



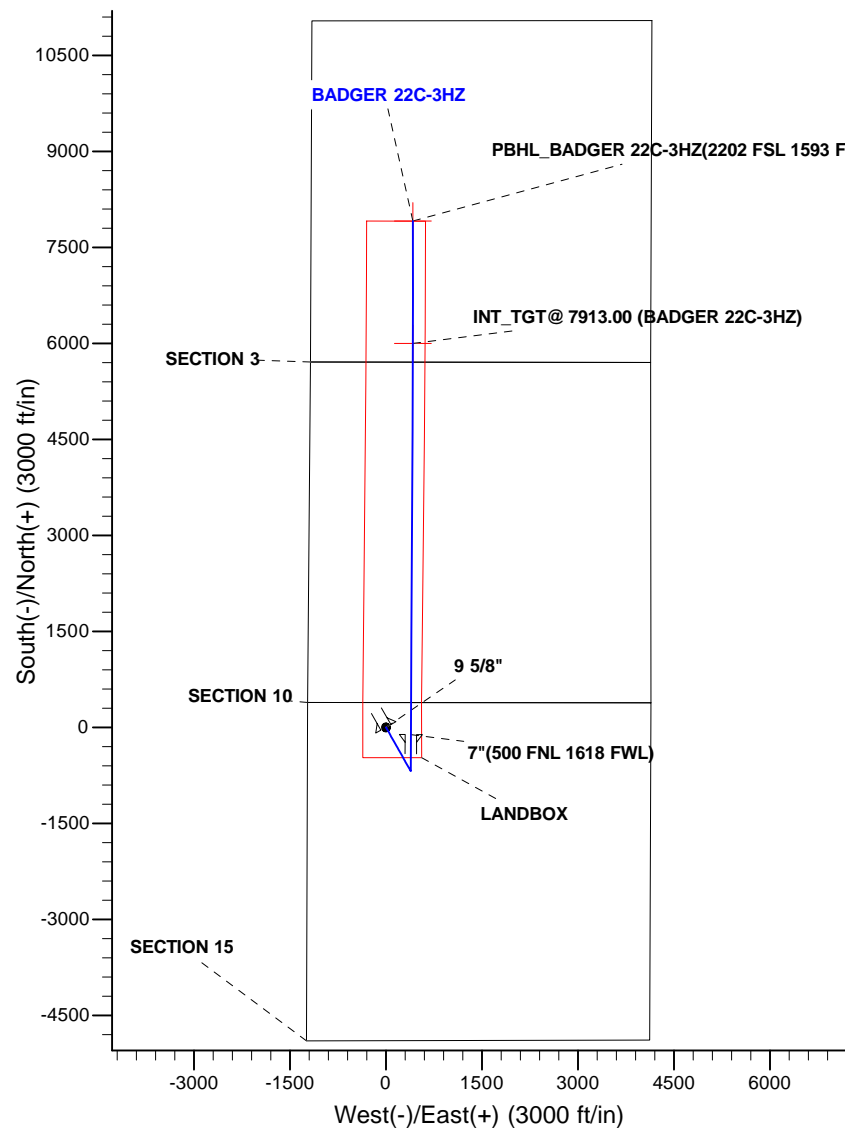
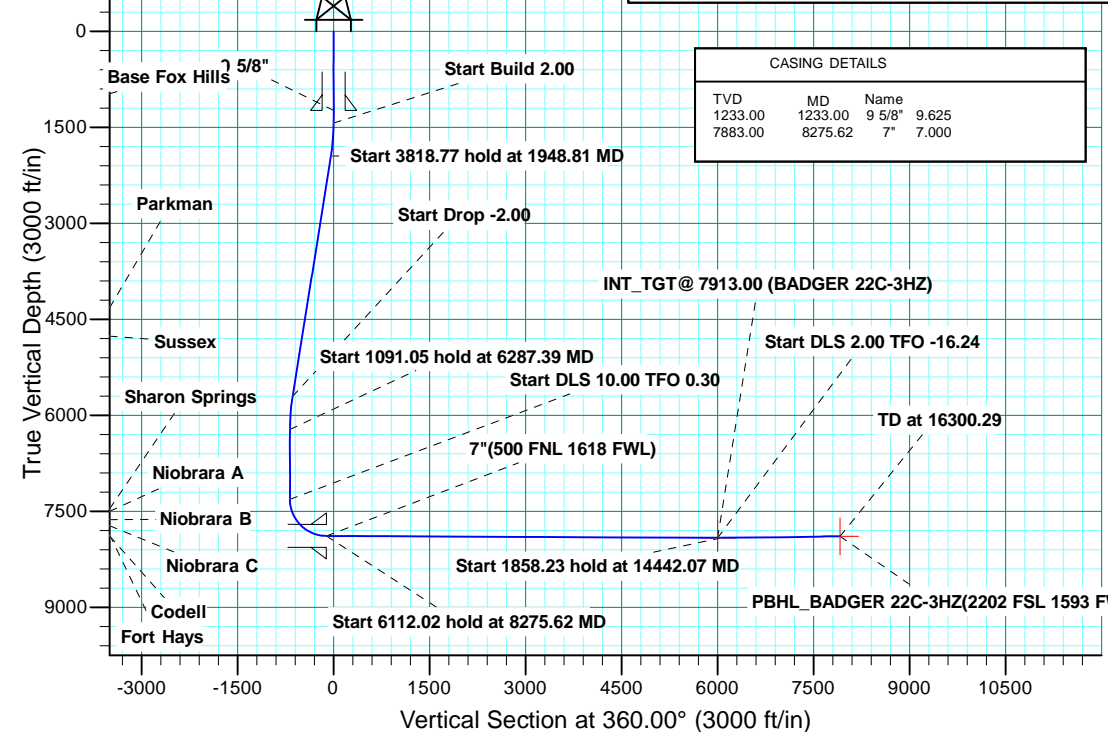
Project: COLORADO NORTHERN ZONE - 83  
Site: BUFFALO & BADGER 4E-15HZ PAD  
Well: BADGER 22C-3HZ  
Wellbore: OH  
Design: PLAN #2 PRELIMINARY



WELL DETAILS: BADGER 22C-3HZ									
GL 5132 & KB 21 @ 5153.00ft (UNIT 403)									
		+N/-S 0.00	+E/-W 0.00	Northing 1264142.37	Easting 3141430.59	Latitude 40.0573540		Longitude -104.9947400	
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	
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	
1948.81	10.40	150.55	1945.96	-40.95	23.12	2.00	150.55	-40.95	
5767.58	10.40	150.55	5702.04	-641.05	361.88	0.00	0.00	-641.05	
6287.39	0.00	0.00	6219.00	-682.00	385.00	2.00	180.00	-682.00	
7378.44	0.00	0.00	7310.05	-682.00	385.00	0.00	0.00	-682.00	
8275.62	89.72	0.30	7883.00	-111.86	387.99	10.00	0.30	-111.86	
14387.64	89.72	0.30	7913.00	6000.00	420.00	0.00	0.00	6000.00	
14442.07	90.76	360.00	7912.77	6054.42	420.14	2.00	-16.24	6054.42	
16300.29	90.76	360.00	7888.00	7912.48	420.00	0.00	0.00	7912.48	
PBHL_BADGER 22C-3HZ(2202 FSL 1593 FWL)									

DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7888.00	7912.48	420.00	1272057.10	3141805.50	40.0790750	-104.9932391	Point
- plan hits target center								
INT	7913.00	6000.00	420.00	1270144.65	3141816.40	40.0738249	-104.9932392	Point
- plan hits target center								

PROJECT DETAILS: COLORADO NORTHERN ZONE - 83				FORMATION TOP DETAILS			
Geodetic System: US State Plane 1983				TVDPath	MDPath	Formation	Inc
Datum: North American Datum 1983				973.00	973.00	Base Fox Hills	0.00
Ellipsoid: GRS 1980				4315.00	4357.39	Parkman	10.40
Zone: Colorado Northern Zone				4761.00	4810.83	Sussex	10.40
Location: SECTION 15 T1N R68W				7456.00	7526.01	Sharon Springs	14.76
System Datum: Mean Sea Level				7499.00	7570.99	Niobrara A	19.26
				7627.00	7714.29	Niobrara B	33.59
				7725.00	7842.48	Niobrara C	46.40
				7861.00	8119.12	Fort Hays	74.07
				7883.00	8275.45	Codell	89.70





Scientific Drilling

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
BUFFALO & BADGER 4E-15HZ PAD  
BADGER 22C-3HZ**

**OH**

**Plan: PLAN #2 PRELIMINARY**

## **Standard Planning Report**

**03 October, 2014**

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BADGER 22C-3HZ
<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>	BADGER 22C-3HZ	<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>	BADGER 22C-3HZ, 387 FNL 1229 FWL			
<b>Well Position</b>	<b>+N/-S</b>	1.08 ft	<b>Northing:</b>	1,264,142.37 usft
	<b>+E/-W</b>	59.90 ft	<b>Easting:</b>	3,141,430.59 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	360.00

<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	
1,948.81	10.40	150.55	1,945.96	-40.95	23.12	2.00	2.00	0.00	150.55	
5,767.58	10.40	150.55	5,702.04	-641.05	361.88	0.00	0.00	0.00	0.00	
6,287.39	0.00	0.00	6,219.00	-682.00	385.00	2.00	-2.00	0.00	180.00	
7,378.44	0.00	0.00	7,310.05	-682.00	385.00	0.00	0.00	0.00	0.00	
8,275.62	89.72	0.30	7,883.00	-111.86	387.99	10.00	10.00	0.03	0.30	
14,387.64	89.72	0.30	7,913.00	6,000.00	420.00	0.00	0.00	0.00	0.00	
14,442.07	90.76	360.00	7,912.77	6,054.42	420.14	2.00	1.92	-0.56	-16.24	
16,300.29	90.76	360.00	7,888.00	7,912.48	420.00	0.00	0.00	0.00	0.00	PBHL_BADGER 22C

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BADGER 22C-3HZ
<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>	BADGER 22C-3HZ	<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	150.55	1,499.99	-0.77	0.43	-0.77	2.00	2.00	0.00
1,600.00	3.42	150.55	1,599.90	-4.44	2.51	-4.44	2.00	2.00	0.00
1,700.00	5.42	150.55	1,699.60	-11.15	6.30	-11.15	2.00	2.00	0.00
1,800.00	7.42	150.55	1,798.96	-20.89	11.79	-20.89	2.00	2.00	0.00
1,900.00	9.42	150.55	1,897.88	-33.64	18.99	-33.64	2.00	2.00	0.00
1,948.81	10.40	150.55	1,945.96	-40.95	23.12	-40.95	2.00	2.00	0.00
<b>Start 3818.77 hold at 1948.81 MD</b>									
2,000.00	10.40	150.55	1,996.31	-49.00	27.66	-49.00	0.00	0.00	0.00
2,100.00	10.40	150.55	2,094.67	-64.71	36.53	-64.71	0.00	0.00	0.00
2,200.00	10.40	150.55	2,193.03	-80.43	45.40	-80.43	0.00	0.00	0.00
2,300.00	10.40	150.55	2,291.39	-96.14	54.27	-96.14	0.00	0.00	0.00
2,400.00	10.40	150.55	2,389.75	-111.86	63.14	-111.86	0.00	0.00	0.00
2,500.00	10.40	150.55	2,488.10	-127.57	72.02	-127.57	0.00	0.00	0.00
2,600.00	10.40	150.55	2,586.46	-143.28	80.89	-143.28	0.00	0.00	0.00
2,700.00	10.40	150.55	2,684.82	-159.00	89.76	-159.00	0.00	0.00	0.00
2,800.00	10.40	150.55	2,783.18	-174.71	98.63	-174.71	0.00	0.00	0.00
2,900.00	10.40	150.55	2,881.54	-190.43	107.50	-190.43	0.00	0.00	0.00
3,000.00	10.40	150.55	2,979.90	-206.14	116.37	-206.14	0.00	0.00	0.00
3,100.00	10.40	150.55	3,078.25	-221.86	125.24	-221.86	0.00	0.00	0.00
3,200.00	10.40	150.55	3,176.61	-237.57	134.11	-237.57	0.00	0.00	0.00
3,300.00	10.40	150.55	3,274.97	-253.28	142.98	-253.28	0.00	0.00	0.00
3,400.00	10.40	150.55	3,373.33	-269.00	151.85	-269.00	0.00	0.00	0.00
3,500.00	10.40	150.55	3,471.69	-284.71	160.72	-284.71	0.00	0.00	0.00
3,600.00	10.40	150.55	3,570.05	-300.43	169.60	-300.43	0.00	0.00	0.00
3,700.00	10.40	150.55	3,668.40	-316.14	178.47	-316.14	0.00	0.00	0.00
3,800.00	10.40	150.55	3,766.76	-331.86	187.34	-331.86	0.00	0.00	0.00
3,900.00	10.40	150.55	3,865.12	-347.57	196.21	-347.57	0.00	0.00	0.00
4,000.00	10.40	150.55	3,963.48	-363.28	205.08	-363.28	0.00	0.00	0.00
4,100.00	10.40	150.55	4,061.84	-379.00	213.95	-379.00	0.00	0.00	0.00
4,200.00	10.40	150.55	4,160.20	-394.71	222.82	-394.71	0.00	0.00	0.00
4,300.00	10.40	150.55	4,258.55	-410.43	231.69	-410.43	0.00	0.00	0.00
4,357.39	10.40	150.55	4,315.00	-419.44	236.78	-419.44	0.00	0.00	0.00
<b>Parkman</b>									

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<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>	BADGER 22C-3HZ	<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	10.40	150.55	4,356.91	-426.14	240.56	-426.14	0.00	0.00	0.00
4,500.00	10.40	150.55	4,455.27	-441.86	249.43	-441.86	0.00	0.00	0.00
4,600.00	10.40	150.55	4,553.63	-457.57	258.31	-457.57	0.00	0.00	0.00
4,700.00	10.40	150.55	4,651.99	-473.28	267.18	-473.28	0.00	0.00	0.00
4,800.00	10.40	150.55	4,750.35	-489.00	276.05	-489.00	0.00	0.00	0.00
4,810.83	10.40	150.55	4,761.00	-490.70	277.01	-490.70	0.00	0.00	0.00
<b>Sussex</b>									
4,900.00	10.40	150.55	4,848.70	-504.71	284.92	-504.71	0.00	0.00	0.00
5,000.00	10.40	150.55	4,947.06	-520.43	293.79	-520.43	0.00	0.00	0.00
5,100.00	10.40	150.55	5,045.42	-536.14	302.66	-536.14	0.00	0.00	0.00
5,200.00	10.40	150.55	5,143.78	-551.85	311.53	-551.85	0.00	0.00	0.00
5,300.00	10.40	150.55	5,242.14	-567.57	320.40	-567.57	0.00	0.00	0.00
5,400.00	10.40	150.55	5,340.50	-583.28	329.27	-583.28	0.00	0.00	0.00
5,500.00	10.40	150.55	5,438.86	-599.00	338.14	-599.00	0.00	0.00	0.00
5,600.00	10.40	150.55	5,537.21	-614.71	347.01	-614.71	0.00	0.00	0.00
5,700.00	10.40	150.55	5,635.57	-630.43	355.89	-630.43	0.00	0.00	0.00
5,767.58	10.40	150.55	5,702.04	-641.05	361.88	-641.05	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,800.00	9.75	150.55	5,733.96	-645.98	364.67	-645.98	2.00	-2.00	0.00
5,900.00	7.75	150.55	5,832.79	-659.23	372.14	-659.23	2.00	-2.00	0.00
6,000.00	5.75	150.55	5,932.10	-669.46	377.92	-669.46	2.00	-2.00	0.00
6,100.00	3.75	150.55	6,031.75	-676.67	381.99	-676.67	2.00	-2.00	0.00
6,200.00	1.75	150.55	6,131.63	-680.84	384.34	-680.84	2.00	-2.00	0.00
6,287.39	0.00	0.00	6,219.00	-682.00	385.00	-682.00	2.00	-2.00	0.00
<b>Start 1091.05 hold at 6287.39 MD</b>									
6,300.00	0.00	0.00	6,231.61	-682.00	385.00	-682.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,331.61	-682.00	385.00	-682.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,431.61	-682.00	385.00	-682.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,531.61	-682.00	385.00	-682.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,631.61	-682.00	385.00	-682.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,731.61	-682.00	385.00	-682.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,831.61	-682.00	385.00	-682.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,931.61	-682.00	385.00	-682.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,031.61	-682.00	385.00	-682.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,131.61	-682.00	385.00	-682.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,231.61	-682.00	385.00	-682.00	0.00	0.00	0.00
7,378.44	0.00	0.00	7,310.05	-682.00	385.00	-682.00	0.00	0.00	0.00
<b>Start DLS 10.00 TFO 0.30</b>									
7,400.00	2.16	0.30	7,331.61	-681.59	385.00	-681.59	10.00	10.00	0.00
7,500.00	12.16	0.30	7,430.70	-669.15	385.07	-669.15	10.00	10.00	0.00
7,526.01	14.76	0.30	7,456.00	-663.10	385.10	-663.10	10.00	10.00	0.00
<b>Sharon Springs</b>									
7,570.99	19.26	0.30	7,499.00	-649.95	385.17	-649.95	10.00	10.00	0.00
<b>Niobrara A</b>									
7,600.00	22.16	0.30	7,526.13	-639.69	385.22	-639.69	10.00	10.00	0.00
7,700.00	32.16	0.30	7,615.00	-594.11	385.46	-594.11	10.00	10.00	0.00
7,714.29	33.59	0.30	7,627.00	-586.35	385.50	-586.35	10.00	10.00	0.00
<b>Niobrara B</b>									
7,800.00	42.16	0.30	7,694.60	-533.79	385.78	-533.79	10.00	10.00	0.00
7,842.48	46.40	0.30	7,725.00	-504.14	385.93	-504.14	10.00	10.00	0.00
<b>Niobrara C</b>									
7,900.00	52.16	0.30	7,762.51	-460.56	386.16	-460.56	10.00	10.00	0.00
8,000.00	62.16	0.30	7,816.67	-376.65	386.60	-376.65	10.00	10.00	0.00

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<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>	BADGER 22C-3HZ	<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	72.16	0.30	7,855.45	-284.61	387.08	-284.61	10.00	10.00	0.00
8,119.12	74.07	0.30	7,861.00	-266.32	387.18	-266.32	10.00	10.00	0.00
<b>Fort Hays</b>									
8,200.00	82.16	0.30	7,877.65	-187.24	387.59	-187.24	10.00	10.00	0.00
8,275.45	89.70	0.30	7,883.00	-112.04	387.99	-112.04	10.00	10.00	0.00
<b>Codell</b>									
8,275.62	89.72	0.30	7,883.00	-111.87	387.99	-111.87	10.00	10.00	0.00
<b>Start 6112.02 hold at 8275.62 MD - 7"(500 FNL 1618 FWL)</b>									
8,300.00	89.72	0.30	7,883.12	-87.49	388.11	-87.49	0.00	0.00	0.00
8,400.00	89.72	0.30	7,883.61	12.51	388.64	12.51	0.00	0.00	0.00
8,500.00	89.72	0.30	7,884.10	112.51	389.16	112.51	0.00	0.00	0.00
8,600.00	89.72	0.30	7,884.59	212.51	389.69	212.51	0.00	0.00	0.00
8,700.00	89.72	0.30	7,885.08	312.50	390.21	312.50	0.00	0.00	0.00
8,800.00	89.72	0.30	7,885.57	412.50	390.73	412.50	0.00	0.00	0.00
8,900.00	89.72	0.30	7,886.07	512.50	391.26	512.50	0.00	0.00	0.00
9,000.00	89.72	0.30	7,886.56	612.50	391.78	612.50	0.00	0.00	0.00
9,100.00	89.72	0.30	7,887.05	712.49	392.30	712.49	0.00	0.00	0.00
9,200.00	89.72	0.30	7,887.54	812.49	392.83	812.49	0.00	0.00	0.00
9,300.00	89.72	0.30	7,888.03	912.49	393.35	912.49	0.00	0.00	0.00
9,400.00	89.72	0.30	7,888.52	1,012.49	393.88	1,012.49	0.00	0.00	0.00
9,500.00	89.72	0.30	7,889.01	1,112.48	394.40	1,112.48	0.00	0.00	0.00
9,600.00	89.72	0.30	7,889.50	1,212.48	394.92	1,212.48	0.00	0.00	0.00
9,700.00	89.72	0.30	7,889.99	1,312.48	395.45	1,312.48	0.00	0.00	0.00
9,800.00	89.72	0.30	7,890.48	1,412.48	395.97	1,412.48	0.00	0.00	0.00
9,900.00	89.72	0.30	7,890.97	1,512.47	396.49	1,512.47	0.00	0.00	0.00
10,000.00	89.72	0.30	7,891.46	1,612.47	397.02	1,612.47	0.00	0.00	0.00
10,100.00	89.72	0.30	7,891.96	1,712.47	397.54	1,712.47	0.00	0.00	0.00
10,200.00	89.72	0.30	7,892.45	1,812.47	398.07	1,812.47	0.00	0.00	0.00
10,300.00	89.72	0.30	7,892.94	1,912.46	398.59	1,912.46	0.00	0.00	0.00
10,400.00	89.72	0.30	7,893.43	2,012.46	399.11	2,012.46	0.00	0.00	0.00
10,500.00	89.72	0.30	7,893.92	2,112.46	399.64	2,112.46	0.00	0.00	0.00
10,600.00	89.72	0.30	7,894.41	2,212.45	400.16	2,212.45	0.00	0.00	0.00
10,700.00	89.72	0.30	7,894.90	2,312.45	400.68	2,312.45	0.00	0.00	0.00
10,800.00	89.72	0.30	7,895.39	2,412.45	401.21	2,412.45	0.00	0.00	0.00
10,900.00	89.72	0.30	7,895.88	2,512.45	401.73	2,512.45	0.00	0.00	0.00
11,000.00	89.72	0.30	7,896.37	2,612.44	402.26	2,612.44	0.00	0.00	0.00
11,100.00	89.72	0.30	7,896.86	2,712.44	402.78	2,712.44	0.00	0.00	0.00
11,200.00	89.72	0.30	7,897.35	2,812.44	403.30	2,812.44	0.00	0.00	0.00
11,300.00	89.72	0.30	7,897.85	2,912.44	403.83	2,912.44	0.00	0.00	0.00
11,400.00	89.72	0.30	7,898.34	3,012.43	404.35	3,012.43	0.00	0.00	0.00
11,500.00	89.72	0.30	7,898.83	3,112.43	404.88	3,112.43	0.00	0.00	0.00
11,600.00	89.72	0.30	7,899.32	3,212.43	405.40	3,212.43	0.00	0.00	0.00
11,700.00	89.72	0.30	7,899.81	3,312.43	405.92	3,312.43	0.00	0.00	0.00
11,800.00	89.72	0.30	7,900.30	3,412.42	406.45	3,412.42	0.00	0.00	0.00
11,900.00	89.72	0.30	7,900.79	3,512.42	406.97	3,512.42	0.00	0.00	0.00
12,000.00	89.72	0.30	7,901.28	3,612.42	407.49	3,612.42	0.00	0.00	0.00
12,100.00	89.72	0.30	7,901.77	3,712.42	408.02	3,712.42	0.00	0.00	0.00
12,200.00	89.72	0.30	7,902.26	3,812.41	408.54	3,812.41	0.00	0.00	0.00
12,300.00	89.72	0.30	7,902.75	3,912.41	409.07	3,912.41	0.00	0.00	0.00
12,400.00	89.72	0.30	7,903.24	4,012.41	409.59	4,012.41	0.00	0.00	0.00
12,500.00	89.72	0.30	7,903.74	4,112.41	410.11	4,112.41	0.00	0.00	0.00
12,600.00	89.72	0.30	7,904.23	4,212.40	410.64	4,212.40	0.00	0.00	0.00
12,700.00	89.72	0.30	7,904.72	4,312.40	411.16	4,312.40	0.00	0.00	0.00

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BADGER 22C-3HZ
<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>	BADGER 22C-3HZ	<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)
12,800.00	89.72	0.30	7,905.21	4,412.40	411.68	4,412.40	0.00	0.00	0.00
12,900.00	89.72	0.30	7,905.70	4,512.40	412.21	4,512.40	0.00	0.00	0.00
13,000.00	89.72	0.30	7,906.19	4,612.39	412.73	4,612.39	0.00	0.00	0.00
13,100.00	89.72	0.30	7,906.68	4,712.39	413.26	4,712.39	0.00	0.00	0.00
13,200.00	89.72	0.30	7,907.17	4,812.39	413.78	4,812.39	0.00	0.00	0.00
13,300.00	89.72	0.30	7,907.66	4,912.39	414.30	4,912.39	0.00	0.00	0.00
13,400.00	89.72	0.30	7,908.15	5,012.38	414.83	5,012.38	0.00	0.00	0.00
13,500.00	89.72	0.30	7,908.64	5,112.38	415.35	5,112.38	0.00	0.00	0.00
13,600.00	89.72	0.30	7,909.13	5,212.38	415.87	5,212.38	0.00	0.00	0.00
13,700.00	89.72	0.30	7,909.63	5,312.38	416.40	5,312.38	0.00	0.00	0.00
13,800.00	89.72	0.30	7,910.12	5,412.37	416.92	5,412.37	0.00	0.00	0.00
13,900.00	89.72	0.30	7,910.61	5,512.37	417.45	5,512.37	0.00	0.00	0.00
14,000.00	89.72	0.30	7,911.10	5,612.37	417.97	5,612.37	0.00	0.00	0.00
14,100.00	89.72	0.30	7,911.59	5,712.36	418.49	5,712.36	0.00	0.00	0.00
14,200.00	89.72	0.30	7,912.08	5,812.36	419.02	5,812.36	0.00	0.00	0.00
14,300.00	89.72	0.30	7,912.57	5,912.36	419.54	5,912.36	0.00	0.00	0.00
14,387.64	89.72	0.30	7,913.00	6,000.00	420.00	6,000.00	0.00	0.00	0.00
<b>Start DLS 2.00 TFO -16.24 - INT_TGT@ 7913.00 (BADGER 22C-3HZ)</b>									
14,400.00	89.96	0.23	7,913.04	6,012.36	420.06	6,012.36	2.00	1.92	-0.56
14,442.07	90.76	360.00	7,912.77	6,054.42	420.14	6,054.42	2.00	1.92	-0.56
<b>Start 1858.23 hold at 14442.07 MD</b>									
14,500.00	90.76	360.00	7,912.00	6,112.35	420.14	6,112.35	0.00	0.00	0.00
14,600.00	90.76	360.00	7,910.67	6,212.34	420.13	6,212.34	0.00	0.00	0.00
14,700.00	90.76	360.00	7,909.33	6,312.33	420.12	6,312.33	0.00	0.00	0.00
14,800.00	90.76	360.00	7,908.00	6,412.32	420.11	6,412.32	0.00	0.00	0.00
14,900.00	90.76	360.00	7,906.67	6,512.32	420.11	6,512.32	0.00	0.00	0.00
15,000.00	90.76	360.00	7,905.33	6,612.31	420.10	6,612.31	0.00	0.00	0.00
15,100.00	90.76	360.00	7,904.00	6,712.30	420.09	6,712.30	0.00	0.00	0.00
15,200.00	90.76	360.00	7,902.67	6,812.29	420.08	6,812.29	0.00	0.00	0.00
15,300.00	90.76	360.00	7,901.33	6,912.28	420.08	6,912.28	0.00	0.00	0.00
15,400.00	90.76	360.00	7,900.00	7,012.27	420.07	7,012.27	0.00	0.00	0.00
15,500.00	90.76	360.00	7,898.67	7,112.26	420.06	7,112.26	0.00	0.00	0.00
15,600.00	90.76	360.00	7,897.34	7,212.25	420.05	7,212.25	0.00	0.00	0.00
15,700.00	90.76	360.00	7,896.00	7,312.24	420.05	7,312.24	0.00	0.00	0.00
15,800.00	90.76	360.00	7,894.67	7,412.24	420.04	7,412.24	0.00	0.00	0.00
15,900.00	90.76	360.00	7,893.34	7,512.23	420.03	7,512.23	0.00	0.00	0.00
16,000.00	90.76	360.00	7,892.00	7,612.22	420.02	7,612.22	0.00	0.00	0.00
16,100.00	90.76	360.00	7,890.67	7,712.21	420.02	7,712.21	0.00	0.00	0.00
16,200.00	90.76	360.00	7,889.34	7,812.20	420.01	7,812.20	0.00	0.00	0.00
16,300.00	90.76	360.00	7,888.00	7,912.19	420.00	7,912.19	0.00	0.00	0.00
16,300.29	90.76	360.00	7,888.00	7,912.48	420.00	7,912.48	0.00	0.00	0.00
<b>TD at 16300.29 - PBHL_BADGER 22C-3HZ(2202 FSL 1593 FWL)</b>									

<b>Database:</b>	Denver Sales	<b>Local Co-ordinate Reference:</b>	Well BADGER 22C-3HZ
<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>	BADGER 22C-3HZ	<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_BADGER 22C-3H	0.00	0.00	7,888.00	7,912.48	420.00	1,272,057.10	3,141,805.50	40.0790750	-104.9932391
- plan hits target center									
- Point									
INT_TGT@ 7913.00 (BA	0.00	0.00	7,913.00	6,000.00	420.00	1,270,144.65	3,141,816.40	40.0738249	-104.9932392
- 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	
8,275.62	7,883.00	7"(500 FNL 1618 FWL)	7.000	7.500	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
973.00	973.00	Base Fox Hills			
4,357.39	4,315.00	Parkman			
4,810.83	4,761.00	Sussex			
7,526.01	7,456.00	Sharon Springs			
7,570.99	7,499.00	Niobrara A			
7,714.29	7,627.00	Niobrara B			
7,842.48	7,725.00	Niobrara C			
8,119.12	7,861.00	Fort Hays			
8,275.45	7,883.00	Codell			

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
1,948.81	1,945.96	-40.95	23.12	Start 3818.77 hold at 1948.81 MD
5,767.58	5,702.04	-641.05	361.88	Start Drop -2.00
6,287.39	6,219.00	-682.00	385.00	Start 1091.05 hold at 6287.39 MD
7,378.44	7,310.05	-682.00	385.00	Start DLS 10.00 TFO 0.30
8,275.62	7,883.00	-111.86	387.99	Start 6112.02 hold at 8275.62 MD
14,387.64	7,913.00	6,000.00	420.00	Start DLS 2.00 TFO -16.24
14,442.07	7,912.77	6,054.42	420.14	Start 1858.23 hold at 14442.07 MD
16,300.29	7,888.00	7,912.48	420.00	TD at 16300.29