

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_Buffalo & Badger 4E-15HZ Pad

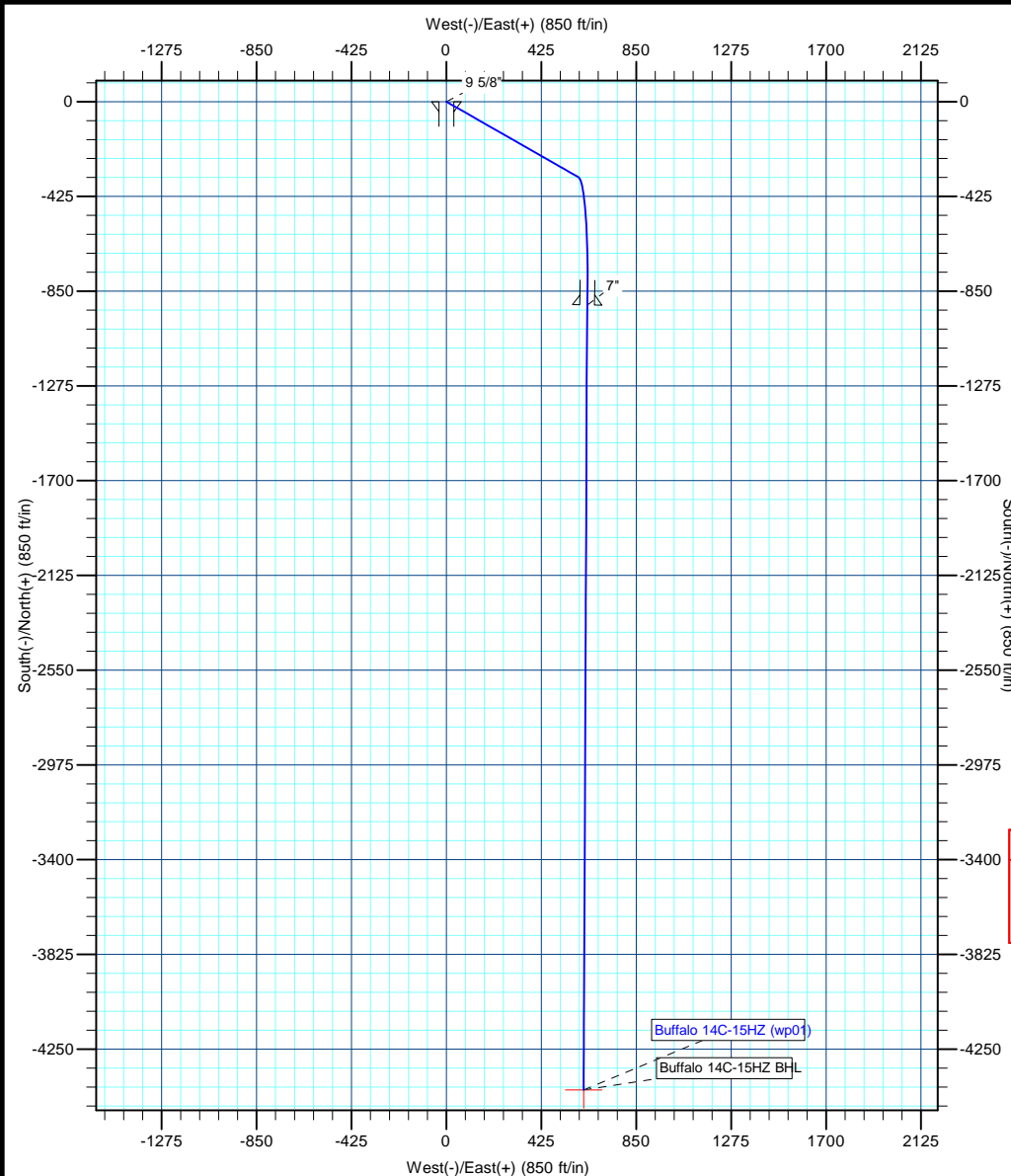
Buffalo 14C-15HZ

Buffalo 14C-15HZ

Plan: Buffalo 14C-15HZ (wp01)

Standard Planning Report

16 July, 2012



T

M

Azimuths to True North

Magnetic North: 8.81°

Magnetic Field Strength: 52809.0snT

Dip Angle: 66.70°

Date: 7/16/2012

Model: IGRF2010



Project: COLORADO NORTHERN ZONE - 83

Site: WELD_Buffalo & Badger 4E-15HZ Pad

Well: Buffalo 14C-15HZ

Wellbore: Buffalo 14C-15HZ

Section:

SHL:

Design: Buffalo 14C-15HZ (wp01)

Latitude: 40.057353

Longitude: -104.994847

GL: 5132.00

KB: GL + RKB @ 5149.00ft

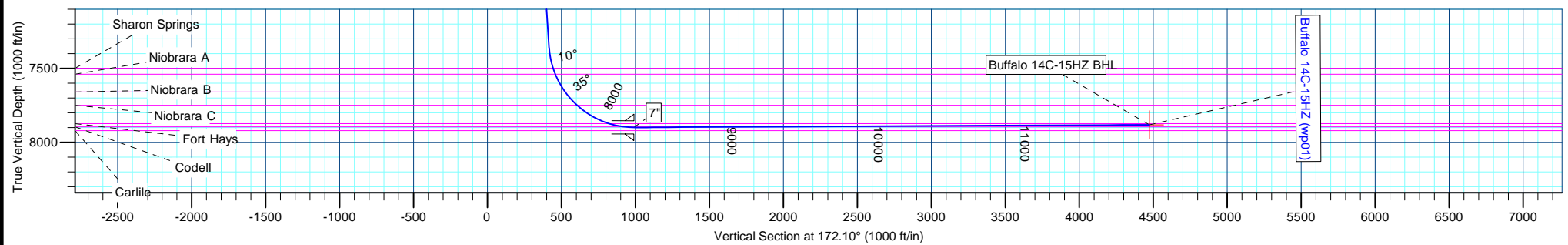
WELL DETAILS: Buffalo 14C-15HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	5132.00 Latitude	Longitude	Slot
0.00	0.00	1264141.85	3141400.65	40.057353	-104.994847	

SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00
1313.57	6.27	119.81	1312.94	-8.52	14.87	2.00	119.81	10.49
7395.50	6.27	119.81	7358.48	-338.82	591.32	0.00	0.00	416.85
8265.56	90.00	181.25	7899.00	-912.00	631.00	10.00	61.58	990.04
8369.56	90.28	180.25	7898.75	-1015.98	629.64	1.00	-74.33	1092.86
11786.15	90.28	180.25	7882.00	-4432.51	614.81	0.00	0.00	4474.94

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Buffalo 14C-15HZ BHL	7882.00	-4432.51	614.81	40.045185	-104.992651	Point

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4311.00	4329.67	Parkman
4769.00	4790.43	Sussex
5257.00	5281.37	Shannon
7499.00	7539.31	Sharon Springs
7539.00	7581.95	Niobrara A
7659.00	7719.49	Niobrara B
7749.00	7840.31	Niobrara C
7873.00	8091.89	Fort Hays
7895.00	8197.66	Codell

CASING DETAILS			
TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7899.00	8265.56	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Buffalo 14C-15HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL + RKB @ 5149.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL + RKB @ 5149.00ft
Site:	WELD_Buffalo & Badger 4E-15HZ Pad	North Reference:	True
Well:	Buffalo 14C-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Buffalo 14C-15HZ		
Design:	Buffalo 14C-15HZ (wp01)		

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		WELD_Buffalo & Badger 4E-15HZ Pad			
Site Position:		Northing:	1,264,141.85 usft	Latitude:	40.057353
From:	Lat/Long	Easting:	3,141,400.65 usft	Longitude:	-104.994847
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.33 °

Well	Buffalo 14C-15HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,264,141.84 usft	Latitude:	40.057353
	+E/-W	0.00 ft	Easting:	3,141,400.65 usft	Longitude:	-104.994847
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,132.00 ft

Wellbore	Buffalo 14C-15HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/16/2012	8.81	66.70	52,809

Design	Buffalo 14C-15HZ (wp01)				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	172.10	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,313.57	6.27	119.81	1,312.94	-8.52	14.87	2.00	2.00	0.00	119.81	
7,395.50	6.27	119.81	7,358.48	-338.82	591.32	0.00	0.00	0.00	0.00	
8,265.56	90.00	181.25	7,899.00	-912.00	631.00	10.00	9.62	7.06	61.58	
8,369.56	90.28	180.25	7,898.75	-1,015.98	629.64	1.00	0.27	-0.96	-74.33	
11,786.15	90.28	180.25	7,882.00	-4,432.51	614.81	0.00	0.00	0.00	0.00	Buffalo 14C-15HZ BH

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Buffalo 14C-15HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL + RKB @ 5149.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL + RKB @ 5149.00ft
Site:	WELD_Buffalo & Badger 4E-15HZ Pad	North Reference:	True
Well:	Buffalo 14C-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Buffalo 14C-15HZ		
Design:	Buffalo 14C-15HZ (wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	2.00	119.81	1,099.98	-0.87	1.51	1.07	2.00	2.00	0.00
1,200.00	4.00	119.81	1,199.84	-3.47	6.05	4.27	2.00	2.00	0.00
1,300.00	6.00	119.81	1,299.45	-7.80	13.62	9.60	2.00	2.00	0.00
1,313.57	6.27	119.81	1,312.94	-8.52	14.87	10.49	2.00	2.00	0.00
Start 6081.93 hold at 1313.57 MD									
1,400.00	6.27	119.81	1,398.86	-13.22	23.07	16.26	0.00	0.00	0.00
1,500.00	6.27	119.81	1,498.26	-18.65	32.55	22.94	0.00	0.00	0.00
1,600.00	6.27	119.81	1,597.66	-24.08	42.02	29.62	0.00	0.00	0.00
1,700.00	6.27	119.81	1,697.06	-29.51	51.50	36.31	0.00	0.00	0.00
1,800.00	6.27	119.81	1,796.46	-34.94	60.98	42.99	0.00	0.00	0.00
1,900.00	6.27	119.81	1,895.86	-40.37	70.46	49.67	0.00	0.00	0.00
2,000.00	6.27	119.81	1,995.27	-45.80	79.94	56.35	0.00	0.00	0.00
2,100.00	6.27	119.81	2,094.67	-51.23	89.41	63.03	0.00	0.00	0.00
2,200.00	6.27	119.81	2,194.07	-56.66	98.89	69.71	0.00	0.00	0.00
2,300.00	6.27	119.81	2,293.47	-62.09	108.37	76.39	0.00	0.00	0.00
2,400.00	6.27	119.81	2,392.87	-67.53	117.85	83.08	0.00	0.00	0.00
2,500.00	6.27	119.81	2,492.27	-72.96	127.33	89.76	0.00	0.00	0.00
2,600.00	6.27	119.81	2,591.68	-78.39	136.80	96.44	0.00	0.00	0.00
2,700.00	6.27	119.81	2,691.08	-83.82	146.28	103.12	0.00	0.00	0.00
2,800.00	6.27	119.81	2,790.48	-89.25	155.76	109.80	0.00	0.00	0.00
2,900.00	6.27	119.81	2,889.88	-94.68	165.24	116.48	0.00	0.00	0.00
3,000.00	6.27	119.81	2,989.28	-100.11	174.72	123.16	0.00	0.00	0.00
3,100.00	6.27	119.81	3,088.68	-105.54	184.19	129.85	0.00	0.00	0.00
3,200.00	6.27	119.81	3,188.09	-110.97	193.67	136.53	0.00	0.00	0.00
3,300.00	6.27	119.81	3,287.49	-116.40	203.15	143.21	0.00	0.00	0.00
3,400.00	6.27	119.81	3,386.89	-121.83	212.63	149.89	0.00	0.00	0.00
3,500.00	6.27	119.81	3,486.29	-127.26	222.11	156.57	0.00	0.00	0.00
3,600.00	6.27	119.81	3,585.69	-132.69	231.58	163.25	0.00	0.00	0.00
3,700.00	6.27	119.81	3,685.09	-138.13	241.06	169.94	0.00	0.00	0.00
3,800.00	6.27	119.81	3,784.49	-143.56	250.54	176.62	0.00	0.00	0.00
3,900.00	6.27	119.81	3,883.90	-148.99	260.02	183.30	0.00	0.00	0.00
4,000.00	6.27	119.81	3,983.30	-154.42	269.50	189.98	0.00	0.00	0.00
4,100.00	6.27	119.81	4,082.70	-159.85	278.97	196.66	0.00	0.00	0.00
4,200.00	6.27	119.81	4,182.10	-165.28	288.45	203.34	0.00	0.00	0.00
4,300.00	6.27	119.81	4,281.50	-170.71	297.93	210.02	0.00	0.00	0.00
4,329.67	6.27	119.81	4,311.00	-172.32	300.74	212.01	0.00	0.00	0.00
Parkman									
4,400.00	6.27	119.81	4,380.90	-176.14	307.41	216.71	0.00	0.00	0.00
4,500.00	6.27	119.81	4,480.31	-181.57	316.89	223.39	0.00	0.00	0.00
4,600.00	6.27	119.81	4,579.71	-187.00	326.36	230.07	0.00	0.00	0.00
4,700.00	6.27	119.81	4,679.11	-192.43	335.84	236.75	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Buffalo 14C-15HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL + RKB @ 5149.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL + RKB @ 5149.00ft
Site:	WELD_Buffalo & Badger 4E-15HZ Pad	North Reference:	True
Well:	Buffalo 14C-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Buffalo 14C-15HZ		
Design:	Buffalo 14C-15HZ (wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,790.43	6.27	119.81	4,769.00	-197.34	344.41	242.79	0.00	0.00	0.00
Sussex									
4,800.00	6.27	119.81	4,778.51	-197.86	345.32	243.43	0.00	0.00	0.00
4,900.00	6.27	119.81	4,877.91	-203.30	354.80	250.11	0.00	0.00	0.00
5,000.00	6.27	119.81	4,977.31	-208.73	364.28	256.79	0.00	0.00	0.00
5,100.00	6.27	119.81	5,076.72	-214.16	373.75	263.48	0.00	0.00	0.00
5,200.00	6.27	119.81	5,176.12	-219.59	383.23	270.16	0.00	0.00	0.00
5,281.37	6.27	119.81	5,257.00	-224.01	390.94	275.59	0.00	0.00	0.00
Shannon									
5,300.00	6.27	119.81	5,275.52	-225.02	392.71	276.84	0.00	0.00	0.00
5,400.00	6.27	119.81	5,374.92	-230.45	402.19	283.52	0.00	0.00	0.00
5,500.00	6.27	119.81	5,474.32	-235.88	411.67	290.20	0.00	0.00	0.00
5,600.00	6.27	119.81	5,573.72	-241.31	421.14	296.88	0.00	0.00	0.00
5,700.00	6.27	119.81	5,673.12	-246.74	430.62	303.57	0.00	0.00	0.00
5,800.00	6.27	119.81	5,772.53	-252.17	440.10	310.25	0.00	0.00	0.00
5,900.00	6.27	119.81	5,871.93	-257.60	449.58	316.93	0.00	0.00	0.00
6,000.00	6.27	119.81	5,971.33	-263.03	459.06	323.61	0.00	0.00	0.00
6,100.00	6.27	119.81	6,070.73	-268.47	468.54	330.29	0.00	0.00	0.00
6,200.00	6.27	119.81	6,170.13	-273.90	478.01	336.97	0.00	0.00	0.00
6,300.00	6.27	119.81	6,269.53	-279.33	487.49	343.65	0.00	0.00	0.00
6,400.00	6.27	119.81	6,368.94	-284.76	496.97	350.34	0.00	0.00	0.00
6,500.00	6.27	119.81	6,468.34	-290.19	506.45	357.02	0.00	0.00	0.00
6,600.00	6.27	119.81	6,567.74	-295.62	515.93	363.70	0.00	0.00	0.00
6,700.00	6.27	119.81	6,667.14	-301.05	525.40	370.38	0.00	0.00	0.00
6,800.00	6.27	119.81	6,766.54	-306.48	534.88	377.06	0.00	0.00	0.00
6,900.00	6.27	119.81	6,865.94	-311.91	544.36	383.74	0.00	0.00	0.00
7,000.00	6.27	119.81	6,965.35	-317.34	553.84	390.42	0.00	0.00	0.00
7,100.00	6.27	119.81	7,064.75	-322.77	563.32	397.11	0.00	0.00	0.00
7,200.00	6.27	119.81	7,164.15	-328.20	572.79	403.79	0.00	0.00	0.00
7,300.00	6.27	119.81	7,263.55	-333.63	582.27	410.47	0.00	0.00	0.00
7,395.50	6.27	119.81	7,358.48	-338.82	591.32	416.85	0.00	0.00	0.00
Start DLS 10.00 TFO 61.58									
7,400.00	6.50	123.31	7,362.95	-339.08	591.75	417.17	10.00	5.03	77.77
7,500.00	14.51	159.35	7,461.28	-353.95	600.92	433.16	10.00	8.01	36.04
7,539.31	18.20	164.18	7,499.00	-364.47	604.33	444.05	10.00	9.39	12.28
Sharon Springs									
7,581.95	22.30	167.64	7,539.00	-378.79	607.88	458.71	10.00	9.60	8.10
Niobrara A									
7,600.00	24.05	168.76	7,555.59	-385.74	609.33	465.80	10.00	9.70	6.21
7,700.00	33.84	172.97	7,643.00	-433.48	616.73	514.10	10.00	9.80	4.22
7,719.49	35.76	173.55	7,659.00	-444.53	618.03	525.22	10.00	9.86	2.95
Niobrara B									
7,800.00	43.72	175.46	7,720.86	-495.73	622.88	576.60	10.00	9.89	2.37
7,840.31	47.72	176.21	7,749.00	-524.51	624.97	605.40	10.00	9.91	1.88
Niobrara C									
7,900.00	53.64	177.18	7,786.81	-570.58	627.62	651.40	10.00	9.92	1.61
8,000.00	63.58	178.50	7,838.83	-655.78	630.78	736.22	10.00	9.94	1.33
8,091.89	72.72	179.53	7,873.00	-740.96	632.22	820.79	10.00	9.95	1.12
Fort Hays									
8,100.00	73.52	179.61	7,875.36	-748.72	632.28	828.49	10.00	9.95	1.05
8,197.66	83.24	180.59	7,895.00	-844.27	632.09	923.10	10.00	9.95	1.00
Codell									
8,200.00	83.47	180.62	7,895.27	-846.59	632.07	925.40	10.00	9.95	0.97

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Buffalo 14C-15HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL + RKB @ 5149.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL + RKB @ 5149.00ft
Site:	WELD_Buffalo & Badger 4E-15HZ Pad	North Reference:	True
Well:	Buffalo 14C-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Buffalo 14C-15HZ		
Design:	Buffalo 14C-15HZ (wp01)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,265.56	90.00	181.25	7,899.00	-912.00	631.00	990.04	10.00	9.95	0.96	
Start DLS 1.00 TFO -74.33 - 7"										
8,300.00	90.09	180.92	7,898.97	-946.43	630.35	1,024.06	1.00	0.27	-0.96	
8,369.56	90.28	180.25	7,898.75	-1,015.98	629.64	1,092.86	1.00	0.27	-0.96	
Start 3416.59 hold at 8369.56 MD										
8,400.00	90.28	180.25	7,898.60	-1,046.43	629.51	1,122.99	0.00	0.00	0.00	
8,500.00	90.28	180.25	7,898.11	-1,146.42	629.07	1,221.98	0.00	0.00	0.00	
8,600.00	90.28	180.25	7,897.62	-1,246.42	628.64	1,320.97	0.00	0.00	0.00	
8,700.00	90.28	180.25	7,897.13	-1,346.42	628.21	1,419.96	0.00	0.00	0.00	
8,800.00	90.28	180.25	7,896.64	-1,446.42	627.77	1,518.95	0.00	0.00	0.00	
8,900.00	90.28	180.25	7,896.15	-1,546.42	627.34	1,617.94	0.00	0.00	0.00	
9,000.00	90.28	180.25	7,895.66	-1,646.41	626.90	1,716.93	0.00	0.00	0.00	
9,100.00	90.28	180.25	7,895.17	-1,746.41	626.47	1,815.92	0.00	0.00	0.00	
9,200.00	90.28	180.25	7,894.68	-1,846.41	626.04	1,914.91	0.00	0.00	0.00	
9,300.00	90.28	180.25	7,894.19	-1,946.41	625.60	2,013.90	0.00	0.00	0.00	
9,400.00	90.28	180.25	7,893.69	-2,046.40	625.17	2,112.89	0.00	0.00	0.00	
9,500.00	90.28	180.25	7,893.20	-2,146.40	624.73	2,211.88	0.00	0.00	0.00	
9,600.00	90.28	180.25	7,892.71	-2,246.40	624.30	2,310.87	0.00	0.00	0.00	
9,700.00	90.28	180.25	7,892.22	-2,346.40	623.87	2,409.86	0.00	0.00	0.00	
9,800.00	90.28	180.25	7,891.73	-2,446.40	623.43	2,508.85	0.00	0.00	0.00	
9,900.00	90.28	180.25	7,891.24	-2,546.39	623.00	2,607.84	0.00	0.00	0.00	
10,000.00	90.28	180.25	7,890.75	-2,646.39	622.56	2,706.83	0.00	0.00	0.00	
10,100.00	90.28	180.25	7,890.26	-2,746.39	622.13	2,805.82	0.00	0.00	0.00	
10,200.00	90.28	180.25	7,889.77	-2,846.39	621.70	2,904.81	0.00	0.00	0.00	
10,300.00	90.28	180.25	7,889.28	-2,946.39	621.26	3,003.80	0.00	0.00	0.00	
10,400.00	90.28	180.25	7,888.79	-3,046.38	620.83	3,102.79	0.00	0.00	0.00	
10,500.00	90.28	180.25	7,888.30	-3,146.38	620.39	3,201.78	0.00	0.00	0.00	
10,600.00	90.28	180.25	7,887.81	-3,246.38	619.96	3,300.77	0.00	0.00	0.00	
10,700.00	90.28	180.25	7,887.32	-3,346.38	619.53	3,399.76	0.00	0.00	0.00	
10,800.00	90.28	180.25	7,886.83	-3,446.37	619.09	3,498.75	0.00	0.00	0.00	
10,900.00	90.28	180.25	7,886.34	-3,546.37	618.66	3,597.74	0.00	0.00	0.00	
11,000.00	90.28	180.25	7,885.85	-3,646.37	618.22	3,696.73	0.00	0.00	0.00	
11,100.00	90.28	180.25	7,885.36	-3,746.37	617.79	3,795.72	0.00	0.00	0.00	
11,200.00	90.28	180.25	7,884.87	-3,846.37	617.35	3,894.71	0.00	0.00	0.00	
11,300.00	90.28	180.25	7,884.38	-3,946.36	616.92	3,993.70	0.00	0.00	0.00	
11,400.00	90.28	180.25	7,883.89	-4,046.36	616.49	4,092.69	0.00	0.00	0.00	
11,500.00	90.28	180.25	7,883.40	-4,146.36	616.05	4,191.68	0.00	0.00	0.00	
11,600.00	90.28	180.25	7,882.91	-4,246.36	615.62	4,290.67	0.00	0.00	0.00	
11,700.00	90.28	180.25	7,882.42	-4,346.36	615.18	4,389.66	0.00	0.00	0.00	
11,786.15	90.28	180.25	7,882.00	-4,432.51	614.81	4,474.94	0.00	0.00	0.00	
TD at 11786.15 - Buffalo 14C-15HZ BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Buffalo 14C-15HZ BHL	0.00	0.00	7,882.00	-4,432.51	614.81	1,259,712.92	3,142,040.70	40.045185	-104.992651	
- hit/miss target										
- Shape										
- plan hits target center										
- Point										

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Buffalo 14C-15HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL + RKB @ 5149.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL + RKB @ 5149.00ft
Site:	WELD_Buffalo & Badger 4E-15HZ Pad	North Reference:	True
Well:	Buffalo 14C-15HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Buffalo 14C-15HZ		
Design:	Buffalo 14C-15HZ (wp01)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
900.00	900.00	9 5/8"	9-5/8	12-1/4	
8,265.56	7,899.00	7"	7	8-3/4	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,329.67	4,311.00	Parkman				
4,790.43	4,769.00	Sussex				
5,281.37	5,257.00	Shannon				
7,539.31	7,499.00	Sharon Springs				
7,581.95	7,539.00	Niobrara A				
7,719.49	7,659.00	Niobrara B				
7,840.31	7,749.00	Niobrara C				
8,091.89	7,873.00	Fort Hays				
8,197.66	7,895.00	Codell				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.00	1,000.00	0.00	0.00	Start Build 2.00	
1,313.57	1,312.94	-8.52	14.87	Start 6081.93 hold at 1313.57 MD	
7,395.50	7,358.48	-338.82	591.32	Start DLS 10.00 TFO 61.58	
8,265.56	7,899.00	-912.00	631.00	Start DLS 1.00 TFO -74.33	
8,369.56	7,898.75	-1,015.98	629.64	Start 3416.59 hold at 8369.56 MD	
11,786.15	7,882.00	-4,432.51	614.81	TD at 11786.15	