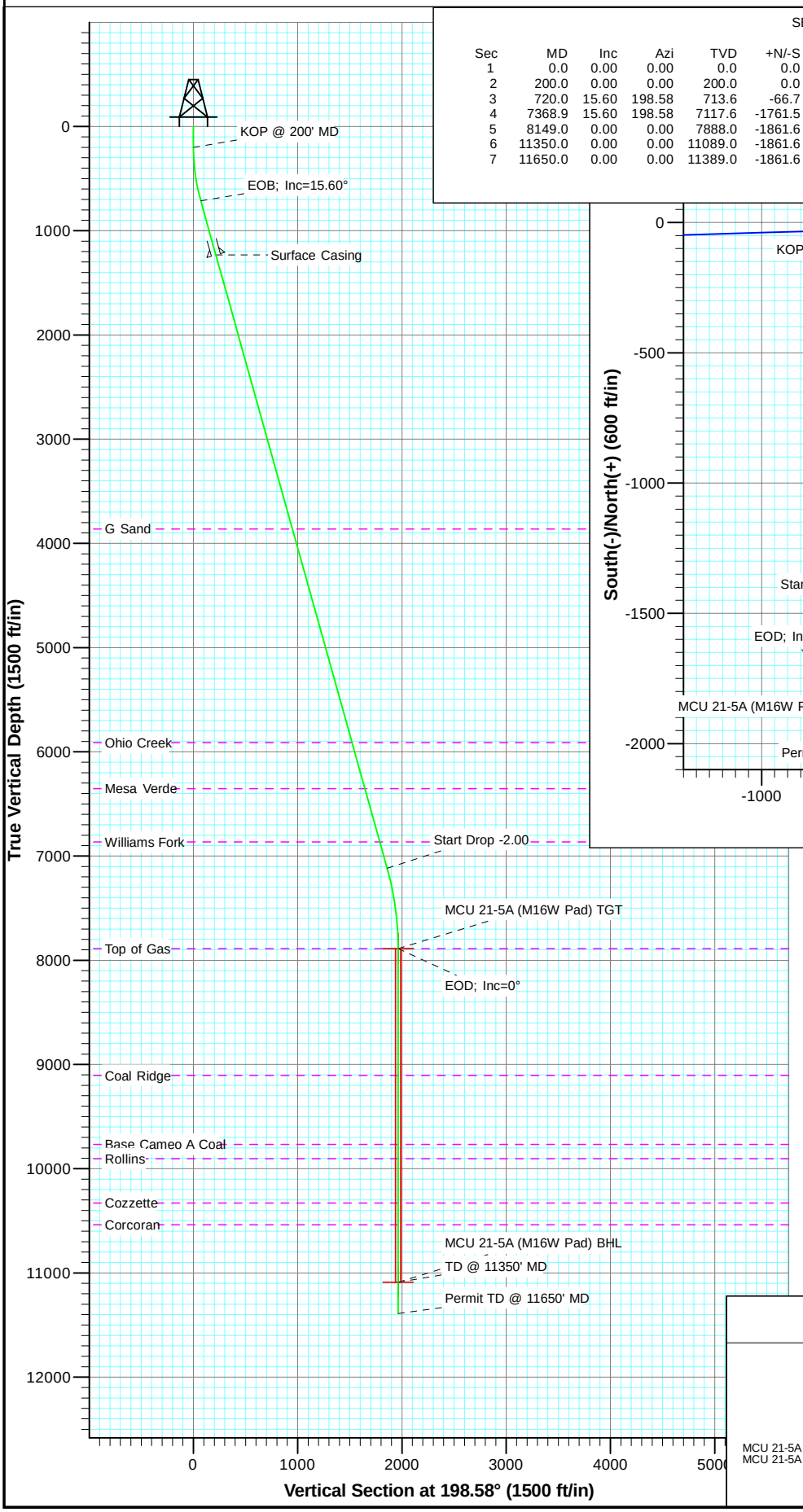
Project: Mamm Creek
Site: SWSW S16-T7S-R93W (M16W Pad)
Well: MCU 21-5A (M16W Pad)
Wellbore: DD
Plan: Plan #1

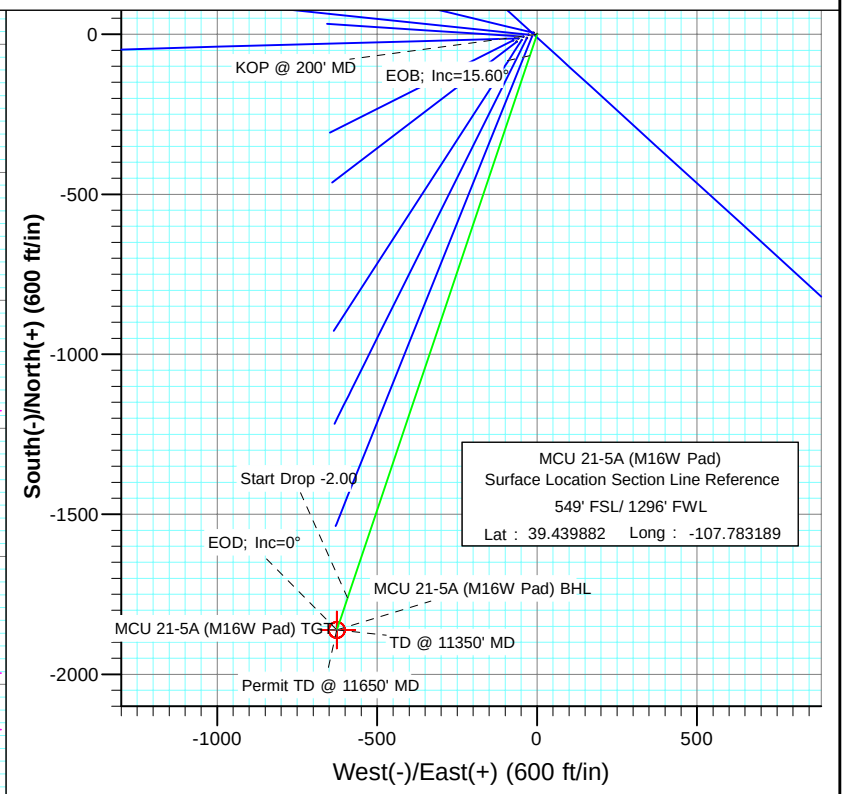
ENCANA

CATHEDRAL

SECTION DETAILS

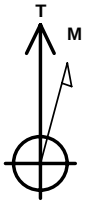
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	720.0	15.60	198.58	713.6	-66.7	-22.4	3.00	198.58	70.4	
4	7368.9	15.60	198.58	7117.6	-1761.5	-592.3	0.00	0.00	1858.4	
5	8149.0	0.00	0.00	7888.0	-1861.6	-625.9	2.00	180.00	1964.0	MCU 21-5A (M16W Pad) TGT
6	11350.0	0.00	0.00	11089.0	-1861.6	-625.9	0.00	0.00	1964.0	MCU 21-5A (M16W Pad) BHL
7	11650.0	0.00	0.00	11389.0	-1861.6	-625.9	0.00	0.00	1964.0	





FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3862.0	3988.8	G Sand
5912.0	6117.2	Ohio Creek
6353.0	6575.1	Mesa Verde
6865.0	7106.7	Williams Fork
7888.0	8149.0	Top of Gas
9104.0	9365.0	Coal Ridge
9768.0	10029.0	Base Cameo A Coal
9904.0	10165.0	Rollins
10330.0	10591.0	Cozzette
10539.0	10800.0	Corcoran



Azimuths to True North
Magnetic North: 10.30°

Magnetic Field
Strength: 52273.1snT
Dip Angle: 65.74°
Date: 1/18/2011
Model: IGRF2010

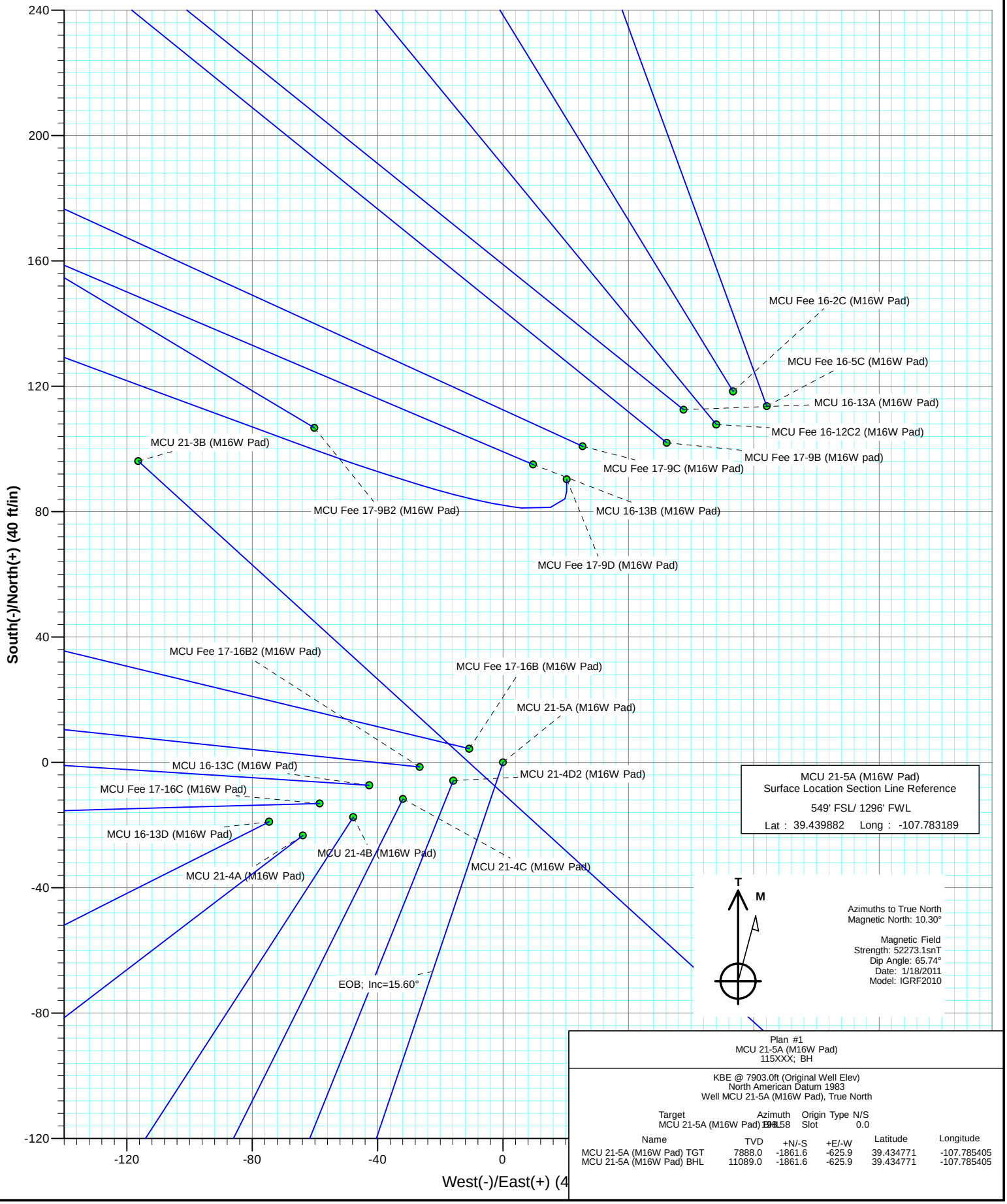
Plan #1
MCU 21-5A (M16W Pad)
115XXX; BH

KBE @ 7903.0ft (Original Well Elev)
North American Datum 1983
Well MCU 21-5A (M16W Pad), True North

Target	Azimuth	Origin Type	N/S
MCU 21-5A (M16W Pad) BHL	198.58	Slot	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-5A (M16W Pad) TGT	7888.0	-1861.6	-625.9	39.434771	-107.785405
MCU 21-5A (M16W Pad) BHL	11089.0	-1861.6	-625.9	39.434771	-107.785405

Project: Mamm Creek
Site: SWSW S16-T7S-R93W (M16W Pad)
Well: MCU 21-5A (M16W Pad)
Wellbore: DD
Plan: Plan #1



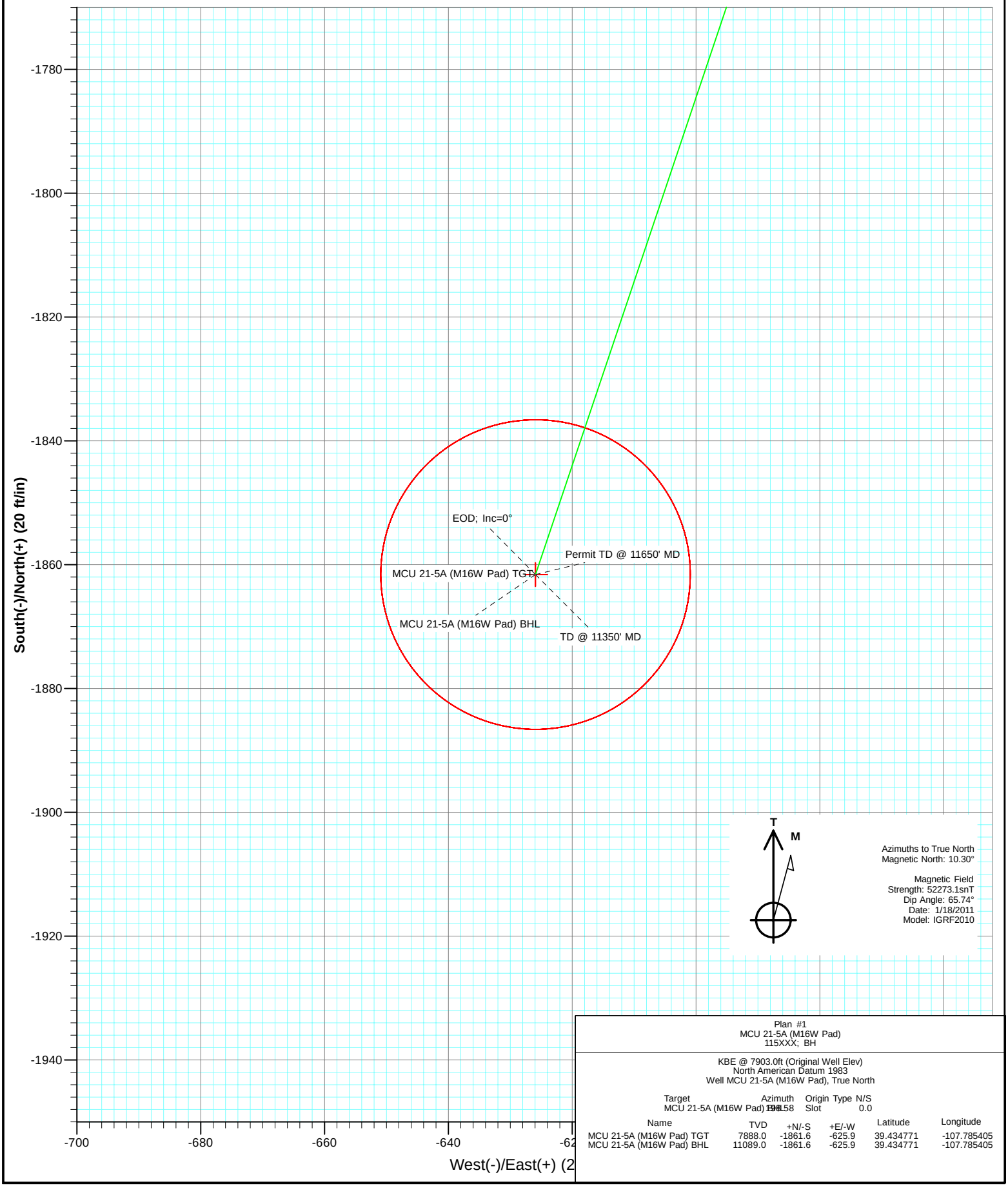
Plan #1
MCU 21-5A (M16W Pad)
115XXX; BH

KBE @ 7903.0ft (Original Well Elev)
North American Datum 1983
Well MCU 21-5A (M16W Pad), True North

Target	Azimuth	Origin Type	N/S
MCU 21-5A (M16W Pad) BHL	198.58	Slot	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-5A (M16W Pad) TGT	7888.0	-1861.6	-625.9	39.434771	-107.785405
MCU 21-5A (M16W Pad) BHL	11089.0	-1861.6	-625.9	39.434771	-107.785405

Project: Mamm Creek
Site: SWSW S16-T7S-R93W (M16W Pad)
Well: MCU 21-5A (M16W Pad)
Wellbore: DD
Plan: Plan #1



Plan #1
MCU 21-5A (M16W Pad)
115XXX; BH

KBE @ 7903.0ft (Original Well Elev)
North American Datum 1983
Well MCU 21-5A (M16W Pad), True North

Target	Azimuth	Origin Type	N/S
MCU 21-5A (M16W Pad) BHL	198.58	Slot	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-5A (M16W Pad) TGT	7888.0	-1861.6	-625.9	39.434771	-107.785405
MCU 21-5A (M16W Pad) BHL	11089.0	-1861.6	-625.9	39.434771	-107.785405

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-5A (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 SWSW S16-T7S-R93W (M16W Pad)

Site Position:		**Northing:**	1,593,196.17 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 21-5A (M16W Pad)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,593,212.44 ft	**Latitude:**	39.439882
	+E/-W	0.0 ft	**Easting:**	2,355,241.87 ft	**Longitude:**	-107.783189
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	1/18/2011	10.30	65.74	52,273

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	198.58

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
720.0	15.60	198.58	713.6	-66.7	-22.4	3.00	3.00	0.00	198.58	
7,368.9	15.60	198.58	7,117.6	-1,761.5	-592.3	0.00	0.00	0.00	0.00	
8,149.0	0.00	0.00	7,888.0	-1,861.6	-625.9	2.00	-2.00	0.00	180.00	MCU 21-5A (M16W P
11,350.0	0.00	0.00	11,089.0	-1,861.6	-625.9	0.00	0.00	0.00	0.00	MCU 21-5A (M16W P
11,650.0	0.00	0.00	11,389.0	-1,861.6	-625.9	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-5A (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	KOP @ 200' MD
300.0	3.00	198.58	300.0	-2.5	-0.8	2.6	3.00	3.00	
400.0	6.00	198.58	399.6	-9.9	-3.3	10.5	3.00	3.00	
500.0	9.00	198.58	498.8	-22.3	-7.5	23.5	3.00	3.00	
600.0	12.00	198.58	597.1	-39.6	-13.3	41.7	3.00	3.00	
700.0	15.00	198.58	694.3	-61.7	-20.7	65.1	3.00	3.00	
720.0	15.60	198.58	713.6	-66.7	-22.4	70.4	3.00	3.00	EOB; Inc=15.60°
800.0	15.60	198.58	790.7	-87.1	-29.3	91.9	0.00	0.00	
900.0	15.60	198.58	887.0	-112.6	-37.8	118.8	0.00	0.00	
1,000.0	15.60	198.58	983.3	-138.1	-46.4	145.7	0.00	0.00	
1,100.0	15.60	198.58	1,079.6	-163.6	-55.0	172.5	0.00	0.00	
1,200.0	15.60	198.58	1,175.9	-189.0	-63.6	199.4	0.00	0.00	
1,258.2	15.60	198.58	1,232.0	-203.9	-68.6	215.1	0.00	0.00	Surface Casing
1,300.0	15.60	198.58	1,272.2	-214.5	-72.1	226.3	0.00	0.00	
1,400.0	15.60	198.58	1,368.5	-240.0	-80.7	253.2	0.00	0.00	
1,500.0	15.60	198.58	1,464.9	-265.5	-89.3	280.1	0.00	0.00	
1,600.0	15.60	198.58	1,561.2	-291.0	-97.8	307.0	0.00	0.00	
1,700.0	15.60	198.58	1,657.5	-316.5	-106.4	333.9	0.00	0.00	
1,800.0	15.60	198.58	1,753.8	-342.0	-115.0	360.8	0.00	0.00	
1,900.0	15.60	198.58	1,850.1	-367.5	-123.6	387.7	0.00	0.00	
2,000.0	15.60	198.58	1,946.4	-393.0	-132.1	414.6	0.00	0.00	
2,100.0	15.60	198.58	2,042.8	-418.5	-140.7	441.5	0.00	0.00	
2,200.0	15.60	198.58	2,139.1	-443.9	-149.3	468.4	0.00	0.00	
2,300.0	15.60	198.58	2,235.4	-469.4	-157.8	495.3	0.00	0.00	
2,400.0	15.60	198.58	2,331.7	-494.9	-166.4	522.2	0.00	0.00	
2,500.0	15.60	198.58	2,428.0	-520.4	-175.0	549.0	0.00	0.00	
2,600.0	15.60	198.58	2,524.3	-545.9	-183.5	575.9	0.00	0.00	
2,700.0	15.60	198.58	2,620.7	-571.4	-192.1	602.8	0.00	0.00	
2,800.0	15.60	198.58	2,717.0	-596.9	-200.7	629.7	0.00	0.00	
2,900.0	15.60	198.58	2,813.3	-622.4	-209.3	656.6	0.00	0.00	
3,000.0	15.60	198.58	2,909.6	-647.9	-217.8	683.5	0.00	0.00	
3,100.0	15.60	198.58	3,005.9	-673.4	-226.4	710.4	0.00	0.00	
3,200.0	15.60	198.58	3,102.2	-698.9	-235.0	737.3	0.00	0.00	
3,300.0	15.60	198.58	3,198.6	-724.3	-243.5	764.2	0.00	0.00	
3,400.0	15.60	198.58	3,294.9	-749.8	-252.1	791.1	0.00	0.00	
3,500.0	15.60	198.58	3,391.2	-775.3	-260.7	818.0	0.00	0.00	
3,600.0	15.60	198.58	3,487.5	-800.8	-269.3	844.9	0.00	0.00	
3,700.0	15.60	198.58	3,583.8	-826.3	-277.8	871.8	0.00	0.00	
3,800.0	15.60	198.58	3,680.1	-851.8	-286.4	898.7	0.00	0.00	
3,900.0	15.60	198.58	3,776.4	-877.3	-295.0	925.6	0.00	0.00	
3,988.8	15.60	198.58	3,862.0	-899.9	-302.6	949.4	0.00	0.00	G Sand
4,000.0	15.60	198.58	3,872.8	-902.8	-303.5	952.4	0.00	0.00	
4,100.0	15.60	198.58	3,969.1	-928.3	-312.1	979.3	0.00	0.00	
4,200.0	15.60	198.58	4,065.4	-953.8	-320.7	1,006.2	0.00	0.00	
4,300.0	15.60	198.58	4,161.7	-979.3	-329.2	1,033.1	0.00	0.00	
4,400.0	15.60	198.58	4,258.0	-1,004.7	-337.8	1,060.0	0.00	0.00	
4,500.0	15.60	198.58	4,354.3	-1,030.2	-346.4	1,086.9	0.00	0.00	
4,600.0	15.60	198.58	4,450.7	-1,055.7	-355.0	1,113.8	0.00	0.00	
4,700.0	15.60	198.58	4,547.0	-1,081.2	-363.5	1,140.7	0.00	0.00	
4,800.0	15.60	198.58	4,643.3	-1,106.7	-372.1	1,167.6	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-5A (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
4,900.0	15.60	198.58	4,739.6	-1,132.2	-380.7	1,194.5	0.00	0.00	
5,000.0	15.60	198.58	4,835.9	-1,157.7	-389.2	1,221.4	0.00	0.00	
5,100.0	15.60	198.58	4,932.2	-1,183.2	-397.8	1,248.3	0.00	0.00	
5,200.0	15.60	198.58	5,028.6	-1,208.7	-406.4	1,275.2	0.00	0.00	
5,300.0	15.60	198.58	5,124.9	-1,234.2	-415.0	1,302.1	0.00	0.00	
5,400.0	15.60	198.58	5,221.2	-1,259.7	-423.5	1,328.9	0.00	0.00	
5,500.0	15.60	198.58	5,317.5	-1,285.1	-432.1	1,355.8	0.00	0.00	
5,600.0	15.60	198.58	5,413.8	-1,310.6	-440.7	1,382.7	0.00	0.00	
5,700.0	15.60	198.58	5,510.1	-1,336.1	-449.2	1,409.6	0.00	0.00	
5,800.0	15.60	198.58	5,606.5	-1,361.6	-457.8	1,436.5	0.00	0.00	
5,900.0	15.60	198.58	5,702.8	-1,387.1	-466.4	1,463.4	0.00	0.00	
6,000.0	15.60	198.58	5,799.1	-1,412.6	-474.9	1,490.3	0.00	0.00	
6,100.0	15.60	198.58	5,895.4	-1,438.1	-483.5	1,517.2	0.00	0.00	
6,117.2	15.60	198.58	5,912.0	-1,442.5	-485.0	1,521.8	0.00	0.00	Ohio Creek
6,200.0	15.60	198.58	5,991.7	-1,463.6	-492.1	1,544.1	0.00	0.00	
6,300.0	15.60	198.58	6,088.0	-1,489.1	-500.7	1,571.0	0.00	0.00	
6,400.0	15.60	198.58	6,184.3	-1,514.6	-509.2	1,597.9	0.00	0.00	
6,500.0	15.60	198.58	6,280.7	-1,540.1	-517.8	1,624.8	0.00	0.00	
6,575.1	15.60	198.58	6,353.0	-1,559.2	-524.2	1,645.0	0.00	0.00	Mesa Verde
6,600.0	15.60	198.58	6,377.0	-1,565.5	-526.4	1,651.7	0.00	0.00	
6,700.0	15.60	198.58	6,473.3	-1,591.0	-534.9	1,678.6	0.00	0.00	
6,800.0	15.60	198.58	6,569.6	-1,616.5	-543.5	1,705.4	0.00	0.00	
6,900.0	15.60	198.58	6,665.9	-1,642.0	-552.1	1,732.3	0.00	0.00	
7,000.0	15.60	198.58	6,762.2	-1,667.5	-560.6	1,759.2	0.00	0.00	
7,100.0	15.60	198.58	6,858.6	-1,693.0	-569.2	1,786.1	0.00	0.00	
7,106.7	15.60	198.58	6,865.0	-1,694.7	-569.8	1,787.9	0.00	0.00	Williams Fork
7,200.0	15.60	198.58	6,954.9	-1,718.5	-577.8	1,813.0	0.00	0.00	
7,300.0	15.60	198.58	7,051.2	-1,744.0	-586.4	1,839.9	0.00	0.00	
7,368.9	15.60	198.58	7,117.6	-1,761.5	-592.3	1,858.4	0.00	0.00	Start Drop -2.00
7,400.0	14.98	198.58	7,147.6	-1,769.3	-594.9	1,866.6	2.00	-2.00	
7,500.0	12.98	198.58	7,244.6	-1,792.2	-602.6	1,890.8	2.00	-2.00	
7,600.0	10.98	198.58	7,342.4	-1,811.9	-609.2	1,911.6	2.00	-2.00	
7,700.0	8.98	198.58	7,440.9	-1,828.3	-614.7	1,928.9	2.00	-2.00	
7,800.0	6.98	198.58	7,539.9	-1,841.5	-619.1	1,942.8	2.00	-2.00	
7,900.0	4.98	198.58	7,639.4	-1,851.3	-622.5	1,953.2	2.00	-2.00	
8,000.0	2.98	198.58	7,739.1	-1,857.9	-624.7	1,960.1	2.00	-2.00	
8,100.0	0.98	198.58	7,839.1	-1,861.2	-625.8	1,963.6	2.00	-2.00	
8,149.0	0.00	0.00	7,888.0	-1,861.6	-625.9	1,964.0	2.00	-2.00	EOD; Inc=0° - Top of Gas - MCU 21-5A (M16W
8,200.0	0.00	0.00	7,939.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,300.0	0.00	0.00	8,039.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,400.0	0.00	0.00	8,139.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,500.0	0.00	0.00	8,239.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,600.0	0.00	0.00	8,339.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,700.0	0.00	0.00	8,439.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,800.0	0.00	0.00	8,539.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
8,900.0	0.00	0.00	8,639.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,000.0	0.00	0.00	8,739.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,100.0	0.00	0.00	8,839.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,200.0	0.00	0.00	8,939.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,300.0	0.00	0.00	9,039.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,365.0	0.00	0.00	9,104.0	-1,861.6	-625.9	1,964.0	0.00	0.00	Coal Ridge
9,400.0	0.00	0.00	9,139.0	-1,861.6	-625.9	1,964.0	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-5A (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
9,500.0	0.00	0.00	9,239.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,600.0	0.00	0.00	9,339.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,700.0	0.00	0.00	9,439.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,800.0	0.00	0.00	9,539.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
9,900.0	0.00	0.00	9,639.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,000.0	0.00	0.00	9,739.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,029.0	0.00	0.00	9,768.0	-1,861.6	-625.9	1,964.0	0.00	0.00	Base Cameo A Coal
10,100.0	0.00	0.00	9,839.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,165.0	0.00	0.00	9,904.0	-1,861.6	-625.9	1,964.0	0.00	0.00	Rollins
10,200.0	0.00	0.00	9,939.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,300.0	0.00	0.00	10,039.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,400.0	0.00	0.00	10,139.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,500.0	0.00	0.00	10,239.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,591.0	0.00	0.00	10,330.0	-1,861.6	-625.9	1,964.0	0.00	0.00	Cozzette
10,600.0	0.00	0.00	10,339.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,700.0	0.00	0.00	10,439.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
10,800.0	0.00	0.00	10,539.0	-1,861.6	-625.9	1,964.0	0.00	0.00	Corcoran
10,900.0	0.00	0.00	10,639.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,000.0	0.00	0.00	10,739.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,100.0	0.00	0.00	10,839.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,200.0	0.00	0.00	10,939.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,300.0	0.00	0.00	11,039.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,350.0	0.00	0.00	11,089.0	-1,861.6	-625.9	1,964.0	0.00	0.00	TD @ 11350' MD - MCU 21-5A (M16W Pad) BH
11,400.0	0.00	0.00	11,139.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,500.0	0.00	0.00	11,239.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,600.0	0.00	0.00	11,339.0	-1,861.6	-625.9	1,964.0	0.00	0.00	
11,650.0	0.00	0.00	11,389.0	-1,861.6	-625.9	1,964.0	0.00	0.00	Permit TD @ 11650' 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 21-5A (M16W Pad - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,888.0	-1,861.6	-625.9	1,591,367.17	2,354,569.38	39.434771	-107.785405
MCU 21-5A (M16W Pad - plan hits target center - Circle (radius 25.0)	0.00	0.00	11,089.0	-1,861.6	-625.9	1,591,367.17	2,354,569.38	39.434771	-107.785405

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,258.2	1,232.0	Surface Casing	0.000	0.000

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,988.8	3,862.0	G Sand		0.00	
6,117.2	5,912.0	Ohio Creek		0.00	
6,575.1	6,353.0	Mesa Verde		0.00	
7,106.7	6,865.0	Williams Fork		0.00	
8,149.0	7,888.0	Top of Gas		0.00	
9,365.0	9,104.0	Coal Ridge		0.00	
10,029.0	9,768.0	Base Cameo A Coal		0.00	
10,165.0	9,904.0	Rollins		0.00	
10,591.0	10,330.0	Cozzette		0.00	
10,800.0	10,539.0	Corcoran		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP @ 200' MD
720.0	713.6	-66.7	-22.4	EOB; Inc=15.60°
7,368.9	7,117.6	-1,761.5	-592.3	Start Drop -2.00
8,149.0	7,888.0	-1,861.6	-625.9	EOD; Inc=0°
11,350.0	11,089.0	-1,861.6	-625.9	TD @ 11350' MD
11,650.0	11,389.0	-1,861.6	-625.9	Permit TD @ 11650' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek
SWSW S16-T7S-R93W (M16W Pad)
MCU 21-5A (M16W Pad)
DD
Plan #1

Anticollision Report

19 January, 2011

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US 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 500.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 1/19/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,650.0	Plan #1 (DD)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US 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
SWSW S16-T7S-R93W (M16W Pad)						
MCU 16-13A (M16W Pad) - DD - Plan #1	200.0	200.0	126.4	125.8	203.494	CC, ES
MCU 16-13A (M16W Pad) - DD - Plan #1	1,500.0	1,439.8	469.5	463.5	77.752	SF
MCU 16-13B (M16W Pad) - DD - Plan #1	200.0	200.0	95.5	94.9	153.779	CC, ES
MCU 16-13B (M16W Pad) - DD - Plan #1	1,800.0	1,741.1	493.1	485.6	65.449	SF
MCU 16-13C (M16W Pad) - DD - Plan #1	200.0	200.0	43.3	42.6	69.630	CC, ES
MCU 16-13C (M16W Pad) - DD - Plan #1	700.0	690.7	79.5	76.6	27.064	SF
MCU 16-13D (M16W Pad) - DD - Plan #1	200.0	200.0	76.9	76.3	123.811	CC, ES
MCU 16-13D (M16W Pad) - DD - Plan #1	900.0	885.4	108.8	104.4	24.816	SF
MCU 21-3B (M16W Pad) - DD - Plan #1	739.2	766.5	119.5	116.4	38.962	CC, ES
MCU 21-3B (M16W Pad) - DD - Plan #1	1,500.0	1,495.7	249.1	240.2	27.974	SF
MCU 21-4A (M16W Pad) - DD - Plan #1	200.0	200.0	68.0	67.3	109.364	CC, ES
MCU 21-4A (M16W Pad) - DD - Plan #1	900.0	887.3	90.0	85.5	19.976	SF
MCU 21-4B (M16W Pad) - DD - Plan #1	200.0	200.0	50.8	50.2	81.805	CC, ES
MCU 21-4B (M16W Pad) - DD - Plan #1	1,000.0	990.6	66.8	61.2	11.954	SF
MCU 21-4C (M16W Pad) - DD - Plan #1	200.0	200.0	34.0	33.4	54.682	CC
MCU 21-4C (M16W Pad) - DD - Plan #1	300.0	298.7	34.2	33.2	35.014	ES
MCU 21-4C (M16W Pad) - DD - Plan #1	1,000.0	993.9	43.9	38.1	7.490	SF
MCU 21-4D2 (M16W Pad) - DD - Plan #1	200.0	200.0	16.9	16.2	27.130	CC
MCU 21-4D2 (M16W Pad) - DD - Plan #1	900.0	897.2	19.3	14.0	3.609	ES
MCU 21-4D2 (M16W Pad) - DD - Plan #1	1,000.0	997.1	21.1	14.9	3.411	SF
MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1	200.0	200.0	127.5	126.9	205.204	CC, ES
MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1	700.0	677.3	217.9	215.3	85.148	SF
MCU Fee 16-2C (M16W Pad) - DD - Plan #1	200.0	200.0	139.3	138.7	224.197	CC, ES
MCU Fee 16-2C (M16W Pad) - DD - Plan #1	700.0	666.0	238.4	235.9	94.321	SF
MCU Fee 16-5C (M16W Pad) - DD - Plan #1	200.0	200.0	141.4	140.8	227.595	CC, ES
MCU Fee 16-5C (M16W Pad) - DD - Plan #1	600.0	570.6	207.4	205.3	98.779	SF
MCU Fee 17-16B (M16W Pad) - DD - Plan #1	200.0	200.0	11.6	11.0	18.650	CC, ES
MCU Fee 17-16B (M16W Pad) - DD - Plan #1	300.0	299.3	14.5	13.5	14.818	SF
MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1	200.0	200.0	26.6	26.0	42.792	CC, ES
MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1	400.0	396.5	34.8	33.4	25.390	SF
MCU Fee 17-16C (M16W Pad) - DD - Plan #1	200.0	200.0	59.9	59.3	96.429	CC, ES
MCU Fee 17-16C (M16W Pad) - DD - Plan #1	800.0	765.3	137.3	133.5	36.002	SF
MCU Fee 17-9B (M16W pad) - DD - Plan #1	200.0	200.0	114.6	114.0	184.419	CC, ES
MCU Fee 17-9B (M16W pad) - DD - Plan #1	1,400.0	1,271.4	479.6	473.2	75.249	SF
MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1	200.0	200.0	122.5	121.9	197.168	CC, ES
MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1	1,300.0	1,159.7	491.6	485.0	74.128	SF
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	200.0	200.0	104.0	103.4	167.434	CC, ES
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	1,400.0	1,292.5	485.1	477.3	61.666	SF
MCU Fee 17-9D (M16W Pad) - DD - Plan #1	200.0	200.0	92.6	92.0	149.018	CC, ES
MCU Fee 17-9D (M16W Pad) - DD - Plan #1	1,600.0	1,511.4	472.3	463.4	53.395	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 16-13A (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	27.11	112.5	57.6	126.4				
100.0	100.0	100.0	100.0	0.1	0.1	27.11	112.5	57.6	126.4	126.2	0.27	464.383	
200.0	200.0	200.0	200.0	0.3	0.3	27.11	112.5	57.6	126.4	125.8	0.62	203.494	CC, ES
300.0	300.0	298.5	298.5	0.5	0.5	-172.73	114.1	55.6	129.6	128.6	0.98	132.896	
400.0	399.6	395.9	395.6	0.7	0.7	-176.13	118.8	49.8	139.3	138.0	1.36	102.689	
500.0	498.8	492.7	491.7	1.0	1.0	179.38	126.2	40.7	156.2	154.5	1.76	88.892	
600.0	597.1	589.5	587.6	1.4	1.2	175.65	133.9	31.1	179.3	177.1	2.16	83.078	
700.0	694.3	684.9	682.3	1.8	1.5	172.88	141.4	21.7	207.9	205.3	2.55	81.417	
800.0	790.7	779.3	775.9	2.3	1.7	170.96	148.9	12.4	240.1	237.1	2.97	80.929	
900.0	887.0	873.6	869.5	2.8	2.0	169.52	156.4	3.1	272.6	269.2	3.39	80.367	
1,000.0	983.3	968.0	963.1	3.3	2.3	168.38	163.9	-6.2	305.3	301.5	3.82	79.838	
1,100.0	1,079.6	1,062.4	1,056.7	3.8	2.5	167.46	171.4	-15.5	338.0	333.8	4.26	79.346	
1,200.0	1,175.9	1,156.7	1,150.3	4.2	2.8	166.71	178.9	-24.8	370.8	366.1	4.70	78.893	
1,300.0	1,272.2	1,251.1	1,243.9	4.7	3.0	166.08	186.4	-34.1	403.7	398.6	5.14	78.477	
1,400.0	1,368.5	1,345.4	1,337.5	5.2	3.3	165.54	193.9	-43.4	436.6	431.0	5.59	78.098	
1,500.0	1,464.9	1,439.8	1,431.1	5.7	3.6	165.08	201.4	-52.7	469.5	463.5	6.04	77.752	SF

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 16-13B (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	5.77	95.1	9.6	95.5				
100.0	100.0	100.0	100.0	0.1	0.1	5.77	95.1	9.6	95.5	95.3	0.27	350.932	
200.0	200.0	200.0	200.0	0.3	0.3	5.77	95.1	9.6	95.5	94.9	0.62	153.779	CC, ES
300.0	300.0	298.4	298.4	0.5	0.5	166.09	96.1	7.3	98.9	97.9	0.97	101.428	
400.0	399.6	396.1	395.8	0.7	0.7	163.21	99.0	0.4	109.0	107.7	1.36	80.419	
500.0	498.8	494.7	493.8	1.0	0.9	160.59	102.8	-8.6	125.2	123.4	1.76	71.314	
600.0	597.1	592.4	591.1	1.4	1.2	159.22	106.5	-17.4	146.3	144.1	2.17	67.506	
700.0	694.3	688.9	687.2	1.8	1.4	158.73	110.2	-26.1	172.2	169.6	2.59	66.471	
800.0	790.7	784.6	782.4	2.3	1.6	158.90	113.9	-34.8	201.2	198.2	3.03	66.438	
900.0	887.0	880.3	877.6	2.8	1.9	159.09	117.6	-43.5	230.4	227.0	3.47	66.311	
1,000.0	983.3	975.9	972.8	3.3	2.1	159.23	121.3	-52.1	259.6	255.7	3.92	66.178	
1,100.0	1,079.6	1,071.5	1,067.9	3.8	2.3	159.35	124.9	-60.8	288.8	284.4	4.37	66.052	
1,200.0	1,175.9	1,167.2	1,163.1	4.2	2.6	159.44	128.6	-69.4	318.0	313.2	4.82	65.937	
1,300.0	1,272.2	1,262.8	1,258.3	4.7	2.8	159.52	132.3	-78.1	347.2	341.9	5.27	65.832	
1,400.0	1,368.5	1,358.5	1,353.5	5.2	3.0	159.59	136.0	-86.7	376.3	370.6	5.72	65.738	
1,500.0	1,464.9	1,454.1	1,448.7	5.7	3.3	159.65	139.7	-95.4	405.5	399.4	6.18	65.654	
1,600.0	1,561.2	1,549.8	1,543.8	6.2	3.5	159.70	143.3	-104.0	434.7	428.1	6.63	65.579	
1,700.0	1,657.5	1,645.4	1,639.0	6.7	3.7	159.74	147.0	-112.7	463.9	456.8	7.08	65.511	
1,800.0	1,753.8	1,741.1	1,734.2	7.2	4.0	159.78	150.7	-121.3	493.1	485.6	7.53	65.449	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 16-13C (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	-99.69	-7.3	-42.6	43.3				
100.0	100.0	100.0	100.0	0.1	0.1	-99.69	-7.3	-42.6	43.3	43.0	0.27	158.900	
200.0	200.0	200.0	200.0	0.3	0.3	-99.69	-7.3	-42.6	43.3	42.6	0.62	69.630	CC, ES
300.0	300.0	297.7	297.7	0.5	0.5	65.33	-7.1	-45.1	44.6	43.6	0.97	45.813	
400.0	399.6	395.9	395.6	0.7	0.7	74.82	-6.7	-52.3	49.2	47.8	1.36	36.092	
500.0	498.8	495.0	494.3	1.0	0.9	87.70	-6.1	-60.4	55.5	53.6	1.83	30.359	
600.0	597.1	593.4	592.4	1.4	1.1	101.92	-5.6	-68.4	64.9	62.5	2.37	27.417	
700.0	694.3	690.7	689.4	1.8	1.3	115.27	-5.1	-76.4	79.5	76.6	2.94	27.064	SF
800.0	790.7	787.3	785.7	2.3	1.6	126.05	-4.6	-84.3	99.3	95.8	3.46	28.711	
900.0	887.0	883.9	881.9	2.8	1.8	133.26	-4.1	-92.2	121.4	117.5	3.94	30.827	
1,000.0	983.3	980.4	978.2	3.3	2.0	138.23	-3.6	-100.1	144.9	140.5	4.40	32.919	
1,100.0	1,079.6	1,077.0	1,074.4	3.8	2.2	141.81	-3.1	-108.0	169.1	164.2	4.85	34.839	
1,200.0	1,175.9	1,173.6	1,170.6	4.2	2.4	144.49	-2.5	-115.9	193.8	188.5	5.30	36.558	
1,300.0	1,272.2	1,270.1	1,266.9	4.7	2.6	146.56	-2.0	-123.8	218.8	213.0	5.74	38.084	
1,400.0	1,368.5	1,366.7	1,363.1	5.2	2.9	148.21	-1.5	-131.7	243.9	237.8	6.19	39.438	
1,500.0	1,464.9	1,463.2	1,459.3	5.7	3.1	149.56	-1.0	-139.6	269.3	262.7	6.63	40.641	
1,600.0	1,561.2	1,559.8	1,555.6	6.2	3.3	150.67	-0.5	-147.5	294.8	287.7	7.07	41.714	
1,700.0	1,657.5	1,656.3	1,651.8	6.7	3.5	151.60	0.0	-155.4	320.3	312.8	7.51	42.675	
1,800.0	1,753.8	1,752.9	1,748.0	7.2	3.7	152.40	0.5	-163.3	345.9	338.0	7.95	43.541	
1,900.0	1,850.1	1,849.5	1,844.3	7.7	3.9	153.08	1.0	-171.2	371.6	363.2	8.38	44.323	
2,000.0	1,946.4	1,946.0	1,940.5	8.2	4.2	153.68	1.5	-179.1	397.3	388.5	8.82	45.032	
2,100.0	2,042.8	2,042.6	2,036.7	8.7	4.4	154.21	2.1	-187.0	423.1	413.8	9.26	45.679	
2,200.0	2,139.1	2,139.1	2,133.0	9.2	4.6	154.67	2.6	-194.9	448.9	439.2	9.70	46.270	
2,300.0	2,235.4	2,235.7	2,229.2	9.7	4.8	155.09	3.1	-202.8	474.7	464.6	10.14	46.813	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 16-13D (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	-104.25	-18.9	-74.6	76.9				
100.0	100.0	100.0	100.0	0.1	0.1	-104.25	-18.9	-74.6	76.9	76.7	0.27	282.543	
200.0	200.0	200.0	200.0	0.3	0.3	-104.25	-18.9	-74.6	76.9	76.3	0.62	123.811	CC, ES
300.0	300.0	296.2	296.1	0.5	0.5	58.31	-20.0	-76.7	78.0	77.0	0.97	80.374	
400.0	399.6	393.3	393.0	0.7	0.7	61.64	-23.2	-83.1	81.1	79.8	1.35	59.933	
500.0	498.8	492.9	492.2	1.0	0.9	67.72	-27.1	-90.7	83.6	81.8	1.81	46.160	
600.0	597.1	591.9	590.9	1.4	1.1	76.69	-30.9	-98.3	85.6	83.2	2.38	36.027	
700.0	694.3	690.2	688.8	1.8	1.3	88.18	-34.6	-105.8	89.4	86.3	3.06	29.205	
800.0	790.7	787.8	786.1	2.3	1.6	100.40	-38.4	-113.2	97.1	93.4	3.75	25.882	
900.0	887.0	885.4	883.3	2.8	1.8	110.57	-42.2	-120.7	108.8	104.4	4.38	24.816	SF
1,000.0	983.3	983.0	980.6	3.3	2.0	118.63	-45.9	-128.1	123.2	118.2	4.95	24.900	
1,100.0	1,079.6	1,080.6	1,077.8	3.8	2.2	124.94	-49.7	-135.6	139.5	134.1	5.46	25.549	
1,200.0	1,175.9	1,178.2	1,175.1	4.2	2.5	129.91	-53.4	-143.1	157.2	151.3	5.94	26.456	
1,300.0	1,272.2	1,275.8	1,272.3	4.7	2.7	133.87	-57.2	-150.5	175.8	169.4	6.40	27.463	
1,400.0	1,368.5	1,373.4	1,369.5	5.2	2.9	137.06	-60.9	-158.0	195.1	188.2	6.85	28.488	
1,500.0	1,464.9	1,471.0	1,466.8	5.7	3.1	139.68	-64.7	-165.4	214.8	207.5	7.28	29.488	
1,600.0	1,561.2	1,568.6	1,564.0	6.2	3.4	141.86	-68.4	-172.9	234.9	227.2	7.72	30.442	
1,700.0	1,657.5	1,666.2	1,661.3	6.7	3.6	143.70	-72.2	-180.3	255.3	247.1	8.14	31.343	
1,800.0	1,753.8	1,763.8	1,758.5	7.2	3.8	145.26	-75.9	-187.8	275.9	267.3	8.57	32.187	
1,900.0	1,850.1	1,861.4	1,855.7	7.7	4.0	146.61	-79.7	-195.2	296.6	287.6	9.00	32.974	
2,000.0	1,946.4	1,959.0	1,953.0	8.2	4.2	147.78	-83.4	-202.7	317.5	308.1	9.42	33.709	
2,100.0	2,042.8	2,056.6	2,050.2	8.7	4.5	148.81	-87.2	-210.2	338.5	328.7	9.84	34.393	
2,200.0	2,139.1	2,154.2	2,147.5	9.2	4.7	149.71	-90.9	-217.6	359.7	349.4	10.27	35.030	
2,300.0	2,235.4	2,251.8	2,244.7	9.7	4.9	150.52	-94.7	-225.1	380.8	370.1	10.69	35.625	
2,400.0	2,331.7	2,349.4	2,341.9	10.2	5.1	151.24	-98.5	-232.5	402.1	391.0	11.11	36.180	
2,500.0	2,428.0	2,447.0	2,439.2	10.8	5.4	151.89	-102.2	-240.0	423.4	411.8	11.54	36.699	
2,600.0	2,524.3	2,544.6	2,536.4	11.3	5.6	152.48	-106.0	-247.4	444.7	432.8	11.96	37.185	
2,700.0	2,620.7	2,642.2	2,633.7	11.8	5.8	153.01	-109.7	-254.9	466.1	453.7	12.38	37.640	
2,800.0	2,717.0	2,739.8	2,730.9	12.3	6.0	153.50	-113.5	-262.4	487.5	474.7	12.81	38.068	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-3B (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	-50.43	96.2	-116.4	150.9				
100.0	100.0	100.0	100.0	0.1	0.1	-50.43	96.2	-116.4	150.9	150.7	0.27	554.409	
200.0	200.0	200.0	200.0	0.3	0.3	-50.43	96.2	-116.4	150.9	150.3	0.62	242.943	
300.0	300.0	308.5	308.4	0.5	0.5	112.00	94.1	-114.1	149.1	148.1	0.99	150.105	
400.0	399.6	416.3	415.9	0.7	0.8	115.17	87.9	-107.3	143.7	142.3	1.39	103.052	
500.0	498.8	523.0	521.5	1.0	1.1	120.87	77.8	-96.2	135.7	133.8	1.84	73.870	
600.0	597.1	628.0	624.4	1.4	1.5	129.64	64.0	-81.1	126.7	124.4	2.32	54.610	
700.0	694.3	728.8	722.2	1.8	1.9	141.59	47.3	-62.8	120.1	117.3	2.85	42.143	
739.2	732.2	766.5	758.6	2.0	2.1	146.64	40.8	-55.6	119.5	116.4	3.07	38.962	CC, ES
800.0	790.7	824.7	814.8	2.3	2.4	154.57	30.7	-44.5	121.2	117.8	3.41	35.545	
900.0	887.0	920.6	907.4	2.8	2.9	166.74	14.0	-26.3	128.8	124.8	4.01	32.108	
1,000.0	983.3	1,016.4	1,000.0	3.3	3.3	177.23	-2.6	-8.0	141.8	137.1	4.68	30.297	
1,100.0	1,079.6	1,112.3	1,092.7	3.8	3.8	-174.18	-19.2	10.2	158.9	153.5	5.44	29.223	
1,200.0	1,175.9	1,208.1	1,185.3	4.2	4.2	-167.30	-35.9	28.5	179.0	172.7	6.27	28.552	
1,300.0	1,272.2	1,304.0	1,277.9	4.7	4.7	-161.82	-52.5	46.8	201.0	193.9	7.14	28.171	
1,400.0	1,368.5	1,399.8	1,370.5	5.2	5.2	-157.43	-69.1	65.0	224.6	216.6	8.02	28.001	
1,500.0	1,464.9	1,495.7	1,463.1	5.7	5.6	-153.87	-85.8	83.3	249.1	240.2	8.91	27.974	SF
1,600.0	1,561.2	1,591.6	1,555.8	6.2	6.1	-150.94	-102.4	101.5	274.5	264.7	9.79	28.040	
1,700.0	1,657.5	1,687.4	1,648.4	6.7	6.6	-148.51	-119.1	119.8	300.4	289.7	10.67	28.163	
1,800.0	1,753.8	1,783.3	1,741.0	7.2	7.0	-146.46	-135.7	138.0	326.7	315.2	11.54	28.319	
1,900.0	1,850.1	1,879.1	1,833.6	7.7	7.5	-144.71	-152.3	156.3	353.4	341.0	12.40	28.492	
2,000.0	1,946.4	1,975.0	1,926.2	8.2	8.0	-143.21	-169.0	174.5	380.3	367.0	13.26	28.673	
2,100.0	2,042.8	2,070.8	2,018.9	8.7	8.4	-141.90	-185.6	192.8	407.4	393.3	14.12	28.855	
2,200.0	2,139.1	2,166.7	2,111.5	9.2	8.9	-140.76	-202.2	211.0	434.7	419.8	14.97	29.035	
2,300.0	2,235.4	2,262.6	2,204.1	9.7	9.4	-139.75	-218.9	229.3	462.2	446.4	15.82	29.210	
2,400.0	2,331.7	2,358.4	2,296.7	10.2	9.8	-138.86	-235.5	247.5	489.8	473.1	16.67	29.379	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4A (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	-110.06	-23.3	-63.8	68.0				
100.0	100.0	100.0	100.0	0.1	0.1	-110.06	-23.3	-63.8	68.0	67.7	0.27	249.574	
200.0	200.0	200.0	200.0	0.3	0.3	-110.06	-23.3	-63.8	68.0	67.3	0.62	109.364	CC, ES
300.0	300.0	296.7	296.7	0.5	0.5	52.38	-24.8	-65.8	68.7	67.8	0.97	70.824	
400.0	399.6	393.5	393.2	0.7	0.7	55.31	-29.2	-71.6	71.2	69.9	1.35	52.722	
500.0	498.8	493.3	492.5	1.0	0.9	60.91	-35.1	-79.3	73.2	71.4	1.81	40.554	
600.0	597.1	592.6	591.3	1.4	1.2	69.85	-41.0	-86.9	73.9	71.5	2.38	31.091	
700.0	694.3	691.2	689.5	1.8	1.4	82.15	-46.8	-94.5	75.4	72.4	3.09	24.392	
800.0	790.7	789.2	787.1	2.3	1.6	95.87	-52.5	-102.1	80.7	76.8	3.84	21.016	
900.0	887.0	887.3	884.6	2.8	1.9	107.49	-58.3	-109.6	90.0	85.5	4.51	19.976	SF
1,000.0	983.3	985.3	982.2	3.3	2.1	116.67	-64.0	-117.2	102.4	97.3	5.09	20.128	
1,100.0	1,079.6	1,083.3	1,079.7	3.8	2.3	123.77	-69.8	-124.8	116.8	111.2	5.60	20.852	
1,200.0	1,175.9	1,181.3	1,177.3	4.2	2.6	129.28	-75.6	-132.3	132.7	126.6	6.08	21.828	
1,300.0	1,272.2	1,279.4	1,274.9	4.7	2.8	133.59	-81.3	-139.9	149.4	142.9	6.53	22.893	
1,400.0	1,368.5	1,377.4	1,372.4	5.2	3.0	137.02	-87.1	-147.4	166.9	159.9	6.96	23.963	
1,500.0	1,464.9	1,475.4	1,470.0	5.7	3.3	139.81	-92.9	-155.0	184.8	177.4	7.39	24.998	
1,600.0	1,561.2	1,573.4	1,567.5	6.2	3.5	142.10	-98.6	-162.5	203.0	195.2	7.82	25.980	
1,700.0	1,657.5	1,671.4	1,665.1	6.7	3.8	144.01	-104.4	-170.1	221.6	213.3	8.24	26.900	
1,800.0	1,753.8	1,769.5	1,762.7	7.2	4.0	145.63	-110.2	-177.6	240.3	231.6	8.66	27.757	
1,900.0	1,850.1	1,867.5	1,860.2	7.7	4.2	147.01	-115.9	-185.2	259.2	250.1	9.08	28.555	
2,000.0	1,946.4	1,965.5	1,957.8	8.2	4.5	148.20	-121.7	-192.7	278.2	268.7	9.50	29.295	
2,100.0	2,042.8	2,063.5	2,055.3	8.7	4.7	149.25	-127.5	-200.3	297.3	287.4	9.92	29.983	
2,200.0	2,139.1	2,161.6	2,152.9	9.2	5.0	150.16	-133.2	-207.8	316.5	306.2	10.34	30.622	
2,300.0	2,235.4	2,259.6	2,250.5	9.7	5.2	150.97	-139.0	-215.4	335.8	325.0	10.76	31.217	
2,400.0	2,331.7	2,357.6	2,348.0	10.2	5.4	151.70	-144.8	-222.9	355.1	343.9	11.18	31.771	
2,500.0	2,428.0	2,455.6	2,445.6	10.8	5.7	152.35	-150.5	-230.5	374.5	362.9	11.60	32.288	
2,600.0	2,524.3	2,553.6	2,543.1	11.3	5.9	152.93	-156.3	-238.0	393.9	381.9	12.02	32.771	
2,700.0	2,620.7	2,651.7	2,640.7	11.8	6.1	153.46	-162.0	-245.6	413.3	400.9	12.44	33.224	
2,800.0	2,717.0	2,749.7	2,738.3	12.3	6.4	153.94	-167.8	-253.1	432.8	419.9	12.86	33.648	
2,900.0	2,813.3	2,847.7	2,835.8	12.8	6.6	154.38	-173.6	-260.7	452.3	439.0	13.29	34.046	
3,000.0	2,909.6	2,945.7	2,933.4	13.3	6.9	154.79	-179.3	-268.3	471.8	458.1	13.71	34.421	
3,100.0	3,005.9	3,043.8	3,030.9	13.8	7.1	155.16	-185.1	-275.8	491.4	477.3	14.13	34.774	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4B (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	-110.11	-17.5	-47.7	50.8				
100.0	100.0	100.0	100.0	0.1	0.1	-110.11	-17.5	-47.7	50.8	50.6	0.27	186.682	
200.0	200.0	200.0	200.0	0.3	0.3	-110.11	-17.5	-47.7	50.8	50.2	0.62	81.805	CC, ES
300.0	300.0	297.9	297.9	0.5	0.5	51.85	-19.6	-49.1	51.2	50.3	0.97	52.557	
400.0	399.6	395.8	395.5	0.7	0.7	53.41	-25.9	-53.2	52.5	51.1	1.37	38.363	
500.0	498.8	494.0	492.8	1.0	1.0	55.88	-36.4	-60.0	54.7	52.8	1.84	29.707	
600.0	597.1	593.8	591.6	1.4	1.3	61.43	-48.7	-67.9	55.6	53.2	2.43	22.855	
700.0	694.3	693.3	690.0	1.8	1.6	71.72	-60.9	-75.8	55.2	52.0	3.21	17.201	
712.3	706.2	705.5	702.0	1.9	1.6	73.31	-62.4	-76.8	55.2	51.9	3.32	16.641	
800.0	790.7	792.4	788.0	2.3	1.9	85.33	-73.0	-83.7	56.2	52.1	4.09	13.757	
900.0	887.0	891.5	886.1	2.8	2.2	97.89	-85.2	-91.5	60.3	55.4	4.90	12.301	
1,000.0	983.3	990.6	984.1	3.3	2.5	108.47	-97.4	-99.4	66.8	61.2	5.59	11.954	SF
1,100.0	1,079.6	1,089.7	1,082.1	3.8	2.8	116.95	-109.5	-107.3	75.2	69.0	6.17	12.191	
1,200.0	1,175.9	1,188.8	1,180.1	4.2	3.1	123.63	-121.7	-115.1	84.9	78.2	6.67	12.722	
1,300.0	1,272.2	1,287.8	1,278.2	4.7	3.4	128.89	-133.9	-123.0	95.5	88.4	7.13	13.391	
1,400.0	1,368.5	1,386.9	1,376.2	5.2	3.7	133.08	-146.0	-130.9	106.8	99.2	7.57	14.110	
1,500.0	1,464.9	1,486.0	1,474.2	5.7	4.0	136.45	-158.2	-138.7	118.5	110.5	7.99	14.834	
1,600.0	1,561.2	1,585.1	1,572.2	6.2	4.3	139.22	-170.4	-146.6	130.6	122.2	8.40	15.539	
1,700.0	1,657.5	1,684.2	1,670.3	6.7	4.6	141.51	-182.5	-154.5	142.9	134.1	8.81	16.212	
1,800.0	1,753.8	1,783.3	1,768.3	7.2	4.9	143.44	-194.7	-162.3	155.4	146.1	9.22	16.848	
1,900.0	1,850.1	1,882.4	1,866.3	7.7	5.2	145.08	-206.9	-170.2	168.0	158.4	9.63	17.445	
2,000.0	1,946.4	1,981.5	1,964.3	8.2	5.5	146.49	-219.1	-178.1	180.8	170.7	10.04	18.005	
2,100.0	2,042.8	2,080.6	2,062.4	8.7	5.8	147.72	-231.2	-185.9	193.6	183.2	10.45	18.528	
2,200.0	2,139.1	2,179.7	2,160.4	9.2	6.1	148.79	-243.4	-193.8	206.5	195.7	10.86	19.016	
2,300.0	2,235.4	2,278.8	2,258.4	9.7	6.4	149.74	-255.6	-201.7	219.5	208.3	11.27	19.473	
2,400.0	2,331.7	2,377.9	2,356.4	10.2	6.7	150.58	-267.7	-209.5	232.6	220.9	11.69	19.900	
2,500.0	2,428.0	2,476.9	2,454.5	10.8	7.0	151.33	-279.9	-217.4	245.7	233.6	12.10	20.300	
2,600.0	2,524.3	2,576.0	2,552.5	11.3	7.4	152.00	-292.1	-225.3	258.8	246.3	12.52	20.674	
2,700.0	2,620.7	2,675.1	2,650.5	11.8	7.7	152.61	-304.2	-233.1	272.0	259.0	12.93	21.026	
2,800.0	2,717.0	2,774.2	2,748.6	12.3	8.0	153.16	-316.4	-241.0	285.1	271.8	13.35	21.356	
2,900.0	2,813.3	2,873.3	2,846.6	12.8	8.3	153.67	-328.6	-248.9	298.3	284.6	13.77	21.667	
3,000.0	2,909.6	2,972.4	2,944.6	13.3	8.6	154.13	-340.7	-256.7	311.6	297.4	14.19	21.960	
3,100.0	3,005.9	3,071.5	3,042.6	13.8	8.9	154.55	-352.9	-264.6	324.8	310.2	14.61	22.236	
3,200.0	3,102.2	3,170.6	3,140.7	14.3	9.2	154.94	-365.1	-272.5	338.1	323.1	15.03	22.497	
3,300.0	3,198.6	3,269.7	3,238.7	14.8	9.5	155.30	-377.2	-280.3	351.4	335.9	15.45	22.744	
3,400.0	3,294.9	3,368.8	3,336.7	15.3	9.8	155.64	-389.4	-288.2	364.6	348.8	15.87	22.978	
3,500.0	3,391.2	3,467.9	3,434.7	15.8	10.1	155.95	-401.6	-296.1	378.0	361.7	16.29	23.200	
3,600.0	3,487.5	3,566.9	3,532.8	16.3	10.4	156.24	-413.7	-303.9	391.3	374.5	16.71	23.411	
3,700.0	3,583.8	3,666.0	3,630.8	16.8	10.7	156.51	-425.9	-311.8	404.6	387.4	17.13	23.612	
3,800.0	3,680.1	3,765.1	3,728.8	17.3	11.0	156.77	-438.1	-319.7	417.9	400.4	17.56	23.802	
3,900.0	3,776.4	3,864.2	3,826.8	17.8	11.3	157.00	-450.2	-327.5	431.2	413.3	17.98	23.984	
4,000.0	3,872.8	3,963.3	3,924.9	18.3	11.6	157.23	-462.4	-335.4	444.6	426.2	18.40	24.158	
4,100.0	3,969.1	4,062.4	4,022.9	18.8	12.0	157.44	-474.6	-343.3	457.9	439.1	18.83	24.323	
4,200.0	4,065.4	4,161.5	4,120.9	19.3	12.3	157.64	-486.7	-351.1	471.3	452.0	19.25	24.481	
4,300.0	4,161.7	4,260.6	4,218.9	19.8	12.6	157.82	-498.9	-359.0	484.7	465.0	19.68	24.633	
4,400.0	4,258.0	4,359.7	4,317.0	20.3	12.9	158.00	-511.1	-366.9	498.0	477.9	20.10	24.778	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4C (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	-110.06	-11.7	-31.9	34.0				
100.0	100.0	100.0	100.0	0.1	0.1	-110.06	-11.7	-31.9	34.0	33.7	0.27	124.787	
200.0	200.0	200.0	200.0	0.3	0.3	-110.06	-11.7	-31.9	34.0	33.4	0.62	54.682	CC
300.0	300.0	298.7	298.7	0.5	0.5	51.79	-13.9	-33.1	34.2	33.2	0.98	35.014	ES
400.0	399.6	397.4	397.1	0.7	0.7	53.06	-20.8	-36.5	35.0	33.6	1.38	25.389	
500.0	498.8	496.2	495.0	1.0	1.0	55.06	-32.2	-42.1	36.2	34.4	1.86	19.452	
600.0	597.1	595.4	592.7	1.4	1.3	58.24	-47.7	-49.9	37.7	35.3	2.47	15.301	
700.0	694.3	695.2	690.8	1.8	1.7	67.22	-64.0	-58.0	37.5	34.3	3.27	11.464	
748.1	740.7	743.1	737.9	2.0	1.8	73.51	-71.9	-62.0	37.4	33.6	3.73	10.017	
800.0	790.7	794.8	788.7	2.3	2.0	81.31	-80.3	-66.2	37.6	33.3	4.23	8.876	
900.0	887.0	894.4	886.6	2.8	2.4	94.73	-96.6	-74.3	39.8	34.7	5.12	7.766	
1,000.0	983.3	993.9	984.5	3.3	2.7	106.20	-112.9	-82.4	43.9	38.1	5.87	7.490	SF
1,100.0	1,079.6	1,093.5	1,082.4	3.8	3.1	115.39	-129.2	-90.6	49.5	43.1	6.47	7.655	
1,200.0	1,175.9	1,193.0	1,180.2	4.2	3.4	122.59	-145.5	-98.7	56.1	49.1	6.98	8.043	
1,300.0	1,272.2	1,292.6	1,278.1	4.7	3.8	128.22	-161.8	-106.8	63.4	56.0	7.43	8.533	
1,400.0	1,368.5	1,392.2	1,376.0	5.2	4.2	132.65	-178.1	-114.9	71.2	63.3	7.86	9.062	
1,500.0	1,464.9	1,491.7	1,473.9	5.7	4.5	136.19	-194.3	-123.1	79.3	71.0	8.27	9.594	
1,600.0	1,561.2	1,591.3	1,571.8	6.2	4.9	139.07	-210.6	-131.2	87.7	79.0	8.67	10.112	
1,700.0	1,657.5	1,690.9	1,669.7	6.7	5.2	141.45	-226.9	-139.3	96.2	87.1	9.07	10.607	
1,800.0	1,753.8	1,790.4	1,767.6	7.2	5.6	143.43	-243.2	-147.4	104.9	95.4	9.47	11.073	
1,900.0	1,850.1	1,890.0	1,865.4	7.7	6.0	145.11	-259.5	-155.6	113.7	103.8	9.87	11.512	
2,000.0	1,946.4	1,989.5	1,963.3	8.2	6.3	146.55	-275.8	-163.7	122.5	112.3	10.28	11.922	
2,100.0	2,042.8	2,089.1	2,061.2	8.7	6.7	147.80	-292.1	-171.8	131.5	120.8	10.68	12.305	
2,200.0	2,139.1	2,188.7	2,159.1	9.2	7.1	148.88	-308.4	-179.9	140.5	129.4	11.09	12.662	
2,300.0	2,235.4	2,288.2	2,257.0	9.7	7.4	149.84	-324.6	-188.1	149.5	138.0	11.50	12.996	
2,400.0	2,331.7	2,387.8	2,354.9	10.2	7.8	150.68	-340.9	-196.2	158.6	146.6	11.91	13.309	
2,500.0	2,428.0	2,487.4	2,452.7	10.8	8.1	151.44	-357.2	-204.3	167.7	155.3	12.33	13.601	
2,600.0	2,524.3	2,586.9	2,550.6	11.3	8.5	152.11	-373.5	-212.5	176.8	164.0	12.74	13.875	
2,700.0	2,620.7	2,686.5	2,648.5	11.8	8.9	152.72	-389.8	-220.6	185.9	172.8	13.16	14.131	
2,800.0	2,717.0	2,786.0	2,746.4	12.3	9.2	153.27	-406.1	-228.7	195.1	181.5	13.57	14.373	
2,900.0	2,813.3	2,885.6	2,844.3	12.8	9.6	153.78	-422.4	-236.8	204.3	190.3	13.99	14.599	
3,000.0	2,909.6	2,985.2	2,942.2	13.3	10.0	154.24	-438.7	-245.0	213.5	199.1	14.41	14.813	
3,100.0	3,005.9	3,084.7	3,040.0	13.8	10.3	154.66	-455.0	-253.1	222.7	207.8	14.83	15.015	
3,200.0	3,102.2	3,184.3	3,137.9	14.3	10.7	155.05	-471.2	-261.2	231.9	216.6	15.25	15.205	
3,300.0	3,198.6	3,283.9	3,235.8	14.8	11.0	155.41	-487.5	-269.3	241.1	225.4	15.67	15.385	
3,400.0	3,294.9	3,383.4	3,333.7	15.3	11.4	155.74	-503.8	-277.5	250.4	234.3	16.09	15.556	
3,500.0	3,391.2	3,483.0	3,431.6	15.8	11.8	156.05	-520.1	-285.6	259.6	243.1	16.52	15.718	
3,600.0	3,487.5	3,582.5	3,529.5	16.3	12.1	156.33	-536.4	-293.7	268.9	251.9	16.94	15.871	
3,700.0	3,583.8	3,682.1	3,627.4	16.8	12.5	156.60	-552.7	-301.8	278.1	260.7	17.36	16.017	
3,800.0	3,680.1	3,781.7	3,725.2	17.3	12.9	156.85	-569.0	-310.0	287.4	269.6	17.79	16.156	
3,900.0	3,776.4	3,881.2	3,823.1	17.8	13.2	157.09	-585.3	-318.1	296.6	278.4	18.21	16.289	
4,000.0	3,872.8	3,980.8	3,921.0	18.3	13.6	157.31	-601.5	-326.2	305.9	287.3	18.64	16.415	
4,100.0	3,969.1	4,080.4	4,018.9	18.8	13.9	157.52	-617.8	-334.3	315.2	296.1	19.06	16.536	
4,200.0	4,065.4	4,179.9	4,116.8	19.3	14.3	157.71	-634.1	-342.5	324.5	305.0	19.49	16.651	
4,300.0	4,161.7	4,279.5	4,214.7	19.8	14.7	157.90	-650.4	-350.6	333.8	313.8	19.91	16.761	
4,400.0	4,258.0	4,379.0	4,312.5	20.3	15.0	158.07	-666.7	-358.7	343.1	322.7	20.34	16.866	
4,500.0	4,354.3	4,478.6	4,410.4	20.8	15.4	158.24	-683.0	-366.9	352.3	331.6	20.77	16.967	
4,600.0	4,450.7	4,578.2	4,508.3	21.3	15.8	158.40	-699.3	-375.0	361.6	340.4	21.19	17.064	
4,700.0	4,547.0	4,677.7	4,606.2	21.8	16.1	158.55	-715.6	-383.1	370.9	349.3	21.62	17.157	
4,800.0	4,643.3	4,777.3	4,704.1	22.3	16.5	158.69	-731.9	-391.2	380.2	358.2	22.05	17.247	
4,900.0	4,739.6	4,876.9	4,802.0	22.8	16.8	158.82	-748.1	-399.4	389.5	367.1	22.47	17.333	
5,000.0	4,835.9	4,976.4	4,899.8	23.3	17.2	158.95	-764.4	-407.5	398.8	375.9	22.90	17.415	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4C (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	4,932.2	5,076.0	4,997.7	23.8	17.6	159.07	-780.7	-415.6	408.1	384.8	23.33	17.495	
5,200.0	5,028.6	5,175.5	5,095.6	24.3	17.9	159.19	-797.0	-423.7	417.5	393.7	23.76	17.572	
5,300.0	5,124.9	5,275.1	5,193.5	24.8	18.3	159.30	-813.3	-431.9	426.8	402.6	24.19	17.646	
5,400.0	5,221.2	5,374.7	5,291.4	25.3	18.7	159.41	-829.6	-440.0	436.1	411.5	24.61	17.717	
5,500.0	5,317.5	5,474.2	5,389.3	25.8	19.0	159.52	-845.9	-448.1	445.4	420.3	25.04	17.786	
5,600.0	5,413.8	5,573.8	5,487.2	26.3	19.4	159.61	-862.2	-456.2	454.7	429.2	25.47	17.852	
5,700.0	5,510.1	5,673.3	5,585.0	26.8	19.7	159.71	-878.4	-464.4	464.0	438.1	25.90	17.916	
5,800.0	5,606.5	5,772.9	5,682.9	27.3	20.1	159.80	-894.7	-472.5	473.3	447.0	26.33	17.978	
5,900.0	5,702.8	5,872.5	5,780.8	27.8	20.5	159.89	-911.0	-480.6	482.6	455.9	26.76	18.038	
6,000.0	5,799.1	5,972.0	5,878.7	28.3	20.8	159.97	-927.3	-488.8	492.0	464.8	27.19	18.097	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4D2 (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	-110.24	-5.8	-15.8	16.9				
100.0	100.0	100.0	100.0	0.1	0.1	-110.24	-5.8	-15.8	16.9	16.6	0.27	61.912	
200.0	200.0	200.0	200.0	0.3	0.3	-110.24	-5.8	-15.8	16.9	16.2	0.62	27.130	CC
300.0	300.0	299.4	299.4	0.5	0.5	51.54	-8.2	-16.8	17.0	16.0	0.98	17.322	
400.0	399.6	398.8	398.5	0.7	0.7	52.59	-15.4	-19.7	17.3	15.9	1.38	12.490	
500.0	498.8	498.2	497.0	1.0	1.0	54.26	-27.4	-24.5	17.8	15.9	1.88	9.495	
600.0	597.1	597.7	594.8	1.4	1.4	56.43	-44.1	-31.2	18.6	16.1	2.50	7.439	
700.0	694.3	697.4	692.1	1.8	1.8	61.64	-64.6	-39.4	19.0	15.7	3.30	5.769	
793.8	784.8	791.2	783.4	2.3	2.1	73.63	-84.2	-47.2	18.7	14.4	4.26	4.390	
800.0	790.7	797.3	789.4	2.3	2.2	75.76	-85.5	-47.8	18.6	14.2	4.34	4.282	
900.0	887.0	897.2	886.7	2.8	2.6	89.99	-106.4	-56.1	19.3	14.0	5.35	3.609	ES
1,000.0	983.3	997.1	984.1	3.3	3.0	102.51	-127.2	-64.5	21.1	14.9	6.18	3.411	SF
1,100.0	1,079.6	1,097.0	1,081.4	3.8	3.4	112.68	-148.1	-72.8	23.7	16.9	6.83	3.470	
1,200.0	1,175.9	1,196.9	1,178.7	4.2	3.9	120.63	-168.9	-81.2	26.9	19.6	7.35	3.660	
1,300.0	1,272.2	1,296.7	1,276.0	4.7	4.3	126.80	-189.8	-89.6	30.5	22.7	7.80	3.913	
1,400.0	1,368.5	1,396.6	1,373.4	5.2	4.7	131.63	-210.6	-97.9	34.4	26.2	8.21	4.191	
1,500.0	1,464.9	1,496.5	1,470.7	5.7	5.1	135.45	-231.5	-106.3	38.5	29.9	8.60	4.473	
1,600.0	1,561.2	1,596.4	1,568.0	6.2	5.6	138.53	-252.4	-114.6	42.7	33.7	8.99	4.749	
1,700.0	1,657.5	1,696.3	1,665.3	6.7	6.0	141.05	-273.2	-123.0	47.0	37.6	9.38	5.014	
1,800.0	1,753.8	1,796.2	1,762.7	7.2	6.4	143.15	-294.1	-131.4	51.4	41.7	9.77	5.264	
1,900.0	1,850.1	1,896.1	1,860.0	7.7	6.8	144.91	-314.9	-139.7	55.9	45.7	10.16	5.499	
2,000.0	1,946.4	1,996.0	1,957.3	8.2	7.3	146.41	-335.8	-148.1	60.4	49.8	10.55	5.720	
2,100.0	2,042.8	2,095.8	2,054.7	8.7	7.7	147.70	-356.6	-156.5	64.9	54.0	10.95	5.926	
2,200.0	2,139.1	2,195.7	2,152.0	9.2	8.1	148.82	-377.5	-164.8	69.5	58.1	11.35	6.119	
2,300.0	2,235.4	2,295.6	2,249.3	9.7	8.6	149.81	-398.3	-173.2	74.1	62.3	11.76	6.299	
2,400.0	2,331.7	2,395.5	2,346.6	10.2	9.0	150.68	-419.2	-181.5	78.7	66.5	12.16	6.467	
2,500.0	2,428.0	2,495.4	2,444.0	10.8	9.4	151.45	-440.1	-189.9	83.3	70.7	12.57	6.625	
2,600.0	2,524.3	2,595.3	2,541.3	11.3	9.9	152.14	-460.9	-198.3	87.9	74.9	12.98	6.772	
2,700.0	2,620.7	2,695.2	2,638.6	11.8	10.3	152.76	-481.8	-206.6	92.6	79.2	13.39	6.911	
2,800.0	2,717.0	2,795.1	2,735.9	12.3	10.7	153.33	-502.6	-215.0	97.2	83.4	13.81	7.041	
2,900.0	2,813.3	2,894.9	2,833.3	12.8	11.1	153.84	-523.5	-223.3	101.9	87.7	14.22	7.163	
3,000.0	2,909.6	2,994.8	2,930.6	13.3	11.6	154.30	-544.3	-231.7	106.6	91.9	14.64	7.278	
3,100.0	3,005.9	3,094.7	3,027.9	13.8	12.0	154.73	-565.2	-240.1	111.2	96.2	15.06	7.387	
3,200.0	3,102.2	3,194.6	3,125.3	14.3	12.4	155.12	-586.0	-248.4	115.9	100.4	15.48	7.490	
3,300.0	3,198.6	3,294.5	3,222.6	14.8	12.9	155.48	-606.9	-256.8	120.6	104.7	15.90	7.587	
3,400.0	3,294.9	3,394.4	3,319.9	15.3	13.3	155.82	-627.8	-265.2	125.3	109.0	16.32	7.679	
3,500.0	3,391.2	3,494.3	3,417.2	15.8	13.7	156.13	-648.6	-273.5	130.0	113.3	16.74	7.767	
3,600.0	3,487.5	3,594.2	3,514.6	16.3	14.2	156.42	-669.5	-281.9	134.7	117.5	17.16	7.849	
3,700.0	3,583.8	3,694.0	3,611.9	16.8	14.6	156.69	-690.3	-290.2	139.4	121.8	17.58	7.928	
3,800.0	3,680.1	3,793.9	3,709.2	17.3	15.0	156.94	-711.2	-298.6	144.1	126.1	18.01	8.003	
3,900.0	3,776.4	3,893.8	3,806.5	17.8	15.4	157.18	-732.0	-307.0	148.8	130.4	18.43	8.075	
4,000.0	3,872.8	3,993.7	3,903.9	18.3	15.9	157.40	-752.9	-315.3	153.5	134.7	18.86	8.143	
4,100.0	3,969.1	4,093.6	4,001.2	18.8	16.3	157.61	-773.7	-323.7	158.3	139.0	19.28	8.208	
4,200.0	4,065.4	4,193.5	4,098.5	19.3	16.7	157.80	-794.6	-332.0	163.0	143.3	19.71	8.270	
4,300.0	4,161.7	4,293.4	4,195.9	19.8	17.2	157.99	-815.5	-340.4	167.7	147.6	20.13	8.329	
4,400.0	4,258.0	4,393.3	4,293.2	20.3	17.6	158.16	-836.3	-348.8	172.4	151.9	20.56	8.386	
4,500.0	4,354.3	4,493.1	4,390.5	20.8	18.0	158.33	-857.2	-357.1	177.1	156.1	20.99	8.441	
4,600.0	4,450.7	4,593.0	4,487.8	21.3	18.5	158.49	-878.0	-365.5	181.9	160.4	21.41	8.493	
4,700.0	4,547.0	4,692.9	4,585.2	21.8	18.9	158.63	-898.9	-373.9	186.6	164.7	21.84	8.543	
4,800.0	4,643.3	4,792.8	4,682.5	22.3	19.3	158.78	-919.7	-382.2	191.3	169.0	22.27	8.591	
4,900.0	4,739.6	4,892.7	4,779.8	22.8	19.7	158.91	-940.6	-390.6	196.0	173.3	22.69	8.638	
5,000.0	4,835.9	4,992.6	4,877.1	23.3	20.2	159.04	-961.4	-398.9	200.8	177.6	23.12	8.682	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4D2 (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	4,932.2	5,092.5	4,974.5	23.8	20.6	159.16	-982.3	-407.3	205.5	181.9	23.55	8.725	
5,200.0	5,028.6	5,192.3	5,071.8	24.3	21.0	159.28	-1,003.2	-415.7	210.2	186.2	23.98	8.767	
5,300.0	5,124.9	5,292.2	5,169.1	24.8	21.5	159.39	-1,024.0	-424.0	214.9	190.5	24.41	8.807	
5,400.0	5,221.2	5,392.1	5,266.4	25.3	21.9	159.50	-1,044.9	-432.4	219.7	194.8	24.84	8.845	
5,500.0	5,317.5	5,492.0	5,363.8	25.8	22.3	159.60	-1,065.7	-440.7	224.4	199.1	25.27	8.882	
5,600.0	5,413.8	5,591.9	5,461.1	26.3	22.8	159.70	-1,086.6	-449.1	229.1	203.5	25.69	8.918	
5,700.0	5,510.1	5,691.8	5,558.4	26.8	23.2	159.79	-1,107.4	-457.5	233.9	207.8	26.12	8.953	
5,800.0	5,606.5	5,791.7	5,655.8	27.3	23.6	159.89	-1,128.3	-465.8	238.6	212.1	26.55	8.986	
5,900.0	5,702.8	5,891.6	5,753.1	27.8	24.0	159.97	-1,149.1	-474.2	243.3	216.4	26.98	9.018	
6,000.0	5,799.1	5,991.4	5,850.4	28.3	24.5	160.06	-1,170.0	-482.6	248.1	220.7	27.41	9.050	
6,100.0	5,895.4	6,091.3	5,947.7	28.8	24.9	160.14	-1,190.9	-490.9	252.8	225.0	27.84	9.080	
6,200.0	5,991.7	6,191.2	6,045.1	29.3	25.3	160.21	-1,211.7	-499.3	257.6	229.3	28.27	9.110	
6,300.0	6,088.0	6,291.1	6,142.4	29.8	25.8	160.29	-1,232.6	-507.6	262.3	233.6	28.70	9.138	
6,400.0	6,184.3	6,391.0	6,239.7	30.3	26.2	160.36	-1,253.4	-516.0	267.0	237.9	29.13	9.166	
6,500.0	6,280.7	6,490.9	6,337.0	30.8	26.6	160.43	-1,274.3	-524.4	271.8	242.2	29.56	9.193	
6,600.0	6,377.0	6,590.8	6,434.4	31.3	27.1	160.50	-1,295.1	-532.7	276.5	246.5	29.99	9.219	
6,700.0	6,473.3	6,690.7	6,531.7	31.8	27.5	160.56	-1,316.0	-541.1	281.2	250.8	30.42	9.244	
6,800.0	6,569.6	6,790.5	6,629.0	32.3	27.9	160.63	-1,336.9	-549.4	286.0	255.1	30.85	9.269	
6,900.0	6,665.9	6,890.4	6,726.4	32.8	28.4	160.69	-1,357.7	-557.8	290.7	259.4	31.29	9.292	
7,000.0	6,762.2	6,990.3	6,823.7	33.3	28.8	160.75	-1,378.6	-566.2	295.5	263.7	31.72	9.316	
7,100.0	6,858.6	7,090.2	6,921.0	33.8	29.2	160.80	-1,399.4	-574.5	300.2	268.0	32.15	9.338	
7,200.0	6,954.9	7,190.1	7,018.3	34.4	29.6	160.86	-1,420.3	-582.9	304.9	272.4	32.58	9.360	
7,300.0	7,051.2	7,290.0	7,115.7	34.9	30.1	160.91	-1,441.1	-591.3	309.7	276.7	33.01	9.382	
7,400.0	7,147.6	7,389.9	7,213.0	35.3	30.5	160.96	-1,462.0	-599.6	314.3	280.8	33.45	9.396	
7,500.0	7,244.6	7,483.5	7,304.4	35.8	30.9	160.92	-1,480.9	-607.2	317.0	283.1	33.91	9.348	
7,600.0	7,342.4	7,574.1	7,393.4	36.2	31.2	160.88	-1,496.8	-613.6	319.3	284.9	34.33	9.300	
7,700.0	7,440.9	7,664.8	7,482.9	36.5	31.5	160.84	-1,510.0	-618.9	321.1	286.4	34.70	9.255	
7,800.0	7,539.9	7,755.3	7,572.7	36.7	31.7	160.81	-1,520.5	-623.1	322.6	287.6	35.03	9.211	
7,900.0	7,639.4	7,845.9	7,662.9	36.9	31.9	160.79	-1,528.5	-626.3	323.8	288.4	35.31	9.170	
8,000.0	7,739.1	7,936.4	7,753.2	37.1	32.0	160.78	-1,533.7	-628.4	324.5	289.0	35.54	9.130	
8,100.0	7,839.1	8,026.9	7,843.7	37.2	32.1	160.77	-1,536.4	-629.4	324.9	289.1	35.73	9.091	
8,200.0	7,939.0	8,122.3	7,939.0	37.2	32.2	-0.65	-1,536.7	-629.6	324.9	289.0	35.96	9.037	
8,300.0	8,039.0	8,222.3	8,039.0	37.3	32.2	-0.65	-1,536.7	-629.6	324.9	288.7	36.23	8.968	
8,400.0	8,139.0	8,322.3	8,139.0	37.4	32.3	-0.65	-1,536.7	-629.6	324.9	288.4	36.51	8.900	
8,500.0	8,239.0	8,422.3	8,239.0	37.5	32.4	-0.65	-1,536.7	-629.6	324.9	288.1	36.79	8.832	
8,600.0	8,339.0	8,522.3	8,339.0	37.5	32.5	-0.65	-1,536.7	-629.6	324.9	287.8	37.07	8.765	
8,700.0	8,439.0	8,622.3	8,439.0	37.6	32.6	-0.65	-1,536.7	-629.6	324.9	287.6	37.35	8.699	
8,800.0	8,539.0	8,722.3	8,539.0	37.7	32.6	-0.65	-1,536.7	-629.6	324.9	287.3	37.63	8.634	
8,900.0	8,639.0	8,822.3	8,639.0	37.7	32.7	-0.65	-1,536.7	-629.6	324.9	287.0	37.92	8.570	
9,000.0	8,739.0	8,922.3	8,739.0	37.8	32.8	-0.65	-1,536.7	-629.6	324.9	286.7	38.20	8.506	
9,100.0	8,839.0	9,022.3	8,839.0	37.9	32.9	-0.65	-1,536.7	-629.6	324.9	286.4	38.49	8.443	
9,200.0	8,939.0	9,122.3	8,939.0	37.9	33.0	-0.65	-1,536.7	-629.6	324.9	286.1	38.77	8.380	
9,300.0	9,039.0	9,222.3	9,039.0	38.0	33.0	-0.65	-1,536.7	-629.6	324.9	285.9	39.06	8.318	
9,400.0	9,139.0	9,322.3	9,139.0	38.1	33.1	-0.65	-1,536.7	-629.6	324.9	285.6	39.35	8.257	
9,500.0	9,239.0	9,422.3	9,239.0	38.2	33.2	-0.65	-1,536.7	-629.6	324.9	285.3	39.64	8.197	
9,600.0	9,339.0	9,522.3	9,339.0	38.2	33.3	-0.65	-1,536.7	-629.6	324.9	285.0	39.93	8.137	
9,700.0	9,439.0	9,622.3	9,439.0	38.3	33.4	-0.65	-1,536.7	-629.6	324.9	284.7	40.22	8.078	
9,800.0	9,539.0	9,722.3	9,539.0	38.4	33.5	-0.65	-1,536.7	-629.6	324.9	284.4	40.51	8.020	
9,900.0	9,639.0	9,822.3	9,639.0	38.5	33.6	-0.65	-1,536.7	-629.6	324.9	284.1	40.81	7.962	
10,000.0	9,739.0	9,922.3	9,739.0	38.6	33.7	-0.65	-1,536.7	-629.6	324.9	283.8	41.10	7.905	
10,100.0	9,839.0	10,022.3	9,839.0	38.6	33.7	-0.65	-1,536.7	-629.6	324.9	283.5	41.40	7.849	
10,200.0	9,939.0	10,122.3	9,939.0	38.7	33.8	-0.65	-1,536.7	-629.6	324.9	283.2	41.69	7.793	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-4D2 (M16W Pad) - DD - Plan #1

Survey Program: 0-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
10,300.0	10,039.0	10,222.3	10,039.0	38.8	33.9	-0.65	-1,536.7	-629.6	324.9	282.9	41.99	7.738	
10,400.0	10,139.0	10,322.3	10,139.0	38.9	34.0	-0.65	-1,536.7	-629.6	324.9	282.6	42.29	7.684	
10,500.0	10,239.0	10,422.3	10,239.0	39.0	34.1	-0.65	-1,536.7	-629.6	324.9	282.3	42.58	7.630	
10,548.7	10,287.7	10,470.9	10,287.7	39.0	34.2	-0.65	-1,536.7	-629.6	324.9	282.2	42.73	7.604	
10,600.0	10,339.0	10,487.2	10,304.0	39.0	34.2	-0.65	-1,536.7	-629.6	326.8	284.0	42.83	7.630	
10,700.0	10,439.0	10,487.2	10,304.0	39.1	34.2	-0.65	-1,536.7	-629.6	351.9	308.9	42.98	8.187	
10,800.0	10,539.0	10,487.2	10,304.0	39.2	34.2	-0.65	-1,536.7	-629.6	401.0	357.9	43.13	9.298	
10,900.0	10,639.0	10,487.2	10,304.0	39.3	34.2	-0.65	-1,536.7	-629.6	466.7	423.4	43.28	10.784	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 16-12C2 (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	32.26	107.8	68.1	127.5				
100.0	100.0	100.0	100.0	0.1	0.1	32.26	107.8	68.1	127.5	127.2	0.27	468.286	
200.0	200.0	200.0	200.0	0.3	0.3	32.26	107.8	68.1	127.5	126.9	0.62	205.204	CC, ES
300.0	300.0	297.7	297.7	0.5	0.5	-167.60	109.7	66.5	130.9	129.9	0.97	134.454	
400.0	399.6	394.3	394.0	0.7	0.7	-171.04	115.4	61.8	141.4	140.0	1.35	104.667	
500.0	498.8	488.6	487.5	1.0	1.0	-175.69	124.6	54.2	159.8	158.0	1.76	90.758	
600.0	597.1	583.3	581.0	1.4	1.3	179.65	136.3	44.7	185.8	183.7	2.16	85.850	
700.0	694.3	677.3	673.8	1.8	1.6	176.10	147.9	35.1	217.9	215.3	2.56	85.148	SF
800.0	790.7	770.1	765.4	2.3	1.9	173.57	159.4	25.6	253.8	250.8	2.97	85.500	
900.0	887.0	862.9	857.0	2.8	2.2	171.67	170.9	16.2	290.1	286.8	3.39	85.615	
1,000.0	983.3	955.7	948.6	3.3	2.5	170.20	182.4	6.7	326.7	322.9	3.82	85.632	
1,100.0	1,079.6	1,048.5	1,040.1	3.8	2.8	169.02	193.9	-2.7	363.4	359.2	4.25	85.578	
1,200.0	1,175.9	1,141.2	1,131.7	4.2	3.1	168.06	205.4	-12.1	400.2	395.5	4.68	85.482	
1,300.0	1,272.2	1,234.0	1,223.3	4.7	3.4	167.26	216.9	-21.6	437.1	432.0	5.12	85.359	
1,400.0	1,368.5	1,326.8	1,314.9	5.2	3.7	166.58	228.4	-31.0	474.1	468.5	5.56	85.223	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 16-2C (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	31.81	118.4	73.4	139.3				
100.0	100.0	100.0	100.0	0.1	0.1	31.81	118.4	73.4	139.3	139.0	0.27	511.628	
200.0	200.0	200.0	200.0	0.3	0.3	31.81	118.4	73.4	139.3	138.7	0.62	224.197	CC, ES
300.0	300.0	296.6	296.6	0.5	0.5	-167.85	120.5	72.2	143.0	142.0	0.97	147.368	
400.0	399.6	392.0	391.7	0.7	0.7	-170.76	126.6	68.4	154.4	153.1	1.34	115.212	
500.0	498.8	484.9	483.9	1.0	1.0	-174.70	136.5	62.4	174.1	172.4	1.73	100.478	
600.0	597.1	574.4	572.0	1.4	1.3	-178.85	149.6	54.4	202.4	200.3	2.13	94.953	
700.0	694.3	666.0	661.7	1.8	1.6	177.34	165.2	44.8	238.4	235.9	2.53	94.321	SF
800.0	790.7	756.9	750.8	2.3	1.9	174.56	180.8	35.3	278.4	275.4	2.94	94.801	
900.0	887.0	847.8	839.9	2.8	2.3	172.49	196.3	25.8	318.9	315.5	3.35	95.048	
1,000.0	983.3	938.7	928.9	3.3	2.6	170.88	211.8	16.3	359.6	355.8	3.78	95.189	
1,100.0	1,079.6	1,029.6	1,018.0	3.8	3.0	169.59	227.4	6.8	400.5	396.3	4.21	95.245	
1,200.0	1,175.9	1,120.5	1,107.1	4.2	3.3	168.55	242.9	-2.7	441.6	437.0	4.64	95.242	
1,300.0	1,272.2	1,211.4	1,196.1	4.7	3.7	167.68	258.4	-12.2	482.8	477.7	5.07	95.199	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 16-5C (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	36.52	113.6	84.2	141.4				
100.0	100.0	100.0	100.0	0.1	0.1	36.52	113.6	84.2	141.4	141.1	0.27	519.383	
200.0	200.0	200.0	200.0	0.3	0.3	36.52	113.6	84.2	141.4	140.8	0.62	227.595	CC, ES
300.0	300.0	295.9	295.8	0.5	0.5	-163.12	115.9	83.3	145.3	144.3	0.97	150.018	
400.0	399.6	390.4	390.1	0.7	0.7	-165.97	122.5	80.9	157.3	155.9	1.33	117.920	
500.0	498.8	482.4	481.3	1.0	0.9	-169.78	133.2	77.0	177.8	176.1	1.72	103.689	
600.0	597.1	570.6	568.3	1.4	1.3	-173.76	147.3	71.9	207.4	205.3	2.10	98.779	SF
700.0	694.3	654.3	650.0	1.8	1.6	-177.42	164.2	65.7	245.9	243.4	2.47	99.394	
800.0	790.7	733.4	726.5	2.3	2.0	179.41	183.2	58.8	291.4	288.5	2.86	102.042	
900.0	887.0	809.1	798.8	2.8	2.4	176.76	204.1	51.2	340.6	337.3	3.24	105.102	
1,000.0	983.3	890.9	876.3	3.3	2.9	174.35	228.8	42.2	392.3	388.6	3.65	107.607	
1,100.0	1,079.6	975.3	956.2	3.8	3.3	172.42	254.4	32.8	444.5	440.5	4.06	109.484	
1,200.0	1,175.9	1,059.7	1,036.1	4.2	3.8	170.89	279.9	23.5	497.1	492.6	4.48	111.023	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-16B (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	-67.84	4.4	-10.7	11.6				
100.0	100.0	100.0	100.0	0.1	0.1	-67.84	4.4	-10.7	11.6	11.3	0.27	42.561	
200.0	200.0	200.0	200.0	0.3	0.3	-67.84	4.4	-10.7	11.6	11.0	0.62	18.650	CC, ES
300.0	300.0	299.3	299.2	0.5	0.5	102.26	5.0	-13.2	14.5	13.5	0.98	14.818	SF
400.0	399.6	397.8	397.5	0.7	0.7	114.69	6.8	-20.7	24.2	22.8	1.37	17.593	
500.0	498.8	494.9	493.8	1.0	1.0	121.77	9.7	-32.8	41.1	39.3	1.84	22.385	
600.0	597.1	590.0	587.3	1.4	1.3	125.23	13.7	-49.3	65.0	62.6	2.38	27.271	
700.0	694.3	682.3	677.2	1.8	1.7	126.90	18.6	-69.6	95.5	92.5	3.02	31.598	
800.0	790.7	771.9	763.4	2.3	2.2	127.81	24.3	-93.4	131.3	127.6	3.73	35.239	
900.0	887.0	859.2	846.2	2.8	2.7	127.39	30.7	-120.2	170.3	165.8	4.47	38.126	
1,000.0	983.3	950.7	932.3	3.3	3.3	126.69	38.0	-150.3	210.7	205.4	5.24	40.181	
1,100.0	1,079.6	1,042.1	1,018.4	3.8	3.9	126.21	45.2	-180.3	251.1	245.0	6.03	41.665	
1,200.0	1,175.9	1,133.6	1,104.4	4.2	4.5	125.86	52.4	-210.3	291.5	284.7	6.81	42.777	
1,300.0	1,272.2	1,225.0	1,190.5	4.7	5.0	125.60	59.7	-240.3	331.9	324.3	7.61	43.639	
1,400.0	1,368.5	1,316.5	1,276.6	5.2	5.6	125.40	66.9	-270.4	372.3	363.9	8.40	44.327	
1,500.0	1,464.9	1,407.9	1,362.7	5.7	6.2	125.24	74.1	-300.4	412.8	403.6	9.20	44.886	
1,600.0	1,561.2	1,499.4	1,448.8	6.2	6.8	125.10	81.4	-330.4	453.2	443.2	9.99	45.351	
1,700.0	1,657.5	1,590.9	1,534.9	6.7	7.4	124.99	88.6	-360.4	493.6	482.8	10.79	45.742	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-16B2 (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	-93.14	-1.5	-26.5	26.6				
100.0	100.0	100.0	100.0	0.1	0.1	-93.14	-1.5	-26.5	26.6	26.3	0.27	97.652	
200.0	200.0	200.0	200.0	0.3	0.3	-93.14	-1.5	-26.5	26.6	26.0	0.62	42.792	CC, ES
300.0	300.0	298.5	298.5	0.5	0.5	73.90	-1.2	-29.1	28.3	27.3	0.98	29.012	
400.0	399.6	396.5	396.1	0.7	0.7	86.79	-0.4	-36.6	34.8	33.4	1.37	25.390	SF
500.0	498.8	493.2	492.0	1.0	1.0	99.28	0.9	-48.9	47.9	46.1	1.84	26.055	
600.0	597.1	588.1	585.4	1.4	1.3	107.93	2.6	-65.6	68.2	65.8	2.41	28.335	
700.0	694.3	680.8	675.7	1.8	1.7	113.26	4.8	-86.4	95.3	92.2	3.08	30.907	
800.0	790.7	771.1	762.6	2.3	2.2	116.55	7.4	-110.8	127.9	124.1	3.83	33.438	
900.0	887.0	859.8	846.8	2.8	2.7	117.58	10.3	-138.8	164.0	159.4	4.60	35.648	
1,000.0	983.3	952.6	934.2	3.3	3.3	117.90	13.6	-169.6	201.4	196.0	5.41	37.212	
1,100.0	1,079.6	1,045.3	1,021.6	3.8	3.9	118.12	16.8	-200.5	238.9	232.6	6.23	38.311	
1,200.0	1,175.9	1,138.0	1,109.0	4.2	4.5	118.28	20.0	-231.3	276.3	269.2	7.06	39.118	
1,300.0	1,272.2	1,230.8	1,196.4	4.7	5.1	118.40	23.3	-262.1	313.7	305.8	7.90	39.734	
1,400.0	1,368.5	1,323.5	1,283.8	5.2	5.6	118.50	26.5	-293.0	351.1	342.4	8.73	40.218	
1,500.0	1,464.9	1,416.2	1,371.1	5.7	6.2	118.58	29.7	-323.8	388.6	379.0	9.57	40.608	
1,600.0	1,561.2	1,509.0	1,458.5	6.2	6.8	118.64	33.0	-354.7	426.0	415.6	10.41	40.928	
1,700.0	1,657.5	1,601.7	1,545.9	6.7	7.4	118.70	36.2	-385.5	463.4	452.2	11.25	41.195	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-16C (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	-102.64	-13.1	-58.5	59.9				
100.0	100.0	100.0	100.0	0.1	0.1	-102.64	-13.1	-58.5	59.9	59.6	0.27	220.055	
200.0	200.0	200.0	200.0	0.3	0.3	-102.64	-13.1	-58.5	59.9	59.3	0.62	96.429	CC, ES
300.0	300.0	296.9	296.9	0.5	0.5	61.22	-13.2	-60.9	61.1	60.1	0.97	62.889	
400.0	399.6	393.4	393.0	0.7	0.7	67.91	-13.4	-68.2	65.3	64.0	1.35	48.216	
500.0	498.8	488.8	487.7	1.0	1.0	76.97	-13.7	-80.3	74.1	72.3	1.81	40.984	
600.0	597.1	582.8	580.3	1.4	1.3	86.10	-14.2	-96.7	88.8	86.4	2.37	37.519	
700.0	694.3	675.0	670.1	1.8	1.7	93.79	-14.7	-117.2	110.0	106.9	3.05	36.039	
800.0	790.7	765.3	757.0	2.3	2.2	99.66	-15.4	-141.5	137.3	133.5	3.81	36.002	SF
900.0	887.0	855.0	842.3	2.8	2.7	102.88	-16.1	-169.6	169.2	164.6	4.61	36.690	
1,000.0	983.3	949.1	931.2	3.3	3.3	104.96	-17.0	-200.3	202.6	197.2	5.45	37.180	
1,100.0	1,079.6	1,043.1	1,020.0	3.8	3.8	106.45	-17.8	-231.1	236.2	229.9	6.30	37.484	
1,200.0	1,175.9	1,137.2	1,108.9	4.2	4.4	107.57	-18.7	-261.8	269.9	262.7	7.16	37.684	
1,300.0	1,272.2	1,231.2	1,197.8	4.7	5.0	108.44	-19.5	-292.6	303.6	295.6	8.03	37.822	
1,400.0	1,368.5	1,325.3	1,286.7	5.2	5.6	109.13	-20.3	-323.3	337.4	328.5	8.90	37.921	
1,500.0	1,464.9	1,419.3	1,375.5	5.7	6.2	109.70	-21.2	-354.1	371.2	361.5	9.77	37.995	
1,600.0	1,561.2	1,513.4	1,464.4	6.2	6.7	110.18	-22.0	-384.8	405.1	394.4	10.65	38.052	
1,700.0	1,657.5	1,607.4	1,553.3	6.7	7.3	110.58	-22.8	-415.6	439.0	427.4	11.52	38.096	
1,800.0	1,753.8	1,701.5	1,642.2	7.2	7.9	110.92	-23.7	-446.3	472.9	460.4	12.40	38.131	

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9B (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	27.13	102.0	52.2	114.6				
100.0	100.0	100.0	100.0	0.1	0.1	27.13	102.0	52.2	114.6	114.3	0.27	420.854	
200.0	200.0	200.0	200.0	0.3	0.3	27.13	102.0	52.2	114.6	114.0	0.62	184.419	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-171.63	102.0	52.2	117.2	116.2	0.97	120.832	
400.0	399.6	399.6	399.6	0.7	0.7	-172.13	102.0	52.2	124.9	123.6	1.32	94.929	
500.0	498.8	497.1	497.0	1.0	0.8	-173.81	103.5	50.3	138.5	136.8	1.66	83.426	
600.0	597.1	592.6	592.2	1.4	1.0	-177.05	108.1	44.7	158.7	156.7	2.01	78.766	
700.0	694.3	685.2	684.2	1.8	1.3	179.06	115.4	35.7	186.1	183.7	2.39	77.759	
800.0	790.7	774.7	772.3	2.3	1.6	175.17	125.0	23.8	219.4	216.6	2.83	77.661	
900.0	887.0	861.8	857.3	2.8	1.9	171.49	136.9	9.1	255.6	252.3	3.31	77.171	
1,000.0	983.3	946.1	938.7	3.3	2.3	168.07	150.7	-8.0	294.7	290.9	3.85	76.585	
1,100.0	1,079.6	1,027.5	1,016.3	3.8	2.7	164.94	166.2	-27.2	337.0	332.5	4.43	76.097	
1,200.0	1,175.9	1,105.9	1,089.9	4.2	3.2	162.09	183.1	-48.0	382.3	377.2	5.04	75.868	
1,300.0	1,272.2	1,186.0	1,164.1	4.7	3.8	159.40	202.1	-71.5	430.4	424.7	5.69	75.639	
1,400.0	1,368.5	1,271.4	1,243.0	5.2	4.4	157.02	222.6	-96.8	479.6	473.2	6.37	75.249	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9B2 (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	-29.41	106.7	-60.2	122.5				
100.0	100.0	100.0	100.0	0.1	0.1	-29.41	106.7	-60.2	122.5	122.2	0.27	449.946	
200.0	200.0	200.0	200.0	0.3	0.3	-29.41	106.7	-60.2	122.5	121.9	0.62	197.168	CC, ES
300.0	300.0	294.6	294.5	0.5	0.5	132.23	107.9	-62.2	126.4	125.4	0.97	130.678	
400.0	399.6	388.3	388.0	0.7	0.7	132.81	111.5	-68.1	138.1	136.8	1.34	103.051	
500.0	498.8	480.3	479.2	1.0	0.9	133.52	117.3	-77.8	157.5	155.7	1.76	89.579	
600.0	597.1	569.8	567.5	1.4	1.3	134.18	125.1	-90.8	184.3	182.1	2.23	82.567	
700.0	694.3	656.1	651.8	1.8	1.6	134.66	134.6	-106.6	218.4	215.7	2.77	78.873	
800.0	790.7	739.2	732.1	2.3	2.0	135.42	145.6	-125.0	258.3	255.0	3.35	77.155	
900.0	887.0	819.8	809.0	2.8	2.5	135.69	158.0	-145.7	301.5	297.6	3.96	76.197	
1,000.0	983.3	897.8	882.4	3.3	3.0	135.53	171.6	-168.3	347.7	343.1	4.59	75.756	
1,100.0	1,079.6	984.3	963.0	3.8	3.6	135.19	187.7	-195.0	395.7	390.4	5.26	75.186	
1,200.0	1,175.9	1,072.0	1,044.8	4.2	4.2	134.92	204.0	-222.2	443.6	437.7	5.95	74.619	
1,300.0	1,272.2	1,159.7	1,126.6	4.7	4.7	134.70	220.3	-249.4	491.6	485.0	6.63	74.128	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9C (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	14.14	100.9	25.4	104.0				
100.0	100.0	100.0	100.0	0.1	0.1	14.14	100.9	25.4	104.0	103.8	0.27	382.092	
200.0	200.0	200.0	200.0	0.3	0.3	14.14	100.9	25.4	104.0	103.4	0.62	167.434	CC, ES
300.0	300.0	298.9	298.8	0.5	0.5	174.31	101.9	23.1	107.1	106.2	0.98	109.792	
400.0	399.6	396.9	396.5	0.7	0.7	170.98	105.1	16.2	116.7	115.3	1.36	85.744	
500.0	498.8	493.1	492.0	1.0	1.0	166.54	110.2	5.0	133.3	131.5	1.79	74.254	
600.0	597.1	586.9	584.3	1.4	1.3	161.91	117.1	-10.1	157.2	155.0	2.29	68.779	
700.0	694.3	677.5	672.6	1.8	1.7	157.67	125.6	-28.6	188.7	185.9	2.84	66.413	
800.0	790.7	764.9	756.7	2.3	2.2	154.24	135.4	-50.0	226.0	222.5	3.47	65.078	
900.0	887.0	849.6	837.2	2.8	2.7	151.12	146.4	-74.1	266.2	262.0	4.16	64.031	
1,000.0	983.3	935.9	918.0	3.3	3.2	148.20	158.9	-101.4	309.0	304.1	4.88	63.288	
1,100.0	1,079.6	1,025.0	1,001.5	3.8	3.8	145.84	172.0	-129.9	352.5	346.9	5.63	62.657	
1,200.0	1,175.9	1,114.2	1,084.9	4.2	4.4	144.00	185.0	-158.5	396.5	390.1	6.37	62.214	
1,300.0	1,272.2	1,203.3	1,168.4	4.7	5.0	142.52	198.1	-187.0	440.7	433.6	7.12	61.898	
1,400.0	1,368.5	1,292.5	1,251.8	5.2	5.6	141.31	211.1	-215.6	485.1	477.3	7.87	61.666	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9D (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	12.69	90.3	20.3	92.6				
100.0	100.0	100.0	100.0	0.1	0.1	12.69	90.3	20.3	92.6	92.3	0.27	340.067	
200.0	200.0	200.0	200.0	0.3	0.3	12.69	90.3	20.3	92.6	92.0	0.62	149.018	CC, ES
300.0	300.0	303.3	303.2	0.5	0.5	174.52	88.5	20.3	93.4	92.5	0.98	95.769	
400.0	399.6	404.0	403.8	0.7	0.7	175.18	83.9	19.7	96.7	95.4	1.32	73.054	
500.0	498.8	502.1	501.8	1.0	0.9	173.63	81.4	15.0	106.1	104.4	1.67	63.424	
600.0	597.1	598.8	598.1	1.4	1.1	170.37	81.2	6.1	122.3	120.2	2.06	59.498	
700.0	694.3	693.1	691.5	1.8	1.3	166.46	83.3	-6.6	145.7	143.2	2.50	58.202	
800.0	790.7	784.9	781.7	2.3	1.6	162.67	87.5	-22.9	174.9	171.9	3.04	57.475	
900.0	887.0	874.4	868.9	2.8	2.0	158.94	93.6	-42.4	207.0	203.3	3.67	56.398	
1,000.0	983.3	961.5	952.6	3.3	2.4	155.40	101.5	-64.8	242.2	237.8	4.36	55.604	
1,100.0	1,079.6	1,052.7	1,039.8	3.8	2.9	152.17	110.8	-90.2	279.5	274.4	5.10	54.815	
1,200.0	1,175.9	1,144.5	1,127.4	4.2	3.4	149.68	120.3	-115.8	317.4	311.6	5.85	54.280	
1,300.0	1,272.2	1,236.2	1,215.0	4.7	3.9	147.72	129.7	-141.4	355.8	349.2	6.60	53.919	
1,400.0	1,368.5	1,327.9	1,302.5	5.2	4.4	146.13	139.1	-167.0	394.4	387.1	7.35	53.674	
1,500.0	1,464.9	1,419.7	1,390.1	5.7	4.9	144.83	148.6	-192.6	433.3	425.2	8.10	53.508	
1,600.0	1,561.2	1,511.4	1,477.7	6.2	5.4	143.74	158.0	-218.1	472.3	463.4	8.84	53.395	SF

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 21-5A (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-5A (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KBE @ 7903.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinates are relative to: MCU 21-5A (M16W Pad)
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°