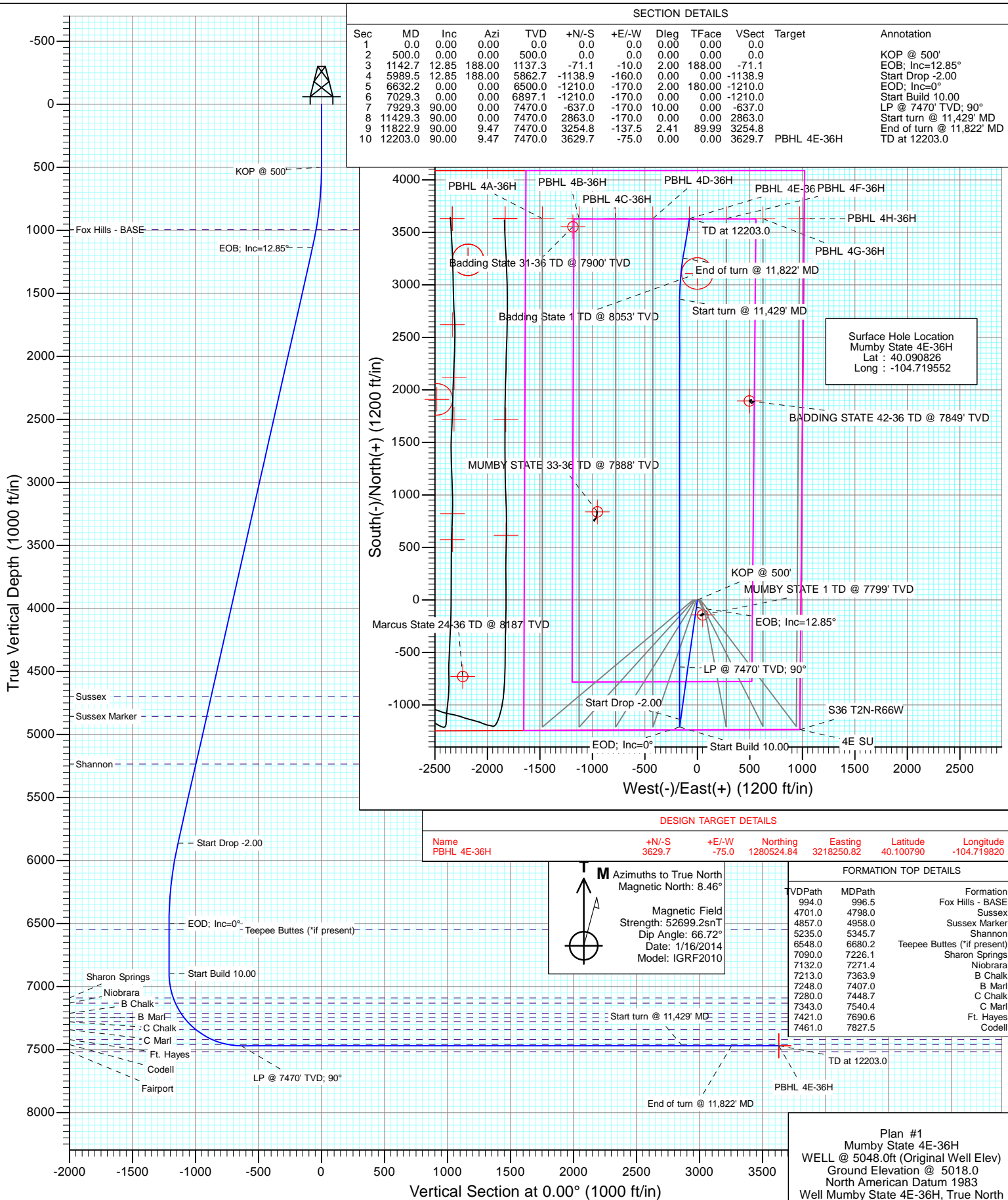




Project: DJ Wattenberg
Site: S36 T2N-R66W (Marcus State, Mumby State)
Well: Mumby State 4E-36H
Wellbore: HZ
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site:	S36 T2N-R66W (Marcus State, Mumby State)	North Reference:	True
Well:	Mumby State 4E-36H	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		S36 T2N-R66W (Marcus State, Mumby State)			
Site Position:		Northing:	1,275,942.66 ft	Latitude:	40.088280
From:	Lat/Long	Easting:	3,215,403.58 ft	Longitude:	-104.730140
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	Mumby State 4E-36H					
Well Position	+N/-S	0.0 ft	Northing:	1,276,895.96 ft	Latitude:	40.090826
	+E/-W	0.0 ft	Easting:	3,218,357.73 ft	Longitude:	-104.719552
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,018.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	1/16/2014	8.47	66.72	52,699

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	0.00

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,142.7	12.85	188.00	1,137.3	-71.1	-10.0	2.00	2.00	0.00	188.00	
5,989.5	12.85	188.00	5,862.7	-1,138.9	-160.0	0.00	0.00	0.00	0.00	
6,632.2	0.00	0.00	6,500.0	-1,210.0	-170.0	2.00	-2.00	0.00	180.00	
7,029.3	0.00	0.00	6,897.1	-1,210.0	-170.0	0.00	0.00	0.00	0.00	
7,929.3	90.00	0.00	7,470.0	-637.0	-170.0	10.00	10.00	0.00	0.00	
11,429.3	90.00	0.00	7,470.0	2,863.0	-170.0	0.00	0.00	0.00	0.00	
11,822.9	90.00	9.47	7,470.0	3,254.8	-137.5	2.41	0.00	2.41	89.99	
12,203.0	90.00	9.47	7,470.0	3,629.7	-75.0	0.00	0.00	0.00	0.00	PBHL 4E-36H

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site:	S36 T2N-R66W (Marcus State, Mumby State)	North Reference:	True
Well:	Mumby State 4E-36H	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	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500'
600.0	2.00	188.00	600.0	-1.7	-0.2	-1.7	2.00	2.00	
700.0	4.00	188.00	699.8	-6.9	-1.0	-6.9	2.00	2.00	
800.0	6.00	188.00	799.5	-15.5	-2.2	-15.5	2.00	2.00	
900.0	8.00	188.00	898.7	-27.6	-3.9	-27.6	2.00	2.00	
996.5	9.93	188.00	994.0	-42.5	-6.0	-42.5	2.00	2.00	Fox Hills - BASE
1,000.0	10.00	188.00	997.5	-43.1	-6.1	-43.1	2.00	2.00	
1,100.0	12.00	188.00	1,095.6	-62.0	-8.7	-62.0	2.00	2.00	
1,142.7	12.85	188.00	1,137.3	-71.1	-10.0	-71.1	2.00	2.00	EOB; Inc=12.85°
1,200.0	12.85	188.00	1,193.2	-83.7	-11.8	-83.7	0.00	0.00	
1,300.0	12.85	188.00	1,290.7	-105.7	-14.9	-105.7	0.00	0.00	
1,400.0	12.85	188.00	1,388.2	-127.8	-18.0	-127.8	0.00	0.00	
1,500.0	12.85	188.00	1,485.7	-149.8	-21.0	-149.8	0.00	0.00	
1,600.0	12.85	188.00	1,583.2	-171.8	-24.1	-171.8	0.00	0.00	
1,700.0	12.85	188.00	1,680.7	-193.9	-27.2	-193.9	0.00	0.00	
1,800.0	12.85	188.00	1,778.1	-215.9	-30.3	-215.9	0.00	0.00	
1,900.0	12.85	188.00	1,875.6	-237.9	-33.4	-237.9	0.00	0.00	
2,000.0	12.85	188.00	1,973.1	-260.0	-36.5	-260.0	0.00	0.00	
2,100.0	12.85	188.00	2,070.6	-282.0	-39.6	-282.0	0.00	0.00	
2,200.0	12.85	188.00	2,168.1	-304.0	-42.7	-304.0	0.00	0.00	
2,300.0	12.85	188.00	2,265.6	-326.1	-45.8	-326.1	0.00	0.00	
2,400.0	12.85	188.00	2,363.1	-348.1	-48.9	-348.1	0.00	0.00	
2,500.0	12.85	188.00	2,460.6	-370.1	-52.0	-370.1	0.00	0.00	
2,600.0	12.85	188.00	2,558.1	-392.2	-55.1	-392.2	0.00	0.00	
2,700.0	12.85	188.00	2,655.6	-414.2	-58.2	-414.2	0.00	0.00	
2,800.0	12.85	188.00	2,753.1	-436.2	-61.3	-436.2	0.00	0.00	
2,900.0	12.85	188.00	2,850.6	-458.2	-64.4	-458.2	0.00	0.00	
3,000.0	12.85	188.00	2,948.1	-480.3	-67.5	-480.3	0.00	0.00	
3,100.0	12.85	188.00	3,045.6	-502.3	-70.6	-502.3	0.00	0.00	
3,200.0	12.85	188.00	3,143.1	-524.3	-73.7	-524.3	0.00	0.00	
3,300.0	12.85	188.00	3,240.6	-546.4	-76.8	-546.4	0.00	0.00	
3,400.0	12.85	188.00	3,338.1	-568.4	-79.9	-568.4	0.00	0.00	
3,500.0	12.85	188.00	3,435.5	-590.4	-83.0	-590.4	0.00	0.00	
3,600.0	12.85	188.00	3,533.0	-612.5	-86.0	-612.5	0.00	0.00	
3,700.0	12.85	188.00	3,630.5	-634.5	-89.1	-634.5	0.00	0.00	
3,800.0	12.85	188.00	3,728.0	-656.5	-92.2	-656.5	0.00	0.00	
3,900.0	12.85	188.00	3,825.5	-678.6	-95.3	-678.6	0.00	0.00	
4,000.0	12.85	188.00	3,923.0	-700.6	-98.4	-700.6	0.00	0.00	
4,100.0	12.85	188.00	4,020.5	-722.6	-101.5	-722.6	0.00	0.00	
4,200.0	12.85	188.00	4,118.0	-744.7	-104.6	-744.7	0.00	0.00	
4,300.0	12.85	188.00	4,215.5	-766.7	-107.7	-766.7	0.00	0.00	
4,400.0	12.85	188.00	4,313.0	-788.7	-110.8	-788.7	0.00	0.00	
4,500.0	12.85	188.00	4,410.5	-810.7	-113.9	-810.7	0.00	0.00	
4,600.0	12.85	188.00	4,508.0	-832.8	-117.0	-832.8	0.00	0.00	
4,700.0	12.85	188.00	4,605.5	-854.8	-120.1	-854.8	0.00	0.00	
4,798.0	12.85	188.00	4,701.0	-876.4	-123.1	-876.4	0.00	0.00	Sussex
4,800.0	12.85	188.00	4,703.0	-876.8	-123.2	-876.8	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site:	S36 T2N-R66W (Marcus State, Mumby State)	North Reference:	True
Well:	Mumby State 4E-36H	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
4,900.0	12.85	188.00	4,800.5	-898.9	-126.3	-898.9	0.00	0.00	
4,958.0	12.85	188.00	4,857.0	-911.6	-128.1	-911.6	0.00	0.00	Sussex Marker
5,000.0	12.85	188.00	4,898.0	-920.9	-129.4	-920.9	0.00	0.00	
5,100.0	12.85	188.00	4,995.4	-942.9	-132.5	-942.9	0.00	0.00	
5,200.0	12.85	188.00	5,092.9	-965.0	-135.6	-965.0	0.00	0.00	
5,300.0	12.85	188.00	5,190.4	-987.0	-138.7	-987.0	0.00	0.00	
5,345.7	12.85	188.00	5,235.0	-997.1	-140.1	-997.1	0.00	0.00	Shannon
5,400.0	12.85	188.00	5,287.9	-1,009.0	-141.8	-1,009.0	0.00	0.00	
5,500.0	12.85	188.00	5,385.4	-1,031.1	-144.9	-1,031.1	0.00	0.00	
5,600.0	12.85	188.00	5,482.9	-1,053.1	-148.0	-1,053.1	0.00	0.00	
5,700.0	12.85	188.00	5,580.4	-1,075.1	-151.1	-1,075.1	0.00	0.00	
5,800.0	12.85	188.00	5,677.9	-1,097.2	-154.1	-1,097.2	0.00	0.00	
5,900.0	12.85	188.00	5,775.4	-1,119.2	-157.2	-1,119.2	0.00	0.00	
5,989.5	12.85	188.00	5,862.7	-1,138.9	-160.0	-1,138.9	0.00	0.00	Start Drop -2.00
6,000.0	12.64	188.00	5,872.9	-1,141.2	-160.3	-1,141.2	2.00	-2.00	
6,100.0	10.64	188.00	5,970.8	-1,161.2	-163.1	-1,161.2	2.00	-2.00	
6,200.0	8.64	188.00	6,069.4	-1,177.8	-165.5	-1,177.8	2.00	-2.00	
6,300.0	6.64	188.00	6,168.5	-1,190.9	-167.3	-1,190.9	2.00	-2.00	
6,400.0	4.64	188.00	6,268.0	-1,200.7	-168.7	-1,200.7	2.00	-2.00	
6,500.0	2.64	188.00	6,367.8	-1,207.0	-169.6	-1,207.0	2.00	-2.00	
6,600.0	0.64	188.00	6,467.8	-1,209.8	-170.0	-1,209.8	2.00	-2.00	
6,632.2	0.00	0.00	6,500.0	-1,210.0	-170.0	-1,210.0	2.00	-2.00	EOD; Inc=0°
6,680.2	0.00	0.00	6,548.0	-1,210.0	-170.0	-1,210.0	0.00	0.00	Teepee Buttes (*if present)
6,700.0	0.00	0.00	6,567.8	-1,210.0	-170.0	-1,210.0	0.00	0.00	
6,800.0	0.00	0.00	6,667.8	-1,210.0	-170.0	-1,210.0	0.00	0.00	
6,900.0	0.00	0.00	6,767.8	-1,210.0	-170.0	-1,210.0	0.00	0.00	
7,000.0	0.00	0.00	6,867.8	-1,210.0	-170.0	-1,210.0	0.00	0.00	
7,029.3	0.00	0.00	6,897.1	-1,210.0	-170.0	-1,210.0	0.00	0.00	Start Build 10.00
7,100.0	7.07	0.00	6,967.6	-1,205.6	-170.0	-1,205.6	10.00	10.00	
7,200.0	17.07	0.00	7,065.3	-1,184.8	-170.0	-1,184.8	10.00	10.00	
7,226.1	19.68	0.00	7,090.0	-1,176.5	-170.0	-1,176.5	10.00	10.00	Sharon Springs
7,271.4	24.21	0.00	7,132.0	-1,159.6	-170.0	-1,159.6	10.00	10.00	Niobrara
7,300.0	27.07	0.00	7,157.8	-1,147.2	-170.0	-1,147.2	10.00	10.00	
7,363.9	33.46	0.00	7,213.0	-1,115.0	-170.0	-1,115.0	10.00	10.00	B Chalk
7,400.0	37.07	0.00	7,242.4	-1,094.2	-170.0	-1,094.2	10.00	10.00	
7,407.0	37.77	0.00	7,248.0	-1,089.9	-170.0	-1,089.9	10.00	10.00	B Marl
7,448.7	41.94	0.00	7,280.0	-1,063.2	-170.0	-1,063.2	10.00	10.00	C Chalk
7,500.0	47.07	0.00	7,316.6	-1,027.3	-170.0	-1,027.3	10.00	10.00	
7,540.4	51.11	0.00	7,343.0	-996.8	-170.0	-996.8	10.00	10.00	C Marl
7,600.0	57.07	0.00	7,378.0	-948.5	-170.0	-948.5	10.00	10.00	
7,690.6	66.13	0.00	7,421.0	-868.9	-170.0	-868.9	10.00	10.00	Ft. Hayes
7,700.0	67.07	0.00	7,424.7	-860.3	-170.0	-860.3	10.00	10.00	
7,800.0	77.07	0.00	7,455.5	-765.2	-170.0	-765.2	10.00	10.00	
7,827.5	79.82	0.00	7,461.0	-738.3	-170.0	-738.3	10.00	10.00	Codell
7,900.0	87.07	0.00	7,469.3	-666.3	-170.0	-666.3	10.00	10.00	
7,929.3	90.00	0.00	7,470.0	-637.0	-170.0	-637.0	10.00	10.00	LP @ 7470' TVD; 90°
8,000.0	90.00	0.00	7,470.0	-566.3	-170.0	-566.3	0.00	0.00	
8,100.0	90.00	0.00	7,470.0	-466.3	-170.0	-466.3	0.00	0.00	
8,200.0	90.00	0.00	7,470.0	-366.3	-170.0	-366.3	0.00	0.00	
8,300.0	90.00	0.00	7,470.0	-266.3	-170.0	-266.3	0.00	0.00	
8,400.0	90.00	0.00	7,470.0	-166.3	-170.0	-166.3	0.00	0.00	
8,500.0	90.00	0.00	7,470.0	-66.3	-170.0	-66.3	0.00	0.00	

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Well:	Mumby State 4E-36H	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
8,600.0	90.00	0.00	7,470.0	33.7	-170.0	33.7	0.00	0.00	
8,700.0	90.00	0.00	7,470.0	133.7	-170.0	133.7	0.00	0.00	
8,800.0	90.00	0.00	7,470.0	233.7	-170.0	233.7	0.00	0.00	
8,900.0	90.00	0.00	7,470.0	333.7	-170.0	333.7	0.00	0.00	
9,000.0	90.00	0.00	7,470.0	433.7	-170.0	433.7	0.00	0.00	
9,100.0	90.00	0.00	7,470.0	533.7	-170.0	533.7	0.00	0.00	
9,200.0	90.00	0.00	7,470.0	633.7	-170.0	633.7	0.00	0.00	
9,300.0	90.00	0.00	7,470.0	733.7	-170.0	733.7	0.00	0.00	
9,400.0	90.00	0.00	7,470.0	833.7	-170.0	833.7	0.00	0.00	
9,500.0	90.00	0.00	7,470.0	933.7	-170.0	933.7	0.00	0.00	
9,600.0	90.00	0.00	7,470.0	1,033.7	-170.0	1,033.7	0.00	0.00	
9,700.0	90.00	0.00	7,470.0	1,133.7	-170.0	1,133.7	0.00	0.00	
9,800.0	90.00	0.00	7,470.0	1,233.7	-170.0	1,233.7	0.00	0.00	
9,900.0	90.00	0.00	7,470.0	1,333.7	-170.0	1,333.7	0.00	0.00	
10,000.0	90.00	0.00	7,470.0	1,433.7	-170.0	1,433.7	0.00	0.00	
10,100.0	90.00	0.00	7,470.0	1,533.7	-170.0	1,533.7	0.00	0.00	
10,200.0	90.00	0.00	7,470.0	1,633.7	-170.0	1,633.7	0.00	0.00	
10,300.0	90.00	0.00	7,470.0	1,733.7	-170.0	1,733.7	0.00	0.00	
10,400.0	90.00	0.00	7,470.0	1,833.7	-170.0	1,833.7	0.00	0.00	
10,500.0	90.00	0.00	7,470.0	1,933.7	-170.0	1,933.7	0.00	0.00	
10,600.0	90.00	0.00	7,470.0	2,033.7	-170.0	2,033.7	0.00	0.00	
10,700.0	90.00	0.00	7,470.0	2,133.7	-170.0	2,133.7	0.00	0.00	
10,800.0	90.00	0.00	7,470.0	2,233.7	-170.0	2,233.7	0.00	0.00	
10,900.0	90.00	0.00	7,470.0	2,333.7	-170.0	2,333.7	0.00	0.00	
11,000.0	90.00	0.00	7,470.0	2,433.7	-170.0	2,433.7	0.00	0.00	
11,100.0	90.00	0.00	7,470.0	2,533.7	-170.0	2,533.7	0.00	0.00	
11,200.0	90.00	0.00	7,470.0	2,633.7	-170.0	2,633.7	0.00	0.00	
11,300.0	90.00	0.00	7,470.0	2,733.7	-170.0	2,733.7	0.00	0.00	
11,400.0	90.00	0.00	7,470.0	2,833.7	-170.0	2,833.7	0.00	0.00	
11,429.3	90.00	0.00	7,470.0	2,863.0	-170.0	2,863.0	0.00	0.00	Start turn @ 11,429' MD
11,500.0	90.00	1.70	7,470.0	2,933.7	-168.9	2,933.7	2.41	0.00	
11,600.0	90.00	4.11	7,470.0	3,033.5	-163.9	3,033.5	2.41	0.00	
11,700.0	90.00	6.52	7,470.0	3,133.1	-154.6	3,133.1	2.41	0.00	
11,800.0	90.00	8.92	7,470.0	3,232.2	-141.2	3,232.2	2.41	0.00	
11,822.9	90.00	9.47	7,470.0	3,254.8	-137.5	3,254.8	2.41	0.00	End of turn @ 11,822' MD
11,900.0	90.00	9.47	7,470.0	3,330.8	-124.8	3,330.8	0.00	0.00	
12,000.0	90.00	9.47	7,470.0	3,429.5	-108.4	3,429.5	0.00	0.00	
12,100.0	90.00	9.47	7,470.0	3,528.1	-91.9	3,528.1	0.00	0.00	
12,200.0	90.00	9.47	7,470.0	3,626.7	-75.5	3,626.7	0.00	0.00	
12,203.0	90.00	9.47	7,470.0	3,629.7	-75.0	3,629.7	0.00	0.00	TD at 12203.0

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL 4E-36H	0.00	0.00	7,470.0	3,629.7	-75.0	1,280,524.84	3,218,250.82	40.100790	-104.719820
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site:	S36 T2N-R66W (Marcus State, Mumby State)	North Reference:	True
Well:	Mumby State 4E-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
996.5	994.0	Fox Hills - BASE			
4,798.0	4,701.0	Sussex			
4,958.0	4,857.0	Sussex Marker			
5,345.7	5,235.0	Shannon			
6,680.2	6,548.0	Teepee Buttes (*if present)			
7,226.1	7,090.0	Sharon Springs			
7,271.4	7,132.0	Niobrara			
7,363.9	7,213.0	B Chalk			
7,407.0	7,248.0	B Marl			
7,448.7	7,280.0	C Chalk			
7,540.4	7,343.0	C Marl			
7,690.6	7,421.0	Ft. Hayes			
7,827.5	7,461.0	Codell			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
500.0	500.0	0.0	0.0	KOP @ 500'
1,142.7	1,137.3	-71.1	-10.0	EOB; Inc=12.85°
5,989.5	5,862.7	-1,138.9	-160.0	Start Drop -2.00
6,632.2	6,500.0	-1,210.0	-170.0	EOD; Inc=0°
7,029.3	6,897.1	-1,210.0	-170.0	Start Build 10.00
7,929.3	7,470.0	-637.0	-170.0	LP @ 7470' TVD; 90°
11,429.3	7,470.0	2,863.0	-170.0	Start turn @ 11,429' MD
11,822.9	7,470.0	3,254.8	-137.5	End of turn @ 11,822' MD
12,203.0	7,470.0	3,629.7	-75.0	TD at 12203.0

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S36 T2N-R66W (Marcus State, Mumby State)

Mumby State 4E-36H

HZ

Plan #1

Anticollision Report

16 January, 2014

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	1/16/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,203.0	Plan #1 (HZ)	Geolink MWD	Geolink MWD	

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						
S36 T2N-R66W (Marcus State, Mumby State)						
BADDING STATE 1 (EXISTING) - PDC WELL - NO SUR	11,692.0	7,475.0	155.1	84.0	2.183	CC, ES
BADDING STATE 1 (EXISTING) - PDC WELL - NO SUR	11,700.0	7,475.0	155.3	84.1	2.182	SF
BADDING STATE 31-36 (EXISTING) - ENCANA WELL -						Out of range
BADDING STATE 42-36 (EXISTING) - ENCANA WELL -						Out of range
BALLANTYNE WW 01-18D (EXISTING) - NOBLE WELL						Out of range
Marcus State 3A-36H - HZ - FINAL						Out of range
Marcus State 3B-36H - HZ - FINAL						Out of range
Marcus State 3C-36H - HZ - FINAL						Out of range
Marcus State 3D-36H - HZ - FINAL						Out of range
Marcus State 3E-36H - HZ - FINAL						Out of range
Marcus State 3F-36H - HZ - FINAL						Out of range
MUMBY STATE 1 (EXISTING) - ENCANA WELL - GYRO	1,464.4	1,455.8	61.6	56.7	12.491	CC, ES
MUMBY STATE 1 (EXISTING) - ENCANA WELL - GYRO	8,425.1	7,477.4	223.5	202.1	10.472	SF
MUMBY STATE 33-36 (EXISTING) - ENCANA WELL - G						Out of range
Mumby State 4A-36H - HZ - Plan #1	166.3	167.3	40.0	39.5	83.769	CC
Mumby State 4A-36H - HZ - Plan #1	200.0	201.0	40.0	39.4	67.227	ES
Mumby State 4A-36H - HZ - Plan #1	2,600.0	2,528.3	480.4	464.1	29.509	SF
Mumby State 4B-36H - HZ - Plan #1	233.7	233.7	29.9	29.2	42.100	CC, ES
Mumby State 4B-36H - HZ - Plan #1	3,300.0	3,246.7	484.1	462.0	21.906	SF
Mumby State 4C-36H - HZ - Plan #1	266.3	267.3	20.1	19.3	24.371	CC
Mumby State 4C-36H - HZ - Plan #1	300.0	301.0	20.1	19.2	21.337	ES
Mumby State 4C-36H - HZ - Plan #1	4,800.0	4,766.0	489.0	454.7	14.240	SF
Mumby State 4D-36H - HZ - Plan #1	400.0	400.0	10.1	8.8	7.799	CC, ES
Mumby State 4D-36H - HZ - Plan #1	12,203.0	11,971.0	429.9	321.0	3.950	SF
Mumby State 4F-36H - HZ - Plan #1	400.0	400.0	10.1	8.8	7.799	CC, ES
Mumby State 4F-36H - HZ - Plan #1	12,203.0	11,961.0	429.9	319.9	3.910	SF
Mumby State 4G-36H - HZ - Plan #1	300.0	300.0	19.9	18.9	21.077	CC, ES
Mumby State 4G-36H - HZ - Plan #1	500.0	499.1	23.8	22.2	14.403	SF
Mumby State 4H-36H - HZ - Plan #1	200.0	200.0	29.9	29.3	50.452	CC, ES
Mumby State 4H-36H - HZ - Plan #1	500.0	497.0	41.5	39.8	24.833	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 Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - BADDING STATE 1 (EXISTING) - PDC WELL - NO SU													Offset Site Error:	0.0 ft
Survey Program: 0-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)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
11,300.0	7,470.0	7,475.0	7,475.0	52.1	13.0	90.00	3,108.0	-1.4	410.6	345.5	65.02	6.314		
11,400.0	7,470.0	7,475.0	7,475.0	53.8	13.0	90.00	3,108.0	-1.4	322.0	255.3	66.71	4.827		
11,500.0	7,470.0	7,475.0	7,475.0	55.4	13.0	90.00	3,108.0	-1.4	241.8	173.5	68.29	3.541		
11,600.0	7,470.0	7,475.0	7,475.0	57.1	13.0	90.00	3,108.0	-1.4	178.7	109.0	69.76	2.562		
11,692.0	7,470.0	7,475.0	7,475.0	58.7	13.0	90.00	3,108.0	-1.4	155.1	84.0	71.04	2.183 CC, ES		
11,700.0	7,470.0	7,475.0	7,475.0	58.8	13.0	90.00	3,108.0	-1.4	155.3	84.1	71.15	2.182 SF		
11,800.0	7,470.0	7,475.0	7,475.0	60.5	13.0	90.00	3,108.0	-1.4	187.0	114.5	72.45	2.581		
11,900.0	7,470.0	7,475.0	7,475.0	62.1	13.0	90.00	3,108.0	-1.4	254.7	180.7	74.05	3.440		
12,000.0	7,470.0	7,475.0	7,475.0	63.8	13.0	90.00	3,108.0	-1.4	338.8	263.0	75.75	4.472		
12,100.0	7,470.0	7,475.0	7,475.0	65.5	13.0	90.00	3,108.0	-1.4	429.7	352.3	77.46	5.548		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - MUMBY STATE 1 (EXISTING) - ENCANA WELL - GYR												Offset Site Error: 0.0 ft		
Survey Program: 100-Gyro												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	4.9	4.9	0.0	0.0	169.64	-145.4	26.6	147.8					
100.0	100.0	103.4	103.4	0.1	0.1	169.43	-145.9	27.2	148.4	148.2	0.20	736.977		
200.0	200.0	205.7	205.7	0.3	0.2	169.04	-145.9	28.3	148.6	148.2	0.47	319.206		
229.0	229.0	234.0	234.0	0.3	0.2	168.92	-145.8	28.5	148.6	148.0	0.54	274.477		
300.0	300.0	303.5	303.4	0.5	0.3	168.56	-146.0	29.5	148.9	148.2	0.73	205.098		
400.0	400.0	402.7	402.6	0.6	0.3	168.06	-147.0	31.1	150.3	149.3	0.99	152.131		
500.0	500.0	502.6	502.6	0.8	0.4	167.64	-148.3	32.5	151.8	150.6	1.25	121.499		
600.0	600.0	602.8	602.7	1.0	0.5	-20.83	-149.7	33.5	151.8	150.2	1.51	100.372		
700.0	699.8	703.3	703.2	1.2	0.6	-21.88	-150.8	34.5	148.2	146.4	1.78	83.458		
800.0	799.5	805.1	805.0	1.4	0.7	-23.75	-150.8	35.6	140.5	138.4	2.04	68.705		
900.0	898.7	903.5	903.5	1.6	0.8	-26.17	-150.6	36.0	129.3	127.0	2.32	55.784		
1,000.0	997.5	1,003.5	1,003.4	1.9	0.9	-29.93	-150.2	36.2	115.1	112.5	2.62	44.014		
1,100.0	1,095.6	1,100.9	1,100.8	2.3	1.0	-36.20	-149.3	36.9	98.5	95.5	2.96	33.262		
1,200.0	1,193.2	1,197.2	1,197.0	2.6	1.0	-45.97	-149.1	38.2	82.3	78.9	3.40	24.222		
1,300.0	1,290.7	1,294.5	1,294.4	3.0	1.1	-59.39	-150.0	39.7	70.2	66.3	3.95	17.768		
1,400.0	1,388.2	1,392.7	1,392.6	3.4	1.2	-76.53	-151.1	40.7	63.1	58.5	4.57	13.797		
1,464.4	1,450.9	1,455.8	1,455.7	3.7	1.3	-89.02	-151.6	40.9	61.6	56.7	4.93	12.491	CC, ES	
1,500.0	1,485.7	1,490.7	1,490.5	3.8	1.3	-96.18	-151.6	41.0	62.1	57.0	5.10	12.186		
1,600.0	1,583.2	1,588.2	1,588.1	4.2	1.4	-115.03	-151.1	41.1	68.5	63.1	5.38	12.729		
1,700.0	1,680.7	1,685.6	1,685.5	4.6	1.5	-129.89	-150.3	40.9	80.9	75.4	5.48	14.744		
1,800.0	1,778.1	1,782.8	1,782.6	5.0	1.5	-140.51	-149.2	40.5	97.3	91.7	5.55	17.523		
1,900.0	1,875.6	1,880.3	1,880.1	5.5	1.6	-147.51	-148.8	40.8	116.0	110.3	5.67	20.478		
2,000.0	1,973.1	1,979.3	1,979.1	5.9	1.7	-152.29	-149.3	41.4	135.3	129.5	5.82	23.246		
2,100.0	2,070.6	2,076.3	2,076.2	6.3	1.8	-156.15	-149.8	40.8	154.8	148.8	5.99	25.846		
2,200.0	2,168.1	2,172.8	2,172.6	6.7	1.9	-159.33	-149.4	40.1	175.4	169.3	6.17	28.454		
2,300.0	2,265.6	2,270.9	2,270.7	7.1	2.0	-161.95	-148.7	39.3	196.7	190.4	6.36	30.944		
2,400.0	2,363.1	2,368.8	2,368.7	7.6	2.1	-163.99	-148.5	38.4	217.8	211.2	6.57	33.176		
2,500.0	2,460.6	2,464.6	2,464.4	8.0	2.1	-165.64	-148.2	37.6	239.3	232.5	6.78	35.283		
2,600.0	2,558.1	2,563.8	2,563.6	8.4	2.2	-166.98	-147.6	37.4	261.4	254.4	7.01	37.282		
2,700.0	2,655.6	2,662.5	2,662.3	8.8	2.3	-168.08	-148.1	36.8	282.6	275.3	7.25	38.985		
2,800.0	2,753.1	2,757.6	2,757.4	9.2	2.4	-169.03	-148.2	36.2	304.1	296.6	7.48	40.632		
2,900.0	2,850.6	2,854.1	2,853.9	9.7	2.5	-169.84	-147.5	35.9	326.5	318.8	7.73	42.267		
3,000.0	2,948.1	2,951.3	2,951.1	10.1	2.6	-170.64	-146.8	35.2	348.9	341.0	7.97	43.797		
3,100.0	3,045.6	3,049.1	3,048.9	10.5	2.7	-171.32	-146.0	34.6	371.5	363.3	8.21	45.244		
3,200.0	3,143.1	3,147.2	3,147.0	10.9	2.7	-171.98	-145.5	33.6	393.8	385.3	8.46	46.564		
3,300.0	3,240.6	3,244.9	3,244.7	11.4	2.8	-172.56	-144.9	32.7	416.2	407.5	8.70	47.812		
3,400.0	3,338.1	3,342.3	3,342.1	11.8	2.9	-173.04	-144.6	32.0	438.3	429.4	8.95	48.952		
3,500.0	3,435.5	3,436.9	3,436.7	12.2	3.0	-173.48	-143.9	31.2	460.9	451.7	9.20	50.086		
3,600.0	3,533.0	3,533.4	3,533.1	12.6	3.1	-173.78	-142.9	31.4	484.1	474.6	9.46	51.184		
8,000.0	7,470.0	7,478.3	7,477.5	17.1	6.5	90.64	-141.3	53.5	480.2	456.9	23.35	20.564		
8,100.0	7,470.0	7,478.1	7,477.3	16.3	6.5	90.59	-141.3	53.5	394.5	371.9	22.59	17.463		
8,200.0	7,470.0	7,477.9	7,477.1	15.8	6.5	90.54	-141.3	53.5	317.2	295.2	21.99	14.424		
8,300.0	7,470.0	7,477.7	7,476.9	15.3	6.5	90.48	-141.3	53.5	256.1	234.5	21.57	11.873		
8,400.0	7,470.0	7,477.5	7,476.7	15.1	6.5	90.42	-141.3	53.5	224.9	203.5	21.35	10.535		
8,425.1	7,470.0	7,477.4	7,476.6	15.1	6.5	90.41	-141.3	53.5	223.5	202.1	21.34	10.472	SF	
8,500.0	7,470.0	7,477.2	7,476.4	15.1	6.5	90.36	-141.3	53.5	235.7	214.4	21.33	11.051		
8,600.0	7,470.0	7,477.0	7,476.2	15.3	6.5	90.30	-141.3	53.5	283.8	262.3	21.52	13.189		
8,700.0	7,470.0	7,476.7	7,475.9	15.7	6.5	90.24	-141.3	53.5	354.3	332.4	21.91	16.174		
8,800.0	7,470.0	7,476.5	7,475.7	16.2	6.5	90.17	-141.3	53.5	436.5	414.0	22.48	19.418		

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 Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4A-36H - 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				Total	Separation	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)	Uncertainty Axis	Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.48	0.4	-40.0	40.0					
100.0	100.0	101.0	101.0	0.1	0.1	-89.48	0.4	-40.0	40.0	39.8	0.25	162.583		
166.3	166.3	167.3	167.3	0.2	0.2	-89.48	0.4	-40.0	40.0	39.5	0.48	83.769 CC		
200.0	200.0	201.0	201.0	0.3	0.3	-89.48	0.4	-40.0	40.0	39.4	0.60	67.227 ES		
300.0	300.0	300.0	300.0	0.5	0.5	-91.05	-0.8	-41.3	41.4	40.4	0.94	43.838		
400.0	400.0	398.6	398.4	0.6	0.7	-95.13	-4.1	-45.3	45.5	44.2	1.29	35.173		
500.0	500.0	496.8	496.2	0.8	0.9	-100.43	-9.5	-51.8	52.8	51.2	1.65	32.104		
600.0	600.0	594.4	593.2	1.0	1.2	67.53	-17.1	-60.7	62.9	60.9	2.02	31.217		
700.0	699.8	691.6	689.2	1.2	1.5	65.92	-26.7	-72.2	74.8	72.4	2.39	31.285		
800.0	799.5	788.2	784.0	1.4	1.8	65.84	-38.4	-86.0	88.4	85.6	2.80	31.566		
900.0	898.7	884.1	877.6	1.6	2.2	66.66	-52.0	-102.2	103.7	100.4	3.26	31.775		
1,000.0	997.5	979.2	969.7	1.9	2.7	67.98	-67.5	-120.6	120.6	116.8	3.79	31.778		
1,100.0	1,095.6	1,073.6	1,060.1	2.3	3.2	69.56	-84.8	-141.1	139.2	134.8	4.41	31.543		
1,200.0	1,193.2	1,167.1	1,148.9	2.6	3.7	71.26	-103.8	-163.7	159.8	154.7	5.11	31.271		
1,300.0	1,290.7	1,263.2	1,239.2	3.0	4.3	72.44	-124.8	-188.6	182.4	176.6	5.85	31.210		
1,400.0	1,388.2	1,360.5	1,330.8	3.4	4.9	73.36	-146.1	-213.9	205.3	198.7	6.61	31.070		
1,500.0	1,485.7	1,457.8	1,422.3	3.8	5.5	74.09	-167.4	-239.2	228.1	220.7	7.38	30.901		
1,600.0	1,583.2	1,555.1	1,513.8	4.2	6.1	74.68	-188.7	-264.5	251.0	242.8	8.17	30.727		
1,700.0	1,680.7	1,652.4	1,605.3	4.6	6.8	75.18	-210.0	-289.8	273.9	264.9	8.96	30.558		
1,800.0	1,778.1	1,749.8	1,696.8	5.0	7.4	75.60	-231.3	-315.1	296.8	287.0	9.76	30.400		
1,900.0	1,875.6	1,847.1	1,788.4	5.5	8.0	75.97	-252.6	-340.4	319.7	309.2	10.57	30.252		
2,000.0	1,973.1	1,944.4	1,879.9	5.9	8.6	76.28	-274.0	-365.7	342.7	331.3	11.38	30.117		
2,100.0	2,070.6	2,041.7	1,971.4	6.3	9.2	76.55	-295.3	-391.0	365.6	353.4	12.19	29.993		
2,200.0	2,168.1	2,139.0	2,062.9	6.7	9.8	76.79	-316.6	-416.3	388.6	375.6	13.00	29.879		
2,300.0	2,265.6	2,236.4	2,154.5	7.1	10.4	77.01	-337.9	-441.6	411.5	397.7	13.82	29.774		
2,400.0	2,363.1	2,333.7	2,246.0	7.6	11.1	77.20	-359.2	-466.9	434.5	419.8	14.64	29.679		
2,500.0	2,460.6	2,431.0	2,337.5	8.0	11.7	77.37	-380.5	-492.2	457.5	442.0	15.46	29.590		
2,600.0	2,558.1	2,528.3	2,429.0	8.4	12.3	77.53	-401.8	-517.5	480.4	464.1	16.28	29.509 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4B-36H - 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		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-89.30	0.4	-29.9	29.9					
100.0	100.0	100.0	100.0	0.1	0.1	-89.30	0.4	-29.9	29.9	29.7	0.24	122.526		
200.0	200.0	200.0	200.0	0.3	0.3	-89.30	0.4	-29.9	29.9	29.3	0.59	50.452		
233.7	233.7	233.7	233.7	0.4	0.4	-89.30	0.4	-29.9	29.9	29.2	0.71	42.100	CC, ES	
300.0	300.0	299.7	299.6	0.5	0.5	-89.91	0.0	-30.2	30.2	29.3	0.94	32.090		
400.0	400.0	398.8	398.8	0.6	0.7	-94.39	-2.5	-32.5	32.7	31.4	1.29	25.263		
500.0	500.0	497.7	497.4	0.8	0.9	-101.52	-7.6	-37.1	38.0	36.3	1.65	23.078		
600.0	600.0	596.1	595.2	1.0	1.1	64.81	-15.1	-44.0	46.0	43.9	2.01	22.838		
700.0	699.8	694.0	692.3	1.2	1.4	62.32	-25.1	-53.0	55.6	53.2	2.39	23.275		
800.0	799.5	791.6	788.4	1.4	1.7	61.78	-37.5	-64.2	66.7	63.9	2.80	23.835		
900.0	898.7	888.6	883.4	1.6	2.1	62.39	-52.2	-77.5	79.1	75.9	3.26	24.293		
1,000.0	997.5	985.1	977.1	1.9	2.5	63.64	-69.1	-92.9	93.0	89.2	3.79	24.544		
1,100.0	1,095.6	1,081.0	1,069.4	2.3	3.0	65.21	-88.3	-110.3	108.2	103.8	4.40	24.560		
1,200.0	1,193.2	1,178.1	1,162.1	2.6	3.5	67.00	-109.7	-129.7	124.7	119.6	5.10	24.454		
1,300.0	1,290.7	1,276.6	1,256.0	3.0	4.0	68.53	-131.7	-149.7	141.6	135.8	5.84	24.247		
1,400.0	1,388.2	1,375.1	1,349.9	3.4	4.6	69.73	-153.7	-169.6	158.5	151.9	6.60	24.017		
1,500.0	1,485.7	1,473.6	1,443.8	3.8	5.1	70.69	-175.7	-189.5	175.5	168.1	7.38	23.791		
1,600.0	1,583.2	1,572.1	1,537.8	4.2	5.7	71.49	-197.7	-209.5	192.6	184.4	8.17	23.581		
1,700.0	1,680.7	1,670.6	1,631.7	4.6	6.2	72.16	-219.7	-229.4	209.6	200.7	8.96	23.389		
1,800.0	1,778.1	1,769.1	1,725.6	5.0	6.8	72.72	-241.7	-249.3	226.7	216.9	9.77	23.215		
1,900.0	1,875.6	1,867.6	1,819.5	5.5	7.3	73.21	-263.7	-269.3	243.8	233.2	10.57	23.058		
2,000.0	1,973.1	1,966.1	1,913.5	5.9	7.9	73.64	-285.7	-289.2	260.9	249.5	11.39	22.918		
2,100.0	2,070.6	2,064.6	2,007.4	6.3	8.4	74.01	-307.7	-309.2	278.1	265.9	12.20	22.791		
2,200.0	2,168.1	2,163.1	2,101.3	6.7	9.0	74.34	-329.7	-329.1	295.2	282.2	13.02	22.676		
2,300.0	2,265.6	2,261.6	2,195.2	7.1	9.5	74.63	-351.7	-349.0	312.3	298.5	13.84	22.572		
2,400.0	2,363.1	2,360.1	2,289.2	7.6	10.1	74.89	-373.7	-369.0	329.5	314.8	14.66	22.477		
2,500.0	2,460.6	2,458.7	2,383.1	8.0	10.6	75.13	-395.7	-388.9	346.7	331.2	15.48	22.391		
2,600.0	2,558.1	2,557.2	2,477.0	8.4	11.2	75.34	-417.7	-408.8	363.8	347.5	16.31	22.312		
2,700.0	2,655.6	2,655.7	2,570.9	8.8	11.7	75.53	-439.7	-428.8	381.0	363.9	17.13	22.240		
2,800.0	2,753.1	2,754.2	2,664.9	9.2	12.3	75.71	-461.7	-448.7	398.2	380.2	17.96	22.173		
2,900.0	2,850.6	2,852.7	2,758.8	9.7	12.8	75.87	-483.7	-468.7	415.3	396.6	18.78	22.111		
3,000.0	2,948.1	2,951.2	2,852.7	10.1	13.4	76.02	-505.7	-488.6	432.5	412.9	19.61	22.054		
3,100.0	3,045.6	3,049.7	2,946.6	10.5	14.0	76.16	-527.7	-508.5	449.7	429.3	20.44	22.001		
3,200.0	3,143.1	3,148.2	3,040.6	10.9	14.5	76.29	-549.7	-528.5	466.9	445.6	21.27	21.952		
3,300.0	3,240.6	3,246.7	3,134.5	11.4	15.1	76.41	-571.7	-548.4	484.1	462.0	22.10	21.906	SF	

Cathedral Energy Services

Anticollision Report

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Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4C-36H - 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	1.0	1.0	0.0	0.0	-88.96	0.4	-20.1	20.1					
100.0	100.0	101.0	101.0	0.1	0.1	-88.96	0.4	-20.1	20.1	19.9	0.25	81.870		
200.0	200.0	201.0	201.0	0.3	0.3	-88.96	0.4	-20.1	20.1	19.6	0.60	33.852		
266.3	266.3	267.3	267.3	0.4	0.4	-88.96	0.4	-20.1	20.1	19.3	0.83	24.371 CC		
300.0	300.0	301.0	301.0	0.5	0.5	-88.96	0.4	-20.1	20.1	19.2	0.94	21.337 ES		
400.0	400.0	400.6	400.6	0.6	0.6	-93.07	-1.1	-21.1	21.1	19.8	1.29	16.317		
500.0	500.0	500.0	499.8	0.8	0.8	-103.10	-5.5	-23.8	24.5	22.9	1.65	14.876		
600.0	600.0	599.0	598.4	1.0	1.1	60.34	-12.8	-28.4	30.4	28.4	2.01	15.105		
700.0	699.8	697.7	696.4	1.2	1.3	56.23	-23.0	-34.8	37.7	35.3	2.39	15.785		
800.0	799.5	796.1	793.6	1.4	1.6	54.79	-36.0	-42.9	46.0	43.3	2.79	16.499		
900.0	898.7	894.2	890.0	1.6	2.0	54.87	-51.7	-52.7	55.3	52.1	3.24	17.088		
1,000.0	997.5	991.9	985.2	1.9	2.4	55.82	-70.1	-64.3	65.5	61.8	3.75	17.482		
1,100.0	1,095.6	1,089.5	1,079.5	2.3	2.8	57.24	-91.2	-77.5	76.7	72.4	4.34	17.667		
1,200.0	1,193.2	1,188.8	1,175.2	2.6	3.3	59.50	-113.9	-91.7	87.5	82.5	5.02	17.422		
1,300.0	1,290.7	1,288.2	1,270.9	3.0	3.8	61.48	-136.5	-105.9	98.3	92.5	5.75	17.102		
1,400.0	1,388.2	1,387.5	1,366.6	3.4	4.3	63.07	-159.1	-120.1	109.2	102.7	6.50	16.803		
1,500.0	1,485.7	1,486.9	1,462.3	3.8	4.7	64.38	-181.8	-134.2	120.1	112.9	7.26	16.535		
1,600.0	1,583.2	1,586.3	1,558.0	4.2	5.2	65.46	-204.4	-148.4	131.1	123.1	8.04	16.298		
1,700.0	1,680.7	1,685.6	1,653.7	4.6	5.7	66.38	-227.1	-162.6	142.1	133.3	8.83	16.090		
1,800.0	1,778.1	1,785.0	1,749.5	5.0	6.2	67.16	-249.7	-176.8	153.2	143.6	9.63	15.907		
1,900.0	1,875.6	1,884.4	1,845.2	5.5	6.7	67.84	-272.3	-191.0	164.3	153.9	10.43	15.746		
2,000.0	1,973.1	1,983.7	1,940.9	5.9	7.2	68.44	-295.0	-205.2	175.4	164.2	11.24	15.604		
2,100.0	2,070.6	2,083.1	2,036.6	6.3	7.7	68.96	-317.6	-219.3	186.5	174.5	12.05	15.477		
2,200.0	2,168.1	2,182.5	2,132.3	6.7	8.2	69.42	-340.2	-233.5	197.7	184.8	12.87	15.364		
2,300.0	2,265.6	2,281.8	2,228.0	7.1	8.7	69.84	-362.9	-247.7	208.8	195.1	13.68	15.263		
2,400.0	2,363.1	2,381.2	2,323.7	7.6	9.2	70.21	-385.5	-261.9	220.0	205.5	14.50	15.172		
2,500.0	2,460.6	2,480.6	2,419.4	8.0	9.7	70.54	-408.2	-276.1	231.2	215.8	15.32	15.090		
2,600.0	2,558.1	2,579.9	2,515.1	8.4	10.2	70.85	-430.8	-290.2	242.3	226.2	16.14	15.015		
2,700.0	2,655.6	2,679.3	2,610.8	8.8	10.7	71.13	-453.4	-304.4	253.5	236.6	16.96	14.946		
2,800.0	2,753.1	2,778.7	2,706.5	9.2	11.2	71.38	-476.1	-318.6	264.7	246.9	17.78	14.884		
2,900.0	2,850.6	2,878.0	2,802.2	9.7	11.7	71.62	-498.7	-332.8	275.9	257.3	18.61	14.826		
3,000.0	2,948.1	2,977.4	2,897.9	10.1	12.2	71.83	-521.4	-347.0	287.1	267.7	19.43	14.773		
3,100.0	3,045.6	3,076.8	2,993.6	10.5	12.7	72.03	-544.0	-361.2	298.3	278.0	20.26	14.724		
3,200.0	3,143.1	3,176.1	3,089.4	10.9	13.2	72.22	-566.6	-375.3	309.5	288.4	21.08	14.679		
3,300.0	3,240.6	3,275.5	3,185.1	11.4	13.7	72.39	-589.3	-389.5	320.7	298.8	21.91	14.637		
3,400.0	3,338.1	3,374.9	3,280.8	11.8	14.2	72.55	-611.9	-403.7	331.9	309.2	22.74	14.597		
3,500.0	3,435.5	3,474.2	3,376.5	12.2	14.7	72.70	-634.6	-417.9	343.1	319.6	23.56	14.561		
3,600.0	3,533.0	3,573.6	3,472.2	12.6	15.2	72.84	-657.2	-432.1	354.3	329.9	24.39	14.527		
3,700.0	3,630.5	3,673.0	3,567.9	13.1	15.7	72.97	-679.8	-446.3	365.6	340.3	25.22	14.494		
3,800.0	3,728.0	3,772.3	3,663.6	13.5	16.2	73.10	-702.5	-460.4	376.8	350.7	26.05	14.464		
3,900.0	3,825.5	3,871.7	3,759.3	13.9	16.7	73.21	-725.1	-474.6	388.0	361.1	26.88	14.436		
4,000.0	3,923.0	3,971.1	3,855.0	14.3	17.2	73.32	-747.7	-488.8	399.2	371.5	27.71	14.409		
4,100.0	4,020.5	4,070.4	3,950.7	14.8	17.7	73.43	-770.4	-503.0	410.4	381.9	28.53	14.384		
4,200.0	4,118.0	4,169.8	4,046.4	15.2	18.2	73.53	-793.0	-517.2	421.7	392.3	29.36	14.360		
4,300.0	4,215.5	4,269.2	4,142.1	15.6	18.7	73.62	-815.7	-531.3	432.9	402.7	30.19	14.337		
4,400.0	4,313.0	4,368.5	4,237.8	16.0	19.2	73.71	-838.3	-545.5	444.1	413.1	31.02	14.316		
4,500.0	4,410.5	4,467.9	4,333.6	16.5	19.7	73.80	-860.9	-559.7	455.3	423.5	31.85	14.295		
4,600.0	4,508.0	4,567.2	4,429.3	16.9	20.2	73.88	-883.6	-573.9	466.6	433.9	32.68	14.276		
4,700.0	4,605.5	4,666.6	4,525.0	17.3	20.7	73.95	-906.2	-588.1	477.8	444.3	33.51	14.257		
4,800.0	4,703.0	4,766.0	4,620.7	17.7	21.2	74.03	-928.9	-602.3	489.0	454.7	34.34	14.240 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 Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4D-36H - 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	-90.00	0.0	-10.1	10.1					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-10.1	10.1	9.8	0.24	41.221		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-10.1	10.1	9.5	0.59	16.973		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-10.1	10.1	9.1	0.94	10.687		
400.0	400.0	400.0	400.0	0.6	0.6	-90.00	0.0	-10.1	10.1	8.8	1.29	7.799	CC, ES	
500.0	500.0	499.8	499.8	0.8	0.8	-98.80	-1.6	-10.6	10.8	9.1	1.64	6.556		
600.0	600.0	599.5	599.4	1.0	1.0	60.08	-6.6	-12.3	13.0	11.0	2.00	6.515		
700.0	699.8	699.1	698.6	1.2	1.2	52.80	-14.8	-15.1	16.2	13.9	2.37	6.848		
800.0	799.5	798.6	797.3	1.4	1.5	49.37	-26.2	-19.0	20.1	17.3	2.76	7.255		
900.0	898.7	897.9	895.4	1.6	1.8	48.20	-40.8	-24.0	24.3	21.1	3.19	7.624		
1,000.0	997.5	997.0	992.7	1.9	2.1	48.35	-58.6	-30.1	29.1	25.4	3.68	7.907		
1,100.0	1,095.6	1,096.0	1,089.2	2.3	2.5	49.25	-79.6	-37.3	34.2	30.0	4.23	8.083		
1,200.0	1,193.2	1,195.5	1,185.4	2.6	2.9	50.55	-103.3	-45.4	39.7	34.8	4.85	8.177		
1,300.0	1,290.7	1,295.3	1,282.0	3.0	3.4	51.63	-127.3	-53.6	45.2	39.7	5.51	8.205		
1,400.0	1,388.2	1,395.2	1,378.6	3.4	3.8	52.47	-151.4	-61.9	50.8	44.6	6.19	8.202		
1,500.0	1,485.7	1,495.0	1,475.1	3.8	4.3	53.15	-175.4	-70.1	56.3	49.4	6.88	8.184		
1,600.0	1,583.2	1,594.8	1,571.7	4.2	4.8	53.70	-199.5	-78.3	61.9	54.3	7.59	8.157		
1,700.0	1,680.7	1,694.7	1,668.2	4.6	5.2	54.17	-223.5	-86.5	67.5	59.2	8.30	8.128		
1,800.0	1,778.1	1,794.5	1,764.8	5.0	5.7	54.56	-247.6	-94.8	73.0	64.0	9.02	8.097		
1,900.0	1,875.6	1,894.4	1,861.3	5.5	6.2	54.90	-271.6	-103.0	78.6	68.9	9.74	8.068		
2,000.0	1,973.1	1,994.2	1,957.9	5.9	6.6	55.19	-295.7	-111.2	84.2	73.7	10.47	8.039		
2,100.0	2,070.6	2,094.1	2,054.4	6.3	7.1	55.45	-319.7	-119.5	89.8	78.6	11.20	8.012		
2,200.0	2,168.1	2,193.9	2,151.0	6.7	7.6	55.67	-343.7	-127.7	95.3	83.4	11.94	7.987		
2,300.0	2,265.6	2,293.8	2,247.5	7.1	8.1	55.87	-367.8	-135.9	100.9	88.3	12.67	7.963		
2,400.0	2,363.1	2,393.6	2,344.1	7.6	8.5	56.05	-391.8	-144.1	106.5	93.1	13.41	7.941		
2,500.0	2,460.6	2,493.4	2,440.7	8.0	9.0	56.22	-415.9	-152.4	112.1	97.9	14.15	7.920		
2,600.0	2,558.1	2,593.3	2,537.2	8.4	9.5	56.36	-439.9	-160.6	117.7	102.8	14.89	7.901		
2,700.0	2,655.6	2,693.1	2,633.8	8.8	10.0	56.50	-464.0	-168.8	123.3	107.6	15.64	7.883		
2,800.0	2,753.1	2,793.0	2,730.3	9.2	10.4	56.62	-488.0	-177.1	128.9	112.5	16.38	7.866		
2,900.0	2,850.6	2,892.8	2,826.9	9.7	10.9	56.73	-512.1	-185.3	134.4	117.3	17.13	7.850		
3,000.0	2,948.1	2,992.7	2,923.4	10.1	11.4	56.83	-536.1	-193.5	140.0	122.2	17.87	7.836		
3,100.0	3,045.6	3,092.5	3,020.0	10.5	11.9	56.93	-560.2	-201.7	145.6	127.0	18.62	7.822		
3,200.0	3,143.1	3,192.3	3,116.5	10.9	12.3	57.01	-584.2	-210.0	151.2	131.8	19.36	7.809		
3,300.0	3,240.6	3,292.2	3,213.1	11.4	12.8	57.10	-608.3	-218.2	156.8	136.7	20.11	7.797		
3,400.0	3,338.1	3,392.0	3,309.6	11.8	13.3	57.17	-632.3	-226.4	162.4	141.5	20.86	7.785		
3,500.0	3,435.5	3,491.9	3,406.2	12.2	13.8	57.24	-656.4	-234.6	168.0	146.4	21.61	7.774		
3,600.0	3,533.0	3,591.7	3,502.8	12.6	14.2	57.31	-680.4	-242.9	173.6	151.2	22.35	7.764		
3,700.0	3,630.5	3,691.6	3,599.3	13.1	14.7	57.37	-704.4	-251.1	179.2	156.1	23.10	7.754		
3,800.0	3,728.0	3,791.4	3,695.9	13.5	15.2	57.43	-728.5	-259.3	184.7	160.9	23.85	7.745		
3,900.0	3,825.5	3,891.2	3,792.4	13.9	15.7	57.49	-752.5	-267.6	190.3	165.7	24.60	7.737		
4,000.0	3,923.0	3,991.1	3,889.0	14.3	16.1	57.54	-776.6	-275.8	195.9	170.6	25.35	7.728		
4,100.0	4,020.5	4,090.9	3,985.5	14.8	16.6	57.59	-800.6	-284.0	201.5	175.4	26.10	7.720		
4,200.0	4,118.0	4,190.8	4,082.1	15.2	17.1	57.63	-824.7	-292.2	207.1	180.3	26.85	7.713		
4,300.0	4,215.5	4,290.6	4,178.6	15.6	17.6	57.68	-848.7	-300.5	212.7	185.1	27.60	7.706		
4,400.0	4,313.0	4,390.5	4,275.2	16.0	18.0	57.72	-872.8	-308.7	218.3	189.9	28.35	7.699		
4,500.0	4,410.5	4,490.3	4,371.7	16.5	18.5	57.76	-896.8	-316.9	223.9	194.8	29.10	7.693		
4,600.0	4,508.0	4,590.2	4,468.3	16.9	19.0	57.80	-920.9	-325.1	229.5	199.6	29.85	7.686		
4,700.0	4,605.5	4,690.0	4,564.9	17.3	19.5	57.83	-944.9	-333.4	235.1	204.5	30.61	7.680		
4,800.0	4,703.0	4,789.8	4,661.4	17.7	20.0	57.87	-969.0	-341.6	240.7	209.3	31.36	7.675		
4,900.0	4,800.5	4,889.7	4,758.0	18.1	20.4	57.90	-993.0	-349.8	246.2	214.1	32.11	7.669		
5,000.0	4,898.0	4,989.5	4,854.5	18.6	20.9	57.93	-1,017.1	-358.1	251.8	219.0	32.86	7.664		
5,100.0	4,995.4	5,089.4	4,951.1	19.0	21.4	57.96	-1,041.1	-366.3	257.4	223.8	33.61	7.659		

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 Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4D-36H - 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
5,200.0	5,092.9	5,189.2	5,047.6	19.4	21.9	57.99	-1,065.1	-374.5	263.0	228.7	34.36	7.654	
5,300.0	5,190.4	5,289.1	5,144.2	19.8	22.3	58.02	-1,089.2	-382.7	268.6	233.5	35.11	7.650	
5,400.0	5,287.9	5,388.9	5,240.7	20.3	22.8	58.04	-1,113.2	-391.0	274.2	238.3	35.87	7.645	
5,500.0	5,385.4	5,493.6	5,342.2	20.7	23.3	58.21	-1,137.6	-399.3	279.2	242.5	36.66	7.615	
5,600.0	5,482.9	5,600.5	5,446.7	21.1	23.7	58.95	-1,159.0	-406.6	281.8	244.2	37.63	7.489	
5,700.0	5,580.4	5,707.2	5,551.8	21.6	24.0	60.28	-1,176.6	-412.7	282.1	243.3	38.77	7.276	
5,800.0	5,677.9	5,813.4	5,657.0	22.0	24.3	62.22	-1,190.5	-417.4	280.1	240.0	40.07	6.991	
5,900.0	5,775.4	5,918.9	5,761.8	22.4	24.5	64.82	-1,200.6	-420.9	276.2	234.7	41.52	6.653	
6,000.0	5,872.9	6,023.2	5,866.0	22.8	24.7	68.12	-1,207.0	-423.1	270.9	227.8	43.10	6.286	
6,100.0	5,970.8	6,126.7	5,969.4	23.2	24.8	71.68	-1,209.8	-424.0	265.4	220.8	44.55	5.957	
6,200.0	6,069.4	6,226.7	6,069.4	23.5	24.9	75.06	-1,210.0	-424.1	260.6	214.8	45.77	5.694	
6,300.0	6,168.5	6,325.8	6,168.5	23.8	24.9	77.84	-1,210.0	-424.1	257.5	210.8	46.70	5.513	
6,400.0	6,268.0	6,425.3	6,268.0	24.0	25.0	79.95	-1,210.0	-424.1	255.6	208.2	47.39	5.393	
6,500.0	6,367.8	6,525.1	6,367.8	24.1	25.1	81.33	-1,210.0	-424.1	254.5	206.7	47.86	5.318	
6,600.0	6,467.8	6,625.1	6,467.8	24.2	25.2	81.96	-1,210.0	-424.1	254.1	206.0	48.14	5.278	
6,654.1	6,521.9	6,679.2	6,521.9	24.3	25.2	82.06	-1,210.0	-424.1	254.0	205.8	48.25	5.265	
6,700.0	6,567.8	6,725.1	6,567.8	24.3	25.3	-90.00	-1,210.0	-424.1	254.1	205.8	48.32	5.259	
6,762.5	6,630.3	6,787.6	6,630.3	24.4	25.3	-90.00	-1,210.0	-424.1	254.1	205.7	48.42	5.247	
6,800.0	6,667.8	6,825.1	6,667.8	24.4	25.3	-89.92	-1,209.6	-424.1	254.1	205.6	48.47	5.242	
6,900.0	6,767.8	6,923.3	6,765.2	24.5	25.2	-87.23	-1,197.7	-424.1	254.4	205.6	48.77	5.216	
7,000.0	6,867.8	7,015.0	6,853.0	24.6	24.8	-81.43	-1,171.7	-424.1	257.4	208.3	49.03	5.250	
7,100.0	6,967.6	7,100.0	6,929.8	24.5	24.3	-73.68	-1,135.4	-424.1	266.3	217.7	48.62	5.478	
7,200.0	7,065.3	7,178.0	6,994.7	24.3	23.8	-66.79	-1,092.4	-424.1	279.4	232.2	47.17	5.923	
7,300.0	7,157.8	7,250.0	7,049.1	23.7	23.2	-61.10	-1,045.2	-424.1	294.6	249.6	44.99	6.548	
7,400.0	7,242.4	7,329.1	7,101.5	23.0	22.4	-56.01	-986.0	-424.1	310.1	268.0	42.09	7.367	
7,500.0	7,316.6	7,400.0	7,141.1	22.1	21.7	-52.27	-927.3	-424.1	324.6	285.6	39.03	8.317	
7,600.0	7,378.0	7,473.5	7,174.1	21.1	20.9	-49.34	-861.7	-424.1	337.1	301.3	35.85	9.403	
7,700.0	7,424.7	7,550.0	7,199.3	20.1	20.2	-47.22	-789.5	-424.1	347.0	314.2	32.82	10.573	
7,800.0	7,455.5	7,614.2	7,212.9	19.0	19.5	-46.05	-726.8	-424.1	353.4	323.1	30.32	11.657	
7,900.0	7,469.3	7,683.9	7,219.6	18.0	18.9	-45.50	-657.4	-424.1	356.3	328.0	28.33	12.578	
8,000.0	7,470.0	7,775.0	7,220.0	17.1	18.1	-45.47	-566.4	-424.1	356.5	329.3	27.22	13.098	
8,100.0	7,470.0	7,875.0	7,220.0	16.3	17.4	-45.47	-466.4	-424.2	356.5	330.1	26.45	13.480	
8,200.0	7,470.0	7,975.0	7,220.0	15.8	16.8	-45.47	-366.4	-424.2	356.5	330.6	25.90	13.764	
8,300.0	7,470.0	8,075.0	7,220.0	15.3	16.4	-45.47	-266.4	-424.2	356.5	330.9	25.59	13.932	
8,400.0	7,470.0	8,175.0	7,220.0	15.1	16.2	-45.48	-166.4	-424.2	356.5	331.0	25.53	13.968	
8,500.0	7,470.0	8,275.0	7,220.0	15.1	16.1	-45.48	-66.4	-424.2	356.6	330.8	25.71	13.869	
8,600.0	7,470.0	8,375.0	7,220.0	15.3	16.3	-45.48	33.6	-424.2	356.6	330.4	26.13	13.645	
8,700.0	7,470.0	8,475.0	7,220.0	15.7	16.7	-45.48	133.6	-424.2	356.6	329.8	26.79	13.312	
8,800.0	7,470.0	8,575.0	7,220.0	16.2	17.2	-45.48	233.6	-424.2	356.6	328.9	27.65	12.895	
8,900.0	7,470.0	8,675.0	7,220.0	17.0	17.9	-45.48	333.6	-424.3	356.6	327.9	28.72	12.418	
9,000.0	7,470.0	8,775.0	7,220.0	17.8	18.7	-45.48	433.6	-424.3	356.6	326.6	29.95	11.905	
9,100.0	7,470.0	8,875.0	7,220.0	18.8	19.7	-45.48	533.6	-424.3	356.6	325.3	31.34	11.377	
9,200.0	7,470.0	8,975.0	7,220.0	19.9	20.7	-45.49	633.6	-424.3	356.6	323.7	32.87	10.850	
9,300.0	7,470.0	9,075.0	7,220.0	21.1	21.9	-45.49	733.6	-424.3	356.6	322.1	34.51	10.334	
9,400.0	7,470.0	9,175.0	7,220.0	22.4	23.1	-45.49	833.6	-424.3	356.6	320.4	36.25	9.838	
9,500.0	7,470.0	9,275.0	7,220.0	23.7	24.4	-45.49	933.6	-424.3	356.6	318.6	38.08	9.365	
9,600.0	7,470.0	9,375.0	7,220.0	25.1	25.7	-45.49	1,033.6	-424.3	356.6	316.7	39.98	8.920	
9,700.0	7,470.0	9,475.0	7,220.0	26.5	27.1	-45.49	1,133.6	-424.4	356.7	314.7	41.95	8.501	
9,800.0	7,470.0	9,575.0	7,220.0	28.0	28.5	-45.49	1,233.6	-424.4	356.7	312.7	43.98	8.110	
9,900.0	7,470.0	9,675.0	7,220.0	29.5	30.0	-45.50	1,333.6	-424.4	356.7	310.6	46.05	7.745	
10,000.0	7,470.0	9,775.0	7,220.0	31.0	31.5	-45.50	1,433.6	-424.4	356.7	308.5	48.17	7.405	
10,100.0	7,470.0	9,875.0	7,220.0	32.5	33.0	-45.50	1,533.6	-424.4	356.7	306.4	50.32	7.088	

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 Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4D-36H - 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)			
10,200.0	7,470.0	9,975.0	7,220.0	34.1	34.5	-45.50	1,633.6	-424.4	356.7	304.2	52.51	6.793	
10,300.0	7,470.0	10,075.0	7,220.0	35.7	36.1	-45.50	1,733.6	-424.4	356.7	302.0	54.72	6.519	
10,400.0	7,470.0	10,175.0	7,220.0	37.3	37.7	-45.50	1,833.6	-424.4	356.7	299.8	56.96	6.262	
10,500.0	7,470.0	10,275.0	7,220.0	38.9	39.3	-45.50	1,933.6	-424.4	356.7	297.5	59.22	6.023	
10,600.0	7,470.0	10,375.0	7,220.0	40.5	40.9	-45.50	2,033.6	-424.5	356.7	295.2	61.50	5.800	
10,700.0	7,470.0	10,475.0	7,220.0	42.1	42.5	-45.51	2,133.6	-424.5	356.7	292.9	63.80	5.591	
10,800.0	7,470.0	10,575.0	7,220.0	43.8	44.1	-45.51	2,233.6	-424.5	356.7	290.6	66.12	5.395	
10,900.0	7,470.0	10,675.0	7,220.0	45.4	45.8	-45.51	2,333.6	-424.5	356.8	288.3	68.45	5.212	
11,000.0	7,470.0	10,775.0	7,220.0	47.1	47.4	-45.51	2,433.6	-424.5	356.8	286.0	70.79	5.039	
11,100.0	7,470.0	10,875.0	7,220.0	48.7	49.1	-45.51	2,533.6	-424.5	356.8	283.6	73.15	4.877	
11,200.0	7,470.0	10,975.0	7,220.0	50.4	50.7	-45.51	2,633.6	-424.5	356.8	281.3	75.52	4.725	
11,300.0	7,470.0	11,075.0	7,220.0	52.1	52.4	-45.51	2,733.6	-424.5	356.8	278.9	77.89	4.581	
11,400.0	7,470.0	11,175.0	7,220.0	53.8	54.0	-45.52	2,833.6	-424.6	356.8	276.5	80.28	4.445	
11,500.0	7,470.0	11,275.0	7,220.0	55.4	55.7	-45.62	2,933.6	-424.6	357.6	275.0	82.60	4.329	
11,600.0	7,470.0	11,374.9	7,220.0	57.1	57.4	-46.12	3,033.5	-424.6	361.2	276.0	85.22	4.239	
11,700.0	7,470.0	11,474.4	7,220.0	58.8	59.1	-47.01	3,133.1	-424.6	367.9	279.8	88.20	4.172	
11,800.0	7,470.0	11,573.5	7,220.0	60.5	60.8	-48.24	3,232.1	-424.6	377.9	286.4	91.48	4.131	
11,900.0	7,470.0	11,672.2	7,220.0	62.1	62.4	-49.78	3,330.8	-424.6	390.3	294.7	95.68	4.080	
12,000.0	7,470.0	11,770.8	7,220.0	63.8	64.1	-51.29	3,429.4	-424.6	403.1	303.1	100.06	4.029	
12,100.0	7,470.0	11,869.4	7,220.0	65.5	65.8	-52.70	3,528.1	-424.6	416.2	311.8	104.41	3.986	
12,200.0	7,470.0	11,968.1	7,220.0	67.2	67.4	-54.03	3,626.7	-424.6	429.5	320.8	108.70	3.951	
12,203.0	7,470.0	11,971.0	7,220.0	67.2	67.5	-54.06	3,629.6	-424.6	429.9	321.0	108.83	3.950 SF	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4F-36H - 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	90.00	0.0	10.1	10.1					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	10.1	10.1	9.8	0.24	41.221		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	10.1	10.1	9.5	0.59	16.973		
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	10.1	10.1	9.1	0.94	10.687		
400.0	400.0	400.0	400.0	0.6	0.6	90.00	0.0	10.1	10.1	8.8	1.29	7.799 CC, ES		
500.0	500.0	499.9	499.9	0.8	0.8	99.25	-1.7	10.4	10.6	8.9	1.64	6.444		
600.0	600.0	599.6	599.5	1.0	1.0	-74.72	-6.8	11.6	12.9	10.9	2.00	6.423		
700.0	699.8	699.2	698.7	1.2	1.2	-67.70	-15.2	13.4	16.7	14.3	2.38	7.007		
800.0	799.5	798.6	797.3	1.4	1.5	-65.28	-27.0	16.0	21.6	18.8	2.79	7.748		
900.0	898.7	897.8	895.3	1.6	1.8	-65.26	-42.1	19.3	27.6	24.3	3.26	8.466		
1,000.0	997.5	996.8	992.5	1.9	2.1	-66.38	-60.5	23.4	34.5	30.7	3.80	9.078		
1,100.0	1,095.6	1,095.6	1,088.8	2.3	2.5	-67.99	-82.1	28.1	42.5	38.0	4.45	9.555		
1,200.0	1,193.2	1,195.1	1,185.2	2.6	2.9	-70.31	-105.9	33.3	50.9	45.7	5.17	9.843		
1,300.0	1,290.7	1,294.7	1,281.8	3.0	3.4	-72.28	-129.8	38.6	59.3	53.4	5.93	9.994		
1,400.0	1,388.2	1,394.3	1,378.4	3.4	3.8	-73.75	-153.8	43.9	67.8	61.0	6.72	10.087		
1,500.0	1,485.7	1,494.0	1,474.9	3.8	4.2	-74.90	-177.7	49.1	76.2	68.7	7.51	10.146		
1,600.0	1,583.2	1,593.6	1,571.5	4.2	4.7	-75.82	-201.6	54.4	84.8	76.4	8.32	10.185		
1,700.0	1,680.7	1,693.2	1,668.1	4.6	5.1	-76.58	-225.5	59.6	93.3	84.2	9.14	10.212		
1,800.0	1,778.1	1,792.9	1,764.7	5.0	5.6	-77.20	-249.5	64.9	101.8	91.9	9.96	10.229		
1,900.0	1,875.6	1,892.5	1,861.2	5.5	6.0	-77.73	-273.4	70.1	110.4	99.6	10.78	10.241		
2,000.0	1,973.1	1,992.1	1,957.8	5.9	6.5	-78.18	-297.3	75.4	119.0	107.4	11.61	10.249		
2,100.0	2,070.6	2,091.7	2,054.4	6.3	7.0	-78.57	-321.2	80.6	127.5	115.1	12.44	10.255		
2,200.0	2,168.1	2,191.4	2,150.9	6.7	7.4	-78.92	-345.1	85.9	136.1	122.8	13.27	10.259		
2,300.0	2,265.6	2,291.0	2,247.5	7.1	7.9	-79.22	-369.1	91.1	144.7	130.6	14.10	10.261		
2,400.0	2,363.1	2,390.6	2,344.1	7.6	8.3	-79.49	-393.0	96.4	153.3	138.3	14.93	10.262		
2,500.0	2,460.6	2,490.3	2,440.7	8.0	8.8	-79.73	-416.9	101.7	161.9	146.1	15.77	10.263		
2,600.0	2,558.1	2,589.9	2,537.2	8.4	9.2	-79.94	-440.8	106.9	170.4	153.8	16.61	10.263		
2,700.0	2,655.6	2,689.5	2,633.8	8.8	9.7	-80.14	-464.7	112.2	179.0	161.6	17.44	10.263		
2,800.0	2,753.1	2,789.1	2,730.4	9.2	10.2	-80.31	-488.7	117.4	187.6	169.3	18.28	10.262		
2,900.0	2,850.6	2,888.8	2,826.9	9.7	10.6	-80.47	-512.6	122.7	196.2	177.1	19.12	10.261		
3,000.0	2,948.1	2,988.4	2,923.5	10.1	11.1	-80.62	-536.5	127.9	204.8	184.9	19.96	10.260		
3,100.0	3,045.6	3,088.0	3,020.1	10.5	11.5	-80.76	-560.4	133.2	213.4	192.6	20.80	10.259		
3,200.0	3,143.1	3,187.7	3,116.7	10.9	12.0	-80.88	-584.4	138.4	222.0	200.4	21.64	10.258		
3,300.0	3,240.6	3,287.3	3,213.2	11.4	12.5	-81.00	-608.3	143.7	230.6	208.1	22.48	10.257		
3,400.0	3,338.1	3,386.9	3,309.8	11.8	12.9	-81.11	-632.2	148.9	239.2	215.9	23.32	10.256		
3,500.0	3,435.5	3,486.5	3,406.4	12.2	13.4	-81.21	-656.1	154.2	247.8	223.6	24.16	10.255		
3,600.0	3,533.0	3,586.2	3,502.9	12.6	13.8	-81.30	-680.0	159.5	256.4	231.4	25.01	10.254		
3,700.0	3,630.5	3,685.8	3,599.5	13.1	14.3	-81.39	-704.0	164.7	265.0	239.2	25.85	10.253		
3,800.0	3,728.0	3,785.4	3,696.1	13.5	14.8	-81.47	-727.9	170.0	273.6	246.9	26.69	10.251		
3,900.0	3,825.5	3,885.1	3,792.7	13.9	15.2	-81.55	-751.8	175.2	282.2	254.7	27.53	10.250		
4,000.0	3,923.0	3,984.7	3,889.2	14.3	15.7	-81.62	-775.7	180.5	290.8	262.4	28.38	10.249		
4,100.0	4,020.5	4,084.3	3,985.8	14.8	16.2	-81.69	-799.6	185.7	299.4	270.2	29.22	10.248		
4,200.0	4,118.0	4,183.9	4,082.4	15.2	16.6	-81.75	-823.6	191.0	308.0	278.0	30.06	10.247		
4,300.0	4,215.5	4,283.6	4,178.9	15.6	17.1	-81.81	-847.5	196.2	316.6	285.7	30.90	10.246		
4,400.0	4,313.0	4,383.2	4,275.5	16.0	17.5	-81.87	-871.4	201.5	325.2	293.5	31.75	10.245		
4,500.0	4,410.5	4,482.8	4,372.1	16.5	18.0	-81.93	-895.3	206.8	333.8	301.3	32.59	10.244		
4,600.0	4,508.0	4,582.5	4,468.7	16.9	18.5	-81.98	-919.3	212.0	342.4	309.0	33.43	10.243		
4,700.0	4,605.5	4,682.1	4,565.2	17.3	18.9	-82.03	-943.2	217.3	351.1	316.8	34.28	10.242		
4,800.0	4,703.0	4,781.7	4,661.8	17.7	19.4	-82.07	-967.1	222.5	359.7	324.5	35.12	10.241		
4,900.0	4,800.5	4,881.3	4,758.4	18.1	19.8	-82.12	-991.0	227.8	368.3	332.3	35.96	10.240		
5,000.0	4,898.0	4,981.0	4,854.9	18.6	20.3	-82.16	-1,014.9	233.0	376.9	340.1	36.81	10.239		
5,100.0	4,995.4	5,080.6	4,951.5	19.0	20.8	-82.20	-1,038.9	238.3	385.5	347.8	37.65	10.238		

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 Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4F-36H - 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	
5,200.0	5,092.9	5,180.2	5,048.1	19.4	21.2	-82.24	-1,062.8	243.5	394.1	355.6	38.49	10.238		
5,300.0	5,190.4	5,279.9	5,144.7	19.8	21.7	-82.28	-1,086.7	248.8	402.7	363.4	39.34	10.237		
5,400.0	5,287.9	5,379.5	5,241.2	20.3	22.1	-82.32	-1,110.6	254.0	411.3	371.1	40.18	10.236		
5,500.0	5,385.4	5,482.3	5,340.9	20.7	22.6	-82.40	-1,134.9	259.4	419.7	378.7	41.03	10.229		
5,600.0	5,482.9	5,589.2	5,445.4	21.1	23.0	-82.88	-1,157.1	264.2	426.8	384.8	41.92	10.181		
5,700.0	5,580.4	5,696.0	5,550.6	21.6	23.4	-83.81	-1,175.4	268.3	432.2	389.3	42.83	10.091		
5,800.0	5,677.9	5,802.4	5,655.9	22.0	23.6	-85.19	-1,189.7	271.4	436.1	392.3	43.75	9.968		
5,900.0	5,775.4	5,908.0	5,761.0	22.4	23.9	-86.99	-1,200.2	273.7	438.8	394.1	44.66	9.824		
6,000.0	5,872.9	6,012.7	5,865.5	22.8	24.0	-89.22	-1,206.9	275.2	440.5	395.0	45.54	9.673		
6,100.0	5,970.8	6,116.6	5,969.3	23.2	24.1	-91.61	-1,209.8	275.8	441.7	395.4	46.27	9.545		
6,200.0	6,069.4	6,216.7	6,069.4	23.5	24.2	-93.78	-1,210.0	275.9	442.5	395.7	46.85	9.445		
6,300.0	6,168.5	6,315.8	6,168.5	23.8	24.3	-95.50	-1,210.0	275.9	443.6	396.3	47.30	9.378		
6,400.0	6,268.0	6,415.3	6,268.0	24.0	24.4	-96.77	-1,210.0	275.9	444.7	397.0	47.65	9.331		
6,500.0	6,367.8	6,515.1	6,367.8	24.1	24.4	-97.60	-1,210.0	275.9	445.5	397.5	47.92	9.296		
6,600.0	6,467.8	6,615.1	6,467.8	24.2	24.5	-97.97	-1,210.0	275.9	445.8	397.7	48.11	9.267		
6,700.0	6,567.8	6,715.1	6,567.8	24.3	24.6	90.00	-1,210.0	275.9	445.9	397.6	48.28	9.235		
6,764.5	6,632.2	6,779.5	6,632.2	24.4	24.7	90.00	-1,210.0	275.9	445.9	397.5	48.39	9.214		
6,800.0	6,667.8	6,815.1	6,667.8	24.4	24.7	89.95	-1,209.6	275.9	445.9	397.4	48.43	9.207		
6,809.1	6,676.8	6,824.1	6,676.8	24.4	24.7	89.90	-1,209.2	275.9	445.9	397.4	48.43	9.206		
6,900.0	6,767.8	6,913.3	6,765.2	24.5	24.5	88.42	-1,197.7	275.9	446.0	397.7	48.38	9.220		
7,000.0	6,867.8	7,005.1	6,853.1	24.6	24.1	85.09	-1,171.7	275.9	447.7	399.7	48.07	9.315		
7,100.0	6,967.6	7,088.5	6,928.5	24.5	23.7	80.60	-1,136.1	275.9	452.9	405.6	47.31	9.573		
7,200.0	7,065.3	7,168.0	6,994.8	24.3	23.1	76.26	-1,092.4	275.8	460.7	414.7	45.98	10.020		
7,300.0	7,157.8	7,244.7	7,052.5	23.7	22.4	72.37	-1,041.9	275.8	470.1	425.8	44.21	10.631		
7,400.0	7,242.4	7,319.2	7,101.5	23.0	21.7	68.98	-985.9	275.8	479.9	437.8	42.13	11.392		
7,500.0	7,316.6	7,392.0	7,142.1	22.1	20.9	66.15	-925.5	275.8	489.4	449.6	39.87	12.276		
7,600.0	7,378.0	7,463.6	7,174.2	21.1	20.1	63.91	-861.6	275.8	497.8	460.2	37.57	13.249		
11,700.0	7,470.0	11,464.6	7,220.0	58.8	58.8	59.63	3,133.2	274.8	496.9	394.6	102.36	4.855		
11,800.0	7,470.0	11,563.6	7,220.0	60.5	60.5	58.68	3,232.3	274.8	485.3	381.5	103.88	4.672		
11,900.0	7,470.0	11,662.3	7,220.0	62.1	62.2	57.61	3,330.9	274.8	471.4	365.9	105.52	4.467		
12,000.0	7,470.0	11,760.9	7,220.0	63.8	63.8	56.51	3,429.6	274.8	457.5	350.3	107.17	4.269		
12,100.0	7,470.0	11,859.6	7,220.0	65.5	65.5	55.34	3,528.2	274.7	443.8	335.1	108.64	4.085		
12,200.0	7,470.0	11,958.2	7,220.0	67.2	67.2	54.10	3,626.8	274.7	430.3	320.3	109.90	3.915		
12,203.0	7,470.0	11,961.0	7,220.0	67.2	67.2	54.06	3,629.7	274.7	429.9	319.9	109.94	3.910 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4G-36H - 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		Total		Separation		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)	Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	19.9	19.9					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	19.9	19.9	19.6	0.24	81.296		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	19.9	19.9	19.3	0.59	33.475		
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	19.9	19.9	18.9	0.94	21.077 CC, ES		
400.0	400.0	399.6	399.6	0.6	0.6	94.29	-1.5	20.6	20.7	19.4	1.29	16.007		
500.0	500.0	499.1	498.9	0.8	0.8	105.06	-6.2	23.0	23.8	22.2	1.65	14.403 SF		
600.0	600.0	598.1	597.6	1.0	1.1	-73.71	-13.9	26.8	29.7	27.7	2.01	14.767		
700.0	699.8	696.8	695.6	1.2	1.3	-69.61	-24.5	32.2	37.8	35.4	2.40	15.764		
800.0	799.5	795.2	792.7	1.4	1.6	-68.52	-38.2	39.0	47.5	44.7	2.81	16.873		
900.0	898.7	893.0	888.8	1.6	2.0	-69.02	-54.7	47.3	58.7	55.4	3.29	17.865		
1,000.0	997.5	990.5	983.8	1.9	2.4	-70.30	-74.0	57.0	71.5	67.7	3.83	18.654		
1,100.0	1,095.6	1,089.5	1,080.0	2.3	2.8	-72.73	-95.1	67.5	84.6	80.1	4.48	18.872		
1,200.0	1,193.2	1,188.6	1,176.2	2.6	3.2	-76.26	-116.1	78.1	97.0	91.8	5.22	18.589		
1,300.0	1,290.7	1,287.6	1,272.5	3.0	3.6	-79.22	-137.2	88.6	109.7	103.7	5.99	18.303		
1,400.0	1,388.2	1,386.7	1,368.7	3.4	4.1	-81.57	-158.2	99.2	122.6	115.8	6.79	18.067		
1,500.0	1,485.7	1,485.7	1,464.9	3.8	4.5	-83.47	-179.2	109.7	135.7	128.1	7.59	17.873		
1,600.0	1,583.2	1,584.8	1,561.1	4.2	4.9	-85.03	-200.3	120.3	148.9	140.5	8.40	17.714		
1,700.0	1,680.7	1,683.8	1,657.3	4.6	5.4	-86.34	-221.3	130.8	162.1	152.9	9.22	17.583		
1,800.0	1,778.1	1,782.9	1,753.5	5.0	5.8	-87.45	-242.4	141.4	175.5	165.4	10.04	17.473		
1,900.0	1,875.6	1,881.9	1,849.7	5.5	6.3	-88.40	-263.4	151.9	188.9	178.0	10.87	17.381		
2,000.0	1,973.1	1,981.0	1,946.0	5.9	6.7	-89.23	-284.5	162.5	202.4	190.7	11.69	17.303		
2,100.0	2,070.6	2,080.0	2,042.2	6.3	7.2	-89.95	-305.5	173.1	215.9	203.3	12.52	17.237		
2,200.0	2,168.1	2,179.1	2,138.4	6.7	7.6	-90.59	-326.6	183.6	229.4	216.0	13.35	17.179		
2,300.0	2,265.6	2,278.2	2,234.6	7.1	8.0	-91.16	-347.6	194.2	242.9	228.7	14.18	17.129		
2,400.0	2,363.1	2,377.2	2,330.8	7.6	8.5	-91.66	-368.6	204.7	256.5	241.5	15.01	17.085		
2,500.0	2,460.6	2,476.3	2,427.0	8.0	8.9	-92.12	-389.7	215.3	270.1	254.2	15.84	17.046		
2,600.0	2,558.1	2,575.3	2,523.2	8.4	9.4	-92.53	-410.7	225.8	283.7	267.0	16.68	17.012		
2,700.0	2,655.6	2,674.4	2,619.4	8.8	9.8	-92.91	-431.8	236.4	297.3	279.8	17.51	16.981		
2,800.0	2,753.1	2,773.4	2,715.7	9.2	10.3	-93.25	-452.8	246.9	310.9	292.6	18.34	16.953		
2,900.0	2,850.6	2,872.5	2,811.9	9.7	10.7	-93.56	-473.9	257.5	324.5	305.4	19.17	16.928		
3,000.0	2,948.1	2,971.5	2,908.1	10.1	11.2	-93.85	-494.9	268.0	338.2	318.2	20.00	16.906		
3,100.0	3,045.6	3,070.6	3,004.3	10.5	11.6	-94.11	-515.9	278.6	351.8	331.0	20.84	16.885		
3,200.0	3,143.1	3,169.6	3,100.5	10.9	12.1	-94.36	-537.0	289.1	365.5	343.8	21.67	16.867		
3,300.0	3,240.6	3,268.7	3,196.7	11.4	12.5	-94.59	-558.0	299.7	379.2	356.7	22.50	16.850		
3,400.0	3,338.1	3,367.7	3,292.9	11.8	13.0	-94.80	-579.1	310.2	392.8	369.5	23.34	16.834		
3,500.0	3,435.5	3,466.8	3,389.1	12.2	13.4	-95.00	-600.1	320.8	406.5	382.3	24.17	16.819		
3,600.0	3,533.0	3,565.8	3,485.4	12.6	13.8	-95.18	-621.2	331.3	420.2	395.2	25.00	16.806		
3,700.0	3,630.5	3,664.9	3,581.6	13.1	14.3	-95.36	-642.2	341.9	433.9	408.0	25.83	16.794		
3,800.0	3,728.0	3,763.9	3,677.8	13.5	14.7	-95.52	-663.3	352.4	447.5	420.9	26.67	16.782		
3,900.0	3,825.5	3,863.0	3,774.0	13.9	15.2	-95.67	-684.3	363.0	461.2	433.7	27.50	16.771		
4,000.0	3,923.0	3,962.0	3,870.2	14.3	15.6	-95.82	-705.3	373.5	474.9	446.6	28.33	16.761		
4,100.0	4,020.5	4,061.1	3,966.4	14.8	16.1	-95.95	-726.4	384.1	488.6	459.5	29.17	16.752		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Mumby State 4E-36H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5048.0ft (Original Well Elev)
Reference Site:	S36 T2N-R66W (Marcus State, Mumby State)	MD Reference:	WELL @ 5048.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Mumby State 4E-36H	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 S36 T2N-R66W (Marcus State, Mumby State) - Mumby State 4H-36H - 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				Total	Separation	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)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.70	-0.4	29.9	29.9					
100.0	100.0	100.0	100.0	0.1	0.1	90.70	-0.4	29.9	29.9	29.7	0.24	122.526		
200.0	200.0	200.0	200.0	0.3	0.3	90.70	-0.4	29.9	29.9	29.3	0.59	50.452 CC, ES		
300.0	300.0	299.3	299.3	0.5	0.5	93.18	-1.7	31.0	31.1	30.1	0.94	32.895		
400.0	400.0	398.4	398.2	0.6	0.7	99.59	-5.8	34.2	34.7	33.4	1.30	26.614		
500.0	500.0	497.0	496.5	0.8	0.9	107.57	-12.5	39.4	41.5	39.8	1.67	24.833 SF		
600.0	600.0	595.0	593.8	1.0	1.2	-74.64	-21.8	46.7	51.4	49.4	2.02	25.406		
700.0	699.8	692.5	690.1	1.2	1.5	-72.31	-33.6	56.0	63.6	61.2	2.40	26.463		
800.0	799.5	789.4	785.2	1.4	1.8	-71.98	-47.9	67.2	77.9	75.0	2.82	27.591		
900.0	898.7	885.5	878.9	1.6	2.2	-72.74	-64.6	80.2	94.0	90.7	3.29	28.534		
1,000.0	997.5	980.8	971.1	1.9	2.7	-74.04	-83.6	95.1	112.1	108.3	3.84	29.185		
1,100.0	1,095.6	1,077.1	1,063.7	2.3	3.2	-75.73	-104.9	111.7	131.8	127.3	4.48	29.449		
1,200.0	1,193.2	1,175.0	1,157.5	2.6	3.7	-78.15	-126.8	128.9	151.3	146.1	5.20	29.104		
1,300.0	1,290.7	1,272.9	1,251.3	3.0	4.2	-80.25	-148.7	146.0	171.0	165.1	5.96	28.696		
1,400.0	1,388.2	1,370.8	1,345.2	3.4	4.7	-81.92	-170.6	163.1	190.9	184.2	6.74	28.324		
1,500.0	1,485.7	1,468.6	1,439.0	3.8	5.2	-83.27	-192.4	180.2	210.9	203.4	7.53	27.996		
1,600.0	1,583.2	1,566.5	1,532.9	4.2	5.7	-84.38	-214.3	197.3	231.0	222.7	8.34	27.711		
1,700.0	1,680.7	1,664.4	1,626.7	4.6	6.2	-85.32	-236.2	214.4	251.2	242.0	9.15	27.464		
1,800.0	1,778.1	1,762.2	1,720.6	5.0	6.7	-86.12	-258.0	231.5	271.4	261.4	9.96	27.249		
1,900.0	1,875.6	1,860.1	1,814.4	5.5	7.3	-86.81	-279.9	248.6	291.7	280.9	10.78	27.061		
2,000.0	1,973.1	1,958.0	1,908.3	5.9	7.8	-87.41	-301.8	265.8	312.0	300.4	11.60	26.896		
2,100.0	2,070.6	2,055.8	2,002.1	6.3	8.3	-87.93	-323.7	282.9	332.3	319.9	12.42	26.751		
2,200.0	2,168.1	2,153.7	2,096.0	6.7	8.8	-88.40	-345.5	300.0	352.7	339.4	13.25	26.621		
2,300.0	2,265.6	2,251.6	2,189.8	7.1	9.3	-88.81	-367.4	317.1	373.0	359.0	14.07	26.506		
2,400.0	2,363.1	2,349.5	2,283.7	7.6	9.8	-89.18	-389.3	334.2	393.4	378.5	14.90	26.402		
2,500.0	2,460.6	2,447.3	2,377.5	8.0	10.4	-89.52	-411.2	351.3	413.8	398.1	15.73	26.309		
2,600.0	2,558.1	2,545.2	2,471.3	8.4	10.9	-89.82	-433.0	368.4	434.2	417.7	16.56	26.224		
2,700.0	2,655.6	2,643.1	2,565.2	8.8	11.4	-90.10	-454.9	385.5	454.7	437.3	17.39	26.147		
2,800.0	2,753.1	2,740.9	2,659.0	9.2	11.9	-90.35	-476.8	402.6	475.1	456.9	18.22	26.077		
2,900.0	2,850.6	2,838.8	2,752.9	9.7	12.4	-90.58	-498.7	419.8	495.6	476.5	19.05	26.012		

Cathedral Energy Services

Anticollision Report

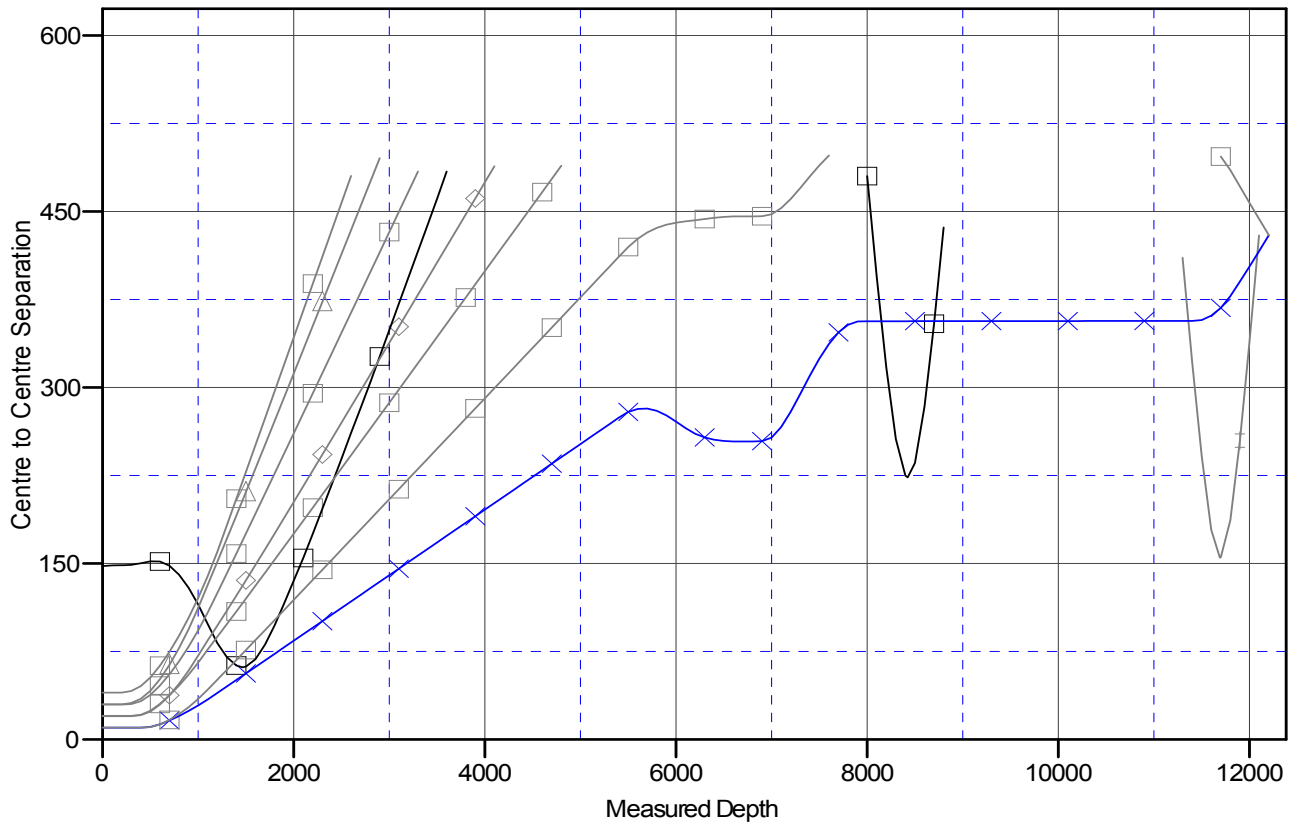
Company: EnCana Oil & Gas (USA) Inc
Project: DJ Wattenberg
Reference Site: S36 T2N-R66W (Marcus State, Mumby State)
Site Error: 0.0ft
Reference Well: Mumby State 4E-36H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Mumby State 4E-36H
TVD Reference: WELL @ 5048.0ft (Original Well Elev)
MD Reference: WELL @ 5048.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 5048.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Mumby State 4E-36H
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.50°

Ladder Plot



LEGEND

I (EXISTING), PDC WELL, NO SURVEYS V0
 EXISTING), ENCANA WELL, GYRO V0
 HZ, Plan #1 V0

MumbyState 4B-36H, HZ, Plan #1 V0
 MumbyState 4C-36H, HZ, Plan #1 V0
 MumbyState 4D-36H, HZ, Plan #1 V0

MumbyState 4F-36H, HZ, Plan #1 V0
 MumbyState 4G-36H, HZ, Plan #1 V0
 MumbyState 4H-36H, HZ, Plan #1 V0