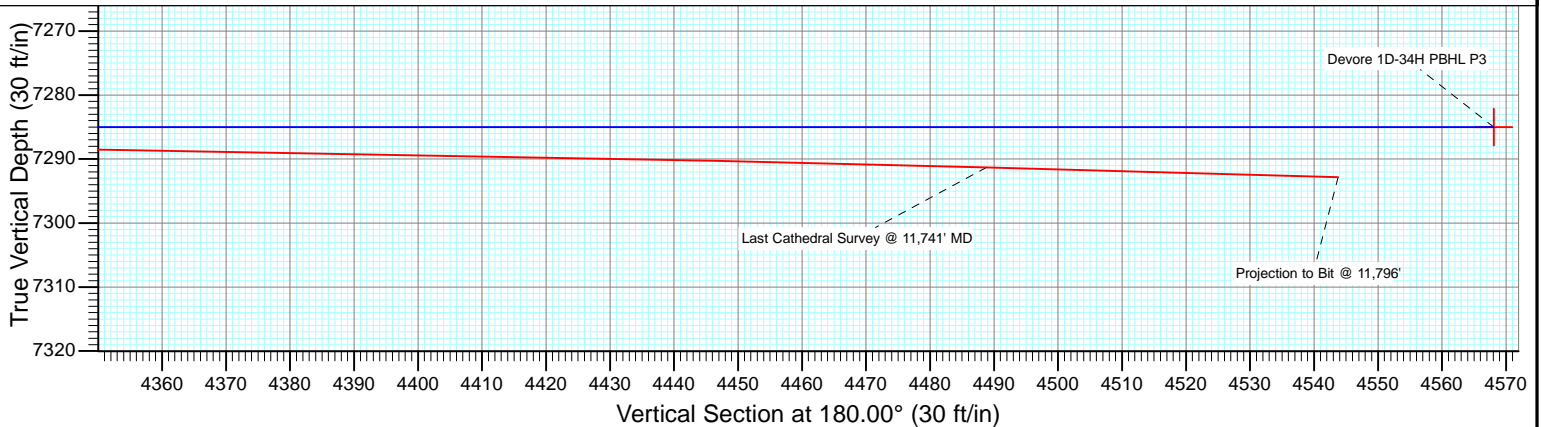
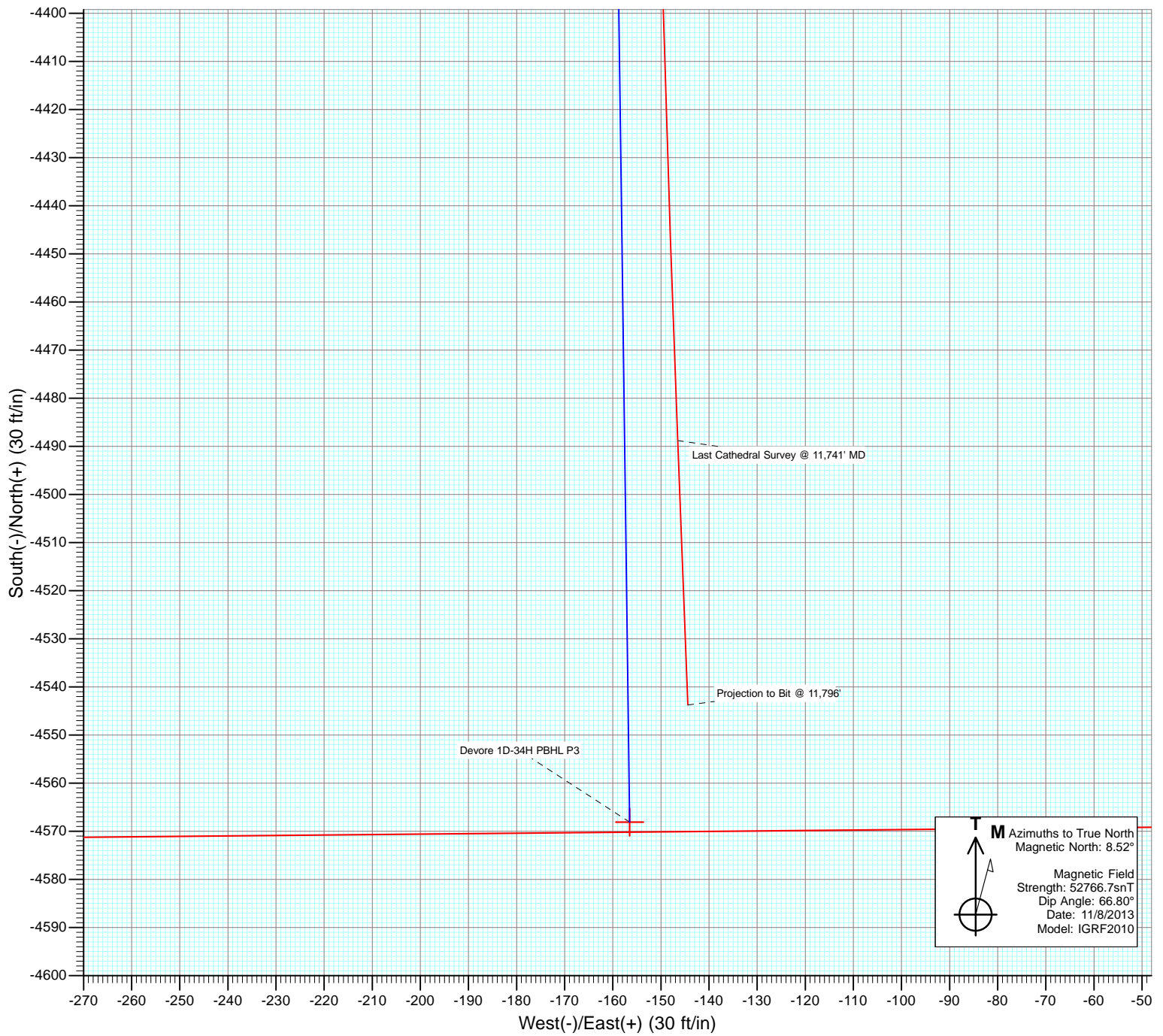




Project: DJ Wattenberg
Site: S34-T3N-R66W (Devore)
Well: Devore 1D-34H
Wellbore: Hz
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1D-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 1D-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 1D-34H					
Well Position	+N/-S	0.0 ft	Northing:	1,312,279.76 ft	Latitude:	40.188220
	+E/-W	0.0 ft	Easting:	3,207,142.20 ft	Longitude:	-104.758580
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	11/8/2013	8.52	66.80	52,767

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	11/18/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
261.0	11,796.0	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		
261.0	0.50	107.60	261.0	-0.3	1.1	0.3	0.19	0.19		
354.0	0.70	109.50	354.0	-0.7	2.0	0.7	0.22	0.22		
448.0	0.80	104.20	448.0	-1.0	3.2	1.0	0.13	0.11		
542.0	0.40	35.40	542.0	-0.9	4.0	0.9	0.80	-0.43		
635.0	1.80	318.90	635.0	0.5	3.2	-0.5	1.88	1.51		
729.0	2.90	310.60	728.9	3.1	0.5	-3.1	1.22	1.17		
823.0	3.60	311.40	822.7	6.6	-3.6	-6.6	0.75	0.74		
916.0	4.00	311.90	915.5	10.7	-8.2	-10.7	0.43	0.43		
975.0	4.40	312.20	974.4	13.6	-11.4	-13.6	0.68	0.68		
1,108.0	6.20	321.80	1,106.8	22.7	-19.6	-22.7	1.50	1.35		
1,202.0	8.20	327.00	1,200.1	32.3	-26.4	-32.3	2.24	2.13		
1,296.0	9.30	325.60	1,293.0	44.2	-34.3	-44.2	1.19	1.17		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1D-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 1D-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
1,389.0	11.00	325.80	1,384.5	57.7	-43.6	-57.7	1.83	1.83	
1,483.0	11.30	324.30	1,476.7	72.6	-54.0	-72.6	0.44	0.32	
1,576.0	11.10	322.80	1,568.0	87.2	-64.7	-87.2	0.38	-0.22	
1,670.0	11.20	319.50	1,660.2	101.3	-76.1	-101.3	0.69	0.11	
1,764.0	8.80	312.00	1,752.7	113.1	-87.4	-113.1	2.90	-2.55	
1,857.0	8.50	324.20	1,844.7	123.4	-96.7	-123.4	2.00	-0.32	
1,951.0	8.00	317.80	1,937.7	133.9	-105.1	-133.9	1.11	-0.53	
2,045.0	7.70	313.10	2,030.8	143.0	-114.1	-143.0	0.75	-0.32	
2,140.0	7.50	316.60	2,125.0	151.9	-123.0	-151.9	0.53	-0.21	
2,234.0	7.20	312.20	2,218.2	160.3	-131.6	-160.3	0.68	-0.32	
2,328.0	7.20	309.50	2,311.5	168.0	-140.5	-168.0	0.36	0.00	
2,423.0	7.90	330.20	2,405.7	177.4	-148.4	-177.4	2.94	0.74	
2,517.0	6.60	327.50	2,498.9	187.6	-154.5	-187.6	1.43	-1.38	
2,612.0	4.30	327.80	2,593.5	195.2	-159.3	-195.2	2.42	-2.42	
2,706.0	3.10	319.00	2,687.3	200.1	-162.9	-200.1	1.41	-1.28	
2,801.0	1.60	338.10	2,782.2	203.3	-165.0	-203.3	1.76	-1.58	
2,895.0	0.40	80.00	2,876.2	204.6	-165.2	-204.6	1.84	-1.28	
2,990.0	0.50	89.00	2,971.2	204.6	-164.5	-204.6	0.13	0.11	
3,084.0	1.70	201.80	3,065.2	203.4	-164.6	-203.4	2.07	1.28	
3,179.0	1.90	206.80	3,160.1	200.6	-165.8	-200.6	0.27	0.21	
3,273.0	2.10	209.90	3,254.1	197.8	-167.4	-197.8	0.24	0.21	
3,367.0	1.60	254.00	3,348.0	195.9	-169.5	-195.9	1.56	-0.53	
3,462.0	0.60	270.00	3,443.0	195.5	-171.3	-195.5	1.09	-1.05	
3,557.0	1.50	102.50	3,538.0	195.3	-170.5	-195.3	2.20	0.95	
3,651.0	0.60	89.00	3,632.0	195.0	-168.8	-195.0	0.99	-0.96	
3,745.0	0.10	141.10	3,726.0	195.0	-168.3	-195.0	0.58	-0.53	
3,840.0	0.50	309.90	3,821.0	195.2	-168.6	-195.2	0.63	0.42	
3,934.0	0.50	326.90	3,915.0	195.8	-169.1	-195.8	0.16	0.00	
4,029.0	0.10	335.80	4,010.0	196.2	-169.4	-196.2	0.42	-0.42	
4,123.0	2.10	62.30	4,104.0	197.1	-167.9	-197.1	2.23	2.13	
4,218.0	2.00	52.30	4,198.9	198.9	-165.0	-198.9	0.39	-0.11	
4,312.0	1.10	41.10	4,292.9	200.6	-163.1	-200.6	1.01	-0.96	
4,407.0	0.20	68.50	4,387.9	201.3	-162.4	-201.3	0.98	-0.95	
4,501.0	0.20	312.80	4,481.9	201.5	-162.3	-201.5	0.36	0.00	
4,596.0	0.40	260.20	4,576.9	201.5	-162.8	-201.5	0.34	0.21	
4,690.0	0.50	248.90	4,670.9	201.3	-163.5	-201.3	0.14	0.11	
4,785.0	0.90	221.80	4,765.9	200.6	-164.4	-200.6	0.54	0.42	
4,879.0	1.10	197.90	4,859.8	199.2	-165.2	-199.2	0.49	0.21	
4,974.0	1.30	124.00	4,954.8	197.8	-164.5	-197.8	1.53	0.21	
5,068.0	1.40	136.80	5,048.8	196.3	-162.9	-196.3	0.34	0.11	
5,162.0	0.50	180.90	5,142.8	195.1	-162.1	-195.1	1.17	-0.96	
5,257.0	1.00	25.20	5,237.8	195.4	-161.7	-195.4	1.55	0.53	
5,351.0	1.00	24.30	5,331.8	196.9	-161.1	-196.9	0.02	0.00	
5,445.0	0.90	31.50	5,425.8	198.3	-160.3	-198.3	0.17	-0.11	
5,540.0	0.80	18.50	5,520.8	199.5	-159.7	-199.5	0.23	-0.11	
5,634.0	0.40	8.40	5,614.7	200.5	-159.5	-200.5	0.44	-0.43	
5,729.0	0.50	14.60	5,709.7	201.2	-159.3	-201.2	0.12	0.11	
5,823.0	0.40	359.00	5,803.7	201.9	-159.2	-201.9	0.17	-0.11	
5,917.0	0.80	352.80	5,897.7	202.9	-159.3	-202.9	0.43	0.43	
6,012.0	1.10	327.70	5,992.7	204.3	-159.9	-204.3	0.53	0.32	
6,106.0	1.40	324.90	6,086.7	206.0	-161.0	-206.0	0.33	0.32	
6,201.0	0.60	0.20	6,181.7	207.5	-161.7	-207.5	1.03	-0.84	
6,294.0	0.80	99.90	6,274.7	207.9	-161.1	-207.9	1.16	0.22	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1D-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 1D-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
6,388.0	1.20	172.90	6,368.7	206.8	-160.3	-206.8	1.31	0.43	
6,483.0	0.80	153.60	6,463.7	205.2	-159.9	-205.2	0.54	-0.42	
6,577.0	0.40	141.00	6,557.6	204.4	-159.4	-204.4	0.45	-0.43	
6,671.0	0.40	123.60	6,651.6	203.9	-158.9	-203.9	0.13	0.00	
6,734.0	3.00	172.70	6,714.6	202.2	-158.5	-202.2	4.37	4.13	
6,765.0	7.10	181.30	6,745.5	199.4	-158.4	-199.4	13.41	13.23	
6,796.0	11.60	183.70	6,776.1	194.4	-158.7	-194.4	14.57	14.52	
6,827.0	14.00	184.30	6,806.3	187.6	-159.2	-187.6	7.75	7.74	
6,859.0	15.20	184.30	6,837.3	179.5	-159.8	-179.5	3.75	3.75	
6,890.0	17.70	183.70	6,867.0	170.8	-160.4	-170.8	8.08	8.06	
6,922.0	19.90	183.00	6,897.3	160.5	-161.0	-160.5	6.91	6.87	
6,953.0	22.90	182.60	6,926.1	149.2	-161.5	-149.2	9.69	9.68	
6,985.0	25.40	180.50	6,955.3	136.1	-161.9	-136.1	8.26	7.81	
7,016.0	27.40	180.10	6,983.1	122.3	-161.9	-122.3	6.48	6.45	
7,048.0	29.10	178.50	7,011.3	107.2	-161.8	-107.2	5.82	5.31	
7,079.0	32.60	181.30	7,037.9	91.3	-161.7	-91.3	12.20	11.29	
7,111.0	36.10	182.20	7,064.3	73.2	-162.3	-73.2	11.05	10.94	
7,143.0	39.90	180.50	7,089.5	53.5	-162.8	-53.5	12.32	11.87	
7,174.0	43.50	180.50	7,112.7	32.9	-162.9	-32.9	11.61	11.61	
7,206.0	47.80	180.80	7,135.0	10.0	-163.2	-10.0	13.45	13.44	
7,237.0	52.10	180.90	7,155.0	-13.7	-163.5	13.7	13.87	13.87	
7,269.0	55.30	180.50	7,173.9	-39.5	-163.9	39.5	10.05	10.00	
7,300.0	59.50	181.10	7,190.6	-65.6	-164.2	65.6	13.65	13.55	
7,332.0	62.50	180.70	7,206.1	-93.6	-164.7	93.6	9.44	9.37	
7,363.0	66.10	180.50	7,219.6	-121.5	-165.0	121.5	11.63	11.61	
7,395.0	68.70	179.80	7,231.9	-151.0	-165.0	151.0	8.37	8.12	
7,426.0	71.30	179.20	7,242.5	-180.1	-164.8	180.1	8.58	8.39	
7,458.0	73.90	179.40	7,252.0	-210.7	-164.4	210.7	8.15	8.12	
7,489.0	75.70	179.70	7,260.2	-240.6	-164.2	240.6	5.88	5.81	
7,521.0	77.50	179.50	7,267.6	-271.7	-164.0	271.7	5.66	5.62	
7,552.0	80.00	179.30	7,273.6	-302.1	-163.6	302.1	8.09	8.06	
7,584.0	83.00	179.10	7,278.4	-333.8	-163.2	333.8	9.40	9.37	
7,603.0	84.70	178.90	7,280.4	-352.6	-162.9	352.6	9.01	8.95	
7,669.0	89.20	178.60	7,283.9	-418.5	-161.4	418.5	6.83	6.82	
7,732.0	89.90	178.60	7,284.4	-481.5	-159.9	481.5	1.11	1.11	
7,826.0	89.50	179.70	7,284.9	-575.5	-158.5	575.5	1.25	-0.43	
7,921.0	89.50	180.00	7,285.7	-670.5	-158.2	670.5	0.32	0.00	
8,015.0	88.90	180.70	7,287.0	-764.5	-158.8	764.5	0.98	-0.64	
8,110.0	88.40	179.30	7,289.3	-859.4	-158.8	859.4	1.56	-0.53	
8,204.0	90.50	181.50	7,290.2	-953.4	-159.5	953.4	3.24	2.23	
8,299.0	90.80	183.20	7,289.1	-1,048.3	-163.4	1,048.3	1.82	0.32	
8,393.0	90.20	183.40	7,288.3	-1,142.2	-168.8	1,142.2	0.67	-0.64	
8,488.0	90.20	182.90	7,287.9	-1,237.0	-174.0	1,237.0	0.53	0.00	
8,582.0	91.30	182.60	7,286.7	-1,330.9	-178.5	1,330.9	1.21	1.17	
8,677.0	90.50	182.30	7,285.2	-1,425.8	-182.6	1,425.8	0.90	-0.84	
8,771.0	89.70	182.90	7,285.1	-1,519.7	-186.8	1,519.7	1.06	-0.85	
8,866.0	89.40	182.10	7,285.8	-1,614.6	-191.0	1,614.6	0.90	-0.32	
8,961.0	90.00	181.20	7,286.3	-1,709.6	-193.7	1,709.6	1.14	0.63	
9,055.0	89.50	179.90	7,286.7	-1,803.6	-194.6	1,803.6	1.48	-0.53	
9,150.0	90.10	180.10	7,287.0	-1,898.6	-194.6	1,898.6	0.67	0.63	
9,244.0	90.30	180.10	7,286.7	-1,992.6	-194.8	1,992.6	0.21	0.21	
9,338.0	90.10	180.20	7,286.4	-2,086.6	-195.0	2,086.6	0.24	-0.21	
9,433.0	89.50	179.80	7,286.7	-2,181.6	-195.0	2,181.6	0.76	-0.63	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Devore 1D-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 1D-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
9,527.0	89.30	179.40	7,287.7	-2,275.6	-194.4	2,275.6	0.48	-0.21	
9,621.0	89.50	179.80	7,288.7	-2,369.5	-193.7	2,369.5	0.48	0.21	
9,716.0	89.60	180.20	7,289.4	-2,464.5	-193.7	2,464.5	0.43	0.11	
9,810.0	90.60	178.40	7,289.3	-2,558.5	-192.6	2,558.5	2.19	1.06	
9,904.0	90.20	178.70	7,288.6	-2,652.5	-190.2	2,652.5	0.53	-0.43	
9,999.0	90.60	179.60	7,288.0	-2,747.5	-188.8	2,747.5	1.04	0.42	
10,093.0	90.30	177.80	7,287.2	-2,841.5	-186.6	2,841.5	1.94	-0.32	
10,188.0	88.90	178.10	7,287.9	-2,936.4	-183.2	2,936.4	1.51	-1.47	
10,282.0	89.10	178.30	7,289.5	-3,030.3	-180.3	3,030.3	0.30	0.21	
10,377.0	89.60	178.80	7,290.6	-3,125.3	-177.9	3,125.3	0.74	0.53	
10,471.0	90.70	178.90	7,290.3	-3,219.3	-176.0	3,219.3	1.18	1.17	
10,565.0	90.60	178.90	7,289.3	-3,313.2	-174.2	3,313.2	0.11	-0.11	
10,660.0	90.10	178.20	7,288.7	-3,408.2	-171.8	3,408.2	0.91	-0.53	
10,755.0	89.40	177.60	7,289.1	-3,503.1	-168.3	3,503.1	0.97	-0.74	
10,849.0	89.30	179.00	7,290.2	-3,597.1	-165.5	3,597.1	1.49	-0.11	
10,944.0	91.00	178.80	7,289.9	-3,692.1	-163.7	3,692.1	1.80	1.79	
11,038.0	90.60	178.90	7,288.6	-3,786.1	-161.8	3,786.1	0.44	-0.43	
11,133.0	90.20	177.60	7,288.0	-3,881.0	-158.9	3,881.0	1.43	-0.42	
11,227.0	90.70	179.30	7,287.2	-3,975.0	-156.4	3,975.0	1.89	0.53	
11,321.0	90.10	179.30	7,286.6	-4,069.0	-155.2	4,069.0	0.64	-0.64	
11,416.0	89.80	179.40	7,286.6	-4,163.9	-154.1	4,163.9	0.33	-0.32	
11,510.0	89.40	179.10	7,287.3	-4,257.9	-152.9	4,257.9	0.53	-0.43	
11,604.0	89.10	178.50	7,288.5	-4,351.9	-150.9	4,351.9	0.71	-0.32	
11,699.0	88.80	178.00	7,290.3	-4,446.8	-148.0	4,446.8	0.61	-0.32	
11,741.0	88.40	177.80	7,291.3	-4,488.8	-146.5	4,488.8	1.06	-0.95	Last Cathedral Survey @ 11,741' MD
11,796.0	88.40	177.80	7,292.8	-4,543.7	-144.4	4,543.7	0.00	0.00	Projection to Bit @ 11,796'

Targets

Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Devore 1D-34H PBHL	- Shape	0.00	0.00	7,169.5	-4,568.1	-156.5	1,307,710.53	3,207,023.92	40.175680	-104.759140
	- actual wellpath misses target center by 126.3ft at 11796.0ft MD (7292.8 TVD, -4543.7 N, -144.4 E)									
	- Point									
Devore 1D-34H PBHL P	- Shape	0.00	0.00	7,285.0	-4,568.1	-156.5	1,307,710.53	3,207,023.92	40.175680	-104.759140
	- actual wellpath misses target center by 28.3ft at 11796.0ft MD (7292.8 TVD, -4543.7 N, -144.4 E)									
	- Point									

Design Annotations

	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	11,741.0	7,291.3	-4,488.8	-146.5	Last Cathedral Survey @ 11,741' MD
	11,796.0	7,292.8	-4,543.7	-144.4	Projection to Bit @ 11,796'

Checked By: _____ Approved By: _____ Date: _____