

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N  
1N-68W-08 SHUMAKER PAD  
SHUMAKER 8-8HZ**

**Plan A**

**Plan: Permit Rev-1**

## **Standard Planning Report**

**16 March, 2017**



Azimuths to True North  
Magnetic North: 8.20°

Magnetic Field  
Strength: 52320.4nT  
Dip Angle: 66.54°  
Date: 3/8/2017  
Model: IGRF2010

SITE: 1N-68W-08 SHUMAKER PAD

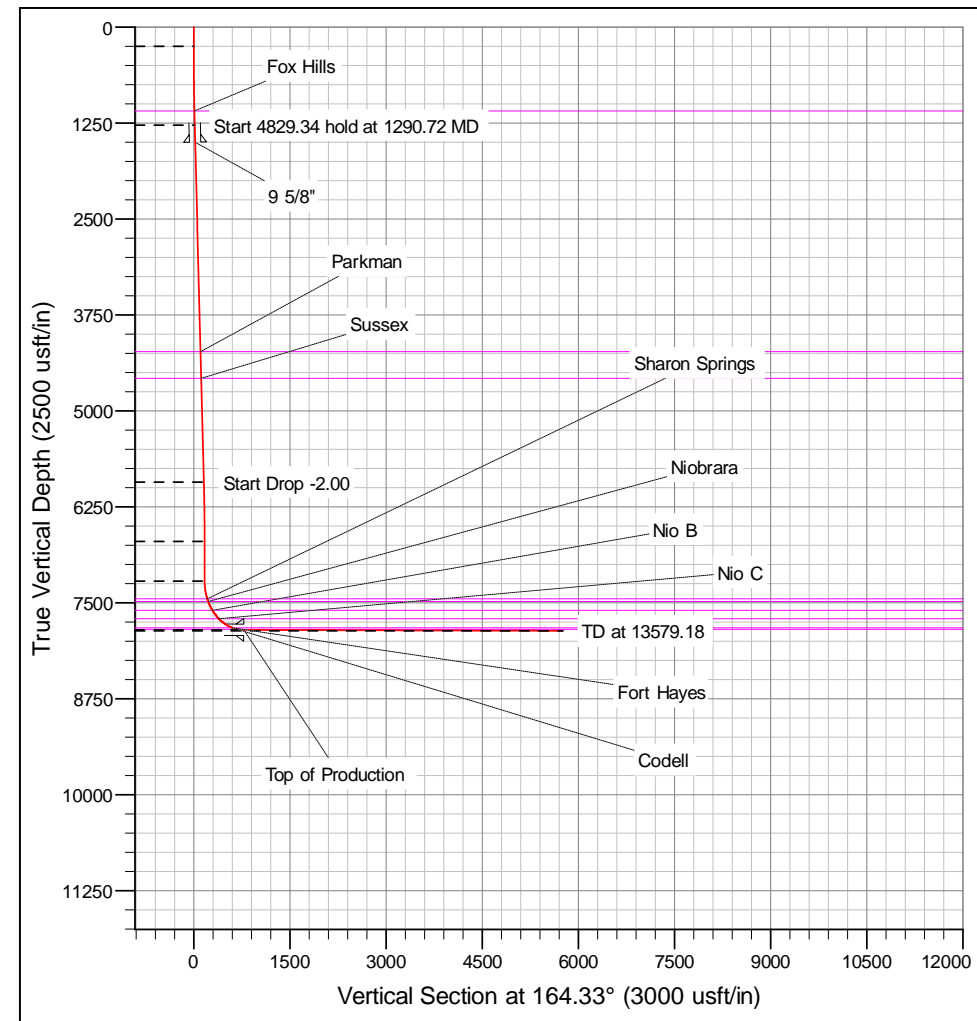
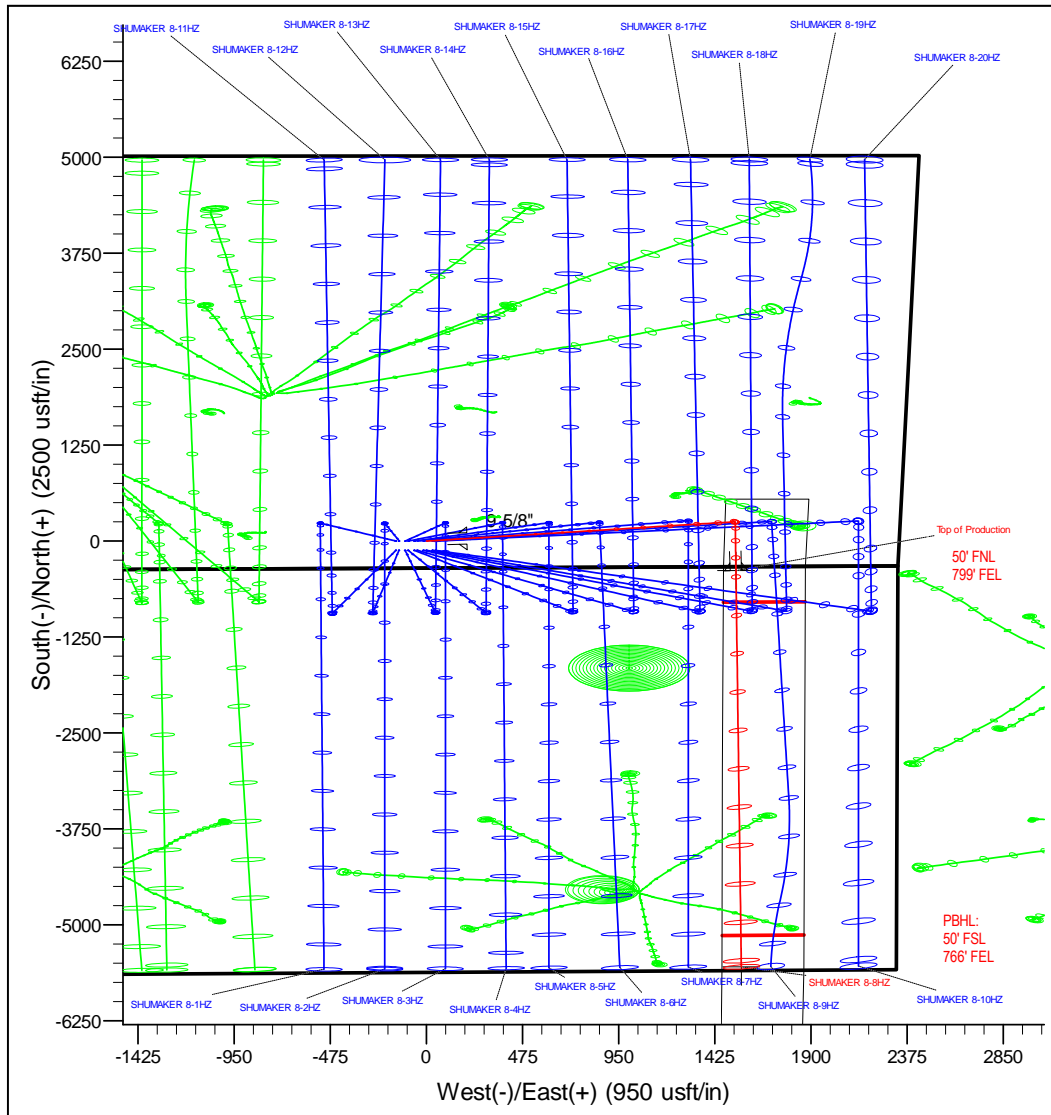
Well: SHUMAKER 8-8HZ  
Wellbore: Plan A  
Design: Permit Rev-1

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1053.00	1100.00	Fox Hills
4228.00	4353.82	Parkman
4576.00	4715.15	Sussex
7448.00	7653.94	Sharon Springs
7483.00	7691.95	Niobrara
7600.00	7828.38	Nio B
7709.00	7979.53	Nio C
7825.00	8224.40	Fort Hayes
7845.00	8309.38	Codell

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHUMAKER 8-8HZ PBHL	7866.00	-5545.45	1555.48	14542759.00	1634555.00	40.044007	-105.020944

WELL DETAILS: SHUMAKER 8-8HZ					
		GL: 5104.00	RKB @ 5121.00usft (D Rig)		
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14548304.91	1633001.17	40.059236	-105.026502

SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dieg	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	
1290.72	15.61	80.62	1277.89	22.96	139.02	1.50	15.43	
6120.06	15.61	80.62	5929.08	234.78	1421.22	0.00	157.78	
6900.59	0.00	0.00	6700.00	252.00	1525.48	2.00	169.36	
7418.26	0.00	0.00	7217.67	252.00	1525.48	0.00	169.36	
8416.82	89.87	179.70	7854.29	-383.17	1528.77	9.00	781.81	
13579.18	89.87	179.70	7866.00	-5545.45	1555.48	0.00	5759.47	



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well SHUMAKER 8-8HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Site:</b>	1N-68W-08 SHUMAKER PAD	<b>North Reference:</b>	True
<b>Well:</b>	SHUMAKER 8-8HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

<b>Project</b>	WELD-NAD83-UTMFT13N		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

Site		1N-68W-08 SHUMAKER PAD			
Site Position:		Northing:	14,548,245.20 usft	Latitude:	40.059072
From:	Map	Easting:	1,632,948.27 usft	Longitude:	-105.026691
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.02 °

Well	SHUMAKER 8-8HZ					
Well Position	+N/-S	59.72 usft	Northing:	14,548,304.91 usft	Latitude:	40.059236
	+E/-W	52.88 usft	Easting:	1,633,001.17 usft	Longitude:	-105.026502
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,104.00 usft

<b>Wellbore</b>	Plan A				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/8/2017	8.20	66.54	52,320.42483603

<b>Design</b>	Permit Rev-1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	164.33

<b>Plan Survey Tool Program</b>	<b>Date</b>	3/16/2017			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	1,521.34	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI Fixed:v2:standard declination	
2	1,521.34	13,579.18	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI Fixed:v2:crustal field declinat	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well SHUMAKER 8-8HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Site:</b>	1N-68W-08 SHUMAKER PAD	<b>North Reference:</b>	True
<b>Well:</b>	SHUMAKER 8-8HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,290.72	15.61	80.62	1,277.89	22.96	139.02	1.50	1.50	0.00	80.62	
6,120.06	15.61	80.62	5,929.08	234.78	1,421.22	0.00	0.00	0.00	0.00	
6,900.59	0.00	0.00	6,700.00	252.00	1,525.48	2.00	-2.00	0.00	180.00	
7,418.26	0.00	0.00	7,217.67	252.00	1,525.48	0.00	0.00	0.00	0.00	
8,416.82	89.87	179.70	7,854.29	-383.17	1,528.77	9.00	9.00	0.00	179.70	
13,579.18	89.87	179.70	7,866.00	-5,545.45	1,555.48	0.00	0.00	0.00	0.00	SHUMAKER 8-8HZ

# Corporate Planning Report

**Database:** PLANNING  
**Company:** US ROCKIES WATTENBERG PLANNING  
**Project:** WELD-NAD83-UTMFT13N  
**Site:** 1N-68W-08 SHUMAKER PAD  
**Well:** SHUMAKER 8-8HZ  
**Wellbore:** Plan A  
**Design:** Permit Rev-1

**Local Co-ordinate Reference:** Well SHUMAKER 8-8HZ  
**TVD Reference:** RKB @ 5121.00usft (D Rig)  
**MD Reference:** RKB @ 5121.00usft (D Rig)  
**North Reference:** True  
**Survey Calculation Method:** 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)
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	80.62	300.00	0.05	0.32	0.04	1.50	1.50	0.00
400.00	2.25	80.62	399.96	0.48	2.91	0.32	1.50	1.50	0.00
500.00	3.75	80.62	499.82	1.33	8.07	0.90	1.50	1.50	0.00
600.00	5.25	80.62	599.51	2.61	15.81	1.76	1.50	1.50	0.00
700.00	6.75	80.62	698.96	4.32	26.12	2.90	1.50	1.50	0.00
800.00	8.25	80.62	798.10	6.44	39.00	4.33	1.50	1.50	0.00
900.00	9.75	80.62	896.87	8.99	54.43	6.04	1.50	1.50	0.00
1,000.00	11.25	80.62	995.19	11.96	72.41	8.04	1.50	1.50	0.00
1,100.00	12.75	80.62	1,093.00	15.35	92.93	10.32	1.50	1.50	0.00
Fox Hills									
1,200.00	14.25	80.62	1,190.24	19.16	115.96	12.87	1.50	1.50	0.00
1,290.72	15.61	80.62	1,277.89	22.96	139.02	15.43	1.50	1.50	0.00
1,300.00	15.61	80.62	1,286.83	23.37	141.48	15.71	0.00	0.00	0.00
1,400.00	15.61	80.62	1,383.14	27.76	168.03	18.65	0.00	0.00	0.00
1,500.00	15.61	80.62	1,479.45	32.14	194.58	21.60	0.00	0.00	0.00
1,521.34	15.61	80.62	1,500.00	33.08	200.25	22.23	0.00	0.00	0.00
9 5/8"									
1,600.00	15.61	80.62	1,575.76	36.53	221.13	24.55	0.00	0.00	0.00
1,700.00	15.61	80.62	1,672.07	40.92	247.68	27.50	0.00	0.00	0.00
1,800.00	15.61	80.62	1,768.39	45.30	274.23	30.44	0.00	0.00	0.00
1,900.00	15.61	80.62	1,864.70	49.69	300.78	33.39	0.00	0.00	0.00
2,000.00	15.61	80.62	1,961.01	54.07	327.33	36.34	0.00	0.00	0.00
2,100.00	15.61	80.62	2,057.32	58.46	353.88	39.29	0.00	0.00	0.00
2,200.00	15.61	80.62	2,153.63	62.85	380.43	42.23	0.00	0.00	0.00
2,300.00	15.61	80.62	2,249.94	67.23	406.98	45.18	0.00	0.00	0.00
2,400.00	15.61	80.62	2,346.25	71.62	433.53	48.13	0.00	0.00	0.00
2,500.00	15.61	80.62	2,442.56	76.00	460.08	51.08	0.00	0.00	0.00
2,600.00	15.61	80.62	2,538.88	80.39	486.63	54.03	0.00	0.00	0.00
2,700.00	15.61	80.62	2,635.19	84.78	513.19	56.97	0.00	0.00	0.00
2,800.00	15.61	80.62	2,731.50	89.16	539.74	59.92	0.00	0.00	0.00
2,900.00	15.61	80.62	2,827.81	93.55	566.29	62.87	0.00	0.00	0.00
3,000.00	15.61	80.62	2,924.12	97.93	592.84	65.82	0.00	0.00	0.00
3,100.00	15.61	80.62	3,020.43	102.32	619.39	68.76	0.00	0.00	0.00
3,200.00	15.61	80.62	3,116.74	106.70	645.94	71.71	0.00	0.00	0.00
3,300.00	15.61	80.62	3,213.05	111.09	672.49	74.66	0.00	0.00	0.00
3,400.00	15.61	80.62	3,309.36	115.48	699.04	77.61	0.00	0.00	0.00
3,500.00	15.61	80.62	3,405.68	119.86	725.59	80.55	0.00	0.00	0.00
3,600.00	15.61	80.62	3,501.99	124.25	752.14	83.50	0.00	0.00	0.00
3,700.00	15.61	80.62	3,598.30	128.63	778.69	86.45	0.00	0.00	0.00
3,800.00	15.61	80.62	3,694.61	133.02	805.24	89.40	0.00	0.00	0.00
3,900.00	15.61	80.62	3,790.92	137.41	831.79	92.34	0.00	0.00	0.00
4,000.00	15.61	80.62	3,887.23	141.79	858.34	95.29	0.00	0.00	0.00
4,100.00	15.61	80.62	3,983.54	146.18	884.89	98.24	0.00	0.00	0.00
4,200.00	15.61	80.62	4,079.85	150.56	911.44	101.19	0.00	0.00	0.00
4,300.00	15.61	80.62	4,176.17	154.95	937.99	104.13	0.00	0.00	0.00
4,353.82	15.61	80.62	4,228.00	157.31	952.28	105.72	0.00	0.00	0.00
Parkman									
4,400.00	15.61	80.62	4,272.48	159.34	964.54	107.08	0.00	0.00	0.00
4,500.00	15.61	80.62	4,368.79	163.72	991.09	110.03	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well SHUMAKER 8-8HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Site:</b>	1N-68W-08 SHUMAKER PAD	<b>North Reference:</b>	True
<b>Well:</b>	SHUMAKER 8-8HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,600.00	15.61	80.62	4,465.10	168.11	1,017.64	112.98	0.00	0.00	0.00	
4,700.00	15.61	80.62	4,561.41	172.49	1,044.19	115.92	0.00	0.00	0.00	
4,715.15	15.61	80.62	4,576.00	173.16	1,048.21	116.37	0.00	0.00	0.00	
<b>Sussex</b>										
4,800.00	15.61	80.62	4,657.72	176.88	1,070.74	118.87	0.00	0.00	0.00	
4,900.00	15.61	80.62	4,754.03	181.27	1,097.29	121.82	0.00	0.00	0.00	
5,000.00	15.61	80.62	4,850.34	185.65	1,123.84	124.77	0.00	0.00	0.00	
5,100.00	15.61	80.62	4,946.66	190.04	1,150.39	127.71	0.00	0.00	0.00	
5,200.00	15.61	80.62	5,042.97	194.42	1,176.94	130.66	0.00	0.00	0.00	
5,300.00	15.61	80.62	5,139.28	198.81	1,203.49	133.61	0.00	0.00	0.00	
5,400.00	15.61	80.62	5,235.59	203.20	1,230.04	136.56	0.00	0.00	0.00	
5,500.00	15.61	80.62	5,331.90	207.58	1,256.59	139.50	0.00	0.00	0.00	
5,600.00	15.61	80.62	5,428.21	211.97	1,283.14	142.45	0.00	0.00	0.00	
5,700.00	15.61	80.62	5,524.52	216.35	1,309.69	145.40	0.00	0.00	0.00	
5,800.00	15.61	80.62	5,620.83	220.74	1,336.24	148.35	0.00	0.00	0.00	
5,900.00	15.61	80.62	5,717.15	225.12	1,362.79	151.29	0.00	0.00	0.00	
6,000.00	15.61	80.62	5,813.46	229.51	1,389.34	154.24	0.00	0.00	0.00	
6,100.00	15.61	80.62	5,909.77	233.90	1,415.89	157.19	0.00	0.00	0.00	
6,120.06	15.61	80.62	5,929.08	234.78	1,421.22	157.78	0.00	0.00	0.00	
6,200.00	14.01	80.62	6,006.37	238.11	1,441.38	160.02	2.00	-2.00	0.00	
6,300.00	12.01	80.62	6,103.80	241.78	1,463.59	162.48	2.00	-2.00	0.00	
6,400.00	10.01	80.62	6,201.95	244.89	1,482.44	164.58	2.00	-2.00	0.00	
6,500.00	8.01	80.62	6,300.71	247.44	1,497.89	166.29	2.00	-2.00	0.00	
6,600.00	6.01	80.62	6,399.96	249.43	1,509.93	167.63	2.00	-2.00	0.00	
6,700.00	4.01	80.62	6,499.57	250.86	1,518.55	168.59	2.00	-2.00	0.00	
6,800.00	2.01	80.62	6,599.43	251.71	1,523.74	169.16	2.00	-2.00	0.00	
6,900.00	0.01	80.62	6,699.41	252.00	1,525.48	169.36	2.00	-2.00	0.00	
6,900.59	0.00	0.00	6,700.00	252.00	1,525.48	169.36	2.00	-2.00	0.00	
7,000.00	0.00	0.00	6,799.41	252.00	1,525.48	169.36	0.00	0.00	0.00	
7,100.00	0.00	0.00	6,899.41	252.00	1,525.48	169.36	0.00	0.00	0.00	
7,200.00	0.00	0.00	6,999.41	252.00	1,525.48	169.36	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,099.41	252.00	1,525.48	169.36	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,199.41	252.00	1,525.48	169.36	0.00	0.00	0.00	
7,418.26	0.00	0.00	7,217.67	252.00	1,525.48	169.36	0.00	0.00	0.00	
7,500.00	7.36	179.70	7,299.18	246.76	1,525.51	174.41	9.00	9.00	0.00	
7,600.00	16.36	179.70	7,396.95	226.24	1,525.61	194.20	9.00	9.00	0.00	
7,653.94	21.21	179.70	7,448.00	208.87	1,525.70	210.94	9.00	9.00	0.00	
<b>Sharon Springs</b>										
7,691.95	24.63	179.70	7,483.00	194.07	1,525.78	225.21	9.00	9.00	0.00	
<b>Niobrara</b>										
7,700.00	25.36	179.70	7,490.30	190.67	1,525.80	228.49	9.00	9.00	0.00	
7,800.00	34.36	179.70	7,576.94	140.94	1,526.05	276.44	9.00	9.00	0.00	
7,828.38	36.91	179.70	7,600.00	124.41	1,526.14	292.38	9.00	9.00	0.00	
<b>Nio B</b>										
7,900.00	43.36	179.70	7,654.73	78.27	1,526.38	336.87	9.00	9.00	0.00	
7,979.53	50.51	179.70	7,709.00	20.20	1,526.68	392.86	9.00	9.00	0.00	
<b>Nio C</b>										
8,000.00	52.36	179.70	7,721.76	4.20	1,526.76	408.30	9.00	9.00	0.00	
8,100.00	61.36	179.70	7,776.38	-79.45	1,527.20	488.95	9.00	9.00	0.00	
8,200.00	70.36	179.70	7,817.24	-170.60	1,527.67	576.84	9.00	9.00	0.00	
8,224.40	72.55	179.70	7,825.00	-193.74	1,527.79	599.15	9.00	9.00	0.00	
<b>Fort Hayes</b>										
8,300.00	79.36	179.70	7,843.34	-267.03	1,528.17	669.82	9.00	9.00	0.00	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well SHUMAKER 8-8HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Site:</b>	1N-68W-08 SHUMAKER PAD	<b>North Reference:</b>	True
<b>Well:</b>	SHUMAKER 8-8HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	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)	
8,309.38	80.20	179.70	7,845.00	-276.26	1,528.21	678.72	9.00	9.00	0.00	
<b>Codell</b>										
8,400.00	88.36	179.70	7,854.03	-366.35	1,528.68	765.59	9.00	9.00	0.00	
8,416.82	89.87	179.70	7,854.29	-383.17	1,528.77	781.81	9.00	9.00	0.00	
<b>Top of Production - SHUMAKER 8-8HZ_PHL</b>										
8,500.00	89.87	179.70	7,854.48	-466.35	1,529.20	862.01	0.00	0.00	0.00	
8,600.00	89.87	179.70	7,854.70	-566.35	1,529.71	958.43	0.00	0.00	0.00	
8,700.00	89.87	179.70	7,854.93	-666.34	1,530.23	1,054.86	0.00	0.00	0.00	
8,800.00	89.87	179.70	7,855.16	-766.34	1,530.75	1,151.28	0.00	0.00	0.00	
8,900.00	89.87	179.70	7,855.38	-866.34	1,531.27	1,247.70	0.00	0.00	0.00	
9,000.00	89.87	179.70	7,855.61	-966.34	1,531.78	1,344.12	0.00	0.00	0.00	
9,100.00	89.87	179.70	7,855.84	-1,066.34	1,532.30	1,440.55	0.00	0.00	0.00	
9,200.00	89.87	179.70	7,856.06	-1,166.34	1,532.82	1,536.97	0.00	0.00	0.00	
9,300.00	89.87	179.70	7,856.29	-1,266.33	1,533.34	1,633.39	0.00	0.00	0.00	
9,400.00	89.87	179.70	7,856.52	-1,366.33	1,533.85	1,729.81	0.00	0.00	0.00	
9,500.00	89.87	179.70	7,856.74	-1,466.33	1,534.37	1,826.23	0.00	0.00	0.00	
9,600.00	89.87	179.70	7,856.97	-1,566.33	1,534.89	1,922.66	0.00	0.00	0.00	
9,700.00	89.87	179.70	7,857.20	-1,666.33	1,535.41	2,019.08	0.00	0.00	0.00	
9,800.00	89.87	179.70	7,857.43	-1,766.33	1,535.92	2,115.50	0.00	0.00	0.00	
9,900.00	89.87	179.70	7,857.65	-1,866.33	1,536.44	2,211.92	0.00	0.00	0.00	
10,000.00	89.87	179.70	7,857.88	-1,966.32	1,536.96	2,308.35	0.00	0.00	0.00	
10,100.00	89.87	179.70	7,858.11	-2,066.32	1,537.48	2,404.77	0.00	0.00	0.00	
10,200.00	89.87	179.70	7,858.33	-2,166.32	1,537.99	2,501.19	0.00	0.00	0.00	
10,300.00	89.87	179.70	7,858.56	-2,266.32	1,538.51	2,597.61	0.00	0.00	0.00	
10,400.00	89.87	179.70	7,858.79	-2,366.32	1,539.03	2,694.03	0.00	0.00	0.00	
10,500.00	89.87	179.70	7,859.01	-2,466.32	1,539.55	2,790.46	0.00	0.00	0.00	
10,600.00	89.87	179.70	7,859.24	-2,566.31	1,540.06	2,886.88	0.00	0.00	0.00	
10,700.00	89.87	179.70	7,859.47	-2,666.31	1,540.58	2,983.30	0.00	0.00	0.00	
10,800.00	89.87	179.70	7,859.69	-2,766.31	1,541.10	3,079.72	0.00	0.00	0.00	
10,900.00	89.87	179.70	7,859.92	-2,866.31	1,541.61	3,176.15	0.00	0.00	0.00	
11,000.00	89.87	179.70	7,860.15	-2,966.31	1,542.13	3,272.57	0.00	0.00	0.00	
11,100.00	89.87	179.70	7,860.38	-3,066.31	1,542.65	3,368.99	0.00	0.00	0.00	
11,200.00	89.87	179.70	7,860.60	-3,166.30	1,543.17	3,465.41	0.00	0.00	0.00	
11,300.00	89.87	179.70	7,860.83	-3,266.30	1,543.68	3,561.83	0.00	0.00	0.00	
11,400.00	89.87	179.70	7,861.06	-3,366.30	1,544.20	3,658.26	0.00	0.00	0.00	
11,500.00	89.87	179.70	7,861.28	-3,466.30	1,544.72	3,754.68	0.00	0.00	0.00	
11,600.00	89.87	179.70	7,861.51	-3,566.30	1,545.24	3,851.10	0.00	0.00	0.00	
11,700.00	89.87	179.70	7,861.74	-3,666.30	1,545.75	3,947.52	0.00	0.00	0.00	
11,800.00	89.87	179.70	7,861.96	-3,766.29	1,546.27	4,043.95	0.00	0.00	0.00	
11,900.00	89.87	179.70	7,862.19	-3,866.29	1,546.79	4,140.37	0.00	0.00	0.00	
12,000.00	89.87	179.70	7,862.42	-3,966.29	1,547.31	4,236.79	0.00	0.00	0.00	
12,100.00	89.87	179.70	7,862.64	-4,066.29	1,547.82	4,333.21	0.00	0.00	0.00	
12,200.00	89.87	179.70	7,862.87	-4,166.29	1,548.34	4,429.63	0.00	0.00	0.00	
12,300.00	89.87	179.70	7,863.10	-4,266.29	1,548.86	4,526.06	0.00	0.00	0.00	
12,400.00	89.87	179.70	7,863.32	-4,366.29	1,549.38	4,622.48	0.00	0.00	0.00	
12,500.00	89.87	179.70	7,863.55	-4,466.28	1,549.89	4,718.90	0.00	0.00	0.00	
12,600.00	89.87	179.70	7,863.78	-4,566.28	1,550.41	4,815.32	0.00	0.00	0.00	
12,700.00	89.87	179.70	7,864.01	-4,666.28	1,550.93	4,911.74	0.00	0.00	0.00	
12,800.00	89.87	179.70	7,864.23	-4,766.28	1,551.45	5,008.17	0.00	0.00	0.00	
12,900.00	89.87	179.70	7,864.46	-4,866.28	1,551.96	5,104.59	0.00	0.00	0.00	
13,000.00	89.87	179.70	7,864.69	-4,966.28	1,552.48	5,201.01	0.00	0.00	0.00	
13,100.00	89.87	179.70	7,864.91	-5,066.27	1,553.00	5,297.43	0.00	0.00	0.00	
13,200.00	89.87	179.70	7,865.14	-5,166.27	1,553.52	5,393.86	0.00	0.00	0.00	
13,300.00	89.87	179.70	7,865.37	-5,266.27	1,554.03	5,490.28	0.00	0.00	0.00	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well SHUMAKER 8-8HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5121.00usft (D Rig)
<b>Site:</b>	1N-68W-08 SHUMAKER PAD	<b>North Reference:</b>	True
<b>Well:</b>	SHUMAKER 8-8HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	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)
13,400.00	89.87	179.70	7,865.59	-5,366.27	1,554.55	5,586.70	0.00	0.00	0.00
13,500.00	89.87	179.70	7,865.82	-5,466.27	1,555.07	5,683.12	0.00	0.00	0.00
13,579.18	89.87	179.70	7,866.00	-5,545.45	1,555.48	5,759.47	0.00	0.00	0.00
SHUMAKER 8-8HZ_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									
SHUMAKER 8-8HZ_F	0.00	0.00	7,854.29	-383.17	1,528.77	14,547,921.28	1,634,529.82	40.058184	-105.021039
- plan hits target center									
- Point									
SHUMAKER 8-8HZ_P	0.00	0.00	7,866.00	-5,545.45	1,555.48	14,542,759.00	1,634,555.00	40.044007	-105.020944
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,521.34	1,500.00	9 5/8"	9-5/8	13-1/2	
8,416.82	7,854.29	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,100.00	1,093.00	Fox Hills				
4,353.82	4,228.00	Parkman				
4,715.15	4,576.00	Sussex				
7,653.94	7,448.00	Sharon Springs				
7,691.95	7,483.00	Niobrara				
7,828.38	7,600.00	Nio B				
7,979.53	7,709.00	Nio C				
8,224.40	7,825.00	Fort Hayes				
8,309.38	7,845.00	Codell				