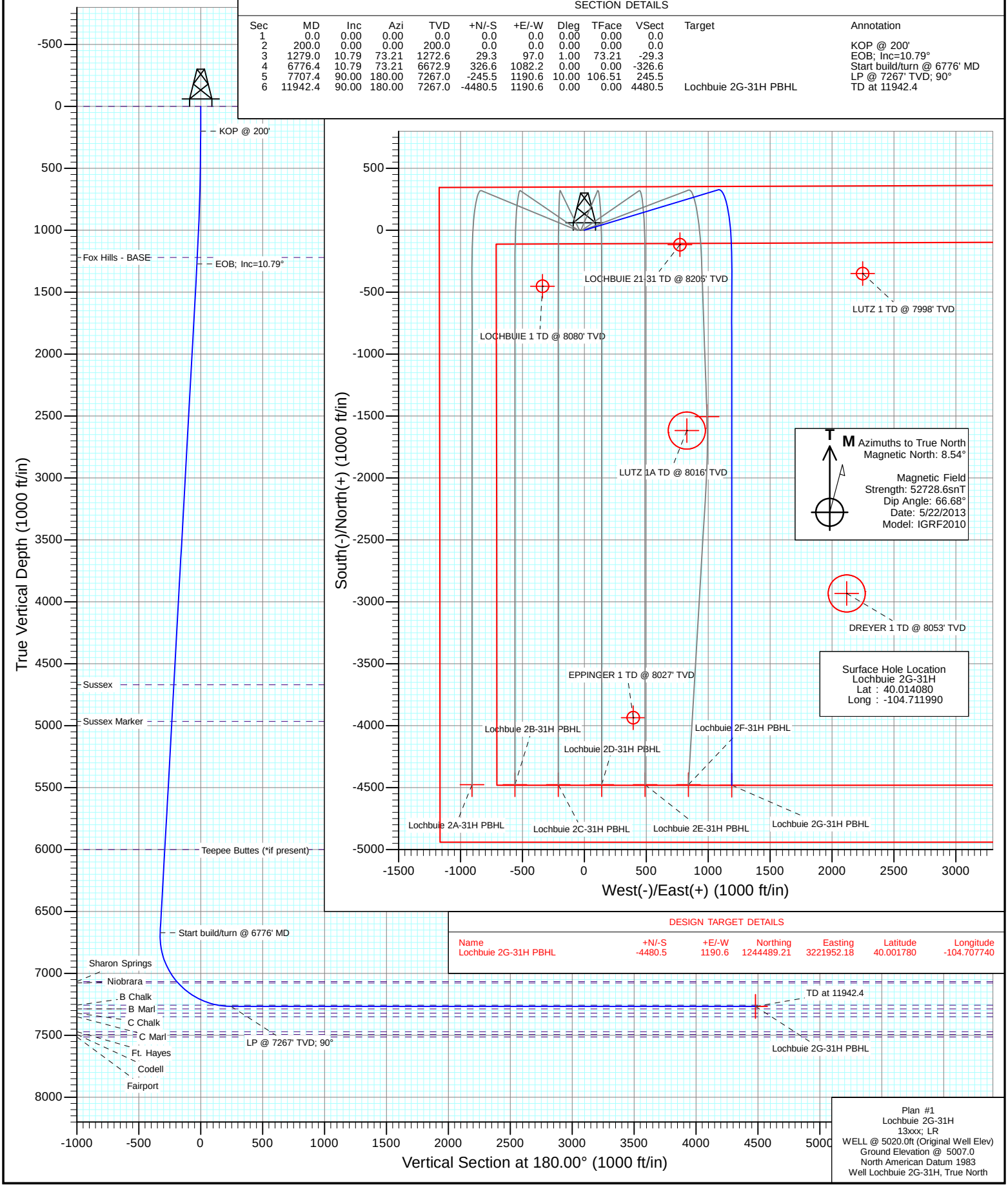
Project: DJ Wattenberg
Site: S31-T1N-R65W (Lochbuie)
Well: Lochbuie 2G-31H
Wellbore: Hz
Design: Plan #1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0		KOP @ 200'
3	1279.0	10.79	73.21	1272.6	29.3	97.0	1.00	73.21	-29.3		EOB; Inc=10.79°
4	6776.4	10.79	73.21	6672.9	326.6	1082.2	0.00	0.00	-326.6		Start build/turn @ 6776' MD
5	7707.4	90.00	180.00	7267.0	-245.5	1190.6	10.00	106.51	245.5		LP @ 7267' TVD; 90°
6	11942.4	90.00	180.00	7267.0	-4480.5	1190.6	0.00	0.00	4480.5	Lochbuie 2G-31H PBHL	TD at 11942.4



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Lochbuie 2G-31H PBHL	-4480.5	1190.6	1244489.21	3221952.18	40.001780	-104.707740

Plan #1
Lochbuie 2G-31H
13xxx; LR
WELL @ 5020.0ft (Original Well Elev)
Ground Elevation @ 5007.0
North American Datum 1983
Well Lochbuie 2G-31H, True North

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 2G-31H

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,248,958.95 ft	**Latitude:**	40.014080
	+E/-W	0.0 ft	**Easting:**	3,220,721.79 ft	**Longitude:**	-104.711990
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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,279.0	10.79	73.21	1,272.6	29.3	97.0	1.00	1.00	0.00	73.21	
6,776.4	10.79	73.21	6,672.9	326.6	1,082.2	0.00	0.00	0.00	0.00	
7,707.4	90.00	180.00	7,267.0	-245.5	1,190.6	10.00	8.51	11.47	106.51	
11,942.4	90.00	180.00	7,267.0	-4,480.5	1,190.6	0.00	0.00	0.00	0.00	Lochbuie 2G-31H PBl

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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	KOP @ 200'
300.0	1.00	73.21	300.0	0.3	0.8	-0.3	1.00	1.00	
400.0	2.00	73.21	400.0	1.0	3.3	-1.0	1.00	1.00	
500.0	3.00	73.21	499.9	2.3	7.5	-2.3	1.00	1.00	
600.0	4.00	73.21	599.7	4.0	13.4	-4.0	1.00	1.00	
700.0	5.00	73.21	699.4	6.3	20.9	-6.3	1.00	1.00	
800.0	6.00	73.21	798.9	9.1	30.0	-9.1	1.00	1.00	
900.0	7.00	73.21	898.3	12.3	40.9	-12.3	1.00	1.00	
1,000.0	8.00	73.21	997.4	16.1	53.4	-16.1	1.00	1.00	
1,100.0	9.00	73.21	1,096.3	20.4	67.5	-20.4	1.00	1.00	
1,200.0	10.00	73.21	1,194.9	25.2	83.3	-25.2	1.00	1.00	
1,225.5	10.25	73.21	1,220.0	26.4	87.6	-26.4	1.00	1.00	Fox Hills - BASE
1,279.0	10.79	73.21	1,272.6	29.3	97.0	-29.3	1.00	1.00	EOB; Inc=10.79°
1,300.0	10.79	73.21	1,293.3	30.4	100.7	-30.4	0.00	0.00	
1,400.0	10.79	73.21	1,391.5	35.8	118.7	-35.8	0.00	0.00	
1,500.0	10.79	73.21	1,489.7	41.2	136.6	-41.2	0.00	0.00	
1,600.0	10.79	73.21	1,588.0	46.6	154.5	-46.6	0.00	0.00	
1,700.0	10.79	73.21	1,686.2	52.0	172.4	-52.0	0.00	0.00	
1,800.0	10.79	73.21	1,784.4	57.4	190.4	-57.4	0.00	0.00	
1,900.0	10.79	73.21	1,882.7	62.9	208.3	-62.9	0.00	0.00	
2,000.0	10.79	73.21	1,980.9	68.3	226.2	-68.3	0.00	0.00	
2,100.0	10.79	73.21	2,079.1	73.7	244.1	-73.7	0.00	0.00	
2,200.0	10.79	73.21	2,177.4	79.1	262.0	-79.1	0.00	0.00	
2,300.0	10.79	73.21	2,275.6	84.5	280.0	-84.5	0.00	0.00	
2,400.0	10.79	73.21	2,373.8	89.9	297.9	-89.9	0.00	0.00	
2,500.0	10.79	73.21	2,472.0	95.3	315.8	-95.3	0.00	0.00	
2,600.0	10.79	73.21	2,570.3	100.7	333.7	-100.7	0.00	0.00	
2,700.0	10.79	73.21	2,668.5	106.1	351.7	-106.1	0.00	0.00	
2,800.0	10.79	73.21	2,766.7	111.5	369.6	-111.5	0.00	0.00	
2,900.0	10.79	73.21	2,865.0	116.9	387.5	-116.9	0.00	0.00	
3,000.0	10.79	73.21	2,963.2	122.4	405.4	-122.4	0.00	0.00	
3,100.0	10.79	73.21	3,061.4	127.8	423.3	-127.8	0.00	0.00	
3,200.0	10.79	73.21	3,159.7	133.2	441.3	-133.2	0.00	0.00	
3,300.0	10.79	73.21	3,257.9	138.6	459.2	-138.6	0.00	0.00	
3,400.0	10.79	73.21	3,356.1	144.0	477.1	-144.0	0.00	0.00	
3,500.0	10.79	73.21	3,454.4	149.4	495.0	-149.4	0.00	0.00	
3,600.0	10.79	73.21	3,552.6	154.8	512.9	-154.8	0.00	0.00	
3,700.0	10.79	73.21	3,650.8	160.2	530.9	-160.2	0.00	0.00	
3,800.0	10.79	73.21	3,749.1	165.6	548.8	-165.6	0.00	0.00	
3,900.0	10.79	73.21	3,847.3	171.0	566.7	-171.0	0.00	0.00	
4,000.0	10.79	73.21	3,945.5	176.4	584.6	-176.4	0.00	0.00	
4,100.0	10.79	73.21	4,043.8	181.9	602.6	-181.9	0.00	0.00	
4,200.0	10.79	73.21	4,142.0	187.3	620.5	-187.3	0.00	0.00	
4,300.0	10.79	73.21	4,240.2	192.7	638.4	-192.7	0.00	0.00	
4,400.0	10.79	73.21	4,338.5	198.1	656.3	-198.1	0.00	0.00	
4,500.0	10.79	73.21	4,436.7	203.5	674.2	-203.5	0.00	0.00	
4,600.0	10.79	73.21	4,534.9	208.9	692.2	-208.9	0.00	0.00	
4,700.0	10.79	73.21	4,633.2	214.3	710.1	-214.3	0.00	0.00	
4,737.5	10.79	73.21	4,670.0	216.3	716.8	-216.3	0.00	0.00	Sussex
4,800.0	10.79	73.21	4,731.4	219.7	728.0	-219.7	0.00	0.00	

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5020.0ft (Original Well Elev)
Site:	S31-T1N-R65W (Lochbuie)	**North Reference:**	True
Well:	Lochbuie 2G-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	10.79	73.21	4,829.6	225.1	745.9	-225.1	0.00	0.00	
5,000.0	10.79	73.21	4,927.8	230.5	763.9	-230.5	0.00	0.00	
5,038.8	10.79	73.21	4,966.0	232.6	770.8	-232.6	0.00	0.00	Sussex Marker
5,100.0	10.79	73.21	5,026.1	235.9	781.8	-235.9	0.00	0.00	
5,200.0	10.79	73.21	5,124.3	241.4	799.7	-241.4	0.00	0.00	
5,300.0	10.79	73.21	5,222.5	246.8	817.6	-246.8	0.00	0.00	
5,400.0	10.79	73.21	5,320.8	252.2	835.5	-252.2	0.00	0.00	
5,500.0	10.79	73.21	5,419.0	257.6	853.5	-257.6	0.00	0.00	
5,600.0	10.79	73.21	5,517.2	263.0	871.4	-263.0	0.00	0.00	
5,700.0	10.79	73.21	5,615.5	268.4	889.3	-268.4	0.00	0.00	
5,800.0	10.79	73.21	5,713.7	273.8	907.2	-273.8	0.00	0.00	
5,900.0	10.79	73.21	5,811.9	279.2	925.2	-279.2	0.00	0.00	
6,000.0	10.79	73.21	5,910.2	284.6	943.1	-284.6	0.00	0.00	
6,091.4	10.79	73.21	6,000.0	289.6	959.5	-289.6	0.00	0.00	Teepee Buttes (*if present)
6,100.0	10.79	73.21	6,008.4	290.0	961.0	-290.0	0.00	0.00	
6,200.0	10.79	73.21	6,106.6	295.4	978.9	-295.4	0.00	0.00	
6,300.0	10.79	73.21	6,204.9	300.9	996.8	-300.9	0.00	0.00	
6,400.0	10.79	73.21	6,303.1	306.3	1,014.8	-306.3	0.00	0.00	
6,500.0	10.79	73.21	6,401.3	311.7	1,032.7	-311.7	0.00	0.00	
6,600.0	10.79	73.21	6,499.6	317.1	1,050.6	-317.1	0.00	0.00	
6,700.0	10.79	73.21	6,597.8	322.5	1,068.5	-322.5	0.00	0.00	
6,776.4	10.79	73.21	6,672.9	326.6	1,082.2	-326.6	0.00	0.00	Start build/turn @ 6776' MD
6,800.0	10.37	85.87	6,696.0	327.4	1,086.5	-327.4	10.00	-1.80	
6,900.0	13.85	132.25	6,794.0	320.0	1,104.3	-320.0	10.00	3.48	
7,000.0	21.76	152.81	6,889.3	295.4	1,121.7	-295.4	10.00	7.92	
7,100.0	30.88	162.24	6,978.8	254.4	1,138.0	-254.4	10.00	9.11	
7,200.0	40.38	167.61	7,060.0	198.1	1,152.9	-198.1	10.00	9.50	
7,207.9	41.14	167.95	7,066.0	193.1	1,154.0	-193.1	10.00	9.61	Sharon Springs
7,224.0	42.69	168.59	7,078.0	182.6	1,156.1	-182.6	10.00	9.63	Niobrara
7,300.0	50.05	171.21	7,130.4	128.4	1,165.7	-128.4	10.00	9.69	
7,400.0	59.81	173.91	7,187.8	47.4	1,176.2	-47.4	10.00	9.76	
7,500.0	69.61	176.11	7,230.5	-42.6	1,184.0	42.6	10.00	9.80	
7,599.3	79.37	178.04	7,257.0	-138.1	1,188.8	138.1	10.00	9.82	B Chalk
7,600.0	79.43	178.05	7,257.1	-138.7	1,188.8	138.7	10.00	9.83	
7,700.0	89.27	179.87	7,267.0	-238.1	1,190.6	238.1	10.00	9.84	
7,707.4	90.00	180.00	7,267.0	-245.5	1,190.6	245.5	10.00	9.84	LP @ 7267' TVD; 90°
7,800.0	90.00	180.00	7,267.0	-338.1	1,190.6	338.1	0.00	0.00	
7,900.0	90.00	180.00	7,267.0	-438.1	1,190.6	438.1	0.00	0.00	
8,000.0	90.00	180.00	7,267.0	-538.1	1,190.6	538.1	0.00	0.00	
8,100.0	90.00	180.00	7,267.0	-638.1	1,190.6	638.1	0.00	0.00	
8,200.0	90.00	180.00	7,267.0	-738.1	1,190.6	738.1	0.00	0.00	
8,300.0	90.00	180.00	7,267.0	-838.1	1,190.6	838.1	0.00	0.00	
8,400.0	90.00	180.00	7,267.0	-938.1	1,190.6	938.1	0.00	0.00	
8,500.0	90.00	180.00	7,267.0	-1,038.1	1,190.6	1,038.1	0.00	0.00	
8,600.0	90.00	180.00	7,267.0	-1,138.1	1,190.6	1,138.1	0.00	0.00	
8,700.0	90.00	180.00	7,267.0	-1,238.1	1,190.6	1,238.1	0.00	0.00	
8,800.0	90.00	180.00	7,267.0	-1,338.1	1,190.6	1,338.1	0.00	0.00	
8,900.0	90.00	180.00	7,267.0	-1,438.1	1,190.6	1,438.1	0.00	0.00	
9,000.0	90.00	180.00	7,267.0	-1,538.1	1,190.6	1,538.1	0.00	0.00	
9,100.0	90.00	180.00	7,267.0	-1,638.1	1,190.6	1,638.1	0.00	0.00	
9,200.0	90.00	180.00	7,267.0	-1,738.1	1,190.6	1,738.1	0.00	0.00	
9,300.0	90.00	180.00	7,267.0	-1,838.1	1,190.6	1,838.1	0.00	0.00	

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Site:	S31-T1N-R65W (Lochbuie)	**North Reference:**	True
Well:	Lochbuie 2G-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
9,400.0	90.00	180.00	7,267.0	-1,938.1	1,190.6	1,938.1	0.00	0.00	
9,500.0	90.00	180.00	7,267.0	-2,038.1	1,190.6	2,038.1	0.00	0.00	
9,600.0	90.00	180.00	7,267.0	-2,138.1	1,190.6	2,138.1	0.00	0.00	
9,700.0	90.00	180.00	7,267.0	-2,238.1	1,190.6	2,238.1	0.00	0.00	
9,800.0	90.00	180.00	7,267.0	-2,338.1	1,190.6	2,338.1	0.00	0.00	
9,900.0	90.00	180.00	7,267.0	-2,438.1	1,190.6	2,438.1	0.00	0.00	
10,000.0	90.00	180.00	7,267.0	-2,538.1	1,190.6	2,538.1	0.00	0.00	
10,100.0	90.00	180.00	7,267.0	-2,638.1	1,190.6	2,638.1	0.00	0.00	
10,200.0	90.00	180.00	7,267.0	-2,738.1	1,190.6	2,738.1	0.00	0.00	
10,300.0	90.00	180.00	7,267.0	-2,838.1	1,190.6	2,838.1	0.00	0.00	
10,400.0	90.00	180.00	7,267.0	-2,938.1	1,190.6	2,938.1	0.00	0.00	
10,500.0	90.00	180.00	7,267.0	-3,038.1	1,190.6	3,038.1	0.00	0.00	
10,600.0	90.00	180.00	7,267.0	-3,138.1	1,190.6	3,138.1	0.00	0.00	
10,700.0	90.00	180.00	7,267.0	-3,238.1	1,190.6	3,238.1	0.00	0.00	
10,800.0	90.00	180.00	7,267.0	-3,338.1	1,190.6	3,338.1	0.00	0.00	
10,900.0	90.00	180.00	7,267.0	-3,438.1	1,190.6	3,438.1	0.00	0.00	
11,000.0	90.00	180.00	7,267.0	-3,538.1	1,190.6	3,538.1	0.00	0.00	
11,100.0	90.00	180.00	7,267.0	-3,638.1	1,190.6	3,638.1	0.00	0.00	
11,200.0	90.00	180.00	7,267.0	-3,738.1	1,190.6	3,738.1	0.00	0.00	
11,300.0	90.00	180.00	7,267.0	-3,838.1	1,190.6	3,838.1	0.00	0.00	
11,400.0	90.00	180.00	7,267.0	-3,938.1	1,190.6	3,938.1	0.00	0.00	
11,500.0	90.00	180.00	7,267.0	-4,038.1	1,190.6	4,038.1	0.00	0.00	
11,600.0	90.00	180.00	7,267.0	-4,138.1	1,190.6	4,138.1	0.00	0.00	
11,700.0	90.00	180.00	7,267.0	-4,238.1	1,190.6	4,238.1	0.00	0.00	
11,800.0	90.00	180.00	7,267.0	-4,338.1	1,190.6	4,338.1	0.00	0.00	
11,900.0	90.00	180.00	7,267.0	-4,438.1	1,190.6	4,438.1	0.00	0.00	
11,942.4	90.00	180.00	7,267.0	-4,480.5	1,190.6	4,480.5	0.00	0.00	TD at 11942.4 - Lochbuie 2G-31H PBHL

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lochbuie 2G-31H PBHL - plan hits target center - Point	0.00	0.00	7,267.0	-4,480.5	1,190.6	1,244,489.21	3,221,952.18	40.001780	-104.707740

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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			
1,225.5	1,220.0	Fox Hills - BASE			
4,737.5	4,670.0	Sussex			
5,038.8	4,966.0	Sussex Marker			
6,091.4	6,000.0	Teepee Buttes (*if present)			
7,207.9	7,066.0	Sharon Springs			
7,224.0	7,078.0	Niobrara			
7,599.3	7,257.0	B Chalk			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP @ 200'
1,279.0	1,272.6	29.3	97.0	EOB; Inc=10.79°
6,776.4	6,672.9	326.6	1,082.2	Start build/turn @ 6776' MD
7,707.4	7,267.0	-245.5	1,190.6	LP @ 7267' TVD; 90°
11,942.4	7,267.0	-4,480.5	1,190.6	TD at 11942.4

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
S31-T1N-R65W (Lochbuie)
Lochbuie 2G-31H
Hz
Plan #1

Anticollision Report

22 May, 2013

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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	11,942.4	Plan #1 (Hz)	MWD	Geolink MWD

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S31-T1N-R65W (Lochbuie)						
DREYER 1 (EXISTING) - VESSELS WELL - NO SURVE						Out of range
EPPINGER 1 (EXISTING) - ENCANA WELL - NO SURV						Out of range
LOCHBUIE 1 (EXISTING) - ENCANA WELL - NO SURV						Out of range
LOCHBUIE 21-31 (EXISTING) - ENCANA WELL - NO SU	4,504.3	4,415.9	334.5	311.9	14.809	CC
LOCHBUIE 21-31 (EXISTING) - ENCANA WELL - NO SU	4,600.0	4,509.9	335.0	311.9	14.505	ES
LOCHBUIE 21-31 (EXISTING) - ENCANA WELL - NO SU	5,000.0	4,902.8	347.1	322.3	13.964	SF
Lochbuie 2A-31H - Hz - Plan #1	166.3	167.3	58.8	58.3	109.541	CC
Lochbuie 2A-31H - Hz - Plan #1	200.0	201.0	58.8	58.2	89.872	ES
Lochbuie 2A-31H - Hz - Plan #1	600.0	595.5	85.0	82.9	41.488	SF
Lochbuie 2B-31H - Hz - Plan #1	200.0	200.0	50.4	49.8	77.238	CC, ES
Lochbuie 2B-31H - Hz - Plan #1	600.0	596.8	70.2	68.1	34.240	SF
Lochbuie 2C-31H - Hz - Plan #1	200.0	200.0	39.2	38.6	60.074	CC, ES
Lochbuie 2C-31H - Hz - Plan #1	700.0	698.0	63.5	61.1	26.357	SF
Lochbuie 2D-31H - Hz - Plan #1	200.0	200.0	28.0	27.4	42.910	CC, ES
Lochbuie 2D-31H - Hz - Plan #1	600.0	599.7	41.6	39.5	20.296	SF
Lochbuie 2E-31H - Hz - Plan #1	200.0	200.0	19.6	19.0	30.037	CC, ES
Lochbuie 2E-31H - Hz - Plan #1	700.0	700.6	37.9	35.5	15.780	SF
Lochbuie 2F-31H - Hz - Plan #1	200.0	200.0	8.4	7.8	12.873	CC, ES
Lochbuie 2F-31H - Hz - Plan #1	11,942.4	12,124.6	422.5	286.3	3.101	SF
LUTZ 1 (EXISTING) - ENCANA WELL - NO SURVEYS						Out of range
LUTZ 1A (EXISTING) - VESSELS WELL - NO SURVEYS	9,079.6	7,239.0	363.2	317.8	8.013	CC, ES
LUTZ 1A (EXISTING) - VESSELS WELL - NO SURVEYS	9,100.0	7,239.0	363.7	318.1	7.968	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 21-31 (EXISTING) - ENCANA WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 8205-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
2,600.0	2,570.3	2,545.3	2,545.3	7.8	4.4	43.69	-116.5	771.7	488.9	478.2	10.70	45.683	
2,700.0	2,668.5	2,643.5	2,643.5	8.1	4.6	45.23	-116.5	771.7	475.4	464.1	11.25	42.262	
2,800.0	2,766.7	2,741.7	2,741.7	8.5	4.8	46.86	-116.5	771.7	462.3	450.5	11.81	39.141	
2,900.0	2,865.0	2,840.0	2,840.0	8.9	5.0	48.59	-116.5	771.7	449.5	437.2	12.39	36.292	
3,000.0	2,963.2	2,938.2	2,938.2	9.3	5.1	50.41	-116.5	771.7	437.3	424.3	12.98	33.691	
3,100.0	3,061.4	3,036.4	3,036.4	9.6	5.3	52.33	-116.5	771.7	425.4	411.9	13.59	31.317	
3,200.0	3,159.7	3,134.7	3,134.7	10.0	5.5	54.36	-116.5	771.7	414.1	399.9	14.21	29.152	
3,300.0	3,257.9	3,232.9	3,232.9	10.4	5.6	56.49	-116.5	771.7	403.4	388.5	14.84	27.181	
3,400.0	3,356.1	3,331.1	3,331.1	10.8	5.8	58.74	-116.5	771.7	393.2	377.7	15.49	25.390	
3,500.0	3,454.4	3,429.4	3,429.4	11.1	6.0	61.10	-116.5	771.7	383.7	367.6	16.15	23.766	
3,600.0	3,552.6	3,527.6	3,527.6	11.5	6.2	63.57	-116.5	771.7	374.9	358.1	16.81	22.300	
3,700.0	3,650.8	3,625.8	3,625.8	11.9	6.3	66.15	-116.5	771.7	366.8	349.3	17.48	20.981	
3,800.0	3,749.1	3,724.1	3,724.1	12.2	6.5	68.83	-116.5	771.7	359.5	341.4	18.16	19.801	
3,900.0	3,847.3	3,822.3	3,822.3	12.6	6.7	71.62	-116.5	771.7	353.1	334.3	18.83	18.752	
4,000.0	3,945.5	3,920.5	3,920.5	13.0	6.8	74.50	-116.5	771.7	347.6	328.1	19.50	17.827	
4,100.0	4,043.8	4,018.8	4,018.8	13.4	7.0	77.47	-116.5	771.7	343.0	322.8	20.15	17.019	
4,200.0	4,142.0	4,117.0	4,117.0	13.7	7.2	80.50	-116.5	771.7	339.3	318.5	20.79	16.321	
4,300.0	4,240.2	4,215.2	4,215.2	14.1	7.4	83.59	-116.5	771.7	336.7	315.3	21.41	15.727	
4,400.0	4,338.5	4,313.5	4,313.5	14.5	7.5	86.72	-116.5	771.7	335.1	313.1	22.00	15.230	
4,500.0	4,436.7	4,411.7	4,411.7	14.9	7.7	89.86	-116.5	771.7	334.5	311.9	22.56	14.825	
4,504.3	4,440.9	4,415.9	4,415.9	14.9	7.7	90.00	-116.5	771.7	334.5	311.9	22.59	14.809	CC
4,600.0	4,534.9	4,509.9	4,509.9	15.2	7.9	93.01	-116.5	771.7	335.0	311.9	23.09	14.505	ES
4,700.0	4,633.2	4,608.2	4,608.2	15.6	8.0	96.14	-116.5	771.7	336.5	312.9	23.59	14.265	
4,800.0	4,731.4	4,706.4	4,706.4	16.0	8.2	99.23	-116.5	771.7	339.0	315.0	24.05	14.099	
4,900.0	4,829.6	4,804.6	4,804.6	16.4	8.4	102.27	-116.5	771.7	342.6	318.1	24.47	14.001	
5,000.0	4,927.8	4,902.8	4,902.8	16.7	8.6	105.24	-116.5	771.7	347.1	322.3	24.86	13.964	SF
5,100.0	5,026.1	5,001.1	5,001.1	17.1	8.7	108.13	-116.5	771.7	352.6	327.4	25.21	13.985	
5,200.0	5,124.3	5,099.3	5,099.3	17.5	8.9	110.93	-116.5	771.7	359.0	333.4	25.54	14.057	
5,300.0	5,222.5	5,197.5	5,197.5	17.9	9.1	113.63	-116.5	771.7	366.2	340.3	25.83	14.176	
5,400.0	5,320.8	5,295.8	5,295.8	18.2	9.2	116.22	-116.5	771.7	374.2	348.1	26.10	14.336	
5,500.0	5,419.0	5,394.0	5,394.0	18.6	9.4	118.70	-116.5	771.7	382.9	356.6	26.35	14.533	
5,600.0	5,517.2	5,492.2	5,492.2	19.0	9.6	121.06	-116.5	771.7	392.4	365.8	26.58	14.762	
5,700.0	5,615.5	5,590.5	5,590.5	19.4	9.8	123.32	-116.5	771.7	402.5	375.7	26.80	15.020	
5,800.0	5,713.7	5,688.7	5,688.7	19.7	9.9	125.46	-116.5	771.7	413.2	386.2	27.00	15.303	
5,900.0	5,811.9	5,786.9	5,786.9	20.1	10.1	127.50	-116.5	771.7	424.4	397.3	27.20	15.607	
6,000.0	5,910.2	5,885.2	5,885.2	20.5	10.3	129.43	-116.5	771.7	436.2	408.8	27.38	15.929	
6,100.0	6,008.4	5,983.4	5,983.4	20.9	10.4	131.26	-116.5	771.7	448.5	420.9	27.57	16.267	
6,200.0	6,106.6	6,081.6	6,081.6	21.2	10.6	132.99	-116.5	771.7	461.1	433.4	27.75	16.617	
6,300.0	6,204.9	6,179.9	6,179.9	21.6	10.8	134.63	-116.5	771.7	474.2	446.3	27.93	16.978	
6,400.0	6,303.1	6,278.1	6,278.1	22.0	11.0	136.18	-116.5	771.7	487.7	459.6	28.11	17.347	
7,200.0	7,060.0	7,035.0	7,035.0	24.3	12.3	68.66	-116.5	771.7	494.3	468.4	25.84	19.128	
7,300.0	7,130.4	7,105.4	7,105.4	24.4	12.4	74.70	-116.5	771.7	464.0	438.7	25.31	18.329	
7,400.0	7,187.8	7,162.8	7,162.8	24.6	12.5	81.81	-116.5	771.7	436.4	411.0	25.43	17.164	
7,500.0	7,230.5	7,205.5	7,205.5	24.8	12.6	87.81	-116.5	771.7	418.9	393.1	25.81	16.227	
7,556.6	7,247.6	7,222.6	7,222.6	25.0	12.6	90.00	-116.5	771.7	415.9	389.8	26.08	15.949	
7,600.0	7,257.1	7,232.1	7,232.1	25.1	12.6	90.92	-116.5	771.7	417.7	391.5	26.26	15.908	
7,700.0	7,267.0	7,242.0	7,242.0	25.5	12.6	90.21	-116.5	771.7	436.2	409.5	26.76	16.301	
7,800.0	7,267.0	7,242.0	7,242.0	25.9	12.6	90.00	-116.5	771.7	473.9	446.4	27.56	17.199	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.95	0.1	-58.8	58.8				
100.0	100.0	101.0	101.0	0.2	0.2	-89.95	0.1	-58.8	58.8	58.5	0.31	192.580	
166.3	166.3	167.3	167.3	0.3	0.3	-89.95	0.1	-58.8	58.8	58.3	0.54	109.541	CC
200.0	200.0	201.0	201.0	0.3	0.3	-89.95	0.1	-58.8	58.8	58.2	0.65	89.872	ES
300.0	300.0	300.0	300.0	0.5	0.5	-163.07	0.4	-59.6	60.5	59.5	1.00	60.353	
400.0	400.0	398.9	398.9	0.7	0.7	-162.86	1.4	-62.0	65.4	64.0	1.35	48.439	
500.0	499.9	497.5	497.3	0.9	0.9	-162.57	3.0	-66.0	73.6	71.9	1.70	43.309	
600.0	599.7	595.5	595.2	1.1	1.1	-162.26	5.3	-71.4	85.0	82.9	2.05	41.488	SF
700.0	699.4	693.0	692.4	1.3	1.3	-161.95	8.1	-78.4	99.6	97.2	2.40	41.517	
800.0	798.9	789.7	788.6	1.5	1.5	-161.68	11.6	-86.8	117.5	114.7	2.75	42.674	
900.0	898.3	885.5	883.8	1.8	1.7	-161.43	15.7	-96.7	138.5	135.4	3.11	44.558	
1,000.0	997.4	980.2	977.8	2.0	2.0	-161.22	20.3	-107.8	162.6	159.1	3.46	46.932	
1,100.0	1,096.3	1,076.5	1,073.2	2.3	2.3	-161.11	25.3	-120.0	189.1	185.3	3.83	49.413	
1,200.0	1,194.9	1,172.5	1,168.3	2.7	2.5	-161.15	30.3	-132.1	217.2	213.0	4.19	51.822	
1,300.0	1,293.3	1,268.0	1,262.9	3.0	2.8	-161.32	35.3	-144.1	246.9	242.3	4.56	54.151	
1,400.0	1,391.5	1,363.3	1,357.3	3.4	3.1	-161.54	40.2	-156.1	277.0	272.1	4.93	56.149	
1,500.0	1,489.7	1,458.6	1,451.8	3.7	3.3	-161.72	45.2	-168.1	307.2	301.9	5.31	57.855	
1,600.0	1,588.0	1,554.0	1,546.2	4.1	3.6	-161.87	50.2	-180.1	337.4	331.7	5.69	59.326	
1,700.0	1,686.2	1,649.3	1,640.7	4.5	3.9	-162.00	55.1	-192.1	367.5	361.5	6.06	60.608	
1,800.0	1,784.4	1,744.7	1,735.1	4.8	4.2	-162.10	60.1	-204.2	397.7	391.3	6.44	61.735	
1,900.0	1,882.7	1,840.0	1,829.6	5.2	4.5	-162.20	65.1	-216.2	427.9	421.1	6.82	62.733	
2,000.0	1,980.9	1,935.3	1,924.0	5.6	4.7	-162.27	70.0	-228.2	458.0	450.8	7.20	63.623	
2,100.0	2,079.1	2,030.7	2,018.5	5.9	5.0	-162.34	75.0	-240.2	488.2	480.6	7.58	64.421	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.95	0.0	-50.4	50.4				
100.0	100.0	100.0	100.0	0.2	0.2	-89.95	0.0	-50.4	50.4	50.1	0.30	166.017	
200.0	200.0	200.0	200.0	0.3	0.3	-89.95	0.0	-50.4	50.4	49.8	0.65	77.238	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-163.44	0.0	-50.4	51.3	50.3	1.00	51.161	
400.0	400.0	399.2	399.2	0.7	0.7	-163.69	0.5	-51.1	54.5	53.1	1.35	40.358	
500.0	499.9	498.2	498.1	0.9	0.9	-163.43	2.0	-53.2	60.8	59.1	1.70	35.783	
600.0	599.7	596.8	596.7	1.1	1.0	-162.83	4.4	-56.8	70.2	68.1	2.05	34.240	SF
700.0	699.4	694.9	694.6	1.3	1.2	-162.06	7.7	-61.6	82.7	80.3	2.40	34.386	
800.0	798.9	792.4	791.8	1.5	1.4	-161.26	12.0	-67.9	98.2	95.4	2.76	35.553	
900.0	898.3	890.5	889.5	1.8	1.6	-160.64	16.9	-75.0	116.3	113.2	3.13	37.219	
1,000.0	997.4	988.5	987.2	2.0	1.9	-160.42	21.8	-82.2	136.1	132.6	3.49	38.977	
1,100.0	1,096.3	1,086.2	1,084.5	2.3	2.1	-160.45	26.7	-89.3	157.4	153.6	3.86	40.797	
1,200.0	1,194.9	1,183.6	1,181.4	2.7	2.3	-160.64	31.6	-96.4	180.4	176.2	4.23	42.662	
1,300.0	1,293.3	1,280.5	1,278.0	3.0	2.5	-160.94	36.4	-103.5	204.9	200.3	4.60	44.545	
1,400.0	1,391.5	1,377.3	1,374.4	3.4	2.7	-161.27	41.3	-110.6	229.9	225.0	4.98	46.189	
1,500.0	1,489.7	1,474.1	1,470.8	3.7	3.0	-161.54	46.1	-117.7	255.0	249.6	5.36	47.595	
1,600.0	1,588.0	1,570.9	1,567.3	4.1	3.2	-161.76	51.0	-124.7	280.0	274.3	5.74	48.811	
1,700.0	1,686.2	1,667.7	1,663.7	4.5	3.4	-161.95	55.8	-131.8	305.1	299.0	6.12	49.873	
1,800.0	1,784.4	1,764.5	1,760.1	4.8	3.6	-162.10	60.7	-138.9	330.1	323.6	6.50	50.807	
1,900.0	1,882.7	1,861.3	1,856.5	5.2	3.9	-162.24	65.5	-146.0	355.2	348.3	6.88	51.636	
2,000.0	1,980.9	1,958.1	1,953.0	5.6	4.1	-162.35	70.4	-153.0	380.3	373.0	7.26	52.376	
2,100.0	2,079.1	2,055.0	2,049.4	5.9	4.3	-162.46	75.2	-160.1	405.3	397.7	7.64	53.041	
2,200.0	2,177.4	2,151.8	2,145.8	6.3	4.5	-162.55	80.1	-167.2	430.4	422.4	8.02	53.641	
2,300.0	2,275.6	2,248.6	2,242.2	6.7	4.7	-162.63	84.9	-174.3	455.4	447.0	8.41	54.186	
2,400.0	2,373.8	2,345.4	2,338.7	7.0	5.0	-162.70	89.8	-181.3	480.5	471.7	8.79	54.683	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.95	0.0	-39.2	39.2				
100.0	100.0	100.0	100.0	0.2	0.2	-89.95	0.0	-39.2	39.2	38.9	0.30	129.124	
200.0	200.0	200.0	200.0	0.3	0.3	-89.95	0.0	-39.2	39.2	38.6	0.65	60.074	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-163.52	0.0	-39.2	40.0	39.0	1.00	39.977	
400.0	400.0	400.0	400.0	0.7	0.7	-164.51	0.0	-39.2	42.6	41.2	1.35	31.511	
500.0	499.9	499.5	499.5	0.9	0.8	-164.95	0.8	-39.6	47.1	45.4	1.70	27.728	
600.0	599.7	598.9	598.9	1.1	1.0	-164.10	3.1	-40.7	54.1	52.0	2.05	26.371	
700.0	699.4	698.0	697.9	1.3	1.2	-162.48	7.0	-42.6	63.5	61.1	2.41	26.357	SF
800.0	798.9	797.1	796.8	1.5	1.4	-160.76	12.1	-45.1	75.2	72.4	2.77	27.120	
900.0	898.3	896.2	895.7	1.8	1.6	-159.82	17.3	-47.6	88.7	85.5	3.14	28.215	
1,000.0	997.4	995.1	994.4	2.0	1.8	-159.45	22.4	-50.1	103.7	100.2	3.51	29.517	
1,100.0	1,096.3	1,093.7	1,092.9	2.3	2.0	-159.45	27.6	-52.6	120.4	116.5	3.89	30.966	
1,200.0	1,194.9	1,192.0	1,191.0	2.7	2.2	-159.69	32.7	-55.1	138.7	134.5	4.27	32.524	
1,300.0	1,293.3	1,290.0	1,288.8	3.0	2.4	-160.09	37.8	-57.6	158.6	154.0	4.64	34.155	
1,400.0	1,391.5	1,387.9	1,386.6	3.4	2.6	-160.50	43.0	-60.1	179.0	174.0	5.03	35.604	
1,500.0	1,489.7	1,485.7	1,484.3	3.7	2.8	-160.82	48.1	-62.6	199.4	194.0	5.41	36.843	
1,600.0	1,588.0	1,583.6	1,582.0	4.1	2.9	-161.09	53.2	-65.1	219.8	214.0	5.80	37.915	
1,700.0	1,686.2	1,681.5	1,679.7	4.5	3.1	-161.31	58.3	-67.6	240.2	234.0	6.18	38.852	
1,800.0	1,784.4	1,779.4	1,777.5	4.8	3.3	-161.49	63.4	-70.1	260.6	254.0	6.57	39.677	
1,900.0	1,882.7	1,877.3	1,875.2	5.2	3.5	-161.65	68.5	-72.6	281.0	274.1	6.95	40.408	
2,000.0	1,980.9	1,975.2	1,972.9	5.6	3.7	-161.79	73.7	-75.1	301.4	294.1	7.34	41.062	
2,100.0	2,079.1	2,073.1	2,070.6	5.9	3.9	-161.91	78.8	-77.6	321.8	314.1	7.73	41.649	
2,200.0	2,177.4	2,171.0	2,168.4	6.3	4.1	-162.02	83.9	-80.1	342.3	334.1	8.11	42.179	
2,300.0	2,275.6	2,268.9	2,266.1	6.7	4.3	-162.11	89.0	-82.6	362.7	354.2	8.50	42.661	
2,400.0	2,373.8	2,366.8	2,363.8	7.0	4.5	-162.19	94.1	-85.0	383.1	374.2	8.89	43.099	
2,500.0	2,472.0	2,464.7	2,461.6	7.4	4.7	-162.27	99.2	-87.5	403.5	394.2	9.28	43.501	
2,600.0	2,570.3	2,562.6	2,559.3	7.8	4.9	-162.34	104.4	-90.0	423.9	414.3	9.66	43.870	
2,700.0	2,668.5	2,660.5	2,657.0	8.1	5.1	-162.40	109.5	-92.5	444.3	434.3	10.05	44.211	
2,800.0	2,766.7	2,758.3	2,754.7	8.5	5.3	-162.45	114.6	-95.0	464.8	454.3	10.44	44.525	
2,900.0	2,865.0	2,856.2	2,852.5	8.9	5.5	-162.51	119.7	-97.5	485.2	474.3	10.83	44.817	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.95	0.0	-28.0	28.0				
100.0	100.0	100.0	100.0	0.2	0.2	-89.95	0.0	-28.0	28.0	27.7	0.30	92.232	
200.0	200.0	200.0	200.0	0.3	0.3	-89.95	0.0	-28.0	28.0	27.4	0.65	42.910	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-163.65	0.0	-28.0	28.8	27.8	1.00	28.794	
400.0	400.0	400.0	400.0	0.7	0.7	-164.99	0.0	-28.0	31.4	30.0	1.35	23.220	
500.0	499.9	499.9	499.9	0.9	0.8	-166.80	0.0	-28.0	35.6	33.9	1.70	20.944	
600.0	599.7	599.7	599.7	1.1	1.0	-168.71	0.0	-28.0	41.6	39.5	2.05	20.296	SF
700.0	699.4	699.4	699.4	1.3	1.2	-170.48	0.0	-28.0	49.3	46.9	2.40	20.575	
800.0	798.9	798.9	798.9	1.5	1.4	-172.02	0.0	-28.0	58.8	56.0	2.74	21.433	
900.0	898.3	898.3	898.3	1.8	1.5	-173.29	0.0	-28.0	70.0	66.9	3.09	22.677	
1,000.0	997.4	997.4	997.4	2.0	1.7	-174.33	0.0	-28.0	83.0	79.5	3.43	24.190	
1,100.0	1,096.3	1,096.3	1,096.3	2.3	1.9	-175.17	0.0	-28.0	97.7	93.9	3.77	25.902	
1,200.0	1,194.9	1,194.9	1,194.9	2.7	2.1	-175.86	0.0	-28.0	114.1	110.0	4.11	27.762	
1,300.0	1,293.3	1,293.3	1,293.3	3.0	2.2	-176.42	0.0	-28.0	132.3	127.8	4.45	29.720	
1,400.0	1,391.5	1,391.5	1,391.5	3.4	2.4	-176.86	0.0	-28.0	151.0	146.2	4.80	31.479	
1,500.0	1,489.7	1,489.7	1,489.7	3.7	2.6	-177.21	0.0	-28.0	169.7	164.5	5.14	33.003	
1,600.0	1,588.0	1,588.0	1,588.0	4.1	2.7	-177.49	0.0	-28.0	188.4	182.9	5.49	34.337	
1,700.0	1,686.2	1,686.2	1,686.2	4.5	2.9	-177.71	0.0	-28.0	207.1	201.2	5.83	35.514	
1,800.0	1,784.4	1,784.4	1,784.4	4.8	3.1	-177.90	0.0	-28.0	225.8	219.6	6.18	36.560	
1,900.0	1,882.7	1,882.7	1,882.7	5.2	3.3	-178.06	0.0	-28.0	244.5	238.0	6.52	37.496	
2,000.0	1,980.9	1,980.9	1,980.9	5.6	3.4	-178.20	0.0	-28.0	263.2	256.3	6.87	38.338	
2,100.0	2,079.1	2,079.1	2,079.1	5.9	3.6	-178.32	0.0	-28.0	281.9	274.7	7.21	39.100	
2,200.0	2,177.4	2,177.4	2,177.4	6.3	3.8	-178.42	0.0	-28.0	300.6	293.1	7.55	39.793	
2,300.0	2,275.6	2,275.6	2,275.6	6.7	3.9	-178.52	0.0	-28.0	319.3	311.4	7.90	40.425	
2,400.0	2,373.8	2,373.8	2,373.8	7.0	4.1	-178.60	0.0	-28.0	338.1	329.8	8.24	41.004	
2,500.0	2,472.0	2,472.0	2,472.0	7.4	4.3	-178.67	0.0	-28.0	356.8	348.2	8.59	41.537	
2,600.0	2,570.3	2,570.3	2,570.3	7.8	4.5	-178.74	0.0	-28.0	375.5	366.6	8.93	42.029	
2,700.0	2,668.5	2,668.5	2,668.5	8.1	4.6	-178.80	0.0	-28.0	394.2	384.9	9.28	42.485	
2,800.0	2,766.7	2,766.7	2,766.7	8.5	4.8	-178.85	0.0	-28.0	412.9	403.3	9.62	42.908	
2,900.0	2,865.0	2,865.0	2,865.0	8.9	5.0	-178.90	0.0	-28.0	431.6	421.7	9.97	43.301	
3,000.0	2,963.2	2,963.2	2,963.2	9.3	5.1	-178.95	0.0	-28.0	450.4	440.0	10.31	43.669	
3,100.0	3,061.4	3,061.4	3,061.4	9.6	5.3	-178.99	0.0	-28.0	469.1	458.4	10.66	44.012	
3,200.0	3,159.7	3,159.7	3,159.7	10.0	5.5	-179.03	0.0	-28.0	487.8	476.8	11.00	44.335	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	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	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-163.86	0.0	-19.6	20.4	19.4	1.00	20.407	
400.0	400.0	400.0	400.0	0.7	0.7	-165.67	0.0	-19.6	23.0	21.6	1.35	17.005	
500.0	499.9	499.9	499.9	0.9	0.8	-167.94	0.0	-19.6	27.2	25.5	1.70	16.015	
600.0	599.7	600.2	600.2	1.1	1.0	-169.42	0.5	-18.9	32.4	30.4	2.05	15.836	
700.0	699.4	700.6	700.5	1.3	1.2	-169.70	2.0	-16.7	37.9	35.5	2.40	15.780	SF
800.0	798.9	801.0	800.9	1.5	1.4	-169.23	4.5	-13.1	43.4	40.7	2.75	15.788	
900.0	898.3	901.6	901.3	1.8	1.6	-168.27	8.0	-8.0	49.2	46.1	3.11	15.830	
1,000.0	997.4	1,002.2	1,001.6	2.0	1.8	-166.97	12.5	-1.5	55.2	51.7	3.47	15.889	
1,100.0	1,096.3	1,102.3	1,101.3	2.3	2.0	-165.61	17.8	6.2	61.6	57.7	3.84	16.026	
1,200.0	1,194.9	1,202.0	1,200.5	2.7	2.2	-164.81	23.2	14.0	69.6	65.4	4.22	16.499	
1,300.0	1,293.3	1,301.5	1,299.6	3.0	2.4	-164.51	28.6	21.8	79.3	74.7	4.60	17.244	
1,400.0	1,391.5	1,401.0	1,398.6	3.4	2.7	-164.38	33.9	29.5	89.4	84.5	4.98	17.961	
1,500.0	1,489.7	1,500.5	1,497.6	3.7	2.9	-164.29	39.3	37.3	99.6	94.2	5.36	18.569	
1,600.0	1,588.0	1,600.0	1,596.7	4.1	3.1	-164.21	44.7	45.1	109.8	104.0	5.75	19.091	
1,700.0	1,686.2	1,699.5	1,695.7	4.5	3.4	-164.14	50.0	52.9	120.0	113.8	6.14	19.544	
1,800.0	1,784.4	1,798.9	1,794.7	4.8	3.6	-164.08	55.4	60.6	130.1	123.6	6.53	19.940	
1,900.0	1,882.7	1,898.4	1,893.7	5.2	3.8	-164.03	60.8	68.4	140.3	133.4	6.92	20.289	
2,000.0	1,980.9	1,997.9	1,992.8	5.6	4.1	-163.99	66.1	76.2	150.5	143.2	7.31	20.599	
2,100.0	2,079.1	2,097.4	2,091.8	5.9	4.3	-163.96	71.5	84.0	160.7	153.0	7.70	20.876	
2,200.0	2,177.4	2,196.9	2,190.8	6.3	4.5	-163.92	76.9	91.7	170.9	162.8	8.09	21.125	
2,300.0	2,275.6	2,296.3	2,289.9	6.7	4.8	-163.90	82.2	99.5	181.0	172.6	8.48	21.350	
2,400.0	2,373.8	2,395.8	2,388.9	7.0	5.0	-163.87	87.6	107.3	191.2	182.3	8.87	21.555	
2,500.0	2,472.0	2,495.3	2,487.9	7.4	5.2	-163.85	92.9	115.1	201.4	192.1	9.26	21.741	
2,600.0	2,570.3	2,594.8	2,587.0	7.8	5.5	-163.83	98.3	122.8	211.6	201.9	9.66	21.912	
2,700.0	2,668.5	2,694.3	2,686.0	8.1	5.7	-163.81	103.7	130.6	221.7	211.7	10.05	22.068	
2,800.0	2,766.7	2,793.8	2,785.0	8.5	5.9	-163.79	109.0	138.4	231.9	221.5	10.44	22.213	
2,900.0	2,865.0	2,893.2	2,884.1	8.9	6.2	-163.77	114.4	146.2	242.1	231.3	10.83	22.347	
3,000.0	2,963.2	2,992.7	2,983.1	9.3	6.4	-163.76	119.8	153.9	252.3	241.1	11.23	22.470	
3,100.0	3,061.4	3,092.2	3,082.1	9.6	6.7	-163.75	125.1	161.7	262.5	250.8	11.62	22.586	
3,200.0	3,159.7	3,191.7	3,181.2	10.0	6.9	-163.73	130.5	169.5	272.6	260.6	12.01	22.693	
3,300.0	3,257.9	3,291.2	3,280.2	10.4	7.1	-163.72	135.9	177.3	282.8	270.4	12.41	22.793	
3,400.0	3,356.1	3,390.6	3,379.2	10.8	7.4	-163.71	141.2	185.0	293.0	280.2	12.80	22.887	
3,500.0	3,454.4	3,490.1	3,478.2	11.1	7.6	-163.70	146.6	192.8	303.2	290.0	13.20	22.976	
3,600.0	3,552.6	3,589.6	3,577.3	11.5	7.9	-163.69	152.0	200.6	313.4	299.8	13.59	23.058	
3,700.0	3,650.8	3,689.1	3,676.3	11.9	8.1	-163.68	157.3	208.4	323.5	309.5	13.98	23.137	
3,800.0	3,749.1	3,788.6	3,775.3	12.2	8.3	-163.68	162.7	216.1	333.7	319.3	14.38	23.210	
3,900.0	3,847.3	3,888.0	3,874.4	12.6	8.6	-163.67	168.1	223.9	343.9	329.1	14.77	23.280	
4,000.0	3,945.5	3,987.5	3,973.4	13.0	8.8	-163.66	173.4	231.7	354.1	338.9	15.17	23.346	
4,100.0	4,043.8	4,087.0	4,072.4	13.4	9.0	-163.65	178.8	239.5	364.2	348.7	15.56	23.408	
4,200.0	4,142.0	4,186.5	4,171.5	13.7	9.3	-163.65	184.2	247.2	374.4	358.5	15.95	23.468	
4,300.0	4,240.2	4,286.0	4,270.5	14.1	9.5	-163.64	189.5	255.0	384.6	368.3	16.35	23.524	
4,400.0	4,338.5	4,385.4	4,369.5	14.5	9.8	-163.64	194.9	262.8	394.8	378.0	16.74	23.578	
4,500.0	4,436.7	4,484.9	4,468.6	14.9	10.0	-163.63	200.2	270.6	405.0	387.8	17.14	23.629	
4,600.0	4,534.9	4,584.4	4,567.6	15.2	10.2	-163.63	205.6	278.3	415.1	397.6	17.53	23.677	
4,700.0	4,633.2	4,683.9	4,666.6	15.6	10.5	-163.62	211.0	286.1	425.3	407.4	17.93	23.724	
4,800.0	4,731.4	4,783.4	4,765.7	16.0	10.7	-163.62	216.3	293.9	435.5	417.2	18.32	23.768	
4,900.0	4,829.6	4,882.8	4,864.7	16.4	11.0	-163.61	221.7	301.7	445.7	427.0	18.72	23.811	
5,000.0	4,927.8	4,982.3	4,963.7	16.7	11.2	-163.61	227.1	309.4	455.9	436.7	19.11	23.852	
5,100.0	5,026.1	5,081.8	5,062.7	17.1	11.4	-163.60	232.4	317.2	466.0	446.5	19.51	23.891	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,124.3	5,181.3	5,161.8	17.5	11.7	-163.60	237.8	325.0	476.2	456.3	19.90	23.928	
5,300.0	5,222.5	5,280.8	5,260.8	17.9	11.9	-163.59	243.2	332.8	486.4	466.1	20.30	23.964	
5,400.0	5,320.8	5,380.2	5,359.8	18.2	12.2	-163.59	248.5	340.5	496.6	475.9	20.69	23.999	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 2F-31H - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.94	0.0	-8.4	8.4				
100.0	100.0	100.0	100.0	0.2	0.2	-89.94	0.0	-8.4	8.4	8.1	0.30	27.670	
200.0	200.0	200.0	200.0	0.3	0.3	-89.94	0.0	-8.4	8.4	7.8	0.65	12.873	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-164.71	0.0	-8.4	9.2	8.2	1.00	9.225	
400.0	400.0	400.0	400.0	0.7	0.7	-168.07	0.0	-8.4	11.8	10.4	1.35	8.727	
500.0	499.9	499.9	499.9	0.9	0.8	-171.27	0.0	-8.4	16.1	14.4	1.70	9.464	
600.0	599.7	600.0	600.0	1.1	1.0	-173.25	0.3	-7.6	21.3	19.2	2.05	10.393	
700.0	699.4	700.3	700.3	1.3	1.2	-174.18	1.3	-5.1	26.5	24.1	2.40	11.063	
800.0	798.9	800.7	800.5	1.5	1.4	-174.57	2.8	-1.0	31.7	29.0	2.74	11.569	
900.0	898.3	901.1	900.8	1.8	1.6	-174.66	5.0	4.7	37.0	33.9	3.09	11.963	
1,000.0	997.4	1,001.7	1,001.0	2.0	1.8	-174.56	7.8	12.1	42.3	38.8	3.44	12.278	
1,100.0	1,096.3	1,102.3	1,101.2	2.3	2.0	-174.32	11.3	21.1	47.5	43.7	3.79	12.534	
1,200.0	1,194.9	1,203.1	1,201.3	2.7	2.2	-174.00	15.4	31.8	52.8	48.6	4.14	12.743	
1,300.0	1,293.3	1,303.9	1,301.2	3.0	2.5	-173.61	20.1	44.2	58.0	53.5	4.50	12.904	
1,400.0	1,391.5	1,404.4	1,400.7	3.4	2.8	-173.06	25.4	58.0	62.2	57.4	4.86	12.803	
1,500.0	1,489.7	1,504.3	1,499.5	3.7	3.1	-172.53	30.7	72.1	66.1	60.9	5.22	12.653	
1,600.0	1,588.0	1,604.3	1,598.3	4.1	3.4	-172.06	36.1	86.1	70.0	64.4	5.59	12.519	
1,700.0	1,686.2	1,704.2	1,697.0	4.5	3.7	-171.64	41.4	100.1	73.9	67.9	5.96	12.398	
1,800.0	1,784.4	1,804.1	1,795.8	4.8	4.0	-171.26	46.8	114.2	77.8	71.4	6.33	12.288	
1,900.0	1,882.7	1,904.0	1,894.6	5.2	4.3	-170.92	52.1	128.2	81.6	74.9	6.70	12.188	
2,000.0	1,980.9	2,003.9	1,993.4	5.6	4.6	-170.61	57.5	142.3	85.5	78.5	7.07	12.096	
2,100.0	2,079.1	2,103.9	2,092.2	5.9	4.9	-170.32	62.9	156.3	89.4	82.0	7.45	12.012	
2,200.0	2,177.4	2,203.8	2,191.0	6.3	5.2	-170.06	68.2	170.3	93.3	85.5	7.82	11.933	
2,300.0	2,275.6	2,303.7	2,289.8	6.7	5.5	-169.82	73.6	184.4	97.2	89.0	8.20	11.861	
2,400.0	2,373.8	2,403.6	2,388.5	7.0	5.8	-169.60	78.9	198.4	101.1	92.6	8.58	11.793	
2,500.0	2,472.0	2,503.6	2,487.3	7.4	6.1	-169.40	84.3	212.5	105.1	96.1	8.96	11.730	
2,600.0	2,570.3	2,603.5	2,586.1	7.8	6.4	-169.21	89.7	226.5	109.0	99.6	9.34	11.672	
2,700.0	2,668.5	2,703.4	2,684.9	8.1	6.7	-169.03	95.0	240.5	112.9	103.1	9.72	11.617	
2,800.0	2,766.7	2,803.3	2,783.7	8.5	7.0	-168.87	100.4	254.6	116.8	106.7	10.10	11.565	
2,900.0	2,865.0	2,903.3	2,882.5	8.9	7.4	-168.71	105.7	268.6	120.7	110.2	10.48	11.516	
3,000.0	2,963.2	3,003.2	2,981.3	9.3	7.7	-168.57	111.1	282.7	124.6	113.7	10.86	11.470	
3,100.0	3,061.4	3,103.1	3,080.1	9.6	8.0	-168.43	116.4	296.7	128.5	117.3	11.25	11.427	
3,200.0	3,159.7	3,203.0	3,178.8	10.0	8.3	-168.30	121.8	310.7	132.4	120.8	11.63	11.386	
3,300.0	3,257.9	3,302.9	3,277.6	10.4	8.6	-168.18	127.2	324.8	136.3	124.3	12.01	11.348	
3,400.0	3,356.1	3,402.9	3,376.4	10.8	8.9	-168.07	132.5	338.8	140.2	127.8	12.40	11.311	
3,500.0	3,454.4	3,502.8	3,475.2	11.1	9.2	-167.96	137.9	352.9	144.2	131.4	12.78	11.276	
3,600.0	3,552.6	3,602.7	3,574.0	11.5	9.5	-167.86	143.2	366.9	148.1	134.9	13.17	11.243	
3,700.0	3,650.8	3,702.6	3,672.8	11.9	9.9	-167.76	148.6	380.9	152.0	138.4	13.56	11.212	
3,800.0	3,749.1	3,802.6	3,771.6	12.2	10.2	-167.67	153.9	395.0	155.9	142.0	13.94	11.182	
3,900.0	3,847.3	3,902.5	3,870.3	12.6	10.5	-167.58	159.3	409.0	159.8	145.5	14.33	11.153	
4,000.0	3,945.5	4,002.4	3,969.1	13.0	10.8	-167.50	164.7	423.1	163.7	149.0	14.72	11.126	
4,100.0	4,043.8	4,102.3	4,067.9	13.4	11.1	-167.42	170.0	437.1	167.6	152.5	15.10	11.099	
4,200.0	4,142.0	4,202.3	4,166.7	13.7	11.4	-167.35	175.4	451.1	171.6	156.1	15.49	11.074	
4,300.0	4,240.2	4,302.2	4,265.5	14.1	11.7	-167.27	180.7	465.2	175.5	159.6	15.88	11.050	
4,400.0	4,338.5	4,402.1	4,364.3	14.5	12.1	-167.20	186.1	479.2	179.4	163.1	16.27	11.027	
4,500.0	4,436.7	4,502.0	4,463.1	14.9	12.4	-167.14	191.5	493.3	183.3	166.6	16.66	11.005	
4,600.0	4,534.9	4,601.9	4,561.9	15.2	12.7	-167.08	196.8	507.3	187.2	170.2	17.04	10.984	
4,700.0	4,633.2	4,701.9	4,660.6	15.6	13.0	-167.01	202.2	521.3	191.1	173.7	17.43	10.964	
4,800.0	4,731.4	4,801.8	4,759.4	16.0	13.3	-166.96	207.5	535.4	195.1	177.2	17.82	10.944	
4,900.0	4,829.6	4,901.7	4,858.2	16.4	13.6	-166.90	212.9	549.4	199.0	180.8	18.21	10.926	
5,000.0	4,927.8	5,001.6	4,957.0	16.7	14.0	-166.85	218.2	563.4	202.9	184.3	18.60	10.908	
5,100.0	5,026.1	5,101.6	5,055.8	17.1	14.3	-166.79	223.6	577.5	206.8	187.8	18.99	10.890	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 2F-31H - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,124.3	5,201.5	5,154.6	17.5	14.6	-166.74	229.0	591.5	210.7	191.3	19.38	10.873	
5,300.0	5,222.5	5,301.4	5,253.4	17.9	14.9	-166.70	234.3	605.6	214.6	194.9	19.77	10.857	
5,400.0	5,320.8	5,401.3	5,352.1	18.2	15.2	-166.65	239.7	619.6	218.6	198.4	20.16	10.841	
5,500.0	5,419.0	5,501.3	5,450.9	18.6	15.5	-166.61	245.0	633.6	222.5	201.9	20.55	10.826	
5,600.0	5,517.2	5,601.2	5,549.7	19.0	15.9	-166.56	250.4	647.7	226.4	205.5	20.94	10.812	
5,700.0	5,615.5	5,701.1	5,648.5	19.4	16.2	-166.52	255.7	661.7	230.3	209.0	21.33	10.797	
5,800.0	5,713.7	5,801.0	5,747.3	19.7	16.5	-166.48	261.1	675.8	234.2	212.5	21.72	10.784	
5,900.0	5,811.9	5,900.9	5,846.1	20.1	16.8	-166.44	266.5	689.8	238.2	216.0	22.11	10.770	
6,000.0	5,910.2	6,000.9	5,944.9	20.5	17.1	-166.40	271.8	703.8	242.1	219.6	22.50	10.758	
6,100.0	6,008.4	6,100.8	6,043.7	20.9	17.4	-166.37	277.2	717.9	246.0	223.1	22.89	10.745	
6,200.0	6,106.6	6,200.7	6,142.4	21.2	17.8	-166.33	282.5	731.9	249.9	226.6	23.28	10.733	
6,300.0	6,204.9	6,300.6	6,241.2	21.6	18.1	-166.30	287.9	746.0	253.8	230.2	23.68	10.721	
6,400.0	6,303.1	6,400.6	6,340.0	22.0	18.4	-166.26	293.3	760.0	257.8	233.7	24.07	10.710	
6,500.0	6,401.3	6,500.5	6,438.8	22.4	18.7	-166.23	298.6	774.0	261.7	237.2	24.46	10.699	
6,600.0	6,499.6	6,600.4	6,537.6	22.7	19.0	-166.20	304.0	788.1	265.6	240.7	24.85	10.688	
6,700.0	6,597.8	6,700.3	6,636.4	23.1	19.3	-166.17	309.3	802.1	269.5	244.3	25.24	10.678	
6,800.0	6,696.0	6,800.2	6,735.2	23.5	19.6	-178.58	314.7	816.2	273.4	247.8	25.63	10.668	
6,900.0	6,794.0	6,899.2	6,833.0	23.8	20.0	138.23	320.0	830.1	277.0	250.6	26.44	10.476	
7,000.0	6,889.3	6,995.8	6,928.5	24.0	20.3	123.85	324.8	843.7	282.4	254.5	27.86	10.135	
7,100.0	6,978.8	7,099.9	7,031.1	24.2	20.5	121.55	317.5	858.7	291.1	262.1	29.03	10.029	
7,200.0	7,060.0	7,211.9	7,137.9	24.3	20.7	122.95	288.8	875.1	302.4	273.2	29.25	10.340	
7,300.0	7,130.4	7,333.1	7,244.8	24.4	20.8	125.63	234.7	892.4	314.8	286.4	28.39	11.088	
7,400.0	7,187.8	7,464.3	7,344.9	24.6	21.0	128.55	152.1	909.6	326.6	299.9	26.72	12.222	
7,500.0	7,230.5	7,605.3	7,428.5	24.8	21.2	131.17	40.3	925.6	335.9	311.0	24.91	13.484	
7,600.0	7,257.1	7,754.1	7,484.6	25.1	21.6	133.12	-96.5	938.5	340.9	316.9	24.05	14.175	
7,700.0	7,267.0	7,906.1	7,504.0	25.5	22.3	134.14	-246.6	946.5	340.4	315.3	25.06	13.584	
7,800.0	7,267.0	8,006.0	7,504.0	25.9	22.9	134.56	-346.5	950.0	337.9	311.7	26.20	12.897	
7,900.0	7,267.0	8,105.9	7,504.0	26.5	23.6	134.98	-446.4	953.5	335.4	308.0	27.43	12.226	
8,000.0	7,267.0	8,205.9	7,504.0	27.1	24.4	135.40	-546.2	956.9	332.9	304.1	28.80	11.560	
8,100.0	7,267.0	8,305.8	7,504.0	27.9	25.3	135.84	-646.1	960.4	330.5	300.2	30.27	10.917	
8,200.0	7,267.0	8,405.8	7,504.0	28.7	26.3	136.27	-746.0	963.9	328.1	296.2	31.83	10.307	
8,300.0	7,267.0	8,505.7	7,504.0	29.6	27.3	136.72	-845.9	967.4	325.7	292.2	33.44	9.737	
8,400.0	7,267.0	8,605.6	7,504.0	30.6	28.5	137.17	-945.8	970.9	323.3	288.2	35.10	9.209	
8,500.0	7,267.0	8,705.6	7,504.0	31.7	29.7	137.62	-1,045.6	974.4	320.9	284.1	36.79	8.722	
8,600.0	7,267.0	8,805.5	7,504.0	32.8	30.9	138.09	-1,145.5	977.9	318.6	280.1	38.50	8.275	
8,700.0	7,267.0	8,905.5	7,504.0	34.0	32.2	138.56	-1,245.4	981.4	316.2	276.0	40.21	7.865	
8,800.0	7,267.0	9,005.4	7,504.0	35.2	33.5	139.03	-1,345.3	984.9	313.9	272.0	41.92	7.489	
8,900.0	7,267.0	9,105.3	7,504.0	36.5	34.9	139.52	-1,445.1	988.3	311.7	268.0	43.62	7.145	
9,000.0	7,267.0	9,203.9	7,504.0	37.8	36.3	139.98	-1,543.6	991.6	309.5	264.2	45.31	6.831	
9,100.0	7,267.0	9,300.0	7,504.0	39.1	37.6	140.25	-1,639.7	993.5	308.3	261.2	47.09	6.546	
9,165.9	7,267.0	9,364.3	7,504.0	40.0	38.6	140.30	-1,704.0	993.9	308.0	259.7	48.36	6.369	
9,200.0	7,267.0	9,397.2	7,504.0	40.5	39.0	140.29	-1,736.9	993.8	308.1	259.0	49.05	6.281	
9,300.0	7,267.0	9,493.9	7,504.0	41.9	40.4	140.09	-1,833.6	992.4	309.0	257.8	51.21	6.034	
9,400.0	7,267.0	9,590.5	7,504.0	43.3	41.8	139.67	-1,930.1	989.4	311.0	257.4	53.58	5.804	
9,500.0	7,267.0	9,686.9	7,504.0	44.8	43.2	139.03	-2,026.5	984.8	314.1	257.9	56.20	5.589	
9,600.0	7,267.0	9,786.2	7,504.0	46.3	44.7	138.24	-2,125.6	979.0	318.0	258.9	59.04	5.386	
9,700.0	7,267.0	9,886.0	7,504.0	47.8	46.2	137.45	-2,225.3	973.1	321.9	260.0	61.96	5.196	
9,800.0	7,267.0	9,985.9	7,504.0	49.3	47.7	136.69	-2,324.9	967.2	325.9	261.0	64.93	5.020	
9,900.0	7,267.0	10,085.7	7,504.0	50.8	49.3	135.95	-2,424.6	961.4	330.0	262.1	67.95	4.857	
10,000.0	7,267.0	10,185.5	7,504.0	52.3	50.8	135.23	-2,524.2	955.5	334.1	263.1	71.01	4.705	
10,100.0	7,267.0	10,285.4	7,504.0	53.9	52.4	134.52	-2,623.9	949.6	338.3	264.2	74.12	4.564	
10,200.0	7,267.0	10,385.2	7,504.0	55.5	53.9	133.83	-2,723.5	943.8	342.5	265.3	77.27	4.433	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 2F-31H - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	7,267.0	10,485.0	7,504.0	57.0	55.5	133.16	-2,823.2	937.9	346.8	266.3	80.46	4.310	
10,400.0	7,267.0	10,584.8	7,504.0	58.6	57.1	132.50	-2,922.8	932.0	351.1	267.4	83.68	4.196	
10,500.0	7,267.0	10,684.7	7,504.0	60.2	58.7	131.86	-3,022.5	926.1	355.5	268.5	86.93	4.089	
10,600.0	7,267.0	10,784.5	7,504.0	61.8	60.3	131.24	-3,122.1	920.3	359.9	269.7	90.22	3.989	
10,700.0	7,267.0	10,884.3	7,504.0	63.4	61.9	130.63	-3,221.8	914.4	364.3	270.8	93.53	3.896	
10,800.0	7,267.0	10,984.1	7,504.0	65.1	63.6	130.03	-3,321.5	908.5	368.8	272.0	96.86	3.808	
10,900.0	7,267.0	11,084.0	7,504.0	66.7	65.2	129.45	-3,421.1	902.6	373.3	273.1	100.22	3.725	
11,000.0	7,267.0	11,183.8	7,504.0	68.3	66.8	128.89	-3,520.8	896.8	377.9	274.3	103.60	3.648	
11,100.0	7,267.0	11,283.6	7,504.0	70.0	68.5	128.33	-3,620.4	890.9	382.5	275.5	107.00	3.575	
11,200.0	7,267.0	11,383.5	7,504.0	71.6	70.1	127.80	-3,720.1	885.0	387.1	276.7	110.42	3.506	
11,300.0	7,267.0	11,483.3	7,504.0	73.3	71.8	127.27	-3,819.7	879.2	391.8	278.0	113.86	3.441	
11,400.0	7,267.0	11,583.1	7,504.0	74.9	73.4	126.75	-3,919.4	873.3	396.5	279.2	117.31	3.380	
11,500.0	7,267.0	11,682.9	7,504.0	76.6	75.1	126.25	-4,019.0	867.4	401.2	280.5	120.78	3.322	
11,600.0	7,267.0	11,782.8	7,504.0	78.2	76.8	125.76	-4,118.7	861.5	406.0	281.7	124.26	3.267	
11,700.0	7,267.0	11,882.6	7,504.0	79.9	78.4	125.28	-4,218.3	855.7	410.8	283.0	127.75	3.216	
11,800.0	7,267.0	11,982.4	7,504.0	81.6	80.1	124.81	-4,318.0	849.8	415.6	284.4	131.26	3.166	
11,900.0	7,267.0	12,082.2	7,504.0	83.2	81.8	124.36	-4,417.6	843.9	420.5	285.7	134.77	3.120	
11,942.4	7,267.0	12,124.6	7,504.0	84.0	82.5	124.17	-4,459.9	841.4	422.5	286.3	136.27	3.101	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
8,800.0	7,267.0	7,239.0	7,239.0	35.2	12.6	90.00	-1,617.7	827.5	458.3	417.5	40.87	11.213	
8,900.0	7,267.0	7,239.0	7,239.0	36.5	12.6	90.00	-1,617.7	827.5	405.2	362.7	42.45	9.545	
9,000.0	7,267.0	7,239.0	7,239.0	37.8	12.6	90.00	-1,617.7	827.5	371.8	327.7	44.04	8.442	
9,079.6	7,267.0	7,239.0	7,239.0	38.9	12.6	90.00	-1,617.7	827.5	363.2	317.8	45.32	8.013	CC, ES
9,100.0	7,267.0	7,239.0	7,239.0	39.1	12.6	90.00	-1,617.7	827.5	363.7	318.1	45.65	7.968	SF
9,200.0	7,267.0	7,239.0	7,239.0	40.5	12.6	90.00	-1,617.7	827.5	382.6	335.3	47.27	8.094	
9,300.0	7,267.0	7,239.0	7,239.0	41.9	12.6	90.00	-1,617.7	827.5	424.8	375.9	48.91	8.686	
9,400.0	7,267.0	7,239.0	7,239.0	43.3	12.6	90.00	-1,617.7	827.5	484.3	433.7	50.55	9.580	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2G-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 2G-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 2G-31H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°