





## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Billings 1C-34H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5008.0ft (Ensign 135)
<b>Site:</b>	S34-T2N-R68W (Billings)	<b>MD Reference:</b>	WELL @ 5008.0ft (Ensign 135)
<b>Well:</b>	Billings 1C-34H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<b>Project</b>	DJ Wattenberg		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		S34-T2N-R68W (Billings)			
Site Position:		Northing:	1,280,284.39 ft	Latitude:	40.101620
From:	Lat/Long	Easting:	3,143,887.76 ft	Longitude:	-104.985650
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.33 °

Well		Billings 1C-34H				
Well Position	+N/-S	0.0 ft	Northing:	1,280,266.28 ft	Latitude:	40.101570
	+E/-W	0.0 ft	Easting:	3,143,907.45 ft	Longitude:	-104.985580
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,995.0 ft

<b>Wellbore</b>	Hz				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/30/2013	8.64	66.69	52,699

<b>Design</b>	FINAL				
<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)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	180.00	

<b>Survey Program</b>	<b>Date</b>	11/25/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
144.0	481.0	Survey #2 (Hz)	Gyro	Gyro	
514.0	12,280.0	Survey #3 (Hz)	Geolink MWD	Geolink MWD	

<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>Formations / Comments</b>	
481.0	3.69	16.48	480.8	5.7	8.8	-5.7	0.00	0.00		
514.0	4.20	12.90	513.7	7.9	9.4	-7.9	1.72	1.55		
545.0	4.80	9.40	544.6	10.3	9.8	-10.3	2.13	1.94		
575.0	4.70	8.40	574.5	12.7	10.2	-12.7	0.43	-0.33		
606.0	4.50	8.50	605.4	15.2	10.6	-15.2	0.65	-0.65		
637.0	4.70	7.10	636.3	17.6	10.9	-17.6	0.74	0.65		
667.0	4.70	11.90	666.2	20.1	11.3	-20.1	1.31	0.00		
698.0	4.60	15.20	697.1	22.5	11.9	-22.5	0.92	-0.32		
759.0	4.80	25.80	757.9	27.2	13.7	-27.2	1.46	0.33		
821.0	5.10	31.60	819.7	31.8	16.2	-31.8	0.94	0.48		
882.0	5.80	34.20	880.4	36.7	19.4	-36.7	1.22	1.15		
943.0	6.30	35.50	941.1	42.0	23.1	-42.0	0.85	0.82		

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<b>Well:</b>	Billings 1C-34H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
975.0	6.80	35.50	972.8	45.0	25.2	-45.0	1.56	1.56	
1,038.0	7.40	36.50	1,035.4	51.2	29.8	-51.2	0.97	0.95	
1,099.0	8.00	38.50	1,095.8	57.7	34.7	-57.7	1.08	0.98	
1,191.0	9.90	40.70	1,186.7	68.7	43.9	-68.7	2.10	2.07	
1,283.0	9.50	36.20	1,277.4	80.9	53.5	-80.9	0.93	-0.43	
1,375.0	9.90	35.40	1,368.1	93.4	62.6	-93.4	0.46	0.43	
1,467.0	10.00	35.20	1,458.7	106.4	71.8	-106.4	0.12	0.11	
1,559.0	10.80	36.40	1,549.2	119.9	81.5	-119.9	0.90	0.87	
1,651.0	9.90	36.70	1,639.7	133.2	91.3	-133.2	0.98	-0.98	
1,743.0	9.30	43.30	1,730.4	144.9	101.2	-144.9	1.36	-0.65	
1,834.0	9.10	35.60	1,820.2	156.1	110.4	-156.1	1.37	-0.22	
1,926.0	9.10	42.60	1,911.1	167.4	119.6	-167.4	1.20	0.00	
2,021.0	8.80	36.30	2,004.9	178.8	128.9	-178.8	1.08	-0.32	
2,116.0	6.80	39.10	2,099.0	189.0	136.8	-189.0	2.14	-2.11	
2,211.0	6.20	49.00	2,193.4	196.7	144.2	-196.7	1.34	-0.63	
2,305.0	5.20	46.10	2,286.9	203.0	151.1	-203.0	1.11	-1.06	
2,400.0	4.70	48.50	2,381.6	208.6	157.1	-208.6	0.57	-0.53	
2,495.0	4.10	67.30	2,476.3	212.5	163.2	-212.5	1.63	-0.63	
2,589.0	2.80	60.10	2,570.1	214.9	168.3	-214.9	1.46	-1.38	
2,684.0	0.90	44.90	2,665.1	216.6	170.8	-216.6	2.05	-2.00	
2,779.0	0.80	39.40	2,760.1	217.6	171.8	-217.6	0.14	-0.11	
2,874.0	0.10	228.60	2,855.1	218.1	172.1	-218.1	0.95	-0.74	
2,968.0	0.40	205.30	2,949.1	217.7	171.9	-217.7	0.33	0.32	
3,063.0	0.30	218.50	3,044.1	217.2	171.6	-217.2	0.13	-0.11	
3,158.0	0.20	222.30	3,139.1	216.9	171.4	-216.9	0.11	-0.11	
3,253.0	0.10	68.00	3,234.1	216.8	171.3	-216.8	0.31	-0.11	
3,348.0	0.80	15.20	3,329.1	217.5	171.6	-217.5	0.78	0.74	
3,442.0	1.50	297.90	3,423.1	218.7	170.7	-218.7	1.64	0.74	
3,537.0	2.20	258.90	3,518.0	218.9	167.8	-218.9	1.47	0.74	
3,632.0	1.00	222.60	3,613.0	218.0	165.4	-218.0	1.59	-1.26	
3,727.0	0.90	240.60	3,708.0	217.0	164.2	-217.0	0.33	-0.11	
3,821.0	1.20	249.20	3,801.9	216.3	162.6	-216.3	0.36	0.32	
3,916.0	0.80	303.50	3,896.9	216.3	161.2	-216.3	1.03	-0.42	
4,011.0	0.80	254.30	3,991.9	216.5	160.0	-216.5	0.70	0.00	
4,105.0	0.70	89.90	4,085.9	216.3	159.9	-216.3	1.58	-0.11	
4,200.0	0.50	67.30	4,180.9	216.5	160.9	-216.5	0.32	-0.21	
4,295.0	1.50	75.10	4,275.9	216.9	162.5	-216.9	1.06	1.05	
4,389.0	1.60	54.10	4,369.9	218.0	164.7	-218.0	0.61	0.11	
4,484.0	1.20	105.20	4,464.8	218.6	166.7	-218.6	1.33	-0.42	
4,579.0	1.40	210.60	4,559.8	217.3	167.1	-217.3	2.18	0.21	
4,674.0	0.60	326.20	4,654.8	216.7	166.2	-216.7	1.84	-0.84	
4,768.0	0.90	305.30	4,748.8	217.5	165.4	-217.5	0.43	0.32	
4,863.0	0.10	212.00	4,843.8	217.9	164.7	-217.9	0.96	-0.84	
4,958.0	0.50	306.30	4,938.8	218.1	164.3	-218.1	0.54	0.42	
5,053.0	0.30	263.30	5,033.8	218.3	163.8	-218.3	0.37	-0.21	
5,147.0	0.20	286.30	5,127.8	218.3	163.4	-218.3	0.15	-0.11	
5,242.0	0.20	273.80	5,222.8	218.4	163.0	-218.4	0.05	0.00	
5,337.0	0.30	296.50	5,317.8	218.5	162.6	-218.5	0.15	0.11	
5,431.0	0.60	312.00	5,411.8	218.9	162.1	-218.9	0.34	0.32	
5,526.0	0.60	314.10	5,506.8	219.6	161.3	-219.6	0.02	0.00	
5,621.0	0.90	123.20	5,601.8	219.5	161.6	-219.5	1.57	0.32	
5,715.0	0.30	141.50	5,695.8	219.0	162.4	-219.0	0.66	-0.64	
5,810.0	0.30	204.30	5,790.8	218.5	162.4	-218.5	0.33	0.00	

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<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,905.0	0.20	179.50	5,885.8	218.1	162.3	-218.1	0.15	-0.11	
5,999.0	0.80	40.70	5,979.8	218.5	162.7	-218.5	1.02	0.64	
6,094.0	2.00	81.90	6,074.7	219.2	164.8	-219.2	1.57	1.26	
6,189.0	0.10	38.60	6,169.7	219.5	166.5	-219.5	2.03	-2.00	
6,283.0	0.10	111.60	6,263.7	219.5	166.6	-219.5	0.13	0.00	
6,378.0	0.60	7.80	6,358.7	220.0	166.8	-220.0	0.66	0.53	
6,472.0	0.90	124.40	6,452.7	220.1	167.5	-220.1	1.37	0.32	
6,567.0	1.30	134.80	6,547.7	218.9	168.8	-218.9	0.47	0.42	
6,662.0	1.10	153.70	6,642.7	217.3	170.0	-217.3	0.46	-0.21	
6,756.0	0.90	162.60	6,736.7	215.8	170.6	-215.8	0.27	-0.21	
6,851.0	0.60	266.80	6,831.7	215.1	170.4	-215.1	1.26	-0.32	
6,946.0	0.40	250.90	6,926.7	214.9	169.5	-214.9	0.25	-0.21	
7,040.0	0.20	356.50	7,020.7	215.0	169.2	-215.0	0.52	-0.21	
7,071.0	0.20	41.40	7,051.7	215.1	169.3	-215.1	0.49	0.00	
7,103.0	1.20	130.90	7,083.7	214.9	169.6	-214.9	3.80	3.12	
7,135.0	2.90	152.30	7,115.6	214.0	170.2	-214.0	5.74	5.31	
7,166.0	5.00	161.20	7,146.6	212.0	171.0	-212.0	7.04	6.77	
7,198.0	7.60	166.10	7,178.4	208.6	171.9	-208.6	8.29	8.12	
7,229.0	10.30	174.20	7,209.0	203.9	172.7	-203.9	9.59	8.71	
7,261.0	12.70	180.10	7,240.3	197.5	173.0	-197.5	8.34	7.50	
7,292.0	15.20	183.90	7,270.4	190.0	172.7	-190.0	8.58	8.06	
7,324.0	17.60	185.10	7,301.1	181.0	172.0	-181.0	7.57	7.50	
7,355.0	20.50	184.10	7,330.4	170.9	171.2	-170.9	9.41	9.35	
7,387.0	23.10	181.60	7,360.1	159.1	170.6	-159.1	8.63	8.12	
7,419.0	25.50	179.20	7,389.3	145.9	170.5	-145.9	8.11	7.50	
7,450.0	26.90	180.40	7,417.1	132.2	170.6	-132.2	4.83	4.52	
7,482.0	29.10	180.20	7,445.4	117.2	170.5	-117.2	6.88	6.87	
7,513.0	30.80	179.30	7,472.2	101.7	170.6	-101.7	5.67	5.48	
7,545.0	33.70	177.80	7,499.3	84.7	171.0	-84.7	9.40	9.06	
7,576.0	37.80	175.50	7,524.4	66.6	172.1	-66.6	13.92	13.23	
7,608.0	42.50	174.80	7,548.9	46.0	173.8	-46.0	14.75	14.69	
7,639.0	46.90	173.70	7,570.9	24.4	176.0	-24.4	14.41	14.19	
7,671.0	52.00	172.90	7,591.7	0.2	178.9	-0.2	16.05	15.94	
7,702.0	57.10	172.50	7,609.7	-24.8	182.1	24.8	16.49	16.45	
7,734.0	62.40	172.50	7,625.8	-52.2	185.7	52.2	16.56	16.56	
7,788.0	71.31	172.50	7,647.0	-101.4	192.2	101.4	16.50	16.50	
7,797.0	72.90	174.40	7,649.8	-109.9	193.1	109.9	26.75	17.67	
7,829.0	78.60	174.80	7,657.6	-140.8	196.1	140.8	17.85	17.81	
7,860.0	83.00	174.30	7,662.6	-171.2	199.0	171.2	14.28	14.19	
7,892.0	85.50	173.90	7,665.8	-202.9	202.2	202.9	7.91	7.81	
7,900.0	86.20	173.60	7,666.4	-210.8	203.1	210.8	9.52	8.75	
7,979.0	89.60	174.40	7,669.3	-289.3	211.4	289.3	4.42	4.30	
8,042.0	88.60	173.40	7,670.3	-352.0	218.1	352.0	2.24	-1.59	
8,105.0	87.60	173.30	7,672.4	-414.5	225.3	414.5	1.60	-1.59	
8,200.0	88.20	172.80	7,675.8	-508.7	236.8	508.7	0.82	0.63	
8,295.0	87.50	173.40	7,679.4	-603.0	248.2	603.0	0.97	-0.74	
8,390.0	88.30	174.00	7,682.9	-697.4	258.7	697.4	1.05	0.84	
8,484.0	89.20	175.60	7,684.9	-790.9	267.2	790.9	1.95	0.96	
8,579.0	89.90	176.50	7,685.7	-885.7	273.7	885.7	1.20	0.74	
8,674.0	89.40	176.70	7,686.3	-980.5	279.3	980.5	0.57	-0.53	
8,769.0	87.40	175.90	7,688.9	-1,075.3	285.5	1,075.3	2.27	-2.11	
8,863.0	87.60	176.00	7,693.0	-1,169.0	292.1	1,169.0	0.24	0.21	
8,958.0	87.10	176.40	7,697.4	-1,263.7	298.4	1,263.7	0.67	-0.53	

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<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
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9,052.0	88.80	177.00	7,700.8	-1,357.4	303.8	1,357.4	1.92	1.81	
9,147.0	90.50	177.20	7,701.4	-1,452.3	308.6	1,452.3	1.80	1.79	
9,242.0	88.90	176.10	7,701.8	-1,547.2	314.2	1,547.2	2.04	-1.68	
9,337.0	89.40	176.20	7,703.3	-1,641.9	320.5	1,641.9	0.54	0.53	
9,432.0	90.60	176.20	7,703.3	-1,736.7	326.8	1,736.7	1.26	1.26	
9,526.0	89.10	176.00	7,703.5	-1,830.5	333.2	1,830.5	1.61	-1.60	
9,621.0	89.30	176.60	7,704.8	-1,925.3	339.4	1,925.3	0.67	0.21	
9,716.0	89.00	175.80	7,706.2	-2,020.1	345.7	2,020.1	0.90	-0.32	
9,811.0	90.00	177.30	7,707.1	-2,114.9	351.4	2,114.9	1.90	1.05	
9,905.0	90.40	178.80	7,706.7	-2,208.8	354.6	2,208.8	1.65	0.43	
10,000.0	90.00	180.00	7,706.4	-2,303.8	355.6	2,303.8	1.33	-0.42	
10,095.0	90.10	179.90	7,706.3	-2,398.8	355.6	2,398.8	0.15	0.11	
10,190.0	89.90	179.70	7,706.3	-2,493.8	356.0	2,493.8	0.30	-0.21	
10,285.0	88.70	177.70	7,707.5	-2,588.8	358.1	2,588.8	2.45	-1.26	
10,379.0	89.10	178.30	7,709.3	-2,682.7	361.4	2,682.7	0.77	0.43	
10,474.0	90.70	178.90	7,709.5	-2,777.7	363.7	2,777.7	1.80	1.68	
10,569.0	91.10	179.00	7,708.0	-2,872.6	365.5	2,872.6	0.43	0.42	
10,663.0	90.70	178.20	7,706.5	-2,966.6	367.8	2,966.6	0.95	-0.43	
10,758.0	89.40	177.80	7,706.4	-3,061.5	371.1	3,061.5	1.43	-1.37	
10,853.0	89.00	176.30	7,707.7	-3,156.4	376.0	3,156.4	1.63	-0.42	
10,948.0	90.60	176.80	7,708.1	-3,251.2	381.7	3,251.2	1.76	1.68	
11,042.0	90.20	177.70	7,707.4	-3,345.1	386.2	3,345.1	1.05	-0.43	
11,137.0	89.00	177.90	7,708.1	-3,440.0	389.8	3,440.0	1.28	-1.26	
11,232.0	90.60	179.00	7,708.4	-3,535.0	392.4	3,535.0	2.04	1.68	
11,327.0	87.60	178.80	7,709.9	-3,630.0	394.2	3,630.0	3.16	-3.16	
11,421.0	89.20	179.90	7,712.5	-3,723.9	395.3	3,723.9	2.07	1.70	
11,516.0	90.90	184.00	7,712.4	-3,818.8	392.1	3,818.8	4.67	1.79	
11,611.0	89.30	182.90	7,712.3	-3,913.7	386.4	3,913.7	2.04	-1.68	
11,705.0	88.40	181.60	7,714.2	-4,007.6	382.7	4,007.6	1.68	-0.96	
11,800.0	89.30	182.20	7,716.1	-4,102.5	379.5	4,102.5	1.14	0.95	
11,895.0	88.10	180.00	7,718.2	-4,197.4	377.7	4,197.4	2.64	-1.26	
11,995.0	88.04	180.00	7,721.6	-4,297.4	377.7	4,297.4	0.06	-0.06	
12,095.0	88.20	178.60	7,724.9	-4,397.3	378.9	4,397.3	1.41	0.16	
12,195.0	87.14	179.90	7,728.9	-4,497.2	380.2	4,497.2	1.68	-1.06	
12,280.0	87.14	179.90	7,733.2	-4,582.1	380.4	4,582.1	0.00	0.00	

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Billings 1C-34H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5008.0ft (Ensign 135)
<b>Site:</b>	S34-T2N-R68W (Billings)	<b>MD Reference:</b>	WELL @ 5008.0ft (Ensign 135)
<b>Well:</b>	Billings 1C-34H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Billings 1C-34H TGT - survey misses target center by 62.9ft at 9906.1ft MD (7706.7 TVD, -2209.9 N, 354.6 E) - Point	0.00	0.00	7,649.0	-2,209.5	379.5	1,278,059.04	3,144,299.76	40.095505	-104.984223
Billings 1C-34H 9,500' - survey misses target center by 13.8ft at 9532.3ft MD (7703.6 TVD, -1836.8 N, 333.7 E) - Point	0.00	0.00	7,706.0	-1,835.9	347.3	1,278,432.45	3,144,265.36	40.096530	-104.984339
Billings 1C-34H PBHL P. - survey misses target center by 38.1ft at 12280.0ft MD (7733.2 TVD, -4582.1 N, 380.4 E) - Point	0.00	0.00	7,720.0	-4,604.5	352.5	1,275,663.94	3,144,286.69	40.088930	-104.984320
Billings 1C-34H 11,000' - survey misses target center by 10.8ft at 11030.4ft MD (7707.5 TVD, -3333.6 N, 385.7 E) - Point	0.00	0.00	7,706.0	-3,334.1	375.0	1,276,934.46	3,144,301.80	40.092417	-104.984240
Billings 1C-34H PBHL - survey misses target center by 91.4ft at 12280.0ft MD (7733.2 TVD, -4582.1 N, 380.4 E) - Point	0.00	0.00	7,649.0	-4,604.5	352.5	1,275,663.94	3,144,286.69	40.088930	-104.984320

Checked By: _____	Approved By: _____	Date: _____
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