



ATF Power Toolkit

ATF Power Toolkit

The **ATF Power Toolkit** was created to help power users get the most out of the **Armored Task Force** game engine. It allows you to create new maps and change or create new databases for the **ATF Scenario Builder** to use in creating scenarios. The **Toolkit** did not ship with the original version of **Armored Task Force** but is installed automatically with all upgrades to **ATF**, version 1.02 or later. To get the latest upgrade, go to www.prosimco.com.

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1. How to Open a Database

A scenario database holds all of the reference information on which the scenario is built. It contains all of the information about the vehicles, ammunition, and weapons in the scenario. It also contains all of the sounds and graphics for all of the units and hierarchies in a scenario.

Creating a new database from scratch is a huge undertaking and, really, beyond the scope of this tutorial. In this tutorial, we will make changes to the existing **Armored Task Force** database. This is usually the best way to attack just about any mod you want to make to the game.

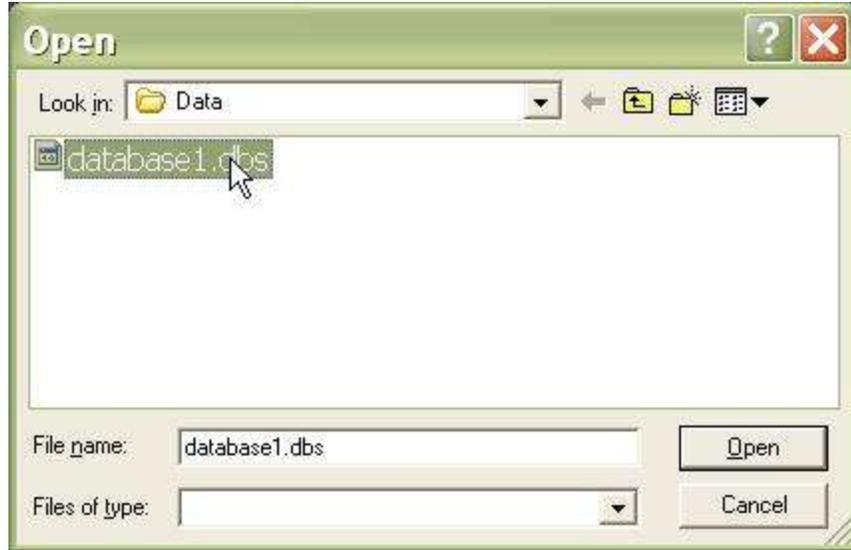
1-1. Select the database:

All changes to an **Armored Task Force** database are made using the **ATF Power Toolkit**. To continue with the topics in this tutorial, you must open this application. The **ATF Power Toolkit** did not ship with the original version of **Armored Task Force**, but is included with all of the free upgrades, beginning with the version 1.02 upgrade. You can get the latest upgrade free at www.shrapnelgames.com.

1. Select the 'Open...' function from the 'Database' menu in the **ATF Power Toolkit**.



2. Select the database you wish to make changes to. 'database1.dbs' is the default database for **Armored Task Force** and is a protected file name. After you make changes to this database, you will have to save it with a new name. For more information, see 'Save a database'.



2. How to Create a New Piece

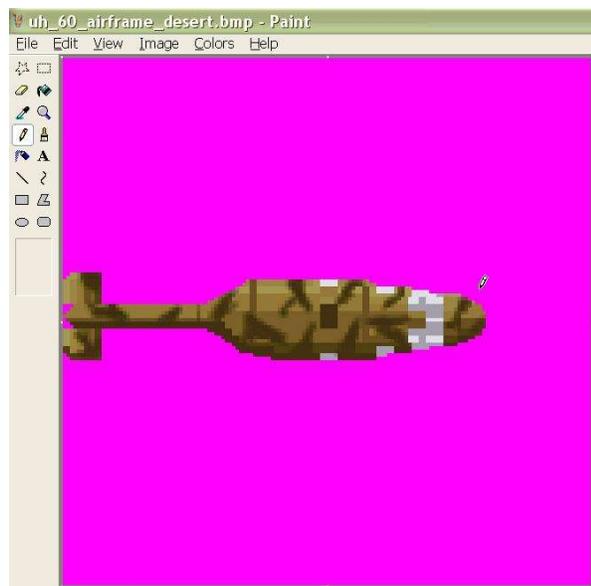
A piece is a multi-framed image that depicts multiple aspects of a single object. It is used to display a graphic representation of a vehicle on the game map.

This topic demonstrates how to create a piece and add it to a database. To actually make a piece correspond to a vehicle, you must edit the vehicle. For more information on this, see 'Create a new vehicle'.

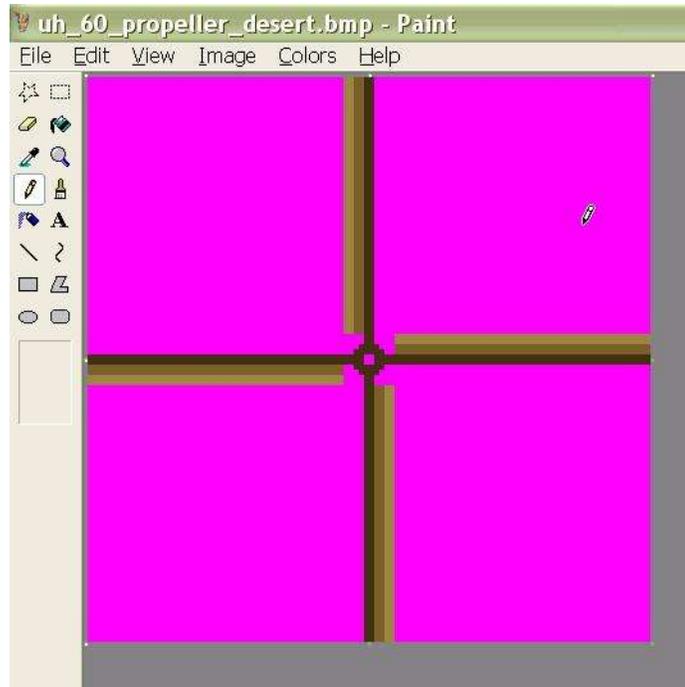
2-1. Create the graphics:

The first step is to create the image that will be displayed on the screen.

1. using your favorite drawing application, create a single image of the graphic. If the vehicle has a turret or a propeller (as is the case with our piece), you must put the axis of rotation of the graphic at the center of the image. The background for the image must be 'magenta' (red = 255, blue = 255, green = 0) in order for it not to appear as part of the image when drawn on the screen.



2. We are also going to draw the propeller, as a separate image. Again, we are going to center the axis of rotation of the image in the center of the image so that it will be drawn properly on the screen.



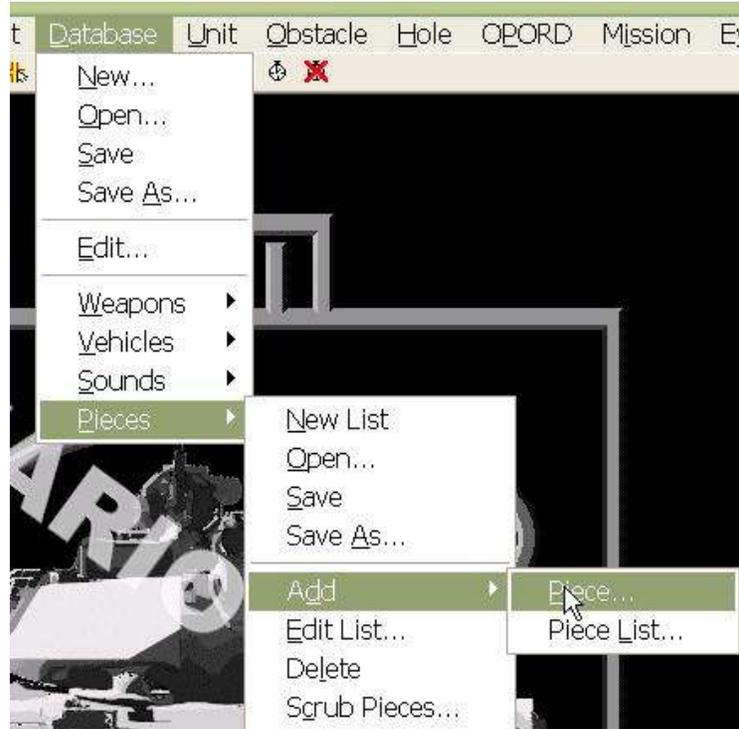
3. We are going to increase the size of the image and copy and rotate it to create frames. The first frame must point north. The other frames should be rotated by equal angles, completely through 360 degrees (the last image should be rotated to the left by a distance of the rotation angle from the first frame). It is very important that this rotation be done without blending the background color into any of the images. Otherwise, an ugly pink border will surround the image when it is drawn in **Armored Task Force**. The number of frames is not set. You can use any number of frames, as long as they are each rotated by an equal angle. But the more frames you use, smoother rotation of the image will be. We are going to repeat this step for the propeller image. Both images should be saved in the 'Data' subdirectory of the **Armored Task Force** install directory. The width of the frame should not exceed 640 pixels wide. There is no limit on the height of the image.



2-2. Add the piece to the database:

Now that we have built the image, we need to add it to the database. We need to start the **ATF Power Toolkit** application and open a database to continue.

1. Select 'Add Piece...' from the 'Pieces' sub-menu of the 'Database' menu.



2. Select the image file for the piece you want to add to the database.



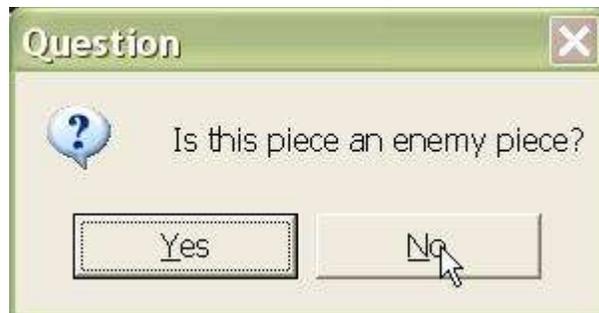
3. Input the name that you will use to reference the piece inside the database. This is the name you will input when prompted for a piece name in the Vehicle Edit dialog in order to display the piece.



4. You must tell the database how many frames wide and high the source image is, as well as how many total frames are in the image.



5. You need to tell the database whether this is an enemy piece. If you select 'Yes' the piece will be added as an enemy piece. Selecting 'No' will designate this as a friendly piece. **Armored Task Force** uses this data to decide whether the player is playing as 'Red' or 'Blue' during a game. If more than half of the player's vehicles are 'Red', icons and dots on the Overview Map will be displayed as Red during game play.



3. How to Add a Vehicle to the Database

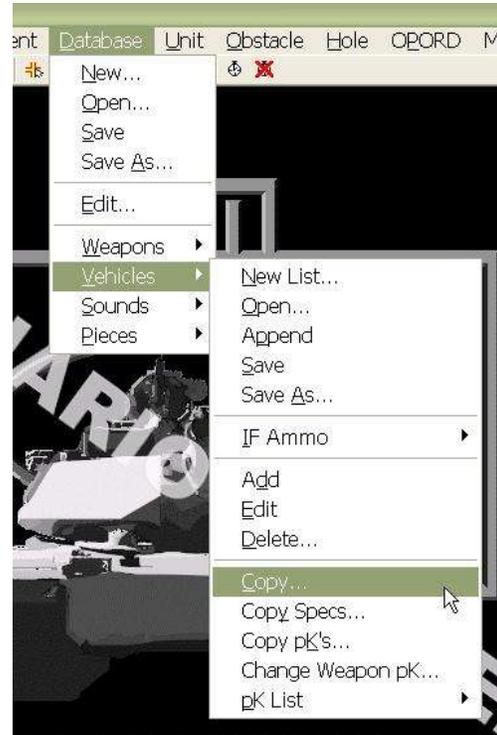
A vehicle object in the database contains all of the data defining a vehicle type, including its special capabilities, its starting ammo, its speed and dimensions. Each unit in the game refers to a vehicle in the database and derives its capabilities from the vehicle object in the database.

We are going to build a UH-60L by copying an OH-58D to a new vehicle object and changing its attributes. You can also make a vehicle by starting from scratch, but you must then manually input all of the Kill Odds data for every weapon in the game. This is not the preferred method for creating a vehicle.

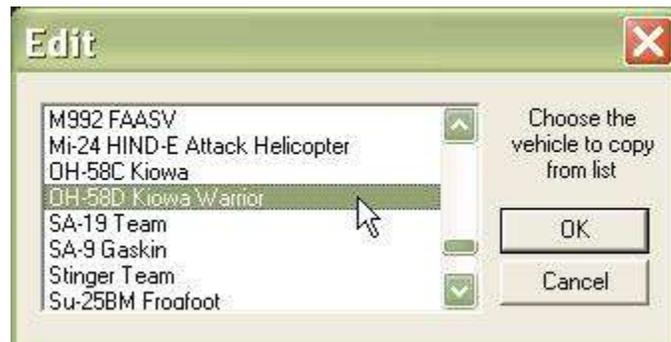
3-1. Create a vehicle:

We are going to build a vehicle by copying an existing vehicle to a new vehicle object. Then we are going to edit the copied vehicle to reflect the properties we want it to have.

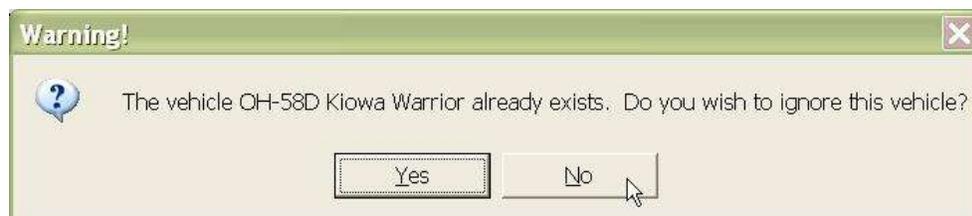
1. Select the 'Copy...' function from the 'Vehicle' sub-menu of the 'Database' menu in the **ATF Power Toolkit**.



2. Select the vehicle you wish to copy. Ideally, you select a vehicle which has similar vulnerabilities to direct fire weapons. Kill Odds are time consuming to edit, so if you can start with a close match, you will save time.



3. Select 'No'.



4. Select a name for your new vehicle.



5. Fill in the edit boxes for the vehicle data.

- Speed. The speed of the vehicle during normal movement.
- Sprint Speed. The speed while under the 'Sprint' Order.
- Reverse Speed, Turn Speed, Turn Radius. Currently not implemented.
- Target Value. Used by the AI to select targets for direct and indirect fire.
- Threat Value. Used by the AI to select targets for direct and indirect fire.

- Weight. Currently not implemented.
- Height, Length, Width. Dimensions of the vehicle. If the vehicle has a turret, these dimensions are not included in this total.
- Time to Move. How long it takes for a unit to start moving after the unit's 'Stop' Order is canceled.
- Time to Enter Defilade. How many seconds it takes a unit to enter defilade after the 'Defilade' Order is given.
- View Range. This is the base range at which a unit will detect other vehicles. It is affected by vehicle and target movement and posture.
- Protection Value. A value from 1-100 which indicates how susceptible occupants are to suppression (lower number means easier to suppress).
- NBC Detect. A number from 1-100 which indicates how good the vehicle is at detecting chemical agents.
- BOS (Battlefield Operating System) Flags. Check all of the boxes which describe the function of your vehicle. These attributes are used by the game AI to decide how to fight this vehicle type as part of Missions.

Finally, we delete the old weapon and click 'Add' to add a new weapon to the vehicle.

6. Go back to the image for your new vehicle in whatever drawing program you prefer and try to identify the location of weapons on the image. This is the place from which weapons bursts will be shown when the vehicle is firing. On a tank, this might be the turret muzzle, but on our aircraft, this is the door gun.

The value you need is from the center of the vehicle (with up being the positive Y axis and right being the positive X axis). In other words, you need to subtract the coordinates of the center from the coordinates of the weapon location and then multiply the Y value by -1 (huh?).



This number will be input into the Flash Offset X, and Y for the aircraft. Right now, flash graphics are not implemented. But this may change someday

as the **Armored Task Force** game engine is upgraded, so it is a good idea to input this value so that your vehicle and database will remain 100% compatible when the engine is upgraded.

7. We were presented with this dialog when we selected the 'Add' button from the vehicle dialog. If this were a vehicle with a turret, we would add the weapons to the turret, not here, unless they were connected to the chassis of the vehicle, but our aircraft does not have a turret.

Click on the 'Weapon' button and select the weapon, and then fill out the form.

- Ammo. Total number of rounds the vehicle carries as its basic load for this weapon.
- Left, Right Limit. These numbers describe the left and right extent of the weapons traverse. Enter -99 if there is no limit. Directions are described with zero being straight ahead and 0 to -3200 being to the left of straight ahead and 0 to 3200 being right of straight ahead. Our door gun only fires to the right of the aircraft.
- Flash Offset X, Y. This is the number we just got from the image in the last step.

- **Suppression Radius.** This is the radius that can be suppressed on the ground with this weapon when the unit has the 'Suppress' SOP set.
- **Percent Infra-Red.** A value from 1-200. This is how well the vehicle sees in infrared (used when looking through smoke).
- **Percent Night Vision.** A value from 1-200 describing how well the vehicle can see during limited visibility (night).
- **Co-Axial.** If checked, this weapon is fixed to either the chassis or the turret of the vehicle which it is a part. If this is the case, the vehicle or turret will be rotated when the weapon engages targets.
- **Shoot Moving.** If checked, this weapon can be fired while the unit is moving.

8. We are going to delete the special attributes that do not apply to our aircraft. Then, we select the 'Rotary Wing' item and select 'Edit' so that we can tailor it to our aircraft.

Vehicle Data

0L Blackhawk Vehicle Name 5 Weight (0-5) Kill Odds... OK

55 Speed (m/s) 5.33 Height (m) IF Effects... Cancel

78.11 Sprint Speed (m/s) 15.26 Length (m) Towed?

14 Reverse Speed (m/s) 4.37 Width (m)

600 Turn Speed (mils/s) 15 Time to Move (sec.)

0 Turn Radius (m) 999 Time to Enter Defilade

70 Target Value 200 View Range

10 Threat Value 25 Protection Value

1 NBC Detect

BOS Flags:

Attack Fixed Wing

Artillery Rotary Wing

AT Troop Carry

Dismount Engineer

Intel CSS

Recon C2

Air Defense Observer

Auto-Fill

Weapons

AGM-114L Longbow Hellfire Add... Edit... Delete

Special Attributes

Observer Add... Edit... Delete

Rotary Wing

dstr_veh.wav Destroy Sound...

Vehicle Sound...

Friendly Aviatio NATO Piece...

oh_58_airframe Graphic Piece...

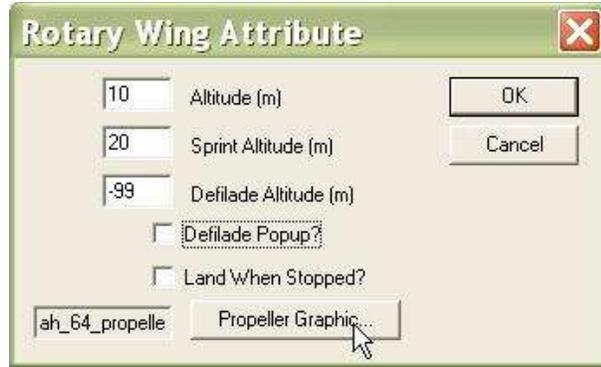
Hit Graphic...

destroyed_uh_ Destroyed Graphic...

Help Picture...

9. First we fill out the form:

- Altitude. The height above ground level at which the vehicle flies while moving normally.
- Sprint Altitude. The altitude at which the aircraft flies when sprinting.
- Defilade Altitude, Defilade Popup. If defilade popup is checked, then when the vehicle is in defilade, it will fly at the 'Defilade Altitude'.



- Land When Stopped. Self-explanatory. This needs to be checked if we have troop carrying aircraft (which we do).

Now we are going to change the propeller graphic...

10. Select the UH-60L propeller graphic that you drew using your favorite drawing application.

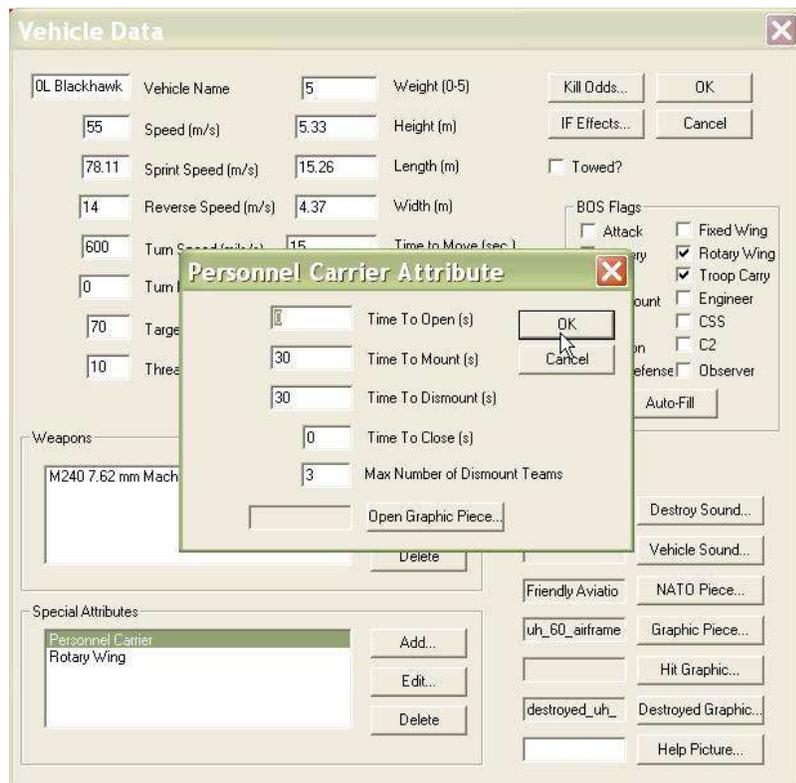


11. After we click 'OK' on the Rotary Wing Attribute dialog, we are going to select the 'Add...' button and select 'Personnel Carrier' so that our aircraft can carry soldiers.

We simply fill out the form.

Time to Open. The amount of time required to open the vehicle to accept dismounts. This is most applicable to APC's and other vehicles with large, heavy back ramps.

- Time to Mount. How much time, per dismount team, is required to load the aircraft with the team and its equipment?
- Time to Dismount. Time to unload all of the dismount teams aboard an aircraft.



- Time to Close. After mounting or dismounting is complete, how long it takes to close the carrier.
- Max Number of Dismount Teams. Self-explanatory.
- Open Graphic Piece. You can create a separate graphic piece to display the vehicle while it is open and specify it here.

12. Now we will specify the graphics which represent the vehicle on the map. First, we will specify the NATO icon which represents the vehicle by selecting the 'NATO Piece' button...

Vehicle Data

0L Blackhawk Vehicle Name: 5 Weight (0-5): Kill Odds... OK

55 Speed (m/s): 5.33 Height (m): IF Effects... Cancel

78.11 Sprint Speed (m/s): 15.26 Length (m): Towed?

14 Reverse Speed (m/s): 4.37 Width (m):

600 Turn Speed (mils/s): 15 Time to Move (sec.):

0 Turn Radius (m): 999 Time to Enter Defilade:

70 Target Value: 200 View Range:

10 Threat Value: 25 Protection Value:

1 NBC Detect:

Weapons

M240 7.62 mm Machine Gun Add... Edit... Delete

Special Attributes

Rotary Wing Add... Edit... Delete

BOS Flags

Attack Fixed Wing

Artillery Rotary Wing

AT Troop Carry

Dismount Engineer

Intel CSS

Recon C2

Air Defense Observer

Auto-Fill

dstr_veh.wav Destroy Sound...

Vehicle Sound...

Friendly Aviatio **NATO Piece...**

oh_58_airframe Graphic Piece...

Hit Graphic...

destroyed_uh_ Destroyed Graphic...

Help Picture...

13. ...And specifying the rather generic 'Friendly Aviation Blue'.

Edit

engineer_flag

Friendly ADA Blue

Friendly Ammunition Vehicle Blue

Friendly Armor Blue

Friendly Attack Aviation Blue

Friendly Attack Fixed Wing Blue

Friendly Aviation Blue

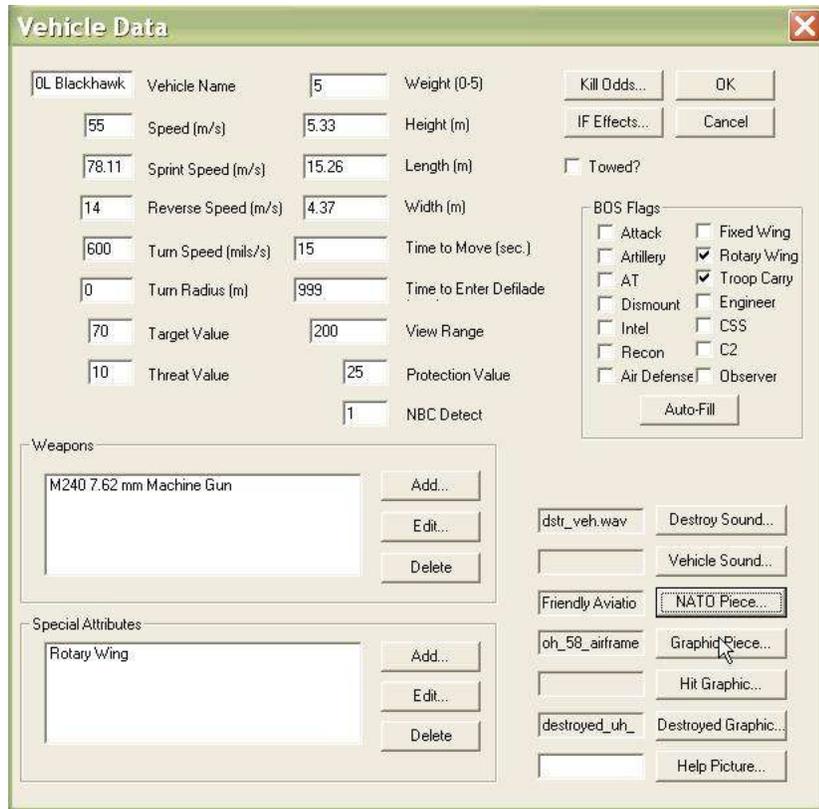
Friendly Aviation Mine Layer Blue

Choose a Piece from the List

OK

Cancel

14. Now we are going to pick the graphic piece we created so that, when we have selected 'Vehicle Icons' in our 'View Options' window, our new graphic piece will be displayed. Select 'Graphic Piece' and then select the 'UH-60L' graphic that we created in the previous topic.

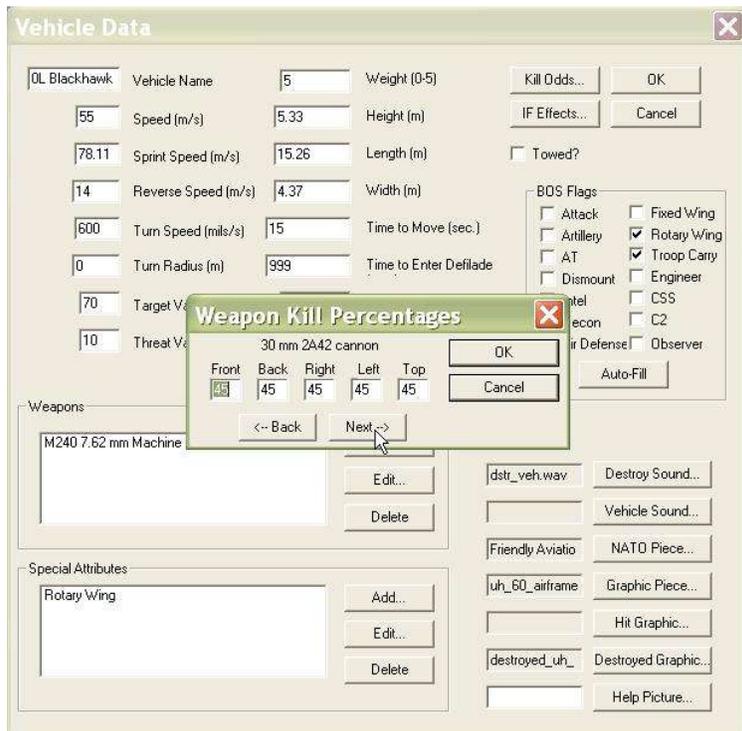


15. If you wish to change the vulnerabilities of the vehicle to direct fire weapons, you can do so by selecting 'Kill Odds'. You will be presented with the 'Weapon Kill Percentages' dialog which allows you to change the pK (percent kill, odds a weapon will kill the vehicle if hit) for each weapon in the database.

pK is separate from pH (percent hit, the odds a weapon will hit a vehicle). pH is based on a complicated algorithm and can not be directly edited in the database. It relies on vehicle movement, visibility, weapon magnifications, and many other factors.

Here is how to use the dialog.

- Front, Back, Left, Right. These are the odds (from 1-100) that a hit on this facing with the specified weapon will destroy the vehicle.
- Top. This value is not currently implemented, but it is a good idea to fill it in so your database will continue to be compatible when the **Armored Task Force** game engine is upgraded, later.

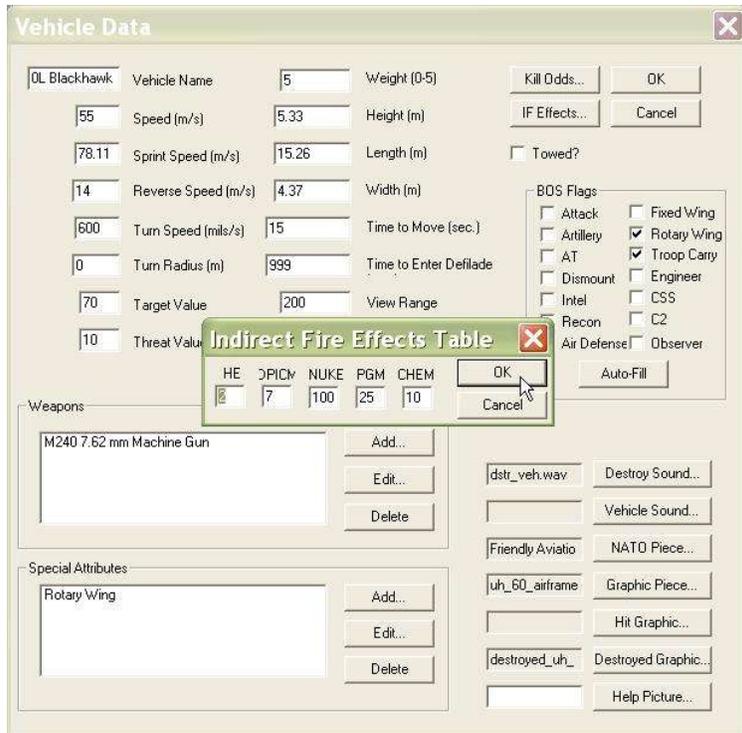


- Back, Next. Cycle through all of the weapons in the database.

You can also edit these values by using the 'pK List' functions, 'Import' and 'Export'. With these functions and a program like Microsoft Excel*, you can export all of the current database values, edit them in a tabular format, save them as a comma-separated value list, and import them back into the game.

16. You can also edit the vulnerability of your vehicle to indirect fire, by selecting the 'IF Effects' button.

These are base pK's (percent kills, odds, from 1-100, that a vehicle will be killed) used if the vehicle is within the blast radius of an indirect fire impact. They are modified by the caliber of the weapon (a rocket will have higher odds than these, while a mortar will have lower odds). The base value here is for a U.S. 155mm round.



- HE. High explosive rounds.
- DPICM. Dual-purpose, improved, conventional munitions (bomblets).
- NUKE. Nuclear rounds.
- PGM. Precision guided munitions (laser guided, 'smart' munitions).
- CHEM. Chemical munitions effects. The odds the vehicle will die when first entering a chemically contaminated area.

4. How to Save a Database

When you make changes to a database, you must save them so that the changes are not lost. However, the file 'Database1', and its associated Piece List, Vehicle List, Weapon List, and Sound List are protected, so, if you make changes, you must save them with a different name.

4-1. Save the database:

1. Select the 'Save' functions from the 'Database' menu in the **ATF Power Toolkit**. If you have opened the original **Armored Task Force** database, you will be prompted to provide names for the various pieces of your new database. We recommend using the same file name, with different extensions, for your database components, so you can easily discern what pieces go to your database. It is also not a good idea to give your database the same name as one of your custom scenarios, as it will be hard to distinguish your database files (which can be used in multiple scenarios) from the scenario files which apply only to your scenario.



2. To use your database in a scenario, after creating a new scenario using **ATF Scenario Builder**, select 'Import Database' from the 'File' menu. When, prompted, select your database and you will be all set! Your database will be loaded into the scenario.

5. How to Create a New Map

One of the most distinctive features of **Armored Task Force** is its ultra-realistic maps, made from real, GIS topographic data of real locations across the world. Now, with the **ATF Power Toolkit**, for the first time in any **ProSIM Company** product, you can build and add your own topographic maps.

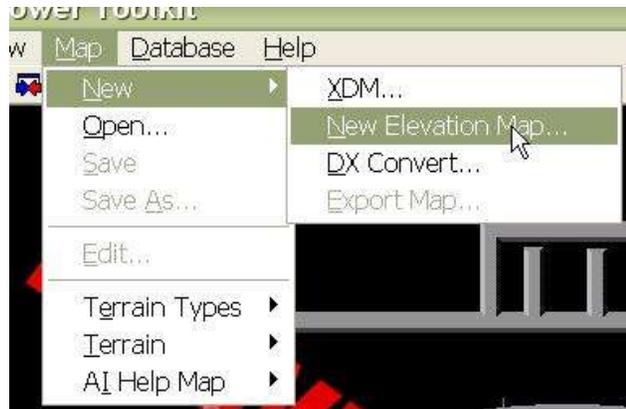
The capability to import USGS format DEM's is a highly advanced feature, and well beyond the scope of this Tutorial. It requires an advanced understanding of cartographic principals and GIS data formats. Should you want help doing this, contact us on our [web forum](#)? In this tutorial, we will begin with topographic data in the custom, **ProSIM Company** XDM format. You can download free XDM format data at the **Armored Task Force** game board, at the [web forum](#).

In this tutorial, we are going to try to, as closely as possible, exactly recreate the terrain around Bihac, Bosnia-Herzegovina. If you wish to create a map without exactly replicating real terrain, you can skip several of the steps in this topic. These steps are indicated as they arise. In order to recreate real terrain you will also need a 1:50,000 or 1:100,000 map of the terrain you wish to replicate. The map (military maps work best) needs to indicate UTM (Universal Transverse Mercator) coordinates, as well as any trees, roads, or other special terrain which are present on the actual terrain.

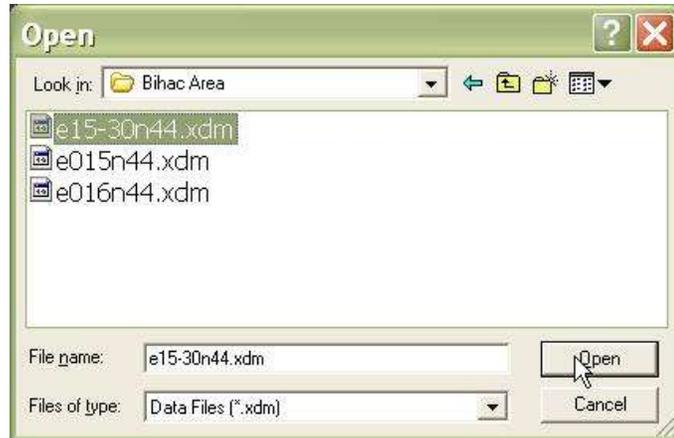
5-1. Create an Elevation Map:

Building **Armored Task Force** maps requires the **ATF Power Toolkit**. To continue with the topics in this tutorial, you must open this application

1. Select 'New Elevation Map' from the 'Map' menu in **ATF Power Toolkit**.

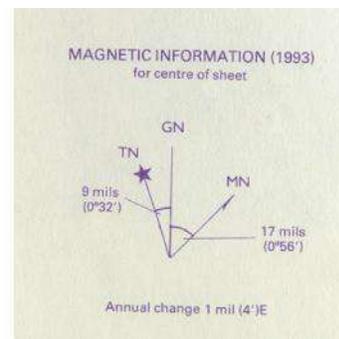


2. You will be prompted for an XDM from which to make the map. If you wished to create a map from a USGS format DEM, you could change the entry in 'Files of type:' to load a DEM.



3. TO EXACTLY RECREATE REAL TERRAIN ONLY. Go to the margin information of your 1:50,000 or 1:100,000 map of the terrain and look for the 'Magnetic Information'. We need to extract the true north (TN) to grid north (GN) angle in mils. A clockwise angle is positive. A counter-clockwise angle is negative.

Also, from the margin information, you need to extract the two letters, 100,000 meter grid zone designators for the map.



4. TO EXACTLY RECREATE REAL TERRAIN ONLY. Next, we need to figure out how many meters there are in an arc-second of longitude. We need to find tick-marks along the bottom of the map which indicate minutes of longitude (there are sixty arc-seconds in an arc-minute). We are going to measure the number of meters (in map scale) between these tick marks. Then we are going to divide the number of meters by the number of seconds (minutes X 60). This will give us the number of meters per arc-second of longitude.



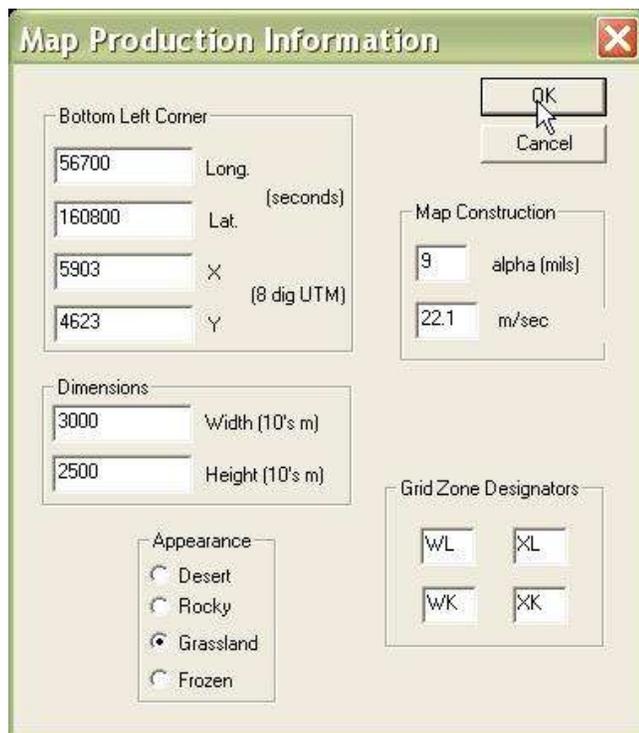
5. TO EXACTLY RECREATE REAL TERRAIN ONLY. We need to find the bottom left corner of the map. It needs to be at a location where we can determine both the longitude and latitude AND the UTM grid.

We also need to look at the map and decide the size of the map in meters high and wide. A map of a region like Bihac, with lots of trees and mountains, will bog down the engine if it is much larger than 20 X 20 kilometers. A map of wide open terrain like Saudi Arabia can be much larger. The maximum map size is 50 X 50 km.



6. You will be presented with the 'Map Production Information' dialog, which allows you to tell the **Power Toolkit** how to extract data from the XDM data file you have selected.

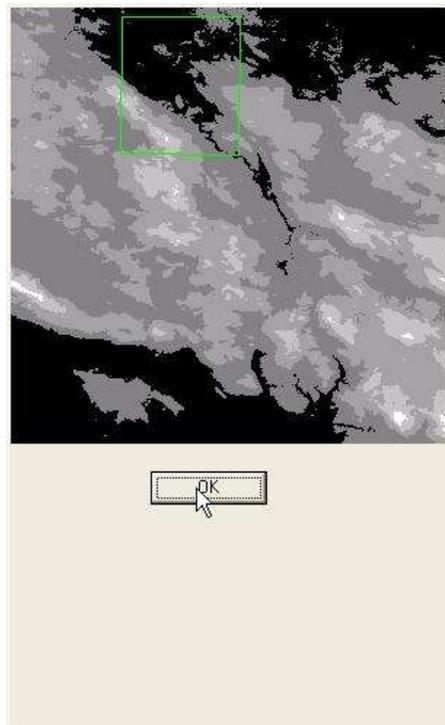
TO EXACTLY RECREATE REAL TERRAIN ONLY. Enter the numbers you have extracted from steps 3-5.



- Long. This is the longitude of the bottom left corner of the map, in seconds (there are 60 seconds in a minute and 3600 seconds in a degree). Negative values are west (of Greenwich, England) and positive values are east.
- Lat. The Latitude of the bottom left corner of the map in seconds. Positive values are north (of the equator) and negative values are south.
- The easting of the UTM eight-digit grid of the bottom left corner. In an eight-digit grid, the ones column represents tens of meters.
- The northing of the UTM grid.
- Width. The horizontal size of the map in tens of meters. The max is 5000.
- Height. The vertical size of the map in tens of meters. Again, the max is 5000.
- Appearance. These settings decide the color of the color map when it is drawn.
- Desert. Light-tan.
- Rocky. Red-brown.

- Grassland. Green.
- Frozen. White.
- Alpha. This is the rotation angle between the absolute axes of the XDM file from which you are extracting data and the data axes of the map you are creating. Clockwise is positive, counter-clockwise negative. TO EXACTLY RECREATE REAL TERRAIN ONLY. This is the True North-Grid North angle from step 3.
- m/sec. How the XDM data is "stretched" horizontally to make the new map. TO EXACTLY RECREATE REAL TERRAIN ONLY. The number of meters per arc-second of longitude from step 4.
- Grid Zone Designators. The two letter designator in front of the UTM grids that are displayed for the map. The bottom left entry is always used. The other values are only used when the easting and/or northing exceeds 9999. On real maps, the second letter of the grid-zone designator increases as you move north, and the first letter increases as you move right. TO EXACTLY RECREATE REAL TERRAIN ONLY. The 100,000 meter grid-zone designators from step 3.

7. This preview map indicates the orientation of your new map in the XDM map set. TO EXACTLY RECREATE REAL TERRAIN ONLY. **Do not click in this map!** Doing this will alter the settings you have made in the previous step and make your map inaccurate.

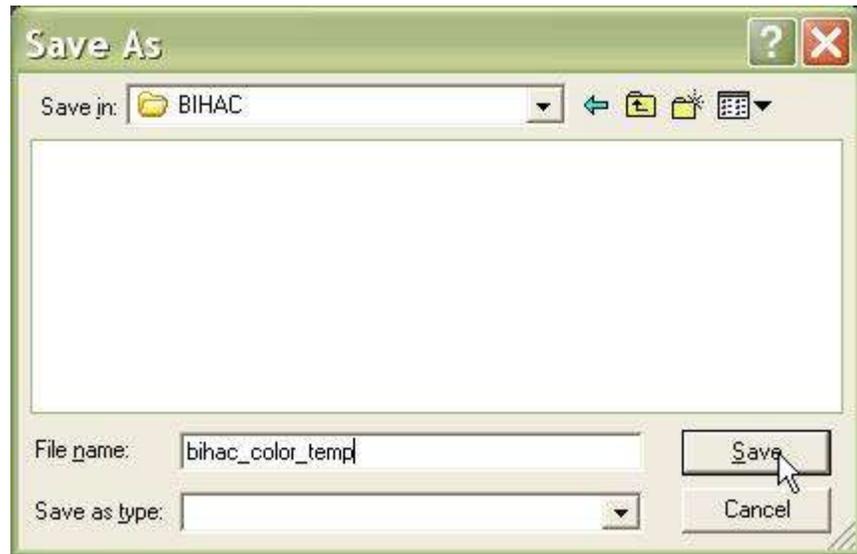


8. **ATF Power Toolkit** builds three components. A color map, a contour map, and an elevation map. However, the contour map and color map must be converted to DX maps (a **ProSIM Company** custom format) before they can be imported into an **Armored Task Force** game map.

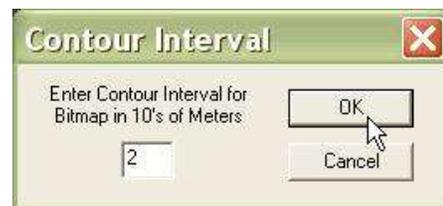


First, you are prompted to provide a name for saving the temporary color map that you will then convert to a DX map.

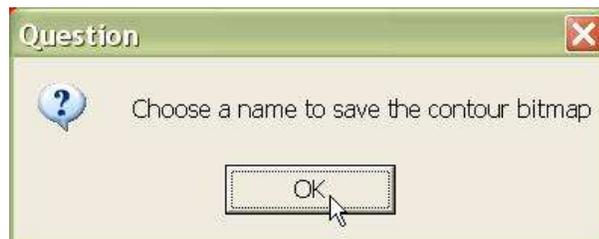
9. Provide a name for the custom map. The map must reside in the 'Data' sub-directory of the **Armored Task Force** install directory in order to be converted by the **Power Toolkit**.



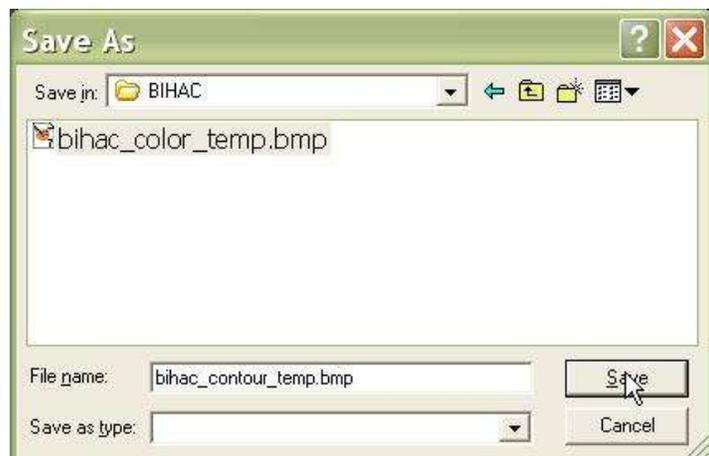
10. The contour interval is the vertical difference between contour lines on the contour map. Contour lines connect points of equal elevation on a map. This value is entered in tens of meters. For flat terrain, you may use '1'. For mountainous terrain, you may use anywhere from 2-4. The intent is that the contour map not be so saturated with contour lines that it is unreadable.



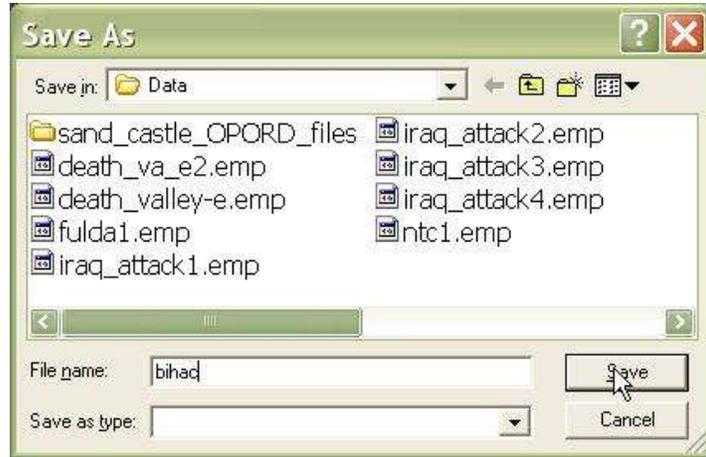
11. You must also specify the name for the temporary contour map.



12. Again, it must be in the 'Data' sub-directory of the **Armored Task Force** install directory.



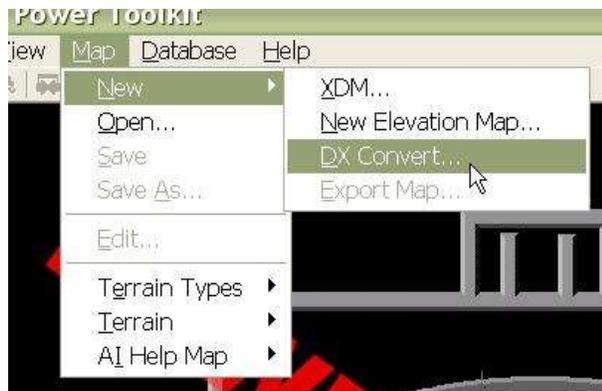
13. Next, we must save the elevation map. We recommend that you save all of the final map components with the same file name and different extensions. This makes it easy to identify what maps go with what components. This file must also be in the 'Data' sub-directory of the **Armored Task Force** install directory to be useable.



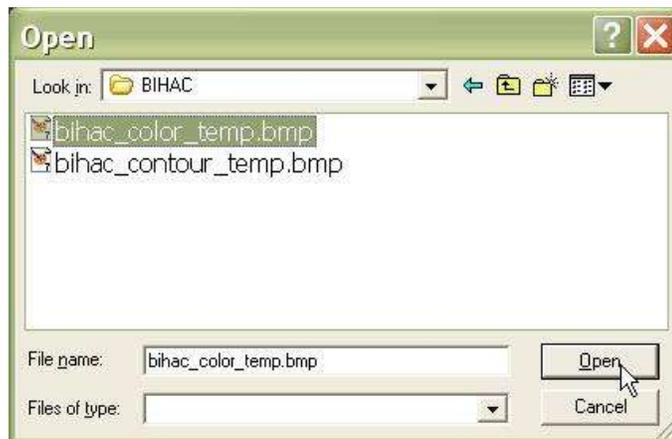
5-2. Convert Graphic Maps to DX Format Maps:

The maps drawn by the **ATF Power Toolkit** are normal Windows bitmaps. In order for them to be used by **Armored Task Force** in game maps, they must be converted to a custom **ProSIM Company** format called DX format. The format is still a Windows bitmap, but the map is cut up into rectangular sections that can be digested by the **Armored Task Force** graphics engine.

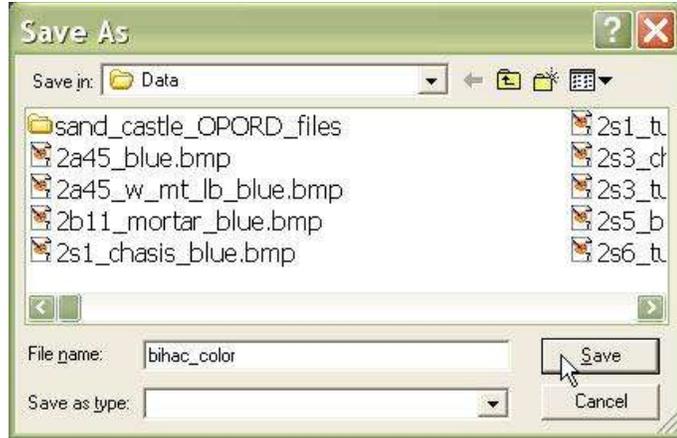
1. Select 'New' and 'DX Convert' from the 'Map' menu.



2. Select the bitmap which you wish to convert to DX format.



3. Select a name with which to save the converted file. Again, we recommend using a name similar to that of the other map files, so that it will be easy to find later.



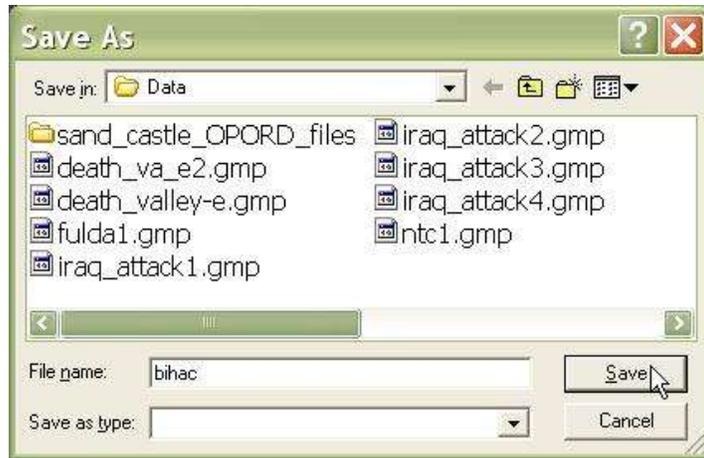
4. The .map file is linked to the DX format map file. It basically tells **Armored Task Force** how many blocks a DX format file has been chopped into. Again, we recommend a common name with the other game map files.



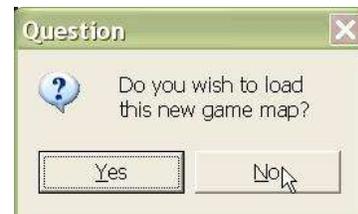
5. **ATF Power Toolkit** will tell you how many tiles and of what size it has chopped the map into during the conversion.



6. The .gmp (game map) file is the top level file for an **Armored Task Force** map. When you select a map to import into **Armored Task Force** either from the scenario wizard or the 'Import Map' functions, you select a .gmp game map file. Select a name for the game map which corresponds to this map file.



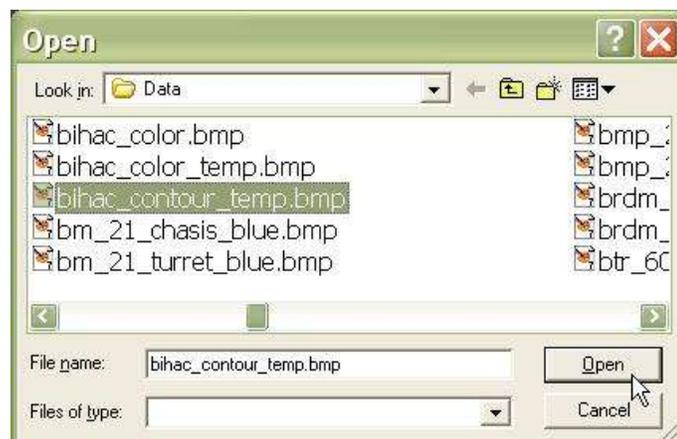
7. **ATF Power Toolkit** is done with the conversion. It asks you if you want to load the game map. Say no, because we have some more work to do first.



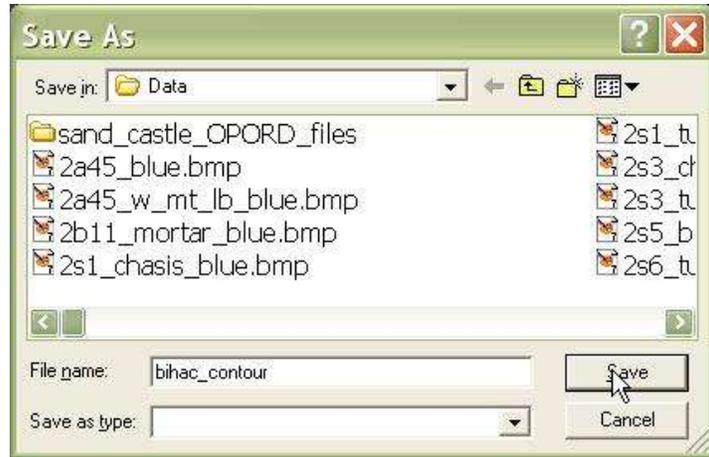
8. We have completed conversion of the color map. Now, we are going to repeat the process to convert the contour map to DX format.



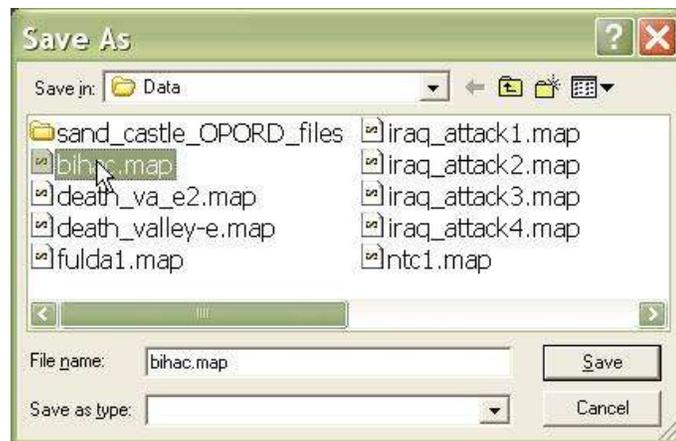
9. Select the temporary contour map image.



10. Select a name with which to save the contour map.



11. All images of the same size will always be chopped into the same number and size of tiles. Since our color and contour map are both the same size, we can save over the original .map file.



12. We can also save over the .gmp game map file, since we are going to edit it next, anyway.



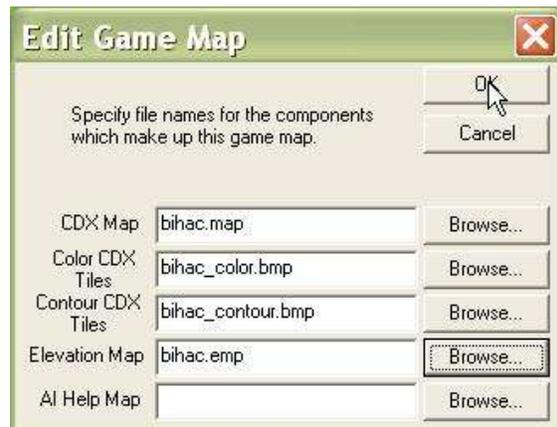
5-3. Edit the Armored Task Force Game Map:

The only thing left to do is gather all of the pieces we have built into an **Armored Task Force** game map. The game map (saved in the .gmp file) 'points' to all of the components that make up the game map. In order to continue with this topic, we will assume you have already loaded a game map, either by responding 'yes' to the prompt to do so during the map creation process, or by using 'Open' from the 'Map' menu.

1. Select 'Edit' from the 'Map' menu.



2. You will be presented with the 'Edit Game Map' dialog. Enter the name of each file which makes up the game map. For a game map to function correctly in **Armored Task Force**, it must have an entry in every block except 'AI Help Map'. However, unless you have a map of completely open, completely flat desert, hierarchies will not be able to execute formations or Missions correctly without the help map.



3. To use a file dialog to select files, click on a 'Browse' button. Select the file name for the file you wish to include in each entry. All of the specified files must be in the 'Data' sub-directory of the **Armored Task Force** install directory for the game map to load properly.

Make sure you save the map using 'Save' from the 'Map' menu before continuing.



6. How to Add Terrain to a Map

In addition to the elevation data they contain, the elevation map component of an **Armored Task Force** game map also contains all of the special terrain (trees, roads, water, and urbanization) for the **ATF** game map. This terrain impedes or aids movement and visibility and creates a tough, complex battlefield for **Armored Task Force** players who will play your scenario.

There are two components which make up the terrain you see on the **Armored Task Force** map. The first is the Terrain Type List and the second is the Terrain List (again, both are saved as part of the .emp, Elevation Map file). The Terrain Type List is like a database that contains all of the information about the different terrain types on the map and how they interact with units and are drawn on the screen. The Terrain List is the actual terrain objects on the map, each of a type described in the Terrain Type list.

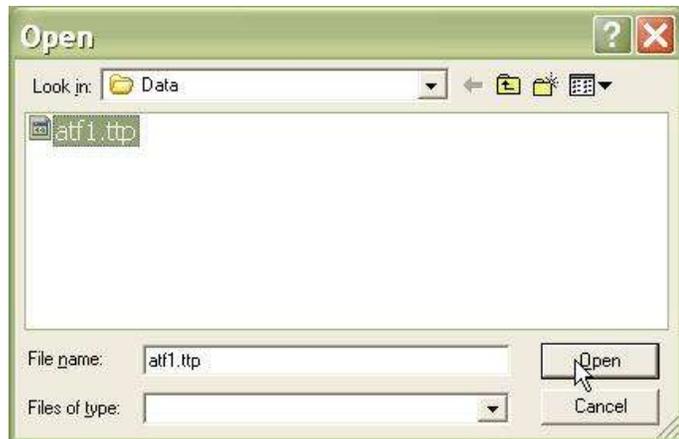
6-1. Load Terrain Types:

While you can start from scratch and build a brand new Terrain Type List, why? **Armored Task Force** ships with a ready-made list that you can use in your own maps. Once you load this list, it becomes part of the Elevation Map. So, making changes to the Terrain Type List after you have imported it will not alter the Terrain Type List provided with **ATF**.

1. Select the 'Open...' function from the 'Terrain Types' sub-menu of the 'Map' menu in the **ATF Power Toolkit**.



2. You will be prompted for the name of the list file to load. 'atf1.ttp' is the file that ships with **Armored Task Force**, and is the foundation of all maps that ship with **ATF**.

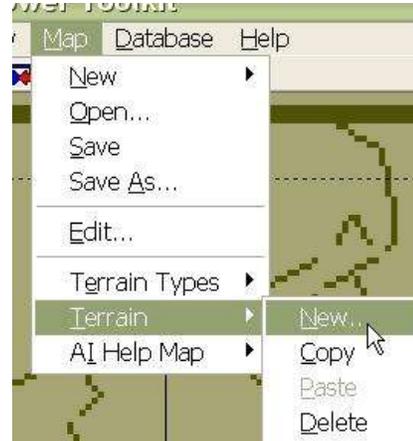


6-2. Add Terrain Objects to the Map:

Now that you have the Terrain Types loaded into your Elevation Map, you can draw terrain objects on the map. If you are recreating real terrain, you will need to be very careful to replicate the location of trees, roads, and rivers. But, if you are creating a map from your imagination, it is only important to capture the 'feel' of a real map. Rivers run in low ground, and roads generally follow contours to minimize grades.

It is not a good idea to overlap terrain. While it will not 'break' **Armored Task Force**, it will almost certainly create unanticipated effects. It is better to draw terrain adjacently. Check out some of the current **Armored Task Force** maps to see the best design practices in action.

1. First, initiate a new terrain object by selecting 'new' from the 'Terrain' sub-menu of the 'Map' menu.



2. Select the type of object you wish to create.



3. Begin left-clicking on the map to indicate outline of the terrain object you are creating. For streets and rivers you will have to draw the complete outline to get a realistic effect.



4. When you are done drawing the terrain object, right-click to complete the object. The **Power Toolkit** will connect the first and last point to close the object. That's it! Repeat these steps until you have added all of the terrains you wish to add.



7. How to Create Advanced Map Effects

In this portion of the tutorial, we are actually going to share with you how we create the 'look' of an **Armored Task Force** game map. These techniques will help you create maps that are both visually appealing and more effective in communicating terrain to the player.

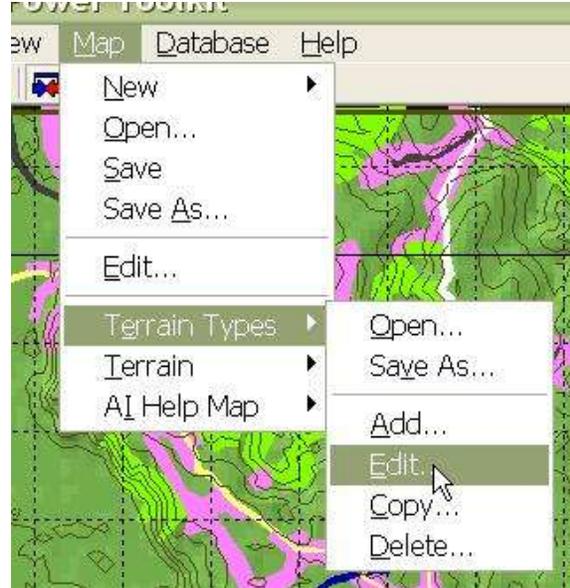
But beyond this, these techniques will also improve the performance of your map in **Armored Task Force**. Drawing terrain objects at runtime eats a lot of processor power. By using these techniques, you can eliminate the need for **Armored Task Force** to draw terrain objects to indicate their location on the map. This means better performance and less lag during game play.

You should not execute the techniques in this topic until you are sure you have added all of the terrain to the map that you want.

7-1. Change Terrain Types for Color Replacement:

We want to make the terrain appear as solid color blocks when the color map is displayed. We do this so that we can use color replacement to insert our own graphics on the color map. We will repeat these steps for every terrain type in the Terrain Type List.

1. Select 'Edit' from the 'Terrain Types' sub-menu of the 'map' menu.

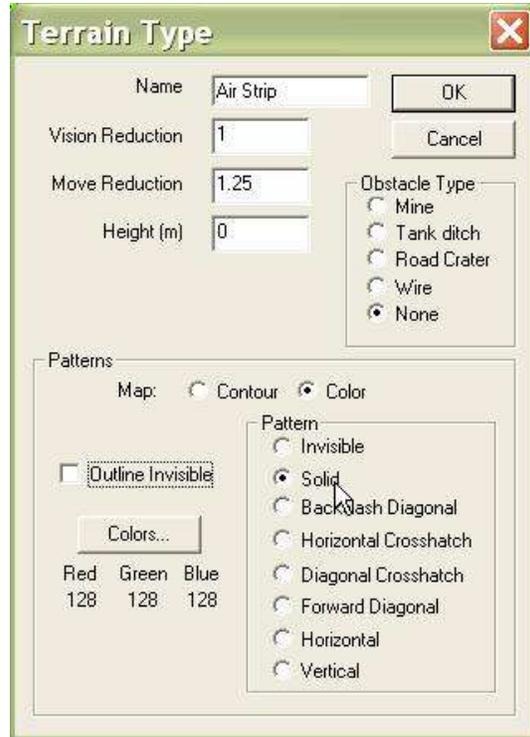


2. We are going to select every single terrain type in the Terrain Type List and change the way it is drawn.



3. In each 'Terrain Type' dialog, ensure that the 'Color' button and the 'Solid' button are selected, and that the 'Outline Invisible' button is unchecked.

We also need to ensure that all of the terrain types have unique colors specified for their 'Color' representation (if you need to change a color, select 'Colors...').



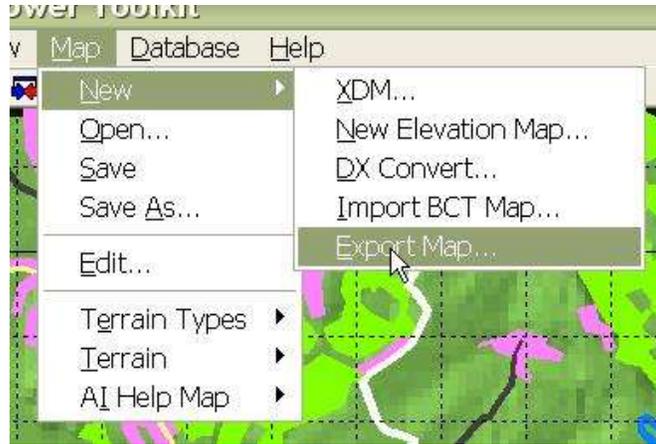
7-2. Build an Export Map Image:

The next step is to create an export map. A good export map indicates where terrain is on the map, so that you can replace it with your own, more attractive and descriptive graphics. Essentially, what we are doing is converting the map from DX format (see Creating a New Map); back into a normal Windows bitmap, but with all of our special terrain drawn on it.

1. We want to create an export map of just the color map, so we select 'Color' from the 'Map' sub-menu of the 'View' menu.



2. Second, we select 'Export Map' from the 'New' sub-menu of the 'Map' menu.



3. We are prompted to enter the name of the export map. It is best to save the map in the 'Data' sub-directory of the **Armored Task Force** install directory, since it will need to be there later, when we convert it back to DX format.



7-3. Edit the Export Map Image:

Prior to this step, we need to create graphics panels. These are bitmaps with graphics patterns representing trees, urban terrain, roads, and other terrain types. Each panel should be the same size as the export map for best results. We need one panel for each terrain type on the map. We assume this is completed before we continue.

We are just showing you how WE created maps for **Armored Task Force**. You can use any technique you want to modify or improve the style of the map.

1. Open 'Paint', the drawing program which ships with every version of Windows. After we have opened it, we are going to open our export map.



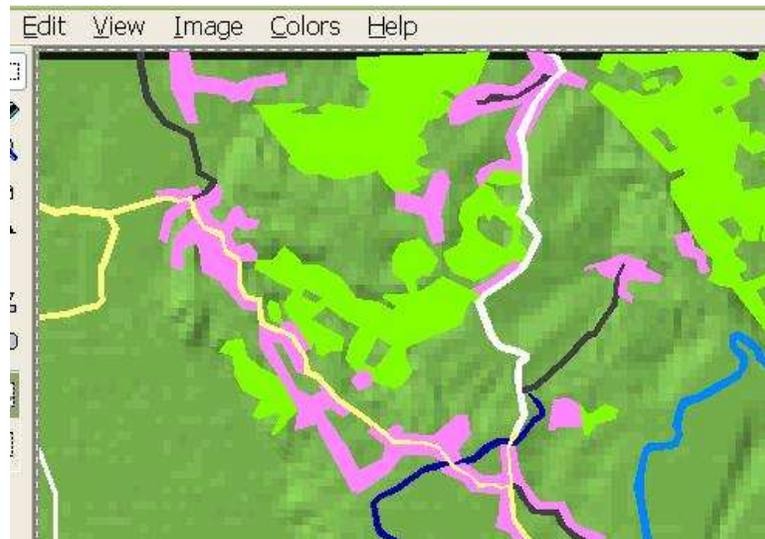
2. After the export map is open, in Paint, we select 'Select All' from the 'Edit' menu...



3.... And then 'Copy', also from the 'Edit' menu.



4. The whole export map is now stored in the clipboard.



5. We need to select the color of the terrain we want to replace as a custom color in the colors menu at the bottom of the Paint window. First, we select the 'Select Color' tool from the toolbar and then we select the color of the terrain we wish to replace by left-clicking on it in the image.



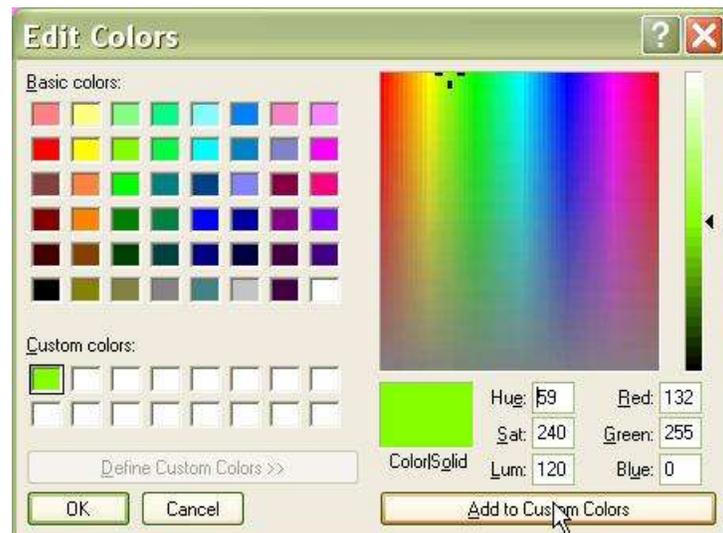
6. Select 'Edit Colors' from the 'Colors' menu.



7. Select the 'Define Custom Color' button...



8. ...And then the 'Add to Custom Colors'.



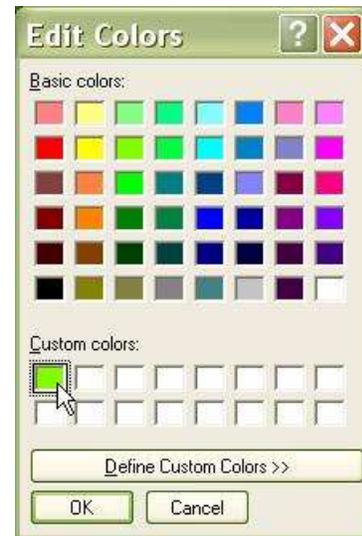
9. Next we are going to open the bitmap panel we built which corresponds to the terrain we want to draw on the map. We select 'Open' from the 'File' menu and select our terrain panel (which will represent the terrain type on our modified map).



10. We select 'Edit Colors' from the 'Colors' menu again.



11. We double-click on our defined custom color and select 'OK'.



12. Now our custom color appears on the color bar. We are going to right-click on it so that it appears as the background color.



13. We want to cancel the 'Draw Opaque' function (so that the background color will not be drawn on pasted images) by selecting it in the 'Image' menu.

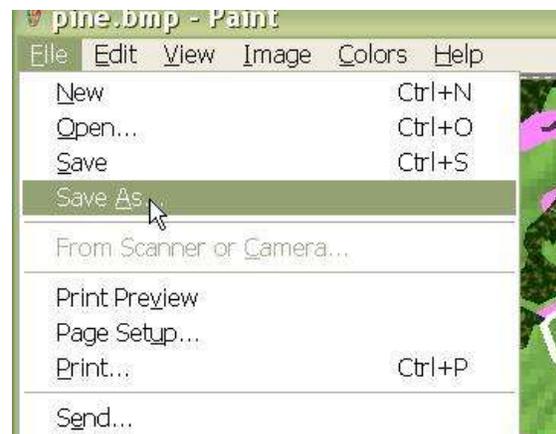


14. Now we are going to paste our export map (stored in the clipboard) over the panel. All of the places on the export map where the selected terrain is will be replaced with the graphics from our panel.



15. Now we save the resulting, composite image over our old export map using 'Save As' from the 'File' menu (make sure you don't save over your panel by accident; you may want to use it again for other maps).

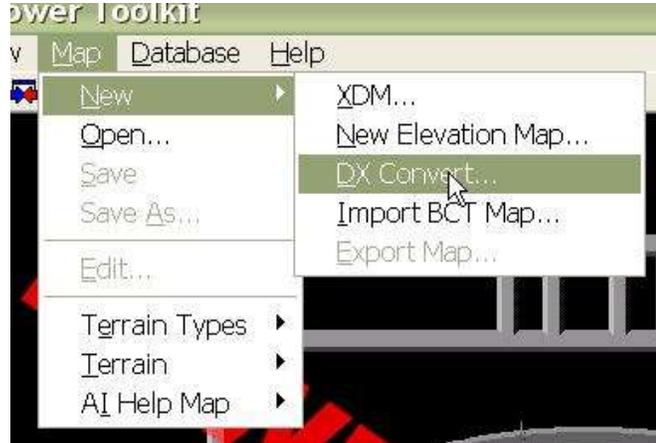
We are going to repeat these steps for every terrain type which appears in the export map, until we have replaced all of the solid-colored blocks with more visually appealing terrain.



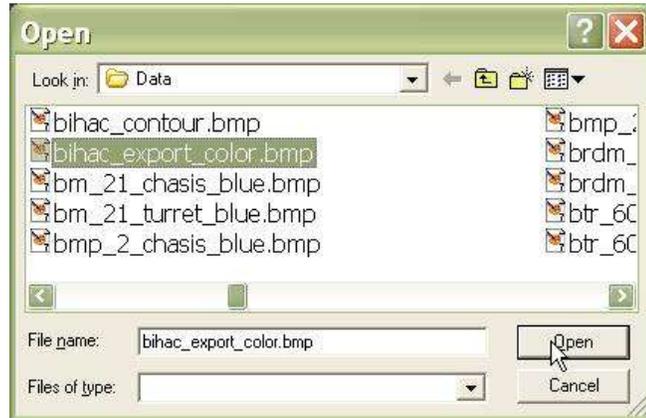
7-4. Import the Export Map Back into the Game Map:

We have finished modifying the export map, adding all of the graphics we want to appear on the finished map. Now we must make it usable by **ATF** (converting it to DX format).

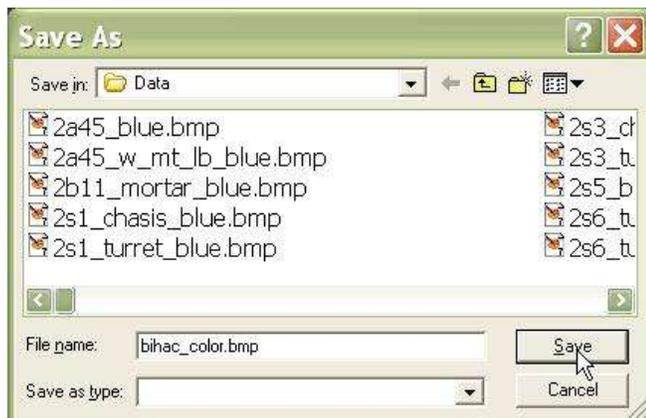
1. Select 'DX Convert' from the 'New' sub-menu of the 'Map' menu.



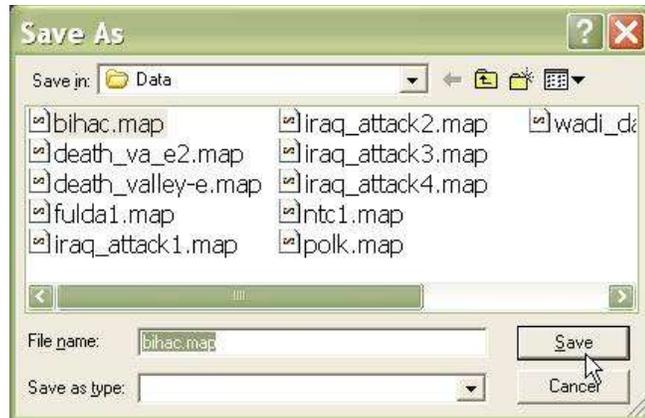
2. Select the export map.



3. Select the old, DX-converted color map file. When **ATF** asks you if you want to overwrite this file, answer 'Yes'.



4. We can overwrite the 'bihac.map' file. Remember that all images of the exact same dimensions make exactly the same number and sized tiles (see Create a New Map).



5. However, we **cannot** overwrite the game map (.gmp) file for this map. It contains pointers to all of the files in our game map and we will have to recreate it if we overwrite it. So, when prompted, just save our new game map with a temporary name and delete the file as soon as we are done.



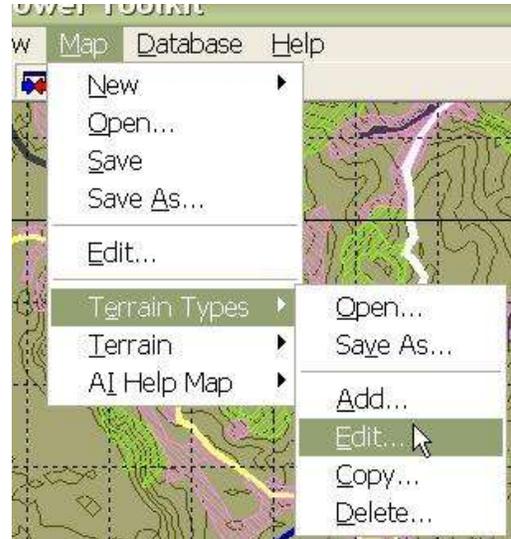
6. To see our map, we have to reopen the game map, so that the color map will be re-loaded into memory. Select 'Open' from the 'Map' menu.



7-5. Make Terrain Objects Invisible:

Wait a minute! What happened? We have changed the map but it still looks the same? We have to tell **Armored Task Force** not to draw the terrain itself, so that our handiwork can shine through.

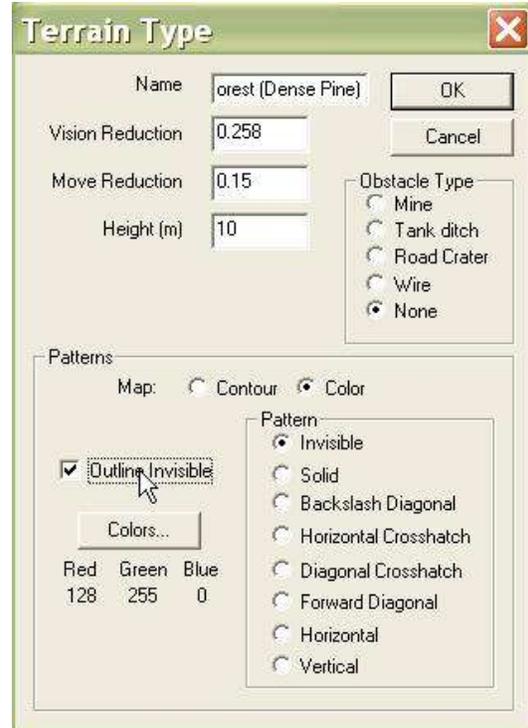
1. We are going to have to edit every terrain type again. To save ourselves work, we are going to get a head start on the next step, which is exporting our contour map with the terrain drawn on it. Select 'Edit Terrain Types' from the 'Map' menu.



2. We are going to select each terrain type, from top to bottom.

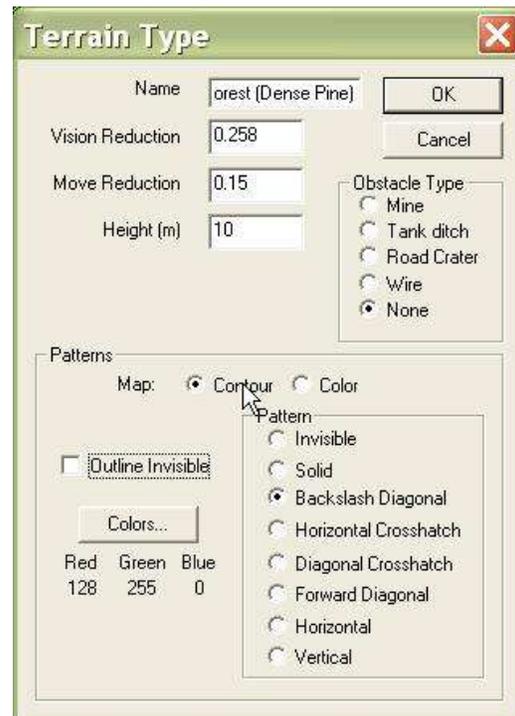


3. First we are going to select the 'Color' button, select 'Invisible' and 'Outline Invisible'. This will prevent **Armored Task Force** from drawing Terrain Objects of this type on the map.



4. Then, we are going to select the 'Contour' button and select the pattern and color which we want to use to represent the Terrain Type on the contour map.

So that our graphics can show through the contour map when using the 'Contour Over Color' view, we recommend using line patterns rather than 'Solid'. We also recommend using a different color for every terrain type, even if they have different patterns. It makes it easier to identify these terrain types at a glance.



7-6. Making Terrain Permanent on the Contour Map:

We are going to create an export map of the contour map as well and re-import it into **Armored Task Force**. But we are not going to edit or make any changes to the export map before we import it. Why do we do this? If you have a lot of graphics on the contour map, when it is shown over the color map (when the 'Contour Over Color' view is active), the added graphics will block out the color map. We want all of the terrain to be transparent, so that you can see the color map beneath (see previous step).

Why bother? If we are not going to change the contour map, why execute this step. It's simple. Drawing all that terrain on the map takes **ATF** a lot of processing power. That causes lag and slows down game play. If we make the drawings on the map permanent, and prevent **ATF** from drawing the graphics, we will speed up the game.

1. We want to export the Contour map, so we need to display the contour map. Select 'Contour' from the 'Map' sub-menu of the 'View' menu.



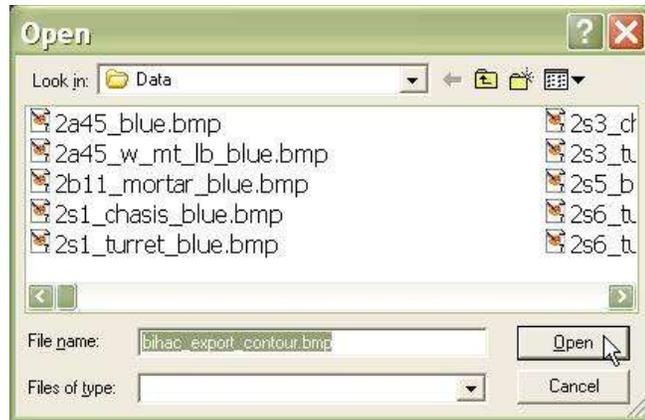
2. Now we select 'Export Map' from the 'New' sub-menu of the 'Map' menu. When prompted, we save the export map with a temporary file name. We can delete the file after we complete this topic.



3. We select 'DX Convert' from the 'New' sub-menu of the 'Map' menu...



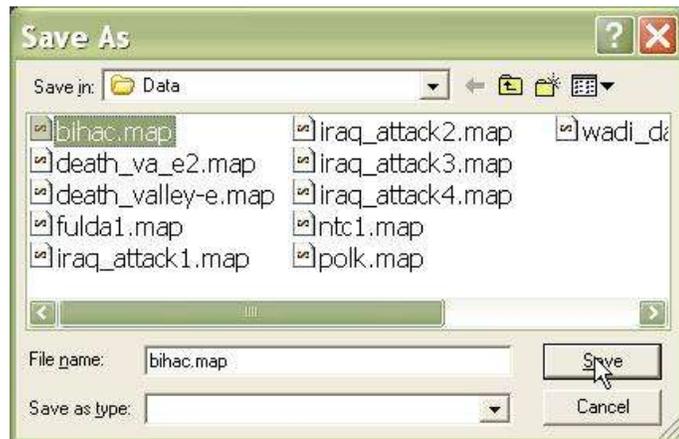
4. ...We select our export map...



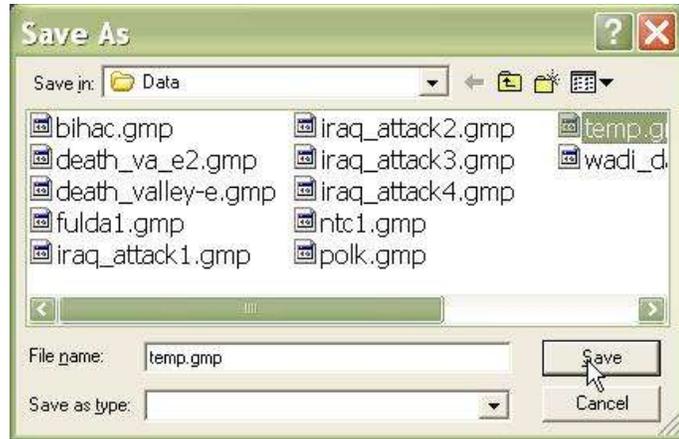
5. ...We choose to overwrite our old contour map and answer 'Yes' to overwrite prompts.



6. Again, it is safe to overwrite the original .map object...



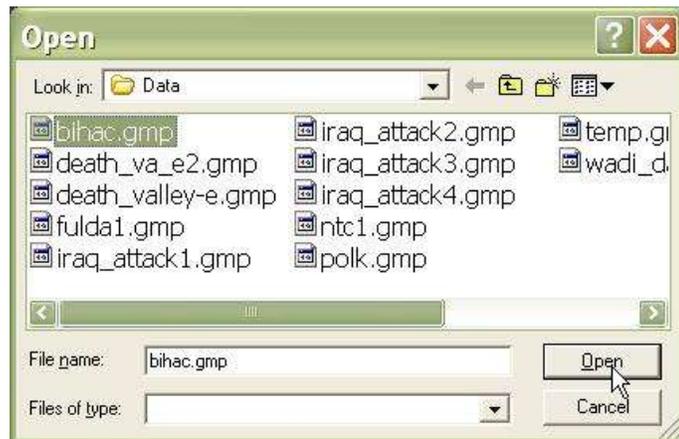
7.... But not the game map object (.gmp).



8. To see our map, we need to reopen it. Select 'Open' from the 'Map' file...



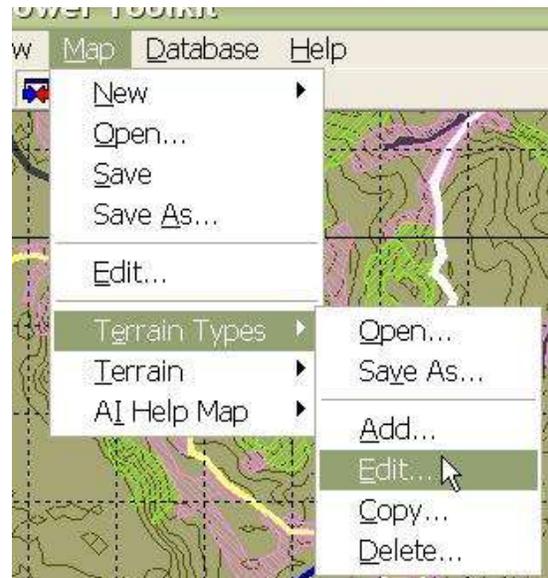
9.... And the game map files for this map (.gmp).



7-7. Make Terrain Objects Invisible, Part II:

Finally, we have to tell **Armored Task Force** not to draw the terrain when the contour map is shown, either.

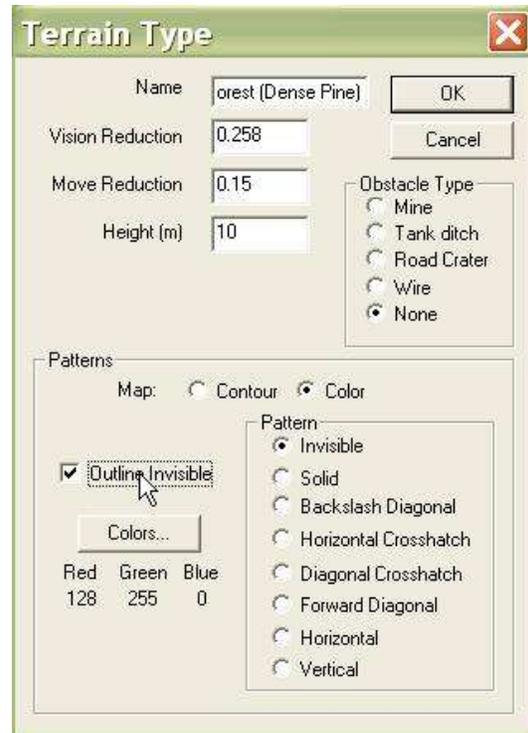
1. Select 'Edit Terrain Type' from the 'Map' menu again.



2. One last time, we are going to go through each terrain type.



3. This time, we are going to, for each terrain type; select the 'Contour' button, and then 'Outline Invisible' and 'Invisible'. This will prevent **Armored Task Force** from drawing this terrain type on the map.



8. How to Add AI Terrain to a Map

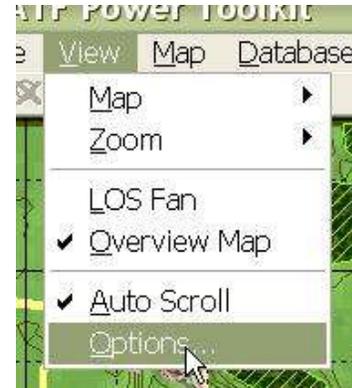
AI (Artificial Intelligence) Terrain is 'hints' that you give to **Armored Task Force** to help it make decisions. **ATF** uses this data to make decisions about formations, movement of units, and execution of Missions for enemy and friendly hierarchies. The AI Help Map is a list of AI Terrain objects (much as the Terrain List is a list of Terrain objects). There are four types of AI Terrain objects stored in the AI Help Map.

- Impassible Terrain Map. This terrain object is actually a map 'overlay' which describes which spots on the map is impassible to vehicular traffic. It can only be generated automatically, by the **ATF Power Toolkit's** automation features.
- Regions. These are manually drawn areas on the map, much like normal Terrain objects, which describe regions that are impassible to certain types of traffic. Regions are much more powerful than an Impassible Terrain Map because **ATF** can use the region's bounding points to determine a path around the region. However, they take a very long time to create, even for the easiest of maps.
- Routes. Routes are user defined paths around and through restricted terrain. They help **ATF** determine how to pass through difficult regions on the map. They are much more useful if they are drawn as short segments that **Armored Task Force** can link together into a coherent path for units and hierarchies.
- SBF's. This stands for Support By Fire. These are groups of points on the map which are favorable for observation and fields of fire for different types of vehicles. They can be drawn manually, but this is very time consuming. It is much easier to use the **Power Toolkit's** automation features to select them for you.

8-1. Make AI Terrain Visible:

In order to make changes to the AI Help Map, we must make it visible in **ATF Power Toolkit**. The AI Help Map is only visible in the **Power Toolkit**. It can not be seen in the **ATF Scenario Builder** or **Armored Task Force**.

1. Select 'Options' from the 'View' menu.



2. Ensure that the 'Show AI Help Map' box is checked.



8-2. Create and Save an AI Help Map:

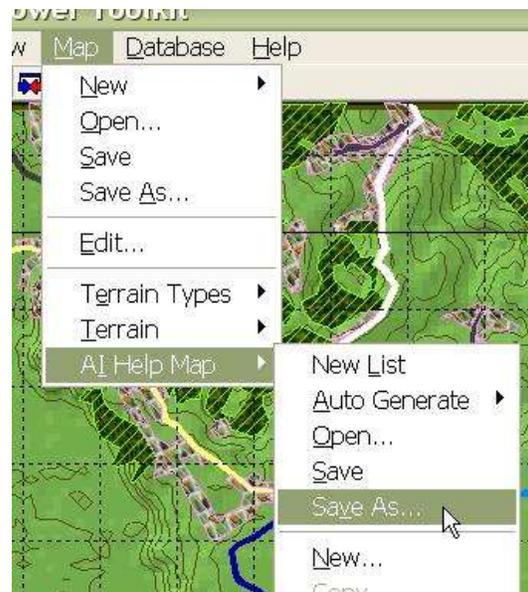
What gives? We made the AI Help Map visible. Why hasn't the view changed? Well, we don't have an AI Help Map yet! We have to create a map and begin adding AI Terrain objects before we will see the map.

1. Select 'New List' from the 'AI Help Map' sub-menu of the 'Map' menu.



2. We need to save the AI Help Map so that it is 'pointed to' by the Game Map. Select 'Save As' from the 'AI Help Map' sub-menu of the 'Map' menu.

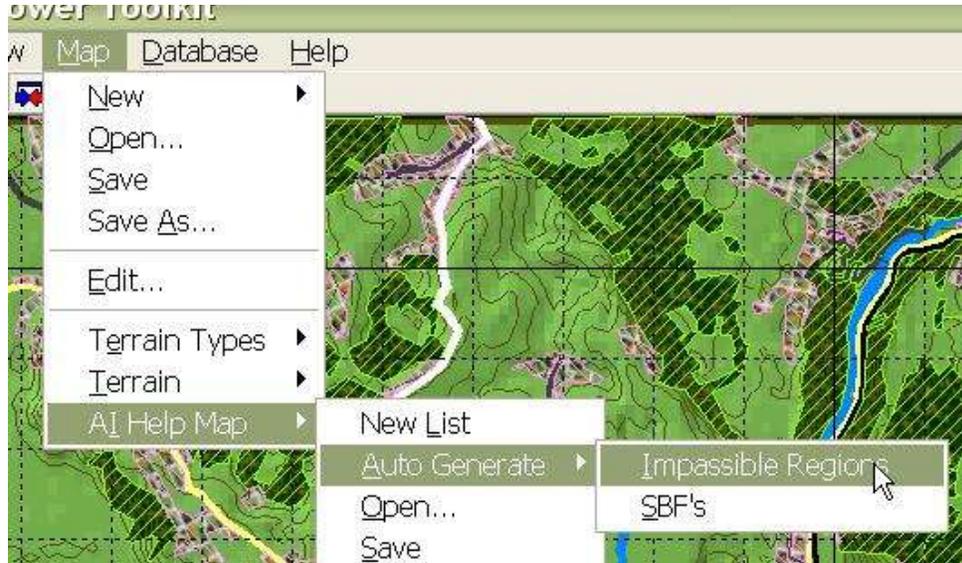
Again, we suggest that you use the same name, with a different extension that you use for all of the other map components, so that it will be easy to identify that the file is part of the map.



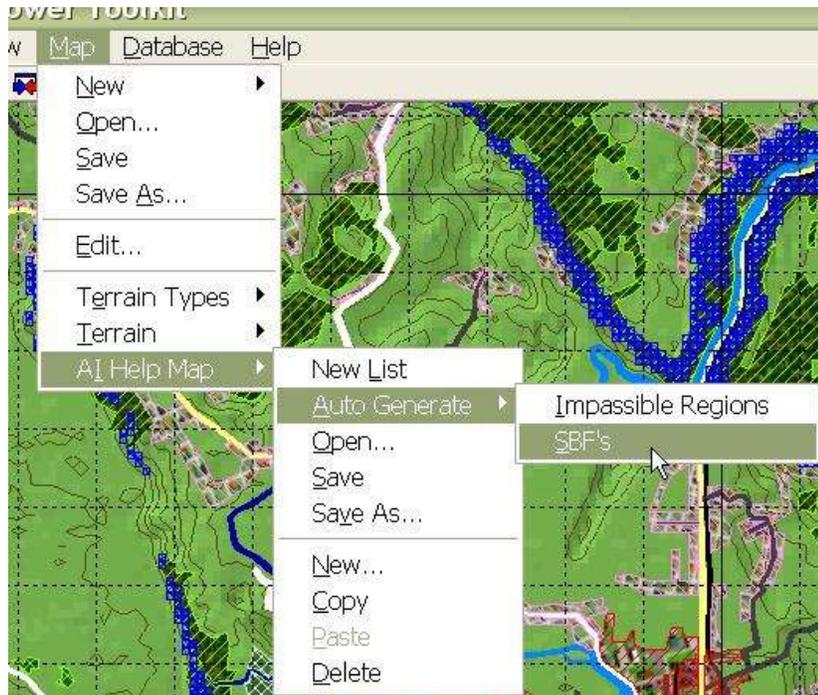
8-3. Auto-Generate AI Terrain Objects:

The first objects that we need to add to our AI Help Map are an Impassible Terrain Map and SBF's. This is best done using the auto-generate features of the **ATF Power Toolkit**. For the auto-generate functions to work correctly, these terrain objects must be created in this order.

1. We are going to make an Impassible Terrain Map. This can only be generated via the auto-generate function. Select 'Map', 'AI Help Map', 'Auto Generate', and 'Impassible Regions'.



2. Now, with impassible regions identified by blue boxes, we are going to auto-generate SBF's. Select 'Map', 'AI Help Map', 'Auto Generate', and 'SBF's'.



8-4. Add Routes to the AI Help Map:

The last terrain objects we need to build are routes. Routes help the **Armored Task Force** AI figure out how to negotiate restricted terrain. They work best if planned in short segments of a few kilometers in length. The AI can then 'tie them together' into a single route to where it wants to go.

Unrestricted, flat terrain may have no routes at all. We have used an example of very mountainous terrain to provide this example.

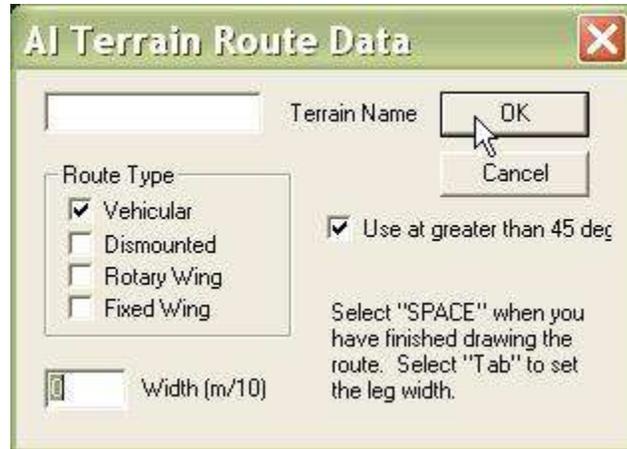
1. Select 'New' from the 'AI Help Map' sub-menu of the 'Map' menu.



2. Select 'Route'



6. When you are planning routes through a restricted area (such as bridge over a river) that can not be bypassed, make sure you select 'use at greater than 45 degrees'. This tells the engine that it MUST use this route to get through the terrain.



7. Then plan the route as you do other routes. Again, you want to plan multiple routes through the terrain if it has multiple entrances and exits.

