

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N  
3N-68W-27 PUTTER 29-27HZ PAD  
PUTTER 27-4HZ**

**Plan A**

**Plan: Permit Rev-1**

## **Standard Planning Report**

**24 April, 2017**



Azimuths to True North  
Magnetic North: 8.20°

Magnetic Field  
Strength: 52402.0snT  
Dip Angle: 66.66°  
Date: 3/2/2017  
Model: IGRF2010

SITE: 3N-68W-27 PUTTER 29-27HZ PAD

Well: PUTTER 27-4HZ  
Wellbore: Plan A  
Design: Permit Rev-1

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
936.00	938.74	Fox Hills
3577.00	3670.87	Parkman
4002.00	4110.70	Sussex
6918.00	7084.62	Sharon Springs
7009.00	7233.19	Niobrara
7073.00	7390.20	Nio B

#### WELL DETAILS: PUTTER 27-4HZ

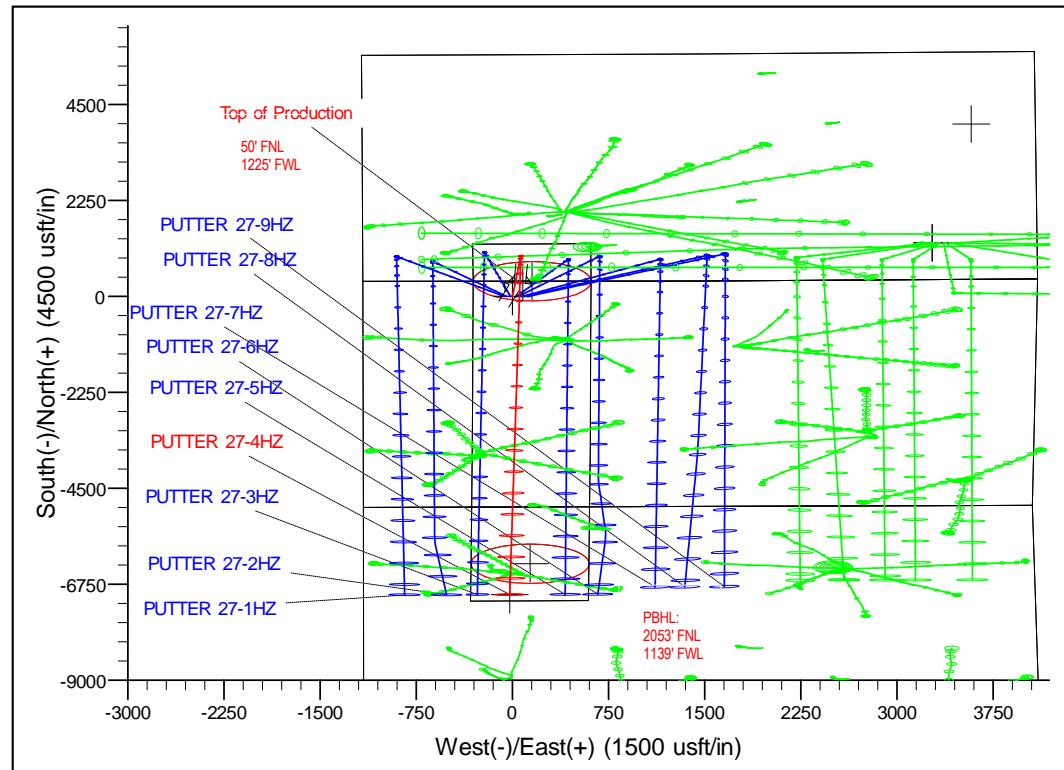
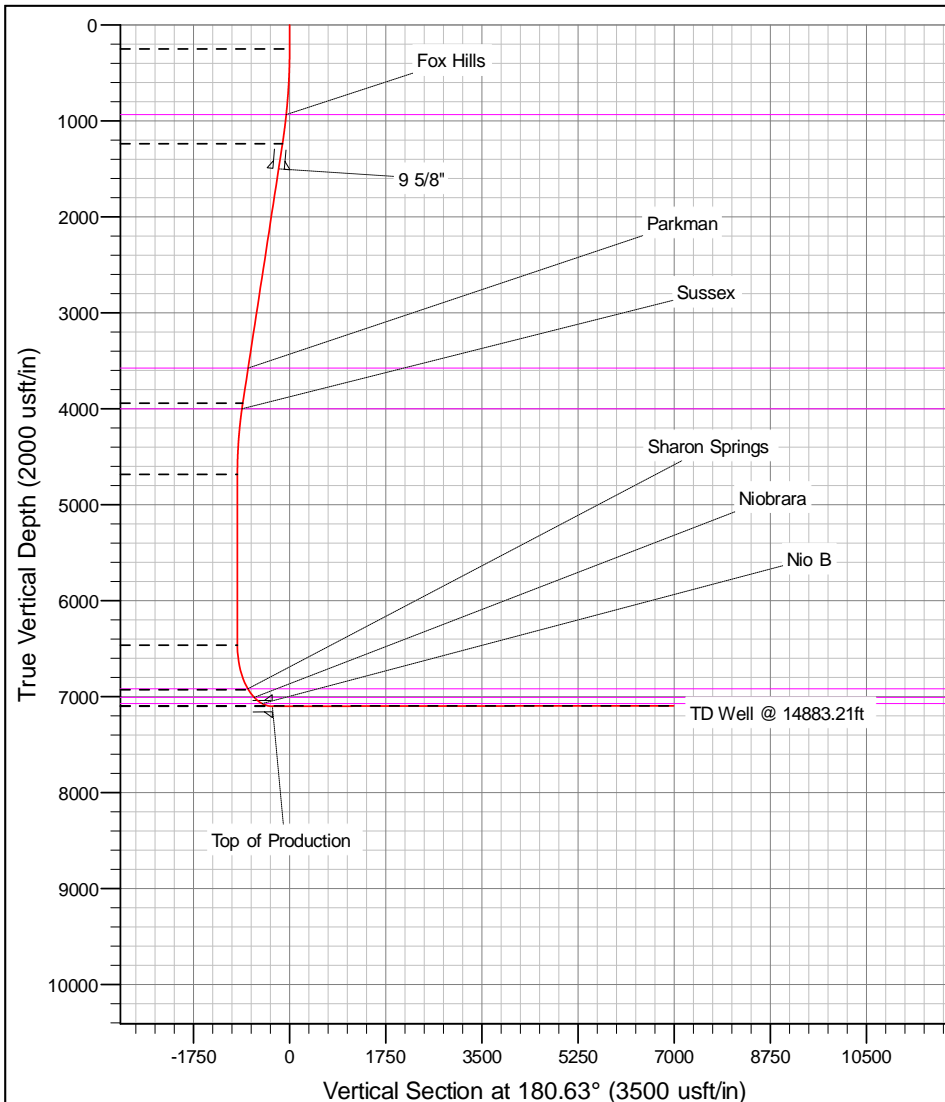
+N/-S	+E/-W	GL: 4980.00	RKB = 17' @ 4997.00usft (Drilling Rig)	Longitude	Slot
0.00	0.00	Northing 14600712.50	Easting 1642035.30	Latitude 40.203157	-104.994203

#### 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
1250.00	15.00	4.00	1238.62	129.84	9.08	1.50	-129.93
4050.00	15.00	4.00	3943.21	852.76	59.63	0.00	-853.37
4800.00	0.00	0.00	4684.67	950.14	66.44	2.00	-950.82
6579.71	0.00	0.00	6464.38	950.14	66.44	0.00	-950.82
7580.15	90.04	180.63	7101.00	313.12	59.49	9.00	-313.76
14883.21	90.04	180.63	7096.00	-6989.51	-20.24	0.00	6989.31

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PUTTER 27-4HZ BHL	7096.00	-6989.51	-20.24	14593722.99	1642015.52	40.183963	-104.994275



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well PUTTER 27-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<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						3N-68W-27 PUTTER 29-27HZ PAD											
Site Position:						Northing:			14,600,712.86 usft			Latitude:			40.203158		
From:			Lat/Long			Easting:			1,641,975.27 usft			Longitude:			-104.994418		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.00 °		

Well	PUTTER 27-4HZ					
Well Position	+N-S	-0.36 usft	Northing:	14,600,712.50 usft	Latitude:	40.203157
	+E-W	60.03 usft	Easting:	1,642,035.30 usft	Longitude:	-104.994203
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,980.00 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	3/2/2017	8.20	66.66	52,402.02893524

<b>Design</b>	Permit Rev-1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	180.63

<b>Plan Survey Tool Program</b>	<b>Date</b>	4/24/2017			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI Fixed:v2:crustal field declinat	
2	1,500.00	14,883.21	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 PUTTER 27-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<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	
1,250.00	15.00	4.00	1,238.62	129.84	9.08	1.50	1.50	0.00	4.00	
4,050.00	15.00	4.00	3,943.21	852.76	59.63	0.00	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,684.67	950.14	66.44	2.00	-2.00	0.00	180.00	
6,579.71	0.00	0.00	6,464.38	950.14	66.44	0.00	0.00	0.00	0.00	
7,580.15	90.04	180.63	7,101.00	313.12	59.49	9.00	9.00	-17.93	180.63	
14,883.21	90.04	180.63	7,096.00	-6,989.51	-20.24	0.00	0.00	0.00	0.00	PUTTER 27-4HZ_B

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well PUTTER 27-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>3N-R68W-Sec. 22 Section Lines - 3N-R68W-Sec. 34 Section Lines - PUTTER 27-4HZ_Heel - PUTTER 27-4HZ_SHL - 3N-R</b>									
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
<b>Start Build 1.50</b>									
300.00	0.75	4.00	300.00	0.33	0.02	-0.33	1.50	1.50	0.00
400.00	2.25	4.00	399.96	2.94	0.21	-2.94	1.50	1.50	0.00
500.00	3.75	4.00	499.82	8.16	0.57	-8.16	1.50	1.50	0.00
600.00	5.25	4.00	599.51	15.98	1.12	-16.00	1.50	1.50	0.00
700.00	6.75	4.00	698.96	26.41	1.85	-26.43	1.50	1.50	0.00
800.00	8.25	4.00	798.10	39.43	2.76	-39.46	1.50	1.50	0.00
900.00	9.75	4.00	896.87	55.04	3.85	-55.08	1.50	1.50	0.00
939.74	10.35	4.00	936.00	61.95	4.33	-62.00	1.50	1.50	0.00
<b>Fox Hills</b>									
1,000.00	11.25	4.00	995.19	73.22	5.12	-73.27	1.50	1.50	0.00
1,100.00	12.75	4.00	1,093.00	93.96	6.57	-94.02	1.50	1.50	0.00
1,200.00	14.25	4.00	1,190.24	117.24	8.20	-117.33	1.50	1.50	0.00
1,250.00	15.00	4.00	1,238.62	129.84	9.08	-129.93	1.50	1.50	0.00
<b>Start 2800.00 hold at 1250.00 MD</b>									
1,300.00	15.00	4.00	1,286.91	142.75	9.98	-142.85	0.00	0.00	0.00
1,400.00	15.00	4.00	1,383.50	168.56	11.79	-168.68	0.00	0.00	0.00
1,500.00	15.00	4.00	1,480.10	194.38	13.59	-194.52	0.00	0.00	0.00
1,520.60	15.00	4.00	1,500.00	199.70	13.96	-199.85	0.00	0.00	0.00
<b>9 5/8"</b>									
1,600.00	15.00	4.00	1,576.69	220.20	15.40	-220.36	0.00	0.00	0.00
1,700.00	15.00	4.00	1,673.28	246.02	17.20	-246.20	0.00	0.00	0.00
1,800.00	15.00	4.00	1,769.88	271.84	19.01	-272.03	0.00	0.00	0.00
1,900.00	15.00	4.00	1,866.47	297.66	20.81	-297.87	0.00	0.00	0.00
2,000.00	15.00	4.00	1,963.06	323.48	22.62	-323.71	0.00	0.00	0.00
2,100.00	15.00	4.00	2,059.65	349.30	24.43	-349.54	0.00	0.00	0.00
2,200.00	15.00	4.00	2,156.25	375.12	26.23	-375.38	0.00	0.00	0.00
2,300.00	15.00	4.00	2,252.84	400.93	28.04	-401.22	0.00	0.00	0.00
2,400.00	15.00	4.00	2,349.43	426.75	29.84	-427.06	0.00	0.00	0.00
2,500.00	15.00	4.00	2,446.02	452.57	31.65	-452.89	0.00	0.00	0.00
2,600.00	15.00	4.00	2,542.62	478.39	33.45	-478.73	0.00	0.00	0.00
2,700.00	15.00	4.00	2,639.21	504.21	35.26	-504.57	0.00	0.00	0.00
2,800.00	15.00	4.00	2,735.80	530.03	37.06	-530.40	0.00	0.00	0.00
2,900.00	15.00	4.00	2,832.39	555.85	38.87	-556.24	0.00	0.00	0.00
3,000.00	15.00	4.00	2,928.99	581.67	40.67	-582.08	0.00	0.00	0.00
3,100.00	15.00	4.00	3,025.58	607.49	42.48	-607.92	0.00	0.00	0.00
3,200.00	15.00	4.00	3,122.17	633.30	44.28	-633.75	0.00	0.00	0.00
3,300.00	15.00	4.00	3,218.76	659.12	46.09	-659.59	0.00	0.00	0.00
3,400.00	15.00	4.00	3,315.36	684.94	47.90	-685.43	0.00	0.00	0.00
3,500.00	15.00	4.00	3,411.95	710.76	49.70	-711.26	0.00	0.00	0.00
3,600.00	15.00	4.00	3,508.54	736.58	51.51	-737.10	0.00	0.00	0.00
3,670.87	15.00	4.00	3,577.00	754.88	52.79	-755.41	0.00	0.00	0.00
<b>Parkman</b>									
3,700.00	15.00	4.00	3,605.13	762.40	53.31	-762.94	0.00	0.00	0.00
3,800.00	15.00	4.00	3,701.73	788.22	55.12	-788.78	0.00	0.00	0.00
3,900.00	15.00	4.00	3,798.32	814.04	56.92	-814.61	0.00	0.00	0.00
4,000.00	15.00	4.00	3,894.91	839.86	58.73	-840.45	0.00	0.00	0.00
4,050.00	15.00	4.00	3,943.21	852.76	59.63	-853.37	0.00	0.00	0.00

# Corporate Planning Report

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<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)	
<b>Start Drop -2.00</b>										
4,100.00	14.00	4.00	3,991.62	865.25	60.50	-865.87	2.00	-2.00	0.00	
4,110.70	13.79	4.00	4,002.00	867.82	60.68	-868.43	2.00	-2.00	0.00	
<b>Sussex</b>										
4,200.00	12.00	4.00	4,089.05	887.69	62.07	-888.32	2.00	-2.00	0.00	
4,300.00	10.00	4.00	4,187.20	906.73	63.40	-907.37	2.00	-2.00	0.00	
4,400.00	8.00	4.00	4,285.97	922.33	64.50	-922.98	2.00	-2.00	0.00	
4,500.00	6.00	4.00	4,385.22	934.49	65.35	-935.15	2.00	-2.00	0.00	
4,600.00	4.00	4.00	4,484.83	943.18	65.95	-943.85	2.00	-2.00	0.00	
4,700.00	2.00	4.00	4,584.69	948.40	66.32	-949.07	2.00	-2.00	0.00	
4,800.00	0.00	0.00	4,684.67	950.14	66.44	-950.82	2.00	-2.00	0.00	
<b>Start 1779.71 hold at 4800.00 MD</b>										
4,900.00	0.00	0.00	4,784.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,000.00	0.00	0.00	4,884.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,100.00	0.00	0.00	4,984.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,084.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,184.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,284.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,384.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,484.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,584.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,684.67	950.14	66.44	-950.82	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,784.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,884.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,984.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,084.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,184.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,284.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,384.67	950.14	66.44	-950.82	0.00	0.00	0.00	
6,579.71	0.00	0.00	6,464.38	950.14	66.44	-950.82	0.00	0.00	0.00	
<b>KOP @ 6579.71ft</b>										
6,600.00	1.83	180.63	6,484.67	949.82	66.44	-950.49	9.00	9.00	0.00	
6,700.00	10.83	180.63	6,583.96	938.81	66.32	-939.48	9.00	9.00	0.00	
6,800.00	19.83	180.63	6,680.30	912.41	66.03	-913.08	9.00	9.00	0.00	
6,900.00	28.83	180.63	6,771.33	871.26	65.58	-871.93	9.00	9.00	0.00	
7,000.00	37.83	180.63	6,854.80	816.38	64.98	-817.05	9.00	9.00	0.00	
7,084.62	45.44	180.63	6,918.00	760.20	64.37	-760.87	9.00	9.00	0.00	
<b>Sharon Springs</b>										
7,100.00	46.83	180.63	6,928.65	749.12	64.25	-749.78	9.00	9.00	0.00	
<b>DLS = 9°/100'</b>										
7,200.00	55.83	180.63	6,991.08	671.13	63.39	-671.79	9.00	9.00	0.00	
7,233.19	58.81	180.63	7,009.00	643.20	63.09	-643.85	9.00	9.00	0.00	
<b>Niobrara</b>										
7,300.00	64.83	180.63	7,040.53	584.34	62.45	-584.99	9.00	9.00	0.00	
7,390.20	72.94	180.63	7,073.00	500.28	61.53	-500.92	9.00	9.00	0.00	
<b>Nio B</b>										
7,400.00	73.83	180.63	7,075.80	490.88	61.43	-491.53	9.00	9.00	0.00	
7,500.00	82.83	180.63	7,096.02	393.06	60.36	-393.70	9.00	9.00	0.00	
7,580.15	90.04	180.63	7,101.00	313.12	59.49	-313.76	9.00	9.00	0.00	
<b>End Build @ 7580.15ft - Top of Production</b>										
7,600.00	90.04	180.63	7,100.99	293.27	59.27	-293.91	0.00	0.00	0.00	
7,700.00	90.04	180.63	7,100.92	193.28	58.18	-193.91	0.00	0.00	0.00	
7,800.00	90.04	180.63	7,100.85	93.28	57.09	-93.91	0.00	0.00	0.00	

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<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<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)
7,900.00	90.04	180.63	7,100.78	-6.71	55.99	6.09	0.00	0.00	0.00
8,000.00	90.04	180.63	7,100.71	-106.70	54.90	106.09	0.00	0.00	0.00
8,100.00	90.04	180.63	7,100.64	-206.70	53.81	206.09	0.00	0.00	0.00
8,200.00	90.04	180.63	7,100.58	-306.69	52.72	306.09	0.00	0.00	0.00
8,300.00	90.04	180.63	7,100.51	-406.69	51.63	406.09	0.00	0.00	0.00
8,400.00	90.04	180.63	7,100.44	-506.68	50.54	506.09	0.00	0.00	0.00
8,500.00	90.04	180.63	7,100.37	-606.67	49.44	606.09	0.00	0.00	0.00
8,600.00	90.04	180.63	7,100.30	-706.67	48.35	706.09	0.00	0.00	0.00
8,700.00	90.04	180.63	7,100.23	-806.66	47.26	806.09	0.00	0.00	0.00
8,800.00	90.04	180.63	7,100.16	-906.66	46.17	906.09	0.00	0.00	0.00
8,900.00	90.04	180.63	7,100.10	-1,006.65	45.08	1,006.09	0.00	0.00	0.00
9,000.00	90.04	180.63	7,100.03	-1,106.64	43.99	1,106.09	0.00	0.00	0.00
9,100.00	90.04	180.63	7,099.96	-1,206.64	42.89	1,206.09	0.00	0.00	0.00
9,200.00	90.04	180.63	7,099.89	-1,306.63	41.80	1,306.09	0.00	0.00	0.00
9,300.00	90.04	180.63	7,099.82	-1,406.63	40.71	1,406.09	0.00	0.00	0.00
9,400.00	90.04	180.63	7,099.75	-1,506.62	39.62	1,506.09	0.00	0.00	0.00
9,500.00	90.04	180.63	7,099.69	-1,606.61	38.53	1,606.09	0.00	0.00	0.00
9,600.00	90.04	180.63	7,099.62	-1,706.61	37.44	1,706.09	0.00	0.00	0.00
9,700.00	90.04	180.63	7,099.55	-1,806.60	36.34	1,806.09	0.00	0.00	0.00
9,800.00	90.04	180.63	7,099.48	-1,906.60	35.25	1,906.09	0.00	0.00	0.00
9,900.00	90.04	180.63	7,099.41	-2,006.59	34.16	2,006.09	0.00	0.00	0.00
10,000.00	90.04	180.63	7,099.34	-2,106.58	33.07	2,106.09	0.00	0.00	0.00
10,100.00	90.04	180.63	7,099.27	-2,206.58	31.98	2,206.09	0.00	0.00	0.00
10,200.00	90.04	180.63	7,099.21	-2,306.57	30.89	2,306.09	0.00	0.00	0.00
10,300.00	90.04	180.63	7,099.14	-2,406.57	29.79	2,406.09	0.00	0.00	0.00
10,400.00	90.04	180.63	7,099.07	-2,506.56	28.70	2,506.09	0.00	0.00	0.00
10,500.00	90.04	180.63	7,099.00	-2,606.55	27.61	2,606.09	0.00	0.00	0.00
10,600.00	90.04	180.63	7,098.93	-2,706.55	26.52	2,706.09	0.00	0.00	0.00
10,700.00	90.04	180.63	7,098.86	-2,806.54	25.43	2,806.09	0.00	0.00	0.00
10,800.00	90.04	180.63	7,098.80	-2,906.54	24.34	2,906.09	0.00	0.00	0.00
10,900.00	90.04	180.63	7,098.73	-3,006.53	23.24	3,006.09	0.00	0.00	0.00
11,000.00	90.04	180.63	7,098.66	-3,106.53	22.15	3,106.09	0.00	0.00	0.00
11,100.00	90.04	180.63	7,098.59	-3,206.52	21.06	3,206.09	0.00	0.00	0.00
11,200.00	90.04	180.63	7,098.52	-3,306.51	19.97	3,306.09	0.00	0.00	0.00
11,300.00	90.04	180.63	7,098.45	-3,406.51	18.88	3,406.09	0.00	0.00	0.00
11,400.00	90.04	180.63	7,098.38	-3,506.50	17.79	3,506.09	0.00	0.00	0.00
11,500.00	90.04	180.63	7,098.32	-3,606.50	16.69	3,606.09	0.00	0.00	0.00
11,600.00	90.04	180.63	7,098.25	-3,706.49	15.60	3,706.09	0.00	0.00	0.00
11,700.00	90.04	180.63	7,098.18	-3,806.48	14.51	3,806.09	0.00	0.00	0.00
11,800.00	90.04	180.63	7,098.11	-3,906.48	13.42	3,906.09	0.00	0.00	0.00
11,900.00	90.04	180.63	7,098.04	-4,006.47	12.33	4,006.09	0.00	0.00	0.00
12,000.00	90.04	180.63	7,097.97	-4,106.47	11.24	4,106.09	0.00	0.00	0.00
12,100.00	90.04	180.63	7,097.91	-4,206.46	10.14	4,206.09	0.00	0.00	0.00
12,200.00	90.04	180.63	7,097.84	-4,306.45	9.05	4,306.09	0.00	0.00	0.00
12,300.00	90.04	180.63	7,097.77	-4,406.45	7.96	4,406.09	0.00	0.00	0.00
12,400.00	90.04	180.63	7,097.70	-4,506.44	6.87	4,506.09	0.00	0.00	0.00
12,500.00	90.04	180.63	7,097.63	-4,606.44	5.78	4,606.09	0.00	0.00	0.00
12,600.00	90.04	180.63	7,097.56	-4,706.43	4.69	4,706.09	0.00	0.00	0.00
12,700.00	90.04	180.63	7,097.49	-4,806.42	3.59	4,806.09	0.00	0.00	0.00
12,800.00	90.04	180.63	7,097.43	-4,906.42	2.50	4,906.09	0.00	0.00	0.00
12,900.00	90.04	180.63	7,097.36	-5,006.41	1.41	5,006.09	0.00	0.00	0.00
13,000.00	90.04	180.63	7,097.29	-5,106.41	0.32	5,106.09	0.00	0.00	0.00
13,100.00	90.04	180.63	7,097.22	-5,206.40	-0.77	5,206.09	0.00	0.00	0.00
13,200.00	90.04	180.63	7,097.15	-5,306.39	-1.86	5,306.09	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well PUTTER 27-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<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)
13,300.00	90.04	180.63	7,097.08	-5,406.39	-2.96	5,406.09	0.00	0.00	0.00
13,400.00	90.04	180.63	7,097.02	-5,506.38	-4.05	5,506.09	0.00	0.00	0.00
13,500.00	90.04	180.63	7,096.95	-5,606.38	-5.14	5,606.09	0.00	0.00	0.00
13,600.00	90.04	180.63	7,096.88	-5,706.37	-6.23	5,706.09	0.00	0.00	0.00
13,700.00	90.04	180.63	7,096.81	-5,806.36	-7.32	5,806.09	0.00	0.00	0.00
13,800.00	90.04	180.63	7,096.74	-5,906.36	-8.41	5,906.09	0.00	0.00	0.00
13,900.00	90.04	180.63	7,096.67	-6,006.35	-9.51	6,006.09	0.00	0.00	0.00
14,000.00	90.04	180.63	7,096.60	-6,106.35	-10.60	6,106.09	0.00	0.00	0.00
14,100.00	90.04	180.63	7,096.54	-6,206.34	-11.69	6,206.09	0.00	0.00	0.00
14,200.00	90.04	180.63	7,096.47	-6,306.33	-12.78	6,306.09	0.00	0.00	0.00
14,300.00	90.04	180.63	7,096.40	-6,406.33	-13.87	6,406.09	0.00	0.00	0.00
14,400.00	90.04	180.63	7,096.33	-6,506.32	-14.96	6,506.09	0.00	0.00	0.00
14,500.00	90.04	180.63	7,096.26	-6,606.32	-16.06	6,606.09	0.00	0.00	0.00
14,600.00	90.04	180.63	7,096.19	-6,706.31	-17.15	6,706.09	0.00	0.00	0.00
14,700.00	90.04	180.63	7,096.13	-6,806.30	-18.24	6,806.09	0.00	0.00	0.00
14,800.00	90.04	180.63	7,096.06	-6,906.30	-19.33	6,906.09	0.00	0.00	0.00
14,883.21	90.04	180.63	7,096.00	-6,989.50	-20.24	6,989.30	0.00	0.00	0.00
TD Well @ 14883.21ft - PUTTER 27-4HZ_BHL									



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well PUTTER 27-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

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)		
PUTTER 27-4HZ_Har	0.00	0.00	0.00	0.00	0.00	14,600,712.50	1,642,035.30	40.203157	-104.994203
- plan hits target center									
- Polygon									
Point 1			0.00	1,226.22	-309.02	14,601,938.70	1,641,726.20		
Point 2			0.00	1,232.09	150.98	14,601,944.60	1,642,186.20		
Point 3			0.00	1,238.06	610.98	14,601,950.60	1,642,646.20		
Point 4			0.00	357.36	614.42	14,601,069.90	1,642,649.69		
Point 5			0.00	-961.54	611.94	14,599,751.00	1,642,647.30		
Point 6			0.00	-2,282.34	609.85	14,598,430.20	1,642,645.30		
Point 7			0.00	-3,607.14	607.76	14,597,105.40	1,642,643.29		
Point 8			0.00	-4,934.84	602.98	14,595,777.70	1,642,638.60		
Point 9			0.00	-6,263.14	598.29	14,594,449.40	1,642,634.00		
Point 10			0.00	-7,132.14	593.23	14,593,580.40	1,642,628.99		
Point 11			0.00	-7,137.11	125.63	14,593,575.40	1,642,161.39		
Point 12			0.00	-7,141.88	-326.87	14,593,570.60	1,641,708.89		
Point 13			0.00	-6,272.38	-321.71	14,594,440.10	1,641,714.00		
Point 14			0.00	-4,943.68	-317.02	14,595,768.80	1,641,718.60		
Point 15			0.00	-3,616.38	-312.34	14,597,096.10	1,641,723.19		
Point 16			0.00	-2,291.88	-310.25	14,598,420.60	1,641,725.20		
Point 17			0.00	-967.78	-308.16	14,599,744.70	1,641,727.20		
Point 18			0.00	354.42	-305.58	14,601,066.90	1,641,729.69		
Point 19			0.00	1,226.22	-309.02	14,601,938.70	1,641,726.20		
PUTTER 27-4HZ_460	0.00	0.00	0.00	355.89	154.42	14,601,068.40	1,642,189.70	40.204134	-104.993650
- plan misses target center by 387.95usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 460.00)									
PUTTER 27-4HZ_Hee	0.00	0.00	0.00	315.49	81.72	14,601,028.00	1,642,117.00	40.204023	-104.993911
- plan misses target center by 325.90usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
PUTTER 27-4HZ_SHI	0.00	0.00	0.00	0.00	0.00	14,600,712.50	1,642,035.30	40.203157	-104.994203
- plan hits target center									
- Point									
PUTTER 27-4HZ_460	0.00	0.00	0.00	-6,267.71	138.29	14,594,444.80	1,642,174.00	40.185945	-104.993708
- plan misses target center by 6269.24usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Circle (radius 460.00)									
3N-R68W-Sec. 22_Se	0.00	0.00	-4.00	4,043.82	3,579.29	14,604,756.55	1,645,614.32	40.214261	-104.981382
- plan misses target center by 5400.35usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-4.00	1,609.13	-4,756.64	14,606,365.37	1,640,857.57		
Point 2			-4.00	1,644.10	-2,132.46	14,606,400.51	1,643,481.75		
Point 3			-4.00	1,698.21	493.16	14,606,454.79	1,646,107.37		
Point 4			-4.00	-967.02	505.37	14,603,789.56	1,646,119.75		
Point 5			-4.00	-3,630.21	518.25	14,601,126.38	1,646,132.81		
Point 6			-4.00	-3,681.09	-2,110.42	14,601,075.32	1,643,504.14		
Point 7			-4.00	-3,689.13	-4,746.07	14,601,067.11	1,640,868.49		
Point 8			-4.00	-1,042.08	-4,750.66	14,603,714.16	1,640,863.73		
3N-R68W-Sec. 27_Se	0.00	0.00	-19.00	1,256.18	3,274.52	14,601,968.89	1,645,309.73	40.206606	-104.982475
- plan misses target center by 3507.25usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-19.00	-901.61	-4,440.91	14,601,066.99	1,640,868.88		
Point 2			-19.00	-893.57	-1,805.40	14,601,075.21	1,643,504.39		
Point 3			-19.00	-845.64	823.41	14,601,123.31	1,646,133.20		
Point 4			-19.00	-3,498.41	802.83	14,598,470.54	1,646,112.79		
Point 5			-19.00	-6,154.53	782.53	14,595,814.41	1,646,092.66		
Point 6			-19.00	-6,204.04	-4,436.84	14,595,764.56	1,640,873.30		

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well PUTTER 27-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB = 17' @ 4997.00usft (Drilling Rig)
<b>Site:</b>	3N-68W-27 PUTTER 29-27HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	PUTTER 27-4HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-1		

3N-R68W-Sec. 34_Se	0.00	0.00	-19.00	1,256.18	3,274.52	14,601,968.89	1,645,309.73	40.206606	-104.982475
- plan misses target center by 3507.25usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			-19.00	-6,204.04	-4,436.84	14,595,764.56	1,640,873.30		
Point 2			-19.00	-6,154.53	782.53	14,595,814.41	1,646,092.66		
Point 3			-19.00	-11,510.48	839.68	14,590,458.47	1,646,150.16		
Point 4			-19.00	-11,511.55	-4,434.16	14,590,457.05	1,640,876.32		
PUTTER 27-4HZ_BHI	0.00	0.00	7,096.00	-6,989.51	-20.24	14,593,722.99	1,642,015.51	40.183963	-104.994276
- plan hits target center									
- Point									

## Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,520.60	1,500.00	9 5/8"	9-5/8	13-1/2
7,580.15	7,101.00	Top of Production	5-1/2	7-7/8

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
939.74	936.00	Fox Hills			
3,670.87	3,577.00	Parkman			
4,110.70	4,002.00	Sussex			
7,084.62	6,918.00	Sharon Springs			
7,233.19	7,009.00	Niobrara			
7,390.20	7,073.00	Nio B			

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Start Build 1.50
1,250.00	1,238.62	129.84	9.08	Start 2800.00 hold at 1250.00 MD
4,050.00	3,943.21	852.76	59.63	Start Drop -2.00
4,800.00	4,684.67	950.14	66.44	Start 1779.71 hold at 4800.00 MD
6,579.71	6,464.38	950.14	66.44	KOP @ 6579.71ft
7,100.00	6,928.65	749.12	64.25	DLS = 9°/100'
7,580.15	7,101.00	313.12	59.49	End Build @ 7580.15ft
14,883.21	7,096.00	-6,989.50	-20.24	TD Well @ 14883.21ft