



## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Liberty 2A-21H
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Site:</b>	NENE S20-T3N-R68W (Liberty 2A-21H)	<b>North Reference:</b>	True
<b>Well:</b>	Liberty 2A-21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

<b>Project</b>	DJ Wattenberg		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 2A-21H					
Well Position	+N/-S	0.0 ft	Northing:	1,322,254.58 ft	Latitude:	40.216940
	+E/-W	0.0 ft	Easting:	3,136,925.14 ft	Longitude:	-105.009710
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,029.0 ft

<b>Wellbore</b>	HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	10/6/2011	8.90	66.86	52,998

<b>Design</b>	Plan #2				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN		<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	271.40	

<b>Plan Sections</b>										
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	
4,660.0	0.00	0.00	4,660.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,283.3	18.70	91.41	5,272.3	-2.5	100.8	3.00	3.00	0.00	91.41	
6,403.2	18.70	91.41	6,333.1	-11.3	459.7	0.00	0.00	0.00	0.00	
7,405.0	91.50	271.40	7,020.7	1.0	-47.2	11.00	7.27	17.97	179.99	
11,555.0	91.50	271.40	6,912.1	102.4	-4,194.5	0.00	0.00	0.00	0.00	Liberty 2A-21H PBHL

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<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Site:</b>	NENE S20-T3N-R68W (Liberty 2A-21H)	<b>North Reference:</b>	True
<b>Well:</b>	Liberty 2A-21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,121.0	0.00	0.00	4,121.0	0.0	0.0	0.0	0.00	0.00	Sussex
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,256.0	0.00	0.00	4,256.0	0.0	0.0	0.0	0.00	0.00	Sussex Marker
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,507.0	0.00	0.00	4,507.0	0.0	0.0	0.0	0.00	0.00	Shannon
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,660.0	0.00	0.00	4,660.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4660'
4,700.0	1.20	91.41	4,700.0	0.0	0.4	-0.4	3.00	3.00	

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<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Site:</b>	NENE S20-T3N-R68W (Liberty 2A-21H)	<b>North Reference:</b>	True
<b>Well:</b>	Liberty 2A-21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

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
4,800.0	4.20	91.41	4,799.9	-0.1	5.1	-5.1	3.00	3.00	
4,900.0	7.20	91.41	4,899.4	-0.4	15.1	-15.1	3.00	3.00	
5,000.0	10.20	91.41	4,998.2	-0.7	30.2	-30.2	3.00	3.00	
5,100.0	13.20	91.41	5,096.1	-1.2	50.4	-50.5	3.00	3.00	
5,200.0	16.20	91.41	5,192.8	-1.9	75.8	-75.8	3.00	3.00	
5,283.3	18.70	91.41	5,272.3	-2.5	100.8	-100.8	3.00	3.00	EOB; Inc=18.7°
5,300.0	18.70	91.41	5,288.1	-2.6	106.1	-106.2	0.00	0.00	
5,400.0	18.70	91.41	5,382.8	-3.4	138.2	-138.2	0.00	0.00	
5,500.0	18.70	91.41	5,477.6	-4.2	170.2	-170.3	0.00	0.00	
5,600.0	18.70	91.41	5,572.3	-5.0	202.3	-202.3	0.00	0.00	
5,700.0	18.70	91.41	5,667.0	-5.8	234.3	-234.4	0.00	0.00	
5,800.0	18.70	91.41	5,761.7	-6.6	266.4	-266.5	0.00	0.00	
5,900.0	18.70	91.41	5,856.4	-7.4	298.4	-298.5	0.00	0.00	
6,000.0	18.70	91.41	5,951.2	-8.1	330.5	-330.6	0.00	0.00	
6,100.0	18.70	91.41	6,045.9	-8.9	362.5	-362.6	0.00	0.00	
6,200.0	18.70	91.41	6,140.6	-9.7	394.6	-394.7	0.00	0.00	
6,300.0	18.70	91.41	6,235.3	-10.5	426.6	-426.8	0.00	0.00	
6,400.0	18.70	91.41	6,330.1	-11.3	458.7	-458.8	0.00	0.00	
6,403.2	18.70	91.41	6,333.1	-11.3	459.7	-459.8	0.00	0.00	Start 11° Build @ 6403' MD
6,500.0	8.05	91.43	6,427.1	-11.9	482.0	-482.2	11.00	-11.00	
6,600.0	2.95	271.32	6,526.9	-12.0	486.5	-486.6	11.00	-5.09	
6,700.0	13.95	271.38	6,625.6	-11.7	471.8	-472.0	11.00	11.00	
6,800.0	24.95	271.39	6,719.8	-10.8	438.6	-438.7	11.00	11.00	
6,900.0	35.95	271.39	6,805.9	-9.6	388.0	-388.1	11.00	11.00	
7,000.0	46.95	271.40	6,880.7	-8.0	321.9	-322.0	11.00	11.00	
7,068.5	54.48	271.40	6,924.0	-6.7	269.0	-269.1	11.00	11.00	Sharon Springs
7,100.0	57.95	271.40	6,941.5	-6.1	242.8	-242.8	11.00	11.00	
7,200.0	68.95	271.40	6,986.2	-3.9	153.5	-153.5	11.00	11.00	
7,275.1	77.22	271.40	7,008.0	-2.1	81.7	-81.7	11.00	11.00	Niobrara
7,300.0	79.95	271.40	7,012.9	-1.6	57.3	-57.3	11.00	11.00	
7,400.0	90.95	271.40	7,020.8	0.9	-42.2	42.2	11.00	11.00	
7,405.0	91.50	271.40	7,020.7	1.0	-47.2	47.2	11.00	11.00	Landing Pt @ 7020.7' TVD; 91.5°
7,500.0	91.50	271.40	7,018.2	3.3	-142.1	142.2	0.00	0.00	
7,600.0	91.50	271.40	7,015.6	5.8	-242.1	242.1	0.00	0.00	
7,700.0	91.50	271.40	7,013.0	8.2	-342.0	342.1	0.00	0.00	
7,800.0	91.50	271.40	7,010.4	10.6	-441.9	442.1	0.00	0.00	
7,900.0	91.50	271.40	7,007.8	13.1	-541.9	542.0	0.00	0.00	
8,000.0	91.50	271.40	7,005.2	15.5	-641.8	642.0	0.00	0.00	
8,100.0	91.50	271.40	7,002.5	18.0	-741.8	742.0	0.00	0.00	
8,200.0	91.50	271.40	6,999.9	20.4	-841.7	841.9	0.00	0.00	
8,300.0	91.50	271.40	6,997.3	22.9	-941.6	941.9	0.00	0.00	
8,400.0	91.50	271.40	6,994.7	25.3	-1,041.6	1,041.9	0.00	0.00	
8,500.0	91.50	271.40	6,992.1	27.7	-1,141.5	1,141.8	0.00	0.00	
8,600.0	91.50	271.40	6,989.5	30.2	-1,241.4	1,241.8	0.00	0.00	
8,700.0	91.50	271.40	6,986.8	32.6	-1,341.4	1,341.8	0.00	0.00	
8,800.0	91.50	271.40	6,984.2	35.1	-1,441.3	1,441.7	0.00	0.00	
8,900.0	91.50	271.40	6,981.6	37.5	-1,541.2	1,541.7	0.00	0.00	
9,000.0	91.50	271.40	6,979.0	40.0	-1,641.2	1,641.7	0.00	0.00	
9,100.0	91.50	271.40	6,976.4	42.4	-1,741.1	1,741.6	0.00	0.00	
9,200.0	91.50	271.40	6,973.7	44.8	-1,841.0	1,841.6	0.00	0.00	
9,300.0	91.50	271.40	6,971.1	47.3	-1,941.0	1,941.6	0.00	0.00	
9,400.0	91.50	271.40	6,968.5	49.7	-2,040.9	2,041.5	0.00	0.00	

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<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Site:</b>	NENE S20-T3N-R68W (Liberty 2A-21H)	<b>North Reference:</b>	True
<b>Well:</b>	Liberty 2A-21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### 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
9,500.0	91.50	271.40	6,965.9	52.2	-2,140.9	2,141.5	0.00	0.00	
9,600.0	91.50	271.40	6,963.3	54.6	-2,240.8	2,241.5	0.00	0.00	
9,700.0	91.50	271.40	6,960.7	57.1	-2,340.7	2,341.4	0.00	0.00	
9,800.0	91.50	271.40	6,958.0	59.5	-2,440.7	2,441.4	0.00	0.00	
9,900.0	91.50	271.40	6,955.4	61.9	-2,540.6	2,541.4	0.00	0.00	
10,000.0	91.50	271.40	6,952.8	64.4	-2,640.5	2,641.3	0.00	0.00	
10,100.0	91.50	271.40	6,950.2	66.8	-2,740.5	2,741.3	0.00	0.00	
10,200.0	91.50	271.40	6,947.6	69.3	-2,840.4	2,841.2	0.00	0.00	
10,300.0	91.50	271.40	6,945.0	71.7	-2,940.3	2,941.2	0.00	0.00	
10,400.0	91.50	271.40	6,942.3	74.2	-3,040.3	3,041.2	0.00	0.00	
10,500.0	91.50	271.40	6,939.7	76.6	-3,140.2	3,141.1	0.00	0.00	
10,600.0	91.50	271.40	6,937.1	79.0	-3,240.1	3,241.1	0.00	0.00	
10,700.0	91.50	271.40	6,934.5	81.5	-3,340.1	3,341.1	0.00	0.00	
10,800.0	91.50	271.40	6,931.9	83.9	-3,440.0	3,441.0	0.00	0.00	
10,900.0	91.50	271.40	6,929.2	86.4	-3,540.0	3,541.0	0.00	0.00	
11,000.0	91.50	271.40	6,926.6	88.8	-3,639.9	3,641.0	0.00	0.00	
11,100.0	91.50	271.40	6,924.0	91.2	-3,739.8	3,740.9	0.00	0.00	
11,200.0	91.50	271.40	6,921.4	93.7	-3,839.8	3,840.9	0.00	0.00	
11,300.0	91.50	271.40	6,918.8	96.1	-3,939.7	3,940.9	0.00	0.00	
11,400.0	91.50	271.40	6,916.2	98.6	-4,039.6	4,040.8	0.00	0.00	
11,500.0	91.50	271.40	6,913.5	101.0	-4,139.6	4,140.8	0.00	0.00	
11,555.0	91.50	271.40	6,912.1	102.4	-4,194.5	4,195.8	0.00	0.00	TD at 11555.0 - Liberty 2A-21H PBHL

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Liberty 2A-21H PBHL	0.00	0.00	6,912.1	102.4	-4,194.5	1,322,333.75	3,132,730.12	40.217220	-105.024730
- plan hits target center									
- Polygon									
Point 1			6,912.1	460.0	-400.0	1,322,791.53	3,132,327.59		
Point 2			6,912.1	460.0	400.0	1,322,795.96	3,133,127.57		

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,121.0	4,121.0	Sussex			
4,256.0	4,256.0	Sussex Marker			
4,507.0	4,507.0	Shannon			
7,068.5	6,924.0	Sharon Springs			
7,275.1	7,008.0	Niobrara			

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<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Liberty 2A-21H
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	KBE @ 5041.0ft (Original Well Elev)
<b>Site:</b>	NENE S20-T3N-R68W (Liberty 2A-21H)	<b>North Reference:</b>	True
<b>Well:</b>	Liberty 2A-21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,660.0	4,660.0	0.0	0.0	KOP @ 4660'
5,283.3	5,272.3	-2.5	100.8	EOB; Inc=18.7°
6,403.2	6,333.1	-11.3	459.7	Start 11° Build @ 6403' MD
7,405.0	7,020.7	1.0	-47.2	Landing Pt @ 7020.7' TVD; 91.5°
11,555.0	6,912.1	102.4	-4,194.5	TD at 11555.0