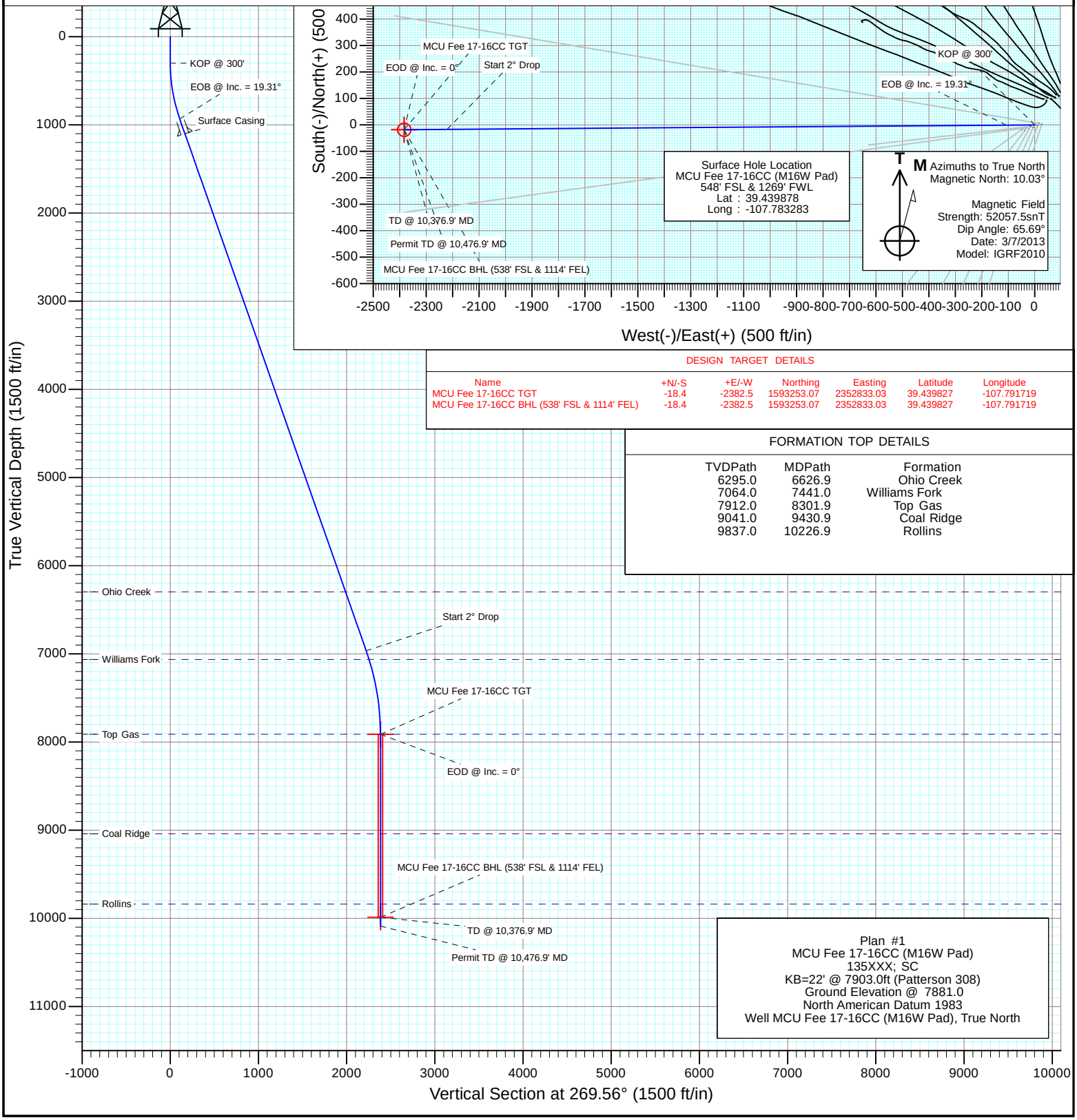
Project: Mamm Creek
Site: M16W Pad (SWSW S16-T7S-R93W)
Well: MCU Fee 17-16CC (M16W Pad)
Wellbore: DD
Design: Plan #1

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	943.7	19.31	269.56	931.6	-0.8	-107.4	3.00	269.56	107.4	
4	7336.4	19.31	269.56	6964.6	-17.2	-2221.4	0.00	0.00	2221.4	
5	8301.9	0.00	0.00	7912.0	-18.4	-2382.5	2.00	180.00	2382.6	MCU Fee 17-16CC TGT
6	10376.9	0.00	0.00	9987.0	-18.4	-2382.5	0.00	0.00	2382.6	MCU Fee 17-16CC BHL (538' FSL & 1114' FEL)
7	10476.9	0.00	0.00	10087.0	-18.4	-2382.5	0.00	0.00	2382.6	



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
MCU Fee 17-16CC TGT	-18.4	-2382.5	1593253.07	2352833.03	39.439827	-107.791719
MCU Fee 17-16CC BHL (538' FSL & 1114' FEL)	-18.4	-2382.5	1593253.07	2352833.03	39.439827	-107.791719

FORMATION TOP DETAILS

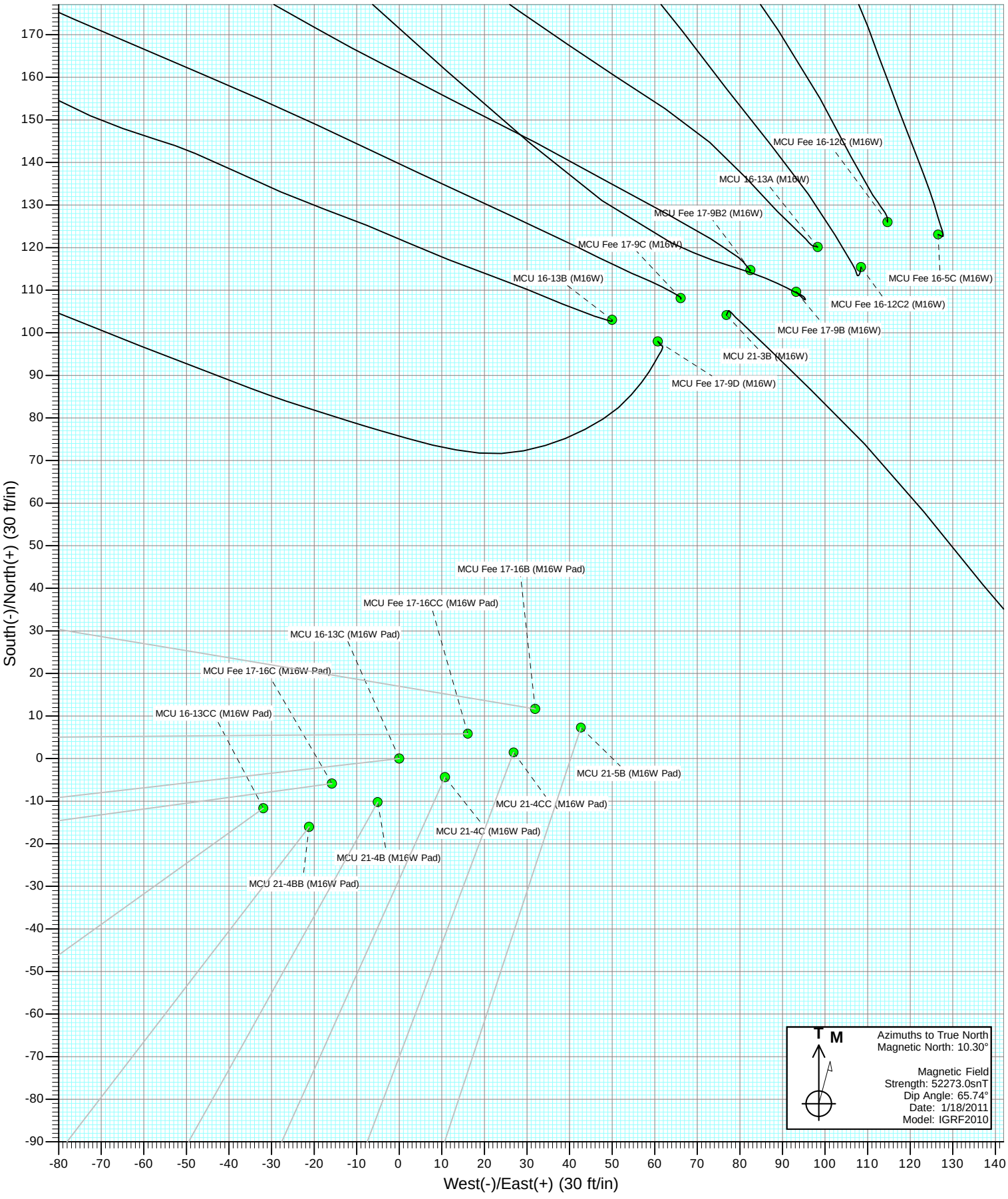
TVDPath	MDPath	Formation
6295.0	6626.9	Ohio Creek
7064.0	7441.0	Williams Fork
7912.0	8301.9	Top Gas
9041.0	9430.9	Coal Ridge
9837.0	10226.9	Rollins

Plan #1
MCU Fee 17-16CC (M16W Pad)
135XXX; SC
KB=22' @ 7903.0ft (Patterson 308)
Ground Elevation @ 7881.0
North American Datum 1983
Well MCU Fee 17-16CC (M16W Pad), True North

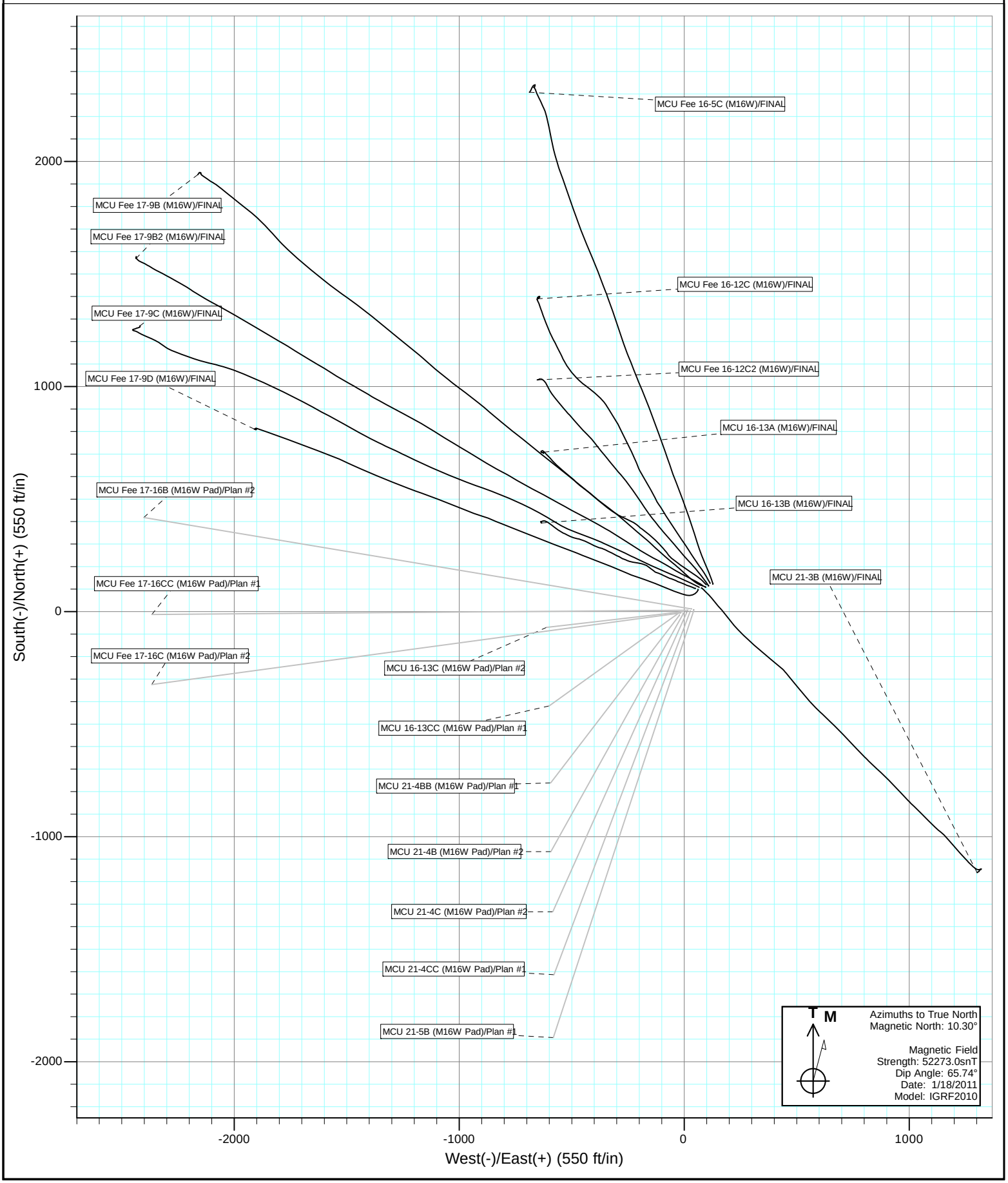
encana natural gas

Project: Mamm Creek
Site: M16W Pad (SWSW S16-T7S-R93W)

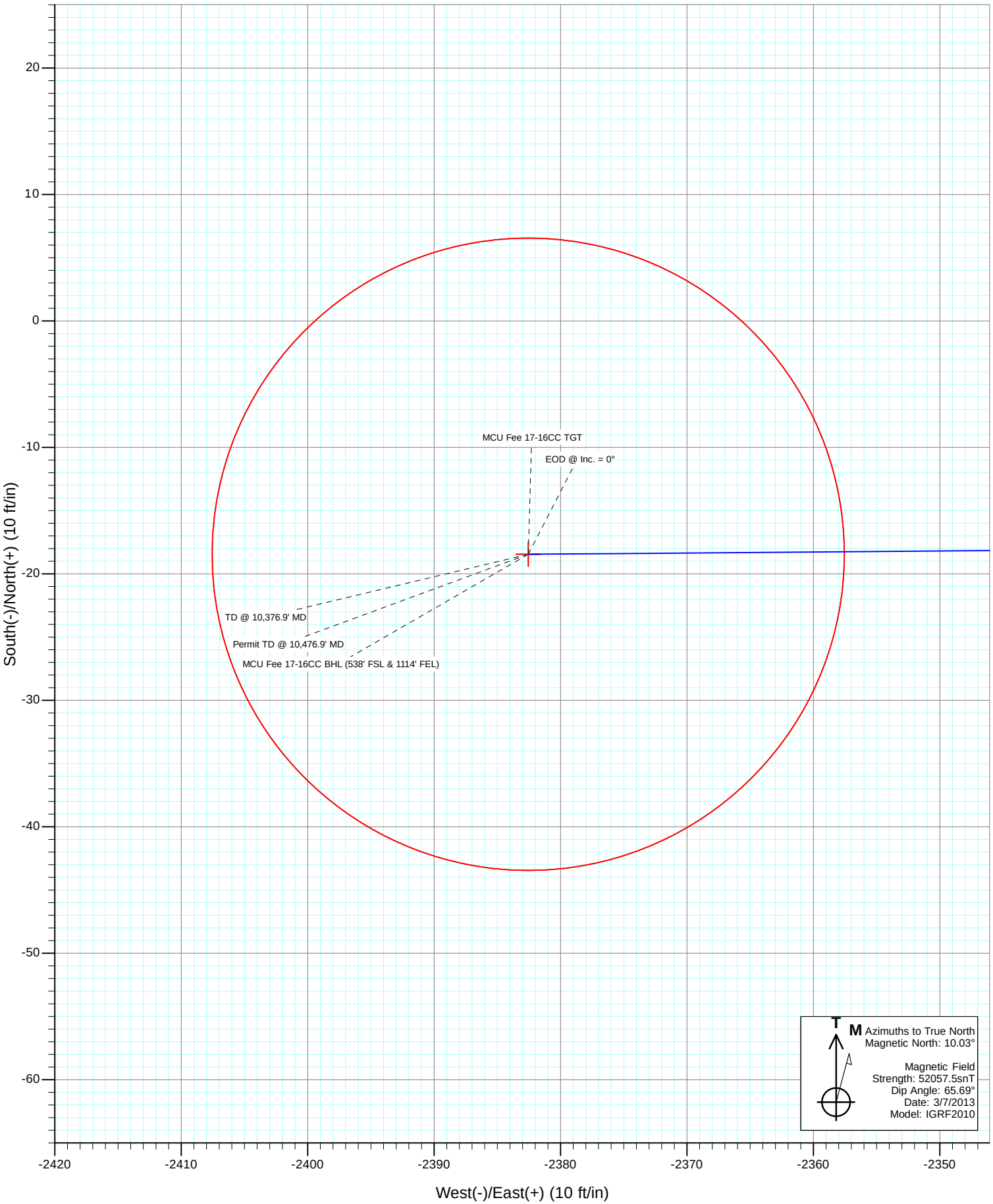
CATHEDRAL



Project: Mamm Creek
Site: M16W Pad (SWSW S16-T7S-R93W)



Project: Mamm Creek
Site: M16W Pad (SWSW S16-T7S-R93W)
Well: MCU Fee 17-16CC (M16W Pad)
Wellbore: DD
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	**North Reference:**	True
Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

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 17-16CC (M16W Pad)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,593,211.64 ft	**Latitude:**	39.439878
	+E/-W	0.0 ft	**Easting:**	2,355,215.29 ft	**Longitude:**	-107.783283
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	3/7/2013	10.03	65.69	52,058

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	269.56

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
943.7	19.31	269.56	931.6	-0.8	-107.4	3.00	3.00	0.00	269.56	
7,336.4	19.31	269.56	6,964.6	-17.2	-2,221.4	0.00	0.00	0.00	0.00	
8,301.9	0.00	0.00	7,912.0	-18.4	-2,382.5	2.00	-2.00	0.00	180.00	MCU Fee 17-16CC T(
10,376.9	0.00	0.00	9,987.0	-18.4	-2,382.5	0.00	0.00	0.00	0.00	MCU Fee 17-16CC B
10,476.9	0.00	0.00	10,087.0	-18.4	-2,382.5	0.00	0.00	0.00	0.00	

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Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	**North Reference:**	True
Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
400.0	3.00	269.56	400.0	0.0	-2.6	2.6	3.00	3.00	
500.0	6.00	269.56	499.6	-0.1	-10.5	10.5	3.00	3.00	
600.0	9.00	269.56	598.8	-0.2	-23.5	23.5	3.00	3.00	
700.0	12.00	269.56	697.1	-0.3	-41.7	41.7	3.00	3.00	
800.0	15.00	269.56	794.3	-0.5	-65.1	65.1	3.00	3.00	
900.0	18.00	269.56	890.2	-0.7	-93.5	93.5	3.00	3.00	
943.7	19.31	269.56	931.6	-0.8	-107.4	107.4	3.00	3.00	EOB @ Inc. = 19.31°
1,000.0	19.31	269.56	984.7	-1.0	-126.1	126.1	0.00	0.00	
1,100.0	19.31	269.56	1,079.1	-1.2	-159.1	159.1	0.00	0.00	
1,122.2	19.31	269.56	1,100.0	-1.3	-166.5	166.5	0.00	0.00	Surface Casing
1,200.0	19.31	269.56	1,173.5	-1.5	-192.2	192.2	0.00	0.00	
1,300.0	19.31	269.56	1,267.8	-1.7	-225.3	225.3	0.00	0.00	
1,400.0	19.31	269.56	1,362.2	-2.0	-258.3	258.3	0.00	0.00	
1,500.0	19.31	269.56	1,456.6	-2.3	-291.4	291.4	0.00	0.00	
1,600.0	19.31	269.56	1,551.0	-2.5	-324.5	324.5	0.00	0.00	
1,700.0	19.31	269.56	1,645.3	-2.8	-357.5	357.6	0.00	0.00	
1,800.0	19.31	269.56	1,739.7	-3.0	-390.6	390.6	0.00	0.00	
1,900.0	19.31	269.56	1,834.1	-3.3	-423.7	423.7	0.00	0.00	
2,000.0	19.31	269.56	1,928.5	-3.5	-456.7	456.8	0.00	0.00	
2,100.0	19.31	269.56	2,022.8	-3.8	-489.8	489.8	0.00	0.00	
2,200.0	19.31	269.56	2,117.2	-4.0	-522.9	522.9	0.00	0.00	
2,300.0	19.31	269.56	2,211.6	-4.3	-555.9	556.0	0.00	0.00	
2,400.0	19.31	269.56	2,306.0	-4.6	-589.0	589.0	0.00	0.00	
2,500.0	19.31	269.56	2,400.3	-4.8	-622.1	622.1	0.00	0.00	
2,600.0	19.31	269.56	2,494.7	-5.1	-655.2	655.2	0.00	0.00	
2,700.0	19.31	269.56	2,589.1	-5.3	-688.2	688.2	0.00	0.00	
2,800.0	19.31	269.56	2,683.4	-5.6	-721.3	721.3	0.00	0.00	
2,900.0	19.31	269.56	2,777.8	-5.8	-754.4	754.4	0.00	0.00	
3,000.0	19.31	269.56	2,872.2	-6.1	-787.4	787.4	0.00	0.00	
3,100.0	19.31	269.56	2,966.6	-6.4	-820.5	820.5	0.00	0.00	
3,200.0	19.31	269.56	3,060.9	-6.6	-853.6	853.6	0.00	0.00	
3,300.0	19.31	269.56	3,155.3	-6.9	-886.6	886.7	0.00	0.00	
3,400.0	19.31	269.56	3,249.7	-7.1	-919.7	919.7	0.00	0.00	
3,500.0	19.31	269.56	3,344.1	-7.4	-952.8	952.8	0.00	0.00	
3,600.0	19.31	269.56	3,438.4	-7.6	-985.8	985.9	0.00	0.00	
3,700.0	19.31	269.56	3,532.8	-7.9	-1,018.9	1,018.9	0.00	0.00	
3,800.0	19.31	269.56	3,627.2	-8.1	-1,052.0	1,052.0	0.00	0.00	
3,900.0	19.31	269.56	3,721.6	-8.4	-1,085.0	1,085.1	0.00	0.00	
4,000.0	19.31	269.56	3,815.9	-8.7	-1,118.1	1,118.1	0.00	0.00	
4,100.0	19.31	269.56	3,910.3	-8.9	-1,151.2	1,151.2	0.00	0.00	
4,200.0	19.31	269.56	4,004.7	-9.2	-1,184.2	1,184.3	0.00	0.00	
4,300.0	19.31	269.56	4,099.1	-9.4	-1,217.3	1,217.3	0.00	0.00	
4,400.0	19.31	269.56	4,193.4	-9.7	-1,250.4	1,250.4	0.00	0.00	
4,500.0	19.31	269.56	4,287.8	-9.9	-1,283.4	1,283.5	0.00	0.00	
4,600.0	19.31	269.56	4,382.2	-10.2	-1,316.5	1,316.5	0.00	0.00	
4,700.0	19.31	269.56	4,476.6	-10.4	-1,349.6	1,349.6	0.00	0.00	
4,800.0	19.31	269.56	4,570.9	-10.7	-1,382.6	1,382.7	0.00	0.00	
4,900.0	19.31	269.56	4,665.3	-11.0	-1,415.7	1,415.8	0.00	0.00	

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Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	**North Reference:**	True
Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,000.0	19.31	269.56	4,759.7	-11.2	-1,448.8	1,448.8	0.00	0.00	
5,100.0	19.31	269.56	4,854.0	-11.5	-1,481.8	1,481.9	0.00	0.00	
5,200.0	19.31	269.56	4,948.4	-11.7	-1,514.9	1,515.0	0.00	0.00	
5,300.0	19.31	269.56	5,042.8	-12.0	-1,548.0	1,548.0	0.00	0.00	
5,400.0	19.31	269.56	5,137.2	-12.2	-1,581.0	1,581.1	0.00	0.00	
5,500.0	19.31	269.56	5,231.5	-12.5	-1,614.1	1,614.2	0.00	0.00	
5,600.0	19.31	269.56	5,325.9	-12.8	-1,647.2	1,647.2	0.00	0.00	
5,700.0	19.31	269.56	5,420.3	-13.0	-1,680.3	1,680.3	0.00	0.00	
5,800.0	19.31	269.56	5,514.7	-13.3	-1,713.3	1,713.4	0.00	0.00	
5,900.0	19.31	269.56	5,609.0	-13.5	-1,746.4	1,746.4	0.00	0.00	
6,000.0	19.31	269.56	5,703.4	-13.8	-1,779.5	1,779.5	0.00	0.00	
6,100.0	19.31	269.56	5,797.8	-14.0	-1,812.5	1,812.6	0.00	0.00	
6,200.0	19.31	269.56	5,892.2	-14.3	-1,845.6	1,845.6	0.00	0.00	
6,300.0	19.31	269.56	5,986.5	-14.5	-1,878.7	1,878.7	0.00	0.00	
6,400.0	19.31	269.56	6,080.9	-14.8	-1,911.7	1,911.8	0.00	0.00	
6,500.0	19.31	269.56	6,175.3	-15.1	-1,944.8	1,944.9	0.00	0.00	
6,600.0	19.31	269.56	6,269.7	-15.3	-1,977.9	1,977.9	0.00	0.00	
6,626.9	19.31	269.56	6,295.0	-15.4	-1,986.7	1,986.8	0.00	0.00	Ohio Creek
6,700.0	19.31	269.56	6,364.0	-15.6	-2,010.9	2,011.0	0.00	0.00	
6,800.0	19.31	269.56	6,458.4	-15.8	-2,044.0	2,044.1	0.00	0.00	
6,900.0	19.31	269.56	6,552.8	-16.1	-2,077.1	2,077.1	0.00	0.00	
7,000.0	19.31	269.56	6,647.2	-16.3	-2,110.1	2,110.2	0.00	0.00	
7,100.0	19.31	269.56	6,741.5	-16.6	-2,143.2	2,143.3	0.00	0.00	
7,200.0	19.31	269.56	6,835.9	-16.9	-2,176.3	2,176.3	0.00	0.00	
7,300.0	19.31	269.56	6,930.3	-17.1	-2,209.3	2,209.4	0.00	0.00	
7,336.4	19.31	269.56	6,964.6	-17.2	-2,221.4	2,221.4	0.00	0.00	Start 2° Drop
7,400.0	18.04	269.56	7,024.9	-17.4	-2,241.7	2,241.8	2.00	-2.00	
7,441.0	17.22	269.56	7,064.0	-17.5	-2,254.2	2,254.2	2.00	-2.00	Williams Fork
7,500.0	16.04	269.56	7,120.5	-17.6	-2,271.0	2,271.1	2.00	-2.00	
7,600.0	14.04	269.56	7,217.1	-17.8	-2,297.0	2,297.1	2.00	-2.00	
7,700.0	12.04	269.56	7,314.5	-18.0	-2,319.5	2,319.6	2.00	-2.00	
7,800.0	10.04	269.56	7,412.6	-18.1	-2,338.7	2,338.8	2.00	-2.00	
7,900.0	8.04	269.56	7,511.4	-18.2	-2,354.4	2,354.5	2.00	-2.00	
8,000.0	6.04	269.56	7,610.6	-18.3	-2,366.7	2,366.7	2.00	-2.00	
8,100.0	4.04	269.56	7,710.2	-18.4	-2,375.4	2,375.5	2.00	-2.00	
8,200.0	2.04	269.56	7,810.1	-18.4	-2,380.7	2,380.8	2.00	-2.00	
8,301.9	0.00	0.00	7,912.0	-18.4	-2,382.5	2,382.6	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
8,400.0	0.00	0.00	8,010.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
8,500.0	0.00	0.00	8,110.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
8,600.0	0.00	0.00	8,210.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
8,700.0	0.00	0.00	8,310.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
8,800.0	0.00	0.00	8,410.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
8,900.0	0.00	0.00	8,510.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,000.0	0.00	0.00	8,610.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,100.0	0.00	0.00	8,710.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,200.0	0.00	0.00	8,810.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,300.0	0.00	0.00	8,910.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,400.0	0.00	0.00	9,010.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,430.9	0.00	0.00	9,041.0	-18.4	-2,382.5	2,382.6	0.00	0.00	Coal Ridge
9,500.0	0.00	0.00	9,110.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,600.0	0.00	0.00	9,210.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,700.0	0.00	0.00	9,310.1	-18.4	-2,382.5	2,382.6	0.00	0.00	

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Site:	M16W Pad (SWSW S16-T7S-R93W)	**North Reference:**	True
Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,800.0	0.00	0.00	9,410.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
9,900.0	0.00	0.00	9,510.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
10,000.0	0.00	0.00	9,610.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
10,100.0	0.00	0.00	9,710.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
10,200.0	0.00	0.00	9,810.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
10,226.9	0.00	0.00	9,837.0	-18.4	-2,382.5	2,382.6	0.00	0.00	Rollins
10,300.0	0.00	0.00	9,910.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
10,376.9	0.00	0.00	9,987.0	-18.4	-2,382.5	2,382.6	0.00	0.00	TD @ 10,376.9' MD
10,400.0	0.00	0.00	10,010.1	-18.4	-2,382.5	2,382.6	0.00	0.00	
10,476.9	0.00	0.00	10,087.0	-18.4	-2,382.5	2,382.6	0.00	0.00	Permit TD @ 10,476.9' 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 17-16CC BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,987.0	-18.4	-2,382.5	1,593,253.07	2,352,833.03	39.439827	-107.791719
MCU Fee 17-16CC TGT - plan hits target center - Point	0.00	0.00	7,912.0	-18.4	-2,382.5	1,593,253.07	2,352,833.03	39.439827	-107.791719

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,122.2	1,100.0	Surface Casing		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,626.9	6,295.0	Ohio Creek			
7,441.0	7,064.0	Williams Fork			
8,301.9	7,912.0	Top Gas			
9,430.9	9,041.0	Coal Ridge			
10,226.9	9,837.0	Rollins			

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site:	M16W Pad (SWSW S16-T7S-R93W)	**North Reference:**	True
Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
300.0	300.0	0.0	0.0	KOP @ 300'
943.7	931.6	-0.8	-107.4	EOB @ Inc. = 19.31°
7,336.4	6,964.6	-17.2	-2,221.4	Start 2° Drop
8,301.9	7,912.0	-18.4	-2,382.5	EOD @ Inc. = 0°
10,376.9	9,987.0	-18.4	-2,382.5	TD @ 10,376.9' MD
10,476.9	10,087.0	-18.4	-2,382.5	Permit TD @ 10,476.9' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek
M16W Pad (SWSW S16-T7S-R93W)
MCU Fee 17-16CC (M16W Pad)
DD
Plan #1

Anticollision Report

07 March, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,250.9ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 3/7/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	10,476.9	Plan #1 (DD)	MWD	Geolink MWD

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
M16W Pad (SWSW S16-T7S-R93W)						
MCU 16-13A (M16W) - DD - FINAL	285.9	285.9	140.3	139.4	152.262	CC
MCU 16-13A (M16W) - DD - FINAL	300.0	299.8	140.3	139.3	144.613	ES
MCU 16-13A (M16W) - DD - FINAL	1,700.0	1,671.1	373.7	364.5	40.819	SF
MCU 16-13B (M16W) - DD - FINAL	305.4	305.5	102.5	101.5	102.403	CC, ES
MCU 16-13B (M16W) - DD - FINAL	1,100.0	1,089.9	171.7	166.2	31.585	SF
MCU 16-13C (M16W Pad) - DD - Plan #2	729.7	727.3	9.2	6.2	3.048	CC, ES, SF
MCU 16-13CC (M16W Pad) - DD - Plan #1	850.2	841.5	48.2	44.4	12.890	CC, ES
MCU 16-13CC (M16W Pad) - DD - Plan #1	900.0	890.0	49.3	45.1	11.714	SF
MCU 21-3B (M16W) - DD - FINAL	0.0	0.0	115.6			
MCU 21-3B (M16W) - DD - FINAL	100.0	99.6	115.7	115.4	396.603	ES
MCU 21-3B (M16W) - DD - FINAL	700.0	690.5	153.4	150.7	56.162	SF
MCU 21-4B (M16W Pad) - DD - Plan #2	255.6	255.6	26.6	25.7	32.583	CC
MCU 21-4B (M16W Pad) - DD - Plan #2	300.0	299.7	26.7	25.7	27.542	ES
MCU 21-4B (M16W Pad) - DD - Plan #2	500.0	496.4	32.2	30.5	19.032	SF
MCU 21-4BB (M16W Pad) - DD - Plan #1	300.0	300.0	43.2	42.2	44.529	CC
MCU 21-4BB (M16W Pad) - DD - Plan #1	400.0	397.9	43.4	42.1	32.920	ES
MCU 21-4BB (M16W Pad) - DD - Plan #1	900.0	888.3	71.2	67.1	17.045	SF
MCU 21-4C (M16W Pad) - DD - Plan #2	233.3	233.3	11.5	10.8	15.616	CC, ES
MCU 21-4C (M16W Pad) - DD - Plan #2	400.0	398.8	16.3	15.0	12.347	SF
MCU 21-4CC (M16W Pad) - DD - Plan #1	200.0	200.0	11.6	11.0	18.653	CC
MCU 21-4CC (M16W Pad) - DD - Plan #1	300.0	299.9	11.7	10.8	12.081	ES
MCU 21-4CC (M16W Pad) - DD - Plan #1	400.0	399.5	15.9	14.5	11.766	SF
MCU 21-5B (M16W Pad) - DD - Plan #1	327.5	328.0	25.5	24.5	23.488	CC, ES
MCU 21-5B (M16W Pad) - DD - Plan #1	400.0	400.3	27.2	25.9	19.822	SF
MCU Fee 16-12C (M16W) - DD - FINAL	0.0	0.0	155.4			
MCU Fee 16-12C (M16W) - DD - FINAL	100.0	99.6	155.6	155.3	533.423	ES
MCU Fee 16-12C (M16W) - DD - FINAL	4,100.0	3,927.2	1,163.8	1,133.6	38.541	SF
MCU Fee 16-12C2 (M16W) - DD - FINAL	300.0	300.1	141.2	140.3	145.134	ES
MCU Fee 16-12C2 (M16W) - DD - FINAL	300.5	300.5	141.2	140.3	145.242	CC
MCU Fee 16-12C2 (M16W) - DD - FINAL	2,400.0	2,336.6	594.8	579.5	38.721	SF
MCU Fee 16-5C (M16W) - DD - FINAL	0.0	0.0	161.1			
MCU Fee 16-5C (M16W) - DD - FINAL	300.0	298.6	161.6	160.6	166.877	ES
MCU Fee 16-5C (M16W) - DD - FINAL	3,500.0	3,267.0	1,248.7	1,219.3	42.507	SF
MCU Fee 17-16B (M16W Pad) - DD - Plan #2	300.0	300.0	16.9	15.9	17.371	CC, ES
MCU Fee 17-16B (M16W Pad) - DD - Plan #2	10,476.9	10,509.2	432.0	337.2	4.556	SF
MCU Fee 17-16C (M16W Pad) - DD - Plan #2	200.0	200.0	34.0	33.4	54.694	CC, ES
MCU Fee 17-16C (M16W Pad) - DD - Plan #2	10,476.9	10,469.2	311.8	217.8	3.318	SF
MCU Fee 17-9B (M16W) - DD - FINAL	236.4	236.4	129.0	128.3	172.326	CC
MCU Fee 17-9B (M16W) - DD - FINAL	300.0	299.6	129.1	128.2	133.183	ES
MCU Fee 17-9B (M16W) - DD - FINAL	5,300.0	5,158.5	1,249.4	1,191.2	21.464	SF
MCU Fee 17-9B2 (M16W) - DD - FINAL	221.9	221.9	127.3	126.6	182.432	CC, ES
MCU Fee 17-9B2 (M16W) - DD - FINAL	6,500.0	6,402.7	1,238.3	1,163.3	16.511	SF
MCU Fee 17-9C (M16W) - DD - FINAL	212.6	212.7	113.7	113.0	170.791	CC, ES
MCU Fee 17-9C (M16W) - DD - FINAL	7,700.0	7,679.5	1,172.0	1,082.1	13.035	SF
MCU Fee 17-9D (M16W) - DD - FINAL	670.4	680.4	81.2	78.7	32.626	CC, ES
MCU Fee 17-9D (M16W) - DD - FINAL	10,476.9	10,395.5	944.1	860.7	11.331	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13A (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	35.71	114.3	82.2	140.8				
100.0	100.0	100.2	100.2	0.1	0.2	35.65	114.4	82.0	140.7	140.4	0.29	481.368	
200.0	200.0	200.4	200.4	0.3	0.3	35.46	114.5	81.5	140.5	139.9	0.62	225.553	
285.9	285.9	285.9	285.9	0.5	0.5	35.16	114.7	80.8	140.3	139.4	0.92	152.262	CC
300.0	300.0	299.8	299.8	0.5	0.5	35.06	114.9	80.6	140.3	139.3	0.97	144.613	ES
400.0	400.0	399.0	398.9	0.7	0.7	124.74	117.6	77.8	142.5	141.2	1.33	106.802	
500.0	499.6	496.2	495.7	0.9	0.9	123.60	124.0	71.5	148.7	147.0	1.75	85.019	
600.0	598.8	595.6	594.4	1.1	1.1	123.06	132.7	63.3	158.8	156.5	2.24	70.960	
700.0	697.1	697.4	695.2	1.5	1.4	123.45	142.0	53.2	171.0	168.2	2.82	60.749	
800.0	794.3	798.6	795.3	1.9	1.7	124.60	150.4	40.7	184.3	180.8	3.47	53.088	
900.0	890.2	896.5	892.1	2.5	2.0	126.59	158.6	28.3	200.6	196.4	4.17	48.102	
1,000.0	984.7	993.4	988.0	3.1	2.3	129.44	166.6	16.6	220.1	215.2	4.87	45.219	
1,100.0	1,079.1	1,090.3	1,083.8	3.7	2.6	132.12	174.6	5.1	240.7	235.1	5.54	43.406	
1,200.0	1,173.5	1,186.5	1,179.1	4.3	2.9	134.43	182.6	-5.8	262.0	255.8	6.20	42.288	
1,300.0	1,267.8	1,285.6	1,277.2	4.9	3.2	136.51	190.5	-17.1	283.5	276.7	6.83	41.496	
1,400.0	1,362.2	1,382.0	1,372.7	5.5	3.5	138.30	197.7	-28.2	304.9	297.4	7.44	40.992	
1,500.0	1,456.6	1,475.7	1,465.6	6.2	3.7	139.95	204.8	-37.7	327.6	319.6	8.01	40.895	
1,600.0	1,551.0	1,573.9	1,563.0	6.8	4.0	141.42	212.6	-47.6	350.8	342.2	8.59	40.853	
1,700.0	1,645.3	1,671.1	1,659.4	7.4	4.3	142.67	220.0	-57.9	373.7	364.5	9.15	40.819	SF
1,800.0	1,739.7	1,767.9	1,755.4	8.0	4.5	143.80	227.5	-67.7	397.1	387.4	9.71	40.912	
1,900.0	1,834.1	1,857.9	1,844.7	8.7	4.8	144.80	234.3	-76.5	420.8	410.6	10.23	41.146	
2,000.0	1,928.5	1,946.1	1,932.3	9.3	5.0	145.71	241.9	-83.1	447.1	436.4	10.74	41.631	
2,100.0	2,022.8	2,041.6	2,027.2	9.9	5.3	146.51	251.2	-89.9	474.3	463.1	11.28	42.059	
2,200.0	2,117.2	2,141.4	2,126.0	10.6	5.6	147.12	261.6	-97.9	501.2	489.3	11.86	42.255	
2,300.0	2,211.6	2,242.4	2,225.9	11.2	5.9	147.50	273.0	-107.7	527.3	514.8	12.48	42.262	
2,400.0	2,306.0	2,341.7	2,324.2	11.8	6.2	147.91	283.3	-117.5	552.7	539.6	13.07	42.287	
2,500.0	2,400.3	2,436.3	2,417.8	12.4	6.5	148.28	292.8	-126.8	578.1	564.4	13.65	42.360	
2,600.0	2,494.7	2,526.8	2,507.5	13.1	6.7	148.66	301.9	-135.0	604.1	590.0	14.19	42.567	
2,700.0	2,589.1	2,637.9	2,617.6	13.7	7.1	149.06	312.9	-145.5	629.8	615.0	14.80	42.538	
2,800.0	2,683.4	2,735.0	2,713.7	14.3	7.4	149.37	322.0	-155.9	654.1	638.7	15.37	42.547	
2,900.0	2,777.8	2,831.0	2,808.8	15.0	7.6	149.70	330.6	-166.0	678.5	662.6	15.93	42.592	
3,000.0	2,872.2	2,927.2	2,904.1	15.6	7.9	150.02	339.2	-175.7	703.2	686.7	16.48	42.665	
3,100.0	2,966.6	3,029.8	3,005.8	16.2	8.2	150.35	348.0	-186.4	727.4	710.4	17.04	42.692	
3,200.0	3,060.9	3,128.3	3,103.4	16.9	8.5	150.69	355.7	-197.1	751.0	733.4	17.57	42.739	
3,300.0	3,155.3	3,221.8	3,196.1	17.5	8.8	151.02	362.8	-206.7	775.0	756.9	18.08	42.859	
3,400.0	3,249.7	3,314.7	3,288.3	18.1	9.0	151.33	370.0	-215.9	799.3	780.8	18.59	42.999	
3,500.0	3,344.1	3,406.3	3,379.2	18.8	9.3	151.61	377.4	-224.5	824.4	805.3	19.10	43.172	
3,600.0	3,438.4	3,521.2	3,493.2	19.4	9.6	151.96	386.5	-235.5	849.3	829.7	19.64	43.237	
3,700.0	3,532.8	3,634.9	3,605.7	20.0	10.0	152.26	394.2	-249.3	871.4	851.2	20.19	43.156	
3,800.0	3,627.2	3,734.8	3,704.7	20.6	10.3	152.53	400.4	-262.1	892.7	872.0	20.71	43.102	
3,900.0	3,721.6	3,832.2	3,801.1	21.3	10.5	152.79	406.2	-274.5	913.8	892.6	21.21	43.085	
4,000.0	3,815.9	3,922.4	3,890.5	21.9	10.8	153.07	411.0	-285.4	935.5	913.8	21.67	43.167	
4,100.0	3,910.3	4,012.6	3,980.0	22.5	11.0	153.36	416.0	-295.5	957.9	935.8	22.13	43.292	
4,200.0	4,004.7	4,111.5	4,078.2	23.2	11.3	153.68	421.1	-306.1	980.6	958.0	22.58	43.426	
4,300.0	4,099.1	4,208.5	4,174.3	23.8	11.6	153.87	428.0	-317.5	1,003.3	980.2	23.11	43.423	
4,400.0	4,193.4	4,304.7	4,269.5	24.4	11.9	154.01	435.3	-329.0	1,026.0	1,002.3	23.63	43.410	
4,500.0	4,287.8	4,397.0	4,360.9	25.1	12.2	154.13	442.5	-339.7	1,049.1	1,025.0	24.16	43.430	
4,600.0	4,382.2	4,492.0	4,454.9	25.7	12.4	154.26	450.0	-350.7	1,072.3	1,047.7	24.69	43.440	
4,700.0	4,476.6	4,578.4	4,540.5	26.3	12.7	154.37	457.1	-360.0	1,096.4	1,071.2	25.19	43.524	
4,800.0	4,570.9	4,671.4	4,632.8	27.0	13.0	154.50	464.8	-369.3	1,121.1	1,095.4	25.70	43.622	
4,900.0	4,665.3	4,767.0	4,727.6	27.6	13.2	154.65	472.2	-378.6	1,145.8	1,119.6	26.20	43.740	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13A (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,000.0	4,759.7	4,858.0	4,818.0	28.2	13.5	154.80	479.3	-387.0	1,171.0	1,144.3	26.68	43.888	
5,100.0	4,854.0	4,955.3	4,914.5	28.9	13.7	154.94	487.1	-395.9	1,196.5	1,169.3	27.18	44.015	
5,200.0	4,948.4	5,052.9	5,011.4	29.5	14.0	155.09	494.7	-405.0	1,221.7	1,194.0	27.68	44.134	
5,300.0	5,042.8	5,144.1	5,102.0	30.1	14.3	155.22	501.9	-413.1	1,247.2	1,219.0	28.16	44.286	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13B (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 175-MWD, 1703-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	19.22	97.2	33.9	102.9				
100.0	100.0	100.2	100.2	0.1	0.2	19.24	97.1	33.9	102.8	102.6	0.29	355.739	
200.0	200.0	200.2	200.2	0.3	0.3	19.25	96.9	33.8	102.6	102.0	0.62	164.979	
300.0	300.0	300.1	300.1	0.5	0.5	17.88	97.6	31.5	102.5	101.5	0.97	105.552	
305.4	305.4	305.5	305.4	0.5	0.5	108.15	97.7	31.2	102.5	101.5	1.00	102.403	CC, ES
400.0	400.0	399.0	398.7	0.7	0.7	105.32	100.1	24.1	103.7	102.3	1.37	75.598	
500.0	499.6	499.1	498.2	0.9	0.9	104.01	104.0	14.9	107.1	105.3	1.81	59.134	
600.0	598.8	599.0	597.6	1.1	1.2	105.09	107.7	5.2	111.6	109.3	2.32	48.126	
700.0	697.1	698.4	696.4	1.5	1.4	108.15	111.5	-5.1	117.7	114.8	2.90	40.559	
800.0	794.3	796.7	794.0	1.9	1.7	112.80	115.9	-15.4	126.6	123.0	3.55	35.705	
900.0	890.2	895.7	892.4	2.5	1.9	118.70	120.2	-25.8	138.6	134.4	4.22	32.861	
1,000.0	984.7	993.2	989.3	3.1	2.2	125.01	124.2	-36.3	154.1	149.3	4.85	31.774	
1,100.0	1,079.1	1,089.9	1,085.3	3.7	2.5	130.20	128.5	-46.9	171.7	166.2	5.44	31.585	SF
1,200.0	1,173.5	1,186.8	1,181.5	4.3	2.7	134.34	133.4	-57.5	190.8	184.9	5.98	31.888	
1,300.0	1,267.8	1,284.6	1,278.6	4.9	3.0	137.86	137.9	-68.1	210.5	204.0	6.49	32.463	
1,400.0	1,362.2	1,380.4	1,373.9	5.5	3.2	141.28	140.7	-76.8	231.2	224.3	6.91	33.475	
1,500.0	1,456.6	1,476.1	1,469.3	6.2	3.4	144.21	143.6	-84.9	253.1	245.8	7.30	34.658	
1,600.0	1,551.0	1,571.8	1,564.5	6.8	3.7	146.60	147.0	-93.0	275.9	268.2	7.70	35.846	
1,700.0	1,645.3	1,666.6	1,659.0	7.4	3.9	148.61	150.6	-100.6	299.6	291.5	8.08	37.071	
1,800.0	1,739.7	1,763.7	1,755.8	8.0	4.1	150.40	154.4	-107.9	324.0	315.5	8.46	38.307	
1,900.0	1,834.1	1,859.5	1,851.2	8.7	4.3	151.98	157.7	-115.2	348.4	339.6	8.82	39.492	
2,000.0	1,928.5	1,960.4	1,951.7	9.3	4.6	153.34	161.6	-123.1	372.9	363.7	9.21	40.513	
2,100.0	2,022.8	2,060.8	2,051.6	9.9	4.8	154.47	165.2	-132.5	396.3	386.7	9.59	41.315	
2,200.0	2,117.2	2,153.6	2,144.0	10.6	5.0	155.48	168.0	-140.8	419.9	409.9	9.96	42.172	
2,300.0	2,211.6	2,246.7	2,236.6	11.2	5.3	156.17	172.7	-149.0	444.5	434.1	10.38	42.802	
2,400.0	2,306.0	2,343.5	2,332.7	11.8	5.5	156.54	179.8	-158.0	469.6	458.7	10.86	43.251	
2,500.0	2,400.3	2,440.2	2,428.9	12.4	5.8	156.96	186.2	-166.6	494.7	483.4	11.31	43.737	
2,600.0	2,494.7	2,549.7	2,537.3	13.1	6.1	157.10	195.3	-178.3	519.0	507.1	11.88	43.703	
2,700.0	2,589.1	2,664.4	2,650.5	13.7	6.5	157.19	203.5	-194.8	539.3	526.8	12.44	43.364	
2,800.0	2,683.4	2,761.8	2,746.9	14.3	6.8	157.60	207.3	-208.3	559.0	546.2	12.87	43.435	
2,900.0	2,777.8	2,860.4	2,844.5	15.0	7.0	158.08	210.1	-221.6	578.7	565.4	13.27	43.596	
3,000.0	2,872.2	2,950.9	2,934.3	15.6	7.3	158.60	211.9	-233.2	598.8	585.2	13.63	43.920	
3,100.0	2,966.6	3,041.2	3,024.0	16.2	7.5	159.18	213.2	-243.0	620.4	606.5	13.97	44.425	
3,200.0	3,060.9	3,130.4	3,112.8	16.9	7.7	159.70	215.0	-252.0	643.1	628.8	14.30	44.964	
3,300.0	3,155.3	3,216.3	3,198.3	17.5	7.9	160.15	217.4	-259.6	667.3	652.7	14.64	45.578	
3,400.0	3,249.7	3,307.6	3,289.3	18.1	8.1	160.61	220.2	-266.2	693.0	678.1	14.97	46.282	
3,500.0	3,344.1	3,402.2	3,383.7	18.8	8.3	161.10	222.7	-272.8	719.0	703.7	15.30	46.986	
3,600.0	3,438.4	3,497.8	3,479.0	19.4	8.5	161.56	225.3	-279.1	745.3	729.7	15.63	47.689	
3,700.0	3,532.8	3,596.1	3,577.1	20.0	8.7	162.03	227.6	-285.6	771.5	755.5	15.94	48.384	
3,800.0	3,627.2	3,691.3	3,672.0	20.6	8.9	162.42	230.2	-292.1	797.6	781.3	16.29	48.961	
3,900.0	3,721.6	3,790.7	3,771.0	21.3	9.2	162.65	234.9	-299.5	823.8	807.1	16.68	49.374	
4,000.0	3,815.9	3,882.4	3,862.4	21.9	9.4	162.92	238.3	-306.2	849.9	832.9	17.04	49.890	
4,100.0	3,910.3	3,988.0	3,967.7	22.5	9.6	163.26	241.6	-313.6	876.1	858.7	17.40	50.354	
4,200.0	4,004.7	4,096.5	4,075.6	23.2	9.9	163.43	246.8	-323.4	900.9	883.1	17.83	50.517	
4,300.0	4,099.1	4,194.7	4,173.2	23.8	10.1	163.53	252.0	-333.1	925.0	906.7	18.26	50.649	
4,400.0	4,193.4	4,285.1	4,263.1	24.4	10.4	163.65	256.3	-341.5	949.5	930.9	18.66	50.889	
4,500.0	4,287.8	4,379.8	4,357.3	25.1	10.6	163.82	260.2	-349.9	974.3	955.3	19.04	51.167	
4,600.0	4,382.2	4,471.1	4,448.2	25.7	10.8	163.98	264.0	-357.4	999.7	980.3	19.42	51.483	
4,700.0	4,476.6	4,569.0	4,545.8	26.3	11.0	164.16	267.7	-365.3	1,025.2	1,005.4	19.79	51.793	
4,800.0	4,570.9	4,662.3	4,638.8	27.0	11.2	164.36	270.9	-372.6	1,050.7	1,030.6	20.15	52.137	
4,900.0	4,665.3	4,760.7	4,736.8	27.6	11.5	164.55	274.3	-379.9	1,076.7	1,056.2	20.52	52.482	
5,000.0	4,759.7	4,865.5	4,841.2	28.2	11.7	164.79	277.0	-388.6	1,101.7	1,080.8	20.87	52.786	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13B (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 175-MWD, 1703-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,854.0	4,964.1	4,939.4	28.9	11.9	165.01	279.2	-396.7	1,126.6	1,105.4	21.21	53.107	
5,200.0	4,948.4	5,061.5	5,036.5	29.5	12.2	165.20	281.9	-405.2	1,151.3	1,129.7	21.58	53.359	
5,300.0	5,042.8	5,151.5	5,126.0	30.1	12.4	165.32	285.2	-412.9	1,176.2	1,154.3	21.94	53.606	
5,400.0	5,137.2	5,243.6	5,217.8	30.8	12.6	165.45	288.5	-420.3	1,201.8	1,179.5	22.31	53.865	
5,500.0	5,231.5	5,338.1	5,311.9	31.4	12.8	165.55	292.6	-427.8	1,227.5	1,204.8	22.70	54.079	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13C (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-109.89	-5.8	-16.1	17.1				
100.0	100.0	100.0	100.0	0.1	0.1	-109.89	-5.8	-16.1	17.1	16.8	0.27	62.875	
200.0	200.0	200.0	200.0	0.3	0.3	-109.89	-5.8	-16.1	17.1	16.5	0.62	27.552	
233.4	233.4	233.4	233.4	0.4	0.4	-109.89	-5.8	-16.1	17.1	16.4	0.74	23.200	
300.0	300.0	299.6	299.6	0.5	0.5	-109.41	-5.9	-16.7	17.8	16.8	0.97	18.297	
400.0	400.0	398.6	398.4	0.7	0.7	-18.08	-6.5	-21.8	20.3	19.0	1.32	15.430	
500.0	499.6	498.5	498.0	0.9	0.9	-20.08	-7.4	-30.0	20.9	19.2	1.67	12.503	
600.0	598.8	598.3	597.5	1.1	1.1	-28.73	-8.3	-38.1	16.8	14.7	2.06	8.150	
700.0	697.1	697.8	696.6	1.5	1.3	-62.98	-9.3	-46.2	10.0	7.3	2.72	3.684	
729.7	726.1	727.3	726.0	1.6	1.4	-86.53	-9.5	-48.6	9.2	6.2	3.01	3.048	CC, ES, SF
800.0	794.3	796.6	795.1	1.9	1.5	-137.28	-10.2	-54.3	14.5	11.4	3.10	4.694	
900.0	890.2	894.5	892.6	2.5	1.8	-160.74	-11.1	-62.2	33.0	29.8	3.18	10.370	
1,000.0	984.7	991.3	989.2	3.1	2.0	-168.06	-12.0	-70.1	57.2	53.7	3.45	16.596	
1,100.0	1,079.1	1,088.1	1,085.6	3.7	2.2	-171.11	-12.9	-78.0	82.2	78.4	3.76	21.834	
1,200.0	1,173.5	1,184.8	1,182.0	4.3	2.4	-172.74	-13.8	-85.9	107.3	103.2	4.10	26.194	
1,300.0	1,267.8	1,281.6	1,278.5	4.9	2.6	-173.74	-14.7	-93.8	132.5	128.1	4.44	29.874	
1,400.0	1,362.2	1,378.3	1,374.9	5.5	2.8	-174.43	-15.6	-101.7	157.7	153.0	4.78	33.022	
1,500.0	1,456.6	1,475.1	1,471.3	6.2	3.1	-174.93	-16.5	-109.6	183.0	177.9	5.12	35.745	
1,600.0	1,551.0	1,571.9	1,567.8	6.8	3.3	-175.30	-17.4	-117.5	208.2	202.8	5.46	38.123	
1,700.0	1,645.3	1,668.6	1,664.2	7.4	3.5	-175.60	-18.3	-125.4	233.5	227.7	5.80	40.218	
1,800.0	1,739.7	1,765.4	1,760.6	8.0	3.7	-175.84	-19.2	-133.2	258.7	252.6	6.15	42.078	
1,900.0	1,834.1	1,862.1	1,857.0	8.7	3.9	-176.03	-20.1	-141.1	284.0	277.5	6.49	43.739	
2,000.0	1,928.5	1,958.9	1,953.5	9.3	4.1	-176.20	-21.0	-149.0	309.2	302.4	6.84	45.233	
2,100.0	2,022.8	2,055.6	2,049.9	9.9	4.4	-176.33	-21.9	-156.9	334.5	327.3	7.18	46.584	
2,200.0	2,117.2	2,152.4	2,146.3	10.6	4.6	-176.45	-22.8	-164.8	359.8	352.2	7.52	47.810	
2,300.0	2,211.6	2,249.1	2,242.7	11.2	4.8	-176.56	-23.7	-172.7	385.0	377.1	7.87	48.929	
2,400.0	2,306.0	2,345.9	2,339.2	11.8	5.0	-176.65	-24.6	-180.6	410.3	402.1	8.21	49.954	
2,500.0	2,400.3	2,442.6	2,435.6	12.4	5.2	-176.73	-25.5	-188.5	435.5	427.0	8.56	50.896	
2,600.0	2,494.7	2,539.4	2,532.0	13.1	5.5	-176.80	-26.4	-196.4	460.8	451.9	8.90	51.766	
2,700.0	2,589.1	2,636.2	2,628.5	13.7	5.7	-176.86	-27.3	-204.2	486.1	476.8	9.25	52.570	
2,800.0	2,683.4	2,732.9	2,724.9	14.3	5.9	-176.92	-28.2	-212.1	511.3	501.8	9.59	53.317	
2,900.0	2,777.8	2,829.7	2,821.3	15.0	6.1	-176.97	-29.1	-220.0	536.6	526.7	9.94	54.012	
3,000.0	2,872.2	2,926.4	2,917.7	15.6	6.3	-177.02	-30.0	-227.9	561.9	551.6	10.28	54.660	
3,100.0	2,966.6	3,023.2	3,014.2	16.2	6.6	-177.06	-30.9	-235.8	587.1	576.5	10.62	55.266	
3,200.0	3,060.9	3,119.9	3,110.6	16.9	6.8	-177.10	-31.8	-243.7	612.4	601.4	10.97	55.835	
3,300.0	3,155.3	3,216.7	3,207.0	17.5	7.0	-177.14	-32.7	-251.6	637.7	626.4	11.31	56.368	
3,400.0	3,249.7	3,313.4	3,303.5	18.1	7.2	-177.18	-33.6	-259.5	663.0	651.3	11.66	56.870	
3,500.0	3,344.1	3,410.2	3,399.9	18.8	7.4	-177.21	-34.5	-267.3	688.2	676.2	12.00	57.343	
3,600.0	3,438.4	3,506.9	3,496.3	19.4	7.6	-177.24	-35.4	-275.2	713.5	701.1	12.35	57.790	
3,700.0	3,532.8	3,603.7	3,592.7	20.0	7.9	-177.26	-36.3	-283.1	738.8	726.1	12.69	58.212	
3,800.0	3,627.2	3,700.4	3,689.2	20.6	8.1	-177.29	-37.2	-291.0	764.0	751.0	13.04	58.613	
3,900.0	3,721.6	3,797.2	3,785.6	21.3	8.3	-177.31	-38.1	-298.9	789.3	775.9	13.38	58.992	
4,000.0	3,815.9	3,894.0	3,882.0	21.9	8.5	-177.33	-39.0	-306.8	814.6	800.8	13.72	59.353	
4,100.0	3,910.3	3,990.7	3,978.4	22.5	8.7	-177.36	-39.9	-314.7	839.8	825.8	14.07	59.695	
4,200.0	4,004.7	4,087.5	4,074.9	23.2	9.0	-177.38	-40.8	-322.6	865.1	850.7	14.41	60.022	
4,300.0	4,099.1	4,184.2	4,171.3	23.8	9.2	-177.39	-41.7	-330.4	890.4	875.6	14.76	60.333	
4,400.0	4,193.4	4,281.0	4,267.7	24.4	9.4	-177.41	-42.6	-338.3	915.7	900.6	15.10	60.630	
4,500.0	4,287.8	4,377.7	4,364.2	25.1	9.6	-177.43	-43.5	-346.2	940.9	925.5	15.45	60.914	
4,600.0	4,382.2	4,474.5	4,460.6	25.7	9.8	-177.44	-44.4	-354.1	966.2	950.4	15.79	61.185	
4,700.0	4,476.6	4,571.2	4,557.0	26.3	10.0	-177.46	-45.3	-362.0	991.5	975.3	16.14	61.445	
4,800.0	4,570.9	4,668.0	4,653.4	27.0	10.3	-177.47	-46.2	-369.9	1,016.7	1,000.3	16.48	61.694	
4,900.0	4,665.3	4,764.7	4,749.9	27.6	10.5	-177.49	-47.1	-377.8	1,042.0	1,025.2	16.82	61.932	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13C (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,000.0	4,759.7	4,861.5	4,846.3	28.2	10.7	-177.50	-48.0	-385.7	1,067.3	1,050.1	17.17	62.162	
5,100.0	4,854.0	4,958.2	4,942.7	28.9	10.9	-177.51	-48.9	-393.5	1,092.5	1,075.0	17.51	62.382	
5,200.0	4,948.4	5,055.0	5,039.2	29.5	11.1	-177.52	-49.8	-401.4	1,117.8	1,100.0	17.86	62.593	
5,300.0	5,042.8	5,151.8	5,135.6	30.1	11.4	-177.53	-50.7	-409.3	1,143.1	1,124.9	18.20	62.797	
5,400.0	5,137.2	5,248.5	5,232.0	30.8	11.6	-177.55	-51.6	-417.2	1,168.4	1,149.8	18.55	62.993	
5,500.0	5,231.5	5,345.3	5,328.4	31.4	11.8	-177.56	-52.5	-425.1	1,193.6	1,174.7	18.89	63.182	
5,600.0	5,325.9	5,442.0	5,424.9	32.0	12.0	-177.57	-53.4	-433.0	1,218.9	1,199.7	19.24	63.364	
5,700.0	5,420.3	5,538.8	5,521.3	32.7	12.2	-177.58	-54.3	-440.9	1,244.2	1,224.6	19.58	63.540	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13CC (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-110.01	-17.5	-48.0	51.1				
100.0	100.0	100.0	100.0	0.1	0.1	-110.01	-17.5	-48.0	51.1	50.8	0.27	187.668	
200.0	200.0	200.0	200.0	0.3	0.3	-110.01	-17.5	-48.0	51.1	50.5	0.62	82.236	
300.0	300.0	297.4	297.4	0.5	0.5	-110.72	-18.9	-50.0	53.6	52.6	0.97	55.011	
400.0	400.0	395.0	394.6	0.7	0.7	-22.96	-23.2	-56.0	58.5	57.2	1.31	44.530	
500.0	499.6	494.8	494.1	0.9	0.9	-27.69	-28.6	-63.6	60.5	58.9	1.67	36.285	
600.0	598.8	594.5	593.3	1.1	1.2	-34.83	-34.0	-71.1	58.6	56.6	2.05	28.589	
700.0	697.1	693.8	692.2	1.5	1.4	-46.06	-39.4	-78.6	53.9	51.4	2.53	21.304	
800.0	794.3	792.4	790.3	1.9	1.6	-63.88	-44.7	-86.0	49.1	45.8	3.25	15.095	
850.2	842.6	841.5	839.3	2.2	1.7	-75.72	-47.4	-89.7	48.2	44.4	3.74	12.890	CC, ES
900.0	890.2	890.0	887.5	2.5	1.8	-88.70	-50.0	-93.4	49.3	45.1	4.21	11.714	SF
1,000.0	984.7	986.6	983.7	3.1	2.1	-113.10	-55.2	-100.7	59.9	55.0	4.94	12.127	
1,100.0	1,079.1	1,083.1	1,079.8	3.7	2.3	-128.89	-60.4	-108.0	78.3	72.9	5.35	14.618	
1,200.0	1,173.5	1,179.5	1,175.8	4.3	2.5	-138.40	-65.7	-115.3	100.2	94.5	5.69	17.626	
1,300.0	1,267.8	1,276.0	1,271.9	4.9	2.8	-144.43	-70.9	-122.5	123.9	117.9	6.02	20.587	
1,400.0	1,362.2	1,372.5	1,367.9	5.5	3.0	-148.52	-76.1	-129.8	148.5	142.1	6.36	23.326	
1,500.0	1,456.6	1,469.0	1,464.0	6.2	3.2	-151.45	-81.3	-137.1	173.5	166.8	6.72	25.806	
1,600.0	1,551.0	1,565.4	1,560.0	6.8	3.4	-153.64	-86.5	-144.4	198.9	191.8	7.10	28.036	
1,700.0	1,645.3	1,661.9	1,656.1	7.4	3.7	-155.33	-91.7	-151.7	224.5	217.1	7.47	30.041	
1,800.0	1,739.7	1,758.4	1,752.2	8.0	3.9	-156.68	-97.0	-158.9	250.3	242.4	7.86	31.845	
1,900.0	1,834.1	1,854.9	1,848.2	8.7	4.1	-157.78	-102.2	-166.2	276.2	267.9	8.25	33.474	
2,000.0	1,928.5	1,951.3	1,944.3	9.3	4.4	-158.68	-107.4	-173.5	302.1	293.4	8.64	34.950	
2,100.0	2,022.8	2,047.8	2,040.3	9.9	4.6	-159.45	-112.6	-180.8	328.1	319.1	9.04	36.293	
2,200.0	2,117.2	2,144.3	2,136.4	10.6	4.8	-160.10	-117.8	-188.1	354.1	344.7	9.44	37.519	
2,300.0	2,211.6	2,240.8	2,232.5	11.2	5.1	-160.66	-123.0	-195.4	380.2	370.4	9.84	38.641	
2,400.0	2,306.0	2,337.2	2,328.5	11.8	5.3	-161.16	-128.3	-202.6	406.3	396.1	10.24	39.673	
2,500.0	2,400.3	2,433.7	2,424.6	12.4	5.5	-161.59	-133.5	-209.9	432.5	421.8	10.65	40.624	
2,600.0	2,494.7	2,530.2	2,520.6	13.1	5.7	-161.97	-138.7	-217.2	458.6	447.6	11.05	41.503	
2,700.0	2,589.1	2,626.7	2,616.7	13.7	6.0	-162.31	-143.9	-224.5	484.8	473.3	11.46	42.318	
2,800.0	2,683.4	2,723.1	2,712.8	14.3	6.2	-162.62	-149.1	-231.8	511.0	499.1	11.86	43.076	
2,900.0	2,777.8	2,819.6	2,808.8	15.0	6.4	-162.89	-154.3	-239.0	537.2	524.9	12.27	43.783	
3,000.0	2,872.2	2,916.1	2,904.9	15.6	6.7	-163.14	-159.6	-246.3	563.4	550.7	12.68	44.443	
3,100.0	2,966.6	3,012.6	3,000.9	16.2	6.9	-163.37	-164.8	-253.6	589.6	576.5	13.08	45.061	
3,200.0	3,060.9	3,109.1	3,097.0	16.9	7.1	-163.58	-170.0	-260.9	615.8	602.3	13.49	45.640	
3,300.0	3,155.3	3,205.5	3,193.1	17.5	7.4	-163.77	-175.2	-268.2	642.1	628.2	13.90	46.185	
3,400.0	3,249.7	3,302.0	3,289.1	18.1	7.6	-163.95	-180.4	-275.5	668.3	654.0	14.31	46.697	
3,500.0	3,344.1	3,398.5	3,385.2	18.8	7.8	-164.11	-185.6	-282.7	694.6	679.8	14.72	47.181	
3,600.0	3,438.4	3,495.0	3,481.2	19.4	8.0	-164.27	-190.9	-290.0	720.8	705.7	15.13	47.638	
3,700.0	3,532.8	3,591.4	3,577.3	20.0	8.3	-164.41	-196.1	-297.3	747.1	731.5	15.54	48.071	
3,800.0	3,627.2	3,687.9	3,673.4	20.6	8.5	-164.54	-201.3	-304.6	773.3	757.4	15.95	48.480	
3,900.0	3,721.6	3,784.4	3,769.4	21.3	8.7	-164.66	-206.5	-311.9	799.6	783.2	16.36	48.869	
4,000.0	3,815.9	3,880.9	3,865.5	21.9	9.0	-164.78	-211.7	-319.1	825.8	809.1	16.77	49.239	
4,100.0	3,910.3	3,977.3	3,961.5	22.5	9.2	-164.88	-216.9	-326.4	852.1	834.9	17.18	49.590	
4,200.0	4,004.7	4,073.8	4,057.6	23.2	9.4	-164.98	-222.2	-333.7	878.4	860.8	17.59	49.925	
4,300.0	4,099.1	4,170.3	4,153.7	23.8	9.7	-165.08	-227.4	-341.0	904.7	886.7	18.01	50.244	
4,400.0	4,193.4	4,266.8	4,249.7	24.4	9.9	-165.17	-232.6	-348.3	930.9	912.5	18.42	50.549	
4,500.0	4,287.8	4,363.2	4,345.8	25.1	10.1	-165.26	-237.8	-355.6	957.2	938.4	18.83	50.840	
4,600.0	4,382.2	4,459.7	4,441.8	25.7	10.3	-165.34	-243.0	-362.8	983.5	964.3	19.24	51.119	
4,700.0	4,476.6	4,556.2	4,537.9	26.3	10.6	-165.41	-248.2	-370.1	1,009.8	990.1	19.65	51.386	
4,800.0	4,570.9	4,652.7	4,633.9	27.0	10.8	-165.49	-253.5	-377.4	1,036.1	1,016.0	20.06	51.642	
4,900.0	4,665.3	4,749.1	4,730.0	27.6	11.0	-165.55	-258.7	-384.7	1,062.3	1,041.9	20.47	51.887	
5,000.0	4,759.7	4,845.6	4,826.1	28.2	11.3	-165.62	-263.9	-392.0	1,088.6	1,067.7	20.89	52.123	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 16-13CC (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,854.0	4,942.1	4,922.1	28.9	11.5	-165.68	-269.1	-399.3	1,114.9	1,093.6	21.30	52.349	
5,200.0	4,948.4	5,038.6	5,018.2	29.5	11.7	-165.74	-274.3	-406.5	1,141.2	1,119.5	21.71	52.566	
5,300.0	5,042.8	5,135.1	5,114.2	30.1	12.0	-165.80	-279.6	-413.8	1,167.5	1,145.4	22.12	52.776	
5,400.0	5,137.2	5,231.5	5,210.3	30.8	12.2	-165.85	-284.8	-421.1	1,193.8	1,171.2	22.53	52.977	
5,500.0	5,231.5	5,328.0	5,306.4	31.4	12.4	-165.91	-290.0	-428.4	1,220.1	1,197.1	22.95	53.172	
5,600.0	5,325.9	5,424.5	5,402.4	32.0	12.6	-165.96	-295.2	-435.7	1,246.4	1,223.0	23.36	53.359	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-3B (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD, 1161-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	31.70	98.3	60.7	115.6				
100.0	100.0	99.6	99.6	0.1	0.2	31.69	98.5	60.8	115.7	115.4	0.29	396.603	ES
200.0	200.0	199.2	199.2	0.3	0.3	31.65	98.9	61.0	116.2	115.6	0.62	186.868	
300.0	300.0	299.9	299.9	0.5	0.5	31.72	99.3	61.4	116.8	115.8	0.97	120.257	
400.0	400.0	401.3	401.2	0.7	0.7	125.72	95.7	65.1	117.3	116.0	1.34	87.737	
500.0	499.6	500.7	500.0	0.9	0.9	133.70	88.1	73.0	121.4	119.7	1.76	68.904	
600.0	598.8	596.7	594.7	1.1	1.2	144.04	77.6	83.9	132.6	130.4	2.24	59.144	
700.0	697.1	690.5	686.5	1.5	1.6	154.91	63.6	97.3	153.4	150.7	2.73	56.162	SF
800.0	794.3	782.5	775.9	1.9	1.9	164.46	47.0	111.3	183.5	180.4	3.17	57.887	
900.0	890.2	870.3	861.0	2.5	2.3	171.54	30.5	124.7	222.3	218.8	3.55	62.697	
1,000.0	984.7	954.5	942.6	3.1	2.7	176.68	14.7	138.4	268.2	264.3	3.91	68.628	
1,100.0	1,079.1	1,042.3	1,027.7	3.7	3.1	-179.43	-1.6	152.6	316.0	311.7	4.30	73.460	
1,200.0	1,173.5	1,132.7	1,115.5	4.3	3.5	-176.55	-18.0	166.7	363.9	359.2	4.71	77.188	
1,300.0	1,267.8	1,222.7	1,203.0	4.9	3.9	-174.31	-34.5	179.5	411.3	406.1	5.14	79.940	
1,400.0	1,362.2	1,310.4	1,288.4	5.5	4.3	-172.60	-50.5	191.9	458.8	453.2	5.58	82.233	
1,500.0	1,456.6	1,388.9	1,364.8	6.2	4.6	-171.37	-64.6	203.2	506.9	500.9	6.00	84.453	
1,600.0	1,551.0	1,459.7	1,433.2	6.8	5.0	-170.36	-78.2	215.3	557.6	551.2	6.42	86.909	
1,700.0	1,645.3	1,528.8	1,499.5	7.4	5.4	-169.47	-92.0	228.7	610.7	603.9	6.83	89.388	
1,800.0	1,739.7	1,618.0	1,585.0	8.0	5.8	-168.51	-109.8	246.9	664.6	657.3	7.30	90.992	
1,900.0	1,834.1	1,701.3	1,665.0	8.7	6.3	-167.80	-125.9	263.7	718.4	710.6	7.76	92.561	
2,000.0	1,928.5	1,789.4	1,749.8	9.3	6.7	-167.18	-142.6	281.3	772.0	763.8	8.23	93.823	
2,100.0	2,022.8	1,875.3	1,832.4	9.9	7.1	-166.71	-158.3	298.3	825.3	816.7	8.68	95.054	
2,200.0	2,117.2	1,964.5	1,918.5	10.6	7.6	-166.34	-173.7	315.8	878.5	869.3	9.13	96.173	
2,300.0	2,211.6	2,053.8	2,004.9	11.2	8.0	-166.07	-188.3	333.1	931.1	921.5	9.58	97.149	
2,400.0	2,306.0	2,142.4	2,090.7	11.8	8.4	-165.84	-202.6	349.9	983.4	973.4	10.03	98.048	
2,500.0	2,400.3	2,237.6	2,183.2	12.4	8.8	-165.65	-217.3	367.6	1,035.3	1,024.8	10.48	98.781	
2,600.0	2,494.7	2,326.4	2,269.5	13.1	9.2	-165.56	-229.9	383.6	1,086.4	1,075.5	10.91	99.595	
2,700.0	2,589.1	2,410.9	2,351.8	13.7	9.6	-165.47	-242.0	398.9	1,137.6	1,126.2	11.34	100.339	
2,800.0	2,683.4	2,490.8	2,429.4	14.3	10.0	-165.33	-254.6	413.2	1,189.0	1,177.2	11.77	100.995	
2,900.0	2,777.8	2,574.2	2,510.1	15.0	10.4	-165.12	-269.1	428.3	1,240.9	1,228.6	12.25	101.330	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-4B (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-127.12	-16.0	-21.2	26.6				
100.0	100.0	100.0	100.0	0.1	0.1	-127.12	-16.0	-21.2	26.6	26.3	0.27	97.565	
200.0	200.0	200.0	200.0	0.3	0.3	-127.12	-16.0	-21.2	26.6	25.9	0.62	42.753	
255.6	255.6	255.6	255.6	0.4	0.4	-127.12	-16.0	-21.2	26.6	25.7	0.82	32.583	CC
300.0	300.0	299.7	299.7	0.5	0.5	-127.26	-16.2	-21.3	26.7	25.7	0.97	27.542	ES
400.0	400.0	398.3	398.2	0.7	0.7	-43.02	-19.5	-23.1	28.3	27.0	1.32	21.467	
500.0	499.6	496.4	495.9	0.9	0.9	-57.14	-27.2	-27.4	32.2	30.5	1.69	19.032	SF
600.0	598.8	593.7	592.2	1.1	1.2	-73.22	-39.2	-34.1	41.0	38.8	2.15	19.095	
700.0	697.1	692.2	689.4	1.5	1.5	-87.64	-53.3	-41.9	53.6	50.8	2.74	19.580	
800.0	794.3	790.0	785.8	1.9	1.8	-100.29	-67.3	-49.7	69.1	65.6	3.45	20.032	
900.0	890.2	886.8	881.4	2.5	2.1	-110.98	-81.2	-57.4	88.6	84.4	4.23	20.975	
1,000.0	984.7	982.7	976.0	3.1	2.4	-119.76	-95.0	-65.1	112.4	107.4	4.98	22.570	
1,100.0	1,079.1	1,078.5	1,070.5	3.7	2.7	-125.79	-108.7	-72.7	138.2	132.5	5.69	24.274	
1,200.0	1,173.5	1,174.3	1,164.9	4.3	3.0	-129.91	-122.4	-80.3	165.0	158.6	6.38	25.845	
1,300.0	1,267.8	1,270.0	1,259.4	4.9	3.3	-132.89	-136.1	-88.0	192.3	185.3	7.06	27.239	
1,400.0	1,362.2	1,365.8	1,353.9	5.5	3.7	-135.12	-149.9	-95.6	220.0	212.3	7.73	28.461	
1,500.0	1,456.6	1,461.6	1,448.4	6.2	4.0	-136.86	-163.6	-103.2	248.0	239.6	8.40	29.531	
1,600.0	1,551.0	1,557.3	1,542.8	6.8	4.3	-138.24	-177.3	-110.8	276.1	267.1	9.06	30.471	
1,700.0	1,645.3	1,653.1	1,637.3	7.4	4.6	-139.37	-191.0	-118.5	304.4	294.7	9.72	31.300	
1,800.0	1,739.7	1,748.9	1,731.8	8.0	4.9	-140.31	-204.7	-126.1	332.7	322.4	10.39	32.036	
1,900.0	1,834.1	1,844.6	1,826.2	8.7	5.3	-141.10	-218.5	-133.7	361.2	350.1	11.05	32.693	
2,000.0	1,928.5	1,940.4	1,920.7	9.3	5.6	-141.77	-232.2	-141.4	389.6	377.9	11.71	33.281	
2,100.0	2,022.8	2,036.2	2,015.2	9.9	5.9	-142.36	-245.9	-149.0	418.1	405.8	12.37	33.812	
2,200.0	2,117.2	2,131.9	2,109.7	10.6	6.2	-142.87	-259.6	-156.6	446.7	433.7	13.03	34.292	
2,300.0	2,211.6	2,227.7	2,204.1	11.2	6.5	-143.31	-273.4	-164.3	475.3	461.6	13.69	34.728	
2,400.0	2,306.0	2,323.5	2,298.6	11.8	6.9	-143.71	-287.1	-171.9	503.9	489.5	14.34	35.126	
2,500.0	2,400.3	2,419.3	2,393.1	12.4	7.2	-144.07	-300.8	-179.5	532.5	517.5	15.00	35.491	
2,600.0	2,494.7	2,515.0	2,487.5	13.1	7.5	-144.38	-314.5	-187.1	561.1	545.4	15.66	35.827	
2,700.0	2,589.1	2,610.8	2,582.0	13.7	7.8	-144.67	-328.3	-194.8	589.8	573.4	16.32	36.137	
2,800.0	2,683.4	2,706.6	2,676.5	14.3	8.1	-144.93	-342.0	-202.4	618.4	601.4	16.98	36.423	
2,900.0	2,777.8	2,802.3	2,771.0	15.0	8.5	-145.17	-355.7	-210.0	647.1	629.5	17.64	36.689	
3,000.0	2,872.2	2,898.1	2,865.4	15.6	8.8	-145.39	-369.4	-217.7	675.8	657.5	18.30	36.936	
3,100.0	2,966.6	2,993.9	2,959.9	16.2	9.1	-145.59	-383.1	-225.3	704.5	685.5	18.95	37.166	
3,200.0	3,060.9	3,089.6	3,054.4	16.9	9.4	-145.77	-396.9	-232.9	733.2	713.6	19.61	37.382	
3,300.0	3,155.3	3,185.4	3,148.9	17.5	9.7	-145.94	-410.6	-240.6	761.9	741.6	20.27	37.584	
3,400.0	3,249.7	3,281.2	3,243.3	18.1	10.1	-146.10	-424.3	-248.2	790.6	769.6	20.93	37.773	
3,500.0	3,344.1	3,376.9	3,337.8	18.8	10.4	-146.25	-438.0	-255.8	819.3	797.7	21.59	37.951	
3,600.0	3,438.4	3,472.7	3,432.3	19.4	10.7	-146.38	-451.8	-263.4	848.0	825.8	22.25	38.119	
3,700.0	3,532.8	3,568.5	3,526.7	20.0	11.0	-146.51	-465.5	-271.1	876.7	853.8	22.90	38.277	
3,800.0	3,627.2	3,664.2	3,621.2	20.6	11.4	-146.63	-479.2	-278.7	905.5	881.9	23.56	38.427	
3,900.0	3,721.6	3,760.0	3,715.7	21.3	11.7	-146.74	-492.9	-286.3	934.2	910.0	24.22	38.569	
4,000.0	3,815.9	3,855.8	3,810.2	21.9	12.0	-146.85	-506.7	-294.0	962.9	938.0	24.88	38.703	
4,100.0	3,910.3	3,951.5	3,904.6	22.5	12.3	-146.95	-520.4	-301.6	991.7	966.1	25.54	38.830	
4,200.0	4,004.7	4,047.3	3,999.1	23.2	12.6	-147.04	-534.1	-309.2	1,020.4	994.2	26.20	38.951	
4,300.0	4,099.1	4,143.1	4,093.6	23.8	13.0	-147.13	-547.8	-316.9	1,049.1	1,022.3	26.86	39.067	
4,400.0	4,193.4	4,238.8	4,188.0	24.4	13.3	-147.22	-561.5	-324.5	1,077.9	1,050.4	27.51	39.177	
4,500.0	4,287.8	4,334.6	4,282.5	25.1	13.6	-147.30	-575.3	-332.1	1,106.6	1,078.5	28.17	39.282	
4,600.0	4,382.2	4,430.4	4,377.0	25.7	13.9	-147.37	-589.0	-339.7	1,135.4	1,106.6	28.83	39.382	
4,700.0	4,476.6	4,526.2	4,471.5	26.3	14.2	-147.44	-602.7	-347.4	1,164.1	1,134.6	29.49	39.477	
4,800.0	4,570.9	4,621.9	4,565.9	27.0	14.6	-147.51	-616.4	-355.0	1,192.9	1,162.7	30.15	39.569	
4,900.0	4,665.3	4,717.7	4,660.4	27.6	14.9	-147.58	-630.2	-362.6	1,221.6	1,190.8	30.81	39.657	
5,000.0	4,759.7	4,813.5	4,754.9	28.2	15.2	-147.64	-643.9	-370.3	1,250.4	1,218.9	31.46	39.741	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-4BB (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-120.37	-21.8	-37.3	43.2				
100.0	100.0	100.0	100.0	0.1	0.1	-120.37	-21.8	-37.3	43.2	42.9	0.27	158.707	
200.0	200.0	200.0	200.0	0.3	0.3	-120.37	-21.8	-37.3	43.2	42.6	0.62	69.546	
300.0	300.0	300.0	300.0	0.5	0.5	-120.37	-21.8	-37.3	43.2	42.2	0.97	44.529	CC
400.0	400.0	397.9	397.9	0.7	0.7	-32.86	-23.8	-38.8	43.4	42.1	1.32	32.920	ES
500.0	499.6	495.5	495.2	0.9	0.9	-41.37	-29.8	-43.4	44.6	42.9	1.68	26.523	
600.0	598.8	593.8	592.7	1.1	1.1	-54.16	-39.2	-50.6	47.9	45.8	2.10	22.819	
700.0	697.1	692.7	690.8	1.5	1.4	-69.86	-49.2	-58.3	52.0	49.3	2.66	19.562	
800.0	794.3	791.0	788.3	1.9	1.6	-87.26	-59.1	-65.9	58.9	55.5	3.38	17.405	
900.0	890.2	888.3	884.8	2.5	1.9	-103.88	-68.9	-73.4	71.2	67.1	4.18	17.045	SF
1,000.0	984.7	984.6	980.4	3.1	2.2	-117.51	-78.6	-80.9	89.9	85.0	4.88	18.405	
1,100.0	1,079.1	1,080.8	1,075.8	3.7	2.4	-126.60	-88.3	-88.4	112.2	106.7	5.49	20.435	
1,200.0	1,173.5	1,177.0	1,171.2	4.3	2.7	-132.63	-98.0	-95.8	136.4	130.3	6.06	22.519	
1,300.0	1,267.8	1,273.2	1,266.6	4.9	3.0	-136.84	-107.7	-103.3	161.6	155.0	6.60	24.466	
1,400.0	1,362.2	1,369.4	1,362.0	5.5	3.2	-139.91	-117.4	-110.7	187.3	180.2	7.14	26.227	
1,500.0	1,456.6	1,465.6	1,457.4	6.2	3.5	-142.24	-127.1	-118.2	213.5	205.8	7.68	27.803	
1,600.0	1,551.0	1,561.8	1,552.9	6.8	3.8	-144.06	-136.8	-125.6	239.9	231.7	8.21	29.208	
1,700.0	1,645.3	1,658.0	1,648.3	7.4	4.0	-145.52	-146.4	-133.1	266.5	257.8	8.75	30.463	
1,800.0	1,739.7	1,754.2	1,743.7	8.0	4.3	-146.72	-156.1	-140.6	293.2	284.0	9.28	31.588	
1,900.0	1,834.1	1,850.4	1,839.1	8.7	4.6	-147.71	-165.8	-148.0	320.1	310.3	9.82	32.599	
2,000.0	1,928.5	1,946.6	1,934.5	9.3	4.8	-148.55	-175.5	-155.5	347.0	336.6	10.35	33.512	
2,100.0	2,022.8	2,042.8	2,029.9	9.9	5.1	-149.28	-185.2	-162.9	373.9	363.0	10.89	34.339	
2,200.0	2,117.2	2,139.0	2,125.4	10.6	5.4	-149.90	-194.9	-170.4	400.9	389.5	11.43	35.092	
2,300.0	2,211.6	2,235.2	2,220.8	11.2	5.7	-150.45	-204.6	-177.8	428.0	416.0	11.96	35.780	
2,400.0	2,306.0	2,331.3	2,316.2	11.8	5.9	-150.93	-214.3	-185.3	455.1	442.6	12.50	36.410	
2,500.0	2,400.3	2,427.5	2,411.6	12.4	6.2	-151.35	-224.0	-192.7	482.2	469.2	13.04	36.990	
2,600.0	2,494.7	2,523.7	2,507.0	13.1	6.5	-151.73	-233.7	-200.2	509.3	495.7	13.57	37.525	
2,700.0	2,589.1	2,619.9	2,602.4	13.7	6.7	-152.08	-243.4	-207.6	536.5	522.4	14.11	38.019	
2,800.0	2,683.4	2,716.1	2,697.8	14.3	7.0	-152.39	-253.1	-215.1	563.6	549.0	14.65	38.479	
2,900.0	2,777.8	2,812.3	2,793.3	15.0	7.3	-152.67	-262.8	-222.6	590.8	575.6	15.19	38.906	
3,000.0	2,872.2	2,908.5	2,888.7	15.6	7.6	-152.93	-272.5	-230.0	618.0	602.3	15.72	39.304	
3,100.0	2,966.6	3,004.7	2,984.1	16.2	7.8	-153.16	-282.2	-237.5	645.2	629.0	16.26	39.676	
3,200.0	3,060.9	3,100.9	3,079.5	16.9	8.1	-153.38	-291.9	-244.9	672.4	655.6	16.80	40.025	
3,300.0	3,155.3	3,197.1	3,174.9	17.5	8.4	-153.58	-301.6	-252.4	699.6	682.3	17.34	40.352	
3,400.0	3,249.7	3,293.3	3,270.3	18.1	8.6	-153.76	-311.3	-259.8	726.9	709.0	17.88	40.659	
3,500.0	3,344.1	3,389.5	3,365.8	18.8	8.9	-153.93	-320.9	-267.3	754.1	735.7	18.42	40.949	
3,600.0	3,438.4	3,485.7	3,461.2	19.4	9.2	-154.09	-330.6	-274.7	781.3	762.4	18.95	41.222	
3,700.0	3,532.8	3,581.9	3,556.6	20.0	9.5	-154.24	-340.3	-282.2	808.6	789.1	19.49	41.481	
3,800.0	3,627.2	3,678.1	3,652.0	20.6	9.7	-154.38	-350.0	-289.7	835.8	815.8	20.03	41.725	
3,900.0	3,721.6	3,774.3	3,747.4	21.3	10.0	-154.51	-359.7	-297.1	863.1	842.5	20.57	41.957	
4,000.0	3,815.9	3,870.5	3,842.8	21.9	10.3	-154.63	-369.4	-304.6	890.3	869.2	21.11	42.177	
4,100.0	3,910.3	3,966.7	3,938.3	22.5	10.5	-154.74	-379.1	-312.0	917.6	896.0	21.65	42.386	
4,200.0	4,004.7	4,062.9	4,033.7	23.2	10.8	-154.85	-388.8	-319.5	944.9	922.7	22.19	42.585	
4,300.0	4,099.1	4,159.1	4,129.1	23.8	11.1	-154.95	-398.5	-326.9	972.1	949.4	22.73	42.775	
4,400.0	4,193.4	4,255.3	4,224.5	24.4	11.4	-155.05	-408.2	-334.4	999.4	976.1	23.27	42.956	
4,500.0	4,287.8	4,351.5	4,319.9	25.1	11.6	-155.14	-417.9	-341.8	1,026.7	1,002.9	23.81	43.128	
4,600.0	4,382.2	4,447.7	4,415.3	25.7	11.9	-155.23	-427.6	-349.3	1,054.0	1,029.6	24.34	43.293	
4,700.0	4,476.6	4,543.9	4,510.8	26.3	12.2	-155.31	-437.3	-356.7	1,081.2	1,056.3	24.88	43.451	
4,800.0	4,570.9	4,640.1	4,606.2	27.0	12.4	-155.39	-447.0	-364.2	1,108.5	1,083.1	25.42	43.602	
4,900.0	4,665.3	4,736.3	4,701.6	27.6	12.7	-155.46	-456.7	-371.7	1,135.8	1,109.8	25.96	43.747	
5,000.0	4,759.7	4,832.5	4,797.0	28.2	13.0	-155.53	-466.4	-379.1	1,163.1	1,136.6	26.50	43.887	
5,100.0	4,854.0	4,928.7	4,892.4	28.9	13.3	-155.60	-476.1	-386.6	1,190.4	1,163.3	27.04	44.020	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-4BB (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	4,948.4	5,024.9	4,987.8	29.5	13.5	-155.67	-485.7	-394.0	1,217.6	1,190.1	27.58	44.148	
5,300.0	5,042.8	5,121.1	5,083.3	30.1	13.8	-155.73	-495.4	-401.5	1,244.9	1,216.8	28.12	44.272	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-4C (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-152.24	-10.2	-5.4	11.5				
100.0	100.0	100.0	100.0	0.1	0.1	-152.24	-10.2	-5.4	11.5	11.2	0.27	42.312	
200.0	200.0	200.0	200.0	0.3	0.3	-152.24	-10.2	-5.4	11.5	10.9	0.62	18.541	
233.3	233.3	233.3	233.3	0.4	0.4	-152.24	-10.2	-5.4	11.5	10.8	0.74	15.616	CC, ES
300.0	300.0	299.7	299.7	0.5	0.5	-152.43	-10.8	-5.6	12.2	11.2	0.97	12.541	
400.0	400.0	398.8	398.7	0.7	0.7	-71.05	-15.5	-7.7	16.3	15.0	1.32	12.347	SF
500.0	499.6	497.3	496.6	0.9	0.9	-85.52	-24.8	-11.9	24.9	23.2	1.72	14.511	
600.0	598.8	594.7	592.8	1.1	1.2	-96.22	-38.5	-18.0	39.2	37.0	2.21	17.747	
700.0	697.1	691.9	688.2	1.5	1.6	-103.51	-55.8	-25.8	58.4	55.6	2.81	20.796	
800.0	794.3	789.1	783.5	1.9	1.9	-110.30	-73.3	-33.6	80.1	76.6	3.51	22.808	
900.0	890.2	885.4	877.9	2.5	2.3	-116.49	-90.7	-41.4	104.7	100.4	4.28	24.438	
1,000.0	984.7	980.8	971.3	3.1	2.6	-122.08	-108.0	-49.1	132.5	127.4	5.07	26.116	
1,100.0	1,079.1	1,076.0	1,064.7	3.7	3.0	-126.09	-125.2	-56.8	161.4	155.5	5.85	27.596	
1,200.0	1,173.5	1,171.2	1,158.0	4.3	3.4	-128.88	-142.4	-64.5	190.8	184.1	6.61	28.847	
1,300.0	1,267.8	1,266.5	1,251.4	4.9	3.7	-130.92	-159.6	-72.2	220.5	213.1	7.37	29.903	
1,400.0	1,362.2	1,361.7	1,344.7	5.5	4.1	-132.49	-176.8	-79.9	250.4	242.2	8.13	30.799	
1,500.0	1,456.6	1,456.9	1,438.1	6.2	4.4	-133.72	-194.0	-87.6	280.4	271.5	8.88	31.565	
1,600.0	1,551.0	1,552.1	1,531.4	6.8	4.8	-134.71	-211.2	-95.3	310.5	300.9	9.64	32.226	
1,700.0	1,645.3	1,647.4	1,624.7	7.4	5.2	-135.52	-228.4	-103.0	340.7	330.4	10.39	32.801	
1,800.0	1,739.7	1,742.6	1,718.1	8.0	5.5	-136.21	-245.6	-110.7	371.0	359.9	11.14	33.306	
1,900.0	1,834.1	1,837.8	1,811.4	8.7	5.9	-136.79	-262.8	-118.4	401.3	389.4	11.89	33.752	
2,000.0	1,928.5	1,933.1	1,904.8	9.3	6.3	-137.29	-280.0	-126.1	431.6	419.0	12.64	34.148	
2,100.0	2,022.8	2,028.3	1,998.1	9.9	6.7	-137.72	-297.2	-133.8	462.0	448.6	13.39	34.503	
2,200.0	2,117.2	2,123.5	2,091.5	10.6	7.0	-138.10	-314.4	-141.5	492.4	478.2	14.14	34.823	
2,300.0	2,211.6	2,218.7	2,184.8	11.2	7.4	-138.44	-331.6	-149.2	522.8	507.9	14.89	35.111	
2,400.0	2,306.0	2,314.0	2,278.2	11.8	7.8	-138.73	-348.8	-156.9	553.2	537.5	15.64	35.374	
2,500.0	2,400.3	2,409.2	2,371.5	12.4	8.1	-139.00	-366.0	-164.6	583.6	567.2	16.39	35.613	
2,600.0	2,494.7	2,504.4	2,464.8	13.1	8.5	-139.24	-383.2	-172.3	614.0	596.9	17.14	35.832	
2,700.0	2,589.1	2,599.6	2,558.2	13.7	8.9	-139.46	-400.4	-180.0	644.5	626.6	17.88	36.034	
2,800.0	2,683.4	2,694.9	2,651.5	14.3	9.2	-139.66	-417.6	-187.7	674.9	656.3	18.63	36.220	
2,900.0	2,777.8	2,790.1	2,744.9	15.0	9.6	-139.84	-434.8	-195.4	705.4	686.0	19.38	36.392	
3,000.0	2,872.2	2,885.3	2,838.2	15.6	10.0	-140.01	-452.0	-203.1	735.8	715.7	20.13	36.552	
3,100.0	2,966.6	2,980.6	2,931.6	16.2	10.3	-140.16	-469.2	-210.8	766.3	745.4	20.88	36.700	
3,200.0	3,060.9	3,075.8	3,024.9	16.9	10.7	-140.30	-486.4	-218.5	796.8	775.1	21.63	36.839	
3,300.0	3,155.3	3,171.0	3,118.2	17.5	11.1	-140.44	-503.6	-226.2	827.2	804.9	22.38	36.968	
3,400.0	3,249.7	3,266.2	3,211.6	18.1	11.4	-140.56	-520.8	-233.9	857.7	834.6	23.13	37.089	
3,500.0	3,344.1	3,361.5	3,304.9	18.8	11.8	-140.67	-538.0	-241.6	888.2	864.3	23.87	37.203	
3,600.0	3,438.4	3,456.7	3,398.3	19.4	12.2	-140.78	-555.2	-249.3	918.7	894.1	24.62	37.310	
3,700.0	3,532.8	3,551.9	3,491.6	20.0	12.6	-140.88	-572.4	-257.0	949.2	923.8	25.37	37.411	
3,800.0	3,627.2	3,647.1	3,585.0	20.6	12.9	-140.97	-589.6	-264.7	979.7	953.5	26.12	37.506	
3,900.0	3,721.6	3,742.4	3,678.3	21.3	13.3	-141.06	-606.8	-272.4	1,010.2	983.3	26.87	37.596	
4,000.0	3,815.9	3,837.6	3,771.6	21.9	13.7	-141.14	-624.0	-280.1	1,040.6	1,013.0	27.62	37.682	
4,100.0	3,910.3	3,932.8	3,865.0	22.5	14.0	-141.22	-641.2	-287.8	1,071.1	1,042.8	28.37	37.762	
4,200.0	4,004.7	4,028.0	3,958.3	23.2	14.4	-141.29	-658.4	-295.5	1,101.6	1,072.5	29.11	37.839	
4,300.0	4,099.1	4,123.3	4,051.7	23.8	14.8	-141.36	-675.6	-303.2	1,132.1	1,102.3	29.86	37.912	
4,400.0	4,193.4	4,218.5	4,145.0	24.4	15.1	-141.43	-692.8	-310.9	1,162.6	1,132.0	30.61	37.981	
4,500.0	4,287.8	4,313.7	4,238.4	25.1	15.5	-141.49	-710.0	-318.6	1,193.1	1,161.8	31.36	38.048	
4,600.0	4,382.2	4,409.0	4,331.7	25.7	15.9	-141.55	-727.2	-326.3	1,223.6	1,191.5	32.11	38.111	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-4CC (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	112.18	-4.4	10.7	11.6				
100.0	100.0	100.0	100.0	0.1	0.1	112.18	-4.4	10.7	11.6	11.3	0.27	42.567	
200.0	200.0	200.0	200.0	0.3	0.3	112.18	-4.4	10.7	11.6	11.0	0.62	18.653	CC
234.3	234.3	234.3	234.3	0.4	0.4	112.29	-4.4	10.7	11.6	10.8	0.74	15.636	
300.0	300.0	299.9	299.9	0.5	0.5	119.38	-5.8	10.2	11.7	10.8	0.97	12.081	ES
400.0	400.0	399.5	399.3	0.7	0.7	-131.18	-11.8	7.9	15.9	14.5	1.35	11.766	SF
500.0	499.6	498.2	497.3	0.9	0.9	-121.40	-22.6	3.9	26.8	25.1	1.77	15.149	
600.0	598.8	595.6	593.3	1.1	1.3	-118.08	-37.9	-1.9	43.9	41.6	2.28	19.248	
700.0	697.1	691.6	687.0	1.5	1.7	-117.07	-57.4	-9.2	66.5	63.6	2.89	23.035	
800.0	794.3	788.0	780.7	1.9	2.1	-118.28	-78.6	-17.1	92.6	89.0	3.59	25.805	
900.0	890.2	883.6	873.7	2.5	2.5	-120.82	-99.6	-25.0	121.4	117.0	4.37	27.761	
1,000.0	984.7	978.3	965.7	3.1	2.9	-123.95	-120.4	-32.8	152.7	147.5	5.19	29.407	
1,100.0	1,079.1	1,072.8	1,057.6	3.7	3.3	-126.38	-141.1	-40.6	184.6	178.6	6.02	30.676	
1,200.0	1,173.5	1,167.3	1,149.4	4.3	3.7	-128.10	-161.8	-48.4	216.7	209.9	6.84	31.672	
1,300.0	1,267.8	1,261.8	1,241.3	4.9	4.1	-129.38	-182.6	-56.2	249.0	241.3	7.67	32.472	
1,400.0	1,362.2	1,356.4	1,333.2	5.5	4.5	-130.36	-203.3	-64.0	281.4	272.9	8.49	33.127	
1,500.0	1,456.6	1,450.9	1,425.1	6.2	5.0	-131.14	-224.1	-71.8	313.8	304.5	9.32	33.673	
1,600.0	1,551.0	1,545.4	1,517.0	6.8	5.4	-131.77	-244.8	-79.5	346.2	336.1	10.14	34.134	
1,700.0	1,645.3	1,639.9	1,608.9	7.4	5.8	-132.30	-265.6	-87.3	378.7	367.7	10.97	34.528	
1,800.0	1,739.7	1,734.5	1,700.8	8.0	6.2	-132.74	-286.3	-95.1	411.2	399.4	11.79	34.870	
1,900.0	1,834.1	1,829.0	1,792.7	8.7	6.6	-133.12	-307.1	-102.9	443.7	431.1	12.62	35.168	
2,000.0	1,928.5	1,923.5	1,884.6	9.3	7.1	-133.44	-327.8	-110.7	476.3	462.8	13.44	35.430	
2,100.0	2,022.8	2,018.0	1,976.4	9.9	7.5	-133.73	-348.6	-118.5	508.8	494.6	14.27	35.663	
2,200.0	2,117.2	2,112.6	2,068.3	10.6	7.9	-133.98	-369.3	-126.3	541.4	526.3	15.09	35.871	
2,300.0	2,211.6	2,207.1	2,160.2	11.2	8.3	-134.20	-390.1	-134.1	574.0	558.1	15.92	36.057	
2,400.0	2,306.0	2,301.6	2,252.1	11.8	8.7	-134.40	-410.8	-141.9	606.6	589.8	16.74	36.226	
2,500.0	2,400.3	2,396.1	2,344.0	12.4	9.2	-134.58	-431.6	-149.6	639.1	621.6	17.57	36.379	
2,600.0	2,494.7	2,490.7	2,435.9	13.1	9.6	-134.74	-452.3	-157.4	671.7	653.3	18.39	36.519	
2,700.0	2,589.1	2,585.2	2,527.8	13.7	10.0	-134.88	-473.1	-165.2	704.3	685.1	19.22	36.646	
2,800.0	2,683.4	2,679.7	2,619.7	14.3	10.4	-135.02	-493.8	-173.0	736.9	716.9	20.05	36.764	
2,900.0	2,777.8	2,774.2	2,711.6	15.0	10.9	-135.14	-514.6	-180.8	769.5	748.7	20.87	36.872	
3,000.0	2,872.2	2,868.8	2,803.4	15.6	11.3	-135.25	-535.3	-188.6	802.1	780.4	21.70	36.972	
3,100.0	2,966.6	2,963.3	2,895.3	16.2	11.7	-135.35	-556.1	-196.4	834.7	812.2	22.52	37.065	
3,200.0	3,060.9	3,057.8	2,987.2	16.9	12.1	-135.45	-576.8	-204.2	867.4	844.0	23.35	37.151	
3,300.0	3,155.3	3,152.3	3,079.1	17.5	12.5	-135.54	-597.6	-212.0	900.0	875.8	24.17	37.232	
3,400.0	3,249.7	3,246.9	3,171.0	18.1	13.0	-135.62	-618.3	-219.7	932.6	907.6	25.00	37.307	
3,500.0	3,344.1	3,341.4	3,262.9	18.8	13.4	-135.69	-639.1	-227.5	965.2	939.4	25.82	37.377	
3,600.0	3,438.4	3,435.9	3,354.8	19.4	13.8	-135.77	-659.8	-235.3	997.8	971.2	26.65	37.443	
3,700.0	3,532.8	3,530.4	3,446.7	20.0	14.2	-135.83	-680.6	-243.1	1,030.4	1,003.0	27.47	37.506	
3,800.0	3,627.2	3,625.0	3,538.6	20.6	14.6	-135.90	-701.3	-250.9	1,063.0	1,034.7	28.30	37.564	
3,900.0	3,721.6	3,719.5	3,630.5	21.3	15.1	-135.96	-722.1	-258.7	1,095.7	1,066.5	29.12	37.619	
4,000.0	3,815.9	3,814.0	3,722.3	21.9	15.5	-136.01	-742.8	-266.5	1,128.3	1,098.3	29.95	37.672	
4,100.0	3,910.3	3,908.5	3,814.2	22.5	15.9	-136.06	-763.6	-274.3	1,160.9	1,130.1	30.78	37.721	
4,200.0	4,004.7	4,003.0	3,906.1	23.2	16.3	-136.11	-784.3	-282.1	1,193.5	1,161.9	31.60	37.768	
4,300.0	4,099.1	4,097.6	3,998.0	23.8	16.7	-136.16	-805.1	-289.9	1,226.2	1,193.7	32.43	37.813	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU 21-5B (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	86.86	1.5	26.5	26.6				
100.0	100.0	100.0	100.0	0.1	0.1	86.86	1.5	26.5	26.6	26.3	0.27	97.652	
200.0	200.0	200.0	200.0	0.3	0.3	86.86	1.5	26.5	26.6	26.0	0.62	42.792	
300.0	300.0	300.4	300.4	0.5	0.5	92.34	-1.1	25.7	25.7	24.8	0.97	26.496	
327.5	327.5	328.0	327.9	0.5	0.6	-173.68	-2.6	25.2	25.5	24.5	1.09	23.488	CC, ES
400.0	400.0	400.3	400.0	0.7	0.7	-161.37	-8.5	23.3	27.2	25.9	1.37	19.822	SF
500.0	499.6	499.2	498.0	0.9	1.0	-144.40	-20.8	19.2	36.2	34.4	1.83	19.828	
600.0	598.8	596.6	593.7	1.1	1.3	-133.51	-37.5	13.7	53.0	50.6	2.35	22.514	
700.0	697.1	692.0	686.5	1.5	1.8	-127.53	-58.4	6.9	76.5	73.5	2.98	25.697	
800.0	794.3	786.8	777.9	1.9	2.2	-124.58	-82.6	-1.1	105.4	101.7	3.69	28.599	
900.0	890.2	881.6	869.1	2.5	2.7	-124.27	-107.1	-9.1	137.4	132.9	4.48	30.662	
1,000.0	984.7	975.4	959.4	3.1	3.2	-125.48	-131.3	-17.1	171.8	166.4	5.33	32.240	
1,100.0	1,079.1	1,069.1	1,049.5	3.7	3.6	-126.67	-155.5	-25.0	206.5	200.3	6.19	33.339	
1,200.0	1,173.5	1,162.8	1,139.7	4.3	4.1	-127.52	-179.7	-33.0	241.3	234.3	7.07	34.151	
1,300.0	1,267.8	1,256.5	1,229.9	4.9	4.6	-128.16	-203.9	-40.9	276.2	268.2	7.94	34.773	
1,400.0	1,362.2	1,350.2	1,320.0	5.5	5.0	-128.65	-228.1	-48.9	311.0	302.2	8.82	35.265	
1,500.0	1,456.6	1,443.8	1,410.2	6.2	5.5	-129.04	-252.2	-56.8	345.9	336.2	9.70	35.663	
1,600.0	1,551.0	1,537.5	1,500.4	6.8	6.0	-129.36	-276.4	-64.8	380.8	370.2	10.58	35.992	
1,700.0	1,645.3	1,631.2	1,590.5	7.4	6.4	-129.63	-300.6	-72.7	415.7	404.3	11.46	36.268	
1,800.0	1,739.7	1,724.9	1,680.7	8.0	6.9	-129.85	-324.8	-80.7	450.6	438.3	12.35	36.502	
1,900.0	1,834.1	1,818.6	1,770.9	8.7	7.4	-130.05	-349.0	-88.7	485.6	472.3	13.23	36.704	
2,000.0	1,928.5	1,912.3	1,861.0	9.3	7.9	-130.21	-373.2	-96.6	520.5	506.4	14.11	36.880	
2,100.0	2,022.8	2,006.0	1,951.2	9.9	8.3	-130.36	-397.4	-104.6	555.4	540.4	15.00	37.034	
2,200.0	2,117.2	2,099.7	2,041.4	10.6	8.8	-130.49	-421.6	-112.5	590.3	574.4	15.88	37.170	
2,300.0	2,211.6	2,193.4	2,131.5	11.2	9.3	-130.60	-445.8	-120.5	625.3	608.5	16.77	37.292	
2,400.0	2,306.0	2,287.1	2,221.7	11.8	9.8	-130.70	-470.0	-128.4	660.2	642.5	17.65	37.401	
2,500.0	2,400.3	2,380.8	2,311.9	12.4	10.2	-130.80	-494.1	-136.4	695.1	676.6	18.54	37.499	
2,600.0	2,494.7	2,474.5	2,402.1	13.1	10.7	-130.88	-518.3	-144.3	730.1	710.6	19.42	37.588	
2,700.0	2,589.1	2,568.2	2,492.2	13.7	11.2	-130.96	-542.5	-152.3	765.0	744.7	20.31	37.669	
2,800.0	2,683.4	2,661.9	2,582.4	14.3	11.7	-131.02	-566.7	-160.2	799.9	778.7	21.19	37.743	
2,900.0	2,777.8	2,755.6	2,672.6	15.0	12.1	-131.09	-590.9	-168.2	834.9	812.8	22.08	37.810	
3,000.0	2,872.2	2,849.3	2,762.7	15.6	12.6	-131.15	-615.1	-176.1	869.8	846.8	22.97	37.873	
3,100.0	2,966.6	2,943.0	2,852.9	16.2	13.1	-131.20	-639.3	-184.1	904.7	880.9	23.85	37.931	
3,200.0	3,060.9	3,036.7	2,943.1	16.9	13.5	-131.25	-663.5	-192.0	939.7	914.9	24.74	37.984	
3,300.0	3,155.3	3,130.3	3,033.2	17.5	14.0	-131.30	-687.7	-200.0	974.6	949.0	25.62	38.034	
3,400.0	3,249.7	3,224.0	3,123.4	18.1	14.5	-131.34	-711.8	-207.9	1,009.6	983.0	26.51	38.080	
3,500.0	3,344.1	3,317.7	3,213.6	18.8	15.0	-131.38	-736.0	-215.9	1,044.5	1,017.1	27.40	38.123	
3,600.0	3,438.4	3,411.4	3,303.7	19.4	15.4	-131.42	-760.2	-223.8	1,079.4	1,051.2	28.28	38.164	
3,700.0	3,532.8	3,505.1	3,393.9	20.0	15.9	-131.45	-784.4	-231.8	1,114.4	1,085.2	29.17	38.202	
3,800.0	3,627.2	3,598.8	3,484.1	20.6	16.4	-131.48	-808.6	-239.7	1,149.3	1,119.3	30.06	38.238	
3,900.0	3,721.6	3,692.5	3,574.2	21.3	16.9	-131.52	-832.8	-247.7	1,184.3	1,153.3	30.94	38.271	
4,000.0	3,815.9	3,786.2	3,664.4	21.9	17.3	-131.55	-857.0	-255.6	1,219.2	1,187.4	31.83	38.303	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 16-12C (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD, 1347-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	39.36	120.2	98.6	155.4				
100.0	100.0	99.6	99.6	0.1	0.2	39.32	120.3	98.6	155.6	155.3	0.29	533.423	ES
200.0	200.0	199.2	199.2	0.3	0.3	39.20	120.8	98.6	155.9	155.3	0.62	250.869	
300.0	300.0	298.0	298.0	0.5	0.5	38.80	122.1	98.1	156.6	155.7	0.97	161.833	
400.0	400.0	395.7	395.5	0.7	0.7	127.81	127.0	94.8	160.1	158.8	1.33	119.966	
500.0	499.6	488.7	487.8	0.9	0.9	126.08	136.7	89.4	169.8	168.0	1.76	96.704	
600.0	598.8	585.4	583.0	1.1	1.2	124.10	151.6	81.3	185.2	182.9	2.29	80.992	
700.0	697.1	684.4	679.9	1.5	1.6	122.50	169.0	70.3	203.8	200.9	2.92	69.699	
800.0	794.3	783.4	776.5	1.9	2.0	121.91	186.5	58.2	224.6	221.0	3.65	61.525	
900.0	890.2	879.5	870.2	2.5	2.4	122.16	203.7	45.9	248.2	243.7	4.45	55.718	
1,000.0	984.7	974.9	963.2	3.1	2.8	123.31	221.4	33.7	274.6	269.3	5.30	51.769	
1,100.0	1,079.1	1,071.0	1,056.9	3.7	3.2	124.57	239.2	21.4	301.5	295.3	6.16	48.933	
1,200.0	1,173.5	1,165.9	1,149.6	4.3	3.6	125.93	256.0	10.7	328.7	321.7	6.99	47.038	
1,300.0	1,267.8	1,262.8	1,244.5	4.9	4.0	127.19	273.0	0.3	356.2	348.4	7.82	45.580	
1,400.0	1,362.2	1,362.2	1,341.8	5.5	4.3	128.31	289.8	-10.8	383.1	374.5	8.65	44.317	
1,500.0	1,456.6	1,458.0	1,435.7	6.2	4.7	129.28	305.3	-21.7	409.6	400.2	9.46	43.303	
1,600.0	1,551.0	1,548.0	1,523.6	6.8	5.1	129.92	321.6	-32.0	437.4	427.1	10.28	42.553	
1,700.0	1,645.3	1,650.6	1,623.7	7.4	5.5	130.49	340.1	-44.5	464.8	453.6	11.14	41.720	
1,800.0	1,739.7	1,747.4	1,718.4	8.0	5.9	131.06	356.6	-56.3	491.5	479.5	11.96	41.080	
1,900.0	1,834.1	1,841.1	1,810.2	8.7	6.3	131.63	372.4	-67.0	518.5	505.8	12.76	40.651	
2,000.0	1,928.5	1,935.0	1,902.4	9.3	6.6	132.28	387.6	-76.6	546.0	532.5	13.52	40.382	
2,100.0	2,022.8	2,032.8	1,998.4	9.9	7.0	132.93	403.3	-86.2	573.8	559.5	14.29	40.152	
2,200.0	2,117.2	2,133.5	2,097.4	10.6	7.4	133.58	418.6	-96.3	600.8	585.8	15.06	39.906	
2,300.0	2,211.6	2,223.1	2,185.5	11.2	7.7	134.09	432.3	-105.5	627.9	612.1	15.81	39.717	
2,400.0	2,306.0	2,316.3	2,276.6	11.8	8.1	134.39	448.9	-115.6	656.3	639.7	16.61	39.522	
2,500.0	2,400.3	2,418.0	2,376.0	12.4	8.5	134.69	466.7	-127.0	684.1	666.7	17.42	39.274	
2,600.0	2,494.7	2,501.7	2,458.0	13.1	8.8	134.95	481.0	-136.1	712.1	693.9	18.18	39.159	
2,700.0	2,589.1	2,588.8	2,542.8	13.7	9.2	135.04	498.7	-145.5	742.1	723.1	18.99	39.077	
2,800.0	2,683.4	2,688.7	2,640.1	14.3	9.6	135.16	518.8	-156.1	772.1	752.3	19.83	38.934	
2,900.0	2,777.8	2,787.9	2,737.0	15.0	10.0	135.36	537.3	-166.3	801.5	780.9	20.64	38.830	
3,000.0	2,872.2	2,881.2	2,828.3	15.6	10.4	135.59	554.1	-175.4	830.9	809.4	21.41	38.802	
3,100.0	2,966.6	2,993.1	2,938.0	16.2	10.8	135.91	573.3	-186.2	859.7	837.5	22.23	38.678	
3,200.0	3,060.9	3,086.0	3,029.3	16.9	11.2	136.20	588.0	-195.6	887.4	864.4	22.97	38.642	
3,300.0	3,155.3	3,170.9	3,112.6	17.5	11.5	136.45	601.9	-203.7	915.9	892.2	23.69	38.668	
3,400.0	3,249.7	3,269.0	3,208.9	18.1	11.9	136.72	618.3	-212.7	944.8	920.4	24.43	38.668	
3,500.0	3,344.1	3,336.4	3,274.9	18.8	12.2	136.84	630.8	-218.9	975.0	949.8	25.15	38.772	
3,600.0	3,438.4	3,425.2	3,361.0	19.4	12.6	136.82	650.7	-227.1	1,007.5	981.5	25.97	38.799	
3,700.0	3,532.8	3,519.7	3,452.8	20.0	13.0	136.82	671.5	-235.9	1,039.7	1,012.9	26.81	38.784	
3,800.0	3,627.2	3,619.2	3,549.4	20.6	13.4	136.83	693.2	-245.1	1,071.9	1,044.3	27.66	38.759	
3,900.0	3,721.6	3,728.3	3,655.6	21.3	13.9	136.87	715.9	-255.4	1,103.3	1,074.7	28.54	38.663	
4,000.0	3,815.9	3,827.8	3,752.6	21.9	14.3	136.93	735.8	-265.4	1,133.8	1,104.4	29.37	38.605	
4,100.0	3,910.3	3,927.2	3,849.6	22.5	14.7	136.99	755.3	-275.5	1,163.8	1,133.6	30.20	38.541	SF
4,200.0	4,004.7	4,015.2	3,935.5	23.2	15.1	137.06	772.4	-284.1	1,194.1	1,163.1	30.97	38.556	
4,300.0	4,099.1	4,112.0	4,030.0	23.8	15.5	137.15	791.1	-293.1	1,224.7	1,192.9	31.77	38.551	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 16-12C2 (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	40.12	109.6	92.4	143.3				
100.0	100.0	100.9	100.8	0.1	0.2	40.18	109.3	92.3	143.0	142.7	0.29	485.688	
200.0	200.0	201.7	201.7	0.3	0.3	40.39	108.3	92.1	142.1	141.5	0.63	226.572	
300.0	300.0	300.1	300.1	0.5	0.5	40.37	107.6	91.5	141.2	140.3	0.97	145.134	ES
300.5	300.5	300.5	300.5	0.5	0.5	130.81	107.6	91.5	141.2	140.3	0.97	145.242	CC
400.0	400.0	396.9	396.8	0.7	0.7	130.28	110.7	90.0	144.4	143.1	1.32	109.391	
500.0	499.6	494.1	493.6	0.9	0.9	129.06	118.5	85.4	152.6	150.9	1.72	88.777	
600.0	598.8	593.5	592.1	1.1	1.1	127.92	129.3	78.1	164.8	162.5	2.20	74.729	
700.0	697.1	691.9	689.1	1.5	1.4	126.93	142.4	67.9	180.1	177.4	2.79	64.539	
800.0	794.3	789.3	784.8	1.9	1.8	126.72	156.5	56.8	199.0	195.6	3.46	57.543	
900.0	890.2	887.5	881.3	2.5	2.1	127.45	171.1	45.6	221.3	217.1	4.20	52.739	
1,000.0	984.7	986.0	978.2	3.1	2.4	129.27	184.5	34.4	245.3	240.4	4.95	49.528	
1,100.0	1,079.1	1,084.3	1,075.0	3.7	2.8	131.08	197.5	23.0	269.6	263.9	5.71	47.230	
1,200.0	1,173.5	1,181.0	1,170.2	4.3	3.1	132.59	209.8	11.6	293.6	287.2	6.46	45.463	
1,300.0	1,267.8	1,277.3	1,264.9	4.9	3.5	133.74	222.8	-0.1	318.0	310.8	7.21	44.089	
1,400.0	1,362.2	1,373.8	1,359.8	5.5	3.8	134.69	235.9	-12.0	342.5	334.5	7.97	42.983	
1,500.0	1,456.6	1,469.0	1,453.4	6.2	4.1	135.50	249.1	-23.5	367.4	358.7	8.71	42.158	
1,600.0	1,551.0	1,565.6	1,548.3	6.8	4.5	136.17	262.8	-35.2	392.6	383.1	9.47	41.435	
1,700.0	1,645.3	1,662.6	1,643.4	7.4	4.9	136.62	277.3	-47.7	417.7	407.5	10.26	40.719	
1,800.0	1,739.7	1,758.7	1,737.4	8.0	5.3	136.93	292.2	-60.4	442.9	431.9	11.05	40.096	
1,900.0	1,834.1	1,855.7	1,832.5	8.7	5.6	137.26	306.9	-72.9	468.3	456.4	11.82	39.617	
2,000.0	1,928.5	1,952.7	1,927.8	9.3	6.0	137.72	320.6	-84.7	493.5	480.9	12.56	39.283	
2,100.0	2,022.8	2,051.2	2,024.8	9.9	6.3	138.22	333.9	-96.2	518.6	505.3	13.29	39.015	
2,200.0	2,117.2	2,145.6	2,117.7	10.6	6.7	138.68	346.4	-107.3	543.6	529.6	14.00	38.820	
2,300.0	2,211.6	2,241.2	2,211.8	11.2	7.0	139.17	358.9	-117.7	569.1	554.5	14.69	38.738	
2,400.0	2,306.0	2,336.6	2,306.0	11.8	7.3	139.70	370.7	-127.5	594.8	579.5	15.36	38.721	SF
2,500.0	2,400.3	2,433.4	2,401.6	12.4	7.6	140.23	382.5	-137.1	620.7	604.6	16.02	38.745	
2,600.0	2,494.7	2,528.1	2,495.2	13.1	7.9	140.79	393.4	-145.9	646.6	630.0	16.64	38.857	
2,700.0	2,589.1	2,624.0	2,590.1	13.7	8.2	141.35	404.3	-154.5	672.8	655.5	17.26	38.971	
2,800.0	2,683.4	2,720.1	2,685.3	14.3	8.5	141.87	415.1	-163.0	699.1	681.2	17.87	39.110	
2,900.0	2,777.8	2,815.1	2,779.3	15.0	8.8	142.36	425.8	-171.3	725.5	707.0	18.48	39.249	
3,000.0	2,872.2	2,906.4	2,869.7	15.6	9.1	142.81	436.3	-178.8	752.4	733.3	19.08	39.437	
3,100.0	2,966.6	3,000.9	2,963.1	16.2	9.4	143.20	447.7	-186.7	779.7	760.0	19.70	39.574	
3,200.0	3,060.9	3,095.1	3,056.2	16.9	9.7	143.49	460.0	-194.8	807.3	787.0	20.34	39.684	
3,300.0	3,155.3	3,193.0	3,152.9	17.5	10.0	143.78	472.8	-203.3	834.9	813.9	20.99	39.773	
3,400.0	3,249.7	3,289.5	3,248.2	18.1	10.3	144.06	485.1	-211.7	862.3	840.7	21.62	39.877	
3,500.0	3,344.1	3,384.2	3,341.9	18.8	10.6	144.35	496.8	-219.5	889.9	867.6	22.25	39.990	
3,600.0	3,438.4	3,481.3	3,437.5	19.4	10.9	144.47	510.8	-228.9	917.5	894.5	22.95	39.974	
3,700.0	3,532.8	3,584.0	3,538.6	20.0	11.3	144.59	525.6	-239.1	944.8	921.1	23.68	39.903	
3,800.0	3,627.2	3,682.3	3,635.0	20.6	11.7	144.57	540.7	-250.7	971.3	946.8	24.44	39.742	
3,900.0	3,721.6	3,774.1	3,725.0	21.3	12.0	144.54	555.4	-261.3	998.3	973.1	25.18	39.641	
4,000.0	3,815.9	3,873.5	3,822.5	21.9	12.4	144.53	571.1	-272.5	1,025.3	999.4	25.94	39.525	
4,100.0	3,910.3	3,986.2	3,933.2	22.5	12.8	144.55	587.8	-285.7	1,051.5	1,024.8	26.73	39.334	
4,200.0	4,004.7	4,086.5	4,031.8	23.2	13.2	144.59	601.7	-298.1	1,076.6	1,049.1	27.47	39.194	
4,300.0	4,099.1	4,175.1	4,118.9	23.8	13.5	144.64	613.9	-308.8	1,101.9	1,073.8	28.16	39.130	
4,400.0	4,193.4	4,270.6	4,212.8	24.4	13.9	144.70	627.2	-319.9	1,127.7	1,098.8	28.87	39.064	
4,500.0	4,287.8	4,364.0	4,304.7	25.1	14.2	144.76	640.0	-330.5	1,153.6	1,124.1	29.56	39.025	
4,600.0	4,382.2	4,458.7	4,397.9	25.7	14.5	144.84	653.0	-340.9	1,179.8	1,149.5	30.25	39.003	
4,700.0	4,476.6	4,558.4	4,496.3	26.3	14.9	144.97	665.7	-351.3	1,205.8	1,174.9	30.91	39.008	
4,800.0	4,570.9	4,649.5	4,586.3	27.0	15.2	145.12	676.8	-360.3	1,232.1	1,200.5	31.54	39.063	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 16-5C (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 237-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	43.28	117.3	110.4	161.1				
100.0	100.0	99.8	99.8	0.1	0.2	43.33	117.2	110.6	161.1	160.8	0.29	547.526	
200.0	200.0	199.7	199.7	0.3	0.3	43.48	117.0	111.0	161.3	160.6	0.63	257.224	
300.0	300.0	298.6	298.6	0.5	0.5	43.69	116.8	111.6	161.6	160.6	0.97	166.877	ES
400.0	400.0	395.2	395.1	0.7	0.7	133.79	119.8	110.9	165.1	163.8	1.31	125.568	
500.0	499.6	489.5	488.9	0.9	0.8	132.66	128.6	108.1	175.3	173.6	1.69	103.563	
600.0	598.8	583.5	581.7	1.1	1.1	130.93	142.7	102.6	191.3	189.2	2.15	88.888	
700.0	697.1	674.2	670.1	1.5	1.4	128.96	161.5	95.6	213.9	211.2	2.72	78.684	
800.0	794.3	767.3	759.7	1.9	1.9	126.91	185.3	86.3	242.1	238.7	3.45	70.272	
900.0	890.2	862.2	850.0	2.5	2.4	125.18	211.8	74.5	273.8	269.5	4.28	63.936	
1,000.0	984.7	949.6	933.1	3.1	2.9	124.74	236.9	63.9	308.7	303.6	5.15	59.891	
1,100.0	1,079.1	1,038.6	1,017.3	3.7	3.4	124.70	264.0	53.8	345.7	339.7	6.06	57.036	
1,200.0	1,173.5	1,129.6	1,103.2	4.3	3.9	124.70	292.1	44.2	383.4	376.5	6.98	54.936	
1,300.0	1,267.8	1,222.1	1,190.8	4.9	4.4	124.81	320.4	35.1	421.3	413.4	7.90	53.307	
1,400.0	1,362.2	1,312.4	1,276.3	5.5	5.0	124.91	348.2	26.3	459.4	450.5	8.84	51.983	
1,500.0	1,456.6	1,401.6	1,360.3	6.2	5.5	124.81	376.8	16.9	498.0	488.2	9.79	50.893	
1,600.0	1,551.0	1,495.9	1,448.9	6.8	6.1	124.67	407.5	6.8	536.9	526.2	10.76	49.919	
1,700.0	1,645.3	1,591.2	1,538.6	7.4	6.7	124.60	437.8	-3.5	575.1	563.4	11.74	48.986	
1,800.0	1,739.7	1,683.3	1,625.1	8.0	7.3	124.44	467.4	-14.4	613.2	600.5	12.73	48.187	
1,900.0	1,834.1	1,775.9	1,712.1	8.7	7.8	124.29	497.4	-25.3	651.3	637.6	13.70	47.527	
2,000.0	1,928.5	1,874.8	1,805.3	9.3	8.4	124.21	528.7	-36.7	689.1	674.4	14.71	46.830	
2,100.0	2,022.8	1,971.0	1,896.0	9.9	9.0	124.13	558.5	-48.3	726.0	710.3	15.71	46.208	
2,200.0	2,117.2	2,071.0	1,990.5	10.6	9.6	124.13	588.5	-60.1	762.5	745.7	16.71	45.636	
2,300.0	2,211.6	2,146.5	2,062.1	11.2	10.1	124.15	611.4	-68.6	799.4	781.8	17.60	45.419	
2,400.0	2,306.0	2,238.3	2,148.5	11.8	10.6	124.12	640.7	-78.5	837.7	819.2	18.57	45.122	
2,500.0	2,400.3	2,341.4	2,246.0	12.4	11.2	124.15	672.4	-89.5	875.3	855.7	19.57	44.720	
2,600.0	2,494.7	2,425.1	2,325.0	13.1	11.7	124.16	698.1	-98.7	912.6	892.1	20.51	44.493	
2,700.0	2,589.1	2,522.0	2,416.3	13.7	12.3	124.12	728.6	-109.6	950.5	929.0	21.50	44.215	
2,800.0	2,683.4	2,602.1	2,491.9	14.3	12.8	124.11	753.9	-118.4	988.4	966.0	22.43	44.062	
2,900.0	2,777.8	2,698.2	2,581.9	15.0	13.4	123.99	785.7	-129.8	1,027.2	1,003.7	23.44	43.824	
3,000.0	2,872.2	2,801.5	2,679.1	15.6	14.1	123.94	818.5	-141.6	1,065.0	1,040.5	24.47	43.516	
3,100.0	2,966.6	2,901.8	2,773.8	16.2	14.7	123.93	849.3	-153.3	1,102.0	1,076.5	25.48	43.245	
3,200.0	3,060.9	2,995.8	2,862.9	16.9	15.2	123.97	877.4	-163.7	1,138.7	1,112.2	26.45	43.058	
3,300.0	3,155.3	3,083.6	2,946.0	17.5	15.7	123.98	904.1	-173.7	1,175.6	1,148.1	27.41	42.890	
3,400.0	3,249.7	3,188.4	3,045.1	18.1	16.4	123.97	935.8	-186.2	1,212.0	1,183.5	28.44	42.613	
3,500.0	3,344.1	3,267.0	3,119.2	18.8	16.9	123.93	960.1	-196.0	1,248.7	1,219.3	29.38	42.507	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-16B (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	69.76	5.8	15.8	16.9				
100.0	100.0	100.0	100.0	0.1	0.1	69.76	5.8	15.8	16.9	16.6	0.27	61.912	
200.0	200.0	200.0	200.0	0.3	0.3	69.76	5.8	15.8	16.9	16.2	0.62	27.130	
300.0	300.0	300.0	300.0	0.5	0.5	69.76	5.8	15.8	16.9	15.9	0.97	17.371	CC, ES
400.0	400.0	400.0	400.0	0.7	0.7	162.81	5.8	15.8	19.3	18.0	1.32	14.663	
500.0	499.6	500.3	500.3	0.9	0.8	167.18	5.9	15.2	26.3	24.7	1.67	15.800	
600.0	598.8	601.5	601.3	1.1	1.0	168.60	6.8	9.9	34.2	32.2	2.02	16.978	
700.0	697.1	703.0	702.3	1.5	1.3	168.25	8.6	-0.7	42.3	39.9	2.37	17.825	
800.0	794.3	805.0	802.9	1.9	1.6	166.96	11.2	-16.6	50.6	47.8	2.75	18.365	
900.0	890.2	907.3	902.9	2.5	1.9	165.14	14.8	-37.9	59.1	55.9	3.18	18.567	
1,000.0	984.7	1,010.0	1,002.0	3.1	2.4	162.82	19.3	-64.6	67.0	63.3	3.70	18.101	
1,100.0	1,079.1	1,113.1	1,099.9	3.7	3.0	159.02	24.6	-96.6	70.8	66.4	4.40	16.099	
1,200.0	1,173.5	1,213.6	1,194.0	4.3	3.6	154.07	30.4	-131.2	71.8	66.5	5.31	13.529	
1,300.0	1,267.8	1,313.4	1,287.5	4.9	4.3	149.27	36.1	-165.7	73.2	66.9	6.38	11.474	
1,400.0	1,362.2	1,413.2	1,381.0	5.5	4.9	144.68	41.9	-200.3	75.2	67.6	7.60	9.892	
1,500.0	1,456.6	1,513.0	1,474.4	6.2	5.6	140.35	47.7	-234.8	77.6	68.6	8.92	8.694	
1,600.0	1,551.0	1,612.8	1,567.9	6.8	6.2	136.30	53.4	-269.3	80.4	70.1	10.32	7.787	
1,700.0	1,645.3	1,712.6	1,661.4	7.4	6.9	132.54	59.2	-303.8	83.6	71.8	11.77	7.098	
1,800.0	1,739.7	1,812.4	1,754.8	8.0	7.5	129.07	64.9	-338.3	87.1	73.8	13.25	6.571	
1,900.0	1,834.1	1,912.2	1,848.3	8.7	8.2	125.88	70.7	-372.8	90.9	76.1	14.75	6.163	
2,000.0	1,928.5	2,012.0	1,941.8	9.3	8.9	122.95	76.5	-407.3	95.0	78.7	16.24	5.846	
2,100.0	2,022.8	2,111.8	2,035.2	9.9	9.5	120.27	82.2	-441.9	99.3	81.5	17.74	5.596	
2,200.0	2,117.2	2,211.6	2,128.7	10.6	10.2	117.82	88.0	-476.4	103.8	84.5	19.22	5.398	
2,300.0	2,211.6	2,311.4	2,222.2	11.2	10.9	115.57	93.7	-510.9	108.4	87.7	20.69	5.240	
2,400.0	2,306.0	2,411.2	2,315.6	11.8	11.5	113.52	99.5	-545.4	113.3	91.1	22.15	5.113	
2,500.0	2,400.3	2,511.0	2,409.1	12.4	12.2	111.63	105.3	-579.9	118.2	94.6	23.60	5.010	
2,600.0	2,494.7	2,610.9	2,502.6	13.1	12.8	109.89	111.0	-614.4	123.3	98.3	25.03	4.926	
2,700.0	2,589.1	2,710.7	2,596.1	13.7	13.5	108.30	116.8	-648.9	128.5	102.0	26.44	4.859	
2,800.0	2,683.4	2,810.5	2,689.5	14.3	14.2	106.83	122.5	-683.4	133.7	105.9	27.84	4.803	
2,900.0	2,777.8	2,910.3	2,783.0	15.0	14.8	105.47	128.3	-718.0	139.1	109.9	29.24	4.758	
3,000.0	2,872.2	3,010.1	2,876.5	15.6	15.5	104.21	134.1	-752.5	144.5	113.9	30.61	4.721	
3,100.0	2,966.6	3,109.9	2,969.9	16.2	16.2	103.04	139.8	-787.0	150.0	118.0	31.98	4.690	
3,200.0	3,060.9	3,209.7	3,063.4	16.9	16.8	101.96	145.6	-821.5	155.6	122.2	33.34	4.666	
3,300.0	3,155.3	3,309.5	3,156.9	17.5	17.5	100.95	151.4	-856.0	161.2	126.5	34.69	4.646	
3,400.0	3,249.7	3,409.3	3,250.3	18.1	18.2	100.01	157.1	-890.5	166.8	130.8	36.03	4.630	
3,500.0	3,344.1	3,509.1	3,343.8	18.8	18.9	99.13	162.9	-925.0	172.5	135.1	37.36	4.617	
3,600.0	3,438.4	3,608.9	3,437.3	19.4	19.5	98.31	168.6	-959.5	178.2	139.5	38.69	4.606	
3,700.0	3,532.8	3,708.7	3,530.7	20.0	20.2	97.54	174.4	-994.1	184.0	144.0	40.01	4.599	
3,800.0	3,627.2	3,808.5	3,624.2	20.6	20.9	96.81	180.2	-1,028.6	189.8	148.4	41.32	4.592	
3,900.0	3,721.6	3,908.3	3,717.7	21.3	21.5	96.13	185.9	-1,063.1	195.6	153.0	42.63	4.588	
4,000.0	3,815.9	4,008.1	3,811.2	21.9	22.2	95.49	191.7	-1,097.6	201.4	157.5	43.93	4.585	
4,100.0	3,910.3	4,107.9	3,904.6	22.5	22.9	94.88	197.4	-1,132.1	207.3	162.1	45.23	4.583	
4,200.0	4,004.7	4,207.7	3,998.1	23.2	23.5	94.31	203.2	-1,166.6	213.2	166.7	46.53	4.582	
4,300.0	4,099.1	4,307.5	4,091.6	23.8	24.2	93.77	209.0	-1,201.1	219.1	171.3	47.82	4.582	
4,400.0	4,193.4	4,407.3	4,185.0	24.4	24.9	93.25	214.7	-1,235.7	225.0	175.9	49.10	4.583	
4,500.0	4,287.8	4,507.1	4,278.5	25.1	25.5	92.77	220.5	-1,270.2	231.0	180.6	50.39	4.584	
4,600.0	4,382.2	4,606.9	4,372.0	25.7	26.2	92.31	226.2	-1,304.7	236.9	185.3	51.67	4.586	
4,700.0	4,476.6	4,706.7	4,465.4	26.3	26.9	91.87	232.0	-1,339.2	242.9	190.0	52.94	4.588	
4,800.0	4,570.9	4,806.5	4,558.9	27.0	27.5	91.45	237.8	-1,373.7	248.9	194.7	54.22	4.591	
4,900.0	4,665.3	4,906.3	4,652.4	27.6	28.2	91.05	243.5	-1,408.2	254.9	199.4	55.49	4.594	
5,000.0	4,759.7	5,006.2	4,745.9	28.2	28.9	90.67	249.3	-1,442.7	260.9	204.2	56.76	4.597	
5,100.0	4,854.0	5,106.0	4,839.3	28.9	29.5	90.30	255.0	-1,477.2	267.0	208.9	58.03	4.601	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-16B (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	4,948.4	5,205.8	4,932.8	29.5	30.2	89.96	260.8	-1,511.8	273.0	213.7	59.29	4.604	
5,300.0	5,042.8	5,305.6	5,026.3	30.1	30.9	89.63	266.6	-1,546.3	279.0	218.5	60.56	4.608	
5,400.0	5,137.2	5,405.4	5,119.7	30.8	31.5	89.31	272.3	-1,580.8	285.1	223.3	61.82	4.612	
5,500.0	5,231.5	5,505.2	5,213.2	31.4	32.2	89.00	278.1	-1,615.3	291.2	228.1	63.08	4.616	
5,600.0	5,325.9	5,605.0	5,306.7	32.0	32.9	88.71	283.8	-1,649.8	297.2	232.9	64.34	4.620	
5,700.0	5,420.3	5,704.8	5,400.1	32.7	33.6	88.43	289.6	-1,684.3	303.3	237.7	65.60	4.624	
5,800.0	5,514.7	5,804.6	5,493.6	33.3	34.2	88.16	295.4	-1,718.8	309.4	242.5	66.85	4.628	
5,900.0	5,609.0	5,904.4	5,587.1	33.9	34.9	87.90	301.1	-1,753.4	315.5	247.4	68.11	4.632	
6,000.0	5,703.4	6,004.2	5,680.5	34.6	35.6	87.65	306.9	-1,787.9	321.6	252.2	69.36	4.637	
6,100.0	5,797.8	6,104.0	5,774.0	35.2	36.2	87.41	312.6	-1,822.4	327.7	257.1	70.61	4.641	
6,200.0	5,892.2	6,203.8	5,867.5	35.8	36.9	87.18	318.4	-1,856.9	333.8	261.9	71.86	4.645	
6,300.0	5,986.5	6,303.6	5,961.0	36.5	37.6	86.96	324.2	-1,891.4	339.9	266.8	73.11	4.649	
6,400.0	6,080.9	6,403.4	6,054.4	37.1	38.2	86.74	329.9	-1,925.9	346.0	271.7	74.36	4.653	
6,500.0	6,175.3	6,503.2	6,147.9	37.7	38.9	86.53	335.7	-1,960.4	352.2	276.6	75.61	4.657	
6,600.0	6,269.7	6,603.0	6,241.4	38.3	39.6	86.33	341.5	-1,994.9	358.3	281.4	76.86	4.662	
6,700.0	6,364.0	6,702.8	6,334.8	39.0	40.2	86.14	347.2	-2,029.5	364.4	286.3	78.11	4.666	
6,800.0	6,458.4	6,802.6	6,428.3	39.6	40.9	85.95	353.0	-2,064.0	370.6	291.2	79.35	4.670	
6,900.0	6,552.8	6,902.4	6,521.8	40.2	41.6	85.77	358.7	-2,098.5	376.7	296.1	80.60	4.674	
7,000.0	6,647.2	7,002.2	6,615.2	40.9	42.3	85.60	364.5	-2,133.0	382.9	301.0	81.84	4.678	
7,100.0	6,741.5	7,102.0	6,708.7	41.5	42.9	85.43	370.3	-2,167.5	389.0	305.9	83.09	4.682	
7,200.0	6,835.9	7,201.8	6,802.2	42.1	43.6	85.26	376.0	-2,202.0	395.2	310.8	84.33	4.686	
7,300.0	6,930.3	7,301.7	6,895.7	42.8	44.3	85.10	381.8	-2,236.5	401.3	315.7	85.57	4.690	
7,400.0	7,024.9	7,404.9	6,992.9	43.4	44.9	85.13	387.5	-2,270.7	407.1	320.3	86.79	4.691	
7,500.0	7,120.5	7,508.4	7,091.6	43.9	45.5	85.23	392.6	-2,301.5	412.3	324.5	87.89	4.692	
7,600.0	7,217.1	7,612.0	7,191.4	44.4	45.9	85.33	397.2	-2,328.8	417.0	328.1	88.85	4.693	
7,700.0	7,314.5	7,715.6	7,292.2	44.8	46.4	85.41	401.1	-2,352.5	421.0	331.3	89.68	4.694	
7,800.0	7,412.6	7,819.3	7,393.9	45.1	46.7	85.48	404.5	-2,372.6	424.4	334.0	90.40	4.694	
7,900.0	7,511.4	7,923.1	7,496.3	45.4	47.0	85.55	407.2	-2,389.0	427.1	336.2	90.98	4.695	
8,000.0	7,610.6	8,026.9	7,599.3	45.6	47.3	85.60	409.4	-2,401.9	429.3	337.8	91.45	4.694	
8,100.0	7,710.2	8,130.7	7,702.7	45.8	47.5	85.65	410.9	-2,411.0	430.8	339.0	91.80	4.693	
8,200.0	7,810.1	8,234.6	7,806.4	45.9	47.6	85.69	411.8	-2,416.4	431.7	339.7	92.03	4.691	
8,300.0	7,910.1	8,338.3	7,910.1	46.0	47.6	85.72	412.1	-2,418.1	432.0	339.8	92.16	4.687	
8,339.0	7,949.0	8,377.3	7,949.0	46.0	47.7	85.73	412.1	-2,418.1	432.0	339.8	92.20	4.685	
8,400.0	8,010.1	8,438.3	8,010.1	46.0	47.7	-4.72	412.1	-2,418.1	432.0	339.7	92.27	4.682	
8,500.0	8,110.1	8,538.3	8,110.1	46.1	47.7	-4.72	412.1	-2,418.1	432.0	339.6	92.38	4.676	
8,600.0	8,210.1	8,638.3	8,210.1	46.1	47.8	-4.72	412.1	-2,418.1	432.0	339.5	92.49	4.671	
8,700.0	8,310.1	8,738.3	8,310.1	46.2	47.8	-4.72	412.1	-2,418.1	432.0	339.4	92.61	4.665	
8,800.0	8,410.1	8,838.3	8,410.1	46.2	47.9	-4.72	412.1	-2,418.1	432.0	339.3	92.72	4.659	
8,900.0	8,510.1	8,938.3	8,510.1	46.3	48.0	-4.72	412.1	-2,418.1	432.0	339.2	92.84	4.653	
9,000.0	8,610.1	9,038.3	8,610.1	46.4	48.0	-4.72	412.1	-2,418.1	432.0	339.0	92.96	4.647	
9,100.0	8,710.1	9,138.3	8,710.1	46.4	48.1	-4.72	412.1	-2,418.1	432.0	338.9	93.07	4.641	
9,200.0	8,810.1	9,238.3	8,810.1	46.5	48.1	-4.72	412.1	-2,418.1	432.0	338.8	93.19	4.635	
9,300.0	8,910.1	9,338.3	8,910.1	46.5	48.2	-4.72	412.1	-2,418.1	432.0	338.7	93.32	4.629	
9,400.0	9,010.1	9,438.3	9,010.1	46.6	48.3	-4.72	412.1	-2,418.1	432.0	338.6	93.44	4.623	
9,500.0	9,110.1	9,538.3	9,110.1	46.7	48.3	-4.72	412.1	-2,418.1	432.0	338.4	93.56	4.617	
9,600.0	9,210.1	9,638.3	9,210.1	46.7	48.4	-4.72	412.1	-2,418.1	432.0	338.3	93.68	4.611	
9,700.0	9,310.1	9,738.3	9,310.1	46.8	48.4	-4.72	412.1	-2,418.1	432.0	338.2	93.81	4.605	
9,800.0	9,410.1	9,838.3	9,410.1	46.9	48.5	-4.72	412.1	-2,418.1	432.0	338.1	93.94	4.599	
9,900.0	9,510.1	9,938.3	9,510.1	46.9	48.6	-4.72	412.1	-2,418.1	432.0	337.9	94.06	4.593	
10,000.0	9,610.1	10,038.3	9,610.1	47.0	48.6	-4.72	412.1	-2,418.1	432.0	337.8	94.19	4.586	
10,100.0	9,710.1	10,138.3	9,710.1	47.0	48.7	-4.72	412.1	-2,418.1	432.0	337.7	94.32	4.580	
10,200.0	9,810.1	10,238.3	9,810.1	47.1	48.7	-4.72	412.1	-2,418.1	432.0	337.5	94.45	4.574	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-16B (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	9,910.1	10,338.3	9,910.1	47.2	48.8	-4.72	412.1	-2,418.1	432.0	337.4	94.59	4.567	
10,400.0	10,010.1	10,438.3	10,010.1	47.2	48.9	-4.72	412.1	-2,418.1	432.0	337.3	94.72	4.561	
10,449.1	10,059.2	10,487.4	10,059.2	47.3	48.9	-4.72	412.1	-2,418.1	432.0	337.2	94.79	4.558	
10,476.9	10,087.0	10,509.2	10,081.0	47.3	48.9	-4.72	412.1	-2,418.1	432.0	337.2	94.82	4.556	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-16C (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-110.10	-11.7	-31.9	34.0				
100.0	100.0	100.0	100.0	0.1	0.1	-110.10	-11.7	-31.9	34.0	33.7	0.27	124.815	
200.0	200.0	200.0	200.0	0.3	0.3	-110.10	-11.7	-31.9	34.0	33.4	0.62	54.694	CC, ES
300.0	300.0	298.7	298.7	0.5	0.5	-109.60	-11.9	-33.3	35.4	34.4	0.97	36.468	
400.0	400.0	396.7	396.5	0.7	0.7	-18.46	-12.7	-39.6	39.2	37.9	1.32	29.820	
500.0	499.6	494.6	493.7	0.9	0.9	-18.74	-14.2	-50.7	43.1	41.4	1.67	25.869	
600.0	598.8	592.3	590.0	1.1	1.3	-19.75	-16.4	-66.8	47.0	45.0	2.03	23.183	
700.0	697.1	689.7	685.2	1.5	1.7	-21.31	-19.2	-87.7	51.1	48.7	2.42	21.100	
800.0	794.3	787.0	778.9	1.9	2.2	-23.29	-22.7	-113.3	55.2	52.4	2.87	19.269	
900.0	890.2	884.9	871.9	2.5	2.7	-25.65	-26.8	-143.6	59.4	56.0	3.40	17.455	
1,000.0	984.7	984.8	966.4	3.1	3.3	-29.25	-31.2	-175.8	61.0	56.9	4.10	14.876	
1,100.0	1,079.1	1,084.7	1,060.8	3.7	3.9	-32.91	-35.5	-208.0	62.5	57.5	4.94	12.651	
1,200.0	1,173.5	1,184.6	1,155.3	4.3	4.6	-36.38	-39.9	-240.3	64.1	58.3	5.88	10.902	
1,300.0	1,267.8	1,284.5	1,249.8	4.9	5.2	-39.67	-44.3	-272.5	66.1	59.1	6.93	9.537	
1,400.0	1,362.2	1,384.4	1,344.2	5.5	5.8	-42.76	-48.6	-304.7	68.2	60.1	8.05	8.472	
1,500.0	1,456.6	1,484.3	1,438.7	6.2	6.4	-45.66	-53.0	-336.9	70.5	61.2	9.23	7.634	
1,600.0	1,551.0	1,584.3	1,533.2	6.8	7.0	-48.37	-57.4	-369.2	73.0	62.5	10.47	6.970	
1,700.0	1,645.3	1,684.2	1,627.7	7.4	7.6	-50.90	-61.7	-401.4	75.6	63.8	11.74	6.438	
1,800.0	1,739.7	1,784.1	1,722.1	8.0	8.3	-53.26	-66.1	-433.6	78.3	65.3	13.04	6.007	
1,900.0	1,834.1	1,884.0	1,816.6	8.7	8.9	-55.45	-70.5	-465.8	81.2	66.9	14.36	5.655	
2,000.0	1,928.5	1,983.9	1,911.1	9.3	9.5	-57.48	-74.8	-498.1	84.2	68.5	15.70	5.364	
2,100.0	2,022.8	2,083.8	2,005.5	9.9	10.1	-59.38	-79.2	-530.3	87.3	70.3	17.05	5.121	
2,200.0	2,117.2	2,183.7	2,100.0	10.6	10.7	-61.14	-83.6	-562.5	90.5	72.1	18.40	4.917	
2,300.0	2,211.6	2,283.6	2,194.5	11.2	11.3	-62.78	-87.9	-594.7	93.8	74.0	19.76	4.745	
2,400.0	2,306.0	2,383.5	2,289.0	11.8	12.0	-64.32	-92.3	-626.9	97.1	76.0	21.12	4.597	
2,500.0	2,400.3	2,483.5	2,383.4	12.4	12.6	-65.74	-96.7	-659.2	100.5	78.0	22.48	4.470	
2,600.0	2,494.7	2,583.4	2,477.9	13.1	13.2	-67.08	-101.0	-691.4	103.9	80.1	23.84	4.361	
2,700.0	2,589.1	2,683.3	2,572.4	13.7	13.8	-68.33	-105.4	-723.6	107.5	82.3	25.19	4.265	
2,800.0	2,683.4	2,783.2	2,666.8	14.3	14.4	-69.49	-109.8	-755.8	111.0	84.5	26.55	4.182	
2,900.0	2,777.8	2,883.1	2,761.3	15.0	15.1	-70.59	-114.1	-788.1	114.6	86.7	27.90	4.109	
3,000.0	2,872.2	2,983.0	2,855.8	15.6	15.7	-71.62	-118.5	-820.3	118.3	89.0	29.24	4.044	
3,100.0	2,966.6	3,082.9	2,950.3	16.2	16.3	-72.58	-122.9	-852.5	121.9	91.3	30.59	3.987	
3,200.0	3,060.9	3,182.8	3,044.7	16.9	16.9	-73.49	-127.2	-884.7	125.6	93.7	31.93	3.936	
3,300.0	3,155.3	3,282.8	3,139.2	17.5	17.5	-74.35	-131.6	-917.0	129.4	96.1	33.26	3.890	
3,400.0	3,249.7	3,382.7	3,233.7	18.1	18.2	-75.16	-136.0	-949.2	133.1	98.6	34.59	3.849	
3,500.0	3,344.1	3,482.6	3,328.1	18.8	18.8	-75.93	-140.3	-981.4	136.9	101.0	35.92	3.812	
3,600.0	3,438.4	3,582.5	3,422.6	19.4	19.4	-76.65	-144.7	-1,013.6	140.8	103.5	37.25	3.779	
3,700.0	3,532.8	3,682.4	3,517.1	20.0	20.0	-77.33	-149.1	-1,045.9	144.6	106.0	38.57	3.749	
3,800.0	3,627.2	3,782.3	3,611.6	20.6	20.7	-77.98	-153.4	-1,078.1	148.4	108.6	39.89	3.722	
3,900.0	3,721.6	3,882.2	3,706.0	21.3	21.3	-78.60	-157.8	-1,110.3	152.3	111.1	41.20	3.697	
4,000.0	3,815.9	3,982.1	3,800.5	21.9	21.9	-79.19	-162.2	-1,142.5	156.2	113.7	42.51	3.674	
4,100.0	3,910.3	4,082.0	3,895.0	22.5	22.5	-79.74	-166.5	-1,174.8	160.1	116.3	43.82	3.654	
4,200.0	4,004.7	4,182.0	3,989.4	23.2	23.1	-80.27	-170.9	-1,207.0	164.0	118.9	45.13	3.635	
4,300.0	4,099.1	4,281.9	4,083.9	23.8	23.8	-80.78	-175.3	-1,239.2	168.0	121.5	46.43	3.617	
4,400.0	4,193.4	4,381.8	4,178.4	24.4	24.4	-81.26	-179.6	-1,271.4	171.9	124.2	47.74	3.601	
4,500.0	4,287.8	4,481.7	4,272.9	25.1	25.0	-81.72	-184.0	-1,303.7	175.9	126.8	49.04	3.587	
4,600.0	4,382.2	4,581.6	4,367.3	25.7	25.6	-82.17	-188.4	-1,335.9	179.8	129.5	50.33	3.573	
4,700.0	4,476.6	4,681.5	4,461.8	26.3	26.2	-82.59	-192.7	-1,368.1	183.8	132.2	51.63	3.560	
4,800.0	4,570.9	4,781.4	4,556.3	27.0	26.9	-82.99	-197.1	-1,400.3	187.8	134.9	52.92	3.549	
4,900.0	4,665.3	4,881.3	4,650.8	27.6	27.5	-83.38	-201.5	-1,432.6	191.8	137.6	54.21	3.538	
5,000.0	4,759.7	4,981.3	4,745.2	28.2	28.1	-83.75	-205.8	-1,464.8	195.8	140.3	55.50	3.528	
5,100.0	4,854.0	5,081.2	4,839.7	28.9	28.7	-84.11	-210.2	-1,497.0	199.8	143.0	56.79	3.519	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-16C (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	4,948.4	5,181.1	4,934.2	29.5	29.3	-84.45	-214.6	-1,529.2	203.8	145.8	58.07	3.510	
5,300.0	5,042.8	5,281.0	5,028.6	30.1	30.0	-84.78	-218.9	-1,561.5	207.9	148.5	59.36	3.502	
5,400.0	5,137.2	5,380.9	5,123.1	30.8	30.6	-85.09	-223.3	-1,593.7	211.9	151.3	60.64	3.494	
5,500.0	5,231.5	5,480.8	5,217.6	31.4	31.2	-85.40	-227.7	-1,625.9	215.9	154.0	61.92	3.487	
5,600.0	5,325.9	5,580.7	5,312.1	32.0	31.8	-85.69	-232.0	-1,658.1	220.0	156.8	63.20	3.481	
5,700.0	5,420.3	5,680.6	5,406.5	32.7	32.5	-85.97	-236.4	-1,690.4	224.0	159.6	64.48	3.475	
5,800.0	5,514.7	5,780.6	5,501.0	33.3	33.1	-86.25	-240.8	-1,722.6	228.1	162.3	65.76	3.469	
5,900.0	5,609.0	5,880.5	5,595.5	33.9	33.7	-86.51	-245.1	-1,754.8	232.2	165.1	67.03	3.463	
6,000.0	5,703.4	5,980.4	5,689.9	34.6	34.3	-86.76	-249.5	-1,787.0	236.2	167.9	68.31	3.458	
6,100.0	5,797.8	6,080.3	5,784.4	35.2	34.9	-87.01	-253.9	-1,819.2	240.3	170.7	69.58	3.453	
6,200.0	5,892.2	6,180.2	5,878.9	35.8	35.6	-87.25	-258.2	-1,851.5	244.4	173.5	70.86	3.449	
6,300.0	5,986.5	6,280.1	5,973.4	36.5	36.2	-87.48	-262.6	-1,883.7	248.5	176.3	72.13	3.445	
6,400.0	6,080.9	6,380.0	6,067.8	37.1	36.8	-87.70	-267.0	-1,915.9	252.5	179.1	73.40	3.441	
6,500.0	6,175.3	6,479.9	6,162.3	37.7	37.4	-87.91	-271.3	-1,948.1	256.6	182.0	74.67	3.437	
6,600.0	6,269.7	6,579.8	6,256.8	38.3	38.0	-88.12	-275.7	-1,980.4	260.7	184.8	75.94	3.433	
6,700.0	6,364.0	6,679.8	6,351.2	39.0	38.7	-88.33	-280.1	-2,012.6	264.8	187.6	77.21	3.430	
6,800.0	6,458.4	6,779.7	6,445.7	39.6	39.3	-88.52	-284.4	-2,044.8	268.9	190.4	78.47	3.427	
6,900.0	6,552.8	6,879.6	6,540.2	40.2	39.9	-88.71	-288.8	-2,077.0	273.0	193.3	79.74	3.424	
7,000.0	6,647.2	6,979.5	6,634.7	40.9	40.5	-88.90	-293.2	-2,109.3	277.1	196.1	81.01	3.421	
7,100.0	6,741.5	7,079.4	6,729.1	41.5	41.1	-89.07	-297.5	-2,141.5	281.2	198.9	82.27	3.418	
7,200.0	6,835.9	7,179.3	6,823.6	42.1	41.8	-89.25	-301.9	-2,173.7	285.3	201.8	83.54	3.415	
7,300.0	6,930.3	7,279.2	6,918.1	42.8	42.4	-89.42	-306.3	-2,205.9	289.4	204.6	84.80	3.413	
7,400.0	7,024.9	7,379.6	7,013.0	43.4	43.0	-89.53	-310.6	-2,238.1	293.5	207.5	86.03	3.412	
7,500.0	7,120.5	7,480.8	7,109.6	43.9	43.5	-89.54	-314.7	-2,268.1	297.3	210.2	87.10	3.413	
7,600.0	7,217.1	7,582.1	7,207.3	44.4	44.0	-89.56	-318.3	-2,294.6	300.7	212.6	88.04	3.415	
7,700.0	7,314.5	7,683.5	7,306.0	44.8	44.5	-89.56	-321.4	-2,317.8	303.6	214.7	88.87	3.416	
7,800.0	7,412.6	7,784.9	7,405.4	45.1	44.8	-89.56	-324.1	-2,337.4	306.1	216.5	89.56	3.417	
7,900.0	7,511.4	7,886.3	7,505.5	45.4	45.1	-89.56	-326.3	-2,353.6	308.1	217.9	90.14	3.418	
8,000.0	7,610.6	7,987.8	7,606.1	45.6	45.3	-89.55	-328.0	-2,366.2	309.7	219.1	90.60	3.418	
8,100.0	7,710.2	8,089.2	7,707.2	45.8	45.5	-89.54	-329.2	-2,375.3	310.8	219.9	90.94	3.418	
8,200.0	7,810.1	8,190.7	7,808.5	45.9	45.6	-89.52	-330.0	-2,380.9	311.5	220.4	91.16	3.417	
8,300.0	7,910.1	8,292.2	7,910.0	46.0	45.7	-89.50	-330.2	-2,382.9	311.8	220.5	91.28	3.416	
8,400.0	8,010.1	8,392.3	8,010.1	46.0	45.7	-179.94	-330.2	-2,382.9	311.8	220.4	91.39	3.412	
8,500.0	8,110.1	8,492.3	8,110.1	46.1	45.8	-179.94	-330.2	-2,382.9	311.8	220.3	91.50	3.407	
8,600.0	8,210.1	8,592.3	8,210.1	46.1	45.9	-179.94	-330.2	-2,382.9	311.8	220.2	91.61	3.403	
8,700.0	8,310.1	8,692.3	8,310.1	46.2	45.9	-179.94	-330.2	-2,382.9	311.8	220.1	91.73	3.399	
8,800.0	8,410.1	8,792.3	8,410.1	46.2	46.0	-179.94	-330.2	-2,382.9	311.8	219.9	91.85	3.395	
8,900.0	8,510.1	8,892.3	8,510.1	46.3	46.0	-179.94	-330.2	-2,382.9	311.8	219.8	91.96	3.390	
9,000.0	8,610.1	8,992.3	8,610.1	46.4	46.1	-179.94	-330.2	-2,382.9	311.8	219.7	92.08	3.386	
9,100.0	8,710.1	9,092.3	8,710.1	46.4	46.2	-179.94	-330.2	-2,382.9	311.8	219.6	92.20	3.382	
9,200.0	8,810.1	9,192.3	8,810.1	46.5	46.2	-179.94	-330.2	-2,382.9	311.8	219.5	92.32	3.377	
9,300.0	8,910.1	9,292.3	8,910.1	46.5	46.3	-179.94	-330.2	-2,382.9	311.8	219.3	92.44	3.373	
9,400.0	9,010.1	9,392.3	9,010.1	46.6	46.3	-179.94	-330.2	-2,382.9	311.8	219.2	92.56	3.368	
9,500.0	9,110.1	9,492.3	9,110.1	46.7	46.4	-179.94	-330.2	-2,382.9	311.8	219.1	92.69	3.364	
9,600.0	9,210.1	9,592.3	9,210.1	46.7	46.5	-179.94	-330.2	-2,382.9	311.8	219.0	92.81	3.359	
9,700.0	9,310.1	9,692.3	9,310.1	46.8	46.5	-179.94	-330.2	-2,382.9	311.8	218.8	92.94	3.355	
9,800.0	9,410.1	9,792.3	9,410.1	46.9	46.6	-179.94	-330.2	-2,382.9	311.8	218.7	93.07	3.350	
9,900.0	9,510.1	9,892.3	9,510.1	46.9	46.6	-179.94	-330.2	-2,382.9	311.8	218.6	93.20	3.345	
10,000.0	9,610.1	9,992.3	9,610.1	47.0	46.7	-179.94	-330.2	-2,382.9	311.8	218.5	93.33	3.341	
10,100.0	9,710.1	10,092.3	9,710.1	47.0	46.8	-179.94	-330.2	-2,382.9	311.8	218.3	93.46	3.336	
10,200.0	9,810.1	10,192.3	9,810.1	47.1	46.8	-179.94	-330.2	-2,382.9	311.8	218.2	93.59	3.331	
10,300.0	9,910.1	10,292.3	9,910.1	47.2	46.9	-179.94	-330.2	-2,382.9	311.8	218.1	93.72	3.327	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-16C (M16W Pad) - DD - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	10,010.1	10,392.3	10,010.1	47.2	47.0	-179.94	-330.2	-2,382.9	311.8	217.9	93.86	3.322	
10,476.9	10,087.0	10,469.2	10,087.0	47.3	47.0	-179.94	-330.2	-2,382.9	311.8	217.8	93.96	3.318	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9B (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD, 1163-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	36.61	103.8	77.1	129.3				
100.0	100.0	100.2	100.2	0.1	0.2	36.80	103.5	77.4	129.2	128.9	0.29	442.063	
200.0	200.0	200.3	200.3	0.3	0.3	37.36	102.6	78.3	129.1	128.4	0.62	207.140	
236.4	236.4	236.4	236.4	0.4	0.4	37.63	102.2	78.8	129.0	128.3	0.75	172.326	CC
300.0	300.0	299.6	299.5	0.5	0.5	37.86	102.0	79.3	129.1	128.2	0.97	133.183	ES
400.0	400.0	401.3	401.2	0.7	0.7	128.26	103.3	77.6	130.9	129.5	1.33	98.730	
500.0	499.6	503.7	503.3	0.9	0.9	127.63	106.7	70.6	134.1	132.4	1.71	78.381	
600.0	598.8	606.7	605.3	1.1	1.1	126.27	111.4	57.0	137.7	135.5	2.19	62.894	
700.0	697.1	702.4	699.3	1.5	1.4	124.70	119.0	40.9	145.1	142.3	2.79	51.977	
800.0	794.3	796.7	791.3	1.9	1.8	123.34	131.1	23.9	158.9	155.4	3.53	44.975	
900.0	890.2	892.3	883.5	2.5	2.2	122.17	147.1	4.8	177.6	173.2	4.43	40.066	
1,000.0	984.7	987.5	974.2	3.1	2.7	121.20	166.3	-16.9	200.0	194.6	5.46	36.643	
1,100.0	1,079.1	1,084.0	1,065.0	3.7	3.3	119.78	188.3	-41.3	223.6	217.0	6.58	33.971	
1,200.0	1,173.5	1,183.6	1,157.6	4.3	4.0	117.89	211.7	-69.3	246.5	238.7	7.80	31.606	
1,300.0	1,267.8	1,276.0	1,242.8	4.9	4.6	116.02	234.8	-96.5	270.5	261.5	9.01	30.037	
1,400.0	1,362.2	1,373.0	1,332.6	5.5	5.3	114.56	259.0	-124.1	295.0	284.8	10.23	28.854	
1,500.0	1,456.6	1,466.3	1,418.8	6.2	6.0	113.30	283.1	-150.7	320.5	309.0	11.43	28.028	
1,600.0	1,551.0	1,564.7	1,509.7	6.8	6.7	112.20	308.8	-178.3	346.4	333.7	12.67	27.335	
1,700.0	1,645.3	1,665.7	1,602.9	7.4	7.4	111.10	334.1	-208.0	371.0	357.1	13.94	26.618	
1,800.0	1,739.7	1,760.7	1,690.7	8.0	8.0	110.28	357.6	-235.5	395.6	380.4	15.17	26.083	
1,900.0	1,834.1	1,855.7	1,778.0	8.7	8.7	109.38	381.9	-263.9	420.8	404.4	16.40	25.658	
2,000.0	1,928.5	1,953.0	1,867.6	9.3	9.4	108.62	406.8	-292.6	446.1	428.5	17.64	25.286	
2,100.0	2,022.8	2,058.3	1,964.5	9.9	10.2	107.83	433.1	-324.3	470.8	451.9	18.95	24.845	
2,200.0	2,117.2	2,155.8	2,054.1	10.6	10.9	107.09	456.3	-354.8	494.1	473.9	20.22	24.438	
2,300.0	2,211.6	2,254.3	2,144.6	11.2	11.7	106.38	480.0	-385.8	517.6	496.1	21.48	24.096	
2,400.0	2,306.0	2,349.0	2,232.1	11.8	12.3	105.92	502.3	-414.3	541.2	518.5	22.69	23.853	
2,500.0	2,400.3	2,444.0	2,320.0	12.4	13.0	105.53	525.0	-442.4	565.2	541.3	23.91	23.638	
2,600.0	2,494.7	2,543.1	2,411.9	13.1	13.7	105.24	548.5	-471.0	589.2	564.1	25.12	23.451	
2,700.0	2,589.1	2,633.8	2,495.9	13.7	14.3	104.97	570.3	-497.4	613.6	587.3	26.32	23.314	
2,800.0	2,683.4	2,731.8	2,586.4	14.3	15.0	104.63	594.5	-526.3	638.4	610.9	27.55	23.172	
2,900.0	2,777.8	2,834.7	2,681.3	15.0	15.8	104.27	619.4	-557.3	662.7	633.8	28.83	22.988	
3,000.0	2,872.2	2,932.9	2,772.0	15.6	16.5	103.96	642.5	-586.9	686.2	656.1	30.07	22.822	
3,100.0	2,966.6	3,026.7	2,858.3	16.2	17.2	103.63	665.1	-615.7	710.3	679.0	31.29	22.703	
3,200.0	3,060.9	3,127.6	2,951.6	16.9	17.9	103.36	689.1	-646.0	734.2	701.7	32.52	22.575	
3,300.0	3,155.3	3,224.8	3,042.1	17.5	18.6	103.27	711.4	-673.5	757.8	724.0	33.74	22.461	
3,400.0	3,249.7	3,317.9	3,128.2	18.1	19.2	103.09	733.4	-700.9	781.6	746.7	34.93	22.378	
3,500.0	3,344.1	3,416.7	3,219.8	18.8	19.9	102.93	756.9	-729.6	805.9	769.7	36.16	22.283	
3,600.0	3,438.4	3,516.6	3,312.2	19.4	20.6	102.72	780.4	-759.6	829.6	792.2	37.40	22.178	
3,700.0	3,532.8	3,599.4	3,388.6	20.0	21.3	102.55	800.3	-784.5	853.8	815.2	38.57	22.137	
3,800.0	3,627.2	3,693.3	3,474.1	20.6	22.0	102.19	824.9	-814.5	879.6	839.8	39.80	22.102	
3,900.0	3,721.6	3,792.4	3,564.8	21.3	22.7	101.91	850.1	-845.3	905.0	863.9	41.04	22.048	
4,000.0	3,815.9	3,894.4	3,658.9	21.9	23.4	101.74	875.5	-875.6	930.1	887.9	42.28	21.999	
4,100.0	3,910.3	3,989.1	3,746.6	22.5	24.1	101.66	898.5	-902.7	955.0	911.5	43.49	21.961	
4,200.0	4,004.7	4,095.1	3,844.4	23.2	24.9	101.49	924.4	-934.6	979.6	934.8	44.78	21.877	
4,300.0	4,099.1	4,197.3	3,938.6	23.8	25.6	101.33	948.7	-965.6	1,003.5	957.5	46.03	21.802	
4,400.0	4,193.4	4,301.4	4,035.3	24.4	26.3	101.23	972.4	-996.3	1,026.7	979.4	47.29	21.708	
4,500.0	4,287.8	4,394.4	4,121.1	25.1	27.0	101.09	993.8	-1,024.8	1,049.8	1,001.3	48.50	21.646	
4,600.0	4,382.2	4,484.6	4,204.7	25.7	27.7	100.99	1,014.8	-1,051.8	1,073.4	1,023.8	49.68	21.608	
4,700.0	4,476.6	4,577.3	4,290.1	26.3	28.3	100.85	1,037.4	-1,080.0	1,097.9	1,047.0	50.88	21.580	
4,800.0	4,570.9	4,676.6	4,382.1	27.0	29.0	100.79	1,060.7	-1,108.8	1,121.8	1,069.7	52.09	21.534	
4,900.0	4,665.3	4,757.3	4,456.9	27.6	29.6	100.75	1,080.4	-1,132.1	1,146.7	1,093.5	53.22	21.548	
5,000.0	4,759.7	4,842.1	4,534.6	28.2	30.3	100.62	1,102.5	-1,157.8	1,172.9	1,118.5	54.38	21.570	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9B (M16W) - DD - FINAL

Survey Program: 206-MWD, 1163-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,854.0	4,941.8	4,626.0	28.9	31.0	100.49	1,128.8	-1,187.5	1,199.5	1,143.9	55.61	21.569	
5,200.0	4,948.4	5,058.1	4,732.7	29.5	31.9	100.32	1,158.2	-1,223.1	1,224.9	1,167.9	56.97	21.501	
5,300.0	5,042.8	5,158.5	4,825.2	30.1	32.6	100.20	1,182.6	-1,253.7	1,249.4	1,191.2	58.21	21.464	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9B2 (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	31.36	108.9	66.4	127.5				
100.0	100.0	100.1	100.1	0.1	0.2	31.36	108.9	66.3	127.5	127.2	0.29	436.253	
200.0	200.0	200.2	200.2	0.3	0.3	31.34	108.8	66.2	127.4	126.7	0.62	204.486	
221.9	221.9	221.9	221.9	0.3	0.3	31.34	108.8	66.2	127.3	126.6	0.70	182.432	CC, ES
300.0	300.0	299.3	299.2	0.5	0.5	31.15	109.2	66.0	127.6	126.6	0.97	131.679	
400.0	400.0	399.1	399.0	0.7	0.7	120.70	112.3	63.0	130.1	128.8	1.33	97.703	
500.0	499.6	499.8	499.2	0.9	0.9	119.44	117.4	55.1	134.6	132.8	1.76	76.485	
600.0	598.8	600.2	598.6	1.1	1.2	118.15	124.3	42.7	141.0	138.7	2.29	61.483	
700.0	697.1	699.6	696.2	1.5	1.5	116.95	133.1	26.5	149.9	146.9	2.96	50.687	
800.0	794.3	799.8	793.9	1.9	1.9	116.07	143.7	6.7	161.0	157.3	3.78	42.653	
900.0	890.2	898.2	888.7	2.5	2.4	115.26	155.6	-17.0	174.0	169.3	4.76	36.593	
1,000.0	984.7	994.6	980.1	3.1	3.0	114.46	170.2	-43.6	190.0	184.2	5.87	32.391	
1,100.0	1,079.1	1,090.4	1,069.7	3.7	3.7	112.93	187.4	-73.1	207.6	200.5	7.06	29.405	
1,200.0	1,173.5	1,190.9	1,163.3	4.3	4.3	111.35	206.2	-104.5	225.7	217.4	8.30	27.202	
1,300.0	1,267.8	1,292.3	1,258.1	4.9	5.0	110.22	223.2	-136.1	242.2	232.6	9.54	25.379	
1,400.0	1,362.2	1,388.7	1,348.1	5.5	5.6	109.17	239.4	-166.6	258.6	247.9	10.78	24.004	
1,500.0	1,456.6	1,482.9	1,435.9	6.2	6.3	108.22	256.6	-196.1	276.6	264.6	12.00	23.049	
1,600.0	1,551.0	1,578.1	1,524.2	6.8	6.9	107.20	275.4	-226.3	295.9	282.7	13.26	22.319	
1,700.0	1,645.3	1,674.0	1,612.6	7.4	7.6	106.04	295.3	-257.8	316.0	301.5	14.54	21.735	
1,800.0	1,739.7	1,772.1	1,702.5	8.0	8.4	104.82	316.3	-290.8	336.6	320.8	15.85	21.237	
1,900.0	1,834.1	1,868.4	1,790.6	8.7	9.1	103.61	336.9	-324.0	357.2	340.0	17.15	20.827	
2,000.0	1,928.5	1,972.7	1,886.0	9.3	9.9	102.49	359.0	-359.7	377.7	359.2	18.49	20.427	
2,100.0	2,022.8	2,073.8	1,979.2	9.9	10.6	101.67	378.6	-394.0	396.6	376.8	19.79	20.045	
2,200.0	2,117.2	2,177.0	2,074.4	10.6	11.4	100.94	397.5	-428.9	414.6	393.5	21.11	19.640	
2,300.0	2,211.6	2,274.2	2,164.3	11.2	12.1	100.40	414.9	-461.3	432.4	410.0	22.36	19.340	
2,400.0	2,306.0	2,376.2	2,259.3	11.8	12.8	100.06	432.4	-494.1	449.6	425.9	23.63	19.024	
2,500.0	2,400.3	2,471.0	2,347.5	12.4	13.4	99.73	448.9	-524.8	467.1	442.2	24.87	18.783	
2,600.0	2,494.7	2,568.9	2,438.5	13.1	14.1	99.42	466.4	-556.3	485.0	458.9	26.12	18.568	
2,700.0	2,589.1	2,666.7	2,529.2	13.7	14.8	99.05	483.9	-588.6	502.8	475.4	27.39	18.358	
2,800.0	2,683.4	2,760.8	2,615.8	14.3	15.5	98.58	501.4	-620.6	521.3	492.7	28.65	18.194	
2,900.0	2,777.8	2,860.8	2,707.4	15.0	16.3	97.94	520.8	-656.0	540.3	510.4	29.96	18.038	
3,000.0	2,872.2	2,963.4	2,801.8	15.6	17.0	97.44	539.5	-691.6	558.4	527.1	31.25	17.867	
3,100.0	2,966.6	3,058.5	2,889.7	16.2	17.7	97.13	556.5	-723.4	576.4	543.9	32.49	17.741	
3,200.0	3,060.9	3,150.4	2,974.8	16.9	18.4	96.89	573.9	-753.6	595.3	561.6	33.70	17.662	
3,300.0	3,155.3	3,247.1	3,064.0	17.5	19.1	96.62	592.9	-785.7	615.0	580.0	34.96	17.590	
3,400.0	3,249.7	3,355.2	3,163.4	18.1	19.9	96.21	613.5	-822.8	634.1	597.8	36.31	17.464	
3,500.0	3,344.1	3,453.0	3,253.6	18.8	20.6	95.89	631.2	-856.3	652.2	614.6	37.55	17.367	
3,600.0	3,438.4	3,536.6	3,330.7	19.4	21.2	95.67	647.3	-884.3	671.5	632.7	38.73	17.339	
3,700.0	3,532.8	3,637.8	3,424.0	20.0	21.9	95.45	667.7	-917.8	691.8	651.8	39.98	17.301	
3,800.0	3,627.2	3,735.4	3,514.0	20.6	22.7	95.26	687.1	-950.0	711.7	670.5	41.24	17.257	
3,900.0	3,721.6	3,836.0	3,606.9	21.3	23.4	95.07	706.8	-983.2	731.5	689.0	42.50	17.209	
4,000.0	3,815.9	3,929.3	3,693.0	21.9	24.1	94.91	725.3	-1,013.9	751.4	707.7	43.73	17.183	
4,100.0	3,910.3	4,026.3	3,782.4	22.5	24.8	94.72	745.2	-1,046.3	772.0	727.1	44.97	17.168	
4,200.0	4,004.7	4,131.5	3,879.9	23.2	25.5	94.64	765.3	-1,080.0	791.4	745.2	46.25	17.112	
4,300.0	4,099.1	4,220.6	3,962.5	23.8	26.2	94.57	783.2	-1,108.5	811.6	764.2	47.44	17.107	
4,400.0	4,193.4	4,322.7	4,056.5	24.4	26.9	94.43	803.9	-1,142.0	832.1	783.4	48.71	17.084	
4,500.0	4,287.8	4,432.4	4,158.5	25.1	27.6	94.39	824.9	-1,176.7	851.5	801.5	50.01	17.026	
4,600.0	4,382.2	4,529.8	4,249.0	25.7	28.3	94.33	842.8	-1,208.0	870.1	818.8	51.27	16.972	
4,700.0	4,476.6	4,636.7	4,347.7	26.3	29.1	94.15	862.4	-1,244.1	888.6	836.0	52.59	16.898	
4,800.0	4,570.9	4,726.4	4,430.3	27.0	29.8	93.96	878.7	-1,275.1	906.9	853.1	53.80	16.858	
4,900.0	4,665.3	4,821.2	4,517.2	27.6	30.5	93.71	896.7	-1,308.5	925.9	870.9	55.05	16.819	
5,000.0	4,759.7	4,923.1	4,610.8	28.2	31.3	93.50	916.0	-1,343.8	944.9	888.6	56.31	16.779	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9B2 (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,854.0	5,022.6	4,702.5	28.9	32.0	93.33	934.2	-1,377.8	963.4	905.8	57.59	16.728	
5,200.0	4,948.4	5,099.0	4,772.4	29.5	32.6	93.15	949.5	-1,404.6	983.4	924.7	58.72	16.748	
5,300.0	5,042.8	5,209.7	4,873.9	30.1	33.4	92.96	972.0	-1,442.6	1,003.9	943.8	60.03	16.722	
5,400.0	5,137.2	5,313.2	4,969.3	30.8	34.2	92.84	992.1	-1,477.3	1,023.5	962.2	61.31	16.695	
5,500.0	5,231.5	5,420.9	5,069.4	31.4	34.9	92.81	1,011.4	-1,512.1	1,041.6	979.0	62.61	16.637	
5,600.0	5,325.9	5,502.1	5,144.7	32.0	35.5	92.77	1,026.5	-1,538.5	1,060.5	996.7	63.75	16.634	
5,700.0	5,420.3	5,584.0	5,220.1	32.7	36.1	92.69	1,043.3	-1,565.7	1,081.2	1,016.3	64.90	16.661	
5,800.0	5,514.7	5,692.1	5,319.8	33.3	36.9	92.63	1,065.7	-1,601.0	1,102.1	1,036.0	66.20	16.650	
5,900.0	5,609.0	5,799.4	5,419.0	33.9	37.7	92.56	1,086.6	-1,636.1	1,121.8	1,054.3	67.50	16.620	
6,000.0	5,703.4	5,898.1	5,510.3	34.6	38.4	92.51	1,105.6	-1,668.4	1,141.3	1,072.5	68.74	16.603	
6,100.0	5,797.8	6,004.6	5,609.3	35.2	39.1	92.52	1,125.7	-1,702.2	1,160.5	1,090.4	70.02	16.574	
6,200.0	5,892.2	6,090.2	5,689.1	35.8	39.7	92.57	1,141.8	-1,728.4	1,179.6	1,108.4	71.17	16.574	
6,300.0	5,986.5	6,178.8	5,771.5	36.5	40.3	92.59	1,159.5	-1,756.1	1,199.8	1,127.5	72.36	16.581	
6,400.0	6,080.9	6,297.5	5,881.3	37.1	41.2	92.56	1,182.8	-1,794.3	1,219.7	1,146.0	73.73	16.544	
6,500.0	6,175.3	6,402.7	5,979.5	37.7	41.9	92.61	1,202.0	-1,827.0	1,238.3	1,163.3	75.00	16.511	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9C (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	26.04	102.3	50.0	113.9				
100.0	100.0	100.1	100.1	0.1	0.2	26.05	102.3	50.0	113.8	113.5	0.29	389.541	
200.0	200.0	200.2	200.2	0.3	0.3	26.07	102.1	50.0	113.7	113.1	0.62	182.568	
212.6	212.6	212.7	212.7	0.3	0.3	26.07	102.1	50.0	113.7	113.0	0.67	170.791	CC, ES
300.0	300.0	299.7	299.7	0.5	0.5	25.91	102.6	49.8	114.1	113.1	0.97	117.590	
400.0	400.0	399.6	399.5	0.7	0.7	115.19	104.9	45.8	115.5	114.2	1.33	86.725	
500.0	499.6	499.7	499.0	0.9	0.9	113.43	109.2	36.2	118.9	117.1	1.76	67.571	
600.0	598.8	598.8	596.8	1.1	1.2	111.37	116.2	21.9	125.0	122.7	2.32	53.973	
700.0	697.1	698.3	693.8	1.5	1.6	108.89	125.4	1.9	133.1	130.1	3.05	43.677	
800.0	794.3	796.5	788.4	1.9	2.1	106.76	136.7	-21.9	143.9	140.0	3.95	36.462	
900.0	890.2	896.0	883.0	2.5	2.6	105.08	149.5	-49.8	156.6	151.5	5.02	31.165	
1,000.0	984.7	995.2	976.4	3.1	3.3	104.19	162.7	-80.6	170.1	163.9	6.20	27.420	
1,100.0	1,079.1	1,093.2	1,068.3	3.7	3.9	103.42	176.3	-111.9	184.0	176.6	7.41	24.846	
1,200.0	1,173.5	1,193.3	1,162.1	4.3	4.5	102.66	189.7	-144.3	197.5	188.8	8.65	22.839	
1,300.0	1,267.8	1,288.6	1,251.2	4.9	5.2	101.95	204.0	-175.0	212.5	202.6	9.86	21.559	
1,400.0	1,362.2	1,387.6	1,344.0	5.5	5.8	101.56	218.9	-205.9	227.7	216.6	11.09	20.540	
1,500.0	1,456.6	1,486.0	1,436.0	6.2	6.5	100.98	234.2	-237.5	243.4	231.0	12.35	19.711	
1,600.0	1,551.0	1,584.2	1,527.2	6.8	7.2	100.17	249.5	-270.3	258.9	245.3	13.61	19.029	
1,700.0	1,645.3	1,684.2	1,620.3	7.4	7.9	99.51	265.4	-303.3	274.7	259.8	14.90	18.442	
1,800.0	1,739.7	1,784.1	1,712.7	8.0	8.6	98.61	280.7	-337.9	289.8	273.7	16.18	17.913	
1,900.0	1,834.1	1,881.5	1,803.5	8.7	9.2	98.13	295.5	-370.1	305.1	287.7	17.42	17.515	
2,000.0	1,928.5	1,984.7	1,899.5	9.3	10.0	97.62	310.9	-404.5	320.1	301.3	18.74	17.077	
2,100.0	2,022.8	2,086.7	1,993.8	9.9	10.7	96.77	325.1	-440.9	333.8	313.7	20.06	16.640	
2,200.0	2,117.2	2,186.8	2,086.7	10.6	11.4	96.19	338.3	-475.5	347.0	325.6	21.33	16.263	
2,300.0	2,211.6	2,283.9	2,177.1	11.2	12.1	95.76	351.1	-508.7	360.2	337.6	22.60	15.940	
2,400.0	2,306.0	2,375.7	2,262.3	11.8	12.7	95.31	364.3	-540.3	374.6	350.8	23.82	15.728	
2,500.0	2,400.3	2,462.7	2,343.3	12.4	13.3	95.17	379.1	-568.3	391.9	366.9	24.98	15.686	
2,600.0	2,494.7	2,558.3	2,432.1	13.1	14.0	95.04	397.0	-598.8	410.8	384.6	26.21	15.675	
2,700.0	2,589.1	2,658.1	2,525.1	13.7	14.6	95.04	415.7	-629.8	429.8	402.4	27.45	15.656	
2,800.0	2,683.4	2,760.7	2,620.2	14.3	15.4	94.81	434.3	-663.4	448.2	419.5	28.74	15.597	
2,900.0	2,777.8	2,861.8	2,714.0	15.0	16.1	94.59	451.7	-696.7	465.6	435.6	30.02	15.509	
3,000.0	2,872.2	2,963.0	2,807.6	15.6	16.8	94.23	469.0	-731.2	482.7	451.5	31.29	15.426	
3,100.0	2,966.6	3,069.7	2,906.8	16.2	17.6	94.03	485.9	-766.7	498.8	466.2	32.60	15.299	
3,200.0	3,060.9	3,180.0	3,010.1	16.9	18.3	93.96	501.1	-802.5	512.8	478.9	33.91	15.123	
3,300.0	3,155.3	3,276.4	3,100.4	17.5	18.9	93.92	513.5	-833.7	526.0	490.8	35.16	14.960	
3,400.0	3,249.7	3,376.0	3,192.8	18.1	19.7	93.58	526.7	-868.6	539.3	502.8	36.46	14.793	
3,500.0	3,344.1	3,474.4	3,283.9	18.8	20.3	93.23	540.1	-903.2	553.0	515.2	37.72	14.661	
3,600.0	3,438.4	3,577.1	3,379.4	19.4	21.1	92.98	552.9	-938.6	565.6	526.6	39.02	14.497	
3,700.0	3,532.8	3,672.7	3,467.7	20.0	21.8	92.62	565.9	-972.8	579.3	539.0	40.27	14.385	
3,800.0	3,627.2	3,773.6	3,561.4	20.6	22.5	92.36	578.7	-1,007.9	592.2	550.6	41.55	14.252	
3,900.0	3,721.6	3,864.5	3,645.5	21.3	23.1	92.06	591.2	-1,040.2	606.1	563.3	42.78	14.168	
4,000.0	3,815.9	3,958.8	3,732.5	21.9	23.8	91.76	605.2	-1,073.6	621.1	577.1	44.00	14.116	
4,100.0	3,910.3	4,068.5	3,834.6	22.5	24.6	91.63	621.2	-1,110.5	636.0	590.7	45.31	14.036	
4,200.0	4,004.7	4,159.3	3,919.7	23.2	25.2	91.64	633.5	-1,139.9	649.8	603.3	46.51	13.972	
4,300.0	4,099.1	4,255.3	4,009.3	23.8	25.8	91.66	648.0	-1,170.8	665.1	617.4	47.74	13.931	
4,400.0	4,193.4	4,347.5	4,095.3	24.4	26.5	91.62	662.2	-1,201.1	680.8	631.8	48.95	13.907	
4,500.0	4,287.8	4,449.9	4,190.4	25.1	27.2	91.52	678.5	-1,235.3	696.9	646.7	50.24	13.871	
4,600.0	4,382.2	4,542.3	4,276.2	25.7	27.8	91.42	693.1	-1,266.4	713.0	661.6	51.44	13.862	
4,700.0	4,476.6	4,647.9	4,374.3	26.3	28.6	91.34	710.0	-1,301.5	729.2	676.5	52.75	13.825	
4,800.0	4,570.9	4,748.3	4,467.9	27.0	29.3	91.30	725.1	-1,334.6	744.6	690.6	54.00	13.789	
4,900.0	4,665.3	4,834.9	4,548.4	27.6	29.9	91.25	739.1	-1,363.2	761.0	705.8	55.18	13.792	
5,000.0	4,759.7	4,942.5	4,648.7	28.2	30.6	91.25	756.4	-1,398.2	777.2	720.8	56.46	13.766	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9C (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,854.0	5,043.1	4,743.3	28.9	31.2	91.43	772.1	-1,428.5	793.2	735.5	57.69	13.749	
5,200.0	4,948.4	5,139.4	4,834.3	29.5	31.8	91.66	786.6	-1,456.5	808.6	749.7	58.91	13.725	
5,300.0	5,042.8	5,222.2	4,912.0	30.1	32.4	91.79	800.4	-1,481.5	825.5	765.5	60.06	13.745	
5,400.0	5,137.2	5,316.0	4,999.4	30.8	33.0	91.84	817.5	-1,511.0	844.0	782.8	61.27	13.776	
5,500.0	5,231.5	5,424.2	5,100.7	31.4	33.7	91.95	836.3	-1,544.2	861.6	799.1	62.55	13.775	
5,600.0	5,325.9	5,523.8	5,194.2	32.0	34.4	92.10	853.1	-1,574.2	878.8	815.0	63.82	13.771	
5,700.0	5,420.3	5,627.4	5,290.5	32.7	35.1	92.06	870.4	-1,608.0	895.8	830.7	65.08	13.764	
5,800.0	5,514.7	5,726.7	5,383.8	33.3	35.7	92.18	886.4	-1,638.2	912.3	846.0	66.29	13.761	
5,900.0	5,609.0	5,831.0	5,482.5	33.9	36.4	92.45	902.9	-1,667.6	928.5	860.9	67.55	13.746	
6,000.0	5,703.4	5,923.0	5,569.2	34.6	37.0	92.61	917.4	-1,694.6	944.7	875.9	68.76	13.739	
6,100.0	5,797.8	6,014.0	5,653.6	35.2	37.6	92.54	933.1	-1,724.8	962.0	892.0	70.00	13.743	
6,200.0	5,892.2	6,106.4	5,738.5	35.8	38.3	92.36	949.7	-1,757.2	980.1	908.9	71.22	13.762	
6,300.0	5,986.5	6,219.1	5,842.4	36.5	39.2	92.17	968.9	-1,796.4	997.4	924.8	72.57	13.745	
6,400.0	6,080.9	6,320.3	5,936.3	37.1	39.9	92.08	985.3	-1,830.3	1,013.8	940.0	73.82	13.734	
6,500.0	6,175.3	6,429.6	6,038.5	37.7	40.6	92.12	1,002.7	-1,864.9	1,030.1	954.9	75.13	13.711	
6,600.0	6,269.7	6,540.5	6,142.1	38.3	41.3	92.09	1,018.5	-1,901.2	1,044.5	968.0	76.47	13.658	
6,700.0	6,364.0	6,645.8	6,240.3	39.0	42.1	92.02	1,033.0	-1,936.5	1,058.4	980.7	77.75	13.614	
6,800.0	6,458.4	6,733.0	6,322.0	39.6	42.6	92.04	1,045.0	-1,964.4	1,072.5	993.6	78.92	13.589	
6,900.0	6,552.8	6,845.7	6,427.4	40.2	43.4	92.03	1,060.8	-2,001.0	1,086.8	1,006.5	80.27	13.539	
7,000.0	6,647.2	6,961.7	6,535.0	40.9	44.2	91.84	1,075.3	-2,042.1	1,099.5	1,017.8	81.68	13.460	
7,100.0	6,741.5	7,082.4	6,646.0	41.5	45.1	91.50	1,088.5	-2,087.5	1,110.6	1,027.5	83.11	13.363	
7,200.0	6,835.9	7,200.5	6,755.1	42.1	46.0	91.22	1,099.0	-2,131.4	1,119.7	1,035.2	84.49	13.252	
7,300.0	6,930.3	7,280.8	6,830.1	42.8	46.5	91.15	1,106.2	-2,159.1	1,128.9	1,043.3	85.61	13.186	
7,400.0	7,024.9	7,371.1	6,915.0	43.4	47.1	91.25	1,115.6	-2,188.7	1,139.5	1,052.7	86.82	13.125	
7,500.0	7,120.5	7,463.3	7,001.7	43.9	47.7	91.33	1,125.7	-2,218.2	1,150.6	1,062.7	87.92	13.087	
7,600.0	7,217.1	7,568.4	7,101.3	44.4	48.3	91.32	1,137.3	-2,249.5	1,161.8	1,072.9	88.97	13.059	
7,700.0	7,314.5	7,679.5	7,207.8	44.8	48.8	91.28	1,148.4	-2,279.2	1,172.0	1,082.1	89.91	13.035	SF
7,800.0	7,412.6	7,755.0	7,280.6	45.1	49.2	91.28	1,156.1	-2,297.7	1,182.3	1,091.7	90.61	13.048	
7,900.0	7,511.4	7,825.5	7,348.6	45.4	49.6	91.26	1,164.7	-2,314.2	1,194.8	1,103.6	91.20	13.101	
8,000.0	7,610.6	7,912.6	7,432.5	45.6	50.0	91.11	1,177.7	-2,333.7	1,209.7	1,117.9	91.75	13.185	
8,100.0	7,710.2	8,061.3	7,576.7	45.8	50.7	90.52	1,197.1	-2,364.3	1,222.9	1,130.6	92.32	13.247	
8,200.0	7,810.1	8,192.5	7,704.6	45.9	51.2	89.80	1,209.7	-2,390.7	1,232.7	1,140.0	92.69	13.299	
8,300.0	7,910.1	8,290.8	7,800.7	46.0	51.6	89.19	1,217.6	-2,409.5	1,241.2	1,148.3	92.88	13.363	
8,400.0	8,010.1	8,396.0	7,904.0	46.0	52.0	-2.08	1,226.0	-2,427.8	1,249.8	1,156.8	92.96	13.444	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9D (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD, 1298-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	25.84	92.1	44.6	102.4				
100.0	100.0	100.2	100.2	0.1	0.2	25.97	91.9	44.8	102.3	102.0	0.29	349.531	
200.0	200.0	200.5	200.5	0.3	0.3	26.36	91.3	45.2	101.9	101.3	0.62	163.468	
300.0	300.0	302.0	302.0	0.5	0.5	26.79	90.6	45.8	101.5	100.6	0.97	104.181	
400.0	400.0	408.5	408.3	0.7	0.7	118.67	85.9	43.1	97.7	96.4	1.34	72.905	
500.0	499.6	513.0	512.1	0.9	0.9	121.82	76.4	35.1	89.9	88.2	1.72	52.199	
600.0	598.8	612.1	609.9	1.1	1.2	124.18	68.8	21.3	83.0	80.8	2.14	38.703	
670.4	668.1	680.4	677.3	1.4	1.4	125.71	66.0	10.2	81.2	78.7	2.49	32.626	CC, ES
700.0	697.1	708.7	705.1	1.5	1.5	126.25	65.8	5.3	81.6	78.9	2.64	30.938	
800.0	794.3	806.4	801.1	1.9	1.8	127.57	68.9	-12.5	87.3	84.1	3.24	26.963	
900.0	890.2	907.1	898.9	2.5	2.2	127.71	75.7	-35.1	96.6	92.5	4.01	24.074	
1,000.0	984.7	1,006.1	994.0	3.1	2.6	127.11	85.1	-61.4	108.0	103.1	4.97	21.747	
1,100.0	1,079.1	1,105.4	1,088.4	3.7	3.1	125.50	96.2	-89.9	119.9	113.9	6.00	19.988	
1,200.0	1,173.5	1,203.8	1,181.8	4.3	3.7	123.85	108.0	-118.6	132.1	125.0	7.12	18.561	
1,300.0	1,267.8	1,303.9	1,276.9	4.9	4.2	122.56	119.9	-147.5	144.6	136.4	8.26	17.505	
1,400.0	1,362.2	1,404.3	1,372.3	5.5	4.8	121.52	130.9	-176.9	156.2	146.7	9.41	16.589	
1,500.0	1,456.6	1,504.5	1,467.5	6.2	5.4	120.79	141.3	-206.1	167.4	156.8	10.56	15.853	
1,600.0	1,551.0	1,604.2	1,562.3	6.8	5.9	120.21	151.2	-235.2	178.2	166.5	11.70	15.226	
1,700.0	1,645.3	1,699.2	1,652.8	7.4	6.5	119.70	161.5	-262.6	189.9	177.1	12.83	14.805	
1,800.0	1,739.7	1,798.6	1,747.4	8.0	7.0	119.23	173.5	-290.5	203.1	189.1	13.97	14.535	
1,900.0	1,834.1	1,898.2	1,842.4	8.7	7.6	118.98	184.9	-318.1	215.9	200.8	15.10	14.300	
2,000.0	1,928.5	1,997.4	1,937.2	9.3	8.1	118.87	195.9	-345.3	228.6	212.4	16.21	14.108	
2,100.0	2,022.8	2,097.2	2,032.4	9.9	8.7	118.72	207.1	-372.9	241.3	224.0	17.33	13.922	
2,200.0	2,117.2	2,197.3	2,128.1	10.6	9.2	118.66	217.7	-400.5	253.5	235.1	18.44	13.747	
2,300.0	2,211.6	2,296.0	2,222.6	11.2	9.8	118.80	227.9	-427.0	265.9	246.3	19.52	13.622	
2,400.0	2,306.0	2,395.1	2,317.3	11.8	10.3	118.76	238.4	-454.2	278.1	257.5	20.62	13.485	
2,500.0	2,400.3	2,492.8	2,410.8	12.4	10.8	118.84	248.9	-480.3	290.8	269.1	21.68	13.412	
2,600.0	2,494.7	2,593.8	2,507.8	13.1	11.4	119.08	259.4	-506.6	303.6	280.9	22.77	13.337	
2,700.0	2,589.1	2,694.8	2,603.8	13.7	12.0	118.75	270.6	-535.8	315.6	291.6	23.95	13.177	
2,800.0	2,683.4	2,793.6	2,698.1	14.3	12.6	118.61	281.0	-563.7	327.4	302.3	25.07	13.057	
2,900.0	2,777.8	2,893.7	2,793.5	15.0	13.1	118.45	291.7	-592.1	339.2	313.0	26.24	12.929	
3,000.0	2,872.2	2,992.0	2,886.8	15.6	13.7	118.13	302.6	-620.8	351.1	323.7	27.42	12.808	
3,100.0	2,966.6	3,090.5	2,980.8	16.2	14.3	118.02	313.3	-648.4	363.3	334.8	28.54	12.730	
3,200.0	3,060.9	3,190.0	3,075.5	16.9	14.9	117.82	324.3	-676.9	375.4	345.7	29.72	12.632	
3,300.0	3,155.3	3,287.0	3,167.6	17.5	15.4	117.57	335.6	-704.9	387.9	357.0	30.88	12.560	
3,400.0	3,249.7	3,386.0	3,262.0	18.1	16.0	117.46	347.0	-732.6	400.7	368.7	32.02	12.514	
3,500.0	3,344.1	3,486.9	3,358.5	18.8	16.6	117.48	358.0	-760.1	413.3	380.2	33.14	12.470	
3,600.0	3,438.4	3,586.6	3,453.3	19.4	17.1	117.31	369.1	-788.7	425.4	391.1	34.32	12.397	
3,700.0	3,532.8	3,684.8	3,546.8	20.0	17.7	117.18	380.2	-816.5	437.9	402.4	35.46	12.348	
3,800.0	3,627.2	3,783.2	3,640.8	20.6	18.3	117.16	391.0	-843.7	450.4	413.8	36.58	12.313	
3,900.0	3,721.6	3,880.1	3,733.5	21.3	18.8	117.21	401.7	-869.9	463.3	425.6	37.66	12.301	
4,000.0	3,815.9	3,989.0	3,837.7	21.9	19.4	117.32	413.1	-899.0	475.8	437.0	38.80	12.262	
4,100.0	3,910.3	4,089.0	3,933.5	22.5	19.9	117.43	422.2	-926.4	486.8	446.9	39.88	12.207	
4,200.0	4,004.7	4,186.2	4,026.7	23.2	20.5	117.57	431.2	-952.8	498.0	457.0	40.95	12.162	
4,300.0	4,099.1	4,280.8	4,116.6	23.8	21.0	117.42	441.6	-980.1	509.9	467.8	42.11	12.108	
4,400.0	4,193.4	4,380.8	4,211.6	24.4	21.6	117.20	453.2	-1,009.3	522.2	478.9	43.31	12.058	
4,500.0	4,287.8	4,478.6	4,304.7	25.1	22.2	117.12	464.0	-1,036.9	534.5	490.1	44.44	12.027	
4,600.0	4,382.2	4,575.5	4,397.3	25.7	22.7	117.11	474.8	-1,063.5	547.2	501.7	45.54	12.016	
4,700.0	4,476.6	4,679.1	4,496.5	26.3	23.3	117.18	486.1	-1,091.3	560.1	513.4	46.67	12.000	
4,800.0	4,570.9	4,782.0	4,594.3	27.0	23.9	117.04	496.9	-1,121.2	571.5	523.6	47.87	11.937	
4,900.0	4,665.3	4,878.9	4,686.5	27.6	24.5	116.97	507.3	-1,148.9	583.3	534.3	49.00	11.902	
5,000.0	4,759.7	4,977.0	4,780.3	28.2	25.0	117.00	517.4	-1,175.8	595.3	545.2	50.09	11.883	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9D (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD, 1298-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,854.0	5,079.2	4,878.0	28.9	25.6	117.02	528.0	-1,204.1	607.2	556.0	51.26	11.847	
5,200.0	4,948.4	5,176.3	4,970.0	29.5	26.2	116.81	538.9	-1,233.0	619.0	566.5	52.45	11.801	
5,300.0	5,042.8	5,277.4	5,066.2	30.1	26.8	116.70	550.0	-1,262.2	630.9	577.2	53.63	11.763	
5,400.0	5,137.2	5,375.7	5,159.9	30.8	27.3	116.66	560.3	-1,290.1	642.6	587.9	54.76	11.734	
5,500.0	5,231.5	5,471.5	5,251.3	31.4	27.9	116.65	570.5	-1,316.7	654.8	598.9	55.87	11.719	
5,600.0	5,325.9	5,565.8	5,341.5	32.0	28.4	116.67	581.0	-1,342.4	667.6	610.6	56.95	11.721	
5,700.0	5,420.3	5,664.4	5,435.8	32.7	28.9	116.73	592.0	-1,368.8	680.7	622.6	58.04	11.728	
5,800.0	5,514.7	5,761.1	5,528.7	33.3	29.5	116.86	602.8	-1,393.8	694.1	635.0	59.08	11.749	
5,900.0	5,609.0	5,863.6	5,627.1	33.9	30.0	116.99	614.1	-1,420.2	707.5	647.4	60.16	11.760	
6,000.0	5,703.4	5,963.8	5,722.6	34.6	30.6	116.95	625.5	-1,448.1	720.3	658.9	61.32	11.745	
6,100.0	5,797.8	6,057.0	5,811.2	35.2	31.1	116.85	636.9	-1,474.4	733.6	671.2	62.46	11.746	
6,200.0	5,892.2	6,153.2	5,902.9	35.8	31.7	116.78	649.1	-1,501.1	747.6	684.0	63.60	11.755	
6,300.0	5,986.5	6,248.5	5,993.7	36.5	32.2	116.73	661.4	-1,527.2	761.9	697.2	64.73	11.770	
6,400.0	6,080.9	6,363.4	6,103.3	37.1	32.9	116.68	675.9	-1,558.6	776.0	710.1	65.96	11.766	
6,500.0	6,175.3	6,465.7	6,200.9	37.7	33.5	116.66	686.9	-1,587.2	788.2	721.1	67.12	11.743	
6,600.0	6,269.7	6,573.0	6,302.9	38.3	34.1	116.57	698.3	-1,618.3	799.8	731.4	68.34	11.702	
6,700.0	6,364.0	6,662.4	6,387.9	39.0	34.6	116.50	708.0	-1,644.2	811.6	742.1	69.46	11.685	
6,800.0	6,458.4	6,759.4	6,480.5	39.6	35.2	116.50	718.8	-1,670.9	824.2	753.7	70.56	11.681	
6,900.0	6,552.8	6,863.9	6,580.2	40.2	35.8	116.46	730.1	-1,700.4	836.3	764.6	71.75	11.656	
7,000.0	6,647.2	6,963.0	6,674.7	40.9	36.3	116.43	741.1	-1,728.2	848.7	775.8	72.88	11.645	
7,100.0	6,741.5	7,067.0	6,774.3	41.5	36.9	116.52	750.9	-1,756.4	860.1	786.1	73.96	11.628	
7,200.0	6,835.9	7,162.7	6,866.5	42.1	37.4	116.72	759.5	-1,780.5	871.9	797.0	74.93	11.637	
7,300.0	6,930.3	7,258.5	6,959.4	42.8	37.8	117.07	767.2	-1,802.6	883.9	808.2	75.79	11.663	
7,400.0	7,024.9	7,352.0	7,050.5	43.4	38.2	117.63	774.3	-1,822.2	896.3	819.8	76.54	11.710	
7,500.0	7,120.5	7,447.3	7,143.9	43.9	38.5	118.19	781.1	-1,840.3	907.7	830.5	77.21	11.757	
7,600.0	7,217.1	7,546.0	7,240.8	44.4	38.9	118.65	787.6	-1,857.5	917.8	840.0	77.85	11.790	
7,700.0	7,314.5	7,646.1	7,339.3	44.8	39.2	118.95	793.7	-1,874.0	926.2	847.8	78.46	11.805	
7,800.0	7,412.6	7,746.9	7,438.9	45.1	39.5	119.16	798.8	-1,888.9	932.9	853.9	79.02	11.806	
7,900.0	7,511.4	7,839.3	7,530.5	45.4	39.8	119.32	802.3	-1,900.0	938.2	858.7	79.46	11.808	
8,000.0	7,610.6	7,935.0	7,625.7	45.6	40.0	119.42	805.6	-1,909.5	942.4	862.6	79.86	11.802	
8,100.0	7,710.2	8,032.5	7,723.0	45.8	40.1	119.47	807.9	-1,916.6	945.2	865.1	80.16	11.792	
8,200.0	7,810.1	8,134.0	7,824.3	45.9	40.2	119.51	808.6	-1,921.2	946.2	865.9	80.35	11.776	
8,300.0	7,910.1	8,221.7	7,912.1	46.0	40.3	119.59	808.1	-1,921.6	946.4	866.0	80.41	11.770	
8,400.0	8,010.1	8,324.5	8,014.8	46.0	40.3	29.23	807.0	-1,920.6	946.0	865.5	80.48	11.754	
8,500.0	8,110.1	8,423.1	8,113.4	46.1	40.4	29.29	806.2	-1,919.9	945.6	865.0	80.56	11.737	
8,600.0	8,210.1	8,525.2	8,215.5	46.1	40.4	29.37	805.2	-1,919.0	945.1	864.5	80.64	11.721	
8,692.5	8,302.5	8,612.2	8,302.5	46.2	40.5	29.43	804.2	-1,918.3	944.6	863.9	80.71	11.704	
8,700.0	8,310.1	8,618.5	8,308.8	46.2	40.5	29.44	804.2	-1,918.3	944.6	863.9	80.72	11.703	
8,800.0	8,410.1	8,707.7	8,397.9	46.2	40.5	29.46	804.8	-1,917.6	945.5	864.7	80.83	11.698	
8,900.0	8,510.1	8,808.4	8,498.7	46.3	40.6	29.47	805.8	-1,916.8	946.8	865.9	80.96	11.696	
9,000.0	8,610.1	8,914.6	8,604.9	46.4	40.6	29.46	806.7	-1,916.4	947.8	866.7	81.10	11.686	
9,100.0	8,710.1	9,021.2	8,711.5	46.4	40.7	29.42	807.3	-1,916.9	947.9	866.7	81.28	11.663	
9,200.0	8,810.1	9,124.6	8,814.9	46.5	40.8	29.34	807.6	-1,918.2	947.6	866.1	81.47	11.631	
9,300.0	8,910.1	9,230.3	8,920.6	46.5	40.9	29.32	806.9	-1,919.0	946.7	865.1	81.62	11.600	
9,400.0	9,010.1	9,330.7	9,020.9	46.6	41.0	29.32	806.1	-1,919.5	945.7	864.0	81.76	11.567	
9,500.0	9,110.1	9,432.9	9,123.1	46.7	41.1	29.28	805.0	-1,920.8	944.1	862.2	81.92	11.524	
9,600.0	9,210.1	9,524.4	9,214.7	46.7	41.1	29.34	804.0	-1,920.4	943.4	861.4	82.01	11.503	
9,700.0	9,310.1	9,626.4	9,316.7	46.8	41.2	29.41	802.8	-1,919.7	942.7	860.6	82.11	11.480	
9,800.0	9,410.1	9,725.5	9,415.7	46.9	41.2	29.43	802.1	-1,919.7	942.1	859.8	82.24	11.455	
9,884.7	9,494.8	9,804.6	9,494.8	46.9	41.3	29.42	801.8	-1,920.0	941.7	859.3	82.37	11.432	
9,900.0	9,510.1	9,817.8	9,508.0	46.9	41.3	29.41	801.9	-1,920.1	941.7	859.3	82.40	11.429	
10,000.0	9,610.1	9,918.5	9,608.8	47.0	41.4	29.36	802.7	-1,920.5	942.2	859.6	82.59	11.409	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design M16W Pad (SWSW S16-T7S-R93W) - MCU Fee 17-9D (M16W) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 206-MWD, 1298-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,056.2	9,666.2	9,975.7	9,665.9	47.0	41.4	29.31	803.1	-1,921.3	942.2	859.5	82.70	11.393	
10,100.0	9,710.1	10,016.0	9,706.2	47.0	41.5	29.30	803.3	-1,921.5	942.3	859.5	82.77	11.385	
10,200.0	9,810.1	10,115.7	9,805.9	47.1	41.5	29.31	803.7	-1,921.0	942.8	859.9	82.90	11.373	
10,300.0	9,910.1	10,212.2	9,902.4	47.2	41.6	29.33	804.0	-1,920.5	943.4	860.3	83.04	11.361	
10,400.0	10,010.1	10,318.3	10,008.5	47.2	41.7	29.33	804.5	-1,920.2	943.9	860.7	83.19	11.346	
10,476.9	10,087.0	10,395.5	10,085.7	47.3	41.7	29.32	804.6	-1,920.2	944.1	860.7	83.32	11.331	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU Fee 17-16CC (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Reference Site:	M16W Pad (SWSW S16-T7S-R93W)	**MD Reference:**	KB=22' @ 7903.0ft (Patterson 308)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU Fee 17-16CC (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=22' @ 7903.0ft (Patterson 308)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: MCU Fee 17-16CC (M16W Pad)
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°