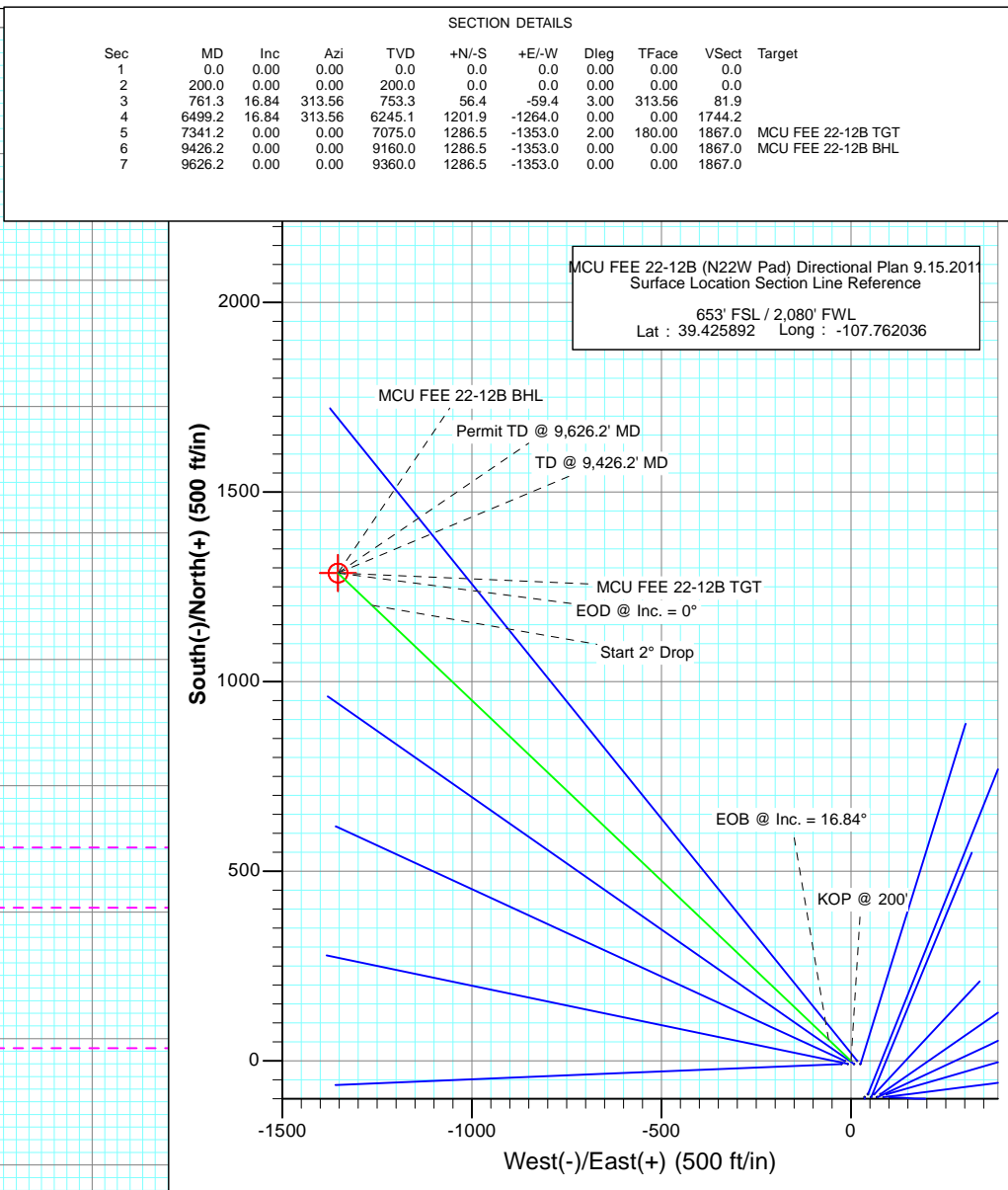
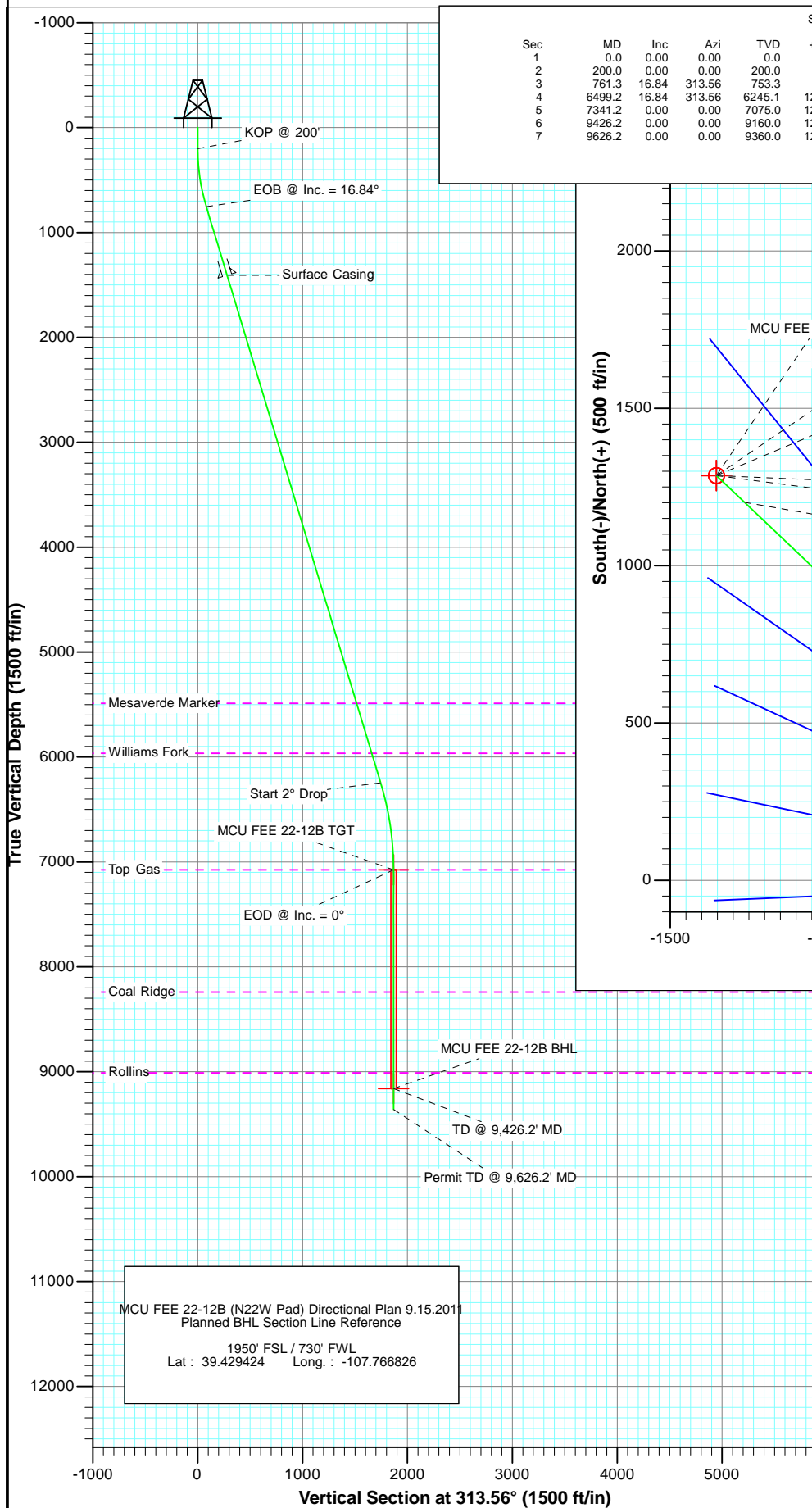




Project: Mamm Creek  
Site: N22W Pad  
Well: MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.2011  
Wellbore: OH  
Plan: Plan #2



FORMATION TOP DETAILS				
TVDPath	MDPath	Formation		
5488.0	5708.2	Mesaverde Marker		
5963.0	6204.5	Williams Fork		
7075.0	7341.2	Top Gas		
8241.0	8507.2	Coal Ridge		
9010.0	9276.2	Rollins		

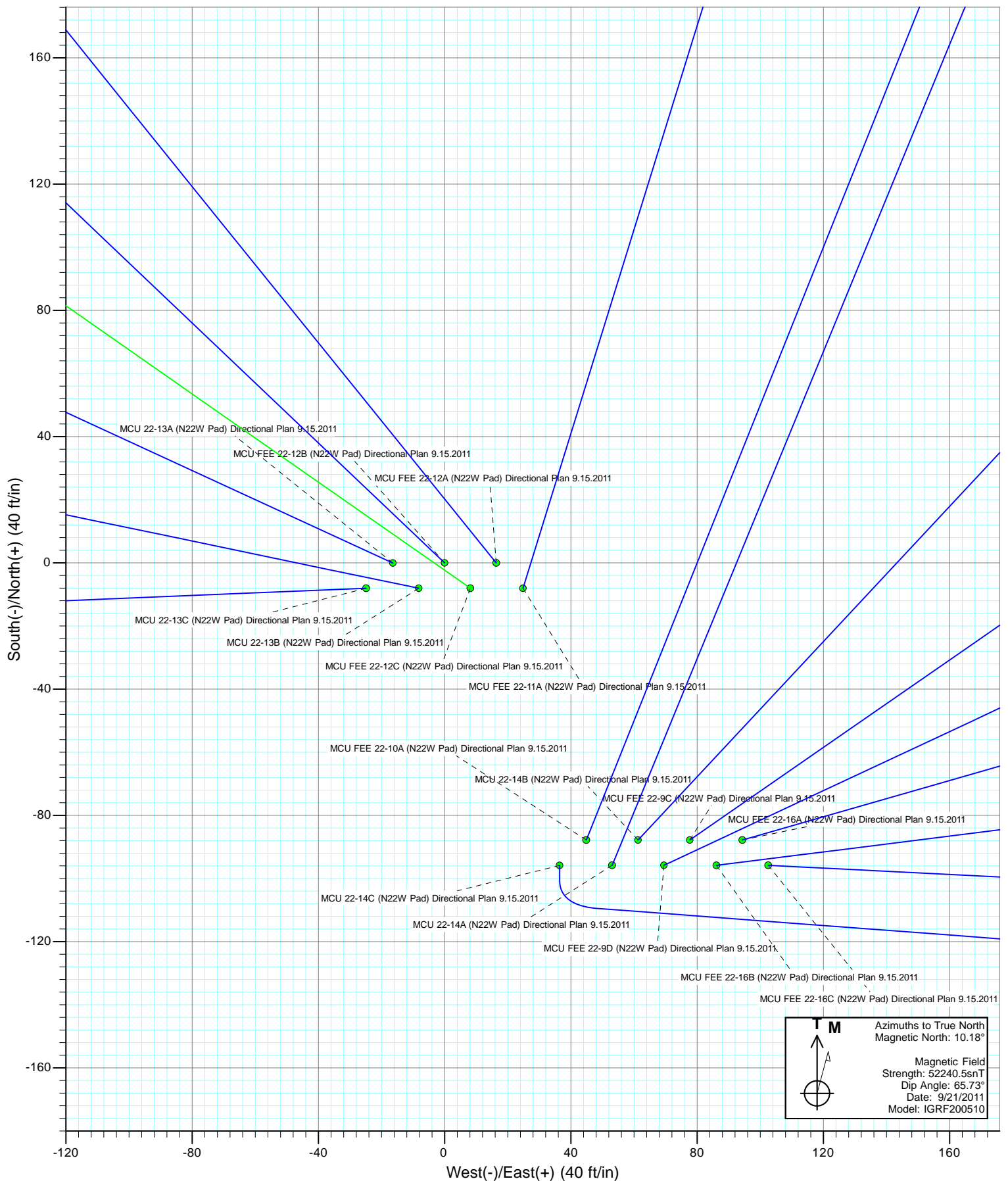
		Azimuths to True North Magnetic North: 10.18°		
		Magnetic Field Strength: 52240.5nT Dip Angle: 65.73° Date: 9/21/2011 Model: IGRF200510		

DESIGN DETAILS: Plan #2				
115XXX; SC				
KBE @ 7048.0ft (Original Well Elev)				
No Target (Freehand)	Azimuth	Origin Type	N/S	E/W
	313.56	Slot	0.0	0.0

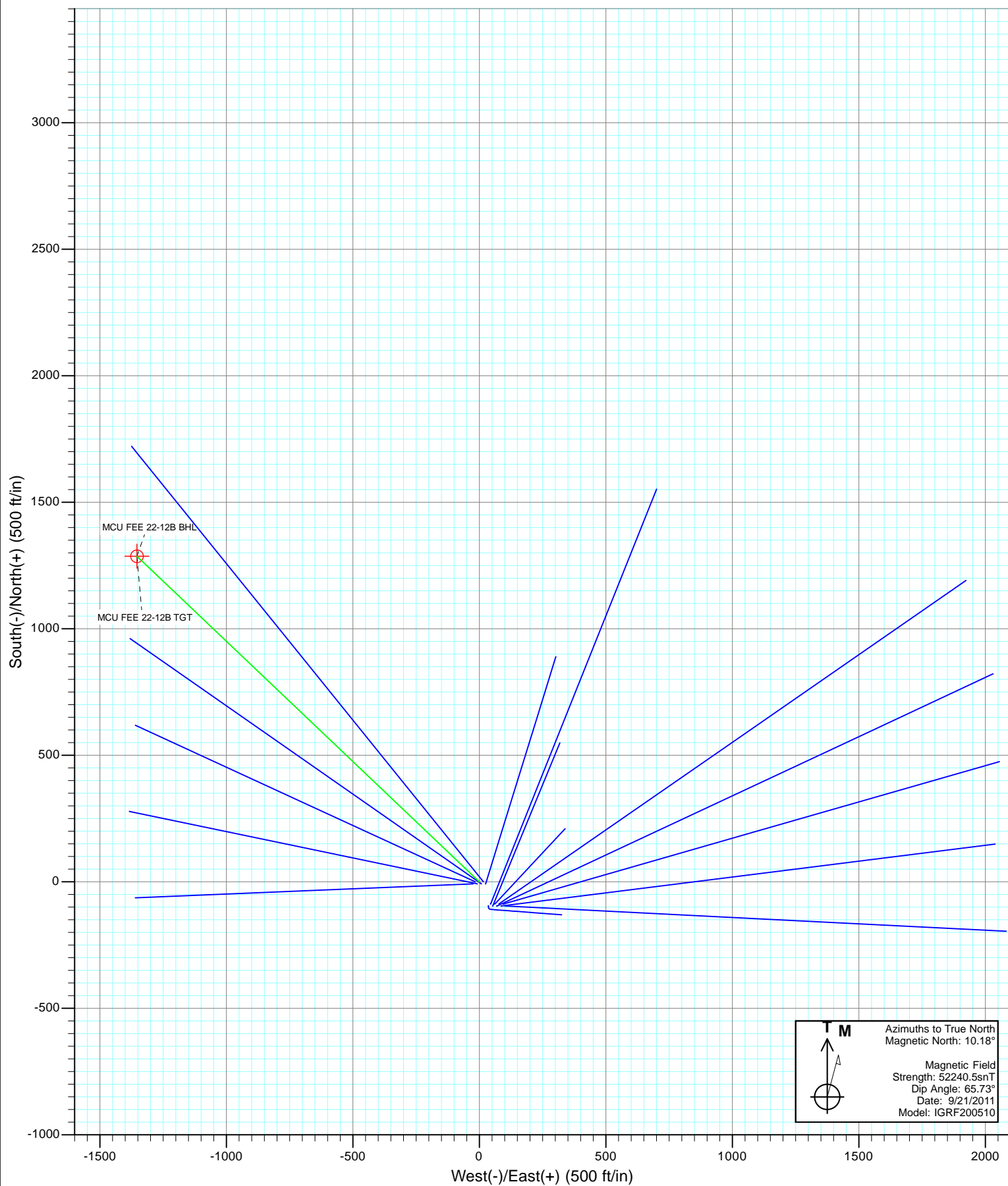


Project: Mamm Creek  
Site: N22W Pad  
Well: MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.2011  
Wellbore: OH  
Design: Plan #2



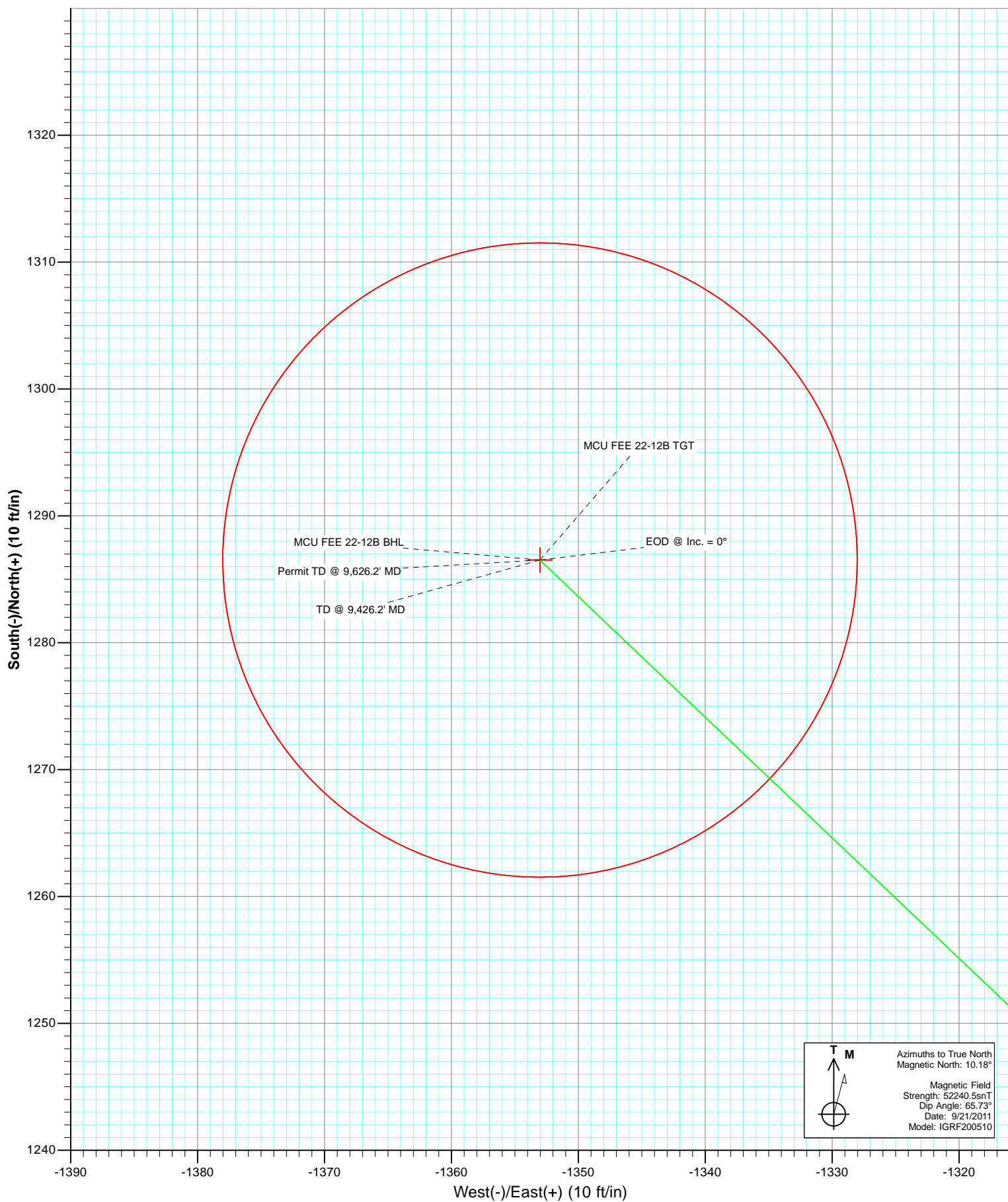


Project: Mamm Creek  
Site: N22W Pad  
Well: MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.2011  
Wellbore: OH  
Design: Plan #2





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



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU FEE 22-12B (N22W Pad) Directional
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Site:</b>	N22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.21	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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 22-12B (N22W Pad) Directional Plan 9.15.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,587,968.95 ft	Latitude:	39.425892
	+E/-W	0.0 ft	Easting:	2,361,087.29 ft	Longitude:	-107.762036
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	313.56

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	
761.3	16.84	313.56	753.3	56.4	-59.4	3.00	3.00	0.00	313.56	
6,499.2	16.84	313.56	6,245.1	1,201.9	-1,264.0	0.00	0.00	0.00	0.00	
7,341.2	0.00	0.00	7,075.0	1,286.5	-1,353.0	2.00	-2.00	0.00	180.00	MCU FEE 22-12B TG
9,426.2	0.00	0.00	9,160.0	1,286.5	-1,353.0	0.00	0.00	0.00	0.00	MCU FEE 22-12B BH
9,626.2	0.00	0.00	9,360.0	1,286.5	-1,353.0	0.00	0.00	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU FEE 22-12B (N22W Pad) Directional
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Site:</b>	N22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.2f	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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	313.56	300.0	1.8	-1.9	2.6	3.00	3.00	
400.0	6.00	313.56	399.6	7.2	-7.6	10.5	3.00	3.00	
500.0	9.00	313.56	498.8	16.2	-17.0	23.5	3.00	3.00	
600.0	12.00	313.56	597.1	28.8	-30.2	41.7	3.00	3.00	
700.0	15.00	313.56	694.3	44.8	-47.2	65.1	3.00	3.00	
761.3	16.84	313.56	753.3	56.4	-59.4	81.9	3.00	3.00	EOB @ Inc. = 16.84°
800.0	16.84	313.56	790.3	64.2	-67.5	93.1	0.00	0.00	
900.0	16.84	313.56	886.0	84.1	-88.5	122.1	0.00	0.00	
1,000.0	16.84	313.56	981.7	104.1	-109.5	151.0	0.00	0.00	
1,100.0	16.84	313.56	1,077.4	124.0	-130.5	180.0	0.00	0.00	
1,200.0	16.84	313.56	1,173.1	144.0	-151.4	209.0	0.00	0.00	
1,300.0	16.84	313.56	1,268.9	164.0	-172.4	238.0	0.00	0.00	
1,400.0	16.84	313.56	1,364.6	183.9	-193.4	266.9	0.00	0.00	
1,446.0	16.84	313.56	1,408.6	193.1	-203.1	280.3	0.00	0.00	Surface Casing
1,500.0	16.84	313.56	1,460.3	203.9	-214.4	295.9	0.00	0.00	
1,600.0	16.84	313.56	1,556.0	223.9	-235.4	324.9	0.00	0.00	
1,700.0	16.84	313.56	1,651.7	243.8	-256.4	353.8	0.00	0.00	
1,800.0	16.84	313.56	1,747.4	263.8	-277.4	382.8	0.00	0.00	
1,900.0	16.84	313.56	1,843.1	283.7	-298.4	411.8	0.00	0.00	
2,000.0	16.84	313.56	1,938.8	303.7	-319.4	440.7	0.00	0.00	
2,100.0	16.84	313.56	2,034.5	323.7	-340.4	469.7	0.00	0.00	
2,200.0	16.84	313.56	2,130.3	343.6	-361.4	498.7	0.00	0.00	
2,300.0	16.84	313.56	2,226.0	363.6	-382.4	527.7	0.00	0.00	
2,400.0	16.84	313.56	2,321.7	383.6	-403.4	556.6	0.00	0.00	
2,500.0	16.84	313.56	2,417.4	403.5	-424.4	585.6	0.00	0.00	
2,600.0	16.84	313.56	2,513.1	423.5	-445.4	614.6	0.00	0.00	
2,700.0	16.84	313.56	2,608.8	443.4	-466.4	643.5	0.00	0.00	
2,800.0	16.84	313.56	2,704.5	463.4	-487.4	672.5	0.00	0.00	
2,900.0	16.84	313.56	2,800.2	483.4	-508.4	701.5	0.00	0.00	
3,000.0	16.84	313.56	2,896.0	503.3	-529.4	730.5	0.00	0.00	
3,100.0	16.84	313.56	2,991.7	523.3	-550.3	759.4	0.00	0.00	
3,200.0	16.84	313.56	3,087.4	543.3	-571.3	788.4	0.00	0.00	
3,300.0	16.84	313.56	3,183.1	563.2	-592.3	817.4	0.00	0.00	
3,400.0	16.84	313.56	3,278.8	583.2	-613.3	846.3	0.00	0.00	
3,500.0	16.84	313.56	3,374.5	603.1	-634.3	875.3	0.00	0.00	
3,600.0	16.84	313.56	3,470.2	623.1	-655.3	904.3	0.00	0.00	
3,700.0	16.84	313.56	3,565.9	643.1	-676.3	933.2	0.00	0.00	
3,800.0	16.84	313.56	3,661.6	663.0	-697.3	962.2	0.00	0.00	
3,900.0	16.84	313.56	3,757.4	683.0	-718.3	991.2	0.00	0.00	
4,000.0	16.84	313.56	3,853.1	703.0	-739.3	1,020.2	0.00	0.00	
4,100.0	16.84	313.56	3,948.8	722.9	-760.3	1,049.1	0.00	0.00	
4,200.0	16.84	313.56	4,044.5	742.9	-781.3	1,078.1	0.00	0.00	
4,300.0	16.84	313.56	4,140.2	762.9	-802.3	1,107.1	0.00	0.00	
4,400.0	16.84	313.56	4,235.9	782.8	-823.3	1,136.0	0.00	0.00	
4,500.0	16.84	313.56	4,331.6	802.8	-844.3	1,165.0	0.00	0.00	
4,600.0	16.84	313.56	4,427.3	822.7	-865.3	1,194.0	0.00	0.00	
4,700.0	16.84	313.56	4,523.0	842.7	-886.3	1,223.0	0.00	0.00	
4,800.0	16.84	313.56	4,618.8	862.7	-907.3	1,251.9	0.00	0.00	
4,900.0	16.84	313.56	4,714.5	882.6	-928.3	1,280.9	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU FEE 22-12B (N22W Pad) Directional
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Site:</b>	N22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.2f	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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
5,000.0	16.84	313.56	4,810.2	902.6	-949.2	1,309.9	0.00	0.00	
5,100.0	16.84	313.56	4,905.9	922.6	-970.2	1,338.8	0.00	0.00	
5,200.0	16.84	313.56	5,001.6	942.5	-991.2	1,367.8	0.00	0.00	
5,300.0	16.84	313.56	5,097.3	962.5	-1,012.2	1,396.8	0.00	0.00	
5,400.0	16.84	313.56	5,193.0	982.4	-1,033.2	1,425.7	0.00	0.00	
5,500.0	16.84	313.56	5,288.7	1,002.4	-1,054.2	1,454.7	0.00	0.00	
5,600.0	16.84	313.56	5,384.5	1,022.4	-1,075.2	1,483.7	0.00	0.00	
5,700.0	16.84	313.56	5,480.2	1,042.3	-1,096.2	1,512.7	0.00	0.00	
5,708.2	16.84	313.56	5,488.0	1,044.0	-1,097.9	1,515.0	0.00	0.00	Mesaverde Marker
5,800.0	16.84	313.56	5,575.9	1,062.3	-1,117.2	1,541.6	0.00	0.00	
5,900.0	16.84	313.56	5,671.6	1,082.3	-1,138.2	1,570.6	0.00	0.00	
6,000.0	16.84	313.56	5,767.3	1,102.2	-1,159.2	1,599.6	0.00	0.00	
6,100.0	16.84	313.56	5,863.0	1,122.2	-1,180.2	1,628.5	0.00	0.00	
6,200.0	16.84	313.56	5,958.7	1,142.1	-1,201.2	1,657.5	0.00	0.00	
6,204.5	16.84	313.56	5,963.0	1,143.0	-1,202.1	1,658.8	0.00	0.00	Williams Fork
6,300.0	16.84	313.56	6,054.4	1,162.1	-1,222.2	1,686.5	0.00	0.00	
6,400.0	16.84	313.56	6,150.1	1,182.1	-1,243.2	1,715.4	0.00	0.00	
6,499.2	16.84	313.56	6,245.1	1,201.9	-1,264.0	1,744.2	0.00	0.00	Start 2° Drop
6,600.0	14.82	313.56	6,342.1	1,220.8	-1,283.9	1,771.7	2.00	-2.00	
6,700.0	12.82	313.56	6,439.2	1,237.3	-1,301.2	1,795.6	2.00	-2.00	
6,800.0	10.82	313.56	6,537.0	1,251.4	-1,316.1	1,816.1	2.00	-2.00	
6,900.0	8.82	313.56	6,635.6	1,263.2	-1,328.5	1,833.1	2.00	-2.00	
7,000.0	6.82	313.56	6,734.6	1,272.5	-1,338.3	1,846.7	2.00	-2.00	
7,100.0	4.82	313.56	6,834.1	1,279.5	-1,345.7	1,856.9	2.00	-2.00	
7,200.0	2.82	313.56	6,933.9	1,284.1	-1,350.5	1,863.6	2.00	-2.00	
7,300.0	0.82	313.56	7,033.8	1,286.3	-1,352.8	1,866.7	2.00	-2.00	
7,341.2	0.00	0.00	7,075.0	1,286.5	-1,353.0	1,867.0	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
7,400.0	0.00	0.00	7,133.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
7,500.0	0.00	0.00	7,233.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
7,600.0	0.00	0.00	7,333.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
7,700.0	0.00	0.00	7,433.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
7,800.0	0.00	0.00	7,533.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
7,900.0	0.00	0.00	7,633.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,000.0	0.00	0.00	7,733.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,100.0	0.00	0.00	7,833.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,200.0	0.00	0.00	7,933.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,300.0	0.00	0.00	8,033.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,400.0	0.00	0.00	8,133.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,500.0	0.00	0.00	8,233.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,507.2	0.00	0.00	8,241.0	1,286.5	-1,353.0	1,867.0	0.00	0.00	Coal Ridge
8,600.0	0.00	0.00	8,333.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,700.0	0.00	0.00	8,433.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,800.0	0.00	0.00	8,533.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
8,900.0	0.00	0.00	8,633.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,000.0	0.00	0.00	8,733.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,100.0	0.00	0.00	8,833.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,200.0	0.00	0.00	8,933.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,276.2	0.00	0.00	9,010.0	1,286.5	-1,353.0	1,867.0	0.00	0.00	Rollins
9,300.0	0.00	0.00	9,033.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,400.0	0.00	0.00	9,133.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,426.2	0.00	0.00	9,160.0	1,286.5	-1,353.0	1,867.0	0.00	0.00	TD @ 9,426.2' MD
9,500.0	0.00	0.00	9,233.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU FEE 22-12B (N22W Pad) Directional
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Project:</b>	Mamm Creek	<b>MD Reference:</b>	KBE @ 7048.0ft (Original Well Elev)
<b>Site:</b>	N22W Pad	<b>North Reference:</b>	True
<b>Well:</b>	MCU FEE 22-12B (N22W Pad) Directional Plan 9.15.2f	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	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
9,600.0	0.00	0.00	9,333.8	1,286.5	-1,353.0	1,867.0	0.00	0.00	
9,626.2	0.00	0.00	9,360.0	1,286.5	-1,353.0	1,867.0	0.00	0.00	Permit TD @ 9,626.2' 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 22-12B BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,160.0	1,286.5	-1,353.0	1,589,288.76	2,359,766.72	39.429424	-107.766826
MCU FEE 22-12B TGT - plan hits target center - Point	0.00	0.00	7,075.0	1,286.5	-1,353.0	1,589,288.76	2,359,766.72	39.429424	-107.766826

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,446.0	1,408.6	Surface Casing	5.500	6.000

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,708.2	5,488.0	Mesaverde Marker			
6,204.5	5,963.0	Williams Fork			
7,341.2	7,075.0	Top Gas			
8,507.2	8,241.0	Coal Ridge			
9,276.2	9,010.0	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'
761.3	753.3	56.4	-59.4	EOB @ Inc. = 16.84°
6,499.2	6,245.1	1,201.9	-1,264.0	Start 2° Drop
7,341.2	7,075.0	1,286.5	-1,353.0	EOD @ Inc. = 0°
9,426.2	9,160.0	1,286.5	-1,353.0	TD @ 9,426.2' MD
9,626.2	9,360.0	1,286.5	-1,353.0	Permit TD @ 9,626.2' MD