

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

1N-67W-24 QUARTER CIRCLE 14-24HZ

QUARTER CIRCLE 24-9HZ

Plan A

Plan: Permit Rev-1

Standard Planning Report

05 April, 2017



Azimuths to True North
Magnetic North: 8.09°

Magnetic Field
Strength: 52318.0snT
Dip Angle: 66.54°
Date: 4/3/2017
Model: IGRF2010

SITE: 1N-67W-24 QUARTER CIRCLE 14-24HZ

Well: QUARTER CIRCLE 24-9HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
655.00	655.76	Fox Hills
4158.00	4227.14	Parkman
4958.00	5027.14	Sussex
7175.00	7284.97	Sharon Springs
7189.00	7304.09	Niobrara
7359.00	7634.38	Nio B

WELL DETAILS: QUARTER CIRCLE 24-9HZ

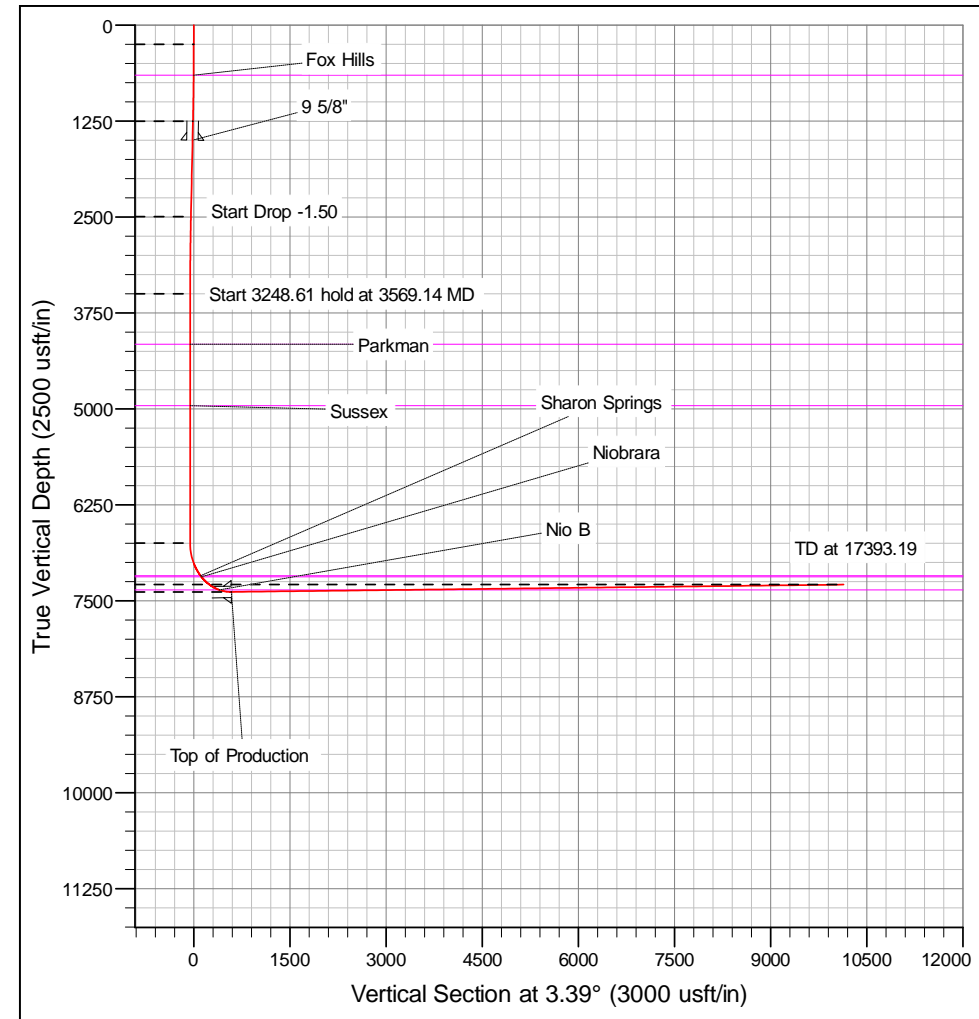
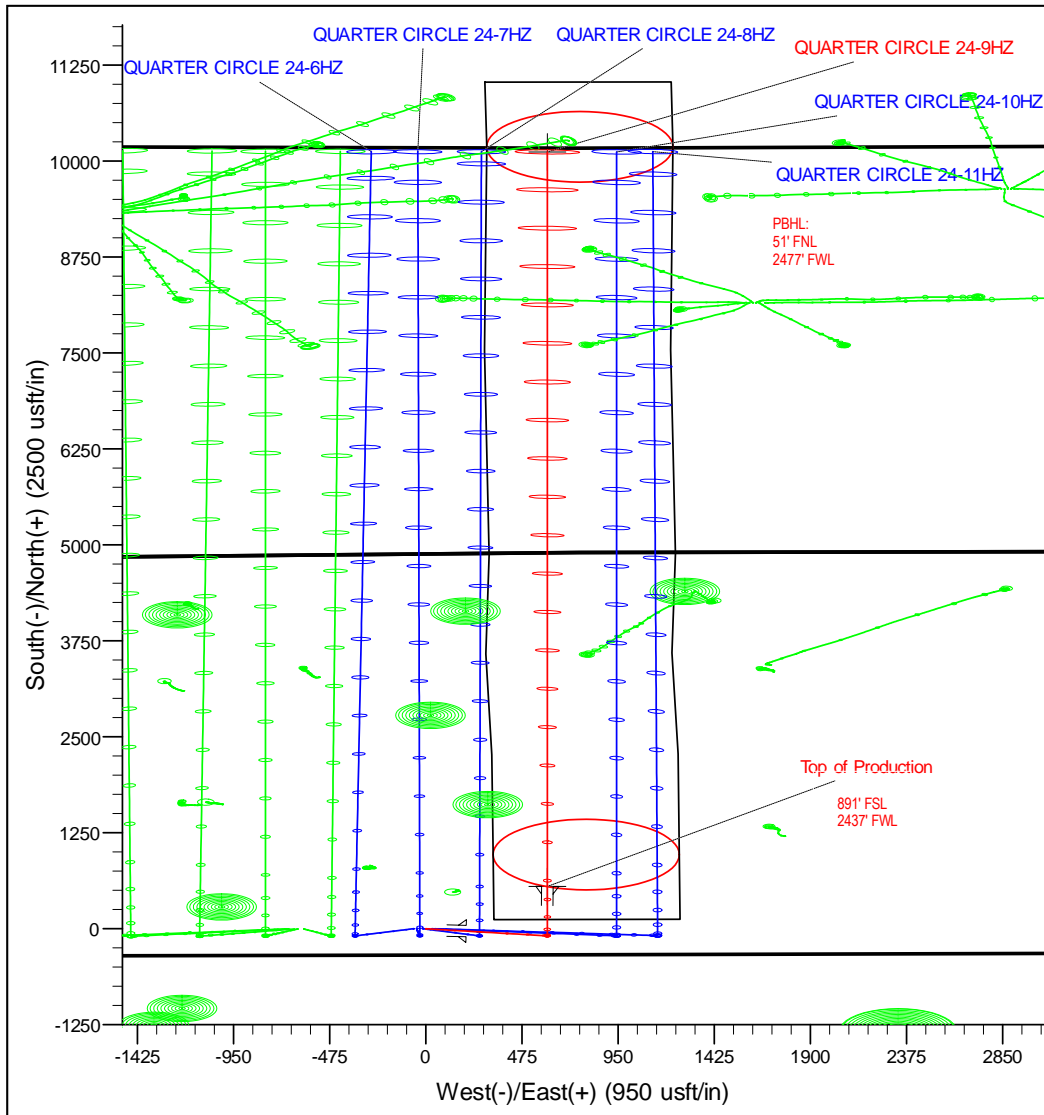
+N/-S	+E/-W	GL: 4941.00 Northing	RKB @ 4958.00usft (D Rig) Easting	Latitude	Longitude	Slot
0.00	0.00	14537818.65	1684694.13	40.030334	-104.841825	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
QUARTER CIRCLE 24-9HZ/PBHL	7290.00	10119.58	600.00	14547939.28	1685276.16	40.058124	-104.839681

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	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
1266.05	15.24	98.72	1254.11	-20.36	132.79	1.50	-12.47
2553.10	15.24	98.72	2495.89	-71.64	467.21	0.00	-43.86
3569.14	0.00	0.00	3500.00	-92.00	600.00	1.50	-56.33
6817.75	0.00	0.00	6748.61	-92.00	600.00	0.00	-56.33
7824.09	90.57	0.00	7385.20	550.95	600.00	9.00	585.50
17393.19	90.57	0.00	7290.00	10119.58	600.00	0.00	0137.35



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-9HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4958.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4958.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 14-24HZ	North Reference:	True
Well:	QUARTER CIRCLE 24-9HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

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

Site						1N-67W-24 QUARTER CIRCLE 14-24HZ											
Site Position:						Northing:			14,537,819.28 usft			Latitude:			40.030336		
From:			Lat/Long			Easting:			1,684,633.94 usft			Longitude:			-104.842040		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.10 °		

Well	QUARTER CIRCLE 24-9HZ					
Well Position	+N/-S	-0.73 usft	Northing:	14,537,818.65 usft	Latitude:	40.030334
	+E/-W	60.18 usft	Easting:	1,684,694.13 usft	Longitude:	-104.841825
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,941.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/3/2017	8.09	66.54	52,318.03169780

Design	Permit Rev-1				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	3.39	

Plan Survey Tool Program	Date	4/5/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,520.90	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI	
				Fixed:v2:standard declination	
2	1,520.90	17,393.19	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI	
				Fixed:v2:crustal field declinat	

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4958.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 14-24HZ	North Reference:	True
Well:	QUARTER CIRCLE 24-9HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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	
1,266.05	15.24	98.72	1,254.11	-20.36	132.79	1.50	1.50	0.00	98.72	
2,553.10	15.24	98.72	2,495.89	-71.64	467.21	0.00	0.00	0.00	0.00	
3,569.14	0.00	0.00	3,500.00	-92.00	600.00	1.50	-1.50	0.00	180.00	
6,817.75	0.00	0.00	6,748.61	-92.00	600.00	0.00	0.00	0.00	0.00	
7,824.09	90.57	0.00	7,385.20	550.95	600.00	9.00	9.00	0.00	0.00	
17,393.19	90.57	0.00	7,290.00	10,119.58	600.00	0.00	0.00	0.00	0.00	QUARTER CIRCLE

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 1N-67W-24 QUARTER CIRCLE 14-24HZ
Well: QUARTER CIRCLE 24-9HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well QUARTER CIRCLE 24-9HZ
TVD Reference: RKB @ 4958.00usft (D Rig)
MD Reference: RKB @ 4958.00usft (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	98.72	300.00	-0.05	0.32	-0.03	1.50	1.50	0.00
400.00	2.25	98.72	399.96	-0.45	2.91	-0.27	1.50	1.50	0.00
500.00	3.75	98.72	499.82	-1.24	8.08	-0.76	1.50	1.50	0.00
600.00	5.25	98.72	599.51	-2.43	15.84	-1.49	1.50	1.50	0.00
655.76	6.09	98.72	655.00	-3.26	21.28	-2.00	1.50	1.50	0.00
Fox Hills									
700.00	6.75	98.72	698.96	-4.01	26.17	-2.46	1.50	1.50	0.00
800.00	8.25	98.72	798.10	-5.99	39.07	-3.67	1.50	1.50	0.00
900.00	9.75	98.72	896.87	-8.36	54.53	-5.12	1.50	1.50	0.00
1,000.00	11.25	98.72	995.19	-11.12	72.55	-6.81	1.50	1.50	0.00
1,100.00	12.75	98.72	1,093.00	-14.27	93.10	-8.74	1.50	1.50	0.00
1,200.00	14.25	98.72	1,190.24	-17.81	116.17	-10.91	1.50	1.50	0.00
1,266.05	15.24	98.72	1,254.11	-20.36	132.79	-12.47	1.50	1.50	0.00
1,300.00	15.24	98.72	1,286.87	-21.71	141.61	-13.29	0.00	0.00	0.00
1,400.00	15.24	98.72	1,383.35	-25.70	167.59	-15.73	0.00	0.00	0.00
1,500.00	15.24	98.72	1,479.83	-29.68	193.58	-18.17	0.00	0.00	0.00
1,520.90	15.24	98.72	1,500.00	-30.51	199.01	-18.68	0.00	0.00	0.00
9 5/8"									
1,600.00	15.24	98.72	1,576.32	-33.67	219.56	-20.61	0.00	0.00	0.00
1,700.00	15.24	98.72	1,672.80	-37.65	245.55	-23.05	0.00	0.00	0.00
1,800.00	15.24	98.72	1,769.28	-41.63	271.53	-25.49	0.00	0.00	0.00
1,900.00	15.24	98.72	1,865.76	-45.62	297.51	-27.93	0.00	0.00	0.00
2,000.00	15.24	98.72	1,962.25	-49.60	323.50	-30.37	0.00	0.00	0.00
2,100.00	15.24	98.72	2,058.73	-53.59	349.48	-32.81	0.00	0.00	0.00
2,200.00	15.24	98.72	2,155.21	-57.57	375.46	-35.25	0.00	0.00	0.00
2,300.00	15.24	98.72	2,251.70	-61.56	401.45	-37.69	0.00	0.00	0.00
2,400.00	15.24	98.72	2,348.18	-65.54	427.43	-40.13	0.00	0.00	0.00
2,500.00	15.24	98.72	2,444.66	-69.52	453.42	-42.57	0.00	0.00	0.00
2,553.10	15.24	98.72	2,495.89	-71.64	467.21	-43.86	0.00	0.00	0.00
2,600.00	14.54	98.72	2,541.22	-73.47	479.12	-44.98	1.50	-1.50	0.00
2,700.00	13.04	98.72	2,638.34	-77.08	502.68	-47.19	1.50	-1.50	0.00
2,800.00	11.54	98.72	2,736.04	-80.30	523.71	-49.17	1.50	-1.50	0.00
2,900.00	10.04	98.72	2,834.27	-83.14	542.21	-50.90	1.50	-1.50	0.00
3,000.00	8.54	98.72	2,932.96	-85.59	558.17	-52.40	1.50	-1.50	0.00
3,100.00	7.04	98.72	3,032.03	-87.64	571.56	-53.66	1.50	-1.50	0.00
3,200.00	5.54	98.72	3,131.43	-89.30	582.38	-54.67	1.50	-1.50	0.00
3,300.00	4.04	98.72	3,231.08	-90.56	590.63	-55.45	1.50	-1.50	0.00
3,400.00	2.54	98.72	3,330.91	-91.43	596.30	-55.98	1.50	-1.50	0.00
3,500.00	1.04	98.72	3,430.86	-91.91	599.38	-56.27	1.50	-1.50	0.00
3,569.14	0.00	0.00	3,500.00	-92.00	600.00	-56.33	1.50	-1.50	0.00
3,600.00	0.00	0.00	3,530.86	-92.00	600.00	-56.33	0.00	0.00	0.00
3,700.00	0.00	0.00	3,630.86	-92.00	600.00	-56.33	0.00	0.00	0.00
3,800.00	0.00	0.00	3,730.86	-92.00	600.00	-56.33	0.00	0.00	0.00
3,900.00	0.00	0.00	3,830.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,000.00	0.00	0.00	3,930.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,100.00	0.00	0.00	4,030.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,200.00	0.00	0.00	4,130.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,227.14	0.00	0.00	4,158.00	-92.00	600.00	-56.33	0.00	0.00	0.00
Parkman									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-9HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4958.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4958.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 14-24HZ	North Reference:	True
Well:	QUARTER CIRCLE 24-9HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
4,300.00	0.00	0.00	4,230.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,400.00	0.00	0.00	4,330.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,500.00	0.00	0.00	4,430.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,600.00	0.00	0.00	4,530.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,700.00	0.00	0.00	4,630.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,800.00	0.00	0.00	4,730.86	-92.00	600.00	-56.33	0.00	0.00	0.00
4,900.00	0.00	0.00	4,830.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,000.00	0.00	0.00	4,930.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,027.14	0.00	0.00	4,958.00	-92.00	600.00	-56.33	0.00	0.00	0.00
Sussex									
5,100.00	0.00	0.00	5,030.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,200.00	0.00	0.00	5,130.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,300.00	0.00	0.00	5,230.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,400.00	0.00	0.00	5,330.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,500.00	0.00	0.00	5,430.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,600.00	0.00	0.00	5,530.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,700.00	0.00	0.00	5,630.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,800.00	0.00	0.00	5,730.86	-92.00	600.00	-56.33	0.00	0.00	0.00
5,900.00	0.00	0.00	5,830.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,000.00	0.00	0.00	5,930.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,100.00	0.00	0.00	6,030.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,200.00	0.00	0.00	6,130.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,300.00	0.00	0.00	6,230.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,400.00	0.00	0.00	6,330.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,500.00	0.00	0.00	6,430.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,600.00	0.00	0.00	6,530.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,700.00	0.00	0.00	6,630.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,800.00	0.00	0.00	6,730.86	-92.00	600.00	-56.33	0.00	0.00	0.00
6,817.75	0.00	0.00	6,748.61	-92.00	600.00	-56.33	0.00	0.00	0.00
6,900.00	7.40	0.00	6,830.63	-86.69	600.00	-51.03	9.00	9.00	0.00
7,000.00	16.40	0.00	6,928.38	-66.09	600.00	-30.46	9.00	9.00	0.00
7,100.00	25.40	0.00	7,021.70	-30.45	600.00	5.12	9.00	9.00	0.00
7,200.00	34.40	0.00	7,108.30	19.35	600.00	54.83	9.00	9.00	0.00
7,284.97	42.05	0.00	7,175.00	71.89	600.00	107.28	9.00	9.00	0.00
Sharon Springs									
7,300.00	43.40	0.00	7,186.04	82.09	600.00	117.45	9.00	9.00	0.00
7,304.09	43.77	0.00	7,189.00	84.90	600.00	120.27	9.00	9.00	0.00
Niobrara									
7,400.00	52.40	0.00	7,253.01	156.21	600.00	191.45	9.00	9.00	0.00
7,500.00	61.40	0.00	7,307.56	239.90	600.00	274.99	9.00	9.00	0.00
7,600.00	70.40	0.00	7,348.35	331.09	600.00	366.02	9.00	9.00	0.00
7,634.38	73.50	0.00	7,359.00	363.77	600.00	398.65	9.00	9.00	0.00
Nio B									
7,700.00	79.40	0.00	7,374.37	427.54	600.00	462.30	9.00	9.00	0.00
7,800.00	88.40	0.00	7,384.98	526.87	600.00	561.46	9.00	9.00	0.00
7,824.09	90.57	0.00	7,385.20	550.96	600.00	585.50	9.00	9.00	0.00
Top of Production - QUARTER CIRCLE 24-9HZ_PHL									
7,900.00	90.57	0.00	7,384.44	626.86	600.00	661.28	0.00	0.00	0.00
8,000.00	90.57	0.00	7,383.45	726.86	600.00	761.10	0.00	0.00	0.00
8,100.00	90.57	0.00	7,382.45	826.85	600.00	860.92	0.00	0.00	0.00
8,200.00	90.57	0.00	7,381.46	926.85	600.00	960.74	0.00	0.00	0.00
8,300.00	90.57	0.00	7,380.46	1,026.84	600.00	1,060.56	0.00	0.00	0.00
8,400.00	90.57	0.00	7,379.47	1,126.84	600.00	1,160.38	0.00	0.00	0.00
8,500.00	90.57	0.00	7,378.47	1,226.83	600.00	1,260.20	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4958.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4958.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 14-24HZ	North Reference:	True
Well:	QUARTER CIRCLE 24-9HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	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)
8,600.00	90.57	0.00	7,377.48	1,326.83	600.00	1,360.02	0.00	0.00	0.00
8,700.00	90.57	0.00	7,376.48	1,426.82	600.00	1,459.84	0.00	0.00	0.00
8,800.00	90.57	0.00	7,375.49	1,526.82	600.00	1,559.65	0.00	0.00	0.00
8,900.00	90.57	0.00	7,374.49	1,626.81	600.00	1,659.47	0.00	0.00	0.00
9,000.00	90.57	0.00	7,373.50	1,726.81	600.00	1,759.29	0.00	0.00	0.00
9,100.00	90.57	0.00	7,372.50	1,826.80	600.00	1,859.11	0.00	0.00	0.00
9,200.00	90.57	0.00	7,371.51	1,926.80	600.00	1,958.93	0.00	0.00	0.00
9,300.00	90.57	0.00	7,370.51	2,026.79	600.00	2,058.75	0.00	0.00	0.00
9,400.00	90.57	0.00	7,369.52	2,126.79	600.00	2,158.57	0.00	0.00	0.00
9,500.00	90.57	0.00	7,368.52	2,226.78	600.00	2,258.39	0.00	0.00	0.00
9,600.00	90.57	0.00	7,367.53	2,326.78	600.00	2,358.21	0.00	0.00	0.00
9,700.00	90.57	0.00	7,366.53	2,426.77	600.00	2,458.03	0.00	0.00	0.00
9,800.00	90.57	0.00	7,365.54	2,526.77	600.00	2,557.85	0.00	0.00	0.00
9,900.00	90.57	0.00	7,364.54	2,626.76	600.00	2,657.67	0.00	0.00	0.00
10,000.00	90.57	0.00	7,363.55	2,726.76	600.00	2,757.49	0.00	0.00	0.00
10,100.00	90.57	0.00	7,362.55	2,826.76	600.00	2,857.31	0.00	0.00	0.00
10,200.00	90.57	0.00	7,361.56	2,926.75	600.00	2,957.13	0.00	0.00	0.00
10,300.00	90.57	0.00	7,360.56	3,026.75	600.00	3,056.95	0.00	0.00	0.00
10,400.00	90.57	0.00	7,359.57	3,126.74	600.00	3,156.77	0.00	0.00	0.00
10,500.00	90.57	0.00	7,358.58	3,226.74	600.00	3,256.59	0.00	0.00	0.00
10,600.00	90.57	0.00	7,357.58	3,326.73	600.00	3,356.41	0.00	0.00	0.00
10,700.00	90.57	0.00	7,356.59	3,426.73	600.00	3,456.23	0.00	0.00	0.00
10,800.00	90.57	0.00	7,355.59	3,526.72	600.00	3,556.05	0.00	0.00	0.00
10,900.00	90.57	0.00	7,354.60	3,626.72	600.00	3,655.87	0.00	0.00	0.00
11,000.00	90.57	0.00	7,353.60	3,726.71	600.00	3,755.69	0.00	0.00	0.00
11,100.00	90.57	0.00	7,352.61	3,826.71	600.00	3,855.51	0.00	0.00	0.00
11,200.00	90.57	0.00	7,351.61	3,926.70	600.00	3,955.33	0.00	0.00	0.00
11,300.00	90.57	0.00	7,350.62	4,026.70	600.00	4,055.15	0.00	0.00	0.00
11,400.00	90.57	0.00	7,349.62	4,126.69	600.00	4,154.97	0.00	0.00	0.00
11,500.00	90.57	0.00	7,348.63	4,226.69	600.00	4,254.79	0.00	0.00	0.00
11,600.00	90.57	0.00	7,347.63	4,326.68	600.00	4,354.61	0.00	0.00	0.00
11,700.00	90.57	0.00	7,346.64	4,426.68	600.00	4,454.43	0.00	0.00	0.00
11,800.00	90.57	0.00	7,345.64	4,526.67	600.00	4,554.25	0.00	0.00	0.00
11,900.00	90.57	0.00	7,344.65	4,626.67	600.00	4,654.07	0.00	0.00	0.00
12,000.00	90.57	0.00	7,343.65	4,726.66	600.00	4,753.89	0.00	0.00	0.00
12,100.00	90.57	0.00	7,342.66	4,826.66	600.00	4,853.71	0.00	0.00	0.00
12,200.00	90.57	0.00	7,341.66	4,926.65	600.00	4,953.53	0.00	0.00	0.00
12,300.00	90.57	0.00	7,340.67	5,026.65	600.00	5,053.35	0.00	0.00	0.00
12,400.00	90.57	0.00	7,339.67	5,126.64	600.00	5,153.17	0.00	0.00	0.00
12,500.00	90.57	0.00	7,338.68	5,226.64	600.00	5,252.99	0.00	0.00	0.00
12,600.00	90.57	0.00	7,337.68	5,326.63	600.00	5,352.81	0.00	0.00	0.00
12,700.00	90.57	0.00	7,336.69	5,426.63	600.00	5,452.63	0.00	0.00	0.00
12,800.00	90.57	0.00	7,335.69	5,526.62	600.00	5,552.45	0.00	0.00	0.00
12,900.00	90.57	0.00	7,334.70	5,626.62	600.00	5,652.26	0.00	0.00	0.00
13,000.00	90.57	0.00	7,333.70	5,726.61	600.00	5,752.08	0.00	0.00	0.00
13,100.00	90.57	0.00	7,332.71	5,826.61	600.00	5,851.90	0.00	0.00	0.00
13,200.00	90.57	0.00	7,331.71	5,926.60	600.00	5,951.72	0.00	0.00	0.00
13,300.00	90.57	0.00	7,330.72	6,026.60	600.00	6,051.54	0.00	0.00	0.00
13,400.00	90.57	0.00	7,329.73	6,126.59	600.00	6,151.36	0.00	0.00	0.00
13,500.00	90.57	0.00	7,328.73	6,226.59	600.00	6,251.18	0.00	0.00	0.00
13,600.00	90.57	0.00	7,327.74	6,326.58	600.00	6,351.00	0.00	0.00	0.00
13,700.00	90.57	0.00	7,326.74	6,426.58	600.00	6,450.82	0.00	0.00	0.00
13,800.00	90.57	0.00	7,325.75	6,526.57	600.00	6,550.64	0.00	0.00	0.00
13,900.00	90.57	0.00	7,324.75	6,626.57	600.00	6,650.46	0.00	0.00	0.00

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 1N-67W-24 QUARTER CIRCLE 14-24HZ
Well: QUARTER CIRCLE 24-9HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well QUARTER CIRCLE 24-9HZ
TVD Reference: RKB @ 4958.00usft (D Rig)
MD Reference: RKB @ 4958.00usft (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)
14,000.00	90.57	0.00	7,323.76	6,726.56	600.00	6,750.28	0.00	0.00	0.00
14,100.00	90.57	0.00	7,322.76	6,826.56	600.00	6,850.10	0.00	0.00	0.00
14,200.00	90.57	0.00	7,321.77	6,926.55	600.00	6,949.92	0.00	0.00	0.00
14,300.00	90.57	0.00	7,320.77	7,026.55	600.00	7,049.74	0.00	0.00	0.00
14,400.00	90.57	0.00	7,319.78	7,126.54	600.00	7,149.56	0.00	0.00	0.00
14,500.00	90.57	0.00	7,318.78	7,226.54	600.00	7,249.38	0.00	0.00	0.00
14,600.00	90.57	0.00	7,317.79	7,326.53	600.00	7,349.20	0.00	0.00	0.00
14,700.00	90.57	0.00	7,316.79	7,426.53	600.00	7,449.02	0.00	0.00	0.00
14,800.00	90.57	0.00	7,315.80	7,526.52	600.00	7,548.84	0.00	0.00	0.00
14,900.00	90.57	0.00	7,314.80	7,626.52	600.00	7,648.66	0.00	0.00	0.00
15,000.00	90.57	0.00	7,313.81	7,726.51	600.00	7,748.48	0.00	0.00	0.00
15,100.00	90.57	0.00	7,312.81	7,826.51	600.00	7,848.30	0.00	0.00	0.00
15,200.00	90.57	0.00	7,311.82	7,926.50	600.00	7,948.12	0.00	0.00	0.00
15,300.00	90.57	0.00	7,310.82	8,026.50	600.00	8,047.94	0.00	0.00	0.00
15,400.00	90.57	0.00	7,309.83	8,126.49	600.00	8,147.76	0.00	0.00	0.00
15,500.00	90.57	0.00	7,308.83	8,226.49	600.00	8,247.58	0.00	0.00	0.00
15,600.00	90.57	0.00	7,307.84	8,326.48	600.00	8,347.40	0.00	0.00	0.00
15,700.00	90.57	0.00	7,306.84	8,426.48	600.00	8,447.22	0.00	0.00	0.00
15,800.00	90.57	0.00	7,305.85	8,526.47	600.00	8,547.04	0.00	0.00	0.00
15,900.00	90.57	0.00	7,304.85	8,626.47	600.00	8,646.86	0.00	0.00	0.00
16,000.00	90.57	0.00	7,303.86	8,726.46	600.00	8,746.68	0.00	0.00	0.00
16,100.00	90.57	0.00	7,302.87	8,826.46	600.00	8,846.50	0.00	0.00	0.00
16,200.00	90.57	0.00	7,301.87	8,926.45	600.00	8,946.32	0.00	0.00	0.00
16,300.00	90.57	0.00	7,300.88	9,026.45	600.00	9,046.14	0.00	0.00	0.00
16,400.00	90.57	0.00	7,299.88	9,126.44	600.00	9,145.96	0.00	0.00	0.00
16,500.00	90.57	0.00	7,298.89	9,226.44	600.00	9,245.78	0.00	0.00	0.00
16,600.00	90.57	0.00	7,297.89	9,326.43	600.00	9,345.60	0.00	0.00	0.00
16,700.00	90.57	0.00	7,296.90	9,426.43	600.00	9,445.42	0.00	0.00	0.00
16,800.00	90.57	0.00	7,295.90	9,526.42	600.00	9,545.24	0.00	0.00	0.00
16,900.00	90.57	0.00	7,294.91	9,626.42	600.00	9,645.05	0.00	0.00	0.00
17,000.00	90.57	0.00	7,293.91	9,726.41	600.00	9,744.87	0.00	0.00	0.00
17,100.00	90.57	0.00	7,292.92	9,826.41	600.00	9,844.69	0.00	0.00	0.00
17,200.00	90.57	0.00	7,291.92	9,926.40	600.00	9,944.51	0.00	0.00	0.00
17,300.00	90.57	0.00	7,290.93	10,026.40	600.00	10,044.33	0.00	0.00	0.00
17,393.19	90.57	0.00	7,290.00	10,119.58	600.00	10,137.35	0.00	0.00	0.00

QUARTER CIRCLE 24-9HZ_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									
QUARTER CIRCLE 2	0.00	0.00	7,290.00	10,119.58	600.00	14,547,939.27	1,685,276.15	40.058124	-104.839681
- plan hits target center									
- Point									
QUARTER CIRCLE 2	0.00	0.00	7,385.20	550.96	600.00	14,538,370.68	1,685,293.15	40.031847	-104.839682
- plan hits target center									
- Point									

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-9HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4958.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4958.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 14-24HZ	North Reference:	True
Well:	QUARTER CIRCLE 24-9HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,520.90	1,500.00	9 5/8"	9-5/8	13-1/2	
7,824.09	7,385.20	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
655.76	655.00	Fox Hills				
4,227.14	4,158.00	Parkman				
5,027.14	4,958.00	Sussex				
7,284.97	7,175.00	Sharon Springs				
7,304.09	7,189.00	Niobrara				
7,634.38	7,359.00	Nio B				