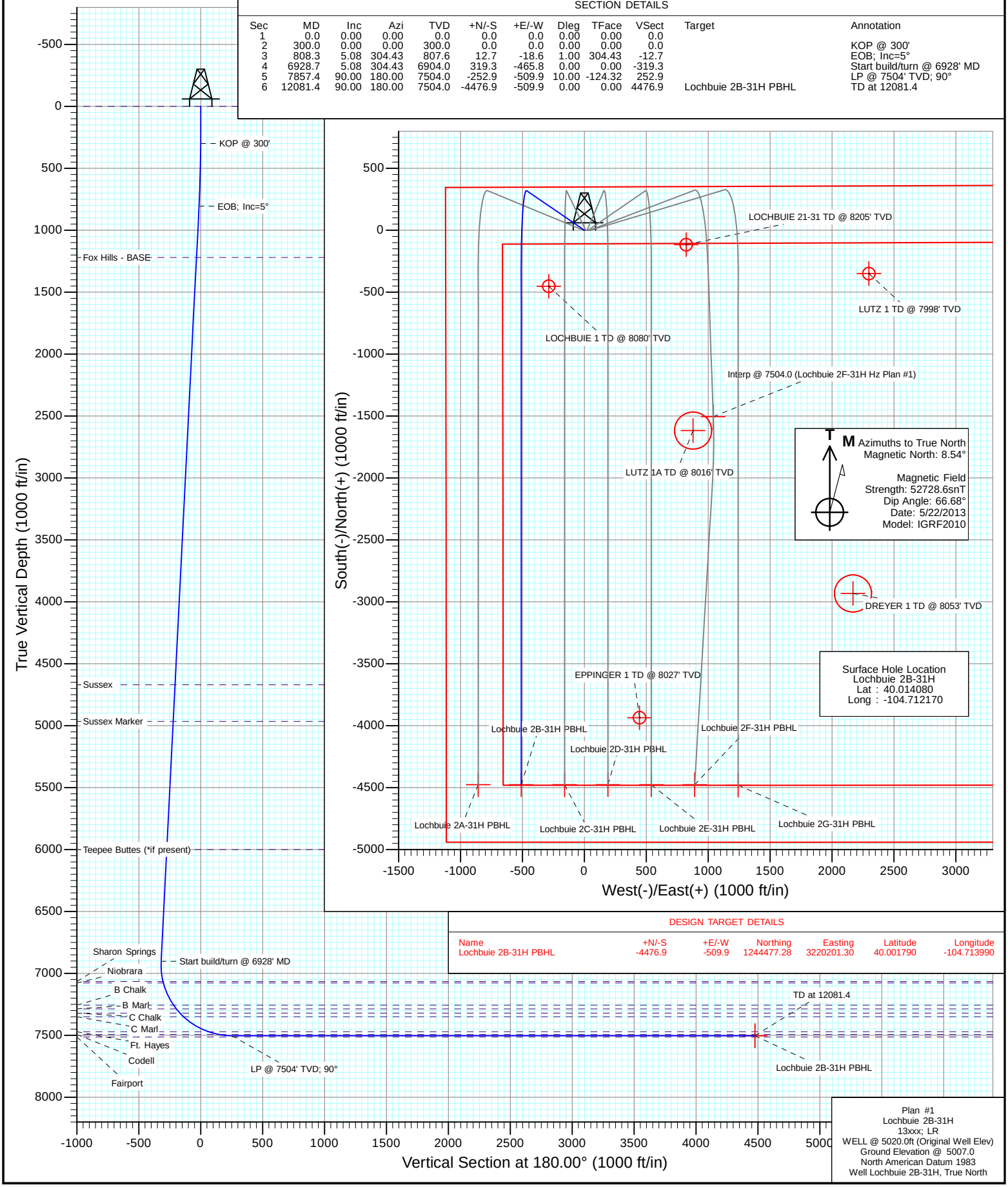
encana

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

CATHEDRAL

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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0		KOP @ 300'
3	808.3	5.08	304.43	807.6	12.7	-18.6	1.00	304.43	-12.7		EOB; Inc=5°
4	6928.7	5.08	304.43	6904.0	319.3	-465.8	0.00	0.00	-319.3		Start build/turn @ 6928' MD
5	7857.4	90.00	180.00	7504.0	-252.9	-509.9	10.00	-124.32	252.9		LP @ 7504' TVD; 90°
6	12081.4	90.00	180.00	7504.0	-4476.9	-509.9	0.00	0.00	4476.9	Lochbuie 2B-31H PBHL	TD at 12081.4



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Lochbuie 2B-31H PBHL	-4476.9	-509.9	1244477.28	3220201.30	40.001790	-104.713990

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

Planning Report

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

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,248,958.55 ft	**Latitude:**	40.014080
	+E/-W	0.0 ft	**Easting:**	3,220,671.37 ft	**Longitude:**	-104.712170
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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
808.3	5.08	304.43	807.6	12.7	-18.6	1.00	1.00	0.00	304.43	
6,928.7	5.08	304.43	6,904.0	319.3	-465.8	0.00	0.00	0.00	0.00	
7,857.4	90.00	180.00	7,504.0	-252.9	-509.9	10.00	9.14	-13.40	-124.32	
12,081.4	90.00	180.00	7,504.0	-4,476.9	-509.9	0.00	0.00	0.00	0.00	Lochbuie 2B-31H PBH

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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	KOP @ 300'
400.0	1.00	304.43	400.0	0.5	-0.7	-0.5	1.00	1.00	
500.0	2.00	304.43	500.0	2.0	-2.9	-2.0	1.00	1.00	
600.0	3.00	304.43	599.9	4.4	-6.5	-4.4	1.00	1.00	
700.0	4.00	304.43	699.7	7.9	-11.5	-7.9	1.00	1.00	
800.0	5.00	304.43	799.4	12.3	-18.0	-12.3	1.00	1.00	
808.3	5.08	304.43	807.6	12.7	-18.6	-12.7	1.00	1.00	EOB; Inc=5°
900.0	5.08	304.43	899.0	17.3	-25.3	-17.3	0.00	0.00	
1,000.0	5.08	304.43	998.6	22.3	-32.6	-22.3	0.00	0.00	
1,100.0	5.08	304.43	1,098.2	27.4	-39.9	-27.4	0.00	0.00	
1,200.0	5.08	304.43	1,197.8	32.4	-47.2	-32.4	0.00	0.00	
1,222.3	5.08	304.43	1,220.0	33.5	-48.8	-33.5	0.00	0.00	Fox Hills - BASE
1,300.0	5.08	304.43	1,297.4	37.4	-54.5	-37.4	0.00	0.00	
1,400.0	5.08	304.43	1,397.0	42.4	-61.8	-42.4	0.00	0.00	
1,500.0	5.08	304.43	1,496.6	47.4	-69.1	-47.4	0.00	0.00	
1,600.0	5.08	304.43	1,596.2	52.4	-76.4	-52.4	0.00	0.00	
1,700.0	5.08	304.43	1,695.8	57.4	-83.7	-57.4	0.00	0.00	
1,800.0	5.08	304.43	1,795.4	62.4	-91.1	-62.4	0.00	0.00	
1,900.0	5.08	304.43	1,895.0	67.4	-98.4	-67.4	0.00	0.00	
2,000.0	5.08	304.43	1,994.6	72.4	-105.7	-72.4	0.00	0.00	
2,100.0	5.08	304.43	2,094.3	77.4	-113.0	-77.4	0.00	0.00	
2,200.0	5.08	304.43	2,193.9	82.5	-120.3	-82.5	0.00	0.00	
2,300.0	5.08	304.43	2,293.5	87.5	-127.6	-87.5	0.00	0.00	
2,400.0	5.08	304.43	2,393.1	92.5	-134.9	-92.5	0.00	0.00	
2,500.0	5.08	304.43	2,492.7	97.5	-142.2	-97.5	0.00	0.00	
2,600.0	5.08	304.43	2,592.3	102.5	-149.5	-102.5	0.00	0.00	
2,700.0	5.08	304.43	2,691.9	107.5	-156.8	-107.5	0.00	0.00	
2,800.0	5.08	304.43	2,791.5	112.5	-164.1	-112.5	0.00	0.00	
2,900.0	5.08	304.43	2,891.1	117.5	-171.4	-117.5	0.00	0.00	
3,000.0	5.08	304.43	2,990.7	122.5	-178.7	-122.5	0.00	0.00	
3,100.0	5.08	304.43	3,090.3	127.5	-186.1	-127.5	0.00	0.00	
3,200.0	5.08	304.43	3,189.9	132.5	-193.4	-132.5	0.00	0.00	
3,300.0	5.08	304.43	3,289.5	137.6	-200.7	-137.6	0.00	0.00	
3,400.0	5.08	304.43	3,389.1	142.6	-208.0	-142.6	0.00	0.00	
3,500.0	5.08	304.43	3,488.7	147.6	-215.3	-147.6	0.00	0.00	
3,600.0	5.08	304.43	3,588.4	152.6	-222.6	-152.6	0.00	0.00	
3,700.0	5.08	304.43	3,688.0	157.6	-229.9	-157.6	0.00	0.00	
3,800.0	5.08	304.43	3,787.6	162.6	-237.2	-162.6	0.00	0.00	
3,900.0	5.08	304.43	3,887.2	167.6	-244.5	-167.6	0.00	0.00	
4,000.0	5.08	304.43	3,986.8	172.6	-251.8	-172.6	0.00	0.00	
4,100.0	5.08	304.43	4,086.4	177.6	-259.1	-177.6	0.00	0.00	
4,200.0	5.08	304.43	4,186.0	182.6	-266.4	-182.6	0.00	0.00	
4,300.0	5.08	304.43	4,285.6	187.6	-273.7	-187.6	0.00	0.00	
4,400.0	5.08	304.43	4,385.2	192.7	-281.1	-192.7	0.00	0.00	
4,500.0	5.08	304.43	4,484.8	197.7	-288.4	-197.7	0.00	0.00	
4,600.0	5.08	304.43	4,584.4	202.7	-295.7	-202.7	0.00	0.00	
4,685.9	5.08	304.43	4,670.0	207.0	-301.9	-207.0	0.00	0.00	Sussex
4,700.0	5.08	304.43	4,684.0	207.7	-303.0	-207.7	0.00	0.00	
4,800.0	5.08	304.43	4,783.6	212.7	-310.3	-212.7	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 2B-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	5.08	304.43	4,883.2	217.7	-317.6	-217.7	0.00	0.00	
4,983.1	5.08	304.43	4,966.0	221.9	-323.7	-221.9	0.00	0.00	Sussex Marker
5,000.0	5.08	304.43	4,982.8	222.7	-324.9	-222.7	0.00	0.00	
5,100.0	5.08	304.43	5,082.5	227.7	-332.2	-227.7	0.00	0.00	
5,200.0	5.08	304.43	5,182.1	232.7	-339.5	-232.7	0.00	0.00	
5,300.0	5.08	304.43	5,281.7	237.7	-346.8	-237.7	0.00	0.00	
5,400.0	5.08	304.43	5,381.3	242.7	-354.1	-242.7	0.00	0.00	
5,500.0	5.08	304.43	5,480.9	247.8	-361.4	-247.8	0.00	0.00	
5,600.0	5.08	304.43	5,580.5	252.8	-368.7	-252.8	0.00	0.00	
5,700.0	5.08	304.43	5,680.1	257.8	-376.1	-257.8	0.00	0.00	
5,800.0	5.08	304.43	5,779.7	262.8	-383.4	-262.8	0.00	0.00	
5,900.0	5.08	304.43	5,879.3	267.8	-390.7	-267.8	0.00	0.00	
6,000.0	5.08	304.43	5,978.9	272.8	-398.0	-272.8	0.00	0.00	
6,021.2	5.08	304.43	6,000.0	273.9	-399.5	-273.9	0.00	0.00	Teepee Buttes (*if present)
6,100.0	5.08	304.43	6,078.5	277.8	-405.3	-277.8	0.00	0.00	
6,200.0	5.08	304.43	6,178.1	282.8	-412.6	-282.8	0.00	0.00	
6,300.0	5.08	304.43	6,277.7	287.8	-419.9	-287.8	0.00	0.00	
6,400.0	5.08	304.43	6,377.3	292.8	-427.2	-292.8	0.00	0.00	
6,500.0	5.08	304.43	6,477.0	297.8	-434.5	-297.8	0.00	0.00	
6,600.0	5.08	304.43	6,576.6	302.9	-441.8	-302.9	0.00	0.00	
6,700.0	5.08	304.43	6,676.2	307.9	-449.1	-307.9	0.00	0.00	
6,800.0	5.08	304.43	6,775.8	312.9	-456.4	-312.9	0.00	0.00	
6,900.0	5.08	304.43	6,875.4	317.9	-463.7	-317.9	0.00	0.00	
6,928.7	5.08	304.43	6,904.0	319.3	-465.8	-319.3	0.00	0.00	Start build/turn @ 6928' MD
7,000.0	5.98	224.49	6,975.0	318.5	-471.1	-318.5	10.00	1.25	
7,092.4	14.13	196.95	7,066.0	304.2	-477.7	-304.2	10.00	8.82	Sharon Springs
7,100.0	14.85	196.06	7,073.3	302.4	-478.3	-302.4	10.00	9.56	
7,104.8	15.32	195.54	7,078.0	301.2	-478.6	-301.2	10.00	9.60	Niobrara
7,200.0	24.60	189.22	7,167.4	269.4	-485.2	-269.4	10.00	9.75	
7,300.0	34.48	186.13	7,254.3	220.6	-491.5	-220.6	10.00	9.89	
7,303.3	34.82	186.06	7,257.0	218.7	-491.7	-218.7	10.00	9.92	B Chalk
7,340.7	38.53	185.29	7,287.0	196.5	-493.9	-196.5	10.00	9.92	B Marl
7,385.6	42.99	184.51	7,321.0	167.3	-496.4	-167.3	10.00	9.94	C Chalk
7,400.0	44.42	184.29	7,331.4	157.4	-497.2	-157.4	10.00	9.94	
7,426.7	47.07	183.91	7,350.0	138.4	-498.6	-138.4	10.00	9.95	C Marl
7,500.0	54.37	183.01	7,396.4	81.7	-502.0	-81.7	10.00	9.96	
7,600.0	64.33	182.02	7,447.3	-4.1	-505.7	4.1	10.00	9.96	
7,661.7	70.49	181.49	7,471.0	-61.0	-507.4	61.0	10.00	9.97	Ft. Hayes
7,700.0	74.30	181.18	7,482.6	-97.5	-508.3	97.5	10.00	9.97	
7,750.1	79.29	180.80	7,494.0	-146.2	-509.1	146.2	9.99	9.96	Codell
7,800.0	84.28	180.42	7,501.1	-195.6	-509.7	195.6	10.01	9.98	
7,857.4	90.00	180.00	7,504.0	-252.9	-509.9	252.9	10.00	9.97	LP @ 7504' TVD; 90°
7,900.0	90.00	180.00	7,504.0	-295.5	-509.9	295.5	0.00	0.00	
8,000.0	90.00	180.00	7,504.0	-395.5	-509.9	395.5	0.00	0.00	
8,100.0	90.00	180.00	7,504.0	-495.5	-509.9	495.5	0.00	0.00	
8,200.0	90.00	180.00	7,504.0	-595.5	-509.9	595.5	0.00	0.00	
8,300.0	90.00	180.00	7,504.0	-695.5	-509.9	695.5	0.00	0.00	
8,400.0	90.00	180.00	7,504.0	-795.5	-509.9	795.5	0.00	0.00	
8,500.0	90.00	180.00	7,504.0	-895.5	-509.9	895.5	0.00	0.00	
8,600.0	90.00	180.00	7,504.0	-995.5	-509.9	995.5	0.00	0.00	
8,700.0	90.00	180.00	7,504.0	-1,095.5	-509.9	1,095.5	0.00	0.00	
8,800.0	90.00	180.00	7,504.0	-1,195.5	-509.9	1,195.5	0.00	0.00	

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Site:	S31-T1N-R65W (Lochbuie)	**North Reference:**	True
Well:	Lochbuie 2B-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	180.00	7,504.0	-1,295.5	-509.9	1,295.5	0.00	0.00	
9,000.0	90.00	180.00	7,504.0	-1,395.5	-509.9	1,395.5	0.00	0.00	
9,100.0	90.00	180.00	7,504.0	-1,495.5	-509.9	1,495.5	0.00	0.00	
9,200.0	90.00	180.00	7,504.0	-1,595.5	-509.9	1,595.5	0.00	0.00	
9,300.0	90.00	180.00	7,504.0	-1,695.5	-509.9	1,695.5	0.00	0.00	
9,400.0	90.00	180.00	7,504.0	-1,795.5	-509.9	1,795.5	0.00	0.00	
9,500.0	90.00	180.00	7,504.0	-1,895.5	-509.9	1,895.5	0.00	0.00	
9,600.0	90.00	180.00	7,504.0	-1,995.5	-509.9	1,995.5	0.00	0.00	
9,700.0	90.00	180.00	7,504.0	-2,095.5	-509.9	2,095.5	0.00	0.00	
9,800.0	90.00	180.00	7,504.0	-2,195.5	-509.9	2,195.5	0.00	0.00	
9,900.0	90.00	180.00	7,504.0	-2,295.5	-509.9	2,295.5	0.00	0.00	
10,000.0	90.00	180.00	7,504.0	-2,395.5	-509.9	2,395.5	0.00	0.00	
10,100.0	90.00	180.00	7,504.0	-2,495.5	-509.9	2,495.5	0.00	0.00	
10,200.0	90.00	180.00	7,504.0	-2,595.5	-509.9	2,595.5	0.00	0.00	
10,300.0	90.00	180.00	7,504.0	-2,695.5	-509.9	2,695.5	0.00	0.00	
10,400.0	90.00	180.00	7,504.0	-2,795.5	-509.9	2,795.5	0.00	0.00	
10,500.0	90.00	180.00	7,504.0	-2,895.5	-509.9	2,895.5	0.00	0.00	
10,600.0	90.00	180.00	7,504.0	-2,995.5	-509.9	2,995.5	0.00	0.00	
10,700.0	90.00	180.00	7,504.0	-3,095.5	-509.9	3,095.5	0.00	0.00	
10,800.0	90.00	180.00	7,504.0	-3,195.5	-509.9	3,195.5	0.00	0.00	
10,900.0	90.00	180.00	7,504.0	-3,295.5	-509.9	3,295.5	0.00	0.00	
11,000.0	90.00	180.00	7,504.0	-3,395.5	-509.9	3,395.5	0.00	0.00	
11,100.0	90.00	180.00	7,504.0	-3,495.5	-509.9	3,495.5	0.00	0.00	
11,200.0	90.00	180.00	7,504.0	-3,595.5	-509.9	3,595.5	0.00	0.00	
11,300.0	90.00	180.00	7,504.0	-3,695.5	-509.9	3,695.5	0.00	0.00	
11,400.0	90.00	180.00	7,504.0	-3,795.5	-509.9	3,795.5	0.00	0.00	
11,500.0	90.00	180.00	7,504.0	-3,895.5	-509.9	3,895.5	0.00	0.00	
11,600.0	90.00	180.00	7,504.0	-3,995.5	-509.9	3,995.5	0.00	0.00	
11,700.0	90.00	180.00	7,504.0	-4,095.5	-509.9	4,095.5	0.00	0.00	
11,800.0	90.00	180.00	7,504.0	-4,195.5	-509.9	4,195.5	0.00	0.00	
11,900.0	90.00	180.00	7,504.0	-4,295.5	-509.9	4,295.5	0.00	0.00	
12,000.0	90.00	180.00	7,504.0	-4,395.5	-509.9	4,395.5	0.00	0.00	
12,081.4	90.00	180.00	7,504.0	-4,476.9	-509.9	4,476.9	0.00	0.00	TD at 12081.4 - Lochbuie 2B-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 2B-31H PBHL - plan hits target center - Point	0.00	0.00	7,504.0	-4,476.9	-509.9	1,244,477.28	3,220,201.30	40.001790	-104.713990

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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			
1,222.3	1,220.0	Fox Hills - BASE			
4,685.9	4,670.0	Sussex			
4,983.1	4,966.0	Sussex Marker			
6,021.2	6,000.0	Teepee Buttes (*if present)			
7,092.4	7,066.0	Sharon Springs			
7,104.8	7,078.0	Niobrara			
7,303.3	7,257.0	B Chalk			
7,340.7	7,287.0	B Marl			
7,385.6	7,321.0	C Chalk			
7,426.7	7,350.0	C Marl			
7,661.7	7,471.0	Ft. Hayes			
7,750.1	7,494.0	Codell			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
300.0	300.0	0.0	0.0	KOP @ 300'
808.3	807.6	12.7	-18.6	EOB; Inc=5°
6,928.7	6,904.0	319.3	-465.8	Start build/turn @ 6928' MD
7,857.4	7,504.0	-252.9	-509.9	LP @ 7504' TVD; 90°
12,081.4	7,504.0	-4,476.9	-509.9	TD at 12081.4

EnCana Oil & Gas (USA) Inc

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

Anticollision Report

22 May, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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	12,081.4	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	8,056.5	7,490.0	222.2	192.8	7.563	CC, ES, SF
LOCHBUIE 21-31 (EXISTING) - ENCANA WELL - NO SU						Out of range
Lochbuie 2A-31H - Hz - Plan #1	166.3	167.3	8.4	7.9	15.649	CC
Lochbuie 2A-31H - Hz - Plan #1	200.0	201.0	8.4	7.7	12.839	ES
Lochbuie 2A-31H - Hz - Plan #1	12,081.4	11,878.9	421.1	285.2	3.099	SF
Lochbuie 2C-31H - Hz - Plan #1	300.0	300.0	11.2	10.2	11.184	CC, ES
Lochbuie 2C-31H - Hz - Plan #1	12,081.4	11,828.5	422.8	286.8	3.107	SF
Lochbuie 2D-31H - Hz - Plan #1	300.0	300.0	22.4	21.4	22.367	CC, ES
Lochbuie 2D-31H - Hz - Plan #1	600.0	599.9	29.2	27.2	14.252	SF
Lochbuie 2E-31H - Hz - Plan #1	300.0	300.0	30.8	29.8	30.755	CC, ES
Lochbuie 2E-31H - Hz - Plan #1	600.0	599.4	38.2	36.2	18.632	SF
Lochbuie 2F-31H - Hz - Plan #1	300.0	300.0	42.0	41.0	41.938	CC, ES
Lochbuie 2F-31H - Hz - Plan #1	700.0	698.0	57.1	54.7	23.798	SF
Lochbuie 2G-31H - Hz - Plan #1	200.0	200.0	50.4	49.8	77.238	CC, ES
Lochbuie 2G-31H - Hz - Plan #1	600.0	595.6	70.1	68.1	34.226	SF
LUTZ 1 (EXISTING) - ENCANA WELL - NO SURVEYS						Out of range
LUTZ 1A (EXISTING) - VESSELS WELL - NO SURVEYS						Out of range

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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 1 (EXISTING) - ENCANA WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 8080-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
7,600.0	7,447.3	7,433.3	7,433.3	16.0	13.0	-50.80	-452.1	-287.7	498.2	474.9	23.33	21.355	
7,700.0	7,482.6	7,468.6	7,468.6	16.3	13.0	-67.44	-452.1	-287.7	417.6	392.2	25.38	16.452	
7,800.0	7,501.1	7,487.1	7,487.1	16.7	13.1	-83.52	-452.1	-287.7	339.2	312.1	27.04	12.544	
7,900.0	7,504.0	7,490.0	7,490.0	17.3	13.1	-90.00	-452.1	-287.7	271.8	243.9	27.91	9.740	
8,000.0	7,504.0	7,490.0	7,490.0	18.1	13.1	-90.00	-452.1	-287.7	229.3	200.5	28.80	7.962	
8,056.5	7,504.0	7,490.0	7,490.0	18.6	13.1	-90.00	-452.1	-287.7	222.2	192.8	29.38	7.563	CC, ES, SF
8,100.0	7,504.0	7,490.0	7,490.0	19.0	13.1	-90.00	-452.1	-287.7	226.4	196.6	29.83	7.591	
8,200.0	7,504.0	7,490.0	7,490.0	20.0	13.1	-90.00	-452.1	-287.7	264.5	233.5	30.97	8.540	
8,300.0	7,504.0	7,490.0	7,490.0	21.1	13.1	-90.00	-452.1	-287.7	329.6	297.4	32.20	10.235	
8,400.0	7,504.0	7,490.0	7,490.0	22.3	13.1	-90.00	-452.1	-287.7	409.1	375.6	33.52	12.205	
8,500.0	7,504.0	7,490.0	7,490.0	23.6	13.1	-90.00	-452.1	-287.7	496.0	461.1	34.89	14.217	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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	-89.94	0.0	-8.4	8.4				
100.0	100.0	101.0	101.0	0.2	0.2	-89.94	0.0	-8.4	8.4	8.1	0.31	27.511	
166.3	166.3	167.3	167.3	0.3	0.3	-89.94	0.0	-8.4	8.4	7.9	0.54	15.649	CC
200.0	200.0	201.0	201.0	0.3	0.3	-89.94	0.0	-8.4	8.4	7.7	0.65	12.839	ES
300.0	300.0	300.9	300.8	0.5	0.5	-87.84	0.3	-9.2	9.2	8.2	1.00	9.198	
400.0	400.0	400.7	400.6	0.7	0.7	-29.93	1.4	-11.7	11.0	9.6	1.35	8.109	
500.0	500.0	500.5	500.3	0.9	0.9	-29.74	3.0	-15.7	12.9	11.2	1.70	7.550	
600.0	599.9	600.2	599.9	1.0	1.1	-30.88	5.3	-21.3	14.9	12.8	2.06	7.240	
700.0	699.7	700.0	699.4	1.2	1.3	-32.84	8.3	-28.6	17.1	14.7	2.42	7.066	
800.0	799.4	799.6	798.5	1.4	1.5	-35.29	12.0	-37.4	19.5	16.7	2.79	6.973	
900.0	899.0	899.2	897.5	1.7	1.8	-36.88	16.3	-47.8	22.7	19.5	3.18	7.130	
1,000.0	998.6	998.8	996.2	1.9	2.0	-36.51	21.2	-59.8	27.4	23.8	3.56	7.694	
1,100.0	1,098.2	1,098.6	1,095.1	2.1	2.3	-35.80	26.4	-72.3	32.7	28.8	3.94	8.296	
1,200.0	1,197.8	1,198.5	1,194.0	2.3	2.6	-35.29	31.6	-84.9	38.0	33.7	4.32	8.791	
1,300.0	1,297.4	1,298.3	1,293.0	2.6	2.9	-34.90	36.8	-97.5	43.3	38.6	4.71	9.204	
1,400.0	1,397.0	1,398.2	1,391.9	2.8	3.2	-34.60	42.0	-110.1	48.6	43.6	5.09	9.555	
1,500.0	1,496.6	1,498.1	1,490.8	3.0	3.5	-34.36	47.2	-122.7	54.0	48.5	5.47	9.857	
1,600.0	1,596.2	1,597.9	1,589.7	3.2	3.7	-34.16	52.4	-135.2	59.3	53.4	5.86	10.118	
1,700.0	1,695.8	1,697.8	1,688.7	3.5	4.0	-33.99	57.6	-147.8	64.6	58.4	6.24	10.347	
1,800.0	1,795.4	1,797.6	1,787.6	3.7	4.3	-33.85	62.8	-160.4	69.9	63.3	6.63	10.549	
1,900.0	1,895.0	1,897.5	1,886.5	3.9	4.6	-33.73	68.0	-173.0	75.2	68.2	7.01	10.728	
2,000.0	1,994.6	1,997.3	1,985.4	4.2	4.9	-33.62	73.2	-185.6	80.6	73.2	7.40	10.889	
2,100.0	2,094.3	2,097.2	2,084.4	4.4	5.2	-33.53	78.4	-198.2	85.9	78.1	7.78	11.034	
2,200.0	2,193.9	2,197.1	2,183.3	4.6	5.5	-33.45	83.6	-210.7	91.2	83.0	8.17	11.165	
2,300.0	2,293.5	2,296.9	2,282.2	4.9	5.8	-33.38	88.8	-223.3	96.5	88.0	8.55	11.284	
2,400.0	2,393.1	2,396.8	2,381.2	5.1	6.1	-33.31	94.0	-235.9	101.8	92.9	8.94	11.392	
2,500.0	2,492.7	2,496.6	2,480.1	5.3	6.4	-33.25	99.2	-248.5	107.1	97.8	9.32	11.492	
2,600.0	2,592.3	2,596.5	2,579.0	5.6	6.7	-33.20	104.4	-261.1	112.5	102.8	9.71	11.584	
2,700.0	2,691.9	2,696.4	2,677.9	5.8	7.0	-33.15	109.6	-273.6	117.8	107.7	10.09	11.668	
2,800.0	2,791.5	2,796.2	2,776.9	6.0	7.3	-33.11	114.8	-286.2	123.1	112.6	10.48	11.747	
2,900.0	2,891.1	2,896.1	2,875.8	6.3	7.6	-33.07	120.0	-298.8	128.4	117.6	10.87	11.819	
3,000.0	2,990.7	2,995.9	2,974.7	6.5	7.9	-33.03	125.2	-311.4	133.7	122.5	11.25	11.887	
3,100.0	3,090.3	3,095.8	3,073.6	6.7	8.1	-33.00	130.4	-324.0	139.1	127.4	11.64	11.950	
3,200.0	3,189.9	3,195.6	3,172.6	7.0	8.4	-32.97	135.6	-336.5	144.4	132.4	12.02	12.009	
3,300.0	3,289.5	3,295.5	3,271.5	7.2	8.7	-32.94	140.8	-349.1	149.7	137.3	12.41	12.065	
3,400.0	3,389.1	3,395.4	3,370.4	7.4	9.0	-32.91	146.0	-361.7	155.0	142.2	12.79	12.117	
3,500.0	3,488.7	3,495.2	3,469.3	7.7	9.3	-32.88	151.2	-374.3	160.3	147.2	13.18	12.166	
3,600.0	3,588.4	3,595.1	3,568.3	7.9	9.6	-32.86	156.4	-386.9	165.7	152.1	13.57	12.212	
3,700.0	3,688.0	3,694.9	3,667.2	8.1	9.9	-32.84	161.6	-399.4	171.0	157.0	13.95	12.255	
3,800.0	3,787.6	3,794.8	3,766.1	8.4	10.2	-32.82	166.8	-412.0	176.3	162.0	14.34	12.296	
3,900.0	3,887.2	3,894.7	3,865.0	8.6	10.5	-32.80	172.0	-424.6	181.6	166.9	14.72	12.336	
4,000.0	3,986.8	3,994.5	3,964.0	8.8	10.8	-32.78	177.1	-437.2	186.9	171.8	15.11	12.373	
4,100.0	4,086.4	4,094.4	4,062.9	9.1	11.1	-32.76	182.3	-449.8	192.3	176.8	15.50	12.408	
4,200.0	4,186.0	4,194.2	4,161.8	9.3	11.4	-32.74	187.5	-462.3	197.6	181.7	15.88	12.441	
4,300.0	4,285.6	4,294.1	4,260.7	9.5	11.7	-32.73	192.7	-474.9	202.9	186.6	16.27	12.473	
4,400.0	4,385.2	4,394.0	4,359.7	9.8	12.0	-32.71	197.9	-487.5	208.2	191.6	16.65	12.503	
4,500.0	4,484.8	4,493.8	4,458.6	10.0	12.3	-32.70	203.1	-500.1	213.5	196.5	17.04	12.532	
4,600.0	4,584.4	4,593.7	4,557.5	10.2	12.6	-32.68	208.3	-512.7	218.9	201.4	17.43	12.560	
4,700.0	4,684.0	4,693.5	4,656.5	10.5	12.9	-32.67	213.5	-525.3	224.2	206.4	17.81	12.587	
4,800.0	4,783.6	4,793.4	4,755.4	10.7	13.2	-32.66	218.7	-537.8	229.5	211.3	18.20	12.612	
4,900.0	4,883.2	4,893.2	4,854.3	10.9	13.5	-32.65	223.9	-550.4	234.8	216.2	18.58	12.636	
5,000.0	4,982.8	4,993.1	4,953.2	11.2	13.8	-32.64	229.1	-563.0	240.1	221.2	18.97	12.660	

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 2B-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 2B-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
5,100.0	5,082.5	5,093.0	5,052.2	11.4	14.1	-32.62	234.3	-575.6	245.5	226.1	19.36	12.682	
5,200.0	5,182.1	5,192.8	5,151.1	11.6	14.4	-32.61	239.5	-588.2	250.8	231.0	19.74	12.703	
5,300.0	5,281.7	5,292.7	5,250.0	11.9	14.6	-32.60	244.7	-600.7	256.1	236.0	20.13	12.724	
5,400.0	5,381.3	5,392.5	5,348.9	12.1	14.9	-32.59	249.9	-613.3	261.4	240.9	20.51	12.744	
5,500.0	5,480.9	5,492.4	5,447.9	12.3	15.2	-32.59	255.1	-625.9	266.7	245.8	20.90	12.763	
5,600.0	5,580.5	5,592.3	5,546.8	12.6	15.5	-32.58	260.3	-638.5	272.1	250.8	21.29	12.782	
5,700.0	5,680.1	5,692.1	5,645.7	12.8	15.8	-32.57	265.5	-651.1	277.4	255.7	21.67	12.799	
5,800.0	5,779.7	5,792.0	5,744.6	13.0	16.1	-32.56	270.7	-663.6	282.7	260.6	22.06	12.817	
5,900.0	5,879.3	5,891.8	5,843.6	13.3	16.4	-32.55	275.9	-676.2	288.0	265.6	22.44	12.833	
6,000.0	5,978.9	5,991.7	5,942.5	13.5	16.7	-32.55	281.1	-688.8	293.3	270.5	22.83	12.849	
6,100.0	6,078.5	6,091.5	6,041.4	13.7	17.0	-32.54	286.3	-701.4	298.7	275.4	23.22	12.865	
6,200.0	6,178.1	6,191.4	6,140.3	14.0	17.3	-32.53	291.5	-714.0	304.0	280.4	23.60	12.880	
6,300.0	6,277.7	6,291.3	6,239.3	14.2	17.6	-32.52	296.7	-726.5	309.3	285.3	23.99	12.894	
6,400.0	6,377.3	6,391.1	6,338.2	14.4	17.9	-32.52	301.9	-739.1	314.6	290.2	24.37	12.908	
6,500.0	6,477.0	6,491.0	6,437.1	14.7	18.2	-32.51	307.1	-751.7	319.9	295.2	24.76	12.922	
6,600.0	6,576.6	6,590.8	6,536.1	14.9	18.5	-32.50	312.3	-764.3	325.3	300.1	25.15	12.935	
6,700.0	6,676.2	6,690.7	6,635.0	15.1	18.8	-32.50	317.5	-776.9	330.6	305.0	25.53	12.948	
6,800.0	6,775.8	6,791.4	6,734.8	15.3	19.1	-33.15	318.9	-789.6	335.8	309.8	25.98	12.927	
6,900.0	6,875.4	6,888.7	6,830.2	15.6	19.2	-36.39	304.5	-801.7	341.4	314.6	26.72	12.777	
7,000.0	6,975.0	6,979.0	6,915.3	15.8	19.3	38.05	276.8	-812.5	349.3	321.7	27.64	12.638	
7,100.0	7,073.3	7,065.2	6,991.6	15.9	19.4	61.06	238.1	-822.2	359.6	331.3	28.21	12.745	
7,200.0	7,167.4	7,150.0	7,060.2	15.9	19.4	62.98	189.1	-831.0	371.1	342.8	28.27	13.126	
7,300.0	7,254.3	7,229.0	7,117.1	15.8	19.5	61.91	134.8	-838.2	382.9	355.1	27.79	13.778	
7,400.0	7,331.4	7,307.8	7,165.9	15.8	19.5	60.16	73.3	-844.4	394.1	367.2	26.91	14.649	
7,500.0	7,396.4	7,385.1	7,205.2	15.8	19.7	58.48	7.0	-849.4	404.0	378.1	25.91	15.593	
7,600.0	7,447.3	7,461.4	7,234.9	16.0	19.8	57.11	-63.0	-853.2	412.0	387.0	25.04	16.451	
7,700.0	7,482.6	7,536.9	7,255.0	16.3	20.1	56.16	-135.7	-855.7	417.6	392.8	24.79	16.844	
7,800.0	7,501.1	7,611.9	7,265.4	16.7	20.4	55.66	-210.0	-857.0	420.6	395.2	25.44	16.537	
7,900.0	7,504.0	7,697.5	7,267.0	17.3	20.8	55.58	-295.5	-857.2	421.1	394.3	26.80	15.715	
8,000.0	7,504.0	7,797.5	7,267.0	18.1	21.5	55.58	-395.5	-857.2	421.1	392.8	28.26	14.901	
8,100.0	7,504.0	7,897.5	7,267.0	19.0	22.2	55.58	-495.5	-857.2	421.1	391.2	29.93	14.069	
8,200.0	7,504.0	7,997.5	7,267.0	20.0	23.1	55.58	-595.5	-857.2	421.1	389.3	31.78	13.249	
8,300.0	7,504.0	8,097.5	7,267.0	21.1	24.1	55.58	-695.5	-857.2	421.1	387.3	33.78	12.466	
8,400.0	7,504.0	8,197.5	7,267.0	22.3	25.1	55.58	-795.5	-857.2	421.1	385.2	35.90	11.729	
8,500.0	7,504.0	8,297.5	7,267.0	23.6	26.2	55.58	-895.5	-857.2	421.1	383.0	38.13	11.044	
8,600.0	7,504.0	8,397.5	7,267.0	24.9	27.4	55.58	-995.5	-857.2	421.1	380.7	40.44	10.413	
8,700.0	7,504.0	8,497.5	7,267.0	26.3	28.7	55.58	-1,095.5	-857.2	421.1	378.3	42.82	9.833	
8,800.0	7,504.0	8,597.5	7,267.0	27.7	30.0	55.58	-1,195.5	-857.2	421.1	375.8	45.27	9.303	
8,900.0	7,504.0	8,697.5	7,267.0	29.2	31.3	55.58	-1,295.5	-857.2	421.1	373.3	47.76	8.817	
9,000.0	7,504.0	8,797.5	7,267.0	30.6	32.7	55.58	-1,395.5	-857.2	421.1	370.8	50.30	8.372	
9,100.0	7,504.0	8,897.5	7,267.0	32.2	34.1	55.58	-1,495.5	-857.2	421.1	368.2	52.88	7.964	
9,200.0	7,504.0	8,997.5	7,267.0	33.7	35.6	55.58	-1,595.5	-857.2	421.1	365.6	55.49	7.589	
9,300.0	7,504.0	9,097.5	7,267.0	35.2	37.1	55.58	-1,695.5	-857.2	421.1	363.0	58.12	7.245	
9,400.0	7,504.0	9,197.5	7,267.0	36.8	38.6	55.58	-1,795.5	-857.2	421.1	360.3	60.78	6.928	
9,500.0	7,504.0	9,297.5	7,267.0	38.4	40.1	55.58	-1,895.5	-857.2	421.1	357.6	63.46	6.635	
9,600.0	7,504.0	9,397.5	7,267.0	40.0	41.6	55.58	-1,995.5	-857.2	421.1	354.9	66.16	6.364	
9,700.0	7,504.0	9,497.5	7,267.0	41.6	43.2	55.58	-2,095.5	-857.2	421.1	352.2	68.88	6.113	
9,800.0	7,504.0	9,597.5	7,267.0	43.3	44.7	55.58	-2,195.5	-857.2	421.1	349.5	71.61	5.880	
9,900.0	7,504.0	9,697.5	7,267.0	44.9	46.3	55.58	-2,295.5	-857.2	421.1	346.7	74.36	5.663	
10,000.0	7,504.0	9,797.5	7,267.0	46.5	47.9	55.58	-2,395.5	-857.2	421.1	344.0	77.11	5.461	
10,100.0	7,504.0	9,897.5	7,267.0	48.2	49.5	55.58	-2,495.5	-857.2	421.1	341.2	79.88	5.272	
10,200.0	7,504.0	9,997.5	7,267.0	49.8	51.1	55.58	-2,595.5	-857.2	421.1	338.4	82.66	5.095	

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 2B-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 2B-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
10,300.0	7,504.0	10,097.5	7,267.0	51.5	52.7	55.58	-2,695.5	-857.2	421.1	335.7	85.44	4.929	
10,400.0	7,504.0	10,197.5	7,267.0	53.2	54.4	55.58	-2,795.5	-857.2	421.1	332.9	88.23	4.773	
10,500.0	7,504.0	10,297.5	7,267.0	54.9	56.0	55.58	-2,895.5	-857.2	421.1	330.1	91.03	4.626	
10,600.0	7,504.0	10,397.5	7,267.0	56.5	57.7	55.58	-2,995.5	-857.2	421.1	327.3	93.84	4.488	
10,700.0	7,504.0	10,497.5	7,267.0	58.2	59.3	55.58	-3,095.5	-857.2	421.1	324.4	96.65	4.357	
10,800.0	7,504.0	10,597.5	7,267.0	59.9	61.0	55.58	-3,195.5	-857.2	421.1	321.6	99.46	4.234	
10,900.0	7,504.0	10,697.5	7,267.0	61.6	62.6	55.58	-3,295.5	-857.2	421.1	318.8	102.28	4.117	
11,000.0	7,504.0	10,797.5	7,267.0	63.3	64.3	55.58	-3,395.5	-857.2	421.1	316.0	105.11	4.006	
11,100.0	7,504.0	10,897.5	7,267.0	65.0	66.0	55.58	-3,495.5	-857.2	421.1	313.2	107.94	3.901	
11,200.0	7,504.0	10,997.5	7,267.0	66.7	67.7	55.58	-3,595.5	-857.2	421.1	310.3	110.77	3.801	
11,300.0	7,504.0	11,097.5	7,267.0	68.4	69.3	55.58	-3,695.5	-857.2	421.1	307.5	113.61	3.707	
11,400.0	7,504.0	11,197.5	7,267.0	70.1	71.0	55.58	-3,795.5	-857.2	421.1	304.6	116.45	3.616	
11,500.0	7,504.0	11,297.5	7,267.0	71.8	72.7	55.58	-3,895.5	-857.2	421.1	301.8	119.29	3.530	
11,600.0	7,504.0	11,397.5	7,267.0	73.5	74.4	55.58	-3,995.5	-857.2	421.1	299.0	122.14	3.448	
11,700.0	7,504.0	11,497.5	7,267.0	75.2	76.1	55.58	-4,095.5	-857.2	421.1	296.1	124.98	3.369	
11,800.0	7,504.0	11,597.5	7,267.0	77.0	77.8	55.58	-4,195.5	-857.2	421.1	293.3	127.83	3.294	
11,900.0	7,504.0	11,697.5	7,267.0	78.7	79.5	55.58	-4,295.5	-857.2	421.1	290.4	130.69	3.222	
12,000.0	7,504.0	11,797.5	7,267.0	80.4	81.2	55.58	-4,395.5	-857.2	421.1	287.5	133.54	3.153	
12,048.2	7,504.0	11,845.7	7,267.0	81.2	82.0	55.58	-4,443.7	-857.2	421.1	286.2	134.92	3.121	
12,081.4	7,504.0	11,878.9	7,267.0	81.8	82.6	55.58	-4,476.9	-857.2	421.1	285.2	135.87	3.099	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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	90.04	0.0	11.2	11.2				
100.0	100.0	100.0	100.0	0.2	0.2	90.04	0.0	11.2	11.2	10.9	0.30	36.893	
200.0	200.0	200.0	200.0	0.3	0.3	90.04	0.0	11.2	11.2	10.6	0.65	17.164	
300.0	300.0	300.0	300.0	0.5	0.5	90.04	0.0	11.2	11.2	10.2	1.00	11.184	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	147.98	0.0	11.2	11.9	10.6	1.35	8.834	
500.0	500.0	500.1	500.1	0.9	0.9	150.55	0.8	10.8	13.8	12.1	1.70	8.084	
600.0	599.9	600.2	600.2	1.0	1.0	150.18	3.1	9.7	16.2	14.1	2.06	7.884	
700.0	699.7	700.3	700.2	1.2	1.2	148.02	7.1	7.8	19.3	16.9	2.42	7.979	
800.0	799.4	800.3	800.0	1.4	1.4	145.84	12.2	5.3	23.2	20.5	2.79	8.325	
900.0	899.0	900.2	899.7	1.7	1.6	145.35	17.4	2.7	28.0	24.8	3.17	8.832	
1,000.0	998.6	1,000.0	999.4	1.9	1.8	145.00	22.6	0.2	32.8	29.2	3.55	9.223	
1,100.0	1,098.2	1,099.9	1,099.1	2.1	2.0	144.75	27.9	-2.4	37.5	33.6	3.94	9.532	
1,200.0	1,197.8	1,199.8	1,198.8	2.3	2.2	144.55	33.1	-4.9	42.3	38.0	4.33	9.782	
1,300.0	1,297.4	1,299.7	1,298.6	2.6	2.4	144.39	38.3	-7.5	47.1	42.4	4.71	9.988	
1,400.0	1,397.0	1,399.6	1,398.3	2.8	2.6	144.26	43.5	-10.0	51.8	46.7	5.10	10.161	
1,500.0	1,496.6	1,499.5	1,498.0	3.0	2.8	144.15	48.8	-12.5	56.6	51.1	5.49	10.307	
1,600.0	1,596.2	1,599.4	1,597.7	3.2	3.0	144.06	54.0	-15.1	61.4	55.5	5.88	10.433	
1,700.0	1,695.8	1,699.2	1,697.4	3.5	3.2	143.99	59.2	-17.6	66.2	59.9	6.28	10.542	
1,800.0	1,795.4	1,799.1	1,797.1	3.7	3.4	143.92	64.4	-20.2	70.9	64.3	6.67	10.638	
1,900.0	1,895.0	1,899.0	1,896.9	3.9	3.6	143.86	69.6	-22.7	75.7	68.6	7.06	10.722	
2,000.0	1,994.6	1,998.9	1,996.6	4.2	3.8	143.81	74.9	-25.3	80.5	73.0	7.45	10.798	
2,100.0	2,094.3	2,098.8	2,096.3	4.4	4.0	143.76	80.1	-27.8	85.2	77.4	7.85	10.865	
2,200.0	2,193.9	2,198.7	2,196.0	4.6	4.2	143.72	85.3	-30.4	90.0	81.8	8.24	10.925	
2,300.0	2,293.5	2,298.6	2,295.7	4.9	4.4	143.68	90.5	-32.9	94.8	86.1	8.63	10.980	
2,400.0	2,393.1	2,398.4	2,395.4	5.1	4.6	143.65	95.7	-35.4	99.5	90.5	9.03	11.030	
2,500.0	2,492.7	2,498.3	2,495.2	5.3	4.8	143.62	101.0	-38.0	104.3	94.9	9.42	11.075	
2,600.0	2,592.3	2,598.2	2,594.9	5.6	5.0	143.59	106.2	-40.5	109.1	99.3	9.81	11.117	
2,700.0	2,691.9	2,698.1	2,694.6	5.8	5.2	143.57	111.4	-43.1	113.9	103.6	10.21	11.155	
2,800.0	2,791.5	2,798.0	2,794.3	6.0	5.4	143.54	116.6	-45.6	118.6	108.0	10.60	11.190	
2,900.0	2,891.1	2,897.9	2,894.0	6.3	5.6	143.52	121.8	-48.2	123.4	112.4	11.00	11.223	
3,000.0	2,990.7	2,997.8	2,993.7	6.5	5.8	143.50	127.1	-50.7	128.2	116.8	11.39	11.253	
3,100.0	3,090.3	3,097.6	3,093.5	6.7	6.0	143.48	132.3	-53.2	132.9	121.2	11.78	11.281	
3,200.0	3,189.9	3,197.5	3,193.2	7.0	6.2	143.47	137.5	-55.8	137.7	125.5	12.18	11.308	
3,300.0	3,289.5	3,297.4	3,292.9	7.2	6.4	143.45	142.7	-58.3	142.5	129.9	12.57	11.332	
3,400.0	3,389.1	3,397.3	3,392.6	7.4	6.6	143.44	148.0	-60.9	147.2	134.3	12.97	11.355	
3,500.0	3,488.7	3,497.2	3,492.3	7.7	6.8	143.42	153.2	-63.4	152.0	138.7	13.36	11.377	
3,600.0	3,588.4	3,597.1	3,592.0	7.9	7.0	143.41	158.4	-66.0	156.8	143.0	13.76	11.397	
3,700.0	3,688.0	3,697.0	3,691.8	8.1	7.2	143.40	163.6	-68.5	161.6	147.4	14.15	11.417	
3,800.0	3,787.6	3,796.9	3,791.5	8.4	7.4	143.38	168.8	-71.0	166.3	151.8	14.55	11.435	
3,900.0	3,887.2	3,896.7	3,891.2	8.6	7.6	143.37	174.1	-73.6	171.1	156.2	14.94	11.452	
4,000.0	3,986.8	3,996.6	3,990.9	8.8	7.8	143.36	179.3	-76.1	175.9	160.5	15.34	11.468	
4,100.0	4,086.4	4,096.5	4,090.6	9.1	8.0	143.35	184.5	-78.7	180.6	164.9	15.73	11.484	
4,200.0	4,186.0	4,196.4	4,190.3	9.3	8.2	143.34	189.7	-81.2	185.4	169.3	16.13	11.498	
4,300.0	4,285.6	4,296.3	4,290.1	9.5	8.4	143.33	194.9	-83.8	190.2	173.7	16.52	11.512	
4,400.0	4,385.2	4,396.2	4,389.8	9.8	8.6	143.33	200.2	-86.3	195.0	178.0	16.92	11.525	
4,500.0	4,484.8	4,496.1	4,489.5	10.0	8.8	143.32	205.4	-88.8	199.7	182.4	17.31	11.538	
4,600.0	4,584.4	4,595.9	4,589.2	10.2	9.0	143.31	210.6	-91.4	204.5	186.8	17.70	11.550	
4,700.0	4,684.0	4,695.8	4,688.9	10.5	9.2	143.30	215.8	-93.9	209.3	191.2	18.10	11.561	
4,800.0	4,783.6	4,795.7	4,788.7	10.7	9.4	143.30	221.0	-96.5	214.0	195.5	18.49	11.572	
4,900.0	4,883.2	4,895.6	4,888.4	10.9	9.6	143.29	226.3	-99.0	218.8	199.9	18.89	11.583	
5,000.0	4,982.8	4,995.5	4,988.1	11.2	9.8	143.28	231.5	-101.6	223.6	204.3	19.29	11.593	
5,100.0	5,082.5	5,095.4	5,087.8	11.4	10.0	143.28	236.7	-104.1	228.3	208.7	19.68	11.603	

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 2B-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 2B-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
5,200.0	5,182.1	5,195.3	5,187.5	11.6	10.2	143.27	241.9	-106.6	233.1	213.0	20.08	11.612	
5,300.0	5,281.7	5,295.1	5,287.2	11.9	10.4	143.27	247.1	-109.2	237.9	217.4	20.47	11.621	
5,400.0	5,381.3	5,395.0	5,387.0	12.1	10.6	143.26	252.4	-111.7	242.7	221.8	20.87	11.630	
5,500.0	5,480.9	5,494.9	5,486.7	12.3	10.8	143.25	257.6	-114.3	247.4	226.2	21.26	11.638	
5,600.0	5,580.5	5,594.8	5,586.4	12.6	11.0	143.25	262.8	-116.8	252.2	230.5	21.66	11.646	
5,700.0	5,680.1	5,694.7	5,686.1	12.8	11.2	143.24	268.0	-119.4	257.0	234.9	22.05	11.653	
5,800.0	5,779.7	5,794.6	5,785.8	13.0	11.4	143.24	273.3	-121.9	261.7	239.3	22.45	11.661	
5,900.0	5,879.3	5,894.5	5,885.5	13.3	11.6	143.24	278.5	-124.5	266.5	243.7	22.84	11.668	
6,000.0	5,978.9	5,994.3	5,985.3	13.5	11.8	143.23	283.7	-127.0	271.3	248.0	23.24	11.675	
6,100.0	6,078.5	6,094.2	6,085.0	13.7	12.0	143.23	288.9	-129.5	276.0	252.4	23.63	11.681	
6,200.0	6,178.1	6,194.1	6,184.7	14.0	12.2	143.22	294.1	-132.1	280.8	256.8	24.03	11.688	
6,300.0	6,277.7	6,294.0	6,284.4	14.2	12.4	143.22	299.4	-134.6	285.6	261.2	24.42	11.694	
6,400.0	6,377.3	6,393.9	6,384.1	14.4	12.6	143.21	304.6	-137.2	290.4	265.5	24.82	11.700	
6,500.0	6,477.0	6,493.8	6,483.8	14.7	12.8	143.21	309.8	-139.7	295.1	269.9	25.21	11.706	
6,600.0	6,576.6	6,593.7	6,583.6	14.9	13.0	143.21	315.0	-142.3	299.9	274.3	25.61	11.711	
6,700.0	6,676.2	6,694.0	6,683.7	15.1	13.2	143.27	319.9	-144.8	304.7	278.7	25.99	11.721	
6,800.0	6,775.8	6,794.3	6,783.7	15.3	13.3	145.51	313.0	-147.4	309.2	283.1	26.09	11.853	
6,900.0	6,875.4	6,887.9	6,874.5	15.6	13.3	150.37	290.9	-149.7	315.2	289.4	25.87	12.186	
7,000.0	6,975.0	6,972.8	6,952.8	15.8	13.2	-123.34	258.3	-151.7	325.8	300.3	25.48	12.783	
7,100.0	7,073.3	7,050.0	7,019.1	15.9	13.1	-89.23	219.0	-153.4	339.8	314.6	25.17	13.502	
7,200.0	7,167.4	7,131.3	7,082.5	15.9	13.0	-77.16	168.3	-155.0	355.6	330.7	24.94	14.258	
7,300.0	7,254.3	7,206.6	7,134.4	15.8	13.0	-69.93	113.7	-156.3	371.7	347.0	24.78	15.001	
7,400.0	7,331.4	7,280.2	7,177.7	15.8	13.0	-64.83	54.3	-157.4	386.9	362.3	24.63	15.708	
7,500.0	7,396.4	7,350.0	7,211.4	15.8	13.2	-61.20	-6.7	-158.3	400.2	375.7	24.47	16.355	
7,600.0	7,447.3	7,423.6	7,238.7	16.0	13.4	-58.55	-75.1	-159.0	410.8	386.4	24.39	16.842	
7,700.0	7,482.6	7,500.0	7,257.5	16.3	13.7	-56.83	-149.0	-159.4	418.3	393.9	24.48	17.090	
7,800.0	7,501.1	7,564.3	7,265.6	16.7	14.1	-56.04	-212.8	-159.6	422.2	397.5	24.77	17.045	
7,900.0	7,504.0	7,647.1	7,267.0	17.3	14.8	-55.91	-295.5	-159.7	422.8	397.2	25.68	16.469	
8,000.0	7,504.0	7,747.1	7,267.0	18.1	15.6	-55.91	-395.5	-159.7	422.8	395.6	27.20	15.546	
8,100.0	7,504.0	7,847.1	7,267.0	19.0	16.7	-55.91	-495.5	-159.7	422.8	393.9	28.94	14.613	
8,200.0	7,504.0	7,947.1	7,267.0	20.0	17.8	-55.91	-595.5	-159.7	422.8	392.0	30.85	13.705	
8,300.0	7,504.0	8,047.1	7,267.0	21.1	19.1	-55.91	-695.5	-159.7	422.8	389.9	32.91	12.847	
8,400.0	7,504.0	8,147.1	7,267.0	22.3	20.4	-55.91	-795.5	-159.7	422.8	387.7	35.10	12.048	
8,500.0	7,504.0	8,247.1	7,267.0	23.6	21.7	-55.91	-895.5	-159.7	422.8	385.5	37.38	11.312	
8,600.0	7,504.0	8,347.1	7,267.0	24.9	23.2	-55.91	-995.5	-159.7	422.8	383.1	39.75	10.639	
8,700.0	7,504.0	8,447.1	7,267.0	26.3	24.6	-55.91	-1,095.5	-159.7	422.8	380.7	42.18	10.025	
8,800.0	7,504.0	8,547.1	7,267.0	27.7	26.1	-55.91	-1,195.5	-159.7	422.8	378.2	44.67	9.466	
8,900.0	7,504.0	8,647.1	7,267.0	29.2	27.7	-55.91	-1,295.5	-159.7	422.8	375.6	47.21	8.956	
9,000.0	7,504.0	8,747.1	7,267.0	30.6	29.2	-55.91	-1,395.5	-159.7	422.8	373.1	49.79	8.492	
9,100.0	7,504.0	8,847.1	7,267.0	32.2	30.8	-55.91	-1,495.5	-159.7	422.8	370.4	52.41	8.068	
9,200.0	7,504.0	8,947.1	7,267.0	33.7	32.4	-55.91	-1,595.5	-159.7	422.8	367.8	55.05	7.680	
9,300.0	7,504.0	9,047.1	7,267.0	35.2	34.0	-55.91	-1,695.5	-159.7	422.8	365.1	57.73	7.325	
9,400.0	7,504.0	9,147.1	7,267.0	36.8	35.6	-55.91	-1,795.5	-159.7	422.8	362.4	60.42	6.998	
9,500.0	7,504.0	9,247.1	7,267.0	38.4	37.3	-55.91	-1,895.5	-159.7	422.8	359.7	63.13	6.698	
9,600.0	7,504.0	9,347.1	7,267.0	40.0	38.9	-55.91	-1,995.5	-159.7	422.8	357.0	65.86	6.420	
9,700.0	7,504.0	9,447.1	7,267.0	41.6	40.6	-55.91	-2,095.5	-159.7	422.8	354.2	68.61	6.163	
9,800.0	7,504.0	9,547.1	7,267.0	43.3	42.3	-55.91	-2,195.5	-159.7	422.8	351.5	71.37	5.925	
9,900.0	7,504.0	9,647.1	7,267.0	44.9	43.9	-55.91	-2,295.5	-159.7	422.8	348.7	74.14	5.703	
10,000.0	7,504.0	9,747.1	7,267.0	46.5	45.6	-55.91	-2,395.5	-159.7	422.8	345.9	76.92	5.497	
10,100.0	7,504.0	9,847.1	7,267.0	48.2	47.3	-55.91	-2,495.5	-159.7	422.8	343.1	79.71	5.305	
10,200.0	7,504.0	9,947.1	7,267.0	49.8	49.0	-55.91	-2,595.5	-159.7	422.8	340.3	82.51	5.125	
10,300.0	7,504.0	10,047.1	7,267.0	51.5	50.7	-55.91	-2,695.5	-159.7	422.8	337.5	85.32	4.956	

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 2B-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 2B-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
10,400.0	7,504.0	10,147.1	7,267.0	53.2	52.4	-55.91	-2,795.5	-159.7	422.8	334.7	88.13	4.798	
10,500.0	7,504.0	10,247.1	7,267.0	54.9	54.1	-55.91	-2,895.5	-159.7	422.8	331.9	90.95	4.649	
10,600.0	7,504.0	10,347.1	7,267.0	56.5	55.8	-55.91	-2,995.5	-159.7	422.8	329.1	93.78	4.509	
10,700.0	7,504.0	10,447.1	7,267.0	58.2	57.5	-55.91	-3,095.5	-159.7	422.8	326.2	96.61	4.377	
10,800.0	7,504.0	10,547.1	7,267.0	59.9	59.2	-55.91	-3,195.5	-159.7	422.8	323.4	99.44	4.252	
10,900.0	7,504.0	10,647.1	7,267.0	61.6	60.9	-55.91	-3,295.5	-159.7	422.8	320.6	102.29	4.134	
11,000.0	7,504.0	10,747.1	7,267.0	63.3	62.6	-55.91	-3,395.5	-159.7	422.8	317.7	105.13	4.022	
11,100.0	7,504.0	10,847.1	7,267.0	65.0	64.3	-55.91	-3,495.5	-159.7	422.8	314.9	107.98	3.916	
11,200.0	7,504.0	10,947.1	7,267.0	66.7	66.0	-55.91	-3,595.5	-159.7	422.8	312.0	110.83	3.815	
11,300.0	7,504.0	11,047.1	7,267.0	68.4	67.8	-55.91	-3,695.5	-159.7	422.8	309.2	113.68	3.720	
11,400.0	7,504.0	11,147.1	7,267.0	70.1	69.5	-55.91	-3,795.5	-159.7	422.8	306.3	116.54	3.628	
11,500.0	7,504.0	11,247.1	7,267.0	71.8	71.2	-55.91	-3,895.5	-159.7	422.8	303.4	119.40	3.541	
11,600.0	7,504.0	11,347.1	7,267.0	73.5	72.9	-55.91	-3,995.5	-159.7	422.8	300.6	122.26	3.458	
11,700.0	7,504.0	11,447.1	7,267.0	75.2	74.7	-55.91	-4,095.5	-159.7	422.8	297.7	125.13	3.379	
11,800.0	7,504.0	11,547.1	7,267.0	77.0	76.4	-55.91	-4,195.5	-159.7	422.8	294.8	128.00	3.304	
11,900.0	7,504.0	11,647.1	7,267.0	78.7	78.1	-55.91	-4,295.5	-159.7	422.8	292.0	130.86	3.231	
12,000.0	7,504.0	11,747.1	7,267.0	80.4	79.8	-55.91	-4,395.5	-159.7	422.8	289.1	133.74	3.162	
12,081.4	7,504.0	11,828.5	7,267.0	81.8	81.3	-55.91	-4,476.9	-159.7	422.8	286.8	136.07	3.107	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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	90.04	0.0	22.4	22.4				
100.0	100.0	100.0	100.0	0.2	0.2	90.04	0.0	22.4	22.4	22.1	0.30	73.785	
200.0	200.0	200.0	200.0	0.3	0.3	90.04	0.0	22.4	22.4	21.8	0.65	34.328	
300.0	300.0	300.0	300.0	0.5	0.5	90.04	0.0	22.4	22.4	21.4	1.00	22.367	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	146.83	0.0	22.4	23.1	21.8	1.35	17.123	
500.0	500.0	500.0	500.0	0.9	0.8	150.06	0.0	22.4	25.4	23.7	1.70	14.915	
600.0	599.9	599.9	599.9	1.0	1.0	154.31	0.0	22.4	29.2	27.2	2.05	14.252	SF
700.0	699.7	699.7	699.7	1.2	1.2	158.65	0.0	22.4	34.8	32.4	2.40	14.512	
800.0	799.4	799.4	799.4	1.4	1.4	162.50	0.0	22.4	42.2	39.5	2.75	15.367	
900.0	899.0	899.0	899.0	1.7	1.5	165.51	0.0	22.4	50.8	47.7	3.10	16.388	
1,000.0	998.6	998.6	998.6	1.9	1.7	167.65	0.0	22.4	59.4	55.9	3.45	17.233	
1,100.0	1,098.2	1,098.2	1,098.2	2.1	1.9	169.24	0.0	22.4	68.1	64.3	3.79	17.940	
1,200.0	1,197.8	1,197.8	1,197.8	2.3	2.1	170.48	0.0	22.4	76.8	72.6	4.14	18.539	
1,300.0	1,297.4	1,297.4	1,297.4	2.6	2.2	171.46	0.0	22.4	85.5	81.0	4.49	19.051	
1,400.0	1,397.0	1,397.0	1,397.0	2.8	2.4	172.26	0.0	22.4	94.3	89.5	4.84	19.495	
1,500.0	1,496.6	1,496.6	1,496.6	3.0	2.6	172.92	0.0	22.4	103.1	97.9	5.19	19.881	
1,600.0	1,596.2	1,596.2	1,596.2	3.2	2.8	173.48	0.0	22.4	111.9	106.4	5.53	20.221	
1,700.0	1,695.8	1,695.8	1,695.8	3.5	2.9	173.96	0.0	22.4	120.7	114.8	5.88	20.523	
1,800.0	1,795.4	1,795.4	1,795.4	3.7	3.1	174.37	0.0	22.4	129.5	123.3	6.23	20.792	
1,900.0	1,895.0	1,895.0	1,895.0	3.9	3.3	174.73	0.0	22.4	138.3	131.7	6.58	21.033	
2,000.0	1,994.6	1,994.6	1,994.6	4.2	3.5	175.05	0.0	22.4	147.2	140.2	6.92	21.251	
2,100.0	2,094.3	2,094.3	2,094.3	4.4	3.6	175.33	0.0	22.4	156.0	148.7	7.27	21.448	
2,200.0	2,193.9	2,193.9	2,193.9	4.6	3.8	175.58	0.0	22.4	164.8	157.2	7.62	21.628	
2,300.0	2,293.5	2,293.5	2,293.5	4.9	4.0	175.80	0.0	22.4	173.6	165.7	7.97	21.792	
2,400.0	2,393.1	2,393.1	2,393.1	5.1	4.2	176.01	0.0	22.4	182.5	174.2	8.32	21.943	
2,500.0	2,492.7	2,492.7	2,492.7	5.3	4.3	176.19	0.0	22.4	191.3	182.7	8.66	22.082	
2,600.0	2,592.3	2,592.3	2,592.3	5.6	4.5	176.36	0.0	22.4	200.2	191.2	9.01	22.211	
2,700.0	2,691.9	2,691.9	2,691.9	5.8	4.7	176.52	0.0	22.4	209.0	199.6	9.36	22.330	
2,800.0	2,791.5	2,791.5	2,791.5	6.0	4.8	176.66	0.0	22.4	217.9	208.1	9.71	22.440	
2,900.0	2,891.1	2,891.1	2,891.1	6.3	5.0	176.79	0.0	22.4	226.7	216.6	10.06	22.543	
3,000.0	2,990.7	2,990.7	2,990.7	6.5	5.2	176.91	0.0	22.4	235.5	225.1	10.40	22.640	
3,100.0	3,090.3	3,090.3	3,090.3	6.7	5.4	177.02	0.0	22.4	244.4	233.6	10.75	22.730	
3,200.0	3,189.9	3,189.9	3,189.9	7.0	5.5	177.12	0.0	22.4	253.2	242.1	11.10	22.814	
3,300.0	3,289.5	3,289.5	3,289.5	7.2	5.7	177.22	0.0	22.4	262.1	250.6	11.45	22.894	
3,400.0	3,389.1	3,389.1	3,389.1	7.4	5.9	177.31	0.0	22.4	270.9	259.1	11.80	22.969	
3,500.0	3,488.7	3,488.7	3,488.7	7.7	6.1	177.40	0.0	22.4	279.8	267.6	12.14	23.039	
3,600.0	3,588.4	3,588.4	3,588.4	7.9	6.2	177.48	0.0	22.4	288.6	276.1	12.49	23.106	
3,700.0	3,688.0	3,688.0	3,688.0	8.1	6.4	177.55	0.0	22.4	297.5	284.6	12.84	23.169	
3,800.0	3,787.6	3,787.6	3,787.6	8.4	6.6	177.62	0.0	22.4	306.3	293.2	13.19	23.229	
3,900.0	3,887.2	3,887.2	3,887.2	8.6	6.8	177.69	0.0	22.4	315.2	301.7	13.54	23.286	
4,000.0	3,986.8	3,986.8	3,986.8	8.8	6.9	177.75	0.0	22.4	324.0	310.2	13.88	23.339	
4,100.0	4,086.4	4,087.2	4,087.2	9.1	7.1	177.70	0.6	22.7	332.8	318.6	14.23	23.380	
4,200.0	4,186.0	4,187.8	4,187.7	9.3	7.3	177.36	2.8	23.6	341.3	326.7	14.59	23.398	
4,300.0	4,285.6	4,288.3	4,288.1	9.5	7.5	176.75	6.7	25.2	349.5	334.6	14.94	23.395	
4,400.0	4,385.2	4,388.6	4,388.4	9.8	7.6	175.89	12.1	27.5	357.5	342.2	15.30	23.373	
4,500.0	4,484.8	4,488.9	4,488.3	10.0	7.8	174.79	19.2	30.5	365.4	349.8	15.66	23.335	
4,600.0	4,584.4	4,588.8	4,587.8	10.2	8.0	173.48	27.8	34.2	373.3	357.3	16.03	23.284	
4,700.0	4,684.0	4,688.5	4,686.9	10.5	8.2	171.96	38.0	38.5	381.3	364.9	16.42	23.224	
4,800.0	4,783.6	4,787.8	4,785.4	10.7	8.4	170.26	49.8	43.4	389.4	372.6	16.82	23.158	
4,900.0	4,883.2	4,886.7	4,883.3	10.9	8.6	168.51	62.3	48.7	397.9	380.7	17.23	23.099	
5,000.0	4,982.8	4,985.6	4,981.3	11.2	8.8	166.83	74.9	54.0	406.8	389.1	17.65	23.051	
5,100.0	5,082.5	5,084.5	5,079.2	11.4	9.0	165.22	87.4	59.3	415.9	397.9	18.07	23.013	

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 2B-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 2B-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
5,200.0	5,182.1	5,183.5	5,177.2	11.6	9.2	163.68	100.0	64.6	425.4	406.9	18.51	22.985	
5,300.0	5,281.7	5,282.4	5,275.2	11.9	9.5	162.20	112.5	69.9	435.2	416.3	18.95	22.965	
5,400.0	5,381.3	5,381.3	5,373.1	12.1	9.7	160.80	125.1	75.2	445.3	425.9	19.40	22.954	
5,500.0	5,480.9	5,480.2	5,471.1	12.3	9.9	159.45	137.6	80.5	455.6	435.7	19.85	22.951	
5,600.0	5,580.5	5,579.1	5,569.0	12.6	10.2	158.16	150.2	85.8	466.2	445.9	20.31	22.954	
5,700.0	5,680.1	5,678.0	5,667.0	12.8	10.4	156.94	162.7	91.1	476.9	456.2	20.77	22.965	
5,800.0	5,779.7	5,776.9	5,765.0	13.0	10.6	155.76	175.3	96.4	487.9	466.7	21.23	22.981	
5,900.0	5,879.3	5,875.8	5,862.9	13.3	10.9	154.64	187.8	101.7	499.1	477.4	21.70	23.003	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Lochbuie 2B-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 2B-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	90.05	0.0	30.8	30.8				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	30.8	30.8	30.5	0.30	101.455	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	30.8	30.8	30.2	0.65	47.201	
300.0	300.0	300.0	300.0	0.5	0.5	90.05	0.0	30.8	30.8	29.8	1.00	30.755	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	146.51	0.0	30.8	31.5	30.2	1.35	23.342	
500.0	500.0	500.0	500.0	0.9	0.8	148.95	0.0	30.8	33.7	32.0	1.70	19.843	
600.0	599.9	599.4	599.4	1.0	1.0	151.49	0.5	31.5	38.2	36.2	2.05	18.632	SF
700.0	699.7	698.5	698.5	1.2	1.2	152.99	1.9	33.6	45.6	43.2	2.40	18.963	
800.0	799.4	797.4	797.2	1.4	1.4	153.62	4.4	37.2	55.8	53.0	2.76	20.212	
900.0	899.0	895.8	895.5	1.7	1.6	153.47	7.7	42.1	68.1	65.0	3.12	21.823	
1,000.0	998.6	993.9	993.3	1.9	1.8	152.57	12.1	48.3	81.7	78.2	3.49	23.416	
1,100.0	1,098.2	1,092.3	1,091.2	2.1	2.0	151.33	17.2	55.8	96.5	92.6	3.87	24.961	
1,200.0	1,197.8	1,191.1	1,189.6	2.3	2.2	150.34	22.6	63.5	111.5	107.2	4.25	26.257	
1,300.0	1,297.4	1,290.0	1,288.0	2.6	2.4	149.59	27.9	71.3	126.5	121.9	4.63	27.335	
1,400.0	1,397.0	1,388.8	1,386.4	2.8	2.6	148.99	33.2	79.0	141.5	136.5	5.01	28.244	
1,500.0	1,496.6	1,487.7	1,484.9	3.0	2.9	148.51	38.6	86.7	156.5	151.2	5.39	29.021	
1,600.0	1,596.2	1,586.5	1,583.3	3.2	3.1	148.12	43.9	94.5	171.6	165.8	5.78	29.691	
1,700.0	1,695.8	1,685.4	1,681.7	3.5	3.3	147.78	49.2	102.2	186.6	180.5	6.16	30.275	
1,800.0	1,795.4	1,784.2	1,780.1	3.7	3.6	147.50	54.6	109.9	201.7	195.1	6.55	30.789	
1,900.0	1,895.0	1,883.1	1,878.5	3.9	3.8	147.26	59.9	117.6	216.8	209.8	6.94	31.244	
2,000.0	1,994.6	1,982.0	1,976.9	4.2	4.0	147.04	65.2	125.4	231.8	224.5	7.32	31.650	
2,100.0	2,094.3	2,080.8	2,075.3	4.4	4.3	146.86	70.5	133.1	246.9	239.2	7.71	32.014	
2,200.0	2,193.9	2,179.7	2,173.7	4.6	4.5	146.69	75.9	140.8	262.0	253.9	8.10	32.342	
2,300.0	2,293.5	2,278.5	2,272.1	4.9	4.7	146.55	81.2	148.5	277.0	268.5	8.49	32.640	
2,400.0	2,393.1	2,377.4	2,370.5	5.1	5.0	146.42	86.5	156.3	292.1	283.2	8.88	32.911	
2,500.0	2,492.7	2,476.2	2,468.9	5.3	5.2	146.30	91.9	164.0	307.2	297.9	9.26	33.159	
2,600.0	2,592.3	2,575.1	2,567.4	5.6	5.4	146.19	97.2	171.7	322.2	312.6	9.65	33.387	
2,700.0	2,691.9	2,673.9	2,665.8	5.8	5.7	146.09	102.5	179.4	337.3	327.3	10.04	33.596	
2,800.0	2,791.5	2,772.8	2,764.2	6.0	5.9	146.00	107.9	187.2	352.4	342.0	10.43	33.790	
2,900.0	2,891.1	2,871.7	2,862.6	6.3	6.1	145.92	113.2	194.9	367.5	356.6	10.82	33.969	
3,000.0	2,990.7	2,970.5	2,961.0	6.5	6.4	145.84	118.5	202.6	382.5	371.3	11.21	34.136	
3,100.0	3,090.3	3,069.4	3,059.4	6.7	6.6	145.77	123.9	210.3	397.6	386.0	11.60	34.292	
3,200.0	3,189.9	3,168.2	3,157.8	7.0	6.8	145.71	129.2	218.1	412.7	400.7	11.98	34.437	
3,300.0	3,289.5	3,267.1	3,256.2	7.2	7.1	145.65	134.5	225.8	427.8	415.4	12.37	34.572	
3,400.0	3,389.1	3,365.9	3,354.6	7.4	7.3	145.59	139.9	233.5	442.9	430.1	12.76	34.700	
3,500.0	3,488.7	3,464.8	3,453.0	7.7	7.6	145.54	145.2	241.2	457.9	444.8	13.15	34.820	
3,600.0	3,588.4	3,563.6	3,551.4	7.9	7.8	145.49	150.5	249.0	473.0	459.5	13.54	34.932	
3,700.0	3,688.0	3,662.5	3,649.9	8.1	8.0	145.44	155.9	256.7	488.1	474.2	13.93	35.039	

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 2B-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 2B-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	90.05	0.0	42.0	42.0				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	42.0	42.0	41.7	0.30	138.348	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	42.0	42.0	41.4	0.65	64.365	
300.0	300.0	300.0	300.0	0.5	0.5	90.05	0.0	42.0	42.0	41.0	1.00	41.938	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	146.27	0.0	42.0	42.7	41.4	1.35	31.634	
500.0	500.0	500.0	500.0	0.9	0.8	148.12	0.0	42.0	44.9	43.2	1.70	26.421	
600.0	599.9	599.1	599.1	1.0	1.0	150.35	0.3	42.8	49.5	47.4	2.05	24.129	
700.0	699.7	698.0	697.9	1.2	1.2	152.20	1.2	45.2	57.1	54.7	2.40	23.798	SF
800.0	799.4	796.4	796.3	1.4	1.4	153.54	2.7	49.2	67.9	65.2	2.75	24.658	
900.0	899.0	894.4	894.1	1.7	1.6	154.25	4.8	54.7	81.1	78.0	3.11	26.069	
1,000.0	998.6	992.1	991.4	1.9	1.8	154.26	7.5	61.7	95.8	92.3	3.47	27.586	
1,100.0	1,098.2	1,089.2	1,088.2	2.1	2.0	153.84	10.8	70.3	111.9	108.1	3.84	29.169	
1,200.0	1,197.8	1,185.9	1,184.2	2.3	2.2	153.17	14.6	80.3	129.5	125.3	4.20	30.795	
1,300.0	1,297.4	1,282.0	1,279.5	2.6	2.5	152.36	19.0	91.8	148.5	144.0	4.58	32.454	
1,400.0	1,397.0	1,377.8	1,374.3	2.8	2.7	151.48	23.9	104.7	169.1	164.1	4.95	34.139	
1,500.0	1,496.6	1,475.5	1,470.9	3.0	3.0	150.70	29.1	118.4	190.2	184.9	5.33	35.660	
1,600.0	1,596.2	1,573.2	1,567.6	3.2	3.3	150.07	34.4	132.2	211.3	205.6	5.71	36.978	
1,700.0	1,695.8	1,670.9	1,664.2	3.5	3.6	149.55	39.6	145.9	232.5	226.4	6.10	38.130	
1,800.0	1,795.4	1,768.6	1,760.8	3.7	3.9	149.12	44.8	159.6	253.7	247.2	6.48	39.146	
1,900.0	1,895.0	1,866.3	1,857.4	3.9	4.2	148.76	50.1	173.3	274.9	268.0	6.86	40.048	
2,000.0	1,994.6	1,964.1	1,954.0	4.2	4.4	148.45	55.3	187.1	296.1	288.8	7.25	40.854	
2,100.0	2,094.3	2,061.8	2,050.6	4.4	4.7	148.18	60.6	200.8	317.3	309.6	7.63	41.578	
2,200.0	2,193.9	2,159.5	2,147.2	4.6	5.0	147.94	65.8	214.5	338.5	330.5	8.01	42.233	
2,300.0	2,293.5	2,257.2	2,243.8	4.9	5.3	147.73	71.0	228.3	359.7	351.3	8.40	42.827	
2,400.0	2,393.1	2,354.9	2,340.4	5.1	5.6	147.55	76.3	242.0	380.9	372.1	8.78	43.369	
2,500.0	2,492.7	2,452.6	2,437.0	5.3	5.9	147.38	81.5	255.7	402.1	393.0	9.17	43.866	
2,600.0	2,592.3	2,550.4	2,533.6	5.6	6.3	147.23	86.8	269.5	423.4	413.8	9.55	44.322	
2,700.0	2,691.9	2,648.1	2,630.2	5.8	6.6	147.10	92.0	283.2	444.6	434.6	9.94	44.742	
2,800.0	2,791.5	2,745.8	2,726.8	6.0	6.9	146.98	97.2	296.9	465.8	455.5	10.32	45.131	
2,900.0	2,891.1	2,843.5	2,823.4	6.3	7.2	146.86	102.5	310.6	487.0	476.3	10.71	45.492	

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 2B-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 2B-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 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	90.05	0.0	50.4	50.4				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	50.4	50.4	50.1	0.30	166.017	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	50.4	50.4	49.8	0.65	77.238	CC, ES
300.0	300.0	299.2	299.1	0.5	0.5	89.77	0.2	51.2	51.2	50.2	1.00	51.186	
400.0	400.0	398.2	398.2	0.7	0.7	145.07	0.9	53.7	54.5	53.1	1.35	40.383	
500.0	500.0	497.1	496.9	0.9	0.9	145.30	2.2	57.8	60.7	59.0	1.70	35.786	
600.0	599.9	595.6	595.2	1.0	1.1	145.86	3.9	63.5	70.1	68.1	2.05	34.226	SF
700.0	699.7	693.5	692.9	1.2	1.3	146.58	6.1	70.8	82.6	80.2	2.40	34.359	
800.0	799.4	790.9	789.8	1.4	1.5	147.31	8.8	79.6	98.1	95.3	2.76	35.511	
900.0	899.0	887.5	885.9	1.7	1.7	147.88	11.9	89.9	116.0	112.9	3.12	37.128	
1,000.0	998.6	983.6	981.2	1.9	2.0	148.08	15.4	101.6	135.5	132.0	3.49	38.825	
1,100.0	1,098.2	1,079.1	1,075.6	2.1	2.3	148.02	19.4	114.9	156.6	152.7	3.86	40.575	
1,200.0	1,197.8	1,173.9	1,169.2	2.3	2.6	147.80	23.8	129.5	179.2	174.9	4.23	42.361	
1,300.0	1,297.4	1,268.0	1,261.8	2.6	2.9	147.48	28.6	145.4	203.3	198.7	4.60	44.177	
1,400.0	1,397.0	1,364.4	1,356.5	2.8	3.2	147.15	33.8	162.7	228.3	223.3	4.98	45.853	
1,500.0	1,496.6	1,461.2	1,451.6	3.0	3.6	146.88	39.1	180.0	253.3	248.0	5.36	47.285	
1,600.0	1,596.2	1,558.0	1,546.7	3.2	3.9	146.65	44.3	197.4	278.4	272.7	5.74	48.522	
1,700.0	1,695.8	1,654.8	1,641.8	3.5	4.3	146.47	49.6	214.7	303.4	297.3	6.12	49.603	
1,800.0	1,795.4	1,751.6	1,736.9	3.7	4.6	146.31	54.8	232.1	328.5	322.0	6.50	50.554	
1,900.0	1,895.0	1,848.4	1,832.0	3.9	5.0	146.17	60.0	249.4	353.6	346.7	6.88	51.398	
2,000.0	1,994.6	1,945.2	1,927.1	4.2	5.4	146.05	65.3	266.8	378.6	371.4	7.26	52.152	
2,100.0	2,094.3	2,042.0	2,022.2	4.4	5.7	145.95	70.5	284.1	403.7	396.0	7.64	52.829	
2,200.0	2,193.9	2,138.8	2,117.3	4.6	6.1	145.86	75.7	301.5	428.7	420.7	8.02	53.440	
2,300.0	2,293.5	2,235.7	2,212.4	4.9	6.4	145.78	81.0	318.8	453.8	445.4	8.40	53.995	
2,400.0	2,393.1	2,332.5	2,307.5	5.1	6.8	145.71	86.2	336.2	478.9	470.1	8.79	54.500	

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 2B-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 2B-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 2B-31H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°