

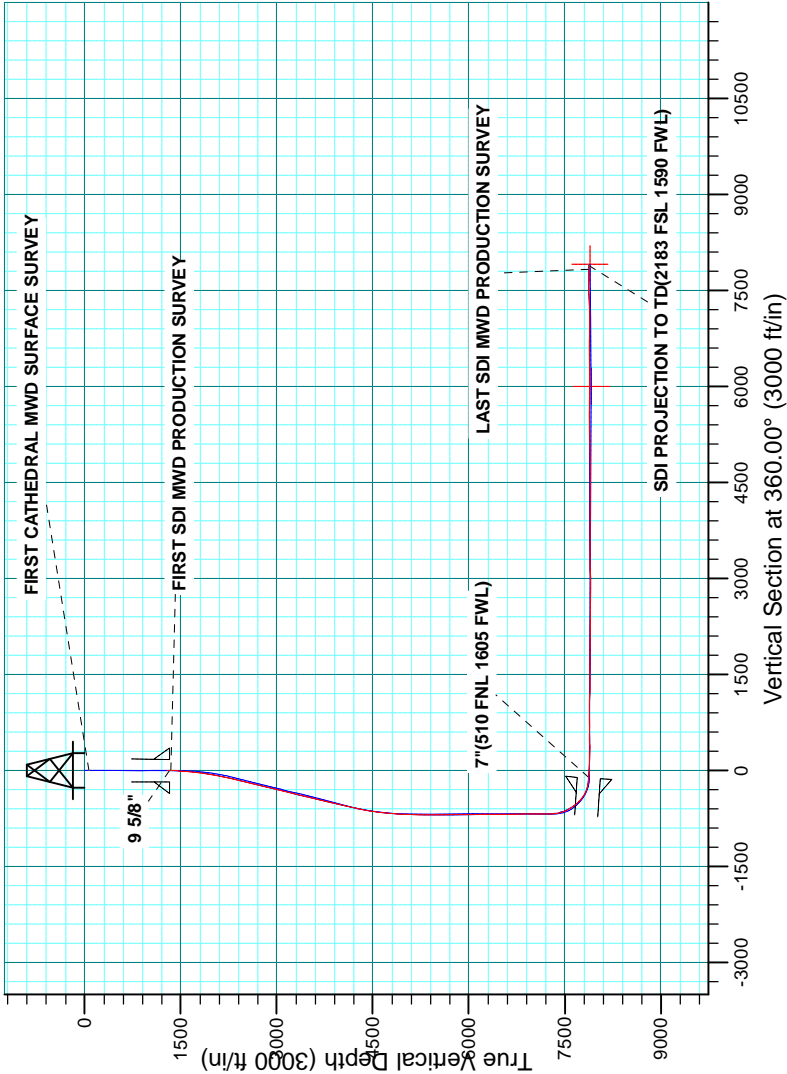


Project: COLORADO NORTHERN ZONE - 83
Site: BUFFALO & BADGER 4E-15HZ PAD
Well: BADGER 22C-3HZ
Wellbore: OH
Design: OH

WELL DETAILS: BADGER 22C-3HZ					
GL 5132 & KB 25 @ 5157.00ft (HP 290)					
+N/-S 0.00	+E/-W 0.00	Northing 1264142.35	Easting 3141430.59	Latitude 40.0573539	Longitude -104.9947400

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
1325.91326.00	9 5/8"	9.625
7876.532540FNL	1605 FWL	7.000



BHL
2183 FSL 1590 FWL
LAT:40.0790060
LONG:-104.9932509

LAST SDI MWD PRODUCTION SURVEY

SECTION 3

7"
510 FNL 1605 FWL
LAT:40.0570391
LONG:-104.9933821

7"(510 FNL 1605 FWL)

SECTION 10

LANDBOX

9 5/8"

West(-)/East(+) (1500 ft/in)

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well BADGER 22C-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Site:	BUFFALO & BADGER 4E-15HZ PAD	MD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Well:	BADGER 22C-3HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales

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

Well	BADGER 22C-3HZ, 387 FNL 1229 FWL					
Well Position	+N/-S	0.00 ft	Northing:	1,264,142.35 usft	Latitude:	40.0573539
	+E/-W	0.00 ft	Easting:	3,141,430.59 usft	Longitude:	-104.9947400
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,132.00 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	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	360.00	

Survey Program	Date	3/6/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
19.00	1,291.00	Survey #1 CATHEDRAL MWD SURFACE	MWD	MWD - Standard	
1,347.00	16,288.00	Survey #2 SDI MWD PRODUCTION (OH)	MWD+IFR	MWD + IFR correction	

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	
19.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00	0.00	0.00	
71.00	0.30	121.00	71.00	-0.07	0.12	-0.07	0.58	0.58	0.00	
FIRST CATHEDRAL MWD SURFACE SURVEY										
161.00	0.40	66.30	161.00	-0.07	0.61	-0.07	0.37	0.11	-60.78	
258.00	0.60	61.20	257.99	0.32	1.36	0.32	0.21	0.21	-5.26	
337.00	0.40	63.60	336.99	0.64	1.97	0.64	0.25	-0.25	3.04	
417.00	0.90	59.40	416.99	1.08	2.76	1.08	0.63	0.63	-5.25	
497.00	0.80	57.30	496.98	1.70	3.77	1.70	0.13	-0.13	-2.63	
577.00	0.60	142.70	576.97	1.67	4.50	1.67	1.20	-0.25	106.75	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well BADGER 22C-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Site:	BUFFALO & BADGER 4E-15HZ PAD	MD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Well:	BADGER 22C-3HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
657.00	0.70	160.00	656.97	0.88	4.92	0.88	0.27	0.13	21.63
737.00	1.00	199.90	736.96	-0.24	4.85	-0.24	0.81	0.38	49.88
817.00	1.10	225.80	816.95	-1.43	4.06	-1.43	0.60	0.13	32.38
897.00	1.30	242.80	896.93	-2.38	2.70	-2.38	0.51	0.25	21.25
977.00	0.70	251.80	976.92	-2.95	1.43	-2.95	0.77	-0.75	11.25
1,057.00	0.30	297.20	1,056.91	-3.00	0.78	-3.00	0.67	-0.50	56.75
1,137.00	0.30	298.60	1,136.91	-2.81	0.41	-2.81	0.01	0.00	1.75
1,217.00	0.30	317.50	1,216.91	-2.55	0.08	-2.55	0.12	0.00	23.63
1,291.00	0.10	250.10	1,290.91	-2.43	-0.11	-2.43	0.37	-0.27	-91.08
LAST CATHEDRAL MWD SURFACE SURVEY									
1,326.00	0.71	252.72	1,325.91	-2.51	-0.34	-2.51	1.75	1.75	7.50
9 5/8"									
1,347.00	1.08	252.87	1,346.91	-2.60	-0.66	-2.60	1.75	1.75	0.69
FIRST SDI MWD PRODUCTION SURVEY									
1,437.00	2.23	212.63	1,436.87	-4.33	-2.41	-4.33	1.74	1.28	-44.71
1,528.00	3.88	183.89	1,527.74	-8.89	-3.58	-8.89	2.42	1.81	-31.58
1,619.00	5.78	181.68	1,618.42	-16.54	-3.92	-16.54	2.10	2.09	-2.43
1,709.00	6.80	177.04	1,707.87	-26.40	-3.78	-26.40	1.27	1.13	-5.16
1,799.00	8.18	162.53	1,797.11	-37.83	-1.58	-37.83	2.59	1.53	-16.12
1,890.00	9.54	149.69	1,887.03	-50.51	4.17	-50.51	2.63	1.49	-14.11
1,980.00	10.12	149.79	1,975.71	-63.78	11.91	-63.78	0.64	0.64	0.11
2,072.00	11.95	149.60	2,066.01	-78.99	20.80	-78.99	1.99	1.99	-0.21
2,163.00	13.56	147.92	2,154.76	-96.15	31.23	-96.15	1.82	1.77	-1.85
2,253.00	14.40	147.61	2,242.09	-114.54	42.83	-114.54	0.94	0.93	-0.34
2,344.00	14.93	149.01	2,330.13	-134.15	54.93	-134.15	0.70	0.58	1.54
2,438.00	17.74	148.91	2,420.32	-156.80	68.56	-156.80	2.99	2.99	-0.11
2,533.00	16.09	145.31	2,511.21	-180.02	83.53	-180.02	2.06	-1.74	-3.79
2,627.00	15.50	147.96	2,601.66	-201.37	97.61	-201.37	0.99	-0.63	2.82
2,722.00	15.61	147.54	2,693.19	-222.92	111.20	-222.92	0.17	0.12	-0.44
2,816.00	15.12	144.83	2,783.83	-243.61	125.05	-243.61	0.92	-0.52	-2.88
2,910.00	15.72	144.26	2,874.44	-263.97	139.55	-263.97	0.66	0.64	-0.61
3,005.00	16.65	141.50	2,965.68	-285.07	155.54	-285.07	1.27	0.98	-2.91
3,099.00	17.15	145.86	3,055.62	-307.08	171.70	-307.08	1.45	0.53	4.64
3,194.00	16.48	150.30	3,146.56	-330.38	186.24	-330.38	1.52	-0.71	4.67
3,288.00	16.58	150.31	3,236.68	-353.61	199.49	-353.61	0.11	0.11	0.01
3,383.00	16.15	148.06	3,327.83	-376.60	213.19	-376.60	0.81	-0.45	-2.37
3,477.00	16.27	147.54	3,418.09	-398.80	227.18	-398.80	0.20	0.13	-0.55
3,571.00	15.53	150.84	3,508.50	-420.90	240.38	-420.90	1.24	-0.79	3.51
3,666.00	15.43	149.89	3,600.05	-442.94	252.91	-442.94	0.29	-0.11	-1.00
3,760.00	15.74	153.27	3,690.60	-465.15	264.92	-465.15	1.02	0.33	3.60
3,855.00	14.52	151.26	3,782.30	-487.10	276.44	-487.10	1.40	-1.28	-2.12
3,949.00	14.64	148.11	3,873.28	-507.52	288.38	-507.52	0.85	0.13	-3.35
4,044.00	14.84	150.91	3,965.15	-528.34	300.64	-528.34	0.78	0.21	2.95
4,138.00	14.17	151.18	4,056.16	-548.94	312.04	-548.94	0.72	-0.71	0.29

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well BADGER 22C-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Site:	BUFFALO & BADGER 4E-15HZ PAD	MD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Well:	BADGER 22C-3HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
4,233.00	14.51	153.58	4,148.20	-569.79	322.94	-569.79	0.72	0.36	2.53
4,327.00	14.11	154.21	4,239.28	-590.65	333.17	-590.65	0.46	-0.43	0.67
4,421.00	12.01	154.91	4,330.84	-609.82	342.30	-609.82	2.24	-2.23	0.74
4,516.00	10.87	156.72	4,423.95	-627.01	350.03	-627.01	1.26	-1.20	1.91
4,610.00	8.98	162.10	4,516.55	-642.13	355.79	-642.13	2.24	-2.01	5.72
4,705.00	6.73	164.72	4,610.65	-654.56	359.54	-654.56	2.40	-2.37	2.76
4,799.00	4.88	156.08	4,704.16	-663.53	362.61	-663.53	2.17	-1.97	-9.19
4,894.00	3.98	157.58	4,798.88	-670.27	365.51	-670.27	0.96	-0.95	1.58
4,988.00	3.37	155.43	4,892.69	-675.80	367.90	-675.80	0.67	-0.65	-2.29
5,082.00	2.84	167.55	4,986.55	-680.58	369.55	-680.58	0.89	-0.56	12.89
5,177.00	2.25	174.67	5,081.45	-684.74	370.23	-684.74	0.70	-0.62	7.49
5,271.00	2.54	147.20	5,175.38	-688.33	371.53	-688.33	1.25	0.31	-29.22
5,366.00	2.84	133.64	5,270.27	-691.72	374.37	-691.72	0.74	0.32	-14.27
5,460.00	2.22	101.94	5,364.18	-693.70	377.84	-693.70	1.60	-0.66	-33.72
5,555.00	1.95	86.75	5,459.12	-693.99	381.25	-693.99	0.64	-0.28	-15.99
5,649.00	1.26	69.61	5,553.08	-693.54	383.82	-693.54	0.89	-0.73	-18.23
5,744.00	0.99	54.03	5,648.07	-692.70	385.46	-692.70	0.43	-0.28	-16.40
5,838.00	0.89	38.66	5,742.05	-691.65	386.58	-691.65	0.29	-0.11	-16.35
5,932.00	0.71	13.21	5,836.04	-690.51	387.16	-690.51	0.42	-0.19	-27.07
6,027.00	0.67	16.06	5,931.04	-689.40	387.45	-689.40	0.06	-0.04	3.00
6,122.00	1.12	1.77	6,026.03	-687.94	387.64	-687.94	0.53	0.47	-15.04
6,216.00	0.98	353.66	6,120.01	-686.23	387.57	-686.23	0.22	-0.15	-8.63
6,311.00	0.17	7.56	6,215.01	-685.28	387.50	-685.28	0.86	-0.85	14.63
6,405.00	0.18	358.37	6,309.00	-684.99	387.52	-684.99	0.03	0.01	-9.78
6,499.00	0.47	328.50	6,403.00	-684.52	387.31	-684.52	0.35	0.31	-31.78
6,594.00	0.52	323.32	6,498.00	-683.84	386.85	-683.84	0.07	0.05	-5.45
6,688.00	0.88	25.04	6,591.99	-682.84	386.90	-682.84	0.83	0.38	65.66
6,783.00	0.74	23.86	6,686.98	-681.62	387.46	-681.62	0.15	-0.15	-1.24
6,877.00	0.61	36.21	6,780.98	-680.66	388.00	-680.66	0.21	-0.14	13.14
6,972.00	0.73	38.36	6,875.97	-679.78	388.67	-679.78	0.13	0.13	2.26
7,066.00	0.34	31.25	6,969.97	-679.07	389.19	-679.07	0.42	-0.41	-7.56
7,161.00	0.87	83.36	7,064.96	-678.75	390.05	-678.75	0.75	0.56	54.85
7,255.00	0.83	50.30	7,158.95	-678.23	391.29	-678.23	0.52	-0.04	-35.17
7,349.00	1.08	60.57	7,252.94	-677.36	392.58	-677.36	0.32	0.27	10.93
7,444.00	4.85	358.05	7,347.81	-672.90	393.22	-672.90	4.69	3.97	-65.81
7,491.00	11.32	359.54	7,394.32	-666.30	393.12	-666.30	13.77	13.77	3.17
7,538.00	15.93	358.06	7,439.98	-655.23	392.86	-655.23	9.84	9.81	-3.15
7,585.00	20.10	0.08	7,484.67	-640.70	392.66	-640.70	8.97	8.87	4.30
7,633.00	24.60	0.30	7,529.05	-622.46	392.72	-622.46	9.38	9.38	0.46
7,680.00	29.37	356.05	7,570.93	-601.16	391.98	-601.16	10.94	10.15	-9.04
7,727.00	34.53	351.26	7,610.80	-576.48	389.16	-576.48	12.22	10.98	-10.19
7,774.00	38.30	353.11	7,648.62	-548.84	385.38	-548.84	8.35	8.02	3.94
7,822.00	41.08	357.42	7,685.56	-518.31	382.89	-518.31	8.15	5.79	8.98

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Site:	BUFFALO & BADGER 4E-15HZ PAD	MD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Well:	BADGER 22C-3HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
7,869.00	43.32	1.15	7,720.38	-486.75	382.52	-486.75	7.15	4.77	7.94
7,916.00	48.65	0.27	7,753.02	-452.97	382.92	-452.97	11.42	11.34	-1.87
7,963.00	53.81	359.07	7,782.44	-416.34	382.70	-416.34	11.16	10.98	-2.55
8,010.00	60.20	356.97	7,808.03	-376.96	381.31	-376.96	14.10	13.60	-4.47
8,057.00	66.05	358.86	7,829.27	-335.09	379.81	-335.09	12.95	12.45	4.02
8,105.00	70.64	359.50	7,846.97	-290.49	379.17	-290.49	9.64	9.56	1.33
8,152.00	76.04	0.22	7,860.44	-245.48	379.07	-245.48	11.58	11.49	1.53
8,199.00	81.88	0.60	7,869.44	-199.37	379.40	-199.37	12.45	12.43	0.81
8,228.00	85.56	0.48	7,872.61	-170.55	379.67	-170.55	12.70	12.69	-0.41
8,284.00	86.42	0.41	7,876.53	-114.69	380.10	-114.69	1.54	1.54	-0.12
7"(510 FNL 1605 FWL)									
8,388.00	88.02	0.29	7,881.57	-10.82	380.74	-10.82	1.54	1.54	-0.12
8,482.00	87.35	359.19	7,885.37	83.10	380.32	83.10	1.37	-0.71	-1.17
8,577.00	88.12	359.77	7,889.12	178.02	379.45	178.02	1.01	0.81	0.61
8,671.00	89.03	1.01	7,891.46	271.99	380.09	271.99	1.64	0.97	1.32
8,766.00	91.14	2.22	7,891.32	366.94	382.77	366.94	2.56	2.22	1.27
8,858.00	90.57	1.00	7,889.95	458.89	385.36	458.89	1.46	-0.62	-1.33
8,949.00	90.37	1.00	7,889.20	549.87	386.94	549.87	0.22	-0.22	0.00
9,041.00	90.20	0.41	7,888.74	641.87	388.08	641.87	0.67	-0.18	-0.64
9,132.00	89.87	0.50	7,888.69	732.86	388.80	732.86	0.38	-0.36	0.10
9,224.00	90.67	0.59	7,888.25	824.86	389.67	824.86	0.88	0.87	0.10
9,315.00	90.94	0.69	7,886.97	915.84	390.69	915.84	0.32	0.30	0.11
9,406.00	90.91	0.93	7,885.51	1,006.82	391.98	1,006.82	0.27	-0.03	0.26
9,497.00	87.95	0.10	7,886.41	1,097.80	392.79	1,097.80	3.38	-3.25	-0.91
9,588.00	87.35	359.94	7,890.14	1,188.73	392.83	1,188.73	0.68	-0.66	-0.18
9,677.00	88.39	0.46	7,893.45	1,277.66	393.14	1,277.66	1.31	1.17	0.58
9,768.00	88.96	359.64	7,895.55	1,368.64	393.22	1,368.64	1.10	0.63	-0.90
9,859.00	90.50	0.31	7,895.98	1,459.63	393.18	1,459.63	1.85	1.69	0.74
9,949.00	90.37	1.22	7,895.30	1,549.62	394.38	1,549.62	1.02	-0.14	1.01
10,039.00	89.87	0.72	7,895.11	1,639.61	395.90	1,639.61	0.79	-0.56	-0.56
10,130.00	90.67	1.80	7,894.68	1,730.58	397.90	1,730.58	1.48	0.88	1.19
10,220.00	90.10	0.30	7,894.08	1,820.56	399.55	1,820.56	1.78	-0.63	-1.67
10,313.00	89.53	0.18	7,894.38	1,913.56	399.94	1,913.56	0.63	-0.61	-0.13
10,403.00	89.80	1.55	7,894.90	2,003.55	401.30	2,003.55	1.55	0.30	1.52
10,493.00	89.03	1.32	7,895.82	2,093.51	403.55	2,093.51	0.89	-0.86	-0.26
10,584.00	89.09	1.46	7,897.32	2,184.47	405.76	2,184.47	0.17	0.07	0.15
10,678.00	89.06	0.24	7,898.83	2,278.45	407.15	2,278.45	1.30	-0.03	-1.30
10,772.00	88.76	359.84	7,900.62	2,372.43	407.22	2,372.43	0.53	-0.32	-0.43
10,867.00	89.46	359.51	7,902.10	2,467.42	406.68	2,467.42	0.81	0.74	-0.35
10,961.00	89.66	0.05	7,902.82	2,561.41	406.32	2,561.41	0.61	0.21	0.57
11,056.00	89.30	359.08	7,903.68	2,656.41	405.60	2,656.41	1.09	-0.38	-1.02
11,150.00	89.83	359.91	7,904.40	2,750.40	404.77	2,750.40	1.05	0.56	0.88
11,244.00	89.60	0.46	7,904.86	2,844.40	405.07	2,844.40	0.63	-0.24	0.59

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well BADGER 22C-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Site:	BUFFALO & BADGER 4E-15HZ PAD	MD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Well:	BADGER 22C-3HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
11,339.00	90.17	0.31	7,905.05	2,939.39	405.71	2,939.39	0.62	0.60	-0.16
11,433.00	91.18	1.88	7,903.95	3,033.37	407.51	3,033.37	1.99	1.07	1.67
11,527.00	91.14	1.73	7,902.04	3,127.30	410.47	3,127.30	0.17	-0.04	-0.16
11,622.00	90.50	0.87	7,900.68	3,222.26	412.62	3,222.26	1.13	-0.67	-0.91
11,716.00	89.80	1.25	7,900.44	3,316.25	414.36	3,316.25	0.85	-0.74	0.40
11,811.00	90.91	0.92	7,899.85	3,411.23	416.16	3,411.23	1.22	1.17	-0.35
11,905.00	91.11	0.00	7,898.19	3,505.21	416.92	3,505.21	1.00	0.21	-0.98
11,999.00	90.74	358.41	7,896.67	3,599.18	415.61	3,599.18	1.74	-0.39	-1.69
12,094.00	90.50	359.03	7,895.65	3,694.15	413.49	3,694.15	0.70	-0.25	0.65
12,188.00	90.77	358.72	7,894.60	3,788.13	411.64	3,788.13	0.44	0.29	-0.33
12,283.00	89.56	358.74	7,894.33	3,883.10	409.54	3,883.10	1.27	-1.27	0.02
12,377.00	89.60	359.58	7,895.02	3,977.09	408.16	3,977.09	0.89	0.04	0.89
12,472.00	90.47	0.06	7,894.96	4,072.09	407.86	4,072.09	1.05	0.92	0.51
12,566.00	90.23	0.00	7,894.39	4,166.09	407.91	4,166.09	0.26	-0.26	-0.06
12,661.00	90.44	0.83	7,893.83	4,261.08	408.60	4,261.08	0.90	0.22	0.87
12,755.00	90.30	0.50	7,893.23	4,355.07	409.69	4,355.07	0.38	-0.15	-0.35
12,849.00	90.50	1.20	7,892.57	4,449.06	411.09	4,449.06	0.77	0.21	0.74
12,943.00	90.87	0.92	7,891.45	4,543.04	412.82	4,543.04	0.49	0.39	-0.30
13,038.00	89.06	1.15	7,891.50	4,638.02	414.54	4,638.02	1.92	-1.91	0.24
13,132.00	88.42	0.55	7,893.57	4,731.98	415.93	4,731.98	0.93	-0.68	-0.64
13,226.00	89.43	0.60	7,895.33	4,825.96	416.88	4,825.96	1.08	1.07	0.05
13,321.00	90.74	0.68	7,895.19	4,920.95	417.94	4,920.95	1.38	1.38	0.08
13,415.00	91.51	0.43	7,893.35	5,014.93	418.85	5,014.93	0.86	0.82	-0.27
13,510.00	90.50	359.91	7,891.68	5,109.91	419.13	5,109.91	1.20	-1.06	-0.55
13,604.00	90.81	359.52	7,890.61	5,203.91	418.66	5,203.91	0.53	0.33	-0.41
13,698.00	90.87	359.59	7,889.23	5,297.89	417.93	5,297.89	0.10	0.06	0.07
13,793.00	90.27	0.71	7,888.28	5,392.89	418.18	5,392.89	1.34	-0.63	1.18
13,887.00	90.30	0.44	7,887.82	5,486.88	419.13	5,486.88	0.29	0.03	-0.29
13,982.00	89.83	0.28	7,887.71	5,581.88	419.72	5,581.88	0.52	-0.49	-0.17
14,076.00	90.37	1.06	7,887.54	5,675.87	420.82	5,675.87	1.01	0.57	0.83
14,171.00	89.50	0.42	7,887.65	5,770.86	422.05	5,770.86	1.14	-0.92	-0.67
14,265.00	89.39	0.27	7,888.56	5,864.85	422.61	5,864.85	0.20	-0.12	-0.16
14,359.00	90.34	0.98	7,888.78	5,958.85	423.64	5,958.85	1.26	1.01	0.76
14,453.00	90.24	0.89	7,888.31	6,052.83	425.17	6,052.83	0.14	-0.11	-0.10
14,548.00	90.34	0.63	7,887.83	6,147.82	426.43	6,147.82	0.29	0.11	-0.27
14,642.00	89.46	0.34	7,887.99	6,241.82	427.23	6,241.82	0.99	-0.94	-0.31
14,737.00	90.03	0.49	7,888.41	6,336.82	427.92	6,336.82	0.62	0.60	0.16
14,831.00	90.67	0.83	7,887.84	6,430.81	429.00	6,430.81	0.77	0.68	0.36
14,926.00	90.37	0.77	7,886.98	6,525.79	430.33	6,525.79	0.32	-0.32	-0.06
15,020.00	90.60	0.17	7,886.18	6,619.79	431.10	6,619.79	0.68	0.24	-0.64
15,115.00	89.09	359.13	7,886.44	6,714.78	430.52	6,714.78	1.93	-1.59	-1.09
15,209.00	89.80	359.09	7,887.35	6,808.76	429.06	6,808.76	0.76	0.76	-0.04
15,304.00	88.52	357.80	7,888.74	6,903.71	426.48	6,903.71	1.91	-1.35	-1.36
15,398.00	89.06	358.50	7,890.73	6,997.64	423.45	6,997.64	0.94	0.57	0.74

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well BADGER 22C-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Site:	BUFFALO & BADGER 4E-15HZ PAD	MD Reference:	GL 5132 & KB 25 @ 5157.00ft (HP 290)
Well:	BADGER 22C-3HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)	
15,492.00	90.52	359.67	7,891.07	7,091.63	421.95	7,091.63	1.99	1.55	1.24	
15,587.00	91.88	0.00	7,889.08	7,186.60	421.67	7,186.60	1.47	1.43	0.35	
15,681.00	91.61	359.29	7,886.22	7,280.56	421.09	7,280.56	0.81	-0.29	-0.76	
15,776.00	92.08	359.94	7,883.16	7,375.51	420.45	7,375.51	0.84	0.49	0.68	
15,870.00	91.82	359.29	7,879.96	7,469.45	419.82	7,469.45	0.74	-0.28	-0.69	
15,964.00	91.14	0.11	7,877.53	7,563.41	419.33	7,563.41	1.13	-0.72	0.87	
16,059.00	90.84	0.23	7,875.89	7,658.40	419.61	7,658.40	0.34	-0.32	0.13	
16,153.00	89.56	359.64	7,875.57	7,752.40	419.50	7,752.40	1.50	-1.36	-0.63	
16,226.00	89.46	358.50	7,876.19	7,825.38	418.32	7,825.38	1.57	-0.14	-1.56	
LAST SDI MWD PRODUCTION SURVEY										
16,288.00	89.46	358.50	7,876.77	7,887.36	416.70	7,887.36	0.00	0.00	0.00	
SDI PROJECTION TO TD(2183 FSL 1590 FWL)										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,326.00	1,325.91	9 5/8"	9.625	13.500	
8,284.00	7,876.53	7"(510 FNL 1605 FWL)	7.000	8.750	

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
71.00	71.00	-0.07	0.12	FIRST CATHEDRAL MWD SURFACE SURVEY	
1,291.00	1,290.91	-2.43	-0.11	LAST CATHEDRAL MWD SURFACE SURVEY	
1,347.00	1,346.91	-2.60	-0.66	FIRST SDI MWD PRODUCTION SURVEY	
16,226.00	7,876.19	7,825.38	418.32	LAST SDI MWD PRODUCTION SURVEY	
16,288.00	7,876.77	7,887.36	416.70	SDI PROJECTION TO TD(2183 FSL 1590 FWL)	

Checked By: _____ Approved By: _____ Date: _____