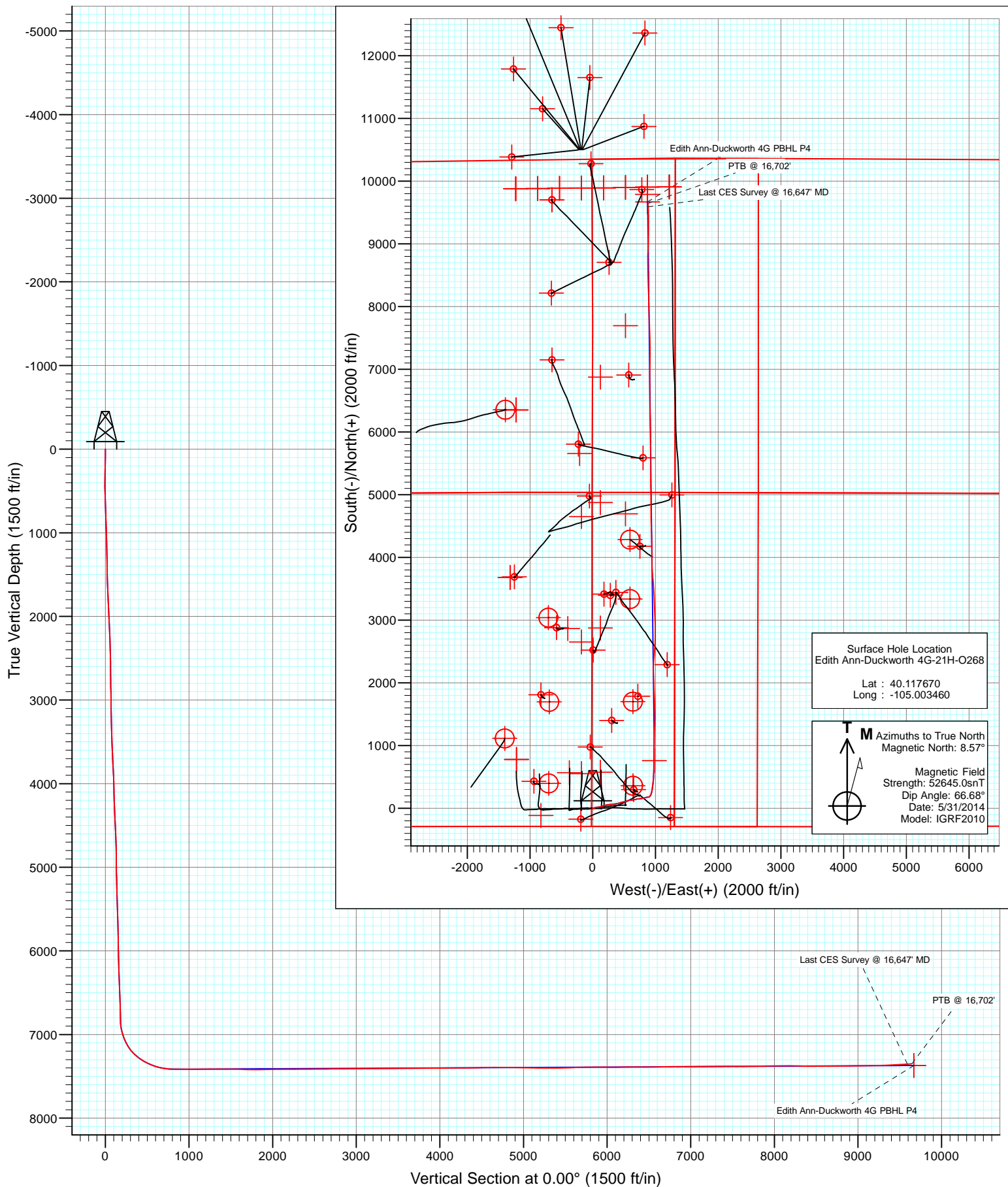


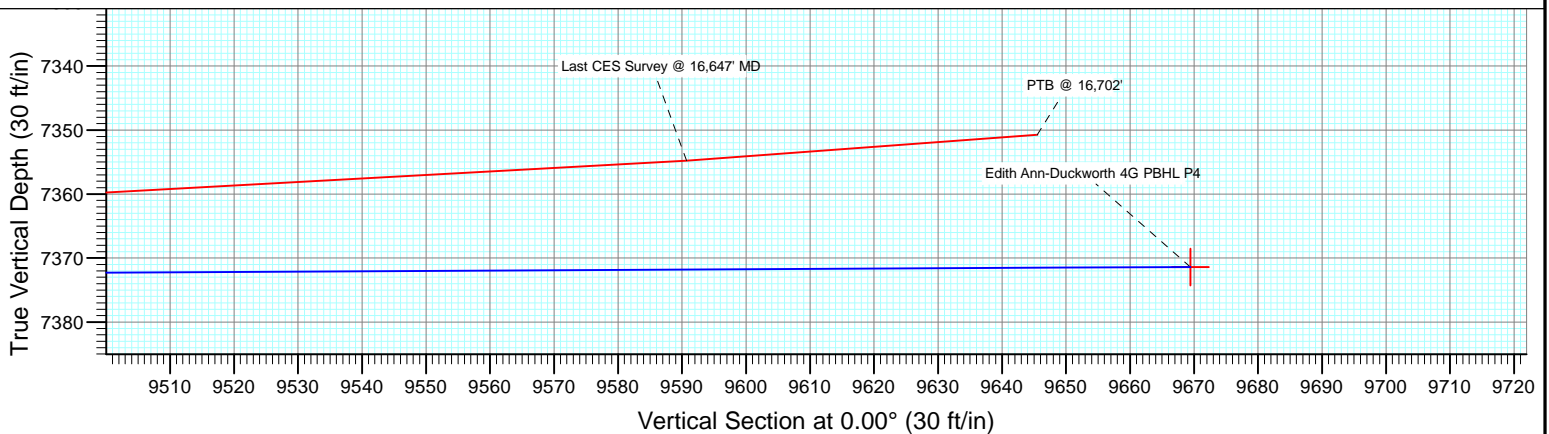
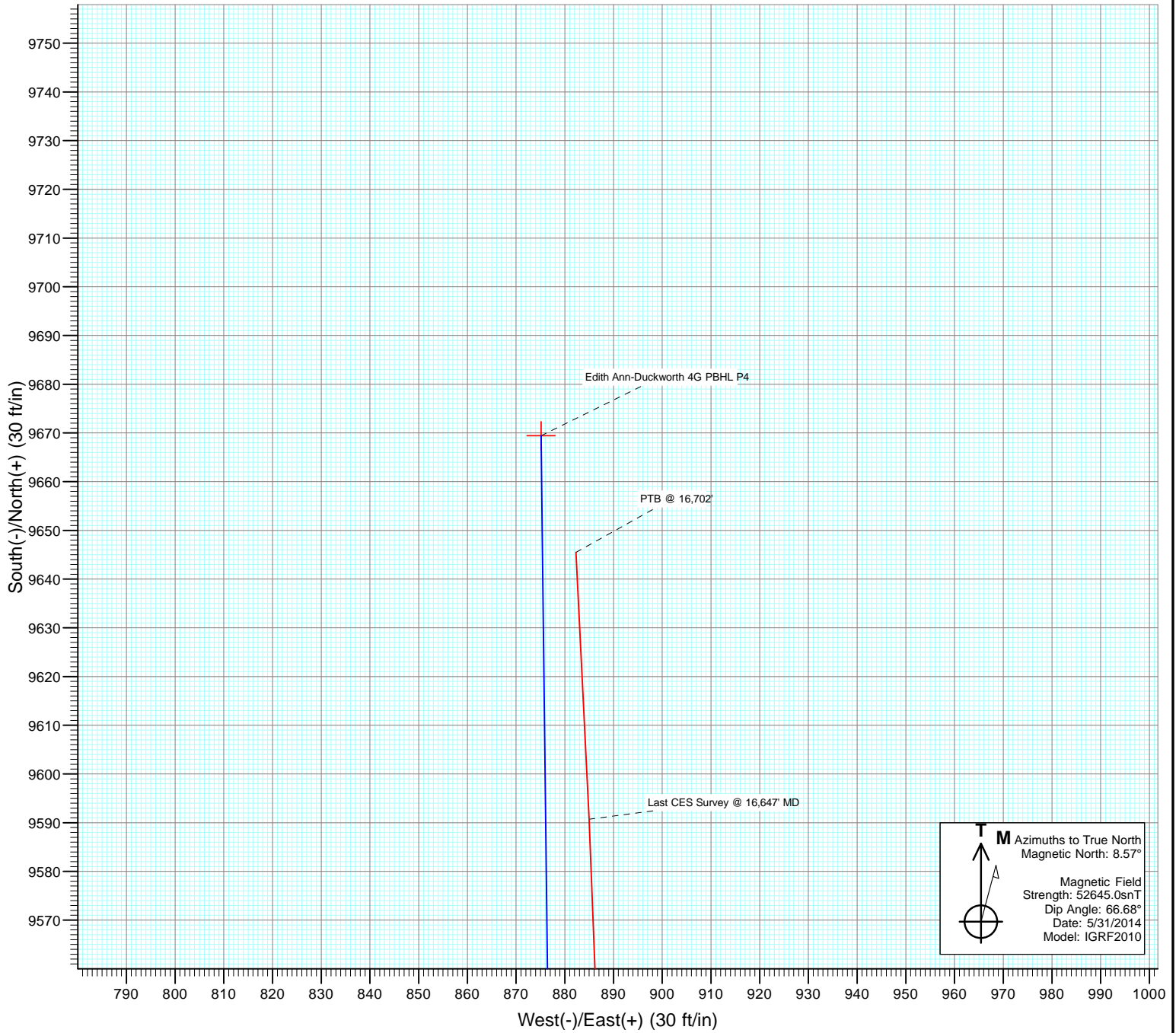


Project: DJ Wattenberg
Site: S21-T2N-R68W (Edith Ann-Duckworth)
Well: Edith Ann-Duckworth 4G-21H-O268
Wellbore: Hz
Design: FINAL





Project: DJ Wattenberg
Site: S21-T2N-R68W (Edith Ann-Duckworth)
Well: Edith Ann-Duckworth 4G-21H-O268
Wellbore: Hz
Design: FINAL



Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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	S21-T2N-R68W (Edith Ann-Duckworth)			
Site Position:		Northing:	1,290,455.50 ft	Latitude: 40.129630
From:	Lat/Long	Easting:	3,138,171.93 ft	Longitude: -105.005880
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: 0.32 °

Well	Edith Ann-Duckworth 4G-21H-O268			
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.57 ft
	+E/-W	0.0 ft	Easting:	3,138,872.99 ft
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft
			Ground Level:	4,927.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/31/2014	8.57	66.68	52,645

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	0.00	

Survey Program	Date	6/10/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
166.0	16,702.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey									
Measured	Vertical		Vertical		Dogleg	Build	Formations /		
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Section	Rate	Rate	Comments
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
166.0	1.30	210.90	166.0	-1.6	-1.0	-1.6	0.78	0.78	
260.0	1.30	194.10	260.0	-3.6	-1.8	-3.6	0.40	0.00	
354.0	1.20	152.40	353.9	-5.5	-1.6	-5.5	0.95	-0.11	
448.0	1.80	75.60	447.9	-6.0	0.3	-6.0	2.04	0.64	
541.0	3.80	67.20	540.8	-4.4	4.6	-4.4	2.19	2.15	
635.0	5.00	64.50	634.5	-1.4	11.1	-1.4	1.30	1.28	
728.0	4.90	64.20	727.2	2.0	18.4	2.0	0.11	-0.11	
822.0	5.90	57.60	820.8	6.4	26.1	6.4	1.25	1.06	
911.0	5.80	72.90	909.3	10.1	34.2	10.1	1.75	-0.11	
1,019.0	5.90	74.20	1,016.7	13.3	44.8	13.3	0.15	0.09	
1,112.0	7.40	84.40	1,109.1	15.1	55.3	15.1	2.05	1.61	
1,206.0	8.50	87.30	1,202.2	16.1	68.3	16.1	1.25	1.17	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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
1,299.0	9.30	81.90	1,294.1	17.4	82.6	17.4	1.24	0.86	
1,392.0	8.60	82.20	1,386.0	19.4	96.9	19.4	0.75	-0.75	
1,487.0	7.30	81.70	1,480.0	21.3	109.9	21.3	1.37	-1.37	
1,582.0	8.70	75.60	1,574.1	23.9	122.9	23.9	1.72	1.47	
1,676.0	7.60	75.20	1,667.2	27.3	135.8	27.3	1.17	-1.17	
1,771.0	8.00	68.00	1,761.3	31.4	148.0	31.4	1.11	0.42	
1,866.0	9.80	74.50	1,855.1	36.0	161.9	36.0	2.17	1.89	
1,961.0	9.10	71.10	1,948.9	40.6	176.8	40.6	0.94	-0.74	
2,056.0	8.60	69.20	2,042.7	45.6	190.5	45.6	0.61	-0.53	
2,151.0	8.90	76.20	2,136.6	49.8	204.3	49.8	1.16	0.32	
2,247.0	8.10	73.90	2,231.6	53.5	218.0	53.5	0.91	-0.83	
2,342.0	8.80	84.70	2,325.5	56.0	231.7	56.0	1.82	0.74	
2,437.0	8.20	82.30	2,419.5	57.6	245.7	57.6	0.73	-0.63	
2,532.0	8.50	84.50	2,513.5	59.2	259.4	59.2	0.46	0.32	
2,627.0	8.00	82.70	2,607.5	60.7	272.9	60.7	0.59	-0.53	
2,722.0	9.40	86.10	2,701.4	62.0	287.2	62.0	1.57	1.47	
2,818.0	8.80	81.30	2,796.2	63.7	302.3	63.7	1.01	-0.62	
2,913.0	7.80	80.60	2,890.2	65.8	315.8	65.8	1.06	-1.05	
3,008.0	8.80	86.60	2,984.2	67.3	329.4	67.3	1.39	1.05	
3,103.0	7.90	85.90	3,078.2	68.2	343.2	68.2	0.95	-0.95	
3,198.0	9.70	81.80	3,172.1	69.8	357.6	69.8	2.01	1.89	
3,293.0	8.40	81.20	3,265.9	72.0	372.4	72.0	1.37	-1.37	
3,389.0	9.10	81.70	3,360.8	74.2	386.9	74.2	0.73	0.73	
3,484.0	8.20	79.90	3,454.7	76.5	401.0	76.5	0.99	-0.95	
3,579.0	8.80	72.80	3,548.7	79.8	414.6	79.8	1.27	0.63	
3,674.0	9.70	71.50	3,642.4	84.5	429.1	84.5	0.97	0.95	
3,770.0	8.50	68.30	3,737.2	89.7	443.4	89.7	1.36	-1.25	
3,865.0	9.30	75.70	3,831.1	94.2	457.3	94.2	1.47	0.84	
3,958.0	8.10	71.60	3,923.0	98.1	470.8	98.1	1.45	-1.29	
4,054.0	8.50	80.80	4,018.0	101.4	484.3	101.4	1.44	0.42	
4,149.0	8.40	87.70	4,112.0	102.8	498.1	102.8	1.07	-0.11	
4,244.0	9.90	77.10	4,205.8	104.9	513.0	104.9	2.37	1.58	
4,339.0	7.00	67.50	4,299.7	108.9	526.3	108.9	3.38	-3.05	
4,434.0	8.20	67.40	4,393.9	113.7	537.9	113.7	1.26	1.26	
4,530.0	9.10	70.60	4,488.8	118.9	551.4	118.9	1.06	0.94	
4,625.0	9.10	77.10	4,582.6	123.1	565.8	123.1	1.08	0.00	
4,720.0	7.60	75.30	4,676.6	126.3	579.2	126.3	1.60	-1.58	
4,815.0	8.40	86.70	4,770.7	128.3	592.2	128.3	1.87	0.84	
4,910.0	9.10	83.50	4,864.6	129.6	606.6	129.6	0.90	0.74	
5,005.0	10.30	87.10	4,958.2	130.9	622.6	130.9	1.41	1.26	
5,100.0	8.10	82.20	5,052.0	132.2	637.7	132.2	2.46	-2.32	
5,195.0	7.50	81.30	5,146.1	134.0	650.4	134.0	0.64	-0.63	
5,290.0	8.60	76.80	5,240.2	136.6	663.5	136.6	1.33	1.16	
5,386.0	7.10	73.70	5,335.3	139.9	676.2	139.9	1.62	-1.56	
5,481.0	7.10	78.70	5,429.6	142.7	687.6	142.7	0.65	0.00	
5,576.0	7.60	77.10	5,523.8	145.3	699.4	145.3	0.57	0.53	
5,671.0	8.80	78.30	5,617.8	148.1	712.7	148.1	1.28	1.26	
5,766.0	9.50	81.90	5,711.6	150.7	727.6	150.7	0.95	0.74	
5,861.0	9.60	82.50	5,805.3	152.9	743.2	152.9	0.15	0.11	
5,956.0	8.10	89.90	5,899.1	153.9	757.7	153.9	1.98	-1.58	
6,051.0	10.50	83.70	5,992.9	154.9	773.0	154.9	2.73	2.53	
6,146.0	6.90	78.40	6,086.8	157.0	787.2	157.0	3.88	-3.79	
6,241.0	9.30	72.80	6,180.8	160.4	800.1	160.4	2.66	2.53	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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
6,337.0	8.20	79.30	6,275.7	163.9	814.3	163.9	1.54	-1.15	
6,432.0	8.70	77.40	6,369.7	166.8	828.0	166.8	0.60	0.53	
6,527.0	8.40	72.30	6,463.6	170.4	841.6	170.4	0.86	-0.32	
6,622.0	7.70	79.30	6,557.7	173.7	854.4	173.7	1.27	-0.74	
6,717.0	8.90	79.20	6,651.7	176.3	867.9	176.3	1.26	1.26	
6,812.0	9.00	84.70	6,745.5	178.4	882.5	178.4	0.91	0.11	
6,907.0	7.80	76.70	6,839.5	180.5	896.2	180.5	1.76	-1.26	
6,954.0	10.30	56.80	6,885.9	183.6	902.8	183.6	8.45	5.32	
7,002.0	15.10	42.60	6,932.8	190.5	910.7	190.5	11.86	10.00	
7,049.0	18.00	32.40	6,977.8	201.2	918.7	201.2	8.71	6.17	
7,098.0	21.10	24.00	7,024.0	215.6	926.3	215.6	8.53	6.33	
7,145.0	24.60	17.70	7,067.3	232.7	932.8	232.7	9.08	7.45	
7,193.0	28.70	14.40	7,110.2	253.4	938.7	253.4	9.08	8.54	
7,240.0	33.10	10.90	7,150.5	276.9	943.9	276.9	10.11	9.36	
7,288.0	39.20	9.20	7,189.3	304.8	948.8	304.8	12.88	12.71	
7,335.0	45.50	6.40	7,224.0	336.1	953.1	336.1	13.99	13.40	
7,383.0	49.20	8.50	7,256.5	371.1	957.7	371.1	8.35	7.71	
7,430.0	53.40	6.70	7,285.9	407.5	962.5	407.5	9.42	8.94	
7,478.0	58.30	5.20	7,312.8	447.0	966.6	447.0	10.53	10.21	
7,525.0	63.60	2.60	7,335.7	488.0	969.4	488.0	12.27	11.28	
7,573.0	66.90	1.40	7,355.7	531.5	970.9	531.5	7.24	6.87	
7,620.0	69.80	2.30	7,373.1	575.2	972.3	575.2	6.42	6.17	
7,669.0	74.00	2.30	7,388.3	621.7	974.2	621.7	8.57	8.57	
7,716.0	78.40	2.10	7,399.5	667.3	975.9	667.3	9.37	9.36	
7,764.0	81.80	0.00	7,407.8	714.6	976.8	714.6	8.29	7.08	
7,818.0	86.40	359.40	7,413.3	768.3	976.5	768.3	8.59	8.52	
7,909.0	89.90	0.00	7,416.3	859.2	976.0	859.2	3.90	3.85	
8,002.0	90.20	0.30	7,416.2	952.2	976.3	952.2	0.46	0.32	
8,095.0	90.00	1.20	7,416.0	1,045.2	977.5	1,045.2	0.99	-0.22	
8,189.0	90.70	2.20	7,415.4	1,139.1	980.3	1,139.1	1.30	0.74	
8,282.0	90.30	1.90	7,414.6	1,232.1	983.6	1,232.1	0.54	-0.43	
8,376.0	90.20	2.70	7,414.2	1,326.0	987.4	1,326.0	0.86	-0.11	
8,469.0	90.00	2.00	7,414.0	1,418.9	991.2	1,418.9	0.78	-0.22	
8,563.0	89.00	359.50	7,414.9	1,512.9	992.4	1,512.9	2.86	-1.06	
8,657.0	88.70	357.60	7,416.8	1,606.8	990.0	1,606.8	2.05	-0.32	
8,750.0	88.90	356.90	7,418.7	1,699.7	985.6	1,699.7	0.78	0.22	
8,845.0	88.70	356.70	7,420.7	1,794.6	980.3	1,794.6	0.30	-0.21	
8,938.0	91.30	358.70	7,420.7	1,887.5	976.5	1,887.5	3.53	2.80	
9,032.0	92.30	358.40	7,417.7	1,981.4	974.2	1,981.4	1.11	1.06	
9,125.0	89.70	357.90	7,416.1	2,074.3	971.1	2,074.3	2.85	-2.80	
9,219.0	90.00	357.80	7,416.4	2,168.3	967.6	2,168.3	0.34	0.32	
9,312.0	90.50	1.80	7,416.0	2,261.2	967.3	2,261.2	4.33	0.54	
9,406.0	90.40	5.30	7,415.2	2,355.0	973.1	2,355.0	3.72	-0.11	
9,499.0	90.30	5.20	7,414.7	2,447.6	981.6	2,447.6	0.15	-0.11	
9,592.0	90.60	4.10	7,413.9	2,540.3	989.2	2,540.3	1.23	0.32	
9,686.0	90.60	2.40	7,412.9	2,634.2	994.5	2,634.2	1.81	0.00	
9,780.0	90.30	0.20	7,412.2	2,728.1	996.6	2,728.1	2.36	-0.32	
9,873.0	90.50	0.80	7,411.5	2,821.1	997.4	2,821.1	0.68	0.22	
9,967.0	90.50	358.10	7,410.7	2,915.1	996.5	2,915.1	2.87	0.00	
10,060.0	90.60	358.10	7,409.8	3,008.1	993.5	3,008.1	0.11	0.11	
10,154.0	90.50	357.90	7,408.9	3,102.0	990.2	3,102.0	0.24	-0.11	
10,247.0	90.50	357.00	7,408.1	3,194.9	986.0	3,194.9	0.97	0.00	
10,341.0	90.70	356.80	7,407.1	3,288.8	981.0	3,288.8	0.30	0.21	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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
10,434.0	90.80	359.40	7,405.9	3,381.7	977.9	3,381.7	2.80	0.11	
10,529.0	90.10	357.90	7,405.2	3,476.7	975.6	3,476.7	1.74	-0.74	
10,623.0	89.40	354.00	7,405.6	3,570.4	969.0	3,570.4	4.22	-0.74	
10,718.0	90.10	354.00	7,406.0	3,664.9	959.1	3,664.9	0.74	0.74	
10,812.0	90.50	355.50	7,405.5	3,758.5	950.5	3,758.5	1.65	0.43	
10,906.0	92.10	358.80	7,403.4	3,852.3	945.8	3,852.3	3.90	1.70	
11,001.0	90.20	359.00	7,401.5	3,947.3	944.0	3,947.3	2.01	-2.00	
11,095.0	90.90	0.90	7,400.6	4,041.3	943.9	4,041.3	2.15	0.74	
11,190.0	89.70	359.70	7,400.1	4,136.3	944.4	4,136.3	1.79	-1.26	
11,285.0	90.30	357.60	7,400.1	4,231.2	942.1	4,231.2	2.30	0.63	
11,379.0	91.00	357.70	7,399.0	4,325.2	938.3	4,325.2	0.75	0.74	
11,473.0	90.00	358.00	7,398.2	4,419.1	934.8	4,419.1	1.11	-1.06	
11,568.0	91.60	0.00	7,396.9	4,514.1	933.1	4,514.1	2.70	1.68	
11,662.0	91.30	359.10	7,394.5	4,608.0	932.4	4,608.0	1.01	-0.32	
11,757.0	89.00	359.40	7,394.2	4,703.0	931.1	4,703.0	2.44	-2.42	
11,851.0	90.20	358.80	7,394.9	4,797.0	929.6	4,797.0	1.43	1.28	
11,944.0	88.90	359.80	7,395.6	4,890.0	928.5	4,890.0	1.76	-1.40	
12,039.0	89.10	359.90	7,397.3	4,985.0	928.3	4,985.0	0.24	0.21	
12,134.0	89.30	359.30	7,398.6	5,080.0	927.6	5,080.0	0.67	0.21	
12,229.0	89.00	359.30	7,400.0	5,174.9	926.4	5,174.9	0.32	-0.32	
12,324.0	88.80	359.20	7,401.8	5,269.9	925.2	5,269.9	0.24	-0.21	
12,418.0	90.20	0.20	7,402.7	5,363.9	924.7	5,363.9	1.83	1.49	
12,513.0	91.20	0.50	7,401.5	5,458.9	925.3	5,458.9	1.10	1.05	
12,607.0	93.40	0.70	7,397.7	5,552.8	926.3	5,552.8	2.35	2.34	
12,701.0	91.80	359.50	7,393.5	5,646.7	926.4	5,646.7	2.13	-1.70	
12,796.0	89.80	359.70	7,392.1	5,741.7	925.8	5,741.7	2.12	-2.11	
12,890.0	91.00	0.30	7,391.5	5,835.7	925.8	5,835.7	1.43	1.28	
12,984.0	89.50	358.50	7,391.1	5,929.7	924.8	5,929.7	2.49	-1.60	
13,079.0	89.20	358.30	7,392.1	6,024.6	922.1	6,024.6	0.38	-0.32	
13,174.0	91.00	358.20	7,392.0	6,119.6	919.2	6,119.6	1.90	1.89	
13,268.0	90.90	358.30	7,390.4	6,213.5	916.4	6,213.5	0.15	-0.11	
13,363.0	91.20	359.00	7,388.7	6,308.5	914.1	6,308.5	0.80	0.32	
13,457.0	88.70	359.30	7,388.8	6,402.4	912.7	6,402.4	2.68	-2.66	
13,551.0	88.70	358.60	7,390.9	6,496.4	911.0	6,496.4	0.74	0.00	
13,646.0	92.50	359.00	7,389.9	6,591.3	909.0	6,591.3	4.02	4.00	
13,741.0	91.30	359.30	7,386.7	6,686.3	907.6	6,686.3	1.30	-1.26	
13,835.0	90.60	0.30	7,385.2	6,780.3	907.3	6,780.3	1.30	-0.74	
13,930.0	90.50	0.70	7,384.3	6,875.3	908.1	6,875.3	0.43	-0.11	
14,025.0	90.40	1.00	7,383.5	6,970.2	909.5	6,970.2	0.33	-0.11	
14,119.0	90.20	1.40	7,383.0	7,064.3	911.5	7,064.3	0.48	-0.21	
14,214.0	90.20	0.00	7,382.7	7,159.2	912.6	7,159.2	1.47	0.00	
14,308.0	90.40	0.60	7,382.2	7,253.2	913.1	7,253.2	0.67	0.21	
14,403.0	90.30	359.30	7,381.6	7,348.2	913.1	7,348.2	1.37	-0.11	
14,497.0	90.50	0.00	7,381.0	7,442.2	912.5	7,442.2	0.77	0.21	
14,592.0	89.40	358.50	7,381.1	7,537.2	911.2	7,537.2	1.96	-1.16	
14,687.0	90.50	357.80	7,381.1	7,632.2	908.2	7,632.2	1.37	1.16	
14,782.0	90.60	356.70	7,380.2	7,727.1	903.6	7,727.1	1.16	0.11	
14,877.0	90.90	357.80	7,379.0	7,821.9	899.1	7,821.9	1.20	0.32	
14,971.0	91.10	358.90	7,377.3	7,915.9	896.4	7,915.9	1.19	0.21	
15,066.0	90.60	359.70	7,375.9	8,010.9	895.2	8,010.9	0.99	-0.53	
15,160.0	91.10	358.60	7,374.5	8,104.8	893.8	8,104.8	1.29	0.53	
15,254.0	88.90	357.50	7,374.5	8,198.8	890.6	8,198.8	2.62	-2.34	
15,349.0	88.00	358.40	7,377.1	8,293.7	887.2	8,293.7	1.34	-0.95	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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
15,443.0	88.40	358.20	7,380.1	8,387.6	884.4	8,387.6	0.48	0.43	
15,538.0	91.80	359.90	7,379.9	8,482.6	882.8	8,482.6	4.00	3.58	
15,633.0	90.00	358.80	7,378.4	8,577.5	881.8	8,577.5	2.22	-1.89	
15,727.0	90.50	358.70	7,378.0	8,671.5	879.7	8,671.5	0.54	0.53	
15,821.0	90.50	358.60	7,377.2	8,765.5	877.5	8,765.5	0.11	0.00	
15,916.0	90.60	4.20	7,376.3	8,860.4	879.8	8,860.4	5.90	0.11	
16,011.0	90.80	1.50	7,375.1	8,955.3	884.5	8,955.3	2.85	0.21	
16,106.0	90.70	0.50	7,373.9	9,050.2	886.2	9,050.2	1.06	-0.11	
16,200.0	90.80	0.60	7,372.6	9,144.2	887.1	9,144.2	0.15	0.11	
16,295.0	91.40	1.00	7,370.8	9,239.2	888.4	9,239.2	0.76	0.63	
16,390.0	91.60	0.40	7,368.3	9,334.1	889.6	9,334.1	0.67	0.21	
16,484.0	94.10	359.40	7,363.6	9,428.1	889.4	9,428.1	2.86	2.66	
16,578.0	92.10	358.40	7,358.6	9,521.9	887.6	9,521.9	2.38	-2.13	
16,647.0	94.20	357.20	7,354.8	9,590.7	885.0	9,590.7	3.50	3.04	Last CES Survey @ 16,647' MD
16,702.0	94.20	357.20	7,350.7	9,645.5	882.3	9,645.5	0.00	0.00	PTB @ 16,702'

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									
Edith Ann-Duckworth 4G	0.00	0.00	7,370.2	9,904.8	872.2	1,296,012.10	3,139,689.74	40.144860	-105.000340
- actual wellpath misses target center by 260.2ft at 16702.0ft MD (7350.7 TVD, 9645.5 N, 882.3 E)									
- Point									
Interp @ 7370.8 (Edith A	0.00	0.00	7,370.8	9,789.4	873.6	1,295,896.69	3,139,691.80	40.144543	-105.000335
- actual wellpath misses target center by 145.5ft at 16702.0ft MD (7350.7 TVD, 9645.5 N, 882.3 E)									
- Point									
Edith Ann-Duckworth 4G	0.00	0.00	7,347.5	9,904.8	872.2	1,296,012.10	3,139,689.74	40.144860	-105.000340
- actual wellpath misses target center by 259.5ft at 16702.0ft MD (7350.7 TVD, 9645.5 N, 882.3 E)									
- Point									
Edith Ann-Duckworth 4G	0.00	0.00	7,416.0	760.7	983.9	1,286,868.79	3,139,852.67	40.119758	-104.999942
- actual wellpath misses target center by 8.1ft at 7810.8ft MD (7412.8 TVD, 761.0 N, 976.6 E)									
- Point									
Edith Ann-Duckworth 4G	0.00	0.00	7,371.4	9,669.4	875.1	1,295,776.73	3,139,693.94	40.144214	-105.000330
- actual wellpath misses target center by 32.4ft at 16702.0ft MD (7350.7 TVD, 9645.5 N, 882.3 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
16,647.0	7,354.8	9,590.7	885.0	Last CES Survey @ 16,647' MD
16,702.0	7,350.7	9,645.5	882.3	PTB @ 16,702'

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

DJ Wattenberg

S21-T2N-R68W (Edith Ann-Duckworth)

Edith Ann-Duckworth 4G-21H-O268

Hz

Design: FINAL

Survey Report - Geographic

10 June, 2014

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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	S21-T2N-R68W (Edith Ann-Duckworth)				
Site Position:		Northing:	1,290,455.49 ft	Latitude:	40.129630
From:	Lat/Long	Easting:	3,138,171.93 ft	Longitude:	-105.005880
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well		Edith Ann-Duckworth 4G-21H-O268				
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.57 ft	Latitude:	40.117670
	+E/-W	0.0 ft	Easting:	3,138,873.00 ft	Longitude:	-105.003460
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,927.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	5/31/2014	8.57	66.68	52,645

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	0.00	

Survey Program	Date	6/10/2014			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
166.0	16,702.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey										
Measured	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude			
Depth	Depth	(ft)	(ft)	Northing	Easting					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)					
0.0	0.0	0.0	0.0	1,286,102.57	3,138,873.00	40.117670	-105.003460			
166.0	1.30	210.90	166.0	-1.6	-1.0	40.117666	-105.003464			
260.0	1.30	194.10	260.0	-3.6	-1.8	40.117660	-105.003467			
354.0	1.20	152.40	353.9	-5.5	-1.6	40.117655	-105.003466			
448.0	1.80	75.60	447.9	-6.0	0.3	40.117654	-105.003459			
541.0	3.80	67.20	540.8	-4.4	4.6	40.117658	-105.003444			
635.0	5.00	64.50	634.5	-1.4	11.1	40.117666	-105.003420			
728.0	4.90	64.20	727.2	2.0	18.4	40.117676	-105.003395			
822.0	5.90	57.60	820.8	6.4	26.1	40.117688	-105.003367			
911.0	5.80	72.90	909.3	10.1	34.2	40.117698	-105.003338			
1,019.0	5.90	74.20	1,016.7	13.3	44.8	40.117706	-105.003300			
1,112.0	7.40	84.40	1,109.1	15.1	55.3	40.117712	-105.003262			

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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		
1,206.0	8.50	87.30	1,202.2	16.1	68.3	1,286,119.01	3,138,941.21	40.117714	-105.003216	
1,299.0	9.30	81.90	1,294.1	17.4	82.6	1,286,120.47	3,138,955.51	40.117718	-105.003165	
1,392.0	8.60	82.20	1,386.0	19.4	96.9	1,286,122.55	3,138,969.82	40.117723	-105.003114	
1,487.0	7.30	81.70	1,480.0	21.3	109.9	1,286,124.46	3,138,982.82	40.117728	-105.003067	
1,582.0	8.70	75.60	1,574.1	23.9	122.9	1,286,127.19	3,138,995.74	40.117736	-105.003021	
1,676.0	7.60	75.20	1,667.2	27.3	135.8	1,286,130.62	3,139,008.62	40.117745	-105.002975	
1,771.0	8.00	68.00	1,761.3	31.4	148.0	1,286,134.77	3,139,020.80	40.117756	-105.002931	
1,866.0	9.80	74.50	1,855.1	36.0	161.9	1,286,139.48	3,139,034.69	40.117769	-105.002881	
1,961.0	9.10	71.10	1,948.9	40.6	176.8	1,286,144.16	3,139,049.57	40.117782	-105.002828	
2,056.0	8.60	69.20	2,042.7	45.6	190.5	1,286,149.19	3,139,063.29	40.117795	-105.002779	
2,151.0	8.90	76.20	2,136.6	49.8	204.3	1,286,153.55	3,139,077.04	40.117807	-105.002730	
2,247.0	8.10	73.90	2,231.6	53.5	218.0	1,286,157.27	3,139,090.73	40.117817	-105.002681	
2,342.0	8.80	84.70	2,325.5	56.0	231.7	1,286,159.87	3,139,104.38	40.117824	-105.002632	
2,437.0	8.20	82.30	2,419.5	57.6	245.7	1,286,161.53	3,139,118.32	40.117828	-105.002582	
2,532.0	8.50	84.50	2,513.5	59.2	259.4	1,286,163.19	3,139,132.01	40.117832	-105.002533	
2,627.0	8.00	82.70	2,607.5	60.7	272.9	1,286,164.78	3,139,145.55	40.117837	-105.002484	
2,722.0	9.40	86.10	2,701.4	62.0	287.2	1,286,166.22	3,139,159.84	40.117840	-105.002433	
2,818.0	8.80	81.30	2,796.2	63.7	302.3	1,286,167.95	3,139,174.91	40.117845	-105.002379	
2,913.0	7.80	80.60	2,890.2	65.8	315.8	1,286,170.18	3,139,188.44	40.117851	-105.002331	
3,008.0	8.80	86.60	2,984.2	67.3	329.4	1,286,171.74	3,139,202.05	40.117855	-105.002282	
3,103.0	7.90	85.90	3,078.2	68.2	343.2	1,286,172.72	3,139,215.81	40.117857	-105.002233	
3,198.0	9.70	81.80	3,172.1	69.8	357.6	1,286,174.40	3,139,230.24	40.117862	-105.002181	
3,293.0	8.40	81.20	3,265.9	72.0	372.4	1,286,176.69	3,139,245.00	40.117868	-105.002129	
3,389.0	9.10	81.70	3,360.8	74.2	386.9	1,286,178.94	3,139,259.43	40.117874	-105.002077	
3,484.0	8.20	79.90	3,454.7	76.5	401.0	1,286,181.29	3,139,273.52	40.117880	-105.002027	
3,579.0	8.80	72.80	3,548.7	79.8	414.6	1,286,184.70	3,139,287.12	40.117889	-105.001978	
3,674.0	9.70	71.50	3,642.4	84.5	429.1	1,286,189.47	3,139,301.62	40.117902	-105.001926	
3,770.0	8.50	68.30	3,737.2	89.7	443.4	1,286,194.74	3,139,315.86	40.117916	-105.001875	
3,865.0	9.30	75.70	3,831.1	94.2	457.3	1,286,199.31	3,139,329.79	40.117929	-105.001825	
3,958.0	8.10	71.60	3,923.0	98.1	470.8	1,286,203.31	3,139,343.27	40.117939	-105.001777	
4,054.0	8.50	80.80	4,018.0	101.4	484.3	1,286,206.66	3,139,356.67	40.117948	-105.001729	
4,149.0	8.40	87.70	4,112.0	102.8	498.1	1,286,208.14	3,139,370.53	40.117952	-105.001679	
4,244.0	9.90	77.10	4,205.8	104.9	513.0	1,286,210.32	3,139,385.41	40.117958	-105.001626	
4,339.0	7.00	67.50	4,299.7	108.9	526.3	1,286,214.44	3,139,398.70	40.117969	-105.001578	
4,434.0	8.20	67.40	4,393.9	113.7	537.9	1,286,219.32	3,139,410.28	40.117982	-105.001537	
4,530.0	9.10	70.60	4,488.8	118.9	551.4	1,286,224.55	3,139,423.73	40.117996	-105.001489	
4,625.0	9.10	77.10	4,582.6	123.1	565.8	1,286,228.80	3,139,438.12	40.118008	-105.001437	
4,720.0	7.60	75.30	4,676.6	126.3	579.2	1,286,232.15	3,139,451.50	40.118017	-105.001389	
4,815.0	8.40	86.70	4,770.7	128.3	592.2	1,286,234.21	3,139,464.49	40.118022	-105.001343	
4,910.0	9.10	83.50	4,864.6	129.6	606.6	1,286,235.55	3,139,478.88	40.118026	-105.001291	
5,005.0	10.30	87.10	4,958.2	130.9	622.6	1,286,236.91	3,139,494.82	40.118029	-105.001234	
5,100.0	8.10	82.20	5,052.0	132.2	637.7	1,286,238.34	3,139,509.92	40.118033	-105.001180	
5,195.0	7.50	81.30	5,146.1	134.0	650.4	1,286,240.26	3,139,522.67	40.118038	-105.001135	
5,290.0	8.60	76.80	5,240.2	136.6	663.5	1,286,242.89	3,139,535.70	40.118045	-105.001088	
5,386.0	7.10	73.70	5,335.3	139.9	676.2	1,286,246.26	3,139,548.37	40.118054	-105.001043	
5,481.0	7.10	78.70	5,429.6	142.7	687.6	1,286,249.13	3,139,559.74	40.118062	-105.001002	
5,576.0	7.60	77.10	5,523.8	145.3	699.4	1,286,251.74	3,139,571.61	40.118069	-105.000959	
5,671.0	8.80	78.30	5,617.8	148.1	712.7	1,286,254.70	3,139,584.83	40.118077	-105.000912	
5,766.0	9.50	81.90	5,711.6	150.7	727.6	1,286,257.36	3,139,599.70	40.118084	-105.000859	
5,861.0	9.60	82.50	5,805.3	152.9	743.2	1,286,259.58	3,139,615.30	40.118090	-105.000803	
5,956.0	8.10	89.90	5,899.1	153.9	757.7	1,286,260.71	3,139,629.84	40.118093	-105.000751	
6,051.0	10.50	83.70	5,992.9	154.9	773.0	1,286,261.76	3,139,645.14	40.118095	-105.000696	
6,146.0	6.90	78.40	6,086.8	157.0	787.2	1,286,263.93	3,139,659.32	40.118101	-105.000645	
6,241.0	9.30	72.80	6,180.8	160.4	800.1	1,286,267.43	3,139,672.23	40.118110	-105.000599	
6,337.0	8.20	79.30	6,275.7	163.9	814.3	1,286,271.07	3,139,686.35	40.118120	-105.000549	

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured										
Depth	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map			
(ft)	(°)	(°)	Depth	(ft)	(ft)	Northing	Easting			
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude	Longitude	
6,432.0	8.70	77.40	6,369.7	166.8	828.0	1,286,273.97	3,139,700.00	40.118128	-105.000500	
6,527.0	8.40	72.30	6,463.6	170.4	841.6	1,286,277.72	3,139,713.60	40.118138	-105.000451	
6,622.0	7.70	79.30	6,557.7	173.7	854.4	1,286,281.09	3,139,726.45	40.118147	-105.000405	
6,717.0	8.90	79.20	6,651.7	176.3	867.9	1,286,283.72	3,139,739.91	40.118154	-105.000357	
6,812.0	9.00	84.70	6,745.5	178.4	882.5	1,286,285.87	3,139,754.51	40.118160	-105.000305	
6,907.0	7.80	76.70	6,839.5	180.5	896.2	1,286,288.11	3,139,768.17	40.118166	-105.000256	
6,954.0	10.30	56.80	6,885.9	183.6	902.8	1,286,291.19	3,139,774.78	40.118174	-105.000232	
7,002.0	15.10	42.60	6,932.8	190.5	910.7	1,286,298.19	3,139,782.57	40.118193	-105.000204	
7,049.0	18.00	32.40	6,977.8	201.2	918.7	1,286,308.87	3,139,790.55	40.118222	-105.000175	
7,098.0	21.10	24.00	7,024.0	215.6	926.3	1,286,323.37	3,139,798.11	40.118262	-105.000148	
7,145.0	24.60	17.70	7,067.3	232.7	932.8	1,286,340.46	3,139,804.44	40.118309	-105.000125	
7,193.0	28.70	14.40	7,110.2	253.4	938.7	1,286,361.19	3,139,810.23	40.118366	-105.000104	
7,240.0	33.10	10.90	7,150.5	276.9	943.9	1,286,384.76	3,139,815.33	40.118430	-105.000085	
7,288.0	39.20	9.20	7,189.3	304.8	948.8	1,286,412.66	3,139,820.08	40.118507	-105.000068	
7,335.0	45.50	6.40	7,224.0	336.1	953.1	1,286,444.04	3,139,824.16	40.118593	-105.000052	
7,383.0	49.20	8.50	7,256.5	371.1	957.7	1,286,479.06	3,139,828.55	40.118689	-105.000036	
7,430.0	53.40	6.70	7,285.9	407.5	962.5	1,286,515.43	3,139,833.18	40.118789	-105.000019	
7,478.0	58.30	5.20	7,312.8	447.0	966.6	1,286,554.95	3,139,837.06	40.118897	-105.000004	
7,525.0	63.60	2.60	7,335.7	488.0	969.4	1,286,595.94	3,139,839.60	40.119010	-104.999994	
7,573.0	66.90	1.40	7,355.7	531.5	970.9	1,286,639.51	3,139,840.88	40.119129	-104.999989	
7,620.0	69.80	2.30	7,373.1	575.2	972.3	1,286,683.17	3,139,842.04	40.119249	-104.999984	
7,669.0	74.00	2.30	7,388.3	621.7	974.2	1,286,729.71	3,139,843.65	40.119377	-104.999977	
7,716.0	78.40	2.10	7,399.5	667.3	975.9	1,286,775.32	3,139,845.15	40.119502	-104.999971	
7,764.0	81.80	0.00	7,407.8	714.6	976.8	1,286,822.59	3,139,845.75	40.119632	-104.999968	
7,818.0	86.40	359.40	7,413.3	768.3	976.5	1,286,876.28	3,139,845.16	40.119779	-104.999969	
7,909.0	89.90	0.00	7,416.3	859.2	976.0	1,286,967.22	3,139,844.18	40.120029	-104.999970	
8,002.0	90.20	0.30	7,416.2	952.2	976.3	1,287,060.22	3,139,843.90	40.120284	-104.999969	
8,095.0	90.00	1.20	7,416.0	1,045.2	977.5	1,287,153.21	3,139,844.60	40.120539	-104.999965	
8,189.0	90.70	2.20	7,415.4	1,139.1	980.3	1,287,247.18	3,139,846.86	40.120797	-104.999955	
8,282.0	90.30	1.90	7,414.6	1,232.1	983.6	1,287,340.14	3,139,849.66	40.121052	-104.999943	
8,376.0	90.20	2.70	7,414.2	1,326.0	987.4	1,287,434.08	3,139,852.91	40.121310	-104.999930	
8,469.0	90.00	2.00	7,414.0	1,418.9	991.2	1,287,527.02	3,139,856.20	40.121565	-104.999916	
8,563.0	89.00	359.50	7,414.9	1,512.9	992.4	1,287,621.00	3,139,856.91	40.121823	-104.999912	
8,657.0	88.70	357.60	7,416.8	1,606.8	990.0	1,287,714.94	3,139,854.00	40.122081	-104.999920	
8,750.0	88.90	356.90	7,418.7	1,699.7	985.6	1,287,807.78	3,139,849.02	40.122336	-104.999936	
8,845.0	88.70	356.70	7,420.7	1,794.6	980.3	1,287,902.58	3,139,843.19	40.122596	-104.999955	
8,938.0	91.30	358.70	7,420.7	1,887.5	976.5	1,287,995.47	3,139,838.94	40.122851	-104.999968	
9,032.0	92.30	358.40	7,417.7	1,981.4	974.2	1,288,089.38	3,139,836.04	40.123109	-104.999977	
9,125.0	89.70	357.90	7,416.1	2,074.3	971.1	1,288,182.29	3,139,832.51	40.123364	-104.999988	
9,219.0	90.00	357.80	7,416.4	2,168.3	967.6	1,288,276.20	3,139,828.46	40.123622	-105.000000	
9,312.0	90.50	1.80	7,416.0	2,261.2	967.3	1,288,369.18	3,139,827.62	40.123877	-105.000001	
9,406.0	90.40	5.30	7,415.2	2,355.0	973.1	1,288,463.01	3,139,832.91	40.124135	-104.999980	
9,499.0	90.30	5.20	7,414.7	2,447.6	981.6	1,288,555.67	3,139,840.90	40.124389	-104.999950	
9,592.0	90.60	4.10	7,413.9	2,540.3	989.2	1,288,648.40	3,139,847.92	40.124644	-104.999923	
9,686.0	90.60	2.40	7,412.9	2,634.2	994.5	1,288,742.27	3,139,852.72	40.124901	-104.999904	
9,780.0	90.30	0.20	7,412.2	2,728.1	996.6	1,288,836.24	3,139,854.33	40.125159	-104.999896	
9,873.0	90.50	0.80	7,411.5	2,821.1	997.4	1,288,929.24	3,139,854.62	40.125414	-104.999893	
9,967.0	90.50	358.10	7,410.7	2,915.1	996.5	1,289,023.22	3,139,853.19	40.125672	-104.999897	
10,060.0	90.60	358.10	7,409.8	3,008.1	993.5	1,289,116.14	3,139,849.59	40.125928	-104.999908	
10,154.0	90.50	357.90	7,408.9	3,102.0	990.2	1,289,210.06	3,139,845.78	40.126185	-104.999919	
10,247.0	90.50	357.00	7,408.1	3,194.9	986.0	1,289,302.94	3,139,841.12	40.126440	-104.999934	
10,341.0	90.70	356.80	7,407.1	3,288.8	981.0	1,289,396.77	3,139,835.52	40.126698	-104.999952	
10,434.0	90.80	359.40	7,405.9	3,381.7	977.9	1,289,489.68	3,139,831.91	40.126953	-104.999963	
10,529.0	90.10	357.90	7,405.2	3,476.7	975.6	1,289,584.64	3,139,829.14	40.127214	-104.999971	
10,623.0	89.40	354.00	7,405.6	3,570.4	969.0	1,289,678.34	3,139,821.98	40.127471	-104.999995	

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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		
10,718.0	90.10	354.00	7,406.0	3,664.9	959.1	1,289,772.77	3,139,811.52	40.127731		
10,812.0	90.50	355.50	7,405.5	3,758.5	950.5	1,289,866.32	3,139,802.40	40.127988		
10,906.0	92.10	358.80	7,403.4	3,852.3	945.8	1,289,960.13	3,139,797.20	40.128245		
11,001.0	90.20	359.00	7,401.5	3,947.3	944.0	1,290,055.08	3,139,794.84	40.128506		
11,095.0	90.90	0.90	7,400.6	4,041.3	943.9	1,290,149.07	3,139,794.24	40.128764		
11,190.0	89.70	359.70	7,400.1	4,136.3	944.4	1,290,244.07	3,139,794.20	40.129025		
11,285.0	90.30	357.60	7,400.1	4,231.2	942.1	1,290,339.02	3,139,791.43	40.129285		
11,379.0	91.00	357.70	7,399.0	4,325.2	938.3	1,290,432.91	3,139,787.05	40.129543		
11,473.0	90.00	358.00	7,398.2	4,419.1	934.8	1,290,526.82	3,139,783.00	40.129801		
11,568.0	91.60	0.00	7,396.9	4,514.1	933.1	1,290,621.78	3,139,780.81	40.130062		
11,662.0	91.30	359.10	7,394.5	4,608.0	932.4	1,290,715.74	3,139,779.54	40.130320		
11,757.0	89.00	359.40	7,394.2	4,703.0	931.1	1,290,810.71	3,139,777.77	40.130580		
11,851.0	90.20	358.80	7,394.9	4,797.0	929.6	1,290,904.69	3,139,775.77	40.130838		
11,944.0	88.90	359.80	7,395.6	4,890.0	928.5	1,290,997.67	3,139,774.11	40.131094		
12,039.0	89.10	359.90	7,397.3	4,985.0	928.3	1,291,092.65	3,139,773.33	40.131354		
12,134.0	89.30	359.30	7,398.6	5,080.0	927.6	1,291,187.63	3,139,772.13	40.131615		
12,229.0	89.00	359.30	7,400.0	5,174.9	926.4	1,291,282.61	3,139,770.44	40.131876		
12,324.0	88.80	359.20	7,401.8	5,269.9	925.2	1,291,377.57	3,139,768.67	40.132137		
12,418.0	90.20	0.20	7,402.7	5,363.9	924.7	1,291,471.56	3,139,767.65	40.132395		
12,513.0	91.20	0.50	7,401.5	5,458.9	925.3	1,291,566.55	3,139,767.70	40.132655		
12,607.0	93.40	0.70	7,397.7	5,552.8	926.3	1,291,660.47	3,139,768.15	40.132913		
12,701.0	91.80	359.50	7,393.5	5,646.7	926.4	1,291,754.37	3,139,767.79	40.133171		
12,796.0	89.80	359.70	7,392.1	5,741.7	925.8	1,291,849.35	3,139,766.60	40.133432		
12,890.0	91.00	0.30	7,391.5	5,835.7	925.8	1,291,943.34	3,139,766.07	40.133690		
12,984.0	89.50	358.50	7,391.1	5,929.7	924.8	1,292,037.32	3,139,764.56	40.133948		
13,079.0	89.20	358.30	7,392.1	6,024.6	922.1	1,292,132.26	3,139,761.38	40.134208		
13,174.0	91.00	358.20	7,392.0	6,119.6	919.2	1,292,227.20	3,139,757.94	40.134469		
13,268.0	90.90	358.30	7,390.4	6,213.5	916.4	1,292,321.12	3,139,754.55	40.134727		
13,363.0	91.20	359.00	7,388.7	6,308.5	914.1	1,292,416.04	3,139,751.78	40.134988		
13,457.0	88.70	359.30	7,388.8	6,402.4	912.7	1,292,510.01	3,139,749.86	40.135246		
13,551.0	88.70	358.60	7,390.9	6,496.4	911.0	1,292,603.96	3,139,747.61	40.135504		
13,646.0	92.50	359.00	7,389.9	6,591.3	909.0	1,292,698.90	3,139,745.09	40.135764		
13,741.0	91.30	359.30	7,386.7	6,686.3	907.6	1,292,793.83	3,139,743.15	40.136025		
13,835.0	90.60	0.30	7,385.2	6,780.3	907.3	1,292,887.81	3,139,742.29	40.136283		
13,930.0	90.50	0.70	7,384.3	6,875.3	908.1	1,292,982.81	3,139,742.59	40.136544		
14,025.0	90.40	1.00	7,383.5	6,970.2	909.5	1,293,077.80	3,139,743.47	40.136804		
14,119.0	90.20	1.40	7,383.0	7,064.3	911.5	1,293,171.82	3,139,744.91	40.137062		
14,214.0	90.20	0.00	7,382.7	7,159.2	912.6	1,293,266.81	3,139,745.54	40.137323		
14,308.0	90.40	0.60	7,382.2	7,253.2	913.1	1,293,360.81	3,139,745.51	40.137581		
14,403.0	90.30	359.30	7,381.6	7,348.2	913.1	1,293,455.80	3,139,744.89	40.137842		
14,497.0	90.50	0.00	7,381.0	7,442.2	912.5	1,293,549.79	3,139,743.79	40.138100		
14,592.0	89.40	358.50	7,381.1	7,537.2	911.2	1,293,644.77	3,139,742.02	40.138361		
14,687.0	90.50	357.80	7,381.1	7,632.2	908.2	1,293,739.70	3,139,738.42	40.138621		
14,782.0	90.60	356.70	7,380.2	7,727.1	903.6	1,293,834.56	3,139,733.33	40.138882		
14,877.0	90.90	357.80	7,379.0	7,821.9	899.1	1,293,929.42	3,139,728.24	40.139142		
14,971.0	91.10	358.90	7,377.3	7,915.9	896.4	1,294,023.34	3,139,725.01	40.139400		
15,066.0	90.60	359.70	7,375.9	8,010.9	895.2	1,294,118.32	3,139,723.31	40.139661		
15,160.0	91.10	358.60	7,374.5	8,104.8	893.8	1,294,212.29	3,139,721.39	40.139919		
15,254.0	88.90	357.50	7,374.5	8,198.8	890.6	1,294,306.21	3,139,717.67	40.140177		
15,349.0	88.00	358.40	7,377.1	8,293.7	887.2	1,294,401.09	3,139,713.74	40.140437		
15,443.0	88.40	358.20	7,380.1	8,387.6	884.4	1,294,494.98	3,139,710.43	40.140695		
15,538.0	91.80	359.90	7,379.9	8,482.6	882.8	1,294,589.94	3,139,708.32	40.140956		
15,633.0	90.00	358.80	7,378.4	8,577.5	881.8	1,294,684.91	3,139,706.71	40.141217		
15,727.0	90.50	358.70	7,378.0	8,671.5	879.7	1,294,778.88	3,139,704.14	40.141475		
15,821.0	90.50	358.60	7,377.2	8,765.5	877.5	1,294,872.83	3,139,701.39	40.141733		

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured			Vertical			Map	Map			
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
15,916.0	90.60	4.20	7,376.3	8,860.4	879.8	1,294,967.77	3,139,703.18	40.141993	-105.000313	
16,011.0	90.80	1.50	7,375.1	8,955.3	884.5	1,295,062.66	3,139,707.37	40.142254	-105.000296	
16,106.0	90.70	0.50	7,373.9	9,050.2	886.2	1,295,157.62	3,139,708.50	40.142514	-105.000290	
16,200.0	90.80	0.60	7,372.6	9,144.2	887.1	1,295,251.61	3,139,708.88	40.142772	-105.000287	
16,295.0	91.40	1.00	7,370.8	9,239.2	888.4	1,295,346.59	3,139,709.67	40.143033	-105.000282	
16,390.0	91.60	0.40	7,368.3	9,334.1	889.6	1,295,441.55	3,139,710.30	40.143294	-105.000278	
16,484.0	94.10	359.40	7,363.6	9,428.1	889.4	1,295,535.46	3,139,709.61	40.143551	-105.000279	
16,578.0	92.10	358.40	7,358.6	9,521.9	887.6	1,295,629.28	3,139,707.28	40.143809	-105.000285	
16,647.0	94.20	357.20	7,354.8	9,590.7	885.0	1,295,698.08	3,139,704.25	40.143998	-105.000295	
Last CES Survey @ 16,647' MD										
16,702.0	94.20	357.20	7,350.7	9,645.5	882.3	1,295,752.85	3,139,701.27	40.144148	-105.000304	
PTB @ 16,702'										

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude	Longitude
Edith Ann-Duckworth 4G	0.00	0.00	7,371.4	9,669.4	875.1	1,295,776.73	3,139,693.94	40.144214	-105.000330
- actual wellpath misses target center by 32.4ft at 16702.0ft MD (7350.7 TVD, 9645.5 N, 882.3 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
16,647.0	7,354.8	9,590.7	885.0	Last CES Survey @ 16,647' MD	
16,702.0	7,350.7	9,645.5	882.3	PTB @ 16,702'	

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S21-T2N-R68W (Edith Ann-Duckworth)

Edith Ann-Duckworth 4G-21H-O268

Hz

Design: FINAL

Survey Report - Geographic

10 June, 2014

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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	S21-T2N-R68W (Edith Ann-Duckworth)				
Site Position:		Northing:	1,290,455.49 ft	Latitude:	40.129630
From:	Lat/Long	Easting:	3,138,171.93 ft	Longitude:	-105.005880
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	Edith Ann-Duckworth 4G-21H-O268					
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.57 ft	Latitude:	40.117670
	+E/-W	0.0 ft	Easting:	3,138,873.00 ft	Longitude:	-105.003460
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,927.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	5/31/2014	8.57	66.68	52,645

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	0.00	

Survey Program	Date	6/10/2014			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
166.0	16,702.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey										
Measured	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude			
Depth	Depth	(ft)	(ft)	Northing	Easting					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)					
0.0	0.0	0.0	0.0	1,286,102.57	3,138,873.00	40.117670	-105.003460			
166.0	1.30	210.90	166.0	-1.6	-1.0	40.117666	-105.003464			
260.0	1.30	194.10	260.0	-3.6	-1.8	40.117660	-105.003467			
354.0	1.20	152.40	353.9	-5.5	-1.6	40.117655	-105.003466			
448.0	1.80	75.60	447.9	-6.0	0.3	40.117654	-105.003459			
541.0	3.80	67.20	540.8	-4.4	4.6	40.117658	-105.003444			
635.0	5.00	64.50	634.5	-1.4	11.1	40.117666	-105.003420			
728.0	4.90	64.20	727.2	2.0	18.4	40.117676	-105.003395			
822.0	5.90	57.60	820.8	6.4	26.1	40.117688	-105.003367			
911.0	5.80	72.90	909.3	10.1	34.2	40.117698	-105.003338			
1,019.0	5.90	74.20	1,016.7	13.3	44.8	40.117706	-105.003300			
1,112.0	7.40	84.40	1,109.1	15.1	55.3	40.117712	-105.003262			

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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		
1,206.0	8.50	87.30	1,202.2	16.1	68.3	1,286,119.01	3,138,941.21	40.117714	-105.003216	
1,299.0	9.30	81.90	1,294.1	17.4	82.6	1,286,120.47	3,138,955.51	40.117718	-105.003165	
1,392.0	8.60	82.20	1,386.0	19.4	96.9	1,286,122.55	3,138,969.82	40.117723	-105.003114	
1,487.0	7.30	81.70	1,480.0	21.3	109.9	1,286,124.46	3,138,982.82	40.117728	-105.003067	
1,582.0	8.70	75.60	1,574.1	23.9	122.9	1,286,127.19	3,138,995.74	40.117736	-105.003021	
1,676.0	7.60	75.20	1,667.2	27.3	135.8	1,286,130.62	3,139,008.62	40.117745	-105.002975	
1,771.0	8.00	68.00	1,761.3	31.4	148.0	1,286,134.77	3,139,020.80	40.117756	-105.002931	
1,866.0	9.80	74.50	1,855.1	36.0	161.9	1,286,139.48	3,139,034.69	40.117769	-105.002881	
1,961.0	9.10	71.10	1,948.9	40.6	176.8	1,286,144.16	3,139,049.57	40.117782	-105.002828	
2,056.0	8.60	69.20	2,042.7	45.6	190.5	1,286,149.19	3,139,063.29	40.117795	-105.002779	
2,151.0	8.90	76.20	2,136.6	49.8	204.3	1,286,153.55	3,139,077.04	40.117807	-105.002730	
2,247.0	8.10	73.90	2,231.6	53.5	218.0	1,286,157.27	3,139,090.73	40.117817	-105.002681	
2,342.0	8.80	84.70	2,325.5	56.0	231.7	1,286,159.87	3,139,104.38	40.117824	-105.002632	
2,437.0	8.20	82.30	2,419.5	57.6	245.7	1,286,161.53	3,139,118.32	40.117828	-105.002582	
2,532.0	8.50	84.50	2,513.5	59.2	259.4	1,286,163.19	3,139,132.01	40.117832	-105.002533	
2,627.0	8.00	82.70	2,607.5	60.7	272.9	1,286,164.78	3,139,145.55	40.117837	-105.002484	
2,722.0	9.40	86.10	2,701.4	62.0	287.2	1,286,166.22	3,139,159.84	40.117840	-105.002433	
2,818.0	8.80	81.30	2,796.2	63.7	302.3	1,286,167.95	3,139,174.91	40.117845	-105.002379	
2,913.0	7.80	80.60	2,890.2	65.8	315.8	1,286,170.18	3,139,188.44	40.117851	-105.002331	
3,008.0	8.80	86.60	2,984.2	67.3	329.4	1,286,171.74	3,139,202.05	40.117855	-105.002282	
3,103.0	7.90	85.90	3,078.2	68.2	343.2	1,286,172.72	3,139,215.81	40.117857	-105.002233	
3,198.0	9.70	81.80	3,172.1	69.8	357.6	1,286,174.40	3,139,230.24	40.117862	-105.002181	
3,293.0	8.40	81.20	3,265.9	72.0	372.4	1,286,176.69	3,139,245.00	40.117868	-105.002129	
3,389.0	9.10	81.70	3,360.8	74.2	386.9	1,286,178.94	3,139,259.43	40.117874	-105.002077	
3,484.0	8.20	79.90	3,454.7	76.5	401.0	1,286,181.29	3,139,273.52	40.117880	-105.002027	
3,579.0	8.80	72.80	3,548.7	79.8	414.6	1,286,184.70	3,139,287.12	40.117889	-105.001978	
3,674.0	9.70	71.50	3,642.4	84.5	429.1	1,286,189.47	3,139,301.62	40.117902	-105.001926	
3,770.0	8.50	68.30	3,737.2	89.7	443.4	1,286,194.74	3,139,315.86	40.117916	-105.001875	
3,865.0	9.30	75.70	3,831.1	94.2	457.3	1,286,199.31	3,139,329.79	40.117929	-105.001825	
3,958.0	8.10	71.60	3,923.0	98.1	470.8	1,286,203.31	3,139,343.27	40.117939	-105.001777	
4,054.0	8.50	80.80	4,018.0	101.4	484.3	1,286,206.66	3,139,356.67	40.117948	-105.001729	
4,149.0	8.40	87.70	4,112.0	102.8	498.1	1,286,208.14	3,139,370.53	40.117952	-105.001679	
4,244.0	9.90	77.10	4,205.8	104.9	513.0	1,286,210.32	3,139,385.41	40.117958	-105.001626	
4,339.0	7.00	67.50	4,299.7	108.9	526.3	1,286,214.44	3,139,398.70	40.117969	-105.001578	
4,434.0	8.20	67.40	4,393.9	113.7	537.9	1,286,219.32	3,139,410.28	40.117982	-105.001537	
4,530.0	9.10	70.60	4,488.8	118.9	551.4	1,286,224.55	3,139,423.73	40.117996	-105.001489	
4,625.0	9.10	77.10	4,582.6	123.1	565.8	1,286,228.80	3,139,438.12	40.118008	-105.001437	
4,720.0	7.60	75.30	4,676.6	126.3	579.2	1,286,232.15	3,139,451.50	40.118017	-105.001389	
4,815.0	8.40	86.70	4,770.7	128.3	592.2	1,286,234.21	3,139,464.49	40.118022	-105.001343	
4,910.0	9.10	83.50	4,864.6	129.6	606.6	1,286,235.55	3,139,478.88	40.118026	-105.001291	
5,005.0	10.30	87.10	4,958.2	130.9	622.6	1,286,236.91	3,139,494.82	40.118029	-105.001234	
5,100.0	8.10	82.20	5,052.0	132.2	637.7	1,286,238.34	3,139,509.92	40.118033	-105.001180	
5,195.0	7.50	81.30	5,146.1	134.0	650.4	1,286,240.26	3,139,522.67	40.118038	-105.001135	
5,290.0	8.60	76.80	5,240.2	136.6	663.5	1,286,242.89	3,139,535.70	40.118045	-105.001088	
5,386.0	7.10	73.70	5,335.3	139.9	676.2	1,286,246.26	3,139,548.37	40.118054	-105.001043	
5,481.0	7.10	78.70	5,429.6	142.7	687.6	1,286,249.13	3,139,559.74	40.118062	-105.001002	
5,576.0	7.60	77.10	5,523.8	145.3	699.4	1,286,251.74	3,139,571.61	40.118069	-105.000959	
5,671.0	8.80	78.30	5,617.8	148.1	712.7	1,286,254.70	3,139,584.83	40.118077	-105.000912	
5,766.0	9.50	81.90	5,711.6	150.7	727.6	1,286,257.36	3,139,599.70	40.118084	-105.000859	
5,861.0	9.60	82.50	5,805.3	152.9	743.2	1,286,259.58	3,139,615.30	40.118090	-105.000803	
5,956.0	8.10	89.90	5,899.1	153.9	757.7	1,286,260.71	3,139,629.84	40.118093	-105.000751	
6,051.0	10.50	83.70	5,992.9	154.9	773.0	1,286,261.76	3,139,645.14	40.118095	-105.000696	
6,146.0	6.90	78.40	6,086.8	157.0	787.2	1,286,263.93	3,139,659.32	40.118101	-105.000645	
6,241.0	9.30	72.80	6,180.8	160.4	800.1	1,286,267.43	3,139,672.23	40.118110	-105.000599	
6,337.0	8.20	79.30	6,275.7	163.9	814.3	1,286,271.07	3,139,686.35	40.118120	-105.000549	

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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		
6,432.0	8.70	77.40	6,369.7	166.8	828.0	1,286,273.97	3,139,700.00	40.118128		-105.000500
6,527.0	8.40	72.30	6,463.6	170.4	841.6	1,286,277.72	3,139,713.60	40.118138		-105.000451
6,622.0	7.70	79.30	6,557.7	173.7	854.4	1,286,281.09	3,139,726.45	40.118147		-105.000405
6,717.0	8.90	79.20	6,651.7	176.3	867.9	1,286,283.72	3,139,739.91	40.118154		-105.000357
6,812.0	9.00	84.70	6,745.5	178.4	882.5	1,286,285.87	3,139,754.51	40.118160		-105.000305
6,907.0	7.80	76.70	6,839.5	180.5	896.2	1,286,288.11	3,139,768.17	40.118166		-105.000256
6,954.0	10.30	56.80	6,885.9	183.6	902.8	1,286,291.19	3,139,774.78	40.118174		-105.000232
7,002.0	15.10	42.60	6,932.8	190.5	910.7	1,286,298.19	3,139,782.57	40.118193		-105.000204
7,049.0	18.00	32.40	6,977.8	201.2	918.7	1,286,308.87	3,139,790.55	40.118222		-105.000175
7,098.0	21.10	24.00	7,024.0	215.6	926.3	1,286,323.37	3,139,798.11	40.118262		-105.000148
7,145.0	24.60	17.70	7,067.3	232.7	932.8	1,286,340.46	3,139,804.44	40.118309		-105.000125
7,193.0	28.70	14.40	7,110.2	253.4	938.7	1,286,361.19	3,139,810.23	40.118366		-105.000104
7,240.0	33.10	10.90	7,150.5	276.9	943.9	1,286,384.76	3,139,815.33	40.118430		-105.000085
7,288.0	39.20	9.20	7,189.3	304.8	948.8	1,286,412.66	3,139,820.08	40.118507		-105.000068
7,335.0	45.50	6.40	7,224.0	336.1	953.1	1,286,444.04	3,139,824.16	40.118593		-105.000052
7,383.0	49.20	8.50	7,256.5	371.1	957.7	1,286,479.06	3,139,828.55	40.118689		-105.000036
7,430.0	53.40	6.70	7,285.9	407.5	962.5	1,286,515.43	3,139,833.18	40.118789		-105.000019
7,478.0	58.30	5.20	7,312.8	447.0	966.6	1,286,554.95	3,139,837.06	40.118897		-105.000004
7,525.0	63.60	2.60	7,335.7	488.0	969.4	1,286,595.94	3,139,839.60	40.119010		-104.999994
7,573.0	66.90	1.40	7,355.7	531.5	970.9	1,286,639.51	3,139,840.88	40.119129		-104.999989
7,620.0	69.80	2.30	7,373.1	575.2	972.3	1,286,683.17	3,139,842.04	40.119249		-104.999984
7,669.0	74.00	2.30	7,388.3	621.7	974.2	1,286,729.71	3,139,843.65	40.119377		-104.999977
7,716.0	78.40	2.10	7,399.5	667.3	975.9	1,286,775.32	3,139,845.15	40.119502		-104.999971
7,764.0	81.80	0.00	7,407.8	714.6	976.8	1,286,822.59	3,139,845.75	40.119632		-104.999968
7,818.0	86.40	359.40	7,413.3	768.3	976.5	1,286,876.28	3,139,845.16	40.119779		-104.999969
7,909.0	89.90	0.00	7,416.3	859.2	976.0	1,286,967.22	3,139,844.18	40.120029		-104.999970
8,002.0	90.20	0.30	7,416.2	952.2	976.3	1,287,060.22	3,139,843.90	40.120284		-104.999969
8,095.0	90.00	1.20	7,416.0	1,045.2	977.5	1,287,153.21	3,139,844.60	40.120539		-104.999965
8,189.0	90.70	2.20	7,415.4	1,139.1	980.3	1,287,247.18	3,139,846.86	40.120797		-104.999955
8,282.0	90.30	1.90	7,414.6	1,232.1	983.6	1,287,340.14	3,139,849.66	40.121052		-104.999943
8,376.0	90.20	2.70	7,414.2	1,326.0	987.4	1,287,434.08	3,139,852.91	40.121310		-104.999930
8,469.0	90.00	2.00	7,414.0	1,418.9	991.2	1,287,527.02	3,139,856.20	40.121565		-104.999916
8,563.0	89.00	359.50	7,414.9	1,512.9	992.4	1,287,621.00	3,139,856.91	40.121823		-104.999912
8,657.0	88.70	357.60	7,416.8	1,606.8	990.0	1,287,714.94	3,139,854.00	40.122081		-104.999920
8,750.0	88.90	356.90	7,418.7	1,699.7	985.6	1,287,807.78	3,139,849.02	40.122336		-104.999936
8,845.0	88.70	356.70	7,420.7	1,794.6	980.3	1,287,902.58	3,139,843.19	40.122596		-104.999955
8,938.0	91.30	358.70	7,420.7	1,887.5	976.5	1,287,995.47	3,139,838.94	40.122851		-104.999968
9,032.0	92.30	358.40	7,417.7	1,981.4	974.2	1,288,089.38	3,139,836.04	40.123109		-104.999977
9,125.0	89.70	357.90	7,416.1	2,074.3	971.1	1,288,182.29	3,139,832.51	40.123364		-104.999988
9,219.0	90.00	357.80	7,416.4	2,168.3	967.6	1,288,276.20	3,139,828.46	40.123622		-105.000000
9,312.0	90.50	1.80	7,416.0	2,261.2	967.3	1,288,369.18	3,139,827.62	40.123877		-105.000001
9,406.0	90.40	5.30	7,415.2	2,355.0	973.1	1,288,463.01	3,139,832.91	40.124135		-104.999980
9,499.0	90.30	5.20	7,414.7	2,447.6	981.6	1,288,555.67	3,139,840.90	40.124389		-104.999950
9,592.0	90.60	4.10	7,413.9	2,540.3	989.2	1,288,648.40	3,139,847.92	40.124644		-104.999923
9,686.0	90.60	2.40	7,412.9	2,634.2	994.5	1,288,742.27	3,139,852.72	40.124901		-104.999904
9,780.0	90.30	0.20	7,412.2	2,728.1	996.6	1,288,836.24	3,139,854.33	40.125159		-104.999896
9,873.0	90.50	0.80	7,411.5	2,821.1	997.4	1,288,929.24	3,139,854.62	40.125414		-104.999893
9,967.0	90.50	358.10	7,410.7	2,915.1	996.5	1,289,023.22	3,139,853.19	40.125672		-104.999897
10,060.0	90.60	358.10	7,409.8	3,008.1	993.5	1,289,116.14	3,139,849.59	40.125928		-104.999908
10,154.0	90.50	357.90	7,408.9	3,102.0	990.2	1,289,210.06	3,139,845.78	40.126185		-104.999919
10,247.0	90.50	357.00	7,408.1	3,194.9	986.0	1,289,302.94	3,139,841.12	40.126440		-104.999934
10,341.0	90.70	356.80	7,407.1	3,288.8	981.0	1,289,396.77	3,139,835.52	40.126698		-104.999952
10,434.0	90.80	359.40	7,405.9	3,381.7	977.9	1,289,489.68	3,139,831.91	40.126953		-104.999963
10,529.0	90.10	357.90	7,405.2	3,476.7	975.6	1,289,584.64	3,139,829.14	40.127214		-104.999971
10,623.0	89.40	354.00	7,405.6	3,570.4	969.0	1,289,678.34	3,139,821.98	40.127471		-104.999995

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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		
10,718.0	90.10	354.00	7,406.0	3,664.9	959.1	1,289,772.77	3,139,811.52	40.127731		
10,812.0	90.50	355.50	7,405.5	3,758.5	950.5	1,289,866.32	3,139,802.40	40.127988		
10,906.0	92.10	358.80	7,403.4	3,852.3	945.8	1,289,960.13	3,139,797.20	40.128245		
11,001.0	90.20	359.00	7,401.5	3,947.3	944.0	1,290,055.08	3,139,794.84	40.128506		
11,095.0	90.90	0.90	7,400.6	4,041.3	943.9	1,290,149.07	3,139,794.24	40.128764		
11,190.0	89.70	359.70	7,400.1	4,136.3	944.4	1,290,244.07	3,139,794.20	40.129025		
11,285.0	90.30	357.60	7,400.1	4,231.2	942.1	1,290,339.02	3,139,791.43	40.129285		
11,379.0	91.00	357.70	7,399.0	4,325.2	938.3	1,290,432.91	3,139,787.05	40.129543		
11,473.0	90.00	358.00	7,398.2	4,419.1	934.8	1,290,526.82	3,139,783.00	40.129801		
11,568.0	91.60	0.00	7,396.9	4,514.1	933.1	1,290,621.78	3,139,780.81	40.130062		
11,662.0	91.30	359.10	7,394.5	4,608.0	932.4	1,290,715.74	3,139,779.54	40.130320		
11,757.0	89.00	359.40	7,394.2	4,703.0	931.1	1,290,810.71	3,139,777.77	40.130580		
11,851.0	90.20	358.80	7,394.9	4,797.0	929.6	1,290,904.69	3,139,775.77	40.130838		
11,944.0	88.90	359.80	7,395.6	4,890.0	928.5	1,290,997.67	3,139,774.11	40.131094		
12,039.0	89.10	359.90	7,397.3	4,985.0	928.3	1,291,092.65	3,139,773.33	40.131354		
12,134.0	89.30	359.30	7,398.6	5,080.0	927.6	1,291,187.63	3,139,772.13	40.131615		
12,229.0	89.00	359.30	7,400.0	5,174.9	926.4	1,291,282.61	3,139,770.44	40.131876		
12,324.0	88.80	359.20	7,401.8	5,269.9	925.2	1,291,377.57	3,139,768.67	40.132137		
12,418.0	90.20	0.20	7,402.7	5,363.9	924.7	1,291,471.56	3,139,767.65	40.132395		
12,513.0	91.20	0.50	7,401.5	5,458.9	925.3	1,291,566.55	3,139,767.70	40.132655		
12,607.0	93.40	0.70	7,397.7	5,552.8	926.3	1,291,660.47	3,139,768.15	40.132913		
12,701.0	91.80	359.50	7,393.5	5,646.7	926.4	1,291,754.37	3,139,767.79	40.133171		
12,796.0	89.80	359.70	7,392.1	5,741.7	925.8	1,291,849.35	3,139,766.60	40.133432		
12,890.0	91.00	0.30	7,391.5	5,835.7	925.8	1,291,943.34	3,139,766.07	40.133690		
12,984.0	89.50	358.50	7,391.1	5,929.7	924.8	1,292,037.32	3,139,764.56	40.133948		
13,079.0	89.20	358.30	7,392.1	6,024.6	922.1	1,292,132.26	3,139,761.38	40.134208		
13,174.0	91.00	358.20	7,392.0	6,119.6	919.2	1,292,227.20	3,139,757.94	40.134469		
13,268.0	90.90	358.30	7,390.4	6,213.5	916.4	1,292,321.12	3,139,754.55	40.134727		
13,363.0	91.20	359.00	7,388.7	6,308.5	914.1	1,292,416.04	3,139,751.78	40.134988		
13,457.0	88.70	359.30	7,388.8	6,402.4	912.7	1,292,510.01	3,139,749.86	40.135246		
13,551.0	88.70	358.60	7,390.9	6,496.4	911.0	1,292,603.96	3,139,747.61	40.135504		
13,646.0	92.50	359.00	7,389.9	6,591.3	909.0	1,292,698.90	3,139,745.09	40.135764		
13,741.0	91.30	359.30	7,386.7	6,686.3	907.6	1,292,793.83	3,139,743.15	40.136025		
13,835.0	90.60	0.30	7,385.2	6,780.3	907.3	1,292,887.81	3,139,742.29	40.136283		
13,930.0	90.50	0.70	7,384.3	6,875.3	908.1	1,292,982.81	3,139,742.59	40.136544		
14,025.0	90.40	1.00	7,383.5	6,970.2	909.5	1,293,077.80	3,139,743.47	40.136804		
14,119.0	90.20	1.40	7,383.0	7,064.3	911.5	1,293,171.82	3,139,744.91	40.137062		
14,214.0	90.20	0.00	7,382.7	7,159.2	912.6	1,293,266.81	3,139,745.54	40.137323		
14,308.0	90.40	0.60	7,382.2	7,253.2	913.1	1,293,360.81	3,139,745.51	40.137581		
14,403.0	90.30	359.30	7,381.6	7,348.2	913.1	1,293,455.80	3,139,744.89	40.137842		
14,497.0	90.50	0.00	7,381.0	7,442.2	912.5	1,293,549.79	3,139,743.79	40.138100		
14,592.0	89.40	358.50	7,381.1	7,537.2	911.2	1,293,644.77	3,139,742.02	40.138361		
14,687.0	90.50	357.80	7,381.1	7,632.2	908.2	1,293,739.70	3,139,738.42	40.138621		
14,782.0	90.60	356.70	7,380.2	7,727.1	903.6	1,293,834.56	3,139,733.33	40.138882		
14,877.0	90.90	357.80	7,379.0	7,821.9	899.1	1,293,929.42	3,139,728.24	40.139142		
14,971.0	91.10	358.90	7,377.3	7,915.9	896.4	1,294,023.34	3,139,725.01	40.139400		
15,066.0	90.60	359.70	7,375.9	8,010.9	895.2	1,294,118.32	3,139,723.31	40.139661		
15,160.0	91.10	358.60	7,374.5	8,104.8	893.8	1,294,212.29	3,139,721.39	40.139919		
15,254.0	88.90	357.50	7,374.5	8,198.8	890.6	1,294,306.21	3,139,717.67	40.140177		
15,349.0	88.00	358.40	7,377.1	8,293.7	887.2	1,294,401.09	3,139,713.74	40.140437		
15,443.0	88.40	358.20	7,380.1	8,387.6	884.4	1,294,494.98	3,139,710.43	40.140695		
15,538.0	91.80	359.90	7,379.9	8,482.6	882.8	1,294,589.94	3,139,708.32	40.140956		
15,633.0	90.00	358.80	7,378.4	8,577.5	881.8	1,294,684.91	3,139,706.71	40.141217		
15,727.0	90.50	358.70	7,378.0	8,671.5	879.7	1,294,778.88	3,139,704.14	40.141475		
15,821.0	90.50	358.60	7,377.2	8,765.5	877.5	1,294,872.83	3,139,701.39	40.141733		

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4G-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4955.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4955.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4G-21H-O268	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		
15,916.0	90.60	4.20	7,376.3	8,860.4	879.8	1,294,967.77	3,139,703.18	40.141993	-105.000313	
16,011.0	90.80	1.50	7,375.1	8,955.3	884.5	1,295,062.66	3,139,707.37	40.142254	-105.000296	
16,106.0	90.70	0.50	7,373.9	9,050.2	886.2	1,295,157.62	3,139,708.50	40.142514	-105.000290	
16,200.0	90.80	0.60	7,372.6	9,144.2	887.1	1,295,251.61	3,139,708.88	40.142772	-105.000287	
16,295.0	91.40	1.00	7,370.8	9,239.2	888.4	1,295,346.59	3,139,709.67	40.143033	-105.000282	
16,390.0	91.60	0.40	7,368.3	9,334.1	889.6	1,295,441.55	3,139,710.30	40.143294	-105.000278	
16,484.0	94.10	359.40	7,363.6	9,428.1	889.4	1,295,535.46	3,139,709.61	40.143551	-105.000279	
16,578.0	92.10	358.40	7,358.6	9,521.9	887.6	1,295,629.28	3,139,707.28	40.143809	-105.000285	
16,647.0	94.20	357.20	7,354.8	9,590.7	885.0	1,295,698.08	3,139,704.25	40.143998	-105.000295	
Last CES Survey @ 16,647' MD										
16,702.0	94.20	357.20	7,350.7	9,645.5	882.3	1,295,752.85	3,139,701.27	40.144148	-105.000304	
PTB @ 16,702'										

Design Targets										
Target Name										
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude Longitude		
- Shape										
Edith Ann-Duckworth 4G	0.00	0.00	7,371.4	9,669.4	875.1	1,295,776.73	3,139,693.94	40.144214	-105.000330	
- actual wellpath misses target center by 32.4ft at 16702.0ft MD (7350.7 TVD, 9645.5 N, 882.3 E)										
- Point										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
16,647.0	7,354.8	9,590.7	885.0	Last CES Survey @ 16,647' MD	
16,702.0	7,350.7	9,645.5	882.3	PTB @ 16,702'	

Checked By: _____ Approved By: _____ Date: _____