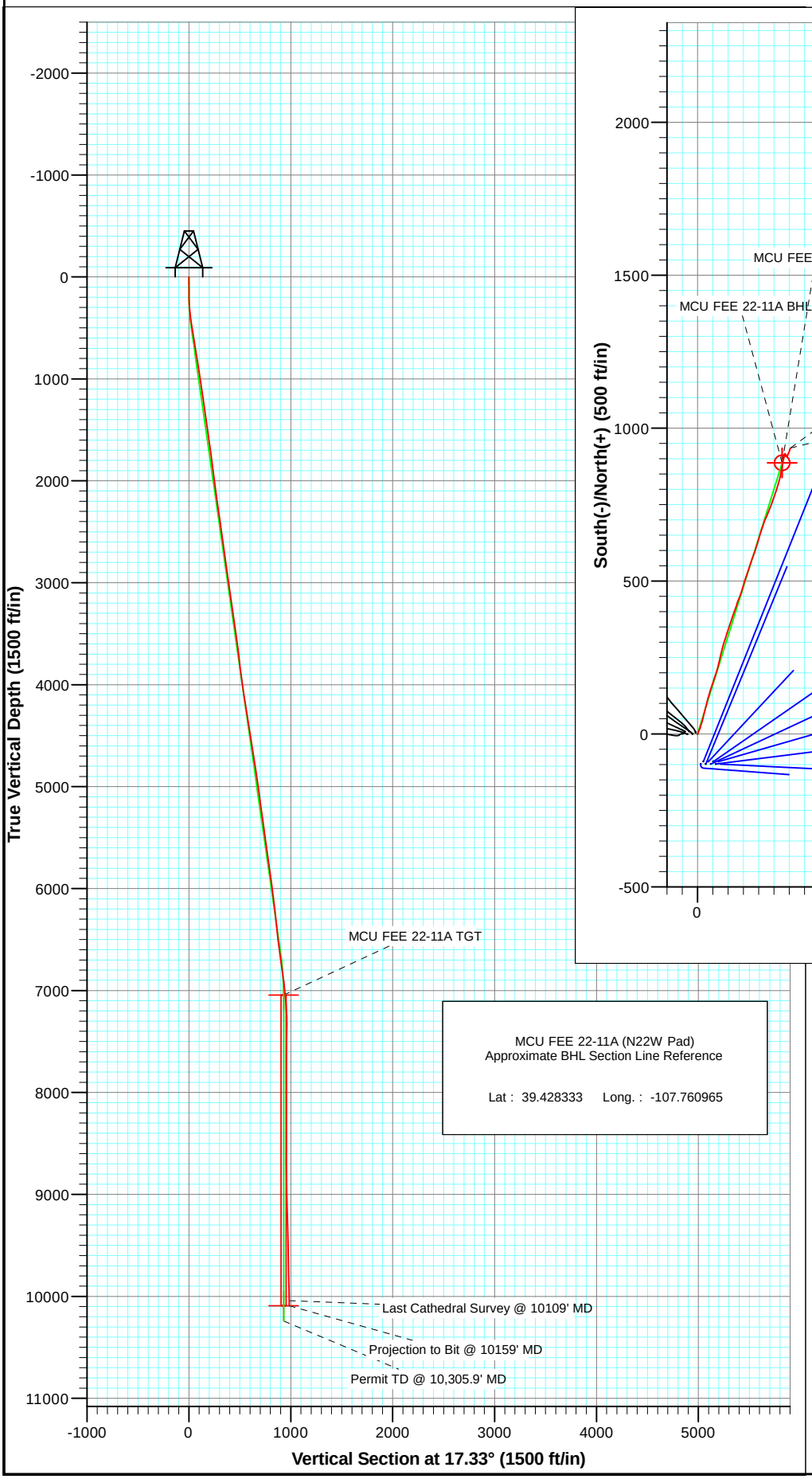
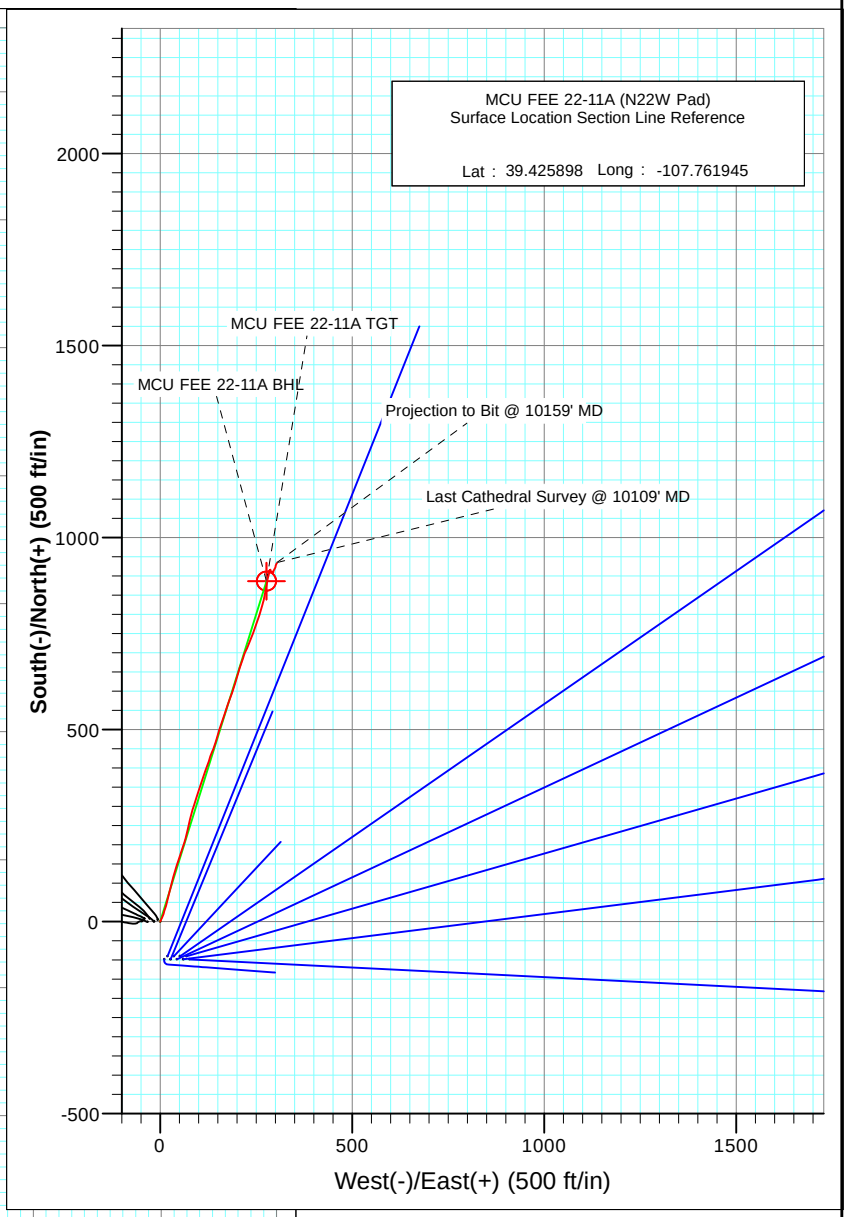
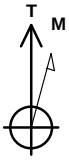
Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-11A (N22W Pad)
Wellbore: OH
Plan: FINAL

OH (MCU FEE 22-11A (





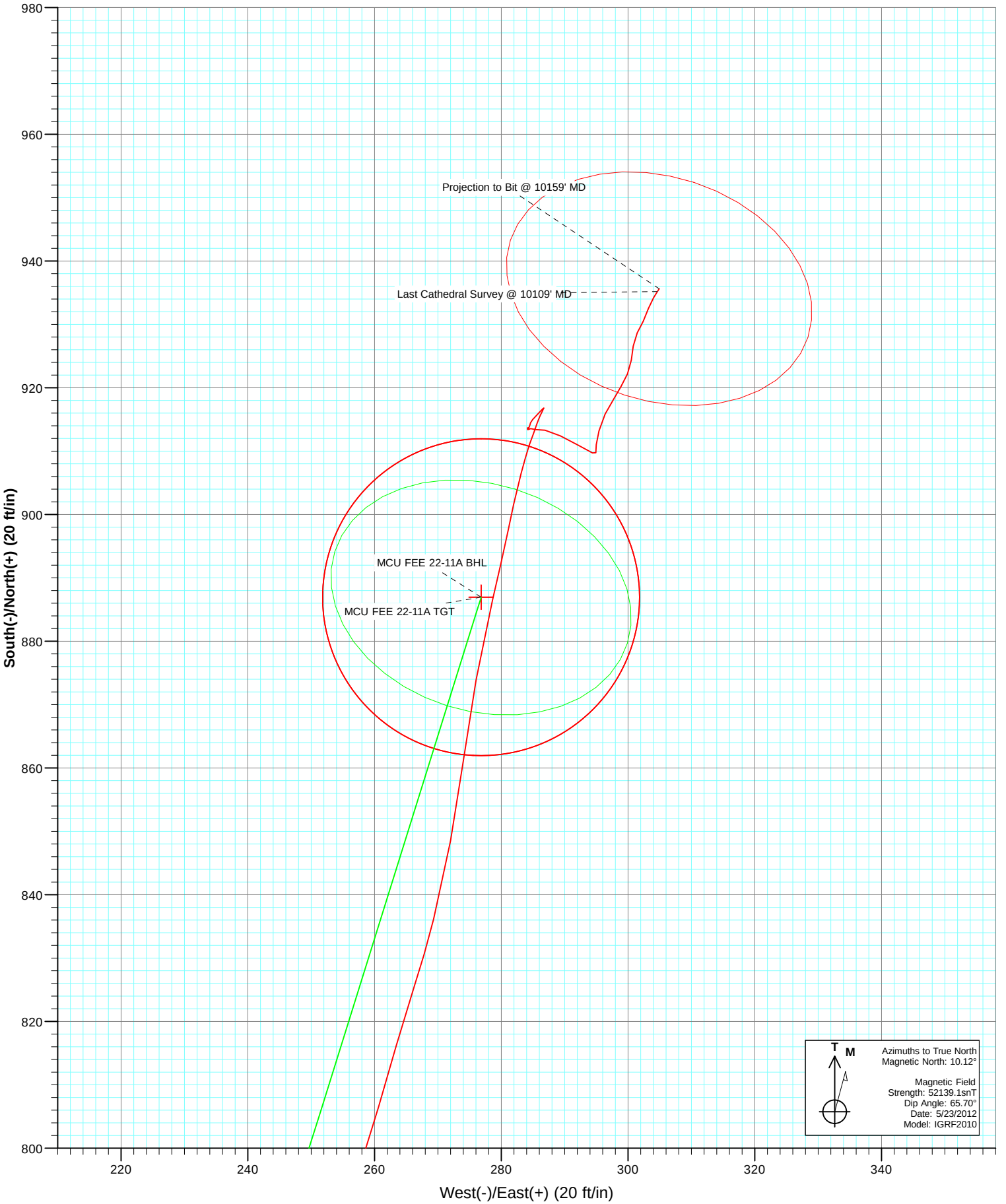


Azimuths to True North
Magnetic North: 10.12°

Magnetic Field
Strength: 52139.1snT
Dip Angle: 65.70°
Date: 5/23/2012
Model: IGRF2010

Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-11A (N22W Pad)
Wellbore: OH
Plan: Final

Final (MCU FEE 22-11A



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU FEE 22-11A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7048.0ft (Nabors M15)
Site:	N22W Pad	**MD Reference:**	KBE @ 7048.0ft (Nabors M15)
Well:	MCU FEE 22-11A (N22W Pad)	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Final	**Database:**	USA EDM 5000 Multi Users DB

Project Mamm Creek

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site N22W Pad

Site Position:		**Northing:**	1,587,870.64 ft	**Latitude:**	39.425629
From:	Lat/Long	**Easting:**	2,361,187.41 ft	**Longitude:**	-107.761673
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.43 °

Well MCU FEE 22-11A (N22W Pad)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,587,970.46 ft	**Latitude:**	39.425898
	+E/-W	0.0 ft	**Easting:**	2,361,113.04 ft	**Longitude:**	-107.761945
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	7,026.0 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/23/2012	10.12	65.70	52,139

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	17.33

Survey Program **Date** 6/7/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
154.0	10,159.0	Survey #1 (OH)	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	
154.0	0.60	22.90	154.0	0.7	0.3	0.8	0.39	0.39	
185.0	0.60	34.40	185.0	1.0	0.5	1.1	0.39	0.00	
215.0	1.40	16.40	215.0	1.5	0.7	1.6	2.83	2.67	
246.0	2.20	32.10	246.0	2.4	1.1	2.6	3.01	2.58	
277.0	3.30	24.20	276.9	3.7	1.8	4.1	3.74	3.55	
307.0	4.10	27.60	306.9	5.4	2.6	6.0	2.76	2.67	
399.0	7.80	20.60	398.4	14.2	6.3	15.4	4.09	4.02	
491.0	9.30	19.00	489.3	27.1	11.0	29.1	1.65	1.63	
583.0	9.00	16.40	580.2	41.0	15.4	43.7	0.56	-0.33	
674.0	9.20	14.60	670.0	54.9	19.3	58.1	0.38	0.22	
767.0	9.30	11.50	761.8	69.4	22.6	73.0	0.55	0.11	
859.0	9.10	10.90	852.6	83.9	25.5	87.6	0.24	-0.22	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU FEE 22-11A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7048.0ft (Nabors M15)
Site:	N22W Pad	**MD Reference:**	KBE @ 7048.0ft (Nabors M15)
Well:	MCU FEE 22-11A (N22W Pad)	**North Reference:**	True
Wellbore:	OH	**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
949.0	8.80	15.10	941.5	97.5	28.6	101.6	0.80	-0.33	
1,041.0	8.40	15.40	1,032.5	110.8	32.2	115.3	0.44	-0.43	
1,132.0	8.60	17.20	1,122.5	123.7	36.0	128.8	0.37	0.22	
1,223.0	8.30	18.90	1,212.5	136.4	40.2	142.2	0.43	-0.33	
1,316.0	7.90	17.50	1,304.6	148.8	44.3	155.3	0.48	-0.43	
1,411.0	7.90	17.00	1,398.7	161.3	48.1	168.3	0.07	0.00	
1,507.0	7.90	18.30	1,493.8	173.9	52.1	181.5	0.19	0.00	
1,530.0	8.10	18.60	1,516.6	176.9	53.1	184.7	0.89	0.87	
1,638.0	8.50	19.80	1,623.4	191.6	58.3	200.3	0.40	0.37	
1,734.0	8.20	18.40	1,718.4	204.8	62.8	214.2	0.38	-0.31	
1,829.0	6.80	11.20	1,812.6	216.7	66.1	226.6	1.77	-1.47	
1,925.0	7.30	14.00	1,907.9	228.2	68.6	238.3	0.63	0.52	
2,020.0	7.50	13.30	2,002.1	240.1	71.5	250.5	0.23	0.21	
2,115.0	7.60	10.30	2,096.2	252.3	74.1	263.0	0.43	0.11	
2,211.0	7.90	14.30	2,191.4	265.0	76.8	275.8	0.64	0.31	
2,306.0	8.10	19.10	2,285.5	277.6	80.6	289.1	0.73	0.21	
2,401.0	7.70	15.30	2,379.5	290.1	84.5	302.1	0.69	-0.42	
2,496.0	8.40	19.40	2,473.6	302.8	88.5	315.4	0.95	0.74	
2,592.0	8.50	13.40	2,568.6	316.3	92.5	329.5	0.92	0.10	
2,687.0	7.80	18.70	2,662.6	329.2	96.2	342.9	1.08	-0.74	
2,782.0	7.70	20.50	2,756.7	341.3	100.5	355.7	0.28	-0.11	
2,877.0	7.50	17.90	2,850.9	353.2	104.6	368.3	0.42	-0.21	
2,973.0	7.70	15.70	2,946.1	365.3	108.3	381.0	0.37	0.21	
3,068.0	8.40	21.00	3,040.1	377.9	112.5	394.3	1.07	0.74	
3,163.0	8.70	20.00	3,134.1	391.2	117.4	408.4	0.35	0.32	
3,258.0	8.70	19.90	3,228.0	404.7	122.3	422.7	0.02	0.00	
3,353.0	7.90	17.20	3,322.0	417.7	126.7	436.4	0.94	-0.84	
3,449.0	8.40	19.30	3,417.0	430.6	131.0	450.0	0.61	0.52	
3,544.0	7.80	22.80	3,511.1	443.1	135.8	463.4	0.82	-0.63	
3,640.0	6.90	18.80	3,606.3	454.5	140.1	475.6	1.08	-0.94	
3,735.0	7.10	18.30	3,700.6	465.5	143.8	487.2	0.22	0.21	
3,830.0	6.90	17.40	3,794.9	476.5	147.4	498.8	0.24	-0.21	
3,926.0	6.70	15.50	3,890.2	487.4	150.6	510.2	0.31	-0.21	
4,021.0	7.80	14.70	3,984.4	499.0	153.7	522.1	1.16	1.16	
4,117.0	9.00	20.70	4,079.4	512.3	158.0	536.1	1.55	1.25	
4,212.0	9.40	18.80	4,173.2	526.6	163.1	551.3	0.53	0.42	
4,308.0	9.20	19.10	4,267.9	541.3	168.2	566.8	0.21	-0.21	
4,404.0	8.30	15.20	4,362.8	555.2	172.5	581.4	1.12	-0.94	
4,499.0	9.10	21.60	4,456.7	568.8	177.1	595.8	1.32	0.84	
4,593.0	8.80	20.40	4,549.6	582.5	182.3	610.4	0.38	-0.32	
4,689.0	9.20	19.40	4,644.4	596.6	187.4	625.4	0.45	0.42	
4,784.0	9.00	18.70	4,738.2	610.8	192.3	640.4	0.24	-0.21	
4,880.0	8.40	12.80	4,833.1	624.8	196.3	654.9	1.12	-0.62	
4,975.0	8.70	16.20	4,927.0	638.4	199.8	669.0	0.62	0.32	
5,070.0	7.90	19.50	5,021.0	651.5	204.0	682.7	0.98	-0.84	
5,166.0	7.70	19.90	5,116.1	663.7	208.4	695.7	0.22	-0.21	
5,261.0	7.80	17.80	5,210.3	675.9	212.5	708.5	0.32	0.11	
5,357.0	7.30	15.50	5,305.4	687.9	216.2	721.1	0.61	-0.52	
5,453.0	8.40	24.40	5,400.5	700.2	220.7	734.2	1.70	1.15	
5,548.0	7.80	23.20	5,494.6	712.5	226.1	747.5	0.66	-0.63	
5,643.0	8.10	21.90	5,588.7	724.6	231.1	760.5	0.37	0.32	
5,738.0	7.80	21.00	5,682.8	736.8	235.9	773.7	0.34	-0.32	
5,833.0	8.00	23.50	5,776.9	748.9	240.9	786.7	0.42	0.21	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU FEE 22-11A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7048.0ft (Nabors M15)
Site:	N22W Pad	**MD Reference:**	KBE @ 7048.0ft (Nabors M15)
Well:	MCU FEE 22-11A (N22W Pad)	**North Reference:**	True
Wellbore:	OH	**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
5,929.0	7.80	20.60	5,872.0	761.1	245.8	799.8	0.46	-0.21	
6,023.0	7.60	19.50	5,965.1	773.0	250.2	812.4	0.26	-0.21	
6,119.0	7.30	16.50	6,060.3	784.8	254.0	824.8	0.51	-0.31	
6,214.0	6.90	17.30	6,154.6	796.0	257.4	836.6	0.43	-0.42	
6,309.0	6.30	16.80	6,248.9	806.5	260.6	847.5	0.63	-0.63	
6,404.0	6.00	15.30	6,343.4	816.2	263.4	857.7	0.36	-0.32	
6,499.0	5.90	18.50	6,437.9	825.7	266.3	867.5	0.36	-0.11	
6,594.0	7.30	14.10	6,532.3	836.1	269.3	878.4	1.57	1.47	
6,689.0	8.00	10.40	6,626.4	848.5	272.0	891.0	0.90	0.74	
6,781.0	7.80	7.80	6,717.5	861.0	274.0	903.5	0.45	-0.22	
6,876.0	8.00	10.20	6,811.6	873.9	276.0	916.4	0.41	0.21	
6,971.0	7.70	13.10	6,905.7	886.6	278.6	929.3	0.52	-0.32	
7,067.0	5.80	11.90	7,001.1	897.6	281.1	940.6	1.98	-1.98	
7,107.0	5.80	12.40	7,040.9	901.5	282.0	944.6	0.13	0.00	
7,107.7	5.79	12.42	7,041.6	901.6	282.0	944.7	1.68	-1.64	**MCU FEE 22-11A TGT**
7,162.0	4.90	14.70	7,095.6	906.5	283.2	949.7	1.68	-1.64	
7,193.0	4.10	15.50	7,126.5	908.9	283.8	952.2	2.59	-2.58	
7,224.0	3.70	18.60	7,157.5	910.9	284.4	954.3	1.46	-1.29	
7,257.0	3.30	22.20	7,190.4	912.8	285.1	956.3	1.38	-1.21	
7,290.0	2.70	16.70	7,223.4	914.4	285.7	958.0	2.01	-1.82	
7,322.0	1.80	28.80	7,255.3	915.6	286.1	959.2	3.17	-2.81	
7,352.0	1.40	21.40	7,285.3	916.3	286.5	960.1	1.50	-1.33	
7,386.0	0.40	37.40	7,319.3	916.8	286.7	960.6	3.00	-2.94	
7,417.0	1.10	227.80	7,350.3	916.7	286.6	960.4	4.82	2.26	
7,448.0	1.40	221.80	7,381.3	916.2	286.1	959.8	1.05	0.97	
7,543.0	0.60	226.10	7,476.3	915.0	285.0	958.3	0.85	-0.84	
7,638.0	0.20	173.30	7,571.3	914.5	284.6	957.8	0.53	-0.42	
7,733.0	0.40	209.10	7,666.3	914.0	284.5	957.3	0.28	0.21	
7,828.0	0.10	156.30	7,761.3	913.7	284.4	956.9	0.37	-0.32	
7,923.0	0.10	285.40	7,856.3	913.6	284.3	956.8	0.19	0.00	
8,019.0	0.10	301.70	7,952.3	913.7	284.2	956.8	0.03	0.00	
8,114.0	0.40	163.10	8,047.3	913.4	284.2	956.6	0.50	0.32	
8,209.0	0.40	1.70	8,142.3	913.4	284.3	956.6	0.83	0.00	
8,305.0	0.50	120.00	8,238.3	913.5	284.7	956.9	0.81	0.10	
8,400.0	0.50	80.60	8,333.3	913.4	285.4	957.0	0.35	0.00	
8,495.0	1.30	98.30	8,428.3	913.3	286.9	957.3	0.88	0.84	
8,590.0	1.90	118.90	8,523.2	912.4	289.3	957.2	0.87	0.63	
8,685.0	2.00	115.90	8,618.2	910.9	292.2	956.6	0.15	0.11	
8,780.0	1.00	123.90	8,713.1	909.7	294.4	956.1	1.07	-1.05	
8,874.0	0.60	342.10	8,807.1	909.7	294.9	956.3	1.61	-0.43	
8,970.0	1.00	15.70	8,903.1	911.0	295.0	957.5	0.63	0.42	
9,065.0	1.70	8.70	8,998.1	913.2	295.4	959.8	0.76	0.74	
9,161.0	1.70	31.00	9,094.1	915.8	296.4	962.6	0.68	0.00	
9,256.0	1.50	28.40	9,189.0	918.1	297.7	965.1	0.22	-0.21	
9,352.0	1.40	32.10	9,285.0	920.2	298.9	967.5	0.14	-0.10	
9,446.0	1.30	22.10	9,379.0	922.2	299.9	969.7	0.27	-0.11	
9,542.0	1.40	9.50	9,474.9	924.4	300.5	971.9	0.33	0.10	
9,636.0	1.30	5.40	9,568.9	926.6	300.8	974.1	0.15	-0.11	
9,731.0	1.40	28.20	9,663.9	928.7	301.5	976.3	0.57	0.11	
9,826.0	1.10	24.50	9,758.9	930.5	302.4	978.4	0.33	-0.32	
9,922.0	1.50	21.10	9,854.8	932.5	303.2	980.5	0.42	0.42	
10,017.0	0.80	33.90	9,949.8	934.2	304.1	982.4	0.78	-0.74	
10,109.0	0.60	30.60	10,041.8	935.2	304.7	983.5	0.22	-0.22	**Last Cathedral Survey @ 10109' MD**

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU FEE 22-11A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7048.0ft (Nabors M15)
Site:	N22W Pad	**MD Reference:**	KBE @ 7048.0ft (Nabors M15)
Well:	MCU FEE 22-11A (N22W Pad)	**North Reference:**	True
Wellbore:	OH	**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
10,157.6	0.60	30.60	10,090.4	935.6	304.9	984.0	0.00	0.00	**MCU FEE 22-11A BHL**
10,159.0	0.60	30.60	10,091.8	935.6	304.9	984.0	0.00	0.00	**Projection to Bit @ 10159' MD**

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
MCU FEE 22-11A TGT	0.00	0.00	7,043.0	886.9	276.8	1,588,850.25	2,361,411.86	39.428333	-107.760965
- actual wellpath misses target center by 15.6ft at 7107.6ft MD (7041.4 TVD, 901.6 N, 282.0 E)									
- Point									
MCU FEE 22-11A BHL	0.00	0.00	10,091.0	886.9	276.8	1,588,850.25	2,361,411.86	39.428333	-107.760965
- actual wellpath misses target center by 56.2ft at 10157.6ft MD (10090.4 TVD, 935.6 N, 304.9 E)									
- Circle (radius 25.0)									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
10,109.0	10,041.8	935.2	304.7	Last Cathedral Survey @ 10109' MD
10,159.0	10,091.8	935.6	304.9	Projection to Bit @ 10159' MD

Checked By: _____ Approved By: _____ Date: _____