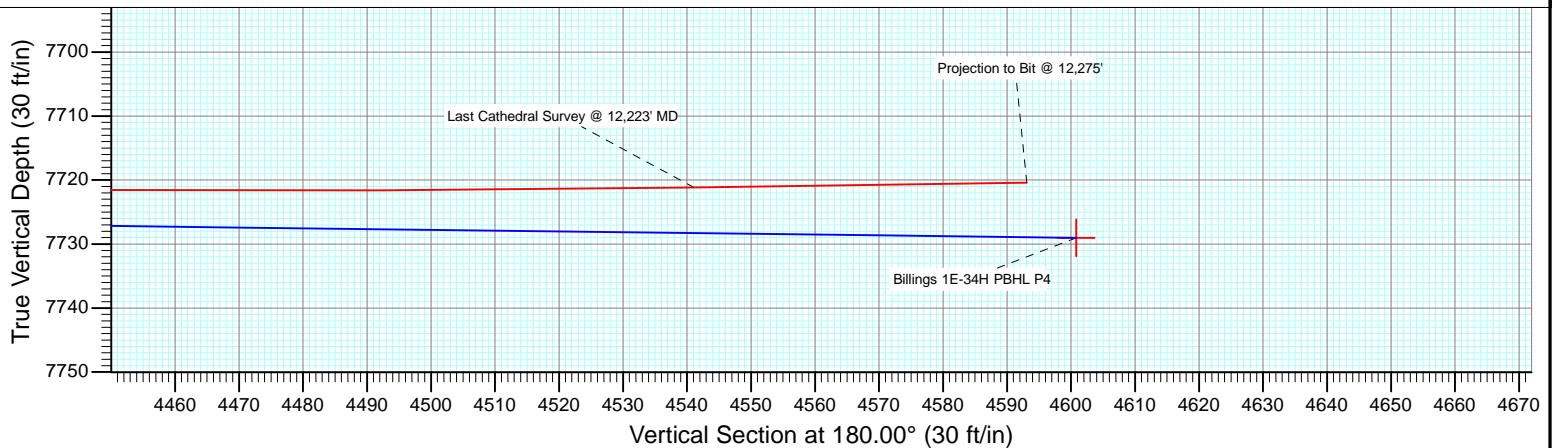
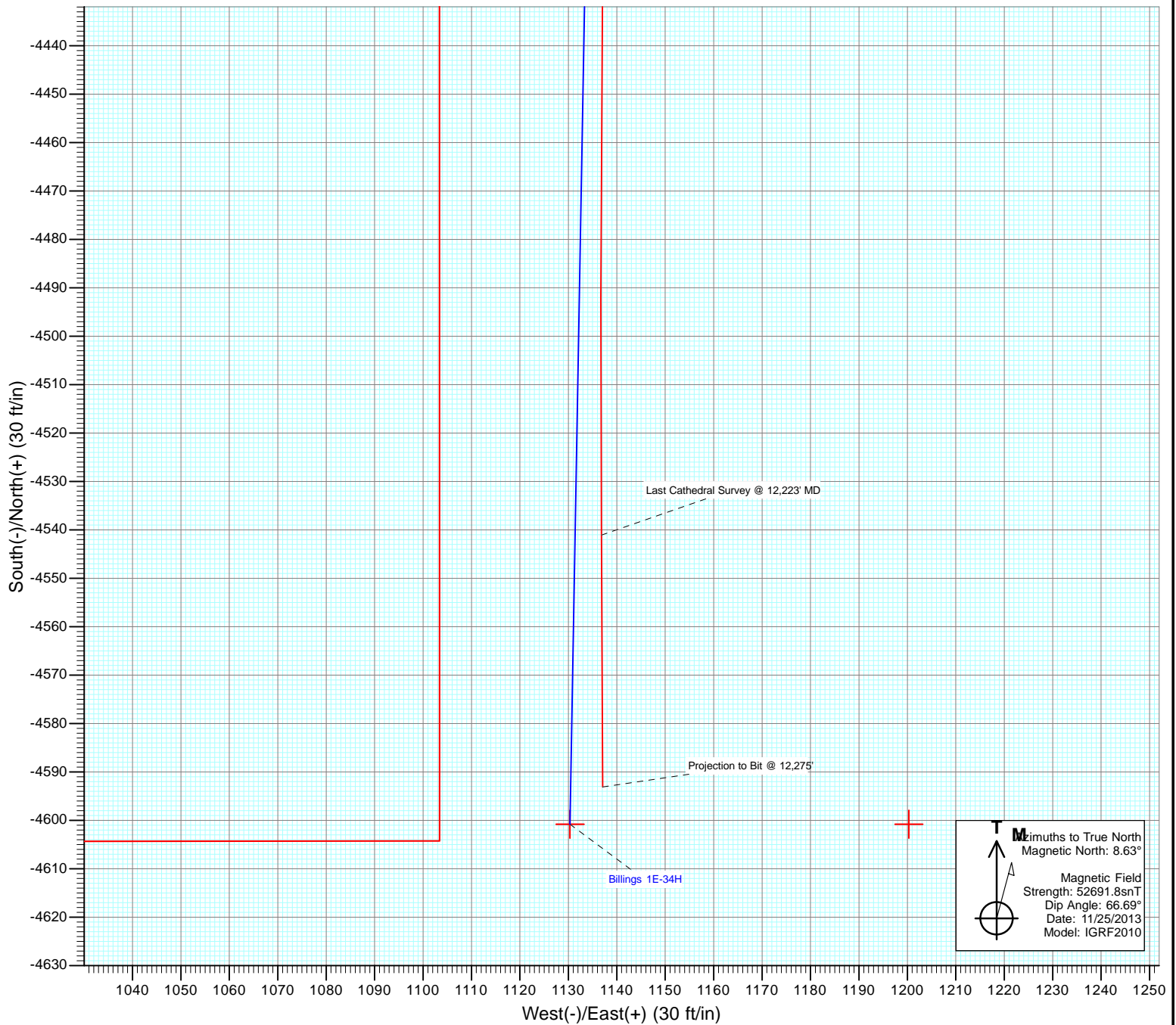




Project: DJ Wattenberg
Site: S34-T2N-R68W (Billings)
Well: Billings 1E-34H
Wellbore: Hz
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Billings 1E-34H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5008.0ft (Ensign 135)
Site:	S34-T2N-R68W (Billings)	MD Reference:	WELL @ 5008.0ft (Ensign 135)
Well:	Billings 1E-34H	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		S34-T2N-R68W (Billings)			
Site Position:		Northing:	1,280,284.39 ft	Latitude:	40.101620
From:	Lat/Long	Easting:	3,143,887.76 ft	Longitude:	-104.985650
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.33 °

Well	Billings 1E-34H					
Well Position	+N/-S	0.0 ft	Northing:	1,280,266.39 ft	Latitude:	40.101570
	+E/-W	0.0 ft	Easting:	3,143,929.83 ft	Longitude:	-104.985500
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,995.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/25/2013	8.63	66.69	52,692

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	180.00	

Survey Program	Date	12/6/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
144.0	12,275.0	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		
144.0	0.40	338.50	144.0	0.5	-0.2	-0.5	0.28	0.28		
236.0	0.50	23.80	236.0	1.1	-0.1	-1.1	0.39	0.11		
328.0	0.60	90.10	328.0	1.5	0.5	-1.5	0.66	0.11		
420.0	1.60	100.20	420.0	1.3	2.2	-1.3	1.10	1.09		
512.0	3.60	106.40	511.9	0.2	6.3	-0.2	2.19	2.17		
604.0	5.50	103.70	603.6	-1.6	13.3	1.6	2.08	2.07		
696.0	6.60	89.90	695.1	-2.7	22.9	2.7	1.97	1.20		
788.0	8.10	84.90	786.3	-2.1	34.7	2.1	1.77	1.63		
879.0	8.60	77.80	876.4	-0.1	47.7	0.1	1.26	0.55		
968.0	8.40	75.40	964.4	3.0	60.5	-3.0	0.46	-0.22		
1,037.0	7.50	73.30	1,032.7	5.5	69.7	-5.5	1.37	-1.30		
1,098.0	8.80	73.40	1,093.1	8.0	78.0	-8.0	2.13	2.13		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Billings 1E-34H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5008.0ft (Ensign 135)
Site:	S34-T2N-R68W (Billings)	MD Reference:	WELL @ 5008.0ft (Ensign 135)
Well:	Billings 1E-34H	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
1,190.0	11.70	78.90	1,183.6	11.8	93.9	-11.8	3.32	3.15	
1,282.0	10.70	83.20	1,273.9	14.6	111.5	-14.6	1.42	-1.09	
1,374.0	11.60	82.80	1,364.1	16.8	129.2	-16.8	0.98	0.98	
1,466.0	10.50	79.90	1,454.4	19.4	146.6	-19.4	1.34	-1.20	
1,556.0	9.60	78.30	1,543.0	22.4	162.0	-22.4	1.05	-1.00	
1,648.0	9.20	70.20	1,633.8	26.4	176.4	-26.4	1.50	-0.43	
1,740.0	9.90	78.60	1,724.5	30.5	191.1	-30.5	1.69	0.76	
1,831.0	9.00	84.80	1,814.3	32.7	205.9	-32.7	1.49	-0.99	
1,923.0	9.70	79.20	1,905.1	34.8	220.7	-34.8	1.25	0.76	
2,018.0	9.70	81.00	1,998.7	37.5	236.4	-37.5	0.32	0.00	
2,112.0	10.10	77.50	2,091.3	40.6	252.3	-40.6	0.77	0.43	
2,207.0	10.30	83.20	2,184.8	43.4	268.9	-43.4	1.08	0.21	
2,301.0	10.10	82.00	2,277.3	45.5	285.4	-45.5	0.31	-0.21	
2,395.0	9.80	79.50	2,369.9	48.1	301.4	-48.1	0.56	-0.32	
2,490.0	9.50	78.40	2,463.6	51.2	317.0	-51.2	0.37	-0.32	
2,585.0	9.10	78.00	2,557.3	54.3	332.0	-54.3	0.43	-0.42	
2,679.0	9.60	82.90	2,650.1	56.8	347.1	-56.8	1.00	0.53	
2,774.0	9.90	82.10	2,743.7	58.9	363.0	-58.9	0.35	0.32	
2,868.0	9.40	80.60	2,836.4	61.3	378.6	-61.3	0.60	-0.53	
2,963.0	9.90	77.70	2,930.0	64.3	394.3	-64.3	0.73	0.53	
3,058.0	9.60	76.20	3,023.7	67.9	409.9	-67.9	0.41	-0.32	
3,152.0	10.50	76.30	3,116.2	71.8	425.9	-71.8	0.96	0.96	
3,247.0	10.70	82.50	3,209.6	75.0	443.0	-75.0	1.22	0.21	
3,341.0	9.60	81.10	3,302.1	77.4	459.4	-77.4	1.20	-1.17	
3,436.0	9.60	86.20	3,395.8	79.1	475.1	-79.1	0.89	0.00	
3,531.0	10.20	79.40	3,489.4	81.2	491.3	-81.2	1.38	0.63	
3,625.0	10.40	78.10	3,581.9	84.5	507.8	-84.5	0.33	0.21	
3,720.0	10.40	77.50	3,675.3	88.1	524.6	-88.1	0.11	0.00	
3,815.0	10.00	85.70	3,768.8	90.6	541.2	-90.6	1.58	-0.42	
3,909.0	8.70	84.10	3,861.6	91.9	556.4	-91.9	1.41	-1.38	
4,004.0	11.10	81.00	3,955.2	94.1	572.6	-94.1	2.59	2.53	
4,099.0	9.60	77.20	4,048.6	97.3	589.3	-97.3	1.73	-1.58	
4,194.0	9.90	76.60	4,142.2	100.9	605.0	-100.9	0.33	0.32	
4,288.0	10.80	82.60	4,234.7	103.9	621.6	-103.9	1.49	0.96	
4,383.0	9.40	81.30	4,328.2	106.2	638.1	-106.2	1.49	-1.47	
4,477.0	9.60	80.30	4,420.9	108.7	653.4	-108.7	0.28	0.21	
4,572.0	10.30	83.80	4,514.5	111.0	669.6	-111.0	0.97	0.74	
4,667.0	9.40	81.00	4,608.1	113.1	685.7	-113.1	1.07	-0.95	
4,761.0	10.80	78.00	4,700.7	116.1	701.9	-116.1	1.59	1.49	
4,856.0	9.50	75.20	4,794.2	120.0	718.2	-120.0	1.46	-1.37	
4,950.0	10.60	79.00	4,886.7	123.6	734.2	-123.6	1.37	1.17	
5,045.0	10.10	84.20	4,980.2	126.1	751.1	-126.1	1.11	-0.53	
5,139.0	9.50	84.10	5,072.8	127.8	767.0	-127.8	0.64	-0.64	
5,234.0	10.30	78.30	5,166.4	130.3	783.1	-130.3	1.34	0.84	
5,328.0	9.50	75.90	5,259.0	133.9	798.9	-133.9	0.96	-0.85	
5,423.0	8.90	79.80	5,352.8	137.1	813.7	-137.1	0.91	-0.63	
5,517.0	10.20	79.90	5,445.5	139.8	829.0	-139.8	1.38	1.38	
5,612.0	10.50	75.10	5,538.9	143.6	845.7	-143.6	0.96	0.32	
5,706.0	10.40	81.80	5,631.4	147.0	862.4	-147.0	1.30	-0.11	
5,801.0	11.20	80.80	5,724.7	149.7	880.0	-149.7	0.86	0.84	
5,896.0	9.90	79.50	5,818.1	152.6	897.1	-152.6	1.39	-1.37	
5,991.0	10.20	80.20	5,911.6	155.5	913.4	-155.5	0.34	0.32	
6,085.0	9.10	78.60	6,004.3	158.4	928.9	-158.4	1.20	-1.17	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Billings 1E-34H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5008.0ft (Ensign 135)
Site:	S34-T2N-R68W (Billings)	MD Reference:	WELL @ 5008.0ft (Ensign 135)
Well:	Billings 1E-34H	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
6,180.0	10.10	70.70	6,098.0	162.7	944.1	-162.7	1.74	1.05	
6,275.0	9.80	77.80	6,191.5	167.1	959.9	-167.1	1.33	-0.32	
6,369.0	9.10	86.50	6,284.3	169.3	975.1	-169.3	1.69	-0.74	
6,464.0	9.40	86.50	6,378.0	170.2	990.4	-170.2	0.32	0.32	
6,559.0	10.50	82.90	6,471.6	171.8	1,006.7	-171.8	1.33	1.16	
6,654.0	9.10	80.90	6,565.2	174.0	1,022.7	-174.0	1.52	-1.47	
6,748.0	9.00	73.20	6,658.0	177.3	1,037.1	-177.3	1.29	-0.11	
6,843.0	10.00	75.30	6,751.7	181.6	1,052.2	-181.6	1.11	1.05	
6,937.0	9.50	78.20	6,844.4	185.2	1,067.7	-185.2	0.75	-0.53	
7,032.0	12.00	88.50	6,937.7	187.1	1,085.2	-187.1	3.31	2.63	
7,064.0	11.50	87.10	6,969.0	187.3	1,091.7	-187.3	1.80	-1.56	
7,095.0	11.40	92.30	6,999.4	187.4	1,097.9	-187.4	3.34	-0.32	
7,127.0	13.00	107.40	7,030.7	186.1	1,104.5	-186.1	11.11	5.00	
7,159.0	15.30	122.70	7,061.8	182.8	1,111.5	-182.8	13.66	7.19	
7,190.0	17.20	132.10	7,091.5	177.5	1,118.3	-177.5	10.45	6.13	
7,222.0	18.90	137.50	7,121.9	170.5	1,125.3	-170.5	7.45	5.31	
7,253.0	20.30	141.10	7,151.1	162.6	1,132.1	-162.6	5.96	4.52	
7,285.0	22.60	147.10	7,180.9	153.1	1,138.9	-153.1	9.93	7.19	
7,316.0	25.10	152.40	7,209.3	142.3	1,145.2	-142.3	10.61	8.06	
7,348.0	25.50	158.40	7,238.2	129.9	1,150.9	-129.9	8.11	1.25	
7,379.0	25.20	164.10	7,266.2	117.3	1,155.2	-117.3	7.93	-0.97	
7,411.0	26.90	166.50	7,295.0	103.7	1,158.7	-103.7	6.25	5.31	
7,442.0	28.70	169.70	7,322.4	89.6	1,161.7	-89.6	7.54	5.81	
7,474.0	31.10	172.60	7,350.2	73.8	1,164.1	-73.8	8.75	7.50	
7,506.0	32.80	175.70	7,377.3	57.0	1,165.8	-57.0	7.38	5.31	
7,537.0	33.20	175.60	7,403.3	40.2	1,167.1	-40.2	1.30	1.29	
7,569.0	34.40	174.50	7,429.9	22.4	1,168.7	-22.4	4.21	3.75	
7,600.0	36.00	173.40	7,455.2	4.7	1,170.6	-4.7	5.55	5.16	
7,632.0	38.50	173.20	7,480.7	-14.6	1,172.8	14.6	7.82	7.81	
7,664.0	41.80	174.30	7,505.2	-35.1	1,175.1	35.1	10.55	10.31	
7,695.0	46.10	174.80	7,527.5	-56.5	1,177.1	56.5	13.92	13.87	
7,727.0	49.40	175.50	7,549.0	-80.1	1,179.1	80.1	10.44	10.31	
7,758.0	53.10	175.00	7,568.4	-104.2	1,181.1	104.2	12.00	11.94	
7,790.0	56.70	175.50	7,586.8	-130.3	1,183.3	130.3	11.32	11.25	
7,822.0	61.10	174.80	7,603.3	-157.6	1,185.6	157.6	13.88	13.75	
7,853.0	64.10	175.30	7,617.6	-185.0	1,188.0	185.0	9.78	9.68	
7,867.0	66.00	175.10	7,623.5	-197.6	1,189.0	197.6	13.63	13.57	
7,943.0	69.70	174.90	7,652.1	-267.7	1,195.1	267.7	4.87	4.87	
7,975.0	72.60	175.10	7,662.5	-297.9	1,197.8	297.9	9.08	9.06	
8,007.0	75.70	176.10	7,671.2	-328.6	1,200.1	328.6	10.14	9.69	
8,038.0	79.20	177.10	7,677.9	-358.8	1,201.9	358.8	11.72	11.29	
8,070.0	82.00	177.60	7,683.2	-390.3	1,203.4	390.3	8.88	8.75	
8,102.0	84.70	177.70	7,686.9	-422.1	1,204.7	422.1	8.44	8.44	
8,133.0	87.60	178.50	7,688.9	-453.0	1,205.7	453.0	9.70	9.35	
8,165.0	88.70	178.30	7,690.0	-485.0	1,206.6	485.0	3.49	3.44	
8,196.0	89.20	179.10	7,690.5	-516.0	1,207.3	516.0	3.04	1.61	
8,291.0	92.50	180.20	7,689.1	-610.9	1,207.9	610.9	3.66	3.47	
8,354.0	91.30	180.80	7,687.0	-673.9	1,207.4	673.9	2.13	-1.90	
8,416.0	89.80	181.40	7,686.5	-735.9	1,206.2	735.9	2.61	-2.42	
8,479.0	89.10	180.80	7,687.1	-798.9	1,205.0	798.9	1.46	-1.11	
8,574.0	89.00	181.50	7,688.6	-893.8	1,203.0	893.8	0.74	-0.11	
8,669.0	90.90	181.00	7,688.7	-988.8	1,201.0	988.8	2.07	2.00	
8,764.0	92.30	181.10	7,686.1	-1,083.7	1,199.2	1,083.7	1.48	1.47	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Billings 1E-34H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5008.0ft (Ensign 135)
Site:	S34-T2N-R68W (Billings)	MD Reference:	WELL @ 5008.0ft (Ensign 135)
Well:	Billings 1E-34H	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
8,858.0	90.20	181.70	7,684.0	-1,177.7	1,196.9	1,177.7	2.32	-2.23	
8,953.0	88.90	179.80	7,684.8	-1,272.7	1,195.7	1,272.7	2.42	-1.37	
9,048.0	88.70	181.20	7,686.7	-1,367.6	1,194.9	1,367.6	1.49	-0.21	
9,143.0	88.90	183.00	7,688.7	-1,462.6	1,191.4	1,462.6	1.91	0.21	
9,237.0	88.90	183.10	7,690.5	-1,556.4	1,186.4	1,556.4	0.11	0.00	
9,332.0	88.80	183.40	7,692.4	-1,651.2	1,181.0	1,651.2	0.33	-0.11	
9,427.0	89.90	182.80	7,693.5	-1,746.1	1,175.9	1,746.1	1.32	1.16	
9,521.0	90.40	181.60	7,693.3	-1,840.0	1,172.3	1,840.0	1.38	0.53	
9,616.0	90.90	180.90	7,692.2	-1,935.0	1,170.2	1,935.0	0.91	0.53	
9,711.0	90.10	180.50	7,691.4	-2,030.0	1,169.0	2,030.0	0.94	-0.84	
9,806.0	88.60	178.90	7,692.5	-2,125.0	1,169.5	2,125.0	2.31	-1.58	
9,900.0	88.50	180.00	7,694.8	-2,218.9	1,170.4	2,218.9	1.17	-0.11	
9,995.0	88.90	180.60	7,697.0	-2,313.9	1,169.9	2,313.9	0.76	0.42	
10,090.0	90.40	180.20	7,697.6	-2,408.9	1,169.3	2,408.9	1.63	1.58	
10,185.0	90.30	180.20	7,697.0	-2,503.9	1,168.9	2,503.9	0.11	-0.11	
10,279.0	90.20	179.70	7,696.6	-2,597.9	1,169.0	2,597.9	0.54	-0.11	
10,374.0	88.60	180.40	7,697.6	-2,692.9	1,168.9	2,692.9	1.84	-1.68	
10,469.0	88.60	180.70	7,699.9	-2,787.8	1,168.0	2,787.8	0.32	0.00	
10,564.0	89.00	180.00	7,701.9	-2,882.8	1,167.4	2,882.8	0.85	0.42	
10,658.0	88.80	180.20	7,703.7	-2,976.8	1,167.3	2,976.8	0.30	-0.21	
10,753.0	89.40	181.60	7,705.2	-3,071.8	1,165.8	3,071.8	1.60	0.63	
10,848.0	89.30	180.50	7,706.3	-3,166.7	1,164.0	3,166.7	1.16	-0.11	
10,943.0	89.20	179.10	7,707.5	-3,261.7	1,164.4	3,261.7	1.48	-0.11	
11,037.0	88.70	179.40	7,709.2	-3,355.7	1,165.6	3,355.7	0.62	-0.53	
11,132.0	89.70	181.40	7,710.5	-3,450.7	1,164.9	3,450.7	2.35	1.05	
11,227.0	90.10	182.50	7,710.7	-3,545.6	1,161.7	3,545.6	1.23	0.42	
11,322.0	89.60	181.10	7,711.0	-3,640.6	1,158.7	3,640.6	1.56	-0.53	
11,416.0	90.20	182.00	7,711.1	-3,734.6	1,156.2	3,734.6	1.15	0.64	
11,511.0	90.40	181.20	7,710.6	-3,829.5	1,153.5	3,829.5	0.87	0.21	
11,606.0	90.50	180.70	7,709.9	-3,924.5	1,152.0	3,924.5	0.54	0.11	
11,700.0	88.30	182.10	7,710.9	-4,018.5	1,149.7	4,018.5	2.77	-2.34	
11,795.0	87.80	182.80	7,714.1	-4,113.3	1,145.6	4,113.3	0.91	-0.53	
11,889.0	88.90	182.00	7,716.8	-4,207.2	1,141.7	4,207.2	1.45	1.17	
11,984.0	88.70	181.40	7,718.8	-4,302.1	1,138.8	4,302.1	0.67	-0.21	
12,079.0	88.80	180.60	7,720.9	-4,397.1	1,137.2	4,397.1	0.85	0.11	
12,174.0	90.30	180.00	7,721.6	-4,492.1	1,136.7	4,492.1	1.70	1.58	
12,223.0	90.80	179.70	7,721.1	-4,541.1	1,136.8	4,541.1	1.19	1.02	Last Cathedral Survey @ 12,223' MD Projection to Bit @ 12,275'
12,275.0	90.80	179.70	7,720.4	-4,593.1	1,137.1	4,593.1	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Billings 1E-34H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5008.0ft (Ensign 135)
Site:	S34-T2N-R68W (Billings)	MD Reference:	WELL @ 5008.0ft (Ensign 135)
Well:	Billings 1E-34H	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)		
Billings 1E-34H PBHL P:	0.00	0.00	7,729.0	-4,600.8	1,200.3	1,275,672.65	3,145,156.80	40.088940	-104.981210
- actual wellpath misses target center by 64.3ft at 12275.0ft MD (7720.4 TVD, -4593.1 N, 1137.1 E)									
- Point									
Billings 1E-34H PBHL P:	0.00	0.00	7,729.0	-4,600.8	1,130.3	1,275,672.24	3,145,086.85	40.088940	-104.981460
- actual wellpath misses target center by 13.4ft at 12275.0ft MD (7720.4 TVD, -4593.1 N, 1137.1 E)									
- Point									
Billings 1E-34H PBHL N	0.00	0.00	7,649.0	-4,600.8	1,200.3	1,275,672.65	3,145,156.80	40.088940	-104.981210
- actual wellpath misses target center by 95.7ft at 12275.0ft MD (7720.4 TVD, -4593.1 N, 1137.1 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	Comment	
12,223.0	7,721.1	-4,541.1	1,136.8	Last Cathedral Survey @ 12,223' MD	
12,275.0	7,720.4	-4,593.1	1,137.1	Projection to Bit @ 12,275'	

Checked By: _____ Approved By: _____ Date: _____