

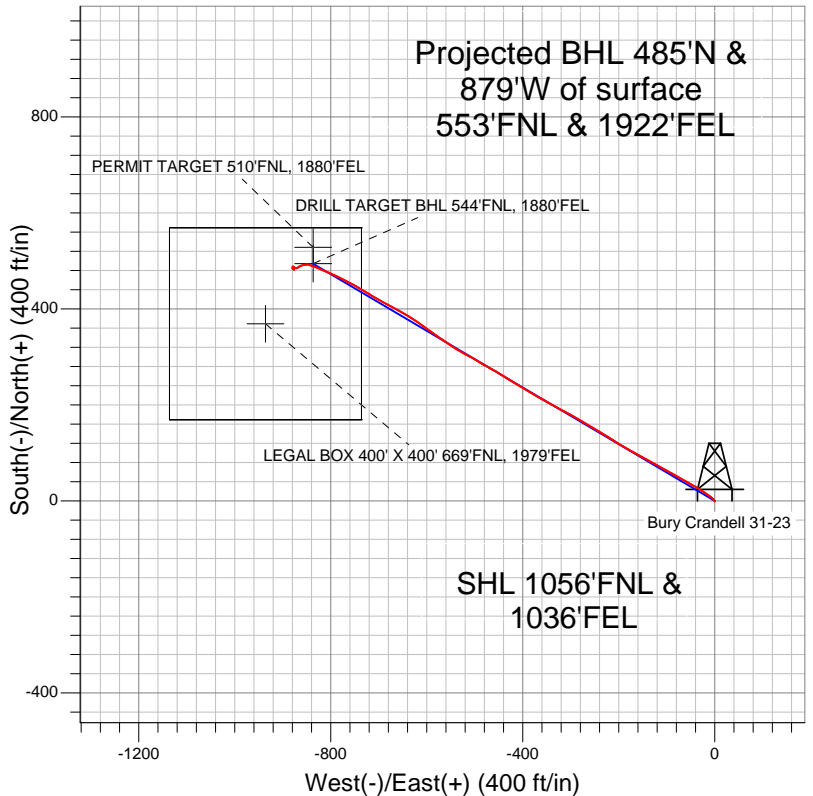
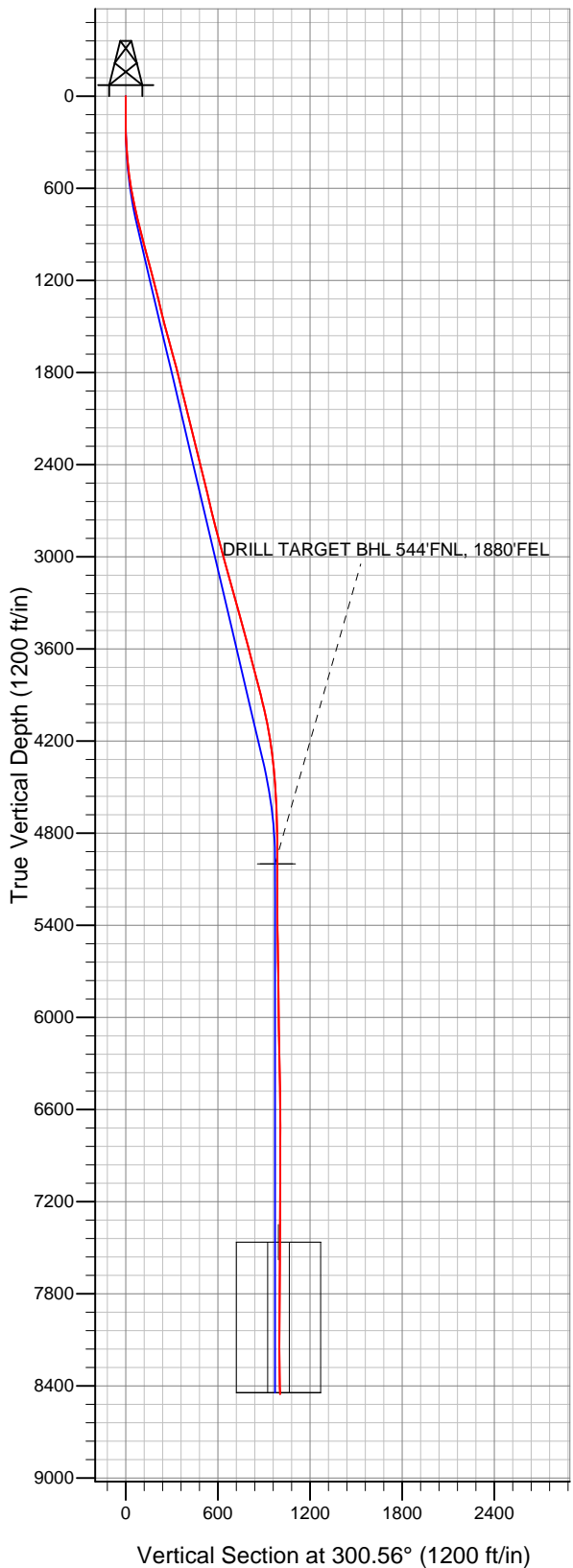


# Well Name: Bury Crandell 31-23

Surface Location: Bury Crandell 6-0-23 Pad Sec.23-T1N-R68W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 5113.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1258336.08	3149812.94	40.041280	-104.964920	
		Original Well Elev	WELL @ 5126.0ft (Original Well Elev)			

## EnCana Oil & Gas Broomfield County, CO



### LEGEND

- Survey #1
- Bury Crandell 31-23, Wellbore #1, Plan #2 (1-21-12) R V0
- Wellbore #1

## Final Survey Plot

Projected Final Survey -  
8571'MD & 8453'TVD @ 1004'VS  
0.80 deg Inc 314.60 deg AZ

Project: SEC.23-T1N-R68W  
Site: Bury Crandell 6-0-23 Pad Sec.23-T1N-R68W  
Well: Bury Crandell 31-23  
Plan: Wellbore #1



# **EnCana Oil & Gas Broomfield County, CO**

**SEC.23-T1N-R68W**

**Bury Crandell 6-0-23 Pad Sec.23-T1N-R68W**

**Bury Crandell 31-23**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**30 January, 2012**

<b>Company:</b>	EnCana Oil & Gas Broomfield County, CO	<b>Local Co-ordinate Reference:</b>	Well Bury Crandell 31-23
<b>Project:</b>	SEC.23-T1N-R68W	<b>TVD Reference:</b>	WELL @ 5126.0ft (Original Well Elev)
<b>Site:</b>	Bury Crandell 6-0-23 Pad Sec.23-T1N-R68W	<b>MD Reference:</b>	WELL @ 5126.0ft (Original Well Elev)
<b>Well:</b>	Bury Crandell 31-23	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.23-T1N-R68W, Broomfield County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Bury Crandell 6-0-23 Pad Sec.23-T1N-R68W			
Site Position:		Northing:	1,258,365.55 ft	Latitude:	40.041360
From:	Lat/Long	Easting:	3,149,865.96 ft	Longitude:	-104.964730
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.35 °

Well	Bury Crandell 31-23					
Well Position	+N/-S	0.0 ft	Northing:	1,258,336.08 ft	Latitude:	40.041280
	+E/-W	0.0 ft	Easting:	3,149,812.94 ft	Longitude:	-104.964920
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,113.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/21/2012	8.86	66.71	52,855

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	300.56	

Survey Program		Date	1/30/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
109.0	8,571.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey	Wellbore Data									
	Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Main Survey	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	109.0	0.80	159.30	109.0	-0.7	0.3	-0.6	0.73	0.73	0.00
	200.0	0.70	342.20	200.0	-0.8	0.3	-0.7	1.65	-0.11	-194.62
	291.0	3.00	320.00	290.9	1.6	-1.4	2.0	2.60	2.53	-24.40
	382.0	4.70	311.80	381.7	5.9	-5.7	7.9	1.96	1.87	-9.01
	474.0	6.50	304.70	473.3	11.4	-12.8	16.8	2.09	1.96	-7.72
	565.0	8.60	303.80	563.5	18.1	-22.7	28.7	2.31	2.31	-0.99
	656.0	10.60	301.00	653.2	26.2	-35.5	43.9	2.26	2.20	-3.08
	747.0	12.90	300.30	742.3	35.6	-51.4	62.4	2.53	2.53	-0.77
	841.0	14.60	299.40	833.6	46.7	-70.8	84.7	1.82	1.81	-0.96
	934.0	14.10	298.90	923.7	58.0	-91.0	107.8	0.55	-0.54	-0.54
	1,027.0	14.90	298.70	1,013.7	69.2	-111.4	131.1	0.86	0.86	-0.22
	1,088.0	15.20	299.40	1,072.7	76.9	-125.2	146.9	0.58	0.49	1.15

<b>Company:</b>	EnCana Oil & Gas Broomfield County, CO	<b>Local Co-ordinate Reference:</b>	Well Bury Crandell 31-23
<b>Project:</b>	SEC.23-T1N-R68W	<b>TVD Reference:</b>	WELL @ 5126.0ft (Original Well Elev)
<b>Site:</b>	Bury Crandell 6-0-23 Pad Sec.23-T1N-R68W	<b>MD Reference:</b>	WELL @ 5126.0ft (Original Well Elev)
<b>Well:</b>	Bury Crandell 31-23	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,152.0	15.10	298.40	1,134.4	84.9	-139.9	163.6	0.44	-0.16	-1.56	
1,246.0	13.70	298.60	1,225.5	96.1	-160.4	187.0	1.49	-1.49	0.21	
1,339.0	13.50	299.10	1,315.9	106.7	-179.5	208.8	0.25	-0.22	0.54	
1,433.0	14.20	301.20	1,407.1	118.0	-199.0	231.3	0.92	0.74	2.23	
1,526.0	14.90	304.00	1,497.1	130.6	-218.7	254.7	1.07	0.75	3.01	
1,620.0	15.40	300.00	1,587.9	143.6	-239.5	279.2	1.23	0.53	-4.26	
1,713.0	15.20	301.20	1,677.6	156.0	-260.6	303.8	0.40	-0.22	1.29	
1,807.0	15.20	300.70	1,768.3	168.7	-281.8	328.4	0.14	0.00	-0.53	
1,900.0	14.20	298.70	1,858.3	180.4	-302.2	352.0	1.21	-1.08	-2.15	
1,994.0	13.00	298.00	1,949.6	190.9	-321.7	374.1	1.29	-1.28	-0.74	
2,088.0	13.50	299.10	2,041.1	201.2	-340.6	395.6	0.60	0.53	1.17	
2,181.0	14.20	299.40	2,131.4	212.1	-360.0	417.9	0.76	0.75	0.32	
2,275.0	14.20	300.50	2,222.5	223.6	-380.0	440.9	0.29	0.00	1.17	
2,368.0	13.60	300.30	2,312.8	234.9	-399.3	463.3	0.65	-0.65	-0.22	
2,462.0	13.90	301.70	2,404.1	246.4	-418.4	485.6	0.48	0.32	1.49	
2,555.0	14.20	301.70	2,494.3	258.3	-437.6	508.2	0.32	0.32	0.00	
2,648.0	13.50	300.90	2,584.6	269.9	-456.7	530.4	0.78	-0.75	-0.86	
2,742.0	12.70	297.50	2,676.2	280.3	-475.2	551.7	1.18	-0.85	-3.62	
2,835.0	14.30	303.00	2,766.6	291.2	-493.9	573.4	2.20	1.72	5.91	
2,929.0	15.20	297.50	2,857.5	303.3	-514.6	597.3	1.77	0.96	-5.85	
3,022.0	14.90	299.80	2,947.3	314.8	-535.8	621.5	0.72	-0.32	2.47	
3,116.0	15.30	305.10	3,038.1	328.0	-556.4	645.9	1.53	0.43	5.64	
3,210.0	15.70	304.70	3,128.7	342.3	-577.0	670.9	0.44	0.43	-0.43	
3,304.0	15.60	306.30	3,219.2	357.1	-597.7	696.2	0.47	-0.11	1.70	
3,398.0	15.80	304.50	3,309.7	371.8	-618.4	721.6	0.56	0.21	-1.91	
3,491.0	15.70	301.60	3,399.2	385.6	-639.6	746.8	0.85	-0.11	-3.12	
3,585.0	15.10	297.30	3,489.8	397.8	-661.3	771.7	1.37	-0.64	-4.57	
3,679.0	14.00	299.60	3,580.8	409.1	-682.1	795.3	1.32	-1.17	2.45	
3,772.0	14.70	299.10	3,670.9	420.4	-702.1	818.3	0.76	0.75	-0.54	
3,866.0	14.40	301.60	3,761.9	432.3	-722.5	842.0	0.74	-0.32	2.66	
3,960.0	14.90	299.40	3,852.8	444.3	-743.0	865.7	0.80	0.53	-2.34	
4,055.0	13.70	298.20	3,944.9	455.7	-763.6	889.2	1.30	-1.26	-1.26	
4,150.0	12.10	296.80	4,037.5	465.5	-782.4	910.4	1.72	-1.68	-1.47	
4,243.0	10.50	293.30	4,128.7	473.2	-798.8	928.5	1.87	-1.72	-3.76	
4,337.0	8.40	292.10	4,221.4	479.2	-813.1	943.8	2.24	-2.23	-1.28	
4,430.0	6.60	294.20	4,313.6	483.9	-824.2	955.8	1.96	-1.94	2.26	
4,523.0	5.60	288.70	4,406.1	487.6	-833.4	965.6	1.24	-1.08	-5.91	
4,617.0	4.40	292.40	4,499.7	490.4	-841.1	973.6	1.32	-1.28	3.94	
4,710.0	2.80	282.20	4,592.5	492.3	-846.6	979.3	1.85	-1.72	-10.97	
4,804.0	2.00	255.00	4,686.5	492.3	-850.4	982.6	1.46	-0.85	-28.94	
4,897.0	1.40	273.10	4,779.4	492.0	-853.1	984.8	0.86	-0.65	19.46	
4,991.0	0.10	156.40	4,873.4	491.9	-854.3	985.7	1.54	-1.38	-124.15	
5,085.0	0.10	210.10	4,967.4	491.8	-854.3	985.7	0.10	0.00	57.13	
5,117.5	0.18	249.58	4,999.9	491.8	-854.3	985.7	0.38	0.26	121.45	
PERMIT TARGET 510'FNL, 1880'FEL - DRILL TARGET BHL 544'FNL, 1880'FEL										
5,178.0	0.40	266.80	5,060.4	491.7	-854.6	985.9	0.38	0.36	28.46	
5,271.0	0.60	259.50	5,153.4	491.6	-855.4	986.6	0.23	0.22	-7.85	
5,365.0	0.50	270.40	5,247.4	491.5	-856.3	987.3	0.15	-0.11	11.60	
5,459.0	0.60	269.90	5,341.4	491.5	-857.2	988.1	0.11	0.11	-0.53	
5,552.0	0.80	252.30	5,434.4	491.3	-858.3	988.9	0.31	0.22	-18.92	
5,646.0	1.20	243.90	5,528.4	490.7	-859.8	989.9	0.45	0.43	-8.94	
5,739.0	1.40	249.20	5,621.3	489.9	-861.8	991.1	0.25	0.22	5.70	
5,833.0	1.40	248.10	5,715.3	489.0	-863.9	992.6	0.03	0.00	-1.17	
5,926.0	1.50	242.80	5,808.3	488.0	-866.1	993.9	0.18	0.11	-5.70	

<b>Company:</b>	EnCana Oil & Gas Broomfield County, CO	<b>Local Co-ordinate Reference:</b>	Well Bury Crandell 31-23
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<b>Well:</b>	Bury Crandell 31-23	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,020.0	1.20	234.20	5,902.3	486.9	-868.0	995.0	0.38	-0.32	-9.15
6,113.0	1.20	237.40	5,995.2	485.8	-869.6	995.8	0.07	0.00	3.44
6,207.0	1.00	252.70	6,089.2	485.0	-871.2	996.8	0.38	-0.21	16.28
6,300.0	1.00	271.30	6,182.2	484.8	-872.8	998.0	0.35	0.00	20.00
6,394.0	1.60	306.50	6,276.2	485.6	-874.6	1,000.1	1.03	0.64	37.45
6,488.0	1.20	305.80	6,370.2	487.0	-876.5	1,002.3	0.43	-0.43	-0.74
6,582.0	0.80	307.00	6,464.1	487.9	-877.8	1,004.0	0.43	-0.43	1.28
6,675.0	0.40	264.60	6,557.1	488.3	-878.7	1,004.9	0.62	-0.43	-45.59
6,769.0	0.30	257.10	6,651.1	488.2	-879.2	1,005.3	0.12	-0.11	-7.98
6,863.0	0.40	200.80	6,745.1	487.9	-879.6	1,005.4	0.36	0.11	-59.89
6,956.0	0.30	207.00	6,838.1	487.3	-879.8	1,005.4	0.11	-0.11	6.67
7,050.0	0.40	181.30	6,932.1	486.8	-879.9	1,005.2	0.20	0.11	-27.34
7,143.0	0.20	177.60	7,025.1	486.3	-879.9	1,005.0	0.22	-0.22	-3.98
7,237.0	0.40	142.50	7,119.1	485.9	-879.7	1,004.6	0.28	0.21	-37.34
7,330.0	0.20	156.00	7,212.1	485.5	-879.5	1,004.1	0.23	-0.22	14.52
7,423.0	0.30	177.80	7,305.1	485.1	-879.4	1,003.9	0.15	0.11	23.44
7,517.0	0.20	228.80	7,399.1	484.7	-879.5	1,003.8	0.25	-0.11	54.26
7,582.4	0.27	214.17	7,464.5	484.5	-879.7	1,003.8	0.14	0.10	-22.36
LEGAL BOX 400' X 400' 669'FNL, 1979'FEL									
7,610.0	0.30	210.10	7,492.1	484.4	-879.7	1,003.8	0.14	0.12	-14.76
7,704.0	0.30	120.50	7,586.1	484.1	-879.6	1,003.6	0.45	0.00	-95.32
7,798.0	0.60	118.70	7,680.1	483.7	-879.0	1,002.8	0.32	0.32	-1.91
7,891.0	0.50	131.60	7,773.1	483.2	-878.3	1,002.0	0.17	-0.11	13.87
7,985.0	0.70	137.20	7,867.1	482.5	-877.6	1,001.0	0.22	0.21	5.96
8,079.0	0.40	133.00	7,961.1	481.9	-876.9	1,000.1	0.32	-0.32	-4.47
8,172.0	0.20	173.60	8,054.1	481.5	-876.7	999.7	0.30	-0.22	43.66
8,266.0	0.40	356.20	8,148.1	481.6	-876.7	999.8	0.64	0.21	-188.72
8,359.0	0.90	334.30	8,241.1	482.6	-877.0	1,000.6	0.59	0.54	-23.55
8,453.0	1.00	313.20	8,335.1	483.9	-878.0	1,002.0	0.38	0.11	-22.45
8,525.0	0.80	314.60	8,407.1	484.6	-878.8	1,003.1	0.28	-0.28	1.94
8,571.0	0.80	314.60	8,453.1	485.1	-879.2	1,003.7	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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