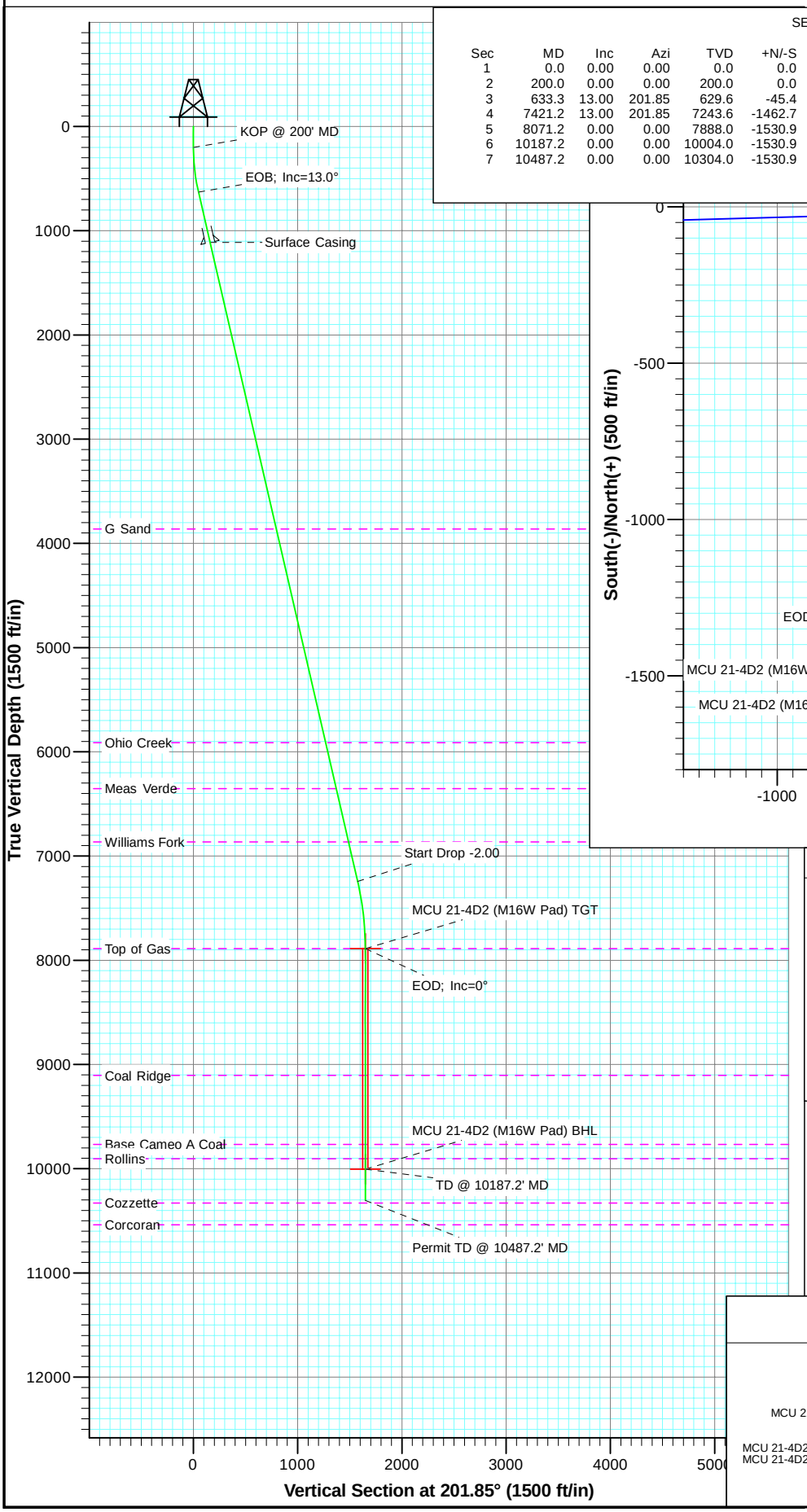
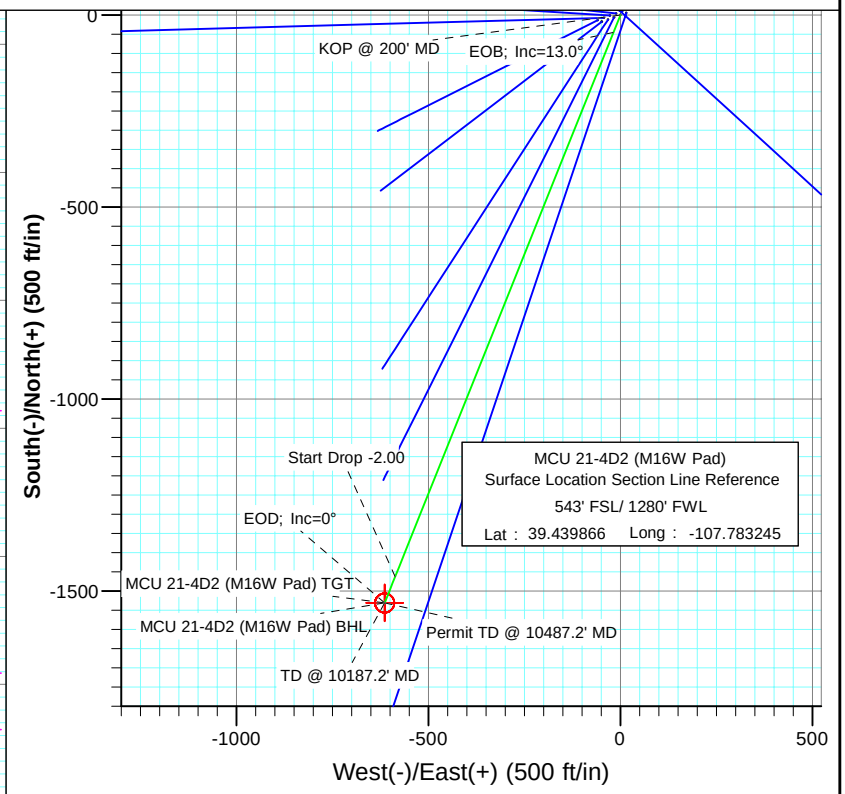
Project: Mamm Creek
Site: SWSW S16-T7S-R93W (M16W Pad)
Well: MCU 21-4D2 (M16W Pad)
Wellbore: DD
Plan: Plan #1

CATHEDRAL

SECTION DETAILS

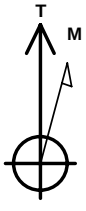
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	633.3	13.00	201.85	629.6	-45.4	-18.2	3.00	201.85	48.9	
4	7421.2	13.00	201.85	7243.6	-1462.7	-586.4	0.00	0.00	1575.9	
5	8071.2	0.00	0.00	7888.0	-1530.9	-613.7	2.00	180.00	1649.3	MCU 21-4D2 (M16W Pad) TGT
6	10187.2	0.00	0.00	10004.0	-1530.9	-613.7	0.00	0.00	1649.3	MCU 21-4D2 (M16W Pad) BHL
7	10487.2	0.00	0.00	10304.0	-1530.9	-613.7	0.00	0.00	1649.3	





FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3862.0	3950.7	G Sand
5912.0	6054.7	Ohio Creek
6353.0	6507.3	Meas Verde
6865.0	7032.7	Williams Fork
7888.0	8071.2	Top of Gas
9104.0	9287.2	Coal Ridge
9768.0	9951.2	Base Cameo A Coal
9904.0	10087.2	Rollins



Azimuths to True North
Magnetic North: 10.30°

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

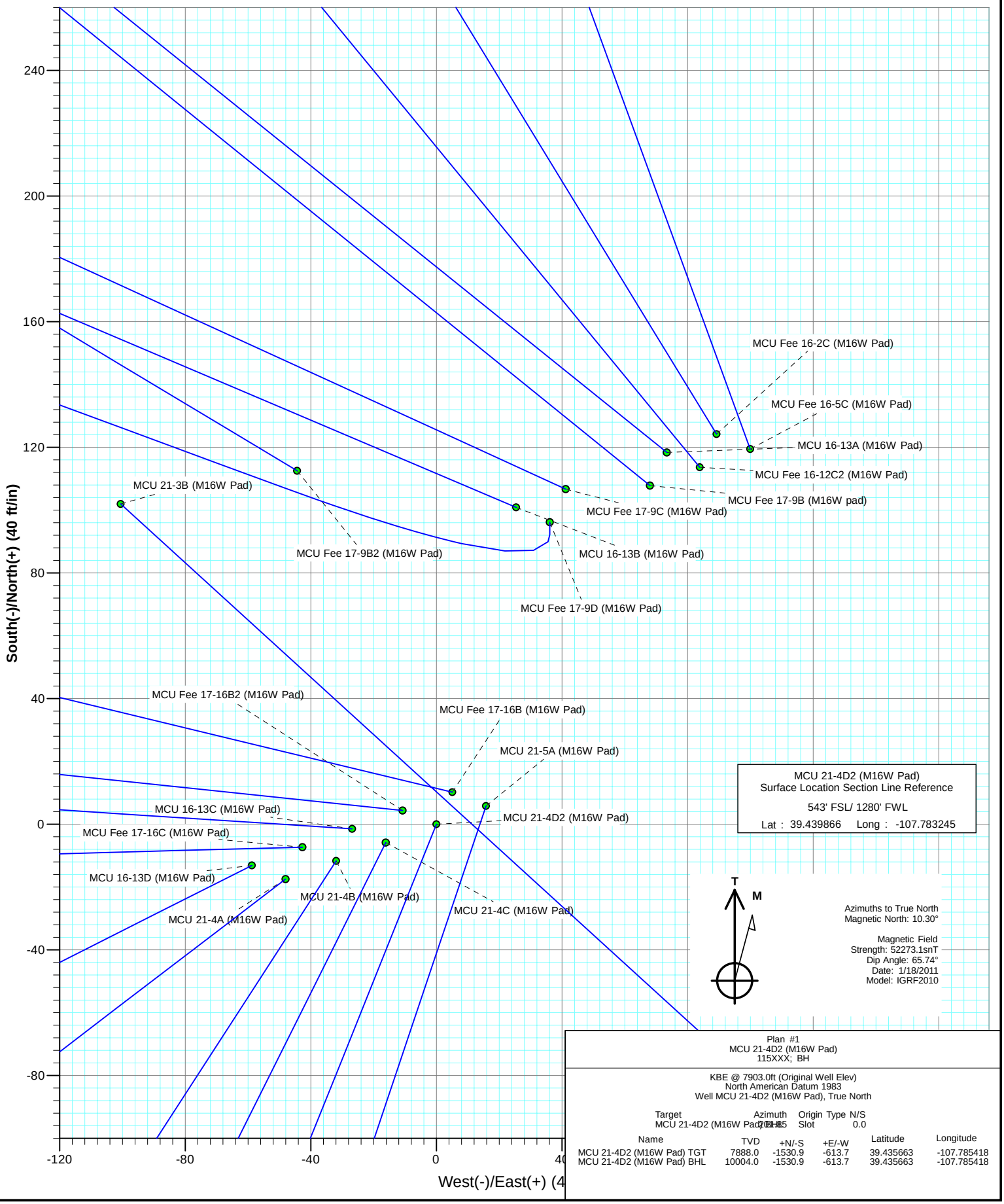
Plan #1
MCU 21-4D2 (M16W Pad)
115XXX; BH

KBE @ 7903.0ft (Original Well Elev)
North American Datum 1983
Well MCU 21-4D2 (M16W Pad), True North

Target	Azimuth	Origin Type	N/S
MCU 21-4D2 (M16W Pad) BHL	201.85	Slot	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-4D2 (M16W Pad) TGT	7888.0	-1530.9	-613.7	39.435663	-107.785418
MCU 21-4D2 (M16W Pad) BHL	10004.0	-1530.9	-613.7	39.435663	-107.785418

Project: Mamm Creek
Site: SWSW S16-T7S-R93W (M16W Pad)
Well: MCU 21-4D2 (M16W Pad)
Wellbore: DD
Plan: Plan #1



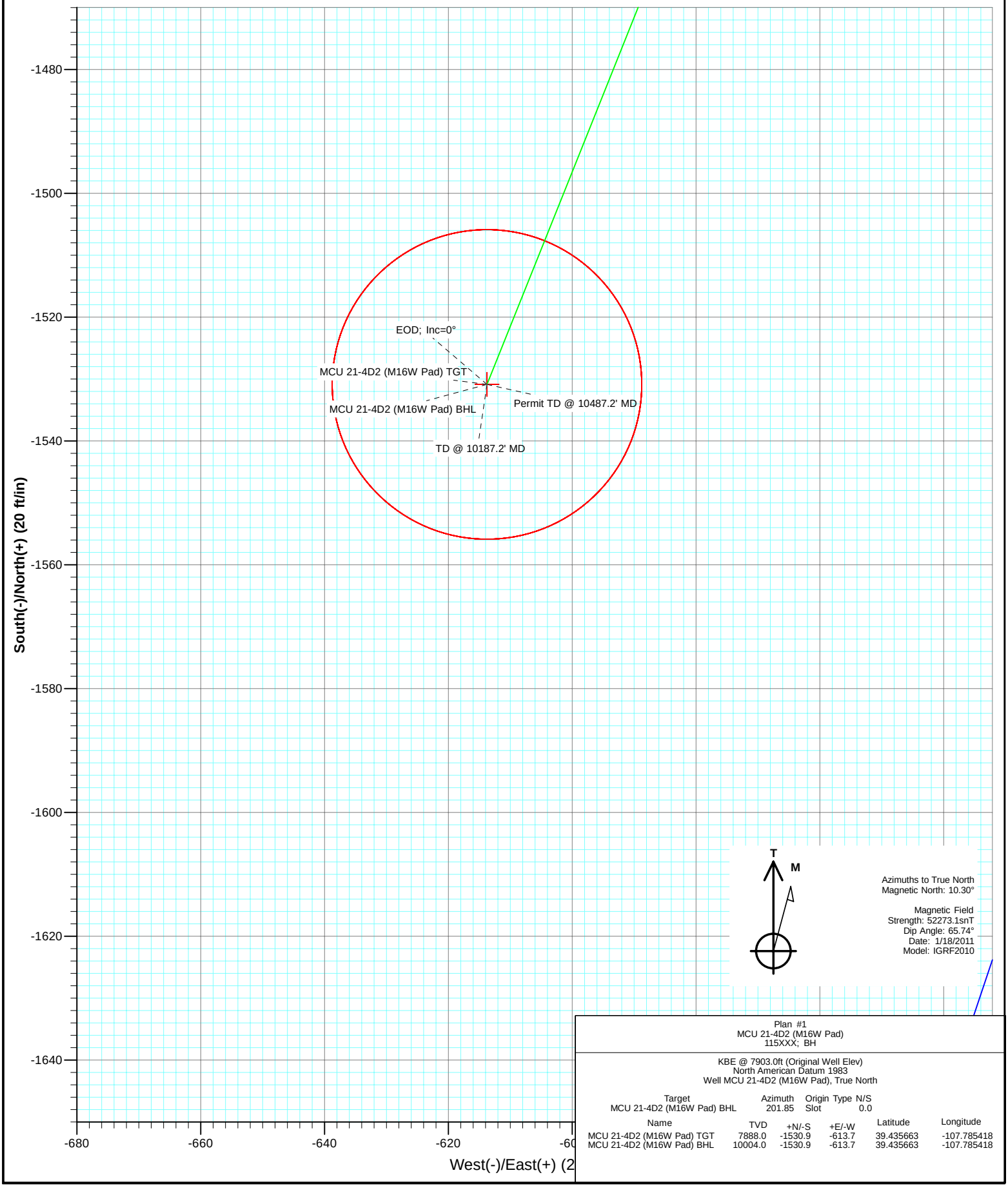
Plan #1
MCU 21-4D2 (M16W Pad)
115XXX; BH

KBE @ 7903.0ft (Original Well Elev)
North American Datum 1983
Well MCU 21-4D2 (M16W Pad), True North

Target	Azimuth	Origin Type	N/S
MCU 21-4D2 (M16W Pad) BH	201.85	Slot	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-4D2 (M16W Pad) TGT	7888.0	-1530.9	-613.7	39.435663	-107.785418
MCU 21-4D2 (M16W Pad) BHL	10004.0	-1530.9	-613.7	39.435663	-107.785418

Project: Mamm Creek
Site: SWSW S16-T7S-R93W (M16W Pad)
Well: MCU 21-4D2 (M16W Pad)
Wellbore: DD
Plan: Plan #1



Plan #1
MCU 21-4D2 (M16W Pad)
115XXX; BH

KBE @ 7903.0ft (Original Well Elev)
North American Datum 1983
Well MCU 21-4D2 (M16W Pad), True North

Target	Azimuth	Origin Type	N/S
MCU 21-4D2 (M16W Pad) BHL	201.85	Slot	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MCU 21-4D2 (M16W Pad) TGT	7888.0	-1530.9	-613.7	39.435663	-107.785418
MCU 21-4D2 (M16W Pad) BHL	10004.0	-1530.9	-613.7	39.435663	-107.785418

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Project Mamm Creek

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

Site SWSW S16-T7S-R93W (M16W Pad)

Site Position:		**Northing:**	1,593,196.17 ft	**Latitude:**	39.439834
From:	Lat/Long	**Easting:**	2,355,193.71 ft	**Longitude:**	-107.783358
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.44 °

Well MCU 21-4D2 (M16W Pad)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,593,207.01 ft	**Latitude:**	39.439866
	+E/-W	0.0 ft	**Easting:**	2,355,225.91 ft	**Longitude:**	-107.783245
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	7,881.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/18/2011	10.30	65.74	52,273

Design Plan #1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	201.85

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
633.3	13.00	201.85	629.6	-45.4	-18.2	3.00	3.00	0.00	201.85	
7,421.2	13.00	201.85	7,243.6	-1,462.7	-586.4	0.00	0.00	0.00	0.00	
8,071.2	0.00	0.00	7,888.0	-1,530.9	-613.7	2.00	-2.00	0.00	180.00	MCU 21-4D2 (M16W
10,187.2	0.00	0.00	10,004.0	-1,530.9	-613.7	0.00	0.00	0.00	0.00	MCU 21-4D2 (M16W
10,487.2	0.00	0.00	10,304.0	-1,530.9	-613.7	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200' MD
300.0	3.00	201.85	300.0	-2.4	-1.0	2.6	3.00	3.00	
400.0	6.00	201.85	399.6	-9.7	-3.9	10.5	3.00	3.00	
500.0	9.00	201.85	498.8	-21.8	-8.7	23.5	3.00	3.00	
600.0	12.00	201.85	597.1	-38.7	-15.5	41.7	3.00	3.00	
633.3	13.00	201.85	629.6	-45.4	-18.2	48.9	3.00	3.00	EOB; Inc=13.0°
700.0	13.00	201.85	694.6	-59.4	-23.8	63.9	0.00	0.00	
800.0	13.00	201.85	792.0	-80.2	-32.2	86.4	0.00	0.00	
900.0	13.00	201.85	889.5	-101.1	-40.5	108.9	0.00	0.00	
1,000.0	13.00	201.85	986.9	-122.0	-48.9	131.4	0.00	0.00	
1,100.0	13.00	201.85	1,084.3	-142.9	-57.3	153.9	0.00	0.00	
1,128.4	13.00	201.85	1,112.0	-148.8	-59.7	160.3	0.00	0.00	Surface Casing
1,200.0	13.00	201.85	1,181.8	-163.8	-65.7	176.4	0.00	0.00	
1,300.0	13.00	201.85	1,279.2	-184.6	-74.0	198.9	0.00	0.00	
1,400.0	13.00	201.85	1,376.6	-205.5	-82.4	221.4	0.00	0.00	
1,500.0	13.00	201.85	1,474.1	-226.4	-90.8	243.9	0.00	0.00	
1,600.0	13.00	201.85	1,571.5	-247.3	-99.1	266.4	0.00	0.00	
1,700.0	13.00	201.85	1,669.0	-268.1	-107.5	288.9	0.00	0.00	
1,800.0	13.00	201.85	1,766.4	-289.0	-115.9	311.4	0.00	0.00	
1,900.0	13.00	201.85	1,863.8	-309.9	-124.2	333.9	0.00	0.00	
2,000.0	13.00	201.85	1,961.3	-330.8	-132.6	356.4	0.00	0.00	
2,100.0	13.00	201.85	2,058.7	-351.7	-141.0	378.9	0.00	0.00	
2,200.0	13.00	201.85	2,156.1	-372.5	-149.4	401.4	0.00	0.00	
2,300.0	13.00	201.85	2,253.6	-393.4	-157.7	423.9	0.00	0.00	
2,400.0	13.00	201.85	2,351.0	-414.3	-166.1	446.4	0.00	0.00	
2,500.0	13.00	201.85	2,448.4	-435.2	-174.5	468.9	0.00	0.00	
2,600.0	13.00	201.85	2,545.9	-456.1	-182.8	491.3	0.00	0.00	
2,700.0	13.00	201.85	2,643.3	-476.9	-191.2	513.8	0.00	0.00	
2,800.0	13.00	201.85	2,740.8	-497.8	-199.6	536.3	0.00	0.00	
2,900.0	13.00	201.85	2,838.2	-518.7	-208.0	558.8	0.00	0.00	
3,000.0	13.00	201.85	2,935.6	-539.6	-216.3	581.3	0.00	0.00	
3,100.0	13.00	201.85	3,033.1	-560.5	-224.7	603.8	0.00	0.00	
3,200.0	13.00	201.85	3,130.5	-581.3	-233.1	626.3	0.00	0.00	
3,300.0	13.00	201.85	3,227.9	-602.2	-241.4	648.8	0.00	0.00	
3,400.0	13.00	201.85	3,325.4	-623.1	-249.8	671.3	0.00	0.00	
3,500.0	13.00	201.85	3,422.8	-644.0	-258.2	693.8	0.00	0.00	
3,600.0	13.00	201.85	3,520.3	-664.9	-266.6	716.3	0.00	0.00	
3,700.0	13.00	201.85	3,617.7	-685.7	-274.9	738.8	0.00	0.00	
3,800.0	13.00	201.85	3,715.1	-706.6	-283.3	761.3	0.00	0.00	
3,900.0	13.00	201.85	3,812.6	-727.5	-291.7	783.8	0.00	0.00	
3,950.7	13.00	201.85	3,862.0	-738.1	-295.9	795.2	0.00	0.00	G Sand
4,000.0	13.00	201.85	3,910.0	-748.4	-300.0	806.3	0.00	0.00	
4,100.0	13.00	201.85	4,007.4	-769.3	-308.4	828.8	0.00	0.00	
4,200.0	13.00	201.85	4,104.9	-790.1	-316.8	851.3	0.00	0.00	
4,300.0	13.00	201.85	4,202.3	-811.0	-325.1	873.8	0.00	0.00	
4,400.0	13.00	201.85	4,299.8	-831.9	-333.5	896.3	0.00	0.00	
4,500.0	13.00	201.85	4,397.2	-852.8	-341.9	918.8	0.00	0.00	
4,600.0	13.00	201.85	4,494.6	-873.6	-350.3	941.2	0.00	0.00	
4,700.0	13.00	201.85	4,592.1	-894.5	-358.6	963.7	0.00	0.00	
4,800.0	13.00	201.85	4,689.5	-915.4	-367.0	986.2	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,900.0	13.00	201.85	4,786.9	-936.3	-375.4	1,008.7	0.00	0.00	
5,000.0	13.00	201.85	4,884.4	-957.2	-383.7	1,031.2	0.00	0.00	
5,100.0	13.00	201.85	4,981.8	-978.0	-392.1	1,053.7	0.00	0.00	
5,200.0	13.00	201.85	5,079.3	-998.9	-400.5	1,076.2	0.00	0.00	
5,300.0	13.00	201.85	5,176.7	-1,019.8	-408.9	1,098.7	0.00	0.00	
5,400.0	13.00	201.85	5,274.1	-1,040.7	-417.2	1,121.2	0.00	0.00	
5,500.0	13.00	201.85	5,371.6	-1,061.6	-425.6	1,143.7	0.00	0.00	
5,600.0	13.00	201.85	5,469.0	-1,082.4	-434.0	1,166.2	0.00	0.00	
5,700.0	13.00	201.85	5,566.4	-1,103.3	-442.3	1,188.7	0.00	0.00	
5,800.0	13.00	201.85	5,663.9	-1,124.2	-450.7	1,211.2	0.00	0.00	
5,900.0	13.00	201.85	5,761.3	-1,145.1	-459.1	1,233.7	0.00	0.00	
6,000.0	13.00	201.85	5,858.7	-1,166.0	-467.5	1,256.2	0.00	0.00	
6,054.7	13.00	201.85	5,912.0	-1,177.4	-472.0	1,268.5	0.00	0.00	Ohio Creek
6,100.0	13.00	201.85	5,956.2	-1,186.8	-475.8	1,278.7	0.00	0.00	
6,200.0	13.00	201.85	6,053.6	-1,207.7	-484.2	1,301.2	0.00	0.00	
6,300.0	13.00	201.85	6,151.1	-1,228.6	-492.6	1,323.7	0.00	0.00	
6,400.0	13.00	201.85	6,248.5	-1,249.5	-500.9	1,346.2	0.00	0.00	
6,500.0	13.00	201.85	6,345.9	-1,270.4	-509.3	1,368.6	0.00	0.00	
6,507.3	13.00	201.85	6,353.0	-1,271.9	-509.9	1,370.3	0.00	0.00	Meas Verde
6,600.0	13.00	201.85	6,443.4	-1,291.2	-517.7	1,391.1	0.00	0.00	
6,700.0	13.00	201.85	6,540.8	-1,312.1	-526.1	1,413.6	0.00	0.00	
6,800.0	13.00	201.85	6,638.2	-1,333.0	-534.4	1,436.1	0.00	0.00	
6,900.0	13.00	201.85	6,735.7	-1,353.9	-542.8	1,458.6	0.00	0.00	
7,000.0	13.00	201.85	6,833.1	-1,374.8	-551.2	1,481.1	0.00	0.00	
7,032.7	13.00	201.85	6,865.0	-1,381.6	-553.9	1,488.5	0.00	0.00	Williams Fork
7,100.0	13.00	201.85	6,930.6	-1,395.6	-559.5	1,503.6	0.00	0.00	
7,200.0	13.00	201.85	7,028.0	-1,416.5	-567.9	1,526.1	0.00	0.00	
7,300.0	13.00	201.85	7,125.4	-1,437.4	-576.3	1,548.6	0.00	0.00	
7,400.0	13.00	201.85	7,222.9	-1,458.3	-584.6	1,571.1	0.00	0.00	
7,421.2	13.00	201.85	7,243.6	-1,462.7	-586.4	1,575.9	0.00	0.00	Start Drop -2.00
7,500.0	11.42	201.85	7,320.5	-1,478.2	-592.6	1,592.5	2.00	-2.00	
7,600.0	9.42	201.85	7,418.9	-1,495.0	-599.4	1,610.6	2.00	-2.00	
7,700.0	7.42	201.85	7,517.8	-1,508.6	-604.8	1,625.3	2.00	-2.00	
7,800.0	5.42	201.85	7,617.2	-1,518.9	-609.0	1,636.5	2.00	-2.00	
7,900.0	3.42	201.85	7,716.9	-1,526.1	-611.8	1,644.2	2.00	-2.00	
8,000.0	1.42	201.85	7,816.8	-1,530.0	-613.4	1,648.4	2.00	-2.00	
8,071.2	0.00	0.00	7,888.0	-1,530.9	-613.7	1,649.3	2.00	-2.00	EOD; Inc=0° - Top of Gas - MCU 21-4D2 (M16\
8,100.0	0.00	0.00	7,916.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,200.0	0.00	0.00	8,016.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,300.0	0.00	0.00	8,116.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,400.0	0.00	0.00	8,216.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,500.0	0.00	0.00	8,316.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,600.0	0.00	0.00	8,416.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,700.0	0.00	0.00	8,516.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,800.0	0.00	0.00	8,616.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
8,900.0	0.00	0.00	8,716.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,000.0	0.00	0.00	8,816.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,100.0	0.00	0.00	8,916.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,200.0	0.00	0.00	9,016.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,287.2	0.00	0.00	9,104.0	-1,530.9	-613.7	1,649.3	0.00	0.00	Coal Ridge
9,300.0	0.00	0.00	9,116.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,400.0	0.00	0.00	9,216.8	-1,530.9	-613.7	1,649.3	0.00	0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,500.0	0.00	0.00	9,316.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,600.0	0.00	0.00	9,416.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,700.0	0.00	0.00	9,516.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,800.0	0.00	0.00	9,616.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,900.0	0.00	0.00	9,716.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
9,951.2	0.00	0.00	9,768.0	-1,530.9	-613.7	1,649.3	0.00	0.00	Base Cameo A Coal
10,000.0	0.00	0.00	9,816.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
10,087.2	0.00	0.00	9,904.0	-1,530.9	-613.7	1,649.3	0.00	0.00	Rollins
10,100.0	0.00	0.00	9,916.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
10,187.2	0.00	0.00	10,004.0	-1,530.9	-613.7	1,649.3	0.00	0.00	TD @ 10187.2' MD - MCU 21-4D2 (M16W Pad)
10,200.0	0.00	0.00	10,016.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
10,300.0	0.00	0.00	10,116.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
10,400.0	0.00	0.00	10,216.8	-1,530.9	-613.7	1,649.3	0.00	0.00	
10,487.2	0.00	0.00	10,304.0	-1,530.9	-613.7	1,649.3	0.00	0.00	Permit TD @ 10487.2' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
MCU 21-4D2 (M16W Pa - plan hits target center - Circle (radius 25.0)	0.00	0.00	7,888.0	-1,530.9	-613.7	1,591,692.06	2,354,573.88	39.435663	-107.785418
MCU 21-4D2 (M16W Pa - plan hits target center - Circle (radius 25.0)	0.00	0.00	10,004.0	-1,530.9	-613.7	1,591,692.06	2,354,573.88	39.435663	-107.785418

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,128.4	1,112.0	Surface Casing	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,950.7	3,862.0	G Sand		0.00	
6,054.7	5,912.0	Ohio Creek		0.00	
6,507.3	6,353.0	Meas Verde		0.00	
7,032.7	6,865.0	Williams Fork		0.00	
8,071.2	7,888.0	Top of Gas		0.00	
9,287.2	9,104.0	Coal Ridge		0.00	
9,951.2	9,768.0	Base Cameo A Coal		0.00	
10,087.2	9,904.0	Rollins		0.00	

Database:	EDM 5000.1 US Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site:	SWSW S16-T7S-R93W (M16W Pad)	**North Reference:**	True
Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP @ 200' MD
633.3	629.6	-45.4	-18.2	EOB; Inc=13.0°
7,421.2	7,243.6	-1,462.7	-586.4	Start Drop -2.00
8,071.2	7,888.0	-1,530.9	-613.7	EOD; Inc=0°
10,187.2	10,004.0	-1,530.9	-613.7	TD @ 10187.2' MD
10,487.2	10,304.0	-1,530.9	-613.7	Permit TD @ 10487.2' MD

EnCana Oil & Gas (USA) Inc

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

Anticollision Report

19 January, 2011

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

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

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	10,487.2	Plan #1 (DD)	MWD	Geolink MWD

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
SWSW S16-T7S-R93W (M16W Pad)						
MCU 16-13A (M16W Pad) - DD - Plan #1	200.0	200.0	139.3	138.7	224.203	CC, ES
MCU 16-13A (M16W Pad) - DD - Plan #1	1,700.0	1,644.9	495.4	488.4	70.789	SF
MCU 16-13B (M16W Pad) - DD - Plan #1	200.0	200.0	104.0	103.4	167.461	CC, ES
MCU 16-13B (M16W Pad) - DD - Plan #1	2,000.0	1,950.7	495.8	487.3	58.894	SF
MCU 16-13C (M16W Pad) - DD - Plan #1	200.0	200.0	26.9	26.2	43.245	CC, ES
MCU 16-13C (M16W Pad) - DD - Plan #1	500.0	496.4	42.0	40.1	22.838	SF
MCU 16-13D (M16W Pad) - DD - Plan #1	200.0	200.0	60.2	59.6	96.871	CC, ES
MCU 16-13D (M16W Pad) - DD - Plan #1	900.0	889.1	91.4	87.2	21.604	SF
MCU 21-3B (M16W Pad) - DD - Plan #1	736.2	760.9	117.7	114.6	38.181	CC, ES
MCU 21-3B (M16W Pad) - DD - Plan #1	1,300.0	1,303.2	194.1	186.9	26.723	SF
MCU 21-4A (M16W Pad) - DD - Plan #1	200.0	200.0	51.1	50.5	82.234	CC, ES
MCU 21-4A (M16W Pad) - DD - Plan #1	900.0	890.8	72.2	67.9	16.612	SF
MCU 21-4B (M16W Pad) - DD - Plan #1	200.0	200.0	34.0	33.4	54.675	CC
MCU 21-4B (M16W Pad) - DD - Plan #1	300.0	298.6	34.3	33.3	35.139	ES
MCU 21-4B (M16W Pad) - DD - Plan #1	1,000.0	994.3	46.1	40.7	8.585	SF
MCU 21-4C (M16W Pad) - DD - Plan #1	200.0	200.0	17.1	16.5	27.552	CC
MCU 21-4C (M16W Pad) - DD - Plan #1	800.0	797.5	19.2	15.0	4.598	ES
MCU 21-4C (M16W Pad) - DD - Plan #1	1,000.0	997.3	23.0	17.4	4.096	SF
MCU 21-5A (M16W Pad) - DD - Plan #1	200.0	200.0	16.9	16.2	27.130	CC
MCU 21-5A (M16W Pad) - DD - Plan #1	900.0	902.5	19.3	14.0	3.598	ES
MCU 21-5A (M16W Pad) - DD - Plan #1	1,000.0	1,002.4	21.1	14.9	3.410	SF
MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1	200.0	200.0	141.2	140.6	227.330	CC, ES
MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1	1,500.0	1,434.6	481.2	475.1	78.856	SF
MCU Fee 16-2C (M16W Pad) - DD - Plan #1	200.0	200.0	152.9	152.3	246.157	CC, ES
MCU Fee 16-2C (M16W Pad) - DD - Plan #1	1,400.0	1,317.0	499.5	493.9	88.732	SF
MCU Fee 16-5C (M16W Pad) - DD - Plan #1	200.0	200.0	155.8	155.2	250.729	CC, ES
MCU Fee 16-5C (M16W Pad) - DD - Plan #1	800.0	736.4	296.9	294.0	101.295	SF
MCU Fee 17-16B (M16W Pad) - DD - Plan #1	200.0	200.0	11.4	10.8	18.346	CC, ES
MCU Fee 17-16B (M16W Pad) - DD - Plan #1	300.0	300.0	13.7	12.7	14.007	SF
MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1	200.0	200.0	11.6	11.0	18.653	CC, ES
MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1	300.0	299.3	14.2	13.2	14.534	SF
MCU Fee 17-16C (M16W Pad) - DD - Plan #1	200.0	200.0	43.3	42.6	69.629	CC, ES
MCU Fee 17-16C (M16W Pad) - DD - Plan #1	600.0	586.3	73.9	71.5	30.724	SF
MCU Fee 17-9B (M16W pad) - DD - Plan #1	200.0	200.0	127.5	126.9	205.204	CC, ES
MCU Fee 17-9B (M16W pad) - DD - Plan #1	1,500.0	1,378.5	498.9	491.7	69.572	SF
MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1	200.0	200.0	121.0	120.4	194.696	CC, ES
MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1	1,300.0	1,176.2	466.0	459.5	70.918	SF
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	200.0	200.0	114.4	113.8	184.121	CC, ES
MCU Fee 17-9C (M16W Pad) - DD - Plan #1	1,500.0	1,400.7	496.1	487.5	57.780	SF
MCU Fee 17-9D (M16W Pad) - DD - Plan #1	200.0	200.0	102.7	102.1	165.342	CC, ES
MCU Fee 17-9D (M16W Pad) - DD - Plan #1	1,700.0	1,623.2	468.7	459.2	49.224	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	31.81	118.4	73.4	139.3				
100.0	100.0	100.0	100.0	0.1	0.1	31.81	118.4	73.4	139.3	139.0	0.27	511.642	
200.0	200.0	200.0	200.0	0.3	0.3	31.81	118.4	73.4	139.3	138.7	0.62	224.203	CC, ES
300.0	300.0	298.9	298.9	0.5	0.5	-171.23	120.0	71.4	142.2	141.3	0.98	145.696	
400.0	399.6	396.9	396.5	0.7	0.7	-174.49	124.7	65.5	151.3	150.0	1.36	111.168	
500.0	498.8	494.0	492.9	1.0	1.0	-178.90	132.1	56.4	167.2	165.5	1.77	94.623	
600.0	597.1	590.8	589.0	1.4	1.2	177.32	139.8	46.8	189.3	187.1	2.17	87.131	
700.0	694.6	686.7	684.1	1.8	1.5	174.43	147.4	37.4	215.9	213.3	2.59	83.505	
800.0	792.0	782.6	779.2	2.2	1.7	172.19	155.0	27.9	243.1	240.1	3.01	80.814	
900.0	889.5	878.4	874.2	2.6	2.0	170.40	162.6	18.5	270.7	267.2	3.44	78.744	
1,000.0	986.9	974.2	969.3	3.0	2.3	168.94	170.2	9.0	298.4	294.6	3.87	77.086	
1,100.0	1,084.3	1,070.0	1,064.3	3.4	2.5	167.73	177.8	-0.4	326.3	322.0	4.31	75.720	
1,200.0	1,181.8	1,165.8	1,159.4	3.9	2.8	166.71	185.4	-9.9	354.3	349.6	4.75	74.573	
1,300.0	1,279.2	1,261.7	1,254.4	4.3	3.1	165.84	193.0	-19.3	382.4	377.2	5.20	73.595	
1,400.0	1,376.6	1,357.5	1,349.5	4.7	3.3	165.08	200.7	-28.8	410.6	404.9	5.64	72.750	
1,500.0	1,474.1	1,453.3	1,444.5	5.1	3.6	164.43	208.3	-38.3	438.8	432.7	6.09	72.013	
1,600.0	1,571.5	1,549.1	1,539.6	5.6	3.9	163.85	215.9	-47.7	467.1	460.5	6.54	71.364	
1,700.0	1,669.0	1,644.9	1,634.6	6.0	4.2	163.34	223.5	-57.2	495.4	488.4	7.00	70.789	SF

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	14.14	100.9	25.4	104.0				
100.0	100.0	100.0	100.0	0.1	0.1	14.14	100.9	25.4	104.0	103.8	0.27	382.155	
200.0	200.0	200.0	200.0	0.3	0.3	14.14	100.9	25.4	104.0	103.4	0.62	167.461	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	171.11	101.9	23.1	107.1	106.1	0.98	109.663	
400.0	399.6	397.4	397.0	0.7	0.7	167.94	104.9	16.1	116.3	115.0	1.36	85.535	
500.0	498.8	496.0	495.2	1.0	0.9	164.85	108.7	7.1	131.5	129.7	1.76	74.760	
600.0	597.1	593.8	592.5	1.4	1.2	162.92	112.4	-1.7	151.9	149.7	2.17	70.076	
700.0	694.6	690.8	689.0	1.8	1.4	161.93	116.1	-10.5	176.1	173.5	2.59	67.977	
800.0	792.0	787.7	785.5	2.2	1.6	161.26	119.9	-19.3	200.6	197.6	3.03	66.318	
900.0	889.5	884.6	881.9	2.6	1.9	160.74	123.6	-28.0	225.2	221.7	3.46	64.992	
1,000.0	986.9	981.5	978.4	3.0	2.1	160.32	127.3	-36.8	249.8	245.8	3.91	63.911	
1,100.0	1,084.3	1,078.5	1,074.8	3.4	2.3	159.97	131.0	-45.6	274.3	270.0	4.35	63.015	
1,200.0	1,181.8	1,175.4	1,171.3	3.9	2.6	159.69	134.8	-54.3	298.9	294.1	4.80	62.261	
1,300.0	1,279.2	1,272.3	1,267.7	4.3	2.8	159.44	138.5	-63.1	323.5	318.3	5.25	61.619	
1,400.0	1,376.6	1,369.2	1,364.2	4.7	3.0	159.23	142.2	-71.9	348.1	342.4	5.70	61.066	
1,500.0	1,474.1	1,466.1	1,460.6	5.1	3.3	159.05	145.9	-80.6	372.7	366.6	6.15	60.586	
1,600.0	1,571.5	1,563.1	1,557.1	5.6	3.5	158.89	149.7	-89.4	397.3	390.7	6.60	60.164	
1,700.0	1,669.0	1,660.0	1,653.5	6.0	3.8	158.75	153.4	-98.2	421.9	414.9	7.06	59.791	
1,800.0	1,766.4	1,756.9	1,750.0	6.4	4.0	158.62	157.1	-107.0	446.5	439.0	7.51	59.459	
1,900.0	1,863.8	1,853.8	1,846.4	6.9	4.2	158.51	160.8	-115.7	471.1	463.2	7.96	59.162	
2,000.0	1,961.3	1,950.7	1,942.9	7.3	4.5	158.41	164.6	-124.5	495.8	487.3	8.42	58.894	SF

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-93.10	-1.5	-26.8	26.9				
100.0	100.0	100.0	100.0	0.1	0.1	-93.10	-1.5	-26.8	26.9	26.6	0.27	98.687	
200.0	200.0	200.0	200.0	0.3	0.3	-93.10	-1.5	-26.8	26.9	26.2	0.62	43.245	CC, ES
300.0	300.0	298.5	298.5	0.5	0.5	70.33	-1.3	-29.4	28.5	27.5	0.98	29.171	
400.0	399.6	397.2	396.9	0.7	0.7	82.93	-0.8	-36.6	34.0	32.6	1.37	24.788	
500.0	498.8	496.4	495.7	1.0	0.9	98.33	-0.3	-44.7	42.0	40.1	1.84	22.838	SF
600.0	597.1	594.8	593.8	1.4	1.1	113.35	0.2	-52.7	54.0	51.6	2.36	22.856	
700.0	694.6	692.5	691.2	1.8	1.3	125.38	0.7	-60.7	70.6	67.7	2.86	24.683	
800.0	792.0	790.2	788.6	2.2	1.6	132.89	1.3	-68.7	89.4	86.0	3.33	26.818	
900.0	889.5	887.9	885.9	2.6	1.8	137.77	1.8	-76.7	109.1	105.3	3.79	28.782	
1,000.0	986.9	985.6	983.3	3.0	2.0	141.14	2.3	-84.7	129.4	125.1	4.24	30.493	
1,100.0	1,084.3	1,083.3	1,080.7	3.4	2.2	143.60	2.8	-92.7	150.0	145.3	4.69	31.965	
1,200.0	1,181.8	1,181.0	1,178.0	3.9	2.4	145.46	3.3	-100.7	170.7	165.6	5.14	33.232	
1,300.0	1,279.2	1,278.6	1,275.4	4.3	2.7	146.92	3.8	-108.7	191.7	186.1	5.58	34.328	
1,400.0	1,376.6	1,376.3	1,372.7	4.7	2.9	148.09	4.4	-116.7	212.7	206.7	6.03	35.281	
1,500.0	1,474.1	1,474.0	1,470.1	5.1	3.1	149.05	4.9	-124.6	233.8	227.3	6.47	36.117	
1,600.0	1,571.5	1,571.7	1,567.4	5.6	3.3	149.85	5.4	-132.6	254.9	248.0	6.92	36.855	
1,700.0	1,669.0	1,669.4	1,664.8	6.0	3.5	150.53	5.9	-140.6	276.1	268.7	7.36	37.510	
1,800.0	1,766.4	1,767.1	1,762.1	6.4	3.8	151.12	6.4	-148.6	297.3	289.5	7.80	38.096	
1,900.0	1,863.8	1,864.7	1,859.5	6.9	4.0	151.62	6.9	-156.6	318.5	310.3	8.25	38.622	
2,000.0	1,961.3	1,962.4	1,956.8	7.3	4.2	152.06	7.5	-164.6	339.8	331.1	8.69	39.097	
2,100.0	2,058.7	2,060.1	2,054.2	7.7	4.4	152.45	8.0	-172.6	361.1	351.9	9.13	39.528	
2,200.0	2,156.1	2,157.8	2,151.6	8.2	4.6	152.80	8.5	-180.6	382.3	372.8	9.58	39.921	
2,300.0	2,253.6	2,255.5	2,248.9	8.6	4.9	153.11	9.0	-188.6	403.6	393.6	10.02	40.281	
2,400.0	2,351.0	2,353.2	2,346.3	9.0	5.1	153.39	9.5	-196.6	425.0	414.5	10.46	40.611	
2,500.0	2,448.4	2,450.8	2,443.6	9.4	5.3	153.64	10.0	-204.6	446.3	435.4	10.91	40.915	
2,600.0	2,545.9	2,548.5	2,541.0	9.9	5.5	153.87	10.6	-212.5	467.6	456.2	11.35	41.196	
2,700.0	2,643.3	2,646.2	2,638.3	10.3	5.7	154.08	11.1	-220.5	488.9	477.1	11.79	41.457	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-102.58	-13.1	-58.7	60.2				
100.0	100.0	100.0	100.0	0.1	0.1	-102.58	-13.1	-58.7	60.2	59.9	0.27	221.063	
200.0	200.0	200.0	200.0	0.3	0.3	-102.58	-13.1	-58.7	60.2	59.6	0.62	96.871	CC, ES
300.0	300.0	297.0	297.0	0.5	0.5	56.95	-14.2	-60.9	61.2	60.2	0.97	62.977	
400.0	399.6	394.8	394.5	0.7	0.7	60.91	-17.5	-67.4	64.2	62.8	1.36	47.296	
500.0	498.8	494.4	493.7	1.0	0.9	68.22	-21.3	-75.0	66.4	64.6	1.82	36.522	
600.0	597.1	593.5	592.5	1.4	1.1	79.09	-25.1	-82.6	68.6	66.2	2.40	28.594	
700.0	694.6	692.1	690.7	1.8	1.4	92.07	-28.9	-90.1	73.1	70.0	3.04	24.017	
800.0	792.0	790.6	788.8	2.2	1.6	103.31	-32.7	-97.6	81.0	77.3	3.66	22.110	
900.0	889.5	889.1	887.0	2.6	1.8	112.31	-36.5	-105.1	91.4	87.2	4.23	21.604	SF
1,000.0	986.9	987.6	985.2	3.0	2.0	119.36	-40.3	-112.7	103.7	98.9	4.76	21.796	
1,100.0	1,084.3	1,086.2	1,083.3	3.4	2.2	124.88	-44.0	-120.2	117.2	111.9	5.25	22.321	
1,200.0	1,181.8	1,184.7	1,181.5	3.9	2.5	129.23	-47.8	-127.7	131.5	125.8	5.72	22.992	
1,300.0	1,279.2	1,283.2	1,279.6	4.3	2.7	132.72	-51.6	-135.3	146.4	140.3	6.18	23.713	
1,400.0	1,376.6	1,381.7	1,377.8	4.7	2.9	135.56	-55.4	-142.8	161.8	155.2	6.62	24.434	
1,500.0	1,474.1	1,480.3	1,476.0	5.1	3.2	137.90	-59.2	-150.3	177.5	170.4	7.06	25.131	
1,600.0	1,571.5	1,578.8	1,574.1	5.6	3.4	139.87	-63.0	-157.8	193.4	185.9	7.50	25.792	
1,700.0	1,669.0	1,677.3	1,672.3	6.0	3.6	141.53	-66.8	-165.4	209.5	201.6	7.93	26.413	
1,800.0	1,766.4	1,775.8	1,770.5	6.4	3.8	142.95	-70.6	-172.9	225.8	217.4	8.37	26.993	
1,900.0	1,863.8	1,874.3	1,868.6	6.9	4.1	144.19	-74.4	-180.4	242.2	233.4	8.80	27.533	
2,000.0	1,961.3	1,972.9	1,966.8	7.3	4.3	145.27	-78.1	-187.9	258.7	249.5	9.23	28.035	
2,100.0	2,058.7	2,071.4	2,064.9	7.7	4.5	146.21	-81.9	-195.5	275.3	265.6	9.66	28.503	
2,200.0	2,156.1	2,169.9	2,163.1	8.2	4.7	147.05	-85.7	-203.0	291.9	281.8	10.09	28.938	
2,300.0	2,253.6	2,268.4	2,261.3	8.6	5.0	147.80	-89.5	-210.5	308.6	298.0	10.52	29.343	
2,400.0	2,351.0	2,367.0	2,359.4	9.0	5.2	148.48	-93.3	-218.1	325.3	314.3	10.94	29.722	
2,500.0	2,448.4	2,465.5	2,457.6	9.4	5.4	149.08	-97.1	-225.6	342.1	330.7	11.37	30.075	
2,600.0	2,545.9	2,564.0	2,555.7	9.9	5.6	149.63	-100.9	-233.1	358.9	347.1	11.80	30.406	
2,700.0	2,643.3	2,662.5	2,653.9	10.3	5.9	150.14	-104.7	-240.6	375.7	363.5	12.23	30.716	
2,800.0	2,740.8	2,761.1	2,752.1	10.7	6.1	150.59	-108.5	-248.2	392.5	379.9	12.66	31.007	
2,900.0	2,838.2	2,859.6	2,850.2	11.2	6.3	151.01	-112.2	-255.7	409.4	396.3	13.09	31.280	
3,000.0	2,935.6	2,958.1	2,948.4	11.6	6.5	151.40	-116.0	-263.2	426.3	412.8	13.52	31.538	
3,100.0	3,033.1	3,056.6	3,046.5	12.0	6.8	151.76	-119.8	-270.7	443.2	429.3	13.95	31.781	
3,200.0	3,130.5	3,155.1	3,144.7	12.5	7.0	152.09	-123.6	-278.3	460.2	445.8	14.38	32.010	
3,300.0	3,227.9	3,253.7	3,242.9	12.9	7.2	152.40	-127.4	-285.8	477.1	462.3	14.80	32.227	
3,400.0	3,325.4	3,352.2	3,341.0	13.3	7.5	152.69	-131.2	-293.3	494.1	478.8	15.23	32.433	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU 21-3B (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-44.59	102.0	-100.5	143.2				
100.0	100.0	100.0	100.0	0.1	0.1	-44.59	102.0	-100.5	143.2	142.9	0.27	526.006	
200.0	200.0	200.0	200.0	0.3	0.3	-44.59	102.0	-100.5	143.2	142.6	0.62	230.497	
300.0	300.0	308.0	307.9	0.5	0.5	114.73	99.9	-98.3	141.5	140.5	0.99	142.609	
400.0	399.6	415.3	414.9	0.7	0.8	118.35	93.8	-91.6	136.5	135.1	1.39	98.132	
500.0	498.8	521.4	519.9	1.0	1.1	124.82	83.8	-80.6	129.5	127.7	1.83	70.639	
600.0	597.1	625.6	622.1	1.4	1.5	134.60	70.2	-65.6	122.5	120.1	2.33	52.627	
700.0	694.6	726.1	719.5	1.8	1.9	147.16	53.6	-47.5	118.1	115.2	2.87	41.097	
736.2	729.8	760.9	753.2	1.9	2.1	151.79	47.6	-40.8	117.7	114.6	3.08	38.181	CC, ES
800.0	792.0	822.3	812.5	2.2	2.4	159.92	36.9	-29.2	119.0	115.5	3.46	34.339	
900.0	889.5	918.5	905.4	2.6	2.8	171.93	20.2	-10.8	125.9	121.8	4.11	30.633	
1,000.0	986.9	1,014.6	998.3	3.0	3.3	-177.65	3.5	7.5	138.1	133.3	4.83	28.603	
1,100.0	1,084.3	1,110.8	1,091.3	3.4	3.8	-169.05	-13.1	25.8	154.2	148.6	5.61	27.485	
1,200.0	1,181.8	1,207.0	1,184.2	3.9	4.2	-162.13	-29.8	44.1	173.2	166.7	6.43	26.924	
1,300.0	1,279.2	1,303.2	1,277.1	4.3	4.7	-156.60	-46.5	62.4	194.1	186.9	7.26	26.723	SF
1,400.0	1,376.6	1,399.4	1,370.1	4.7	5.2	-152.15	-63.2	80.7	216.6	208.5	8.10	26.749	
1,500.0	1,474.1	1,495.5	1,463.0	5.1	5.6	-148.53	-79.9	99.0	240.0	231.1	8.92	26.909	
1,600.0	1,571.5	1,591.7	1,555.9	5.6	6.1	-145.55	-96.6	117.4	264.2	254.5	9.73	27.146	
1,700.0	1,669.0	1,687.9	1,648.8	6.0	6.6	-143.08	-113.3	135.7	289.0	278.5	10.54	27.423	
1,800.0	1,766.4	1,784.1	1,741.8	6.4	7.0	-140.99	-130.0	154.0	314.2	302.9	11.34	27.717	
1,900.0	1,863.8	1,880.2	1,834.7	6.9	7.5	-139.21	-146.7	172.3	339.7	327.6	12.13	28.015	
2,000.0	1,961.3	1,976.4	1,927.6	7.3	8.0	-137.68	-163.4	190.6	365.6	352.7	12.91	28.309	
2,100.0	2,058.7	2,072.6	2,020.6	7.7	8.5	-136.34	-180.1	208.9	391.6	377.9	13.69	28.595	
2,200.0	2,156.1	2,168.8	2,113.5	8.2	8.9	-135.18	-196.8	227.2	417.8	403.3	14.47	28.868	
2,300.0	2,253.6	2,264.9	2,206.4	8.6	9.4	-134.15	-213.5	245.6	444.1	428.9	15.25	29.129	
2,400.0	2,351.0	2,361.1	2,299.3	9.0	9.9	-133.24	-230.2	263.9	470.6	454.6	16.02	29.377	
2,500.0	2,448.4	2,457.3	2,392.3	9.4	10.3	-132.42	-246.8	282.2	497.2	480.4	16.79	29.612	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-110.00	-17.5	-48.0	51.1				
100.0	100.0	100.0	100.0	0.1	0.1	-110.00	-17.5	-48.0	51.1	50.8	0.27	187.662	
200.0	200.0	200.0	200.0	0.3	0.3	-110.00	-17.5	-48.0	51.1	50.5	0.62	82.234	CC, ES
300.0	300.0	297.5	297.5	0.5	0.5	49.42	-19.0	-50.0	51.8	50.8	0.97	53.312	
400.0	399.6	395.1	394.8	0.7	0.7	53.02	-23.5	-55.9	54.0	52.7	1.35	39.947	
500.0	498.8	494.9	494.1	1.0	0.9	59.96	-29.4	-63.6	55.6	53.8	1.81	30.708	
600.0	597.1	594.3	593.0	1.4	1.2	71.31	-35.2	-71.3	56.0	53.6	2.40	23.347	
700.0	694.6	693.1	691.4	1.8	1.4	85.94	-41.0	-78.9	58.1	55.0	3.09	18.836	
800.0	792.0	792.0	789.8	2.2	1.6	99.04	-46.8	-86.5	63.8	60.0	3.75	17.005	
900.0	889.5	890.8	888.2	2.6	1.9	109.59	-52.7	-94.1	72.2	67.9	4.35	16.612	SF
1,000.0	986.9	989.7	986.6	3.0	2.1	117.75	-58.5	-101.7	82.6	77.7	4.88	16.920	
1,100.0	1,084.3	1,088.5	1,084.9	3.4	2.3	124.01	-64.3	-109.3	94.3	88.9	5.37	17.547	
1,200.0	1,181.8	1,187.4	1,183.3	3.9	2.6	128.86	-70.1	-117.0	106.8	101.0	5.84	18.301	
1,300.0	1,279.2	1,286.2	1,281.7	4.3	2.8	132.68	-75.9	-124.6	119.9	113.6	6.28	19.088	
1,400.0	1,376.6	1,385.1	1,380.1	4.7	3.1	135.73	-81.7	-132.2	133.5	126.7	6.72	19.860	
1,500.0	1,474.1	1,484.0	1,478.5	5.1	3.3	138.22	-87.5	-139.8	147.3	140.2	7.15	20.595	
1,600.0	1,571.5	1,582.8	1,576.9	5.6	3.5	140.28	-93.4	-147.4	161.4	153.8	7.58	21.285	
1,700.0	1,669.0	1,681.7	1,675.3	6.0	3.8	142.01	-99.2	-155.0	175.7	167.6	8.01	21.927	
1,800.0	1,766.4	1,780.5	1,773.6	6.4	4.0	143.48	-105.0	-162.7	190.0	181.6	8.44	22.523	
1,900.0	1,863.8	1,879.4	1,872.0	6.9	4.3	144.74	-110.8	-170.3	204.5	195.7	8.86	23.075	
2,000.0	1,961.3	1,978.2	1,970.4	7.3	4.5	145.84	-116.6	-177.9	219.1	209.8	9.29	23.585	
2,100.0	2,058.7	2,077.1	2,068.8	7.7	4.7	146.79	-122.4	-185.5	233.7	224.0	9.72	24.058	
2,200.0	2,156.1	2,175.9	2,167.2	8.2	5.0	147.64	-128.2	-193.1	248.4	238.3	10.14	24.496	
2,300.0	2,253.6	2,274.8	2,265.6	8.6	5.2	148.39	-134.0	-200.7	263.2	252.6	10.57	24.903	
2,400.0	2,351.0	2,373.6	2,364.0	9.0	5.5	149.06	-139.9	-208.4	278.0	267.0	10.99	25.282	
2,500.0	2,448.4	2,472.5	2,462.3	9.4	5.7	149.66	-145.7	-216.0	292.8	281.4	11.42	25.635	
2,600.0	2,545.9	2,571.3	2,560.7	9.9	5.9	150.21	-151.5	-223.6	307.6	295.8	11.85	25.965	
2,700.0	2,643.3	2,670.2	2,659.1	10.3	6.2	150.70	-157.3	-231.2	322.5	310.2	12.28	26.273	
2,800.0	2,740.8	2,769.0	2,757.5	10.7	6.4	151.15	-163.1	-238.8	337.4	324.7	12.70	26.561	
2,900.0	2,838.2	2,867.9	2,855.9	11.2	6.7	151.57	-168.9	-246.4	352.3	339.2	13.13	26.832	
3,000.0	2,935.6	2,966.7	2,954.3	11.6	6.9	151.95	-174.7	-254.1	367.3	353.7	13.56	27.087	
3,100.0	3,033.1	3,065.6	3,052.7	12.0	7.1	152.30	-180.6	-261.7	382.2	368.2	13.99	27.327	
3,200.0	3,130.5	3,164.4	3,151.0	12.5	7.4	152.62	-186.4	-269.3	397.2	382.7	14.41	27.553	
3,300.0	3,227.9	3,263.3	3,249.4	12.9	7.6	152.92	-192.2	-276.9	412.1	397.3	14.84	27.767	
3,400.0	3,325.4	3,362.1	3,347.8	13.3	7.9	153.20	-198.0	-284.5	427.1	411.8	15.27	27.969	
3,500.0	3,422.8	3,461.0	3,446.2	13.7	8.1	153.46	-203.8	-292.1	442.1	426.4	15.70	28.160	
3,600.0	3,520.3	3,559.8	3,544.6	14.2	8.4	153.70	-209.6	-299.8	457.1	441.0	16.13	28.342	
3,700.0	3,617.7	3,658.7	3,643.0	14.6	8.6	153.93	-215.4	-307.4	472.1	455.5	16.56	28.514	
3,800.0	3,715.1	3,757.5	3,741.4	15.0	8.8	154.14	-221.3	-315.0	487.1	470.1	16.99	28.678	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-110.04	-11.6	-31.9	34.0				
100.0	100.0	100.0	100.0	0.1	0.1	-110.04	-11.6	-31.9	34.0	33.7	0.27	124.770	
200.0	200.0	200.0	200.0	0.3	0.3	-110.04	-11.6	-31.9	34.0	33.4	0.62	54.675	CC
300.0	300.0	298.6	298.6	0.5	0.5	48.75	-13.8	-33.3	34.3	33.3	0.98	35.139	ES
400.0	399.6	397.2	396.8	0.7	0.7	50.60	-20.2	-37.4	35.3	33.9	1.37	25.749	
500.0	498.8	496.0	494.8	1.0	1.0	53.53	-30.8	-44.3	36.9	35.0	1.84	20.043	
600.0	597.1	595.8	593.6	1.4	1.3	60.96	-43.1	-52.2	37.1	34.7	2.45	15.162	
684.7	679.8	680.3	677.2	1.7	1.5	71.16	-53.4	-58.9	36.8	33.7	3.09	11.916	
700.0	694.6	695.5	692.2	1.8	1.6	74.06	-55.3	-60.1	36.7	33.4	3.22	11.394	
800.0	792.0	795.1	790.7	2.2	1.9	87.25	-67.5	-68.1	38.1	34.1	4.01	9.494	
900.0	889.5	894.7	889.3	2.6	2.2	98.92	-79.8	-76.0	41.4	36.6	4.74	8.729	
1,000.0	986.9	994.3	987.8	3.0	2.5	108.57	-92.0	-83.9	46.1	40.7	5.37	8.585	SF
1,100.0	1,084.3	1,094.0	1,086.4	3.4	2.8	116.25	-104.2	-91.8	51.8	45.9	5.91	8.765	
1,200.0	1,181.8	1,193.6	1,184.9	3.9	3.1	122.32	-116.5	-99.7	58.3	51.9	6.41	9.107	
1,300.0	1,279.2	1,293.2	1,283.5	4.3	3.4	127.13	-128.7	-107.6	65.4	58.5	6.87	9.522	
1,400.0	1,376.6	1,392.8	1,382.0	4.7	3.7	130.99	-140.9	-115.5	72.8	65.5	7.30	9.962	
1,500.0	1,474.1	1,492.4	1,480.5	5.1	4.0	134.13	-153.2	-123.4	80.4	72.7	7.73	10.401	
1,600.0	1,571.5	1,592.0	1,579.1	5.6	4.3	136.72	-165.4	-131.3	88.3	80.1	8.16	10.827	
1,700.0	1,669.0	1,691.7	1,677.6	6.0	4.6	138.88	-177.6	-139.2	96.3	87.7	8.57	11.232	
1,800.0	1,766.4	1,791.3	1,776.2	6.4	4.9	140.70	-189.9	-147.1	104.4	95.4	8.99	11.614	
1,900.0	1,863.8	1,890.9	1,874.7	6.9	5.2	142.26	-202.1	-155.1	112.7	103.2	9.41	11.973	
2,000.0	1,961.3	1,990.5	1,973.3	7.3	5.5	143.61	-214.3	-163.0	120.9	111.1	9.83	12.308	
2,100.0	2,058.7	2,090.1	2,071.8	7.7	5.8	144.79	-226.6	-170.9	129.3	119.0	10.24	12.621	
2,200.0	2,156.1	2,189.8	2,170.4	8.2	6.2	145.82	-238.8	-178.8	137.7	127.0	10.66	12.914	
2,300.0	2,253.6	2,289.4	2,268.9	8.6	6.5	146.73	-251.0	-186.7	146.1	135.0	11.08	13.187	
2,400.0	2,351.0	2,389.0	2,367.5	9.0	6.8	147.55	-263.3	-194.6	154.6	143.1	11.50	13.442	
2,500.0	2,448.4	2,488.6	2,466.0	9.4	7.1	148.27	-275.5	-202.5	163.1	151.2	11.92	13.681	
2,600.0	2,545.9	2,588.2	2,564.6	9.9	7.4	148.93	-287.7	-210.4	171.6	159.3	12.34	13.905	
2,700.0	2,643.3	2,687.8	2,663.1	10.3	7.7	149.53	-300.0	-218.3	180.1	167.4	12.76	14.115	
2,800.0	2,740.8	2,787.5	2,761.7	10.7	8.0	150.07	-312.2	-226.2	188.7	175.5	13.18	14.312	
2,900.0	2,838.2	2,887.1	2,860.2	11.2	8.3	150.56	-324.4	-234.1	197.3	183.7	13.61	14.498	
3,000.0	2,935.6	2,986.7	2,958.8	11.6	8.6	151.01	-336.7	-242.1	205.9	191.8	14.03	14.672	
3,100.0	3,033.1	3,086.3	3,057.3	12.0	8.9	151.43	-348.9	-250.0	214.4	200.0	14.45	14.837	
3,200.0	3,130.5	3,185.9	3,155.9	12.5	9.2	151.81	-361.1	-257.9	223.1	208.2	14.88	14.993	
3,300.0	3,227.9	3,285.6	3,254.4	12.9	9.5	152.17	-373.4	-265.8	231.7	216.4	15.30	15.141	
3,400.0	3,325.4	3,385.2	3,352.9	13.3	9.9	152.50	-385.6	-273.7	240.3	224.6	15.73	15.280	
3,500.0	3,422.8	3,484.8	3,451.5	13.7	10.2	152.81	-397.8	-281.6	248.9	232.8	16.15	15.413	
3,600.0	3,520.3	3,584.4	3,550.0	14.2	10.5	153.09	-410.0	-289.5	257.6	241.0	16.58	15.539	
3,700.0	3,617.7	3,684.0	3,648.6	14.6	10.8	153.36	-422.3	-297.4	266.2	249.2	17.00	15.658	
3,800.0	3,715.1	3,783.6	3,747.1	15.0	11.1	153.61	-434.5	-305.3	274.9	257.4	17.43	15.772	
3,900.0	3,812.6	3,883.3	3,845.7	15.5	11.4	153.85	-446.7	-313.2	283.5	265.7	17.85	15.880	
4,000.0	3,910.0	3,982.9	3,944.2	15.9	11.7	154.07	-459.0	-321.1	292.2	273.9	18.28	15.984	
4,100.0	4,007.4	4,082.5	4,042.8	16.3	12.0	154.28	-471.2	-329.1	300.8	282.1	18.71	16.083	
4,200.0	4,104.9	4,182.1	4,141.3	16.8	12.3	154.48	-483.4	-337.0	309.5	290.4	19.13	16.177	
4,300.0	4,202.3	4,281.7	4,239.9	17.2	12.6	154.66	-495.7	-344.9	318.2	298.6	19.56	16.267	
4,400.0	4,299.8	4,381.4	4,338.4	17.6	12.9	154.84	-507.9	-352.8	326.8	306.9	19.99	16.354	
4,500.0	4,397.2	4,481.0	4,437.0	18.1	13.2	155.01	-520.1	-360.7	335.5	315.1	20.41	16.437	
4,600.0	4,494.6	4,580.6	4,535.5	18.5	13.6	155.17	-532.4	-368.6	344.2	323.4	20.84	16.516	
4,700.0	4,592.1	4,680.2	4,634.1	18.9	13.9	155.32	-544.6	-376.5	352.9	331.6	21.27	16.593	
4,800.0	4,689.5	4,779.8	4,732.6	19.3	14.2	155.46	-556.8	-384.4	361.6	339.9	21.70	16.666	
4,900.0	4,786.9	4,879.5	4,831.2	19.8	14.5	155.60	-569.1	-392.3	370.3	348.1	22.12	16.736	
5,000.0	4,884.4	4,979.1	4,929.7	20.2	14.8	155.73	-581.3	-400.2	378.9	356.4	22.55	16.804	

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,981.8	5,078.7	5,028.3	20.6	15.1	155.86	-593.5	-408.1	387.6	364.7	22.98	16.869	
5,200.0	5,079.3	5,178.3	5,126.8	21.1	15.4	155.98	-605.8	-416.0	396.3	372.9	23.41	16.932	
5,300.0	5,176.7	5,277.9	5,225.4	21.5	15.7	156.09	-618.0	-424.0	405.0	381.2	23.83	16.993	
5,400.0	5,274.1	5,377.5	5,323.9	21.9	16.0	156.20	-630.2	-431.9	413.7	389.5	24.26	17.051	
5,500.0	5,371.6	5,477.2	5,422.4	22.4	16.3	156.30	-642.5	-439.8	422.4	397.7	24.69	17.108	
5,600.0	5,469.0	5,576.8	5,521.0	22.8	16.6	156.41	-654.7	-447.7	431.1	406.0	25.12	17.162	
5,700.0	5,566.4	5,676.4	5,619.5	23.2	17.0	156.50	-666.9	-455.6	439.8	414.3	25.55	17.215	
5,800.0	5,663.9	5,776.0	5,718.1	23.7	17.3	156.60	-679.2	-463.5	448.5	422.5	25.98	17.266	
5,900.0	5,761.3	5,875.6	5,816.6	24.1	17.6	156.69	-691.4	-471.4	457.2	430.8	26.41	17.315	
6,000.0	5,858.7	5,975.3	5,915.2	24.5	17.9	156.77	-703.6	-479.3	465.9	439.1	26.83	17.363	
6,100.0	5,956.2	6,074.9	6,013.7	24.9	18.2	156.85	-715.9	-487.2	474.6	447.4	27.26	17.409	
6,200.0	6,053.6	6,174.5	6,112.3	25.4	18.5	156.93	-728.1	-495.1	483.3	455.6	27.69	17.454	
6,300.0	6,151.1	6,274.1	6,210.8	25.8	18.8	157.01	-740.3	-503.0	492.0	463.9	28.12	17.497	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-109.89	-5.8	-16.1	17.1				
100.0	100.0	100.0	100.0	0.1	0.1	-109.89	-5.8	-16.1	17.1	16.8	0.27	62.875	
200.0	200.0	200.0	200.0	0.3	0.3	-109.89	-5.8	-16.1	17.1	16.5	0.62	27.552	CC
300.0	300.0	299.4	299.3	0.5	0.5	48.79	-8.1	-17.3	17.3	16.3	0.98	17.650	
400.0	399.6	398.7	398.4	0.7	0.7	50.31	-15.1	-20.7	17.7	16.3	1.38	12.847	
500.0	498.8	498.1	496.9	1.0	1.0	52.68	-26.6	-26.5	18.4	16.6	1.86	9.899	
600.0	597.1	597.7	594.9	1.4	1.3	57.00	-42.2	-34.3	19.2	16.7	2.48	7.744	
700.0	694.6	697.6	693.2	1.8	1.7	70.04	-58.6	-42.4	18.7	15.4	3.30	5.669	
707.9	702.3	705.5	700.9	1.8	1.7	71.16	-59.9	-43.1	18.7	15.3	3.37	5.551	
800.0	792.0	797.5	791.4	2.2	2.0	83.93	-74.9	-50.6	19.2	15.0	4.17	4.598	ES
900.0	889.5	897.4	889.6	2.6	2.4	96.47	-91.3	-58.7	20.7	15.7	4.96	4.172	
1,000.0	986.9	997.3	987.8	3.0	2.7	106.88	-107.6	-66.9	23.0	17.4	5.62	4.096	SF
1,100.0	1,084.3	1,097.2	1,086.0	3.4	3.1	115.15	-124.0	-75.0	26.0	19.8	6.18	4.203	
1,200.0	1,181.8	1,197.1	1,184.2	3.9	3.5	121.62	-140.3	-83.2	29.4	22.7	6.68	4.401	
1,300.0	1,279.2	1,297.0	1,282.4	4.3	3.8	126.71	-156.6	-91.3	33.1	25.9	7.13	4.638	
1,400.0	1,376.6	1,396.9	1,380.6	4.7	4.2	130.75	-173.0	-99.5	37.0	29.4	7.56	4.888	
1,500.0	1,474.1	1,496.8	1,478.8	5.1	4.5	134.01	-189.3	-107.7	41.0	33.0	7.98	5.137	
1,600.0	1,571.5	1,596.7	1,577.1	5.6	4.9	136.68	-205.7	-115.8	45.2	36.8	8.40	5.377	
1,700.0	1,669.0	1,696.5	1,675.3	6.0	5.3	138.89	-222.0	-124.0	49.4	40.6	8.81	5.606	
1,800.0	1,766.4	1,796.4	1,773.5	6.4	5.6	140.75	-238.4	-132.1	53.7	44.5	9.22	5.821	
1,900.0	1,863.8	1,896.3	1,871.7	6.9	6.0	142.34	-254.7	-140.3	58.0	48.4	9.63	6.022	
2,000.0	1,961.3	1,996.2	1,969.9	7.3	6.4	143.71	-271.0	-148.4	62.4	52.4	10.05	6.210	
2,100.0	2,058.7	2,096.1	2,068.1	7.7	6.7	144.89	-287.4	-156.6	66.8	56.3	10.46	6.386	
2,200.0	2,156.1	2,196.0	2,166.3	8.2	7.1	145.93	-303.7	-164.7	71.2	60.4	10.88	6.550	
2,300.0	2,253.6	2,295.9	2,264.5	8.6	7.4	146.84	-320.1	-172.9	75.7	64.4	11.29	6.703	
2,400.0	2,351.0	2,395.8	2,362.7	9.0	7.8	147.66	-336.4	-181.0	80.2	68.5	11.71	6.845	
2,500.0	2,448.4	2,495.7	2,460.9	9.4	8.2	148.39	-352.8	-189.2	84.7	72.5	12.13	6.979	
2,600.0	2,545.9	2,595.6	2,559.2	9.9	8.5	149.04	-369.1	-197.3	89.2	76.6	12.55	7.104	
2,700.0	2,643.3	2,695.5	2,657.4	10.3	8.9	149.63	-385.4	-205.5	93.7	80.7	12.97	7.221	
2,800.0	2,740.8	2,795.4	2,755.6	10.7	9.3	150.17	-401.8	-213.6	98.2	84.8	13.39	7.331	
2,900.0	2,838.2	2,895.3	2,853.8	11.2	9.6	150.66	-418.1	-221.8	102.7	88.9	13.82	7.435	
3,000.0	2,935.6	2,995.2	2,952.0	11.6	10.0	151.11	-434.5	-230.0	107.2	93.0	14.24	7.532	
3,100.0	3,033.1	3,095.1	3,050.2	12.0	10.4	151.52	-450.8	-238.1	111.8	97.1	14.66	7.624	
3,200.0	3,130.5	3,195.0	3,148.4	12.5	10.7	151.90	-467.2	-246.3	116.3	101.2	15.09	7.711	
3,300.0	3,227.9	3,294.8	3,246.6	12.9	11.1	152.25	-483.5	-254.4	120.9	105.4	15.51	7.793	
3,400.0	3,325.4	3,394.7	3,344.8	13.3	11.4	152.58	-499.8	-262.6	125.4	109.5	15.94	7.871	
3,500.0	3,422.8	3,494.6	3,443.0	13.7	11.8	152.88	-516.2	-270.7	130.0	113.6	16.36	7.945	
3,600.0	3,520.3	3,594.5	3,541.3	14.2	12.2	153.16	-532.5	-278.9	134.6	117.8	16.79	8.015	
3,700.0	3,617.7	3,694.4	3,639.5	14.6	12.5	153.43	-548.9	-287.0	139.1	121.9	17.22	8.081	
3,800.0	3,715.1	3,794.3	3,737.7	15.0	12.9	153.67	-565.2	-295.2	143.7	126.0	17.64	8.144	
3,900.0	3,812.6	3,894.2	3,835.9	15.5	13.3	153.90	-581.6	-303.3	148.3	130.2	18.07	8.205	
4,000.0	3,910.0	3,994.1	3,934.1	15.9	13.6	154.12	-597.9	-311.5	152.8	134.3	18.50	8.262	
4,100.0	4,007.4	4,094.0	4,032.3	16.3	14.0	154.33	-614.2	-319.6	157.4	138.5	18.92	8.317	
4,200.0	4,104.9	4,193.9	4,130.5	16.8	14.4	154.52	-630.6	-327.8	162.0	142.6	19.35	8.370	
4,300.0	4,202.3	4,293.8	4,228.7	17.2	14.7	154.70	-646.9	-336.0	166.6	146.8	19.78	8.420	
4,400.0	4,299.8	4,393.7	4,326.9	17.6	15.1	154.88	-663.3	-344.1	171.1	150.9	20.21	8.468	
4,500.0	4,397.2	4,493.6	4,425.1	18.1	15.4	155.04	-679.6	-352.3	175.7	155.1	20.64	8.514	
4,600.0	4,494.6	4,593.5	4,523.4	18.5	15.8	155.20	-695.9	-360.4	180.3	159.2	21.07	8.558	
4,700.0	4,592.1	4,693.4	4,621.6	18.9	16.2	155.35	-712.3	-368.6	184.9	163.4	21.50	8.601	
4,800.0	4,689.5	4,793.3	4,719.8	19.3	16.5	155.49	-728.6	-376.7	189.5	167.5	21.93	8.641	
4,900.0	4,786.9	4,893.1	4,818.0	19.8	16.9	155.62	-745.0	-384.9	194.0	171.7	22.35	8.680	
5,000.0	4,884.4	4,993.0	4,916.2	20.2	17.3	155.75	-761.3	-393.0	198.6	175.8	22.78	8.718	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,981.8	5,092.9	5,014.4	20.6	17.6	155.87	-777.7	-401.2	203.2	180.0	23.21	8.754	
5,200.0	5,079.3	5,192.8	5,112.6	21.1	18.0	155.99	-794.0	-409.3	207.8	184.2	23.64	8.789	
5,300.0	5,176.7	5,292.7	5,210.8	21.5	18.4	156.10	-810.3	-417.5	212.4	188.3	24.07	8.823	
5,400.0	5,274.1	5,392.6	5,309.0	21.9	18.7	156.21	-826.7	-425.6	217.0	192.5	24.50	8.855	
5,500.0	5,371.6	5,492.5	5,407.2	22.4	19.1	156.31	-843.0	-433.8	221.6	196.6	24.93	8.887	
5,600.0	5,469.0	5,592.4	5,505.5	22.8	19.5	156.41	-859.4	-442.0	226.2	200.8	25.36	8.917	
5,700.0	5,566.4	5,692.3	5,603.7	23.2	19.8	156.50	-875.7	-450.1	230.8	205.0	25.79	8.946	
5,800.0	5,663.9	5,792.2	5,701.9	23.7	20.2	156.60	-892.1	-458.3	235.4	209.1	26.22	8.975	
5,900.0	5,761.3	5,892.1	5,800.1	24.1	20.5	156.68	-908.4	-466.4	239.9	213.3	26.65	9.002	
6,000.0	5,858.7	5,992.0	5,898.3	24.5	20.9	156.77	-924.7	-474.6	244.5	217.5	27.09	9.028	
6,100.0	5,956.2	6,091.9	5,996.5	24.9	21.3	156.85	-941.1	-482.7	249.1	221.6	27.52	9.054	
6,200.0	6,053.6	6,191.8	6,094.7	25.4	21.6	156.93	-957.4	-490.9	253.7	225.8	27.95	9.079	
6,300.0	6,151.1	6,291.7	6,192.9	25.8	22.0	157.00	-973.8	-499.0	258.3	229.9	28.38	9.103	
6,400.0	6,248.5	6,391.6	6,291.1	26.2	22.4	157.07	-990.1	-507.2	262.9	234.1	28.81	9.126	
6,500.0	6,345.9	6,491.4	6,389.3	26.7	22.7	157.14	-1,006.5	-515.3	267.5	238.3	29.24	9.149	
6,600.0	6,443.4	6,591.3	6,487.6	27.1	23.1	157.21	-1,022.8	-523.5	272.1	242.4	29.67	9.171	
6,700.0	6,540.8	6,691.2	6,585.8	27.5	23.5	157.28	-1,039.1	-531.6	276.7	246.6	30.10	9.192	
6,800.0	6,638.2	6,791.1	6,684.0	28.0	23.8	157.34	-1,055.5	-539.8	281.3	250.8	30.53	9.213	
6,900.0	6,735.7	6,891.0	6,782.2	28.4	24.2	157.40	-1,071.8	-547.9	285.9	254.9	30.96	9.233	
7,000.0	6,833.1	6,990.9	6,880.4	28.8	24.6	157.46	-1,088.2	-556.1	290.5	259.1	31.40	9.253	
7,100.0	6,930.6	7,090.8	6,978.6	29.3	24.9	157.52	-1,104.5	-564.3	295.1	263.3	31.83	9.272	
7,200.0	7,028.0	7,190.7	7,076.8	29.7	25.3	157.58	-1,120.9	-572.4	299.7	267.4	32.26	9.291	
7,300.0	7,125.4	7,290.6	7,175.0	30.1	25.6	157.63	-1,137.2	-580.6	304.3	271.6	32.69	9.309	
7,400.0	7,222.9	7,390.5	7,273.2	30.5	26.0	157.68	-1,153.5	-588.7	308.9	275.8	33.12	9.326	
7,500.0	7,320.5	7,489.3	7,370.4	30.9	26.4	157.68	-1,169.7	-596.8	312.5	278.9	33.58	9.307	
7,600.0	7,418.9	7,580.4	7,460.3	31.3	26.6	157.61	-1,183.0	-603.4	314.7	280.7	34.01	9.253	
7,700.0	7,517.8	7,671.5	7,550.5	31.6	26.9	157.56	-1,193.7	-608.8	316.5	282.2	34.39	9.204	
7,800.0	7,617.2	7,762.5	7,641.1	31.8	27.1	157.52	-1,201.9	-612.8	318.0	283.2	34.72	9.158	
7,900.0	7,716.9	7,853.5	7,731.8	31.9	27.2	157.50	-1,207.5	-615.6	319.0	284.0	35.00	9.115	
8,000.0	7,816.8	7,944.4	7,822.7	32.1	27.3	157.49	-1,210.5	-617.1	319.6	284.4	35.22	9.075	
8,100.0	7,916.8	8,038.5	7,916.8	32.1	27.4	-0.66	-1,211.1	-617.4	319.8	284.4	35.43	9.027	
8,200.0	8,016.8	8,138.5	8,016.8	32.2	27.5	-0.66	-1,211.1	-617.4	319.8	284.1	35.71	8.956	
8,300.0	8,116.8	8,238.5	8,116.8	32.3	27.6	-0.66	-1,211.1	-617.4	319.8	283.8	35.99	8.887	
8,400.0	8,216.8	8,338.5	8,216.8	32.4	27.7	-0.66	-1,211.1	-617.4	319.8	283.6	36.27	8.819	
8,500.0	8,316.8	8,438.5	8,316.8	32.5	27.8	-0.66	-1,211.1	-617.4	319.8	283.3	36.55	8.751	
8,600.0	8,416.8	8,538.5	8,416.8	32.5	27.9	-0.66	-1,211.1	-617.4	319.8	283.0	36.83	8.684	
8,700.0	8,516.8	8,638.5	8,516.8	32.6	28.0	-0.66	-1,211.1	-617.4	319.8	282.7	37.11	8.617	
8,800.0	8,616.8	8,738.5	8,616.8	32.7	28.1	-0.66	-1,211.1	-617.4	319.8	282.4	37.40	8.552	
8,900.0	8,716.8	8,838.5	8,716.8	32.8	28.2	-0.66	-1,211.1	-617.4	319.8	282.1	37.68	8.487	
9,000.0	8,816.8	8,938.5	8,816.8	32.9	28.2	-0.66	-1,211.1	-617.4	319.8	281.8	37.97	8.423	
9,100.0	8,916.8	9,038.5	8,916.8	32.9	28.3	-0.66	-1,211.1	-617.4	319.8	281.6	38.26	8.360	
9,200.0	9,016.8	9,138.5	9,016.8	33.0	28.4	-0.66	-1,211.1	-617.4	319.8	281.3	38.55	8.297	
9,300.0	9,116.8	9,238.5	9,116.8	33.1	28.5	-0.66	-1,211.1	-617.4	319.8	281.0	38.84	8.235	
9,400.0	9,216.8	9,338.5	9,216.8	33.2	28.6	-0.66	-1,211.1	-617.4	319.8	280.7	39.13	8.174	
9,500.0	9,316.8	9,438.5	9,316.8	33.3	28.7	-0.66	-1,211.1	-617.4	319.8	280.4	39.42	8.114	
9,600.0	9,416.8	9,538.5	9,416.8	33.4	28.8	-0.66	-1,211.1	-617.4	319.8	280.1	39.71	8.054	
9,700.0	9,516.8	9,638.5	9,516.8	33.5	28.9	-0.66	-1,211.1	-617.4	319.8	279.8	40.00	7.995	
9,800.0	9,616.8	9,738.5	9,616.8	33.5	29.0	-0.66	-1,211.1	-617.4	319.8	279.5	40.30	7.936	
9,900.0	9,716.8	9,838.5	9,716.8	33.6	29.1	-0.66	-1,211.1	-617.4	319.8	279.2	40.59	7.879	
10,000.0	9,816.8	9,938.5	9,816.8	33.7	29.2	-0.66	-1,211.1	-617.4	319.8	278.9	40.89	7.822	
10,100.0	9,916.8	10,038.5	9,916.8	33.8	29.4	-0.66	-1,211.1	-617.4	319.8	278.6	41.19	7.765	
10,200.0	10,016.8	10,138.5	10,016.8	33.9	29.5	-0.66	-1,211.1	-617.4	319.8	278.3	41.48	7.710	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	10,116.8	10,238.5	10,116.8	34.0	29.6	-0.66	-1,211.1	-617.4	319.8	278.0	41.78	7.654	
10,400.0	10,216.8	10,338.5	10,216.8	34.1	29.7	-0.66	-1,211.1	-617.4	319.8	277.7	42.08	7.600	
10,456.4	10,273.2	10,394.8	10,273.2	34.1	29.7	-0.66	-1,211.1	-617.4	319.8	277.6	42.25	7.570	
10,487.2	10,304.0	10,420.7	10,299.0	34.2	29.8	-0.66	-1,211.1	-617.4	319.9	277.5	42.34	7.555	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	69.76	5.8	15.8	16.9				
100.0	100.0	100.0	100.0	0.1	0.1	69.76	5.8	15.8	16.9	16.6	0.27	61.912	
200.0	200.0	200.0	200.0	0.3	0.3	69.76	5.8	15.8	16.9	16.2	0.62	27.130	CC
300.0	300.0	300.6	300.5	0.5	0.5	-131.72	3.3	15.0	17.0	16.0	0.98	17.285	
400.0	399.6	401.1	400.7	0.7	0.7	-130.64	-4.2	12.4	17.3	15.9	1.39	12.449	
500.0	498.8	501.7	500.4	1.0	1.0	-128.93	-16.7	8.2	17.8	15.9	1.88	9.456	
600.0	597.1	602.2	599.2	1.4	1.4	-126.71	-34.2	2.4	18.6	16.1	2.51	7.402	
700.0	694.6	702.7	696.9	1.8	1.8	-121.23	-56.5	-5.1	19.0	15.7	3.32	5.719	
787.7	780.0	790.4	781.4	2.1	2.2	-108.81	-78.8	-12.6	18.6	14.3	4.24	4.383	
800.0	792.0	802.7	793.2	2.2	2.3	-107.01	-81.9	-13.7	18.6	14.2	4.37	4.255	
900.0	889.5	902.5	889.4	2.6	2.8	-92.81	-107.4	-22.3	19.3	14.0	5.37	3.598	ES
1,000.0	986.9	1,002.4	985.6	3.0	3.3	-80.35	-132.8	-30.8	21.1	14.9	6.20	3.410	SF
1,100.0	1,084.3	1,102.3	1,081.8	3.4	3.8	-70.25	-158.3	-39.4	23.8	16.9	6.85	3.473	
1,200.0	1,181.8	1,202.2	1,178.0	3.9	4.3	-62.34	-183.8	-47.9	27.0	19.6	7.36	3.666	
1,300.0	1,279.2	1,302.1	1,274.3	4.3	4.8	-56.21	-209.2	-56.5	30.6	22.8	7.81	3.919	
1,400.0	1,376.6	1,402.0	1,370.5	4.7	5.3	-51.42	-234.7	-65.1	34.5	26.3	8.22	4.196	
1,500.0	1,474.1	1,501.9	1,466.7	5.1	5.8	-47.62	-260.2	-73.6	38.6	30.0	8.62	4.478	
1,600.0	1,571.5	1,601.8	1,562.9	5.6	6.3	-44.56	-285.6	-82.2	42.8	33.8	9.01	4.754	
1,700.0	1,669.0	1,701.6	1,659.1	6.0	6.8	-42.05	-311.1	-90.7	47.1	37.7	9.39	5.018	
1,800.0	1,766.4	1,801.5	1,755.3	6.4	7.3	-39.96	-336.5	-99.3	51.5	41.8	9.78	5.268	
1,900.0	1,863.8	1,901.4	1,851.5	6.9	7.8	-38.21	-362.0	-107.9	56.0	45.8	10.18	5.502	
2,000.0	1,961.3	2,001.3	1,947.7	7.3	8.3	-36.72	-387.5	-116.4	60.5	49.9	10.57	5.722	
2,100.0	2,058.7	2,101.2	2,043.9	7.7	8.8	-35.43	-412.9	-125.0	65.0	54.1	10.97	5.928	
2,200.0	2,156.1	2,201.1	2,140.1	8.2	9.3	-34.31	-438.4	-133.5	69.6	58.2	11.37	6.120	
2,300.0	2,253.6	2,301.0	2,236.3	8.6	9.8	-33.33	-463.9	-142.1	74.2	62.4	11.77	6.300	
2,400.0	2,351.0	2,400.9	2,332.5	9.0	10.3	-32.46	-489.3	-150.7	78.8	66.6	12.18	6.468	
2,500.0	2,448.4	2,500.7	2,428.7	9.4	10.8	-31.69	-514.8	-159.2	83.4	70.8	12.59	6.625	
2,600.0	2,545.9	2,600.6	2,524.9	9.9	11.3	-31.00	-540.2	-167.8	88.0	75.0	13.00	6.772	
2,700.0	2,643.3	2,700.5	2,621.2	10.3	11.8	-30.38	-565.7	-176.3	92.7	79.3	13.41	6.911	
2,800.0	2,740.8	2,800.4	2,717.4	10.7	12.3	-29.82	-591.2	-184.9	97.3	83.5	13.83	7.041	
2,900.0	2,838.2	2,900.3	2,813.6	11.2	12.8	-29.31	-616.6	-193.5	102.0	87.8	14.24	7.163	
3,000.0	2,935.6	3,000.2	2,909.8	11.6	13.3	-28.85	-642.1	-202.0	106.7	92.0	14.66	7.278	
3,100.0	3,033.1	3,100.1	3,006.0	12.0	13.8	-28.42	-667.6	-210.6	111.4	96.3	15.08	7.386	
3,200.0	3,130.5	3,200.0	3,102.2	12.5	14.3	-28.03	-693.0	-219.1	116.0	100.6	15.50	7.489	
3,300.0	3,227.9	3,299.8	3,198.4	12.9	14.8	-27.67	-718.5	-227.7	120.7	104.8	15.92	7.586	
3,400.0	3,325.4	3,399.7	3,294.6	13.3	15.3	-27.34	-743.9	-236.3	125.4	109.1	16.34	7.678	
3,500.0	3,422.8	3,499.6	3,390.8	13.7	15.8	-27.03	-769.4	-244.8	130.1	113.4	16.76	7.765	
3,600.0	3,520.3	3,599.5	3,487.0	14.2	16.3	-26.74	-794.9	-253.4	134.8	117.7	17.18	7.848	
3,700.0	3,617.7	3,699.4	3,583.2	14.6	16.8	-26.47	-820.3	-262.0	139.5	121.9	17.60	7.927	
3,800.0	3,715.1	3,799.3	3,679.4	15.0	17.3	-26.22	-845.8	-270.5	144.2	126.2	18.03	8.002	
3,900.0	3,812.6	3,899.2	3,775.6	15.5	17.8	-25.98	-871.2	-279.1	149.0	130.5	18.45	8.073	
4,000.0	3,910.0	3,999.1	3,871.9	15.9	18.3	-25.76	-896.7	-287.6	153.7	134.8	18.88	8.141	
4,100.0	4,007.4	4,098.9	3,968.1	16.3	18.8	-25.55	-922.2	-296.2	158.4	139.1	19.30	8.206	
4,200.0	4,104.9	4,198.8	4,064.3	16.8	19.3	-25.36	-947.6	-304.8	163.1	143.4	19.73	8.268	
4,300.0	4,202.3	4,298.7	4,160.5	17.2	19.8	-25.17	-973.1	-313.3	167.8	147.7	20.15	8.328	
4,400.0	4,299.8	4,398.6	4,256.7	17.6	20.3	-25.00	-998.6	-321.9	172.5	152.0	20.58	8.384	
4,500.0	4,397.2	4,498.5	4,352.9	18.1	20.8	-24.83	-1,024.0	-330.4	177.3	156.3	21.00	8.439	
4,600.0	4,494.6	4,598.4	4,449.1	18.5	21.3	-24.67	-1,049.5	-339.0	182.0	160.6	21.43	8.491	
4,700.0	4,592.1	4,698.3	4,545.3	18.9	21.8	-24.52	-1,074.9	-347.6	186.7	164.8	21.86	8.541	
4,800.0	4,689.5	4,798.2	4,641.5	19.3	22.3	-24.38	-1,100.4	-356.1	191.4	169.1	22.29	8.590	
4,900.0	4,786.9	4,898.0	4,737.7	19.8	22.8	-24.25	-1,125.9	-364.7	196.2	173.4	22.71	8.636	
5,000.0	4,884.4	4,997.9	4,833.9	20.2	23.3	-24.12	-1,151.3	-373.2	200.9	177.7	23.14	8.681	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	4,981.8	5,097.8	4,930.1	20.6	23.8	-24.00	-1,176.8	-381.8	205.6	182.0	23.57	8.723	
5,200.0	5,079.3	5,197.7	5,026.3	21.1	24.3	-23.88	-1,202.3	-390.4	210.3	186.3	24.00	8.765	
5,300.0	5,176.7	5,297.6	5,122.5	21.5	24.8	-23.77	-1,227.7	-398.9	215.1	190.6	24.43	8.805	
5,400.0	5,274.1	5,397.5	5,218.8	21.9	25.3	-23.66	-1,253.2	-407.5	219.8	195.0	24.86	8.843	
5,500.0	5,371.6	5,497.4	5,315.0	22.4	25.8	-23.56	-1,278.6	-416.0	224.5	199.3	25.29	8.880	
5,600.0	5,469.0	5,597.2	5,411.2	22.8	26.3	-23.46	-1,304.1	-424.6	229.3	203.6	25.71	8.916	
5,700.0	5,566.4	5,697.1	5,507.4	23.2	26.8	-23.37	-1,329.6	-433.2	234.0	207.9	26.14	8.951	
5,800.0	5,663.9	5,797.0	5,603.6	23.7	27.3	-23.28	-1,355.0	-441.7	238.7	212.2	26.57	8.984	
5,900.0	5,761.3	5,896.9	5,699.8	24.1	27.8	-23.19	-1,380.5	-450.3	243.5	216.5	27.00	9.017	
6,000.0	5,858.7	5,996.8	5,796.0	24.5	28.3	-23.10	-1,406.0	-458.9	248.2	220.8	27.43	9.048	
6,100.0	5,956.2	6,096.7	5,892.2	24.9	28.8	-23.02	-1,431.4	-467.4	252.9	225.1	27.86	9.078	
6,200.0	6,053.6	6,196.6	5,988.4	25.4	29.3	-22.95	-1,456.9	-476.0	257.7	229.4	28.29	9.108	
6,300.0	6,151.1	6,296.5	6,084.6	25.8	29.8	-22.87	-1,482.3	-484.5	262.4	233.7	28.72	9.136	
6,400.0	6,248.5	6,396.3	6,180.8	26.2	30.3	-22.80	-1,507.8	-493.1	267.2	238.0	29.15	9.164	
6,500.0	6,345.9	6,496.2	6,277.0	26.7	30.8	-22.73	-1,533.3	-501.7	271.9	242.3	29.58	9.191	
6,600.0	6,443.4	6,596.1	6,373.2	27.1	31.3	-22.66	-1,558.7	-510.2	276.6	246.6	30.01	9.217	
6,700.0	6,540.8	6,696.0	6,469.4	27.5	31.8	-22.60	-1,584.2	-518.8	281.4	250.9	30.44	9.242	
6,800.0	6,638.2	6,795.9	6,565.7	28.0	32.3	-22.53	-1,609.6	-527.3	286.1	255.2	30.87	9.267	
6,900.0	6,735.7	6,895.8	6,661.9	28.4	32.8	-22.47	-1,635.1	-535.9	290.8	259.5	31.31	9.291	
7,000.0	6,833.1	6,995.7	6,758.1	28.8	33.3	-22.41	-1,660.6	-544.5	295.6	263.8	31.74	9.314	
7,100.0	6,930.6	7,095.6	6,854.3	29.3	33.8	-22.36	-1,686.0	-553.0	300.3	268.2	32.17	9.336	
7,200.0	7,028.0	7,195.4	6,950.5	29.7	34.3	-22.30	-1,711.5	-561.6	305.1	272.5	32.60	9.358	
7,300.0	7,125.4	7,295.3	7,046.7	30.1	34.8	-22.25	-1,737.0	-570.1	309.8	276.8	33.03	9.380	
7,400.0	7,222.9	7,398.3	7,145.9	30.5	35.3	-22.20	-1,763.1	-578.9	314.4	280.9	33.47	9.394	
7,500.0	7,320.5	7,509.8	7,254.2	30.9	35.8	-22.28	-1,788.5	-587.5	317.3	283.4	33.96	9.344	
7,600.0	7,418.9	7,621.6	7,363.6	31.3	36.2	-22.35	-1,809.9	-594.7	319.8	285.4	34.41	9.293	
7,700.0	7,517.8	7,733.4	7,473.9	31.6	36.6	-22.40	-1,827.2	-600.5	321.7	286.9	34.80	9.244	
7,800.0	7,617.2	7,845.2	7,584.9	31.8	36.8	-22.44	-1,840.5	-605.0	323.2	288.1	35.14	9.197	
7,900.0	7,716.9	7,957.2	7,696.4	31.9	37.0	-22.47	-1,849.7	-608.0	324.2	288.8	35.43	9.151	
8,000.0	7,816.8	8,069.2	7,808.2	32.1	37.2	-22.49	-1,854.7	-609.7	324.8	289.1	35.67	9.105	
8,100.0	7,916.8	8,177.7	7,916.8	32.1	37.2	179.35	-1,855.8	-610.1	324.9	289.0	35.89	9.052	
8,200.0	8,016.8	8,277.7	8,016.8	32.2	37.3	179.35	-1,855.8	-610.1	324.9	288.7	36.17	8.983	
8,300.0	8,116.8	8,377.7	8,116.8	32.3	37.4	179.35	-1,855.8	-610.1	324.9	288.5	36.45	8.915	
8,400.0	8,216.8	8,477.7	8,216.8	32.4	37.4	179.35	-1,855.8	-610.1	324.9	288.2	36.73	8.847	
8,500.0	8,316.8	8,577.7	8,316.8	32.5	37.5	179.35	-1,855.8	-610.1	324.9	287.9	37.01	8.780	
8,600.0	8,416.8	8,677.7	8,416.8	32.5	37.6	179.35	-1,855.8	-610.1	324.9	287.6	37.29	8.714	
8,700.0	8,516.8	8,777.7	8,516.8	32.6	37.6	179.35	-1,855.8	-610.1	324.9	287.3	37.57	8.649	
8,800.0	8,616.8	8,877.7	8,616.8	32.7	37.7	179.35	-1,855.8	-610.1	324.9	287.1	37.85	8.584	
8,900.0	8,716.8	8,977.7	8,716.8	32.8	37.8	179.35	-1,855.8	-610.1	324.9	286.8	38.14	8.520	
9,000.0	8,816.8	9,077.7	8,816.8	32.9	37.9	179.35	-1,855.8	-610.1	324.9	286.5	38.42	8.457	
9,100.0	8,916.8	9,177.7	8,916.8	32.9	37.9	179.35	-1,855.8	-610.1	324.9	286.2	38.71	8.394	
9,200.0	9,016.8	9,277.7	9,016.8	33.0	38.0	179.35	-1,855.8	-610.1	324.9	285.9	39.00	8.332	
9,300.0	9,116.8	9,377.7	9,116.8	33.1	38.1	179.35	-1,855.8	-610.1	324.9	285.6	39.28	8.271	
9,400.0	9,216.8	9,477.7	9,216.8	33.2	38.2	179.35	-1,855.8	-610.1	324.9	285.3	39.57	8.210	
9,500.0	9,316.8	9,577.7	9,316.8	33.3	38.2	179.35	-1,855.8	-610.1	324.9	285.1	39.86	8.151	
9,600.0	9,416.8	9,677.7	9,416.8	33.4	38.3	179.35	-1,855.8	-610.1	324.9	284.8	40.16	8.091	
9,700.0	9,516.8	9,777.7	9,516.8	33.5	38.4	179.35	-1,855.8	-610.1	324.9	284.5	40.45	8.033	
9,800.0	9,616.8	9,877.7	9,616.8	33.5	38.5	179.35	-1,855.8	-610.1	324.9	284.2	40.74	7.975	
9,900.0	9,716.8	9,977.7	9,716.8	33.6	38.5	179.35	-1,855.8	-610.1	324.9	283.9	41.04	7.918	
10,000.0	9,816.8	10,077.7	9,816.8	33.7	38.6	179.35	-1,855.8	-610.1	324.9	283.6	41.33	7.862	
10,100.0	9,916.8	10,177.7	9,916.8	33.8	38.7	179.35	-1,855.8	-610.1	324.9	283.3	41.63	7.806	
10,200.0	10,016.8	10,277.7	10,016.8	33.9	38.8	179.35	-1,855.8	-610.1	324.9	283.0	41.92	7.750	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	10,116.8	10,377.7	10,116.8	34.0	38.9	179.35	-1,855.8	-610.1	324.9	282.7	42.22	7.696	
10,400.0	10,216.8	10,477.7	10,216.8	34.1	38.9	179.35	-1,855.8	-610.1	324.9	282.4	42.52	7.642	
10,487.2	10,304.0	10,565.0	10,304.0	34.2	39.0	179.35	-1,855.8	-610.1	324.9	282.1	42.78	7.595	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 16-12C2 (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	36.43	113.6	83.9	141.2				
100.0	100.0	100.0	100.0	0.1	0.1	36.43	113.6	83.9	141.2	141.0	0.27	518.779	
200.0	200.0	200.0	200.0	0.3	0.3	36.43	113.6	83.9	141.2	140.6	0.62	227.330	CC, ES
300.0	300.0	298.0	298.0	0.5	0.5	-166.62	115.6	82.3	144.4	143.5	0.97	148.239	
400.0	399.6	394.9	394.6	0.7	0.7	-169.89	121.3	77.6	154.4	153.0	1.36	113.922	
500.0	498.8	489.5	488.4	1.0	1.0	-174.41	130.6	70.0	171.8	170.1	1.77	96.935	
600.0	597.1	584.5	582.2	1.4	1.3	-179.07	142.3	60.4	196.8	194.6	2.19	90.027	
700.0	694.6	679.0	675.5	1.8	1.6	177.29	154.0	50.7	226.8	224.2	2.60	87.089	
800.0	792.0	773.5	768.7	2.2	1.9	174.49	165.7	41.1	257.6	254.6	3.03	85.058	
900.0	889.5	867.9	861.9	2.6	2.2	172.30	177.4	31.5	289.0	285.5	3.46	83.567	
1,000.0	986.9	962.4	955.2	3.0	2.5	170.52	189.1	21.9	320.6	316.7	3.89	82.400	
1,100.0	1,084.3	1,056.8	1,048.4	3.4	2.8	169.07	200.8	12.3	352.4	348.1	4.33	81.447	
1,200.0	1,181.8	1,151.3	1,141.6	3.9	3.1	167.86	212.5	2.6	384.5	379.7	4.77	80.649	
1,300.0	1,279.2	1,245.7	1,234.8	4.3	3.4	166.83	224.2	-7.0	416.6	411.4	5.21	79.966	
1,400.0	1,376.6	1,340.1	1,328.0	4.7	3.7	165.95	235.9	-16.6	448.9	443.2	5.66	79.375	
1,500.0	1,474.1	1,434.6	1,421.3	5.1	4.0	165.18	247.6	-26.2	481.2	475.1	6.10	78.856	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 16-2C (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	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	561.742	
200.0	200.0	200.0	200.0	0.3	0.3	35.70	124.2	89.2	152.9	152.3	0.62	246.157	CC, ES
300.0	300.0	296.8	296.7	0.5	0.5	-167.17	126.3	88.0	156.5	155.5	0.97	161.130	
400.0	399.6	392.3	392.0	0.7	0.7	-169.96	132.5	84.2	167.4	166.1	1.34	124.538	
500.0	498.8	485.5	484.5	1.0	1.0	-173.81	142.4	78.1	186.3	184.6	1.74	106.831	
600.0	597.1	575.4	573.0	1.4	1.3	-177.98	155.6	70.1	213.7	211.6	2.15	99.182	
700.0	694.6	667.6	663.3	1.8	1.6	178.11	171.3	60.5	247.6	245.0	2.58	96.048	
800.0	792.0	760.4	754.2	2.2	1.9	175.11	187.2	50.8	282.5	279.5	3.01	93.967	
900.0	889.5	853.1	845.1	2.6	2.3	172.76	203.0	41.1	318.0	314.6	3.44	92.515	
1,000.0	986.9	945.9	936.0	3.0	2.7	170.88	218.9	31.4	353.9	350.0	3.87	91.423	
1,100.0	1,084.3	1,038.7	1,026.9	3.4	3.0	169.34	234.7	21.7	390.0	385.7	4.31	90.557	
1,200.0	1,181.8	1,131.4	1,117.8	3.9	3.4	168.07	250.6	12.0	426.4	421.6	4.75	89.846	
1,300.0	1,279.2	1,224.2	1,208.7	4.3	3.7	166.99	266.5	2.3	462.9	457.7	5.19	89.246	
1,400.0	1,376.6	1,317.0	1,299.5	4.7	4.1	166.07	282.3	-7.4	499.5	493.9	5.63	88.732	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 16-5C (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	39.92	119.5	100.0	155.8				
100.0	100.0	100.0	100.0	0.1	0.1	39.92	119.5	100.0	155.8	155.5	0.27	572.175	
200.0	200.0	200.0	200.0	0.3	0.3	39.92	119.5	100.0	155.8	155.2	0.62	250.729	CC, ES
300.0	300.0	295.9	295.8	0.5	0.5	-162.92	121.7	99.2	159.6	158.6	0.97	164.644	
400.0	399.6	390.4	390.1	0.7	0.7	-165.61	128.4	96.7	171.1	169.8	1.34	127.999	
500.0	498.8	482.5	481.4	1.0	0.9	-169.30	139.1	92.8	191.1	189.3	1.73	110.756	
600.0	597.1	570.9	568.6	1.4	1.3	-173.25	153.2	87.7	219.8	217.7	2.12	103.669	
700.0	694.6	655.2	650.9	1.8	1.6	-177.02	170.2	81.5	256.3	253.8	2.52	101.622	
800.0	792.0	736.4	729.4	2.2	2.0	179.65	189.8	74.3	296.9	294.0	2.93	101.295	SF
900.0	889.5	814.3	803.8	2.6	2.4	176.77	211.5	66.4	341.3	338.0	3.34	102.250	
1,000.0	986.9	899.4	884.4	3.0	2.9	174.07	237.2	57.0	388.3	384.5	3.77	103.091	
1,100.0	1,084.3	986.3	966.6	3.4	3.4	171.89	263.5	47.4	435.9	431.7	4.20	103.806	
1,200.0	1,181.8	1,073.1	1,048.8	3.9	3.9	170.13	289.8	37.9	483.9	479.2	4.63	104.488	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-16B (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	26.48	10.2	5.1	11.4				
100.0	100.0	100.0	100.0	0.1	0.1	26.48	10.2	5.1	11.4	11.1	0.27	41.867	
200.0	200.0	200.0	200.0	0.3	0.3	26.48	10.2	5.1	11.4	10.8	0.62	18.346	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	173.00	10.8	2.5	13.7	12.7	0.98	14.007	SF
400.0	399.6	399.3	399.0	0.7	0.7	155.07	12.6	-5.0	22.4	21.0	1.37	16.281	
500.0	498.8	497.3	496.1	1.0	1.0	144.49	15.6	-17.4	38.5	36.7	1.84	20.891	
600.0	597.1	593.2	590.4	1.4	1.3	139.00	19.6	-34.1	61.6	59.2	2.40	25.665	
700.0	694.6	686.8	681.6	1.8	1.8	135.76	24.7	-54.9	90.5	87.5	3.04	29.752	
800.0	792.0	778.4	769.6	2.2	2.3	132.52	30.6	-79.4	122.5	118.8	3.75	32.713	
900.0	889.5	868.1	854.5	2.6	2.8	129.36	37.3	-107.3	157.6	153.1	4.47	35.235	
1,000.0	986.9	960.9	941.9	3.0	3.4	126.86	44.6	-137.8	194.1	188.9	5.22	37.183	
1,100.0	1,084.3	1,053.7	1,029.3	3.4	3.9	125.15	52.0	-168.3	230.9	224.9	5.97	38.688	
1,200.0	1,181.8	1,146.5	1,116.6	3.9	4.5	123.91	59.3	-198.7	267.8	261.1	6.72	39.877	
1,300.0	1,279.2	1,239.3	1,204.0	4.3	5.1	122.96	66.6	-229.2	304.8	297.3	7.46	40.837	
1,400.0	1,376.6	1,332.1	1,291.3	4.7	5.7	122.23	74.0	-259.7	341.8	333.6	8.21	41.629	
1,500.0	1,474.1	1,424.9	1,378.7	5.1	6.3	121.63	81.3	-290.1	378.9	369.9	8.96	42.291	
1,600.0	1,571.5	1,517.7	1,466.0	5.6	6.9	121.15	88.7	-320.6	416.0	406.3	9.71	42.854	
1,700.0	1,669.0	1,610.5	1,553.4	6.0	7.5	120.74	96.0	-351.1	453.1	442.6	10.45	43.337	
1,800.0	1,766.4	1,703.4	1,640.8	6.4	8.1	120.39	103.3	-381.6	490.2	479.0	11.20	43.757	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-16B2 (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-67.82	4.4	-10.7	11.6				
100.0	100.0	100.0	100.0	0.1	0.1	-67.82	4.4	-10.7	11.6	11.3	0.27	42.567	
200.0	200.0	200.0	200.0	0.3	0.3	-67.82	4.4	-10.7	11.6	11.0	0.62	18.653	CC, ES
300.0	300.0	299.3	299.3	0.5	0.5	97.85	4.6	-13.3	14.2	13.2	0.98	14.534	SF
400.0	399.6	398.1	397.7	0.7	0.7	109.22	5.4	-20.9	22.9	21.5	1.38	16.555	
500.0	498.8	495.6	494.5	1.0	1.0	116.12	6.8	-33.4	38.0	36.2	1.87	20.369	
600.0	597.1	591.6	588.8	1.4	1.3	119.64	8.6	-50.5	59.4	56.9	2.45	24.238	
700.0	694.6	685.5	680.3	1.8	1.8	121.23	10.8	-71.8	86.2	83.1	3.11	27.664	
800.0	792.0	777.6	768.9	2.2	2.3	120.53	13.4	-96.9	116.2	112.4	3.84	30.295	
900.0	889.5	868.5	855.0	2.6	2.8	118.82	16.5	-125.8	149.3	144.7	4.58	32.579	
1,000.0	986.9	962.4	943.5	3.0	3.4	117.35	19.7	-157.1	183.5	178.1	5.35	34.290	
1,100.0	1,084.3	1,056.3	1,031.9	3.4	4.0	116.33	23.0	-188.3	217.8	211.7	6.12	35.568	
1,200.0	1,181.8	1,150.2	1,120.4	3.9	4.5	115.59	26.3	-219.5	252.1	245.2	6.90	36.553	
1,300.0	1,279.2	1,244.1	1,208.9	4.3	5.1	115.03	29.6	-250.7	286.5	278.8	7.67	37.334	
1,400.0	1,376.6	1,337.9	1,297.4	4.7	5.7	114.59	32.8	-282.0	320.8	312.4	8.45	37.968	
1,500.0	1,474.1	1,431.8	1,385.8	5.1	6.3	114.24	36.1	-313.2	355.2	346.0	9.23	38.493	
1,600.0	1,571.5	1,525.7	1,474.3	5.6	6.9	113.94	39.4	-344.4	389.6	379.6	10.01	38.935	
1,700.0	1,669.0	1,619.6	1,562.8	6.0	7.5	113.70	42.7	-375.7	424.0	413.2	10.79	39.311	
1,800.0	1,766.4	1,713.5	1,651.3	6.4	8.1	113.49	46.0	-406.9	458.4	446.9	11.57	39.635	
1,900.0	1,863.8	1,807.4	1,739.8	6.9	8.7	113.31	49.2	-438.1	492.8	480.5	12.35	39.918	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-16C (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-99.69	-7.3	-42.6	43.3				
100.0	100.0	100.0	100.0	0.1	0.1	-99.69	-7.3	-42.6	43.3	43.0	0.27	158.898	
200.0	200.0	200.0	200.0	0.3	0.3	-99.69	-7.3	-42.6	43.3	42.6	0.62	69.629	CC, ES
300.0	300.0	297.7	297.7	0.5	0.5	61.70	-7.3	-45.1	44.5	43.5	0.97	45.736	
400.0	399.6	395.0	394.7	0.7	0.7	70.21	-7.6	-52.6	49.0	47.6	1.36	36.041	
500.0	498.8	491.3	490.2	1.0	1.0	80.90	-7.9	-64.8	58.4	56.6	1.82	32.020	
600.0	597.1	586.3	583.7	1.4	1.3	90.61	-8.3	-81.6	73.9	71.5	2.41	30.724	SF
700.0	694.6	679.8	674.7	1.8	1.7	97.80	-8.9	-102.6	95.6	92.5	3.08	31.068	
800.0	792.0	771.7	763.2	2.2	2.2	101.24	-9.6	-127.5	122.1	118.3	3.80	32.157	
900.0	889.5	863.4	850.2	2.6	2.8	102.44	-10.4	-156.5	152.4	147.8	4.54	33.534	
1,000.0	986.9	958.4	940.0	3.0	3.3	103.04	-11.2	-187.5	183.6	178.2	5.32	34.517	
1,100.0	1,084.3	1,053.4	1,029.7	3.4	3.9	103.47	-12.1	-218.6	214.7	208.6	6.10	35.198	
1,200.0	1,181.8	1,148.4	1,119.5	3.9	4.5	103.79	-12.9	-249.7	246.0	239.1	6.89	35.693	
1,300.0	1,279.2	1,243.4	1,209.3	4.3	5.1	104.03	-13.8	-280.7	277.2	269.5	7.68	36.065	
1,400.0	1,376.6	1,338.4	1,299.1	4.7	5.7	104.23	-14.6	-311.8	308.4	299.9	8.48	36.355	
1,500.0	1,474.1	1,433.4	1,388.8	5.1	6.3	104.39	-15.5	-342.9	339.6	330.3	9.28	36.587	
1,600.0	1,571.5	1,528.4	1,478.6	5.6	6.8	104.52	-16.3	-373.9	370.8	360.7	10.08	36.775	
1,700.0	1,669.0	1,623.4	1,568.4	6.0	7.4	104.64	-17.2	-405.0	402.0	391.1	10.89	36.931	
1,800.0	1,766.4	1,718.4	1,658.2	6.4	8.0	104.73	-18.0	-436.1	433.2	421.5	11.69	37.063	
1,900.0	1,863.8	1,813.4	1,747.9	6.9	8.6	104.82	-18.8	-467.1	464.5	452.0	12.49	37.175	
2,000.0	1,961.3	1,908.4	1,837.7	7.3	9.2	104.89	-19.7	-498.2	495.7	482.4	13.30	37.272	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9B (M16W pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	32.26	107.8	68.1	127.5				
100.0	100.0	100.0	100.0	0.1	0.1	32.26	107.8	68.1	127.5	127.2	0.27	468.286	
200.0	200.0	200.0	200.0	0.3	0.3	32.26	107.8	68.1	127.5	126.9	0.62	205.204	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-169.78	107.8	68.1	130.1	129.1	0.97	134.122	
400.0	399.6	399.6	399.6	0.7	0.7	-170.32	107.8	68.1	137.8	136.5	1.32	104.655	
500.0	498.8	497.6	497.5	1.0	0.8	-172.03	109.4	66.1	151.1	149.4	1.66	90.873	
600.0	597.1	593.6	593.3	1.4	1.0	-175.27	114.0	60.4	170.6	168.6	2.02	84.446	
700.0	694.6	687.3	686.2	1.8	1.3	-179.26	121.4	51.3	195.9	193.5	2.42	81.086	
800.0	792.0	778.9	776.4	2.2	1.6	176.59	131.4	38.9	223.8	220.9	2.86	78.137	
900.0	889.5	868.1	863.4	2.6	1.9	172.49	143.7	23.7	254.4	251.1	3.37	75.578	
1,000.0	986.9	954.7	947.0	3.0	2.3	168.58	158.1	5.9	288.2	284.3	3.92	73.489	
1,100.0	1,084.3	1,038.5	1,026.7	3.4	2.8	164.92	174.3	-14.1	325.3	320.7	4.52	71.950	
1,200.0	1,181.8	1,119.3	1,102.4	3.9	3.3	161.57	192.0	-36.0	365.7	360.6	5.15	71.077	
1,300.0	1,279.2	1,203.4	1,180.3	4.3	3.9	158.36	212.1	-60.8	409.1	403.3	5.81	70.395	
1,400.0	1,376.6	1,291.0	1,261.1	4.7	4.5	155.61	233.1	-86.8	453.6	447.1	6.49	69.858	
1,500.0	1,474.1	1,378.5	1,342.0	5.1	5.1	153.34	254.2	-112.8	498.9	491.7	7.17	69.572	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9B2 (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-21.50	112.6	-44.3	121.0				
100.0	100.0	100.0	100.0	0.1	0.1	-21.50	112.6	-44.3	121.0	120.7	0.27	444.307	
200.0	200.0	200.0	200.0	0.3	0.3	-21.50	112.6	-44.3	121.0	120.4	0.62	194.696	CC, ES
300.0	300.0	295.1	295.0	0.5	0.5	136.69	113.8	-46.4	124.8	123.9	0.97	128.909	
400.0	399.6	389.3	389.0	0.7	0.7	136.79	117.4	-52.4	136.4	135.1	1.34	101.534	
500.0	498.8	481.9	480.9	1.0	0.9	136.88	123.2	-62.1	155.6	153.8	1.77	88.075	
600.0	597.1	572.1	569.7	1.4	1.3	136.88	131.1	-75.3	182.2	179.9	2.25	80.939	
700.0	694.6	659.5	655.1	1.8	1.6	137.06	140.9	-91.5	215.0	212.2	2.79	77.190	
800.0	792.0	744.6	737.3	2.2	2.1	136.80	152.2	-110.5	251.3	248.0	3.36	74.837	
900.0	889.5	827.3	816.1	2.6	2.5	136.11	165.1	-131.9	290.8	286.9	3.96	73.434	
1,000.0	986.9	907.5	891.4	3.0	3.1	135.18	179.2	-155.4	333.4	328.9	4.58	72.782	
1,100.0	1,084.3	997.1	974.9	3.4	3.7	134.18	195.9	-183.2	377.6	372.3	5.24	72.013	
1,200.0	1,181.8	1,086.6	1,058.4	3.9	4.3	133.39	212.5	-210.9	421.8	415.9	5.91	71.404	
1,300.0	1,279.2	1,176.2	1,142.0	4.3	4.9	132.75	229.2	-238.7	466.0	459.5	6.57	70.918	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9C (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	21.13	106.7	41.2	114.4				
100.0	100.0	100.0	100.0	0.1	0.1	21.13	106.7	41.2	114.4	114.1	0.27	420.174	
200.0	200.0	200.0	200.0	0.3	0.3	21.13	106.7	41.2	114.4	113.8	0.62	184.121	CC, ES
300.0	300.0	299.5	299.5	0.5	0.5	178.03	107.8	38.9	117.2	116.2	0.98	119.942	
400.0	399.6	398.2	397.8	0.7	0.7	174.63	111.0	31.9	125.9	124.5	1.37	92.208	
500.0	498.8	495.1	494.0	1.0	1.0	169.96	116.2	20.5	141.2	139.4	1.81	78.200	
600.0	597.1	589.7	587.0	1.4	1.3	164.94	123.2	5.2	163.6	161.3	2.31	70.937	
700.0	694.6	681.5	676.5	1.8	1.7	160.30	131.8	-13.7	192.3	189.4	2.88	66.719	
800.0	792.0	771.0	762.5	2.2	2.2	155.97	142.0	-35.8	224.2	220.6	3.53	63.510	
900.0	889.5	857.8	844.9	2.6	2.7	151.93	153.4	-60.8	259.2	254.9	4.22	61.363	
1,000.0	986.9	946.6	928.1	3.0	3.3	148.19	166.3	-89.0	296.9	292.0	4.95	59.994	
1,100.0	1,084.3	1,037.4	1,013.1	3.4	3.9	145.17	179.6	-118.1	335.8	330.1	5.68	59.074	
1,200.0	1,181.8	1,128.2	1,098.1	3.9	4.5	142.77	192.9	-147.2	375.3	368.9	6.42	58.498	
1,300.0	1,279.2	1,219.1	1,183.1	4.3	5.1	140.81	206.2	-176.2	415.3	408.1	7.14	58.138	
1,400.0	1,376.6	1,309.9	1,268.1	4.7	5.7	139.20	219.5	-205.3	455.5	447.7	7.87	57.914	
1,500.0	1,474.1	1,400.7	1,353.1	5.1	6.3	137.85	232.8	-234.4	496.1	487.5	8.59	57.780	SF

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

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design SWSW S16-T7S-R93W (M16W Pad) - MCU Fee 17-9D (M16W Pad) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	20.60	96.2	36.2	102.7				
100.0	100.0	100.0	100.0	0.1	0.1	20.60	96.2	36.2	102.7	102.5	0.27	377.318	
200.0	200.0	200.0	200.0	0.3	0.3	20.60	96.2	36.2	102.7	102.1	0.62	165.342	CC, ES
300.0	300.0	303.5	303.4	0.5	0.5	179.15	94.3	36.2	103.7	102.7	0.98	106.180	
400.0	399.6	404.6	404.5	0.7	0.7	179.74	89.8	35.5	107.1	105.8	1.33	80.792	
500.0	498.8	503.3	503.1	1.0	0.9	178.06	87.2	30.8	116.0	114.3	1.67	69.446	
600.0	597.1	600.7	600.0	1.4	1.1	174.56	87.0	21.7	131.2	129.2	2.04	64.185	
700.0	694.6	696.2	694.5	1.8	1.3	170.25	89.2	8.7	152.1	149.6	2.49	61.064	
800.0	792.0	789.8	786.6	2.2	1.6	165.59	93.6	-8.1	175.6	172.5	3.03	57.923	
900.0	889.5	881.4	875.6	2.6	2.0	160.90	100.0	-28.3	202.0	198.3	3.66	55.130	
1,000.0	986.9	970.6	961.4	3.0	2.5	156.39	108.2	-51.5	231.7	227.3	4.36	53.157	
1,100.0	1,084.3	1,063.8	1,050.4	3.4	2.9	152.32	117.8	-77.5	263.7	258.6	5.10	51.655	
1,200.0	1,181.8	1,157.1	1,139.4	3.9	3.4	149.13	127.4	-103.5	296.6	290.8	5.85	50.707	
1,300.0	1,279.2	1,250.3	1,228.4	4.3	3.9	146.57	137.0	-129.5	330.3	323.7	6.59	50.098	
1,400.0	1,376.6	1,343.5	1,317.4	4.7	4.5	144.48	146.6	-155.5	364.4	357.1	7.33	49.708	
1,500.0	1,474.1	1,436.7	1,406.4	5.1	5.0	142.74	156.1	-181.5	398.9	390.9	8.07	49.461	
1,600.0	1,571.5	1,530.0	1,495.4	5.6	5.5	141.28	165.7	-207.5	433.7	424.9	8.80	49.310	
1,700.0	1,669.0	1,623.2	1,584.4	6.0	6.0	140.03	175.3	-233.5	468.7	459.2	9.52	49.224	SF

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 21-4D2 (M16W Pad)
Project:	Mamm Creek	**TVD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Reference Site:	SWSW S16-T7S-R93W (M16W Pad)	**MD Reference:**	KBE @ 7903.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 21-4D2 (M16W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KBE @ 7903.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: MCU 21-4D2 (M16W Pad)
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.44°