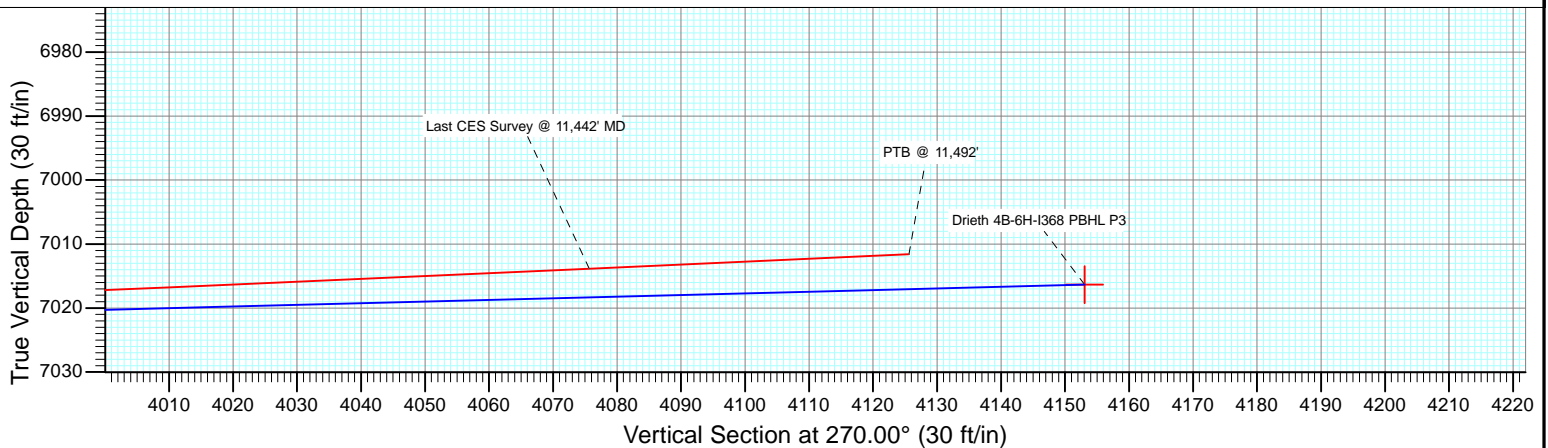
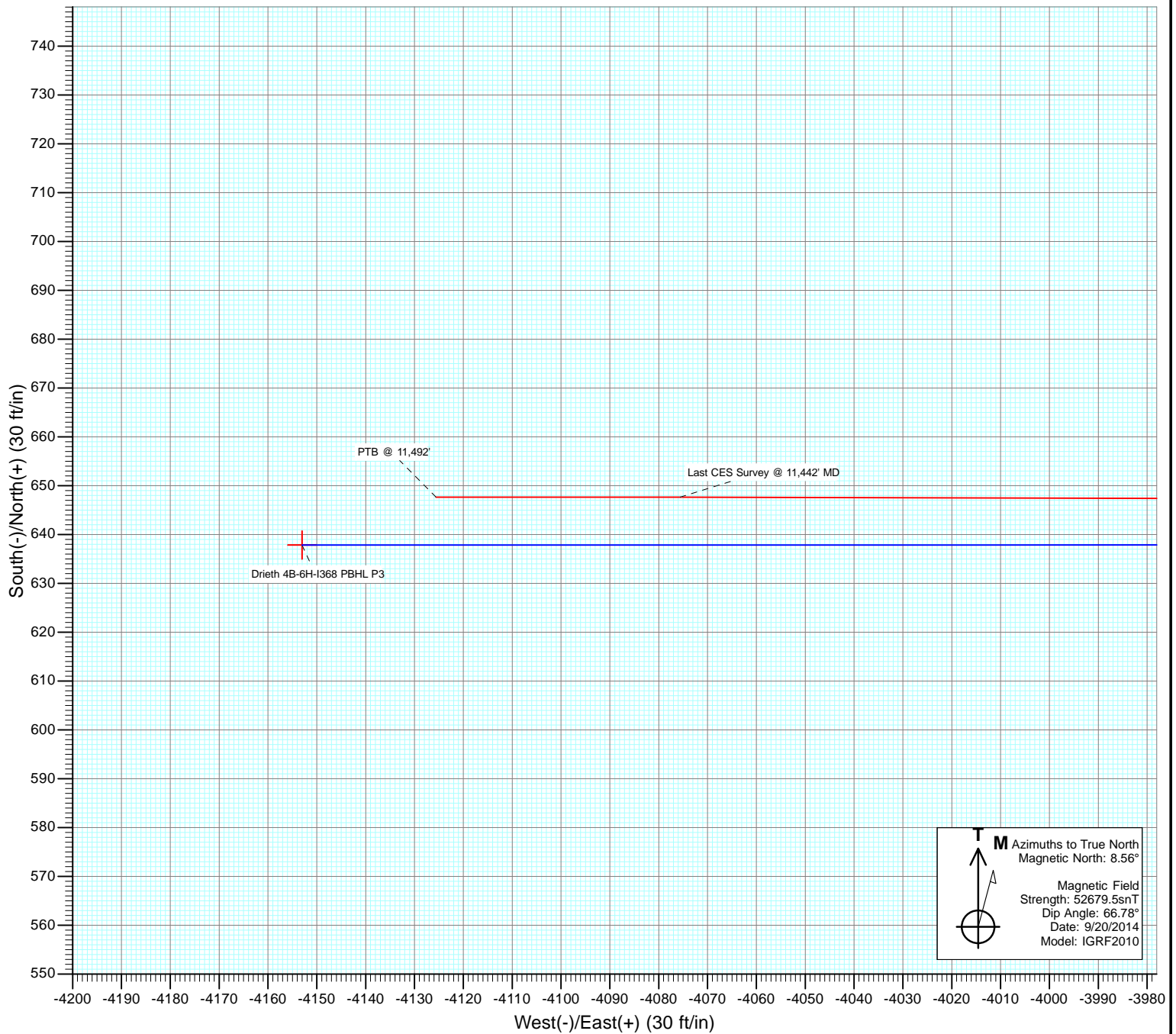




Project: DJ Wattenberg  
Site: S6-T3N-R68W (Zisch/Drieth)  
Well: Drieth 4B-6H-I368  
Design: FINAL



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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		S6-T3N-R68W (Zisch/Drieth)			
Site Position:		Northing:	1,333,692.14 ft	Latitude:	40.248510
From:	Lat/Long	Easting:	3,124,995.76 ft	Longitude:	-105.052220
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.29 °

Well	Drieth 4B-6H-I368					
Well Position	+N/-S	0.0 ft	Northing:	1,335,780.81 ft	Latitude:	40.254190
	+E/-W	0.0 ft	Easting:	3,128,797.90 ft	Longitude:	-105.038560
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,110.0 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	9/20/2014	8.56	66.78	52,679

<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	270.00	

<b>Survey Program</b>	<b>Date</b>	9/29/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
140.0	11,492.0	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		
140.0	0.60	60.00	140.0	0.4	0.6	-0.6	0.43	0.43		
232.0	1.30	52.30	232.0	1.2	1.9	-1.9	0.77	0.76		
324.0	2.00	33.70	323.9	3.2	3.6	-3.6	0.95	0.76		
416.0	2.70	38.10	415.9	6.3	5.8	-5.8	0.79	0.76		
507.0	3.10	29.00	506.8	10.1	8.3	-8.3	0.67	0.44		
599.0	3.50	17.60	598.6	15.0	10.4	-10.4	0.83	0.43		
691.0	4.20	26.20	690.4	20.7	12.7	-12.7	0.98	0.76		
783.0	5.40	29.80	782.1	27.4	16.4	-16.4	1.34	1.30		
830.0	5.80	24.70	828.8	31.5	18.5	-18.5	1.36	0.85		
924.0	5.80	20.00	922.4	40.3	22.1	-22.1	0.51	0.00		
1,018.0	7.10	38.30	1,015.8	49.3	27.3	-27.3	2.57	1.38		
1,110.0	6.80	34.90	1,107.1	58.2	33.9	-33.9	0.55	-0.33		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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
1,202.0	8.00	37.40	1,198.3	67.8	40.9	-40.9	1.35	1.30	
1,294.0	8.40	38.70	1,289.4	78.1	49.0	-49.0	0.48	0.43	
1,386.0	8.20	48.00	1,380.4	87.8	58.1	-58.1	1.47	-0.22	
1,478.0	8.20	45.00	1,471.5	96.8	67.6	-67.6	0.47	0.00	
1,570.0	8.00	42.70	1,562.6	106.1	76.6	-76.6	0.41	-0.22	
1,662.0	8.20	40.90	1,653.7	115.8	85.2	-85.2	0.35	0.22	
1,754.0	7.20	43.00	1,744.8	125.0	93.5	-93.5	1.13	-1.09	
1,846.0	6.90	47.60	1,836.1	132.9	101.5	-101.5	0.69	-0.33	
1,938.0	7.00	43.30	1,927.5	140.7	109.4	-109.4	0.58	0.11	
2,030.0	6.90	40.10	2,018.8	149.0	116.8	-116.8	0.43	-0.11	
2,122.0	6.90	37.20	2,110.1	157.7	123.7	-123.7	0.38	0.00	
2,214.0	8.00	50.20	2,201.3	166.2	132.0	-132.0	2.18	1.20	
2,306.0	7.80	45.50	2,292.5	174.6	141.3	-141.3	0.73	-0.22	
2,398.0	7.70	42.70	2,383.6	183.5	150.0	-150.0	0.42	-0.11	
2,490.0	7.60	38.40	2,474.8	192.8	157.9	-157.9	0.63	-0.11	
2,582.0	8.10	41.50	2,566.0	202.5	166.0	-166.0	0.71	0.54	
2,674.0	7.50	37.60	2,657.1	212.1	174.0	-174.0	0.87	-0.65	
2,766.0	7.50	34.80	2,748.3	221.8	181.1	-181.1	0.40	0.00	
2,858.0	7.00	43.00	2,839.6	230.8	188.3	-188.3	1.25	-0.54	
2,950.0	7.70	49.00	2,930.8	238.9	196.8	-196.8	1.13	0.76	
3,042.0	6.60	45.40	3,022.1	246.7	205.2	-205.2	1.29	-1.20	
3,134.0	5.90	56.70	3,113.6	253.0	212.9	-212.9	1.53	-0.76	
3,225.0	7.80	51.00	3,203.9	259.4	221.6	-221.6	2.22	2.09	
3,320.0	7.90	46.60	3,298.0	268.0	231.4	-231.4	0.64	0.11	
3,414.0	8.40	43.60	3,391.1	277.4	240.8	-240.8	0.70	0.53	
3,509.0	7.30	39.80	3,485.2	287.1	249.5	-249.5	1.28	-1.16	
3,603.0	8.60	38.60	3,578.3	297.1	257.7	-257.7	1.39	1.38	
3,698.0	8.40	36.20	3,672.2	308.3	266.2	-266.2	0.43	-0.21	
3,792.0	8.30	33.50	3,765.2	319.5	274.0	-274.0	0.43	-0.11	
3,887.0	7.70	34.90	3,859.3	330.4	281.4	-281.4	0.66	-0.63	
3,982.0	6.00	49.40	3,953.6	338.9	288.8	-288.8	2.54	-1.79	
4,076.0	4.90	42.90	4,047.2	345.0	295.3	-295.3	1.34	-1.17	
4,170.0	5.30	43.90	4,140.8	351.1	301.0	-301.0	0.44	0.43	
4,265.0	5.90	62.40	4,235.4	356.5	308.4	-308.4	1.99	0.63	
4,360.0	5.10	61.00	4,330.0	360.8	316.4	-316.4	0.85	-0.84	
4,454.0	5.90	63.40	4,423.5	365.0	324.4	-324.4	0.89	0.85	
4,549.0	7.30	51.20	4,517.9	371.0	333.5	-333.5	2.08	1.47	
4,643.0	8.80	45.70	4,611.0	379.7	343.3	-343.3	1.79	1.60	
4,738.0	8.10	45.20	4,704.9	389.5	353.2	-353.2	0.74	-0.74	
4,832.0	6.60	41.70	4,798.2	398.2	361.5	-361.5	1.66	-1.60	
4,927.0	7.00	25.00	4,892.5	407.6	367.6	-367.6	2.12	0.42	
5,022.0	6.30	39.80	4,986.9	416.8	373.4	-373.4	1.94	-0.74	
5,116.0	7.10	38.50	5,080.2	425.3	380.3	-380.3	0.87	0.85	
5,211.0	8.40	41.30	5,174.4	435.1	388.5	-388.5	1.42	1.37	
5,305.0	8.70	28.60	5,267.3	446.5	396.5	-396.5	2.03	0.32	
5,400.0	8.20	32.50	5,361.3	458.6	403.5	-403.5	0.80	-0.53	
5,494.0	7.30	38.40	5,454.4	468.9	410.9	-410.9	1.28	-0.96	
5,589.0	8.50	41.60	5,548.5	478.9	419.3	-419.3	1.34	1.26	
5,684.0	6.70	38.80	5,642.7	488.4	427.4	-427.4	1.93	-1.89	
5,778.0	7.40	38.50	5,736.0	497.5	434.6	-434.6	0.75	0.74	
5,873.0	9.40	43.20	5,830.0	507.9	443.7	-443.7	2.22	2.11	
5,967.0	7.10	35.50	5,923.0	518.2	452.4	-452.4	2.71	-2.45	
6,062.0	6.60	39.10	6,017.3	527.2	459.2	-459.2	0.69	-0.53	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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
6,157.0	6.50	44.40	6,111.7	535.3	466.4	-466.4	0.64	-0.11	
6,251.0	8.70	40.60	6,204.9	544.5	474.8	-474.8	2.40	2.34	
6,346.0	7.90	36.90	6,298.9	555.2	483.4	-483.4	1.01	-0.84	
6,393.0	6.50	34.60	6,345.5	560.0	486.8	-486.8	3.04	-2.98	
6,441.0	4.40	347.00	6,393.3	564.0	487.9	-487.9	9.99	-4.37	
6,488.0	5.20	296.80	6,440.2	566.7	485.6	-485.6	8.79	1.70	
6,535.0	8.00	274.60	6,486.8	567.9	480.5	-480.5	7.96	5.96	
6,582.0	10.20	272.40	6,533.3	568.4	473.1	-473.1	4.74	4.68	
6,630.0	13.10	277.60	6,580.3	569.3	463.4	-463.4	6.42	6.04	
6,677.0	15.60	284.50	6,625.8	571.6	452.0	-452.0	6.44	5.32	
6,725.0	18.40	288.10	6,671.7	575.5	438.6	-438.6	6.23	5.83	
6,772.0	22.30	290.30	6,715.8	580.9	423.1	-423.1	8.45	8.30	
6,819.0	27.30	289.30	6,758.4	587.6	404.6	-404.6	10.68	10.64	
6,866.0	33.50	286.80	6,798.9	594.9	382.0	-382.0	13.46	13.19	
6,914.0	38.10	284.50	6,837.8	602.5	354.9	-354.9	9.98	9.58	
6,961.0	41.50	279.90	6,874.0	608.8	325.6	-325.6	9.57	7.23	
7,008.0	44.40	276.40	6,908.4	613.3	293.9	-293.9	7.99	6.17	
7,055.0	47.80	275.00	6,940.9	616.6	260.2	-260.2	7.55	7.23	
7,103.0	52.00	274.00	6,971.9	619.5	223.6	-223.6	8.89	8.75	
7,150.0	56.50	272.90	6,999.3	621.8	185.5	-185.5	9.76	9.57	
7,197.0	61.30	273.00	7,023.6	623.9	145.3	-145.3	10.21	10.21	
7,244.0	64.50	272.80	7,045.0	626.0	103.5	-103.5	6.82	6.81	
7,292.0	67.10	271.60	7,064.7	627.6	59.8	-59.8	5.88	5.42	
7,339.0	70.20	272.50	7,081.8	629.2	16.1	-16.1	6.83	6.60	
7,387.0	73.10	273.60	7,096.9	631.6	-29.4	29.4	6.42	6.04	
7,434.0	75.90	271.80	7,109.4	633.8	-74.7	74.7	7.01	5.96	
7,481.0	77.80	270.50	7,120.1	634.7	-120.4	120.4	4.86	4.04	
7,528.0	79.40	269.30	7,129.4	634.6	-166.5	166.5	4.23	3.40	
7,563.0	82.70	267.80	7,134.9	633.7	-201.0	201.0	10.34	9.43	
7,693.0	89.40	269.90	7,143.8	631.1	-330.6	330.6	5.40	5.15	
7,788.0	90.20	269.80	7,144.2	630.9	-425.6	425.6	0.85	0.84	
7,882.0	91.40	269.70	7,142.8	630.5	-519.6	519.6	1.28	1.28	
7,976.0	90.80	271.90	7,141.0	631.8	-613.6	613.6	2.43	-0.64	
8,070.0	90.20	271.40	7,140.2	634.5	-707.5	707.5	0.83	-0.64	
8,165.0	89.90	271.40	7,140.1	636.8	-802.5	802.5	0.32	-0.32	
8,259.0	90.20	271.00	7,140.1	638.8	-896.5	896.5	0.53	0.32	
8,353.0	93.00	270.60	7,137.4	640.1	-990.4	990.4	3.01	2.98	
8,447.0	95.00	269.90	7,130.9	640.5	-1,084.2	1,084.2	2.25	2.13	
8,541.0	93.80	269.10	7,123.7	639.7	-1,177.9	1,177.9	1.53	-1.28	
8,635.0	94.10	269.20	7,117.2	638.3	-1,271.7	1,271.7	0.34	0.32	
8,730.0	93.50	269.50	7,110.9	637.2	-1,366.5	1,366.5	0.71	-0.63	
8,824.0	93.30	268.70	7,105.3	635.7	-1,460.3	1,460.3	0.88	-0.21	
8,919.0	92.00	270.10	7,100.9	634.8	-1,555.2	1,555.2	2.01	-1.37	
9,013.0	92.30	269.40	7,097.4	634.3	-1,649.1	1,649.1	0.81	0.32	
9,107.0	92.60	269.10	7,093.4	633.1	-1,743.0	1,743.0	0.45	0.32	
9,202.0	93.30	268.60	7,088.5	631.2	-1,837.9	1,837.9	0.91	0.74	
9,296.0	93.50	267.90	7,082.9	628.3	-1,931.7	1,931.7	0.77	0.21	
9,391.0	94.10	268.90	7,076.6	625.7	-2,026.4	2,026.4	1.23	0.63	
9,485.0	94.00	269.70	7,070.0	624.6	-2,120.2	2,120.2	0.86	-0.11	
9,580.0	92.10	270.70	7,064.9	624.9	-2,215.0	2,215.0	2.26	-2.00	
9,674.0	90.10	270.60	7,063.1	626.0	-2,309.0	2,309.0	2.13	-2.13	
9,769.0	90.00	269.60	7,063.0	626.1	-2,404.0	2,404.0	1.06	-0.11	
9,863.0	90.50	269.20	7,062.6	625.1	-2,498.0	2,498.0	0.68	0.53	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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
9,958.0	92.10	269.30	7,060.5	623.9	-2,593.0	2,593.0	1.69	1.68	
10,052.0	92.60	271.20	7,056.6	624.3	-2,686.9	2,686.9	2.09	0.53	
10,147.0	92.70	270.90	7,052.2	626.0	-2,781.8	2,781.8	0.33	0.11	
10,241.0	92.80	272.80	7,047.7	629.1	-2,875.6	2,875.6	2.02	0.11	
10,336.0	89.10	272.20	7,046.1	633.2	-2,970.5	2,970.5	3.95	-3.89	
10,430.0	90.50	271.40	7,046.5	636.2	-3,064.4	3,064.4	1.72	1.49	
10,525.0	89.80	271.70	7,046.2	638.7	-3,159.4	3,159.4	0.80	-0.74	
10,620.0	91.80	272.00	7,044.9	641.8	-3,254.3	3,254.3	2.13	2.11	
10,714.0	92.20	270.60	7,041.6	643.9	-3,348.2	3,348.2	1.55	0.43	
10,809.0	92.40	270.60	7,037.8	644.9	-3,443.2	3,443.2	0.21	0.21	
10,903.0	92.90	270.50	7,033.5	645.8	-3,537.1	3,537.1	0.54	0.53	
10,998.0	92.10	270.60	7,029.3	646.7	-3,632.0	3,632.0	0.85	-0.84	
11,092.0	92.70	270.20	7,025.4	647.4	-3,725.9	3,725.9	0.77	0.64	
11,187.0	90.60	269.90	7,022.6	647.5	-3,820.8	3,820.8	2.23	-2.21	
11,281.0	92.00	269.90	7,020.5	647.3	-3,914.8	3,914.8	1.49	1.49	
11,376.0	92.50	270.30	7,016.8	647.5	-4,009.7	4,009.7	0.67	0.53	
11,442.0	92.60	270.00	7,013.8	647.7	-4,075.6	4,075.6	0.48	0.15	Last CES Survey @ 11,442' MD
11,492.0	92.60	270.00	7,011.6	647.7	-4,125.6	4,125.6	0.00	0.00	PTB @ 11,492'

### 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
Drieth 4B-6H-I368 7,700 - actual wellpath misses target center by 9.8ft at 7713.6ft MD (7144.0 TVD, 631.1 N, -351.2 E) - Point	0.00	0.00	7,137.0	638.0	-351.3	1,336,416.98	3,128,443.32	40.255941	-105.039819
Drieth 4B-6H-I368 8,300 - actual wellpath misses target center by 2.7ft at 8313.9ft MD (7139.1 TVD, 639.6 N, -951.3 E) - Point	0.00	0.00	7,137.0	638.0	-951.3	1,336,413.84	3,127,843.33	40.255941	-105.041968
Drieth 4B-6H-I368 PBHL - actual wellpath misses target center by 29.5ft at 11492.0ft MD (7011.6 TVD, 647.7 N, -4125.6 E) - Point	0.00	0.00	7,016.3	637.9	-4,153.0	1,336,397.05	3,124,641.59	40.255940	-105.053440
Drieth 4B-6H-I368 9,700 - actual wellpath misses target center by 11.7ft at 9716.3ft MD (7063.1 TVD, 626.2 N, -2351.3 E) - Point	0.00	0.00	7,063.5	637.9	-2,351.3	1,336,406.50	3,126,443.34	40.255941	-105.046984
Drieth 4B-6H-I368 PBHL - actual wellpath misses target center by 56.5ft at 11492.0ft MD (7011.6 TVD, 647.7 N, -4125.6 E) - Point	0.00	0.00	7,060.0	637.9	-4,153.0	1,336,397.05	3,124,641.59	40.255940	-105.053440

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
11,442.0	7,013.8	647.7	-4,075.6	Last CES Survey @ 11,442' MD
11,492.0	7,011.6	647.7	-4,125.6	PTB @ 11,492'

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

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

**DJ Wattenberg**

**S6-T3N-R68W (Zisch/Drieth)**

**Drieth 4B-6H-I368**

**Hz**

**Design: FINAL**

## **Survey Report - Geographic**

**29 September, 2014**

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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	S6-T3N-R68W (Zisch/Drieth)				
Site Position:		Northing:	1,333,692.14 ft	Latitude:	40.248510
From:	Lat/Long	Easting:	3,124,995.76 ft	Longitude:	-105.052220
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.29 °

Well	Drieth 4B-6H-I368					
Well Position	+N/-S	0.0 ft	Northing:	1,335,780.81 ft	Latitude:	40.254190
	+E/-W	0.0 ft	Easting:	3,128,797.90 ft	Longitude:	-105.038560
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,110.0 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	9/20/2014	8.56	66.78	52,679

<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	270.00	

<b>Survey Program</b>	<b>Date</b>	9/29/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
140.0	11,492.0	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	1,335,780.81	3,128,797.90	40.254190	-105.038560	
140.0	0.60	60.00	140.0	0.4	0.6	1,335,781.18	3,128,798.54	40.254191	-105.038558	
232.0	1.30	52.30	232.0	1.2	1.9	1,335,782.07	3,128,799.78	40.254193	-105.038554	
324.0	2.00	33.70	323.9	3.2	3.6	1,335,784.05	3,128,801.48	40.254199	-105.038547	
416.0	2.70	38.10	415.9	6.3	5.8	1,335,787.10	3,128,803.69	40.254207	-105.038539	
507.0	3.10	29.00	506.8	10.1	8.3	1,335,790.95	3,128,806.19	40.254218	-105.038530	
599.0	3.50	17.60	598.6	15.0	10.4	1,335,795.82	3,128,808.22	40.254231	-105.038523	
691.0	4.20	26.20	690.4	20.7	12.7	1,335,801.53	3,128,810.53	40.254247	-105.038515	
783.0	5.40	29.80	782.1	27.4	16.4	1,335,808.33	3,128,814.13	40.254265	-105.038502	
830.0	5.80	24.70	828.8	31.5	18.5	1,335,812.41	3,128,816.20	40.254277	-105.038494	
924.0	5.80	20.00	922.4	40.3	22.1	1,335,821.21	3,128,819.76	40.254301	-105.038481	
1,018.0	7.10	38.30	1,015.8	49.3	27.3	1,335,830.26	3,128,824.94	40.254325	-105.038462	



# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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
1,110.0	6.80	34.90	1,107.1	58.2	33.9	1,335,839.23	3,128,831.54	40.254350	-105.038439
1,202.0	8.00	37.40	1,198.3	67.8	40.9	1,335,848.82	3,128,838.49	40.254376	-105.038414
1,294.0	8.40	38.70	1,289.4	78.1	49.0	1,335,859.19	3,128,846.53	40.254405	-105.038385
1,386.0	8.20	48.00	1,380.4	87.8	58.1	1,335,868.87	3,128,855.55	40.254431	-105.038352
1,478.0	8.20	45.00	1,471.5	96.8	67.6	1,335,877.95	3,128,865.02	40.254456	-105.038318
1,570.0	8.00	42.70	1,562.6	106.1	76.6	1,335,887.34	3,128,873.95	40.254481	-105.038286
1,662.0	8.20	40.90	1,653.7	115.8	85.2	1,335,897.05	3,128,882.54	40.254508	-105.038255
1,754.0	7.20	43.00	1,744.8	125.0	93.5	1,335,906.27	3,128,890.72	40.254533	-105.038225
1,846.0	6.90	47.60	1,836.1	132.9	101.5	1,335,914.25	3,128,898.69	40.254555	-105.038197
1,938.0	7.00	43.30	1,927.5	140.7	109.4	1,335,922.10	3,128,906.58	40.254576	-105.038168
2,030.0	6.90	40.10	2,018.8	149.0	116.8	1,335,930.44	3,128,913.94	40.254599	-105.038142
2,122.0	6.90	37.20	2,110.1	157.7	123.7	1,335,939.11	3,128,920.79	40.254623	-105.038117
2,214.0	8.00	50.20	2,201.3	166.2	132.0	1,335,947.65	3,128,929.01	40.254646	-105.038087
2,306.0	7.80	45.50	2,292.5	174.6	141.3	1,335,956.17	3,128,938.34	40.254669	-105.038054
2,398.0	7.70	42.70	2,383.6	183.5	150.0	1,335,965.12	3,128,946.92	40.254694	-105.038023
2,490.0	7.60	38.40	2,474.8	192.8	157.9	1,335,974.46	3,128,954.83	40.254719	-105.037994
2,582.0	8.10	41.50	2,566.0	202.5	166.0	1,335,984.13	3,128,962.86	40.254746	-105.037965
2,674.0	7.50	37.60	2,657.1	212.1	174.0	1,335,993.78	3,128,970.77	40.254772	-105.037937
2,766.0	7.50	34.80	2,748.3	221.8	181.1	1,336,003.51	3,128,977.81	40.254799	-105.037912
2,858.0	7.00	43.00	2,839.6	230.8	188.3	1,336,012.57	3,128,985.01	40.254824	-105.037886
2,950.0	7.70	49.00	2,930.8	238.9	196.8	1,336,020.76	3,128,993.44	40.254846	-105.037855
3,042.0	6.60	45.40	3,022.1	246.7	205.2	1,336,028.56	3,129,001.82	40.254867	-105.037825
3,134.0	5.90	56.70	3,113.6	253.0	212.9	1,336,034.91	3,129,009.50	40.254885	-105.037797
3,225.0	7.80	51.00	3,203.9	259.4	221.6	1,336,041.41	3,129,018.18	40.254902	-105.037766
3,320.0	7.90	46.60	3,298.0	268.0	231.4	1,336,050.00	3,129,027.89	40.254926	-105.037731
3,414.0	8.40	43.60	3,391.1	277.4	240.8	1,336,059.46	3,129,037.26	40.254952	-105.037697
3,509.0	7.30	39.80	3,485.2	287.1	249.5	1,336,069.17	3,129,045.86	40.254978	-105.037666
3,603.0	8.60	38.60	3,578.3	297.1	257.7	1,336,079.29	3,129,054.02	40.255006	-105.037637
3,698.0	8.40	36.20	3,672.2	308.3	266.2	1,336,090.49	3,129,062.49	40.255036	-105.037607
3,792.0	8.30	33.50	3,765.2	319.5	274.0	1,336,101.73	3,129,070.23	40.255067	-105.037579
3,887.0	7.70	34.90	3,859.3	330.4	281.4	1,336,112.70	3,129,077.60	40.255097	-105.037552
3,982.0	6.00	49.40	3,953.6	338.9	288.8	1,336,121.19	3,129,084.97	40.255120	-105.037525
4,076.0	4.90	42.90	4,047.2	345.0	295.3	1,336,127.37	3,129,091.40	40.255137	-105.037502
4,170.0	5.30	43.90	4,140.8	351.1	301.0	1,336,133.46	3,129,097.11	40.255154	-105.037482
4,265.0	5.90	62.40	4,235.4	356.5	308.4	1,336,138.93	3,129,104.45	40.255169	-105.037455
4,360.0	5.10	61.00	4,330.0	360.8	316.4	1,336,143.28	3,129,112.45	40.255181	-105.037427
4,454.0	5.90	63.40	4,423.5	365.0	324.4	1,336,147.51	3,129,120.40	40.255192	-105.037398
4,549.0	7.30	51.20	4,517.9	371.0	333.5	1,336,153.52	3,129,129.44	40.255208	-105.037365
4,643.0	8.80	45.70	4,611.0	379.7	343.3	1,336,162.34	3,129,139.20	40.255232	-105.037330
4,738.0	8.10	45.20	4,704.9	389.5	353.2	1,336,172.18	3,129,149.10	40.255259	-105.037295
4,832.0	6.60	41.70	4,798.2	398.2	361.5	1,336,180.93	3,129,157.34	40.255283	-105.037265
4,927.0	7.00	25.00	4,892.5	407.6	367.6	1,336,190.28	3,129,163.38	40.255309	-105.037243
5,022.0	6.30	39.80	4,986.9	416.8	373.4	1,336,199.56	3,129,169.11	40.255334	-105.037222
5,116.0	7.10	38.50	5,080.2	425.3	380.3	1,336,208.11	3,129,175.98	40.255358	-105.037198
5,211.0	8.40	41.30	5,174.4	435.1	388.5	1,336,217.96	3,129,184.17	40.255385	-105.037168
5,305.0	8.70	28.60	5,267.3	446.5	396.5	1,336,229.40	3,129,192.04	40.255416	-105.037140
5,400.0	8.20	32.50	5,361.3	458.6	403.5	1,336,241.46	3,129,199.06	40.255449	-105.037114
5,494.0	7.30	38.40	5,454.4	468.9	410.9	1,336,251.83	3,129,206.32	40.255477	-105.037088
5,589.0	8.50	41.60	5,548.5	478.9	419.3	1,336,261.86	3,129,214.68	40.255505	-105.037058
5,684.0	6.70	38.80	5,642.7	488.4	427.4	1,336,271.47	3,129,222.76	40.255531	-105.037029
5,778.0	7.40	38.50	5,736.0	497.5	434.6	1,336,280.52	3,129,229.92	40.255556	-105.037003
5,873.0	9.40	43.20	5,830.0	507.9	443.7	1,336,291.01	3,129,238.98	40.255584	-105.036970
5,967.0	7.10	35.50	5,923.0	518.2	452.4	1,336,301.38	3,129,247.56	40.255613	-105.036940
6,062.0	6.60	39.10	6,017.3	527.2	459.2	1,336,310.43	3,129,254.37	40.255637	-105.036915
6,157.0	6.50	44.40	6,111.7	535.3	466.4	1,336,318.55	3,129,261.53	40.255660	-105.036889

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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
6,251.0	8.70	40.60	6,204.9	544.5	474.8	1,336,327.79	3,129,269.83	40.255685	-105.036859
6,346.0	7.90	36.90	6,298.9	555.2	483.4	1,336,338.51	3,129,278.37	40.255714	-105.036828
6,393.0	6.50	34.60	6,345.5	560.0	486.8	1,336,343.30	3,129,281.80	40.255727	-105.036816
6,441.0	4.40	347.00	6,393.3	564.0	487.9	1,336,347.34	3,129,282.91	40.255738	-105.036812
6,488.0	5.20	296.80	6,440.2	566.7	485.6	1,336,350.05	3,129,280.58	40.255746	-105.036820
6,535.0	8.00	274.60	6,486.8	567.9	480.5	1,336,351.25	3,129,275.41	40.255749	-105.036839
6,582.0	10.20	272.40	6,533.3	568.4	473.1	1,336,351.64	3,129,267.99	40.255750	-105.036865
6,630.0	13.10	277.60	6,580.3	569.3	463.4	1,336,352.49	3,129,258.35	40.255753	-105.036900
6,677.0	15.60	284.50	6,625.8	571.6	452.0	1,336,354.72	3,129,246.94	40.255759	-105.036941
6,725.0	18.40	288.10	6,671.7	575.5	438.6	1,336,358.62	3,129,233.46	40.255770	-105.036989
6,772.0	22.30	290.30	6,715.8	580.9	423.1	1,336,363.94	3,129,218.02	40.255785	-105.037044
6,819.0	27.30	289.30	6,758.4	587.6	404.6	1,336,370.50	3,129,199.43	40.255803	-105.037111
6,866.0	33.50	286.80	6,798.9	594.9	382.0	1,336,377.70	3,129,176.78	40.255823	-105.037192
6,914.0	38.10	284.50	6,837.8	602.5	354.9	1,336,385.10	3,129,149.71	40.255844	-105.037289
6,961.0	41.50	279.90	6,874.0	608.8	325.6	1,336,391.26	3,129,120.28	40.255861	-105.037394
7,008.0	44.40	276.40	6,908.4	613.3	293.9	1,336,395.61	3,129,088.57	40.255874	-105.037507
7,055.0	47.80	275.00	6,940.9	616.6	260.2	1,336,398.78	3,129,054.86	40.255883	-105.037628
7,103.0	52.00	274.00	6,971.9	619.5	223.6	1,336,401.46	3,129,018.25	40.255891	-105.037759
7,150.0	56.50	272.90	6,999.3	621.8	185.5	1,336,403.55	3,128,980.17	40.255897	-105.037896
7,197.0	61.30	273.00	7,023.6	623.9	145.3	1,336,405.41	3,128,939.99	40.255903	-105.038040
7,244.0	64.50	272.80	7,045.0	626.0	103.5	1,336,407.31	3,128,898.19	40.255908	-105.038189
7,292.0	67.10	271.60	7,064.7	627.6	59.8	1,336,408.76	3,128,854.44	40.255913	-105.038346
7,339.0	70.20	272.50	7,081.8	629.2	16.1	1,336,410.10	3,128,810.69	40.255917	-105.038503
7,387.0	73.10	273.60	7,096.9	631.6	-29.4	1,336,412.29	3,128,765.19	40.255924	-105.038666
7,434.0	75.90	271.80	7,109.4	633.8	-74.7	1,336,414.18	3,128,719.95	40.255930	-105.038828
7,481.0	77.80	270.50	7,120.1	634.7	-120.4	1,336,414.86	3,128,674.19	40.255932	-105.038992
7,528.0	79.40	269.30	7,129.4	634.6	-166.5	1,336,414.54	3,128,628.12	40.255932	-105.039157
7,563.0	82.70	267.80	7,134.9	633.7	-201.0	1,336,413.48	3,128,593.57	40.255930	-105.039281
7,693.0	89.40	269.90	7,143.8	631.1	-330.6	1,336,410.22	3,128,464.00	40.255923	-105.039745
7,788.0	90.20	269.80	7,144.2	630.9	-425.6	1,336,409.48	3,128,369.00	40.255922	-105.040085
7,882.0	91.40	269.70	7,142.8	630.5	-519.6	1,336,408.58	3,128,275.02	40.255921	-105.040422
7,976.0	90.80	271.90	7,141.0	631.8	-613.6	1,336,409.40	3,128,181.04	40.255924	-105.040759
8,070.0	90.20	271.40	7,140.2	634.5	-707.5	1,336,411.62	3,128,087.07	40.255932	-105.041095
8,165.0	89.90	271.40	7,140.1	636.8	-802.5	1,336,413.44	3,127,992.09	40.255938	-105.041436
8,259.0	90.20	271.00	7,140.1	638.8	-896.5	1,336,414.92	3,127,898.10	40.255944	-105.041772
8,353.0	93.00	270.60	7,137.4	640.1	-990.4	1,336,415.75	3,127,804.15	40.255947	-105.042109
8,447.0	95.00	269.90	7,130.9	640.5	-1,084.2	1,336,415.67	3,127,710.39	40.255948	-105.042445
8,541.0	93.80	269.10	7,123.7	639.7	-1,177.9	1,336,414.36	3,127,616.67	40.255946	-105.042781
8,635.0	94.10	269.20	7,117.2	638.3	-1,271.7	1,336,412.48	3,127,522.92	40.255942	-105.043117
8,730.0	93.50	269.50	7,110.9	637.2	-1,366.5	1,336,410.92	3,127,428.14	40.255939	-105.043456
8,824.0	93.30	268.70	7,105.3	635.7	-1,460.3	1,336,408.95	3,127,334.33	40.255935	-105.043792
8,919.0	92.00	270.10	7,100.9	634.8	-1,555.2	1,336,407.47	3,127,239.44	40.255932	-105.044132
9,013.0	92.30	269.40	7,097.4	634.3	-1,649.1	1,336,406.57	3,127,145.51	40.255931	-105.044469
9,107.0	92.60	269.10	7,093.4	633.1	-1,743.0	1,336,404.85	3,127,051.62	40.255928	-105.044805
9,202.0	93.30	268.60	7,088.5	631.2	-1,837.9	1,336,402.45	3,126,956.77	40.255923	-105.045145
9,296.0	93.50	267.90	7,082.9	628.3	-1,931.7	1,336,399.10	3,126,863.00	40.255915	-105.045481
9,391.0	94.10	268.90	7,076.6	625.7	-2,026.4	1,336,395.96	3,126,768.26	40.255907	-105.045821
9,485.0	94.00	269.70	7,070.0	624.6	-2,120.2	1,336,394.33	3,126,674.51	40.255904	-105.046157
9,580.0	92.10	270.70	7,064.9	624.9	-2,215.0	1,336,394.16	3,126,579.65	40.255905	-105.046497
9,674.0	90.10	270.60	7,063.1	626.0	-2,309.0	1,336,394.74	3,126,485.67	40.255908	-105.046833
9,769.0	90.00	269.60	7,063.0	626.1	-2,404.0	1,336,394.41	3,126,390.68	40.255908	-105.047174
9,863.0	90.50	269.20	7,062.6	625.1	-2,498.0	1,336,392.94	3,126,296.69	40.255906	-105.047510
9,958.0	92.10	269.30	7,060.5	623.9	-2,593.0	1,336,391.20	3,126,201.73	40.255902	-105.047851
10,052.0	92.60	271.20	7,056.6	624.3	-2,686.9	1,336,391.12	3,126,107.82	40.255903	-105.048187
10,147.0	92.70	270.90	7,052.2	626.0	-2,781.8	1,336,392.37	3,126,012.92	40.255908	-105.048527

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Drieth 4B-6H-I368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Site:</b>	S6-T3N-R68W (Zisch/Drieth)	<b>MD Reference:</b>	30' KB @ 5140.0ft (H&P 522)
<b>Well:</b>	Drieth 4B-6H-I368	<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
10,241.0	92.80	272.80	7,047.7	629.1	-2,875.6	1,336,394.91	3,125,919.07	40.255916	-105.048863
10,336.0	89.10	272.20	7,046.1	633.2	-2,970.5	1,336,398.56	3,125,824.17	40.255928	-105.049203
10,430.0	90.50	271.40	7,046.5	636.2	-3,064.4	1,336,401.02	3,125,730.21	40.255936	-105.049540
10,525.0	89.80	271.70	7,046.2	638.7	-3,159.4	1,336,403.10	3,125,635.23	40.255943	-105.049880
10,620.0	91.80	272.00	7,044.9	641.8	-3,254.3	1,336,405.67	3,125,540.28	40.255951	-105.050220
10,714.0	92.20	270.60	7,041.6	643.9	-3,348.2	1,336,407.31	3,125,446.35	40.255957	-105.050557
10,809.0	92.40	270.60	7,037.8	644.9	-3,443.2	1,336,407.81	3,125,351.43	40.255960	-105.050897
10,903.0	92.90	270.50	7,033.5	645.8	-3,537.1	1,336,408.23	3,125,257.53	40.255962	-105.051233
10,998.0	92.10	270.60	7,029.3	646.7	-3,632.0	1,336,408.64	3,125,162.63	40.255965	-105.051573
11,092.0	92.70	270.20	7,025.4	647.4	-3,725.9	1,336,408.81	3,125,068.71	40.255966	-105.051910
11,187.0	90.60	269.90	7,022.6	647.5	-3,820.8	1,336,408.40	3,124,973.75	40.255967	-105.052250
11,281.0	92.00	269.90	7,020.5	647.3	-3,914.8	1,336,407.75	3,124,879.78	40.255966	-105.052587
11,376.0	92.50	270.30	7,016.8	647.5	-4,009.7	1,336,407.42	3,124,784.86	40.255967	-105.052927
11,442.0	92.60	270.00	7,013.8	647.7	-4,075.6	1,336,407.25	3,124,718.94	40.255967	-105.053163
<b>Last CES Survey @ 11,442' MD</b>									
11,492.0	92.60	270.00	7,011.6	647.7	-4,125.6	1,336,406.99	3,124,669.00	40.255967	-105.053342
<b>PTB @ 11,492'</b>									

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									
Drieth 4B-6H-I368 PBHL	0.00	0.00	7,016.3	637.9	-4,153.0	1,336,397.05	3,124,641.59	40.255940	-105.053440
- actual wellpath misses target center by 29.5ft at 11492.0ft MD (7011.6 TVD, 647.7 N, -4125.6 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,442.0	7,013.8	647.7	-4,075.6	Last CES Survey @ 11,442' MD	
11,492.0	7,011.6	647.7	-4,125.6	PTB @ 11,492'	

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