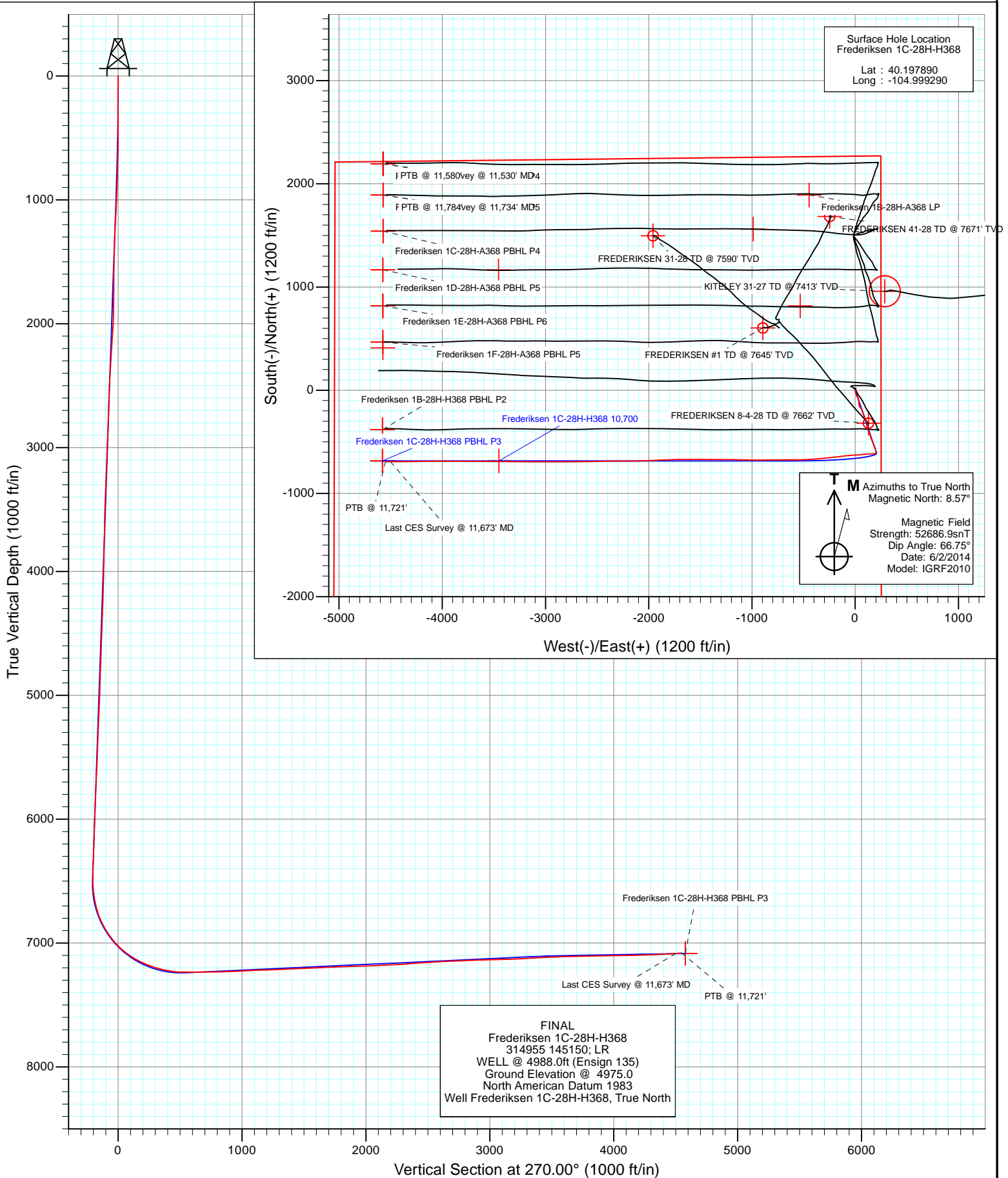
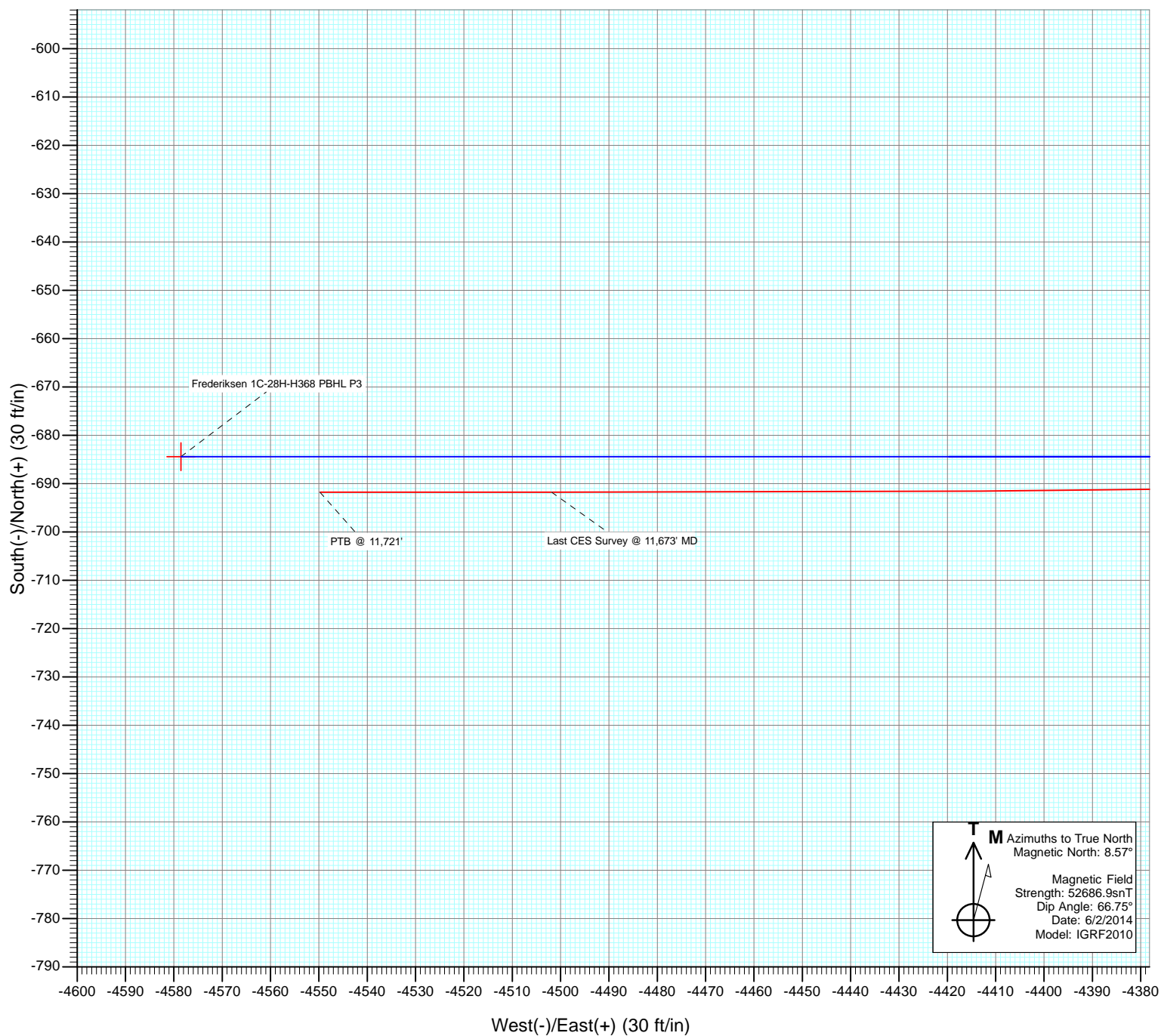


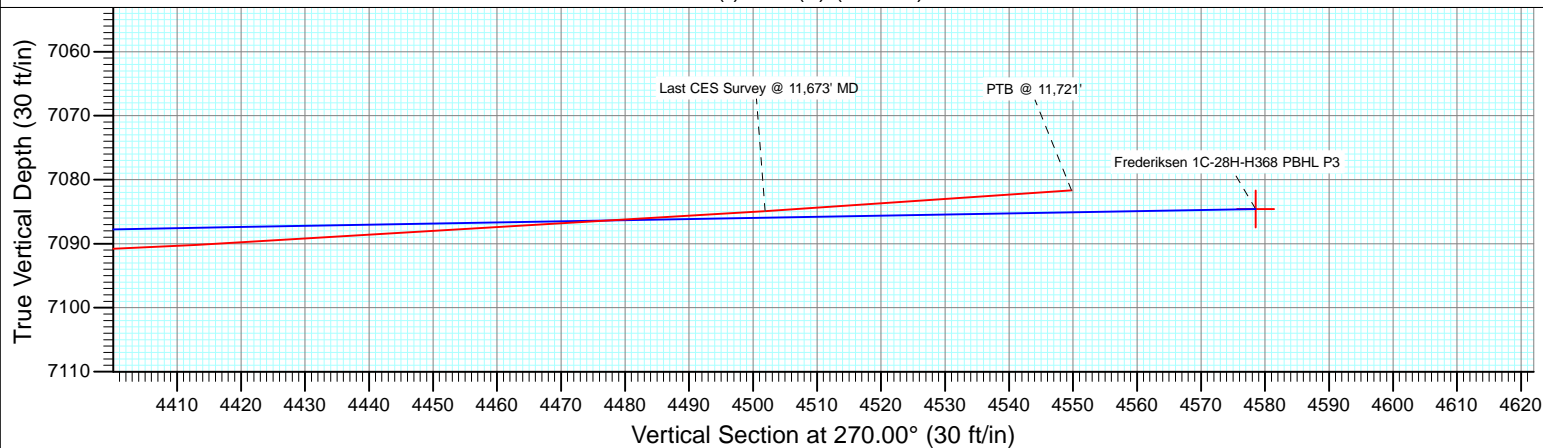


Project: DJ Wattenberg
Site: S28-T3N-R68W (Frederiksen)
Well: Frederiksen 1C-28H-H368
Wellbore: Hz
Design: FINAL





T Azimuths to True North
M Magnetic North: 8.57°
 Magnetic Field
 Strength: 52686.9snT
 Dip Angle: 66.75°
 Date: 6/2/2014
 Model: IGRF2010



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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		S28-T3N-R68W (Frederiksen)			
Site Position:		Northing:	1,315,349.57 ft	Latitude:	40.197940
From:	Lat/Long	Easting:	3,139,876.89 ft	Longitude:	-104.999280
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	Frederiksen 1C-28H-H368					
Well Position	+N/-S	0.0 ft	Northing:	1,315,331.33 ft	Latitude:	40.197890
	+E/-W	0.0 ft	Easting:	3,139,874.20 ft	Longitude:	-104.999290
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,975.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/2/2014	8.57	66.75	52,687

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	6/17/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
138.0	11,721.0	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		
138.0	0.20	99.00	138.0	0.0	0.2	-0.2	0.14	0.14		
168.0	0.10	97.40	168.0	0.0	0.3	-0.3	0.33	-0.33		
260.0	1.10	205.90	260.0	-0.9	0.0	0.0	1.23	1.09		
352.0	1.80	193.30	352.0	-3.1	-0.7	0.7	0.83	0.76		
443.0	2.20	174.70	442.9	-6.2	-0.9	0.9	0.83	0.44		
535.0	3.10	172.90	534.8	-10.4	-0.4	0.4	0.98	0.98		
626.0	3.60	165.70	625.7	-15.6	0.6	-0.6	0.72	0.55		
718.0	5.00	163.40	717.4	-22.3	2.5	-2.5	1.53	1.52		
801.0	6.20	161.00	800.0	-30.0	5.0	-5.0	1.47	1.45		
915.0	6.50	160.90	913.3	-41.9	9.1	-9.1	0.26	0.26		
1,007.0	5.80	153.70	1,004.8	-51.0	12.8	-12.8	1.13	-0.76		
1,098.0	6.30	159.20	1,095.3	-59.8	16.6	-16.6	0.84	0.55		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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	5.50	141.20	1,186.8	-67.9	21.2	-21.2	2.18	-0.87	
1,282.0	5.10	150.60	1,278.4	-74.9	26.0	-26.0	1.04	-0.43	
1,373.0	6.20	165.60	1,369.0	-83.2	29.2	-29.2	2.01	1.21	
1,465.0	5.20	164.30	1,460.5	-92.0	31.5	-31.5	1.10	-1.09	
1,556.0	6.60	173.20	1,551.0	-101.2	33.3	-33.3	1.83	1.54	
1,648.0	6.10	174.80	1,642.5	-111.3	34.3	-34.3	0.58	-0.54	
1,740.0	7.10	178.90	1,733.8	-121.9	34.9	-34.9	1.20	1.09	
1,832.0	7.00	174.50	1,825.1	-133.1	35.5	-35.5	0.60	-0.11	
1,924.0	5.80	168.80	1,916.6	-143.3	37.0	-37.0	1.47	-1.30	
2,015.0	6.70	160.20	2,007.0	-152.8	39.7	-39.7	1.42	0.99	
2,107.0	6.80	148.10	2,098.4	-162.4	44.4	-44.4	1.55	0.11	
2,199.0	6.80	141.20	2,189.8	-171.3	50.7	-50.7	0.89	0.00	
2,290.0	7.00	147.60	2,280.1	-180.2	57.0	-57.0	0.87	0.22	
2,382.0	6.80	142.80	2,371.4	-189.3	63.3	-63.3	0.66	-0.22	
2,477.0	6.80	164.60	2,465.8	-199.2	68.2	-68.2	2.70	0.00	
2,571.0	6.20	162.50	2,559.2	-209.4	71.2	-71.2	0.69	-0.64	
2,665.0	5.80	160.10	2,652.7	-218.7	74.4	-74.4	0.50	-0.43	
2,760.0	5.10	157.30	2,747.2	-227.1	77.6	-77.6	0.79	-0.74	
2,854.0	6.20	160.60	2,840.8	-235.7	80.9	-80.9	1.22	1.17	
2,949.0	5.50	156.80	2,935.3	-244.8	84.4	-84.4	0.84	-0.74	
3,044.0	6.20	158.80	3,029.8	-253.7	88.1	-88.1	0.77	0.74	
3,138.0	5.30	155.90	3,123.3	-262.4	91.7	-91.7	1.01	-0.96	
3,233.0	6.10	158.00	3,217.8	-271.1	95.4	-95.4	0.87	0.84	
3,327.0	6.00	157.50	3,311.3	-280.3	99.1	-99.1	0.12	-0.11	
3,422.0	7.10	165.30	3,405.7	-290.5	102.5	-102.5	1.49	1.16	
3,517.0	6.10	159.90	3,500.1	-301.0	105.7	-105.7	1.24	-1.05	
3,612.0	7.40	172.80	3,594.4	-311.8	108.2	-108.2	2.09	1.37	
3,706.0	6.90	172.50	3,687.7	-323.4	109.7	-109.7	0.53	-0.53	
3,801.0	6.40	169.40	3,782.0	-334.2	111.4	-111.4	0.65	-0.53	
3,896.0	5.80	170.60	3,876.5	-344.2	113.2	-113.2	0.65	-0.63	
3,990.0	6.90	167.00	3,969.9	-354.4	115.2	-115.2	1.24	1.17	
4,085.0	6.30	165.20	4,064.3	-365.0	117.9	-117.9	0.67	-0.63	
4,180.0	5.80	165.40	4,158.8	-374.7	120.4	-120.4	0.53	-0.53	
4,274.0	5.20	166.20	4,252.3	-383.4	122.6	-122.6	0.64	-0.64	
4,369.0	4.70	156.50	4,347.0	-391.1	125.2	-125.2	1.02	-0.53	
4,464.0	5.30	146.20	4,441.6	-398.4	129.2	-129.2	1.13	0.63	
4,558.0	6.00	159.00	4,535.2	-406.5	133.4	-133.4	1.53	0.74	
4,653.0	5.80	160.30	4,629.7	-415.7	136.8	-136.8	0.25	-0.21	
4,747.0	5.50	160.40	4,723.2	-424.4	139.9	-139.9	0.32	-0.32	
4,842.0	5.80	157.90	4,817.7	-433.2	143.2	-143.2	0.41	0.32	
4,936.0	7.30	166.30	4,911.1	-443.4	146.4	-146.4	1.89	1.60	
5,031.0	6.30	167.00	5,005.5	-454.3	149.0	-149.0	1.06	-1.05	
5,126.0	6.70	158.40	5,099.9	-464.5	152.2	-152.2	1.11	0.42	
5,220.0	5.60	158.40	5,193.3	-473.9	155.9	-155.9	1.17	-1.17	
5,315.0	6.00	150.50	5,287.8	-482.5	160.1	-160.1	0.94	0.42	
5,409.0	6.40	158.80	5,381.3	-491.7	164.4	-164.4	1.04	0.43	
5,504.0	4.70	161.60	5,475.8	-500.3	167.5	-167.5	1.81	-1.79	
5,599.0	6.30	157.70	5,570.4	-508.8	170.7	-170.7	1.73	1.68	
5,693.0	6.90	154.30	5,663.8	-518.7	175.1	-175.1	0.76	0.64	
5,788.0	6.10	159.20	5,758.2	-528.6	179.4	-179.4	1.02	-0.84	
5,883.0	6.40	161.10	5,852.6	-538.3	182.9	-182.9	0.38	0.32	
5,977.0	6.90	158.30	5,946.0	-548.5	186.7	-186.7	0.63	0.53	
6,072.0	4.80	154.40	6,040.5	-557.4	190.5	-190.5	2.25	-2.21	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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
6,167.0	6.30	164.80	6,135.0	-566.0	193.6	-193.6	1.89	1.58	
6,262.0	6.40	164.60	6,229.4	-576.1	196.4	-196.4	0.11	0.11	
6,356.0	4.50	164.20	6,323.0	-584.7	198.8	-198.8	2.02	-2.02	
6,451.0	5.30	146.70	6,417.7	-592.0	202.2	-202.2	1.77	0.84	
6,498.0	4.70	157.10	6,464.5	-595.6	204.1	-204.1	2.31	-1.28	
6,545.0	6.50	192.60	6,511.3	-599.9	204.3	-204.3	8.12	3.83	
6,592.0	9.50	211.30	6,557.8	-605.8	201.7	-201.7	8.37	6.38	
6,640.0	10.00	235.70	6,605.1	-611.6	196.2	-196.2	8.61	1.04	
6,687.0	12.00	254.60	6,651.3	-615.2	188.1	-188.1	8.72	4.26	
6,734.0	13.60	265.70	6,697.1	-616.9	177.9	-177.9	6.23	3.40	
6,781.0	15.90	272.20	6,742.6	-617.1	166.0	-166.0	6.02	4.89	
6,829.0	20.40	271.70	6,788.2	-616.6	151.0	-151.0	9.38	9.37	
6,876.0	25.30	268.80	6,831.5	-616.5	132.8	-132.8	10.69	10.43	
6,923.0	30.20	264.70	6,873.1	-617.8	111.0	-111.0	11.18	10.43	
6,970.0	33.30	262.50	6,913.0	-620.6	86.4	-86.4	7.04	6.60	
7,018.0	36.10	263.60	6,952.5	-623.9	59.3	-59.3	5.98	5.83	
7,065.0	39.90	266.40	6,989.5	-626.4	30.4	-30.4	8.88	8.09	
7,112.0	45.20	268.10	7,024.1	-627.9	-1.3	1.3	11.54	11.28	
7,159.0	50.60	265.50	7,055.6	-629.9	-36.1	36.1	12.20	11.49	
7,207.0	53.90	263.60	7,085.0	-633.5	-73.9	73.9	7.55	6.87	
7,254.0	56.00	262.60	7,112.0	-638.1	-112.1	112.1	4.80	4.47	
7,302.0	60.40	262.80	7,137.3	-643.3	-152.5	152.5	9.17	9.17	
7,349.0	65.60	263.70	7,158.6	-648.2	-194.1	194.1	11.19	11.06	
7,397.0	69.80	264.70	7,176.8	-652.7	-238.3	238.3	8.96	8.75	
7,444.0	72.00	264.80	7,192.2	-656.8	-282.5	282.5	4.69	4.68	
7,491.0	74.20	264.90	7,205.9	-660.8	-327.3	327.3	4.69	4.68	
7,538.0	77.50	265.30	7,217.4	-664.7	-372.7	372.7	7.07	7.02	
7,586.0	80.70	265.10	7,226.4	-668.6	-419.6	419.6	6.68	6.67	
7,633.0	84.20	266.20	7,232.6	-672.2	-466.1	466.1	7.80	7.45	
7,683.0	89.10	269.60	7,235.5	-674.0	-515.9	515.9	11.92	9.80	
7,800.0	91.10	270.50	7,235.3	-673.9	-632.9	632.9	1.87	1.71	
7,895.0	91.10	269.30	7,233.5	-674.1	-727.9	727.9	1.26	0.00	
7,989.0	90.30	268.70	7,232.4	-675.7	-821.9	821.9	1.06	-0.85	
8,084.0	91.70	269.40	7,230.7	-677.3	-916.9	916.9	1.65	1.47	
8,179.0	94.40	270.60	7,225.7	-677.3	-1,011.7	1,011.7	3.11	2.84	
8,274.0	91.70	272.00	7,220.6	-675.1	-1,106.5	1,106.5	3.20	-2.84	
8,368.0	92.30	271.00	7,217.3	-672.7	-1,200.5	1,200.5	1.24	0.64	
8,463.0	92.80	270.50	7,213.1	-671.4	-1,295.3	1,295.3	0.74	0.53	
8,558.0	91.50	270.00	7,209.5	-671.0	-1,390.3	1,390.3	1.47	-1.37	
8,652.0	92.60	270.00	7,206.2	-671.0	-1,484.2	1,484.2	1.17	1.17	
8,747.0	92.60	269.90	7,201.9	-671.1	-1,579.1	1,579.1	0.11	0.00	
8,842.0	93.40	270.50	7,196.9	-670.8	-1,674.0	1,674.0	1.05	0.84	
8,936.0	91.50	267.80	7,192.9	-672.1	-1,767.9	1,767.9	3.51	-2.02	
9,031.0	91.80	267.50	7,190.1	-676.0	-1,862.8	1,862.8	0.45	0.32	
9,125.0	91.50	267.30	7,187.4	-680.3	-1,956.6	1,956.6	0.38	-0.32	
9,219.0	92.20	268.50	7,184.4	-683.7	-2,050.5	2,050.5	1.48	0.74	
9,314.0	93.30	269.40	7,179.8	-685.5	-2,145.4	2,145.4	1.50	1.16	
9,377.0	92.70	269.40	7,176.5	-686.1	-2,208.3	2,208.3	0.95	-0.95	
9,440.0	93.50	269.50	7,173.1	-686.7	-2,271.2	2,271.2	1.28	1.27	
9,503.0	94.50	270.00	7,168.7	-687.0	-2,334.0	2,334.0	1.77	1.59	
9,597.0	93.90	269.20	7,161.8	-687.7	-2,427.8	2,427.8	1.06	-0.64	
9,692.0	93.50	269.30	7,155.7	-688.9	-2,522.6	2,522.6	0.43	-0.42	
9,786.0	93.20	268.80	7,150.2	-690.5	-2,616.4	2,616.4	0.62	-0.32	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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
9,881.0	92.80	268.40	7,145.3	-692.8	-2,711.2	2,711.2	0.60	-0.42	
9,975.0	91.60	269.20	7,141.6	-694.8	-2,805.2	2,805.2	1.53	-1.28	
10,070.0	92.20	270.30	7,138.5	-695.2	-2,900.1	2,900.1	1.32	0.63	
10,164.0	91.90	271.10	7,135.1	-694.0	-2,994.0	2,994.0	0.91	-0.32	
10,259.0	91.20	271.00	7,132.6	-692.3	-3,089.0	3,089.0	0.74	-0.74	
10,353.0	91.50	270.40	7,130.3	-691.1	-3,182.9	3,182.9	0.71	0.32	
10,448.0	92.90	270.10	7,126.7	-690.7	-3,277.9	3,277.9	1.51	1.47	
10,543.0	92.90	269.50	7,121.9	-691.1	-3,372.8	3,372.8	0.63	0.00	
10,637.0	94.20	270.20	7,116.1	-691.3	-3,466.6	3,466.6	1.57	1.38	
10,732.0	92.60	271.70	7,110.4	-689.7	-3,561.4	3,561.4	2.31	-1.68	
10,827.0	90.90	270.20	7,107.5	-688.2	-3,656.3	3,656.3	2.39	-1.79	
10,921.0	90.90	270.10	7,106.1	-687.9	-3,750.3	3,750.3	0.11	0.00	
11,016.0	90.70	269.50	7,104.7	-688.2	-3,845.3	3,845.3	0.67	-0.21	
11,111.0	90.50	270.00	7,103.7	-688.7	-3,940.3	3,940.3	0.57	-0.21	
11,205.0	90.90	269.90	7,102.6	-688.7	-4,034.3	4,034.3	0.44	0.43	
11,300.0	91.20	269.40	7,100.8	-689.3	-4,129.3	4,129.3	0.61	0.32	
11,395.0	92.30	270.00	7,097.9	-689.8	-4,224.2	4,224.2	1.32	1.16	
11,489.0	92.10	269.10	7,094.3	-690.5	-4,318.1	4,318.1	0.98	-0.21	
11,584.0	92.90	269.70	7,090.2	-691.5	-4,413.0	4,413.0	1.05	0.84	
11,673.0	93.90	270.00	7,084.9	-691.8	-4,501.9	4,501.9	1.17	1.12	Last CES Survey @ 11,673' MD
11,721.0	93.90	270.00	7,081.7	-691.8	-4,549.8	4,549.8	0.00	0.00	PTB @ 11,721'

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									
Frederiksen 1C-28H-H368	0.00	0.00	7,084.6	-684.4	-4,578.5	1,314,621.07	3,135,299.60	40.196010	-105.015680
- actual wellpath misses target center by 29.8ft at 11721.0ft MD (7081.7 TVD, -691.8 N, -4549.8 E)									
- Point									
Frederiksen 1C-28H-H368	0.00	0.00	7,105.8	-684.4	-3,450.3	1,314,627.44	3,136,427.85	40.196010	-105.011641
- actual wellpath misses target center by 13.3ft at 10621.4ft MD (7117.2 TVD, -691.3 N, -3451.0 E)									
- Point									
Frederiksen 1C-28H-H368	0.00	0.00	7,233.0	-684.4	-4,578.5	1,314,621.07	3,135,299.60	40.196010	-105.015680
- actual wellpath misses target center by 154.2ft at 11721.0ft MD (7081.7 TVD, -691.8 N, -4549.8 E)									
- Point									

Design Annotations

	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	11,673.0	7,084.9	-691.8	-4,501.9	Last CES Survey @ 11,673' MD
	11,721.0	7,081.7	-691.8	-4,549.8	PTB @ 11,721'

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S28-T3N-R68W (Frederiksen)

Frederiksen 1C-28H-H368

Hz

Design: FINAL

Survey Report - Geographic

17 June, 2014

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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	S28-T3N-R68W (Frederiksen)				
Site Position:		Northing:	1,315,349.57 ft	Latitude:	40.197940
From:	Lat/Long	Easting:	3,139,876.89 ft	Longitude:	-104.999280
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	Frederiksen 1C-28H-H368					
Well Position	+N/-S	0.0 ft	Northing:	1,315,331.33 ft	Latitude:	40.197890
	+E/-W	0.0 ft	Easting:	3,139,874.20 ft	Longitude:	-104.999290
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,975.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/2/2014	8.57	66.75	52,687

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	6/17/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
138.0	11,721.0	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	1,315,331.33	3,139,874.20	40.197890	-104.999290	
138.0	0.20	99.00	138.0	0.0	0.2	1,315,331.29	3,139,874.43	40.197890	-104.999289	
168.0	0.10	97.40	168.0	0.0	0.3	1,315,331.28	3,139,874.51	40.197890	-104.999289	
260.0	1.10	205.90	260.0	-0.9	0.0	1,315,330.47	3,139,874.21	40.197888	-104.999290	
352.0	1.80	193.30	352.0	-3.1	-0.7	1,315,328.27	3,139,873.50	40.197882	-104.999293	
443.0	2.20	174.70	442.9	-6.2	-0.9	1,315,325.14	3,139,873.36	40.197873	-104.999293	
535.0	3.10	172.90	534.8	-10.4	-0.4	1,315,320.91	3,139,873.85	40.197861	-104.999292	
626.0	3.60	165.70	625.7	-15.6	0.6	1,315,315.71	3,139,874.89	40.197847	-104.999288	
718.0	5.00	163.40	717.4	-22.3	2.5	1,315,309.08	3,139,876.79	40.197829	-104.999281	
801.0	6.20	161.00	800.0	-30.0	5.0	1,315,301.39	3,139,879.32	40.197808	-104.999273	
915.0	6.50	160.90	913.3	-41.9	9.1	1,315,289.49	3,139,883.50	40.197775	-104.999258	
1,007.0	5.80	153.70	1,004.8	-51.0	12.8	1,315,280.43	3,139,887.32	40.197750	-104.999244	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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
1,098.0	6.30	159.20	1,095.3	-59.8	16.6	1,315,271.66	3,139,891.18	40.197726	-104.999231
1,190.0	5.50	141.20	1,186.8	-67.9	21.2	1,315,263.53	3,139,895.78	40.197704	-104.999214
1,282.0	5.10	150.60	1,278.4	-74.9	26.0	1,315,256.56	3,139,900.59	40.197684	-104.999197
1,373.0	6.20	165.60	1,369.0	-83.2	29.2	1,315,248.29	3,139,903.84	40.197662	-104.999186
1,465.0	5.20	164.30	1,460.5	-92.0	31.5	1,315,239.48	3,139,906.26	40.197637	-104.999177
1,556.0	6.60	173.20	1,551.0	-101.2	33.3	1,315,230.32	3,139,908.05	40.197612	-104.999171
1,648.0	6.10	174.80	1,642.5	-111.3	34.3	1,315,220.21	3,139,909.17	40.197584	-104.999167
1,740.0	7.10	178.90	1,733.8	-121.9	34.9	1,315,209.66	3,139,909.78	40.197556	-104.999165
1,832.0	7.00	174.50	1,825.1	-133.1	35.5	1,315,198.40	3,139,910.49	40.197525	-104.999163
1,924.0	5.80	168.80	1,916.6	-143.3	37.0	1,315,188.27	3,139,911.99	40.197497	-104.999158
2,015.0	6.70	160.20	2,007.0	-152.8	39.7	1,315,178.78	3,139,914.74	40.197471	-104.999148
2,107.0	6.80	148.10	2,098.4	-162.4	44.4	1,315,169.13	3,139,919.49	40.197444	-104.999131
2,199.0	6.80	141.20	2,189.8	-171.3	50.7	1,315,160.30	3,139,925.83	40.197420	-104.999109
2,290.0	7.00	147.60	2,280.1	-180.2	57.0	1,315,151.45	3,139,932.22	40.197395	-104.999086
2,382.0	6.80	142.80	2,371.4	-189.3	63.3	1,315,142.42	3,139,938.57	40.197370	-104.999064
2,477.0	6.80	164.60	2,465.8	-199.2	68.2	1,315,132.54	3,139,943.52	40.197343	-104.999046
2,571.0	6.20	162.50	2,559.2	-209.4	71.2	1,315,122.35	3,139,946.59	40.197315	-104.999035
2,665.0	5.80	160.10	2,652.7	-218.7	74.4	1,315,113.06	3,139,949.78	40.197290	-104.999024
2,760.0	5.10	157.30	2,747.2	-227.1	77.6	1,315,104.67	3,139,953.09	40.197267	-104.999012
2,854.0	6.20	160.60	2,840.8	-235.7	80.9	1,315,096.05	3,139,956.44	40.197243	-104.999001
2,949.0	5.50	156.80	2,935.3	-244.8	84.4	1,315,087.05	3,139,959.99	40.197218	-104.998988
3,044.0	6.20	158.80	3,029.8	-253.7	88.1	1,315,078.10	3,139,963.69	40.197194	-104.998975
3,138.0	5.30	155.90	3,123.3	-262.4	91.7	1,315,069.42	3,139,967.34	40.197170	-104.998962
3,233.0	6.10	158.00	3,217.8	-271.1	95.4	1,315,060.76	3,139,971.08	40.197146	-104.998949
3,327.0	6.00	157.50	3,311.3	-280.3	99.1	1,315,051.61	3,139,974.88	40.197121	-104.998936
3,422.0	7.10	165.30	3,405.7	-290.5	102.5	1,315,041.36	3,139,978.33	40.197092	-104.998923
3,517.0	6.10	159.90	3,500.1	-301.0	105.7	1,315,030.96	3,139,981.61	40.197064	-104.998912
3,612.0	7.40	172.80	3,594.4	-311.8	108.2	1,315,020.17	3,139,984.17	40.197034	-104.998903
3,706.0	6.90	172.50	3,687.7	-323.4	109.7	1,315,008.57	3,139,985.73	40.197002	-104.998898
3,801.0	6.40	169.40	3,782.0	-334.2	111.4	1,314,997.72	3,139,987.51	40.196973	-104.998891
3,896.0	5.80	170.60	3,876.5	-344.2	113.2	1,314,987.79	3,139,989.33	40.196945	-104.998885
3,990.0	6.90	167.00	3,969.9	-354.4	115.2	1,314,977.61	3,139,991.43	40.196917	-104.998878
4,085.0	6.30	165.20	4,064.3	-365.0	117.9	1,314,967.03	3,139,994.11	40.196888	-104.998868
4,180.0	5.80	165.40	4,158.8	-374.7	120.4	1,314,957.36	3,139,996.70	40.196862	-104.998859
4,274.0	5.20	166.20	4,252.3	-383.4	122.6	1,314,948.64	3,139,998.97	40.196838	-104.998851
4,369.0	4.70	156.50	4,347.0	-391.1	125.2	1,314,940.90	3,140,001.59	40.196816	-104.998842
4,464.0	5.30	146.20	4,441.6	-398.4	129.2	1,314,933.71	3,140,005.62	40.196797	-104.998828
4,558.0	6.00	159.00	4,535.2	-406.5	133.4	1,314,925.54	3,140,009.84	40.196774	-104.998813
4,653.0	5.80	160.30	4,629.7	-415.7	136.8	1,314,916.40	3,140,013.29	40.196749	-104.998801
4,747.0	5.50	160.40	4,723.2	-424.4	139.9	1,314,907.70	3,140,016.45	40.196725	-104.998790
4,842.0	5.80	157.90	4,817.7	-433.2	143.2	1,314,898.99	3,140,019.84	40.196701	-104.998778
4,936.0	7.30	166.30	4,911.1	-443.4	146.4	1,314,888.80	3,140,023.10	40.196673	-104.998766
5,031.0	6.30	167.00	5,005.5	-454.3	149.0	1,314,877.87	3,140,025.76	40.196643	-104.998757
5,126.0	6.70	158.40	5,099.9	-464.5	152.2	1,314,867.66	3,140,029.03	40.196615	-104.998745
5,220.0	5.60	158.40	5,193.3	-473.9	155.9	1,314,858.32	3,140,032.79	40.196589	-104.998732
5,315.0	6.00	150.50	5,287.8	-482.5	160.1	1,314,849.71	3,140,036.99	40.196565	-104.998717
5,409.0	6.40	158.80	5,381.3	-491.7	164.4	1,314,840.57	3,140,041.36	40.196540	-104.998702
5,504.0	4.70	161.60	5,475.8	-500.3	167.5	1,314,831.96	3,140,044.55	40.196517	-104.998691
5,599.0	6.30	157.70	5,570.4	-508.8	170.7	1,314,823.46	3,140,047.80	40.196493	-104.998679
5,693.0	6.90	154.30	5,663.8	-518.7	175.1	1,314,813.63	3,140,052.26	40.196466	-104.998663
5,788.0	6.10	159.20	5,758.2	-528.6	179.4	1,314,803.79	3,140,056.59	40.196439	-104.998648
5,883.0	6.40	161.10	5,852.6	-538.3	182.9	1,314,794.08	3,140,060.15	40.196412	-104.998635
5,977.0	6.90	158.30	5,946.0	-548.5	186.7	1,314,783.90	3,140,063.99	40.196384	-104.998622
6,072.0	4.80	154.40	6,040.5	-557.4	190.5	1,314,775.04	3,140,067.87	40.196360	-104.998608
6,167.0	6.30	164.80	6,135.0	-566.0	193.6	1,314,766.44	3,140,071.00	40.196336	-104.998597

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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
6,262.0	6.40	164.60	6,229.4	-576.1	196.4	1,314,756.32	3,140,073.83	40.196309	-104.998587
6,356.0	4.50	164.20	6,323.0	-584.7	198.8	1,314,747.73	3,140,076.28	40.196285	-104.998579
6,451.0	5.30	146.70	6,417.7	-592.0	202.2	1,314,740.50	3,140,079.74	40.196265	-104.998566
6,498.0	4.70	157.10	6,464.5	-595.6	204.1	1,314,736.92	3,140,081.70	40.196255	-104.998559
6,545.0	6.50	192.60	6,511.3	-599.9	204.3	1,314,732.55	3,140,081.90	40.196243	-104.998559
6,592.0	9.50	211.30	6,557.8	-605.8	201.7	1,314,726.62	3,140,079.33	40.196227	-104.998568
6,640.0	10.00	235.70	6,605.1	-611.6	196.2	1,314,720.86	3,140,073.86	40.196211	-104.998588
6,687.0	12.00	254.60	6,651.3	-615.2	188.1	1,314,717.21	3,140,065.80	40.196201	-104.998617
6,734.0	13.60	265.70	6,697.1	-616.9	177.9	1,314,715.44	3,140,055.58	40.196197	-104.998653
6,781.0	15.90	272.20	6,742.6	-617.1	166.0	1,314,715.21	3,140,043.64	40.196196	-104.998696
6,829.0	20.40	271.70	6,788.2	-616.6	151.0	1,314,715.63	3,140,028.70	40.196198	-104.998750
6,876.0	25.30	268.80	6,831.5	-616.5	132.8	1,314,715.56	3,140,010.46	40.196198	-104.998815
6,923.0	30.20	264.70	6,873.1	-617.8	111.0	1,314,714.13	3,139,988.64	40.196194	-104.998893
6,970.0	33.30	262.50	6,913.0	-620.6	86.4	1,314,711.21	3,139,964.09	40.196186	-104.998981
7,018.0	36.10	263.60	6,952.5	-623.9	59.3	1,314,707.76	3,139,936.98	40.196177	-104.999078
7,065.0	39.90	266.40	6,989.5	-626.4	30.4	1,314,705.11	3,139,908.18	40.196171	-104.999181
7,112.0	45.20	268.10	7,024.1	-627.9	-1.3	1,314,703.43	3,139,876.45	40.196166	-104.999295
7,159.0	50.60	265.50	7,055.6	-629.9	-36.1	1,314,701.25	3,139,841.67	40.196161	-104.999419
7,207.0	53.90	263.60	7,085.0	-633.5	-73.9	1,314,697.42	3,139,803.92	40.196151	-104.999555
7,254.0	56.00	262.60	7,112.0	-638.1	-112.1	1,314,692.58	3,139,765.75	40.196138	-104.999691
7,302.0	60.40	262.80	7,137.3	-643.3	-152.5	1,314,687.17	3,139,725.32	40.196124	-104.999836
7,349.0	65.60	263.70	7,158.6	-648.2	-194.1	1,314,682.03	3,139,683.78	40.196111	-104.999985
7,397.0	69.80	264.70	7,176.8	-652.7	-238.3	1,314,677.29	3,139,639.63	40.196098	-105.000143
7,444.0	72.00	264.80	7,192.2	-656.8	-282.5	1,314,672.98	3,139,595.43	40.196087	-105.000301
7,491.0	74.20	264.90	7,205.9	-660.8	-327.3	1,314,668.69	3,139,550.67	40.196076	-105.000462
7,538.0	77.50	265.30	7,217.4	-664.7	-372.7	1,314,664.55	3,139,505.29	40.196065	-105.000624
7,586.0	80.70	265.10	7,226.4	-668.6	-419.6	1,314,660.34	3,139,458.35	40.196055	-105.000792
7,633.0	84.20	266.20	7,232.6	-672.2	-466.1	1,314,656.54	3,139,411.92	40.196045	-105.000959
7,683.0	89.10	269.60	7,235.5	-674.0	-515.9	1,314,654.44	3,139,362.08	40.196040	-105.001137
7,800.0	91.10	270.50	7,235.3	-673.9	-632.9	1,314,653.88	3,139,245.08	40.196040	-105.001556
7,895.0	91.10	269.30	7,233.5	-674.1	-727.9	1,314,653.18	3,139,150.11	40.196040	-105.001896
7,989.0	90.30	268.70	7,232.4	-675.7	-821.9	1,314,651.00	3,139,056.14	40.196035	-105.002232
8,084.0	91.70	269.40	7,230.7	-677.3	-916.9	1,314,648.89	3,138,961.18	40.196031	-105.002572
8,179.0	94.40	270.60	7,225.7	-677.3	-1,011.7	1,314,648.36	3,138,866.33	40.196031	-105.002912
8,274.0	91.70	272.00	7,220.6	-675.1	-1,106.5	1,314,649.97	3,138,771.48	40.196037	-105.003251
8,368.0	92.30	271.00	7,217.3	-672.7	-1,200.5	1,314,651.90	3,138,677.56	40.196043	-105.003588
8,463.0	92.80	270.50	7,213.1	-671.4	-1,295.3	1,314,652.61	3,138,582.66	40.196047	-105.003927
8,558.0	91.50	270.00	7,209.5	-671.0	-1,390.3	1,314,652.49	3,138,487.73	40.196048	-105.004267
8,652.0	92.60	270.00	7,206.2	-671.0	-1,484.2	1,314,651.96	3,138,393.79	40.196048	-105.004603
8,747.0	92.60	269.90	7,201.9	-671.1	-1,579.1	1,314,651.34	3,138,298.89	40.196048	-105.004943
8,842.0	93.40	270.50	7,196.9	-670.8	-1,674.0	1,314,651.13	3,138,204.02	40.196049	-105.005283
8,936.0	91.50	267.80	7,192.9	-672.1	-1,767.9	1,314,649.21	3,138,110.14	40.196045	-105.005619
9,031.0	91.80	267.50	7,190.1	-676.0	-1,862.8	1,314,644.78	3,138,015.28	40.196034	-105.005958
9,125.0	91.50	267.30	7,187.4	-680.3	-1,956.6	1,314,639.99	3,137,921.45	40.196022	-105.006294
9,219.0	92.20	268.50	7,184.4	-683.7	-2,050.5	1,314,636.01	3,137,827.58	40.196013	-105.006631
9,314.0	93.30	269.40	7,179.8	-685.5	-2,145.4	1,314,633.74	3,137,732.72	40.196008	-105.006970
9,377.0	92.70	269.40	7,176.5	-686.1	-2,208.3	1,314,632.73	3,137,669.81	40.196006	-105.007195
9,440.0	93.50	269.50	7,173.1	-686.7	-2,271.2	1,314,631.77	3,137,606.91	40.196005	-105.007421
9,503.0	94.50	270.00	7,168.7	-687.0	-2,334.0	1,314,631.14	3,137,544.07	40.196004	-105.007646
9,597.0	93.90	269.20	7,161.8	-687.7	-2,427.8	1,314,629.95	3,137,450.33	40.196002	-105.007981
9,692.0	93.50	269.30	7,155.7	-688.9	-2,522.6	1,314,628.18	3,137,355.55	40.195999	-105.008320
9,786.0	93.20	268.80	7,150.2	-690.5	-2,616.4	1,314,626.09	3,137,261.73	40.195994	-105.008656
9,881.0	92.80	268.40	7,145.3	-692.8	-2,711.2	1,314,623.24	3,137,166.90	40.195988	-105.008996
9,975.0	91.60	269.20	7,141.6	-694.8	-2,805.2	1,314,620.74	3,137,073.01	40.195982	-105.009332
10,070.0	92.20	270.30	7,138.5	-695.2	-2,900.1	1,314,619.79	3,136,978.07	40.195981	-105.009672

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Frederiksen 1C-28H-H368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 4988.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	MD Reference:	WELL @ 4988.0ft (Ensign 135)
Well:	Frederiksen 1C-28H-H368	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
10,164.0	91.90	271.10	7,135.1	-694.0	-2,994.0	1,314,620.41	3,136,884.13	40.195984	-105.010008
10,259.0	91.20	271.00	7,132.6	-692.3	-3,089.0	1,314,621.61	3,136,789.17	40.195989	-105.010348
10,353.0	91.50	270.40	7,130.3	-691.1	-3,182.9	1,314,622.23	3,136,695.20	40.195992	-105.010684
10,448.0	92.90	270.10	7,126.7	-690.7	-3,277.9	1,314,622.11	3,136,600.27	40.195993	-105.011024
10,543.0	92.90	269.50	7,121.9	-691.1	-3,372.8	1,314,621.24	3,136,505.40	40.195992	-105.011364
10,637.0	94.20	270.20	7,116.1	-691.3	-3,466.6	1,314,620.47	3,136,411.59	40.195992	-105.011700
10,732.0	92.60	271.70	7,110.4	-689.7	-3,561.4	1,314,621.50	3,136,316.77	40.195996	-105.012039
10,827.0	90.90	270.20	7,107.5	-688.2	-3,656.3	1,314,622.54	3,136,221.82	40.196000	-105.012379
10,921.0	90.90	270.10	7,106.1	-687.9	-3,750.3	1,314,622.26	3,136,127.83	40.196001	-105.012715
11,016.0	90.70	269.50	7,104.7	-688.2	-3,845.3	1,314,621.39	3,136,032.85	40.196000	-105.013055
11,111.0	90.50	270.00	7,103.7	-688.7	-3,940.3	1,314,620.44	3,135,937.86	40.195999	-105.013396
11,205.0	90.90	269.90	7,102.6	-688.7	-4,034.3	1,314,619.82	3,135,843.87	40.195998	-105.013732
11,300.0	91.20	269.40	7,100.8	-689.3	-4,129.3	1,314,618.71	3,135,748.89	40.195997	-105.014072
11,395.0	92.30	270.00	7,097.9	-689.8	-4,224.2	1,314,617.67	3,135,653.94	40.195995	-105.014412
11,489.0	92.10	269.10	7,094.3	-690.5	-4,318.1	1,314,616.41	3,135,560.02	40.195993	-105.014748
11,584.0	92.90	269.70	7,090.2	-691.5	-4,413.0	1,314,614.88	3,135,465.12	40.195991	-105.015088
11,673.0	93.90	270.00	7,084.9	-691.8	-4,501.9	1,314,614.14	3,135,376.31	40.195990	-105.015406
Last CES Survey @ 11,673' MD									
11,721.0	93.90	270.00	7,081.7	-691.8	-4,549.8	1,314,613.87	3,135,328.42	40.195990	-105.015577
PTB @ 11,721'									

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									
Frederiksen 1C-28H-H368	0.00	0.00	7,084.6	-684.4	-4,578.5	1,314,621.07	3,135,299.60	40.196010	-105.015680
- actual wellpath misses target center by 29.8ft at 11721.0ft MD (7081.7 TVD, -691.8 N, -4549.8 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,673.0	7,084.9	-691.8	-4,501.9	Last CES Survey @ 11,673' MD	
11,721.0	7,081.7	-691.8	-4,549.8	PTB @ 11,721'	

Checked By: _____ Approved By: _____ Date: _____