



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 4G-6H-I368
Project:	DJ Wattenberg	TVD Reference:	30' KB @ 5141.0ft (H&P 522)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	30' KB @ 5141.0ft (H&P 522)
Well:	Drieth 4G-6H-I368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	DJ Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 4G-6H-I368					
Well Position	+N/-S	0.0 ft	Northing:	1,335,729.83 ft	Latitude:	40.254050
	+E/-W	0.0 ft	Easting:	3,128,800.96 ft	Longitude:	-105.038550
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,111.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/5/2014	8.54	66.77	52,666

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	270.00	

Survey Program	Date	11/12/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
170.0	11,716.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

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	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
170.0	0.50	78.40	170.0	0.1	0.7	-0.7	0.29	0.29		
262.0	1.10	162.50	262.0	-0.6	1.4	-1.4	1.26	0.65		
354.0	1.40	153.20	354.0	-2.5	2.2	-2.2	0.39	0.33		
446.0	2.40	168.70	445.9	-5.3	3.0	-3.0	1.21	1.09		
538.0	3.70	171.70	537.8	-10.2	3.8	-3.8	1.42	1.41		
630.0	5.00	169.80	629.5	-17.1	5.0	-5.0	1.42	1.41		
722.0	6.00	163.20	721.1	-25.6	7.1	-7.1	1.28	1.09		
814.0	6.00	155.30	812.6	-34.6	10.5	-10.5	0.90	0.00		
925.0	5.70	156.30	923.0	-44.9	15.1	-15.1	0.29	-0.27		
1,019.0	8.40	148.10	1,016.3	-55.0	20.6	-20.6	3.06	2.87		
1,111.0	11.20	150.50	1,106.9	-68.5	28.6	-28.6	3.08	3.04		
1,203.0	10.80	149.60	1,197.3	-83.7	37.3	-37.3	0.47	-0.43		

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Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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	10.10	148.10	1,287.7	-98.0	46.0	-46.0	0.82	-0.76	
1,387.0	9.80	145.50	1,378.3	-111.3	54.7	-54.7	0.59	-0.33	
1,479.0	11.90	152.00	1,468.7	-126.1	63.6	-63.6	2.64	2.28	
1,571.0	10.90	150.90	1,558.9	-142.1	72.2	-72.2	1.11	-1.09	
1,663.0	10.60	148.70	1,649.3	-156.9	80.9	-80.9	0.55	-0.33	
1,755.0	10.20	149.00	1,739.8	-171.1	89.5	-89.5	0.44	-0.43	
1,847.0	9.50	147.10	1,830.4	-184.5	97.8	-97.8	0.84	-0.76	
1,939.0	10.20	154.70	1,921.1	-198.2	105.4	-105.4	1.60	0.76	
2,031.0	9.60	152.50	2,011.7	-212.4	112.4	-112.4	0.77	-0.65	
2,123.0	11.30	153.60	2,102.2	-227.3	120.0	-120.0	1.86	1.85	
2,215.0	10.70	152.30	2,192.5	-242.9	127.9	-127.9	0.71	-0.65	
2,307.0	10.50	151.50	2,282.9	-257.8	135.9	-135.9	0.27	-0.22	
2,399.0	10.50	151.80	2,373.4	-272.6	143.9	-143.9	0.06	0.00	
2,491.0	10.10	152.20	2,463.9	-287.1	151.6	-151.6	0.44	-0.43	
2,583.0	9.80	151.50	2,554.5	-301.1	159.1	-159.1	0.35	-0.33	
2,675.0	9.40	153.10	2,645.2	-314.7	166.2	-166.2	0.52	-0.43	
2,767.0	11.50	153.10	2,735.7	-329.6	173.8	-173.8	2.28	2.28	
2,859.0	10.80	154.70	2,825.9	-345.6	181.6	-181.6	0.83	-0.76	
2,951.0	10.20	155.60	2,916.4	-360.8	188.7	-188.7	0.68	-0.65	
3,042.0	9.80	156.60	3,006.0	-375.2	195.1	-195.1	0.48	-0.44	
3,134.0	9.40	147.10	3,096.7	-388.7	202.2	-202.2	1.77	-0.43	
3,226.0	8.90	149.10	3,187.6	-401.1	210.0	-210.0	0.64	-0.54	
3,320.0	9.10	148.60	3,280.4	-413.7	217.6	-217.6	0.23	0.21	
3,415.0	8.50	150.90	3,374.3	-426.3	224.9	-224.9	0.73	-0.63	
3,509.0	10.60	146.30	3,467.0	-439.5	233.1	-233.1	2.38	2.23	
3,603.0	10.40	147.80	3,559.4	-453.9	242.4	-242.4	0.36	-0.21	
3,697.0	10.30	149.00	3,651.9	-468.3	251.3	-251.3	0.25	-0.11	
3,791.0	10.10	149.40	3,744.4	-482.6	259.8	-259.8	0.23	-0.21	
3,886.0	9.60	150.60	3,838.0	-496.7	267.9	-267.9	0.57	-0.53	
3,980.0	8.60	150.60	3,930.8	-509.6	275.2	-275.2	1.06	-1.06	
4,075.0	9.80	154.80	4,024.6	-523.1	282.1	-282.1	1.45	1.26	
4,169.0	11.60	152.30	4,116.9	-538.7	289.9	-289.9	1.98	1.91	
4,263.0	11.60	153.70	4,209.0	-555.6	298.5	-298.5	0.30	0.00	
4,357.0	11.00	154.40	4,301.2	-572.1	306.6	-306.6	0.65	-0.64	
4,452.0	10.20	154.90	4,394.6	-587.9	314.1	-314.1	0.85	-0.84	
4,546.0	9.80	155.70	4,487.1	-602.7	320.9	-320.9	0.45	-0.43	
4,641.0	9.40	155.80	4,580.8	-617.2	327.4	-327.4	0.42	-0.42	
4,735.0	10.40	146.60	4,673.4	-631.3	335.2	-335.2	1.99	1.06	
4,830.0	9.90	149.50	4,766.9	-645.5	344.1	-344.1	0.75	-0.53	
4,924.0	9.40	149.40	4,859.6	-659.0	352.1	-352.1	0.53	-0.53	
5,019.0	8.50	150.90	4,953.4	-671.9	359.5	-359.5	0.98	-0.95	
5,114.0	10.50	142.40	5,047.1	-684.8	368.2	-368.2	2.57	2.11	
5,208.0	9.60	144.20	5,139.7	-698.0	378.0	-378.0	1.01	-0.96	
5,302.0	8.90	144.40	5,232.5	-710.3	386.8	-386.8	0.75	-0.74	
5,397.0	10.90	143.00	5,326.1	-723.4	396.5	-396.5	2.12	2.11	
5,491.0	9.50	143.10	5,418.6	-736.7	406.5	-406.5	1.49	-1.49	
5,586.0	13.50	150.80	5,511.7	-752.7	416.6	-416.6	4.50	4.21	
5,681.0	12.00	150.50	5,604.3	-770.9	426.9	-426.9	1.58	-1.58	
5,775.0	10.50	149.20	5,696.5	-786.8	436.1	-436.1	1.62	-1.60	
5,870.0	9.50	149.40	5,790.1	-801.0	444.5	-444.5	1.05	-1.05	
5,964.0	11.00	151.50	5,882.6	-815.5	452.7	-452.7	1.64	1.60	
6,059.0	9.70	160.20	5,976.0	-831.0	459.8	-459.8	2.14	-1.37	
6,154.0	8.40	159.00	6,069.8	-845.1	465.0	-465.0	1.38	-1.37	

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6,248.0	9.60	162.30	6,162.7	-858.9	469.8	-469.8	1.39	1.28	
6,343.0	10.60	154.40	6,256.2	-874.4	476.0	-476.0	1.80	1.05	
6,436.0	10.60	154.40	6,347.6	-889.8	483.4	-483.4	0.00	0.00	
6,532.0	9.40	153.70	6,442.2	-904.8	490.7	-490.7	1.26	-1.25	
6,626.0	8.40	153.90	6,535.0	-917.8	497.1	-497.1	1.06	-1.06	
6,673.0	8.20	199.60	6,581.6	-924.1	497.5	-497.5	13.68	-0.43	
6,721.0	11.90	218.80	6,628.8	-931.2	493.2	-493.2	10.30	7.71	
6,768.0	14.50	218.20	6,674.6	-939.6	486.5	-486.5	5.54	5.53	
6,816.0	16.40	219.80	6,720.9	-949.5	478.5	-478.5	4.06	3.96	
6,863.0	19.10	228.60	6,765.6	-959.7	468.5	-468.5	8.08	5.74	
6,910.0	23.20	240.60	6,809.5	-969.3	454.6	-454.6	12.65	8.72	
6,957.0	26.40	250.00	6,852.2	-977.4	436.7	-436.7	10.79	6.81	
7,004.0	27.50	250.90	6,894.0	-984.6	416.7	-416.7	2.50	2.34	
7,051.0	28.10	248.20	6,935.6	-992.2	396.1	-396.1	2.97	1.28	
7,098.0	31.70	250.10	6,976.4	-1,000.5	374.2	-374.2	7.92	7.66	
7,145.0	37.40	252.80	7,015.1	-1,009.0	349.0	-349.0	12.56	12.13	
7,193.0	41.30	257.80	7,052.2	-1,016.6	319.5	-319.5	10.47	8.12	
7,240.0	43.30	261.30	7,086.9	-1,022.4	288.4	-288.4	6.57	4.26	
7,288.0	45.10	263.20	7,121.4	-1,026.9	255.3	-255.3	4.66	3.75	
7,335.0	48.60	262.30	7,153.5	-1,031.2	221.3	-221.3	7.58	7.45	
7,382.0	52.80	261.70	7,183.3	-1,036.3	185.3	-185.3	8.99	8.94	
7,429.0	58.70	262.60	7,209.7	-1,041.6	146.8	-146.8	12.65	12.55	
7,477.0	62.40	264.20	7,233.3	-1,046.3	105.3	-105.3	8.24	7.71	
7,524.0	65.80	264.80	7,253.8	-1,050.4	63.2	-63.2	7.32	7.23	
7,571.0	69.80	265.70	7,271.6	-1,054.0	19.8	-19.8	8.69	8.51	
7,618.0	72.80	267.40	7,286.6	-1,056.7	-24.6	24.6	7.24	6.38	
7,666.0	74.60	268.60	7,300.1	-1,058.3	-70.6	70.6	4.45	3.75	
7,713.0	78.10	268.70	7,311.2	-1,059.3	-116.3	116.3	7.45	7.45	
7,760.0	82.90	269.20	7,319.0	-1,060.2	-162.6	162.6	10.27	10.21	
7,807.0	85.70	269.60	7,323.6	-1,060.7	-209.4	209.4	6.02	5.96	
7,842.0	88.20	270.70	7,325.5	-1,060.6	-244.3	244.3	7.80	7.14	
7,974.0	91.40	271.40	7,326.0	-1,058.2	-376.3	376.3	2.48	2.42	
8,068.0	91.40	271.40	7,323.7	-1,055.9	-470.2	470.2	0.00	0.00	
8,163.0	91.40	271.40	7,321.3	-1,053.6	-565.2	565.2	0.00	0.00	
8,257.0	92.00	271.80	7,318.5	-1,050.9	-659.1	659.1	0.77	0.64	
8,352.0	92.50	271.60	7,314.8	-1,048.1	-754.0	754.0	0.57	0.53	
8,447.0	93.70	273.40	7,309.7	-1,044.0	-848.7	848.7	2.27	1.26	
8,541.0	92.70	270.10	7,304.4	-1,041.1	-942.5	942.5	3.66	-1.06	
8,636.0	90.60	269.50	7,301.7	-1,041.4	-1,037.5	1,037.5	2.30	-2.21	
8,730.0	91.10	270.10	7,300.3	-1,041.8	-1,131.5	1,131.5	0.83	0.53	
8,825.0	90.80	269.80	7,298.7	-1,041.9	-1,226.5	1,226.5	0.45	-0.32	
8,920.0	90.70	268.60	7,297.5	-1,043.2	-1,321.4	1,321.4	1.27	-0.11	
9,014.0	90.50	268.10	7,296.5	-1,045.9	-1,415.4	1,415.4	0.57	-0.21	
9,109.0	91.30	268.70	7,295.0	-1,048.5	-1,510.4	1,510.4	1.05	0.84	
9,203.0	92.30	272.50	7,292.1	-1,047.6	-1,604.3	1,604.3	4.18	1.06	
9,298.0	93.10	272.40	7,287.6	-1,043.5	-1,699.1	1,699.1	0.85	0.84	
9,393.0	91.60	271.50	7,283.7	-1,040.3	-1,794.0	1,794.0	1.84	-1.58	
9,487.0	91.50	271.80	7,281.1	-1,037.6	-1,887.9	1,887.9	0.34	-0.11	
9,582.0	91.80	269.60	7,278.4	-1,036.4	-1,982.8	1,982.8	2.34	0.32	
9,676.0	91.60	269.20	7,275.6	-1,037.4	-2,076.8	2,076.8	0.48	-0.21	
9,771.0	91.50	269.00	7,273.0	-1,038.9	-2,171.7	2,171.7	0.24	-0.11	
9,866.0	91.20	268.90	7,270.8	-1,040.6	-2,266.7	2,266.7	0.33	-0.32	
9,960.0	92.60	267.20	7,267.7	-1,043.8	-2,360.6	2,360.6	2.34	1.49	

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10,054.0	92.20	268.30	7,263.8	-1,047.5	-2,454.4	2,454.4	1.24	-0.43	
10,149.0	91.80	267.80	7,260.4	-1,050.7	-2,549.3	2,549.3	0.67	-0.42	
10,244.0	91.30	268.60	7,257.9	-1,053.7	-2,644.2	2,644.2	0.99	-0.53	
10,338.0	92.40	270.50	7,254.8	-1,054.5	-2,738.2	2,738.2	2.33	1.17	
10,433.0	93.40	271.00	7,250.0	-1,053.2	-2,833.0	2,833.0	1.18	1.05	
10,527.0	91.80	271.10	7,245.8	-1,051.5	-2,926.9	2,926.9	1.71	-1.70	
10,622.0	90.50	271.20	7,243.9	-1,049.6	-3,021.9	3,021.9	1.37	-1.37	
10,716.0	89.80	270.50	7,243.6	-1,048.2	-3,115.9	3,115.9	1.05	-0.74	
10,811.0	91.90	270.00	7,242.2	-1,047.8	-3,210.9	3,210.9	2.27	2.21	
10,906.0	92.00	270.30	7,239.0	-1,047.5	-3,305.8	3,305.8	0.33	0.11	
11,000.0	92.00	269.80	7,235.7	-1,047.4	-3,399.7	3,399.7	0.53	0.00	
11,095.0	90.70	270.30	7,233.5	-1,047.4	-3,494.7	3,494.7	1.47	-1.37	
11,189.0	90.50	269.50	7,232.5	-1,047.5	-3,588.7	3,588.7	0.88	-0.21	
11,284.0	91.60	268.90	7,230.7	-1,048.9	-3,683.7	3,683.7	1.32	1.16	
11,379.0	90.40	268.20	7,229.1	-1,051.3	-3,778.6	3,778.6	1.46	-1.26	
11,473.0	89.80	267.60	7,228.9	-1,054.7	-3,872.6	3,872.6	0.90	-0.64	
11,568.0	91.10	268.70	7,228.2	-1,057.8	-3,967.5	3,967.5	1.79	1.37	
11,662.0	92.10	269.50	7,225.5	-1,059.2	-4,061.4	4,061.4	1.36	1.06	Last CES Survey @ 11,662' MD
11,716.0	92.10	269.50	7,223.6	-1,059.7	-4,115.4	4,115.4	0.00	0.00	PTB @ 11,716'

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 4G-6H-I368 PBHL	0.00	0.00	7,281.0	-1,045.1	-4,156.1	1,334,663.07	3,124,650.32	40.251180	-105.053440
- actual wellpath misses target center by 71.9ft at 11716.0ft MD (7223.6 TVD, -1059.7 N, -4115.4 E)									
- Point									
Drieth 4G-6H-I368 PBHL	0.00	0.00	7,225.0	-1,045.1	-4,156.1	1,334,663.07	3,124,650.32	40.251180	-105.053440
- actual wellpath misses target center by 43.3ft at 11716.0ft MD (7223.6 TVD, -1059.7 N, -4115.4 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,662.0	7,225.5	-1,059.2	-4,061.4	Last CES Survey @ 11,662' MD	
11,716.0	7,223.6	-1,059.7	-4,115.4	PTB @ 11,716'	

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S6-T3N-R68W (Zisch/Drieth)

Drieth 4G-6H-I368

Hz

Design: FINAL

Survey Report - Geographic

12 November, 2014

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 4G-6H-I368
Project:	DJ Wattenberg	TVD Reference:	30' KB @ 5141.0ft (H&P 522)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	30' KB @ 5141.0ft (H&P 522)
Well:	Drieth 4G-6H-I368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	DJ Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 4G-6H-I368					
Well Position	+N/-S	0.0 ft	Northing:	1,335,729.83 ft	Latitude:	40.254050
	+E/-W	0.0 ft	Easting:	3,128,800.96 ft	Longitude:	-105.038550
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,111.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/5/2014	8.54	66.77	52,666

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	270.00	

Survey Program	Date	11/12/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
170.0	11,716.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	1,335,729.83	3,128,800.96	40.254050	-105.038550	
170.0	0.50	78.40	170.0	0.1	0.7	1,335,729.98	3,128,801.69	40.254050	-105.038548	
262.0	1.10	162.50	262.0	-0.6	1.4	1,335,729.22	3,128,802.35	40.254048	-105.038545	
354.0	1.40	153.20	354.0	-2.5	2.2	1,335,727.38	3,128,803.13	40.254043	-105.038543	
446.0	2.40	168.70	445.9	-5.3	3.0	1,335,724.49	3,128,804.03	40.254035	-105.038539	
538.0	3.70	171.70	537.8	-10.2	3.8	1,335,719.67	3,128,804.86	40.254022	-105.038536	
630.0	5.00	169.80	629.5	-17.1	5.0	1,335,712.79	3,128,806.04	40.254003	-105.038532	
722.0	6.00	163.20	721.1	-25.6	7.1	1,335,704.25	3,128,808.18	40.253980	-105.038525	
814.0	6.00	155.30	812.6	-34.6	10.5	1,335,695.30	3,128,811.63	40.253955	-105.038513	
925.0	5.70	156.30	923.0	-44.9	15.1	1,335,685.01	3,128,816.32	40.253927	-105.038496	
1,019.0	8.40	148.10	1,016.3	-55.0	20.6	1,335,674.93	3,128,821.88	40.253899	-105.038476	
1,111.0	11.20	150.50	1,106.9	-68.5	28.6	1,335,661.49	3,128,829.90	40.253862	-105.038448	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 4G-6H-I368
Project:	DJ Wattenberg	TVD Reference:	30' KB @ 5141.0ft (H&P 522)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	30' KB @ 5141.0ft (H&P 522)
Well:	Drieth 4G-6H-I368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
1,203.0	10.80	149.60	1,197.3	-83.7	37.3	1,335,646.32	3,128,838.74	40.253820	-105.038416
1,295.0	10.10	148.10	1,287.7	-98.0	46.0	1,335,632.08	3,128,847.44	40.253781	-105.038386
1,387.0	9.80	145.50	1,378.3	-111.3	54.7	1,335,618.83	3,128,856.21	40.253745	-105.038354
1,479.0	11.90	152.00	1,468.7	-126.1	63.6	1,335,604.04	3,128,865.17	40.253704	-105.038323
1,571.0	10.90	150.90	1,558.9	-142.1	72.2	1,335,588.11	3,128,873.94	40.253660	-105.038291
1,663.0	10.60	148.70	1,649.3	-156.9	80.9	1,335,573.33	3,128,882.64	40.253619	-105.038261
1,755.0	10.20	149.00	1,739.8	-171.1	89.5	1,335,559.16	3,128,891.31	40.253580	-105.038230
1,847.0	9.50	147.10	1,830.4	-184.5	97.8	1,335,545.85	3,128,899.70	40.253544	-105.038200
1,939.0	10.20	154.70	1,921.1	-198.2	105.4	1,335,532.15	3,128,907.37	40.253506	-105.038173
2,031.0	9.60	152.50	2,011.7	-212.4	112.4	1,335,518.01	3,128,914.47	40.253467	-105.038148
2,123.0	11.30	153.60	2,102.2	-227.3	120.0	1,335,503.17	3,128,922.10	40.253426	-105.038120
2,215.0	10.70	152.30	2,192.5	-242.9	127.9	1,335,487.58	3,128,930.16	40.253383	-105.038092
2,307.0	10.50	151.50	2,282.9	-257.8	135.9	1,335,472.69	3,128,938.21	40.253342	-105.038063
2,399.0	10.50	151.80	2,373.4	-272.6	143.9	1,335,457.98	3,128,946.24	40.253302	-105.038035
2,491.0	10.10	152.20	2,463.9	-287.1	151.6	1,335,443.50	3,128,954.04	40.253262	-105.038007
2,583.0	9.80	151.50	2,554.5	-301.1	159.1	1,335,429.52	3,128,961.61	40.253223	-105.037980
2,675.0	9.40	153.10	2,645.2	-314.7	166.2	1,335,415.98	3,128,968.82	40.253186	-105.037955
2,767.0	11.50	153.10	2,735.7	-329.6	173.8	1,335,401.13	3,128,976.45	40.253145	-105.037928
2,859.0	10.80	154.70	2,825.9	-345.6	181.6	1,335,385.20	3,128,984.36	40.253101	-105.037900
2,951.0	10.20	155.60	2,916.4	-360.8	188.7	1,335,370.03	3,128,991.49	40.253060	-105.037874
3,042.0	9.80	156.60	3,006.0	-375.2	195.1	1,335,355.62	3,128,997.97	40.253020	-105.037851
3,134.0	9.40	147.10	3,096.7	-388.7	202.2	1,335,342.16	3,129,005.23	40.252983	-105.037826
3,226.0	8.90	149.10	3,187.6	-401.1	210.0	1,335,329.79	3,129,013.03	40.252949	-105.037798
3,320.0	9.10	148.60	3,280.4	-413.7	217.6	1,335,317.24	3,129,020.70	40.252914	-105.037771
3,415.0	8.50	150.90	3,374.3	-426.3	224.9	1,335,304.73	3,129,028.10	40.252880	-105.037744
3,509.0	10.60	146.30	3,467.0	-439.5	233.1	1,335,291.51	3,129,036.34	40.252843	-105.037715
3,603.0	10.40	147.80	3,559.4	-453.9	242.4	1,335,277.19	3,129,045.74	40.252804	-105.037682
3,697.0	10.30	149.00	3,651.9	-468.3	251.3	1,335,262.85	3,129,054.66	40.252765	-105.037650
3,791.0	10.10	149.40	3,744.4	-482.6	259.8	1,335,248.60	3,129,063.26	40.252725	-105.037620
3,886.0	9.60	150.60	3,838.0	-496.7	267.9	1,335,234.57	3,129,071.46	40.252687	-105.037590
3,980.0	8.60	150.60	3,930.8	-509.6	275.2	1,335,221.65	3,129,078.83	40.252651	-105.037564
4,075.0	9.80	154.80	4,024.6	-523.1	282.1	1,335,208.19	3,129,085.82	40.252614	-105.037539
4,169.0	11.60	152.30	4,116.9	-538.7	289.9	1,335,192.62	3,129,093.71	40.252571	-105.037511
4,263.0	11.60	153.70	4,209.0	-555.6	298.5	1,335,175.82	3,129,102.37	40.252525	-105.037481
4,357.0	11.00	154.40	4,301.2	-572.1	306.6	1,335,159.31	3,129,110.52	40.252480	-105.037452
4,452.0	10.20	154.90	4,394.6	-587.9	314.1	1,335,143.55	3,129,118.09	40.252436	-105.037425
4,546.0	9.80	155.70	4,487.1	-602.7	320.9	1,335,128.76	3,129,124.99	40.252395	-105.037401
4,641.0	9.40	155.80	4,580.8	-617.2	327.4	1,335,114.35	3,129,131.57	40.252356	-105.037377
4,735.0	10.40	146.60	4,673.4	-631.3	335.2	1,335,100.31	3,129,139.46	40.252317	-105.037349
4,830.0	9.90	149.50	4,766.9	-645.5	344.1	1,335,086.16	3,129,148.40	40.252278	-105.037318
4,924.0	9.40	149.40	4,859.6	-659.0	352.1	1,335,072.63	3,129,156.48	40.252241	-105.037289
5,019.0	8.50	150.90	4,953.4	-671.9	359.5	1,335,059.85	3,129,163.91	40.252206	-105.037262
5,114.0	10.50	142.40	5,047.1	-684.8	368.2	1,335,046.91	3,129,172.68	40.252170	-105.037231
5,208.0	9.60	144.20	5,139.7	-698.0	378.0	1,335,033.81	3,129,182.56	40.252134	-105.037196
5,302.0	8.90	144.40	5,232.5	-710.3	386.8	1,335,021.59	3,129,191.44	40.252100	-105.037165
5,397.0	10.90	143.00	5,326.1	-723.4	396.5	1,335,008.49	3,129,201.19	40.252064	-105.037130
5,491.0	9.50	143.10	5,418.6	-736.7	406.5	1,334,995.24	3,129,211.27	40.252028	-105.037094
5,586.0	13.50	150.80	5,511.7	-752.7	416.6	1,334,979.34	3,129,221.47	40.251984	-105.037058
5,681.0	12.00	150.50	5,604.3	-770.9	426.9	1,334,961.11	3,129,231.84	40.251934	-105.037021
5,775.0	10.50	149.20	5,696.5	-786.8	436.1	1,334,945.30	3,129,241.12	40.251890	-105.036988
5,870.0	9.50	149.40	5,790.1	-801.0	444.5	1,334,931.16	3,129,249.62	40.251851	-105.036958
5,964.0	11.00	151.50	5,882.6	-815.5	452.7	1,334,916.64	3,129,257.92	40.251811	-105.036928
6,059.0	9.70	160.20	5,976.0	-831.0	459.8	1,334,901.18	3,129,265.04	40.251769	-105.036903
6,154.0	8.40	159.00	6,069.8	-845.1	465.0	1,334,887.20	3,129,270.31	40.251730	-105.036884
6,248.0	9.60	162.30	6,162.7	-858.9	469.8	1,334,873.35	3,129,275.22	40.251692	-105.036867

Cathedral Energy Services

Survey Report - Geographic

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Project:	DJ Wattenberg	TVD Reference:	30' KB @ 5141.0ft (H&P 522)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	30' KB @ 5141.0ft (H&P 522)
Well:	Drieth 4G-6H-I368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
6,343.0	10.60	154.40	6,256.2	-874.4	476.0	1,334,857.95	3,129,281.49	40.251650	-105.036845
6,436.0	10.60	154.40	6,347.6	-889.8	483.4	1,334,842.56	3,129,288.96	40.251607	-105.036818
6,532.0	9.40	153.70	6,442.2	-904.8	490.7	1,334,827.61	3,129,296.33	40.251566	-105.036792
6,626.0	8.40	153.90	6,535.0	-917.8	497.1	1,334,814.60	3,129,302.82	40.251531	-105.036769
6,673.0	8.20	199.60	6,581.6	-924.1	497.5	1,334,808.35	3,129,303.24	40.251513	-105.036768
6,721.0	11.90	218.80	6,628.8	-931.2	493.2	1,334,801.24	3,129,299.02	40.251494	-105.036783
6,768.0	14.50	218.20	6,674.6	-939.6	486.5	1,334,792.81	3,129,292.39	40.251471	-105.036807
6,816.0	16.40	219.80	6,720.9	-949.5	478.5	1,334,782.84	3,129,284.39	40.251444	-105.036836
6,863.0	19.10	228.60	6,765.6	-959.7	468.5	1,334,772.60	3,129,274.42	40.251416	-105.036872
6,910.0	23.20	240.60	6,809.5	-969.3	454.6	1,334,762.89	3,129,260.62	40.251389	-105.036921
6,957.0	26.40	250.00	6,852.2	-977.4	436.7	1,334,754.67	3,129,242.77	40.251367	-105.036986
7,004.0	27.50	250.90	6,894.0	-984.6	416.7	1,334,747.44	3,129,222.74	40.251347	-105.037058
7,051.0	28.10	248.20	6,935.6	-992.2	396.1	1,334,739.67	3,129,202.24	40.251326	-105.037131
7,098.0	31.70	250.10	6,976.4	-1,000.5	374.2	1,334,731.24	3,129,180.39	40.251303	-105.037210
7,145.0	37.40	252.80	7,015.1	-1,009.0	349.0	1,334,722.68	3,129,155.17	40.251280	-105.037300
7,193.0	41.30	257.80	7,052.2	-1,016.6	319.5	1,334,714.86	3,129,125.78	40.251259	-105.037405
7,240.0	43.30	261.30	7,086.9	-1,022.4	288.4	1,334,708.99	3,129,094.71	40.251244	-105.037517
7,288.0	45.10	263.20	7,121.4	-1,026.9	255.3	1,334,704.31	3,129,061.58	40.251231	-105.037636
7,335.0	48.60	262.30	7,153.5	-1,031.2	221.3	1,334,699.80	3,129,027.59	40.251219	-105.037758
7,382.0	52.80	261.70	7,183.3	-1,036.3	185.3	1,334,694.55	3,128,991.61	40.251205	-105.037887
7,429.0	58.70	262.60	7,209.7	-1,041.6	146.8	1,334,689.05	3,128,953.17	40.251191	-105.038024
7,477.0	62.40	264.20	7,233.3	-1,046.3	105.3	1,334,684.04	3,128,911.69	40.251178	-105.038173
7,524.0	65.80	264.80	7,253.8	-1,050.4	63.2	1,334,679.78	3,128,869.63	40.251167	-105.038324
7,571.0	69.80	265.70	7,271.6	-1,054.0	19.8	1,334,675.95	3,128,826.29	40.251157	-105.038479
7,618.0	72.80	267.40	7,286.6	-1,056.7	-24.6	1,334,673.05	3,128,781.87	40.251149	-105.038638
7,666.0	74.60	268.60	7,300.1	-1,058.3	-70.6	1,334,671.20	3,128,735.84	40.251145	-105.038803
7,713.0	78.10	268.70	7,311.2	-1,059.3	-116.3	1,334,669.89	3,128,690.20	40.251142	-105.038967
7,760.0	82.90	269.20	7,319.0	-1,060.2	-162.6	1,334,668.80	3,128,643.87	40.251140	-105.039133
7,807.0	85.70	269.60	7,323.6	-1,060.7	-209.4	1,334,668.07	3,128,597.11	40.251138	-105.039300
7,842.0	88.20	270.70	7,325.5	-1,060.6	-244.3	1,334,667.98	3,128,562.16	40.251139	-105.039426
7,974.0	91.40	271.40	7,326.0	-1,058.2	-376.3	1,334,669.71	3,128,430.19	40.251145	-105.039898
8,068.0	91.40	271.40	7,323.7	-1,055.9	-470.2	1,334,671.52	3,128,336.24	40.251152	-105.040235
8,163.0	91.40	271.40	7,321.3	-1,053.6	-565.2	1,334,673.34	3,128,241.28	40.251158	-105.040575
8,257.0	92.00	271.80	7,318.5	-1,050.9	-659.1	1,334,675.48	3,128,147.35	40.251165	-105.040912
8,352.0	92.50	271.60	7,314.8	-1,048.1	-754.0	1,334,677.80	3,128,052.45	40.251173	-105.041251
8,447.0	93.70	273.40	7,309.7	-1,044.0	-848.7	1,334,681.44	3,127,957.67	40.251184	-105.041591
8,541.0	92.70	270.10	7,304.4	-1,041.1	-942.5	1,334,683.82	3,127,863.86	40.251192	-105.041927
8,636.0	90.60	269.50	7,301.7	-1,041.4	-1,037.5	1,334,683.00	3,127,768.91	40.251191	-105.042267
8,730.0	91.10	270.10	7,300.3	-1,041.8	-1,131.5	1,334,682.18	3,127,674.92	40.251190	-105.042604
8,825.0	90.80	269.80	7,298.7	-1,041.9	-1,226.5	1,334,681.60	3,127,579.93	40.251190	-105.042944
8,920.0	90.70	268.60	7,297.5	-1,043.2	-1,321.4	1,334,679.78	3,127,484.96	40.251186	-105.043285
9,014.0	90.50	268.10	7,296.5	-1,045.9	-1,415.4	1,334,676.58	3,127,391.02	40.251179	-105.043621
9,109.0	91.30	268.70	7,295.0	-1,048.5	-1,510.4	1,334,673.44	3,127,296.09	40.251172	-105.043961
9,203.0	92.30	272.50	7,292.1	-1,047.6	-1,604.3	1,334,673.93	3,127,202.15	40.251174	-105.044298
9,298.0	93.10	272.40	7,287.6	-1,043.5	-1,699.1	1,334,677.50	3,127,107.32	40.251185	-105.044638
9,393.0	91.60	271.50	7,283.7	-1,040.3	-1,794.0	1,334,680.23	3,127,012.45	40.251194	-105.044977
9,487.0	91.50	271.80	7,281.1	-1,037.6	-1,887.9	1,334,682.45	3,126,918.51	40.251202	-105.045314
9,582.0	91.80	269.60	7,278.4	-1,036.4	-1,982.8	1,334,683.11	3,126,823.56	40.251205	-105.045654
9,676.0	91.60	269.20	7,275.6	-1,037.4	-2,076.8	1,334,681.64	3,126,729.61	40.251202	-105.045991
9,771.0	91.50	269.00	7,273.0	-1,038.9	-2,171.7	1,334,679.66	3,126,634.66	40.251198	-105.046331
9,866.0	91.20	268.90	7,270.8	-1,040.6	-2,266.7	1,334,677.42	3,126,539.72	40.251193	-105.046671
9,960.0	92.60	267.20	7,267.7	-1,043.8	-2,360.6	1,334,673.74	3,126,445.85	40.251184	-105.047007
10,054.0	92.20	268.30	7,263.8	-1,047.5	-2,454.4	1,334,669.56	3,126,352.02	40.251174	-105.047344
10,149.0	91.80	267.80	7,260.4	-1,050.7	-2,549.3	1,334,665.84	3,126,257.15	40.251165	-105.047684
10,244.0	91.30	268.60	7,257.9	-1,053.7	-2,644.2	1,334,662.36	3,126,162.25	40.251157	-105.048024

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 4G-6H-I368
Project:	DJ Wattenberg	TVD Reference:	30' KB @ 5141.0ft (H&P 522)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	30' KB @ 5141.0ft (H&P 522)
Well:	Drieth 4G-6H-I368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
10,338.0	92.40	270.50	7,254.8	-1,054.5	-2,738.2	1,334,661.13	3,126,068.32	40.251155	-105.048360
10,433.0	93.40	271.00	7,250.0	-1,053.2	-2,833.0	1,334,661.88	3,125,973.44	40.251158	-105.048700
10,527.0	91.80	271.10	7,245.8	-1,051.5	-2,926.9	1,334,663.11	3,125,879.55	40.251163	-105.049036
10,622.0	90.50	271.20	7,243.9	-1,049.6	-3,021.9	1,334,664.53	3,125,784.58	40.251168	-105.049377
10,716.0	89.80	270.50	7,243.6	-1,048.2	-3,115.9	1,334,665.43	3,125,690.59	40.251172	-105.049713
10,811.0	91.90	270.00	7,242.2	-1,047.8	-3,210.9	1,334,665.35	3,125,595.60	40.251173	-105.050054
10,906.0	92.00	270.30	7,239.0	-1,047.5	-3,305.8	1,334,665.11	3,125,500.66	40.251174	-105.050394
11,000.0	92.00	269.80	7,235.7	-1,047.4	-3,399.7	1,334,664.70	3,125,406.72	40.251174	-105.050730
11,095.0	90.70	270.30	7,233.5	-1,047.4	-3,494.7	1,334,664.29	3,125,311.75	40.251174	-105.051071
11,189.0	90.50	269.50	7,232.5	-1,047.5	-3,588.7	1,334,663.63	3,125,217.75	40.251174	-105.051407
11,284.0	91.60	268.90	7,230.7	-1,048.9	-3,683.7	1,334,661.81	3,125,122.79	40.251170	-105.051748
11,379.0	90.40	268.20	7,229.1	-1,051.3	-3,778.6	1,334,658.92	3,125,027.85	40.251163	-105.052088
11,473.0	89.80	267.60	7,228.9	-1,054.7	-3,872.6	1,334,654.98	3,124,933.93	40.251154	-105.052424
11,568.0	91.10	268.70	7,228.2	-1,057.8	-3,967.5	1,334,651.42	3,124,839.01	40.251146	-105.052765
11,662.0	92.10	269.50	7,225.5	-1,059.2	-4,061.4	1,334,649.46	3,124,745.09	40.251141	-105.053101
Last CES Survey @ 11,662' MD									
11,716.0	92.10	269.50	7,223.6	-1,059.7	-4,115.4	1,334,648.71	3,124,691.13	40.251140	-105.053294
PTB @ 11,716'									

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 4G-6H-I368 PBHL	0.00	0.00	7,225.0	-1,045.1	-4,156.1	1,334,663.07	3,124,650.32	40.251180	-105.053440
- actual wellpath misses target center by 43.3ft at 11716.0ft MD (7223.6 TVD, -1059.7 N, -4115.4 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,662.0	7,225.5	-1,059.2	-4,061.4	Last CES Survey @ 11,662' MD	
11,716.0	7,223.6	-1,059.7	-4,115.4	PTB @ 11,716'	

Checked By: _____ Approved By: _____ Date: _____