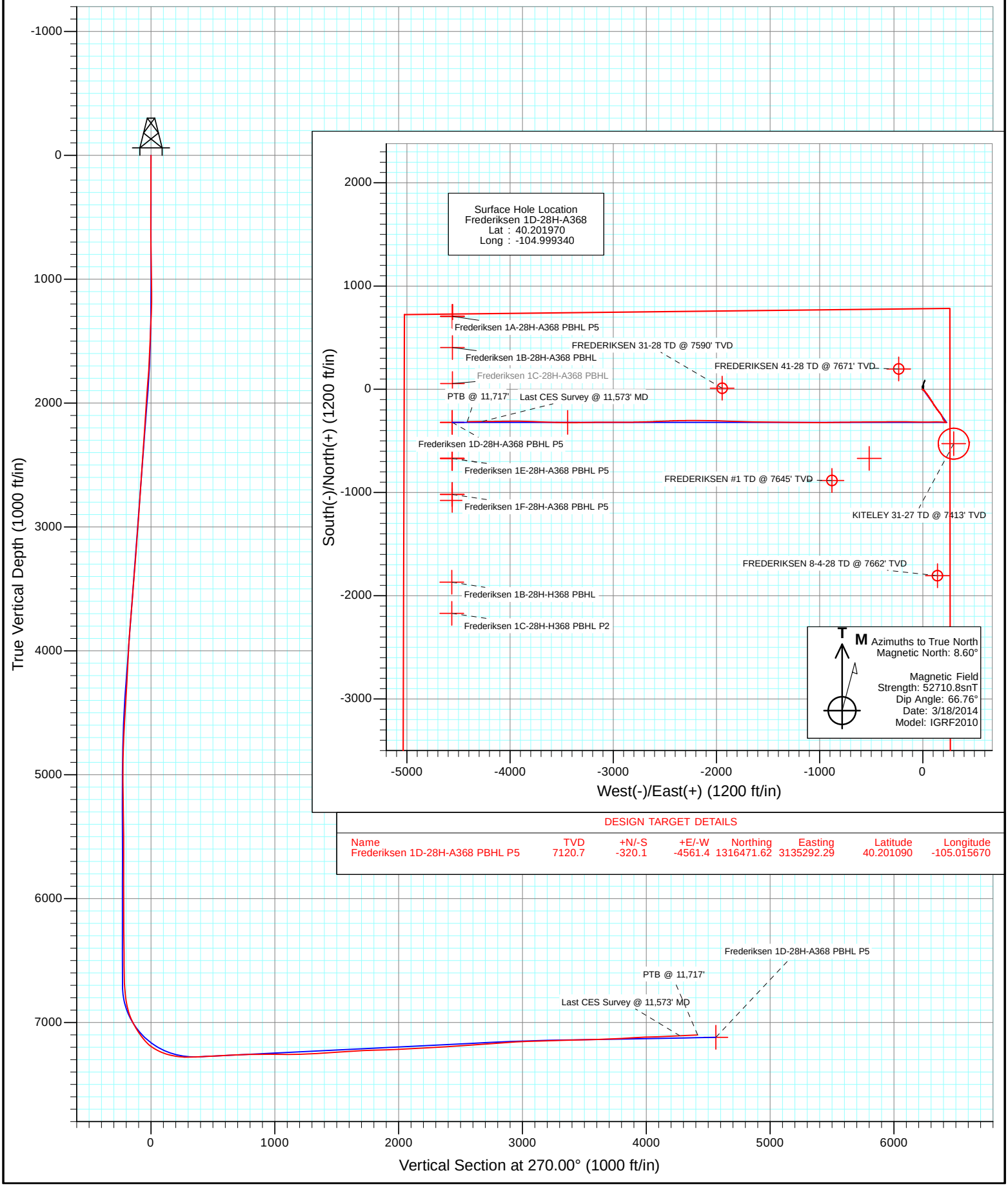
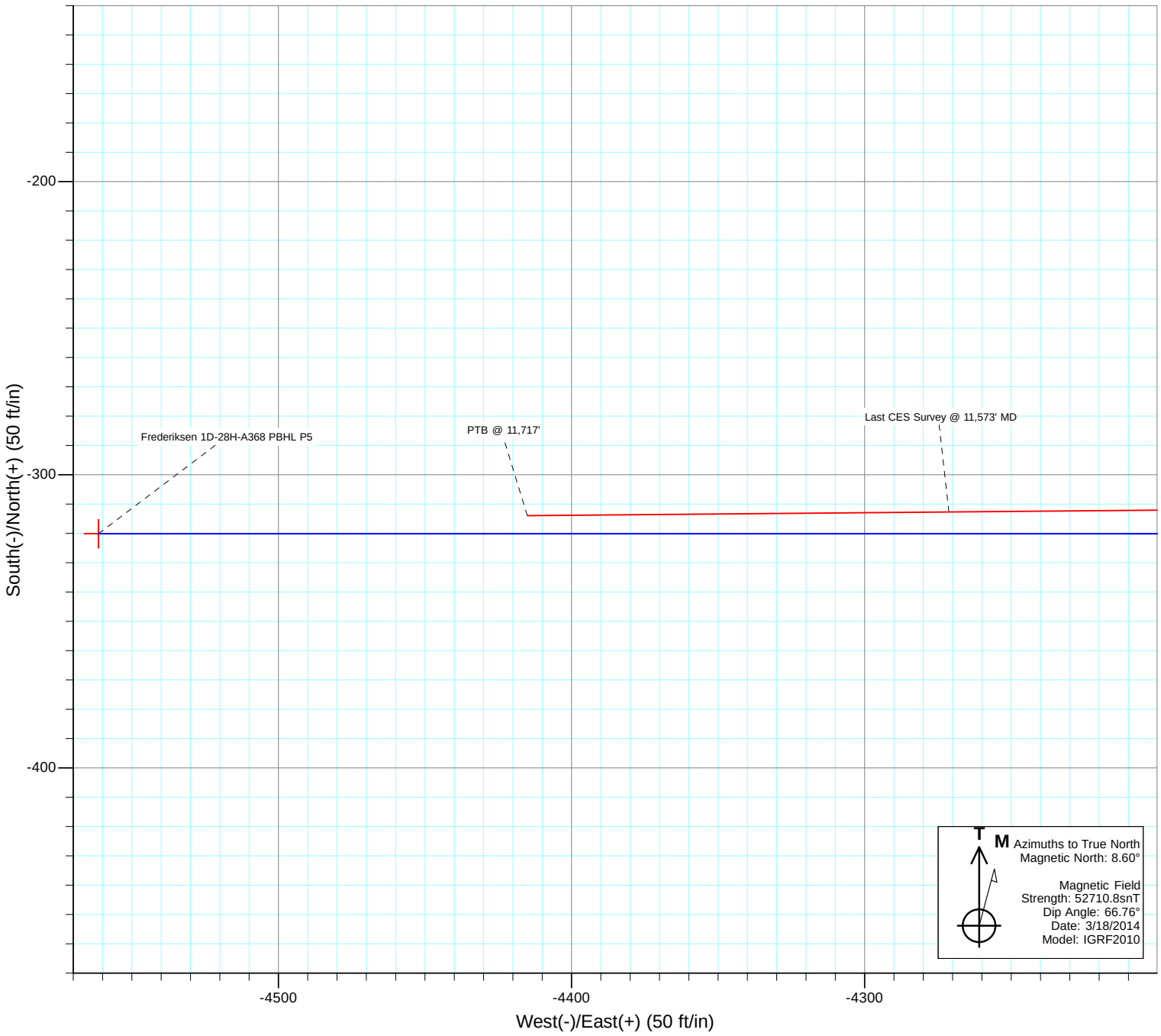
Project: DJ Wattenberg
Site: S28-T3N-R68W (Frederiksen)
Well: Frederiksen 1D-28H-A368
Wellbore: Hz
Design: FINAL

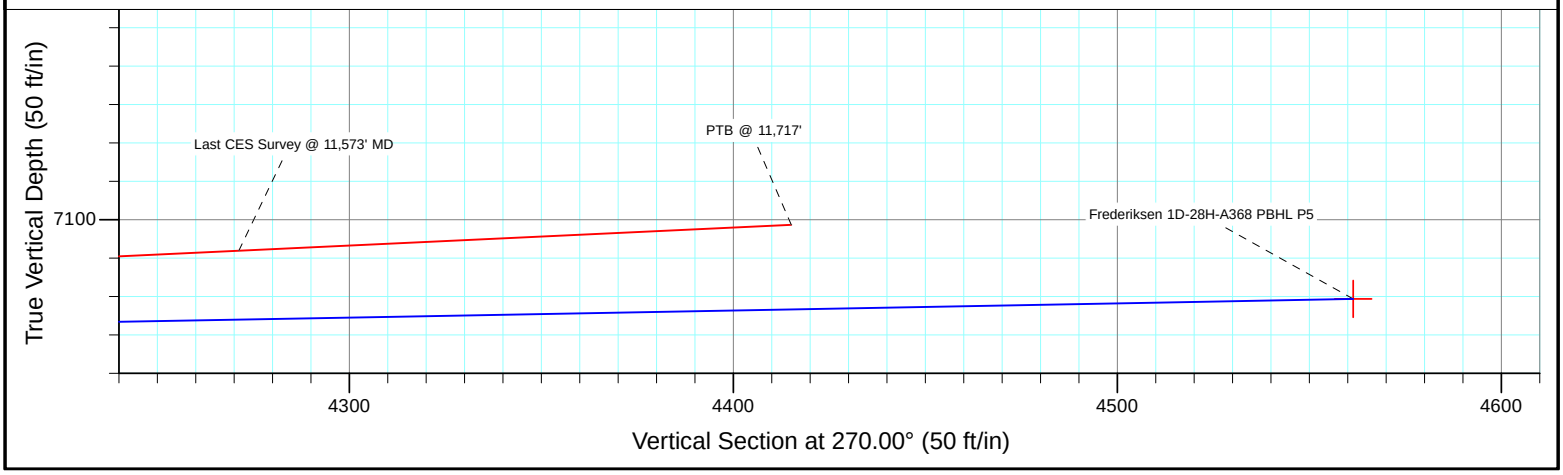


DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Frederiksen 1D-28H-A368 PBHL P5	7120.7	-320.1	-4561.4	1316471.62	3135292.29	40.201090	-105.015670

Project: DJ Wattenberg
Site: S28-T3N-R68W (Frederiksen)
Well: Frederiksen 1D-28H-A368
Wellbore: Hz
Design: FINAL





Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Frederiksen 1D-28H-A368
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5005.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	**MD Reference:**	WELL @ 5005.0ft (Ensign 135)
Well:	Frederiksen 1D-28H-A368	**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 1D-28H-A368

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,316,817.51 ft	**Latitude:**	40.201970
	+E/-W	0.0 ft	**Easting:**	3,139,851.84 ft	**Longitude:**	-104.999340
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,992.0 ft

Wellbore Hz

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/18/2014	8.60	66.76	52,711

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** 4/1/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
143.0	11,717.0	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	
143.0	0.30	128.10	143.0	-0.2	0.3	-0.3	0.21	0.21	
235.0	0.10	353.80	235.0	-0.3	0.5	-0.5	0.41	-0.22	
326.0	0.40	135.00	326.0	-0.4	0.7	-0.7	0.53	0.33	
418.0	0.40	140.10	418.0	-0.9	1.1	-1.1	0.04	0.00	
510.0	0.20	122.30	510.0	-1.3	1.5	-1.5	0.24	-0.22	
602.0	0.40	221.00	602.0	-1.6	1.4	-1.4	0.51	0.22	
694.0	0.60	249.50	694.0	-2.0	0.7	-0.7	0.34	0.22	
786.0	0.80	253.00	786.0	-2.3	-0.3	0.3	0.22	0.22	
819.0	0.90	254.00	819.0	-2.5	-0.8	0.8	0.31	0.30	
912.0	0.90	266.30	912.0	-2.7	-2.2	2.2	0.21	0.00	
1,004.0	1.00	285.50	1,004.0	-2.6	-3.7	3.7	0.36	0.11	
1,096.0	1.20	283.10	1,095.9	-2.1	-5.4	5.4	0.22	0.22	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Frederiksen 1D-28H-A368
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5005.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	**MD Reference:**	WELL @ 5005.0ft (Ensign 135)
Well:	Frederiksen 1D-28H-A368	**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
1,188.0	1.10	73.70	1,187.9	-1.7	-5.5	5.5	2.42	-0.11	
1,279.0	3.20	128.30	1,278.9	-3.0	-2.7	2.7	2.98	2.31	
1,371.0	2.40	106.60	1,370.8	-5.1	1.2	-1.2	1.43	-0.87	
1,463.0	3.50	123.90	1,462.6	-7.3	5.3	-5.3	1.53	1.20	
1,555.0	2.80	112.90	1,554.5	-9.7	9.7	-9.7	1.00	-0.76	
1,647.0	4.70	144.70	1,646.3	-13.6	14.0	-14.0	2.99	2.07	
1,739.0	5.40	142.30	1,738.0	-20.1	18.8	-18.8	0.79	0.76	
1,831.0	7.20	141.20	1,829.4	-28.1	25.1	-25.1	1.96	1.96	
1,923.0	6.30	137.00	1,920.8	-36.3	32.1	-32.1	1.12	-0.98	
2,018.0	6.90	148.40	2,015.1	-44.9	38.7	-38.7	1.51	0.63	
2,112.0	6.20	144.00	2,108.5	-53.8	44.6	-44.6	0.92	-0.74	
2,207.0	6.60	142.20	2,202.9	-62.3	51.0	-51.0	0.47	0.42	
2,302.0	7.30	148.90	2,297.2	-71.8	57.4	-57.4	1.13	0.74	
2,396.0	6.60	144.40	2,390.5	-81.3	63.7	-63.7	0.94	-0.74	
2,491.0	6.70	149.30	2,484.9	-90.5	69.7	-69.7	0.61	0.11	
2,585.0	8.50	147.70	2,578.1	-101.1	76.2	-76.2	1.93	1.91	
2,680.0	7.50	142.40	2,672.1	-111.9	83.7	-83.7	1.31	-1.05	
2,775.0	6.90	146.40	2,766.4	-121.6	90.7	-90.7	0.82	-0.63	
2,870.0	7.00	153.80	2,860.7	-131.5	96.4	-96.4	0.95	0.11	
2,965.0	8.10	149.40	2,954.9	-142.5	102.3	-102.3	1.31	1.16	
3,059.0	6.70	146.60	3,048.1	-152.8	108.7	-108.7	1.54	-1.49	
3,154.0	8.60	144.10	3,142.2	-163.2	115.9	-115.9	2.03	2.00	
3,248.0	6.70	143.00	3,235.4	-173.2	123.4	-123.4	2.03	-2.02	
3,343.0	9.20	149.30	3,329.5	-184.2	130.6	-130.6	2.78	2.63	
3,438.0	7.70	142.30	3,423.4	-195.8	138.4	-138.4	1.91	-1.58	
3,532.0	6.00	138.90	3,516.8	-204.4	145.4	-145.4	1.86	-1.81	
3,626.0	8.00	142.70	3,610.1	-213.4	152.6	-152.6	2.18	2.13	
3,721.0	7.60	140.50	3,704.2	-223.5	160.6	-160.6	0.53	-0.42	
3,816.0	6.80	142.80	3,798.4	-232.8	168.0	-168.0	0.89	-0.84	
3,910.0	6.90	142.50	3,891.8	-241.7	174.8	-174.8	0.11	0.11	
4,005.0	8.10	156.30	3,986.0	-252.4	181.0	-181.0	2.27	1.26	
4,099.0	6.30	155.90	4,079.2	-263.1	185.8	-185.8	1.92	-1.91	
4,194.0	7.60	155.90	4,173.5	-273.6	190.5	-190.5	1.37	1.37	
4,289.0	7.10	155.60	4,267.7	-284.7	195.4	-195.4	0.53	-0.53	
4,383.0	6.30	142.80	4,361.1	-294.1	201.0	-201.0	1.80	-0.85	
4,480.0	5.50	145.40	4,457.6	-302.2	206.8	-206.8	0.87	-0.82	
4,575.0	4.90	133.80	4,552.2	-308.7	212.3	-212.3	1.27	-0.63	
4,669.0	4.50	140.70	4,645.9	-314.4	217.6	-217.6	0.74	-0.43	
4,764.0	2.90	127.70	4,740.7	-318.7	221.8	-221.8	1.89	-1.68	
4,859.0	1.90	137.50	4,835.6	-321.3	224.8	-224.8	1.13	-1.05	
4,953.0	1.00	180.50	4,929.6	-323.3	225.8	-225.8	1.44	-0.96	
5,048.0	0.70	32.30	5,024.6	-323.6	226.1	-226.1	1.72	-0.32	
5,143.0	0.50	297.30	5,119.6	-323.0	226.1	-226.1	0.94	-0.21	
5,238.0	1.10	272.00	5,214.6	-322.7	224.8	-224.8	0.72	0.63	
5,332.0	0.70	262.30	5,308.5	-322.8	223.3	-223.3	0.45	-0.43	
5,427.0	1.50	250.80	5,403.5	-323.3	221.6	-221.6	0.87	0.84	
5,521.0	0.40	9.50	5,497.5	-323.4	220.5	-220.5	1.84	-1.17	
5,616.0	1.20	359.30	5,592.5	-322.0	220.5	-220.5	0.85	0.84	
5,710.0	1.00	332.40	5,686.5	-320.3	220.1	-220.1	0.58	-0.21	
5,805.0	1.10	138.40	5,781.5	-320.3	220.4	-220.4	2.19	0.11	
5,899.0	0.50	285.90	5,875.5	-320.8	220.6	-220.6	1.64	-0.64	
5,994.0	0.40	53.80	5,970.5	-320.5	220.4	-220.4	0.85	-0.11	
6,089.0	0.80	277.80	6,065.5	-320.2	220.0	-220.0	1.18	0.42	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Frederiksen 1D-28H-A368
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5005.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	**MD Reference:**	WELL @ 5005.0ft (Ensign 135)
Well:	Frederiksen 1D-28H-A368	**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
6,183.0	1.30	28.70	6,159.5	-319.2	219.9	-219.9	1.86	0.53	
6,278.0	1.10	274.10	6,254.4	-318.2	219.5	-219.5	2.13	-0.21	
6,373.0	0.40	292.60	6,349.4	-318.0	218.3	-218.3	0.77	-0.74	
6,468.0	0.70	193.60	6,444.4	-318.4	217.8	-217.8	0.90	0.32	
6,563.0	0.30	214.10	6,539.4	-319.2	217.6	-217.6	0.45	-0.42	
6,658.0	1.90	255.70	6,634.4	-319.8	215.9	-215.9	1.78	1.68	
6,705.0	2.30	258.60	6,681.4	-320.2	214.2	-214.2	0.88	0.85	
6,752.0	3.30	261.00	6,728.3	-320.6	212.0	-212.0	2.14	2.13	
6,799.0	6.50	272.60	6,775.1	-320.7	208.0	-208.0	7.09	6.81	
6,847.0	8.70	276.20	6,822.7	-320.2	201.6	-201.6	4.69	4.58	
6,894.0	12.50	276.10	6,868.9	-319.2	193.1	-193.1	8.09	8.09	
6,942.0	17.30	276.20	6,915.3	-317.9	180.8	-180.8	10.00	10.00	
6,989.0	21.90	272.80	6,959.6	-316.7	165.1	-165.1	10.08	9.79	
7,037.0	26.60	271.00	7,003.3	-316.1	145.4	-145.4	9.91	9.79	
7,084.0	30.30	269.70	7,044.6	-316.0	123.0	-123.0	7.98	7.87	
7,131.0	34.10	267.40	7,084.4	-316.6	98.0	-98.0	8.49	8.09	
7,179.0	37.50	268.10	7,123.3	-317.7	69.9	-69.9	7.13	7.08	
7,226.0	44.40	269.60	7,158.8	-318.3	39.1	-39.1	14.83	14.68	
7,273.0	51.90	270.70	7,190.1	-318.2	4.2	-4.2	16.05	15.96	
7,321.0	60.00	270.80	7,217.0	-317.7	-35.6	35.6	16.88	16.87	
7,368.0	66.50	271.90	7,238.1	-316.7	-77.5	77.5	13.99	13.83	
7,416.0	71.80	270.80	7,255.2	-315.6	-122.3	122.3	11.25	11.04	
7,464.0	78.50	270.50	7,267.5	-315.1	-168.7	168.7	13.97	13.96	
7,532.0	84.00	270.10	7,277.8	-314.8	-235.9	235.9	8.11	8.09	
7,595.0	89.50	269.70	7,281.4	-314.9	-298.8	298.8	8.75	8.73	
7,690.0	93.50	269.50	7,278.9	-315.5	-393.7	393.7	4.22	4.21	
7,785.0	93.70	269.30	7,273.0	-316.5	-488.5	488.5	0.30	0.21	
7,879.0	93.20	269.50	7,267.3	-317.5	-582.3	582.3	0.57	-0.53	
7,974.0	92.40	269.30	7,262.7	-318.5	-677.2	677.2	0.87	-0.84	
8,069.0	90.10	269.40	7,260.6	-319.6	-772.2	772.2	2.42	-2.42	
8,164.0	91.90	268.60	7,258.9	-321.3	-867.2	867.2	2.07	1.89	
8,258.0	89.50	269.50	7,257.8	-322.8	-961.1	961.1	2.73	-2.55	
8,353.0	89.90	270.80	7,258.3	-322.6	-1,056.1	1,056.1	1.43	0.42	
8,448.0	90.30	270.40	7,258.1	-321.6	-1,151.1	1,151.1	0.60	0.42	
8,543.0	92.00	270.80	7,256.2	-320.6	-1,246.1	1,246.1	1.84	1.79	
8,638.0	94.00	270.30	7,251.2	-319.7	-1,341.0	1,341.0	2.17	2.11	
8,732.0	94.30	270.50	7,244.4	-319.0	-1,434.7	1,434.7	0.38	0.32	
8,827.0	93.10	271.00	7,238.3	-317.8	-1,529.5	1,529.5	1.37	-1.26	
8,922.0	92.90	270.70	7,233.3	-316.4	-1,624.4	1,624.4	0.38	-0.21	
9,017.0	92.70	272.10	7,228.7	-314.0	-1,719.2	1,719.2	1.49	-0.21	
9,111.0	92.00	272.10	7,224.8	-310.6	-1,813.1	1,813.1	0.74	-0.74	
9,206.0	92.50	272.40	7,221.1	-306.9	-1,907.9	1,907.9	0.61	0.53	
9,301.0	92.30	270.50	7,217.1	-304.5	-2,002.8	2,002.8	2.01	-0.21	
9,396.0	93.10	271.00	7,212.7	-303.2	-2,097.7	2,097.7	0.99	0.84	
9,490.0	93.50	269.60	7,207.2	-302.7	-2,191.5	2,191.5	1.55	0.43	
9,585.0	93.00	269.90	7,201.9	-303.2	-2,286.4	2,286.4	0.61	-0.53	
9,679.0	94.10	268.40	7,196.0	-304.5	-2,380.2	2,380.2	1.98	1.17	
9,774.0	92.90	268.10	7,190.2	-307.4	-2,475.0	2,475.0	1.30	-1.26	
9,869.0	93.30	267.30	7,185.1	-311.2	-2,569.7	2,569.7	0.94	0.42	
9,963.0	95.10	268.20	7,178.2	-314.9	-2,663.4	2,663.4	2.14	1.91	
10,058.0	94.10	268.30	7,170.6	-317.8	-2,758.1	2,758.1	1.06	-1.05	
10,153.0	94.20	269.90	7,163.7	-319.3	-2,852.8	2,852.8	1.68	0.11	
10,248.0	93.20	270.00	7,157.6	-319.4	-2,947.6	2,947.6	1.06	-1.05	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Frederiksen 1D-28H-A368
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5005.0ft (Ensign 135)
Site:	S28-T3N-R68W (Frederiksen)	**MD Reference:**	WELL @ 5005.0ft (Ensign 135)
Well:	Frederiksen 1D-28H-A368	**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
10,342.0	92.30	269.80	7,153.1	-319.6	-3,041.5	3,041.5	0.98	-0.96	
10,437.0	91.20	270.00	7,150.2	-319.7	-3,136.4	3,136.4	1.18	-1.16	
10,532.0	92.50	268.60	7,147.1	-320.9	-3,231.4	3,231.4	2.01	1.37	
10,626.0	91.20	268.60	7,144.1	-323.2	-3,325.3	3,325.3	1.38	-1.38	
10,721.0	91.00	269.90	7,142.3	-324.4	-3,420.3	3,420.3	1.38	-0.21	
10,816.0	90.50	271.80	7,141.0	-323.0	-3,515.2	3,515.2	2.07	-0.53	
10,910.0	93.10	272.20	7,138.1	-319.7	-3,609.1	3,609.1	2.80	2.77	
11,005.0	92.20	272.40	7,133.7	-315.9	-3,704.0	3,704.0	0.97	-0.95	
11,100.0	93.20	272.50	7,129.2	-311.9	-3,798.8	3,798.8	1.06	1.05	
11,195.0	92.90	270.60	7,124.1	-309.3	-3,893.6	3,893.6	2.02	-0.32	
11,289.0	92.30	269.60	7,119.9	-309.1	-3,987.5	3,987.5	1.24	-0.64	
11,384.0	92.10	268.80	7,116.2	-310.5	-4,082.4	4,082.4	0.87	-0.21	
11,478.0	92.50	269.50	7,112.4	-311.9	-4,176.3	4,176.3	0.86	0.43	
11,573.0	92.70	269.50	7,108.1	-312.7	-4,271.2	4,271.2	0.21	0.21	**Last CES Survey @ 11,573' MD**
11,717.0	92.70	269.50	7,101.4	-313.9	-4,415.1	4,415.1	0.00	0.00	**PTB @ 11,717'**

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Frederiksen 1D-28H-A3(	0.00	0.00	7,130.7	-320.1	-3,441.7	1,316,477.95	3,136,412.01	40.201091	-105.011661
- actual wellpath misses target center by 12.0ft at 10742.6ft MD (7141.9 TVD, -324.4 N, -3441.9 E)									
- Point									
Frederiksen 1D-28H-A3(	0.00	0.00	7,251.0	-320.1	-4,561.4	1,316,471.62	3,135,292.29	40.201090	-105.015670
- actual wellpath misses target center by 209.4ft at 11717.0ft MD (7101.4 TVD, -313.9 N, -4415.1 E)									
- Point									
Frederiksen 1D-28H-A3(	0.00	0.00	7,120.7	-320.1	-4,561.4	1,316,471.62	3,135,292.29	40.201090	-105.015670
- actual wellpath misses target center by 147.8ft at 11717.0ft MD (7101.4 TVD, -313.9 N, -4415.1 E)									
- Point									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
11,573.0	7,108.1	-312.7	-4,271.2	Last CES Survey @ 11,573' MD
11,717.0	7,101.4	-313.9	-4,415.1	PTB @ 11,717'

Checked By: _____ Approved By: _____ Date: _____