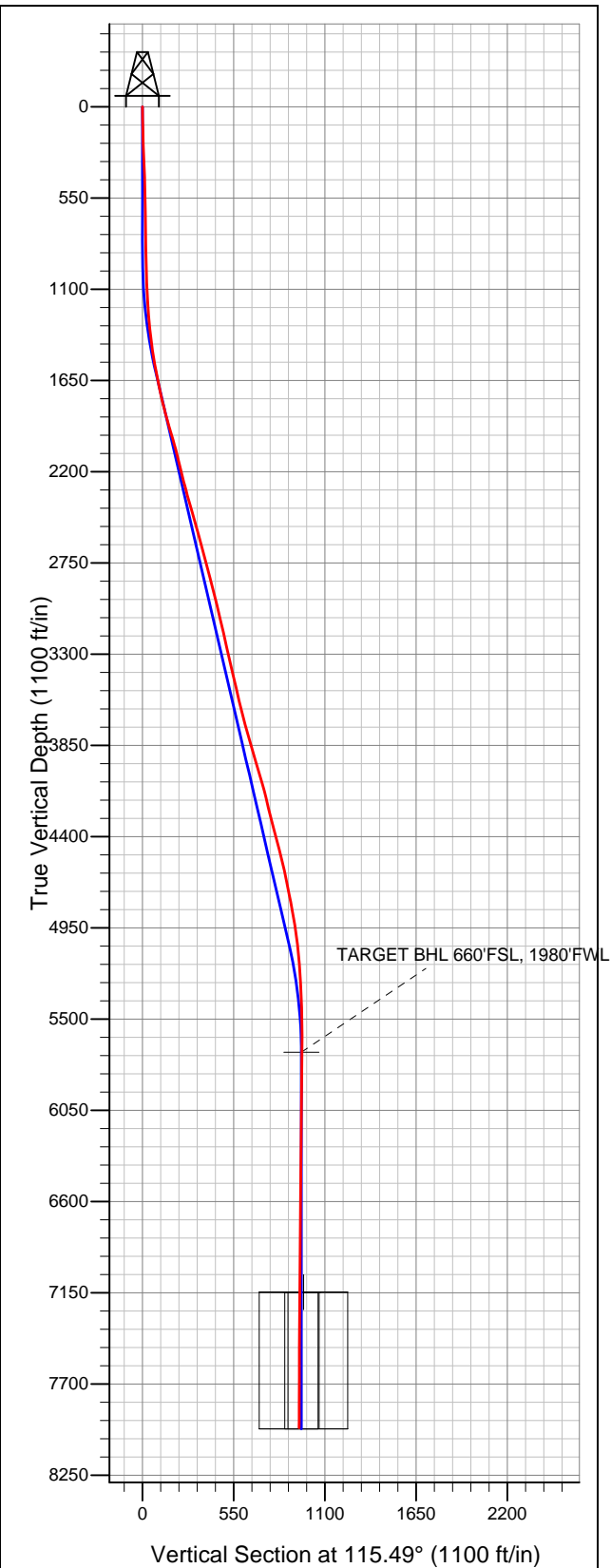
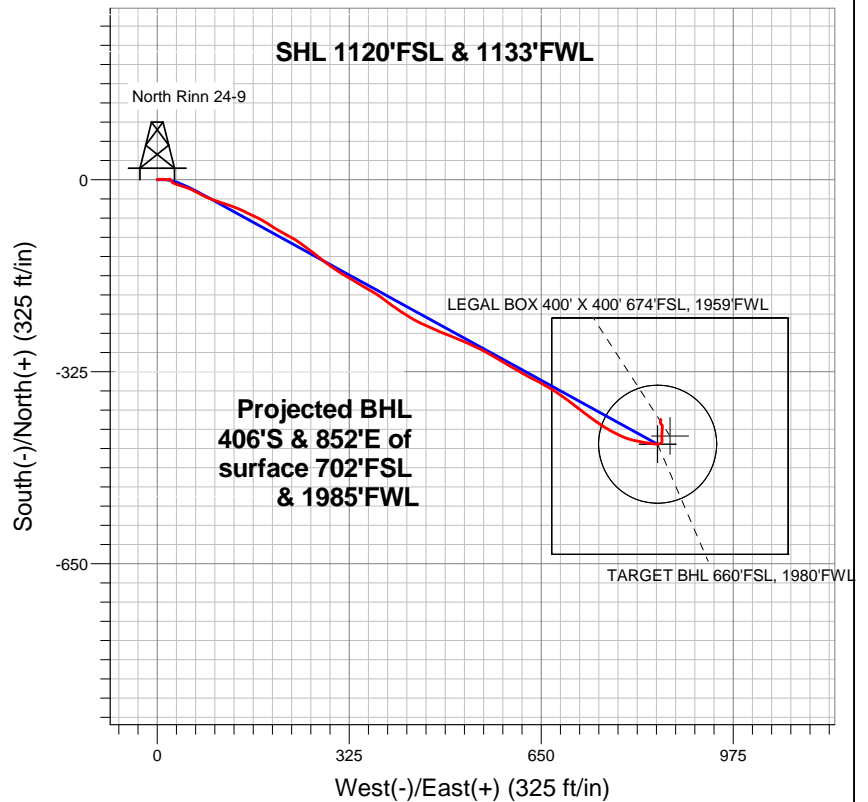


**Well Name: North Rinn 24-9**

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 1297518.97 3135990.55 40.149060 -105.013520  
Original Well Elev WELL @ 4879.0ft (Original Well Elev)



**EnCana Oil & Gas Weld County CO**



**LEGEND**

- North Rinn 24-9, Wellbore #1, Plan #1 (7-01-13)R V0
- Wellbore #1

**Final Survey Plot**

**Projected Final Survey -**  
**8077'MD & 7964'TVD @ 943'VS**  
**0.70 deg Inc 2.72 deg AZ**

Project: SEC.9-T2N-R68W  
Site: North Rinn 2-4-9 Pad Sec.9-T2N-R68W  
Well: North Rinn 24-9  
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 24-9**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**05 July, 2013**



<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 24-9
<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 24-9	<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

<b>Site</b>	North Rinn 2-4-9 Pad Sec.9-T2N-R68W		
<b>Site Position:</b>		<b>Northing:</b>	1,297,580.91 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,135,990.21 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.149230
		<b>Longitude:</b>	-105.013520
		<b>Grid Convergence:</b>	0.31 °

<b>Well</b>	North Rinn 24-9		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<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	7/1/2013	8.70	66.74	52,757

<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	115.49	

<b>Survey Program</b>	<b>Date</b>	7/5/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
137.0	8,077.0	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	
137.0	1.80	88.20	137.0	0.1	2.2	1.9	1.31	1.31	0.00	
227.0	2.00	86.20	226.9	0.2	5.1	4.5	0.23	0.22	-2.22	
317.0	2.10	88.30	316.9	0.4	8.3	7.4	0.14	0.11	2.33	
408.0	2.30	94.90	407.8	0.3	11.8	10.6	0.35	0.22	7.25	
498.0	1.90	94.90	497.7	0.0	15.1	13.7	0.44	-0.44	0.00	
589.0	1.50	84.70	588.7	0.0	17.8	16.1	0.55	-0.44	-11.21	
751.0	0.90	78.20	750.7	0.4	21.2	18.9	0.38	-0.37	-4.01	
827.0	0.20	91.20	826.7	0.5	21.9	19.5	0.93	-0.92	17.11	
913.0	1.10	154.40	912.7	-0.2	22.4	20.3	1.19	1.05	73.49	
999.0	2.50	145.00	998.6	-2.5	23.8	22.6	1.66	1.63	-10.93	
1,085.0	2.70	129.30	1,084.5	-5.3	26.5	26.2	0.86	0.23	-18.26	
1,170.0	3.30	111.40	1,169.4	-7.5	30.3	30.6	1.30	0.71	-21.06	

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 24-9
<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 24-9	<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)
1,256.0	4.70	104.30	1,255.2	-9.2	36.0	36.5	1.72	1.63	-8.26
1,342.0	5.80	107.30	1,340.8	-11.4	43.6	44.2	1.32	1.28	3.49
1,428.0	7.70	115.20	1,426.2	-15.2	52.9	54.3	2.45	2.21	9.19
1,513.0	9.10	114.70	1,510.3	-20.4	64.2	66.7	1.65	1.65	-0.59
1,599.0	11.10	118.40	1,595.0	-27.2	77.7	81.8	2.44	2.33	4.30
1,685.0	11.80	108.20	1,679.3	-33.9	93.3	98.8	2.49	0.81	-11.86
1,770.0	12.80	108.40	1,762.3	-39.5	110.5	116.7	1.18	1.18	0.24
1,856.0	15.20	111.70	1,845.8	-46.7	130.0	137.5	2.94	2.79	3.84
1,942.0	16.30	114.70	1,928.5	-55.9	151.4	160.8	1.59	1.28	3.49
2,028.0	15.90	117.70	2,011.2	-66.4	172.8	184.6	1.07	-0.47	3.49
2,113.0	14.20	123.90	2,093.3	-77.7	191.8	206.6	2.75	-2.00	7.29
2,199.0	14.20	119.30	2,176.6	-88.7	209.8	227.5	1.31	0.00	-5.35
2,285.0	14.40	118.60	2,260.0	-99.0	228.3	248.7	0.31	0.23	-0.81
2,371.0	15.40	127.00	2,343.1	-111.0	246.9	270.6	2.76	1.16	9.77
2,456.0	16.20	127.70	2,424.9	-125.0	265.3	293.2	0.97	0.94	0.82
2,542.0	16.80	127.90	2,507.3	-140.0	284.6	317.1	0.70	0.70	0.23
2,628.0	15.70	122.80	2,589.9	-153.9	304.1	340.8	2.09	-1.28	-5.93
2,714.0	14.40	120.30	2,673.0	-165.6	323.2	363.0	1.69	-1.51	-2.91
2,799.0	14.90	120.70	2,755.2	-176.6	341.7	384.4	0.60	0.59	0.47
2,885.0	14.70	120.20	2,838.3	-187.7	360.6	406.3	0.28	-0.23	-0.58
2,971.0	14.20	124.70	2,921.6	-199.2	378.7	427.6	1.43	-0.58	5.23
3,056.0	14.00	127.90	3,004.1	-211.4	395.4	447.9	0.95	-0.24	3.76
3,142.0	13.60	123.30	3,087.6	-223.4	412.1	468.1	1.36	-0.47	-5.35
3,228.0	13.00	121.00	3,171.3	-233.9	428.8	487.7	0.93	-0.70	-2.67
3,314.0	12.80	114.20	3,255.1	-242.8	445.8	506.9	1.78	-0.23	-7.91
3,399.0	13.00	114.40	3,338.0	-250.6	463.1	525.9	0.24	0.24	0.24
3,485.0	13.10	113.10	3,421.7	-258.4	480.9	545.3	0.36	0.12	-1.51
3,571.0	13.50	111.90	3,505.4	-266.0	499.1	565.0	0.57	0.47	-1.40
3,657.0	13.00	113.00	3,589.1	-273.5	517.4	584.7	0.65	-0.58	1.28
3,742.0	14.00	115.10	3,671.8	-281.6	535.5	604.5	1.31	1.18	2.47
3,828.0	15.50	118.20	3,755.0	-291.5	555.0	626.4	1.97	1.74	3.60
3,914.0	16.10	120.00	3,837.7	-302.9	575.5	649.8	0.90	0.70	2.09
3,999.0	17.60	120.50	3,919.1	-315.3	596.7	674.3	1.77	1.76	0.59
4,085.0	16.40	120.50	4,001.3	-328.0	618.4	699.4	1.40	-1.40	0.00
4,171.0	15.40	116.50	4,084.0	-339.3	639.1	722.9	1.72	-1.16	-4.65
4,257.0	14.10	119.10	4,167.2	-349.5	658.5	744.8	1.70	-1.51	3.02
4,342.0	13.50	123.30	4,249.7	-360.0	675.8	764.9	1.37	-0.71	4.94
4,428.0	14.70	127.00	4,333.1	-372.0	692.9	785.6	1.74	1.40	4.30
4,514.0	15.90	127.70	4,416.1	-385.8	710.9	807.8	1.41	1.40	0.81
4,600.0	14.30	127.50	4,499.1	-399.5	728.7	829.7	1.86	-1.86	-0.23
4,685.0	12.50	124.20	4,581.8	-411.0	744.6	849.0	2.30	-2.12	-3.88
4,771.0	11.80	120.00	4,665.9	-420.7	759.9	867.0	1.31	-0.81	-4.88
4,857.0	11.70	117.70	4,750.1	-429.1	775.3	884.5	0.56	-0.12	-2.67
4,943.0	10.50	112.40	4,834.5	-436.2	790.3	901.0	1.83	-1.40	-6.16
5,028.0	9.20	103.80	4,918.2	-440.7	804.0	915.4	2.31	-1.53	-10.12
5,114.0	7.70	102.10	5,003.3	-443.6	816.3	927.8	1.77	-1.74	-1.98
5,200.0	6.20	99.10	5,088.6	-445.5	826.5	937.8	1.79	-1.74	-3.49
5,285.0	4.80	98.00	5,173.2	-446.7	834.6	945.6	1.65	-1.65	-1.29
5,371.0	3.60	95.90	5,259.0	-447.5	840.8	951.6	1.41	-1.40	-2.44
5,457.0	2.70	93.30	5,344.9	-447.9	845.6	956.0	1.06	-1.05	-3.02
5,543.0	1.90	74.60	5,430.8	-447.7	848.9	959.0	1.26	-0.93	-21.74
5,714.0	1.10	59.20	5,601.8	-446.1	853.1	962.0	0.52	-0.47	-9.01
5,812.1	1.27	17.29	5,699.9	-444.5	854.2	962.4	0.88	0.17	-42.71
TARGET BHL 660'FSL, 1980'FWL									

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 24-9
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<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 24-9	<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)
5,886.0	1.70	358.30	5,773.7	-442.7	854.4	961.8	0.88	0.58	-25.71
6,057.0	1.80	356.40	5,944.6	-437.5	854.2	959.3	0.07	0.06	-1.11
6,229.0	1.70	1.50	6,116.5	-432.2	854.1	957.0	0.11	-0.06	2.97
6,400.0	1.60	7.50	6,287.5	-427.3	854.5	955.2	0.12	-0.06	3.51
6,571.0	1.20	1.30	6,458.4	-423.1	854.8	953.7	0.25	-0.23	-3.63
6,743.0	0.90	8.40	6,630.4	-420.0	855.1	952.6	0.19	-0.17	4.13
6,914.0	0.90	350.10	6,801.4	-417.4	855.0	951.4	0.17	0.00	-10.70
7,086.0	0.70	325.30	6,973.4	-415.2	854.2	949.7	0.23	-0.12	-14.42
7,257.0	0.60	307.60	7,144.3	-413.8	852.9	947.9	0.13	-0.06	-10.35
7,259.4	0.60	307.96	7,146.8	-413.7	852.9	947.9	0.19	-0.10	14.98
<b>LEGAL BOX 400' X 400' 674'FSL, 1959'FWL</b>									
7,429.0	0.50	340.10	7,316.3	-412.5	851.9	946.5	0.19	-0.06	18.95
7,600.0	0.50	9.60	7,487.3	-411.1	851.8	945.8	0.15	0.00	17.25
7,772.0	0.50	9.60	7,659.3	-409.6	852.0	945.4	0.00	0.00	0.00
7,946.0	0.70	356.40	7,833.3	-407.8	852.1	944.6	0.14	0.11	-7.59
8,033.0	0.70	0.60	7,920.3	-406.7	852.1	944.2	0.06	0.00	4.83
8,077.0	0.70	2.72	7,964.3	-406.2	852.1	943.9	0.06	0.00	4.82

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	7,147.0	-448.1	847.1	1,297,075.58	3,136,840.02	40.147830	-105.010490
- actual wellpath misses target center by 34.8ft at 7259.4ft MD (7146.8 TVD, -413.7 N, 852.9 E)									
- Circle (radius 100.0)									

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