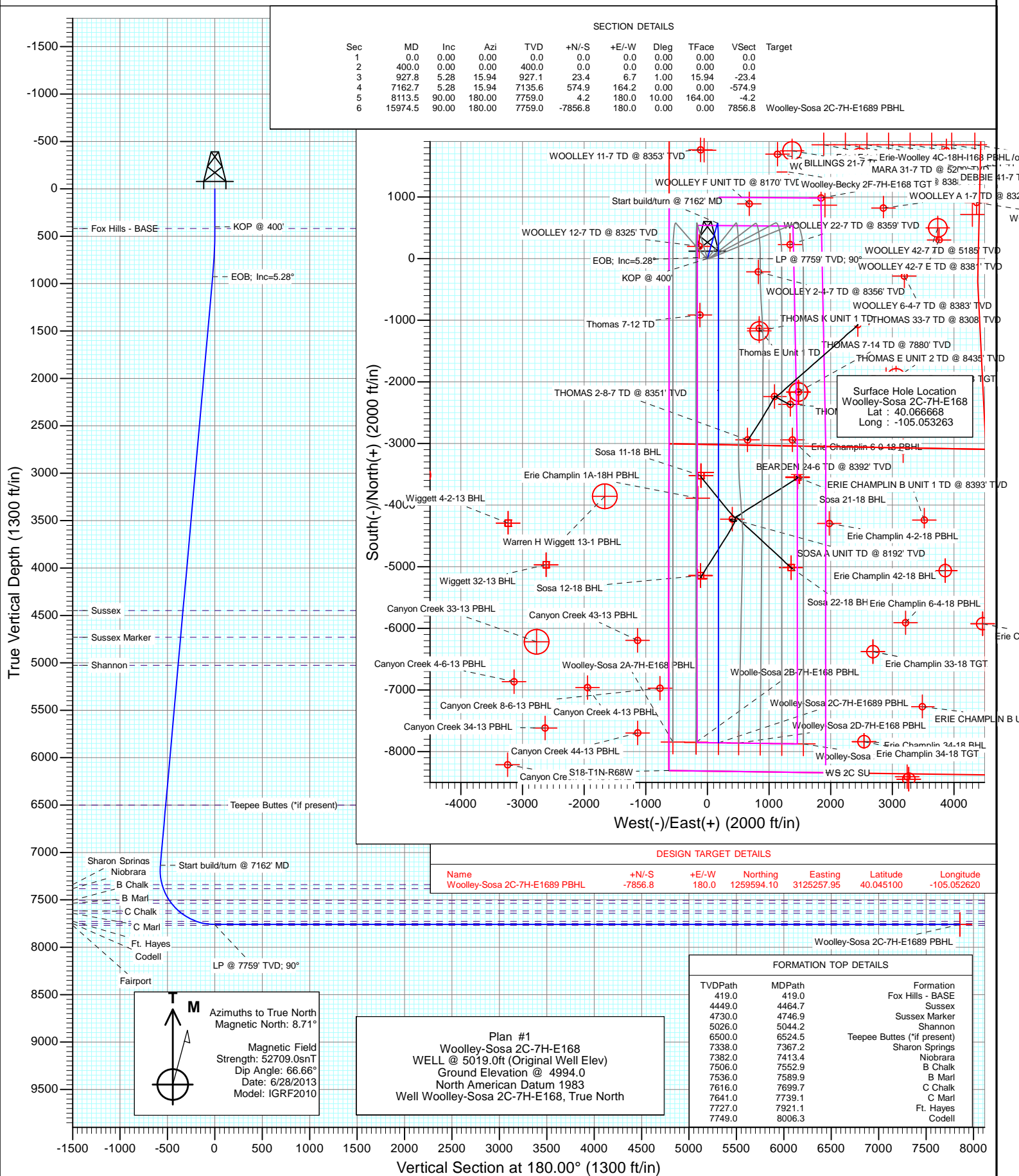




Project: DJ Wattenberg
Site: S7-T1N-R68W (Woolley-Sosa/Becky)
Well: Woolley-Sosa 2C-7H-E168
Wellbore: HZ
Design: Plan #1



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site:	S7-T1N-R68W (Woolley-Sosa)	North Reference:	True
Well:	Woolley-Sosa 2C-7H-E168	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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		S7-T1N-R68W (Woolley-Sosa)			
Site Position:		Northing:	1,265,219.42 ft	Latitude:	40.060530
From:	Lat/Long	Easting:	3,126,139.27 ft	Longitude:	-105.049370
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.29 °

Well	Woolley-Sosa 2C-7H-E168					
Well Position	+N/-S	0.0 ft	Northing:	1,267,449.90 ft	Latitude:	40.066668
	+E/-W	0.0 ft	Easting:	3,125,038.39 ft	Longitude:	-105.053263
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,994.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	6/28/2013	8.71	66.66	52,709

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	180.00

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
927.8	5.28	15.94	927.1	23.4	6.7	1.00	1.00	0.00	15.94	
7,162.7	5.28	15.94	7,135.6	574.9	164.2	0.00	0.00	0.00	0.00	
8,113.5	90.00	180.00	7,759.0	4.2	180.0	10.00	8.91	17.26	164.00	
15,974.5	90.00	180.00	7,759.0	-7,856.8	180.0	0.00	0.00	0.00	0.00	Woolley-Sosa 2C-7H-

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site:	S7-T1N-R68W (Woolley-Sosa)	North Reference:	True
Well:	Woolley-Sosa 2C-7H-E168	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	KOP @ 400'
419.0	0.19	15.94	419.0	0.0	0.0	0.0	1.00	1.00	Fox Hills - BASE
500.0	1.00	15.94	500.0	0.8	0.2	-0.8	1.00	1.00	
600.0	2.00	15.94	600.0	3.4	1.0	-3.4	1.00	1.00	
700.0	3.00	15.94	699.9	7.6	2.2	-7.6	1.00	1.00	
800.0	4.00	15.94	799.7	13.4	3.8	-13.4	1.00	1.00	
900.0	5.00	15.94	899.4	21.0	6.0	-21.0	1.00	1.00	
927.8	5.28	15.94	927.1	23.4	6.7	-23.4	1.00	1.00	EOB; Inc=5.28°
1,000.0	5.28	15.94	998.9	29.7	8.5	-29.7	0.00	0.00	
1,100.0	5.28	15.94	1,098.5	38.6	11.0	-38.6	0.00	0.00	
1,200.0	5.28	15.94	1,198.1	47.4	13.5	-47.4	0.00	0.00	
1,300.0	5.28	15.94	1,297.7	56.3	16.1	-56.3	0.00	0.00	
1,400.0	5.28	15.94	1,397.3	65.1	18.6	-65.1	0.00	0.00	
1,500.0	5.28	15.94	1,496.8	74.0	21.1	-74.0	0.00	0.00	
1,600.0	5.28	15.94	1,596.4	82.8	23.6	-82.8	0.00	0.00	
1,700.0	5.28	15.94	1,696.0	91.7	26.2	-91.7	0.00	0.00	
1,800.0	5.28	15.94	1,795.6	100.5	28.7	-100.5	0.00	0.00	
1,900.0	5.28	15.94	1,895.1	109.4	31.2	-109.4	0.00	0.00	
2,000.0	5.28	15.94	1,994.7	118.2	33.8	-118.2	0.00	0.00	
2,100.0	5.28	15.94	2,094.3	127.1	36.3	-127.1	0.00	0.00	
2,200.0	5.28	15.94	2,193.9	135.9	38.8	-135.9	0.00	0.00	
2,300.0	5.28	15.94	2,293.4	144.7	41.3	-144.7	0.00	0.00	
2,400.0	5.28	15.94	2,393.0	153.6	43.9	-153.6	0.00	0.00	
2,500.0	5.28	15.94	2,492.6	162.4	46.4	-162.4	0.00	0.00	
2,600.0	5.28	15.94	2,592.2	171.3	48.9	-171.3	0.00	0.00	
2,700.0	5.28	15.94	2,691.7	180.1	51.4	-180.1	0.00	0.00	
2,800.0	5.28	15.94	2,791.3	189.0	54.0	-189.0	0.00	0.00	
2,900.0	5.28	15.94	2,890.9	197.8	56.5	-197.8	0.00	0.00	
3,000.0	5.28	15.94	2,990.5	206.7	59.0	-206.7	0.00	0.00	
3,100.0	5.28	15.94	3,090.0	215.5	61.5	-215.5	0.00	0.00	
3,200.0	5.28	15.94	3,189.6	224.4	64.1	-224.4	0.00	0.00	
3,300.0	5.28	15.94	3,289.2	233.2	66.6	-233.2	0.00	0.00	
3,400.0	5.28	15.94	3,388.8	242.0	69.1	-242.0	0.00	0.00	
3,500.0	5.28	15.94	3,488.3	250.9	71.6	-250.9	0.00	0.00	
3,600.0	5.28	15.94	3,587.9	259.7	74.2	-259.7	0.00	0.00	
3,700.0	5.28	15.94	3,687.5	268.6	76.7	-268.6	0.00	0.00	
3,800.0	5.28	15.94	3,787.1	277.4	79.2	-277.4	0.00	0.00	
3,900.0	5.28	15.94	3,886.6	286.3	81.7	-286.3	0.00	0.00	
4,000.0	5.28	15.94	3,986.2	295.1	84.3	-295.1	0.00	0.00	
4,100.0	5.28	15.94	4,085.8	304.0	86.8	-304.0	0.00	0.00	
4,200.0	5.28	15.94	4,185.4	312.8	89.3	-312.8	0.00	0.00	
4,300.0	5.28	15.94	4,285.0	321.7	91.9	-321.7	0.00	0.00	
4,400.0	5.28	15.94	4,384.5	330.5	94.4	-330.5	0.00	0.00	
4,464.7	5.28	15.94	4,449.0	336.2	96.0	-336.2	0.00	0.00	Sussex
4,500.0	5.28	15.94	4,484.1	339.4	96.9	-339.4	0.00	0.00	
4,600.0	5.28	15.94	4,583.7	348.2	99.4	-348.2	0.00	0.00	
4,700.0	5.28	15.94	4,683.3	357.0	102.0	-357.0	0.00	0.00	
4,746.9	5.28	15.94	4,730.0	361.2	103.1	-361.2	0.00	0.00	Sussex Marker

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site:	S7-T1N-R68W (Woolley-Sosa)	North Reference:	True
Well:	Woolley-Sosa 2C-7H-E168	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	5.28	15.94	4,782.8	365.9	104.5	-365.9	0.00	0.00	
4,900.0	5.28	15.94	4,882.4	374.7	107.0	-374.7	0.00	0.00	
5,000.0	5.28	15.94	4,982.0	383.6	109.5	-383.6	0.00	0.00	
5,044.2	5.28	15.94	5,026.0	387.5	110.6	-387.5	0.00	0.00	Shannon
5,100.0	5.28	15.94	5,081.6	392.4	112.1	-392.4	0.00	0.00	
5,200.0	5.28	15.94	5,181.1	401.3	114.6	-401.3	0.00	0.00	
5,300.0	5.28	15.94	5,280.7	410.1	117.1	-410.1	0.00	0.00	
5,400.0	5.28	15.94	5,380.3	419.0	119.6	-419.0	0.00	0.00	
5,500.0	5.28	15.94	5,479.9	427.8	122.2	-427.8	0.00	0.00	
5,600.0	5.28	15.94	5,579.4	436.7	124.7	-436.7	0.00	0.00	
5,700.0	5.28	15.94	5,679.0	445.5	127.2	-445.5	0.00	0.00	
5,800.0	5.28	15.94	5,778.6	454.4	129.7	-454.4	0.00	0.00	
5,900.0	5.28	15.94	5,878.2	463.2	132.3	-463.2	0.00	0.00	
6,000.0	5.28	15.94	5,977.7	472.0	134.8	-472.0	0.00	0.00	
6,100.0	5.28	15.94	6,077.3	480.9	137.3	-480.9	0.00	0.00	
6,200.0	5.28	15.94	6,176.9	489.7	139.8	-489.7	0.00	0.00	
6,300.0	5.28	15.94	6,276.5	498.6	142.4	-498.6	0.00	0.00	
6,400.0	5.28	15.94	6,376.0	507.4	144.9	-507.4	0.00	0.00	
6,500.0	5.28	15.94	6,475.6	516.3	147.4	-516.3	0.00	0.00	
6,524.5	5.28	15.94	6,500.0	518.4	148.0	-518.4	0.00	0.00	Teepee Buttes (*if present)
6,600.0	5.28	15.94	6,575.2	525.1	149.9	-525.1	0.00	0.00	
6,700.0	5.28	15.94	6,674.8	534.0	152.5	-534.0	0.00	0.00	
6,800.0	5.28	15.94	6,774.4	542.8	155.0	-542.8	0.00	0.00	
6,900.0	5.28	15.94	6,873.9	551.7	157.5	-551.7	0.00	0.00	
7,000.0	5.28	15.94	6,973.5	560.5	160.1	-560.5	0.00	0.00	
7,100.0	5.28	15.94	7,073.1	569.4	162.6	-569.4	0.00	0.00	
7,162.7	5.28	15.94	7,135.5	574.9	164.2	-574.9	0.00	0.00	Start build/turn @ 7162' MD
7,200.0	1.98	47.11	7,172.7	577.0	165.1	-577.0	9.99	-8.83	
7,300.0	8.77	170.54	7,272.4	570.6	167.6	-570.6	10.00	6.79	
7,367.2	15.43	174.73	7,338.0	556.7	169.3	-556.7	10.00	9.92	Sharon Springs
7,400.0	18.71	175.70	7,369.4	547.1	170.1	-547.1	10.00	9.96	
7,413.4	20.04	176.01	7,382.0	542.6	170.4	-542.6	10.00	9.97	Niobrara
7,500.0	28.68	177.34	7,460.9	507.0	172.4	-507.0	10.00	9.98	
7,552.9	33.96	177.84	7,506.0	479.5	173.6	-479.5	10.00	9.99	B Chalk
7,589.9	37.66	178.12	7,536.0	457.9	174.3	-457.9	10.00	9.99	B Marl
7,600.0	38.67	178.18	7,544.0	451.7	174.5	-451.7	10.00	9.99	
7,699.7	48.64	178.72	7,616.0	382.9	176.3	-382.9	10.00	9.99	C Chalk
7,700.0	48.67	178.72	7,616.2	382.7	176.4	-382.7	10.00	9.99	
7,739.1	52.57	178.89	7,641.0	352.5	177.0	-352.5	10.00	9.99	C Marl
7,800.0	58.66	179.11	7,675.4	302.3	177.9	-302.3	10.00	10.00	
7,900.0	68.66	179.43	7,719.7	212.8	179.0	-212.8	10.00	10.00	
7,921.1	70.76	179.49	7,727.0	193.0	179.2	-193.0	10.00	10.00	Ft. Hayes
8,000.0	78.65	179.71	7,747.8	116.9	179.7	-116.9	10.00	10.00	
8,006.3	79.28	179.72	7,749.0	110.8	179.7	-110.8	10.00	10.00	Codell
8,100.0	88.65	179.97	7,758.8	17.7	180.0	-17.7	10.00	10.00	
8,113.5	90.00	180.00	7,759.0	4.2	180.0	-4.2	10.00	9.99	LP @ 7759' TVD; 90°
8,200.0	90.00	180.00	7,759.0	-82.3	180.0	82.3	0.00	0.00	
8,300.0	90.00	180.00	7,759.0	-182.3	180.0	182.3	0.00	0.00	
8,400.0	90.00	180.00	7,759.0	-282.3	180.0	282.3	0.00	0.00	
8,500.0	90.00	180.00	7,759.0	-382.3	180.0	382.3	0.00	0.00	
8,600.0	90.00	180.00	7,759.0	-482.3	180.0	482.3	0.00	0.00	
8,700.0	90.00	180.00	7,759.0	-582.3	180.0	582.3	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site:	S7-T1N-R68W (Woolley-Sosa)	North Reference:	True
Well:	Woolley-Sosa 2C-7H-E168	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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
8,800.0	90.00	180.00	7,759.0	-682.3	180.0	682.3	0.00	0.00	
8,900.0	90.00	180.00	7,759.0	-782.3	180.0	782.3	0.00	0.00	
9,000.0	90.00	180.00	7,759.0	-882.3	180.0	882.3	0.00	0.00	
9,100.0	90.00	180.00	7,759.0	-982.3	180.0	982.3	0.00	0.00	
9,200.0	90.00	180.00	7,759.0	-1,082.3	180.0	1,082.3	0.00	0.00	
9,300.0	90.00	180.00	7,759.0	-1,182.3	180.0	1,182.3	0.00	0.00	
9,400.0	90.00	180.00	7,759.0	-1,282.3	180.0	1,282.3	0.00	0.00	
9,500.0	90.00	180.00	7,759.0	-1,382.3	180.0	1,382.3	0.00	0.00	
9,600.0	90.00	180.00	7,759.0	-1,482.3	180.0	1,482.3	0.00	0.00	
9,700.0	90.00	180.00	7,759.0	-1,582.3	180.0	1,582.3	0.00	0.00	
9,800.0	90.00	180.00	7,759.0	-1,682.3	180.0	1,682.3	0.00	0.00	
9,900.0	90.00	180.00	7,759.0	-1,782.3	180.0	1,782.3	0.00	0.00	
10,000.0	90.00	180.00	7,759.0	-1,882.3	180.0	1,882.3	0.00	0.00	
10,100.0	90.00	180.00	7,759.0	-1,982.3	180.0	1,982.3	0.00	0.00	
10,200.0	90.00	180.00	7,759.0	-2,082.3	180.0	2,082.3	0.00	0.00	
10,300.0	90.00	180.00	7,759.0	-2,182.3	180.0	2,182.3	0.00	0.00	
10,400.0	90.00	180.00	7,759.0	-2,282.3	180.0	2,282.3	0.00	0.00	
10,500.0	90.00	180.00	7,759.0	-2,382.3	180.0	2,382.3	0.00	0.00	
10,600.0	90.00	180.00	7,759.0	-2,482.3	180.0	2,482.3	0.00	0.00	
10,700.0	90.00	180.00	7,759.0	-2,582.3	180.0	2,582.3	0.00	0.00	
10,800.0	90.00	180.00	7,759.0	-2,682.3	180.0	2,682.3	0.00	0.00	
10,900.0	90.00	180.00	7,759.0	-2,782.3	180.0	2,782.3	0.00	0.00	
11,000.0	90.00	180.00	7,759.0	-2,882.3	180.0	2,882.3	0.00	0.00	
11,100.0	90.00	180.00	7,759.0	-2,982.3	180.0	2,982.3	0.00	0.00	
11,200.0	90.00	180.00	7,759.0	-3,082.3	180.0	3,082.3	0.00	0.00	
11,300.0	90.00	180.00	7,759.0	-3,182.3	180.0	3,182.3	0.00	0.00	
11,400.0	90.00	180.00	7,759.0	-3,282.3	180.0	3,282.3	0.00	0.00	
11,500.0	90.00	180.00	7,759.0	-3,382.3	180.0	3,382.3	0.00	0.00	
11,600.0	90.00	180.00	7,759.0	-3,482.3	180.0	3,482.3	0.00	0.00	
11,700.0	90.00	180.00	7,759.0	-3,582.3	180.0	3,582.3	0.00	0.00	
11,800.0	90.00	180.00	7,759.0	-3,682.3	180.0	3,682.3	0.00	0.00	
11,900.0	90.00	180.00	7,759.0	-3,782.3	180.0	3,782.3	0.00	0.00	
12,000.0	90.00	180.00	7,759.0	-3,882.3	180.0	3,882.3	0.00	0.00	
12,100.0	90.00	180.00	7,759.0	-3,982.3	180.0	3,982.3	0.00	0.00	
12,200.0	90.00	180.00	7,759.0	-4,082.3	180.0	4,082.3	0.00	0.00	
12,300.0	90.00	180.00	7,759.0	-4,182.3	180.0	4,182.3	0.00	0.00	
12,400.0	90.00	180.00	7,759.0	-4,282.3	180.0	4,282.3	0.00	0.00	
12,500.0	90.00	180.00	7,759.0	-4,382.3	180.0	4,382.3	0.00	0.00	
12,600.0	90.00	180.00	7,759.0	-4,482.3	180.0	4,482.3	0.00	0.00	
12,700.0	90.00	180.00	7,759.0	-4,582.3	180.0	4,582.3	0.00	0.00	
12,800.0	90.00	180.00	7,759.0	-4,682.3	180.0	4,682.3	0.00	0.00	
12,900.0	90.00	180.00	7,759.0	-4,782.3	180.0	4,782.3	0.00	0.00	
13,000.0	90.00	180.00	7,759.0	-4,882.3	180.0	4,882.3	0.00	0.00	
13,100.0	90.00	180.00	7,759.0	-4,982.3	180.0	4,982.3	0.00	0.00	
13,200.0	90.00	180.00	7,759.0	-5,082.3	180.0	5,082.3	0.00	0.00	
13,300.0	90.00	180.00	7,759.0	-5,182.3	180.0	5,182.3	0.00	0.00	
13,400.0	90.00	180.00	7,759.0	-5,282.3	180.0	5,282.3	0.00	0.00	
13,500.0	90.00	180.00	7,759.0	-5,382.3	180.0	5,382.3	0.00	0.00	
13,600.0	90.00	180.00	7,759.0	-5,482.3	180.0	5,482.3	0.00	0.00	
13,700.0	90.00	180.00	7,759.0	-5,582.3	180.0	5,582.3	0.00	0.00	
13,800.0	90.00	180.00	7,759.0	-5,682.3	180.0	5,682.3	0.00	0.00	
13,900.0	90.00	180.00	7,759.0	-5,782.3	180.0	5,782.3	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site:	S7-T1N-R68W (Woolley-Sosa)	North Reference:	True
Well:	Woolley-Sosa 2C-7H-E168	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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
14,000.0	90.00	180.00	7,759.0	-5,882.3	180.0	5,882.3	0.00	0.00	
14,100.0	90.00	180.00	7,759.0	-5,982.3	180.0	5,982.3	0.00	0.00	
14,200.0	90.00	180.00	7,759.0	-6,082.3	180.0	6,082.3	0.00	0.00	
14,300.0	90.00	180.00	7,759.0	-6,182.3	180.0	6,182.3	0.00	0.00	
14,400.0	90.00	180.00	7,759.0	-6,282.3	180.0	6,282.3	0.00	0.00	
14,500.0	90.00	180.00	7,759.0	-6,382.3	180.0	6,382.3	0.00	0.00	
14,600.0	90.00	180.00	7,759.0	-6,482.3	180.0	6,482.3	0.00	0.00	
14,700.0	90.00	180.00	7,759.0	-6,582.3	180.0	6,582.3	0.00	0.00	
14,800.0	90.00	180.00	7,759.0	-6,682.3	180.0	6,682.3	0.00	0.00	
14,900.0	90.00	180.00	7,759.0	-6,782.3	180.0	6,782.3	0.00	0.00	
15,000.0	90.00	180.00	7,759.0	-6,882.3	180.0	6,882.3	0.00	0.00	
15,100.0	90.00	180.00	7,759.0	-6,982.3	180.0	6,982.3	0.00	0.00	
15,200.0	90.00	180.00	7,759.0	-7,082.3	180.0	7,082.3	0.00	0.00	
15,300.0	90.00	180.00	7,759.0	-7,182.3	180.0	7,182.3	0.00	0.00	
15,400.0	90.00	180.00	7,759.0	-7,282.3	180.0	7,282.3	0.00	0.00	
15,500.0	90.00	180.00	7,759.0	-7,382.3	180.0	7,382.3	0.00	0.00	
15,600.0	90.00	180.00	7,759.0	-7,482.3	180.0	7,482.3	0.00	0.00	
15,700.0	90.00	180.00	7,759.0	-7,582.3	180.0	7,582.3	0.00	0.00	
15,800.0	90.00	180.00	7,759.0	-7,682.3	180.0	7,682.3	0.00	0.00	
15,900.0	90.00	180.00	7,759.0	-7,782.3	180.0	7,782.3	0.00	0.00	
15,974.5	90.00	180.00	7,759.0	-7,856.8	180.0	7,856.8	0.00	0.00	TD at 15974.0

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									
Woolley-Sosa 2C-7H-E1	0.00	0.00	7,759.0	-7,856.8	180.0	1,259,594.10	3,125,257.95	40.045100	-105.052620
- plan hits target center									
- Point									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
419.0	419.0	Fox Hills - BASE			
4,464.7	4,449.0	Sussex			
4,746.9	4,730.0	Sussex Marker			
5,044.2	5,026.0	Shannon			
6,524.5	6,500.0	Teepee Buttes (*if present)			
7,367.2	7,338.0	Sharon Springs			
7,413.4	7,382.0	Niobrara			
7,552.9	7,506.0	B Chalk			
7,589.9	7,536.0	B Marl			
7,699.7	7,616.0	C Chalk			
7,739.1	7,641.0	C Marl			
7,921.1	7,727.0	Ft. Hayes			
8,006.3	7,749.0	Codell			

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site:	S7-T1N-R68W (Woolley-Sosa)	North Reference:	True
Well:	Woolley-Sosa 2C-7H-E168	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
400.0	400.0	0.0	0.0	KOP @ 400'
927.8	927.1	23.4	6.7	EOB; Inc=5.28°
7,162.7	7,135.5	574.9	164.2	Start build/turn @ 7162' MD
8,113.5	7,759.0	4.2	180.0	LP @ 7759' TVD; 90°
15,974.5	7,759.0	-7,856.8	180.0	TD at 15974.0



EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S7-T1N-R68W (Woolley-Sosa)

Woolley-Sosa 2C-7H-E168

HZ

Plan #1

Anticollision Report

28 June, 2013





Cathedral Energy Services
Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	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 6/28/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	15,974.0	Plan #1 (HZ)	Geolink MWD	Geolink MWD	



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S7-T1N-R68W (Woolley-Sosa)						
Sosa 11-18 - DD - DD	11,653.8	7,841.7	282.0	198.6	3.383	CC, ES, SF
Sosa 12-18 - DD - DD	13,288.0	7,891.8	278.9	163.5	2.417	CC, ES
Sosa 12-18 - DD - DD	13,300.0	7,891.8	279.2	163.6	2.415	SF
Sosa 21-18 - DD (Gyro) - DD						Out of range
Sosa 21-18 - DD (MWD) - DD						Out of range
Sosa 22-18 - DD - DD						Out of range
Sosa A #1 (Existing) - DD - DD	12,362.0	2,740.0	303.1	220.8	3.683	CC, ES
Sosa A #1 (Existing) - DD - DD	12,400.0	2,740.0	305.5	222.6	3.683	SF
THOMAS 14-7(EXISTING) - EXISTING - NO SURVEY						Out of range
THOMAS 24-7 (EXISTING) - ENCANA WELL - Plan #1						Out of range
THOMAS 24-7 (EXISTING) - ENCANA WELL - Plan #2						Out of range
THOMAS 24-7 (EXISTING) - ENCANA WELL - SURVEY						Out of range
THOMAS 24-7 (Existing) - Existing - NO SURVEYS						Out of range
THOMAS 2-8-7 (EXISTING) - ENCANA WELL - Plan #1	11,089.5	7,818.0	475.8	401.7	6.421	CC
THOMAS 2-8-7 (EXISTING) - ENCANA WELL - Plan #1	11,100.0	7,818.0	475.9	401.7	6.407	ES, SF
THOMAS 2-8-7 (EXISTING) - ENCANA WELL - SURVEY	11,058.4	7,820.6	468.5	395.4	6.404	CC, ES
THOMAS 2-8-7 (EXISTING) - ENCANA WELL - SURVEY	11,100.0	7,820.5	470.4	396.5	6.368	SF
THOMAS 33-7 (EXISTING) - ENCANA WELL - Plan #1						Out of range
THOMAS 33-7 (EXISTING) - ENCANA WELL - Plan #2						Out of range
THOMAS 33-7 (EXISTING) - ENCANA WELL - Plan #3						Out of range
THOMAS 33-7 (EXISTING) - ENCANA WELL - SURVEY						Out of range
Thomas 7-12 (Existing) - Existing - NO SURVEYS	9,032.8	7,735.0	301.2	265.0	8.322	CC, ES
Thomas 7-12 (Existing) - Existing - NO SURVEYS	9,100.0	7,735.0	308.6	271.5	8.312	SF
Thomas 7-14 (Existing) - Existing - NO SURVEYS						Out of range
THOMAS E UNIT 1 (EXISTING) - Existing - NO SURVEY						Out of range
THOMAS K UNIT 1 (EXISTING) - EXISTING - NO SURV						Out of range
Woolley-Sosa 2A-7H-E168 - Hz - Plan #1	200.0	200.0	10.0	9.4	16.370	CC, ES
Woolley-Sosa 2A-7H-E168 - Hz - Plan #1	400.0	399.7	12.6	11.3	9.585	SF
Woolley-Sosa 2B-7H-E168 - HZ - Plan #1	300.0	300.0	7.8	6.9	8.136	CC, ES
Woolley-Sosa 2B-7H-E168 - HZ - Plan #1	15,974.5	15,969.8	364.0	83.4	1.297	Level 3, SF
Woolley-Sosa 2D-7H-E168 - HZ - Plan #1	687.1	686.9	5.2	2.8	2.225	CC
Woolley-Sosa 2D-7H-E168 - HZ - Plan #1	700.0	699.8	5.2	2.8	2.187	ES
Woolley-Sosa 2D-7H-E168 - HZ - Plan #1	15,974.5	15,993.8	327.6	46.9	1.167	Level 2, SF
Woolley-Sosa 2E-7H-E168 - HZ - Plan #1	620.7	620.6	19.3	17.2	9.263	CC, ES
Woolley-Sosa 2E-7H-E168 - HZ - Plan #1	800.0	799.4	22.1	19.4	8.081	SF
Woolley-Sosa 2F-7H-E168 - HZ - Plan #1	744.5	744.2	22.7	20.2	8.957	CC, ES
Woolley-Sosa 2F-7H-E168 - HZ - Plan #1	900.0	898.9	25.9	22.8	8.302	SF
Woolley-Sosa 2G-7H-E168 - HZ - Plan #1	704.5	704.4	28.9	26.5	12.103	CC, ES
Woolley-Sosa 2G-7H-E168 - HZ - Plan #1	900.0	899.1	32.4	29.3	10.413	SF

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Sosa 11-18 - DD - DD												Offset Site Error:	0.0 ft
Survey Program: 811-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
11,300.0	7,759.0	7,840.0	7,769.0	59.4	20.3	89.60	-3,536.1	-102.0	452.4	375.1	77.31	5.852	CC, ES, SF
11,400.0	7,759.0	7,840.5	7,769.5	61.1	20.3	89.70	-3,536.1	-102.0	379.4	300.3	79.02	4.801	
11,500.0	7,759.0	7,841.0	7,770.0	62.8	20.3	89.79	-3,536.1	-102.0	321.2	240.5	80.72	3.979	
11,600.0	7,759.0	7,841.5	7,770.5	64.5	20.3	89.89	-3,536.1	-102.0	287.1	204.6	82.43	3.482	
11,653.8	7,759.0	7,841.7	7,770.7	65.4	20.3	89.94	-3,536.1	-102.0	282.0	198.6	83.36	3.383	
11,700.0	7,759.0	7,841.9	7,770.9	66.2	20.3	89.99	-3,536.1	-102.0	285.7	201.6	84.15	3.396	
11,800.0	7,759.0	7,842.4	7,771.4	67.9	20.3	90.08	-3,536.1	-102.0	317.6	231.8	85.86	3.699	
11,900.0	7,759.0	7,842.9	7,771.9	69.6	20.3	90.18	-3,536.1	-102.0	374.4	286.8	87.58	4.274	
12,000.0	7,759.0	7,843.3	7,772.4	71.3	20.3	90.27	-3,536.1	-102.0	446.5	357.2	89.30	5.000	

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Sosa 12-18 - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 56-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)		Total Uncertainty Axis	Separation Factor	
12,900.0	7,759.0	7,891.6	7,772.8	86.9	24.0	90.36	-5,170.4	-99.0	477.9	369.2	108.69	4.397		
13,000.0	7,759.0	7,891.6	7,772.8	88.6	24.0	90.37	-5,170.4	-99.0	401.0	290.6	110.42	3.631		
13,100.0	7,759.0	7,891.7	7,772.9	90.3	24.0	90.38	-5,170.4	-99.0	336.4	224.3	112.15	3.000		
13,200.0	7,759.0	7,891.7	7,772.9	92.1	24.0	90.39	-5,170.4	-99.0	292.5	178.6	113.88	2.568		
13,288.0	7,759.0	7,891.8	7,773.0	93.6	24.0	90.40	-5,170.4	-98.9	278.9	163.5	115.41	2.417 CC, ES		
13,300.0	7,759.0	7,891.8	7,773.0	93.8	24.0	90.40	-5,170.4	-98.9	279.2	163.6	115.62	2.415 SF		
13,400.0	7,759.0	7,891.8	7,773.0	95.5	24.0	90.41	-5,170.4	-98.9	300.6	183.2	117.35	2.561		
13,500.0	7,759.0	7,891.9	7,773.1	97.3	24.0	90.42	-5,170.4	-98.9	350.3	231.2	119.09	2.942		
13,600.0	7,759.0	7,891.9	7,773.1	99.0	24.0	90.43	-5,170.4	-98.9	418.5	297.6	120.82	3.463		
13,700.0	7,759.0	7,892.0	7,773.2	100.7	24.0	90.44	-5,170.4	-98.9	497.5	374.9	122.56	4.059		

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Sosa A #1 (Existing) - DD - DD													Offset Site Error: 0.0 ft
Survey Program: 9000-MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
12,000.0	7,759.0	2,740.0	2,740.0	71.3	4.8	-90.00	-4,244.3	483.1	472.2	396.1	76.06	6.207	
12,100.0	7,759.0	2,740.0	2,740.0	73.1	4.8	-90.00	-4,244.3	483.1	400.7	322.9	77.78	5.151	
12,200.0	7,759.0	2,740.0	2,740.0	74.8	4.8	-90.00	-4,244.3	483.1	343.7	264.2	79.50	4.323	
12,300.0	7,759.0	2,740.0	2,740.0	76.5	4.8	-90.00	-4,244.3	483.1	309.4	228.2	81.23	3.809	
12,362.0	7,759.0	2,740.0	2,740.0	77.6	4.8	-90.00	-4,244.3	483.1	303.1	220.8	82.30	3.683 CC, ES	
12,400.0	7,759.0	2,740.0	2,740.0	78.2	4.8	-90.00	-4,244.3	483.1	305.5	222.6	82.95	3.683 SF	
12,500.0	7,759.0	2,740.0	2,740.0	80.0	4.8	-90.00	-4,244.3	483.1	333.1	248.4	84.68	3.933	
12,600.0	7,759.0	2,740.0	2,740.0	81.7	4.8	-90.00	-4,244.3	483.1	385.4	299.0	86.41	4.460	
12,700.0	7,759.0	2,740.0	2,740.0	83.4	4.8	-90.00	-4,244.3	483.1	454.0	365.9	88.14	5.152	

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
S7-T1N-R68W (Woolley-Sosa) - THOMAS 2-8-7 (EXISTING) - ENCANA WELL - Plan #1												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)			
11,000.0	7,759.0	7,818.0	7,758.0	54.3	19.9	-90.00	-2,971.9	655.8	484.2	411.6	72.59	6.670	
11,089.5	7,759.0	7,818.0	7,758.0	55.8	19.9	-90.00	-2,971.9	655.8	475.8	401.7	74.10	6.421 CC	
11,100.0	7,759.0	7,818.0	7,758.0	56.0	19.9	-90.00	-2,971.9	655.8	475.9	401.7	74.28	6.407 ES, SF	
11,200.0	7,759.0	7,818.0	7,758.0	57.7	19.9	-90.00	-2,971.9	655.8	488.5	412.5	75.98	6.429	



Cathedral Energy Services
Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - THOMAS 2-8-7 (EXISTING) - ENCANA WELL - SURVEYS												Offset Site Error:	0.0 ft
Survey Program: 838-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)			
10,900.0	7,759.0	7,821.0	7,757.2	52.6	19.6	-89.90	-2,940.7	648.5	494.6	424.1	70.48	7.017	
11,000.0	7,759.0	7,820.7	7,756.9	54.3	19.6	-89.87	-2,940.7	648.5	472.2	400.0	72.17	6.542	
11,058.4	7,759.0	7,820.6	7,756.8	55.3	19.6	-89.85	-2,940.7	648.5	468.5	395.4	73.16	6.404 CC, ES	
11,100.0	7,759.0	7,820.5	7,756.7	56.0	19.6	-89.84	-2,940.7	648.5	470.4	396.5	73.87	6.368 SF	
11,200.0	7,759.0	7,820.3	7,756.5	57.7	19.6	-89.81	-2,940.7	648.5	489.5	413.9	75.57	6.477	



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Thomas 7-12 (Existing) - Existing - NO SURVEYS													Offset Site Error: 0.0 ft
Survey Program: 7894-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
8,700.0	7,759.0	7,735.0	7,735.0	18.7	13.5	90.00	-915.2	-121.2	448.9	417.0	31.95	14.049	
8,800.0	7,759.0	7,735.0	7,735.0	19.9	13.5	90.00	-915.2	-121.2	380.7	347.6	33.14	11.488	
8,900.0	7,759.0	7,735.0	7,735.0	21.1	13.5	90.00	-915.2	-121.2	329.2	294.8	34.41	9.568	
9,000.0	7,759.0	7,735.0	7,735.0	22.5	13.5	90.00	-915.2	-121.2	303.0	267.3	35.74	8.478	
9,032.8	7,759.0	7,735.0	7,735.0	22.9	13.5	90.00	-915.2	-121.2	301.2	265.0	36.19	8.322 CC, ES	
9,100.0	7,759.0	7,735.0	7,735.0	23.8	13.5	90.00	-915.2	-121.2	308.6	271.5	37.13	8.312 SF	
9,200.0	7,759.0	7,735.0	7,735.0	25.3	13.5	90.00	-915.2	-121.2	344.5	305.9	38.56	8.934	
9,300.0	7,759.0	7,735.0	7,735.0	26.7	13.5	90.00	-915.2	-121.2	402.6	362.6	40.03	10.057	
9,400.0	7,759.0	7,735.0	7,735.0	28.2	13.5	90.00	-915.2	-121.2	474.9	433.4	41.54	11.433	

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2A-7H-E168 - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.71	0.1	-10.0	10.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.71	0.1	-10.0	10.0	9.7	0.26	38.197		
200.0	200.0	200.0	200.0	0.3	0.3	-89.71	0.1	-10.0	10.0	9.4	0.61	16.370 CC, ES		
300.0	300.0	299.9	299.9	0.5	0.5	-86.18	0.7	-10.6	10.6	9.6	0.96	11.033		
400.0	400.0	399.7	399.6	0.7	0.7	-77.74	2.7	-12.3	12.6	11.3	1.31	9.585 SF		
500.0	500.0	499.4	499.3	0.8	0.8	-87.54	5.9	-15.1	16.2	14.6	1.66	9.757		
600.0	600.0	599.0	598.7	1.0	1.0	-86.22	10.5	-19.1	21.4	19.3	2.02	10.576		
700.0	699.9	698.4	697.8	1.2	1.3	-87.25	16.4	-24.2	27.9	25.5	2.39	11.683		
800.0	799.7	797.6	796.5	1.4	1.5	-89.21	23.5	-30.5	35.9	33.1	2.78	12.930		
900.0	899.4	896.8	895.1	1.6	1.7	-91.50	31.8	-37.8	45.3	42.1	3.19	14.206		
927.8	927.1	924.5	922.6	1.7	1.8	-92.29	34.2	-39.8	48.0	44.7	3.30	14.516		
1,000.0	998.9	996.3	993.9	1.8	2.0	-94.19	40.4	-45.3	55.0	51.4	3.62	15.223		
1,100.0	1,098.5	1,095.8	1,092.8	2.0	2.2	-96.15	49.0	-52.8	64.9	60.8	4.05	16.013		
1,200.0	1,198.1	1,195.3	1,191.6	2.3	2.5	-97.59	57.6	-60.3	74.8	70.3	4.49	16.642		
1,300.0	1,297.7	1,294.8	1,290.4	2.5	2.8	-98.69	66.2	-67.8	84.8	79.8	4.94	17.151		
1,400.0	1,397.3	1,394.3	1,389.3	2.7	3.0	-99.56	74.8	-75.3	94.7	89.3	5.39	17.571		
1,500.0	1,496.8	1,493.8	1,488.1	2.9	3.3	-100.27	83.4	-82.8	104.7	98.9	5.84	17.922		
1,600.0	1,596.4	1,593.2	1,586.9	3.2	3.5	-100.85	92.0	-90.3	114.7	108.4	6.30	18.220		
1,700.0	1,696.0	1,692.7	1,685.8	3.4	3.8	-101.34	100.6	-97.8	124.7	118.0	6.75	18.476		
1,800.0	1,795.6	1,792.2	1,784.6	3.6	4.1	-101.75	109.2	-105.3	134.7	127.5	7.21	18.697		
1,900.0	1,895.1	1,891.7	1,883.5	3.9	4.3	-102.11	117.8	-112.8	144.8	137.1	7.66	18.891		
2,000.0	1,994.7	1,991.2	1,982.3	4.1	4.6	-102.42	126.4	-120.3	154.8	146.7	8.12	19.062		
2,100.0	2,094.3	2,090.7	2,081.1	4.3	4.8	-102.70	135.0	-127.8	164.8	156.3	8.58	19.213		
2,200.0	2,193.9	2,190.2	2,180.0	4.6	5.1	-102.94	143.6	-135.4	174.9	165.8	9.04	19.349		
2,300.0	2,293.4	2,289.7	2,278.8	4.8	5.4	-103.15	152.2	-142.9	184.9	175.4	9.50	19.470		
2,400.0	2,393.0	2,389.2	2,377.6	5.0	5.6	-103.35	160.8	-150.4	195.0	185.0	9.96	19.581		
2,500.0	2,492.6	2,488.7	2,476.5	5.3	5.9	-103.52	169.4	-157.9	205.0	194.6	10.42	19.680		
2,600.0	2,592.2	2,588.2	2,575.3	5.5	6.2	-103.68	178.0	-165.4	215.1	204.2	10.88	19.771		
2,700.0	2,691.7	2,687.7	2,674.1	5.7	6.4	-103.83	186.6	-172.9	225.1	213.8	11.34	19.855		
2,800.0	2,791.3	2,787.2	2,773.0	6.0	6.7	-103.96	195.2	-180.4	235.2	223.4	11.80	19.931		
2,900.0	2,890.9	2,886.6	2,871.8	6.2	6.9	-104.08	203.8	-187.9	245.2	232.9	12.26	20.002		
3,000.0	2,990.5	2,986.1	2,970.6	6.5	7.2	-104.19	212.4	-195.4	255.3	242.5	12.72	20.067		
3,100.0	3,090.0	3,085.6	3,069.5	6.7	7.5	-104.29	221.0	-202.9	265.3	252.1	13.18	20.128		
3,200.0	3,189.6	3,185.1	3,168.3	6.9	7.7	-104.39	229.6	-210.4	275.4	261.7	13.64	20.184		
3,300.0	3,289.2	3,284.6	3,267.1	7.2	8.0	-104.48	238.2	-217.9	285.4	271.3	14.10	20.236		
3,400.0	3,388.8	3,384.1	3,366.0	7.4	8.3	-104.56	246.8	-225.4	295.5	280.9	14.57	20.285		
3,500.0	3,488.3	3,483.6	3,464.8	7.6	8.5	-104.64	255.4	-232.9	305.5	290.5	15.03	20.331		
3,600.0	3,587.9	3,583.1	3,563.7	7.9	8.8	-104.71	264.0	-240.5	315.6	300.1	15.49	20.374		
3,700.0	3,687.5	3,682.6	3,662.5	8.1	9.1	-104.78	272.6	-248.0	325.6	309.7	15.95	20.415		
3,800.0	3,787.1	3,782.1	3,761.3	8.3	9.3	-104.84	281.2	-255.5	335.7	319.3	16.41	20.453		
3,900.0	3,886.6	3,881.6	3,860.2	8.6	9.6	-104.90	289.8	-263.0	345.8	328.9	16.88	20.489		
4,000.0	3,986.2	3,981.1	3,959.0	8.8	9.9	-104.96	298.4	-270.5	355.8	338.5	17.34	20.523		
4,100.0	4,085.8	4,080.6	4,057.8	9.0	10.1	-105.01	307.0	-278.0	365.9	348.1	17.80	20.555		
4,200.0	4,185.4	4,180.0	4,156.7	9.3	10.4	-105.06	315.6	-285.5	375.9	357.7	18.26	20.586		
4,300.0	4,285.0	4,279.5	4,255.5	9.5	10.6	-105.11	324.2	-293.0	386.0	367.3	18.72	20.615		
4,400.0	4,384.5	4,379.0	4,354.3	9.8	10.9	-105.16	332.8	-300.5	396.1	376.9	19.19	20.642		
4,500.0	4,484.1	4,478.5	4,453.2	10.0	11.2	-105.20	341.4	-308.0	406.1	386.5	19.65	20.668		
4,600.0	4,583.7	4,578.0	4,552.0	10.2	11.4	-105.24	350.0	-315.5	416.2	396.1	20.11	20.693		
4,700.0	4,683.3	4,677.5	4,650.8	10.5	11.7	-105.28	358.5	-323.0	426.2	405.7	20.57	20.717		
4,800.0	4,782.8	4,777.0	4,749.7	10.7	12.0	-105.32	367.1	-330.5	436.3	415.3	21.04	20.740		
4,900.0	4,882.4	4,876.5	4,848.5	10.9	12.2	-105.36	375.7	-338.1	446.4	424.9	21.50	20.762		
5,000.0	4,982.0	4,976.0	4,947.4	11.2	12.5	-105.39	384.3	-345.6	456.4	434.5	21.96	20.782		

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



Cathedral Energy Services
Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2A-7H-E168 - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
5,100.0	5,081.6	5,075.5	5,046.2	11.4	12.8	-105.42	392.9	-353.1	466.5	444.0	22.42	20.802		
5,200.0	5,181.1	5,175.0	5,145.0	11.7	13.0	-105.45	401.5	-360.6	476.5	453.6	22.89	20.821		
5,300.0	5,280.7	5,274.5	5,243.9	11.9	13.3	-105.48	410.1	-368.1	486.6	463.2	23.35	20.840		
5,400.0	5,380.3	5,374.0	5,342.7	12.1	13.6	-105.51	418.7	-375.6	496.7	472.8	23.81	20.857		



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2B-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft			
Survey Program: 0-Geolink MWD															Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor				
0.0	0.0	0.0	0.0	0.0	0.0	-39.52	6.0	-5.0	7.8							
100.0	100.0	100.0	100.0	0.1	0.1	-39.52	6.0	-5.0	7.8	7.5	0.26	29.833				
200.0	200.0	200.0	200.0	0.3	0.3	-39.52	6.0	-5.0	7.8	7.2	0.61	12.786				
300.0	300.0	300.0	300.0	0.5	0.5	-39.52	6.0	-5.0	7.8	6.9	0.96	8.136 CC, ES				
400.0	400.0	399.9	399.9	0.7	0.7	-37.20	6.9	-5.2	8.6	7.3	1.31	6.582				
500.0	500.0	499.7	499.6	0.8	0.8	-51.77	9.4	-5.9	10.5	8.9	1.66	6.350				
600.0	600.0	599.5	599.3	1.0	1.0	-54.27	13.5	-7.1	13.0	11.0	2.01	6.474				
700.0	699.9	699.2	698.9	1.2	1.2	-58.56	19.4	-8.8	16.2	13.8	2.37	6.808				
800.0	799.7	798.8	798.2	1.4	1.4	-63.35	26.9	-10.9	20.0	17.3	2.75	7.285				
900.0	899.4	898.7	897.6	1.6	1.6	-68.78	35.5	-13.4	24.3	21.1	3.15	7.704				
927.8	927.1	926.5	925.3	1.7	1.7	-70.62	37.9	-14.1	25.4	22.1	3.27	7.769				
1,000.0	998.9	998.5	997.1	1.8	1.9	-75.04	44.2	-15.9	28.4	24.8	3.58	7.920				
1,100.0	1,098.5	1,098.4	1,096.6	2.0	2.1	-79.81	52.8	-18.3	32.7	28.7	4.02	8.126				
1,200.0	1,198.1	1,198.3	1,196.0	2.3	2.3	-83.45	61.5	-20.8	37.2	32.7	4.47	8.317				
1,300.0	1,297.7	1,298.2	1,295.5	2.5	2.5	-86.30	70.1	-23.3	41.8	36.9	4.92	8.490				
1,400.0	1,397.3	1,398.0	1,395.0	2.7	2.8	-88.58	78.8	-25.8	46.5	41.1	5.38	8.644				
1,500.0	1,496.8	1,497.9	1,494.4	2.9	3.0	-90.44	87.4	-28.2	51.2	45.4	5.83	8.781				
1,600.0	1,596.4	1,597.8	1,593.9	3.2	3.2	-91.98	96.1	-30.7	56.0	49.7	6.29	8.904				
1,700.0	1,696.0	1,697.7	1,693.4	3.4	3.5	-93.28	104.7	-33.2	60.8	54.1	6.75	9.013				
1,800.0	1,795.6	1,797.5	1,792.8	3.6	3.7	-94.38	113.4	-35.7	65.7	58.5	7.21	9.112				
1,900.0	1,895.1	1,897.4	1,892.3	3.9	3.9	-95.34	122.0	-38.1	70.6	62.9	7.67	9.200				
2,000.0	1,994.7	1,997.3	1,991.8	4.1	4.2	-96.17	130.7	-40.6	75.5	67.3	8.13	9.280				
2,100.0	2,094.3	2,097.1	2,091.2	4.3	4.4	-96.90	139.4	-43.1	80.4	71.8	8.59	9.353				
2,200.0	2,193.9	2,197.0	2,190.7	4.6	4.6	-97.54	148.0	-45.5	85.3	76.2	9.05	9.420				
2,300.0	2,293.4	2,296.9	2,290.2	4.8	4.9	-98.12	156.7	-48.0	90.2	80.7	9.51	9.480				
2,400.0	2,393.0	2,396.8	2,389.6	5.0	5.1	-98.63	165.3	-50.5	95.1	85.2	9.98	9.536				
2,500.0	2,492.6	2,496.6	2,489.1	5.3	5.3	-99.10	174.0	-53.0	100.1	89.6	10.44	9.587				
2,600.0	2,592.2	2,596.5	2,588.6	5.5	5.6	-99.52	182.6	-55.4	105.0	94.1	10.90	9.635				
2,700.0	2,691.7	2,696.4	2,688.1	5.7	5.8	-99.90	191.3	-57.9	110.0	98.6	11.36	9.678				
2,800.0	2,791.3	2,796.3	2,787.5	6.0	6.0	-100.25	199.9	-60.4	114.9	103.1	11.82	9.719				
2,900.0	2,890.9	2,896.1	2,887.0	6.2	6.3	-100.57	208.6	-62.9	119.9	107.6	12.29	9.757				
3,000.0	2,990.5	2,996.0	2,986.5	6.5	6.5	-100.87	217.2	-65.3	124.9	112.1	12.75	9.792				
3,100.0	3,090.0	3,095.9	3,085.9	6.7	6.7	-101.14	225.9	-67.8	129.8	116.6	13.21	9.826				
3,200.0	3,189.6	3,195.8	3,185.4	6.9	7.0	-101.39	234.5	-70.3	134.8	121.1	13.68	9.857				
3,300.0	3,289.2	3,295.6	3,284.9	7.2	7.2	-101.63	243.2	-72.7	139.8	125.6	14.14	9.886				
3,400.0	3,388.8	3,395.5	3,384.3	7.4	7.4	-101.85	251.8	-75.2	144.7	130.1	14.60	9.913				
3,500.0	3,488.3	3,495.4	3,483.8	7.6	7.7	-102.05	260.5	-77.7	149.7	134.6	15.06	9.939				
3,600.0	3,587.9	3,595.3	3,583.3	7.9	7.9	-102.24	269.2	-80.2	154.7	139.2	15.53	9.963				
3,700.0	3,687.5	3,695.1	3,682.7	8.1	8.1	-102.42	277.8	-82.6	159.7	143.7	15.99	9.986				
3,800.0	3,787.1	3,795.0	3,782.2	8.3	8.4	-102.59	286.5	-85.1	164.7	148.2	16.45	10.008				
3,900.0	3,886.6	3,894.9	3,881.7	8.6	8.6	-102.75	295.1	-87.6	169.6	152.7	16.92	10.029				
4,000.0	3,986.2	3,994.8	3,981.1	8.8	8.8	-102.90	303.8	-90.1	174.6	157.2	17.38	10.048				
4,100.0	4,085.8	4,094.6	4,080.6	9.0	9.1	-103.04	312.4	-92.5	179.6	161.8	17.84	10.067				
4,200.0	4,185.4	4,194.5	4,180.1	9.3	9.3	-103.17	321.1	-95.0	184.6	166.3	18.30	10.085				
4,300.0	4,285.0	4,294.4	4,279.5	9.5	9.5	-103.30	329.7	-97.5	189.6	170.8	18.77	10.101				
4,400.0	4,384.5	4,394.3	4,379.0	9.8	9.8	-103.42	338.4	-99.9	194.6	175.3	19.23	10.118				
4,500.0	4,484.1	4,494.1	4,478.5	10.0	10.0	-103.53	347.0	-102.4	199.6	179.9	19.69	10.133				
4,600.0	4,583.7	4,594.0	4,578.0	10.2	10.2	-103.64	355.7	-104.9	204.5	184.4	20.16	10.148				
4,700.0	4,683.3	4,693.9	4,677.4	10.5	10.5	-103.74	364.3	-107.4	209.5	188.9	20.62	10.162				
4,800.0	4,782.8	4,793.8	4,776.9	10.7	10.7	-103.84	373.0	-109.8	214.5	193.4	21.08	10.175				
4,900.0	4,882.4	4,893.6	4,876.4	10.9	10.9	-103.93	381.6	-112.3	219.5	198.0	21.55	10.188				
5,000.0	4,982.0	4,993.5	4,975.8	11.2	11.2	-104.02	390.3	-114.8	224.5	202.5	22.01	10.201				

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2B-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,081.6	5,093.4	5,075.3	11.4	11.4	-104.11	399.0	-117.3	229.5	207.0	22.47	10.212		
5,200.0	5,181.1	5,193.3	5,174.8	11.7	11.6	-104.19	407.6	-119.7	234.5	211.6	22.94	10.224		
5,300.0	5,280.7	5,293.1	5,274.2	11.9	11.9	-104.27	416.3	-122.2	239.5	216.1	23.40	10.235		
5,400.0	5,380.3	5,393.0	5,373.7	12.1	12.1	-104.35	424.9	-124.7	244.5	220.6	23.86	10.246		
5,500.0	5,479.9	5,492.9	5,473.2	12.4	12.4	-104.42	433.6	-127.2	249.5	225.1	24.32	10.256		
5,600.0	5,579.4	5,592.8	5,572.6	12.6	12.6	-104.49	442.2	-129.6	254.5	229.7	24.79	10.266		
5,700.0	5,679.0	5,692.6	5,672.1	12.8	12.8	-104.56	450.9	-132.1	259.5	234.2	25.25	10.275		
5,800.0	5,778.6	5,792.5	5,771.6	13.1	13.1	-104.62	459.5	-134.6	264.5	238.7	25.71	10.284		
5,900.0	5,878.2	5,892.4	5,871.0	13.3	13.3	-104.68	468.2	-137.0	269.4	243.3	26.18	10.293		
6,000.0	5,977.7	5,992.3	5,970.5	13.5	13.5	-104.74	476.8	-139.5	274.4	247.8	26.64	10.302		
6,100.0	6,077.3	6,092.1	6,070.0	13.8	13.8	-104.80	485.5	-142.0	279.4	252.3	27.10	10.310		
6,200.0	6,176.9	6,192.0	6,169.4	14.0	14.0	-104.85	494.1	-144.5	284.4	256.9	27.57	10.318		
6,300.0	6,276.5	6,291.9	6,268.9	14.3	14.2	-104.91	502.8	-146.9	289.4	261.4	28.03	10.326		
6,400.0	6,376.0	6,391.8	6,368.4	14.5	14.5	-104.96	511.4	-149.4	294.4	265.9	28.49	10.333		
6,500.0	6,475.6	6,491.6	6,467.9	14.7	14.7	-105.01	520.1	-151.9	299.4	270.5	28.96	10.340		
6,600.0	6,575.2	6,591.5	6,567.3	15.0	14.9	-105.06	528.8	-154.4	304.4	275.0	29.42	10.347		
6,700.0	6,674.8	6,691.4	6,666.8	15.2	15.2	-105.11	537.4	-156.8	309.4	279.5	29.88	10.354		
6,800.0	6,774.4	6,791.3	6,766.3	15.4	15.4	-105.15	546.1	-159.3	314.4	284.1	30.35	10.361		
6,900.0	6,873.9	6,891.1	6,865.7	15.7	15.6	-105.20	554.7	-161.8	319.4	288.6	30.81	10.367		
7,000.0	6,973.5	6,991.0	6,965.2	15.9	15.9	-105.24	563.4	-164.2	324.4	293.1	31.27	10.373		
7,100.0	7,073.1	7,090.9	7,064.7	16.2	16.1	-105.28	572.0	-166.7	329.4	297.7	31.74	10.380		
7,162.7	7,135.6	7,153.6	7,127.1	16.3	16.2	-105.30	577.4	-168.3	332.6	300.5	32.03	10.383		
7,200.0	7,172.7	7,190.9	7,164.3	16.4	16.3	-136.54	580.0	-169.2	334.4	302.3	32.15	10.401		
7,250.0	7,222.7	7,241.1	7,214.5	16.4	16.4	112.18	579.7	-170.4	336.9	304.7	32.23	10.455		
7,300.0	7,272.4	7,291.4	7,264.5	16.4	16.4	99.89	575.0	-171.7	339.4	307.2	32.21	10.538		
7,350.0	7,321.4	7,341.8	7,314.1	16.3	16.3	96.32	566.0	-172.9	341.9	309.8	32.10	10.650		
7,400.0	7,369.4	7,392.2	7,362.6	16.2	16.2	94.58	552.6	-174.1	344.3	312.4	31.92	10.789		
7,450.0	7,416.0	7,442.7	7,409.9	16.1	16.1	93.53	534.9	-175.3	346.7	315.0	31.65	10.952		
7,500.0	7,460.9	7,493.2	7,455.5	16.0	16.0	92.80	513.2	-176.4	348.9	317.6	31.33	11.138		
7,550.0	7,503.6	7,543.8	7,499.0	15.8	15.8	92.26	487.5	-177.5	351.1	320.1	30.96	11.342		
7,600.0	7,544.0	7,594.5	7,540.1	15.6	15.6	91.83	458.0	-178.5	353.1	322.6	30.54	11.562		
7,650.0	7,581.6	7,645.1	7,578.6	15.4	15.4	91.48	424.9	-179.5	355.0	324.9	30.11	11.790		
7,700.0	7,616.2	7,695.9	7,613.9	15.2	15.2	91.19	388.6	-180.4	356.8	327.1	29.68	12.021		
7,750.0	7,647.5	7,746.6	7,646.0	15.0	15.0	90.94	349.2	-181.2	358.4	329.1	29.26	12.247		
7,800.0	7,675.4	7,797.4	7,674.4	14.8	14.8	90.73	307.2	-181.9	359.8	330.9	28.88	12.459		
7,850.0	7,699.5	7,848.3	7,699.0	14.6	14.6	90.55	262.7	-182.5	361.0	332.4	28.54	12.647		
7,900.0	7,719.7	7,899.1	7,719.6	14.5	14.5	90.40	216.3	-183.0	362.0	333.7	28.28	12.800		
7,950.0	7,735.8	7,949.9	7,736.0	14.4	14.4	90.27	168.2	-183.4	362.8	334.7	28.11	12.909		
8,000.0	7,747.8	8,000.8	7,748.1	14.4	14.4	90.16	118.8	-183.7	363.4	335.4	28.03	12.966		
8,050.0	7,755.5	8,051.6	7,755.7	14.4	14.4	90.07	68.6	-183.9	363.8	335.7	28.05	12.967		
8,100.0	7,758.8	8,102.4	7,758.9	14.4	14.4	90.01	17.8	-184.0	364.0	335.8	28.19	12.910		
8,113.5	7,759.0	8,116.1	7,759.0	14.5	14.5	90.00	4.2	-184.0	364.0	335.7	28.25	12.884		
8,200.0	7,759.0	8,202.6	7,759.0	14.7	14.7	90.00	-82.3	-184.0	364.0	335.2	28.79	12.643		
8,300.0	7,759.0	8,302.6	7,759.0	15.2	15.2	90.00	-182.3	-184.0	364.0	334.2	29.78	12.220		
8,400.0	7,759.0	8,402.6	7,759.0	15.9	15.9	90.00	-282.3	-184.0	364.0	332.8	31.15	11.685		
8,500.0	7,759.0	8,502.6	7,759.0	16.7	16.7	90.00	-382.3	-184.0	364.0	331.1	32.83	11.086		
8,600.0	7,759.0	8,602.6	7,759.0	17.6	17.7	90.00	-482.3	-184.0	364.0	329.2	34.79	10.463		
8,700.0	7,759.0	8,702.6	7,759.0	18.7	18.8	90.00	-582.3	-184.0	364.0	327.0	36.97	9.844		
8,800.0	7,759.0	8,802.6	7,759.0	19.9	20.0	90.00	-682.3	-184.0	364.0	324.6	39.35	9.249		
8,900.0	7,759.0	8,902.6	7,759.0	21.1	21.2	90.00	-782.3	-184.0	364.0	322.1	41.89	8.689		
9,000.0	7,759.0	9,002.6	7,759.0	22.5	22.5	90.00	-882.3	-184.0	364.0	319.4	44.56	8.169		
9,100.0	7,759.0	9,102.6	7,759.0	23.8	23.9	90.00	-982.3	-184.0	364.0	316.6	47.33	7.689		

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2B-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,200.0	7,759.0	9,202.6	7,759.0	25.3	25.3	90.00	-1,082.3	-184.0	364.0	313.8	50.20	7.250		
9,300.0	7,759.0	9,302.6	7,759.0	26.7	26.8	90.00	-1,182.3	-184.0	364.0	310.8	53.15	6.848		
9,400.0	7,759.0	9,402.6	7,759.0	28.2	28.3	90.00	-1,282.3	-184.0	364.0	307.8	56.16	6.480		
9,500.0	7,759.0	9,502.6	7,759.0	29.7	29.8	90.00	-1,382.3	-184.0	364.0	304.7	59.23	6.145		
9,600.0	7,759.0	9,602.6	7,759.0	31.3	31.4	90.00	-1,482.3	-184.0	364.0	301.6	62.34	5.838		
9,700.0	7,759.0	9,702.6	7,759.0	32.9	32.9	90.00	-1,582.3	-184.0	364.0	298.5	65.49	5.557		
9,800.0	7,759.0	9,802.6	7,759.0	34.4	34.5	90.00	-1,682.3	-184.0	364.0	295.3	68.68	5.299		
9,900.0	7,759.0	9,902.6	7,759.0	36.0	36.1	90.00	-1,782.3	-184.0	364.0	292.1	71.90	5.062		
10,000.0	7,759.0	10,002.6	7,759.0	37.7	37.7	90.00	-1,882.3	-184.0	364.0	288.8	75.14	4.844		
10,100.0	7,759.0	10,102.6	7,759.0	39.3	39.4	90.00	-1,982.3	-184.0	364.0	285.6	78.41	4.642		
10,200.0	7,759.0	10,202.6	7,759.0	40.9	41.0	90.00	-2,082.3	-184.0	364.0	282.3	81.69	4.455		
10,300.0	7,759.0	10,302.6	7,759.0	42.6	42.7	90.00	-2,182.3	-184.0	364.0	279.0	85.00	4.282		
10,400.0	7,759.0	10,402.6	7,759.0	44.2	44.3	90.00	-2,282.3	-184.0	364.0	275.6	88.32	4.121		
10,500.0	7,759.0	10,502.6	7,759.0	45.9	46.0	90.00	-2,382.3	-184.0	364.0	272.3	91.65	3.971		
10,600.0	7,759.0	10,602.6	7,759.0	47.6	47.7	90.00	-2,482.3	-184.0	364.0	269.0	95.00	3.831		
10,700.0	7,759.0	10,702.6	7,759.0	49.2	49.3	90.00	-2,582.3	-184.0	364.0	265.6	98.35	3.701		
10,800.0	7,759.0	10,802.6	7,759.0	50.9	51.0	90.00	-2,682.3	-184.0	364.0	262.2	101.72	3.578		
10,900.0	7,759.0	10,902.6	7,759.0	52.6	52.7	90.00	-2,782.3	-184.0	364.0	258.9	105.10	3.463		
11,000.0	7,759.0	11,002.6	7,759.0	54.3	54.4	90.00	-2,882.3	-184.0	364.0	255.5	108.48	3.355		
11,100.0	7,759.0	11,102.6	7,759.0	56.0	56.1	90.00	-2,982.3	-184.0	364.0	252.1	111.87	3.253		
11,200.0	7,759.0	11,202.6	7,759.0	57.7	57.8	90.00	-3,082.3	-184.0	364.0	248.7	115.27	3.157		
11,300.0	7,759.0	11,302.6	7,759.0	59.4	59.5	90.00	-3,182.3	-184.0	364.0	245.3	118.68	3.067		
11,400.0	7,759.0	11,402.6	7,759.0	61.1	61.2	90.00	-3,282.3	-184.0	364.0	241.9	122.09	2.981		
11,500.0	7,759.0	11,502.6	7,759.0	62.8	62.9	90.00	-3,382.3	-184.0	364.0	238.4	125.51	2.900		
11,600.0	7,759.0	11,602.6	7,759.0	64.5	64.6	90.00	-3,482.3	-184.0	364.0	235.0	128.93	2.823		
11,700.0	7,759.0	11,702.6	7,759.0	66.2	66.3	90.00	-3,582.3	-184.0	364.0	231.6	132.36	2.750		
11,800.0	7,759.0	11,802.6	7,759.0	67.9	68.0	90.00	-3,682.3	-184.0	364.0	228.2	135.79	2.680		
11,900.0	7,759.0	11,902.6	7,759.0	69.6	69.7	90.00	-3,782.3	-184.0	364.0	224.7	139.22	2.614		
12,000.0	7,759.0	12,002.6	7,759.0	71.3	71.5	90.00	-3,882.3	-184.0	364.0	221.3	142.66	2.551		
12,100.0	7,759.0	12,102.6	7,759.0	73.1	73.2	90.00	-3,982.3	-184.0	364.0	217.9	146.10	2.491		
12,200.0	7,759.0	12,202.6	7,759.0	74.8	74.9	90.00	-4,082.3	-184.0	364.0	214.4	149.55	2.434		
12,300.0	7,759.0	12,302.6	7,759.0	76.5	76.6	90.00	-4,182.3	-184.0	364.0	211.0	152.99	2.379		
12,400.0	7,759.0	12,402.6	7,759.0	78.2	78.3	90.00	-4,282.3	-184.0	364.0	207.5	156.44	2.326		
12,500.0	7,759.0	12,502.6	7,759.0	80.0	80.1	90.00	-4,382.3	-184.0	364.0	204.1	159.90	2.276		
12,600.0	7,759.0	12,602.6	7,759.0	81.7	81.8	90.00	-4,482.3	-184.0	364.0	200.6	163.35	2.228		
12,700.0	7,759.0	12,702.6	7,759.0	83.4	83.5	90.00	-4,582.3	-184.0	364.0	197.2	166.81	2.182		
12,800.0	7,759.0	12,802.6	7,759.0	85.1	85.2	90.00	-4,682.3	-184.0	364.0	193.7	170.27	2.138		
12,900.0	7,759.0	12,902.6	7,759.0	86.9	87.0	90.00	-4,782.3	-184.0	364.0	190.2	173.73	2.095		
13,000.0	7,759.0	13,002.6	7,759.0	88.6	88.7	90.00	-4,882.3	-184.0	364.0	186.8	177.19	2.054		
13,100.0	7,759.0	13,102.6	7,759.0	90.3	90.4	90.00	-4,982.3	-184.0	364.0	183.3	180.66	2.015		
13,200.0	7,759.0	13,202.6	7,759.0	92.1	92.2	90.00	-5,082.3	-184.0	364.0	179.8	184.12	1.977		
13,300.0	7,759.0	13,302.6	7,759.0	93.8	93.9	90.00	-5,182.3	-184.0	364.0	176.4	187.59	1.940		
13,400.0	7,759.0	13,402.6	7,759.0	95.5	95.6	90.00	-5,282.3	-184.0	364.0	172.9	191.06	1.905		
13,500.0	7,759.0	13,502.6	7,759.0	97.3	97.4	90.00	-5,382.3	-184.0	364.0	169.4	194.53	1.871		
13,600.0	7,759.0	13,602.6	7,759.0	99.0	99.1	90.00	-5,482.3	-184.0	364.0	166.0	198.00	1.838		
13,700.0	7,759.0	13,702.6	7,759.0	100.7	100.8	90.00	-5,582.3	-184.0	364.0	162.5	201.48	1.806		
13,800.0	7,759.0	13,802.6	7,759.0	102.5	102.6	90.00	-5,682.3	-184.0	364.0	159.0	204.95	1.776		
13,900.0	7,759.0	13,902.6	7,759.0	104.2	104.3	90.00	-5,782.3	-184.0	364.0	155.5	208.43	1.746		
14,000.0	7,759.0	14,002.6	7,759.0	105.9	106.0	90.00	-5,882.3	-184.0	364.0	152.1	211.90	1.718		
14,100.0	7,759.0	14,102.6	7,759.0	107.7	107.8	90.00	-5,982.3	-184.0	364.0	148.6	215.38	1.690		
14,200.0	7,759.0	14,202.6	7,759.0	109.4	109.5	90.00	-6,082.3	-184.0	364.0	145.1	218.86	1.663		
14,300.0	7,759.0	14,302.6	7,759.0	111.2	111.3	90.00	-6,182.3	-184.0	364.0	141.6	222.34	1.637		

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2B-7H-E168 - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Between Centres (ft)	Between Ellipses (ft)						
14,400.0	7,759.0	14,402.6	7,759.0	112.9	113.0	90.00	-6,282.3	-184.0	364.0	138.1	225.82	1.612		
14,500.0	7,759.0	14,502.6	7,759.0	114.6	114.7	90.00	-6,382.3	-184.0	364.0	134.7	229.30	1.587		
14,600.0	7,759.0	14,602.6	7,759.0	116.4	116.5	90.00	-6,482.3	-184.0	364.0	131.2	232.78	1.564		
14,700.0	7,759.0	14,702.6	7,759.0	118.1	118.2	90.00	-6,582.3	-184.0	364.0	127.7	236.27	1.540		
14,800.0	7,759.0	14,802.6	7,759.0	119.9	120.0	90.00	-6,682.3	-184.0	364.0	124.2	239.75	1.518		
14,900.0	7,759.0	14,902.6	7,759.0	121.6	121.7	90.00	-6,782.3	-184.0	364.0	120.7	243.23	1.496 Level 3		
15,000.0	7,759.0	15,002.6	7,759.0	123.3	123.5	90.00	-6,882.3	-184.0	364.0	117.2	246.72	1.475 Level 3		
15,100.0	7,759.0	15,102.6	7,759.0	125.1	125.2	90.00	-6,982.3	-184.0	364.0	113.8	250.20	1.455 Level 3		
15,200.0	7,759.0	15,202.6	7,759.0	126.8	126.9	90.00	-7,082.3	-184.0	364.0	110.3	253.69	1.435 Level 3		
15,300.0	7,759.0	15,302.6	7,759.0	128.6	128.7	90.00	-7,182.3	-184.0	364.0	106.8	257.18	1.415 Level 3		
15,400.0	7,759.0	15,402.6	7,759.0	130.3	130.4	90.00	-7,282.3	-184.0	364.0	103.3	260.67	1.396 Level 3		
15,500.0	7,759.0	15,502.6	7,759.0	132.1	132.2	90.00	-7,382.3	-184.0	364.0	99.8	264.15	1.378 Level 3		
15,600.0	7,759.0	15,602.6	7,759.0	133.8	133.9	90.00	-7,482.3	-184.0	364.0	96.3	267.64	1.360 Level 3		
15,700.0	7,759.0	15,702.6	7,759.0	135.6	135.7	90.00	-7,582.3	-184.0	364.0	92.8	271.13	1.342 Level 3		
15,800.0	7,759.0	15,802.6	7,759.0	137.3	137.4	90.00	-7,682.3	-184.0	364.0	89.3	274.62	1.325 Level 3		
15,900.0	7,759.0	15,902.6	7,759.0	139.0	139.1	90.00	-7,782.3	-184.0	364.0	85.8	278.11	1.309 Level 3		
15,941.4	7,759.0	15,944.0	7,759.0	139.8	139.9	90.00	-7,823.7	-184.0	364.0	84.4	279.56	1.302 Level 3		
15,974.5	7,759.0	15,969.8	7,759.0	140.3	140.3	90.00	-7,849.5	-184.0	364.0	83.4	280.58	1.297 Level 3, SF		



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2D-7H-E168 - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program:		0-Geolink MWD											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	40.09	6.0	5.0	7.8					
100.0	100.0	100.0	100.0	0.1	0.1	40.09	6.0	5.0	7.8	7.5	0.26	29.833		
200.0	200.0	200.0	200.0	0.3	0.3	40.09	6.0	5.0	7.8	7.2	0.61	12.786		
300.0	300.0	300.0	300.0	0.5	0.5	40.09	6.0	5.0	7.8	6.9	0.96	8.136		
400.0	400.0	400.0	400.0	0.7	0.7	40.09	6.0	5.0	7.8	6.5	1.31	5.967		
500.0	500.0	500.0	500.0	0.8	0.8	27.08	6.0	5.0	7.0	5.4	1.66	4.236		
600.0	600.0	599.9	599.9	1.0	1.0	38.51	6.7	5.6	5.7	3.7	2.01	2.825		
687.1	687.0	686.9	686.9	1.2	1.2	57.84	8.4	6.9	5.2	2.8	2.32	2.225 CC		
700.0	699.9	699.8	699.7	1.2	1.2	61.25	8.7	7.2	5.2	2.8	2.37	2.187 ES		
800.0	799.7	799.7	799.5	1.4	1.4	86.26	12.1	9.9	6.2	3.5	2.75	2.268		
900.0	899.4	899.6	899.3	1.6	1.6	101.93	16.9	13.7	8.8	5.6	3.15	2.785		
927.8	927.1	927.4	927.0	1.7	1.6	104.70	18.4	15.0	9.7	6.4	3.26	2.965		
1,000.0	998.9	999.5	998.9	1.8	1.8	107.75	23.0	18.6	12.2	8.6	3.56	3.421		
1,100.0	1,098.5	1,099.4	1,098.3	2.0	2.0	104.92	30.4	24.6	15.8	11.8	4.00	3.957		
1,200.0	1,198.1	1,199.3	1,197.5	2.3	2.2	98.51	39.2	31.6	19.8	15.4	4.46	4.450		
1,300.0	1,297.7	1,299.2	1,296.8	2.5	2.5	93.50	48.2	38.8	24.1	19.2	4.91	4.908		
1,400.0	1,397.3	1,399.0	1,396.0	2.7	2.7	90.01	57.2	46.0	28.5	23.2	5.37	5.312		
1,500.0	1,496.8	1,498.9	1,495.2	2.9	3.0	87.47	66.2	53.2	33.0	27.2	5.83	5.666		
1,600.0	1,596.4	1,598.8	1,594.4	3.2	3.2	85.54	75.2	60.4	37.5	31.3	6.28	5.976		
1,700.0	1,696.0	1,698.7	1,693.7	3.4	3.5	84.02	84.2	67.6	42.1	35.4	6.74	6.248		
1,800.0	1,795.6	1,798.6	1,792.9	3.6	3.7	82.80	93.2	74.8	46.7	39.5	7.20	6.489		
1,900.0	1,895.1	1,898.5	1,892.1	3.9	4.0	81.80	102.2	81.9	51.3	43.7	7.66	6.702		
2,000.0	1,994.7	1,998.4	1,991.3	4.1	4.2	80.97	111.2	89.1	55.9	47.8	8.11	6.893		
2,100.0	2,094.3	2,098.3	2,090.5	4.3	4.5	80.26	120.2	96.3	60.6	52.0	8.57	7.064		
2,200.0	2,193.9	2,198.2	2,189.8	4.6	4.7	79.66	129.2	103.5	65.2	56.2	9.03	7.218		
2,300.0	2,293.4	2,298.1	2,289.0	4.8	5.0	79.13	138.2	110.7	69.9	60.4	9.49	7.358		
2,400.0	2,393.0	2,397.9	2,388.2	5.0	5.3	78.67	147.2	117.9	74.5	64.6	9.95	7.485		
2,500.0	2,492.6	2,497.8	2,487.4	5.3	5.5	78.26	156.3	125.1	79.2	68.7	10.41	7.601		
2,600.0	2,592.2	2,597.7	2,586.7	5.5	5.8	77.90	165.3	132.3	83.8	72.9	10.88	7.708		
2,700.0	2,691.7	2,697.6	2,685.9	5.7	6.1	77.58	174.3	139.5	88.5	77.1	11.34	7.805		
2,800.0	2,791.3	2,797.5	2,785.1	6.0	6.3	77.29	183.3	146.7	93.1	81.4	11.80	7.896		
2,900.0	2,890.9	2,897.4	2,884.3	6.2	6.6	77.03	192.3	153.9	97.8	85.6	12.26	7.979		
3,000.0	2,990.5	2,997.3	2,983.5	6.5	6.8	76.79	201.3	161.1	102.5	89.8	12.72	8.057		
3,100.0	3,090.0	3,097.2	3,082.8	6.7	7.1	76.57	210.3	168.3	107.2	94.0	13.18	8.129		
3,200.0	3,189.6	3,197.1	3,182.0	6.9	7.4	76.37	219.3	175.5	111.8	98.2	13.64	8.197		
3,300.0	3,289.2	3,297.0	3,281.2	7.2	7.6	76.19	228.3	182.7	116.5	102.4	14.11	8.260		
3,400.0	3,388.8	3,396.8	3,380.4	7.4	7.9	76.02	237.3	189.9	121.2	106.6	14.57	8.318		
3,500.0	3,488.3	3,496.7	3,479.7	7.6	8.2	75.86	246.3	197.1	125.9	110.8	15.03	8.374		
3,600.0	3,587.9	3,596.6	3,578.9	7.9	8.4	75.71	255.3	204.3	130.5	115.0	15.49	8.426		
3,700.0	3,687.5	3,696.5	3,678.1	8.1	8.7	75.58	264.3	211.5	135.2	119.3	15.95	8.475		
3,800.0	3,787.1	3,796.4	3,777.3	8.3	9.0	75.45	273.3	218.7	139.9	123.5	16.42	8.521		
3,900.0	3,886.6	3,896.3	3,876.6	8.6	9.2	75.33	282.3	225.9	144.6	127.7	16.88	8.565		
4,000.0	3,986.2	3,996.2	3,975.8	8.8	9.5	75.22	291.3	233.1	149.2	131.9	17.34	8.607		
4,100.0	4,085.8	4,096.1	4,075.0	9.0	9.8	75.12	300.3	240.3	153.9	136.1	17.80	8.646		
4,200.0	4,185.4	4,196.0	4,174.2	9.3	10.0	75.02	309.4	247.5	158.6	140.3	18.27	8.683		
4,300.0	4,285.0	4,295.9	4,273.4	9.5	10.3	74.93	318.4	254.7	163.3	144.6	18.73	8.719		
4,400.0	4,384.5	4,395.7	4,372.7	9.8	10.6	74.84	327.4	261.9	168.0	148.8	19.19	8.752		
4,500.0	4,484.1	4,495.6	4,471.9	10.0	10.8	74.76	336.4	269.1	172.6	153.0	19.65	8.785		
4,600.0	4,583.7	4,595.5	4,571.1	10.2	11.1	74.68	345.4	276.3	177.3	157.2	20.12	8.815		
4,700.0	4,683.3	4,695.4	4,670.3	10.5	11.4	74.60	354.4	283.5	182.0	161.4	20.58	8.845		
4,800.0	4,782.8	4,795.3	4,769.6	10.7	11.6	74.53	363.4	290.7	186.7	165.7	21.04	8.873		
4,900.0	4,882.4	4,895.2	4,868.8	10.9	11.9	74.47	372.4	297.9	191.4	169.9	21.50	8.899		

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2D-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft			
Survey Program: 0-Geolink MWD															Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning			
5,000.0	4,982.0	4,995.1	4,968.0	11.2	12.1	74.40	381.4	305.1	196.1	174.1	21.97	8.925				
5,100.0	5,081.6	5,095.0	5,067.2	11.4	12.4	74.34	390.4	312.3	200.7	178.3	22.43	8.950				
5,200.0	5,181.1	5,194.9	5,166.4	11.7	12.7	74.28	399.4	319.5	205.4	182.5	22.89	8.973				
5,300.0	5,280.7	5,294.8	5,265.7	11.9	12.9	74.23	408.4	326.7	210.1	186.8	23.36	8.996				
5,400.0	5,380.3	5,394.6	5,364.9	12.1	13.2	74.18	417.4	333.9	214.8	191.0	23.82	9.018				
5,500.0	5,479.9	5,494.5	5,464.1	12.4	13.5	74.12	426.4	341.1	219.5	195.2	24.28	9.039				
5,600.0	5,579.4	5,594.4	5,563.3	12.6	13.7	74.08	435.4	348.3	224.2	199.4	24.74	9.059				
5,700.0	5,679.0	5,694.3	5,662.6	12.8	14.0	74.03	444.4	355.5	228.8	203.6	25.21	9.078				
5,800.0	5,778.6	5,794.2	5,761.8	13.1	14.3	73.98	453.4	362.7	233.5	207.9	25.67	9.097				
5,900.0	5,878.2	5,894.1	5,861.0	13.3	14.5	73.94	462.4	369.9	238.2	212.1	26.13	9.115				
6,000.0	5,977.7	5,994.0	5,960.2	13.5	14.8	73.90	471.5	377.1	242.9	216.3	26.60	9.133				
6,100.0	6,077.3	6,093.9	6,059.4	13.8	15.1	73.86	480.5	384.3	247.6	220.5	27.06	9.150				
6,200.0	6,176.9	6,193.8	6,158.7	14.0	15.3	73.82	489.5	391.4	252.3	224.7	27.52	9.166				
6,300.0	6,276.5	6,293.7	6,257.9	14.3	15.6	73.78	498.5	398.6	257.0	229.0	27.99	9.182				
6,400.0	6,376.0	6,393.5	6,357.1	14.5	15.9	73.75	507.5	405.8	261.6	233.2	28.45	9.197				
6,500.0	6,475.6	6,493.4	6,456.3	14.7	16.1	73.71	516.5	413.0	266.3	237.4	28.91	9.212				
6,600.0	6,575.2	6,593.3	6,555.6	15.0	16.4	73.68	525.5	420.2	271.0	241.6	29.37	9.226				
6,700.0	6,674.8	6,693.2	6,654.8	15.2	16.7	73.65	534.5	427.4	275.7	245.9	29.84	9.240				
6,800.0	6,774.4	6,793.1	6,754.0	15.4	16.9	73.62	543.5	434.6	280.4	250.1	30.30	9.253				
6,900.0	6,873.9	6,893.0	6,853.2	15.7	17.2	73.59	552.5	441.8	285.1	254.3	30.76	9.266				
7,000.0	6,973.5	6,992.9	6,952.4	15.9	17.5	73.56	561.5	449.0	289.7	258.5	31.23	9.279				
7,100.0	7,073.1	7,092.8	7,051.7	16.2	17.7	73.53	570.5	456.2	294.4	262.7	31.69	9.291				
7,162.7	7,135.6	7,155.5	7,113.9	16.3	17.9	73.51	576.2	460.7	297.4	265.4	31.98	9.298				
7,200.0	7,172.7	7,192.7	7,150.9	16.4	18.0	42.36	579.3	463.4	299.1	267.0	32.12	9.313				
7,250.0	7,222.7	7,242.9	7,201.0	16.4	18.1	-68.94	580.4	467.1	301.5	269.3	32.19	9.366				
7,300.0	7,272.4	7,293.3	7,251.1	16.4	18.1	-81.22	577.0	470.7	303.9	271.7	32.17	9.446				
7,350.0	7,321.4	7,343.8	7,300.9	16.3	18.1	-84.79	569.1	474.3	306.2	274.2	32.06	9.551				
7,400.0	7,369.4	7,394.6	7,350.0	16.2	18.1	-86.50	556.9	477.9	308.5	276.7	31.88	9.680				
7,450.0	7,416.0	7,445.5	7,398.0	16.1	18.0	-87.53	540.3	481.3	310.8	279.2	31.62	9.830				
7,500.0	7,460.9	7,496.6	7,444.4	16.0	17.9	-88.21	519.4	484.7	313.0	281.7	31.30	10.001				
7,550.0	7,503.6	7,547.8	7,489.0	15.8	17.7	-88.70	494.3	488.0	315.1	284.1	30.93	10.188				
7,600.0	7,544.0	7,599.2	7,531.3	15.6	17.6	-89.07	465.3	491.0	317.0	286.5	30.52	10.388				
7,650.0	7,581.6	7,650.8	7,570.9	15.4	17.4	-89.35	432.5	493.9	318.9	288.8	30.09	10.597				
7,700.0	7,616.2	7,702.4	7,607.5	15.2	17.2	-89.57	396.1	496.6	320.6	290.9	29.67	10.807				
7,750.0	7,647.5	7,754.2	7,640.8	15.0	17.1	-89.74	356.5	499.0	322.1	292.9	29.25	11.012				
7,800.0	7,675.4	7,806.1	7,670.4	14.8	16.9	-89.87	313.9	501.1	323.5	294.6	28.87	11.204				
7,850.0	7,699.5	7,858.1	7,696.1	14.6	16.8	-89.96	268.8	503.0	324.7	296.1	28.55	11.373				
7,900.0	7,719.7	7,910.2	7,717.7	14.5	16.7	-90.02	221.5	504.5	325.7	297.4	28.29	11.511				
7,950.0	7,735.8	7,962.3	7,734.9	14.4	16.6	-90.05	172.3	505.8	326.5	298.3	28.12	11.609				
8,000.0	7,747.8	8,014.5	7,747.5	14.4	16.6	-90.06	121.7	506.7	327.0	299.0	28.05	11.660				
8,050.0	7,755.5	8,066.7	7,755.6	14.4	16.6	-90.05	70.2	507.3	327.4	299.3	28.08	11.660				
8,100.0	7,758.8	8,118.9	7,758.9	14.4	16.7	-90.01	18.1	507.5	327.6	299.3	28.21	11.609				
8,113.5	7,759.0	8,132.8	7,759.0	14.5	16.7	-90.00	4.2	507.5	327.6	299.3	28.27	11.586				
8,200.0	7,759.0	8,219.3	7,759.0	14.7	16.9	-90.00	-82.3	507.5	327.6	298.7	28.82	11.365				
8,300.0	7,759.0	8,319.3	7,759.0	15.2	17.3	-90.00	-182.3	507.5	327.6	297.7	29.82	10.986				
8,400.0	7,759.0	8,419.3	7,759.0	15.9	17.9	-90.00	-282.3	507.5	327.6	296.4	31.18	10.506				
8,500.0	7,759.0	8,519.3	7,759.0	16.7	18.7	-90.00	-382.3	507.5	327.6	294.7	32.86	9.969				
8,600.0	7,759.0	8,619.3	7,759.0	17.6	19.5	-90.00	-482.3	507.5	327.6	292.8	34.81	9.410				
8,700.0	7,759.0	8,719.3	7,759.0	18.7	20.5	-90.00	-582.3	507.5	327.6	290.6	36.99	8.854				
8,800.0	7,759.0	8,819.3	7,759.0	19.9	21.6	-90.00	-682.3	507.5	327.6	288.2	39.37	8.320				
8,900.0	7,759.0	8,919.3	7,759.0	21.1	22.8	-90.00	-782.3	507.5	327.6	285.7	41.91	7.817				
9,000.0	7,759.0	9,019.3	7,759.0	22.5	24.0	-90.00	-882.3	507.5	327.6	283.0	44.57	7.349				

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2D-7H-E168 - HZ - Plan #1												Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,100.0	7,759.0	9,119.3	7,759.0	23.8	25.3	-90.00	-982.3	507.5	327.6	280.2	47.35	6.918	
9,200.0	7,759.0	9,219.3	7,759.0	25.3	26.7	-90.00	-1,082.3	507.5	327.6	277.3	50.22	6.523	
9,300.0	7,759.0	9,319.3	7,759.0	26.7	28.1	-90.00	-1,182.3	507.5	327.6	274.4	53.16	6.161	
9,400.0	7,759.0	9,419.3	7,759.0	28.2	29.5	-90.00	-1,282.3	507.5	327.6	271.4	56.17	5.831	
9,500.0	7,759.0	9,519.3	7,759.0	29.7	31.0	-90.00	-1,382.3	507.5	327.6	268.3	59.24	5.529	
9,600.0	7,759.0	9,619.3	7,759.0	31.3	32.4	-90.00	-1,482.3	507.5	327.6	265.2	62.35	5.253	
9,700.0	7,759.0	9,719.3	7,759.0	32.9	34.0	-90.00	-1,582.3	507.5	327.6	262.1	65.50	5.001	
9,800.0	7,759.0	9,819.3	7,759.0	34.4	35.5	-90.00	-1,682.3	507.5	327.6	258.9	68.69	4.769	
9,900.0	7,759.0	9,919.3	7,759.0	36.0	37.1	-90.00	-1,782.3	507.5	327.6	255.7	71.91	4.555	
10,000.0	7,759.0	10,019.3	7,759.0	37.7	38.6	-90.00	-1,882.3	507.5	327.6	252.4	75.15	4.359	
10,100.0	7,759.0	10,119.3	7,759.0	39.3	40.2	-90.00	-1,982.3	507.5	327.6	249.1	78.41	4.177	
10,200.0	7,759.0	10,219.3	7,759.0	40.9	41.8	-90.00	-2,082.3	507.5	327.6	245.9	81.70	4.009	
10,300.0	7,759.0	10,319.3	7,759.0	42.6	43.5	-90.00	-2,182.3	507.5	327.6	242.6	85.00	3.854	
10,400.0	7,759.0	10,419.3	7,759.0	44.2	45.1	-90.00	-2,282.3	507.5	327.6	239.2	88.32	3.709	
10,500.0	7,759.0	10,519.3	7,759.0	45.9	46.7	-90.00	-2,382.3	507.5	327.6	235.9	91.66	3.574	
10,600.0	7,759.0	10,619.3	7,759.0	47.6	48.4	-90.00	-2,482.3	507.5	327.6	232.6	95.00	3.448	
10,700.0	7,759.0	10,719.3	7,759.0	49.2	50.0	-90.00	-2,582.3	507.5	327.6	229.2	98.36	3.330	
10,800.0	7,759.0	10,819.3	7,759.0	50.9	51.7	-90.00	-2,682.3	507.5	327.6	225.8	101.73	3.220	
10,900.0	7,759.0	10,919.3	7,759.0	52.6	53.3	-90.00	-2,782.3	507.5	327.6	222.5	105.10	3.117	
11,000.0	7,759.0	11,019.3	7,759.0	54.3	55.0	-90.00	-2,882.3	507.5	327.6	219.1	108.49	3.019	
11,100.0	7,759.0	11,119.3	7,759.0	56.0	56.7	-90.00	-2,982.3	507.5	327.6	215.7	111.88	2.928	
11,200.0	7,759.0	11,219.3	7,759.0	57.7	58.4	-90.00	-3,082.3	507.5	327.6	212.3	115.28	2.841	
11,300.0	7,759.0	11,319.3	7,759.0	59.4	60.0	-90.00	-3,182.3	507.5	327.6	208.9	118.68	2.760	
11,400.0	7,759.0	11,419.3	7,759.0	61.1	61.7	-90.00	-3,282.3	507.5	327.6	205.5	122.10	2.683	
11,500.0	7,759.0	11,519.3	7,759.0	62.8	63.4	-90.00	-3,382.3	507.5	327.6	202.0	125.51	2.610	
11,600.0	7,759.0	11,619.3	7,759.0	64.5	65.1	-90.00	-3,482.3	507.5	327.6	198.6	128.93	2.541	
11,700.0	7,759.0	11,719.3	7,759.0	66.2	66.8	-90.00	-3,582.3	507.5	327.6	195.2	132.36	2.475	
11,800.0	7,759.0	11,819.3	7,759.0	67.9	68.5	-90.00	-3,682.3	507.5	327.6	191.8	135.79	2.412	
11,900.0	7,759.0	11,919.3	7,759.0	69.6	70.2	-90.00	-3,782.3	507.5	327.6	188.3	139.23	2.353	
12,000.0	7,759.0	12,019.3	7,759.0	71.3	71.9	-90.00	-3,882.3	507.5	327.6	184.9	142.66	2.296	
12,100.0	7,759.0	12,119.3	7,759.0	73.1	73.6	-90.00	-3,982.3	507.5	327.6	181.5	146.11	2.242	
12,200.0	7,759.0	12,219.3	7,759.0	74.8	75.3	-90.00	-4,082.3	507.5	327.6	178.0	149.55	2.190	
12,300.0	7,759.0	12,319.3	7,759.0	76.5	77.1	-90.00	-4,182.3	507.5	327.6	174.6	153.00	2.141	
12,400.0	7,759.0	12,419.3	7,759.0	78.2	78.8	-90.00	-4,282.3	507.5	327.6	171.1	156.45	2.094	
12,500.0	7,759.0	12,519.3	7,759.0	80.0	80.5	-90.00	-4,382.3	507.5	327.6	167.7	159.90	2.049	
12,600.0	7,759.0	12,619.3	7,759.0	81.7	82.2	-90.00	-4,482.3	507.5	327.6	164.2	163.35	2.005	
12,700.0	7,759.0	12,719.3	7,759.0	83.4	83.9	-90.00	-4,582.3	507.5	327.6	160.8	166.81	1.964	
12,800.0	7,759.0	12,819.3	7,759.0	85.1	85.6	-90.00	-4,682.3	507.5	327.6	157.3	170.27	1.924	
12,900.0	7,759.0	12,919.3	7,759.0	86.9	87.4	-90.00	-4,782.3	507.5	327.6	153.8	173.73	1.885	
13,000.0	7,759.0	13,019.3	7,759.0	88.6	89.1	-90.00	-4,882.3	507.5	327.6	150.4	177.19	1.849	
13,100.0	7,759.0	13,119.3	7,759.0	90.3	90.8	-90.00	-4,982.3	507.5	327.6	146.9	180.66	1.813	
13,200.0	7,759.0	13,219.3	7,759.0	92.1	92.5	-90.00	-5,082.3	507.5	327.6	143.4	184.13	1.779	
13,300.0	7,759.0	13,319.3	7,759.0	93.8	94.3	-90.00	-5,182.3	507.5	327.6	140.0	187.59	1.746	
13,400.0	7,759.0	13,419.3	7,759.0	95.5	96.0	-90.00	-5,282.3	507.5	327.6	136.5	191.06	1.714	
13,500.0	7,759.0	13,519.3	7,759.0	97.3	97.7	-90.00	-5,382.3	507.5	327.6	133.0	194.53	1.684	
13,600.0	7,759.0	13,619.3	7,759.0	99.0	99.4	-90.00	-5,482.3	507.5	327.6	129.6	198.01	1.654	
13,700.0	7,759.0	13,719.3	7,759.0	100.7	101.2	-90.00	-5,582.3	507.5	327.6	126.1	201.48	1.626	
13,800.0	7,759.0	13,819.3	7,759.0	102.5	102.9	-90.00	-5,682.3	507.5	327.6	122.6	204.95	1.598	
13,900.0	7,759.0	13,919.3	7,759.0	104.2	104.6	-90.00	-5,782.3	507.5	327.6	119.1	208.43	1.572	
14,000.0	7,759.0	14,019.3	7,759.0	105.9	106.4	-90.00	-5,882.3	507.5	327.6	115.7	211.91	1.546	
14,100.0	7,759.0	14,119.3	7,759.0	107.7	108.1	-90.00	-5,982.3	507.5	327.6	112.2	215.38	1.521	
14,200.0	7,759.0	14,219.3	7,759.0	109.4	109.8	-90.00	-6,082.3	507.5	327.6	108.7	218.86	1.497 Level 3	

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2D-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
14,300.0	7,759.0	14,319.3	7,759.0	111.2	111.6	-90.00	-6,182.3	507.5	327.6	105.2	222.34	1.473 Level 3	
14,400.0	7,759.0	14,419.3	7,759.0	112.9	113.3	-90.00	-6,282.3	507.5	327.6	101.7	225.82	1.451 Level 3	
14,500.0	7,759.0	14,519.3	7,759.0	114.6	115.0	-90.00	-6,382.3	507.5	327.6	98.3	229.30	1.429 Level 3	
14,600.0	7,759.0	14,619.3	7,759.0	116.4	116.8	-90.00	-6,482.3	507.5	327.6	94.8	232.79	1.407 Level 3	
14,700.0	7,759.0	14,719.3	7,759.0	118.1	118.5	-90.00	-6,582.3	507.5	327.6	91.3	236.27	1.386 Level 3	
14,800.0	7,759.0	14,819.3	7,759.0	119.9	120.3	-90.00	-6,682.3	507.5	327.6	87.8	239.75	1.366 Level 3	
14,900.0	7,759.0	14,919.3	7,759.0	121.6	122.0	-90.00	-6,782.3	507.5	327.6	84.3	243.24	1.347 Level 3	
15,000.0	7,759.0	15,019.3	7,759.0	123.3	123.7	-90.00	-6,882.3	507.5	327.6	80.8	246.72	1.328 Level 3	
15,100.0	7,759.0	15,119.3	7,759.0	125.1	125.5	-90.00	-6,982.3	507.5	327.6	77.4	250.21	1.309 Level 3	
15,200.0	7,759.0	15,219.3	7,759.0	126.8	127.2	-90.00	-7,082.3	507.5	327.6	73.9	253.69	1.291 Level 3	
15,300.0	7,759.0	15,319.3	7,759.0	128.6	128.9	-90.00	-7,182.3	507.5	327.6	70.4	257.18	1.274 Level 3	
15,400.0	7,759.0	15,419.3	7,759.0	130.3	130.7	-90.00	-7,282.3	507.5	327.6	66.9	260.67	1.257 Level 3	
15,500.0	7,759.0	15,519.3	7,759.0	132.1	132.4	-90.00	-7,382.3	507.5	327.6	63.4	264.16	1.240 Level 2	
15,600.0	7,759.0	15,619.3	7,759.0	133.8	134.2	-90.00	-7,482.3	507.5	327.6	59.9	267.64	1.224 Level 2	
15,700.0	7,759.0	15,719.3	7,759.0	135.6	135.9	-90.00	-7,582.3	507.5	327.6	56.4	271.13	1.208 Level 2	
15,800.0	7,759.0	15,819.3	7,759.0	137.3	137.6	-90.00	-7,682.3	507.5	327.6	52.9	274.62	1.193 Level 2	
15,900.0	7,759.0	15,919.3	7,759.0	139.0	139.4	-90.00	-7,782.3	507.5	327.6	49.5	278.11	1.178 Level 2	
15,974.5	7,759.0	15,993.8	7,759.0	140.3	140.7	-90.00	-7,856.8	507.5	327.6	46.9	280.71	1.167 Level 2, SF	



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2E-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft			
Survey Program: 0-Geolink MWD															Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor				
0.0	0.0	0.0	0.0	0.0	0.0	90.29	-0.1	20.0	20.0							
100.0	100.0	100.0	100.0	0.1	0.1	90.29	-0.1	20.0	20.0	19.7	0.26	76.394				
200.0	200.0	200.0	200.0	0.3	0.3	90.29	-0.1	20.0	20.0	19.4	0.61	32.740				
300.0	300.0	300.0	300.0	0.5	0.5	90.29	-0.1	20.0	20.0	19.0	0.96	20.835				
400.0	400.0	400.0	400.0	0.7	0.7	90.29	-0.1	20.0	20.0	18.7	1.31	15.279				
500.0	500.0	500.0	500.0	0.8	0.8	76.79	-0.1	20.0	19.8	18.1	1.66	11.927				
600.0	600.0	600.0	600.0	1.0	1.0	84.36	-0.1	20.0	19.4	17.3	2.01	9.623				
620.7	620.7	620.6	620.6	1.0	1.0	86.51	-0.1	20.0	19.3	17.2	2.09	9.263 CC, ES				
700.0	699.9	699.7	699.7	1.2	1.2	95.07	0.4	20.7	19.9	17.5	2.37	8.381				
800.0	799.7	799.4	799.4	1.4	1.4	105.10	2.0	22.8	22.1	19.4	2.74	8.081 SF				
900.0	899.4	899.2	899.0	1.6	1.5	112.88	4.6	26.2	26.0	22.9	3.12	8.351				
927.8	927.1	926.9	926.8	1.7	1.6	114.59	5.5	27.5	27.4	24.2	3.23	8.490				
1,000.0	998.9	998.9	998.6	1.8	1.7	117.49	8.2	31.1	31.2	27.7	3.51	8.883				
1,100.0	1,098.5	1,098.7	1,098.0	2.0	1.9	118.18	12.9	37.3	36.8	32.8	3.92	9.369				
1,200.0	1,198.1	1,198.4	1,197.3	2.3	2.1	116.38	18.7	44.9	42.6	38.2	4.36	9.780				
1,300.0	1,297.7	1,298.0	1,296.2	2.5	2.4	113.02	25.4	53.9	48.9	44.1	4.81	10.156				
1,400.0	1,397.3	1,397.4	1,394.8	2.7	2.6	108.73	33.2	64.3	55.8	50.5	5.29	10.550				
1,500.0	1,496.8	1,496.6	1,493.0	2.9	2.9	103.97	42.0	76.0	63.6	57.8	5.78	11.013				
1,600.0	1,596.4	1,596.2	1,591.3	3.2	3.2	99.75	51.2	88.2	72.1	65.8	6.26	11.516				
1,700.0	1,696.0	1,695.7	1,689.6	3.4	3.5	96.43	60.4	100.5	80.9	74.1	6.74	12.000				
1,800.0	1,795.6	1,795.2	1,788.0	3.6	3.8	93.77	69.6	112.7	89.9	82.6	7.21	12.456				
1,900.0	1,895.1	1,894.7	1,886.3	3.9	4.1	91.60	78.9	125.0	99.0	91.3	7.69	12.881				
2,000.0	1,994.7	1,994.2	1,984.6	4.1	4.4	89.79	88.1	137.3	108.3	100.1	8.16	13.275				
2,100.0	2,094.3	2,093.7	2,082.9	4.3	4.7	88.27	97.3	149.5	117.6	109.0	8.63	13.639				
2,200.0	2,193.9	2,193.3	2,181.3	4.6	5.0	86.98	106.5	161.8	127.1	118.0	9.09	13.975				
2,300.0	2,293.4	2,292.8	2,279.6	4.8	5.3	85.86	115.8	174.1	136.6	127.0	9.56	14.285				
2,400.0	2,393.0	2,392.3	2,377.9	5.0	5.6	84.89	125.0	186.3	146.1	136.1	10.03	14.572				
2,500.0	2,492.6	2,491.8	2,476.3	5.3	5.9	84.04	134.2	198.6	155.7	145.2	10.49	14.838				
2,600.0	2,592.2	2,591.3	2,574.6	5.5	6.2	83.29	143.4	210.9	165.3	154.3	10.96	15.084				
2,700.0	2,691.7	2,690.8	2,672.9	5.7	6.5	82.62	152.6	223.1	174.9	163.5	11.42	15.314				
2,800.0	2,791.3	2,790.4	2,771.2	6.0	6.9	82.02	161.9	235.4	184.5	172.6	11.88	15.527				
2,900.0	2,890.9	2,889.9	2,869.6	6.2	7.2	81.48	171.1	247.6	194.2	181.8	12.35	15.727				
3,000.0	2,990.5	2,989.4	2,967.9	6.5	7.5	80.99	180.3	259.9	203.9	191.1	12.81	15.913				
3,100.0	3,090.0	3,088.9	3,066.2	6.7	7.8	80.55	189.5	272.2	213.6	200.3	13.28	16.088				
3,200.0	3,189.6	3,188.4	3,164.5	6.9	8.1	80.14	198.8	284.4	223.3	209.5	13.74	16.252				
3,300.0	3,289.2	3,287.9	3,262.9	7.2	8.4	79.77	208.0	296.7	233.0	218.8	14.20	16.406				
3,400.0	3,388.8	3,387.5	3,361.2	7.4	8.7	79.43	217.2	309.0	242.7	228.0	14.66	16.551				
3,500.0	3,488.3	3,487.0	3,459.5	7.6	9.1	79.11	226.4	321.2	252.4	237.3	15.13	16.688				
3,600.0	3,587.9	3,586.5	3,557.8	7.9	9.4	78.82	235.6	333.5	262.2	246.6	15.59	16.817				
3,700.0	3,687.5	3,686.0	3,656.2	8.1	9.7	78.55	244.9	345.8	271.9	255.9	16.05	16.940				
3,800.0	3,787.1	3,785.5	3,754.5	8.3	10.0	78.30	254.1	358.0	281.7	265.2	16.51	17.055				
3,900.0	3,886.6	3,885.0	3,852.8	8.6	10.3	78.06	263.3	370.3	291.4	274.4	16.98	17.165				
4,000.0	3,986.2	3,984.5	3,951.1	8.8	10.7	77.84	272.5	382.6	301.2	283.7	17.44	17.270				
4,100.0	4,085.8	4,084.1	4,049.5	9.0	11.0	77.63	281.8	394.8	310.9	293.0	17.90	17.369				
4,200.0	4,185.4	4,183.6	4,147.8	9.3	11.3	77.44	291.0	407.1	320.7	302.3	18.36	17.464				
4,300.0	4,285.0	4,283.1	4,246.1	9.5	11.6	77.26	300.2	419.3	330.5	311.7	18.83	17.554				
4,400.0	4,384.5	4,382.6	4,344.4	9.8	11.9	77.08	309.4	431.6	340.3	321.0	19.29	17.640				
4,500.0	4,484.1	4,482.1	4,442.8	10.0	12.2	76.92	318.6	443.9	350.0	330.3	19.75	17.722				
4,600.0	4,583.7	4,581.6	4,541.1	10.2	12.6	76.77	327.9	456.1	359.8	339.6	20.21	17.800				
4,700.0	4,683.3	4,681.2	4,639.4	10.5	12.9	76.62	337.1	468.4	369.6	348.9	20.68	17.875				
4,800.0	4,782.8	4,780.7	4,737.8	10.7	13.2	76.48	346.3	480.7	379.4	358.2	21.14	17.947				
4,900.0	4,882.4	4,880.2	4,836.1	10.9	13.5	76.35	355.5	492.9	389.2	367.6	21.60	18.016				

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2E-7H-E168 - HZ - Plan #1													Offset Site Error: 0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,000.0	4,982.0	4,979.7	4,934.4	11.2	13.8	76.23	364.8	505.2	399.0	376.9	22.06	18.082	
5,100.0	5,081.6	5,079.2	5,032.7	11.4	14.2	76.11	374.0	517.5	408.7	386.2	22.53	18.146	
5,200.0	5,181.1	5,178.7	5,131.1	11.7	14.5	76.00	383.2	529.7	418.5	395.5	22.99	18.207	
5,300.0	5,280.7	5,278.3	5,229.4	11.9	14.8	75.89	392.4	542.0	428.3	404.9	23.45	18.266	
5,400.0	5,380.3	5,377.8	5,327.7	12.1	15.1	75.78	401.6	554.2	438.1	414.2	23.91	18.323	
5,500.0	5,479.9	5,477.3	5,426.0	12.4	15.4	75.69	410.9	566.5	447.9	423.5	24.37	18.377	
5,600.0	5,579.4	5,576.8	5,524.4	12.6	15.8	75.59	420.1	578.8	457.7	432.9	24.84	18.430	
5,700.0	5,679.0	5,676.3	5,622.7	12.8	16.1	75.50	429.3	591.0	467.5	442.2	25.30	18.480	
5,800.0	5,778.6	5,775.8	5,721.0	13.1	16.4	75.41	438.5	603.3	477.3	451.6	25.76	18.529	
5,900.0	5,878.2	5,875.4	5,819.3	13.3	16.7	75.33	447.8	615.6	487.1	460.9	26.22	18.576	
6,000.0	5,977.7	5,974.9	5,917.7	13.5	17.0	75.25	457.0	627.8	496.9	470.2	26.68	18.622	



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2F-7H-E168 - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	76.79	5.9	25.0	25.7					
100.0	100.0	100.0	100.0	0.1	0.1	76.79	5.9	25.0	25.7	25.4	0.26	98.205		
200.0	200.0	200.0	200.0	0.3	0.3	76.79	5.9	25.0	25.7	25.1	0.61	42.088		
300.0	300.0	300.0	300.0	0.5	0.5	76.79	5.9	25.0	25.7	24.7	0.96	26.783		
400.0	400.0	400.0	400.0	0.7	0.7	76.79	5.9	25.0	25.7	24.4	1.31	19.641		
500.0	500.0	500.0	500.0	0.8	0.8	62.59	5.9	25.0	25.3	23.6	1.66	15.253		
600.0	600.0	600.0	600.0	1.0	1.0	68.10	5.9	25.0	24.2	22.2	2.01	12.038		
700.0	699.9	699.9	699.9	1.2	1.2	78.27	5.9	25.0	22.9	20.6	2.37	9.680		
744.5	744.3	744.2	744.2	1.3	1.3	84.21	6.0	25.2	22.7	20.2	2.53	8.957 CC, ES		
800.0	799.7	799.4	799.4	1.4	1.4	92.02	6.3	25.8	23.1	20.4	2.74	8.433		
900.0	899.4	898.9	898.9	1.6	1.5	105.28	7.5	28.1	25.9	22.8	3.12	8.302 SF		
927.8	927.1	926.7	926.6	1.7	1.6	108.47	8.0	29.0	27.1	23.9	3.22	8.410		
1,000.0	998.9	998.5	998.4	1.8	1.7	114.70	9.5	31.9	30.9	27.4	3.50	8.838		
1,100.0	1,098.5	1,098.1	1,097.8	2.0	1.9	118.86	12.4	37.2	37.1	33.2	3.89	9.528		
1,200.0	1,198.1	1,197.7	1,197.0	2.3	2.1	119.63	16.1	44.1	43.8	39.5	4.30	10.190		
1,300.0	1,297.7	1,297.2	1,296.1	2.5	2.3	118.32	20.5	52.4	51.0	46.3	4.73	10.797		
1,400.0	1,397.3	1,396.5	1,394.8	2.7	2.5	115.73	25.8	62.3	58.8	53.7	5.17	11.372		
1,500.0	1,496.8	1,495.7	1,493.1	2.9	2.8	112.40	31.9	73.7	67.4	61.8	5.64	11.951		
1,600.0	1,596.4	1,594.6	1,591.0	3.2	3.1	108.68	38.7	86.5	76.9	70.8	6.12	12.568		
1,700.0	1,696.0	1,693.2	1,688.2	3.4	3.4	104.82	46.4	100.7	87.6	81.0	6.61	13.249		
1,800.0	1,795.6	1,791.4	1,784.8	3.6	3.7	101.01	54.8	116.4	99.5	92.4	7.10	14.011		
1,900.0	1,895.1	1,889.4	1,880.9	3.9	4.0	97.34	63.9	133.5	112.8	105.2	7.59	14.864		
2,000.0	1,994.7	1,988.2	1,977.6	4.1	4.4	94.25	73.3	151.2	126.8	118.8	8.07	15.717		
2,100.0	2,094.3	2,087.0	2,074.4	4.3	4.7	91.77	82.8	168.8	141.2	132.6	8.54	16.519		
2,200.0	2,193.9	2,185.8	2,171.1	4.6	5.1	89.75	92.2	186.5	155.7	146.7	9.02	17.268		
2,300.0	2,293.4	2,284.6	2,267.9	4.8	5.4	88.08	101.7	204.2	170.4	160.9	9.48	17.965		
2,400.0	2,393.0	2,383.4	2,364.6	5.0	5.8	86.67	111.2	221.9	185.2	175.2	9.95	18.612		
2,500.0	2,492.6	2,482.2	2,461.4	5.3	6.2	85.47	120.6	239.5	200.1	189.7	10.41	19.212		
2,600.0	2,592.2	2,581.0	2,558.1	5.5	6.6	84.44	130.1	257.2	215.1	204.2	10.88	19.770		
2,700.0	2,691.7	2,679.8	2,654.9	5.7	7.0	83.54	139.5	274.9	230.1	218.7	11.34	20.290		
2,800.0	2,791.3	2,778.6	2,751.6	6.0	7.3	82.75	149.0	292.6	245.2	233.4	11.80	20.773		
2,900.0	2,890.9	2,877.4	2,848.4	6.2	7.7	82.05	158.4	310.2	260.3	248.0	12.26	21.225		
3,000.0	2,990.5	2,976.2	2,945.1	6.5	8.1	81.43	167.9	327.9	275.4	262.7	12.72	21.647		
3,100.0	3,090.0	3,075.1	3,041.9	6.7	8.5	80.88	177.3	345.6	290.6	277.4	13.19	22.042		
3,200.0	3,189.6	3,173.9	3,138.6	6.9	8.9	80.38	186.8	363.3	305.8	292.2	13.65	22.412		
3,300.0	3,289.2	3,272.7	3,235.4	7.2	9.3	79.92	196.2	380.9	321.1	307.0	14.11	22.760		
3,400.0	3,388.8	3,371.5	3,332.1	7.4	9.6	79.51	205.7	398.6	336.3	321.7	14.57	23.088		
3,500.0	3,488.3	3,470.3	3,428.9	7.6	10.0	79.14	215.2	416.3	351.6	336.5	15.03	23.397		
3,600.0	3,587.9	3,569.1	3,525.6	7.9	10.4	78.79	224.6	434.0	366.9	351.4	15.49	23.688		
3,700.0	3,687.5	3,667.9	3,622.4	8.1	10.8	78.47	234.1	451.7	382.1	366.2	15.95	23.963		
3,800.0	3,787.1	3,766.7	3,719.1	8.3	11.2	78.18	243.5	469.3	397.4	381.0	16.41	24.224		
3,900.0	3,886.6	3,865.5	3,815.9	8.6	11.6	77.91	253.0	487.0	412.7	395.9	16.87	24.471		
4,000.0	3,986.2	3,964.3	3,912.6	8.8	12.0	77.66	262.4	504.7	428.1	410.7	17.33	24.706		
4,100.0	4,085.8	4,063.1	4,009.4	9.0	12.4	77.42	271.9	522.4	443.4	425.6	17.79	24.929		
4,200.0	4,185.4	4,161.9	4,106.1	9.3	12.8	77.21	281.3	540.0	458.7	440.5	18.25	25.141		
4,300.0	4,285.0	4,260.7	4,202.9	9.5	13.1	77.00	290.8	557.7	474.1	455.3	18.71	25.343		
4,400.0	4,384.5	4,359.5	4,299.6	9.8	13.5	76.81	300.3	575.4	489.4	470.2	19.16	25.536		

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



Cathedral Energy Services

Anticollision Report



Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Woolley-Sosa 2C-7H-E168
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
Reference Site:	S7-T1N-R68W (Woolley-Sosa)	MD Reference:	WELL @ 5019.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Offset Design		S7-T1N-R68W (Woolley-Sosa) - Woolley-Sosa 2G-7H-E168 - HZ - Plan #1											Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.29	-0.2	30.0	30.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.29	-0.2	30.0	30.0	29.7	0.26	114.591		
200.0	200.0	200.0	200.0	0.3	0.3	90.29	-0.2	30.0	30.0	29.4	0.61	49.111		
300.0	300.0	300.0	300.0	0.5	0.5	90.29	-0.2	30.0	30.0	29.0	0.96	31.252		
400.0	400.0	400.0	400.0	0.7	0.7	90.29	-0.2	30.0	30.0	28.7	1.31	22.918		
500.0	500.0	500.0	500.0	0.8	0.8	75.97	-0.2	30.0	29.8	28.1	1.66	17.953		
600.0	600.0	600.0	600.0	1.0	1.0	80.95	-0.2	30.0	29.3	27.2	2.01	14.545		
700.0	699.9	699.9	699.9	1.2	1.2	89.53	-0.2	30.0	28.9	26.5	2.37	12.189		
704.5	704.4	704.4	704.4	1.2	1.2	90.00	-0.2	30.0	28.9	26.5	2.39	12.103 CC, ES		
800.0	799.7	799.7	799.7	1.4	1.4	101.45	-0.2	30.0	29.5	26.7	2.74	10.770		
900.0	899.4	899.1	899.1	1.6	1.5	113.91	0.2	30.8	32.4	29.3	3.11	10.413 SF		
927.8	927.1	926.8	926.8	1.7	1.6	116.94	0.4	31.3	33.7	30.5	3.21	10.489		
1,000.0	998.9	998.6	998.5	1.8	1.7	123.09	1.2	33.2	37.8	34.3	3.48	10.859		
1,100.0	1,098.5	1,098.1	1,098.0	2.0	1.9	127.74	2.8	37.2	44.3	40.5	3.85	11.500		
1,200.0	1,198.1	1,197.7	1,197.4	2.3	2.1	129.27	5.1	42.7	51.4	47.2	4.24	12.122		
1,300.0	1,297.7	1,297.2	1,296.6	2.5	2.3	128.78	8.1	49.9	58.9	54.2	4.65	12.676		
1,400.0	1,397.3	1,396.6	1,395.5	2.7	2.5	126.95	11.7	58.7	66.8	61.7	5.07	13.169		
1,500.0	1,496.8	1,495.9	1,494.1	2.9	2.7	124.24	16.0	69.0	75.2	69.7	5.52	13.632		
1,600.0	1,596.4	1,594.9	1,592.3	3.2	2.9	120.99	20.9	80.8	84.4	78.4	5.98	14.097		
1,700.0	1,696.0	1,693.6	1,690.0	3.4	3.2	117.42	26.5	94.2	94.4	87.9	6.47	14.597		
1,800.0	1,795.6	1,792.1	1,787.1	3.6	3.5	113.73	32.7	109.1	105.6	98.6	6.96	15.155		
1,900.0	1,895.1	1,890.1	1,883.5	3.9	3.8	110.05	39.5	125.5	117.9	110.5	7.47	15.789		
2,000.0	1,994.7	1,987.7	1,979.2	4.1	4.2	106.47	46.9	143.3	131.6	123.7	7.97	16.508		
2,100.0	2,094.3	2,084.7	2,074.0	4.3	4.5	103.08	54.8	162.5	146.8	138.3	8.48	17.315		
2,200.0	2,193.9	2,181.3	2,167.9	4.6	4.9	99.89	63.3	183.0	163.5	154.5	8.98	18.211		
2,300.0	2,293.4	2,277.2	2,260.9	4.8	5.3	96.93	72.4	204.9	181.8	172.3	9.47	19.192		
2,400.0	2,393.0	2,374.6	2,355.0	5.0	5.7	94.26	82.0	228.1	201.2	191.3	9.96	20.209		
2,500.0	2,492.6	2,472.3	2,449.4	5.3	6.2	92.06	91.7	251.3	221.0	210.6	10.44	21.180		
2,600.0	2,592.2	2,570.0	2,543.8	5.5	6.6	90.22	101.3	274.5	241.1	230.2	10.91	22.100		
2,700.0	2,691.7	2,667.7	2,638.2	5.7	7.1	88.66	110.9	297.7	261.4	250.0	11.38	22.970		
2,800.0	2,791.3	2,765.4	2,732.6	6.0	7.5	87.32	120.6	320.9	281.8	269.9	11.85	23.789		
2,900.0	2,890.9	2,863.1	2,827.0	6.2	8.0	86.17	130.2	344.2	302.3	290.0	12.31	24.561		
3,000.0	2,990.5	2,960.8	2,921.4	6.5	8.5	85.16	139.8	367.4	323.0	310.2	12.77	25.287		
3,100.0	3,090.0	3,058.5	3,015.8	6.7	8.9	84.27	149.5	390.6	343.7	330.5	13.23	25.972		
3,200.0	3,189.6	3,156.1	3,110.2	6.9	9.4	83.49	159.1	413.8	364.6	350.9	13.70	26.618		
3,300.0	3,289.2	3,253.8	3,204.6	7.2	9.9	82.78	168.7	437.1	385.4	371.3	14.16	27.227		
3,400.0	3,388.8	3,351.5	3,299.0	7.4	10.3	82.16	178.4	460.3	406.3	391.7	14.62	27.802		
3,500.0	3,488.3	3,449.2	3,393.4	7.6	10.8	81.59	188.0	483.5	427.3	412.2	15.07	28.346		
3,600.0	3,587.9	3,546.9	3,487.9	7.9	11.3	81.07	197.6	506.7	448.3	432.8	15.53	28.861		
3,700.0	3,687.5	3,644.6	3,582.3	8.1	11.7	80.60	207.3	530.0	469.3	453.3	15.99	29.349		
3,800.0	3,787.1	3,742.3	3,676.7	8.3	12.2	80.18	216.9	553.2	490.4	473.9	16.45	29.812		

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Project:	DJ Wattenberg	TVD Reference:	WELL @ 5019.0ft (Original Well Elev)
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Site Error:	0.0ft	North Reference:	True
Reference Well:	Woolley-Sosa 2C-7H-E168	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 #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5019.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Woolley-Sosa 2C-7H-E168
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.29°

