

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-65W-13 Swartz 15-13HZ Pad
SWARTZ 2N-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 2N-12HZ
Wellbore: Plan A
Design: Permit Rev-2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1294.00	1299.50	Fox Hills Mkr
3971.00	3994.45	Parkman
4362.00	4385.45	Sussex
6781.00	6888.18	Sharon Springs
6833.00	6986.87	Niobrara
6897.00	7194.27	Nio B

WELL DETAILS: SWARTZ 2N-12HZ

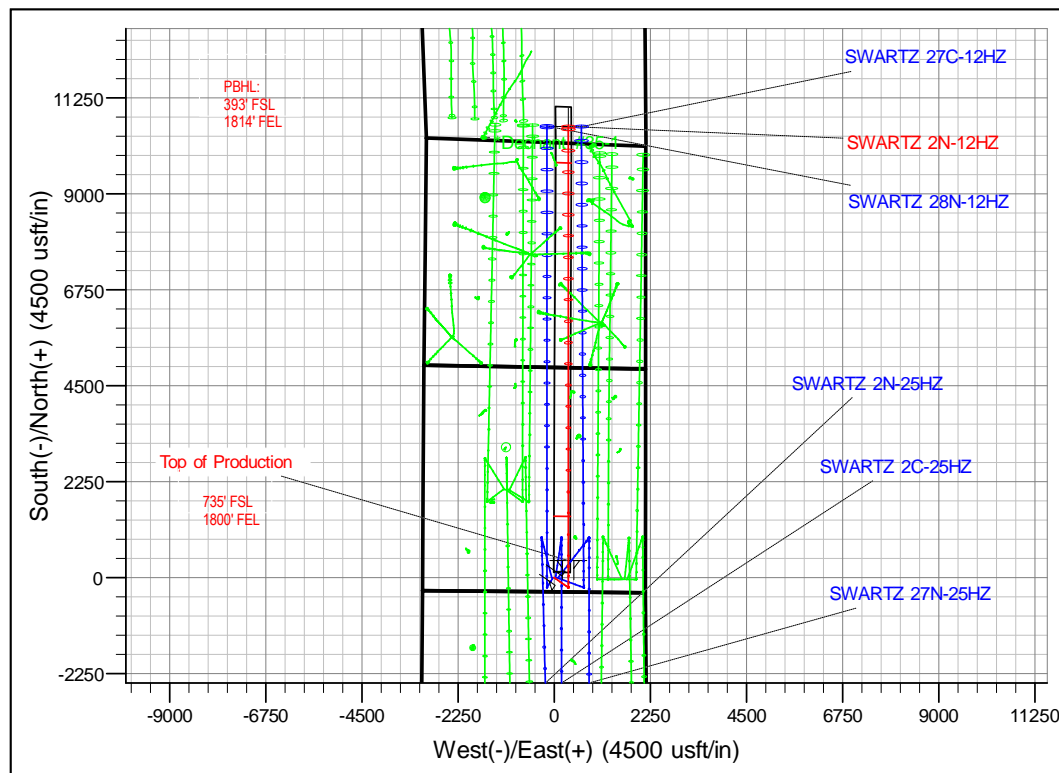
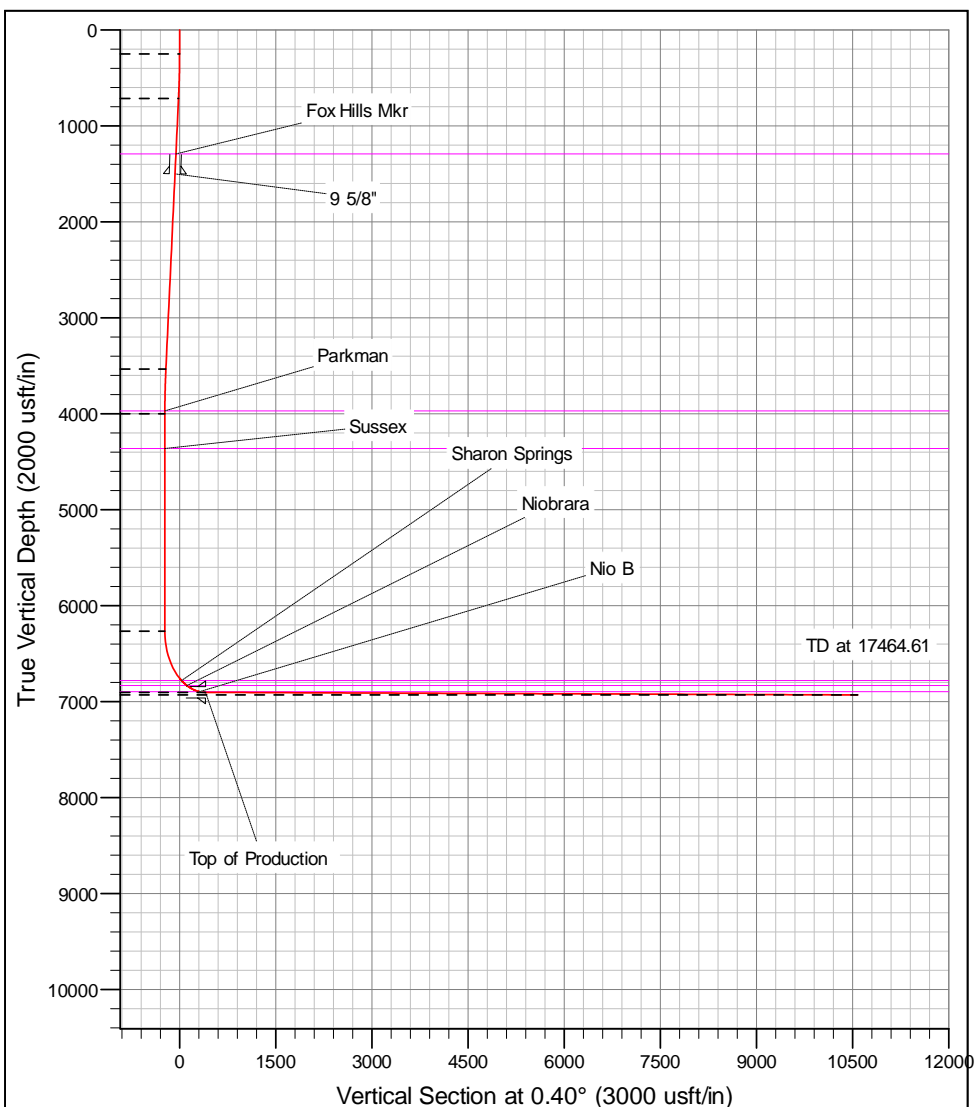
+N/-S	+E/-W	GL: 4878.00 Northing	RKB = 17' @ 4895.00usft (D Rig) Easting	Latitude	Longitude	Slot
0.00	0.00	14575070.30	1749263.83	40.132086	-104.610580	

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
716.26	6.99	125.11	715.10	-16.35	23.25	1.50	-16.18
3557.19	6.99	125.11	3534.90	-215.29	306.24	0.00	-213.15
4023.45	0.00	0.00	4000.00	-231.64	329.49	1.50	-229.33
6291.20	0.00	0.00	6267.74	-231.64	329.49	0.00	-229.33
7289.53	89.85	0.00	6904.36	403.32	329.50	9.00	405.61
17464.61	89.85	0.00	6931.00	10578.36	329.52	0.00	10580.40

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SWARTZ 2N-12HZ_PBHL	6931.00	10578.36	329.52	14585650.00	1749547.00	40.161135	-104.609401



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 2N-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 2N-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 2N-12HZ					
Well Position	+N-S	-0.36 usft	Northing:	14,575,070.29 usft	Latitude:	40.132086
	+E-W	59.82 usft	Easting:	1,749,263.83 usft	Longitude:	-104.610580
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	52,572.33019612

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	0.40	

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	7,280.57	17,464.61	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)
Site:	2N-65W-13 Swartz 15-13HZ Pad	North Reference:	True
Well:	SWARTZ 2N-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	
716.26	6.99	125.11	715.10	-16.35	23.25	1.50	1.50	0.00	125.11	
3,557.19	6.99	125.11	3,534.90	-215.29	306.24	0.00	0.00	0.00	0.00	
4,023.45	0.00	0.00	4,000.00	-231.64	329.49	1.50	-1.50	0.00	180.00	
6,291.20	0.00	0.00	6,267.74	-231.64	329.49	0.00	0.00	0.00	0.00	
7,289.53	89.85	0.00	6,904.36	403.32	329.50	9.00	9.00	0.00	0.00	
17,464.61	89.85	0.00	6,931.00	10,578.36	329.52	0.00	0.00	0.00	0.00	SWARTZ 2N-12HZ

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 2N-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	125.11	300.00	-0.19	0.27	-0.19	1.50	1.50	0.00
400.00	2.25	125.11	399.96	-1.69	2.41	-1.68	1.50	1.50	0.00
500.00	3.75	125.11	499.82	-4.70	6.69	-4.66	1.50	1.50	0.00
600.00	5.25	125.11	599.51	-9.22	13.11	-9.12	1.50	1.50	0.00
700.00	6.75	125.11	698.96	-15.23	21.66	-15.08	1.50	1.50	0.00
716.26	6.99	125.11	715.10	-16.35	23.25	-16.18	1.50	1.50	0.00
800.00	6.99	125.11	798.22	-22.21	31.59	-21.99	0.00	0.00	0.00
900.00	6.99	125.11	897.48	-29.21	41.55	-28.92	0.00	0.00	0.00
1,000.00	6.99	125.11	996.73	-36.22	51.52	-35.86	0.00	0.00	0.00
1,100.00	6.99	125.11	1,095.99	-43.22	61.48	-42.79	0.00	0.00	0.00
1,200.00	6.99	125.11	1,195.24	-50.22	71.44	-49.72	0.00	0.00	0.00
1,299.50	6.99	125.11	1,294.00	-57.19	81.35	-56.62	0.00	0.00	0.00
Fox Hills Mkr									
1,300.00	6.99	125.11	1,294.50	-57.22	81.40	-56.65	0.00	0.00	0.00
1,400.00	6.99	125.11	1,393.76	-64.23	91.36	-63.59	0.00	0.00	0.00
1,500.00	6.99	125.11	1,493.01	-71.23	101.32	-70.52	0.00	0.00	0.00
1,507.04	6.99	125.11	1,500.00	-71.72	102.02	-71.01	0.00	0.00	0.00
9 5/8"									
1,600.00	6.99	125.11	1,592.27	-78.23	111.28	-77.45	0.00	0.00	0.00
1,700.00	6.99	125.11	1,691.52	-85.23	121.24	-84.39	0.00	0.00	0.00
1,800.00	6.99	125.11	1,790.78	-92.24	131.20	-91.32	0.00	0.00	0.00
1,900.00	6.99	125.11	1,890.03	-99.24	141.17	-98.25	0.00	0.00	0.00
2,000.00	6.99	125.11	1,989.29	-106.24	151.13	-105.19	0.00	0.00	0.00
2,100.00	6.99	125.11	2,088.55	-113.25	161.09	-112.12	0.00	0.00	0.00
2,200.00	6.99	125.11	2,187.80	-120.25	171.05	-119.05	0.00	0.00	0.00
2,300.00	6.99	125.11	2,287.06	-127.25	181.01	-125.98	0.00	0.00	0.00
2,400.00	6.99	125.11	2,386.31	-134.25	190.97	-132.92	0.00	0.00	0.00
2,500.00	6.99	125.11	2,485.57	-141.26	200.93	-139.85	0.00	0.00	0.00
2,600.00	6.99	125.11	2,584.83	-148.26	210.89	-146.78	0.00	0.00	0.00
2,700.00	6.99	125.11	2,684.08	-155.26	220.86	-153.72	0.00	0.00	0.00
2,800.00	6.99	125.11	2,783.34	-162.27	230.82	-160.65	0.00	0.00	0.00
2,900.00	6.99	125.11	2,882.59	-169.27	240.78	-167.58	0.00	0.00	0.00
3,000.00	6.99	125.11	2,981.85	-176.27	250.74	-174.52	0.00	0.00	0.00
3,100.00	6.99	125.11	3,081.11	-183.27	260.70	-181.45	0.00	0.00	0.00
3,200.00	6.99	125.11	3,180.36	-190.28	270.66	-188.38	0.00	0.00	0.00
3,300.00	6.99	125.11	3,279.62	-197.28	280.62	-195.32	0.00	0.00	0.00
3,400.00	6.99	125.11	3,378.87	-204.28	290.58	-202.25	0.00	0.00	0.00
3,500.00	6.99	125.11	3,478.13	-211.28	300.55	-209.18	0.00	0.00	0.00
3,557.19	6.99	125.11	3,534.90	-215.29	306.24	-213.15	0.00	0.00	0.00
3,600.00	6.35	125.11	3,577.41	-218.15	310.31	-215.98	1.50	-1.50	0.00
3,700.00	4.85	125.11	3,676.93	-223.76	318.30	-221.54	1.50	-1.50	0.00
3,800.00	3.35	125.11	3,776.67	-227.88	324.15	-225.61	1.50	-1.50	0.00
3,900.00	1.85	125.11	3,876.57	-230.49	327.86	-228.19	1.50	-1.50	0.00
3,994.45	0.44	125.11	3,971.00	-231.57	329.40	-229.27	1.50	-1.50	0.00
Parkman									
4,000.00	0.35	125.11	3,976.55	-231.59	329.44	-229.29	1.50	-1.50	0.00
4,023.45	0.00	0.00	4,000.00	-231.64	329.49	-229.33	1.50	-1.50	0.00
4,100.00	0.00	0.00	4,076.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,200.00	0.00	0.00	4,176.55	-231.64	329.49	-229.33	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 2N-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 2N-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	4,276.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,385.45	0.00	0.00	4,362.00	-231.64	329.49	-229.33	0.00	0.00	0.00
Sussex									
4,400.00	0.00	0.00	4,376.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,500.00	0.00	0.00	4,476.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,600.00	0.00	0.00	4,576.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,700.00	0.00	0.00	4,676.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,800.00	0.00	0.00	4,776.55	-231.64	329.49	-229.33	0.00	0.00	0.00
4,900.00	0.00	0.00	4,876.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,000.00	0.00	0.00	4,976.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,100.00	0.00	0.00	5,076.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,200.00	0.00	0.00	5,176.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,300.00	0.00	0.00	5,276.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,400.00	0.00	0.00	5,376.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,500.00	0.00	0.00	5,476.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,600.00	0.00	0.00	5,576.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,700.00	0.00	0.00	5,676.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,800.00	0.00	0.00	5,776.55	-231.64	329.49	-229.33	0.00	0.00	0.00
5,900.00	0.00	0.00	5,876.55	-231.64	329.49	-229.33	0.00	0.00	0.00
6,000.00	0.00	0.00	5,976.55	-231.64	329.49	-229.33	0.00	0.00	0.00
6,100.00	0.00	0.00	6,076.55	-231.64	329.49	-229.33	0.00	0.00	0.00
6,200.00	0.00	0.00	6,176.55	-231.64	329.49	-229.33	0.00	0.00	0.00
6,291.20	0.00	0.00	6,267.74	-231.64	329.49	-229.33	0.00	0.00	0.00
6,300.00	0.79	0.00	6,276.55	-231.58	329.49	-229.27	9.00	9.00	0.00
6,400.00	9.79	0.00	6,376.02	-222.36	329.49	-220.06	9.00	9.00	0.00
6,500.00	18.79	0.00	6,472.82	-197.70	329.49	-195.39	9.00	9.00	0.00
6,600.00	27.79	0.00	6,564.58	-158.20	329.49	-155.89	9.00	9.00	0.00
6,700.00	36.79	0.00	6,649.03	-104.83	329.49	-102.53	9.00	9.00	0.00
6,800.00	45.79	0.00	6,724.08	-38.91	329.49	-36.61	9.00	9.00	0.00
6,888.18	53.73	0.00	6,781.00	28.35	329.49	30.65	9.00	9.00	0.00
Sharon Springs									
6,900.00	54.79	0.00	6,787.91	37.95	329.49	40.24	9.00	9.00	0.00
6,986.87	62.61	0.00	6,833.00	112.12	329.49	114.42	9.00	9.00	0.00
Niobrara									
7,000.00	63.79	0.00	6,838.92	123.84	329.49	126.13	9.00	9.00	0.00
7,100.00	72.79	0.00	6,875.87	216.65	329.49	218.94	9.00	9.00	0.00
7,194.27	81.28	0.00	6,897.00	308.43	329.50	310.73	9.00	9.00	0.00
Nio B									
7,200.00	81.79	0.00	6,897.84	314.10	329.50	316.39	9.00	9.00	0.00
7,289.53	89.85	0.00	6,904.36	403.32	329.50	405.61	9.00	9.00	0.00
Top of Production - SWARTZ 2N-12HZ_PHL									
7,300.00	89.85	0.00	6,904.39	413.79	329.50	416.08	0.00	0.00	0.00
7,400.00	89.85	0.00	6,904.65	513.79	329.50	516.07	0.00	0.00	0.00
7,500.00	89.85	0.00	6,904.91	613.79	329.50	616.07	0.00	0.00	0.00
7,600.00	89.85	0.00	6,905.17	713.79	329.50	716.07	0.00	0.00	0.00
7,700.00	89.85	0.00	6,905.44	813.79	329.50	816.07	0.00	0.00	0.00
7,800.00	89.85	0.00	6,905.70	913.78	329.50	916.06	0.00	0.00	0.00
7,900.00	89.85	0.00	6,905.96	1,013.78	329.50	1,016.06	0.00	0.00	0.00
8,000.00	89.85	0.00	6,906.22	1,113.78	329.50	1,116.06	0.00	0.00	0.00
8,100.00	89.85	0.00	6,906.48	1,213.78	329.50	1,216.05	0.00	0.00	0.00
8,200.00	89.85	0.00	6,906.75	1,313.78	329.50	1,316.05	0.00	0.00	0.00
8,300.00	89.85	0.00	6,907.01	1,413.78	329.50	1,416.05	0.00	0.00	0.00
8,400.00	89.85	0.00	6,907.27	1,513.78	329.50	1,516.05	0.00	0.00	0.00
8,500.00	89.85	0.00	6,907.53	1,613.78	329.50	1,616.04	0.00	0.00	0.00

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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 2N-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)
8,600.00	89.85	0.00	6,907.79	1,713.78	329.50	1,716.04	0.00	0.00	0.00
8,700.00	89.85	0.00	6,908.05	1,813.78	329.50	1,816.04	0.00	0.00	0.00
8,800.00	89.85	0.00	6,908.32	1,913.78	329.50	1,916.04	0.00	0.00	0.00
8,900.00	89.85	0.00	6,908.58	2,013.78	329.50	2,016.03	0.00	0.00	0.00
9,000.00	89.85	0.00	6,908.84	2,113.78	329.50	2,116.03	0.00	0.00	0.00
9,100.00	89.85	0.00	6,909.10	2,213.78	329.50	2,216.03	0.00	0.00	0.00
9,200.00	89.85	0.00	6,909.36	2,313.78	329.50	2,316.02	0.00	0.00	0.00
9,300.00	89.85	0.00	6,909.63	2,413.78	329.50	2,416.02	0.00	0.00	0.00
9,400.00	89.85	0.00	6,909.89	2,513.78	329.50	2,516.02	0.00	0.00	0.00
9,500.00	89.85	0.00	6,910.15	2,613.78	329.50	2,616.02	0.00	0.00	0.00
9,600.00	89.85	0.00	6,910.41	2,713.78	329.50	2,716.01	0.00	0.00	0.00
9,700.00	89.85	0.00	6,910.67	2,813.78	329.50	2,816.01	0.00	0.00	0.00
9,800.00	89.85	0.00	6,910.93	2,913.78	329.50	2,916.01	0.00	0.00	0.00
9,900.00	89.85	0.00	6,911.20	3,013.78	329.50	3,016.00	0.00	0.00	0.00
10,000.00	89.85	0.00	6,911.46	3,113.78	329.50	3,116.00	0.00	0.00	0.00
10,100.00	89.85	0.00	6,911.72	3,213.78	329.50	3,216.00	0.00	0.00	0.00
10,200.00	89.85	0.00	6,911.98	3,313.78	329.50	3,316.00	0.00	0.00	0.00
10,300.00	89.85	0.00	6,912.24	3,413.78	329.50	3,415.99	0.00	0.00	0.00
10,400.00	89.85	0.00	6,912.51	3,513.78	329.50	3,515.99	0.00	0.00	0.00
10,500.00	89.85	0.00	6,912.77	3,613.78	329.50	3,615.99	0.00	0.00	0.00
10,600.00	89.85	0.00	6,913.03	3,713.78	329.50	3,715.99	0.00	0.00	0.00
10,700.00	89.85	0.00	6,913.29	3,813.77	329.50	3,815.98	0.00	0.00	0.00
10,800.00	89.85	0.00	6,913.55	3,913.77	329.50	3,915.98	0.00	0.00	0.00
10,900.00	89.85	0.00	6,913.81	4,013.77	329.50	4,015.98	0.00	0.00	0.00
11,000.00	89.85	0.00	6,914.08	4,113.77	329.50	4,115.97	0.00	0.00	0.00
11,100.00	89.85	0.00	6,914.34	4,213.77	329.50	4,215.97	0.00	0.00	0.00
11,200.00	89.85	0.00	6,914.60	4,313.77	329.50	4,315.97	0.00	0.00	0.00
11,300.00	89.85	0.00	6,914.86	4,413.77	329.50	4,415.97	0.00	0.00	0.00
11,400.00	89.85	0.00	6,915.12	4,513.77	329.50	4,515.96	0.00	0.00	0.00
11,500.00	89.85	0.00	6,915.38	4,613.77	329.51	4,615.96	0.00	0.00	0.00
11,600.00	89.85	0.00	6,915.65	4,713.77	329.51	4,715.96	0.00	0.00	0.00
11,700.00	89.85	0.00	6,915.91	4,813.77	329.51	4,815.95	0.00	0.00	0.00
11,800.00	89.85	0.00	6,916.17	4,913.77	329.51	4,915.95	0.00	0.00	0.00
11,900.00	89.85	0.00	6,916.43	5,013.77	329.51	5,015.95	0.00	0.00	0.00
12,000.00	89.85	0.00	6,916.69	5,113.77	329.51	5,115.95	0.00	0.00	0.00
12,100.00	89.85	0.00	6,916.96	5,213.77	329.51	5,215.94	0.00	0.00	0.00
12,200.00	89.85	0.00	6,917.22	5,313.77	329.51	5,315.94	0.00	0.00	0.00
12,300.00	89.85	0.00	6,917.48	5,413.77	329.51	5,415.94	0.00	0.00	0.00
12,400.00	89.85	0.00	6,917.74	5,513.77	329.51	5,515.94	0.00	0.00	0.00
12,500.00	89.85	0.00	6,918.00	5,613.77	329.51	5,615.93	0.00	0.00	0.00
12,600.00	89.85	0.00	6,918.26	5,713.77	329.51	5,715.93	0.00	0.00	0.00
12,700.00	89.85	0.00	6,918.53	5,813.77	329.51	5,815.93	0.00	0.00	0.00
12,800.00	89.85	0.00	6,918.79	5,913.77	329.51	5,915.92	0.00	0.00	0.00
12,900.00	89.85	0.00	6,919.05	6,013.77	329.51	6,015.92	0.00	0.00	0.00
13,000.00	89.85	0.00	6,919.31	6,113.77	329.51	6,115.92	0.00	0.00	0.00
13,100.00	89.85	0.00	6,919.57	6,213.77	329.51	6,215.92	0.00	0.00	0.00
13,200.00	89.85	0.00	6,919.84	6,313.77	329.51	6,315.91	0.00	0.00	0.00
13,300.00	89.85	0.00	6,920.10	6,413.77	329.51	6,415.91	0.00	0.00	0.00
13,400.00	89.85	0.00	6,920.36	6,513.77	329.51	6,515.91	0.00	0.00	0.00
13,500.00	89.85	0.00	6,920.62	6,613.77	329.51	6,615.90	0.00	0.00	0.00
13,600.00	89.85	0.00	6,920.88	6,713.77	329.51	6,715.90	0.00	0.00	0.00
13,700.00	89.85	0.00	6,921.14	6,813.76	329.51	6,815.90	0.00	0.00	0.00
13,800.00	89.85	0.00	6,921.41	6,913.76	329.51	6,915.90	0.00	0.00	0.00
13,900.00	89.85	0.00	6,921.67	7,013.76	329.51	7,015.89	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 2N-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 2N-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)
14,000.00	89.85	0.00	6,921.93	7,113.76	329.51	7,115.89	0.00	0.00	0.00
14,100.00	89.85	0.00	6,922.19	7,213.76	329.51	7,215.89	0.00	0.00	0.00
14,200.00	89.85	0.00	6,922.45	7,313.76	329.51	7,315.89	0.00	0.00	0.00
14,300.00	89.85	0.00	6,922.72	7,413.76	329.51	7,415.88	0.00	0.00	0.00
14,400.00	89.85	0.00	6,922.98	7,513.76	329.51	7,515.88	0.00	0.00	0.00
14,500.00	89.85	0.00	6,923.24	7,613.76	329.51	7,615.88	0.00	0.00	0.00
14,600.00	89.85	0.00	6,923.50	7,713.76	329.51	7,715.87	0.00	0.00	0.00
14,700.00	89.85	0.00	6,923.76	7,813.76	329.51	7,815.87	0.00	0.00	0.00
14,800.00	89.85	0.00	6,924.02	7,913.76	329.51	7,915.87	0.00	0.00	0.00
14,900.00	89.85	0.00	6,924.29	8,013.76	329.51	8,015.87	0.00	0.00	0.00
15,000.00	89.85	0.00	6,924.55	8,113.76	329.51	8,115.86	0.00	0.00	0.00
15,100.00	89.85	0.00	6,924.81	8,213.76	329.51	8,215.86	0.00	0.00	0.00
15,200.00	89.85	0.00	6,925.07	8,313.76	329.51	8,315.86	0.00	0.00	0.00
15,300.00	89.85	0.00	6,925.33	8,413.76	329.51	8,415.85	0.00	0.00	0.00
15,400.00	89.85	0.00	6,925.60	8,513.76	329.51	8,515.85	0.00	0.00	0.00
15,500.00	89.85	0.00	6,925.86	8,613.76	329.51	8,615.85	0.00	0.00	0.00
15,600.00	89.85	0.00	6,926.12	8,713.76	329.51	8,715.85	0.00	0.00	0.00
15,700.00	89.85	0.00	6,926.38	8,813.76	329.51	8,815.84	0.00	0.00	0.00
15,800.00	89.85	0.00	6,926.64	8,913.76	329.52	8,915.84	0.00	0.00	0.00
15,900.00	89.85	0.00	6,926.90	9,013.76	329.52	9,015.84	0.00	0.00	0.00
16,000.00	89.85	0.00	6,927.17	9,113.76	329.52	9,115.84	0.00	0.00	0.00
16,100.00	89.85	0.00	6,927.43	9,213.76	329.52	9,215.83	0.00	0.00	0.00
16,200.00	89.85	0.00	6,927.69	9,313.76	329.52	9,315.83	0.00	0.00	0.00
16,300.00	89.85	0.00	6,927.95	9,413.76	329.52	9,415.83	0.00	0.00	0.00
16,400.00	89.85	0.00	6,928.21	9,513.76	329.52	9,515.82	0.00	0.00	0.00
16,500.00	89.85	0.00	6,928.47	9,613.76	329.52	9,615.82	0.00	0.00	0.00
16,600.00	89.85	0.00	6,928.74	9,713.75	329.52	9,715.82	0.00	0.00	0.00
16,700.00	89.85	0.00	6,929.00	9,813.75	329.52	9,815.82	0.00	0.00	0.00
16,800.00	89.85	0.00	6,929.26	9,913.75	329.52	9,915.81	0.00	0.00	0.00
16,900.00	89.85	0.00	6,929.52	10,013.75	329.52	10,015.81	0.00	0.00	0.00
17,000.00	89.85	0.00	6,929.78	10,113.75	329.52	10,115.81	0.00	0.00	0.00
17,100.00	89.85	0.00	6,930.05	10,213.75	329.52	10,215.80	0.00	0.00	0.00
17,200.00	89.85	0.00	6,930.31	10,313.75	329.52	10,315.80	0.00	0.00	0.00
17,300.00	89.85	0.00	6,930.57	10,413.75	329.52	10,415.80	0.00	0.00	0.00
17,400.00	89.85	0.00	6,930.83	10,513.75	329.52	10,515.80	0.00	0.00	0.00
17,464.61	89.85	0.00	6,931.00	10,578.36	329.52	10,580.41	0.00	0.00	0.00
SWARTZ 2N-12HZ_PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SWARTZ 2N-12HZ_P	0.00	0.00	6,904.36	403.32	329.50	14,575,475.05	1,749,591.55	40.133194	-104.609401
- plan hits target center									
- Point									
SWARTZ 2N-12HZ_P	0.00	0.00	6,931.00	10,578.36	329.52	14,585,650.00	1,749,547.00	40.161135	-104.609401
- plan hits target center									
- Point									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well SWARTZ 2N-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 2N-12HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-2		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,507.04	1,500.00	9 5/8"	9-5/8	13-1/2	
7,289.53	6,904.36	Top of Production	5-1/2	8-1/2	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,299.50	1,294.00	Fox Hills Mkr				
3,994.45	3,971.00	Parkman				
4,385.45	4,362.00	Sussex				
6,888.18	6,781.00	Sharon Springs				
6,986.87	6,833.00	Niobrara				
7,194.27	6,897.00	Nio B				