

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-67W-10 Butterball 21-10HZ Pad
BUTTERBALL 22N2-34HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

13 October, 2016



Azimuths to True North
Magnetic North: 8.19°

Magnetic Field
Strength: 52431.0snT
Dip Angle: 66.65°
Date: 10/12/2016
Model: IGRF2010

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

Well: BUTTERBALL 22N2-34HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1032.00	1037.45	Fox Hills
3973.00	4023.28	Parkman
4387.00	4447.28	Sussex
7148.00	7263.68	Sharon Springs
7231.00	7412.76	Niobrara
7280.00	7549.34	Nio B

WELL DETAILS: BUTTERBALL 22N2-34HZ

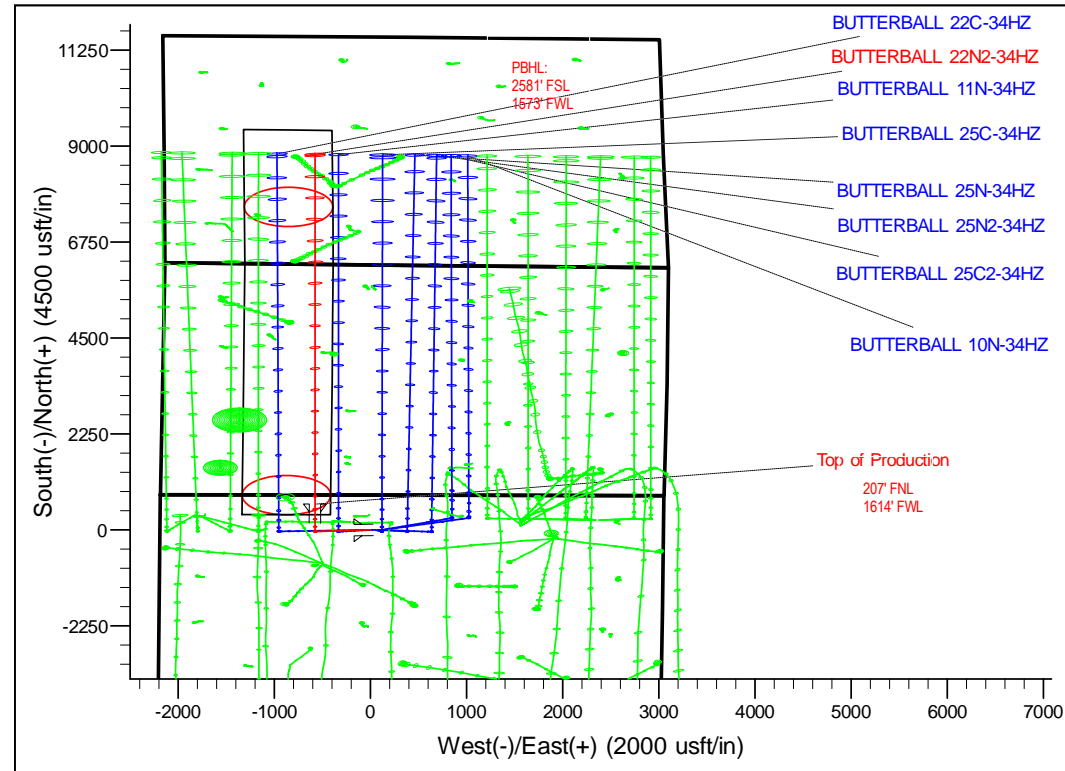
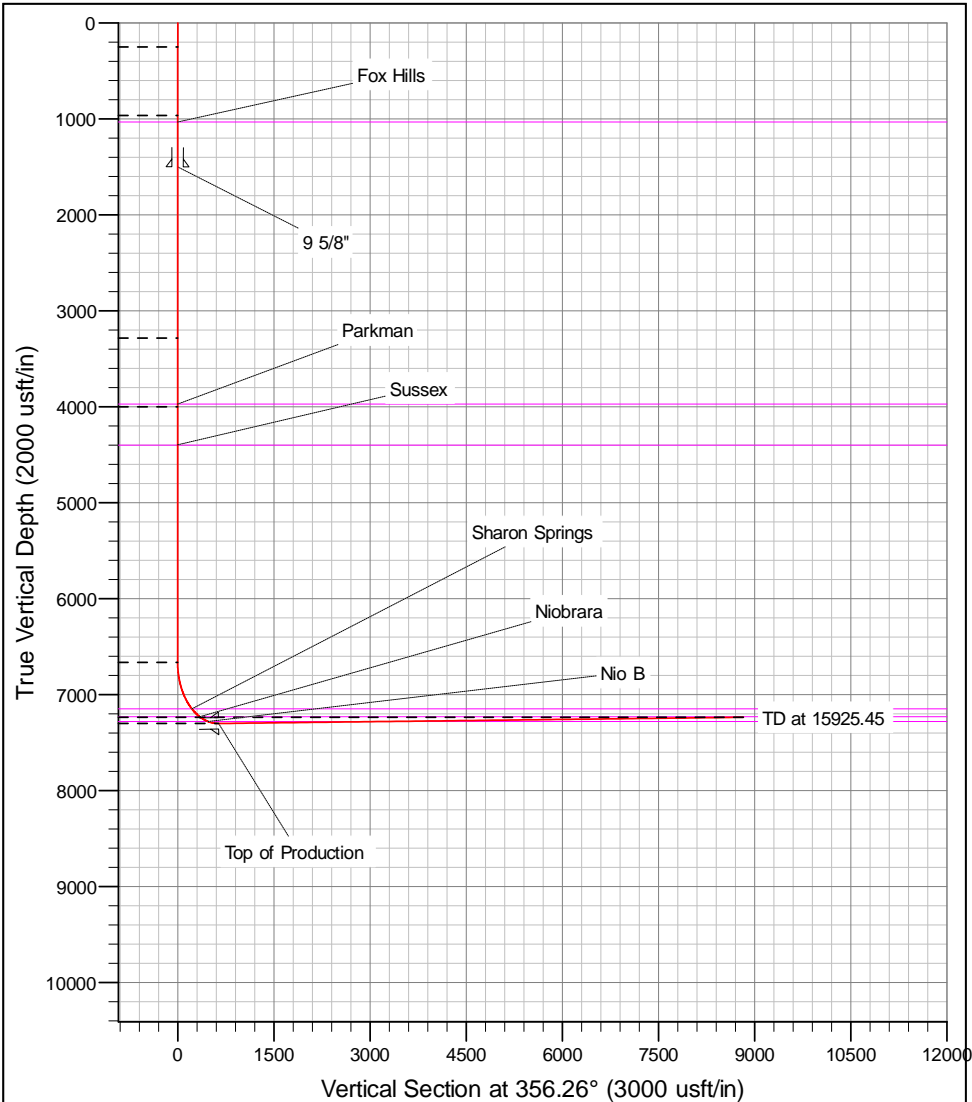
+N/-S	+E/-W	GL: 4934.00	RKB @ 4951.00usft (D Rig)	Longitude	Slot
0.00	0.00	Northing 14584161.10	Easting 1674491.06	Latitude 40.157641	-104.878047

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
969.62	10.79	266.03	965.37	-4.68	-67.42	1.50	-0.27
3330.65	10.79	266.03	3284.63	-35.32	-508.55	0.00	-2.05
4050.28	0.00	0.00	4000.00	-40.00	-575.97	1.50	-2.33
6715.12	0.00	0.00	6664.84	-40.00	-575.97	0.00	-2.33
7720.12	90.45	0.00	7301.44	601.62	-575.97	9.00	637.93
15925.45	90.45	0.00	7237.00	8806.70	-575.97	0.008825.51	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BUTTERBALL 22N2-34HZ, PBHL	7237.00	8806.70	-575.97	14592967.00	1673903.00	40.181825	-104.880109



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22N2-34HZ
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 22N2-34HZ	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 22N2-34HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,584,161.10 usft	Latitude:	40.157641
	+E/-W	15.09 usft	Easting:	1,674,491.05 usft	Longitude:	-104.878047
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	356.26	

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	
969.62	10.79	266.03	965.37	-4.68	-67.42	1.50	1.50	0.00	266.03	
3,330.65	10.79	266.03	3,284.63	-35.32	-508.55	0.00	0.00	0.00	0.00	
4,050.28	0.00	0.00	4,000.00	-40.00	-575.97	1.50	-1.50	0.00	180.00	
6,715.12	0.00	0.00	6,664.84	-40.00	-575.97	0.00	0.00	0.00	0.00	
7,720.12	90.45	0.00	7,301.44	601.62	-575.97	9.00	9.00	0.00	0.00	
15,925.45	90.45	0.00	7,237.00	8,806.70	-575.97	0.00	0.00	0.00	0.00	BUTTERBALL 22N:

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22N2-34HZ
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 22N2-34HZ	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)
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	266.03	300.00	-0.02	-0.33	0.00	1.50	1.50	0.00
400.00	2.25	266.03	399.96	-0.20	-2.94	-0.01	1.50	1.50	0.00
500.00	3.75	266.03	499.82	-0.57	-8.16	-0.03	1.50	1.50	0.00
600.00	5.25	266.03	599.51	-1.11	-15.99	-0.06	1.50	1.50	0.00
700.00	6.75	266.03	698.96	-1.83	-26.41	-0.11	1.50	1.50	0.00
800.00	8.25	266.03	798.10	-2.74	-39.43	-0.16	1.50	1.50	0.00
900.00	9.75	266.03	896.87	-3.82	-55.04	-0.22	1.50	1.50	0.00
969.62	10.79	266.03	965.37	-4.68	-67.42	-0.27	1.50	1.50	0.00
1,000.00	10.79	266.03	995.21	-5.08	-73.10	-0.30	0.00	0.00	0.00
1,037.45	10.79	266.03	1,032.00	-5.56	-80.10	-0.32	0.00	0.00	0.00
Fox Hills									
1,100.00	10.79	266.03	1,093.44	-6.37	-91.78	-0.37	0.00	0.00	0.00
1,200.00	10.79	266.03	1,191.67	-7.67	-110.47	-0.45	0.00	0.00	0.00
1,300.00	10.79	266.03	1,289.90	-8.97	-129.15	-0.52	0.00	0.00	0.00
1,400.00	10.79	266.03	1,388.14	-10.27	-147.83	-0.60	0.00	0.00	0.00
1,500.00	10.79	266.03	1,486.37	-11.56	-166.52	-0.67	0.00	0.00	0.00
1,513.88	10.79	266.03	1,500.00	-11.74	-169.11	-0.68	0.00	0.00	0.00
9 5/8"									
1,600.00	10.79	266.03	1,584.60	-12.86	-185.20	-0.75	0.00	0.00	0.00
1,700.00	10.79	266.03	1,682.83	-14.16	-203.88	-0.82	0.00	0.00	0.00
1,800.00	10.79	266.03	1,781.06	-15.46	-222.57	-0.90	0.00	0.00	0.00
1,900.00	10.79	266.03	1,879.29	-16.75	-241.25	-0.97	0.00	0.00	0.00
2,000.00	10.79	266.03	1,977.52	-18.05	-259.93	-1.05	0.00	0.00	0.00
2,100.00	10.79	266.03	2,075.75	-19.35	-278.62	-1.13	0.00	0.00	0.00
2,200.00	10.79	266.03	2,173.98	-20.65	-297.30	-1.20	0.00	0.00	0.00
2,300.00	10.79	266.03	2,272.21	-21.94	-315.98	-1.28	0.00	0.00	0.00
2,400.00	10.79	266.03	2,370.44	-23.24	-334.67	-1.35	0.00	0.00	0.00
2,500.00	10.79	266.03	2,468.67	-24.54	-353.35	-1.43	0.00	0.00	0.00
2,600.00	10.79	266.03	2,566.90	-25.84	-372.03	-1.50	0.00	0.00	0.00
2,700.00	10.79	266.03	2,665.13	-27.13	-390.72	-1.58	0.00	0.00	0.00
2,800.00	10.79	266.03	2,763.36	-28.43	-409.40	-1.65	0.00	0.00	0.00
2,900.00	10.79	266.03	2,861.59	-29.73	-428.08	-1.73	0.00	0.00	0.00
3,000.00	10.79	266.03	2,959.82	-31.03	-446.77	-1.80	0.00	0.00	0.00
3,100.00	10.79	266.03	3,058.06	-32.32	-465.45	-1.88	0.00	0.00	0.00
3,200.00	10.79	266.03	3,156.29	-33.62	-484.14	-1.96	0.00	0.00	0.00
3,300.00	10.79	266.03	3,254.52	-34.92	-502.82	-2.03	0.00	0.00	0.00
3,330.65	10.79	266.03	3,284.63	-35.32	-508.55	-2.05	0.00	0.00	0.00
3,400.00	9.75	266.03	3,352.86	-36.17	-520.88	-2.10	1.50	-1.50	0.00
3,500.00	8.25	266.03	3,451.63	-37.26	-536.50	-2.17	1.50	-1.50	0.00
3,600.00	6.75	266.03	3,550.77	-38.16	-549.52	-2.22	1.50	-1.50	0.00
3,700.00	5.25	266.03	3,650.22	-38.89	-559.96	-2.26	1.50	-1.50	0.00
3,800.00	3.75	266.03	3,749.90	-39.43	-567.79	-2.29	1.50	-1.50	0.00
3,900.00	2.25	266.03	3,849.76	-39.80	-573.02	-2.31	1.50	-1.50	0.00
4,000.00	0.75	266.03	3,949.73	-39.98	-575.64	-2.32	1.50	-1.50	0.00
4,023.28	0.41	266.03	3,973.00	-39.99	-575.87	-2.33	1.50	-1.50	0.00
Parkman									
4,050.28	0.00	0.00	4,000.00	-40.00	-575.97	-2.33	1.50	-1.50	0.00
4,100.00	0.00	0.00	4,049.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,200.00	0.00	0.00	4,149.72	-40.00	-575.97	-2.33	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22N2-34HZ
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 22N2-34HZ	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)
4,300.00	0.00	0.00	4,249.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,400.00	0.00	0.00	4,349.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,447.28	0.00	0.00	4,397.00	-40.00	-575.97	-2.33	0.00	0.00	0.00
Sussex									
4,500.00	0.00	0.00	4,449.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,600.00	0.00	0.00	4,549.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,700.00	0.00	0.00	4,649.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,800.00	0.00	0.00	4,749.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
4,900.00	0.00	0.00	4,849.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,000.00	0.00	0.00	4,949.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,100.00	0.00	0.00	5,049.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,200.00	0.00	0.00	5,149.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,300.00	0.00	0.00	5,249.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,400.00	0.00	0.00	5,349.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,500.00	0.00	0.00	5,449.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,600.00	0.00	0.00	5,549.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,700.00	0.00	0.00	5,649.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,800.00	0.00	0.00	5,749.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
5,900.00	0.00	0.00	5,849.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,000.00	0.00	0.00	5,949.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,100.00	0.00	0.00	6,049.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,200.00	0.00	0.00	6,149.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,300.00	0.00	0.00	6,249.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,400.00	0.00	0.00	6,349.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,500.00	0.00	0.00	6,449.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,600.00	0.00	0.00	6,549.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,700.00	0.00	0.00	6,649.72	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,715.12	0.00	0.00	6,664.84	-40.00	-575.97	-2.33	0.00	0.00	0.00
6,800.00	7.64	0.00	6,749.47	-34.35	-575.97	3.31	9.00	9.00	0.00
6,900.00	16.64	0.00	6,847.14	-13.34	-575.97	24.27	9.00	9.00	0.00
7,000.00	25.64	0.00	6,940.31	22.68	-575.97	60.22	9.00	9.00	0.00
7,100.00	34.64	0.00	7,026.70	72.84	-575.97	110.28	9.00	9.00	0.00
7,200.00	43.64	0.00	7,104.19	135.90	-575.97	173.20	9.00	9.00	0.00
7,263.68	49.37	0.00	7,148.00	182.08	-575.97	219.28	9.00	9.00	0.00
Sharon Springs									
7,300.00	52.64	0.00	7,170.85	210.30	-575.97	247.44	9.00	9.00	0.00
7,400.00	61.64	0.00	7,225.05	294.21	-575.97	331.17	9.00	9.00	0.00
7,412.76	62.79	0.00	7,231.00	305.50	-575.97	342.44	9.00	9.00	0.00
Niobrara									
7,500.00	70.64	0.00	7,265.46	385.57	-575.97	422.34	9.00	9.00	0.00
7,549.34	75.08	0.00	7,280.00	432.71	-575.97	469.37	9.00	9.00	0.00
Nio B									
7,600.00	79.64	0.00	7,291.08	482.13	-575.97	518.69	9.00	9.00	0.00
7,700.00	88.64	0.00	7,301.28	581.50	-575.97	617.85	9.00	9.00	0.00
7,720.12	90.45	0.00	7,301.44	601.62	-575.97	637.93	9.00	9.00	0.00
Top of Production - BUTTERBALL 22N2-34HZ_PHL									
7,800.00	90.45	0.00	7,300.82	681.50	-575.97	717.63	0.00	0.00	0.00
7,900.00	90.45	0.00	7,300.03	781.50	-575.97	817.42	0.00	0.00	0.00
8,000.00	90.45	0.00	7,299.25	881.49	-575.97	917.20	0.00	0.00	0.00
8,100.00	90.45	0.00	7,298.46	981.49	-575.97	1,016.99	0.00	0.00	0.00
8,200.00	90.45	0.00	7,297.68	1,081.49	-575.97	1,116.77	0.00	0.00	0.00
8,300.00	90.45	0.00	7,296.89	1,181.48	-575.97	1,216.55	0.00	0.00	0.00
8,400.00	90.45	0.00	7,296.10	1,281.48	-575.97	1,316.34	0.00	0.00	0.00
8,500.00	90.45	0.00	7,295.32	1,381.48	-575.97	1,416.12	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22N2-34HZ
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 22N2-34HZ	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)
8,600.00	90.45	0.00	7,294.53	1,481.47	-575.97	1,515.90	0.00	0.00	0.00
8,700.00	90.45	0.00	7,293.75	1,581.47	-575.97	1,615.69	0.00	0.00	0.00
8,800.00	90.45	0.00	7,292.96	1,681.47	-575.97	1,715.47	0.00	0.00	0.00
8,900.00	90.45	0.00	7,292.18	1,781.46	-575.97	1,815.26	0.00	0.00	0.00
9,000.00	90.45	0.00	7,291.39	1,881.46	-575.97	1,915.04	0.00	0.00	0.00
9,100.00	90.45	0.00	7,290.61	1,981.46	-575.97	2,014.82	0.00	0.00	0.00
9,200.00	90.45	0.00	7,289.82	2,081.46	-575.97	2,114.61	0.00	0.00	0.00
9,300.00	90.45	0.00	7,289.04	2,181.45	-575.97	2,214.39	0.00	0.00	0.00
9,400.00	90.45	0.00	7,288.25	2,281.45	-575.97	2,314.17	0.00	0.00	0.00
9,500.00	90.45	0.00	7,287.47	2,381.45	-575.97	2,413.96	0.00	0.00	0.00
9,600.00	90.45	0.00	7,286.68	2,481.44	-575.97	2,513.74	0.00	0.00	0.00
9,700.00	90.45	0.00	7,285.89	2,581.44	-575.97	2,613.53	0.00	0.00	0.00
9,800.00	90.45	0.00	7,285.11	2,681.44	-575.97	2,713.31	0.00	0.00	0.00
9,900.00	90.45	0.00	7,284.32	2,781.43	-575.97	2,813.09	0.00	0.00	0.00
10,000.00	90.45	0.00	7,283.54	2,881.43	-575.97	2,912.88	0.00	0.00	0.00
10,100.00	90.45	0.00	7,282.75	2,981.43	-575.97	3,012.66	0.00	0.00	0.00
10,200.00	90.45	0.00	7,281.97	3,081.42	-575.97	3,112.44	0.00	0.00	0.00
10,300.00	90.45	0.00	7,281.18	3,181.42	-575.97	3,212.23	0.00	0.00	0.00
10,400.00	90.45	0.00	7,280.40	3,281.42	-575.97	3,312.01	0.00	0.00	0.00
10,500.00	90.45	0.00	7,279.61	3,381.41	-575.97	3,411.80	0.00	0.00	0.00
10,600.00	90.45	0.00	7,278.83	3,481.41	-575.97	3,511.58	0.00	0.00	0.00
10,700.00	90.45	0.00	7,278.04	3,581.41	-575.97	3,611.36	0.00	0.00	0.00
10,800.00	90.45	0.00	7,277.25	3,681.41	-575.97	3,711.15	0.00	0.00	0.00
10,900.00	90.45	0.00	7,276.47	3,781.40	-575.97	3,810.93	0.00	0.00	0.00
11,000.00	90.45	0.00	7,275.68	3,881.40	-575.97	3,910.71	0.00	0.00	0.00
11,100.00	90.45	0.00	7,274.90	3,981.40	-575.97	4,010.50	0.00	0.00	0.00
11,200.00	90.45	0.00	7,274.11	4,081.39	-575.97	4,110.28	0.00	0.00	0.00
11,300.00	90.45	0.00	7,273.33	4,181.39	-575.97	4,210.07	0.00	0.00	0.00
11,400.00	90.45	0.00	7,272.54	4,281.39	-575.97	4,309.85	0.00	0.00	0.00
11,500.00	90.45	0.00	7,271.76	4,381.38	-575.97	4,409.63	0.00	0.00	0.00
11,600.00	90.45	0.00	7,270.97	4,481.38	-575.97	4,509.42	0.00	0.00	0.00
11,700.00	90.45	0.00	7,270.19	4,581.38	-575.97	4,609.20	0.00	0.00	0.00
11,800.00	90.45	0.00	7,269.40	4,681.37	-575.97	4,708.98	0.00	0.00	0.00
11,900.00	90.45	0.00	7,268.62	4,781.37	-575.97	4,808.77	0.00	0.00	0.00
12,000.00	90.45	0.00	7,267.83	4,881.37	-575.97	4,908.55	0.00	0.00	0.00
12,100.00	90.45	0.00	7,267.04	4,981.37	-575.97	5,008.34	0.00	0.00	0.00
12,200.00	90.45	0.00	7,266.26	5,081.36	-575.97	5,108.12	0.00	0.00	0.00
12,300.00	90.45	0.00	7,265.47	5,181.36	-575.97	5,207.90	0.00	0.00	0.00
12,400.00	90.45	0.00	7,264.69	5,281.36	-575.97	5,307.69	0.00	0.00	0.00
12,500.00	90.45	0.00	7,263.90	5,381.35	-575.97	5,407.47	0.00	0.00	0.00
12,600.00	90.45	0.00	7,263.12	5,481.35	-575.97	5,507.25	0.00	0.00	0.00
12,700.00	90.45	0.00	7,262.33	5,581.35	-575.97	5,607.04	0.00	0.00	0.00
12,800.00	90.45	0.00	7,261.55	5,681.34	-575.97	5,706.82	0.00	0.00	0.00
12,900.00	90.45	0.00	7,260.76	5,781.34	-575.97	5,806.60	0.00	0.00	0.00
13,000.00	90.45	0.00	7,259.98	5,881.34	-575.97	5,906.39	0.00	0.00	0.00
13,100.00	90.45	0.00	7,259.19	5,981.33	-575.97	6,006.17	0.00	0.00	0.00
13,200.00	90.45	0.00	7,258.41	6,081.33	-575.97	6,105.96	0.00	0.00	0.00
13,300.00	90.45	0.00	7,257.62	6,181.33	-575.97	6,205.74	0.00	0.00	0.00
13,400.00	90.45	0.00	7,256.83	6,281.33	-575.97	6,305.52	0.00	0.00	0.00
13,500.00	90.45	0.00	7,256.05	6,381.32	-575.97	6,405.31	0.00	0.00	0.00
13,600.00	90.45	0.00	7,255.26	6,481.32	-575.97	6,505.09	0.00	0.00	0.00
13,700.00	90.45	0.00	7,254.48	6,581.32	-575.97	6,604.87	0.00	0.00	0.00
13,800.00	90.45	0.00	7,253.69	6,681.31	-575.97	6,704.66	0.00	0.00	0.00
13,900.00	90.45	0.00	7,252.91	6,781.31	-575.97	6,804.44	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22N2-34HZ
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 22N2-34HZ	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)	
14,000.00	90.45	0.00	7,252.12	6,881.31	-575.97	6,904.23	0.00	0.00	0.00	
14,100.00	90.45	0.00	7,251.34	6,981.30	-575.97	7,004.01	0.00	0.00	0.00	
14,200.00	90.45	0.00	7,250.55	7,081.30	-575.97	7,103.79	0.00	0.00	0.00	
14,300.00	90.45	0.00	7,249.77	7,181.30	-575.97	7,203.58	0.00	0.00	0.00	
14,400.00	90.45	0.00	7,248.98	7,281.29	-575.97	7,303.36	0.00	0.00	0.00	
14,500.00	90.45	0.00	7,248.20	7,381.29	-575.97	7,403.14	0.00	0.00	0.00	
14,600.00	90.45	0.00	7,247.41	7,481.29	-575.97	7,502.93	0.00	0.00	0.00	
14,700.00	90.45	0.00	7,246.62	7,581.29	-575.97	7,602.71	0.00	0.00	0.00	
14,800.00	90.45	0.00	7,245.84	7,681.28	-575.97	7,702.50	0.00	0.00	0.00	
14,900.00	90.45	0.00	7,245.05	7,781.28	-575.97	7,802.28	0.00	0.00	0.00	
15,000.00	90.45	0.00	7,244.27	7,881.28	-575.97	7,902.06	0.00	0.00	0.00	
15,100.00	90.45	0.00	7,243.48	7,981.27	-575.97	8,001.85	0.00	0.00	0.00	
15,200.00	90.45	0.00	7,242.70	8,081.27	-575.97	8,101.63	0.00	0.00	0.00	
15,300.00	90.45	0.00	7,241.91	8,181.27	-575.97	8,201.41	0.00	0.00	0.00	
15,400.00	90.45	0.00	7,241.13	8,281.26	-575.97	8,301.20	0.00	0.00	0.00	
15,500.00	90.45	0.00	7,240.34	8,381.26	-575.97	8,400.98	0.00	0.00	0.00	
15,600.00	90.45	0.00	7,239.56	8,481.26	-575.97	8,500.77	0.00	0.00	0.00	
15,700.00	90.45	0.00	7,238.77	8,581.25	-575.97	8,600.55	0.00	0.00	0.00	
15,800.00	90.45	0.00	7,237.99	8,681.25	-575.97	8,700.33	0.00	0.00	0.00	
15,900.00	90.45	0.00	7,237.20	8,781.25	-575.97	8,800.12	0.00	0.00	0.00	
15,925.45	90.45	0.00	7,237.00	8,806.70	-575.97	8,825.51	0.00	0.00	0.00	
BUTTERBALL 22N2-34HZ_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 22N2-34HZ	0.00	0.00	7,237.00	8,806.70	-575.97	14,592,967.00	1,673,903.00	40.181825	-104.880109	
- plan hits target center										
- Point										
BUTTERBALL 22N2-34HZ	0.00	0.00	7,301.44	601.62	-575.97	14,584,761.93	1,673,914.26	40.159293	-104.880109	
- plan hits target center										
- Point										

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,513.88	1,500.00	9 5/8"	9-5/8	13-1/2		
7,720.12	7,301.44	Top of Production	5-1/2	8-1/2		

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 22N2-34HZ
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 22N2-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,037.45	1,032.00	Fox Hills				
4,023.28	3,973.00	Parkman				
4,447.28	4,397.00	Sussex				
7,263.68	7,148.00	Sharon Springs				
7,412.76	7,231.00	Niobrara				
7,549.34	7,280.00	Nio B				