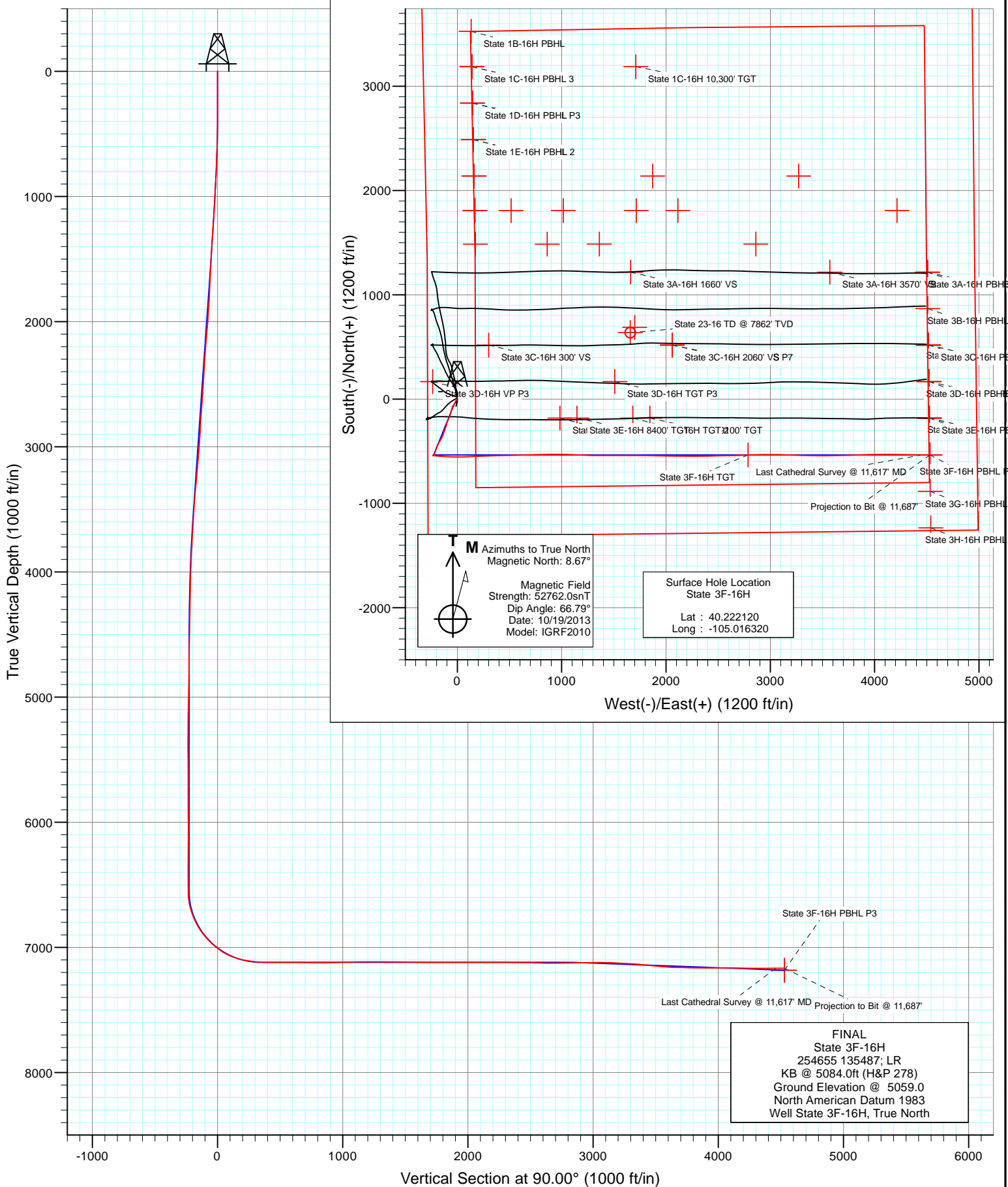


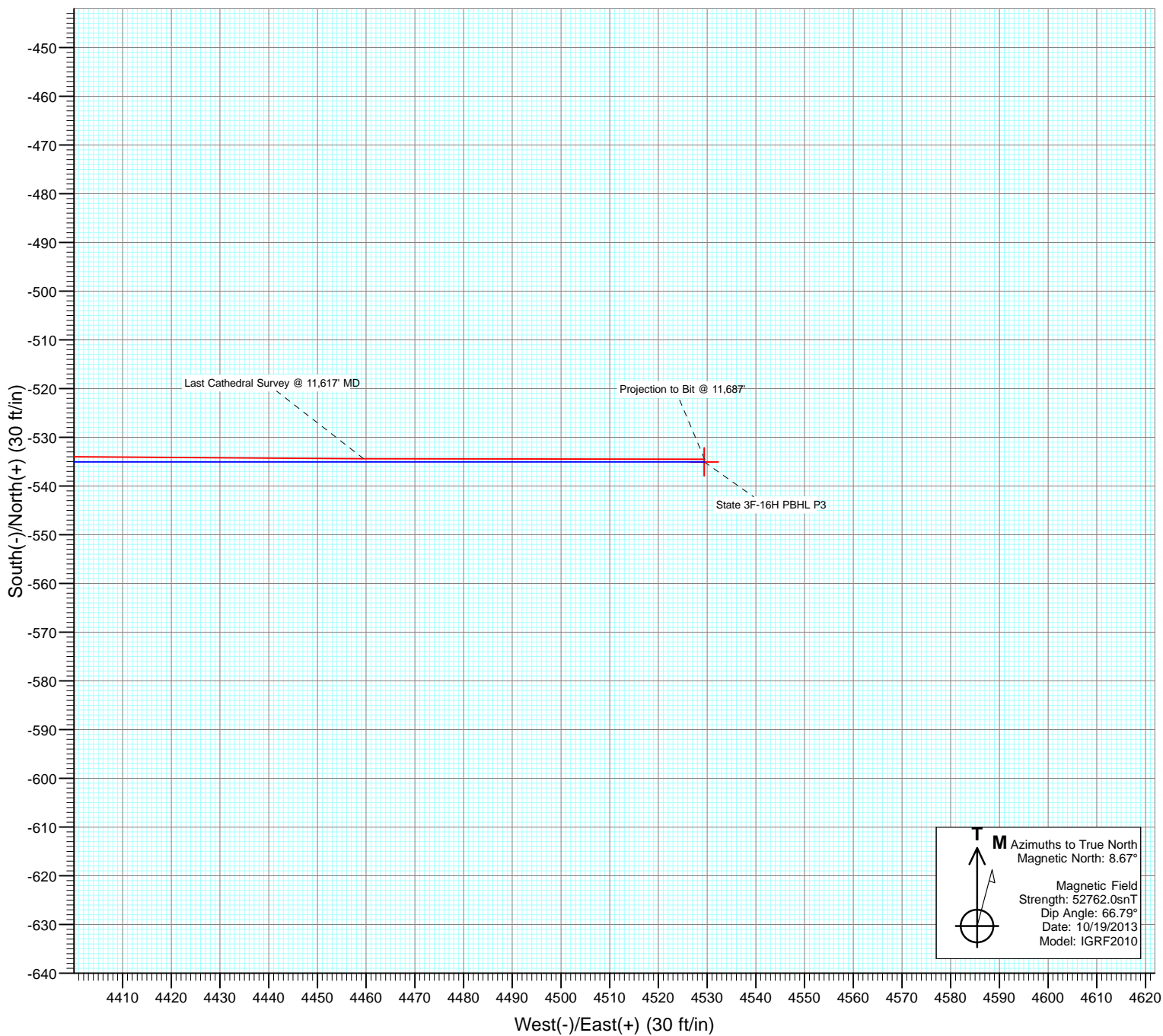


Project: DJ Wattenberg  
Site: S16-T3N-R68W (State)  
Well: State 3F-16H  
Wellbore: Hz  
Design: FINAL



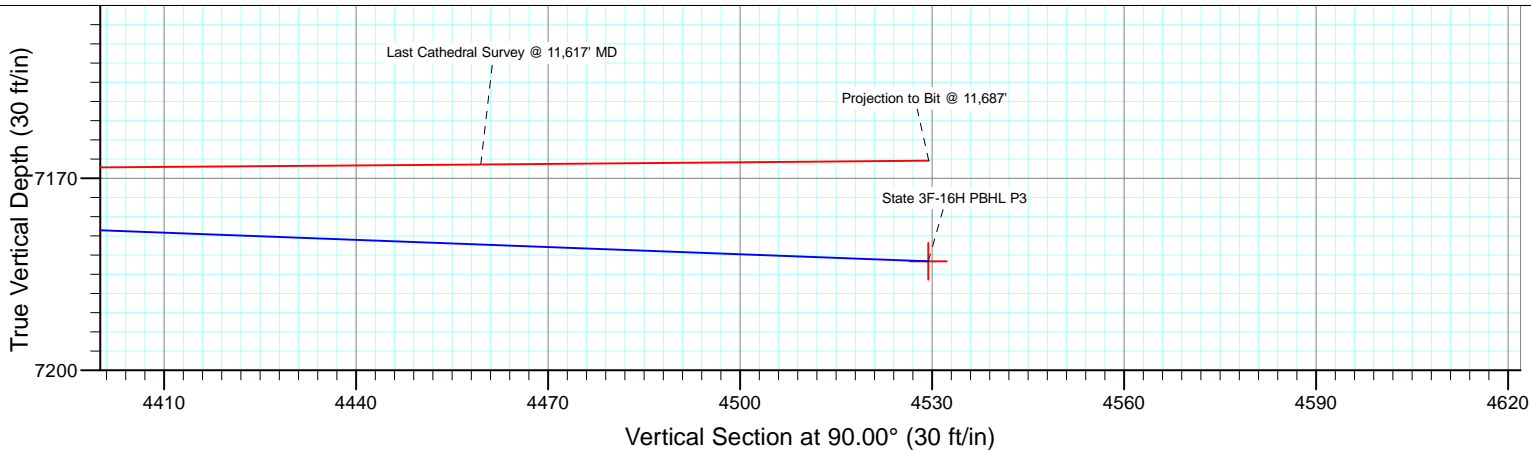


Project: DJ Wattenberg  
Site: S16-T3N-R68W (State)  
Well: State 3F-16H  
Wellbore: Hz  
Design: FINAL



**T** M Azimuths to True North  
Magnetic North: 8.67°

Magnetic Field  
Strength: 52762.0snT  
Dip Angle: 66.79°  
Date: 10/19/2013  
Model: IGRF2010



# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well State 3F-16H
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> KB @ 5084.0ft (H&P 278)
<b>Site:</b> S16-T3N-R68W (State)	<b>MD Reference:</b> KB @ 5084.0ft (H&P 278)
<b>Well:</b> State 3F-16H	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> USA EDM 5000 Multi Users DB

<b>Project</b> DJ Wattenberg		
<b>Map System:</b> US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b> North American Datum 1983		
<b>Map Zone:</b> Colorado Northern Zone		

<b>Site</b> S16-T3N-R68W (State)				
<b>Site Position:</b>	<b>Northing:</b>	1,326,575.12 ft	<b>Latitude:</b>	40.228760
<b>From:</b> Lat/Long	<b>Easting:</b>	3,139,542.66 ft	<b>Longitude:</b>	-105.000250
<b>Position Uncertainty:</b> 0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.32 °

<b>Well</b> State 3F-16H				
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,324,131.39 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,135,068.94 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Latitude:</b>	40.222120
			<b>Longitude:</b>	-105.016320
			<b>Ground Level:</b>	5,059.0 ft

<b>Wellbore</b> Hz					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	10/19/2013	8.67	66.79	52,762

<b>Design</b> FINAL				
<b>Audit Notes:</b>				
<b>Version:</b> 1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	90.00

<b>Survey Program</b>		<b>Date</b> 12/26/2013
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>
144.0	11,687.0	Survey #1 (Hz)
		<b>Tool Name</b>
		Geolink MWD
		<b>Description</b>
		Geolink MWD

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	0.10	46.20	144.0	0.1	0.1	0.1	0.07	0.07	
235.0	0.30	36.30	235.0	0.3	0.3	0.3	0.22	0.22	
327.0	0.10	28.30	327.0	0.6	0.5	0.5	0.22	-0.22	
419.0	0.30	323.10	419.0	0.9	0.4	0.4	0.30	0.22	
511.0	1.10	229.80	511.0	0.5	-0.5	-0.5	1.26	0.87	
603.0	2.30	219.30	603.0	-1.5	-2.3	-2.3	1.34	1.30	
695.0	3.60	215.90	694.8	-5.3	-5.2	-5.2	1.43	1.41	
787.0	5.00	215.50	786.6	-10.9	-9.2	-9.2	1.52	1.52	
862.0	5.90	209.80	861.2	-16.9	-13.0	-13.0	1.40	1.20	
1,010.0	6.00	208.70	1,008.4	-30.3	-20.5	-20.5	0.10	0.07	
1,102.0	7.50	209.30	1,099.8	-39.7	-25.7	-25.7	1.63	1.63	
1,194.0	6.40	218.20	1,191.1	-49.0	-31.9	-31.9	1.67	-1.20	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well State 3F-16H
<b>Project:</b>	DJ Wattenberg	<b>TD Reference:</b>	KB @ 5084.0ft (H&P 278)
<b>Site:</b>	S16-T3N-R68W (State)	<b>MD Reference:</b>	KB @ 5084.0ft (H&P 278)
<b>Well:</b>	State 3F-16H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,286.0	7.20	210.00	1,282.5	-58.0	-37.9	-37.9	1.37	0.87	
1,378.0	8.40	210.40	1,373.6	-68.8	-44.2	-44.2	1.31	1.30	
1,469.0	9.10	197.40	1,463.6	-81.4	-49.7	-49.7	2.30	0.77	
1,561.0	9.80	197.00	1,554.3	-95.8	-54.2	-54.2	0.76	0.76	
1,653.0	10.40	190.20	1,644.9	-111.5	-57.9	-57.9	1.45	0.65	
1,745.0	10.40	194.90	1,735.4	-127.7	-61.5	-61.5	0.92	0.00	
1,837.0	10.80	200.80	1,825.8	-143.8	-66.7	-66.7	1.26	0.43	
1,929.0	11.10	198.80	1,916.1	-160.2	-72.6	-72.6	0.53	0.33	
2,024.0	10.90	202.10	2,009.4	-177.2	-79.0	-79.0	0.70	-0.21	
2,119.0	11.90	206.00	2,102.5	-194.3	-86.6	-86.6	1.33	1.05	
2,214.0	10.50	201.20	2,195.7	-211.2	-94.1	-94.1	1.77	-1.47	
2,308.0	12.90	197.70	2,287.8	-229.2	-100.4	-100.4	2.66	2.55	
2,403.0	12.60	195.00	2,380.4	-249.3	-106.3	-106.3	0.70	-0.32	
2,498.0	12.20	198.60	2,473.2	-268.8	-112.1	-112.1	0.92	-0.42	
2,593.0	11.60	195.80	2,566.2	-287.5	-118.0	-118.0	0.88	-0.63	
2,688.0	12.00	202.50	2,659.2	-305.8	-124.3	-124.3	1.50	0.42	
2,783.0	10.90	200.80	2,752.3	-323.4	-131.3	-131.3	1.21	-1.16	
2,878.0	9.60	195.30	2,845.8	-339.4	-136.6	-136.6	1.71	-1.37	
2,973.0	10.50	202.30	2,939.3	-355.1	-142.0	-142.0	1.60	0.95	
3,068.0	9.40	209.10	3,032.9	-369.8	-149.0	-149.0	1.69	-1.16	
3,164.0	9.60	207.90	3,127.6	-383.8	-156.6	-156.6	0.29	0.21	
3,259.0	9.60	214.30	3,221.2	-397.3	-164.7	-164.7	1.12	0.00	
3,354.0	10.30	212.30	3,314.8	-411.0	-173.7	-173.7	0.82	0.74	
3,449.0	8.60	209.00	3,408.5	-424.4	-181.7	-181.7	1.88	-1.79	
3,544.0	8.70	207.50	3,502.4	-437.0	-188.5	-188.5	0.26	0.11	
3,639.0	9.60	199.50	3,596.2	-450.9	-194.5	-194.5	1.64	0.95	
3,734.0	9.60	198.60	3,689.9	-465.8	-199.6	-199.6	0.16	0.00	
3,830.0	8.60	201.50	3,784.7	-480.1	-204.8	-204.8	1.15	-1.04	
3,924.0	7.10	202.20	3,877.8	-492.0	-209.6	-209.6	1.60	-1.60	
4,020.0	6.10	195.90	3,973.2	-502.4	-213.2	-213.2	1.28	-1.04	
4,115.0	4.90	195.40	4,067.7	-511.2	-215.7	-215.7	1.26	-1.26	
4,209.0	4.80	194.80	4,161.4	-518.9	-217.7	-217.7	0.12	-0.11	
4,304.0	4.20	197.10	4,256.1	-526.0	-219.8	-219.8	0.66	-0.63	
4,399.0	3.30	190.80	4,350.9	-532.0	-221.3	-221.3	1.04	-0.95	
4,494.0	2.50	201.00	4,445.8	-536.7	-222.6	-222.6	1.00	-0.84	
4,589.0	1.10	232.00	4,540.7	-539.1	-224.0	-224.0	1.74	-1.47	
4,684.0	0.60	252.90	4,635.7	-539.9	-225.2	-225.2	0.61	-0.53	
4,779.0	0.80	259.00	4,730.7	-540.1	-226.4	-226.4	0.22	0.21	
4,874.0	1.20	253.80	4,825.7	-540.5	-228.0	-228.0	0.43	0.42	
4,969.0	1.30	259.10	4,920.7	-541.0	-230.0	-230.0	0.16	0.11	
5,064.0	0.60	322.10	5,015.7	-540.8	-231.3	-231.3	1.22	-0.74	
5,158.0	1.30	313.70	5,109.6	-539.7	-232.4	-232.4	0.76	0.74	
5,253.0	1.20	280.10	5,204.6	-538.8	-234.2	-234.2	0.77	-0.11	
5,348.0	0.40	163.30	5,299.6	-538.9	-235.1	-235.1	1.50	-0.84	
5,443.0	0.10	98.60	5,394.6	-539.3	-234.9	-234.9	0.39	-0.32	
5,538.0	0.50	117.10	5,489.6	-539.5	-234.4	-234.4	0.43	0.42	
5,633.0	0.20	82.00	5,584.6	-539.6	-233.9	-233.9	0.37	-0.32	
5,727.0	0.20	112.40	5,678.6	-539.7	-233.6	-233.6	0.11	0.00	
5,822.0	0.10	202.10	5,773.6	-539.8	-233.5	-233.5	0.23	-0.11	
5,917.0	0.40	251.80	5,868.6	-540.0	-233.8	-233.8	0.36	0.32	
6,011.0	0.70	112.50	5,962.6	-540.3	-233.6	-233.6	1.10	0.32	
6,106.0	0.40	153.50	6,057.6	-540.8	-232.9	-232.9	0.50	-0.32	
6,200.0	0.20	77.60	6,151.6	-541.1	-232.6	-232.6	0.43	-0.21	

# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well State 3F-16H
<b>Project:</b> DJ Wattenberg	<b>TD Reference:</b> KB @ 5084.0ft (H&P 278)
<b>Site:</b> S16-T3N-R68W (State)	<b>MVD Reference:</b> KB @ 5084.0ft (H&P 278)
<b>Well:</b> State 3F-16H	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
6,295.0	0.40	318.40	6,246.6	-540.8	-232.7	-232.7	0.56	0.21	
6,390.0	0.40	296.60	6,341.6	-540.4	-233.2	-233.2	0.16	0.00	
6,485.0	0.60	269.40	6,436.6	-540.3	-234.0	-234.0	0.32	0.21	
6,578.0	0.80	227.90	6,529.6	-540.7	-234.9	-234.9	0.57	0.22	
6,610.0	2.30	110.10	6,561.6	-541.1	-234.5	-234.5	8.64	4.69	
6,641.0	5.60	98.10	6,592.5	-541.5	-232.4	-232.4	10.92	10.65	
6,673.0	8.70	93.50	6,624.2	-541.9	-228.5	-228.5	9.84	9.69	
6,704.0	11.50	92.60	6,654.8	-542.1	-223.0	-223.0	9.05	9.03	
6,736.0	14.60	93.90	6,685.9	-542.6	-215.8	-215.8	9.73	9.69	
6,767.0	17.30	94.30	6,715.7	-543.2	-207.3	-207.3	8.72	8.71	
6,799.0	20.70	95.70	6,746.0	-544.1	-196.9	-196.9	10.72	10.62	
6,831.0	24.20	96.80	6,775.6	-545.4	-184.8	-184.8	11.02	10.94	
6,862.0	27.30	98.20	6,803.5	-547.2	-171.4	-171.4	10.19	10.00	
6,893.0	30.40	97.10	6,830.6	-549.2	-156.6	-156.6	10.15	10.00	
6,925.0	33.50	95.50	6,857.8	-551.0	-139.8	-139.8	10.04	9.69	
6,957.0	35.80	92.20	6,884.1	-552.2	-121.6	-121.6	9.27	7.19	
6,988.0	39.20	90.10	6,908.7	-552.6	-102.8	-102.8	11.72	10.97	
7,020.0	42.80	90.00	6,932.8	-552.6	-81.8	-81.8	11.25	11.25	
7,052.0	46.30	92.50	6,955.6	-553.1	-59.4	-59.4	12.23	10.94	
7,083.0	48.80	93.40	6,976.6	-554.3	-36.5	-36.5	8.34	8.06	
7,115.0	50.90	92.10	6,997.2	-555.5	-12.1	-12.1	7.26	6.56	
7,146.0	53.40	89.70	7,016.2	-555.9	12.4	12.4	10.12	8.06	
7,178.0	56.60	88.30	7,034.6	-555.4	38.6	38.6	10.62	10.00	
7,209.0	60.90	87.90	7,050.6	-554.5	65.1	65.1	13.91	13.87	
7,241.0	65.30	87.70	7,065.1	-553.4	93.6	93.6	13.76	13.75	
7,273.0	70.10	86.90	7,077.3	-552.0	123.1	123.1	15.18	15.00	
7,304.0	73.20	86.60	7,087.0	-550.3	152.5	152.5	10.04	10.00	
7,336.0	75.60	87.10	7,095.6	-548.7	183.3	183.3	7.65	7.50	
7,367.0	78.20	87.40	7,102.6	-547.2	213.4	213.4	8.44	8.39	
7,399.0	81.10	87.80	7,108.4	-545.9	244.9	244.9	9.15	9.06	
7,430.0	83.10	88.20	7,112.7	-544.8	275.6	275.6	6.58	6.45	
7,449.0	84.00	88.40	7,114.8	-544.3	294.4	294.4	4.85	4.74	
7,549.0	89.50	88.60	7,120.5	-541.6	394.2	394.2	5.50	5.50	
7,644.0	90.10	88.80	7,120.8	-539.5	489.2	489.2	0.67	0.63	
7,738.0	90.20	88.60	7,120.5	-537.4	583.2	583.2	0.24	0.11	
7,833.0	89.10	88.20	7,121.1	-534.7	678.1	678.1	1.23	-1.16	
7,928.0	89.20	87.20	7,122.5	-530.9	773.1	773.1	1.06	0.11	
8,022.0	91.20	89.90	7,122.2	-528.5	867.0	867.0	3.57	2.13	
8,117.0	91.20	91.00	7,120.2	-529.3	962.0	962.0	1.16	0.00	
8,212.0	91.30	91.60	7,118.1	-531.4	1,056.9	1,056.9	0.64	0.11	
8,306.0	90.50	92.50	7,116.7	-534.8	1,150.9	1,150.9	1.28	-0.85	
8,401.0	90.00	91.70	7,116.2	-538.3	1,245.8	1,245.8	0.99	-0.53	
8,496.0	89.50	90.30	7,116.7	-539.9	1,340.8	1,340.8	1.56	-0.53	
8,591.0	89.30	90.00	7,117.7	-540.2	1,435.8	1,435.8	0.38	-0.21	
8,686.0	89.90	89.60	7,118.3	-539.8	1,530.8	1,530.8	0.76	0.63	
8,780.0	89.20	90.20	7,119.1	-539.7	1,624.8	1,624.8	0.98	-0.74	
8,875.0	89.50	90.40	7,120.1	-540.2	1,719.8	1,719.8	0.38	0.32	
8,970.0	90.20	91.00	7,120.4	-541.3	1,814.8	1,814.8	0.97	0.74	
9,064.0	89.80	91.20	7,120.4	-543.1	1,908.7	1,908.7	0.48	-0.43	
9,159.0	90.40	91.20	7,120.2	-545.1	2,003.7	2,003.7	0.63	0.63	
9,254.0	90.00	90.40	7,119.9	-546.4	2,098.7	2,098.7	0.94	-0.42	
9,349.0	90.80	90.60	7,119.2	-547.3	2,193.7	2,193.7	0.87	0.84	
9,443.0	89.00	89.70	7,119.4	-547.5	2,287.7	2,287.7	2.14	-1.91	

# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well State 3F-16H
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> KB @ 5084.0ft (H&P 278)
<b>Site:</b> S16-T3N-R68W (State)	<b>MD Reference:</b> KB @ 5084.0ft (H&P 278)
<b>Well:</b> State 3F-16H	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
9,538.0	89.00	89.30	7,121.0	-546.7	2,382.7	2,382.7	0.42	0.00	
9,632.0	89.30	88.80	7,122.4	-545.1	2,476.6	2,476.6	0.62	0.32	
9,727.0	88.50	87.90	7,124.3	-542.4	2,571.6	2,571.6	1.27	-0.84	
9,822.0	89.90	88.50	7,125.6	-539.4	2,666.5	2,666.5	1.60	1.47	
9,917.0	90.40	88.40	7,125.3	-536.8	2,761.5	2,761.5	0.54	0.53	
10,012.0	90.90	88.10	7,124.3	-533.9	2,856.4	2,856.4	0.61	0.53	
10,107.0	91.10	89.80	7,122.6	-532.2	2,951.4	2,951.4	1.80	0.21	
10,202.0	90.20	90.70	7,121.5	-532.6	3,046.4	3,046.4	1.34	-0.95	
10,296.0	87.20	91.30	7,123.7	-534.3	3,140.4	3,140.4	3.25	-3.19	
10,391.0	87.00	92.00	7,128.5	-537.0	3,235.2	3,235.2	0.77	-0.21	
10,486.0	86.50	91.50	7,133.9	-539.9	3,330.0	3,330.0	0.74	-0.53	
10,580.0	84.20	91.40	7,141.5	-542.3	3,423.6	3,423.6	2.45	-2.45	
10,675.0	84.00	89.40	7,151.2	-542.9	3,518.1	3,518.1	2.10	-0.21	
10,770.0	87.40	89.00	7,158.4	-541.6	3,612.8	3,612.8	3.60	3.58	
10,865.0	89.50	89.40	7,160.9	-540.3	3,707.8	3,707.8	2.25	2.21	
10,959.0	87.50	86.40	7,163.4	-536.8	3,801.7	3,801.7	3.83	-2.13	
11,054.0	90.70	88.90	7,164.9	-532.9	3,896.6	3,896.6	4.27	3.37	
11,149.0	90.30	89.50	7,164.1	-531.6	3,991.6	3,991.6	0.76	-0.42	
11,244.0	89.60	90.00	7,164.1	-531.2	4,086.6	4,086.6	0.91	-0.74	
11,339.0	88.00	90.40	7,166.1	-531.5	4,181.5	4,181.5	1.74	-1.68	
11,433.0	89.40	90.90	7,168.3	-532.6	4,275.5	4,275.5	1.58	1.49	
11,528.0	90.30	90.60	7,168.5	-533.8	4,370.5	4,370.5	1.00	0.95	
11,617.0	90.50	90.10	7,167.9	-534.4	4,459.5	4,459.5	0.61	0.22	Last Cathedral Survey @ 11,617' MD
11,687.0	90.50	90.10	7,167.3	-534.5	4,529.5	4,529.5	0.00	0.00	Projection to Bit @ 11,687'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
State 3F-16H PBHL P3 - hit/miss target - Shape - Point	0.00	0.00	7,183.0	-535.1	4,529.4	1,323,621.05	3,139,601.19	40.220650	-105.000100
- actual wellpath misses target center by 15.7ft at 11686.8ft MD (7167.3 TVD, -534.5 N, 4529.3 E)									
State 3F-16H PBHL - actual wellpath misses target center by 13.7ft at 11686.8ft MD (7167.3 TVD, -534.5 N, 4529.3 E) - Point	0.00	0.00	7,181.0	-535.1	4,529.4	1,323,621.05	3,139,601.19	40.220650	-105.000100
State 3F-16H TGT - actual wellpath misses target center by 5.3ft at 9941.3ft MD (7125.1 TVD, -536.2 N, 2785.7 E) - Point	0.00	0.00	7,120.0	-535.0	2,785.7	1,323,611.63	3,137,857.47	40.220651	-105.006344

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,617.0	7,167.9	-534.4	4,459.5	Last Cathedral Survey @ 11,617' MD
11,687.0	7,167.3	-534.5	4,529.5	Projection to Bit @ 11,687'

Checked By: _____	Approved By: _____	Date: _____
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