

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

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

**HIGHLANDS 15N-16HZ**

**Plan A**

**Plan: Permit Rev-4**

## **Standard Planning Report**

**16 June, 2016**



Azimuths to True North  
Magnetic North: 8.32°

Magnetic Field  
Strength: 52544.3snT  
Dip Angle: 66.65°  
Date: 5/14/2015  
Model: IGRF2010

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

Well: HIGHLANDS 15N-16HZ  
Wellbore: Plan A  
Design: Permit Rev-4

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1458.00	1466.55	Fox Hills
4203.00	4230.54	Parkman
4599.00	4626.54	Sussex
7121.00	7222.90	Sharon Springs
7162.00	7294.04	Niobrara
7252.00	7556.59	Nio B

#### WELL DETAILS: HIGHLANDS 15N-16HZ

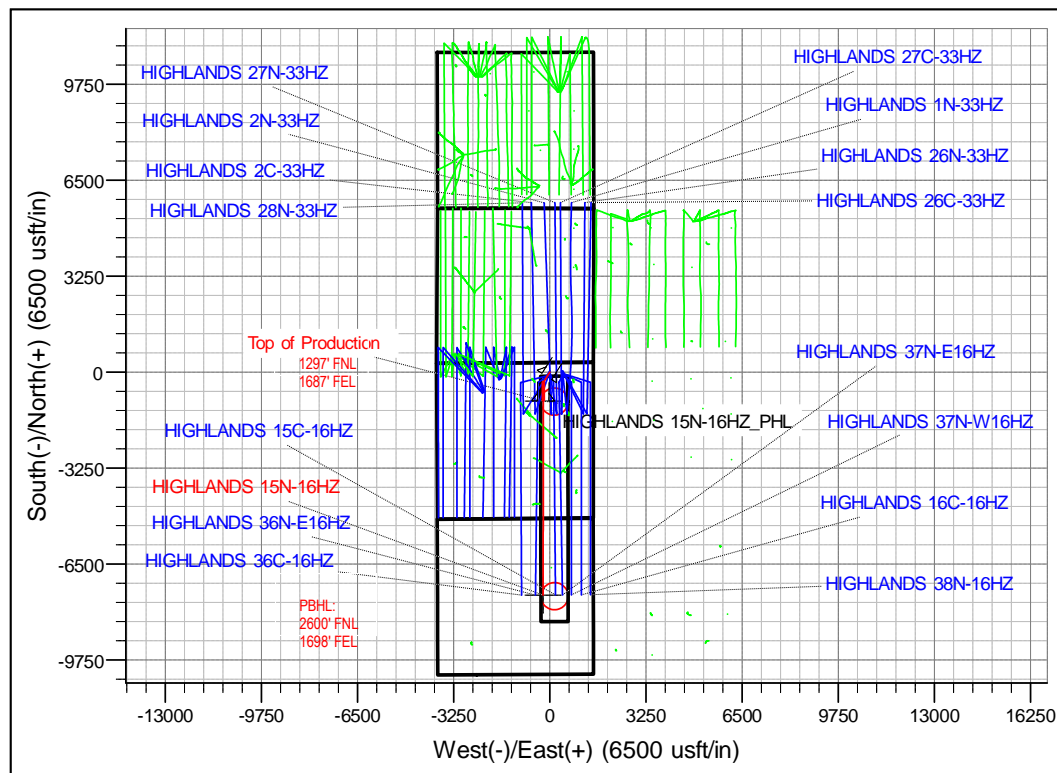
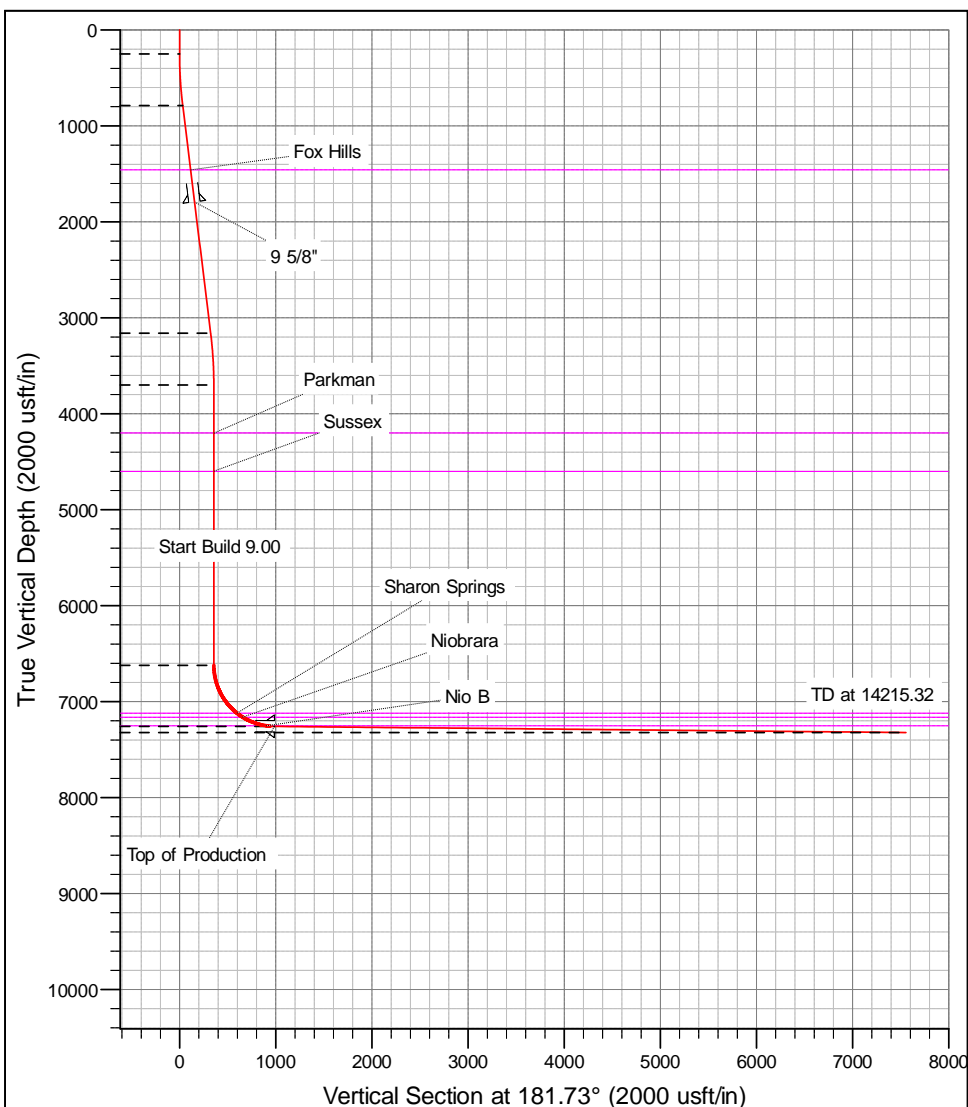
+N/-S	+E/-W	GL: 5001.00	RKB @ 5018.00usft (D Rig)	Longitude	Slot
0.00	0.00	Northing 14553075.45	Easting 1702521.70	Latitude 40.072127	-104.778003

#### 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
790.31	8.10	212.33	788.51	-32.24	-20.40	1.50	32.84
3187.23	8.10	212.33	3161.49	-317.76	-201.14	0.00	323.68
3727.54	0.00	0.00	3700.00	-350.00	-221.54	1.50	356.51
6649.72	0.00	0.00	6622.18	-350.00	-221.54	0.00	356.51
7643.50	89.44	180.05	7258.77	-980.40	-222.07	9.00	986.64
14215.32	89.44	180.05	7323.00	-7551.90	-227.54	0.00	7555.33

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
HIGHLANDS 15N-16HZ_PHL	7258.77	-980.40	-222.07	14552094.50	1702302.08	40.069435	-104.778797
HIGHLANDS 15N-16HZ_PBHL	7323.00	-7551.90	-227.54	14545523.00	1702313.00	40.051388	-104.778816



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## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 15N-16HZ
<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 15N-16HZ	<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 15N-16HZ					
Well Position	+N/-S	-44.79 usft	Northing:	14,553,075.44 usft	Latitude:	40.072127
	+E/-W	-0.28 usft	Easting:	1,702,521.70 usft	Longitude:	-104.778003
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	5/14/2015	8.32	66.65	52,544

<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	181.73

<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	
790.31	8.10	212.33	788.51	-32.24	-20.40	1.50	1.50	0.00	212.33	
3,187.23	8.10	212.33	3,161.49	-317.76	-201.14	0.00	0.00	0.00	0.00	
3,727.54	0.00	0.00	3,700.00	-350.00	-221.54	1.50	-1.50	0.00	180.00	
6,649.72	0.00	0.00	6,622.18	-350.00	-221.54	0.00	0.00	0.00	0.00	
7,643.50	89.44	180.05	7,258.77	-980.40	-222.07	9.00	9.00	0.00	180.05	
14,215.32	89.44	180.05	7,323.00	-7,551.90	-227.54	0.00	0.00	0.00	0.00	HIGHLANDS 15N-1

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## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 15N-16HZ
<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 15N-16HZ	<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	212.33	300.00	-0.28	-0.18	0.28	1.50	1.50	0.00
400.00	2.25	212.33	399.96	-2.49	-1.58	2.53	1.50	1.50	0.00
500.00	3.75	212.33	499.82	-6.91	-4.37	7.04	1.50	1.50	0.00
600.00	5.25	212.33	599.51	-13.54	-8.57	13.79	1.50	1.50	0.00
700.00	6.75	212.33	698.96	-22.37	-14.16	22.79	1.50	1.50	0.00
790.31	8.10	212.33	788.51	-32.24	-20.40	32.84	1.50	1.50	0.00
800.00	8.10	212.33	798.10	-33.39	-21.13	34.01	0.00	0.00	0.00
900.00	8.10	212.33	897.10	-45.30	-28.67	46.15	0.00	0.00	0.00
1,000.00	8.10	212.33	996.11	-57.21	-36.22	58.28	0.00	0.00	0.00
1,100.00	8.10	212.33	1,095.11	-69.13	-43.76	70.41	0.00	0.00	0.00
1,200.00	8.10	212.33	1,194.11	-81.04	-51.30	82.55	0.00	0.00	0.00
1,300.00	8.10	212.33	1,293.11	-92.95	-58.84	94.68	0.00	0.00	0.00
1,400.00	8.10	212.33	1,392.11	-104.86	-66.38	106.82	0.00	0.00	0.00
1,466.55	8.10	212.33	1,458.00	-112.79	-71.39	114.89	0.00	0.00	0.00
<b>Fox Hills</b>									
1,500.00	8.10	212.33	1,491.11	-116.78	-73.92	118.95	0.00	0.00	0.00
1,600.00	8.10	212.33	1,590.11	-128.69	-81.46	131.08	0.00	0.00	0.00
1,700.00	8.10	212.33	1,689.11	-140.60	-89.00	143.22	0.00	0.00	0.00
1,800.00	8.10	212.33	1,788.12	-152.51	-96.54	155.35	0.00	0.00	0.00
1,804.93	8.10	212.33	1,793.00	-153.10	-96.91	155.95	0.00	0.00	0.00
<b>9 5/8"</b>									
1,900.00	8.10	212.33	1,887.12	-164.43	-104.08	167.49	0.00	0.00	0.00
2,000.00	8.10	212.33	1,986.12	-176.34	-111.62	179.62	0.00	0.00	0.00
2,100.00	8.10	212.33	2,085.12	-188.25	-119.16	191.75	0.00	0.00	0.00
2,200.00	8.10	212.33	2,184.12	-200.16	-126.70	203.89	0.00	0.00	0.00
2,300.00	8.10	212.33	2,283.12	-212.07	-134.24	216.02	0.00	0.00	0.00
2,400.00	8.10	212.33	2,382.12	-223.99	-141.78	228.16	0.00	0.00	0.00
2,500.00	8.10	212.33	2,481.12	-235.90	-149.32	240.29	0.00	0.00	0.00
2,600.00	8.10	212.33	2,580.13	-247.81	-156.86	252.42	0.00	0.00	0.00
2,700.00	8.10	212.33	2,679.13	-259.72	-164.40	264.56	0.00	0.00	0.00
2,800.00	8.10	212.33	2,778.13	-271.64	-171.94	276.69	0.00	0.00	0.00
2,900.00	8.10	212.33	2,877.13	-283.55	-179.48	288.83	0.00	0.00	0.00
3,000.00	8.10	212.33	2,976.13	-295.46	-187.02	300.96	0.00	0.00	0.00
3,100.00	8.10	212.33	3,075.13	-307.37	-194.56	313.09	0.00	0.00	0.00
3,187.23	8.10	212.33	3,161.49	-317.76	-201.14	323.68	0.00	0.00	0.00
3,200.00	7.91	212.33	3,174.14	-319.27	-202.09	325.21	1.50	-1.50	0.00
3,300.00	6.41	212.33	3,273.35	-329.80	-208.76	335.94	1.50	-1.50	0.00
3,400.00	4.91	212.33	3,372.86	-338.14	-214.03	344.43	1.50	-1.50	0.00
3,500.00	3.41	212.33	3,472.59	-344.28	-217.92	350.68	1.50	-1.50	0.00
3,600.00	1.91	212.33	3,572.48	-348.20	-220.40	354.68	1.50	-1.50	0.00
3,700.00	0.41	212.33	3,672.46	-349.92	-221.49	356.43	1.50	-1.50	0.00
3,727.54	0.00	0.00	3,700.00	-350.00	-221.54	356.51	1.50	-1.50	0.00
3,800.00	0.00	0.00	3,772.46	-350.00	-221.54	356.51	0.00	0.00	0.00
3,900.00	0.00	0.00	3,872.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,000.00	0.00	0.00	3,972.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,100.00	0.00	0.00	4,072.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,200.00	0.00	0.00	4,172.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,230.54	0.00	0.00	4,203.00	-350.00	-221.54	356.51	0.00	0.00	0.00
<b>Parkman</b>									

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## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 15N-16HZ
<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 15N-16HZ	<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)
4,300.00	0.00	0.00	4,272.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,400.00	0.00	0.00	4,372.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,500.00	0.00	0.00	4,472.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,600.00	0.00	0.00	4,572.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,626.54	0.00	0.00	4,599.00	-350.00	-221.54	356.51	0.00	0.00	0.00
<b>Sussex</b>									
4,700.00	0.00	0.00	4,672.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,800.00	0.00	0.00	4,772.46	-350.00	-221.54	356.51	0.00	0.00	0.00
4,900.00	0.00	0.00	4,872.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,000.00	0.00	0.00	4,972.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,100.00	0.00	0.00	5,072.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,200.00	0.00	0.00	5,172.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,300.00	0.00	0.00	5,272.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,400.00	0.00	0.00	5,372.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,500.00	0.00	0.00	5,472.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,600.00	0.00	0.00	5,572.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,700.00	0.00	0.00	5,672.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,800.00	0.00	0.00	5,772.46	-350.00	-221.54	356.51	0.00	0.00	0.00
5,900.00	0.00	0.00	5,872.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,000.00	0.00	0.00	5,972.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,100.00	0.00	0.00	6,072.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,200.00	0.00	0.00	6,172.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,300.00	0.00	0.00	6,272.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,400.00	0.00	0.00	6,372.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,500.00	0.00	0.00	6,472.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,600.00	0.00	0.00	6,572.46	-350.00	-221.54	356.51	0.00	0.00	0.00
6,649.72	0.00	0.00	6,622.18	-350.00	-221.54	356.51	0.00	0.00	0.00
6,700.00	4.53	180.05	6,672.41	-351.98	-221.54	358.50	9.00	9.00	0.00
6,800.00	13.53	180.05	6,771.07	-367.66	-221.55	374.16	9.00	9.00	0.00
6,900.00	22.53	180.05	6,866.06	-398.57	-221.58	405.06	9.00	9.00	0.00
7,000.00	31.53	180.05	6,955.05	-443.96	-221.62	450.43	9.00	9.00	0.00
7,100.00	40.53	180.05	7,035.84	-502.71	-221.67	509.16	9.00	9.00	0.00
7,200.00	49.53	180.05	7,106.45	-573.38	-221.73	579.80	9.00	9.00	0.00
7,222.90	51.59	180.05	7,121.00	-591.07	-221.74	597.48	9.00	9.00	0.00
<b>Sharon Springs</b>									
7,294.04	57.99	180.05	7,162.00	-649.16	-221.79	655.55	9.00	9.00	0.00
<b>Niobrara</b>									
7,300.00	58.53	180.05	7,165.13	-654.23	-221.79	660.61	9.00	9.00	0.00
7,400.00	67.53	180.05	7,210.45	-743.25	-221.87	749.60	9.00	9.00	0.00
7,500.00	76.53	180.05	7,241.28	-838.28	-221.95	844.58	9.00	9.00	0.00
7,556.59	81.62	180.05	7,252.00	-893.82	-221.99	900.10	9.00	9.00	0.00
<b>Nio B</b>									
7,600.00	85.53	180.05	7,256.86	-936.95	-222.03	943.21	9.00	9.00	0.00
7,643.50	89.44	180.05	7,258.77	-980.40	-222.07	986.64	9.00	9.00	0.00
<b>Top of Production - HIGHLANDS 15N-16HZ_PHL</b>									
7,700.00	89.44	180.05	7,259.32	-1,036.90	-222.11	1,043.12	0.00	0.00	0.00
7,800.00	89.44	180.05	7,260.30	-1,136.89	-222.20	1,143.07	0.00	0.00	0.00
7,900.00	89.44	180.05	7,261.28	-1,236.89	-222.28	1,243.02	0.00	0.00	0.00
8,000.00	89.44	180.05	7,262.25	-1,336.88	-222.36	1,342.97	0.00	0.00	0.00
8,100.00	89.44	180.05	7,263.23	-1,436.88	-222.45	1,442.93	0.00	0.00	0.00
8,200.00	89.44	180.05	7,264.21	-1,536.87	-222.53	1,542.88	0.00	0.00	0.00
8,300.00	89.44	180.05	7,265.19	-1,636.87	-222.61	1,642.83	0.00	0.00	0.00
8,400.00	89.44	180.05	7,266.16	-1,736.86	-222.70	1,742.78	0.00	0.00	0.00
8,500.00	89.44	180.05	7,267.14	-1,836.86	-222.78	1,842.73	0.00	0.00	0.00

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## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 15N-16HZ
<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 15N-16HZ	<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)
8,600.00	89.44	180.05	7,268.12	-1,936.85	-222.86	1,942.69	0.00	0.00	0.00
8,700.00	89.44	180.05	7,269.10	-2,036.85	-222.95	2,042.64	0.00	0.00	0.00
8,800.00	89.44	180.05	7,270.07	-2,136.84	-223.03	2,142.59	0.00	0.00	0.00
8,900.00	89.44	180.05	7,271.05	-2,236.84	-223.11	2,242.54	0.00	0.00	0.00
9,000.00	89.44	180.05	7,272.03	-2,336.83	-223.20	2,342.50	0.00	0.00	0.00
9,100.00	89.44	180.05	7,273.00	-2,436.83	-223.28	2,442.45	0.00	0.00	0.00
9,200.00	89.44	180.05	7,273.98	-2,536.83	-223.36	2,542.40	0.00	0.00	0.00
9,300.00	89.44	180.05	7,274.96	-2,636.82	-223.45	2,642.35	0.00	0.00	0.00
9,400.00	89.44	180.05	7,275.94	-2,736.82	-223.53	2,742.31	0.00	0.00	0.00
9,500.00	89.44	180.05	7,276.91	-2,836.81	-223.61	2,842.26	0.00	0.00	0.00
9,600.00	89.44	180.05	7,277.89	-2,936.81	-223.70	2,942.21	0.00	0.00	0.00
9,700.00	89.44	180.05	7,278.87	-3,036.80	-223.78	3,042.16	0.00	0.00	0.00
9,800.00	89.44	180.05	7,279.85	-3,136.80	-223.86	3,142.12	0.00	0.00	0.00
9,900.00	89.44	180.05	7,280.82	-3,236.79	-223.95	3,242.07	0.00	0.00	0.00
10,000.00	89.44	180.05	7,281.80	-3,336.79	-224.03	3,342.02	0.00	0.00	0.00
10,100.00	89.44	180.05	7,282.78	-3,436.78	-224.11	3,441.97	0.00	0.00	0.00
10,200.00	89.44	180.05	7,283.76	-3,536.78	-224.20	3,541.92	0.00	0.00	0.00
10,300.00	89.44	180.05	7,284.73	-3,636.77	-224.28	3,641.88	0.00	0.00	0.00
10,400.00	89.44	180.05	7,285.71	-3,736.77	-224.36	3,741.83	0.00	0.00	0.00
10,500.00	89.44	180.05	7,286.69	-3,836.76	-224.45	3,841.78	0.00	0.00	0.00
10,600.00	89.44	180.05	7,287.67	-3,936.76	-224.53	3,941.73	0.00	0.00	0.00
10,700.00	89.44	180.05	7,288.64	-4,036.75	-224.61	4,041.69	0.00	0.00	0.00
10,800.00	89.44	180.05	7,289.62	-4,136.75	-224.69	4,141.64	0.00	0.00	0.00
10,900.00	89.44	180.05	7,290.60	-4,236.74	-224.78	4,241.59	0.00	0.00	0.00
11,000.00	89.44	180.05	7,291.57	-4,336.74	-224.86	4,341.54	0.00	0.00	0.00
11,100.00	89.44	180.05	7,292.55	-4,436.73	-224.94	4,441.50	0.00	0.00	0.00
11,200.00	89.44	180.05	7,293.53	-4,536.73	-225.03	4,541.45	0.00	0.00	0.00
11,300.00	89.44	180.05	7,294.51	-4,636.72	-225.11	4,641.40	0.00	0.00	0.00
11,400.00	89.44	180.05	7,295.48	-4,736.72	-225.19	4,741.35	0.00	0.00	0.00
11,500.00	89.44	180.05	7,296.46	-4,836.71	-225.28	4,841.31	0.00	0.00	0.00
11,600.00	89.44	180.05	7,297.44	-4,936.71	-225.36	4,941.26	0.00	0.00	0.00
11,700.00	89.44	180.05	7,298.42	-5,036.70	-225.44	5,041.21	0.00	0.00	0.00
11,800.00	89.44	180.05	7,299.39	-5,136.70	-225.53	5,141.16	0.00	0.00	0.00
11,900.00	89.44	180.05	7,300.37	-5,236.70	-225.61	5,241.11	0.00	0.00	0.00
12,000.00	89.44	180.05	7,301.35	-5,336.69	-225.69	5,341.07	0.00	0.00	0.00
12,100.00	89.44	180.05	7,302.33	-5,436.69	-225.78	5,441.02	0.00	0.00	0.00
12,200.00	89.44	180.05	7,303.30	-5,536.68	-225.86	5,540.97	0.00	0.00	0.00
12,300.00	89.44	180.05	7,304.28	-5,636.68	-225.94	5,640.92	0.00	0.00	0.00
12,400.00	89.44	180.05	7,305.26	-5,736.67	-226.03	5,740.88	0.00	0.00	0.00
12,500.00	89.44	180.05	7,306.24	-5,836.67	-226.11	5,840.83	0.00	0.00	0.00
12,600.00	89.44	180.05	7,307.21	-5,936.66	-226.19	5,940.78	0.00	0.00	0.00
12,700.00	89.44	180.05	7,308.19	-6,036.66	-226.28	6,040.73	0.00	0.00	0.00
12,800.00	89.44	180.05	7,309.17	-6,136.65	-226.36	6,140.69	0.00	0.00	0.00
12,900.00	89.44	180.05	7,310.14	-6,236.65	-226.44	6,240.64	0.00	0.00	0.00
13,000.00	89.44	180.05	7,311.12	-6,336.64	-226.53	6,340.59	0.00	0.00	0.00
13,100.00	89.44	180.05	7,312.10	-6,436.64	-226.61	6,440.54	0.00	0.00	0.00
13,200.00	89.44	180.05	7,313.08	-6,536.63	-226.69	6,540.50	0.00	0.00	0.00
13,300.00	89.44	180.05	7,314.05	-6,636.63	-226.78	6,640.45	0.00	0.00	0.00
13,400.00	89.44	180.05	7,315.03	-6,736.62	-226.86	6,740.40	0.00	0.00	0.00
13,500.00	89.44	180.05	7,316.01	-6,836.62	-226.94	6,840.35	0.00	0.00	0.00
13,600.00	89.44	180.05	7,316.99	-6,936.61	-227.03	6,940.30	0.00	0.00	0.00
13,700.00	89.44	180.05	7,317.96	-7,036.61	-227.11	7,040.26	0.00	0.00	0.00
13,800.00	89.44	180.05	7,318.94	-7,136.60	-227.19	7,140.21	0.00	0.00	0.00
13,900.00	89.44	180.05	7,319.92	-7,236.60	-227.28	7,240.16	0.00	0.00	0.00

# Anadarko

## Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well HIGHLANDS 15N-16HZ
<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 15N-16HZ	<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)
14,000.00	89.44	180.05	7,320.90	-7,336.59	-227.36	7,340.11	0.00	0.00	0.00
14,100.00	89.44	180.05	7,321.87	-7,436.59	-227.44	7,440.07	0.00	0.00	0.00
14,200.00	89.44	180.05	7,322.85	-7,536.58	-227.53	7,540.02	0.00	0.00	0.00
14,215.32	89.44	180.05	7,323.00	-7,551.90	-227.54	7,555.33	0.00	0.00	0.00
HIGHLANDS 15N-16HZ_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 15N-16H	0.00	0.00	7,258.77	-980.40	-222.07	14,552,094.49	1,702,302.08	40.069435	-104.778797
- plan hits target center									
- Point									
HIGHLANDS 15N-16H	0.00	0.00	7,323.00	-7,551.90	-227.54	14,545,523.00	1,702,313.00	40.051388	-104.778816
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,804.93	1,793.00	9 5/8"	9-5/8	13-1/2	
7,643.50	7,258.77	Top of Production	5-1/2	8-1/2	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,466.55	1,458.00	Fox Hills				
4,230.54	4,203.00	Parkman				
4,626.54	4,599.00	Sussex				
7,222.90	7,121.00	Sharon Springs				
7,294.04	7,162.00	Niobrara				
7,556.59	7,252.00	Nio B				