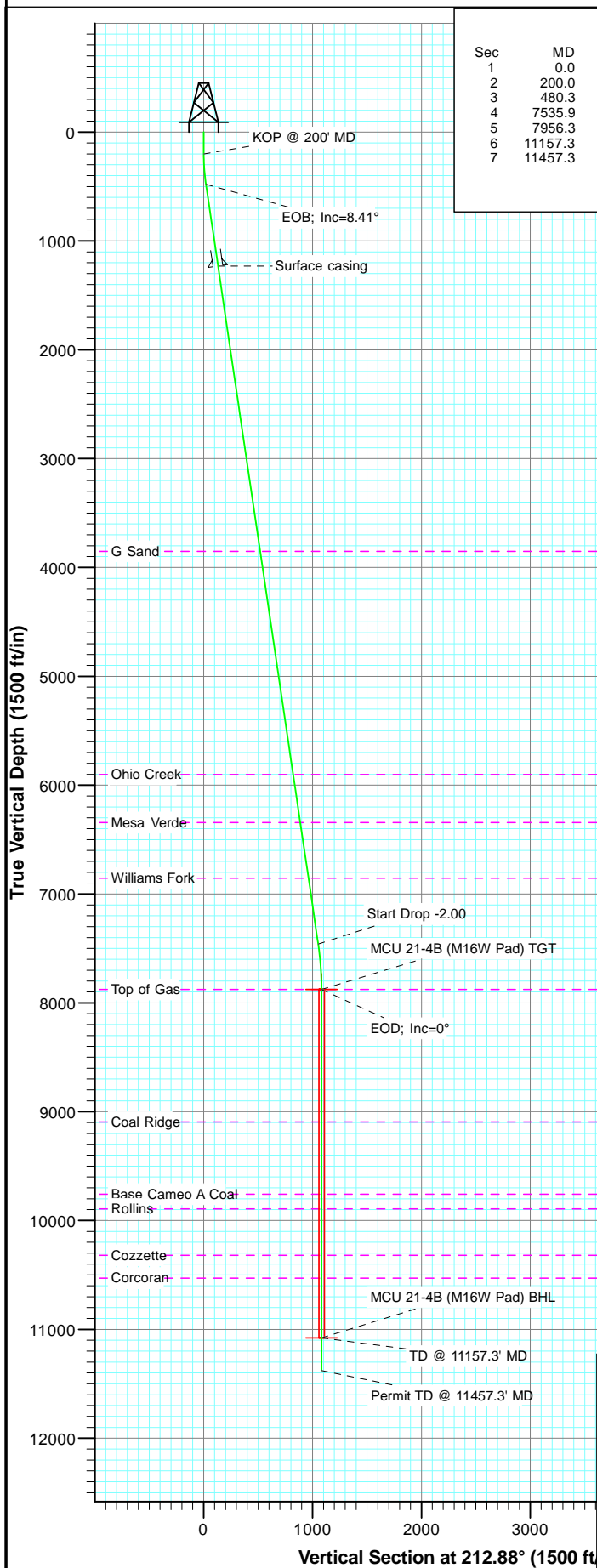
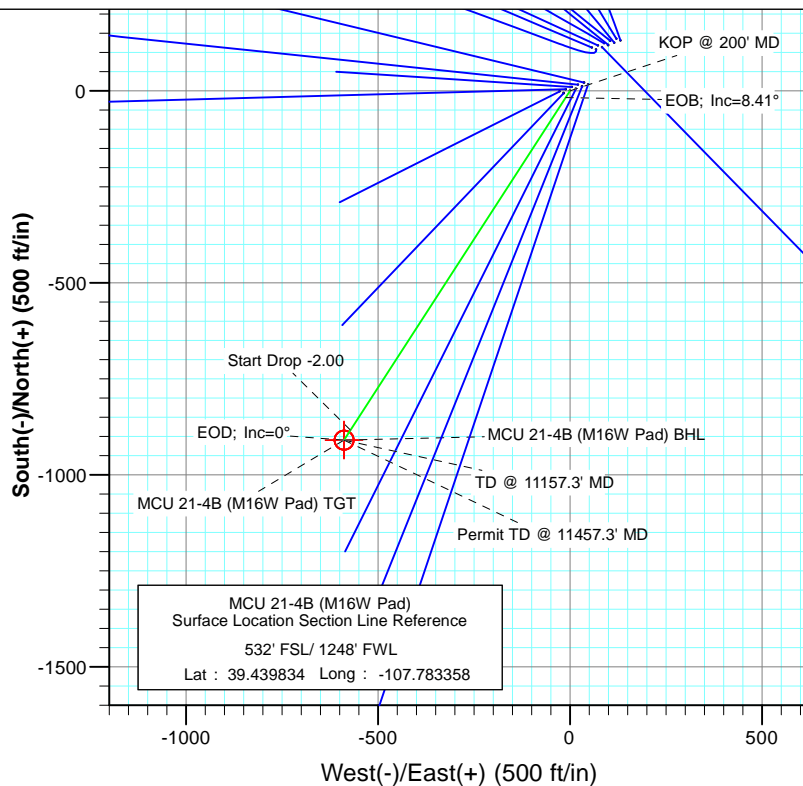




Project: Mamm Creek  
Site: SWSW S16-T7S-R93W (M16W Pad)  
Well: MCU 21-4B (M16W Pad)  
Wellbore: DD  
Plan: Plan #1



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	480.3	8.41	212.88	479.3	-17.2	-11.1	3.00	212.88	20.5	
4	7535.9	8.41	212.88	7459.1	-883.6	-571.3	0.00	0.00	1052.2	
5	7956.3	0.00	0.00	7878.0	-909.5	-588.0	2.00	180.00	1083.0	MCU 21-4B (M16W Pad) TGT
6	11157.3	0.00	0.00	11079.0	-909.5	-588.0	0.00	0.00	1083.0	MCU 21-4B (M16W Pad) BHL
7	11457.3	0.00	0.00	11379.0	-909.5	-588.0	0.00	0.00	1083.0	



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3852.0	3889.7	G Sand
5902.0	5961.9	Ohio Creek
6343.0	6407.7	Mesa Verde
6855.0	6925.3	Williams Fork
7878.0	7956.3	Top of Gas
9094.0	9172.3	Coal Ridge
9758.0	9836.3	Base Cameo A Coal
9894.0	9972.3	Rollins
10320.0	10398.3	Cozzette
10529.0	10607.3	Corcoran

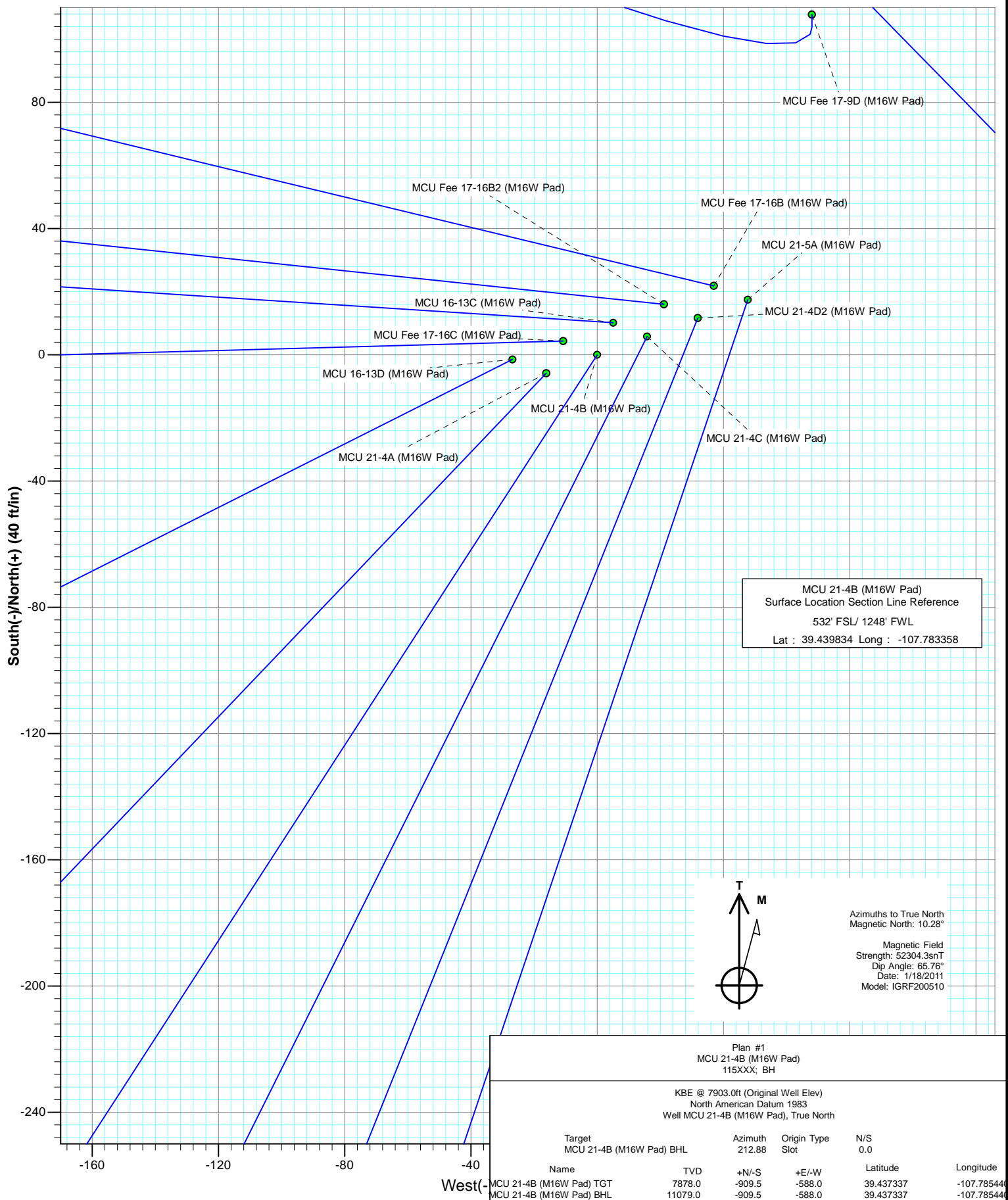


Azimuths to True North  
Magnetic North: 10.28°  
  
Magnetic Field  
Strength: 52304.3nT  
Dip Angle: 65.76°  
Date: 1/18/2011  
Model: IGRF200510

Plan #1 MCU 21-4B (M16W Pad) 115XXX; BH					
KBE @ 7903.0ft (Original Well Elev) North American Datum 1983 Well MCU 21-4B (M16W Pad), True North					
Target MCU 21-4B (M16W Pad) BHL	Azimuth 212.88	Origin Type Slot	N/S 0.0		
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-4B (M16W Pad) TGT	7878.0	-909.5	-588.0	39.437337	-107.785440
MCU 21-4B (M16W Pad) BHL	11079.0	-909.5	-588.0	39.437337	-107.785440

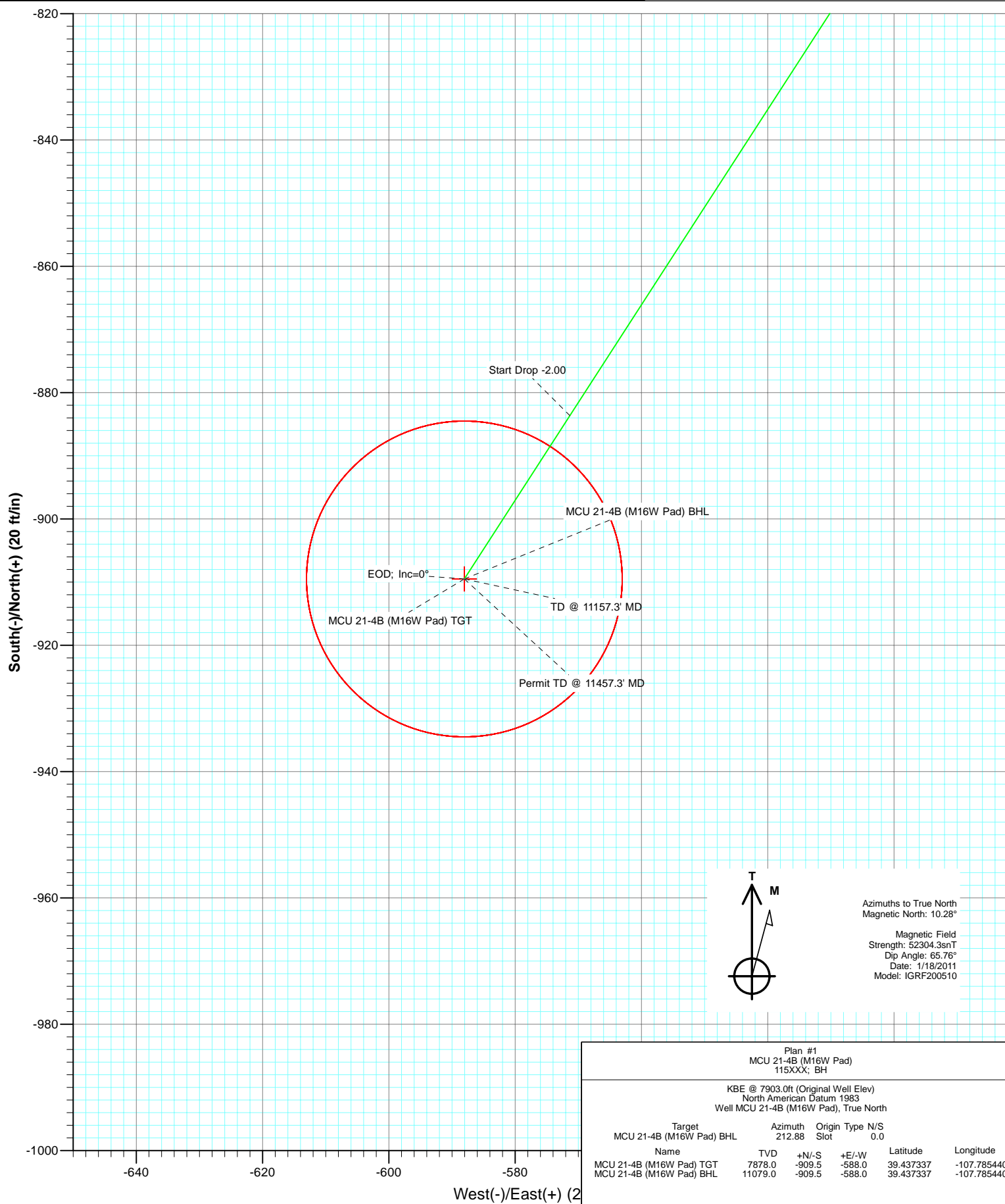


Project: Mamm Creek  
Site: SWSW S16-T7S-R93W (M16W Pad)  
Well: MCU 21-4B (M16W Pad)  
Wellbore: DD  
Plan: Plan #1





Project: Mamm Creek  
 Site: SWSW S16-T7S-R93W (M16W Pad)  
 Well: MCU 21-4B (M16W Pad)  
 Wellbore: DD  
 Plan: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<b>Project</b>	Mamm Creek		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	SWSW S16-T7S-R93W (M16W Pad)			
<b>Site Position:</b>		<b>Northing:</b>	1,593,196.17 ft	<b>Latitude:</b> 39.439834
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,355,193.71 ft	<b>Longitude:</b> -107.783358
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.44 °

<b>Well</b>	MCU 21-4B (M16W Pad)			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,593,196.17 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,355,193.71 ft
<b>Position Uncertainty</b>	0.0 ft		<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	7,881.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	1/18/2011	10.27	65.76	52,304

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	212.88

<b>Plan Sections</b>										
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	
480.3	8.41	212.88	479.3	-17.2	-11.1	3.00	3.00	0.00	212.88	
7,535.9	8.41	212.88	7,459.1	-883.6	-571.3	0.00	0.00	0.00	0.00	
7,956.3	0.00	0.00	7,878.0	-909.5	-588.0	2.00	-2.00	0.00	180.00	MCU 21-4B (M16W P
11,157.3	0.00	0.00	11,079.0	-909.5	-588.0	0.00	0.00	0.00	0.00	MCU 21-4B (M16W P
11,457.3	0.00	0.00	11,379.0	-909.5	-588.0	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	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	212.88	300.0	-2.2	-1.4	2.6	3.00	3.00	
400.0	6.00	212.88	399.6	-8.8	-5.7	10.5	3.00	3.00	
480.3	8.41	212.88	479.3	-17.2	-11.1	20.5	3.00	3.00	EOB; Inc=8.41°
500.0	8.41	212.88	498.8	-19.7	-12.7	23.4	0.00	0.00	
600.0	8.41	212.88	597.7	-31.9	-20.7	38.0	0.00	0.00	
700.0	8.41	212.88	696.6	-44.2	-28.6	52.7	0.00	0.00	
800.0	8.41	212.88	795.6	-56.5	-36.5	67.3	0.00	0.00	
900.0	8.41	212.88	894.5	-68.8	-44.5	81.9	0.00	0.00	
1,000.0	8.41	212.88	993.4	-81.1	-52.4	96.5	0.00	0.00	
1,100.0	8.41	212.88	1,092.3	-93.3	-60.3	111.1	0.00	0.00	
1,200.0	8.41	212.88	1,191.3	-105.6	-68.3	125.8	0.00	0.00	
1,240.2	8.41	212.88	1,231.0	-110.5	-71.5	131.6	0.00	0.00	Surface casing
1,300.0	8.41	212.88	1,290.2	-117.9	-76.2	140.4	0.00	0.00	
1,400.0	8.41	212.88	1,389.1	-130.2	-84.2	155.0	0.00	0.00	
1,500.0	8.41	212.88	1,488.0	-142.5	-92.1	169.6	0.00	0.00	
1,600.0	8.41	212.88	1,587.0	-154.7	-100.0	184.3	0.00	0.00	
1,700.0	8.41	212.88	1,685.9	-167.0	-108.0	198.9	0.00	0.00	
1,800.0	8.41	212.88	1,784.8	-179.3	-115.9	213.5	0.00	0.00	
1,900.0	8.41	212.88	1,883.7	-191.6	-123.9	228.1	0.00	0.00	
2,000.0	8.41	212.88	1,982.7	-203.9	-131.8	242.7	0.00	0.00	
2,100.0	8.41	212.88	2,081.6	-216.1	-139.7	257.4	0.00	0.00	
2,200.0	8.41	212.88	2,180.5	-228.4	-147.7	272.0	0.00	0.00	
2,300.0	8.41	212.88	2,279.4	-240.7	-155.6	286.6	0.00	0.00	
2,400.0	8.41	212.88	2,378.4	-253.0	-163.6	301.2	0.00	0.00	
2,500.0	8.41	212.88	2,477.3	-265.2	-171.5	315.9	0.00	0.00	
2,600.0	8.41	212.88	2,576.2	-277.5	-179.4	330.5	0.00	0.00	
2,700.0	8.41	212.88	2,675.1	-289.8	-187.4	345.1	0.00	0.00	
2,800.0	8.41	212.88	2,774.1	-302.1	-195.3	359.7	0.00	0.00	
2,900.0	8.41	212.88	2,873.0	-314.4	-203.3	374.3	0.00	0.00	
3,000.0	8.41	212.88	2,971.9	-326.6	-211.2	389.0	0.00	0.00	
3,100.0	8.41	212.88	3,070.8	-338.9	-219.1	403.6	0.00	0.00	
3,200.0	8.41	212.88	3,169.8	-351.2	-227.1	418.2	0.00	0.00	
3,300.0	8.41	212.88	3,268.7	-363.5	-235.0	432.8	0.00	0.00	
3,400.0	8.41	212.88	3,367.6	-375.8	-243.0	447.5	0.00	0.00	
3,500.0	8.41	212.88	3,466.5	-388.0	-250.9	462.1	0.00	0.00	
3,600.0	8.41	212.88	3,565.5	-400.3	-258.8	476.7	0.00	0.00	
3,700.0	8.41	212.88	3,664.4	-412.6	-266.8	491.3	0.00	0.00	
3,800.0	8.41	212.88	3,763.3	-424.9	-274.7	506.0	0.00	0.00	
3,889.7	8.41	212.88	3,852.0	-435.9	-281.8	519.1	0.00	0.00	G Sand
3,900.0	8.41	212.88	3,862.2	-437.2	-282.6	520.6	0.00	0.00	
4,000.0	8.41	212.88	3,961.2	-449.4	-290.6	535.2	0.00	0.00	
4,100.0	8.41	212.88	4,060.1	-461.7	-298.5	549.8	0.00	0.00	
4,200.0	8.41	212.88	4,159.0	-474.0	-306.5	564.4	0.00	0.00	
4,300.0	8.41	212.88	4,257.9	-486.3	-314.4	579.1	0.00	0.00	
4,400.0	8.41	212.88	4,356.9	-498.6	-322.3	593.7	0.00	0.00	
4,500.0	8.41	212.88	4,455.8	-510.8	-330.3	608.3	0.00	0.00	
4,600.0	8.41	212.88	4,554.7	-523.1	-338.2	622.9	0.00	0.00	
4,700.0	8.41	212.88	4,653.6	-535.4	-346.2	637.6	0.00	0.00	
4,800.0	8.41	212.88	4,752.6	-547.7	-354.1	652.2	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	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	8.41	212.88	4,851.5	-560.0	-362.0	666.8	0.00	0.00	
5,000.0	8.41	212.88	4,950.4	-572.2	-370.0	681.4	0.00	0.00	
5,100.0	8.41	212.88	5,049.3	-584.5	-377.9	696.0	0.00	0.00	
5,200.0	8.41	212.88	5,148.3	-596.8	-385.9	710.7	0.00	0.00	
5,300.0	8.41	212.88	5,247.2	-609.1	-393.8	725.3	0.00	0.00	
5,400.0	8.41	212.88	5,346.1	-621.3	-401.7	739.9	0.00	0.00	
5,500.0	8.41	212.88	5,445.0	-633.6	-409.7	754.5	0.00	0.00	
5,600.0	8.41	212.88	5,544.0	-645.9	-417.6	769.2	0.00	0.00	
5,700.0	8.41	212.88	5,642.9	-658.2	-425.6	783.8	0.00	0.00	
5,800.0	8.41	212.88	5,741.8	-670.5	-433.5	798.4	0.00	0.00	
5,900.0	8.41	212.88	5,840.7	-682.7	-441.4	813.0	0.00	0.00	
5,961.9	8.41	212.88	5,902.0	-690.3	-446.3	822.1	0.00	0.00	Ohio Creek
6,000.0	8.41	212.88	5,939.7	-695.0	-449.4	827.6	0.00	0.00	
6,100.0	8.41	212.88	6,038.6	-707.3	-457.3	842.3	0.00	0.00	
6,200.0	8.41	212.88	6,137.5	-719.6	-465.2	856.9	0.00	0.00	
6,300.0	8.41	212.88	6,236.4	-731.9	-473.2	871.5	0.00	0.00	
6,400.0	8.41	212.88	6,335.4	-744.1	-481.1	886.1	0.00	0.00	
6,407.7	8.41	212.88	6,343.0	-745.1	-481.7	887.3	0.00	0.00	Mesa Verde
6,500.0	8.41	212.88	6,434.3	-756.4	-489.1	900.8	0.00	0.00	
6,600.0	8.41	212.88	6,533.2	-768.7	-497.0	915.4	0.00	0.00	
6,700.0	8.41	212.88	6,632.1	-781.0	-504.9	930.0	0.00	0.00	
6,800.0	8.41	212.88	6,731.1	-793.3	-512.9	944.6	0.00	0.00	
6,900.0	8.41	212.88	6,830.0	-805.5	-520.8	959.2	0.00	0.00	
6,925.3	8.41	212.88	6,855.0	-808.6	-522.8	962.9	0.00	0.00	Williams Fork
7,000.0	8.41	212.88	6,928.9	-817.8	-528.8	973.9	0.00	0.00	
7,100.0	8.41	212.88	7,027.8	-830.1	-536.7	988.5	0.00	0.00	
7,200.0	8.41	212.88	7,126.8	-842.4	-544.6	1,003.1	0.00	0.00	
7,300.0	8.41	212.88	7,225.7	-854.7	-552.6	1,017.7	0.00	0.00	
7,400.0	8.41	212.88	7,324.6	-866.9	-560.5	1,032.4	0.00	0.00	
7,500.0	8.41	212.88	7,423.5	-879.2	-568.5	1,047.0	0.00	0.00	
7,535.9	8.41	212.88	7,459.1	-883.6	-571.3	1,052.2	0.00	0.00	Start Drop -2.00
7,600.0	7.13	212.88	7,522.6	-890.9	-576.0	1,060.9	2.00	-2.00	
7,700.0	5.13	212.88	7,622.0	-899.9	-581.8	1,071.6	2.00	-2.00	
7,800.0	3.13	212.88	7,721.7	-905.9	-585.7	1,078.8	2.00	-2.00	
7,900.0	1.13	212.88	7,821.7	-909.0	-587.7	1,082.5	2.00	-2.00	
7,956.3	0.00	0.00	7,878.0	-909.5	-588.0	1,083.0	2.00	-2.00	EOD; Inc=0° - Top of Gas - MCU 21-4B (M16W)
8,000.0	0.00	0.00	7,921.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,100.0	0.00	0.00	8,021.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,200.0	0.00	0.00	8,121.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,300.0	0.00	0.00	8,221.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,400.0	0.00	0.00	8,321.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,500.0	0.00	0.00	8,421.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,600.0	0.00	0.00	8,521.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,700.0	0.00	0.00	8,621.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,800.0	0.00	0.00	8,721.7	-909.5	-588.0	1,083.0	0.00	0.00	
8,900.0	0.00	0.00	8,821.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,000.0	0.00	0.00	8,921.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,100.0	0.00	0.00	9,021.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,172.3	0.00	0.00	9,094.0	-909.5	-588.0	1,083.0	0.00	0.00	Coal Ridge
9,200.0	0.00	0.00	9,121.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,300.0	0.00	0.00	9,221.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,400.0	0.00	0.00	9,321.7	-909.5	-588.0	1,083.0	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	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	9,421.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,600.0	0.00	0.00	9,521.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,700.0	0.00	0.00	9,621.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,800.0	0.00	0.00	9,721.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,836.3	0.00	0.00	9,758.0	-909.5	-588.0	1,083.0	0.00	0.00	Base Cameo A Coal
9,900.0	0.00	0.00	9,821.7	-909.5	-588.0	1,083.0	0.00	0.00	
9,972.3	0.00	0.00	9,894.0	-909.5	-588.0	1,083.0	0.00	0.00	Rollins
10,000.0	0.00	0.00	9,921.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,100.0	0.00	0.00	10,021.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,200.0	0.00	0.00	10,121.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,300.0	0.00	0.00	10,221.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,398.3	0.00	0.00	10,320.0	-909.5	-588.0	1,083.0	0.00	0.00	Cozzette
10,400.0	0.00	0.00	10,321.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,500.0	0.00	0.00	10,421.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,600.0	0.00	0.00	10,521.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,607.3	0.00	0.00	10,529.0	-909.5	-588.0	1,083.0	0.00	0.00	Corcoran
10,700.0	0.00	0.00	10,621.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,800.0	0.00	0.00	10,721.7	-909.5	-588.0	1,083.0	0.00	0.00	
10,900.0	0.00	0.00	10,821.7	-909.5	-588.0	1,083.0	0.00	0.00	
11,000.0	0.00	0.00	10,921.7	-909.5	-588.0	1,083.0	0.00	0.00	
11,100.0	0.00	0.00	11,021.7	-909.5	-588.0	1,083.0	0.00	0.00	
11,157.3	0.00	0.00	11,079.0	-909.5	-588.0	1,083.0	0.00	0.00	TD @ 11157.3' MD - MCU 21-4B (M16W Pad) I
11,200.0	0.00	0.00	11,121.7	-909.5	-588.0	1,083.0	0.00	0.00	
11,300.0	0.00	0.00	11,221.7	-909.5	-588.0	1,083.0	0.00	0.00	
11,400.0	0.00	0.00	11,321.7	-909.5	-588.0	1,083.0	0.00	0.00	
11,457.3	0.00	0.00	11,379.0	-909.5	-588.0	1,083.0	0.00	0.00	Permit TD @ 11457.3' MD

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
MCU 21-4B (M16W Pad - plan hits target center - Circle (radius 25.0)	0.00	0.00	11,079.0	-909.5	-588.0	1,592,301.75	2,354,583.01	39.437337	-107.785440
MCU 21-4B (M16W Pad - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,878.0	-909.5	-588.0	1,592,301.75	2,354,583.01	39.437337	-107.785440

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,240.2	1,231.0	Surface casing	0.000	0.000

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>North Reference:</b>	True
<b>Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,889.7	3,852.0	G Sand		0.00		
5,961.9	5,902.0	Ohio Creek		0.00		
6,407.7	6,343.0	Mesa Verde		0.00		
6,925.3	6,855.0	Williams Fork		0.00		
7,956.3	7,878.0	Top of Gas		0.00		
9,172.3	9,094.0	Coal Ridge		0.00		
9,836.3	9,758.0	Base Cameo A Coal		0.00		
9,972.3	9,894.0	Rollins		0.00		
10,398.3	10,320.0	Cozzette		0.00		
10,607.3	10,529.0	Corcoran		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP @ 200' MD	
480.3	479.3	-17.2	-11.1	EOB; Inc=8.41°	
7,535.9	7,459.1	-883.6	-571.3	Start Drop -2.00	
7,956.3	7,878.0	-909.5	-588.0	EOD; Inc=0°	
11,157.3	11,079.0	-909.5	-588.0	TD @ 11157.3' MD	
11,457.3	11,379.0	-909.5	-588.0	Permit TD @ 11457.3' MD	



# **EnCana Oil & Gas (USA) Inc**

**Mamm Creek**

**SWSW S16-T7S-R93W (M16W Pad)**

**MCU 21-4B (M16W Pad)**

**DD**

**Plan #1**

## **Anticollision Report**

**28 January, 2011**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #1		
Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
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		

<b>Survey Tool Program</b>	<b>Date</b>	1/20/2011		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,457.3	Plan #1 (DD)	MWD	Geolink MWD

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

### Summary

Site Name Offset Well - Wellbore - Design	Reference Measured	Offset Measured	Distance		Separation Factor	Warning
	Depth (ft)	Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
SWSW S16-T7S-R93W (M16W Pad)						
MCU 16-13A (M16W Pad) - DD - Plan #1	200.0	200.0	167.3	166.7	269.326	CC, ES
MCU 16-13A (M16W Pad) - DD - Plan #1	2,100.0	2,063.8	491.0	482.0	54.587	SF
MCU 16-13B (M16W Pad) - DD - Plan #1	200.0	200.0	126.3	125.7	203.274	CC, ES
MCU 16-13B (M16W Pad) - DD - Plan #1	2,700.0	2,670.1	494.8	483.2	42.637	SF
MCU 16-13C (M16W Pad) - DD - Plan #1	200.0	200.0	11.4	10.8	18.327	CC, ES
MCU 16-13C (M16W Pad) - DD - Plan #1	300.0	300.2	13.1	12.2	13.431	SF
MCU 16-13D (M16W Pad) - DD - Plan #1	200.0	200.0	26.9	26.2	43.246	CC, ES
MCU 16-13D (M16W Pad) - DD - Plan #1	900.0	896.1	52.6	48.7	13.473	SF
MCU 21-3B (M16W Pad) - DD - Plan #1	200.0	200.0	141.2	140.6	227.296	CC, ES
MCU 21-3B (M16W Pad) - DD - Plan #1	2,000.0	1,952.7	481.7	470.7	43.715	SF
MCU 21-4A (M16W Pad) - DD - Plan #1	200.0	200.0	17.1	16.5	27.559	CC
MCU 21-4A (M16W Pad) - DD - Plan #1	600.0	598.1	18.2	15.8	7.652	ES
MCU 21-4A (M16W Pad) - DD - Plan #1	1,000.0	997.8	25.8	21.1	5.517	SF
MCU 21-4C (M16W Pad) - DD - Plan #1	200.0	200.0	16.9	16.2	27.123	CC
MCU 21-4C (M16W Pad) - DD - Plan #1	700.0	702.0	18.1	14.9	5.684	ES
MCU 21-4C (M16W Pad) - DD - Plan #1	1,000.0	1,001.8	23.2	18.0	4.502	SF
MCU 21-4D2 (M16W Pad) - DD - Plan #1	200.0	200.0	34.0	33.4	54.675	CC
MCU 21-4D2 (M16W Pad) - DD - Plan #1	300.0	301.2	34.3	33.3	34.976	ES
MCU 21-4D2 (M16W Pad) - DD - Plan #1	1,000.0	1,003.2	46.3	40.9	8.587	SF
MCU 21-5A (M16W Pad) - DD - Plan #1	200.0	200.0	50.8	50.2	81.805	CC, ES
MCU 21-5A (M16W Pad) - DD - Plan #1	1,000.0	1,004.3	67.3	61.7	11.959	SF
MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1	200.0	200.0	170.6	170.0	274.574	CC, ES
MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1	1,800.0	1,751.5	488.7	481.0	63.335	SF
MCU Fee 16-2C (M16W Pad) - DD - Plan #1	200.0	200.0	182.0	181.4	292.966	CC, ES
MCU Fee 16-2C (M16W Pad) - DD - Plan #1	1,500.0	1,439.2	474.0	467.6	74.327	SF
MCU Fee 16-5C (M16W Pad) - DD - Plan #1	200.0	200.0	186.0	185.4	299.315	CC, ES
MCU Fee 16-5C (M16W Pad) - DD - Plan #1	1,300.0	1,190.8	491.5	486.1	90.244	SF
MCU Fee 17-16B (M16W Pad) - DD - Plan #1	200.0	200.0	43.0	42.3	69.150	CC, ES
MCU Fee 17-16B (M16W Pad) - DD - Plan #1	700.0	697.9	81.3	78.3	26.446	SF
MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1	200.0	200.0	26.6	25.9	42.740	CC, ES
MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1	600.0	599.5	52.3	49.9	21.394	SF
MCU Fee 17-16C (M16W Pad) - DD - Plan #1	200.0	200.0	11.6	11.0	18.645	CC, ES
MCU Fee 17-16C (M16W Pad) - DD - Plan #1	300.0	299.4	13.6	12.6	13.841	SF
MCU Fee 17-9B (M16W pad) - DD - Plan #1	200.0	200.0	155.8	155.2	250.707	CC, ES
MCU Fee 17-9B (M16W pad) - DD - Plan #1	1,300.0	1,224.8	406.9	400.2	60.439	SF
MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1	200.0	200.0	152.9	152.3	246.122	CC, ES
MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1	1,400.0	1,329.9	418.0	410.2	53.928	SF
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	100.0	100.0	139.1	138.9	511.013	CC
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	200.0	200.0	139.1	138.5	223.927	ES
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	1,400.0	1,341.7	390.1	382.2	49.662	SF
MCU Fee 17-9D (M16W Pad) - DD - Plan #1	200.0	200.0	127.5	126.9	205.192	CC, ES
MCU Fee 17-9D (M16W Pad) - DD - Plan #1	1,600.0	1,562.2	351.2	342.5	40.437	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	39.01	130.0	105.3	167.3					
100.0	100.0	100.0	100.0	0.1	0.1	39.01	130.0	105.3	167.3	167.1	0.27	614.615		
200.0	200.0	200.0	200.0	0.3	0.3	39.01	130.0	105.3	167.3	166.7	0.62	269.326 CC, ES		
300.0	300.0	299.9	299.8	0.5	0.5	-174.84	131.7	103.3	170.0	169.0	0.98	173.786		
400.0	399.6	398.9	398.5	0.7	0.7	-177.55	136.5	97.3	178.1	176.7	1.37	130.238		
500.0	498.8	496.8	495.7	1.0	1.0	178.71	144.0	88.0	192.2	190.4	1.78	107.718		
600.0	597.7	594.7	592.9	1.3	1.2	175.37	151.7	78.4	208.7	206.5	2.22	94.210		
700.0	696.6	692.7	690.0	1.6	1.5	172.53	159.5	68.7	225.9	223.2	2.65	85.165		
800.0	795.6	790.6	787.2	1.9	1.8	170.08	167.3	59.0	243.5	240.4	3.09	78.731		
900.0	894.5	888.5	884.3	2.2	2.0	167.97	175.1	49.4	261.5	257.9	3.54	73.941		
1,000.0	993.4	986.5	981.4	2.5	2.3	166.13	182.8	39.7	279.8	275.8	3.98	70.247		
1,100.0	1,092.3	1,084.4	1,078.6	2.8	2.6	164.51	190.6	30.0	298.3	293.9	4.43	67.317		
1,200.0	1,191.3	1,182.4	1,175.7	3.1	2.9	163.09	198.4	20.4	317.1	312.2	4.88	64.940		
1,300.0	1,290.2	1,280.3	1,272.9	3.4	3.1	161.82	206.2	10.7	336.0	330.6	5.33	62.976		
1,400.0	1,389.1	1,378.2	1,370.0	3.7	3.4	160.69	213.9	1.1	355.0	349.2	5.79	61.328		
1,500.0	1,488.0	1,476.2	1,467.2	4.0	3.7	159.67	221.7	-8.6	374.2	368.0	6.24	59.927		
1,600.0	1,587.0	1,574.1	1,564.3	4.3	4.0	158.75	229.5	-18.3	393.5	386.8	6.70	58.722		
1,700.0	1,685.9	1,672.0	1,661.5	4.6	4.2	157.92	237.3	-27.9	412.9	405.7	7.16	57.675		
1,800.0	1,784.8	1,770.0	1,758.6	5.0	4.5	157.16	245.0	-37.6	432.3	424.7	7.62	56.759		
1,900.0	1,883.7	1,867.9	1,855.8	5.3	4.8	156.47	252.8	-47.2	451.8	443.7	8.08	55.949		
2,000.0	1,982.7	1,965.9	1,952.9	5.6	5.1	155.83	260.6	-56.9	471.4	462.8	8.53	55.230		
2,100.0	2,081.6	2,063.8	2,050.1	5.9	5.3	155.24	268.4	-66.6	491.0	482.0	8.99	54.587 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance				Total	Separation	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	27.00	112.5	57.3	126.3					
100.0	100.0	100.0	100.0	0.1	0.1	27.00	112.5	57.3	126.3	126.0	0.27	463.882		
200.0	200.0	200.0	200.0	0.3	0.3	27.00	112.5	57.3	126.3	125.7	0.62	203.274 CC, ES		
300.0	300.0	300.3	300.3	0.5	0.5	173.05	113.6	54.9	128.7	127.8	0.98	131.506		
400.0	399.6	400.0	399.6	0.7	0.7	170.13	116.6	47.7	136.3	134.9	1.37	99.647		
500.0	498.8	498.9	498.1	1.0	0.9	167.16	120.4	38.8	149.2	147.5	1.77	84.257		
600.0	597.7	597.6	596.3	1.3	1.2	164.87	124.2	29.9	164.1	161.9	2.19	74.957		
700.0	696.6	696.3	694.5	1.6	1.4	162.95	128.0	20.9	179.2	176.6	2.62	68.528		
800.0	795.6	795.0	792.7	1.9	1.6	161.34	131.8	12.0	194.5	191.4	3.05	63.833		
900.0	894.5	893.7	890.9	2.2	1.9	159.96	135.6	3.1	209.9	206.4	3.48	60.262		
1,000.0	993.4	992.4	989.1	2.5	2.1	158.77	139.4	-5.9	225.3	221.4	3.92	57.459		
1,100.0	1,092.3	1,091.1	1,087.3	2.8	2.4	157.74	143.2	-14.8	240.9	236.5	4.36	55.203		
1,200.0	1,191.3	1,189.7	1,185.6	3.1	2.6	156.82	147.0	-23.7	256.5	251.7	4.81	53.350		
1,300.0	1,290.2	1,288.4	1,283.8	3.4	2.8	156.02	150.8	-32.7	272.2	267.0	5.26	51.802		
1,400.0	1,389.1	1,387.1	1,382.0	3.7	3.1	155.30	154.6	-41.6	288.0	282.3	5.70	50.491		
1,500.0	1,488.0	1,485.8	1,480.2	4.0	3.3	154.66	158.3	-50.5	303.8	297.6	6.15	49.366		
1,600.0	1,587.0	1,584.5	1,578.4	4.3	3.6	154.08	162.1	-59.4	319.6	313.0	6.60	48.391		
1,700.0	1,685.9	1,683.2	1,676.6	4.6	3.8	153.55	165.9	-68.4	335.4	328.4	7.06	47.538		
1,800.0	1,784.8	1,781.9	1,774.8	5.0	4.1	153.07	169.7	-77.3	351.3	343.8	7.51	46.786		
1,900.0	1,883.7	1,880.6	1,873.1	5.3	4.3	152.63	173.5	-86.2	367.2	359.2	7.96	46.118		
2,000.0	1,982.7	1,979.3	1,971.3	5.6	4.5	152.23	177.3	-95.2	383.1	374.7	8.42	45.520		
2,100.0	2,081.6	2,078.0	2,069.5	5.9	4.8	151.87	181.1	-104.1	399.0	390.1	8.87	44.983		
2,200.0	2,180.5	2,176.7	2,167.7	6.2	5.0	151.53	184.9	-113.0	415.0	405.6	9.33	44.498		
2,300.0	2,279.4	2,275.4	2,265.9	6.5	5.3	151.21	188.7	-122.0	430.9	421.1	9.78	44.057		
2,400.0	2,378.4	2,374.1	2,364.1	6.8	5.5	150.92	192.5	-130.9	446.9	436.6	10.24	43.655		
2,500.0	2,477.3	2,472.7	2,462.3	7.1	5.7	150.64	196.3	-139.8	462.8	452.2	10.69	43.287		
2,600.0	2,576.2	2,571.4	2,560.6	7.4	6.0	150.39	200.1	-148.7	478.8	467.7	11.15	42.949		
2,700.0	2,675.1	2,670.1	2,658.8	7.7	6.2	150.15	203.9	-157.7	494.8	483.2	11.61	42.637 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance				Total		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	26.51	10.2	5.1	11.4						
100.0	100.0	100.0	100.0	0.1	0.1	26.51	10.2	5.1	11.4	11.1	0.27	41.824			
200.0	200.0	200.0	200.0	0.3	0.3	26.51	10.2	5.1	11.4	10.8	0.62	18.327 CC, ES			
300.0	300.0	300.2	300.1	0.5	0.5	164.29	10.4	2.5	13.1	12.2	0.98	13.431 SF			
400.0	399.6	399.9	399.6	0.7	0.7	149.36	10.8	-4.9	19.6	18.3	1.37	14.318			
500.0	498.8	499.3	498.6	1.0	0.9	146.29	11.4	-13.0	31.0	29.2	1.79	17.314			
600.0	597.7	598.4	597.4	1.3	1.1	146.21	11.9	-21.1	43.8	41.6	2.22	19.712			
700.0	696.6	697.6	696.3	1.6	1.4	146.17	12.4	-29.2	56.6	54.0	2.66	21.286			
800.0	795.6	796.8	795.1	1.9	1.6	146.14	12.9	-37.3	69.4	66.3	3.10	22.393			
900.0	894.5	896.0	894.0	2.2	1.8	146.12	13.5	-45.4	82.2	78.7	3.54	23.211			
1,000.0	993.4	995.1	992.8	2.5	2.0	146.11	14.0	-53.6	95.1	91.1	3.99	23.840			
1,100.0	1,092.3	1,094.3	1,091.7	2.8	2.2	146.10	14.5	-61.7	107.9	103.4	4.43	24.338			
1,200.0	1,191.3	1,193.5	1,190.5	3.1	2.5	146.09	15.0	-69.8	120.7	115.8	4.88	24.741			
1,300.0	1,290.2	1,292.7	1,289.3	3.4	2.7	146.08	15.6	-77.9	133.5	128.1	5.32	25.075			
1,400.0	1,389.1	1,391.8	1,388.2	3.7	2.9	146.08	16.1	-86.0	146.3	140.5	5.77	25.355			
1,500.0	1,488.0	1,491.0	1,487.0	4.0	3.1	146.07	16.6	-94.1	159.1	152.9	6.22	25.594			
1,600.0	1,587.0	1,590.2	1,585.9	4.3	3.4	146.07	17.1	-102.2	171.9	165.2	6.66	25.800			
1,700.0	1,685.9	1,689.4	1,684.7	4.6	3.6	146.07	17.7	-110.3	184.7	177.6	7.11	25.979			
1,800.0	1,784.8	1,788.5	1,783.6	5.0	3.8	146.06	18.2	-118.5	197.5	189.9	7.56	26.137			
1,900.0	1,883.7	1,887.7	1,882.4	5.3	4.0	146.06	18.7	-126.6	210.3	202.3	8.00	26.276			
2,000.0	1,982.7	1,986.9	1,981.2	5.6	4.3	146.06	19.2	-134.7	223.1	214.7	8.45	26.401			
2,100.0	2,081.6	2,086.1	2,080.1	5.9	4.5	146.06	19.8	-142.8	235.9	227.0	8.90	26.512			
2,200.0	2,180.5	2,185.3	2,178.9	6.2	4.7	146.05	20.3	-150.9	248.7	239.4	9.35	26.613			
2,300.0	2,279.4	2,284.4	2,277.8	6.5	4.9	146.05	20.8	-159.0	261.5	251.7	9.79	26.704			
2,400.0	2,378.4	2,383.6	2,376.6	6.8	5.1	146.05	21.3	-167.1	274.3	264.1	10.24	26.788			
2,500.0	2,477.3	2,482.8	2,475.5	7.1	5.4	146.05	21.9	-175.2	287.1	276.5	10.69	26.864			
2,600.0	2,576.2	2,582.0	2,574.3	7.4	5.6	146.05	22.4	-183.4	299.9	288.8	11.14	26.933			
2,700.0	2,675.1	2,681.1	2,673.1	7.7	5.8	146.05	22.9	-191.5	312.8	301.2	11.58	26.998			
2,800.0	2,774.1	2,780.3	2,772.0	8.0	6.0	146.05	23.4	-199.6	325.6	313.5	12.03	27.057			
2,900.0	2,873.0	2,879.5	2,870.8	8.4	6.3	146.05	24.0	-207.7	338.4	325.9	12.48	27.112			
3,000.0	2,971.9	2,978.7	2,969.7	8.7	6.5	146.04	24.5	-215.8	351.2	338.2	12.93	27.163			
3,100.0	3,070.8	3,077.8	3,068.5	9.0	6.7	146.04	25.0	-223.9	364.0	350.6	13.38	27.211			
3,200.0	3,169.8	3,177.0	3,167.4	9.3	6.9	146.04	25.5	-232.0	376.8	363.0	13.82	27.256			
3,300.0	3,268.7	3,276.2	3,266.2	9.6	7.2	146.04	26.1	-240.2	389.6	375.3	14.27	27.298			
3,400.0	3,367.6	3,375.4	3,365.0	9.9	7.4	146.04	26.6	-248.3	402.4	387.7	14.72	27.337			
3,500.0	3,466.5	3,474.6	3,463.9	10.2	7.6	146.04	27.1	-256.4	415.2	400.0	15.17	27.374			
3,600.0	3,565.5	3,573.7	3,562.7	10.5	7.8	146.04	27.6	-264.5	428.0	412.4	15.62	27.408			
3,700.0	3,664.4	3,672.9	3,661.6	10.8	8.1	146.04	28.2	-272.6	440.8	424.7	16.06	27.441			
3,800.0	3,763.3	3,772.1	3,760.4	11.1	8.3	146.04	28.7	-280.7	453.6	437.1	16.51	27.472			
3,900.0	3,862.2	3,871.3	3,859.3	11.4	8.5	146.04	29.2	-288.8	466.4	449.5	16.96	27.501			
4,000.0	3,961.2	3,970.4	3,958.1	11.8	8.7	146.04	29.7	-296.9	479.2	461.8	17.41	27.529			
4,100.0	4,060.1	4,069.6	4,056.9	12.1	9.0	146.04	30.3	-305.1	492.0	474.2	17.86	27.555			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-93.13	-1.5	-26.8	26.9					
100.0	100.0	100.0	100.0	0.1	0.1	-93.13	-1.5	-26.8	26.9	26.6	0.27	98.690		
200.0	200.0	200.0	200.0	0.3	0.3	-93.13	-1.5	-26.8	26.9	26.2	0.62	43.246 CC, ES		
300.0	300.0	298.7	298.7	0.5	0.5	56.18	-2.6	-29.1	27.7	26.7	0.98	28.417		
400.0	399.6	397.8	397.4	0.7	0.7	62.30	-5.9	-35.7	30.2	28.9	1.37	22.060		
500.0	498.8	497.5	496.8	1.0	0.9	74.70	-9.8	-43.3	32.2	30.4	1.85	17.405		
600.0	597.7	597.2	596.1	1.3	1.1	87.96	-13.6	-50.9	35.4	33.1	2.38	14.891		
700.0	696.6	696.8	695.4	1.6	1.4	98.58	-17.4	-58.5	40.2	37.3	2.91	13.831		
800.0	795.6	796.4	794.6	1.9	1.6	106.73	-21.3	-66.2	46.0	42.6	3.42	13.482		
900.0	894.5	896.1	893.9	2.2	1.8	112.96	-25.1	-73.8	52.6	48.7	3.90	13.473 SF		
1,000.0	993.4	995.7	993.2	2.5	2.0	117.77	-28.9	-81.4	59.6	55.3	4.38	13.621		
1,100.0	1,092.3	1,095.4	1,092.5	2.8	2.3	121.55	-32.8	-89.0	67.0	62.2	4.84	13.840		
1,200.0	1,191.3	1,195.0	1,191.8	3.1	2.5	124.57	-36.6	-96.6	74.6	69.3	5.30	14.083		
1,300.0	1,290.2	1,294.6	1,291.0	3.4	2.7	127.02	-40.4	-104.2	82.4	76.6	5.75	14.330		
1,400.0	1,389.1	1,394.3	1,390.3	3.7	3.0	129.05	-44.3	-111.8	90.3	84.1	6.20	14.570		
1,500.0	1,488.0	1,493.9	1,489.6	4.0	3.2	130.76	-48.1	-119.4	98.3	91.6	6.64	14.798		
1,600.0	1,587.0	1,593.6	1,588.9	4.3	3.4	132.20	-51.9	-127.1	106.3	99.2	7.08	15.011		
1,700.0	1,685.9	1,693.2	1,688.1	4.6	3.6	133.44	-55.7	-134.7	114.4	106.9	7.52	15.210		
1,800.0	1,784.8	1,792.8	1,787.4	5.0	3.9	134.52	-59.6	-142.3	122.6	114.6	7.96	15.395		
1,900.0	1,883.7	1,892.5	1,886.7	5.3	4.1	135.46	-63.4	-149.9	130.8	122.4	8.40	15.566		
2,000.0	1,982.7	1,992.1	1,986.0	5.6	4.3	136.29	-67.2	-157.5	139.0	130.2	8.84	15.726		
2,100.0	2,081.6	2,091.8	2,085.2	5.9	4.6	137.03	-71.1	-165.1	147.3	138.0	9.28	15.873		
2,200.0	2,180.5	2,191.4	2,184.5	6.2	4.8	137.69	-74.9	-172.7	155.6	145.9	9.72	16.011		
2,300.0	2,279.4	2,291.1	2,283.8	6.5	5.0	138.28	-78.7	-180.3	163.9	153.7	10.15	16.139		
2,400.0	2,378.4	2,390.7	2,383.1	6.8	5.2	138.81	-82.6	-187.9	172.2	161.6	10.59	16.258		
2,500.0	2,477.3	2,490.3	2,482.3	7.1	5.5	139.30	-86.4	-195.6	180.5	169.5	11.03	16.369		
2,600.0	2,576.2	2,590.0	2,581.6	7.4	5.7	139.74	-90.2	-203.2	188.9	177.4	11.47	16.474		
2,700.0	2,675.1	2,689.6	2,680.9	7.7	5.9	140.15	-94.1	-210.8	197.2	185.3	11.90	16.571		
2,800.0	2,774.1	2,789.3	2,780.2	8.0	6.2	140.52	-97.9	-218.4	205.6	193.2	12.34	16.663		
2,900.0	2,873.0	2,888.9	2,879.4	8.4	6.4	140.86	-101.7	-226.0	213.9	201.2	12.77	16.749		
3,000.0	2,971.9	2,988.5	2,978.7	8.7	6.6	141.18	-105.6	-233.6	222.3	209.1	13.21	16.830		
3,100.0	3,070.8	3,088.2	3,078.0	9.0	6.8	141.48	-109.4	-241.2	230.7	217.1	13.65	16.907		
3,200.0	3,169.8	3,187.8	3,177.3	9.3	7.1	141.75	-113.2	-248.8	239.1	225.0	14.08	16.979		
3,300.0	3,268.7	3,287.5	3,276.6	9.6	7.3	142.01	-117.1	-256.5	247.5	233.0	14.52	17.047		
3,400.0	3,367.6	3,387.1	3,375.8	9.9	7.5	142.24	-120.9	-264.1	255.9	240.9	14.95	17.112		
3,500.0	3,466.5	3,486.8	3,475.1	10.2	7.8	142.47	-124.7	-271.7	264.3	248.9	15.39	17.173		
3,600.0	3,565.5	3,586.4	3,574.4	10.5	8.0	142.68	-128.6	-279.3	272.7	256.9	15.82	17.231		
3,700.0	3,664.4	3,686.0	3,673.7	10.8	8.2	142.87	-132.4	-286.9	281.1	264.8	16.26	17.287		
3,800.0	3,763.3	3,785.7	3,772.9	11.1	8.4	143.06	-136.2	-294.5	289.5	272.8	16.70	17.340		
3,900.0	3,862.2	3,885.3	3,872.2	11.4	8.7	143.23	-140.0	-302.1	297.9	280.8	17.13	17.390		
4,000.0	3,961.2	3,985.0	3,971.5	11.8	8.9	143.40	-143.9	-309.7	306.3	288.8	17.57	17.438		
4,100.0	4,060.1	4,084.6	4,070.8	12.1	9.1	143.56	-147.7	-317.4	314.8	296.7	18.00	17.483		
4,200.0	4,159.0	4,184.2	4,170.0	12.4	9.4	143.71	-151.5	-325.0	323.2	304.7	18.44	17.527		
4,300.0	4,257.9	4,283.9	4,269.3	12.7	9.6	143.85	-155.4	-332.6	331.6	312.7	18.87	17.569		
4,400.0	4,356.9	4,383.5	4,368.6	13.0	9.8	143.98	-159.2	-340.2	340.0	320.7	19.31	17.609		
4,500.0	4,455.8	4,483.2	4,467.9	13.3	10.0	144.11	-163.0	-347.8	348.4	328.7	19.74	17.648		
4,600.0	4,554.7	4,582.8	4,567.1	13.6	10.3	144.23	-166.9	-355.4	356.9	336.7	20.18	17.684		
4,700.0	4,653.6	4,682.4	4,666.4	13.9	10.5	144.35	-170.7	-363.0	365.3	344.7	20.62	17.720		
4,800.0	4,752.6	4,782.1	4,765.7	14.2	10.7	144.46	-174.5	-370.6	373.7	352.7	21.05	17.754		
4,900.0	4,851.5	4,881.7	4,865.0	14.5	11.0	144.56	-178.4	-378.3	382.2	360.7	21.49	17.786		
5,000.0	4,950.4	4,981.4	4,964.3	14.9	11.2	144.66	-182.2	-385.9	390.6	368.7	21.92	17.818		
5,100.0	5,049.3	5,081.0	5,063.5	15.2	11.4	144.76	-186.0	-393.5	399.0	376.7	22.36	17.848		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,200.0	5,148.3	5,180.7	5,162.8	15.5	11.7	144.85	-189.9	-401.1	407.5	384.7	22.79	17.877	
5,300.0	5,247.2	5,280.3	5,262.1	15.8	11.9	144.94	-193.7	-408.7	415.9	392.7	23.23	17.905	
5,400.0	5,346.1	5,379.9	5,361.4	16.1	12.1	145.03	-197.5	-416.3	424.3	400.7	23.66	17.933	
5,500.0	5,445.0	5,479.6	5,460.6	16.4	12.3	145.11	-201.4	-423.9	432.8	408.7	24.10	17.959	
5,600.0	5,544.0	5,579.2	5,559.9	16.7	12.6	145.19	-205.2	-431.5	441.2	416.7	24.53	17.984	
5,700.0	5,642.9	5,678.9	5,659.2	17.0	12.8	145.26	-209.0	-439.2	449.7	424.7	24.97	18.009	
5,800.0	5,741.8	5,778.5	5,758.5	17.3	13.0	145.34	-212.9	-446.8	458.1	432.7	25.41	18.032	
5,900.0	5,840.7	5,878.1	5,857.7	17.6	13.3	145.41	-216.7	-454.4	466.6	440.7	25.84	18.055	
6,000.0	5,939.7	5,977.8	5,957.0	18.0	13.5	145.48	-220.5	-462.0	475.0	448.7	26.28	18.077	
6,100.0	6,038.6	6,077.4	6,056.3	18.3	13.7	145.54	-224.3	-469.6	483.4	456.7	26.71	18.099	
6,200.0	6,137.5	6,177.1	6,155.6	18.6	13.9	145.61	-228.2	-477.2	491.9	464.7	27.15	18.120	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	36.44	113.6	83.9	141.2					
100.0	100.0	100.0	100.0	0.1	0.1	36.44	113.6	83.9	141.2	141.0	0.27	518.701		
200.0	200.0	200.0	200.0	0.3	0.3	36.44	113.6	83.9	141.2	140.6	0.62	227.296	CC, ES	
300.0	300.0	301.1	301.0	0.5	0.5	-175.45	111.7	85.7	143.4	142.5	0.98	146.310		
400.0	399.6	401.5	401.2	0.7	0.7	-172.66	106.0	91.3	150.3	148.9	1.37	109.319		
500.0	498.8	500.7	499.5	1.0	1.0	-168.59	96.7	100.4	162.3	160.5	1.83	88.611		
600.0	597.7	598.4	595.5	1.3	1.4	-163.67	84.0	112.8	176.8	174.4	2.37	74.451		
700.0	696.6	694.8	689.3	1.6	1.8	-158.17	68.2	128.3	193.1	190.1	2.98	64.708		
800.0	795.6	791.6	783.2	1.9	2.2	-153.18	51.4	144.7	211.3	207.6	3.61	58.461		
900.0	894.5	888.3	877.1	2.2	2.6	-148.99	34.6	161.1	230.7	226.5	4.25	54.319		
1,000.0	993.4	985.1	971.0	2.5	3.1	-145.45	17.8	177.4	251.2	246.4	4.88	51.466		
1,100.0	1,092.3	1,081.8	1,064.8	2.8	3.5	-142.44	1.1	193.8	272.5	267.0	5.51	49.440		
1,200.0	1,191.3	1,178.6	1,158.7	3.1	4.0	-139.87	-15.7	210.2	294.5	288.3	6.14	47.963		
1,300.0	1,290.2	1,275.4	1,252.6	3.4	4.4	-137.65	-32.5	226.6	316.9	310.1	6.76	46.863		
1,400.0	1,389.1	1,372.1	1,346.5	3.7	4.8	-135.73	-49.2	243.0	339.7	332.3	7.38	46.028		
1,500.0	1,488.0	1,468.9	1,440.3	4.0	5.3	-134.04	-66.0	259.4	362.8	354.8	7.99	45.386		
1,600.0	1,587.0	1,565.6	1,534.2	4.3	5.7	-132.56	-82.8	275.8	386.2	377.6	8.61	44.884		
1,700.0	1,685.9	1,662.4	1,628.1	4.6	6.2	-131.25	-99.6	292.1	409.9	400.6	9.21	44.489		
1,800.0	1,784.8	1,759.2	1,722.0	5.0	6.6	-130.07	-116.3	308.5	433.7	423.8	9.82	44.173		
1,900.0	1,883.7	1,855.9	1,815.9	5.3	7.1	-129.02	-133.1	324.9	457.6	447.2	10.42	43.920		
2,000.0	1,982.7	1,952.7	1,909.7	5.6	7.5	-128.08	-149.9	341.3	481.7	470.7	11.02	43.715	SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-109.93	-5.8	-16.1	17.1					
100.0	100.0	100.0	100.0	0.1	0.1	-109.93	-5.8	-16.1	17.1	16.9	0.27	62.892		
200.0	200.0	200.0	200.0	0.3	0.3	-109.93	-5.8	-16.1	17.1	16.5	0.62	27.559	CC	
300.0	300.0	299.2	299.2	0.5	0.5	38.58	-7.7	-17.9	17.4	16.4	0.97	17.836		
400.0	399.6	398.4	398.0	0.7	0.7	42.52	-13.3	-23.2	18.2	16.8	1.36	13.393		
500.0	498.8	498.2	497.2	1.0	1.0	51.64	-21.3	-30.9	18.3	16.5	1.82	10.081		
564.5	562.5	562.6	561.2	1.2	1.1	60.15	-26.5	-35.9	18.1	15.9	2.17	8.349		
600.0	597.7	598.1	596.5	1.3	1.2	64.87	-29.4	-38.6	18.2	15.8	2.37	7.652	ES	
700.0	696.6	698.0	695.8	1.6	1.5	77.63	-37.5	-46.3	19.0	16.0	2.98	6.369		
800.0	795.6	797.9	795.1	1.9	1.7	88.83	-45.6	-54.0	20.6	17.1	3.58	5.765		
900.0	894.5	897.9	894.4	2.2	2.0	98.08	-53.7	-61.8	23.0	18.8	4.14	5.540		
1,000.0	993.4	997.8	993.7	2.5	2.2	105.48	-61.8	-69.5	25.8	21.1	4.67	5.517	SF	
1,100.0	1,092.3	1,097.7	1,092.9	2.8	2.5	111.36	-69.9	-77.2	28.9	23.7	5.17	5.597		
1,200.0	1,191.3	1,197.6	1,192.2	3.1	2.8	116.04	-78.0	-84.9	32.3	26.7	5.64	5.728		
1,300.0	1,290.2	1,297.5	1,291.5	3.4	3.0	119.81	-86.1	-92.7	35.9	29.8	6.10	5.881		
1,400.0	1,389.1	1,397.4	1,390.8	3.7	3.3	122.89	-94.1	-100.4	39.6	33.0	6.55	6.040		
1,500.0	1,488.0	1,497.3	1,490.1	4.0	3.5	125.44	-102.2	-108.1	43.3	36.3	6.99	6.199		
1,600.0	1,587.0	1,597.2	1,589.4	4.3	3.8	127.58	-110.3	-115.8	47.2	39.8	7.43	6.351		
1,700.0	1,685.9	1,697.1	1,688.6	4.6	4.1	129.39	-118.4	-123.6	51.1	43.2	7.87	6.496		
1,800.0	1,784.8	1,797.1	1,787.9	5.0	4.3	130.94	-126.5	-131.3	55.1	46.8	8.30	6.632		
1,900.0	1,883.7	1,897.0	1,887.2	5.3	4.6	132.28	-134.6	-139.0	59.1	50.3	8.74	6.760		
2,000.0	1,982.7	1,996.9	1,986.5	5.6	4.8	133.46	-142.7	-146.7	63.1	53.9	9.17	6.879		
2,100.0	2,081.6	2,096.8	2,085.8	5.9	5.1	134.49	-150.8	-154.5	67.1	57.5	9.60	6.991		
2,200.0	2,180.5	2,196.7	2,185.0	6.2	5.4	135.40	-158.9	-162.2	71.2	61.1	10.03	7.095		
2,300.0	2,279.4	2,296.6	2,284.3	6.5	5.6	136.22	-167.0	-169.9	75.3	64.8	10.46	7.192		
2,400.0	2,378.4	2,396.5	2,383.6	6.8	5.9	136.95	-175.1	-177.6	79.3	68.5	10.89	7.283		
2,500.0	2,477.3	2,496.4	2,482.9	7.1	6.2	137.61	-183.1	-185.4	83.5	72.1	11.33	7.368		
2,600.0	2,576.2	2,596.4	2,582.2	7.4	6.4	138.21	-191.2	-193.1	87.6	75.8	11.76	7.448		
2,700.0	2,675.1	2,696.3	2,681.5	7.7	6.7	138.75	-199.3	-200.8	91.7	79.5	12.19	7.523		
2,800.0	2,774.1	2,796.2	2,780.7	8.0	6.9	139.25	-207.4	-208.5	95.8	83.2	12.62	7.593		
2,900.0	2,873.0	2,896.1	2,880.0	8.4	7.2	139.71	-215.5	-216.2	100.0	86.9	13.05	7.660		
3,000.0	2,971.9	2,996.0	2,979.3	8.7	7.5	140.13	-223.6	-224.0	104.1	90.6	13.48	7.722		
3,100.0	3,070.8	3,095.9	3,078.6	9.0	7.7	140.52	-231.7	-231.7	108.2	94.3	13.91	7.781		
3,200.0	3,169.8	3,195.8	3,177.9	9.3	8.0	140.87	-239.8	-239.4	112.4	98.1	14.34	7.837		
3,300.0	3,268.7	3,295.7	3,277.2	9.6	8.2	141.21	-247.9	-247.1	116.5	101.8	14.77	7.889		
3,400.0	3,367.6	3,395.6	3,376.4	9.9	8.5	141.52	-256.0	-254.9	120.7	105.5	15.20	7.939		
3,500.0	3,466.5	3,495.6	3,475.7	10.2	8.8	141.81	-264.1	-262.6	124.9	109.2	15.63	7.987		
3,600.0	3,565.5	3,595.5	3,575.0	10.5	9.0	142.08	-272.2	-270.3	129.0	113.0	16.07	8.032		
3,700.0	3,664.4	3,695.4	3,674.3	10.8	9.3	142.33	-280.2	-278.0	133.2	116.7	16.50	8.074		
3,800.0	3,763.3	3,795.3	3,773.6	11.1	9.6	142.57	-288.3	-285.8	137.4	120.4	16.93	8.115		
3,900.0	3,862.2	3,895.2	3,872.9	11.4	9.8	142.80	-296.4	-293.5	141.5	124.2	17.36	8.154		
4,000.0	3,961.2	3,995.1	3,972.1	11.8	10.1	143.01	-304.5	-301.2	145.7	127.9	17.79	8.191		
4,100.0	4,060.1	4,095.0	4,071.4	12.1	10.3	143.21	-312.6	-308.9	149.9	131.7	18.22	8.226		
4,200.0	4,159.0	4,194.9	4,170.7	12.4	10.6	143.40	-320.7	-316.7	154.1	135.4	18.65	8.260		
4,300.0	4,257.9	4,294.8	4,270.0	12.7	10.9	143.58	-328.8	-324.4	158.3	139.2	19.08	8.293		
4,400.0	4,356.9	4,394.8	4,369.3	13.0	11.1	143.75	-336.9	-332.1	162.4	142.9	19.52	8.324		
4,500.0	4,455.8	4,494.7	4,468.6	13.3	11.4	143.91	-345.0	-339.8	166.6	146.7	19.95	8.353		
4,600.0	4,554.7	4,594.6	4,567.8	13.6	11.7	144.06	-353.1	-347.5	170.8	150.4	20.38	8.382		
4,700.0	4,653.6	4,694.5	4,667.1	13.9	11.9	144.21	-361.2	-355.3	175.0	154.2	20.81	8.409		
4,800.0	4,752.6	4,794.4	4,766.4	14.2	12.2	144.35	-369.2	-363.0	179.2	157.9	21.24	8.435		
4,900.0	4,851.5	4,894.3	4,865.7	14.5	12.4	144.48	-377.3	-370.7	183.4	161.7	21.67	8.461		
5,000.0	4,950.4	4,994.2	4,965.0	14.9	12.7	144.61	-385.4	-378.4	187.6	165.5	22.11	8.485		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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: O-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
5,100.0	5,049.3	5,094.1	5,064.3	15.2	13.0	144.73	-393.5	-386.2	191.7	169.2	22.54	8.508	
5,200.0	5,148.3	5,194.0	5,163.5	15.5	13.2	144.85	-401.6	-393.9	195.9	173.0	22.97	8.531	
5,300.0	5,247.2	5,294.0	5,262.8	15.8	13.5	144.96	-409.7	-401.6	200.1	176.7	23.40	8.553	
5,400.0	5,346.1	5,393.9	5,362.1	16.1	13.8	145.06	-417.8	-409.3	204.3	180.5	23.83	8.574	
5,500.0	5,445.0	5,493.8	5,461.4	16.4	14.0	145.17	-425.9	-417.1	208.5	184.3	24.26	8.594	
5,600.0	5,544.0	5,593.7	5,560.7	16.7	14.3	145.27	-434.0	-424.8	212.7	188.0	24.69	8.613	
5,700.0	5,642.9	5,693.6	5,660.0	17.0	14.5	145.36	-442.1	-432.5	216.9	191.8	25.13	8.632	
5,800.0	5,741.8	5,793.5	5,759.2	17.3	14.8	145.45	-450.2	-440.2	221.1	195.5	25.56	8.651	
5,900.0	5,840.7	5,893.4	5,858.5	17.6	15.1	145.54	-458.3	-448.0	225.3	199.3	25.99	8.668	
6,000.0	5,939.7	5,993.3	5,957.8	18.0	15.3	145.62	-466.3	-455.7	229.5	203.1	26.42	8.686	
6,100.0	6,038.6	6,093.2	6,057.1	18.3	15.6	145.71	-474.4	-463.4	233.7	206.8	26.85	8.702	
6,200.0	6,137.5	6,193.2	6,156.4	18.6	15.8	145.78	-482.5	-471.1	237.9	210.6	27.29	8.718	
6,300.0	6,236.4	6,293.1	6,255.7	18.9	16.1	145.86	-490.6	-478.9	242.1	214.4	27.72	8.734	
6,400.0	6,335.4	6,393.0	6,354.9	19.2	16.4	145.93	-498.7	-486.6	246.3	218.1	28.15	8.749	
6,500.0	6,434.3	6,492.9	6,454.2	19.5	16.6	146.00	-506.8	-494.3	250.5	221.9	28.58	8.764	
6,600.0	6,533.2	6,592.8	6,553.5	19.8	16.9	146.07	-514.9	-502.0	254.7	225.7	29.01	8.778	
6,700.0	6,632.1	6,692.7	6,652.8	20.1	17.2	146.14	-523.0	-509.7	258.9	229.4	29.44	8.792	
6,800.0	6,731.1	6,792.6	6,752.1	20.4	17.4	146.20	-531.1	-517.5	263.1	233.2	29.88	8.805	
6,900.0	6,830.0	6,892.5	6,851.4	20.7	17.7	146.26	-539.2	-525.2	267.3	237.0	30.31	8.818	
7,000.0	6,928.9	6,992.5	6,950.6	21.1	17.9	146.33	-547.3	-532.9	271.5	240.7	30.74	8.831	
7,100.0	7,027.8	7,092.4	7,049.9	21.4	18.2	146.38	-555.3	-540.6	275.7	244.5	31.17	8.843	
7,200.0	7,126.8	7,192.3	7,149.2	21.7	18.5	146.44	-563.4	-548.4	279.9	248.3	31.60	8.855	
7,300.0	7,225.7	7,292.2	7,248.5	22.0	18.7	146.50	-571.5	-556.1	284.1	252.0	32.04	8.867	
7,400.0	7,324.6	7,392.1	7,347.8	22.3	19.0	146.55	-579.6	-563.8	288.3	255.8	32.47	8.879	
7,500.0	7,423.5	7,492.0	7,447.1	22.6	19.3	146.60	-587.7	-571.5	292.5	259.6	32.90	8.890	
7,600.0	7,522.6	7,591.9	7,546.4	22.9	19.5	146.60	-595.8	-579.3	296.1	262.7	33.35	8.879	
7,700.0	7,622.0	7,685.8	7,639.7	23.1	19.7	146.43	-602.5	-585.7	297.9	264.1	33.77	8.820	
7,800.0	7,721.7	7,778.8	7,732.6	23.3	19.9	146.32	-607.1	-590.0	299.1	265.0	34.12	8.765	
7,900.0	7,821.7	7,871.9	7,825.6	23.4	20.0	146.26	-609.4	-592.2	299.7	265.3	34.41	8.711	
8,000.0	7,921.7	7,968.0	7,921.7	23.5	20.1	-0.86	-609.7	-592.5	299.8	265.1	34.66	8.649	
8,100.0	8,021.7	8,068.0	8,021.7	23.6	20.3	-0.86	-609.7	-592.5	299.8	264.9	34.94	8.580	
8,200.0	8,121.7	8,168.0	8,121.7	23.7	20.4	-0.86	-609.7	-592.5	299.8	264.6	35.22	8.511	
8,300.0	8,221.7	8,268.0	8,221.7	23.8	20.5	-0.86	-609.7	-592.5	299.8	264.3	35.51	8.443	
8,400.0	8,321.7	8,368.0	8,321.7	23.9	20.6	-0.86	-609.7	-592.5	299.8	264.0	35.79	8.376	
8,500.0	8,421.7	8,468.0	8,421.7	24.1	20.8	-0.86	-609.7	-592.5	299.8	263.7	36.08	8.310	
8,600.0	8,521.7	8,568.0	8,521.7	24.2	20.9	-0.86	-609.7	-592.5	299.8	263.4	36.36	8.245	
8,700.0	8,621.7	8,668.0	8,621.7	24.3	21.0	-0.86	-609.7	-592.5	299.8	263.1	36.65	8.180	
8,800.0	8,721.7	8,768.0	8,721.7	24.4	21.1	-0.86	-609.7	-592.5	299.8	262.9	36.94	8.116	
8,900.0	8,821.7	8,868.0	8,821.7	24.5	21.3	-0.86	-609.7	-592.5	299.8	262.6	37.23	8.053	
9,000.0	8,921.7	8,968.0	8,921.7	24.6	21.4	-0.86	-609.7	-592.5	299.8	262.3	37.52	7.990	
9,100.0	9,021.7	9,068.0	9,021.7	24.7	21.5	-0.86	-609.7	-592.5	299.8	262.0	37.81	7.929	
9,200.0	9,121.7	9,168.0	9,121.7	24.8	21.6	-0.86	-609.7	-592.5	299.8	261.7	38.10	7.868	
9,300.0	9,221.7	9,268.0	9,221.7	24.9	21.8	-0.86	-609.7	-592.5	299.8	261.4	38.40	7.808	
9,400.0	9,321.7	9,368.0	9,321.7	25.1	21.9	-0.86	-609.7	-592.5	299.8	261.1	38.69	7.748	
9,500.0	9,421.7	9,468.0	9,421.7	25.2	22.0	-0.86	-609.7	-592.5	299.8	260.8	38.99	7.690	
9,600.0	9,521.7	9,568.0	9,521.7	25.3	22.2	-0.86	-609.7	-592.5	299.8	260.5	39.28	7.632	
9,700.0	9,621.7	9,668.0	9,621.7	25.4	22.3	-0.86	-609.7	-592.5	299.8	260.2	39.58	7.575	
9,800.0	9,721.7	9,768.0	9,721.7	25.5	22.4	-0.86	-609.7	-592.5	299.8	259.9	39.88	7.518	
9,900.0	9,821.7	9,868.0	9,821.7	25.6	22.6	-0.86	-609.7	-592.5	299.8	259.6	40.18	7.462	
10,000.0	9,921.7	9,968.0	9,921.7	25.7	22.7	-0.86	-609.7	-592.5	299.8	259.3	40.48	7.407	
10,100.0	10,021.7	10,068.0	10,021.7	25.9	22.8	-0.86	-609.7	-592.5	299.8	259.0	40.78	7.352	
10,200.0	10,121.7	10,168.0	10,121.7	26.0	23.0	-0.86	-609.7	-592.5	299.8	258.7	41.08	7.298	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
10,300.0	10,221.7	10,268.0	10,221.7	26.1	23.1	-0.86	-609.7	-592.5	299.8	258.4	41.38	7.245	
10,353.9	10,275.6	10,321.9	10,275.6	26.2	23.2	-0.86	-609.7	-592.5	299.8	258.3	41.54	7.217	
10,400.0	10,321.7	10,340.3	10,294.0	26.2	23.2	-0.86	-609.7	-592.5	301.1	259.4	41.64	7.230	
10,500.0	10,421.7	10,340.3	10,294.0	26.3	23.2	-0.86	-609.7	-592.5	325.8	284.1	41.79	7.797	
10,600.0	10,521.7	10,340.3	10,294.0	26.5	23.2	-0.86	-609.7	-592.5	376.4	334.5	41.94	8.975	
10,700.0	10,621.7	10,340.3	10,294.0	26.6	23.2	-0.86	-609.7	-592.5	444.1	402.0	42.09	10.550	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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: O-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	69.80	5.8	15.8	16.9						
100.0	100.0	100.0	100.0	0.1	0.1	69.80	5.8	15.8	16.9	16.6	0.27	61.895			
200.0	200.0	200.0	200.0	0.3	0.3	69.80	5.8	15.8	16.9	16.2	0.62	27.123 CC			
300.0	300.0	300.6	300.6	0.5	0.5	-142.29	3.4	14.6	17.0	16.1	0.98	17.401			
400.0	399.6	401.3	400.9	0.7	0.7	-140.00	-3.7	11.1	17.6	16.2	1.37	12.801			
500.0	498.8	501.9	500.7	1.0	1.0	-136.29	-15.5	5.2	18.5	16.6	1.85	9.998			
600.0	597.7	602.1	599.3	1.3	1.3	-125.16	-31.3	-2.7	18.0	15.6	2.46	7.310			
643.8	641.0	645.9	642.3	1.4	1.5	-119.40	-38.5	-6.3	17.9	15.2	2.77	6.464			
700.0	696.6	702.0	697.5	1.6	1.7	-112.03	-47.7	-10.9	18.1	14.9	3.18	5.684 ES			
800.0	795.6	802.0	795.8	1.9	2.0	-99.62	-64.0	-19.0	19.1	15.2	3.90	4.885			
900.0	894.5	901.9	894.0	2.2	2.4	-88.87	-80.4	-27.2	20.8	16.3	4.56	4.562			
1,000.0	993.4	1,001.8	992.2	2.5	2.8	-80.04	-96.7	-35.3	23.2	18.0	5.15	4.502 SF			
1,100.0	1,092.3	1,101.7	1,090.5	2.8	3.1	-72.99	-113.1	-43.5	26.0	20.3	5.68	4.579			
1,200.0	1,191.3	1,201.6	1,188.7	3.1	3.5	-67.39	-129.4	-51.6	29.1	23.0	6.17	4.725			
1,300.0	1,290.2	1,301.5	1,286.9	3.4	3.8	-62.90	-145.7	-59.8	32.5	25.9	6.63	4.903			
1,400.0	1,389.1	1,401.5	1,385.1	3.7	4.2	-59.27	-162.1	-68.0	36.0	28.9	7.07	5.092			
1,500.0	1,488.0	1,501.4	1,483.4	4.0	4.6	-56.30	-178.4	-76.1	39.7	32.1	7.51	5.281			
1,600.0	1,587.0	1,601.3	1,581.6	4.3	4.9	-53.83	-194.8	-84.3	43.4	35.4	7.94	5.465			
1,700.0	1,685.9	1,701.2	1,679.8	4.6	5.3	-51.75	-211.1	-92.4	47.2	38.8	8.36	5.640			
1,800.0	1,784.8	1,801.1	1,778.1	5.0	5.6	-49.99	-227.5	-100.6	51.0	42.2	8.79	5.805			
1,900.0	1,883.7	1,901.0	1,876.3	5.3	6.0	-48.47	-243.8	-108.7	54.9	45.7	9.21	5.960			
2,000.0	1,982.7	2,000.9	1,974.5	5.6	6.4	-47.16	-260.2	-116.9	58.8	49.2	9.63	6.106			
2,100.0	2,081.6	2,100.9	2,072.8	5.9	6.7	-46.01	-276.5	-125.0	62.8	52.7	10.06	6.241			
2,200.0	2,180.5	2,200.8	2,171.0	6.2	7.1	-45.00	-292.9	-133.2	66.7	56.3	10.48	6.368			
2,300.0	2,279.4	2,300.7	2,269.2	6.5	7.5	-44.10	-309.2	-141.4	70.7	59.8	10.90	6.487			
2,400.0	2,378.4	2,400.6	2,367.4	6.8	7.8	-43.29	-325.6	-149.5	74.7	63.4	11.33	6.598			
2,500.0	2,477.3	2,500.5	2,465.7	7.1	8.2	-42.57	-341.9	-157.7	78.8	67.0	11.75	6.702			
2,600.0	2,576.2	2,600.4	2,563.9	7.4	8.6	-41.92	-358.2	-165.8	82.8	70.6	12.17	6.799			
2,700.0	2,675.1	2,700.3	2,662.1	7.7	8.9	-41.33	-374.6	-174.0	86.8	74.2	12.60	6.891			
2,800.0	2,774.1	2,800.3	2,760.4	8.0	9.3	-40.79	-390.9	-182.1	90.9	77.8	13.02	6.977			
2,900.0	2,873.0	2,900.2	2,858.6	8.4	9.6	-40.30	-407.3	-190.3	94.9	81.5	13.45	7.058			
3,000.0	2,971.9	3,000.1	2,956.8	8.7	10.0	-39.85	-423.6	-198.4	99.0	85.1	13.87	7.134			
3,100.0	3,070.8	3,100.0	3,055.1	9.0	10.4	-39.43	-440.0	-206.6	103.0	88.7	14.30	7.206			
3,200.0	3,169.8	3,199.9	3,153.3	9.3	10.7	-39.05	-456.3	-214.8	107.1	92.4	14.73	7.274			
3,300.0	3,268.7	3,299.8	3,251.5	9.6	11.1	-38.69	-472.7	-222.9	111.2	96.0	15.15	7.338			
3,400.0	3,367.6	3,399.7	3,349.8	9.9	11.5	-38.36	-489.0	-231.1	115.3	99.7	15.58	7.399			
3,500.0	3,466.5	3,499.7	3,448.0	10.2	11.8	-38.05	-505.4	-239.2	119.3	103.3	16.00	7.457			
3,600.0	3,565.5	3,599.6	3,546.2	10.5	12.2	-37.76	-521.7	-247.4	123.4	107.0	16.43	7.512			
3,700.0	3,664.4	3,699.5	3,644.4	10.8	12.6	-37.49	-538.1	-255.5	127.5	110.7	16.86	7.564			
3,800.0	3,763.3	3,799.4	3,742.7	11.1	12.9	-37.24	-554.4	-263.7	131.6	114.3	17.29	7.614			
3,900.0	3,862.2	3,899.3	3,840.9	11.4	13.3	-37.00	-570.7	-271.8	135.7	118.0	17.71	7.662			
4,000.0	3,961.2	3,999.2	3,939.1	11.8	13.6	-36.78	-587.1	-280.0	139.8	121.7	18.14	7.707			
4,100.0	4,060.1	4,099.1	4,037.4	12.1	14.0	-36.57	-603.4	-288.2	143.9	125.3	18.57	7.750			
4,200.0	4,159.0	4,199.1	4,135.6	12.4	14.4	-36.37	-619.8	-296.3	148.0	129.0	19.00	7.791			
4,300.0	4,257.9	4,299.0	4,233.8	12.7	14.7	-36.18	-636.1	-304.5	152.1	132.7	19.42	7.831			
4,400.0	4,356.9	4,398.9	4,332.1	13.0	15.1	-36.00	-652.5	-312.6	156.2	136.4	19.85	7.869			
4,500.0	4,455.8	4,498.8	4,430.3	13.3	15.5	-35.83	-668.8	-320.8	160.3	140.0	20.28	7.905			
4,600.0	4,554.7	4,598.7	4,528.5	13.6	15.8	-35.67	-685.2	-328.9	164.4	143.7	20.71	7.940			
4,700.0	4,653.6	4,698.6	4,626.8	13.9	16.2	-35.52	-701.5	-337.1	168.5	147.4	21.14	7.973			
4,800.0	4,752.6	4,798.5	4,725.0	14.2	16.6	-35.37	-717.9	-345.2	172.6	151.1	21.56	8.005			
4,900.0	4,851.5	4,898.5	4,823.2	14.5	16.9	-35.23	-734.2	-353.4	176.7	154.7	21.99	8.036			
5,000.0	4,950.4	4,998.4	4,921.4	14.9	17.3	-35.10	-750.6	-361.6	180.9	158.4	22.42	8.066			

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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: O-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,049.3	5,098.3	5,019.7	15.2	17.7	-34.97	-766.9	-369.7	185.0	162.1	22.85	8.094	
5,200.0	5,148.3	5,198.2	5,117.9	15.5	18.0	-34.85	-783.2	-377.9	189.1	165.8	23.28	8.122	
5,300.0	5,247.2	5,298.1	5,216.1	15.8	18.4	-34.73	-799.6	-386.0	193.2	169.5	23.71	8.149	
5,400.0	5,346.1	5,398.0	5,314.4	16.1	18.7	-34.62	-815.9	-394.2	197.3	173.2	24.14	8.174	
5,500.0	5,445.0	5,498.0	5,412.6	16.4	19.1	-34.51	-832.3	-402.3	201.4	176.9	24.57	8.199	
5,600.0	5,544.0	5,597.9	5,510.8	16.7	19.5	-34.41	-848.6	-410.5	205.5	180.5	25.00	8.223	
5,700.0	5,642.9	5,697.8	5,609.1	17.0	19.8	-34.31	-865.0	-418.6	209.6	184.2	25.42	8.246	
5,800.0	5,741.8	5,797.7	5,707.3	17.3	20.2	-34.22	-881.3	-426.8	213.8	187.9	25.85	8.268	
5,900.0	5,840.7	5,897.6	5,805.5	17.6	20.6	-34.13	-897.7	-434.9	217.9	191.6	26.28	8.290	
6,000.0	5,939.7	5,997.5	5,903.7	18.0	20.9	-34.04	-914.0	-443.1	222.0	195.3	26.71	8.311	
6,100.0	6,038.6	6,097.4	6,002.0	18.3	21.3	-33.95	-930.4	-451.3	226.1	199.0	27.14	8.331	
6,200.0	6,137.5	6,197.4	6,100.2	18.6	21.7	-33.87	-946.7	-459.4	230.2	202.7	27.57	8.351	
6,300.0	6,236.4	6,297.3	6,198.4	18.9	22.0	-33.79	-963.0	-467.6	234.4	206.4	28.00	8.370	
6,400.0	6,335.4	6,397.2	6,296.7	19.2	22.4	-33.72	-979.4	-475.7	238.5	210.0	28.43	8.388	
6,500.0	6,434.3	6,497.1	6,394.9	19.5	22.8	-33.65	-995.7	-483.9	242.6	213.7	28.86	8.406	
6,600.0	6,533.2	6,597.0	6,493.1	19.8	23.1	-33.57	-1,012.1	-492.0	246.7	217.4	29.29	8.424	
6,700.0	6,632.1	6,696.9	6,591.4	20.1	23.5	-33.51	-1,028.4	-500.2	250.8	221.1	29.72	8.441	
6,800.0	6,731.1	6,796.8	6,689.6	20.4	23.8	-33.44	-1,044.8	-508.3	255.0	224.8	30.15	8.457	
6,900.0	6,830.0	6,896.8	6,787.8	20.7	24.2	-33.38	-1,061.1	-516.5	259.1	228.5	30.58	8.473	
7,000.0	6,928.9	6,996.7	6,886.1	21.1	24.6	-33.31	-1,077.5	-524.7	263.2	232.2	31.01	8.489	
7,100.0	7,027.8	7,096.6	6,984.3	21.4	24.9	-33.25	-1,093.8	-532.8	267.3	235.9	31.44	8.504	
7,200.0	7,126.8	7,196.5	7,082.5	21.7	25.3	-33.19	-1,110.2	-541.0	271.4	239.6	31.87	8.518	
7,300.0	7,225.7	7,296.4	7,180.7	22.0	25.7	-33.14	-1,126.5	-549.1	275.6	243.3	32.30	8.533	
7,400.0	7,324.6	7,396.3	7,279.0	22.3	26.0	-33.08	-1,142.9	-557.3	279.7	247.0	32.73	8.547	
7,500.0	7,423.5	7,498.0	7,379.0	22.6	26.4	-33.03	-1,159.4	-565.5	283.8	250.6	33.16	8.557	
7,600.0	7,522.6	7,607.7	7,487.3	22.9	26.7	-33.16	-1,174.8	-573.2	286.1	252.5	33.64	8.506	
7,700.0	7,622.0	7,717.5	7,596.3	23.1	27.0	-33.28	-1,186.5	-579.1	287.8	253.8	34.06	8.452	
7,800.0	7,721.7	7,827.4	7,705.8	23.3	27.2	-33.36	-1,194.5	-583.0	289.1	254.6	34.41	8.401	
7,900.0	7,821.7	7,937.3	7,815.6	23.4	27.3	-33.39	-1,198.7	-585.1	289.8	255.1	34.69	8.353	
8,000.0	7,921.7	8,043.3	7,921.7	23.5	27.4	179.50	-1,199.4	-585.5	289.9	255.0	34.94	8.297	
8,100.0	8,021.7	8,143.3	8,021.7	23.6	27.5	179.50	-1,199.4	-585.5	289.9	254.7	35.22	8.232	
8,200.0	8,121.7	8,243.3	8,121.7	23.7	27.6	179.50	-1,199.4	-585.5	289.9	254.4	35.50	8.166	
8,300.0	8,221.7	8,343.3	8,221.7	23.8	27.7	179.50	-1,199.4	-585.5	289.9	254.2	35.79	8.102	
8,400.0	8,321.7	8,443.3	8,321.7	23.9	27.8	179.50	-1,199.4	-585.5	289.9	253.9	36.07	8.038	
8,500.0	8,421.7	8,543.3	8,421.7	24.1	27.9	179.50	-1,199.4	-585.5	289.9	253.6	36.35	7.976	
8,600.0	8,521.7	8,643.3	8,521.7	24.2	28.0	179.50	-1,199.4	-585.5	289.9	253.3	36.64	7.913	
8,700.0	8,621.7	8,743.3	8,621.7	24.3	28.1	179.50	-1,199.4	-585.5	289.9	253.0	36.93	7.852	
8,800.0	8,721.7	8,843.3	8,721.7	24.4	28.2	179.50	-1,199.4	-585.5	289.9	252.7	37.21	7.791	
8,900.0	8,821.7	8,943.3	8,821.7	24.5	28.3	179.50	-1,199.4	-585.5	289.9	252.4	37.50	7.731	
9,000.0	8,921.7	9,043.3	8,921.7	24.6	28.3	179.50	-1,199.4	-585.5	289.9	252.1	37.79	7.672	
9,100.0	9,021.7	9,143.3	9,021.7	24.7	28.4	179.50	-1,199.4	-585.5	289.9	251.9	38.08	7.614	
9,200.0	9,121.7	9,243.3	9,121.7	24.8	28.5	179.50	-1,199.4	-585.5	289.9	251.6	38.37	7.556	
9,300.0	9,221.7	9,343.3	9,221.7	24.9	28.6	179.50	-1,199.4	-585.5	289.9	251.3	38.67	7.499	
9,400.0	9,321.7	9,443.3	9,321.7	25.1	28.7	179.50	-1,199.4	-585.5	289.9	251.0	38.96	7.442	
9,500.0	9,421.7	9,543.3	9,421.7	25.2	28.8	179.50	-1,199.4	-585.5	289.9	250.7	39.25	7.386	
9,600.0	9,521.7	9,643.3	9,521.7	25.3	28.9	179.50	-1,199.4	-585.5	289.9	250.4	39.55	7.331	
9,700.0	9,621.7	9,743.3	9,621.7	25.4	29.0	179.50	-1,199.4	-585.5	289.9	250.1	39.85	7.277	
9,800.0	9,721.7	9,843.3	9,721.7	25.5	29.1	179.50	-1,199.4	-585.5	289.9	249.8	40.14	7.223	
9,900.0	9,821.7	9,943.3	9,821.7	25.6	29.3	179.50	-1,199.4	-585.5	289.9	249.5	40.44	7.170	
10,000.0	9,921.7	10,043.3	9,921.7	25.7	29.4	179.50	-1,199.4	-585.5	289.9	249.2	40.74	7.117	
10,100.0	10,021.7	10,143.3	10,021.7	25.9	29.5	179.50	-1,199.4	-585.5	289.9	248.9	41.04	7.065	
10,200.0	10,121.7	10,243.3	10,121.7	26.0	29.6	179.50	-1,199.4	-585.5	289.9	248.6	41.34	7.014	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:		0.0 ft	
Survey Program: 0-MWD												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)					
10,300.0	10,221.7	10,343.3	10,221.7	26.1	29.7	179.50	-1,199.4	-585.5	289.9	248.3	41.64	6.963			
10,356.9	10,278.5	10,400.2	10,278.5	26.2	29.7	179.50	-1,199.4	-585.5	289.9	248.1	41.81	6.934			
10,400.0	10,321.7	10,420.7	10,299.0	26.2	29.8	179.50	-1,199.4	-585.5	290.8	248.9	41.91	6.940			
10,500.0	10,421.7	10,420.7	10,299.0	26.3	29.8	179.50	-1,199.4	-585.5	314.8	272.8	42.06	7.485			
10,600.0	10,521.7	10,420.7	10,299.0	26.5	29.8	179.50	-1,199.4	-585.5	365.6	323.4	42.21	8.660			
10,700.0	10,621.7	10,420.7	10,299.0	26.6	29.8	179.50	-1,199.4	-585.5	433.8	391.4	42.36	10.240			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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: O-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	69.96	11.6	31.9	34.0						
100.0	100.0	100.0	100.0	0.1	0.1	69.96	11.6	31.9	34.0	33.7	0.27	124.770			
200.0	200.0	200.0	200.0	0.3	0.3	69.96	11.6	31.9	34.0	33.4	0.62	54.675 CC			
300.0	300.0	301.2	301.2	0.5	0.5	-142.25	9.2	30.9	34.3	33.3	0.98	34.976 ES			
400.0	399.6	402.4	402.0	0.7	0.7	-140.31	1.7	27.9	35.3	33.9	1.38	25.576			
500.0	498.8	503.5	502.2	1.0	1.0	-137.22	-10.7	23.0	36.9	35.1	1.86	19.859			
600.0	597.7	604.5	601.4	1.3	1.4	-129.43	-28.0	16.0	37.1	34.6	2.48	14.959			
675.2	672.1	679.6	674.8	1.5	1.7	-119.56	-43.5	9.8	36.6	33.6	3.06	11.984			
700.0	696.6	704.3	698.8	1.6	1.8	-116.19	-48.6	7.8	36.7	33.4	3.25	11.276			
800.0	795.6	804.0	795.9	1.9	2.2	-103.05	-69.4	-0.6	38.2	34.2	4.05	9.442			
900.0	894.5	903.6	892.9	2.2	2.6	-91.46	-90.2	-8.9	41.5	36.8	4.77	8.713			
1,000.0	993.4	1,003.2	990.0	2.5	3.0	-81.91	-111.0	-17.3	46.3	40.9	5.39	8.587 SF			
1,100.0	1,092.3	1,102.8	1,087.1	2.8	3.5	-74.30	-131.8	-25.6	52.1	46.2	5.94	8.776			
1,200.0	1,191.3	1,202.4	1,184.1	3.1	3.9	-68.30	-152.6	-33.9	58.6	52.2	6.43	9.121			
1,300.0	1,290.2	1,302.1	1,281.2	3.4	4.3	-63.53	-173.4	-42.3	65.7	58.8	6.89	9.537			
1,400.0	1,389.1	1,401.7	1,378.3	3.7	4.7	-59.71	-194.2	-50.6	73.1	65.8	7.33	9.977			
1,500.0	1,488.0	1,501.3	1,475.3	4.0	5.2	-56.60	-215.0	-59.0	80.8	73.0	7.76	10.415			
1,600.0	1,587.0	1,600.9	1,572.4	4.3	5.6	-54.04	-235.8	-67.3	88.6	80.5	8.18	10.839			
1,700.0	1,685.9	1,700.5	1,669.5	4.6	6.0	-51.89	-256.6	-75.6	96.7	88.1	8.60	11.243			
1,800.0	1,784.8	1,800.1	1,766.5	5.0	6.4	-50.08	-277.4	-84.0	104.8	95.8	9.02	11.624			
1,900.0	1,883.7	1,899.8	1,863.6	5.3	6.9	-48.53	-298.2	-92.3	113.0	103.6	9.43	11.981			
2,000.0	1,982.7	1,999.4	1,960.7	5.6	7.3	-47.19	-319.0	-100.7	121.3	111.5	9.85	12.315			
2,100.0	2,081.6	2,099.0	2,057.7	5.9	7.7	-46.02	-339.8	-109.0	129.7	119.4	10.27	12.627			
2,200.0	2,180.5	2,198.6	2,154.8	6.2	8.1	-44.99	-360.6	-117.3	138.1	127.4	10.69	12.919			
2,300.0	2,279.4	2,298.2	2,251.9	6.5	8.6	-44.09	-381.4	-125.7	146.5	135.4	11.11	13.191			
2,400.0	2,378.4	2,397.9	2,348.9	6.8	9.0	-43.28	-402.2	-134.0	155.0	143.4	11.53	13.445			
2,500.0	2,477.3	2,497.5	2,446.0	7.1	9.4	-42.55	-423.0	-142.3	163.5	151.5	11.95	13.683			
2,600.0	2,576.2	2,597.1	2,543.0	7.4	9.9	-41.90	-443.8	-150.7	172.0	159.6	12.37	13.906			
2,700.0	2,675.1	2,696.7	2,640.1	7.7	10.3	-41.31	-464.6	-159.0	180.5	167.7	12.79	14.116			
2,800.0	2,774.1	2,796.3	2,737.2	8.0	10.7	-40.77	-485.4	-167.4	189.1	175.9	13.21	14.313			
2,900.0	2,873.0	2,895.9	2,834.2	8.4	11.1	-40.28	-506.2	-175.7	197.6	184.0	13.63	14.498			
3,000.0	2,971.9	2,995.6	2,931.3	8.7	11.6	-39.82	-527.0	-184.0	206.2	192.2	14.06	14.672			
3,100.0	3,070.8	3,095.2	3,028.4	9.0	12.0	-39.41	-547.8	-192.4	214.8	200.4	14.48	14.837			
3,200.0	3,169.8	3,194.8	3,125.4	9.3	12.4	-39.03	-568.6	-200.7	223.4	208.5	14.90	14.992			
3,300.0	3,268.7	3,294.4	3,222.5	9.6	12.9	-38.67	-589.4	-209.1	232.1	216.7	15.33	15.140			
3,400.0	3,367.6	3,394.0	3,319.6	9.9	13.3	-38.34	-610.2	-217.4	240.7	224.9	15.75	15.279			
3,500.0	3,466.5	3,493.7	3,416.6	10.2	13.7	-38.04	-631.0	-225.7	249.3	233.1	16.18	15.411			
3,600.0	3,565.5	3,593.3	3,513.7	10.5	14.2	-37.75	-651.8	-234.1	257.9	241.3	16.60	15.537			
3,700.0	3,664.4	3,692.9	3,610.8	10.8	14.6	-37.48	-672.6	-242.4	266.6	249.6	17.03	15.656			
3,800.0	3,763.3	3,792.5	3,707.8	11.1	15.0	-37.23	-693.4	-250.8	275.2	257.8	17.45	15.770			
3,900.0	3,862.2	3,892.1	3,804.9	11.4	15.4	-37.00	-714.2	-259.1	283.9	266.0	17.88	15.878			
4,000.0	3,961.2	3,991.7	3,902.0	11.8	15.9	-36.78	-735.0	-267.4	292.6	274.3	18.31	15.981			
4,100.0	4,060.1	4,091.4	3,999.0	12.1	16.3	-36.57	-755.8	-275.8	301.2	282.5	18.73	16.080			
4,200.0	4,159.0	4,191.0	4,096.1	12.4	16.7	-36.37	-776.6	-284.1	309.9	290.7	19.16	16.174			
4,300.0	4,257.9	4,290.6	4,193.2	12.7	17.2	-36.18	-797.4	-292.4	318.6	299.0	19.59	16.265			
4,400.0	4,356.9	4,390.2	4,290.2	13.0	17.6	-36.01	-818.2	-300.8	327.2	307.2	20.01	16.351			
4,500.0	4,455.8	4,489.8	4,387.3	13.3	18.0	-35.84	-839.0	-309.1	335.9	315.5	20.44	16.434			
4,600.0	4,554.7	4,589.5	4,484.3	13.6	18.4	-35.68	-859.8	-317.5	344.6	323.7	20.87	16.513			
4,700.0	4,653.6	4,689.1	4,581.4	13.9	18.9	-35.53	-880.6	-325.8	353.3	332.0	21.29	16.589			
4,800.0	4,752.6	4,788.7	4,678.5	14.2	19.3	-35.39	-901.4	-334.1	362.0	340.2	21.72	16.663			
4,900.0	4,851.5	4,888.3	4,775.5	14.5	19.7	-35.25	-922.2	-342.5	370.6	348.5	22.15	16.733			
5,000.0	4,950.4	4,987.9	4,872.6	14.9	20.2	-35.12	-943.0	-350.8	379.3	356.8	22.58	16.801			

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,049.3	5,087.5	4,969.7	15.2	20.6	-34.99	-963.8	-359.2	388.0	365.0	23.01	16.866		
5,200.0	5,148.3	5,187.2	5,066.7	15.5	21.0	-34.88	-984.6	-367.5	396.7	373.3	23.43	16.929		
5,300.0	5,247.2	5,286.8	5,163.8	15.8	21.4	-34.76	-1,005.4	-375.8	405.4	381.5	23.86	16.990		
5,400.0	5,346.1	5,386.4	5,260.9	16.1	21.9	-34.65	-1,026.2	-384.2	414.1	389.8	24.29	17.048		
5,500.0	5,445.0	5,486.0	5,357.9	16.4	22.3	-34.55	-1,047.0	-392.5	422.8	398.1	24.72	17.104		
5,600.0	5,544.0	5,585.6	5,455.0	16.7	22.7	-34.45	-1,067.8	-400.9	431.5	406.3	25.15	17.159		
5,700.0	5,642.9	5,685.3	5,552.1	17.0	23.2	-34.35	-1,088.6	-409.2	440.2	414.6	25.58	17.212		
5,800.0	5,741.8	5,784.9	5,649.1	17.3	23.6	-34.26	-1,109.4	-417.5	448.9	422.9	26.00	17.263		
5,900.0	5,840.7	5,884.5	5,746.2	17.6	24.0	-34.17	-1,130.2	-425.9	457.6	431.2	26.43	17.312		
6,000.0	5,939.7	5,984.1	5,843.3	18.0	24.4	-34.08	-1,151.0	-434.2	466.3	439.4	26.86	17.360		
6,100.0	6,038.6	6,083.7	5,940.3	18.3	24.9	-34.00	-1,171.8	-442.5	475.0	447.7	27.29	17.406		
6,200.0	6,137.5	6,183.3	6,037.4	18.6	25.3	-33.92	-1,192.6	-450.9	483.7	456.0	27.72	17.451		
6,300.0	6,236.4	6,283.0	6,134.5	18.9	25.7	-33.84	-1,213.4	-459.2	492.4	464.3	28.15	17.494		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-5A (M16W Pad) - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	69.89	17.5	47.7	50.8					
100.0	100.0	100.0	100.0	0.1	0.1	69.89	17.5	47.7	50.8	50.6	0.27	186.682		
200.0	200.0	200.0	200.0	0.3	0.3	69.89	17.5	47.7	50.8	50.2	0.62	81.805 CC, ES		
300.0	300.0	301.7	301.6	0.5	0.5	-142.41	14.9	46.9	51.3	50.3	0.98	52.200		
400.0	399.6	403.3	403.0	0.7	0.7	-140.74	7.2	44.3	52.6	51.2	1.38	37.978		
500.0	498.8	504.9	503.6	1.0	1.0	-138.07	-5.6	40.0	54.8	52.9	1.87	29.314		
600.0	597.7	606.3	603.2	1.3	1.4	-132.15	-23.3	34.0	55.6	53.1	2.48	22.439		
700.0	696.6	706.9	701.0	1.6	1.8	-121.41	-45.9	26.4	55.2	51.9	3.27	16.884		
713.6	710.1	720.5	714.1	1.6	1.9	-119.56	-49.3	25.3	55.2	51.8	3.39	16.285		
800.0	795.6	806.1	796.5	1.9	2.3	-107.78	-71.2	17.9	56.4	52.3	4.14	13.611		
900.0	894.5	905.2	892.0	2.2	2.8	-95.33	-96.4	9.4	60.6	55.7	4.95	12.255		
1,000.0	993.4	1,004.3	987.4	2.5	3.3	-84.90	-121.7	0.9	67.3	61.7	5.63	11.959 SF		
1,100.0	1,092.3	1,103.4	1,082.8	2.8	3.8	-76.56	-146.9	-7.5	75.8	69.6	6.21	12.220		
1,200.0	1,191.3	1,202.5	1,178.3	3.1	4.3	-69.99	-172.2	-16.0	85.6	78.9	6.71	12.763		
1,300.0	1,290.2	1,301.6	1,273.7	3.4	4.8	-64.81	-197.5	-24.5	96.3	89.1	7.17	13.434		
1,400.0	1,389.1	1,400.6	1,369.2	3.7	5.2	-60.69	-222.7	-33.0	107.6	100.0	7.60	14.153		
1,500.0	1,488.0	1,499.7	1,464.6	4.0	5.7	-57.36	-248.0	-41.5	119.3	111.3	8.02	14.875		
1,600.0	1,587.0	1,598.8	1,560.1	4.3	6.2	-54.63	-273.2	-50.0	131.4	123.0	8.44	15.576		
1,700.0	1,685.9	1,697.9	1,655.5	4.6	6.7	-52.36	-298.5	-58.5	143.7	134.9	8.85	16.245		
1,800.0	1,784.8	1,797.0	1,750.9	5.0	7.2	-50.46	-323.7	-67.0	156.2	147.0	9.26	16.877		
1,900.0	1,883.7	1,896.1	1,846.4	5.3	7.7	-48.83	-349.0	-75.5	168.9	159.2	9.67	17.471		
2,000.0	1,982.7	1,995.2	1,941.8	5.6	8.2	-47.44	-374.3	-84.0	181.7	171.6	10.08	18.027		
2,100.0	2,081.6	2,094.3	2,037.3	5.9	8.7	-46.22	-399.5	-92.5	194.5	184.0	10.49	18.547		
2,200.0	2,180.5	2,193.4	2,132.7	6.2	9.2	-45.16	-424.8	-101.0	207.4	196.5	10.90	19.033		
2,300.0	2,279.4	2,292.5	2,228.1	6.5	9.7	-44.22	-450.0	-109.5	220.4	209.1	11.31	19.487		
2,400.0	2,378.4	2,391.6	2,323.6	6.8	10.2	-43.39	-475.3	-118.0	233.5	221.8	11.73	19.912		
2,500.0	2,477.3	2,490.6	2,419.0	7.1	10.7	-42.64	-500.6	-126.4	246.6	234.4	12.14	20.310		
2,600.0	2,576.2	2,589.7	2,514.5	7.4	11.2	-41.97	-525.8	-134.9	259.7	247.1	12.56	20.682		
2,700.0	2,675.1	2,688.8	2,609.9	7.7	11.7	-41.37	-551.1	-143.4	272.9	259.9	12.97	21.032		
2,800.0	2,774.1	2,787.9	2,705.3	8.0	12.2	-40.82	-576.3	-151.9	286.0	272.7	13.39	21.361		
2,900.0	2,873.0	2,887.0	2,800.8	8.4	12.7	-40.32	-601.6	-160.4	299.3	285.4	13.81	21.671		
3,000.0	2,971.9	2,986.1	2,896.2	8.7	13.2	-39.86	-626.9	-168.9	312.5	298.3	14.23	21.962		
3,100.0	3,070.8	3,085.2	2,991.7	9.0	13.7	-39.44	-652.1	-177.4	325.7	311.1	14.65	22.238		
3,200.0	3,169.8	3,184.3	3,087.1	9.3	14.2	-39.05	-677.4	-185.9	339.0	323.9	15.07	22.498		
3,300.0	3,268.7	3,283.4	3,182.5	9.6	14.7	-38.69	-702.6	-194.4	352.3	336.8	15.49	22.744		
3,400.0	3,367.6	3,382.5	3,278.0	9.9	15.2	-38.36	-727.9	-202.9	365.6	349.7	15.91	22.977		
3,500.0	3,466.5	3,481.6	3,373.4	10.2	15.7	-38.05	-753.2	-211.4	378.9	362.5	16.33	23.199		
3,600.0	3,565.5	3,580.7	3,468.9	10.5	16.2	-37.76	-778.4	-219.9	392.2	375.4	16.75	23.409		
3,700.0	3,664.4	3,679.7	3,564.3	10.8	16.7	-37.49	-803.7	-228.4	405.5	388.3	17.18	23.609		
3,800.0	3,763.3	3,778.8	3,659.7	11.1	17.2	-37.24	-828.9	-236.8	418.8	401.2	17.60	23.799		
3,900.0	3,862.2	3,877.9	3,755.2	11.4	17.7	-37.00	-854.2	-245.3	432.2	414.1	18.02	23.980		
4,000.0	3,961.2	3,977.0	3,850.6	11.8	18.2	-36.78	-879.5	-253.8	445.5	427.1	18.45	24.153		
4,100.0	4,060.1	4,076.1	3,946.1	12.1	18.7	-36.57	-904.7	-262.3	458.9	440.0	18.87	24.319		
4,200.0	4,159.0	4,175.2	4,041.5	12.4	19.2	-36.37	-930.0	-270.8	472.2	452.9	19.29	24.476		
4,300.0	4,257.9	4,274.3	4,136.9	12.7	19.7	-36.18	-955.2	-279.3	485.6	465.9	19.72	24.627		
4,400.0	4,356.9	4,373.4	4,232.4	13.0	20.2	-36.00	-980.5	-287.8	498.9	478.8	20.14	24.772		

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## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	42.74	125.3	115.8	170.6					
100.0	100.0	100.0	100.0	0.1	0.1	42.74	125.3	115.8	170.6	170.3	0.27	626.591		
200.0	200.0	200.0	200.0	0.3	0.3	42.74	125.3	115.8	170.6	170.0	0.62	274.574	CC, ES	
300.0	300.0	298.6	298.6	0.5	0.5	-171.10	127.3	114.2	173.6	172.6	0.98	177.900		
400.0	399.6	396.2	395.9	0.7	0.7	-173.79	133.1	109.4	182.7	181.3	1.36	134.335		
500.0	498.8	491.8	490.7	1.0	1.0	-177.65	142.5	101.7	198.6	196.8	1.79	110.829		
600.0	597.7	588.3	585.9	1.3	1.3	178.21	154.4	91.9	218.0	215.7	2.24	97.275		
700.0	696.6	685.2	681.6	1.6	1.6	174.72	166.4	82.0	238.4	235.7	2.69	88.467		
800.0	795.6	782.2	777.3	1.9	1.9	171.77	178.4	72.1	259.5	256.3	3.15	82.409		
900.0	894.5	879.1	873.0	2.2	2.2	169.27	190.4	62.3	281.1	277.5	3.60	78.025		
1,000.0	993.4	976.0	968.6	2.5	2.5	167.12	202.4	52.4	303.2	299.2	4.06	74.724		
1,100.0	1,092.3	1,073.0	1,064.3	2.8	2.8	165.26	214.4	42.5	325.7	321.2	4.51	72.158		
1,200.0	1,191.3	1,169.9	1,160.0	3.1	3.2	163.65	226.4	32.7	348.4	343.5	4.97	70.112		
1,300.0	1,290.2	1,266.8	1,255.7	3.4	3.5	162.23	238.4	22.8	371.4	366.0	5.43	68.447		
1,400.0	1,389.1	1,363.8	1,351.4	3.7	3.8	160.97	250.4	12.9	394.6	388.7	5.88	67.068		
1,500.0	1,488.0	1,460.7	1,447.0	4.0	4.1	159.86	262.4	3.1	417.9	411.6	6.34	65.909		
1,600.0	1,587.0	1,557.6	1,542.7	4.3	4.4	158.86	274.4	-6.8	441.4	434.6	6.80	64.922		
1,700.0	1,685.9	1,654.6	1,638.4	4.6	4.8	157.96	286.4	-16.7	465.0	457.7	7.26	64.073		
1,800.0	1,784.8	1,751.5	1,734.1	5.0	5.1	157.15	298.5	-26.6	488.7	481.0	7.72	63.335	SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	41.73	135.9	121.2	182.0					
100.0	100.0	100.0	100.0	0.1	0.1	41.73	135.9	121.2	182.0	181.8	0.27	668.564	CC, ES	
200.0	200.0	200.0	200.0	0.3	0.3	41.73	135.9	121.2	182.0	181.4	0.62	292.966		
300.0	300.0	297.1	297.1	0.5	0.5	-171.99	138.0	119.9	185.4	184.4	0.97	190.672		
400.0	399.6	393.2	392.8	0.7	0.7	-174.32	144.2	116.1	195.6	194.3	1.35	144.994		
500.0	498.8	487.1	486.0	1.0	1.0	-177.64	154.2	109.9	213.2	211.4	1.76	120.958		
600.0	597.7	578.8	576.3	1.3	1.3	178.56	167.8	101.6	235.2	233.0	2.21	106.280		
700.0	696.6	674.0	669.6	1.6	1.6	174.76	184.1	91.7	259.4	256.8	2.68	96.770		
800.0	795.6	769.7	763.3	1.9	2.0	171.60	200.4	81.7	284.6	281.5	3.15	90.407		
900.0	894.5	865.3	857.1	2.2	2.4	168.95	216.8	71.7	310.5	306.9	3.61	85.932		
1,000.0	993.4	961.0	950.8	2.5	2.7	166.70	233.1	61.7	337.0	332.9	4.08	82.648		
1,100.0	1,092.3	1,056.6	1,044.5	2.8	3.1	164.77	249.5	51.7	363.8	359.3	4.54	80.154		
1,200.0	1,191.3	1,152.3	1,138.2	3.1	3.5	163.11	265.8	41.7	391.0	386.0	5.00	78.205		
1,300.0	1,290.2	1,247.9	1,231.9	3.4	3.8	161.67	282.2	31.8	418.4	413.0	5.46	76.647		
1,400.0	1,389.1	1,343.6	1,325.6	3.7	4.2	160.40	298.5	21.8	446.1	440.2	5.92	75.378		
1,500.0	1,488.0	1,439.2	1,419.3	4.0	4.6	159.27	314.8	11.8	474.0	467.6	6.38	74.327 SF		

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## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	45.17	131.1	131.9	186.0						
100.0	100.0	100.0	100.0	0.1	0.1	45.17	131.1	131.9	186.0	185.7	0.27	683.052			
200.0	200.0	200.0	200.0	0.3	0.3	45.17	131.1	131.9	186.0	185.4	0.62	299.315 CC, ES			
300.0	300.0	295.9	295.8	0.5	0.5	-168.52	133.4	131.1	189.6	188.6	0.97	195.601			
400.0	399.6	390.6	390.2	0.7	0.7	-170.72	140.0	128.6	200.7	199.4	1.34	149.821			
500.0	498.8	482.9	481.9	1.0	0.9	-173.87	150.8	124.7	219.6	217.9	1.74	126.346			
600.0	597.7	572.9	570.6	1.3	1.3	-177.42	165.2	119.5	243.4	241.2	2.17	112.241			
700.0	696.6	660.5	656.1	1.6	1.6	179.00	183.0	113.0	270.8	268.2	2.62	103.339			
800.0	795.6	745.4	738.0	1.9	2.0	175.54	203.8	105.4	302.0	298.9	3.09	97.862			
900.0	894.5	827.6	816.3	2.2	2.5	172.30	227.1	96.9	337.1	333.6	3.55	95.004			
1,000.0	993.4	918.4	902.3	2.5	3.0	169.14	254.6	86.9	374.7	370.6	4.04	92.836			
1,100.0	1,092.3	1,009.2	988.3	2.8	3.5	166.54	282.1	76.8	413.0	408.5	4.51	91.522			
1,200.0	1,191.3	1,100.0	1,074.2	3.1	4.1	164.37	309.6	66.8	452.0	447.1	4.98	90.721			
1,300.0	1,290.2	1,190.8	1,160.2	3.4	4.6	162.54	337.1	56.8	491.5	486.1	5.45	90.244 SF			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	59.44	21.8	37.0	43.0					
100.0	100.0	100.0	100.0	0.1	0.1	59.44	21.8	37.0	43.0	42.7	0.27	157.805		
200.0	200.0	200.0	200.0	0.3	0.3	59.44	21.8	37.0	43.0	42.3	0.62	69.150 CC, ES		
300.0	300.0	301.5	301.5	0.5	0.5	-157.48	22.5	34.4	43.5	42.5	0.98	44.443		
400.0	399.6	402.5	402.1	0.7	0.7	-168.67	24.4	26.6	46.3	44.9	1.37	33.913		
500.0	498.8	502.4	501.1	1.0	1.0	176.45	27.4	13.8	54.1	52.3	1.82	29.691		
600.0	597.7	601.0	598.0	1.3	1.4	161.81	31.7	-3.8	65.8	63.4	2.40	27.471		
700.0	696.6	697.9	692.3	1.6	1.8	148.61	37.0	-25.7	81.3	78.3	3.08	26.446 SF		
800.0	795.6	792.8	783.3	1.9	2.3	137.45	43.2	-51.7	101.6	97.8	3.81	26.683		
900.0	894.5	886.2	871.6	2.2	2.9	128.39	50.4	-81.4	126.8	122.3	4.52	28.055		
1,000.0	993.4	980.9	960.8	2.5	3.5	121.91	57.9	-112.5	154.8	149.6	5.19	29.812		
1,100.0	1,092.3	1,075.7	1,050.0	2.8	4.1	117.41	65.3	-143.6	184.1	178.3	5.84	31.542		
1,200.0	1,191.3	1,170.4	1,139.2	3.1	4.7	114.14	72.8	-174.7	214.2	207.7	6.47	33.128		
1,300.0	1,290.2	1,265.2	1,228.3	3.4	5.3	111.68	80.3	-205.8	244.8	237.7	7.08	34.548		
1,400.0	1,389.1	1,359.9	1,317.5	3.7	5.9	109.76	87.8	-236.9	275.6	267.9	7.70	35.809		
1,500.0	1,488.0	1,454.7	1,406.7	4.0	6.5	108.23	95.3	-268.0	306.7	298.4	8.31	36.928		
1,600.0	1,587.0	1,549.4	1,495.9	4.3	7.1	106.97	102.8	-299.1	338.0	329.1	8.91	37.923		
1,700.0	1,685.9	1,644.2	1,585.1	4.6	7.7	105.93	110.3	-330.2	369.4	359.9	9.52	38.812		
1,800.0	1,784.8	1,738.9	1,674.3	5.0	8.3	105.06	117.8	-361.3	400.9	390.8	10.12	39.609		
1,900.0	1,883.7	1,833.7	1,763.4	5.3	8.9	104.31	125.3	-392.4	432.4	421.7	10.72	40.326		
2,000.0	1,982.7	1,928.4	1,852.6	5.6	9.5	103.66	132.8	-423.5	464.0	452.7	11.33	40.975		
2,100.0	2,081.6	2,023.2	1,941.8	5.9	10.1	103.09	140.3	-454.6	495.7	483.8	11.93	41.564		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	52.90	16.0	21.2	26.6					
100.0	100.0	100.0	100.0	0.1	0.1	52.90	16.0	21.2	26.6	26.3	0.27	97.536		
200.0	200.0	200.0	200.0	0.3	0.3	52.90	16.0	21.2	26.6	25.9	0.62	42.740	CC, ES	
300.0	300.0	300.9	300.9	0.5	0.5	-165.72	16.3	18.5	27.2	26.2	0.98	27.861		
400.0	399.6	401.4	401.1	0.7	0.7	179.30	17.1	10.6	30.6	29.3	1.36	22.468		
500.0	498.8	501.0	499.8	1.0	1.0	162.18	18.5	-2.4	39.5	37.7	1.84	21.486		
600.0	597.7	599.5	596.6	1.3	1.4	147.20	20.4	-20.2	52.3	49.9	2.45	21.394	SF	
700.0	696.6	696.6	691.0	1.6	1.8	134.43	22.7	-42.7	68.6	65.5	3.14	21.866		
800.0	795.6	791.8	782.4	1.9	2.3	124.01	25.5	-69.3	89.3	85.4	3.86	23.149		
900.0	894.5	885.9	871.4	2.2	2.9	115.76	28.7	-99.7	114.4	109.9	4.54	25.199		
1,000.0	993.4	981.4	961.3	2.5	3.5	110.12	32.0	-131.5	141.7	136.5	5.19	27.298		
1,100.0	1,092.3	1,076.8	1,051.3	2.8	4.1	106.29	35.4	-163.2	169.8	164.0	5.82	29.179		
1,200.0	1,191.3	1,172.2	1,141.2	3.1	4.7	103.56	38.7	-194.9	198.4	192.0	6.44	30.820		
1,300.0	1,290.2	1,267.7	1,231.2	3.4	5.3	101.51	42.0	-226.7	227.4	220.3	7.05	32.243		
1,400.0	1,389.1	1,363.1	1,321.1	3.7	5.9	99.93	45.4	-258.4	256.5	248.9	7.66	33.480		
1,500.0	1,488.0	1,458.6	1,411.0	4.0	6.5	98.66	48.7	-290.2	285.8	277.6	8.27	34.559		
1,600.0	1,587.0	1,554.0	1,501.0	4.3	7.1	97.63	52.0	-321.9	315.2	306.4	8.88	35.508		
1,700.0	1,685.9	1,649.4	1,590.9	4.6	7.7	96.78	55.4	-353.7	344.7	335.2	9.48	36.346		
1,800.0	1,784.8	1,744.9	1,680.9	5.0	8.3	96.06	58.7	-385.4	374.3	364.2	10.09	37.092		
1,900.0	1,883.7	1,840.3	1,770.8	5.3	8.9	95.45	62.0	-417.2	403.8	393.1	10.70	37.759		
2,000.0	1,982.7	1,935.8	1,860.8	5.6	9.5	94.92	65.4	-448.9	433.5	422.2	11.30	38.359		
2,100.0	2,081.6	2,031.2	1,950.7	5.9	10.1	94.46	68.7	-480.6	463.1	451.2	11.90	38.901		
2,200.0	2,180.5	2,126.6	2,040.7	6.2	10.7	94.05	72.0	-512.4	492.8	480.3	12.51	39.394		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-67.88	4.4	-10.7	11.6					
100.0	100.0	100.0	100.0	0.1	0.1	-67.88	4.4	-10.7	11.6	11.3	0.27	42.549		
200.0	200.0	200.0	200.0	0.3	0.3	-67.88	4.4	-10.7	11.6	11.0	0.62	18.645 CC, ES		
300.0	300.0	299.4	299.3	0.5	0.5	85.60	4.3	-13.3	13.6	12.6	0.98	13.841 SF		
400.0	399.6	398.4	398.1	0.7	0.7	96.59	4.1	-21.0	20.1	18.7	1.39	14.405		
500.0	498.8	496.8	495.6	1.0	1.0	104.19	3.7	-33.7	31.6	29.7	1.90	16.626		
600.0	597.7	594.3	591.5	1.3	1.3	104.85	3.3	-51.3	47.1	44.6	2.47	19.054		
700.0	696.6	690.6	685.2	1.6	1.8	101.84	2.7	-73.4	65.8	62.8	3.08	21.394		
800.0	795.6	785.2	776.1	1.9	2.3	97.92	1.9	-99.7	88.2	84.5	3.70	23.849		
900.0	894.5	879.7	865.6	2.2	2.8	94.15	1.1	-129.9	114.1	109.8	4.30	26.509		
1,000.0	993.4	975.9	956.5	2.5	3.4	91.54	0.3	-161.3	140.9	136.0	4.91	28.697		
1,100.0	1,092.3	1,072.1	1,047.4	2.8	4.0	89.76	-0.6	-192.8	167.8	162.3	5.51	30.451		
1,200.0	1,191.3	1,168.2	1,138.3	3.1	4.6	88.48	-1.5	-224.3	194.9	188.8	6.11	31.880		
1,300.0	1,290.2	1,264.4	1,229.2	3.4	5.2	87.50	-2.3	-255.7	222.0	215.3	6.71	33.065		
1,400.0	1,389.1	1,360.6	1,320.1	3.7	5.8	86.74	-3.2	-287.2	249.2	241.9	7.32	34.062		
1,500.0	1,488.0	1,456.8	1,411.0	4.0	6.4	86.13	-4.0	-318.6	276.4	268.5	7.92	34.911		
1,600.0	1,587.0	1,553.0	1,501.9	4.3	7.0	85.63	-4.9	-350.1	303.7	295.1	8.52	35.643		
1,700.0	1,685.9	1,649.2	1,592.8	4.6	7.6	85.21	-5.7	-381.5	330.9	321.8	9.12	36.281		
1,800.0	1,784.8	1,745.4	1,683.6	5.0	8.2	84.86	-6.6	-413.0	358.2	348.5	9.72	36.840		
1,900.0	1,883.7	1,841.6	1,774.5	5.3	8.8	84.55	-7.5	-444.4	385.5	375.1	10.32	37.335		
2,000.0	1,982.7	1,937.7	1,865.4	5.6	9.4	84.29	-8.3	-475.9	412.8	401.8	10.93	37.776		
2,100.0	2,081.6	2,033.9	1,956.3	5.9	10.0	84.06	-9.2	-507.3	440.1	428.5	11.53	38.172		
2,200.0	2,180.5	2,130.1	2,047.2	6.2	10.6	83.85	-10.0	-538.8	467.4	455.2	12.13	38.528		
2,300.0	2,279.4	2,226.3	2,138.1	6.5	11.2	83.67	-10.9	-570.2	494.7	481.9	12.73	38.851		



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor				
0.0	0.0	0.0	0.0	0.0	0.0	39.93	119.5	100.0	155.8							
100.0	100.0	100.0	100.0	0.1	0.1	39.93	119.5	100.0	155.8	155.5	0.27	572.125				
200.0	200.0	200.0	200.0	0.3	0.3	39.93	119.5	100.0	155.8	155.2	0.62	250.707	CC, ES			
300.0	300.0	300.0	299.9	0.5	0.5	-174.01	121.1	97.9	158.4	157.4	0.98	161.881				
400.0	399.6	399.1	398.7	0.7	0.7	-176.95	126.0	91.9	166.4	165.0	1.37	121.638				
500.0	498.8	496.4	495.2	1.0	1.0	178.80	133.9	82.1	180.5	178.7	1.81	99.772				
600.0	597.7	591.8	589.1	1.3	1.3	173.89	144.6	68.8	198.2	195.8	2.32	85.500				
700.0	696.6	685.1	679.9	1.6	1.7	168.68	158.0	52.3	218.5	215.6	2.89	75.703				
800.0	795.6	776.0	767.3	1.9	2.2	163.46	173.7	33.0	242.1	238.6	3.50	69.121				
900.0	894.5	864.1	850.8	2.2	2.8	158.46	191.4	11.1	269.6	265.4	4.15	64.920				
1,000.0	993.4	951.1	931.9	2.5	3.3	153.72	211.1	-13.3	301.1	296.3	4.80	62.681				
1,100.0	1,092.3	1,042.4	1,016.6	2.8	4.0	149.49	232.4	-39.7	335.1	329.6	5.46	61.317				
1,200.0	1,191.3	1,133.6	1,101.3	3.1	4.6	146.01	253.8	-66.1	370.5	364.4	6.11	60.668				
1,300.0	1,290.2	1,224.8	1,186.0	3.4	5.2	143.12	275.1	-92.5	406.9	400.2	6.73	60.439	SF			
1,400.0	1,389.1	1,316.1	1,270.7	3.7	5.8	140.69	296.5	-118.9	444.1	436.8	7.35	60.465				
1,500.0	1,488.0	1,407.3	1,355.4	4.0	6.5	138.63	317.9	-145.3	482.0	474.0	7.95	60.646				

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	35.70	124.2	89.2	152.9						
100.0	100.0	100.0	100.0	0.1	0.1	35.70	124.2	89.2	152.9	152.7	0.27	561.664			
200.0	200.0	200.0	200.0	0.3	0.3	35.70	124.2	89.2	152.9	152.3	0.62	246.122 CC, ES			
300.0	300.0	300.7	300.6	0.5	0.5	-178.20	125.5	86.9	155.3	154.3	0.98	158.539			
400.0	399.6	400.6	400.2	0.7	0.7	178.94	129.4	80.1	162.7	161.3	1.37	118.604			
500.0	498.8	498.9	497.7	1.0	1.0	174.78	135.8	69.0	175.7	173.8	1.82	96.484			
600.0	597.7	595.6	592.8	1.3	1.3	169.86	144.6	53.9	191.6	189.3	2.35	81.638			
700.0	696.6	690.3	684.9	1.6	1.8	164.50	155.4	35.0	209.8	206.9	2.95	71.191			
800.0	795.6	782.7	773.7	1.9	2.3	159.01	168.2	12.8	231.1	227.5	3.61	64.008			
900.0	894.5	872.4	858.6	2.2	2.8	153.64	182.6	-12.3	256.0	251.7	4.32	59.304			
1,000.0	993.4	961.5	941.6	2.5	3.4	148.49	198.8	-40.4	284.9	279.8	5.03	56.664			
1,100.0	1,092.3	1,053.6	1,027.1	2.8	4.1	143.98	215.9	-70.1	316.2	310.5	5.74	55.097			
1,200.0	1,191.3	1,145.7	1,112.6	3.1	4.7	140.26	233.0	-99.8	349.1	342.6	6.43	54.305			
1,300.0	1,290.2	1,237.8	1,198.1	3.4	5.3	137.16	250.1	-129.5	383.1	376.0	7.10	53.976			
1,400.0	1,389.1	1,329.9	1,283.6	3.7	6.0	134.55	267.2	-159.2	418.0	410.2	7.75	53.928 SF			
1,500.0	1,488.0	1,422.0	1,369.0	4.0	6.6	132.34	284.3	-188.9	453.5	445.1	8.39	54.053			
1,600.0	1,587.0	1,514.1	1,454.5	4.3	7.3	130.44	301.4	-218.6	489.5	480.5	9.02	54.285			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	31.72	118.4	73.1	139.1					
100.0	100.0	100.0	100.0	0.1	0.1	31.72	118.4	73.1	139.1	138.9	0.27	511.013	CC	
200.0	200.0	200.0	200.0	0.3	0.3	31.72	118.4	73.1	139.1	138.5	0.62	223.927	ES	
300.0	300.0	300.8	300.7	0.5	0.5	177.78	119.5	70.7	141.4	140.5	0.98	144.365		
400.0	399.6	400.9	400.5	0.7	0.7	174.85	122.7	63.6	148.6	147.3	1.37	108.262		
500.0	498.8	499.6	498.3	1.0	1.0	170.61	128.1	51.8	161.2	159.4	1.83	88.299		
600.0	597.7	596.7	593.9	1.3	1.4	165.56	135.4	35.8	176.7	174.3	2.36	74.764		
700.0	696.6	692.0	686.6	1.6	1.8	160.01	144.6	15.8	194.2	191.2	2.98	65.161		
800.0	795.6	785.1	776.0	1.9	2.3	154.29	155.3	-7.7	214.7	211.0	3.67	58.566		
900.0	894.5	875.6	861.6	2.2	2.8	148.68	167.5	-34.4	238.8	234.4	4.39	54.400		
1,000.0	993.4	968.3	948.4	2.5	3.4	143.42	181.1	-64.0	266.3	261.1	5.12	51.996		
1,100.0	1,092.3	1,061.7	1,035.8	2.8	4.1	139.09	194.8	-93.9	295.5	289.7	5.83	50.671		
1,200.0	1,191.3	1,155.0	1,123.1	3.1	4.7	135.52	208.5	-123.8	326.1	319.6	6.52	49.996		
1,300.0	1,290.2	1,248.3	1,210.5	3.4	5.3	132.56	222.1	-153.7	357.7	350.5	7.20	49.710		
1,400.0	1,389.1	1,341.7	1,297.8	3.7	5.9	130.06	235.8	-183.6	390.1	382.2	7.85	49.662	SF	
1,500.0	1,488.0	1,435.0	1,385.2	4.0	6.5	127.95	249.5	-213.4	423.0	414.5	8.50	49.760		
1,600.0	1,587.0	1,528.3	1,472.6	4.3	7.1	126.13	263.1	-243.3	456.3	447.2	9.14	49.948		
1,700.0	1,685.9	1,621.7	1,559.9	4.6	7.8	124.56	276.8	-273.2	490.0	480.3	9.76	50.190		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	32.27	107.8	68.1	127.5					
100.0	100.0	100.0	100.0	0.1	0.1	32.27	107.8	68.1	127.5	127.2	0.27	468.259		
200.0	200.0	200.0	200.0	0.3	0.3	32.27	107.8	68.1	127.5	126.9	0.62	205.192	CC, ES	
300.0	300.0	303.9	303.9	0.5	0.5	179.84	105.9	68.1	128.6	127.6	0.98	131.510		
400.0	399.6	405.9	405.7	0.7	0.7	-179.34	101.3	67.3	132.3	131.0	1.33	99.511		
500.0	498.8	506.0	505.7	1.0	0.9	179.52	98.8	62.5	140.5	138.8	1.67	83.919		
600.0	597.7	605.6	604.8	1.3	1.1	176.54	98.7	53.1	150.2	148.2	2.05	73.257		
700.0	696.6	704.1	702.3	1.6	1.4	172.12	101.1	39.4	160.6	158.1	2.50	64.346		
800.0	795.6	801.1	797.6	1.9	1.7	166.68	105.9	21.5	172.5	169.5	3.04	56.825		
900.0	894.5	896.2	889.9	2.2	2.1	160.62	112.9	0.0	187.1	183.4	3.69	50.746		
1,000.0	993.4	989.7	979.6	2.5	2.6	154.34	121.8	-24.9	205.2	200.8	4.41	46.499		
1,100.0	1,092.3	1,085.1	1,070.7	2.8	3.1	148.66	131.6	-51.5	226.2	221.0	5.16	43.812		
1,200.0	1,191.3	1,180.5	1,161.8	3.1	3.6	143.95	141.5	-78.1	249.0	243.1	5.90	42.202		
1,300.0	1,290.2	1,275.9	1,252.9	3.4	4.1	140.02	151.3	-104.8	273.2	266.6	6.62	41.264		
1,400.0	1,389.1	1,371.3	1,344.0	3.7	4.6	136.72	161.1	-131.4	298.5	291.1	7.32	40.749		
1,500.0	1,488.0	1,466.8	1,435.1	4.0	5.1	133.93	170.9	-158.0	324.5	316.5	8.01	40.506		
1,600.0	1,587.0	1,562.2	1,526.2	4.3	5.7	131.56	180.7	-184.6	351.2	342.5	8.68	40.437	SF	
1,700.0	1,685.9	1,657.6	1,617.3	4.6	6.2	129.51	190.5	-211.2	378.4	369.0	9.35	40.482		
1,800.0	1,784.8	1,753.0	1,708.4	5.0	6.7	127.74	200.3	-237.8	405.9	395.9	10.00	40.601		
1,900.0	1,883.7	1,848.4	1,799.5	5.3	7.3	126.19	210.1	-264.4	433.8	423.1	10.64	40.766		
2,000.0	1,982.7	1,943.8	1,890.6	5.6	7.8	124.83	219.9	-291.0	461.9	450.6	11.28	40.961		
2,100.0	2,081.6	2,039.2	1,981.7	5.9	8.3	123.62	229.7	-317.6	490.3	478.4	11.91	41.174		

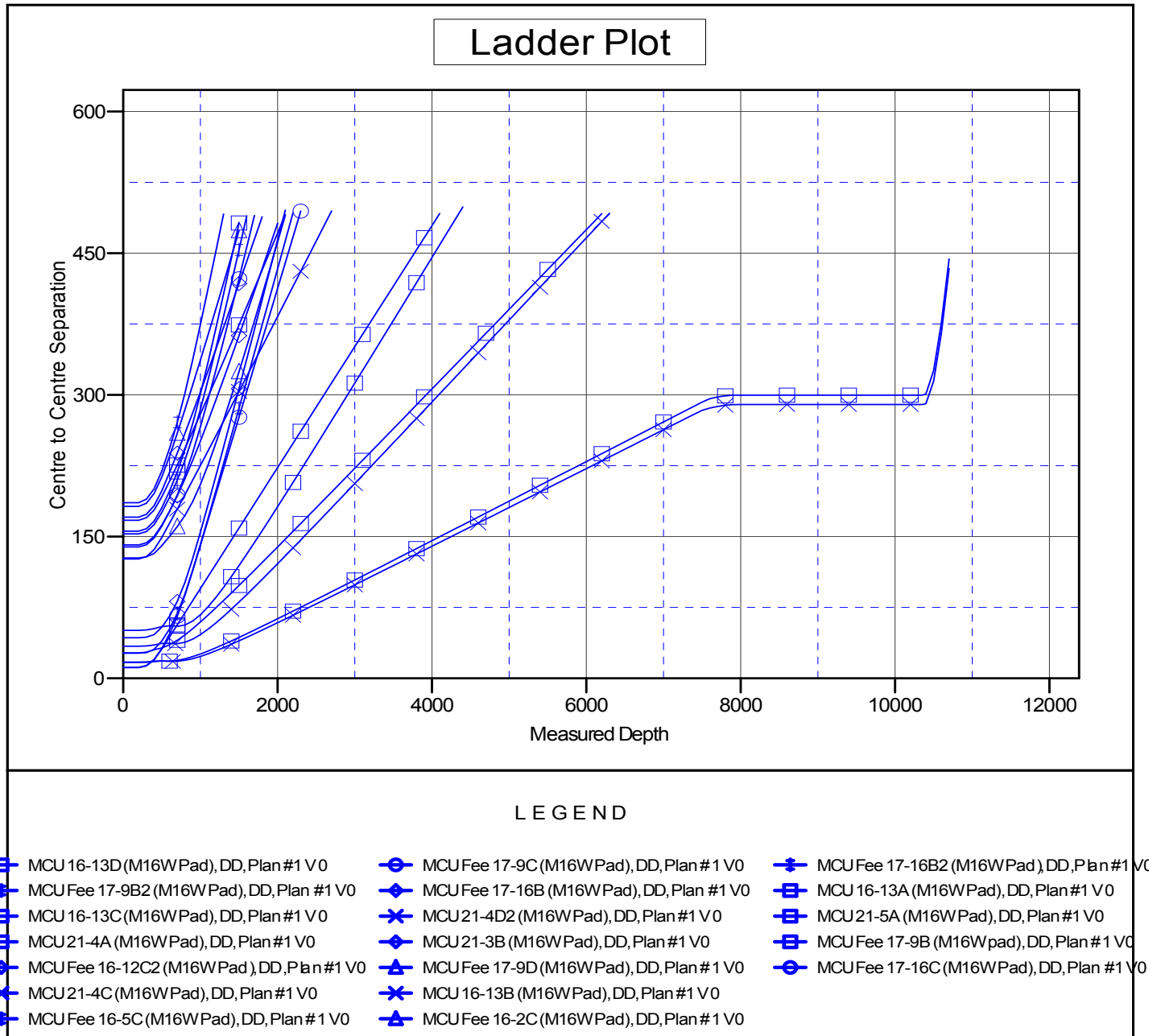
# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well MCU 21-4B (M16W Pad)
<b>Project:</b>	Mamm Creek	<b>TVD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Reference Site:</b>	SWSW S16-T7S-R93W (M16W Pad)	<b>MD Reference:</b>	KBE @ 7903.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	MCU 21-4B (M16W Pad)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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 21-4B (M16W Pad)  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.44°



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