



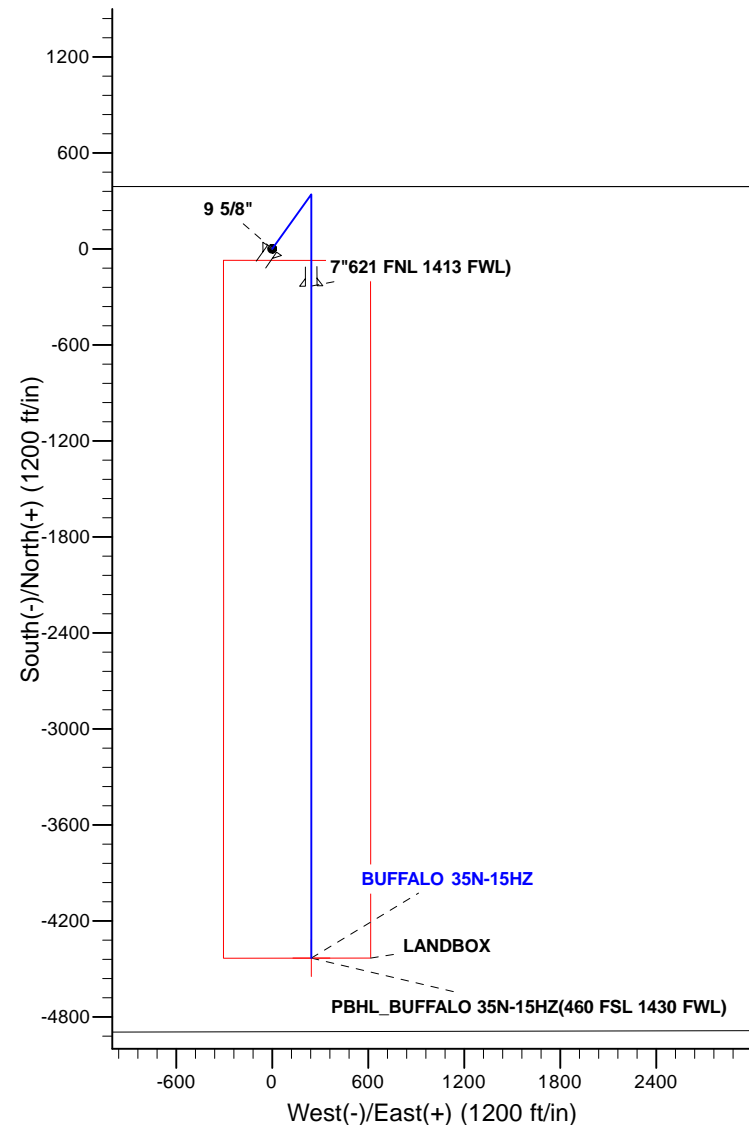
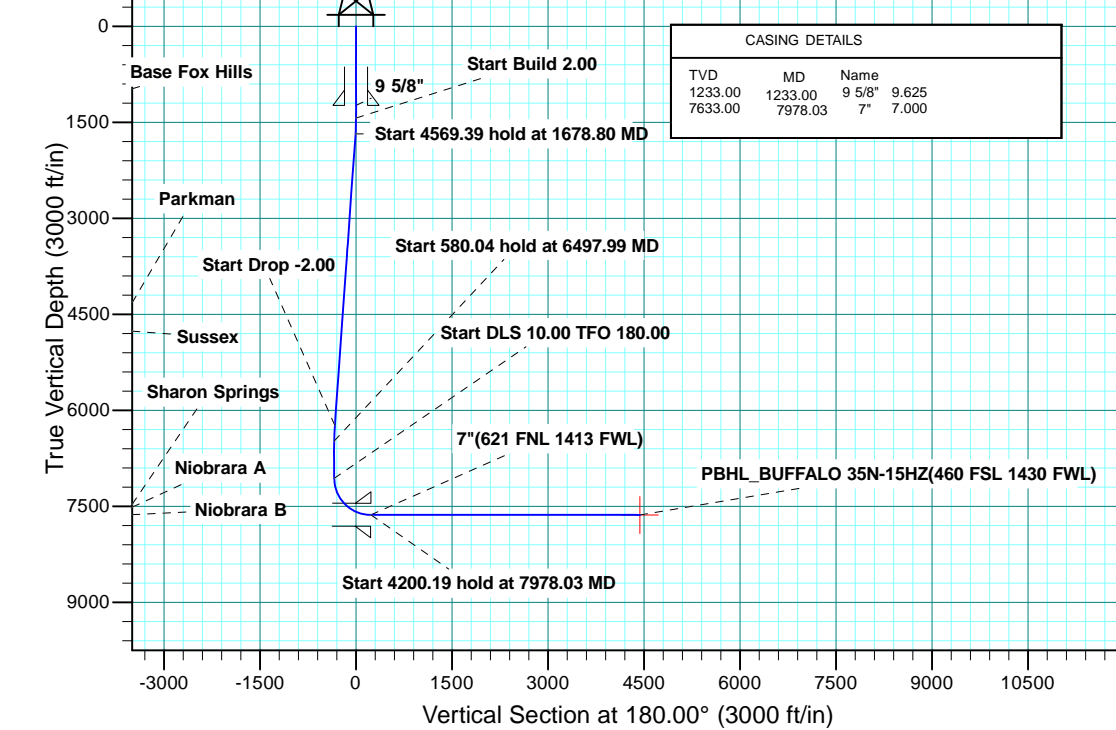
Project: COLORADO NORTHERN ZONE - 83  
Site: BUFFALO & BADGER 4E-15HZ PAD  
Well: BUFFALO 35N-15HZ  
Wellbore: OH  
Design: PLAN #2 PRELIMINARY



WELL DETAILS: BUFFALO 35N-15HZ									
GL 5132 KB 21 @ 5153.00ft (UNIT 403)									
		+N-S	+E-W	Northing	Easting	Latitude		Longitude	
		0.00	0.00	1264140.94	3141370.70	40.0573510		-104.9949540	
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	
1429.00	0.00	0.00	1429.00	0.00	0.00	0.00	0.00	0.00	
1678.80	5.00	35.66	1678.49	8.84	6.35	2.00	35.66	-8.84	
6248.19	5.00	35.66	6230.51	332.16	238.33	0.00	0.00	-332.16	
6497.99	0.00	0.00	6480.00	341.00	244.68	2.00	180.00	-341.00	
7078.03	0.00	0.00	7060.04	341.00	244.68	0.00	0.00	-341.00	
7978.03	90.00	180.00	7633.00	-231.96	244.68	10.00	180.00	231.96	
12178.22	90.00	180.00	7633.00	-4432.14	244.68	0.00	0.00	4432.14	PBHL_BUFFALO 35N-15HZ(460 FSL 1430 FWL)
DESIGN TARGET DETAILS									
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude		Longitude	Shape
PBHL 7633.00		-4432.14	244.68	1259710.28	3141640.62	40.0451840		-104.9940800	Point
- plan hits target center									

PROJECT DETAILS: COLORADO NORTHERN ZONE - 83									
Geodetic System: US State Plane 1983									
Datum: North American Datum 1983									
Ellipsoid: GRS 1980									
Zone: Colorado Northern Zone									
Location: SECTION 15 T1N R68W									
System Datum: Mean Sea Level									

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	Inc	
973.00	973.00	Base Fox Hills	0.00	
4315.00	4325.37	Parkman	5.00	
4761.00	4773.07	Sussex	5.00	
7467.00	7530.61	Sharon Springs	45.26	
7511.00	7597.16	Niobrara A	51.91	
7628.00	7902.30	Niobrara B	82.43	



Plan: PLAN #2 PRELIMINARY (BUFFALO 35N-15HZ/OH)

Created By: R.Scott Date: 11:03, October 03 2014



**Scientific Drilling**

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
BUFFALO & BADGER 4E-15HZ PAD  
BUFFALO 35N-15HZ**

**OH**

**Plan: PLAN #2 PRELIMINARY**

## **Standard Planning Report**

**03 October, 2014**

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BUFFALO 35N-15HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Site:</b>	BUFFALO & BADGER 4E-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BUFFALO 35N-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #2 PRELIMINARY		

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	BUFFALO & BADGER 4E-15HZ PAD, SECTION 15 T1N R68W			
<b>Site Position:</b>		<b>Northing:</b>	1,264,140.95 usft	<b>Latitude:</b> 40.0573510
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,141,370.70 usft	<b>Longitude:</b> -104.9949540
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> 0.33 °

<b>Well</b>	BUFFALO 35N-15HZ, 389 FNL 1169 FWL			
<b>Well Position</b>	<b>+N/-S</b>	-0.01 ft	<b>Northing:</b>	1,264,140.94 usft
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,141,370.70 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	0.00 ft
			<b>Ground Level:</b>	5,132.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2013	6/5/2014	8.61	66.62	52,526

<b>Design</b>	PLAN #2 PRELIMINARY			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	180.00

<b>Plan Sections</b>										
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	
1,429.00	0.00	0.00	1,429.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,678.80	5.00	35.66	1,678.49	8.84	6.35	2.00	2.00	0.00	35.66	
6,248.19	5.00	35.66	6,230.52	332.16	238.33	0.00	0.00	0.00	0.00	
6,497.99	0.00	0.00	6,480.00	341.00	244.68	2.00	-2.00	0.00	180.00	
7,078.03	0.00	0.00	7,060.04	341.00	244.68	0.00	0.00	0.00	0.00	
7,978.03	90.00	180.00	7,633.00	-231.96	244.68	10.00	10.00	20.00	180.00	
12,178.22	90.00	180.00	7,633.00	-4,432.14	244.68	0.00	0.00	0.00	0.00	PBHL_BUFFALO 35N

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BUFFALO 35N-15HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Site:</b>	BUFFALO & BADGER 4E-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BUFFALO 35N-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #2 PRELIMINARY		

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
973.00	0.00	0.00	973.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Base Fox Hills</b>									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,233.00	0.00	0.00	1,233.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,429.00	0.00	0.00	1,429.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
1,500.00	1.42	35.66	1,499.99	0.71	0.51	-0.71	2.00	2.00	0.00
1,600.00	3.42	35.66	1,599.90	4.15	2.97	-4.15	2.00	2.00	0.00
1,678.80	5.00	35.66	1,678.49	8.84	6.35	-8.84	2.00	2.00	0.00
<b>Start 4569.39 hold at 1678.80 MD</b>									
1,700.00	5.00	35.66	1,699.60	10.34	7.42	-10.34	0.00	0.00	0.00
1,800.00	5.00	35.66	1,799.22	17.42	12.50	-17.42	0.00	0.00	0.00
1,900.00	5.00	35.66	1,898.84	24.49	17.58	-24.49	0.00	0.00	0.00
2,000.00	5.00	35.66	1,998.46	31.57	22.65	-31.57	0.00	0.00	0.00
2,100.00	5.00	35.66	2,098.08	38.65	27.73	-38.65	0.00	0.00	0.00
2,200.00	5.00	35.66	2,197.70	45.72	32.81	-45.72	0.00	0.00	0.00
2,300.00	5.00	35.66	2,297.32	52.80	37.88	-52.80	0.00	0.00	0.00
2,400.00	5.00	35.66	2,396.94	59.87	42.96	-59.87	0.00	0.00	0.00
2,500.00	5.00	35.66	2,496.56	66.95	48.04	-66.95	0.00	0.00	0.00
2,600.00	5.00	35.66	2,596.18	74.02	53.11	-74.02	0.00	0.00	0.00
2,700.00	5.00	35.66	2,695.80	81.10	58.19	-81.10	0.00	0.00	0.00
2,800.00	5.00	35.66	2,795.42	88.18	63.27	-88.18	0.00	0.00	0.00
2,900.00	5.00	35.66	2,895.04	95.25	68.35	-95.25	0.00	0.00	0.00
3,000.00	5.00	35.66	2,994.66	102.33	73.42	-102.33	0.00	0.00	0.00
3,100.00	5.00	35.66	3,094.28	109.40	78.50	-109.40	0.00	0.00	0.00
3,200.00	5.00	35.66	3,193.90	116.48	83.58	-116.48	0.00	0.00	0.00
3,300.00	5.00	35.66	3,293.52	123.55	88.65	-123.55	0.00	0.00	0.00
3,400.00	5.00	35.66	3,393.14	130.63	93.73	-130.63	0.00	0.00	0.00
3,500.00	5.00	35.66	3,492.76	137.70	98.81	-137.70	0.00	0.00	0.00
3,600.00	5.00	35.66	3,592.38	144.78	103.89	-144.78	0.00	0.00	0.00
3,700.00	5.00	35.66	3,692.00	151.86	108.96	-151.86	0.00	0.00	0.00
3,800.00	5.00	35.66	3,791.62	158.93	114.04	-158.93	0.00	0.00	0.00
3,900.00	5.00	35.66	3,891.24	166.01	119.12	-166.01	0.00	0.00	0.00
4,000.00	5.00	35.66	3,990.86	173.08	124.19	-173.08	0.00	0.00	0.00
4,100.00	5.00	35.66	4,090.48	180.16	129.27	-180.16	0.00	0.00	0.00
4,200.00	5.00	35.66	4,190.10	187.23	134.35	-187.23	0.00	0.00	0.00
4,300.00	5.00	35.66	4,289.73	194.31	139.42	-194.31	0.00	0.00	0.00
4,325.37	5.00	35.66	4,315.00	196.10	140.71	-196.10	0.00	0.00	0.00
<b>Parkman</b>									

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BUFFALO 35N-15HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Site:</b>	BUFFALO & BADGER 4E-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BUFFALO 35N-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #2 PRELIMINARY		

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)
4,400.00	5.00	35.66	4,389.35	201.39	144.50	-201.39	0.00	0.00	0.00
4,500.00	5.00	35.66	4,488.97	208.46	149.58	-208.46	0.00	0.00	0.00
4,600.00	5.00	35.66	4,588.59	215.54	154.66	-215.54	0.00	0.00	0.00
4,700.00	5.00	35.66	4,688.21	222.61	159.73	-222.61	0.00	0.00	0.00
4,773.07	5.00	35.66	4,761.00	227.78	163.44	-227.78	0.00	0.00	0.00
<b>Sussex</b>									
4,800.00	5.00	35.66	4,787.83	229.69	164.81	-229.69	0.00	0.00	0.00
4,900.00	5.00	35.66	4,887.45	236.76	169.89	-236.76	0.00	0.00	0.00
5,000.00	5.00	35.66	4,987.07	243.84	174.96	-243.84	0.00	0.00	0.00
5,100.00	5.00	35.66	5,086.69	250.91	180.04	-250.91	0.00	0.00	0.00
5,200.00	5.00	35.66	5,186.31	257.99	185.12	-257.99	0.00	0.00	0.00
5,300.00	5.00	35.66	5,285.93	265.07	190.19	-265.07	0.00	0.00	0.00
5,400.00	5.00	35.66	5,385.55	272.14	195.27	-272.14	0.00	0.00	0.00
5,500.00	5.00	35.66	5,485.17	279.22	200.35	-279.22	0.00	0.00	0.00
5,600.00	5.00	35.66	5,584.79	286.29	205.43	-286.29	0.00	0.00	0.00
5,700.00	5.00	35.66	5,684.41	293.37	210.50	-293.37	0.00	0.00	0.00
5,800.00	5.00	35.66	5,784.03	300.44	215.58	-300.44	0.00	0.00	0.00
5,900.00	5.00	35.66	5,883.65	307.52	220.66	-307.52	0.00	0.00	0.00
6,000.00	5.00	35.66	5,983.27	314.60	225.73	-314.60	0.00	0.00	0.00
6,100.00	5.00	35.66	6,082.89	321.67	230.81	-321.67	0.00	0.00	0.00
6,200.00	5.00	35.66	6,182.51	328.75	235.89	-328.75	0.00	0.00	0.00
6,248.19	5.00	35.66	6,230.52	332.16	238.33	-332.16	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
6,300.00	3.96	35.66	6,282.16	335.44	240.69	-335.44	2.00	-2.00	0.00
6,400.00	1.96	35.66	6,382.03	339.64	243.70	-339.64	2.00	-2.00	0.00
6,497.99	0.00	0.00	6,480.00	341.00	244.68	-341.00	2.00	-2.00	0.00
<b>Start 580.04 hold at 6497.99 MD</b>									
6,500.00	0.00	0.00	6,482.01	341.00	244.68	-341.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,582.01	341.00	244.68	-341.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,682.01	341.00	244.68	-341.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,782.01	341.00	244.68	-341.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,882.01	341.00	244.68	-341.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,982.01	341.00	244.68	-341.00	0.00	0.00	0.00
7,078.03	0.00	0.00	7,060.04	341.00	244.68	-341.00	0.00	0.00	0.00
<b>Start DLS 10.00 TFO 180.00</b>									
7,100.00	2.20	180.00	7,082.00	340.58	244.68	-340.58	10.00	10.00	0.00
7,200.00	12.20	180.00	7,181.09	328.07	244.68	-328.07	10.00	10.00	0.00
7,300.00	22.20	180.00	7,276.50	298.54	244.68	-298.54	10.00	10.00	0.00
7,400.00	32.20	180.00	7,365.33	252.89	244.68	-252.89	10.00	10.00	0.00
7,500.00	42.20	180.00	7,444.88	192.51	244.68	-192.51	10.00	10.00	0.00
7,530.61	45.26	180.00	7,467.00	171.36	244.68	-171.36	10.00	10.00	0.00
<b>Sharon Springs</b>									
7,597.16	51.91	180.00	7,511.00	121.48	244.68	-121.48	10.00	10.00	0.00
<b>Niobrara A</b>									
7,600.00	52.20	180.00	7,512.75	119.24	244.68	-119.24	10.00	10.00	0.00
7,700.00	62.20	180.00	7,566.85	35.29	244.68	-35.29	10.00	10.00	0.00
7,800.00	72.20	180.00	7,605.56	-56.78	244.68	56.78	10.00	10.00	0.00
7,900.00	82.20	180.00	7,627.69	-154.17	244.68	154.17	10.00	10.00	0.00
7,902.30	82.43	180.00	7,628.00	-156.45	244.68	156.45	10.00	10.00	0.00
<b>Niobrara B</b>									
7,978.03	90.00	180.00	7,633.00	-231.95	244.68	231.95	10.00	10.00	0.00
<b>Start 4200.19 hold at 7978.03 MD - 7"621 FNL 1413 FWL)</b>									
8,000.00	90.00	180.00	7,633.00	-253.92	244.68	253.92	0.00	0.00	0.00

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BUFFALO 35N-15HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Site:</b>	BUFFALO & BADGER 4E-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BUFFALO 35N-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #2 PRELIMINARY		

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)
8,100.00	90.00	180.00	7,633.00	-353.92	244.68	353.92	0.00	0.00	0.00
8,200.00	90.00	180.00	7,633.00	-453.92	244.68	453.92	0.00	0.00	0.00
8,300.00	90.00	180.00	7,633.00	-553.92	244.68	553.92	0.00	0.00	0.00
8,400.00	90.00	180.00	7,633.00	-653.92	244.68	653.92	0.00	0.00	0.00
8,500.00	90.00	180.00	7,633.00	-753.92	244.68	753.92	0.00	0.00	0.00
8,600.00	90.00	180.00	7,633.00	-853.92	244.68	853.92	0.00	0.00	0.00
8,700.00	90.00	180.00	7,633.00	-953.92	244.68	953.92	0.00	0.00	0.00
8,800.00	90.00	180.00	7,633.00	-1,053.92	244.68	1,053.92	0.00	0.00	0.00
8,900.00	90.00	180.00	7,633.00	-1,153.92	244.68	1,153.92	0.00	0.00	0.00
9,000.00	90.00	180.00	7,633.00	-1,253.92	244.68	1,253.92	0.00	0.00	0.00
9,100.00	90.00	180.00	7,633.00	-1,353.92	244.68	1,353.92	0.00	0.00	0.00
9,200.00	90.00	180.00	7,633.00	-1,453.92	244.68	1,453.92	0.00	0.00	0.00
9,300.00	90.00	180.00	7,633.00	-1,553.92	244.68	1,553.92	0.00	0.00	0.00
9,400.00	90.00	180.00	7,633.00	-1,653.92	244.68	1,653.92	0.00	0.00	0.00
9,500.00	90.00	180.00	7,633.00	-1,753.92	244.68	1,753.92	0.00	0.00	0.00
9,600.00	90.00	180.00	7,633.00	-1,853.92	244.68	1,853.92	0.00	0.00	0.00
9,700.00	90.00	180.00	7,633.00	-1,953.92	244.68	1,953.92	0.00	0.00	0.00
9,800.00	90.00	180.00	7,633.00	-2,053.92	244.68	2,053.92	0.00	0.00	0.00
9,900.00	90.00	180.00	7,633.00	-2,153.92	244.68	2,153.92	0.00	0.00	0.00
10,000.00	90.00	180.00	7,633.00	-2,253.92	244.68	2,253.92	0.00	0.00	0.00
10,100.00	90.00	180.00	7,633.00	-2,353.92	244.68	2,353.92	0.00	0.00	0.00
10,200.00	90.00	180.00	7,633.00	-2,453.92	244.68	2,453.92	0.00	0.00	0.00
10,300.00	90.00	180.00	7,633.00	-2,553.92	244.68	2,553.92	0.00	0.00	0.00
10,400.00	90.00	180.00	7,633.00	-2,653.92	244.68	2,653.92	0.00	0.00	0.00
10,500.00	90.00	180.00	7,633.00	-2,753.92	244.68	2,753.92	0.00	0.00	0.00
10,600.00	90.00	180.00	7,633.00	-2,853.92	244.68	2,853.92	0.00	0.00	0.00
10,700.00	90.00	180.00	7,633.00	-2,953.92	244.68	2,953.92	0.00	0.00	0.00
10,800.00	90.00	180.00	7,633.00	-3,053.92	244.68	3,053.92	0.00	0.00	0.00
10,900.00	90.00	180.00	7,633.00	-3,153.92	244.68	3,153.92	0.00	0.00	0.00
11,000.00	90.00	180.00	7,633.00	-3,253.92	244.68	3,253.92	0.00	0.00	0.00
11,100.00	90.00	180.00	7,633.00	-3,353.92	244.68	3,353.92	0.00	0.00	0.00
11,200.00	90.00	180.00	7,633.00	-3,453.92	244.68	3,453.92	0.00	0.00	0.00
11,300.00	90.00	180.00	7,633.00	-3,553.92	244.68	3,553.92	0.00	0.00	0.00
11,400.00	90.00	180.00	7,633.00	-3,653.92	244.68	3,653.92	0.00	0.00	0.00
11,500.00	90.00	180.00	7,633.00	-3,753.92	244.68	3,753.92	0.00	0.00	0.00
11,600.00	90.00	180.00	7,633.00	-3,853.92	244.68	3,853.92	0.00	0.00	0.00
11,700.00	90.00	180.00	7,633.00	-3,953.92	244.68	3,953.92	0.00	0.00	0.00
11,800.00	90.00	180.00	7,633.00	-4,053.92	244.68	4,053.92	0.00	0.00	0.00
11,900.00	90.00	180.00	7,633.00	-4,153.92	244.68	4,153.92	0.00	0.00	0.00
12,000.00	90.00	180.00	7,633.00	-4,253.92	244.68	4,253.92	0.00	0.00	0.00
12,100.00	90.00	180.00	7,633.00	-4,353.92	244.68	4,353.92	0.00	0.00	0.00
12,178.22	90.00	180.00	7,633.00	-4,432.14	244.68	4,432.14	0.00	0.00	0.00
TD at 12178.22 - PBHL_BUFFALO 35N-15HZ(460 FSL 1430 FWL)									

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BUFFALO 35N-15HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 5132 KB 21 @ 5153.00ft (UNIT 403)
<b>Site:</b>	BUFFALO & BADGER 4E-15HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	BUFFALO 35N-15HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	PLAN #2 PRELIMINARY		

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_BUFFALO 35N-1	0.00	0.00	7,633.00	-4,432.14	244.68	1,259,710.27	3,141,640.62	40.0451840	-104.9940800
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,233.00	1,233.00	9 5/8"	9.625	12.250	
7,978.03	7,633.00	7"621 FNL 1413 FWL)	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
973.00	973.00	Base Fox Hills				
4,325.37	4,315.00	Parkman				
4,773.07	4,761.00	Sussex				
7,530.61	7,467.00	Sharon Springs				
7,597.16	7,511.00	Niobrara A				
7,902.30	7,628.00	Niobrara B				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,429.00	1,429.00	0.00	0.00	Start Build 2.00	
1,678.80	1,678.49	8.84	6.35	Start 4569.39 hold at 1678.80 MD	
6,248.19	6,230.52	332.16	238.33	Start Drop -2.00	
6,497.99	6,480.00	341.00	244.68	Start 580.04 hold at 6497.99 MD	
7,078.03	7,060.04	341.00	244.68	Start DLS 10.00 TFO 180.00	
7,978.03	7,633.00	-231.96	244.68	Start 4200.19 hold at 7978.03 MD	
12,178.22	7,633.00	-4,432.14	244.68	TD at 12178.22	