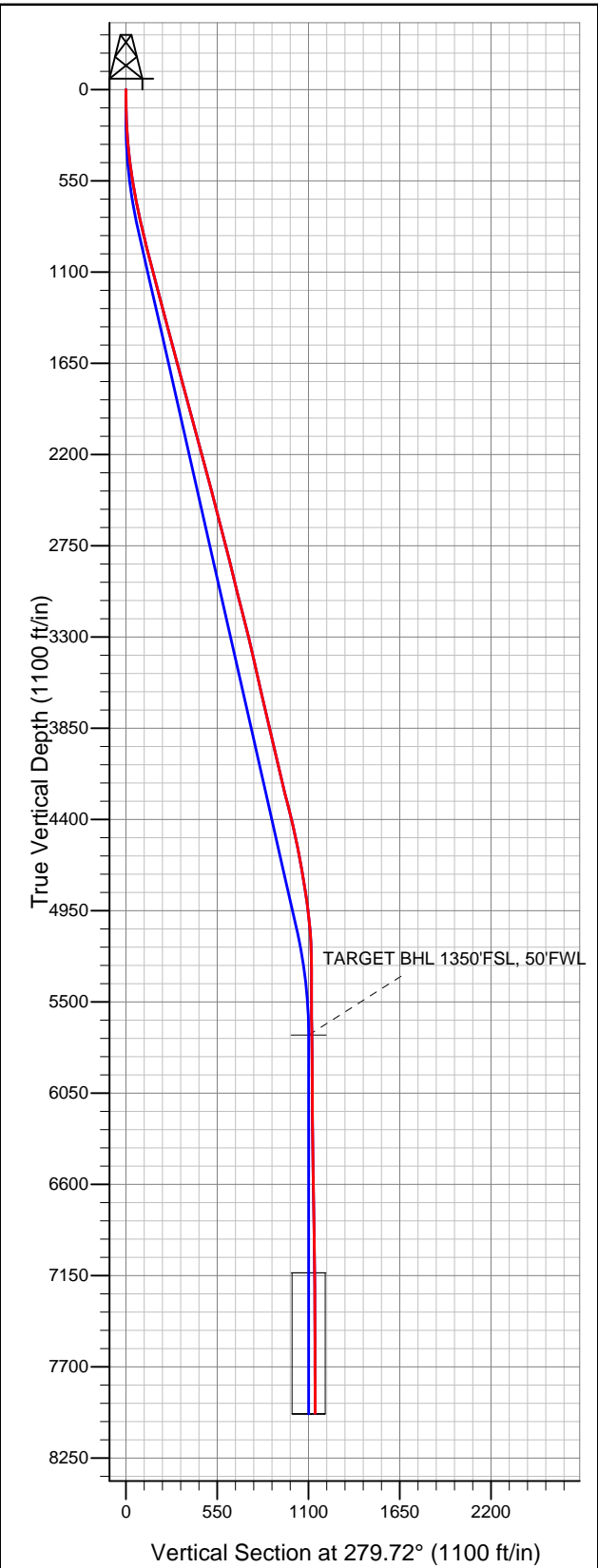


# Well Name: North Rinn 0-6-9

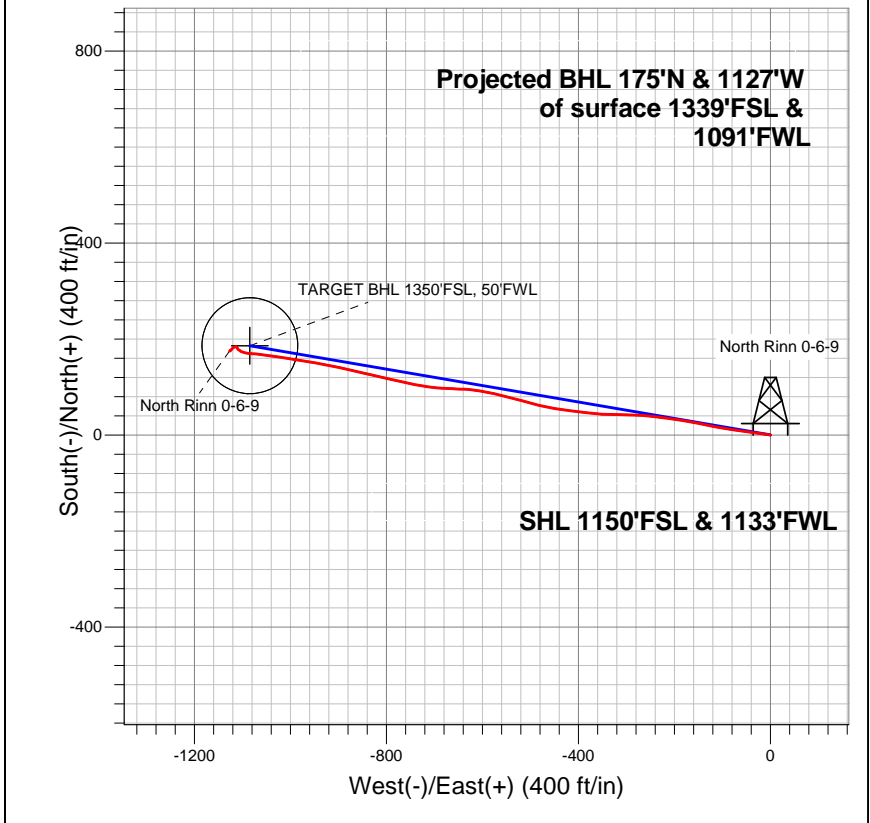
Surface Location: North Rinn 2-4-9 Pad Sec.9-T2N-R68W  
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone  
 Ground Elevation: 4866.0  

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1297548.11	3135990.39	40.149140	-105.013520	

 Original Well Elev WELL @ 4879.0ft (Original Well Elev)



## EnCana Oil & Gas Weld County CO



### LEGEND

- North Rinn 0-6-9, Wellbore #1, Plan #1 (5-20-13) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
 8112'MD & 7981'TVD @ 1140°VS  
 0.10 deg Inc 30.80 deg AZ

Project: SEC.9-T2N-R68W  
 Site: North Rinn 2-4-9 Pad Sec.9-T2N-R68W  
 Well: North Rinn 0-6-9  
 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 0-6-9**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**19 July, 2013**



<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 0-6-9
<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 0-6-9	<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 0-6-9					
Well Position	+N/-S	0.0 ft	Northing:	1,297,548.11 ft	Latitude:	40.149140
	+E/-W	0.0 ft	Easting:	3,135,990.39 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	279.72	

<b>Survey Program</b>	<b>Date</b>	7/19/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
77.0	8,112.0	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	
77.0	0.50	283.30	77.0	0.1	-0.3	0.3	0.65	0.65	0.00	
137.0	1.50	266.80	137.0	0.1	-1.4	1.4	1.72	1.67	-27.50	
197.0	2.50	270.80	197.0	0.1	-3.5	3.4	1.68	1.67	6.67	
257.0	3.40	278.40	256.9	0.3	-6.5	6.5	1.63	1.50	12.67	
317.0	4.70	280.80	316.7	1.1	-10.7	10.7	2.18	2.17	4.00	
378.0	6.10	275.60	377.4	1.9	-16.4	16.5	2.43	2.30	-8.52	
438.0	7.00	281.90	437.1	2.9	-23.1	23.3	1.92	1.50	10.50	
498.0	8.20	278.40	496.5	4.3	-30.9	31.2	2.14	2.00	-5.83	
559.0	9.20	278.50	556.8	5.7	-40.1	40.4	1.64	1.64	0.16	
620.0	10.20	277.70	617.0	7.1	-50.2	50.7	1.65	1.64	-1.31	
680.0	11.20	277.00	675.9	8.5	-61.3	61.9	1.68	1.67	-1.17	
752.0	12.40	278.20	746.4	10.5	-75.9	76.6	1.70	1.67	1.67	

<b>Company:</b>	EnCana Oil & Gas Weld County CO	<b>Local Co-ordinate Reference:</b>	Well North Rinn 0-6-9
<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 0-6-9	<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)	
827.0	13.50	277.10	819.5	12.7	-92.5	93.4	1.50	1.47	-1.47	
956.0	13.80	283.30	944.8	18.1	-122.5	123.8	1.16	0.23	4.81	
1,085.0	14.50	281.20	1,069.9	24.8	-153.3	155.3	0.67	0.54	-1.63	
1,213.0	14.70	278.40	1,193.8	30.3	-185.1	187.5	0.57	0.16	-2.19	
1,342.0	14.60	277.80	1,318.6	34.9	-217.4	220.1	0.14	-0.08	-0.47	
1,470.0	15.30	276.40	1,442.3	38.9	-250.1	253.1	0.62	0.55	-1.09	
1,599.0	15.60	271.90	1,566.6	41.4	-284.4	287.3	0.96	0.23	-3.49	
1,728.0	14.90	270.30	1,691.1	42.1	-318.3	320.8	0.63	-0.54	-1.24	
1,856.0	14.90	273.30	1,814.8	43.1	-351.2	353.4	0.60	0.00	2.34	
1,985.0	14.90	277.00	1,939.4	46.1	-384.2	386.5	0.74	0.00	2.87	
2,113.0	15.10	277.70	2,063.1	50.3	-417.1	419.6	0.21	0.16	0.55	
2,242.0	15.00	279.10	2,187.6	55.2	-450.2	453.1	0.29	-0.08	1.09	
2,371.0	14.90	284.00	2,312.3	61.9	-482.8	486.3	0.98	-0.08	3.80	
2,499.0	15.10	284.50	2,435.9	70.0	-514.9	519.3	0.19	0.16	0.39	
2,628.0	15.00	286.10	2,560.5	78.9	-547.2	552.6	0.33	-0.08	1.24	
2,756.0	14.30	280.10	2,684.3	86.2	-578.7	584.9	1.30	-0.55	-4.69	
2,885.0	14.40	280.80	2,809.3	92.0	-610.1	616.9	0.16	0.08	0.54	
3,014.0	12.20	271.00	2,934.9	95.3	-639.5	646.4	2.44	-1.71	-7.60	
3,142.0	15.40	273.30	3,059.2	96.5	-670.0	676.7	2.54	2.50	1.80	
3,271.0	13.60	275.00	3,184.0	98.8	-702.2	708.8	1.43	-1.40	1.32	
3,399.0	14.20	281.90	3,308.3	103.3	-732.6	739.5	1.38	0.47	5.39	
3,528.0	12.70	281.20	3,433.8	109.4	-762.0	769.5	1.17	-1.16	-0.54	
3,657.0	12.70	283.50	3,559.6	115.4	-789.7	797.8	0.39	0.00	1.78	
3,785.0	12.80	282.10	3,684.5	121.7	-817.2	826.0	0.25	0.08	-1.09	
3,914.0	13.80	283.50	3,810.0	128.3	-846.1	855.6	0.81	0.78	1.09	
4,042.0	12.70	282.80	3,934.6	134.9	-874.7	884.9	0.87	-0.86	-0.55	
4,171.0	13.20	282.60	4,060.3	141.3	-902.9	913.8	0.39	0.39	-0.16	
4,300.0	13.50	279.80	4,185.8	147.1	-932.1	943.6	0.55	0.23	-2.17	
4,428.0	14.70	280.00	4,310.0	152.4	-962.8	974.8	0.94	0.94	0.16	
4,557.0	13.00	279.20	4,435.2	157.6	-993.3	1,005.6	1.33	-1.32	-0.62	
4,685.0	11.40	278.40	4,560.3	161.8	-1,020.0	1,032.7	1.26	-1.25	-0.63	
4,814.0	10.00	277.80	4,687.1	165.1	-1,043.7	1,056.6	1.09	-1.09	-0.47	
4,943.0	9.10	277.00	4,814.3	167.9	-1,064.9	1,078.0	0.71	-0.70	-0.62	
5,071.0	7.00	272.90	4,941.0	169.5	-1,082.8	1,095.9	1.70	-1.64	-3.20	
5,200.0	4.90	286.10	5,069.3	171.5	-1,095.9	1,109.1	1.93	-1.63	10.23	
5,328.0	1.50	298.80	5,197.1	173.8	-1,102.6	1,116.2	2.70	-2.66	9.92	
5,457.0	0.20	261.70	5,326.1	174.6	-1,104.4	1,118.0	1.04	-1.01	-28.76	
5,628.0	0.40	324.10	5,497.1	175.0	-1,105.0	1,118.7	0.21	0.12	36.49	
5,800.0	0.60	310.50	5,669.1	176.1	-1,106.0	1,119.9	0.13	0.12	-7.91	
5,830.8	0.56	307.30	5,699.9	176.3	-1,106.3	1,120.2	0.17	-0.14	-10.39	
TARGET BHL 1350'FSL, 50'FWL										
5,971.0	0.40	284.90	5,840.1	176.8	-1,107.3	1,121.2	0.17	-0.11	-15.98	
6,143.0	0.70	313.90	6,012.1	177.7	-1,108.6	1,122.7	0.23	0.17	16.86	
6,314.0	0.60	326.50	6,183.0	179.2	-1,109.9	1,124.2	0.10	-0.06	7.37	
6,486.0	0.80	345.00	6,355.0	181.1	-1,110.7	1,125.3	0.17	0.12	10.76	
6,657.0	1.10	311.80	6,526.0	183.3	-1,112.2	1,127.2	0.36	0.18	-19.42	
6,829.0	1.20	251.60	6,698.0	183.8	-1,115.2	1,130.2	0.67	0.06	-35.00	
7,000.0	1.10	235.00	6,868.9	182.3	-1,118.2	1,132.9	0.20	-0.06	-9.71	
7,172.0	1.30	227.60	7,040.9	180.1	-1,121.0	1,135.3	0.15	0.12	-4.30	
7,264.5	1.03	224.91	7,133.4	178.8	-1,122.4	1,136.4	0.30	-0.29	-2.91	
TARGET CIRCLE 1350'FSL, 50'FWL										
7,343.0	0.80	221.20	7,211.9	177.9	-1,123.2	1,137.1	0.30	-0.29	-4.73	
7,515.0	0.40	213.00	7,383.9	176.5	-1,124.3	1,138.0	0.24	-0.23	-4.77	
7,686.0	0.50	229.90	7,554.9	175.5	-1,125.2	1,138.7	0.10	0.06	9.88	

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<b>Well:</b>	North Rinn 0-6-9	<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)	
7,857.0	0.40	247.10	7,725.9	174.8	-1,126.3	1,139.7	0.10	-0.06	10.06	
8,029.0	0.20	10.10	7,897.9	174.8	-1,126.8	1,140.2	0.31	-0.12	71.51	
8,112.0	0.10	30.80	7,980.9	175.0	-1,126.8	1,140.2	0.14	-0.12	24.94	

Design Targets										
Target Name										
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude		Longitude
- Shape										
TARGET CIRCLE 13¢	0.00	0.00	7,134.0	185.8	-1,084.7	1,297,727.97	3,134,904.77	40.149650		-105.017400
- survey misses target center by 38.4ft at 7264.6ft MD (7133.5 TVD, 178.8 N, -1122.4 E)										
- Circle (radius 100.0)										

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