## UNIT ATTRIBUTES CHART

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIREPOWER | | | | | | | | | | | | | | | | | |
| DEFENSE | | | | | | | | | | | | | | | | | |
| ASSAULT | | | | | | | | | | | | | | | | | |
| MOVEMENT | | | | | | | | | | | | | | | | | |
| STRENGTH | | | | | | | | | | | | | | | | | |
| RANGE | | | | | | | | | | | | | | | | | |
| FIRE TYPE | | | | | | | | | | | | | | | | | |
| UNIT TYPE | | | | | | | | | | | | | | | | | |
| TRANSPORTABLE | | | | | | | | | | | | | | | | | |
| DIG IN | | | | | | | | | | | | | | | | | |
| AT CAPABLE | | | | | | | | | | | | | | | | | |
| AT DEFENSE | | | | | | | | | | | | | | | | | |

## TERRAIN EFFECTS TABLE

| | UNIT TYPE | | | | | | |
|---|---|---|---|---|---|---|---|
| TERRAIN TYPE | IN | TN/TR | EN | MR/GN | HL | BT | AT/SP |
| Clear | 2 | 2 | 2 | 2 | 1 | P | 2 |
| Roads | 1 | 1 | 1 | 1 | 1 | P | 1 |
| Bridge | 3 | 3 | 3 | 3 | 1 | 1 | 3 |
| Blown bridge | 3 | P | * | 3 | 1 | 1 | P |
| Trees | 3 | 3 | 3 | 3 | 1 | P | 3 |
| Crests | 3 | 3 | 3 | 3 | 1 | P | 3 |
| Hilltop | 6 | 6 | 6 | 6 | 1 | P | 6 |
| Woods | 6 | 6† | 6 | 6 | 1 | P | 6 |
| Mines | * | 7 | 7 | 7 | 1 | P | 3 |
| Buildings | 8 | 8 | 8 | 8 | 1 | P | 8 |
| River | 8 | P | 8 | 8 | 1 | 1 | 8 |
| Border | P | P | P | P | P | P | P |

**KEY:**
# = Cost in movement points
P = Prohibited
* = All remaining movement points
† = TN and TR prohibited in woods centers

If you have any questions or problems regarding the program or game, please send a self-addressed, stamped envelope with your question to: *STRATEGIC SIMULATIONS, INC., 1046 N. Rengstorff Avenue, Mountain View, CA 94043.*

Or you can call our Hotline Number: *(415) 964-1200* every weekday, 9 to 5 (P.S.T.).

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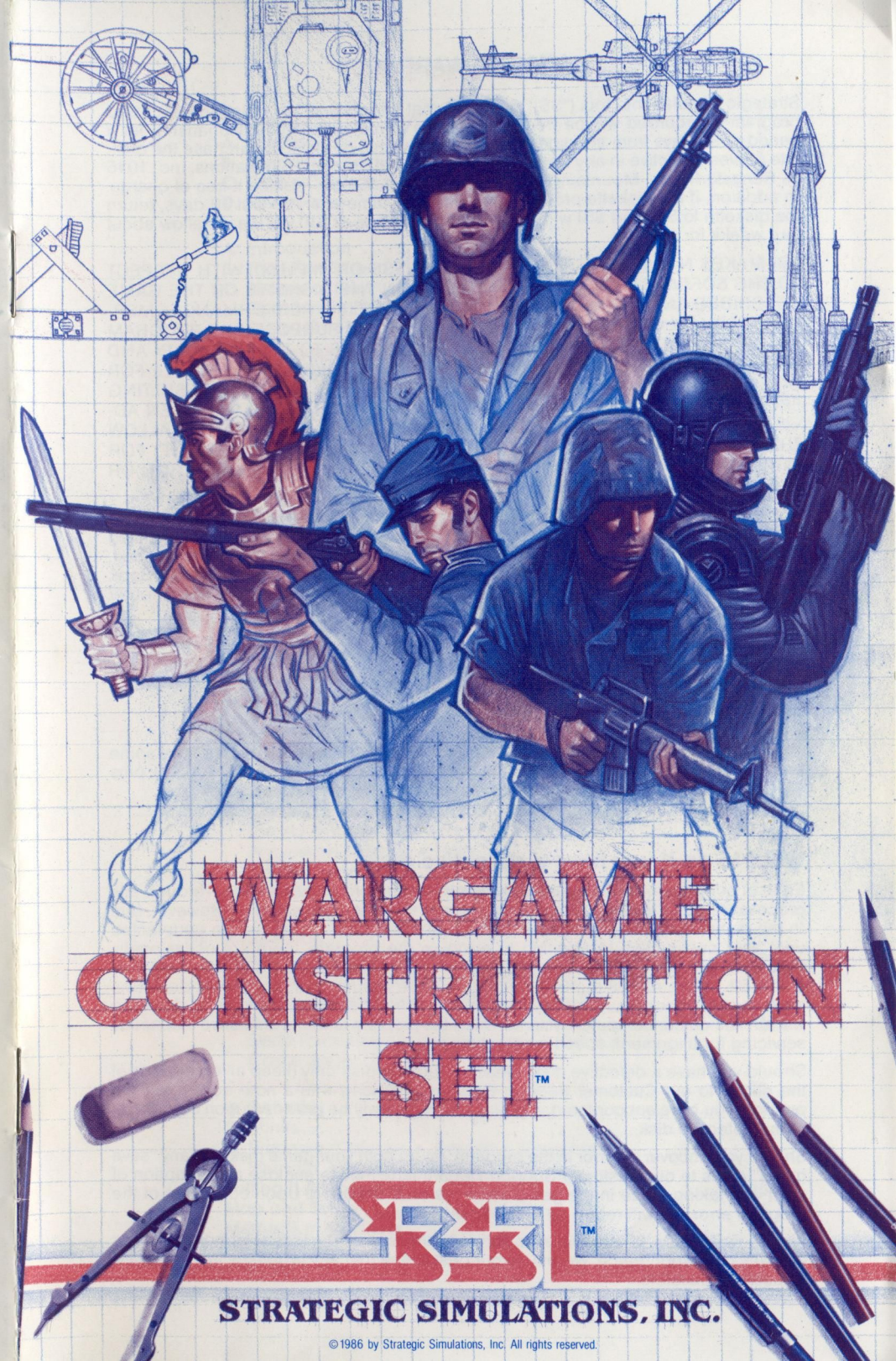


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## What to do if you have a defective disk

Each of our games undergoes extensive playtesting prior to its release. Through this process we hope to uncover, and correct, any errors in programming. However, due to the complex nature of our simulations, some program errors may go undetected until after publication. In addition to errors in the program, there are occasionally problems with the disk itself. We experience the industry standard of approximately a 3 to 5% failure rate of duplicated disks. Before assuming that a disk is defective, make sure to check your disk drive. Up to 95% of the disks returned to us as defective will run fine on our computer systems. Often the problem is with a disk drive that needs servicing for alignment, speed, or cleaning.

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Should you uncover an error in the program, return both your game disk and any "save game" disks to our Customer Support Department. Please enclose a description of what was taking place in the game when the error occurred. Upon correction of the program error, we will return an updated disk to you.

Always make sure to include your name, address, and daytime telephone number with any correspondence. We will do our best to see that any problems are corrected as soon as possible.

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With your WARGAME CONSTRUCTION SET, you can develop a model of a military situation and then use it in game play. As you construct a scenario, you are limited only by your own imagination and the nature of the game. You can explore a wide range of conflict situations in military history, fantasy, and science fiction.

WARGAME CONSTRUCTION SET consists of two parts: the EDITOR and the GAME. The EDITOR is used to design the scenario or to alter a previously created one. The GAME is used to play the scenario.

In creating a scenario for the game, you have full control over the battle terrain and the combatants. There are 31 units available to your side and 31 units available to the enemy forces which can be controlled by another player or by the computer. Our goal is to give you maximum flexibility and discretion in representing situations.

You may begin with either the GAME or the EDITOR. If you are eager to design a scenario but uncertain about how it is done, turn first to Section V (TUTORIAL). Learn how to use the EDITOR by following the instructions in planning and developing a fantasy simulation. If you want more detailed explanations of the elements, see Section IV (EDITOR).

If you prefer, instead, to begin by playing a game, you can use one of the scenarios included. Beginners and newcomers to this type of game should start with the "Return to Beta 4" scenario. It is an introductory situation with the force size limited and the objective clear. If you are ready for a greater challenge, use "Rommel's 88's". Again, the force size is limited, but this time the problem is more complex.

After you become familiar with the GAME and the EDITOR, you can modify an existing scenario or create a new one. Make sure you have a formatted DOS2.0S disk or a copy of the Scenario Disk ready. Load the scenario you want to inspect from the Scenario Disk; when you have completed editing it, save it onto the blank disk.

When you use the EDITOR, keep in mind the fact that there is no variable that can crash the system. The worst that can happen is that your design will have unanticipated consequences. Let your imagination be free to create situations as yet unseen by other players. Take control and do what I have been doing . . . and do it better.

# I. THE GAME

The GAME allows you to enact the battle set up with the EDITOR. There are eight battles included with each version of the game (5 one-player, 3 two-player) to let you experience some of the available situations. Theoretically, any period in military history can be represented in some manner, but some military situations cannot be represented as effectively as others.

### A. Loading

**Atari:** Insert the disk, GAME side face up. Turn the computer on. The game loads and runs automatically. If you have an XL or XE computer, you do not have to hold down the OPTION key when turning on the computer.

To play against the computer, press the START key for the one-player game.

To play against another person, press the OPTION key for the two-player game.

### B. Scenario Selection

After the game is loaded, the computer prompts you again. Insert the scenario disk provided or the scenario disk you have created; then press <START>.

Press <SELECT> to take you through the list of scenario titles.

Press <START> to load the scenario you choose to play.

Press <OPTION> to return to the beginning; this allows you to flip over the disk to see scenarios on the other side.

### C. Game Control

Your main controls are the joysticks and the three console keys: <START>, <SELECT>, and <OPTION>. Control the cursor with the proper joystick; use the fire button to control individual units. <START> takes you from one phase to another. <SELECT> unloads transported units during the Movement Phase. <OPTION> removes all units from the map (and later replaces them) so that you can see the terrain under the units.

### D. Save Game

To save the game in progress, press <SELECT>. Use a blank formatted disk or the scenario disk. The game is saved in the place reserved for Scenario 5.

After saving the game, you may edit the game with the EDITOR or reenter the game (by choosing Scenario 5 at the beginning of the program) and continue playing from where you left off.

# II. ONE-PLAYER GAME

### A. Introduction

The GAME consists of a series of phases of play. In each phase, as the events occur, several actions and commands are available to you.



NOTE: In all cases, the units controlled by the human player are referred to as the Friendly units and are controlled by joystick*1. The computer's forces are referred to as the Enemy units.

The phases are listed below:

1. Observation Phase
2. Friendly Fire Phase
3. Friendly Movement Phase
4. Enemy Fire Phase
5. Friendly Fire Phase
6. Enemy Movement Phase
7. Enemy Fire Phase
8. Victory Phase
9. Save Game Phase

These phases must be executed in the above sequence. One game turn consists of the completion of all of these phases. Detailed information about the phases follows in Section II. C.

### B. The Main Screen

The first line displays your position in the game turn; the current Phase is highlighted. The Phase names are abbreviated as follows:

OB Observation Phase
FF Friendly Fire Phase
FM Friendly Movement Phase
EF Enemy Fire
EM Enemy Movement

The first line indicates the Phase.

Below the Phase indicator is the window into the map, displaying one-fifth of the entire available map.

Below the map are the message windows. The first line generally is used for unit identification. With the cursor over a friendly unit (or an enemy unit in the two-player version), the computer displays the ID number (e.g. #01) and its vital information in the form F=nn D=nn R=nn A=nn M=nn S=n A*. The capital letters are abbreviations for the unit's Firepower, Defense, Range, Assault Value, Movement Points, and Strength; the n is a number. This may be followed by an * if the unit has anti-tank capability and an A if the unit is armored. For a fuller explanation of the various capabilities see the EDITOR rules.

Below the information about the unit is a text area used to inform you of various conditions during the game.

At the bottom, the turn number is given.

### C. Phases of Play

#### Observation Phase

In the Observation Phase, the joystick in port 1 activates a square cursor. Moving this cursor to a screen edge triggers the map scroll until a map edge is reached.

As the cursor passes over a unit, the unit is identified and some of its characteristics are given (the form is described above). All of the values are set while designing the scenario with the EDITOR.

Units may be dug in and made combat-ready in this phase only. To dig in a unit or to make combat-ready a unit that is already dug in, place the cursor over the unit; press the trigger. The status of the unit is displayed in the message area. Dug-in units may not be moved. Dug-in units gain an advantage in defense (seen in the unit's status information) and recover more readily from damage. A unit may be dug in during the GAME only if it is indicated in the EDITOR that the unit is one that may be dug in. Dug-in units flash on and off during the Observation Phase.

#### Fire Phase

In the Fire Phase, a crosshair appears in the center of the cursor. To fire your units, place the cursor over the unit you want to fire; press the button. Then move the cursor to the area into which you want the unit to fire; press the button again. The unit will fire. If there is an enemy unit in the chosen area (a hidden unit will show up at this time) and it is hit, it will undergo damage. Whether the shot hit or missed its target is indicated in the message area. The heavier the cover, the harder it is to hit units under cover. Units that were moved during the turn have a lesser chance of hitting a target.

A unit will not fire if:
1) it has fired already in the current Fire Phase,
2) the target area is out of its range,
3) the firing unit is Suppressed, or
4) the target area cannot be seen by the firing unit (no Line of Sight).

The message area indicates whether any of these conditions exist. If a unit is Suppressed and you attempt to fire it, the message window informs you of this condition. Likewise, if a unit is Pinned and you attempt to move it, the message window informs you of this condition.

#### Movement Phase

In the Movement Phase, you may move any unit capable of movement. A unit is moved, one square at a time, until its movement points are all gone.

To move a unit, place the cursor over it and press, then release, the fire button. The cursor turns green and the unit is "picked up" and may be moved with the joystick.

The following conditions define movement:

1) Each square has a different entry "cost" in movement points, corresponding to its density. Each square's cost is deducted from the moving unit's Movement Points.

2) You can move a unit as long as it has sufficient movement points remaining to enter the square to which you want it to move. When the movement points of a unit reach 0, it can no longer be moved.

3) The cursor turns red when the unit no longer has sufficient movement points to conduct an assault.

4) If a unit enters a square next to a hidden enemy unit, that enemy unit shows up on the map.

5) If a friendly unit tries to move away from a square next to any enemy unit, that enemy unit fires at the friendly unit.

6) If a friendly unit tries to move onto an enemy unit, an assault may occur. Assaults are explained below.

7) If a unit enters an area that is mined, the mines detonate.

8) Vehicles (trucks, tanks) cannot enter heavy woods, river, banks, or water.

9) No unit, with the exception of an Engineer, may enter a blown bridge.

10) A Pinned unit cannot be moved.

11) If (with the EDITOR) a unit is given the ability to be transported, then it can be loaded onto a truck, helicopter, or boat unit type. To load the unit, move it next to and then onto the transporting unit. The unit disappears, and the transporting unit gets a blue line at the top and bottom of it to show that it is carrying something.

12) To unload a unit, place the cursor over the unit; press and hold the fire button. Moving the joystick in any direction while the button is held unloads the unit; it then can be moved its separate way.

Assaults may occur during the movement phase. An assault occurs when a unit attempts to enter a square occupied by an enemy unit. First, the enemy unit fires. After this shot is resolved, you may move your unit onto the enemy occupied square. A series of explosions occurs, and the assault is resolved. There are four possible results:

1) Your unit wins, and the enemy units falls back.

2) Your unit loses, and it falls back.

3) Your unit is eliminated.

4) The enemy unit is eliminated.

Enemy units may assault your forces. Your units do not get an initial shot during such assaults.

If a unit that loses an assault has no place to which it can fall back, it is eliminated. Units do not retreat onto other units, into water or river edges, or into the map borders.

After an assault with a unit, you may continue moving the unit and assaulting with it as long as it has sufficient movement points.

### Enemy Fire Phase

In the Enemy Fire Phase, enemy units fire at friendly units. During these shots, identification of the targetted unit and reports of hits and misses appear in the message area.

### Enemy Movement Phase

In the Enemy Movement Phase, each enemy unit moves according to its agressiveness and its strength. A unit given a higher aggressiveness (4, 5, 6, or 7) tends to move in the direction of your forces, in order to engage them in assaults and combat. A unit with a lower aggressiveness rating tends to retreat from danger as it comes under withering fire. Such a unit does not move otherwise. A unit with aggressiveness 0 does not move (see the Editor Rules for a fuller explanation of aggressiveness).

### Victory Phase

In the Victory Phase that completes a turn, you receive victory points for enemy units eliminated. The enemy receives points for friendly units eliminated. The computer displays F=000 and E=000 for friendly and enemy points. This is a general tally of how you are doing.

In addition, you receive a victory point for each Victory Square you occupy at the end of each turn.

## III. TWO-PLAYER GAME

In the two-player version of the game, Player One (friendly) controls his units from Joystick 1 and Player 2 (enemy) from Joystick 2.

The rules for the two-player version are the same as for the one-player version except for the following differences:

### A. Observation Phase

There is no Observation Phase.

### B. Digging In

There is no "digging in" of units.



### C. Sequence of Play

#### Two-Player Turn Sequence

1. Friendly Artillery Plot (FA)
2. Enemy Artillery Plot (EA)
3. Friendly First Fire (FF)
4. Friendly Movement (FM)
5. Enemy Defensive Fire (EF)
6. Friendly Second Fire (FF)
7. Enemy First Fire (EF)
8. Enemy Movement (EM)
9. Friendly Defensive fire (FF)
10. Enemy Second Fire (EF)
11. Victory Phase
12. Save Game Phase

### D. Player Turns

Phases 3–6 constitute the Friendly half of the game turn. Phases 7–10 constitute the Enemy half of the game turn.

### E. Fire Capabilities

Each unit may fire only once in each half turn. Therefore, a unit which fires during First Fire of a given player turn may not fire during Second Fire of the same player turn. Similarly, a unit which opportunity fires (See H. below) during the opponent's movement phase will be unable to fire during the fire phase following that movement.

### F. Artillery

Notice the addition of the Artillery Plot phase. These represent off-board artillery support. You may omit these phases if you choose. The Artillery is very damaging to both sides when it hits. Artillery should not be used in the Operation and Strategic scales since in these scales it acts more like atomic weaponry.

Whether a side receives artillery is determined during the editing of the scenario. See the EDITOR rules below. If a side gets it, a black box will appear around the crosshair on the screen. To plot the artillery, move the crosshair to the square you want to target, and press the fire button. The location is stored, and the artillery lands at the beginning of the next turn. You may plot only on one square, replotting if you make an error.

To exit the Artillery Plot Phase, press <START>.

Artillery falls in a cluster around the plotted square. A unit that is hit has its strength halved immediately. Artillery damages any unit that is hit, regardless of who plotted it.

### G. Pins and Suppression

In the Tactical and the Tactical-operational scales, there is an additional effect of Firepower in the form of Pins and Suppressions. When a unit is hit, the chance of being Pinned or Suppressed depends on the type of fire it is experiencing. Under small arms fire, the chance of Pin or Suppression is small. It is greater for MG, AT, and greatest for HE.

A unit in cover has a lower chance of becoming Pinned or Suppressed.

A Pinned unit cannot move; a Suppressed unit can neither move nor fire.

A Pinned or Suppressed unit recovers gradually as long as it is not continually harrassed by enemy fire.

### H. Opportunity Fire

During an opponent's Movement Phase, a player may interrupt the movement by pressing his fire button. This brings the player into his Fire Phase. He may fire any unit that has not been fired in the current half turn. Units which already have fired flash during the Fire Phase. This opportunity Fire is just like normal fire. To revert to the opponent's movement, press <START>. Movement may be interrupted in this way only while a player is actually moving a unit.

### I. Hit Effects

When a unit is hit, the unit:

1) may lose some movement points due to mild disruption,

2) may become Pinned (no longer able to move),

3) may become Suppressed (no longer able to move or fire), or

4) may take strength losses.

## IV. EDITOR

The EDITOR provides, in effect, a blank sheet of paper and a pencil. You arrange elements, such as the shape and the appearance of the terrain on which the battle is fought, the full range of unit capabilities, and the initial deployment of the combatants. The information is stored on a data disk, and the situation is then available for enactment in the GAME.

The EDITOR may also be used to alter a scenario that you have created or that has been included in WARGAME CONSTRUCTION SET. Assemble your scenario carefully. There are many parameters to consider. Charts are included to help you initally to lay out the format of the forces involved. Use of these charts speeds the editing process and keeps errors to a minimum.

We suggest you play around with the map drawing routine or follow the instructions in the Tutorial (Section V) to get used to the icons and the procedures. After even minimal use, drawing maps becomes easy.

### A. Loading

Turn off everything but the disk drive. Insert the disk, EDITOR side up.

Turn the computer on. The editor loads and runs automatically. If you have an Atari XL or XE computer, you do not have to hold down <OPTION> when turning on the computer.

You need a Scenario Disk available on which to save your scenarios. Use a blank, formatted DOS 2.0S disk or a copy of the Scenario Disk on which scenarios previously were saved. Each disk holds up to 4 scenarios and one saved game.

Back up your Scenario Disk if you choose to alter the included scenarios. There are two ways to do this:

1) Load each scenario on the disk into the EDITOR and save each to another blank, previously formatted disk.
2) Use the COPY command with DOS.

## B. The Main Menu

There are eight options on the MAIN MENU, each highlighted by the up and down movement of the joystick. To activate, press the trigger while the option of your choice is highlighted.

In most cases, pressing <OPTION> returns you to the MAIN MENU.

## C. Main Menu Options

### 1. Disk Access

This routine loads or saves scenarios.

You can load a scenario from the sample Scenario Disk or from the scenario disk you have created. You can inspect and change the scenario that you load.

First place a scenario disk or a blank, formatted disk in the disk drive. Then, as described above, select option 1 with your joystick.

The computer displays the names of the scenarios (no more than 5) on each disk. Scenario #5 is reserved for saved games; that is, you may save a game on any blank, formatted disk or on the scenario disk and access it through selection #5.

Move the joystick up and down to highlight each scenario name. If there are no scenarios on the disk, the name area is blank.

To load a highlighted scenario, press <SELECT>. A second prompt asks you to be sure the scenario disk has been inserted. Then press <START> to begin loading.

To save a scenario, press <START>. The computer asks you to type in the scenario name which can be up to 36 characters. Type the scenario number first and then the name you assign to it.

Note: The scenario will be saved in the slot highlighted. If there is already a scenario in that slot it will be overwritten.

To return to the MAIN MENU, press <OPTION>.

### 2. Draw Map

This routine gives you a set of terrain icons to be placed on the map to make the battlefield.

There are two modes in this routine: the Selection Mode and the Drawing Mode.

When you enter the routine, you are in the Selection Mode. A flashing cursor appears below the map. The cursor is used to select the specific icon you want to use currently. Moving the joystick up and down reveals more selections in the icon area. The class of icons is printed below the icons. Moving left and right allows you to pick a certain terrain icon out of the particular class. In addition to the terrain classification, the screen may display L, M, or H, indicating that the terrain is Light, Medium, or Heavy cover. With some terrain classes, there is also a B, indicating that the class blocks the line of sight. For example, WOODS has an M and a B, indicating "medium cover" and "blocks line of sight"; while CREST has only an L, indicating "light cover" and "does not block line of sight."

When you locate an icon that you want to use, press the fire button. A cursor appears in the map area; you may move the cursor in any direction corresponding to the joystick direction. When the cursor is over an area in which you wish to place the chosen icon, press the button; the icon is deposited. The cursor retains the icon chosen as long as you remain in the Drawing Mode.

To return to the icon Selection Mode, move the cursor to one of the EXIT areas printed on the top and bottom of the map. The cursor disappears, and the icon Selection Mode is activated again.

There are some factors you should keep in mind while drawing terrain.

There is a special feature allowing you to erase an entire map. Insert the joystick into port 2; press the fire button. This replaces the map with clear icons. Since the Editor includes a map from one of the scenarios, you may wish to do this before drawing your own map.

**ROAD** and **RIVER** icons are designed to be contiguous. There are vertical and horizontal icons plus an icon for each corner to make turns or bends. The rivers are either a full blue or an edge. The full blue square is for the centers of the rivers, the edges for the banks. There are also two corner edges for making bends in the rivers. Using two edges beside each other with no center creates a narrower waterway.



**WOODS** consist of two center woods squares for variety and two icons for each edge. The centers should be placed where you want them to be, and the edges added to make them seem irregular.

**BRIDGES** placed over rivers allow all units to pass over the river. When an engineer-type unit enters a blown bridge, it rebuilds the bridge, allowing other units to cross. It is not clear which blown bridge is which. The first (left) icon is for horizontal bridges and the right one for vertical bridges.

In the Tactical scale, **BUILDINGS** may be placed apart or may be placed right next to each other to make larger buildings. The leftmost icon in each class is a clear terrain icon; it is there for easy access in cleaning up mistakes. In the building icons, the last icon on the right is a square icon. It is a Victory Square. For all game purposes, it acts like a building/city square. In addition, when a Victory Square is occupied at the end of the turn, the side occupying the square receives one bonus victory point for each one occupied.

There are three **MINE** icons. When a friendly unit enters one of these, the unit undergoes a mine attack. The first mine icon appears as a solid square. During the game, this icon appears as clear terrain; it should be used for hidden mines. The second mine icon is the standard mine icon; it is displayed as it appears on the map in the game. The third is a road mine icon; it is used for hiding mines along roads.

There are tricks to be used in drawing ROADS and WOODS.

To place a road, go first to the Choose Scale option on the MAIN MENU; select Operation Scale. It is clear in this scale which way the road icons bend; therefore, roads can be drawn easily. After placing all roads, return to the Choose Scale options, and select the scale you want to use for your scenario. You should then check the roads to make sure they are as you want them.

There is a special utility for drawing woods. Start with the first full woods icon (the icon on the left). Place this icon in all areas in which you want woods. Return to the icon selection mode; press <SELECT>. This action randomizes the woods centers and places the woods edge icons around the edges, thereby speeding the entire process. Should you wish to use this option, place the centers at least 2 squares from any other terrain so that the edges do not overwrite the other terrain.

To exit the map drawing routine, press <OPTION>.

### 3. Edit Map Colors

With this routine, you can use the joystick to change the colors of the map and units. Moving the joystick up or down changes the color. Moving it left or right changes the hue (shade).

There are five classifications of color: "TREES", "ROADS", "BACKGROUND", "UNITS", and "WATER".

"TREES" indicates the dark color, a dark green, in its normal operation. It is used as the main color in trees and for shading lighter colors in buildings and roads.

"ROADS", initially, is a light brown. It dominates in roads in the Tactical Scale and Tactical-operation Scales. In the Operational Scale, "ROADS" is the dark green of "TREES".

"BACKGROUND", the most obvious color, is the color of clear, empty terrain.

"UNITS", initially, is the white highlighting of the units. Generally, unless a white background is to be used, this color should be left alone.

"WATER", initially, is light blue, and is the color of the rivers on the map.

You can check the map and unit icons with the Deploy Units routine. If you change colors, check to be sure you have created the effect you want.

### 4. Edit Friendly Units

With this routine , you can define the capabilities of the units you are to control in the game.

Moving the joystick up and down moves the pointers up and down. In most cases, moving the joystick left or right alters the feature of the chosen unit.

UNIT NUMBER: The identification number of the unit is a number between 1 and 31. To increase or decrease, first be sure the < > markers are on the unit number line, and then move the joystick right or left. Holding the button down while doing this hastens the process. During play of the game, the unit number is displayed as #nn, in which nn is the unit number corresponding to the unit number selected here.

FIREPOWER: Firepower is a number between 1 and 99. Generally, it is the degree of damage a unit does to another unit when it fires and hits. The higher the number, the greater the damage.

DEFENSE: Defense is a number ranging from 0 to 99. It represents how well a unit takes hits. Generally, it is subtracted from a firing unit's firepower to get the true damage a hit

incurs. Example: a unit with a firepower of 20 hits a unit with a defense of 15. The overall damage done is 5 hit points (See STRENGTH for an explanation of hit points). Other factors, such as cover, range, etc. also have an effect. These values are simply a starting point.

ASSAULT: Assault is a number ranging from 0 to 14. It represents a base value in calculating assaults. Generally, the higher the number, the greater the chance of its winning an assault. In an assault or overrun, the assaulting unit's assault factor is added to its strength. Then the assaulted unit's assault factor is added to its strength plus any terrain bonus (1 for light, 2 for medium, 4 for heavy). The two results are compared. Initially, there is a 50% chance of an assaulting unit winning. This chance is adjusted upward or downward depending on the calculated result from above. If the attacker's value is less than the defender's, then the base chance of success is lessened on a prorated basis. If greater, then the chance of success increases.

Because of the other variables included, this value alone does not indicate a specific ability, only a general one. In most cases with assaulter and assualtee of equal strength, the one with the higher assault factor has the edge.

MOVEMENT: Movement is a number ranging from 1 to 99 (0 to 99 for enemy units). For ground units, it is the number of movement points the unit can move in a given movement phase. For helicopters, it is the total number of squares the helicopter can move (helicopters are unaffected by terrain). For boats, it is the number of water squares the boat can traverse in a given movement phase. Movement costs for ground units are listed on the Terrain Effects Chart.

In the one-player version, the movement allowance of an enemy (computer) ground unit is the number of squares the unit moves, not the number of movement points assigned to it.

STRENGTH: Strength is a number ranging from 1 to 7. It represents a multiple of the actual strength of the unit (the hit points it can endure). To get the actual strength of a unit that the game uses, multiply this number by 32 and add 32. Example: A unit with a strength 6 has 224 hit points. Continuing with the example given above in Defense, the unit with a defense of 15 that was hit by one with a firepower of 20 (all else being equal) goes from 224 to 219 after the hit. The essential idea to keep in mind is that the higher the strength value, the longer the

**TERRAIN EFFECTS TABLE**

| | UNIT TYPE | | | | | | |
|---|---|---|---|---|---|---|---|
| TERRAIN TYPE | IN | TN/TR | EN | MR/GN | HL | BT | AT/SP |
| Clear | 2 | 2 | 2 | 2 | 1 | P | 2 |
| Roads | 1 | 1 | 1 | 1 | 1 | P | 1 |
| Bridge | 3 | 3 | 3 | 3 | 1 | 1 | 3 |
| Blown bridge | 3 | P | * | 3 | 1 | 1 | P |
| Trees | 3 | 3 | 3 | 3 | 1 | P | 3 |
| Crests | 3 | 3 | 3 | 3 | 1 | P | 3 |
| Hilltop | 6 | 6 | 6 | 6 | 1 | P | 6 |
| Woods | 6 | 6† | 6 | 6 | 1 | P | 6 |
| Mines | * | 7 | 7 | 7 | 1 | P | 3 |
| Buildings | 8 | 8 | 8 | 8 | 1 | P | 8 |
| River | 8 | P | 8 | 8 | 1 | 1 | 8 |
| Border | P | P | P | P | P | P | P |

KEY:
# = Cost in movement points
P = Prohibited
* = All remaining movement points
† = TN and TR prohibited in woods centers

unit survives in battle. In an attack, if a unit's actual strength is less than the firepower directed at it, the unit is eliminated.

RANGE: Range is a number ranging from 0 to 20. It represents the number of squares there can be between a firing unit and its target for the unit to fire. Units with a range of 0 can assault only; they cannot fire. This enables you to simulate larger scales and still have some combat occur.

FIRE TYPE: First, the FIRE TYPE chosen determines how the unit sounds when it fires. There are four types of fire used in the game: 1) SM (small arms) sounds like a short crack; 2) MG (machine gun) sounds like a series of cracks; 3) AT (anti-tank gun) sounds like a short whistle and an explosion; and, 4) HE (mortars and artillery) sounds like a longer whistling sound followed by an explosion.

Second, the type of fire chosen has an impact also on Pinning and Suppressing units in the tactical and tactical-operational scales. In the game, when a unit is hit, there is a chance it will become Pinned or Suppressed. The chance is small if the attack is with SM, greater if the attack is with an MG, even greater if it is with AT, and very high if the attack is with HE.

For best effect, choose a fire type that is appropriate for the unit. Keep in mind its Pin/Suppression effects, but do not base your choice of fire type on that alone.

UNIT TYPE: Your choice of unit type, unlike that of fire type, affects play. Keep in mind that the general classification cannot itself



cover all characteristics. For example, designating a unit as a tank does not assure that it will act as a tank in the game. You have to also give it firepower, movement, and armor characteristics that make it tank-like.

There are currently 9 types available. The abbreviations used on the screen and the characterizations follow.

- *IN (Infantry):* Infantry units are assumed to be leg units. They may enter any type of terrain.
- *TN (Tank):* Tank units are assumed to be tank-like vehicles. They are not permitted to enter water or heavy woods. They cannot be Pinned or Suppressed.
- *EN (Engineer):* Engineer units act as leg units. In addition, they clear mines and rebuild destroyed bridges.
- *MR (Mortar):* Mortar units are limited range, indirect fire units. They are not subject to Line of Sight restrictions, but they are subject to Range restrictions. The range value given above is not used; instead they are given a range of about 20 squares.
- *GN (Gun):* Gun units are cannons. They are similar to mortars, but they have no range restrictions.
- *SP (Special):* Only the Enemy units can be Special units. They generally act as normal units do. The one exception is that if they hit a helicopter, they eliminate it automatically. This to balance the extreme power of the helicopters.

The following units are available for Friendly units only. They are the only types that may be used to transport other units. For example, if you want infantry riding tanks, design the tank to act as a tank, but give it a TR (Truck) unit classification.

- *TR (Truck):* Truck units are wheeled vehicles. They do not enter heavy woods or water. They should be used mainly for transport.
- *HL (Helicopter):* Helicopter units are unaffected by terrain. They move at the rate of 1 square per movement point. They are good for transport and if given some firepower, as gunships. They are not restricted to Line of Sight firing and can see over most terrain features.
- *BT (Boat):* Boat units move on water only. They can be transported to water if given the capability. They can be used as gunboats or as transports for units making beach assaults or river crossings.

TRANSPORT: This is a yes/no flag. If "yes," then the unit being edited can be transported by trucks, helicopters, or boats.

DIG IN: This is a yes/no flag. If "yes," then a Friendly unit can "dig in" during the game. Use at your discretion. It is available only for the one-player version of the game.

AT CAPABILITY: This is a yes/no flag. If "yes," then the unit can fire and inflict damage on armor targets out to its range. If "no," the unit can fire at armor only if adjacent.

AT DEFENSE: This is a yes/no flag. If "yes," the unit is treated as an armored target and can be hurt by ranged fire only if the unit firing at it has AT Capability.

DUPLICATE: After you have assigned a set of attributes to a unit, you may use this feature to quickly assign the same attributes to one or more other units.

Set the unit number to the number of the new unit to be created. Move the brackets down to the DUPLICATE line, and press the fire button. A number appears to the right. Use the joystick to adjust this number to the number of the previously defined unit that you now want to duplicate. Press the button again, and the new unit becomes an exact copy of the prior unit. Repeat the procedure to create additional duplicate units.

CHOOSE ICON: If you are on this line and move the joystick left or right, you can see the character below change shape. There are many shapes available. Generally, you should keep the units with the light background as your units and save the dark background units as enemy units.

### 5. Edit Enemy Units

There are 31 available enemy units. The menu for this routine is similar to the menu for EDIT FRIENDLY UNITS. Two lines are omitted: Transport and Dig In. One line is added: Aggression.

AGGRESSION: Aggression is a number ranging from 0 to 7. If you stop on this line and push the joystick left or right, a number appears. This number can be raised or lowered with the joystick moves to the left or right. It indicates how the enemy reacts during a game. The higher the number, the more aggressive the actions of the enemy unit.

A unit with an aggression level of 0 does not move and has a "hold at all costs" order. Levels 1, 2, and 3 indicate a unit that mainly will retreat to better positions if under heavy duress. This retreat is oriented upscreen; that is, the unit retreats toward the top of the map.

As the aggression level rises to 4 and 5, the unit is more likely to leave its position and charge your units. This charge is an individual act and generally is oriented

toward the nearest unit. At level 6, the unit unconditionally charges the nearest enemy unit that it can see. At level 7, the unit becomes a counterattacker. This means that as the game progresses, the unit is triggered to pursue relentlessly your units until they are gone or it is gone. A unit with an aggression level of 7 does not move until a counterattack is triggered. The counterattack is triggered at random; the chance that it will occur increases as the turns increase. This allows you to set some units in reserve for the enemy forces. These units, if put at the top of the screen away from the main battle, all counterattack at the same time if they are set to aggression 7.

To summarize, if you want a unit to act wimpy, set aggression at 3 or less. If you want it to hassle your units, set it at 4 or 5. If you want it to hassle and counterattack, set it at 6. If you want it to counterattack only, set it at 7. This gives you some leeway as to setting up the enemy disposition. For example, you could have front line of 1 and 2 aggressions level units, and behind them, a group of tanks with aggression 6 or 7 who "come to the aid" of the enemy front line units, hopefully in the nick of time.

### 6. Deploy Units

With this routine, you indicate the starting locations of all friendly and enemy units. As a guideline, keep in mind the orientation: your forces tend toward the top of the map offensively, and the enemy units tend toward the bottom offensively and the top defensively. These tendencies occur in units with aggression levels of 4, 5, or 6. Therefore, set up your forces initially in the bottom quarter of the map; and set up the enemy forces in the top quarter. Of course, other arrangements are possible if you prefer.

DEPLOYING FRIENDLY UNITS: To deploy a friendly unit, use the joystick to place the cursor over the unit, and then press the fire button. A cursor appears on the map. Use the joystick to move this cursor to the desired location for the unit at the start of the game, and them press the fire button. After the unit is placed, control reverts to the unit icon line.

DEPLOYING ENEMY UNITS: Each enemy unit can be in one of three spots at the start of the game; therefore, you have to spot each enemy unit 3 times. You will not know which of the three is the actual location until the unit shows up in play. A number next to the unit ID and the sound of beeps indicate how many placements remain.

You can spot a unit twice in the same place, increasing its chance of starting there. If you spot it in the same place three times, it is automatically placed there at the start of the game.

FEATURES: Units that have been deployed are indicated by a blue line above and below the unit. The screen appears as it does in the map drawing routine, but instead of terrain icons, there are unit icons. You can see under a flashing cursor the unit disposition (friendly or enemy) and the unit number. Moving the joystick left and right moves the cursor left and right. Moving it up and down brings in the next set of units.

Units already deployed can be re-spotted, simply by moving the cursor to another location and pressing the fire button. Units can be un-spotted by pressing the SELECT key.

To return to the main menu, press the OPTION key.

SPECIAL FEATURE: To wipe out all deployed units, insert the joystick into port 2 and press the fire button. This removes all friendly and enemy units from the map, and they may be re-deployed. Since the Editor includes units from one of the scenarios, you will need to do this before deploying your own units.

### 7. Print Map

This routine gives you an ACSII representation of the map. The printout is rotated ninety degrees so that the right side of the printout will be the top of the map. In the printout, X is border, + are roads, # are building/cities, & are rivers/water, and – are minor terrain features.

### 8. Choose Scale

This routine changes the appearance of the map and sets up some changes in the game, mainly in the buildings and roads.

In the Strategic scale, rivers are changed also.

In the Operational and Strategic scales, units are not pinned or suppressed by fire.

### 9. Artillery Option

Artillery can be toggled on and off for the two-player version by pressing the OPTION key. If artillery is on, both players receive artillery each turn; if off, neither player receives any.

# V. TUTORIAL

## A. Introduction

All games begin with ideas about settings, characters, and goals. As the ideas become more clearly defined, scenarios are developed. Some of the original ideas are dropped as others that seem more appropriate arise and are incorporated in the plans. The WARGAME CONSTRUCTION SET has easy editing features that allow you great flexibility in carrying out your designs.

This tutorial illustrates the entire process, from thinking in general about the type of game to entering the details into the computer and saving your efforts. Follow our suggestions for creating the game scenario, developing the preliminary plans on paper, drawing the map on the screen, entering the data, and then saving the information on a disk.

## B. Planning the Game

### 1. Genre

With the WARGAME CONSTRUCTION SET, you can simulate conflicts in many genres: historical battles of any period, literary classics, fantasy, science fiction, etc. For this first tutorial game, we have chosen to help you design a small fantasy scenario.

### 2. Theme and Plot

Having chosen fantasy, we thought of a story line that will allow our characters to fight for the triumph of good over evil.

The necromancer Ixtul has been terrorizing the poor residents of a minor barony for the past several months. The baron, with few men of his own, has enlisted the aid of a group of itinerant adventurers. If our troops succeed in fighting their way past Ixtul's minions and in destroying the necromancer and his laboratory, they will be rewarded greatly.

### 3. Map Scale

In a scenario based on a real situation, the map scale is of primary importance. Basing your computer map on an already existing map, you must decide what scale will best represent it.

In a fantasy or sci-fi scenario, the scale is of lesser importance. It may be arbitrarily chosen or even left undefined as it will be in this tutorial game.

### 4. Map Size

Your choice of map size should also be influenced by the type of scenario planned. In a simulation of a historical battle, you should include the entire region in which the battle was fought.

To broaden the selection of stratagems available to the players, also include areas that might have been used, but were not.

In addition to the type of scenario, the number of units to be included in the scenario should determine the map size. Too many units on a small map may create congestion and a lack of mobility. Too few units on a large map may result in a difficult, tedious march to be close enough to engage the enemy. These effects may be desirable in some few circumstances, but more often are inappropriate.

For our game, we will use a very small (15 × 15) map.

### 5. Sketch Map

You will find it useful to sketch your map on graph paper first. Draw your active map area and then the terrain, following the same sequence that is recommended for developing the map on the computer (outlined in Section D.2).

### 6. Number and Scale of Units

The number and scale of units are closely related. The maximum number of units on each side is 31; the unit scale must accommodate this limitation. For example, you may decide that in a platoon action, the units will represent squads, fireteams, and individual soldiers. This choice will affect the number of units comprising the platoon.

In our game, you will use individuals for the adventurers, Ixtul, and some of Ixtul's minions. Less worthy minions of Ixtul will represent groups of a dozen or more lesser beings.

### 7. Unit Design

ATTRIBUTES: Having made preliminary decisions as to unit scale and number of units, you should be ready to assign numerical values. Make a chart similar to the example in Figure 1A. Across the top, fill in the units that you wish to include in the scenario. Then, consider the attributes of each unit.

It is helpful to define norms for these values. This is more easily done for attributes such as Assault and Strength as they have a comparatively narrow range and the arithmetic median can serve as a useful norm.

It is more difficult to select norms for Range and Movement as, in most cases, these have to be smaller than the median value to be meaningful. In making both decisions, map scale should be considered. In selecting Movement rates, terrain movement costs are also an important factor. Be sure the values chosen leave room for variance upwards or downwards.

Firepower and Defense must be balanced carefully against each other. Essentially, for every increment of 32 by which Firepower exceeds Defense, the Strength of the target will be decreased by 1. This means that a small difference between normal Firepower and normal Defense will create a scenario with few losses. A wide difference will result in greater casualties and more rapid attrition of units. Use this relationship to create desired effects in your scenarios. If a unit represents a large organizations, its elimination should not occur readily as that of a unit representing a single man.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIREPOWER | | | | | | | | | | | | | | | | |
| DEFENSE | | | | | | | | | | | | | | | | |
| ASSAULT | | | | | | | | | | | | | | | | |
| MOVEMENT | | | | | | | | | | | | | | | | |
| STRENGTH | | | | | | | | | | | | | | | | |
| RANGE | | | | | | | | | | | | | | | | |
| FIRE TYPE | | | | | | | | | | | | | | | | |
| UNIT TYPE | | | | | | | | | | | | | | | | |
| TRANSPORTABLE | | | | | | | | | | | | | | | | |
| DIG IN | | | | | | | | | | | | | | | | |
| AT CAPABLE | | | | | | | | | | | | | | | | |
| AT DEFENSE | | | | | | | | | | | | | | | | |

*Figure 1.A*

| | SYLVAN | SHORTY | SWIFTY | TARKUS | HUNK | SHAZAR | VICTOR | KATE | GRUNBAR | IXTUL | SKELETONS | ZOMBIES | ARCHERS | GOLEMS | GIANTS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIREPOWER | | | | | | | | | | | | | | | | NORM = 32 |
| DEFENSE | | | | | | | | | | | | | | | | NORM = 16 |
| ASSAULT | | | | | | | | | | | | | | | | NORM = 7 |
| MOVEMENT | | | | | | | | | | | | | | | | NORM = 16 |
| STRENGTH | | | | | | | | | | | | | | | | NORM = 4–5 |
| RANGE | | | | | | | | | | | | | | | | NORM = 5 |
| FIRE TYPE | | | | | | | | | | | | | | | | NORM = SA |
| UNIT TYPE | | | | | | | | | | | | | | | | NORM = INF |
| TRANSPORTABLE | | | | | | | | | | NA | NA | NA | NA | NA | NA | NORM = Y |
| DIG IN | | | | | | | | | | NA | NA | NA | NA | NA | NA | NORM = Y |
| AT CAPABLE | | | | | | | | | | | | | | | | NORM = N |
| AT DEFENSE | | | | | | | | | | | | | | | | NORM = N |
| | | | | | | | | | | | | | | | | AGGRESSIVENESS |

*Figure 1.B*



For your purposes, a moderate difference will work best; units will fight it out in a few turns. The norms selected are toward the lower end of the scale; this allows for the creation of some very powerful units.

It is less crucial to assign norms to the final attributes: Fire Type, Unit Type, Transportability, Dig-in Ability, Anti-tank Capability, and Anti-tank defense.

For our tutorial game, the norms selected are shown in Figure 1B. Note that side two differs slightly in format from that of side one.

ONE OR TWO PLAYERS: Before designing the units, consider whether the scenario will be played primarily by one solitaire player or by two opponents. Although any scenario may be played by either one or two players, certain design features are more suited to each mode. If a scenario is designed for one mode and played in the other, a lack of balance may result.

In a two-player scenario, forces should be balanced approximately. A slight edge in material may be given to player two to offset the lack of transportation ability; but overall, the two players should be expected to play a fairly even game. In a one-player scenario, the computer-opponent cannot be expected to play with as much verve and flexibility. Thus, the computer should be given an edge. This may be done by an advantage in the number of units or the strength of its units or by assigning the computer side control of one or more objectives which provide "free" victory points as long as they remain controlled by the computer's forces.

When designing your units, remember to set the Aggression level of units for player two even if the scenario is primarily designed for two players. This will allow solitaire play without additional adjustment.

For our tutorial game, you will be designing a one-player scenario. To provide balance, you will give the computer side extra units and control of a single objective at the start of the game.

## C. Character (Unit)

### 1. The Adventurers

*Sylvan of the Glade:* An elf bowman of great skill. Thin of elves as quick and lithe, but somewhat frail. Sylvan should have an excellent missile, good movement speed, but below average physical characteristics.

*Shorty Brophur:* A dwarf warrior, stout and hearty. Dwarves are typically strong and healthy. Shorty should be given above average physical characteristics. However, his short legs call for a reduced movement speed. He has no missile weapons to speak of. Shorty can remove traps and jury-rig bridges.

*Swifty the Dip:* A thief or scout, lightning fast. Swifty has an excellent movement speed, but below average physical and combat values. Swifty can remove traps and jury-rig bridges.

*Tarkus Starkiller:* A great lizardman warrior. The epitome of a physical warrior, Tarkus should be rated very high in all physical categories. His thick hide acts as protection from most missile weapons, but his bulk makes for reduced movement.

*Hunk Hawker:* A mercenary, soldier of fortune. Hunk, a healthy specimen, wears armor and is well practiced with sword and bow. He is an all-around useful fellow with no outstanding strengths or weaknesses.

*Shazar the Wize:* An elderly mage. Shzar is weak and slow, but practiced in the mystic arts. He can hurl bolts of magic at his foes.

*Victor von Von:* A master duelist. Victor is one of the world's greatest swordsmen. He rejects missile weapons because he thinks them unmanly.

*Sister Kate:* A priestess of storms. Kate is a frail young woman of great piety. She can summon forth huge bolts of lightning from even cloudless skies.

*Grunbar the Ancient:* A huge, fire-breathing dragon. Without peer in any category, Grunbar is by far the strongest of the adventurers. His only disadvantage is the short range of his breath. Grunbar can fly.

### 2. Ixtul and his Guardians

IXTUL: A wizened sorceror and necromancer. Ixtul has a ward which protects him from all ranged attacks. He will not leave his laboratory, preferring to have his minions do his bidding. Ixtul can hurl tremendously destructive bolts of magic to any place in the world. He does this by using the palantir in his possession.

SKELETONS: There are dozens of animated skeletons, each armed with sword and shield. They are quite vicious and utterly fearless.

ZOMBIES: There are dozens of animated corpses. Slightly sturdier than skeletons, zombies are just as fearless.

UNDEAD ARCHERS: Animated warrior ghouls. Ixtul has animated the remains of a mercenary archer company which had been led unsuccessfully against his minions. Now they, too, are his minions.

URGND THE GIANT: A twenty-foot tall humanoid. Urgnd the Giant lives on a hill near Ixtul's lab and has formed an alliance with the necromancer. He is formidable in physical combat, capable of hurling huge rocks over great distances.

GOLEMS: Magically animated stone statues. Ixtul is surrounded by his four golem bodyguards at all times. Anyone approaching Ixtul must pass them. They are massive and virtually indestructible.

### 3. Aggression Settings

Ixtul, his Golem guards, and Urgnd the Giant are expected to guard their posts to the death. The archers should snipe at intruders, but stay under cover. Therefore, to carry out these aims, you should place these characters carefully and set their aggression levels to 0 to prevent movement.

### 4. Units

Each adventurer is one unit for a total of nine for side one.

Ixtul and the giant are each one unit for side two. In addition there are four golems (one to stand on each space horizontally or vertically adjacent to Ixtul), two archer units, two zombie units, and three skeleton units. The total for side two is thirteen units, giving the computer the suggested fifty percent advantage.

Write in the unit numbers 1 through 9 next to the names of the adventurers and the numbers 1 through 13 next to those of the enemies. See Figure 1.C for the completed chart.

## D. At the Computer

### 1. Preliminaries

**a.** You need an initialized DOS 2.0S disk on which to save your completed scenario. If you do not have a DOS 2.0S master, make a copy of the Scenario Disk provided in the game; save the scenario on the copy.

**b.** Boot the WARGAME CONSTRUCTION SET Editor Disk. Use your joystick to move the highlight up and down among the options on the opening menu. Press the joystick fire button to activate a highlighted option.

**c.** Before you begin to create the scenario, press the <OPTION> key to toggle the off-board artillery option to off. There is no off-board support fire in the scenario developed in this tutorial.

### 2. Creating the Map

Use the joystick to move the highlight to option 2; press the fire button. Place your joystick in port 2 and press the fire button. You will see a field of green clear terrain squares on your screen. Surrounding the field is a brown border consisting of "border" icons

| | SYLVAN #1 | SHORTY #2 | SWIFTY #3 | TARKUS #4 | HUNK #5 | SHAZAR #6 | VICTOR #7 | KATE #8 | GRUNBAR #9 | IXTUL #1 | SKELETONS #2,#3,#4 | ZOMBIES #5,#6 | ARCHERS #7,#8 | GOLEMS #9,#10,#11,#12 | GIANTS #13 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIREPOWER | 64 | 32 | 32 | 32 | 32 | 64 | 32 | 96 | 96 | 80 | 32 | 32 | 32 | 32 | 64 | NORM = 32 |
| DEFENSE | 8 | 24 | 8 | 32 | 24 | 8 | 16 | 4 | 48 | 99 | 8 | 16 | 0 | 64 | 32 | NORM = 16 |
| ASSAULT | 5 | 8 | 5 | 11 | 8 | 1 | 9 | 2 | 14 | 3 | 8 | 10 | 6 | 12 | 12 | NORM = 7 |
| MOVEMENT | 20 | 12 | 24 | 8 | 16 | 12 | 16 | 16 | 24 | 12 | 12 | 12 | 16 | 8 | 32 | NORM = 16 |
| STRENGTH | 3 | 5 | 3 | 6 | 5 | 2 | 4 | 2 | 7 | 4 | 3 | 5 | 5 | 7 | 7 | NORM = 4–5 |
| RANGE | 8 | 0 | 0 | 0 | 5 | 5 | 0 | 20 | 2 | (20) UNL. | 0 | 0 | 5 | 0 | 16 | NORM = 5 |
| FIRE TYPE | MG | SA | SA | SA | SA | AT | SA | HE | HE | HE | SA | SA | SA | SA | AT | NORM = SA |
| UNIT TYPE | IN | EN | EN | IN | IN | IN | IN | MRT | HEL | GUN | IN | IN | IN | IN | IN | NORM = INF |
| TRANSPORTABLE | Y | Y | Y | Y | Y | Y | Y | Y | N | NA | NA | NA | NA | NA | NA | NORM = Y |
| DIG IN | Y | Y | Y | Y | Y | Y | Y | Y | N | NA | NA | NA | NA | NA | NA | NORM = Y |
| AT CAPABLE | N | N | N | N | N | Y | N | Y | Y | Y | N | N | N | N | Y | NORM = N |
| AT DEFENSE | N | N | N | Y | Y | N | N | N | Y | Y | N | N | N | Y | N | NORM = N |
| | | | | | | | | | | 0 | 6 | 6 | 0 | 0 | 0 | AGGRESSIVENESS |

*Figure 1.C*



which no unit may enter. Return your joystick to port 1.

**a.** EDGING THE MAP AREA: You will see a red blinking cursor and series of icons. Below these at the bottom of the screen, the icons are identified. Pull back on the joystick until a brown square appears above the words CLEAR-BORDER. Push the joystick to the right until the red icon cursor is around the brown square (the border icon); then press the button. A white cursor will appear on the map window.

Use the joystick to move the white cursor to the lower right hand corner of the map. Be careful when moving the cursor at the top or bottom of the screen near either EXIT. If your cursor accidentally leaves the map window, you once again must locate the brown square below the map window and press the fire button when the red cursor is on it. The white cursor will appear in the map window as before.

When your cursor is in the lower right hand corner, it will be above a brown border icon. Move the cursor sixteen spaces to the left, and press the fire button. A brown border icon will appear; there should be 15 green spaces between this border block and the right hand map edge. To quickly create the left edge of your map area, hold the fire button down and push forward on the joystick. This will stack 16 of these brown border blocks vertically. Then hold the button down and push the joystick to the right. The top edge of your map will be quickly drawn in. You may thicken the border as you desire. We recommend a double row of border icons to very clearly delimit the map area. After you complete the border, move the cursor near either EXIT, and it will disappear from the map window.

If you place an icon (such as the border icon) incorrectly, you can erase it easily. Exit the window; pick up a clear green square with the cursor; place the green square over the incorrectly place icon; and press the button.

With the border complete, you will be ready to place the terrain on the map. Have your sketchmap ready (See Figure 2.A). This tutorial recommends a particular order of placement. For later scenarios, you may develop your own priorities.

**b.** ROADS (Figure 2.B): Roads (light brown in color) will be placed first. They make useful landmarks by which to gauge the placement of other terrain. Pull back on the joystick until the road icons appear below the map window. Place the icon cursor around the first vertical road icon (the third from the left). Press the fire button; the white cursor will appear in the map window.

Move the white cursor to the position of the first vertical road segment on your sketch map; press the button. Move the cursor to the location of each of the other vertical road stretches, and press the button at each one. You may wish to use the ninth road icon to add variation to your vertical roads. The two vertical road icons are interchangeable.

The road icons represent the following road positions:

1. Horizontal
2. Horizontal
3. Vertical
4. Crossroad
5. Top-to-right
6. Top-to-left
7. Bottom-to-left
8. Bottom-to-right
9. Vertical
10. Horizontal

Continue selecting and placing road icons to complete the road.

Note that a road may make only ninety degree bends. You must use a series of bends to simulate diagonal roads.

**c.** RIVERS: Cycle through the icon sets until you find the river icons (blue in color). There are ten available.

1. Upper bank
2. Upper bank
3. Lower bank
4. Upper left bank for bend
5. Lower left bank for bend
6. Upper right bank for bend
7. Lower right bank for bend
8. Right bank
9. Left bank
10. Full river

Select the full river icon and draw the river in the map window (as in figure 2.C). Exit the map window. Select the bank icons as required to enclose each river icon (as in Figure 2.D). The multiple upper bank may be used to add variety. You must decide which icon to place at the spot where the road crosses the river. There are two bridge icons (vertical and horizontal) and two interchangeable blown bridge icons. Substitute a blown bridge for the vertical road icon which previously spanned the river (as in Figure 2.E). Use the blown bridge icon on the right.

**d.** HILLTOPS: There is only one hilltop icon (brown within black) which may be used to represent either a single knoll or the slope at the edge of a large hill. Both uses appear in our tutorial game. Place the hilltop icons as indicated in Figure 2.F.

**e.** CRESTS: Crest icons (black) are used to represent rises of less significance than hills. There are two icons provided. The first icon best suits representing singular features, such as entrenchments. It also can be used to cover a large area of rough ground. The second icon better suits representation of continuous crest lines; it is used for this purpose in our tutorial game. Place the second crest icon as indicated in Figure 2.G.

**f.** BUILDINGS: There are several building icons (a combination of brown, blue, and black). With the exception of the last icon, all may be used interchangeably. The last icon is an objective icon; it will be explained later in this tutorial. Place the building icons as indicated in Figure 2.H.

**g.** WOODS CENTER AND AUTO-EDGING FEATURE: There are two woods center icons (black).

To use the "auto-edging" feature, select the left (darker) woods center icon and place it in the map window, as shown in Figure 2.I. Then exit the map window. Press SELECT and all woods will be edged for you (as shown in Figure 2.J).

Note that no woods center were placed vertically or horizontally adjacent to existing terrain features so that no terrain would be destroyed by the auto-edger. The auto-edger places an appropriate woods edge icon on all non-woods spaced adjacent to wood center and also replaced some of the dark woods centers with light woods for diversity.

Individual woods edge icons and trees may also be added for variety, as shown in Figures 2.K and 2.L.

**h.** MINES: Mine icons (brown and black) may represent traps as well as mines.

The first mine icon (solid black) represents hidden mines; it should be used in clear terrain only.

The second mine icon represents visible mines or traps.

The third mine icon is used to place hidden mines in vertical road segments.

Place the first and third icons to represent traps, as shown in Figure 2.M.

**i.** OBJECTIVES: A player receives one point at the end of each turn in which one of his units occupies an objective.

In our fantasy game, the objective represents Ixtul's lab. Place it as shown in Figure 2.N.

**j.** EXITING THE DRAW MAP ROUTINES: Press OPTION to return to the main menu.

### 3. Editing Friendly Units

Use the joystick to move the highlight to option four and press the fire button. Refer to your unit design chart (Figure 1.C). The adventurers are the friendly units, and Ixtul's minions are the enemy units.

Note that the on-screen menu is very similar to the menu used in designing the unit chart. The active line of the menu is marked with angular brackets. Push the joystick forward or pull it backward to move the brackets. Push the joystick left or right to change the values listed in the right-hand column.

As you begin, the brackets should be on the line labelled UNIT NUMBER. Friendly unit number 1 is Sylvan. Pull the joystick slightly to move the brackets down one line to FIREPOWER. Push the joystick left or right until the value to the right of FIREPOWER reads 64 (Sylvan's firepower).

Pull the joystick back again to move the cursor down to DEFENSE. Set Sylvan's defense to 8, the number on your chart. Continue setting values for Sylvan until you reach the line labelled TURN OF ENTRY.

TURN OF ENTRY is used to bring reinforcements into the game at predetermined points. Since there are no reinforcements in our game, the TURN OF ENTRY for all units should be set to 1.

After setting Sylvan's TURN OF ENTRY, move the brackets down to the line labelled CHOOSE ICON. (The DUPLICATE line is explained in the next section.) At the bottom center of the screen, you will see a single small icon which will represent the unit during play. This icon can be changed by pushing the joystick left or right. We recommend that friendly units be assigned icons with white backgrounds, and enemy units be assigned icons with dark backgrounds. Choose an icon to represent Sylvan.

Move the brackets back up to the line labelled UNIT NUMBER. Push the joystick to the right to change to unit number 2, Shorty. Set Shorty's attributes, and proceed to assigning the attributes for each of the friendly units.

### 4. Edit Enemy Units

Use the joystick to move the highlight to option four; press the fire button. Note the difference between the screen display and that used in setting friendly units. The TRANSPORT and DIG IN flags are gone. A new category, AGGRESSION, has been added.

A unit's aggression level determines its actions in a solitaire game in which the enemy units are controlled by the computer. In two-player scenarios, you do not need need to set the aggression level. However, since you might want to play the scenario when no opponent is available, you probably should set the aggression level in each scenario that you design. Use only two of the seven aggression settings, setting 0 (stand fast) and setting 6 (charge any opposing unit on sight). You will find an explanation of aggression levels in Section IV.5 of this rulebook.

Set all values for enemy units 1 and 2. Note that units 3 and 4 are identical to unti 2. The available DUPLICATE feature makes duplicating units quick and easy. Continue designing the enemy units until all thirteen are completed. Then press the <OPTION> key to return to the main menu.

DUPLICATE: To duplicate unit 2, set the UNIT NUMBER to 3 (the number of the new unit to be created). Move the brackets down to the DUPLICATE line; press the button. A number will appear on the right. Use the joystick to adjust this number to 2 (the number of the unit to be used as a pattern for the new unit). Press the button again and unit 3 will become an exact duplicate of unit 2. Repeat the procedure to make unit 4 another exact duplicate.

### 5. Deploying Units on the Map

Deploying units on the map is a simple process. There is one important restriction: no two units may be deployed in the same square.

Before deploying the units you have made, you must clear the units contained in the Editor. To do this, put your joystick in port 2 and press the fire button. When the Editor's units have disappeared, return the joystick to port 1.

Refer to Figure 2.O and Figure 2.P for reference. Each number on the map represents a unit. Numbers representing friendly units (adventurers) are underlined.

You will see a row of icons at the bottom of the screen. Push or pull the joystick to cycle through the icons. Push the joystick left to right to select individual icons.

Place the icon cursor around the icon of friendly unit 1; press the fire button. A white cursor will appear in the main map window. Place the white cursor around the space in which you wish to deploy friendly unit 1; press the button.

The unit will be deployed on the map, and the white cursor will disappear from the main map window. The icon below the map (and the icon on the map) will be tinted in blue to inform you that the unit has been deployed.

The following three pages contain Figures 2.A through 2.P; these figures illustrate the step-by-step process of drawing the map on the screen.

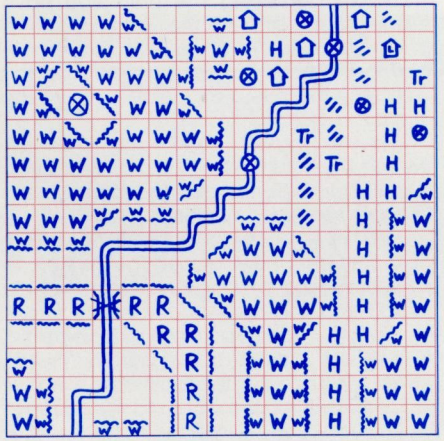

Figure 2.A

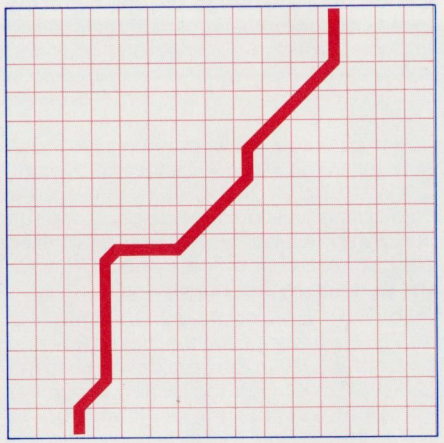

Figure 2.B

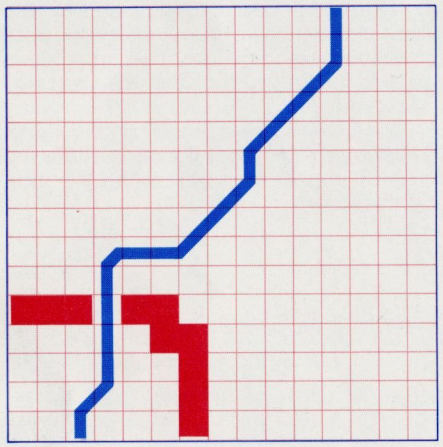

Figure 2.C

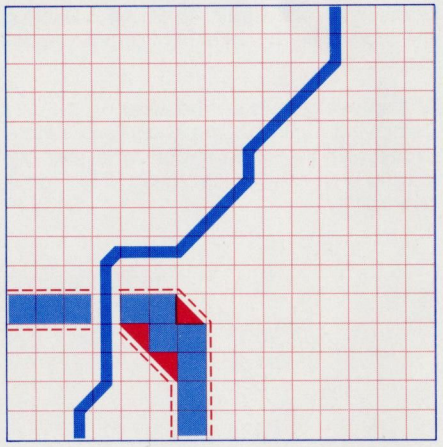

Figure 2.D

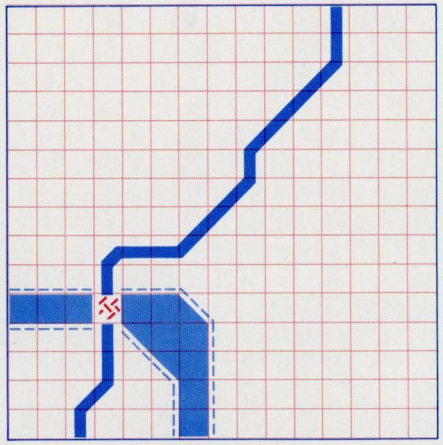

Figure 2.E

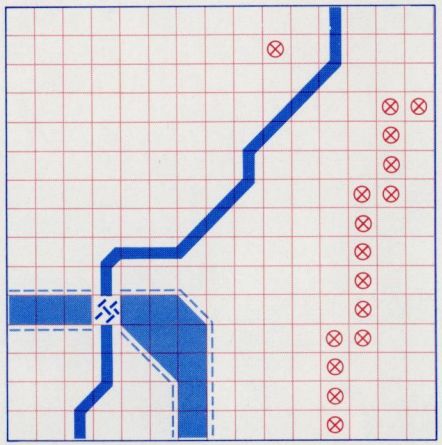

Figure 2.F



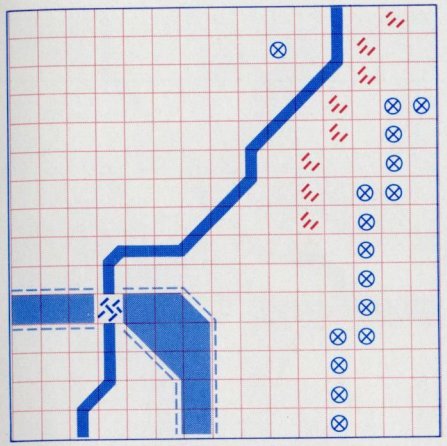

Figure 2.G

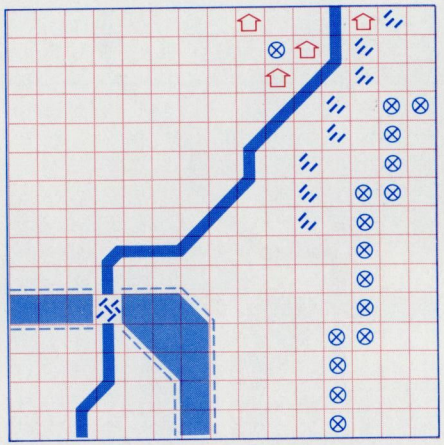

Figure 2.H

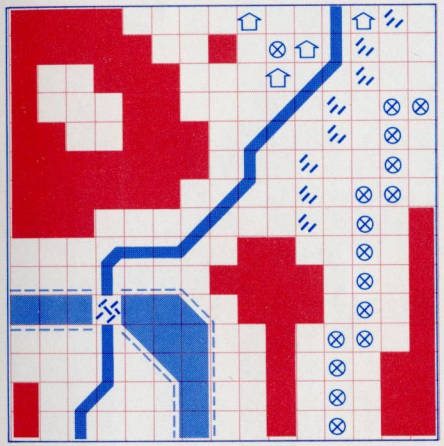

Figure 2.I

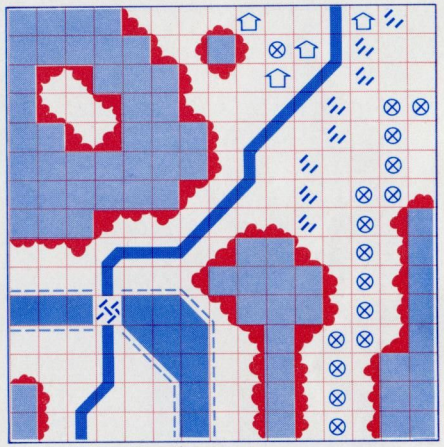

Figure 2.J

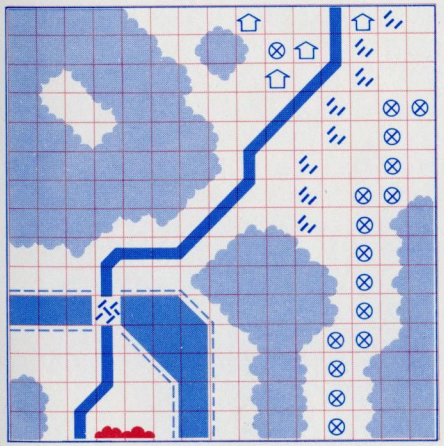

Figure 2.K

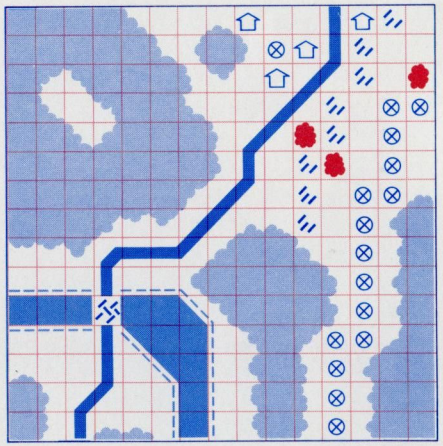

Figure 2.L

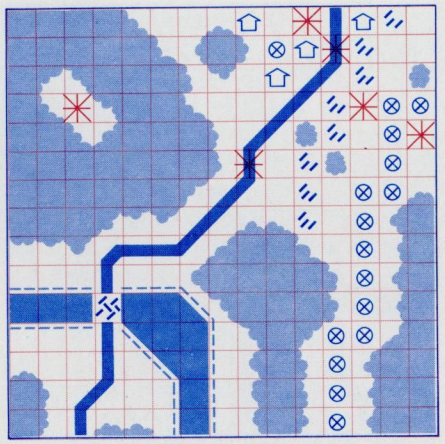

Figure 2.M

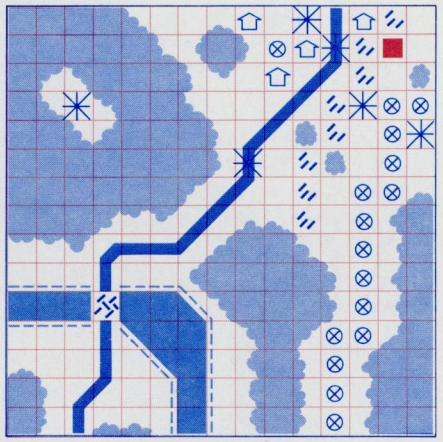

Figure 2.N

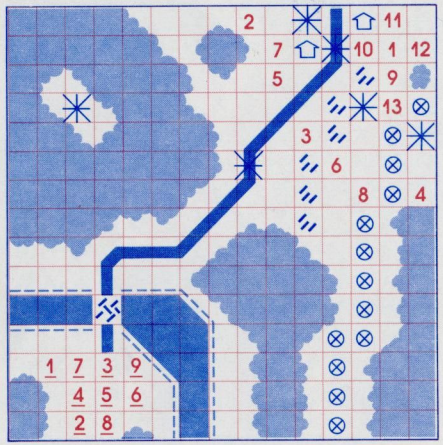


Figure 2.O

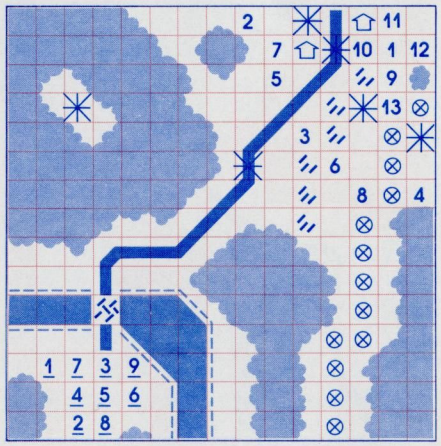


Figure 2.P



# VI. SCENARIOS

There are five one-player and three two-player scenarios. A scenario, though, is not exclusively one- or two-player; it can be played either way. However, each scenario is intended specifically for one or two players. Thus a one-player scenario accounts for the intelligence limitations of the computer. If played as a two-player game, the friendly player is at a disadvantage. The intelligence of his opponent is (usually) drastically greater than that of the computer. This must be considered when creating a situation which can be played with one or two players. Note also that the movement rates of the enemy units differ in the two versions. In the one-player version, the movement rates are the number of squares the unit will move, and in the two-player version it is the number of Movement Points the unit has.

In the two-player scenarios, both sides are capable of achieving a victory. Due to the flexibility of this package, specific victory levels are left to the players. Basically, if you feel you have beaten your opponent, you probably have.

## SIDE 1 OF SCENARIO DISK

### 1. Rommel's 88's (WWII)

FIVE DIVISIONS. That's what Rommel wrote on his map over the French town of Arras. So impressed was he at the initial ferocity of the British/French attack that he wrote "five divisions" right on the map for historians to ponder, perhaps forever. What actually attacked was an order of magnitude lower, approximately 4 battalions. Yet it is interesting to imagine Rommel, possibly in some darkened hut with only a lamp for light, scratching those words on that map, while outside things seemed to be coming undone in unexpected fury.

This one gets hot fast. You have two victorious columns busy with their drive to the coast in June of 1940. The British have launched a desperate counterattack of approximately 4 battalions of armor and infantry. Many of the British tanks were Matildas and had such heavy armor that standard German anti-tank weaponry of the day was ineffective. Only a lucky shot could stop one. When this ineffectiveness became apparent, Rommel had to call up the 88MM anti-aircraft guns from the tail of the column.

**Designer:** Roger Damon

**Number of Players:** Rommel's 88's is intended for 1 player.

**Map:** The map represents an area around two villages in France.

**Scale:** The scale of the map is approximately 25 meters per square. Units represent squads for infantry and individual tanks, guns, and MG's with crews.

**Units:**

*Friendly Forces*

1–5 ..... regular infantry
6–9, 12, 13 . are not used
10–11 ..... medium machine guns (30 cal.)
13–14, 23 .. 37MM anti-tank gun
15–16 ..... Panzer III tanks
17–19 ..... Czech 38T tanks
20–21 ..... Panzer II tanks
22 ..... 47MM anti-tank gun
24–29 ..... trucks
30–31 ..... 88MM anti-aircraft guns

Enemy forces are a mix of infantry, machine guns, heavy Matilda tanks and infantry tanks.

**Objective:** Stop the enemy counterattack by eliminating all enemy units.

**Game Length:** 6 turns is excellent, 7 good, and 8 or more, fairly poor.

### 2. To Cross a River

River crossings are among the most risky of standard military operations. They involve a large number of forces and often result in a large number of casualties. In this scenario, the setting is more modern with the inclusion of the helicopters. This presents some keen problems for the defender, as the transport capability and the movement range of the helicopters are unaffected by the river.

**Designer:** Roger Damon

**Number of Players:** This scenario is intended for 2 players.

**Map:** The map represents a section of river near a town with one bridge crossing. The bridge has been partially demolished. No units may cross it until it is repaired by the Engineers.

**Scale:** The scale is approximately 50 meters per square with units representing infantry platoons and tank companies.

**Units:**

*Friendly (player 1)*

1–12 ... Regular infantry
13–17 .. Tank Platoons
18, 22 .. Engineer Teams
19–21 .. Transport Helicopters
23–28 .. Boats
29–31 .. Motorized Field Artillery

*Enemy (player 2)*

1–12 ... Regular infantry
13–20 .. Anti-Tank Guns
21–22 .. Field Artillery
23–24 .. Mobile Anti-Aircraft Units
25–30 .. Tank Platoons
31 ..... is not used

**Objective:** Player 1 is to cross the river in force and rebuild the bridge with his Engineers so the armor can get across the river. Player 1 is to establish a bridgehead by eliminating all enemy units in the buildings of the town across the river.

**Game Length:** No Player 2 units in the town at the end of 10 turns is a Player 1 Victory. None at the end of 12 turns is a draw. Anything else is a Player 2 Victory.

**3. Abuse on the Meuse**

This is the Battle of the Bulge. Player 1 is the German player and Player 2 is the American/British. It demonstrates the strategic level of the Construciton Set. Unit ranges for fire are only 1 square. this makes the Assault the primary force for taking ground.

**Designer:** Roger Damon

**Number of Players:** The game is intended for 2 players.

**Map:** The map represents an area of Germany/Belgium/Luxembourg/France around which the Battle of the Bulge was fought. The German border is at the bottom and the Meuse River runs from the upper right area to the upper left.

**Scale:** Each unit is a division and a square represents an area of roughly 5 miles.

**Units:**

*Friendly (Player 1 — German)*

1–8 .... Armored Divisions
9–10 ... Luftwaffe Infantry
11–26 .. Infantry Divisions
27–28 .. Panzer Grenadier Divisions
29–30 .. Armored Regiments
31 ..... Corps Artillery

*Enemy (Player 2 — American)*

1–8 .... Armored Divisions
9–10 ... Airborne Divisions
11–26 .. Infantry Divisions
27–28 .. British Armored Divisions
29–30 .. British Infantry Divisions
31 ..... Corps Artillery

**Objective:** The German player (Player 1) has the initiative and is to push relentlessly towards and across the Meuse River and get as many units on the victory squares as possible by game's end. Player 1 should have a +10 point advantage by game's end to win decisively. Player 2 wins decisively if he prevents the German Player from crossing the Meuse with more than 2 units. Any other result is a draw.

**Game Length:** The game should end after 7 turns.

**4. Return to Beta 4**

Beta 4 is an asteroid rich in nickel. So rich that the original owners were invaded by a rival mining faction and ousted from their hold. On conquering the Asteroid, defenses were set up for the inevitable return of the original owners. Outraged at the refusal of the Federation to intervene in this form of theft, the Space Mine Corporation scoured the system for the best mercenaries and the best offensive weaponry and moved to take back the asteroid. You command these forces.

**Designer:** Roger Damon

**Number of Players:** This is intended as a 1-player game.

**Map:** The map is a section of the asteroid around the main mine portal. It is crossed with deep crevasses which only your propelled infantry and hovercraft can cross.

**Scale:** Each unit represents one team of 5 men, or one vehicle. Each square is approximately 100 meters.

**Units:**

*Friendly Units*

1–16 ... Storm Troopers
17–26 .. Assault Hovercraft
27–31 .. are not used

**Objective:** At all costs, you are to wipe out the 4 enemy missile launchers at the top of the map near the mine portal. This will weaken the enemy sufficiently so that the asteroid may be later retaken.

**Game Length:** You have 8 turns to accomplish your mission.

## SIDE 2 OF SCENARIO DISK

**1. Delta Force Rescue**

International terrorists have kidnapped three top NATO officials: General J.J. Jackson, his aide W.H. Smith, and Special Envoy K.P. Cooper. The terrorist's demands cannot be met. The situation is rapidly decaying. Delta Force, an elite counterterrorist unit, has been called in to rescue the hostages before time runs out.

The scenario starts with Delta Force having landed at an abandoned airstrip south of the terrorist camp.

**Designer:** Arlon Harris

**Number of Players:** This is intended as a 1-player scenario.

**Map:** The map represents the area around the main terrorist compounds. In the lower right across the river is the first terrorist camp in which one of the hostages is being held. In the top right corner is the main camp in which the other two hostages are being held.

**Scale:** Each unit represents one vehicle, one team, or individual men.



**Units:**

*Friendly Units*

1 ..... Delta Force Commander
2 ..... Fast Attack Patrol Craft
3 ..... Delta Force Team Alpha
4 ..... Delta Force Team Beta
5 ..... Delta Force Team Charlie
6 ..... Apache Helicopter
7–8 .... Black Hawk Helicopters
9 ..... J.J. Jackson
10 ..... W.H. Smith
11 ..... K.P. Cooper
12 ..... Support Aircraft
13–15 .. NMC-40 Warrior Dune Buggy
16 ..... Hummer Jeep
17–31 .. are not used

You will be facing a mixture of terrorist guards, patrols, and some SA-8 SAM launchers.

**Objective:** You are to rescue the one hostage in the lower camp and the two in the upper. They will appear as the game progresses. They should be loaded aboard some type of transport and returned to the airfield from which you will start. Getting three hostages onto the victory squares by the end of 16 turns is a decisive victory. Less than three by turn 14 is a major victory. Anything past turn 16 is meaningless as the rescue transport will have already left. On turn 10, you will receive some helicopter support.

**Game Length:** 16 turns

**2. Fulda Gap**

World War III has begun. Your position is in the Fulda Gap region of West Germany. You have received a message from your forward observers that a large Soviet tank force is on the way. To make matters worse, there have been scattered reports of airborne units landing in the area.

**Designer:** Arlon Harris

**Number of Players:** This scenario is intended for 1 player.

**Map:** The map represents an area in West Germany near the border of East Germany. Your forward helicopter base is at the bottom of the map. Near the center of the map is a small village garrisoned by West German forces with Leopard tanks. Scattered across the top of the map are 3 British Sheridan tanks acting as forward observers.

**Scale:** Vehicles are individual tanks, transports, and helicopters. Other units are MG teams and TOW missile teams. Each square is approximately 50 meters across.

**Units:**

*Friendly Units*

4, 5 .... Apache Helicopters
6–9 .... Huey 500 Helicopters
10–12 .. Huey Cobra Helicopters
13–15 .. M551 Sheridan Tanks
16–19 .. American M-1 Abrams Tanks
20–23 .. West German Leopard II Tanks
24–25 .. Marauders
26–27 .. U.S. Ranger MG teams
28–30 .. U.S. Ranger TOW teams
31 ..... Ranger Commander
1–3, 23 . are not used

You will be facing Soviet T-80's, T-72's, T-55's, BMP-1 transports, and some airborne troops.

**Objective:** Basically, you are to stop the Soviet advance. If any Soviet tank crosses the river at the bottom of the map, you have lost. If you have units in the village at the center of the map and there are no Soviet units in this village or advanced beyond it, you have won.

**Game Length:** 10 turns

**3. First Bull Run**

In the first major engagement of the American Civil War, Union troops attempted to flank the Confederate line. It was in this battle that the firm stance of Thomas Jackson's troops earned him the nickname "Stonewall."

**Designer:** Jeffrey A. Johnson

**Number of Players:** Bull Run is designed as a two-player scenario.

**Map:** The map covers the main battle area west of Bull Run, from Sudley Springs in the north to New Market.

**Scale:** Each unit represents one half of a brigade or a loose collection of batteries or cavalry companies.

**Units:**

*Friendly Units*

Army of the Potomac (Beauregard)

1, 2 ... 1st Brigade (Bonham/Kershaw)
3, 4 ... 3rd Brigade (Jones)
5, 6 ... 4th Brigade (Longstreet)
7, 8 ... 5th Brigade (Cocke/Evans)
9, 10 .. 6th Brigade (Early)
11 .... Cavalry
12, 13 . Artillery

Army of the Shenandoah (Johnston)

14, 15 . 1st Brigade (Jackson)
16, 17 . 2nd Brigade (Barton)
18, 19 . 3rd Brigade (Bee)
20, 21 . 4th Brigade (Smith)
22, 23 . Artillery
24–31 . are not used

*Enemy Units*
Army of Virginia (McDowell)
1–6 . . . 1st Division Infantry (Tyler)
7, 8 . . . 1st Division Artillery
9–12 . . 2nd Division Infantry (Hunter)
13 . . . . 2nd Division Cavalry
14, 15 . 2nd Division Artillery
16–21 . 3rd Division Infantry (Heintzelman)
22, 23 . 3rd Division Artillery
24–27 . 5th Division Infantry (Miles)
28–31 . are not used

**Objective:** As at Bull Run, the objective of both commanders is destruction of the opposing army.

**Game Length:** Ten turns or until one player concedes.

**4. Castle Siege**
This scenario is a fictional siege of a castle in the late 12th century. The castle is defended by eleven towers with catapults as well as a small number of men-at-arms and archers. There are also 5 gates which the attackers must smash to gain entrance to the keep.

**Designer:** Robert W. Calfee

**Number of Players:** This scenario is designed for 1 player.

**Map:** The map represents a medieval castle and the area immediately surrounding it.

**Scale:** Each unit represents one siege engine or a small group of men. Each square is about 15 meters across.

**Units:**
*Friendly Units*
1–10 . . Archers
11–18 . Men-at-Arms
19–23 . Mantlets (Movable walls with arrow slits)
24–25 . Siege Towers
26–29 . Catapults
30–31 . Trebuches (Huge catapults capable of hurling 500-lb. stones 300 meters)

*Enemy units* consist of siege towers with catapults, 5 gates, men-at-arms, and archers

**Objective:** Take the castle. Hold it against the relieving forces that may arrive at any time. Extra points are awarded for occupying keep.

**Game Length:** 16 turns

## VII. DESIGN GUIDELINES, HINTS & COMMENTS

### In General
Imagination is the key to fully exploiting the features of the WARGAME CONSTRUCTION SET. To help stir your imagination, I offer the following guidelines on how to use various aspects of the package.

Wargame design has a unique characteristic: The playfield and the parameters are already there, although still to be deciphered. The overall situation is highly visible, but it needs to be understood and interpreted by the designer. Unlike the designer of an adventure game, which requires an excellent story line, or an arcade game, which requires a challenging situation, the designer of a wargame begins with a large part of the work already done. Since so many of the parameters are set by history, the prime area of the designer's effort is in the organization and execution of those parameters. The numbers are all there; how they interrelate is for the designer to determine.

Despite all the givens, wargame design is formidable. Wargames reflect the real world, and the real world is incredibly complex. Insignificant details cluster with others to create a major turning point. Other details that appear major can vaporize in the face of history.

The central concept of this construction set is to first define the variables and then make them as easy to manipulate as possible. The designer's focus can turn then to wrenching a game out of the available data. The key is understanding the construction set's ability to manipulate the data; helping you to attain that understanding is the purpose of this guide.

Don't worry if things aren't perfectly worked out when you start playing a design. A good overall plan is to assemble the situation to a point where you think it effectively represents what you want. Then play it through a few turns, taking note of discrepancies. You will feel where the problems are. As in a good play in football, you will need a clear understanding of the result you want your scenario to achieve. Adjust your variables to approach the desired result.

Keep in mind that there is no one aspect of the construction set which ensures a good game. The three prime ingredients are the units, the deployment of the units, and the map. The proper use of these ingredients coupled with a central idea (e.g. crossing a river under fire defeating a superior force in a flanking maneuver) almost always will result in your creating a good game.

### The Units
Deciding what type of units to generate in what quantities can be a major stumbling block for the beginner. For the first few times, it may help you to use the values from one of the included scenarios centered around the same scale and time period you want to represent. Just remember that a unit doesn't mean anything if it is alone on a blank map. While the terrain is important, more so are the opposing units. In creating a friendly infantry unit, you are, in effect, creating an enemy infantry unit. It may not be an identical unit, but the parameter ranges should be close and the values between the two sides properly coordinated for the desired results.

Initially, decide on the basic layout of the forces and make notes so that editing will go quickly and smoothly. Your notes, once organized, will also help you decide where to deploy the units. Don't hesitate to use the duplicate function in the manner described in the instructions to make similar units.

Pre-planning the basic parameters of the units is vital. This is especially so if you are working on a scale where the pieces represent individual units. To get the effect of individual units, you need clear unit differentiation.

This is evident in the Rommel's 88's scenario. I wanted German tanks to wither under the fire of the British tanks and British tanks to hold up against repeated hits by German tanks and anti-tank guns. A clean differentiation and relationship between the forces was important since the major units, the tanks and anti-tank guns, were individual units. This affected the result I wanted, which was for the British armor to have the initial impact followed by the greater impact of the German 88's.

But situations are not always so clear cut. Such was the case in the river crossing scenario. I had no historical prerequisite in mind, though there are many available. My intentions were simply to represent a force attempting a river crossing. Nevertheless, the friendly units had to interrelate with the enemy units.

The following guidelines on specific aspects of unit construction should also be kept in mind:

**Firepower/Defense**
These two values work together, though from opposite sides of the coin (that is friendly firepower relates to enemy defense and vice versa). Firepower of A minus Defense of B equals Damage. New Strength of B equals Old Strength of B minus Damage. Strength works, roughly, in "chunks" of 32, and is explained below.

The process of hitting a unit is not in your direct control. It is a function of the range to the target and the cover the target occupies plus the decrease in accuracy of a firing unit that has moved. Cover affects the chance of hitting the target, but, once hit, these factors come into play.

Thus, increasing or decreasing a unit's firepower or defense by 1 has little effect. The key is the way they work together.

**Assault**
Assault values are more involved in their game interaction. If unit A has an Assault value of 6 and Unit B has an Assault value of 6, then, all else being equal, there is a 50-50 chance of either of them winning an assault. Factors which vary these odds are: The firepower of the units (the greater the firepower of one unit, the better it will do); the strength of the units (the unit with the greater strength will do better); and the terrain occupied by the assulted unit (the heavier the terrain, the harder it is to pry the unit from it). However, the assault values play the most important role and affect the outcome the most. Thus a unit with an assault value of 14 will almost always win over a unit with a 1 or 0, regardless of strength, firepower, and terrain.

Unlike Firepower/Defense, differences of 1 can create fairly significant effects in the game.

Using Assault values wisely can create some very unique effects. Elite, understrength units can be very steadfast in holding their position. Assaults also work very well in "zone of control" type games where ranges are set to 0 and assaults are the only mode of combat. This gives a much larger feel to the scale of the simulation while still remaining in the framework of the system.

**Movement**
Movement values are based on Movement Points. Units expend movement points as they move. The number of movement points expended is dependent on the unit type and the terrain the unit is attempting to enter. Denser terrain requires a higher expenditure of movement points. Helicopter units expend only one movement point for each square entered. Boats expend one movement point for each water square entered. Boats cannot move on land.

All other units expend 1 point for roads, 2 points for clear, 3 points for light terrain, 6 points for woods and hilltops, and 8 points for river/water and city/buildings.

Some thought must be given to timing in deciding how many movement points to give a unit. Assume, for example, that there is a river 10 squares wide which infantry must cross in boats. If the boats have 10 movement points, the infantry will get across without undergoing very much enemy fire. This all but eliminates the river as a defensive barrier. If, however, the boats have 4 move-

ment points, the units will undergo two turns of fire from the opposite shore before landing.

Thus the number of movement points given a unit depends on the map and how much that unit is to accomplish. In a situation where units seem to be getting too much accomplished at too little a price, often teasing the movement points can remedy the problem.

**Strength**

Every point of strength a unit has is equivalent to 32 damage points. For every 32 damage points a unit undergoes, its strength is reduced by one. Thus a unit with a defense of 1 and a strength of 0 will be eliminated if fired at by a unit with a firepower of 33.

This value can be treated in a more relative way, however. Think of it as the staying power of the unit. The lower the strength, the greater the chance of the unit withering away under fire. Units can recover lost strength by remaining "out of action."

Units with very low strength but high firepower, defense, and assault values can be brought to bear against a force superior in strength but with much less punch to create some exciting play. Such a situation requires some delicate fine tuning, but the possibility is there for some quick, hot action.

**Range**

This value, more than any other, determines the scale of the game. The maximum range for units needing a line of sight is 20 squares. Mortar unit types have a range of about a screen and a half, vertically, and are not affected by sighting restrictions. Gun unit types may shoot all over the map with no sighting restrictions.

Generally for tactical scales, the highest range should be 20. For operational levels, 10 to 12 is long. For operational/strategic, 4 or 5 should be the maximum range. At the strategic level, only artillery units should have any range over 1.

**Transport**

Only three unit types can transport other units: TR (Truck), HL (Helicopter), and BT (Boat). These types are different from each other. Trucks are limited to ground movement and their movement is affected by terrain. Helicopters expend one movement point per square regardless of the terrain type. Boats are only permitted to move on water or bridges. They expend one movement point for each of these terrain types.

Do not let the labels limit you. A truck type may have firepower, armor, and a good main gun. The icon chosen may be tank shaped. The end result would be a tank that can transport infantry.

Helicopter types can also have as wide a range of capabilities as any other type. Create a glider or transport type unit that brings troops into the main battle area. Give them firepower and make gunships.

Boats need not be limited to hauling units across the water. They can have firepower, armor, and a GN (Gun) weapons type to enable them to blast away at anything on the map. With the proper scale, they can then act like gun boats or even destroyers.

Stretching things further, boats can even be made into fortresses. Give them a high enough defense so they cannot be eliminated by fire and a high enough assault rating that other units cannot assault them effectively. Then, infantry can hide inside these "boats" and recover from damage out of harm's way.

An interesting variance is the enemy Special (SP) unit type. Such a unit has standard capabilities, given normally. But as a Special unit, it becomes a helicopter's nightmare. If it merely hits a helicopter, that helicopter is gone. It was included to keep helicopters from running amok. It has a bonus feature: It cannot be pinned or suppressed. These units must be knocked out before helicopters can roam freely.

## Putting It All Together

Four critical factors define the interactions between the friendly and enemy units. These are Firepower, Defense, Assault, and Strength. Armor and Anti-Armor capabilities also create interactions, but more clearly than the other factors.

After you have set up some initial values, compare what happens with what you wish to achieve. If certain units are disappearing too fast, you can increase their Strength or Defense. This is preferred to reducing the Firepower of all the opposing units. Yet sometimes, a global reduction of factors better approaches the result you want. Consider too how long a unit is around. Unless you're working a modern scenario with tactical nuclear weapons, division should not disappear with one hit. Strength is the major factor in how long a unit survives. Firepower and defense affect how much a unit is hurt, but, within the constraints of the system, a unit cannot lose more than two Strength points with a normal hit.

Or set the strength of a unit at 1 and adjust its firepower and defense so that only a few points are knocked off per hit. If working from this angle, keep in mind though, that if a unit's net firepower is greater than a target's actual strength, it will eliminate that target. So, keep defense around 12 and firepower around 15 or so. It will then take approximately 23 hits to eliminate a unit (not counting terrain and recovery).

Remember that there are two ways to keep a certain unit from harming another unit. One is to make the defense of the target unit stronger than the firepower of the firing unit. The second is to make the target armored and to deny the firer armor capabilities. The latter is irrelevant, however, when the range is one square.

There is absolutely no way to insure that unit A will eliminate unit B with one shot. Giving a much greater firepower than unit B's defense helps, but terrain defense and a random "no kill" factor built into the game system precludes sure bets. (This "no kill" factor occurs randomly. When it does, a unit, otherwise eliminated, gets a second chance.)

## Map and Scale

If you are modeling a specific situation and have a good map of the area, drawing the map should not be too difficult. If you're doing a free-form map, put what you want where you want it. In a military situation, the terrain is a key factor; but whatever it may be, the combatants have to work with it. You can design the terrain and make the game work better. But nature is very random and very irregular. Things are not put in their places with any intent. It just is. If a military force encounters a river that seems impassable, it has to deal with it. If there is no good cover in an approach to any enemy position, then the approach must be made in the open. So let your imagination roam in placing terrain with little thought as to the actual military situation. Once the map is designed, it can be surveyed and a situation can be built around it.

Determining a scale for a scenario is probably the most difficult part of the whole developmental process because various elements of a scenario interrelate in many ways. The scale choice in the Construction Set main menu is mainly for the map appearance and should be tied to the movement rates and ranges of the units. Do not use the strategic map scale where buildings are little dots if your infantry can shoot up to 8 squares. That would be allowing their rifles to shoot for miles.

Since true scale is dependent on weapon ranges and movement rates, I will offer my interpretation of the actual scales represented by the Scale Select option in terms of distance across each square.

TACTICAL — approximately 20 to 100 meters across.

TACTICAL/OPERATIONAL — from 100 to 500 meters across.

OPERATIONAL — from 500 meters to 1 or 2 kilometers across.

STRATEGIC — from 1 or 2 kilometers across on up to 10 or even more.

Therefore you should first determine the scale for ranges and movement rates. The map scale should support this decision. I feel that the range scale is by far the most important. In designing a scenario, I decide right from the start how far infantry will shoot and how far the tanks will shoot. This determines the general scale of the scenario. For instance, if I want a game with a high tactical feel, the highest ranged weapons (tanks, AT guns) will have a range of 20. Lesser weapons (MG's) will have a range of 10 to 14. Infantry will have a range less than 10 and generally around 6 or 8.

When choosing ranges, keep in mind that you do not want to represent the maximum range of a particular weapon. You should be after the effective range. Though an M-1 rifle could shoot much farther than 200 yards, hitting anything at that range can be a problem. A tank shell can travel for miles. But rarely did a tank fire at another at a range of more than 500 to 1000 yards.

Note also that there are many intangibles involved in ranged firing. Terrain is rarely flat. Rolls, rises, weeds, and brush all limit effective range. Weather also has an effect. Fog, haze, rain, and even night can come into play. So, you needn't go overboard in your calculations and be absolutely precise. Feel can be more important.

In the operational and strategic scales, ranged firing can be totally eliminated by setting ranges to 0. This drastically increases the weight put on assault values as it is the only way in which a unit can be attacked with no ranged firing.

## Methods in Madness

Throughout the development of this product, I have been asked a lot of questions by my playtesters. Here are the answers to a few of them.

**Q.** Why do cities cost so many movement points to enter?

**A.** Look at it this way. In tactical scales, the buildings represent one or a few buildings. In the operational-strategic scales, they are towns and, when clustered, cities. Since a unit on a building square receives all the defensive benefits it has to offer, I decided to charge for it. There is no better terrain from which to make a defensive stand. Units in buildings are first, hard to hit, and second, hard to hurt when hit. The bonus received for being in a city when assaulted is equivalent

to an increase of 4 assault factors. To receive these bonuses, a unit must have the time (movement points) to effectively deploy in the magnificent cover.

**Q.** Yes, but what about an attacker that just wants to roll through a city/building square in an attempt to keep his offensive momentum at a peak?

**A.** There are no friendly cities in enemy territory. An army on the march will not roll right through an enemy city. It represents some kind of obstacle to advance. Are there any forces there? Again, it will take time to deploy. And if the attacker stays there, he too will receive the defensive benefits it offers should he be counterattacked.

**Q.** What, exactly, does Strength represent?

**A.** Strength is a representation of how much firepower a unit can bring to bear. It is a combination of morale and numbers. In the more tactical levels, it has more of a tendency to represent actual numbers of men/tanks. As the scales increase, it tends to represent morale more. Don't think of it as a cold, hard figure of how many men are there. It is meant to be a representation of the unit's combat effectiveness.

**Q.** Why does a unit survive when it is fired at and a "Target Hit" message appears?

**A.** The target hit message is an indicator that an effect has been achieved through the firepower broght to bear on a particular unit. It is not a literal hit in all cases. The only situation where one hit will eliminate a unit is where the net firepower of the firing unit (the firepower minus the defense of the target) is greater than the remaining strength value (Strength times 32) of the target. On the other hand, with a miss, the target will be totally unaffected. Thus with a hit, though a unit may not lose any strength, it still may become suppressed or pinned.

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