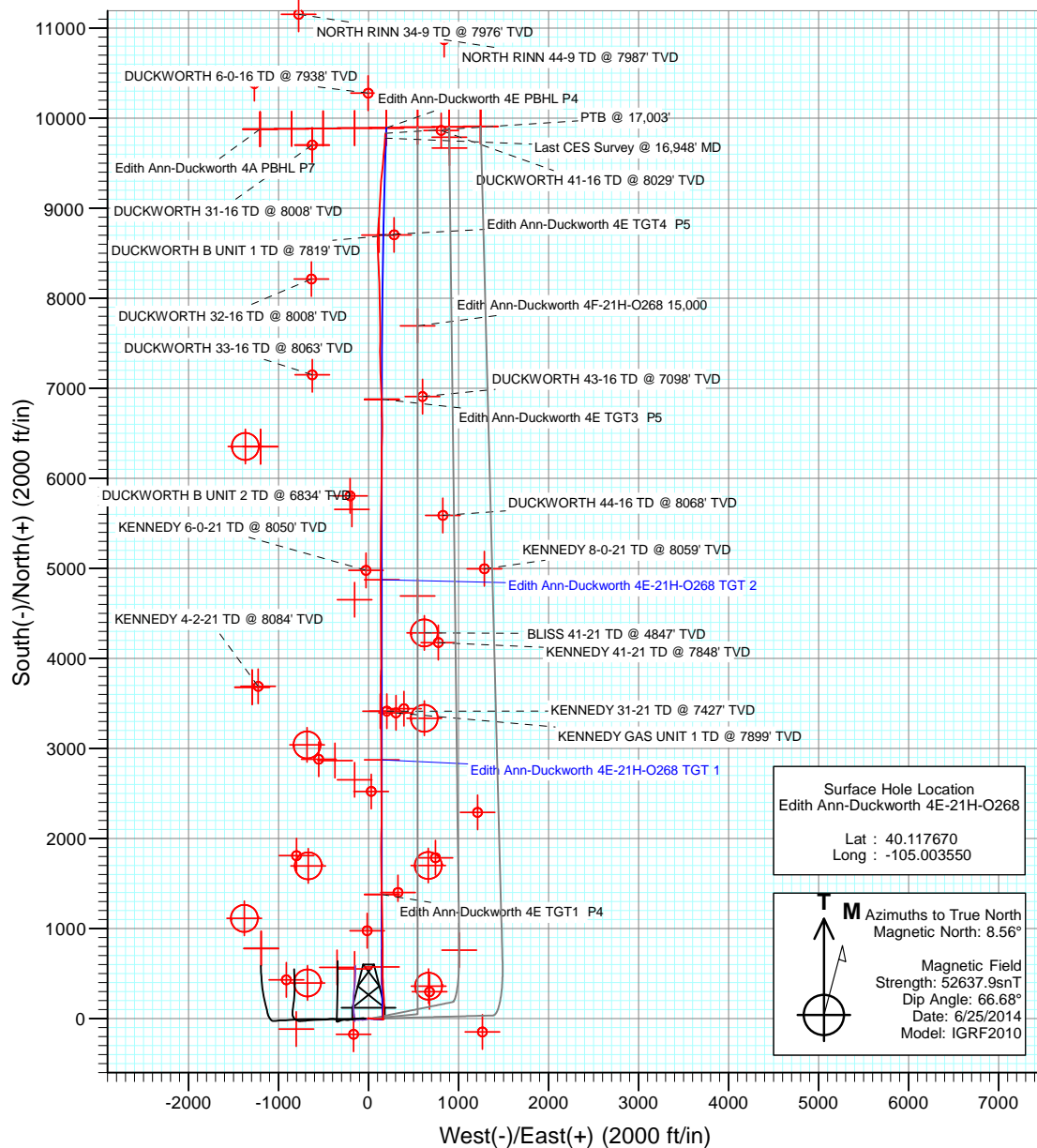
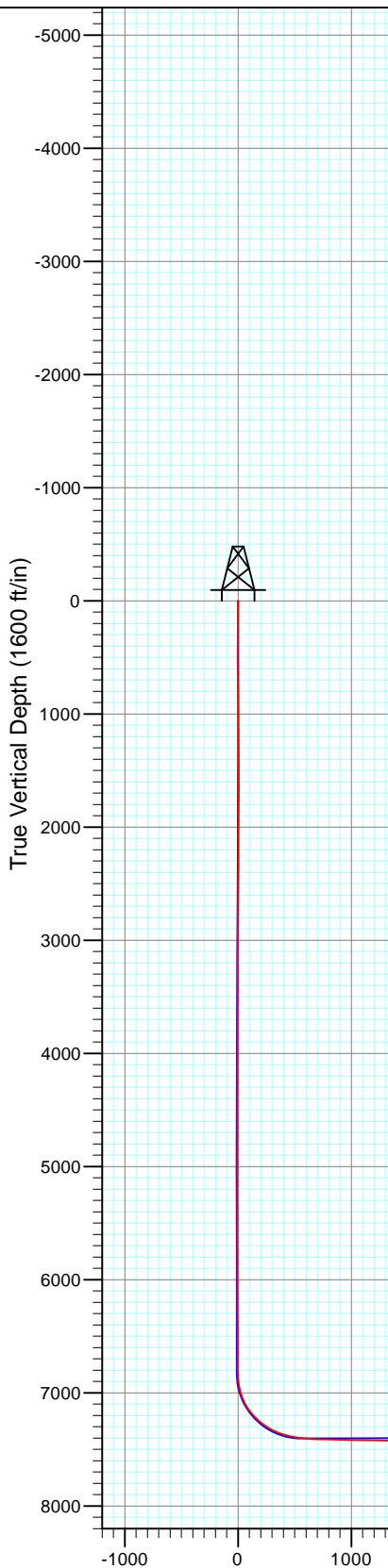




Project: DJ Wattenberg
Site: S21-T2N-R68W (Edith Ann-Duckworth)
Well: Edith Ann-Duckworth 4E-21H-O268
Wellbore: HZ
Design: FINAL



FINAL
Edith Ann-Duckworth 4E-21H-O268
305655/145103(S-I) 306255/145213(LAT); SC
KB @ 4954.5ft (Patterson 272)
Ground Elevation @ 4926.0
North American Datum 1983
Well Edith Ann-Duckworth 4E-21H-O268, True North

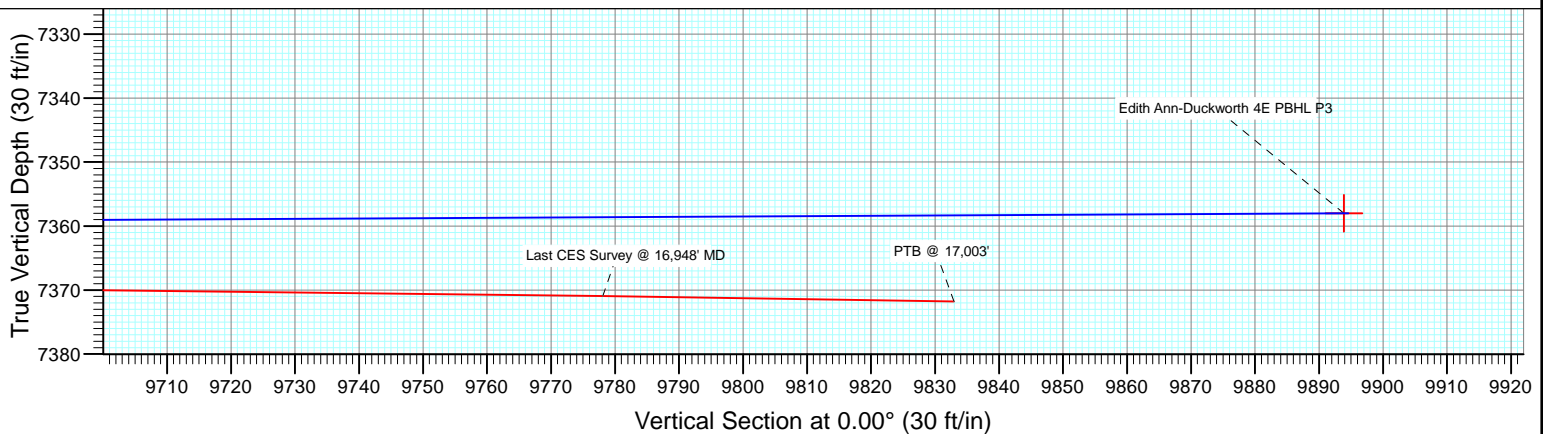
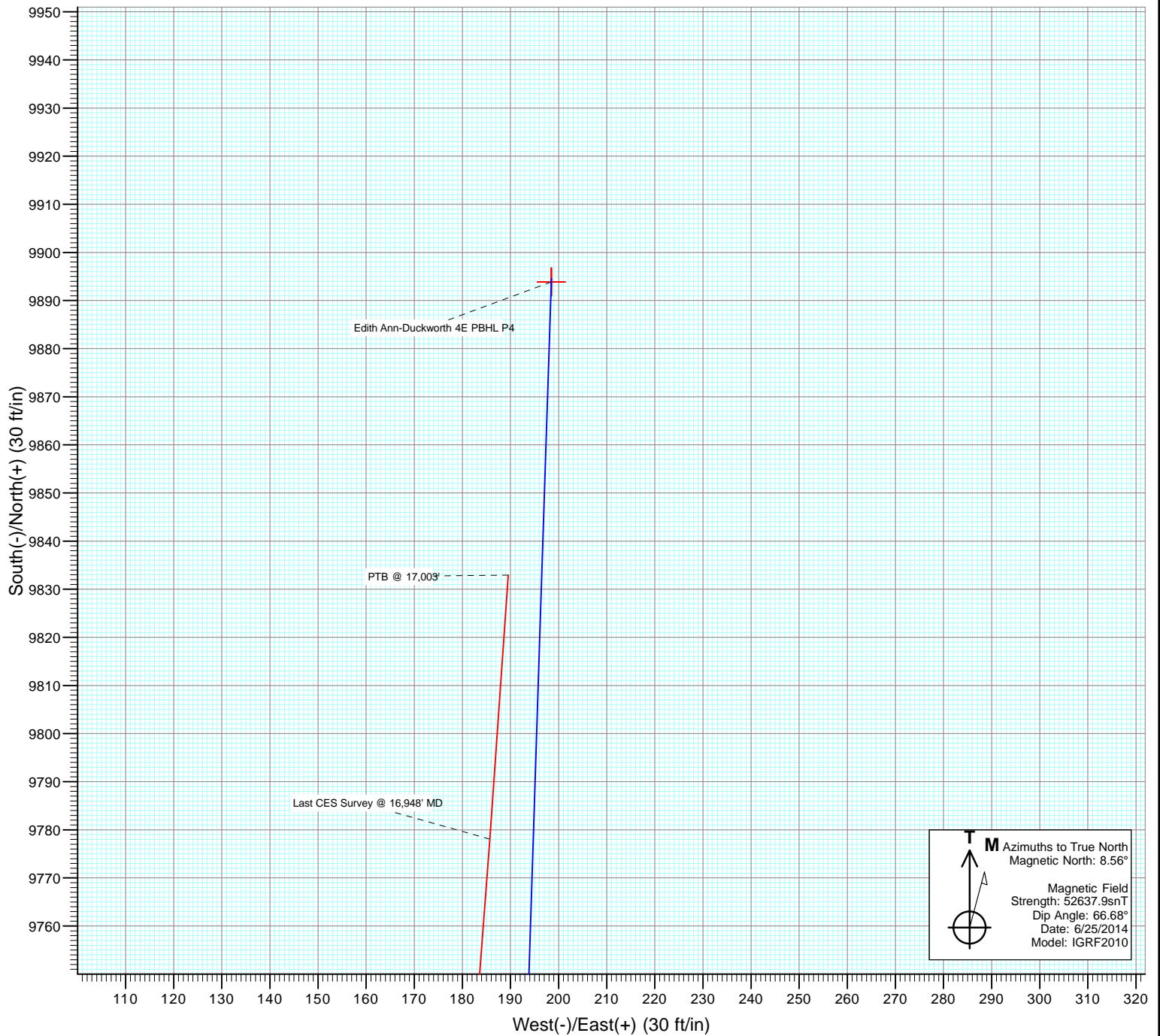


PTB @ 17,003'
Last CES Survey @ 16,948' MD
Edith Ann-Duckworth 4E PBHL P3

Vertical Section at 0.00° (1600 ft/in)



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



Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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 4E-21H-O268					
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.43 ft	Latitude:	40.117670
	+E/-W	0.0 ft	Easting:	3,138,847.82 ft	Longitude:	-105.003550
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,926.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/25/2014	8.56	66.68	52,638

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	7/7/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
167.0	17,003.0	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		
167.0	0.30	249.30	167.0	-0.2	-0.4	-0.2	0.18	0.18		
261.0	0.50	222.20	261.0	-0.5	-0.9	-0.5	0.29	0.21		
355.0	0.60	231.00	355.0	-1.2	-1.6	-1.2	0.14	0.11		
449.0	0.60	244.00	449.0	-1.7	-2.4	-1.7	0.14	0.00		
542.0	0.50	281.00	542.0	-1.8	-3.2	-1.8	0.39	-0.11		
635.0	0.40	289.80	635.0	-1.6	-3.9	-1.6	0.13	-0.11		
729.0	0.50	348.60	729.0	-1.1	-4.3	-1.1	0.48	0.11		
820.0	0.60	349.40	820.0	-0.3	-4.5	-0.3	0.11	0.11		
898.0	0.90	32.40	898.0	0.7	-4.2	0.7	0.79	0.38		
1,018.0	1.20	43.70	1,017.9	2.4	-2.9	2.4	0.30	0.25		
1,111.0	1.10	35.00	1,110.9	3.8	-1.7	3.8	0.22	-0.11		
1,205.0	1.00	28.60	1,204.9	5.3	-0.8	5.3	0.16	-0.11		

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
1,298.0	0.10	310.60	1,297.9	6.0	-0.4	6.0	1.06	-0.97	
1,392.0	0.30	320.80	1,391.9	6.3	-0.7	6.3	0.22	0.21	
1,486.0	0.30	306.60	1,485.9	6.6	-1.0	6.6	0.08	0.00	
1,581.0	0.50	303.10	1,580.9	7.0	-1.6	7.0	0.21	0.21	
1,676.0	0.40	170.00	1,675.9	6.9	-1.9	6.9	0.87	-0.11	
1,771.0	0.40	189.60	1,770.9	6.2	-1.9	6.2	0.14	0.00	
1,866.0	0.40	205.90	1,865.9	5.6	-2.1	5.6	0.12	0.00	
1,961.0	0.40	209.40	1,960.9	5.0	-2.4	5.0	0.03	0.00	
2,056.0	1.00	98.70	2,055.9	4.6	-1.7	4.6	1.26	0.63	
2,152.0	1.60	101.50	2,151.9	4.2	0.4	4.2	0.63	0.62	
2,247.0	2.90	100.60	2,246.8	3.5	4.1	3.5	1.37	1.37	
2,342.0	3.80	92.40	2,341.6	2.9	9.6	2.9	1.07	0.95	
2,437.0	4.50	87.50	2,436.4	3.0	16.5	3.0	0.83	0.74	
2,532.0	5.70	93.40	2,531.0	2.8	24.9	2.8	1.38	1.26	
2,627.0	6.30	98.50	2,625.5	1.8	34.8	1.8	0.84	0.63	
2,722.0	5.70	98.20	2,720.0	0.3	44.6	0.3	0.63	-0.63	
2,818.0	6.10	100.70	2,815.5	-1.3	54.3	-1.3	0.50	0.42	
2,913.0	5.00	97.40	2,910.0	-2.8	63.4	-2.8	1.21	-1.16	
3,008.0	6.20	93.70	3,004.6	-3.6	72.6	-3.6	1.32	1.26	
3,103.0	5.40	88.40	3,099.1	-3.8	82.2	-3.8	1.01	-0.84	
3,199.0	6.30	87.30	3,194.6	-3.5	92.0	-3.5	0.94	0.94	
3,294.0	5.60	83.80	3,289.1	-2.7	101.8	-2.7	0.83	-0.74	
3,389.0	6.40	95.60	3,383.5	-2.7	111.7	-2.7	1.54	0.84	
3,484.0	5.70	83.50	3,478.0	-2.7	121.6	-2.7	1.53	-0.74	
3,579.0	5.00	97.60	3,572.6	-2.7	130.4	-2.7	1.56	-0.74	
3,675.0	4.50	94.30	3,668.3	-3.6	138.3	-3.6	0.59	-0.52	
3,770.0	4.30	88.70	3,763.0	-3.8	145.6	-3.8	0.50	-0.21	
3,865.0	3.90	84.80	3,857.7	-3.4	152.4	-3.4	0.51	-0.42	
3,960.0	4.00	100.40	3,952.5	-3.7	158.9	-3.7	1.13	0.11	
4,056.0	2.60	104.50	4,048.4	-4.8	164.3	-4.8	1.48	-1.46	
4,151.0	1.50	116.60	4,143.3	-5.9	167.5	-5.9	1.24	-1.16	
4,246.0	0.80	337.20	4,238.3	-5.9	168.3	-5.9	2.29	-0.74	
4,341.0	0.80	1.90	4,333.3	-4.6	168.1	-4.6	0.36	0.00	
4,437.0	0.40	286.50	4,429.3	-3.8	167.8	-3.8	0.83	-0.42	
4,532.0	0.40	310.00	4,524.3	-3.5	167.2	-3.5	0.17	0.00	
4,627.0	0.50	213.60	4,619.3	-3.7	166.7	-3.7	0.71	0.11	
4,722.0	0.70	219.50	4,714.3	-4.5	166.1	-4.5	0.22	0.21	
4,817.0	0.70	227.30	4,809.3	-5.3	165.3	-5.3	0.10	0.00	
4,912.0	0.60	237.70	4,904.3	-6.0	164.5	-6.0	0.16	-0.11	
5,008.0	0.50	244.90	5,000.2	-6.4	163.7	-6.4	0.13	-0.10	
5,103.0	0.30	275.00	5,095.2	-6.6	163.1	-6.6	0.30	-0.21	
5,198.0	0.20	279.10	5,190.2	-6.5	162.6	-6.5	0.11	-0.11	
5,292.0	0.20	284.60	5,284.2	-6.4	162.3	-6.4	0.02	0.00	
5,388.0	0.20	297.60	5,380.2	-6.3	162.0	-6.3	0.05	0.00	
5,483.0	0.20	315.70	5,475.2	-6.1	161.8	-6.1	0.07	0.00	
5,578.0	0.30	310.80	5,570.2	-5.8	161.4	-5.8	0.11	0.11	
5,673.0	0.30	310.40	5,665.2	-5.5	161.1	-5.5	0.00	0.00	
5,768.0	0.30	299.10	5,760.2	-5.2	160.7	-5.2	0.06	0.00	
5,863.0	0.30	237.50	5,855.2	-5.3	160.2	-5.3	0.32	0.00	
5,958.0	0.30	269.30	5,950.2	-5.4	159.8	-5.4	0.17	0.00	
6,053.0	0.40	292.80	6,045.2	-5.3	159.2	-5.3	0.18	0.11	
6,148.0	0.40	284.00	6,140.2	-5.1	158.6	-5.1	0.06	0.00	
6,244.0	0.50	4.30	6,236.2	-4.6	158.3	-4.6	0.61	0.10	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
6,339.0	0.40	342.70	6,331.2	-3.8	158.2	-3.8	0.21	-0.11	
6,434.0	0.40	342.30	6,426.2	-3.2	158.0	-3.2	0.00	0.00	
6,529.0	0.50	78.30	6,521.2	-2.8	158.3	-2.8	0.71	0.11	
6,624.0	0.40	53.20	6,616.2	-2.5	159.0	-2.5	0.23	-0.11	
6,719.0	0.30	45.30	6,711.2	-2.1	159.5	-2.1	0.12	-0.11	
6,814.7	0.30	19.80	6,806.9	-1.7	159.7	-1.7	0.14	0.00	
6,861.0	2.60	358.10	6,853.2	-0.6	159.7	-0.6	5.02	4.97	
6,909.0	7.00	5.50	6,901.0	3.4	160.0	3.4	9.24	9.17	
6,956.0	11.40	8.20	6,947.4	10.9	160.9	10.9	9.40	9.36	
7,005.0	15.70	6.70	6,995.0	22.3	162.4	22.3	8.80	8.78	
7,052.0	20.80	4.40	7,039.7	36.9	163.8	36.9	10.96	10.85	
7,100.0	25.80	3.80	7,083.7	55.9	165.1	55.9	10.43	10.42	
7,147.0	31.60	4.60	7,124.9	78.4	166.8	78.4	12.37	12.34	
7,195.0	37.10	3.60	7,164.5	105.4	168.7	105.4	11.52	11.46	
7,242.0	42.30	5.50	7,200.7	135.3	171.1	135.3	11.36	11.06	
7,290.0	46.70	2.20	7,234.9	168.8	173.3	168.8	10.35	9.17	
7,337.0	51.60	357.60	7,265.7	204.3	173.2	204.3	12.78	10.43	
7,385.0	56.70	355.70	7,293.8	243.2	170.9	243.2	11.10	10.62	
7,432.0	60.00	356.00	7,318.4	283.1	168.0	283.1	7.04	7.02	
7,480.0	64.60	355.20	7,340.7	325.4	164.7	325.4	9.70	9.58	
7,527.0	70.70	357.40	7,358.6	368.8	162.0	368.8	13.68	12.98	
7,576.0	74.20	358.90	7,373.4	415.5	160.5	415.5	7.72	7.14	
7,623.0	76.70	358.80	7,385.2	461.0	159.5	461.0	5.32	5.32	
7,671.0	80.40	359.30	7,394.7	508.0	158.8	508.0	7.78	7.71	
7,725.0	85.10	0.40	7,401.5	561.5	158.6	561.5	8.94	8.70	
7,817.0	87.50	0.40	7,407.5	653.3	159.3	653.3	2.61	2.61	
7,911.0	87.80	0.10	7,411.3	747.3	159.7	747.3	0.45	0.32	
8,005.0	88.20	359.60	7,414.6	841.2	159.4	841.2	0.68	0.43	
8,098.0	88.50	359.20	7,417.3	934.2	158.5	934.2	0.54	0.32	
8,192.0	89.20	358.50	7,419.2	1,028.1	156.6	1,028.1	1.05	0.74	
8,285.0	89.50	357.70	7,420.2	1,121.1	153.5	1,121.1	0.92	0.32	
8,379.0	89.10	359.20	7,421.4	1,215.0	151.0	1,215.0	1.65	-0.43	
8,472.0	88.80	358.20	7,423.1	1,308.0	148.8	1,308.0	1.12	-0.32	
8,566.0	90.50	359.90	7,423.6	1,402.0	147.3	1,402.0	2.56	1.81	
8,659.0	90.60	359.50	7,422.8	1,495.0	146.8	1,495.0	0.44	0.11	
8,753.0	91.10	358.40	7,421.4	1,588.9	145.1	1,588.9	1.29	0.53	
8,847.0	90.90	359.20	7,419.7	1,682.9	143.1	1,682.9	0.88	-0.21	
8,941.0	90.30	0.20	7,418.7	1,776.9	142.6	1,776.9	1.24	-0.64	
9,034.0	89.10	359.00	7,419.2	1,869.9	142.0	1,869.9	1.82	-1.29	
9,128.0	89.20	0.40	7,420.6	1,963.9	141.5	1,963.9	1.49	0.11	
9,221.0	90.40	2.20	7,420.9	2,056.8	143.6	2,056.8	2.33	1.29	
9,315.0	92.30	1.60	7,418.7	2,150.8	146.7	2,150.8	2.12	2.02	
9,408.0	92.30	0.20	7,415.0	2,243.7	148.2	2,243.7	1.50	0.00	
9,502.0	91.30	359.10	7,412.0	2,337.6	147.6	2,337.6	1.58	-1.06	
9,595.0	91.40	359.60	7,409.8	2,430.6	146.5	2,430.6	0.55	0.11	
9,689.0	90.10	357.60	7,408.6	2,524.5	144.2	2,524.5	2.54	-1.38	
9,782.0	92.90	359.90	7,406.2	2,617.5	142.2	2,617.5	3.90	3.01	
9,876.0	91.60	359.90	7,402.5	2,711.4	142.0	2,711.4	1.38	-1.38	
9,964.0	91.10	359.90	7,400.4	2,799.4	141.9	2,799.4	0.57	-0.57	
10,058.0	90.10	359.80	7,399.4	2,893.3	141.6	2,893.3	1.07	-1.06	
10,152.0	90.20	359.70	7,399.2	2,987.3	141.2	2,987.3	0.15	0.11	
10,245.0	89.50	359.80	7,399.4	3,080.3	140.8	3,080.3	0.76	-0.75	
10,339.0	87.80	0.20	7,401.6	3,174.3	140.8	3,174.3	1.86	-1.81	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
10,432.0	88.20	359.80	7,404.9	3,267.3	140.8	3,267.3	0.61	0.43	
10,525.0	88.00	359.50	7,408.0	3,360.2	140.3	3,360.2	0.39	-0.22	
10,619.0	89.80	359.90	7,409.8	3,454.2	139.8	3,454.2	1.96	1.91	
10,712.0	89.80	359.60	7,410.1	3,547.2	139.4	3,547.2	0.32	0.00	
10,806.0	89.80	358.30	7,410.4	3,641.2	137.6	3,641.2	1.38	0.00	
10,899.0	90.20	359.70	7,410.4	3,734.1	136.0	3,734.1	1.57	0.43	
10,993.0	89.90	2.80	7,410.4	3,828.1	138.1	3,828.1	3.31	-0.32	
11,086.0	90.30	0.10	7,410.2	3,921.1	140.4	3,921.1	2.93	0.43	
11,180.0	89.80	0.20	7,410.1	4,015.1	140.7	4,015.1	0.54	-0.53	
11,273.0	89.50	359.20	7,410.7	4,108.1	140.2	4,108.1	1.12	-0.32	
11,367.0	90.40	0.40	7,410.8	4,202.1	139.8	4,202.1	1.60	0.96	
11,461.0	90.90	359.80	7,409.7	4,296.1	140.0	4,296.1	0.83	0.53	
11,556.0	90.60	359.90	7,408.4	4,391.0	139.8	4,391.0	0.33	-0.32	
11,650.0	90.50	359.20	7,407.5	4,485.0	139.0	4,485.0	0.75	-0.11	
11,745.0	91.40	358.80	7,406.0	4,580.0	137.4	4,580.0	1.04	0.95	
11,839.0	91.00	0.60	7,404.0	4,674.0	136.9	4,674.0	1.96	-0.43	
11,934.0	90.60	359.60	7,402.7	4,769.0	137.0	4,769.0	1.13	-0.42	
12,029.0	89.70	359.80	7,402.4	4,864.0	136.5	4,864.0	0.97	-0.95	
12,124.0	90.80	0.60	7,402.0	4,959.0	136.9	4,959.0	1.43	1.16	
12,219.0	90.70	0.80	7,400.8	5,054.0	138.0	5,054.0	0.24	-0.11	
12,313.0	90.40	0.50	7,399.9	5,147.9	139.1	5,147.9	0.45	-0.32	
12,407.0	90.10	359.50	7,399.5	5,241.9	139.1	5,241.9	1.11	-0.32	
12,502.0	90.90	0.20	7,398.6	5,336.9	138.9	5,336.9	1.12	0.84	
12,596.0	90.50	0.10	7,397.5	5,430.9	139.1	5,430.9	0.44	-0.43	
12,691.0	89.00	359.90	7,397.9	5,525.9	139.1	5,525.9	1.59	-1.58	
12,785.0	89.90	1.30	7,398.8	5,619.9	140.1	5,619.9	1.77	0.96	
12,880.0	90.30	1.20	7,398.6	5,714.9	142.2	5,714.9	0.43	0.42	
12,974.0	90.90	0.10	7,397.6	5,808.9	143.2	5,808.9	1.33	0.64	
13,069.0	93.10	2.10	7,394.3	5,903.8	145.0	5,903.8	3.13	2.32	
13,163.0	91.00	0.80	7,391.0	5,997.7	147.4	5,997.7	2.63	-2.23	
13,258.0	90.00	359.60	7,390.1	6,092.7	147.8	6,092.7	1.64	-1.05	
13,352.0	90.30	359.90	7,389.9	6,186.7	147.3	6,186.7	0.45	0.32	
13,446.0	90.00	0.10	7,389.6	6,280.7	147.3	6,280.7	0.38	-0.32	
13,541.0	91.70	1.40	7,388.2	6,375.7	148.6	6,375.7	2.25	1.79	
13,635.0	91.50	1.10	7,385.6	6,469.6	150.6	6,469.6	0.38	-0.21	
13,730.0	91.30	0.70	7,383.3	6,564.6	152.1	6,564.6	0.47	-0.21	
13,825.0	87.60	358.90	7,384.2	6,659.6	151.8	6,659.6	4.33	-3.89	
13,919.0	87.10	358.60	7,388.6	6,753.4	149.7	6,753.4	0.62	-0.53	
14,013.0	89.50	357.90	7,391.3	6,847.3	146.9	6,847.3	2.66	2.55	
14,108.0	90.50	358.40	7,391.3	6,942.3	143.8	6,942.3	1.18	1.05	
14,203.0	91.60	357.50	7,389.6	7,037.2	140.4	7,037.2	1.50	1.16	
14,297.0	91.40	357.00	7,387.1	7,131.1	135.9	7,131.1	0.57	-0.21	
14,393.0	91.40	358.60	7,384.8	7,227.0	132.2	7,227.0	1.67	0.00	
14,488.0	90.10	359.20	7,383.5	7,321.9	130.4	7,321.9	1.51	-1.37	
14,582.0	90.80	0.30	7,382.8	7,415.9	130.0	7,415.9	1.39	0.74	
14,677.0	90.90	0.80	7,381.4	7,510.9	130.9	7,510.9	0.54	0.11	
14,771.0	90.80	0.00	7,380.0	7,604.9	131.6	7,604.9	0.86	-0.11	
14,866.0	90.30	359.30	7,379.1	7,699.9	131.0	7,699.9	0.91	-0.53	
14,960.0	90.90	359.30	7,378.1	7,793.9	129.8	7,793.9	0.64	0.64	
15,054.0	90.20	358.50	7,377.2	7,887.8	128.0	7,887.8	1.13	-0.74	
15,149.0	90.20	358.20	7,376.9	7,982.8	125.3	7,982.8	0.32	0.00	
15,243.0	90.30	358.90	7,376.5	8,076.8	122.9	8,076.8	0.75	0.11	
15,337.0	90.30	358.60	7,376.0	8,170.7	120.9	8,170.7	0.32	0.00	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
15,432.0	89.90	357.70	7,375.8	8,265.7	117.8	8,265.7	1.04	-0.42	
15,527.0	89.90	357.60	7,376.0	8,360.6	113.9	8,360.6	0.11	0.00	
15,621.0	89.10	356.70	7,376.8	8,454.5	109.2	8,454.5	1.28	-0.85	
15,717.0	89.90	357.60	7,377.6	8,550.4	104.4	8,550.4	1.25	0.83	
15,811.0	88.80	1.40	7,378.7	8,644.3	103.6	8,644.3	4.21	-1.17	
15,906.0	91.00	3.10	7,378.9	8,739.3	107.4	8,739.3	2.93	2.32	
16,000.0	90.90	4.30	7,377.3	8,833.0	113.4	8,833.0	1.28	-0.11	
16,095.0	91.30	3.70	7,375.5	8,927.8	120.0	8,927.8	0.76	0.42	
16,189.0	89.80	3.00	7,374.6	9,021.6	125.5	9,021.6	1.76	-1.60	
16,283.0	90.50	3.20	7,374.3	9,115.5	130.6	9,115.5	0.77	0.74	
16,378.0	90.00	2.90	7,373.9	9,210.4	135.7	9,210.4	0.61	-0.53	
16,473.0	90.30	5.00	7,373.7	9,305.1	142.2	9,305.1	2.23	0.32	
16,567.0	91.00	6.00	7,372.6	9,398.7	151.2	9,398.7	1.30	0.74	
16,661.0	90.90	5.60	7,371.0	9,492.2	160.7	9,492.2	0.44	-0.11	
16,756.0	90.50	5.50	7,369.9	9,586.7	169.9	9,586.7	0.43	-0.42	
16,850.0	89.60	4.70	7,369.8	9,680.4	178.3	9,680.4	1.28	-0.96	
16,948.0	89.10	4.00	7,370.9	9,778.1	185.7	9,778.1	0.88	-0.51	Last CES Survey @ 16,948' MD
17,003.0	89.10	4.00	7,371.8	9,832.9	189.5	9,832.9	0.00	0.00	PTB @ 17,003'

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-21H-O268	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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)		
Edith Ann-Duckworth 4E	0.00	0.00	7,405.0	575.0	148.5	1,286,678.21	3,138,993.10	40.119248	-105.003019
- actual wellpath misses target center by 10.5ft at 7738.5ft MD (7402.6 TVD, 575.0 N, 158.7 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,358.0	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 63.1ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,420.4	1,378.5	148.5	1,287,481.74	3,138,988.61	40.121454	-105.003019
- actual wellpath misses target center by 3.5ft at 8542.5ft MD (7423.8 TVD, 1378.5 N, 147.4 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,383.5	4,875.0	148.5	1,290,978.14	3,138,969.03	40.131052	-105.003019
- actual wellpath misses target center by 22.4ft at 12040.1ft MD (7402.5 TVD, 4875.1 N, 136.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,420.4	1,378.5	148.5	1,287,481.74	3,138,988.61	40.121454	-105.003019
- actual wellpath misses target center by 3.5ft at 8542.5ft MD (7423.8 TVD, 1378.5 N, 147.4 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,392.8	6,878.5	148.5	1,292,981.65	3,138,957.81	40.136552	-105.003019
- actual wellpath misses target center by 3.0ft at 14044.1ft MD (7391.5 TVD, 6878.4 N, 145.8 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,392.8	6,878.5	148.5	1,292,981.65	3,138,957.81	40.136552	-105.003019
- actual wellpath misses target center by 3.0ft at 14044.1ft MD (7391.5 TVD, 6878.4 N, 145.8 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,410.1	3,415.8	130.8	1,289,518.91	3,138,959.50	40.127047	-105.003082
- actual wellpath misses target center by 9.1ft at 10580.7ft MD (7409.4 TVD, 3415.9 N, 139.9 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,393.5	2,875.0	148.5	1,288,978.17	3,138,980.23	40.125562	-105.003019
- actual wellpath misses target center by 9.1ft at 10039.7ft MD (7399.5 TVD, 2875.0 N, 141.7 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,347.5	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 66.2ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,376.9	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 61.8ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,376.9	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 61.8ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,373.5	6,875.0	148.5	1,292,978.11	3,138,957.83	40.136543	-105.003019
- actual wellpath misses target center by 18.2ft at 14040.6ft MD (7391.5 TVD, 6874.9 N, 145.9 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,383.2	8,703.7	119.9	1,294,806.66	3,138,919.00	40.141563	-105.003121
- actual wellpath misses target center by 14.8ft at 15871.0ft MD (7379.2 TVD, 8704.3 N, 105.7 E)									
- Point									

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
16,948.0	7,370.9	9,778.1	185.7	Last CES Survey @ 16,948' MD
17,003.0	7,371.8	9,832.9	189.5	PTB @ 17,003'

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-21H-O268	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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)		
Edith Ann-Duckworth 4E	0.00	0.00	7,405.0	575.0	148.5	1,286,678.21	3,138,993.10	40.119248	-105.003019
- actual wellpath misses target center by 10.5ft at 7738.5ft MD (7402.6 TVD, 575.0 N, 158.7 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,358.0	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 63.1ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,420.4	1,378.5	148.5	1,287,481.74	3,138,988.61	40.121454	-105.003019
- actual wellpath misses target center by 3.5ft at 8542.5ft MD (7423.8 TVD, 1378.5 N, 147.4 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,383.5	4,875.0	148.5	1,290,978.14	3,138,969.03	40.131052	-105.003019
- actual wellpath misses target center by 22.4ft at 12040.1ft MD (7402.5 TVD, 4875.1 N, 136.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,420.4	1,378.5	148.5	1,287,481.74	3,138,988.61	40.121454	-105.003019
- actual wellpath misses target center by 3.5ft at 8542.5ft MD (7423.8 TVD, 1378.5 N, 147.4 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,392.8	6,878.5	148.5	1,292,981.65	3,138,957.81	40.136552	-105.003019
- actual wellpath misses target center by 3.0ft at 14044.1ft MD (7391.5 TVD, 6878.4 N, 145.8 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,392.8	6,878.5	148.5	1,292,981.65	3,138,957.81	40.136552	-105.003019
- actual wellpath misses target center by 3.0ft at 14044.1ft MD (7391.5 TVD, 6878.4 N, 145.8 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,410.1	3,415.8	130.8	1,289,518.91	3,138,959.50	40.127047	-105.003082
- actual wellpath misses target center by 9.1ft at 10580.7ft MD (7409.4 TVD, 3415.9 N, 139.9 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,393.5	2,875.0	148.5	1,288,978.17	3,138,980.23	40.125562	-105.003019
- actual wellpath misses target center by 9.1ft at 10039.7ft MD (7399.5 TVD, 2875.0 N, 141.7 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,347.5	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 66.2ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,376.9	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 61.8ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,376.9	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 61.8ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,373.5	6,875.0	148.5	1,292,978.11	3,138,957.83	40.136543	-105.003019
- actual wellpath misses target center by 18.2ft at 14040.6ft MD (7391.5 TVD, 6874.9 N, 145.9 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,383.2	8,703.7	119.9	1,294,806.66	3,138,919.00	40.141563	-105.003121
- actual wellpath misses target center by 14.8ft at 15871.0ft MD (7379.2 TVD, 8704.3 N, 105.7 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
16,948.0	7,370.9	9,778.1	185.7	Last CES Survey @ 16,948' MD
17,003.0	7,371.8	9,832.9	189.5	PTB @ 17,003'

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-21H-O268	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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)		
Edith Ann-Duckworth 4E	0.00	0.00	7,405.0	575.0	148.5	1,286,678.21	3,138,993.10	40.119248	-105.003019
- actual wellpath misses target center by 10.5ft at 7738.5ft MD (7402.6 TVD, 575.0 N, 158.7 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,358.0	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 63.1ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,420.4	1,378.5	148.5	1,287,481.74	3,138,988.61	40.121454	-105.003019
- actual wellpath misses target center by 3.5ft at 8542.5ft MD (7423.8 TVD, 1378.5 N, 147.4 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,383.5	4,875.0	148.5	1,290,978.14	3,138,969.03	40.131052	-105.003019
- actual wellpath misses target center by 22.4ft at 12040.1ft MD (7402.5 TVD, 4875.1 N, 136.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,420.4	1,378.5	148.5	1,287,481.74	3,138,988.61	40.121454	-105.003019
- actual wellpath misses target center by 3.5ft at 8542.5ft MD (7423.8 TVD, 1378.5 N, 147.4 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,392.8	6,878.5	148.5	1,292,981.65	3,138,957.81	40.136552	-105.003019
- actual wellpath misses target center by 3.0ft at 14044.1ft MD (7391.5 TVD, 6878.4 N, 145.8 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,392.8	6,878.5	148.5	1,292,981.65	3,138,957.81	40.136552	-105.003019
- actual wellpath misses target center by 3.0ft at 14044.1ft MD (7391.5 TVD, 6878.4 N, 145.8 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,410.1	3,415.8	130.8	1,289,518.91	3,138,959.50	40.127047	-105.003082
- actual wellpath misses target center by 9.1ft at 10580.7ft MD (7409.4 TVD, 3415.9 N, 139.9 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,393.5	2,875.0	148.5	1,288,978.17	3,138,980.23	40.125562	-105.003019
- actual wellpath misses target center by 9.1ft at 10039.7ft MD (7399.5 TVD, 2875.0 N, 141.7 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,347.5	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 66.2ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,376.9	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 61.8ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,376.9	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 61.8ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,373.5	6,875.0	148.5	1,292,978.11	3,138,957.83	40.136543	-105.003019
- actual wellpath misses target center by 18.2ft at 14040.6ft MD (7391.5 TVD, 6874.9 N, 145.9 E)									
- Point									
Edith Ann-Duckworth 4E	0.00	0.00	7,383.2	8,703.7	119.9	1,294,806.66	3,138,919.00	40.141563	-105.003121
- actual wellpath misses target center by 14.8ft at 15871.0ft MD (7379.2 TVD, 8704.3 N, 105.7 E)									
- Point									

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
16,948.0	7,370.9	9,778.1	185.7	Last CES Survey @ 16,948' MD
17,003.0	7,371.8	9,832.9	189.5	PTB @ 17,003'

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-21H-O268	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S21-T2N-R68W (Edith Ann-Duckworth)

Edith Ann-Duckworth 4E-21H-O268

HZ

Design: FINAL

Survey Report - Geographic

07 July, 2014

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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 4E-21H-O268					
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.43 ft	Latitude:	40.117670
	+E/-W	0.0 ft	Easting:	3,138,847.83 ft	Longitude:	-105.003550
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,926.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/25/2014	8.56	66.68	52,638

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	0.00	

Survey Program	Date	7/7/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
167.0	17,003.0	Survey #1 (HZ)	Geolink MWD	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	1,286,102.43	3,138,847.83	40.117670	-105.003550
167.0	0.30	249.30	167.0	-0.2	-0.4	1,286,102.27	3,138,847.42	40.117670	-105.003552
261.0	0.50	222.20	261.0	-0.5	-0.9	1,286,101.88	3,138,846.91	40.117669	-105.003554
355.0	0.60	231.00	355.0	-1.2	-1.6	1,286,101.26	3,138,846.26	40.117667	-105.003556
449.0	0.60	244.00	449.0	-1.7	-2.4	1,286,100.73	3,138,845.44	40.117665	-105.003559
542.0	0.50	281.00	542.0	-1.8	-3.2	1,286,100.59	3,138,844.60	40.117665	-105.003562
635.0	0.40	289.80	635.0	-1.6	-3.9	1,286,100.77	3,138,843.90	40.117666	-105.003564
729.0	0.50	348.60	729.0	-1.1	-4.3	1,286,101.28	3,138,843.50	40.117667	-105.003566
820.0	0.60	349.40	820.0	-0.3	-4.5	1,286,102.14	3,138,843.33	40.117669	-105.003566
898.0	0.90	32.40	898.0	0.7	-4.2	1,286,103.06	3,138,843.58	40.117672	-105.003565
1,018.0	1.20	43.70	1,017.9	2.4	-2.9	1,286,104.77	3,138,844.94	40.117677	-105.003561
1,111.0	1.10	35.00	1,110.9	3.8	-1.7	1,286,106.21	3,138,846.12	40.117680	-105.003556

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
1,205.0	1.00	28.60	1,204.9	5.3	-0.8	1,286,107.68	3,138,847.02	40.117684	-105.003553
1,298.0	0.10	310.60	1,297.9	6.0	-0.4	1,286,108.45	3,138,847.35	40.117687	-105.003552
1,392.0	0.30	320.80	1,391.9	6.3	-0.7	1,286,108.69	3,138,847.13	40.117687	-105.003553
1,486.0	0.30	306.60	1,485.9	6.6	-1.0	1,286,109.02	3,138,846.77	40.117688	-105.003554
1,581.0	0.50	303.10	1,580.9	7.0	-1.6	1,286,109.39	3,138,846.22	40.117689	-105.003556
1,676.0	0.40	170.00	1,675.9	6.9	-1.9	1,286,109.29	3,138,845.93	40.117689	-105.003557
1,771.0	0.40	189.60	1,770.9	6.2	-1.9	1,286,108.64	3,138,845.94	40.117687	-105.003557
1,866.0	0.40	205.90	1,865.9	5.6	-2.1	1,286,108.01	3,138,845.74	40.117685	-105.003558
1,961.0	0.40	209.40	1,960.9	5.0	-2.4	1,286,107.42	3,138,845.44	40.117684	-105.003559
2,056.0	1.00	98.70	2,055.9	4.6	-1.7	1,286,107.01	3,138,846.10	40.117683	-105.003556
2,152.0	1.60	101.50	2,151.9	4.2	0.4	1,286,106.63	3,138,848.24	40.117682	-105.003549
2,247.0	2.90	100.60	2,246.8	3.5	4.1	1,286,105.95	3,138,851.91	40.117680	-105.003536
2,342.0	3.80	92.40	2,341.6	2.9	9.6	1,286,105.40	3,138,857.42	40.117678	-105.003516
2,437.0	4.50	87.50	2,436.4	3.0	16.5	1,286,105.47	3,138,864.29	40.117678	-105.003491
2,532.0	5.70	93.40	2,531.0	2.8	24.9	1,286,105.40	3,138,872.72	40.117678	-105.003461
2,627.0	6.30	98.50	2,625.5	1.8	34.8	1,286,104.41	3,138,882.59	40.117675	-105.003426
2,722.0	5.70	98.20	2,720.0	0.3	44.6	1,286,103.02	3,138,892.42	40.117671	-105.003391
2,818.0	6.10	100.70	2,815.5	-1.3	54.3	1,286,101.45	3,138,902.16	40.117667	-105.003356
2,913.0	5.00	97.40	2,910.0	-2.8	63.4	1,286,100.03	3,138,911.24	40.117662	-105.003324
3,008.0	6.20	93.70	3,004.6	-3.6	72.6	1,286,099.21	3,138,920.47	40.117660	-105.003291
3,103.0	5.40	88.40	3,099.1	-3.8	82.2	1,286,099.06	3,138,930.05	40.117660	-105.003256
3,199.0	6.30	87.30	3,194.6	-3.5	92.0	1,286,099.49	3,138,939.83	40.117661	-105.003221
3,294.0	5.60	83.80	3,289.1	-2.7	101.8	1,286,100.29	3,138,949.64	40.117663	-105.003186
3,389.0	6.40	95.60	3,383.5	-2.7	111.7	1,286,100.33	3,138,959.52	40.117663	-105.003151
3,484.0	5.70	83.50	3,478.0	-2.7	121.6	1,286,100.40	3,138,969.48	40.117663	-105.003115
3,579.0	5.00	97.60	3,572.6	-2.7	130.4	1,286,100.44	3,138,978.27	40.117663	-105.003084
3,675.0	4.50	94.30	3,668.3	-3.6	138.3	1,286,099.65	3,138,986.17	40.117660	-105.003056
3,770.0	4.30	88.70	3,763.0	-3.8	145.6	1,286,099.49	3,138,993.45	40.117660	-105.003030
3,865.0	3.90	84.80	3,857.7	-3.4	152.4	1,286,099.90	3,139,000.23	40.117661	-105.003005
3,960.0	4.00	100.40	3,952.5	-3.7	158.9	1,286,099.63	3,139,006.71	40.117660	-105.002982
4,056.0	2.60	104.50	4,048.4	-4.8	164.3	1,286,098.51	3,139,012.11	40.117657	-105.002963
4,151.0	1.50	116.60	4,143.3	-5.9	167.5	1,286,097.43	3,139,015.32	40.117654	-105.002951
4,246.0	0.80	337.20	4,238.3	-5.9	168.3	1,286,097.49	3,139,016.17	40.117654	-105.002948
4,341.0	0.80	1.90	4,333.3	-4.6	168.1	1,286,098.77	3,139,015.93	40.117657	-105.002949
4,437.0	0.40	286.50	4,429.3	-3.8	167.8	1,286,099.53	3,139,015.63	40.117660	-105.002950
4,532.0	0.40	310.00	4,524.3	-3.5	167.2	1,286,099.83	3,139,015.05	40.117660	-105.002952
4,627.0	0.50	213.60	4,619.3	-3.7	166.7	1,286,099.70	3,139,014.57	40.117660	-105.002954
4,722.0	0.70	219.50	4,714.3	-4.5	166.1	1,286,098.90	3,139,013.98	40.117658	-105.002956
4,817.0	0.70	227.30	4,809.3	-5.3	165.3	1,286,098.06	3,139,013.19	40.117656	-105.002959
4,912.0	0.60	237.70	4,904.3	-6.0	164.5	1,286,097.39	3,139,012.34	40.117654	-105.002962
5,008.0	0.50	244.90	5,000.2	-6.4	163.7	1,286,096.94	3,139,011.54	40.117652	-105.002965
5,103.0	0.30	275.00	5,095.2	-6.6	163.1	1,286,096.79	3,139,010.92	40.117652	-105.002967
5,198.0	0.20	279.10	5,190.2	-6.5	162.6	1,286,096.83	3,139,010.51	40.117652	-105.002969
5,292.0	0.20	284.60	5,284.2	-6.4	162.3	1,286,096.90	3,139,010.19	40.117652	-105.002970
5,388.0	0.20	297.60	5,380.2	-6.3	162.0	1,286,097.01	3,139,009.87	40.117653	-105.002971
5,483.0	0.20	315.70	5,475.2	-6.1	161.8	1,286,097.21	3,139,009.61	40.117653	-105.002972
5,578.0	0.30	310.80	5,570.2	-5.8	161.4	1,286,097.49	3,139,009.30	40.117654	-105.002973
5,673.0	0.30	310.40	5,665.2	-5.5	161.1	1,286,097.81	3,139,008.93	40.117655	-105.002974
5,768.0	0.30	299.10	5,760.2	-5.2	160.7	1,286,098.09	3,139,008.52	40.117656	-105.002976
5,863.0	0.30	237.50	5,855.2	-5.3	160.2	1,286,098.07	3,139,008.09	40.117656	-105.002977
5,958.0	0.30	269.30	5,950.2	-5.4	159.8	1,286,097.94	3,139,007.63	40.117655	-105.002979
6,053.0	0.40	292.80	6,045.2	-5.3	159.2	1,286,098.06	3,139,007.08	40.117656	-105.002981
6,148.0	0.40	284.00	6,140.2	-5.1	158.6	1,286,098.26	3,139,006.45	40.117656	-105.002983
6,244.0	0.50	4.30	6,236.2	-4.6	158.3	1,286,098.76	3,139,006.15	40.117658	-105.002984
6,339.0	0.40	342.70	6,331.2	-3.8	158.2	1,286,099.49	3,139,006.08	40.117660	-105.002984

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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		
6,434.0	0.40	342.30	6,426.2	-3.2	158.0	1,286,100.12	3,139,005.88	40.117661	-105.002985	
6,529.0	0.50	78.30	6,521.2	-2.8	158.3	1,286,100.52	3,139,006.18	40.117662	-105.002984	
6,624.0	0.40	53.20	6,616.2	-2.5	159.0	1,286,100.81	3,139,006.85	40.117663	-105.002982	
6,719.0	0.30	45.30	6,711.2	-2.1	159.5	1,286,101.18	3,139,007.29	40.117664	-105.002980	
6,814.7	0.30	19.80	6,806.9	-1.7	159.7	1,286,101.60	3,139,007.55	40.117665	-105.002979	
6,861.0	2.60	358.10	6,853.2	-0.6	159.7	1,286,102.76	3,139,007.55	40.117669	-105.002979	
6,909.0	7.00	5.50	6,901.0	3.4	160.0	1,286,106.76	3,139,007.77	40.117680	-105.002978	
6,956.0	11.40	8.20	6,947.4	10.9	160.9	1,286,114.22	3,139,008.67	40.117700	-105.002975	
7,005.0	15.70	6.70	6,995.0	22.3	162.4	1,286,125.61	3,139,010.07	40.117731	-105.002970	
7,052.0	20.80	4.40	7,039.7	36.9	163.8	1,286,140.27	3,139,011.37	40.117771	-105.002965	
7,100.0	25.80	3.80	7,083.7	55.9	165.1	1,286,159.21	3,139,012.61	40.117823	-105.002960	
7,147.0	31.60	4.60	7,124.9	78.4	166.8	1,286,181.71	3,139,014.15	40.117885	-105.002954	
7,195.0	37.10	3.60	7,164.5	105.4	168.7	1,286,208.73	3,139,015.92	40.117959	-105.002947	
7,242.0	42.30	5.50	7,200.7	135.3	171.1	1,286,238.65	3,139,018.16	40.118041	-105.002938	
7,290.0	46.70	2.20	7,234.9	168.8	173.3	1,286,272.22	3,139,020.19	40.118133	-105.002931	
7,337.0	51.60	357.60	7,265.7	204.3	173.2	1,286,307.74	3,139,019.88	40.118231	-105.002931	
7,385.0	56.70	355.70	7,293.8	243.2	170.9	1,286,346.55	3,139,017.37	40.118338	-105.002939	
7,432.0	60.00	356.00	7,318.4	283.1	168.0	1,286,386.43	3,139,014.25	40.118447	-105.002950	
7,480.0	64.60	355.20	7,340.7	325.4	164.7	1,286,428.77	3,139,010.75	40.118563	-105.002961	
7,527.0	70.70	357.40	7,358.6	368.8	162.0	1,286,472.11	3,139,007.72	40.118682	-105.002971	
7,576.0	74.20	358.90	7,373.4	415.5	160.5	1,286,518.79	3,139,005.96	40.118811	-105.002977	
7,623.0	76.70	358.80	7,385.2	461.0	159.5	1,286,564.27	3,139,004.79	40.118935	-105.002980	
7,671.0	80.40	359.30	7,394.7	508.0	158.8	1,286,611.29	3,139,003.75	40.119065	-105.002983	
7,725.0	85.10	0.40	7,401.5	561.5	158.6	1,286,664.84	3,139,003.31	40.119212	-105.002983	
7,817.0	87.50	0.40	7,407.5	653.3	159.3	1,286,756.66	3,139,003.44	40.119464	-105.002981	
7,911.0	87.80	0.10	7,411.3	747.3	159.7	1,286,850.58	3,139,003.32	40.119721	-105.002979	
8,005.0	88.20	359.60	7,414.6	841.2	159.4	1,286,944.52	3,139,002.55	40.119979	-105.002980	
8,098.0	88.50	359.20	7,417.3	934.2	158.5	1,287,037.47	3,139,001.06	40.120234	-105.002984	
8,192.0	89.20	358.50	7,419.2	1,028.1	156.6	1,287,131.42	3,138,998.64	40.120492	-105.002990	
8,285.0	89.50	357.70	7,420.2	1,121.1	153.5	1,287,224.34	3,138,995.04	40.120748	-105.003001	
8,379.0	89.10	359.20	7,421.4	1,215.0	151.0	1,287,318.28	3,138,991.97	40.121005	-105.003010	
8,472.0	88.80	358.20	7,423.1	1,308.0	148.8	1,287,411.23	3,138,989.34	40.121261	-105.003018	
8,566.0	90.50	359.90	7,423.6	1,402.0	147.3	1,287,505.19	3,138,987.26	40.121519	-105.003024	
8,659.0	90.60	359.50	7,422.8	1,495.0	146.8	1,287,598.18	3,138,986.25	40.121774	-105.003025	
8,753.0	91.10	358.40	7,421.4	1,588.9	145.1	1,287,692.15	3,138,984.00	40.122032	-105.003032	
8,847.0	90.90	359.20	7,419.7	1,682.9	143.1	1,287,786.10	3,138,981.51	40.122290	-105.003039	
8,941.0	90.30	0.20	7,418.7	1,776.9	142.6	1,287,880.09	3,138,980.49	40.122548	-105.003040	
9,034.0	89.10	359.00	7,419.2	1,869.9	142.0	1,287,973.07	3,138,979.32	40.122803	-105.003043	
9,128.0	89.20	0.40	7,420.6	1,963.9	141.5	1,288,067.06	3,138,978.30	40.123061	-105.003044	
9,221.0	90.40	2.20	7,420.9	2,056.8	143.6	1,288,160.04	3,138,979.89	40.123316	-105.003037	
9,315.0	92.30	1.60	7,418.7	2,150.8	146.7	1,288,253.97	3,138,982.48	40.123574	-105.003026	
9,408.0	92.30	0.20	7,415.0	2,243.7	148.2	1,288,346.89	3,138,983.42	40.123829	-105.003020	
9,502.0	91.30	359.10	7,412.0	2,337.6	147.6	1,288,440.83	3,138,982.32	40.124087	-105.003023	
9,595.0	91.40	359.60	7,409.8	2,430.6	146.5	1,288,533.79	3,138,980.74	40.124342	-105.003026	
9,689.0	90.10	357.60	7,408.6	2,524.5	144.2	1,288,627.74	3,138,977.92	40.124600	-105.003034	
9,782.0	92.90	359.90	7,406.2	2,617.5	142.2	1,288,720.65	3,138,975.37	40.124855	-105.003042	
9,876.0	91.60	359.90	7,402.5	2,711.4	142.0	1,288,814.58	3,138,974.68	40.125113	-105.003042	
9,964.0	91.10	359.90	7,400.4	2,799.4	141.9	1,288,902.53	3,138,974.04	40.125355	-105.003043	
10,058.0	90.10	359.80	7,399.4	2,893.3	141.6	1,288,996.52	3,138,973.26	40.125613	-105.003044	
10,152.0	90.20	359.70	7,399.2	2,987.3	141.2	1,289,090.52	3,138,972.33	40.125871	-105.003045	
10,245.0	89.50	359.80	7,399.4	3,080.3	140.8	1,289,183.51	3,138,971.40	40.126126	-105.003047	
10,339.0	87.80	0.20	7,401.6	3,174.3	140.8	1,289,277.48	3,138,970.87	40.126384	-105.003047	
10,432.0	88.20	359.80	7,404.9	3,267.3	140.8	1,289,370.42	3,138,970.35	40.126639	-105.003047	
10,525.0	88.00	359.50	7,408.0	3,360.2	140.3	1,289,463.36	3,138,969.27	40.126894	-105.003049	
10,619.0	89.80	359.90	7,409.8	3,454.2	139.8	1,289,557.34	3,138,968.25	40.127152	-105.003050	

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
10,712.0	89.80	359.60	7,410.1	3,547.2	139.4	1,289,650.33	3,138,967.32	40.127408	-105.003052
10,806.0	89.80	358.30	7,410.4	3,641.2	137.6	1,289,744.30	3,138,965.07	40.127666	-105.003058
10,899.0	90.20	359.70	7,410.4	3,734.1	136.0	1,289,837.27	3,138,962.93	40.127921	-105.003064
10,993.0	89.90	2.80	7,410.4	3,828.1	138.1	1,289,931.25	3,138,964.45	40.128179	-105.003057
11,086.0	90.30	0.10	7,410.2	3,921.1	140.4	1,290,024.22	3,138,966.29	40.128434	-105.003048
11,180.0	89.80	0.20	7,410.1	4,015.1	140.7	1,290,118.22	3,138,966.01	40.128692	-105.003047
11,273.0	89.50	359.20	7,410.7	4,108.1	140.2	1,290,211.21	3,138,965.00	40.128947	-105.003049
11,367.0	90.40	0.40	7,410.8	4,202.1	139.8	1,290,305.21	3,138,964.14	40.129205	-105.003050
11,461.0	90.90	359.80	7,409.7	4,296.1	140.0	1,290,399.20	3,138,963.78	40.129463	-105.003050
11,556.0	90.60	359.90	7,408.4	4,391.0	139.8	1,290,494.19	3,138,963.00	40.129724	-105.003050
11,650.0	90.50	359.20	7,407.5	4,485.0	139.0	1,290,588.18	3,138,961.74	40.129982	-105.003053
11,745.0	91.40	358.80	7,406.0	4,580.0	137.4	1,290,683.14	3,138,959.55	40.130243	-105.003059
11,839.0	91.00	0.60	7,404.0	4,674.0	136.9	1,290,777.11	3,138,958.53	40.130501	-105.003061
11,934.0	90.60	359.60	7,402.7	4,769.0	137.0	1,290,872.09	3,138,958.16	40.130762	-105.003060
12,029.0	89.70	359.80	7,402.4	4,864.0	136.5	1,290,967.09	3,138,957.13	40.131022	-105.003062
12,124.0	90.80	0.60	7,402.0	4,959.0	136.9	1,291,062.08	3,138,956.93	40.131283	-105.003061
12,219.0	90.70	0.80	7,400.8	5,054.0	138.0	1,291,157.07	3,138,957.56	40.131544	-105.003057
12,313.0	90.40	0.50	7,399.9	5,147.9	139.1	1,291,251.07	3,138,958.10	40.131802	-105.003053
12,407.0	90.10	359.50	7,399.5	5,241.9	139.1	1,291,345.06	3,138,957.58	40.132060	-105.003053
12,502.0	90.90	0.20	7,398.6	5,336.9	138.9	1,291,440.06	3,138,956.80	40.132321	-105.003054
12,596.0	90.50	0.10	7,397.5	5,430.9	139.1	1,291,534.05	3,138,956.52	40.132579	-105.003053
12,691.0	89.00	359.90	7,397.9	5,525.9	139.1	1,291,629.04	3,138,955.98	40.132839	-105.003053
12,785.0	89.90	1.30	7,398.8	5,619.9	140.1	1,291,723.03	3,138,956.44	40.133098	-105.003049
12,880.0	90.30	1.20	7,398.6	5,714.9	142.2	1,291,818.02	3,138,957.98	40.133358	-105.003042
12,974.0	90.90	0.10	7,397.6	5,808.9	143.2	1,291,912.01	3,138,958.52	40.133616	-105.003038
13,069.0	93.10	2.10	7,394.3	5,903.8	145.0	1,292,006.94	3,138,959.81	40.133877	-105.003032
13,163.0	91.00	0.80	7,391.0	5,997.7	147.4	1,292,100.85	3,138,961.66	40.134135	-105.003023
13,258.0	90.00	359.60	7,390.1	6,092.7	147.8	1,292,195.84	3,138,961.46	40.134395	-105.003022
13,352.0	90.30	359.90	7,389.9	6,186.7	147.3	1,292,289.86	3,138,960.53	40.134653	-105.003023
13,446.0	90.00	0.10	7,389.6	6,280.7	147.3	1,292,383.86	3,138,960.00	40.134911	-105.003023
13,541.0	91.70	1.40	7,388.2	6,375.7	148.6	1,292,478.84	3,138,960.71	40.135172	-105.003019
13,635.0	91.50	1.10	7,385.6	6,469.6	150.6	1,292,572.80	3,138,962.24	40.135430	-105.003012
13,730.0	91.30	0.70	7,383.3	6,564.6	152.1	1,292,667.76	3,138,963.20	40.135691	-105.003006
13,825.0	87.60	358.90	7,384.2	6,659.6	151.8	1,292,762.73	3,138,962.33	40.135951	-105.003007
13,919.0	87.10	358.60	7,388.6	6,753.4	149.7	1,292,856.60	3,138,959.76	40.136209	-105.003015
14,013.0	89.50	357.90	7,391.3	6,847.3	146.9	1,292,950.49	3,138,956.36	40.136467	-105.003025
14,108.0	90.50	358.40	7,391.3	6,942.3	143.8	1,293,045.42	3,138,952.77	40.136728	-105.003036
14,203.0	91.60	357.50	7,389.6	7,037.2	140.4	1,293,140.32	3,138,948.84	40.136988	-105.003048
14,297.0	91.40	357.00	7,387.1	7,131.1	135.9	1,293,234.15	3,138,943.80	40.137246	-105.003064
14,393.0	91.40	358.60	7,384.8	7,227.0	132.2	1,293,330.03	3,138,939.58	40.137509	-105.003077
14,488.0	90.10	359.20	7,383.5	7,321.9	130.4	1,293,424.99	3,138,937.23	40.137770	-105.003084
14,582.0	90.80	0.30	7,382.8	7,415.9	130.0	1,293,518.98	3,138,936.29	40.138028	-105.003085
14,677.0	90.90	0.80	7,381.4	7,510.9	130.9	1,293,613.94	3,138,936.67	40.138289	-105.003082
14,771.0	90.80	0.00	7,380.0	7,604.9	131.6	1,293,707.93	3,138,936.80	40.138547	-105.003080
14,866.0	90.30	359.30	7,379.1	7,699.9	131.0	1,293,802.91	3,138,935.69	40.138807	-105.003082
14,960.0	90.90	359.30	7,378.1	7,793.9	129.8	1,293,896.89	3,138,934.01	40.139065	-105.003086
15,054.0	90.20	358.50	7,377.2	7,887.8	128.0	1,293,990.86	3,138,931.68	40.139323	-105.003092
15,149.0	90.20	358.20	7,376.9	7,982.8	125.3	1,294,085.80	3,138,928.42	40.139584	-105.003102
15,243.0	90.30	358.90	7,376.5	8,076.8	122.9	1,294,179.76	3,138,925.51	40.139842	-105.003111
15,337.0	90.30	358.60	7,376.0	8,170.7	120.9	1,294,273.72	3,138,922.93	40.140100	-105.003118
15,432.0	89.90	357.70	7,375.8	8,265.7	117.8	1,294,368.65	3,138,919.34	40.140361	-105.003129
15,527.0	89.90	357.60	7,376.0	8,360.6	113.9	1,294,463.55	3,138,914.91	40.140621	-105.003143
15,621.0	89.10	356.70	7,376.8	8,454.5	109.2	1,294,557.40	3,138,909.71	40.140879	-105.003160
15,717.0	89.90	357.60	7,377.6	8,550.4	104.4	1,294,653.24	3,138,904.40	40.141142	-105.003177
15,811.0	88.80	1.40	7,378.7	8,644.3	103.6	1,294,747.21	3,138,903.05	40.141400	-105.003180

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4E-21H-O268
Project:	DJ Wattenberg	TVD Reference:	KB @ 4954.5ft (Patterson 272)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	MD Reference:	KB @ 4954.5ft (Patterson 272)
Well:	Edith Ann-Duckworth 4E-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
15,906.0	91.00	3.10	7,378.9	8,739.3	107.4	1,294,842.15	3,138,906.25	40.141661	-105.003166
16,000.0	90.90	4.30	7,377.3	8,833.0	113.4	1,294,935.97	3,138,911.79	40.141918	-105.003145
16,095.0	91.30	3.70	7,375.5	8,927.8	120.0	1,295,030.76	3,138,917.89	40.142178	-105.003121
16,189.0	89.80	3.00	7,374.6	9,021.6	125.5	1,295,124.62	3,138,922.85	40.142436	-105.003101
16,283.0	90.50	3.20	7,374.3	9,115.5	130.6	1,295,218.50	3,138,927.41	40.142693	-105.003083
16,378.0	90.00	2.90	7,373.9	9,210.4	135.7	1,295,313.40	3,138,931.94	40.142954	-105.003065
16,473.0	90.30	5.00	7,373.7	9,305.1	142.2	1,295,408.20	3,138,937.95	40.143214	-105.003042
16,567.0	91.00	6.00	7,372.6	9,398.7	151.2	1,295,501.81	3,138,946.43	40.143471	-105.003009
16,661.0	90.90	5.60	7,371.0	9,492.2	160.7	1,295,595.37	3,138,955.41	40.143727	-105.002975
16,756.0	90.50	5.50	7,369.9	9,586.7	169.9	1,295,689.96	3,138,964.07	40.143987	-105.002942
16,850.0	89.60	4.70	7,369.8	9,680.4	178.3	1,295,783.63	3,138,971.90	40.144244	-105.002913
16,948.0	89.10	4.00	7,370.9	9,778.1	185.7	1,295,881.38	3,138,978.78	40.144512	-105.002886
Last CES Survey @ 16,948' MD									
17,003.0	89.10	4.00	7,371.8	9,832.9	189.5	1,295,936.26	3,138,982.31	40.144663	-105.002872
PTB @ 17,003'									

Design 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 4E	0.00	0.00	7,358.0	9,893.9	198.5	1,295,997.25	3,138,990.92	40.144830	-105.002840
- actual wellpath misses target center by 63.1ft at 17003.0ft MD (7371.8 TVD, 9832.9 N, 189.5 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
16,948.0	7,370.9	9,778.1	185.7	Last CES Survey @ 16,948' MD	
17,003.0	7,371.8	9,832.9	189.5	PTB @ 17,003'	

Checked By: _____ Approved By: _____ Date: _____