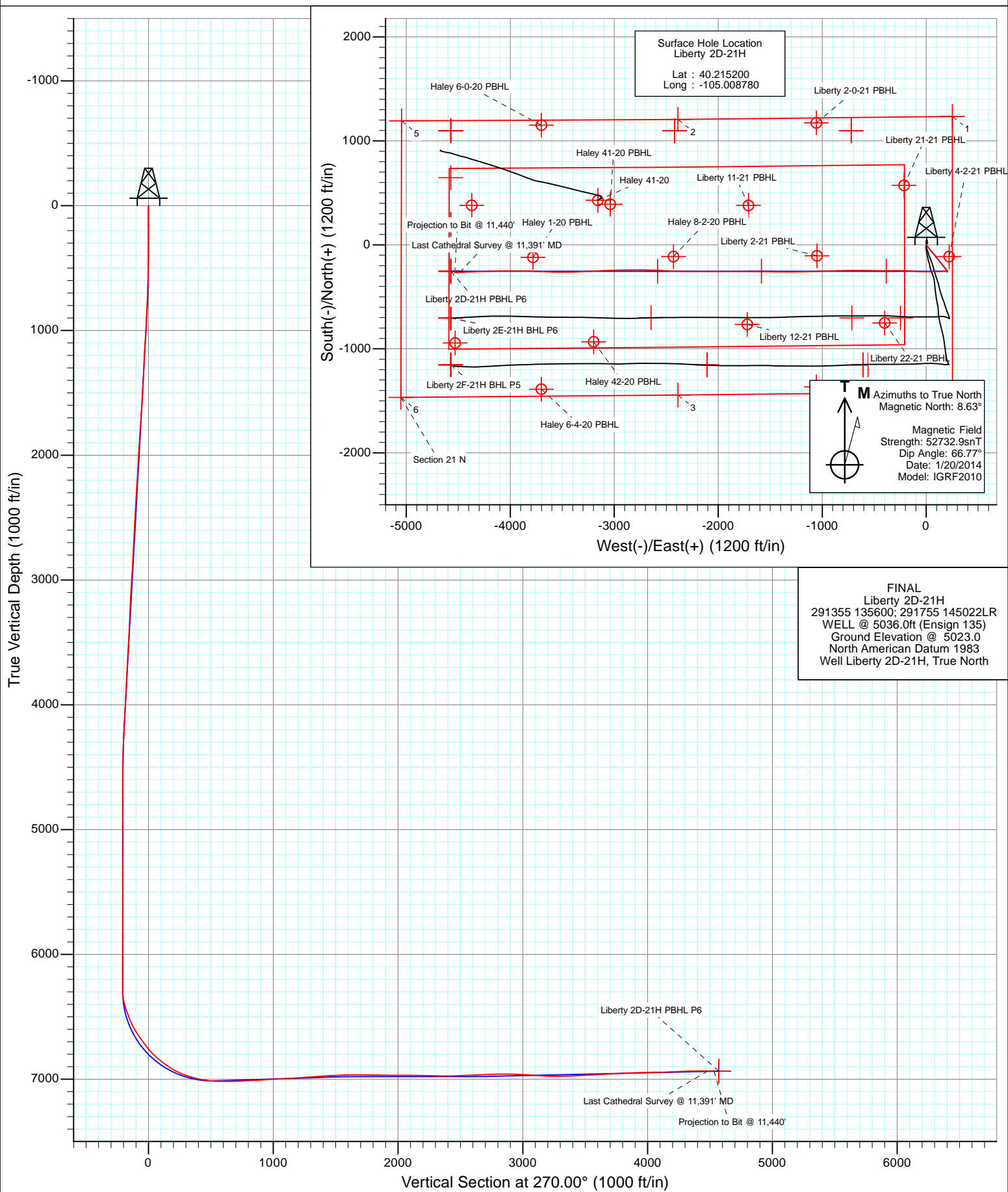


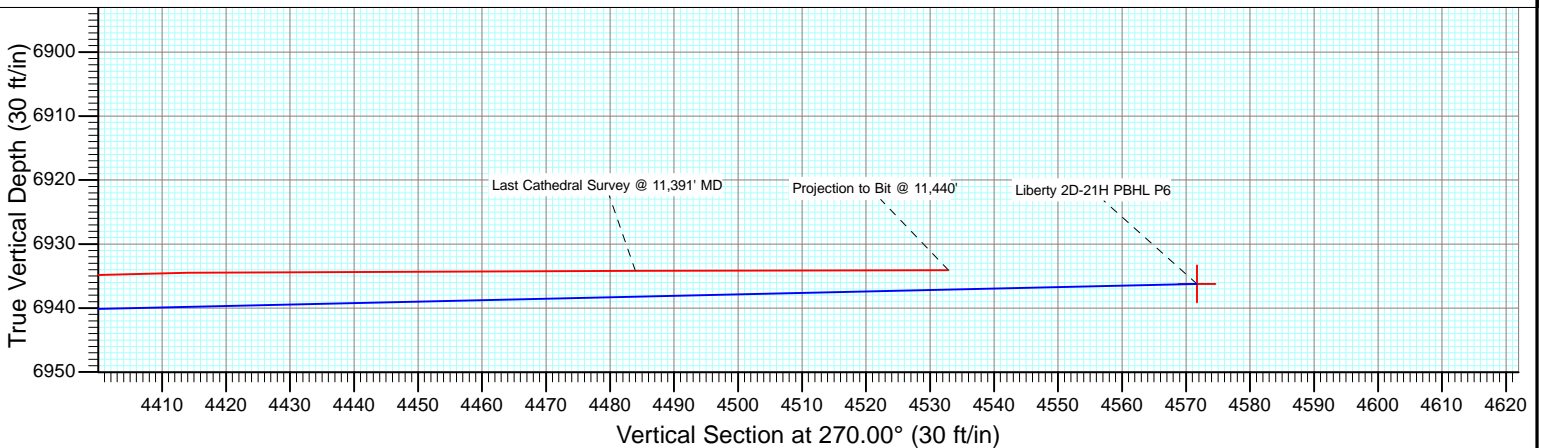
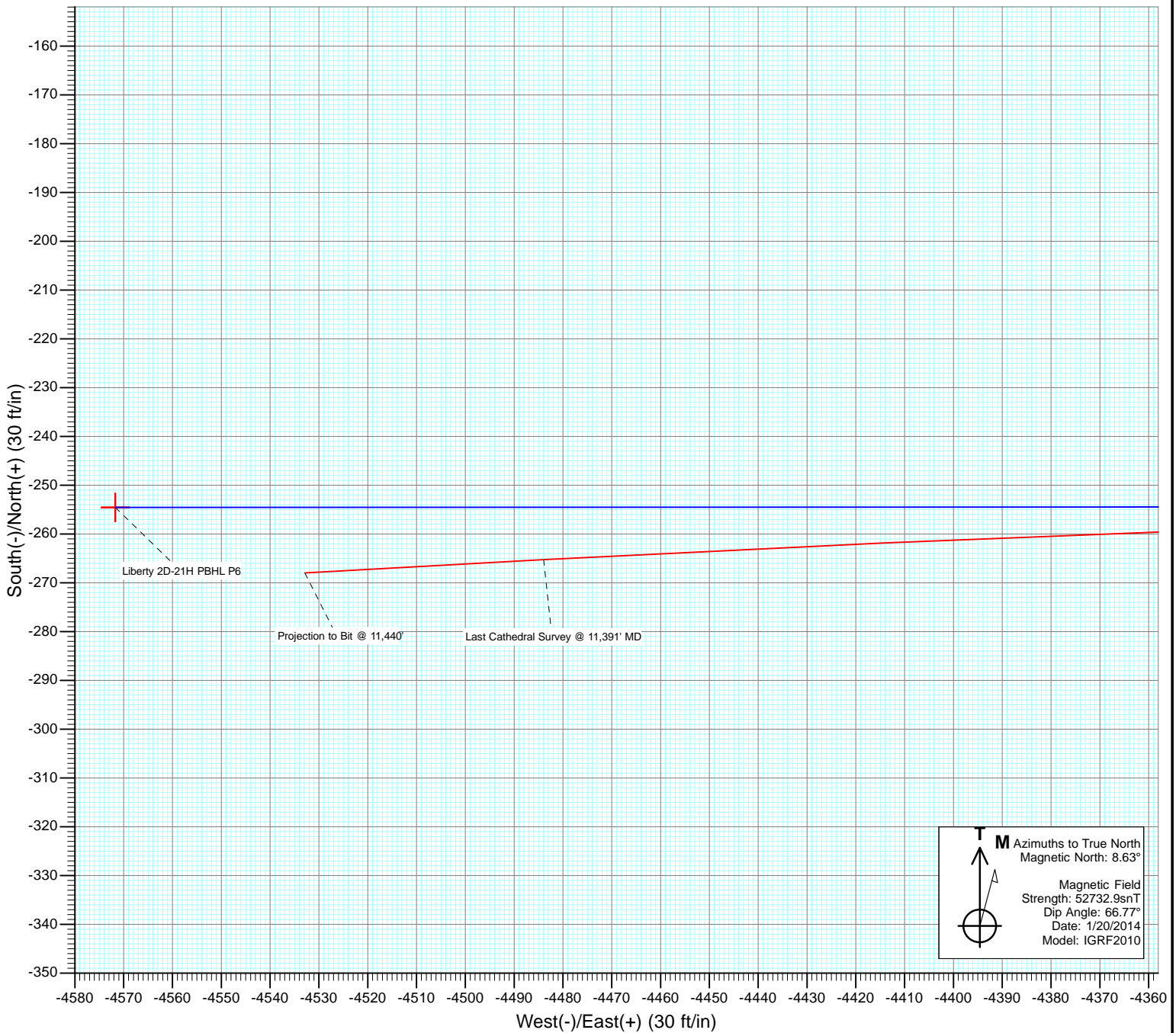


Project: DJ Wattenberg
Site: S20-T3N-R68W (Liberty 2A-21H)
Well: Liberty 2D-21H
Design: FINAL





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



Cathedral Energy Services

Survey Report

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

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	S20-T3N-R68W (Liberty 2A-21H)				
Site Position:		Northing:	1,322,254.59 ft	Latitude:	40.216940
From:	Lat/Long	Easting:	3,136,925.14 ft	Longitude:	-105.009710
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	Liberty 2D-21H					
Well Position	+N/-S	0.0 ft	Northing:	1,321,622.16 ft	Latitude:	40.215200
	+E/-W	0.0 ft	Easting:	3,137,188.36 ft	Longitude:	-105.008780
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,023.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/20/2014	8.63	66.77	52,733

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

Survey Program	Date	1/28/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
145.0	11,440.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
145.0	1.00	346.70	145.0	1.2	-0.3	0.3	0.69	0.69	
237.0	0.40	289.70	237.0	2.1	-0.8	0.8	0.93	-0.65	
329.0	0.70	142.80	329.0	1.8	-0.7	0.7	1.15	0.33	
421.0	1.40	137.00	421.0	0.5	0.4	-0.4	0.77	0.76	
513.0	1.30	152.10	512.9	-1.2	1.6	-1.6	0.40	-0.11	
605.0	1.70	138.80	604.9	-3.2	3.0	-3.0	0.57	0.43	
696.0	3.10	138.80	695.8	-6.0	5.5	-5.5	1.54	1.54	
788.0	4.30	138.10	787.6	-10.5	9.5	-9.5	1.31	1.30	
865.0	5.10	143.10	864.4	-15.4	13.4	-13.4	1.17	1.04	
1,009.0	4.70	145.90	1,007.9	-25.4	20.6	-20.6	0.32	-0.28	
1,101.0	5.10	132.90	1,099.5	-31.3	25.7	-25.7	1.28	0.43	
1,193.0	4.40	132.60	1,191.2	-36.5	31.3	-31.3	0.76	-0.76	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Liberty 2D-21H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5036.0ft (Ensign 135)
Site:	S20-T3N-R68W (Liberty 2A-21H)	MD Reference:	WELL @ 5036.0ft (Ensign 135)
Well:	Liberty 2D-21H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
1,285.0	4.40	148.40	1,282.9	-41.8	35.7	-35.7	1.31	0.00	
1,376.0	4.90	155.30	1,373.6	-48.4	39.2	-39.2	0.82	0.55	
1,468.0	6.30	147.80	1,465.2	-56.2	43.5	-43.5	1.71	1.52	
1,561.0	5.70	137.70	1,557.7	-63.9	49.4	-49.4	1.30	-0.65	
1,652.0	5.50	136.30	1,648.3	-70.4	55.4	-55.4	0.27	-0.22	
1,744.0	5.50	136.70	1,739.8	-76.8	61.5	-61.5	0.04	0.00	
1,836.0	5.30	135.80	1,831.4	-83.1	67.5	-67.5	0.24	-0.22	
1,927.0	5.00	129.00	1,922.1	-88.6	73.5	-73.5	0.75	-0.33	
2,022.0	5.00	143.50	2,016.7	-94.5	79.2	-79.2	1.33	0.00	
2,116.0	5.10	138.50	2,110.3	-100.9	84.4	-84.4	0.48	0.11	
2,211.0	4.70	138.50	2,205.0	-107.0	89.7	-89.7	0.42	-0.42	
2,306.0	4.80	133.70	2,299.7	-112.7	95.2	-95.2	0.43	0.11	
2,400.0	5.70	146.90	2,393.3	-119.3	100.6	-100.6	1.60	0.96	
2,495.0	5.30	143.40	2,487.8	-126.8	105.8	-105.8	0.55	-0.42	
2,590.0	5.10	142.00	2,582.4	-133.6	111.0	-111.0	0.25	-0.21	
2,684.0	4.60	144.40	2,676.1	-140.0	115.8	-115.8	0.57	-0.53	
2,779.0	4.80	141.30	2,770.8	-146.2	120.5	-120.5	0.34	0.21	
2,873.0	4.50	140.30	2,864.5	-152.1	125.3	-125.3	0.33	-0.32	
2,967.0	5.80	139.80	2,958.1	-158.6	130.7	-130.7	1.38	1.38	
3,062.0	5.10	134.90	3,052.7	-165.2	136.8	-136.8	0.88	-0.74	
3,157.0	5.60	149.00	3,147.3	-172.2	142.2	-142.2	1.48	0.53	
3,251.0	5.00	145.40	3,240.9	-179.5	146.9	-146.9	0.73	-0.64	
3,345.0	4.60	141.10	3,334.5	-185.8	151.5	-151.5	0.57	-0.43	
3,440.0	4.90	157.30	3,429.2	-192.5	155.5	-155.5	1.44	0.32	
3,535.0	4.10	139.70	3,523.9	-198.8	159.3	-159.3	1.67	-0.84	
3,630.0	5.10	136.80	3,618.6	-204.5	164.4	-164.4	1.08	1.05	
3,725.0	5.00	133.20	3,713.2	-210.4	170.3	-170.3	0.35	-0.11	
3,820.0	5.00	147.80	3,807.9	-216.7	175.5	-175.5	1.34	0.00	
3,914.0	4.20	140.40	3,901.6	-222.8	179.9	-179.9	1.06	-0.85	
4,008.0	3.90	136.40	3,995.3	-227.8	184.3	-184.3	0.44	-0.32	
4,103.0	5.00	134.40	4,090.1	-233.1	189.4	-189.4	1.17	1.16	
4,198.0	5.90	154.50	4,184.6	-240.4	194.5	-194.5	2.21	0.95	
4,292.0	5.50	151.80	4,278.2	-248.7	198.7	-198.7	0.51	-0.43	
4,387.0	4.00	160.10	4,372.8	-255.8	202.0	-202.0	1.73	-1.58	
4,482.0	3.10	156.00	4,467.7	-261.3	204.2	-204.2	0.98	-0.95	
4,576.0	1.50	195.80	4,561.6	-264.8	204.9	-204.9	2.31	-1.70	
4,670.0	0.30	15.00	4,655.6	-265.7	204.6	-204.6	1.91	-1.28	
4,764.0	1.30	13.60	4,749.6	-264.5	204.9	-204.9	1.06	1.06	
4,859.0	1.30	348.00	4,844.5	-262.4	204.9	-204.9	0.61	0.00	
4,953.0	1.50	344.50	4,938.5	-260.1	204.4	-204.4	0.23	0.21	
5,048.0	0.80	270.20	5,033.5	-258.9	203.4	-203.4	1.58	-0.74	
5,143.0	1.10	36.50	5,128.5	-258.2	203.3	-203.3	1.79	0.32	
5,238.0	0.90	11.30	5,223.5	-256.7	204.0	-204.0	0.50	-0.21	
5,332.0	0.90	358.60	5,317.5	-255.3	204.1	-204.1	0.21	0.00	
5,427.0	0.50	108.60	5,412.5	-254.6	204.5	-204.5	1.23	-0.42	
5,522.0	0.20	109.90	5,507.5	-254.8	205.0	-205.0	0.32	-0.32	
5,617.0	0.30	249.80	5,602.5	-255.0	204.9	-204.9	0.50	0.11	
5,711.0	0.70	346.70	5,696.5	-254.5	204.6	-204.6	0.84	0.43	
5,806.0	0.40	63.50	5,791.5	-253.8	204.7	-204.7	0.76	-0.32	
5,901.0	0.50	359.30	5,886.5	-253.2	205.0	-205.0	0.51	0.11	
5,996.0	0.90	141.40	5,981.5	-253.4	205.5	-205.5	1.40	0.42	
6,091.0	0.20	92.80	6,076.4	-254.0	206.1	-206.1	0.82	-0.74	
6,185.0	0.10	147.90	6,170.4	-254.1	206.3	-206.3	0.18	-0.11	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Liberty 2D-21H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5036.0ft (Ensign 135)
Site:	S20-T3N-R68W (Liberty 2A-21H)	MD Reference:	WELL @ 5036.0ft (Ensign 135)
Well:	Liberty 2D-21H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
6,280.0	0.80	323.10	6,265.4	-253.6	206.0	-206.0	0.95	0.74	
6,327.0	1.70	295.80	6,312.4	-253.0	205.1	-205.1	2.24	1.91	
6,375.0	9.40	272.00	6,360.2	-252.6	200.6	-200.6	16.40	16.04	
6,422.0	17.10	271.70	6,405.9	-252.3	189.8	-189.8	16.38	16.38	
6,469.0	19.50	268.70	6,450.5	-252.2	175.1	-175.1	5.48	5.11	
6,516.0	20.40	264.30	6,494.7	-253.2	159.1	-159.1	3.72	1.91	
6,564.0	22.90	263.90	6,539.3	-255.0	141.5	-141.5	5.22	5.21	
6,611.0	27.70	269.80	6,581.8	-256.1	121.4	-121.4	11.52	10.21	
6,658.0	32.70	269.30	6,622.4	-256.2	97.8	-97.8	10.65	10.64	
6,705.0	35.10	268.90	6,661.4	-256.7	71.6	-71.6	5.13	5.11	
6,753.0	35.90	268.30	6,700.5	-257.3	43.7	-43.7	1.82	1.67	
6,800.0	37.40	268.20	6,738.2	-258.2	15.7	-15.7	3.19	3.19	
6,848.0	41.60	268.40	6,775.2	-259.1	-14.8	14.8	8.75	8.75	
6,895.0	47.00	274.30	6,808.9	-258.2	-47.6	47.6	14.44	11.49	
6,942.0	49.90	275.50	6,840.0	-255.2	-82.6	82.6	6.46	6.17	
6,989.0	52.40	273.20	6,869.5	-252.5	-119.1	119.1	6.54	5.32	
7,037.0	56.40	271.70	6,897.5	-250.8	-158.1	158.1	8.71	8.33	
7,084.0	60.20	271.50	6,922.1	-249.7	-198.1	198.1	8.09	8.09	
7,132.0	64.00	271.10	6,944.6	-248.7	-240.5	240.5	7.95	7.92	
7,179.0	69.10	269.70	6,963.3	-248.5	-283.6	283.6	11.19	10.85	
7,227.0	73.10	269.70	6,978.8	-248.7	-329.0	329.0	8.33	8.33	
7,274.0	75.40	269.70	6,991.6	-248.9	-374.2	374.2	4.89	4.89	
7,322.0	77.80	269.80	7,002.7	-249.1	-420.9	420.9	5.00	5.00	
7,371.0	82.40	270.40	7,011.1	-249.0	-469.2	469.2	9.46	9.39	
7,439.0	88.40	272.20	7,016.6	-247.5	-536.9	536.9	9.21	8.83	
7,533.0	89.50	270.20	7,018.3	-245.5	-630.8	630.8	2.43	1.17	
7,628.0	92.70	269.00	7,016.5	-246.2	-725.8	725.8	3.60	3.37	
7,723.0	93.20	268.60	7,011.6	-248.2	-820.7	820.7	0.67	0.53	
7,817.0	93.50	267.90	7,006.1	-251.1	-914.5	914.5	0.81	0.32	
7,912.0	93.00	268.30	7,000.7	-254.2	-1,009.2	1,009.2	0.67	-0.53	
8,007.0	92.70	268.40	6,996.0	-256.9	-1,104.1	1,104.1	0.33	-0.32	
8,102.0	93.90	268.60	6,990.5	-259.4	-1,198.9	1,198.9	1.28	1.26	
8,196.0	94.30	270.00	6,983.8	-260.6	-1,292.6	1,292.6	1.55	0.43	
8,291.0	94.00	270.60	6,976.9	-260.1	-1,387.4	1,387.4	0.70	-0.32	
8,386.0	93.30	270.50	6,970.9	-259.2	-1,482.2	1,482.2	0.74	-0.74	
8,481.0	90.90	271.20	6,967.4	-257.7	-1,577.1	1,577.1	2.63	-2.53	
8,576.0	90.20	269.90	6,966.5	-256.8	-1,672.1	1,672.1	1.55	-0.74	
8,670.0	89.20	270.40	6,967.0	-256.6	-1,766.1	1,766.1	1.19	-1.06	
8,765.0	89.20	270.10	6,968.3	-256.2	-1,861.1	1,861.1	0.32	0.00	
8,859.0	89.20	269.90	6,969.6	-256.2	-1,955.1	1,955.1	0.21	0.00	
8,954.0	90.50	269.90	6,969.9	-256.3	-2,050.1	2,050.1	1.37	1.37	
9,049.0	88.90	270.30	6,970.4	-256.2	-2,145.1	2,145.1	1.74	-1.68	
9,143.0	88.30	269.80	6,972.7	-256.1	-2,239.0	2,239.0	0.83	-0.64	
9,238.0	88.90	270.40	6,975.0	-255.9	-2,334.0	2,334.0	0.89	0.63	
9,333.0	91.60	273.30	6,974.6	-252.9	-2,428.9	2,428.9	4.17	2.84	
9,427.0	92.60	272.90	6,971.1	-247.8	-2,522.7	2,522.7	1.15	1.06	
9,523.0	91.80	272.20	6,967.5	-243.5	-2,618.6	2,618.6	1.11	-0.83	
9,618.0	92.70	270.90	6,963.7	-240.9	-2,713.5	2,713.5	1.66	0.95	
9,712.0	91.90	269.40	6,959.9	-240.7	-2,807.4	2,807.4	1.81	-0.85	
9,807.0	88.40	269.00	6,959.7	-242.0	-2,902.4	2,902.4	3.71	-3.68	
9,902.0	86.50	268.60	6,963.9	-244.0	-2,997.2	2,997.2	2.04	-2.00	
9,996.0	86.40	267.80	6,969.7	-247.0	-3,091.0	3,091.0	0.86	-0.11	
10,091.0	87.10	267.00	6,975.1	-251.3	-3,185.8	3,185.8	1.12	0.74	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Liberty 2D-21H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5036.0ft (Ensign 135)
Site:	S20-T3N-R68W (Liberty 2A-21H)	MD Reference:	WELL @ 5036.0ft (Ensign 135)
Well:	Liberty 2D-21H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
10,185.0	90.10	266.60	6,977.4	-256.5	-3,279.6	3,279.6	3.22	3.19	
10,217.0	91.70	266.90	6,976.9	-258.3	-3,311.5	3,311.5	5.09	5.00	
10,280.0	91.60	267.60	6,975.1	-261.3	-3,374.4	3,374.4	1.12	-0.16	
10,343.0	92.40	269.80	6,972.9	-262.8	-3,437.4	3,437.4	3.71	1.27	
10,406.0	93.00	269.70	6,969.9	-263.0	-3,500.3	3,500.3	0.97	0.95	
10,469.0	93.60	271.30	6,966.3	-262.5	-3,563.2	3,563.2	2.71	0.95	
10,532.0	93.70	272.00	6,962.3	-260.7	-3,626.0	3,626.0	1.12	0.16	
10,595.0	93.20	273.40	6,958.5	-257.7	-3,688.8	3,688.8	2.36	-0.79	
10,658.0	93.10	272.40	6,955.1	-254.5	-3,751.7	3,751.7	1.59	-0.16	
10,753.0	92.70	271.20	6,950.2	-251.6	-3,846.5	3,846.5	1.33	-0.42	
10,847.0	90.60	270.40	6,947.5	-250.2	-3,940.4	3,940.4	2.39	-2.23	
10,942.0	90.10	268.80	6,947.0	-250.9	-4,035.4	4,035.4	1.76	-0.53	
11,037.0	93.00	269.00	6,944.4	-252.7	-4,130.4	4,130.4	3.06	3.05	
11,132.0	92.00	268.30	6,940.2	-255.0	-4,225.3	4,225.3	1.28	-1.05	
11,226.0	92.30	267.90	6,936.7	-258.1	-4,319.1	4,319.1	0.53	0.32	
11,321.0	90.40	267.60	6,934.5	-261.8	-4,414.0	4,414.0	2.02	-2.00	
11,391.0	90.10	266.80	6,934.2	-265.2	-4,483.9	4,483.9	1.22	-0.43	Last Cathedral Survey @ 11,391' MD Projection to Bit @ 11,440'
11,440.0	90.10	266.80	6,934.1	-268.0	-4,532.9	4,532.9	0.00	0.00	

Cathedral Energy Services

Survey Report

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

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Liberty 2D-21H 8700' TC - actual wellpath misses target center by 3.4ft at 8487.7ft MD (6967.3 TVD, -257.6 N, -1583.8 E) - Point	0.00	0.00	6,967.9	-254.3	-1,583.8	1,321,359.09	3,135,606.02	40.214502	-105.014451
Liberty 2D-21H 9700' TC - actual wellpath misses target center by 14.3ft at 9487.2ft MD (6968.7 TVD, -245.0 N, -2582.8 E) - Point	0.00	0.00	6,979.4	-254.4	-2,583.6	1,321,353.46	3,134,606.19	40.214501	-105.018031
Liberty 2D-21H PBHL - actual wellpath misses target center by 141.2ft at 11440.0ft MD (6934.1 TVD, -268.0 N, -4532.9 E) - Point	0.00	0.00	7,069.2	-254.6	-4,571.7	1,321,342.28	3,132,618.14	40.214500	-105.025150
Liberty 2D-21H PBHL P ₄ - actual wellpath misses target center by 41.1ft at 11440.0ft MD (6934.1 TVD, -268.0 N, -4532.9 E) - Point	0.00	0.00	6,935.2	-254.6	-4,571.7	1,321,342.28	3,132,618.14	40.214500	-105.025150
Liberty 2D-21H 7500' TC - actual wellpath misses target center by 20.9ft at 7288.9ft MD (6995.3 TVD, -249.0 N, -388.7 E) - Point	0.00	0.00	7,015.0	-254.2	-384.0	1,321,365.84	3,136,805.82	40.214502	-105.010155
Liberty 2D-21H PBHL P ₆ - actual wellpath misses target center by 41.1ft at 11440.0ft MD (6934.1 TVD, -268.0 N, -4532.9 E) - Point	0.00	0.00	6,936.2	-254.6	-4,571.7	1,321,342.28	3,132,618.14	40.214500	-105.025150

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,391.0	6,934.2	-265.2	-4,483.9	Last Cathedral Survey @ 11,391' MD
11,440.0	6,934.1	-268.0	-4,532.9	Projection to Bit @ 11,440'

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

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

Liberty 2D-21H

Hz

Design: FINAL

Survey Report - Geographic

28 January, 2014

Cathedral Energy Services

Survey Report - Geographic

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

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	S20-T3N-R68W (Liberty 2A-21H)				
Site Position:		Northing:	1,322,254.59 ft	Latitude:	40.216940
From:	Lat/Long	Easting:	3,136,925.14 ft	Longitude:	-105.009710
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	Liberty 2D-21H					
Well Position	+N/-S	0.0 ft	Northing:	1,321,622.16 ft	Latitude:	40.215200
	+E/-W	0.0 ft	Easting:	3,137,188.36 ft	Longitude:	-105.008780
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,023.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/20/2014	8.63	66.77	52,733

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	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	

Survey Program	Date	1/28/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
145.0	11,440.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	1,321,622.16	3,137,188.36	40.215200	-105.008780	
145.0	1.00	346.70	145.0	1.2	-0.3	1,321,623.39	3,137,188.06	40.215203	-105.008781	
237.0	0.40	289.70	237.0	2.1	-0.8	1,321,624.28	3,137,187.57	40.215206	-105.008783	
329.0	0.70	142.80	329.0	1.8	-0.7	1,321,623.94	3,137,187.61	40.215205	-105.008783	
421.0	1.40	137.00	421.0	0.5	0.4	1,321,622.68	3,137,188.72	40.215201	-105.008779	
513.0	1.30	152.10	512.9	-1.2	1.6	1,321,620.94	3,137,189.99	40.215197	-105.008774	
605.0	1.70	138.80	604.9	-3.2	3.0	1,321,619.00	3,137,191.38	40.215191	-105.008769	
696.0	3.10	138.80	695.8	-6.0	5.5	1,321,616.15	3,137,193.91	40.215183	-105.008761	
788.0	4.30	138.10	787.6	-10.5	9.5	1,321,611.73	3,137,197.88	40.215171	-105.008746	
865.0	5.10	143.10	864.4	-15.4	13.4	1,321,606.86	3,137,201.89	40.215158	-105.008732	
1,009.0	4.70	145.90	1,007.9	-25.4	20.6	1,321,596.90	3,137,209.09	40.215130	-105.008707	
1,101.0	5.10	132.90	1,099.5	-31.3	25.7	1,321,591.02	3,137,214.23	40.215114	-105.008688	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Liberty 2D-21H
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Site:	S20-T3N-R68W (Liberty 2A-21H)	MD Reference:	WELL @ 5036.0ft (Ensign 135)
Well:	Liberty 2D-21H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
1,193.0	4.40	132.60	1,191.2	-36.5	31.3	1,321,585.88	3,137,219.86	40.215100	-105.008668
1,285.0	4.40	148.40	1,282.9	-41.8	35.7	1,321,580.51	3,137,224.33	40.215085	-105.008652
1,376.0	4.90	155.30	1,373.6	-48.4	39.2	1,321,574.03	3,137,227.82	40.215067	-105.008640
1,468.0	6.30	147.80	1,465.2	-56.2	43.5	1,321,566.21	3,137,232.20	40.215046	-105.008624
1,561.0	5.70	137.70	1,557.7	-63.9	49.4	1,321,558.51	3,137,238.07	40.215025	-105.008604
1,652.0	5.50	136.30	1,648.3	-70.4	55.4	1,321,552.05	3,137,244.16	40.215007	-105.008582
1,744.0	5.50	136.70	1,739.8	-76.8	61.5	1,321,545.68	3,137,250.26	40.214989	-105.008560
1,836.0	5.30	135.80	1,831.4	-83.1	67.5	1,321,539.46	3,137,256.28	40.214972	-105.008539
1,927.0	5.00	129.00	1,922.1	-88.6	73.5	1,321,533.99	3,137,262.33	40.214957	-105.008517
2,022.0	5.00	143.50	2,016.7	-94.5	79.2	1,321,528.09	3,137,268.04	40.214941	-105.008497
2,116.0	5.10	138.50	2,110.3	-100.9	84.4	1,321,521.69	3,137,273.28	40.214923	-105.008478
2,211.0	4.70	138.50	2,205.0	-107.0	89.7	1,321,515.65	3,137,278.69	40.214906	-105.008459
2,306.0	4.80	133.70	2,299.7	-112.7	95.2	1,321,510.01	3,137,284.17	40.214891	-105.008439
2,400.0	5.70	146.90	2,393.3	-119.3	100.6	1,321,503.42	3,137,289.60	40.214873	-105.008420
2,495.0	5.30	143.40	2,487.8	-126.8	105.8	1,321,495.97	3,137,294.84	40.214852	-105.008402
2,590.0	5.10	142.00	2,582.4	-133.6	111.0	1,321,489.15	3,137,300.09	40.214833	-105.008383
2,684.0	4.60	144.40	2,676.1	-140.0	115.8	1,321,482.82	3,137,304.89	40.214816	-105.008366
2,779.0	4.80	141.30	2,770.8	-146.2	120.5	1,321,476.65	3,137,309.63	40.214799	-105.008349
2,873.0	4.50	140.30	2,864.5	-152.1	125.3	1,321,470.77	3,137,314.48	40.214783	-105.008332
2,967.0	5.80	139.80	2,958.1	-158.6	130.7	1,321,464.33	3,137,319.93	40.214765	-105.008312
3,062.0	5.10	134.90	3,052.7	-165.2	136.8	1,321,457.72	3,137,326.06	40.214747	-105.008290
3,157.0	5.60	149.00	3,147.3	-172.2	142.2	1,321,450.79	3,137,331.48	40.214727	-105.008271
3,251.0	5.00	145.40	3,240.9	-179.5	146.9	1,321,443.52	3,137,336.20	40.214707	-105.008254
3,345.0	4.60	141.10	3,334.5	-185.8	151.5	1,321,437.24	3,137,340.93	40.214690	-105.008238
3,440.0	4.90	157.30	3,429.2	-192.5	155.5	1,321,430.55	3,137,344.93	40.214672	-105.008223
3,535.0	4.10	139.70	3,523.9	-198.8	159.3	1,321,424.24	3,137,348.73	40.214654	-105.008210
3,630.0	5.10	136.80	3,618.6	-204.5	164.4	1,321,418.60	3,137,353.84	40.214639	-105.008192
3,725.0	5.00	133.20	3,713.2	-210.4	170.3	1,321,412.72	3,137,359.78	40.214622	-105.008171
3,820.0	5.00	147.80	3,807.9	-216.7	175.5	1,321,406.41	3,137,365.04	40.214605	-105.008152
3,914.0	4.20	140.40	3,901.6	-222.8	179.9	1,321,400.32	3,137,369.46	40.214588	-105.008136
4,008.0	3.90	136.40	3,995.3	-227.8	184.3	1,321,395.37	3,137,373.88	40.214575	-105.008120
4,103.0	5.00	134.40	4,090.1	-233.1	189.4	1,321,390.17	3,137,379.10	40.214560	-105.008102
4,198.0	5.90	154.50	4,184.6	-240.4	194.5	1,321,382.89	3,137,384.20	40.214540	-105.008084
4,292.0	5.50	151.80	4,278.2	-248.7	198.7	1,321,374.58	3,137,388.45	40.214517	-105.008069
4,387.0	4.00	160.10	4,372.8	-255.8	202.0	1,321,367.47	3,137,391.77	40.214498	-105.008057
4,482.0	3.10	156.00	4,467.7	-261.3	204.2	1,321,362.02	3,137,393.97	40.214483	-105.008049
4,576.0	1.50	195.80	4,561.6	-264.8	204.9	1,321,358.52	3,137,394.69	40.214473	-105.008047
4,670.0	0.30	15.00	4,655.6	-265.7	204.6	1,321,357.57	3,137,394.43	40.214471	-105.008048
4,764.0	1.30	13.60	4,749.6	-264.5	204.9	1,321,358.85	3,137,394.73	40.214474	-105.008047
4,859.0	1.30	348.00	4,844.5	-262.4	204.9	1,321,360.95	3,137,394.75	40.214480	-105.008046
4,953.0	1.50	344.50	4,938.5	-260.1	204.4	1,321,363.18	3,137,394.19	40.214486	-105.008048
5,048.0	0.80	270.20	5,033.5	-258.9	203.4	1,321,364.37	3,137,393.19	40.214489	-105.008052
5,143.0	1.10	36.50	5,128.5	-258.2	203.3	1,321,365.10	3,137,393.06	40.214491	-105.008052
5,238.0	0.90	11.30	5,223.5	-256.7	204.0	1,321,366.57	3,137,393.74	40.214495	-105.008050
5,332.0	0.90	358.60	5,317.5	-255.3	204.1	1,321,368.04	3,137,393.86	40.214499	-105.008049
5,427.0	0.50	108.60	5,412.5	-254.6	204.5	1,321,368.65	3,137,394.23	40.214501	-105.008048
5,522.0	0.20	109.90	5,507.5	-254.8	205.0	1,321,368.47	3,137,394.78	40.214500	-105.008046
5,617.0	0.30	249.80	5,602.5	-255.0	204.9	1,321,368.32	3,137,394.70	40.214500	-105.008046
5,711.0	0.70	346.70	5,696.5	-254.5	204.6	1,321,368.80	3,137,394.34	40.214501	-105.008048
5,806.0	0.40	63.50	5,791.5	-253.8	204.7	1,321,369.51	3,137,394.50	40.214503	-105.008047
5,901.0	0.50	359.30	5,886.5	-253.2	205.0	1,321,370.07	3,137,394.79	40.214505	-105.008046
5,996.0	0.90	141.40	5,981.5	-253.4	205.5	1,321,369.91	3,137,395.25	40.214504	-105.008044
6,091.0	0.20	92.80	6,076.4	-254.0	206.1	1,321,369.32	3,137,395.88	40.214503	-105.008042
6,185.0	0.10	147.90	6,170.4	-254.1	206.3	1,321,369.24	3,137,396.09	40.214503	-105.008041
6,280.0	0.80	323.10	6,265.4	-253.6	206.0	1,321,369.70	3,137,395.73	40.214504	-105.008043

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Liberty 2D-21H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5036.0ft (Ensign 135)
Site:	S20-T3N-R68W (Liberty 2A-21H)	MD Reference:	WELL @ 5036.0ft (Ensign 135)
Well:	Liberty 2D-21H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
6,327.0	1.70	295.80	6,312.4	-253.0	205.1	1,321,370.26	3,137,394.91	40.214505	-105.008046
6,375.0	9.40	272.00	6,360.2	-252.6	200.6	1,321,370.68	3,137,390.34	40.214507	-105.008062
6,422.0	17.10	271.70	6,405.9	-252.3	189.8	1,321,370.96	3,137,379.58	40.214508	-105.008101
6,469.0	19.50	268.70	6,450.5	-252.2	175.1	1,321,370.91	3,137,364.83	40.214508	-105.008153
6,516.0	20.40	264.30	6,494.7	-253.2	159.1	1,321,369.83	3,137,348.84	40.214505	-105.008211
6,564.0	22.90	263.90	6,539.3	-255.0	141.5	1,321,367.91	3,137,331.23	40.214500	-105.008274
6,611.0	27.70	269.80	6,581.8	-256.1	121.4	1,321,366.79	3,137,311.21	40.214497	-105.008345
6,658.0	32.70	269.30	6,622.4	-256.2	97.8	1,321,366.46	3,137,287.58	40.214497	-105.008430
6,705.0	35.10	268.90	6,661.4	-256.7	71.6	1,321,365.90	3,137,261.37	40.214495	-105.008524
6,753.0	35.90	268.30	6,700.5	-257.3	43.7	1,321,365.07	3,137,233.51	40.214494	-105.008624
6,800.0	37.40	268.20	6,738.2	-258.2	15.7	1,321,364.05	3,137,205.47	40.214491	-105.008724
6,848.0	41.60	268.40	6,775.2	-259.1	-14.8	1,321,362.98	3,137,174.97	40.214489	-105.008833
6,895.0	47.00	274.30	6,808.9	-258.2	-47.6	1,321,363.65	3,137,142.19	40.214491	-105.008951
6,942.0	49.90	275.50	6,840.0	-255.2	-82.6	1,321,366.47	3,137,107.13	40.214499	-105.009076
6,989.0	52.40	273.20	6,869.5	-252.5	-119.1	1,321,369.03	3,137,070.63	40.214507	-105.009207
7,037.0	56.40	271.70	6,897.5	-250.8	-158.1	1,321,370.47	3,137,031.63	40.214512	-105.009346
7,084.0	60.20	271.50	6,922.1	-249.7	-198.1	1,321,371.37	3,136,991.66	40.214515	-105.009490
7,132.0	64.00	271.10	6,944.6	-248.7	-240.5	1,321,372.09	3,136,949.26	40.214517	-105.009641
7,179.0	69.10	269.70	6,963.3	-248.5	-283.6	1,321,372.14	3,136,906.15	40.214518	-105.009796
7,227.0	73.10	269.70	6,978.8	-248.7	-329.0	1,321,371.65	3,136,860.75	40.214517	-105.009958
7,274.0	75.40	269.70	6,991.6	-248.9	-374.2	1,321,371.17	3,136,815.52	40.214517	-105.010120
7,322.0	77.80	269.80	7,002.7	-249.1	-420.9	1,321,370.70	3,136,768.84	40.214516	-105.010287
7,371.0	82.40	270.40	7,011.1	-249.0	-469.2	1,321,370.52	3,136,720.58	40.214516	-105.010460
7,439.0	88.40	272.20	7,016.6	-247.5	-536.9	1,321,371.69	3,136,652.86	40.214521	-105.010703
7,533.0	89.50	270.20	7,018.3	-245.5	-630.8	1,321,373.14	3,136,558.89	40.214526	-105.011039
7,628.0	92.70	269.00	7,016.5	-246.2	-725.8	1,321,371.95	3,136,463.93	40.214524	-105.011379
7,723.0	93.20	268.60	7,011.6	-248.2	-820.7	1,321,369.43	3,136,369.09	40.214519	-105.011719
7,817.0	93.50	267.90	7,006.1	-251.1	-914.5	1,321,366.05	3,136,275.31	40.214511	-105.012055
7,912.0	93.00	268.30	7,000.7	-254.2	-1,009.2	1,321,362.38	3,136,180.54	40.214502	-105.012394
8,007.0	92.70	268.40	6,996.0	-256.9	-1,104.1	1,321,359.12	3,136,085.71	40.214495	-105.012734
8,102.0	93.90	268.60	6,990.5	-259.4	-1,198.9	1,321,356.11	3,135,990.92	40.214488	-105.013073
8,196.0	94.30	270.00	6,983.8	-260.6	-1,292.6	1,321,354.45	3,135,897.17	40.214485	-105.013409
8,291.0	94.00	270.60	6,976.9	-260.1	-1,387.4	1,321,354.42	3,135,802.42	40.214486	-105.013748
8,386.0	93.30	270.50	6,970.9	-259.2	-1,482.2	1,321,354.81	3,135,707.62	40.214489	-105.014088
8,481.0	90.90	271.20	6,967.4	-257.7	-1,577.1	1,321,355.69	3,135,612.69	40.214492	-105.014427
8,576.0	90.20	269.90	6,966.5	-256.8	-1,672.1	1,321,356.07	3,135,517.70	40.214495	-105.014768
8,670.0	89.20	270.40	6,967.0	-256.6	-1,766.1	1,321,355.80	3,135,423.70	40.214496	-105.015104
8,765.0	89.20	270.10	6,968.3	-256.2	-1,861.1	1,321,355.69	3,135,328.71	40.214497	-105.015444
8,859.0	89.20	269.90	6,969.6	-256.2	-1,955.1	1,321,355.17	3,135,234.72	40.214497	-105.015781
8,954.0	90.50	269.90	6,969.9	-256.3	-2,050.1	1,321,354.47	3,135,139.73	40.214496	-105.016121
9,049.0	88.90	270.30	6,970.4	-256.2	-2,145.1	1,321,354.11	3,135,044.73	40.214497	-105.016461
9,143.0	88.30	269.80	6,972.7	-256.1	-2,239.0	1,321,353.68	3,134,950.76	40.214497	-105.016798
9,238.0	88.90	270.40	6,975.0	-255.9	-2,334.0	1,321,353.32	3,134,855.79	40.214497	-105.017138
9,333.0	91.60	273.30	6,974.6	-252.9	-2,428.9	1,321,355.86	3,134,760.85	40.214506	-105.017478
9,427.0	92.60	272.90	6,971.1	-247.8	-2,522.7	1,321,360.42	3,134,667.02	40.214520	-105.017814
9,523.0	91.80	272.20	6,967.5	-243.5	-2,618.6	1,321,364.15	3,134,571.17	40.214531	-105.018157
9,618.0	92.70	270.90	6,963.7	-240.9	-2,713.5	1,321,366.20	3,134,476.27	40.214538	-105.018496
9,712.0	91.90	269.40	6,959.9	-240.7	-2,807.4	1,321,365.92	3,134,382.35	40.214539	-105.018833
9,807.0	88.40	269.00	6,959.7	-242.0	-2,902.4	1,321,364.07	3,134,287.38	40.214535	-105.019173
9,902.0	86.50	268.60	6,963.9	-244.0	-2,997.2	1,321,361.56	3,134,192.51	40.214530	-105.019513
9,996.0	86.40	267.80	6,969.7	-247.0	-3,091.0	1,321,358.09	3,134,098.76	40.214522	-105.019848
10,091.0	87.10	267.00	6,975.1	-251.3	-3,185.8	1,321,353.26	3,134,004.03	40.214510	-105.020188
10,185.0	90.10	266.60	6,977.4	-256.5	-3,279.6	1,321,347.50	3,133,910.25	40.214495	-105.020524
10,217.0	91.70	266.90	6,976.9	-258.3	-3,311.5	1,321,345.51	3,133,878.32	40.214490	-105.020638
10,280.0	91.60	267.60	6,975.1	-261.3	-3,374.4	1,321,342.14	3,133,815.43	40.214482	-105.020863

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Liberty 2D-21H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5036.0ft (Ensign 135)
Site:	S20-T3N-R68W (Liberty 2A-21H)	MD Reference:	WELL @ 5036.0ft (Ensign 135)
Well:	Liberty 2D-21H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	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
10,343.0	92.40	269.80	6,972.9	-262.8	-3,437.4	1,321,340.36	3,133,752.50	40.214478	-105.021089
10,406.0	93.00	269.70	6,969.9	-263.0	-3,500.3	1,321,339.74	3,133,689.57	40.214477	-105.021314
10,469.0	93.60	271.30	6,966.3	-262.5	-3,563.2	1,321,339.94	3,133,626.68	40.214479	-105.021539
10,532.0	93.70	272.00	6,962.3	-260.7	-3,626.0	1,321,341.40	3,133,563.83	40.214484	-105.021764
10,595.0	93.20	273.40	6,958.5	-257.7	-3,688.8	1,321,344.01	3,133,501.00	40.214492	-105.021989
10,658.0	93.10	272.40	6,955.1	-254.5	-3,751.7	1,321,346.85	3,133,438.16	40.214501	-105.022214
10,753.0	92.70	271.20	6,950.2	-251.6	-3,846.5	1,321,349.30	3,133,343.31	40.214509	-105.022554
10,847.0	90.60	270.40	6,947.5	-250.2	-3,940.4	1,321,350.09	3,133,249.36	40.214512	-105.022890
10,942.0	90.10	268.80	6,947.0	-250.9	-4,035.4	1,321,348.90	3,133,154.37	40.214510	-105.023230
11,037.0	93.00	269.00	6,944.4	-252.7	-4,130.4	1,321,346.55	3,133,059.45	40.214505	-105.023570
11,132.0	92.00	268.30	6,940.2	-255.0	-4,225.3	1,321,343.79	3,132,964.58	40.214499	-105.023910
11,226.0	92.30	267.90	6,936.7	-258.1	-4,319.1	1,321,340.16	3,132,870.72	40.214491	-105.024246
11,321.0	90.40	267.60	6,934.5	-261.8	-4,414.0	1,321,335.90	3,132,775.84	40.214480	-105.024586
11,391.0	90.10	266.80	6,934.2	-265.2	-4,483.9	1,321,332.10	3,132,705.95	40.214471	-105.024836
Last Cathedral Survey @ 11,391' MD									
11,440.0	90.10	266.80	6,934.1	-268.0	-4,532.9	1,321,329.09	3,132,657.04	40.214463	-105.025011
Projection to Bit @ 11,440'									

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 2D-21H PBHL Pct	0.00	0.00	6,936.2	-254.6	-4,571.7	1,321,342.28	3,132,618.14	40.214500	-105.025150
- actual wellpath misses target center by 41.1ft at 11440.0ft MD (6934.1 TVD, -268.0 N, -4532.9 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,391.0	6,934.2	-265.2	-4,483.9	Last Cathedral Survey @ 11,391' MD	
11,440.0	6,934.1	-268.0	-4,532.9	Projection to Bit @ 11,440'	

Checked By: _____ Approved By: _____ Date: _____