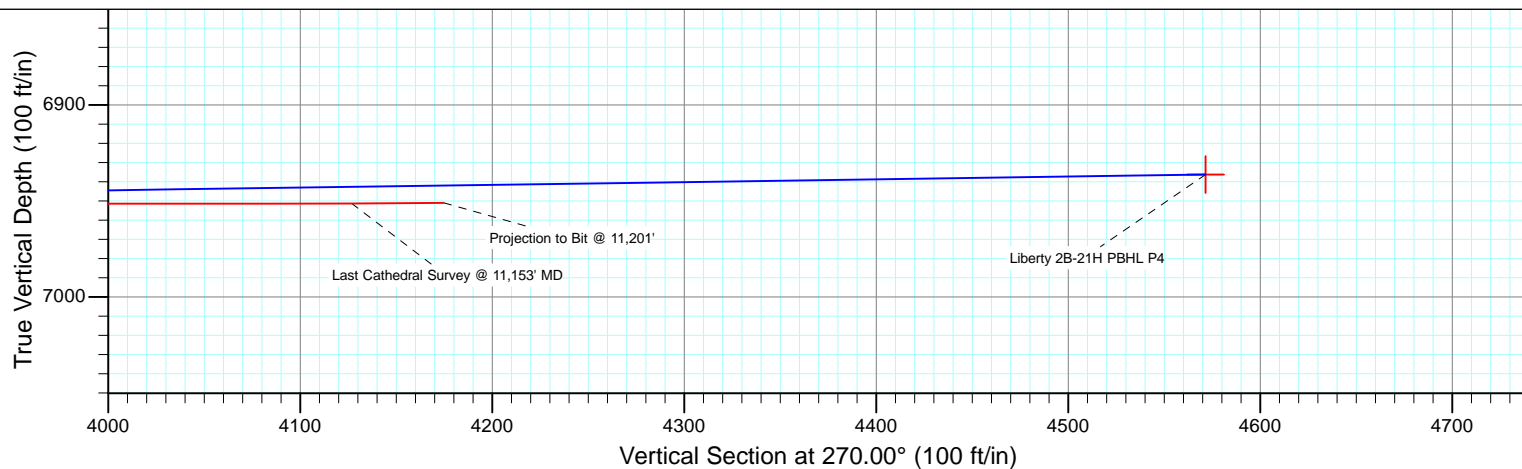
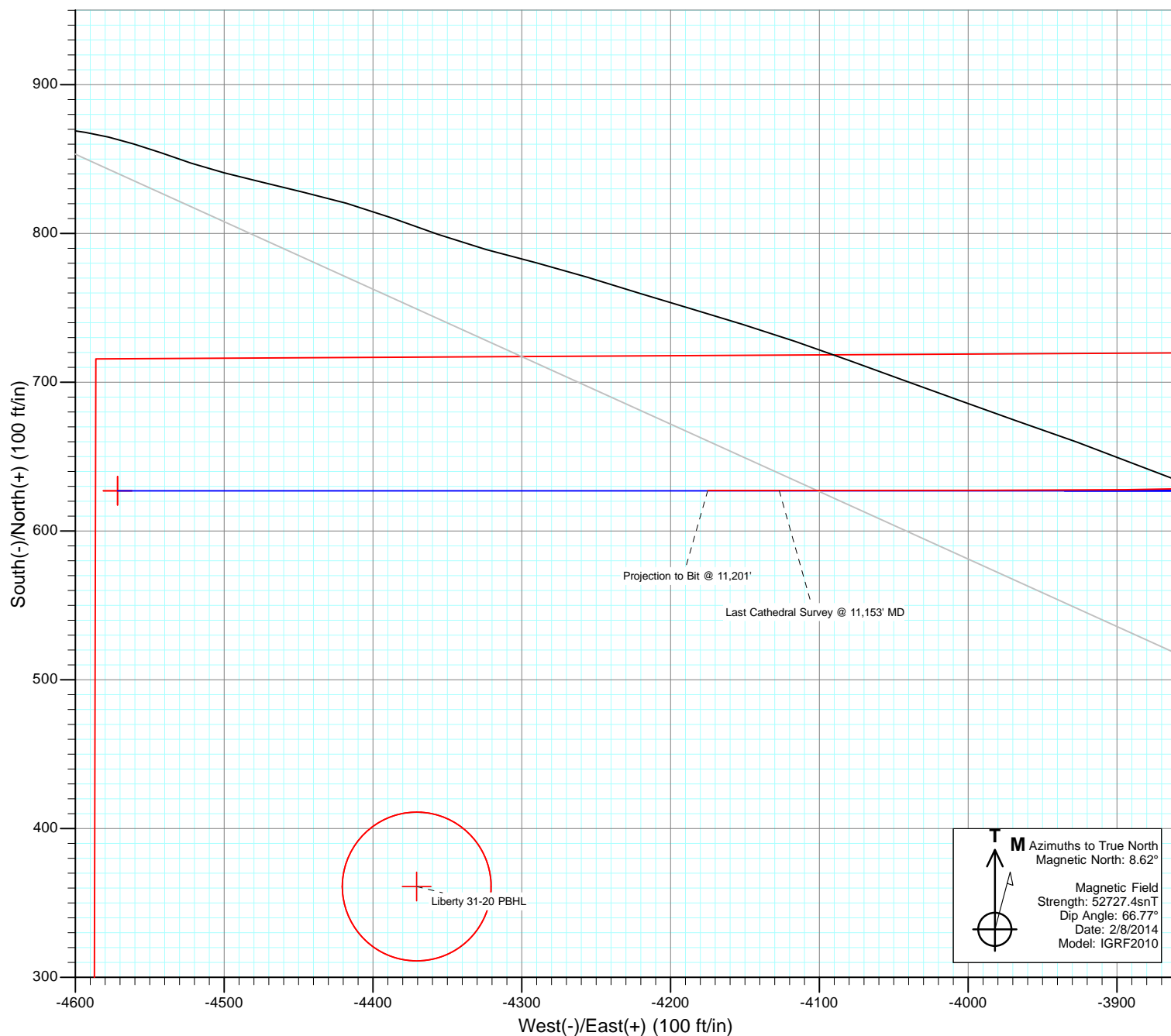




Project: DJ Wattenberg  
Site: S20-T3N-R68W (Liberty 2A-21H)  
Well: Liberty 2B-21H  
Wellbore: Hz  
Design: FINAL



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<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	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:	1,321,640.37 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

<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>
	IGRF2010	2/8/2014	8.62	66.77	52,727

<b>Design</b>	FINAL				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	270.00	

<b>Survey Program</b>	<b>Date</b>	2/16/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
237.0	11,201.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
237.0	0.40	152.30	237.0	-0.7	0.4	-0.4	0.17	0.17		
268.0	0.40	94.60	268.0	-0.8	0.5	-0.5	1.25	0.00		
298.0	0.60	72.30	298.0	-0.8	0.8	-0.8	0.92	0.67		
329.0	0.60	56.80	329.0	-0.7	1.1	-1.1	0.52	0.00		
421.0	1.70	41.20	421.0	0.6	2.4	-2.4	1.23	1.20		
513.0	2.10	15.70	512.9	3.3	3.7	-3.7	1.01	0.43		
605.0	2.90	14.30	604.8	7.2	4.8	-4.8	0.87	0.87		
696.0	4.00	16.00	695.7	12.4	6.2	-6.2	1.21	1.21		
788.0	5.00	20.50	787.4	19.3	8.5	-8.5	1.15	1.09		
868.0	6.10	15.50	867.0	26.6	10.9	-10.9	1.50	1.37		
1,007.0	6.10	11.90	1,005.2	41.0	14.4	-14.4	0.28	0.00		
1,098.0	8.40	16.70	1,095.5	52.1	17.3	-17.3	2.61	2.53		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

### Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,190.0	8.40	16.30	1,186.5	65.0	21.1	-21.1	0.06	0.00	
1,282.0	9.50	22.90	1,277.4	78.4	25.9	-25.9	1.63	1.20	
1,374.0	11.50	22.30	1,367.8	93.9	32.4	-32.4	2.18	2.17	
1,466.0	10.90	23.20	1,458.1	110.4	39.3	-39.3	0.68	-0.65	
1,558.0	11.20	19.50	1,548.4	126.8	45.7	-45.7	0.84	0.33	
1,650.0	10.90	18.90	1,638.7	143.4	51.5	-51.5	0.35	-0.33	
1,741.0	10.80	31.60	1,728.1	158.8	58.7	-58.7	2.62	-0.11	
1,833.0	9.60	22.50	1,818.6	173.3	66.2	-66.2	2.18	-1.30	
1,925.0	9.40	20.70	1,909.4	187.4	71.8	-71.8	0.39	-0.22	
2,019.0	9.00	17.60	2,002.1	201.6	76.7	-76.7	0.68	-0.43	
2,114.0	10.50	23.50	2,095.8	216.6	82.4	-82.4	1.90	1.58	
2,208.0	10.40	18.80	2,188.2	232.5	88.6	-88.6	0.91	-0.11	
2,303.0	10.20	26.50	2,281.7	248.1	95.1	-95.1	1.46	-0.21	
2,398.0	9.90	22.30	2,375.2	263.2	101.9	-101.9	0.83	-0.32	
2,493.0	9.80	16.70	2,468.8	278.5	107.4	-107.4	1.01	-0.11	
2,587.0	10.50	19.80	2,561.4	294.2	112.6	-112.6	0.94	0.74	
2,682.0	10.10	14.20	2,654.8	310.5	117.5	-117.5	1.13	-0.42	
2,776.0	9.60	19.30	2,747.5	325.9	122.1	-122.1	1.07	-0.53	
2,870.0	8.50	19.20	2,840.3	339.8	127.0	-127.0	1.17	-1.17	
2,965.0	9.00	18.30	2,934.2	353.5	131.7	-131.7	0.55	0.53	
3,059.0	10.60	17.60	3,026.8	368.7	136.6	-136.6	1.71	1.70	
3,154.0	10.00	25.10	3,120.3	384.5	142.7	-142.7	1.55	-0.63	
3,249.0	9.30	18.90	3,213.9	399.3	148.7	-148.7	1.32	-0.74	
3,343.0	9.70	22.60	3,306.6	413.7	154.2	-154.2	0.78	0.43	
3,438.0	8.20	16.70	3,400.5	427.6	159.2	-159.2	1.85	-1.58	
3,533.0	9.20	19.20	3,494.4	441.3	163.7	-163.7	1.13	1.05	
3,627.0	10.40	18.50	3,587.0	456.4	168.8	-168.8	1.28	1.28	
3,722.0	10.90	27.80	3,680.4	472.5	175.8	-175.8	1.88	0.53	
3,817.0	10.90	24.50	3,773.7	488.6	183.7	-183.7	0.66	0.00	
3,912.0	9.80	21.30	3,867.1	504.3	190.3	-190.3	1.31	-1.16	
4,006.0	8.40	16.90	3,959.9	518.4	195.2	-195.2	1.66	-1.49	
4,101.0	9.60	22.90	4,053.8	532.3	200.3	-200.3	1.60	1.26	
4,195.0	9.10	20.00	4,146.5	546.5	205.9	-205.9	0.73	-0.53	
4,290.0	8.70	17.30	4,240.4	560.4	210.6	-210.6	0.61	-0.42	
4,385.0	6.70	17.40	4,334.5	572.6	214.4	-214.4	2.11	-2.11	
4,479.0	6.10	12.80	4,427.9	582.7	217.2	-217.2	0.84	-0.64	
4,573.0	6.00	24.20	4,521.4	592.0	220.3	-220.3	1.28	-0.11	
4,668.0	5.40	38.90	4,616.0	600.0	225.1	-225.1	1.66	-0.63	
4,762.0	3.10	30.90	4,709.7	605.7	229.2	-229.2	2.52	-2.45	
4,857.0	2.70	23.40	4,804.6	609.9	231.4	-231.4	0.58	-0.42	
4,951.0	2.20	7.20	4,898.5	613.7	232.5	-232.5	0.90	-0.53	
5,046.0	1.80	357.50	4,993.4	617.0	232.7	-232.7	0.55	-0.42	
5,140.0	1.80	343.30	5,087.4	619.9	232.2	-232.2	0.47	0.00	
5,235.0	1.50	330.20	5,182.3	622.4	231.2	-231.2	0.51	-0.32	
5,330.0	0.90	90.60	5,277.3	623.5	231.3	-231.3	2.21	-0.63	
5,425.0	0.50	88.30	5,372.3	623.5	232.4	-232.4	0.42	-0.42	
5,520.0	0.40	101.20	5,467.3	623.5	233.2	-233.2	0.15	-0.11	
5,614.0	0.20	114.10	5,561.3	623.3	233.7	-233.7	0.22	-0.21	
5,709.0	0.20	337.70	5,656.3	623.4	233.7	-233.7	0.39	0.00	
5,804.0	0.40	294.40	5,751.3	623.7	233.4	-233.4	0.30	0.21	
5,899.0	0.80	272.60	5,846.3	623.9	232.4	-232.4	0.48	0.42	
5,994.0	0.80	356.00	5,941.3	624.6	231.7	-231.7	1.12	0.00	
6,088.0	1.20	327.40	6,035.3	626.0	231.1	-231.1	0.67	0.43	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
6,183.0	2.20	218.20	6,130.3	625.5	229.5	-229.5	2.98	1.05	
6,278.0	1.10	100.30	6,225.2	623.9	229.2	-229.2	3.04	-1.16	
6,372.0	0.30	114.00	6,319.2	623.6	230.4	-230.4	0.86	-0.85	
6,467.0	0.50	288.60	6,414.2	623.6	230.2	-230.2	0.84	0.21	
6,514.0	2.10	265.20	6,461.2	623.6	229.1	-229.1	3.52	3.40	
6,561.0	10.60	266.10	6,507.9	623.3	224.0	-224.0	18.09	18.09	
6,608.0	17.50	271.40	6,553.4	623.1	212.6	-212.6	14.92	14.68	
6,656.0	20.40	272.20	6,598.8	623.6	197.0	-197.0	6.07	6.04	
6,703.0	22.60	271.10	6,642.6	624.1	179.8	-179.8	4.76	4.68	
6,750.0	30.90	267.60	6,684.5	623.8	158.6	-158.6	17.97	17.66	
6,797.0	40.20	268.00	6,722.7	622.7	131.4	-131.4	19.79	19.79	
6,845.0	43.20	269.70	6,758.5	622.1	99.4	-99.4	6.68	6.25	
6,892.0	45.20	267.50	6,792.2	621.3	66.7	-66.7	5.36	4.26	
6,940.0	48.20	266.10	6,825.1	619.3	31.8	-31.8	6.60	6.25	
6,987.0	52.40	265.80	6,855.2	616.8	-4.2	4.2	8.95	8.94	
7,035.0	54.10	266.10	6,883.9	614.1	-42.6	42.6	3.58	3.54	
7,082.0	54.40	268.70	6,911.3	612.3	-80.7	80.7	4.53	0.64	
7,130.0	59.30	268.70	6,937.6	611.4	-120.9	120.9	10.21	10.21	
7,177.0	66.20	271.20	6,959.1	611.4	-162.6	162.6	15.42	14.68	
7,225.0	71.20	276.20	6,976.5	614.3	-207.2	207.2	14.23	10.42	
7,272.0	73.40	276.20	6,990.8	619.2	-251.7	251.7	4.68	4.68	
7,319.0	74.70	275.00	7,003.7	623.6	-296.7	296.7	3.70	2.77	
7,366.0	80.10	272.50	7,014.0	626.6	-342.4	342.4	12.61	11.49	
7,383.0	83.10	270.70	7,016.5	627.0	-359.3	359.3	20.52	17.65	
7,417.0	86.30	269.80	7,019.6	627.2	-393.1	393.1	9.77	9.41	
7,480.0	89.90	269.00	7,021.7	626.5	-456.1	456.1	5.85	5.71	
7,512.0	90.50	269.40	7,021.6	626.1	-488.1	488.1	2.25	1.87	
7,607.0	91.00	269.20	7,020.3	624.9	-583.0	583.0	0.57	0.53	
7,702.0	91.70	269.70	7,018.1	624.0	-678.0	678.0	0.91	0.74	
7,797.0	93.70	271.30	7,013.6	624.8	-772.9	772.9	2.69	2.11	
7,891.0	93.50	271.90	7,007.7	627.5	-866.7	866.7	0.67	-0.21	
7,986.0	94.50	272.40	7,001.1	631.0	-961.4	961.4	1.18	1.05	
8,081.0	93.90	271.70	6,994.1	634.4	-1,056.1	1,056.1	0.97	-0.63	
8,176.0	92.90	271.50	6,988.5	637.1	-1,150.8	1,150.8	1.07	-1.05	
8,270.0	90.70	270.50	6,985.6	638.7	-1,244.8	1,244.8	2.57	-2.34	
8,365.0	91.80	270.40	6,983.5	639.4	-1,339.8	1,339.8	1.16	1.16	
8,460.0	91.50	269.70	6,980.8	639.5	-1,434.7	1,434.7	0.80	-0.32	
8,554.0	91.70	269.00	6,978.1	638.5	-1,528.7	1,528.7	0.77	0.21	
8,649.0	91.30	269.20	6,975.6	637.0	-1,623.6	1,623.6	0.47	-0.42	
8,744.0	93.30	268.80	6,971.8	635.3	-1,718.5	1,718.5	2.15	2.11	
8,838.0	91.60	269.80	6,967.8	634.2	-1,812.4	1,812.4	2.10	-1.81	
8,933.0	90.90	269.20	6,965.7	633.3	-1,907.4	1,907.4	0.97	-0.74	
9,028.0	89.50	270.00	6,965.4	632.7	-2,002.4	2,002.4	1.70	-1.47	
9,122.0	89.40	269.70	6,966.3	632.4	-2,096.4	2,096.4	0.34	-0.11	
9,217.0	88.40	269.70	6,968.1	631.9	-2,191.4	2,191.4	1.05	-1.05	
9,312.0	89.50	269.30	6,969.9	631.1	-2,286.3	2,286.3	1.23	1.16	
9,406.0	91.70	269.70	6,968.9	630.3	-2,380.3	2,380.3	2.38	2.34	
9,501.0	91.50	270.50	6,966.2	630.4	-2,475.3	2,475.3	0.87	-0.21	
9,596.0	90.30	269.90	6,964.7	630.8	-2,570.3	2,570.3	1.41	-1.26	
9,690.0	90.10	269.80	6,964.4	630.5	-2,664.3	2,664.3	0.24	-0.21	
9,785.0	90.50	270.10	6,963.9	630.4	-2,759.3	2,759.3	0.53	0.42	
9,879.0	90.50	270.60	6,963.1	631.0	-2,853.3	2,853.3	0.53	0.00	
9,974.0	92.10	270.70	6,960.9	632.1	-2,948.2	2,948.2	1.69	1.68	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
10,069.0	91.90	271.80	6,957.6	634.2	-3,043.2	3,043.2	1.18	-0.21	
10,163.0	90.60	271.00	6,955.6	636.5	-3,137.1	3,137.1	1.62	-1.38	
10,258.0	90.60	271.30	6,954.6	638.4	-3,232.1	3,232.1	0.32	0.00	
10,352.0	90.40	269.20	6,953.8	638.8	-3,326.1	3,326.1	2.24	-0.21	
10,447.0	90.60	268.80	6,952.9	637.1	-3,421.1	3,421.1	0.47	0.21	
10,542.0	90.10	268.70	6,952.4	635.0	-3,516.0	3,516.0	0.54	-0.53	
10,636.0	90.70	268.90	6,951.7	633.1	-3,610.0	3,610.0	0.67	0.64	
10,731.0	90.50	268.70	6,950.7	631.1	-3,705.0	3,705.0	0.30	-0.21	
10,826.0	89.30	269.00	6,950.9	629.2	-3,800.0	3,800.0	1.30	-1.26	
10,920.0	90.00	269.30	6,951.4	627.8	-3,893.9	3,893.9	0.81	0.74	
11,015.0	90.10	270.20	6,951.4	627.4	-3,988.9	3,988.9	0.95	0.11	
11,110.0	89.90	269.70	6,951.4	627.3	-4,083.9	4,083.9	0.57	-0.21	
11,153.0	90.40	270.10	6,951.2	627.2	-4,126.9	4,126.9	1.49	1.16	Last Cathedral Survey @ 11,153' MD Projection to Bit @ 11,201'
11,201.0	90.40	270.10	6,950.9	627.3	-4,174.9	4,174.9	0.00	0.00	

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Liberty 2B-21H PBHL - hit/miss target - Shape	0.00	0.00	6,940.2	627.0	-4,571.5	1,322,242.05	3,132,613.32	40.216970	-105.025150
- actual wellpath misses target center by 396.7ft at 11201.0ft MD (6950.9 TVD, 627.3 N, -4174.9 E)									
- Point									
Liberty 2B-21H PBHL P <sub>2</sub> - actual wellpath misses target center by 396.9ft at 11201.0ft MD (6950.9 TVD, 627.3 N, -4174.9 E)	0.00	0.00	6,936.2	627.0	-4,571.5	1,322,242.05	3,132,613.32	40.216970	-105.025150
- Point									
Liberty 2B-21H TGT - actual wellpath misses target center by 8.8ft at 9070.7ft MD (6965.8 TVD, 632.6 N, -2045.1 E)	0.00	0.00	6,972.6	627.0	-2,045.1	1,322,256.06	3,135,139.76	40.216971	-105.016103
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,153.0	6,951.2	627.2	-4,126.9	Last Cathedral Survey @ 11,153' MD	
11,201.0	6,950.9	627.3	-4,174.9	Projection to Bit @ 11,201'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

# **EnCana Oil & Gas (USA) Inc**

**DJ Wattenberg**

**S20-T3N-R68W (Liberty 2A-21H)**

**Liberty 2B-21H**

**Hz**

**Design: FINAL**

## **Survey Report - Geographic**

**16 February, 2014**

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<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	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:	1,321,640.37 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

<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>
	IGRF2010	2/8/2014	8.62	66.77	52,727

<b>Design</b>	FINAL				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	270.00	

<b>Survey Program</b>	<b>Date</b>	2/16/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
237.0	11,201.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (ft)</b>	<b>Map Easting (ft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.0	0.00	0.00	0.0	0.0	0.0	1,321,640.37	3,137,188.26	40.215250	-105.008780	
237.0	0.40	152.30	237.0	-0.7	0.4	1,321,639.64	3,137,188.65	40.215248	-105.008779	
268.0	0.40	94.60	268.0	-0.8	0.5	1,321,639.54	3,137,188.81	40.215248	-105.008778	
298.0	0.60	72.30	298.0	-0.8	0.8	1,321,639.58	3,137,189.06	40.215248	-105.008777	
329.0	0.60	56.80	329.0	-0.7	1.1	1,321,639.72	3,137,189.35	40.215248	-105.008776	
421.0	1.70	41.20	421.0	0.6	2.4	1,321,641.02	3,137,190.64	40.215252	-105.008772	
513.0	2.10	15.70	512.9	3.3	3.7	1,321,643.67	3,137,191.98	40.215259	-105.008767	
605.0	2.90	14.30	604.8	7.2	4.8	1,321,647.56	3,137,192.99	40.215270	-105.008763	
696.0	4.00	16.00	695.7	12.4	6.2	1,321,652.85	3,137,194.41	40.215284	-105.008758	
788.0	5.00	20.50	787.4	19.3	8.5	1,321,659.70	3,137,196.66	40.215303	-105.008750	
868.0	6.10	15.50	867.0	26.6	10.9	1,321,667.07	3,137,198.97	40.215323	-105.008741	
1,007.0	6.10	11.90	1,005.2	41.0	14.4	1,321,681.44	3,137,202.39	40.215363	-105.008729	



# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
1,098.0	8.40	16.70	1,095.5	52.1	17.3	1,321,692.55	3,137,205.24	40.215393	-105.008718
1,190.0	8.40	16.30	1,186.5	65.0	21.1	1,321,705.46	3,137,208.98	40.215428	-105.008705
1,282.0	9.50	22.90	1,277.4	78.4	25.9	1,321,718.93	3,137,213.75	40.215465	-105.008687
1,374.0	11.50	22.30	1,367.8	93.9	32.4	1,321,734.45	3,137,220.10	40.215508	-105.008664
1,466.0	10.90	23.20	1,458.1	110.4	39.3	1,321,750.96	3,137,226.91	40.215553	-105.008640
1,558.0	11.20	19.50	1,548.4	126.8	45.7	1,321,767.42	3,137,233.23	40.215598	-105.008617
1,650.0	10.90	18.90	1,638.7	143.4	51.5	1,321,784.10	3,137,238.94	40.215644	-105.008596
1,741.0	10.80	31.60	1,728.1	158.8	58.7	1,321,799.55	3,137,246.11	40.215686	-105.008570
1,833.0	9.60	22.50	1,818.6	173.3	66.2	1,321,814.02	3,137,253.48	40.215726	-105.008543
1,925.0	9.40	20.70	1,909.4	187.4	71.8	1,321,828.16	3,137,259.00	40.215764	-105.008523
2,019.0	9.00	17.60	2,002.1	201.6	76.7	1,321,842.38	3,137,263.85	40.215803	-105.008506
2,114.0	10.50	23.50	2,095.8	216.6	82.4	1,321,857.43	3,137,269.47	40.215845	-105.008485
2,208.0	10.40	18.80	2,188.2	232.5	88.6	1,321,873.35	3,137,275.53	40.215888	-105.008463
2,303.0	10.20	26.50	2,281.7	248.1	95.1	1,321,889.04	3,137,281.96	40.215931	-105.008440
2,398.0	9.90	22.30	2,375.2	263.2	101.9	1,321,904.16	3,137,288.73	40.215973	-105.008415
2,493.0	9.80	16.70	2,468.8	278.5	107.4	1,321,919.49	3,137,294.07	40.216015	-105.008396
2,587.0	10.50	19.80	2,561.4	294.2	112.6	1,321,935.24	3,137,299.18	40.216058	-105.008377
2,682.0	10.10	14.20	2,654.8	310.5	117.5	1,321,951.48	3,137,304.07	40.216102	-105.008359
2,776.0	9.60	19.30	2,747.5	325.9	122.1	1,321,966.90	3,137,308.59	40.216145	-105.008343
2,870.0	8.50	19.20	2,840.3	339.8	127.0	1,321,980.88	3,137,313.39	40.216183	-105.008325
2,965.0	9.00	18.30	2,934.2	353.5	131.7	1,321,994.59	3,137,317.96	40.216220	-105.008309
3,059.0	10.60	17.60	3,026.8	368.7	136.6	1,322,009.84	3,137,322.80	40.216262	-105.008291
3,154.0	10.00	25.10	3,120.3	384.5	142.7	1,322,025.68	3,137,328.85	40.216306	-105.008269
3,249.0	9.30	18.90	3,213.9	399.3	148.7	1,322,040.44	3,137,334.75	40.216346	-105.008248
3,343.0	9.70	22.60	3,306.6	413.7	154.2	1,322,054.97	3,137,340.18	40.216386	-105.008228
3,438.0	8.20	16.70	3,400.5	427.6	159.2	1,322,068.88	3,137,345.12	40.216424	-105.008210
3,533.0	9.20	19.20	3,494.4	441.3	163.7	1,322,082.56	3,137,349.49	40.216461	-105.008194
3,627.0	10.40	18.50	3,587.0	456.4	168.8	1,322,097.73	3,137,354.57	40.216503	-105.008176
3,722.0	10.90	27.80	3,680.4	472.5	175.8	1,322,113.85	3,137,361.39	40.216547	-105.008151
3,817.0	10.90	24.50	3,773.7	488.6	183.7	1,322,130.01	3,137,369.22	40.216591	-105.008123
3,912.0	9.80	21.30	3,867.1	504.3	190.3	1,322,145.76	3,137,375.79	40.216634	-105.008099
4,006.0	8.40	16.90	3,959.9	518.4	195.2	1,322,159.81	3,137,380.62	40.216673	-105.008081
4,101.0	9.60	22.90	4,053.8	532.3	200.3	1,322,173.77	3,137,385.64	40.216711	-105.008063
4,195.0	9.10	20.00	4,146.5	546.5	205.9	1,322,188.01	3,137,391.15	40.216750	-105.008043
4,290.0	8.70	17.30	4,240.4	560.4	210.6	1,322,201.95	3,137,395.78	40.216788	-105.008026
4,385.0	6.70	17.40	4,334.5	572.6	214.4	1,322,214.12	3,137,399.51	40.216822	-105.008012
4,479.0	6.10	12.80	4,427.9	582.7	217.2	1,322,224.24	3,137,402.20	40.216850	-105.008003
4,573.0	6.00	24.20	4,521.4	592.0	220.3	1,322,233.61	3,137,405.27	40.216875	-105.007991
4,668.0	5.40	38.90	4,616.0	600.0	225.1	1,322,241.65	3,137,410.07	40.216897	-105.007974
4,762.0	3.10	30.90	4,709.7	605.7	229.2	1,322,247.29	3,137,414.12	40.216913	-105.007959
4,857.0	2.70	23.40	4,804.6	609.9	231.4	1,322,251.56	3,137,416.30	40.216924	-105.007952
4,951.0	2.20	7.20	4,898.5	613.7	232.5	1,322,255.39	3,137,417.39	40.216935	-105.007948
5,046.0	1.80	357.50	4,993.4	617.0	232.7	1,322,258.69	3,137,417.53	40.216944	-105.007947
5,140.0	1.80	343.30	5,087.4	619.9	232.2	1,322,261.58	3,137,417.03	40.216952	-105.007949
5,235.0	1.50	330.20	5,182.3	622.4	231.2	1,322,264.08	3,137,415.97	40.216959	-105.007953
5,330.0	0.90	90.60	5,277.3	623.5	231.3	1,322,265.15	3,137,416.09	40.216962	-105.007952
5,425.0	0.50	88.30	5,372.3	623.5	232.4	1,322,265.16	3,137,417.25	40.216962	-105.007948
5,520.0	0.40	101.20	5,467.3	623.5	233.2	1,322,265.11	3,137,417.99	40.216961	-105.007945
5,614.0	0.20	114.10	5,561.3	623.3	233.7	1,322,264.99	3,137,418.46	40.216961	-105.007944
5,709.0	0.20	337.70	5,656.3	623.4	233.7	1,322,265.07	3,137,418.55	40.216961	-105.007943
5,804.0	0.40	294.40	5,751.3	623.7	233.4	1,322,265.36	3,137,418.18	40.216962	-105.007945
5,899.0	0.80	272.60	5,846.3	623.9	232.4	1,322,265.52	3,137,417.22	40.216963	-105.007948
5,994.0	0.80	356.00	5,941.3	624.6	231.7	1,322,266.21	3,137,416.50	40.216965	-105.007951
6,088.0	1.20	327.40	6,035.3	626.0	231.1	1,322,267.69	3,137,415.92	40.216969	-105.007953
6,183.0	2.20	218.20	6,130.3	625.5	229.5	1,322,267.09	3,137,414.26	40.216967	-105.007959

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
6,278.0	1.10	100.30	6,225.2	623.9	229.2	1,322,265.49	3,137,414.04	40.216963	-105.007959	
6,372.0	0.30	114.00	6,319.2	623.6	230.4	1,322,265.23	3,137,415.15	40.216962	-105.007955	
6,467.0	0.50	288.60	6,414.2	623.6	230.2	1,322,265.26	3,137,414.99	40.216962	-105.007956	
6,514.0	2.10	265.20	6,461.2	623.6	229.1	1,322,265.25	3,137,413.93	40.216962	-105.007960	
6,561.0	10.60	266.10	6,507.9	623.3	224.0	1,322,264.86	3,137,408.75	40.216961	-105.007978	
6,608.0	17.50	271.40	6,553.4	623.1	212.6	1,322,264.67	3,137,397.36	40.216961	-105.008019	
6,656.0	20.40	272.20	6,598.8	623.6	197.0	1,322,265.08	3,137,381.78	40.216962	-105.008075	
6,703.0	22.60	271.10	6,642.6	624.1	179.8	1,322,265.47	3,137,364.56	40.216963	-105.008137	
6,750.0	30.90	267.60	6,684.5	623.8	158.6	1,322,265.02	3,137,343.44	40.216962	-105.008212	
6,797.0	40.20	268.00	6,722.7	622.7	131.4	1,322,263.84	3,137,316.17	40.216960	-105.008310	
6,845.0	43.20	269.70	6,758.5	622.1	99.4	1,322,263.03	3,137,284.26	40.216958	-105.008424	
6,892.0	45.20	267.50	6,792.2	621.3	66.7	1,322,262.04	3,137,251.51	40.216956	-105.008541	
6,940.0	48.20	266.10	6,825.1	619.3	31.8	1,322,259.89	3,137,216.65	40.216950	-105.008666	
6,987.0	52.40	265.80	6,855.2	616.8	-4.2	1,322,257.13	3,137,180.60	40.216943	-105.008795	
7,035.0	54.10	266.10	6,883.9	614.1	-42.6	1,322,254.20	3,137,142.25	40.216936	-105.008933	
7,082.0	54.40	268.70	6,911.3	612.3	-80.7	1,322,252.26	3,137,104.16	40.216931	-105.009069	
7,130.0	59.30	268.70	6,937.6	611.4	-120.9	1,322,251.13	3,137,064.01	40.216928	-105.009213	
7,177.0	66.20	271.20	6,959.1	611.4	-162.6	1,322,250.89	3,137,022.25	40.216928	-105.009363	
7,225.0	71.20	276.20	6,976.5	614.3	-207.2	1,322,253.56	3,136,977.64	40.216936	-105.009522	
7,272.0	73.40	276.20	6,990.8	619.2	-251.7	1,322,258.15	3,136,933.11	40.216950	-105.009682	
7,319.0	74.70	275.00	7,003.7	623.6	-296.7	1,322,262.31	3,136,888.11	40.216962	-105.009843	
7,366.0	80.10	272.50	7,014.0	626.6	-342.4	1,322,265.04	3,136,842.34	40.216970	-105.010007	
7,383.0	83.10	270.70	7,016.5	627.0	-359.3	1,322,265.42	3,136,825.53	40.216971	-105.010067	
7,417.0	86.30	269.80	7,019.6	627.2	-393.1	1,322,265.38	3,136,791.68	40.216972	-105.010188	
7,480.0	89.90	269.00	7,021.7	626.5	-456.1	1,322,264.37	3,136,728.74	40.216970	-105.010413	
7,512.0	90.50	269.40	7,021.6	626.1	-488.1	1,322,263.74	3,136,696.74	40.216969	-105.010528	
7,607.0	91.00	269.20	7,020.3	624.9	-583.0	1,322,262.06	3,136,601.77	40.216965	-105.010868	
7,702.0	91.70	269.70	7,018.1	624.0	-678.0	1,322,260.62	3,136,506.81	40.216963	-105.011208	
7,797.0	93.70	271.30	7,013.6	624.8	-772.9	1,322,260.92	3,136,411.92	40.216965	-105.011548	
7,891.0	93.50	271.90	7,007.7	627.5	-866.7	1,322,263.02	3,136,318.13	40.216972	-105.011884	
7,986.0	94.50	272.40	7,001.1	631.0	-961.4	1,322,266.05	3,136,223.41	40.216982	-105.012223	
8,081.0	93.90	271.70	6,994.1	634.4	-1,056.1	1,322,268.92	3,136,128.71	40.216991	-105.012562	
8,176.0	92.90	271.50	6,988.5	637.1	-1,150.8	1,322,271.04	3,136,033.90	40.216999	-105.012901	
8,270.0	90.70	270.50	6,985.6	638.7	-1,244.8	1,322,272.16	3,135,939.96	40.217003	-105.013238	
8,365.0	91.80	270.40	6,983.5	639.4	-1,339.8	1,322,272.38	3,135,844.99	40.217005	-105.013578	
8,460.0	91.50	269.70	6,980.8	639.5	-1,434.7	1,322,271.93	3,135,750.03	40.217005	-105.013918	
8,554.0	91.70	269.00	6,978.1	638.5	-1,528.7	1,322,270.35	3,135,656.08	40.217003	-105.014254	
8,649.0	91.30	269.20	6,975.6	637.0	-1,623.6	1,322,268.33	3,135,561.13	40.216998	-105.014594	
8,744.0	93.30	268.80	6,971.8	635.3	-1,718.5	1,322,266.15	3,135,466.24	40.216994	-105.014934	
8,838.0	91.60	269.80	6,967.8	634.2	-1,812.4	1,322,264.48	3,135,372.34	40.216991	-105.015270	
8,933.0	90.90	269.20	6,965.7	633.3	-1,907.4	1,322,263.13	3,135,277.38	40.216988	-105.015610	
9,028.0	89.50	270.00	6,965.4	632.7	-2,002.4	1,322,261.94	3,135,182.39	40.216987	-105.015951	
9,122.0	89.40	269.70	6,966.3	632.4	-2,096.4	1,322,261.17	3,135,088.40	40.216986	-105.016287	
9,217.0	88.40	269.70	6,968.1	631.9	-2,191.4	1,322,260.15	3,134,993.42	40.216984	-105.016627	
9,312.0	89.50	269.30	6,969.9	631.1	-2,286.3	1,322,258.79	3,134,898.45	40.216982	-105.016967	
9,406.0	91.70	269.70	6,968.9	630.3	-2,380.3	1,322,257.45	3,134,804.47	40.216980	-105.017304	
9,501.0	91.50	270.50	6,966.2	630.4	-2,475.3	1,322,257.09	3,134,709.51	40.216980	-105.017644	
9,596.0	90.30	269.90	6,964.7	630.8	-2,570.3	1,322,256.90	3,134,614.52	40.216981	-105.017984	
9,690.0	90.10	269.80	6,964.4	630.5	-2,664.3	1,322,256.13	3,134,520.52	40.216980	-105.018321	
9,785.0	90.50	270.10	6,963.9	630.4	-2,759.3	1,322,255.52	3,134,425.53	40.216980	-105.018661	
9,879.0	90.50	270.60	6,963.1	631.0	-2,853.3	1,322,255.57	3,134,331.53	40.216982	-105.018997	
9,974.0	92.10	270.70	6,960.9	632.1	-2,948.2	1,322,256.12	3,134,236.56	40.216985	-105.019337	
10,069.0	91.90	271.80	6,957.6	634.2	-3,043.2	1,322,257.67	3,134,141.63	40.216990	-105.019677	
10,163.0	90.60	271.00	6,955.6	636.5	-3,137.1	1,322,259.45	3,134,047.67	40.216997	-105.020014	
10,258.0	90.60	271.30	6,954.6	638.4	-3,232.1	1,322,260.83	3,133,952.69	40.217002	-105.020354	

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Liberty 2B-21H
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Site:</b>	S20-T3N-R68W (Liberty 2A-21H)	<b>MD Reference:</b>	WELL @ 5036.0ft (Ensign 135)
<b>Well:</b>	Liberty 2B-21H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
10,352.0	90.40	269.20	6,953.8	638.8	-3,326.1	1,322,260.72	3,133,858.70	40.217003	-105.020690
10,447.0	90.60	268.80	6,952.9	637.1	-3,421.1	1,322,258.53	3,133,763.73	40.216998	-105.021031
10,542.0	90.10	268.70	6,952.4	635.0	-3,516.0	1,322,255.93	3,133,668.77	40.216993	-105.021371
10,636.0	90.70	268.90	6,951.7	633.1	-3,610.0	1,322,253.44	3,133,574.80	40.216987	-105.021707
10,731.0	90.50	268.70	6,950.7	631.1	-3,705.0	1,322,250.93	3,133,479.84	40.216982	-105.022047
10,826.0	89.30	269.00	6,950.9	629.2	-3,800.0	1,322,248.50	3,133,384.87	40.216976	-105.022387
10,920.0	90.00	269.30	6,951.4	627.8	-3,893.9	1,322,246.58	3,133,290.90	40.216973	-105.022724
11,015.0	90.10	270.20	6,951.4	627.4	-3,988.9	1,322,245.64	3,133,195.90	40.216971	-105.023064
11,110.0	89.90	269.70	6,951.4	627.3	-4,083.9	1,322,245.03	3,133,100.90	40.216971	-105.023404
11,153.0	90.40	270.10	6,951.2	627.2	-4,126.9	1,322,244.72	3,133,057.90	40.216971	-105.023558
<b>Last Cathedral Survey @ 11,153' MD</b>									
11,201.0	90.40	270.10	6,950.9	627.3	-4,174.9	1,322,244.54	3,133,009.91	40.216971	-105.023730
<b>Projection to Bit @ 11,201'</b>									

Design 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 2B-21H PBHL P <sub>2</sub>	0.00	0.00	6,936.2	627.0	-4,571.5	1,322,242.05	3,132,613.32	40.216970	-105.025150
- actual wellpath misses target center by 396.9ft at 11201.0ft MD (6950.9 TVD, 627.3 N, -4174.9 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,153.0	6,951.2	627.2	-4,126.9	Last Cathedral Survey @ 11,153' MD	
11,201.0	6,950.9	627.3	-4,174.9	Projection to Bit @ 11,201'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_