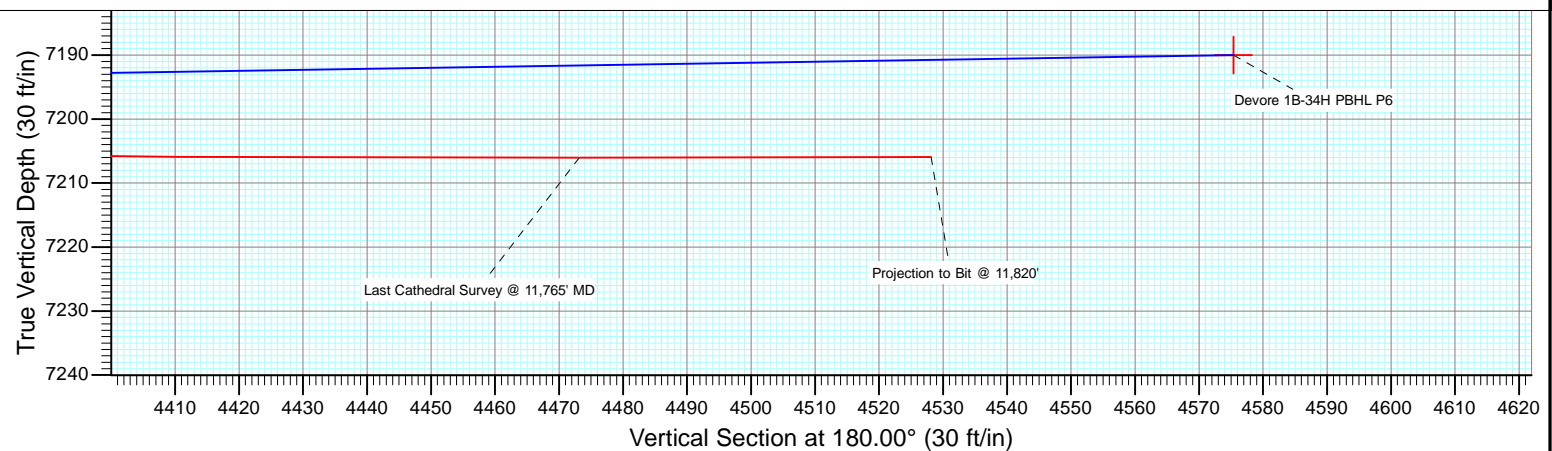
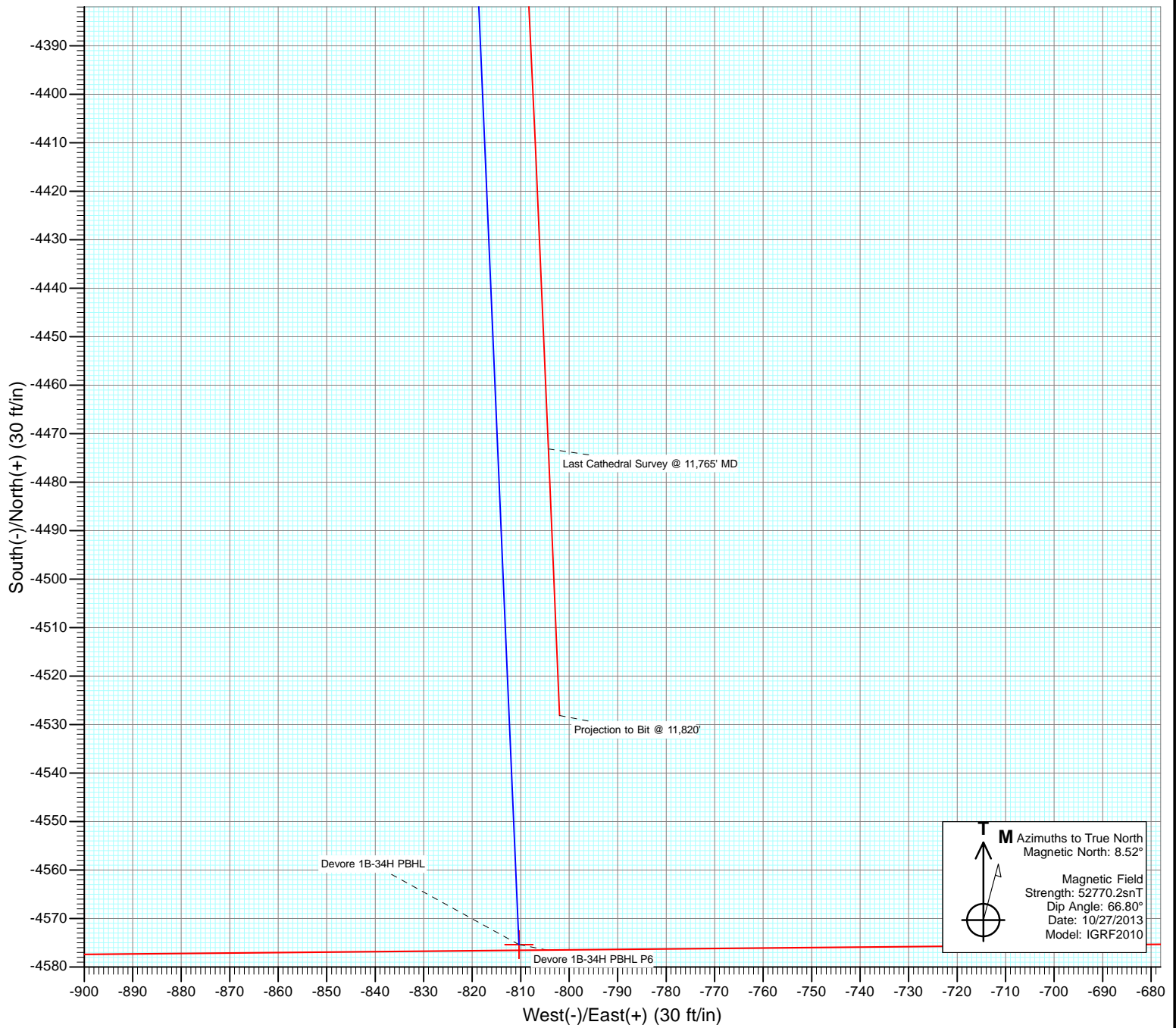




Project: DJ Wattenberg
Site: S34-T3N-R66W (Devore)
Well: Devore 1B-34H
Wellbore: Hz
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1B-34H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4992.0ft (Patterson 272)
Site:	S34-T3N-R66W (Devore)	MD Reference:	KB @ 4992.0ft (Patterson 272)
Well:	Devore 1B-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-T3N-R66W (Devore)			
Site Position:		Northing:	1,307,711.17 ft	Latitude:	40.175660
From:	Lat/Long	Easting:	3,207,971.22 ft	Longitude:	-104.755750
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.48 °

Well	Devore 1B-34H					
Well Position	+N/-S	0.0 ft	Northing:	1,312,279.55 ft	Latitude:	40.188220
	+E/-W	0.0 ft	Easting:	3,207,117.06 ft	Longitude:	-104.758670
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,962.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/27/2013	8.52	66.80	52,770

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	10/31/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
167.0	11,820.0	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		
167.0	0.10	106.80	167.0	0.0	0.1	0.0	0.06	0.06		
260.0	0.10	128.00	260.0	-0.1	0.3	0.1	0.04	0.00		
354.0	0.50	280.30	354.0	-0.1	-0.1	0.1	0.63	0.43		
447.0	2.20	279.20	447.0	0.3	-2.2	-0.3	1.83	1.83		
541.0	3.60	279.20	540.8	1.0	-6.9	-1.0	1.49	1.49		
635.0	4.80	289.30	634.6	2.8	-13.5	-2.8	1.49	1.28		
728.0	6.30	288.30	727.2	5.7	-22.1	-5.7	1.62	1.61		
822.0	6.40	291.90	820.6	9.3	-31.8	-9.3	0.44	0.11		
916.0	6.40	293.20	914.0	13.3	-41.5	-13.3	0.15	0.00		
964.0	6.80	288.40	961.7	15.2	-46.6	-15.2	1.42	0.83		
1,110.0	9.00	290.20	1,106.3	21.9	-65.6	-21.9	1.52	1.51		
1,204.0	8.40	288.60	1,199.2	26.6	-79.0	-26.6	0.69	-0.64		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1B-34H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4992.0ft (Patterson 272)
Site:	S34-T3N-R66W (Devore)	MD Reference:	KB @ 4992.0ft (Patterson 272)
Well:	Devore 1B-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
1,297.0	7.40	282.40	1,291.3	30.1	-91.3	-30.1	1.41	-1.08	
1,391.0	8.80	283.80	1,384.4	33.1	-104.2	-33.1	1.50	1.49	
1,485.0	8.40	282.10	1,477.3	36.3	-117.9	-36.3	0.50	-0.43	
1,578.0	7.80	277.70	1,569.4	38.5	-130.8	-38.5	0.93	-0.65	
1,672.0	7.70	273.00	1,662.5	39.7	-143.4	-39.7	0.68	-0.11	
1,765.0	8.10	278.20	1,754.7	41.0	-156.1	-41.0	0.88	0.43	
1,859.0	7.20	275.20	1,847.8	42.4	-168.5	-42.4	1.05	-0.96	
1,953.0	8.70	279.10	1,940.9	44.1	-181.4	-44.1	1.69	1.60	
2,047.0	8.10	277.70	2,033.9	46.1	-195.0	-46.1	0.67	-0.64	
2,141.0	8.60	292.40	2,126.9	49.7	-208.0	-49.7	2.33	0.53	
2,236.0	8.10	292.50	2,220.9	54.9	-220.8	-54.9	0.53	-0.53	
2,330.0	7.70	292.10	2,314.0	59.9	-232.7	-59.9	0.43	-0.43	
2,424.0	7.20	288.30	2,407.2	64.1	-244.2	-64.1	0.75	-0.53	
2,519.0	6.30	282.40	2,501.6	67.1	-254.9	-67.1	1.19	-0.95	
2,613.0	6.00	276.00	2,595.0	68.7	-264.8	-68.7	0.80	-0.32	
2,708.0	6.00	287.30	2,689.5	70.7	-274.5	-70.7	1.24	0.00	
2,803.0	5.80	286.20	2,784.0	73.5	-283.8	-73.5	0.24	-0.21	
2,897.0	7.90	288.60	2,877.3	76.9	-294.5	-76.9	2.25	2.23	
2,991.0	8.30	289.00	2,970.4	81.1	-307.1	-81.1	0.43	0.43	
3,086.0	7.80	288.70	3,064.5	85.4	-319.7	-85.4	0.53	-0.53	
3,180.0	7.60	285.70	3,157.6	89.2	-331.7	-89.2	0.48	-0.21	
3,275.0	6.60	279.90	3,251.9	91.8	-343.1	-91.8	1.29	-1.05	
3,369.0	7.20	280.10	3,345.2	93.8	-354.2	-93.8	0.64	0.64	
3,464.0	6.90	277.10	3,439.5	95.5	-365.8	-95.5	0.50	-0.32	
3,558.0	7.30	277.50	3,532.8	97.0	-377.3	-97.0	0.43	0.43	
3,653.0	8.70	280.60	3,626.8	99.1	-390.3	-99.1	1.54	1.47	
3,747.0	7.30	275.20	3,719.9	101.0	-403.3	-101.0	1.69	-1.49	
3,842.0	8.20	278.30	3,814.0	102.5	-416.0	-102.5	1.04	0.95	
3,936.0	8.60	281.70	3,907.0	104.9	-429.5	-104.9	0.68	0.43	
4,031.0	9.40	291.50	4,000.9	109.2	-443.7	-109.2	1.82	0.84	
4,125.0	9.30	292.00	4,093.6	114.8	-457.9	-114.8	0.14	-0.11	
4,219.0	9.10	290.20	4,186.4	120.2	-471.9	-120.2	0.37	-0.21	
4,314.0	8.10	287.80	4,280.3	124.9	-485.3	-124.9	1.12	-1.05	
4,409.0	6.40	283.40	4,374.6	128.1	-496.8	-128.1	1.88	-1.79	
4,503.0	7.20	287.30	4,467.9	131.1	-507.5	-131.1	0.98	0.85	
4,598.0	8.00	280.20	4,562.1	134.1	-519.7	-134.1	1.30	0.84	
4,692.0	8.70	273.80	4,655.1	135.7	-533.3	-135.7	1.24	0.74	
4,787.0	8.30	271.10	4,749.1	136.3	-547.3	-136.3	0.59	-0.42	
4,881.0	8.40	275.40	4,842.1	137.1	-560.9	-137.1	0.67	0.11	
4,975.0	7.70	284.00	4,935.1	139.2	-573.9	-139.2	1.48	-0.74	
5,070.0	6.60	282.10	5,029.4	141.9	-585.4	-141.9	1.18	-1.16	
5,164.0	7.20	280.30	5,122.7	144.1	-596.4	-144.1	0.68	0.64	
5,258.0	9.10	280.50	5,215.8	146.5	-609.6	-146.5	2.02	2.02	
5,353.0	7.70	281.20	5,309.7	149.1	-623.2	-149.1	1.48	-1.47	
5,447.0	7.60	277.20	5,402.9	151.1	-635.5	-151.1	0.58	-0.11	
5,541.0	8.50	269.80	5,496.0	151.9	-648.6	-151.9	1.46	0.96	
5,636.0	7.60	275.60	5,590.0	152.5	-661.9	-152.5	1.27	-0.95	
5,730.0	7.40	284.10	5,683.2	154.5	-674.0	-154.5	1.20	-0.21	
5,825.0	7.40	288.70	5,777.4	158.0	-685.7	-158.0	0.62	0.00	
5,919.0	7.60	289.00	5,870.6	162.0	-697.3	-162.0	0.22	0.21	
6,014.0	7.90	292.50	5,964.8	166.5	-709.3	-166.5	0.59	0.32	
6,108.0	7.70	287.30	6,057.9	170.9	-721.3	-170.9	0.78	-0.21	
6,203.0	8.50	286.10	6,152.0	174.7	-734.1	-174.7	0.86	0.84	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1B-34H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4992.0ft (Patterson 272)
Site:	S34-T3N-R66W (Devore)	MD Reference:	KB @ 4992.0ft (Patterson 272)
Well:	Devore 1B-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
6,297.0	7.90	288.00	6,245.0	178.6	-746.9	-178.6	0.70	-0.64	
6,392.0	7.90	294.20	6,339.1	183.3	-759.1	-183.3	0.90	0.00	
6,487.0	7.50	295.30	6,433.2	188.6	-770.6	-188.6	0.45	-0.42	
6,581.0	4.90	287.90	6,526.7	192.5	-780.0	-192.5	2.89	-2.77	
6,596.0	4.40	288.00	6,541.6	192.9	-781.2	-192.9	3.33	-3.33	
6,673.0	4.60	286.90	6,618.4	194.7	-786.9	-194.7	0.28	0.26	
6,767.0	10.30	256.50	6,711.6	193.8	-798.7	-193.8	7.17	6.06	
6,798.0	15.30	249.40	6,741.8	191.7	-805.2	-191.7	16.88	16.13	
6,818.0	17.10	247.20	6,761.0	189.7	-810.4	-189.7	9.51	9.00	
6,830.0	17.80	245.60	6,772.5	188.2	-813.7	-188.2	7.07	5.83	
6,861.0	18.90	240.20	6,801.9	183.8	-822.4	-183.8	6.53	3.55	
6,893.0	19.10	236.10	6,832.2	178.3	-831.2	-178.3	4.22	0.62	
6,924.0	19.60	228.80	6,861.4	172.0	-839.4	-172.0	7.96	1.61	
6,956.0	21.20	224.30	6,891.4	164.3	-847.4	-164.3	7.00	5.00	
6,987.0	24.00	219.30	6,920.0	155.4	-855.3	-155.4	10.95	9.03	
7,019.0	27.10	213.20	6,948.9	144.3	-863.5	-144.3	12.69	9.69	
7,050.0	31.40	207.70	6,975.9	131.2	-871.1	-131.2	16.34	13.87	
7,082.0	36.20	202.90	7,002.5	115.1	-878.6	-115.1	17.15	15.00	
7,113.0	38.70	197.70	7,027.1	97.5	-885.2	-97.5	13.00	8.06	
7,145.0	40.50	192.60	7,051.8	77.8	-890.5	-77.8	11.61	5.62	
7,176.0	42.10	188.30	7,075.1	57.7	-894.2	-57.7	10.51	5.16	
7,207.0	46.20	183.70	7,097.3	36.2	-896.4	-36.2	16.78	13.23	
7,239.0	48.90	182.10	7,118.9	12.6	-897.6	-12.6	9.21	8.44	
7,270.0	52.00	180.10	7,138.7	-11.3	-898.0	11.3	11.17	10.00	
7,302.0	54.50	180.20	7,157.8	-36.9	-898.1	36.9	7.82	7.81	
7,333.0	58.10	180.20	7,175.0	-62.7	-898.2	62.7	11.61	11.61	
7,365.0	61.10	180.20	7,191.2	-90.3	-898.3	90.3	9.37	9.37	
7,396.0	64.40	181.40	7,205.4	-117.8	-898.7	117.8	11.19	10.65	
7,428.0	66.90	182.50	7,218.6	-147.0	-899.7	147.0	8.42	7.81	
7,459.0	70.60	184.20	7,229.8	-175.8	-901.4	175.8	12.98	11.94	
7,490.0	74.80	185.50	7,239.0	-205.3	-903.9	205.3	14.13	13.55	
7,522.0	78.90	186.70	7,246.3	-236.3	-907.2	236.3	13.32	12.81	
7,554.0	82.30	187.90	7,251.6	-267.6	-911.2	267.6	11.25	10.62	
7,585.0	84.50	187.60	7,255.1	-298.1	-915.3	298.1	7.16	7.10	
7,606.0	85.90	186.10	7,256.9	-318.9	-917.8	318.9	9.75	6.67	
7,673.0	89.90	183.90	7,259.3	-385.5	-923.7	385.5	6.81	5.97	
7,736.0	90.60	183.30	7,259.1	-448.4	-927.6	448.4	1.46	1.11	
7,830.0	90.40	181.70	7,258.2	-542.3	-931.7	542.3	1.72	-0.21	
7,925.0	89.80	180.50	7,258.1	-637.3	-933.5	637.3	1.41	-0.63	
8,019.0	90.40	180.20	7,257.9	-731.3	-934.1	731.3	0.71	0.64	
8,114.0	91.20	179.90	7,256.6	-826.3	-934.2	826.3	0.90	0.84	
8,208.0	89.80	179.70	7,255.8	-920.3	-933.9	920.3	1.50	-1.49	
8,303.0	90.10	179.80	7,255.8	-1,015.3	-933.5	1,015.3	0.33	0.32	
8,397.0	90.40	179.80	7,255.4	-1,109.3	-933.1	1,109.3	0.32	0.32	
8,492.0	91.00	179.10	7,254.3	-1,204.3	-932.2	1,204.3	0.97	0.63	
8,586.0	90.70	180.20	7,252.9	-1,298.3	-931.6	1,298.3	1.21	-0.32	
8,680.0	90.70	179.70	7,251.7	-1,392.3	-931.6	1,392.3	0.53	0.00	
8,775.0	90.90	179.30	7,250.4	-1,487.2	-930.7	1,487.2	0.47	0.21	
8,869.0	92.20	178.90	7,247.9	-1,581.2	-929.3	1,581.2	1.45	1.38	
8,964.0	92.10	178.70	7,244.3	-1,676.1	-927.3	1,676.1	0.24	-0.11	
9,058.0	92.20	178.40	7,240.8	-1,770.0	-924.9	1,770.0	0.34	0.11	
9,153.0	92.10	177.90	7,237.2	-1,864.9	-921.8	1,864.9	0.54	-0.11	
9,247.0	92.40	177.60	7,233.5	-1,958.7	-918.1	1,958.7	0.45	0.32	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1B-34H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4992.0ft (Patterson 272)
Site:	S34-T3N-R66W (Devore)	MD Reference:	KB @ 4992.0ft (Patterson 272)
Well:	Devore 1B-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
9,342.0	91.30	177.30	7,230.4	-2,053.6	-913.9	2,053.6	1.20	-1.16	
9,436.0	93.00	177.30	7,226.9	-2,147.4	-909.5	2,147.4	1.81	1.81	
9,530.0	92.80	177.10	7,222.2	-2,241.2	-904.9	2,241.2	0.30	-0.21	
9,625.0	93.10	177.30	7,217.3	-2,336.0	-900.3	2,336.0	0.38	0.32	
9,672.0	93.40	177.10	7,214.6	-2,382.8	-898.0	2,382.8	0.77	0.64	
9,719.0	92.20	177.40	7,212.3	-2,429.7	-895.7	2,429.7	2.63	-2.55	
9,766.0	91.30	178.30	7,210.9	-2,476.7	-894.0	2,476.7	2.71	-1.91	
9,813.0	90.80	178.80	7,210.0	-2,523.6	-892.8	2,523.6	1.50	-1.06	
9,860.0	91.30	178.90	7,209.2	-2,570.6	-891.8	2,570.6	1.08	1.06	
9,908.0	91.40	178.20	7,208.0	-2,618.6	-890.6	2,618.6	1.47	0.21	
9,955.0	90.30	178.90	7,207.3	-2,665.6	-889.4	2,665.6	2.77	-2.34	
10,002.0	90.50	178.40	7,207.0	-2,712.5	-888.3	2,712.5	1.15	0.43	
10,097.0	91.30	178.30	7,205.5	-2,807.5	-885.6	2,807.5	0.85	0.84	
10,191.0	90.50	178.80	7,204.0	-2,901.5	-883.2	2,901.5	1.00	-0.85	
10,286.0	91.00	178.60	7,202.8	-2,996.4	-881.1	2,996.4	0.57	0.53	
10,380.0	91.40	177.90	7,200.8	-3,090.4	-878.2	3,090.4	0.86	0.43	
10,425.0	91.70	177.90	7,199.6	-3,135.3	-876.5	3,135.3	0.67	0.67	
10,474.0	91.20	177.90	7,198.4	-3,184.3	-874.7	3,184.3	1.02	-1.02	
10,520.0	91.30	177.50	7,197.4	-3,230.2	-872.9	3,230.2	0.90	0.22	
10,569.0	89.90	177.60	7,196.8	-3,279.2	-870.8	3,279.2	2.86	-2.86	
10,614.0	89.70	177.70	7,197.0	-3,324.1	-869.0	3,324.1	0.50	-0.44	
10,664.0	89.90	177.40	7,197.2	-3,374.1	-866.8	3,374.1	0.72	0.40	
10,758.0	88.90	177.20	7,198.2	-3,468.0	-862.4	3,468.0	1.08	-1.06	
10,853.0	88.90	176.90	7,200.0	-3,562.8	-857.5	3,562.8	0.32	0.00	
10,947.0	89.30	177.40	7,201.5	-3,656.7	-852.8	3,656.7	0.68	0.43	
11,042.0	89.50	176.00	7,202.5	-3,751.5	-847.4	3,751.5	1.49	0.21	
11,136.0	90.10	176.10	7,202.8	-3,845.3	-840.9	3,845.3	0.65	0.64	
11,230.0	89.40	174.90	7,203.2	-3,939.0	-833.5	3,939.0	1.48	-0.74	
11,325.0	90.50	176.00	7,203.3	-4,033.7	-826.0	4,033.7	1.64	1.16	
11,419.0	89.60	177.50	7,203.2	-4,127.6	-820.6	4,127.6	1.86	-0.96	
11,513.0	90.00	177.00	7,203.5	-4,221.4	-816.1	4,221.4	0.68	0.43	
11,608.0	88.70	177.20	7,204.6	-4,316.3	-811.3	4,316.3	1.38	-1.37	
11,702.0	89.70	177.50	7,205.9	-4,410.2	-807.0	4,410.2	1.11	1.06	
11,765.0	90.10	177.60	7,206.0	-4,473.1	-804.3	4,473.1	0.65	0.63	Last Cathedral Survey @ 11,765' MD Projection to Bit @ 11,820'
11,820.0	90.10	177.60	7,205.9	-4,528.1	-802.0	4,528.1	0.00	0.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1B-34H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4992.0ft (Patterson 272)
Site:	S34-T3N-R66W (Devore)	MD Reference:	KB @ 4992.0ft (Patterson 272)
Well:	Devore 1B-34H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Devore 1B-34H PBHL P1	0.00	0.00	7,190.0	-4,575.4	-810.4	1,307,697.57	3,206,344.98	40.175660	-104.761570
- actual wellpath misses target center by 50.6ft at 11820.0ft MD (7205.9 TVD, -4528.1 N, -802.0 E)									
- Point									
Devore 1B-34H PBHL	0.00	0.00	7,185.0	-4,575.4	-810.4	1,307,697.57	3,206,344.98	40.175660	-104.761570
- actual wellpath misses target center by 52.4ft at 11820.0ft MD (7205.9 TVD, -4528.1 N, -802.0 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
11,765.0	7,206.0	-4,473.1	-804.3	Last Cathedral Survey @ 11,765' MD	
11,820.0	7,205.9	-4,528.1	-802.0	Projection to Bit @ 11,820'	

Checked By: _____ Approved By: _____ Date: _____