

# **US ROCKIES WATTENBERG PLANNING**

**WELD-NAD83-UTMFT13N**

**1N-67W-24 QUARTER CIRCLE 13-24HZ PAD**

**QUARTER CIRCLE 24-4HZ**

**Plan A**

**Plan: Permit Rev-1**

## **Standard Planning Report**

**01 March, 2017**



Azimuths to True North  
Magnetic North: 8.11°

Magnetic Field  
Strength: 52329.3snT  
Dip Angle: 66.54°  
Date: 2/22/2017  
Model: IGRF2010

SITE: 1N-67W-24 QUARTER CIRCLE 13-24HZ PAD

Well: QUARTER CIRCLE 24-4HZ  
Wellbore: Plan A  
Design: Permit Rev-1

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
657.00	657.30	Fox Hills
4160.00	4163.89	Parkman
4960.00	4964.12	Sussex
7177.00	7199.35	Sharon Springs
7191.00	7216.00	Niobrara
7361.00	7454.90	Nio B
7426.00	7589.42	Nio C

## WELL DETAILS: QUARTER CIRCLE 24-4HZ

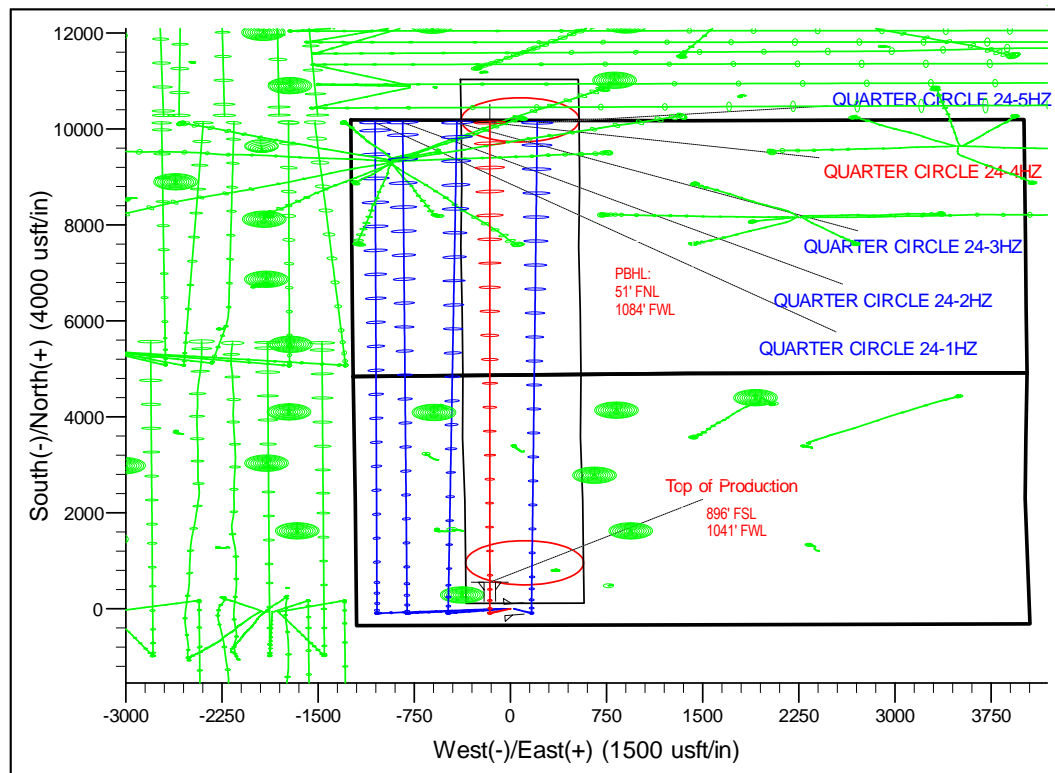
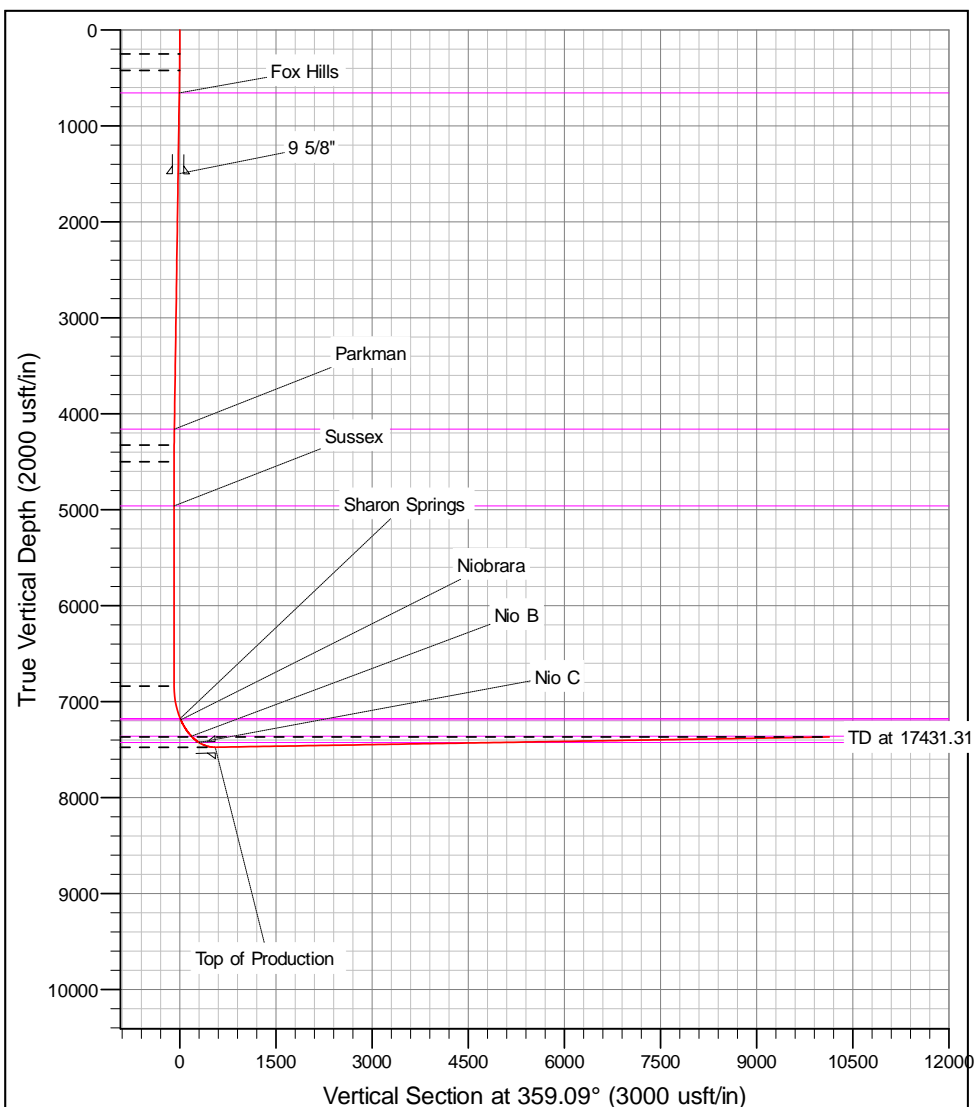
+N/-S	+E/-W	GL: 4943.00	RKB @ 4960.00usft (D Rig)	Latitude	Longitude	Slot
0.00	0.00	Northing 14537814.62	Easting 1684061.22	40.030326	-104.844086	

## 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
422.79	2.59	240.10	422.73	-1.95	-3.39	1.50	-1.89
4331.32	2.59	240.10	4327.27	-90.05	-156.61	0.00	-87.56
4504.12	0.00	0.00	4500.00	-92.00	-160.00	1.50	-89.45
6843.55	0.00	0.00	6839.43	-92.00	-160.00	0.00	-89.45
7850.66	90.64	360.00	7476.01	551.73	-160.03	9.00	554.20
17431.31	90.64	360.00	7369.00	10131.78	-160.45	0.00	0133.05

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
QUARTER CIRCLE 24-4HZ_PBL	7369.00	10131.78	-160.45	14547946.10	1683893.03	40.058150	-104.844659



# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Site:</b>	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	QUARTER CIRCLE 24-4HZ	<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						1N-67W-24 QUARTER CIRCLE 13-24HZ PAD											
Site Position:						Northing:			14,537,814.88 usft			Latitude:			40.030327		
From:			Lat/Long			Easting:			1,684,001.03 usft			Longitude:			-104.844301		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.10 °		

Well	QUARTER CIRCLE 24-4HZ					
Well Position	+N-S	-0.36 usft	Northing:	14,537,814.63 usft	Latitude:	40.030326
	+E-W	60.18 usft	Easting:	1,684,061.22 usft	Longitude:	-104.844086
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,943.00 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	2/22/2017	8.11	66.54	52,329.26974624

<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	359.09	

<b>Plan Survey Tool Program</b>	<b>Date</b>	3/1/2017			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	17,431.31 Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI	Fixed:v2:Rockies, crustal dec	

<b>Plan Sections</b>											
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	<b>TFO (°)</b>	<b>Target</b>	
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		
422.79	2.59	240.10	422.73	-1.95	-3.39	1.50	1.50	0.00	240.10		
4,331.32	2.59	240.10	4,327.27	-90.05	-156.61	0.00	0.00	0.00	0.00		
4,504.12	0.00	0.00	4,500.00	-92.00	-160.00	1.50	-1.50	0.00	180.00		
6,843.55	0.00	0.00	6,839.43	-92.00	-160.00	0.00	0.00	0.00	0.00		
7,850.66	90.64	360.00	7,476.01	551.73	-160.03	9.00	9.00	0.00	360.00		
17,431.31	90.64	360.00	7,369.00	10,131.78	-160.45	0.00	0.00	0.00	0.00	QUARTER CIRCLE	

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Site:</b>	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	QUARTER CIRCLE 24-4HZ	<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
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	240.10	300.00	-0.16	-0.28	-0.16	1.50	1.50	0.00
400.00	2.25	240.10	399.96	-1.47	-2.55	-1.43	1.50	1.50	0.00
422.79	2.59	240.10	422.73	-1.95	-3.39	-1.89	1.50	1.50	0.00
500.00	2.59	240.10	499.86	-3.69	-6.41	-3.59	0.00	0.00	0.00
600.00	2.59	240.10	599.76	-5.94	-10.33	-5.78	0.00	0.00	0.00
657.30	2.59	240.10	657.00	-7.23	-12.58	-7.03	0.00	0.00	0.00
Fox Hills									
700.00	2.59	240.10	699.66	-8.20	-14.25	-7.97	0.00	0.00	0.00
800.00	2.59	240.10	799.56	-10.45	-18.18	-10.16	0.00	0.00	0.00
900.00	2.59	240.10	899.45	-12.70	-22.10	-12.35	0.00	0.00	0.00
1,000.00	2.59	240.10	999.35	-14.96	-26.02	-14.55	0.00	0.00	0.00
1,100.00	2.59	240.10	1,099.25	-17.21	-29.94	-16.74	0.00	0.00	0.00
1,200.00	2.59	240.10	1,199.15	-19.47	-33.86	-18.93	0.00	0.00	0.00
1,300.00	2.59	240.10	1,299.04	-21.72	-37.78	-21.12	0.00	0.00	0.00
1,400.00	2.59	240.10	1,398.94	-23.98	-41.70	-23.31	0.00	0.00	0.00
1,500.00	2.59	240.10	1,498.84	-26.23	-45.62	-25.50	0.00	0.00	0.00
1,501.16	2.59	240.10	1,500.00	-26.26	-45.66	-25.53	0.00	0.00	0.00
9 5/8"									
1,600.00	2.59	240.10	1,598.74	-28.48	-49.54	-27.70	0.00	0.00	0.00
1,700.00	2.59	240.10	1,698.63	-30.74	-53.46	-29.89	0.00	0.00	0.00
1,800.00	2.59	240.10	1,798.53	-32.99	-57.38	-32.08	0.00	0.00	0.00
1,900.00	2.59	240.10	1,898.43	-35.25	-61.30	-34.27	0.00	0.00	0.00
2,000.00	2.59	240.10	1,998.33	-37.50	-65.22	-36.46	0.00	0.00	0.00
2,100.00	2.59	240.10	2,098.23	-39.75	-69.14	-38.65	0.00	0.00	0.00
2,200.00	2.59	240.10	2,198.12	-42.01	-73.06	-40.85	0.00	0.00	0.00
2,300.00	2.59	240.10	2,298.02	-44.26	-76.98	-43.04	0.00	0.00	0.00
2,400.00	2.59	240.10	2,397.92	-46.52	-80.90	-45.23	0.00	0.00	0.00
2,500.00	2.59	240.10	2,497.82	-48.77	-84.82	-47.42	0.00	0.00	0.00
2,600.00	2.59	240.10	2,597.71	-51.03	-88.74	-49.61	0.00	0.00	0.00
2,700.00	2.59	240.10	2,697.61	-53.28	-92.66	-51.81	0.00	0.00	0.00
2,800.00	2.59	240.10	2,797.51	-55.53	-96.58	-54.00	0.00	0.00	0.00
2,900.00	2.59	240.10	2,897.41	-57.79	-100.50	-56.19	0.00	0.00	0.00
3,000.00	2.59	240.10	2,997.30	-60.04	-104.42	-58.38	0.00	0.00	0.00
3,100.00	2.59	240.10	3,097.20	-62.30	-108.34	-60.57	0.00	0.00	0.00
3,200.00	2.59	240.10	3,197.10	-64.55	-112.26	-62.76	0.00	0.00	0.00
3,300.00	2.59	240.10	3,297.00	-66.80	-116.18	-64.96	0.00	0.00	0.00
3,400.00	2.59	240.10	3,396.90	-69.06	-120.10	-67.15	0.00	0.00	0.00
3,500.00	2.59	240.10	3,496.79	-71.31	-124.02	-69.34	0.00	0.00	0.00
3,600.00	2.59	240.10	3,596.69	-73.57	-127.94	-71.53	0.00	0.00	0.00
3,700.00	2.59	240.10	3,696.59	-75.82	-131.86	-73.72	0.00	0.00	0.00
3,800.00	2.59	240.10	3,796.49	-78.08	-135.78	-75.92	0.00	0.00	0.00
3,900.00	2.59	240.10	3,896.38	-80.33	-139.70	-78.11	0.00	0.00	0.00
4,000.00	2.59	240.10	3,996.28	-82.58	-143.62	-80.30	0.00	0.00	0.00
4,100.00	2.59	240.10	4,096.18	-84.84	-147.54	-82.49	0.00	0.00	0.00
4,163.89	2.59	240.10	4,160.00	-86.28	-150.05	-83.89	0.00	0.00	0.00
Parkman									
4,200.00	2.59	240.10	4,196.08	-87.09	-151.46	-84.68	0.00	0.00	0.00
4,300.00	2.59	240.10	4,295.97	-89.35	-155.38	-86.87	0.00	0.00	0.00
4,331.32	2.59	240.10	4,327.27	-90.05	-156.61	-87.56	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Site:</b>	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	QUARTER CIRCLE 24-4HZ	<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)
4,400.00	1.56	240.10	4,395.90	-91.29	-158.77	-88.77	1.50	-1.50	0.00
4,500.00	0.06	240.10	4,495.88	-92.00	-160.00	-89.45	1.50	-1.50	0.00
4,504.12	0.00	0.00	4,500.00	-92.00	-160.00	-89.45	1.50	-1.50	0.00
4,600.00	0.00	0.00	4,595.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
4,700.00	0.00	0.00	4,695.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
4,800.00	0.00	0.00	4,795.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
4,900.00	0.00	0.00	4,895.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
4,964.12	0.00	0.00	4,960.00	-92.00	-160.00	-89.45	0.00	0.00	0.00
<b>Sussex</b>									
5,000.00	0.00	0.00	4,995.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,100.00	0.00	0.00	5,095.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,200.00	0.00	0.00	5,195.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,300.00	0.00	0.00	5,295.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,400.00	0.00	0.00	5,395.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,500.00	0.00	0.00	5,495.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,600.00	0.00	0.00	5,595.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,700.00	0.00	0.00	5,695.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,800.00	0.00	0.00	5,795.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
5,900.00	0.00	0.00	5,895.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,000.00	0.00	0.00	5,995.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,100.00	0.00	0.00	6,095.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,200.00	0.00	0.00	6,195.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,300.00	0.00	0.00	6,295.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,400.00	0.00	0.00	6,395.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,500.00	0.00	0.00	6,495.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,600.00	0.00	0.00	6,595.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,700.00	0.00	0.00	6,695.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,800.00	0.00	0.00	6,795.88	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,843.55	0.00	0.00	6,839.43	-92.00	-160.00	-89.45	0.00	0.00	0.00
6,900.00	5.08	360.00	6,895.81	-89.50	-160.00	-86.95	9.00	9.00	0.00
7,000.00	14.08	360.00	6,994.31	-72.87	-160.00	-70.33	9.00	9.00	0.00
7,100.00	23.08	360.00	7,089.00	-41.04	-160.00	-38.50	9.00	9.00	0.00
7,199.35	32.02	360.00	7,177.00	4.87	-160.00	7.40	9.00	9.00	0.00
<b>Sharon Springs</b>									
7,200.00	32.08	360.00	7,177.55	5.21	-160.00	7.74	9.00	9.00	0.00
7,216.00	33.52	360.00	7,191.00	13.88	-160.00	16.41	9.00	9.00	0.00
<b>Niobrara</b>									
7,300.00	41.08	360.00	7,257.77	64.74	-160.01	67.27	9.00	9.00	0.00
7,400.00	50.08	360.00	7,327.69	136.09	-160.01	138.61	9.00	9.00	0.00
7,454.80	55.01	360.00	7,361.00	179.58	-160.01	182.09	9.00	9.00	0.00
<b>Nio B</b>									
7,500.00	59.08	360.00	7,385.58	217.50	-160.01	220.01	9.00	9.00	0.00
7,589.42	67.13	360.00	7,426.00	297.18	-160.02	299.68	9.00	9.00	0.00
<b>Nio C</b>									
7,600.00	68.08	360.00	7,430.03	306.97	-160.02	309.46	9.00	9.00	0.00
7,700.00	77.08	360.00	7,459.94	402.28	-160.02	404.77	9.00	9.00	0.00
7,800.00	86.08	360.00	7,474.57	501.10	-160.03	503.57	9.00	9.00	0.00
7,850.66	90.64	360.00	7,476.01	551.73	-160.03	554.19	9.00	9.00	0.00
<b>Top of Production - QUARTER CIRCLE 24-4HZ_PHL</b>									
7,900.00	90.64	360.00	7,475.46	601.07	-160.03	603.52	0.00	0.00	0.00
8,000.00	90.64	360.00	7,474.35	701.06	-160.03	703.51	0.00	0.00	0.00
8,100.00	90.64	360.00	7,473.23	801.05	-160.04	803.49	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Site:</b>	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	QUARTER CIRCLE 24-4HZ	<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)
8,200.00	90.64	360.00	7,472.11	901.05	-160.04	903.47	0.00	0.00	0.00
8,300.00	90.64	360.00	7,471.00	1,001.04	-160.05	1,003.45	0.00	0.00	0.00
8,400.00	90.64	360.00	7,469.88	1,101.03	-160.05	1,103.43	0.00	0.00	0.00
8,500.00	90.64	360.00	7,468.76	1,201.03	-160.06	1,203.41	0.00	0.00	0.00
8,600.00	90.64	360.00	7,467.64	1,301.02	-160.06	1,303.39	0.00	0.00	0.00
8,700.00	90.64	360.00	7,466.53	1,401.02	-160.07	1,403.37	0.00	0.00	0.00
8,800.00	90.64	360.00	7,465.41	1,501.01	-160.07	1,503.36	0.00	0.00	0.00
8,900.00	90.64	360.00	7,464.29	1,601.00	-160.07	1,603.34	0.00	0.00	0.00
9,000.00	90.64	360.00	7,463.18	1,701.00	-160.08	1,703.32	0.00	0.00	0.00
9,100.00	90.64	360.00	7,462.06	1,800.99	-160.08	1,803.30	0.00	0.00	0.00
9,200.00	90.64	360.00	7,460.94	1,900.98	-160.09	1,903.28	0.00	0.00	0.00
9,300.00	90.64	360.00	7,459.83	2,000.98	-160.09	2,003.26	0.00	0.00	0.00
9,400.00	90.64	360.00	7,458.71	2,100.97	-160.10	2,103.24	0.00	0.00	0.00
9,500.00	90.64	360.00	7,457.59	2,200.97	-160.10	2,203.23	0.00	0.00	0.00
9,600.00	90.64	360.00	7,456.47	2,300.96	-160.11	2,303.21	0.00	0.00	0.00
9,700.00	90.64	360.00	7,455.36	2,400.95	-160.11	2,403.19	0.00	0.00	0.00
9,800.00	90.64	360.00	7,454.24	2,500.95	-160.11	2,503.17	0.00	0.00	0.00
9,900.00	90.64	360.00	7,453.12	2,600.94	-160.12	2,603.15	0.00	0.00	0.00
10,000.00	90.64	360.00	7,452.01	2,700.93	-160.12	2,703.13	0.00	0.00	0.00
10,100.00	90.64	360.00	7,450.89	2,800.93	-160.13	2,803.11	0.00	0.00	0.00
10,200.00	90.64	360.00	7,449.77	2,900.92	-160.13	2,903.09	0.00	0.00	0.00
10,300.00	90.64	360.00	7,448.66	3,000.92	-160.14	3,003.08	0.00	0.00	0.00
10,400.00	90.64	360.00	7,447.54	3,100.91	-160.14	3,103.06	0.00	0.00	0.00
10,500.00	90.64	360.00	7,446.42	3,200.90	-160.14	3,203.04	0.00	0.00	0.00
10,600.00	90.64	360.00	7,445.31	3,300.90	-160.15	3,303.02	0.00	0.00	0.00
10,700.00	90.64	360.00	7,444.19	3,400.89	-160.15	3,403.00	0.00	0.00	0.00
10,800.00	90.64	360.00	7,443.07	3,500.88	-160.16	3,502.98	0.00	0.00	0.00
10,900.00	90.64	360.00	7,441.95	3,600.88	-160.16	3,602.96	0.00	0.00	0.00
11,000.00	90.64	360.00	7,440.84	3,700.87	-160.17	3,702.94	0.00	0.00	0.00
11,100.00	90.64	360.00	7,439.72	3,800.87	-160.17	3,802.93	0.00	0.00	0.00
11,200.00	90.64	360.00	7,438.60	3,900.86	-160.18	3,902.91	0.00	0.00	0.00
11,300.00	90.64	360.00	7,437.49	4,000.85	-160.18	4,002.89	0.00	0.00	0.00
11,400.00	90.64	360.00	7,436.37	4,100.85	-160.18	4,102.87	0.00	0.00	0.00
11,500.00	90.64	360.00	7,435.25	4,200.84	-160.19	4,202.85	0.00	0.00	0.00
11,600.00	90.64	360.00	7,434.14	4,300.83	-160.19	4,302.83	0.00	0.00	0.00
11,700.00	90.64	360.00	7,433.02	4,400.83	-160.20	4,402.81	0.00	0.00	0.00
11,800.00	90.64	360.00	7,431.90	4,500.82	-160.20	4,502.79	0.00	0.00	0.00
11,900.00	90.64	360.00	7,430.78	4,600.82	-160.21	4,602.78	0.00	0.00	0.00
12,000.00	90.64	360.00	7,429.67	4,700.81	-160.21	4,702.76	0.00	0.00	0.00
12,100.00	90.64	360.00	7,428.55	4,800.80	-160.22	4,802.74	0.00	0.00	0.00
12,200.00	90.64	360.00	7,427.43	4,900.80	-160.22	4,902.72	0.00	0.00	0.00
12,300.00	90.64	360.00	7,426.32	5,000.79	-160.22	5,002.70	0.00	0.00	0.00
12,400.00	90.64	360.00	7,425.20	5,100.79	-160.23	5,102.68	0.00	0.00	0.00
12,500.00	90.64	360.00	7,424.08	5,200.78	-160.23	5,202.66	0.00	0.00	0.00
12,600.00	90.64	360.00	7,422.97	5,300.77	-160.24	5,302.65	0.00	0.00	0.00
12,700.00	90.64	360.00	7,421.85	5,400.77	-160.24	5,402.63	0.00	0.00	0.00
12,800.00	90.64	360.00	7,420.73	5,500.76	-160.25	5,502.61	0.00	0.00	0.00
12,900.00	90.64	360.00	7,419.61	5,600.75	-160.25	5,602.59	0.00	0.00	0.00
13,000.00	90.64	360.00	7,418.50	5,700.75	-160.25	5,702.57	0.00	0.00	0.00
13,100.00	90.64	360.00	7,417.38	5,800.74	-160.26	5,802.55	0.00	0.00	0.00
13,200.00	90.64	360.00	7,416.26	5,900.74	-160.26	5,902.53	0.00	0.00	0.00
13,300.00	90.64	360.00	7,415.15	6,000.73	-160.27	6,002.51	0.00	0.00	0.00
13,400.00	90.64	360.00	7,414.03	6,100.72	-160.27	6,102.50	0.00	0.00	0.00

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Site:</b>	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	QUARTER CIRCLE 24-4HZ	<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)	
13,500.00	90.64	360.00	7,412.91	6,200.72	-160.28	6,202.48	0.00	0.00	0.00	
13,600.00	90.64	360.00	7,411.80	6,300.71	-160.28	6,302.46	0.00	0.00	0.00	
13,700.00	90.64	360.00	7,410.68	6,400.70	-160.29	6,402.44	0.00	0.00	0.00	
13,800.00	90.64	360.00	7,409.56	6,500.70	-160.29	6,502.42	0.00	0.00	0.00	
13,900.00	90.64	360.00	7,408.44	6,600.69	-160.29	6,602.40	0.00	0.00	0.00	
14,000.00	90.64	360.00	7,407.33	6,700.69	-160.30	6,702.38	0.00	0.00	0.00	
14,100.00	90.64	360.00	7,406.21	6,800.68	-160.30	6,802.36	0.00	0.00	0.00	
14,200.00	90.64	360.00	7,405.09	6,900.67	-160.31	6,902.35	0.00	0.00	0.00	
14,300.00	90.64	360.00	7,403.98	7,000.67	-160.31	7,002.33	0.00	0.00	0.00	
14,400.00	90.64	360.00	7,402.86	7,100.66	-160.32	7,102.31	0.00	0.00	0.00	
14,500.00	90.64	360.00	7,401.74	7,200.65	-160.32	7,202.29	0.00	0.00	0.00	
14,600.00	90.64	360.00	7,400.63	7,300.65	-160.33	7,302.27	0.00	0.00	0.00	
14,700.00	90.64	360.00	7,399.51	7,400.64	-160.33	7,402.25	0.00	0.00	0.00	
14,800.00	90.64	360.00	7,398.39	7,500.64	-160.33	7,502.23	0.00	0.00	0.00	
14,900.00	90.64	360.00	7,397.27	7,600.63	-160.34	7,602.22	0.00	0.00	0.00	
15,000.00	90.64	360.00	7,396.16	7,700.62	-160.34	7,702.20	0.00	0.00	0.00	
15,100.00	90.64	360.00	7,395.04	7,800.62	-160.35	7,802.18	0.00	0.00	0.00	
15,200.00	90.64	360.00	7,393.92	7,900.61	-160.35	7,902.16	0.00	0.00	0.00	
15,300.00	90.64	360.00	7,392.81	8,000.60	-160.36	8,002.14	0.00	0.00	0.00	
15,400.00	90.64	360.00	7,391.69	8,100.60	-160.36	8,102.12	0.00	0.00	0.00	
15,500.00	90.64	360.00	7,390.57	8,200.59	-160.37	8,202.10	0.00	0.00	0.00	
15,600.00	90.64	360.00	7,389.46	8,300.59	-160.37	8,302.08	0.00	0.00	0.00	
15,700.00	90.64	360.00	7,388.34	8,400.58	-160.37	8,402.07	0.00	0.00	0.00	
15,800.00	90.64	360.00	7,387.22	8,500.57	-160.38	8,502.05	0.00	0.00	0.00	
15,900.00	90.64	360.00	7,386.10	8,600.57	-160.38	8,602.03	0.00	0.00	0.00	
16,000.00	90.64	360.00	7,384.99	8,700.56	-160.39	8,702.01	0.00	0.00	0.00	
16,100.00	90.64	360.00	7,383.87	8,800.55	-160.39	8,801.99	0.00	0.00	0.00	
16,200.00	90.64	360.00	7,382.75	8,900.55	-160.40	8,901.97	0.00	0.00	0.00	
16,300.00	90.64	360.00	7,381.64	9,000.54	-160.40	9,001.95	0.00	0.00	0.00	
16,400.00	90.64	360.00	7,380.52	9,100.54	-160.40	9,101.93	0.00	0.00	0.00	
16,500.00	90.64	360.00	7,379.40	9,200.53	-160.41	9,201.92	0.00	0.00	0.00	
16,600.00	90.64	360.00	7,378.29	9,300.52	-160.41	9,301.90	0.00	0.00	0.00	
16,700.00	90.64	360.00	7,377.17	9,400.52	-160.42	9,401.88	0.00	0.00	0.00	
16,800.00	90.64	360.00	7,376.05	9,500.51	-160.42	9,501.86	0.00	0.00	0.00	
16,900.00	90.64	360.00	7,374.93	9,600.50	-160.43	9,601.84	0.00	0.00	0.00	
17,000.00	90.64	360.00	7,373.82	9,700.50	-160.43	9,701.82	0.00	0.00	0.00	
17,100.00	90.64	360.00	7,372.70	9,800.49	-160.44	9,801.80	0.00	0.00	0.00	
17,200.00	90.64	360.00	7,371.58	9,900.49	-160.44	9,901.78	0.00	0.00	0.00	
17,300.00	90.64	360.00	7,370.47	10,000.48	-160.44	10,001.77	0.00	0.00	0.00	
17,400.00	90.64	360.00	7,369.35	10,100.47	-160.45	10,101.75	0.00	0.00	0.00	
17,431.31	90.64	360.00	7,369.00	10,131.78	-160.45	10,133.05	0.00	0.00	0.00	
QUARTER CIRCLE 24-4HZ_PBHL										

# Corporate Planning Report

<b>Database:</b>	PLANNING	<b>Local Co-ordinate Reference:</b>	Well QUARTER CIRCLE 24-4HZ
<b>Company:</b>	US ROCKIES WATTENBERG PLANNING	<b>TVD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Project:</b>	WELD-NAD83-UTMFT13N	<b>MD Reference:</b>	RKB @ 4960.00usft (D Rig)
<b>Site:</b>	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	QUARTER CIRCLE 24-4HZ	<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 - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
QUARTER CIRCLE 2 - plan hits target center - Point	0.00	0.00	7,369.00	10,131.78	-160.45	14,547,946.10	1,683,883.03	40.058150	-104.844660
QUARTER CIRCLE 2 - plan hits target center - Point	0.00	0.00	7,476.01	551.73	-160.03	14,538,366.07	1,683,900.22	40.031841	-104.844658

## Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,501.16	1,500.00	9 5/8"	9-5/8	13-1/2
7,850.66	7,476.01	Top of Production	5-1/2	7-7/8

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
657.30	657.00	Fox Hills			
4,163.89	4,160.00	Parkman			
4,964.12	4,960.00	Sussex			
7,199.35	7,177.00	Sharon Springs			
7,216.00	7,191.00	Niobrara			
7,454.80	7,361.00	Nio B			
7,589.42	7,426.00	Nio C			