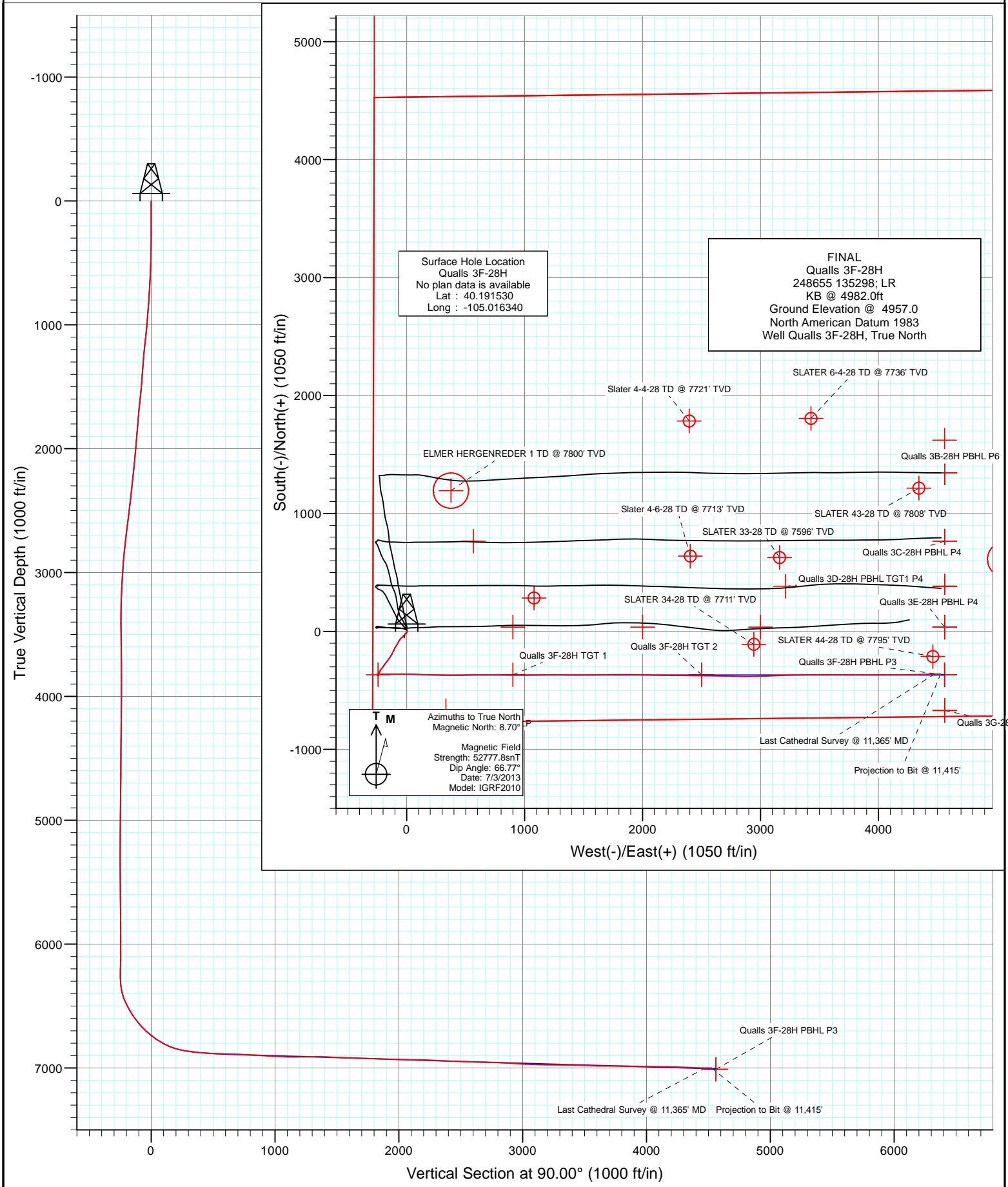


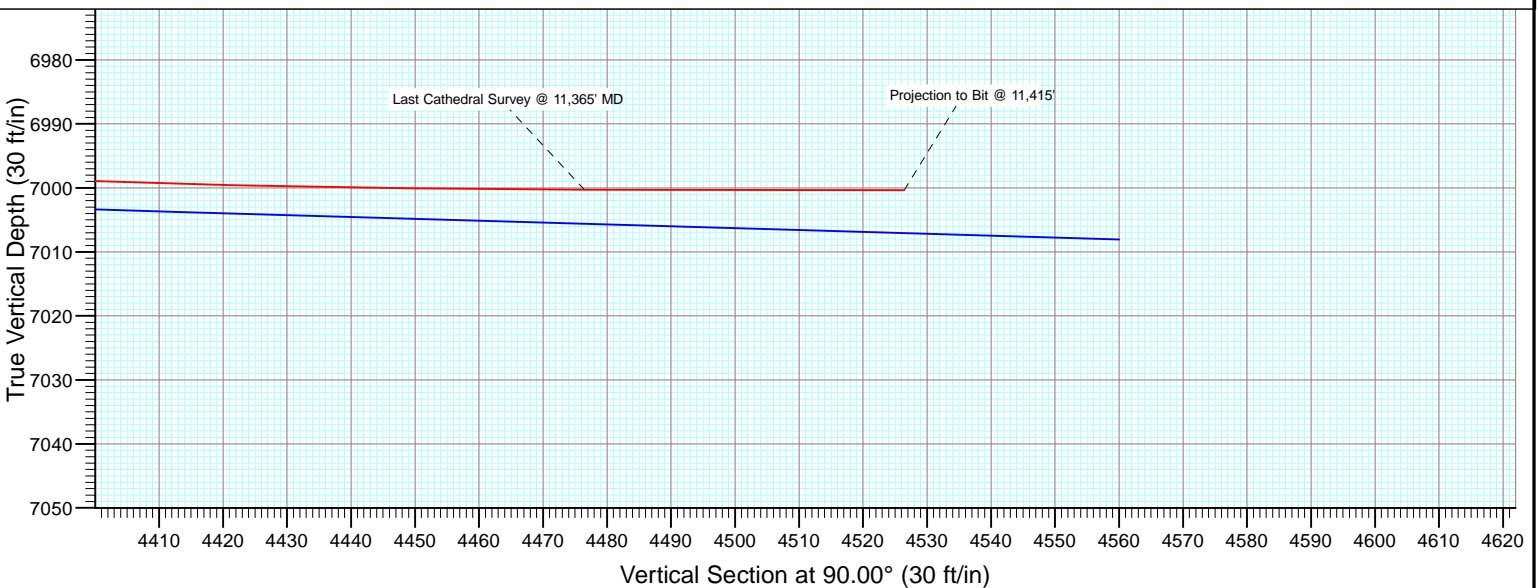
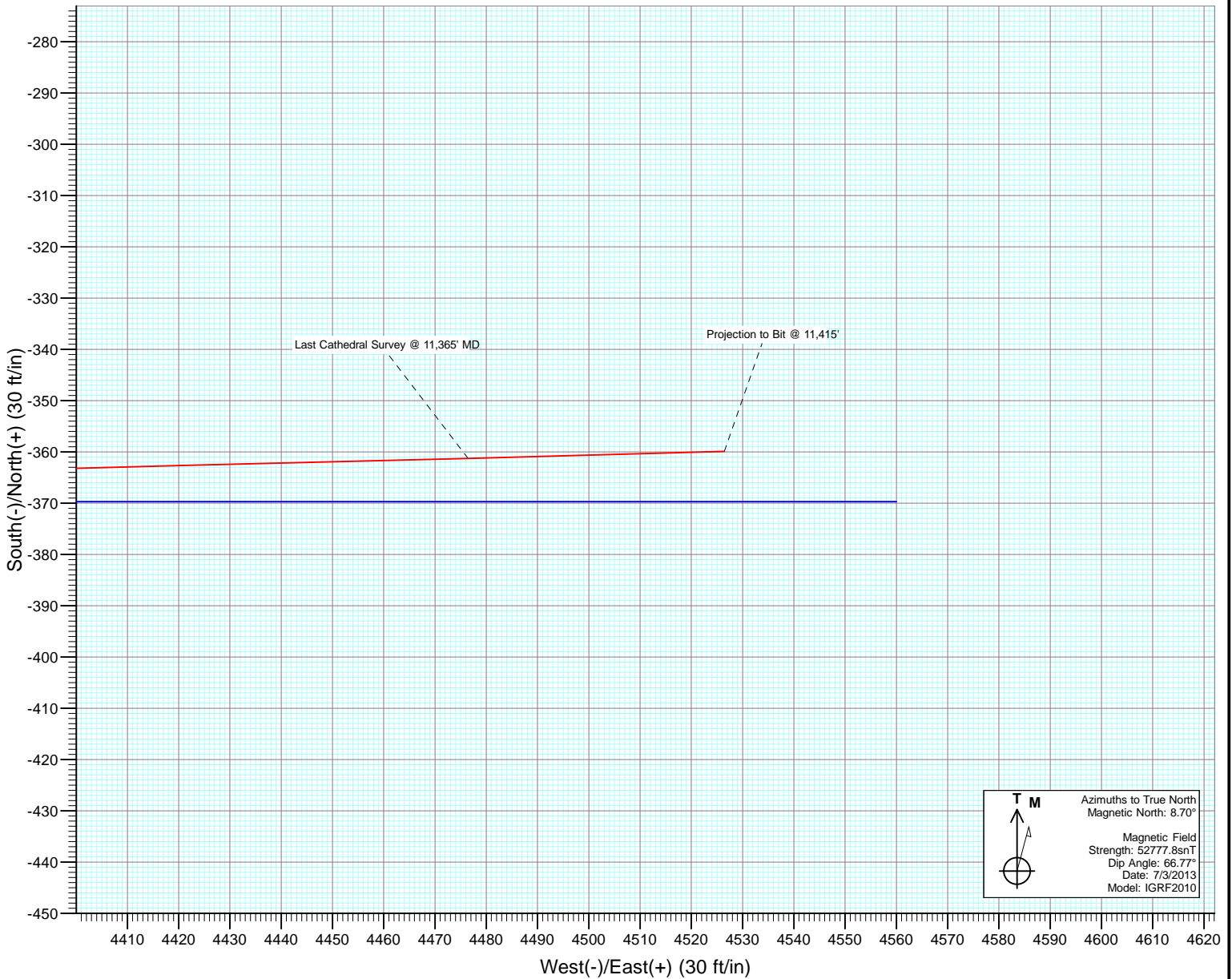


Project: DJ Wattenberg
 Site: S28-T3N-R68W (Qualls)
 Well: Qualls 3F-28H
 Wellbore: Hz
 Design: FINAL





Project: DJ Wattenberg
Site: S28-T3N-R68W (Qualls)
Well: Qualls 3F-28H
Wellbore: Hz
Design: FINAL



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Qualls 3F-28H
Project: DJ Wattenberg	TVD Reference: KB @ 4982.0ft
Site: S28-T3N-R68W (Qualls)	MD Reference: KB @ 4982.0ft
Well: Qualls 3F-28H	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 (Qualls)				
Site Position:	Northing: 1,313,038.99 ft	Latitude: 40.191670		
From: Lat/Long	Easting: 3,135,104.30 ft	Longitude: -105.016410		
Position Uncertainty: 0.0 ft	Slot Radius: 13.200 in	Grid Convergence: 0.31 °		

Well Qualls 3F-28H				
Well Position	+N/-S 0.0 ft	Northing: 1,312,988.08 ft	Latitude: 40.191530	
	+E/-W 0.0 ft	Easting: 3,135,124.14 ft	Longitude: -105.016340	
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 4,957.0 ft	

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/3/2013	8.70	66.77	52,778

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	90.00

Survey Program		Date 9/27/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
143.0	11,415.0	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	0.79	150.47	143.0	-0.9	0.5	0.5	0.55	0.55	
189.0	0.83	171.74	189.0	-1.5	0.7	0.7	0.66	0.09	
235.0	1.10	168.49	235.0	-2.2	0.8	0.8	0.60	0.59	
327.0	1.63	194.94	327.0	-4.4	0.7	0.7	0.88	0.58	
419.0	2.24	207.42	418.9	-7.2	-0.5	-0.5	0.80	0.66	
511.0	3.21	223.07	510.8	-10.7	-3.1	-3.1	1.32	1.05	
603.0	4.22	220.69	602.6	-15.1	-7.1	-7.1	1.11	1.10	
695.0	4.97	220.16	694.3	-20.8	-11.8	-11.8	0.82	0.82	
785.0	5.89	219.90	783.9	-27.3	-17.3	-17.3	1.02	1.02	
917.0	6.20	222.90	915.2	-37.7	-26.5	-26.5	0.34	0.23	
1,009.0	7.30	228.80	1,006.5	-45.2	-34.3	-34.3	1.41	1.20	
1,101.0	8.20	229.70	1,097.7	-53.3	-43.7	-43.7	0.99	0.98	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Qualls 3F-28H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4982.0ft
Site:	S28-T3N-R68W (Qualls)	MD Reference:	KB @ 4982.0ft
Well:	Qualls 3F-28H	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
1,193.0	8.70	221.80	1,188.7	-62.7	-53.3	-53.3	1.37	0.54	
1,285.0	9.90	210.80	1,279.5	-74.7	-62.0	-62.0	2.33	1.30	
1,377.0	8.80	204.20	1,370.3	-87.9	-69.0	-69.0	1.67	-1.20	
1,469.0	8.80	211.90	1,461.2	-100.3	-75.6	-75.6	1.28	0.00	
1,560.0	10.40	214.50	1,550.9	-113.0	-83.9	-83.9	1.82	1.76	
1,652.0	12.20	210.50	1,641.1	-128.2	-93.5	-93.5	2.13	1.96	
1,744.0	10.30	203.80	1,731.4	-144.1	-101.8	-101.8	2.50	-2.07	
1,836.0	10.90	207.30	1,821.8	-159.4	-109.1	-109.1	0.96	0.65	
1,928.0	10.50	205.20	1,912.2	-174.7	-116.6	-116.6	0.61	-0.43	
2,022.0	10.80	207.50	2,004.6	-190.2	-124.4	-124.4	0.55	0.32	
2,117.0	10.90	211.80	2,097.9	-205.8	-133.2	-133.2	0.86	0.11	
2,211.0	9.90	215.40	2,190.3	-219.9	-142.6	-142.6	1.27	-1.06	
2,306.0	11.20	215.20	2,283.7	-234.1	-152.6	-152.6	1.37	1.37	
2,401.0	10.40	215.00	2,377.0	-248.7	-162.9	-162.9	0.84	-0.84	
2,495.0	10.70	220.90	2,469.5	-262.2	-173.4	-173.4	1.19	0.32	
2,590.0	11.60	216.60	2,562.7	-276.5	-184.9	-184.9	1.29	0.95	
2,685.0	11.90	216.50	2,655.7	-292.1	-196.4	-196.4	0.32	0.32	
2,779.0	11.10	214.00	2,747.8	-307.4	-207.2	-207.2	1.00	-0.85	
2,874.0	9.90	213.30	2,841.2	-321.8	-216.8	-216.8	1.27	-1.26	
2,969.0	8.90	212.80	2,934.9	-334.8	-225.3	-225.3	1.06	-1.05	
3,063.0	6.40	210.00	3,028.1	-345.4	-231.9	-231.9	2.69	-2.66	
3,158.0	6.10	209.30	3,122.5	-354.4	-237.0	-237.0	0.33	-0.32	
3,253.0	3.60	213.90	3,217.2	-361.3	-241.1	-241.1	2.66	-2.63	
3,347.0	2.40	207.80	3,311.0	-365.5	-243.7	-243.7	1.32	-1.28	
3,442.0	1.40	142.90	3,406.0	-368.2	-243.9	-243.9	2.32	-1.05	
3,536.0	1.20	146.00	3,500.0	-369.9	-242.7	-242.7	0.23	-0.21	
3,631.0	1.00	138.40	3,595.0	-371.4	-241.6	-241.6	0.26	-0.21	
3,726.0	1.10	152.90	3,689.9	-372.8	-240.6	-240.6	0.30	0.11	
3,820.0	0.60	153.30	3,783.9	-374.0	-240.0	-240.0	0.53	-0.53	
3,915.0	0.30	135.20	3,878.9	-374.7	-239.6	-239.6	0.35	-0.32	
4,010.0	0.20	187.20	3,973.9	-375.0	-239.4	-239.4	0.25	-0.11	
4,104.0	0.40	256.50	4,067.9	-375.2	-239.8	-239.8	0.40	0.21	
4,199.0	0.90	279.40	4,162.9	-375.2	-240.8	-240.8	0.58	0.53	
4,294.0	1.10	317.00	4,257.9	-374.4	-242.2	-242.2	0.71	0.21	
4,388.0	1.50	312.80	4,351.9	-372.9	-243.7	-243.7	0.44	0.43	
4,483.0	0.40	141.80	4,446.9	-372.3	-244.4	-244.4	2.00	-1.16	
4,577.0	0.30	278.90	4,540.9	-372.5	-244.4	-244.4	0.69	-0.11	
4,672.0	0.30	276.90	4,635.9	-372.5	-244.9	-244.9	0.01	0.00	
4,861.0	0.50	270.90	4,824.9	-372.4	-246.2	-246.2	0.11	0.11	
4,956.0	0.80	265.50	4,919.9	-372.4	-247.3	-247.3	0.32	0.32	
5,050.0	1.00	273.90	5,013.8	-372.4	-248.8	-248.8	0.25	0.21	
5,145.0	0.70	42.90	5,108.8	-372.0	-249.2	-249.2	1.62	-0.32	
5,240.0	0.70	7.70	5,203.8	-371.0	-248.8	-248.8	0.45	0.00	
5,334.0	1.00	326.20	5,297.8	-369.7	-249.1	-249.1	0.71	0.32	
5,429.0	1.10	293.50	5,392.8	-368.7	-250.4	-250.4	0.63	0.11	
5,524.0	2.00	59.30	5,487.8	-367.4	-249.8	-249.8	2.94	0.95	
5,618.0	1.30	48.80	5,581.8	-365.9	-247.6	-247.6	0.81	-0.74	
5,713.0	0.90	5.20	5,676.7	-364.5	-246.7	-246.7	0.94	-0.42	
5,807.0	0.70	89.10	5,770.7	-363.7	-246.1	-246.1	1.15	-0.21	
5,902.0	0.30	75.90	5,865.7	-363.6	-245.3	-245.3	0.44	-0.42	
5,996.0	0.10	302.20	5,959.7	-363.5	-245.1	-245.1	0.40	-0.21	
6,091.0	0.50	320.50	6,054.7	-363.2	-245.4	-245.4	0.43	0.42	
6,185.0	0.70	309.10	6,148.7	-362.5	-246.2	-246.2	0.25	0.21	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Qualls 3F-28H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4982.0ft
Site:	S28-T3N-R68W (Qualls)	MD Reference:	KB @ 4982.0ft
Well:	Qualls 3F-28H	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
6,280.0	1.10	303.90	6,243.7	-361.6	-247.4	-247.4	0.43	0.42	
6,343.0	1.40	89.90	6,306.7	-361.3	-247.1	-247.1	3.80	0.48	
6,374.0	6.50	98.90	6,337.6	-361.5	-245.0	-245.0	16.52	16.45	
6,406.0	11.60	93.80	6,369.2	-362.0	-240.0	-240.0	16.12	15.94	
6,438.0	16.20	90.00	6,400.3	-362.3	-232.3	-232.3	14.65	14.37	
6,469.0	19.70	91.00	6,429.8	-362.3	-222.7	-222.7	11.33	11.29	
6,501.0	22.90	92.40	6,459.6	-362.7	-211.1	-211.1	10.12	10.00	
6,532.0	25.80	91.70	6,487.8	-363.2	-198.4	-198.4	9.40	9.35	
6,564.0	28.40	91.30	6,516.3	-363.5	-183.8	-183.8	8.14	8.12	
6,595.0	30.80	90.30	6,543.2	-363.7	-168.5	-168.5	7.90	7.74	
6,627.0	33.20	88.90	6,570.4	-363.6	-151.5	-151.5	7.85	7.50	
6,658.0	35.50	88.80	6,596.0	-363.3	-134.0	-134.0	7.42	7.42	
6,690.0	38.10	88.80	6,621.6	-362.9	-114.9	-114.9	8.12	8.12	
6,721.0	40.50	89.40	6,645.6	-362.6	-95.2	-95.2	7.84	7.74	
6,753.0	43.40	89.20	6,669.4	-362.3	-73.9	-73.9	9.07	9.06	
6,784.0	45.90	89.70	6,691.4	-362.1	-52.1	-52.1	8.14	8.06	
6,816.0	48.30	90.80	6,713.2	-362.2	-28.6	-28.6	7.91	7.50	
6,847.0	50.50	91.00	6,733.4	-362.6	-5.1	-5.1	7.11	7.10	
6,879.0	53.10	91.70	6,753.2	-363.2	20.0	20.0	8.30	8.12	
6,911.0	56.50	91.80	6,771.6	-364.0	46.2	46.2	10.63	10.62	
6,942.0	59.20	92.00	6,788.1	-364.8	72.4	72.4	8.73	8.71	
6,974.0	61.90	92.00	6,803.8	-365.8	100.2	100.2	8.44	8.44	
7,005.0	65.00	91.80	6,817.7	-366.7	128.0	128.0	10.02	10.00	
7,037.0	68.40	91.90	6,830.3	-367.7	157.3	157.3	10.63	10.62	
7,068.0	72.00	91.70	6,840.8	-368.6	186.5	186.5	11.63	11.61	
7,100.0	74.90	90.90	6,850.0	-369.3	217.1	217.1	9.37	9.06	
7,111.0	76.10	90.60	6,852.7	-369.4	227.8	227.8	11.22	10.91	
7,209.0	83.40	91.20	6,870.1	-370.9	324.1	324.1	7.47	7.45	
7,240.0	84.40	90.90	6,873.4	-371.5	354.9	354.9	3.37	3.23	
7,272.0	84.50	90.40	6,876.5	-371.9	386.8	386.8	1.59	0.31	
7,303.0	85.20	89.50	6,879.3	-371.8	417.7	417.7	3.67	2.26	
7,335.0	86.00	89.30	6,881.8	-371.5	449.6	449.6	2.58	2.50	
7,366.0	87.50	89.00	6,883.5	-371.0	480.5	480.5	4.93	4.84	
7,398.0	88.40	89.10	6,884.7	-370.5	512.5	512.5	2.83	2.81	
7,429.0	88.50	88.90	6,885.5	-370.0	543.5	543.5	0.72	0.32	
7,524.0	87.30	89.90	6,889.0	-369.0	638.4	638.4	1.64	-1.26	
7,619.0	88.00	90.30	6,892.9	-369.1	733.3	733.3	0.85	0.74	
7,713.0	87.20	90.70	6,896.8	-370.0	827.2	827.2	0.95	-0.85	
7,808.0	86.00	90.20	6,902.5	-370.7	922.1	922.1	1.37	-1.26	
7,903.0	86.30	89.70	6,908.8	-370.6	1,016.9	1,016.9	0.61	0.32	
7,997.0	90.00	89.10	6,911.9	-369.6	1,110.8	1,110.8	3.99	3.94	
8,092.0	90.40	88.50	6,911.5	-367.7	1,205.8	1,205.8	0.76	0.42	
8,186.0	91.40	91.00	6,910.1	-367.2	1,299.7	1,299.7	2.86	1.06	
8,281.0	88.10	91.30	6,910.5	-369.2	1,394.7	1,394.7	3.49	-3.47	
8,376.0	86.90	89.90	6,914.6	-370.1	1,489.6	1,489.6	1.94	-1.26	
8,470.0	87.90	88.90	6,918.9	-369.2	1,583.5	1,583.5	1.50	1.06	
8,565.0	88.10	88.40	6,922.2	-366.9	1,678.4	1,678.4	0.57	0.21	
8,659.0	88.10	90.20	6,925.3	-365.8	1,772.4	1,772.4	1.91	0.00	
8,754.0	88.50	90.80	6,928.1	-366.6	1,867.3	1,867.3	0.76	0.42	
8,849.0	88.40	91.00	6,930.7	-368.1	1,962.3	1,962.3	0.24	-0.11	
8,944.0	88.60	91.00	6,933.2	-369.8	2,057.2	2,057.2	0.21	0.21	
9,038.0	89.60	91.60	6,934.7	-371.9	2,151.2	2,151.2	1.24	1.06	
9,133.0	87.20	90.20	6,937.3	-373.4	2,246.1	2,246.1	2.92	-2.53	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Qualls 3F-28H
Project:	DJ Wattenberg	TVD Reference:	KB @ 4982.0ft
Site:	S28-T3N-R68W (Qualls)	MD Reference:	KB @ 4982.0ft
Well:	Qualls 3F-28H	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
9,227.0	87.30	90.70	6,941.8	-374.1	2,340.0	2,340.0	0.54	0.11	
9,322.0	86.80	90.30	6,946.7	-374.9	2,434.9	2,434.9	0.67	-0.53	
9,417.0	89.40	90.40	6,949.9	-375.5	2,529.8	2,529.8	2.74	2.74	
9,511.0	87.80	90.90	6,952.2	-376.6	2,623.8	2,623.8	1.78	-1.70	
9,606.0	88.60	91.70	6,955.1	-378.7	2,718.7	2,718.7	1.19	0.84	
9,701.0	87.20	91.40	6,958.6	-381.3	2,813.6	2,813.6	1.51	-1.47	
9,795.0	86.90	90.10	6,963.5	-382.5	2,907.5	2,907.5	1.42	-0.32	
9,890.0	86.40	87.30	6,969.0	-380.4	3,002.3	3,002.3	2.99	-0.53	
9,985.0	88.20	87.50	6,973.5	-376.1	3,097.1	3,097.1	1.91	1.89	
10,080.0	89.60	88.10	6,975.3	-372.4	3,192.0	3,192.0	1.60	1.47	
10,174.0	89.50	88.70	6,976.1	-369.8	3,285.9	3,285.9	0.65	-0.11	
10,269.0	88.70	89.20	6,977.5	-368.1	3,380.9	3,380.9	0.99	-0.84	
10,363.0	88.20	89.70	6,980.1	-367.2	3,474.9	3,474.9	0.75	-0.53	
10,458.0	88.00	90.10	6,983.2	-367.0	3,569.8	3,569.8	0.47	-0.21	
10,552.0	90.10	90.60	6,984.8	-367.6	3,663.8	3,663.8	2.30	2.23	
10,584.0	90.20	90.70	6,984.7	-367.9	3,695.8	3,695.8	0.44	0.31	
10,647.0	90.10	90.30	6,984.5	-368.5	3,758.8	3,758.8	0.65	-0.16	
10,742.0	88.40	88.50	6,985.8	-367.5	3,853.8	3,853.8	2.61	-1.79	
10,836.0	89.00	91.10	6,987.9	-367.2	3,947.7	3,947.7	2.84	0.64	
10,931.0	89.10	90.30	6,989.5	-368.3	4,042.7	4,042.7	0.85	0.11	
11,026.0	89.40	89.40	6,990.7	-368.1	4,137.7	4,137.7	1.00	0.32	
11,120.0	88.70	89.40	6,992.3	-367.1	4,231.7	4,231.7	0.74	-0.74	
11,215.0	86.90	88.20	6,995.9	-365.1	4,326.6	4,326.6	2.28	-1.89	
11,310.0	88.70	88.80	6,999.6	-362.6	4,421.5	4,421.5	2.00	1.89	
11,365.0	89.90	88.40	7,000.3	-361.3	4,476.5	4,476.5	2.30	2.18	Last Cathedral Survey @ 11,365' MD
11,415.0	89.90	88.40	7,000.4	-359.9	4,526.4	4,526.4	0.00	0.00	Projection to Bit @ 11,415'

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Qualls 3F-28H
Project: DJ Wattenberg	TVD Reference: KB @ 4982.0ft
Site: S28-T3N-R68W (Qualls)	MD Reference: KB @ 4982.0ft
Well: Qualls 3F-28H	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									
Qualls 3F-28H PBHL - actual wellpath misses target center by 118.1ft at 11415.0ft MD (7000.4 TVD, -359.9 N, 4526.4 E) - Point	0.00	0.00	6,888.0	-367.5	4,562.1	1,312,645.48	3,139,688.21	40.190520	-105.000010
Qualls 3F-28H TGT 2 - actual wellpath misses target center by 8.0ft at 9387.2ft MD (6949.3 TVD, -375.3 N, 2500.0 E) - Point	0.00	0.00	6,951.0	-367.5	2,500.0	1,312,634.23	3,137,626.11	40.190521	-105.007391
Qualls 3F-28H TGT 1 - actual wellpath misses target center by 9.5ft at 7786.4ft MD (6901.0 TVD, -370.6 N, 900.5 E) - Point	0.00	0.00	6,910.0	-367.5	900.0	1,312,625.51	3,136,026.13	40.190521	-105.013118
Qualls 3F-28H VP - actual wellpath misses target center by 7.5ft at 3837.5ft MD (3801.4 TVD, -374.2 N, -239.9 E) - Point	0.00	0.00	3,801.5	-367.5	-243.2	1,312,619.27	3,134,882.95	40.190521	-105.017211
Qualls 3F-28H PBHL P3 - actual wellpath misses target center by 36.0ft at 11415.0ft MD (7000.4 TVD, -359.9 N, 4526.4 E) - Point	0.00	0.00	7,011.0	-367.5	4,560.0	1,312,645.47	3,139,686.08	40.190520	-105.000018

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	Comment	
11,365.0	7,000.3	-361.3	4,476.5	Last Cathedral Survey @ 11,365' MD	
11,415.0	7,000.4	-359.9	4,526.4	Projection to Bit @ 11,415'	

Checked By: _____ Approved By: _____ Date: _____