

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

QUARTER CIRCLE 24-2HZ

Plan A

Plan: Permit Rev-1

Standard Planning Report

03 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 24-2HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
657.00	657.77	Fox Hills
4160.00	4225.05	Parkman
4960.00	5031.66	Sussex
7177.00	7250.99	Sharon Springs
7191.00	7265.61	Niobrara
7361.00	7455.36	Nio B
7426.00	7538.13	Nio C
7567.00	7770.38	Fort Hayes
7590.00	7825.44	Codell

WELL DETAILS: QUARTER CIRCLE 24-2HZ

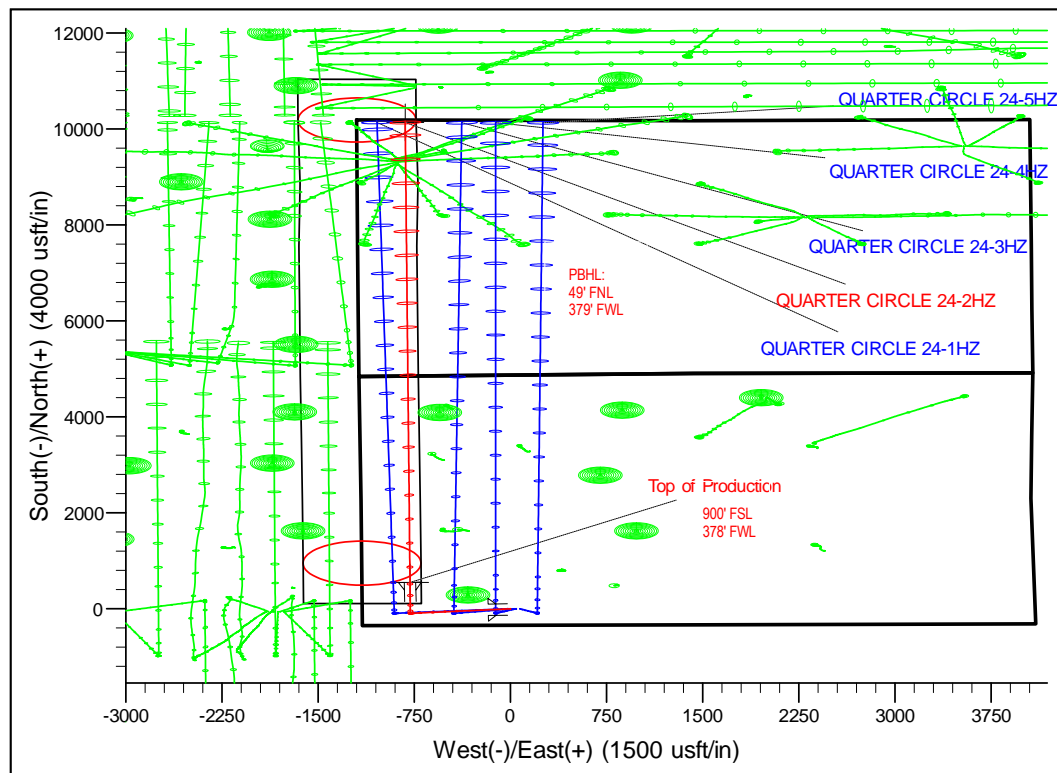
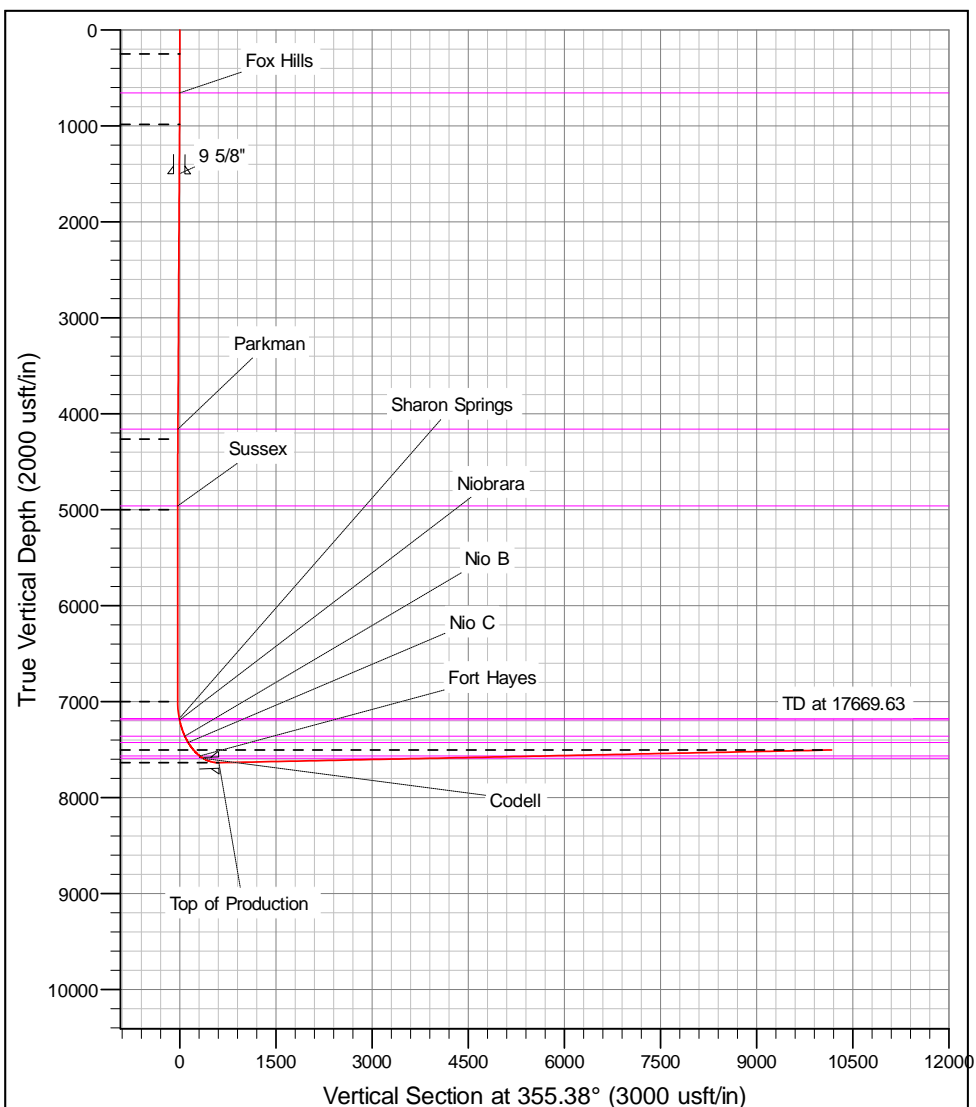
+N/-S	+E/-W	GL: 4943.00	RKB @ 4960.00usft (D Rig)	Latitude	Longitude	Slot
0.00	0.00	Northing 14537814.54	Easting 1684016.15	40.030326	-104.844247	

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
989.43	11.09	263.06	984.82	-8.63	-70.82	1.50	-2.89
4332.23	11.09	263.06	4265.18	-86.37	-709.18	0.00	-28.92
5071.66	0.00	0.00	5000.00	-95.00	-780.00	1.50	-31.81
7072.30	0.00	0.00	7000.64	-95.00	-780.00	0.00	-31.81
8081.08	90.79	359.78	7637.20	550.39	-782.52	9.00	611.69
17669.63	90.79	359.78	7505.00	10137.96	-820.00	0.00	0171.07

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
QUARTER CIRCLE 24-2HZ_PBHL	7505.00	10137.96	-820.00	14547951.05	1683178.42	40.058166	-104.841778



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4960.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4960.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	North Reference:	True
Well:	QUARTER CIRCLE 24-2HZ	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 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 24-2HZ					
Well Position	+N-S	-0.36 usft	Northing:	14,537,814.55 usft	Latitude:	40.030326
	+E-W	15.12 usft	Easting:	1,684,016.15 usft	Longitude:	-104.844247
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,943.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/22/2017	8.11	66.54	52,329.25316322

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	355.38	

Plan Survey Tool Program	Date	3/3/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	17,669.63 Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI	Fixed:v2:Rockies, crustal dec	

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		
989.43	11.09	263.06	984.82	-8.63	-70.82	1.50	1.50	0.00	263.06		
4,332.23	11.09	263.06	4,265.18	-86.37	-709.18	0.00	0.00	0.00	0.00		
5,071.66	0.00	0.00	5,000.00	-95.00	-780.00	1.50	-1.50	0.00	180.00		
7,072.30	0.00	0.00	7,000.64	-95.00	-780.00	0.00	0.00	0.00	0.00		
8,081.08	90.79	359.78	7,637.20	550.39	-782.52	9.00	9.00	0.00	359.78		
17,669.63	90.79	359.78	7,505.00	10,137.96	-820.00	0.00	0.00	0.00	0.00	QUARTER CIRCLE	

Corporate Planning Report

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Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4960.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4960.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	North Reference:	True
Well:	QUARTER CIRCLE 24-2HZ	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)
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	263.06	300.00	-0.04	-0.32	-0.01	1.50	1.50	0.00
400.00	2.25	263.06	399.96	-0.36	-2.92	-0.12	1.50	1.50	0.00
500.00	3.75	263.06	499.82	-0.99	-8.12	-0.33	1.50	1.50	0.00
600.00	5.25	263.06	599.51	-1.94	-15.91	-0.65	1.50	1.50	0.00
657.77	6.12	263.06	657.00	-2.63	-21.59	-0.88	1.50	1.50	0.00
Fox Hills									
700.00	6.75	263.06	698.96	-3.20	-26.28	-1.07	1.50	1.50	0.00
800.00	8.25	263.06	798.10	-4.78	-39.24	-1.60	1.50	1.50	0.00
900.00	9.75	263.06	896.87	-6.67	-54.77	-2.23	1.50	1.50	0.00
989.43	11.09	263.06	984.82	-8.63	-70.82	-2.89	1.50	1.50	0.00
1,000.00	11.09	263.06	995.19	-8.87	-72.84	-2.97	0.00	0.00	0.00
1,100.00	11.09	263.06	1,093.33	-11.20	-91.94	-3.75	0.00	0.00	0.00
1,200.00	11.09	263.06	1,191.46	-13.52	-111.03	-4.53	0.00	0.00	0.00
1,300.00	11.09	263.06	1,289.59	-15.85	-130.13	-5.31	0.00	0.00	0.00
1,400.00	11.09	263.06	1,387.72	-18.18	-149.23	-6.09	0.00	0.00	0.00
1,500.00	11.09	263.06	1,485.85	-20.50	-168.32	-6.86	0.00	0.00	0.00
1,514.42	11.09	263.06	1,500.00	-20.84	-171.08	-6.98	0.00	0.00	0.00
9 5/8"									
1,600.00	11.09	263.06	1,583.99	-22.83	-187.42	-7.64	0.00	0.00	0.00
1,700.00	11.09	263.06	1,682.12	-25.15	-206.52	-8.42	0.00	0.00	0.00
1,800.00	11.09	263.06	1,780.25	-27.48	-225.61	-9.20	0.00	0.00	0.00
1,900.00	11.09	263.06	1,878.38	-29.80	-244.71	-9.98	0.00	0.00	0.00
2,000.00	11.09	263.06	1,976.51	-32.13	-263.81	-10.76	0.00	0.00	0.00
2,100.00	11.09	263.06	2,074.65	-34.46	-282.90	-11.54	0.00	0.00	0.00
2,200.00	11.09	263.06	2,172.78	-36.78	-302.00	-12.31	0.00	0.00	0.00
2,300.00	11.09	263.06	2,270.91	-39.11	-321.09	-13.09	0.00	0.00	0.00
2,400.00	11.09	263.06	2,369.04	-41.43	-340.19	-13.87	0.00	0.00	0.00
2,500.00	11.09	263.06	2,467.18	-43.76	-359.29	-14.65	0.00	0.00	0.00
2,600.00	11.09	263.06	2,565.31	-46.09	-378.38	-15.43	0.00	0.00	0.00
2,700.00	11.09	263.06	2,663.44	-48.41	-397.48	-16.21	0.00	0.00	0.00
2,800.00	11.09	263.06	2,761.57	-50.74	-416.58	-16.99	0.00	0.00	0.00
2,900.00	11.09	263.06	2,859.70	-53.06	-435.67	-17.77	0.00	0.00	0.00
3,000.00	11.09	263.06	2,957.84	-55.39	-454.77	-18.54	0.00	0.00	0.00
3,100.00	11.09	263.06	3,055.97	-57.71	-473.87	-19.32	0.00	0.00	0.00
3,200.00	11.09	263.06	3,154.10	-60.04	-492.96	-20.10	0.00	0.00	0.00
3,300.00	11.09	263.06	3,252.23	-62.37	-512.06	-20.88	0.00	0.00	0.00
3,400.00	11.09	263.06	3,350.36	-64.69	-531.15	-21.66	0.00	0.00	0.00
3,500.00	11.09	263.06	3,448.50	-67.02	-550.25	-22.44	0.00	0.00	0.00
3,600.00	11.09	263.06	3,546.63	-69.34	-569.35	-23.22	0.00	0.00	0.00
3,700.00	11.09	263.06	3,644.76	-71.67	-588.44	-24.00	0.00	0.00	0.00
3,800.00	11.09	263.06	3,742.89	-74.00	-607.54	-24.77	0.00	0.00	0.00
3,900.00	11.09	263.06	3,841.03	-76.32	-626.64	-25.55	0.00	0.00	0.00
4,000.00	11.09	263.06	3,939.16	-78.65	-645.73	-26.33	0.00	0.00	0.00
4,100.00	11.09	263.06	4,037.29	-80.97	-664.83	-27.11	0.00	0.00	0.00
4,200.00	11.09	263.06	4,135.42	-83.30	-683.93	-27.89	0.00	0.00	0.00
4,225.05	11.09	263.06	4,160.00	-83.88	-688.71	-28.08	0.00	0.00	0.00
Parkman									
4,300.00	11.09	263.06	4,233.55	-85.62	-703.02	-28.67	0.00	0.00	0.00
4,332.23	11.09	263.06	4,265.18	-86.37	-709.18	-28.92	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4960.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4960.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	North Reference:	True
Well:	QUARTER CIRCLE 24-2HZ	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)
4,400.00	10.07	263.06	4,331.80	-87.88	-721.53	-29.42	1.50	-1.50	0.00
4,500.00	8.57	263.06	4,430.47	-89.84	-737.62	-30.08	1.50	-1.50	0.00
4,600.00	7.07	263.06	4,529.54	-91.48	-751.13	-30.63	1.50	-1.50	0.00
4,700.00	5.57	263.06	4,628.93	-92.82	-762.07	-31.08	1.50	-1.50	0.00
4,800.00	4.07	263.06	4,728.57	-93.83	-770.41	-31.42	1.50	-1.50	0.00
4,900.00	2.57	263.06	4,828.40	-94.53	-776.17	-31.65	1.50	-1.50	0.00
5,000.00	1.07	263.06	4,928.35	-94.92	-779.33	-31.78	1.50	-1.50	0.00
5,031.66	0.60	263.06	4,960.00	-94.97	-779.79	-31.80	1.50	-1.50	0.00
Sussex									
5,071.66	0.00	0.00	5,000.00	-95.00	-780.00	-31.81	1.50	-1.50	0.00
5,100.00	0.00	0.00	5,028.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,200.00	0.00	0.00	5,128.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,300.00	0.00	0.00	5,228.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,400.00	0.00	0.00	5,328.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,500.00	0.00	0.00	5,428.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,600.00	0.00	0.00	5,528.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,700.00	0.00	0.00	5,628.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,800.00	0.00	0.00	5,728.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
5,900.00	0.00	0.00	5,828.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,000.00	0.00	0.00	5,928.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,100.00	0.00	0.00	6,028.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,200.00	0.00	0.00	6,128.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,300.00	0.00	0.00	6,228.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,400.00	0.00	0.00	6,328.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,500.00	0.00	0.00	6,428.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,600.00	0.00	0.00	6,528.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,700.00	0.00	0.00	6,628.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,800.00	0.00	0.00	6,728.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
6,900.00	0.00	0.00	6,828.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
7,000.00	0.00	0.00	6,928.34	-95.00	-780.00	-31.81	0.00	0.00	0.00
7,072.30	0.00	0.00	7,000.64	-95.00	-780.00	-31.81	0.00	0.00	0.00
7,100.00	2.49	359.78	7,028.33	-94.40	-780.00	-31.21	9.00	9.00	0.00
7,200.00	11.49	359.78	7,127.49	-82.24	-780.05	-19.08	9.00	9.00	0.00
7,250.99	16.08	359.78	7,177.00	-70.09	-780.10	-6.97	9.00	9.00	0.00
Sharon Springs									
7,265.61	17.40	359.78	7,191.00	-65.87	-780.11	-2.77	9.00	9.00	0.00
Niobrara									
7,300.00	20.49	359.78	7,223.52	-54.71	-780.16	8.36	9.00	9.00	0.00
7,400.00	29.49	359.78	7,314.06	-12.51	-780.32	50.45	9.00	9.00	0.00
7,455.36	34.47	359.78	7,361.00	16.81	-780.44	79.67	9.00	9.00	0.00
Nio B									
7,500.00	38.49	359.78	7,396.89	43.35	-780.54	106.13	9.00	9.00	0.00
7,538.13	41.92	359.78	7,426.00	67.95	-780.64	130.67	9.00	9.00	0.00
Nio C									
7,600.00	47.49	359.78	7,469.96	111.47	-780.81	174.05	9.00	9.00	0.00
7,700.00	56.49	359.78	7,531.47	190.18	-781.11	252.53	9.00	9.00	0.00
7,770.38	62.83	359.78	7,567.00	250.88	-781.35	313.06	9.00	9.00	0.00
Fort Hayes									
7,800.00	65.49	359.78	7,579.91	277.54	-781.46	339.64	9.00	9.00	0.00
7,825.45	67.78	359.78	7,590.00	300.90	-781.55	362.93	9.00	9.00	0.00
Codell									
7,900.00	74.49	359.78	7,614.09	371.41	-781.82	433.23	9.00	9.00	0.00

Corporate Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4960.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 13-24HZ	North Reference:	True
Well:	QUARTER CIRCLE 24-2HZ	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)
8,000.00	83.49	359.78	7,633.16	469.47	-782.21	531.00	9.00	9.00	0.00
8,081.08	90.79	359.78	7,637.20	550.39	-782.52	611.69	9.00	9.00	0.00
Top of Production - QUARTER CIRCLE 24-2HZ_PHL									
8,100.00	90.79	359.78	7,636.94	569.31	-782.60	630.55	0.00	0.00	0.00
8,200.00	90.79	359.78	7,635.56	669.30	-782.99	730.25	0.00	0.00	0.00
8,300.00	90.79	359.78	7,634.19	769.29	-783.38	829.94	0.00	0.00	0.00
8,400.00	90.79	359.78	7,632.81	869.28	-783.77	929.64	0.00	0.00	0.00
8,500.00	90.79	359.78	7,631.43	969.27	-784.16	1,029.33	0.00	0.00	0.00
8,600.00	90.79	359.78	7,630.05	1,069.26	-784.55	1,129.03	0.00	0.00	0.00
8,700.00	90.79	359.78	7,628.67	1,169.25	-784.94	1,228.73	0.00	0.00	0.00
8,800.00	90.79	359.78	7,627.29	1,269.24	-785.33	1,328.42	0.00	0.00	0.00
8,900.00	90.79	359.78	7,625.91	1,369.23	-785.72	1,428.12	0.00	0.00	0.00
9,000.00	90.79	359.78	7,624.53	1,469.22	-786.11	1,527.81	0.00	0.00	0.00
9,100.00	90.79	359.78	7,623.16	1,569.21	-786.51	1,627.51	0.00	0.00	0.00
9,200.00	90.79	359.78	7,621.78	1,669.20	-786.90	1,727.20	0.00	0.00	0.00
9,300.00	90.79	359.78	7,620.40	1,769.19	-787.29	1,826.90	0.00	0.00	0.00
9,400.00	90.79	359.78	7,619.02	1,869.18	-787.68	1,926.60	0.00	0.00	0.00
9,500.00	90.79	359.78	7,617.64	1,969.17	-788.07	2,026.29	0.00	0.00	0.00
9,600.00	90.79	359.78	7,616.26	2,069.16	-788.46	2,125.99	0.00	0.00	0.00
9,700.00	90.79	359.78	7,614.88	2,169.15	-788.85	2,225.68	0.00	0.00	0.00
9,800.00	90.79	359.78	7,613.50	2,269.14	-789.24	2,325.38	0.00	0.00	0.00
9,900.00	90.79	359.78	7,612.13	2,369.13	-789.63	2,425.07	0.00	0.00	0.00
10,000.00	90.79	359.78	7,610.75	2,469.12	-790.02	2,524.77	0.00	0.00	0.00
10,100.00	90.79	359.78	7,609.37	2,569.11	-790.41	2,624.47	0.00	0.00	0.00
10,200.00	90.79	359.78	7,607.99	2,669.10	-790.80	2,724.16	0.00	0.00	0.00
10,300.00	90.79	359.78	7,606.61	2,769.08	-791.20	2,823.86	0.00	0.00	0.00
10,400.00	90.79	359.78	7,605.23	2,869.07	-791.59	2,923.55	0.00	0.00	0.00
10,500.00	90.79	359.78	7,603.85	2,969.06	-791.98	3,023.25	0.00	0.00	0.00
10,600.00	90.79	359.78	7,602.47	3,069.05	-792.37	3,122.95	0.00	0.00	0.00
10,700.00	90.79	359.78	7,601.10	3,169.04	-792.76	3,222.64	0.00	0.00	0.00
10,800.00	90.79	359.78	7,599.72	3,269.03	-793.15	3,322.34	0.00	0.00	0.00
10,900.00	90.79	359.78	7,598.34	3,369.02	-793.54	3,422.03	0.00	0.00	0.00
11,000.00	90.79	359.78	7,596.96	3,469.01	-793.93	3,521.73	0.00	0.00	0.00
11,100.00	90.79	359.78	7,595.58	3,569.00	-794.32	3,621.42	0.00	0.00	0.00
11,200.00	90.79	359.78	7,594.20	3,668.99	-794.71	3,721.12	0.00	0.00	0.00
11,300.00	90.79	359.78	7,592.82	3,768.98	-795.10	3,820.82	0.00	0.00	0.00
11,400.00	90.79	359.78	7,591.44	3,868.97	-795.49	3,920.51	0.00	0.00	0.00
11,500.00	90.79	359.78	7,590.06	3,968.96	-795.89	4,020.21	0.00	0.00	0.00
11,600.00	90.79	359.78	7,588.69	4,068.95	-796.28	4,119.90	0.00	0.00	0.00
11,700.00	90.79	359.78	7,587.31	4,168.94	-796.67	4,219.60	0.00	0.00	0.00
11,800.00	90.79	359.78	7,585.93	4,268.93	-797.06	4,319.29	0.00	0.00	0.00
11,900.00	90.79	359.78	7,584.55	4,368.92	-797.45	4,418.99	0.00	0.00	0.00
12,000.00	90.79	359.78	7,583.17	4,468.91	-797.84	4,518.69	0.00	0.00	0.00
12,100.00	90.79	359.78	7,581.79	4,568.90	-798.23	4,618.38	0.00	0.00	0.00
12,200.00	90.79	359.78	7,580.41	4,668.89	-798.62	4,718.08	0.00	0.00	0.00
12,300.00	90.79	359.78	7,579.03	4,768.88	-799.01	4,817.77	0.00	0.00	0.00
12,400.00	90.79	359.78	7,577.66	4,868.87	-799.40	4,917.47	0.00	0.00	0.00
12,500.00	90.79	359.78	7,576.28	4,968.86	-799.79	5,017.16	0.00	0.00	0.00
12,600.00	90.79	359.78	7,574.90	5,068.85	-800.19	5,116.86	0.00	0.00	0.00
12,700.00	90.79	359.78	7,573.52	5,168.84	-800.58	5,216.56	0.00	0.00	0.00
12,800.00	90.79	359.78	7,572.14	5,268.83	-800.97	5,316.25	0.00	0.00	0.00
12,900.00	90.79	359.78	7,570.76	5,368.82	-801.36	5,415.95	0.00	0.00	0.00
13,000.00	90.79	359.78	7,569.38	5,468.81	-801.75	5,515.64	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4960.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4960.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	North Reference:	True
Well:	QUARTER CIRCLE 24-2HZ	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)
13,100.00	90.79	359.78	7,568.00	5,568.80	-802.14	5,615.34	0.00	0.00	0.00
13,200.00	90.79	359.78	7,566.63	5,668.79	-802.53	5,715.03	0.00	0.00	0.00
13,300.00	90.79	359.78	7,565.25	5,768.78	-802.92	5,814.73	0.00	0.00	0.00
13,400.00	90.79	359.78	7,563.87	5,868.77	-803.31	5,914.43	0.00	0.00	0.00
13,500.00	90.79	359.78	7,562.49	5,968.76	-803.70	6,014.12	0.00	0.00	0.00
13,600.00	90.79	359.78	7,561.11	6,068.75	-804.09	6,113.82	0.00	0.00	0.00
13,700.00	90.79	359.78	7,559.73	6,168.74	-804.48	6,213.51	0.00	0.00	0.00
13,800.00	90.79	359.78	7,558.35	6,268.73	-804.88	6,313.21	0.00	0.00	0.00
13,900.00	90.79	359.78	7,556.97	6,368.72	-805.27	6,412.91	0.00	0.00	0.00
14,000.00	90.79	359.78	7,555.60	6,468.70	-805.66	6,512.60	0.00	0.00	0.00
14,100.00	90.79	359.78	7,554.22	6,568.69	-806.05	6,612.30	0.00	0.00	0.00
14,200.00	90.79	359.78	7,552.84	6,668.68	-806.44	6,711.99	0.00	0.00	0.00
14,300.00	90.79	359.78	7,551.46	6,768.67	-806.83	6,811.69	0.00	0.00	0.00
14,400.00	90.79	359.78	7,550.08	6,868.66	-807.22	6,911.38	0.00	0.00	0.00
14,500.00	90.79	359.78	7,548.70	6,968.65	-807.61	7,011.08	0.00	0.00	0.00
14,600.00	90.79	359.78	7,547.32	7,068.64	-808.00	7,110.78	0.00	0.00	0.00
14,700.00	90.79	359.78	7,545.94	7,168.63	-808.39	7,210.47	0.00	0.00	0.00
14,800.00	90.79	359.78	7,544.57	7,268.62	-808.78	7,310.17	0.00	0.00	0.00
14,900.00	90.79	359.78	7,543.19	7,368.61	-809.17	7,409.86	0.00	0.00	0.00
15,000.00	90.79	359.78	7,541.81	7,468.60	-809.57	7,509.56	0.00	0.00	0.00
15,100.00	90.79	359.78	7,540.43	7,568.59	-809.96	7,609.25	0.00	0.00	0.00
15,200.00	90.79	359.78	7,539.05	7,668.58	-810.35	7,708.95	0.00	0.00	0.00
15,300.00	90.79	359.78	7,537.67	7,768.57	-810.74	7,808.65	0.00	0.00	0.00
15,400.00	90.79	359.78	7,536.29	7,868.56	-811.13	7,908.34	0.00	0.00	0.00
15,500.00	90.79	359.78	7,534.91	7,968.55	-811.52	8,008.04	0.00	0.00	0.00
15,600.00	90.79	359.78	7,533.54	8,068.54	-811.91	8,107.73	0.00	0.00	0.00
15,700.00	90.79	359.78	7,532.16	8,168.53	-812.30	8,207.43	0.00	0.00	0.00
15,800.00	90.79	359.78	7,530.78	8,268.52	-812.69	8,307.12	0.00	0.00	0.00
15,900.00	90.79	359.78	7,529.40	8,368.51	-813.08	8,406.82	0.00	0.00	0.00
16,000.00	90.79	359.78	7,528.02	8,468.50	-813.47	8,506.52	0.00	0.00	0.00
16,100.00	90.79	359.78	7,526.64	8,568.49	-813.87	8,606.21	0.00	0.00	0.00
16,200.00	90.79	359.78	7,525.26	8,668.48	-814.26	8,705.91	0.00	0.00	0.00
16,300.00	90.79	359.78	7,523.88	8,768.47	-814.65	8,805.60	0.00	0.00	0.00
16,400.00	90.79	359.78	7,522.51	8,868.46	-815.04	8,905.30	0.00	0.00	0.00
16,500.00	90.79	359.78	7,521.13	8,968.45	-815.43	9,004.99	0.00	0.00	0.00
16,600.00	90.79	359.78	7,519.75	9,068.44	-815.82	9,104.69	0.00	0.00	0.00
16,700.00	90.79	359.78	7,518.37	9,168.43	-816.21	9,204.39	0.00	0.00	0.00
16,800.00	90.79	359.78	7,516.99	9,268.42	-816.60	9,304.08	0.00	0.00	0.00
16,900.00	90.79	359.78	7,515.61	9,368.41	-816.99	9,403.78	0.00	0.00	0.00
17,000.00	90.79	359.78	7,514.23	9,468.40	-817.38	9,503.47	0.00	0.00	0.00
17,100.00	90.79	359.78	7,512.85	9,568.39	-817.77	9,603.17	0.00	0.00	0.00
17,200.00	90.79	359.78	7,511.48	9,668.38	-818.16	9,702.87	0.00	0.00	0.00
17,300.00	90.79	359.78	7,510.10	9,768.37	-818.56	9,802.56	0.00	0.00	0.00
17,400.00	90.79	359.78	7,508.72	9,868.36	-818.95	9,902.26	0.00	0.00	0.00
17,500.00	90.79	359.78	7,507.34	9,968.35	-819.34	10,001.95	0.00	0.00	0.00
17,600.00	90.79	359.78	7,505.96	10,068.34	-819.73	10,101.65	0.00	0.00	0.00
17,669.63	90.79	359.78	7,505.00	10,137.96	-820.00	10,171.07	0.00	0.00	0.00

QUARTER CIRCLE 24-2HZ_PBHL

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well QUARTER CIRCLE 24-2HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4960.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4960.00usft (D Rig)
Site:	1N-67W-24 QUARTER CIRCLE 13-24HZ PAD	North Reference:	True
Well:	QUARTER CIRCLE 24-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
QUARTER CIRCLE 2	0.00	0.00	7,505.00	10,137.96	-820.00	14,547,951.05	1,683,178.42	40.058167	-104.847178
- plan hits target center									
- Point									
QUARTER CIRCLE 2	0.00	0.00	7,637.20	550.39	-782.52	14,538,363.57	1,683,232.66	40.031838	-104.847043
- plan hits target center									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,514.42	1,500.00	9 5/8"	9-5/8	13-1/2
8,081.08	7,637.20	Top of Production	5-1/2	7-7/8

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
657.77	657.00	Fox Hills			
4,225.05	4,160.00	Parkman			
5,031.66	4,960.00	Sussex			
7,250.99	7,177.00	Sharon Springs			
7,265.61	7,191.00	Niobrara			
7,455.36	7,361.00	Nio B			
7,538.13	7,426.00	Nio C			
7,770.38	7,567.00	Fort Hayes			
7,825.45	7,590.00	Codell			