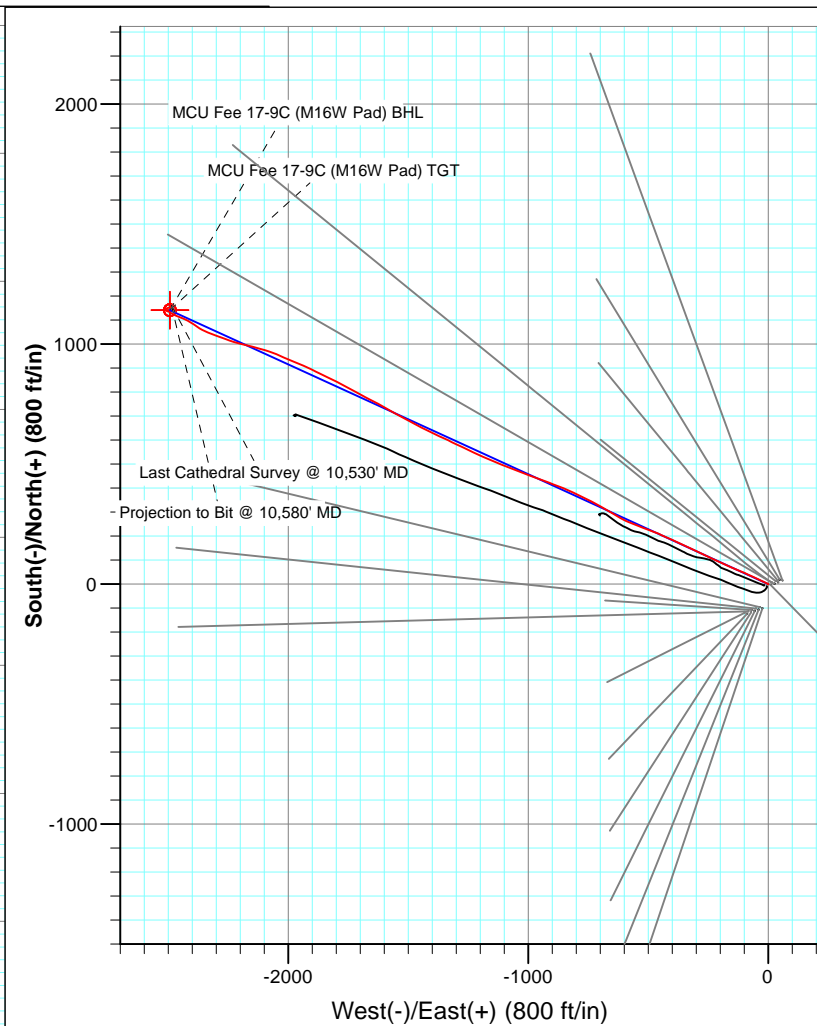
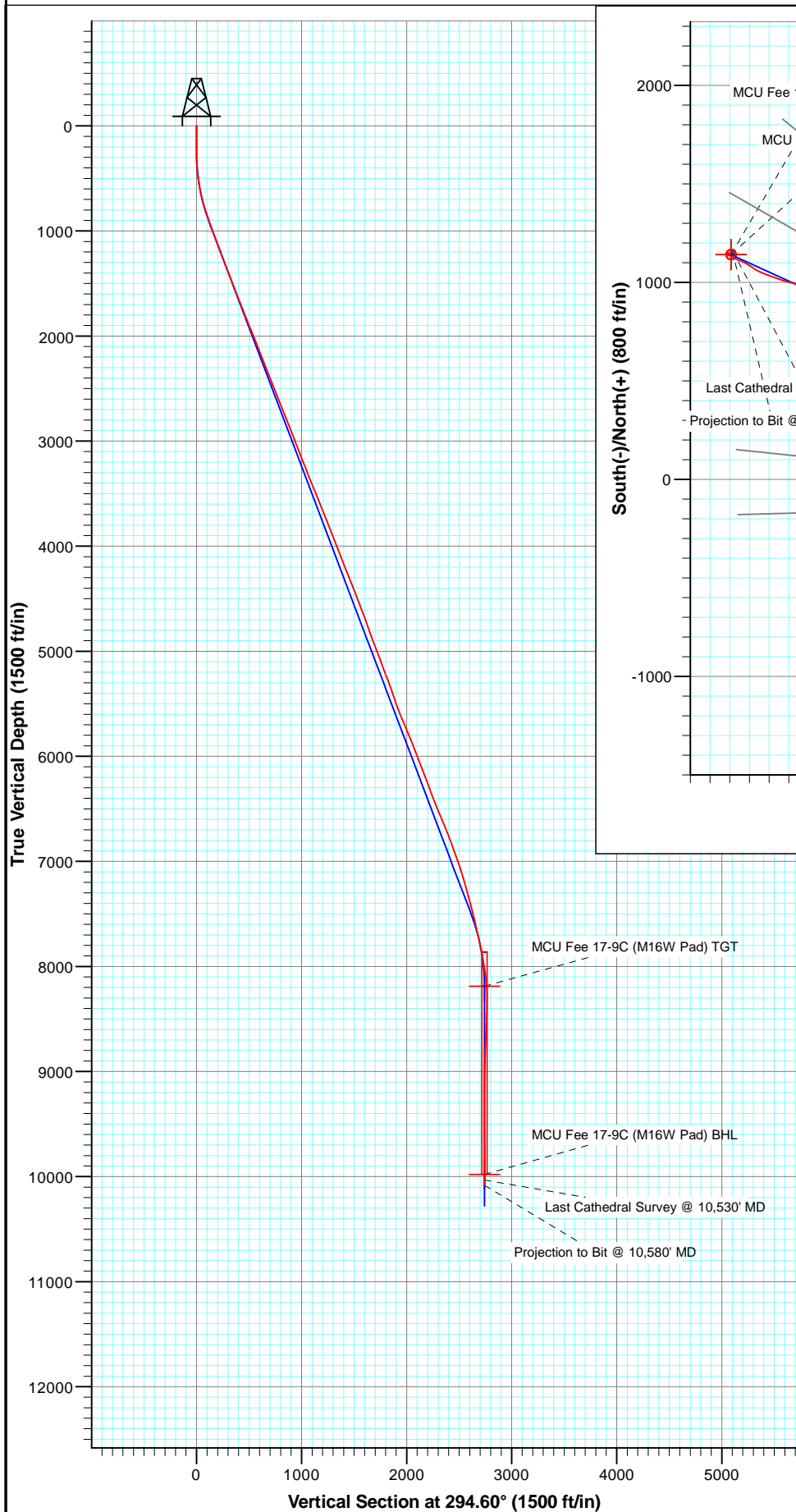




Project: Mamm Creek
Site: M16W Pad (SWSW S16-T7S-R93W)
Well: MCU Fee 17-9C (M16W Pad)
Wellbore: DD
Plan: FINAL

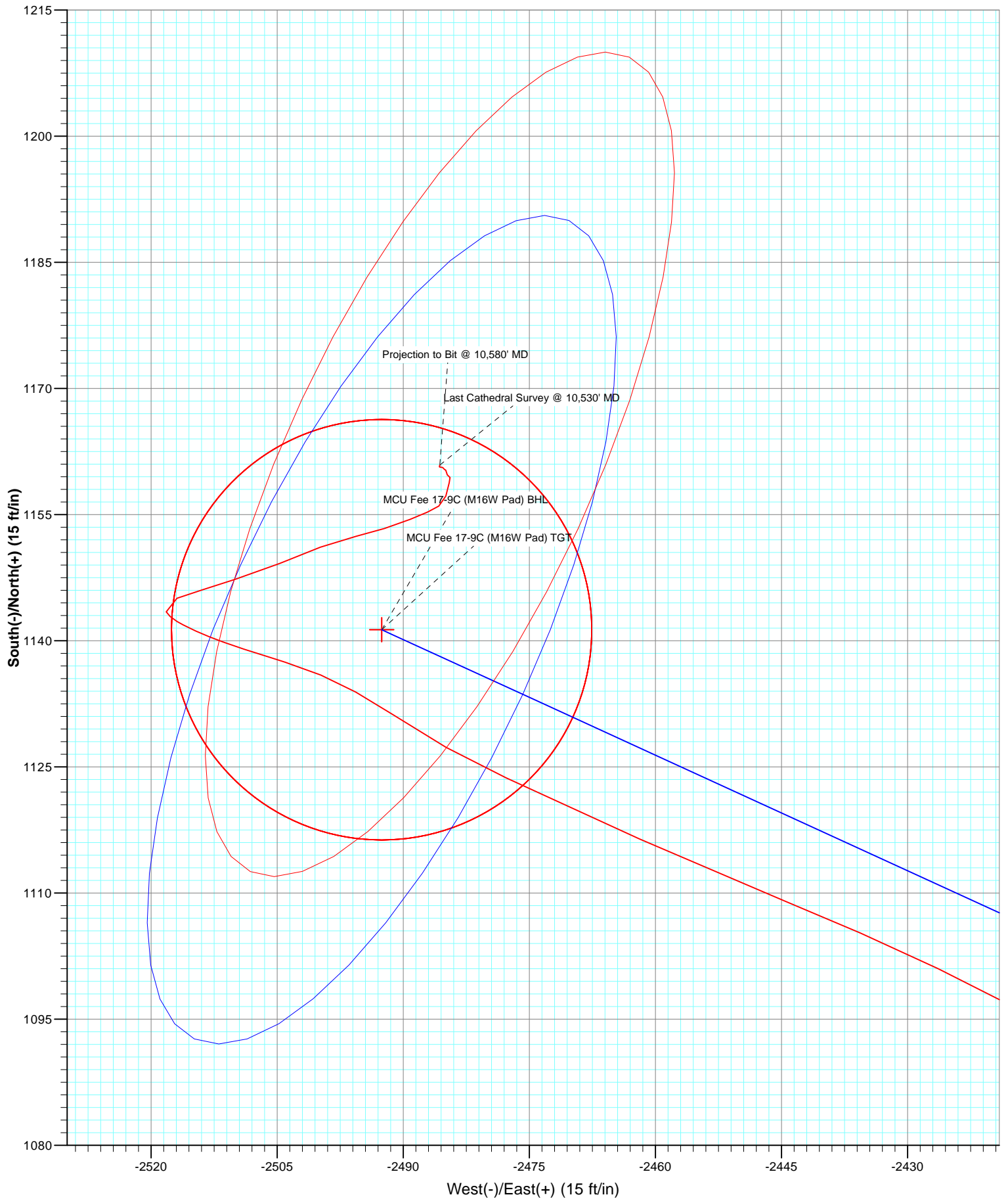


Azimuths to True North
Magnetic North: 10.10°

Magnetic Field
Strength: 52115.5nT
Dip Angle: 65.70°
Date: 8/10/2012
Model: IGRF2010



Project: Mamm Creek
Site: M16W Pad (SWSW S16-T7S-R93W)
Well: MCU Fee 17-9C (M16W Pad)
Wellbore: DD
Plan: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU Fee 17-9C (M16W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7903.0ft (Patterson #308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	MD Reference:	KBE @ 7903.0ft (Patterson #308)
Well:	MCU Fee 17-9C (M16W Pad)	North Reference:	True
Wellbore:	DD	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	M16W Pad (SWSW S16-T7S-R93W)			
Site Position:		Northing:	1,593,196.15 ft	Latitude: 39.439834
From:	Lat/Long	Easting:	2,355,193.71 ft	Longitude: -107.783358
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -1.44 °

Well	MCU Fee 17-9C (M16W Pad)			
Well Position	+N/-S	0.0 ft	Northing:	1,593,312.68 ft
	+E/-W	0.0 ft	Easting:	2,355,267.84 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 7,881.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/10/2012	10.10	65.70	52,115

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	294.60

Survey Program	Date	8/22/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
206.0	10,580.0	Survey #1 (DD)	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	
206.0	0.10	187.80	206.0	-0.2	0.0	-0.1	0.05	0.05	
237.0	0.30	76.70	237.0	-0.2	0.1	-0.1	1.12	0.65	
267.0	0.60	345.50	267.0	0.0	0.1	-0.1	2.25	1.00	
298.0	0.80	306.20	298.0	0.3	-0.1	0.2	1.64	0.65	
328.0	2.20	300.80	328.0	0.7	-0.8	1.0	4.69	4.67	
359.0	2.90	298.30	359.0	1.4	-2.0	2.4	2.29	2.26	
389.0	3.80	299.90	388.9	2.2	-3.5	4.1	3.02	3.00	
420.0	5.10	295.20	419.8	3.3	-5.7	6.5	4.35	4.19	
450.0	6.10	291.40	449.7	4.5	-8.4	9.5	3.55	3.33	
480.0	7.00	295.50	479.5	5.8	-11.5	12.9	3.38	3.00	
511.0	8.20	295.40	510.2	7.6	-15.2	17.0	3.87	3.87	
541.0	8.80	295.30	539.9	9.5	-19.2	21.4	2.00	2.00	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU Fee 17-9C (M16W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7903.0ft (Patterson #308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	MD Reference:	KBE @ 7903.0ft (Patterson #308)
Well:	MCU Fee 17-9C (M16W Pad)	North Reference:	True
Wellbore:	DD	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
571.0	10.00	297.20	569.5	11.7	-23.6	26.3	4.13	4.00	
663.0	13.40	293.90	659.5	19.6	-40.4	44.9	3.77	3.70	
755.0	15.70	295.70	748.6	29.4	-61.4	68.1	2.55	2.50	
846.0	18.10	294.80	835.6	40.6	-85.3	94.5	2.65	2.64	
937.0	19.80	293.10	921.7	52.6	-112.3	124.0	1.96	1.87	
1,032.0	20.40	293.20	1,010.9	65.4	-142.4	156.7	0.63	0.63	
1,095.0	20.40	294.00	1,070.0	74.2	-162.5	178.6	0.44	0.00	
1,164.0	20.50	291.40	1,134.6	83.5	-184.7	202.7	1.32	0.14	
1,255.0	21.00	296.00	1,219.7	96.5	-214.2	234.9	1.87	0.55	
1,342.0	20.00	295.50	1,301.2	109.7	-241.7	265.4	1.17	-1.15	
1,439.0	20.90	296.10	1,392.1	124.5	-272.2	299.3	0.95	0.93	
1,530.0	21.90	294.70	1,476.8	138.7	-302.2	332.5	1.23	1.10	
1,622.0	21.10	296.40	1,562.4	153.3	-332.6	366.2	1.10	-0.87	
1,713.0	22.60	293.60	1,646.9	167.5	-363.3	400.1	2.01	1.65	
1,805.0	21.60	294.20	1,732.1	181.6	-394.9	434.7	1.11	-1.09	
1,896.0	20.70	295.80	1,817.0	195.4	-424.7	467.5	1.17	-0.99	
1,988.0	22.50	292.00	1,902.5	209.1	-455.7	501.3	2.48	1.96	
2,079.0	22.50	290.70	1,986.6	221.8	-488.1	536.1	0.55	0.00	
2,171.0	21.30	290.90	2,072.0	234.0	-520.2	570.3	1.31	-1.30	
2,262.0	21.50	291.20	2,156.7	245.9	-551.2	603.5	0.25	0.22	
2,354.0	22.10	292.90	2,242.1	258.7	-582.8	637.6	0.95	0.65	
2,445.0	21.10	300.10	2,326.7	273.6	-612.8	671.0	3.11	-1.10	
2,537.0	22.00	300.50	2,412.3	290.6	-641.9	704.7	0.99	0.98	
2,628.0	20.90	301.50	2,497.0	307.8	-670.5	737.7	1.27	-1.21	
2,720.0	22.40	298.60	2,582.5	324.7	-699.8	771.5	2.00	1.63	
2,812.0	21.50	297.60	2,667.9	340.9	-730.2	805.8	1.06	-0.98	
2,903.0	22.80	296.50	2,752.1	356.5	-760.7	840.1	1.50	1.43	
2,995.0	21.60	296.10	2,837.3	371.9	-791.9	874.9	1.31	-1.30	
3,086.0	21.30	293.80	2,922.0	386.0	-822.1	908.1	0.98	-0.33	
3,178.0	19.80	291.80	3,008.2	398.5	-851.8	940.4	1.80	-1.63	
3,269.0	20.90	291.80	3,093.5	410.3	-881.2	972.0	1.21	1.21	
3,361.0	22.70	290.00	3,178.9	422.4	-913.1	1,006.1	2.09	1.96	
3,452.0	21.90	291.70	3,263.1	434.7	-945.4	1,040.5	1.13	-0.88	
3,544.0	21.30	289.20	3,348.6	446.6	-977.1	1,074.3	1.19	-0.65	
3,635.0	22.90	291.20	3,432.9	458.4	-1,009.2	1,108.4	1.94	1.76	
3,727.0	21.40	289.70	3,518.1	470.5	-1,041.7	1,143.0	1.74	-1.63	
3,818.0	22.50	291.00	3,602.6	482.4	-1,073.6	1,177.0	1.32	1.21	
3,909.0	22.80	292.80	3,686.5	495.4	-1,106.1	1,212.0	0.83	0.33	
4,001.0	21.70	294.20	3,771.7	509.3	-1,138.1	1,246.8	1.33	-1.20	
4,092.0	20.40	291.40	3,856.6	522.0	-1,168.2	1,279.5	1.81	-1.43	
4,182.0	20.70	295.50	3,940.9	534.6	-1,197.1	1,311.0	1.63	0.33	
4,275.0	21.20	294.50	4,027.7	548.6	-1,227.3	1,344.3	0.66	0.54	
4,367.0	21.40	296.50	4,113.5	563.0	-1,257.4	1,377.7	0.82	0.22	
4,458.0	22.30	294.00	4,197.9	577.4	-1,288.1	1,411.5	1.42	0.99	
4,549.0	21.20	297.00	4,282.4	591.9	-1,318.5	1,445.2	1.72	-1.21	
4,641.0	22.10	294.30	4,368.0	606.6	-1,349.1	1,479.2	1.46	0.98	
4,733.0	20.70	294.80	4,453.6	620.5	-1,379.6	1,512.7	1.53	-1.52	
4,824.0	22.10	296.80	4,538.3	635.0	-1,409.5	1,545.9	1.73	1.54	
4,916.0	20.90	295.80	4,623.9	650.0	-1,439.7	1,579.6	1.36	-1.30	
5,007.0	19.60	298.10	4,709.3	664.2	-1,467.8	1,611.1	1.67	-1.43	
5,099.0	18.90	296.80	4,796.2	678.2	-1,494.7	1,641.4	0.89	-0.76	
5,190.0	20.30	299.20	4,881.9	692.5	-1,521.7	1,671.9	1.77	1.54	
5,282.0	21.70	300.50	4,967.8	709.0	-1,550.3	1,704.7	1.60	1.52	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU Fee 17-9C (M16W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7903.0ft (Patterson #308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	MD Reference:	KBE @ 7903.0ft (Patterson #308)
Well:	MCU Fee 17-9C (M16W Pad)	North Reference:	True
Wellbore:	DD	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
5,374.0	20.50	299.10	5,053.6	725.4	-1,579.0	1,737.7	1.41	-1.30	
5,465.0	19.70	300.00	5,139.1	740.9	-1,606.2	1,768.8	0.94	-0.88	
5,557.0	22.00	296.80	5,225.0	756.4	-1,635.0	1,801.5	2.79	2.50	
5,648.0	20.70	297.20	5,309.8	771.4	-1,664.5	1,834.6	1.44	-1.43	
5,740.0	19.00	299.70	5,396.3	786.3	-1,692.0	1,865.7	2.07	-1.85	
5,831.0	18.60	298.80	5,482.5	800.6	-1,717.6	1,895.0	0.54	-0.44	
5,923.0	20.40	297.80	5,569.2	815.2	-1,744.6	1,925.6	1.99	1.96	
6,014.0	23.40	297.10	5,653.6	830.8	-1,774.8	1,959.5	3.31	3.30	
6,106.0	23.10	297.10	5,738.2	847.3	-1,807.1	1,995.8	0.33	-0.33	
6,197.0	22.60	295.50	5,822.0	863.0	-1,838.8	2,031.1	0.88	-0.55	
6,289.0	21.70	295.70	5,907.2	878.0	-1,870.0	2,065.8	0.98	-0.98	
6,380.0	20.50	297.70	5,992.1	892.7	-1,899.3	2,098.5	1.54	-1.32	
6,472.0	20.70	293.40	6,078.2	906.6	-1,928.5	2,130.9	1.66	0.22	
6,564.0	21.80	292.10	6,164.0	919.5	-1,959.3	2,164.2	1.30	1.20	
6,655.0	20.20	292.60	6,248.9	931.9	-1,989.4	2,196.8	1.77	-1.76	
6,747.0	20.70	294.50	6,335.1	944.8	-2,018.9	2,228.9	0.90	0.54	
6,839.0	20.80	292.00	6,421.2	957.6	-2,048.8	2,261.5	0.97	0.11	
6,930.0	22.60	288.40	6,505.7	969.2	-2,080.4	2,295.0	2.46	1.98	
7,022.0	23.30	286.30	6,590.4	979.9	-2,114.6	2,330.6	1.17	0.76	
7,114.0	22.90	283.70	6,675.1	989.2	-2,149.5	2,366.2	1.19	-0.43	
7,205.0	21.50	282.80	6,759.3	997.1	-2,183.0	2,399.9	1.58	-1.54	
7,297.0	20.10	287.30	6,845.3	1,005.5	-2,214.5	2,432.1	2.31	-1.52	
7,389.0	20.00	288.30	6,931.8	1,015.2	-2,244.5	2,463.4	0.39	-0.11	
7,480.0	19.20	290.20	7,017.5	1,025.2	-2,273.3	2,493.8	1.12	-0.88	
7,572.0	17.60	290.70	7,104.8	1,035.4	-2,300.5	2,522.8	1.75	-1.74	
7,663.0	15.80	290.40	7,191.9	1,044.6	-2,325.0	2,548.8	1.98	-1.98	
7,755.0	15.10	293.80	7,280.6	1,053.8	-2,347.7	2,573.3	1.24	-0.76	
7,847.0	15.80	303.70	7,369.3	1,065.6	-2,369.1	2,597.7	2.96	0.76	
7,938.0	15.10	304.90	7,457.0	1,079.2	-2,389.2	2,621.6	0.85	-0.77	
8,030.0	13.20	300.10	7,546.2	1,091.3	-2,408.1	2,643.8	2.43	-2.07	
8,121.0	13.10	295.60	7,634.8	1,101.0	-2,426.4	2,664.5	1.13	-0.11	
8,213.0	12.10	291.80	7,724.6	1,109.1	-2,444.7	2,684.5	1.41	-1.09	
8,304.0	11.60	294.50	7,813.7	1,116.4	-2,461.9	2,703.2	0.82	-0.55	
8,396.0	10.30	294.80	7,904.0	1,123.7	-2,477.8	2,720.7	1.41	-1.41	
8,487.0	9.70	303.90	7,993.6	1,131.4	-2,491.5	2,736.4	1.86	-0.66	
8,575.0	8.70	286.80	8,080.5	1,137.5	-2,504.1	2,750.3	3.29	-1.14	
8,667.0	4.70	292.90	8,171.9	1,140.9	-2,514.2	2,760.9	4.41	-4.35	
8,682.2	4.11	295.08	8,187.0	1,141.4	-2,515.3	2,762.1	4.01	-3.86	MCU Fee 17-9C (M16W Pad) TGT
8,758.0	1.50	331.60	8,262.7	1,143.4	-2,518.2	2,765.6	4.01	-3.45	
8,850.0	2.40	73.30	8,354.7	1,145.0	-2,516.9	2,765.1	3.34	0.98	
8,941.0	1.50	68.80	8,445.6	1,146.0	-2,514.0	2,762.9	1.00	-0.99	
9,033.0	3.70	73.60	8,537.5	1,147.3	-2,510.0	2,759.8	2.40	2.39	
9,124.0	3.40	66.80	8,628.4	1,149.2	-2,504.7	2,755.8	0.57	-0.33	
9,215.0	3.20	70.00	8,719.2	1,151.1	-2,499.9	2,752.1	0.30	-0.22	
9,307.0	2.30	77.30	8,811.1	1,152.4	-2,495.6	2,748.9	1.05	-0.98	
9,399.0	2.10	71.20	8,903.0	1,153.4	-2,492.2	2,746.2	0.33	-0.22	
9,490.0	2.00	70.00	8,994.0	1,154.4	-2,489.2	2,743.8	0.12	-0.11	
9,582.0	0.80	59.90	9,086.0	1,155.3	-2,487.1	2,742.3	1.33	-1.30	
9,673.0	1.10	64.20	9,176.9	1,156.0	-2,485.8	2,741.4	0.34	0.33	
9,765.0	1.00	2.60	9,268.9	1,157.2	-2,484.9	2,741.1	1.17	-0.11	
9,856.0	1.10	24.90	9,359.9	1,158.8	-2,484.5	2,741.4	0.46	0.11	
9,948.0	0.40	240.10	9,451.9	1,159.4	-2,484.4	2,741.6	1.57	-0.76	
10,039.0	0.60	354.80	9,542.9	1,159.7	-2,484.8	2,742.0	0.93	0.22	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well MCU Fee 17-9C (M16W Pad)
Project:	Mamm Creek	TVD Reference:	KBE @ 7903.0ft (Patterson #308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	MD Reference:	KBE @ 7903.0ft (Patterson #308)
Well:	MCU Fee 17-9C (M16W Pad)	North Reference:	True
Wellbore:	DD	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
10,131.0	0.20	298.00	9,634.9	1,160.3	-2,484.9	2,742.4	0.56	-0.43	
10,223.0	0.00	347.10	9,726.9	1,160.4	-2,485.1	2,742.6	0.22	-0.22	
10,314.0	0.40	317.40	9,817.9	1,160.6	-2,485.3	2,742.9	0.44	0.44	
10,406.0	0.30	223.50	9,909.9	1,160.7	-2,485.7	2,743.2	0.56	-0.11	
10,475.1	0.23	25.21	9,979.0	1,160.7	-2,485.8	2,743.3	0.76	-0.10	MCU Fee 17-9C (M16W Pad) BHL
10,497.0	0.40	29.50	10,000.9	1,160.8	-2,485.7	2,743.3	0.76	0.76	
10,530.0	0.10	354.58	10,033.9	1,160.9	-2,485.6	2,743.3	0.98	-0.91	Last Cathedral Survey @ 10,530' MD
10,580.0	0.10	354.00	10,083.9	1,161.0	-2,485.6	2,743.3	0.00	0.00	Projection to Bit @ 10,580' MD

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									
MCU Fee 17-9C (M16W	0.00	0.00	8,188.0	1,141.3	-2,492.6	1,594,516.26	2,352,804.73	39.443292	-107.791932
- actual wellpath misses target center by 22.7ft at 8681.6ft MD (8186.4 TVD, 1141.4 N, -2515.2 E)									
- Circle (radius 25.0)									
MCU Fee 17-9C (M16W	0.00	0.00	9,979.0	1,141.3	-2,492.6	1,594,516.26	2,352,804.73	39.443292	-107.791932
- actual wellpath misses target center by 20.5ft at 10475.1ft MD (9979.0 TVD, 1160.7 N, -2485.8 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
10,530.0	10,033.9	1,160.9	-2,485.6	Last Cathedral Survey @ 10,530' MD	
10,580.0	10,083.9	1,161.0	-2,485.6	Projection to Bit @ 10,580' MD	

Checked By: _____ Approved By: _____ Date: _____