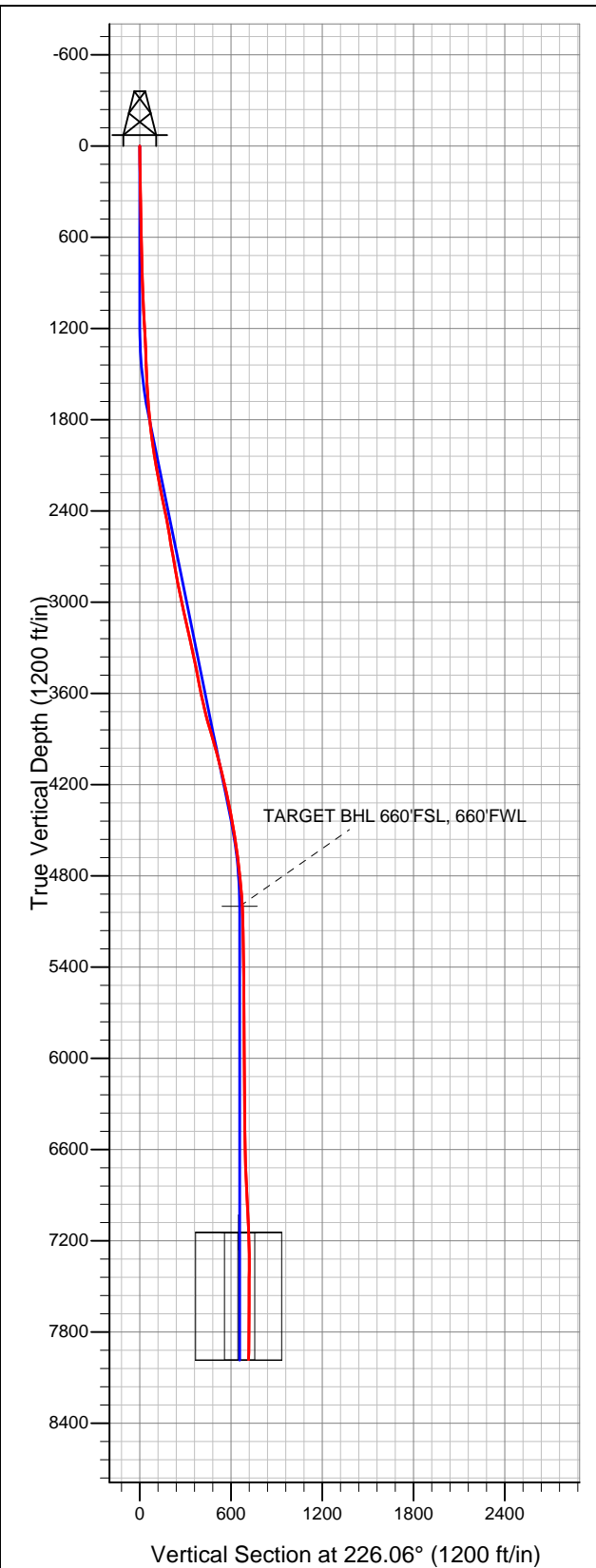
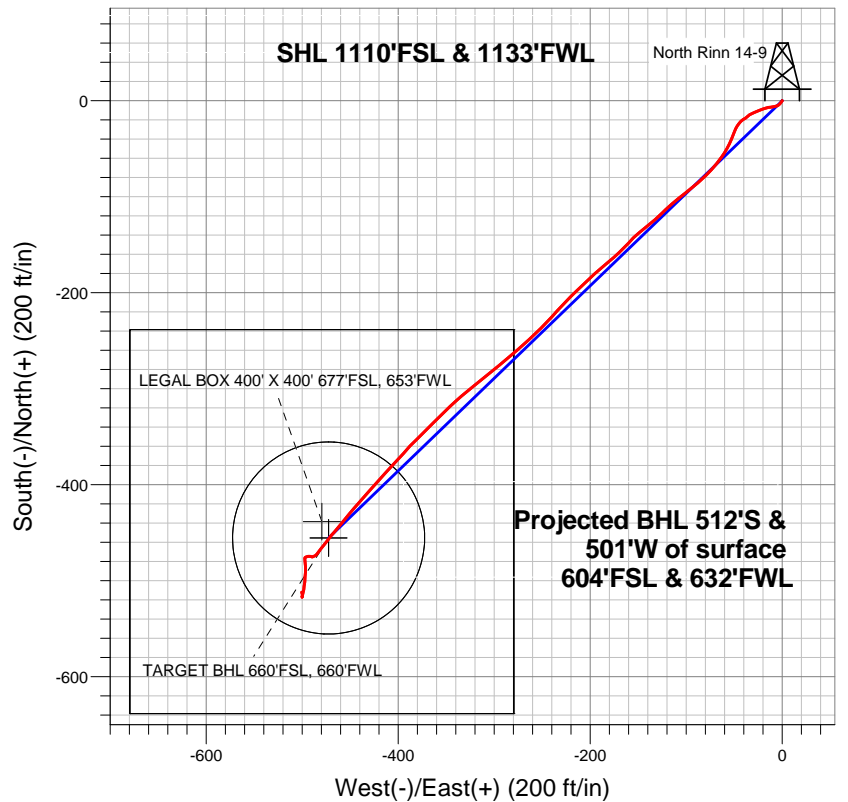


**Well Name: North Rinn 14-9**

Surface Location: North Rinn 2-4-9 Pad Sec.9-T2N-R68W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4866.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1297508.04 3135990.61 40.149030 -105.013520  
Original Well Elev WELL @ 4879.0ft (Original Well Elev)



**EnCana Oil & Gas Weld County CO**



**LEGEND**

- △— North Rinn 14-9, Wellbore #1, Plan #1 (5-16-13) V0
- Wellbore #1
- Survey #1

**Final Survey Plot**

Projected Final Survey -  
8045'MD & 7980'TVD @ 716'VS  
0.99 deg Inc 343.44 deg AZ

Project: SEC.9-T2N-R68W  
Site: North Rinn 2-4-9 Pad Sec.9-T2N-R68W  
Well: North Rinn 14-9  
Plan: Wellbore #1



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

**SEC.9-T2N-R68W**

**North Rinn 2-4-9 Pad Sec.9-T2N-R68W**

**North Rinn 14-9**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**02 July, 2013**



<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 14-9
<b>Project:</b>	SEC.9-T2N-R68W	<b>TVD Reference:</b>	WELL @ 4879.0ft (Original Well Elev)
<b>Site:</b>	North Rinn 2-4-9 Pad Sec.9-T2N-R68W	<b>MD Reference:</b>	WELL @ 4879.0ft (Original Well Elev)
<b>Well:</b>	North Rinn 14-9	<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.9-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	North Rinn 2-4-9 Pad Sec.9-T2N-R68W				
Site Position:		Northing:	1,297,580.91 ft	Latitude:	40.149230
From:	Lat/Long	Easting:	3,135,990.21 ft	Longitude:	-105.013520
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.31 °

Well	North Rinn 14-9					
Well Position	+N/-S	0.0 ft	Northing:	1,297,508.04 ft	Latitude:	40.149030
	+E/-W	0.0 ft	Easting:	3,135,990.61 ft	Longitude:	-105.013520
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,866.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	6/3/2013	8.71	66.74	52,765

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	226.06	

<b>Survey Program</b>	<b>Date</b>	7/2/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
107.0	8,045.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<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 (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
107.0	0.60	212.80	107.0	-0.5	-0.3	0.5	0.56	0.56	0.00	
197.0	1.10	212.30	197.0	-1.6	-1.0	1.8	0.56	0.56	-0.56	
287.0	1.10	221.20	287.0	-3.0	-2.1	3.5	0.19	0.00	9.89	
378.0	1.20	234.60	378.0	-4.2	-3.4	5.4	0.31	0.11	14.73	
468.0	1.20	249.20	467.9	-5.1	-5.1	7.2	0.34	0.00	16.22	
559.0	1.30	254.80	558.9	-5.7	-6.9	8.9	0.17	0.11	6.15	
650.0	1.60	259.20	649.9	-6.2	-9.2	10.9	0.35	0.33	4.84	
752.0	1.70	262.70	751.8	-6.6	-12.1	13.3	0.14	0.10	3.43	
826.0	1.80	260.70	825.8	-7.0	-14.3	15.1	0.16	0.14	-2.70	
912.0	2.40	251.80	911.7	-7.8	-17.4	17.9	0.79	0.70	-10.35	
998.0	2.60	251.40	997.7	-8.9	-20.9	21.3	0.23	0.23	-0.47	
1,083.0	3.30	247.20	1,082.6	-10.5	-25.0	25.3	0.86	0.82	-4.94	

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 14-9
<b>Project:</b>	SEC.9-T2N-R68W	<b>TVD Reference:</b>	WELL @ 4879.0ft (Original Well Elev)
<b>Site:</b>	North Rinn 2-4-9 Pad Sec.9-T2N-R68W	<b>MD Reference:</b>	WELL @ 4879.0ft (Original Well Elev)
<b>Well:</b>	North Rinn 14-9	<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)	
1,169.0	3.30	249.10	1,168.4	-12.3	-29.6	29.9	0.13	0.00	2.21	
1,255.0	3.10	236.50	1,254.3	-14.5	-33.8	34.4	0.85	-0.23	-14.65	
1,341.0	2.40	225.00	1,340.2	-17.1	-37.1	38.5	1.03	-0.81	-13.37	
1,426.0	1.50	246.10	1,425.1	-18.8	-39.3	41.4	1.34	-1.06	24.82	
1,512.0	2.40	231.00	1,511.1	-20.4	-41.8	44.2	1.20	1.05	-17.56	
1,598.0	3.80	219.10	1,597.0	-23.7	-45.0	48.8	1.78	1.63	-13.84	
1,683.0	4.60	205.90	1,681.7	-29.0	-48.2	54.8	1.47	0.94	-15.53	
1,769.0	5.80	199.90	1,767.4	-36.1	-51.2	62.0	1.53	1.40	-6.98	
1,855.0	7.00	205.20	1,852.8	-45.0	-54.9	70.8	1.55	1.40	6.16	
1,941.0	7.80	213.60	1,938.1	-54.6	-60.4	81.4	1.56	0.93	9.77	
2,026.0	9.40	217.50	2,022.2	-64.9	-67.8	93.9	2.00	1.88	4.59	
2,112.0	9.80	224.70	2,107.0	-75.7	-77.2	108.1	1.47	0.47	8.37	
2,198.0	10.10	230.30	2,191.7	-85.7	-88.2	123.0	1.18	0.35	6.51	
2,284.0	12.00	231.70	2,276.1	-96.0	-101.0	139.4	2.23	2.21	1.63	
2,369.0	12.80	228.90	2,359.1	-107.7	-115.0	157.6	1.18	0.94	-3.29	
2,455.0	9.30	225.60	2,443.5	-118.8	-127.2	174.0	4.13	-4.07	-3.84	
2,541.0	9.80	231.30	2,528.3	-128.3	-137.9	188.3	1.24	0.58	6.63	
2,627.0	10.10	230.00	2,613.0	-137.7	-149.3	203.1	0.44	0.35	-1.51	
2,713.0	9.80	221.60	2,697.7	-148.0	-160.0	217.9	1.72	-0.35	-9.77	
2,798.0	9.80	226.90	2,781.5	-158.4	-170.1	232.4	1.06	0.00	6.24	
2,884.0	11.20	230.90	2,866.0	-168.6	-181.9	248.0	1.83	1.63	4.65	
2,970.0	11.80	227.00	2,950.3	-179.9	-194.8	265.1	1.14	0.70	-4.53	
3,055.0	11.80	226.70	3,033.5	-191.8	-207.5	282.5	0.07	0.00	-0.35	
3,141.0	12.80	225.10	3,117.5	-204.6	-220.6	300.8	1.23	1.16	-1.86	
3,227.0	12.80	222.60	3,201.4	-218.3	-233.8	319.8	0.64	0.00	-2.91	
3,313.0	12.10	223.90	3,285.4	-231.8	-246.5	338.4	0.88	-0.81	1.51	
3,398.0	11.60	225.10	3,368.6	-244.2	-258.8	355.8	0.66	-0.59	1.41	
3,484.0	11.20	229.30	3,452.9	-255.8	-271.2	372.8	1.07	-0.47	4.88	
3,570.0	11.30	230.60	3,537.2	-266.6	-284.1	389.5	0.32	0.12	1.51	
3,656.0	11.80	230.00	3,621.5	-277.6	-297.3	406.7	0.60	0.58	-0.70	
3,741.0	13.60	231.30	3,704.4	-289.4	-311.8	425.3	2.14	2.12	1.53	
3,827.0	14.80	230.60	3,787.8	-302.7	-328.1	446.3	1.41	1.40	-0.81	
3,913.0	16.80	226.90	3,870.5	-318.2	-345.7	469.7	2.60	2.33	-4.30	
3,998.0	16.90	224.90	3,951.9	-335.3	-363.4	494.4	0.69	0.12	-2.35	
4,084.0	15.00	225.10	4,034.5	-352.0	-380.1	518.0	2.21	-2.21	0.23	
4,170.0	13.30	221.60	4,117.9	-367.3	-394.6	539.0	2.21	-1.98	-4.07	
4,256.0	12.30	223.30	4,201.8	-381.4	-407.4	558.0	1.24	-1.16	1.98	
4,341.0	11.20	221.80	4,285.0	-394.1	-419.1	575.3	1.34	-1.29	-1.76	
4,427.0	11.80	221.60	4,369.3	-406.9	-430.5	592.4	0.70	0.70	-0.23	
4,513.0	10.30	221.20	4,453.7	-419.3	-441.4	608.8	1.75	-1.74	-0.47	
4,599.0	9.30	219.80	4,538.4	-430.4	-450.9	623.4	1.20	-1.16	-1.63	
4,684.0	8.10	219.70	4,622.5	-440.3	-459.2	636.1	1.41	-1.41	-0.12	
4,770.0	7.20	219.80	4,707.7	-449.1	-466.5	647.5	1.05	-1.05	0.12	
4,856.0	5.50	218.30	4,793.2	-456.5	-472.5	657.0	1.99	-1.98	-1.74	
4,942.0	5.00	218.30	4,878.8	-462.6	-477.4	664.8	0.58	-0.58	0.00	
5,027.0	3.80	216.80	4,963.5	-467.8	-481.3	671.2	1.42	-1.41	-1.76	
5,062.5	3.30	217.03	4,999.0	-469.6	-482.7	673.4	1.40	-1.40	0.64	
TARGET BHL 660'FSL, 660'FWL										
5,113.0	2.60	217.50	5,049.4	-471.6	-484.2	675.9	1.40	-1.40	0.94	
5,199.0	1.10	234.40	5,135.4	-473.7	-486.1	678.7	1.84	-1.74	19.65	
5,456.0	0.60	272.20	5,392.3	-475.0	-489.5	682.1	0.28	-0.19	14.71	
5,627.0	0.90	291.20	5,563.3	-474.5	-491.6	683.3	0.23	0.18	11.11	
5,799.0	0.80	250.90	5,735.3	-474.4	-494.0	684.9	0.34	-0.06	-23.43	
5,970.0	0.50	249.40	5,906.3	-475.1	-495.8	686.7	0.18	-0.18	-0.88	

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 14-9
<b>Project:</b>	SEC.9-T2N-R68W	<b>TVD Reference:</b>	WELL @ 4879.0ft (Original Well Elev)
<b>Site:</b>	North Rinn 2-4-9 Pad Sec.9-T2N-R68W	<b>MD Reference:</b>	WELL @ 4879.0ft (Original Well Elev)
<b>Well:</b>	North Rinn 14-9	<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)
6,142.0	0.30	223.30	6,078.3	-475.7	-496.8	687.8	0.15	-0.12	-15.17
6,313.0	0.40	186.40	6,249.3	-476.6	-497.2	688.7	0.14	0.06	-21.58
6,485.0	0.90	176.20	6,421.3	-478.5	-497.2	690.1	0.30	0.29	-5.93
6,656.0	1.80	172.90	6,592.2	-482.5	-496.8	692.5	0.53	0.53	-1.93
6,828.0	3.20	181.50	6,764.1	-490.0	-496.6	697.6	0.84	0.81	5.00
6,999.0	4.50	185.70	6,934.7	-501.5	-497.3	706.1	0.78	0.76	2.46
7,171.0	2.50	193.30	7,106.3	-511.8	-498.9	714.4	1.19	-1.16	4.42
7,206.5	2.13	193.27	7,141.8	-513.2	-499.2	715.6	1.05	-1.05	-0.08
<b>LEGAL BOX 400' X 400' 677'FSL, 653'FWL</b>									
7,342.0	0.70	192.90	7,277.3	-516.5	-500.0	718.4	1.05	-1.05	-0.28
7,514.0	0.20	1.50	7,449.3	-517.2	-500.2	719.1	0.52	-0.29	98.02
7,685.0	0.60	20.80	7,620.3	-516.1	-499.9	718.0	0.24	0.23	11.29
7,857.0	0.60	344.10	7,792.2	-514.4	-499.8	716.8	0.22	0.00	-21.34
8,000.0	0.90	343.60	7,935.2	-512.6	-500.3	715.9	0.21	0.21	-0.35
8,045.0	0.99	343.44	7,980.2	-511.8	-500.5	715.6	0.20	0.20	-0.36

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET CIRCLE 66C	0.00	0.00	7,144.0	-455.4	-472.5	1,297,050.12	3,135,520.68	40.147780	-105.015210
- survey misses target center by 63.8ft at 7207.2ft MD (7142.5 TVD, -513.2 N, -499.2 E)									
- Circle (radius 100.0)									
LEGAL BOX 400' X 400'	0.00	0.00	7,144.0	-438.4	-479.5	1,297,067.04	3,135,513.54	40.147827	-105.015235
- survey misses target center by 77.4ft at 7205.6ft MD (7140.9 TVD, -513.2 N, -499.2 E)									
- Rectangle (sides W400.0 H400.0 D840.0)									

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