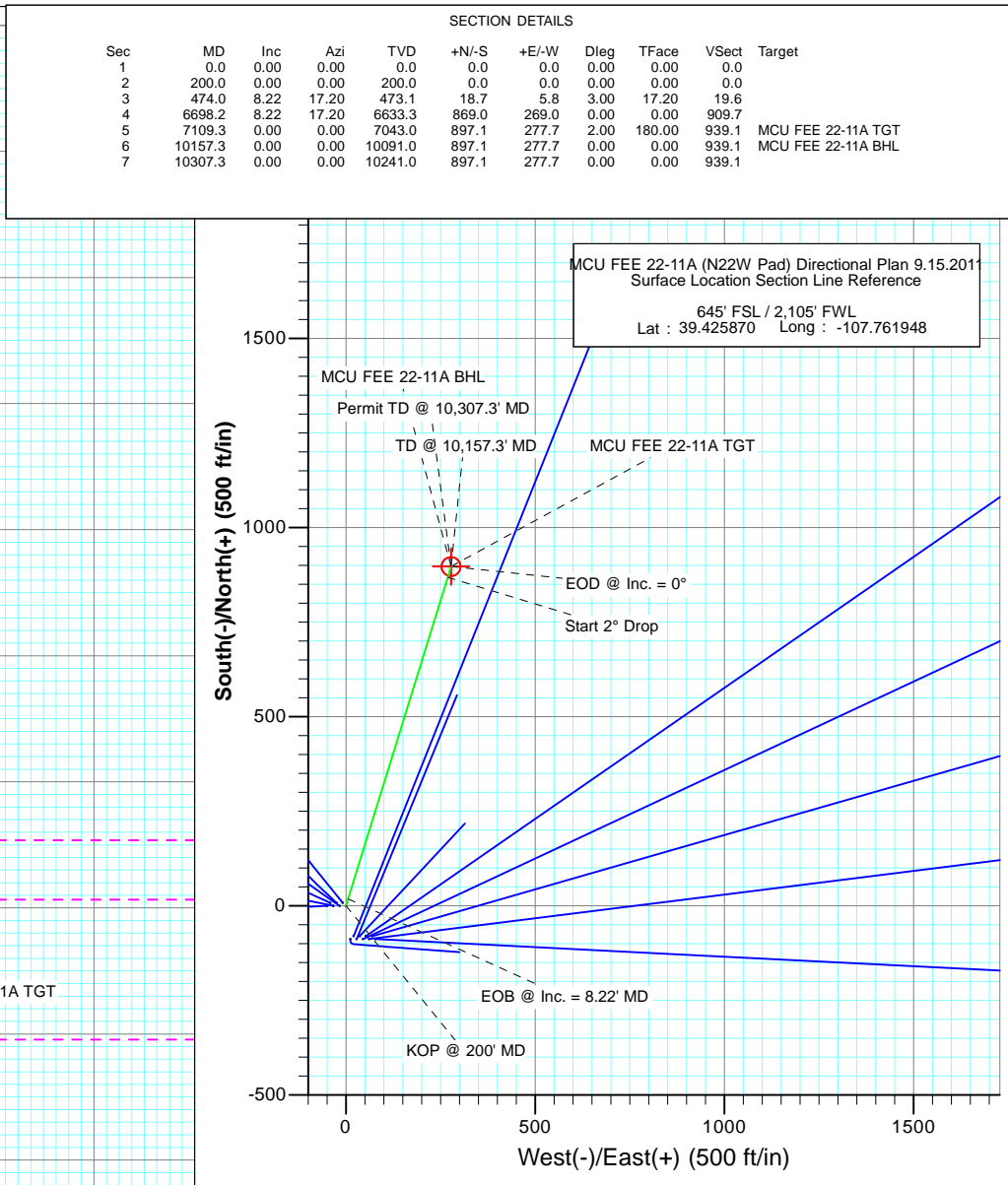
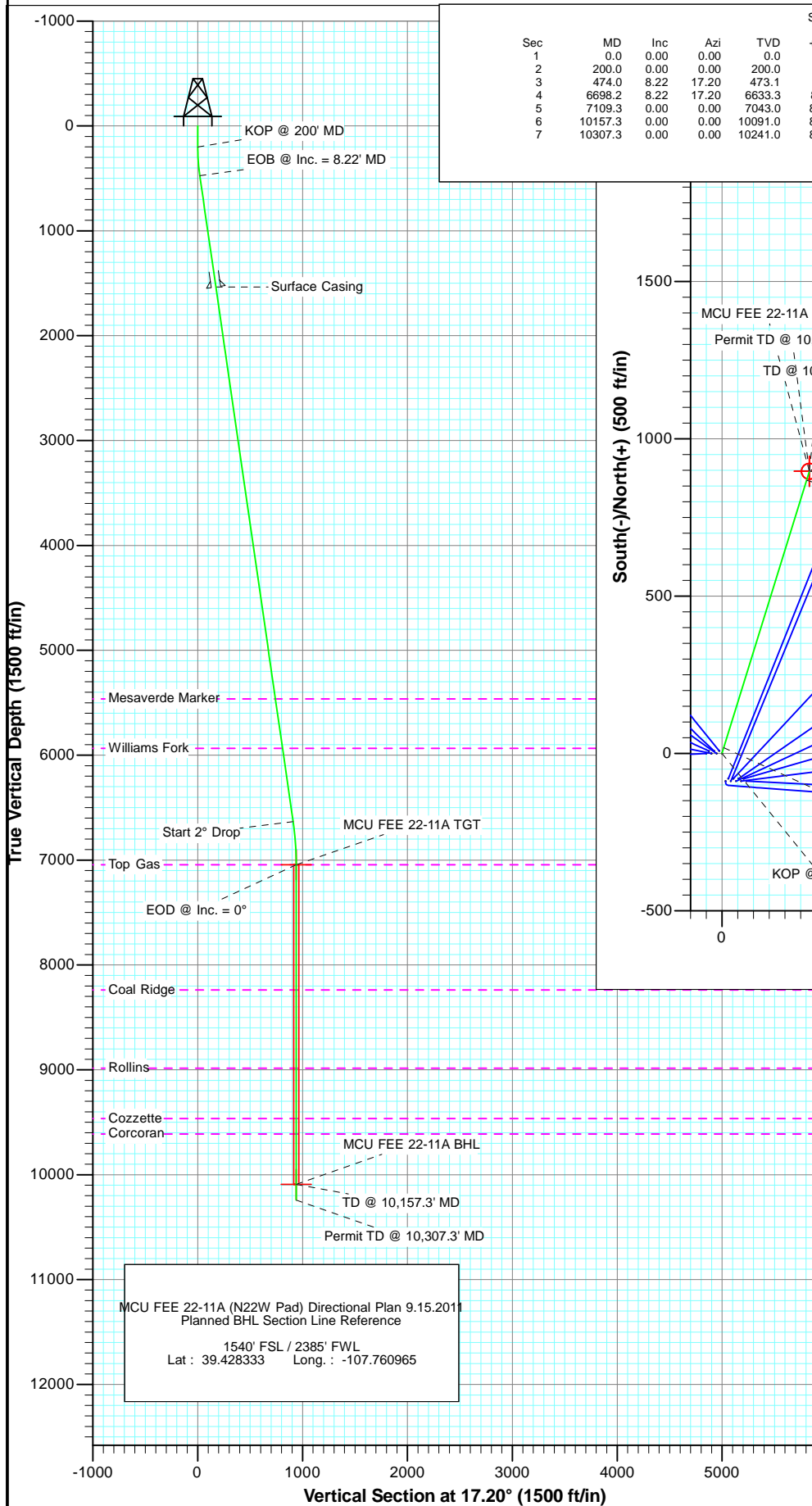




Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-11A (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Plan: Plan #2



FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	
5463.0	5515.8	Mesaverde Marker	
5933.0	5990.6	Williams Fork	
7043.0	7109.3	Top Gas	
8238.0	8304.3	Coal Ridge	
8985.0	9051.3	Rollins	
9465.0	9531.3	Cozzette	
9611.0	9677.3	Corcoran	

T

M

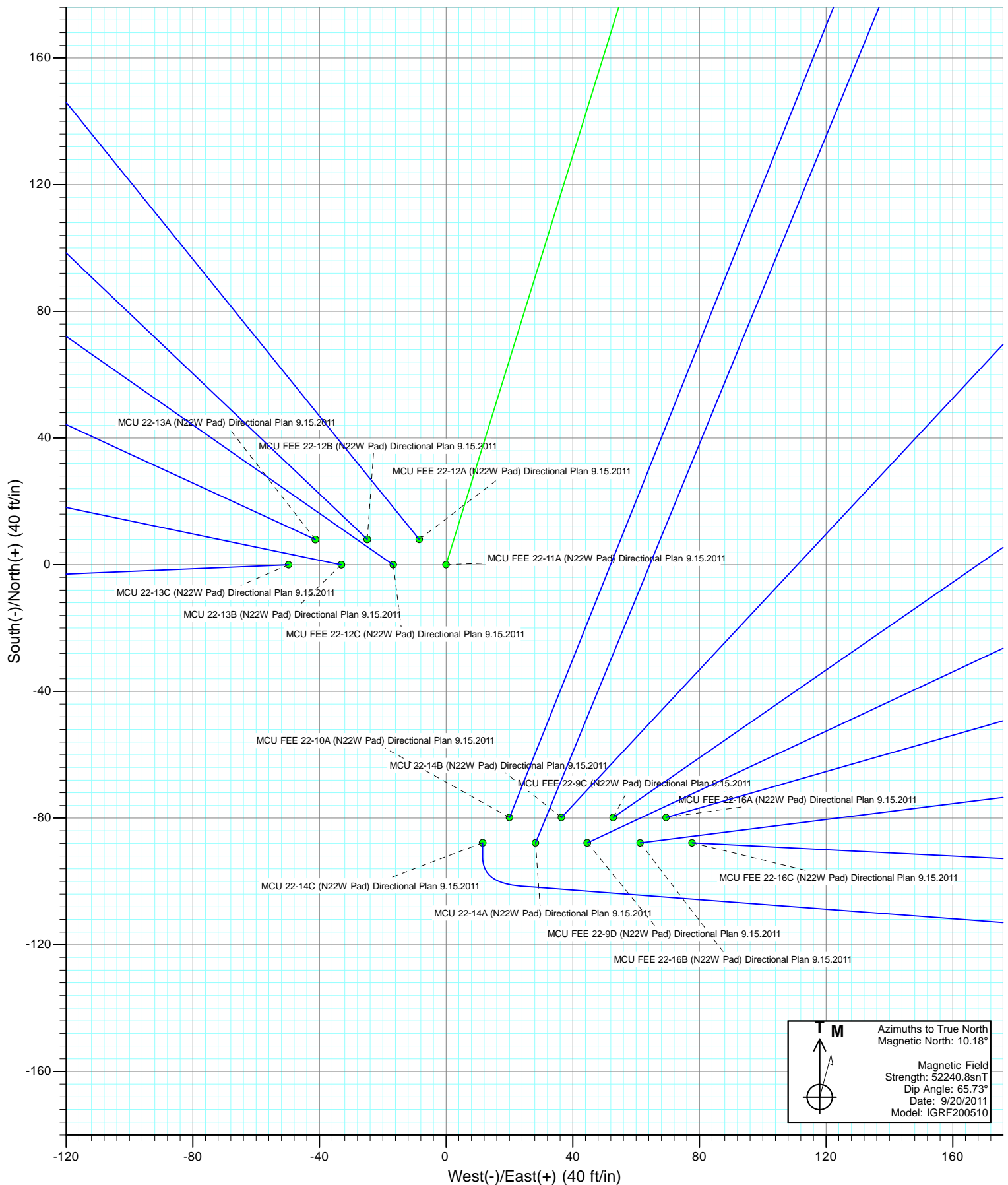
Azimuths to True North
Magnetic North: 10.18°

Magnetic Field
Strength: 52240.8snT
Dip Angle: 65.73°
Date: 9/20/2011
Model: IGRF200510

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

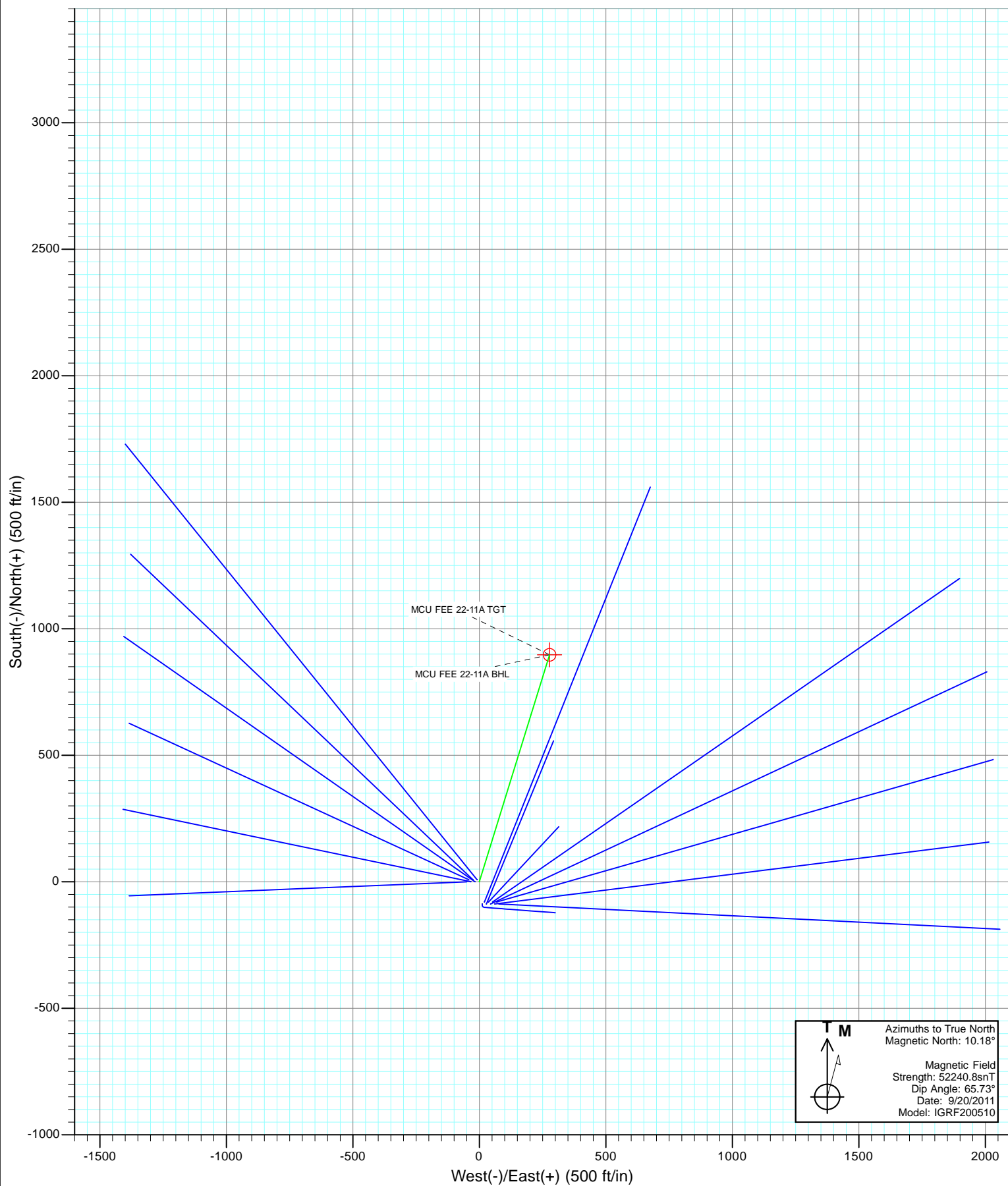


Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-11A (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Design: Plan #2



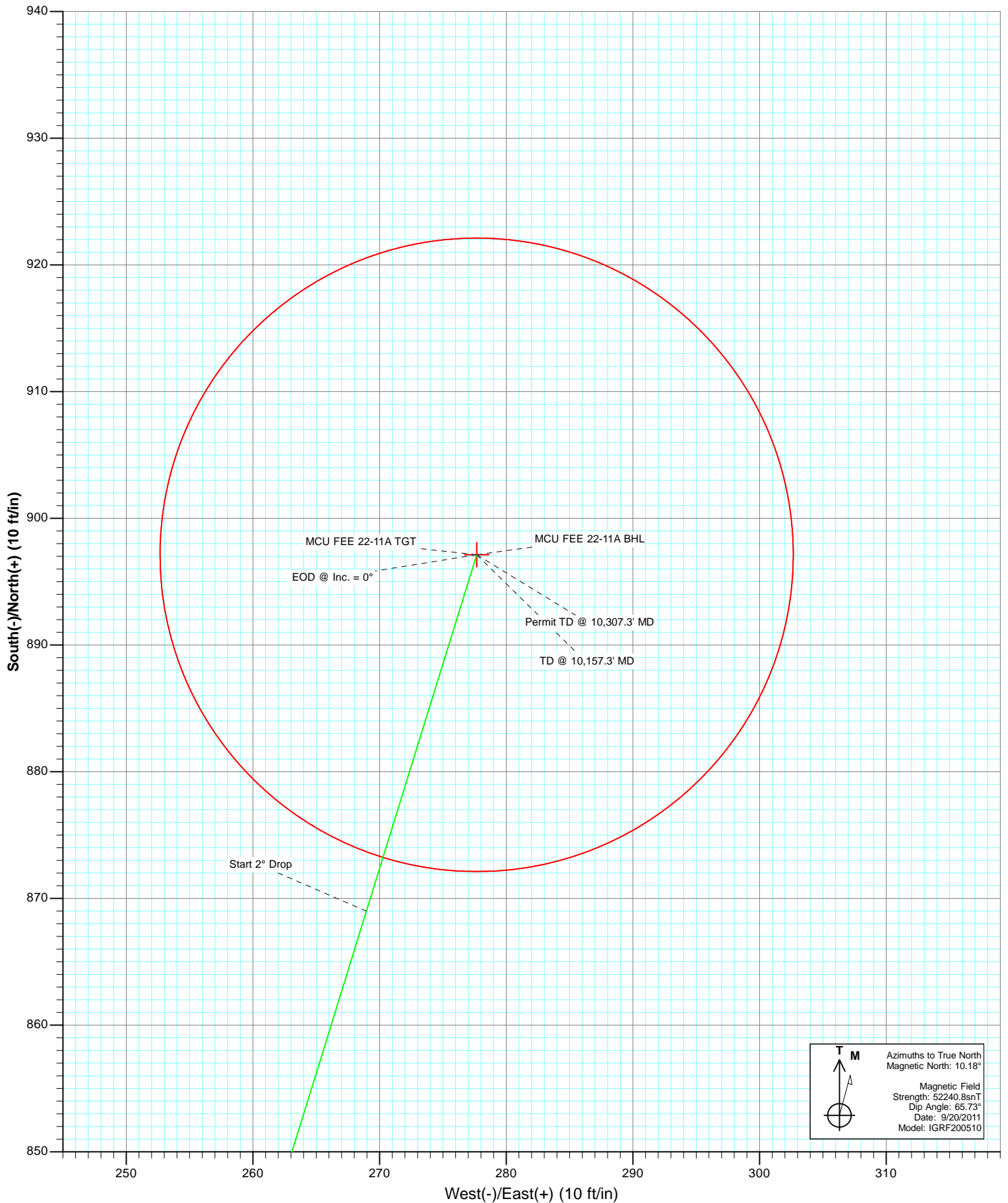


Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-11A (N22W Pad) Directional Plan 9.15.2011
Wellbore: OH
Design: Plan #2





Project: Mamm Creek
Site: N22W Pad
Well: MCU FEE 22-11A (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 22-11A (N22W Pad) Directional P
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 22-11A (N22W Pad) Directional Plan 9.15.2011	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	
From:		Easting:		2,361,187.41 ft	
Position Uncertainty:		Slot Radius:		13.200 in	
Lat/Long				Latitude:	
				39.425629	
				Longitude:	
				-107.761673	
0.0 ft				Grid Convergence:	
				-1.43 °	

Well	MCU FEE 22-11A (N22W Pad) Directional Plan 9.15.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,587,960.32 ft	Latitude:	39.425870
	+E/-W	0.0 ft	Easting:	2,361,111.94 ft	Longitude:	-107.761948
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 #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	17.20

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	
474.0	8.22	17.20	473.1	18.7	5.8	3.00	3.00	0.00	17.20	
6,698.2	8.22	17.20	6,633.3	869.0	269.0	0.00	0.00	0.00	0.00	
7,109.3	0.00	0.00	7,043.0	897.1	277.7	2.00	-2.00	0.00	180.00	MCU FEE 22-11A TG
10,157.3	0.00	0.00	10,091.0	897.1	277.7	0.00	0.00	0.00	0.00	MCU FEE 22-11A BH
10,307.3	0.00	0.00	10,241.0	897.1	277.7	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 22-11A (N22W Pad) Directional P
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 22-11A (N22W Pad) Directional Plan 9.15.2C	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' MD
300.0	3.00	17.20	300.0	2.5	0.8	2.6	3.00	3.00	
400.0	6.00	17.20	399.6	10.0	3.1	10.5	3.00	3.00	
474.0	8.22	17.20	473.1	18.7	5.8	19.6	3.00	3.00	EOB @ Inc. = 8.22' MD
500.0	8.22	17.20	498.8	22.3	6.9	23.3	0.00	0.00	
600.0	8.22	17.20	597.8	36.0	11.1	37.6	0.00	0.00	
700.0	8.22	17.20	696.7	49.6	15.4	51.9	0.00	0.00	
800.0	8.22	17.20	795.7	63.3	19.6	66.2	0.00	0.00	
900.0	8.22	17.20	894.7	76.9	23.8	80.5	0.00	0.00	
1,000.0	8.22	17.20	993.7	90.6	28.0	94.8	0.00	0.00	
1,100.0	8.22	17.20	1,092.6	104.3	32.3	109.1	0.00	0.00	
1,200.0	8.22	17.20	1,191.6	117.9	36.5	123.4	0.00	0.00	
1,300.0	8.22	17.20	1,290.6	131.6	40.7	137.7	0.00	0.00	
1,400.0	8.22	17.20	1,389.5	145.2	45.0	152.0	0.00	0.00	
1,500.0	8.22	17.20	1,488.5	158.9	49.2	166.3	0.00	0.00	
1,548.0	8.22	17.20	1,536.0	165.5	51.2	173.2	0.00	0.00	Surface Casing
1,600.0	8.22	17.20	1,587.5	172.6	53.4	180.6	0.00	0.00	
1,700.0	8.22	17.20	1,686.5	186.2	57.6	194.9	0.00	0.00	
1,800.0	8.22	17.20	1,785.4	199.9	61.9	209.2	0.00	0.00	
1,900.0	8.22	17.20	1,884.4	213.5	66.1	223.5	0.00	0.00	
2,000.0	8.22	17.20	1,983.4	227.2	70.3	237.8	0.00	0.00	
2,100.0	8.22	17.20	2,082.4	240.9	74.5	252.1	0.00	0.00	
2,200.0	8.22	17.20	2,181.3	254.5	78.8	266.4	0.00	0.00	
2,300.0	8.22	17.20	2,280.3	268.2	83.0	280.7	0.00	0.00	
2,400.0	8.22	17.20	2,379.3	281.8	87.2	295.0	0.00	0.00	
2,500.0	8.22	17.20	2,478.2	295.5	91.5	309.3	0.00	0.00	
2,600.0	8.22	17.20	2,577.2	309.2	95.7	323.6	0.00	0.00	
2,700.0	8.22	17.20	2,676.2	322.8	99.9	337.9	0.00	0.00	
2,800.0	8.22	17.20	2,775.2	336.5	104.1	352.2	0.00	0.00	
2,900.0	8.22	17.20	2,874.1	350.1	108.4	366.5	0.00	0.00	
3,000.0	8.22	17.20	2,973.1	363.8	112.6	380.8	0.00	0.00	
3,100.0	8.22	17.20	3,072.1	377.5	116.8	395.1	0.00	0.00	
3,200.0	8.22	17.20	3,171.0	391.1	121.1	409.4	0.00	0.00	
3,300.0	8.22	17.20	3,270.0	404.8	125.3	423.7	0.00	0.00	
3,400.0	8.22	17.20	3,369.0	418.4	129.5	438.0	0.00	0.00	
3,500.0	8.22	17.20	3,468.0	432.1	133.7	452.3	0.00	0.00	
3,600.0	8.22	17.20	3,566.9	445.8	138.0	466.6	0.00	0.00	
3,700.0	8.22	17.20	3,665.9	459.4	142.2	480.9	0.00	0.00	
3,800.0	8.22	17.20	3,764.9	473.1	146.4	495.2	0.00	0.00	
3,900.0	8.22	17.20	3,863.9	486.7	150.7	509.5	0.00	0.00	
4,000.0	8.22	17.20	3,962.8	500.4	154.9	523.8	0.00	0.00	
4,100.0	8.22	17.20	4,061.8	514.1	159.1	538.1	0.00	0.00	
4,200.0	8.22	17.20	4,160.8	527.7	163.3	552.4	0.00	0.00	
4,300.0	8.22	17.20	4,259.7	541.4	167.6	566.7	0.00	0.00	
4,400.0	8.22	17.20	4,358.7	555.0	171.8	581.0	0.00	0.00	
4,500.0	8.22	17.20	4,457.7	568.7	176.0	595.3	0.00	0.00	
4,600.0	8.22	17.20	4,556.7	582.4	180.3	609.6	0.00	0.00	
4,700.0	8.22	17.20	4,655.6	596.0	184.5	623.9	0.00	0.00	
4,800.0	8.22	17.20	4,754.6	609.7	188.7	638.2	0.00	0.00	
4,900.0	8.22	17.20	4,853.6	623.4	192.9	652.5	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-11A (N22W Pad) Directional P
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 22-11A (N22W Pad) Directional Plan 9.15.2C	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
5,000.0	8.22	17.20	4,952.5	637.0	197.2	666.8	0.00	0.00	
5,100.0	8.22	17.20	5,051.5	650.7	201.4	681.1	0.00	0.00	
5,200.0	8.22	17.20	5,150.5	664.3	205.6	695.4	0.00	0.00	
5,300.0	8.22	17.20	5,249.5	678.0	209.8	709.7	0.00	0.00	
5,400.0	8.22	17.20	5,348.4	691.7	214.1	724.0	0.00	0.00	
5,500.0	8.22	17.20	5,447.4	705.3	218.3	738.3	0.00	0.00	
5,515.8	8.22	17.20	5,463.0	707.5	219.0	740.6	0.00	0.00	Mesaverde Marker
5,600.0	8.22	17.20	5,546.4	719.0	222.5	752.6	0.00	0.00	
5,700.0	8.22	17.20	5,645.4	732.6	226.8	766.9	0.00	0.00	
5,800.0	8.22	17.20	5,744.3	746.3	231.0	781.2	0.00	0.00	
5,900.0	8.22	17.20	5,843.3	760.0	235.2	795.5	0.00	0.00	
5,990.6	8.22	17.20	5,933.0	772.3	239.0	808.5	0.00	0.00	Williams Fork
6,000.0	8.22	17.20	5,942.3	773.6	239.4	809.8	0.00	0.00	
6,100.0	8.22	17.20	6,041.2	787.3	243.7	824.1	0.00	0.00	
6,200.0	8.22	17.20	6,140.2	800.9	247.9	838.4	0.00	0.00	
6,300.0	8.22	17.20	6,239.2	814.6	252.1	852.7	0.00	0.00	
6,400.0	8.22	17.20	6,338.2	828.3	256.4	867.0	0.00	0.00	
6,500.0	8.22	17.20	6,437.1	841.9	260.6	881.3	0.00	0.00	
6,600.0	8.22	17.20	6,536.1	855.6	264.8	895.6	0.00	0.00	
6,698.2	8.22	17.20	6,633.3	869.0	269.0	909.7	0.00	0.00	Start 2° Drop
6,700.0	8.19	17.20	6,635.1	869.2	269.0	909.9	2.00	-2.00	
6,800.0	6.19	17.20	6,734.3	881.2	272.7	922.4	2.00	-2.00	
6,900.0	4.19	17.20	6,833.9	889.8	275.4	931.5	2.00	-2.00	
7,000.0	2.19	17.20	6,933.7	895.1	277.1	937.0	2.00	-2.00	
7,109.3	0.00	0.00	7,043.0	897.1	277.7	939.1	2.00	-2.00	EOD @ Inc. = 0° - Top Gas
7,200.0	0.00	0.00	7,133.7	897.1	277.7	939.1	0.00	0.00	
7,300.0	0.00	0.00	7,233.7	897.1	277.7	939.1	0.00	0.00	
7,400.0	0.00	0.00	7,333.7	897.1	277.7	939.1	0.00	0.00	
7,500.0	0.00	0.00	7,433.7	897.1	277.7	939.1	0.00	0.00	
7,600.0	0.00	0.00	7,533.7	897.1	277.7	939.1	0.00	0.00	
7,700.0	0.00	0.00	7,633.7	897.1	277.7	939.1	0.00	0.00	
7,800.0	0.00	0.00	7,733.7	897.1	277.7	939.1	0.00	0.00	
7,900.0	0.00	0.00	7,833.7	897.1	277.7	939.1	0.00	0.00	
8,000.0	0.00	0.00	7,933.7	897.1	277.7	939.1	0.00	0.00	
8,100.0	0.00	0.00	8,033.7	897.1	277.7	939.1	0.00	0.00	
8,200.0	0.00	0.00	8,133.7	897.1	277.7	939.1	0.00	0.00	
8,300.0	0.00	0.00	8,233.7	897.1	277.7	939.1	0.00	0.00	
8,304.3	0.00	0.00	8,238.0	897.1	277.7	939.1	0.00	0.00	Coal Ridge
8,400.0	0.00	0.00	8,333.7	897.1	277.7	939.1	0.00	0.00	
8,500.0	0.00	0.00	8,433.7	897.1	277.7	939.1	0.00	0.00	
8,600.0	0.00	0.00	8,533.7	897.1	277.7	939.1	0.00	0.00	
8,700.0	0.00	0.00	8,633.7	897.1	277.7	939.1	0.00	0.00	
8,800.0	0.00	0.00	8,733.7	897.1	277.7	939.1	0.00	0.00	
8,900.0	0.00	0.00	8,833.7	897.1	277.7	939.1	0.00	0.00	
9,000.0	0.00	0.00	8,933.7	897.1	277.7	939.1	0.00	0.00	
9,051.3	0.00	0.00	8,985.0	897.1	277.7	939.1	0.00	0.00	Rollins
9,100.0	0.00	0.00	9,033.7	897.1	277.7	939.1	0.00	0.00	
9,200.0	0.00	0.00	9,133.7	897.1	277.7	939.1	0.00	0.00	
9,300.0	0.00	0.00	9,233.7	897.1	277.7	939.1	0.00	0.00	
9,400.0	0.00	0.00	9,333.7	897.1	277.7	939.1	0.00	0.00	
9,500.0	0.00	0.00	9,433.7	897.1	277.7	939.1	0.00	0.00	
9,531.3	0.00	0.00	9,465.0	897.1	277.7	939.1	0.00	0.00	Cozzette

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-11A (N22W Pad) Directional P
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 22-11A (N22W Pad) Directional Plan 9.15.20	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
9,600.0	0.00	0.00	9,533.7	897.1	277.7	939.1	0.00	0.00	
9,677.3	0.00	0.00	9,611.0	897.1	277.7	939.1	0.00	0.00	Corcoran
9,700.0	0.00	0.00	9,633.7	897.1	277.7	939.1	0.00	0.00	
9,800.0	0.00	0.00	9,733.7	897.1	277.7	939.1	0.00	0.00	
9,900.0	0.00	0.00	9,833.7	897.1	277.7	939.1	0.00	0.00	
10,000.0	0.00	0.00	9,933.7	897.1	277.7	939.1	0.00	0.00	
10,100.0	0.00	0.00	10,033.7	897.1	277.7	939.1	0.00	0.00	
10,157.3	0.00	0.00	10,091.0	897.1	277.7	939.1	0.00	0.00	TD @ 10,157.3' MD
10,200.0	0.00	0.00	10,133.7	897.1	277.7	939.1	0.00	0.00	
10,307.3	0.00	0.00	10,241.0	897.1	277.7	939.1	0.00	0.00	Permit TD @ 10,307.3' 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 22-11A TGT - plan hits target center - Point	0.00	0.00	7,043.0	897.1	277.7	1,588,850.25	2,361,411.86	39.428333	-107.760965
MCU FEE 22-11A BHL - plan hits target center - Circle (radius 25.0)	0.00	0.00	10,091.0	897.1	277.7	1,588,850.25	2,361,411.86	39.428333	-107.760965

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,548.0	1,536.0	Surface Casing	5.500	6.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,515.8	5,463.0	Mesaverde Marker			
5,990.6	5,933.0	Williams Fork			
7,109.3	7,043.0	Top Gas			
8,304.3	8,238.0	Coal Ridge			
9,051.3	8,985.0	Rollins			
9,531.3	9,465.0	Cozzette			
9,677.3	9,611.0	Corcoran			

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well MCU FEE 22-11A (N22W Pad) Directional P
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 22-11A (N22W Pad) Directional Plan 9.15.20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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' MD
474.0	473.1	18.7	5.8	EOB @ Inc. = 8.22' MD
6,698.2	6,633.3	869.0	269.0	Start 2° Drop
7,109.3	7,043.0	897.1	277.7	EOD @ Inc. = 0°
10,157.3	10,091.0	897.1	277.7	TD @ 10,157.3' MD
10,307.3	10,241.0	897.1	277.7	Permit TD @ 10,307.3' MD