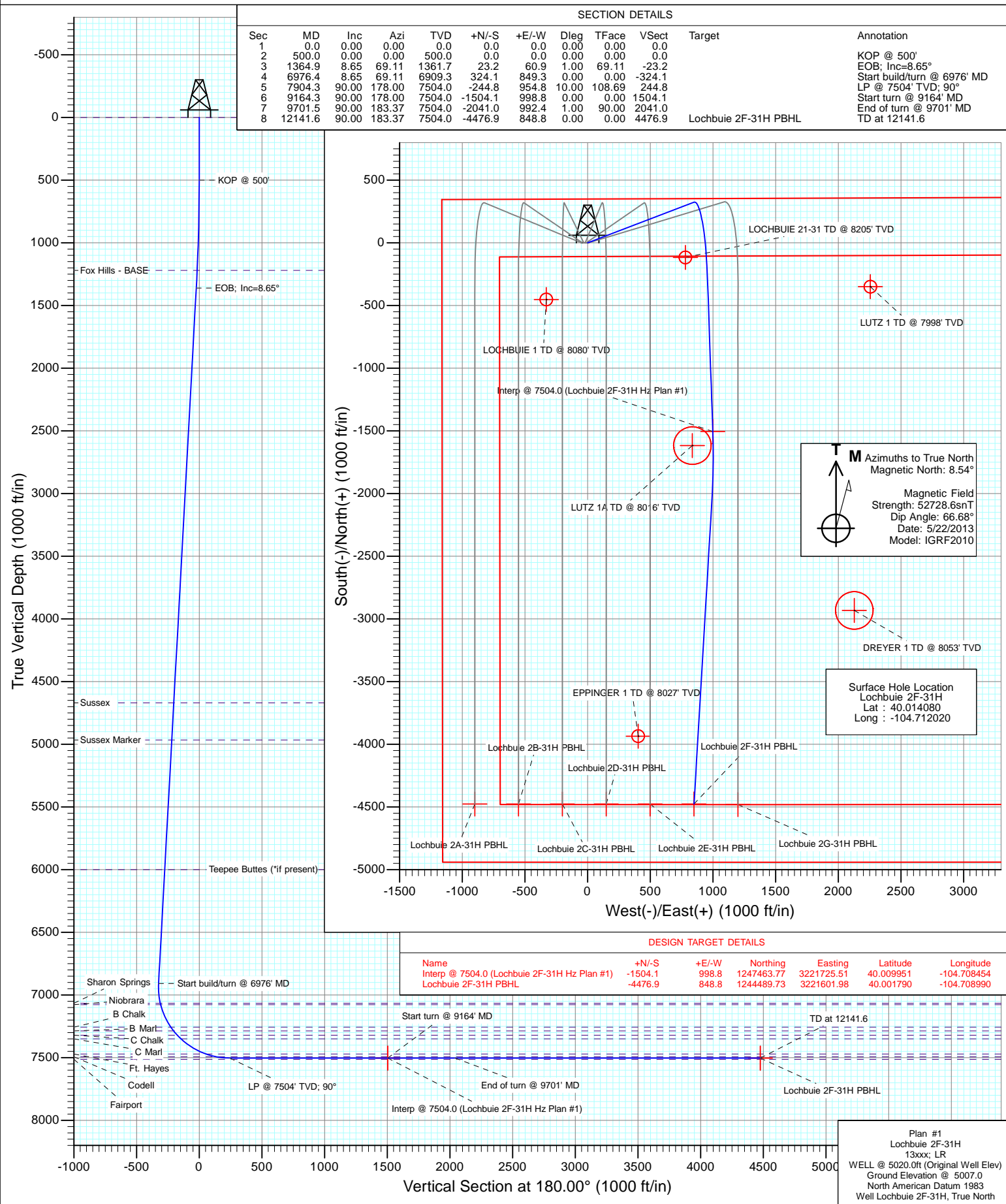




Project: DJ Wattenberg
Site: S31-T1N-R65W (Lochbuie)
Well: Lochbuie 2F-31H
Wellbore: Hz
Design: Plan #1



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site:	S31-T1N-R65W (Lochbuie)	North Reference:	True
Well:	Lochbuie 2F-31H	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		S31-T1N-R65W (Lochbuie)			
Site Position:		Northing:	1,248,958.49 ft	Latitude:	40.014080
From:	Lat/Long	Easting:	3,220,662.97 ft	Longitude:	-104.712200
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.51 °

Well	Lochbuie 2F-31H					
Well Position	+N/-S	0.0 ft	Northing:	1,248,958.89 ft	Latitude:	40.014080
	+E/-W	0.0 ft	Easting:	3,220,713.39 ft	Longitude:	-104.712020
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,007.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/22/2013	8.54	66.68	52,729

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

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	
1,364.9	8.65	69.11	1,361.7	23.2	60.9	1.00	1.00	0.00	69.11	
6,976.4	8.65	69.11	6,909.3	324.1	849.3	0.00	0.00	0.00	0.00	
7,904.3	90.00	178.00	7,504.0	-244.8	954.8	10.00	8.77	11.73	108.69	
9,164.3	90.00	178.00	7,504.0	-1,504.1	998.8	0.00	0.00	0.00	0.00	Interp @ 7504.0 (Locl
9,701.5	90.00	183.37	7,504.0	-2,041.0	992.4	1.00	0.00	1.00	90.00	
12,141.6	90.00	183.37	7,504.0	-4,476.9	848.8	0.00	0.00	0.00	0.00	Lochbuie 2F-31H PB#

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site:	S31-T1N-R65W (Lochbuie)	North Reference:	True
Well:	Lochbuie 2F-31H	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	Shannon
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	1.00	69.11	600.0	0.3	0.8	-0.3	1.00	1.00	
700.0	2.00	69.11	700.0	1.2	3.3	-1.2	1.00	1.00	
800.0	3.00	69.11	799.9	2.8	7.3	-2.8	1.00	1.00	
900.0	4.00	69.11	899.7	5.0	13.0	-5.0	1.00	1.00	
1,000.0	5.00	69.11	999.4	7.8	20.4	-7.8	1.00	1.00	
1,100.0	6.00	69.11	1,098.9	11.2	29.3	-11.2	1.00	1.00	
1,200.0	7.00	69.11	1,198.3	15.2	39.9	-15.2	1.00	1.00	
1,221.9	7.22	69.11	1,220.0	16.2	42.4	-16.2	1.00	1.00	Fox Hills - BASE
1,300.0	8.00	69.11	1,297.4	19.9	52.1	-19.9	1.00	1.00	
1,364.9	8.65	69.11	1,361.7	23.2	60.9	-23.2	1.00	1.00	EOB; Inc=8.65°
1,400.0	8.65	69.11	1,396.3	25.1	65.8	-25.1	0.00	0.00	
1,500.0	8.65	69.11	1,495.2	30.5	79.9	-30.5	0.00	0.00	
1,600.0	8.65	69.11	1,594.0	35.8	93.9	-35.8	0.00	0.00	
1,700.0	8.65	69.11	1,692.9	41.2	108.0	-41.2	0.00	0.00	
1,800.0	8.65	69.11	1,791.8	46.6	122.0	-46.6	0.00	0.00	
1,900.0	8.65	69.11	1,890.6	51.9	136.1	-51.9	0.00	0.00	
2,000.0	8.65	69.11	1,989.5	57.3	150.1	-57.3	0.00	0.00	
2,100.0	8.65	69.11	2,088.4	62.6	164.2	-62.6	0.00	0.00	
2,200.0	8.65	69.11	2,187.2	68.0	178.2	-68.0	0.00	0.00	
2,300.0	8.65	69.11	2,286.1	73.4	192.3	-73.4	0.00	0.00	
2,400.0	8.65	69.11	2,384.9	78.7	206.3	-78.7	0.00	0.00	
2,500.0	8.65	69.11	2,483.8	84.1	220.4	-84.1	0.00	0.00	
2,600.0	8.65	69.11	2,582.7	89.5	234.4	-89.5	0.00	0.00	
2,700.0	8.65	69.11	2,681.5	94.8	248.5	-94.8	0.00	0.00	
2,800.0	8.65	69.11	2,780.4	100.2	262.5	-100.2	0.00	0.00	
2,900.0	8.65	69.11	2,879.3	105.5	276.6	-105.5	0.00	0.00	
3,000.0	8.65	69.11	2,978.1	110.9	290.6	-110.9	0.00	0.00	
3,100.0	8.65	69.11	3,077.0	116.3	304.7	-116.3	0.00	0.00	
3,200.0	8.65	69.11	3,175.8	121.6	318.7	-121.6	0.00	0.00	
3,300.0	8.65	69.11	3,274.7	127.0	332.8	-127.0	0.00	0.00	
3,400.0	8.65	69.11	3,373.6	132.4	346.8	-132.4	0.00	0.00	
3,500.0	8.65	69.11	3,472.4	137.7	360.9	-137.7	0.00	0.00	
3,600.0	8.65	69.11	3,571.3	143.1	374.9	-143.1	0.00	0.00	
3,700.0	8.65	69.11	3,670.2	148.4	389.0	-148.4	0.00	0.00	
3,800.0	8.65	69.11	3,769.0	153.8	403.0	-153.8	0.00	0.00	
3,900.0	8.65	69.11	3,867.9	159.2	417.1	-159.2	0.00	0.00	
4,000.0	8.65	69.11	3,966.8	164.5	431.1	-164.5	0.00	0.00	
4,100.0	8.65	69.11	4,065.6	169.9	445.2	-169.9	0.00	0.00	
4,200.0	8.65	69.11	4,164.5	175.2	459.2	-175.2	0.00	0.00	
4,300.0	8.65	69.11	4,263.3	180.6	473.3	-180.6	0.00	0.00	
4,400.0	8.65	69.11	4,362.2	186.0	487.3	-186.0	0.00	0.00	
4,500.0	8.65	69.11	4,461.1	191.3	501.4	-191.3	0.00	0.00	
4,600.0	8.65	69.11	4,559.9	196.7	515.4	-196.7	0.00	0.00	
4,700.0	8.65	69.11	4,658.8	202.1	529.5	-202.1	0.00	0.00	
4,711.3	8.65	69.11	4,670.0	202.7	531.1	-202.7	0.00	0.00	Sussex
4,800.0	8.65	69.11	4,757.7	207.4	543.5	-207.4	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site:	S31-T1N-R65W (Lochbuie)	North Reference:	True
Well:	Lochbuie 2F-31H	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	8.65	69.11	4,856.5	212.8	557.6	-212.8	0.00	0.00	
5,000.0	8.65	69.11	4,955.4	218.1	571.6	-218.1	0.00	0.00	
5,010.7	8.65	69.11	4,966.0	218.7	573.1	-218.7	0.00	0.00	Sussex Marker
5,100.0	8.65	69.11	5,054.2	223.5	585.7	-223.5	0.00	0.00	
5,200.0	8.65	69.11	5,153.1	228.9	599.7	-228.9	0.00	0.00	
5,300.0	8.65	69.11	5,252.0	234.2	613.8	-234.2	0.00	0.00	
5,400.0	8.65	69.11	5,350.8	239.6	627.8	-239.6	0.00	0.00	
5,500.0	8.65	69.11	5,449.7	245.0	641.9	-245.0	0.00	0.00	
5,600.0	8.65	69.11	5,548.6	250.3	655.9	-250.3	0.00	0.00	
5,700.0	8.65	69.11	5,647.4	255.7	670.0	-255.7	0.00	0.00	
5,800.0	8.65	69.11	5,746.3	261.0	684.0	-261.0	0.00	0.00	
5,900.0	8.65	69.11	5,845.1	266.4	698.1	-266.4	0.00	0.00	
6,000.0	8.65	69.11	5,944.0	271.8	712.1	-271.8	0.00	0.00	
6,056.6	8.65	69.11	6,000.0	274.8	720.1	-274.8	0.00	0.00	Teepee Buttes (*if present)
6,100.0	8.65	69.11	6,042.9	277.1	726.2	-277.1	0.00	0.00	
6,200.0	8.65	69.11	6,141.7	282.5	740.2	-282.5	0.00	0.00	
6,300.0	8.65	69.11	6,240.6	287.9	754.3	-287.9	0.00	0.00	
6,400.0	8.65	69.11	6,339.5	293.2	768.3	-293.2	0.00	0.00	
6,500.0	8.65	69.11	6,438.3	298.6	782.4	-298.6	0.00	0.00	
6,600.0	8.65	69.11	6,537.2	303.9	796.4	-303.9	0.00	0.00	
6,700.0	8.65	69.11	6,636.0	309.3	810.5	-309.3	0.00	0.00	
6,800.0	8.65	69.11	6,734.9	314.7	824.5	-314.7	0.00	0.00	
6,900.0	8.65	69.11	6,833.8	320.0	838.6	-320.0	0.00	0.00	
6,976.4	8.65	69.11	6,909.3	324.1	849.3	-324.1	0.00	0.00	Start build/turn @ 6976' MD
7,000.0	8.20	85.00	6,932.6	324.9	852.6	-324.9	10.00	-1.90	
7,100.0	12.57	137.81	7,031.2	317.4	867.1	-317.4	10.00	4.37	
7,135.9	15.46	146.65	7,066.0	310.5	872.4	-310.5	10.00	8.05	Sharon Springs
7,148.4	16.53	148.99	7,078.0	307.6	874.2	-307.6	10.00	8.56	Niobrara
7,200.0	21.15	156.16	7,126.9	292.8	881.7	-292.8	10.00	8.95	
7,300.0	30.59	163.91	7,216.8	251.8	896.1	-251.8	10.00	9.43	
7,347.9	35.21	166.23	7,257.0	226.6	902.8	-226.6	10.00	9.65	B Chalk
7,385.5	38.86	167.71	7,287.0	204.5	907.9	-204.5	10.00	9.72	B Marl
7,400.0	40.27	168.22	7,298.2	195.5	909.8	-195.5	10.00	9.75	
7,430.6	43.27	169.20	7,321.0	175.5	913.8	-175.5	10.00	9.77	C Chalk
7,471.8	47.30	170.37	7,350.0	146.7	919.0	-146.7	10.00	9.80	C Marl
7,500.0	50.07	171.08	7,368.6	125.8	922.4	-125.8	10.00	9.82	
7,600.0	59.91	173.22	7,425.9	44.8	933.5	-44.8	10.00	9.85	
7,700.0	69.79	174.96	7,468.3	-45.1	942.7	45.1	10.00	9.87	
7,707.9	70.57	175.09	7,471.0	-52.5	943.4	52.5	10.00	9.88	Ft. Hayes
7,796.5	79.34	176.45	7,494.0	-137.8	949.6	137.8	10.00	9.89	Codell
7,800.0	79.68	176.50	7,494.6	-141.2	949.9	141.2	10.00	9.89	
7,900.0	89.58	177.94	7,504.0	-240.5	954.7	240.5	10.00	9.90	
7,904.3	90.00	178.00	7,504.0	-244.8	954.8	244.8	10.00	9.90	LP @ 7504' TVD; 90°
8,000.0	90.00	178.00	7,504.0	-340.5	958.2	340.5	0.00	0.00	
8,100.0	90.00	178.00	7,504.0	-440.4	961.7	440.4	0.00	0.00	
8,200.0	90.00	178.00	7,504.0	-540.4	965.1	540.4	0.00	0.00	
8,300.0	90.00	178.00	7,504.0	-640.3	968.6	640.3	0.00	0.00	
8,400.0	90.00	178.00	7,504.0	-740.2	972.1	740.2	0.00	0.00	
8,500.0	90.00	178.00	7,504.0	-840.2	975.6	840.2	0.00	0.00	
8,600.0	90.00	178.00	7,504.0	-940.1	979.1	940.1	0.00	0.00	
8,700.0	90.00	178.00	7,504.0	-1,040.1	982.6	1,040.1	0.00	0.00	
8,800.0	90.00	178.00	7,504.0	-1,140.0	986.1	1,140.0	0.00	0.00	

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site:	S31-T1N-R65W (Lochbuie)	North Reference:	True
Well:	Lochbuie 2F-31H	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
8,900.0	90.00	178.00	7,504.0	-1,239.9	989.6	1,239.9	0.00	0.00	
9,000.0	90.00	178.00	7,504.0	-1,339.9	993.1	1,339.9	0.00	0.00	
9,100.0	90.00	178.00	7,504.0	-1,439.8	996.6	1,439.8	0.00	0.00	
9,164.3	90.00	178.00	7,504.0	-1,504.1	998.8	1,504.1	0.00	0.00	Start turn @ 9164' MD - Interp @ 7504.0 (Lochbuie)
9,200.0	90.00	178.36	7,504.0	-1,539.8	999.9	1,539.8	1.00	0.00	
9,300.0	90.00	179.36	7,504.0	-1,639.7	1,001.9	1,639.7	1.00	0.00	
9,400.0	90.00	180.36	7,504.0	-1,739.7	1,002.2	1,739.7	1.00	0.00	
9,500.0	90.00	181.36	7,504.0	-1,839.7	1,000.7	1,839.7	1.00	0.00	
9,600.0	90.00	182.36	7,504.0	-1,939.7	997.4	1,939.7	1.00	0.00	
9,700.0	90.00	183.36	7,504.0	-2,039.5	992.5	2,039.5	1.00	0.00	
9,701.5	90.00	183.37	7,504.0	-2,041.0	992.4	2,041.0	1.00	0.00	End of turn @ 9701' MD
9,800.0	90.00	183.37	7,504.0	-2,139.4	986.6	2,139.4	0.00	0.00	
9,900.0	90.00	183.37	7,504.0	-2,239.2	980.7	2,239.2	0.00	0.00	
10,000.0	90.00	183.37	7,504.0	-2,339.0	974.8	2,339.0	0.00	0.00	
10,100.0	90.00	183.37	7,504.0	-2,438.8	968.9	2,438.8	0.00	0.00	
10,200.0	90.00	183.37	7,504.0	-2,538.7	963.0	2,538.7	0.00	0.00	
10,300.0	90.00	183.37	7,504.0	-2,638.5	957.2	2,638.5	0.00	0.00	
10,400.0	90.00	183.37	7,504.0	-2,738.3	951.3	2,738.3	0.00	0.00	
10,500.0	90.00	183.37	7,504.0	-2,838.2	945.4	2,838.2	0.00	0.00	
10,600.0	90.00	183.37	7,504.0	-2,938.0	939.5	2,938.0	0.00	0.00	
10,700.0	90.00	183.37	7,504.0	-3,037.8	933.6	3,037.8	0.00	0.00	
10,800.0	90.00	183.37	7,504.0	-3,137.6	927.8	3,137.6	0.00	0.00	
10,900.0	90.00	183.37	7,504.0	-3,237.5	921.9	3,237.5	0.00	0.00	
11,000.0	90.00	183.37	7,504.0	-3,337.3	916.0	3,337.3	0.00	0.00	
11,100.0	90.00	183.37	7,504.0	-3,437.1	910.1	3,437.1	0.00	0.00	
11,200.0	90.00	183.37	7,504.0	-3,536.9	904.2	3,536.9	0.00	0.00	
11,300.0	90.00	183.37	7,504.0	-3,636.8	898.3	3,636.8	0.00	0.00	
11,400.0	90.00	183.37	7,504.0	-3,736.6	892.5	3,736.6	0.00	0.00	
11,500.0	90.00	183.37	7,504.0	-3,836.4	886.6	3,836.4	0.00	0.00	
11,600.0	90.00	183.37	7,504.0	-3,936.3	880.7	3,936.3	0.00	0.00	
11,700.0	90.00	183.37	7,504.0	-4,036.1	874.8	4,036.1	0.00	0.00	
11,800.0	90.00	183.37	7,504.0	-4,135.9	868.9	4,135.9	0.00	0.00	
11,900.0	90.00	183.37	7,504.0	-4,235.7	863.1	4,235.7	0.00	0.00	
12,000.0	90.00	183.37	7,504.0	-4,335.6	857.2	4,335.6	0.00	0.00	
12,100.0	90.00	183.37	7,504.0	-4,435.4	851.3	4,435.4	0.00	0.00	
12,141.6	90.00	183.37	7,504.0	-4,476.9	848.8	4,476.9	0.00	0.00	TD at 12141.6 - Lochbuie 2F-31H PBHL

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lochbuie 2F-31H PBHL - hit/miss target - Shape - Point	0.00	0.00	7,504.0	-4,476.9	848.8	1,244,489.73	3,221,601.98	40.001790	-104.708990
Interp @ 7504.0 (Lochbuie) - plan hits target center - Point	0.00	0.00	7,504.0	-1,504.1	998.8	1,247,463.77	3,221,725.51	40.009951	-104.708454

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site:	S31-T1N-R65W (Lochbuie)	North Reference:	True
Well:	Lochbuie 2F-31H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
0.0	0.0	Shannon			
1,221.9	1,220.0	Fox Hills - BASE			
4,711.3	4,670.0	Sussex			
5,010.7	4,966.0	Sussex Marker			
6,056.6	6,000.0	Teepee Buttes (*if present)			
7,135.9	7,066.0	Sharon Springs			
7,148.4	7,078.0	Niobrara			
7,347.9	7,257.0	B Chalk			
7,385.5	7,287.0	B Marl			
7,430.6	7,321.0	C Chalk			
7,471.8	7,350.0	C Marl			
7,707.9	7,471.0	Ft. Hayes			
7,796.5	7,494.0	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'
1,364.9	1,361.7	23.2	60.9	EOB; Inc=8.65°
6,976.4	6,909.3	324.1	849.3	Start build/turn @ 6976' MD
7,904.3	7,504.0	-244.8	954.8	LP @ 7504' TVD; 90°
9,164.3	7,504.0	-1,504.1	998.8	Start turn @ 9164' MD
9,701.5	7,504.0	-2,041.0	992.4	End of turn @ 9701' MD
12,141.6	7,504.0	-4,476.9	848.8	TD at 12141.6

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S31-T1N-R65W (Lochbuie)

Lochbuie 2F-31H

Hz

Plan #1

Anticollision Report

22 May, 2013

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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	5/22/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,141.6	Plan #1 (Hz)	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						
S31-T1N-R65W (Lochbuie)						
DREYER 1 (EXISTING) - VESSELS WELL - NO SURVEY						Out of range
EPPINGER 1 (EXISTING) - ENCANA WELL - NO SURVEY	11,627.1	7,495.0	476.8	392.2	5.635	CC, ES
EPPINGER 1 (EXISTING) - ENCANA WELL - NO SURVEY	11,700.0	7,495.0	482.4	396.5	5.617	SF
LOCHBUIE 1 (EXISTING) - ENCANA WELL - NO SURVEY						Out of range
Lochbuie 2A-31H - Hz - Plan #1	166.3	167.3	50.4	49.9	93.893	CC
Lochbuie 2A-31H - Hz - Plan #1	200.0	201.0	50.4	49.8	77.033	ES
Lochbuie 2A-31H - Hz - Plan #1	700.0	695.5	74.0	71.7	30.897	SF
Lochbuie 2B-31H - Hz - Plan #1	300.0	300.0	42.0	41.0	41.938	CC, ES
Lochbuie 2B-31H - Hz - Plan #1	700.0	696.8	57.1	54.7	23.783	SF
Lochbuie 2C-31H - Hz - Plan #1	400.0	400.0	30.8	29.5	22.808	CC, ES
Lochbuie 2C-31H - Hz - Plan #1	700.0	699.0	37.9	35.5	15.775	SF
Lochbuie 2D-31H - Hz - Plan #1	500.0	500.0	19.6	17.9	11.534	CC, ES
Lochbuie 2D-31H - Hz - Plan #1	700.0	700.0	22.9	20.5	9.552	SF
Lochbuie 2E-31H - Hz - Plan #1	500.0	500.0	11.2	9.5	6.591	CC
Lochbuie 2E-31H - Hz - Plan #1	700.0	700.3	11.6	9.2	4.838	ES
Lochbuie 2E-31H - Hz - Plan #1	12,141.6	11,846.2	422.8	288.2	3.141	SF
Lochbuie 2G-31H - Hz - Plan #1	200.0	200.0	8.4	7.8	12.873	CC, ES
Lochbuie 2G-31H - Hz - Plan #1	12,141.6	11,938.8	422.8	288.2	3.140	SF
LUTZ 1 (EXISTING) - ENCANA WELL - NO SURVEYS						Out of range
LUTZ 1A (EXISTING) - VESSELS WELL - NO SURVEYS	9,275.4	7,476.0	165.8	119.6	3.594	CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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
S31-T1N-R65W (Lochbuie) - EPPINGER 1 (EXISTING) - ENCANA WELL - NO SURVEYS													Offset Well Error:	0.0 ft
Survey Program: 8027-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)				
11,500.0	7,504.0	7,495.0	7,495.0	72.0	13.1	90.00	-3,935.2	403.1	493.5	411.0	82.42	5.987		
11,600.0	7,504.0	7,495.0	7,495.0	73.7	13.1	90.00	-3,935.2	403.1	477.6	393.4	84.15	5.675		
11,627.1	7,504.0	7,495.0	7,495.0	74.2	13.1	90.00	-3,935.2	403.1	476.8	392.2	84.62	5.635 CC, ES		
11,700.0	7,504.0	7,495.0	7,495.0	75.4	13.1	90.00	-3,935.2	403.1	482.4	396.5	85.87	5.617 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2A-31H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		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	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.95	0.0	-50.4	50.4					
100.0	100.0	101.0	101.0	0.2	0.2	-89.95	0.0	-50.4	50.4	50.1	0.31	165.068		
166.3	166.3	167.3	167.3	0.3	0.3	-89.95	0.0	-50.4	50.4	49.9	0.54	93.893 CC		
200.0	200.0	201.0	201.0	0.3	0.3	-89.95	0.0	-50.4	50.4	49.8	0.65	77.033 ES		
300.0	300.0	300.0	300.0	0.5	0.5	-89.58	0.4	-51.2	51.2	50.2	1.00	51.095		
400.0	400.0	399.3	399.3	0.7	0.7	-88.54	1.4	-53.6	53.7	52.3	1.36	39.583		
500.0	500.0	498.3	498.2	0.8	0.9	-87.01	3.0	-57.6	57.7	56.0	1.72	33.645		
600.0	600.0	597.1	596.8	1.0	1.1	-154.62	5.3	-63.1	64.3	62.2	2.05	31.388		
700.0	700.0	695.5	694.8	1.2	1.3	-153.60	8.2	-70.2	74.0	71.7	2.40	30.897 SF		
800.0	799.9	793.3	792.2	1.4	1.5	-153.00	11.8	-78.8	87.0	84.3	2.75	31.687		
900.0	899.7	890.4	888.8	1.6	1.7	-152.72	15.9	-88.8	103.1	100.0	3.10	33.304		
1,000.0	999.4	986.8	984.3	1.8	2.0	-152.63	20.6	-100.3	122.4	118.9	3.45	35.479		
1,100.0	1,098.9	1,084.5	1,081.1	2.0	2.3	-152.78	25.7	-112.6	143.9	140.1	3.81	37.786		
1,200.0	1,198.3	1,181.8	1,177.5	2.2	2.5	-153.13	30.8	-124.8	166.9	162.7	4.17	40.031		
1,300.0	1,297.4	1,278.7	1,273.5	2.5	2.8	-153.60	35.8	-137.0	191.4	186.9	4.53	42.224		
1,400.0	1,396.3	1,375.2	1,369.1	2.8	3.1	-154.18	40.9	-149.2	217.4	212.5	4.90	44.337		
1,500.0	1,495.2	1,471.7	1,464.7	3.1	3.4	-154.73	45.9	-161.4	243.7	238.5	5.28	46.162		
1,600.0	1,594.0	1,568.1	1,560.2	3.4	3.7	-155.17	50.9	-173.5	270.1	264.4	5.66	47.736		
1,700.0	1,692.9	1,664.6	1,655.8	3.7	3.9	-155.53	55.9	-185.7	296.4	290.4	6.04	49.107		
1,800.0	1,791.8	1,761.0	1,751.3	4.0	4.2	-155.84	60.9	-197.8	322.8	316.4	6.42	50.312		
1,900.0	1,890.6	1,857.5	1,846.9	4.3	4.5	-156.10	66.0	-210.0	349.2	342.4	6.80	51.378		
2,000.0	1,989.5	1,953.9	1,942.4	4.6	4.8	-156.32	71.0	-222.1	375.6	368.4	7.18	52.328		
2,100.0	2,088.4	2,050.4	2,038.0	4.9	5.1	-156.51	76.0	-234.3	401.9	394.4	7.56	53.180		
2,200.0	2,187.2	2,146.8	2,133.5	5.2	5.4	-156.68	81.0	-246.4	428.3	420.4	7.94	53.948		
2,300.0	2,286.1	2,243.3	2,229.1	5.5	5.6	-156.83	86.0	-258.6	454.7	446.4	8.32	54.643		
2,400.0	2,384.9	2,339.7	2,324.6	5.8	5.9	-156.96	91.1	-270.7	481.1	472.4	8.70	55.277		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2B-31H - Hz - Plan #1													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)						
0.0	0.0	0.0	0.0	0.0	0.0	-89.95	0.0	-42.0	42.0					
100.0	100.0	100.0	100.0	0.2	0.2	-89.95	0.0	-42.0	42.0	41.7	0.30	138.348		
200.0	200.0	200.0	200.0	0.3	0.3	-89.95	0.0	-42.0	42.0	41.4	0.65	64.365		
300.0	300.0	300.0	300.0	0.5	0.5	-89.95	0.0	-42.0	42.0	41.0	1.00	41.938 CC, ES		
400.0	400.0	399.4	399.4	0.7	0.7	-89.30	0.5	-42.7	42.7	41.4	1.35	31.643		
500.0	500.0	498.7	498.7	0.8	0.9	-87.47	2.0	-44.9	44.9	43.2	1.70	26.387		
600.0	600.0	597.9	597.8	1.0	1.0	-154.33	4.4	-48.4	49.4	47.4	2.05	24.126		
700.0	700.0	696.8	696.5	1.2	1.2	-152.44	7.8	-53.3	57.1	54.7	2.40	23.783 SF		
800.0	799.9	795.2	794.6	1.4	1.4	-151.04	12.1	-59.7	67.8	65.1	2.75	24.635		
900.0	899.7	894.2	893.2	1.6	1.7	-150.28	17.1	-66.9	81.1	78.0	3.11	26.069		
1,000.0	999.4	993.1	991.7	1.8	1.9	-150.24	22.0	-74.1	95.9	92.4	3.47	27.618		
1,100.0	1,098.9	1,091.8	1,090.0	2.0	2.1	-150.62	27.0	-81.3	112.1	108.3	3.83	29.239		
1,200.0	1,198.3	1,190.2	1,188.0	2.2	2.3	-151.27	31.9	-88.5	129.9	125.7	4.20	30.912		
1,300.0	1,297.4	1,288.3	1,285.7	2.5	2.5	-152.05	36.8	-95.7	149.2	144.6	4.57	32.626		
1,400.0	1,396.3	1,386.1	1,383.1	2.8	2.8	-152.92	41.7	-102.8	170.0	165.0	4.95	34.346		
1,500.0	1,495.2	1,483.8	1,480.4	3.1	3.0	-153.70	46.6	-110.0	191.1	185.7	5.33	35.854		
1,600.0	1,594.0	1,581.5	1,577.8	3.4	3.2	-154.32	51.5	-117.1	212.2	206.5	5.71	37.161		
1,700.0	1,692.9	1,679.2	1,675.1	3.7	3.4	-154.83	56.4	-124.2	233.4	227.3	6.09	38.303		
1,800.0	1,791.8	1,776.9	1,772.4	4.0	3.7	-155.26	61.3	-131.4	254.6	248.1	6.48	39.309		
1,900.0	1,890.6	1,874.6	1,869.8	4.3	3.9	-155.62	66.2	-138.5	275.7	268.9	6.86	40.202		
2,000.0	1,989.5	1,972.3	1,967.1	4.6	4.1	-155.93	71.1	-145.7	296.9	289.7	7.24	41.001		
2,100.0	2,088.4	2,070.1	2,064.4	4.9	4.3	-156.20	76.0	-152.8	318.1	310.5	7.63	41.718		
2,200.0	2,187.2	2,167.8	2,161.8	5.2	4.6	-156.43	80.9	-159.9	339.4	331.3	8.01	42.366		
2,300.0	2,286.1	2,265.5	2,259.1	5.5	4.8	-156.64	85.8	-167.1	360.6	352.2	8.39	42.955		
2,400.0	2,384.9	2,363.2	2,356.4	5.8	5.0	-156.83	90.7	-174.2	381.8	373.0	8.78	43.491		
2,500.0	2,483.8	2,460.9	2,453.8	6.1	5.2	-156.99	95.6	-181.4	403.0	393.9	9.16	43.982		
2,600.0	2,582.7	2,558.6	2,551.1	6.4	5.5	-157.14	100.5	-188.5	424.2	414.7	9.55	44.434		
2,700.0	2,681.5	2,656.4	2,648.4	6.7	5.7	-157.27	105.3	-195.6	445.5	435.5	9.93	44.850		
2,800.0	2,780.4	2,754.1	2,745.8	7.0	5.9	-157.39	110.2	-202.8	466.7	456.4	10.32	45.235		
2,900.0	2,879.3	2,851.8	2,843.1	7.3	6.1	-157.51	115.1	-209.9	487.9	477.2	10.70	45.592		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2C-31H - Hz - Plan #1													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)						
0.0	0.0	0.0	0.0	0.0	0.0	-89.95	0.0	-30.8	30.8					
100.0	100.0	100.0	100.0	0.2	0.2	-89.95	0.0	-30.8	30.8	30.5	101.455			
200.0	200.0	200.0	200.0	0.3	0.3	-89.95	0.0	-30.8	30.8	30.2	47.201			
300.0	300.0	300.0	300.0	0.5	0.5	-89.95	0.0	-30.8	30.8	29.8	30.755			
400.0	400.0	400.0	400.0	0.7	0.7	-89.95	0.0	-30.8	30.8	29.5	22.808 CC, ES			
500.0	500.0	499.8	499.7	0.8	0.9	-88.52	0.8	-31.2	31.2	29.5	18.356			
600.0	600.0	599.4	599.4	1.0	1.0	-154.21	3.1	-32.3	33.3	31.2	16.223			
700.0	700.0	699.0	698.8	1.2	1.2	-150.28	7.0	-34.2	37.9	35.5	15.775 SF			
800.0	799.9	798.5	798.2	1.4	1.4	-147.04	12.1	-36.7	45.1	42.3	16.302			
900.0	899.7	898.2	897.7	1.6	1.6	-145.65	17.4	-39.3	53.8	50.6	17.196			
1,000.0	999.4	997.6	997.0	1.8	1.8	-145.53	22.6	-41.8	63.9	60.4	18.295			
1,100.0	1,098.9	1,097.0	1,096.2	2.0	2.0	-146.17	27.7	-44.3	75.5	71.7	19.532			
1,200.0	1,198.3	1,196.1	1,195.1	2.2	2.2	-147.25	32.9	-46.8	88.6	84.3	20.876			
1,300.0	1,297.4	1,295.0	1,293.9	2.5	2.4	-148.54	38.1	-49.4	103.1	98.5	22.308			
1,400.0	1,396.3	1,393.7	1,392.4	2.8	2.6	-149.92	43.3	-51.9	119.1	114.1	23.794			
1,500.0	1,495.2	1,492.3	1,490.8	3.1	2.8	-151.09	48.4	-54.4	135.5	130.1	25.121			
1,600.0	1,594.0	1,590.9	1,589.3	3.4	3.0	-152.01	53.6	-56.9	151.9	146.1	26.275			
1,700.0	1,692.9	1,689.5	1,687.7	3.7	3.2	-152.75	58.7	-59.4	168.4	162.2	27.288			
1,800.0	1,791.8	1,788.1	1,786.2	4.0	3.4	-153.36	63.9	-61.9	184.8	178.3	28.183			
1,900.0	1,890.6	1,886.8	1,884.6	4.3	3.6	-153.86	69.0	-64.4	201.3	194.4	28.979			
2,000.0	1,989.5	1,985.4	1,983.1	4.6	3.8	-154.29	74.2	-66.9	217.8	210.5	29.692			
2,100.0	2,088.4	2,084.0	2,081.5	4.9	3.9	-154.66	79.3	-69.4	234.3	226.6	30.333			
2,200.0	2,187.2	2,182.6	2,180.0	5.2	4.1	-154.99	84.5	-72.0	250.8	242.7	30.914			
2,300.0	2,286.1	2,281.2	2,278.4	5.5	4.3	-155.27	89.6	-74.5	267.3	258.8	31.442			
2,400.0	2,384.9	2,379.9	2,376.9	5.8	4.5	-155.52	94.8	-77.0	283.9	275.0	31.924			
2,500.0	2,483.8	2,478.5	2,475.3	6.1	4.7	-155.74	100.0	-79.5	300.4	291.1	32.366			
2,600.0	2,582.7	2,577.1	2,573.8	6.4	4.9	-155.94	105.1	-82.0	316.9	307.3	32.772			
2,700.0	2,681.5	2,675.7	2,672.2	6.7	5.1	-156.12	110.3	-84.5	333.5	323.4	33.147			
2,800.0	2,780.4	2,774.3	2,770.7	7.0	5.3	-156.28	115.4	-87.0	350.0	339.6	33.494			
2,900.0	2,879.3	2,872.9	2,869.1	7.3	5.5	-156.43	120.6	-89.5	366.5	355.7	33.816			
3,000.0	2,978.1	2,971.6	2,967.6	7.7	5.7	-156.56	125.7	-92.0	383.1	371.9	34.115			
3,100.0	3,077.0	3,070.2	3,066.0	8.0	5.9	-156.68	130.9	-94.6	399.6	388.0	34.395			
3,200.0	3,175.8	3,168.8	3,164.5	8.3	6.1	-156.80	136.0	-97.1	416.2	404.2	34.656			
3,300.0	3,274.7	3,267.4	3,262.9	8.6	6.3	-156.90	141.2	-99.6	432.7	420.3	34.902			
3,400.0	3,373.6	3,366.0	3,361.4	8.9	6.5	-157.00	146.3	-102.1	449.3	436.5	35.132			
3,500.0	3,472.4	3,464.7	3,459.8	9.2	6.7	-157.09	151.5	-104.6	465.8	452.7	35.348			
3,600.0	3,571.3	3,563.3	3,558.3	9.5	6.9	-157.17	156.7	-107.1	482.4	468.8	35.552			
3,700.0	3,670.2	3,661.9	3,656.7	9.9	7.1	-157.25	161.8	-109.6	498.9	485.0	35.745			

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2D-31H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-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	-89.95	0.0	-19.6	19.6					
100.0	100.0	100.0	100.0	0.2	0.2	-89.95	0.0	-19.6	19.6	19.3	0.30	64.562		
200.0	200.0	200.0	200.0	0.3	0.3	-89.95	0.0	-19.6	19.6	19.0	0.65	30.037		
300.0	300.0	300.0	300.0	0.5	0.5	-89.95	0.0	-19.6	19.6	18.6	1.00	19.571		
400.0	400.0	400.0	400.0	0.7	0.7	-89.95	0.0	-19.6	19.6	18.3	1.35	14.514		
500.0	500.0	500.0	500.0	0.8	0.8	-89.95	0.0	-19.6	19.6	17.9	1.70	11.534 CC, ES		
600.0	600.0	600.0	600.0	1.0	1.0	-159.93	0.0	-19.6	20.4	18.4	2.05	9.968		
700.0	700.0	700.0	700.0	1.2	1.2	-162.17	0.0	-19.6	22.9	20.5	2.40	9.552 SF		
800.0	799.9	799.9	799.9	1.4	1.4	-164.99	0.0	-19.6	27.1	24.3	2.75	9.865		
900.0	899.7	899.7	899.7	1.6	1.5	-167.72	0.0	-19.6	33.0	29.9	3.09	10.676		
1,000.0	999.4	999.4	999.4	1.8	1.7	-170.06	0.0	-19.6	40.7	37.3	3.44	11.840		
1,100.0	1,098.9	1,098.9	1,098.9	2.0	1.9	-171.93	0.0	-19.6	50.2	46.4	3.78	13.263		
1,200.0	1,198.3	1,198.3	1,198.3	2.2	2.1	-173.40	0.0	-19.6	61.4	57.3	4.13	14.881		
1,300.0	1,297.4	1,297.4	1,297.4	2.5	2.2	-174.54	0.0	-19.6	74.4	69.9	4.47	16.648		
1,400.0	1,396.3	1,396.3	1,396.3	2.8	2.4	-175.43	0.0	-19.6	89.0	84.2	4.81	18.501		
1,500.0	1,495.2	1,495.2	1,495.2	3.1	2.6	-176.09	0.0	-19.6	104.0	98.9	5.16	20.166		
1,600.0	1,594.0	1,594.0	1,594.0	3.4	2.8	-176.59	0.0	-19.6	119.0	113.5	5.50	21.623		
1,700.0	1,692.9	1,692.9	1,692.9	3.7	2.9	-176.97	0.0	-19.6	134.0	128.2	5.85	22.909		
1,800.0	1,791.8	1,791.8	1,791.8	4.0	3.1	-177.28	0.0	-19.6	149.1	142.9	6.20	24.052		
1,900.0	1,890.6	1,890.6	1,890.6	4.3	3.3	-177.52	0.0	-19.6	164.1	157.5	6.54	25.075		
2,000.0	1,989.5	1,989.5	1,989.5	4.6	3.4	-177.73	0.0	-19.6	179.1	172.2	6.89	25.995		
2,100.0	2,088.4	2,088.4	2,088.4	4.9	3.6	-177.91	0.0	-19.6	194.1	186.9	7.24	26.827		
2,200.0	2,187.2	2,187.2	2,187.2	5.2	3.8	-178.06	0.0	-19.6	209.2	201.6	7.58	27.584		
2,300.0	2,286.1	2,286.1	2,286.1	5.5	4.0	-178.19	0.0	-19.6	224.2	216.3	7.93	28.275		
2,400.0	2,384.9	2,384.9	2,384.9	5.8	4.1	-178.30	0.0	-19.6	239.2	231.0	8.28	28.908		
2,500.0	2,483.8	2,483.8	2,483.8	6.1	4.3	-178.40	0.0	-19.6	254.3	245.6	8.62	29.490		
2,600.0	2,582.7	2,582.7	2,582.7	6.4	4.5	-178.49	0.0	-19.6	269.3	260.3	8.97	30.028		
2,700.0	2,681.5	2,681.5	2,681.5	6.7	4.7	-178.57	0.0	-19.6	284.3	275.0	9.31	30.525		
2,800.0	2,780.4	2,780.4	2,780.4	7.0	4.8	-178.64	0.0	-19.6	299.4	289.7	9.66	30.987		
2,900.0	2,879.3	2,879.3	2,879.3	7.3	5.0	-178.71	0.0	-19.6	314.4	304.4	10.01	31.417		
3,000.0	2,978.1	2,978.1	2,978.1	7.7	5.2	-178.77	0.0	-19.6	329.4	319.1	10.35	31.818		
3,100.0	3,077.0	3,077.0	3,077.0	8.0	5.3	-178.82	0.0	-19.6	344.5	333.8	10.70	32.194		
3,200.0	3,175.8	3,175.8	3,175.8	8.3	5.5	-178.87	0.0	-19.6	359.5	348.5	11.05	32.546		
3,300.0	3,274.7	3,274.7	3,274.7	8.6	5.7	-178.92	0.0	-19.6	374.5	363.2	11.39	32.876		
3,400.0	3,373.6	3,373.6	3,373.6	8.9	5.9	-178.96	0.0	-19.6	389.6	377.8	11.74	33.187		
3,500.0	3,472.4	3,472.4	3,472.4	9.2	6.0	-179.00	0.0	-19.6	404.6	392.5	12.09	33.481		
3,600.0	3,571.3	3,571.3	3,571.3	9.5	6.2	-179.03	0.0	-19.6	419.7	407.2	12.43	33.757		
3,700.0	3,670.2	3,670.2	3,670.2	9.9	6.4	-179.07	0.0	-19.6	434.7	421.9	12.78	34.019		
3,800.0	3,769.0	3,769.0	3,769.0	10.2	6.6	-179.10	0.0	-19.6	449.7	436.6	13.12	34.268		
3,900.0	3,867.9	3,867.9	3,867.9	10.5	6.7	-179.13	0.0	-19.6	464.8	451.3	13.47	34.503		
4,000.0	3,966.8	3,966.8	3,966.8	10.8	6.9	-179.15	0.0	-19.6	479.8	466.0	13.82	34.726		
4,100.0	4,065.6	4,065.6	4,065.6	11.1	7.1	-179.14	0.4	-19.4	494.6	480.4	14.17	34.902		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2E-31H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-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	-89.96	0.0	-11.2	11.2					
100.0	100.0	100.0	100.0	0.2	0.2	-89.96	0.0	-11.2	11.2	10.9	0.30	36.893		
200.0	200.0	200.0	200.0	0.3	0.3	-89.96	0.0	-11.2	11.2	10.6	0.65	17.164		
300.0	300.0	300.0	300.0	0.5	0.5	-89.96	0.0	-11.2	11.2	10.2	1.00	11.184		
400.0	400.0	400.0	400.0	0.7	0.7	-89.96	0.0	-11.2	11.2	9.9	1.35	8.294		
500.0	500.0	500.0	500.0	0.8	0.8	-89.96	0.0	-11.2	11.2	9.5	1.70	6.591 CC		
600.0	600.0	600.2	600.2	1.0	1.0	-158.13	0.5	-10.5	11.3	9.3	2.05	5.515		
700.0	700.0	700.3	700.3	1.2	1.2	-155.40	2.0	-8.3	11.6	9.2	2.40	4.838 ES		
800.0	799.9	800.5	800.3	1.4	1.4	-151.19	4.5	-4.7	12.2	9.4	2.76	4.422		
900.0	899.7	900.6	900.3	1.6	1.6	-145.95	8.0	0.3	13.1	10.0	3.12	4.191		
1,000.0	999.4	1,000.8	1,000.1	1.8	1.8	-140.24	12.4	6.8	14.4	10.9	3.51	4.098		
1,100.0	1,098.9	1,100.8	1,099.7	2.0	2.0	-135.41	17.7	14.5	16.2	12.3	3.92	4.147		
1,200.0	1,198.3	1,200.7	1,199.2	2.2	2.2	-135.01	23.1	22.3	19.3	15.0	4.33	4.460		
1,300.0	1,297.4	1,300.6	1,298.7	2.5	2.4	-137.71	28.5	30.1	23.7	18.9	4.74	4.993		
1,400.0	1,396.3	1,400.5	1,398.0	2.8	2.7	-141.65	33.9	37.9	29.3	24.2	5.13	5.712		
1,500.0	1,495.2	1,500.3	1,497.4	3.1	2.9	-144.67	39.3	45.7	35.3	29.8	5.52	6.402		
1,600.0	1,594.0	1,600.1	1,596.7	3.4	3.1	-146.81	44.7	53.5	41.4	35.5	5.91	7.011		
1,700.0	1,692.9	1,699.9	1,696.1	3.7	3.4	-148.40	50.0	61.3	47.6	41.3	6.30	7.551		
1,800.0	1,791.8	1,799.7	1,795.4	4.0	3.6	-149.62	55.4	69.1	53.8	47.1	6.70	8.031		
1,900.0	1,890.6	1,899.5	1,894.8	4.3	3.8	-150.59	60.8	76.9	60.0	52.9	7.09	8.459		
2,000.0	1,889.5	1,999.3	1,994.1	4.6	4.1	-151.38	66.2	84.7	66.2	58.7	7.48	8.845		
2,100.0	2,088.4	2,099.1	2,093.5	4.9	4.3	-152.03	71.6	92.5	72.4	64.5	7.88	9.192		
2,200.0	2,187.2	2,198.9	2,192.9	5.2	4.5	-152.58	77.0	100.3	78.6	70.4	8.27	9.507		
2,300.0	2,286.1	2,298.7	2,292.2	5.5	4.8	-153.05	82.3	108.1	84.9	76.2	8.67	9.793		
2,400.0	2,384.9	2,398.5	2,391.6	5.8	5.0	-153.46	87.7	115.9	91.1	82.0	9.06	10.055		
2,500.0	2,483.8	2,498.3	2,490.9	6.1	5.2	-153.81	93.1	123.7	97.3	87.9	9.45	10.296		
2,600.0	2,582.7	2,598.1	2,590.3	6.4	5.5	-154.12	98.5	131.5	103.6	93.7	9.85	10.517		
2,700.0	2,681.5	2,697.9	2,689.6	6.7	5.7	-154.40	103.9	139.3	109.8	99.6	10.25	10.721		
2,800.0	2,780.4	2,797.7	2,789.0	7.0	6.0	-154.64	109.2	147.1	116.1	105.4	10.64	10.910		
2,900.0	2,879.3	2,897.5	2,888.3	7.3	6.2	-154.86	114.6	154.9	122.3	111.3	11.04	11.085		
3,000.0	2,978.1	2,997.3	2,987.7	7.7	6.4	-155.06	120.0	162.7	128.6	117.2	11.43	11.249		
3,100.0	3,077.0	3,097.1	3,087.0	8.0	6.7	-155.24	125.4	170.5	134.9	123.0	11.83	11.401		
3,200.0	3,175.8	3,196.9	3,186.4	8.3	6.9	-155.41	130.8	178.3	141.1	128.9	12.22	11.544		
3,300.0	3,274.7	3,296.7	3,285.7	8.6	7.2	-155.56	136.2	186.1	147.4	134.7	12.62	11.678		
3,400.0	3,373.6	3,396.5	3,385.1	8.9	7.4	-155.70	141.5	193.9	153.6	140.6	13.02	11.803		
3,500.0	3,472.4	3,496.3	3,484.4	9.2	7.6	-155.82	146.9	201.7	159.9	146.5	13.41	11.921		
3,600.0	3,571.3	3,596.1	3,583.8	9.5	7.9	-155.94	152.3	209.5	166.1	152.3	13.81	12.033		
3,700.0	3,670.2	3,695.9	3,683.1	9.9	8.1	-156.05	157.7	217.3	172.4	158.2	14.20	12.138		
3,800.0	3,769.0	3,795.7	3,782.5	10.2	8.3	-156.15	163.1	225.1	178.7	164.1	14.60	12.237		
3,900.0	3,867.9	3,895.5	3,881.8	10.5	8.6	-156.25	168.5	232.9	184.9	169.9	15.00	12.331		
4,000.0	3,966.8	3,995.3	3,981.2	10.8	8.8	-156.33	173.8	240.7	191.2	175.8	15.39	12.421		
4,100.0	4,065.6	4,095.2	4,080.5	11.1	9.1	-156.42	179.2	248.5	197.5	181.7	15.79	12.506		
4,200.0	4,164.5	4,195.0	4,179.9	11.4	9.3	-156.50	184.6	256.3	203.7	187.5	16.19	12.586		
4,300.0	4,263.3	4,294.8	4,279.3	11.7	9.5	-156.57	190.0	264.1	210.0	193.4	16.58	12.663		
4,400.0	4,362.2	4,394.6	4,378.6	12.1	9.8	-156.64	195.4	271.9	216.2	199.3	16.98	12.736		
4,500.0	4,461.1	4,494.4	4,478.0	12.4	10.0	-156.70	200.8	279.7	222.5	205.1	17.38	12.806		
4,600.0	4,559.9	4,594.2	4,577.3	12.7	10.3	-156.76	206.1	287.5	228.8	211.0	17.77	12.873		
4,700.0	4,658.8	4,694.0	4,676.7	13.0	10.5	-156.82	211.5	295.3	235.0	216.9	18.17	12.937		
4,800.0	4,757.7	4,793.8	4,776.0	13.3	10.7	-156.88	216.9	303.1	241.3	222.7	18.57	12.998		
4,900.0	4,856.5	4,893.6	4,875.4	13.6	11.0	-156.93	222.3	310.9	247.6	228.6	18.96	13.056		
5,000.0	4,955.4	4,993.4	4,974.7	14.0	11.2	-156.98	227.7	318.7	253.8	234.5	19.36	13.112		
5,100.0	5,054.2	5,093.2	5,074.1	14.3	11.5	-157.03	233.0	326.5	260.1	240.4	19.76	13.166		

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 Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2E-31H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-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		
5,200.0	5,153.1	5,193.0	5,173.4	14.6	11.7	-157.07	238.4	334.3	266.4	246.2	20.15	13.218		
5,300.0	5,252.0	5,292.8	5,272.8	14.9	11.9	-157.12	243.8	342.1	272.6	252.1	20.55	13.268		
5,400.0	5,350.8	5,392.6	5,372.1	15.2	12.2	-157.16	249.2	349.9	278.9	258.0	20.95	13.316		
5,500.0	5,449.7	5,492.4	5,471.5	15.5	12.4	-157.20	254.6	357.7	285.2	263.8	21.34	13.362		
5,600.0	5,548.6	5,592.2	5,570.8	15.8	12.7	-157.23	260.0	365.5	291.4	269.7	21.74	13.406		
5,700.0	5,647.4	5,692.0	5,670.2	16.2	12.9	-157.27	265.3	373.3	297.7	275.6	22.14	13.449		
5,800.0	5,746.3	5,791.8	5,769.5	16.5	13.1	-157.30	270.7	381.1	304.0	281.4	22.53	13.490		
5,900.0	5,845.1	5,891.6	5,868.9	16.8	13.4	-157.34	276.1	388.9	310.2	287.3	22.93	13.530		
6,000.0	5,944.0	5,991.4	5,968.2	17.1	13.6	-157.37	281.5	396.7	316.5	293.2	23.33	13.569		
6,100.0	6,042.9	6,091.2	6,067.6	17.4	13.9	-157.40	286.9	404.5	322.8	299.0	23.72	13.606		
6,200.0	6,141.7	6,191.0	6,166.9	17.7	14.1	-157.43	292.3	412.3	329.0	304.9	24.12	13.642		
6,300.0	6,240.6	6,290.8	6,266.3	18.1	14.3	-157.46	297.6	420.1	335.3	310.8	24.52	13.677		
6,400.0	6,339.5	6,390.6	6,365.7	18.4	14.6	-157.49	303.0	427.9	341.6	316.7	24.91	13.710		
6,500.0	6,438.3	6,490.4	6,465.0	18.7	14.8	-157.51	308.4	435.7	347.8	322.5	25.31	13.743		
6,600.0	6,537.2	6,590.2	6,564.4	19.0	15.1	-157.54	313.8	443.5	354.1	328.4	25.71	13.775		
6,700.0	6,636.0	6,690.0	6,663.7	19.3	15.3	-157.56	319.2	451.3	360.4	334.3	26.10	13.805		
6,800.0	6,734.9	6,790.6	6,763.8	19.6	15.5	-158.93	316.0	459.2	366.5	340.3	26.17	14.004		
6,900.0	6,833.8	6,885.4	6,856.2	20.0	15.5	-162.62	297.0	466.4	373.6	347.8	25.77	14.497		
7,000.0	6,932.6	6,970.5	6,935.7	20.3	15.5	176.32	267.1	472.7	384.4	359.2	25.21	15.249		
7,100.0	7,031.2	7,050.0	7,005.0	20.5	15.5	118.05	228.9	478.1	399.8	375.0	24.85	16.087		
7,200.0	7,126.9	7,125.5	7,065.5	20.7	15.4	94.93	183.9	482.8	418.0	393.1	24.96	16.751		
7,300.0	7,216.8	7,200.0	7,118.8	20.8	15.4	83.16	132.2	487.0	437.3	412.0	25.31	17.278		
7,400.0	7,298.2	7,270.5	7,162.7	20.9	15.5	75.72	77.2	490.5	456.3	430.6	25.70	17.758		
7,500.0	7,368.6	7,340.6	7,199.4	21.0	15.6	70.54	17.5	493.4	473.7	447.8	25.92	18.276		
7,600.0	7,425.9	7,409.7	7,228.2	21.2	15.7	66.90	-45.2	495.6	488.8	462.8	25.98	18.812		
10,700.0	7,504.0	10,407.2	7,267.0	58.9	57.1	61.37	-3,037.8	498.7	495.4	396.7	98.65	5.021		
10,800.0	7,504.0	10,507.0	7,267.0	60.6	58.8	61.04	-3,137.6	498.7	490.2	388.8	101.36	4.836		
10,900.0	7,504.0	10,606.8	7,267.0	62.2	60.5	60.71	-3,237.5	498.7	485.1	381.0	104.04	4.662		
11,000.0	7,504.0	10,706.6	7,267.0	63.8	62.2	60.37	-3,337.3	498.7	479.9	373.2	106.70	4.498		
11,100.0	7,504.0	10,806.5	7,267.0	65.4	63.9	60.01	-3,437.1	498.7	474.8	365.5	109.33	4.343		
11,200.0	7,504.0	10,906.3	7,267.0	67.1	65.6	59.66	-3,536.9	498.7	469.7	357.8	111.93	4.197		
11,300.0	7,504.0	11,006.1	7,267.0	68.7	67.3	59.29	-3,636.8	498.7	464.7	350.2	114.50	4.058		
11,400.0	7,504.0	11,106.0	7,267.0	70.4	69.0	58.92	-3,736.6	498.7	459.6	342.6	117.03	3.927		
11,500.0	7,504.0	11,205.8	7,267.0	72.0	70.7	58.53	-3,836.4	498.7	454.6	335.1	119.54	3.803		
11,600.0	7,504.0	11,305.6	7,267.0	73.7	72.4	58.14	-3,936.3	498.7	449.6	327.6	122.00	3.685		
11,700.0	7,504.0	11,405.4	7,267.0	75.4	74.1	57.74	-4,036.1	498.7	444.6	320.2	124.43	3.573		
11,800.0	7,504.0	11,505.3	7,267.0	77.0	75.8	57.33	-4,135.9	498.7	439.6	312.8	126.82	3.467		
11,900.0	7,504.0	11,605.1	7,267.0	78.7	77.6	56.91	-4,235.7	498.7	434.7	305.5	129.16	3.365		
12,000.0	7,504.0	11,704.9	7,267.0	80.4	79.3	56.49	-4,335.6	498.7	429.8	298.3	131.46	3.269		
12,100.0	7,504.0	11,804.7	7,267.0	82.1	81.0	56.05	-4,435.4	498.7	424.9	291.2	133.72	3.177		
12,141.6	7,504.0	11,846.2	7,267.0	82.8	81.7	55.86	-4,476.9	498.7	422.8	288.2	134.64	3.141 SF		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2G-31H - Hz - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Total	Separation		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.06	0.0	8.4	8.4					
100.0	100.0	100.0	100.0	0.2	0.2	90.06	0.0	8.4	8.4	8.1	0.30	27.670		
200.0	200.0	200.0	200.0	0.3	0.3	90.06	0.0	8.4	8.4	7.8	0.65	12.873 CC, ES		
300.0	300.0	299.8	299.8	0.5	0.5	88.49	0.2	9.2	9.2	8.2	1.00	9.220		
400.0	400.0	399.6	399.6	0.7	0.7	85.15	1.0	11.7	11.8	10.4	1.35	8.697		
500.0	500.0	499.3	499.2	0.8	0.9	81.94	2.2	15.9	16.1	14.4	1.71	9.376		
600.0	600.0	598.8	598.5	1.0	1.1	10.85	4.0	21.7	21.2	19.2	2.05	10.376		
700.0	700.0	698.3	697.7	1.2	1.3	9.92	6.2	29.1	26.5	24.1	2.40	11.040		
800.0	799.9	797.7	796.6	1.4	1.5	9.51	9.0	38.2	31.7	28.9	2.74	11.540		
900.0	899.7	896.9	895.2	1.6	1.8	9.42	12.2	48.9	36.9	33.8	3.09	11.928		
1,000.0	999.4	996.1	993.6	1.8	2.0	9.51	15.9	61.3	42.1	38.7	3.44	12.237		
1,100.0	1,098.9	1,095.2	1,091.6	2.0	2.3	9.73	20.2	75.2	47.3	43.5	3.79	12.488		
1,200.0	1,198.3	1,194.2	1,189.2	2.2	2.6	10.04	24.9	90.8	52.6	48.4	4.14	12.693		
1,300.0	1,297.4	1,293.3	1,286.7	2.5	3.0	10.41	30.0	107.9	57.8	53.3	4.49	12.856		
1,400.0	1,396.3	1,393.2	1,384.8	2.8	3.3	10.94	35.4	125.8	62.0	57.1	4.85	12.779		
1,500.0	1,495.2	1,493.1	1,483.0	3.1	3.7	11.48	40.8	143.8	65.9	60.7	5.22	12.631		
1,600.0	1,594.0	1,593.0	1,581.1	3.4	4.1	11.95	46.2	161.7	69.8	64.2	5.58	12.498		
1,700.0	1,692.9	1,693.0	1,679.3	3.7	4.4	12.37	51.7	179.6	73.6	67.7	5.95	12.379		
1,800.0	1,791.8	1,792.9	1,777.4	4.0	4.8	12.75	57.1	197.5	77.5	71.2	6.32	12.270		
1,900.0	1,890.6	1,892.8	1,875.6	4.3	5.2	13.10	62.5	215.4	81.4	74.7	6.69	12.171		
2,000.0	1,989.5	1,992.7	1,973.7	4.6	5.5	13.41	67.9	233.3	85.3	78.3	7.06	12.080		
2,100.0	2,088.4	2,092.6	2,071.9	4.9	5.9	13.70	73.3	251.2	89.2	81.8	7.44	11.996		
2,200.0	2,187.2	2,192.6	2,170.0	5.2	6.3	13.96	78.7	269.1	93.1	85.3	7.81	11.919		
2,300.0	2,286.1	2,292.5	2,268.2	5.5	6.6	14.20	84.1	287.0	97.0	88.8	8.19	11.847		
2,400.0	2,384.9	2,392.4	2,366.4	5.8	7.0	14.42	89.5	304.9	100.9	92.4	8.57	11.780		
2,500.0	2,483.8	2,492.3	2,464.5	6.1	7.4	14.63	94.9	322.8	104.8	95.9	8.95	11.718		
2,600.0	2,582.7	2,592.3	2,562.7	6.4	7.7	14.82	100.3	340.7	108.7	99.4	9.33	11.660		
2,700.0	2,681.5	2,692.2	2,660.8	6.7	8.1	15.00	105.7	358.7	112.6	102.9	9.71	11.605		
2,800.0	2,780.4	2,792.1	2,759.0	7.0	8.5	15.16	111.1	376.6	116.6	106.5	10.09	11.554		
2,900.0	2,879.3	2,892.0	2,857.1	7.3	8.9	15.32	116.5	394.5	120.5	110.0	10.47	11.506		
3,000.0	2,978.1	2,992.0	2,955.3	7.7	9.2	15.46	121.9	412.4	124.4	113.5	10.85	11.460		
3,100.0	3,077.0	3,091.9	3,053.5	8.0	9.6	15.60	127.3	430.3	128.3	117.0	11.24	11.417		
3,200.0	3,175.8	3,191.8	3,151.6	8.3	10.0	15.73	132.7	448.2	132.2	120.6	11.62	11.377		
3,300.0	3,274.7	3,291.7	3,249.8	8.6	10.3	15.85	138.1	466.1	136.1	124.1	12.00	11.338		
3,400.0	3,373.6	3,391.6	3,347.9	8.9	10.7	15.96	143.5	484.0	140.0	127.6	12.39	11.302		
3,500.0	3,472.4	3,491.6	3,446.1	9.2	11.1	16.07	148.9	501.9	143.9	131.2	12.77	11.268		
3,600.0	3,571.3	3,591.5	3,544.2	9.5	11.5	16.17	154.3	519.8	147.8	134.7	13.16	11.235		
3,700.0	3,670.2	3,691.4	3,642.4	9.9	11.8	16.27	159.7	537.7	151.8	138.2	13.55	11.203		
3,800.0	3,769.0	3,791.3	3,740.6	10.2	12.2	16.36	165.2	555.6	155.7	141.7	13.93	11.174		
3,900.0	3,867.9	3,891.3	3,838.7	10.5	12.6	16.45	170.6	573.6	159.6	145.3	14.32	11.145		
4,000.0	3,966.8	3,991.2	3,936.9	10.8	13.0	16.53	176.0	591.5	163.5	148.8	14.71	11.118		
4,100.0	4,065.6	4,091.1	4,035.0	11.1	13.3	16.61	181.4	609.4	167.4	152.3	15.09	11.092		
4,200.0	4,164.5	4,191.0	4,133.2	11.4	13.7	16.69	186.8	627.3	171.3	155.9	15.48	11.067		
4,300.0	4,263.3	4,291.0	4,231.3	11.7	14.1	16.76	192.2	645.2	175.3	159.4	15.87	11.044		
4,400.0	4,362.2	4,390.9	4,329.5	12.1	14.5	16.83	197.6	663.1	179.2	162.9	16.26	11.021		
4,500.0	4,461.1	4,490.8	4,427.6	12.4	14.8	16.89	203.0	681.0	183.1	166.4	16.65	10.999		
4,600.0	4,559.9	4,590.7	4,525.8	12.7	15.2	16.96	208.4	698.9	187.0	170.0	17.03	10.978		
4,700.0	4,658.8	4,690.6	4,624.0	13.0	15.6	17.02	213.8	716.8	190.9	173.5	17.42	10.958		
4,800.0	4,757.7	4,790.6	4,722.1	13.3	16.0	17.08	219.2	734.7	194.8	177.0	17.81	10.938		
4,900.0	4,856.5	4,890.5	4,820.3	13.6	16.3	17.13	224.6	752.6	198.8	180.6	18.20	10.920		
5,000.0	4,955.4	4,990.4	4,918.4	14.0	16.7	17.19	230.0	770.5	202.7	184.1	18.59	10.902		
5,100.0	5,054.2	5,090.3	5,016.6	14.3	17.1	17.24	235.4	788.4	206.6	187.6	18.98	10.884		

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 Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2G-31H - Hz - Plan #1												Offset Site Error: 0.0 ft	
Survey Program: 0-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	5,153.1	5,190.3	5,114.7	14.6	17.4	17.29	240.8	806.4	210.5	191.1	19.37	10.868	
5,300.0	5,252.0	5,290.2	5,212.9	14.9	17.8	17.34	246.2	824.3	214.4	194.7	19.76	10.851	
5,400.0	5,350.8	5,390.1	5,311.1	15.2	18.2	17.38	251.6	842.2	218.3	198.2	20.15	10.836	
5,500.0	5,449.7	5,490.0	5,409.2	15.5	18.6	17.43	257.0	860.1	222.3	201.7	20.54	10.821	
5,600.0	5,548.6	5,590.0	5,507.4	15.8	18.9	17.47	262.4	878.0	226.2	205.2	20.93	10.806	
5,700.0	5,647.4	5,689.9	5,605.5	16.2	19.3	17.51	267.8	895.9	230.1	208.8	21.32	10.792	
5,800.0	5,746.3	5,789.8	5,703.7	16.5	19.7	17.55	273.2	913.8	234.0	212.3	21.71	10.779	
5,900.0	5,845.1	5,889.7	5,801.8	16.8	20.1	17.59	278.7	931.7	237.9	215.8	22.10	10.765	
6,000.0	5,944.0	5,989.6	5,900.0	17.1	20.4	17.63	284.1	949.6	241.9	219.4	22.49	10.753	
6,100.0	6,042.9	6,089.6	5,998.2	17.4	20.8	17.67	289.5	967.5	245.8	222.9	22.88	10.740	
6,200.0	6,141.7	6,189.5	6,096.3	17.7	21.2	17.70	294.9	985.4	249.7	226.4	23.27	10.728	
6,300.0	6,240.6	6,289.4	6,194.5	18.1	21.6	17.74	300.3	1,003.3	253.6	229.9	23.67	10.717	
6,400.0	6,339.5	6,389.3	6,292.6	18.4	21.9	17.77	305.7	1,021.3	257.5	233.5	24.06	10.705	
6,500.0	6,438.3	6,489.3	6,390.8	18.7	22.3	17.80	311.1	1,039.2	261.4	237.0	24.45	10.694	
6,600.0	6,537.2	6,589.2	6,488.9	19.0	22.7	17.83	316.5	1,057.1	265.4	240.5	24.84	10.684	
6,700.0	6,636.0	6,689.1	6,587.1	19.3	23.1	17.86	321.9	1,075.0	269.3	244.1	25.23	10.673	
6,800.0	6,734.9	6,789.3	6,685.5	19.6	23.4	17.92	327.2	1,092.9	273.2	247.6	25.63	10.661	
6,900.0	6,833.8	6,890.0	6,784.3	20.0	23.7	20.24	321.5	1,111.0	276.8	250.4	26.46	10.461	
7,000.0	6,932.6	6,984.3	6,874.6	20.3	24.0	9.91	300.4	1,127.4	281.9	253.8	28.08	10.041	
7,100.0	7,031.2	7,073.0	6,955.4	20.5	24.1	-36.07	267.0	1,142.2	289.8	260.0	29.73	9.746	
7,200.0	7,126.9	7,158.3	7,027.3	20.7	24.2	-48.25	223.3	1,155.3	299.3	268.6	30.66	9.760	
7,300.0	7,216.8	7,240.8	7,090.2	20.8	24.4	-50.55	171.2	1,166.8	309.4	278.8	30.64	10.100	
7,400.0	7,298.2	7,321.0	7,143.6	20.9	24.5	-50.16	112.3	1,176.5	319.3	289.6	29.66	10.764	
7,500.0	7,368.6	7,400.0	7,187.8	21.0	24.6	-49.02	47.4	1,184.6	328.0	300.0	27.99	11.718	
7,600.0	7,425.9	7,476.7	7,221.9	21.2	24.8	-47.82	-21.0	1,190.8	334.9	308.8	26.08	12.839	
7,700.0	7,468.3	7,550.0	7,245.9	21.5	24.9	-46.87	-90.1	1,195.2	339.5	314.9	24.53	13.837	
7,800.0	7,494.6	7,628.5	7,261.7	21.8	25.2	-46.15	-166.8	1,198.1	341.4	317.2	24.13	14.148	
7,900.0	7,504.0	7,703.7	7,267.0	22.3	25.5	-45.84	-241.8	1,199.0	340.4	315.1	25.32	13.445	
8,000.0	7,504.0	7,802.4	7,267.0	22.8	25.9	-45.45	-340.5	1,199.0	337.9	311.4	26.50	12.752	
8,100.0	7,504.0	7,902.3	7,267.0	23.5	26.5	-45.03	-440.4	1,199.0	335.4	307.6	27.79	12.070	
8,200.0	7,504.0	8,002.3	7,267.0	24.3	27.1	-44.60	-540.4	1,199.0	333.0	303.8	29.21	11.400	
8,300.0	7,504.0	8,102.2	7,267.0	25.2	27.9	-44.17	-640.3	1,199.0	330.5	299.8	30.72	10.759	
8,400.0	7,504.0	8,202.2	7,267.0	26.2	28.7	-43.74	-740.2	1,199.0	328.1	295.8	32.31	10.155	
8,500.0	7,504.0	8,302.1	7,267.0	27.3	29.7	-43.29	-840.2	1,199.0	325.7	291.7	33.95	9.592	
8,600.0	7,504.0	8,402.0	7,267.0	28.4	30.7	-42.84	-940.1	1,199.0	323.3	287.7	35.64	9.073	
8,700.0	7,504.0	8,502.0	7,267.0	29.6	31.7	-42.39	-1,040.1	1,199.0	321.0	283.6	37.34	8.595	
8,800.0	7,504.0	8,601.9	7,267.0	30.8	32.8	-41.92	-1,140.0	1,199.0	318.6	279.5	39.06	8.156	
8,900.0	7,504.0	8,701.9	7,267.0	32.1	34.0	-41.45	-1,239.9	1,199.0	316.3	275.5	40.79	7.755	
9,000.0	7,504.0	8,801.8	7,267.0	33.5	35.2	-40.97	-1,339.9	1,199.0	314.0	271.5	42.50	7.387	
9,100.0	7,504.0	8,901.7	7,267.0	34.8	36.5	-40.49	-1,439.8	1,199.0	311.7	267.5	44.21	7.051	
9,200.0	7,504.0	9,001.7	7,267.0	36.2	37.8	-40.02	-1,539.8	1,199.0	309.5	263.7	45.80	6.758	
9,300.0	7,504.0	9,101.7	7,267.0	37.6	39.2	-39.75	-1,639.7	1,199.0	308.2	260.9	47.31	6.516	
9,364.3	7,504.0	9,165.9	7,267.0	38.6	40.0	-39.70	-1,704.0	1,199.0	308.0	259.7	48.36	6.369	
9,400.0	7,504.0	9,201.6	7,267.0	39.1	40.5	-39.71	-1,739.7	1,199.0	308.1	259.1	48.98	6.290	
9,500.0	7,504.0	9,301.6	7,267.0	40.5	41.9	-39.92	-1,839.7	1,199.0	309.0	258.2	50.83	6.080	
9,600.0	7,504.0	9,401.6	7,267.0	42.0	43.4	-40.36	-1,939.7	1,199.0	311.1	258.2	52.89	5.883	
9,700.0	7,504.0	9,501.5	7,267.0	43.4	44.8	-41.03	-2,039.5	1,199.0	314.4	259.2	55.16	5.700	
9,800.0	7,504.0	9,601.3	7,267.0	44.9	46.3	-41.82	-2,139.4	1,199.0	318.3	260.3	57.98	5.490	
9,900.0	7,504.0	9,701.1	7,267.0	46.4	47.8	-42.60	-2,239.2	1,199.0	322.2	261.4	60.86	5.295	
10,000.0	7,504.0	9,800.9	7,267.0	47.9	49.3	-43.36	-2,339.0	1,199.0	326.3	262.5	63.80	5.114	
10,100.0	7,504.0	9,900.8	7,267.0	49.5	50.8	-44.10	-2,438.8	1,199.0	330.3	263.5	66.78	4.946	
10,200.0	7,504.0	10,000.6	7,267.0	51.0	52.3	-44.83	-2,538.7	1,199.0	334.4	264.6	69.82	4.790	

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 Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - Lochbuie 2G-31H - Hz - Plan #1												Offset Site Error:	0.0 ft
Survey Program: 0-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	
10,300.0	7,504.0	10,100.4	7,267.0	52.6	53.9	-45.53	-2,638.5	1,199.0	338.6	265.7	72.90	4.645	
10,400.0	7,504.0	10,200.2	7,267.0	54.2	55.5	-46.22	-2,738.3	1,199.0	342.9	266.8	76.03	4.510	
10,500.0	7,504.0	10,300.1	7,267.0	55.7	57.0	-46.89	-2,838.2	1,199.0	347.1	267.9	79.19	4.383	
10,600.0	7,504.0	10,399.9	7,267.0	57.3	58.6	-47.55	-2,938.0	1,199.0	351.4	269.1	82.39	4.266	
10,700.0	7,504.0	10,499.7	7,267.0	58.9	60.2	-48.19	-3,037.8	1,199.0	355.8	270.2	85.62	4.156	
10,800.0	7,504.0	10,599.6	7,267.0	60.6	61.8	-48.81	-3,137.6	1,199.0	360.2	271.3	88.88	4.053	
10,900.0	7,504.0	10,699.4	7,267.0	62.2	63.4	-49.42	-3,237.5	1,199.0	364.7	272.5	92.17	3.957	
11,000.0	7,504.0	10,799.2	7,267.0	63.8	65.0	-50.01	-3,337.3	1,199.0	369.2	273.7	95.48	3.866	
11,100.0	7,504.0	10,899.0	7,267.0	65.4	66.7	-50.59	-3,437.1	1,199.0	373.7	274.9	98.82	3.781	
11,200.0	7,504.0	10,998.9	7,267.0	67.1	68.3	-51.15	-3,536.9	1,199.0	378.3	276.1	102.18	3.702	
11,300.0	7,504.0	11,098.7	7,267.0	68.7	69.9	-51.71	-3,636.8	1,199.0	382.9	277.3	105.57	3.627	
11,400.0	7,504.0	11,198.5	7,267.0	70.4	71.6	-52.24	-3,736.6	1,199.0	387.5	278.5	108.97	3.556	
11,500.0	7,504.0	11,298.3	7,267.0	72.0	73.2	-52.77	-3,836.4	1,199.0	392.2	279.8	112.39	3.489	
11,600.0	7,504.0	11,398.2	7,267.0	73.7	74.9	-53.28	-3,936.3	1,199.0	396.9	281.0	115.82	3.426	
11,700.0	7,504.0	11,498.0	7,267.0	75.4	76.5	-53.79	-4,036.1	1,199.0	401.6	282.3	119.28	3.367	
11,800.0	7,504.0	11,597.8	7,267.0	77.0	78.2	-54.28	-4,135.9	1,199.0	406.4	283.6	122.74	3.311	
11,900.0	7,504.0	11,697.6	7,267.0	78.7	79.9	-54.75	-4,235.7	1,199.0	411.2	284.9	126.22	3.257	
12,000.0	7,504.0	11,797.5	7,267.0	80.4	81.5	-55.22	-4,335.6	1,199.0	416.0	286.3	129.71	3.207	
12,100.0	7,504.0	11,897.3	7,267.0	82.1	83.2	-55.68	-4,435.4	1,199.0	420.8	287.6	133.22	3.159	
12,141.6	7,504.0	11,938.8	7,267.0	82.8	83.9	-55.86	-4,476.9	1,199.0	422.8	288.2	134.67	3.140 SF	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 S31-T1N-R65W (Lochbuie) - LUTZ 1A (EXISTING) - VESSELS WELL - NO SURVEYS													Offset Site Error:	0.0 ft
Survey Program: 8016-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		
8,900.0	7,504.0	7,476.0	7,476.0	32.1	13.0	90.00	-1,617.7	835.9	407.8	367.4	40.48	10.076		
9,000.0	7,504.0	7,476.0	7,476.0	33.5	13.0	90.00	-1,617.7	835.9	319.2	277.2	42.03	7.595		
9,100.0	7,504.0	7,476.0	7,476.0	34.8	13.0	90.00	-1,617.7	835.9	239.7	196.1	43.61	5.498		
9,200.0	7,504.0	7,476.0	7,476.0	36.2	13.0	90.00	-1,617.7	835.9	181.6	136.5	45.11	4.027		
9,275.4	7,504.0	7,476.0	7,476.0	37.3	13.0	90.00	-1,617.7	835.9	165.8	119.6	46.12	3.594	CC, ES, SF	
9,300.0	7,504.0	7,476.0	7,476.0	37.6	13.0	90.00	-1,617.7	835.9	167.5	121.1	46.45	3.606		
9,400.0	7,504.0	7,476.0	7,476.0	39.1	13.0	90.00	-1,617.7	835.9	206.3	158.5	47.80	4.316		
9,500.0	7,504.0	7,476.0	7,476.0	40.5	13.0	90.00	-1,617.7	835.9	276.5	227.4	49.15	5.627		
9,600.0	7,504.0	7,476.0	7,476.0	42.0	13.0	90.00	-1,617.7	835.9	360.2	309.7	50.49	7.135		
9,700.0	7,504.0	7,476.0	7,476.0	43.4	13.0	90.00	-1,617.7	835.9	450.0	398.1	51.84	8.681		

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lochbuie 2F-31H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5020.0ft (Original Well Elev)
Reference Site:	S31-T1N-R65W (Lochbuie)	MD Reference:	WELL @ 5020.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lochbuie 2F-31H	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 @ 5020.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Lochbuie 2F-31H
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.51°

