



Project: COLORADO NORTHERN ZONE - 83
Site: BUFFALO & BADGER 4-4 PAD
Well: BADGER 11C-3HZ
Wellbore: OH
Design: PLAN #2 PRELIMINARY

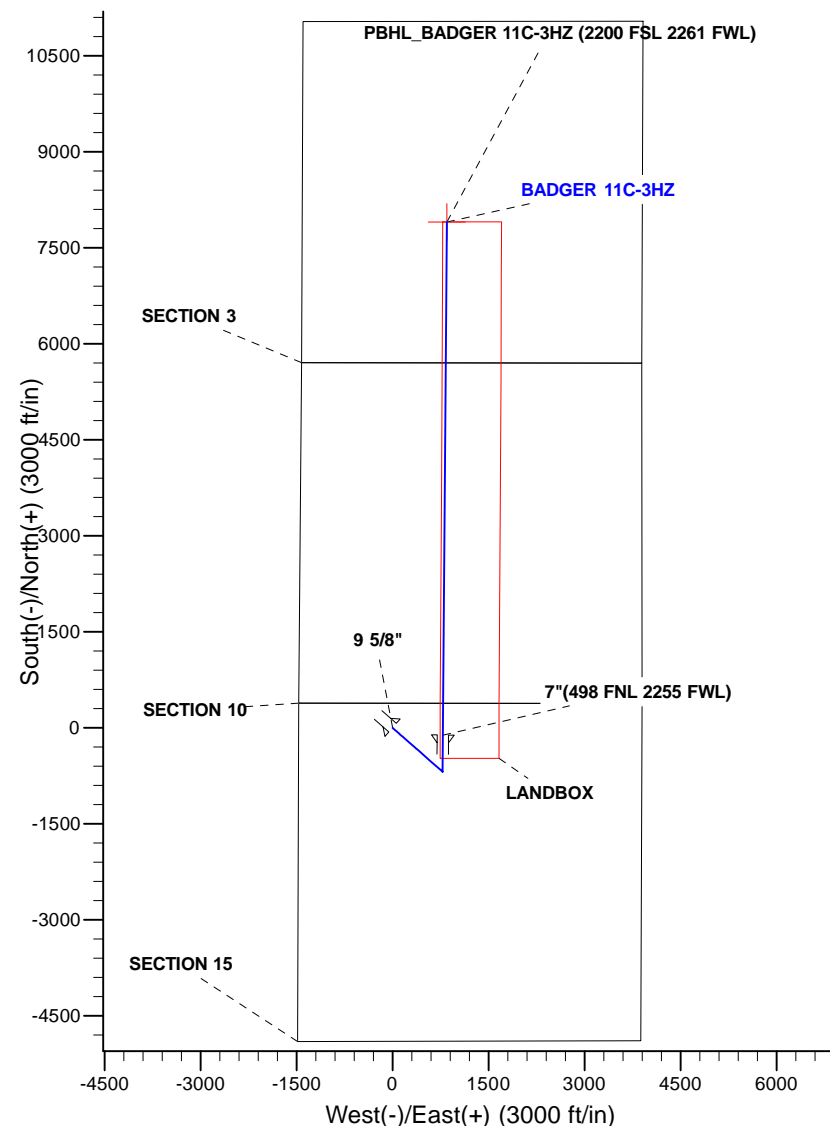
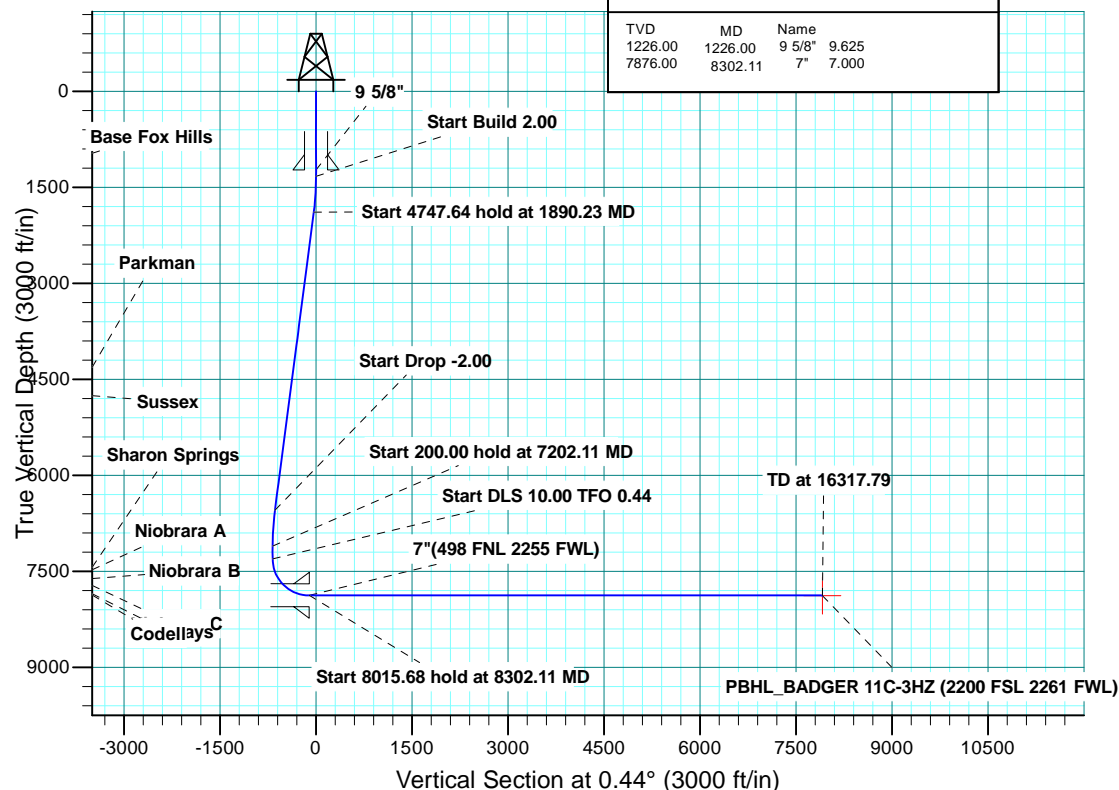


WELL DETAILS: BADGER 11C-3HZ								
GL 5125 & KB 21 @ 5146.00ft (UNIT 403)								
		+N-S	+E-W	Northing	Easting	Latitude	Longitude	
		0.00	0.00	1264148.11	3141670.74	40.0573659	-104.9938820	
SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1326.00	0.00	0.00	1326.00	0.00	0.00	0.00	0.00	0.00
1890.23	11.28	131.21	1886.59	-36.49	41.67	2.00	131.21	-36.17
6637.87	11.28	131.21	6542.45	-648.51	740.61	0.00	0.00	-642.81
7202.11	0.00	0.00	7103.04	-685.00	782.28	2.00	180.00	-678.97
7402.11	0.00	0.00	7303.04	-685.00	782.28	0.00	0.00	-678.97
8302.11	90.00	0.44	7876.00	-112.06	786.64	10.00	0.44	-106.01
16317.79	90.00	0.44	7876.00	7903.39	847.60	0.00	0.00	7909.67
PBHL_BADGER 11C-3HZ (2200 FSL 2261 FWL)								
DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL 7876.00	7903.39	7903.39	847.60	1272056.19	3142473.21	40.0790620	-104.9908530	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: NENW SECTION 15 T1N R68W
System Datum: Mean Sea Level

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	Inc
966.00	966.00	Base Fox Hills	0.00
4308.00	4359.38	Parkman	11.28
4754.00	4814.17	Sussex	11.28
7434.00	7534.23	Sharon Springs	13.21
7473.00	7574.66	Niobrara A	17.26
7610.00	7726.05	Niobrara B	32.39
7717.00	7864.72	Niobrara C	46.26
7847.00	8119.04	Fort Hays	71.69
7869.00	8212.46	Codell	81.04

CASING DETAILS			
TVD	MD	Name	
1226.00	1226.00	9 5/8"	9.625
7876.00	8302.11	7"	7.000





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

BUFFALO & BADGER 4-4 PAD

BADGER 11C-3HZ

OH

Plan: PLAN #2 PRELIMINARY

Standard Planning Report

03 October, 2014

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 11C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Site:	BUFFALO & BADGER 4-4 PAD	North Reference:	True
Well:	BADGER 11C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 PRELIMINARY		

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

Site	BUFFALO & BADGER 4-4 PAD, NENW SECTION 15 T1N R68W			
Site Position:		Northing:	1,264,146.69 usft	Latitude: 40.0573630
From:	Lat/Long	Easting:	3,141,610.56 usft	Longitude: -104.9940970
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.33 °

Well	BADGER 11C-3HZ			
Well Position	+N/-S	1.08 ft	Northing:	1,264,148.11 usft
	+E/-W	60.18 ft	Easting:	3,141,670.74 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft
			Ground Level:	5,125.00 ft

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

Design	PLAN #2 PRELIMINARY			
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	0.44

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	
1,326.00	0.00	0.00	1,326.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,890.23	11.28	131.21	1,886.59	-36.49	41.67	2.00	2.00	0.00	131.21	
6,637.87	11.28	131.21	6,542.45	-648.51	740.61	0.00	0.00	0.00	0.00	
7,202.11	0.00	0.00	7,103.04	-685.00	782.28	2.00	-2.00	0.00	180.00	
7,402.11	0.00	0.00	7,303.04	-685.00	782.28	0.00	0.00	0.00	0.00	
8,302.11	90.00	0.44	7,876.00	-112.06	786.64	10.00	10.00	0.05	0.44	
16,317.79	90.00	0.44	7,876.00	7,903.39	847.60	0.00	0.00	0.00	0.00	PBHL_BADGER 11C-

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 11C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Site:	BUFFALO & BADGER 4-4 PAD	North Reference:	True
Well:	BADGER 11C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
966.00	0.00	0.00	966.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Fox Hills									
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
1,226.00	0.00	0.00	1,226.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,326.00	0.00	0.00	1,326.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,400.00	1.48	131.21	1,399.99	-0.63	0.72	-0.62	2.00	2.00	0.00
1,500.00	3.48	131.21	1,499.89	-3.48	3.97	-3.45	2.00	2.00	0.00
1,600.00	5.48	131.21	1,599.58	-8.63	9.85	-8.55	2.00	2.00	0.00
1,700.00	7.48	131.21	1,698.94	-16.06	18.34	-15.92	2.00	2.00	0.00
1,800.00	9.48	131.21	1,797.84	-25.77	29.43	-25.55	2.00	2.00	0.00
1,890.23	11.28	131.21	1,886.59	-36.49	41.67	-36.17	2.00	2.00	0.00
Start 4747.64 hold at 1890.23 MD									
1,900.00	11.28	131.21	1,896.17	-37.75	43.11	-37.41	0.00	0.00	0.00
2,000.00	11.28	131.21	1,994.24	-50.64	57.83	-50.19	0.00	0.00	0.00
2,100.00	11.28	131.21	2,092.30	-63.53	72.55	-62.97	0.00	0.00	0.00
2,200.00	11.28	131.21	2,190.37	-76.42	87.27	-75.75	0.00	0.00	0.00
2,300.00	11.28	131.21	2,288.44	-89.31	101.99	-88.52	0.00	0.00	0.00
2,400.00	11.28	131.21	2,386.50	-102.20	116.72	-101.30	0.00	0.00	0.00
2,500.00	11.28	131.21	2,484.57	-115.09	131.44	-114.08	0.00	0.00	0.00
2,600.00	11.28	131.21	2,582.64	-127.98	146.16	-126.86	0.00	0.00	0.00
2,700.00	11.28	131.21	2,680.70	-140.87	160.88	-139.64	0.00	0.00	0.00
2,800.00	11.28	131.21	2,778.77	-153.77	175.60	-152.41	0.00	0.00	0.00
2,900.00	11.28	131.21	2,876.84	-166.66	190.33	-165.19	0.00	0.00	0.00
3,000.00	11.28	131.21	2,974.90	-179.55	205.05	-177.97	0.00	0.00	0.00
3,100.00	11.28	131.21	3,072.97	-192.44	219.77	-190.75	0.00	0.00	0.00
3,200.00	11.28	131.21	3,171.04	-205.33	234.49	-203.52	0.00	0.00	0.00
3,300.00	11.28	131.21	3,269.10	-218.22	249.21	-216.30	0.00	0.00	0.00
3,400.00	11.28	131.21	3,367.17	-231.11	263.93	-229.08	0.00	0.00	0.00
3,500.00	11.28	131.21	3,465.24	-244.00	278.66	-241.86	0.00	0.00	0.00
3,600.00	11.28	131.21	3,563.30	-256.90	293.38	-254.64	0.00	0.00	0.00
3,700.00	11.28	131.21	3,661.37	-269.79	308.10	-267.41	0.00	0.00	0.00
3,800.00	11.28	131.21	3,759.44	-282.68	322.82	-280.19	0.00	0.00	0.00
3,900.00	11.28	131.21	3,857.50	-295.57	337.54	-292.97	0.00	0.00	0.00
4,000.00	11.28	131.21	3,955.57	-308.46	352.27	-305.75	0.00	0.00	0.00
4,100.00	11.28	131.21	4,053.64	-321.35	366.99	-318.52	0.00	0.00	0.00
4,200.00	11.28	131.21	4,151.71	-334.24	381.71	-331.30	0.00	0.00	0.00
4,300.00	11.28	131.21	4,249.77	-347.13	396.43	-344.08	0.00	0.00	0.00
4,359.38	11.28	131.21	4,308.00	-354.79	405.17	-351.67	0.00	0.00	0.00
Parkman									

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Site:	BUFFALO & BADGER 4-4 PAD	North Reference:	True
Well:	BADGER 11C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	11.28	131.21	4,347.84	-360.03	411.15	-356.86	0.00	0.00	0.00
4,500.00	11.28	131.21	4,445.91	-372.92	425.88	-369.63	0.00	0.00	0.00
4,600.00	11.28	131.21	4,543.97	-385.81	440.60	-382.41	0.00	0.00	0.00
4,700.00	11.28	131.21	4,642.04	-398.70	455.32	-395.19	0.00	0.00	0.00
4,800.00	11.28	131.21	4,740.11	-411.59	470.04	-407.97	0.00	0.00	0.00
4,814.17	11.28	131.21	4,754.00	-413.42	472.13	-409.78	0.00	0.00	0.00
Sussex									
4,900.00	11.28	131.21	4,838.17	-424.48	484.76	-420.75	0.00	0.00	0.00
5,000.00	11.28	131.21	4,936.24	-437.37	499.49	-433.52	0.00	0.00	0.00
5,100.00	11.28	131.21	5,034.31	-450.26	514.21	-446.30	0.00	0.00	0.00
5,200.00	11.28	131.21	5,132.37	-463.15	528.93	-459.08	0.00	0.00	0.00
5,300.00	11.28	131.21	5,230.44	-476.05	543.65	-471.86	0.00	0.00	0.00
5,400.00	11.28	131.21	5,328.51	-488.94	558.37	-484.63	0.00	0.00	0.00
5,500.00	11.28	131.21	5,426.57	-501.83	573.10	-497.41	0.00	0.00	0.00
5,600.00	11.28	131.21	5,524.64	-514.72	587.82	-510.19	0.00	0.00	0.00
5,700.00	11.28	131.21	5,622.71	-527.61	602.54	-522.97	0.00	0.00	0.00
5,800.00	11.28	131.21	5,720.77	-540.50	617.26	-535.75	0.00	0.00	0.00
5,900.00	11.28	131.21	5,818.84	-553.39	631.98	-548.52	0.00	0.00	0.00
6,000.00	11.28	131.21	5,916.91	-566.28	646.70	-561.30	0.00	0.00	0.00
6,100.00	11.28	131.21	6,014.97	-579.18	661.43	-574.08	0.00	0.00	0.00
6,200.00	11.28	131.21	6,113.04	-592.07	676.15	-586.86	0.00	0.00	0.00
6,300.00	11.28	131.21	6,211.11	-604.96	690.87	-599.63	0.00	0.00	0.00
6,400.00	11.28	131.21	6,309.17	-617.85	705.59	-612.41	0.00	0.00	0.00
6,500.00	11.28	131.21	6,407.24	-630.74	720.31	-625.19	0.00	0.00	0.00
6,600.00	11.28	131.21	6,505.31	-643.63	735.04	-637.97	0.00	0.00	0.00
6,637.87	11.28	131.21	6,542.45	-648.51	740.61	-642.81	0.00	0.00	0.00
Start Drop -2.00									
6,700.00	10.04	131.21	6,603.50	-656.09	749.26	-650.31	2.00	-2.00	0.00
6,800.00	8.04	131.21	6,702.25	-666.44	761.08	-660.58	2.00	-2.00	0.00
6,900.00	6.04	131.21	6,801.49	-674.52	770.31	-668.58	2.00	-2.00	0.00
7,000.00	4.04	131.21	6,901.10	-680.31	776.92	-674.32	2.00	-2.00	0.00
7,100.00	2.04	131.21	7,000.96	-683.80	780.91	-677.78	2.00	-2.00	0.00
7,200.00	0.04	131.21	7,100.93	-685.00	782.28	-678.97	2.00	-2.00	0.00
7,202.11	0.00	0.00	7,103.04	-685.00	782.28	-678.97	2.00	-2.00	0.00
Start 200.00 hold at 7202.11 MD									
7,300.00	0.00	0.00	7,200.93	-685.00	782.28	-678.97	0.00	0.00	0.00
7,400.00	0.00	0.00	7,300.93	-685.00	782.28	-678.97	0.00	0.00	0.00
7,402.11	0.00	0.00	7,303.04	-685.00	782.28	-678.97	0.00	0.00	0.00
Start DLS 10.00 TFO 0.44									
7,500.00	9.79	0.44	7,400.46	-676.66	782.34	-670.63	10.00	10.00	0.00
7,534.23	13.21	0.44	7,434.00	-669.83	782.40	-663.81	10.00	10.00	0.00
Sharon Springs									
7,574.66	17.26	0.44	7,473.00	-659.21	782.48	-653.18	10.00	10.00	0.00
Niobrara A									
7,600.00	19.79	0.44	7,497.02	-651.16	782.54	-645.14	10.00	10.00	0.00
7,700.00	29.79	0.44	7,587.69	-609.29	782.86	-603.26	10.00	10.00	0.00
7,726.05	32.39	0.44	7,610.00	-595.84	782.96	-589.81	10.00	10.00	0.00
Niobrara B									
7,800.00	39.79	0.44	7,669.71	-552.31	783.29	-546.28	10.00	10.00	0.00
7,864.72	46.26	0.44	7,717.00	-508.18	783.62	-502.14	10.00	10.00	0.00
Niobrara C									
7,900.00	49.79	0.44	7,740.59	-481.95	783.82	-475.92	10.00	10.00	0.00
8,000.00	59.79	0.44	7,798.18	-400.35	784.45	-394.32	10.00	10.00	0.00

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Site:	BUFFALO & BADGER 4-4 PAD	North Reference:	True
Well:	BADGER 11C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	69.79	0.44	7,840.72	-310.00	785.13	-303.96	10.00	10.00	0.00
8,119.04	71.69	0.44	7,847.00	-292.02	785.27	-285.98	10.00	10.00	0.00
Fort Hays									
8,200.00	79.79	0.44	7,866.92	-213.62	785.87	-207.58	10.00	10.00	0.00
8,212.46	81.04	0.44	7,869.00	-201.34	785.96	-195.30	10.00	10.00	0.00
Codell									
8,300.00	89.79	0.44	7,876.00	-114.17	786.62	-108.12	10.00	10.00	0.00
8,302.11	90.00	0.44	7,876.00	-112.06	786.64	-106.01	9.99	9.99	0.00
Start 8015.68 hold at 8302.11 MD - 7"(498 FNL 2255 FWL)									
8,400.00	90.00	0.44	7,876.00	-14.17	787.38	-8.12	0.00	0.00	0.00
8,500.00	90.00	0.44	7,876.00	85.83	788.14	91.88	0.00	0.00	0.00
8,600.00	90.00	0.44	7,876.00	185.83	788.90	191.88	0.00	0.00	0.00
8,700.00	90.00	0.44	7,876.00	285.82	789.66	291.88	0.00	0.00	0.00
8,800.00	90.00	0.44	7,876.00	385.82	790.42	391.88	0.00	0.00	0.00
8,900.00	90.00	0.44	7,876.00	485.82	791.19	491.88	0.00	0.00	0.00
9,000.00	90.00	0.44	7,876.00	585.81	791.95	591.88	0.00	0.00	0.00
9,100.00	90.00	0.44	7,876.00	685.81	792.71	691.88	0.00	0.00	0.00
9,200.00	90.00	0.44	7,876.00	785.81	793.47	791.88	0.00	0.00	0.00
9,300.00	90.00	0.44	7,876.00	885.80	794.23	891.88	0.00	0.00	0.00
9,400.00	90.00	0.44	7,876.00	985.80	794.99	991.88	0.00	0.00	0.00
9,500.00	90.00	0.44	7,876.00	1,085.80	795.75	1,091.88	0.00	0.00	0.00
9,600.00	90.00	0.44	7,876.00	1,185.80	796.51	1,191.88	0.00	0.00	0.00
9,700.00	90.00	0.44	7,876.00	1,285.79	797.27	1,291.88	0.00	0.00	0.00
9,800.00	90.00	0.44	7,876.00	1,385.79	798.03	1,391.88	0.00	0.00	0.00
9,900.00	90.00	0.44	7,876.00	1,485.79	798.79	1,491.88	0.00	0.00	0.00
10,000.00	90.00	0.44	7,876.00	1,585.78	799.55	1,591.88	0.00	0.00	0.00
10,100.00	90.00	0.44	7,876.00	1,685.78	800.31	1,691.88	0.00	0.00	0.00
10,200.00	90.00	0.44	7,876.00	1,785.78	801.07	1,791.88	0.00	0.00	0.00
10,300.00	90.00	0.44	7,876.00	1,885.78	801.83	1,891.88	0.00	0.00	0.00
10,400.00	90.00	0.44	7,876.00	1,985.77	802.59	1,991.88	0.00	0.00	0.00
10,500.00	90.00	0.44	7,876.00	2,085.77	803.35	2,091.88	0.00	0.00	0.00
10,600.00	90.00	0.44	7,876.00	2,185.77	804.12	2,191.88	0.00	0.00	0.00
10,700.00	90.00	0.44	7,876.00	2,285.76	804.88	2,291.88	0.00	0.00	0.00
10,800.00	90.00	0.44	7,876.00	2,385.76	805.64	2,391.88	0.00	0.00	0.00
10,900.00	90.00	0.44	7,876.00	2,485.76	806.40	2,491.88	0.00	0.00	0.00
11,000.00	90.00	0.44	7,876.00	2,585.76	807.16	2,591.88	0.00	0.00	0.00
11,100.00	90.00	0.44	7,876.00	2,685.75	807.92	2,691.88	0.00	0.00	0.00
11,200.00	90.00	0.44	7,876.00	2,785.75	808.68	2,791.88	0.00	0.00	0.00
11,300.00	90.00	0.44	7,876.00	2,885.75	809.44	2,891.88	0.00	0.00	0.00
11,400.00	90.00	0.44	7,876.00	2,985.74	810.20	2,991.88	0.00	0.00	0.00
11,500.00	90.00	0.44	7,876.00	3,085.74	810.96	3,091.88	0.00	0.00	0.00
11,600.00	90.00	0.44	7,876.00	3,185.74	811.72	3,191.88	0.00	0.00	0.00
11,700.00	90.00	0.44	7,876.00	3,285.74	812.48	3,291.88	0.00	0.00	0.00
11,800.00	90.00	0.44	7,876.00	3,385.73	813.24	3,391.88	0.00	0.00	0.00
11,900.00	90.00	0.44	7,876.00	3,485.73	814.00	3,491.88	0.00	0.00	0.00
12,000.00	90.00	0.44	7,876.00	3,585.73	814.76	3,591.88	0.00	0.00	0.00
12,100.00	90.00	0.44	7,876.00	3,685.72	815.52	3,691.88	0.00	0.00	0.00
12,200.00	90.00	0.44	7,876.00	3,785.72	816.28	3,791.88	0.00	0.00	0.00
12,300.00	90.00	0.44	7,876.00	3,885.72	817.04	3,891.88	0.00	0.00	0.00
12,400.00	90.00	0.44	7,876.00	3,985.72	817.81	3,991.88	0.00	0.00	0.00
12,500.00	90.00	0.44	7,876.00	4,085.71	818.57	4,091.88	0.00	0.00	0.00
12,600.00	90.00	0.44	7,876.00	4,185.71	819.33	4,191.88	0.00	0.00	0.00
12,700.00	90.00	0.44	7,876.00	4,285.71	820.09	4,291.88	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 11C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Site:	BUFFALO & BADGER 4-4 PAD	North Reference:	True
Well:	BADGER 11C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	90.00	0.44	7,876.00	4,385.70	820.85	4,391.88	0.00	0.00	0.00
12,900.00	90.00	0.44	7,876.00	4,485.70	821.61	4,491.88	0.00	0.00	0.00
13,000.00	90.00	0.44	7,876.00	4,585.70	822.37	4,591.88	0.00	0.00	0.00
13,100.00	90.00	0.44	7,876.00	4,685.70	823.13	4,691.88	0.00	0.00	0.00
13,200.00	90.00	0.44	7,876.00	4,785.69	823.89	4,791.88	0.00	0.00	0.00
13,300.00	90.00	0.44	7,876.00	4,885.69	824.65	4,891.88	0.00	0.00	0.00
13,400.00	90.00	0.44	7,876.00	4,985.69	825.41	4,991.88	0.00	0.00	0.00
13,500.00	90.00	0.44	7,876.00	5,085.68	826.17	5,091.88	0.00	0.00	0.00
13,600.00	90.00	0.44	7,876.00	5,185.68	826.93	5,191.88	0.00	0.00	0.00
13,700.00	90.00	0.44	7,876.00	5,285.68	827.69	5,291.88	0.00	0.00	0.00
13,800.00	90.00	0.44	7,876.00	5,385.67	828.45	5,391.88	0.00	0.00	0.00
13,900.00	90.00	0.44	7,876.00	5,485.67	829.21	5,491.88	0.00	0.00	0.00
14,000.00	90.00	0.44	7,876.00	5,585.67	829.97	5,591.88	0.00	0.00	0.00
14,100.00	90.00	0.44	7,876.00	5,685.67	830.74	5,691.88	0.00	0.00	0.00
14,200.00	90.00	0.44	7,876.00	5,785.66	831.50	5,791.88	0.00	0.00	0.00
14,300.00	90.00	0.44	7,876.00	5,885.66	832.26	5,891.88	0.00	0.00	0.00
14,400.00	90.00	0.44	7,876.00	5,985.66	833.02	5,991.88	0.00	0.00	0.00
14,500.00	90.00	0.44	7,876.00	6,085.65	833.78	6,091.88	0.00	0.00	0.00
14,600.00	90.00	0.44	7,876.00	6,185.65	834.54	6,191.88	0.00	0.00	0.00
14,700.00	90.00	0.44	7,876.00	6,285.65	835.30	6,291.88	0.00	0.00	0.00
14,800.00	90.00	0.44	7,876.00	6,385.65	836.06	6,391.88	0.00	0.00	0.00
14,900.00	90.00	0.44	7,876.00	6,485.64	836.82	6,491.88	0.00	0.00	0.00
15,000.00	90.00	0.44	7,876.00	6,585.64	837.58	6,591.88	0.00	0.00	0.00
15,100.00	90.00	0.44	7,876.00	6,685.64	838.34	6,691.88	0.00	0.00	0.00
15,200.00	90.00	0.44	7,876.00	6,785.63	839.10	6,791.88	0.00	0.00	0.00
15,300.00	90.00	0.44	7,876.00	6,885.63	839.86	6,891.88	0.00	0.00	0.00
15,400.00	90.00	0.44	7,876.00	6,985.63	840.62	6,991.88	0.00	0.00	0.00
15,500.00	90.00	0.44	7,876.00	7,085.63	841.38	7,091.88	0.00	0.00	0.00
15,600.00	90.00	0.44	7,876.00	7,185.62	842.14	7,191.88	0.00	0.00	0.00
15,700.00	90.00	0.44	7,876.00	7,285.62	842.90	7,291.88	0.00	0.00	0.00
15,800.00	90.00	0.44	7,876.00	7,385.62	843.66	7,391.88	0.00	0.00	0.00
15,900.00	90.00	0.44	7,876.00	7,485.61	844.43	7,491.88	0.00	0.00	0.00
16,000.00	90.00	0.44	7,876.00	7,585.61	845.19	7,591.88	0.00	0.00	0.00
16,100.00	90.00	0.44	7,876.00	7,685.61	845.95	7,691.88	0.00	0.00	0.00
16,200.00	90.00	0.44	7,876.00	7,785.61	846.71	7,791.88	0.00	0.00	0.00
16,300.00	90.00	0.44	7,876.00	7,885.60	847.47	7,891.88	0.00	0.00	0.00
16,317.79	90.00	0.44	7,876.00	7,903.39	847.60	7,909.67	0.00	0.00	0.00
TD at 16317.79 - PBHL_BADGER 11C-3HZ (2200 FSL 2261 FWL)									

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 11C-3H	0.00	0.00	7,876.00	7,903.39	847.60	1,272,056.19	3,142,473.21	40.0790620	-104.9908530
- plan hits target center									
- Point									

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 11C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5125 & KB 21 @ 5146.00ft (UNIT 403)
Site:	BUFFALO & BADGER 4-4 PAD	North Reference:	True
Well:	BADGER 11C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 PRELIMINARY		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,226.00	1,226.00	9 5/8"	9.625	12.250	
8,302.11	7,876.00	7"(498 FNL 2255 FWL)	7.000	8.750	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
966.00	981.00	Base Fox Hills				
4,359.38	4,323.00	Parkman				
4,814.17	4,769.00	Sussex				
7,534.23	7,449.00	Sharon Springs				
7,574.66	7,488.00	Niobrara A				
7,726.05	7,625.00	Niobrara B				
7,864.72	7,732.00	Niobrara C				
8,119.04	7,862.00	Fort Hays				
8,212.46	7,884.00	Codell				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,326.00	1,326.00	0.00	0.00	Start Build 2.00	
1,890.23	1,886.59	-36.49	41.67	Start 4747.64 hold at 1890.23 MD	
6,637.87	6,542.45	-648.51	740.61	Start Drop -2.00	
7,202.11	7,103.04	-685.00	782.28	Start 200.00 hold at 7202.11 MD	
7,402.11	7,303.04	-685.00	782.28	Start DLS 10.00 TFO 0.44	
8,302.11	7,876.00	-112.06	786.64	Start 8015.68 hold at 8302.11 MD	
16,317.79	7,876.00	7,903.39	847.60	TD at 16317.79	