



Project: COLORADO NORTHERN ZONE - 83
Site: BUFFALO & BADGER 4-4 PAD
Well: BADGER 25N-3HZ
Wellbore: OH
Design: PLAN #2 PRELIMINARY

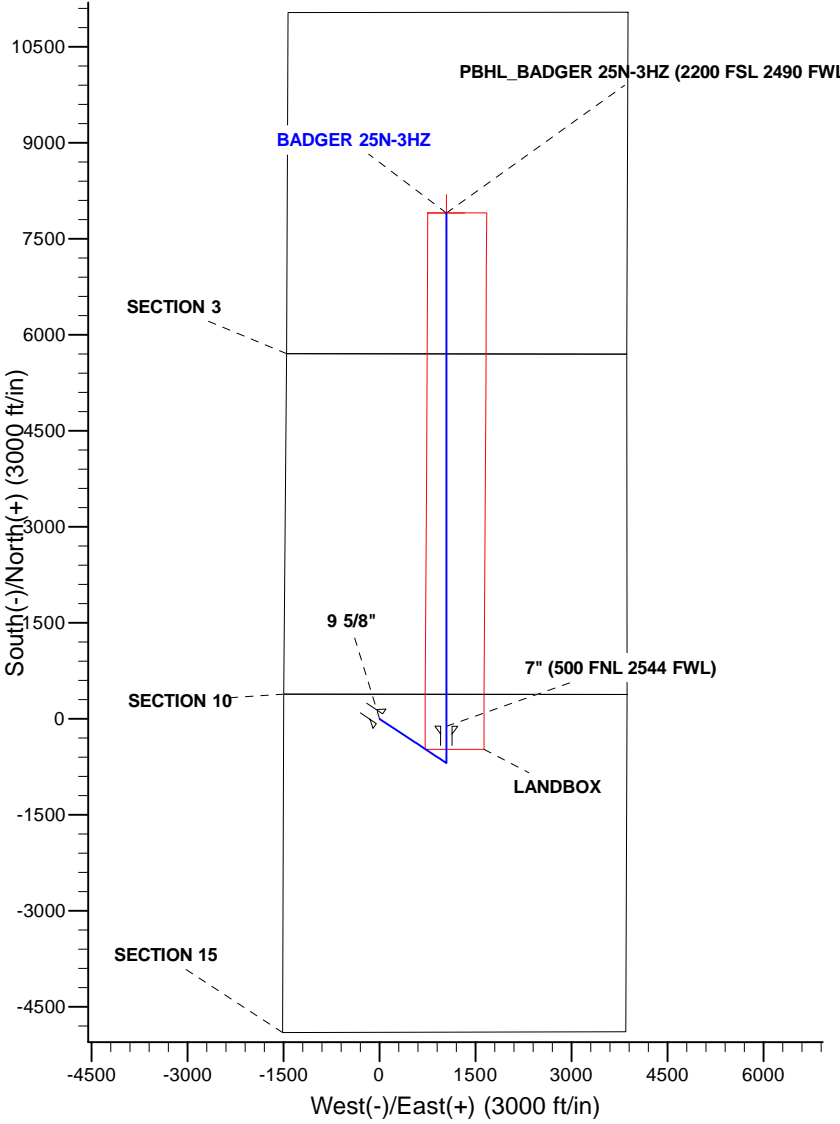
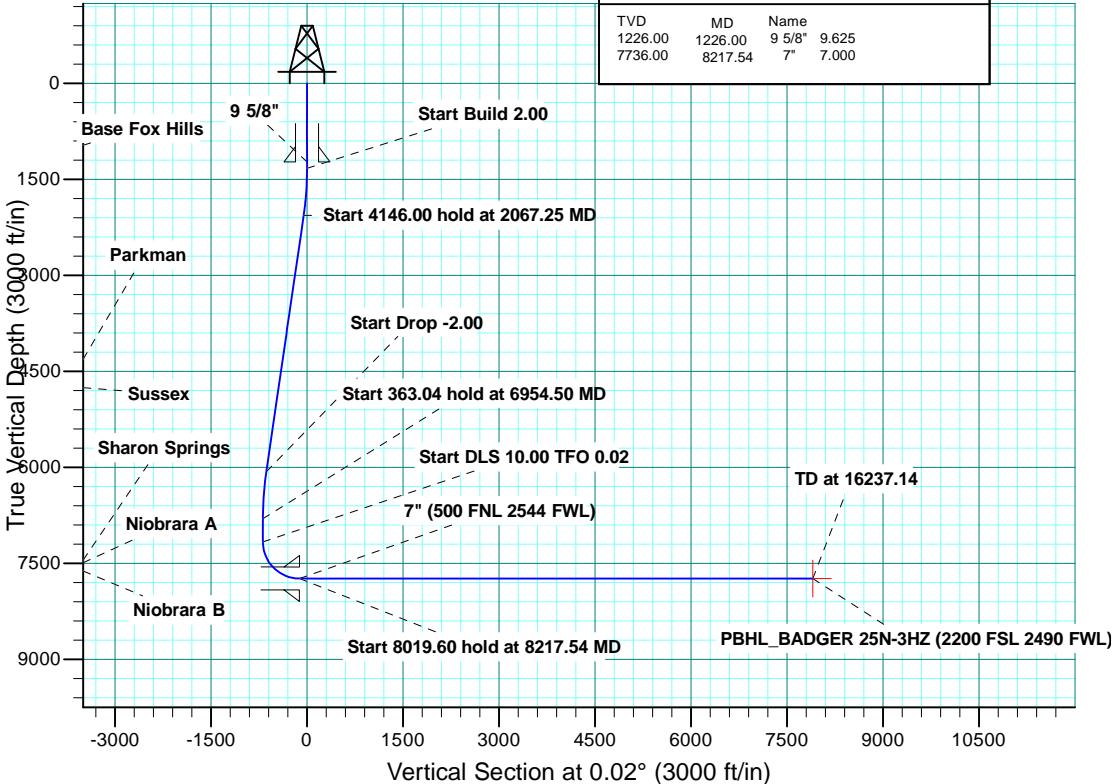


WELL DETAILS: BADGER 25N-3HZ								
GL 5125 & KB 21 @ 5146.00ft (UNIT 403)								
		+N/-S 0.00	+E/-W 0.00	Northing 1264149.01	Easting 3141700.68	Latitude 40.0573679	Longitude -104.9937750	
SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1326.00	0.00	0.00	1326.00	0.00	0.00	0.00	0.00	0.00
2067.25	14.82	123.47	2059.01	-52.59	79.55	2.00	123.47	-52.57
6213.25	14.82	123.47	6066.99	-637.66	964.45	0.00	0.00	-637.32
6954.50	0.00	0.00	6800.00	-690.25	1044.00	2.00	180.00	-689.89
7317.54	0.00	0.00	7163.04	-690.25	1044.00	0.00	0.00	-689.89
8217.54	90.00	0.02	7736.00	-117.29	1044.17	10.00	0.02	-116.93
16237.14	90.00	0.02	7736.00	7902.31	1046.56	0.00	0.00	7902.67
PBHL_BADGER 25N-3HZ (2200 FSL 2490 FWL)								
DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL 7736.00	7902.31	1046.56	1272057.15	3142702.11	40.0790610	-104.9900350		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	4393.69	Parkman	14.82
4754.00	4855.04	Sussex	14.82
7446.00	7613.48	Sharon Springs	29.59
7486.00	7660.64	Niobrara A	34.31
7618.00	7843.20	Niobrara B	52.57

CASING DETAILS			
TVD	MD	Name	
1226.00	1226.00	9 5/8"	9.625
7736.00	8217.54	7"	7.000





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

BUFFALO & BADGER 4-4 PAD

BADGER 25N-3HZ

OH

Plan: PLAN #2 PRELIMINARY

Standard Planning Report

03 October, 2014

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 25N-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 25N-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 25N-3HZ, 382 FNL 1499 FWL			
Well Position	+N/-S	1.80 ft	Northing:	1,264,149.01 usft
	+E/-W	90.13 ft	Easting:	3,141,700.68 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	0.02

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	
2,067.25	14.82	123.47	2,059.01	-52.59	79.55	2.00	2.00	0.00	123.47	
6,213.25	14.82	123.47	6,066.99	-637.66	964.45	0.00	0.00	0.00	0.00	
6,954.50	0.00	0.00	6,800.00	-690.25	1,044.00	2.00	-2.00	0.00	180.00	
7,317.54	0.00	0.00	7,163.04	-690.25	1,044.00	0.00	0.00	0.00	0.00	
8,217.54	90.00	0.02	7,736.00	-117.29	1,044.17	10.00	10.00	0.00	0.02	
16,237.14	90.00	0.02	7,736.00	7,902.31	1,046.56	0.00	0.00	0.00	0.00	PBHL_BADGER 25N

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 25N-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 25N-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	123.47	1,399.99	-0.53	0.80	-0.53	2.00	2.00	0.00
1,500.00	3.48	123.47	1,499.89	-2.91	4.41	-2.91	2.00	2.00	0.00
1,600.00	5.48	123.47	1,599.58	-7.22	10.92	-7.22	2.00	2.00	0.00
1,700.00	7.48	123.47	1,698.94	-13.44	20.34	-13.44	2.00	2.00	0.00
1,800.00	9.48	123.47	1,797.84	-21.58	32.64	-21.57	2.00	2.00	0.00
1,900.00	11.48	123.47	1,896.17	-31.61	47.81	-31.59	2.00	2.00	0.00
2,000.00	13.48	123.47	1,993.80	-43.53	65.83	-43.50	2.00	2.00	0.00
2,067.25	14.82	123.47	2,059.01	-52.59	79.55	-52.57	2.00	2.00	0.00
Start 4146.00 hold at 2067.25 MD									
2,100.00	14.82	123.47	2,090.67	-57.22	86.54	-57.19	0.00	0.00	0.00
2,200.00	14.82	123.47	2,187.34	-71.33	107.88	-71.29	0.00	0.00	0.00
2,300.00	14.82	123.47	2,284.01	-85.44	129.23	-85.39	0.00	0.00	0.00
2,400.00	14.82	123.47	2,380.68	-99.55	150.57	-99.50	0.00	0.00	0.00
2,500.00	14.82	123.47	2,477.35	-113.66	171.91	-113.60	0.00	0.00	0.00
2,600.00	14.82	123.47	2,574.02	-127.77	193.26	-127.71	0.00	0.00	0.00
2,700.00	14.82	123.47	2,670.69	-141.88	214.60	-141.81	0.00	0.00	0.00
2,800.00	14.82	123.47	2,767.36	-156.00	235.94	-155.91	0.00	0.00	0.00
2,900.00	14.82	123.47	2,864.04	-170.11	257.29	-170.02	0.00	0.00	0.00
3,000.00	14.82	123.47	2,960.71	-184.22	278.63	-184.12	0.00	0.00	0.00
3,100.00	14.82	123.47	3,057.38	-198.33	299.97	-198.23	0.00	0.00	0.00
3,200.00	14.82	123.47	3,154.05	-212.44	321.32	-212.33	0.00	0.00	0.00
3,300.00	14.82	123.47	3,250.72	-226.55	342.66	-226.43	0.00	0.00	0.00
3,400.00	14.82	123.47	3,347.39	-240.66	364.00	-240.54	0.00	0.00	0.00
3,500.00	14.82	123.47	3,444.06	-254.78	385.35	-254.64	0.00	0.00	0.00
3,600.00	14.82	123.47	3,540.73	-268.89	406.69	-268.75	0.00	0.00	0.00
3,700.00	14.82	123.47	3,637.41	-283.00	428.04	-282.85	0.00	0.00	0.00
3,800.00	14.82	123.47	3,734.08	-297.11	449.38	-296.95	0.00	0.00	0.00
3,900.00	14.82	123.47	3,830.75	-311.22	470.72	-311.06	0.00	0.00	0.00
4,000.00	14.82	123.47	3,927.42	-325.33	492.07	-325.16	0.00	0.00	0.00
4,100.00	14.82	123.47	4,024.09	-339.45	513.41	-339.27	0.00	0.00	0.00
4,200.00	14.82	123.47	4,120.76	-353.56	534.75	-353.37	0.00	0.00	0.00
4,300.00	14.82	123.47	4,217.43	-367.67	556.10	-367.47	0.00	0.00	0.00
4,393.69	14.82	123.47	4,308.00	-380.89	576.09	-380.69	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 25N-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	14.82	123.47	4,314.10	-381.78	577.44	-381.58	0.00	0.00	0.00
4,500.00	14.82	123.47	4,410.78	-395.89	598.78	-395.68	0.00	0.00	0.00
4,600.00	14.82	123.47	4,507.45	-410.00	620.13	-409.79	0.00	0.00	0.00
4,700.00	14.82	123.47	4,604.12	-424.11	641.47	-423.89	0.00	0.00	0.00
4,800.00	14.82	123.47	4,700.79	-438.23	662.81	-437.99	0.00	0.00	0.00
4,855.04	14.82	123.47	4,754.00	-445.99	674.56	-445.76	0.00	0.00	0.00
Sussex									
4,900.00	14.82	123.47	4,797.46	-452.34	684.16	-452.10	0.00	0.00	0.00
5,000.00	14.82	123.47	4,894.13	-466.45	705.50	-466.20	0.00	0.00	0.00
5,100.00	14.82	123.47	4,990.80	-480.56	726.84	-480.31	0.00	0.00	0.00
5,200.00	14.82	123.47	5,087.47	-494.67	748.19	-494.41	0.00	0.00	0.00
5,300.00	14.82	123.47	5,184.14	-508.78	769.53	-508.51	0.00	0.00	0.00
5,400.00	14.82	123.47	5,280.82	-522.89	790.88	-522.62	0.00	0.00	0.00
5,500.00	14.82	123.47	5,377.49	-537.01	812.22	-536.72	0.00	0.00	0.00
5,600.00	14.82	123.47	5,474.16	-551.12	833.56	-550.83	0.00	0.00	0.00
5,700.00	14.82	123.47	5,570.83	-565.23	854.91	-564.93	0.00	0.00	0.00
5,800.00	14.82	123.47	5,667.50	-579.34	876.25	-579.03	0.00	0.00	0.00
5,900.00	14.82	123.47	5,764.17	-593.45	897.59	-593.14	0.00	0.00	0.00
6,000.00	14.82	123.47	5,860.84	-607.56	918.94	-607.24	0.00	0.00	0.00
6,100.00	14.82	123.47	5,957.51	-621.67	940.28	-621.35	0.00	0.00	0.00
6,200.00	14.82	123.47	6,054.19	-635.79	961.62	-635.45	0.00	0.00	0.00
6,213.25	14.82	123.47	6,066.99	-637.66	964.45	-637.32	0.00	0.00	0.00
Start Drop -2.00									
6,300.00	13.09	123.47	6,151.18	-649.20	981.91	-648.85	2.00	-2.00	0.00
6,400.00	11.09	123.47	6,248.96	-660.75	999.38	-660.40	2.00	-2.00	0.00
6,500.00	9.09	123.47	6,347.41	-670.41	1,013.99	-670.05	2.00	-2.00	0.00
6,600.00	7.09	123.47	6,446.41	-678.17	1,025.73	-677.81	2.00	-2.00	0.00
6,700.00	5.09	123.47	6,545.84	-684.02	1,034.58	-683.66	2.00	-2.00	0.00
6,800.00	3.09	123.47	6,645.58	-687.95	1,040.53	-687.59	2.00	-2.00	0.00
6,900.00	1.09	123.47	6,745.50	-689.96	1,043.57	-689.60	2.00	-2.00	0.00
6,954.50	0.00	0.00	6,800.00	-690.25	1,044.00	-689.89	2.00	-2.00	0.00
Start 363.04 hold at 6954.50 MD									
7,000.00	0.00	0.00	6,845.50	-690.25	1,044.00	-689.89	0.00	0.00	0.00
7,100.00	0.00	0.00	6,945.50	-690.25	1,044.00	-689.89	0.00	0.00	0.00
7,200.00	0.00	0.00	7,045.50	-690.25	1,044.00	-689.89	0.00	0.00	0.00
7,300.00	0.00	0.00	7,145.50	-690.25	1,044.00	-689.89	0.00	0.00	0.00
7,317.54	0.00	0.00	7,163.04	-690.25	1,044.00	-689.89	0.00	0.00	0.00
Start DLS 10.00 TFO 0.02									
7,400.00	8.25	0.02	7,245.22	-684.33	1,044.00	-683.96	10.00	10.00	0.00
7,500.00	18.25	0.02	7,342.43	-661.44	1,044.01	-661.08	10.00	10.00	0.00
7,600.00	28.25	0.02	7,434.20	-622.02	1,044.02	-621.66	10.00	10.00	0.00
7,613.48	29.59	0.02	7,446.00	-615.50	1,044.02	-615.14	10.00	10.00	0.00
Sharon Springs									
7,660.64	34.31	0.02	7,486.00	-590.56	1,044.03	-590.19	10.00	10.00	0.00
Niobrara A									
7,700.00	38.25	0.02	7,517.72	-567.27	1,044.04	-566.91	10.00	10.00	0.00
7,800.00	48.25	0.02	7,590.47	-498.84	1,044.06	-498.48	10.00	10.00	0.00
7,843.20	52.57	0.02	7,618.00	-465.56	1,044.07	-465.20	10.00	10.00	0.00
Niobrara B									
7,900.00	58.25	0.02	7,650.24	-418.82	1,044.08	-418.46	10.00	10.00	0.00
8,000.00	68.25	0.02	7,695.20	-329.64	1,044.11	-329.28	10.00	10.00	0.00
8,100.00	78.25	0.02	7,723.98	-234.01	1,044.14	-233.64	10.00	10.00	0.00
8,200.00	88.25	0.02	7,735.73	-134.83	1,044.17	-134.46	10.00	10.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 25N-3HZ
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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 25N-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)	
8,217.54	90.00	0.02	7,736.00	-117.29	1,044.17	-116.93	10.00	10.00	0.00	
Start 8019.60 hold at 8217.54 MD - 7" (500 FNL 2544 FWL)										
8,300.00	90.00	0.02	7,736.00	-34.83	1,044.20	-34.47	0.00	0.00	0.00	
8,400.00	90.00	0.02	7,736.00	65.17	1,044.23	65.53	0.00	0.00	0.00	
8,500.00	90.00	0.02	7,736.00	165.17	1,044.26	165.53	0.00	0.00	0.00	
8,600.00	90.00	0.02	7,736.00	265.17	1,044.28	265.53	0.00	0.00	0.00	
8,700.00	90.00	0.02	7,736.00	365.17	1,044.31	365.53	0.00	0.00	0.00	
8,800.00	90.00	0.02	7,736.00	465.17	1,044.34	465.53	0.00	0.00	0.00	
8,900.00	90.00	0.02	7,736.00	565.17	1,044.37	565.53	0.00	0.00	0.00	
9,000.00	90.00	0.02	7,736.00	665.17	1,044.40	665.53	0.00	0.00	0.00	
9,100.00	90.00	0.02	7,736.00	765.17	1,044.43	765.53	0.00	0.00	0.00	
9,200.00	90.00	0.02	7,736.00	865.17	1,044.46	865.53	0.00	0.00	0.00	
9,300.00	90.00	0.02	7,736.00	965.17	1,044.49	965.53	0.00	0.00	0.00	
9,400.00	90.00	0.02	7,736.00	1,065.17	1,044.52	1,065.53	0.00	0.00	0.00	
9,500.00	90.00	0.02	7,736.00	1,165.17	1,044.55	1,165.53	0.00	0.00	0.00	
9,600.00	90.00	0.02	7,736.00	1,265.17	1,044.58	1,265.53	0.00	0.00	0.00	
9,700.00	90.00	0.02	7,736.00	1,365.17	1,044.61	1,365.53	0.00	0.00	0.00	
9,800.00	90.00	0.02	7,736.00	1,465.17	1,044.64	1,465.53	0.00	0.00	0.00	
9,900.00	90.00	0.02	7,736.00	1,565.17	1,044.67	1,565.53	0.00	0.00	0.00	
10,000.00	90.00	0.02	7,736.00	1,665.17	1,044.70	1,665.53	0.00	0.00	0.00	
10,100.00	90.00	0.02	7,736.00	1,765.17	1,044.73	1,765.53	0.00	0.00	0.00	
10,200.00	90.00	0.02	7,736.00	1,865.17	1,044.76	1,865.53	0.00	0.00	0.00	
10,300.00	90.00	0.02	7,736.00	1,965.17	1,044.79	1,965.53	0.00	0.00	0.00	
10,400.00	90.00	0.02	7,736.00	2,065.17	1,044.82	2,065.53	0.00	0.00	0.00	
10,500.00	90.00	0.02	7,736.00	2,165.17	1,044.85	2,165.53	0.00	0.00	0.00	
10,600.00	90.00	0.02	7,736.00	2,265.17	1,044.88	2,265.53	0.00	0.00	0.00	
10,700.00	90.00	0.02	7,736.00	2,365.17	1,044.91	2,365.53	0.00	0.00	0.00	
10,800.00	90.00	0.02	7,736.00	2,465.17	1,044.94	2,465.53	0.00	0.00	0.00	
10,900.00	90.00	0.02	7,736.00	2,565.17	1,044.97	2,565.53	0.00	0.00	0.00	
11,000.00	90.00	0.02	7,736.00	2,665.17	1,045.00	2,665.53	0.00	0.00	0.00	
11,100.00	90.00	0.02	7,736.00	2,765.17	1,045.03	2,765.53	0.00	0.00	0.00	
11,200.00	90.00	0.02	7,736.00	2,865.17	1,045.06	2,865.53	0.00	0.00	0.00	
11,300.00	90.00	0.02	7,736.00	2,965.17	1,045.09	2,965.53	0.00	0.00	0.00	
11,400.00	90.00	0.02	7,736.00	3,065.17	1,045.12	3,065.53	0.00	0.00	0.00	
11,500.00	90.00	0.02	7,736.00	3,165.17	1,045.15	3,165.53	0.00	0.00	0.00	
11,600.00	90.00	0.02	7,736.00	3,265.17	1,045.18	3,265.53	0.00	0.00	0.00	
11,700.00	90.00	0.02	7,736.00	3,365.17	1,045.21	3,365.53	0.00	0.00	0.00	
11,800.00	90.00	0.02	7,736.00	3,465.17	1,045.24	3,465.53	0.00	0.00	0.00	
11,900.00	90.00	0.02	7,736.00	3,565.17	1,045.27	3,565.53	0.00	0.00	0.00	
12,000.00	90.00	0.02	7,736.00	3,665.17	1,045.30	3,665.53	0.00	0.00	0.00	
12,100.00	90.00	0.02	7,736.00	3,765.17	1,045.33	3,765.53	0.00	0.00	0.00	
12,200.00	90.00	0.02	7,736.00	3,865.17	1,045.36	3,865.53	0.00	0.00	0.00	
12,300.00	90.00	0.02	7,736.00	3,965.17	1,045.39	3,965.53	0.00	0.00	0.00	
12,400.00	90.00	0.02	7,736.00	4,065.17	1,045.42	4,065.53	0.00	0.00	0.00	
12,500.00	90.00	0.02	7,736.00	4,165.17	1,045.45	4,165.53	0.00	0.00	0.00	
12,600.00	90.00	0.02	7,736.00	4,265.17	1,045.48	4,265.53	0.00	0.00	0.00	
12,700.00	90.00	0.02	7,736.00	4,365.17	1,045.51	4,365.53	0.00	0.00	0.00	
12,800.00	90.00	0.02	7,736.00	4,465.17	1,045.54	4,465.53	0.00	0.00	0.00	
12,900.00	90.00	0.02	7,736.00	4,565.17	1,045.57	4,565.53	0.00	0.00	0.00	
13,000.00	90.00	0.02	7,736.00	4,665.17	1,045.60	4,665.53	0.00	0.00	0.00	
13,100.00	90.00	0.02	7,736.00	4,765.17	1,045.63	4,765.53	0.00	0.00	0.00	
13,200.00	90.00	0.02	7,736.00	4,865.17	1,045.66	4,865.53	0.00	0.00	0.00	
13,300.00	90.00	0.02	7,736.00	4,965.17	1,045.69	4,965.53	0.00	0.00	0.00	
13,400.00	90.00	0.02	7,736.00	5,065.17	1,045.72	5,065.53	0.00	0.00	0.00	

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 25N-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 25N-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)
13,500.00	90.00	0.02	7,736.00	5,165.17	1,045.75	5,165.53	0.00	0.00	0.00
13,600.00	90.00	0.02	7,736.00	5,265.17	1,045.78	5,265.53	0.00	0.00	0.00
13,700.00	90.00	0.02	7,736.00	5,365.17	1,045.81	5,365.53	0.00	0.00	0.00
13,800.00	90.00	0.02	7,736.00	5,465.17	1,045.84	5,465.53	0.00	0.00	0.00
13,900.00	90.00	0.02	7,736.00	5,565.17	1,045.87	5,565.53	0.00	0.00	0.00
14,000.00	90.00	0.02	7,736.00	5,665.17	1,045.89	5,665.53	0.00	0.00	0.00
14,100.00	90.00	0.02	7,736.00	5,765.17	1,045.92	5,765.53	0.00	0.00	0.00
14,200.00	90.00	0.02	7,736.00	5,865.17	1,045.95	5,865.53	0.00	0.00	0.00
14,300.00	90.00	0.02	7,736.00	5,965.17	1,045.98	5,965.53	0.00	0.00	0.00
14,400.00	90.00	0.02	7,736.00	6,065.17	1,046.01	6,065.53	0.00	0.00	0.00
14,500.00	90.00	0.02	7,736.00	6,165.17	1,046.04	6,165.53	0.00	0.00	0.00
14,600.00	90.00	0.02	7,736.00	6,265.17	1,046.07	6,265.53	0.00	0.00	0.00
14,700.00	90.00	0.02	7,736.00	6,365.17	1,046.10	6,365.53	0.00	0.00	0.00
14,800.00	90.00	0.02	7,736.00	6,465.17	1,046.13	6,465.53	0.00	0.00	0.00
14,900.00	90.00	0.02	7,736.00	6,565.17	1,046.16	6,565.53	0.00	0.00	0.00
15,000.00	90.00	0.02	7,736.00	6,665.17	1,046.19	6,665.53	0.00	0.00	0.00
15,100.00	90.00	0.02	7,736.00	6,765.17	1,046.22	6,765.53	0.00	0.00	0.00
15,200.00	90.00	0.02	7,736.00	6,865.17	1,046.25	6,865.53	0.00	0.00	0.00
15,300.00	90.00	0.02	7,736.00	6,965.17	1,046.28	6,965.53	0.00	0.00	0.00
15,400.00	90.00	0.02	7,736.00	7,065.17	1,046.31	7,065.53	0.00	0.00	0.00
15,500.00	90.00	0.02	7,736.00	7,165.17	1,046.34	7,165.53	0.00	0.00	0.00
15,600.00	90.00	0.02	7,736.00	7,265.17	1,046.37	7,265.53	0.00	0.00	0.00
15,700.00	90.00	0.02	7,736.00	7,365.17	1,046.40	7,365.53	0.00	0.00	0.00
15,800.00	90.00	0.02	7,736.00	7,465.17	1,046.43	7,465.53	0.00	0.00	0.00
15,900.00	90.00	0.02	7,736.00	7,565.17	1,046.46	7,565.53	0.00	0.00	0.00
16,000.00	90.00	0.02	7,736.00	7,665.17	1,046.49	7,665.53	0.00	0.00	0.00
16,100.00	90.00	0.02	7,736.00	7,765.17	1,046.52	7,765.53	0.00	0.00	0.00
16,200.00	90.00	0.02	7,736.00	7,865.17	1,046.55	7,865.53	0.00	0.00	0.00
16,237.14	90.00	0.02	7,736.00	7,902.31	1,046.56	7,902.67	0.00	0.00	0.00
TD at 16237.14 - PBHL_BADGER 25N-3HZ (2200 FSL 2490 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 25N-3H	0.00	0.00	7,736.00	7,902.31	1,046.56	1,272,057.14	3,142,702.11	40.0790610	-104.9900350
- plan hits target center									
- Point									

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	
8,217.54	7,736.00	7" (500 FNL 2544 FWL)	7.000	7.500	

Database:	Denver Sales	Local Co-ordinate Reference:	Well BADGER 25N-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 25N-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 PRELIMINARY		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
966.00	966.00	Base Fox Hills			
4,393.69	4,308.00	Parkman			
4,855.04	4,754.00	Sussex			
7,613.48	7,446.00	Sharon Springs			
7,660.64	7,486.00	Niobrara A			
7,843.20	7,618.00	Niobrara B			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,326.00	1,326.00	0.00	0.00	Start Build 2.00
2,067.25	2,059.01	-52.59	79.55	Start 4146.00 hold at 2067.25 MD
6,213.25	6,066.99	-637.66	964.45	Start Drop -2.00
6,954.50	6,800.00	-690.25	1,044.00	Start 363.04 hold at 6954.50 MD
7,317.54	7,163.04	-690.25	1,044.00	Start DLS 10.00 TFO 0.02
8,217.54	7,736.00	-117.29	1,044.17	Start 8019.60 hold at 8217.54 MD
16,237.14	7,736.00	7,902.31	1,046.56	TD at 16237.14