

# Taharqa's Corner

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## Designing a Map with Advanced Buildings

June 23rd, 2009

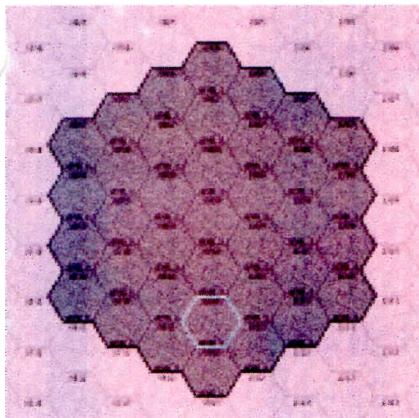
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The map editor in MegaMek is admittedly a little arcane. Additionally, with all of the new building classes and the changes to gun emplacements, it can be a little daunting to try and create maps with buildings on them. This little tutorial is designed to show you how to get buildings and gun emplacements up and running for your MegaMek games.

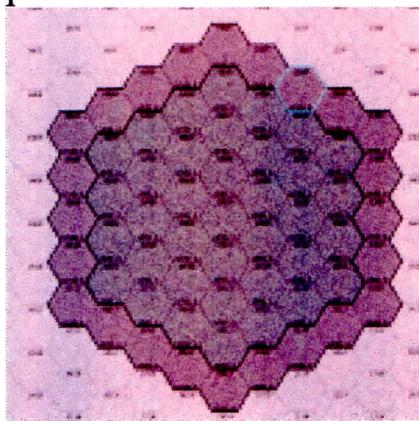
To demonstrate, I am going to take a plain  $16 \times 17$  map and stick a mech base on it. So my first step is to start up the map editor. When it asks for my map settings, I just hit ok, which creates a plain  $16 \times 17$  map.

Now that I have a map, I would like to set my base on nice high plateau for strategic reasons. So I use the "U" button in the map editor to raise the level of my terrain to level 3. I also figure I should pave my base, so I add a paved terrain to the hex. Now I just need to paint my hexes onto the map. If you just click on the hex, it will paint the pavement but it won't make the elevation change. This is by design, so that you can paint over terrain features easily while keeping the elevation the same. In order to change elevation as well, I need to hold down

CTRL while I paint. Here is what my plateau looks like:

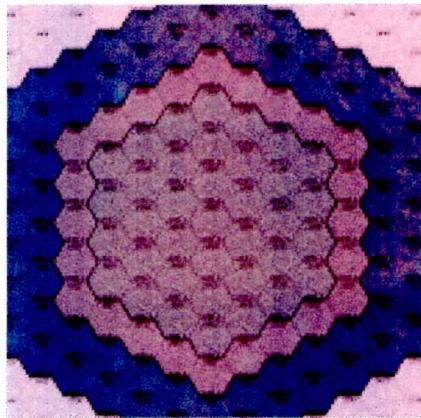


Ok, looks good. Now I also want some “ramparts” that my mechs can use for partial cover, but I don't want these to paved. So I delete the paved terrain from my hex and raise it up another level. I then paint a ring of this hex type around my plateau.

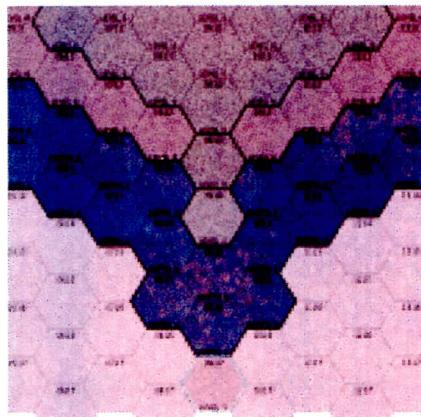


Ok, lets make this place really tough to get into. How about a moat? First, I need to reduce my terrain back to level 0 height. The easiest way to do this is hold down ALT and left click on a plain hex. This will make that hex the hex in my hex

editor. I then add water terrain to my hex. The level of the water terrain gives the depth. I give it a level of 3, which gives me depth 3 water with a surface at height 0. I then paint this around my base:

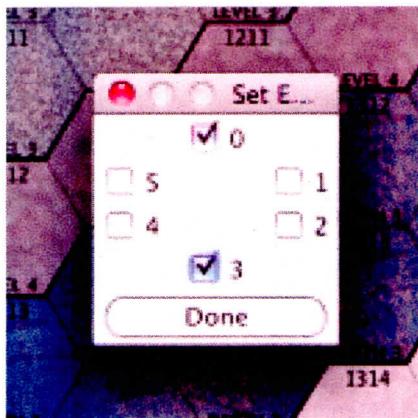


That should keep the bad guys out. The only problem is that I don't have any way to get in either. I need to give myself an entrance. With some quick changes to elevation and a little repainting, I can make an entrance:

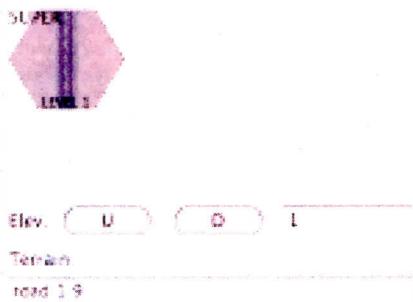


I still need a bridge to get across that water. First, however, I want to paint a road

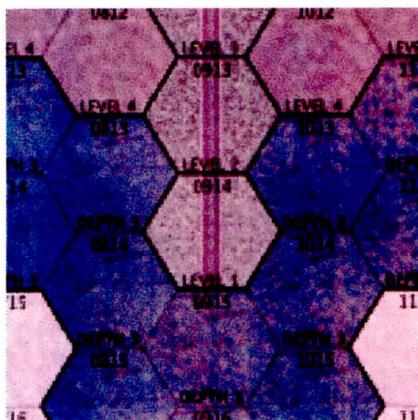
onto my entrance. Roads are a little trickier than most terrain. You have to specify exits that you want your road to use. The exits tell the map editor what direction the road should go in. I want roads that run north to south, so I click on the “Set Exits” button once I have roads selected and enter the following:



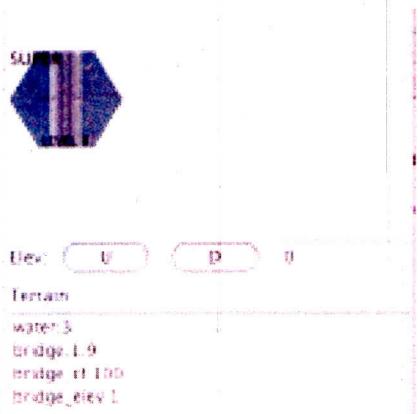
Once I include this terrain, my hex should look like this:



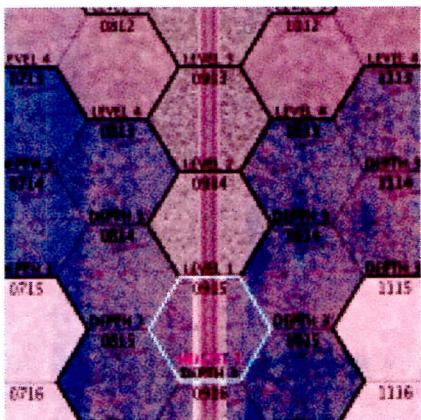
Painting roads onto the map is easy. If I hold down the SHIFT key while I paint, the map editor will add this terrain without changing the other terrain already present. When I am done, I get this:



Now I just need the bridge to get my units over the water. Bridges actually require three pieces of terrain in order to function properly. First, you need the bridge terrain itself. Second, you need the bridge\_cf terrain which gives the construction factor for the bridge. Third, you need the elevation of the bridge. Finally, just like roads you also need to set exits in the bridge terrain itself, to tell the map editor where the bridge is going. My bridge is running north to south, just like my roads. Here is what my bridge hex looks like in the editor:



I set the bridge CF to 100, so it won't collapse easily under the weight of my units. I also set its elevation to one, because it is going to connect to elevation 1 hexes. Now I just paint my bridge over the water and I get:

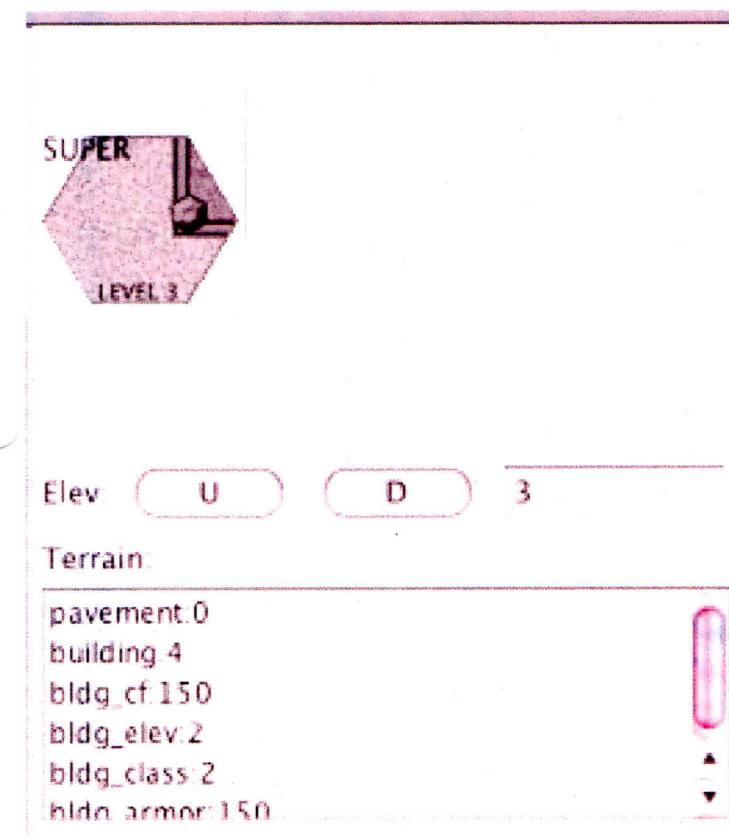


Ok, now I have an entrance to my fortress. My final task is to actually put some buildings in my base. I am going to start with my main command center which will be a heavily armored and hardened fortress building. Just like bridges, there are three terrain types that are necessary to make a building. The first terrain type is the building itself. The levels for this terrain type correspond to (1) light, (2) medium, (3) heavy, and (4) hardened. The second terrain type is the bldg\_cf which defines the construction factor of the building. The third terrain type is the bldg\_elev which defines how tall the building is.

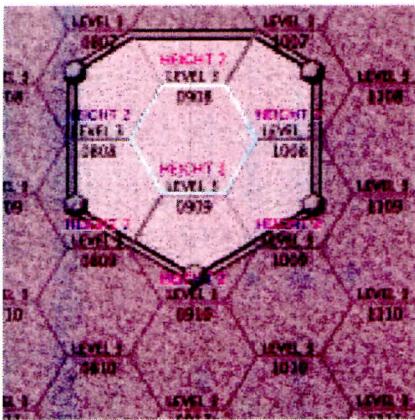
There are also two other building terrains that are not necessary, but add further detail. The first is bldg\_class which defines the class of the building. The levels here correspond to (0) standard, (1) hangar, (2) fortress, and (3) gun emplacement.

You don't actually need to enter anything here if you have a standard building as the building will default to standard in the absence of a class. The second terrain is bldg\_armor where level indicates the amount of armor on the building.

In the case of my fortress, I want a hardened (CF150) building of level 2 height with 150 points of armor. After adding all of these features my hex editor looks like this:

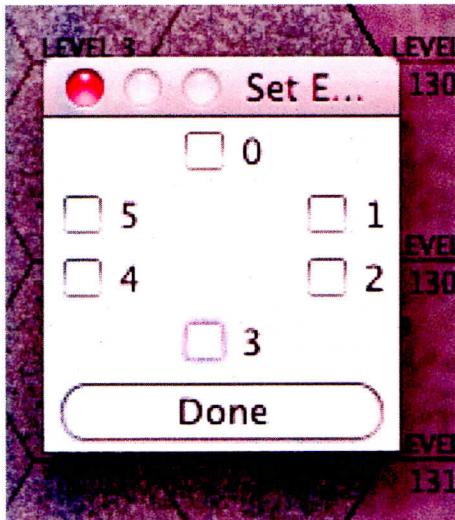


Now I just need to paint this building onto my map. You will notice that the map editor will automatically connect adjacent hexes into the same building. I will discuss below how this can actually be prevented in the case where you want separate buildings. In my case, I paint seven hexes together to create my HQ:



Ok, now I want a few single hex standard light buildings of height one, to represent various administrative offices. The problem here is that if I try to paint them on adjacent hexes, the map editor will attempt to combine them into a single building, when I actually want separate buildings. This can be prevented by explicitly setting the exits in my building terrain. The “exits” for buildings define where the building hex thinks its connected to another building hex. So if my building has an exit to the north, then it thinks that the hex directly above it contains a building hex that is part of the same building. Unless you explicitly set these exits, the map editor will set them for you when it finds adjacent building hexes of the same type.

In order to make sure my standard buildings remain single hex buildings, I click on the “set exits” button for the building terrain and turn off all the exits, like so:



Now, my hex editor should look as follows:



Elev. U D 3

Terrain:

pavement 0  
building 1 0  
bldg\_cf 15  
bldg\_elev 1

Remove Terrain

building

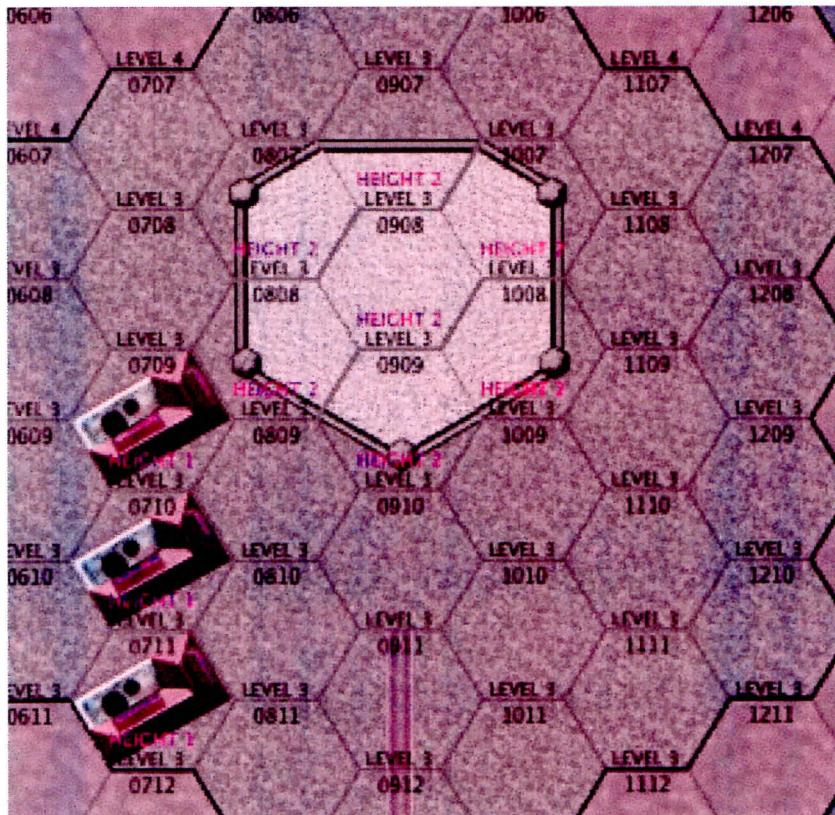
1

Set Exits

A

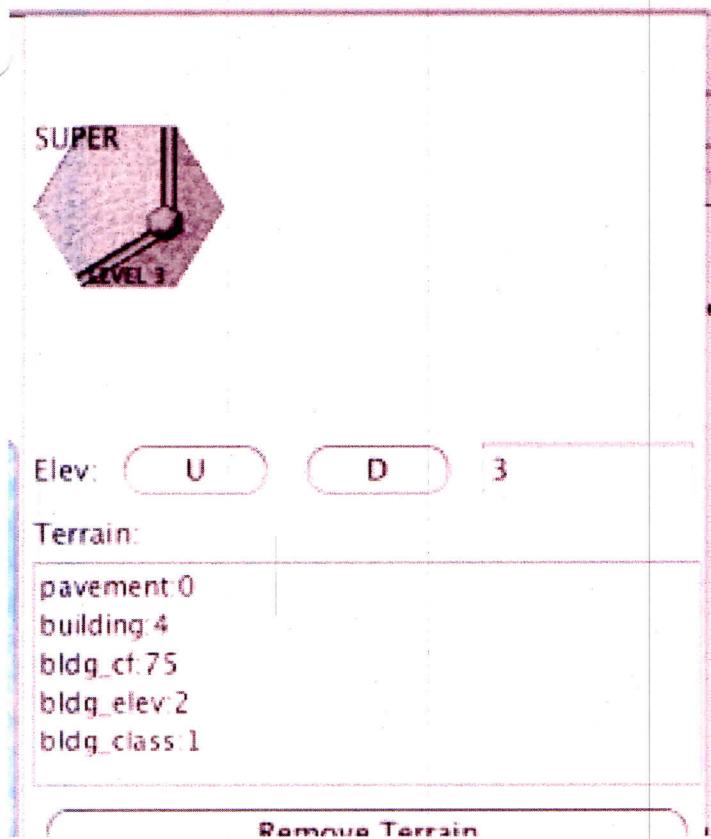
0

I then paint three of these buildings in a line below the fortress:

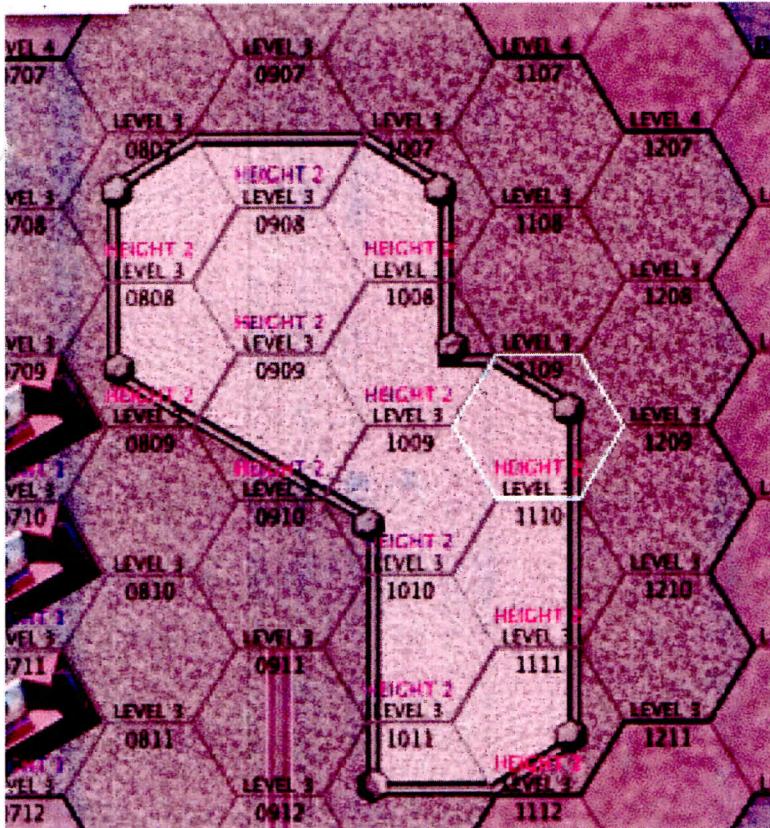


I also need a hangar to put my mechs in. I will construct a height 2 hardened (CF75) hangar building. The hex editor will look like this after I enter in all the

relevant terrains:



I start painting this hangar to the right and below my fortress, but looks what happens!



The map editor is being too smart. Not realizing these buildings are different classes, it is “smooshing” the hangar and the fortress together. But not to fear. In the hexes where the smooshing is happening, I can explicitly set the exits, so that the buildings are not smooshed together. I set the exits as follows

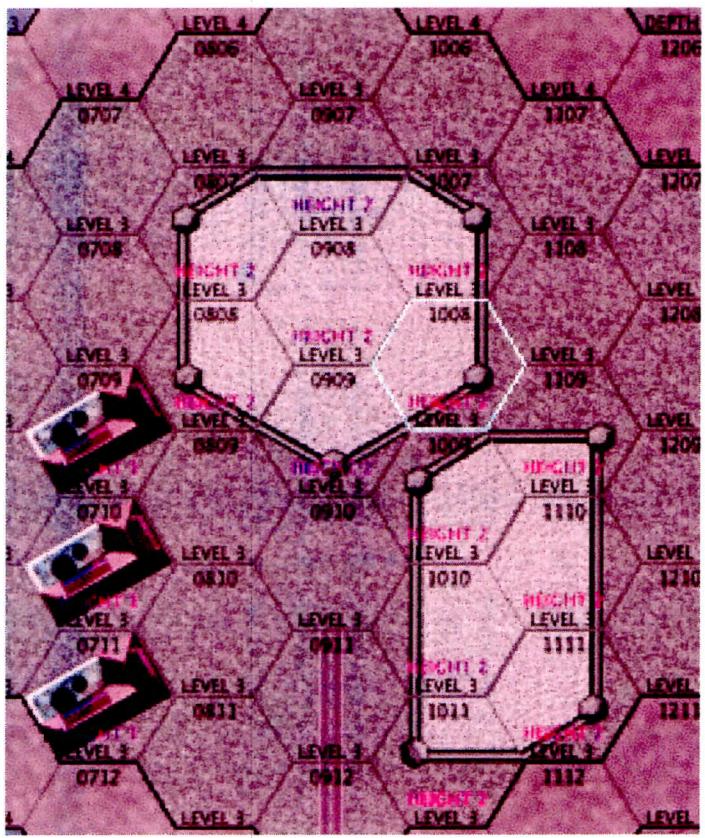
Hex #1109: S, SW

Hex #1009: S, SE, NE

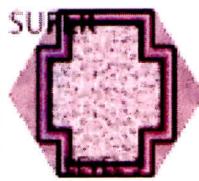
Hex #0909: NW, N, NE

Hex #1008: SW, NW, N

Now my buildings look nicer:



I have one final building type to add. I need to add some gun emplacements to provide static defense. My gun emplacements will be heavy (CF90) buildings of height 2 with 50 points of armor each. Once I have added all the necessary components, my hex editor looks like so:

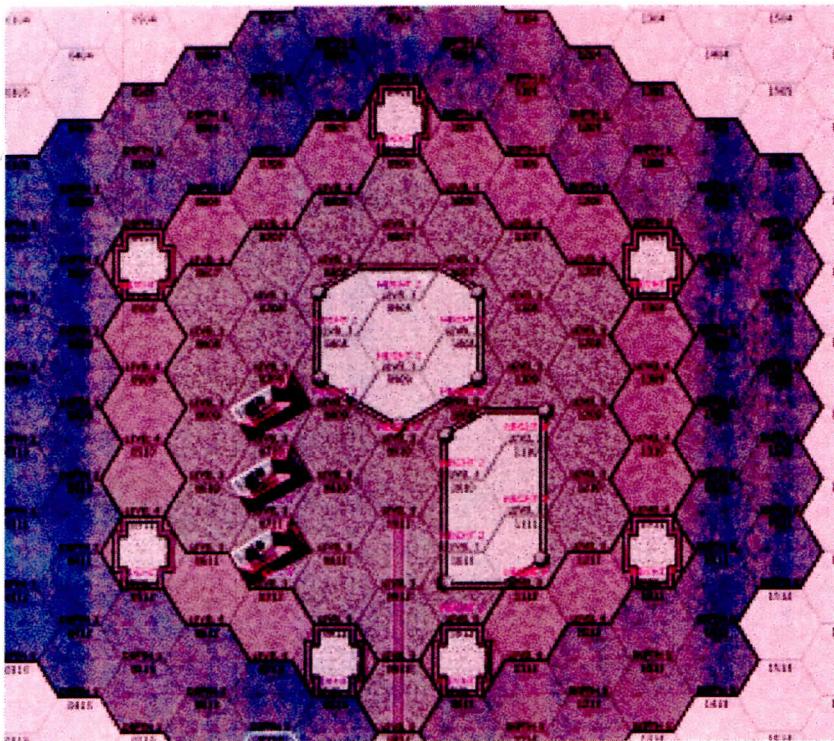


Elev:   3

#### Terrain

building:3  
bldg\_cf 90  
bldg\_elev 2  
bldg\_class 3  
bldg\_armor 50

Notice that I don't actually add any guns to my gun emplacements. Weapons cannot be added on the map editor. You have to add guns to your gun emplacements by selecting "gun emplacement" units in the main MegaMek lobby and then "deploying" those guns into your gun emplacements. I will show below how this can be done. For now, I just distribute my gun emplacements around my ramparts:



That's it for my actual map. I just need to save it. The next step is to actually load some guns into my gun emplacements from within MegaMek.

MegaMek only comes with two gun emplacements that are really just designed to showcase the idea. I want to design some custom gun emplacements for my fortress. First, I decide that each gun emplacement will be mounted on a turret, for greater flexibility. I also decide to focus on long-range weaponry, so that my turrets can't be picked off at a distance before they can be effective. I give each turret the following loadout:

- Two ERPPCs
- Two LRM20s (4 tons standard ammo, 2 tons Thunder-Augmented ammo)

Gun Emplacements can be created using \*blk files. These are just text files that use XML “tags” to incorporate information. You can easily create your own just by opening up the existing \*BLK files in data/mechfiles/ge with a text editor (like NotePad) and editing it yourself. Here is the BLK file for my turrets:

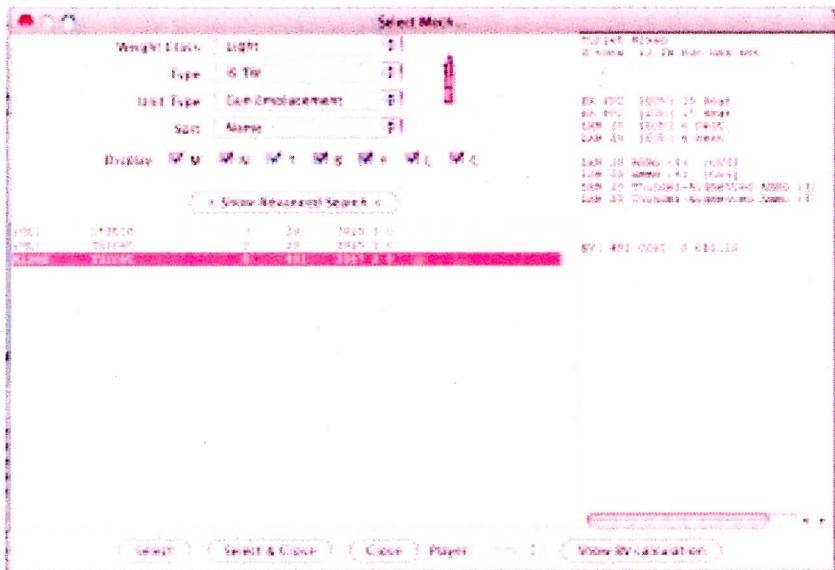
```
#building block data file
<BlockVersion>
1
</BlockVersion>
```

```
#Write the version number just in case...
<Version>
MAM0
</Version>
<UnitType>
GunEmplacement
</UnitType>
<Name>
Turret
</Name>
<Model>
Mixed
</Model>
<Year>
3067
</Year>
<Type>
IS Level 2
</Type>
<Turret>
1
</Turret>
<Guns Equipment>
ISERPPC
ISERPPC
ISLRM20
ISLRM20
ISLRM20 Ammo
ISLRM20 Ammo
ISLRM20 Ammo
ISLRM20 Ammo
ISLRM20 Ammo Thunder-Augmented
ISLRM20 Ammo Thunder-Augmented
</Guns Equipment>
```

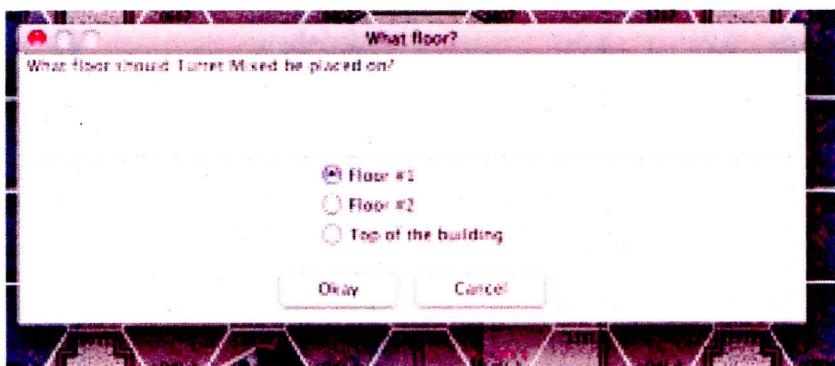
I name the gun emplacement “Turret” with a model of “Mixed.” The Turret tag is important. A 1 here indicates a turret, while a 0 (or nothing) indicates a static gun emplacement. The other important tag is the Guns Equipment tag. Inside of this tag

I put all of my weapons and ammo for the turret. Use the equipment.txt file in docs to make sure that you are using equipment names that MegaMek will recognize. I save this text file as MyTurret.blk in the data/mechfiles/ge folder of MegaMek.

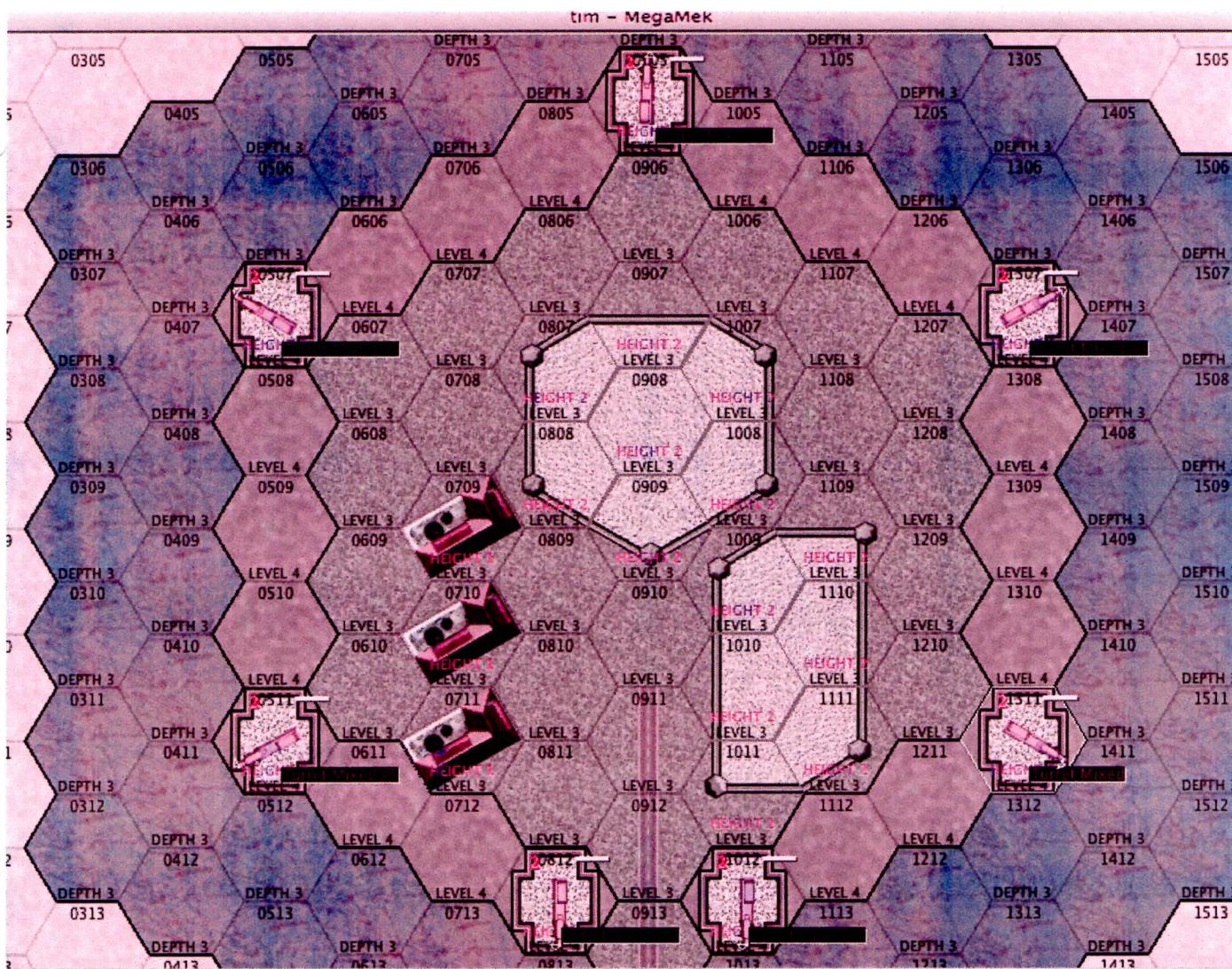
Now when I open Megamek and go to gun emplacements, there it is!



I select seven of these gun emplacements and then make sure I have my fortress map loaded, before I hit done. Now its time for deployment. I want to deploy each of my gun emplacement units into a gun emplacement building. You will notice that when you select a building, you will get a pop-up asking you which floor of the building to deploy into, like so:



Be sure to deploy all the turrets to the top of the building for the best visibility. I deploy all seven of my gun emplacement units to the seven gun emplacement buildings and my mech base is now complete!



Come and get it!

Here are copies of [my map](#) and my [turret BLK file](#).

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1.

Raven34b

January 8th, 2011 at 21:32 | #1

[Reply](#) | [Quote](#)

Thank you for the info on buildings on the maps of MM, got most of it

down, but still cannot figure out fluff. Got a couple of them through trial and error, but was wondering if there is a place i could get all for the details on “fluffing” the maps i make.

2.

Taharqa

January 9th, 2011 at 18:57 | [#2](#)

[Reply](#) | [Quote](#)

There are a set of \*.tileset files in the map images directory that define all of the codes, but it can be a little tricky to read. I generally just use trial and error to figure out fluff, although I don't use much fluff on my maps.

1. No trackbacks yet.

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