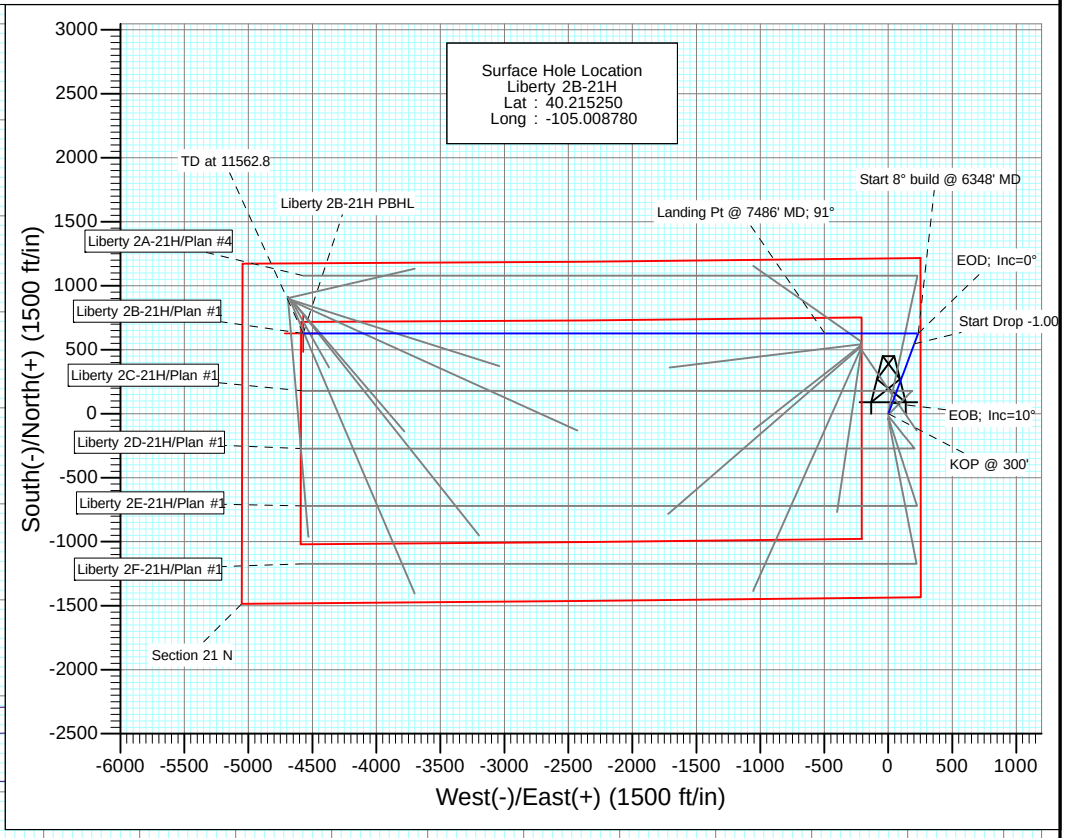
encana natural gas

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

CATHEDRAL

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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	1300.0	10.00	20.40	1294.9	81.6	30.3	1.00	20.40	-30.3	
4	4150.0	10.00	20.40	4101.6	545.4	202.8	0.00	0.00	-202.8	
5	5150.0	0.00	0.00	5096.6	627.0	233.2	1.00	180.00	-233.2	
6	5250.0	0.00	0.00	5196.6	627.0	233.2	0.00	0.00	-233.2	
7	6348.7	0.00	0.00	6295.3	627.0	233.2	0.00	0.00	-233.2	
8	7486.2	91.00	270.00	7011.3	627.0	-495.5	8.00	270.00	495.5	
9	11562.8	91.00	270.00	6940.2	627.0	-4571.5	0.00	0.00	4571.5	Liberty 2B-21H PBHL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Liberty 2B-21H PBHL	627.0	-4571.5	1322242.05	3132613.32	40.216970	-105.025150

T M Azimuths to True North
Magnetic North: 8.76°

Magnetic Field
Strength: 52899.4snT
Dip Angle: 66.83°
Date: 9/19/2012
Model: IGRF200510

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
236.0	236.0	Base of Fox Hills
4077.5	4125.5	Sussex
4212.7	4262.5	Sussex Marker
4463.9	4516.0	Shannon
4953.1	5006.5	Teepee Buttes
6875.9	7025.8	Sharon Springs
6957.3	7193.5	Niobrara

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

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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 2B-21H

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,321,640.39 ft	**Latitude:**	40.215250
	+E/-W	0.0 ft	**Easting:**	3,137,188.26 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	9/19/2012	8.76	66.83	52,899

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,300.0	10.00	20.40	1,294.9	81.6	30.3	1.00	1.00	0.00	20.40	
4,150.0	10.00	20.40	4,101.6	545.4	202.8	0.00	0.00	0.00	0.00	
5,150.0	0.00	0.00	5,096.6	627.0	233.2	1.00	-1.00	0.00	180.00	
5,250.0	0.00	0.00	5,196.6	627.0	233.2	0.00	0.00	0.00	0.00	
6,348.7	0.00	0.00	6,295.3	627.0	233.2	0.00	0.00	0.00	0.00	
7,486.2	91.00	270.00	7,011.3	627.0	-495.5	8.00	8.00	0.00	270.00	
11,562.8	91.00	270.00	6,940.2	627.0	-4,571.5	0.00	0.00	0.00	0.00	Liberty 2B-21H PBHL

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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 2B-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	KOP @ 300'
400.0	1.00	20.40	400.0	0.8	0.3	-0.3	1.00	1.00	
500.0	2.00	20.40	500.0	3.3	1.2	-1.2	1.00	1.00	
600.0	3.00	20.40	599.9	7.4	2.7	-2.7	1.00	1.00	
700.0	4.00	20.40	699.7	13.1	4.9	-4.9	1.00	1.00	
800.0	5.00	20.40	799.4	20.4	7.6	-7.6	1.00	1.00	
900.0	6.00	20.40	898.9	29.4	10.9	-10.9	1.00	1.00	
1,000.0	7.00	20.40	998.3	40.0	14.9	-14.9	1.00	1.00	
1,100.0	8.00	20.40	1,097.4	52.3	19.4	-19.4	1.00	1.00	
1,200.0	9.00	20.40	1,196.3	66.1	24.6	-24.6	1.00	1.00	
1,300.0	10.00	20.40	1,294.9	81.6	30.3	-30.3	1.00	1.00	EOB; Inc=10°
1,400.0	10.00	20.40	1,393.4	97.9	36.4	-36.4	0.00	0.00	
1,500.0	10.00	20.40	1,491.9	114.1	42.4	-42.4	0.00	0.00	
1,600.0	10.00	20.40	1,590.4	130.4	48.5	-48.5	0.00	0.00	
1,700.0	10.00	20.40	1,688.9	146.7	54.6	-54.6	0.00	0.00	
1,800.0	10.00	20.40	1,787.3	163.0	60.6	-60.6	0.00	0.00	
1,900.0	10.00	20.40	1,885.8	179.2	66.7	-66.7	0.00	0.00	
2,000.0	10.00	20.40	1,984.3	195.5	72.7	-72.7	0.00	0.00	
2,100.0	10.00	20.40	2,082.8	211.8	78.8	-78.8	0.00	0.00	
2,200.0	10.00	20.40	2,181.3	228.1	84.8	-84.8	0.00	0.00	
2,300.0	10.00	20.40	2,279.7	244.3	90.9	-90.9	0.00	0.00	
2,400.0	10.00	20.40	2,378.2	260.6	96.9	-96.9	0.00	0.00	
2,500.0	10.00	20.40	2,476.7	276.9	103.0	-103.0	0.00	0.00	
2,600.0	10.00	20.40	2,575.2	293.2	109.0	-109.0	0.00	0.00	
2,700.0	10.00	20.40	2,673.7	309.4	115.1	-115.1	0.00	0.00	
2,800.0	10.00	20.40	2,772.1	325.7	121.1	-121.1	0.00	0.00	
2,900.0	10.00	20.40	2,870.6	342.0	127.2	-127.2	0.00	0.00	
3,000.0	10.00	20.40	2,969.1	358.3	133.2	-133.2	0.00	0.00	
3,100.0	10.00	20.40	3,067.6	374.5	139.3	-139.3	0.00	0.00	
3,200.0	10.00	20.40	3,166.1	390.8	145.3	-145.3	0.00	0.00	
3,300.0	10.00	20.40	3,264.5	407.1	151.4	-151.4	0.00	0.00	
3,400.0	10.00	20.40	3,363.0	423.4	157.5	-157.5	0.00	0.00	
3,500.0	10.00	20.40	3,461.5	439.7	163.5	-163.5	0.00	0.00	
3,600.0	10.00	20.40	3,560.0	455.9	169.6	-169.6	0.00	0.00	
3,700.0	10.00	20.40	3,658.5	472.2	175.6	-175.6	0.00	0.00	
3,800.0	10.00	20.40	3,757.0	488.5	181.7	-181.7	0.00	0.00	
3,900.0	10.00	20.40	3,855.4	504.8	187.7	-187.7	0.00	0.00	
4,000.0	10.00	20.40	3,953.9	521.0	193.8	-193.8	0.00	0.00	
4,100.0	10.00	20.40	4,052.4	537.3	199.8	-199.8	0.00	0.00	
4,125.5	10.00	20.40	4,077.5	541.5	201.4	-201.4	0.00	0.00	Sussex
4,150.0	10.00	20.40	4,101.6	545.4	202.8	-202.8	0.00	0.00	Start Drop -1.00
4,200.0	9.50	20.40	4,150.9	553.4	205.8	-205.8	1.00	-1.00	
4,262.5	8.87	20.40	4,212.7	562.7	209.3	-209.3	1.00	-1.00	Sussex Marker
4,300.0	8.50	20.40	4,249.7	568.0	211.3	-211.3	1.00	-1.00	
4,400.0	7.50	20.40	4,348.7	581.1	216.1	-216.1	1.00	-1.00	
4,500.0	6.50	20.40	4,448.0	592.5	220.4	-220.4	1.00	-1.00	
4,516.0	6.34	20.40	4,463.9	594.2	221.0	-221.0	1.00	-1.00	Shannon
4,600.0	5.50	20.40	4,547.4	602.3	224.0	-224.0	1.00	-1.00	

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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 2B-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
4,700.0	4.50	20.40	4,647.0	610.5	227.0	-227.0	1.00	-1.00	
4,800.0	3.50	20.40	4,746.8	617.0	229.5	-229.5	1.00	-1.00	
4,900.0	2.50	20.40	4,846.6	621.9	231.3	-231.3	1.00	-1.00	
5,000.0	1.50	20.40	4,946.6	625.2	232.5	-232.5	1.00	-1.00	
5,006.5	1.44	20.40	4,953.1	625.3	232.6	-232.6	1.00	-1.00	Teepee Buttes
5,100.0	0.50	20.40	5,046.6	626.8	233.1	-233.1	1.00	-1.00	
5,150.0	0.00	0.00	5,096.6	627.0	233.2	-233.2	1.00	-1.00	EOD; Inc=0°
5,200.0	0.00	0.00	5,146.6	627.0	233.2	-233.2	0.00	0.00	
5,250.0	0.00	0.00	5,196.6	627.0	233.2	-233.2	0.00	0.00	
5,300.0	0.00	0.00	5,246.6	627.0	233.2	-233.2	0.00	0.00	
5,400.0	0.00	0.00	5,346.6	627.0	233.2	-233.2	0.00	0.00	
5,500.0	0.00	0.00	5,446.6	627.0	233.2	-233.2	0.00	0.00	
5,600.0	0.00	0.00	5,546.6	627.0	233.2	-233.2	0.00	0.00	
5,700.0	0.00	0.00	5,646.6	627.0	233.2	-233.2	0.00	0.00	
5,800.0	0.00	0.00	5,746.6	627.0	233.2	-233.2	0.00	0.00	
5,900.0	0.00	0.00	5,846.6	627.0	233.2	-233.2	0.00	0.00	
6,000.0	0.00	0.00	5,946.6	627.0	233.2	-233.2	0.00	0.00	
6,100.0	0.00	0.00	6,046.6	627.0	233.2	-233.2	0.00	0.00	
6,200.0	0.00	0.00	6,146.6	627.0	233.2	-233.2	0.00	0.00	
6,300.0	0.00	0.00	6,246.6	627.0	233.2	-233.2	0.00	0.00	
6,348.7	0.00	0.00	6,295.3	627.0	233.2	-233.2	0.00	0.00	Start 8° build @ 6348' MD
6,400.0	4.10	270.00	6,346.5	627.0	231.4	-231.4	8.00	8.00	
6,500.0	12.10	270.00	6,445.4	627.0	217.3	-217.3	8.00	8.00	
6,600.0	20.10	270.00	6,541.4	627.0	189.6	-189.6	8.00	8.00	
6,700.0	28.10	270.00	6,632.6	627.0	148.7	-148.7	8.00	8.00	
6,800.0	36.10	270.00	6,717.3	627.0	95.6	-95.6	8.00	8.00	
6,900.0	44.10	270.00	6,793.7	627.0	31.3	-31.3	8.00	8.00	
7,000.0	52.10	270.00	6,860.4	627.0	-43.1	43.1	8.00	8.00	
7,025.8	54.17	270.00	6,875.9	627.0	-63.7	63.7	8.00	8.00	Sharon Springs
7,100.0	60.10	270.00	6,916.2	627.0	-126.0	126.0	8.00	8.00	
7,193.5	67.58	270.00	6,957.3	627.0	-209.9	209.9	8.00	8.00	Niobrara
7,200.0	68.10	270.00	6,959.8	627.0	-215.9	215.9	8.00	8.00	
7,300.0	76.10	270.00	6,990.5	627.0	-311.0	311.0	8.00	8.00	
7,400.0	84.10	270.00	7,007.7	627.0	-409.4	409.4	8.00	8.00	
7,486.2	91.00	270.00	7,011.3	627.0	-495.5	495.5	8.00	8.00	Landing Pt @ 7486' MD; 91°
7,500.0	91.00	270.00	7,011.1	627.0	-509.3	509.3	0.00	0.00	
7,600.0	91.00	270.00	7,009.4	627.0	-609.3	609.3	0.00	0.00	
7,700.0	91.00	270.00	7,007.6	627.0	-709.3	709.3	0.00	0.00	
7,800.0	91.00	270.00	7,005.9	627.0	-809.3	809.3	0.00	0.00	
7,900.0	91.00	270.00	7,004.1	627.0	-909.2	909.2	0.00	0.00	
8,000.0	91.00	270.00	7,002.4	627.0	-1,009.2	1,009.2	0.00	0.00	
8,100.0	91.00	270.00	7,000.6	627.0	-1,109.2	1,109.2	0.00	0.00	
8,200.0	91.00	270.00	6,998.9	627.0	-1,209.2	1,209.2	0.00	0.00	
8,300.0	91.00	270.00	6,997.1	627.0	-1,309.2	1,309.2	0.00	0.00	
8,400.0	91.00	270.00	6,995.4	627.0	-1,409.2	1,409.2	0.00	0.00	
8,500.0	91.00	270.00	6,993.7	627.0	-1,509.2	1,509.2	0.00	0.00	
8,600.0	91.00	270.00	6,991.9	627.0	-1,609.1	1,609.1	0.00	0.00	
8,700.0	91.00	270.00	6,990.2	627.0	-1,709.1	1,709.1	0.00	0.00	
8,800.0	91.00	270.00	6,988.4	627.0	-1,809.1	1,809.1	0.00	0.00	
8,900.0	91.00	270.00	6,986.7	627.0	-1,909.1	1,909.1	0.00	0.00	
9,000.0	91.00	270.00	6,984.9	627.0	-2,009.1	2,009.1	0.00	0.00	
9,100.0	91.00	270.00	6,983.2	627.0	-2,109.1	2,109.1	0.00	0.00	

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Site:	NENE S20-T3N-R68W (Liberty 2A-21H)	**North Reference:**	True
Well:	Liberty 2B-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	6,981.4	627.0	-2,209.0	2,209.0	0.00	0.00	
9,300.0	91.00	270.00	6,979.7	627.0	-2,309.0	2,309.0	0.00	0.00	
9,400.0	91.00	270.00	6,977.9	627.0	-2,409.0	2,409.0	0.00	0.00	
9,500.0	91.00	270.00	6,976.2	627.0	-2,509.0	2,509.0	0.00	0.00	
9,600.0	91.00	270.00	6,974.5	627.0	-2,609.0	2,609.0	0.00	0.00	
9,700.0	91.00	270.00	6,972.7	627.0	-2,709.0	2,709.0	0.00	0.00	
9,800.0	91.00	270.00	6,971.0	627.0	-2,809.0	2,809.0	0.00	0.00	
9,900.0	91.00	270.00	6,969.2	627.0	-2,908.9	2,908.9	0.00	0.00	
10,000.0	91.00	270.00	6,967.5	627.0	-3,008.9	3,008.9	0.00	0.00	
10,100.0	91.00	270.00	6,965.7	627.0	-3,108.9	3,108.9	0.00	0.00	
10,200.0	91.00	270.00	6,964.0	627.0	-3,208.9	3,208.9	0.00	0.00	
10,300.0	91.00	270.00	6,962.2	627.0	-3,308.9	3,308.9	0.00	0.00	
10,400.0	91.00	270.00	6,960.5	627.0	-3,408.9	3,408.9	0.00	0.00	
10,500.0	91.00	270.00	6,958.7	627.0	-3,508.9	3,508.9	0.00	0.00	
10,600.0	91.00	270.00	6,957.0	627.0	-3,608.8	3,608.8	0.00	0.00	
10,700.0	91.00	270.00	6,955.3	627.0	-3,708.8	3,708.8	0.00	0.00	
10,800.0	91.00	270.00	6,953.5	627.0	-3,808.8	3,808.8	0.00	0.00	
10,900.0	91.00	270.00	6,951.8	627.0	-3,908.8	3,908.8	0.00	0.00	
11,000.0	91.00	270.00	6,950.0	627.0	-4,008.8	4,008.8	0.00	0.00	
11,100.0	91.00	270.00	6,948.3	627.0	-4,108.8	4,108.8	0.00	0.00	
11,200.0	91.00	270.00	6,946.5	627.0	-4,208.7	4,208.7	0.00	0.00	
11,300.0	91.00	270.00	6,944.8	627.0	-4,308.7	4,308.7	0.00	0.00	
11,400.0	91.00	270.00	6,943.0	627.0	-4,408.7	4,408.7	0.00	0.00	
11,500.0	91.00	270.00	6,941.3	627.0	-4,508.7	4,508.7	0.00	0.00	
11,562.8	91.00	270.00	6,940.2	627.0	-4,571.5	4,571.5	0.00	0.00	TD at 11562.8 - Liberty 2B-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 2B-21H PBHL - plan hits target center - Point	0.00	0.00	6,940.2	627.0	-4,571.5	1,322,242.05	3,132,613.32	40.216970	-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
4,125.5	4,074.0	Sussex		-1.00	270.00
4,262.5	4,209.0	Sussex Marker		-1.00	270.00
4,516.0	4,460.0	Shannon		-1.00	270.00
5,006.5	4,949.0	Teepee Buttes		-1.00	270.00
7,025.8	6,877.0	Sharon Springs		-1.00	270.00
7,193.5	6,961.0	Niobrara		-1.00	270.00

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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
300.0	300.0	0.0	0.0	KOP @ 300'
1,300.0	1,294.9	81.6	30.3	EOB; Inc=10°
4,150.0	4,101.6	545.4	202.8	Start Drop -1.00
5,150.0	5,096.6	627.0	233.2	EOD; Inc=0°
6,348.7	6,295.3	627.0	233.2	Start 8° build @ 6348' MD
7,486.2	7,011.3	627.0	-495.5	Landing Pt @ 7486' MD; 91°
11,562.8	6,940.2	627.0	-4,571.5	TD at 11562.8

EnCana Oil & Gas (USA) Inc

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

Anticollision Report

19 September, 2012

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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	11,562.8	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	3,361.4	3,325.0	391.9	376.3	25.072	CC
Liberty 21-21 (Proposed) - DD - Plan #1	3,400.0	3,363.0	392.0	376.2	24.760	ES
Liberty 21-21 (Proposed) - DD - Plan #1	6,100.0	6,000.0	453.8	431.3	20.136	SF
Liberty 2-21 (Proposed) - DD - Plan #1						Out of range
Liberty 22-21 (Proposed) - DD - Plan #1	1,582.3	1,621.3	311.7	301.7	31.381	CC
Liberty 22-21 (Proposed) - DD - Plan #1	1,600.0	1,636.9	311.8	301.7	30.935	ES
Liberty 22-21 (Proposed) - DD - Plan #1	1,800.0	1,813.4	328.1	316.6	28.665	SF
Liberty 2-4-21 (Proposed) - DD - Plan #1	1,442.1	1,473.2	395.7	386.6	43.378	CC, ES
Liberty 2-4-21 (Proposed) - DD - Plan #1	1,700.0	1,672.1	425.8	414.5	37.728	SF
Liberty 2A-21H - HZ - Plan #4	200.0	200.0	10.9	10.3	16.742	CC, ES
Liberty 2A-21H - HZ - Plan #4	1,300.0	1,296.0	33.2	28.3	6.846	SF
Liberty 2C-21H - Hz - Plan #1	300.0	300.0	7.3	6.3	7.272	CC, ES
Liberty 2C-21H - Hz - Plan #1	11,562.8	11,687.5	497.0	287.5	2.373	SF
Liberty 2D-21H - Hz - Plan #1	300.0	300.0	18.2	17.2	18.185	CC, ES
Liberty 2D-21H - Hz - Plan #1	500.0	499.7	22.2	20.5	13.048	SF
Liberty 2E-21H - HZ - Plan #1	300.0	300.0	29.1	28.1	29.090	CC, ES
Liberty 2E-21H - HZ - Plan #1	600.0	598.6	39.8	37.8	19.457	SF
Liberty 2F-21H - HZ - Plan #1	233.3	233.3	40.1	39.3	52.100	CC
Liberty 2F-21H - HZ - Plan #1	300.0	299.7	40.3	39.3	40.235	ES
Liberty 2F-21H - HZ - Plan #1	600.0	596.7	57.8	55.8	28.288	SF
Liberty 4-2-21 (Proposed) - DD - Plan #1	2,306.9	2,324.2	119.1	106.6	9.588	CC, ES
Liberty 4-2-21 (Proposed) - DD - Plan #1	2,400.0	2,412.7	122.4	109.5	9.471	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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 21-21 (Proposed) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
1,600.0	1,590.4	1,590.4	1,590.4	3.8	2.8	-52.46	553.7	-212.2	497.2	491.0	6.19	80.367	
1,700.0	1,688.9	1,688.9	1,688.9	4.1	2.9	-54.06	553.7	-212.2	486.7	480.0	6.67	72.931	
1,800.0	1,787.3	1,787.3	1,787.3	4.5	3.1	-55.73	553.7	-212.2	476.6	469.4	7.17	66.467	
1,900.0	1,885.8	1,885.8	1,885.8	4.8	3.3	-57.48	553.7	-212.2	466.9	459.2	7.68	60.817	
2,000.0	1,984.3	1,984.3	1,984.3	5.1	3.4	-59.29	553.7	-212.2	457.7	449.5	8.19	55.857	
2,100.0	2,082.8	2,082.8	2,082.8	5.5	3.6	-61.17	553.7	-212.2	449.0	440.3	8.72	51.489	
2,200.0	2,181.3	2,181.3	2,181.3	5.8	3.8	-63.13	553.7	-212.2	440.8	431.5	9.25	47.629	
2,300.0	2,279.7	2,279.7	2,279.7	6.2	4.0	-65.15	553.7	-212.2	433.1	423.3	9.80	44.212	
2,400.0	2,378.2	2,378.2	2,378.2	6.5	4.1	-67.24	553.7	-212.2	426.0	415.7	10.34	41.183	
2,500.0	2,476.7	2,476.7	2,476.7	6.9	4.3	-69.40	553.7	-212.2	419.5	408.6	10.90	38.495	
2,600.0	2,575.2	2,575.2	2,575.2	7.2	4.5	-71.62	553.7	-212.2	413.6	402.2	11.46	36.110	
2,700.0	2,673.7	2,673.7	2,673.7	7.6	4.6	-73.90	553.7	-212.2	408.4	396.4	12.01	33.994	
2,800.0	2,772.1	2,772.1	2,772.1	7.9	4.8	-76.24	553.7	-212.2	403.9	391.3	12.57	32.120	
2,900.0	2,870.6	2,870.6	2,870.6	8.2	5.0	-78.62	553.7	-212.2	400.0	386.9	13.13	30.462	
3,000.0	2,969.1	2,969.1	2,969.1	8.6	5.2	-81.04	553.7	-212.2	396.9	383.2	13.69	29.000	
3,100.0	3,067.6	3,067.6	3,067.6	8.9	5.3	-83.49	553.7	-212.2	394.6	380.3	14.24	27.714	
3,200.0	3,166.1	3,166.1	3,166.1	9.3	5.5	-85.97	553.7	-212.2	392.9	378.2	14.78	26.589	
3,300.0	3,264.5	3,264.5	3,264.5	9.6	5.7	-88.47	553.7	-212.2	392.1	376.8	15.31	25.608	
3,361.4	3,325.0	3,325.0	3,325.0	9.9	5.8	-90.00	553.7	-212.2	391.9	376.3	15.63	25.072	CC
3,400.0	3,363.0	3,363.0	3,363.0	10.0	5.8	-90.96	553.7	-212.2	392.0	376.2	15.83	24.760	ES
3,500.0	3,461.5	3,461.5	3,461.5	10.3	6.0	-93.46	553.7	-212.2	392.7	376.3	16.34	24.031	
3,600.0	3,560.0	3,560.0	3,560.0	10.7	6.2	-95.94	553.7	-212.2	394.1	377.3	16.83	23.411	
3,700.0	3,658.5	3,658.5	3,658.5	11.0	6.4	-98.40	553.7	-212.2	396.3	379.0	17.31	22.890	
3,800.0	3,757.0	3,757.0	3,757.0	11.4	6.5	-100.83	553.7	-212.2	399.3	381.5	17.78	22.459	
3,900.0	3,855.4	3,855.4	3,855.4	11.7	6.7	-103.22	553.7	-212.2	402.9	384.7	18.22	22.109	
4,000.0	3,953.9	3,953.9	3,953.9	12.1	6.9	-105.57	553.7	-212.2	407.3	388.7	18.66	21.833	
4,100.0	4,052.4	4,052.4	4,052.4	12.4	7.1	-107.86	553.7	-212.2	412.4	393.3	19.07	21.624	
4,200.0	4,150.9	4,150.9	4,150.9	12.8	7.2	-110.10	553.7	-212.2	418.0	398.6	19.47	21.476	
4,300.0	4,249.7	4,249.7	4,249.7	13.1	7.4	-112.12	553.7	-212.2	423.7	403.9	19.83	21.370	
4,400.0	4,348.7	4,348.7	4,348.7	13.4	7.6	-113.87	553.7	-212.2	429.2	409.0	20.17	21.278	
4,500.0	4,448.0	4,448.0	4,448.0	13.6	7.7	-115.38	553.7	-212.2	434.3	413.8	20.50	21.188	
4,600.0	4,547.4	4,547.4	4,547.4	13.9	7.9	-116.65	553.7	-212.2	438.9	418.1	20.81	21.089	
4,700.0	4,647.0	4,647.0	4,647.0	14.1	8.1	-117.69	553.7	-212.2	442.9	421.8	21.12	20.973	
4,800.0	4,746.8	4,746.8	4,746.8	14.3	8.3	-118.51	553.7	-212.2	446.2	424.8	21.42	20.836	
4,900.0	4,846.6	4,846.6	4,846.6	14.4	8.4	-119.12	553.7	-212.2	448.7	427.0	21.71	20.673	
5,000.0	4,946.6	4,946.6	4,946.6	14.6	8.6	-119.52	553.7	-212.2	450.5	428.5	21.99	20.481	
5,100.0	5,046.6	5,046.6	5,046.6	14.7	8.8	-119.72	553.7	-212.2	451.3	429.0	22.28	20.261	
5,200.0	5,146.6	5,146.6	5,146.6	14.8	9.0	-99.35	553.7	-212.2	451.4	431.7	19.69	22.922	
5,300.0	5,246.6	5,246.6	5,246.6	14.9	9.1	-99.35	553.7	-212.2	451.4	431.4	20.02	22.553	
5,400.0	5,346.6	5,346.6	5,346.6	15.0	9.3	-99.35	553.7	-212.2	451.4	431.1	20.34	22.195	
5,500.0	5,446.6	5,446.6	5,446.6	15.1	9.5	-99.35	553.7	-212.2	451.4	430.8	20.66	21.847	
5,600.0	5,546.6	5,546.6	5,546.6	15.2	9.7	-99.35	553.7	-212.2	451.4	430.4	20.99	21.510	
5,700.0	5,646.6	5,646.6	5,646.6	15.3	9.8	-99.35	553.7	-212.2	451.4	430.1	21.31	21.181	
5,800.0	5,746.6	5,746.6	5,746.6	15.5	10.0	-99.35	553.7	-212.2	451.4	429.8	21.64	20.863	
5,900.0	5,846.6	5,846.6	5,846.6	15.6	10.2	-99.35	553.7	-212.2	451.4	429.5	21.96	20.552	
6,000.0	5,946.6	5,946.6	5,946.6	15.7	10.4	-99.35	553.7	-212.2	451.4	429.1	22.29	20.251	
6,037.6	5,984.1	5,984.1	5,984.1	15.7	10.4	-99.35	553.7	-212.2	451.4	429.0	22.41	20.140	
6,100.0	6,046.6	6,000.0	6,000.0	15.8	10.4	-99.35	553.7	-212.2	453.8	431.3	22.54	20.136	SF
6,200.0	6,146.6	6,000.0	6,000.0	15.9	10.4	-99.35	553.7	-212.2	474.6	451.9	22.69	20.916	

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 Liberty 2B-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 2B-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
700.0	699.7	783.4	779.4	1.2	1.8	-49.02	436.9	-220.9	486.7	484.0	2.75	177.107	
800.0	799.4	893.6	886.8	1.4	2.3	-51.87	412.8	-224.5	464.2	460.9	3.29	141.180	
900.0	898.9	1,000.3	989.9	1.7	2.8	-55.51	385.6	-228.5	438.7	434.8	3.91	112.080	
1,000.0	998.3	1,103.2	1,088.3	1.9	3.3	-60.08	355.8	-232.9	411.3	406.7	4.65	88.377	
1,100.0	1,097.4	1,194.2	1,174.7	2.2	3.8	-65.08	327.6	-237.1	384.2	378.7	5.44	70.592	
1,200.0	1,196.3	1,283.6	1,259.7	2.5	4.3	-70.81	300.0	-241.2	359.6	353.3	6.32	56.917	
1,300.0	1,294.9	1,372.2	1,343.8	2.8	4.8	-77.31	272.5	-245.2	338.8	331.5	7.27	46.588	
1,400.0	1,393.4	1,460.4	1,427.6	3.1	5.3	-84.27	245.2	-249.3	323.3	315.0	8.25	39.190	
1,500.0	1,491.9	1,548.7	1,511.4	3.5	5.8	-91.66	217.9	-253.3	314.1	304.9	9.20	34.130	
1,582.3	1,573.0	1,621.3	1,580.5	3.7	6.2	-97.93	195.5	-256.6	311.7	301.7	9.93	31.381	CC
1,600.0	1,590.4	1,636.9	1,595.2	3.8	6.3	-99.27	190.6	-257.4	311.8	301.7	10.08	30.935	ES
1,700.0	1,688.9	1,725.1	1,679.0	4.1	6.8	-106.84	163.4	-261.4	316.5	305.7	10.83	29.219	
1,800.0	1,787.3	1,813.4	1,762.9	4.5	7.3	-114.10	136.1	-265.4	328.1	316.6	11.44	28.665	SF
1,900.0	1,885.8	1,901.6	1,846.7	4.8	7.8	-120.87	108.8	-269.5	345.7	333.8	11.91	29.014	
2,000.0	1,984.3	1,989.8	1,930.5	5.1	8.3	-127.02	81.5	-273.5	368.5	356.2	12.26	30.053	
2,100.0	2,082.8	2,078.0	2,014.3	5.5	8.8	-132.52	54.2	-277.6	395.6	383.1	12.52	31.608	
2,200.0	2,181.3	2,166.3	2,098.1	5.8	9.3	-137.38	26.9	-281.6	426.2	413.5	12.71	33.542	
2,300.0	2,279.7	2,254.5	2,181.9	6.2	9.8	-141.65	-0.4	-285.6	459.6	446.8	12.86	35.744	
2,400.0	2,378.2	2,342.7	2,265.7	6.5	10.3	-145.38	-27.7	-289.7	495.2	482.3	12.99	38.127	

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

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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
800.0	799.4	873.2	867.0	1.4	2.2	-51.92	441.7	-244.2	495.4	492.0	3.41	145.405	
900.0	898.9	977.1	967.6	1.7	2.7	-55.64	417.9	-254.8	475.7	471.6	4.08	116.549	
1,000.0	998.3	1,077.4	1,063.8	1.9	3.2	-60.12	391.8	-266.4	455.1	450.3	4.85	93.785	
1,100.0	1,097.4	1,173.9	1,155.3	2.2	3.8	-65.34	363.8	-278.8	435.2	429.4	5.72	76.017	
1,200.0	1,196.3	1,266.3	1,241.8	2.5	4.4	-71.27	334.4	-291.9	417.4	410.7	6.68	62.449	
1,300.0	1,294.9	1,354.4	1,323.4	2.8	5.0	-77.77	303.9	-305.4	403.7	396.0	7.70	52.438	
1,400.0	1,393.4	1,438.7	1,400.5	3.1	5.6	-84.49	272.7	-319.3	396.4	387.7	8.71	45.518	
1,442.1	1,434.9	1,473.2	1,431.7	3.3	5.9	-87.36	259.3	-325.3	395.7	386.6	9.12	43.378	CC, ES
1,500.0	1,491.9	1,519.7	1,473.5	3.5	6.2	-91.30	240.7	-333.5	397.1	387.5	9.67	41.085	
1,600.0	1,590.4	1,597.5	1,542.7	3.8	6.9	-97.98	208.3	-347.9	406.8	396.3	10.53	38.636	
1,700.0	1,688.9	1,672.1	1,608.1	4.1	7.5	-104.34	175.6	-362.5	425.8	414.5	11.28	37.728	SF
1,800.0	1,787.3	1,743.6	1,670.0	4.5	8.2	-110.23	142.7	-377.1	453.6	441.7	11.91	38.072	
1,900.0	1,885.8	1,812.2	1,728.4	4.8	8.8	-115.57	109.9	-391.7	489.5	477.1	12.43	39.393	

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 Liberty 2B-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 2B-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	10.9	0.0	10.9				
100.0	100.0	100.0	100.0	0.2	0.2	0.00	10.9	0.0	10.9	10.6	0.30	35.986	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	10.9	0.0	10.9	10.3	0.65	16.742	CC, ES
300.0	300.0	299.8	299.8	0.5	0.5	0.88	11.8	0.2	11.8	10.8	1.00	11.762	
400.0	400.0	399.6	399.5	0.7	0.7	-18.62	14.3	0.7	13.5	12.2	1.35	10.016	
500.0	500.0	499.3	499.2	0.9	0.9	-18.85	18.6	1.6	15.3	13.6	1.70	9.018	
600.0	599.9	599.0	598.7	1.0	1.1	-19.85	24.5	2.9	17.2	15.1	2.05	8.386	
700.0	699.7	698.7	698.1	1.2	1.3	-21.39	32.1	4.5	19.1	16.7	2.40	7.959	
800.0	799.4	798.3	797.2	1.4	1.5	-23.30	41.5	6.5	21.2	18.4	2.76	7.656	
900.0	898.9	897.9	896.2	1.7	1.8	-25.46	52.5	8.8	23.3	20.2	3.13	7.432	
1,000.0	998.3	997.5	994.9	1.9	2.0	-27.78	65.1	11.5	25.5	22.0	3.52	7.256	
1,100.0	1,097.4	1,097.0	1,093.4	2.2	2.3	-30.20	79.5	14.6	27.9	24.0	3.93	7.109	
1,200.0	1,196.3	1,196.5	1,191.5	2.5	2.7	-32.64	95.5	18.0	30.5	26.1	4.37	6.976	
1,300.0	1,294.9	1,296.0	1,289.3	2.8	3.0	-35.09	113.1	21.7	33.2	28.3	4.85	6.846	SF
1,400.0	1,393.4	1,395.4	1,386.7	3.1	3.4	-36.69	132.5	25.8	36.8	31.4	5.35	6.879	
1,500.0	1,491.9	1,494.6	1,483.6	3.5	3.8	-36.84	153.4	30.3	41.9	36.1	5.83	7.191	
1,600.0	1,590.4	1,593.7	1,580.0	3.8	4.2	-35.98	175.9	35.1	48.6	42.3	6.28	7.731	
1,700.0	1,688.9	1,692.6	1,675.7	4.1	4.6	-34.54	200.0	40.2	56.8	50.1	6.71	8.465	
1,800.0	1,787.3	1,792.1	1,771.9	4.5	5.1	-33.08	225.2	45.5	65.9	58.8	7.11	9.260	
1,900.0	1,885.8	1,891.6	1,868.0	4.8	5.6	-31.98	250.4	50.9	75.0	67.5	7.53	9.968	
2,000.0	1,984.3	1,991.2	1,964.2	5.1	6.0	-31.12	275.6	56.3	84.2	76.3	7.94	10.602	
2,100.0	2,082.8	2,090.8	2,060.4	5.5	6.5	-30.43	300.8	61.6	93.4	85.0	8.36	11.171	
2,200.0	2,181.3	2,190.4	2,156.6	5.8	7.0	-29.87	326.0	67.0	102.6	93.8	8.78	11.686	
2,300.0	2,279.7	2,289.9	2,252.8	6.2	7.5	-29.39	351.2	72.3	111.8	102.6	9.20	12.153	
2,400.0	2,378.2	2,389.5	2,348.9	6.5	7.9	-28.99	376.4	77.7	121.0	111.4	9.62	12.578	
2,500.0	2,476.7	2,489.1	2,445.1	6.9	8.4	-28.64	401.7	83.1	130.2	120.2	10.04	12.967	
2,600.0	2,575.2	2,588.6	2,541.3	7.2	8.9	-28.34	426.9	88.4	139.5	129.0	10.47	13.325	
2,700.0	2,673.7	2,688.2	2,637.5	7.6	9.4	-28.08	452.1	93.8	148.7	137.8	10.89	13.654	
2,800.0	2,772.1	2,787.8	2,733.6	7.9	9.8	-27.85	477.3	99.1	157.9	146.6	11.31	13.958	
2,900.0	2,870.6	2,887.4	2,829.8	8.2	10.3	-27.64	502.5	104.5	167.1	155.4	11.74	14.240	
3,000.0	2,969.1	2,986.9	2,926.0	8.6	10.8	-27.46	527.7	109.8	176.4	164.2	12.16	14.502	
3,100.0	3,067.6	3,086.5	3,022.2	8.9	11.3	-27.29	552.9	115.2	185.6	173.0	12.59	14.747	
3,200.0	3,166.1	3,186.1	3,118.4	9.3	11.7	-27.14	578.1	120.6	194.9	181.8	13.01	14.975	
3,300.0	3,264.5	3,285.6	3,214.5	9.6	12.2	-27.01	603.3	125.9	204.1	190.7	13.44	15.188	
3,400.0	3,363.0	3,385.2	3,310.7	10.0	12.7	-26.88	628.5	131.3	213.3	199.5	13.86	15.388	
3,500.0	3,461.5	3,484.8	3,406.9	10.3	13.2	-26.77	653.7	136.6	222.6	208.3	14.29	15.576	
3,600.0	3,560.0	3,584.4	3,503.1	10.7	13.7	-26.66	678.9	142.0	231.8	217.1	14.71	15.753	
3,700.0	3,658.5	3,683.9	3,599.3	11.0	14.1	-26.57	704.2	147.3	241.0	225.9	15.14	15.920	
3,800.0	3,757.0	3,783.5	3,695.4	11.4	14.6	-26.48	729.4	152.7	250.3	234.7	15.57	16.078	
3,900.0	3,855.4	3,883.1	3,791.6	11.7	15.1	-26.39	754.6	158.1	259.5	243.5	15.99	16.227	
4,000.0	3,953.9	3,982.6	3,887.8	12.1	15.6	-26.31	779.8	163.4	268.8	252.4	16.42	16.369	
4,100.0	4,052.4	4,082.2	3,984.0	12.4	16.1	-26.24	805.0	168.8	278.0	261.2	16.85	16.503	
4,200.0	4,150.9	4,181.8	4,080.1	12.8	16.5	-26.17	830.2	174.1	287.5	270.2	17.27	16.645	
4,300.0	4,249.7	4,281.2	4,176.1	13.1	17.0	-26.01	855.4	179.5	298.3	280.6	17.66	16.892	
4,400.0	4,348.7	4,380.4	4,272.0	13.4	17.5	-25.73	880.5	184.8	310.6	292.6	18.01	17.252	
4,500.0	4,448.0	4,483.4	4,371.6	13.6	18.0	-25.35	906.1	190.3	324.2	305.8	18.33	17.689	
4,600.0	4,547.4	4,588.2	4,473.4	13.9	18.4	-24.95	930.5	195.5	337.6	319.0	18.63	18.124	
4,700.0	4,647.0	4,693.4	4,576.0	14.1	18.9	-24.55	953.1	200.3	350.9	332.0	18.91	18.553	
4,800.0	4,746.8	4,798.8	4,679.2	14.3	19.3	-24.14	973.9	204.7	364.0	344.8	19.18	18.977	
4,900.0	4,846.6	4,904.5	4,783.1	14.4	19.6	-23.73	992.8	208.7	377.0	357.6	19.44	19.396	
5,000.0	4,946.6	5,010.5	4,887.7	14.6	20.0	-23.31	1,010.0	212.4	389.8	370.1	19.68	19.809	
5,100.0	5,046.6	5,116.7	4,992.8	14.7	20.3	-22.89	1,025.3	215.6	402.5	382.6	19.91	20.216	

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 Liberty 2B-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 2B-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
5,200.0	5,146.6	5,223.3	5,098.4	14.8	20.6	-2.05	1,038.7	218.5	414.8	380.6	34.19	12.132	
5,300.0	5,246.6	5,330.3	5,204.8	14.9	20.8	-1.66	1,050.3	220.9	425.5	390.9	34.60	12.298	
5,400.0	5,346.6	5,437.7	5,311.8	15.0	21.1	-1.35	1,059.9	223.0	434.4	399.4	34.97	12.422	
5,500.0	5,446.6	5,545.5	5,419.2	15.1	21.2	-1.12	1,067.6	224.6	441.5	406.2	35.30	12.505	
5,600.0	5,546.6	5,653.5	5,527.1	15.2	21.4	-0.95	1,073.3	225.8	446.8	411.2	35.60	12.549	
5,700.0	5,646.6	5,761.7	5,635.2	15.3	21.5	-0.84	1,077.1	226.6	450.2	414.3	35.87	12.553	
5,800.0	5,746.6	5,870.0	5,743.5	15.5	21.6	-0.79	1,078.8	227.0	451.8	415.7	36.09	12.519	
5,900.0	5,846.6	5,973.1	5,846.6	15.6	21.7	-0.78	1,078.9	227.0	451.9	415.6	36.30	12.451	
6,000.0	5,946.6	6,073.1	5,946.6	15.7	21.8	-0.78	1,078.9	227.0	451.9	415.4	36.50	12.381	
6,100.0	6,046.6	6,173.1	6,046.6	15.8	21.9	-0.78	1,078.9	227.0	451.9	415.2	36.71	12.310	
6,200.0	6,146.6	6,273.1	6,146.6	15.9	22.0	-0.78	1,078.9	227.0	451.9	415.0	36.92	12.240	
6,300.0	6,246.6	6,373.1	6,246.6	16.0	22.1	-0.78	1,078.9	227.0	451.9	414.8	37.13	12.170	
6,400.0	6,346.5	6,473.0	6,346.5	16.1	22.2	89.45	1,078.9	227.0	451.9	428.1	23.81	18.977	
6,442.8	6,389.1	6,515.6	6,389.1	16.2	22.2	90.00	1,078.9	227.0	451.9	428.1	23.81	18.976	
6,500.0	6,445.4	6,571.9	6,445.4	16.2	22.2	91.21	1,078.9	227.0	452.0	428.3	23.75	19.036	
6,600.0	6,541.4	6,669.3	6,542.8	16.2	22.3	94.45	1,078.9	226.5	453.4	429.9	23.49	19.305	
6,700.0	6,632.6	6,772.0	6,644.8	16.2	22.4	98.13	1,078.9	215.5	457.0	433.6	23.33	19.583	
6,800.0	6,717.3	6,879.8	6,749.1	16.2	22.4	101.70	1,078.9	188.3	462.4	438.9	23.44	19.725	
6,900.0	6,793.7	6,993.5	6,853.2	16.3	22.4	105.07	1,078.9	143.0	469.3	445.5	23.85	19.680	
7,000.0	6,860.4	7,113.4	6,953.9	16.5	22.4	108.15	1,078.9	78.1	477.1	452.5	24.58	19.408	
7,100.0	6,916.2	7,239.8	7,046.7	16.8	22.5	110.87	1,078.9	-7.4	485.1	459.4	25.64	18.917	
7,200.0	6,959.8	7,372.4	7,126.3	17.4	22.8	113.10	1,078.9	-113.3	492.4	465.2	27.17	18.121	
7,300.0	6,990.5	7,510.6	7,187.1	18.3	23.3	114.78	1,078.9	-237.1	498.3	469.1	29.18	17.075	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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	180.00	-7.3	0.0	7.3				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-7.3	0.0	7.3	7.0	0.30	23.991	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-7.3	0.0	7.3	6.6	0.65	11.161	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-7.3	0.0	7.3	6.3	1.00	7.272	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	161.75	-7.3	0.0	8.1	6.8	1.35	6.003	
500.0	500.0	500.1	500.1	0.9	0.9	163.04	-6.7	0.6	10.0	8.3	1.70	5.857	
600.0	599.9	600.2	600.2	1.0	1.0	160.84	-4.8	2.5	12.2	10.1	2.05	5.935	
700.0	699.7	700.3	700.2	1.2	1.2	156.90	-1.7	5.6	14.8	12.4	2.41	6.153	
800.0	799.4	800.5	800.1	1.4	1.4	152.28	2.6	9.9	18.0	15.2	2.78	6.467	
900.0	898.9	900.6	899.9	1.7	1.6	147.63	8.2	15.5	21.8	18.6	3.18	6.847	
1,000.0	998.3	1,000.5	999.4	1.9	1.8	144.92	14.3	21.6	26.6	23.0	3.59	7.416	
1,100.0	1,097.4	1,100.3	1,098.9	2.2	2.0	144.87	20.5	27.8	32.9	28.9	4.00	8.227	
1,200.0	1,196.3	1,199.9	1,198.2	2.5	2.3	146.24	26.6	33.9	40.6	36.2	4.41	9.219	
1,300.0	1,294.9	1,299.5	1,297.4	2.8	2.5	148.23	32.8	40.0	49.8	45.0	4.81	10.365	
1,400.0	1,393.4	1,399.0	1,396.5	3.1	2.7	150.07	38.9	46.2	59.9	54.7	5.21	11.490	
1,500.0	1,491.9	1,498.5	1,495.6	3.5	2.9	151.37	45.0	52.3	69.9	64.3	5.61	12.459	
1,600.0	1,590.4	1,598.0	1,594.7	3.8	3.2	152.35	51.1	58.4	80.0	74.0	6.02	13.300	
1,700.0	1,688.9	1,697.4	1,693.8	4.1	3.4	153.11	57.3	64.6	90.1	83.7	6.42	14.036	
1,800.0	1,787.3	1,796.9	1,792.9	4.5	3.6	153.71	63.4	70.7	100.2	93.4	6.82	14.686	
1,900.0	1,885.8	1,896.4	1,892.0	4.8	3.8	154.21	69.5	76.8	110.3	103.1	7.23	15.262	
2,000.0	1,984.3	1,995.9	1,991.1	5.1	4.1	154.62	75.7	83.0	120.5	112.8	7.64	15.778	
2,100.0	2,082.8	2,095.4	2,090.2	5.5	4.3	154.97	81.8	89.1	130.6	122.6	8.04	16.241	
2,200.0	2,181.3	2,194.8	2,189.3	5.8	4.5	155.26	87.9	95.2	140.8	132.3	8.45	16.659	
2,300.0	2,279.7	2,294.3	2,288.4	6.2	4.7	155.52	94.1	101.3	150.9	142.0	8.86	17.039	
2,400.0	2,378.2	2,393.8	2,387.5	6.5	5.0	155.75	100.2	107.5	161.0	151.8	9.26	17.385	
2,500.0	2,476.7	2,493.3	2,486.6	6.9	5.2	155.94	106.3	113.6	171.2	161.5	9.67	17.702	
2,600.0	2,575.2	2,592.8	2,585.7	7.2	5.4	156.12	112.5	119.7	181.3	171.3	10.08	17.994	
2,700.0	2,673.7	2,692.3	2,684.8	7.6	5.7	156.28	118.6	125.9	191.5	181.0	10.49	18.262	
2,800.0	2,772.1	2,791.7	2,783.9	7.9	5.9	156.42	124.7	132.0	201.6	190.7	10.89	18.510	
2,900.0	2,870.6	2,891.2	2,883.0	8.2	6.1	156.55	130.8	138.1	211.8	200.5	11.30	18.740	
3,000.0	2,969.1	2,990.7	2,982.1	8.6	6.3	156.66	137.0	144.3	222.0	210.2	11.71	18.955	
3,100.0	3,067.6	3,090.2	3,081.2	8.9	6.6	156.77	143.1	150.4	232.1	220.0	12.12	19.154	
3,200.0	3,166.1	3,189.7	3,180.3	9.3	6.8	156.87	149.2	156.5	242.3	229.7	12.53	19.340	
3,300.0	3,264.5	3,289.1	3,279.4	9.6	7.0	156.96	155.4	162.7	252.4	239.5	12.93	19.515	
3,400.0	3,363.0	3,388.6	3,378.5	10.0	7.3	157.04	161.5	168.8	262.6	249.2	13.34	19.679	
3,500.0	3,461.5	3,486.0	3,475.5	10.3	7.5	157.17	167.2	174.5	273.0	259.3	13.74	19.874	
3,600.0	3,560.0	3,582.1	3,571.5	10.7	7.7	157.52	171.8	179.1	284.5	270.4	14.10	20.183	
3,700.0	3,658.5	3,677.9	3,667.1	11.0	7.8	158.07	175.2	182.5	297.2	282.7	14.43	20.601	
3,800.0	3,757.0	3,773.4	3,762.5	11.4	8.0	158.79	177.5	184.8	311.0	296.3	14.73	21.119	
3,900.0	3,855.4	3,868.4	3,857.5	11.7	8.2	159.64	178.7	186.0	326.1	311.1	15.00	21.732	
4,000.0	3,953.9	3,964.8	3,953.9	12.1	8.3	160.60	178.9	186.1	342.3	327.0	15.27	22.416	
4,100.0	4,052.4	4,063.3	4,052.4	12.4	8.4	161.52	178.9	186.1	358.7	343.2	15.54	23.085	
4,200.0	4,150.9	4,161.8	4,150.9	12.8	8.6	162.38	178.9	186.1	375.0	359.2	15.82	23.708	
4,300.0	4,249.7	4,260.5	4,249.7	13.1	8.7	163.12	178.9	186.1	390.0	373.9	16.11	24.207	
4,400.0	4,348.7	4,359.6	4,348.7	13.4	8.9	163.73	178.9	186.1	403.4	386.9	16.41	24.580	
4,500.0	4,448.0	4,458.8	4,448.0	13.6	9.0	164.23	178.9	186.1	415.1	398.4	16.71	24.834	
4,600.0	4,547.4	4,558.3	4,547.4	13.9	9.2	164.64	178.9	186.1	425.1	408.1	17.02	24.977	
4,700.0	4,647.0	4,657.9	4,647.0	14.1	9.3	164.97	178.9	186.1	433.6	416.2	17.33	25.014	
4,800.0	4,746.8	4,757.6	4,746.8	14.3	9.5	165.22	178.9	186.1	440.3	422.7	17.64	24.953	
4,900.0	4,846.6	4,857.5	4,846.6	14.4	9.6	165.41	178.9	186.1	445.4	427.4	17.96	24.799	
5,000.0	4,946.6	4,957.4	4,946.6	14.6	9.8	165.53	178.9	186.1	448.7	430.5	18.27	24.556	
5,100.0	5,046.6	5,057.4	5,046.6	14.7	9.9	165.59	178.9	186.1	450.4	431.8	18.59	24.231	

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 Liberty 2B-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 2B-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	5,146.6	5,157.4	5,146.6	14.8	10.1	-174.01	178.9	186.1	450.6	426.5	24.17	18.646	
5,300.0	5,246.6	5,257.4	5,246.6	14.9	10.2	-174.01	178.9	186.1	450.6	426.2	24.44	18.438	
5,400.0	5,346.6	5,357.4	5,346.6	15.0	10.4	-174.01	178.9	186.1	450.6	425.9	24.71	18.234	
5,500.0	5,446.6	5,457.4	5,446.6	15.1	10.6	-174.01	178.9	186.1	450.6	425.7	24.99	18.033	
5,600.0	5,546.6	5,557.4	5,546.6	15.2	10.7	-174.01	178.9	186.1	450.6	425.4	25.27	17.836	
5,700.0	5,646.6	5,657.4	5,646.6	15.3	10.9	-174.01	178.9	186.1	450.6	425.1	25.54	17.642	
5,800.0	5,746.6	5,757.4	5,746.6	15.5	11.0	-174.01	178.9	186.1	450.6	424.8	25.82	17.450	
5,900.0	5,846.6	5,857.4	5,846.6	15.6	11.2	-174.01	178.9	186.1	450.6	424.5	26.11	17.262	
6,000.0	5,946.6	5,957.4	5,946.6	15.7	11.4	-174.01	178.9	186.1	450.6	424.3	26.39	17.078	
6,100.0	6,046.6	6,057.4	6,046.6	15.8	11.5	-174.01	178.9	186.1	450.6	424.0	26.67	16.896	
6,200.0	6,146.6	6,157.4	6,146.6	15.9	11.7	-174.01	178.9	186.1	450.6	423.7	26.96	16.717	
6,300.0	6,246.6	6,257.4	6,246.6	16.0	11.8	-174.01	178.9	186.1	450.6	423.4	27.24	16.541	
6,400.0	6,346.5	6,357.4	6,346.5	16.1	12.0	-84.25	178.9	186.1	450.5	427.5	22.94	19.640	
6,500.0	6,445.4	6,456.3	6,445.4	16.2	12.2	-86.11	178.9	186.1	449.3	425.9	23.31	19.270	
6,600.0	6,541.4	6,552.1	6,541.3	16.2	12.3	-89.50	178.9	185.4	448.2	424.5	23.73	18.889	
6,613.7	6,554.2	6,565.1	6,554.2	16.2	12.3	-90.00	178.9	184.7	448.2	424.4	23.78	18.850	
6,700.0	6,632.6	6,648.9	6,637.3	16.2	12.4	-93.20	178.9	174.6	448.9	424.9	24.03	18.680	
6,800.0	6,717.3	6,750.0	6,735.2	16.2	12.5	-96.89	178.9	149.6	451.8	427.6	24.21	18.657	
6,900.0	6,793.7	6,856.0	6,833.0	16.3	12.5	-100.50	178.9	108.9	456.5	432.2	24.34	18.759	
7,000.0	6,860.4	6,967.6	6,928.2	16.5	12.6	-103.94	178.9	50.9	462.9	438.4	24.55	18.854	
7,100.0	6,916.2	7,085.2	7,017.6	16.8	12.8	-107.13	178.9	-25.3	470.4	445.3	25.11	18.736	
7,200.0	6,959.8	7,209.1	7,096.9	17.4	13.4	-109.97	178.9	-120.3	478.3	452.0	26.28	18.198	
7,300.0	6,990.5	7,339.3	7,161.2	18.3	14.6	-112.37	178.9	-233.3	485.9	457.5	28.34	17.141	
7,400.0	7,007.7	7,475.2	7,205.5	19.5	16.5	-114.23	178.9	-361.6	492.2	460.8	31.40	15.678	
7,500.0	7,011.1	7,615.7	7,225.0	21.1	18.9	-115.50	178.9	-500.5	496.7	461.4	35.28	14.080	
7,600.0	7,009.4	7,728.3	7,224.3	22.8	21.1	-115.63	178.9	-613.1	497.1	458.1	38.96	12.758	
7,700.0	7,007.6	7,828.3	7,222.6	24.7	23.1	-115.63	178.9	-713.0	497.0	454.4	42.64	11.658	
7,800.0	7,005.9	7,928.3	7,220.8	26.7	25.2	-115.63	178.9	-813.0	497.0	450.6	46.45	10.700	
7,900.0	7,004.1	8,028.3	7,219.1	28.8	27.4	-115.63	178.9	-913.0	497.0	446.7	50.37	9.867	
8,000.0	7,002.4	8,128.3	7,217.3	30.9	29.6	-115.63	178.9	-1,013.0	497.0	442.7	54.38	9.141	
8,100.0	7,000.6	8,228.3	7,215.6	33.1	31.9	-115.63	178.9	-1,113.0	497.0	438.6	58.45	8.504	
8,200.0	6,998.9	8,328.3	7,213.8	35.4	34.1	-115.63	178.9	-1,213.0	497.0	434.5	62.58	7.943	
8,300.0	6,997.1	8,428.3	7,212.1	37.6	36.5	-115.63	178.9	-1,312.9	497.0	430.3	66.74	7.447	
8,400.0	6,995.4	8,528.3	7,210.3	39.9	38.8	-115.63	178.9	-1,412.9	497.0	426.1	70.95	7.005	
8,500.0	6,993.7	8,628.3	7,208.6	42.2	41.1	-115.63	178.9	-1,512.9	497.0	421.8	75.19	6.611	
8,600.0	6,991.9	8,728.3	7,206.8	44.6	43.5	-115.63	178.9	-1,612.9	497.0	417.6	79.45	6.256	
8,700.0	6,990.2	8,828.3	7,205.1	46.9	45.9	-115.63	178.9	-1,712.9	497.0	413.3	83.73	5.936	
8,800.0	6,988.4	8,928.3	7,203.4	49.3	48.3	-115.63	178.9	-1,812.9	497.0	409.0	88.03	5.646	
8,900.0	6,986.7	9,028.3	7,201.6	51.6	50.7	-115.63	178.9	-1,912.9	497.0	404.7	92.34	5.382	
9,000.0	6,984.9	9,128.3	7,199.9	54.0	53.1	-115.63	178.9	-2,012.8	497.0	400.4	96.67	5.141	
9,100.0	6,983.2	9,228.3	7,198.1	56.4	55.5	-115.63	178.9	-2,112.8	497.0	396.0	101.01	4.920	
9,200.0	6,981.4	9,328.3	7,196.4	58.8	57.9	-115.63	178.9	-2,212.8	497.0	391.7	105.36	4.717	
9,300.0	6,979.7	9,428.3	7,194.6	61.2	60.3	-115.63	178.9	-2,312.8	497.0	387.3	109.72	4.530	
9,400.0	6,977.9	9,528.3	7,192.9	63.6	62.7	-115.63	178.9	-2,412.8	497.0	382.9	114.09	4.356	
9,500.0	6,976.2	9,628.3	7,191.1	66.0	65.1	-115.63	178.9	-2,512.8	497.0	378.5	118.46	4.195	
9,600.0	6,974.5	9,728.3	7,189.4	68.4	67.6	-115.63	178.9	-2,612.7	497.0	374.2	122.85	4.046	
9,700.0	6,972.7	9,828.3	7,187.6	70.8	70.0	-115.63	178.9	-2,712.7	497.0	369.8	127.23	3.906	
9,800.0	6,971.0	9,928.3	7,185.9	73.3	72.4	-115.63	178.9	-2,812.7	497.0	365.4	131.63	3.776	
9,900.0	6,969.2	10,028.3	7,184.2	75.7	74.9	-115.63	178.9	-2,912.7	497.0	361.0	136.02	3.654	
10,000.0	6,967.5	10,128.3	7,182.4	78.1	77.3	-115.63	178.9	-3,012.7	497.0	356.6	140.42	3.539	
10,100.0	6,965.7	10,228.3	7,180.7	80.5	79.8	-115.63	178.9	-3,112.7	497.0	352.2	144.83	3.432	
10,200.0	6,964.0	10,328.3	7,178.9	83.0	82.2	-115.63	178.9	-3,212.7	497.0	347.8	149.24	3.330	

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 Liberty 2B-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 2B-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	6,962.2	10,428.3	7,177.2	85.4	84.6	-115.63	178.9	-3,312.6	497.0	343.3	153.65	3.235	
10,400.0	6,960.5	10,528.3	7,175.4	87.8	87.1	-115.63	178.9	-3,412.6	497.0	338.9	158.06	3.144	
10,500.0	6,958.7	10,628.3	7,173.7	90.3	89.5	-115.63	178.9	-3,512.6	497.0	334.5	162.48	3.059	
10,600.0	6,957.0	10,728.3	7,171.9	92.7	92.0	-115.63	178.9	-3,612.6	497.0	330.1	166.90	2.978	
10,700.0	6,955.3	10,828.3	7,170.2	95.2	94.4	-115.63	178.9	-3,712.6	497.0	325.7	171.32	2.901	
10,800.0	6,953.5	10,928.3	7,168.4	97.6	96.9	-115.63	178.9	-3,812.6	497.0	321.2	175.75	2.828	
10,900.0	6,951.8	11,028.3	7,166.7	100.1	99.3	-115.63	178.9	-3,912.5	497.0	316.8	180.17	2.758	
11,000.0	6,950.0	11,128.3	7,165.0	102.5	101.8	-115.63	178.9	-4,012.5	497.0	312.4	184.60	2.692	
11,100.0	6,948.3	11,228.3	7,163.2	105.0	104.3	-115.63	178.9	-4,112.5	497.0	307.9	189.03	2.629	
11,200.0	6,946.5	11,328.3	7,161.5	107.4	106.7	-115.63	178.9	-4,212.5	497.0	303.5	193.46	2.569	
11,300.0	6,944.8	11,428.3	7,159.7	109.9	109.2	-115.63	178.9	-4,312.5	497.0	299.1	197.90	2.511	
11,400.0	6,943.0	11,528.3	7,158.0	112.3	111.6	-115.63	178.9	-4,412.5	497.0	294.6	202.33	2.456	
11,500.0	6,941.3	11,628.3	7,156.2	114.8	114.1	-115.63	178.9	-4,512.5	497.0	290.2	206.77	2.404	
11,545.7	6,940.5	11,674.0	7,155.4	115.9	115.2	-115.63	178.9	-4,558.1	497.0	288.2	208.79	2.380	
11,562.8	6,940.2	11,687.5	7,155.2	116.3	115.5	-115.63	178.9	-4,571.6	497.0	287.5	209.47	2.373	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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 2D-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	-18.2	0.0	18.2				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-18.2	0.0	18.2	17.9	0.30	59.991	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-18.2	0.0	18.2	17.6	0.65	27.910	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-18.2	0.0	18.2	17.2	1.00	18.185	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	160.51	-18.2	0.0	19.0	17.7	1.35	14.094	
500.0	500.0	499.7	499.7	0.9	0.8	161.32	-18.9	0.5	22.2	20.5	1.70	13.048	SF
600.0	599.9	599.2	599.1	1.0	1.0	160.68	-20.9	2.2	28.3	26.2	2.05	13.800	
700.0	699.7	698.3	698.2	1.2	1.2	159.47	-24.3	4.9	37.4	35.0	2.40	15.553	
800.0	799.4	797.0	796.7	1.4	1.4	158.20	-28.9	8.7	49.4	46.7	2.76	17.912	
900.0	898.9	895.1	894.4	1.7	1.6	157.09	-34.8	13.5	64.5	61.3	3.12	20.646	
1,000.0	998.3	993.5	992.5	1.9	1.8	156.46	-41.5	18.8	81.8	78.3	3.49	23.449	
1,100.0	1,097.4	1,091.7	1,090.3	2.2	2.0	156.43	-48.1	24.2	100.8	96.9	3.86	26.103	
1,200.0	1,196.3	1,189.5	1,187.8	2.5	2.2	156.72	-54.8	29.6	121.3	117.1	4.23	28.642	
1,300.0	1,294.9	1,287.1	1,285.0	2.8	2.5	157.17	-61.4	35.0	143.4	138.8	4.61	31.094	
1,400.0	1,393.4	1,384.4	1,381.9	3.1	2.7	157.69	-68.0	40.3	166.3	161.3	5.00	33.287	
1,500.0	1,491.9	1,481.7	1,478.9	3.5	2.9	158.08	-74.6	45.6	189.2	183.8	5.38	35.159	
1,600.0	1,590.4	1,579.1	1,575.9	3.8	3.1	158.38	-81.2	51.0	212.1	206.3	5.77	36.776	
1,700.0	1,688.9	1,676.4	1,672.8	4.1	3.3	158.63	-87.8	56.3	235.0	228.8	6.15	38.186	
1,800.0	1,787.3	1,773.7	1,769.8	4.5	3.6	158.83	-94.3	61.6	257.9	251.4	6.54	39.425	
1,900.0	1,885.8	1,871.1	1,866.7	4.8	3.8	159.00	-100.9	67.0	280.8	273.9	6.93	40.522	
2,000.0	1,984.3	1,968.4	1,963.7	5.1	4.0	159.14	-107.5	72.3	303.7	296.4	7.32	41.500	
2,100.0	2,082.8	2,065.7	2,060.7	5.5	4.2	159.27	-114.1	77.7	326.7	319.0	7.71	42.378	
2,200.0	2,181.3	2,163.1	2,157.6	5.8	4.4	159.37	-120.7	83.0	349.6	341.5	8.10	43.169	
2,300.0	2,279.7	2,260.4	2,254.6	6.2	4.7	159.47	-127.3	88.3	372.5	364.0	8.49	43.886	
2,400.0	2,378.2	2,357.8	2,351.6	6.5	4.9	159.55	-133.9	93.7	395.4	386.6	8.88	44.539	
2,500.0	2,476.7	2,455.1	2,448.5	6.9	5.1	159.62	-140.5	99.0	418.4	409.1	9.27	45.136	
2,600.0	2,575.2	2,552.4	2,545.5	7.2	5.3	159.69	-147.1	104.4	441.3	431.6	9.66	45.684	
2,700.0	2,673.7	2,649.8	2,642.5	7.6	5.6	159.75	-153.7	109.7	464.2	454.2	10.05	46.188	
2,800.0	2,772.1	2,747.1	2,739.4	7.9	5.8	159.81	-160.3	115.0	487.1	476.7	10.44	46.654	

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 Liberty 2B-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 2B-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	-29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-29.1	0.0	29.1	28.8	0.30	95.963	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.65	44.646	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-29.1	0.0	29.1	28.1	1.00	29.090	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	160.18	-29.1	0.0	30.0	28.6	1.35	22.180	
500.0	500.0	499.4	499.4	0.9	0.8	161.22	-30.0	0.3	33.3	31.6	1.70	19.572	
600.0	599.9	598.6	598.6	1.0	1.0	161.96	-32.4	1.1	39.8	37.8	2.05	19.457	SF
700.0	699.7	697.4	697.3	1.2	1.2	162.37	-36.5	2.4	49.7	47.3	2.40	20.739	
800.0	799.4	795.6	795.3	1.4	1.4	162.53	-42.1	4.2	62.8	60.0	2.74	22.875	
900.0	898.9	893.2	892.6	1.7	1.6	162.55	-49.3	6.6	79.1	76.0	3.09	25.562	
1,000.0	998.3	989.8	988.8	1.9	1.8	162.49	-58.0	9.4	98.6	95.2	3.45	28.620	
1,100.0	1,097.4	1,085.5	1,083.9	2.2	2.0	162.39	-68.1	12.7	121.3	117.5	3.80	31.932	
1,200.0	1,196.3	1,180.1	1,177.7	2.5	2.3	162.27	-79.6	16.4	147.1	142.9	4.15	35.417	
1,300.0	1,294.9	1,273.4	1,270.0	2.8	2.6	162.14	-92.3	20.5	176.0	171.5	4.51	39.019	
1,400.0	1,393.4	1,365.5	1,361.0	3.1	2.8	162.03	-106.3	25.1	207.1	202.2	4.88	42.474	
1,500.0	1,491.9	1,459.0	1,453.0	3.5	3.1	161.84	-121.7	30.1	239.3	234.1	5.25	45.620	
1,600.0	1,590.4	1,553.6	1,546.2	3.8	3.4	161.68	-137.3	35.1	271.7	266.0	5.62	48.336	
1,700.0	1,688.9	1,648.2	1,639.4	4.1	3.7	161.56	-152.9	40.2	304.0	298.0	6.00	50.701	
1,800.0	1,787.3	1,742.9	1,732.6	4.5	4.1	161.46	-168.5	45.3	336.4	330.0	6.37	52.777	
1,900.0	1,885.8	1,837.5	1,825.8	4.8	4.4	161.38	-184.2	50.4	368.7	362.0	6.75	54.613	
2,000.0	1,984.3	1,932.1	1,918.9	5.1	4.7	161.31	-199.8	55.5	401.1	393.9	7.13	56.247	
2,100.0	2,082.8	2,026.7	2,012.1	5.5	5.0	161.25	-215.4	60.5	433.4	425.9	7.51	57.712	
2,200.0	2,181.3	2,121.3	2,105.3	5.8	5.3	161.20	-231.1	65.6	465.8	457.9	7.89	59.030	
2,300.0	2,279.7	2,216.0	2,198.5	6.2	5.7	161.16	-246.7	70.7	498.1	489.8	8.27	60.224	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Liberty 2B-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 2B-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	-40.1	0.0	40.1				
100.0	100.0	100.0	100.0	0.2	0.2	-180.00	-40.1	0.0	40.1	39.8	0.30	131.949	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-40.1	0.0	40.1	39.4	0.65	61.388	
233.3	233.3	233.3	233.3	0.4	0.4	-180.00	-40.1	0.0	40.1	39.3	0.77	52.100	CC
300.0	300.0	299.7	299.7	0.5	0.5	179.94	-40.3	0.0	40.3	39.3	1.00	40.235	ES
400.0	400.0	398.9	398.9	0.7	0.7	159.50	-42.0	0.4	42.8	41.5	1.35	31.729	
500.0	500.0	498.0	497.9	0.9	0.9	159.79	-45.3	1.0	48.7	47.0	1.70	28.676	
600.0	599.9	596.7	596.4	1.0	1.0	160.25	-50.4	2.0	57.8	55.8	2.04	28.288	SF
700.0	699.7	694.8	694.3	1.2	1.2	160.74	-57.0	3.3	70.3	67.9	2.39	29.397	
800.0	799.4	792.2	791.4	1.4	1.5	161.19	-65.2	4.9	86.1	83.3	2.74	31.425	
900.0	898.9	888.8	887.5	1.7	1.7	161.58	-75.0	6.8	105.1	102.0	3.09	34.051	
1,000.0	998.3	984.4	982.4	1.9	1.9	161.89	-86.2	9.0	127.4	123.9	3.43	37.084	
1,100.0	1,097.4	1,078.9	1,076.0	2.2	2.2	162.13	-98.8	11.4	152.8	149.0	3.78	40.401	
1,200.0	1,196.3	1,172.1	1,168.1	2.5	2.5	162.31	-112.8	14.1	181.4	177.2	4.13	43.918	
1,300.0	1,294.9	1,263.9	1,258.6	2.8	2.8	162.45	-127.9	17.1	213.0	208.5	4.48	47.577	
1,400.0	1,393.4	1,354.5	1,347.6	3.1	3.1	162.60	-144.2	20.2	246.9	242.1	4.83	51.092	
1,500.0	1,491.9	1,444.0	1,435.4	3.5	3.4	162.64	-161.8	23.7	282.2	277.1	5.19	54.395	
1,600.0	1,590.4	1,532.5	1,521.8	3.8	3.8	162.60	-180.4	27.3	319.0	313.4	5.55	57.522	
1,700.0	1,688.9	1,620.0	1,607.0	4.1	4.1	162.51	-200.1	31.1	357.1	351.2	5.90	60.503	
1,800.0	1,787.3	1,706.4	1,690.7	4.5	4.5	162.39	-220.8	35.1	396.5	390.3	6.26	63.361	
1,900.0	1,885.8	1,794.7	1,776.1	4.8	4.9	162.24	-243.1	39.5	437.2	430.6	6.62	66.037	
2,000.0	1,984.3	1,886.0	1,864.3	5.1	5.4	162.11	-266.3	44.0	478.0	471.0	6.99	68.399	

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 Liberty 2B-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 2B-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
700.0	699.7	787.3	783.4	1.2	1.8	-43.59	454.1	-179.0	485.1	482.5	2.58	187.854	
800.0	799.4	884.6	879.2	1.4	2.1	-43.99	439.9	-169.4	462.3	459.3	2.95	156.897	
900.0	898.9	981.6	974.7	1.7	2.5	-44.59	425.8	-159.7	438.2	434.9	3.32	132.128	
1,000.0	998.3	1,078.3	1,069.8	1.9	2.8	-45.43	411.8	-150.1	413.0	409.3	3.70	111.766	
1,100.0	1,097.4	1,174.5	1,164.6	2.2	3.1	-46.56	397.8	-140.6	386.7	382.6	4.08	94.657	
1,200.0	1,196.3	1,270.4	1,258.9	2.5	3.5	-48.04	383.9	-131.1	359.3	354.8	4.49	80.020	
1,300.0	1,294.9	1,365.8	1,352.8	2.8	3.8	-49.98	370.0	-121.6	331.1	326.2	4.92	67.313	
1,400.0	1,393.4	1,461.0	1,446.5	3.1	4.1	-52.14	356.1	-112.1	302.7	297.3	5.37	56.360	
1,500.0	1,491.9	1,556.1	1,540.2	3.5	4.5	-54.74	342.3	-102.7	274.7	268.9	5.85	46.987	
1,600.0	1,590.4	1,651.3	1,633.9	3.8	4.8	-57.91	328.5	-93.2	247.4	241.1	6.36	38.907	
1,700.0	1,688.9	1,746.5	1,727.6	4.1	5.1	-61.83	314.6	-83.8	221.0	214.1	6.93	31.909	
1,800.0	1,787.3	1,841.7	1,821.3	4.5	5.5	-66.75	300.8	-74.3	195.9	188.3	7.58	25.854	
1,900.0	1,885.8	1,936.8	1,915.0	4.8	5.8	-72.99	287.0	-64.9	172.5	164.2	8.34	20.676	
2,000.0	1,984.3	2,032.0	2,008.7	5.1	6.1	-80.96	273.1	-55.4	151.8	142.5	9.26	16.386	
2,100.0	2,082.8	2,127.2	2,102.4	5.5	6.5	-91.03	259.3	-46.0	134.9	124.6	10.33	13.061	
2,200.0	2,181.3	2,222.4	2,196.1	5.8	6.8	-103.24	245.4	-36.5	123.5	112.1	11.44	10.798	
2,300.0	2,279.7	2,317.6	2,289.8	6.2	7.2	-116.96	231.6	-27.1	119.1	106.7	12.37	9.630	
2,306.9	2,286.6	2,324.2	2,296.3	6.2	7.2	-117.94	230.7	-26.4	119.1	106.6	12.42	9.588	CC, ES
2,400.0	2,378.2	2,412.7	2,383.4	6.5	7.5	-130.79	217.8	-17.7	122.4	109.5	12.93	9.471	SF
2,500.0	2,476.7	2,507.9	2,477.1	6.9	7.8	-143.27	203.9	-8.2	133.0	119.8	13.14	10.124	
2,600.0	2,575.2	2,603.1	2,570.8	7.2	8.2	-153.64	190.1	1.2	149.2	136.0	13.16	11.333	
2,700.0	2,673.7	2,698.3	2,664.5	7.6	8.5	-161.89	176.3	10.7	169.5	156.3	13.17	12.865	
2,800.0	2,772.1	2,793.4	2,758.2	7.9	8.8	-168.35	162.4	20.1	192.5	179.3	13.23	14.547	
2,900.0	2,870.6	2,888.6	2,851.9	8.2	9.2	-173.43	148.6	29.6	217.4	204.1	13.36	16.270	
3,000.0	2,969.1	2,983.8	2,945.6	8.6	9.5	-177.47	134.7	39.0	243.7	230.1	13.56	17.971	
3,100.0	3,067.6	3,079.0	3,039.3	8.9	9.8	179.27	120.9	48.5	270.9	257.1	13.81	19.619	
3,200.0	3,166.1	3,174.2	3,133.0	9.3	10.2	176.60	107.1	57.9	298.7	284.7	14.09	21.199	
3,300.0	3,264.5	3,269.3	3,226.7	9.6	10.5	174.38	93.2	67.4	327.1	312.7	14.41	22.706	
3,400.0	3,363.0	3,364.5	3,320.4	10.0	10.9	172.52	79.4	76.8	355.9	341.1	14.74	24.138	
3,500.0	3,461.5	3,459.7	3,414.0	10.3	11.2	170.93	65.6	86.3	384.9	369.8	15.10	25.498	
3,600.0	3,560.0	3,554.9	3,507.7	10.7	11.5	169.56	51.7	95.7	414.2	398.7	15.46	26.788	
3,700.0	3,658.5	3,650.0	3,601.4	11.0	11.9	168.38	37.9	105.2	443.7	427.8	15.84	28.013	
3,800.0	3,757.0	3,745.2	3,695.1	11.4	12.2	167.34	24.1	114.6	473.3	457.1	16.22	29.175	

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 Liberty 2B-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 2B-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: Liberty 2B-21H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.32°