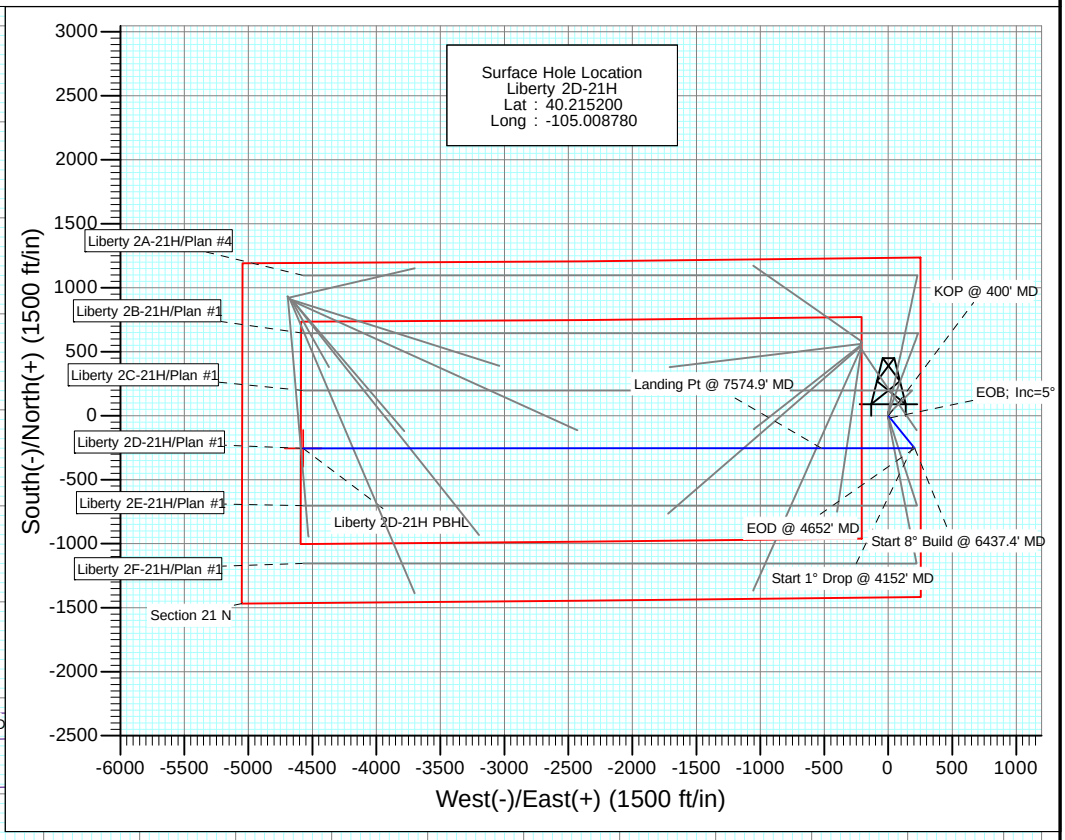
Project: DJ Wattenberg
Site: NENE S20-T3N-R68W (Liberty 2A-21H)
Well: Liberty 2D-21H
Wellbore: Hz
Design: Plan #1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	900.0	5.00	141.00	899.4	-16.9	13.7	1.00	141.00	-13.7	
4	4152.0	5.00	141.00	4139.0	-237.2	192.1	0.00	0.00	-192.1	
5	4652.0	0.00	0.00	4638.4	-254.2	205.8	1.00	180.00	-205.8	
6	4752.0	0.00	0.00	4738.4	-254.2	205.8	0.00	0.00	-205.8	
7	6437.4	0.00	0.00	6423.8	-254.2	205.8	0.00	0.00	-205.8	
8	7574.9	91.00	270.00	7139.9	-254.2	-522.9	8.00	270.00	522.9	
9	11624.4	91.00	270.00	7069.2	-254.6	-4571.7	0.00	0.00	4571.7	Liberty 2D-21H PBHL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Liberty 2D-21H PBHL	-254.6	-4571.7	1321342.28	3132618.14	40.214500	-105.025150

Azimuths to True North
Magnetic North: 8.76°

Magnetic Field
Strength: 52899.7snT
Dip Angle: 66.83°
Date: 9/18/2012
Model: IGRF200510

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
236.0	236.0	Base of Fox Hills
4097.3	4110.2	Sussex
4232.4	4245.7	Sussex Marker
4483.6	4497.2	Shannon
4972.6	4986.2	Teepee Buttes
6897.5	6955.0	Sharon Springs
6980.0	7074.3	Niobrara

Plan #1
Liberty 2D-21H
12xxx; LR
WELL @ 5036.0ft (Original Well Elev)
Ground Elevation @ 5023.0
North American Datum 1983
Well Liberty 2D-21H, True North

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Liberty 2D-21H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**North Reference:**	True
Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H)

Site Position:		**Northing:**	1,322,254.59 ft	**Latitude:**	40.216940
From:	Lat/Long	**Easting:**	3,136,925.14 ft	**Longitude:**	-105.009710
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.32 °

Well Liberty 2D-21H

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,321,622.17 ft	**Latitude:**	40.215200
	+E/-W	0.0 ft	**Easting:**	3,137,188.36 ft	**Longitude:**	-105.008780
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	5,023.0 ft

Wellbore Hz

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/18/2012	8.76	66.83	52,900

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	270.00

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
900.0	5.00	141.00	899.4	-16.9	13.7	1.00	1.00	0.00	141.00	
4,152.0	5.00	141.00	4,139.0	-237.2	192.1	0.00	0.00	0.00	0.00	
4,652.0	0.00	0.00	4,638.4	-254.2	205.8	1.00	-1.00	0.00	180.00	
4,752.0	0.00	0.00	4,738.4	-254.2	205.8	0.00	0.00	0.00	0.00	
6,437.4	0.00	0.00	6,423.8	-254.2	205.8	0.00	0.00	0.00	0.00	
7,574.9	91.00	270.00	7,139.9	-254.2	-522.9	8.00	8.00	0.00	270.00	
11,624.4	91.00	270.00	7,069.2	-254.6	-4,571.7	0.00	0.00	0.00	0.00	Liberty 2D-21H PBHL

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Liberty 2D-21H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**North Reference:**	True
Well:	Liberty 2D-21H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
236.0	0.00	0.00	236.0	0.0	0.0	0.0	0.00	0.00	Base of Fox Hills
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	KOP @ 400' MD
500.0	1.00	141.00	500.0	-0.7	0.5	-0.5	1.00	1.00	
600.0	2.00	141.00	600.0	-2.7	2.2	-2.2	1.00	1.00	
700.0	3.00	141.00	699.9	-6.1	4.9	-4.9	1.00	1.00	
800.0	4.00	141.00	799.7	-10.8	8.8	-8.8	1.00	1.00	
900.0	5.00	141.00	899.4	-16.9	13.7	-13.7	1.00	1.00	EOB; Inc=5°
1,000.0	5.00	141.00	999.0	-23.7	19.2	-19.2	0.00	0.00	
1,100.0	5.00	141.00	1,098.6	-30.5	24.7	-24.7	0.00	0.00	
1,200.0	5.00	141.00	1,198.2	-37.3	30.2	-30.2	0.00	0.00	
1,300.0	5.00	141.00	1,297.8	-44.0	35.7	-35.7	0.00	0.00	
1,400.0	5.00	141.00	1,397.5	-50.8	41.1	-41.1	0.00	0.00	
1,500.0	5.00	141.00	1,497.1	-57.6	46.6	-46.6	0.00	0.00	
1,600.0	5.00	141.00	1,596.7	-64.4	52.1	-52.1	0.00	0.00	
1,700.0	5.00	141.00	1,696.3	-71.1	57.6	-57.6	0.00	0.00	
1,800.0	5.00	141.00	1,795.9	-77.9	63.1	-63.1	0.00	0.00	
1,900.0	5.00	141.00	1,895.6	-84.7	68.6	-68.6	0.00	0.00	
2,000.0	5.00	141.00	1,995.2	-91.4	74.1	-74.1	0.00	0.00	
2,100.0	5.00	141.00	2,094.8	-98.2	79.5	-79.5	0.00	0.00	
2,200.0	5.00	141.00	2,194.4	-105.0	85.0	-85.0	0.00	0.00	
2,300.0	5.00	141.00	2,294.0	-111.8	90.5	-90.5	0.00	0.00	
2,400.0	5.00	141.00	2,393.7	-118.5	96.0	-96.0	0.00	0.00	
2,500.0	5.00	141.00	2,493.3	-125.3	101.5	-101.5	0.00	0.00	
2,600.0	5.00	141.00	2,592.9	-132.1	107.0	-107.0	0.00	0.00	
2,700.0	5.00	141.00	2,692.5	-138.9	112.4	-112.4	0.00	0.00	
2,800.0	5.00	141.00	2,792.1	-145.6	117.9	-117.9	0.00	0.00	
2,900.0	5.00	141.00	2,891.8	-152.4	123.4	-123.4	0.00	0.00	
3,000.0	5.00	141.00	2,991.4	-159.2	128.9	-128.9	0.00	0.00	
3,100.0	5.00	141.00	3,091.0	-166.0	134.4	-134.4	0.00	0.00	
3,200.0	5.00	141.00	3,190.6	-172.7	139.9	-139.9	0.00	0.00	
3,300.0	5.00	141.00	3,290.2	-179.5	145.4	-145.4	0.00	0.00	
3,400.0	5.00	141.00	3,389.9	-186.3	150.8	-150.8	0.00	0.00	
3,500.0	5.00	141.00	3,489.5	-193.0	156.3	-156.3	0.00	0.00	
3,600.0	5.00	141.00	3,589.1	-199.8	161.8	-161.8	0.00	0.00	
3,700.0	5.00	141.00	3,688.7	-206.6	167.3	-167.3	0.00	0.00	
3,800.0	5.00	141.00	3,788.3	-213.4	172.8	-172.8	0.00	0.00	
3,900.0	5.00	141.00	3,887.9	-220.1	178.3	-178.3	0.00	0.00	
4,000.0	5.00	141.00	3,987.6	-226.9	183.8	-183.8	0.00	0.00	
4,100.0	5.00	141.00	4,087.2	-233.7	189.2	-189.2	0.00	0.00	
4,110.2	5.00	141.00	4,097.3	-234.4	189.8	-189.8	0.00	0.00	Sussex
4,152.0	5.00	141.00	4,139.0	-237.2	192.1	-192.1	0.00	0.00	Start 1° Drop @ 4152' MD
4,200.0	4.52	141.00	4,186.8	-240.3	194.6	-194.6	1.00	-1.00	
4,245.7	4.06	141.00	4,232.4	-243.0	196.7	-196.7	1.00	-1.00	Sussex Marker
4,300.0	3.52	141.00	4,286.6	-245.8	199.0	-199.0	1.00	-1.00	
4,400.0	2.52	141.00	4,386.4	-249.8	202.3	-202.3	1.00	-1.00	
4,497.2	1.55	141.00	4,483.6	-252.5	204.5	-204.5	1.00	-1.00	Shannon
4,500.0	1.52	141.00	4,486.4	-252.6	204.5	-204.5	1.00	-1.00	
4,600.0	0.52	141.00	4,586.4	-254.0	205.7	-205.7	1.00	-1.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Liberty 2D-21H
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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**North Reference:**	True
Well:	Liberty 2D-21H	**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
4,652.0	0.00	0.00	4,638.4	-254.2	205.8	-205.8	1.00	-1.00	EOD @ 4652' MD
4,700.0	0.00	0.00	4,686.4	-254.2	205.8	-205.8	0.00	0.00	
4,752.0	0.00	0.00	4,738.4	-254.2	205.8	-205.8	0.00	0.00	
4,800.0	0.00	0.00	4,786.4	-254.2	205.8	-205.8	0.00	0.00	
4,900.0	0.00	0.00	4,886.4	-254.2	205.8	-205.8	0.00	0.00	
4,986.2	0.00	0.00	4,972.6	-254.2	205.8	-205.8	0.00	0.00	Teepee Buttes
5,000.0	0.00	0.00	4,986.4	-254.2	205.8	-205.8	0.00	0.00	
5,100.0	0.00	0.00	5,086.4	-254.2	205.8	-205.8	0.00	0.00	
5,200.0	0.00	0.00	5,186.4	-254.2	205.8	-205.8	0.00	0.00	
5,300.0	0.00	0.00	5,286.4	-254.2	205.8	-205.8	0.00	0.00	
5,400.0	0.00	0.00	5,386.4	-254.2	205.8	-205.8	0.00	0.00	
5,500.0	0.00	0.00	5,486.4	-254.2	205.8	-205.8	0.00	0.00	
5,600.0	0.00	0.00	5,586.4	-254.2	205.8	-205.8	0.00	0.00	
5,700.0	0.00	0.00	5,686.4	-254.2	205.8	-205.8	0.00	0.00	
5,800.0	0.00	0.00	5,786.4	-254.2	205.8	-205.8	0.00	0.00	
5,900.0	0.00	0.00	5,886.4	-254.2	205.8	-205.8	0.00	0.00	
6,000.0	0.00	0.00	5,986.4	-254.2	205.8	-205.8	0.00	0.00	
6,100.0	0.00	0.00	6,086.4	-254.2	205.8	-205.8	0.00	0.00	
6,200.0	0.00	0.00	6,186.4	-254.2	205.8	-205.8	0.00	0.00	
6,300.0	0.00	0.00	6,286.4	-254.2	205.8	-205.8	0.00	0.00	
6,400.0	0.00	0.00	6,386.4	-254.2	205.8	-205.8	0.00	0.00	
6,437.4	0.00	0.00	6,423.8	-254.2	205.8	-205.8	0.00	0.00	Start 8° Build @ 6437.4' MD
6,500.0	5.01	270.00	6,486.3	-254.2	203.1	-203.1	8.00	8.00	
6,600.0	13.01	270.00	6,585.0	-254.2	187.4	-187.4	8.00	8.00	
6,700.0	21.01	270.00	6,680.5	-254.2	158.2	-158.2	8.00	8.00	
6,800.0	29.01	270.00	6,771.1	-254.2	116.0	-116.0	8.00	8.00	
6,900.0	37.01	270.00	6,854.9	-254.2	61.6	-61.6	8.00	8.00	
6,955.0	41.41	270.00	6,897.5	-254.2	26.8	-26.8	8.00	8.00	Sharon Springs
7,000.0	45.01	270.00	6,930.3	-254.2	-4.0	4.0	8.00	8.00	
7,074.3	50.95	270.00	6,980.0	-254.2	-59.2	59.2	8.00	8.00	Niobrara
7,100.0	53.01	270.00	6,995.8	-254.2	-79.4	79.4	8.00	8.00	
7,200.0	61.01	270.00	7,050.2	-254.2	-163.2	163.2	8.00	8.00	
7,300.0	69.01	270.00	7,092.4	-254.2	-253.8	253.8	8.00	8.00	
7,400.0	77.01	270.00	7,121.6	-254.2	-349.3	349.3	8.00	8.00	
7,500.0	85.01	270.00	7,137.3	-254.2	-448.0	448.0	8.00	8.00	
7,574.9	91.00	270.00	7,139.9	-254.2	-522.9	522.9	8.00	8.00	Landing Pt @ 7574.9' MD
7,600.0	91.00	270.00	7,139.4	-254.2	-548.0	548.0	0.01	0.01	
7,700.0	91.00	270.00	7,137.7	-254.2	-647.9	647.9	0.00	0.00	
7,800.0	91.00	270.00	7,135.9	-254.2	-747.9	747.9	0.00	0.00	
7,900.0	91.00	270.00	7,134.2	-254.2	-847.9	847.9	0.00	0.00	
8,000.0	91.00	270.00	7,132.5	-254.3	-947.9	947.9	0.00	0.00	
8,100.0	91.00	270.00	7,130.7	-254.3	-1,047.9	1,047.9	0.00	0.00	
8,200.0	91.00	270.00	7,129.0	-254.3	-1,147.9	1,147.9	0.00	0.00	
8,300.0	91.00	270.00	7,127.2	-254.3	-1,247.8	1,247.8	0.00	0.00	
8,400.0	91.00	270.00	7,125.5	-254.3	-1,347.8	1,347.8	0.00	0.00	
8,500.0	91.00	270.00	7,123.7	-254.3	-1,447.8	1,447.8	0.00	0.00	
8,600.0	91.00	270.00	7,122.0	-254.3	-1,547.8	1,547.8	0.00	0.00	
8,700.0	91.00	270.00	7,120.2	-254.3	-1,647.8	1,647.8	0.00	0.00	
8,800.0	91.00	270.00	7,118.5	-254.3	-1,747.8	1,747.8	0.00	0.00	
8,900.0	91.00	270.00	7,116.7	-254.3	-1,847.8	1,847.8	0.00	0.00	
9,000.0	91.00	270.00	7,115.0	-254.3	-1,947.7	1,947.7	0.00	0.00	
9,100.0	91.00	270.00	7,113.3	-254.3	-2,047.7	2,047.7	0.00	0.00	

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**North Reference:**	True
Well:	Liberty 2D-21H	**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
9,200.0	91.00	270.00	7,111.5	-254.4	-2,147.7	2,147.7	0.00	0.00	
9,300.0	91.00	270.00	7,109.8	-254.4	-2,247.7	2,247.7	0.00	0.00	
9,400.0	91.00	270.00	7,108.0	-254.4	-2,347.7	2,347.7	0.00	0.00	
9,500.0	91.00	270.00	7,106.3	-254.4	-2,447.7	2,447.7	0.00	0.00	
9,600.0	91.00	270.00	7,104.5	-254.4	-2,547.7	2,547.7	0.00	0.00	
9,700.0	91.00	270.00	7,102.8	-254.4	-2,647.6	2,647.6	0.00	0.00	
9,800.0	91.00	270.00	7,101.0	-254.4	-2,747.6	2,747.6	0.00	0.00	
9,900.0	91.00	270.00	7,099.3	-254.4	-2,847.6	2,847.6	0.00	0.00	
10,000.0	91.00	270.00	7,097.5	-254.4	-2,947.6	2,947.6	0.00	0.00	
10,100.0	91.00	270.00	7,095.8	-254.4	-3,047.6	3,047.6	0.00	0.00	
10,200.0	91.00	270.00	7,094.1	-254.4	-3,147.6	3,147.6	0.00	0.00	
10,300.0	91.00	270.00	7,092.3	-254.5	-3,247.5	3,247.5	0.00	0.00	
10,400.0	91.00	270.00	7,090.6	-254.5	-3,347.5	3,347.5	0.00	0.00	
10,500.0	91.00	270.00	7,088.8	-254.5	-3,447.5	3,447.5	0.00	0.00	
10,600.0	91.00	270.00	7,087.1	-254.5	-3,547.5	3,547.5	0.00	0.00	
10,700.0	91.00	270.00	7,085.3	-254.5	-3,647.5	3,647.5	0.00	0.00	
10,800.0	91.00	270.00	7,083.6	-254.5	-3,747.5	3,747.5	0.00	0.00	
10,900.0	91.00	270.00	7,081.8	-254.5	-3,847.5	3,847.5	0.00	0.00	
11,000.0	91.00	270.00	7,080.1	-254.5	-3,947.4	3,947.4	0.00	0.00	
11,100.0	91.00	270.00	7,078.4	-254.5	-4,047.4	4,047.4	0.00	0.00	
11,200.0	91.00	270.00	7,076.6	-254.5	-4,147.4	4,147.4	0.00	0.00	
11,300.0	91.00	270.00	7,074.9	-254.5	-4,247.4	4,247.4	0.00	0.00	
11,400.0	91.00	270.00	7,073.1	-254.5	-4,347.4	4,347.4	0.00	0.00	
11,500.0	91.00	270.00	7,071.4	-254.6	-4,447.4	4,447.4	0.00	0.00	
11,600.0	91.00	270.00	7,069.6	-254.6	-4,547.3	4,547.3	0.00	0.00	
11,624.4	91.00	270.00	7,069.2	-254.6	-4,571.7	4,571.7	0.00	0.00	TD at 11624.4 - Liberty 2D-21H 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
Liberty 2D-21H PBHL - plan hits target center - Point	0.00	0.00	7,069.2	-254.6	-4,571.7	1,321,342.28	3,132,618.14	40.214500	-105.025150

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
236.0	236.0	Base of Fox Hills		-1.00	270.00
4,110.2	4,094.0	Sussex		-1.00	270.00
4,245.7	4,229.0	Sussex Marker		-1.00	270.00
4,497.2	4,480.0	Shannon		-1.00	270.00
4,986.2	4,969.0	Teepee Buttes		-1.00	270.00
6,955.0	6,897.0	Sharon Springs		-1.00	270.00
7,074.3	6,981.0	Niobrara		-1.00	270.00

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Liberty 2D-21H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**North Reference:**	True
Well:	Liberty 2D-21H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
400.0	400.0	0.0	0.0	KOP @ 400' MD
900.0	899.4	-16.9	13.7	EOB; Inc=5°
4,152.0	4,139.0	-237.2	192.1	Start 1° Drop @ 4152' MD
4,652.0	4,638.4	-254.2	205.8	EOD @ 4652' MD
6,437.4	6,423.8	-254.2	205.8	Start 8° Build @ 6437.4' MD
7,574.9	7,139.9	-254.2	-522.9	Landing Pt @ 7574.9' MD
11,624.4	7,069.2	-254.6	-4,571.7	TD at 11624.4

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
NENE S20-T3N-R68W (Liberty 2A-21H)
Liberty 2D-21H
Hz
Plan #1

Anticollision Report

19 September, 2012

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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** 9/19/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,624.1	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
NENE S20-T3N-R68W (Liberty 2A-21H)						
Haley 1-20 (Proposed) - DD - Plan #1						Out of range
Haley 31-20 (Proposed) - DD - Plan #1						Out of range
Haley 32-20 (Proposed) - DD - Plan #1						Out of range
Haley 41-20 (Proposed) - DD - Plan #1						Out of range
Haley 42-20 (Proposed) - DD - Plan #1						Out of range
Haley 6-0-20 (Proposed) - DD - Plan #1						Out of range
Haley 6-4-20 (Proposed) - DD - Plan #1						Out of range
Haley 8-2-20 (Proposed) - DD - Plan #1						Out of range
Liberty 11-21 (Proposed) - DD - Plan #1						Out of range
Liberty 12-21 (Proposed) - DD - Plan #1						Out of range
Liberty 2-0-21 (Proposed) - DD - Plan #1						Out of range
Liberty 21-21 (Proposed) - DD - Plan #1						Out of range
Liberty 2-21 (Proposed) - DD - Plan #1						Out of range
Liberty 22-21 (Proposed) - DD - Plan #1	2,064.9	2,157.1	387.7	374.9	30.309	CC
Liberty 22-21 (Proposed) - DD - Plan #1	2,100.0	2,191.0	387.8	374.7	29.603	ES
Liberty 22-21 (Proposed) - DD - Plan #1	3,000.0	3,059.2	459.3	439.4	23.067	SF
Liberty 2-4-21 (Proposed) - DD - Plan #1	1,559.8	1,659.2	487.7	477.6	48.429	CC
Liberty 2-4-21 (Proposed) - DD - Plan #1	1,600.0	1,695.8	488.0	477.5	46.469	ES
Liberty 2-4-21 (Proposed) - DD - Plan #1	1,700.0	1,784.7	491.8	480.2	42.448	SF
Liberty 2A-21H - HZ - Plan #4	200.0	200.0	29.1	28.5	44.652	CC, ES
Liberty 2A-21H - HZ - Plan #4	500.0	498.2	37.5	35.8	22.079	SF
Liberty 2B-21H - Hz - Plan #1	300.0	300.0	18.2	17.2	18.185	CC, ES
Liberty 2B-21H - Hz - Plan #1	500.0	499.3	22.2	20.5	13.044	SF
Liberty 2C-21H - Hz - Plan #1	400.0	400.0	10.9	9.6	8.093	CC, ES
Liberty 2C-21H - Hz - Plan #1	11,624.4	11,687.5	459.8	232.5	2.023	SF
Liberty 2E-21H - HZ - Plan #1	400.0	400.0	10.9	9.6	8.087	CC
Liberty 2E-21H - HZ - Plan #1	500.0	499.8	11.1	9.4	6.517	ES
Liberty 2E-21H - HZ - Plan #1	11,624.4	11,793.6	460.3	234.6	2.039	SF
Liberty 2F-21H - HZ - Plan #1	233.3	233.3	21.9	21.1	28.412	CC
Liberty 2F-21H - HZ - Plan #1	300.0	299.8	22.1	21.1	22.033	ES
Liberty 2F-21H - HZ - Plan #1	900.0	896.4	41.5	38.3	13.173	SF
Liberty 4-2-21 (Proposed) - DD - Plan #1	6,000.0	6,051.8	142.0	116.1	5.481	CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 22-21 (Proposed) - DD - 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
900.0	899.4	1,021.1	1,009.9	1.6	2.9	-171.50	-235.8	30.4	493.5	489.7	3.82	129.213	
1,000.0	999.0	1,129.8	1,113.6	1.8	3.5	-174.15	-268.1	25.6	478.5	474.1	4.45	107.563	
1,100.0	1,098.6	1,226.3	1,205.2	2.0	4.0	-176.75	-298.0	21.2	463.6	458.5	5.07	91.375	
1,200.0	1,198.2	1,322.8	1,296.9	2.3	4.6	-179.52	-327.8	16.7	449.7	443.9	5.74	78.376	
1,300.0	1,297.8	1,419.2	1,388.5	2.5	5.1	177.56	-357.7	12.3	436.9	430.5	6.44	67.840	
1,400.0	1,397.5	1,515.7	1,480.1	2.7	5.6	174.48	-387.5	7.9	425.4	418.2	7.18	59.239	
1,500.0	1,497.1	1,612.2	1,571.8	2.9	6.2	171.25	-417.3	3.5	415.3	407.3	7.96	52.182	
1,600.0	1,596.7	1,708.6	1,663.4	3.2	6.7	167.88	-447.2	-0.9	406.6	397.8	8.77	46.374	
1,700.0	1,696.3	1,805.1	1,755.0	3.4	7.3	164.38	-477.0	-5.3	399.4	389.8	9.60	41.587	
1,800.0	1,795.9	1,901.6	1,846.6	3.6	7.8	160.78	-506.9	-9.8	393.9	383.4	10.46	37.645	
1,900.0	1,895.6	1,998.0	1,938.3	3.8	8.4	157.10	-536.7	-14.2	390.1	378.8	11.34	34.407	
2,000.0	1,995.2	2,094.5	2,029.9	4.1	8.9	153.37	-566.6	-18.6	388.0	375.8	12.22	31.757	
2,064.9	2,059.8	2,157.1	2,089.3	4.2	9.3	150.93	-585.9	-21.5	387.7	374.9	12.79	30.309	CC
2,100.0	2,094.8	2,191.0	2,121.5	4.3	9.5	149.61	-596.4	-23.0	387.8	374.7	13.10	29.603	ES
2,200.0	2,194.4	2,287.4	2,213.2	4.5	10.0	145.87	-626.3	-27.4	389.3	375.3	13.97	27.869	
2,300.0	2,294.0	2,383.9	2,304.8	4.8	10.6	142.17	-656.1	-31.9	392.6	377.8	14.82	26.488	
2,400.0	2,393.7	2,480.4	2,396.4	5.0	11.1	138.54	-685.9	-36.3	397.6	381.9	15.65	25.407	
2,500.0	2,493.3	2,576.8	2,488.0	5.2	11.7	135.01	-715.8	-40.7	404.3	387.8	16.45	24.580	
2,600.0	2,592.9	2,673.3	2,579.7	5.4	12.2	131.60	-745.6	-45.1	412.5	395.3	17.21	23.968	
2,700.0	2,692.5	2,769.8	2,671.3	5.7	12.8	128.32	-775.5	-49.5	422.2	404.3	17.94	23.537	
2,800.0	2,792.1	2,866.2	2,762.9	5.9	13.3	125.20	-805.3	-53.9	433.4	414.7	18.63	23.258	
2,900.0	2,891.8	2,962.7	2,854.5	6.1	13.9	122.23	-835.2	-58.4	445.8	426.5	19.29	23.109	
3,000.0	2,991.4	3,059.2	2,946.2	6.4	14.4	119.42	-865.0	-62.8	459.3	439.4	19.91	23.067	SF
3,100.0	3,091.0	3,155.6	3,037.8	6.6	15.0	116.77	-894.8	-67.2	474.0	453.5	20.50	23.116	
3,200.0	3,190.6	3,252.1	3,129.4	6.8	15.5	114.27	-924.7	-71.6	489.6	468.6	21.07	23.240	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2-4-21 (Proposed) - DD - 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
1,300.0	1,297.8	1,411.6	1,375.8	2.5	5.4	173.64	-332.7	-55.0	498.0	490.7	7.34	67.809	
1,400.0	1,397.5	1,509.2	1,464.1	2.7	6.1	169.20	-370.7	-71.9	492.0	483.6	8.36	58.858	
1,500.0	1,497.1	1,604.0	1,548.5	2.9	6.9	164.48	-410.2	-89.5	488.3	478.9	9.42	51.853	
1,559.8	1,556.6	1,659.2	1,597.0	3.1	7.4	161.57	-434.4	-100.2	487.7	477.6	10.07	48.429	CC
1,600.0	1,596.7	1,695.8	1,628.8	3.2	7.7	159.58	-450.8	-107.6	488.0	477.5	10.50	46.469	ES
1,700.0	1,696.3	1,784.7	1,705.1	3.4	8.6	154.57	-492.4	-126.0	491.8	480.2	11.59	42.448	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2A-21H - HZ - Plan #4

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	0.00	-604.7	259.7	29.1				
100.0	100.0	100.0	100.0	0.2	0.2	0.00	-604.7	259.7	29.1	28.8	0.30	95.977	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	-604.7	259.7	29.1	28.5	0.65	44.652	CC, ES
300.0	300.0	299.5	299.5	0.5	0.5	0.34	-603.9	259.9	30.0	29.0	1.00	29.963	
400.0	400.0	398.9	398.9	0.7	0.7	1.26	-601.3	260.4	32.6	31.2	1.35	24.105	
500.0	500.0	498.2	498.1	0.9	0.9	-139.33	-597.1	261.3	37.5	35.8	1.70	22.079	SF
600.0	600.0	597.2	596.9	1.0	1.1	-140.06	-591.3	262.6	45.4	43.4	2.05	22.198	
700.0	699.9	695.7	695.1	1.2	1.3	-141.30	-583.8	264.2	56.4	54.0	2.40	23.528	
800.0	799.7	793.7	792.6	1.4	1.5	-142.65	-574.7	266.1	70.4	67.7	2.75	25.597	
900.0	899.4	890.9	889.2	1.6	1.7	-143.90	-564.0	268.4	87.5	84.4	3.11	28.135	
1,000.0	999.0	987.4	984.9	1.8	2.0	-144.83	-551.9	271.0	106.9	103.5	3.47	30.779	
1,100.0	1,098.6	1,083.3	1,079.8	2.0	2.3	-145.26	-538.3	273.8	127.9	124.1	3.84	33.318	
1,200.0	1,198.2	1,178.5	1,173.7	2.3	2.6	-145.39	-523.2	277.0	150.5	146.3	4.21	35.773	
1,300.0	1,297.8	1,273.0	1,266.7	2.5	2.9	-145.34	-506.7	280.5	174.6	170.0	4.58	38.158	
1,400.0	1,397.5	1,366.7	1,358.6	2.7	3.3	-145.16	-488.9	284.3	200.2	195.3	4.95	40.487	
1,500.0	1,497.1	1,459.6	1,449.5	2.9	3.6	-144.92	-469.8	288.4	227.4	222.1	5.32	42.771	
1,600.0	1,596.7	1,551.7	1,539.2	3.2	4.0	-144.62	-449.5	292.7	256.0	250.3	5.69	45.017	
1,700.0	1,696.3	1,642.9	1,627.7	3.4	4.4	-144.31	-427.9	297.3	286.1	280.1	6.06	47.232	
1,800.0	1,795.9	1,734.9	1,716.7	3.6	4.8	-143.98	-404.9	302.2	317.6	311.2	6.43	49.384	
1,900.0	1,895.6	1,829.7	1,808.2	3.8	5.3	-143.69	-380.9	307.3	349.4	342.6	6.81	51.303	
2,000.0	1,995.2	1,924.5	1,899.8	4.1	5.7	-143.45	-356.9	312.4	381.2	374.0	7.19	53.018	
2,100.0	2,094.8	2,019.3	1,991.4	4.3	6.2	-143.24	-332.9	317.5	412.9	405.4	7.57	54.560	
2,200.0	2,194.4	2,114.2	2,083.0	4.5	6.6	-143.07	-308.9	322.6	444.7	436.8	7.95	55.953	
2,300.0	2,294.0	2,209.0	2,174.5	4.8	7.1	-142.91	-284.9	327.7	476.5	468.2	8.33	57.218	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2B-21H - 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	0.00	-615.6	259.7	18.2				
100.0	100.0	100.0	100.0	0.2	0.2	0.00	-615.6	259.7	18.2	17.9	0.30	59.991	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	-615.6	259.7	18.2	17.6	0.65	27.910	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	-615.6	259.7	18.2	17.2	1.00	18.185	CC, ES
400.0	400.0	399.7	399.7	0.7	0.7	0.91	-614.8	260.0	19.0	17.7	1.35	14.096	
500.0	500.0	499.3	499.3	0.9	0.9	-139.27	-612.4	260.9	22.2	20.5	1.70	13.044	SF
600.0	600.0	598.7	598.6	1.0	1.0	-139.87	-608.4	262.4	28.3	26.2	2.05	13.791	
700.0	699.9	697.8	697.4	1.2	1.2	-141.04	-602.7	264.5	37.3	34.9	2.40	15.539	
800.0	799.7	796.3	795.7	1.4	1.4	-142.24	-595.5	267.2	49.4	46.6	2.76	17.891	
900.0	899.4	894.3	893.2	1.6	1.7	-143.28	-586.8	270.5	64.4	61.3	3.12	20.618	
1,000.0	999.0	991.6	990.0	1.8	1.9	-143.87	-576.6	274.3	81.7	78.2	3.49	23.383	
1,100.0	1,098.6	1,088.5	1,086.0	2.0	2.2	-143.87	-564.9	278.6	100.4	96.6	3.86	25.991	
1,200.0	1,198.2	1,184.7	1,181.2	2.3	2.4	-143.55	-551.8	283.5	120.8	116.5	4.24	28.475	
1,300.0	1,297.8	1,280.2	1,275.5	2.5	2.7	-143.06	-537.2	288.9	142.6	138.0	4.62	30.862	
1,400.0	1,397.5	1,377.1	1,370.9	2.7	3.1	-142.55	-521.5	294.7	165.4	160.4	5.00	33.067	
1,500.0	1,497.1	1,474.5	1,466.7	2.9	3.4	-142.16	-505.7	300.6	188.3	182.9	5.39	34.953	
1,600.0	1,596.7	1,571.8	1,562.6	3.2	3.7	-141.85	-489.8	306.5	211.2	205.5	5.77	36.582	
1,700.0	1,696.3	1,669.1	1,658.4	3.4	4.0	-141.60	-474.0	312.4	234.1	228.0	6.16	38.003	
1,800.0	1,795.9	1,766.5	1,754.3	3.6	4.3	-141.40	-458.1	318.3	257.1	250.5	6.55	39.251	
1,900.0	1,895.6	1,863.8	1,850.2	3.8	4.7	-141.23	-442.3	324.2	280.0	273.0	6.94	40.357	
2,000.0	1,995.2	1,961.1	1,946.0	4.1	5.0	-141.09	-426.5	330.1	302.9	295.6	7.33	41.344	
2,100.0	2,094.8	2,058.5	2,041.9	4.3	5.3	-140.96	-410.6	336.0	325.8	318.1	7.72	42.228	
2,200.0	2,194.4	2,155.8	2,137.7	4.5	5.7	-140.85	-394.8	341.9	348.7	340.6	8.11	43.027	
2,300.0	2,294.0	2,253.1	2,233.6	4.8	6.0	-140.76	-378.9	347.8	371.7	363.2	8.50	43.750	
2,400.0	2,393.7	2,350.5	2,329.4	5.0	6.3	-140.67	-363.1	353.6	394.6	385.7	8.89	44.409	
2,500.0	2,493.3	2,447.8	2,425.3	5.2	6.7	-140.60	-347.2	359.5	417.5	408.2	9.28	45.011	
2,600.0	2,592.9	2,545.1	2,521.2	5.4	7.0	-140.53	-331.4	365.4	440.4	430.8	9.67	45.564	
2,700.0	2,692.5	2,642.5	2,617.0	5.7	7.4	-140.47	-315.6	371.3	463.4	453.3	10.06	46.073	
2,800.0	2,792.1	2,739.8	2,712.9	5.9	7.7	-140.42	-299.7	377.2	486.3	475.8	10.45	46.543	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2C-21H - 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	0.00	-622.9	259.7	10.9				
100.0	100.0	100.0	100.0	0.2	0.2	0.00	-622.9	259.7	10.9	10.6	0.30	36.000	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	-622.9	259.7	10.9	10.3	0.65	16.749	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	-622.9	259.7	10.9	9.9	1.00	10.913	
400.0	400.0	400.0	400.0	0.7	0.7	0.00	-622.9	259.7	10.9	9.6	1.35	8.093	CC, ES
500.0	500.0	499.8	499.8	0.9	0.9	-140.68	-622.3	260.3	12.2	10.5	1.70	7.192	
600.0	600.0	599.6	599.6	1.0	1.0	-140.02	-620.5	262.2	16.1	14.1	2.05	7.853	
700.0	699.9	699.1	699.0	1.2	1.2	-139.42	-617.4	265.2	22.6	20.2	2.41	9.378	
800.0	799.7	798.4	798.1	1.4	1.4	-138.97	-613.1	269.5	31.6	28.9	2.77	11.410	
900.0	899.4	897.2	896.6	1.6	1.6	-138.65	-607.7	275.0	43.2	40.1	3.15	13.743	
1,000.0	999.0	996.4	995.4	1.8	1.8	-138.48	-601.6	281.1	56.2	52.6	3.53	15.919	
1,100.0	1,098.6	1,095.5	1,094.2	2.0	2.0	-138.37	-595.5	287.2	69.1	65.2	3.91	17.651	
1,200.0	1,198.2	1,194.7	1,193.0	2.3	2.3	-138.29	-589.4	293.3	82.0	77.7	4.30	19.060	
1,300.0	1,297.8	1,293.9	1,291.7	2.5	2.5	-138.24	-583.2	299.4	94.9	90.2	4.69	20.226	
1,400.0	1,397.5	1,393.0	1,390.5	2.7	2.7	-138.20	-577.1	305.5	107.9	102.8	5.09	21.206	
1,500.0	1,497.1	1,492.2	1,489.3	2.9	2.9	-138.16	-571.0	311.6	120.8	115.3	5.48	22.040	
1,600.0	1,596.7	1,591.4	1,588.1	3.2	3.1	-138.14	-564.9	317.7	133.7	127.8	5.88	22.759	
1,700.0	1,696.3	1,690.5	1,686.9	3.4	3.4	-138.12	-558.8	323.9	146.6	140.4	6.27	23.383	
1,800.0	1,795.9	1,789.7	1,785.7	3.6	3.6	-138.10	-552.7	330.0	159.6	152.9	6.67	23.931	
1,900.0	1,895.6	1,888.8	1,884.4	3.8	3.8	-138.08	-546.6	336.1	172.5	165.4	7.07	24.416	
2,000.0	1,995.2	1,988.0	1,983.2	4.1	4.0	-138.07	-540.5	342.2	185.4	178.0	7.46	24.847	
2,100.0	2,094.8	2,087.2	2,082.0	4.3	4.3	-138.06	-534.4	348.3	198.4	190.5	7.86	25.233	
2,200.0	2,194.4	2,186.3	2,180.8	4.5	4.5	-138.05	-528.2	354.4	211.3	203.0	8.26	25.581	
2,300.0	2,294.0	2,285.5	2,279.6	4.8	4.7	-138.04	-522.1	360.5	224.2	215.6	8.66	25.896	
2,400.0	2,393.7	2,384.6	2,378.4	5.0	5.0	-138.03	-516.0	366.6	237.1	228.1	9.06	26.183	
2,500.0	2,493.3	2,483.8	2,477.1	5.2	5.2	-138.02	-509.9	372.7	250.1	240.6	9.46	26.445	
2,600.0	2,592.9	2,583.0	2,575.9	5.4	5.4	-138.02	-503.8	378.9	263.0	253.1	9.86	26.685	
2,700.0	2,692.5	2,682.1	2,674.7	5.7	5.6	-138.01	-497.7	385.0	275.9	265.7	10.25	26.905	
2,800.0	2,792.1	2,781.3	2,773.5	5.9	5.9	-138.01	-491.6	391.1	288.8	278.2	10.65	27.109	
2,900.0	2,891.8	2,880.4	2,872.3	6.1	6.1	-138.00	-485.5	397.2	301.8	290.7	11.05	27.298	
3,000.0	2,991.4	2,979.6	2,971.1	6.4	6.3	-138.00	-479.4	403.3	314.7	303.2	11.45	27.473	
3,100.0	3,091.0	3,078.8	3,069.8	6.6	6.5	-137.99	-473.2	409.4	327.6	315.8	11.85	27.637	
3,200.0	3,190.6	3,177.9	3,168.6	6.8	6.8	-137.99	-467.1	415.5	340.5	328.3	12.25	27.789	
3,300.0	3,290.2	3,277.1	3,267.4	7.1	7.0	-137.98	-461.0	421.6	353.5	340.8	12.66	27.931	
3,400.0	3,389.9	3,376.3	3,366.2	7.3	7.2	-137.98	-454.9	427.7	366.4	353.3	13.06	28.065	
3,500.0	3,489.5	3,478.3	3,467.8	7.5	7.5	-138.01	-448.8	433.8	379.1	365.7	13.46	28.171	
3,600.0	3,589.1	3,582.8	3,572.1	7.8	7.7	-138.20	-443.8	438.8	390.6	376.8	13.85	28.196	
3,700.0	3,688.7	3,687.6	3,676.8	8.0	7.9	-138.57	-440.1	442.5	400.8	386.6	14.24	28.145	
3,800.0	3,788.3	3,792.5	3,781.7	8.2	8.0	-139.11	-437.8	444.9	409.7	395.1	14.62	28.026	
3,900.0	3,887.9	3,897.6	3,886.8	8.4	8.2	-139.81	-436.8	445.8	417.3	402.3	14.98	27.848	
4,000.0	3,987.6	3,998.4	3,987.6	8.7	8.3	-140.57	-436.8	445.9	424.0	408.7	15.34	27.643	
4,100.0	4,087.2	4,098.0	4,087.2	8.9	8.5	-141.31	-436.8	445.9	430.8	415.1	15.69	27.455	
4,200.0	4,186.8	4,197.7	4,186.8	9.1	8.6	-142.02	-436.8	445.9	437.5	421.4	16.04	27.268	
4,300.0	4,286.6	4,297.4	4,286.6	9.3	8.8	-142.61	-436.8	445.9	443.0	426.6	16.39	27.029	
4,400.0	4,386.4	4,397.3	4,386.4	9.5	8.9	-143.05	-436.8	445.9	447.2	430.5	16.73	26.732	
4,500.0	4,486.4	4,497.2	4,486.4	9.7	9.1	-143.33	-436.8	445.9	450.0	433.0	17.06	26.378	
4,600.0	4,586.4	4,597.2	4,586.4	9.8	9.2	-143.48	-436.8	445.9	451.5	434.1	17.38	25.969	
4,700.0	4,686.4	4,697.2	4,686.4	10.0	9.4	-2.50	-436.8	445.9	451.7	433.5	18.13	24.915	
4,800.0	4,786.4	4,797.2	4,786.4	10.1	9.5	-2.50	-436.8	445.9	451.7	433.2	18.44	24.488	
4,900.0	4,886.4	4,897.2	4,886.4	10.3	9.7	-2.50	-436.8	445.9	451.7	432.9	18.76	24.074	
5,000.0	4,986.4	4,997.2	4,986.4	10.4	9.8	-2.50	-436.8	445.9	451.7	432.6	19.08	23.673	
5,100.0	5,086.4	5,097.2	5,086.4	10.6	10.0	-2.50	-436.8	445.9	451.7	432.3	19.40	23.283	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2C-21H - 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	5,186.4	5,197.2	5,186.4	10.7	10.2	-2.50	-436.8	445.9	451.7	431.9	19.72	22.905	
5,300.0	5,286.4	5,297.2	5,286.4	10.9	10.3	-2.50	-436.8	445.9	451.7	431.6	20.04	22.538	
5,400.0	5,386.4	5,397.2	5,386.4	11.0	10.5	-2.50	-436.8	445.9	451.7	431.3	20.36	22.181	
5,500.0	5,486.4	5,497.2	5,486.4	11.2	10.6	-2.50	-436.8	445.9	451.7	431.0	20.68	21.835	
5,600.0	5,586.4	5,597.2	5,586.4	11.3	10.8	-2.50	-436.8	445.9	451.7	430.6	21.01	21.499	
5,700.0	5,686.4	5,697.2	5,686.4	11.5	10.9	-2.50	-436.8	445.9	451.7	430.3	21.33	21.171	
5,800.0	5,786.4	5,797.2	5,786.4	11.6	11.1	-2.50	-436.8	445.9	451.7	430.0	21.66	20.853	
5,900.0	5,886.4	5,897.2	5,886.4	11.8	11.3	-2.50	-436.8	445.9	451.7	429.7	21.98	20.544	
6,000.0	5,986.4	5,997.2	5,986.4	11.9	11.4	-2.50	-436.8	445.9	451.7	429.3	22.31	20.243	
6,100.0	6,086.4	6,097.2	6,086.4	12.1	11.6	-2.50	-436.8	445.9	451.7	429.0	22.64	19.951	
6,200.0	6,186.4	6,197.2	6,186.4	12.2	11.7	-2.50	-436.8	445.9	451.7	428.7	22.97	19.666	
6,300.0	6,286.4	6,297.2	6,286.4	12.4	11.9	-2.50	-436.8	445.9	451.7	428.4	23.30	19.388	
6,400.0	6,386.4	6,397.2	6,386.4	12.5	12.1	-2.50	-436.8	445.9	451.7	428.0	23.62	19.118	
6,500.0	6,486.3	6,497.1	6,486.3	12.7	12.2	87.86	-436.8	445.9	451.5	427.9	23.61	19.123	
6,600.0	6,585.0	6,595.4	6,584.4	12.7	12.3	89.34	-436.8	441.9	451.3	427.4	23.83	18.935	
6,642.3	6,625.9	6,637.2	6,625.8	12.7	12.4	89.99	-436.8	436.3	451.2	427.3	23.89	18.890	
6,700.0	6,680.5	6,694.8	6,682.2	12.8	12.4	90.88	-436.8	424.7	451.3	427.3	23.95	18.844	
6,800.0	6,771.1	6,795.9	6,778.3	12.8	12.5	92.42	-436.8	393.5	451.6	427.6	24.03	18.796	
6,900.0	6,854.9	6,898.8	6,870.6	12.8	12.5	93.92	-436.8	348.2	452.3	428.1	24.18	18.709	
7,000.0	6,930.3	7,003.5	6,956.8	13.0	12.6	95.36	-436.8	288.9	453.2	428.7	24.55	18.463	
7,100.0	6,995.8	7,110.1	7,034.8	13.3	12.9	96.69	-436.8	216.4	454.4	429.0	25.33	17.937	
7,200.0	7,050.2	7,218.4	7,102.1	14.0	13.5	97.89	-436.8	131.7	455.6	428.9	26.70	17.061	
7,300.0	7,092.4	7,328.4	7,156.6	15.1	14.5	98.92	-436.8	36.4	456.8	428.0	28.78	15.873	
7,400.0	7,121.6	7,439.7	7,196.3	16.5	15.9	99.78	-436.8	-67.6	458.0	426.4	31.57	14.504	
7,500.0	7,137.3	7,552.2	7,219.6	18.2	17.8	100.42	-436.8	-177.6	458.9	423.9	34.99	13.113	
7,600.0	7,139.4	7,664.7	7,225.4	20.0	19.8	100.79	-436.8	-289.7	459.4	420.6	38.86	11.824	
7,700.0	7,137.7	7,764.7	7,223.7	22.0	21.8	100.79	-436.8	-389.7	459.4	416.7	42.77	10.741	
7,800.0	7,135.9	7,864.7	7,221.9	24.1	23.9	100.79	-436.8	-489.7	459.4	412.6	46.86	9.804	
7,900.0	7,134.2	7,964.7	7,220.2	26.2	26.0	100.79	-436.8	-589.7	459.5	408.4	51.08	8.994	
8,000.0	7,132.5	8,064.7	7,218.4	28.4	28.2	100.79	-436.8	-689.7	459.5	404.0	55.41	8.292	
8,100.0	7,130.7	8,164.7	7,216.7	30.6	30.4	100.79	-436.8	-789.7	459.5	399.6	59.82	7.681	
8,200.0	7,129.0	8,264.7	7,214.9	32.9	32.7	100.79	-436.8	-889.6	459.5	395.2	64.30	7.146	
8,300.0	7,127.2	8,364.7	7,213.2	35.2	35.0	100.79	-436.8	-989.6	459.5	390.7	68.82	6.676	
8,400.0	7,125.5	8,464.7	7,211.4	37.5	37.3	100.79	-436.8	-1,089.6	459.5	386.1	73.39	6.261	
8,500.0	7,123.7	8,564.7	7,209.7	39.9	39.6	100.78	-436.8	-1,189.6	459.5	381.5	78.00	5.891	
8,600.0	7,122.0	8,664.7	7,208.0	42.2	42.0	100.78	-436.8	-1,289.6	459.5	376.9	82.63	5.561	
8,700.0	7,120.2	8,764.7	7,206.2	44.6	44.4	100.78	-436.8	-1,389.6	459.5	372.2	87.29	5.264	
8,800.0	7,118.5	8,864.7	7,204.5	47.0	46.7	100.78	-436.8	-1,489.5	459.5	367.6	91.97	4.997	
8,900.0	7,116.7	8,964.7	7,202.7	49.3	49.1	100.78	-436.8	-1,589.5	459.6	362.9	96.67	4.754	
9,000.0	7,115.0	9,064.7	7,201.0	51.7	51.5	100.78	-436.8	-1,689.5	459.6	358.2	101.38	4.533	
9,100.0	7,113.3	9,164.7	7,199.2	54.1	53.9	100.78	-436.8	-1,789.5	459.6	353.5	106.11	4.331	
9,200.0	7,111.5	9,264.7	7,197.5	56.5	56.3	100.78	-436.8	-1,889.5	459.6	348.7	110.85	4.146	
9,300.0	7,109.8	9,364.7	7,195.7	59.0	58.8	100.78	-436.8	-1,989.5	459.6	344.0	115.60	3.976	
9,400.0	7,108.0	9,464.7	7,194.0	61.4	61.2	100.78	-436.8	-2,089.5	459.6	339.2	120.35	3.819	
9,500.0	7,106.3	9,564.7	7,192.2	63.8	63.6	100.78	-436.8	-2,189.4	459.6	334.5	125.12	3.673	
9,600.0	7,104.5	9,664.7	7,190.5	66.2	66.0	100.78	-436.8	-2,289.4	459.6	329.7	129.89	3.538	
9,700.0	7,102.8	9,764.7	7,188.8	68.7	68.5	100.78	-436.8	-2,389.4	459.6	325.0	134.67	3.413	
9,800.0	7,101.0	9,864.7	7,187.0	71.1	70.9	100.78	-436.7	-2,489.4	459.6	320.2	139.46	3.296	
9,900.0	7,099.3	9,964.7	7,185.3	73.5	73.3	100.78	-436.7	-2,589.4	459.7	315.4	144.25	3.187	
10,000.0	7,097.5	10,064.7	7,183.5	76.0	75.8	100.78	-436.7	-2,689.4	459.7	310.6	149.04	3.084	
10,100.0	7,095.8	10,164.7	7,181.8	78.4	78.2	100.78	-436.7	-2,789.3	459.7	305.8	153.84	2.988	
10,200.0	7,094.1	10,264.7	7,180.0	80.9	80.6	100.78	-436.7	-2,889.3	459.7	301.0	158.64	2.898	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2C-21H - 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	7,092.3	10,364.7	7,178.3	83.3	83.1	100.78	-436.7	-2,989.3	459.7	296.2	163.45	2.812	
10,400.0	7,090.6	10,464.7	7,176.5	85.7	85.5	100.78	-436.7	-3,089.3	459.7	291.4	168.26	2.732	
10,500.0	7,088.8	10,564.7	7,174.8	88.2	88.0	100.78	-436.7	-3,189.3	459.7	286.6	173.07	2.656	
10,600.0	7,087.1	10,664.7	7,173.0	90.6	90.4	100.78	-436.7	-3,289.3	459.7	281.8	177.88	2.584	
10,700.0	7,085.3	10,764.7	7,171.3	93.1	92.9	100.78	-436.7	-3,389.3	459.7	277.0	182.70	2.516	
10,800.0	7,083.6	10,864.7	7,169.6	95.5	95.3	100.78	-436.7	-3,489.2	459.7	272.2	187.52	2.452	
10,900.0	7,081.8	10,964.7	7,167.8	98.0	97.8	100.78	-436.7	-3,589.2	459.8	267.4	192.34	2.390	
11,000.0	7,080.1	11,064.7	7,166.1	100.4	100.2	100.78	-436.7	-3,689.2	459.8	262.6	197.16	2.332	
11,100.0	7,078.4	11,164.7	7,164.3	102.9	102.7	100.78	-436.7	-3,789.2	459.8	257.8	201.99	2.276	
11,200.0	7,076.6	11,264.7	7,162.6	105.4	105.1	100.78	-436.7	-3,889.2	459.8	253.0	206.82	2.223	
11,300.0	7,074.9	11,364.7	7,160.8	107.8	107.6	100.78	-436.7	-3,989.2	459.8	248.1	211.65	2.172	
11,400.0	7,073.1	11,464.7	7,159.1	110.3	110.1	100.78	-436.7	-4,089.1	459.8	243.3	216.48	2.124	
11,500.0	7,071.4	11,564.7	7,157.3	112.7	112.5	100.78	-436.7	-4,189.1	459.8	238.5	221.31	2.078	
11,600.0	7,069.6	11,664.7	7,155.6	115.2	115.0	100.78	-436.7	-4,289.1	459.8	233.7	226.14	2.033	
11,609.7	7,069.5	11,674.4	7,155.4	115.4	115.2	100.78	-436.7	-4,298.8	459.8	233.2	226.61	2.029	
11,624.4	7,069.2	11,687.5	7,155.2	115.8	115.5	100.78	-436.7	-4,311.9	459.8	232.5	227.28	2.023	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2E-21H - 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	180.00	-644.8	259.7	10.9				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-644.8	259.7	10.9	10.6	0.30	35.972	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-644.8	259.7	10.9	10.3	0.65	16.736	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-644.8	259.7	10.9	9.9	1.00	10.905	
400.0	400.0	400.0	400.0	0.7	0.7	180.00	-644.8	259.7	10.9	9.6	1.35	8.087	CC
500.0	500.0	499.8	499.8	0.9	0.9	40.44	-645.6	260.0	11.1	9.4	1.70	6.517	ES
600.0	600.0	599.6	599.6	1.0	1.0	44.54	-648.1	260.8	11.6	9.5	2.05	5.647	
700.0	699.9	699.4	699.3	1.2	1.2	50.57	-652.2	262.1	12.5	10.1	2.41	5.204	
800.0	799.7	799.2	798.9	1.4	1.4	57.52	-658.0	264.0	14.1	11.3	2.78	5.055	
900.0	899.4	899.0	898.3	1.6	1.6	64.40	-665.4	266.4	16.3	13.1	3.18	5.113	
1,000.0	999.0	998.7	997.6	1.8	1.8	68.17	-674.5	269.4	19.5	15.9	3.60	5.419	
1,100.0	1,098.6	1,098.3	1,096.6	2.0	2.1	67.68	-685.2	272.9	23.9	19.9	4.02	5.958	
1,200.0	1,198.2	1,197.8	1,195.3	2.3	2.3	64.91	-697.5	276.9	29.6	25.2	4.43	6.677	
1,300.0	1,297.8	1,297.2	1,293.5	2.5	2.6	61.21	-711.5	281.4	36.6	31.8	4.84	7.564	
1,400.0	1,397.5	1,396.2	1,391.2	2.7	2.9	57.38	-726.9	286.4	45.1	39.9	5.24	8.613	
1,500.0	1,497.1	1,495.7	1,489.2	2.9	3.2	54.21	-743.4	291.8	54.5	48.9	5.63	9.688	
1,600.0	1,596.7	1,595.2	1,587.2	3.2	3.6	51.97	-759.8	297.1	64.0	58.0	6.02	10.642	
1,700.0	1,696.3	1,694.7	1,685.2	3.4	3.9	50.32	-776.3	302.4	73.6	67.2	6.41	11.488	
1,800.0	1,795.9	1,794.2	1,783.2	3.6	4.2	49.05	-792.7	307.8	83.3	76.5	6.80	12.242	
1,900.0	1,895.6	1,893.8	1,881.2	3.8	4.6	48.04	-809.1	313.1	93.0	85.8	7.20	12.917	
2,000.0	1,995.2	1,993.3	1,979.2	4.1	4.9	47.22	-825.6	318.5	102.7	95.1	7.59	13.524	
2,100.0	2,094.8	2,092.8	2,077.2	4.3	5.2	46.54	-842.0	323.8	112.4	104.4	7.99	14.073	
2,200.0	2,194.4	2,192.3	2,175.2	4.5	5.6	45.97	-858.4	329.1	122.1	113.7	8.38	14.570	
2,300.0	2,294.0	2,291.8	2,273.2	4.8	5.9	45.49	-874.9	334.5	131.8	123.1	8.78	15.023	
2,400.0	2,393.7	2,391.4	2,371.2	5.0	6.3	45.07	-891.3	339.8	141.6	132.4	9.17	15.438	
2,500.0	2,493.3	2,490.9	2,469.2	5.2	6.6	44.71	-907.7	345.2	151.3	141.8	9.57	15.819	
2,600.0	2,592.9	2,590.4	2,567.2	5.4	6.9	44.39	-924.2	350.5	161.1	151.1	9.96	16.169	
2,700.0	2,692.5	2,689.9	2,665.3	5.7	7.3	44.10	-940.6	355.8	170.9	160.5	10.36	16.493	
2,800.0	2,792.1	2,789.4	2,763.3	5.9	7.6	43.85	-957.0	361.2	180.6	169.9	10.76	16.794	
2,900.0	2,891.8	2,889.0	2,861.3	6.1	8.0	43.62	-973.5	366.5	190.4	179.2	11.15	17.072	
3,000.0	2,991.4	2,988.5	2,959.3	6.4	8.3	43.42	-989.9	371.9	200.2	188.6	11.55	17.332	
3,100.0	3,091.0	3,088.0	3,057.3	6.6	8.7	43.23	-1,006.3	377.2	209.9	198.0	11.95	17.575	
3,200.0	3,190.6	3,187.5	3,155.3	6.8	9.0	43.06	-1,022.8	382.5	219.7	207.4	12.34	17.802	
3,300.0	3,290.2	3,287.0	3,253.3	7.1	9.3	42.91	-1,039.2	387.9	229.5	216.8	12.74	18.015	
3,400.0	3,389.9	3,386.6	3,351.3	7.3	9.7	42.77	-1,055.7	393.2	239.3	226.1	13.14	18.215	
3,500.0	3,489.5	3,486.1	3,449.3	7.5	10.0	42.64	-1,072.1	398.6	249.1	235.5	13.53	18.403	
3,600.0	3,589.1	3,585.6	3,547.3	7.8	10.4	42.51	-1,088.5	403.9	258.8	244.9	13.93	18.581	
3,700.0	3,688.7	3,685.1	3,645.3	8.0	10.7	42.40	-1,105.0	409.2	268.6	254.3	14.33	18.749	
3,800.0	3,788.3	3,784.6	3,743.3	8.2	11.1	42.30	-1,121.4	414.6	278.4	263.7	14.72	18.907	
3,900.0	3,887.9	3,884.1	3,841.3	8.4	11.4	42.20	-1,137.8	419.9	288.2	273.1	15.12	19.058	
4,000.0	3,987.6	3,983.7	3,939.3	8.7	11.8	42.11	-1,154.3	425.3	298.0	282.5	15.52	19.200	
4,100.0	4,087.2	4,083.2	4,037.4	8.9	12.1	42.02	-1,170.7	430.6	307.8	291.8	15.92	19.336	
4,200.0	4,186.8	4,182.7	4,135.3	9.1	12.5	41.95	-1,187.1	435.9	317.7	301.4	16.31	19.478	
4,300.0	4,286.6	4,282.1	4,233.2	9.3	12.8	41.75	-1,203.5	441.3	328.8	312.1	16.67	19.716	
4,400.0	4,386.4	4,381.3	4,330.9	9.5	13.2	41.38	-1,219.9	446.6	341.1	324.1	17.01	20.057	
4,500.0	4,486.4	4,480.2	4,428.4	9.7	13.5	40.87	-1,236.3	451.9	354.8	337.5	17.31	20.494	
4,600.0	4,586.4	4,579.0	4,525.6	9.8	13.8	40.23	-1,252.6	457.2	369.9	352.3	17.59	21.025	
4,700.0	4,686.4	4,683.8	4,629.0	10.0	14.2	-179.55	-1,269.1	462.6	385.4	362.4	22.99	16.760	
4,800.0	4,786.4	4,789.6	4,733.7	10.1	14.5	179.73	-1,283.9	467.4	399.4	375.9	23.51	16.988	
4,900.0	4,886.4	4,896.0	4,839.1	10.3	14.8	179.14	-1,297.0	471.6	411.8	387.8	24.00	17.159	
5,000.0	4,986.4	5,002.8	4,945.3	10.4	15.1	178.67	-1,308.3	475.3	422.3	397.9	24.45	17.277	
5,100.0	5,086.4	5,110.1	5,052.1	10.6	15.3	178.29	-1,317.7	478.3	431.2	406.3	24.86	17.344	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2E-21H - 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	5,186.4	5,217.6	5,159.4	10.7	15.5	178.00	-1,325.2	480.8	438.2	413.0	25.24	17.360	
5,300.0	5,286.4	5,325.5	5,267.0	10.9	15.7	177.79	-1,330.8	482.6	443.5	417.9	25.60	17.328	
5,400.0	5,386.4	5,433.5	5,375.0	11.0	15.8	177.66	-1,334.5	483.8	447.0	421.0	25.92	17.247	
5,500.0	5,486.4	5,541.6	5,483.1	11.2	16.0	177.59	-1,336.2	484.4	448.6	422.4	26.21	17.118	
5,600.0	5,586.4	5,644.9	5,586.4	11.3	16.1	177.59	-1,336.4	484.4	448.7	422.3	26.48	16.949	
5,700.0	5,686.4	5,744.9	5,686.4	11.5	16.2	177.59	-1,336.4	484.4	448.7	422.0	26.74	16.779	
5,800.0	5,786.4	5,844.9	5,786.4	11.6	16.3	177.59	-1,336.4	484.4	448.7	421.7	27.01	16.611	
5,900.0	5,886.4	5,944.9	5,886.4	11.8	16.4	177.59	-1,336.4	484.4	448.7	421.5	27.29	16.446	
6,000.0	5,986.4	6,044.9	5,986.4	11.9	16.5	177.59	-1,336.4	484.4	448.7	421.2	27.56	16.283	
6,100.0	6,086.4	6,144.9	6,086.4	12.1	16.6	177.59	-1,336.4	484.4	448.7	420.9	27.83	16.123	
6,200.0	6,186.4	6,244.9	6,186.4	12.2	16.7	177.59	-1,336.4	484.4	448.7	420.6	28.11	15.964	
6,300.0	6,286.4	6,344.9	6,286.4	12.4	16.8	177.59	-1,336.4	484.4	448.7	420.4	28.39	15.809	
6,400.0	6,386.4	6,444.9	6,386.4	12.5	17.0	177.59	-1,336.4	484.4	448.7	420.1	28.66	15.655	
6,413.8	6,400.2	6,458.7	6,400.2	12.5	17.0	-92.42	-1,336.4	484.4	448.7	425.3	23.40	19.175	
6,500.0	6,486.3	6,544.8	6,486.3	12.7	17.1	-92.75	-1,336.4	484.4	448.9	425.2	23.64	18.988	
6,600.0	6,585.0	6,646.4	6,587.8	12.7	17.2	-94.41	-1,336.4	482.0	449.7	426.0	23.73	18.947	
6,700.0	6,680.5	6,751.6	6,691.6	12.8	17.2	-96.19	-1,336.4	465.8	451.0	427.3	23.76	18.982	
6,800.0	6,771.1	6,859.1	6,794.1	12.8	17.2	-97.85	-1,336.4	433.6	452.6	428.8	23.82	19.006	
6,900.0	6,854.9	6,968.9	6,892.6	12.8	17.2	-99.36	-1,336.4	385.4	454.5	430.4	24.01	18.925	
7,000.0	6,930.3	7,080.8	6,984.2	13.0	17.3	-100.68	-1,336.4	321.3	456.3	431.8	24.49	18.631	
7,100.0	6,995.8	7,194.6	7,066.0	13.3	17.4	-101.77	-1,336.4	242.3	458.0	432.6	25.39	18.039	
7,200.0	7,050.2	7,310.1	7,135.2	14.0	17.7	-102.60	-1,336.4	150.0	459.4	432.5	26.88	17.092	
7,300.0	7,092.4	7,426.7	7,189.0	15.1	18.3	-103.16	-1,336.4	46.7	460.4	431.4	29.03	15.861	
7,400.0	7,121.6	7,544.1	7,225.6	16.5	19.3	-103.42	-1,336.4	-64.7	460.9	429.1	31.82	14.483	
7,500.0	7,137.3	7,661.6	7,243.6	18.2	20.7	-103.37	-1,336.4	-180.7	460.8	425.6	35.18	13.098	
7,600.0	7,139.4	7,771.0	7,244.5	20.0	22.4	-103.19	-1,336.4	-290.0	460.5	421.6	38.84	11.854	
7,700.0	7,137.7	7,871.0	7,242.7	22.0	24.1	-103.19	-1,336.4	-390.0	460.5	417.7	42.74	10.773	
7,800.0	7,135.9	7,971.0	7,241.0	24.1	26.0	-103.19	-1,336.4	-490.0	460.4	413.6	46.81	9.836	
7,900.0	7,134.2	8,071.0	7,239.3	26.2	28.0	-103.19	-1,336.4	-590.0	460.4	409.4	51.01	9.027	
8,000.0	7,132.5	8,171.0	7,237.5	28.4	30.0	-103.19	-1,336.4	-690.0	460.4	405.1	55.31	8.325	
8,100.0	7,130.7	8,271.0	7,235.8	30.6	32.2	-103.19	-1,336.4	-790.0	460.4	400.7	59.69	7.714	
8,200.0	7,129.0	8,371.0	7,234.0	32.9	34.3	-103.19	-1,336.4	-890.0	460.4	396.3	64.13	7.179	
8,300.0	7,127.2	8,471.0	7,232.3	35.2	36.6	-103.19	-1,336.4	-989.9	460.4	391.8	68.62	6.709	
8,400.0	7,125.5	8,571.0	7,230.5	37.5	38.8	-103.19	-1,336.4	-1,089.9	460.4	387.3	73.16	6.293	
8,500.0	7,123.7	8,671.0	7,228.8	39.9	41.1	-103.19	-1,336.4	-1,189.9	460.4	382.7	77.73	5.923	
8,600.0	7,122.0	8,771.0	7,227.0	42.2	43.4	-103.19	-1,336.4	-1,289.9	460.4	378.1	82.32	5.593	
8,700.0	7,120.2	8,871.0	7,225.3	44.6	45.7	-103.19	-1,336.4	-1,389.9	460.4	373.5	86.95	5.295	
8,800.0	7,118.5	8,971.0	7,223.6	47.0	48.0	-103.19	-1,336.4	-1,489.9	460.4	368.8	91.59	5.027	
8,900.0	7,116.7	9,071.0	7,221.8	49.3	50.4	-103.19	-1,336.4	-1,589.9	460.4	364.2	96.25	4.784	
9,000.0	7,115.0	9,171.0	7,220.1	51.7	52.8	-103.19	-1,336.4	-1,689.8	460.4	359.5	100.92	4.562	
9,100.0	7,113.3	9,271.0	7,218.3	54.1	55.1	-103.19	-1,336.5	-1,789.8	460.4	354.8	105.61	4.359	
9,200.0	7,111.5	9,371.0	7,216.6	56.5	57.5	-103.19	-1,336.5	-1,889.8	460.4	350.1	110.30	4.174	
9,300.0	7,109.8	9,471.0	7,214.8	59.0	59.9	-103.19	-1,336.5	-1,989.8	460.4	345.4	115.01	4.003	
9,400.0	7,108.0	9,571.0	7,213.1	61.4	62.3	-103.19	-1,336.5	-2,089.8	460.4	340.6	119.73	3.845	
9,500.0	7,106.3	9,671.0	7,211.3	63.8	64.7	-103.19	-1,336.5	-2,189.8	460.4	335.9	124.45	3.699	
9,600.0	7,104.5	9,771.0	7,209.6	66.2	67.1	-103.19	-1,336.5	-2,289.7	460.4	331.2	129.18	3.564	
9,700.0	7,102.8	9,871.0	7,207.8	68.7	69.5	-103.19	-1,336.5	-2,389.7	460.4	326.4	133.92	3.438	
9,800.0	7,101.0	9,971.0	7,206.1	71.1	71.9	-103.19	-1,336.5	-2,489.7	460.4	321.7	138.66	3.320	
9,900.0	7,099.3	10,071.0	7,204.4	73.5	74.3	-103.19	-1,336.5	-2,589.7	460.4	316.9	143.41	3.210	
10,000.0	7,097.5	10,171.0	7,202.6	76.0	76.8	-103.19	-1,336.5	-2,689.7	460.3	312.2	148.16	3.107	
10,100.0	7,095.8	10,271.0	7,200.9	78.4	79.2	-103.19	-1,336.5	-2,789.7	460.3	307.4	152.92	3.010	
10,200.0	7,094.1	10,371.0	7,199.1	80.9	81.6	-103.19	-1,336.5	-2,889.7	460.3	302.7	157.68	2.919	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2E-21H - 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	7,092.3	10,471.0	7,197.4	83.3	84.0	-103.19	-1,336.5	-2,989.6	460.3	297.9	162.45	2.834	
10,400.0	7,090.6	10,571.0	7,195.6	85.7	86.5	-103.19	-1,336.5	-3,089.6	460.3	293.1	167.21	2.753	
10,500.0	7,088.8	10,671.0	7,193.9	88.2	88.9	-103.19	-1,336.5	-3,189.6	460.3	288.3	171.98	2.677	
10,600.0	7,087.1	10,771.0	7,192.1	90.6	91.4	-103.20	-1,336.5	-3,289.6	460.3	283.6	176.75	2.604	
10,700.0	7,085.3	10,871.0	7,190.4	93.1	93.8	-103.20	-1,336.5	-3,389.6	460.3	278.8	181.53	2.536	
10,800.0	7,083.6	10,971.0	7,188.6	95.5	96.2	-103.20	-1,336.5	-3,489.6	460.3	274.0	186.31	2.471	
10,900.0	7,081.8	11,071.0	7,186.9	98.0	98.7	-103.20	-1,336.5	-3,589.5	460.3	269.2	191.08	2.409	
11,000.0	7,080.1	11,171.0	7,185.2	100.4	101.1	-103.20	-1,336.5	-3,689.5	460.3	264.4	195.87	2.350	
11,100.0	7,078.4	11,271.0	7,183.4	102.9	103.6	-103.20	-1,336.5	-3,789.5	460.3	259.6	200.65	2.294	
11,200.0	7,076.6	11,371.0	7,181.7	105.4	106.0	-103.20	-1,336.5	-3,889.5	460.3	254.9	205.43	2.241	
11,300.0	7,074.9	11,471.0	7,179.9	107.8	108.5	-103.20	-1,336.5	-3,989.5	460.3	250.1	210.22	2.190	
11,400.0	7,073.1	11,571.0	7,178.2	110.3	110.9	-103.20	-1,336.5	-4,089.5	460.3	245.3	215.01	2.141	
11,500.0	7,071.4	11,671.0	7,176.4	112.7	113.4	-103.20	-1,336.5	-4,189.5	460.3	240.5	219.79	2.094	
11,600.0	7,069.6	11,771.0	7,174.7	115.2	115.8	-103.20	-1,336.5	-4,289.4	460.3	235.7	224.58	2.049	
11,620.8	7,069.3	11,791.8	7,174.3	115.7	116.3	-103.20	-1,336.5	-4,310.2	460.3	234.7	225.58	2.040	
11,624.4	7,069.2	11,793.6	7,174.3	115.8	116.4	-103.20	-1,336.5	-4,312.1	460.3	234.6	225.71	2.039	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 2F-21H - 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	180.00	-655.7	259.7	21.9				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-655.7	259.7	21.9	21.5	0.30	71.959	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-655.7	259.7	21.9	21.2	0.65	33.478	
233.3	233.3	233.3	233.3	0.4	0.4	180.00	-655.7	259.7	21.9	21.1	0.77	28.412 CC	
300.0	300.0	299.8	299.8	0.5	0.5	179.89	-655.9	259.8	22.1	21.1	1.00	22.033 ES	
400.0	400.0	399.4	399.4	0.7	0.7	179.10	-657.6	260.1	23.8	22.4	1.35	17.598	
500.0	500.0	498.9	498.9	0.9	0.9	37.93	-661.0	260.8	26.5	24.8	1.70	15.608	
600.0	600.0	598.4	598.2	1.0	1.0	39.28	-666.1	261.7	29.6	27.5	2.05	14.442	
700.0	699.9	697.8	697.4	1.2	1.3	41.68	-672.9	263.1	33.1	30.7	2.40	13.754	
800.0	799.7	797.1	796.3	1.4	1.5	44.74	-681.3	264.7	37.0	34.2	2.77	13.366	
900.0	899.4	896.4	895.0	1.6	1.7	48.17	-691.5	266.7	41.5	38.3	3.15	13.173 SF	
1,000.0	999.0	995.5	993.4	1.8	2.0	50.95	-703.3	269.0	47.1	43.5	3.54	13.296	
1,100.0	1,098.6	1,094.4	1,091.3	2.0	2.2	52.36	-716.7	271.6	54.4	50.4	3.94	13.787	
1,200.0	1,198.2	1,193.1	1,188.8	2.3	2.5	52.76	-731.7	274.5	63.2	58.9	4.35	14.539	
1,300.0	1,297.8	1,291.5	1,285.7	2.5	2.9	52.50	-748.4	277.7	73.7	68.9	4.76	15.488	
1,400.0	1,397.5	1,389.5	1,382.0	2.7	3.2	51.84	-766.6	281.3	85.6	80.5	5.16	16.596	
1,500.0	1,497.1	1,487.1	1,477.5	2.9	3.6	50.95	-786.3	285.1	99.2	93.6	5.56	17.834	
1,600.0	1,596.7	1,584.3	1,572.3	3.2	4.0	49.95	-807.5	289.2	114.3	108.3	5.96	19.181	
1,700.0	1,696.3	1,681.0	1,666.1	3.4	4.4	48.92	-830.2	293.6	131.0	124.6	6.35	20.622	
1,800.0	1,795.9	1,777.7	1,759.7	3.6	4.9	47.91	-854.4	298.3	149.2	142.4	6.74	22.134	
1,900.0	1,895.6	1,875.9	1,854.5	3.8	5.3	47.06	-879.4	303.2	167.8	160.7	7.13	23.535	
2,000.0	1,995.2	1,974.1	1,949.4	4.1	5.8	46.37	-904.3	308.0	186.5	179.0	7.52	24.793	
2,100.0	2,094.8	2,072.3	2,044.3	4.3	6.2	45.82	-929.3	312.9	205.2	197.3	7.92	25.927	
2,200.0	2,194.4	2,170.6	2,139.2	4.5	6.7	45.35	-954.2	317.7	224.0	215.7	8.31	26.954	
2,300.0	2,294.0	2,268.8	2,234.0	4.8	7.2	44.96	-979.2	322.6	242.7	234.0	8.70	27.889	
2,400.0	2,393.7	2,367.0	2,328.9	5.0	7.6	44.62	-1,004.1	327.4	261.4	252.3	9.10	28.743	
2,500.0	2,493.3	2,465.2	2,423.8	5.2	8.1	44.33	-1,029.1	332.3	280.2	270.7	9.49	29.527	
2,600.0	2,592.9	2,563.4	2,518.6	5.4	8.6	44.07	-1,054.0	337.1	299.0	289.1	9.88	30.248	
2,700.0	2,692.5	2,661.6	2,613.5	5.7	9.0	43.85	-1,079.0	342.0	317.7	307.4	10.28	30.913	
2,800.0	2,792.1	2,759.9	2,708.4	5.9	9.5	43.65	-1,103.9	346.8	336.5	325.8	10.67	31.530	
2,900.0	2,891.8	2,858.1	2,803.2	6.1	10.0	43.47	-1,128.9	351.7	355.3	344.2	11.07	32.103	
3,000.0	2,991.4	2,956.3	2,898.1	6.4	10.4	43.31	-1,153.8	356.5	374.0	362.6	11.46	32.636	
3,100.0	3,091.0	3,054.5	2,993.0	6.6	10.9	43.16	-1,178.8	361.4	392.8	380.9	11.86	33.133	
3,200.0	3,190.6	3,152.7	3,087.9	6.8	11.4	43.03	-1,203.7	366.2	411.6	399.3	12.25	33.599	
3,300.0	3,290.2	3,250.9	3,182.7	7.1	11.9	42.91	-1,228.7	371.1	430.4	417.7	12.64	34.035	
3,400.0	3,389.9	3,349.2	3,277.6	7.3	12.3	42.80	-1,253.7	375.9	449.1	436.1	13.04	34.445	
3,500.0	3,489.5	3,447.4	3,372.5	7.5	12.8	42.70	-1,278.6	380.8	467.9	454.5	13.43	34.831	
3,600.0	3,589.1	3,545.6	3,467.3	7.8	13.3	42.60	-1,303.6	385.6	486.7	472.9	13.83	35.194	

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:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 4-2-21 (Proposed) - DD - 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
900.0	899.4	991.7	984.6	1.6	2.5	-161.78	-191.3	101.0	498.2	494.9	3.32	150.243	
1,000.0	999.0	1,091.3	1,082.7	1.8	2.8	-161.61	-205.8	110.9	489.3	485.6	3.68	132.847	
1,100.0	1,098.6	1,190.9	1,180.7	2.0	3.2	-161.44	-220.2	120.8	480.4	476.3	4.05	118.560	
1,200.0	1,198.2	1,290.5	1,278.7	2.3	3.5	-161.26	-234.7	130.6	471.5	467.1	4.42	106.622	
1,300.0	1,297.8	1,390.1	1,376.8	2.5	3.9	-161.07	-249.2	140.5	462.6	457.8	4.79	96.500	
1,400.0	1,397.5	1,489.7	1,474.8	2.7	4.2	-160.88	-263.7	150.4	453.7	448.5	5.17	87.811	
1,500.0	1,497.1	1,589.3	1,572.9	2.9	4.6	-160.68	-278.2	160.3	444.8	439.3	5.54	80.271	
1,600.0	1,596.7	1,688.9	1,670.9	3.2	4.9	-160.47	-292.6	170.2	436.0	430.0	5.92	73.668	
1,700.0	1,696.3	1,788.5	1,768.9	3.4	5.3	-160.25	-307.1	180.1	427.1	420.8	6.30	67.838	
1,800.0	1,795.9	1,888.1	1,867.0	3.6	5.6	-160.03	-321.6	190.0	418.2	411.6	6.68	62.653	
1,900.0	1,895.6	1,987.6	1,965.0	3.8	6.0	-159.79	-336.1	199.9	409.4	402.3	7.06	58.012	
2,000.0	1,995.2	2,087.2	2,063.0	4.1	6.3	-159.54	-350.6	209.7	400.5	393.1	7.44	53.833	
2,100.0	2,094.8	2,186.8	2,161.1	4.3	6.7	-159.28	-365.0	219.6	391.7	383.9	7.83	50.052	
2,200.0	2,194.4	2,286.4	2,259.1	4.5	7.0	-159.01	-379.5	229.5	382.9	374.7	8.21	46.614	
2,300.0	2,294.0	2,386.0	2,357.2	4.8	7.4	-158.73	-394.0	239.4	374.1	365.5	8.60	43.474	
2,400.0	2,393.7	2,485.6	2,455.2	5.0	7.7	-158.43	-408.5	249.3	365.2	356.2	9.00	40.596	
2,500.0	2,493.3	2,585.2	2,553.2	5.2	8.1	-158.12	-423.0	259.2	356.4	347.0	9.39	37.948	
2,600.0	2,592.9	2,684.8	2,651.3	5.4	8.4	-157.79	-437.4	269.1	347.7	337.9	9.79	35.504	
2,700.0	2,692.5	2,784.4	2,749.3	5.7	8.8	-157.45	-451.9	279.0	338.9	328.7	10.19	33.242	
2,800.0	2,792.1	2,884.0	2,847.3	5.9	9.2	-157.09	-466.4	288.9	330.1	319.5	10.60	31.141	
2,900.0	2,891.8	2,983.6	2,945.4	6.1	9.5	-156.70	-480.9	298.7	321.4	310.3	11.01	29.186	
3,000.0	2,991.4	3,083.2	3,043.4	6.4	9.9	-156.30	-495.3	308.6	312.6	301.2	11.43	27.361	
3,100.0	3,091.0	3,182.8	3,141.4	6.6	10.2	-155.87	-509.8	318.5	303.9	292.1	11.85	25.655	
3,200.0	3,190.6	3,282.4	3,239.5	6.8	10.6	-155.42	-524.3	328.4	295.2	282.9	12.27	24.057	
3,300.0	3,290.2	3,381.9	3,337.5	7.1	10.9	-154.94	-538.8	338.3	286.5	273.8	12.70	22.556	
3,400.0	3,389.9	3,481.5	3,435.6	7.3	11.3	-154.43	-553.3	348.2	277.9	264.7	13.14	21.145	
3,500.0	3,489.5	3,581.1	3,533.6	7.5	11.6	-153.89	-567.7	358.1	269.2	255.6	13.59	19.815	
3,600.0	3,589.1	3,680.7	3,631.6	7.8	12.0	-153.31	-582.2	368.0	260.6	246.6	14.04	18.560	
3,700.0	3,688.7	3,780.3	3,729.7	8.0	12.3	-152.69	-596.7	377.8	252.0	237.5	14.50	17.375	
3,800.0	3,788.3	3,879.9	3,827.7	8.2	12.7	-152.03	-611.2	387.7	243.5	228.5	14.98	16.254	
3,900.0	3,887.9	3,979.5	3,925.7	8.4	13.0	-151.32	-625.7	397.6	234.9	219.5	15.46	15.192	
4,000.0	3,987.6	4,079.1	4,023.8	8.7	13.4	-150.56	-640.1	407.5	226.5	210.5	15.96	14.186	
4,100.0	4,087.2	4,178.7	4,121.8	8.9	13.7	-149.74	-654.6	417.4	218.0	201.5	16.48	13.231	
4,200.0	4,186.8	4,278.3	4,219.8	9.1	14.1	-148.80	-669.1	427.3	209.5	192.5	17.01	12.313	
4,300.0	4,286.6	4,377.7	4,317.7	9.3	14.4	-147.53	-683.6	437.2	199.7	182.1	17.59	11.351	
4,400.0	4,386.4	4,476.9	4,415.4	9.5	14.8	-145.82	-698.0	447.0	188.6	170.3	18.24	10.338	
4,500.0	4,486.4	4,575.0	4,512.0	9.7	15.1	-143.60	-712.2	456.7	176.3	157.3	18.97	9.291	
4,600.0	4,586.4	4,669.4	4,605.2	9.8	15.4	-141.20	-724.2	464.9	164.7	145.0	19.71	8.356	
4,700.0	4,686.4	4,764.3	4,699.4	10.0	15.7	2.19	-733.7	471.4	155.0	132.2	22.74	6.813	
4,800.0	4,786.4	4,859.9	4,794.7	10.1	15.8	4.14	-740.7	476.2	147.9	125.1	22.80	6.489	
4,900.0	4,886.4	4,956.0	4,890.6	10.3	16.0	5.45	-745.1	479.2	143.7	120.8	22.91	6.271	
5,000.0	4,986.4	5,052.3	4,986.9	10.4	16.1	5.98	-746.8	480.3	142.0	118.9	23.11	6.146	
5,038.6	5,025.0	5,090.4	5,025.0	10.5	16.1	5.99	-746.8	480.3	142.0	118.8	23.21	6.118	
5,100.0	5,086.4	5,151.8	5,086.4	10.6	16.2	5.99	-746.8	480.3	142.0	118.6	23.38	6.074	
5,200.0	5,186.4	5,251.8	5,186.4	10.7	16.3	5.99	-746.8	480.3	142.0	118.4	23.65	6.004	
5,300.0	5,286.4	5,351.8	5,286.4	10.9	16.4	5.99	-746.8	480.3	142.0	118.1	23.93	5.934	
5,400.0	5,386.4	5,451.8	5,386.4	11.0	16.5	5.99	-746.8	480.3	142.0	117.8	24.21	5.866	
5,500.0	5,486.4	5,551.8	5,486.4	11.2	16.6	5.99	-746.8	480.3	142.0	117.5	24.49	5.799	
5,600.0	5,586.4	5,651.8	5,586.4	11.3	16.7	5.99	-746.8	480.3	142.0	117.2	24.77	5.733	
5,700.0	5,686.4	5,751.8	5,686.4	11.5	16.8	5.99	-746.8	480.3	142.0	117.0	25.05	5.669	
5,800.0	5,786.4	5,851.8	5,786.4	11.6	16.9	5.99	-746.8	480.3	142.0	116.7	25.34	5.605	
5,900.0	5,886.4	5,951.8	5,886.4	11.8	17.0	5.99	-746.8	480.3	142.0	116.4	25.62	5.542	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 NENE S20-T3N-R68W (Liberty 2A-21H) - Liberty 4-2-21 (Proposed) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

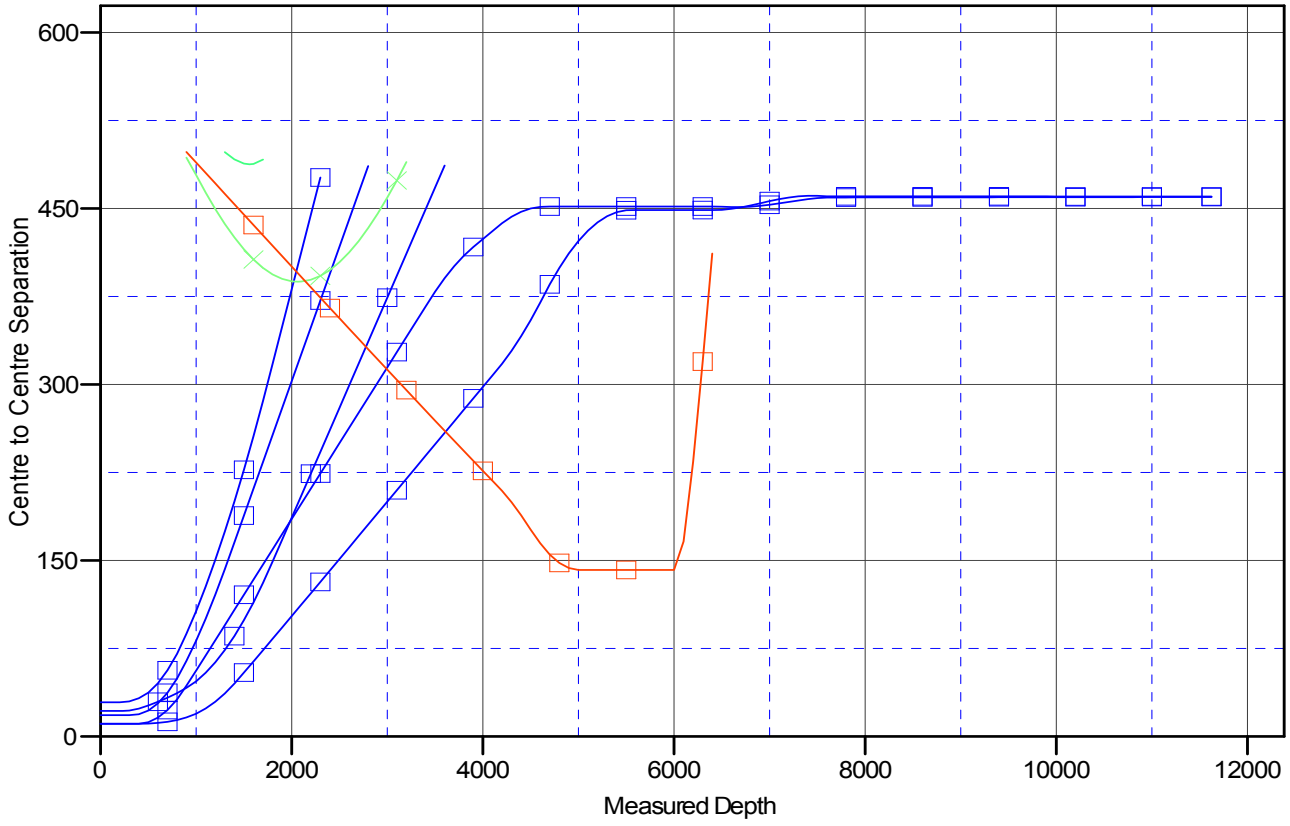
Offset Well Error: 0.0 ft

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
6,000.0	5,986.4	6,051.8	5,986.4	11.9	17.1	5.99	-746.8	480.3	142.0	116.1	25.91	5.481	CC, ES, SF
6,100.0	6,086.4	6,065.4	6,000.0	12.1	17.1	5.99	-746.8	480.3	166.2	140.1	26.09	6.371	
6,200.0	6,186.4	6,065.4	6,000.0	12.2	17.1	5.99	-746.8	480.3	234.3	208.0	26.25	8.925	
6,300.0	6,286.4	6,065.4	6,000.0	12.4	17.1	5.99	-746.8	480.3	319.6	293.2	26.42	12.100	
6,400.0	6,386.4	6,065.4	6,000.0	12.5	17.1	5.99	-746.8	480.3	411.6	385.0	26.58	15.486	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Site NENE S20-T3N-R68W (Liberty 2A-21H)
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Reference Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**MD Reference:**	WELL @ 5036.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Liberty 2D-21H	**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 @ 5036.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: NENE S20-T3N-R68W (Liberty 2A-21H)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.32°



LEGEND

- Liberty2C-21H, Hz, Plan#1 V0
- Liberty2B-21H, Hz, Plan#1 V0
- Liberty2F-21H, HZ, Plan#1 V0
- Liberty2E-21H, HZ, Plan#1 V0
- Liberty2A-21H, HZ, Plan#4 V0
- Liberty22-21 (Proposed), DD, Plan#1 V0
- Liberty2-4-21 (Proposed), DD, Plan#1 V0
- Liberty4-2-21 (Proposed), DD, Plan#1 V0