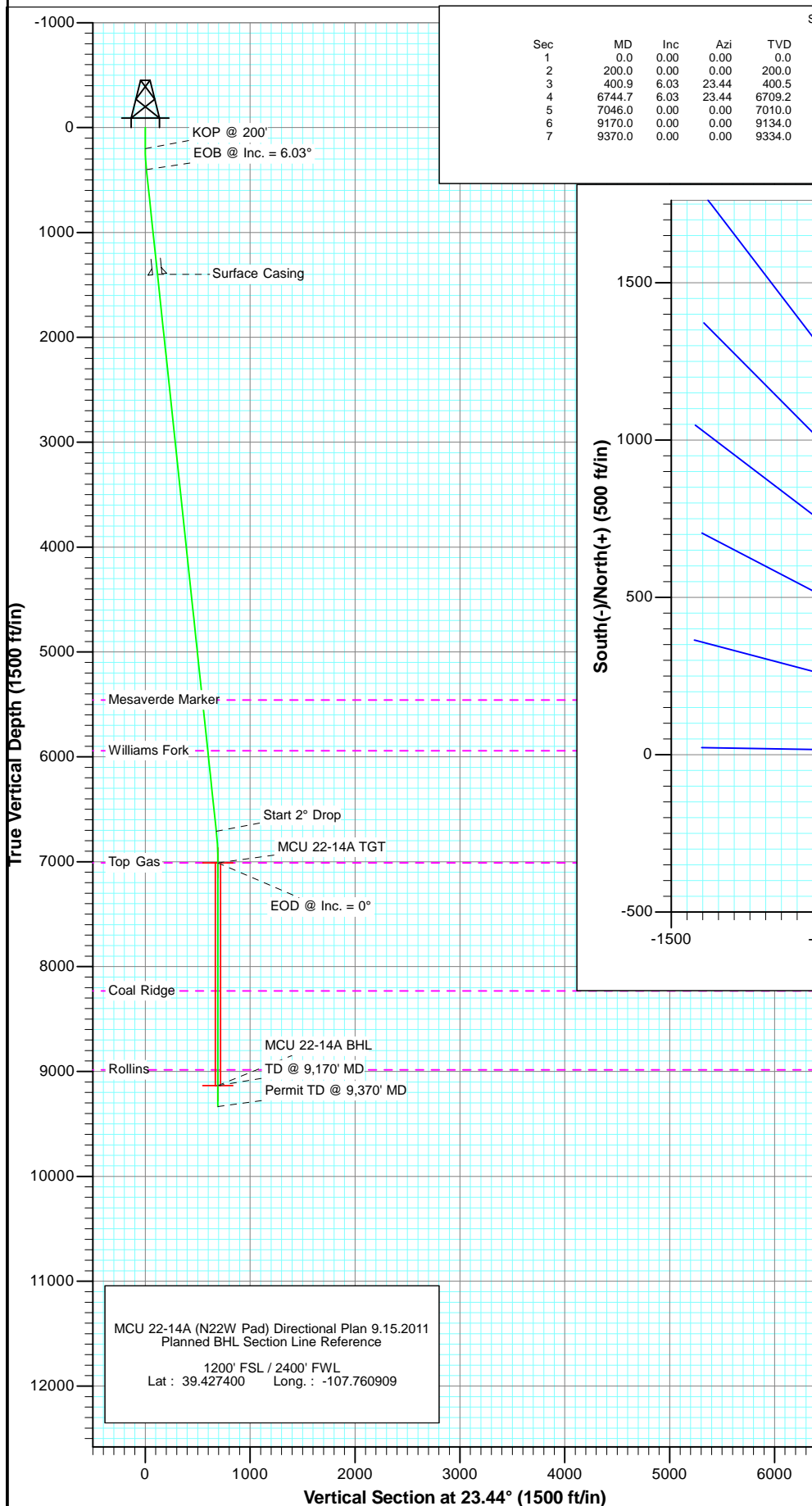
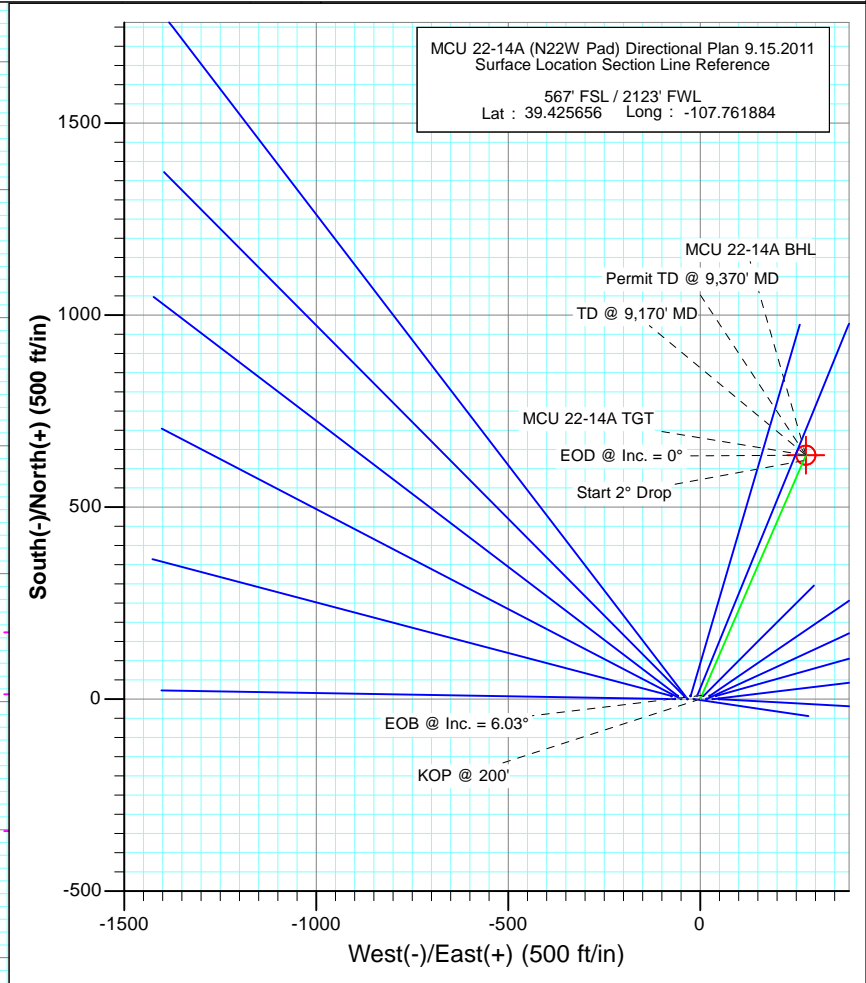




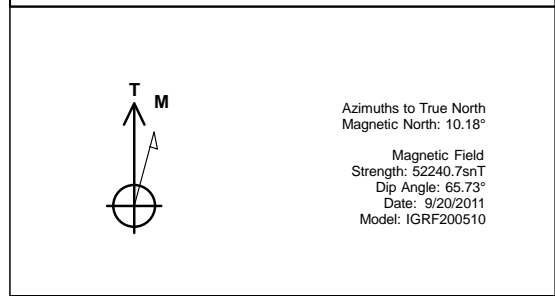
Project: Mamm Creek
 Site: N22W Pad Plan #1 (MCU 22-14A (N22W Pad
 Well: MCU 22-14A (N22W Pad) Directional Plan 9.15.2011
 Wellbore: OH
 Plan: Plan #1



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	400.9	6.03	23.44	400.5	9.7	4.2	3.00	23.44	10.6	
4	6744.7	6.03	23.44	6709.2	620.7	269.1	0.00	0.00	676.6	
5	7046.0	0.00	0.00	7010.0	635.3	275.4	2.00	180.00	692.4	MCU 22-14A TGT
6	9170.0	0.00	0.00	9134.0	635.3	275.4	0.00	0.00	692.4	MCU 22-14A BHL
7	9370.0	0.00	0.00	9334.0	635.3	275.4	0.00	0.00	692.4	



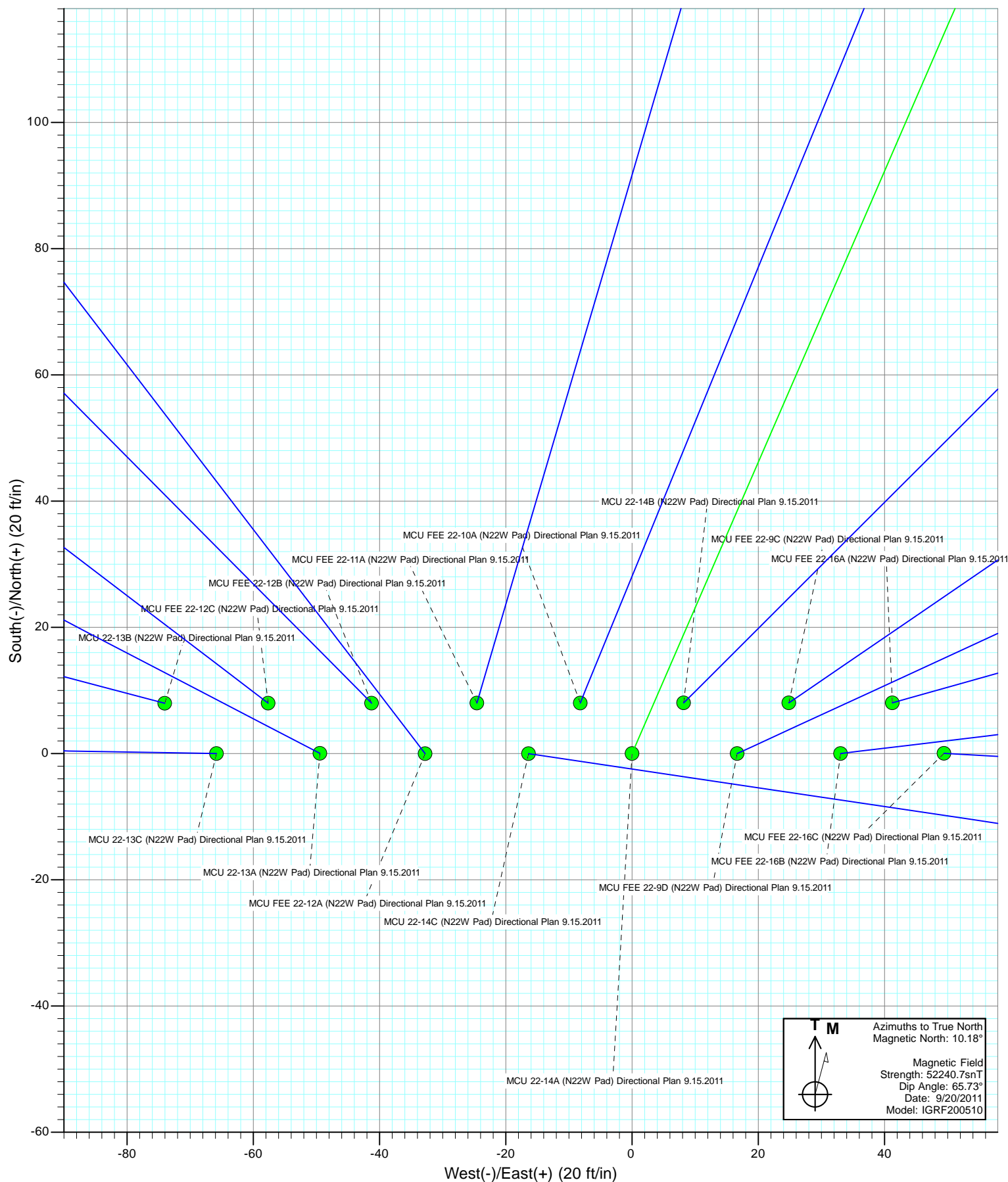
FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
5458.0	5486.5	Mesaverde Marker
5941.0	5972.2	Williams Fork
7010.0	7046.0	Top Gas
8231.0	8267.0	Coal Ridge
8984.0	9020.0	Rollins



DESIGN DETAILS: Plan #1			
115XXX; SC			
KBE @ 7048.0ft (Original Well Elev)			
No Target (Freehand)	23.44	Origin Type	N/S
	Azimuth	Slot	E/W
			0.0
			0.0

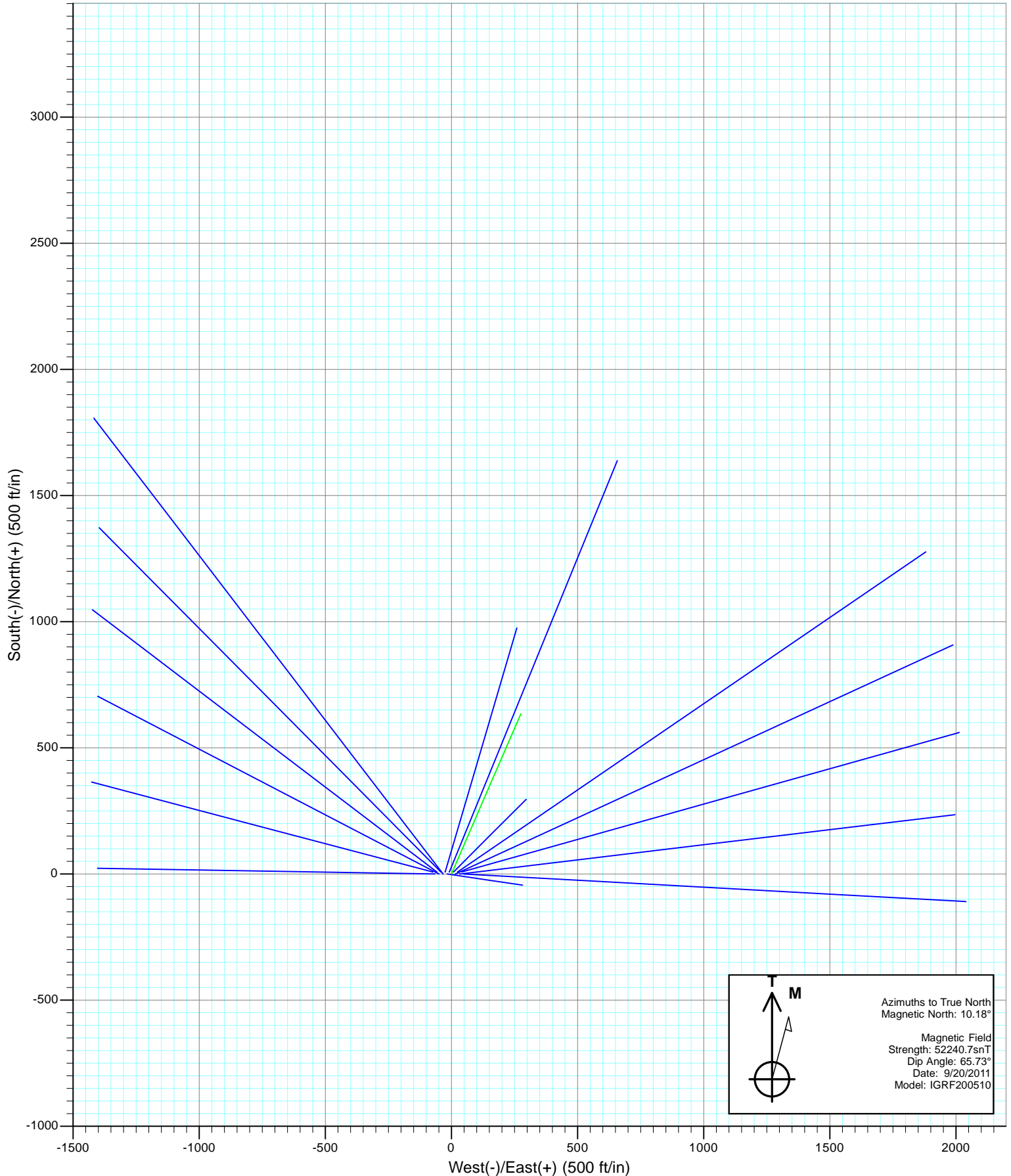


Project: Mamm Creek
Site: N22W Pad
Well: MCU 22-14A (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Design: Plan #1



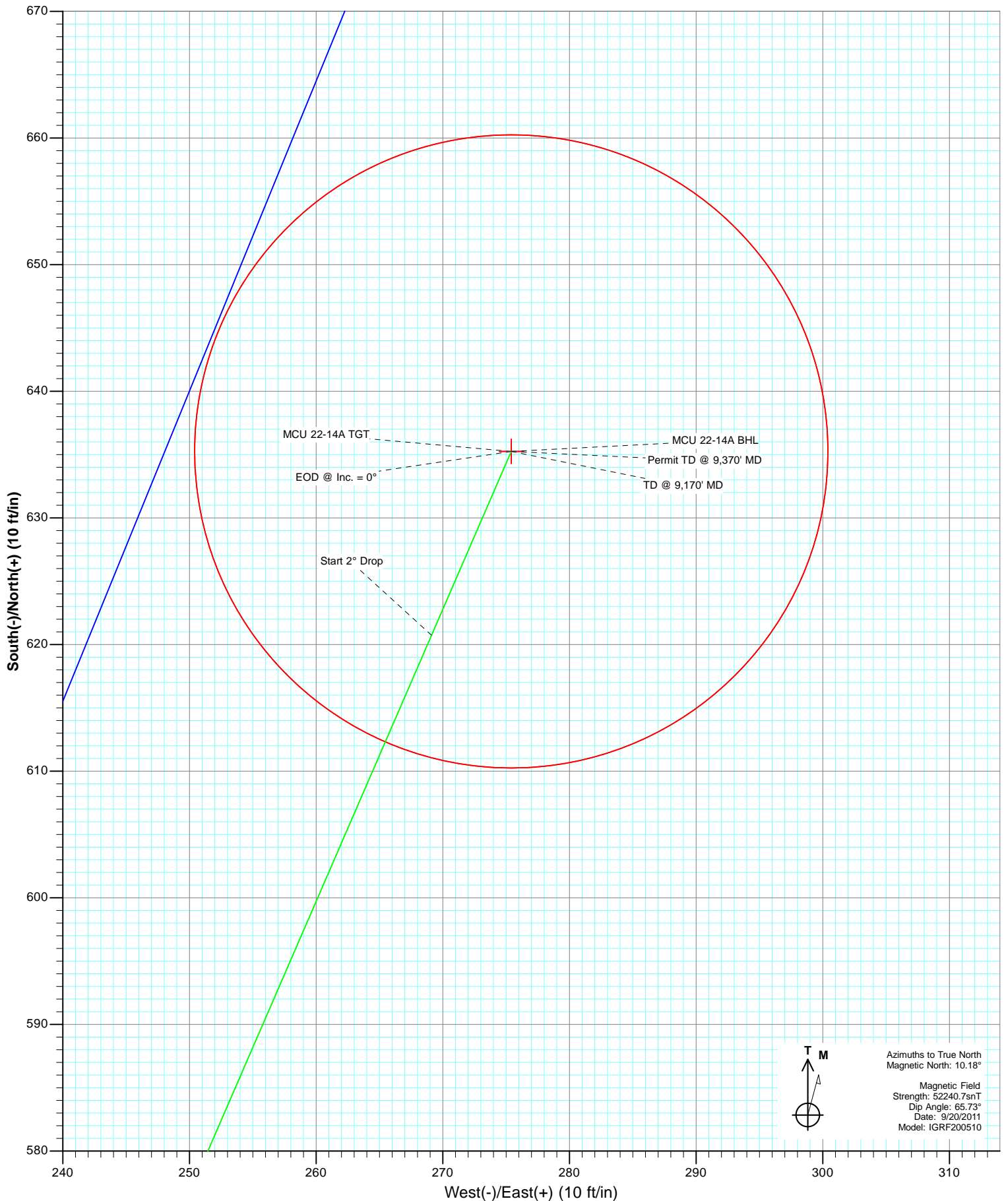


Project: Mamm Creek
Site: N22W Pad
Well: MCU 22-14A (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Design: Plan #1





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



Cathedral Energy Services

Planning Report

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

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

Site		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 22-14A (N22W Pad) Directional Plan 9.15.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,587,881.93 ft	Latitude:	39.425656
	+E/-W	0.0 ft	Easting:	2,361,128.07 ft	Longitude:	-107.761884
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	23.44

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	
400.9	6.03	23.44	400.5	9.7	4.2	3.00	3.00	0.00	23.44	
6,744.7	6.03	23.44	6,709.2	620.7	269.1	0.00	0.00	0.00	0.00	
7,046.0	0.00	0.00	7,010.0	635.3	275.4	2.00	-2.00	0.00	180.00	MCU 22-14A TGT
9,170.0	0.00	0.00	9,134.0	635.3	275.4	0.00	0.00	0.00	0.00	MCU 22-14A BHL
9,370.0	0.00	0.00	9,334.0	635.3	275.4	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 22-14A (N22W Pad) Directional Plan
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 22-14A (N22W Pad) Directional Plan 9.15.2011	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	3.00	23.44	300.0	2.4	1.0	2.6	3.00	3.00	
400.9	6.03	23.44	400.5	9.7	4.2	10.6	3.00	3.00	EOB @ Inc. = 6.03°
500.0	6.03	23.44	499.1	19.2	8.3	21.0	0.00	0.00	
600.0	6.03	23.44	598.5	28.9	12.5	31.5	0.00	0.00	
700.0	6.03	23.44	698.0	38.5	16.7	42.0	0.00	0.00	
800.0	6.03	23.44	797.4	48.1	20.9	52.5	0.00	0.00	
900.0	6.03	23.44	896.9	57.8	25.0	63.0	0.00	0.00	
1,000.0	6.03	23.44	996.3	67.4	29.2	73.5	0.00	0.00	
1,100.0	6.03	23.44	1,095.8	77.0	33.4	84.0	0.00	0.00	
1,200.0	6.03	23.44	1,195.2	86.7	37.6	94.5	0.00	0.00	
1,300.0	6.03	23.44	1,294.7	96.3	41.7	104.9	0.00	0.00	
1,400.0	6.03	23.44	1,394.1	105.9	45.9	115.4	0.00	0.00	
1,405.0	6.03	23.44	1,399.1	106.4	46.1	116.0	0.00	0.00	Surface Casing
1,500.0	6.03	23.44	1,493.6	115.6	50.1	125.9	0.00	0.00	
1,600.0	6.03	23.44	1,593.0	125.2	54.3	136.4	0.00	0.00	
1,700.0	6.03	23.44	1,692.5	134.8	58.4	146.9	0.00	0.00	
1,800.0	6.03	23.44	1,791.9	144.4	62.6	157.4	0.00	0.00	
1,900.0	6.03	23.44	1,891.3	154.1	66.8	167.9	0.00	0.00	
2,000.0	6.03	23.44	1,990.8	163.7	71.0	178.4	0.00	0.00	
2,100.0	6.03	23.44	2,090.2	173.3	75.2	188.9	0.00	0.00	
2,200.0	6.03	23.44	2,189.7	183.0	79.3	199.4	0.00	0.00	
2,300.0	6.03	23.44	2,289.1	192.6	83.5	209.9	0.00	0.00	
2,400.0	6.03	23.44	2,388.6	202.2	87.7	220.4	0.00	0.00	
2,500.0	6.03	23.44	2,488.0	211.9	91.9	230.9	0.00	0.00	
2,600.0	6.03	23.44	2,587.5	221.5	96.0	241.4	0.00	0.00	
2,700.0	6.03	23.44	2,686.9	231.1	100.2	251.9	0.00	0.00	
2,800.0	6.03	23.44	2,786.4	240.8	104.4	262.4	0.00	0.00	
2,900.0	6.03	23.44	2,885.8	250.4	108.6	272.9	0.00	0.00	
3,000.0	6.03	23.44	2,985.3	260.0	112.7	283.4	0.00	0.00	
3,100.0	6.03	23.44	3,084.7	269.7	116.9	293.9	0.00	0.00	
3,200.0	6.03	23.44	3,184.2	279.3	121.1	304.4	0.00	0.00	
3,300.0	6.03	23.44	3,283.6	288.9	125.3	314.9	0.00	0.00	
3,400.0	6.03	23.44	3,383.1	298.6	129.4	325.4	0.00	0.00	
3,500.0	6.03	23.44	3,482.5	308.2	133.6	335.9	0.00	0.00	
3,600.0	6.03	23.44	3,582.0	317.8	137.8	346.4	0.00	0.00	
3,700.0	6.03	23.44	3,681.4	327.5	142.0	356.9	0.00	0.00	
3,800.0	6.03	23.44	3,780.8	337.1	146.1	367.4	0.00	0.00	
3,900.0	6.03	23.44	3,880.3	346.7	150.3	377.9	0.00	0.00	
4,000.0	6.03	23.44	3,979.7	356.4	154.5	388.4	0.00	0.00	
4,100.0	6.03	23.44	4,079.2	366.0	158.7	398.9	0.00	0.00	
4,200.0	6.03	23.44	4,178.6	375.6	162.9	409.4	0.00	0.00	
4,300.0	6.03	23.44	4,278.1	385.3	167.0	419.9	0.00	0.00	
4,400.0	6.03	23.44	4,377.5	394.9	171.2	430.4	0.00	0.00	
4,500.0	6.03	23.44	4,477.0	404.5	175.4	440.9	0.00	0.00	
4,600.0	6.03	23.44	4,576.4	414.2	179.6	451.4	0.00	0.00	
4,700.0	6.03	23.44	4,675.9	423.8	183.7	461.9	0.00	0.00	
4,800.0	6.03	23.44	4,775.3	433.4	187.9	472.4	0.00	0.00	
4,900.0	6.03	23.44	4,874.8	443.0	192.1	482.9	0.00	0.00	
5,000.0	6.03	23.44	4,974.2	452.7	196.3	493.4	0.00	0.00	

Cathedral Energy Services

Planning Report

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

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,100.0	6.03	23.44	5,073.7	462.3	200.4	503.9	0.00	0.00	
5,200.0	6.03	23.44	5,173.1	471.9	204.6	514.4	0.00	0.00	
5,300.0	6.03	23.44	5,272.6	481.6	208.8	524.9	0.00	0.00	
5,400.0	6.03	23.44	5,372.0	491.2	213.0	535.4	0.00	0.00	
5,486.5	6.03	23.44	5,458.0	499.5	216.6	544.5	0.00	0.00	Mesaverde Marker
5,500.0	6.03	23.44	5,471.5	500.8	217.1	545.9	0.00	0.00	
5,600.0	6.03	23.44	5,570.9	510.5	221.3	556.4	0.00	0.00	
5,700.0	6.03	23.44	5,670.3	520.1	225.5	566.9	0.00	0.00	
5,800.0	6.03	23.44	5,769.8	529.7	229.7	577.4	0.00	0.00	
5,900.0	6.03	23.44	5,869.2	539.4	233.8	587.9	0.00	0.00	
5,972.2	6.03	23.44	5,941.0	546.3	236.9	595.5	0.00	0.00	Williams Fork
6,000.0	6.03	23.44	5,968.7	549.0	238.0	598.4	0.00	0.00	
6,100.0	6.03	23.44	6,068.1	558.6	242.2	608.9	0.00	0.00	
6,200.0	6.03	23.44	6,167.6	568.3	246.4	619.4	0.00	0.00	
6,300.0	6.03	23.44	6,267.0	577.9	250.5	629.9	0.00	0.00	
6,400.0	6.03	23.44	6,366.5	587.5	254.7	640.4	0.00	0.00	
6,500.0	6.03	23.44	6,465.9	597.2	258.9	650.9	0.00	0.00	
6,600.0	6.03	23.44	6,565.4	606.8	263.1	661.4	0.00	0.00	
6,700.0	6.03	23.44	6,664.8	616.4	267.3	671.9	0.00	0.00	
6,744.7	6.03	23.44	6,709.2	620.7	269.1	676.6	0.00	0.00	Start 2° Drop
6,800.0	4.92	23.44	6,764.3	625.6	271.2	681.8	2.00	-2.00	
6,900.0	2.92	23.44	6,864.1	631.8	273.9	688.7	2.00	-2.00	
7,000.0	0.92	23.44	6,964.0	634.9	275.3	692.0	2.00	-2.00	
7,046.0	0.00	0.00	7,010.0	635.3	275.4	692.4	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
7,100.0	0.00	0.00	7,064.0	635.3	275.4	692.4	0.00	0.00	
7,200.0	0.00	0.00	7,164.0	635.3	275.4	692.4	0.00	0.00	
7,300.0	0.00	0.00	7,264.0	635.3	275.4	692.4	0.00	0.00	
7,400.0	0.00	0.00	7,364.0	635.3	275.4	692.4	0.00	0.00	
7,500.0	0.00	0.00	7,464.0	635.3	275.4	692.4	0.00	0.00	
7,600.0	0.00	0.00	7,564.0	635.3	275.4	692.4	0.00	0.00	
7,700.0	0.00	0.00	7,664.0	635.3	275.4	692.4	0.00	0.00	
7,800.0	0.00	0.00	7,764.0	635.3	275.4	692.4	0.00	0.00	
7,900.0	0.00	0.00	7,864.0	635.3	275.4	692.4	0.00	0.00	
8,000.0	0.00	0.00	7,964.0	635.3	275.4	692.4	0.00	0.00	
8,100.0	0.00	0.00	8,064.0	635.3	275.4	692.4	0.00	0.00	
8,200.0	0.00	0.00	8,164.0	635.3	275.4	692.4	0.00	0.00	
8,267.0	0.00	0.00	8,231.0	635.3	275.4	692.4	0.00	0.00	Coal Ridge
8,300.0	0.00	0.00	8,264.0	635.3	275.4	692.4	0.00	0.00	
8,400.0	0.00	0.00	8,364.0	635.3	275.4	692.4	0.00	0.00	
8,500.0	0.00	0.00	8,464.0	635.3	275.4	692.4	0.00	0.00	
8,600.0	0.00	0.00	8,564.0	635.3	275.4	692.4	0.00	0.00	
8,700.0	0.00	0.00	8,664.0	635.3	275.4	692.4	0.00	0.00	
8,800.0	0.00	0.00	8,764.0	635.3	275.4	692.4	0.00	0.00	
8,900.0	0.00	0.00	8,864.0	635.3	275.4	692.4	0.00	0.00	
9,000.0	0.00	0.00	8,964.0	635.3	275.4	692.4	0.00	0.00	
9,020.0	0.00	0.00	8,984.0	635.3	275.4	692.4	0.00	0.00	Rollins
9,100.0	0.00	0.00	9,064.0	635.3	275.4	692.4	0.00	0.00	
9,170.0	0.00	0.00	9,134.0	635.3	275.4	692.4	0.00	0.00	TD @ 9,170' MD
9,200.0	0.00	0.00	9,164.0	635.3	275.4	692.4	0.00	0.00	
9,300.0	0.00	0.00	9,264.0	635.3	275.4	692.4	0.00	0.00	
9,370.0	0.00	0.00	9,334.0	635.3	275.4	692.4	0.00	0.00	Permit TD @ 9,370' MD

Cathedral Energy Services

Planning Report

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

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
MCU 22-14A BHL	0.00	0.00	9,134.0	635.3	275.4	1,588,510.13	2,361,419.22	39.427400	-107.760909
- plan hits target center									
- Circle (radius 0.0)									
MCU 22-14A TGT	0.00	0.00	7,010.0	635.3	275.4	1,588,510.13	2,361,419.22	39.427400	-107.760909
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
1,405.0	1,399.1	Surface Casing		5.500	6.000

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
5,486.5	5,458.0	Mesaverde Marker			
5,972.2	5,941.0	Williams Fork			
7,046.0	7,010.0	Top Gas			
8,267.0	8,231.0	Coal Ridge			
9,020.0	8,984.0	Rollins			

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
200.0	200.0	0.0	0.0	KOP @ 200'	
400.9	400.5	9.7	4.2	EOB @ Inc. = 6.03°	
6,744.7	6,709.2	620.7	269.1	Start 2° Drop	
7,046.0	7,010.0	635.3	275.4	EOD @ Inc. = 0°	
9,170.0	9,134.0	635.3	275.4	TD @ 9,170' MD	
9,370.0	9,334.0	635.3	275.4	Permit TD @ 9,370' MD	