



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 1D-6H-A368
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5099.0ft (Ensign 135)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	13' KB @ 5099.0ft (Ensign 135)
Well:	Drieth 1D-6H-A368	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 1D-6H-A368					
Well Position	+N/-S	0.0 ft	Northing:	1,337,934.32 ft	Latitude:	40.260100
	+E/-W	0.0 ft	Easting:	3,128,901.12 ft	Longitude:	-105.038150
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,086.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/18/2014	8.57	66.78	52,692

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	9/10/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
143.0	11,733.0	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		
143.0	0.80	304.30	143.0	0.6	-0.8	0.8	0.56	0.56		
235.0	1.20	289.50	235.0	1.2	-2.3	2.3	0.51	0.43		
326.0	0.80	231.90	326.0	1.2	-3.7	3.7	1.13	-0.44		
418.0	1.80	176.80	417.9	-0.7	-4.1	4.1	1.62	1.09		
510.0	2.20	155.20	509.9	-3.7	-3.3	3.3	0.92	0.43		
601.0	3.70	137.90	600.8	-7.5	-0.6	0.6	1.90	1.65		
692.0	4.60	135.10	691.5	-12.2	4.0	-4.0	1.01	0.99		
784.0	3.80	147.90	783.3	-17.4	8.2	-8.2	1.33	-0.87		
802.0	3.80	146.00	801.2	-18.4	8.9	-8.9	0.70	0.00		
915.0	4.00	148.50	914.0	-24.9	13.0	-13.0	0.23	0.18		
1,007.0	4.80	152.40	1,005.7	-31.0	16.5	-16.5	0.93	0.87		
1,098.0	5.80	140.00	1,096.3	-37.9	21.2	-21.2	1.66	1.10		

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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
1,190.0	4.40	131.10	1,188.0	-43.8	26.8	-26.8	1.74	-1.52	
1,281.0	5.70	143.70	1,278.6	-49.8	32.1	-32.1	1.87	1.43	
1,374.0	4.40	131.40	1,371.3	-55.8	37.6	-37.6	1.81	-1.40	
1,465.0	5.10	141.20	1,461.9	-61.3	42.7	-42.7	1.18	0.77	
1,557.0	5.10	139.40	1,553.6	-67.6	47.9	-47.9	0.17	0.00	
1,648.0	5.50	145.60	1,644.2	-74.3	53.0	-53.0	0.77	0.44	
1,740.0	5.40	136.60	1,735.8	-81.1	58.5	-58.5	0.93	-0.11	
1,832.0	6.10	119.10	1,827.3	-86.6	65.7	-65.7	2.04	0.76	
1,924.0	5.80	115.60	1,918.8	-91.0	74.2	-74.2	0.51	-0.33	
2,015.0	5.90	132.30	2,009.4	-96.1	81.8	-81.8	1.87	0.11	
2,107.0	6.90	133.10	2,100.8	-103.1	89.3	-89.3	1.09	1.09	
2,199.0	6.50	126.00	2,192.2	-109.9	97.6	-97.6	1.00	-0.43	
2,290.0	6.20	121.00	2,282.6	-115.4	106.0	-106.0	0.69	-0.33	
2,382.0	6.40	140.30	2,374.1	-122.0	113.5	-113.5	2.30	0.22	
2,477.0	5.70	133.90	2,468.5	-129.3	120.3	-120.3	1.02	-0.74	
2,572.0	5.30	152.70	2,563.1	-136.5	125.7	-125.7	1.93	-0.42	
2,666.0	4.60	154.60	2,656.7	-143.7	129.3	-129.3	0.76	-0.74	
2,761.0	3.80	153.20	2,751.5	-150.0	132.4	-132.4	0.85	-0.84	
2,855.0	4.70	136.30	2,845.2	-155.5	136.4	-136.4	1.63	0.96	
2,950.0	5.50	151.90	2,939.9	-162.4	141.3	-141.3	1.68	0.84	
3,044.0	4.90	150.50	3,033.5	-169.8	145.4	-145.4	0.65	-0.64	
3,139.0	4.10	146.80	3,128.2	-176.2	149.2	-149.2	0.90	-0.84	
3,233.0	5.00	147.90	3,221.9	-182.5	153.2	-153.2	0.96	0.96	
3,328.0	5.10	143.80	3,316.5	-189.4	157.9	-157.9	0.39	0.11	
3,423.0	6.30	139.40	3,411.0	-196.8	163.8	-163.8	1.34	1.26	
3,517.0	5.40	138.60	3,504.6	-204.0	170.1	-170.1	0.96	-0.96	
3,612.0	6.80	135.10	3,599.0	-211.4	177.0	-177.0	1.52	1.47	
3,706.0	6.50	137.40	3,692.4	-219.2	184.5	-184.5	0.43	-0.32	
3,801.0	5.90	139.60	3,786.8	-226.9	191.4	-191.4	0.68	-0.63	
3,896.0	4.40	146.60	3,881.4	-233.6	196.5	-196.5	1.71	-1.58	
3,990.0	5.20	139.20	3,975.1	-239.9	201.3	-201.3	1.07	0.85	
4,085.0	5.90	130.90	4,069.7	-246.3	207.8	-207.8	1.12	0.74	
4,180.0	5.60	129.20	4,164.2	-252.5	215.1	-215.1	0.36	-0.32	
4,274.0	4.80	132.10	4,257.8	-258.0	221.5	-221.5	0.90	-0.85	
4,369.0	4.00	139.00	4,352.5	-263.2	226.7	-226.7	1.01	-0.84	
4,463.0	4.70	130.10	4,446.3	-268.1	231.8	-231.8	1.03	0.74	
4,558.0	5.70	129.20	4,540.9	-273.6	238.4	-238.4	1.06	1.05	
4,652.0	5.50	130.10	4,634.4	-279.5	245.5	-245.5	0.23	-0.21	
4,746.0	4.90	129.60	4,728.0	-284.9	252.0	-252.0	0.64	-0.64	
4,841.0	4.40	136.80	4,822.7	-290.2	257.6	-257.6	0.81	-0.53	
4,936.0	5.70	149.40	4,917.3	-296.9	262.5	-262.5	1.79	1.37	
5,030.0	6.20	140.20	5,010.8	-304.8	268.1	-268.1	1.14	0.53	
5,125.0	4.90	139.40	5,105.4	-311.8	274.1	-274.1	1.37	-1.37	
5,219.0	5.40	139.60	5,199.0	-318.2	279.6	-279.6	0.53	0.53	
5,314.0	6.00	138.20	5,293.5	-325.3	285.8	-285.8	0.65	0.63	
5,408.0	4.00	140.70	5,387.2	-331.5	291.1	-291.1	2.14	-2.13	
5,503.0	4.50	133.10	5,481.9	-336.7	295.9	-295.9	0.79	0.53	
5,597.0	4.60	130.30	5,575.6	-341.6	301.5	-301.5	0.26	0.11	
5,692.0	6.20	132.20	5,670.2	-347.5	308.2	-308.2	1.69	1.68	
5,786.0	4.00	133.80	5,763.8	-353.2	314.3	-314.3	2.35	-2.34	
5,881.0	5.00	133.00	5,858.5	-358.3	319.7	-319.7	1.05	1.05	
5,976.0	4.60	113.60	5,953.2	-362.7	326.3	-326.3	1.75	-0.42	
6,070.0	5.60	126.90	6,046.8	-366.9	333.4	-333.4	1.64	1.06	

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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
6,165.0	5.40	150.50	6,141.4	-373.6	339.3	-339.3	2.37	-0.21	
6,259.0	5.80	144.20	6,235.0	-381.3	344.3	-344.3	0.78	0.43	
6,354.0	5.50	146.50	6,329.5	-389.0	349.6	-349.6	0.40	-0.32	
6,449.0	6.20	150.90	6,424.0	-397.3	354.6	-354.6	0.87	0.74	
6,543.0	6.70	149.90	6,517.4	-406.5	359.8	-359.8	0.55	0.53	
6,638.0	4.30	149.40	6,612.0	-414.3	364.4	-364.4	2.53	-2.53	
6,685.0	3.60	144.40	6,658.9	-417.0	366.2	-366.2	1.66	-1.49	
6,732.0	6.90	148.80	6,705.6	-420.7	368.5	-368.5	7.07	7.02	
6,779.0	10.70	167.60	6,752.1	-427.3	370.9	-370.9	10.04	8.09	
6,827.0	12.40	195.20	6,799.2	-436.7	370.5	-370.5	11.91	3.54	
6,874.0	13.40	217.80	6,845.0	-445.8	365.8	-365.8	10.87	2.13	
6,922.0	16.40	232.40	6,891.4	-454.4	357.0	-357.0	9.97	6.25	
6,969.0	19.30	248.40	6,936.2	-461.3	344.5	-344.5	12.07	6.17	
7,016.0	21.90	258.60	6,980.2	-465.9	328.7	-328.7	9.41	5.53	
7,063.0	25.80	264.60	7,023.1	-468.6	309.9	-309.9	9.76	8.30	
7,111.0	29.70	268.90	7,065.6	-469.8	287.6	-287.6	9.13	8.12	
7,157.0	31.90	273.60	7,105.1	-469.2	264.1	-264.1	7.09	4.78	
7,205.0	37.90	274.20	7,144.5	-467.4	236.7	-236.7	12.52	12.50	
7,252.0	44.80	270.90	7,179.8	-466.1	205.7	-205.7	15.39	14.68	
7,299.0	52.30	269.70	7,210.8	-465.9	170.5	-170.5	16.07	15.96	
7,348.0	60.10	269.30	7,238.1	-466.3	129.8	-129.8	15.93	15.92	
7,395.0	65.90	269.80	7,259.4	-466.6	88.0	-88.0	12.38	12.34	
7,442.0	71.70	268.90	7,276.4	-467.1	44.2	-44.2	12.47	12.34	
7,490.0	75.10	268.20	7,290.1	-468.2	-1.8	1.8	7.22	7.08	
7,537.0	79.80	267.90	7,300.3	-469.8	-47.6	47.6	10.02	10.00	
7,585.0	85.80	270.70	7,306.3	-470.4	-95.2	95.2	13.77	12.50	
7,700.0	91.80	274.60	7,308.7	-465.1	-210.0	210.0	6.22	5.22	
7,795.0	89.60	272.90	7,307.6	-458.9	-304.8	304.8	2.93	-2.32	
7,890.0	88.60	271.10	7,309.1	-455.5	-399.7	399.7	2.17	-1.05	
7,984.0	90.70	269.30	7,309.6	-455.2	-493.7	493.7	2.94	2.23	
8,079.0	90.90	269.10	7,308.3	-456.5	-588.7	588.7	0.30	0.21	
8,173.0	90.90	268.70	7,306.8	-458.3	-682.6	682.6	0.43	0.00	
8,268.0	91.30	268.00	7,305.0	-461.1	-777.6	777.6	0.85	0.42	
8,363.0	91.70	269.20	7,302.5	-463.4	-872.5	872.5	1.33	0.42	
8,458.0	92.20	268.70	7,299.3	-465.1	-967.5	967.5	0.74	0.53	
8,552.0	92.30	268.50	7,295.6	-467.4	-1,061.4	1,061.4	0.24	0.11	
8,647.0	92.70	269.70	7,291.5	-468.9	-1,156.2	1,156.2	1.33	0.42	
8,742.0	92.70	271.50	7,287.0	-467.9	-1,251.1	1,251.1	1.89	0.00	
8,836.0	91.30	272.20	7,283.7	-464.9	-1,345.0	1,345.0	1.66	-1.49	
8,931.0	90.90	271.20	7,281.9	-462.1	-1,440.0	1,440.0	1.13	-0.42	
9,026.0	91.00	270.10	7,280.3	-461.0	-1,534.9	1,534.9	1.16	0.11	
9,120.0	90.90	269.60	7,278.8	-461.2	-1,628.9	1,628.9	0.54	-0.11	
9,215.0	93.80	269.10	7,274.9	-462.3	-1,723.8	1,723.8	3.10	3.05	
9,310.0	94.00	269.10	7,268.4	-463.8	-1,818.6	1,818.6	0.21	0.21	
9,404.0	94.70	269.00	7,261.3	-465.4	-1,912.3	1,912.3	0.75	0.74	
9,499.0	90.70	270.50	7,256.8	-465.8	-2,007.2	2,007.2	4.50	-4.21	
9,593.0	88.00	270.70	7,257.9	-464.8	-2,101.2	2,101.2	2.88	-2.87	
9,688.0	89.80	270.30	7,259.7	-464.0	-2,196.1	2,196.1	1.94	1.89	
9,783.0	91.60	270.90	7,258.5	-463.0	-2,291.1	2,291.1	2.00	1.89	
9,877.0	90.90	269.80	7,256.5	-462.4	-2,385.1	2,385.1	1.39	-0.74	
9,972.0	91.10	269.90	7,254.8	-462.6	-2,480.1	2,480.1	0.24	0.21	
10,066.0	91.90	269.20	7,252.4	-463.4	-2,574.1	2,574.1	1.13	0.85	
10,161.0	91.60	268.60	7,249.5	-465.2	-2,669.0	2,669.0	0.71	-0.32	

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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
10,256.0	91.70	268.40	7,246.7	-467.7	-2,763.9	2,763.9	0.24	0.11	
10,350.0	92.20	268.90	7,243.5	-469.9	-2,857.8	2,857.8	0.75	0.53	
10,445.0	92.30	270.10	7,239.8	-470.7	-2,952.8	2,952.8	1.27	0.11	
10,539.0	92.20	270.60	7,236.1	-470.2	-3,046.7	3,046.7	0.54	-0.11	
10,634.0	92.70	269.80	7,232.0	-469.8	-3,141.6	3,141.6	0.99	0.53	
10,728.0	92.40	268.90	7,227.9	-470.9	-3,235.5	3,235.5	1.01	-0.32	
10,823.0	92.50	270.40	7,223.8	-471.5	-3,330.4	3,330.4	1.58	0.11	
10,917.0	92.50	270.70	7,219.7	-470.6	-3,424.3	3,424.3	0.32	0.00	
11,012.0	93.10	270.90	7,215.1	-469.2	-3,519.2	3,519.2	0.67	0.63	
11,107.0	93.10	270.70	7,209.9	-467.9	-3,614.0	3,614.0	0.21	0.00	
11,201.0	93.70	270.70	7,204.3	-466.8	-3,707.9	3,707.9	0.64	0.64	
11,296.0	93.60	270.10	7,198.3	-466.1	-3,802.7	3,802.7	0.64	-0.11	
11,390.0	93.50	269.30	7,192.5	-466.6	-3,896.5	3,896.5	0.86	-0.11	
11,485.0	93.70	267.80	7,186.5	-469.0	-3,991.3	3,991.3	1.59	0.21	
11,580.0	93.40	265.70	7,180.6	-474.4	-4,085.9	4,085.9	2.23	-0.32	
11,681.0	93.10	264.20	7,174.9	-483.3	-4,186.4	4,186.4	1.51	-0.30	Last CES Survey @ 11,681' MD
11,733.0	93.10	264.20	7,172.1	-488.5	-4,238.0	4,238.0	0.00	0.00	PTB @ 11,733'

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 1D-6H PBHL	0.00	0.00	7,256.0	-465.9	-4,270.1	1,337,446.17	3,124,633.52	40.258820	-105.053450
- actual wellpath misses target center by 92.6ft at 11733.0ft MD (7172.1 TVD, -488.5 N, -4238.0 E)									
- Point									
Drieth 1D-6H-A368 800C	0.00	0.00	7,308.0	-465.9	-590.3	1,337,465.32	3,128,313.28	40.258821	-105.040265
- actual wellpath misses target center by 9.4ft at 8080.8ft MD (7308.3 TVD, -456.6 N, -590.5 E)									
- Point									
Drieth 1D-6H PBHL P4	0.00	0.00	7,188.5	-465.9	-4,270.1	1,337,446.17	3,124,633.52	40.258820	-105.053450
- actual wellpath misses target center by 42.5ft at 11733.0ft MD (7172.1 TVD, -488.5 N, -4238.0 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,681.0	7,174.9	-483.3	-4,186.4	Last CES Survey @ 11,681' MD	
11,733.0	7,172.1	-488.5	-4,238.0	PTB @ 11,733'	

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S6-T3N-R68W (Zisch/Drieth)

Drieth 1D-6H-A368

Hz

Design: FINAL

Survey Report - Geographic

10 September, 2014

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 1D-6H-A368
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5099.0ft (Ensign 135)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	13' KB @ 5099.0ft (Ensign 135)
Well:	Drieth 1D-6H-A368	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 1D-6H-A368					
Well Position	+N/-S	0.0 ft	Northing:	1,337,934.32 ft	Latitude:	40.260100
	+E/-W	0.0 ft	Easting:	3,128,901.12 ft	Longitude:	-105.038150
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,086.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/18/2014	8.57	66.78	52,692

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	9/10/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
143.0	11,733.0	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	1,337,934.32	3,128,901.12	40.260100	-105.038150	
143.0	0.80	304.30	143.0	0.6	-0.8	1,337,934.87	3,128,900.30	40.260102	-105.038153	
235.0	1.20	289.50	235.0	1.2	-2.3	1,337,935.55	3,128,898.85	40.260103	-105.038158	
326.0	0.80	231.90	326.0	1.2	-3.7	1,337,935.47	3,128,897.46	40.260103	-105.038163	
418.0	1.80	176.80	417.9	-0.7	-4.1	1,337,933.63	3,128,897.04	40.260098	-105.038165	
510.0	2.20	155.20	509.9	-3.7	-3.3	1,337,930.59	3,128,897.88	40.260090	-105.038162	
601.0	3.70	137.90	600.8	-7.5	-0.6	1,337,926.84	3,128,900.60	40.260080	-105.038152	
692.0	4.60	135.10	691.5	-12.2	4.0	1,337,922.10	3,128,905.17	40.260066	-105.038136	
784.0	3.80	147.90	783.3	-17.4	8.2	1,337,916.92	3,128,909.42	40.260052	-105.038121	
802.0	3.80	146.00	801.2	-18.4	8.9	1,337,915.93	3,128,910.08	40.260049	-105.038119	
915.0	4.00	148.50	914.0	-24.9	13.0	1,337,909.48	3,128,914.26	40.260032	-105.038104	
1,007.0	4.80	152.40	1,005.7	-31.0	16.5	1,337,903.35	3,128,917.75	40.260015	-105.038091	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 1D-6H-A368
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5099.0ft (Ensign 135)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	13' KB @ 5099.0ft (Ensign 135)
Well:	Drieth 1D-6H-A368	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
1,098.0	5.80	140.00	1,096.3	-37.9	21.2	1,337,896.48	3,128,922.51	40.259996	-105.038074
1,190.0	4.40	131.10	1,188.0	-43.8	26.8	1,337,890.63	3,128,928.19	40.259980	-105.038054
1,281.0	5.70	143.70	1,278.6	-49.8	32.1	1,337,884.72	3,128,933.53	40.259963	-105.038035
1,374.0	4.40	131.40	1,371.3	-55.8	37.6	1,337,878.67	3,128,938.97	40.259947	-105.038016
1,465.0	5.10	141.20	1,461.9	-61.3	42.7	1,337,873.23	3,128,944.15	40.259932	-105.037997
1,557.0	5.10	139.40	1,553.6	-67.6	47.9	1,337,866.97	3,128,949.41	40.259914	-105.037979
1,648.0	5.50	145.60	1,644.2	-74.3	53.0	1,337,860.33	3,128,954.54	40.259896	-105.037960
1,740.0	5.40	136.60	1,735.8	-81.1	58.5	1,337,853.57	3,128,960.04	40.259878	-105.037941
1,832.0	6.10	119.10	1,827.3	-86.6	65.7	1,337,848.09	3,128,967.31	40.259862	-105.037915
1,924.0	5.80	115.60	1,918.8	-91.0	74.2	1,337,843.74	3,128,975.80	40.259850	-105.037884
2,015.0	5.90	132.30	2,009.4	-96.1	81.8	1,337,838.65	3,128,983.43	40.259836	-105.037857
2,107.0	6.90	133.10	2,100.8	-103.1	89.3	1,337,831.73	3,128,991.00	40.259817	-105.037830
2,199.0	6.50	126.00	2,192.2	-109.9	97.6	1,337,824.94	3,128,999.28	40.259798	-105.037801
2,290.0	6.20	121.00	2,282.6	-115.4	106.0	1,337,819.42	3,129,007.69	40.259783	-105.037771
2,382.0	6.40	140.30	2,374.1	-122.0	113.5	1,337,812.96	3,129,015.26	40.259765	-105.037744
2,477.0	5.70	133.90	2,468.5	-129.3	120.3	1,337,805.65	3,129,022.08	40.259745	-105.037719
2,572.0	5.30	152.70	2,563.1	-136.5	125.7	1,337,798.50	3,129,027.53	40.259725	-105.037700
2,666.0	4.60	154.60	2,656.7	-143.7	129.3	1,337,791.26	3,129,031.17	40.259705	-105.037687
2,761.0	3.80	153.20	2,751.5	-150.0	132.4	1,337,785.02	3,129,034.26	40.259688	-105.037676
2,855.0	4.70	136.30	2,845.2	-155.5	136.4	1,337,779.48	3,129,038.35	40.259673	-105.037661
2,950.0	5.50	151.90	2,939.9	-162.4	141.3	1,337,772.68	3,129,043.22	40.259654	-105.037644
3,044.0	4.90	150.50	3,033.5	-169.8	145.4	1,337,765.23	3,129,047.36	40.259634	-105.037629
3,139.0	4.10	146.80	3,128.2	-176.2	149.2	1,337,758.88	3,129,051.25	40.259616	-105.037616
3,233.0	5.00	147.90	3,221.9	-182.5	153.2	1,337,752.61	3,129,055.30	40.259599	-105.037601
3,328.0	5.10	143.80	3,316.5	-189.4	157.9	1,337,745.73	3,129,060.03	40.259580	-105.037584
3,423.0	6.30	139.40	3,411.0	-196.8	163.8	1,337,738.39	3,129,065.96	40.259560	-105.037563
3,517.0	5.40	138.60	3,504.6	-204.0	170.1	1,337,731.19	3,129,072.28	40.259540	-105.037541
3,612.0	6.80	135.10	3,599.0	-211.4	177.0	1,337,723.89	3,129,079.24	40.259520	-105.037516
3,706.0	6.50	137.40	3,692.4	-219.2	184.5	1,337,716.07	3,129,086.81	40.259498	-105.037489
3,801.0	5.90	139.60	3,786.8	-226.9	191.4	1,337,708.43	3,129,093.65	40.259477	-105.037465
3,896.0	4.40	146.60	3,881.4	-233.6	196.5	1,337,701.69	3,129,098.86	40.259459	-105.037446
3,990.0	5.20	139.20	3,975.1	-239.9	201.3	1,337,695.48	3,129,103.66	40.259442	-105.037429
4,085.0	5.90	130.90	4,069.7	-246.3	207.8	1,337,689.06	3,129,110.20	40.259424	-105.037406
4,180.0	5.60	129.20	4,164.2	-252.5	215.1	1,337,682.97	3,129,117.51	40.259407	-105.037380
4,274.0	4.80	132.10	4,257.8	-258.0	221.5	1,337,677.47	3,129,124.01	40.259392	-105.037356
4,369.0	4.00	139.00	4,352.5	-263.2	226.7	1,337,672.33	3,129,129.16	40.259378	-105.037338
4,463.0	4.70	130.10	4,446.2	-268.1	231.8	1,337,667.40	3,129,134.29	40.259364	-105.037320
4,558.0	5.70	129.20	4,540.9	-273.6	238.4	1,337,661.95	3,129,140.95	40.259349	-105.037296
4,652.0	5.50	130.10	4,634.4	-279.5	245.5	1,337,656.14	3,129,148.04	40.259333	-105.037271
4,746.0	4.90	129.60	4,728.0	-284.9	252.0	1,337,650.71	3,129,154.61	40.259318	-105.037247
4,841.0	4.40	136.80	4,822.7	-290.2	257.6	1,337,645.50	3,129,160.26	40.259304	-105.037227
4,936.0	5.70	149.40	4,917.3	-296.9	262.5	1,337,638.80	3,129,165.19	40.259285	-105.037210
5,030.0	6.20	140.20	5,010.8	-304.8	268.1	1,337,630.91	3,129,170.86	40.259263	-105.037189
5,125.0	4.90	139.40	5,105.4	-311.8	274.1	1,337,623.92	3,129,176.82	40.259244	-105.037168
5,219.0	5.40	139.60	5,199.0	-318.2	279.6	1,337,617.54	3,129,182.33	40.259226	-105.037149
5,314.0	6.00	138.20	5,293.5	-325.3	285.8	1,337,610.46	3,129,188.57	40.259207	-105.037126
5,408.0	4.00	140.70	5,387.2	-331.5	291.1	1,337,604.29	3,129,193.96	40.259190	-105.037107
5,503.0	4.50	133.10	5,481.9	-336.7	295.9	1,337,599.20	3,129,198.80	40.259176	-105.037090
5,597.0	4.60	130.30	5,575.6	-341.6	301.5	1,337,594.28	3,129,204.40	40.259162	-105.037070
5,692.0	6.20	132.20	5,670.2	-347.5	308.2	1,337,588.40	3,129,211.13	40.259146	-105.037046
5,786.0	4.00	133.80	5,763.8	-353.2	314.3	1,337,582.75	3,129,217.29	40.259130	-105.037024
5,881.0	5.00	133.00	5,858.5	-358.3	319.7	1,337,577.66	3,129,222.74	40.259116	-105.037005
5,976.0	4.60	113.60	5,953.2	-362.7	326.3	1,337,573.35	3,129,229.28	40.259104	-105.036981
6,070.0	5.60	126.90	6,046.8	-366.9	333.4	1,337,569.12	3,129,236.42	40.259093	-105.036956
6,165.0	5.40	150.50	6,141.4	-373.6	339.3	1,337,562.48	3,129,242.37	40.259074	-105.036935

Cathedral Energy Services

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Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5099.0ft (Ensign 135)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	13' KB @ 5099.0ft (Ensign 135)
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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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
6,259.0	5.80	144.20	6,235.0	-381.3	344.3	1,337,554.80	3,129,247.36	40.259053	-105.036917
6,354.0	5.50	146.50	6,329.5	-389.0	349.6	1,337,547.14	3,129,252.72	40.259032	-105.036898
6,449.0	6.20	150.90	6,424.0	-397.3	354.6	1,337,538.89	3,129,257.77	40.259009	-105.036880
6,543.0	6.70	149.90	6,517.4	-406.5	359.8	1,337,529.74	3,129,263.04	40.258984	-105.036861
6,638.0	4.30	149.40	6,612.0	-414.3	364.4	1,337,521.90	3,129,267.67	40.258963	-105.036845
6,685.0	3.60	144.40	6,658.9	-417.0	366.2	1,337,519.19	3,129,269.44	40.258955	-105.036838
6,732.0	6.90	148.80	6,705.6	-420.7	368.5	1,337,515.59	3,129,271.78	40.258945	-105.036830
6,779.0	10.70	167.60	6,752.1	-427.3	370.9	1,337,508.92	3,129,274.22	40.258927	-105.036821
6,827.0	12.40	195.20	6,799.2	-436.7	370.5	1,337,499.59	3,129,273.87	40.258901	-105.036823
6,874.0	13.40	217.80	6,845.0	-445.8	365.8	1,337,490.38	3,129,269.26	40.258876	-105.036840
6,922.0	16.40	232.40	6,891.4	-454.4	357.0	1,337,481.80	3,129,260.52	40.258853	-105.036871
6,969.0	19.30	248.40	6,936.2	-461.3	344.5	1,337,474.83	3,129,248.07	40.258834	-105.036916
7,016.0	21.90	258.60	6,980.2	-465.9	328.7	1,337,470.15	3,129,232.27	40.258821	-105.036972
7,063.0	25.80	264.60	7,023.1	-468.6	309.9	1,337,467.35	3,129,213.50	40.258814	-105.037040
7,111.0	29.70	268.90	7,065.6	-469.8	287.6	1,337,466.03	3,129,191.21	40.258810	-105.037120
7,157.0	31.90	273.60	7,105.1	-469.2	264.1	1,337,466.45	3,129,167.67	40.258812	-105.037204
7,205.0	37.90	274.20	7,144.5	-467.4	236.7	1,337,468.18	3,129,140.28	40.258817	-105.037302
7,252.0	44.80	270.90	7,179.8	-466.1	205.7	1,337,469.34	3,129,109.28	40.258821	-105.037413
7,299.0	52.30	269.70	7,210.8	-465.9	170.5	1,337,469.32	3,129,074.08	40.258821	-105.037539
7,348.0	60.10	269.30	7,238.1	-466.3	129.8	1,337,468.75	3,129,033.39	40.258820	-105.037685
7,395.0	65.90	269.80	7,259.4	-466.6	88.0	1,337,468.21	3,128,991.54	40.258819	-105.037835
7,442.0	71.70	268.90	7,276.4	-467.1	44.2	1,337,467.47	3,128,947.74	40.258818	-105.037992
7,490.0	75.10	268.20	7,290.1	-468.2	-1.8	1,337,466.07	3,128,901.77	40.258815	-105.038157
7,537.0	79.80	267.90	7,300.3	-469.8	-47.6	1,337,464.27	3,128,855.94	40.258810	-105.038321
7,585.0	85.80	270.70	7,306.3	-470.4	-95.2	1,337,463.45	3,128,808.36	40.258809	-105.038491
7,700.0	91.80	274.60	7,308.7	-465.1	-210.0	1,337,468.16	3,128,693.55	40.258823	-105.038903
7,795.0	89.60	272.90	7,307.6	-458.9	-304.8	1,337,473.88	3,128,598.74	40.258840	-105.039242
7,890.0	88.60	271.10	7,309.1	-455.5	-399.7	1,337,476.70	3,128,503.80	40.258850	-105.039582
7,984.0	90.70	269.30	7,309.6	-455.2	-493.7	1,337,476.54	3,128,409.81	40.258850	-105.039919
8,079.0	90.90	269.10	7,308.3	-456.5	-588.7	1,337,474.72	3,128,314.84	40.258847	-105.040260
8,173.0	90.90	268.70	7,306.8	-458.3	-682.6	1,337,472.43	3,128,220.88	40.258842	-105.040596
8,268.0	91.30	268.00	7,305.0	-461.1	-777.6	1,337,469.20	3,128,125.95	40.258834	-105.040936
8,363.0	91.70	269.20	7,302.5	-463.4	-872.5	1,337,466.38	3,128,031.02	40.258828	-105.041277
8,458.0	92.20	268.70	7,299.3	-465.1	-967.5	1,337,464.15	3,127,936.11	40.258823	-105.041617
8,552.0	92.30	268.50	7,295.6	-467.4	-1,061.4	1,337,461.37	3,127,842.22	40.258817	-105.041953
8,647.0	92.70	269.70	7,291.5	-468.9	-1,156.2	1,337,459.38	3,127,747.33	40.258813	-105.042293
8,742.0	92.70	271.50	7,287.0	-467.9	-1,251.1	1,337,459.88	3,127,652.44	40.258815	-105.042633
8,836.0	91.30	272.20	7,283.7	-464.9	-1,345.0	1,337,462.42	3,127,558.54	40.258824	-105.042970
8,931.0	90.90	271.20	7,281.9	-462.1	-1,440.0	1,337,464.75	3,127,463.59	40.258832	-105.043310
9,026.0	91.00	270.10	7,280.3	-461.0	-1,534.9	1,337,465.33	3,127,368.60	40.258834	-105.043650
9,120.0	90.90	269.60	7,278.8	-461.2	-1,628.9	1,337,464.59	3,127,274.62	40.258834	-105.043987
9,215.0	93.80	269.10	7,274.9	-462.3	-1,723.8	1,337,463.02	3,127,179.72	40.258831	-105.044327
9,310.0	94.00	269.10	7,268.4	-463.8	-1,818.6	1,337,461.04	3,127,084.96	40.258827	-105.044666
9,404.0	94.70	269.00	7,261.3	-465.4	-1,912.3	1,337,459.00	3,126,991.25	40.258822	-105.045002
9,499.0	90.70	270.50	7,256.8	-465.8	-2,007.2	1,337,458.09	3,126,896.39	40.258821	-105.045342
9,593.0	88.00	270.70	7,257.9	-464.8	-2,101.2	1,337,458.59	3,126,802.40	40.258824	-105.045679
9,688.0	89.80	270.30	7,259.7	-464.0	-2,196.1	1,337,458.92	3,126,707.42	40.258826	-105.046019
9,783.0	91.60	270.90	7,258.5	-463.0	-2,291.1	1,337,459.42	3,126,612.44	40.258829	-105.046360
9,877.0	90.90	269.80	7,256.5	-462.4	-2,385.1	1,337,459.51	3,126,518.46	40.258830	-105.046696
9,972.0	91.10	269.90	7,254.8	-462.6	-2,480.1	1,337,458.76	3,126,423.48	40.258830	-105.047037
10,066.0	91.90	269.20	7,252.4	-463.4	-2,574.1	1,337,457.54	3,126,329.52	40.258828	-105.047373
10,161.0	91.60	268.60	7,249.5	-465.2	-2,669.0	1,337,455.22	3,126,234.59	40.258823	-105.047713
10,256.0	91.70	268.40	7,246.7	-467.7	-2,763.9	1,337,452.24	3,126,139.68	40.258816	-105.048054
10,350.0	92.20	268.90	7,243.5	-469.9	-2,857.8	1,337,449.54	3,126,045.77	40.258810	-105.048390
10,445.0	92.30	270.10	7,239.8	-470.7	-2,952.8	1,337,448.21	3,125,950.86	40.258807	-105.048730

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Drieth 1D-6H-A368
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5099.0ft (Ensign 135)
Site:	S6-T3N-R68W (Zisch/Drieth)	MD Reference:	13' KB @ 5099.0ft (Ensign 135)
Well:	Drieth 1D-6H-A368	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
10,539.0	92.20	270.60	7,236.1	-470.2	-3,046.7	1,337,448.30	3,125,856.93	40.258809	-105.049067
10,634.0	92.70	269.80	7,232.0	-469.8	-3,141.6	1,337,448.13	3,125,762.02	40.258810	-105.049407
10,728.0	92.40	268.90	7,227.9	-470.9	-3,235.5	1,337,446.58	3,125,668.12	40.258807	-105.049743
10,823.0	92.50	270.40	7,223.8	-471.5	-3,330.4	1,337,445.51	3,125,573.22	40.258805	-105.050083
10,917.0	92.50	270.70	7,219.7	-470.6	-3,424.3	1,337,445.92	3,125,479.31	40.258808	-105.050420
11,012.0	93.10	270.90	7,215.1	-469.2	-3,519.2	1,337,446.75	3,125,384.43	40.258811	-105.050760
11,107.0	93.10	270.70	7,209.9	-467.9	-3,614.0	1,337,447.58	3,125,289.57	40.258815	-105.051100
11,201.0	93.70	270.70	7,204.3	-466.8	-3,707.9	1,337,448.24	3,125,195.74	40.258818	-105.051436
11,296.0	93.60	270.10	7,198.3	-466.1	-3,802.7	1,337,448.40	3,125,100.93	40.258820	-105.051775
11,390.0	93.50	269.30	7,192.5	-466.6	-3,896.5	1,337,447.42	3,125,007.12	40.258818	-105.052112
11,485.0	93.70	267.80	7,186.5	-469.0	-3,991.3	1,337,444.53	3,124,912.35	40.258812	-105.052451
11,580.0	93.40	265.70	7,180.6	-474.4	-4,085.9	1,337,438.66	3,124,817.72	40.258797	-105.052790
11,681.0	93.10	264.20	7,174.9	-483.3	-4,186.4	1,337,429.27	3,124,717.35	40.258773	-105.053150
Last CES Survey @ 11,681' MD									
11,733.0	93.10	264.20	7,172.1	-488.5	-4,238.0	1,337,423.75	3,124,665.72	40.258758	-105.053335
PTB @ 11,733'									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,681.0	7,174.9	-483.3	-4,186.4	Last CES Survey @ 11,681' MD	
11,733.0	7,172.1	-488.5	-4,238.0	PTB @ 11,733'	

Checked By: _____ Approved By: _____ Date: _____