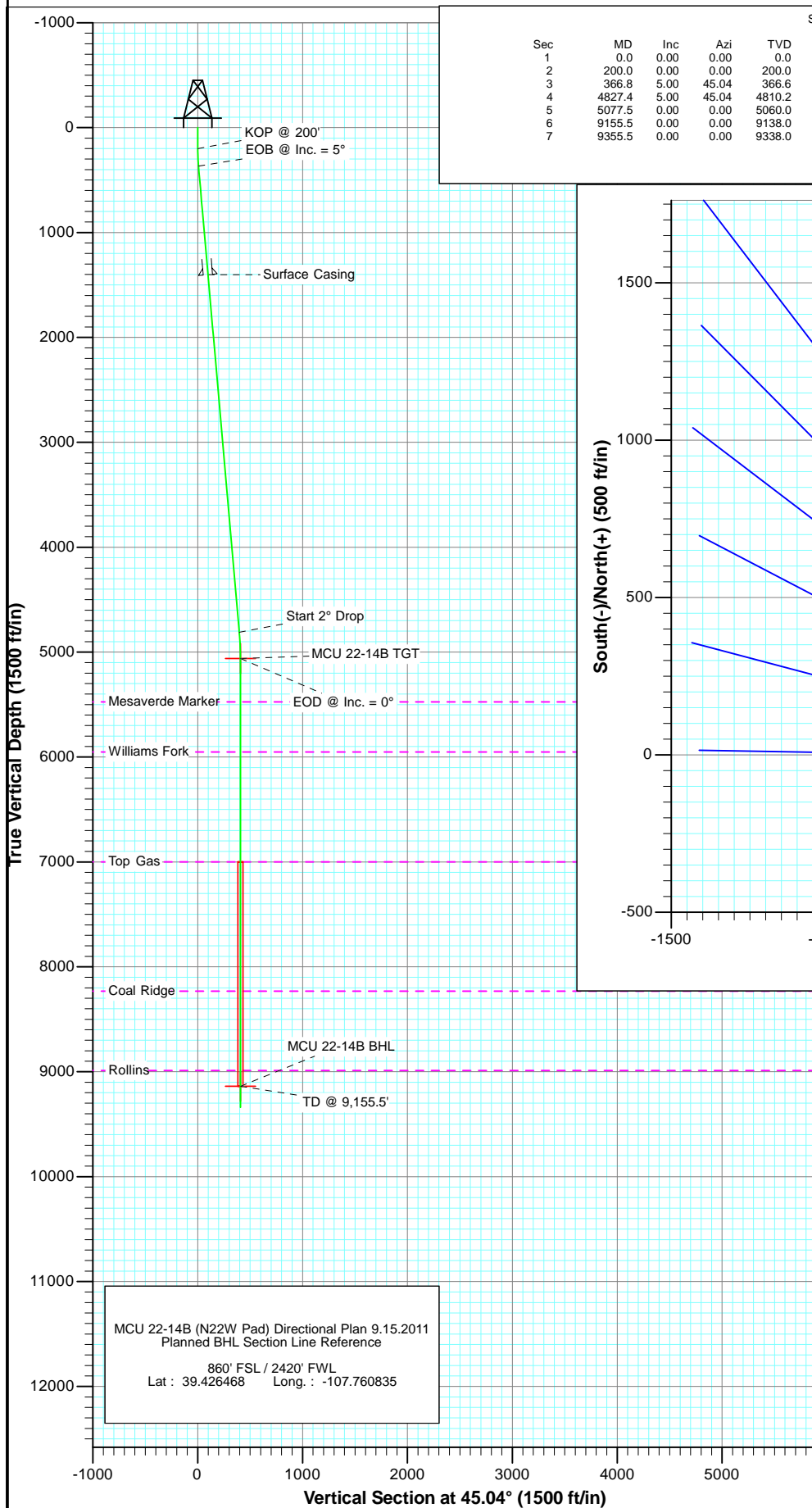


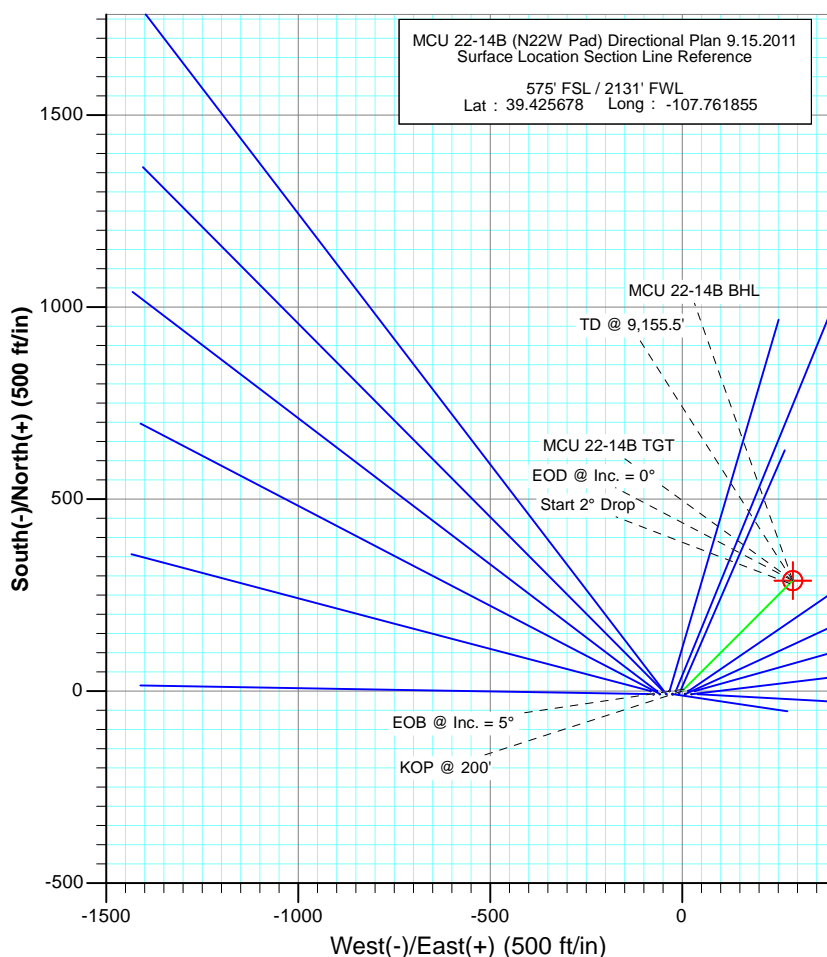


Project: Mamm Creek  
 Site: N22W Pad Plan #1 (MCU 22-14B (N22W Pad  
 Well: MCU 22-14B (N22W Pad) Directional Plan 9.15.2011  
 Wellbore: OH  
 Plan: Plan #1



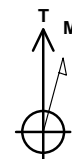
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	366.8	5.00	45.04	366.6	5.1	5.1	3.00	45.04	7.3	
4	4827.4	5.00	45.04	4810.2	280.0	280.4	0.00	0.00	396.3	
5	5077.5	0.00	0.00	5060.0	287.8	288.1	2.00	180.00	407.2	MCU 22-14B TGT
6	9155.5	0.00	0.00	9138.0	287.8	288.1	0.00	0.00	407.2	MCU 22-14B BHL
7	9355.5	0.00	0.00	9338.0	287.8	288.1	0.00	0.00	407.2	



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5475.0	5492.5	Mesaverde Marker
5952.0	5969.5	Williams Fork
6999.0	7016.5	Top Gas
8232.0	8249.5	Coal Ridge
8988.0	9005.5	Rollins



Azimuths to True North  
 Magnetic North: 10.18°

Magnetic Field  
 Strength: 52240.7snT  
 Dip Angle: 65.73°  
 Date: 9/20/2011  
 Model: IGRF200510

DESIGN DETAILS: Plan #1

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

No Target (Freehand)

45.04  
 Azimuth

Origin Type

N/S

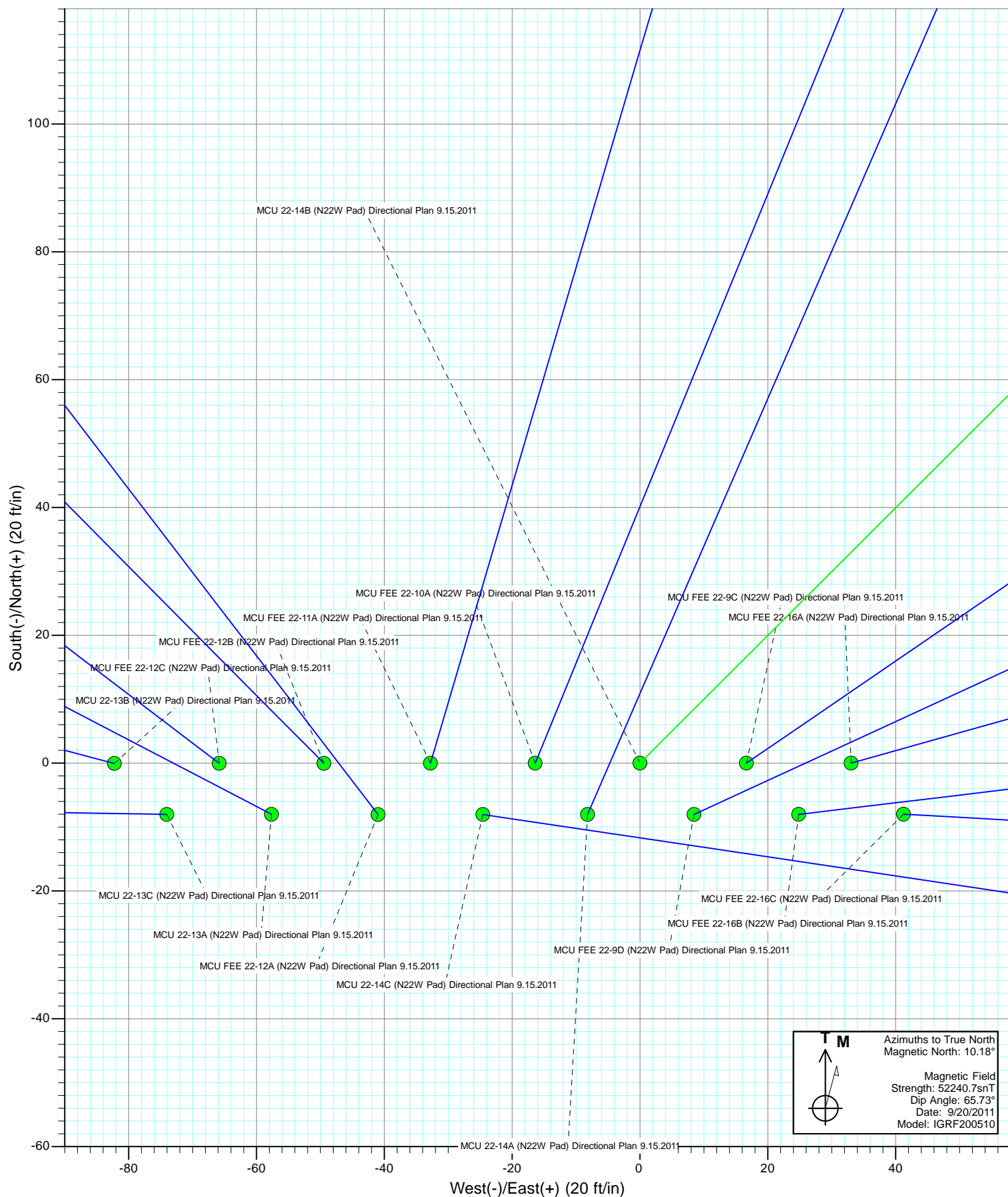
E/W

0.0

0.0

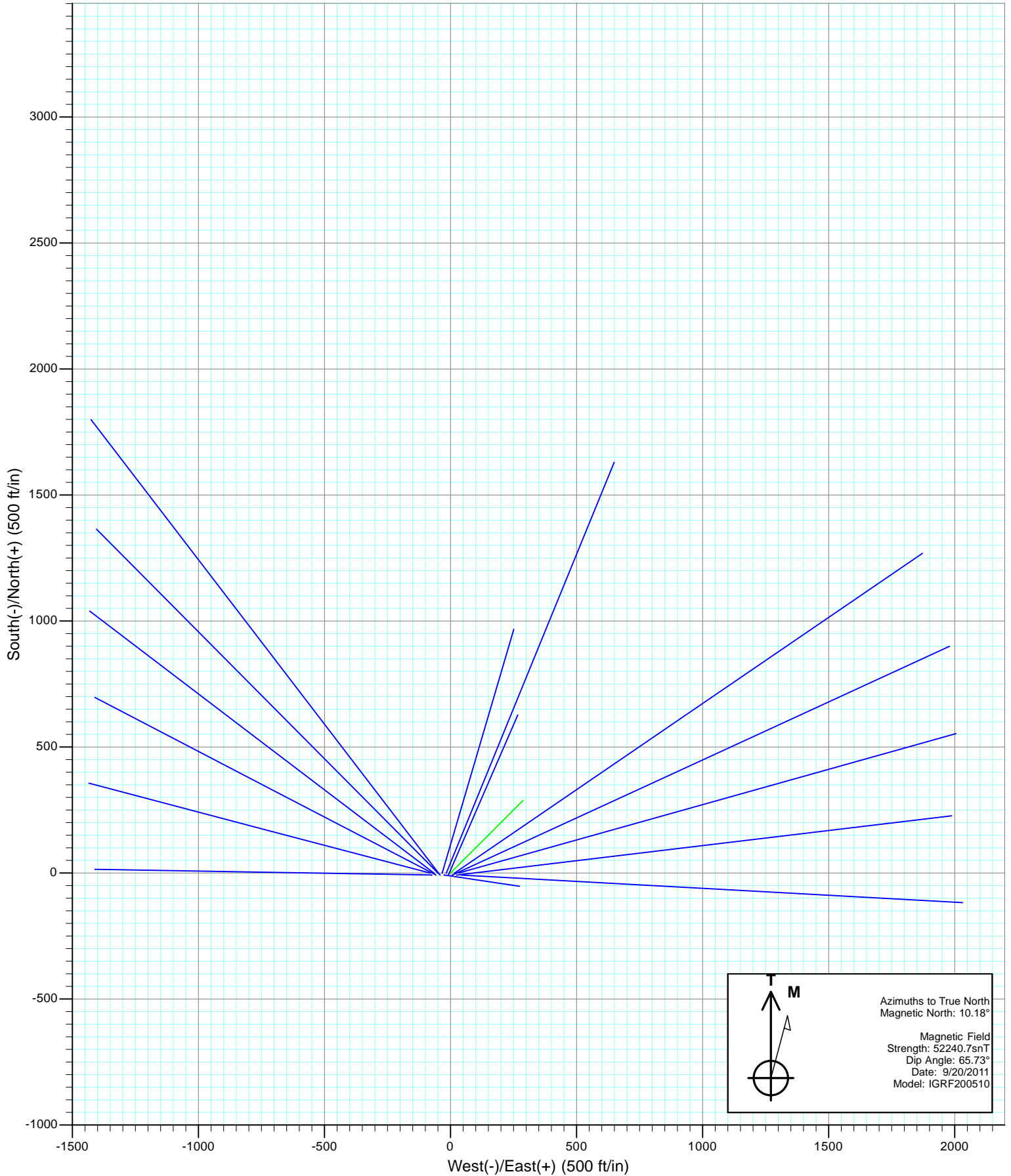


Project: Mamm Creek  
Site: N22W Pad  
Well: MCU 22-14B (N22W Pad) Directional Plan 9.15.2011  
Wellbore: OH  
Design: Plan #1



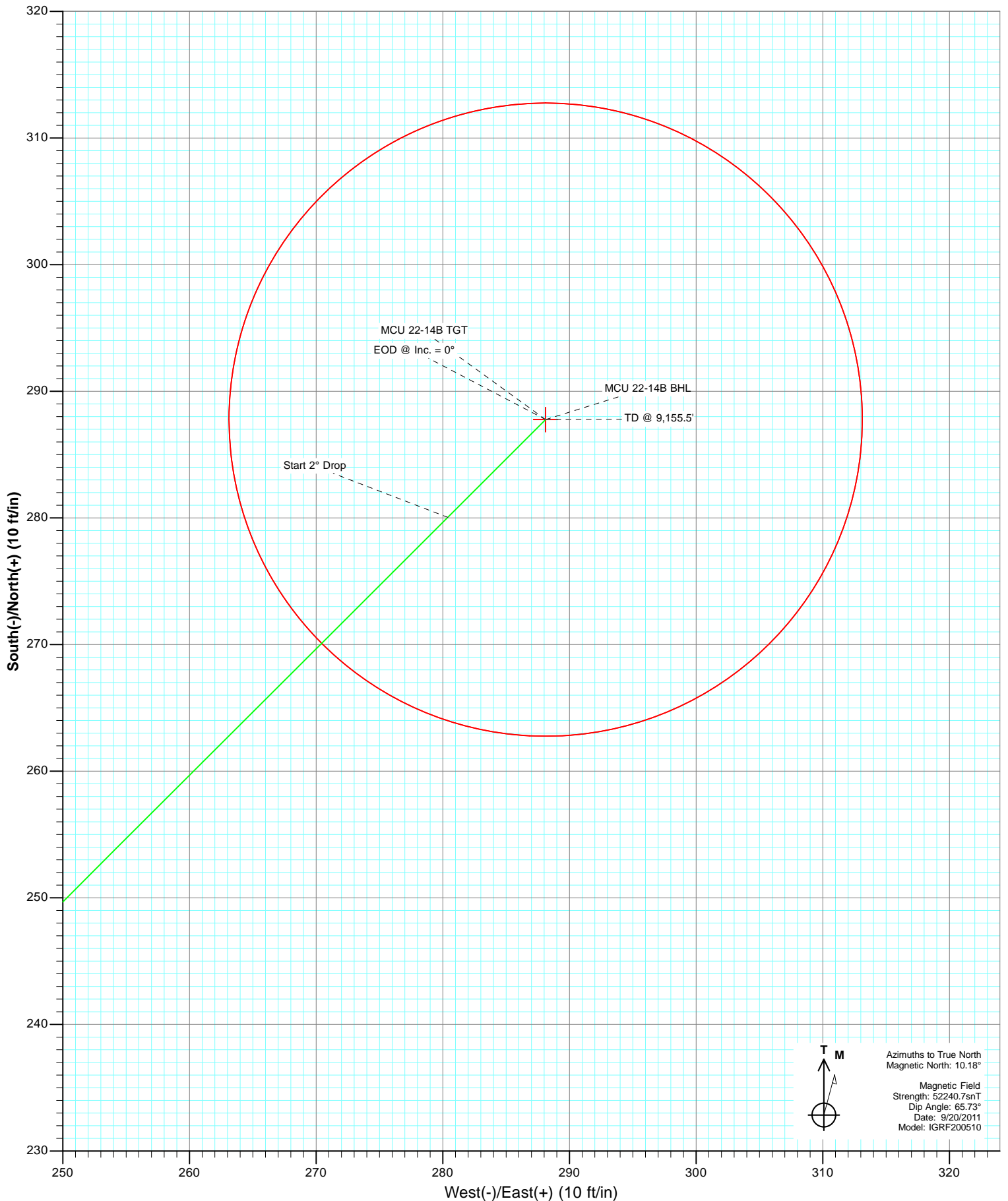


Project: Mamm Creek  
Site: N22W Pad  
Well: MCU 22-14B (N22W Pad) Directional Plan 9.15.2011  
Wellbore: OH  
Design: Plan #1





Project: Mamm Creek  
Site: N22W Pad Plan #1 (MCU 22-14B (N22W Pad  
Well: MCU 22-14B (N22W Pad) Directional Plan 9.15.2011  
Wellbore: OH  
Plan: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 22-14B (N22W Pad) Directional Plan
<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 22-14B (N22W Pad) Directional Plan 9.15.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

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

Site		N22W Pad			
Site Position:		Northing:	1,587,880.73 ft	Latitude:	39.425656
From:	Lat/Long	Easting:	2,361,177.49 ft	Longitude:	-107.761709
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.43 °

Well	MCU 22-14B (N22W Pad) Directional Plan 9.15.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,587,889.75 ft	Latitude:	39.425678
	+E/-W	0.0 ft	Easting:	2,361,136.46 ft	Longitude:	-107.761855
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	9/20/2011	10.18	65.73	52,241

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	45.04

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	
366.8	5.00	45.04	366.6	5.1	5.1	3.00	3.00	0.00	45.04	
4,827.4	5.00	45.04	4,810.2	280.0	280.4	0.00	0.00	0.00	0.00	
5,077.5	0.00	0.00	5,060.0	287.8	288.1	2.00	-2.00	0.00	180.00	MCU 22-14B TGT
9,155.5	0.00	0.00	9,138.0	287.8	288.1	0.00	0.00	0.00	0.00	MCU 22-14B BHL
9,355.5	0.00	0.00	9,338.0	287.8	288.1	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 22-14B (N22W Pad) Directional Plan
<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 22-14B (N22W Pad) Directional Plan 9.15.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	3.00	45.04	300.0	1.8	1.9	2.6	3.00	3.00	
366.8	5.00	45.04	366.6	5.1	5.1	7.3	3.00	3.00	EOB @ Inc. = 5°
400.0	5.00	45.04	399.7	7.2	7.2	10.2	0.00	0.00	
500.0	5.00	45.04	499.3	13.4	13.4	18.9	0.00	0.00	
600.0	5.00	45.04	598.9	19.5	19.5	27.6	0.00	0.00	
700.0	5.00	45.04	698.5	25.7	25.7	36.3	0.00	0.00	
800.0	5.00	45.04	798.1	31.8	31.9	45.1	0.00	0.00	
900.0	5.00	45.04	897.8	38.0	38.1	53.8	0.00	0.00	
1,000.0	5.00	45.04	997.4	44.2	44.2	62.5	0.00	0.00	
1,100.0	5.00	45.04	1,097.0	50.3	50.4	71.2	0.00	0.00	
1,200.0	5.00	45.04	1,196.6	56.5	56.6	79.9	0.00	0.00	
1,300.0	5.00	45.04	1,296.2	62.7	62.7	88.7	0.00	0.00	
1,400.0	5.00	45.04	1,395.9	68.8	68.9	97.4	0.00	0.00	
1,406.0	5.00	45.04	1,401.8	69.2	69.3	97.9	0.00	0.00	Surface Casing
1,500.0	5.00	45.04	1,495.5	75.0	75.1	106.1	0.00	0.00	
1,600.0	5.00	45.04	1,595.1	81.1	81.2	114.8	0.00	0.00	
1,700.0	5.00	45.04	1,694.7	87.3	87.4	123.6	0.00	0.00	
1,800.0	5.00	45.04	1,794.3	93.5	93.6	132.3	0.00	0.00	
1,900.0	5.00	45.04	1,893.9	99.6	99.8	141.0	0.00	0.00	
2,000.0	5.00	45.04	1,993.6	105.8	105.9	149.7	0.00	0.00	
2,100.0	5.00	45.04	2,093.2	112.0	112.1	158.4	0.00	0.00	
2,200.0	5.00	45.04	2,192.8	118.1	118.3	167.2	0.00	0.00	
2,300.0	5.00	45.04	2,292.4	124.3	124.4	175.9	0.00	0.00	
2,400.0	5.00	45.04	2,392.0	130.5	130.6	184.6	0.00	0.00	
2,500.0	5.00	45.04	2,491.7	136.6	136.8	193.3	0.00	0.00	
2,600.0	5.00	45.04	2,591.3	142.8	143.0	202.0	0.00	0.00	
2,700.0	5.00	45.04	2,690.9	148.9	149.1	210.8	0.00	0.00	
2,800.0	5.00	45.04	2,790.5	155.1	155.3	219.5	0.00	0.00	
2,900.0	5.00	45.04	2,890.1	161.3	161.5	228.2	0.00	0.00	
3,000.0	5.00	45.04	2,989.8	167.4	167.6	236.9	0.00	0.00	
3,100.0	5.00	45.04	3,089.4	173.6	173.8	245.7	0.00	0.00	
3,200.0	5.00	45.04	3,189.0	179.8	180.0	254.4	0.00	0.00	
3,300.0	5.00	45.04	3,288.6	185.9	186.2	263.1	0.00	0.00	
3,400.0	5.00	45.04	3,388.2	192.1	192.3	271.8	0.00	0.00	
3,500.0	5.00	45.04	3,487.8	198.2	198.5	280.5	0.00	0.00	
3,600.0	5.00	45.04	3,587.5	204.4	204.7	289.3	0.00	0.00	
3,700.0	5.00	45.04	3,687.1	210.6	210.8	298.0	0.00	0.00	
3,800.0	5.00	45.04	3,786.7	216.7	217.0	306.7	0.00	0.00	
3,900.0	5.00	45.04	3,886.3	222.9	223.2	315.4	0.00	0.00	
4,000.0	5.00	45.04	3,985.9	229.1	229.4	324.1	0.00	0.00	
4,100.0	5.00	45.04	4,085.6	235.2	235.5	332.9	0.00	0.00	
4,200.0	5.00	45.04	4,185.2	241.4	241.7	341.6	0.00	0.00	
4,300.0	5.00	45.04	4,284.8	247.5	247.9	350.3	0.00	0.00	
4,400.0	5.00	45.04	4,384.4	253.7	254.0	359.0	0.00	0.00	
4,500.0	5.00	45.04	4,484.0	259.9	260.2	367.8	0.00	0.00	
4,600.0	5.00	45.04	4,583.7	266.0	266.4	376.5	0.00	0.00	
4,700.0	5.00	45.04	4,683.3	272.2	272.5	385.2	0.00	0.00	
4,800.0	5.00	45.04	4,782.9	278.4	278.7	393.9	0.00	0.00	
4,827.4	5.00	45.04	4,810.2	280.0	280.4	396.3	0.00	0.00	Start 2° Drop

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well MCU 22-14B (N22W Pad) Directional Plan
<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 22-14B (N22W Pad) Directional Plan 9.15.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,900.0	3.55	45.04	4,882.6	283.9	284.2	401.7	2.00	-2.00	
5,000.0	1.55	45.04	4,982.5	287.0	287.4	406.2	2.00	-2.00	
5,077.5	0.00	0.00	5,060.0	287.8	288.1	407.2	2.00	-2.00	EOD @ Inc. = 0°
5,100.0	0.00	0.00	5,082.5	287.8	288.1	407.2	0.00	0.00	
5,200.0	0.00	0.00	5,182.5	287.8	288.1	407.2	0.00	0.00	
5,300.0	0.00	0.00	5,282.5	287.8	288.1	407.2	0.00	0.00	
5,400.0	0.00	0.00	5,382.5	287.8	288.1	407.2	0.00	0.00	
5,492.5	0.00	0.00	5,475.0	287.8	288.1	407.2	0.00	0.00	Mesaverde Marker
5,500.0	0.00	0.00	5,482.5	287.8	288.1	407.2	0.00	0.00	
5,600.0	0.00	0.00	5,582.5	287.8	288.1	407.2	0.00	0.00	
5,700.0	0.00	0.00	5,682.5	287.8	288.1	407.2	0.00	0.00	
5,800.0	0.00	0.00	5,782.5	287.8	288.1	407.2	0.00	0.00	
5,900.0	0.00	0.00	5,882.5	287.8	288.1	407.2	0.00	0.00	
5,969.5	0.00	0.00	5,952.0	287.8	288.1	407.2	0.00	0.00	Williams Fork
6,000.0	0.00	0.00	5,982.5	287.8	288.1	407.2	0.00	0.00	
6,100.0	0.00	0.00	6,082.5	287.8	288.1	407.2	0.00	0.00	
6,200.0	0.00	0.00	6,182.5	287.8	288.1	407.2	0.00	0.00	
6,300.0	0.00	0.00	6,282.5	287.8	288.1	407.2	0.00	0.00	
6,400.0	0.00	0.00	6,382.5	287.8	288.1	407.2	0.00	0.00	
6,500.0	0.00	0.00	6,482.5	287.8	288.1	407.2	0.00	0.00	
6,600.0	0.00	0.00	6,582.5	287.8	288.1	407.2	0.00	0.00	
6,700.0	0.00	0.00	6,682.5	287.8	288.1	407.2	0.00	0.00	
6,800.0	0.00	0.00	6,782.5	287.8	288.1	407.2	0.00	0.00	
6,900.0	0.00	0.00	6,882.5	287.8	288.1	407.2	0.00	0.00	
7,000.0	0.00	0.00	6,982.5	287.8	288.1	407.2	0.00	0.00	
7,016.5	0.00	0.00	6,999.0	287.8	288.1	407.2	0.00	0.00	Top Gas
7,100.0	0.00	0.00	7,082.5	287.8	288.1	407.2	0.00	0.00	
7,200.0	0.00	0.00	7,182.5	287.8	288.1	407.2	0.00	0.00	
7,300.0	0.00	0.00	7,282.5	287.8	288.1	407.2	0.00	0.00	
7,400.0	0.00	0.00	7,382.5	287.8	288.1	407.2	0.00	0.00	
7,500.0	0.00	0.00	7,482.5	287.8	288.1	407.2	0.00	0.00	
7,600.0	0.00	0.00	7,582.5	287.8	288.1	407.2	0.00	0.00	
7,700.0	0.00	0.00	7,682.5	287.8	288.1	407.2	0.00	0.00	
7,800.0	0.00	0.00	7,782.5	287.8	288.1	407.2	0.00	0.00	
7,900.0	0.00	0.00	7,882.5	287.8	288.1	407.2	0.00	0.00	
8,000.0	0.00	0.00	7,982.5	287.8	288.1	407.2	0.00	0.00	
8,100.0	0.00	0.00	8,082.5	287.8	288.1	407.2	0.00	0.00	
8,200.0	0.00	0.00	8,182.5	287.8	288.1	407.2	0.00	0.00	
8,249.5	0.00	0.00	8,232.0	287.8	288.1	407.2	0.00	0.00	Coal Ridge
8,300.0	0.00	0.00	8,282.5	287.8	288.1	407.2	0.00	0.00	
8,400.0	0.00	0.00	8,382.5	287.8	288.1	407.2	0.00	0.00	
8,500.0	0.00	0.00	8,482.5	287.8	288.1	407.2	0.00	0.00	
8,600.0	0.00	0.00	8,582.5	287.8	288.1	407.2	0.00	0.00	
8,700.0	0.00	0.00	8,682.5	287.8	288.1	407.2	0.00	0.00	
8,800.0	0.00	0.00	8,782.5	287.8	288.1	407.2	0.00	0.00	
8,900.0	0.00	0.00	8,882.5	287.8	288.1	407.2	0.00	0.00	
9,000.0	0.00	0.00	8,982.5	287.8	288.1	407.2	0.00	0.00	
9,005.5	0.00	0.00	8,988.0	287.8	288.1	407.2	0.00	0.00	Rollins
9,100.0	0.00	0.00	9,082.5	287.8	288.1	407.2	0.00	0.00	
9,155.5	0.00	0.00	9,138.0	287.8	288.1	407.2	0.00	0.00	TD @ 9,155.5'
9,200.0	0.00	0.00	9,182.5	287.8	288.1	407.2	0.00	0.00	
9,300.0	0.00	0.00	9,282.5	287.8	288.1	407.2	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 22-14B (N22W Pad) Directional Plan
<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 22-14B (N22W Pad) Directional Plan 9.15.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,355.5	0.00	0.00	9,338.0	287.8	288.1	407.2	0.00	0.00	Permit TD @ 9,355.5' 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 22-14B TGT - plan hits target center - Point	0.00	0.00	5,060.0	287.8	288.1	1,588,170.25	2,361,431.67	39.426468	-107.760835
MCU 22-14B BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	9,138.0	287.8	288.1	1,588,170.25	2,361,431.67	39.426468	-107.760835

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,406.0	1,401.8	Surface Casing	5.500	6.000	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,492.5	5,475.0	Mesaverde Marker			
5,969.5	5,952.0	Williams Fork			
7,016.5	6,999.0	Top Gas			
8,249.5	8,232.0	Coal Ridge			
9,005.5	8,988.0	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'	
366.8	366.6	5.1	5.1	EOB @ Inc. = 5°	
4,827.4	4,810.2	280.0	280.4	Start 2° Drop	
5,077.5	5,060.0	287.8	288.1	EOD @ Inc. = 0°	
9,155.5	9,138.0	287.8	288.1	TD @ 9,155.5'	
9,355.5	9,338.0	287.8	288.1	Permit TD @ 9,355.5' MD	