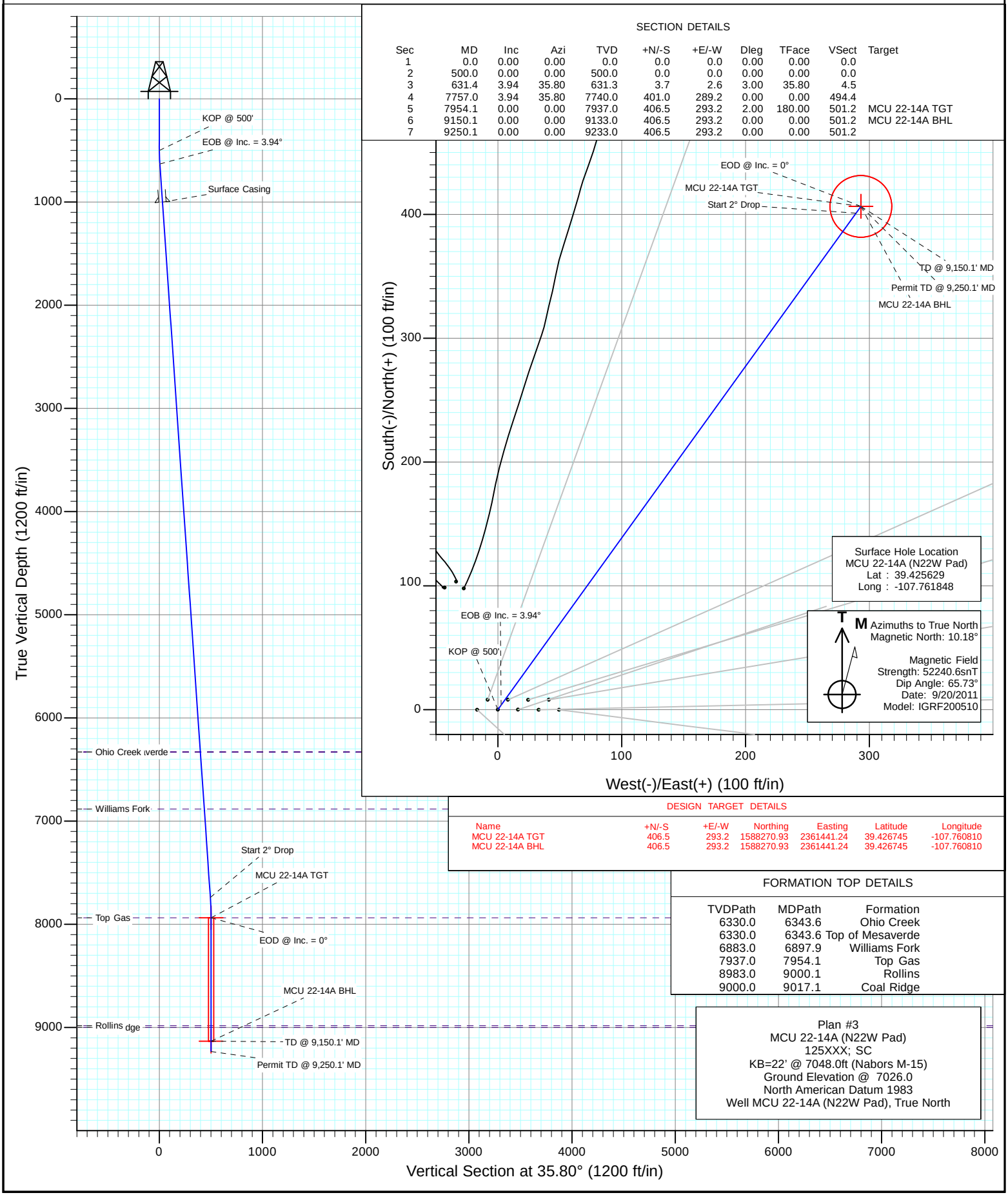
encana natural gas

Project: Mamm Creek
Site: N22W Pad
Well: MCU 22-14A (N22W Pad)
Wellbore: DD
Design: Plan #3

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	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	631.4	3.94	35.80	631.3	3.7	2.6	3.00	35.80	4.5	
4	7757.0	3.94	35.80	7740.0	401.0	289.2	0.00	0.00	494.4	
5	7954.1	0.00	0.00	7937.0	406.5	293.2	2.00	180.00	501.2	MCU 22-14A TGT
6	9150.1	0.00	0.00	9133.0	406.5	293.2	0.00	0.00	501.2	MCU 22-14A BHL
7	9250.1	0.00	0.00	9233.0	406.5	293.2	0.00	0.00	501.2	



Surface Hole Location
MCU 22-14A (N22W Pad)
Lat : 39.425629
Long : -107.761848

T M Azimuths to True North
Magnetic North: 10.18°

Magnetic Field
Strength: 52240.6snT
Dip Angle: 65.73°
Date: 9/20/2011
Model: IGRF200510

DESIGN TARGET DETAILS

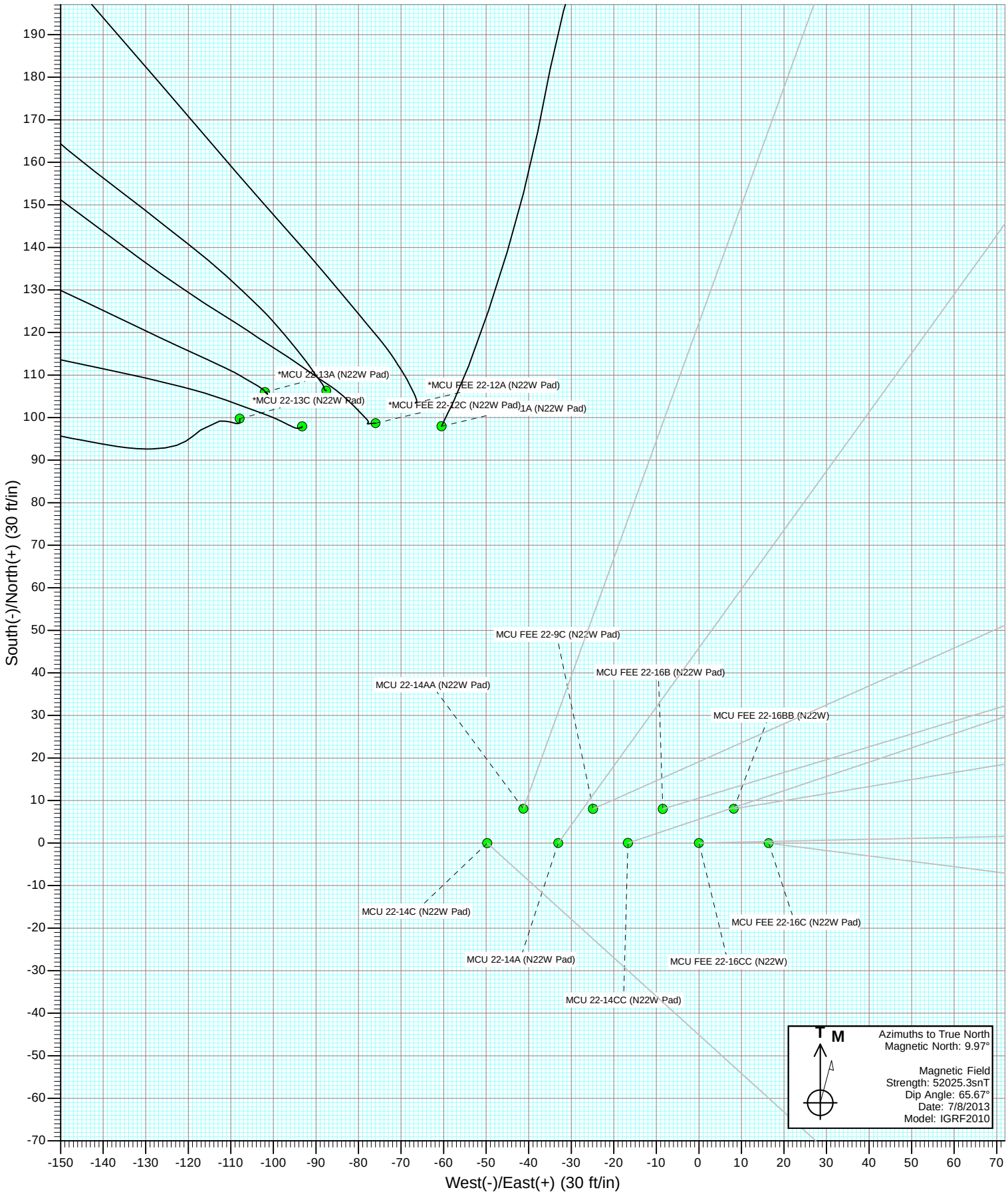
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
MCU 22-14A TGT	406.5	293.2	1588270.93	2361441.24	39.426745	-107.760810
MCU 22-14A BHL	406.5	293.2	1588270.93	2361441.24	39.426745	-107.760810

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6330.0	6343.6	Ohio Creek
6330.0	6343.6	Top of Mesaverde
6883.0	6897.9	Williams Fork
7937.0	7954.1	Top Gas
8983.0	9000.1	Rollins
9000.0	9017.1	Coal Ridge

Plan #3
MCU 22-14A (N22W Pad)
125XXX; SC
KB=22' @ 7048.0ft (Nabors M-15)
Ground Elevation @ 7026.0
North American Datum 1983
Well MCU 22-14A (N22W Pad), True North

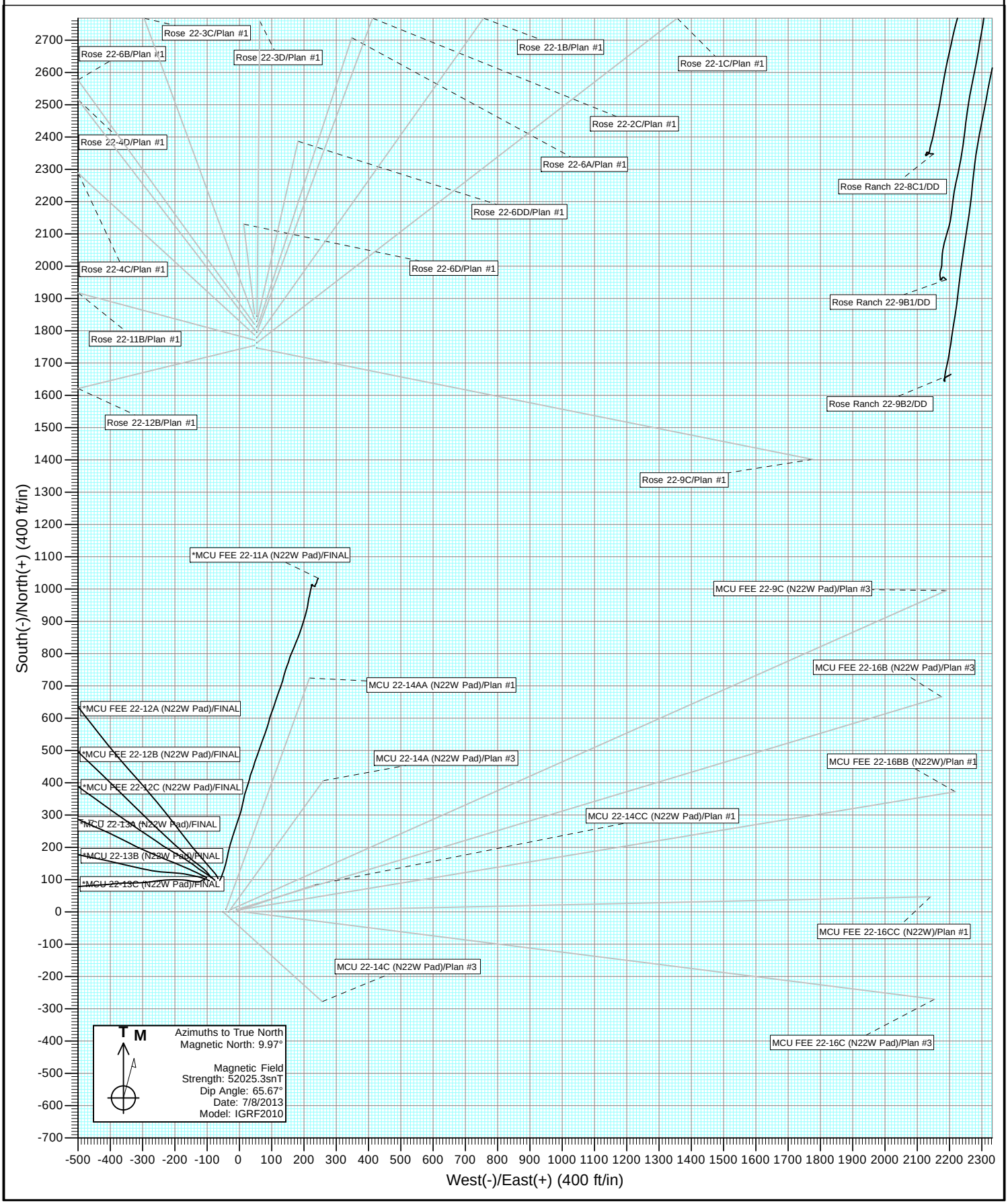
Project: Mamm Creek
Site: N22W Pad



encana natural gas

Project: Mamm Creek
Site: N22W Pad

CATHEDRAL



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	**North Reference:**	True
Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

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 N22W Pad

Site Position:		**Northing:**	1,587,870.64 ft	**Latitude:**	39.425629
From:	Lat/Long	**Easting:**	2,361,187.41 ft	**Longitude:**	-107.761673
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-1.43 °

Well MCU 22-14A (N22W Pad)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,587,871.86 ft	**Latitude:**	39.425629
	+E/-W	0.0 ft	**Easting:**	2,361,137.99 ft	**Longitude:**	-107.761848
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	7,026.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/20/2011	10.18	65.73	52,241

Design Plan #3

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	35.80

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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
631.4	3.94	35.80	631.3	3.7	2.6	3.00	3.00	0.00	35.80	
7,757.0	3.94	35.80	7,740.0	401.0	289.2	0.00	0.00	0.00	0.00	
7,954.1	0.00	0.00	7,937.0	406.5	293.2	2.00	-2.00	0.00	180.00	MCU 22-14A TGT
9,150.1	0.00	0.00	9,133.0	406.5	293.2	0.00	0.00	0.00	0.00	MCU 22-14A BHL
9,250.1	0.00	0.00	9,233.0	406.5	293.2	0.00	0.00	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	**North Reference:**	True
Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500'
600.0	3.00	35.80	600.0	2.1	1.5	2.6	3.00	3.00	
631.4	3.94	35.80	631.3	3.7	2.6	4.5	3.00	3.00	EOB @ Inc. = 3.94°
700.0	3.94	35.80	699.7	7.5	5.4	9.2	0.00	0.00	
800.0	3.94	35.80	799.5	13.1	9.4	16.1	0.00	0.00	
900.0	3.94	35.80	899.3	18.6	13.4	23.0	0.00	0.00	
1,000.0	3.94	35.80	999.0	24.2	17.5	29.9	0.00	0.00	
1,001.0	3.94	35.80	1,000.0	24.3	17.5	29.9	0.00	0.00	Surface Casing
1,100.0	3.94	35.80	1,098.8	29.8	21.5	36.7	0.00	0.00	
1,200.0	3.94	35.80	1,198.6	35.4	25.5	43.6	0.00	0.00	
1,300.0	3.94	35.80	1,298.3	40.9	29.5	50.5	0.00	0.00	
1,400.0	3.94	35.80	1,398.1	46.5	33.6	57.4	0.00	0.00	
1,500.0	3.94	35.80	1,497.8	52.1	37.6	64.2	0.00	0.00	
1,600.0	3.94	35.80	1,597.6	57.7	41.6	71.1	0.00	0.00	
1,700.0	3.94	35.80	1,697.4	63.3	45.6	78.0	0.00	0.00	
1,800.0	3.94	35.80	1,797.1	68.8	49.6	84.9	0.00	0.00	
1,900.0	3.94	35.80	1,896.9	74.4	53.7	91.7	0.00	0.00	
2,000.0	3.94	35.80	1,996.7	80.0	57.7	98.6	0.00	0.00	
2,100.0	3.94	35.80	2,096.4	85.6	61.7	105.5	0.00	0.00	
2,200.0	3.94	35.80	2,196.2	91.1	65.7	112.4	0.00	0.00	
2,300.0	3.94	35.80	2,295.9	96.7	69.8	119.2	0.00	0.00	
2,400.0	3.94	35.80	2,395.7	102.3	73.8	126.1	0.00	0.00	
2,500.0	3.94	35.80	2,495.5	107.9	77.8	133.0	0.00	0.00	
2,600.0	3.94	35.80	2,595.2	113.4	81.8	139.9	0.00	0.00	
2,700.0	3.94	35.80	2,695.0	119.0	85.8	146.7	0.00	0.00	
2,800.0	3.94	35.80	2,794.8	124.6	89.9	153.6	0.00	0.00	
2,900.0	3.94	35.80	2,894.5	130.2	93.9	160.5	0.00	0.00	
3,000.0	3.94	35.80	2,994.3	135.7	97.9	167.4	0.00	0.00	
3,100.0	3.94	35.80	3,094.1	141.3	101.9	174.2	0.00	0.00	
3,200.0	3.94	35.80	3,193.8	146.9	106.0	181.1	0.00	0.00	
3,300.0	3.94	35.80	3,293.6	152.5	110.0	188.0	0.00	0.00	
3,400.0	3.94	35.80	3,393.3	158.0	114.0	194.9	0.00	0.00	
3,500.0	3.94	35.80	3,493.1	163.6	118.0	201.7	0.00	0.00	
3,600.0	3.94	35.80	3,592.9	169.2	122.0	208.6	0.00	0.00	
3,700.0	3.94	35.80	3,692.6	174.8	126.1	215.5	0.00	0.00	
3,800.0	3.94	35.80	3,792.4	180.4	130.1	222.4	0.00	0.00	
3,900.0	3.94	35.80	3,892.2	185.9	134.1	229.3	0.00	0.00	
4,000.0	3.94	35.80	3,991.9	191.5	138.1	236.1	0.00	0.00	
4,100.0	3.94	35.80	4,091.7	197.1	142.2	243.0	0.00	0.00	
4,200.0	3.94	35.80	4,191.5	202.7	146.2	249.9	0.00	0.00	
4,300.0	3.94	35.80	4,291.2	208.2	150.2	256.8	0.00	0.00	
4,400.0	3.94	35.80	4,391.0	213.8	154.2	263.6	0.00	0.00	
4,500.0	3.94	35.80	4,490.7	219.4	158.2	270.5	0.00	0.00	
4,600.0	3.94	35.80	4,590.5	225.0	162.3	277.4	0.00	0.00	
4,700.0	3.94	35.80	4,690.3	230.5	166.3	284.3	0.00	0.00	
4,800.0	3.94	35.80	4,790.0	236.1	170.3	291.1	0.00	0.00	
4,900.0	3.94	35.80	4,889.8	241.7	174.3	298.0	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	**North Reference:**	True
Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,000.0	3.94	35.80	4,989.6	247.3	178.4	304.9	0.00	0.00	
5,100.0	3.94	35.80	5,089.3	252.8	182.4	311.8	0.00	0.00	
5,200.0	3.94	35.80	5,189.1	258.4	186.4	318.6	0.00	0.00	
5,300.0	3.94	35.80	5,288.8	264.0	190.4	325.5	0.00	0.00	
5,400.0	3.94	35.80	5,388.6	269.6	194.4	332.4	0.00	0.00	
5,500.0	3.94	35.80	5,488.4	275.1	198.5	339.3	0.00	0.00	
5,600.0	3.94	35.80	5,588.1	280.7	202.5	346.1	0.00	0.00	
5,700.0	3.94	35.80	5,687.9	286.3	206.5	353.0	0.00	0.00	
5,800.0	3.94	35.80	5,787.7	291.9	210.5	359.9	0.00	0.00	
5,900.0	3.94	35.80	5,887.4	297.5	214.6	366.8	0.00	0.00	
6,000.0	3.94	35.80	5,987.2	303.0	218.6	373.6	0.00	0.00	
6,100.0	3.94	35.80	6,087.0	308.6	222.6	380.5	0.00	0.00	
6,200.0	3.94	35.80	6,186.7	314.2	226.6	387.4	0.00	0.00	
6,300.0	3.94	35.80	6,286.5	319.8	230.6	394.3	0.00	0.00	
6,343.6	3.94	35.80	6,330.0	322.2	232.4	397.3	0.00	0.00	Top of Mesaverde - Ohio Creek
6,400.0	3.94	35.80	6,386.2	325.3	234.7	401.1	0.00	0.00	
6,500.0	3.94	35.80	6,486.0	330.9	238.7	408.0	0.00	0.00	
6,600.0	3.94	35.80	6,585.8	336.5	242.7	414.9	0.00	0.00	
6,700.0	3.94	35.80	6,685.5	342.1	246.7	421.8	0.00	0.00	
6,800.0	3.94	35.80	6,785.3	347.6	250.8	428.6	0.00	0.00	
6,897.9	3.94	35.80	6,883.0	353.1	254.7	435.4	0.00	0.00	Williams Fork
6,900.0	3.94	35.80	6,885.1	353.2	254.8	435.5	0.00	0.00	
7,000.0	3.94	35.80	6,984.8	358.8	258.8	442.4	0.00	0.00	
7,100.0	3.94	35.80	7,084.6	364.4	262.8	449.3	0.00	0.00	
7,200.0	3.94	35.80	7,184.4	369.9	266.8	456.1	0.00	0.00	
7,300.0	3.94	35.80	7,284.1	375.5	270.9	463.0	0.00	0.00	
7,400.0	3.94	35.80	7,383.9	381.1	274.9	469.9	0.00	0.00	
7,500.0	3.94	35.80	7,483.6	386.7	278.9	476.8	0.00	0.00	
7,600.0	3.94	35.80	7,583.4	392.3	282.9	483.6	0.00	0.00	
7,700.0	3.94	35.80	7,683.2	397.8	287.0	490.5	0.00	0.00	
7,757.0	3.94	35.80	7,740.0	401.0	289.2	494.4	0.00	0.00	Start 2° Drop
7,800.0	3.08	35.80	7,783.0	403.1	290.8	497.1	2.00	-2.00	
7,900.0	1.08	35.80	7,882.9	406.1	292.9	500.7	2.00	-2.00	
7,954.1	0.00	0.00	7,937.0	406.5	293.2	501.2	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
8,000.0	0.00	0.00	7,982.9	406.5	293.2	501.2	0.00	0.00	
8,100.0	0.00	0.00	8,082.9	406.5	293.2	501.2	0.00	0.00	
8,200.0	0.00	0.00	8,182.9	406.5	293.2	501.2	0.00	0.00	
8,300.0	0.00	0.00	8,282.9	406.5	293.2	501.2	0.00	0.00	
8,400.0	0.00	0.00	8,382.9	406.5	293.2	501.2	0.00	0.00	
8,500.0	0.00	0.00	8,482.9	406.5	293.2	501.2	0.00	0.00	
8,600.0	0.00	0.00	8,582.9	406.5	293.2	501.2	0.00	0.00	
8,700.0	0.00	0.00	8,682.9	406.5	293.2	501.2	0.00	0.00	
8,800.0	0.00	0.00	8,782.9	406.5	293.2	501.2	0.00	0.00	
8,900.0	0.00	0.00	8,882.9	406.5	293.2	501.2	0.00	0.00	
9,000.0	0.00	0.00	8,982.9	406.5	293.2	501.2	0.00	0.00	
9,000.1	0.00	0.00	8,983.0	406.5	293.2	501.2	0.00	0.00	Rollins
9,017.1	0.00	0.00	9,000.0	406.5	293.2	501.2	0.00	0.00	Coal Ridge
9,100.0	0.00	0.00	9,082.9	406.5	293.2	501.2	0.00	0.00	
9,150.1	0.00	0.00	9,133.0	406.5	293.2	501.2	0.00	0.00	TD @ 9,150.1' MD
9,200.0	0.00	0.00	9,182.9	406.5	293.2	501.2	0.00	0.00	
9,250.1	0.00	0.00	9,233.0	406.5	293.2	501.2	0.00	0.00	Permit TD @ 9,250.1' MD

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Project:	Mamm Creek	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site:	N22W Pad	**North Reference:**	True
Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

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 22-14A BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,133.0	406.5	293.2	1,588,270.93	2,361,441.24	39.426745	-107.760810
MCU 22-14A TGT - plan hits target center - Point	0.00	0.00	7,937.0	406.5	293.2	1,588,270.93	2,361,441.24	39.426745	-107.760810

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,001.0	1,000.0	Surface Casing		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,343.6	6,330.0	Top of Mesaverde			
6,343.6	6,330.0	Ohio Creek			
6,897.9	6,883.0	Williams Fork			
7,954.1	7,937.0	Top Gas			
9,000.1	8,983.0	Rollins			
9,017.1	9,000.0	Coal Ridge			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
500.0	500.0	0.0	0.0	KOP @ 500'
631.4	631.3	3.7	2.6	EOB @ Inc. = 3.94°
7,757.0	7,740.0	401.0	289.2	Start 2° Drop
7,954.1	7,937.0	406.5	293.2	EOD @ Inc. = 0°
9,150.1	9,133.0	406.5	293.2	TD @ 9,150.1' MD
9,250.1	9,233.0	406.5	293.2	Permit TD @ 9,250.1' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek
N22W Pad
MCU 22-14A (N22W Pad)
DD
Plan #3

Anticollision Report

10 July, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference	Plan #3

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** 7/10/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	9,250.1	Plan #3 (DD)	MWD	Geolink MWD

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**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
N22W Pad						
*MCU 22-13A (N22W Pad) - DD - FINAL	233.6	233.6	125.7	124.9	170.135	CC, ES
*MCU 22-13A (N22W Pad) - DD - FINAL	1,100.0	1,052.1	257.3	253.5	67.117	SF
*MCU 22-13B (N22W Pad) - DD - FINAL	197.9	197.9	114.7	114.1	186.780	CC
*MCU 22-13B (N22W Pad) - DD - FINAL	312.3	312.4	114.9	113.9	113.365	ES
*MCU 22-13B (N22W Pad) - DD - FINAL	900.0	868.5	176.7	173.6	56.084	SF
*MCU 22-13C (N22W Pad) - DD - FINAL	198.5	198.5	123.9	123.3	200.784	CC
*MCU 22-13C (N22W Pad) - DD - FINAL	200.0	200.0	123.9	123.3	199.157	ES
*MCU 22-13C (N22W Pad) - DD - FINAL	800.0	770.6	158.2	155.4	56.271	SF
*MCU FEE 22-11A (N22W Pad) - DD - FINAL	0.0	0.0	101.7			
*MCU FEE 22-11A (N22W Pad) - DD - FINAL	100.0	99.5	102.0	101.7	356.871	ES
*MCU FEE 22-11A (N22W Pad) - DD - FINAL	5,000.0	4,966.1	493.0	474.4	26.497	SF
*MCU FEE 22-12A (N22W Pad) - DD - FINAL	0.0	0.0	108.7			
*MCU FEE 22-12A (N22W Pad) - DD - FINAL	100.0	99.8	108.8	108.5	380.821	ES
*MCU FEE 22-12A (N22W Pad) - DD - FINAL	800.0	751.4	198.6	195.9	73.944	SF
*MCU FEE 22-12B (N22W Pad) - DD - FINAL	0.0	0.0	119.5			
*MCU FEE 22-12B (N22W Pad) - DD - FINAL	100.0	99.7	119.6	119.3	419.296	ES
*MCU FEE 22-12B (N22W Pad) - DD - FINAL	800.0	758.7	191.0	188.4	70.872	SF
*MCU FEE 22-12C (N22W Pad) - DD - FINAL	0.0	0.0	107.6			
*MCU FEE 22-12C (N22W Pad) - DD - FINAL	400.0	399.0	108.6	107.2	82.370	ES
*MCU FEE 22-12C (N22W Pad) - DD - FINAL	800.0	767.0	146.1	143.3	53.704	SF
MCU 22-14AA (N22W Pad) - OH - Plan #1	300.0	300.0	11.5	10.5	11.809	CC, ES
MCU 22-14AA (N22W Pad) - OH - Plan #1	9,250.1	9,271.7	320.8	286.4	9.313	SF
MCU 22-14C (N22W Pad) - DD - Plan #3	509.2	509.5	11.3	9.6	6.525	CC, ES, SF
MCU 22-14CC (N22W Pad) - OH - Plan #1	705.0	704.8	13.3	10.9	5.530	CC, ES
MCU 22-14CC (N22W Pad) - OH - Plan #1	800.0	799.5	14.8	12.1	5.391	SF
MCU FEE 22-16B (N22W Pad) - DD - Plan #3	300.0	300.0	25.8	24.9	26.629	CC, ES
MCU FEE 22-16B (N22W Pad) - DD - Plan #3	500.0	496.6	36.1	34.5	21.536	SF
MCU FEE 22-16BB (N22W) - OH - Plan #1	200.0	200.0	42.0	41.4	67.617	CC, ES
MCU FEE 22-16BB (N22W) - OH - Plan #1	500.0	491.3	64.9	63.2	37.908	SF
MCU FEE 22-16C (N22W Pad) - DD - Plan #3	233.3	233.3	49.4	48.7	67.012	CC, ES
MCU FEE 22-16C (N22W Pad) - DD - Plan #3	500.0	492.4	65.2	63.5	38.561	SF
MCU Fee 22-16CC (N22W) - OH - Plan #1	258.3	258.3	33.1	32.2	40.063	CC
MCU Fee 22-16CC (N22W) - OH - Plan #1	300.0	299.7	33.2	32.2	34.185	ES
MCU Fee 22-16CC (N22W) - OH - Plan #1	500.0	495.3	45.5	43.8	27.079	SF
MCU FEE 22-9C (N22W Pad) - DD - Plan #3	200.0	200.0	11.5	10.8	18.438	CC, ES
MCU FEE 22-9C (N22W Pad) - DD - Plan #3	300.0	299.4	13.9	13.0	14.288	SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU 22-13A (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 154-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	-33.05	105.9	-68.9	126.4				
100.0	100.0	100.4	100.4	0.1	0.2	-33.01	105.9	-68.8	126.2	126.0	0.29	440.928	
200.0	200.0	200.7	200.7	0.3	0.3	-32.91	105.6	-68.3	125.8	125.2	0.62	202.014	
233.6	233.6	233.6	233.6	0.4	0.4	-32.93	105.5	-68.3	125.7	124.9	0.74	170.135	CC, ES
300.0	300.0	296.8	296.8	0.5	0.5	-32.99	106.1	-68.9	126.5	125.5	0.96	131.119	
400.0	400.0	392.7	392.5	0.7	0.7	-33.72	108.4	-72.4	130.6	129.3	1.31	99.901	
500.0	500.0	486.0	485.5	0.8	0.8	-35.39	112.4	-79.9	138.6	137.0	1.65	84.255	
600.0	600.0	576.0	574.4	1.0	1.1	-74.32	118.2	-92.4	151.5	149.5	2.00	75.676	
700.0	699.7	670.4	666.9	1.2	1.4	-79.06	126.3	-109.3	168.4	166.0	2.37	71.019	
800.0	799.5	764.2	758.5	1.4	1.8	-83.42	134.7	-128.0	188.0	185.3	2.74	68.608	
900.0	899.3	859.0	850.6	1.6	2.2	-87.23	143.6	-148.5	210.2	207.1	3.11	67.691	
1,000.0	999.0	955.7	944.5	1.8	2.6	-90.43	152.6	-169.9	233.6	230.1	3.47	67.288	
1,100.0	1,098.8	1,052.1	1,038.1	2.0	3.1	-93.11	161.3	-191.2	257.3	253.5	3.83	67.117	SF
1,200.0	1,198.6	1,147.2	1,130.3	2.2	3.5	-95.32	170.0	-212.5	281.8	277.6	4.19	67.207	
1,300.0	1,298.3	1,243.2	1,223.5	2.4	3.9	-97.15	179.1	-234.1	306.9	302.4	4.55	67.401	
1,400.0	1,398.1	1,340.3	1,317.6	2.6	4.4	-98.63	188.7	-255.7	332.2	327.2	4.92	67.540	
1,500.0	1,497.8	1,436.2	1,410.6	2.8	4.8	-99.93	198.0	-277.0	357.6	352.3	5.28	67.692	
1,600.0	1,597.6	1,533.1	1,504.7	3.0	5.3	-100.90	208.4	-298.3	383.3	377.6	5.65	67.819	
1,700.0	1,697.4	1,631.3	1,600.0	3.3	5.7	-101.74	218.9	-319.4	408.6	402.6	6.03	67.811	
1,800.0	1,797.1	1,728.2	1,694.1	3.5	6.2	-102.42	229.5	-340.0	433.9	427.5	6.40	67.779	
1,900.0	1,896.9	1,818.7	1,781.8	3.7	6.6	-103.02	239.4	-359.7	459.7	452.9	6.77	67.937	
2,000.0	1,996.7	1,910.0	1,870.1	3.9	7.0	-103.67	249.0	-381.0	486.9	479.7	7.13	68.242	

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 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU 22-13B (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 185-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	-31.57	97.9	-60.2	114.9				
100.0	100.0	100.1	100.1	0.1	0.2	-31.61	97.8	-60.2	114.9	114.6	0.29	395.776	
197.9	197.9	197.9	197.9	0.3	0.3	-31.71	97.6	-60.3	114.7	114.1	0.61	186.780	CC
200.0	200.0	200.0	200.0	0.3	0.3	-31.71	97.6	-60.3	114.7	114.1	0.62	184.578	
300.0	300.0	300.1	300.1	0.5	0.5	-31.94	97.5	-60.8	114.9	114.0	0.97	118.387	
312.3	312.3	312.4	312.4	0.5	0.5	-31.97	97.5	-60.8	114.9	113.9	1.01	113.365	ES
400.0	400.0	399.0	399.0	0.7	0.7	-32.29	97.5	-61.6	115.4	114.0	1.32	87.523	
500.0	500.0	493.0	492.9	0.8	0.8	-33.33	99.2	-65.2	118.9	117.3	1.66	71.814	
600.0	600.0	585.9	585.3	1.0	1.0	-72.52	102.7	-74.3	126.9	124.8	2.01	63.059	
700.0	699.7	678.9	677.0	1.2	1.3	-78.61	107.4	-89.1	139.4	137.0	2.39	58.441	
800.0	799.5	772.8	768.8	1.4	1.6	-85.04	111.7	-108.1	156.5	153.7	2.77	56.467	
900.0	899.3	868.5	862.1	1.6	2.0	-90.59	116.2	-129.2	176.7	173.6	3.15	56.084	SF
1,000.0	999.0	965.3	956.2	1.8	2.4	-95.52	119.3	-151.3	198.4	194.8	3.53	56.185	
1,100.0	1,098.8	1,060.4	1,048.6	2.0	2.8	-99.81	121.2	-173.9	221.5	217.6	3.90	56.852	
1,200.0	1,198.6	1,155.5	1,140.9	2.2	3.2	-103.32	123.1	-196.8	245.9	241.6	4.25	57.800	
1,300.0	1,298.3	1,247.6	1,230.0	2.4	3.7	-106.12	125.2	-219.9	272.0	267.4	4.60	59.122	
1,400.0	1,398.1	1,343.9	1,323.1	2.6	4.1	-108.23	129.2	-244.4	299.5	294.5	4.95	60.523	
1,500.0	1,497.8	1,447.0	1,423.2	2.8	4.6	-109.89	134.0	-268.3	325.3	320.0	5.31	61.269	
1,600.0	1,597.6	1,543.9	1,517.5	3.0	5.0	-111.15	138.8	-290.0	350.6	345.0	5.67	61.892	
1,700.0	1,697.4	1,638.6	1,609.7	3.3	5.4	-112.20	143.6	-311.3	376.2	370.2	6.02	62.495	
1,800.0	1,797.1	1,735.5	1,704.0	3.5	5.9	-113.10	148.7	-333.2	402.1	395.7	6.38	63.024	
1,900.0	1,896.9	1,829.9	1,795.7	3.7	6.3	-113.87	153.8	-354.7	428.2	421.4	6.74	63.540	
2,000.0	1,996.7	1,929.0	1,892.1	3.9	6.7	-114.65	158.7	-377.4	454.3	447.2	7.11	63.928	
2,100.0	2,096.4	2,021.6	1,982.1	4.1	7.2	-115.34	162.9	-398.6	480.6	473.1	7.47	64.371	

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 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU 22-13C (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 124-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	-36.89	99.7	-74.9	124.7				
100.0	100.0	100.7	100.7	0.1	0.1	-36.99	99.4	-74.9	124.4	124.2	0.28	442.520	
198.5	198.5	198.5	198.5	0.3	0.3	-37.18	98.7	-74.9	123.9	123.3	0.62	200.784	CC
200.0	200.0	200.0	200.0	0.3	0.3	-37.18	98.7	-74.9	123.9	123.3	0.62	199.157	ES
300.0	300.0	296.7	296.7	0.5	0.5	-37.80	98.8	-76.6	125.1	124.1	0.97	129.574	
400.0	400.0	397.8	397.7	0.7	0.7	-39.28	98.9	-80.9	127.8	126.5	1.32	96.863	
500.0	500.0	499.4	499.1	0.8	0.9	-42.14	95.3	-86.2	128.5	126.9	1.68	76.402	
600.0	600.0	591.8	591.2	1.0	1.1	-81.89	92.8	-93.2	131.4	129.4	2.07	63.520	
700.0	699.7	681.4	679.9	1.2	1.3	-87.32	93.4	-104.8	141.1	138.7	2.44	57.826	
800.0	799.5	770.6	767.6	1.4	1.6	-92.41	96.5	-121.2	158.2	155.4	2.81	56.271	SF
900.0	899.3	863.6	858.0	1.6	1.9	-97.61	99.0	-142.6	180.3	177.1	3.20	56.394	
1,000.0	999.0	956.6	947.9	1.8	2.4	-102.51	99.6	-166.7	205.5	201.9	3.57	57.495	
1,100.0	1,098.8	1,051.5	1,039.2	2.0	2.8	-106.87	98.9	-192.4	232.6	228.6	3.95	58.938	
1,200.0	1,198.6	1,152.0	1,136.1	2.2	3.3	-110.85	96.4	-219.2	259.8	255.5	4.31	60.249	
1,300.0	1,298.3	1,257.2	1,238.3	2.4	3.8	-114.21	92.9	-243.8	284.7	280.0	4.67	60.930	
1,400.0	1,398.1	1,357.7	1,336.5	2.6	4.2	-116.64	90.6	-265.1	308.1	303.1	5.02	61.423	
1,500.0	1,497.8	1,457.5	1,434.3	2.8	4.5	-118.37	90.0	-284.8	330.8	325.4	5.36	61.693	
1,600.0	1,597.6	1,555.0	1,530.0	3.0	4.9	-119.81	89.5	-303.6	353.2	347.5	5.71	61.907	
1,700.0	1,697.4	1,644.0	1,617.1	3.3	5.3	-120.95	89.3	-321.7	376.9	370.8	6.04	62.410	
1,800.0	1,797.1	1,738.9	1,709.7	3.5	5.7	-122.12	88.5	-342.2	402.0	395.6	6.39	62.950	
1,900.0	1,896.9	1,838.3	1,806.8	3.7	6.1	-123.40	86.3	-363.7	427.1	420.4	6.74	63.387	
2,000.0	1,996.7	1,926.0	1,892.3	3.9	6.5	-124.39	84.4	-383.0	452.9	445.8	7.07	64.050	
2,100.0	2,096.4	2,020.1	1,983.8	4.1	6.9	-125.28	83.0	-405.0	480.1	472.7	7.42	64.732	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU FEE 22-11A (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 154-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	-15.63	97.9	-27.4	101.7				
100.0	100.0	99.5	99.5	0.1	0.1	-15.51	98.2	-27.3	102.0	101.7	0.29	356.871	ES
200.0	200.0	198.7	198.6	0.3	0.3	-15.16	99.1	-26.8	102.7	102.1	0.62	165.403	
300.0	300.0	294.8	294.7	0.5	0.5	-13.78	102.6	-25.2	105.8	104.8	0.97	108.557	
400.0	400.0	388.2	387.6	0.7	0.7	-11.02	110.8	-21.6	113.5	112.2	1.37	82.998	
500.0	500.0	483.5	482.0	0.8	1.0	-7.74	123.9	-16.8	126.3	124.5	1.80	70.178	
600.0	600.0	582.6	579.8	1.0	1.3	-41.21	138.9	-12.0	138.9	136.8	2.05	67.589	
700.0	699.7	681.3	677.3	1.2	1.6	-40.65	153.9	-7.9	148.7	146.3	2.43	61.301	
800.0	799.5	780.3	774.9	1.4	1.9	-40.50	169.4	-4.4	158.9	156.1	2.80	56.785	
900.0	899.3	880.5	873.9	1.6	2.3	-40.53	185.1	-1.3	169.0	165.8	3.18	53.226	
1,000.0	999.0	981.6	973.8	1.8	2.6	-40.36	200.2	2.5	178.4	174.8	3.56	50.145	
1,100.0	1,098.8	1,081.9	1,072.9	2.0	2.9	-40.17	214.5	6.5	187.1	183.1	3.94	47.494	
1,200.0	1,198.6	1,182.0	1,172.0	2.2	3.2	-39.86	228.7	10.9	195.7	191.3	4.32	45.284	
1,300.0	1,298.3	1,283.0	1,271.9	2.4	3.5	-39.54	242.4	15.5	203.7	199.0	4.70	43.323	
1,400.0	1,398.1	1,383.0	1,370.9	2.6	3.8	-39.37	255.5	19.6	211.2	206.2	5.08	41.583	
1,500.0	1,497.8	1,482.9	1,469.9	2.8	4.1	-39.22	268.6	23.7	218.8	213.3	5.46	40.072	
1,600.0	1,597.6	1,581.4	1,567.4	3.0	4.4	-38.98	281.8	28.1	226.5	220.7	5.84	38.800	
1,700.0	1,697.4	1,680.8	1,665.7	3.3	4.7	-38.66	295.5	33.0	234.7	228.5	6.21	37.765	
1,800.0	1,797.1	1,783.2	1,767.2	3.5	5.0	-38.49	309.1	37.4	242.5	235.9	6.59	36.788	
1,900.0	1,896.9	1,884.2	1,867.4	3.7	5.3	-38.73	321.2	40.1	248.9	242.0	6.97	35.696	
2,000.0	1,996.7	1,982.6	1,965.0	3.9	5.5	-38.88	333.3	43.0	255.7	248.4	7.35	34.792	
2,100.0	2,096.4	2,081.4	2,062.9	4.1	5.8	-39.04	345.9	45.8	263.0	255.3	7.73	34.034	
2,200.0	2,196.2	2,180.3	2,161.0	4.3	6.1	-39.24	358.8	48.5	270.6	262.5	8.11	33.366	
2,300.0	2,295.9	2,280.0	2,259.7	4.5	6.4	-39.21	372.1	52.1	278.3	269.8	8.49	32.775	
2,400.0	2,395.7	2,380.5	2,359.2	4.7	6.7	-39.07	385.4	56.4	286.0	277.1	8.87	32.244	
2,500.0	2,495.5	2,478.5	2,456.3	4.9	7.0	-38.99	398.3	60.3	293.6	284.4	9.25	31.748	
2,600.0	2,595.2	2,576.0	2,552.8	5.1	7.3	-38.84	411.9	64.5	302.0	292.4	9.62	31.403	
2,700.0	2,695.0	2,679.8	2,655.5	5.4	7.6	-38.79	426.2	68.5	310.2	300.2	10.01	31.006	
2,800.0	2,794.8	2,781.0	2,755.7	5.6	7.9	-38.63	439.1	73.0	317.4	307.0	10.39	30.557	
2,900.0	2,894.5	2,881.0	2,854.9	5.8	8.2	-38.51	451.6	77.4	324.3	313.5	10.76	30.134	
3,000.0	2,994.3	2,979.0	2,952.0	6.0	8.5	-38.49	464.0	81.1	331.4	320.3	11.14	29.760	
3,100.0	3,094.1	3,076.4	3,048.5	6.2	8.8	-38.34	477.0	85.5	339.2	327.6	11.51	29.460	
3,200.0	3,193.8	3,174.2	3,145.2	6.4	9.1	-38.08	490.7	90.6	347.5	335.7	11.88	29.249	
3,300.0	3,293.6	3,274.5	3,244.3	6.6	9.4	-37.84	504.9	95.8	356.2	343.9	12.26	29.062	
3,400.0	3,393.3	3,376.8	3,345.5	6.8	9.7	-37.73	518.7	100.3	364.1	351.5	12.63	28.818	
3,500.0	3,493.1	3,476.0	3,443.8	7.0	10.0	-37.59	532.2	104.9	372.1	359.1	13.01	28.599	
3,600.0	3,592.9	3,580.9	3,547.6	7.3	10.3	-37.39	545.5	110.2	379.2	365.8	13.39	28.321	
3,700.0	3,692.6	3,682.7	3,648.6	7.5	10.6	-37.34	557.3	114.4	385.3	371.5	13.77	27.982	
3,800.0	3,792.4	3,782.2	3,747.4	7.7	10.9	-37.34	568.9	118.2	391.4	377.2	14.15	27.668	
3,900.0	3,892.2	3,883.0	3,847.5	7.9	11.2	-37.38	580.5	121.8	397.3	382.8	14.52	27.352	
4,000.0	3,991.9	3,979.0	3,942.8	8.1	11.4	-37.47	591.6	124.9	403.3	388.4	14.90	27.071	
4,100.0	4,091.7	4,072.1	4,035.0	8.3	11.7	-37.48	603.8	128.4	410.9	395.7	15.27	26.911	
4,200.0	4,191.5	4,167.0	4,128.8	8.5	12.0	-37.28	617.7	133.3	419.9	404.3	15.63	26.862	
4,300.0	4,291.2	4,265.7	4,226.2	8.7	12.3	-37.07	632.8	138.6	429.7	413.7	16.00	26.854	
4,400.0	4,391.0	4,369.2	4,328.3	8.9	12.7	-36.92	648.2	143.7	439.0	422.7	16.37	26.812	
4,500.0	4,490.7	4,468.4	4,426.5	9.2	13.0	-36.85	662.3	148.0	447.7	430.9	16.75	26.720	
4,600.0	4,590.5	4,568.1	4,525.0	9.4	13.3	-36.63	676.8	153.6	456.7	439.6	17.12	26.673	
4,700.0	4,690.3	4,665.5	4,621.2	9.6	13.6	-36.45	691.0	158.8	465.7	448.2	17.49	26.631	
4,800.0	4,790.0	4,765.2	4,719.6	9.8	14.0	-36.29	705.9	164.0	475.1	457.3	17.86	26.610	
4,900.0	4,889.8	4,867.4	4,820.6	10.0	14.3	-36.23	720.9	168.5	484.2	466.0	18.23	26.564	
5,000.0	4,989.6	4,966.1	4,918.3	10.2	14.6	-36.27	735.1	172.1	493.0	474.4	18.61	26.497	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU FEE 22-12A (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 154-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	-18.01	103.4	-33.6	108.7				
100.0	100.0	99.8	99.8	0.1	0.1	-17.93	103.5	-33.5	108.8	108.5	0.29	380.821	ES
200.0	200.0	199.2	199.2	0.3	0.3	-17.74	103.9	-33.3	109.1	108.5	0.62	175.930	
300.0	300.0	294.3	294.2	0.5	0.5	-17.86	106.5	-34.3	112.0	111.1	0.96	116.369	
400.0	400.0	388.2	387.8	0.7	0.7	-18.58	112.7	-37.9	119.6	118.3	1.31	91.456	
500.0	500.0	480.2	479.0	0.8	0.9	-20.38	122.7	-45.6	132.5	130.9	1.65	80.118	
600.0	600.0	569.8	566.8	1.0	1.2	-58.82	136.4	-57.0	150.2	148.2	1.98	75.734	
700.0	699.7	657.3	651.3	1.2	1.6	-62.78	153.5	-72.1	172.3	169.9	2.33	73.981	
800.0	799.5	751.4	741.2	1.4	2.1	-66.42	174.6	-90.2	198.6	195.9	2.69	73.944	SF
900.0	899.3	844.5	829.9	1.6	2.6	-69.20	195.9	-108.6	226.1	223.1	3.04	74.396	
1,000.0	999.0	937.2	917.9	1.8	3.2	-71.27	218.3	-127.1	255.2	251.8	3.39	75.252	
1,100.0	1,098.8	1,031.3	1,007.0	2.0	3.7	-72.65	242.4	-145.1	285.3	281.5	3.75	76.059	
1,200.0	1,198.6	1,128.8	1,099.5	2.2	4.3	-73.79	267.3	-163.7	315.3	311.2	4.12	76.512	
1,300.0	1,298.3	1,224.2	1,190.1	2.4	4.8	-74.85	290.9	-182.2	345.0	340.5	4.49	76.806	
1,400.0	1,398.1	1,321.5	1,282.5	2.6	5.4	-75.85	314.3	-201.3	374.4	369.6	4.87	76.896	
1,500.0	1,497.8	1,411.0	1,367.3	2.8	5.9	-76.67	336.3	-219.6	404.9	399.6	5.24	77.315	
1,600.0	1,597.6	1,504.6	1,455.8	3.0	6.5	-77.37	360.0	-239.0	436.2	430.6	5.61	77.706	
1,700.0	1,697.4	1,602.0	1,548.0	3.3	7.1	-78.07	384.0	-259.3	467.1	461.1	6.00	77.862	
1,800.0	1,797.1	1,696.4	1,637.4	3.5	7.6	-78.73	406.8	-279.2	497.8	491.5	6.38	77.999	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU FEE 22-12B (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 154-MWD, 1549-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-27.15	106.3	-54.5	119.5				
100.0	100.0	99.7	99.7	0.1	0.1	-27.20	106.4	-54.7	119.6	119.3	0.29	419.296	ES
200.0	200.0	199.1	199.1	0.3	0.3	-27.27	106.7	-55.0	120.0	119.4	0.62	193.643	
300.0	300.0	296.2	296.1	0.5	0.5	-27.22	108.1	-55.6	121.6	120.7	0.96	126.122	
400.0	400.0	388.3	388.1	0.7	0.7	-27.59	112.7	-58.9	127.7	126.4	1.30	97.942	
500.0	500.0	481.2	480.3	0.8	0.9	-28.54	121.5	-66.0	139.6	138.0	1.65	84.481	
600.0	600.0	575.4	573.2	1.0	1.2	-66.45	132.4	-77.1	154.5	152.5	1.99	77.786	
700.0	699.7	669.3	665.2	1.2	1.5	-70.35	144.2	-91.3	170.9	168.6	2.34	72.959	
800.0	799.5	758.7	752.3	1.4	1.9	-74.01	156.7	-107.4	191.0	188.4	2.70	70.872	SF
900.0	899.3	845.6	835.9	1.6	2.3	-76.94	171.8	-125.9	216.5	213.5	3.04	71.133	
1,000.0	999.0	944.4	930.3	1.8	2.8	-79.38	190.9	-147.5	244.4	241.0	3.41	71.641	
1,100.0	1,098.8	1,041.6	1,023.7	2.0	3.3	-81.33	208.7	-167.9	271.2	267.4	3.78	71.762	
1,200.0	1,198.6	1,138.2	1,116.5	2.2	3.8	-82.76	226.8	-187.6	298.0	293.8	4.15	71.830	
1,300.0	1,298.3	1,234.4	1,209.0	2.4	4.3	-83.89	245.0	-206.8	324.8	320.3	4.52	71.840	
1,400.0	1,398.1	1,332.1	1,303.0	2.6	4.8	-84.89	263.2	-226.3	351.4	346.5	4.90	71.719	
1,500.0	1,497.8	1,427.4	1,394.7	2.8	5.3	-85.65	281.3	-245.0	378.2	372.9	5.28	71.633	
1,600.0	1,597.6	1,523.7	1,487.3	3.0	5.8	-86.27	299.9	-263.7	405.0	399.3	5.66	71.522	
1,700.0	1,697.4	1,612.2	1,572.3	3.3	6.3	-86.79	317.2	-281.4	432.5	426.5	6.03	71.692	
1,800.0	1,797.1	1,703.9	1,659.8	3.5	6.8	-87.33	335.7	-301.4	461.9	455.5	6.41	72.022	
1,900.0	1,896.9	1,800.2	1,751.7	3.7	7.3	-87.75	355.8	-322.0	491.3	484.5	6.80	72.213	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - *MCU FEE 22-12C (N22W Pad) - DD - FINAL

Offset Site Error: 0.0 ft

Survey Program: 185-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	-23.52	98.7	-42.9	107.6				
100.0	100.0	99.8	99.8	0.1	0.2	-23.66	98.6	-43.2	107.7	107.4	0.29	371.543	
200.0	200.0	199.6	199.5	0.3	0.3	-24.08	98.6	-44.1	108.0	107.4	0.62	173.866	
300.0	300.0	299.8	299.8	0.5	0.5	-24.46	98.5	-44.8	108.2	107.3	0.97	111.504	
400.0	400.0	399.0	399.0	0.7	0.7	-24.27	99.0	-44.6	108.6	107.2	1.32	82.370	ES
500.0	500.0	493.9	493.8	0.8	0.8	-24.76	101.4	-46.8	111.9	110.2	1.66	67.477	
600.0	600.0	588.1	587.7	1.0	1.0	-63.06	107.0	-53.1	118.9	116.9	2.01	59.254	
700.0	699.7	680.7	679.2	1.2	1.3	-68.28	114.7	-64.2	129.4	127.1	2.37	54.724	
800.0	799.5	767.0	763.8	1.4	1.5	-73.32	124.0	-78.6	146.1	143.3	2.72	53.704	SF
900.0	899.3	859.0	852.7	1.6	2.0	-77.99	137.2	-98.1	169.3	166.3	3.08	54.930	
1,000.0	999.0	954.3	944.1	1.8	2.4	-81.45	153.2	-119.7	196.2	192.7	3.45	56.922	
1,100.0	1,098.8	1,053.0	1,039.0	2.0	2.9	-84.54	168.2	-142.5	222.8	219.0	3.82	58.335	
1,200.0	1,198.6	1,150.0	1,132.4	2.2	3.4	-87.28	181.4	-165.1	249.1	244.9	4.19	59.497	
1,300.0	1,298.3	1,245.9	1,224.8	2.4	3.8	-89.44	194.2	-187.2	275.4	270.9	4.55	60.502	
1,400.0	1,398.1	1,338.4	1,313.8	2.6	4.3	-90.90	208.2	-208.3	302.9	298.0	4.91	61.645	
1,500.0	1,497.8	1,435.0	1,406.6	2.8	4.8	-92.10	223.3	-230.4	330.8	325.5	5.29	62.581	
1,600.0	1,597.6	1,530.4	1,498.3	3.0	5.3	-93.12	238.0	-252.3	358.8	353.2	5.66	63.402	
1,700.0	1,697.4	1,624.6	1,588.7	3.3	5.8	-93.98	252.8	-274.0	387.1	381.1	6.03	64.167	
1,800.0	1,797.1	1,723.7	1,683.9	3.5	6.3	-94.76	268.2	-296.9	415.5	409.1	6.42	64.743	
1,900.0	1,896.9	1,811.4	1,768.2	3.7	6.8	-95.39	281.8	-317.2	444.0	437.2	6.79	65.433	
2,000.0	1,996.7	1,902.6	1,855.2	3.9	7.3	-95.88	297.3	-339.6	474.4	467.2	7.16	66.234	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU 22-14AA (N22W Pad) - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink 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	-45.63	8.0	-8.2	11.5				
100.0	100.0	100.0	100.0	0.1	0.1	-45.63	8.0	-8.2	11.5	11.2	0.27	42.088	
200.0	200.0	200.0	200.0	0.3	0.3	-45.63	8.0	-8.2	11.5	10.8	0.62	18.443	
300.0	300.0	300.0	300.0	0.5	0.5	-45.63	8.0	-8.2	11.5	10.5	0.97	11.809	CC, ES
400.0	400.0	399.7	399.6	0.7	0.7	-34.95	10.5	-7.3	12.8	11.4	1.33	9.633	
500.0	500.0	498.8	498.4	0.8	0.9	-14.79	17.7	-4.7	18.4	16.7	1.70	10.803	
600.0	600.0	598.5	597.6	1.0	1.1	-41.86	27.3	-1.2	25.5	23.4	2.04	12.518	
700.0	699.7	698.4	697.0	1.2	1.3	-41.70	37.0	2.3	29.8	27.4	2.40	12.393	
800.0	799.5	798.3	796.4	1.4	1.6	-41.89	46.6	5.7	33.9	31.1	2.78	12.207	
900.0	899.3	898.2	895.8	1.6	1.8	-42.04	56.2	9.2	38.0	34.8	3.15	12.055	
1,000.0	999.0	998.1	995.2	1.8	2.1	-42.16	65.9	12.7	42.1	38.6	3.53	11.928	
1,100.0	1,098.8	1,098.1	1,094.5	2.0	2.3	-42.26	75.5	16.2	46.2	42.3	3.91	11.821	
1,200.0	1,198.6	1,198.0	1,193.9	2.2	2.6	-42.34	85.1	19.7	50.3	46.0	4.29	11.730	
1,300.0	1,298.3	1,297.9	1,293.3	2.4	2.8	-42.41	94.8	23.1	54.4	49.8	4.67	11.652	
1,400.0	1,398.1	1,397.8	1,392.7	2.6	3.0	-42.47	104.4	26.6	58.5	53.5	5.05	11.584	
1,500.0	1,497.8	1,497.7	1,492.1	2.8	3.3	-42.52	114.0	30.1	62.6	57.2	5.44	11.524	
1,600.0	1,597.6	1,597.6	1,591.5	3.0	3.5	-42.57	123.7	33.6	66.7	60.9	5.82	11.472	
1,700.0	1,697.4	1,697.6	1,690.9	3.3	3.8	-42.61	133.3	37.0	70.9	64.7	6.20	11.425	
1,800.0	1,797.1	1,797.5	1,790.3	3.5	4.0	-42.64	142.9	40.5	75.0	68.4	6.58	11.384	
1,900.0	1,896.9	1,897.4	1,889.7	3.7	4.3	-42.68	152.5	44.0	79.1	72.1	6.97	11.346	
2,000.0	1,996.7	1,997.3	1,989.1	3.9	4.5	-42.70	162.2	47.5	83.2	75.8	7.35	11.312	
2,100.0	2,096.4	2,097.2	2,088.4	4.1	4.8	-42.73	171.8	51.0	87.3	79.5	7.74	11.281	
2,200.0	2,196.2	2,197.1	2,187.8	4.3	5.0	-42.75	181.4	54.4	91.4	83.3	8.12	11.253	
2,300.0	2,295.9	2,297.0	2,287.2	4.5	5.3	-42.78	191.1	57.9	95.5	87.0	8.51	11.228	
2,400.0	2,395.7	2,397.0	2,386.6	4.7	5.5	-42.80	200.7	61.4	99.6	90.7	8.89	11.204	
2,500.0	2,495.5	2,496.9	2,486.0	4.9	5.8	-42.82	210.3	64.9	103.7	94.4	9.28	11.182	
2,600.0	2,595.2	2,596.8	2,585.4	5.1	6.0	-42.83	220.0	68.4	107.8	98.2	9.66	11.162	
2,700.0	2,695.0	2,696.7	2,684.8	5.4	6.3	-42.85	229.6	71.8	111.9	101.9	10.04	11.143	
2,800.0	2,794.8	2,796.6	2,784.2	5.6	6.5	-42.86	239.2	75.3	116.0	105.6	10.43	11.126	
2,900.0	2,894.5	2,896.5	2,883.6	5.8	6.8	-42.88	248.9	78.8	120.1	109.3	10.81	11.110	
3,000.0	2,994.3	2,996.5	2,982.9	6.0	7.0	-42.89	258.5	82.3	124.3	113.1	11.20	11.094	
3,100.0	3,094.1	3,096.4	3,082.3	6.2	7.3	-42.90	268.1	85.7	128.4	116.8	11.59	11.080	
3,200.0	3,193.8	3,196.3	3,181.7	6.4	7.5	-42.91	277.7	89.2	132.5	120.5	11.97	11.067	
3,300.0	3,293.6	3,296.2	3,281.1	6.6	7.8	-42.92	287.4	92.7	136.6	124.2	12.36	11.054	
3,400.0	3,393.3	3,396.1	3,380.5	6.8	8.0	-42.93	297.0	96.2	140.7	127.9	12.74	11.042	
3,500.0	3,493.1	3,496.0	3,479.9	7.0	8.3	-42.94	306.6	99.7	144.8	131.7	13.13	11.031	
3,600.0	3,592.9	3,595.9	3,579.3	7.3	8.5	-42.95	316.3	103.1	148.9	135.4	13.51	11.021	
3,700.0	3,692.6	3,695.9	3,678.7	7.5	8.8	-42.96	325.9	106.6	153.0	139.1	13.90	11.011	
3,800.0	3,792.4	3,795.8	3,778.1	7.7	9.0	-42.97	335.5	110.1	157.1	142.8	14.28	11.001	
3,900.0	3,892.2	3,895.7	3,877.5	7.9	9.3	-42.98	345.2	113.6	161.2	146.6	14.67	10.992	
4,000.0	3,991.9	3,995.6	3,976.8	8.1	9.5	-42.98	354.8	117.0	165.3	150.3	15.05	10.984	
4,100.0	4,091.7	4,095.5	4,076.2	8.3	9.8	-42.99	364.4	120.5	169.4	154.0	15.44	10.976	
4,200.0	4,191.5	4,195.4	4,175.6	8.5	10.0	-43.00	374.1	124.0	173.6	157.7	15.82	10.968	
4,300.0	4,291.2	4,295.4	4,275.0	8.7	10.3	-43.00	383.7	127.5	177.7	161.5	16.21	10.961	
4,400.0	4,391.0	4,395.3	4,374.4	8.9	10.5	-43.01	393.3	131.0	181.8	165.2	16.59	10.953	
4,500.0	4,490.7	4,495.2	4,473.8	9.2	10.8	-43.01	402.9	134.4	185.9	168.9	16.98	10.947	
4,600.0	4,590.5	4,595.1	4,573.2	9.4	11.0	-43.02	412.6	137.9	190.0	172.6	17.37	10.940	
4,700.0	4,690.3	4,695.0	4,672.6	9.6	11.3	-43.02	422.2	141.4	194.1	176.3	17.75	10.934	
4,800.0	4,790.0	4,794.9	4,772.0	9.8	11.5	-43.03	431.8	144.9	198.2	180.1	18.14	10.928	
4,900.0	4,889.8	4,894.9	4,871.3	10.0	11.8	-43.03	441.5	148.4	202.3	183.8	18.52	10.922	
5,000.0	4,989.6	4,994.8	4,970.7	10.2	12.0	-43.04	451.1	151.8	206.4	187.5	18.91	10.917	
5,100.0	5,089.3	5,094.7	5,070.1	10.4	12.3	-43.04	460.7	155.3	210.5	191.2	19.29	10.912	

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 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU 22-14AA (N22W Pad) - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,189.1	5,194.6	5,169.5	10.6	12.5	-43.05	470.4	158.8	214.6	195.0	19.68	10.907	
5,300.0	5,288.8	5,294.5	5,268.9	10.9	12.8	-43.05	480.0	162.3	218.7	198.7	20.06	10.902	
5,400.0	5,388.6	5,394.4	5,368.3	11.1	13.0	-43.06	489.6	165.7	222.9	202.4	20.45	10.897	
5,500.0	5,488.4	5,494.3	5,467.7	11.3	13.3	-43.06	499.3	169.2	227.0	206.1	20.84	10.893	
5,600.0	5,588.1	5,594.3	5,567.1	11.5	13.5	-43.06	508.9	172.7	231.1	209.8	21.22	10.888	
5,700.0	5,687.9	5,694.2	5,666.5	11.7	13.8	-43.07	518.5	176.2	235.2	213.6	21.61	10.884	
5,800.0	5,787.7	5,794.1	5,765.9	11.9	14.0	-43.07	528.2	179.7	239.3	217.3	21.99	10.880	
5,900.0	5,887.4	5,894.0	5,865.2	12.1	14.3	-43.07	537.8	183.1	243.4	221.0	22.38	10.876	
6,000.0	5,987.2	5,993.9	5,964.6	12.3	14.5	-43.08	547.4	186.6	247.5	224.7	22.76	10.872	
6,100.0	6,087.0	6,093.8	6,064.0	12.5	14.8	-43.08	557.0	190.1	251.6	228.5	23.15	10.869	
6,200.0	6,186.7	6,193.8	6,163.4	12.8	15.0	-43.08	566.7	193.6	255.7	232.2	23.54	10.865	
6,300.0	6,286.5	6,293.7	6,262.8	13.0	15.3	-43.09	576.3	197.0	259.8	235.9	23.92	10.862	
6,400.0	6,386.2	6,393.6	6,362.2	13.2	15.5	-43.09	585.9	200.5	263.9	239.6	24.31	10.858	
6,500.0	6,486.0	6,493.5	6,461.6	13.4	15.8	-43.09	595.6	204.0	268.0	243.3	24.69	10.855	
6,600.0	6,585.8	6,593.4	6,561.0	13.6	16.0	-43.09	605.2	207.5	272.2	247.1	25.08	10.852	
6,700.0	6,685.5	6,693.3	6,660.4	13.8	16.3	-43.10	614.8	211.0	276.3	250.8	25.46	10.849	
6,800.0	6,785.3	6,793.2	6,759.7	14.0	16.5	-43.10	624.5	214.4	280.4	254.5	25.85	10.846	
6,900.0	6,885.1	6,893.2	6,859.1	14.2	16.8	-43.10	634.1	217.9	284.5	258.2	26.24	10.843	
7,000.0	6,984.8	6,993.1	6,958.5	14.5	17.0	-43.10	643.7	221.4	288.6	262.0	26.62	10.840	
7,100.0	7,084.6	7,093.0	7,057.9	14.7	17.3	-43.11	653.4	224.9	292.7	265.7	27.01	10.838	
7,200.0	7,184.4	7,192.9	7,157.3	14.9	17.5	-43.11	663.0	228.4	296.8	269.4	27.39	10.835	
7,300.0	7,284.1	7,292.8	7,256.7	15.1	17.8	-43.11	672.6	231.8	300.9	273.1	27.78	10.832	
7,400.0	7,383.9	7,392.7	7,356.1	15.3	18.0	-43.11	682.2	235.3	305.0	276.9	28.16	10.830	
7,500.0	7,483.6	7,492.7	7,455.5	15.5	18.3	-43.11	691.9	238.8	309.1	280.6	28.55	10.827	
7,600.0	7,583.4	7,592.6	7,554.9	15.7	18.5	-43.12	701.5	242.3	313.2	284.3	28.94	10.825	
7,700.0	7,683.2	7,693.5	7,655.2	15.9	18.8	-43.12	711.2	245.8	317.3	288.0	29.32	10.822	
7,800.0	7,783.0	7,804.4	7,765.8	16.1	19.0	-43.29	719.5	248.8	319.6	289.9	29.73	10.752	
7,900.0	7,882.9	7,915.4	7,876.7	16.3	19.2	-43.43	723.8	250.3	320.7	290.6	30.08	10.659	
8,000.0	7,982.9	8,021.6	7,982.9	16.5	19.3	-7.64	724.5	250.6	320.8	290.4	30.40	10.553	
8,100.0	8,082.9	8,121.6	8,082.9	16.6	19.4	-7.64	724.5	250.6	320.8	290.1	30.72	10.443	
8,200.0	8,182.9	8,221.6	8,182.9	16.7	19.5	-7.64	724.5	250.6	320.8	289.8	31.04	10.335	
8,300.0	8,282.9	8,321.6	8,282.9	16.9	19.7	-7.64	724.5	250.6	320.8	289.5	31.36	10.229	
8,400.0	8,382.9	8,421.6	8,382.9	17.0	19.8	-7.64	724.5	250.6	320.8	289.1	31.69	10.125	
8,500.0	8,482.9	8,521.6	8,482.9	17.2	19.9	-7.64	724.5	250.6	320.8	288.8	32.01	10.023	
8,600.0	8,582.9	8,621.6	8,582.9	17.3	20.1	-7.64	724.5	250.6	320.8	288.5	32.33	9.922	
8,700.0	8,682.9	8,721.6	8,682.9	17.5	20.2	-7.64	724.5	250.6	320.8	288.2	32.66	9.824	
8,800.0	8,782.9	8,821.6	8,782.9	17.6	20.3	-7.64	724.5	250.6	320.8	287.8	32.98	9.727	
8,900.0	8,882.9	8,921.6	8,882.9	17.8	20.5	-7.64	724.5	250.6	320.8	287.5	33.31	9.633	
9,000.0	8,982.9	9,021.6	8,982.9	18.0	20.6	-7.64	724.5	250.6	320.8	287.2	33.63	9.539	
9,100.0	9,082.9	9,121.6	9,082.9	18.1	20.7	-7.64	724.5	250.6	320.8	286.9	33.96	9.448	
9,200.0	9,182.9	9,221.6	9,182.9	18.3	20.9	-7.64	724.5	250.6	320.8	286.5	34.28	9.358	
9,250.1	9,233.0	9,271.7	9,233.0	18.3	20.9	-7.64	724.5	250.6	320.8	286.4	34.45	9.313	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU 22-14C (N22W Pad) - DD - Plan #3 — **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	-90.14	0.0	-16.7	16.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.14	0.0	-16.7	16.7	16.4	0.27	61.213	
200.0	200.0	200.0	200.0	0.3	0.3	-90.14	0.0	-16.7	16.7	16.0	0.62	26.824	
300.0	300.0	300.3	300.3	0.5	0.5	-91.72	-0.5	-16.2	16.2	15.2	0.97	16.661	
400.0	400.0	400.5	400.4	0.7	0.7	-106.05	-3.6	-12.7	13.2	11.9	1.33	9.922	
500.0	500.0	500.4	500.1	0.8	0.9	-130.26	-7.3	-8.6	11.3	9.6	1.69	6.699	
509.2	509.2	509.5	509.3	0.9	0.9	-168.62	-7.7	-8.3	11.3	9.6	1.73	6.525	CC, ES, SF
600.0	600.0	600.1	599.7	1.0	1.1	169.24	-11.0	-4.6	14.5	12.4	2.06	7.029	
700.0	699.7	699.7	699.2	1.2	1.3	159.20	-14.6	-0.6	22.9	20.5	2.42	9.479	
800.0	799.5	799.3	798.6	1.4	1.4	154.85	-18.3	3.5	31.9	29.2	2.78	11.474	
900.0	899.3	898.9	898.0	1.6	1.6	152.41	-22.0	7.5	41.0	37.9	3.15	13.029	
1,000.0	999.0	998.4	997.4	1.8	1.8	150.87	-25.6	11.5	50.2	46.7	3.52	14.265	
1,100.0	1,098.8	1,098.0	1,096.9	2.0	2.0	149.80	-29.3	15.6	59.4	55.5	3.89	15.269	
1,200.0	1,198.6	1,197.6	1,196.3	2.2	2.2	149.01	-32.9	19.6	68.6	64.3	4.26	16.098	
1,300.0	1,298.3	1,297.2	1,295.7	2.4	2.4	148.42	-36.6	23.6	77.8	73.2	4.63	16.794	
1,400.0	1,398.1	1,396.7	1,395.1	2.6	2.6	147.94	-40.2	27.7	87.0	82.0	5.00	17.386	
1,500.0	1,497.8	1,496.3	1,494.5	2.8	2.8	147.56	-43.9	31.7	96.2	90.9	5.38	17.895	
1,600.0	1,597.6	1,595.9	1,594.0	3.0	3.0	147.25	-47.6	35.7	105.5	99.7	5.75	18.338	
1,700.0	1,697.4	1,695.5	1,693.4	3.3	3.2	146.99	-51.2	39.8	114.7	108.6	6.12	18.727	
1,800.0	1,797.1	1,795.0	1,792.8	3.5	3.4	146.76	-54.9	43.8	123.9	117.4	6.50	19.070	
1,900.0	1,896.9	1,894.6	1,892.2	3.7	3.6	146.57	-58.5	47.8	133.1	126.3	6.87	19.376	
2,000.0	1,996.7	1,994.2	1,991.7	3.9	3.8	146.40	-62.2	51.9	142.4	135.1	7.24	19.650	
2,100.0	2,096.4	2,093.7	2,091.1	4.1	4.0	146.25	-65.8	55.9	151.6	144.0	7.62	19.897	
2,200.0	2,196.2	2,193.3	2,190.5	4.3	4.2	146.12	-69.5	59.9	160.8	152.8	7.99	20.121	
2,300.0	2,295.9	2,292.9	2,289.9	4.5	4.4	146.00	-73.1	64.0	170.1	161.7	8.37	20.324	
2,400.0	2,395.7	2,392.5	2,389.4	4.7	4.6	145.90	-76.8	68.0	179.3	170.6	8.74	20.510	
2,500.0	2,495.5	2,492.0	2,488.8	4.9	4.8	145.81	-80.5	72.0	188.5	179.4	9.12	20.681	
2,600.0	2,595.2	2,591.6	2,588.2	5.1	5.0	145.72	-84.1	76.1	197.8	188.3	9.49	20.838	
2,700.0	2,695.0	2,691.2	2,687.6	5.4	5.2	145.64	-87.8	80.1	207.0	197.1	9.87	20.983	
2,800.0	2,794.8	2,790.7	2,787.1	5.6	5.4	145.57	-91.4	84.1	216.2	206.0	10.24	21.117	
2,900.0	2,894.5	2,890.3	2,886.5	5.8	5.6	145.51	-95.1	88.2	225.5	214.9	10.61	21.242	
3,000.0	2,994.3	2,989.9	2,985.9	6.0	5.8	145.44	-98.7	92.2	234.7	223.7	10.99	21.358	
3,100.0	3,094.1	3,089.5	3,085.3	6.2	6.0	145.39	-102.4	96.2	243.9	232.6	11.36	21.466	
3,200.0	3,193.8	3,189.0	3,184.7	6.4	6.2	145.34	-106.1	100.3	253.2	241.4	11.74	21.568	
3,300.0	3,293.6	3,288.6	3,284.2	6.6	6.4	145.29	-109.7	104.3	262.4	250.3	12.11	21.663	
3,400.0	3,393.3	3,388.2	3,383.6	6.8	6.6	145.24	-113.4	108.4	271.7	259.2	12.49	21.753	
3,500.0	3,493.1	3,487.8	3,483.0	7.0	6.8	145.20	-117.0	112.4	280.9	268.0	12.86	21.837	
3,600.0	3,592.9	3,587.3	3,582.4	7.3	7.0	145.16	-120.7	116.4	290.1	276.9	13.24	21.916	
3,700.0	3,692.6	3,686.9	3,681.9	7.5	7.2	145.13	-124.3	120.5	299.4	285.8	13.61	21.991	
3,800.0	3,792.4	3,786.5	3,781.3	7.7	7.4	145.09	-128.0	124.5	308.6	294.6	13.99	22.062	
3,900.0	3,892.2	3,886.0	3,880.7	7.9	7.6	145.06	-131.7	128.5	317.8	303.5	14.36	22.129	
4,000.0	3,991.9	3,985.6	3,980.1	8.1	7.8	145.03	-135.3	132.6	327.1	312.3	14.74	22.193	
4,100.0	4,091.7	4,085.2	4,079.6	8.3	8.0	145.00	-139.0	136.6	336.3	321.2	15.11	22.254	
4,200.0	4,191.5	4,184.8	4,179.0	8.5	8.2	144.97	-142.6	140.6	345.6	330.1	15.49	22.311	
4,300.0	4,291.2	4,284.3	4,278.4	8.7	8.4	144.95	-146.3	144.7	354.8	338.9	15.86	22.366	
4,400.0	4,391.0	4,383.9	4,377.8	8.9	8.6	144.92	-149.9	148.7	364.0	347.8	16.24	22.419	
4,500.0	4,490.7	4,483.5	4,477.2	9.2	8.8	144.90	-153.6	152.7	373.3	356.7	16.61	22.469	
4,600.0	4,590.5	4,583.0	4,576.7	9.4	9.0	144.88	-157.3	156.8	382.5	365.5	16.99	22.516	
4,700.0	4,690.3	4,682.6	4,676.1	9.6	9.2	144.86	-160.9	160.8	391.7	374.4	17.36	22.562	
4,800.0	4,790.0	4,782.2	4,775.5	9.8	9.4	144.83	-164.6	164.8	401.0	383.2	17.74	22.606	
4,900.0	4,889.8	4,881.8	4,874.9	10.0	9.6	144.82	-168.2	168.9	410.2	392.1	18.11	22.648	
5,000.0	4,989.6	4,981.3	4,974.4	10.2	9.8	144.80	-171.9	172.9	419.5	401.0	18.49	22.688	

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 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU 22-14C (N22W Pad) - DD - Plan #3

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	5,089.3	5,080.9	5,073.8	10.4	10.0	144.78	-175.5	176.9	428.7	409.8	18.86	22.727	
5,200.0	5,189.1	5,180.5	5,173.2	10.6	10.1	144.76	-179.2	181.0	437.9	418.7	19.24	22.764	
5,300.0	5,288.8	5,280.1	5,272.6	10.9	10.3	144.75	-182.9	185.0	447.2	427.6	19.61	22.799	
5,400.0	5,388.6	5,379.6	5,372.1	11.1	10.5	144.73	-186.5	189.0	456.4	436.4	19.99	22.834	
5,500.0	5,488.4	5,479.2	5,471.5	11.3	10.7	144.72	-190.2	193.1	465.7	445.3	20.36	22.867	
5,600.0	5,588.1	5,578.8	5,570.9	11.5	10.9	144.70	-193.8	197.1	474.9	454.2	20.74	22.899	
5,700.0	5,687.9	5,678.3	5,670.3	11.7	11.1	144.69	-197.5	201.1	484.1	463.0	21.11	22.929	
5,800.0	5,787.7	5,777.9	5,769.7	11.9	11.3	144.67	-201.1	205.2	493.4	471.9	21.49	22.959	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU 22-14CC (N22W Pad) - OH - Plan #1 — **Offset Site Error:** 0.0 ft

Survey Program: 0-Geolink 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	90.02	0.0	16.4	16.4				
100.0	100.0	100.0	100.0	0.1	0.1	90.02	0.0	16.4	16.4	16.1	0.27	60.175	
200.0	200.0	200.0	200.0	0.3	0.3	90.02	0.0	16.4	16.4	15.8	0.62	26.369	
300.0	300.0	300.0	300.0	0.5	0.5	90.02	0.0	16.4	16.4	15.4	0.97	16.884	
400.0	400.0	400.0	400.0	0.7	0.7	90.02	0.0	16.4	16.4	15.1	1.32	12.417	
500.0	500.0	500.0	500.0	0.8	0.8	90.02	0.0	16.4	16.4	14.7	1.67	9.819	
600.0	600.0	600.0	600.0	1.0	1.0	62.38	0.0	16.4	15.0	13.0	2.02	7.426	
700.0	699.7	699.7	699.7	1.2	1.2	88.51	0.0	16.4	13.3	10.9	2.38	5.575	
705.0	704.8	704.8	704.8	1.2	1.2	90.00	0.0	16.4	13.3	10.9	2.40	5.530	CC, ES
800.0	799.5	799.5	799.5	1.4	1.4	116.11	0.0	16.4	14.8	12.1	2.75	5.391	SF
900.0	899.3	899.3	899.3	1.6	1.5	127.97	0.8	18.6	18.6	15.5	3.10	6.000	
1,000.0	999.0	999.2	999.1	1.8	1.7	132.26	1.9	22.2	22.8	19.3	3.47	6.568	
1,100.0	1,098.8	1,099.1	1,099.0	2.0	1.9	135.21	3.1	25.7	27.0	23.2	3.83	7.049	
1,200.0	1,198.6	1,199.0	1,198.8	2.2	2.1	137.37	4.3	29.2	31.3	27.1	4.20	7.458	
1,300.0	1,298.3	1,298.9	1,298.6	2.4	2.3	139.00	5.5	32.7	35.6	31.1	4.56	7.807	
1,400.0	1,398.1	1,398.8	1,398.5	2.6	2.4	140.28	6.7	36.3	40.0	35.0	4.93	8.109	
1,500.0	1,497.8	1,498.7	1,498.3	2.8	2.6	141.30	7.8	39.8	44.3	39.0	5.29	8.371	
1,600.0	1,597.6	1,598.6	1,598.1	3.0	2.8	142.15	9.0	43.3	48.7	43.0	5.66	8.601	
1,700.0	1,697.4	1,698.5	1,698.0	3.3	3.0	142.85	10.2	46.8	53.1	47.0	6.03	8.805	
1,800.0	1,797.1	1,798.4	1,797.8	3.5	3.2	143.45	11.4	50.4	57.5	51.1	6.39	8.985	
1,900.0	1,896.9	1,898.3	1,897.6	3.7	3.4	143.96	12.6	53.9	61.8	55.1	6.76	9.147	
2,000.0	1,996.7	1,998.2	1,997.5	3.9	3.5	144.40	13.7	57.4	66.2	59.1	7.13	9.293	
2,100.0	2,096.4	2,098.2	2,097.3	4.1	3.7	144.79	14.9	60.9	70.6	63.1	7.50	9.424	
2,200.0	2,196.2	2,198.1	2,197.1	4.3	3.9	145.13	16.1	64.5	75.0	67.2	7.86	9.544	
2,300.0	2,295.9	2,298.0	2,297.0	4.5	4.1	145.44	17.3	68.0	79.4	71.2	8.23	9.653	
2,400.0	2,395.7	2,397.9	2,396.8	4.7	4.3	145.71	18.5	71.5	83.8	75.2	8.60	9.753	
2,500.0	2,495.5	2,497.8	2,496.6	4.9	4.5	145.96	19.7	75.0	88.3	79.3	8.96	9.844	
2,600.0	2,595.2	2,597.7	2,596.4	5.1	4.6	146.18	20.8	78.6	92.7	83.3	9.33	9.929	
2,700.0	2,695.0	2,697.6	2,696.3	5.4	4.8	146.38	22.0	82.1	97.1	87.4	9.70	10.008	
2,800.0	2,794.8	2,797.5	2,796.1	5.6	5.0	146.57	23.2	85.6	101.5	91.4	10.07	10.080	
2,900.0	2,894.5	2,897.4	2,895.9	5.8	5.2	146.74	24.4	89.1	105.9	95.5	10.44	10.148	
3,000.0	2,994.3	2,997.3	2,995.8	6.0	5.4	146.89	25.6	92.7	110.3	99.5	10.80	10.211	
3,100.0	3,094.1	3,097.2	3,095.6	6.2	5.6	147.04	26.7	96.2	114.7	103.6	11.17	10.270	
3,200.0	3,193.8	3,197.1	3,195.4	6.4	5.8	147.17	27.9	99.7	119.1	107.6	11.54	10.325	
3,300.0	3,293.6	3,297.0	3,295.3	6.6	5.9	147.29	29.1	103.2	123.6	111.6	11.91	10.377	
3,400.0	3,393.3	3,396.9	3,395.1	6.8	6.1	147.41	30.3	106.8	128.0	115.7	12.27	10.426	
3,500.0	3,493.1	3,496.8	3,494.9	7.0	6.3	147.51	31.5	110.3	132.4	119.7	12.64	10.472	
3,600.0	3,592.9	3,596.7	3,594.8	7.3	6.5	147.62	32.7	113.8	136.8	123.8	13.01	10.515	
3,700.0	3,692.6	3,696.6	3,694.6	7.5	6.7	147.71	33.8	117.3	141.2	127.8	13.38	10.556	
3,800.0	3,792.4	3,796.5	3,794.4	7.7	6.9	147.80	35.0	120.9	145.6	131.9	13.75	10.595	
3,900.0	3,892.2	3,896.4	3,894.3	7.9	7.1	147.88	36.2	124.4	150.1	135.9	14.11	10.632	
4,000.0	3,991.9	3,996.3	3,994.1	8.1	7.2	147.96	37.4	127.9	154.5	140.0	14.48	10.667	
4,100.0	4,091.7	4,096.2	4,093.9	8.3	7.4	148.03	38.6	131.4	158.9	144.0	14.85	10.700	
4,200.0	4,191.5	4,196.1	4,193.8	8.5	7.6	148.10	39.7	135.0	163.3	148.1	15.22	10.732	
4,300.0	4,291.2	4,296.0	4,293.6	8.7	7.8	148.17	40.9	138.5	167.7	152.1	15.59	10.762	
4,400.0	4,391.0	4,395.9	4,393.4	8.9	8.0	148.23	42.1	142.0	172.1	156.2	15.95	10.791	
4,500.0	4,490.7	4,495.8	4,493.3	9.2	8.2	148.29	43.3	145.5	176.6	160.2	16.32	10.818	
4,600.0	4,590.5	4,595.7	4,593.1	9.4	8.4	148.35	44.5	149.1	181.0	164.3	16.69	10.844	
4,700.0	4,690.3	4,695.6	4,692.9	9.6	8.5	148.40	45.7	152.6	185.4	168.4	17.06	10.869	
4,800.0	4,790.0	4,795.5	4,792.8	9.8	8.7	148.46	46.8	156.1	189.8	172.4	17.43	10.893	
4,900.0	4,889.8	4,895.4	4,892.6	10.0	8.9	148.51	48.0	159.6	194.2	176.5	17.79	10.917	
5,000.0	4,989.6	4,995.3	4,992.4	10.2	9.1	148.55	49.2	163.2	198.7	180.5	18.16	10.939	

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 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU 22-14CC (N22W Pad) - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink 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	5,089.3	5,095.2	5,092.3	10.4	9.3	148.60	50.4	166.7	203.1	184.6	18.53	10.960	
5,200.0	5,189.1	5,195.1	5,192.1	10.6	9.5	148.64	51.6	170.2	207.5	188.6	18.90	10.980	
5,300.0	5,288.8	5,295.0	5,291.9	10.9	9.7	148.68	52.7	173.7	211.9	192.7	19.27	11.000	
5,400.0	5,388.6	5,394.9	5,391.8	11.1	9.8	148.72	53.9	177.3	216.3	196.7	19.63	11.019	
5,500.0	5,488.4	5,494.8	5,491.6	11.3	10.0	148.76	55.1	180.8	220.8	200.8	20.00	11.037	
5,600.0	5,588.1	5,594.7	5,591.4	11.5	10.2	148.80	56.3	184.3	225.2	204.8	20.37	11.055	
5,700.0	5,687.9	5,694.6	5,691.3	11.7	10.4	148.83	57.5	187.8	229.6	208.9	20.74	11.072	
5,800.0	5,787.7	5,794.5	5,791.1	11.9	10.6	148.87	58.7	191.4	234.0	212.9	21.11	11.088	
5,900.0	5,887.4	5,894.4	5,890.9	12.1	10.8	148.90	59.8	194.9	238.5	217.0	21.47	11.104	
6,000.0	5,987.2	5,994.3	5,990.8	12.3	11.0	148.93	61.0	198.4	242.9	221.0	21.84	11.119	
6,100.0	6,087.0	6,094.2	6,090.6	12.5	11.1	148.96	62.2	201.9	247.3	225.1	22.21	11.134	
6,200.0	6,186.7	6,194.1	6,190.4	12.8	11.3	148.99	63.4	205.5	251.7	229.1	22.58	11.148	
6,300.0	6,286.5	6,294.0	6,290.3	13.0	11.5	149.02	64.6	209.0	256.1	233.2	22.95	11.162	
6,400.0	6,386.2	6,393.9	6,390.1	13.2	11.7	149.04	65.7	212.5	260.6	237.2	23.31	11.176	
6,500.0	6,486.0	6,493.8	6,489.9	13.4	11.9	149.07	66.9	216.0	265.0	241.3	23.68	11.189	
6,600.0	6,585.8	6,593.7	6,589.8	13.6	12.1	149.10	68.1	219.6	269.4	245.4	24.05	11.201	
6,700.0	6,685.5	6,693.6	6,689.6	13.8	12.3	149.12	69.3	223.1	273.8	249.4	24.42	11.214	
6,800.0	6,785.3	6,793.6	6,789.4	14.0	12.4	149.14	70.5	226.6	278.2	253.5	24.79	11.225	
6,900.0	6,885.1	6,893.5	6,889.3	14.2	12.6	149.17	71.6	230.1	282.7	257.5	25.16	11.237	
7,000.0	6,984.8	6,993.4	6,989.1	14.5	12.8	149.19	72.8	233.7	287.1	261.6	25.52	11.248	
7,100.0	7,084.6	7,093.3	7,088.9	14.7	13.0	149.21	74.0	237.2	291.5	265.6	25.89	11.259	
7,200.0	7,184.4	7,193.2	7,188.8	14.9	13.2	149.23	75.2	240.7	295.9	269.7	26.26	11.269	
7,300.0	7,284.1	7,293.1	7,288.6	15.1	13.4	149.25	76.4	244.2	300.4	273.7	26.63	11.280	
7,400.0	7,383.9	7,393.0	7,388.4	15.3	13.6	149.27	77.6	247.8	304.8	277.8	27.00	11.290	
7,500.0	7,483.6	7,492.9	7,488.3	15.5	13.7	149.29	78.7	251.3	309.2	281.8	27.36	11.299	
7,600.0	7,583.4	7,592.8	7,588.1	15.7	13.9	149.31	79.9	254.8	313.6	285.9	27.73	11.309	
7,700.0	7,683.2	7,692.7	7,687.9	15.9	14.1	149.33	81.1	258.3	318.0	289.9	28.10	11.318	
7,800.0	7,783.0	7,792.6	7,787.8	16.1	14.3	149.33	82.3	261.9	322.2	293.7	28.47	11.316	
7,900.0	7,882.9	7,890.1	7,885.2	16.3	14.5	149.17	83.3	264.8	324.0	295.2	28.82	11.242	
8,000.0	7,982.9	7,987.7	7,982.9	16.5	14.6	-175.05	83.4	265.3	324.3	295.1	29.15	11.125	
8,100.0	8,082.9	8,087.7	8,082.9	16.6	14.8	-175.05	83.4	265.3	324.3	294.8	29.48	10.999	
8,200.0	8,182.9	8,187.7	8,182.9	16.7	15.0	-175.05	83.4	265.3	324.3	294.5	29.82	10.876	
8,300.0	8,282.9	8,287.7	8,282.9	16.9	15.1	-175.05	83.4	265.3	324.3	294.1	30.15	10.756	
8,400.0	8,382.9	8,387.7	8,382.9	17.0	15.3	-175.05	83.4	265.3	324.3	293.8	30.48	10.638	
8,500.0	8,482.9	8,487.7	8,482.9	17.2	15.5	-175.05	83.4	265.3	324.3	293.5	30.82	10.522	
8,600.0	8,582.9	8,587.7	8,582.9	17.3	15.6	-175.05	83.4	265.3	324.3	293.1	31.15	10.409	
8,700.0	8,682.9	8,687.7	8,682.9	17.5	15.8	-175.05	83.4	265.3	324.3	292.8	31.49	10.298	
8,800.0	8,782.9	8,787.7	8,782.9	17.6	16.0	-175.05	83.4	265.3	324.3	292.5	31.83	10.189	
8,900.0	8,882.9	8,887.7	8,882.9	17.8	16.1	-175.05	83.4	265.3	324.3	292.1	32.16	10.083	
9,000.0	8,982.9	8,987.7	8,982.9	18.0	16.3	-175.05	83.4	265.3	324.3	291.8	32.50	9.979	
9,100.0	9,082.9	9,087.7	9,082.9	18.1	16.5	-175.05	83.4	265.3	324.3	291.4	32.83	9.876	
9,200.0	9,182.9	9,187.7	9,182.9	18.3	16.6	-175.05	83.4	265.3	324.3	291.1	33.17	9.776	
9,250.1	9,233.0	9,237.9	9,233.0	18.3	16.7	-175.05	83.4	265.3	324.3	290.9	33.34	9.727	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU FEE 22-16B (N22W Pad) - DD - Plan #3

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	72.00	8.0	24.6	25.8				
100.0	100.0	100.0	100.0	0.1	0.1	72.00	8.0	24.6	25.8	25.6	0.27	94.910	
200.0	200.0	200.0	200.0	0.3	0.3	72.00	8.0	24.6	25.8	25.2	0.62	41.590	
300.0	300.0	300.0	300.0	0.5	0.5	72.00	8.0	24.6	25.8	24.9	0.97	26.629	CC, ES
400.0	400.0	398.6	398.5	0.7	0.7	72.11	8.7	27.0	28.4	27.1	1.32	21.544	
500.0	500.0	496.6	496.3	0.8	0.9	72.34	10.9	34.3	36.1	34.5	1.68	21.536	SF
600.0	600.0	593.9	592.8	1.0	1.1	38.45	14.5	46.2	46.9	44.9	2.01	23.347	
700.0	699.7	690.4	687.7	1.2	1.5	41.91	19.5	62.6	59.7	57.4	2.36	25.293	
800.0	799.5	785.4	780.2	1.4	1.9	43.86	25.7	83.3	77.4	74.7	2.72	28.470	
900.0	899.3	878.5	869.7	1.6	2.4	44.71	33.1	107.8	99.9	96.9	3.08	32.453	
1,000.0	999.0	972.6	959.0	1.8	2.9	44.99	41.6	136.2	126.5	123.0	3.44	36.717	
1,100.0	1,098.8	1,068.9	1,050.3	2.0	3.5	45.16	50.5	165.6	153.5	149.7	3.82	40.225	
1,200.0	1,198.6	1,165.2	1,141.5	2.2	4.0	45.27	59.4	195.0	180.5	176.3	4.19	43.096	
1,300.0	1,298.3	1,261.5	1,232.8	2.4	4.6	45.36	68.2	224.5	207.5	202.9	4.56	45.484	
1,400.0	1,398.1	1,357.8	1,324.0	2.6	5.2	45.43	77.1	253.9	234.5	229.5	4.94	47.501	
1,500.0	1,497.8	1,454.0	1,415.3	2.8	5.7	45.48	86.0	283.4	261.5	256.2	5.31	49.225	
1,600.0	1,597.6	1,550.3	1,506.5	3.0	6.3	45.52	94.9	312.8	288.5	282.8	5.69	50.716	
1,700.0	1,697.4	1,646.6	1,597.7	3.3	6.9	45.56	103.7	342.2	315.5	309.4	6.07	52.018	
1,800.0	1,797.1	1,742.9	1,689.0	3.5	7.5	45.59	112.6	371.7	342.5	336.1	6.44	53.164	
1,900.0	1,896.9	1,839.2	1,780.2	3.7	8.1	45.61	121.5	401.1	369.5	362.7	6.82	54.180	
2,000.0	1,996.7	1,935.5	1,871.5	3.9	8.6	45.63	130.3	430.5	396.5	389.3	7.20	55.087	
2,100.0	2,096.4	2,031.8	1,962.7	4.1	9.2	45.65	139.2	460.0	423.5	415.9	7.58	55.902	
2,200.0	2,196.2	2,128.0	2,054.0	4.3	9.8	45.67	148.1	489.4	450.5	442.6	7.95	56.638	
2,300.0	2,295.9	2,224.3	2,145.2	4.5	10.4	45.68	157.0	518.8	477.5	469.2	8.33	57.306	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU FEE 22-16BB (N22W) - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink 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	79.01	8.0	41.2	42.0				
100.0	100.0	100.0	100.0	0.1	0.1	79.01	8.0	41.2	42.0	41.7	0.27	154.305	
200.0	200.0	200.0	200.0	0.3	0.3	79.01	8.0	41.2	42.0	41.4	0.62	67.617	CC, ES
300.0	300.0	297.8	297.7	0.5	0.5	79.10	8.4	43.7	44.6	43.6	0.97	45.968	
400.0	400.0	395.0	394.7	0.7	0.7	79.32	9.6	51.1	52.2	50.9	1.33	39.254	
500.0	500.0	491.3	490.1	0.8	1.0	79.57	11.6	63.1	64.9	63.2	1.71	37.908	SF
600.0	600.0	586.4	583.7	1.0	1.3	44.91	14.3	79.7	80.7	78.7	2.00	40.441	
700.0	699.7	680.2	675.2	1.2	1.7	47.35	17.8	100.5	98.8	96.4	2.34	42.118	
800.0	799.5	772.3	763.8	1.4	2.2	49.01	21.9	125.2	121.5	118.8	2.70	45.031	
900.0	899.3	866.9	853.8	1.6	2.8	50.05	26.6	153.9	147.8	144.7	3.06	48.274	
1,000.0	999.0	963.3	945.5	1.8	3.3	50.79	31.4	183.3	174.4	170.9	3.43	50.782	
1,100.0	1,098.8	1,059.7	1,037.2	2.0	3.9	51.33	36.3	212.6	200.9	197.1	3.81	52.756	
1,200.0	1,198.6	1,156.1	1,128.9	2.2	4.4	51.75	41.1	242.0	227.5	223.3	4.19	54.343	
1,300.0	1,298.3	1,252.5	1,220.5	2.4	5.0	52.08	46.0	271.4	254.1	249.5	4.57	55.642	
1,400.0	1,398.1	1,348.9	1,312.2	2.6	5.5	52.34	50.8	300.8	280.7	275.8	4.95	56.724	
1,500.0	1,497.8	1,445.3	1,403.9	2.8	6.1	52.56	55.6	330.2	307.3	302.0	5.33	57.636	
1,600.0	1,597.6	1,541.7	1,495.6	3.0	6.7	52.75	60.5	359.5	333.9	328.2	5.72	58.416	
1,700.0	1,697.4	1,638.0	1,587.2	3.3	7.2	52.91	65.3	388.9	360.5	354.4	6.10	59.089	
1,800.0	1,797.1	1,734.4	1,678.9	3.5	7.8	53.04	70.2	418.3	387.2	380.7	6.49	59.676	
1,900.0	1,896.9	1,830.8	1,770.6	3.7	8.4	53.16	75.0	447.7	413.8	406.9	6.87	60.191	
2,000.0	1,996.7	1,927.2	1,862.3	3.9	8.9	53.27	79.9	477.1	440.4	433.1	7.26	60.647	
2,100.0	2,096.4	2,023.6	1,953.9	4.1	9.5	53.36	84.7	506.4	467.0	459.4	7.65	61.054	
2,200.0	2,196.2	2,120.0	2,045.6	4.3	10.1	53.44	89.5	535.8	493.6	485.6	8.04	61.419	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU FEE 22-16C (N22W Pad) - DD - Plan #3

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	90.07	-0.1	49.4	49.4				
100.0	100.0	100.0	100.0	0.1	0.1	90.07	-0.1	49.4	49.4	49.2	0.27	181.563	
200.0	200.0	200.0	200.0	0.3	0.3	90.07	-0.1	49.4	49.4	48.8	0.62	79.562	
233.3	233.3	233.3	233.3	0.4	0.4	90.07	-0.1	49.4	49.4	48.7	0.74	67.012	CC, ES
300.0	300.0	298.7	298.7	0.5	0.5	90.16	-0.1	50.1	50.1	49.1	0.97	51.699	
400.0	400.0	396.0	395.8	0.7	0.7	90.79	-0.8	55.0	55.1	53.8	1.32	41.740	
500.0	500.0	492.4	491.8	0.8	0.9	91.76	-2.0	64.7	65.2	63.5	1.69	38.561	SF
600.0	600.0	587.8	586.1	1.0	1.2	58.15	-3.8	79.0	78.9	76.9	2.00	39.455	
700.0	699.7	681.9	678.3	1.2	1.6	61.87	-6.2	97.7	95.7	93.4	2.35	40.728	
800.0	799.5	774.3	767.7	1.4	2.0	64.51	-9.0	120.4	117.5	114.8	2.71	43.415	
900.0	899.3	867.1	856.5	1.6	2.5	66.20	-12.4	147.1	143.7	140.7	3.07	46.798	
1,000.0	999.0	963.3	948.3	1.8	3.0	67.39	-16.0	175.6	170.9	167.5	3.45	49.547	
1,100.0	1,098.8	1,059.5	1,040.1	2.0	3.5	68.25	-19.6	204.2	198.1	194.3	3.83	51.694	
1,200.0	1,198.6	1,155.6	1,131.9	2.2	4.1	68.90	-23.2	232.7	225.4	221.2	4.22	53.405	
1,300.0	1,298.3	1,251.8	1,223.7	2.4	4.6	69.41	-26.9	261.2	252.7	248.0	4.61	54.794	
1,400.0	1,398.1	1,348.0	1,315.5	2.6	5.2	69.82	-30.5	289.7	279.9	274.9	5.00	55.940	
1,500.0	1,497.8	1,444.2	1,407.3	2.8	5.7	70.16	-34.1	318.2	307.2	301.8	5.40	56.899	
1,600.0	1,597.6	1,540.4	1,499.1	3.0	6.3	70.45	-37.7	346.7	334.5	328.7	5.80	57.712	
1,700.0	1,697.4	1,636.6	1,590.9	3.3	6.8	70.69	-41.3	375.3	361.8	355.7	6.20	58.408	
1,800.0	1,797.1	1,732.8	1,682.6	3.5	7.3	70.89	-44.9	403.8	389.2	382.6	6.59	59.011	
1,900.0	1,896.9	1,829.0	1,774.4	3.7	7.9	71.07	-48.5	432.3	416.5	409.5	7.00	59.537	
2,000.0	1,996.7	1,925.1	1,866.2	3.9	8.4	71.23	-52.1	460.8	443.8	436.4	7.40	60.000	
2,100.0	2,096.4	2,021.3	1,958.0	4.1	9.0	71.37	-55.7	489.3	471.1	463.3	7.80	60.411	
2,200.0	2,196.2	2,117.5	2,049.8	4.3	9.5	71.50	-59.3	517.8	498.5	490.3	8.20	60.777	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well MCU 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU Fee 22-16CC (N22W) - OH - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink 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	90.04	0.0	33.1	33.1				
100.0	100.0	100.0	100.0	0.1	0.1	90.04	0.0	33.1	33.1	32.8	0.27	121.388	
200.0	200.0	200.0	200.0	0.3	0.3	90.04	0.0	33.1	33.1	32.4	0.62	53.193	
258.3	258.3	258.3	258.3	0.4	0.4	90.04	0.0	33.1	33.1	32.2	0.82	40.063	CC
300.0	300.0	299.7	299.7	0.5	0.5	90.03	0.0	33.2	33.2	32.2	0.97	34.185	ES
400.0	400.0	397.8	397.7	0.7	0.7	89.91	0.1	36.7	36.8	35.4	1.32	27.869	
500.0	500.0	495.3	494.9	0.8	0.9	89.69	0.2	45.2	45.5	43.8	1.68	27.079	SF
600.0	600.0	592.0	590.6	1.0	1.2	55.42	0.5	58.5	57.7	55.7	2.01	28.763	
700.0	699.7	687.5	684.4	1.2	1.5	58.81	0.9	76.3	72.9	70.5	2.36	30.839	
800.0	799.5	781.4	775.6	1.4	1.9	60.79	1.4	98.5	92.9	90.2	2.73	34.059	
900.0	899.3	874.1	864.6	1.6	2.4	61.70	2.0	124.6	117.7	114.6	3.10	37.970	
1,000.0	999.0	970.6	956.6	1.8	2.9	62.20	2.6	153.4	144.0	140.6	3.48	41.381	
1,100.0	1,098.8	1,067.0	1,048.7	2.0	3.5	62.55	3.3	182.2	170.4	166.6	3.87	44.075	
1,200.0	1,198.6	1,163.5	1,140.7	2.2	4.0	62.80	3.9	211.0	196.8	192.6	4.26	46.249	
1,300.0	1,298.3	1,259.9	1,232.8	2.4	4.5	63.00	4.5	239.8	223.2	218.6	4.65	48.038	
1,400.0	1,398.1	1,356.4	1,324.8	2.6	5.1	63.15	5.2	268.6	249.6	244.6	5.04	49.532	
1,500.0	1,497.8	1,452.8	1,416.9	2.8	5.6	63.28	5.8	297.4	276.0	270.6	5.43	50.799	
1,600.0	1,597.6	1,549.3	1,508.9	3.0	6.2	63.38	6.4	326.2	302.4	296.6	5.83	51.884	
1,700.0	1,697.4	1,645.7	1,601.0	3.3	6.7	63.46	7.1	355.0	328.8	322.6	6.23	52.825	
1,800.0	1,797.1	1,742.2	1,693.0	3.5	7.3	63.54	7.7	383.8	355.3	348.6	6.62	53.648	
1,900.0	1,896.9	1,838.6	1,785.1	3.7	7.8	63.60	8.3	412.6	381.7	374.6	7.02	54.373	
2,000.0	1,996.7	1,935.1	1,877.1	3.9	8.3	63.65	9.0	441.3	408.1	400.6	7.42	55.017	
2,100.0	2,096.4	2,031.5	1,969.2	4.1	8.9	63.70	9.6	470.1	434.5	426.7	7.82	55.592	
2,200.0	2,196.2	2,128.0	2,061.2	4.3	9.4	63.75	10.2	498.9	460.9	452.7	8.21	56.109	
2,300.0	2,295.9	2,224.4	2,153.3	4.5	10.0	63.78	10.9	527.7	487.3	478.7	8.61	56.576	

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 22-14A (N22W Pad)
Project:	Mamm Creek	**TVD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design N22W Pad - MCU FEE 22-9C (N22W Pad) - DD - Plan #3

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	45.65	8.0	8.2	11.5				
100.0	100.0	100.0	100.0	0.1	0.1	45.65	8.0	8.2	11.5	11.2	0.27	42.077	
200.0	200.0	200.0	200.0	0.3	0.3	45.65	8.0	8.2	11.5	10.8	0.62	18.438	CC, ES
300.0	300.0	299.4	299.3	0.5	0.5	49.35	9.1	10.6	13.9	13.0	0.97	14.288	SF
400.0	400.0	398.2	397.8	0.7	0.7	55.25	12.2	17.6	21.5	20.2	1.35	15.981	
500.0	500.0	495.9	494.7	0.8	1.0	59.23	17.3	29.1	34.3	32.5	1.74	19.708	
600.0	600.0	592.6	589.8	1.0	1.3	26.79	24.4	44.9	49.8	47.8	2.01	24.807	
700.0	699.7	688.1	682.8	1.2	1.8	30.30	33.3	64.9	67.0	64.6	2.35	28.473	
800.0	799.5	781.8	772.8	1.4	2.3	32.35	43.8	88.5	88.9	86.2	2.70	32.943	
900.0	899.3	874.6	860.7	1.6	2.8	33.45	56.0	115.8	115.5	112.5	3.05	37.900	
1,000.0	999.0	970.5	951.1	1.8	3.4	34.13	69.0	145.1	143.5	140.1	3.41	42.126	
1,100.0	1,098.8	1,066.5	1,041.6	2.0	4.0	34.58	82.1	174.5	171.5	167.7	3.77	45.534	
1,200.0	1,198.6	1,162.5	1,132.0	2.2	4.6	34.91	95.2	203.8	199.5	195.4	4.13	48.333	
1,300.0	1,298.3	1,258.5	1,222.5	2.4	5.2	35.16	108.3	233.2	227.5	223.0	4.49	50.669	
1,400.0	1,398.1	1,354.5	1,312.9	2.6	5.8	35.35	121.4	262.5	255.5	250.7	4.85	52.647	
1,500.0	1,497.8	1,450.5	1,403.4	2.8	6.4	35.51	134.5	291.9	283.5	278.3	5.22	54.343	
1,600.0	1,597.6	1,546.5	1,493.8	3.0	7.0	35.63	147.5	321.3	311.5	306.0	5.58	55.813	
1,700.0	1,697.4	1,642.5	1,584.3	3.3	7.6	35.74	160.6	350.6	339.5	333.6	5.95	57.098	
1,800.0	1,797.1	1,738.5	1,674.7	3.5	8.2	35.83	173.7	380.0	367.6	361.2	6.31	58.231	
1,900.0	1,896.9	1,834.5	1,765.2	3.7	8.8	35.91	186.8	409.3	395.6	388.9	6.68	59.238	
2,000.0	1,996.7	1,930.5	1,855.7	3.9	9.4	35.97	199.9	438.7	423.6	416.5	7.04	60.138	
2,100.0	2,096.4	2,026.5	1,946.1	4.1	10.1	36.03	213.0	468.0	451.6	444.2	7.41	60.947	
2,200.0	2,196.2	2,122.5	2,036.6	4.3	10.7	36.08	226.1	497.4	479.6	471.8	7.78	61.678	

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Reference Site:	N22W Pad	**MD Reference:**	KB=22' @ 7048.0ft (Nabors M-15)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	MCU 22-14A (N22W Pad)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	DD	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=22' @ 7048.0ft (Nabors M-15)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: MCU 22-14A (N22W Pad)
Coordinate System is US State Plane 1983, Colorado Central Zone
Grid Convergence at Surface is: -1.43°