

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

2N-67W-10 Butterball 21-10HZ Pad

BUTTERBALL 22C-34HZ

Plan A

Plan: Permit Rev-1

Standard Planning Report

13 October, 2016



Azimuths to True North
Magnetic North: 8.19°

Magnetic Field
Strength: 52430.9snT
Dip Angle: 66.65°
Date: 10/12/2016
Model: IGRF2010

SITE: 2N-67W-10 Butterball 21-10HZ Pad

Well: BUTTERBALL 22C-34HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1032.00	1037.57	Fox Hills
3973.00	4064.98	Parkman
4397.00	4498.75	Sussex
7151.00	7268.49	Sharon Springs
7234.00	7367.78	Niobrara
7288.00	7439.24	Nio B
7340.00	7516.36	Nio C
7463.00	7757.71	Fort Hayes
7475.00	7857.50	Codell

WELL DETAILS: BUTTERBALL 22C-34HZ

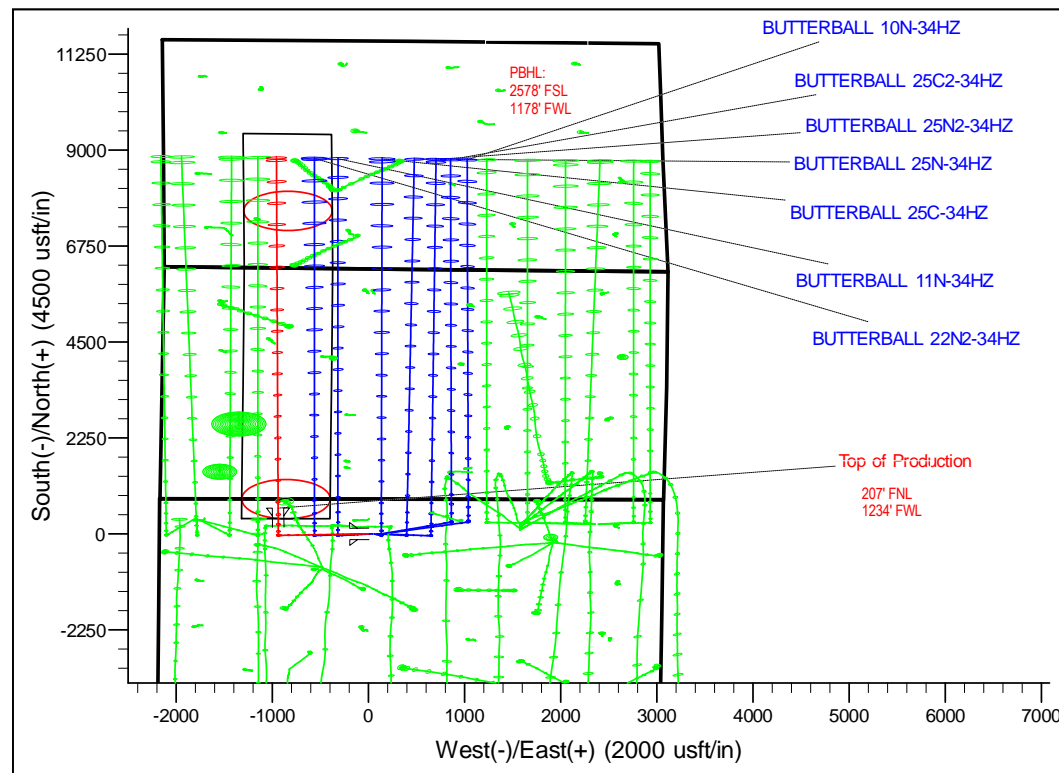
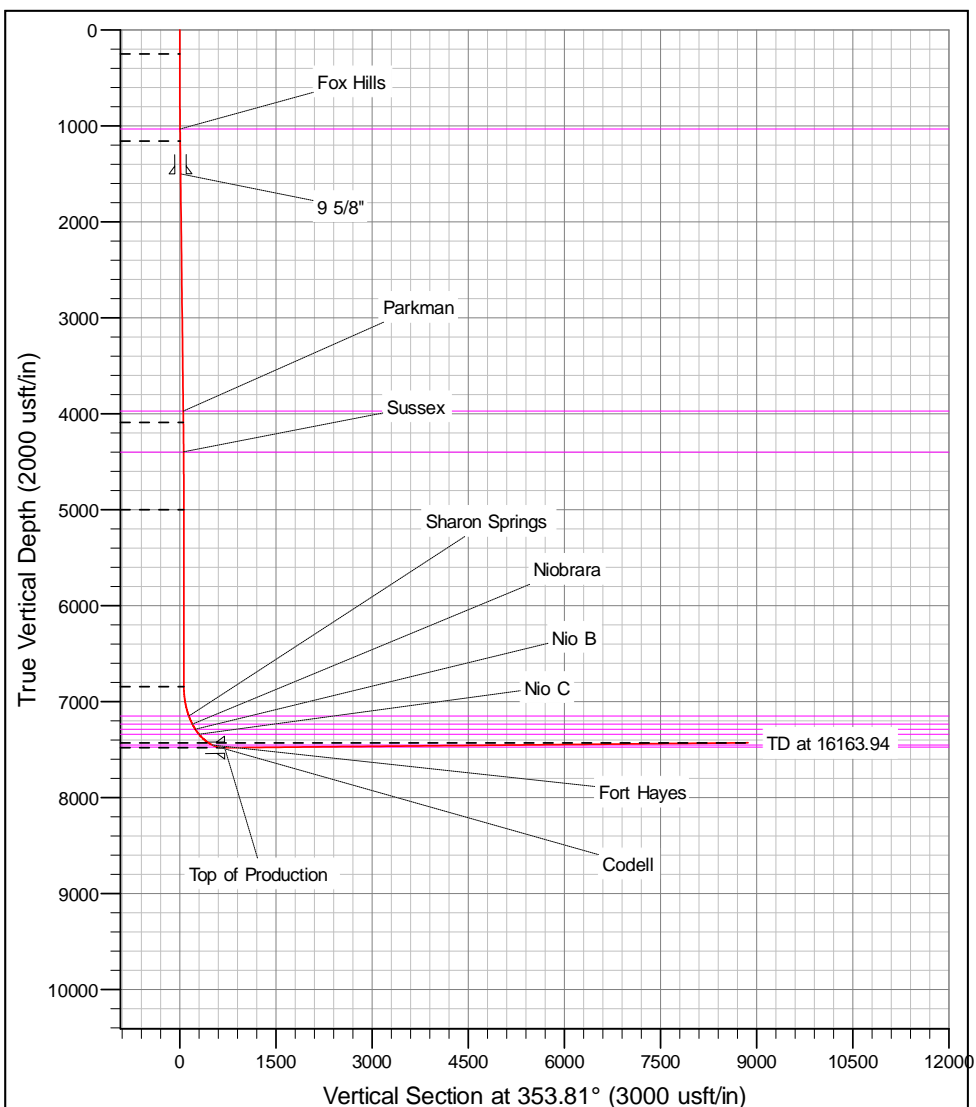
+N/-S	+E/-W	GL: 4934.00	RKB @ 4951.00usft (D Rig)	Latitude	Longitude	Slot
0.00	0.00	Northing 14584161.08	Easting 1674475.97	40.157641	-104.878101	

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
1167.50	13.76	267.74	1158.71	-4.33	-109.58	1.50	7.51
4186.77	13.76	267.74	4091.29	-32.67	-827.30	0.00	56.71
5104.28	0.00	0.00	5000.00	-37.00	-936.88	1.50	64.23
6949.26	0.00	0.00	6844.98	-37.00	-936.88	0.00	64.23
7953.26	90.36	359.88	7481.59	603.62	-938.26	9.00	701.26
16163.94	90.36	359.88	7430.00	8814.12	-955.88	0.00	8865.80

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BUTTERBALL 22C-34HZ_PBHL	7430.00	8814.12	-955.88	14592973.88	1673508.00	40.181845	-104.881523



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22C-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4951.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4951.00usft (D Rig)
Site:	2N-67W-10 Butterball 21-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 22C-34HZ	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						2N-67W-10 Butterball 21-10HZ Pad											
Site Position:			Northing:			14,584,161.08 usft			Latitude:			40.157641					
From:			Lat/Long			Easting:			1,674,475.97 usft			Longitude:			-104.878101		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.08		

Well	BUTTERBALL 22C-34HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,584,161.08 usft	Latitude:	40.157641
	+E/-W	0.00 usft	Easting:	1,674,475.97 usft	Longitude:	-104.878101
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,934.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/12/2016	8.19	66.65	52,431

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	353.81

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	
1,167.51	13.76	267.74	1,158.71	-4.33	-109.58	1.50	1.50	0.00	267.74	
4,186.77	13.76	267.74	4,091.29	-32.67	-827.30	0.00	0.00	0.00	0.00	
5,104.28	0.00	0.00	5,000.00	-37.00	-936.88	1.50	-1.50	0.00	180.00	
6,949.26	0.00	0.00	6,844.98	-37.00	-936.88	0.00	0.00	0.00	0.00	
7,953.26	90.36	359.88	7,481.59	603.62	-938.26	9.00	9.00	0.00	359.88	
16,163.94	90.36	359.88	7,430.00	8,814.12	-955.88	0.00	0.00	0.00	0.00	BUTTERBALL 22C-

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 2N-67W-10 Butterball 21-10HZ Pad
Well: BUTTERBALL 22C-34HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well BUTTERBALL 22C-34HZ
TVD Reference: RKB @ 4951.00usft (D Rig)
MD Reference: RKB @ 4951.00usft (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	267.74	300.00	-0.01	-0.33	0.02	1.50	1.50	0.00
400.00	2.25	267.74	399.96	-0.12	-2.94	0.20	1.50	1.50	0.00
500.00	3.75	267.74	499.82	-0.32	-8.17	0.56	1.50	1.50	0.00
600.00	5.25	267.74	599.51	-0.63	-16.01	1.10	1.50	1.50	0.00
700.00	6.75	267.74	698.96	-1.04	-26.46	1.81	1.50	1.50	0.00
800.00	8.25	267.74	798.10	-1.56	-39.50	2.71	1.50	1.50	0.00
900.00	9.75	267.74	896.87	-2.18	-55.13	3.78	1.50	1.50	0.00
1,000.00	11.25	267.74	995.19	-2.90	-73.34	5.03	1.50	1.50	0.00
1,037.57	11.81	267.74	1,032.00	-3.19	-80.84	5.54	1.50	1.50	0.00
Fox Hills									
1,100.00	12.75	267.74	1,093.00	-3.72	-94.11	6.45	1.50	1.50	0.00
1,167.51	13.76	267.74	1,158.71	-4.33	-109.58	7.51	1.50	1.50	0.00
1,200.00	13.76	267.74	1,190.27	-4.63	-117.30	8.04	0.00	0.00	0.00
1,300.00	13.76	267.74	1,287.40	-5.57	-141.08	9.67	0.00	0.00	0.00
1,400.00	13.76	267.74	1,384.53	-6.51	-164.85	11.30	0.00	0.00	0.00
1,500.00	13.76	267.74	1,481.66	-7.45	-188.62	12.93	0.00	0.00	0.00
1,518.89	13.76	267.74	1,500.00	-7.63	-193.11	13.24	0.00	0.00	0.00
9 5/8"									
1,600.00	13.76	267.74	1,578.79	-8.39	-212.39	14.56	0.00	0.00	0.00
1,700.00	13.76	267.74	1,675.91	-9.33	-236.16	16.19	0.00	0.00	0.00
1,800.00	13.76	267.74	1,773.04	-10.27	-259.93	17.82	0.00	0.00	0.00
1,900.00	13.76	267.74	1,870.17	-11.20	-283.70	19.45	0.00	0.00	0.00
2,000.00	13.76	267.74	1,967.30	-12.14	-307.47	21.08	0.00	0.00	0.00
2,100.00	13.76	267.74	2,064.43	-13.08	-331.25	22.71	0.00	0.00	0.00
2,200.00	13.76	267.74	2,161.56	-14.02	-355.02	24.34	0.00	0.00	0.00
2,300.00	13.76	267.74	2,258.69	-14.96	-378.79	25.97	0.00	0.00	0.00
2,400.00	13.76	267.74	2,355.82	-15.90	-402.56	27.60	0.00	0.00	0.00
2,500.00	13.76	267.74	2,452.95	-16.84	-426.33	29.23	0.00	0.00	0.00
2,600.00	13.76	267.74	2,550.08	-17.78	-450.10	30.86	0.00	0.00	0.00
2,700.00	13.76	267.74	2,647.20	-18.71	-473.87	32.49	0.00	0.00	0.00
2,800.00	13.76	267.74	2,744.33	-19.65	-497.65	34.12	0.00	0.00	0.00
2,900.00	13.76	267.74	2,841.46	-20.59	-521.42	35.75	0.00	0.00	0.00
3,000.00	13.76	267.74	2,938.59	-21.53	-545.19	37.37	0.00	0.00	0.00
3,100.00	13.76	267.74	3,035.72	-22.47	-568.96	39.00	0.00	0.00	0.00
3,200.00	13.76	267.74	3,132.85	-23.41	-592.73	40.63	0.00	0.00	0.00
3,300.00	13.76	267.74	3,229.98	-24.35	-616.50	42.26	0.00	0.00	0.00
3,400.00	13.76	267.74	3,327.11	-25.29	-640.27	43.89	0.00	0.00	0.00
3,500.00	13.76	267.74	3,424.24	-26.22	-664.05	45.52	0.00	0.00	0.00
3,600.00	13.76	267.74	3,521.37	-27.16	-687.82	47.15	0.00	0.00	0.00
3,700.00	13.76	267.74	3,618.49	-28.10	-711.59	48.78	0.00	0.00	0.00
3,800.00	13.76	267.74	3,715.62	-29.04	-735.36	50.41	0.00	0.00	0.00
3,900.00	13.76	267.74	3,812.75	-29.98	-759.13	52.04	0.00	0.00	0.00
4,000.00	13.76	267.74	3,909.88	-30.92	-782.90	53.67	0.00	0.00	0.00
4,064.98	13.76	267.74	3,973.00	-31.53	-798.35	54.73	0.00	0.00	0.00
Parkman									
4,100.00	13.76	267.74	4,007.01	-31.86	-806.67	55.30	0.00	0.00	0.00
4,186.77	13.76	267.74	4,091.29	-32.67	-827.30	56.71	0.00	0.00	0.00
4,200.00	13.56	267.74	4,104.14	-32.80	-830.42	56.93	1.50	-1.50	0.00
4,300.00	12.06	267.74	4,201.65	-33.67	-852.58	58.45	1.50	-1.50	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22C-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4951.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4951.00usft (D Rig)
Site:	2N-67W-10 Butterball 21-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 22C-34HZ	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	10.56	267.74	4,299.71	-34.45	-872.19	59.79	1.50	-1.50	0.00	
4,498.75	9.08	267.74	4,397.00	-35.11	-889.02	60.95	1.50	-1.50	0.00	
Sussex										
4,500.00	9.06	267.74	4,398.24	-35.12	-889.22	60.96	1.50	-1.50	0.00	
4,600.00	7.56	267.74	4,497.19	-35.69	-903.67	61.95	1.50	-1.50	0.00	
4,700.00	6.06	267.74	4,596.48	-36.16	-915.52	62.76	1.50	-1.50	0.00	
4,800.00	4.56	267.74	4,696.04	-36.52	-924.78	63.40	1.50	-1.50	0.00	
4,900.00	3.06	267.74	4,795.82	-36.78	-931.42	63.85	1.50	-1.50	0.00	
5,000.00	1.56	267.74	4,895.73	-36.94	-935.46	64.13	1.50	-1.50	0.00	
5,100.00	0.06	267.74	4,995.72	-37.00	-936.88	64.23	1.50	-1.50	0.00	
5,104.28	0.00	0.00	5,000.00	-37.00	-936.88	64.23	1.50	-1.50	0.00	
5,200.00	0.00	0.00	5,095.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,195.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,295.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,395.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,495.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,595.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,695.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,795.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,000.00	0.00	0.00	5,895.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,995.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,095.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,195.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,295.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,395.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,495.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,595.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,695.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,795.72	-37.00	-936.88	64.23	0.00	0.00	0.00	
6,949.26	0.00	0.00	6,844.98	-37.00	-936.88	64.23	0.00	0.00	0.00	
7,000.00	4.57	359.88	6,895.67	-34.98	-936.88	66.24	9.00	9.00	0.00	
7,100.00	13.57	359.88	6,994.32	-19.24	-936.92	81.89	9.00	9.00	0.00	
7,200.00	22.57	359.88	7,089.29	11.74	-936.98	112.70	9.00	9.00	0.00	
7,268.49	28.73	359.88	7,151.00	41.37	-937.05	142.16	9.00	9.00	0.00	
Sharon Springs										
7,300.00	31.57	359.88	7,178.25	57.20	-937.08	157.90	9.00	9.00	0.00	
7,367.78	37.67	359.88	7,234.00	95.69	-937.16	196.17	9.00	9.00	0.00	
Niobrara										
7,400.00	40.57	359.88	7,259.00	116.01	-937.21	216.38	9.00	9.00	0.00	
7,439.24	44.10	359.88	7,288.00	142.43	-937.27	242.66	9.00	9.00	0.00	
Nio B										
7,500.00	49.57	359.88	7,329.55	186.73	-937.36	286.71	9.00	9.00	0.00	
7,516.36	51.04	359.88	7,340.00	199.32	-937.39	299.22	9.00	9.00	0.00	
Nio C										
7,600.00	58.57	359.88	7,388.18	267.62	-937.53	367.14	9.00	9.00	0.00	
7,700.00	67.57	359.88	7,433.42	356.68	-937.73	455.70	9.00	9.00	0.00	
7,757.71	72.76	359.88	7,453.00	410.94	-937.84	509.66	9.00	9.00	0.00	
Fort Hayes										
7,800.00	76.57	359.88	7,464.18	451.72	-937.93	550.21	9.00	9.00	0.00	
7,857.50	81.74	359.88	7,475.00	508.18	-938.05	606.35	9.00	9.00	0.00	
Codell										
7,900.00	85.57	359.88	7,479.70	550.41	-938.14	648.35	9.00	9.00	0.00	
7,953.26	90.36	359.88	7,481.59	603.62	-938.26	701.26	9.00	9.00	0.00	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22C-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4951.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4951.00usft (D Rig)
Site:	2N-67W-10 Butterball 21-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 22C-34HZ	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)
Top of Production - BUTTERBALL 22C-34HZ_PHL									
8,000.00	90.36	359.88	7,481.30	650.36	-938.36	747.74	0.00	0.00	0.00
8,100.00	90.36	359.88	7,480.67	750.35	-938.57	847.17	0.00	0.00	0.00
8,200.00	90.36	359.88	7,480.04	850.35	-938.78	946.61	0.00	0.00	0.00
8,300.00	90.36	359.88	7,479.41	950.35	-939.00	1,046.05	0.00	0.00	0.00
8,400.00	90.36	359.88	7,478.78	1,050.35	-939.21	1,145.49	0.00	0.00	0.00
8,500.00	90.36	359.88	7,478.15	1,150.35	-939.43	1,244.93	0.00	0.00	0.00
8,600.00	90.36	359.88	7,477.53	1,250.34	-939.64	1,344.36	0.00	0.00	0.00
8,700.00	90.36	359.88	7,476.90	1,350.34	-939.86	1,443.80	0.00	0.00	0.00
8,800.00	90.36	359.88	7,476.27	1,450.34	-940.07	1,543.24	0.00	0.00	0.00
8,900.00	90.36	359.88	7,475.64	1,550.34	-940.29	1,642.68	0.00	0.00	0.00
9,000.00	90.36	359.88	7,475.01	1,650.34	-940.50	1,742.12	0.00	0.00	0.00
9,100.00	90.36	359.88	7,474.38	1,750.33	-940.72	1,841.55	0.00	0.00	0.00
9,200.00	90.36	359.88	7,473.76	1,850.33	-940.93	1,940.99	0.00	0.00	0.00
9,300.00	90.36	359.88	7,473.13	1,950.33	-941.15	2,040.43	0.00	0.00	0.00
9,400.00	90.36	359.88	7,472.50	2,050.33	-941.36	2,139.87	0.00	0.00	0.00
9,500.00	90.36	359.88	7,471.87	2,150.32	-941.58	2,239.31	0.00	0.00	0.00
9,600.00	90.36	359.88	7,471.24	2,250.32	-941.79	2,338.74	0.00	0.00	0.00
9,700.00	90.36	359.88	7,470.61	2,350.32	-942.00	2,438.18	0.00	0.00	0.00
9,800.00	90.36	359.88	7,469.99	2,450.32	-942.22	2,537.62	0.00	0.00	0.00
9,900.00	90.36	359.88	7,469.36	2,550.32	-942.43	2,637.06	0.00	0.00	0.00
10,000.00	90.36	359.88	7,468.73	2,650.31	-942.65	2,736.50	0.00	0.00	0.00
10,100.00	90.36	359.88	7,468.10	2,750.31	-942.86	2,835.94	0.00	0.00	0.00
10,200.00	90.36	359.88	7,467.47	2,850.31	-943.08	2,935.37	0.00	0.00	0.00
10,300.00	90.36	359.88	7,466.84	2,950.31	-943.29	3,034.81	0.00	0.00	0.00
10,400.00	90.36	359.88	7,466.22	3,050.30	-943.51	3,134.25	0.00	0.00	0.00
10,500.00	90.36	359.88	7,465.59	3,150.30	-943.72	3,233.69	0.00	0.00	0.00
10,600.00	90.36	359.88	7,464.96	3,250.30	-943.94	3,333.13	0.00	0.00	0.00
10,700.00	90.36	359.88	7,464.33	3,350.30	-944.15	3,432.56	0.00	0.00	0.00
10,800.00	90.36	359.88	7,463.70	3,450.30	-944.37	3,532.00	0.00	0.00	0.00
10,900.00	90.36	359.88	7,463.07	3,550.29	-944.58	3,631.44	0.00	0.00	0.00
11,000.00	90.36	359.88	7,462.45	3,650.29	-944.80	3,730.88	0.00	0.00	0.00
11,100.00	90.36	359.88	7,461.82	3,750.29	-945.01	3,830.32	0.00	0.00	0.00
11,200.00	90.36	359.88	7,461.19	3,850.29	-945.22	3,929.75	0.00	0.00	0.00
11,300.00	90.36	359.88	7,460.56	3,950.28	-945.44	4,029.19	0.00	0.00	0.00
11,400.00	90.36	359.88	7,459.93	4,050.28	-945.65	4,128.63	0.00	0.00	0.00
11,500.00	90.36	359.88	7,459.30	4,150.28	-945.87	4,228.07	0.00	0.00	0.00
11,600.00	90.36	359.88	7,458.68	4,250.28	-946.08	4,327.51	0.00	0.00	0.00
11,700.00	90.36	359.88	7,458.05	4,350.28	-946.30	4,426.94	0.00	0.00	0.00
11,800.00	90.36	359.88	7,457.42	4,450.27	-946.51	4,526.38	0.00	0.00	0.00
11,900.00	90.36	359.88	7,456.79	4,550.27	-946.73	4,625.82	0.00	0.00	0.00
12,000.00	90.36	359.88	7,456.16	4,650.27	-946.94	4,725.26	0.00	0.00	0.00
12,100.00	90.36	359.88	7,455.53	4,750.27	-947.16	4,824.70	0.00	0.00	0.00
12,200.00	90.36	359.88	7,454.91	4,850.26	-947.37	4,924.13	0.00	0.00	0.00
12,300.00	90.36	359.88	7,454.28	4,950.26	-947.59	5,023.57	0.00	0.00	0.00
12,400.00	90.36	359.88	7,453.65	5,050.26	-947.80	5,123.01	0.00	0.00	0.00
12,500.00	90.36	359.88	7,453.02	5,150.26	-948.02	5,222.45	0.00	0.00	0.00
12,600.00	90.36	359.88	7,452.39	5,250.26	-948.23	5,321.89	0.00	0.00	0.00
12,700.00	90.36	359.88	7,451.76	5,350.25	-948.44	5,421.32	0.00	0.00	0.00
12,800.00	90.36	359.88	7,451.14	5,450.25	-948.66	5,520.76	0.00	0.00	0.00
12,900.00	90.36	359.88	7,450.51	5,550.25	-948.87	5,620.20	0.00	0.00	0.00
13,000.00	90.36	359.88	7,449.88	5,650.25	-949.09	5,719.64	0.00	0.00	0.00
13,100.00	90.36	359.88	7,449.25	5,750.24	-949.30	5,819.08	0.00	0.00	0.00
13,200.00	90.36	359.88	7,448.62	5,850.24	-949.52	5,918.51	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22C-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TD Reference:	RKB @ 4951.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4951.00usft (D Rig)
Site:	2N-67W-10 Butterball 21-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 22C-34HZ	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)	
13,300.00	90.36	359.88	7,447.99	5,950.24	-949.73	6,017.95	0.00	0.00	0.00	
13,400.00	90.36	359.88	7,447.37	6,050.24	-949.95	6,117.39	0.00	0.00	0.00	
13,500.00	90.36	359.88	7,446.74	6,150.24	-950.16	6,216.83	0.00	0.00	0.00	
13,600.00	90.36	359.88	7,446.11	6,250.23	-950.38	6,316.27	0.00	0.00	0.00	
13,700.00	90.36	359.88	7,445.48	6,350.23	-950.59	6,415.70	0.00	0.00	0.00	
13,800.00	90.36	359.88	7,444.85	6,450.23	-950.81	6,515.14	0.00	0.00	0.00	
13,900.00	90.36	359.88	7,444.22	6,550.23	-951.02	6,614.58	0.00	0.00	0.00	
14,000.00	90.36	359.88	7,443.60	6,650.22	-951.23	6,714.02	0.00	0.00	0.00	
14,100.00	90.36	359.88	7,442.97	6,750.22	-951.45	6,813.46	0.00	0.00	0.00	
14,200.00	90.36	359.88	7,442.34	6,850.22	-951.66	6,912.89	0.00	0.00	0.00	
14,300.00	90.36	359.88	7,441.71	6,950.22	-951.88	7,012.33	0.00	0.00	0.00	
14,400.00	90.36	359.88	7,441.08	7,050.22	-952.09	7,111.77	0.00	0.00	0.00	
14,500.00	90.36	359.88	7,440.45	7,150.21	-952.31	7,211.21	0.00	0.00	0.00	
14,600.00	90.36	359.88	7,439.83	7,250.21	-952.52	7,310.65	0.00	0.00	0.00	
14,700.00	90.36	359.88	7,439.20	7,350.21	-952.74	7,410.08	0.00	0.00	0.00	
14,800.00	90.36	359.88	7,438.57	7,450.21	-952.95	7,509.52	0.00	0.00	0.00	
14,900.00	90.36	359.88	7,437.94	7,550.21	-953.17	7,608.96	0.00	0.00	0.00	
15,000.00	90.36	359.88	7,437.31	7,650.20	-953.38	7,708.40	0.00	0.00	0.00	
15,100.00	90.36	359.88	7,436.69	7,750.20	-953.60	7,807.84	0.00	0.00	0.00	
15,200.00	90.36	359.88	7,436.06	7,850.20	-953.81	7,907.27	0.00	0.00	0.00	
15,300.00	90.36	359.88	7,435.43	7,950.20	-954.03	8,006.71	0.00	0.00	0.00	
15,400.00	90.36	359.88	7,434.80	8,050.19	-954.24	8,106.15	0.00	0.00	0.00	
15,500.00	90.36	359.88	7,434.17	8,150.19	-954.45	8,205.59	0.00	0.00	0.00	
15,600.00	90.36	359.88	7,433.54	8,250.19	-954.67	8,305.03	0.00	0.00	0.00	
15,700.00	90.36	359.88	7,432.92	8,350.19	-954.88	8,404.46	0.00	0.00	0.00	
15,800.00	90.36	359.88	7,432.29	8,450.19	-955.10	8,503.90	0.00	0.00	0.00	
15,900.00	90.36	359.88	7,431.66	8,550.18	-955.31	8,603.34	0.00	0.00	0.00	
16,000.00	90.36	359.88	7,431.03	8,650.18	-955.53	8,702.78	0.00	0.00	0.00	
16,100.00	90.36	359.88	7,430.40	8,750.18	-955.74	8,802.22	0.00	0.00	0.00	
16,163.94	90.36	359.88	7,430.00	8,814.12	-955.88	8,865.80	0.00	0.00	0.00	
BUTTERBALL 22C-34HZ_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									
BUTTERBALL 22C-34	0.00	0.00	7,430.00	8,814.12	-955.88	14,592,973.87	1,673,507.99	40.181846	-104.881524
- plan hits target center									
- Point									
BUTTERBALL 22C-34	0.00	0.00	7,481.59	603.62	-938.26	14,584,763.41	1,673,536.88	40.159299	-104.881459
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,518.89	1,500.00	9 5/8"	9-5/8	13-1/2	
7,953.26	7,481.59	Top of Production	5-1/2	8-1/2	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22C-34HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4951.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4951.00usft (D Rig)
Site:	2N-67W-10 Butterball 21-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 22C-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,037.57	1,032.00	Fox Hills				
4,064.98	3,973.00	Parkman				
4,498.75	4,397.00	Sussex				
7,268.49	7,151.00	Sharon Springs				
7,367.78	7,234.00	Niobrara				
7,439.24	7,288.00	Nio B				
7,516.36	7,340.00	Nio C				
7,757.71	7,453.00	Fort Hayes				
7,857.50	7,475.00	Codell				