00	0.00	0.00
15,600.00	89.61	0.00	7,027.86	8,659.86	-138.54	8,658.05	0.00	0.00	0.00
15,700.00	89.61	0.00	7,028.54	8,759.85	-138.54	8,758.04	0.00	0.00	0.00
15,800.00	89.61	0.00	7,029.22	8,859.85	-138.54	8,858.03	0.00	0.00	0.00
15,900.00	89.61	0.00	7,029.90	8,959.85	-138.54	8,958.03	0.00	0.00	0.00
16,000.00	89.61	0.00	7,030.58	9,059.85	-138.54	9,058.02	0.00	0.00	0.00
16,100.00	89.61	0.00	7,031.26	9,159.84	-138.54	9,158.01	0.00	0.00	0.00
16,200.00	89.61	0.00	7,031.94	9,259.84	-138.54	9,258.01	0.00	0.00	0.00
16,300.00	89.61	0.00	7,032.63	9,359.84	-138.54	9,358.00	0.00	0.00	0.00
16,400.00	89.61	0.00	7,033.31	9,459.84	-138.54	9,457.99	0.00	0.00	0.00
16,500.00	89.61	0.00	7,033.99	9,559.84	-138.54	9,557.98	0.00	0.00	0.00
16,600.00	89.61	0.00	7,034.67	9,659.83	-138.54	9,657.98	0.00	0.00	0.00
16,700.00	89.61	0.00	7,035.35	9,759.83	-138.54	9,757.97	0.00	0.00	0.00
16,800.00	89.61	0.00	7,036.03	9,859.83	-138.54	9,857.96	0.00	0.00	0.00
16,900.00	89.61	0.00	7,036.71	9,959.83	-138.54	9,957.96	0.00	0.00	0.00
17,000.00	89.61	0.00	7,037.39	10,059.82	-138.54	10,057.95	0.00	0.00	0.00
17,100.00	89.61	0.00	7,038.07	10,159.82	-138.54	10,157.94	0.00	0.00	0.00
17,200.00	89.61	0.00	7,038.75	10,259.82	-138.54	10,257.93	0.00	0.00	0.00
17,300.00	89.61	0.00	7,039.43	10,359.82	-138.54	10,357.93	0.00	0.00	0.00
17,400.00	89.61	0.00	7,040.11	10,459.81	-138.54	10,457.92	0.00	0.00	0.00
17,500.00	89.61	0.00	7,040.79	10,559.81	-138.54	10,557.91	0.00	0.00	0.00
17,530.37	89.61	0.00	7,041.00	10,590.18	-138.54	10,588.28	0.00	0.00	0.00
SWARTZ 28N-12HZ_PBHL									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 28N-12HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 4895.00usft (D Rig)
Site:	2N-65W-13 Swartz 15-13HZ Pad	North Reference:	True
Well:	SWARTZ 28N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
SWARTZ 28N-12HZ_ - plan hits target center - Point	0.00	0.00	6,971.67	405.09	-138.55	14,575,475.00	1,749,093.60	40.133200	-104.611183
SWARTZ 28N-12HZ_ - plan hits target center - Point	0.00	0.00	7,041.00	10,590.18	-138.54	14,585,660.00	1,749,049.00	40.161169	-104.611183

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,506.33	1,500.00	9 5/8"	9-5/8	13-1/2	
7,345.04	6,971.67	Top of Production	5-1/2	8-1/2	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,298.97	1,294.00	Fox Hills Mkr				
3,985.31	3,971.00	Parkman				
4,376.31	4,362.00	Sussex				
6,829.56	6,771.00	Sharon Springs				
6,905.32	6,823.00	Niobrara				
7,015.25	6,886.00	Nio B				
7,222.07	6,959.00	Nio C				