

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

**1N-66W-09 Highlands 27-9HZ Pad**

**HIGHLANDS 27C-33HZ**

**Plan A**

**Plan: Permit Rev-4**

## **Standard Planning Report**

**16 June, 2016**



Azimuths to True North  
Magnetic North: 8.32°

Magnetic Field  
Strength: 52545.0snT  
Dip Angle: 66.65°  
Date: 5/12/2015  
Model: IGRF2010

SITE: 1N-66W-09 Highlands 27-9HZ Pad

Well: HIGHLANDS 27C-33HZ  
Wellbore: Plan A  
Design: Permit Rev-4

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1468.00	1479.10	Fox Hills
4203.00	4394.00	Parkman
4599.00	4807.73	Sussex
7193.00	7424.68	Sharon Springs
7234.00	7472.90	Niobrara
7287.00	7539.19	Nio B
7346.00	7620.62	Nio C
7479.00	7679.46	Fort Hayes
7501.00	7959.86	Codell

#### WELL DETAILS: HIGHLANDS 27C-33HZ

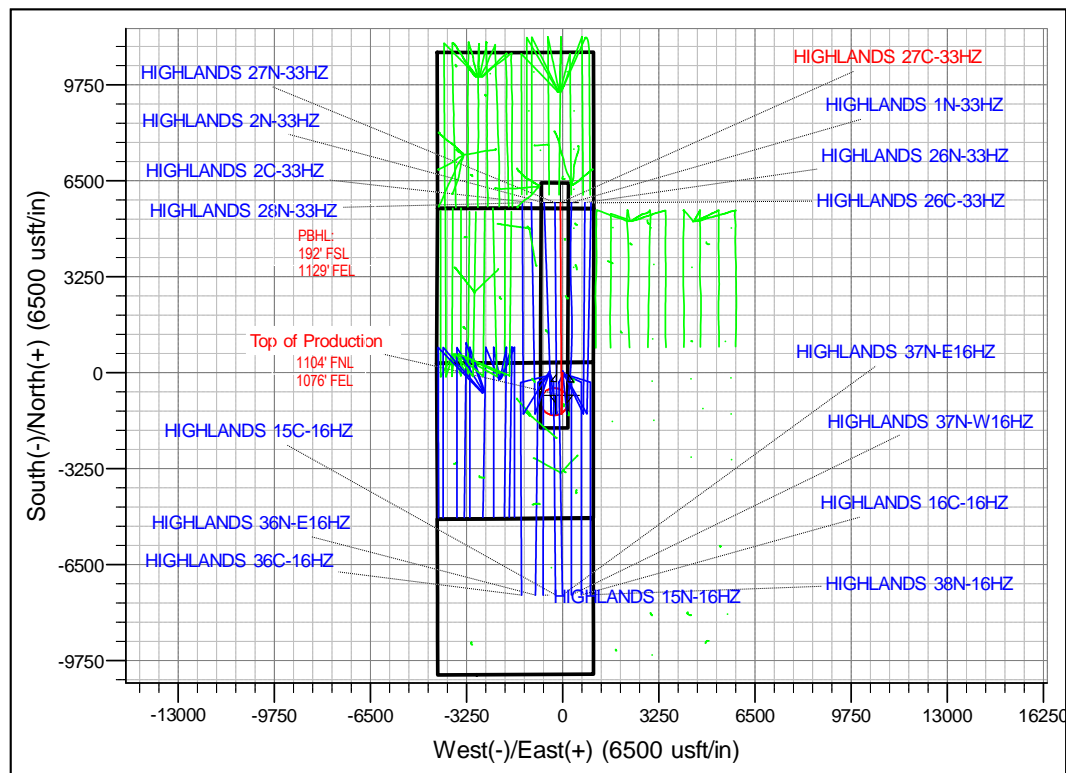
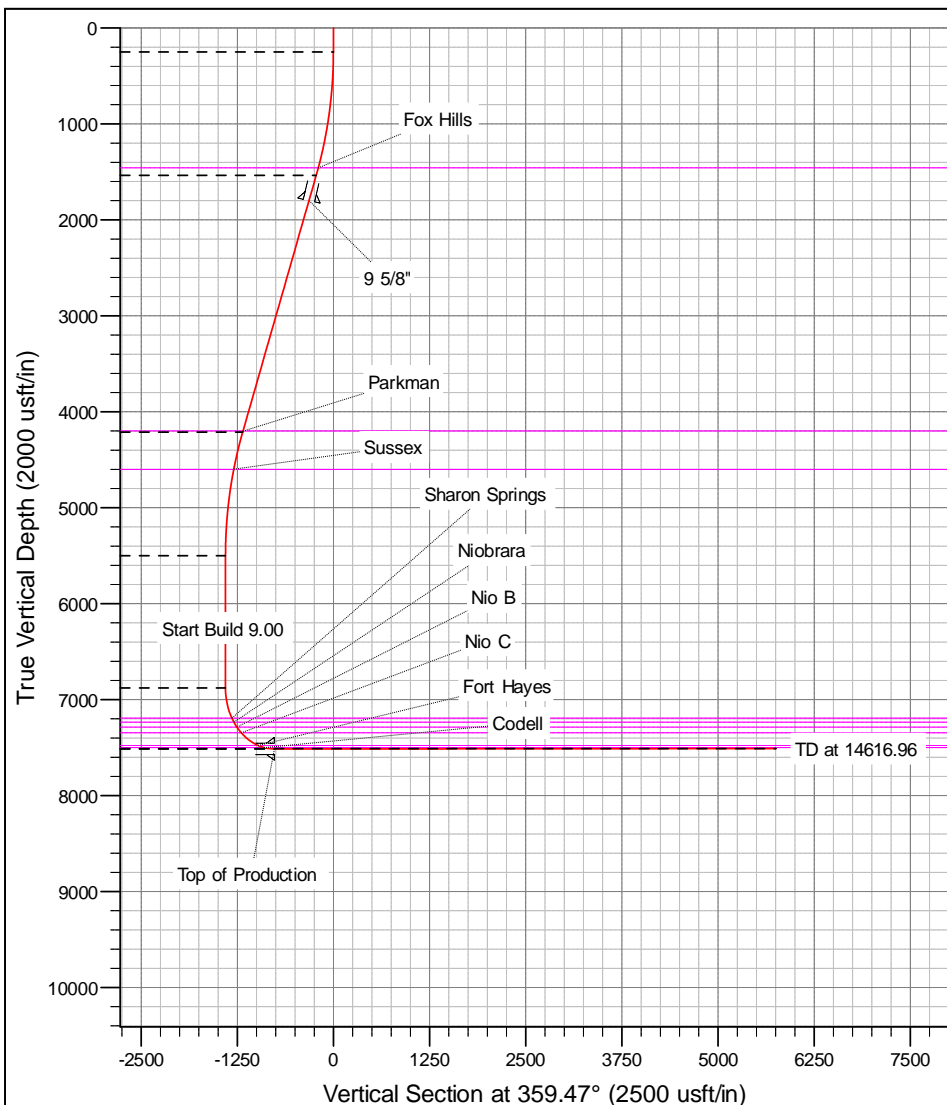
+N/-S	+E/-W	GL: 5001.00	RKB @ 5018.00usft (D Rig)	Longitude	Slot
0.00	0.00	Northing 14553057.96	Easting 1702953.97	Latitude 40.072076	-104.776458

#### 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
1561.72	19.68	181.63	1536.09	-222.93	-6.36	1.50	-222.86
4405.58	19.68	181.63	4213.91	-1180.07	-33.64	0.00	1179.71
5717.31	0.00	0.00	5500.00	-1403.00	-40.00	1.50	-1402.57
7096.24	0.00	0.00	6878.93	-1403.00	-40.00	0.00	-1402.57
8096.68	90.04	359.72	7515.55	-765.94	-43.16	9.00	-765.51
14616.96	90.04	359.72	7511.00	5754.25	-75.52	0.00	5754.70

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
HIGHLANDS 27C-33HZ, PBHL	7511.00	5754.25	-75.52	14558812.00	1702864.00	40.087878	-104.776728
HIGHLANDS 27C-33HZ, PHL	7515.55	-765.95	-43.16	14552291.91	1702912.73	40.069973	-104.776612



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## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 27C-33HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Site:</b>	1N-66W-09 Highlands 27-9HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HIGHLANDS 27C-33HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-4		

<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-66W-09 Highlands 27-9HZ Pad											
Site Position:						Northing:			14,553,120.23 usft			Latitude:			40.072250		
From:			Lat/Long			Easting:			1,702,521.87 usft			Longitude:			-104.778002		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.14		

Well	HIGHLANDS 27C-33HZ					
Well Position	+N/-S	-63.36 usft	Northing:	14,553,057.95 usft	Latitude:	40.072076
	+E/-W	431.95 usft	Easting:	1,702,953.97 usft	Longitude:	-104.776458
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,001.00 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	5/12/2015	8.32	66.65	52,545

<b>Design</b>	Permit Rev-4			
<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	359.47

<b>Plan Sections</b>										
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	
1,561.72	19.68	181.63	1,536.09	-222.93	-6.36	1.50	1.50	0.00	181.63	
4,405.58	19.68	181.63	4,213.91	-1,180.07	-33.64	0.00	0.00	0.00	0.00	
5,717.31	0.00	0.00	5,500.00	-1,403.00	-40.00	1.50	-1.50	0.00	180.00	
7,096.24	0.00	0.00	6,878.93	-1,403.00	-40.00	0.00	0.00	0.00	0.00	
8,096.68	90.04	359.72	7,515.55	-765.94	-43.16	9.00	9.00	0.00	359.72	
14,616.96	90.04	359.72	7,511.00	5,754.25	-75.52	0.00	0.00	0.00	0.00	HIGHLANDS 27C-3

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## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 27C-33HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Site:</b>	1N-66W-09 Highlands 27-9HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HIGHLANDS 27C-33HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-4		

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	181.63	300.00	-0.33	-0.01	-0.33	1.50	1.50	0.00
400.00	2.25	181.63	399.96	-2.94	-0.08	-2.94	1.50	1.50	0.00
500.00	3.75	181.63	499.82	-8.17	-0.23	-8.17	1.50	1.50	0.00
600.00	5.25	181.63	599.51	-16.02	-0.46	-16.01	1.50	1.50	0.00
700.00	6.75	181.63	698.96	-26.47	-0.75	-26.46	1.50	1.50	0.00
800.00	8.25	181.63	798.10	-39.51	-1.13	-39.50	1.50	1.50	0.00
900.00	9.75	181.63	896.87	-55.15	-1.57	-55.13	1.50	1.50	0.00
1,000.00	11.25	181.63	995.19	-73.37	-2.09	-73.34	1.50	1.50	0.00
1,100.00	12.75	181.63	1,093.00	-94.15	-2.68	-94.12	1.50	1.50	0.00
1,200.00	14.25	181.63	1,190.24	-117.48	-3.35	-117.45	1.50	1.50	0.00
1,300.00	15.75	181.63	1,286.83	-143.35	-4.09	-143.31	1.50	1.50	0.00
1,400.00	17.25	181.63	1,382.71	-171.74	-4.90	-171.69	1.50	1.50	0.00
1,479.10	18.44	181.63	1,458.00	-195.97	-5.59	-195.91	1.50	1.50	0.00
<b>Fox Hills</b>									
1,500.00	18.75	181.63	1,477.81	-202.63	-5.78	-202.57	1.50	1.50	0.00
1,561.72	19.68	181.63	1,536.09	-222.93	-6.36	-222.86	1.50	1.50	0.00
1,600.00	19.68	181.63	1,572.13	-235.82	-6.72	-235.74	0.00	0.00	0.00
1,700.00	19.68	181.63	1,666.30	-269.47	-7.68	-269.39	0.00	0.00	0.00
1,800.00	19.68	181.63	1,760.46	-303.13	-8.64	-303.03	0.00	0.00	0.00
1,841.99	19.68	181.63	1,800.00	-317.26	-9.05	-317.16	0.00	0.00	0.00
<b>9 5/8"</b>									
1,900.00	19.68	181.63	1,854.62	-336.78	-9.60	-336.68	0.00	0.00	0.00
2,000.00	19.68	181.63	1,948.78	-370.44	-10.56	-370.33	0.00	0.00	0.00
2,100.00	19.68	181.63	2,042.94	-404.10	-11.52	-403.97	0.00	0.00	0.00
2,200.00	19.68	181.63	2,137.10	-437.75	-12.48	-437.62	0.00	0.00	0.00
2,300.00	19.68	181.63	2,231.26	-471.41	-13.44	-471.26	0.00	0.00	0.00
2,400.00	19.68	181.63	2,325.43	-505.06	-14.40	-504.91	0.00	0.00	0.00
2,500.00	19.68	181.63	2,419.59	-538.72	-15.36	-538.56	0.00	0.00	0.00
2,600.00	19.68	181.63	2,513.75	-572.38	-16.32	-572.20	0.00	0.00	0.00
2,700.00	19.68	181.63	2,607.91	-606.03	-17.28	-605.85	0.00	0.00	0.00
2,800.00	19.68	181.63	2,702.07	-639.69	-18.24	-639.49	0.00	0.00	0.00
2,900.00	19.68	181.63	2,796.23	-673.35	-19.20	-673.14	0.00	0.00	0.00
3,000.00	19.68	181.63	2,890.39	-707.00	-20.16	-706.79	0.00	0.00	0.00
3,100.00	19.68	181.63	2,984.55	-740.66	-21.12	-740.43	0.00	0.00	0.00
3,200.00	19.68	181.63	3,078.72	-774.31	-22.08	-774.08	0.00	0.00	0.00
3,300.00	19.68	181.63	3,172.88	-807.97	-23.04	-807.72	0.00	0.00	0.00
3,400.00	19.68	181.63	3,267.04	-841.63	-24.00	-841.37	0.00	0.00	0.00
3,500.00	19.68	181.63	3,361.20	-875.28	-24.95	-875.01	0.00	0.00	0.00
3,600.00	19.68	181.63	3,455.36	-908.94	-25.91	-908.66	0.00	0.00	0.00
3,700.00	19.68	181.63	3,549.52	-942.59	-26.87	-942.31	0.00	0.00	0.00
3,800.00	19.68	181.63	3,643.68	-976.25	-27.83	-975.95	0.00	0.00	0.00
3,900.00	19.68	181.63	3,737.84	-1,009.91	-28.79	-1,009.60	0.00	0.00	0.00
4,000.00	19.68	181.63	3,832.01	-1,043.56	-29.75	-1,043.24	0.00	0.00	0.00
4,100.00	19.68	181.63	3,926.17	-1,077.22	-30.71	-1,076.89	0.00	0.00	0.00
4,200.00	19.68	181.63	4,020.33	-1,110.88	-31.67	-1,110.54	0.00	0.00	0.00
4,300.00	19.68	181.63	4,114.49	-1,144.53	-32.63	-1,144.18	0.00	0.00	0.00
4,394.00	19.68	181.63	4,203.00	-1,176.17	-33.53	-1,175.81	0.00	0.00	0.00
<b>Parkman</b>									
4,400.00	19.68	181.63	4,208.65	-1,178.19	-33.59	-1,177.83	0.00	0.00	0.00

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## Planning Report

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<b>Well:</b>	HIGHLANDS 27C-33HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-4		

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)
4,405.58	19.68	181.63	4,213.91	-1,180.07	-33.64	-1,179.71	0.00	0.00	0.00
4,500.00	18.26	181.63	4,303.20	-1,210.74	-34.52	-1,210.37	1.50	-1.50	0.00
4,600.00	16.76	181.63	4,398.56	-1,240.82	-35.38	-1,240.44	1.50	-1.50	0.00
4,700.00	15.26	181.63	4,494.68	-1,268.38	-36.16	-1,268.00	1.50	-1.50	0.00
4,800.00	13.76	181.63	4,591.49	-1,293.43	-36.88	-1,293.03	1.50	-1.50	0.00
4,807.73	13.64	181.63	4,599.00	-1,295.26	-36.93	-1,294.86	1.50	-1.50	0.00
<b>Sussex</b>									
4,900.00	12.26	181.63	4,688.92	-1,315.93	-37.52	-1,315.53	1.50	-1.50	0.00
5,000.00	10.76	181.63	4,786.90	-1,335.87	-38.09	-1,335.46	1.50	-1.50	0.00
5,100.00	9.26	181.63	4,885.38	-1,353.25	-38.58	-1,352.83	1.50	-1.50	0.00
5,200.00	7.76	181.63	4,984.27	-1,368.04	-39.00	-1,367.62	1.50	-1.50	0.00
5,300.00	6.26	181.63	5,083.52	-1,380.24	-39.35	-1,379.81	1.50	-1.50	0.00
5,400.00	4.76	181.63	5,183.06	-1,389.83	-39.62	-1,389.41	1.50	-1.50	0.00
5,500.00	3.26	181.63	5,282.81	-1,396.82	-39.82	-1,396.39	1.50	-1.50	0.00
5,600.00	1.76	181.63	5,382.71	-1,401.20	-39.95	-1,400.77	1.50	-1.50	0.00
5,700.00	0.26	181.63	5,482.69	-1,402.96	-40.00	-1,402.53	1.50	-1.50	0.00
5,717.31	0.00	0.00	5,500.00	-1,403.00	-40.00	-1,402.57	1.50	-1.50	0.00
5,800.00	0.00	0.00	5,582.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
5,900.00	0.00	0.00	5,682.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,000.00	0.00	0.00	5,782.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,100.00	0.00	0.00	5,882.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,200.00	0.00	0.00	5,982.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,300.00	0.00	0.00	6,082.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,400.00	0.00	0.00	6,182.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,500.00	0.00	0.00	6,282.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,600.00	0.00	0.00	6,382.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,700.00	0.00	0.00	6,482.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,800.00	0.00	0.00	6,582.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
6,900.00	0.00	0.00	6,682.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
7,000.00	0.00	0.00	6,782.69	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
7,096.24	0.00	0.00	6,878.93	-1,403.00	-40.00	-1,402.57	0.00	0.00	0.00
7,100.00	0.34	359.72	6,882.69	-1,402.99	-40.00	-1,402.56	9.00	9.00	0.00
7,200.00	9.34	359.72	6,982.24	-1,394.56	-40.04	-1,394.13	9.00	9.00	0.00
7,300.00	18.34	359.72	7,079.23	-1,370.67	-40.16	-1,370.24	9.00	9.00	0.00
7,400.00	27.34	359.72	7,171.30	-1,331.90	-40.35	-1,331.47	9.00	9.00	0.00
7,424.68	29.56	359.72	7,193.00	-1,320.14	-40.41	-1,319.71	9.00	9.00	0.00
<b>Sharon Springs</b>									
7,472.90	33.90	359.72	7,234.00	-1,294.79	-40.54	-1,294.36	9.00	9.00	0.00
<b>Niobrara</b>									
7,500.00	36.34	359.72	7,256.16	-1,279.20	-40.61	-1,278.77	9.00	9.00	0.00
7,539.19	39.87	359.72	7,287.00	-1,255.02	-40.73	-1,254.59	9.00	9.00	0.00
<b>Nio B</b>									
7,600.00	45.34	359.72	7,331.74	-1,213.87	-40.94	-1,213.44	9.00	9.00	0.00
7,620.63	47.19	359.72	7,346.00	-1,198.97	-41.01	-1,198.54	9.00	9.00	0.00
<b>Nio C</b>									
7,700.00	54.34	359.72	7,396.17	-1,137.53	-41.32	-1,137.10	9.00	9.00	0.00
7,800.00	63.34	359.72	7,447.86	-1,052.05	-41.74	-1,051.62	9.00	9.00	0.00
7,879.46	70.49	359.72	7,479.00	-979.00	-42.10	-978.57	9.00	9.00	0.00
<b>Fort Hayes</b>									
7,900.00	72.34	359.72	7,485.55	-959.53	-42.20	-959.10	9.00	9.00	0.00
7,959.86	77.73	359.72	7,501.00	-901.73	-42.49	-901.29	9.00	9.00	0.00
<b>Codell</b>									
8,000.00	81.34	359.72	7,508.29	-862.26	-42.68	-861.83	9.00	9.00	0.00

# Anadarko

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 27C-33HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Site:</b>	1N-66W-09 Highlands 27-9HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HIGHLANDS 27C-33HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-4		

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)
8,096.68	90.04	359.72	7,515.55	-765.95	-43.16	-765.51	9.00	9.00	0.00
<b>Top of Production - HIGHLANDS 27C-33HZ_PHL</b>									
8,100.00	90.04	359.72	7,515.55	-762.63	-43.18	-762.19	0.01	0.01	0.00
8,200.00	90.04	359.72	7,515.48	-662.63	-43.67	-662.20	0.00	0.00	0.00
8,300.00	90.04	359.72	7,515.41	-562.63	-44.17	-562.20	0.00	0.00	0.00
8,400.00	90.04	359.72	7,515.34	-462.63	-44.67	-462.20	0.00	0.00	0.00
8,500.00	90.04	359.72	7,515.27	-362.63	-45.16	-362.20	0.00	0.00	0.00
8,600.00	90.04	359.72	7,515.20	-262.63	-45.66	-262.20	0.00	0.00	0.00
8,700.00	90.04	359.72	7,515.13	-162.63	-46.16	-162.20	0.00	0.00	0.00
8,800.00	90.04	359.72	7,515.06	-62.64	-46.65	-62.20	0.00	0.00	0.00
8,900.00	90.04	359.72	7,514.99	37.36	-47.15	37.80	0.00	0.00	0.00
9,000.00	90.04	359.72	7,514.92	137.36	-47.64	137.80	0.00	0.00	0.00
9,100.00	90.04	359.72	7,514.85	237.36	-48.14	237.80	0.00	0.00	0.00
9,200.00	90.04	359.72	7,514.78	337.36	-48.64	337.80	0.00	0.00	0.00
9,300.00	90.04	359.72	7,514.71	437.36	-49.13	437.79	0.00	0.00	0.00
9,400.00	90.04	359.72	7,514.64	537.36	-49.63	537.79	0.00	0.00	0.00
9,500.00	90.04	359.72	7,514.57	637.36	-50.13	637.79	0.00	0.00	0.00
9,600.00	90.04	359.72	7,514.50	737.35	-50.62	737.79	0.00	0.00	0.00
9,700.00	90.04	359.72	7,514.43	837.35	-51.12	837.79	0.00	0.00	0.00
9,800.00	90.04	359.72	7,514.36	937.35	-51.61	937.79	0.00	0.00	0.00
9,900.00	90.04	359.72	7,514.29	1,037.35	-52.11	1,037.79	0.00	0.00	0.00
10,000.00	90.04	359.72	7,514.22	1,137.35	-52.61	1,137.79	0.00	0.00	0.00
10,100.00	90.04	359.72	7,514.15	1,237.35	-53.10	1,237.79	0.00	0.00	0.00
10,200.00	90.04	359.72	7,514.08	1,337.35	-53.60	1,337.79	0.00	0.00	0.00
10,300.00	90.04	359.72	7,514.01	1,437.35	-54.10	1,437.78	0.00	0.00	0.00
10,400.00	90.04	359.72	7,513.94	1,537.34	-54.59	1,537.78	0.00	0.00	0.00
10,500.00	90.04	359.72	7,513.87	1,637.34	-55.09	1,637.78	0.00	0.00	0.00
10,600.00	90.04	359.72	7,513.80	1,737.34	-55.58	1,737.78	0.00	0.00	0.00
10,700.00	90.04	359.72	7,513.73	1,837.34	-56.08	1,837.78	0.00	0.00	0.00
10,800.00	90.04	359.72	7,513.66	1,937.34	-56.58	1,937.78	0.00	0.00	0.00
10,900.00	90.04	359.72	7,513.60	2,037.34	-57.07	2,037.78	0.00	0.00	0.00
11,000.00	90.04	359.72	7,513.53	2,137.34	-57.57	2,137.78	0.00	0.00	0.00
11,100.00	90.04	359.72	7,513.46	2,237.34	-58.07	2,237.78	0.00	0.00	0.00
11,200.00	90.04	359.72	7,513.39	2,337.33	-58.56	2,337.78	0.00	0.00	0.00
11,300.00	90.04	359.72	7,513.32	2,437.33	-59.06	2,437.78	0.00	0.00	0.00
11,400.00	90.04	359.72	7,513.25	2,537.33	-59.55	2,537.77	0.00	0.00	0.00
11,500.00	90.04	359.72	7,513.18	2,637.33	-60.05	2,637.77	0.00	0.00	0.00
11,600.00	90.04	359.72	7,513.11	2,737.33	-60.55	2,737.77	0.00	0.00	0.00
11,700.00	90.04	359.72	7,513.04	2,837.33	-61.04	2,837.77	0.00	0.00	0.00
11,800.00	90.04	359.72	7,512.97	2,937.33	-61.54	2,937.77	0.00	0.00	0.00
11,900.00	90.04	359.72	7,512.90	3,037.33	-62.04	3,037.77	0.00	0.00	0.00
12,000.00	90.04	359.72	7,512.83	3,137.32	-62.53	3,137.77	0.00	0.00	0.00
12,100.00	90.04	359.72	7,512.76	3,237.32	-63.03	3,237.77	0.00	0.00	0.00
12,200.00	90.04	359.72	7,512.69	3,337.32	-63.52	3,337.77	0.00	0.00	0.00
12,300.00	90.04	359.72	7,512.62	3,437.32	-64.02	3,437.77	0.00	0.00	0.00
12,400.00	90.04	359.72	7,512.55	3,537.32	-64.52	3,537.77	0.00	0.00	0.00
12,500.00	90.04	359.72	7,512.48	3,637.32	-65.01	3,637.76	0.00	0.00	0.00
12,600.00	90.04	359.72	7,512.41	3,737.32	-65.51	3,737.76	0.00	0.00	0.00
12,700.00	90.04	359.72	7,512.34	3,837.32	-66.01	3,837.76	0.00	0.00	0.00
12,800.00	90.04	359.72	7,512.27	3,937.31	-66.50	3,937.76	0.00	0.00	0.00
12,900.00	90.04	359.72	7,512.20	4,037.31	-67.00	4,037.76	0.00	0.00	0.00
13,000.00	90.04	359.72	7,512.13	4,137.31	-67.49	4,137.76	0.00	0.00	0.00
13,100.00	90.04	359.72	7,512.06	4,237.31	-67.99	4,237.76	0.00	0.00	0.00
13,200.00	90.04	359.72	7,511.99	4,337.31	-68.49	4,337.76	0.00	0.00	0.00

# Anadarko

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 27C-33HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Site:</b>	1N-66W-09 Highlands 27-9HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HIGHLANDS 27C-33HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-4		

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	359.72	7,511.92	4,437.31	-68.98	4,437.76	0.00	0.00	0.00
13,400.00	90.04	359.72	7,511.85	4,537.31	-69.48	4,537.76	0.00	0.00	0.00
13,500.00	90.04	359.72	7,511.78	4,637.31	-69.98	4,637.75	0.00	0.00	0.00
13,600.00	90.04	359.72	7,511.71	4,737.30	-70.47	4,737.75	0.00	0.00	0.00
13,700.00	90.04	359.72	7,511.64	4,837.30	-70.97	4,837.75	0.00	0.00	0.00
13,800.00	90.04	359.72	7,511.57	4,937.30	-71.46	4,937.75	0.00	0.00	0.00
13,900.00	90.04	359.72	7,511.50	5,037.30	-71.96	5,037.75	0.00	0.00	0.00
14,000.00	90.04	359.72	7,511.43	5,137.30	-72.46	5,137.75	0.00	0.00	0.00
14,100.00	90.04	359.72	7,511.36	5,237.30	-72.95	5,237.75	0.00	0.00	0.00
14,200.00	90.04	359.72	7,511.29	5,337.30	-73.45	5,337.75	0.00	0.00	0.00
14,300.00	90.04	359.72	7,511.22	5,437.30	-73.95	5,437.75	0.00	0.00	0.00
14,400.00	90.04	359.72	7,511.15	5,537.29	-74.44	5,537.75	0.00	0.00	0.00
14,500.00	90.04	359.72	7,511.08	5,637.29	-74.94	5,637.75	0.00	0.00	0.00
14,600.00	90.04	359.72	7,511.01	5,737.29	-75.44	5,737.74	0.00	0.00	0.00
14,616.96	90.04	359.72	7,511.00	5,754.25	-75.52	5,754.70	0.00	0.00	0.00
HIGHLANDS 27C-33HZ_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									
HIGHLANDS 27C-33H	0.00	0.00	7,511.00	5,754.25	-75.52	14,558,812.00	1,702,864.00	40.087878	-104.776728
- plan hits target center									
- Point									
HIGHLANDS 27C-33H	0.00	0.00	7,515.55	-765.95	-43.16	14,552,291.90	1,702,912.73	40.069973	-104.776613
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,841.99	1,800.00	9 5/8"	9-5/8	13-1/2	
8,096.68	7,515.55	Top of Production	5-1/2	8-1/2	

# Anadarko

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 27C-33HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 5018.00usft (D Rig)
<b>Site:</b>	1N-66W-09 Highlands 27-9HZ Pad	<b>North Reference:</b>	True
<b>Well:</b>	HIGHLANDS 27C-33HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Plan A		
<b>Design:</b>	Permit Rev-4		

Formations						
	Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
	1,479.10	1,458.00	Fox Hills			
	4,394.00	4,203.00	Parkman			
	4,807.73	4,599.00	Sussex			
	7,424.68	7,193.00	Sharon Springs			
	7,472.90	7,234.00	Niobrara			
	7,539.19	7,287.00	Nio B			
	7,620.63	7,346.00	Nio C			
	7,879.46	7,479.00	Fort Hayes			
	7,959.86	7,501.00	Codell			