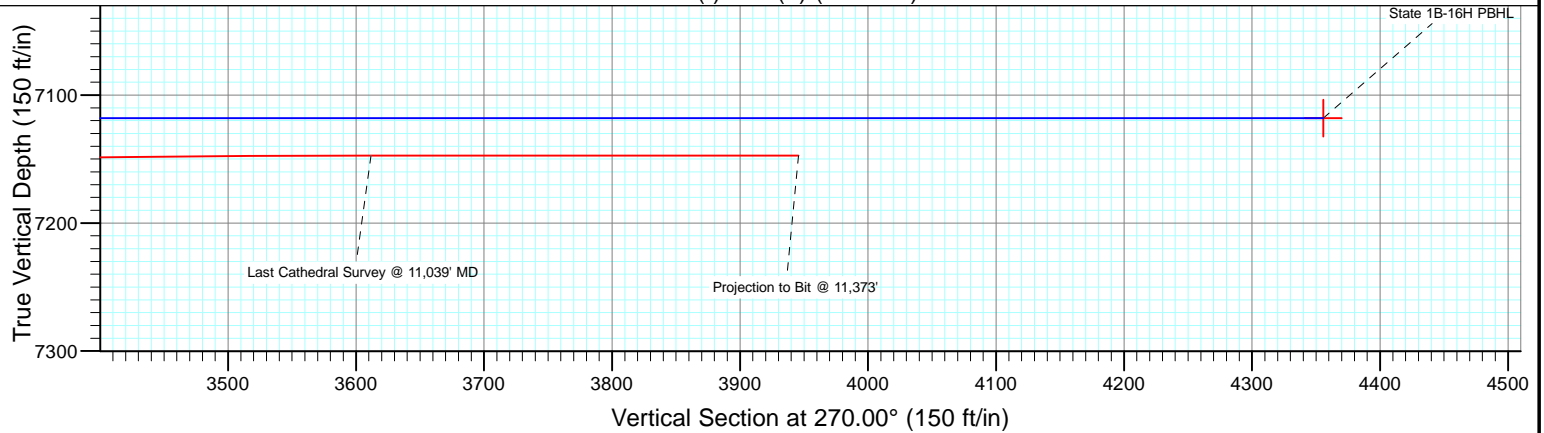
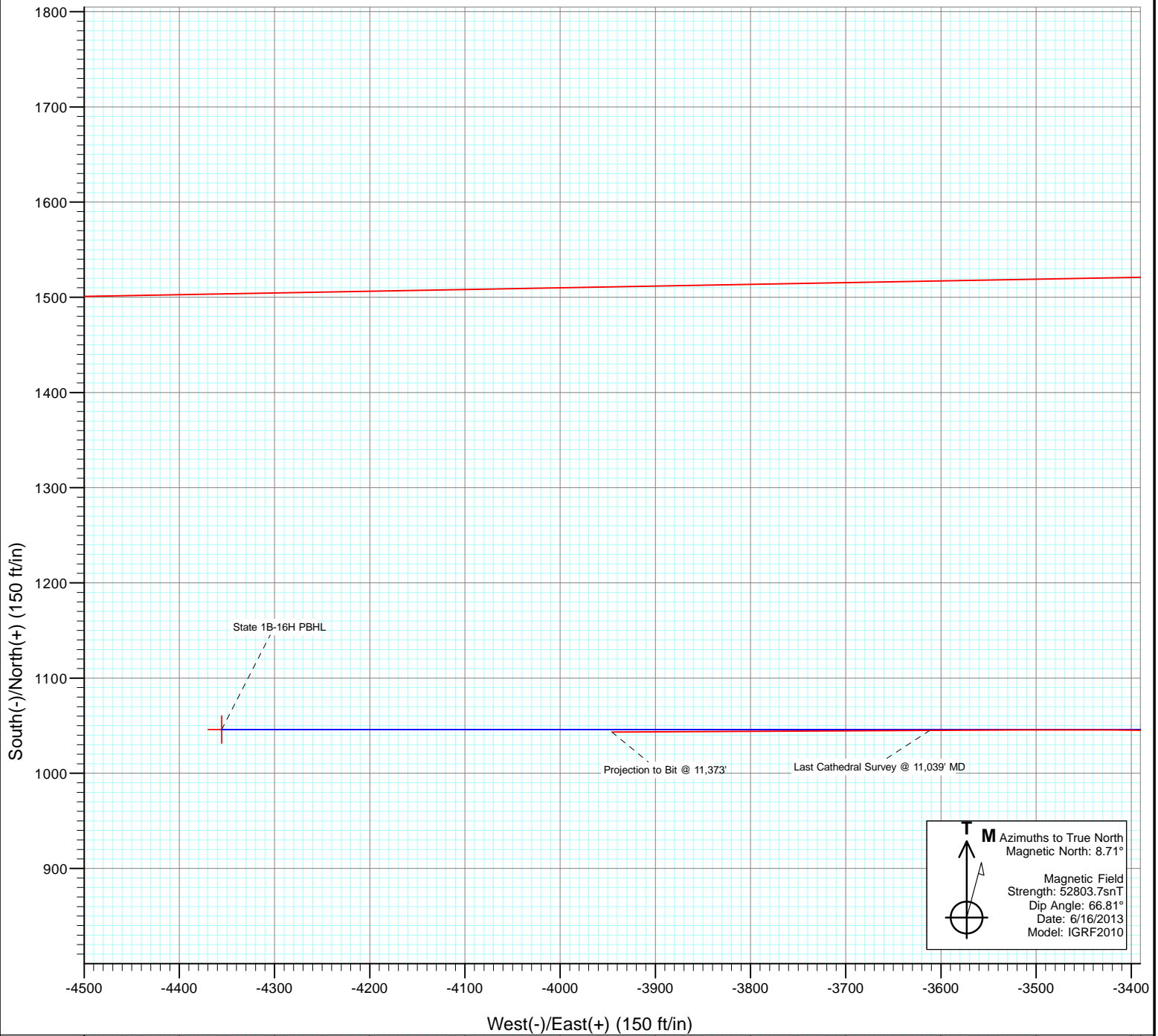




Project: DJ Wattenberg
Site: S16-T3N-R68W (State)
Well: State 1B-16H
Wellbore: Hz
Design: FINAL



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 1B-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5039.0ft (H&P 278)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5039.0ft (H&P 278)
Well: State 1B-16H	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 S16-T3N-R68W (State)				
Site Position:	Northing: 1,326,575.12 ft	Latitude: 40.228760		
From: Lat/Long	Easting: 3,139,542.66 ft	Longitude: -105.000250		
Position Uncertainty: 0.0 ft	Slot Radius: 13.200 in	Grid Convergence: 0.32 °		

Well State 1B-16H				
Well Position	+N/-S 0.0 ft	Northing: 1,326,637.03 ft	Latitude: 40.228930	
	+E/-W 0.0 ft	Easting: 3,139,542.31 ft	Longitude: -105.000250	
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 5,026.0 ft	

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/16/2013	8.71	66.81	52,804

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 6/27/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
123.0	11,373.0	Survey #1 (Hz)	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	
123.0	0.40	7.80	123.0	0.4	0.1	-0.1	0.33	0.33	
184.0	0.60	28.30	184.0	0.9	0.2	-0.2	0.43	0.33	
246.0	1.40	14.70	246.0	1.9	0.6	-0.6	1.34	1.29	
307.0	2.00	14.30	307.0	3.7	1.0	-1.0	0.98	0.98	
368.0	2.80	23.80	367.9	6.1	1.9	-1.9	1.46	1.31	
430.0	3.30	23.80	429.8	9.1	3.2	-3.2	0.81	0.81	
491.0	3.90	22.70	490.7	12.6	4.7	-4.7	0.99	0.98	
552.0	4.40	19.30	551.5	16.7	6.3	-6.3	0.91	0.82	
613.0	4.90	10.90	612.3	21.5	7.6	-7.6	1.38	0.82	
675.0	5.30	8.90	674.1	26.9	8.5	-8.5	0.71	0.65	
767.0	5.80	17.30	765.7	35.6	10.6	-10.6	1.04	0.54	
787.0	5.60	14.50	785.6	37.5	11.1	-11.1	1.71	-1.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1B-16H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5039.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MVD Reference:	WELL @ 5039.0ft (H&P 278)
Well:	State 1B-16H	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
904.0	6.20	13.90	901.9	49.1	14.1	-14.1	0.52	0.51	
996.0	7.40	23.90	993.3	59.4	17.7	-17.7	1.83	1.30	
1,088.0	9.10	21.80	1,084.3	71.6	22.8	-22.8	1.88	1.85	
1,180.0	10.20	23.80	1,175.0	85.8	28.7	-28.7	1.25	1.20	
1,273.0	11.10	21.80	1,266.4	101.6	35.4	-35.4	1.05	0.97	
1,365.0	12.10	19.30	1,356.6	118.9	41.9	-41.9	1.22	1.09	
1,457.0	13.00	19.20	1,446.4	137.8	48.5	-48.5	0.98	0.98	
1,552.0	13.20	21.20	1,538.9	158.0	55.9	-55.9	0.52	0.21	
1,647.0	16.10	23.40	1,630.8	180.2	65.0	-65.0	3.11	3.05	
1,742.0	16.00	21.50	1,722.1	204.5	75.1	-75.1	0.56	-0.11	
1,837.0	17.20	23.70	1,813.1	229.5	85.5	-85.5	1.43	1.26	
1,932.0	17.90	23.70	1,903.7	255.8	97.0	-97.0	0.74	0.74	
2,027.0	17.00	20.80	1,994.3	282.1	107.8	-107.8	1.32	-0.95	
2,121.0	16.00	21.00	2,084.5	307.1	117.4	-117.4	1.07	-1.06	
2,216.0	14.50	23.70	2,176.1	330.2	126.8	-126.8	1.75	-1.58	
2,311.0	14.60	23.10	2,268.1	352.1	136.3	-136.3	0.19	0.11	
2,403.0	14.50	24.30	2,357.1	373.2	145.6	-145.6	0.35	-0.11	
2,499.0	14.80	27.40	2,450.0	395.1	156.2	-156.2	0.87	0.31	
2,594.0	16.30	28.80	2,541.5	417.5	168.2	-168.2	1.63	1.58	
2,688.0	14.70	24.80	2,632.1	439.9	179.6	-179.6	2.05	-1.70	
2,783.0	15.40	22.10	2,723.8	462.6	189.4	-189.4	1.04	0.74	
2,878.0	15.30	23.40	2,815.5	485.7	199.1	-199.1	0.38	-0.11	
2,973.0	14.40	20.00	2,907.3	508.3	208.1	-208.1	1.32	-0.95	
3,068.0	14.30	21.00	2,999.3	530.4	216.3	-216.3	0.28	-0.11	
3,162.0	15.60	23.50	3,090.1	552.8	225.5	-225.5	1.54	1.38	
3,257.0	14.70	22.80	3,181.8	575.7	235.3	-235.3	0.97	-0.95	
3,351.0	14.60	23.40	3,272.8	597.5	244.6	-244.6	0.19	-0.11	
3,446.0	14.80	25.00	3,364.7	619.5	254.5	-254.5	0.48	0.21	
3,541.0	14.50	22.80	3,456.6	641.5	264.3	-264.3	0.67	-0.32	
3,635.0	14.90	20.20	3,547.5	663.7	273.0	-273.0	0.82	0.43	
3,730.0	14.80	22.90	3,639.3	686.3	281.9	-281.9	0.74	-0.11	
3,825.0	16.80	26.50	3,730.7	709.8	292.8	-292.8	2.34	2.11	
3,919.0	17.50	24.20	3,820.6	734.8	304.6	-304.6	1.04	0.74	
4,014.0	16.70	22.50	3,911.4	760.5	315.7	-315.7	0.99	-0.84	
4,108.0	13.90	21.10	4,002.0	783.5	324.9	-324.9	3.00	-2.98	
4,203.0	13.30	20.00	4,094.4	804.4	332.8	-332.8	0.69	-0.63	
4,298.0	14.60	22.40	4,186.6	825.7	341.1	-341.1	1.50	1.37	
4,392.0	14.50	20.70	4,277.5	847.7	349.8	-349.8	0.47	-0.11	
4,487.0	15.50	20.20	4,369.3	870.7	358.4	-358.4	1.06	1.05	
4,582.0	15.00	20.00	4,461.0	894.2	366.9	-366.9	0.53	-0.53	
4,676.0	14.70	20.10	4,551.8	916.8	375.2	-375.2	0.32	-0.32	
4,771.0	13.60	19.20	4,643.9	938.7	383.0	-383.0	1.18	-1.16	
4,865.0	13.80	17.00	4,735.3	959.9	389.9	-389.9	0.59	0.21	
4,960.0	11.40	20.60	4,828.0	979.5	396.5	-396.5	2.66	-2.53	
5,054.0	9.20	24.70	4,920.5	995.0	403.0	-403.0	2.47	-2.34	
5,149.0	7.40	24.70	5,014.5	1,007.5	408.7	-408.7	1.89	-1.89	
5,244.0	6.20	21.00	5,108.8	1,017.8	413.1	-413.1	1.34	-1.26	
5,338.0	5.00	16.90	5,202.3	1,026.5	416.1	-416.1	1.34	-1.28	
5,433.0	3.60	26.80	5,297.1	1,033.1	418.6	-418.6	1.66	-1.47	
5,528.0	2.60	21.50	5,391.9	1,037.8	420.8	-420.8	1.09	-1.05	
5,622.0	1.80	11.10	5,485.9	1,041.2	421.8	-421.8	0.95	-0.85	
5,717.0	0.90	356.50	5,580.8	1,043.4	422.1	-422.1	1.01	-0.95	
5,812.0	0.40	105.20	5,675.8	1,044.1	422.4	-422.4	1.15	-0.53	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1B-16H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5039.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MD Reference:	WELL @ 5039.0ft (H&P 278)
Well:	State 1B-16H	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,906.0	0.50	143.20	5,769.8	1,043.6	422.9	-422.9	0.33	0.11	
6,001.0	0.50	166.70	5,864.8	1,042.9	423.3	-423.3	0.21	0.00	
6,096.0	0.30	163.70	5,959.8	1,042.3	423.4	-423.4	0.21	-0.21	
6,190.0	0.40	171.00	6,053.8	1,041.7	423.5	-423.5	0.12	0.11	
6,285.0	0.60	171.60	6,148.8	1,040.9	423.7	-423.7	0.21	0.21	
6,379.0	0.40	168.30	6,242.8	1,040.1	423.8	-423.8	0.21	-0.21	
6,474.0	0.80	172.70	6,337.8	1,039.1	424.0	-424.0	0.42	0.42	
6,571.0	1.30	172.10	6,434.8	1,037.3	424.2	-424.2	0.52	0.52	
6,602.0	1.30	178.30	6,465.8	1,036.6	424.3	-424.3	0.45	0.00	
6,634.0	2.20	253.70	6,497.8	1,036.1	423.7	-423.7	7.05	2.81	
6,665.0	6.10	273.50	6,528.7	1,036.0	421.5	-421.5	13.22	12.58	
6,697.0	11.00	280.90	6,560.3	1,036.7	416.8	-416.8	15.66	15.31	
6,728.0	13.80	285.00	6,590.6	1,038.2	410.3	-410.3	9.46	9.03	
6,760.0	14.80	283.40	6,621.6	1,040.2	402.6	-402.6	3.36	3.12	
6,791.0	16.30	277.60	6,651.5	1,041.7	394.5	-394.5	6.96	4.84	
6,823.0	18.50	273.10	6,682.0	1,042.5	384.9	-384.9	8.05	6.87	
6,854.0	19.90	268.90	6,711.3	1,042.7	374.8	-374.8	6.34	4.52	
6,886.0	20.60	264.90	6,741.3	1,042.1	363.7	-363.7	4.85	2.19	
6,918.0	20.40	263.60	6,771.3	1,041.0	352.5	-352.5	1.55	-0.62	
6,949.0	21.10	264.00	6,800.3	1,039.8	341.6	-341.6	2.30	2.26	
6,981.0	23.80	265.00	6,829.8	1,038.6	329.5	-329.5	8.52	8.44	
7,012.0	27.70	267.00	6,857.8	1,037.7	316.0	-316.0	12.89	12.58	
7,044.0	31.60	267.50	6,885.6	1,036.9	300.2	-300.2	12.21	12.19	
7,075.0	35.60	269.70	6,911.4	1,036.5	283.1	-283.1	13.49	12.90	
7,107.0	39.10	273.30	6,936.8	1,037.1	263.7	-263.7	12.89	10.94	
7,138.0	43.30	274.70	6,960.1	1,038.5	243.3	-243.3	13.87	13.55	
7,170.0	46.70	275.00	6,982.8	1,040.4	220.8	-220.8	10.65	10.62	
7,202.0	49.50	275.30	7,004.1	1,042.6	197.1	-197.1	8.78	8.75	
7,233.0	52.70	275.60	7,023.6	1,044.9	173.0	-173.0	10.35	10.32	
7,265.0	56.70	275.50	7,042.1	1,047.4	147.1	-147.1	12.50	12.50	
7,296.0	61.80	273.70	7,057.9	1,049.5	120.5	-120.5	17.19	16.45	
7,328.0	67.00	271.40	7,071.7	1,050.8	91.7	-91.7	17.49	16.25	
7,359.0	71.30	270.60	7,082.8	1,051.3	62.7	-62.7	14.08	13.87	
7,391.0	73.70	270.30	7,092.4	1,051.5	32.2	-32.2	7.55	7.50	
7,422.0	76.40	270.30	7,100.4	1,051.7	2.3	-2.3	8.71	8.71	
7,454.0	78.90	270.70	7,107.2	1,051.9	-29.0	29.0	7.91	7.81	
7,485.0	80.50	270.80	7,112.8	1,052.3	-59.5	59.5	5.17	5.16	
7,523.0	82.70	270.50	7,118.3	1,052.8	-97.1	97.1	5.84	5.79	
7,632.0	89.60	268.50	7,125.6	1,051.8	-205.7	205.7	6.59	6.33	
7,727.0	88.80	268.70	7,127.0	1,049.5	-300.7	300.7	0.87	-0.84	
7,822.0	87.90	269.10	7,129.7	1,047.7	-395.6	395.6	1.04	-0.95	
7,916.0	89.10	267.90	7,132.2	1,045.2	-489.6	489.6	1.81	1.28	
8,011.0	89.40	268.70	7,133.4	1,042.4	-584.5	584.5	0.90	0.32	
8,106.0	90.20	269.50	7,133.7	1,040.9	-679.5	679.5	1.19	0.84	
8,200.0	90.50	269.60	7,133.2	1,040.2	-773.5	773.5	0.34	0.32	
8,295.0	90.40	270.30	7,132.4	1,040.1	-868.5	868.5	0.74	-0.11	
8,389.0	90.60	270.60	7,131.6	1,040.8	-962.5	962.5	0.38	0.21	
8,484.0	90.00	270.90	7,131.1	1,042.1	-1,057.5	1,057.5	0.71	-0.63	
8,579.0	88.70	269.60	7,132.2	1,042.5	-1,152.5	1,152.5	1.94	-1.37	
8,673.0	90.20	269.80	7,133.1	1,042.0	-1,246.5	1,246.5	1.61	1.60	
8,768.0	90.90	270.00	7,132.2	1,041.8	-1,341.5	1,341.5	0.77	0.74	
8,862.0	91.30	270.80	7,130.4	1,042.5	-1,435.5	1,435.5	0.95	0.43	
8,957.0	90.50	271.30	7,128.9	1,044.2	-1,530.4	1,530.4	0.99	-0.84	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 1B-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5039.0ft (H&P 278)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5039.0ft (H&P 278)
Well: State 1B-16H	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
9,051.0	89.00	271.90	7,129.3	1,046.8	-1,624.4	1,624.4	1.72	-1.60	
9,146.0	88.10	271.40	7,131.7	1,049.6	-1,719.3	1,719.3	1.08	-0.95	
9,241.0	88.30	270.50	7,134.7	1,051.1	-1,814.3	1,814.3	0.97	0.21	
9,335.0	89.80	269.80	7,136.2	1,051.4	-1,908.2	1,908.2	1.76	1.60	
9,430.0	88.70	269.60	7,137.5	1,050.9	-2,003.2	2,003.2	1.18	-1.16	
9,525.0	88.70	269.40	7,139.6	1,050.1	-2,098.2	2,098.2	0.21	0.00	
9,619.0	88.70	269.20	7,141.8	1,048.9	-2,192.2	2,192.2	0.21	0.00	
9,714.0	88.60	269.20	7,144.0	1,047.6	-2,287.1	2,287.1	0.11	-0.11	
9,809.0	88.70	269.40	7,146.2	1,046.4	-2,382.1	2,382.1	0.24	0.11	
9,903.0	89.70	268.80	7,147.6	1,045.0	-2,476.1	2,476.1	1.24	1.06	
9,998.0	91.60	269.70	7,146.5	1,043.7	-2,571.1	2,571.1	2.21	2.00	
10,093.0	92.30	270.80	7,143.2	1,044.1	-2,666.0	2,666.0	1.37	0.74	
10,187.0	92.70	270.60	7,139.1	1,045.3	-2,759.9	2,759.9	0.48	0.43	
10,282.0	90.00	270.10	7,136.9	1,045.9	-2,854.9	2,854.9	2.89	-2.84	
10,376.0	87.70	269.50	7,138.8	1,045.5	-2,948.8	2,948.8	2.53	-2.45	
10,471.0	87.90	269.90	7,142.4	1,045.0	-3,043.8	3,043.8	0.47	0.21	
10,566.0	88.00	270.20	7,145.8	1,045.1	-3,138.7	3,138.7	0.33	0.11	
10,660.0	89.60	269.80	7,147.8	1,045.1	-3,232.7	3,232.7	1.75	1.70	
10,755.0	89.40	270.10	7,148.6	1,045.0	-3,327.7	3,327.7	0.38	-0.21	
10,850.0	90.80	270.40	7,148.5	1,045.4	-3,422.7	3,422.7	1.51	1.47	
10,944.0	90.40	269.70	7,147.5	1,045.5	-3,516.7	3,516.7	0.86	-0.43	
11,039.0	90.00	269.70	7,147.2	1,045.0	-3,611.6	3,611.6	0.42	-0.42	Last Cathedral Survey @ 11,039' MD
11,373.0	90.00	269.70	7,147.2	1,043.3	-3,945.6	3,945.6	0.00	0.00	Projection to Bit @ 11,373'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
State 1B-16H PBHL - hit/miss target - Shape - Point	0.00	0.00	7,118.0	1,045.9	-4,355.5	1,327,658.37	3,135,180.93	40.231800	-105.015850
- actual wellpath misses target center by 410.9ft at 11373.0ft MD (7147.2 TVD, 1043.3 N, -3945.6 E)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,039.0	7,147.2	1,045.0	-3,611.6	Last Cathedral Survey @ 11,039' MD	
11,373.0	7,147.2	1,043.3	-3,945.6	Projection to Bit @ 11,373'	

Checked By: _____ Approved By: _____ Date: _____