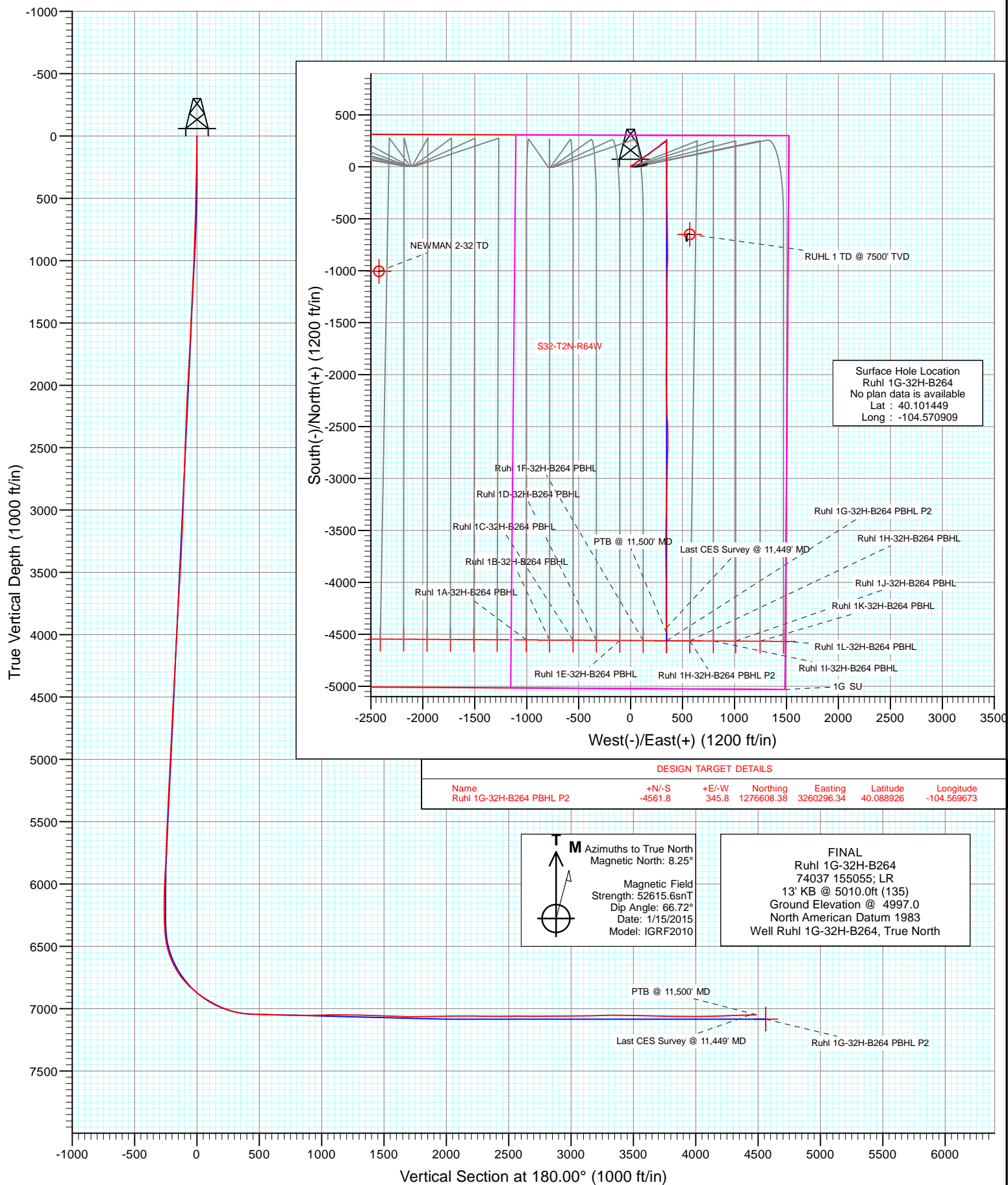




Project: DJ Wattenberg  
Site: S32-T2N-R64W (Newman/Ruhl)  
Well: Ruhl 1G-32H-B264  
Wellbore: Hz  
Design: FINAL



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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		S32-T2N-R64W (Newman/Ruhl)			
Site Position:		Northing:	1,281,150.65 ft	Latitude:	40.101468
From:	Lat/Long	Easting:	3,257,734.55 ft	Longitude:	-104.578660
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.60 °

Well	Ruhl 1G-32H-B264					
Well Position	+N/-S	0.0 ft	Northing:	1,281,166.35 ft	Latitude:	40.101449
	+E/-W	0.0 ft	Easting:	3,259,902.74 ft	Longitude:	-104.570909
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,997.0 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	1/15/2015	8.25	66.72	52,616

Design	FINAL			
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	180.00

<b>Survey Program</b>	<b>Date</b>	1/25/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
235.0	11,500.0	Survey #1 (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>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
235.0	1.40	354.10	235.0	2.9	-0.3	-2.9	0.60	0.60	
327.0	1.30	347.60	327.0	5.0	-0.6	-5.0	0.20	-0.11	
419.0	1.30	335.60	418.9	7.0	-1.3	-7.0	0.30	0.00	
510.0	1.50	59.40	509.9	8.5	-0.7	-8.5	2.06	0.22	
602.0	2.90	63.50	601.8	10.2	2.4	-10.2	1.53	1.52	
694.0	4.20	68.50	693.7	12.4	7.6	-12.4	1.45	1.41	
785.0	4.90	65.10	784.4	15.3	14.3	-15.3	0.82	0.77	
877.0	4.80	62.00	876.0	18.8	21.2	-18.8	0.30	-0.11	
969.0	4.60	59.40	967.7	22.4	27.8	-22.4	0.32	-0.22	
1,061.0	4.20	53.80	1,059.5	26.3	33.7	-26.3	0.64	-0.43	
1,122.0	3.90	51.00	1,120.3	28.9	37.1	-28.9	0.59	-0.49	
1,204.0	3.60	51.10	1,202.1	32.3	41.3	-32.3	0.37	-0.37	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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
1,295.0	5.20	55.90	1,292.9	36.4	46.9	-36.4	1.80	1.76	
1,387.0	4.70	55.00	1,384.5	40.9	53.5	-40.9	0.55	-0.54	
1,479.0	5.10	53.50	1,476.2	45.5	59.8	-45.5	0.46	0.43	
1,571.0	4.70	51.50	1,567.8	50.3	66.1	-50.3	0.47	-0.43	
1,662.0	5.30	69.50	1,658.5	54.1	72.9	-54.1	1.84	0.66	
1,754.0	5.80	46.60	1,750.1	58.8	80.3	-58.8	2.45	0.54	
1,846.0	5.10	57.50	1,841.7	64.1	87.1	-64.1	1.36	-0.76	
1,937.0	5.10	57.70	1,932.3	68.5	93.9	-68.5	0.02	0.00	
2,029.0	4.90	48.40	2,024.0	73.3	100.3	-73.3	0.91	-0.22	
2,121.0	4.60	49.00	2,115.6	78.3	106.1	-78.3	0.33	-0.33	
2,212.0	4.10	47.20	2,206.4	82.9	111.2	-82.9	0.57	-0.55	
2,304.0	4.00	64.10	2,298.2	86.5	116.5	-86.5	1.30	-0.11	
2,396.0	3.80	59.10	2,389.9	89.5	122.0	-89.5	0.43	-0.22	
2,487.0	3.80	57.90	2,480.7	92.7	127.1	-92.7	0.09	0.00	
2,579.0	3.40	57.60	2,572.6	95.7	132.0	-95.7	0.44	-0.43	
2,671.0	3.40	56.60	2,664.4	98.7	136.6	-98.7	0.06	0.00	
2,762.0	3.30	54.10	2,755.2	101.7	141.0	-101.7	0.19	-0.11	
2,854.0	4.70	58.10	2,847.0	105.3	146.3	-105.3	1.55	1.52	
2,948.0	4.20	63.90	2,940.7	108.8	152.7	-108.8	0.71	-0.53	
3,043.0	4.10	64.60	3,035.5	111.8	158.9	-111.8	0.12	-0.11	
3,137.0	5.20	59.50	3,129.2	115.4	165.6	-115.4	1.25	1.17	
3,232.0	4.80	62.50	3,223.8	119.4	172.8	-119.4	0.50	-0.42	
3,327.0	5.90	53.40	3,318.4	124.2	180.3	-124.2	1.46	1.16	
3,421.0	4.90	47.80	3,412.0	129.8	187.1	-129.8	1.20	-1.06	
3,516.0	4.10	42.60	3,506.7	135.0	192.4	-135.0	0.94	-0.84	
3,610.0	4.70	41.30	3,600.4	140.4	197.2	-140.4	0.65	0.64	
3,705.0	4.80	50.60	3,695.1	145.8	202.9	-145.8	0.82	0.11	
3,800.0	4.30	50.30	3,789.8	150.6	208.7	-150.6	0.53	-0.53	
3,894.0	5.10	49.30	3,883.5	155.6	214.6	-155.6	0.86	0.85	
3,989.0	4.40	47.90	3,978.1	160.8	220.5	-160.8	0.75	-0.74	
4,084.0	5.50	60.40	4,072.8	165.5	227.1	-165.5	1.62	1.16	
4,178.0	5.60	57.40	4,166.4	170.2	234.9	-170.2	0.33	0.11	
4,273.0	5.80	56.30	4,260.9	175.3	242.8	-175.3	0.24	0.21	
4,367.0	5.50	61.40	4,354.4	180.1	250.7	-180.1	0.62	-0.32	
4,462.0	5.70	60.40	4,449.0	184.6	258.8	-184.6	0.23	0.21	
4,557.0	4.70	53.00	4,543.6	189.3	266.0	-189.3	1.27	-1.05	
4,651.0	5.10	51.30	4,637.2	194.2	272.4	-194.2	0.45	0.43	
4,746.0	3.80	50.70	4,732.0	198.9	278.1	-198.9	1.37	-1.37	
4,841.0	4.20	33.60	4,826.7	203.7	282.5	-203.7	1.32	0.42	
4,935.0	4.30	32.30	4,920.5	209.6	286.3	-209.6	0.15	0.11	
5,030.0	4.00	45.10	5,015.2	214.9	290.5	-214.9	1.02	-0.32	
5,124.0	4.10	46.00	5,109.0	219.6	295.3	-219.6	0.13	0.11	
5,219.0	4.30	62.60	5,203.7	223.6	300.9	-223.6	1.29	0.21	
5,313.0	4.10	57.90	5,297.5	227.0	306.8	-227.0	0.42	-0.21	
5,408.0	3.40	49.40	5,392.3	230.6	311.8	-230.6	0.94	-0.74	
5,502.0	4.80	55.20	5,486.0	234.7	317.2	-234.7	1.55	1.49	
5,597.0	4.70	57.40	5,580.7	239.1	323.7	-239.1	0.22	-0.11	
5,691.0	3.50	48.80	5,674.5	243.0	329.1	-243.0	1.43	-1.28	
5,785.0	4.10	54.50	5,768.3	246.9	334.0	-246.9	0.75	0.64	
5,880.0	4.00	50.90	5,863.0	250.9	339.4	-250.9	0.29	-0.11	
5,975.0	3.30	37.90	5,957.8	255.2	343.6	-255.2	1.14	-0.74	
6,070.0	3.20	22.40	6,052.7	259.8	346.3	-259.8	0.93	-0.11	
6,164.0	0.70	53.30	6,146.6	262.6	347.8	-262.6	2.79	-2.66	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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
6,258.0	1.20	193.60	6,240.6	261.9	348.0	-261.9	1.91	0.53	
6,353.0	3.50	177.80	6,335.5	258.1	347.9	-258.1	2.49	2.42	
6,400.0	3.30	174.80	6,382.4	255.3	348.1	-255.3	0.57	-0.43	
6,447.0	6.80	178.10	6,429.3	251.2	348.3	-251.2	7.47	7.45	
6,494.0	10.60	183.80	6,475.7	244.1	348.1	-244.1	8.28	8.09	
6,542.0	14.50	183.70	6,522.5	233.7	347.4	-233.7	8.13	8.12	
6,589.0	18.80	181.50	6,567.6	220.2	346.8	-220.2	9.25	9.15	
6,637.0	23.30	181.70	6,612.4	203.0	346.3	-203.0	9.38	9.37	
6,685.0	28.40	182.50	6,655.5	182.1	345.6	-182.1	10.65	10.62	
6,731.0	30.80	182.40	6,695.5	159.4	344.6	-159.4	5.22	5.22	
6,778.0	34.50	178.50	6,735.1	134.0	344.4	-134.0	9.05	7.87	
6,826.0	40.20	176.30	6,773.2	105.0	345.8	-105.0	12.19	11.87	
6,873.0	45.50	176.90	6,807.7	73.1	347.7	-73.1	11.31	11.28	
6,920.0	48.50	178.20	6,839.7	38.7	349.1	-38.7	6.70	6.38	
6,967.0	51.40	180.40	6,870.0	2.8	349.6	-2.8	7.13	6.17	
7,015.0	55.20	181.00	6,898.7	-35.7	349.1	35.7	7.98	7.92	
7,062.0	57.90	182.30	6,924.6	-74.9	347.9	74.9	6.19	5.74	
7,109.0	60.80	182.40	6,948.5	-115.3	346.3	115.3	6.17	6.17	
7,156.0	63.20	180.30	6,970.6	-156.8	345.3	156.8	6.45	5.11	
7,204.0	66.90	177.50	6,990.8	-200.3	346.2	200.3	9.35	7.71	
7,251.0	70.20	177.30	7,008.0	-244.0	348.2	244.0	7.03	7.02	
7,299.0	73.80	179.40	7,022.9	-289.6	349.5	289.6	8.58	7.50	
7,346.0	79.70	180.00	7,033.6	-335.3	349.7	335.3	12.61	12.55	
7,393.0	84.10	179.80	7,040.2	-381.8	349.8	381.8	9.37	9.36	
7,410.0	86.20	179.90	7,041.7	-398.8	349.8	398.8	12.37	12.35	
7,511.0	88.70	178.70	7,046.2	-499.7	351.1	499.7	2.75	2.48	
7,606.0	87.50	178.40	7,049.3	-594.6	353.5	594.6	1.30	-1.26	
7,700.0	89.10	178.80	7,052.1	-688.5	355.8	688.5	1.75	1.70	
7,795.0	89.40	179.70	7,053.4	-783.5	357.0	783.5	1.00	0.32	
7,889.0	89.60	181.30	7,054.2	-877.5	356.2	877.5	1.72	0.21	
7,984.0	91.40	182.40	7,053.3	-972.4	353.1	972.4	2.22	1.89	
8,079.0	91.50	181.00	7,050.9	-1,067.3	350.3	1,067.3	1.48	0.11	
8,174.0	88.90	180.60	7,050.6	-1,162.3	349.0	1,162.3	2.77	-2.74	
8,268.0	89.20	180.70	7,052.2	-1,256.3	347.9	1,256.3	0.34	0.32	
8,363.0	88.70	179.60	7,053.9	-1,351.3	347.7	1,351.3	1.27	-0.53	
8,457.0	87.60	179.20	7,056.9	-1,445.2	348.6	1,445.2	1.25	-1.17	
8,552.0	88.60	180.30	7,060.1	-1,540.2	349.0	1,540.2	1.56	1.05	
8,646.0	87.40	180.40	7,063.4	-1,634.1	348.5	1,634.1	1.28	-1.28	
8,741.0	90.30	181.00	7,065.3	-1,729.1	347.3	1,729.1	3.12	3.05	
8,836.0	90.70	180.90	7,064.5	-1,824.1	345.7	1,824.1	0.43	0.42	
8,930.0	91.50	181.20	7,062.7	-1,918.0	344.0	1,918.0	0.91	0.85	
9,025.0	90.90	180.50	7,060.7	-2,013.0	342.6	2,013.0	0.97	-0.63	
9,120.0	90.40	180.30	7,059.6	-2,108.0	341.9	2,108.0	0.57	-0.53	
9,214.0	89.30	178.10	7,059.8	-2,202.0	343.3	2,202.0	2.62	-1.17	
9,309.0	88.90	177.10	7,061.3	-2,296.9	347.2	2,296.9	1.13	-0.42	
9,403.0	90.00	176.90	7,062.2	-2,390.7	352.2	2,390.7	1.19	1.17	
9,498.0	90.90	178.40	7,061.5	-2,485.7	356.0	2,485.7	1.84	0.95	
9,592.0	90.30	179.50	7,060.5	-2,579.6	357.8	2,579.6	1.33	-0.64	
9,687.0	89.00	179.70	7,061.1	-2,674.6	358.4	2,674.6	1.38	-1.37	
9,781.0	90.40	182.20	7,061.6	-2,768.6	356.9	2,768.6	3.05	1.49	
9,876.0	91.30	182.70	7,060.2	-2,863.5	352.8	2,863.5	1.08	0.95	
9,970.0	89.20	180.50	7,059.7	-2,957.5	350.2	2,957.5	3.24	-2.23	
10,064.0	90.50	181.60	7,060.0	-3,051.4	348.5	3,051.4	1.81	1.38	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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
10,159.0	91.50	181.10	7,058.3	-3,146.4	346.2	3,146.4	1.18	1.05	
10,254.0	91.80	181.10	7,055.6	-3,241.3	344.4	3,241.3	0.32	0.32	
10,349.0	90.40	180.80	7,053.8	-3,336.3	342.8	3,336.3	1.51	-1.47	
10,443.0	88.90	181.00	7,054.3	-3,430.3	341.4	3,430.3	1.61	-1.60	
10,537.0	88.80	180.70	7,056.2	-3,524.3	340.0	3,524.3	0.34	-0.11	
10,632.0	89.00	180.50	7,058.1	-3,619.2	339.0	3,619.2	0.30	0.21	
10,727.0	88.90	179.60	7,059.8	-3,714.2	338.9	3,714.2	0.95	-0.11	
10,821.0	88.50	179.00	7,061.9	-3,808.2	340.0	3,808.2	0.77	-0.43	
10,916.0	89.40	179.50	7,063.7	-3,903.2	341.3	3,903.2	1.08	0.95	
11,010.0	89.90	179.60	7,064.2	-3,997.2	342.0	3,997.2	0.54	0.53	
11,105.0	92.00	180.60	7,062.7	-4,092.1	341.8	4,092.1	2.45	2.21	
11,199.0	91.80	179.60	7,059.6	-4,186.1	341.7	4,186.1	1.08	-0.21	
11,294.0	91.70	179.20	7,056.7	-4,281.0	342.7	4,281.0	0.43	-0.11	
11,388.0	91.80	179.30	7,053.8	-4,375.0	343.9	4,375.0	0.15	0.11	
11,449.0	92.30	179.00	7,051.6	-4,435.9	344.8	4,435.9	0.96	0.82	Last CES Survey @ 11,449' MD
11,500.0	92.30	179.00	7,049.6	-4,486.9	345.7	4,486.9	0.00	0.00	PTB @ 11,500' MD

### 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									
Ruhl 1G-32H-B264 PBH	0.00	0.00	7,045.0	-4,561.8	345.8	1,276,608.38	3,260,296.34	40.088926	-104.569673
- survey misses target center by 75.1ft at 11500.0ft MD (7049.6 TVD, -4486.9 N, 345.7 E)									
- Point									
Ruhl 1G-32H-B264 PBH	0.00	0.00	7,084.0	-4,561.8	345.8	1,276,608.38	3,260,296.34	40.088926	-104.569673
- survey misses target center by 82.5ft at 11500.0ft MD (7049.6 TVD, -4486.9 N, 345.7 E)									
- Point									

### Survey Annotations

	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	11,449.0	7,051.6	-4,435.9	344.8	Last CES Survey @ 11,449' MD
	11,500.0	7,049.6	-4,486.9	345.7	PTB @ 11,500' MD

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

# **EnCana Oil & Gas (USA) Inc**

**DJ Wattenberg**

**S32-T2N-R64W (Newman/Ruhl)**

**Ruhl 1G-32H-B264**

**Hz**

**Survey: Survey #1**

## **Survey Report - Geographic**

**25 January, 2015**

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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		

<b>Site</b>	S32-T2N-R64W (Newman/Ruhl)			
<b>Site Position:</b>		<b>Northing:</b>	1,281,150.65 ft	<b>Latitude:</b> 40.101468
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,257,734.55 ft	<b>Longitude:</b> -104.578660
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> 0.60 °

<b>Well</b>	Ruhl 1G-32H-B264			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,281,166.35 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,259,902.75 ft
<b>Position Uncertainty</b>	0.0 ft		<b>Wellhead Elevation:</b>	0.0 ft
			<b>Ground Level:</b>	4,997.0 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	1/15/2015	8.25	66.72	52,616

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

<b>Survey Program</b>	<b>Date</b>	1/25/2015		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
235.0	11,500.0	Survey #1 (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>Map Northing (ft)</b>	<b>Map Easting (ft)</b>	<b>Latitude</b>	<b>Longitude</b>
0.0	0.00	0.00	0.0	0.0	0.0	1,281,166.35	3,259,902.75	40.101449	-104.570909
235.0	1.40	354.10	235.0	2.9	-0.3	1,281,169.20	3,259,902.42	40.101457	-104.570910
327.0	1.30	347.60	327.0	5.0	-0.6	1,281,171.33	3,259,902.06	40.101463	-104.570912
419.0	1.30	335.60	418.9	7.0	-1.3	1,281,173.29	3,259,901.38	40.101468	-104.570914
510.0	1.50	59.40	509.9	8.5	-0.7	1,281,174.85	3,259,901.97	40.101472	-104.570912
602.0	2.90	63.50	601.8	10.2	2.4	1,281,176.53	3,259,905.07	40.101477	-104.570901
694.0	4.20	68.50	693.7	12.4	7.6	1,281,178.86	3,259,910.26	40.101483	-104.570882
785.0	4.90	65.10	784.4	15.3	14.3	1,281,181.79	3,259,916.86	40.101491	-104.570858
877.0	4.80	62.00	876.0	18.8	21.2	1,281,185.32	3,259,923.78	40.101501	-104.570833
969.0	4.60	59.40	967.7	22.4	27.8	1,281,189.07	3,259,930.32	40.101511	-104.570810
1,061.0	4.20	53.80	1,059.5	26.3	33.7	1,281,193.00	3,259,936.17	40.101521	-104.570789
1,122.0	3.90	51.00	1,120.3	28.9	37.1	1,281,195.66	3,259,939.56	40.101528	-104.570777

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
1,204.0	3.60	51.10	1,202.1	32.3	41.3	1,281,199.08	3,259,943.69	40.101538	-104.570762
1,295.0	5.20	55.90	1,292.9	36.4	46.9	1,281,203.24	3,259,949.29	40.101549	-104.570742
1,387.0	4.70	55.00	1,384.5	40.9	53.5	1,281,207.81	3,259,955.78	40.101561	-104.570718
1,479.0	5.10	53.50	1,476.2	45.5	59.8	1,281,212.47	3,259,962.11	40.101574	-104.570695
1,571.0	4.70	51.50	1,567.8	50.3	66.1	1,281,217.32	3,259,968.29	40.101587	-104.570673
1,662.0	5.30	69.50	1,658.5	54.1	72.9	1,281,221.18	3,259,975.11	40.101597	-104.570649
1,754.0	5.80	46.60	1,750.1	58.8	80.3	1,281,225.94	3,259,982.42	40.101610	-104.570622
1,846.0	5.10	57.50	1,841.7	64.1	87.1	1,281,231.40	3,259,989.19	40.101625	-104.570598
1,937.0	5.10	57.70	1,932.3	68.5	93.9	1,281,235.81	3,259,995.97	40.101637	-104.570573
2,029.0	4.90	48.40	2,024.0	73.3	100.3	1,281,240.67	3,260,002.32	40.101650	-104.570551
2,121.0	4.60	49.00	2,115.6	78.3	106.1	1,281,245.76	3,260,007.99	40.101664	-104.570530
2,212.0	4.10	47.20	2,206.4	82.9	111.2	1,281,250.41	3,260,013.08	40.101677	-104.570512
2,304.0	4.00	64.10	2,298.2	86.5	116.5	1,281,254.11	3,260,018.34	40.101687	-104.570493
2,396.0	3.80	59.10	2,389.9	89.5	122.0	1,281,257.13	3,260,023.81	40.101695	-104.570473
2,487.0	3.80	57.90	2,480.7	92.7	127.1	1,281,260.34	3,260,028.92	40.101703	-104.570455
2,579.0	3.40	57.60	2,572.6	95.7	132.0	1,281,263.47	3,260,033.77	40.101712	-104.570437
2,671.0	3.40	56.60	2,664.4	98.7	136.6	1,281,266.48	3,260,038.32	40.101720	-104.570421
2,762.0	3.30	54.10	2,755.2	101.7	141.0	1,281,269.55	3,260,042.66	40.101728	-104.570405
2,854.0	4.70	58.10	2,847.0	105.3	146.3	1,281,273.15	3,260,047.97	40.101738	-104.570386
2,948.0	4.20	63.90	2,940.7	108.8	152.7	1,281,276.76	3,260,054.30	40.101748	-104.570363
3,043.0	4.10	64.60	3,035.5	111.8	158.9	1,281,279.82	3,260,060.46	40.101756	-104.570341
3,137.0	5.20	59.50	3,129.2	115.4	165.6	1,281,283.49	3,260,067.12	40.101766	-104.570317
3,232.0	4.80	62.50	3,223.8	119.4	172.8	1,281,287.58	3,260,074.32	40.101777	-104.570291
3,327.0	5.90	53.40	3,318.4	124.2	180.3	1,281,292.41	3,260,081.71	40.101790	-104.570265
3,421.0	4.90	47.80	3,412.0	129.8	187.1	1,281,298.06	3,260,088.51	40.101805	-104.570240
3,516.0	4.10	42.60	3,506.7	135.0	192.4	1,281,303.34	3,260,093.76	40.101820	-104.570221
3,610.0	4.70	41.30	3,600.4	140.4	197.2	1,281,308.76	3,260,098.52	40.101834	-104.570204
3,705.0	4.80	50.60	3,695.1	145.8	202.9	1,281,314.26	3,260,104.10	40.101849	-104.570184
3,800.0	4.30	50.30	3,789.8	150.6	208.7	1,281,319.12	3,260,109.86	40.101862	-104.570163
3,894.0	5.10	49.30	3,883.5	155.6	214.6	1,281,324.16	3,260,115.69	40.101876	-104.570142
3,989.0	4.40	47.90	3,978.1	160.8	220.5	1,281,329.42	3,260,121.54	40.101890	-104.570121
4,084.0	5.50	60.40	4,072.8	165.5	227.1	1,281,334.18	3,260,128.15	40.101903	-104.570097
4,178.0	5.60	57.40	4,166.4	170.2	234.9	1,281,338.95	3,260,135.88	40.101916	-104.570069
4,273.0	5.80	56.30	4,260.9	175.3	242.8	1,281,344.20	3,260,143.72	40.101930	-104.570041
4,367.0	5.50	61.40	4,354.4	180.1	250.7	1,281,349.07	3,260,151.58	40.101943	-104.570013
4,462.0	5.70	60.40	4,449.0	184.6	258.8	1,281,353.67	3,260,159.63	40.101956	-104.569984
4,557.0	4.70	53.00	4,543.6	189.3	266.0	1,281,358.41	3,260,166.79	40.101969	-104.569958
4,651.0	5.10	51.30	4,637.2	194.2	272.4	1,281,363.41	3,260,173.08	40.101982	-104.569936
4,746.0	3.80	50.70	4,732.0	198.9	278.1	1,281,368.10	3,260,178.76	40.101995	-104.569915
4,841.0	4.20	33.60	4,826.7	203.7	282.5	1,281,373.04	3,260,183.07	40.102008	-104.569899
4,935.0	4.30	32.30	4,920.5	209.6	286.3	1,281,378.93	3,260,186.80	40.102024	-104.569886
5,030.0	4.00	45.10	5,015.2	214.9	290.5	1,281,384.32	3,260,190.99	40.102039	-104.569871
5,124.0	4.10	46.00	5,109.0	219.6	295.3	1,281,389.02	3,260,195.68	40.102052	-104.569854
5,219.0	4.30	62.60	5,203.7	223.6	300.9	1,281,393.07	3,260,201.24	40.102063	-104.569834
5,313.0	4.10	57.90	5,297.5	227.0	306.8	1,281,396.54	3,260,207.18	40.102072	-104.569812
5,408.0	3.40	49.40	5,392.3	230.6	311.8	1,281,400.23	3,260,212.16	40.102082	-104.569794
5,502.0	4.80	55.20	5,486.0	234.7	317.2	1,281,404.35	3,260,217.46	40.102093	-104.569775
5,597.0	4.70	57.40	5,580.7	239.1	323.7	1,281,408.78	3,260,223.96	40.102105	-104.569752
5,691.0	3.50	48.80	5,674.5	243.0	329.1	1,281,412.80	3,260,229.32	40.102116	-104.569733
5,785.0	4.10	54.50	5,768.3	246.9	334.0	1,281,416.70	3,260,234.18	40.102127	-104.569715
5,880.0	4.00	50.90	5,863.0	250.9	339.4	1,281,420.81	3,260,239.47	40.102138	-104.569696
5,975.0	3.30	37.90	5,957.8	255.2	343.6	1,281,425.11	3,260,243.68	40.102150	-104.569681
6,070.0	3.20	22.40	6,052.7	259.8	346.3	1,281,429.74	3,260,246.32	40.102162	-104.569671
6,164.0	0.70	53.30	6,146.6	262.6	347.8	1,281,432.53	3,260,247.75	40.102170	-104.569666
6,258.0	1.20	193.60	6,240.6	261.9	348.0	1,281,431.92	3,260,247.99	40.102168	-104.569665



# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
6,353.0	3.50	177.80	6,335.5	258.1	347.9	1,281,428.05	3,260,247.90	40.102158	-104.569666
6,400.0	3.30	174.80	6,382.4	255.3	348.1	1,281,425.27	3,260,248.11	40.102150	-104.569665
6,447.0	6.80	178.10	6,429.3	251.2	348.3	1,281,421.14	3,260,248.37	40.102139	-104.569664
6,494.0	10.60	183.80	6,475.7	244.1	348.1	1,281,414.05	3,260,248.25	40.102119	-104.569665
6,542.0	14.50	183.70	6,522.5	233.7	347.4	1,281,403.63	3,260,247.68	40.102090	-104.569667
6,589.0	18.80	181.50	6,567.6	220.2	346.8	1,281,390.18	3,260,247.24	40.102054	-104.569669
6,637.0	23.30	181.70	6,612.4	203.0	346.3	1,281,372.95	3,260,246.94	40.102006	-104.569671
6,685.0	28.40	182.50	6,655.5	182.1	345.6	1,281,352.03	3,260,246.37	40.101949	-104.569674
6,731.0	30.80	182.40	6,695.5	159.4	344.6	1,281,329.32	3,260,245.64	40.101887	-104.569677
6,778.0	34.50	178.50	6,735.1	134.0	344.4	1,281,303.98	3,260,245.75	40.101817	-104.569678
6,826.0	40.20	176.30	6,773.2	105.0	345.8	1,281,274.93	3,260,247.41	40.101737	-104.569673
6,873.0	45.50	176.90	6,807.7	73.1	347.7	1,281,243.05	3,260,249.63	40.101650	-104.569666
6,920.0	48.50	178.20	6,839.7	38.7	349.1	1,281,208.73	3,260,251.45	40.101555	-104.569661
6,967.0	51.40	180.40	6,870.0	2.8	349.6	1,281,172.77	3,260,252.25	40.101457	-104.569660
7,015.0	55.20	181.00	6,898.7	-35.7	349.1	1,281,134.29	3,260,252.18	40.101351	-104.569661
7,062.0	57.90	182.30	6,924.6	-74.9	347.9	1,281,095.09	3,260,251.46	40.101243	-104.569665
7,109.0	60.80	182.40	6,948.5	-115.3	346.3	1,281,054.68	3,260,250.22	40.101133	-104.569671
7,156.0	63.20	180.30	6,970.6	-156.8	345.3	1,281,013.19	3,260,249.69	40.101019	-104.569675
7,204.0	66.90	177.50	6,990.8	-200.3	346.2	1,280,969.70	3,260,251.00	40.100899	-104.569672
7,251.0	70.20	177.30	7,008.0	-244.0	348.2	1,280,926.03	3,260,253.44	40.100779	-104.569665
7,299.0	73.80	179.40	7,022.9	-289.6	349.5	1,280,880.43	3,260,255.22	40.100654	-104.569660
7,346.0	79.70	180.00	7,033.6	-335.3	349.7	1,280,834.70	3,260,255.94	40.100529	-104.569659
7,393.0	84.10	179.80	7,040.2	-381.8	349.8	1,280,788.19	3,260,256.51	40.100401	-104.569659
7,410.0	86.20	179.90	7,041.7	-398.8	349.8	1,280,771.25	3,260,256.73	40.100354	-104.569659
7,511.0	88.70	178.70	7,046.2	-499.7	351.1	1,280,670.39	3,260,259.02	40.100077	-104.569654
7,606.0	87.50	178.40	7,049.3	-594.6	353.5	1,280,575.50	3,260,262.41	40.099817	-104.569646
7,700.0	89.10	178.80	7,052.1	-688.5	355.8	1,280,481.60	3,260,265.69	40.099559	-104.569638
7,795.0	89.40	179.70	7,053.4	-783.5	357.0	1,280,386.64	3,260,267.93	40.099298	-104.569633
7,889.0	89.60	181.30	7,054.2	-877.5	356.2	1,280,292.65	3,260,268.10	40.099040	-104.569636
7,984.0	91.40	182.40	7,053.3	-972.4	353.1	1,280,197.68	3,260,266.03	40.098780	-104.569647
8,079.0	91.50	181.00	7,050.9	-1,067.3	350.3	1,280,102.73	3,260,264.20	40.098519	-104.569657
8,174.0	88.90	180.60	7,050.6	-1,162.3	349.0	1,280,007.74	3,260,263.87	40.098258	-104.569662
8,268.0	89.20	180.70	7,052.2	-1,256.3	347.9	1,279,913.75	3,260,263.79	40.098000	-104.569666
8,363.0	88.70	179.60	7,053.9	-1,351.3	347.7	1,279,818.77	3,260,264.54	40.097740	-104.569667
8,457.0	87.60	179.20	7,056.9	-1,445.2	348.6	1,279,724.84	3,260,266.51	40.097482	-104.569663
8,552.0	88.60	180.30	7,060.1	-1,540.2	349.0	1,279,629.91	3,260,267.91	40.097221	-104.569662
8,646.0	87.40	180.40	7,063.4	-1,634.1	348.5	1,279,535.97	3,260,268.32	40.096963	-104.569664
8,741.0	90.30	181.00	7,065.3	-1,729.1	347.3	1,279,441.00	3,260,268.16	40.096702	-104.569668
8,836.0	90.70	180.90	7,064.5	-1,824.1	345.7	1,279,346.00	3,260,267.58	40.096442	-104.569673
8,930.0	91.50	181.20	7,062.7	-1,918.0	344.0	1,279,252.02	3,260,266.84	40.096184	-104.569680
9,025.0	90.90	180.50	7,060.7	-2,013.0	342.6	1,279,157.05	3,260,266.43	40.095923	-104.569685
9,120.0	90.40	180.30	7,059.6	-2,108.0	341.9	1,279,062.05	3,260,266.76	40.095662	-104.569687
9,214.0	89.30	178.10	7,059.8	-2,202.0	343.3	1,278,968.09	3,260,269.06	40.095404	-104.569682
9,309.0	88.90	177.10	7,061.3	-2,296.9	347.2	1,278,873.23	3,260,274.03	40.095144	-104.569668
9,403.0	90.00	176.90	7,062.2	-2,390.7	352.2	1,278,779.42	3,260,279.93	40.094886	-104.569651
9,498.0	90.90	178.40	7,061.5	-2,485.7	356.0	1,278,684.56	3,260,284.82	40.094626	-104.569637
9,592.0	90.30	179.50	7,060.5	-2,579.6	357.8	1,278,590.60	3,260,287.53	40.094368	-104.569630
9,687.0	89.00	179.70	7,061.1	-2,674.6	358.4	1,278,495.62	3,260,289.19	40.094107	-104.569628
9,781.0	90.40	182.20	7,061.6	-2,768.6	356.9	1,278,401.63	3,260,288.61	40.093849	-104.569634
9,876.0	91.30	182.70	7,060.2	-2,863.5	352.8	1,278,306.70	3,260,285.55	40.093588	-104.569648
9,970.0	89.20	180.50	7,059.7	-2,957.5	350.2	1,278,212.72	3,260,283.91	40.093330	-104.569658
10,064.0	90.50	181.60	7,060.0	-3,051.4	348.5	1,278,118.73	3,260,283.17	40.093072	-104.569664
10,159.0	91.50	181.10	7,058.3	-3,146.4	346.2	1,278,023.75	3,260,281.93	40.092812	-104.569672
10,254.0	91.80	181.10	7,055.6	-3,241.3	344.4	1,277,928.80	3,260,281.10	40.092551	-104.569678
10,349.0	90.40	180.80	7,053.8	-3,336.3	342.8	1,277,833.82	3,260,280.52	40.092290	-104.569684

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Ruhl 1G-32H-B264
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Site:</b>	S32-T2N-R64W (Newman/Ruhl)	<b>MD Reference:</b>	13' KB @ 5010.0ft (135)
<b>Well:</b>	Ruhl 1G-32H-B264	<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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
10,443.0	88.90	181.00	7,054.3	-3,430.3	341.4	1,277,739.82	3,260,280.03	40.092032	-104.569689
10,537.0	88.80	180.70	7,056.2	-3,524.3	340.0	1,277,645.84	3,260,279.62	40.091774	-104.569694
10,632.0	89.00	180.50	7,058.1	-3,619.2	339.0	1,277,550.86	3,260,279.62	40.091514	-104.569698
10,727.0	88.90	179.60	7,059.8	-3,714.2	338.9	1,277,455.88	3,260,280.53	40.091253	-104.569698
10,821.0	88.50	179.00	7,061.9	-3,808.2	340.0	1,277,361.93	3,260,282.66	40.090995	-104.569694
10,916.0	89.40	179.50	7,063.7	-3,903.2	341.3	1,277,266.97	3,260,284.90	40.090734	-104.569689
11,010.0	89.90	179.60	7,064.2	-3,997.2	342.0	1,277,172.99	3,260,286.62	40.090476	-104.569687
11,105.0	92.00	180.60	7,062.7	-4,092.1	341.8	1,277,078.02	3,260,287.45	40.090216	-104.569687
11,199.0	91.80	179.60	7,059.6	-4,186.1	341.7	1,276,984.07	3,260,288.27	40.089958	-104.569688
11,294.0	91.70	179.20	7,056.7	-4,281.0	342.7	1,276,889.14	3,260,290.26	40.089697	-104.569684
11,388.0	91.80	179.30	7,053.8	-4,375.0	343.9	1,276,795.21	3,260,292.48	40.089439	-104.569680
11,449.0	92.30	179.00	7,051.6	-4,435.9	344.8	1,276,734.27	3,260,294.02	40.089272	-104.569677
Last CES Survey @ 11,449' MD									
11,500.0	92.30	179.00	7,049.6	-4,486.9	345.7	1,276,683.33	3,260,295.44	40.089132	-104.569674
PTB @ 11,500' MD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Ruhl 1G-32H-B264 PBH	0.00	0.00	7,084.0	-4,561.8	345.8	1,276,608.37	3,260,296.34	40.088926	-104.569673
- hit/miss target									
- Shape									
- survey misses target center by 82.5ft at 11500.0ft MD (7049.6 TVD, -4486.9 N, 345.7 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,449.0	7,051.6	-4,435.9	344.8	Last CES Survey @ 11,449' MD	
11,500.0	7,049.6	-4,486.9	345.7	PTB @ 11,500' MD	

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