

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-67W-10 Butterball 4-10HZ Pad
BUTTERBALL 40N-33HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

26 October, 2016



Azimuths to True North
Magnetic North: 8.19°

Magnetic Field
Strength: 52431.0snT
Dip Angle: 66.65°
Date: 10/11/2016
Model: IGRF2010

SITE: 2N-67W-10 Butterball 4-10HZ Pad

Well: BUTTERBALL 40N-33HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1043.00	1047.62	Fox Hills
3972.00	4007.41	Parkman
4397.00	4432.54	Sussex
7160.00	7233.88	Sharon Springs
7243.00	7354.88	Niobrara
7300.00	7458.91	Nio B
7353.00	7598.97	Nio C

WELL DETAILS: BUTTERBALL 40N-33HZ

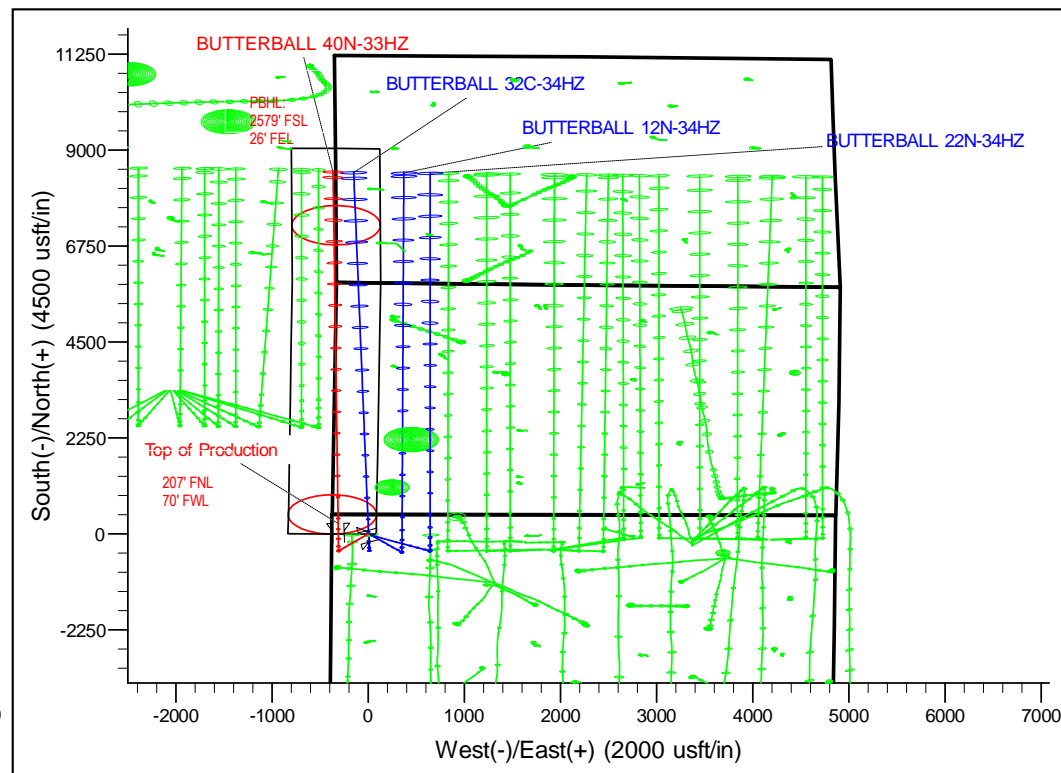
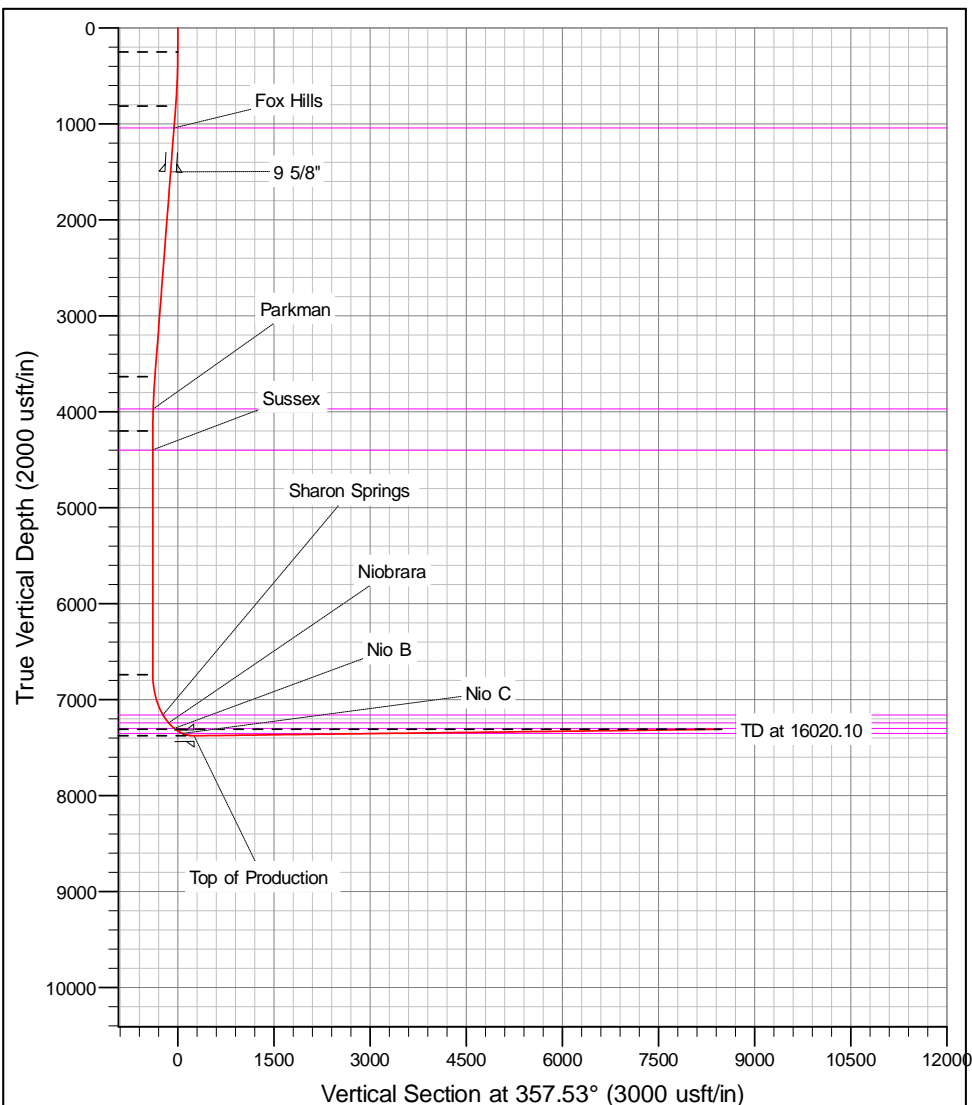
+N/-S	+E/-W	GL: 4945.00 Northing	RKB @ 4962.00usft (D Rig) Easting	Latitude	Longitude	Slot
0.00	0.00	14584525.75	1672681.15	40.158649	-104.884523	

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
817.21	8.51	217.38	815.13	-33.40	-25.52	1.50	-32.27
3668.33	8.51	217.38	3634.87	-368.60	-281.61	0.00	-356.14
4235.54	0.00	0.00	4200.00	-402.00	-307.13	1.50	-388.41
6776.52	0.00	0.00	6740.98	-402.00	-307.13	0.00	-388.41
7781.74	90.47	359.63	7377.58	239.83	-311.32	9.00	253.00
16020.10	90.47	359.63	7310.00	8477.73	-365.13	0.00	8485.59

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BUTTERBALL 40N-33HZ_PBHL	7310.00	8477.73	-365.13	14593003.00	1672305.00	40.181930	-104.885830



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 40N-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4962.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4962.00usft (D Rig)
Site:	2N-67W-10 Butterball 4-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 40N-33HZ	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 4-10HZ Pad											
Site Position:						Northing:			14,584,525.74 usft			Latitude:			40.158649		
From:			Lat/Long			Easting:			1,672,681.14 usft			Longitude:			-104.884523		
Position Uncertainty:			0.00 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.07		

Well	BUTTERBALL 40N-33HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,584,525.74 usft	Latitude:	40.158649
	+E/-W	0.00 usft	Easting:	1,672,681.14 usft	Longitude:	-104.884523
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,945.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/11/2016	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	357.53	

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	
817.21	8.51	217.38	815.13	-33.40	-25.52	1.50	1.50	0.00	217.38	
3,668.33	8.51	217.38	3,634.87	-368.60	-281.61	0.00	0.00	0.00	0.00	
4,235.54	0.00	0.00	4,200.00	-402.00	-307.13	1.50	-1.50	0.00	180.00	
6,776.52	0.00	0.00	6,740.98	-402.00	-307.13	0.00	0.00	0.00	0.00	
7,781.74	90.47	359.63	7,377.58	239.83	-311.32	9.00	9.00	0.00	359.63	
16,020.10	90.47	359.63	7,310.00	8,477.73	-365.13	0.00	0.00	0.00	0.00	BUTTERBALL 40N-

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 40N-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4962.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4962.00usft (D Rig)
Site:	2N-67W-10 Butterball 4-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 40N-33HZ	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	217.38	300.00	-0.26	-0.20	-0.25	1.50	1.50	0.00
400.00	2.25	217.38	399.96	-2.34	-1.79	-2.26	1.50	1.50	0.00
500.00	3.75	217.38	499.82	-6.50	-4.97	-6.28	1.50	1.50	0.00
600.00	5.25	217.38	599.51	-12.73	-9.73	-12.30	1.50	1.50	0.00
700.00	6.75	217.38	698.96	-21.04	-16.07	-20.33	1.50	1.50	0.00
800.00	8.25	217.38	798.10	-31.41	-24.00	-30.35	1.50	1.50	0.00
817.21	8.51	217.38	815.13	-33.40	-25.52	-32.27	1.50	1.50	0.00
900.00	8.51	217.38	897.01	-43.14	-32.96	-41.68	0.00	0.00	0.00
1,000.00	8.51	217.38	995.91	-54.89	-41.94	-53.04	0.00	0.00	0.00
1,047.62	8.51	217.38	1,043.00	-60.49	-46.22	-58.45	0.00	0.00	0.00
Fox Hills									
1,100.00	8.51	217.38	1,094.81	-66.65	-50.92	-64.40	0.00	0.00	0.00
1,200.00	8.51	217.38	1,193.71	-78.41	-59.90	-75.76	0.00	0.00	0.00
1,300.00	8.51	217.38	1,292.60	-90.16	-68.88	-87.12	0.00	0.00	0.00
1,400.00	8.51	217.38	1,391.50	-101.92	-77.87	-98.47	0.00	0.00	0.00
1,500.00	8.51	217.38	1,490.40	-113.68	-86.85	-109.83	0.00	0.00	0.00
1,509.70	8.51	217.38	1,500.00	-114.82	-87.72	-110.94	0.00	0.00	0.00
9 5/8"									
1,600.00	8.51	217.38	1,589.30	-125.43	-95.83	-121.19	0.00	0.00	0.00
1,700.00	8.51	217.38	1,688.20	-137.19	-104.81	-132.55	0.00	0.00	0.00
1,800.00	8.51	217.38	1,787.10	-148.95	-113.80	-143.91	0.00	0.00	0.00
1,900.00	8.51	217.38	1,886.00	-160.70	-122.78	-155.27	0.00	0.00	0.00
2,000.00	8.51	217.38	1,984.90	-172.46	-131.76	-166.63	0.00	0.00	0.00
2,100.00	8.51	217.38	2,083.80	-184.22	-140.74	-177.99	0.00	0.00	0.00
2,200.00	8.51	217.38	2,182.70	-195.97	-149.72	-189.35	0.00	0.00	0.00
2,300.00	8.51	217.38	2,281.60	-207.73	-158.71	-200.71	0.00	0.00	0.00
2,400.00	8.51	217.38	2,380.50	-219.48	-167.69	-212.07	0.00	0.00	0.00
2,500.00	8.51	217.38	2,479.40	-231.24	-176.67	-223.43	0.00	0.00	0.00
2,600.00	8.51	217.38	2,578.30	-243.00	-185.65	-234.78	0.00	0.00	0.00
2,700.00	8.51	217.38	2,677.20	-254.75	-194.63	-246.14	0.00	0.00	0.00
2,800.00	8.51	217.38	2,776.10	-266.51	-203.62	-257.50	0.00	0.00	0.00
2,900.00	8.51	217.38	2,875.00	-278.27	-212.60	-268.86	0.00	0.00	0.00
3,000.00	8.51	217.38	2,973.90	-290.02	-221.58	-280.22	0.00	0.00	0.00
3,100.00	8.51	217.38	3,072.80	-301.78	-230.56	-291.58	0.00	0.00	0.00
3,200.00	8.51	217.38	3,171.69	-313.54	-239.54	-302.94	0.00	0.00	0.00
3,300.00	8.51	217.38	3,270.59	-325.29	-248.53	-314.30	0.00	0.00	0.00
3,400.00	8.51	217.38	3,369.49	-337.05	-257.51	-325.66	0.00	0.00	0.00
3,500.00	8.51	217.38	3,468.39	-348.81	-266.49	-337.02	0.00	0.00	0.00
3,600.00	8.51	217.38	3,567.29	-360.56	-275.47	-348.38	0.00	0.00	0.00
3,668.33	8.51	217.38	3,634.87	-368.60	-281.61	-356.14	0.00	0.00	0.00
3,700.00	8.03	217.38	3,666.21	-372.22	-284.38	-359.64	1.50	-1.50	0.00
3,800.00	6.53	217.38	3,765.40	-382.29	-292.07	-369.37	1.50	-1.50	0.00
3,900.00	5.03	217.38	3,864.89	-390.30	-298.19	-377.10	1.50	-1.50	0.00
4,000.00	3.53	217.38	3,964.61	-396.23	-302.72	-382.84	1.50	-1.50	0.00
4,007.41	3.42	217.38	3,972.00	-396.59	-303.00	-383.18	1.50	-1.50	0.00
Parkman									
4,100.00	2.03	217.38	4,064.49	-400.09	-305.67	-386.57	1.50	-1.50	0.00
4,200.00	0.53	217.38	4,164.46	-401.87	-307.03	-388.29	1.50	-1.50	0.00
4,235.54	0.00	0.00	4,200.00	-402.00	-307.13	-388.41	1.50	-1.50	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 40N-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4962.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4962.00usft (D Rig)
Site:	2N-67W-10 Butterball 4-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 40N-33HZ	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	4,264.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
4,400.00	0.00	0.00	4,364.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
4,432.54	0.00	0.00	4,397.00	-402.00	-307.13	-388.41	0.00	0.00	0.00
Sussex									
4,500.00	0.00	0.00	4,464.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
4,600.00	0.00	0.00	4,564.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
4,700.00	0.00	0.00	4,664.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
4,800.00	0.00	0.00	4,764.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
4,900.00	0.00	0.00	4,864.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,000.00	0.00	0.00	4,964.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,100.00	0.00	0.00	5,064.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,200.00	0.00	0.00	5,164.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,300.00	0.00	0.00	5,264.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,400.00	0.00	0.00	5,364.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,500.00	0.00	0.00	5,464.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,600.00	0.00	0.00	5,564.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,700.00	0.00	0.00	5,664.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,800.00	0.00	0.00	5,764.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
5,900.00	0.00	0.00	5,864.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,000.00	0.00	0.00	5,964.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,100.00	0.00	0.00	6,064.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,200.00	0.00	0.00	6,164.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,300.00	0.00	0.00	6,264.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,400.00	0.00	0.00	6,364.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,500.00	0.00	0.00	6,464.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,600.00	0.00	0.00	6,564.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,700.00	0.00	0.00	6,664.46	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,776.52	0.00	0.00	6,740.98	-402.00	-307.13	-388.41	0.00	0.00	0.00
6,800.00	2.11	359.63	6,764.45	-401.57	-307.13	-387.98	9.00	9.00	0.00
6,900.00	11.11	359.63	6,863.69	-390.06	-307.21	-376.48	9.00	9.00	0.00
7,000.00	20.11	359.63	6,959.90	-363.18	-307.38	-349.62	9.00	9.00	0.00
7,100.00	29.11	359.63	7,050.72	-321.57	-307.66	-308.04	9.00	9.00	0.00
7,200.00	38.11	359.63	7,133.91	-266.27	-308.02	-252.77	9.00	9.00	0.00
7,233.88	41.16	359.63	7,160.00	-244.66	-308.16	-231.18	9.00	9.00	0.00
Sharon Springs									
7,300.00	47.11	359.63	7,207.43	-198.64	-308.46	-185.18	9.00	9.00	0.00
7,354.88	52.05	359.63	7,243.00	-156.87	-308.73	-143.44	9.00	9.00	0.00
Niobrara									
7,400.00	56.11	359.63	7,269.46	-120.34	-308.97	-106.93	9.00	9.00	0.00
7,458.91	61.41	359.63	7,300.00	-69.99	-309.30	-56.62	9.00	9.00	0.00
Nio B									
7,500.00	65.11	359.63	7,318.48	-33.30	-309.54	-19.95	9.00	9.00	0.00
7,598.97	74.02	359.63	7,353.00	59.35	-310.14	72.64	9.00	9.00	0.00
Nio C									
7,600.00	74.11	359.63	7,353.28	60.34	-310.15	73.63	9.00	9.00	0.00
7,700.00	83.11	359.63	7,373.01	158.27	-310.79	171.50	9.00	9.00	0.00
7,781.74	90.47	359.63	7,377.58	239.82	-311.32	253.00	9.00	9.00	0.00
Top of Production - BUTTERBALL 40N-33HZ_PHL									
7,800.00	90.47	359.63	7,377.43	258.08	-311.44	271.24	0.00	0.00	0.00
7,900.00	90.47	359.63	7,376.61	358.08	-312.09	371.17	0.00	0.00	0.00
8,000.00	90.47	359.63	7,375.79	458.07	-312.75	471.10	0.00	0.00	0.00
8,100.00	90.47	359.63	7,374.97	558.07	-313.40	571.03	0.00	0.00	0.00
8,200.00	90.47	359.63	7,374.15	658.06	-314.05	670.96	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 40N-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4962.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4962.00usft (D Rig)
Site:	2N-67W-10 Butterball 4-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 40N-33HZ	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)	
8,300.00	90.47	359.63	7,373.33	758.06	-314.71	770.89	0.00	0.00	0.00	
8,400.00	90.47	359.63	7,372.51	858.05	-315.36	870.82	0.00	0.00	0.00	
8,500.00	90.47	359.63	7,371.69	958.04	-316.01	970.75	0.00	0.00	0.00	
8,600.00	90.47	359.63	7,370.87	1,058.04	-316.67	1,070.68	0.00	0.00	0.00	
8,700.00	90.47	359.63	7,370.05	1,158.03	-317.32	1,170.61	0.00	0.00	0.00	
8,800.00	90.47	359.63	7,369.23	1,258.03	-317.97	1,270.54	0.00	0.00	0.00	
8,900.00	90.47	359.63	7,368.41	1,358.02	-318.63	1,370.47	0.00	0.00	0.00	
9,000.00	90.47	359.63	7,367.59	1,458.02	-319.28	1,470.40	0.00	0.00	0.00	
9,100.00	90.47	359.63	7,366.77	1,558.01	-319.93	1,570.33	0.00	0.00	0.00	
9,200.00	90.47	359.63	7,365.95	1,658.01	-320.58	1,670.26	0.00	0.00	0.00	
9,300.00	90.47	359.63	7,365.12	1,758.00	-321.24	1,770.19	0.00	0.00	0.00	
9,400.00	90.47	359.63	7,364.30	1,857.99	-321.89	1,870.12	0.00	0.00	0.00	
9,500.00	90.47	359.63	7,363.48	1,957.99	-322.54	1,970.05	0.00	0.00	0.00	
9,600.00	90.47	359.63	7,362.66	2,057.98	-323.20	2,069.98	0.00	0.00	0.00	
9,700.00	90.47	359.63	7,361.84	2,157.98	-323.85	2,169.91	0.00	0.00	0.00	
9,800.00	90.47	359.63	7,361.02	2,257.97	-324.50	2,269.84	0.00	0.00	0.00	
9,900.00	90.47	359.63	7,360.20	2,357.97	-325.16	2,369.77	0.00	0.00	0.00	
10,000.00	90.47	359.63	7,359.38	2,457.96	-325.81	2,469.70	0.00	0.00	0.00	
10,100.00	90.47	359.63	7,358.56	2,557.96	-326.46	2,569.63	0.00	0.00	0.00	
10,200.00	90.47	359.63	7,357.74	2,657.95	-327.12	2,669.56	0.00	0.00	0.00	
10,300.00	90.47	359.63	7,356.92	2,757.95	-327.77	2,769.49	0.00	0.00	0.00	
10,400.00	90.47	359.63	7,356.10	2,857.94	-328.42	2,869.42	0.00	0.00	0.00	
10,500.00	90.47	359.63	7,355.28	2,957.93	-329.08	2,969.35	0.00	0.00	0.00	
10,600.00	90.47	359.63	7,354.46	3,057.93	-329.73	3,069.28	0.00	0.00	0.00	
10,700.00	90.47	359.63	7,353.64	3,157.92	-330.38	3,169.21	0.00	0.00	0.00	
10,800.00	90.47	359.63	7,352.82	3,257.92	-331.03	3,269.14	0.00	0.00	0.00	
10,900.00	90.47	359.63	7,352.00	3,357.91	-331.69	3,369.07	0.00	0.00	0.00	
11,000.00	90.47	359.63	7,351.18	3,457.91	-332.34	3,469.00	0.00	0.00	0.00	
11,100.00	90.47	359.63	7,350.36	3,557.90	-332.99	3,568.93	0.00	0.00	0.00	
11,200.00	90.47	359.63	7,349.54	3,657.90	-333.65	3,668.86	0.00	0.00	0.00	
11,300.00	90.47	359.63	7,348.72	3,757.89	-334.30	3,768.79	0.00	0.00	0.00	
11,400.00	90.47	359.63	7,347.90	3,857.88	-334.95	3,868.72	0.00	0.00	0.00	
11,500.00	90.47	359.63	7,347.08	3,957.88	-335.61	3,968.65	0.00	0.00	0.00	
11,600.00	90.47	359.63	7,346.26	4,057.87	-336.26	4,068.58	0.00	0.00	0.00	
11,700.00	90.47	359.63	7,345.44	4,157.87	-336.91	4,168.51	0.00	0.00	0.00	
11,800.00	90.47	359.63	7,344.62	4,257.86	-337.57	4,268.44	0.00	0.00	0.00	
11,900.00	90.47	359.63	7,343.80	4,357.86	-338.22	4,368.37	0.00	0.00	0.00	
12,000.00	90.47	359.63	7,342.98	4,457.85	-338.87	4,468.30	0.00	0.00	0.00	
12,100.00	90.47	359.63	7,342.16	4,557.85	-339.52	4,568.23	0.00	0.00	0.00	
12,200.00	90.47	359.63	7,341.34	4,657.84	-340.18	4,668.16	0.00	0.00	0.00	
12,300.00	90.47	359.63	7,340.52	4,757.84	-340.83	4,768.09	0.00	0.00	0.00	
12,400.00	90.47	359.63	7,339.70	4,857.83	-341.48	4,868.02	0.00	0.00	0.00	
12,500.00	90.47	359.63	7,338.88	4,957.82	-342.14	4,967.95	0.00	0.00	0.00	
12,600.00	90.47	359.63	7,338.06	5,057.82	-342.79	5,067.88	0.00	0.00	0.00	
12,700.00	90.47	359.63	7,337.23	5,157.81	-343.44	5,167.81	0.00	0.00	0.00	
12,800.00	90.47	359.63	7,336.41	5,257.81	-344.10	5,267.74	0.00	0.00	0.00	
12,900.00	90.47	359.63	7,335.59	5,357.80	-344.75	5,367.67	0.00	0.00	0.00	
13,000.00	90.47	359.63	7,334.77	5,457.80	-345.40	5,467.60	0.00	0.00	0.00	
13,100.00	90.47	359.63	7,333.95	5,557.79	-346.06	5,567.53	0.00	0.00	0.00	
13,200.00	90.47	359.63	7,333.13	5,657.79	-346.71	5,667.46	0.00	0.00	0.00	
13,300.00	90.47	359.63	7,332.31	5,757.78	-347.36	5,767.39	0.00	0.00	0.00	
13,400.00	90.47	359.63	7,331.49	5,857.77	-348.02	5,867.32	0.00	0.00	0.00	
13,500.00	90.47	359.63	7,330.67	5,957.77	-348.67	5,967.25	0.00	0.00	0.00	
13,600.00	90.47	359.63	7,329.85	6,057.76	-349.32	6,067.18	0.00	0.00	0.00	

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 2N-67W-10 Butterball 4-10HZ Pad
Well: BUTTERBALL 40N-33HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well BUTTERBALL 40N-33HZ
TVD Reference: RKB @ 4962.00usft (D Rig)
MD Reference: RKB @ 4962.00usft (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)
13,700.00	90.47	359.63	7,329.03	6,157.76	-349.97	6,167.11	0.00	0.00	0.00
13,800.00	90.47	359.63	7,328.21	6,257.75	-350.63	6,267.04	0.00	0.00	0.00
13,900.00	90.47	359.63	7,327.39	6,357.75	-351.28	6,366.97	0.00	0.00	0.00
14,000.00	90.47	359.63	7,326.57	6,457.74	-351.93	6,466.90	0.00	0.00	0.00
14,100.00	90.47	359.63	7,325.75	6,557.74	-352.59	6,566.83	0.00	0.00	0.00
14,200.00	90.47	359.63	7,324.93	6,657.73	-353.24	6,666.76	0.00	0.00	0.00
14,300.00	90.47	359.63	7,324.11	6,757.73	-353.89	6,766.69	0.00	0.00	0.00
14,400.00	90.47	359.63	7,323.29	6,857.72	-354.55	6,866.62	0.00	0.00	0.00
14,500.00	90.47	359.63	7,322.47	6,957.71	-355.20	6,966.55	0.00	0.00	0.00
14,600.00	90.47	359.63	7,321.65	7,057.71	-355.85	7,066.48	0.00	0.00	0.00
14,700.00	90.47	359.63	7,320.83	7,157.70	-356.51	7,166.41	0.00	0.00	0.00
14,800.00	90.47	359.63	7,320.01	7,257.70	-357.16	7,266.34	0.00	0.00	0.00
14,900.00	90.47	359.63	7,319.19	7,357.69	-357.81	7,366.27	0.00	0.00	0.00
15,000.00	90.47	359.63	7,318.37	7,457.69	-358.47	7,466.20	0.00	0.00	0.00
15,100.00	90.47	359.63	7,317.55	7,557.68	-359.12	7,566.13	0.00	0.00	0.00
15,200.00	90.47	359.63	7,316.73	7,657.68	-359.77	7,666.06	0.00	0.00	0.00
15,300.00	90.47	359.63	7,315.91	7,757.67	-360.42	7,765.99	0.00	0.00	0.00
15,400.00	90.47	359.63	7,315.09	7,857.67	-361.08	7,865.92	0.00	0.00	0.00
15,500.00	90.47	359.63	7,314.27	7,957.66	-361.73	7,965.85	0.00	0.00	0.00
15,600.00	90.47	359.63	7,313.45	8,057.65	-362.38	8,065.78	0.00	0.00	0.00
15,700.00	90.47	359.63	7,312.63	8,157.65	-363.04	8,165.71	0.00	0.00	0.00
15,800.00	90.47	359.63	7,311.81	8,257.64	-363.69	8,265.64	0.00	0.00	0.00
15,900.00	90.47	359.63	7,310.99	8,357.64	-364.34	8,365.57	0.00	0.00	0.00
16,000.00	90.47	359.63	7,310.17	8,457.63	-365.00	8,465.50	0.00	0.00	0.00
16,020.10	90.47	359.63	7,310.00	8,477.73	-365.13	8,485.59	0.00	0.00	0.00
BUTTERBALL 40N-33HZ_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 40N-33HZ - plan hits target center	0.00	0.00	7,310.00	8,477.73	-365.13	14,593,003.00	1,672,305.00	40.181930	-104.885831
- Point									
BUTTERBALL 40N-33HZ - plan hits target center	0.00	0.00	7,377.58	239.82	-311.32	14,584,765.16	1,672,369.51	40.159308	-104.885638
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,509.70	1,500.00	9 5/8"	9-5/8	13-1/2
7,781.74	7,377.58	Top of Production	5-1/2	8-1/2

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well BUTTERBALL 40N-33HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 4962.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 4962.00usft (D Rig)
Site:	2N-67W-10 Butterball 4-10HZ Pad	North Reference:	True
Well:	BUTTERBALL 40N-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Formations						
	Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
	1,047.62	-3,919.00	Fox Hills		0.00	
	4,007.41	-990.00	Parkman			
	4,432.54	-565.00	Sussex			
	7,233.88	2,198.00	Sharon Springs			
	7,354.88	2,281.00	Niobrara			
	7,458.91	2,338.00	Nio B			
	7,598.97	2,391.00	Nio C			