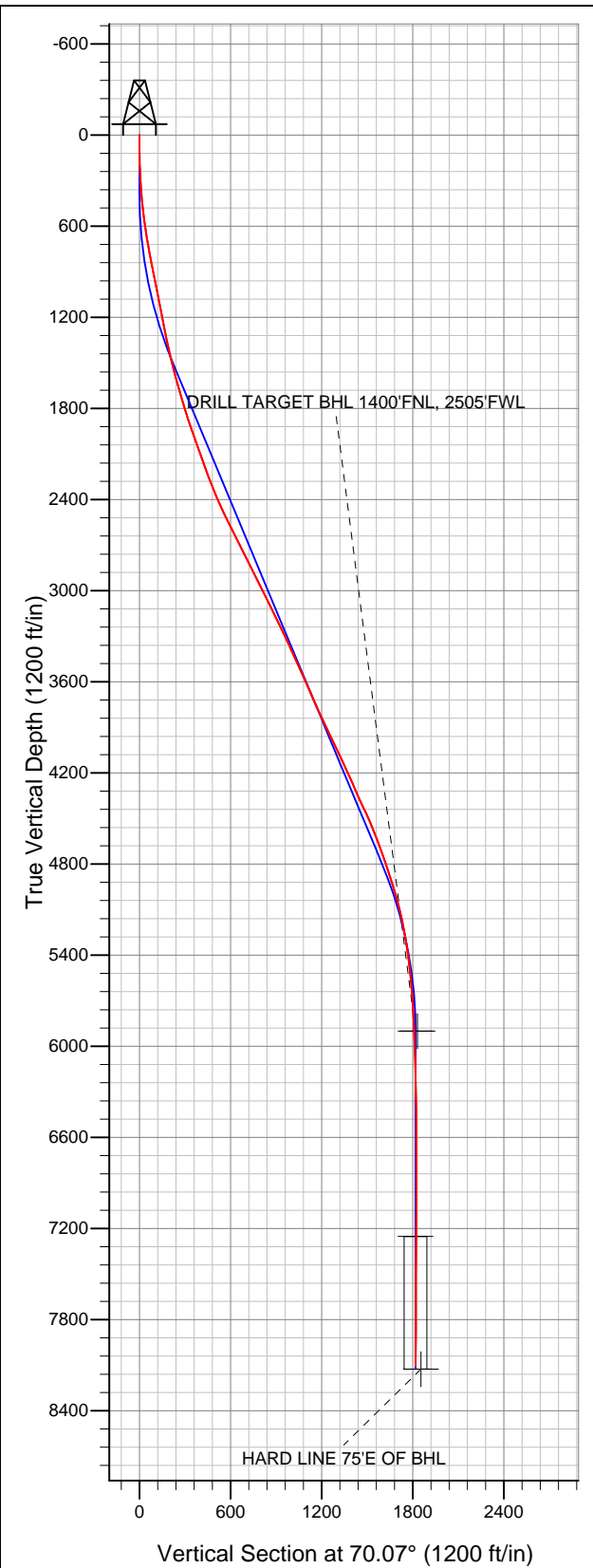


# Well Name: Ross 4-2-19

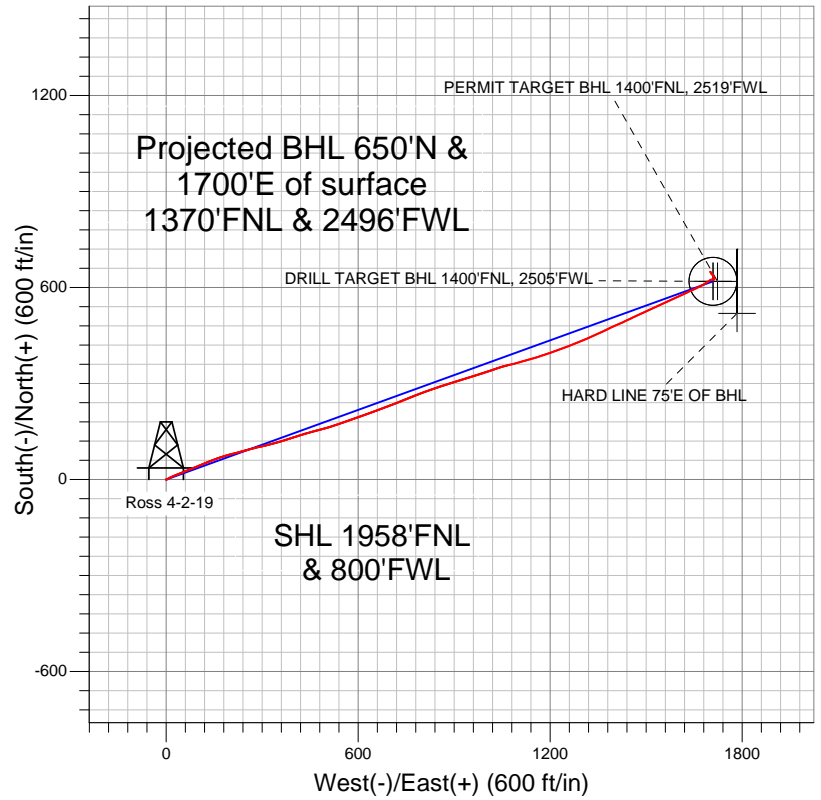
Surface Location: Ross 11-19 Pad Sec.19-T2N-R68W  
 North American Datum 1983 US State Plane 1983Colorado Northern Zone  
 Ground Elevation: 4988.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1288966.66	3125131.46	40.125740	-105.052520	

Original Well Elev WELL @ 5001.0ft (Original Well Elev)



## EnCana Oil & Gas Weld County CO



### LEGEND

- Survey #1
- ◇ Ross 4-2-19, Wellbore #1, Plan #1 (1-19-12) R V0
- Wellbore #1

## Final Survey Plot

Projected Final Survey -  
 8442'MD & 8106'TVD @ 1820'VS  
 0.50 deg Inc 305.80 deg AZ

Project: SEC.19-T2N-R68W  
 Site: Ross 11-19 Pad Sec.19-T2N-R68W  
 Well: Ross 4-2-19  
 Plan: Wellbore #1



# **EnCana Oil & Gas Weld County CO**

**SEC.19-T2N-R68W**

**Ross 11-19 Pad Sec.19-T2N-R68W**

**Ross 4-2-19**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**27 January, 2012**

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ross 4-2-19
<b>Project:</b>	SEC.19-T2N-R68W	<b>TVD Reference:</b>	WELL @ 5001.0ft (Original Well Elev)
<b>Site:</b>	Ross 11-19 Pad Sec.19-T2N-R68W	<b>MD Reference:</b>	WELL @ 5001.0ft (Original Well Elev)
<b>Well:</b>	Ross 4-2-19	<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.19-T2N-R68W, Weld 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		Ross 11-19 Pad Sec.19-T2N-R68W			
Site Position:		Northing:		1,288,988.53ft	
From:	Lat/Long	Easting:		Longitude:	
		3,125,131.35ft		-105.052520	
Position Uncertainty:		Slot Radius:		Grid Convergence:	
0.0 ft		"		0.29 °	

Well	Ross 4-2-19					
Well Position	+N-S	0.0 ft	Northing:	1,288,966.66 ft	Latitude:	40.125740
	+E-W	0.0 ft	Easting:	3,125,131.46 ft	Longitude:	-105.052520
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,988.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2012	8.92	66.76	52,895

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	70.07	

Survey Program		Date	1/27/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
101.0	8,442.0	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
	101.0	0.40	130.70	101.0	-0.2	0.3	0.2	0.40	0.40	0.00
	190.0	1.60	63.40	190.0	0.1	1.6	1.6	1.68	1.35	-75.62
	281.0	3.10	55.20	280.9	2.1	4.8	5.2	1.69	1.65	-9.01
	374.0	4.40	62.70	373.7	5.2	10.0	11.2	1.49	1.40	8.06
	465.0	5.90	69.00	464.3	8.4	17.5	19.3	1.76	1.65	6.92
	557.0	7.80	68.30	555.7	12.4	27.7	30.3	2.07	2.07	-0.76
	648.0	8.90	66.40	645.7	17.6	39.9	43.5	1.25	1.21	-2.09
	740.0	10.30	67.50	736.4	23.5	54.0	58.8	1.53	1.52	1.20
	786.0	11.00	68.90	781.6	26.7	61.9	67.3	1.62	1.52	3.04
	850.0	11.00	68.90	844.5	31.1	73.3	79.5	0.00	0.00	0.00
	871.0	11.20	66.40	865.1	32.6	77.0	83.5	2.48	0.95	-11.90
	959.0	11.20	68.70	951.4	39.2	92.8	100.6	0.51	0.00	2.61

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ross 4-2-19
<b>Project:</b>	SEC.19-T2N-R68W	<b>TVD Reference:</b>	WELL @ 5001.0ft (Original Well Elev)
<b>Site:</b>	Ross 11-19 Pad Sec.19-T2N-R68W	<b>MD Reference:</b>	WELL @ 5001.0ft (Original Well Elev)
<b>Well:</b>	Ross 4-2-19	<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)	
1,046.0	10.80	67.60	1,036.8	45.3	108.2	117.2	0.52	-0.46	-1.26	
1,133.0	10.70	65.70	1,122.3	51.8	123.1	133.4	0.42	-0.11	-2.18	
1,221.0	11.30	68.00	1,208.6	58.4	138.6	150.2	0.84	0.68	2.61	
1,308.0	12.00	71.80	1,293.8	64.4	155.1	167.7	1.19	0.80	4.37	
1,395.0	12.20	69.70	1,378.9	70.4	172.3	185.9	0.56	0.23	-2.41	
1,482.0	13.10	74.10	1,463.8	76.3	190.4	205.0	1.51	1.03	5.06	
1,570.0	14.20	78.20	1,549.3	81.2	210.5	225.6	1.66	1.25	4.66	
1,657.0	15.70	74.30	1,633.4	86.6	232.3	247.9	2.08	1.72	-4.48	
1,744.0	16.70	74.30	1,716.9	93.2	255.7	272.1	1.15	1.15	0.00	
1,832.0	17.10	76.10	1,801.1	99.7	280.4	297.6	0.75	0.45	2.05	
1,919.0	18.70	77.50	1,883.9	105.8	306.4	324.1	1.90	1.84	1.61	
2,006.0	19.30	75.70	1,966.2	112.3	334.0	352.3	0.96	0.69	-2.07	
2,094.0	19.50	72.90	2,049.2	120.3	362.1	381.4	1.08	0.23	-3.18	
2,181.0	19.50	72.00	2,131.2	129.0	389.8	410.4	0.35	0.00	-1.03	
2,268.0	20.30	72.00	2,213.0	138.2	418.0	440.0	0.92	0.92	0.00	
2,355.0	21.50	75.70	2,294.3	146.8	447.8	471.0	2.05	1.38	4.25	
2,443.0	23.20	75.20	2,375.7	155.2	480.2	504.3	1.94	1.93	-0.57	
2,530.0	25.00	72.20	2,455.1	165.2	514.2	539.8	2.50	2.07	-3.45	
2,617.0	26.00	70.10	2,533.6	177.3	549.7	577.2	1.55	1.15	-2.41	
2,705.0	26.60	71.70	2,612.5	190.0	586.5	616.2	1.06	0.68	1.82	
2,792.0	26.60	70.40	2,690.3	202.7	623.4	655.1	0.67	0.00	-1.49	
2,879.0	26.50	69.20	2,768.1	216.1	659.9	694.0	0.63	-0.11	-1.38	
2,967.0	26.70	69.90	2,846.8	229.9	696.8	733.4	0.42	0.23	0.80	
3,054.0	27.00	67.10	2,924.4	244.3	733.3	772.7	1.49	0.34	-3.22	
3,141.0	26.70	68.00	3,002.0	259.3	769.6	811.9	0.58	-0.34	1.03	
3,228.0	25.70	70.80	3,080.1	272.8	805.6	850.3	1.83	-1.15	3.22	
3,316.0	26.20	69.90	3,159.2	285.8	841.8	888.8	0.72	0.57	-1.02	
3,403.0	25.90	72.90	3,237.4	298.0	878.0	927.0	1.55	-0.34	3.45	
3,490.0	25.80	72.60	3,315.7	309.2	914.3	964.9	0.19	-0.11	-0.34	
3,578.0	24.70	73.80	3,395.3	320.1	950.2	1,002.4	1.38	-1.25	1.36	
3,665.0	24.20	72.70	3,474.5	330.4	984.7	1,038.3	0.78	-0.57	-1.26	
3,752.0	24.00	70.30	3,553.9	341.7	1,018.4	1,073.9	1.15	-0.23	-2.76	
3,840.0	23.50	72.90	3,634.4	352.9	1,052.0	1,109.3	1.32	-0.57	2.95	
3,883.0	23.40	76.20	3,673.9	357.5	1,068.5	1,126.3	3.06	-0.23	7.67	
3,927.0	23.70	76.80	3,714.2	361.6	1,085.6	1,143.8	0.87	0.68	1.36	
4,014.0	25.10	73.80	3,793.5	370.7	1,120.3	1,179.6	2.15	1.61	-3.45	
4,101.0	25.10	73.10	3,872.2	381.2	1,155.7	1,216.4	0.34	0.00	-0.80	
4,189.0	26.00	71.10	3,951.6	392.9	1,191.8	1,254.3	1.42	1.02	-2.27	
4,276.0	26.00	69.40	4,029.8	405.8	1,227.7	1,292.5	0.86	0.00	-1.95	
4,363.0	25.20	68.00	4,108.3	419.4	1,262.7	1,330.1	1.15	-0.92	-1.61	
4,451.0	23.30	68.90	4,188.5	432.7	1,296.3	1,366.2	2.20	-2.16	1.02	
4,538.0	23.70	66.20	4,268.3	446.0	1,328.4	1,400.8	1.32	0.46	-3.10	
4,625.0	25.00	63.60	4,347.6	461.2	1,360.8	1,436.5	1.94	1.49	-2.99	
4,713.0	25.20	66.40	4,427.3	477.0	1,394.7	1,473.7	1.37	0.23	3.18	
4,800.0	24.10	65.50	4,506.3	491.7	1,427.8	1,509.9	1.34	-1.26	-1.03	
4,887.0	22.20	63.40	4,586.3	506.5	1,458.7	1,543.9	2.38	-2.18	-2.41	
4,974.0	20.10	65.30	4,667.5	520.1	1,486.9	1,575.2	2.54	-2.41	2.18	
5,062.0	19.30	65.90	4,750.3	532.3	1,514.0	1,604.7	0.94	-0.91	0.68	
5,149.0	18.80	65.70	4,832.5	544.0	1,539.9	1,633.1	0.58	-0.57	-0.23	
5,236.0	18.00	65.20	4,915.1	555.4	1,564.8	1,660.4	0.94	-0.92	-0.57	
5,324.0	16.30	65.50	4,999.2	566.2	1,588.4	1,686.3	1.93	-1.93	0.34	
5,411.0	14.20	65.30	5,083.1	575.7	1,609.2	1,709.1	2.41	-2.41	-0.23	
5,498.0	12.00	64.10	5,167.8	584.1	1,627.1	1,728.7	2.55	-2.53	-1.38	
5,586.0	10.10	65.70	5,254.2	591.3	1,642.3	1,745.5	2.19	-2.16	1.82	

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ross 4-2-19
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<b>Well:</b>	Ross 4-2-19	<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									
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5,673.0	8.80	65.00	5,340.0	597.3	1,655.3	1,759.8	1.50	-1.49	-0.80
5,760.0	7.60	62.50	5,426.1	602.7	1,666.4	1,772.1	1.44	-1.38	-2.87
5,847.0	6.10	62.50	5,512.5	607.5	1,675.6	1,782.4	1.72	-1.72	0.00
5,935.0	4.90	58.80	5,600.1	611.6	1,683.0	1,790.7	1.42	-1.36	-4.20
6,022.0	4.10	59.40	5,686.8	615.1	1,688.9	1,797.4	0.92	-0.92	0.69
6,109.0	3.10	53.00	5,773.7	618.1	1,693.4	1,802.7	1.24	-1.15	-7.36
6,197.0	2.60	55.50	5,861.6	620.7	1,697.0	1,806.9	0.59	-0.57	2.84
6,235.7	2.24	52.25	5,900.3	621.7	1,698.3	1,808.5	1.00	-0.94	-8.39
<b>DRILL TARGET BHL 1400'FNL, 2505'FWL</b>									
6,236.1	2.23	52.22	5,900.6	621.7	1,698.3	1,808.5	1.00	-0.93	-9.75
<b>PERMIT TARGET BHL 1400'FNL, 2519'FWL</b>									
6,284.0	1.80	46.40	5,948.5	622.8	1,699.6	1,810.1	1.00	-0.91	-12.14
6,459.0	1.60	81.90	6,123.4	625.0	1,704.0	1,815.0	0.60	-0.11	20.29
6,633.0	1.90	98.40	6,297.3	624.9	1,709.2	1,819.9	0.34	0.17	9.48
6,808.0	1.00	35.30	6,472.3	625.7	1,713.0	1,823.7	0.97	-0.51	-36.06
6,982.0	1.70	345.50	6,646.2	629.5	1,713.2	1,825.2	0.75	0.40	-28.62
7,157.0	1.40	326.20	6,821.2	633.8	1,711.4	1,824.9	0.34	-0.17	-11.03
7,332.0	1.20	318.30	6,996.1	636.9	1,709.0	1,823.7	0.15	-0.11	-4.51
7,506.0	1.10	325.20	7,170.1	639.6	1,706.8	1,822.6	0.10	-0.06	3.97
7,586.5	1.37	321.96	7,250.5	641.0	1,705.8	1,822.1	0.35	0.34	-4.02
<b>TARGET CIRCLE 1400'FNL, 2505'FWL</b>									
7,681.0	1.70	319.50	7,345.1	643.0	1,704.2	1,821.3	0.35	0.34	-2.60
7,855.0	0.40	335.00	7,519.0	645.5	1,702.2	1,820.3	0.76	-0.75	8.91
8,030.0	0.40	359.70	7,694.0	646.7	1,702.0	1,820.5	0.10	0.00	14.11
8,205.0	0.50	313.70	7,869.0	647.8	1,701.4	1,820.3	0.21	0.06	-26.29
8,392.0	0.50	305.80	8,056.0	648.9	1,700.2	1,819.5	0.04	0.00	-4.22
8,442.0	0.50	305.80	8,106.0	649.1	1,699.8	1,819.3	0.00	0.00	0.00
<b>HARD LINE 75'E OF BHL</b>									

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