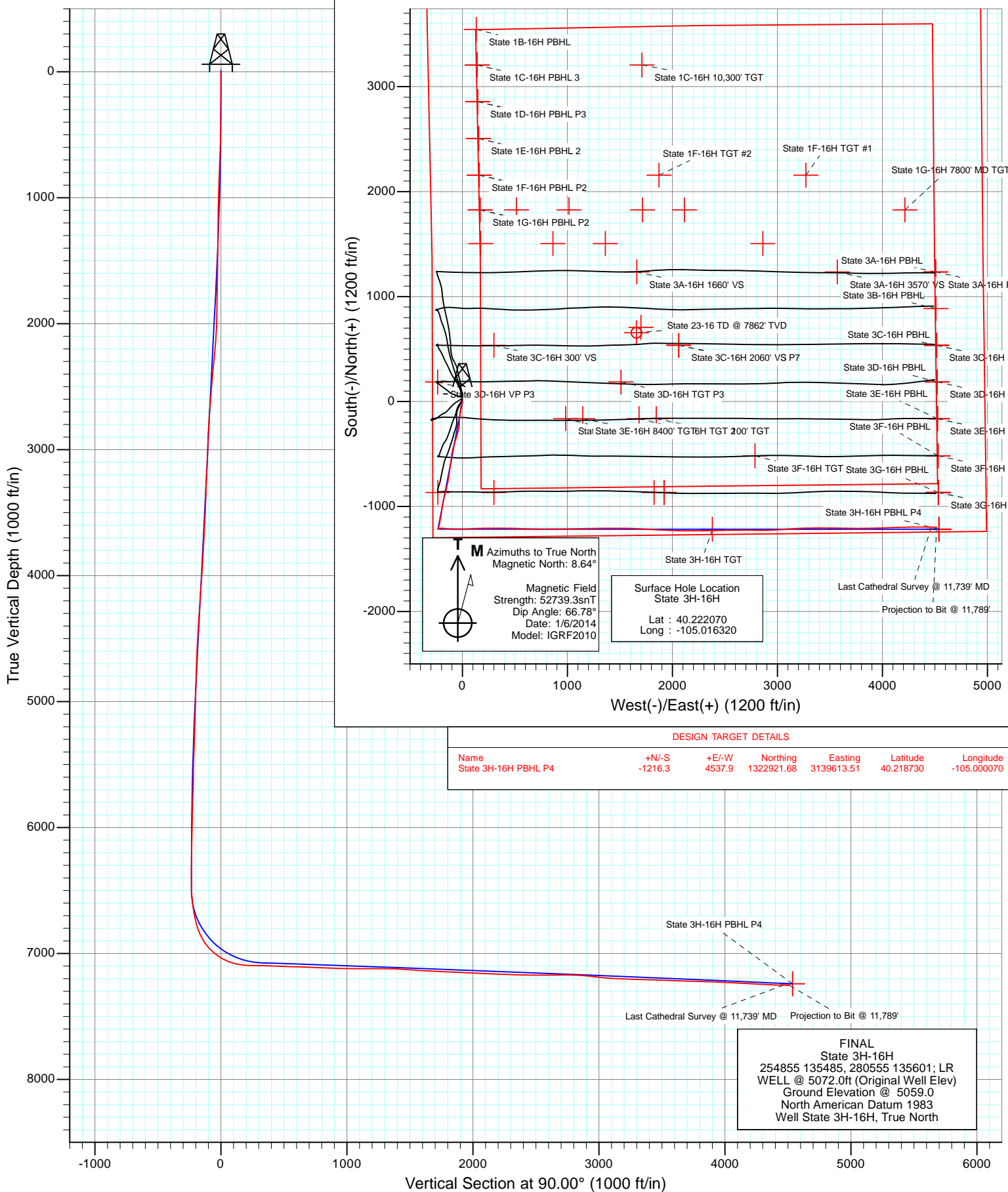




Project: DJ Wattenberg
 Site: S16-T3N-R68W (State)
 Well: State 3H-16H
 Wellbore: Hz
 Design: FINAL



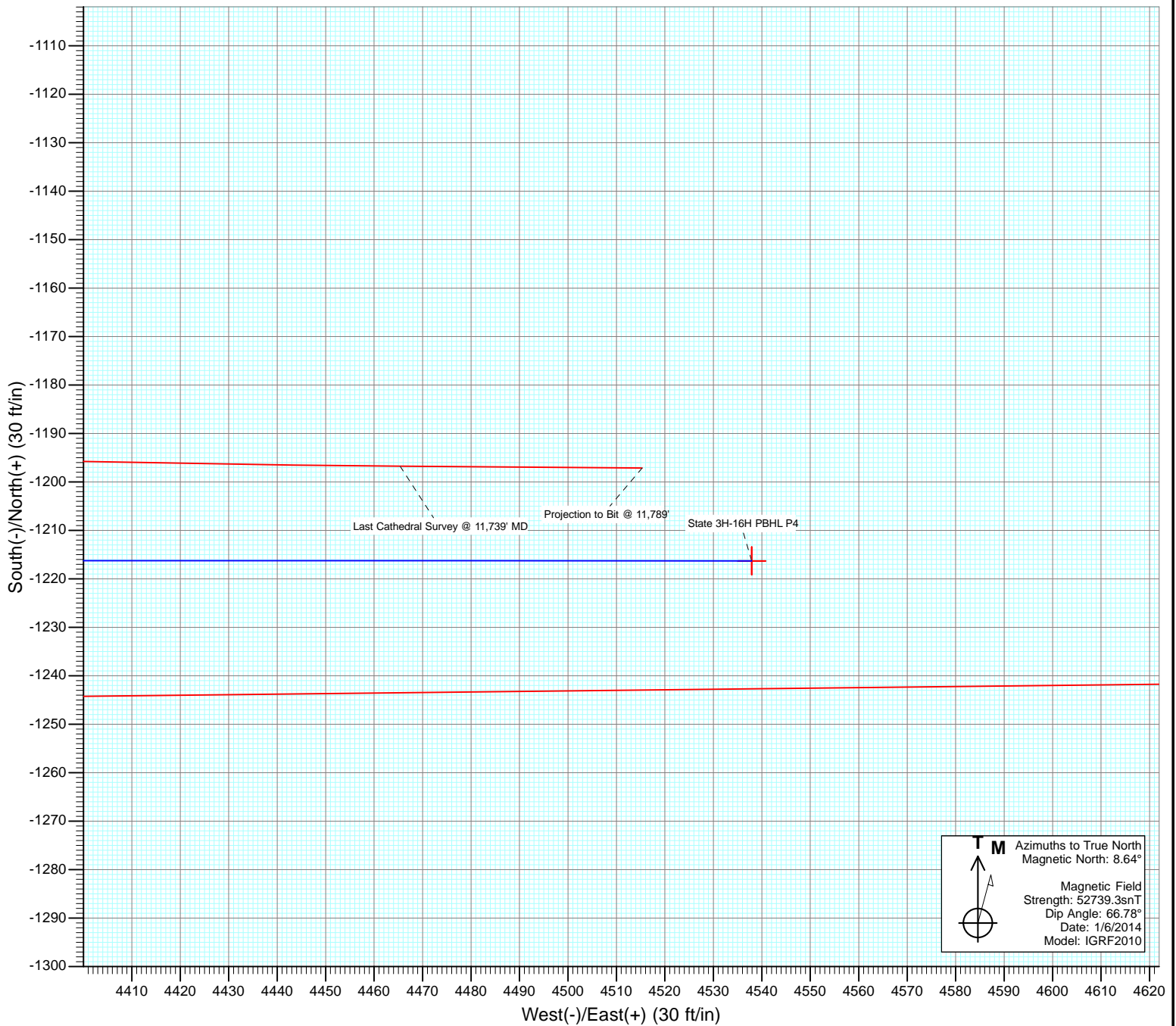
DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
State 3H-16H PBHL P4	-1216.3	4537.9	1322921.68	3139613.51	40.218730	-105.000070

FINAL
 State 3H-16H
 254855 135485, 280555 135601; LR
 WELL @ 5072.0ft (Original Well Elev)
 Ground Elevation @ 5059.0
 North American Datum 1983
 Well State 3H-16H, True North

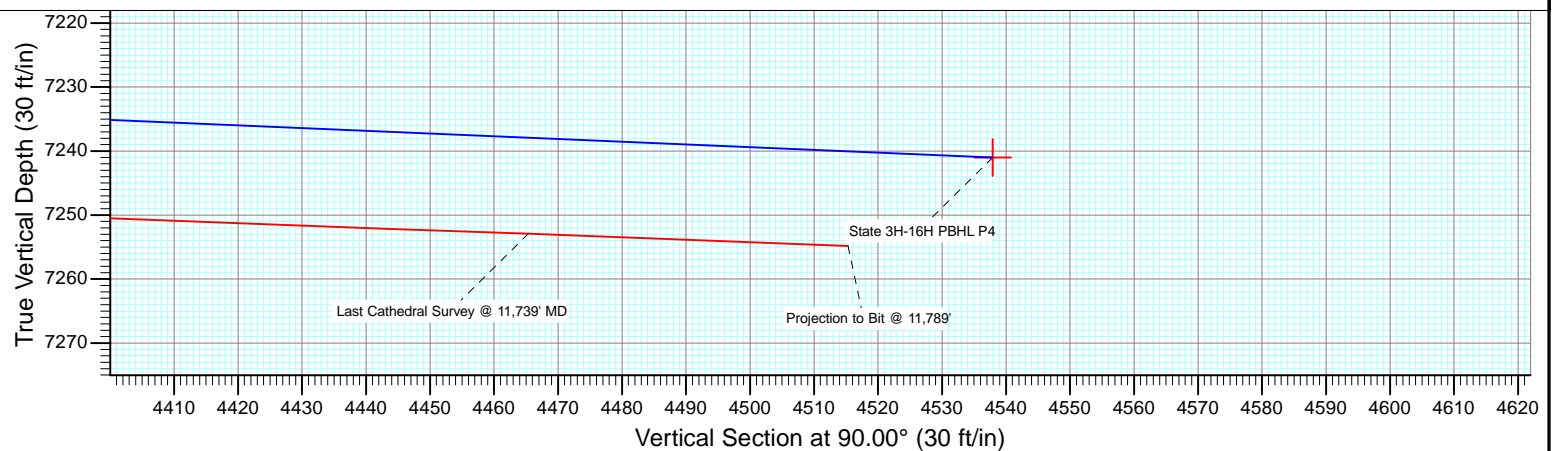


Project: DJ Wattenberg
Site: S16-T3N-R68W (State)
Well: State 3H-16H
Wellbore: Hz
Design: FINAL



T M Azimuths to True North
Magnetic North: 8.64°

Magnetic Field
Strength: 52739.3snT
Dip Angle: 66.78°
Date: 1/6/2014
Model: IGRF2010



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 3H-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5072.0ft (Original Well Elev)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5072.0ft (Original Well Elev)
Well: State 3H-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 3H-16H				
Well Position	+N/-S 0.0 ft	Northing: 1,324,113.18 ft	Latitude: 40.222070	
	+E/-W 0.0 ft	Easting: 3,135,069.04 ft	Longitude: -105.016320	
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 5,059.0 ft	

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2014	8.64	66.78	52,739

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	90.00

Survey Program		Date 1/17/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
144.0	11,789.0	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	
144.0	0.00	61.00	144.0	0.0	0.0	0.0	0.00	0.00	
235.0	0.60	152.00	235.0	-0.4	0.2	0.2	0.66	0.66	
327.0	1.80	182.80	327.0	-2.3	0.4	0.4	1.44	1.30	
419.0	3.00	194.60	418.9	-6.1	-0.3	-0.3	1.40	1.30	
511.0	4.30	196.70	510.7	-11.7	-1.9	-1.9	1.42	1.41	
603.0	5.60	199.10	602.4	-19.2	-4.4	-4.4	1.43	1.41	
695.0	7.00	198.10	693.8	-28.8	-7.6	-7.6	1.53	1.52	
787.0	8.40	196.10	785.0	-40.6	-11.2	-11.2	1.55	1.52	
862.0	8.70	192.80	859.1	-51.4	-13.9	-13.9	0.77	0.40	
918.0	8.70	191.00	914.5	-59.7	-15.7	-15.7	0.49	0.00	
1,010.0	8.00	190.80	1,005.5	-72.8	-18.2	-18.2	0.76	-0.76	
1,102.0	8.00	187.10	1,096.6	-85.4	-20.2	-20.2	0.56	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 3H-16H
Project:	DJ Wattenberg	TD Reference:	WELL @ 5072.0ft (Original Well Elev)
Site:	S16-T3N-R68W (State)	MVD Reference:	WELL @ 5072.0ft (Original Well Elev)
Well:	State 3H-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
1,194.0	6.90	184.80	1,187.8	-97.3	-21.5	-21.5	1.24	-1.20	
1,286.0	7.10	184.20	1,279.2	-108.5	-22.3	-22.3	0.23	0.22	
1,378.0	8.20	183.50	1,370.3	-120.7	-23.2	-23.2	1.20	1.20	
1,469.0	8.80	185.80	1,460.3	-134.1	-24.3	-24.3	0.76	0.66	
1,561.0	10.40	188.00	1,551.0	-149.3	-26.1	-26.1	1.78	1.74	
1,653.0	10.50	184.70	1,641.5	-165.9	-28.0	-28.0	0.66	0.11	
1,745.0	11.50	182.50	1,731.8	-183.4	-29.1	-29.1	1.18	1.09	
1,837.0	12.30	182.50	1,821.9	-202.4	-29.9	-29.9	0.87	0.87	
1,929.0	13.20	185.90	1,911.6	-222.6	-31.4	-31.4	1.27	0.98	
2,024.0	14.50	186.20	2,003.8	-245.2	-33.8	-33.8	1.37	1.37	
2,119.0	15.90	192.70	2,095.5	-269.7	-37.9	-37.9	2.32	1.47	
2,214.0	17.20	196.80	2,186.6	-295.9	-44.9	-44.9	1.84	1.37	
2,309.0	17.90	198.30	2,277.1	-323.2	-53.5	-53.5	0.88	0.74	
2,403.0	16.90	195.90	2,366.8	-350.1	-61.8	-61.8	1.31	-1.06	
2,498.0	17.70	197.50	2,457.5	-377.1	-69.9	-69.9	0.98	0.84	
2,593.0	15.40	194.00	2,548.6	-403.1	-77.3	-77.3	2.64	-2.42	
2,688.0	17.50	195.10	2,639.7	-429.2	-84.1	-84.1	2.23	2.21	
2,783.0	15.90	193.60	2,730.7	-455.6	-90.9	-90.9	1.74	-1.68	
2,878.0	16.20	192.30	2,822.0	-481.2	-96.7	-96.7	0.49	0.32	
2,973.0	17.00	189.60	2,913.0	-507.8	-101.9	-101.9	1.17	0.84	
3,068.0	14.50	184.20	3,004.5	-533.4	-105.1	-105.1	3.05	-2.63	
3,163.0	15.00	186.80	3,096.3	-557.5	-107.4	-107.4	0.87	0.53	
3,257.0	16.60	191.40	3,186.8	-582.7	-111.5	-111.5	2.16	1.70	
3,352.0	16.40	187.10	3,277.9	-609.3	-115.8	-115.8	1.30	-0.21	
3,448.0	15.70	186.80	3,370.1	-635.7	-119.0	-119.0	0.73	-0.73	
3,543.0	16.70	187.60	3,461.4	-662.0	-122.4	-122.4	1.08	1.05	
3,638.0	18.20	190.30	3,552.0	-690.1	-126.8	-126.8	1.79	1.58	
3,733.0	17.90	188.40	3,642.3	-719.1	-131.6	-131.6	0.70	-0.32	
3,828.0	17.70	187.70	3,732.8	-747.9	-135.7	-135.7	0.31	-0.21	
3,924.0	14.80	194.60	3,824.9	-774.2	-140.7	-140.7	3.62	-3.02	
4,019.0	14.60	192.30	3,916.8	-797.7	-146.3	-146.3	0.65	-0.21	
4,113.0	15.20	192.20	4,007.7	-821.3	-151.5	-151.5	0.64	0.64	
4,209.0	16.00	193.80	4,100.1	-846.4	-157.3	-157.3	0.95	0.83	
4,304.0	15.90	196.60	4,191.5	-871.6	-164.1	-164.1	0.82	-0.11	
4,399.0	14.60	195.10	4,283.1	-895.6	-171.0	-171.0	1.43	-1.37	
4,494.0	14.50	191.80	4,375.1	-918.9	-176.5	-176.5	0.88	-0.11	
4,589.0	14.70	191.80	4,467.0	-942.3	-181.4	-181.4	0.21	0.21	
4,684.0	15.40	190.60	4,558.8	-966.5	-186.2	-186.2	0.81	0.74	
4,779.0	14.30	190.00	4,650.6	-990.4	-190.6	-190.6	1.17	-1.16	
4,874.0	12.60	188.40	4,743.0	-1,012.2	-194.1	-194.1	1.83	-1.79	
4,969.0	11.80	188.20	4,835.8	-1,032.1	-197.0	-197.0	0.84	-0.84	
5,064.0	11.90	185.90	4,928.8	-1,051.5	-199.4	-199.4	0.51	0.11	
5,159.0	10.80	187.60	5,021.9	-1,070.0	-201.6	-201.6	1.21	-1.16	
5,254.0	10.20	188.80	5,115.4	-1,087.2	-204.0	-204.0	0.67	-0.63	
5,349.0	10.40	191.60	5,208.8	-1,103.9	-207.1	-207.1	0.57	0.21	
5,444.0	9.80	190.70	5,302.4	-1,120.2	-210.3	-210.3	0.65	-0.63	
5,538.0	9.10	192.60	5,395.1	-1,135.3	-213.4	-213.4	0.82	-0.74	
5,633.0	9.10	190.60	5,488.9	-1,150.1	-216.4	-216.4	0.33	0.00	
5,728.0	7.30	184.50	5,582.9	-1,163.5	-218.3	-218.3	2.10	-1.89	
5,822.0	5.80	189.30	5,676.3	-1,174.1	-219.5	-219.5	1.70	-1.60	
5,917.0	5.40	205.30	5,770.9	-1,182.9	-222.2	-222.2	1.69	-0.42	
6,012.0	4.20	201.30	5,865.5	-1,190.2	-225.4	-225.4	1.31	-1.26	
6,107.0	3.20	190.20	5,960.3	-1,196.0	-227.1	-227.1	1.29	-1.05	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 3H-16H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5072.0ft (Original Well Elev)
Site:	S16-T3N-R68W (State)	MD Reference:	WELL @ 5072.0ft (Original Well Elev)
Well:	State 3H-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
6,201.0	3.70	204.50	6,054.2	-1,201.4	-228.8	-228.8	1.05	0.53	
6,296.0	2.80	204.10	6,149.0	-1,206.3	-231.0	-231.0	0.95	-0.95	
6,391.0	2.00	205.30	6,243.9	-1,209.9	-232.7	-232.7	0.84	-0.84	
6,485.0	1.40	219.80	6,337.9	-1,212.3	-234.1	-234.1	0.78	-0.64	
6,579.0	1.70	85.50	6,431.9	-1,213.0	-233.5	-233.5	3.04	0.32	
6,611.0	1.20	87.50	6,463.9	-1,213.0	-232.7	-232.7	1.57	-1.56	
6,642.0	1.00	86.10	6,494.8	-1,212.9	-232.1	-232.1	0.65	-0.65	
6,674.0	2.30	89.10	6,526.8	-1,212.9	-231.1	-231.1	4.07	4.06	
6,705.0	4.40	81.90	6,557.8	-1,212.7	-229.3	-229.3	6.90	6.77	
6,737.0	7.00	75.70	6,589.6	-1,212.1	-226.2	-226.2	8.34	8.13	
6,768.0	9.50	76.10	6,620.3	-1,211.0	-221.9	-221.9	8.07	8.06	
6,800.0	10.10	77.60	6,651.8	-1,209.8	-216.6	-216.6	2.04	1.87	
6,831.0	11.10	77.50	6,682.3	-1,208.5	-211.1	-211.1	3.23	3.23	
6,863.0	10.50	83.20	6,713.7	-1,207.5	-205.2	-205.2	3.83	-1.87	
6,894.0	11.80	91.10	6,744.1	-1,207.2	-199.2	-199.2	6.46	4.19	
6,926.0	15.50	94.40	6,775.2	-1,207.6	-191.6	-191.6	11.81	11.56	
6,957.0	19.60	94.00	6,804.8	-1,208.3	-182.3	-182.3	13.23	13.23	
6,989.0	23.10	94.60	6,834.6	-1,209.2	-170.7	-170.7	10.96	10.94	
7,020.0	26.70	95.80	6,862.7	-1,210.4	-157.7	-157.7	11.73	11.61	
7,052.0	30.50	95.40	6,890.8	-1,211.9	-142.5	-142.5	11.89	11.87	
7,084.0	34.90	94.70	6,917.7	-1,213.4	-125.3	-125.3	13.80	13.75	
7,115.0	39.60	93.50	6,942.4	-1,214.7	-106.5	-106.5	15.34	15.16	
7,147.0	43.60	91.60	6,966.3	-1,215.7	-85.3	-85.3	13.11	12.50	
7,178.0	48.30	89.90	6,987.8	-1,215.9	-63.1	-63.1	15.66	15.16	
7,210.0	52.50	89.80	7,008.2	-1,215.9	-38.4	-38.4	13.13	13.12	
7,242.0	56.50	89.60	7,026.8	-1,215.7	-12.4	-12.4	12.51	12.50	
7,273.0	61.30	88.80	7,042.8	-1,215.4	14.2	14.2	15.64	15.48	
7,305.0	65.20	87.50	7,057.2	-1,214.4	42.7	42.7	12.72	12.19	
7,336.0	70.00	86.50	7,069.0	-1,212.9	71.3	71.3	15.77	15.48	
7,368.0	74.80	87.00	7,078.7	-1,211.2	101.8	101.8	15.07	15.00	
7,399.0	79.60	87.80	7,085.6	-1,209.8	132.0	132.0	15.69	15.48	
7,416.0	81.70	88.10	7,088.3	-1,209.2	148.7	148.7	12.48	12.35	
7,548.0	90.60	90.00	7,097.2	-1,207.1	280.3	280.3	6.89	6.74	
7,643.0	87.30	90.10	7,098.9	-1,207.1	375.3	375.3	3.48	-3.47	
7,737.0	88.50	91.60	7,102.4	-1,208.5	469.2	469.2	2.04	1.28	
7,832.0	88.20	92.10	7,105.1	-1,211.6	564.1	564.1	0.61	-0.32	
7,927.0	87.50	91.10	7,108.7	-1,214.3	659.0	659.0	1.28	-0.74	
8,022.0	87.90	90.30	7,112.5	-1,215.4	753.9	753.9	0.94	0.42	
8,116.0	88.60	90.00	7,115.4	-1,215.7	847.9	847.9	0.81	0.74	
8,211.0	87.20	90.10	7,118.8	-1,215.7	942.8	942.8	1.48	-1.47	
8,306.0	90.20	88.50	7,121.0	-1,214.6	1,037.8	1,037.8	3.58	3.16	
8,400.0	89.60	88.50	7,121.2	-1,212.1	1,131.7	1,131.7	0.64	-0.64	
8,495.0	90.40	88.60	7,121.2	-1,209.7	1,226.7	1,226.7	0.85	0.84	
8,590.0	89.40	89.90	7,121.3	-1,208.5	1,321.7	1,321.7	1.73	-1.05	
8,685.0	87.00	90.10	7,124.3	-1,208.5	1,416.6	1,416.6	2.54	-2.53	
8,779.0	85.40	89.50	7,130.5	-1,208.1	1,510.4	1,510.4	1.82	-1.70	
8,874.0	86.40	91.60	7,137.3	-1,209.1	1,605.2	1,605.2	2.44	1.05	
8,969.0	88.20	93.70	7,141.8	-1,213.4	1,700.0	1,700.0	2.91	1.89	
9,064.0	87.30	92.70	7,145.5	-1,218.7	1,794.7	1,794.7	1.42	-0.95	
9,158.0	86.90	92.50	7,150.3	-1,223.0	1,888.5	1,888.5	0.48	-0.43	
9,253.0	87.20	92.80	7,155.2	-1,227.4	1,983.3	1,983.3	0.45	0.32	
9,348.0	87.40	91.20	7,159.7	-1,230.7	2,078.1	2,078.1	1.70	0.21	
9,442.0	87.90	89.70	7,163.5	-1,231.4	2,172.0	2,172.0	1.68	0.53	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 3H-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5072.0ft (Original Well Elev)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5072.0ft (Original Well Elev)
Well: State 3H-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
9,537.0	88.30	90.10	7,166.7	-1,231.3	2,267.0	2,267.0	0.60	0.42	
9,631.0	87.70	88.60	7,169.9	-1,230.2	2,360.9	2,360.9	1.72	-0.64	
9,726.0	89.80	88.80	7,172.0	-1,228.0	2,455.9	2,455.9	2.22	2.21	
9,821.0	89.50	88.70	7,172.6	-1,226.0	2,550.8	2,550.8	0.33	-0.32	
9,916.0	91.30	89.70	7,171.9	-1,224.7	2,645.8	2,645.8	2.17	1.89	
10,011.0	89.80	90.80	7,171.0	-1,225.1	2,740.8	2,740.8	1.96	-1.58	
10,106.0	87.30	91.60	7,173.4	-1,227.1	2,835.8	2,835.8	2.76	-2.63	
10,201.0	83.30	86.80	7,181.2	-1,225.7	2,930.4	2,930.4	6.56	-4.21	
10,295.0	84.50	87.00	7,191.2	-1,220.7	3,023.7	3,023.7	1.29	1.28	
10,390.0	86.00	85.20	7,199.1	-1,214.2	3,118.2	3,118.2	2.46	1.58	
10,485.0	88.30	87.20	7,203.8	-1,208.0	3,212.8	3,212.8	3.21	2.42	
10,580.0	88.10	89.20	7,206.8	-1,205.0	3,307.7	3,307.7	2.12	-0.21	
10,674.0	88.30	90.80	7,209.7	-1,205.0	3,401.6	3,401.6	1.71	0.21	
10,769.0	88.20	90.80	7,212.6	-1,206.3	3,496.6	3,496.6	0.11	-0.11	
10,864.0	87.30	89.90	7,216.4	-1,206.9	3,591.5	3,591.5	1.34	-0.95	
10,958.0	88.70	91.60	7,219.6	-1,208.1	3,685.4	3,685.4	2.34	1.49	
11,053.0	87.80	89.40	7,222.5	-1,208.9	3,780.4	3,780.4	2.50	-0.95	
11,148.0	88.20	88.70	7,225.9	-1,207.4	3,875.3	3,875.3	0.85	0.42	
11,243.0	88.20	89.60	7,228.8	-1,206.0	3,970.3	3,970.3	0.95	0.00	
11,338.0	86.50	87.90	7,233.2	-1,203.9	4,065.1	4,065.1	2.53	-1.79	
11,432.0	86.70	85.60	7,238.8	-1,198.6	4,158.8	4,158.8	2.45	0.21	
11,527.0	87.70	89.50	7,243.4	-1,194.5	4,253.6	4,253.6	4.23	1.05	
11,622.0	86.80	91.00	7,248.0	-1,194.9	4,348.5	4,348.5	1.84	-0.95	
11,717.0	88.20	90.90	7,252.2	-1,196.5	4,443.4	4,443.4	1.48	1.47	
11,739.0	87.80	90.40	7,252.9	-1,196.8	4,465.4	4,465.4	2.91	-1.82	Last Cathedral Survey @ 11,739' MD
11,789.0	87.80	90.40	7,254.8	-1,197.1	4,515.3	4,515.3	0.00	0.00	Projection to Bit @ 11,789'

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 3H-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5072.0ft (Original Well Elev)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5072.0ft (Original Well Elev)
Well: State 3H-16H	North Reference: True
Wellbore: Hz	Survey Calculation Method: Minimum Curvature
Design: FINAL	Database: USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
State 3H-16H PBHL P3	0.00	0.00	7,228.0	-1,216.3	4,537.9	1,322,921.68	3,139,613.51	40.218730	-105.000070
- actual wellpath misses target center by 40.0ft at 11789.0ft MD (7254.8 TVD, -1197.1 N, 4515.3 E)									
- Point									
State 3H-16H PBHL	0.00	0.00	7,169.0	-1,216.3	4,537.9	1,322,921.68	3,139,613.51	40.218730	-105.000070
- actual wellpath misses target center by 90.8ft at 11789.0ft MD (7254.8 TVD, -1197.1 N, 4515.3 E)									
- Point									
State 3H-16H TGT	0.00	0.00	7,149.2	-1,216.1	2,379.3	1,322,910.05	3,137,454.97	40.218731	-105.007800
- actual wellpath misses target center by 25.4ft at 9649.3ft MD (7170.6 TVD, -1229.8 N, 2379.2 E)									
- Point									
State 3H-16H PBHL P4	0.00	0.00	7,241.0	-1,216.3	4,537.9	1,322,921.68	3,139,613.51	40.218730	-105.000070
- actual wellpath misses target center by 32.7ft at 11789.0ft MD (7254.8 TVD, -1197.1 N, 4515.3 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)		
11,739.0	7,252.9	-1,196.8	4,465.4	Last Cathedral Survey @ 11,739' MD	
11,789.0	7,254.8	-1,197.1	4,515.3	Projection to Bit @ 11,789'	

Checked By: _____	Approved By: _____	Date: _____
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EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S16-T3N-R68W (State)

State 3H-16H

Hz

Design: FINAL

Survey Report - Geographic

17 January, 2014

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 3H-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5072.0ft (Original Well Elev)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5072.0ft (Original Well Elev)
Well: State 3H-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 3H-16H				
Well Position +N/-S	0.0 ft	Northing: 1,324,113.18 ft	Latitude: 40.222070	
+E/-W	0.0 ft	Easting: 3,135,069.04 ft	Longitude: -105.016320	
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 5,059.0 ft	

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2014	8.64	66.78	52,739

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	90.00

Survey Program		Date 1/17/2014
From (ft)	To (ft)	Survey (Wellbore)
144.0	11,789.0	Survey #1 (Hz)
		Tool Name Geolink MWD
		Description 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	1,324,113.18	3,135,069.04	40.222070	-105.016320	
144.0	0.00	61.00	144.0	0.0	0.0	1,324,113.18	3,135,069.04	40.222070	-105.016320	
235.0	0.60	152.00	235.0	-0.4	0.2	1,324,112.76	3,135,069.27	40.222069	-105.016319	
327.0	1.80	182.80	327.0	-2.3	0.4	1,324,110.89	3,135,069.43	40.222064	-105.016319	
419.0	3.00	194.60	418.9	-6.1	-0.3	1,324,107.12	3,135,068.78	40.222053	-105.016321	
511.0	4.30	196.70	510.7	-11.7	-1.9	1,324,101.47	3,135,067.21	40.222038	-105.016327	
603.0	5.60	199.10	602.4	-19.2	-4.4	1,324,093.92	3,135,064.79	40.222017	-105.016336	
695.0	7.00	198.10	693.8	-28.8	-7.6	1,324,084.33	3,135,061.63	40.221991	-105.016347	
787.0	8.40	196.10	785.0	-40.6	-11.2	1,324,072.52	3,135,058.09	40.221959	-105.016360	
862.0	8.70	192.80	859.1	-51.4	-13.9	1,324,061.71	3,135,055.38	40.221929	-105.016370	
918.0	8.70	191.00	914.5	-59.7	-15.7	1,324,053.42	3,135,053.67	40.221906	-105.016376	
1,010.0	8.00	190.80	1,005.5	-72.8	-18.2	1,324,040.28	3,135,051.22	40.221870	-105.016386	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 3H-16H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5072.0ft (Original Well Elev)
Site:	S16-T3N-R68W (State)	MD Reference:	WELL @ 5072.0ft (Original Well Elev)
Well:	State 3H-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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
1,102.0	8.00	187.10	1,096.6	-85.4	-20.2	1,324,027.63	3,135,049.30	40.221835	-105.016393	
1,194.0	6.90	184.80	1,187.8	-97.3	-21.5	1,324,015.76	3,135,048.11	40.221803	-105.016397	
1,286.0	7.10	184.20	1,279.2	-108.5	-22.3	1,324,004.58	3,135,047.29	40.221772	-105.016400	
1,378.0	8.20	183.50	1,370.3	-120.7	-23.2	1,323,992.36	3,135,046.54	40.221739	-105.016403	
1,469.0	8.80	185.80	1,460.3	-134.1	-24.3	1,323,978.95	3,135,045.51	40.221702	-105.016407	
1,561.0	10.40	188.00	1,551.0	-149.3	-26.1	1,323,963.71	3,135,043.73	40.221660	-105.016414	
1,653.0	10.50	184.70	1,641.5	-165.9	-28.0	1,323,947.13	3,135,041.98	40.221615	-105.016420	
1,745.0	11.50	182.50	1,731.8	-183.4	-29.1	1,323,929.60	3,135,040.99	40.221567	-105.016424	
1,837.0	12.30	182.50	1,821.9	-202.4	-29.9	1,323,910.65	3,135,040.26	40.221514	-105.016427	
1,929.0	13.20	185.90	1,911.6	-222.6	-31.4	1,323,890.40	3,135,038.86	40.221459	-105.016433	
2,024.0	14.50	186.20	2,003.8	-245.2	-33.8	1,323,867.77	3,135,036.59	40.221397	-105.016441	
2,119.0	15.90	192.70	2,095.5	-269.7	-37.9	1,323,843.23	3,135,032.58	40.221330	-105.016456	
2,214.0	17.20	196.80	2,186.6	-295.9	-44.9	1,323,817.05	3,135,025.80	40.221258	-105.016481	
2,309.0	17.90	198.30	2,277.1	-323.2	-53.5	1,323,789.69	3,135,017.30	40.221183	-105.016512	
2,403.0	16.90	195.90	2,366.8	-350.1	-61.8	1,323,762.79	3,135,009.17	40.221109	-105.016542	
2,498.0	17.70	197.50	2,457.5	-377.1	-69.9	1,323,735.70	3,135,001.19	40.221035	-105.016571	
2,593.0	15.40	194.00	2,548.6	-403.1	-77.3	1,323,709.64	3,134,993.94	40.220963	-105.016597	
2,688.0	17.50	195.10	2,639.7	-429.2	-84.1	1,323,683.57	3,134,987.31	40.220892	-105.016621	
2,783.0	15.90	193.60	2,730.7	-455.6	-90.9	1,323,657.09	3,134,980.67	40.220819	-105.016646	
2,878.0	16.20	192.30	2,822.0	-481.2	-96.7	1,323,631.46	3,134,974.93	40.220749	-105.016667	
2,973.0	17.00	189.60	2,913.0	-507.8	-101.9	1,323,604.80	3,134,969.93	40.220676	-105.016685	
3,068.0	14.50	184.20	3,004.5	-533.4	-105.1	1,323,579.22	3,134,966.89	40.220606	-105.016697	
3,163.0	15.00	186.80	3,096.3	-557.5	-107.4	1,323,555.14	3,134,964.69	40.220540	-105.016705	
3,257.0	16.60	191.40	3,186.8	-582.7	-111.5	1,323,529.87	3,134,960.73	40.220470	-105.016720	
3,352.0	16.40	187.10	3,277.9	-609.3	-115.8	1,323,503.24	3,134,956.54	40.220397	-105.016735	
3,448.0	15.70	186.80	3,370.1	-635.7	-119.0	1,323,476.87	3,134,953.47	40.220325	-105.016747	
3,543.0	16.70	187.60	3,461.4	-662.0	-122.4	1,323,450.56	3,134,950.29	40.220253	-105.016758	
3,638.0	18.20	190.30	3,552.0	-690.1	-126.8	1,323,422.41	3,134,945.98	40.220176	-105.016774	
3,733.0	17.90	188.40	3,642.3	-719.1	-131.6	1,323,393.34	3,134,941.35	40.220096	-105.016792	
3,828.0	17.70	187.70	3,732.8	-747.9	-135.7	1,323,364.57	3,134,937.44	40.220017	-105.016806	
3,924.0	14.80	194.60	3,824.9	-774.2	-140.7	1,323,338.20	3,134,932.54	40.219945	-105.016824	
4,019.0	14.60	192.30	3,916.8	-797.7	-146.3	1,323,314.73	3,134,927.06	40.219880	-105.016844	
4,113.0	15.20	192.20	4,007.7	-821.3	-151.5	1,323,291.09	3,134,922.06	40.219816	-105.016863	
4,209.0	16.00	193.80	4,100.1	-846.4	-157.3	1,323,265.90	3,134,916.38	40.219746	-105.016883	
4,304.0	15.90	196.60	4,191.5	-871.6	-164.1	1,323,240.68	3,134,909.68	40.219677	-105.016908	
4,399.0	14.60	195.10	4,283.1	-895.6	-171.0	1,323,216.61	3,134,902.97	40.219611	-105.016932	
4,494.0	14.50	191.80	4,375.1	-918.9	-176.5	1,323,193.38	3,134,897.55	40.219548	-105.016952	
4,589.0	14.70	191.80	4,467.0	-942.3	-181.4	1,323,169.91	3,134,892.78	40.219483	-105.016970	
4,684.0	15.40	190.60	4,558.8	-966.5	-186.2	1,323,145.69	3,134,888.12	40.219417	-105.016987	
4,779.0	14.30	190.00	4,650.6	-990.4	-190.6	1,323,121.71	3,134,883.90	40.219351	-105.017003	
4,874.0	12.60	188.40	4,743.0	-1,012.2	-194.1	1,323,099.89	3,134,880.46	40.219291	-105.017015	
4,969.0	11.80	188.20	4,835.8	-1,032.1	-197.0	1,323,080.01	3,134,877.67	40.219237	-105.017026	
5,064.0	11.90	185.90	4,928.8	-1,051.5	-199.4	1,323,060.64	3,134,875.39	40.219184	-105.017034	
5,159.0	10.80	187.60	5,021.9	-1,070.0	-201.6	1,323,042.06	3,134,873.30	40.219133	-105.017042	
5,254.0	10.20	188.80	5,115.4	-1,087.2	-204.0	1,323,024.91	3,134,870.93	40.219086	-105.017051	
5,349.0	10.40	191.60	5,208.8	-1,103.9	-207.1	1,323,008.18	3,134,868.01	40.219040	-105.017062	
5,444.0	9.80	190.70	5,302.4	-1,120.2	-210.3	1,322,991.82	3,134,864.88	40.218995	-105.017073	
5,538.0	9.10	192.60	5,395.1	-1,135.3	-213.4	1,322,976.69	3,134,861.85	40.218953	-105.017084	
5,633.0	9.10	190.60	5,488.9	-1,150.1	-216.4	1,322,961.96	3,134,858.91	40.218913	-105.017095	
5,728.0	7.30	184.50	5,582.9	-1,163.5	-218.3	1,322,948.54	3,134,857.13	40.218876	-105.017102	
5,822.0	5.80	189.30	5,676.3	-1,174.1	-219.5	1,322,937.89	3,134,855.95	40.218847	-105.017106	
5,917.0	5.40	205.30	5,770.9	-1,182.9	-222.2	1,322,929.10	3,134,853.31	40.218823	-105.017116	
6,012.0	4.20	201.30	5,865.5	-1,190.2	-225.4	1,322,921.80	3,134,850.18	40.218803	-105.017127	
6,107.0	3.20	190.20	5,960.3	-1,196.0	-227.1	1,322,915.94	3,134,848.48	40.218787	-105.017133	
6,201.0	3.70	204.50	6,054.2	-1,201.4	-228.8	1,322,910.59	3,134,846.78	40.218772	-105.017140	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 3H-16H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5072.0ft (Original Well Elev)
Site:	S16-T3N-R68W (State)	MD Reference:	WELL @ 5072.0ft (Original Well Elev)
Well:	State 3H-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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
6,296.0	2.80	204.10	6,149.0	-1,206.3	-231.0	1,322,905.67	3,134,844.59	40.218759	-105.017148	
6,391.0	2.00	205.30	6,243.9	-1,209.9	-232.7	1,322,902.04	3,134,842.96	40.218749	-105.017154	
6,485.0	1.40	219.80	6,337.9	-1,212.3	-234.1	1,322,899.67	3,134,841.53	40.218742	-105.017159	
6,579.0	1.70	85.50	6,431.9	-1,213.0	-233.5	1,322,898.90	3,134,842.19	40.218740	-105.017156	
6,611.0	1.20	87.50	6,463.8	-1,213.0	-232.7	1,322,898.96	3,134,843.00	40.218740	-105.017153	
6,642.0	1.00	86.10	6,494.8	-1,212.9	-232.1	1,322,898.99	3,134,843.59	40.218740	-105.017151	
6,674.0	2.30	89.10	6,526.8	-1,212.9	-231.1	1,322,899.03	3,134,844.51	40.218740	-105.017148	
6,705.0	4.40	81.90	6,557.8	-1,212.7	-229.3	1,322,899.21	3,134,846.31	40.218741	-105.017142	
6,737.0	7.00	75.70	6,589.6	-1,212.1	-226.2	1,322,899.89	3,134,849.41	40.218743	-105.017130	
6,768.0	9.50	76.10	6,620.3	-1,211.0	-221.9	1,322,900.99	3,134,853.72	40.218746	-105.017115	
6,800.0	10.10	77.60	6,651.8	-1,209.8	-216.6	1,322,902.26	3,134,859.02	40.218749	-105.017096	
6,831.0	11.10	77.50	6,682.3	-1,208.5	-211.1	1,322,903.52	3,134,864.58	40.218752	-105.017076	
6,863.0	10.50	83.20	6,713.7	-1,207.5	-205.2	1,322,904.56	3,134,870.48	40.218755	-105.017055	
6,894.0	11.80	91.10	6,744.1	-1,207.2	-199.2	1,322,904.87	3,134,876.45	40.218756	-105.017034	
6,926.0	15.50	94.40	6,775.2	-1,207.6	-191.6	1,322,904.52	3,134,883.99	40.218755	-105.017007	
6,957.0	19.60	94.00	6,804.8	-1,208.3	-182.3	1,322,903.89	3,134,893.31	40.218753	-105.016973	
6,989.0	23.10	94.60	6,834.6	-1,209.2	-170.7	1,322,903.07	3,134,904.93	40.218751	-105.016932	
7,020.0	26.70	95.80	6,862.7	-1,210.4	-157.7	1,322,901.95	3,134,917.93	40.218747	-105.016885	
7,052.0	30.50	95.40	6,890.8	-1,211.9	-142.5	1,322,900.54	3,134,933.19	40.218743	-105.016830	
7,084.0	34.90	94.70	6,917.7	-1,213.4	-125.3	1,322,899.12	3,134,950.41	40.218739	-105.016769	
7,115.0	39.60	93.50	6,942.4	-1,214.7	-106.5	1,322,897.89	3,134,969.13	40.218735	-105.016702	
7,147.0	43.60	91.60	6,966.3	-1,215.7	-85.3	1,322,897.08	3,134,990.35	40.218733	-105.016626	
7,178.0	48.30	89.90	6,987.8	-1,215.9	-63.1	1,322,896.92	3,135,012.62	40.218732	-105.016546	
7,210.0	52.50	89.80	7,008.2	-1,215.9	-38.4	1,322,897.12	3,135,037.27	40.218732	-105.016458	
7,242.0	56.50	89.60	7,026.8	-1,215.7	-12.4	1,322,897.40	3,135,063.32	40.218733	-105.016365	
7,273.0	61.30	88.80	7,042.8	-1,215.4	14.2	1,322,897.92	3,135,089.85	40.218734	-105.016269	
7,305.0	65.20	87.50	7,057.2	-1,214.4	42.7	1,322,899.00	3,135,118.40	40.218736	-105.016167	
7,336.0	70.00	86.50	7,069.0	-1,212.9	71.3	1,322,900.66	3,135,147.00	40.218740	-105.016065	
7,368.0	74.80	87.00	7,078.7	-1,211.2	101.8	1,322,902.56	3,135,177.44	40.218745	-105.015956	
7,399.0	79.60	87.80	7,085.6	-1,209.8	132.0	1,322,904.09	3,135,207.62	40.218749	-105.015848	
7,416.0	81.70	88.10	7,088.3	-1,209.2	148.7	1,322,904.78	3,135,224.38	40.218751	-105.015788	
7,548.0	90.60	90.00	7,097.2	-1,207.1	280.3	1,322,907.67	3,135,355.92	40.218757	-105.015317	
7,643.0	87.30	90.10	7,098.9	-1,207.1	375.3	1,322,908.10	3,135,450.89	40.218756	-105.014976	
7,737.0	88.50	91.60	7,102.4	-1,208.5	469.2	1,322,907.22	3,135,544.82	40.218752	-105.014640	
7,832.0	88.20	92.10	7,105.1	-1,211.6	564.1	1,322,904.68	3,135,639.75	40.218744	-105.014300	
7,927.0	87.50	91.10	7,108.7	-1,214.3	659.0	1,322,902.54	3,135,734.66	40.218737	-105.013960	
8,022.0	87.90	90.30	7,112.5	-1,215.4	753.9	1,322,901.90	3,135,829.58	40.218734	-105.013621	
8,116.0	88.60	90.00	7,115.4	-1,215.7	847.9	1,322,902.17	3,135,923.53	40.218733	-105.013284	
8,211.0	87.20	90.10	7,118.8	-1,215.7	942.8	1,322,902.60	3,136,018.47	40.218733	-105.012944	
8,306.0	90.20	88.50	7,121.0	-1,214.6	1,037.8	1,322,904.28	3,136,113.41	40.218736	-105.012604	
8,400.0	89.60	88.50	7,121.2	-1,212.1	1,131.7	1,322,907.25	3,136,207.36	40.218743	-105.012268	
8,495.0	90.40	88.60	7,121.2	-1,209.7	1,226.7	1,322,910.18	3,136,302.32	40.218749	-105.011928	
8,590.0	89.40	89.90	7,121.3	-1,208.5	1,321.7	1,322,911.94	3,136,397.30	40.218753	-105.011587	
8,685.0	87.00	90.10	7,124.3	-1,208.5	1,416.6	1,322,912.46	3,136,492.24	40.218753	-105.011247	
8,779.0	85.40	89.50	7,130.5	-1,208.1	1,510.4	1,322,913.29	3,136,586.03	40.218753	-105.010912	
8,874.0	86.40	91.60	7,137.3	-1,209.1	1,605.2	1,322,912.90	3,136,680.78	40.218751	-105.010572	
8,969.0	88.20	93.70	7,141.8	-1,213.4	1,700.0	1,322,909.03	3,136,775.59	40.218739	-105.010233	
9,064.0	87.30	92.70	7,145.5	-1,218.7	1,794.7	1,322,904.25	3,136,870.39	40.218724	-105.009893	
9,158.0	86.90	92.50	7,150.3	-1,223.0	1,888.5	1,322,900.50	3,136,964.20	40.218713	-105.009558	
9,253.0	87.20	92.80	7,155.2	-1,227.4	1,983.3	1,322,896.63	3,137,058.99	40.218701	-105.009218	
9,348.0	87.40	91.20	7,159.7	-1,230.7	2,078.1	1,322,893.84	3,137,153.84	40.218691	-105.008879	
9,442.0	87.90	89.70	7,163.5	-1,231.4	2,172.0	1,322,893.61	3,137,247.76	40.218689	-105.008542	
9,537.0	88.30	90.10	7,166.7	-1,231.3	2,267.0	1,322,894.29	3,137,342.70	40.218690	-105.008202	
9,631.0	87.70	88.60	7,169.9	-1,230.2	2,360.9	1,322,895.87	3,137,436.63	40.218693	-105.007866	
9,726.0	89.80	88.80	7,172.0	-1,228.0	2,455.9	1,322,898.54	3,137,531.57	40.218699	-105.007526	

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well State 3H-16H
Project: DJ Wattenberg	TVD Reference: WELL @ 5072.0ft (Original Well Elev)
Site: S16-T3N-R68W (State)	MD Reference: WELL @ 5072.0ft (Original Well Elev)
Well: State 3H-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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
9,821.0	89.50	88.70	7,172.6	-1,226.0	2,550.8	1,322,901.14	3,137,626.53	40.218704	-105.007186	
9,916.0	91.30	89.70	7,171.9	-1,224.7	2,645.8	1,322,902.98	3,137,721.50	40.218708	-105.006846	
10,011.0	89.80	90.80	7,171.0	-1,225.1	2,740.8	1,322,903.08	3,137,816.50	40.218707	-105.006506	
10,106.0	87.30	91.60	7,173.4	-1,227.1	2,835.8	1,322,901.61	3,137,911.45	40.218701	-105.006166	
10,201.0	83.30	86.80	7,181.2	-1,225.7	2,930.4	1,322,903.44	3,138,006.06	40.218705	-105.005827	
10,295.0	84.50	87.00	7,191.2	-1,220.7	3,023.7	1,322,909.00	3,138,099.36	40.218719	-105.005493	
10,390.0	86.00	85.20	7,199.1	-1,214.2	3,118.2	1,322,915.96	3,138,193.77	40.218736	-105.005154	
10,485.0	88.30	87.20	7,203.8	-1,208.0	3,212.8	1,322,922.76	3,138,288.40	40.218753	-105.004815	
10,580.0	88.10	89.20	7,206.8	-1,205.0	3,307.7	1,322,926.26	3,138,383.26	40.218762	-105.004476	
10,674.0	88.30	90.80	7,209.7	-1,205.0	3,401.6	1,322,926.77	3,138,477.21	40.218762	-105.004139	
10,769.0	88.20	90.80	7,212.6	-1,206.3	3,496.6	1,322,925.96	3,138,572.16	40.218758	-105.003799	
10,864.0	87.30	89.90	7,216.4	-1,206.9	3,591.5	1,322,925.90	3,138,667.09	40.218756	-105.003459	
10,958.0	88.70	91.60	7,219.6	-1,208.1	3,685.4	1,322,925.18	3,138,761.02	40.218753	-105.003123	
11,053.0	87.80	89.40	7,222.5	-1,208.9	3,780.4	1,322,924.87	3,138,855.97	40.218751	-105.002783	
11,148.0	88.20	88.70	7,225.9	-1,207.4	3,875.3	1,322,926.96	3,138,950.89	40.218755	-105.002443	
11,243.0	88.20	89.60	7,228.8	-1,206.0	3,970.3	1,322,928.89	3,139,045.82	40.218759	-105.002103	
11,338.0	86.50	87.90	7,233.2	-1,203.9	4,065.1	1,322,931.48	3,139,140.68	40.218764	-105.001763	
11,432.0	86.70	85.60	7,238.8	-1,198.6	4,158.8	1,322,937.31	3,139,234.33	40.218779	-105.001428	
11,527.0	87.70	89.50	7,243.4	-1,194.5	4,253.6	1,322,941.88	3,139,329.08	40.218790	-105.001088	
11,622.0	86.80	91.00	7,248.0	-1,194.9	4,348.5	1,322,941.98	3,139,423.97	40.218789	-105.000749	
11,717.0	88.20	90.90	7,252.2	-1,196.5	4,443.4	1,322,940.93	3,139,518.87	40.218784	-105.000409	
11,739.0	87.80	90.40	7,252.9	-1,196.8	4,465.4	1,322,940.80	3,139,540.86	40.218784	-105.000330	
Last Cathedral Survey @ 11,739' MD										
11,789.0	87.80	90.40	7,254.8	-1,197.1	4,515.3	1,322,940.72	3,139,590.82	40.218783	-105.000151	
Projection to Bit @ 11,789'										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
State 3H-16H PBHL P4	0.00	0.00	7,241.0	-1,216.3	4,537.9	1,322,921.68	3,139,613.51	40.218730	-105.000070	
- hit/miss target										
- Shape										
- actual wellpath misses target center by 32.7ft at 11789.0ft MD (7254.8 TVD, -1197.1 N, 4515.3 E)										
- Point										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,739.0	7,252.9	-1,196.8	4,465.4	Last Cathedral Survey @ 11,739' MD	
11,789.0	7,254.8	-1,197.1	4,515.3	Projection to Bit @ 11,789'	

Checked By: _____ Approved By: _____ Date: _____