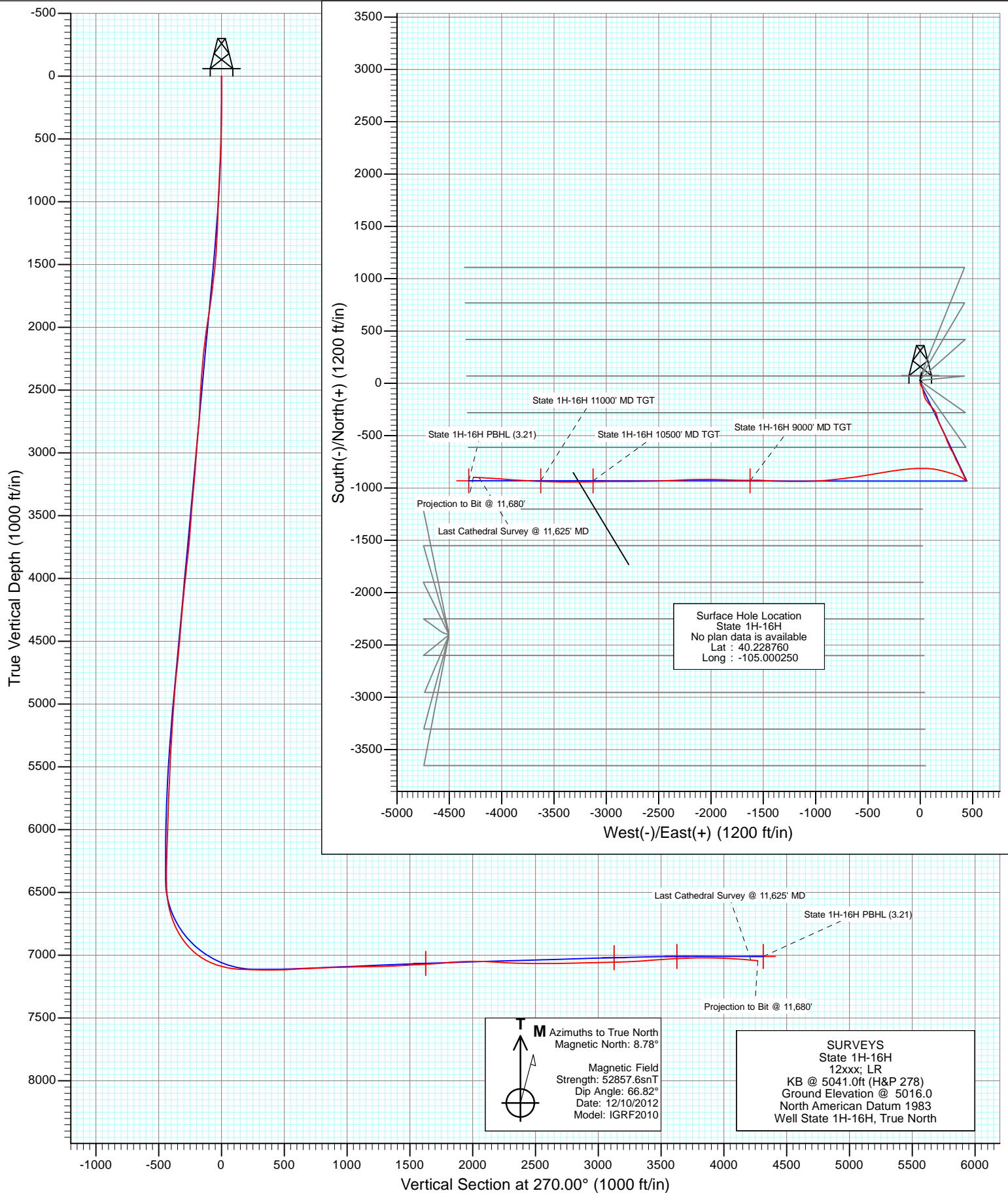


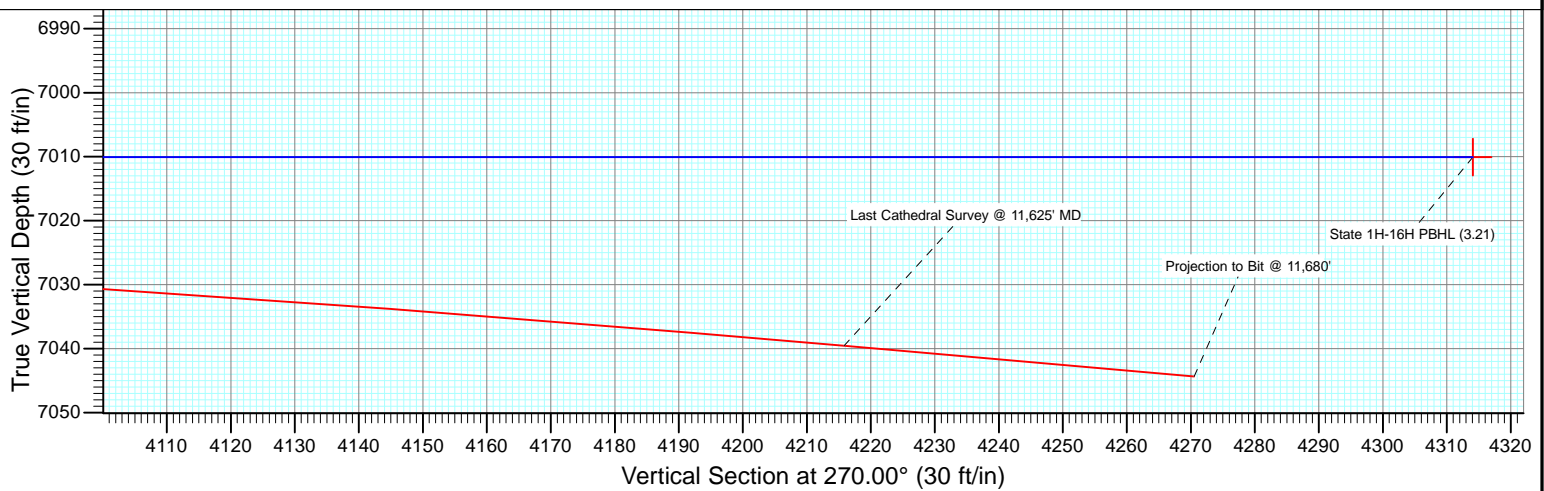
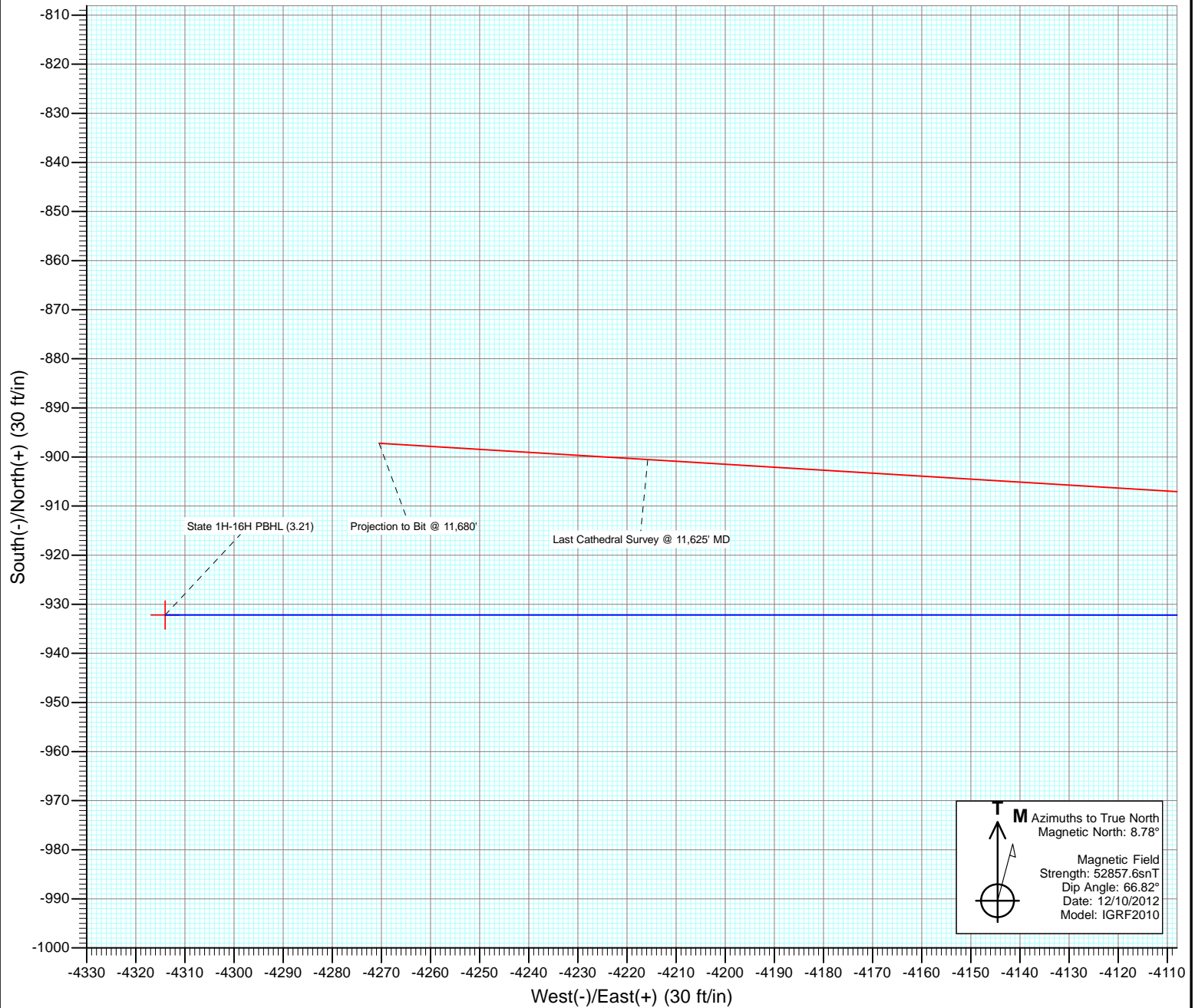


Project: DJ Wattenberg
Site: S16-T3N-R68W (State)
Well: State 1H-16H
Wellbore: Hz
Design: FINAL





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



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1H-16H
Project:	DJ Wattenberg	TVD Reference:	KB @ 5041.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MD Reference:	KB @ 5041.0ft (H&P 278)
Well:	State 1H-16H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	SURVEYS	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 1H-16H					
Well Position	+N/-S	0.0 ft	Northing:	1,326,575.11 ft	Latitude:	40.228760
	+E/-W	0.0 ft	Easting:	3,139,542.66 ft	Longitude:	-105.000250
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,016.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/10/2012	8.77	66.82	52,858

Design	SURVEYS			
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	4/7/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
123.0	11,680.0	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	0.30	300.20	123.0	0.2	-0.3	0.3	0.24	0.24	
215.0	0.70	181.00	215.0	-0.3	-0.5	0.5	0.96	0.43	
307.0	1.23	182.80	307.0	-1.8	-0.6	0.6	0.58	0.58	
399.0	2.33	149.60	398.9	-4.4	0.3	-0.3	1.59	1.20	
491.0	3.90	151.20	490.8	-8.8	2.8	-2.8	1.71	1.71	
583.0	4.30	149.30	582.6	-14.5	6.1	-6.1	0.46	0.43	
675.0	5.10	150.10	674.3	-21.0	9.9	-9.9	0.87	0.87	
767.0	6.30	152.50	765.8	-29.0	14.2	-14.2	1.33	1.30	
791.0	6.40	152.80	789.7	-31.4	15.5	-15.5	0.44	0.42	
887.0	8.00	162.40	884.9	-42.5	19.9	-19.9	2.08	1.67	
979.0	9.40	166.80	975.8	-55.9	23.6	-23.6	1.68	1.52	
1,070.0	8.80	166.60	1,065.7	-69.9	26.9	-26.9	0.66	-0.66	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1H-16H
Project:	DJ Wattenberg	TVD Reference:	KB @ 5041.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MD Reference:	KB @ 5041.0ft (H&P 278)
Well:	State 1H-16H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	SURVEYS	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
1,162.0	10.80	169.10	1,156.3	-85.2	30.1	-30.1	2.22	2.17	
1,254.0	10.20	168.80	1,246.8	-101.7	33.4	-33.4	0.65	-0.65	
1,346.0	11.40	164.00	1,337.2	-118.4	37.4	-37.4	1.63	1.30	
1,438.0	12.30	157.80	1,427.2	-136.2	43.7	-43.7	1.69	0.98	
1,531.0	11.90	150.10	1,518.2	-153.7	52.2	-52.2	1.79	-0.43	
1,623.0	11.20	143.40	1,608.3	-169.1	62.2	-62.2	1.64	-0.76	
1,715.0	11.60	144.10	1,698.5	-183.8	73.0	-73.0	0.46	0.43	
1,808.0	12.30	143.00	1,789.5	-199.3	84.4	-84.4	0.79	0.75	
1,900.0	13.00	139.30	1,879.2	-214.9	97.1	-97.1	1.16	0.76	
1,995.0	12.20	135.90	1,971.9	-230.3	111.0	-111.0	1.15	-0.84	
2,089.0	12.30	140.00	2,063.8	-245.1	124.4	-124.4	0.93	0.11	
2,184.0	12.10	147.00	2,156.7	-261.2	136.3	-136.3	1.57	-0.21	
2,278.0	12.70	153.70	2,248.5	-278.7	146.2	-146.2	1.66	0.64	
2,373.0	12.30	161.50	2,341.2	-297.7	154.1	-154.1	1.82	-0.42	
2,468.0	13.40	164.20	2,433.9	-317.8	160.3	-160.3	1.32	1.16	
2,562.0	12.70	163.70	2,525.4	-338.2	166.2	-166.2	0.75	-0.74	
2,657.0	10.90	162.50	2,618.4	-356.8	171.8	-171.8	1.91	-1.89	
2,752.0	6.80	156.60	2,712.3	-370.6	176.7	-176.7	4.41	-4.32	
2,846.0	11.70	153.90	2,805.0	-384.2	183.1	-183.1	5.23	5.21	
2,941.0	10.90	154.70	2,898.2	-401.0	191.2	-191.2	0.86	-0.84	
3,036.0	10.00	156.80	2,991.6	-416.7	198.3	-198.3	1.03	-0.95	
3,130.0	10.20	154.90	3,084.1	-431.7	205.0	-205.0	0.41	0.21	
3,225.0	11.00	155.80	3,177.5	-447.6	212.3	-212.3	0.86	0.84	
3,319.0	11.80	153.50	3,269.7	-464.4	220.3	-220.3	0.98	0.85	
3,414.0	12.30	153.80	3,362.6	-482.2	229.1	-229.1	0.53	0.53	
3,509.0	11.20	156.50	3,455.6	-499.7	237.2	-237.2	1.29	-1.16	
3,603.0	11.30	159.60	3,547.8	-516.7	244.1	-244.1	0.65	0.11	
3,698.0	12.60	160.80	3,640.7	-535.2	250.7	-250.7	1.39	1.37	
3,792.0	14.40	158.70	3,732.1	-555.8	258.4	-258.4	1.98	1.91	
3,887.0	16.30	156.00	3,823.7	-579.0	268.1	-268.1	2.14	2.00	
3,981.0	14.40	156.60	3,914.4	-601.8	278.1	-278.1	2.03	-2.02	
4,076.0	13.10	153.40	4,006.6	-622.3	287.6	-287.6	1.58	-1.37	
4,171.0	11.60	149.50	4,099.4	-640.1	297.3	-297.3	1.81	-1.58	
4,265.0	10.60	147.80	4,191.7	-655.6	306.7	-306.7	1.12	-1.06	
4,360.0	11.60	153.80	4,284.9	-671.5	315.5	-315.5	1.61	1.05	
4,454.0	11.30	156.90	4,377.0	-688.5	323.3	-323.3	0.73	-0.32	
4,549.0	12.20	157.30	4,470.0	-706.3	330.9	-330.9	0.95	0.95	
4,644.0	12.10	157.00	4,562.9	-724.7	338.6	-338.6	0.12	-0.11	
4,738.0	12.50	152.40	4,654.8	-742.8	347.2	-347.2	1.13	0.43	
4,833.0	13.30	151.80	4,747.4	-761.6	357.1	-357.1	0.85	0.84	
4,928.0	11.40	151.20	4,840.2	-779.4	366.8	-366.8	2.00	-2.00	
5,023.0	10.00	154.40	4,933.5	-795.1	374.9	-374.9	1.60	-1.47	
5,117.0	11.10	157.50	5,025.9	-810.8	381.9	-381.9	1.32	1.17	
5,212.0	9.40	158.10	5,119.4	-826.5	388.3	-388.3	1.79	-1.79	
5,306.0	7.20	158.30	5,212.4	-839.0	393.3	-393.3	2.34	-2.34	
5,401.0	6.90	149.80	5,306.7	-849.5	398.4	-398.4	1.14	-0.32	
5,496.0	6.80	151.40	5,401.0	-859.4	403.9	-403.9	0.23	-0.11	
5,590.0	5.20	148.10	5,494.5	-867.9	408.9	-408.9	1.74	-1.70	
5,685.0	5.80	150.90	5,589.1	-875.7	413.5	-413.5	0.69	0.63	
5,780.0	5.90	159.40	5,683.6	-884.5	417.5	-417.5	0.92	0.11	
5,874.0	5.00	160.20	5,777.1	-892.9	420.6	-420.6	0.96	-0.96	
5,969.0	5.40	153.10	5,871.7	-900.8	424.0	-424.0	0.80	0.42	
6,063.0	5.00	152.00	5,965.4	-908.3	428.0	-428.0	0.44	-0.43	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1H-16H
Project:	DJ Wattenberg	TVD Reference:	KB @ 5041.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MD Reference:	KB @ 5041.0ft (H&P 278)
Well:	State 1H-16H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	SURVEYS	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
6,158.0	3.90	151.30	6,060.1	-914.8	431.5	-431.5	1.16	-1.16	
6,253.0	3.60	155.70	6,154.9	-920.4	434.2	-434.2	0.44	-0.32	
6,347.0	3.30	156.00	6,248.7	-925.5	436.5	-436.5	0.32	-0.32	
6,442.0	2.30	163.70	6,343.6	-929.9	438.2	-438.2	1.12	-1.05	
6,473.0	2.10	172.70	6,374.6	-931.0	438.4	-438.4	1.29	-0.65	
6,537.0	2.10	313.50	6,438.5	-931.4	437.7	-437.7	6.18	0.00	
6,568.0	3.40	307.00	6,469.5	-930.4	436.6	-436.6	4.31	4.19	
6,600.0	5.40	306.40	6,501.4	-929.0	434.6	-434.6	6.25	6.25	
6,631.0	8.30	304.90	6,532.2	-926.8	431.6	-431.6	9.37	9.35	
6,663.0	11.10	311.20	6,563.7	-923.5	427.4	-427.4	9.34	8.75	
6,694.0	14.20	307.00	6,594.0	-919.2	422.1	-422.1	10.42	10.00	
6,726.0	16.40	309.00	6,624.8	-914.0	415.5	-415.5	7.07	6.87	
6,757.0	17.80	307.70	6,654.5	-908.3	408.3	-408.3	4.68	4.52	
6,789.0	19.30	303.40	6,684.8	-902.4	400.0	-400.0	6.34	4.69	
6,820.0	21.60	298.20	6,713.8	-896.9	390.7	-390.7	9.45	7.42	
6,852.0	24.20	295.00	6,743.3	-891.4	379.6	-379.6	9.01	8.12	
6,884.0	27.00	294.20	6,772.2	-885.6	367.0	-367.0	8.82	8.75	
6,915.0	29.30	292.70	6,799.5	-879.8	353.6	-353.6	7.76	7.42	
6,947.0	31.50	290.30	6,827.1	-873.9	338.5	-338.5	7.85	6.87	
6,978.0	34.10	288.80	6,853.2	-868.3	322.7	-322.7	8.79	8.39	
7,010.0	37.00	285.70	6,879.2	-862.8	304.9	-304.9	10.67	9.06	
7,041.0	40.40	285.20	6,903.4	-857.6	286.3	-286.3	11.01	10.97	
7,073.0	43.10	286.70	6,927.3	-851.8	265.8	-265.8	9.00	8.44	
7,104.0	45.00	286.90	6,949.5	-845.5	245.1	-245.1	6.15	6.13	
7,136.0	49.10	285.00	6,971.3	-839.1	222.6	-222.6	13.53	12.81	
7,167.0	52.30	284.40	6,991.0	-833.0	199.4	-199.4	10.43	10.32	
7,199.0	55.10	282.20	7,009.9	-827.1	174.3	-174.3	10.36	8.75	
7,230.0	58.80	279.80	7,026.8	-822.1	148.8	-148.8	13.58	11.94	
7,262.0	62.10	277.60	7,042.6	-817.9	121.3	-121.3	11.92	10.31	
7,294.0	65.20	274.30	7,056.8	-815.0	92.8	-92.8	13.39	9.69	
7,325.0	69.00	272.30	7,068.9	-813.4	64.3	-64.3	13.62	12.26	
7,357.0	73.00	269.90	7,079.3	-812.8	34.1	-34.1	14.37	12.50	
7,388.0	75.50	270.60	7,087.7	-812.6	4.2	-4.2	8.35	8.06	
7,420.0	76.70	269.50	7,095.4	-812.6	-26.8	26.8	5.02	3.75	
7,451.0	78.50	267.60	7,102.1	-813.4	-57.1	57.1	8.34	5.81	
7,498.0	82.90	264.40	7,109.6	-816.6	-103.3	103.3	11.52	9.36	
7,533.0	87.00	262.60	7,112.7	-820.6	-138.0	138.0	12.79	11.71	
7,564.0	88.40	262.30	7,114.0	-824.6	-168.7	168.7	4.62	4.52	
7,596.0	88.50	262.30	7,114.8	-828.9	-200.4	200.4	0.31	0.31	
7,628.0	88.30	261.80	7,115.7	-833.4	-232.1	232.1	1.68	-0.62	
7,659.0	87.80	261.10	7,116.8	-838.0	-262.7	262.7	2.77	-1.61	
7,722.0	88.90	260.50	7,118.6	-848.0	-324.9	324.9	1.99	1.75	
7,817.0	90.70	262.00	7,118.9	-862.5	-418.8	418.8	2.47	1.89	
7,911.0	92.80	261.20	7,116.1	-876.2	-511.7	511.7	2.39	2.23	
8,006.0	93.60	261.30	7,110.8	-890.6	-605.4	605.4	0.85	0.84	
8,101.0	92.00	261.90	7,106.1	-904.5	-699.3	699.3	1.80	-1.68	
8,195.0	93.00	264.00	7,102.0	-916.0	-792.5	792.5	2.47	1.06	
8,290.0	91.20	263.80	7,098.5	-926.1	-886.9	886.9	1.91	-1.89	
8,385.0	91.70	267.50	7,096.1	-933.3	-981.6	981.6	3.93	0.53	
8,479.0	91.80	269.60	7,093.3	-935.7	-1,075.5	1,075.5	2.24	0.11	
8,574.0	90.90	269.00	7,091.0	-936.9	-1,170.5	1,170.5	1.14	-0.95	
8,668.0	91.40	271.10	7,089.1	-936.8	-1,264.4	1,264.4	2.30	0.53	
8,763.0	90.80	271.00	7,087.3	-935.0	-1,359.4	1,359.4	0.64	-0.63	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1H-16H
Project:	DJ Wattenberg	TVD Reference:	KB @ 5041.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MD Reference:	KB @ 5041.0ft (H&P 278)
Well:	State 1H-16H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	SURVEYS	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
8,857.0	94.70	275.00	7,082.8	-930.1	-1,453.1	1,453.1	5.94	4.15	
8,952.0	93.20	270.60	7,076.3	-925.5	-1,547.8	1,547.8	4.88	-1.58	
9,046.0	91.90	267.70	7,072.1	-926.9	-1,641.6	1,641.6	3.38	-1.38	
9,141.0	95.50	272.50	7,065.9	-926.7	-1,736.4	1,736.4	6.31	3.79	
9,204.0	95.10	272.50	7,060.1	-924.0	-1,799.1	1,799.1	0.63	-0.63	
9,267.0	94.00	271.90	7,055.1	-921.6	-1,861.8	1,861.8	1.99	-1.75	
9,330.0	92.70	271.30	7,051.4	-919.8	-1,924.7	1,924.7	2.27	-2.06	
9,393.0	91.20	270.80	7,049.3	-918.7	-1,987.6	1,987.6	2.51	-2.38	
9,456.0	88.80	270.30	7,049.3	-918.1	-2,050.6	2,050.6	3.89	-3.81	
9,519.0	86.90	269.20	7,051.7	-918.3	-2,113.6	2,113.6	3.48	-3.02	
9,582.0	86.00	268.90	7,055.6	-919.4	-2,176.5	2,176.5	1.51	-1.43	
9,645.0	86.50	268.30	7,059.7	-920.9	-2,239.3	2,239.3	1.24	0.79	
9,708.0	88.30	267.40	7,062.5	-923.3	-2,302.2	2,302.2	3.19	2.86	
9,771.0	89.00	266.90	7,064.0	-926.4	-2,365.1	2,365.1	1.37	1.11	
9,803.0	88.50	266.50	7,064.7	-928.3	-2,397.0	2,397.0	2.00	-1.56	
9,898.0	89.50	267.50	7,066.4	-933.2	-2,491.9	2,491.9	1.49	1.05	
9,992.0	89.40	268.40	7,067.3	-936.6	-2,585.8	2,585.8	0.96	-0.11	
10,087.0	91.30	270.90	7,066.7	-937.2	-2,680.8	2,680.8	3.31	2.00	
10,181.0	91.10	270.20	7,064.7	-936.3	-2,774.8	2,774.8	0.77	-0.21	
10,276.0	91.40	269.60	7,062.7	-936.4	-2,869.8	2,869.8	0.71	0.32	
10,371.0	91.10	268.90	7,060.6	-937.7	-2,964.7	2,964.7	0.80	-0.32	
10,465.0	92.40	269.70	7,057.7	-938.8	-3,058.7	3,058.7	1.62	1.38	
10,560.0	90.50	268.50	7,055.3	-940.3	-3,153.6	3,153.6	2.37	-2.00	
10,654.0	92.80	269.30	7,052.6	-942.1	-3,247.6	3,247.6	2.59	2.45	
10,749.0	93.20	269.60	7,047.6	-943.0	-3,342.4	3,342.4	0.53	0.42	
10,844.0	95.20	271.00	7,040.7	-942.5	-3,437.2	3,437.2	2.57	2.11	
10,938.0	94.40	271.40	7,032.8	-940.6	-3,530.8	3,530.8	0.95	-0.85	
11,033.0	92.40	272.10	7,027.2	-937.7	-3,625.6	3,625.6	2.23	-2.11	
11,128.0	91.60	273.40	7,023.9	-933.1	-3,720.4	3,720.4	1.61	-0.84	
11,222.0	91.10	274.30	7,021.6	-926.8	-3,814.2	3,814.2	1.10	-0.53	
11,317.0	88.30	274.00	7,022.1	-919.9	-3,908.9	3,908.9	2.96	-2.95	
11,411.0	87.60	273.70	7,025.5	-913.6	-4,002.7	4,002.7	0.81	-0.74	
11,506.0	86.40	273.50	7,030.5	-907.7	-4,097.3	4,097.3	1.28	-1.26	
11,601.0	85.20	273.40	7,037.4	-902.0	-4,191.9	4,191.9	1.27	-1.26	
11,625.0	85.00	273.50	7,039.5	-900.5	-4,215.8	4,215.8	0.93	-0.83	Last Cathedral Survey @ 11,625' MD Projection to Bit @ 11,680'
11,680.0	85.00	273.50	7,044.3	-897.2	-4,270.5	4,270.5	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well State 1H-16H
Project:	DJ Wattenberg	TVD Reference:	KB @ 5041.0ft (H&P 278)
Site:	S16-T3N-R68W (State)	MD Reference:	KB @ 5041.0ft (H&P 278)
Well:	State 1H-16H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	SURVEYS	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
State 1H-16H 9000' MD	0.00	0.00	7,065.0	-932.4	-1,626.4	1,325,633.57	3,137,921.49	40.226200	-105.006075
- actual wellpath misses target center by 9.7ft at 9031.2ft MD (7072.6 TVD, -926.4 N, -1626.9 E)									
- Point									
State 1H-16H 10500' ME	0.00	0.00	7,020.0	-932.3	-3,126.2	1,325,625.23	3,136,421.74	40.226200	-105.011446
- actual wellpath misses target center by 36.4ft at 10533.4ft MD (7055.7 TVD, -939.7 N, -3127.0 E)									
- Point									
State 1H-16H 11000' ME	0.00	0.00	7,010.0	-932.2	-3,626.1	1,325,622.45	3,135,921.82	40.226200	-105.013236
- actual wellpath misses target center by 18.0ft at 11034.4ft MD (7027.1 TVD, -937.6 N, -3627.0 E)									
- Point									
State 1H-16H PBHL (3.2	0.00	0.00	7,010.0	-932.2	-4,314.0	1,325,618.63	3,135,233.95	40.226200	-105.015700
- actual wellpath misses target center by 65.5ft at 11680.0ft MD (7044.3 TVD, -897.2 N, -4270.5 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	Comment	
11,625.0	7,039.5	-900.5	-4,215.8	Last Cathedral Survey @ 11,625' MD	
11,680.0	7,044.3	-897.2	-4,270.5	Projection to Bit @ 11,680'	

Checked By: _____ Approved By: _____ Date: _____