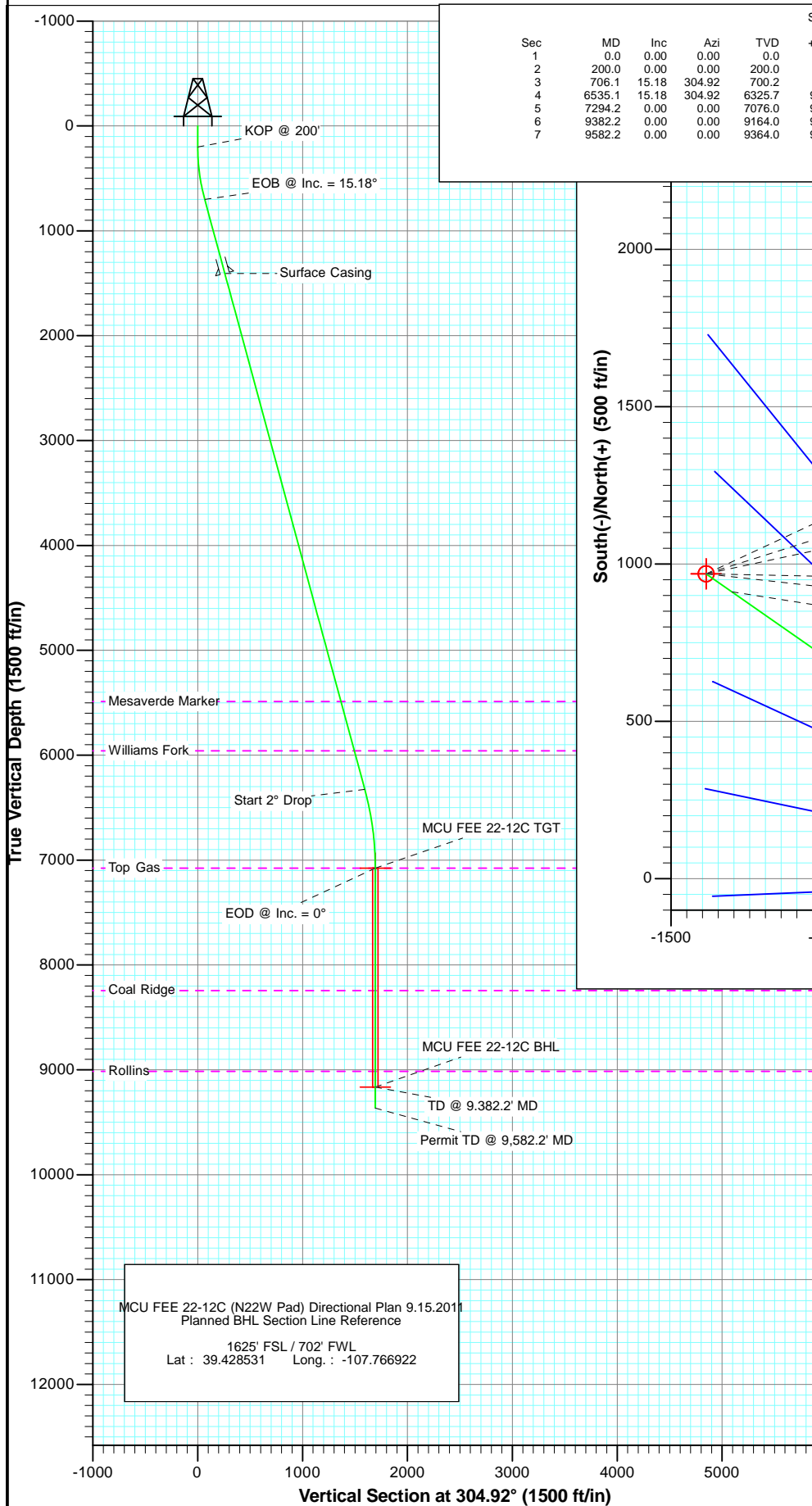


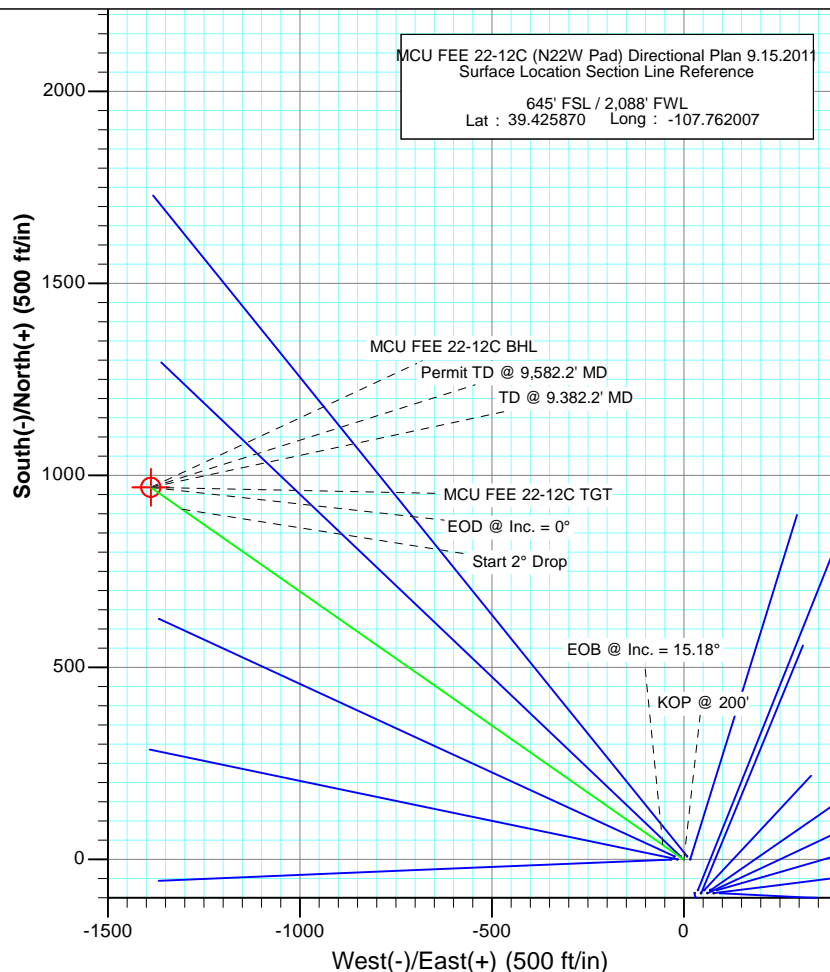


Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Plan: Plan #2



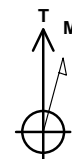
SECTION DETAILS

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	706.1	15.18	304.92	700.2	38.2	-54.7	3.00	304.92	66.7	
4	6535.1	15.18	304.92	6325.7	912.0	-1306.4	0.00	0.00	1593.2	
5	7294.2	0.00	0.00	7076.0	969.3	-1388.3	2.00	180.00	1693.2	MCU FEE 22-12C TGT
6	9382.2	0.00	0.00	9164.0	969.3	-1388.3	0.00	0.00	1693.2	MCU FEE 22-12C BHL
7	9582.2	0.00	0.00	9364.0	969.3	-1388.3	0.00	0.00	1693.2	



FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
5488.0	5667.1	Mesaverde Marker
5958.0	6154.1	Williams Fork
7076.0	7294.2	Top Gas
8243.0	8461.2	Coal Ridge
9014.0	9232.2	Rollins



Azimuths to True North
Magnetic North: 10.18°

Magnetic Field
Strength: 52240.5nT
Dip Angle: 65.73°
Date: 9/21/2011
Model: IGRF200510

DESIGN DETAILS: Plan #2

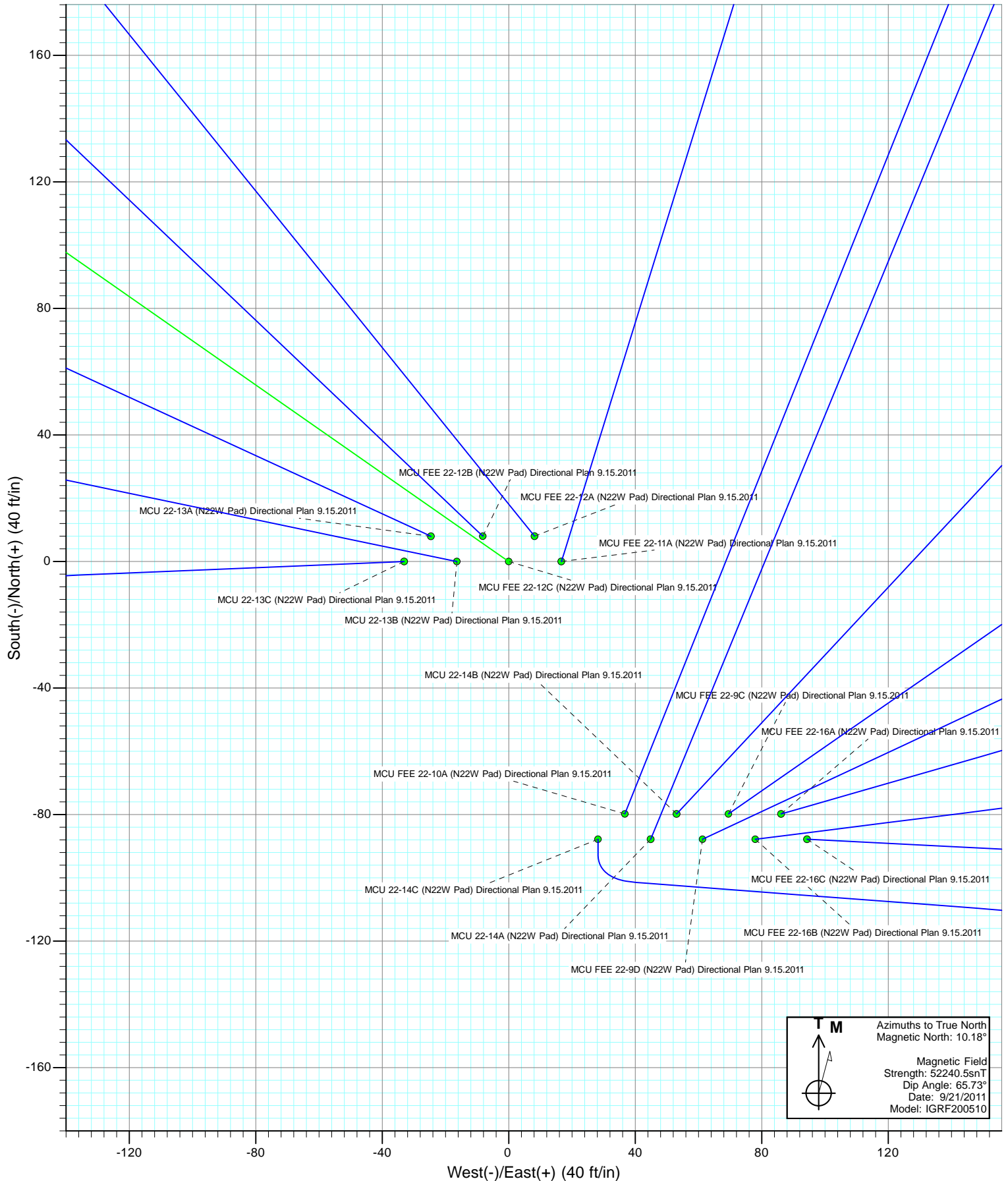
115XXX; SC
KBE @ 7048.0ft (Original Well Elev)

No Target (Freehand)

Azimuth	Origin Type	N/S	E/W
304.92	Slot	0.0	0.0

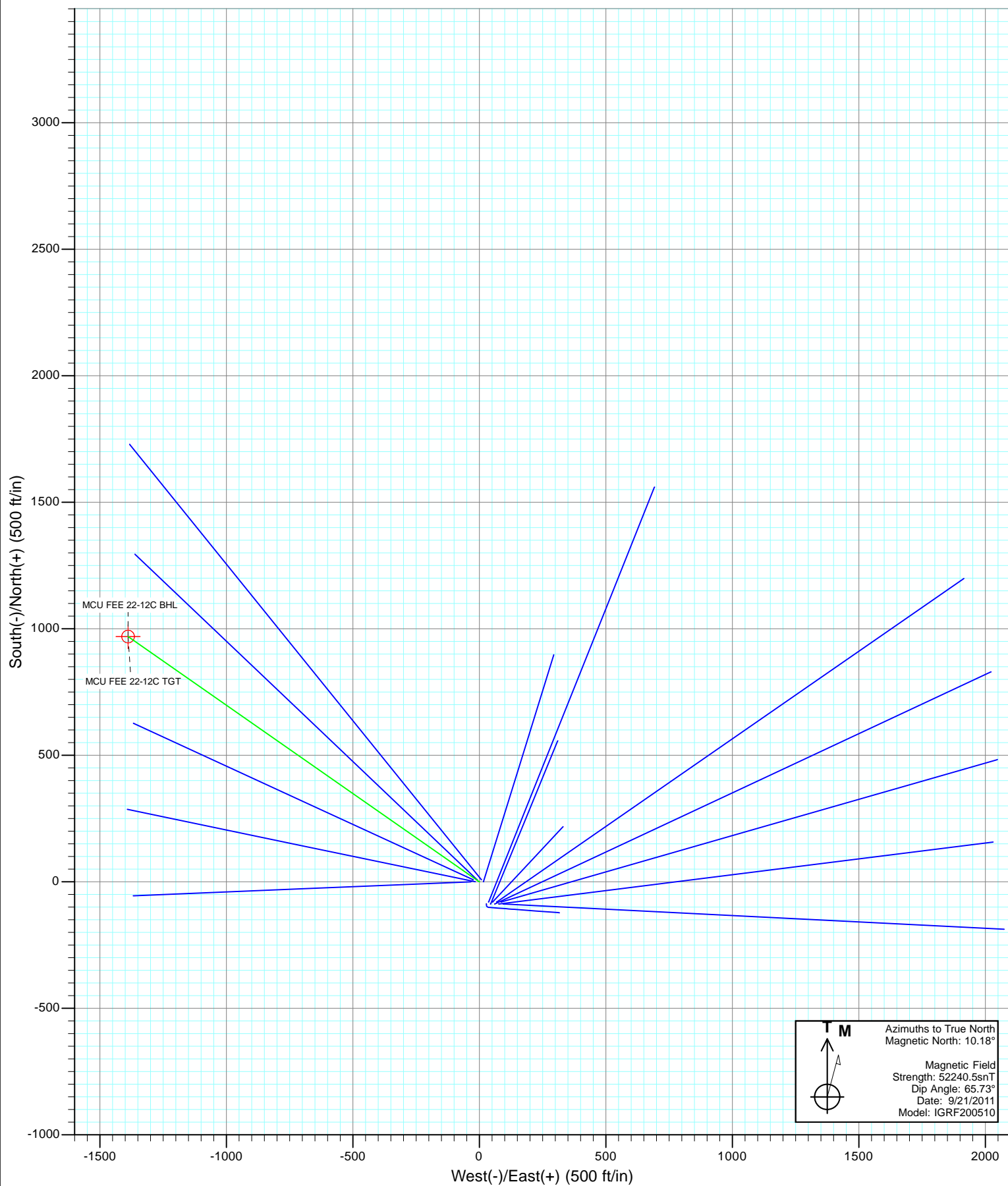


Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Design: Plan #2



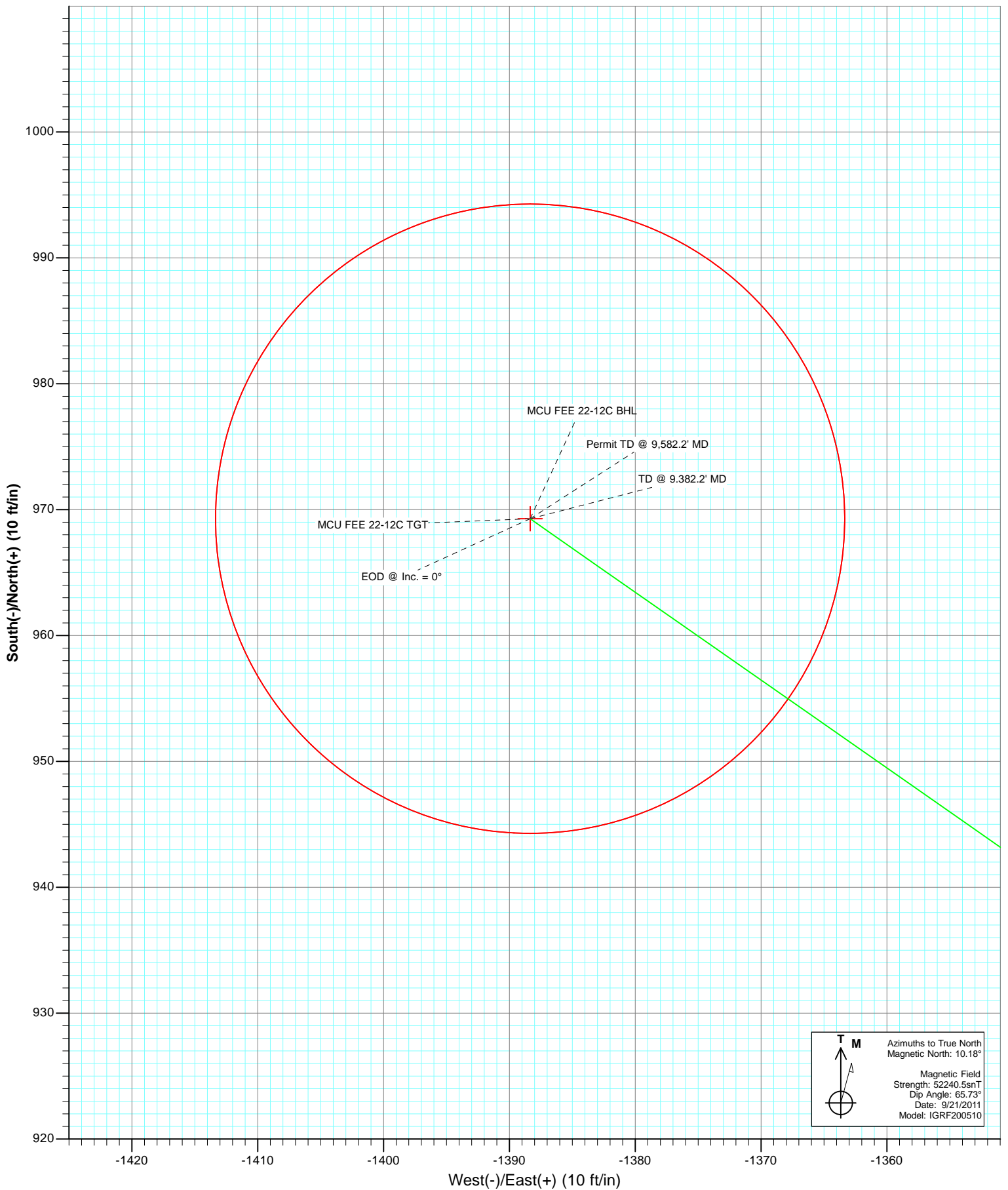


Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Design: Plan #2





Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Plan: Plan #2



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-12C (N22W Pad) Directional
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7048.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7048.0ft (Original Well Elev)
Site:	N22W Pad	North Reference:	True
Well:	MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.21	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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 FEE 22-12C (N22W Pad) Directional Plan 9.15.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,587,960.73 ft	Latitude:	39.425870
	+E/-W	0.0 ft	Easting:	2,361,095.28 ft	Longitude:	-107.762007
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,026.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/21/2011	10.18	65.73	52,240

Design	Plan #2			
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	304.92

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	
706.1	15.18	304.92	700.2	38.2	-54.7	3.00	3.00	0.00	304.92	
6,535.1	15.18	304.92	6,325.7	912.0	-1,306.4	0.00	0.00	0.00	0.00	
7,294.2	0.00	0.00	7,076.0	969.3	-1,388.3	2.00	-2.00	0.00	180.00	MCU FEE 22-12C TG
9,382.2	0.00	0.00	9,164.0	969.3	-1,388.3	0.00	0.00	0.00	0.00	MCU FEE 22-12C BH
9,582.2	0.00	0.00	9,364.0	969.3	-1,388.3	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-12C (N22W Pad) Directional
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7048.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7048.0ft (Original Well Elev)
Site:	N22W Pad	North Reference:	True
Well:	MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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'
300.0	3.00	304.92	300.0	1.5	-2.1	2.6	3.00	3.00	
400.0	6.00	304.92	399.6	6.0	-8.6	10.5	3.00	3.00	
500.0	9.00	304.92	498.8	13.5	-19.3	23.5	3.00	3.00	
600.0	12.00	304.92	597.1	23.9	-34.2	41.7	3.00	3.00	
706.1	15.18	304.92	700.2	38.2	-54.7	66.7	3.00	3.00	EOB @ Inc. = 15.18°
800.0	15.18	304.92	790.8	52.2	-74.8	91.3	0.00	0.00	
900.0	15.18	304.92	887.3	67.2	-96.3	117.4	0.00	0.00	
1,000.0	15.18	304.92	983.8	82.2	-117.8	143.6	0.00	0.00	
1,100.0	15.18	304.92	1,080.3	97.2	-139.2	169.8	0.00	0.00	
1,200.0	15.18	304.92	1,176.9	112.2	-160.7	196.0	0.00	0.00	
1,300.0	15.18	304.92	1,273.4	127.2	-182.2	222.2	0.00	0.00	
1,400.0	15.18	304.92	1,369.9	142.2	-203.7	248.4	0.00	0.00	
1,438.0	15.18	304.92	1,406.6	147.9	-211.8	258.3	0.00	0.00	Surface Casing
1,500.0	15.18	304.92	1,466.4	157.2	-225.1	274.6	0.00	0.00	
1,600.0	15.18	304.92	1,562.9	172.2	-246.6	300.8	0.00	0.00	
1,700.0	15.18	304.92	1,659.4	187.2	-268.1	327.0	0.00	0.00	
1,800.0	15.18	304.92	1,755.9	202.2	-289.6	353.1	0.00	0.00	
1,900.0	15.18	304.92	1,852.4	217.2	-311.0	379.3	0.00	0.00	
2,000.0	15.18	304.92	1,948.9	232.1	-332.5	405.5	0.00	0.00	
2,100.0	15.18	304.92	2,045.4	247.1	-354.0	431.7	0.00	0.00	
2,200.0	15.18	304.92	2,142.0	262.1	-375.5	457.9	0.00	0.00	
2,300.0	15.18	304.92	2,238.5	277.1	-396.9	484.1	0.00	0.00	
2,400.0	15.18	304.92	2,335.0	292.1	-418.4	510.3	0.00	0.00	
2,500.0	15.18	304.92	2,431.5	307.1	-439.9	536.5	0.00	0.00	
2,600.0	15.18	304.92	2,528.0	322.1	-461.4	562.7	0.00	0.00	
2,700.0	15.18	304.92	2,624.5	337.1	-482.8	588.9	0.00	0.00	
2,800.0	15.18	304.92	2,721.0	352.1	-504.3	615.0	0.00	0.00	
2,900.0	15.18	304.92	2,817.5	367.1	-525.8	641.2	0.00	0.00	
3,000.0	15.18	304.92	2,914.0	382.1	-547.2	667.4	0.00	0.00	
3,100.0	15.18	304.92	3,010.5	397.1	-568.7	693.6	0.00	0.00	
3,200.0	15.18	304.92	3,107.1	412.0	-590.2	719.8	0.00	0.00	
3,300.0	15.18	304.92	3,203.6	427.0	-611.7	746.0	0.00	0.00	
3,400.0	15.18	304.92	3,300.1	442.0	-633.1	772.2	0.00	0.00	
3,500.0	15.18	304.92	3,396.6	457.0	-654.6	798.4	0.00	0.00	
3,600.0	15.18	304.92	3,493.1	472.0	-676.1	824.6	0.00	0.00	
3,700.0	15.18	304.92	3,589.6	487.0	-697.6	850.7	0.00	0.00	
3,800.0	15.18	304.92	3,686.1	502.0	-719.0	876.9	0.00	0.00	
3,900.0	15.18	304.92	3,782.6	517.0	-740.5	903.1	0.00	0.00	
4,000.0	15.18	304.92	3,879.1	532.0	-762.0	929.3	0.00	0.00	
4,100.0	15.18	304.92	3,975.6	547.0	-783.5	955.5	0.00	0.00	
4,200.0	15.18	304.92	4,072.1	562.0	-804.9	981.7	0.00	0.00	
4,300.0	15.18	304.92	4,168.7	577.0	-826.4	1,007.9	0.00	0.00	
4,400.0	15.18	304.92	4,265.2	591.9	-847.9	1,034.1	0.00	0.00	
4,500.0	15.18	304.92	4,361.7	606.9	-869.4	1,060.3	0.00	0.00	
4,600.0	15.18	304.92	4,458.2	621.9	-890.8	1,086.4	0.00	0.00	
4,700.0	15.18	304.92	4,554.7	636.9	-912.3	1,112.6	0.00	0.00	
4,800.0	15.18	304.92	4,651.2	651.9	-933.8	1,138.8	0.00	0.00	
4,900.0	15.18	304.92	4,747.7	666.9	-955.2	1,165.0	0.00	0.00	
5,000.0	15.18	304.92	4,844.2	681.9	-976.7	1,191.2	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-12C (N22W Pad) Directional
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7048.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7048.0ft (Original Well Elev)
Site:	N22W Pad	North Reference:	True
Well:	MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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
5,100.0	15.18	304.92	4,940.7	696.9	-998.2	1,217.4	0.00	0.00	
5,200.0	15.18	304.92	5,037.2	711.9	-1,019.7	1,243.6	0.00	0.00	
5,300.0	15.18	304.92	5,133.8	726.9	-1,041.1	1,269.8	0.00	0.00	
5,400.0	15.18	304.92	5,230.3	741.9	-1,062.6	1,296.0	0.00	0.00	
5,500.0	15.18	304.92	5,326.8	756.9	-1,084.1	1,322.2	0.00	0.00	
5,600.0	15.18	304.92	5,423.3	771.9	-1,105.6	1,348.3	0.00	0.00	
5,667.1	15.18	304.92	5,488.0	781.9	-1,120.0	1,365.9	0.00	0.00	Mesaverde Marker
5,700.0	15.18	304.92	5,519.8	786.8	-1,127.0	1,374.5	0.00	0.00	
5,800.0	15.18	304.92	5,616.3	801.8	-1,148.5	1,400.7	0.00	0.00	
5,900.0	15.18	304.92	5,712.8	816.8	-1,170.0	1,426.9	0.00	0.00	
6,000.0	15.18	304.92	5,809.3	831.8	-1,191.5	1,453.1	0.00	0.00	
6,100.0	15.18	304.92	5,905.8	846.8	-1,212.9	1,479.3	0.00	0.00	
6,154.1	15.18	304.92	5,958.0	854.9	-1,224.5	1,493.4	0.00	0.00	Williams Fork
6,200.0	15.18	304.92	6,002.3	861.8	-1,234.4	1,505.5	0.00	0.00	
6,300.0	15.18	304.92	6,098.9	876.8	-1,255.9	1,531.7	0.00	0.00	
6,400.0	15.18	304.92	6,195.4	891.8	-1,277.4	1,557.9	0.00	0.00	
6,500.0	15.18	304.92	6,291.9	906.8	-1,298.8	1,584.0	0.00	0.00	
6,535.1	15.18	304.92	6,325.7	912.0	-1,306.4	1,593.2	0.00	0.00	Start 2° Drop
6,600.0	13.88	304.92	6,388.6	921.4	-1,319.7	1,609.5	2.00	-2.00	
6,700.0	11.88	304.92	6,486.0	934.1	-1,338.0	1,631.8	2.00	-2.00	
6,800.0	9.88	304.92	6,584.2	944.9	-1,353.5	1,650.7	2.00	-2.00	
6,900.0	7.88	304.92	6,683.0	953.8	-1,366.1	1,666.1	2.00	-2.00	
7,000.0	5.88	304.92	6,782.3	960.6	-1,376.0	1,678.1	2.00	-2.00	
7,100.0	3.88	304.92	6,881.9	965.5	-1,383.0	1,686.6	2.00	-2.00	
7,200.0	1.88	304.92	6,981.8	968.4	-1,387.1	1,691.7	2.00	-2.00	
7,294.2	0.00	0.00	7,076.0	969.3	-1,388.3	1,693.2	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
7,300.0	0.00	0.00	7,081.8	969.3	-1,388.3	1,693.2	0.00	0.00	
7,400.0	0.00	0.00	7,181.8	969.3	-1,388.3	1,693.2	0.00	0.00	
7,500.0	0.00	0.00	7,281.8	969.3	-1,388.3	1,693.2	0.00	0.00	
7,600.0	0.00	0.00	7,381.8	969.3	-1,388.3	1,693.2	0.00	0.00	
7,700.0	0.00	0.00	7,481.8	969.3	-1,388.3	1,693.2	0.00	0.00	
7,800.0	0.00	0.00	7,581.8	969.3	-1,388.3	1,693.2	0.00	0.00	
7,900.0	0.00	0.00	7,681.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,000.0	0.00	0.00	7,781.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,100.0	0.00	0.00	7,881.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,200.0	0.00	0.00	7,981.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,300.0	0.00	0.00	8,081.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,400.0	0.00	0.00	8,181.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,461.2	0.00	0.00	8,243.0	969.3	-1,388.3	1,693.2	0.00	0.00	Coal Ridge
8,500.0	0.00	0.00	8,281.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,600.0	0.00	0.00	8,381.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,700.0	0.00	0.00	8,481.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,800.0	0.00	0.00	8,581.8	969.3	-1,388.3	1,693.2	0.00	0.00	
8,900.0	0.00	0.00	8,681.8	969.3	-1,388.3	1,693.2	0.00	0.00	
9,000.0	0.00	0.00	8,781.8	969.3	-1,388.3	1,693.2	0.00	0.00	
9,100.0	0.00	0.00	8,881.8	969.3	-1,388.3	1,693.2	0.00	0.00	
9,200.0	0.00	0.00	8,981.8	969.3	-1,388.3	1,693.2	0.00	0.00	
9,232.2	0.00	0.00	9,014.0	969.3	-1,388.3	1,693.2	0.00	0.00	Rollins
9,300.0	0.00	0.00	9,081.8	969.3	-1,388.3	1,693.2	0.00	0.00	
9,382.2	0.00	0.00	9,164.0	969.3	-1,388.3	1,693.2	0.00	0.00	TD @ 9,382.2' MD
9,400.0	0.00	0.00	9,181.8	969.3	-1,388.3	1,693.2	0.00	0.00	
9,500.0	0.00	0.00	9,281.8	969.3	-1,388.3	1,693.2	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-12C (N22W Pad) Directional
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 7048.0ft (Original Well Elev)
Project:	Mamm Creek	MD Reference:	KBE @ 7048.0ft (Original Well Elev)
Site:	N22W Pad	North Reference:	True
Well:	MCU FEE 22-12C (N22W Pad) Directional Plan 9.15.2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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
9,582.2	0.00	0.00	9,364.0	969.3	-1,388.3	1,693.2	0.00	0.00	Permit TD @ 9,582.2' 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 FEE 22-12C TGT - plan hits target center - Point	0.00	0.00	7,076.0	969.3	-1,388.3	1,588,964.27	2,359,731.49	39.428531	-107.766922
MCU FEE 22-12C BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,164.0	969.3	-1,388.3	1,588,964.27	2,359,731.49	39.428531	-107.766922

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,438.0	1,406.6	Surface Casing	5.500	6.000	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,667.1	5,488.0	Mesaverde Marker			
6,154.1	5,958.0	Williams Fork			
7,294.2	7,076.0	Top Gas			
8,461.2	8,243.0	Coal Ridge			
9,232.2	9,014.0	Rollins			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200'
706.1	700.2	38.2	-54.7	EOB @ Inc. = 15.18°
6,535.1	6,325.7	912.0	-1,306.4	Start 2° Drop
7,294.2	7,076.0	969.3	-1,388.3	EOD @ Inc. = 0°
9,382.2	9,164.0	969.3	-1,388.3	TD @ 9,382.2' MD
9,582.2	9,364.0	969.3	-1,388.3	Permit TD @ 9,582.2' MD

EnCana Oil & Gas (USA) Inc

Mamm Creek

N22W Pad

MCU FEE 22-12C (N22W Pad) Directional Plan

9.15.2011

OH

Plan #2

Anticollision Report

23 January, 2012