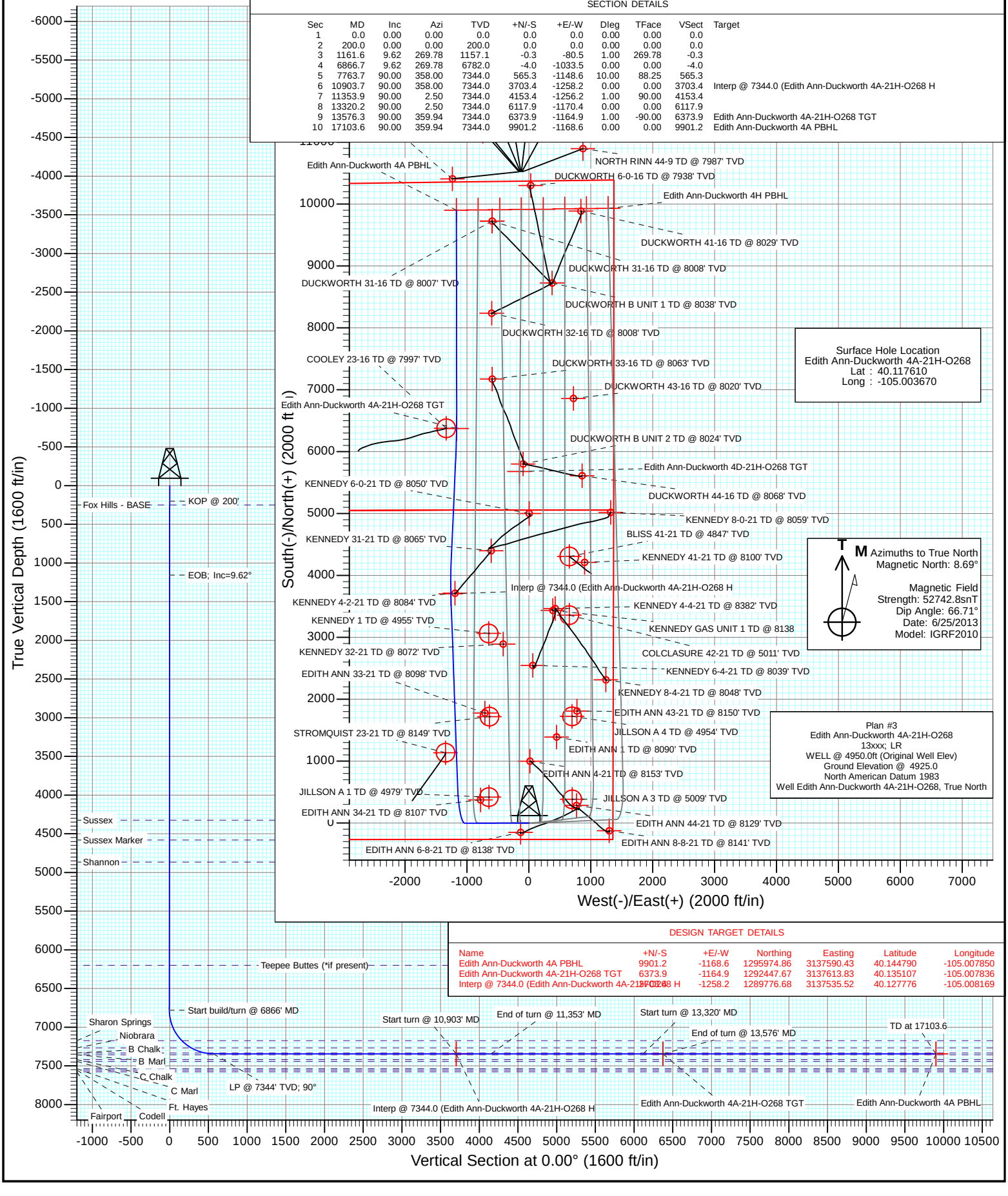
encana

Project: DJ Wattenberg
Site: S21-T2N-R68W (Edith Ann-Duckworth)
Well: Edith Ann-Duckworth 4A-21H-O268
Vellbore: Hz
Design: Plan #3

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1161.6	9.62	269.78	1157.1	-0.3	-80.5	1.00	269.78	-0.3	
4	6866.7	9.62	269.78	6782.0	-4.0	-1033.5	0.00	0.00	-4.0	
5	7763.7	90.00	358.00	7344.0	565.3	-1148.6	10.00	88.25	565.3	
6	10903.7	90.00	358.00	7344.0	3703.4	-1258.2	0.00	0.00	3703.4	Interp @ 7344.0 (Edith Ann-Duckworth 4A-21H-O268 H
7	11353.9	90.00	2.50	7344.0	4153.4	-1256.2	1.00	90.00	4153.4	
8	13320.2	90.00	2.50	7344.0	6117.9	-1170.4	0.00	0.00	6117.9	
9	13576.3	90.00	359.94	7344.0	6373.9	-1164.9	1.00	-90.00	6373.9	Edith Ann-Duckworth 4A-21H-O268 TGT
10	17103.6	90.00	359.94	7344.0	9901.2	-1168.6	0.00	0.00	9901.2	Edith Ann-Duckworth 4A PBHL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Edith Ann-Duckworth 4A PBHL	9901.2	-1168.6	1295974.86	3137590.43	40.144790	-105.007850
Edith Ann-Duckworth 4A-21H-O268 TGT	6373.9	-1164.9	1292447.67	3137613.83	40.135107	-105.007836
Interp @ 7344.0 (Edith Ann-Duckworth 4A-21H-O268 H		-1258.2	1289776.68	3137535.52	40.127776	-105.008169

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**North Reference:**	True
Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

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 4A-21H-O268

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,286,080.39 ft	**Latitude:**	40.117610
	+E/-W	0.0 ft	**Easting:**	3,138,814.39 ft	**Longitude:**	-105.003670
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,925.0 ft

Wellbore Hz

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/25/2013	8.69	66.71	52,743

Design Plan #3

Audit Notes:

Version:		**Phase:**	PLAN	**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

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,161.6	9.62	269.78	1,157.1	-0.3	-80.5	1.00	1.00	0.00	269.78	
6,866.7	9.62	269.78	6,782.0	-4.0	-1,033.5	0.00	0.00	0.00	0.00	
7,763.7	90.00	358.00	7,344.0	565.3	-1,148.6	10.00	8.96	9.83	88.25	
10,903.7	90.00	358.00	7,344.0	3,703.4	-1,258.2	0.00	0.00	0.00	0.00	Interp @ 7344.0 (Edit
11,353.9	90.00	2.50	7,344.0	4,153.4	-1,256.2	1.00	0.00	1.00	90.00	
13,320.2	90.00	2.50	7,344.0	6,117.9	-1,170.4	0.00	0.00	0.00	0.00	
13,576.3	90.00	359.94	7,344.0	6,373.9	-1,164.9	1.00	0.00	-1.00	-90.00	Edith Ann-Duckworth
17,103.6	90.00	359.94	7,344.0	9,901.2	-1,168.6	0.00	0.00	0.00	0.00	Edith Ann-Duckworth

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Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**North Reference:**	True
Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
250.0	0.50	269.78	250.0	0.0	-0.2	0.0	1.00	1.00	Fox Hills - BASE
300.0	1.00	269.78	300.0	0.0	-0.9	0.0	1.00	1.00	
400.0	2.00	269.78	400.0	0.0	-3.5	0.0	1.00	1.00	
500.0	3.00	269.78	499.9	0.0	-7.9	0.0	1.00	1.00	
600.0	4.00	269.78	599.7	-0.1	-14.0	-0.1	1.00	1.00	
700.0	5.00	269.78	699.4	-0.1	-21.8	-0.1	1.00	1.00	
800.0	6.00	269.78	798.9	-0.1	-31.4	-0.1	1.00	1.00	
900.0	7.00	269.78	898.3	-0.2	-42.7	-0.2	1.00	1.00	
1,000.0	8.00	269.78	997.4	-0.2	-55.8	-0.2	1.00	1.00	
1,100.0	9.00	269.78	1,096.3	-0.3	-70.5	-0.3	1.00	1.00	
1,161.6	9.62	269.78	1,157.1	-0.3	-80.5	-0.3	1.00	1.00	EOB; Inc=9.62°
1,200.0	9.62	269.78	1,195.0	-0.3	-86.9	-0.3	0.00	0.00	
1,300.0	9.62	269.78	1,293.5	-0.4	-103.6	-0.4	0.00	0.00	
1,400.0	9.62	269.78	1,392.1	-0.5	-120.3	-0.5	0.00	0.00	
1,500.0	9.62	269.78	1,490.7	-0.5	-137.0	-0.5	0.00	0.00	
1,600.0	9.62	269.78	1,589.3	-0.6	-153.7	-0.6	0.00	0.00	
1,700.0	9.62	269.78	1,687.9	-0.7	-170.4	-0.7	0.00	0.00	
1,800.0	9.62	269.78	1,786.5	-0.7	-187.1	-0.7	0.00	0.00	
1,900.0	9.62	269.78	1,885.1	-0.8	-203.8	-0.8	0.00	0.00	
2,000.0	9.62	269.78	1,983.7	-0.8	-220.5	-0.8	0.00	0.00	
2,100.0	9.62	269.78	2,082.3	-0.9	-237.3	-0.9	0.00	0.00	
2,200.0	9.62	269.78	2,180.9	-1.0	-254.0	-1.0	0.00	0.00	
2,300.0	9.62	269.78	2,279.5	-1.0	-270.7	-1.0	0.00	0.00	
2,400.0	9.62	269.78	2,378.1	-1.1	-287.4	-1.1	0.00	0.00	
2,500.0	9.62	269.78	2,476.7	-1.2	-304.1	-1.2	0.00	0.00	
2,600.0	9.62	269.78	2,575.3	-1.2	-320.8	-1.2	0.00	0.00	
2,700.0	9.62	269.78	2,673.9	-1.3	-337.5	-1.3	0.00	0.00	
2,800.0	9.62	269.78	2,772.5	-1.4	-354.2	-1.4	0.00	0.00	
2,900.0	9.62	269.78	2,871.1	-1.4	-370.9	-1.4	0.00	0.00	
3,000.0	9.62	269.78	2,969.7	-1.5	-387.6	-1.5	0.00	0.00	
3,100.0	9.62	269.78	3,068.3	-1.6	-404.3	-1.6	0.00	0.00	
3,200.0	9.62	269.78	3,166.9	-1.6	-421.0	-1.6	0.00	0.00	
3,300.0	9.62	269.78	3,265.4	-1.7	-437.7	-1.7	0.00	0.00	
3,400.0	9.62	269.78	3,364.0	-1.7	-454.4	-1.7	0.00	0.00	
3,500.0	9.62	269.78	3,462.6	-1.8	-471.1	-1.8	0.00	0.00	
3,600.0	9.62	269.78	3,561.2	-1.9	-487.8	-1.9	0.00	0.00	
3,700.0	9.62	269.78	3,659.8	-1.9	-504.5	-1.9	0.00	0.00	
3,800.0	9.62	269.78	3,758.4	-2.0	-521.2	-2.0	0.00	0.00	
3,900.0	9.62	269.78	3,857.0	-2.1	-537.9	-2.1	0.00	0.00	
4,000.0	9.62	269.78	3,955.6	-2.1	-554.6	-2.1	0.00	0.00	
4,100.0	9.62	269.78	4,054.2	-2.2	-571.3	-2.2	0.00	0.00	
4,200.0	9.62	269.78	4,152.8	-2.3	-588.0	-2.3	0.00	0.00	
4,300.0	9.62	269.78	4,251.4	-2.3	-604.7	-2.3	0.00	0.00	
4,374.7	9.62	269.78	4,325.0	-2.4	-617.2	-2.4	0.00	0.00	Sussex
4,400.0	9.62	269.78	4,350.0	-2.4	-621.4	-2.4	0.00	0.00	
4,500.0	9.62	269.78	4,448.6	-2.5	-638.1	-2.5	0.00	0.00	
4,600.0	9.62	269.78	4,547.2	-2.5	-654.8	-2.5	0.00	0.00	
4,635.3	9.62	269.78	4,582.0	-2.5	-660.7	-2.5	0.00	0.00	Sussex Marker
4,700.0	9.62	269.78	4,645.8	-2.6	-671.6	-2.6	0.00	0.00	

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Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,800.0	9.62	269.78	4,744.4	-2.6	-688.3	-2.6	0.00	0.00	
4,900.0	9.62	269.78	4,843.0	-2.7	-705.0	-2.7	0.00	0.00	
4,924.4	9.62	269.78	4,867.0	-2.7	-709.0	-2.7	0.00	0.00	Shannon
5,000.0	9.62	269.78	4,941.6	-2.8	-721.7	-2.8	0.00	0.00	
5,100.0	9.62	269.78	5,040.2	-2.8	-738.4	-2.8	0.00	0.00	
5,200.0	9.62	269.78	5,138.8	-2.9	-755.1	-2.9	0.00	0.00	
5,300.0	9.62	269.78	5,237.3	-3.0	-771.8	-3.0	0.00	0.00	
5,400.0	9.62	269.78	5,335.9	-3.0	-788.5	-3.0	0.00	0.00	
5,500.0	9.62	269.78	5,434.5	-3.1	-805.2	-3.1	0.00	0.00	
5,600.0	9.62	269.78	5,533.1	-3.2	-821.9	-3.2	0.00	0.00	
5,700.0	9.62	269.78	5,631.7	-3.2	-838.6	-3.2	0.00	0.00	
5,800.0	9.62	269.78	5,730.3	-3.3	-855.3	-3.3	0.00	0.00	
5,900.0	9.62	269.78	5,828.9	-3.4	-872.0	-3.4	0.00	0.00	
6,000.0	9.62	269.78	5,927.5	-3.4	-888.7	-3.4	0.00	0.00	
6,100.0	9.62	269.78	6,026.1	-3.5	-905.4	-3.5	0.00	0.00	
6,200.0	9.62	269.78	6,124.7	-3.5	-922.1	-3.5	0.00	0.00	
6,276.4	9.62	269.78	6,200.0	-3.6	-934.9	-3.6	0.00	0.00	Teepee Buttes (*if present)
6,300.0	9.62	269.78	6,223.3	-3.6	-938.8	-3.6	0.00	0.00	
6,400.0	9.62	269.78	6,321.9	-3.7	-955.5	-3.7	0.00	0.00	
6,500.0	9.62	269.78	6,420.5	-3.7	-972.2	-3.7	0.00	0.00	
6,600.0	9.62	269.78	6,519.1	-3.8	-988.9	-3.8	0.00	0.00	
6,700.0	9.62	269.78	6,617.7	-3.9	-1,005.6	-3.9	0.00	0.00	
6,800.0	9.62	269.78	6,716.3	-3.9	-1,022.3	-3.9	0.00	0.00	
6,866.7	9.62	269.78	6,782.0	-4.0	-1,033.5	-4.0	0.00	0.00	Start build/turn @ 6866' MD
6,900.0	10.27	288.80	6,814.8	-3.0	-1,039.1	-3.0	10.00	1.96	
7,000.0	16.62	323.45	6,912.2	11.4	-1,056.1	11.4	10.00	6.36	
7,100.0	25.41	337.11	7,005.5	42.7	-1,073.0	42.7	10.00	8.78	
7,200.0	34.82	343.91	7,091.9	90.0	-1,089.3	90.0	10.00	9.41	
7,300.0	44.47	348.07	7,168.9	151.9	-1,104.5	151.9	10.00	9.65	
7,308.7	45.31	348.36	7,175.0	157.9	-1,105.7	157.9	10.00	9.72	Sharon Springs
7,400.0	54.22	350.99	7,234.0	226.4	-1,118.1	226.4	10.00	9.76	
7,463.1	60.40	352.48	7,268.0	278.9	-1,125.7	278.9	10.00	9.80	Niobrara
7,500.0	64.03	353.27	7,285.2	311.3	-1,129.7	311.3	10.00	9.82	
7,600.0	73.87	355.19	7,321.1	404.0	-1,139.1	404.0	10.00	9.84	
7,655.7	79.36	356.18	7,334.0	458.1	-1,143.1	458.1	10.00	9.85	B Chalk
7,700.0	83.72	356.93	7,340.5	501.8	-1,145.8	501.8	10.00	9.86	
7,763.7	90.00	358.00	7,344.0	565.3	-1,148.6	565.3	10.00	9.86	LP @ 7344' TVD; 90°
7,800.0	90.00	358.00	7,344.0	601.6	-1,149.8	601.6	0.00	0.00	
7,900.0	90.00	358.00	7,344.0	701.5	-1,153.3	701.5	0.00	0.00	
8,000.0	90.00	358.00	7,344.0	801.5	-1,156.8	801.5	0.00	0.00	
8,100.0	90.00	358.00	7,344.0	901.4	-1,160.3	901.4	0.00	0.00	
8,200.0	90.00	358.00	7,344.0	1,001.3	-1,163.8	1,001.3	0.00	0.00	
8,300.0	90.00	358.00	7,344.0	1,101.3	-1,167.3	1,101.3	0.00	0.00	
8,400.0	90.00	358.00	7,344.0	1,201.2	-1,170.8	1,201.2	0.00	0.00	
8,500.0	90.00	358.00	7,344.0	1,301.1	-1,174.3	1,301.1	0.00	0.00	
8,600.0	90.00	358.00	7,344.0	1,401.1	-1,177.8	1,401.1	0.00	0.00	
8,700.0	90.00	358.00	7,344.0	1,501.0	-1,181.2	1,501.0	0.00	0.00	
8,800.0	90.00	358.00	7,344.0	1,601.0	-1,184.7	1,601.0	0.00	0.00	
8,900.0	90.00	358.00	7,344.0	1,700.9	-1,188.2	1,700.9	0.00	0.00	
9,000.0	90.00	358.00	7,344.0	1,800.8	-1,191.7	1,800.8	0.00	0.00	
9,100.0	90.00	358.00	7,344.0	1,900.8	-1,195.2	1,900.8	0.00	0.00	
9,200.0	90.00	358.00	7,344.0	2,000.7	-1,198.7	2,000.7	0.00	0.00	

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Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,300.0	90.00	358.00	7,344.0	2,100.7	-1,202.2	2,100.7	0.00	0.00	
9,400.0	90.00	358.00	7,344.0	2,200.6	-1,205.7	2,200.6	0.00	0.00	
9,500.0	90.00	358.00	7,344.0	2,300.5	-1,209.2	2,300.5	0.00	0.00	
9,600.0	90.00	358.00	7,344.0	2,400.5	-1,212.7	2,400.5	0.00	0.00	
9,700.0	90.00	358.00	7,344.0	2,500.4	-1,216.1	2,500.4	0.00	0.00	
9,800.0	90.00	358.00	7,344.0	2,600.4	-1,219.6	2,600.4	0.00	0.00	
9,900.0	90.00	358.00	7,344.0	2,700.3	-1,223.1	2,700.3	0.00	0.00	
10,000.0	90.00	358.00	7,344.0	2,800.2	-1,226.6	2,800.2	0.00	0.00	
10,100.0	90.00	358.00	7,344.0	2,900.2	-1,230.1	2,900.2	0.00	0.00	
10,200.0	90.00	358.00	7,344.0	3,000.1	-1,233.6	3,000.1	0.00	0.00	
10,300.0	90.00	358.00	7,344.0	3,100.1	-1,237.1	3,100.1	0.00	0.00	
10,400.0	90.00	358.00	7,344.0	3,200.0	-1,240.6	3,200.0	0.00	0.00	
10,500.0	90.00	358.00	7,344.0	3,299.9	-1,244.1	3,299.9	0.00	0.00	
10,600.0	90.00	358.00	7,344.0	3,399.9	-1,247.6	3,399.9	0.00	0.00	
10,700.0	90.00	358.00	7,344.0	3,499.8	-1,251.0	3,499.8	0.00	0.00	
10,800.0	90.00	358.00	7,344.0	3,599.7	-1,254.5	3,599.7	0.00	0.00	
10,900.0	90.00	358.00	7,344.0	3,699.7	-1,258.0	3,699.7	0.00	0.00	
10,903.7	90.00	358.00	7,344.0	3,703.4	-1,258.2	3,703.4	0.00	0.00	Start turn @ 10,903' MD
11,000.0	90.00	358.96	7,344.0	3,799.7	-1,260.7	3,799.7	1.00	0.00	
11,100.0	90.00	359.96	7,344.0	3,899.6	-1,261.6	3,899.6	1.00	0.00	
11,200.0	90.00	0.96	7,344.0	3,999.6	-1,260.8	3,999.6	1.00	0.00	
11,300.0	90.00	1.96	7,344.0	4,099.6	-1,258.3	4,099.6	1.00	0.00	
11,353.9	90.00	2.50	7,344.0	4,153.4	-1,256.2	4,153.4	1.00	0.00	End of turn @ 11,353' MD
11,400.0	90.00	2.50	7,344.0	4,199.5	-1,254.2	4,199.5	0.00	0.00	
11,500.0	90.00	2.50	7,344.0	4,299.4	-1,249.8	4,299.4	0.00	0.00	
11,600.0	90.00	2.50	7,344.0	4,399.3	-1,245.4	4,399.3	0.00	0.00	
11,700.0	90.00	2.50	7,344.0	4,499.2	-1,241.1	4,499.2	0.00	0.00	
11,800.0	90.00	2.50	7,344.0	4,599.1	-1,236.7	4,599.1	0.00	0.00	
11,900.0	90.00	2.50	7,344.0	4,699.0	-1,232.3	4,699.0	0.00	0.00	
12,000.0	90.00	2.50	7,344.0	4,798.9	-1,228.0	4,798.9	0.00	0.00	
12,100.0	90.00	2.50	7,344.0	4,898.9	-1,223.6	4,898.9	0.00	0.00	
12,200.0	90.00	2.50	7,344.0	4,998.8	-1,219.3	4,998.8	0.00	0.00	
12,300.0	90.00	2.50	7,344.0	5,098.7	-1,214.9	5,098.7	0.00	0.00	
12,400.0	90.00	2.50	7,344.0	5,198.6	-1,210.5	5,198.6	0.00	0.00	
12,500.0	90.00	2.50	7,344.0	5,298.5	-1,206.2	5,298.5	0.00	0.00	
12,600.0	90.00	2.50	7,344.0	5,398.4	-1,201.8	5,398.4	0.00	0.00	
12,700.0	90.00	2.50	7,344.0	5,498.3	-1,197.4	5,498.3	0.00	0.00	
12,800.0	90.00	2.50	7,344.0	5,598.2	-1,193.1	5,598.2	0.00	0.00	
12,900.0	90.00	2.50	7,344.0	5,698.1	-1,188.7	5,698.1	0.00	0.00	
13,000.0	90.00	2.50	7,344.0	5,798.0	-1,184.3	5,798.0	0.00	0.00	
13,100.0	90.00	2.50	7,344.0	5,897.9	-1,180.0	5,897.9	0.00	0.00	
13,200.0	90.00	2.50	7,344.0	5,997.8	-1,175.6	5,997.8	0.00	0.00	
13,300.0	90.00	2.50	7,344.0	6,097.7	-1,171.2	6,097.7	0.00	0.00	
13,320.2	90.00	2.50	7,344.0	6,117.9	-1,170.4	6,117.9	0.00	0.00	Start turn @ 13,320' MD
13,400.0	90.00	1.70	7,344.0	6,197.6	-1,167.4	6,197.6	1.00	0.00	
13,500.0	90.00	0.70	7,344.0	6,297.6	-1,165.3	6,297.6	1.00	0.00	
13,576.3	90.00	359.94	7,344.0	6,373.9	-1,164.9	6,373.9	1.00	0.00	End of turn @ 13,576' MD
13,600.0	90.00	359.94	7,344.0	6,397.6	-1,164.9	6,397.6	0.00	0.00	
13,700.0	90.00	359.94	7,344.0	6,497.6	-1,165.0	6,497.6	0.00	0.00	
13,800.0	90.00	359.94	7,344.0	6,597.6	-1,165.1	6,597.6	0.00	0.00	
13,900.0	90.00	359.94	7,344.0	6,697.6	-1,165.2	6,697.6	0.00	0.00	
14,000.0	90.00	359.94	7,344.0	6,797.6	-1,165.3	6,797.6	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**North Reference:**	True
Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
14,100.0	90.00	359.94	7,344.0	6,897.6	-1,165.4	6,897.6	0.00	0.00	
14,200.0	90.00	359.94	7,344.0	6,997.6	-1,165.5	6,997.6	0.00	0.00	
14,300.0	90.00	359.94	7,344.0	7,097.6	-1,165.7	7,097.6	0.00	0.00	
14,400.0	90.00	359.94	7,344.0	7,197.6	-1,165.8	7,197.6	0.00	0.00	
14,500.0	90.00	359.94	7,344.0	7,297.6	-1,165.9	7,297.6	0.00	0.00	
14,600.0	90.00	359.94	7,344.0	7,397.6	-1,166.0	7,397.6	0.00	0.00	
14,700.0	90.00	359.94	7,344.0	7,497.6	-1,166.1	7,497.6	0.00	0.00	
14,800.0	90.00	359.94	7,344.0	7,597.6	-1,166.2	7,597.6	0.00	0.00	
14,900.0	90.00	359.94	7,344.0	7,697.6	-1,166.3	7,697.6	0.00	0.00	
15,000.0	90.00	359.94	7,344.0	7,797.6	-1,166.4	7,797.6	0.00	0.00	
15,100.0	90.00	359.94	7,344.0	7,897.6	-1,166.5	7,897.6	0.00	0.00	
15,200.0	90.00	359.94	7,344.0	7,997.6	-1,166.6	7,997.6	0.00	0.00	
15,300.0	90.00	359.94	7,344.0	8,097.6	-1,166.7	8,097.6	0.00	0.00	
15,400.0	90.00	359.94	7,344.0	8,197.6	-1,166.8	8,197.6	0.00	0.00	
15,500.0	90.00	359.94	7,344.0	8,297.6	-1,166.9	8,297.6	0.00	0.00	
15,600.0	90.00	359.94	7,344.0	8,397.6	-1,167.0	8,397.6	0.00	0.00	
15,700.0	90.00	359.94	7,344.0	8,497.6	-1,167.1	8,497.6	0.00	0.00	
15,800.0	90.00	359.94	7,344.0	8,597.6	-1,167.2	8,597.6	0.00	0.00	
15,900.0	90.00	359.94	7,344.0	8,697.6	-1,167.3	8,697.6	0.00	0.00	
16,000.0	90.00	359.94	7,344.0	8,797.6	-1,167.4	8,797.6	0.00	0.00	
16,100.0	90.00	359.94	7,344.0	8,897.6	-1,167.5	8,897.6	0.00	0.00	
16,200.0	90.00	359.94	7,344.0	8,997.6	-1,167.6	8,997.6	0.00	0.00	
16,300.0	90.00	359.94	7,344.0	9,097.6	-1,167.7	9,097.6	0.00	0.00	
16,400.0	90.00	359.94	7,344.0	9,197.6	-1,167.8	9,197.6	0.00	0.00	
16,500.0	90.00	359.94	7,344.0	9,297.6	-1,167.9	9,297.6	0.00	0.00	
16,600.0	90.00	359.94	7,344.0	9,397.6	-1,168.0	9,397.6	0.00	0.00	
16,700.0	90.00	359.94	7,344.0	9,497.6	-1,168.1	9,497.6	0.00	0.00	
16,800.0	90.00	359.94	7,344.0	9,597.6	-1,168.2	9,597.6	0.00	0.00	
16,900.0	90.00	359.94	7,344.0	9,697.6	-1,168.3	9,697.6	0.00	0.00	
17,000.0	90.00	359.94	7,344.0	9,797.6	-1,168.5	9,797.6	0.00	0.00	
17,100.0	90.00	359.94	7,344.0	9,897.6	-1,168.6	9,897.6	0.00	0.00	
17,103.6	90.00	359.94	7,344.0	9,901.2	-1,168.6	9,901.2	0.00	0.00	TD at 17103.6

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Edith Ann-Duckworth 4A - plan hits target center - Point	0.00	0.00	7,344.0	9,901.2	-1,168.6	1,295,974.86	3,137,590.43	40.144790	-105.007850
Interp @ 7344.0 (Edith A - plan hits target center - Point	0.00	0.00	7,344.0	3,703.4	-1,258.2	1,289,776.68	3,137,535.52	40.127776	-105.008169
Edith Ann-Duckworth 4A - plan hits target center - Point	0.00	0.00	7,344.0	6,373.9	-1,164.9	1,292,447.67	3,137,613.83	40.135107	-105.007836

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**North Reference:**	True
Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
250.0	250.0	Fox Hills - BASE			
4,374.7	4,325.0	Sussex			
4,635.3	4,582.0	Sussex Marker			
4,924.4	4,867.0	Shannon			
6,276.4	6,200.0	Teepee Buttes (*if present)			
7,308.7	7,175.0	Sharon Springs			
7,463.1	7,268.0	Niobrara			
7,655.7	7,334.0	B Chalk			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP @ 200'
1,161.6	1,157.1	-0.3	-80.5	EOB; Inc=9.62°
6,866.7	6,782.0	-4.0	-1,033.5	Start build/turn @ 6866' MD
7,763.7	7,344.0	565.3	-1,148.6	LP @ 7344' TVD; 90°
10,903.7	7,344.0	3,703.4	-1,258.2	Start turn @ 10,903' MD
11,353.9	7,344.0	4,153.4	-1,256.2	End of turn @ 11,353' MD
13,320.2	7,344.0	6,117.9	-1,170.4	Start turn @ 13,320' MD
13,576.3	7,344.0	6,373.9	-1,164.9	End of turn @ 13,576' MD
17,103.6	7,344.0	9,901.2	-1,168.6	TD at 17103.6

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
S21-T2N-R68W (Edith Ann-Duckworth)
Edith Ann-Duckworth 4A-21H-O268
Hz
Plan #3

Anticollision Report

26 July, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference	Plan #3

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 7/26/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,103.6	Plan #3 (Hz)	Geolink MWD	Geolink MWD

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S21-T2N-R68W (Edith Ann-Duckworth)						
BLISS 41-21 (EXISTING) - KPK WELL - SURVEYS						Out of range
COLCLASURE 42-21 (EXISTING) - KPK WELL - NO SU						Out of range
COOLEY 23-16 (EXISTING) - KERR-MCGEE WELL - SU	13,580.4	7,502.8	174.4	45.6	1.354	Level 3, CC, ES, SF
DUCKWORTH 31-16 (EXISTING) - ENCANA WELL - SU						Out of range
DUCKWORTH 32-16 (EXISTING) - ENCANA WELL - SU						Out of range
DUCKWORTH 33-16 (EXISTING) - ENCANA WELL - SU						Out of range
DUCKWORTH 41-16 (EXISING) - ENCANA WELL - SUR						Out of range
DUCKWORTH 43-16 (EXISTING) - ENCANA WELL - NO						Out of range
DUCKWORTH 44-16 (EXISTING) - ENCANA WELL - SU						Out of range
DUCKWORTH 6-0-16 (EXISTING) - ENCANA WELL - S						Out of range
DUCKWORTH B UNIT 1 (EXISTING) - ENCANA WELL -						Out of range
DUCKWORTH B UNIT 2 (EXISTING) - ENCANA WELL -						Out of range
EDITH ANN 1 (EXISTING) - ENCANA WELL - NO SURV						Out of range
EDITH ANN 33-21 (EXISTING) - ENCANA WELL - NO S	8,958.9	7,296.0	482.5	434.3	10.006	CC, ES
EDITH ANN 33-21 (EXISTING) - ENCANA WELL - NO S	9,000.0	7,296.0	484.2	435.4	9.903	SF
EDITH ANN 34-21 (EXISTING) - ENCANA WELL - NO S	7,525.3	7,253.8	355.6	327.4	12.613	CC, ES, SF
EDITH ANN 4-21 (EXISTING) - ENCANA WELL - SURVE						Out of range
EDITH ANN 43-21 (EXISTING) - ENCANA WELL - NO S						Out of range
EDITH ANN 44-21 (EXISTING) - ENCANA WELL - NO S						Out of range
EDITH ANN 6-8-21 (EXISTING) - ENCANA WELL - SUR						Out of range
EDITH ANN 8-8-21 (EXISTING) - ENCANA WELL - SUR						Out of range
Edith Ann-Duckworth 4B-21H-O268 - Hz - Plan #1	200.0	201.0	11.2	10.6	18.261	CC, ES
Edith Ann-Duckworth 4B-21H-O268 - Hz - Plan #1	17,103.6	17,276.0	413.4	114.4	1.383	Level 3, SF
Edith Ann-Duckworth 4C-21H-O268 - Hz - Plan #1	200.0	201.0	19.6	19.0	31.957	CC, ES
Edith Ann-Duckworth 4C-21H-O268 - Hz - Plan #1	700.0	702.1	33.6	31.2	14.247	SF
Edith Ann-Duckworth 4D-21H-O268 - Hz - Plan #1	200.0	201.0	30.8	30.2	50.218	CC, ES
Edith Ann-Duckworth 4D-21H-O268 - Hz - Plan #1	800.0	801.4	56.3	53.6	20.834	SF
Edith Ann-Duckworth 4E-21H-O268 - Hz - Plan #1	200.0	201.0	39.2	38.5	63.913	CC, ES
Edith Ann-Duckworth 4E-21H-O268 - Hz - Plan #1	700.0	700.4	61.0	58.6	25.909	SF
Edith Ann-Duckworth 4F-21H-O268 - Hz - Plan #1	200.0	202.0	50.3	49.7	81.941	CC, ES
Edith Ann-Duckworth 4F-21H-O268 - Hz - Plan #1	600.0	599.4	67.8	65.8	33.835	SF
Edith Ann-Duckworth 4G-21H-O268 - Hz - Plan #1	200.0	202.0	61.5	60.9	100.150	CC, ES
Edith Ann-Duckworth 4G-21H-O268 - Hz - Plan #1	700.0	695.0	97.1	94.8	41.448	SF
Edith Ann-Duckworth 4H-21H-O268 - Hz - Plan #1	166.0	168.0	69.9	69.4	141.070	CC
Edith Ann-Duckworth 4H-21H-O268 - Hz - Plan #1	200.0	202.0	69.9	69.3	113.811	ES
Edith Ann-Duckworth 4H-21H-O268 - Hz - Plan #1	700.0	692.3	113.3	110.9	48.469	SF
JILLSON A 1 (EXISTING) - FOUNDATION WELL - NO S	4,520.8	4,419.1	421.4	399.8	19.489	CC
JILLSON A 1 (EXISTING) - FOUNDATION WELL - NO S	4,600.0	4,497.2	421.6	399.6	19.142	ES
JILLSON A 1 (EXISTING) - FOUNDATION WELL - NO S	5,100.0	4,979.0	432.5	408.2	17.783	SF
JILLSON A 2 (EXISTING) - FOUNDATION WELL - NO S						Out of range
JILLSON A 3 (EXISTING) - FOUNDATION WELL - NO S						Out of range
JILLSON A 4 (EXISTING) - FOUNDATION WELL - NO S						Out of range
KENNEDY 1 (EXISTING) - MACEY & MERSHON WELL						Out of range
KENNEDY 31-21 (EXISTING) - ENCANA WELL - NO SU						Out of range
KENNEDY 32-21 (EXISTING) - ENCANA WELL - NO SU						Out of range
KENNEDY 41-21 (EXISTING) - ENCANA WELL - NO SU						Out of range
KENNEDY 4-2-21 (EXISTING) - ENCANA WELL - SURV	10,905.6	7,372.5	71.0	-14.7	0.828	Level 1, CC, ES, SF
KENNEDY 6-0-21 (EXISTING) - ENCANA WELL - SURV						Out of range
KENNEDY 6-4-21 (EXISTING) - ENCANA WELL - SURV						Out of range
KENNEDY 8-0-21 (EXISTING) - ENCANA WELL - SURV						Out of range
KENNEDY 8-4-21 (EXISTING) - ENCANA WELL - SURV						Out of range
KENNEDY GAS UNIT 1 (EXISTING) - ENCANA WELL -						Out of range
NORTH RINN 33-9 (EXISTING) - ENCANA WELL - PLA						Out of range

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S21-T2N-R68W (Edith Ann-Duckworth)						
NORTH RINN 34-9 (EXISTING) - ENCANA WELL - PLA						Out of range
NORTH RINN 43-9 (EXISTING) - ENCANA WELL - PLA						Out of range
NORTH RINN 44-9 (EXISTING) - ENCANA WELL - PLA						Out of range
NORTH RINN 4-4-9 (EXISTING) - ENCANA WELL - PLA						Out of range
NORTH RINN 4-6-9 (EXISTING) - ENCANA WELL - PLA						Out of range
NORTH RINN 4-8-9 (EXISTING) - ENCANA WELL - PLA						Out of range
NORTH RINN 6-6-9 (EXISTING) - ENCANA WELL - PLA						Out of range
STROMQUIST 23-21 (EXISTING) - KERR-MCGEE WEL	8,329.3	7,368.2	178.9	134.6	4.036	CC, ES, SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - COOLEY 23-16 (EXISTING) - KERR-MCGEE WELL - SURVE

Offset Site Error: 0.0 ft

Survey Program: 144-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
13,200.0	7,344.0	7,506.0	7,283.9	109.7	29.6	-91.56	6,378.3	-1,339.2	414.2	292.4	121.76	3.401	
13,300.0	7,344.0	7,505.2	7,283.1	111.4	29.6	-91.31	6,378.3	-1,339.2	327.0	203.5	123.51	2.648	
13,400.0	7,344.0	7,504.3	7,282.3	113.1	29.6	-91.06	6,378.3	-1,339.2	249.3	123.9	125.42	1.988	
13,500.0	7,344.0	7,503.5	7,281.4	114.8	29.6	-90.80	6,378.3	-1,339.2	191.7	64.3	127.34	1.505	
13,580.4	7,344.0	7,502.8	7,280.7	116.1	29.6	-90.57	6,378.3	-1,339.2	174.4	45.6	128.84	1.354	Level 3, CC, ES, SF
13,600.0	7,344.0	7,502.6	7,280.6	116.5	29.6	-90.51	6,378.3	-1,339.2	175.4	46.2	129.20	1.357	Level 3
13,700.0	7,344.0	7,501.7	7,279.7	118.2	29.6	-90.22	6,378.3	-1,339.2	211.1	80.2	130.94	1.612	
13,800.0	7,344.0	7,500.8	7,278.8	119.9	29.6	-89.92	6,378.3	-1,339.2	280.0	147.3	132.68	2.110	
13,900.0	7,344.0	7,499.9	7,277.8	121.6	29.6	-89.61	6,378.3	-1,339.2	363.6	229.2	134.41	2.705	
14,000.0	7,344.0	7,498.9	7,276.9	123.3	29.6	-89.31	6,378.3	-1,339.2	453.9	317.8	136.14	3.334	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - EDITH ANN 33-21 (EXISTING) - ENCANA WELL - NO SURVE

Survey Program: 8098-Geolink MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
8,900.0	7,344.0	7,296.0	7,296.0	39.9	12.7	90.00	1,776.6	-708.1	486.1	438.8	47.25	10.287	
8,958.9	7,344.0	7,296.0	7,296.0	40.7	12.7	90.00	1,776.6	-708.1	482.5	434.3	48.22	10.006	CC, ES
9,000.0	7,344.0	7,296.0	7,296.0	41.3	12.7	90.00	1,776.6	-708.1	484.2	435.4	48.90	9.903	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - EDITH ANN 34-21 (EXISTING) - ENCANA WELL - NO SURVE

Survey Program: 8107-Geolink MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
3,400.0	3,364.0	3,322.0	3,322.0	10.1	5.8	49.71	372.7	-778.9	495.4	481.1	14.36	34.514	
3,500.0	3,462.6	3,420.6	3,420.6	10.4	6.0	51.20	372.7	-778.9	484.7	469.8	14.91	32.500	
3,600.0	3,561.2	3,519.2	3,519.2	10.8	6.1	52.76	372.7	-778.9	474.3	458.9	15.48	30.634	
3,700.0	3,659.8	3,617.8	3,617.8	11.1	6.3	54.39	372.7	-778.9	464.3	448.3	16.06	28.906	
3,800.0	3,758.4	3,716.4	3,716.4	11.4	6.5	56.08	372.7	-778.9	454.7	438.1	16.65	27.307	
3,900.0	3,857.0	3,815.0	3,815.0	11.8	6.7	57.85	372.7	-778.9	445.5	428.3	17.25	25.828	
4,000.0	3,955.6	3,913.6	3,913.6	12.1	6.8	59.68	372.7	-778.9	436.8	418.9	17.86	24.462	
4,100.0	4,054.2	4,012.2	4,012.2	12.5	7.0	61.59	372.7	-778.9	428.5	410.0	18.47	23.202	
4,200.0	4,152.8	4,110.8	4,110.8	12.8	7.2	63.57	372.7	-778.9	420.7	401.6	19.09	22.044	
4,300.0	4,251.4	4,209.4	4,209.4	13.2	7.3	65.62	372.7	-778.9	413.5	393.7	19.71	20.980	
4,400.0	4,350.0	4,308.0	4,308.0	13.5	7.5	67.74	372.7	-778.9	406.8	386.4	20.33	20.007	
4,500.0	4,448.6	4,406.6	4,406.6	13.8	7.7	69.92	372.7	-778.9	400.7	379.7	20.95	19.120	
4,600.0	4,547.2	4,505.2	4,505.2	14.2	7.9	72.17	372.7	-778.9	395.2	373.6	21.58	18.314	
4,700.0	4,645.8	4,603.8	4,603.8	14.5	8.0	74.47	372.7	-778.9	390.3	368.1	22.19	17.586	
4,800.0	4,744.4	4,702.4	4,702.4	14.9	8.2	76.83	372.7	-778.9	386.1	363.3	22.80	16.932	
4,900.0	4,843.0	4,801.0	4,801.0	15.2	8.4	79.23	372.7	-778.9	382.6	359.2	23.40	16.348	
5,000.0	4,941.6	4,899.6	4,899.6	15.6	8.6	81.67	372.7	-778.9	379.8	355.8	23.99	15.832	
5,100.0	5,040.2	4,998.2	4,998.2	15.9	8.7	84.15	372.7	-778.9	377.7	353.1	24.56	15.378	
5,200.0	5,138.8	5,096.8	5,096.8	16.2	8.9	86.64	372.7	-778.9	376.3	351.2	25.11	14.986	
5,300.0	5,237.3	5,195.3	5,195.3	16.6	9.1	89.15	372.7	-778.9	375.7	350.1	25.65	14.650	
5,333.8	5,270.7	5,228.7	5,228.7	16.7	9.1	90.00	372.7	-778.9	375.7	349.8	25.82	14.549	
5,400.0	5,335.9	5,293.9	5,293.9	16.9	9.2	91.66	372.7	-778.9	375.8	349.7	26.16	14.368	
5,500.0	5,434.5	5,392.5	5,392.5	17.3	9.4	94.17	372.7	-778.9	376.7	350.0	26.64	14.137	
5,600.0	5,533.1	5,491.1	5,491.1	17.6	9.6	96.66	372.7	-778.9	378.3	351.2	27.11	13.955	
5,700.0	5,631.7	5,589.7	5,589.7	18.0	9.8	99.12	372.7	-778.9	380.6	353.1	27.55	13.817	
5,800.0	5,730.3	5,688.3	5,688.3	18.3	9.9	101.55	372.7	-778.9	383.6	355.7	27.96	13.721	
5,900.0	5,828.9	5,786.9	5,786.9	18.6	10.1	103.94	372.7	-778.9	387.4	359.0	28.35	13.664	
6,000.0	5,927.5	5,885.5	5,885.5	19.0	10.3	106.28	372.7	-778.9	391.8	363.1	28.72	13.643	
6,100.0	6,026.1	5,984.1	5,984.1	19.3	10.4	108.57	372.7	-778.9	396.9	367.8	29.06	13.656	
6,200.0	6,124.7	6,082.7	6,082.7	19.7	10.6	110.79	372.7	-778.9	402.6	373.2	29.38	13.700	
6,300.0	6,223.3	6,181.3	6,181.3	20.0	10.8	112.96	372.7	-778.9	408.9	379.2	29.69	13.772	
6,400.0	6,321.9	6,279.9	6,279.9	20.4	11.0	115.05	372.7	-778.9	415.7	385.8	29.97	13.870	
6,500.0	6,420.5	6,378.5	6,378.5	20.7	11.1	117.08	372.7	-778.9	423.2	392.9	30.24	13.991	
6,600.0	6,519.1	6,477.1	6,477.1	21.0	11.3	119.03	372.7	-778.9	431.1	400.6	30.50	14.134	
6,700.0	6,617.7	6,575.7	6,575.7	21.4	11.5	120.92	372.7	-778.9	439.5	408.8	30.75	14.296	
6,800.0	6,716.3	6,674.3	6,674.3	21.7	11.6	122.73	372.7	-778.9	448.4	417.5	30.98	14.474	
6,900.0	6,814.8	6,772.8	6,772.8	22.1	11.8	105.66	372.7	-778.9	457.0	425.8	31.24	14.630	
7,000.0	6,912.2	6,870.2	6,870.2	22.4	12.0	74.68	372.7	-778.9	455.4	424.3	31.08	14.651	
7,100.0	7,005.5	6,963.5	6,963.5	22.8	12.2	66.78	372.7	-778.9	442.0	411.7	30.33	14.574	
7,200.0	7,091.9	7,049.9	7,049.9	23.2	12.3	67.98	372.7	-778.9	419.8	390.5	29.28	14.337	
7,300.0	7,168.9	7,126.9	7,126.9	23.6	12.4	73.76	372.7	-778.9	393.4	365.0	28.38	13.863	
7,400.0	7,234.0	7,192.0	7,192.0	24.1	12.6	81.51	372.7	-778.9	369.4	341.5	27.96	13.211	
7,500.0	7,285.2	7,243.2	7,243.2	24.7	12.6	88.60	372.7	-778.9	356.2	328.1	28.07	12.688	
7,525.3	7,295.8	7,253.8	7,253.8	24.8	12.7	90.00	372.7	-778.9	355.6	327.4	28.19	12.613	CC, ES, SF
7,600.0	7,321.1	7,279.1	7,279.1	25.3	12.7	92.74	372.7	-778.9	361.6	332.9	28.63	12.627	
7,700.0	7,340.5	7,298.5	7,298.5	26.1	12.7	92.59	372.7	-778.9	388.9	359.4	29.56	13.158	
7,800.0	7,344.0	7,302.0	7,302.0	26.9	12.7	90.00	372.7	-778.9	435.9	405.3	30.60	14.244	
7,900.0	7,344.0	7,302.0	7,302.0	27.7	12.7	90.00	372.7	-778.9	498.4	466.4	31.91	15.616	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4B-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	90.04	0.0	11.2	11.2				
100.0	100.0	101.0	101.0	0.1	0.1	90.04	0.0	11.2	11.2	10.9	0.26	42.448	
200.0	200.0	201.0	201.0	0.3	0.3	90.04	0.0	11.2	11.2	10.6	0.61	18.261	CC, ES
300.0	300.0	301.0	301.0	0.5	0.5	-179.76	0.0	11.2	12.1	11.1	0.96	12.541	
400.0	400.0	401.2	401.2	0.7	0.7	-179.81	0.0	10.3	13.8	12.5	1.31	10.518	
500.0	499.9	501.4	501.4	0.8	0.8	-179.88	0.0	7.6	15.5	13.8	1.66	9.344	
600.0	599.7	601.7	601.6	1.0	1.0	-179.98	0.0	3.2	17.2	15.2	2.01	8.577	
700.0	699.4	702.0	701.7	1.3	1.2	179.91	0.0	-2.9	18.9	16.6	2.36	8.035	
800.0	798.9	802.4	801.7	1.5	1.4	179.79	0.0	-10.8	20.6	17.9	2.71	7.632	
900.0	898.3	902.7	901.6	1.8	1.7	179.67	0.1	-20.5	22.3	19.3	3.05	7.320	
1,000.0	997.4	1,003.1	1,001.3	2.0	1.9	179.54	0.1	-31.9	24.0	20.6	3.40	7.070	
1,100.0	1,096.3	1,103.3	1,100.7	2.3	2.2	179.41	0.1	-44.9	25.9	22.2	3.75	6.913	
1,200.0	1,195.0	1,203.3	1,199.8	2.6	2.4	179.32	0.1	-58.1	29.1	25.0	4.10	7.112	
1,300.0	1,293.5	1,303.2	1,298.9	3.0	2.7	179.26	0.1	-71.2	32.7	28.2	4.45	7.349	
1,400.0	1,392.1	1,403.1	1,397.9	3.3	3.0	179.22	0.2	-84.4	36.2	31.4	4.80	7.552	
1,500.0	1,490.7	1,503.1	1,497.0	3.6	3.3	179.18	0.2	-97.6	39.8	34.6	5.15	7.727	
1,600.0	1,589.3	1,603.0	1,596.0	4.0	3.6	179.15	0.2	-110.8	43.3	37.8	5.50	7.880	
1,700.0	1,687.9	1,703.0	1,695.1	4.3	3.8	179.12	0.2	-124.0	46.9	41.0	5.85	8.015	
1,800.0	1,786.5	1,802.9	1,794.2	4.6	4.1	179.09	0.3	-137.2	50.4	44.2	6.20	8.135	
1,900.0	1,885.1	1,902.8	1,893.2	5.0	4.4	179.07	0.3	-150.4	54.0	47.4	6.55	8.241	
2,000.0	1,983.7	2,002.8	1,992.3	5.3	4.7	179.06	0.3	-163.5	57.5	50.6	6.90	8.337	
2,100.0	2,082.3	2,102.7	2,091.4	5.6	5.0	179.04	0.3	-176.7	61.1	53.8	7.25	8.424	
2,200.0	2,180.9	2,202.6	2,190.4	6.0	5.3	179.03	0.4	-189.9	64.6	57.0	7.60	8.503	
2,300.0	2,279.5	2,302.6	2,289.5	6.3	5.6	179.01	0.4	-203.1	68.2	60.2	7.95	8.575	
2,400.0	2,378.1	2,402.5	2,388.6	6.7	5.8	179.00	0.4	-216.3	71.7	63.4	8.30	8.640	
2,500.0	2,476.7	2,502.5	2,487.6	7.0	6.1	178.99	0.4	-229.5	75.3	66.6	8.65	8.701	
2,600.0	2,575.3	2,602.4	2,586.7	7.3	6.4	178.98	0.5	-242.7	78.8	69.8	9.00	8.756	
2,700.0	2,673.9	2,702.3	2,685.7	7.7	6.7	178.97	0.5	-255.9	82.4	73.0	9.35	8.808	
2,800.0	2,772.5	2,802.3	2,784.8	8.0	7.0	178.97	0.5	-269.0	85.9	76.2	9.70	8.856	
2,900.0	2,871.1	2,902.2	2,883.9	8.4	7.3	178.96	0.5	-282.2	89.4	79.4	10.05	8.900	
3,000.0	2,969.7	3,002.1	2,982.9	8.7	7.6	178.95	0.6	-295.4	93.0	82.6	10.40	8.942	
3,100.0	3,068.3	3,102.1	3,082.0	9.0	7.9	178.95	0.6	-308.6	96.5	85.8	10.75	8.981	
3,200.0	3,166.9	3,202.0	3,181.1	9.4	8.1	178.94	0.6	-321.8	100.1	89.0	11.10	9.017	
3,300.0	3,265.4	3,302.0	3,280.1	9.7	8.4	178.93	0.6	-335.0	103.6	92.2	11.45	9.051	
3,400.0	3,364.0	3,401.9	3,379.2	10.1	8.7	178.93	0.7	-348.2	107.2	95.4	11.80	9.083	
3,500.0	3,462.6	3,501.8	3,478.2	10.4	9.0	178.92	0.7	-361.4	110.7	98.6	12.15	9.114	
3,600.0	3,561.2	3,601.8	3,577.3	10.8	9.3	178.92	0.7	-374.5	114.3	101.8	12.50	9.142	
3,700.0	3,659.8	3,701.7	3,676.4	11.1	9.6	178.92	0.7	-387.7	117.8	105.0	12.85	9.169	
3,800.0	3,758.4	3,801.6	3,775.4	11.4	9.9	178.91	0.8	-400.9	121.4	108.2	13.20	9.195	
3,900.0	3,857.0	3,901.6	3,874.5	11.8	10.2	178.91	0.8	-414.1	124.9	111.4	13.55	9.219	
4,000.0	3,955.6	4,001.5	3,973.6	12.1	10.5	178.91	0.8	-427.3	128.5	114.6	13.90	9.242	
4,100.0	4,054.2	4,101.4	4,072.6	12.5	10.8	178.90	0.8	-440.5	132.0	117.8	14.25	9.264	
4,200.0	4,152.8	4,201.4	4,171.7	12.8	11.0	178.90	0.9	-453.7	135.6	121.0	14.60	9.285	
4,300.0	4,251.4	4,301.3	4,270.8	13.2	11.3	178.90	0.9	-466.9	139.1	124.2	14.95	9.305	
4,400.0	4,350.0	4,401.3	4,369.8	13.5	11.6	178.89	0.9	-480.0	142.7	127.4	15.30	9.324	
4,500.0	4,448.6	4,501.2	4,468.9	13.8	11.9	178.89	0.9	-493.2	146.2	130.6	15.65	9.342	
4,600.0	4,547.2	4,601.1	4,567.9	14.2	12.2	178.89	1.0	-506.4	149.8	133.8	16.00	9.359	
4,700.0	4,645.8	4,701.1	4,667.0	14.5	12.5	178.89	1.0	-519.6	153.3	137.0	16.35	9.376	
4,800.0	4,744.4	4,801.0	4,766.1	14.9	12.8	178.88	1.0	-532.8	156.9	140.2	16.70	9.392	
4,900.0	4,843.0	4,900.9	4,865.1	15.2	13.1	178.88	1.0	-546.0	160.4	143.4	17.05	9.407	
5,000.0	4,941.6	5,000.9	4,964.2	15.6	13.4	178.88	1.1	-559.2	164.0	146.6	17.40	9.422	
5,100.0	5,040.2	5,100.8	5,063.3	15.9	13.6	178.88	1.1	-572.4	167.5	149.8	17.75	9.436	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4B-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,138.8	5,200.8	5,162.3	16.2	13.9	178.87	1.1	-585.5	171.1	153.0	18.10	9.449	
5,300.0	5,237.3	5,300.7	5,261.4	16.6	14.2	178.87	1.1	-598.7	174.6	156.2	18.45	9.462	
5,400.0	5,335.9	5,400.6	5,360.4	16.9	14.5	178.87	1.2	-611.9	178.2	159.4	18.80	9.475	
5,500.0	5,434.5	5,500.6	5,459.5	17.3	14.8	178.87	1.2	-625.1	181.7	162.6	19.15	9.487	
5,600.0	5,533.1	5,600.5	5,558.6	17.6	15.1	178.87	1.2	-638.3	185.3	165.8	19.50	9.499	
5,700.0	5,631.7	5,700.4	5,657.6	18.0	15.4	178.87	1.2	-651.5	188.8	169.0	19.85	9.510	
5,800.0	5,730.3	5,800.4	5,756.7	18.3	15.7	178.86	1.3	-664.7	192.4	172.2	20.20	9.521	
5,900.0	5,828.9	5,900.3	5,855.8	18.6	16.0	178.86	1.3	-677.9	195.9	175.4	20.55	9.531	
6,000.0	5,927.5	6,000.3	5,954.8	19.0	16.3	178.86	1.3	-691.0	199.5	178.6	20.90	9.541	
6,100.0	6,026.1	6,100.2	6,053.9	19.3	16.5	178.86	1.3	-704.2	203.0	181.7	21.25	9.551	
6,200.0	6,124.7	6,200.1	6,153.0	19.7	16.8	178.86	1.4	-717.4	206.6	184.9	21.60	9.561	
6,300.0	6,223.3	6,300.1	6,252.0	20.0	17.1	178.86	1.4	-730.6	210.1	188.1	21.95	9.570	
6,400.0	6,321.9	6,400.0	6,351.1	20.4	17.4	178.86	1.4	-743.8	213.6	191.3	22.30	9.579	
6,500.0	6,420.5	6,499.9	6,450.1	20.7	17.7	178.86	1.4	-757.0	217.2	194.5	22.65	9.587	
6,600.0	6,519.1	6,599.9	6,549.2	21.0	18.0	178.85	1.4	-770.2	220.7	197.7	23.00	9.596	
6,700.0	6,617.7	6,699.8	6,648.3	21.4	18.3	178.85	1.5	-783.4	224.3	200.9	23.35	9.604	
6,800.0	6,716.3	6,799.7	6,747.3	21.7	18.6	178.85	1.5	-796.5	227.8	204.1	23.70	9.612	
6,900.0	6,814.8	6,899.7	6,846.4	22.1	18.9	160.23	1.5	-809.7	231.4	207.3	24.05	9.620	
7,000.0	6,912.2	6,998.4	6,944.3	22.4	19.2	129.48	1.5	-822.8	235.6	211.2	24.39	9.658	
7,100.0	7,005.5	7,096.1	7,041.0	22.8	19.4	122.80	3.3	-835.6	243.1	218.2	24.88	9.770	
7,200.0	7,091.9	7,200.4	7,142.9	23.2	19.7	123.09	20.7	-849.0	255.0	229.7	25.28	10.088	
7,300.0	7,168.9	7,312.0	7,246.4	23.6	20.1	125.25	59.6	-862.5	270.1	244.9	25.23	10.706	
7,400.0	7,234.0	7,431.8	7,347.0	24.1	20.5	127.72	122.9	-875.3	286.7	261.9	24.78	11.570	
7,500.0	7,285.2	7,560.4	7,438.0	24.7	21.0	129.85	212.6	-886.6	303.1	278.6	24.45	12.396	
7,600.0	7,321.1	7,697.3	7,510.5	25.3	21.8	131.29	328.1	-895.3	317.3	292.3	25.03	12.677	
7,700.0	7,340.5	7,841.1	7,555.3	26.1	22.8	131.86	464.2	-900.1	327.8	300.6	27.21	12.048	
7,800.0	7,344.0	7,976.9	7,566.0	26.9	23.9	131.56	599.4	-900.3	333.3	303.1	30.24	11.023	
7,900.0	7,344.0	8,076.8	7,566.0	27.7	24.8	131.06	699.3	-899.4	336.6	304.3	32.26	10.433	
8,000.0	7,344.0	8,176.7	7,566.0	28.7	25.8	130.58	799.2	-898.6	339.9	305.5	34.41	9.877	
8,100.0	7,344.0	8,276.6	7,566.0	29.7	26.9	130.11	899.1	-897.7	343.2	306.6	36.68	9.358	
8,200.0	7,344.0	8,376.5	7,566.0	30.8	28.1	129.64	999.0	-896.8	346.6	307.5	39.04	8.878	
8,300.0	7,344.0	8,476.5	7,566.0	32.0	29.3	129.19	1,098.9	-896.0	350.0	308.5	41.49	8.435	
8,400.0	7,344.0	8,576.4	7,566.0	33.2	30.6	128.74	1,198.8	-895.1	353.3	309.3	44.02	8.028	
8,500.0	7,344.0	8,676.3	7,566.0	34.5	31.9	128.30	1,298.7	-894.2	356.8	310.1	46.61	7.653	
8,600.0	7,344.0	8,776.2	7,566.0	35.8	33.2	127.87	1,398.6	-893.3	360.2	310.9	49.27	7.310	
8,700.0	7,344.0	8,876.1	7,566.0	37.1	34.6	127.45	1,498.5	-892.5	363.7	311.7	51.99	6.994	
8,800.0	7,344.0	8,976.0	7,566.0	38.5	36.0	127.04	1,598.4	-891.6	367.1	312.4	54.76	6.704	
8,900.0	7,344.0	9,075.9	7,566.0	39.9	37.5	126.63	1,698.3	-890.7	370.6	313.0	57.58	6.437	
9,000.0	7,344.0	9,175.8	7,566.0	41.3	39.0	126.23	1,798.2	-889.9	374.1	313.7	60.43	6.191	
9,100.0	7,344.0	9,275.7	7,566.0	42.8	40.5	125.84	1,898.1	-889.0	377.7	314.3	63.33	5.963	
9,200.0	7,344.0	9,375.6	7,566.0	44.3	42.0	125.46	1,998.0	-888.1	381.2	314.9	66.26	5.753	
9,300.0	7,344.0	9,475.5	7,566.0	45.8	43.5	125.08	2,097.9	-887.2	384.8	315.5	69.23	5.558	
9,400.0	7,344.0	9,575.4	7,566.0	47.3	45.1	124.71	2,197.8	-886.4	388.3	316.1	72.23	5.377	
9,500.0	7,344.0	9,675.3	7,566.0	48.8	46.6	124.35	2,297.7	-885.5	391.9	316.7	75.26	5.208	
9,600.0	7,344.0	9,775.2	7,566.0	50.3	48.2	123.99	2,397.6	-884.6	395.5	317.2	78.31	5.051	
9,700.0	7,344.0	9,875.1	7,566.0	51.9	49.8	123.64	2,497.5	-883.7	399.2	317.8	81.39	4.904	
9,800.0	7,344.0	9,975.0	7,566.0	53.5	51.4	123.30	2,597.4	-882.9	402.8	318.3	84.49	4.767	
9,900.0	7,344.0	10,074.9	7,566.0	55.1	53.0	122.96	2,697.3	-882.0	406.5	318.8	87.62	4.639	
10,000.0	7,344.0	10,174.8	7,566.0	56.6	54.6	122.63	2,797.2	-881.1	410.1	319.4	90.77	4.519	
10,100.0	7,344.0	10,274.7	7,566.0	58.2	56.3	122.30	2,897.1	-880.3	413.8	319.9	93.93	4.405	
10,200.0	7,344.0	10,374.6	7,566.0	59.9	57.9	121.98	2,997.0	-879.4	417.5	320.4	97.12	4.299	
10,300.0	7,344.0	10,474.5	7,566.0	61.5	59.5	121.67	3,096.9	-878.5	421.2	320.9	100.32	4.199	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4B-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	7,344.0	10,574.5	7,566.0	63.1	61.2	121.36	3,196.8	-877.6	424.9	321.4	103.54	4.104	
10,500.0	7,344.0	10,674.4	7,566.0	64.7	62.9	121.06	3,296.7	-876.8	428.7	321.9	106.77	4.015	
10,600.0	7,344.0	10,774.3	7,566.0	66.4	64.5	120.76	3,396.6	-875.9	432.4	322.4	110.02	3.930	
10,700.0	7,344.0	10,874.2	7,566.0	68.0	66.2	120.47	3,496.5	-875.0	436.2	322.9	113.29	3.850	
10,800.0	7,344.0	10,974.1	7,566.0	69.7	67.8	120.18	3,596.4	-874.2	439.9	323.4	116.56	3.774	
10,900.0	7,344.0	11,074.0	7,566.0	71.3	69.5	119.90	3,696.3	-873.3	443.7	323.9	119.85	3.702	
11,000.0	7,344.0	11,173.9	7,566.0	73.0	71.2	119.65	3,796.3	-872.4	446.8	324.1	122.65	3.643	
11,100.0	7,344.0	11,273.9	7,566.0	74.6	72.9	119.53	3,896.2	-871.5	448.4	323.1	125.27	3.579	
11,200.0	7,344.0	11,373.9	7,566.0	76.3	74.6	119.53	3,996.2	-870.7	448.4	320.7	127.73	3.511	
11,300.0	7,344.0	11,473.9	7,566.0	77.9	76.2	119.64	4,096.2	-869.8	447.0	317.0	130.01	3.438	
11,400.0	7,344.0	11,573.8	7,566.0	79.5	77.9	119.86	4,196.2	-868.9	444.1	311.7	132.42	3.354	
11,500.0	7,344.0	11,673.8	7,566.0	81.2	79.6	120.08	4,296.1	-868.1	441.1	306.0	135.14	3.264	
11,600.0	7,344.0	11,773.7	7,566.0	82.8	81.3	120.31	4,396.0	-867.2	438.1	300.3	137.83	3.178	
11,700.0	7,344.0	11,873.6	7,566.0	84.5	83.0	120.54	4,496.0	-866.3	435.1	294.6	140.51	3.096	
11,800.0	7,344.0	11,973.6	7,566.0	86.1	84.7	120.78	4,595.9	-865.4	432.1	288.9	143.17	3.018	
11,900.0	7,344.0	12,073.5	7,566.0	87.8	86.4	121.02	4,695.8	-864.6	429.1	283.3	145.81	2.943	
12,000.0	7,344.0	12,173.5	7,566.0	89.5	88.1	121.26	4,795.8	-863.7	426.1	277.7	148.43	2.871	
12,100.0	7,344.0	12,273.4	7,566.0	91.1	89.8	121.50	4,895.7	-862.8	423.1	272.1	151.03	2.801	
12,200.0	7,344.0	12,373.3	7,566.0	92.8	91.5	121.75	4,995.6	-861.9	420.1	266.5	153.61	2.735	
12,300.0	7,344.0	12,473.3	7,566.0	94.5	93.2	122.00	5,095.6	-861.1	417.2	261.0	156.16	2.671	
12,400.0	7,344.0	12,573.2	7,566.0	96.1	95.0	122.26	5,195.5	-860.2	414.2	255.5	158.69	2.610	
12,500.0	7,344.0	12,673.2	7,566.0	97.8	96.7	122.52	5,295.4	-859.3	411.3	250.1	161.20	2.551	
12,600.0	7,344.0	12,773.1	7,566.0	99.5	98.4	122.78	5,395.4	-858.5	408.3	244.6	163.68	2.495	
12,700.0	7,344.0	12,873.0	7,566.0	101.2	100.1	123.05	5,495.3	-857.6	405.4	239.3	166.14	2.440	
12,800.0	7,344.0	12,973.0	7,566.0	102.9	101.8	123.32	5,595.3	-856.7	402.5	233.9	168.57	2.388	
12,900.0	7,344.0	13,072.9	7,566.0	104.6	103.5	123.60	5,695.2	-855.8	399.6	228.6	170.97	2.337	
13,000.0	7,344.0	13,172.8	7,566.0	106.3	105.2	123.88	5,795.1	-855.0	396.6	223.3	173.34	2.288	
13,100.0	7,344.0	13,272.8	7,566.0	108.0	107.0	124.16	5,895.1	-854.1	393.8	218.1	175.68	2.241	
13,200.0	7,344.0	13,372.7	7,566.0	109.7	108.7	124.45	5,995.0	-853.2	390.9	212.9	177.99	2.196	
13,300.0	7,344.0	13,472.7	7,566.0	111.4	110.4	124.74	6,094.9	-852.4	388.0	207.7	180.27	2.152	
13,400.0	7,344.0	13,572.6	7,566.0	113.1	112.1	124.98	6,194.9	-851.5	385.6	202.5	183.11	2.106	
13,500.0	7,344.0	13,672.6	7,566.0	114.8	113.9	125.08	6,294.9	-850.6	384.6	198.3	186.30	2.064	
13,521.8	7,344.0	13,694.4	7,566.0	115.1	114.2	125.08	6,316.6	-850.4	384.5	197.5	187.00	2.056	
13,600.0	7,344.0	13,772.6	7,566.0	116.5	115.6	125.04	6,394.9	-849.7	385.0	195.3	189.62	2.030	
13,700.0	7,344.0	13,872.6	7,566.0	118.2	117.3	124.95	6,494.9	-848.9	385.8	193.1	192.67	2.002	
13,800.0	7,344.0	13,972.6	7,566.0	119.9	119.0	124.87	6,594.8	-848.0	386.6	190.8	195.72	1.975	
13,900.0	7,344.0	14,072.6	7,566.0	121.6	120.8	124.79	6,694.8	-847.1	387.4	188.6	198.77	1.949	
14,000.0	7,344.0	14,172.6	7,566.0	123.3	122.5	124.71	6,794.8	-846.2	388.2	186.3	201.83	1.923	
14,100.0	7,344.0	14,272.6	7,566.0	125.1	124.2	124.62	6,894.8	-845.4	389.0	184.1	204.89	1.898	
14,200.0	7,344.0	14,372.6	7,566.0	126.8	126.0	124.54	6,994.8	-844.5	389.8	181.8	207.96	1.874	
14,300.0	7,344.0	14,472.6	7,566.0	128.5	127.7	124.46	7,094.8	-843.6	390.6	179.5	211.04	1.851	
14,400.0	7,344.0	14,572.6	7,566.0	130.2	129.4	124.38	7,194.8	-842.8	391.4	177.3	214.11	1.828	
14,500.0	7,344.0	14,672.6	7,566.0	132.0	131.1	124.30	7,294.8	-841.9	392.2	175.0	217.20	1.806	
14,600.0	7,344.0	14,772.6	7,566.0	133.7	132.9	124.22	7,394.8	-841.0	393.0	172.7	220.29	1.784	
14,700.0	7,344.0	14,872.6	7,566.0	135.4	134.6	124.14	7,494.8	-840.1	393.8	170.4	223.38	1.763	
14,800.0	7,344.0	14,972.6	7,566.0	137.1	136.3	124.06	7,594.8	-839.3	394.6	168.1	226.48	1.742	
14,900.0	7,344.0	15,072.5	7,566.0	138.9	138.1	123.98	7,694.7	-838.4	395.4	165.8	229.58	1.722	
15,000.0	7,344.0	15,172.5	7,566.0	140.6	139.8	123.90	7,794.7	-837.5	396.2	163.5	232.68	1.703	
15,100.0	7,344.0	15,272.5	7,566.0	142.3	141.6	123.82	7,894.7	-836.6	397.0	161.2	235.80	1.684	
15,200.0	7,344.0	15,372.5	7,566.0	144.0	143.3	123.75	7,994.7	-835.8	397.8	158.9	238.91	1.665	
15,300.0	7,344.0	15,472.5	7,566.0	145.8	145.0	123.67	8,094.7	-834.9	398.7	156.6	242.03	1.647	
15,400.0	7,344.0	15,572.5	7,566.0	147.5	146.8	123.59	8,194.7	-834.0	399.5	154.3	245.15	1.629	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4B-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
15,500.0	7,344.0	15,672.5	7,566.0	149.2	148.5	123.51	8,294.7	-833.2	400.3	152.0	248.28	1.612	
15,600.0	7,344.0	15,772.5	7,566.0	151.0	150.2	123.44	8,394.7	-832.3	401.1	149.7	251.41	1.595	
15,700.0	7,344.0	15,872.5	7,566.0	152.7	152.0	123.36	8,494.7	-831.4	401.9	147.4	254.55	1.579	
15,800.0	7,344.0	15,972.5	7,566.0	154.4	153.7	123.28	8,594.7	-830.5	402.7	145.0	257.69	1.563	
15,900.0	7,344.0	16,072.5	7,566.0	156.2	155.4	123.21	8,694.7	-829.7	403.5	142.7	260.84	1.547	
16,000.0	7,344.0	16,172.5	7,566.0	157.9	157.2	123.13	8,794.7	-828.8	404.4	140.4	263.98	1.532	
16,100.0	7,344.0	16,272.5	7,566.0	159.6	158.9	123.06	8,894.6	-827.9	405.2	138.0	267.14	1.517	
16,200.0	7,344.0	16,372.5	7,566.0	161.4	160.7	122.98	8,994.6	-827.1	406.0	135.7	270.29	1.502	
16,300.0	7,344.0	16,472.5	7,566.0	163.1	162.4	122.91	9,094.6	-826.2	406.8	133.4	273.45	1.488	Level 3
16,400.0	7,344.0	16,572.5	7,566.0	164.8	164.1	122.83	9,194.6	-825.3	407.6	131.0	276.62	1.474	Level 3
16,500.0	7,344.0	16,672.5	7,566.0	166.6	165.9	122.76	9,294.6	-824.4	408.5	128.7	279.79	1.460	Level 3
16,600.0	7,344.0	16,772.5	7,566.0	168.3	167.6	122.68	9,394.6	-823.6	409.3	126.3	282.96	1.446	Level 3
16,700.0	7,344.0	16,872.5	7,566.0	170.0	169.4	122.61	9,494.6	-822.7	410.1	124.0	286.13	1.433	Level 3
16,800.0	7,344.0	16,972.5	7,566.0	171.8	171.1	122.54	9,594.6	-821.8	410.9	121.6	289.31	1.420	Level 3
16,900.0	7,344.0	17,072.5	7,566.0	173.5	172.9	122.46	9,694.6	-820.9	411.8	119.3	292.49	1.408	Level 3
17,000.0	7,344.0	17,172.4	7,566.0	175.2	174.6	122.39	9,794.6	-820.1	412.6	116.9	295.68	1.395	Level 3
17,100.0	7,344.0	17,272.4	7,566.0	177.0	176.3	122.32	9,894.6	-819.2	413.4	114.5	298.87	1.383	Level 3
17,103.6	7,344.0	17,276.0	7,566.0	177.0	176.4	122.31	9,898.1	-819.2	413.4	114.4	298.98	1.383	Level 3, SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4C-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	90.05	0.0	19.6	19.6				
100.0	100.0	101.0	101.0	0.1	0.1	90.05	0.0	19.6	19.6	19.3	0.26	74.283	
200.0	200.0	201.0	201.0	0.3	0.3	90.05	0.0	19.6	19.6	19.0	0.61	31.957	CC, ES
300.0	300.0	301.0	301.0	0.5	0.5	-179.74	0.0	19.6	20.4	19.5	0.96	21.267	
400.0	400.0	401.0	401.0	0.7	0.7	-179.77	0.0	19.6	23.1	21.8	1.31	17.605	
500.0	499.9	501.3	501.3	0.8	0.8	-179.83	0.0	18.7	26.5	24.9	1.66	15.993	
600.0	599.7	601.8	601.7	1.0	1.0	-179.91	0.0	16.0	30.0	28.0	2.01	14.939	
700.0	699.4	702.1	701.9	1.3	1.2	179.99	0.1	11.7	33.6	31.2	2.36	14.247	SF
800.0	798.9	801.9	801.7	1.5	1.4	179.91	0.1	7.1	38.5	35.8	2.70	14.251	
900.0	898.3	901.7	901.4	1.8	1.6	179.85	0.1	2.5	45.2	42.2	3.05	14.830	
1,000.0	997.4	1,001.3	1,000.9	2.0	1.8	179.81	0.2	-2.2	53.7	50.3	3.39	15.809	
1,100.0	1,096.3	1,100.8	1,100.3	2.3	1.9	179.79	0.2	-6.8	63.8	60.1	3.74	17.077	
1,200.0	1,195.0	1,200.1	1,199.5	2.6	2.1	179.78	0.2	-11.4	75.6	71.5	4.08	18.520	
1,300.0	1,293.5	1,299.4	1,298.6	3.0	2.3	179.77	0.3	-16.0	87.7	83.3	4.43	19.799	
1,400.0	1,392.1	1,398.7	1,397.8	3.3	2.5	179.77	0.3	-20.6	99.8	95.1	4.78	20.893	
1,500.0	1,490.7	1,497.9	1,496.9	3.6	2.7	179.76	0.4	-25.2	112.0	106.8	5.13	21.837	
1,600.0	1,589.3	1,597.2	1,596.1	4.0	2.9	179.76	0.4	-29.8	124.1	118.6	5.47	22.662	
1,700.0	1,687.9	1,696.5	1,695.2	4.3	3.1	179.76	0.4	-34.4	136.2	130.4	5.82	23.389	
1,800.0	1,786.5	1,795.7	1,794.4	4.6	3.3	179.75	0.5	-39.0	148.3	142.1	6.17	24.034	
1,900.0	1,885.1	1,895.0	1,893.6	5.0	3.5	179.75	0.5	-43.6	160.4	153.9	6.52	24.610	
2,000.0	1,983.7	1,994.2	1,992.7	5.3	3.6	179.75	0.6	-48.2	172.5	165.7	6.87	25.127	
2,100.0	2,082.3	2,093.5	2,091.9	5.6	3.8	179.75	0.6	-52.8	184.6	177.4	7.21	25.595	
2,200.0	2,180.9	2,192.8	2,191.0	6.0	4.0	179.75	0.6	-57.4	196.7	189.2	7.56	26.020	
2,300.0	2,279.5	2,292.0	2,290.2	6.3	4.2	179.75	0.7	-62.0	208.9	200.9	7.91	26.407	
2,400.0	2,378.1	2,391.3	2,389.3	6.7	4.4	179.75	0.7	-66.6	221.0	212.7	8.26	26.762	
2,500.0	2,476.7	2,490.6	2,488.5	7.0	4.6	179.74	0.8	-71.2	233.1	224.5	8.60	27.089	
2,600.0	2,575.3	2,589.8	2,587.7	7.3	4.8	179.74	0.8	-75.8	245.2	236.2	8.95	27.390	
2,700.0	2,673.9	2,689.1	2,686.8	7.7	5.0	179.74	0.8	-80.5	257.3	248.0	9.30	27.668	
2,800.0	2,772.5	2,788.4	2,786.0	8.0	5.2	179.74	0.9	-85.1	269.4	259.8	9.65	27.926	
2,900.0	2,871.1	2,887.6	2,885.1	8.4	5.4	179.74	0.9	-89.7	281.5	271.5	10.00	28.167	
3,000.0	2,969.7	2,986.9	2,984.3	8.7	5.6	179.74	1.0	-94.3	293.6	283.3	10.34	28.391	
3,100.0	3,068.3	3,086.1	3,083.4	9.0	5.7	179.74	1.0	-98.9	305.8	295.1	10.69	28.601	
3,200.0	3,166.9	3,185.4	3,182.6	9.4	5.9	179.74	1.0	-103.5	317.9	306.8	11.04	28.797	
3,300.0	3,265.4	3,284.7	3,281.8	9.7	6.1	179.74	1.1	-108.1	330.0	318.6	11.39	28.982	
3,400.0	3,364.0	3,383.9	3,380.9	10.1	6.3	179.74	1.1	-112.7	342.1	330.4	11.73	29.156	
3,500.0	3,462.6	3,483.2	3,480.1	10.4	6.5	179.74	1.1	-117.3	354.2	342.1	12.08	29.319	
3,600.0	3,561.2	3,582.5	3,579.2	10.8	6.7	179.74	1.2	-121.9	366.3	353.9	12.43	29.474	
3,700.0	3,659.8	3,681.7	3,678.4	11.1	6.9	179.74	1.2	-126.5	378.4	365.7	12.78	29.620	
3,800.0	3,758.4	3,781.0	3,777.5	11.4	7.1	179.74	1.3	-131.1	390.5	377.4	13.12	29.758	
3,900.0	3,857.0	3,880.3	3,876.7	11.8	7.3	179.74	1.3	-135.7	402.7	389.2	13.47	29.889	
4,000.0	3,955.6	3,979.5	3,975.9	12.1	7.5	179.74	1.3	-140.3	414.8	400.9	13.82	30.014	
4,100.0	4,054.2	4,078.8	4,075.0	12.5	7.7	179.74	1.4	-144.9	426.9	412.7	14.17	30.132	
4,200.0	4,152.8	4,178.0	4,174.2	12.8	7.8	179.74	1.4	-149.5	439.0	424.5	14.51	30.245	
4,300.0	4,251.4	4,277.3	4,273.3	13.2	8.0	179.74	1.5	-154.1	451.1	436.2	14.86	30.353	
4,400.0	4,350.0	4,376.6	4,372.5	13.5	8.2	179.74	1.5	-158.7	463.2	448.0	15.21	30.455	
4,500.0	4,448.6	4,475.8	4,471.6	13.8	8.4	179.74	1.5	-163.3	475.3	459.8	15.56	30.553	
4,600.0	4,547.2	4,575.1	4,570.8	14.2	8.6	179.74	1.6	-168.0	487.4	471.5	15.90	30.647	
4,700.0	4,645.8	4,674.4	4,670.0	14.5	8.8	179.74	1.6	-172.6	499.6	483.3	16.25	30.737	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4D-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	90.05	0.0	30.8	30.8				
100.0	100.0	101.0	101.0	0.1	0.1	90.05	0.0	30.8	30.8	30.5	0.26	116.731	
200.0	200.0	201.0	201.0	0.3	0.3	90.05	0.0	30.8	30.8	30.2	0.61	50.218	CC, ES
300.0	300.0	301.0	301.0	0.5	0.5	-179.74	0.0	30.8	31.6	30.7	0.96	32.900	
400.0	400.0	401.0	401.0	0.7	0.7	-179.76	0.0	30.8	34.3	32.9	1.31	26.143	
500.0	499.9	500.9	500.9	0.8	0.8	-179.79	0.0	30.8	38.6	37.0	1.66	23.284	
600.0	599.7	601.5	601.5	1.0	1.0	-179.82	0.0	29.9	43.8	41.8	2.01	21.834	
700.0	699.4	701.7	701.6	1.3	1.2	-179.86	0.0	27.5	49.3	46.9	2.36	20.924	
800.0	798.9	801.4	801.4	1.5	1.4	-179.89	0.0	24.9	56.3	53.6	2.70	20.834	SF
900.0	898.3	901.0	900.9	1.8	1.5	-179.92	0.0	22.3	65.0	62.0	3.05	21.342	
1,000.0	997.4	1,000.5	1,000.4	2.0	1.7	-179.95	0.0	19.7	75.5	72.1	3.39	22.266	
1,100.0	1,096.3	1,099.7	1,099.6	2.3	1.9	-179.97	0.0	17.2	87.7	84.0	3.73	23.492	
1,200.0	1,195.0	1,198.8	1,198.6	2.6	2.1	-179.98	0.0	14.6	101.6	97.5	4.08	24.900	
1,300.0	1,293.5	1,297.8	1,297.5	3.0	2.2	-179.99	0.0	12.0	115.7	111.3	4.43	26.144	
1,400.0	1,392.1	1,396.8	1,396.5	3.3	2.4	-180.00	0.0	9.5	129.8	125.1	4.77	27.207	
1,500.0	1,490.7	1,495.8	1,495.5	3.6	2.6	179.99	0.0	6.9	144.0	138.9	5.12	28.126	
1,600.0	1,589.3	1,594.8	1,594.4	4.0	2.8	179.99	0.1	4.4	158.1	152.7	5.47	28.928	
1,700.0	1,687.9	1,693.8	1,693.4	4.3	3.0	179.98	0.1	1.8	172.3	166.5	5.81	29.635	
1,800.0	1,786.5	1,792.7	1,792.3	4.6	3.1	179.98	0.1	-0.8	186.4	180.3	6.16	30.263	
1,900.0	1,885.1	1,891.7	1,891.3	5.0	3.3	179.98	0.1	-3.3	200.6	194.1	6.51	30.823	
2,000.0	1,983.7	1,990.7	1,990.3	5.3	3.5	179.97	0.1	-5.9	214.7	207.9	6.85	31.327	
2,100.0	2,082.3	2,089.7	2,089.2	5.6	3.7	179.97	0.1	-8.5	228.9	221.7	7.20	31.782	
2,200.0	2,180.9	2,188.7	2,188.2	6.0	3.8	179.97	0.1	-11.0	243.0	235.5	7.55	32.196	
2,300.0	2,279.5	2,287.7	2,287.2	6.3	4.0	179.97	0.1	-13.6	257.2	249.3	7.90	32.573	
2,400.0	2,378.1	2,386.7	2,386.1	6.7	4.2	179.96	0.1	-16.1	271.3	263.1	8.24	32.919	
2,500.0	2,476.7	2,485.7	2,485.1	7.0	4.4	179.96	0.1	-18.7	285.5	276.9	8.59	33.237	
2,600.0	2,575.3	2,584.7	2,584.0	7.3	4.6	179.96	0.1	-21.3	299.6	290.7	8.94	33.530	
2,700.0	2,673.9	2,683.7	2,683.0	7.7	4.7	179.96	0.1	-23.8	313.8	304.5	9.28	33.801	
2,800.0	2,772.5	2,782.7	2,782.0	8.0	4.9	179.96	0.1	-26.4	327.9	318.3	9.63	34.053	
2,900.0	2,871.1	2,881.7	2,880.9	8.4	5.1	179.96	0.1	-29.0	342.0	332.1	9.98	34.287	
3,000.0	2,969.7	2,980.7	2,979.9	8.7	5.3	179.96	0.2	-31.5	356.2	345.9	10.32	34.505	
3,100.0	3,068.3	3,079.7	3,078.8	9.0	5.5	179.95	0.2	-34.1	370.3	359.7	10.67	34.709	
3,200.0	3,166.9	3,178.7	3,177.8	9.4	5.6	179.95	0.2	-36.6	384.5	373.5	11.02	34.901	
3,300.0	3,265.4	3,277.7	3,276.8	9.7	5.8	179.95	0.2	-39.2	398.6	387.3	11.36	35.081	
3,400.0	3,364.0	3,376.7	3,375.7	10.1	6.0	179.95	0.2	-41.8	412.8	401.1	11.71	35.250	
3,500.0	3,462.6	3,475.6	3,474.7	10.4	6.2	179.95	0.2	-44.3	426.9	414.9	12.06	35.409	
3,600.0	3,561.2	3,574.6	3,573.6	10.8	6.3	179.95	0.2	-46.9	441.1	428.7	12.40	35.560	
3,700.0	3,659.8	3,673.6	3,672.6	11.1	6.5	179.95	0.2	-49.4	455.2	442.5	12.75	35.702	
3,800.0	3,758.4	3,772.6	3,771.6	11.4	6.7	179.95	0.2	-52.0	469.4	456.3	13.10	35.837	
3,900.0	3,857.0	3,871.6	3,870.5	11.8	6.9	179.95	0.2	-54.6	483.5	470.1	13.44	35.965	
4,000.0	3,955.6	3,970.6	3,969.5	12.1	7.1	179.95	0.2	-57.1	497.7	483.9	13.79	36.086	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4E-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	90.05	0.0	39.2	39.2				
100.0	100.0	101.0	101.0	0.1	0.1	90.05	0.0	39.2	39.2	38.9	0.26	148.566	
200.0	200.0	201.0	201.0	0.3	0.3	90.05	0.0	39.2	39.2	38.5	0.61	63.913	CC, ES
300.0	300.0	301.0	301.0	0.5	0.5	-179.74	0.0	39.2	40.0	39.1	0.96	41.626	
400.0	400.0	401.0	401.0	0.7	0.7	-179.75	0.0	39.2	42.6	41.3	1.31	32.547	
500.0	499.9	500.9	500.9	0.8	0.8	-179.78	0.0	39.2	47.0	45.3	1.66	28.343	
600.0	599.7	600.7	600.7	1.0	1.0	-179.80	0.0	39.2	53.1	51.1	2.01	26.476	
700.0	699.4	700.4	700.4	1.3	1.2	-179.83	0.0	39.2	61.0	58.6	2.35	25.909	SF
800.0	798.9	799.9	799.9	1.5	1.4	-179.85	0.0	39.2	70.5	67.8	2.70	26.141	
900.0	898.3	899.3	899.3	1.8	1.5	-179.87	0.0	39.2	81.9	78.8	3.04	26.901	
1,000.0	997.4	998.4	998.4	2.0	1.7	-179.89	0.0	39.2	94.9	91.5	3.39	28.029	
1,100.0	1,096.3	1,097.3	1,097.3	2.3	1.9	-179.90	0.0	39.2	109.7	106.0	3.73	29.425	
1,200.0	1,195.0	1,196.0	1,196.0	2.6	2.0	-179.92	0.0	39.2	126.1	122.0	4.07	30.972	
1,300.0	1,293.5	1,294.5	1,294.5	3.0	2.2	-179.93	0.0	39.2	142.8	138.4	4.42	32.328	
1,400.0	1,392.1	1,393.1	1,393.1	3.3	2.4	-179.93	0.0	39.2	159.5	154.7	4.76	33.488	
1,500.0	1,490.7	1,491.7	1,491.7	3.6	2.6	-179.94	0.0	39.2	176.2	171.1	5.11	34.490	
1,600.0	1,589.3	1,590.3	1,590.3	4.0	2.7	-179.94	0.0	39.2	192.9	187.4	5.45	35.366	
1,700.0	1,687.9	1,688.9	1,688.9	4.3	2.9	-179.95	0.0	39.2	209.6	203.8	5.80	36.138	
1,800.0	1,786.5	1,787.5	1,787.5	4.6	3.1	-179.95	0.0	39.2	226.3	220.1	6.15	36.822	
1,900.0	1,885.1	1,886.1	1,886.1	5.0	3.2	-179.96	0.0	39.2	243.0	236.5	6.49	37.434	
2,000.0	1,983.7	1,984.7	1,984.7	5.3	3.4	-179.96	0.0	39.2	259.7	252.9	6.84	37.984	
2,100.0	2,082.3	2,083.3	2,083.3	5.6	3.6	-179.96	0.0	39.2	276.4	269.2	7.18	38.482	
2,200.0	2,180.9	2,181.9	2,181.9	6.0	3.8	-179.96	0.0	39.2	293.1	285.6	7.53	38.933	
2,300.0	2,279.5	2,280.5	2,280.5	6.3	3.9	-179.97	0.0	39.2	309.8	301.9	7.87	39.345	
2,400.0	2,378.1	2,379.1	2,379.1	6.7	4.1	-179.97	0.0	39.2	326.5	318.3	8.22	39.723	
2,500.0	2,476.7	2,477.7	2,477.7	7.0	4.3	-179.97	0.0	39.2	343.2	334.7	8.57	40.070	
2,600.0	2,575.3	2,576.3	2,576.3	7.3	4.5	-179.97	0.0	39.2	359.9	351.0	8.91	40.390	
2,700.0	2,673.9	2,674.9	2,674.9	7.7	4.6	-179.97	0.0	39.2	376.6	367.4	9.26	40.686	
2,800.0	2,772.5	2,773.5	2,773.5	8.0	4.8	-179.97	0.0	39.2	393.3	383.7	9.60	40.961	
2,900.0	2,871.1	2,872.1	2,872.1	8.4	5.0	-179.97	0.0	39.2	410.0	400.1	9.95	41.217	
3,000.0	2,969.7	2,970.7	2,970.7	8.7	5.1	-179.97	0.0	39.2	426.7	416.4	10.29	41.455	
3,100.0	3,068.3	3,069.3	3,069.3	9.0	5.3	-179.98	0.0	39.2	443.4	432.8	10.64	41.679	
3,200.0	3,166.9	3,167.9	3,167.9	9.4	5.5	-179.98	0.0	39.2	460.2	449.2	10.99	41.888	
3,300.0	3,265.4	3,266.4	3,266.4	9.7	5.7	-179.98	0.0	39.2	476.9	465.5	11.33	42.084	
3,400.0	3,364.0	3,365.0	3,365.0	10.1	5.8	-179.98	0.0	39.2	493.6	481.9	11.68	42.269	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4F-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	2.0	2.0	0.0	0.0	90.05	0.0	50.3	50.3				
100.0	100.0	102.0	102.0	0.1	0.1	90.05	0.0	50.3	50.3	50.1	0.27	189.757	
200.0	200.0	202.0	202.0	0.3	0.3	90.05	0.0	50.3	50.3	49.7	0.61	81.941	CC, ES
300.0	300.0	302.0	302.0	0.5	0.5	-179.74	0.0	50.3	51.2	50.3	0.96	53.163	
400.0	400.0	401.9	401.9	0.7	0.7	-179.75	0.0	50.3	53.8	52.5	1.31	41.031	
500.0	499.9	500.8	500.8	0.8	0.8	-179.86	0.0	51.2	59.1	57.4	1.66	35.628	
600.0	599.7	599.4	599.3	1.0	1.0	179.91	0.3	53.8	67.8	65.8	2.00	33.835	SF
700.0	699.4	697.4	697.2	1.3	1.2	179.62	0.7	58.0	79.9	77.6	2.35	34.056	
800.0	798.9	794.7	794.4	1.5	1.4	179.33	1.3	63.9	95.5	92.8	2.69	35.519	
900.0	898.3	892.1	891.5	1.8	1.6	179.07	2.1	71.1	114.2	111.1	3.03	37.703	
1,000.0	997.4	990.0	989.1	2.0	1.8	178.89	2.9	78.6	134.8	131.4	3.37	40.015	
1,100.0	1,096.3	1,087.5	1,086.3	2.3	2.0	178.77	3.6	86.0	157.1	153.3	3.71	42.385	
1,200.0	1,195.0	1,184.6	1,183.1	2.6	2.2	178.69	4.4	93.4	180.9	176.9	4.04	44.742	
1,300.0	1,293.5	1,281.6	1,279.9	3.0	2.4	178.63	5.1	100.8	205.1	200.7	4.39	46.768	
1,400.0	1,392.1	1,378.6	1,376.6	3.3	2.6	178.59	5.9	108.2	229.3	224.6	4.73	48.501	
1,500.0	1,490.7	1,475.7	1,473.4	3.6	2.8	178.55	6.7	115.6	253.5	248.4	5.07	50.001	
1,600.0	1,589.3	1,572.7	1,570.1	4.0	3.0	178.52	7.4	123.0	277.7	272.3	5.41	51.311	
1,700.0	1,687.9	1,669.7	1,666.9	4.3	3.2	178.50	8.2	130.4	301.9	296.1	5.75	52.466	
1,800.0	1,786.5	1,766.8	1,763.6	4.6	3.4	178.48	8.9	137.8	326.0	319.9	6.10	53.492	
1,900.0	1,885.1	1,863.8	1,860.3	5.0	3.6	178.46	9.7	145.2	350.2	343.8	6.44	54.408	
2,000.0	1,983.7	1,960.8	1,957.1	5.3	3.9	178.44	10.5	152.6	374.4	367.6	6.78	55.233	
2,100.0	2,082.3	2,057.9	2,053.8	5.6	4.1	178.43	11.2	160.0	398.6	391.5	7.12	55.978	
2,200.0	2,180.9	2,154.9	2,150.6	6.0	4.3	178.42	12.0	167.4	422.8	415.3	7.46	56.655	
2,300.0	2,279.5	2,251.9	2,247.3	6.3	4.5	178.41	12.7	174.8	447.0	439.2	7.80	57.273	
2,400.0	2,378.1	2,348.9	2,344.1	6.7	4.7	178.40	13.5	182.2	471.2	463.0	8.15	57.839	
2,500.0	2,476.7	2,446.0	2,440.8	7.0	4.9	178.39	14.3	189.6	495.3	486.9	8.49	58.360	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4G-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	2.0	2.0	0.0	0.0	90.05	-0.1	61.5	61.5				
100.0	100.0	102.0	102.0	0.1	0.1	90.05	-0.1	61.5	61.5	61.3	0.27	231.926	
200.0	200.0	202.0	202.0	0.3	0.3	90.05	-0.1	61.5	61.5	60.9	0.61	100.150	CC, ES
300.0	300.0	302.0	302.0	0.5	0.5	-179.74	-0.1	61.5	62.4	61.4	0.96	64.779	
400.0	400.0	400.8	400.8	0.7	0.7	-179.84	0.1	62.4	65.9	64.6	1.31	50.313	
500.0	499.9	500.0	500.0	0.8	0.8	179.92	0.3	65.0	72.9	71.2	1.66	43.983	
600.0	599.7	597.5	597.4	1.0	1.0	179.61	0.8	69.2	83.3	81.3	2.00	41.634	
700.0	699.4	695.0	694.7	1.3	1.2	179.28	1.5	75.1	97.1	94.8	2.34	41.448	SF
800.0	798.9	791.7	791.1	1.5	1.4	178.97	2.3	82.5	114.3	111.6	2.68	42.613	
900.0	898.3	887.5	886.5	1.8	1.6	178.69	3.4	91.4	134.9	131.9	3.02	44.670	
1,000.0	997.4	982.2	980.6	2.0	1.9	178.45	4.6	101.8	158.8	155.4	3.35	47.350	
1,100.0	1,096.3	1,075.7	1,073.3	2.3	2.1	178.24	5.9	113.6	185.9	182.3	3.68	50.484	
1,200.0	1,195.0	1,168.2	1,164.9	2.6	2.4	178.07	7.4	126.7	216.2	212.2	4.01	53.878	
1,300.0	1,293.5	1,263.2	1,258.8	3.0	2.6	177.94	9.0	140.8	247.3	243.0	4.35	56.857	
1,400.0	1,392.1	1,358.2	1,352.8	3.3	2.9	177.83	10.6	154.8	278.5	273.8	4.69	59.408	
1,500.0	1,490.7	1,453.3	1,446.8	3.6	3.2	177.75	12.2	168.9	309.6	304.6	5.03	61.617	
1,600.0	1,589.3	1,548.3	1,540.7	4.0	3.5	177.68	13.8	183.0	340.8	335.4	5.36	63.548	
1,700.0	1,687.9	1,643.3	1,634.7	4.3	3.8	177.62	15.4	197.0	371.9	366.2	5.70	65.251	
1,800.0	1,786.5	1,738.3	1,728.7	4.6	4.1	177.57	17.0	211.1	403.1	397.0	6.04	66.764	
1,900.0	1,885.1	1,833.4	1,822.6	5.0	4.4	177.53	18.6	225.1	434.2	427.8	6.37	68.117	
2,000.0	1,983.7	1,928.4	1,916.6	5.3	4.7	177.49	20.3	239.2	465.4	458.6	6.71	69.334	
2,100.0	2,082.3	2,023.4	2,010.6	5.6	5.0	177.46	21.9	253.2	496.5	489.5	7.05	70.435	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - Edith Ann-Duckworth 4H-21H-O268 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	2.0	2.0	0.0	0.0	90.05	-0.1	69.9	69.9				
100.0	100.0	102.0	102.0	0.1	0.1	90.05	-0.1	69.9	69.9	69.7	0.27	263.552	
166.0	166.0	168.0	168.0	0.2	0.2	90.05	-0.1	69.9	69.9	69.4	0.50	141.070	CC
200.0	200.0	202.0	202.0	0.3	0.3	90.05	-0.1	69.9	69.9	69.3	0.61	113.811	ES
300.0	300.0	300.7	300.7	0.5	0.5	-179.77	0.0	70.8	71.7	70.7	0.96	74.585	
400.0	400.0	399.3	399.3	0.7	0.7	-179.86	0.1	73.4	76.9	75.6	1.31	58.837	
500.0	499.9	497.6	497.4	0.8	0.8	-179.98	0.3	77.6	85.6	84.0	1.65	51.808	
600.0	599.7	595.3	594.9	1.0	1.0	179.88	0.5	83.5	97.7	95.7	2.00	48.969	
700.0	699.4	692.3	691.7	1.3	1.2	179.75	0.8	91.0	113.3	110.9	2.34	48.469	SF
800.0	798.9	788.4	787.4	1.5	1.5	179.63	1.2	100.1	132.2	129.5	2.67	49.408	
900.0	898.3	883.5	881.9	1.8	1.7	179.52	1.7	110.6	154.4	151.4	3.01	51.300	
1,000.0	997.4	977.5	975.1	2.0	2.0	179.43	2.2	122.5	180.0	176.6	3.34	53.857	
1,100.0	1,096.3	1,070.1	1,066.7	2.3	2.2	179.36	2.8	135.8	208.8	205.1	3.67	56.900	
1,200.0	1,195.0	1,161.3	1,156.8	2.6	2.5	179.29	3.4	150.3	240.6	236.6	3.99	60.234	
1,300.0	1,293.5	1,251.4	1,245.5	3.0	2.8	179.24	4.1	166.0	274.3	270.0	4.32	63.454	
1,400.0	1,392.1	1,340.5	1,333.0	3.3	3.2	179.19	4.8	182.9	309.4	304.8	4.65	66.566	
1,500.0	1,490.7	1,428.9	1,419.5	3.6	3.5	179.15	5.6	201.1	346.0	341.0	4.97	69.582	
1,600.0	1,589.3	1,521.3	1,509.8	4.0	3.9	179.11	6.4	220.7	383.3	378.0	5.30	72.280	
1,700.0	1,687.9	1,614.1	1,600.4	4.3	4.2	179.07	7.2	240.5	420.6	415.0	5.63	74.653	
1,800.0	1,786.5	1,706.9	1,691.1	4.6	4.6	179.05	8.1	260.2	457.9	451.9	5.97	76.764	
1,900.0	1,885.1	1,799.6	1,781.7	5.0	5.0	179.02	8.9	279.9	495.2	488.9	6.30	78.654	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - JILLSON A 1 (EXISTING) - FOUNDATION WELL - NO SURVE

Offset Site Error: 0.0 ft

Survey Program: 4979-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
3,000.0	2,969.7	2,919.7	2,919.7	8.7	5.1	59.28	418.9	-643.2	492.0	479.0	13.03	37.773	
3,100.0	3,068.3	3,018.3	3,018.3	9.0	5.3	60.96	418.9	-643.2	483.6	470.0	13.59	35.595	
3,200.0	3,166.9	3,116.9	3,116.9	9.4	5.4	62.70	418.9	-643.2	475.7	461.5	14.15	33.607	
3,300.0	3,265.4	3,215.4	3,215.4	9.7	5.6	64.49	418.9	-643.2	468.1	453.4	14.73	31.791	
3,400.0	3,364.0	3,314.0	3,314.0	10.1	5.8	66.35	418.9	-643.2	461.1	445.8	15.30	30.134	
3,500.0	3,462.6	3,412.6	3,412.6	10.4	6.0	68.25	418.9	-643.2	454.6	438.7	15.88	28.624	
3,600.0	3,561.2	3,511.2	3,511.2	10.8	6.1	70.21	418.9	-643.2	448.6	432.1	16.46	27.248	
3,700.0	3,659.8	3,609.8	3,609.8	11.1	6.3	72.22	418.9	-643.2	443.1	426.1	17.05	25.998	
3,800.0	3,758.4	3,708.4	3,708.4	11.4	6.5	74.27	418.9	-643.2	438.3	420.6	17.63	24.865	
3,900.0	3,857.0	3,807.0	3,807.0	11.8	6.6	76.36	418.9	-643.2	434.0	415.8	18.20	23.839	
4,000.0	3,955.6	3,905.6	3,905.6	12.1	6.8	78.50	418.9	-643.2	430.3	411.5	18.78	22.915	
4,100.0	4,054.2	4,004.2	4,004.2	12.5	7.0	80.66	418.9	-643.2	427.2	407.9	19.34	22.085	
4,200.0	4,152.8	4,102.8	4,102.8	12.8	7.2	82.85	418.9	-643.2	424.8	404.9	19.90	21.342	
4,300.0	4,251.4	4,201.4	4,201.4	13.2	7.3	85.07	418.9	-643.2	423.0	402.6	20.45	20.682	
4,400.0	4,350.0	4,300.0	4,300.0	13.5	7.5	87.30	418.9	-643.2	421.9	400.9	20.99	20.099	
4,500.0	4,448.6	4,398.6	4,398.6	13.8	7.7	89.54	418.9	-643.2	421.4	399.9	21.52	19.587	
4,520.8	4,469.1	4,419.1	4,419.1	13.9	7.7	90.00	418.9	-643.2	421.4	399.8	21.62	19.489	CC
4,600.0	4,547.2	4,497.2	4,497.2	14.2	7.8	91.77	418.9	-643.2	421.6	399.6	22.03	19.142	ES
4,700.0	4,645.8	4,595.8	4,595.8	14.5	8.0	94.01	418.9	-643.2	422.5	399.9	22.52	18.759	
4,800.0	4,744.4	4,694.4	4,694.4	14.9	8.2	96.23	418.9	-643.2	424.0	401.0	23.00	18.435	
4,900.0	4,843.0	4,793.0	4,793.0	15.2	8.4	98.43	418.9	-643.2	426.1	402.7	23.46	18.164	
5,000.0	4,941.6	4,891.6	4,891.6	15.6	8.5	100.61	418.9	-643.2	428.9	405.0	23.90	17.944	
5,100.0	5,040.2	4,979.0	4,979.0	15.9	8.7	102.51	418.9	-643.2	432.5	408.2	24.32	17.783	SF
5,200.0	5,138.8	4,979.0	4,979.0	16.2	8.7	102.51	418.9	-643.2	450.0	425.3	24.66	18.249	
5,300.0	5,237.3	4,979.0	4,979.0	16.6	8.7	102.51	418.9	-643.2	487.8	462.8	24.99	19.515	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - KENNEDY 4-2-21 (EXISTING) - ENCANA WELL - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 833-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,500.0	7,344.0	7,372.7	7,295.4	64.7	20.1	90.36	3,707.7	-1,187.3	411.7	333.0	78.75	5.228	
10,600.0	7,344.0	7,372.7	7,295.4	66.4	20.1	90.30	3,707.7	-1,187.3	313.7	233.2	80.47	3.898	
10,700.0	7,344.0	7,372.6	7,295.3	68.0	20.1	90.25	3,707.7	-1,187.3	217.5	135.3	82.20	2.646	
10,800.0	7,344.0	7,372.6	7,295.2	69.7	20.1	90.20	3,707.7	-1,187.3	127.2	43.3	83.92	1.516	
10,900.0	7,344.0	7,372.5	7,295.2	71.3	20.1	90.15	3,707.7	-1,187.3	71.2	-14.4	85.64	0.831	Level 1
10,905.6	7,344.0	7,372.5	7,295.2	71.4	20.1	90.14	3,707.7	-1,187.3	71.0	-14.7	85.73	0.828	Level 1, CC, ES, SF
11,000.0	7,344.0	7,372.4	7,295.1	73.0	20.1	90.09	3,707.7	-1,187.3	117.7	30.5	87.15	1.350	Level 3
11,100.0	7,344.0	7,372.3	7,295.0	74.6	20.1	90.03	3,707.7	-1,187.3	205.8	117.2	88.63	2.322	
11,200.0	7,344.0	7,372.3	7,295.0	76.3	20.1	89.97	3,707.7	-1,187.3	301.1	211.0	90.09	3.342	
11,300.0	7,344.0	7,372.2	7,294.9	77.9	20.1	89.92	3,707.7	-1,187.3	398.3	306.8	91.53	4.351	
11,400.0	7,344.0	7,372.1	7,294.8	79.5	20.1	89.87	3,707.7	-1,187.3	496.3	403.2	93.10	5.331	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T2N-R68W (Edith Ann-Duckworth) - STROMQUIST 23-21 (EXISTING) - KERR-MCGEE WELL - SU

Offset Site Error: 0.0 ft

Survey Program: 500-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
7,900.0	7,344.0	7,362.9	7,273.9	27.7	21.6	-88.35	1,124.3	-1,347.2	465.1	427.0	38.08	12.214	
8,000.0	7,344.0	7,364.1	7,275.1	28.7	21.6	-88.75	1,124.3	-1,347.2	374.8	335.4	39.46	9.498	
8,100.0	7,344.0	7,365.4	7,276.3	29.7	21.6	-89.14	1,124.3	-1,347.2	290.9	250.0	40.89	7.113	
8,200.0	7,344.0	7,366.6	7,277.5	30.8	21.6	-89.53	1,124.3	-1,347.2	220.8	178.4	42.37	5.211	
8,300.0	7,344.0	7,367.8	7,278.7	32.0	21.6	-89.92	1,124.4	-1,347.2	181.3	137.5	43.88	4.132	
8,329.3	7,344.0	7,368.2	7,279.1	32.4	21.6	-90.03	1,124.4	-1,347.2	178.9	134.6	44.33	4.036	CC, ES, SF
8,400.0	7,344.0	7,369.0	7,280.0	33.2	21.6	-90.31	1,124.4	-1,347.2	192.4	147.0	45.42	4.235	
8,500.0	7,344.0	7,370.3	7,281.2	34.5	21.6	-90.70	1,124.4	-1,347.2	247.3	200.3	46.99	5.262	
8,600.0	7,344.0	7,371.5	7,282.4	35.8	21.6	-91.09	1,124.4	-1,347.2	324.4	275.9	48.57	6.680	
8,700.0	7,344.0	7,372.7	7,283.6	37.1	21.6	-91.48	1,124.4	-1,347.2	411.6	361.4	50.17	8.203	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Edith Ann-Duckworth 4A-21H-O268
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Reference Site:	S21-T2N-R68W (Edith Ann-Duckworth)	**MD Reference:**	WELL @ 4950.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Edith Ann-Duckworth 4A-21H-O268	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Hz	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4950.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Edith Ann-Duckworth 4A-21H-O268
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.32°