



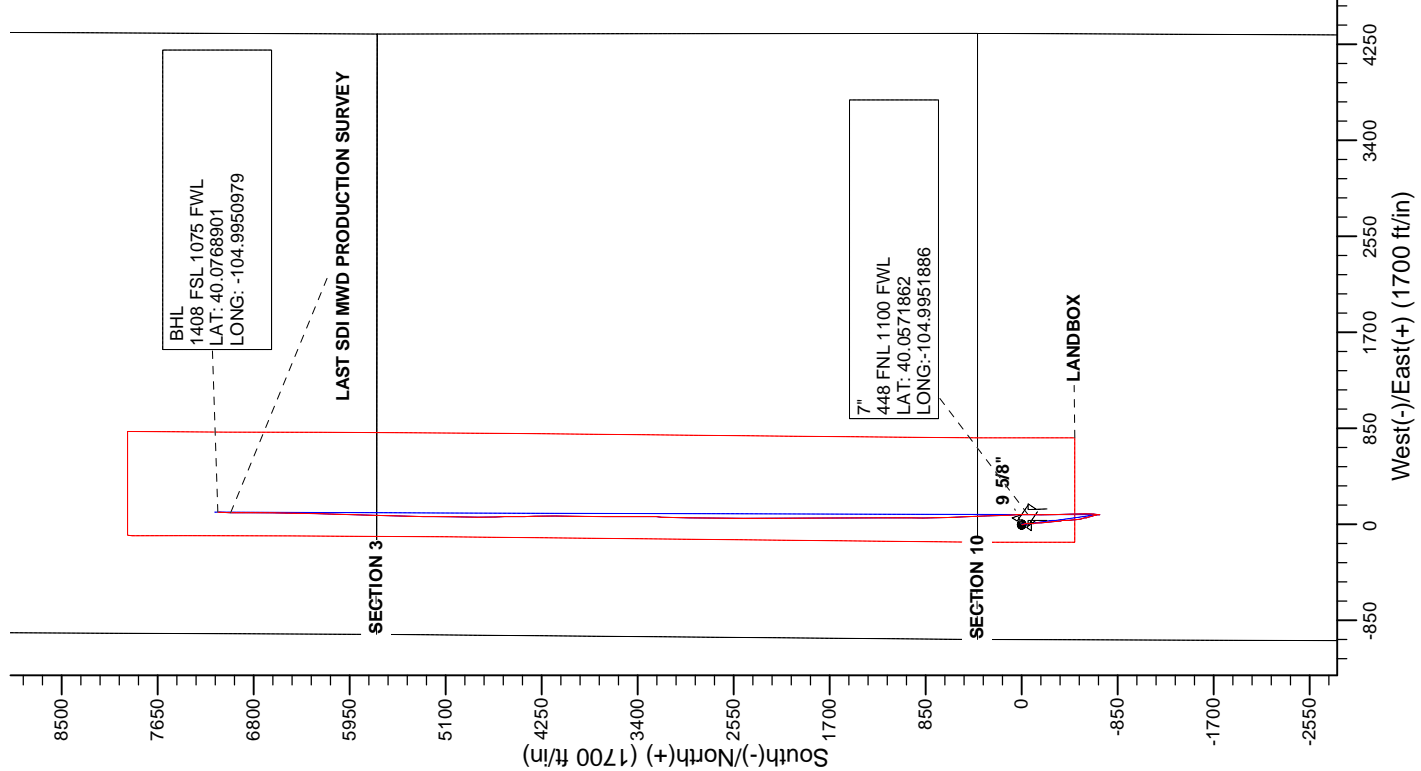
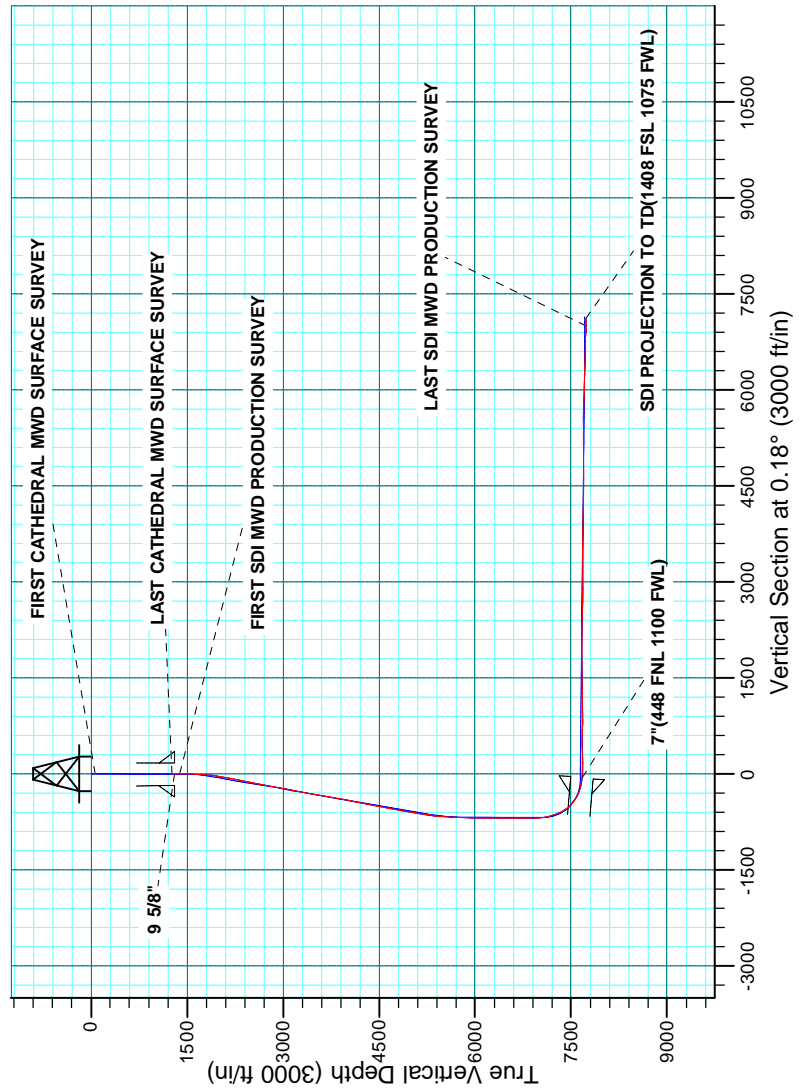
Project: COLORADO NORTHERN ZONE - 83  
Site: BUFFALO & BADGER 4C-15HZ PAD  
Well: BADGER 22N-3HZ  
Wellbore: OH  
Design: OH



WELL DETAILS: BADGER 22N-3HZ					
GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)					
+N/-S 0.00	+E/-W 0.00	Northing 1264137.15	Easting 3141220.68	Latitude 40.0573429	Longitude -104.9954900

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	

CASING DETAILS			
TVD	MD	Name	
1311.99	1312.00	9 5/8"	9.625
7672.43	8080.00	7"	7.000



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BADGER 22N-3HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Site:</b>	BUFFALO & BADGER 4C-15HZ PAD	<b>MD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Well:</b>	BADGER 22N-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

<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		

Site	BUFFALO & BADGER 4C-15HZ PAD, SECTION 15 T1N R68W				
Site Position:		Northing:	1,264,136.65 usft	Latitude:	40.0573420
From:	Lat/Long	Easting:	3,141,190.73 usft	Longitude:	-104.9955970
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.33 °

Well	BADGER 22N-3HZ, 392' FNL 1170' FWL					
Well Position	+N/-S	0.00 ft	Northing:	1,264,137.14 usft	Latitude:	40.0573429
	+E/-W	0.00 ft	Easting:	3,141,220.68 usft	Longitude:	-104.9954900
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,138.00 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>
	IGRF2015	6/5/2014	8.63	66.62	52,536

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	0.18	

<b>Survey Program</b>	<b>Date</b>	4/21/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
14.00	1,271.00	Survey #1 CATHEDRAL MWD SURFACE	MWD	MWD - Standard	
1,393.00	15,261.00	Survey #2 SDI MWD PRODUCTION (OH)	MWD+IFR	MWD + IFR correction	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
14.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	
66.00	0.10	1.60	66.00	0.05	0.00	0.05	0.19	0.19	0.00	
<b>FIRST CATHEDRAL MWD SURFACE SURVEY</b>										
177.00	0.30	134.80	177.00	-0.06	0.21	-0.06	0.34	0.18	120.00	
255.00	0.20	82.80	255.00	-0.19	0.49	-0.19	0.30	-0.13	-66.67	
336.00	0.20	77.80	336.00	-0.14	0.77	-0.14	0.02	0.00	-6.17	
416.00	0.40	119.00	416.00	-0.25	1.15	-0.24	0.35	0.25	51.50	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BADGER 22N-3HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Site:</b>	BUFFALO & BADGER 4C-15HZ PAD	<b>MD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Well:</b>	BADGER 22N-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

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)
496.00	0.20	70.60	496.00	-0.34	1.53	-0.33	0.38	-0.25	-60.50
576.00	0.10	35.60	576.00	-0.23	1.70	-0.23	0.16	-0.13	-43.75
656.00	0.40	98.50	656.00	-0.22	2.01	-0.21	0.46	0.38	78.63
736.00	0.20	218.50	735.99	-0.37	2.20	-0.36	0.66	-0.25	150.00
816.00	0.30	180.10	815.99	-0.69	2.12	-0.68	0.24	0.13	-48.00
896.00	0.40	143.00	895.99	-1.12	2.28	-1.11	0.30	0.13	-46.38
976.00	0.10	98.50	975.99	-1.35	2.52	-1.35	0.42	-0.38	-55.63
1,056.00	0.40	143.90	1,055.99	-1.59	2.75	-1.58	0.42	0.38	56.75
1,136.00	0.40	210.70	1,135.99	-2.05	2.78	-2.05	0.55	0.00	83.50
1,216.00	0.30	157.90	1,215.99	-2.49	2.71	-2.48	0.40	-0.13	-66.00
1,271.00	0.40	228.20	1,270.99	-2.75	2.62	-2.74	0.75	0.18	127.82
LAST CATHEDRAL MWD SURFACE SURVEY									
1,312.00	0.30	304.57	1,311.99	-2.79	2.43	-2.78	1.07	-0.25	186.27
9 5/8"									
1,393.00	1.04	352.17	1,392.98	-1.94	2.16	-1.93	1.07	0.92	58.77
FIRST SDI MWD PRODUCTION SURVEY									
1,487.00	1.46	248.09	1,486.97	-1.54	0.93	-1.54	2.11	0.45	-110.72
1,577.00	2.08	190.02	1,576.93	-3.58	-0.42	-3.58	2.00	0.69	-64.52
1,666.00	2.45	167.47	1,665.86	-7.02	-0.29	-7.02	1.08	0.42	-25.34
1,756.00	3.19	160.85	1,755.75	-11.27	0.95	-11.26	0.90	0.82	-7.36
1,846.00	4.80	157.19	1,845.53	-17.10	3.23	-17.09	1.81	1.79	-4.07
1,936.00	6.60	166.86	1,935.09	-25.61	5.87	-25.59	2.26	2.00	10.74
2,025.00	8.94	177.41	2,023.27	-37.50	7.34	-37.48	3.07	2.63	11.85
2,115.00	11.54	179.04	2,111.83	-53.49	7.81	-53.47	2.91	2.89	1.81
2,160.00	11.01	179.79	2,155.96	-62.29	7.90	-62.27	1.22	-1.18	1.67
2,250.00	12.05	177.13	2,244.14	-80.27	8.40	-80.24	1.30	1.16	-2.96
2,295.00	10.58	175.05	2,288.26	-89.08	9.00	-89.05	3.39	-3.27	-4.62
2,384.00	12.42	176.51	2,375.47	-106.77	10.28	-106.74	2.09	2.07	1.64
2,474.00	11.18	175.94	2,463.57	-125.13	11.49	-125.10	1.38	-1.38	-0.63
2,564.00	11.24	175.21	2,551.85	-142.58	12.84	-142.54	0.17	0.07	-0.81
2,654.00	10.67	177.32	2,640.21	-159.64	13.96	-159.60	0.77	-0.63	2.34
2,743.00	10.94	179.49	2,727.64	-176.32	14.42	-176.27	0.55	0.30	2.44
2,833.00	10.88	173.82	2,816.01	-193.30	15.41	-193.25	1.19	-0.07	-6.30
2,923.00	11.01	171.67	2,904.37	-210.25	17.57	-210.19	0.48	0.14	-2.39
3,013.00	11.14	177.77	2,992.70	-227.44	19.16	-227.38	1.31	0.14	6.78
3,102.00	11.28	172.79	3,080.01	-244.67	20.58	-244.60	1.10	0.16	-5.60
3,192.00	9.91	172.73	3,168.47	-261.09	22.67	-261.01	1.52	-1.52	-0.07
3,282.00	11.16	176.53	3,256.95	-277.46	24.18	-277.38	1.59	1.39	4.22
3,372.00	10.70	175.81	3,345.32	-294.49	25.31	-294.41	0.53	-0.51	-0.80
3,461.00	9.72	172.91	3,432.91	-310.18	26.84	-310.10	1.24	-1.10	-3.26
3,551.00	9.48	176.51	3,521.65	-325.12	28.23	-325.03	0.72	-0.27	4.00
3,641.00	9.62	164.69	3,610.41	-339.77	30.67	-339.68	2.18	0.16	-13.13

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BADGER 22N-3HZ
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<b>Site:</b>	BUFFALO & BADGER 4C-15HZ PAD	<b>MD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Well:</b>	BADGER 22N-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

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)	
3,730.00	11.39	168.96	3,697.92	-355.57	34.32	-355.46	2.17	1.99	4.80	
3,820.00	10.09	169.51	3,786.34	-372.05	37.45	-371.93	1.45	-1.44	0.61	
3,910.00	9.53	179.74	3,875.03	-387.25	38.92	-387.13	2.03	-0.62	11.37	
4,000.00	10.45	176.77	3,963.66	-402.85	39.42	-402.73	1.17	1.02	-3.30	
4,090.00	10.22	180.82	4,052.20	-418.99	39.76	-418.86	0.85	-0.26	4.50	
4,179.00	10.73	178.94	4,139.72	-435.16	39.80	-435.04	0.69	0.57	-2.11	
4,269.00	11.21	174.18	4,228.08	-452.24	40.84	-452.11	1.14	0.53	-5.29	
4,359.00	9.77	172.86	4,316.57	-468.53	42.68	-468.39	1.62	-1.60	-1.47	
4,449.00	11.81	178.04	4,404.98	-485.31	43.95	-485.17	2.51	2.27	5.76	
4,538.00	12.84	170.86	4,491.93	-504.18	45.83	-504.03	2.07	1.16	-8.07	
4,628.00	11.55	166.26	4,579.90	-522.80	49.56	-522.65	1.79	-1.43	-5.11	
4,718.00	10.14	165.47	4,668.29	-539.23	53.68	-539.05	1.58	-1.57	-0.88	
4,808.00	11.06	167.58	4,756.75	-555.33	57.53	-555.14	1.11	1.02	2.34	
4,898.00	10.93	166.84	4,845.10	-572.06	61.33	-571.87	0.21	-0.14	-0.82	
4,987.00	10.32	164.76	4,932.58	-587.97	65.34	-587.76	0.81	-0.69	-2.34	
5,077.00	10.93	165.41	5,021.03	-604.01	69.61	-603.79	0.69	0.68	0.72	
5,167.00	9.07	168.01	5,109.66	-619.21	73.24	-618.97	2.13	-2.07	2.89	
5,257.00	8.10	166.43	5,198.65	-632.31	76.20	-632.07	1.11	-1.08	-1.76	
5,347.00	7.52	164.82	5,287.82	-644.16	79.23	-643.90	0.69	-0.64	-1.79	
5,437.00	6.63	164.14	5,377.13	-654.84	82.19	-654.58	0.99	-0.99	-0.76	
5,526.00	5.32	163.59	5,465.65	-663.74	84.76	-663.47	1.47	-1.47	-0.62	
5,616.00	3.95	167.71	5,555.35	-670.77	86.60	-670.49	1.57	-1.52	4.58	
5,706.00	2.68	169.42	5,645.20	-675.87	87.64	-675.59	1.42	-1.41	1.90	
5,796.00	2.04	176.82	5,735.12	-679.54	88.12	-679.26	0.79	-0.71	8.22	
5,886.00	1.45	184.07	5,825.08	-682.27	88.13	-681.99	0.70	-0.66	8.06	
5,975.00	1.07	194.65	5,914.06	-684.20	87.84	-683.92	0.50	-0.43	11.89	
6,065.00	0.94	185.64	6,004.04	-685.75	87.55	-685.47	0.23	-0.14	-10.01	
6,155.00	0.62	197.31	6,094.04	-686.95	87.34	-686.67	0.40	-0.36	12.97	
6,245.00	0.59	187.74	6,184.03	-687.87	87.13	-687.59	0.12	-0.03	-10.63	
6,335.00	0.51	210.47	6,274.03	-688.67	86.86	-688.40	0.26	-0.09	25.26	
6,424.00	0.94	229.22	6,363.02	-689.49	86.11	-689.22	0.55	0.48	21.07	
6,514.00	0.61	243.17	6,453.01	-690.19	85.12	-689.92	0.42	-0.37	15.50	
6,604.00	0.03	305.44	6,543.01	-690.39	84.68	-690.12	0.66	-0.64	69.19	
6,694.00	0.38	345.45	6,633.01	-690.09	84.58	-689.82	0.40	0.39	44.46	
6,784.00	0.36	341.03	6,723.01	-689.53	84.41	-689.27	0.04	-0.02	-4.91	
6,873.00	0.81	78.85	6,812.00	-689.15	84.94	-688.88	1.05	0.51	109.91	
6,963.00	0.84	38.74	6,901.99	-688.51	85.98	-688.24	0.63	0.03	-44.57	
7,053.00	3.33	5.66	6,991.93	-685.39	86.65	-685.12	2.96	2.77	-36.76	
7,143.00	7.92	0.70	7,081.47	-676.59	86.98	-676.31	5.12	5.10	-5.51	
7,233.00	12.79	14.34	7,169.99	-660.72	89.53	-660.44	6.02	5.41	15.16	
7,322.00	21.13	4.63	7,255.06	-635.14	93.27	-634.84	9.87	9.37	-10.91	
7,412.00	27.77	2.44	7,336.95	-597.98	95.47	-597.68	7.45	7.38	-2.43	

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<b>Site:</b>	BUFFALO & BADGER 4C-15HZ PAD	<b>MD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Well:</b>	BADGER 22N-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

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)
7,502.00	34.02	359.74	7,414.14	-551.81	96.25	-551.50	7.11	6.94	-3.00
7,592.00	44.01	358.56	7,483.98	-495.23	95.35	-494.93	11.13	11.10	-1.31
7,681.00	53.74	357.65	7,542.45	-428.31	93.10	-428.02	10.96	10.93	-1.02
7,771.00	60.98	357.64	7,590.96	-352.64	89.98	-352.36	8.04	8.04	-0.01
7,861.00	70.16	358.93	7,628.14	-270.82	87.57	-270.55	10.28	10.20	1.43
7,951.00	77.00	359.12	7,653.57	-184.56	86.10	-184.29	7.60	7.60	0.21
8,037.00	83.47	359.19	7,668.15	-99.86	84.85	-99.59	7.52	7.52	0.08
8,080.00	85.11	359.51	7,672.43	-57.08	84.37	-56.81	3.88	3.81	0.74
7"(448 FNL 1100 FWL)									
8,174.00	88.69	0.20	7,677.51	36.77	84.13	37.03	3.88	3.81	0.74
8,268.00	89.09	359.35	7,679.33	130.75	83.76	131.01	1.00	0.43	-0.90
8,363.00	90.34	358.48	7,679.81	225.73	81.96	225.99	1.60	1.32	-0.92
8,457.00	90.03	356.64	7,679.50	319.64	77.96	319.88	1.99	-0.33	-1.96
8,551.00	91.14	356.42	7,678.54	413.46	72.27	413.69	1.20	1.18	-0.23
8,645.00	90.61	358.07	7,677.11	507.34	67.75	507.55	1.84	-0.56	1.76
8,834.00	88.86	357.92	7,677.98	696.21	61.14	696.40	0.93	-0.93	-0.08
8,928.00	88.39	359.14	7,680.24	790.15	58.73	790.33	1.39	-0.50	1.30
9,022.00	90.30	359.39	7,681.31	884.14	57.53	884.31	2.05	2.03	0.27
9,116.00	91.73	0.19	7,679.65	978.12	57.18	978.29	1.74	1.52	0.85
9,211.00	91.17	0.46	7,677.24	1,073.08	57.72	1,073.26	0.65	-0.59	0.28
9,305.00	89.50	0.69	7,676.69	1,167.07	58.66	1,167.25	1.79	-1.78	0.24
9,399.00	89.80	0.15	7,677.27	1,261.07	59.35	1,261.25	0.66	0.32	-0.57
9,489.00	91.01	359.94	7,676.63	1,351.07	59.42	1,351.25	1.36	1.34	-0.23
9,579.00	89.93	359.10	7,675.89	1,441.06	58.67	1,441.23	1.52	-1.20	-0.93
9,668.00	92.04	359.54	7,674.36	1,530.03	57.61	1,530.21	2.42	2.37	0.49
9,848.00	91.92	359.15	7,668.14	1,709.91	55.56	1,710.08	0.23	-0.07	-0.22
10,027.00	89.16	0.58	7,666.46	1,888.88	55.14	1,889.05	1.74	-1.54	0.80
10,207.00	89.23	0.24	7,668.98	2,068.86	56.42	2,069.03	0.19	0.04	-0.19
10,297.00	88.69	359.73	7,670.62	2,158.84	56.40	2,159.01	0.83	-0.60	-0.57
10,476.00	90.13	0.22	7,672.46	2,337.83	56.32	2,338.00	0.85	0.80	0.27
10,566.00	88.85	358.92	7,673.26	2,427.82	55.65	2,427.98	2.03	-1.42	-1.44
10,656.00	87.43	0.58	7,676.18	2,517.77	55.25	2,517.93	2.43	-1.58	1.84
10,745.00	87.62	1.16	7,680.03	2,606.67	56.60	2,606.84	0.69	0.21	0.65
10,835.00	88.25	359.65	7,683.27	2,696.61	57.24	2,696.78	1.82	0.70	-1.68
10,925.00	88.89	359.41	7,685.52	2,786.58	56.50	2,786.74	0.76	0.71	-0.27
11,015.00	90.03	1.45	7,686.36	2,876.56	57.18	2,876.73	2.60	1.27	2.27
11,104.00	91.07	1.31	7,685.51	2,965.53	59.32	2,965.71	1.18	1.17	-0.16
11,194.00	91.34	1.93	7,683.62	3,055.48	61.86	3,055.66	0.75	0.30	0.69
11,284.00	91.11	2.42	7,681.69	3,145.39	65.28	3,145.58	0.60	-0.26	0.54
11,374.00	89.73	1.03	7,681.03	3,235.34	67.99	3,235.54	2.18	-1.53	-1.54
11,553.00	89.53	0.84	7,682.19	3,414.32	70.91	3,414.52	0.15	-0.11	-0.11
11,643.00	89.60	0.47	7,682.87	3,504.31	71.94	3,504.52	0.42	0.08	-0.41

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BADGER 22N-3HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Site:</b>	BUFFALO & BADGER 4C-15HZ PAD	<b>MD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Well:</b>	BADGER 22N-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

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)
11,733.00	89.33	359.82	7,683.71	3,594.30	72.17	3,594.51	0.78	-0.30	-0.72
11,822.00	89.03	0.54	7,684.99	3,683.29	72.44	3,683.50	0.88	-0.34	0.81
11,912.00	88.69	0.99	7,686.78	3,773.27	73.65	3,773.48	0.63	-0.38	0.50
12,002.00	89.50	0.41	7,688.20	3,863.25	74.75	3,863.46	1.11	0.90	-0.64
12,092.00	89.47	0.26	7,689.01	3,953.24	75.27	3,953.46	0.17	-0.03	-0.17
12,181.00	89.70	0.43	7,689.65	4,042.24	75.81	4,042.46	0.32	0.26	0.19
12,271.00	89.10	359.70	7,690.60	4,132.23	75.91	4,132.45	1.05	-0.67	-0.81
12,361.00	89.09	359.86	7,692.02	4,222.22	75.56	4,222.44	0.18	-0.01	0.18
12,451.00	88.32	359.47	7,694.05	4,312.19	75.04	4,312.41	0.96	-0.86	-0.43
12,541.00	88.80	358.80	7,696.31	4,402.15	73.68	4,402.36	0.92	0.53	-0.74
12,630.00	89.53	359.04	7,697.61	4,491.13	72.00	4,491.33	0.86	0.82	0.27
12,720.00	90.87	358.30	7,697.30	4,581.10	69.91	4,581.30	1.70	1.49	-0.82
12,810.00	90.77	359.18	7,696.01	4,671.07	67.93	4,671.26	0.98	-0.11	0.98
12,900.00	90.67	358.91	7,694.88	4,761.05	66.43	4,761.24	0.32	-0.11	-0.30
12,990.00	90.34	1.52	7,694.08	4,851.04	66.77	4,851.22	2.92	-0.37	2.90
13,080.00	89.13	0.01	7,694.50	4,941.02	67.97	4,941.21	2.15	-1.34	-1.68
13,169.00	87.76	359.85	7,696.91	5,029.99	67.87	5,030.18	1.55	-1.54	-0.18
13,259.00	88.96	359.82	7,699.49	5,119.95	67.61	5,120.14	1.33	1.33	-0.03
13,349.00	89.90	359.96	7,700.39	5,209.95	67.43	5,210.13	1.06	1.04	0.16
13,439.00	91.85	0.95	7,699.01	5,299.93	68.15	5,300.11	2.43	2.17	1.10
13,529.00	91.47	1.07	7,696.40	5,389.87	69.73	5,390.07	0.44	-0.42	0.13
13,618.00	90.13	2.05	7,695.16	5,478.83	72.16	5,479.03	1.87	-1.51	1.10
13,798.00	89.33	2.89	7,696.01	5,658.66	79.91	5,658.88	0.64	-0.44	0.47
13,888.00	88.59	1.69	7,697.64	5,748.57	83.51	5,748.80	1.57	-0.82	-1.33
13,978.00	87.90	0.96	7,700.40	5,838.50	85.59	5,838.74	1.12	-0.77	-0.81
14,067.00	88.19	2.63	7,703.44	5,927.40	88.38	5,927.65	1.90	0.33	1.88
14,157.00	88.18	1.14	7,706.29	6,017.31	91.33	6,017.56	1.65	-0.01	-1.66
14,247.00	88.15	1.30	7,709.17	6,107.24	93.25	6,107.50	0.18	-0.03	0.18
14,337.00	87.83	1.52	7,712.33	6,197.16	95.46	6,197.43	0.43	-0.36	0.24
14,444.00	87.60	1.86	7,716.59	6,304.02	98.62	6,304.30	0.38	-0.21	0.32
14,606.00	87.85	0.08	7,723.02	6,465.87	101.36	6,466.15	1.11	0.15	-1.10
14,696.00	87.75	359.80	7,726.48	6,555.80	101.26	6,556.09	0.33	-0.11	-0.31
14,786.00	89.63	1.04	7,728.53	6,645.77	101.92	6,646.06	2.50	2.09	1.38
14,876.00	89.30	0.99	7,729.38	6,735.75	103.52	6,736.04	0.37	-0.37	-0.06
14,965.00	88.86	0.86	7,730.80	6,824.73	104.95	6,825.02	0.52	-0.49	-0.15
15,055.00	88.86	0.78	7,732.59	6,914.70	106.24	6,915.00	0.09	0.00	-0.09
15,145.00	88.19	1.02	7,734.91	7,004.66	107.65	7,004.96	0.79	-0.74	0.27
LAST SDI MWD PRODUCTION SURVEY									
15,261.00	88.19	1.02	7,738.58	7,120.58	109.72	7,120.89	0.00	0.00	0.00
SDI PROJECTION TO TD(1408 FSL 1075 FWL)									

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<b>Site:</b>	BUFFALO & BADGER 4C-15HZ PAD	<b>MD Reference:</b>	GL 5138 & KB 20 @ 5158.00ft (PRECISION 461)
<b>Well:</b>	BADGER 22N-3HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,312.00	1,311.99	9 5/8"	9.625	13.500	
8,080.00	7,672.43	7"(448 FNL 1100 FWL)	7.000	8.750	

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
66.00	66.00	0.05	0.00	FIRST CATHEDRAL MWD SURFACE SURVEY	
1,271.00	1,270.99	-2.75	2.62	LAST CATHEDRAL MWD SURFACE SURVEY	
1,393.00	1,392.98	-1.94	2.16	FIRST SDI MWD PRODUCTION SURVEY	
15,145.00	7,734.91	7,004.66	107.65	LAST SDI MWD PRODUCTION SURVEY	
15,261.00	7,738.58	7,120.58	109.72	SDI PROJECTION TO TD(1408 FSL 1075 FWL)	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_