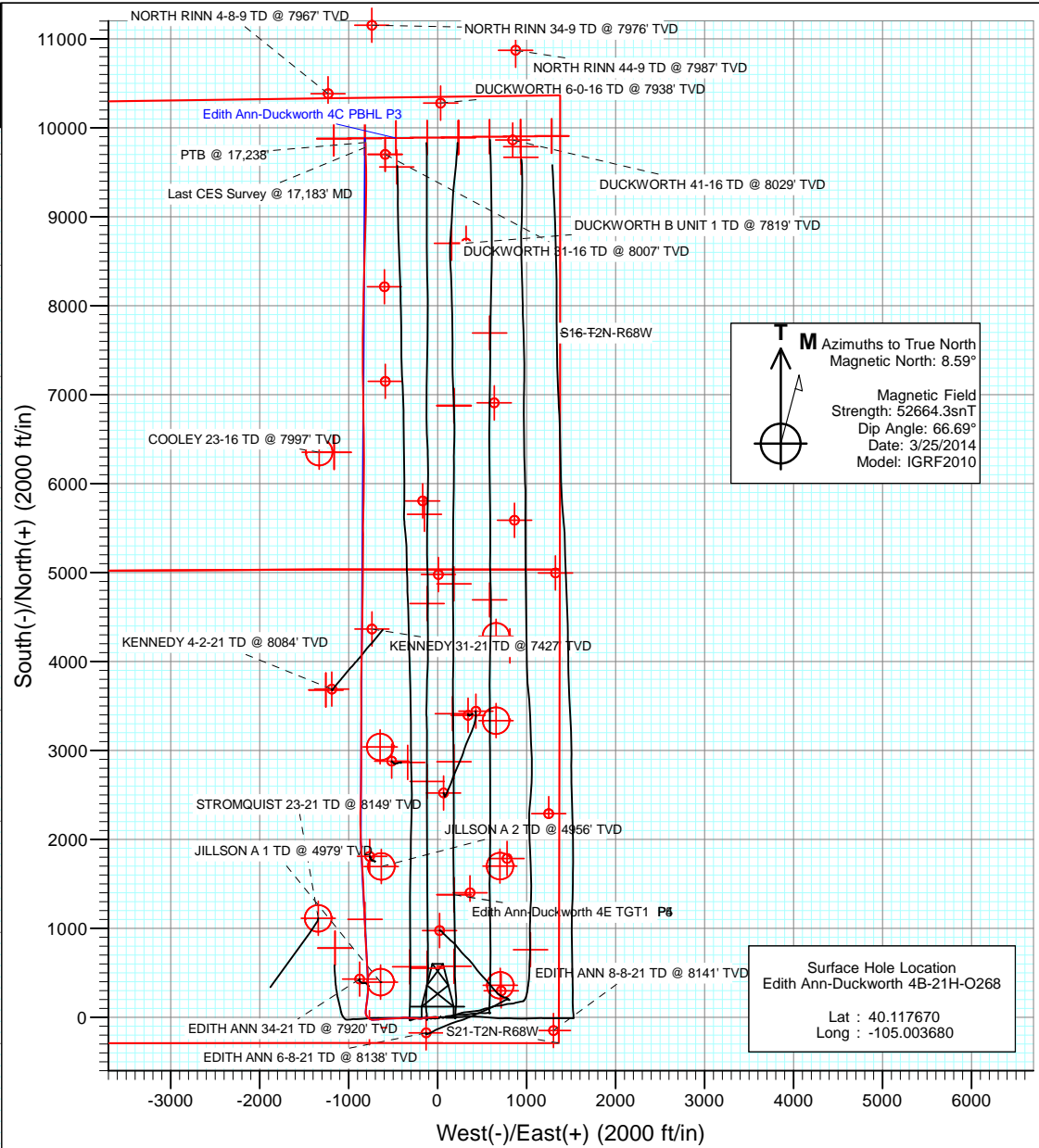
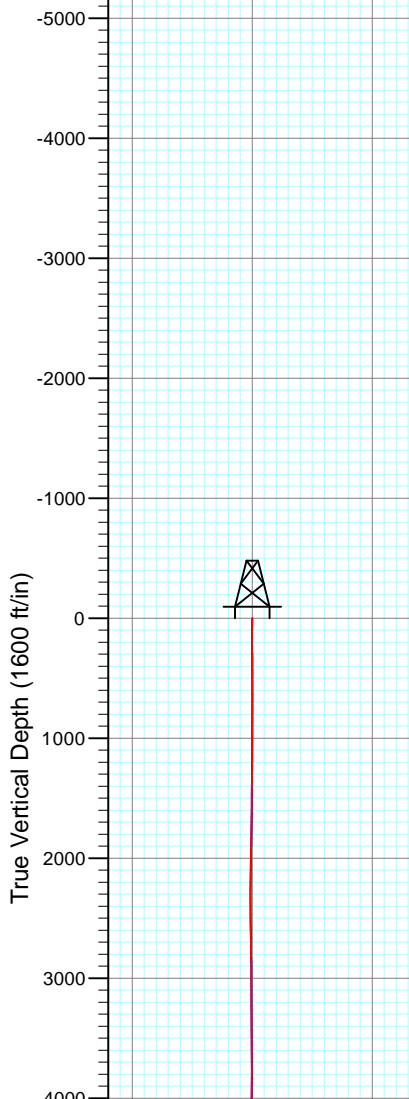




Project: DJ Wattenberg
Site: S21-T2N-R68W (Edith Ann-Duckworth)
Well: Edith Ann-Duckworth 4B-21H-O268
Wellbore: Hz
Design: FINAL

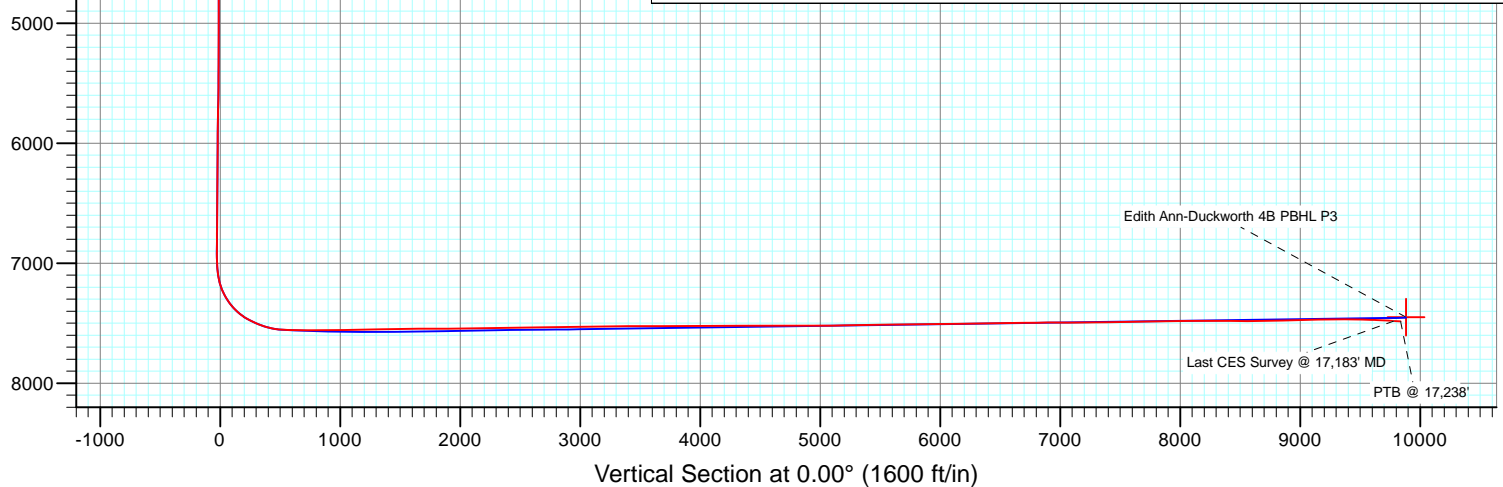


FINAL
Edith Ann-Duckworth 4B-21H-O268
305355 145086; LR
KB @ 4954.5ft (Patterson 272)
Ground Elevation @ 4926.0
North American Datum 1983
Well Edith Ann-Duckworth 4B-21H-O268, True North



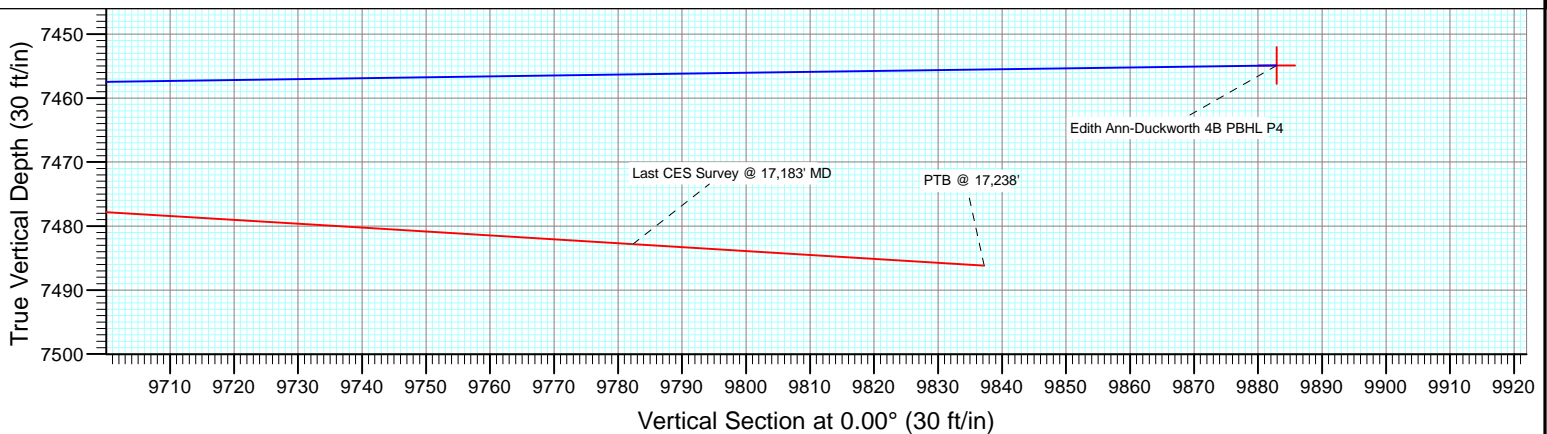
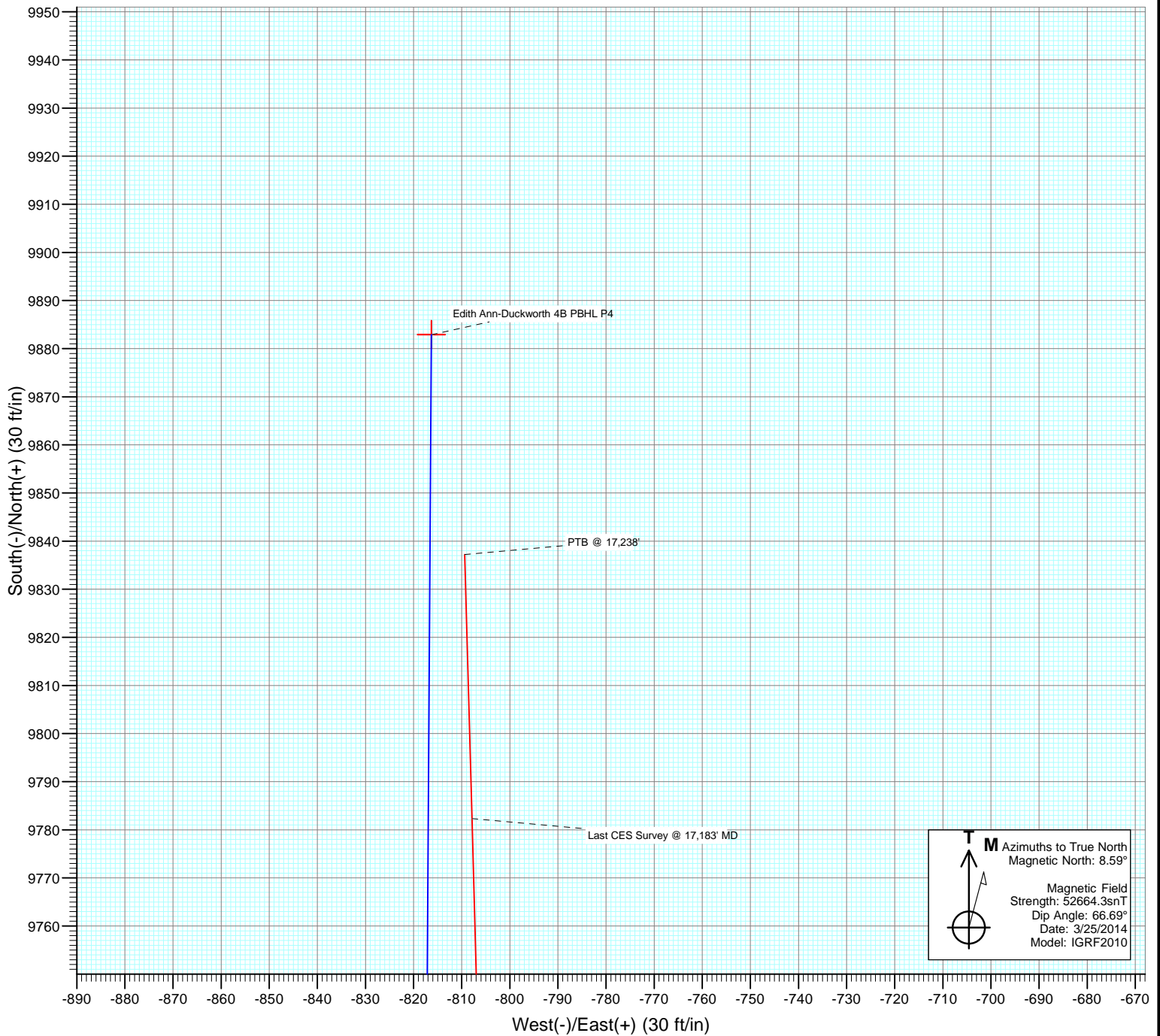
DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Edith Ann-Duckworth 4B PBHL P3	9882.9	-816.3	1295980.45	3137939.85	40.144800	-105.006600





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



Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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 4B-21H-O268			
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.22 ft
	+E/-W	0.0 ft	Easting:	3,138,811.47 ft
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	3/25/2014	8.59	66.69	52,664

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	8/8/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
167.0	17,238.0	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	
167.0	0.10	264.70	167.0	0.0	-0.1	0.0	0.06	0.06	
260.0	0.30	257.70	260.0	-0.1	-0.5	-0.1	0.22	0.22	
354.0	1.60	292.60	354.0	0.4	-1.9	0.4	1.45	1.38	
447.0	2.60	288.00	446.9	1.5	-5.1	1.5	1.09	1.08	
541.0	2.80	268.40	540.8	2.1	-9.4	2.1	1.00	0.21	
634.0	3.30	265.40	633.7	1.8	-14.4	1.8	0.56	0.54	
728.0	3.20	266.50	727.5	1.5	-19.7	1.5	0.13	-0.11	
821.0	4.10	263.00	820.3	0.9	-25.6	0.9	1.00	0.97	
852.0	4.40	264.30	851.3	0.7	-27.9	0.7	1.02	0.97	
923.0	5.20	269.50	922.0	0.4	-33.8	0.4	1.28	1.13	
1,016.0	7.00	269.80	1,014.5	0.3	-43.7	0.3	1.94	1.94	
1,110.0	7.40	271.60	1,107.7	0.4	-55.5	0.4	0.49	0.43	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
1,203.0	6.80	265.60	1,200.0	0.2	-66.9	0.2	1.02	-0.65	
1,297.0	6.50	266.70	1,293.4	-0.5	-77.8	-0.5	0.35	-0.32	
1,390.0	6.10	266.80	1,385.8	-1.1	-88.0	-1.1	0.43	-0.43	
1,484.0	5.50	262.90	1,479.4	-2.0	-97.4	-2.0	0.76	-0.64	
1,579.0	6.00	265.40	1,573.9	-2.9	-106.9	-2.9	0.59	0.53	
1,674.0	6.80	264.70	1,668.3	-3.8	-117.5	-3.8	0.85	0.84	
1,769.0	8.80	267.70	1,762.4	-4.6	-130.3	-4.6	2.15	2.11	
1,865.0	8.10	262.10	1,857.4	-5.9	-144.4	-5.9	1.12	-0.73	
1,956.0	8.00	257.10	1,947.5	-8.2	-156.9	-8.2	0.78	-0.11	
2,052.0	7.80	255.00	2,042.6	-11.3	-169.7	-11.3	0.37	-0.21	
2,147.0	6.40	261.30	2,136.8	-13.8	-181.1	-13.8	1.68	-1.47	
2,242.0	6.20	269.10	2,231.2	-14.7	-191.5	-14.7	0.92	-0.21	
2,337.0	7.60	276.90	2,325.6	-14.0	-202.9	-14.0	1.77	1.47	
2,433.0	7.70	276.90	2,420.7	-12.5	-215.6	-12.5	0.10	0.10	
2,528.0	7.30	275.00	2,514.9	-11.2	-227.9	-11.2	0.50	-0.42	
2,622.0	6.90	276.10	2,608.2	-10.1	-239.5	-10.1	0.45	-0.43	
2,718.0	6.70	274.40	2,703.5	-9.0	-250.8	-9.0	0.30	-0.21	
2,813.0	6.30	274.70	2,797.9	-8.2	-261.5	-8.2	0.42	-0.42	
2,908.0	5.80	271.00	2,892.4	-7.7	-271.5	-7.7	0.67	-0.53	
3,003.0	6.90	273.10	2,986.8	-7.3	-282.0	-7.3	1.18	1.16	
3,099.0	6.50	273.20	3,082.1	-6.7	-293.2	-6.7	0.42	-0.42	
3,194.0	6.30	270.20	3,176.5	-6.3	-303.8	-6.3	0.41	-0.21	
3,289.0	5.40	269.90	3,271.0	-6.3	-313.4	-6.3	0.95	-0.95	
3,384.0	6.20	276.60	3,365.5	-5.7	-323.0	-5.7	1.10	0.84	
3,479.0	7.60	279.90	3,459.9	-4.1	-334.3	-4.1	1.53	1.47	
3,575.0	7.50	273.70	3,555.0	-2.6	-346.8	-2.6	0.85	-0.10	
3,670.0	6.40	275.20	3,649.3	-1.7	-358.3	-1.7	1.17	-1.16	
3,765.0	7.30	267.20	3,743.6	-1.5	-369.6	-1.5	1.38	0.95	
3,860.0	6.10	270.40	3,838.0	-1.8	-380.6	-1.8	1.32	-1.26	
3,956.0	7.20	260.70	3,933.4	-2.7	-391.7	-2.7	1.63	1.15	
4,051.0	6.70	259.90	4,027.7	-4.6	-403.0	-4.6	0.54	-0.53	
4,146.0	6.10	258.30	4,122.1	-6.6	-413.4	-6.6	0.66	-0.63	
4,241.0	6.90	258.20	4,216.4	-8.8	-423.9	-8.8	0.84	0.84	
4,336.0	5.80	258.60	4,310.9	-11.0	-434.2	-11.0	1.16	-1.16	
4,432.0	7.10	270.10	4,406.3	-11.9	-444.9	-11.9	1.90	1.35	
4,527.0	6.70	271.70	4,500.6	-11.7	-456.3	-11.7	0.47	-0.42	
4,622.0	6.50	271.40	4,594.9	-11.4	-467.2	-11.4	0.21	-0.21	
4,717.0	5.60	273.70	4,689.4	-11.0	-477.2	-11.0	0.98	-0.95	
4,813.0	6.90	270.40	4,784.8	-10.7	-487.7	-10.7	1.40	1.35	
4,908.0	7.00	266.40	4,879.1	-11.0	-499.2	-11.0	0.52	0.11	
5,003.0	6.60	266.60	4,973.5	-11.7	-510.4	-11.7	0.42	-0.42	
5,098.0	6.20	268.80	5,067.9	-12.1	-521.0	-12.1	0.49	-0.42	
5,193.0	5.40	270.20	5,162.4	-12.2	-530.6	-12.2	0.86	-0.84	
5,288.0	6.10	269.80	5,256.9	-12.2	-540.1	-12.2	0.74	0.74	
5,383.0	7.10	266.60	5,351.3	-12.6	-551.0	-12.6	1.12	1.05	
5,478.0	6.80	266.80	5,445.6	-13.2	-562.5	-13.2	0.32	-0.32	
5,573.0	7.60	263.30	5,539.8	-14.3	-574.3	-14.3	0.96	0.84	
5,668.0	7.30	262.30	5,634.0	-15.8	-586.5	-15.8	0.34	-0.32	
5,763.0	6.90	262.30	5,728.3	-17.4	-598.2	-17.4	0.42	-0.42	
5,858.0	6.80	265.90	5,822.6	-18.5	-609.4	-18.5	0.46	-0.11	
5,957.0	6.20	265.00	5,921.0	-19.4	-620.6	-19.4	0.61	-0.61	
6,052.0	7.40	263.00	6,015.3	-20.6	-631.8	-20.6	1.29	1.26	
6,147.0	5.10	270.30	6,109.8	-21.3	-642.1	-21.3	2.56	-2.42	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
6,242.0	5.90	265.20	6,204.3	-21.7	-651.2	-21.7	0.99	0.84	
6,337.0	6.10	266.50	6,298.8	-22.5	-661.1	-22.5	0.25	0.21	
6,432.0	6.90	265.80	6,393.2	-23.2	-671.8	-23.2	0.85	0.84	
6,528.0	6.80	269.70	6,488.5	-23.6	-683.3	-23.6	0.50	-0.10	
6,623.0	6.90	264.40	6,582.8	-24.2	-694.6	-24.2	0.67	0.11	
6,718.0	4.50	264.10	6,677.3	-25.2	-703.9	-25.2	2.53	-2.53	
6,813.0	8.40	265.70	6,771.7	-26.1	-714.6	-26.1	4.11	4.11	
6,908.0	5.50	265.60	6,866.0	-26.9	-726.0	-26.9	3.05	-3.05	
7,003.0	6.80	274.40	6,960.5	-26.8	-736.2	-26.8	1.69	1.37	
7,050.0	10.50	288.20	7,006.9	-25.3	-743.0	-25.3	8.97	7.87	
7,098.0	12.70	292.10	7,054.0	-21.9	-752.1	-21.9	4.86	4.58	
7,145.0	16.20	297.60	7,099.5	-17.0	-762.7	-17.0	7.99	7.45	
7,193.0	20.60	308.20	7,145.0	-8.6	-775.3	-8.6	11.48	9.17	
7,240.0	24.90	318.40	7,188.4	3.9	-788.3	3.9	12.38	9.15	
7,289.0	25.60	334.90	7,232.7	21.2	-799.7	21.2	14.39	1.43	
7,336.0	28.40	351.00	7,274.7	41.5	-805.8	41.5	16.60	5.96	
7,384.0	34.20	0.80	7,315.7	66.3	-807.4	66.3	16.04	12.08	
7,391.0	34.97	1.84	7,321.4	70.3	-807.3	70.3	13.86	11.00	
7,431.0	39.50	7.10	7,353.3	94.4	-805.3	94.4	13.83	11.32	
7,479.0	44.90	8.20	7,388.8	126.3	-801.0	126.3	11.35	11.25	
7,526.0	51.60	8.00	7,420.1	161.0	-796.1	161.0	14.26	14.26	
7,574.0	57.10	7.20	7,448.1	199.6	-790.9	199.6	11.54	11.46	
7,621.0	61.60	5.10	7,472.0	239.8	-786.6	239.8	10.32	9.57	
7,670.0	65.30	2.50	7,493.9	283.5	-783.7	283.5	8.92	7.55	
7,717.0	68.30	1.00	7,512.5	326.7	-782.4	326.7	7.02	6.38	
7,765.0	71.90	359.30	7,528.8	371.8	-782.3	371.8	8.21	7.50	
7,812.0	77.40	358.10	7,541.2	417.1	-783.3	417.1	11.96	11.70	
7,860.0	81.50	357.60	7,550.0	464.3	-785.1	464.3	8.60	8.54	
7,891.0	85.90	357.10	7,553.4	495.1	-786.5	495.1	14.28	14.19	
7,990.0	89.10	356.90	7,557.7	593.8	-791.7	593.8	3.24	3.23	
8,083.0	89.20	356.20	7,559.1	686.6	-797.3	686.6	0.76	0.11	
8,177.0	90.10	356.90	7,559.7	780.5	-803.0	780.5	1.21	0.96	
8,270.0	89.60	356.70	7,559.9	873.3	-808.2	873.3	0.58	-0.54	
8,364.0	90.60	357.40	7,559.8	967.2	-813.0	967.2	1.30	1.06	
8,457.0	91.30	358.10	7,558.2	1,060.1	-816.6	1,060.1	1.06	0.75	
8,551.0	90.60	357.30	7,556.7	1,154.0	-820.4	1,154.0	1.13	-0.74	
8,645.0	91.60	357.40	7,554.9	1,247.9	-824.8	1,247.9	1.07	1.06	
8,738.0	92.00	358.10	7,551.9	1,340.8	-828.4	1,340.8	0.87	0.43	
8,832.0	91.70	357.70	7,548.9	1,434.7	-831.9	1,434.7	0.53	-0.32	
8,926.0	90.20	357.00	7,547.3	1,528.5	-836.2	1,528.5	1.76	-1.60	
9,019.0	90.20	356.90	7,547.0	1,621.4	-841.1	1,621.4	0.11	0.00	
9,113.0	90.20	356.40	7,546.7	1,715.3	-846.6	1,715.3	0.53	0.00	
9,207.0	89.80	356.20	7,546.7	1,809.1	-852.7	1,809.1	0.48	-0.43	
9,300.0	90.60	356.90	7,546.4	1,901.9	-858.3	1,901.9	1.14	0.86	
9,394.0	90.70	357.20	7,545.3	1,995.8	-863.1	1,995.8	0.34	0.11	
9,487.0	90.90	359.90	7,544.0	2,088.7	-865.5	2,088.7	2.91	0.22	
9,580.0	90.90	359.20	7,542.5	2,181.7	-866.2	2,181.7	0.75	0.00	
9,674.0	91.30	1.00	7,540.7	2,275.7	-866.1	2,275.7	1.96	0.43	
9,767.0	91.20	0.90	7,538.7	2,368.6	-864.5	2,368.6	0.15	-0.11	
9,861.0	90.80	1.10	7,537.1	2,462.6	-862.9	2,462.6	0.48	-0.43	
9,954.0	90.40	0.70	7,536.1	2,555.6	-861.4	2,555.6	0.61	-0.43	
10,048.0	90.00	0.10	7,535.8	2,649.6	-860.8	2,649.6	0.77	-0.43	
10,142.0	90.40	0.90	7,535.4	2,743.6	-859.9	2,743.6	0.95	0.43	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
10,235.0	90.40	359.90	7,534.8	2,836.6	-859.3	2,836.6	1.08	0.00	
10,329.0	91.50	1.20	7,533.2	2,930.6	-858.4	2,930.6	1.81	1.17	
10,422.0	91.30	0.80	7,531.0	3,023.5	-856.8	3,023.5	0.48	-0.22	
10,517.0	90.70	0.10	7,529.3	3,118.5	-856.0	3,118.5	0.97	-0.63	
10,611.0	90.90	359.80	7,528.0	3,212.5	-856.1	3,212.5	0.38	0.21	
10,705.0	90.70	359.60	7,526.7	3,306.5	-856.6	3,306.5	0.30	-0.21	
10,800.0	90.20	358.60	7,525.9	3,401.5	-858.1	3,401.5	1.18	-0.53	
10,894.0	90.80	359.80	7,525.1	3,495.5	-859.4	3,495.5	1.43	0.64	
10,989.0	88.40	359.80	7,525.8	3,590.5	-859.7	3,590.5	2.53	-2.53	
11,083.0	90.90	0.10	7,526.3	3,684.4	-859.8	3,684.4	2.68	2.66	
11,177.0	91.10	1.40	7,524.7	3,778.4	-858.6	3,778.4	1.40	0.21	
11,272.0	89.90	1.10	7,523.9	3,873.4	-856.5	3,873.4	1.30	-1.26	
11,367.0	89.60	0.80	7,524.3	3,968.4	-854.9	3,968.4	0.45	-0.32	
11,461.0	90.50	1.10	7,524.2	4,062.4	-853.4	4,062.4	1.01	0.96	
11,556.0	90.50	1.10	7,523.4	4,157.3	-851.6	4,157.3	0.00	0.00	
11,650.0	90.70	1.30	7,522.4	4,251.3	-849.6	4,251.3	0.30	0.21	
11,744.0	90.50	1.10	7,521.4	4,345.3	-847.6	4,345.3	0.30	-0.21	
11,839.0	90.20	0.90	7,520.8	4,440.3	-846.0	4,440.3	0.38	-0.32	
11,934.0	90.20	0.90	7,520.5	4,535.3	-844.5	4,535.3	0.00	0.00	
12,028.0	89.80	0.90	7,520.5	4,629.3	-843.0	4,629.3	0.43	-0.43	
12,123.0	89.30	0.30	7,521.2	4,724.2	-842.0	4,724.2	0.82	-0.53	
12,217.0	90.10	0.60	7,521.7	4,818.2	-841.3	4,818.2	0.91	0.85	
12,311.0	90.20	0.40	7,521.5	4,912.2	-840.4	4,912.2	0.24	0.11	
12,406.0	90.20	0.60	7,521.2	5,007.2	-839.6	5,007.2	0.21	0.00	
12,501.0	90.80	1.00	7,520.3	5,102.2	-838.3	5,102.2	0.76	0.63	
12,595.0	90.90	0.50	7,518.9	5,196.2	-837.0	5,196.2	0.54	0.11	
12,690.0	90.70	0.30	7,517.6	5,291.2	-836.4	5,291.2	0.30	-0.21	
12,785.0	91.00	0.40	7,516.2	5,386.2	-835.8	5,386.2	0.33	0.32	
12,879.0	90.60	359.30	7,514.9	5,480.2	-836.1	5,480.2	1.25	-0.43	
12,974.0	91.90	0.20	7,512.8	5,575.1	-836.5	5,575.1	1.66	1.37	
13,068.0	91.00	1.70	7,510.4	5,669.1	-834.9	5,669.1	1.86	-0.96	
13,163.0	90.90	1.50	7,508.9	5,764.0	-832.3	5,764.0	0.24	-0.11	
13,257.0	90.50	1.70	7,507.7	5,858.0	-829.6	5,858.0	0.48	-0.43	
13,352.0	90.20	0.80	7,507.1	5,953.0	-827.6	5,953.0	1.00	-0.32	
13,447.0	90.10	0.30	7,506.9	6,048.0	-826.6	6,048.0	0.54	-0.11	
13,542.0	89.90	0.20	7,506.9	6,143.0	-826.2	6,143.0	0.24	-0.21	
13,637.0	91.60	0.40	7,505.6	6,238.0	-825.7	6,238.0	1.80	1.79	
13,731.0	90.90	359.20	7,503.6	6,331.9	-826.1	6,331.9	1.48	-0.74	
13,825.0	91.40	359.30	7,501.7	6,425.9	-827.3	6,425.9	0.54	0.53	
13,920.0	91.30	359.00	7,499.5	6,520.9	-828.7	6,520.9	0.33	-0.11	
14,014.0	90.70	359.00	7,497.8	6,614.8	-830.3	6,614.8	0.64	-0.64	
14,109.0	90.30	358.40	7,497.0	6,709.8	-832.5	6,709.8	0.76	-0.42	
14,203.0	90.50	0.00	7,496.3	6,803.8	-833.8	6,803.8	1.72	0.21	
14,298.0	90.30	359.70	7,495.7	6,898.8	-834.1	6,898.8	0.38	-0.21	
14,392.0	90.30	359.20	7,495.2	6,992.8	-835.0	6,992.8	0.53	0.00	
14,487.0	89.80	358.10	7,495.1	7,087.8	-837.2	7,087.8	1.27	-0.53	
14,581.0	89.90	359.30	7,495.3	7,181.7	-839.3	7,181.7	1.28	0.11	
14,676.0	90.00	358.90	7,495.4	7,276.7	-840.8	7,276.7	0.43	0.11	
14,771.0	90.10	359.50	7,495.3	7,371.7	-842.2	7,371.7	0.64	0.11	
14,865.0	91.20	0.20	7,494.3	7,465.7	-842.4	7,465.7	1.39	1.17	
14,960.0	92.60	359.80	7,491.1	7,560.7	-842.4	7,560.7	1.53	1.47	
15,054.0	91.30	1.60	7,487.9	7,654.6	-841.2	7,654.6	2.36	-1.38	
15,149.0	90.50	0.70	7,486.4	7,749.6	-839.3	7,749.6	1.27	-0.84	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
15,244.0	91.60	2.10	7,484.7	7,844.5	-837.0	7,844.5	1.87	1.16	
15,338.0	91.20	1.30	7,482.4	7,938.4	-834.2	7,938.4	0.95	-0.43	
15,432.0	89.50	359.70	7,481.8	8,032.4	-833.4	8,032.4	2.48	-1.81	
15,527.0	90.50	1.30	7,481.8	8,127.4	-832.6	8,127.4	1.99	1.05	
15,621.0	90.30	2.20	7,481.2	8,221.4	-829.7	8,221.4	0.98	-0.21	
15,716.0	89.80	1.90	7,481.1	8,316.3	-826.3	8,316.3	0.61	-0.53	
15,812.0	89.70	1.70	7,481.5	8,412.3	-823.3	8,412.3	0.23	-0.10	
15,906.0	89.60	1.40	7,482.1	8,506.2	-820.8	8,506.2	0.34	-0.11	
16,001.0	88.90	0.40	7,483.3	8,601.2	-819.3	8,601.2	1.28	-0.74	
16,096.0	90.80	2.60	7,483.6	8,696.2	-816.8	8,696.2	3.06	2.00	
16,190.0	92.60	1.70	7,480.8	8,790.0	-813.3	8,790.0	2.14	1.91	
16,285.0	92.60	1.70	7,476.5	8,884.9	-810.4	8,884.9	0.00	0.00	
16,379.0	91.40	1.60	7,473.2	8,978.8	-807.7	8,978.8	1.28	-1.28	
16,473.0	91.40	1.60	7,470.9	9,072.7	-805.1	9,072.7	0.00	0.00	
16,568.0	89.70	0.60	7,470.0	9,167.7	-803.3	9,167.7	2.08	-1.79	
16,662.0	89.40	359.90	7,470.7	9,261.7	-802.9	9,261.7	0.81	-0.32	
16,756.0	89.50	359.90	7,471.6	9,355.7	-803.0	9,355.7	0.11	0.11	
16,851.0	90.10	359.90	7,472.0	9,450.7	-803.2	9,450.7	0.63	0.63	
16,946.0	90.30	359.70	7,471.6	9,545.7	-803.5	9,545.7	0.30	0.21	
17,040.0	86.60	359.00	7,474.2	9,639.6	-804.6	9,639.6	4.01	-3.94	
17,136.0	86.50	358.60	7,479.9	9,735.4	-806.6	9,735.4	0.43	-0.10	
17,183.0	86.50	358.40	7,482.8	9,782.3	-807.8	9,782.3	0.42	0.00	Last CES Survey @ 17,183' MD
17,238.0	86.50	358.40	7,486.2	9,837.2	-809.4	9,837.2	0.00	0.00	PTB @ 17,238'

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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 4B	0.00	0.00	7,449.9	9,882.9	-816.3	1,295,980.45	3,137,939.85	40.144800	-105.006600
- actual wellpath misses target center by 58.8ft at 17238.0ft MD (7486.2 TVD, 9837.2 N, -809.4 E)									
- Point									
Edith Ann-Duckworth 4B	0.00	0.00	7,454.9	9,882.9	-816.3	1,295,980.40	3,137,939.87	40.144800	-105.006600
- actual wellpath misses target center by 55.8ft at 17238.0ft MD (7486.2 TVD, 9837.2 N, -809.4 E)									
- Point									
Edith Ann-Duckworth 4B	0.00	0.00	7,554.5	1,102.2	-814.3	1,287,199.81	3,137,991.01	40.120696	-105.006592
- actual wellpath misses target center by 4.8ft at 8499.0ft MD (7557.4 TVD, 1102.1 N, -818.2 E)									
- Point									
Edith Ann-Duckworth 4B	0.00	0.00	7,569.5	9,882.9	-816.3	1,295,980.45	3,137,939.85	40.144800	-105.006600
- actual wellpath misses target center by 95.3ft at 17238.0ft MD (7486.2 TVD, 9837.2 N, -809.4 E)									
- Point									
Interp @ 7122.0 (Edith A	0.00	0.00	7,122.0	-114.0	-764.2	1,285,983.92	3,138,047.90	40.117357	-105.006413
- actual wellpath misses target center by 99.3ft at 7149.9ft MD (7104.2 TVD, -16.3 N, -763.9 E)									
- Point									

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
17,183.0	7,482.8	9,782.3	-807.8	Last CES Survey @ 17,183' MD
17,238.0	7,486.2	9,837.2	-809.4	PTB @ 17,238'

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S21-T2N-R68W (Edith Ann-Duckworth)

Edith Ann-Duckworth 4B-21H-O268

Hz

Design: FINAL

Survey Report - Geographic

08 August, 2014

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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 4B-21H-O268					
Well Position	+N/-S	0.0 ft	Northing:	1,286,102.22 ft	Latitude:	40.117670
	+E/-W	0.0 ft	Easting:	3,138,811.47 ft	Longitude:	-105.003680
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	3/25/2014	8.59	66.69	52,664

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	8/8/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
167.0	17,238.0	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	1,286,102.22	3,138,811.47	40.117670	-105.003680	
167.0	0.10	264.70	167.0	0.0	-0.1	1,286,102.21	3,138,811.32	40.117670	-105.003681	
260.0	0.30	257.70	260.0	-0.1	-0.5	1,286,102.15	3,138,811.01	40.117670	-105.003682	
354.0	1.60	292.60	354.0	0.4	-1.9	1,286,102.59	3,138,809.55	40.117671	-105.003687	
447.0	2.60	288.00	446.9	1.5	-5.1	1,286,103.72	3,138,806.34	40.117674	-105.003699	
541.0	2.80	268.40	540.8	2.1	-9.4	1,286,104.30	3,138,802.01	40.117676	-105.003714	
634.0	3.30	265.40	633.7	1.8	-14.4	1,286,103.99	3,138,797.08	40.117675	-105.003732	
728.0	3.20	266.50	727.5	1.5	-19.7	1,286,103.58	3,138,791.76	40.117674	-105.003751	
821.0	4.10	263.00	820.3	0.9	-25.6	1,286,102.99	3,138,785.88	40.117673	-105.003772	
852.0	4.40	264.30	851.3	0.7	-27.9	1,286,102.72	3,138,783.59	40.117672	-105.003780	
923.0	5.20	269.50	922.0	0.4	-33.8	1,286,102.39	3,138,777.67	40.117671	-105.003801	
1,016.0	7.00	269.80	1,014.5	0.3	-43.7	1,286,102.28	3,138,767.79	40.117671	-105.003836	

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
1,110.0	7.40	271.60	1,107.7	0.4	-55.5	1,286,102.36	3,138,756.01	40.117671	-105.003879
1,203.0	6.80	265.60	1,200.0	0.2	-66.9	1,286,102.04	3,138,744.53	40.117671	-105.003920
1,297.0	6.50	266.70	1,293.4	-0.5	-77.8	1,286,101.25	3,138,733.68	40.117669	-105.003958
1,390.0	6.10	266.80	1,385.8	-1.1	-88.0	1,286,100.61	3,138,723.49	40.117667	-105.003995
1,484.0	5.50	262.90	1,479.4	-2.0	-97.4	1,286,099.72	3,138,714.04	40.117665	-105.004029
1,579.0	6.00	265.40	1,573.9	-2.9	-106.9	1,286,098.71	3,138,704.58	40.117662	-105.004063
1,674.0	6.80	264.70	1,668.3	-3.8	-117.5	1,286,097.73	3,138,694.03	40.117660	-105.004100
1,769.0	8.80	267.70	1,762.4	-4.6	-130.3	1,286,096.85	3,138,681.17	40.117657	-105.004146
1,865.0	8.10	262.10	1,857.4	-5.9	-144.4	1,286,095.55	3,138,667.14	40.117654	-105.004196
1,956.0	8.00	257.10	1,947.5	-8.2	-156.9	1,286,093.18	3,138,654.64	40.117648	-105.004241
2,052.0	7.80	255.00	2,042.6	-11.3	-169.7	1,286,089.93	3,138,641.85	40.117639	-105.004287
2,147.0	6.40	261.30	2,136.8	-13.8	-181.1	1,286,087.40	3,138,630.40	40.117632	-105.004328
2,242.0	6.20	269.10	2,231.2	-14.7	-191.5	1,286,086.46	3,138,620.04	40.117630	-105.004365
2,337.0	7.60	276.90	2,325.6	-14.0	-202.9	1,286,087.07	3,138,608.67	40.117632	-105.004406
2,433.0	7.70	276.90	2,420.7	-12.5	-215.6	1,286,088.53	3,138,595.98	40.117636	-105.004451
2,528.0	7.30	275.00	2,514.9	-11.2	-227.9	1,286,089.75	3,138,583.64	40.117639	-105.004495
2,622.0	6.90	276.10	2,608.2	-10.1	-239.5	1,286,090.81	3,138,572.07	40.117642	-105.004536
2,718.0	6.70	274.40	2,703.5	-9.0	-250.8	1,286,091.79	3,138,560.75	40.117645	-105.004577
2,813.0	6.30	274.70	2,797.9	-8.2	-261.5	1,286,092.58	3,138,550.02	40.117648	-105.004615
2,908.0	5.80	271.00	2,892.4	-7.7	-271.5	1,286,093.04	3,138,540.02	40.117649	-105.004651
3,003.0	6.90	273.10	2,986.8	-7.3	-282.0	1,286,093.37	3,138,529.52	40.117650	-105.004689
3,099.0	6.50	273.20	3,082.1	-6.7	-293.2	1,286,093.92	3,138,518.34	40.117652	-105.004729
3,194.0	6.30	270.20	3,176.5	-6.3	-303.8	1,286,094.18	3,138,507.75	40.117653	-105.004766
3,289.0	5.40	269.90	3,271.0	-6.3	-313.4	1,286,094.14	3,138,498.07	40.117653	-105.004801
3,384.0	6.20	276.60	3,365.5	-5.7	-323.0	1,286,094.67	3,138,488.50	40.117654	-105.004835
3,479.0	7.60	279.90	3,459.9	-4.1	-334.3	1,286,096.27	3,138,477.21	40.117659	-105.004876
3,575.0	7.50	273.70	3,555.0	-2.6	-346.8	1,286,097.70	3,138,464.69	40.117663	-105.004920
3,670.0	6.40	275.20	3,649.3	-1.7	-358.3	1,286,098.51	3,138,453.23	40.117665	-105.004961
3,765.0	7.30	267.20	3,743.6	-1.5	-369.6	1,286,098.64	3,138,441.93	40.117666	-105.005002
3,860.0	6.10	270.40	3,838.0	-1.8	-380.6	1,286,098.31	3,138,430.85	40.117665	-105.005041
3,956.0	7.20	260.70	3,933.4	-2.7	-391.7	1,286,097.32	3,138,419.82	40.117663	-105.005081
4,051.0	6.70	259.90	4,027.7	-4.6	-403.0	1,286,095.32	3,138,408.50	40.117657	-105.005121
4,146.0	6.10	258.30	4,122.1	-6.6	-413.4	1,286,093.27	3,138,398.11	40.117652	-105.005158
4,241.0	6.90	258.20	4,216.4	-8.8	-423.9	1,286,091.02	3,138,387.59	40.117646	-105.005196
4,336.0	5.80	258.60	4,310.9	-11.0	-434.2	1,286,088.84	3,138,377.31	40.117640	-105.005233
4,432.0	7.10	270.10	4,406.3	-11.9	-444.9	1,286,087.83	3,138,366.63	40.117637	-105.005271
4,527.0	6.70	271.70	4,500.6	-11.7	-456.3	1,286,087.95	3,138,355.22	40.117638	-105.005312
4,622.0	6.50	271.40	4,594.9	-11.4	-467.2	1,286,088.18	3,138,344.30	40.117639	-105.005351
4,717.0	5.60	273.70	4,689.4	-11.0	-477.2	1,286,088.55	3,138,334.30	40.117640	-105.005387
4,813.0	6.90	270.40	4,784.8	-10.7	-487.7	1,286,088.84	3,138,323.86	40.117641	-105.005424
4,908.0	7.00	266.40	4,879.1	-11.0	-499.2	1,286,088.45	3,138,312.38	40.117640	-105.005465
5,003.0	6.60	266.60	4,973.5	-11.7	-510.4	1,286,087.70	3,138,301.15	40.117638	-105.005505
5,098.0	6.20	268.80	5,067.9	-12.1	-521.0	1,286,087.21	3,138,290.58	40.117637	-105.005543
5,193.0	5.40	270.20	5,162.4	-12.2	-530.6	1,286,087.06	3,138,280.98	40.117637	-105.005577
5,288.0	6.10	269.80	5,256.9	-12.2	-540.1	1,286,087.01	3,138,271.46	40.117637	-105.005611
5,383.0	7.10	266.60	5,351.3	-12.6	-551.0	1,286,086.58	3,138,260.55	40.117636	-105.005650
5,478.0	6.80	266.80	5,445.6	-13.2	-562.5	1,286,085.86	3,138,249.08	40.117634	-105.005691
5,573.0	7.60	263.30	5,539.8	-14.3	-574.3	1,286,084.74	3,138,237.23	40.117631	-105.005734
5,668.0	7.30	262.30	5,634.0	-15.8	-586.5	1,286,083.13	3,138,225.02	40.117627	-105.005778
5,763.0	6.90	262.30	5,728.3	-17.4	-598.2	1,286,081.49	3,138,213.39	40.117622	-105.005819
5,858.0	6.80	265.90	5,822.6	-18.5	-609.4	1,286,080.26	3,138,202.14	40.117619	-105.005859
5,957.0	6.20	265.00	5,921.0	-19.4	-620.6	1,286,079.32	3,138,190.97	40.117617	-105.005899
6,052.0	7.40	263.00	6,015.3	-20.6	-631.8	1,286,078.06	3,138,179.79	40.117613	-105.005939
6,147.0	5.10	270.30	6,109.8	-21.3	-642.1	1,286,077.28	3,138,169.50	40.117611	-105.005976
6,242.0	5.90	265.20	6,204.3	-21.7	-651.2	1,286,076.84	3,138,160.41	40.117610	-105.006009

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
6,337.0	6.10	266.50	6,298.8	-22.5	-661.1	1,286,076.07	3,138,150.52	40.117608	-105.006044
6,432.0	6.90	265.80	6,393.2	-23.2	-671.8	1,286,075.28	3,138,139.79	40.117606	-105.006082
6,528.0	6.80	269.70	6,488.5	-23.6	-683.3	1,286,074.77	3,138,128.36	40.117605	-105.006123
6,623.0	6.90	264.40	6,582.8	-24.2	-694.6	1,286,074.12	3,138,117.06	40.117604	-105.006164
6,718.0	4.50	264.10	6,677.3	-25.2	-703.9	1,286,073.13	3,138,107.68	40.117601	-105.006197
6,813.0	8.40	265.70	6,771.7	-26.1	-714.6	1,286,072.16	3,138,097.05	40.117598	-105.006235
6,908.0	5.50	265.60	6,866.0	-26.9	-726.0	1,286,071.23	3,138,085.59	40.117596	-105.006276
7,003.0	6.80	274.40	6,960.5	-26.8	-736.2	1,286,071.25	3,138,075.45	40.117596	-105.006313
7,050.0	10.50	288.20	7,006.9	-25.3	-743.0	1,286,072.77	3,138,068.59	40.117601	-105.006337
7,098.0	12.70	292.10	7,054.0	-21.9	-752.1	1,286,076.07	3,138,059.53	40.117610	-105.006369
7,145.0	16.20	297.60	7,099.5	-17.0	-762.7	1,286,080.99	3,138,048.90	40.117623	-105.006407
7,193.0	20.60	308.20	7,145.0	-8.6	-775.3	1,286,089.25	3,138,036.27	40.117646	-105.006452
7,240.0	24.90	318.40	7,188.4	3.9	-788.3	1,286,101.70	3,138,023.13	40.117681	-105.006499
7,289.0	25.60	334.90	7,232.7	21.2	-799.7	1,286,118.96	3,138,011.68	40.117728	-105.006540
7,336.0	28.40	351.00	7,274.7	41.5	-805.8	1,286,139.19	3,138,005.50	40.117784	-105.006561
7,384.0	34.20	0.80	7,315.7	66.3	-807.4	1,286,163.98	3,138,003.76	40.117852	-105.006567
7,391.0	34.97	1.84	7,321.4	70.3	-807.3	1,286,167.96	3,138,003.83	40.117863	-105.006567
7,431.0	39.50	7.10	7,353.3	94.4	-805.3	1,286,192.07	3,138,005.64	40.117929	-105.006560
7,479.0	44.90	8.20	7,388.8	126.3	-801.0	1,286,224.03	3,138,009.76	40.118017	-105.006544
7,526.0	51.60	8.00	7,420.1	161.0	-796.1	1,286,258.75	3,138,014.50	40.118112	-105.006527
7,574.0	57.10	7.20	7,448.1	199.6	-790.9	1,286,297.43	3,138,019.43	40.118218	-105.006508
7,621.0	61.60	5.10	7,472.0	239.8	-786.6	1,286,337.64	3,138,023.52	40.118328	-105.006493
7,670.0	65.30	2.50	7,493.9	283.5	-783.7	1,286,381.38	3,138,026.17	40.118448	-105.006483
7,717.0	68.30	1.00	7,512.5	326.7	-782.4	1,286,424.56	3,138,027.24	40.118567	-105.006478
7,765.0	71.90	359.30	7,528.8	371.8	-782.3	1,286,469.69	3,138,027.10	40.118691	-105.006478
7,812.0	77.40	358.10	7,541.2	417.1	-783.3	1,286,514.97	3,138,025.81	40.118815	-105.006481
7,860.0	81.50	357.60	7,550.0	464.3	-785.1	1,286,562.11	3,138,023.77	40.118945	-105.006488
7,891.0	85.90	357.10	7,553.4	495.1	-786.5	1,286,592.87	3,138,022.18	40.119029	-105.006493
7,990.0	89.10	356.90	7,557.7	593.8	-791.7	1,286,691.60	3,138,016.45	40.119300	-105.006511
8,083.0	89.20	356.20	7,559.1	686.6	-797.3	1,286,784.39	3,138,010.33	40.119555	-105.006531
8,177.0	90.10	356.90	7,559.7	780.5	-803.0	1,286,878.18	3,138,004.15	40.119812	-105.006551
8,270.0	89.60	356.70	7,559.9	873.3	-808.2	1,286,971.00	3,137,998.44	40.120067	-105.006570
8,364.0	90.60	357.40	7,559.8	967.2	-813.0	1,287,064.85	3,137,993.08	40.120325	-105.006587
8,457.0	91.30	358.10	7,558.2	1,060.1	-816.6	1,287,157.74	3,137,988.91	40.120580	-105.006600
8,551.0	90.60	357.30	7,556.7	1,154.0	-820.4	1,287,251.63	3,137,984.61	40.120838	-105.006614
8,645.0	91.60	357.40	7,554.9	1,247.9	-824.8	1,287,345.48	3,137,979.74	40.121096	-105.006629
8,738.0	92.00	358.10	7,551.9	1,340.8	-828.4	1,287,438.34	3,137,975.57	40.121351	-105.006643
8,832.0	91.70	357.70	7,548.9	1,434.7	-831.9	1,287,532.21	3,137,971.60	40.121608	-105.006655
8,926.0	90.20	357.00	7,547.3	1,528.5	-836.2	1,287,626.07	3,137,966.73	40.121866	-105.006670
9,019.0	90.20	356.90	7,547.0	1,621.4	-841.1	1,287,718.91	3,137,961.26	40.122121	-105.006688
9,113.0	90.20	356.40	7,546.7	1,715.3	-846.6	1,287,812.71	3,137,955.24	40.122379	-105.006708
9,207.0	89.80	356.20	7,546.7	1,809.1	-852.7	1,287,906.48	3,137,948.65	40.122636	-105.006729
9,300.0	90.60	356.90	7,546.4	1,901.9	-858.3	1,287,999.28	3,137,942.54	40.122891	-105.006749
9,394.0	90.70	357.20	7,545.3	1,995.8	-863.1	1,288,093.12	3,137,937.17	40.123149	-105.006767
9,487.0	90.90	359.90	7,544.0	2,088.7	-865.5	1,288,186.06	3,137,934.30	40.123404	-105.006775
9,580.0	90.90	359.20	7,542.5	2,181.7	-866.2	1,288,279.03	3,137,933.05	40.123659	-105.006778
9,674.0	91.30	1.00	7,540.7	2,275.7	-866.1	1,288,373.01	3,137,932.69	40.123917	-105.006777
9,767.0	91.20	0.90	7,538.7	2,368.6	-864.5	1,288,465.98	3,137,933.71	40.124172	-105.006772
9,861.0	90.80	1.10	7,537.1	2,462.6	-862.9	1,288,559.96	3,137,934.82	40.124430	-105.006766
9,954.0	90.40	0.70	7,536.1	2,555.6	-861.4	1,288,652.95	3,137,935.76	40.124685	-105.006761
10,048.0	90.00	0.10	7,535.8	2,649.6	-860.8	1,288,746.95	3,137,935.89	40.124944	-105.006758
10,142.0	90.40	0.90	7,535.4	2,743.6	-859.9	1,288,840.95	3,137,936.19	40.125202	-105.006755
10,235.0	90.40	359.90	7,534.8	2,836.6	-859.3	1,288,933.95	3,137,936.32	40.125457	-105.006753
10,329.0	91.50	1.20	7,533.2	2,930.6	-858.4	1,289,027.93	3,137,936.69	40.125715	-105.006750
10,422.0	91.30	0.80	7,531.0	3,023.5	-856.8	1,289,120.90	3,137,937.79	40.125970	-105.006744

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
10,517.0	90.70	0.10	7,529.3	3,118.5	-856.0	1,289,215.88	3,137,938.01	40.126231	-105.006741
10,611.0	90.90	359.80	7,528.0	3,212.5	-856.1	1,289,309.89	3,137,937.40	40.126489	-105.006742
10,705.0	90.70	359.60	7,526.7	3,306.5	-856.6	1,289,403.87	3,137,936.38	40.126747	-105.006744
10,800.0	90.20	358.60	7,525.9	3,401.5	-858.1	1,289,498.85	3,137,934.36	40.127008	-105.006749
10,894.0	90.80	359.80	7,525.1	3,495.5	-859.4	1,289,592.83	3,137,932.52	40.127266	-105.006754
10,989.0	88.40	359.80	7,525.8	3,590.5	-859.7	1,289,687.81	3,137,931.66	40.127526	-105.006755
11,083.0	90.90	0.10	7,526.3	3,684.4	-859.8	1,289,781.80	3,137,931.05	40.127784	-105.006755
11,177.0	91.10	1.40	7,524.7	3,778.4	-858.6	1,289,875.78	3,137,931.75	40.128042	-105.006751
11,272.0	89.90	1.10	7,523.9	3,873.4	-856.5	1,289,970.76	3,137,933.29	40.128303	-105.006743
11,367.0	89.60	0.80	7,524.3	3,968.4	-854.9	1,290,065.76	3,137,934.34	40.128564	-105.006738
11,461.0	90.50	1.10	7,524.2	4,062.4	-853.4	1,290,159.75	3,137,935.37	40.128822	-105.006732
11,556.0	90.50	1.10	7,523.4	4,157.3	-851.6	1,290,254.74	3,137,936.66	40.129083	-105.006726
11,650.0	90.70	1.30	7,522.4	4,251.3	-849.6	1,290,348.72	3,137,938.10	40.129340	-105.006719
11,744.0	90.50	1.10	7,521.4	4,345.3	-847.6	1,290,442.71	3,137,939.55	40.129598	-105.006712
11,839.0	90.20	0.90	7,520.8	4,440.3	-846.0	1,290,537.70	3,137,940.67	40.129859	-105.006706
11,934.0	90.20	0.90	7,520.5	4,535.3	-844.5	1,290,632.69	3,137,941.63	40.130120	-105.006700
12,028.0	89.80	0.90	7,520.5	4,629.3	-843.0	1,290,726.69	3,137,942.58	40.130378	-105.006695
12,123.0	89.30	0.30	7,521.2	4,724.2	-842.0	1,290,821.68	3,137,943.05	40.130639	-105.006691
12,217.0	90.10	0.60	7,521.7	4,818.2	-841.3	1,290,915.68	3,137,943.26	40.130897	-105.006689
12,311.0	90.20	0.40	7,521.5	4,912.2	-840.4	1,291,009.68	3,137,943.55	40.131155	-105.006686
12,406.0	90.20	0.60	7,521.2	5,007.2	-839.6	1,291,104.68	3,137,943.85	40.131416	-105.006683
12,501.0	90.80	1.00	7,520.3	5,102.2	-838.3	1,291,199.67	3,137,944.65	40.131676	-105.006678
12,595.0	90.90	0.50	7,518.9	5,196.2	-837.0	1,291,293.66	3,137,945.35	40.131934	-105.006674
12,690.0	90.70	0.30	7,517.6	5,291.2	-836.4	1,291,388.65	3,137,945.48	40.132195	-105.006672
12,785.0	91.00	0.40	7,516.2	5,386.2	-835.8	1,291,483.64	3,137,945.53	40.132456	-105.006669
12,879.0	90.60	359.30	7,514.9	5,480.2	-836.1	1,291,577.63	3,137,944.76	40.132714	-105.006670
12,974.0	91.90	0.20	7,512.8	5,575.1	-836.5	1,291,672.60	3,137,943.81	40.132975	-105.006672
13,068.0	91.00	1.70	7,510.4	5,669.1	-834.9	1,291,766.56	3,137,944.84	40.133232	-105.006666
13,163.0	90.90	1.50	7,508.9	5,764.0	-832.3	1,291,861.52	3,137,946.96	40.133493	-105.006657
13,257.0	90.50	1.70	7,507.7	5,858.0	-829.6	1,291,955.49	3,137,949.06	40.133751	-105.006647
13,352.0	90.20	0.80	7,507.1	5,953.0	-827.6	1,292,050.47	3,137,950.60	40.134012	-105.006640
13,447.0	90.10	0.30	7,506.9	6,048.0	-826.6	1,292,145.47	3,137,950.98	40.134273	-105.006637
13,542.0	89.90	0.20	7,506.9	6,143.0	-826.2	1,292,240.47	3,137,950.87	40.134533	-105.006635
13,637.0	91.60	0.40	7,505.6	6,238.0	-825.7	1,292,335.46	3,137,950.83	40.134794	-105.006634
13,731.0	90.90	359.20	7,503.6	6,331.9	-826.1	1,292,429.43	3,137,949.98	40.135052	-105.006635
13,825.0	91.40	359.30	7,501.7	6,425.9	-827.3	1,292,523.40	3,137,948.22	40.135310	-105.006639
13,920.0	91.30	359.00	7,499.5	6,520.9	-828.7	1,292,618.35	3,137,946.28	40.135571	-105.006644
14,014.0	90.70	359.00	7,497.8	6,614.8	-830.3	1,292,712.31	3,137,944.12	40.135829	-105.006650
14,109.0	90.30	358.40	7,497.0	6,709.8	-832.5	1,292,807.27	3,137,941.43	40.136089	-105.006658
14,203.0	90.50	0.00	7,496.3	6,803.8	-833.8	1,292,901.25	3,137,939.59	40.136347	-105.006662
14,298.0	90.30	359.70	7,495.7	6,898.8	-834.1	1,292,996.24	3,137,938.81	40.136608	-105.006663
14,392.0	90.30	359.20	7,495.2	6,992.8	-835.0	1,293,090.23	3,137,937.38	40.136866	-105.006667
14,487.0	89.80	358.10	7,495.1	7,087.8	-837.2	1,293,185.19	3,137,934.61	40.137127	-105.006675
14,581.0	89.90	359.30	7,495.3	7,181.7	-839.3	1,293,279.15	3,137,931.95	40.137385	-105.006682
14,676.0	90.00	358.90	7,495.4	7,276.7	-840.8	1,293,374.13	3,137,929.93	40.137646	-105.006688
14,771.0	90.10	359.50	7,495.3	7,371.7	-842.2	1,293,469.11	3,137,928.07	40.137906	-105.006692
14,865.0	91.20	0.20	7,494.3	7,465.7	-842.4	1,293,563.10	3,137,927.30	40.138164	-105.006693
14,960.0	92.60	359.80	7,491.1	7,560.7	-842.4	1,293,658.04	3,137,926.77	40.138425	-105.006693
15,054.0	91.30	1.60	7,487.9	7,654.6	-841.2	1,293,751.98	3,137,927.39	40.138683	-105.006689
15,149.0	90.50	0.70	7,486.4	7,749.6	-839.3	1,293,846.96	3,137,928.77	40.138944	-105.006682
15,244.0	91.60	2.10	7,484.7	7,844.5	-837.0	1,293,941.92	3,137,930.55	40.139204	-105.006674
15,338.0	91.20	1.30	7,482.4	7,938.4	-834.2	1,294,035.86	3,137,932.82	40.139462	-105.006664
15,432.0	89.50	359.70	7,481.8	8,032.4	-833.4	1,294,129.85	3,137,933.11	40.139720	-105.006661
15,527.0	90.50	1.30	7,481.8	8,127.4	-832.6	1,294,224.85	3,137,933.41	40.139981	-105.006658
15,621.0	90.30	2.20	7,481.2	8,221.4	-829.7	1,294,318.82	3,137,935.75	40.140239	-105.006648

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Edith Ann-Duckworth 4B-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 4B-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
15,716.0	89.80	1.90	7,481.1	8,316.3	-826.3	1,294,413.77	3,137,938.62	40.140499	-105.006636
15,812.0	89.70	1.70	7,481.5	8,412.3	-823.3	1,294,509.74	3,137,941.10	40.140763	-105.006625
15,906.0	89.60	1.40	7,482.1	8,506.2	-820.8	1,294,603.72	3,137,943.11	40.141021	-105.006616
16,001.0	88.90	0.40	7,483.3	8,601.2	-819.3	1,294,698.70	3,137,944.07	40.141282	-105.006611
16,096.0	90.80	2.60	7,483.6	8,696.2	-816.8	1,294,793.67	3,137,946.03	40.141542	-105.006602
16,190.0	92.60	1.70	7,480.8	8,790.0	-813.3	1,294,887.58	3,137,949.03	40.141800	-105.006589
16,285.0	92.60	1.70	7,476.5	8,884.9	-810.4	1,294,982.45	3,137,951.31	40.142060	-105.006579
16,379.0	91.40	1.60	7,473.2	8,978.8	-807.7	1,295,076.37	3,137,953.49	40.142318	-105.006569
16,473.0	91.40	1.60	7,470.9	9,072.7	-805.1	1,295,170.32	3,137,955.59	40.142576	-105.006560
16,568.0	89.70	0.60	7,470.0	9,167.7	-803.3	1,295,265.30	3,137,956.88	40.142837	-105.006554
16,662.0	89.40	359.90	7,470.7	9,261.7	-802.9	1,295,359.30	3,137,956.77	40.143095	-105.006552
16,756.0	89.50	359.90	7,471.6	9,355.7	-803.0	1,295,453.29	3,137,956.08	40.143353	-105.006553
16,851.0	90.10	359.90	7,472.0	9,450.7	-803.2	1,295,548.29	3,137,955.38	40.143614	-105.006553
16,946.0	90.30	359.70	7,471.6	9,545.7	-803.5	1,295,643.28	3,137,954.52	40.143874	-105.006555
17,040.0	86.60	359.00	7,474.2	9,639.6	-804.6	1,295,737.18	3,137,952.93	40.144132	-105.006558
17,136.0	86.50	358.60	7,479.9	9,735.4	-806.6	1,295,832.98	3,137,950.38	40.144395	-105.006566
17,183.0	86.50	358.40	7,482.8	9,782.3	-807.8	1,295,879.86	3,137,948.89	40.144524	-105.006570
Last CES Survey @ 17,183' MD									
17,238.0	86.50	358.40	7,486.2	9,837.2	-809.4	1,295,934.73	3,137,947.05	40.144674	-105.006575
PTB @ 17,238'									

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 4B	0.00	0.00	7,454.9	9,882.9	-816.3	1,295,980.40	3,137,939.87	40.144800	-105.006600
- actual wellpath misses target center by 55.8ft at 17238.0ft MD (7486.2 TVD, 9837.2 N, -809.4 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
17,183.0	7,482.8	9,782.3	-807.8	Last CES Survey @ 17,183' MD	
17,238.0	7,486.2	9,837.2	-809.4	PTB @ 17,238'	

Checked By: _____ Approved By: _____ Date: _____