



Ardennes

1944





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1.0 INTRODUCTION

BATTLEGROUND: ARDENNES is an historical strategy game dealing with the Battle of the Bulge in late 1944 and early 1945. It focuses on three specific locales in the Ardennes region of Belgium and Luxembourg where U.S. and German forces clashed during that epic struggle. Each locale is represented by a map, drawn from actual World War II military sources. A series of battles, called scenarios, is presented for each map. In addition, you can create your own scenarios. You choose a scenario, then you and your computer or human opponent maneuver, attack and defend with units representing individual platoons of vehicles, infantry and artillery. Your goal in each scenario is to either capture or hold specific objectives, while trying to eliminate as many of the opponent's units as possible. However, you must also husband your own forces, for each unit you lose decreases your chance of winning. Each hexagon (hex) on the map represents an area 250 meters wide (a mile equals 6 1/2 hexes), and each Game Turn represents ten minutes of time. You will find that **BATTLEGROUND: ARDENNES** is an easy game to learn, but a true challenge to master.



A note to beginners: The concept of "hexes" is very important to successfully grasping the fundamentals of movement and attack ranges. Since the hex outlines are "off" by default at start, it is strongly recommended that you make them visible by Selecting the **Hex Outlines** command in the **Display** menu when you begin your first game.

2.0 CHOOSING A SCENARIO



2.1 THE MENU SCREEN

When you launch **BATTLEGROUND: ARDENNES**, the Menu Screen appears after the introduction. This screen presents you with six choices:

- **Start New Scenario:** Select this to proceed to the Scenario Selection Screen to start a new scenario.
- **Resume Saved Game:** Select this if you wish to resume playing a non-modem game you had saved and quit previously.
- **Start Game as Modem Host:** Select this to become (or resume being) the Host for a modem-play game.
- **Start Game as Modem Caller:** Select this to become (or resume being) the Caller for a modem-play game.
- **Scenario Editor:** Select this to proceed to the Scenario Editor to create a new scenario.
- **Hall of Valor:** Select this to view the ten best scores achieved thus far in the game.



2.2 THE SCENARIO SELECTION SCREEN

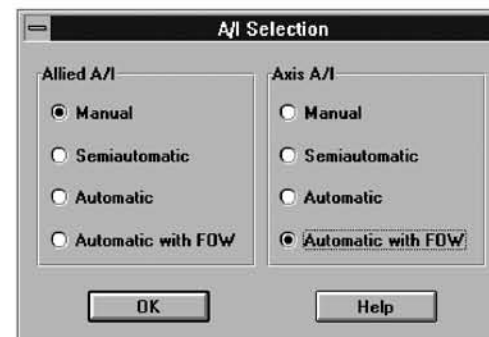
This screen lets you pick a new scenario to play. First, Select the name of a scenario. This will display the map that scenario will use, along with a brief description of the historical action it represents. Once you've decided on a scenario, make sure its name is highlighted, and Select the **Play** button. A dialog box will then appear, giving you the choice of what type of A/I you wish to use for each side. (For your choices, see 2.3 THE TYPES OF A/I.) When you Select **OK**, the scenario will begin.

The **Previous** button takes you back to the Menu Screen, and the **Exit** button takes you back to the Windows™ Program Manager.



2.3 THE TYPES OF A/I

The type of A/I you choose will determine the amount of control the game's "Artificial Intelligence" exerts on play. When A/I is being used, the program will make some or all of the decisions for a particular side and automatically conduct all appropriate actions, such as firing and moving. The A/I can be used in four modes: *Manual*, *Semiautomatic*, *Automatic*, and *Automatic with Fog-of-War*. Any one mode can be applied to each side.



Manual equals "no A/I". Select this for a side if you want to make *all* the decisions for that side, including conducting all moves and attacks for it. This is the default mode for both sides.

If you Select **Semiautomatic** for a side, you'll be able to give orders (attack, defend, etc.) to the various tank and infantry *companies* that make up that side, while letting the program automatically handle all individual unit actions such as moving and firing.

If you Select **Automatic** for a side, the program will handle *all* the decisions and actions for that side.

If you Select **Automatic with FOW** (Fog-of-War) for a side, the program will handle *all* the decisions and actions for that side, *and* Fog of War will be in effect.



This mode is most appropriate when you want to control one side and have the program control the other.

To use the A/I during play, see 5.4 USING THE A/I.

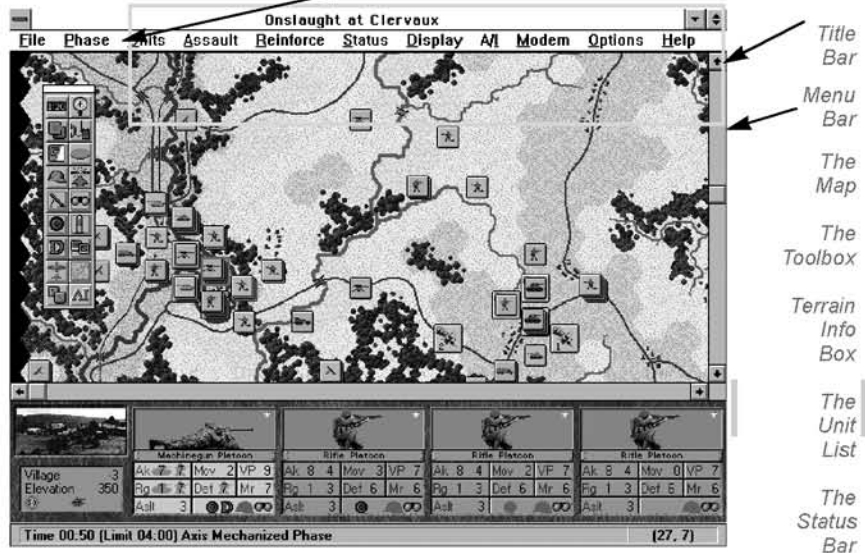
2.4 RESUMING A SAVED GAME

To open a previously saved non-modem game, Select **Resume Saved Game** in the Menu Screen. A dialog box will appear, giving you a choice of which map to open. Select the map the game was played on before. When the map appears on screen, so will a dialog box in which you must select the saved-game file you want, then click on **Open**.

For resuming a saved modem-play game, see 6.3.

If the game had been saved and quit during a phase that was controlled by the A/I, you may have to Select the **Activate A/I** menu command (or its corresponding Toolbox button) to restart it.

3.0 THE GAME INTERFACE



3.1 THE TITLE BAR

This appears at the very top of the screen, and displays the name of the scenario currently being played.

3.2 THE MENU BAR

This appears below the Title Bar, and displays the names of the various pop-down menus. These menus and their commands are explained below.



File

New...

Open...

Save

Save As...

Snapshot...

Exit

File Menu: Use this menu to load a previously saved game, or to save and/or exit a game.

Select **New** to start a new scenario using the current map. A new scenario has the extension *.scn*.

Select **Open** to resume a previously saved game. A previously saved game file has the extension *.btl*.

Select **Save** to save the game you are playing.

Select **Save As** to save a game under a file name other than the one currently being used for it.

Select **Snapshot** to save a copy of the entire map, showing the current position of all unhidden units, to a bitmap file (with the file extension *.bmp*).

Select **Exit** to quit the scenario and return to the Menu Screen (or to the Windows™ Program Manager if you used one of the *map* icons to launch the game). If the current game has changed since the last time it was saved, a dialog will appear giving the option to save it before exiting.

Phase

Next (Ctrl-N)

Phase Menu: Use this menu when you want to proceed from one phase to the next.

Select **Next** to advance the game to the next phase.

Units

To Top of Stack

To Bottom of Stack

Load/Unload

Air Attack

Artillery Dialog...

Undo Last Movement (Ctrl-U)

Units Menu: Use this menu to change the state of friendly units, and to initiate air and/or artillery attacks. Before changing the state of friendly units, you must Select them using the Unit List. Most changes to Selected units can occur only during the Movement Phase, and are subject to limitations as a result of the internal rules and movement allowances.

Select **To Top Of Stack** to move a Selected unit to the top of its stack.

Select **To Bottom of Stack** to move a Selected unit to the bottom of its stack.

Select **Load/Unload** to load a non-vehicular unit onto a vehicular unit, or to unload a unit that is currently a passenger.

Select **Air Attack** to initiate an air attack on the current Hot Spot hex.

Select **Artillery Dialog** to make attacks with Indirect-Fire units during the Prep Fire Phase.

Select **Undo Last Movement** to cancel the entire movement of the most-recently-moved friendly unit, so you can instead move it in a different way (or not at all). This command is disabled during modem play, and when Fog of War is in effect for the opposing side.



- Assault**
- Add to Assault**
- Resolve Assault**
- Show Odds**

Assault Menu: Use this menu to conduct Assaults.
 Select **Add to Assault** to designate the currently Selected unit(s) as participating in an Assault.
 Select **Resolve Assault** *once* to resolve the Assault being made by all units on the Hot Spot hex.

Select **Show Odds** to review the current Assault odds associated with the Hot Spot hex.

- Reinforce**
- Scheduled**
- Arrived**

Reinforce Menu: Use this menu to check on the availability of reinforcements.
 Select **Scheduled** to display the reinforcements that are scheduled to arrive during the current scenario. If Fog of War is in effect for one or both sides, only the reinforcements for the side currently having its Player Turn will be displayed; otherwise, all reinforcements will appear.

Select **Arrived** during a friendly *Movement* Phase to display the reinforcements that are currently available to be placed on the map.

- Status**
- Strength...**
- Objectives...**
- Victory...**

Status Menu: Use this menu to display current strength, objective, and victory information.

Select **Strength** to see the number and types of units currently available to each side. The number associated with a listed unit type indicates the number of units of that type in play. If a second number appears in parentheses, it indicates how many of those units are Disrupted. "[#VP]" shows the VP value of each unit of that type. The Strength dialog also lists the number and types of units each side has lost thus far.

Select **Objectives** to see the number, value and hex location of each Objective. Selecting any of the Objective-hex lines in the dialog box will put the Hot Spot in (and scroll the map to) that hex.

Select **Victory** to see the current level of victory and related items.





Display

Units Off

Unit Bases Off

Specials On Top

Objectives

Locations...

Hex Outlines

Find Org...

Jump Window...

Spotted Units

Fired/Fought Units

Moved Units

Disrupted Units

Indirect Fire Units

Organization

Zoom Out

Normal View

Zoom In

Rotate Toolbox

Display Menu: Use this menu to control how information is displayed on the map.

Select **Units Off** to toggle (off or on) the on-map display of all units and markers. This option is provided so you can hide them in order to see the underlying map terrain better.

Select **Unit Bases Off** to toggle (off or on) the bases of the unit icons on the Zoom-In (Battleview™) map.

Select **Specials on Top** to control the on-map display of Fortification, Improved Position, Minefield, Roadblock, Smoke and Wreck markers. When this command has a check mark next to it, these markers appear above all other units in their hex. When it has no check mark, they appear *beneath* all other units in their hex.

Select **Objectives** to toggle (off or on) the display of Objectives on the map. When this command has a check mark next to it, Objective hexes will be marked with a special symbol to denote their location, point value and ownership.

Select **Locations** to help you find a certain location on the map. When you Select one of those listed, the map will scroll to that hex and put the Hot Spot in it.

Select **Hex Outlines** to toggle (off or on) the display of the map's hex outlines. When the hex outlines are visible, this command has a check mark next to it.

Select **Find Org** to see which units belong to which organizations. When you Select an organization name, its component units become highlighted on the map. If Fog of War is in effect for either or both sides, only the organizations for the side currently having its Player Turn will be displayed; otherwise, all organizations will appear. An organization name printed in light gray indicates that all of its units are currently off-map (i.e., reinforcements or off-board artillery).

Select **Jump Window** to display a miniature of the map being used. When you Select any spot in the jump map, the game map will automatically scroll to the corresponding spot.

Select **Spotted Units** to toggle (off or on) a highlight around all units that have a LOS to (and thus are in the LOS of) at least one enemy unit.

Select **Fired/Fought Units** to toggle (off or on) a highlight around all units that have either fired at an enemy unit or fought in an Assault during the current phase.

Select **Moved Units** to toggle (off or on) a highlight around all units that



have moved during the current phase.

Select **Disrupted Units** to toggle (off or on) a highlight around all units that are Disrupted.

Select **Indirect Fire Units** to toggle (off or on) a highlight around all friendly Indirect-Fire units.

Select **Organization** to toggle (off or on) a highlight around all units that are part of the same organization as the first Selected unit in the Unit List.

Note: The **Spotted, Fired/Fought, Moved, Disrupted, Indirect Fire Units** and **Organization** menu options are mutually exclusive; i.e., Selecting any one of them will toggle-off any of the others that had been previously Selected. During the Assault Phase, if no other highlight has been Selected, each unit that is Assaulting will be highlight-

Select **Zoom Out** to change the map to a smaller, low resolution version that enables more of it to be seen.

Select **Normal View** to restore the map to its normal version.

Select **Zoom In** to change the map to Battleview mode.

Select **Rotate Toolbox** to toggle the Toolbox between its vertical and horizontal orientation.

A/I

Allied (Manual)

Allied (Semiautomatic)...

Allied (Automatic)

Allied (Automatic with Fog-of-War)

Axis (Manual)

Axis (Semiautomatic)...

Axis (Automatic)

Axis (Automatic with Fog-of-War)

Activate A/I

Order Dialog...

A/I Menu: Use this menu to control the "Artificial Intelligence" capabilities of the program.

Select **[Manual]** (i.e., no A/I) for a side if you want to make *all* the decisions for that side, including conducting all moves and attacks for it. This is the default mode for both sides.

Select **[Semiautomatic]** for a side if you'd like to make certain high-level decisions for that side, while letting the program automatically take care of all low-level actions such as moving and firing.

Select **[Automatic]** for a side if you want the program to handle all the decisions and actions for that side.

Select **[Automatic with Fog-of-War]** for a side if you want the program to handle all the decisions and actions, *and* have Fog of War in effect, for that side.

Select **Activate A/I** to restart the A/I after you have canceled it, or if you



started the phase not using A/I but wish to activate it for the remainder of the phase.

Select **Order Dialog** to give orders when using Semiautomatic A/I.

Modem	Modem Menu: Use this menu to play a scenario with someone else over the telephone, using a modem at both ends. Select Host before you start a modem game if you wish to be in charge of opening and saving the scenario, and to configure your modem for play. The Host player can also use this command to close the playing session.
Host Caller	
New Encryption Key Resync with Remote	
Communication Dialog...	

Select **Caller** before starting a modem game if you wish to let the other player be responsible for opening and saving the scenario, and to configure your modem for play. As the Caller, you are responsible for specifying an encryption key (see 6.2). The Caller can also use this command to close the playing session.

Select **New Encryption Key** in a modem game if you are the Caller and wish to specify a new encryption key. As the Caller you must ensure that the same encryption key is used when re-opening a saved-game file as was used when the file was saved previously. The extension *.btx* is used to denote an encrypted saved-game file. For more on the encryption key, see 6.2.

Select **Resync With Remote** in a modem game if the two sides get out of sync (e.g., due to a bad data transmission). Using this command re-transmits the entire scenario to the other player's computer. The Resync option should be rarely needed, as error checking is incorporated into the modem protocol used by the program. Before using it, check with the other player to ensure that he agrees a scenario resync is necessary. Alternatively, the Host can save the current scenario and open it again.

Select **Communication Dialog** in a modem game to display the "chat window" if you had closed it previously.



Options

- ✓ **I**ntroduction
- ✓ **B**EEP on Error
- ✓ **B**link Hot Spot
- ✓ **S**mooth Scroll
- ✓ **S**ound Effects
- ✓ **V**ideo Effects
- ✓ **G**raphical Unit Icons
- ✓ **3D** Dialogs
- ✓ **D**ialog Help Buttons
- ✓ **A**uto Save

Options Menu: Use this menu to control certain options associated with the main program.

Select **Introduction** to toggle (off or on) the introductory material that plays when you launch (and the dedication screen at the end of) the game.

Select **Beep on Error** to toggle (off or on) the option that causes a beep when you make an error.

Select **Blink Hot Spot** to toggle (off or on) the option that causes the Hot Spot to blink. [Exception: the Hot Spot never blinks on the Zoom-In (Battleview™) map.]

Select **Smooth Scroll** to toggle (off or on) the option that causes the map to scroll smoothly to a new Hot Spot. When this command has *no* check mark next to it, the map redraws directly at the new Hot Spot hex without scrolling through the intervening hexes.

Select **Sound Effects** to toggle (off or on) the playing of sound effects.

Select **Video Effects** to toggle (off or on) the playing of video clips.

Select **Graphical Unit Icons** to toggle the display of unit icons between graphical and NATO-type schematic versions.

Select **3D Dialogs** to toggle the appearance of the program dialogs between an enhanced 3D version and the standard Windows™ version.

Select **Dialog Help Buttons** to toggle (off or on) the presence of Help buttons in the program dialogs.

Select **Auto Save** to have the program save the game automatically at the end of each phase [Exception: it will not save a phase that was conducted under *Automatic A/I* (with or without Fog of War) control].

Help

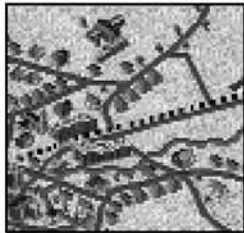
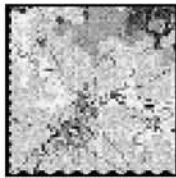
- G**eneral Help (F1)
- P**arameter Data
- A**bout Battleground Ardennes

Help Menu: Use this menu to get information about how to use the *BATTLEGROUND: ARDENNES* program, about the battle being fought, and about the program itself.

Select **General Help** to open the *BATTLEGROUND: ARDENNES* General Help file.

Select **Parameter Data** to open an information file containing data used internally in the game (such as the height of obstacles, the movement costs and defensive modifiers of the various terrain types, etc.).

Select **About Battleground: Ardennes** to display a dialog containing certain information about the *BATTLEGROUND: ARDENNES* program, including version and copyright information.



"Jump" map "Zoom Out" map "Normal View" map "Zoom In" map

3.3 THE MAP

Each map can be viewed in four different scales. The smallest is the *Zoom Out* map, which is displayed by using the **Zoom Out** command in the **Display** menu. This is best used for a quick, overall view of things. Units on this map cannot be distinguished from each other as easily as on the other maps, but their positions relative to the opponent's units are readily apparent over a wider area.

The medium-scale map is called the *Normal View*, and is displayed by Selecting the **Normal View** command in the **Display** menu (or, if the map is currently in the Zoom In or Zoom Out mode, by Selecting the "Zoom Map" button in the Toolbox). This is the standard map for playing the game, and presents the terrain in more detail than the Zoom Out map while showing a greater area than the Zoom In map. You can choose to display units on the Normal View map with either graphical icons or colorful NATO symbols (see 4.0 THE UNIT TYPES below).

The ultimate map view is the *Zoom In* mode, which is displayed by Selecting the **Zoom In** command in the **Display** menu (or, if the map is currently in the Normal View mode, by Selecting the "Zoom Map" button in the Toolbox). This presents the Battleview—a high-resolution map in 3D-type isometric perspective, presenting much more detail on the screen. In this view, units are shown as "miniatures" with individual facings and positions within their hex. (Facing and position are used only for aesthetic purposes, and have no effect on play.) The facing and/or position of a unit automatically changes when it moves or attacks in a direction other than its present one. Facing and position may also be changed manually, using the proper hot keys.

The fourth map view is the Jump Window (see SCROLLING below). This is the only way to view the *Battle for Bastogne* map in its entirety.



Note: Whenever the map changes to the Normal View or Zoom In mode, it automatically scrolls to display the current Hot Spot in the middle of the screen.

Scrolling

Often the map will be too large to fit completely onto the screen. Therefore, several different ways to scroll it are provided. You can use the standard Windows™ scroll bars, the arrow keys on your keyboard, or the *Jump Window*. To use the Jump Window, Select either its button in the Toolbox or the **Jump Window** command in the **Display** menu. This will display a miniature of the map being used. Then Select the desired spot in the jump map, and the game map will automatically scroll to the corresponding point.

Hex Coordinates

Each hex on the map has a unique set of coordinates, given in the form "#,#". The number on the left represents the vertical row of hexes (beginning with "0" for the leftmost row of hexes on each map), while the number on the right represents the horizontal row (beginning with "0" for the topmost row on each map). Thus, for example, the village of *Mocher* in the lower-left-hand corner of the Clervaux map has hex coordinates of "1,18".

The coordinates of the hex currently containing the Hot Spot are displayed at the far right of the Status Bar (see 3.6).



3.4 THE UNIT LIST

The Unit List is the portion of the screen display immediately below the map. It contains a representative drawing of each unit that occupies the current Hot Spot hex, plus that unit's name and pertinent game data. If the Hot Spot is in a hex that contains no units, it shows the current weather and visibility instead; see 5.2 VISIBILITY.



IMPORTANT: A passenger being carried by a transport unit does not appear automatically in the Unit List; only its transport (which will have a *full-color* helmet icon in its data box to show that it has a passenger aboard) does. To view all passenger units in the current Hot Spot hex, *right-click* anywhere in the Unit List and keep the mouse button depressed. Each passenger will appear in the spot normally occupied

The following explains the abbreviations and numbers displayed in the Unit List:

Ak (Attack): The unit's H# and S#, given in the form "H# S#". The tank and soldier silhouettes "behind" the numbers (note: these appear only when the unit is Selected in the List) indicate the "H" and "S" number respectively. If the numbers are blue, the unit is capable of making Anti-Aircraft attacks. If the numbers are red, the unit is capable of conducting Indirect-Fire attacks, A unit with neither an H# nor an S# of "1" or more cannot attack in any way.

Rg (Range): The maximum range, given in the form "H#range S#range", at which the unit can attack using its H# or S# respectively.

Aslt (Assault): The unit's A#. A unit with an A# of "0" cannot conduct an Assault, and will retreat (or be eliminated) automatically when Assaulted.

Mov (Move): The unit's current M#. This number will decrease as the unit moves.





Def (Defense): the unit's D#. The tank or soldier silhouette "behind" the number (note: these appear only when the unit is Selected in the List) indicates that the unit is a "hard" (i.e., armored) or "soft" target respectively.

VP (Victory Points): The unit's point value for victory purposes.

Mr (Morale): The unit's current Morale. This number can change due to Disruption results and subsequent return to Good Order.


















Unit-List Icons


One or more of the following icons may appear from time to time in the bottom right-hand compartment of a unit's data area. These icons, as they appear from left to right on the screen, represent the following:

-  When the *full-color* bullet appears, the unit is eligible to attack. Once it has attacked, the bullet turns brown.
-  When the *full-color* wheel appears, the unit is eligible to move. Once it begins moving, the wheel turns brown. If it uses all of its movement allowance, the wheel disappears.
-  When the red "D" appears, the unit is Disrupted.
-  For a non-vehicular unit, a brown helmet means it is capable of being loaded onto a carrier unit; and when the helmet is



full-color, the unit is currently loaded on a carrier. For a vehicular unit, a brown helmet means it is capable of carrying another unit as a passenger; and when the helmet is *full-color*, it is currently carrying another unit.

-  Advance the game to the next phase.
-  Change the screen display to the Normal or to the Zoom In (Battle-view™) mode.
-  Move the top unit in a stack in the Hot Spot hex to the bottom of that stack.
-  Make the Artillery Dialog appear.
-  Toggle (off or on) the on-map display of all units and markers.
-  Toggle (off or on) the bases of all unit icons on the Zoom-In (Battle-view™) map.
-  Load a unit onto a carrier unit, or unload a unit that is currently being carried. Both the carrier and the unit to be (un)loaded must be pre-Selected.
-  Resolve the Assault being made by all units on the Hot Spot hex.
-  Toggle (off or on) a highlight around all friendly Indirect-Fire units.
-  Toggle (off or on) a highlight around all units that have a LOS to (and thus are in the LOS of) at least one enemy unit.
-  Toggle (off or on) a highlight around all units that have moved during the current phase.
-  Toggle (off or on) a highlight around all units that have either fired at an enemy unit or fought in an Assault during the current phase.
-  Toggle (off or on) a highlight around all units that are Disrupted.
-  Toggle (off or on) a highlight around all units that are part of the same organization as the first Selected unit in the Unit List.
-  Initiate an air attack on the current Hot Spot hex (Movement Phase only).
-  Display the Jump Window. When you Select any spot of the jump map, the game map will scroll to the corresponding spot.
-  Cycle the Hot Spot to another unit that has yet to (be designated to) per-

 When the *full-color* binoculars appear, the unit is currently in the LOS of (and thus also has a LOS to) at least one enemy unit that has the capability of spotting for Indirect Fire. When the brown binocu-



lars appear, the unit is currently in the LOS of (and thus also has a LOS to) only an enemy unit that cannot spot for Indirect Fire (i.e., an enemy wagon, truck or unarmed halftrack).



The Terrain Info Box



The Terrain Info Box appears in the lower-left-hand corner of the screen, presenting certain information about the current Hot Spot hex. It displays a digitized photo (taken from actual sites in the Ardennes) of the type of terrain in the hex (clear, village, forest, etc.), then lists that terrain type by name, its combat modifier, and its elevation in meters. If the hex is also an Objective hex and/or contains any combination of Improved Position, Roadblock, Fortification, Minefield or Smoke, the Normal-View style icons for these are displayed as well.

Clicking with the mouse in the Terrain Info Box (or right-clicking anywhere in the Unit List) will change it to show the availability of Air Support and Smoke for both sides, in the form "###". Each "#" represents the number of such attacks that side can make. The Allied number is on the left, the German number on the right. If Fog of War is in effect for a side, its Air and Smoke values are replaced by a question mark.

Selecting a Unit

To Select a unit in the Unit List, left-click anywhere on its area in the List.

BATTLEGROUNDS: ARDENNES

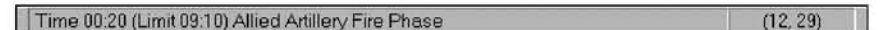


You can quickly Select *all* the units shown in the Unit List by double-clicking with the left mouse button on their *hex*.



3.5 THE TOOLBOX

The Toolbox enables you to conduct certain actions without having to use the pop-down menus. Selecting a Toolbox button initiates the command associated with it. These commands are:



3.6 THE STATUS BAR

The Status Bar appears at the very bottom of the screen. Its main functions are to show the current turn (in increments of time; see 5.5 GAME TURNS) and phase, and the coordinates of the hex occupied by the Hot Spot. It also displays various types of messages from time to time (e.g., to explain why the program won't let you perform a certain action). In addition, it gives a brief explanation of each menu command and Toolbox button when you place the cursor on that command or button and hold down the left mouse button.

3.7 SAVING A GAME

When you start a new scenario you will be prompted at the end of each phase to save it. A dialog will appear so you can specify a name for the saved-game file. Normally you should use the extension *.bt1*. Once you

BATTLEGROUNDS: ARDENNES



have saved the game this way, it will be saved again *automatically* by the Auto Save function at the end of each subsequent phase [Exception: it will not save a phase that was conducted under *Automatic* (with or without Fog of War) A/I control]. Should you wish to save the game at some other point in a phase, you can do so via the **Save** command in the **File** menu.

To save the game under a file name different than the one currently being used for it, Select the **Save As** command in the **File** menu. This allows you to save the current state of a battle in another file without affecting the file being used for the battle.

3.8 SNAPSHOTS

The **Snapshot** command in the **File** menu enables you to save a copy of the entire map as it currently appears (including all unhidden units) to a Bitmap (with a *.bmp* file extension). A file-selection dialog will appear so you can specify the name of the file.

You can use the Paintbrush graphics program (supplied with Windows™) to open the file later. Refer to your Windows™ manual for instructions for the Paintbrush program. The Paintbrush program can also be used with your printer (black and white or color) to supply you with a printout of the map. Paintbrush will allow you to resize the map (as desired) before printing.



4.0 THE UNIT TYPES

Many different types of infantry, vehicles and guns are represented in the game. Some units are armored while others are non-armored. Some are vehicular while others are non-vehicular. Some are carriers (i.e., units able to carry others as passengers) or loadable (capable of being carried on vehicular units). Some have an inherent movement capability while others do not. Some can use only Direct Fire, while others can use





BATTLEGROUND: Ardennes

TERRAIN CHART

Terrain Type	Movement Cost	LOS Effect	Combat Effect
Bridge	0 ^a ; negates stream/river	none	none
Building	2/4 ^b	obstacle ^c	-3 ^{de}
City	1	obstacle ^c	-3 ^d
Clear	2/4 ^b	none	0
Forest	15 ^f	obstacle ^c	-1 ^d
Fortifications ^g	0	none	+20 ^{eh}
Hill	1/2 ^b uphill	obstacle ^c	+1/-1 ^{di}
Improved Position ^g	0	none	-1 ^d
Minefield ^g	0 ^j	none	attacks at 1:1, 2:1 or 3:1 ^k
Railroad	2; negates forest	none	none
River	impassable ^l	none	Assault across not allowed
Road	1 ^m	none	none
Roadblock ^g	ⁿ	none	none
Smoke ^g	none	obstacle ^c	halves non-Assault attacks into/out-of
Stream	2/4 ^b	none	none
Tunnel	no entry allowed	none	none
Village	1	obstacle ^c	-3 ^d
Wrecks	0	obstacle ^c	none

^a: There are three types of bridges, with different crossing restrictions; see BRIDGE on p. 23.

^b: Non-truck/truck unit costs respectively.

^c: Note that an obstacle may or may not block LOS, depending on the relative heights of the firer, obstacle and target. The height of a particular type of obstacle can be found by Selecting **Parameter Data** in the **Help** menu of the scenario being played.

^d: The maximum allowed Combat Effect modifier for any one attack is -4, excluding the modifier for firing uphill or downhill.

^e: Does not apply to vehicular targets (which are instead treated as being in clear terrain).

^f: *Entering* a forest hex during the Mechanized Phase is allowed only if using a road.

^g: See also SPECIALS on p. 23.

^h: Added to the defense factor of each occupying non-vehicular unit.

ⁱ: A +1 applies if attacking downhill; a -1 if attacking uphill. Neither one applies to Indirect Fire, nor do they apply towards the maximum allowed Combat Effect modifier (see footnote "d" above).

^j: A unit entering a minefield hex must halt and end its movement there, but is free to exit the next time it can move. *Entry* is not allowed during the Mechanized Phase.

^k: During the opponent's Defensive Fire Phase. The applicable attack odds of 1:1, 2:1 or 3:1 are indicated by the "1", "2" or "3" (or, on the Zoom-In map, by one, two or three mine symbols) on the minefield marker.

^l: Except via a bridge.

^m: Entering a hex via a road negates the Movement Cost of the other terrain in the hex (aside from that of moving uphill, which can never be negated) if no more than two units—including the one(s) entering it—occupy the hex at the moment. (Passenger units do not count, but Wrecks do.)

ⁿ: A unit entering a roadblock hex must halt and end its movement there, but is free to exit the next time it can move. *Exiting* a roadblock hex is not allowed during the Mechanized Phase.

only Indirect Fire. Some are unarmed and cannot attack at all. To see which characteristics apply to a specific unit during play, Select its *hex* to put it in the Hot Spot and look at its data in the Unit List.

Aircraft are in a category all their own, so are covered separately below under AIR SUPPORT on p.32.

For Wrecks, Improved Positions, Fortifications, Minefields and Roadblocks, see 5.1 TERRAIN below.

4.1 UNIT ICONS

The graphical icons are, in most cases, generalized representations of the actual units they represent. The NATO icons are entirely schematic, however, and require further explanation, which is provided on the next page.

NATO Icons

Each different NATO symbol stands for a specific unit type, as indicated here:



Infantry
 Armored Infantry (Panzergrenadier)
 Engineers
 Machine Guns
 Mortars
 Heavy Mortars
 Infantry Guns
 Heavy Infantry Guns
 Anti-Tank Guns
 Heavy Anti-Tank Guns
 Anti-Aircraft Guns
 Heavy Anti-Aircraft Guns
 Field Artillery
 Heavy Artillery
 Rocket Artillery (Nebelwerfer)
 Wagons (carrier)
 Jeeps
 Trucks (carrier)
 Halftracks (carrier)
 Flamethrower Halftracks
 Mortar Halftracks
 Tanks
 Heavy Tanks
 Tank Destroyers
 Heavy Tank Destroyers
 Assault Guns
 Armored Cars
 Self-Propelled Infantry Guns (halftrack chassis)
 Self-Propelled Anti-Aircraft Guns (truck chassis)
 Self-Propelled Anti-Aircraft Guns (halftrack chassis)
 Self-Propelled Anti-Aircraft Guns (tank chassis)
 Self-Propelled Artillery
 Heavy Self-Propelled Artillery

Orange: leg infantry
Dark Orange: machine guns
Tan: armored infantry (panzergrenadier)
Red: engineer
Brown: anti-tank
Blue: anti-aircraft
Green: mortar and field/heavy artillery
Light Green: infantry guns
Yellow: carriers
Lavender: reconnaissance
Gray: assault guns
Pink: tanks



5.0 PLAYING A SCENARIO

5.1 TERRAIN

The *BATTLEGROUNDS: ARDENNES* maps contain numerous types of terrain, each with an associated effect on movement, LOS, and combat. Should you wish to inspect the terrain in a hex that's obscured by the presence of units/markers, Select that hex to put the Hot Spot there, then consult the Terrain Info Box. Or, you can Select the "toggle units" Toolbox button or the **Units Off** command in the **Display** menu. If you're using the Zoom-In (Battleview™) map, you also have the option to Select the "toggle unit bases" Toolbox button or the **Unit Bases Off** command in the **Display** menu.

A table summarizing the effects of the various terrain types is presented on the next page, followed by an additional explanation for some of them. (Note: a negative-number Combat Effect is detrimental to the attacker.)

NATO-Icon Colors

The color of each NATO symbol indicates a general category of unit types, as explained here:



Bridge

There are three types of bridges in the game: *Light*, *Medium* and *Heavy*.

A **Light bridge** can be crossed only by wagon, infantry, armored infantry, panzergrenadier, machine gun and engineer units—plus mortar units, and light guns, that are non-vehicular and have an inherent movement allotment. All the light bridges in the game are railroad bridges. (Railroad bridges can, of course, carry great weights in real life. However, many of the "strategic" ones in the areas depicted on the maps were along sunken or elevated railway lines which vehicles could not negotiate—hence the treatment of such bridges as light.)

A **Medium bridge** can be crossed by all units except armored vehicles. Medium bridges are brown with black sides. Most have no road crossing them. (In reality they lay along dirt roads which, due to the ground conditions at the time of the fighting, provided no movement benefit and so are not shown on the maps.)

A **Heavy bridge** can be crossed by all units. Heavy bridges are dark gray with black sides. Most are crossed by a road. (All roads shown on the maps are paved roads.)

Building

A building hex contains the depiction of one building (unlike village and city hexes which contain several structures). It represents a single large building, usually institutional in nature, whose stout construction made it an ideal defensive position for infantry.

City

The only city hexes in the game are those that make up the city of Bastogne.

Stream & River

Streams are light blue; rivers are dark blue.

Specials

Fortifications, *Improved Positions*, *Minefields*, *Roadblocks*, *Smoke* and *Wrecks* are collectively called Specials. Each has one or more unique effects in the game, as explained below. Of all the Specials, only *Smoke* and *Wrecks* can affect LOS. The display of Specials can be controlled via the **Specials on Top** command in the **Display** menu.



A **Fortification** adds "20" to the defensive strength of each non-vehicular ground unit in that Fortification's hex.



An **Improved Position** adds a detrimental "-1" to each attack made against a ground unit in that Improved Position's hex.



A **Minefield** ends the movement of any unit that enters it. No unit can *enter* a minefield hex during the Mechanized Phase. Each unit in a minefield hex during the opponent's Defensive Fire Phase is attacked by that minefield at 1:1, 2:1 or 3:1 odds according to the minefield's strength. [Exception: A Good-Order, non-passenger engineer unit is not attacked by a minefield; and for each turn it



spends in Good Order in that hex, the minefield's strength is reduced by one odds level. When its strength becomes less than 1:1 the minefield is eliminated.]



A **Roadblock** ends the movement of any unit that enters it. A unit cannot enter a roadblock hex using the road movement cost, nor can it *exit* a roadblock hex during the Mechanized Phase.



Smoke is an obstacle to LOS. Its obstacle height for the scenario being played can be found by Selecting **Parameter Data** in the **Help** menu. Smoke can be fired only by certain Indirect-Fire units, and halves the strength of each non-Assault attack into or out of its hex; see **SMOKE** on p.31.



Each **Wreck** in a hex counts towards stacking limits like a normal unit, but no more than three wrecks can exist per hex. A wreck has the same effect on LOS as Smoke. When an armored-vehicle unit is eliminated, a wreck appears in its place (up to a maximum of three per hex). Some scenarios have wrecks in existence at the start of play.

5.2 VISIBILITY

Each scenario has a visibility limit, given in hexes. This limit applies throughout play; it will not change during the course of the game. The visibility can be as low as "1" (representing a night action), as high as "20" (excellent visibility), or anywhere in between. Most of the **BATTLEGROUND: ARDENNES** scenarios have rather low visibility due to the poor weather conditions—heavy fog, in most cases—at the time the real battles were being fought.



To find the visibility for the scenario you're playing, Select any *hex* devoid of units to reveal a panoramic view representative of the weather conditions, along with a brief description of the weather, the condition of the ground, and the actual visibility limit.

5.3 VICTORY CONDITIONS

Each scenario has its own set of victory conditions, which can be viewed via the **Victory** command in the **Status** menu. Using this command causes the Victory Dialog to appear, which lists a variety of data. It shows the number of units (excluding aircraft) each side has lost so far (points are not awarded for shooting down aircraft) and the current point value of each side's total unit losses. It also names the side the victory conditions apply to (calling it the *First Side*), the total point value of all Objective hexes that side currently controls, and that side's current overall point total (which the program calculates by subtracting the value of its unit losses from the sum total of its controlled Objectives plus the enemy's losses).



Any of five levels of victory are possible for the First Side: *Major Defeat*, *Minor Defeat*, *Draw*, *Minor Victory* and *Major Victory*. Each has an associated number of points which that side must equal or exceed *at the end of play* in order to achieve the next-higher level of victory. Specifically:


- The First Side suffers a **Major Defeat** if its point total is less than or equal to the total listed for "Major Defeat" in the Victory Dialog.
- The First Side suffers a **Minor Defeat** if its point total is greater than the total listed for "Major Defeat", but is less than or equal to the total listed for "Minor Defeat", in the Victory Dialog.
- The First Side achieves a **Draw** if its point total is greater than the total listed for "Minor Defeat", but is also less than the total listed for "Minor Victory", in the Victory Dialog.
- The First Side wins a **Minor Victory** if its point total is greater than or equal to the total listed for "Minor Victory", but is less than the total listed for "Major Victory", in the Victory Dialog.
- The First Side wins a **Major Victory** if its point total is greater than or equal to the total listed for "Major Victory" in the Victory Dialog.



determining the winner.

Objectives

As the name implies, an Objective is a vital hex to control in a scenario due to its victory-point value. All Objectives are controlled by one side or the other at scenario start. To gain control of an enemy-controlled Objective, you must occupy it with one of your own units (even a Disrupted one will suffice).

 To display all Objectives on the map, Select the **Objectives** command in the **Display** menu. When this command has a check mark next to it, each Objective hex is marked with a special symbol to denote its location, point value and



ownership. A specific Objective hex can be found by Selecting the **Objectives** command in the **Status** menu, then Selecting one of the Objective-hex lines in the ensuing dialog box; this will move the Hot Spot to that hex.

5.4 USING THE A/I

When the A/I is conducting an action, the A/I Action Dialog appears in order to tell you what the A/I is doing, and the map will scroll to bring the corresponding portion of the map to the center of the display.



The A/I Action Dialog has four buttons: *Step*, *Run/Pause*, *Cancel* and *Help*. The *Step* button is initially the default. The current default button is outlined in black, meaning that it can be chosen by pressing **Enter** while the dialog is on-screen.

The **Step** button runs the A/I for one action, after which A/I processing halts.

The **Run** button makes the A/I run continuously until there are no more A/I actions for the current phase. When you Select **Run**, it changes to **Pause** (which becomes the default).

The **Pause** button halts the A/I temporarily. (While the game is thus halted, you cannot Select anything from the Menu Bar or Unit List—but the Toolbox and other A/I Dialog buttons remain active.) When you Select **Pause**, it changes back to **Run** (which becomes the default).

The **Cancel** button cancels A/I processing. (When you Select **Cancel**, it becomes the default.) To re-activate the A/I, Select the "Activate A/I" button in the Toolbox or the **Activate A/I** command in the A/I menu. While the A/I is activated and the A/I Action Dialog is on-screen, the Esc (Escape) key acts as a **Cancel** button.



Note: When the A/I for the side conducting the actions in the current phase is set to Manual, you can Select the **Activate A/I** menu command (or its corresponding Toolbox button) at any time to have the A/I complete that phase for you. Also, the type of A/I being used (Semiautomatic, Automatic, or Automatic with Fog-of-War) can be changed via the **A/I** menu at any time for either or both sides [Exception: if playing a modem-to-modem game, Fog of War cannot be turned off once the game has begun].



Semiautomatic A/I & Organizations

Selecting the **Semiautomatic** command in the **A/I** menu gives you command of the unit *organizations* on that side (or on both sides, if you choose it for both) while letting the A/I control the actions of each individual unit. If you choose this command, the Order Dialog will appear at the start of each phase. This dialog lists the organizations of the current side. When you Select an organization name, information about that organization and any order currently assigned it are displayed. The information includes the center *Location* of the organization (calculated as the average of the positions of the units in that organization), the organization's current *Size* in units, and its *Health* (i.e., the percentage of those units that are currently in Good Order). Reinforcements that have not yet arrived are printed in light gray, and have their entry hex as their center location.

To give an organization an order, Select the organization's name and then Select one of the orders from the list in the dialog. Then choose the organization's "objective" for the phase by clicking on the appropriate hex with the *right* mouse button. Once you've Selected (or decided to leave unchanged) an order for every listed organization, click the **OK** button and play will proceed.

Whenever you click the **Cancel** button in the Order Dialog, A/I processing is canceled at that point. Processing can be resumed by Selecting the "Activate A/I" button in the Toolbox or the **Activate A/I** command in the **A/I** menu.



Unknown-Unit Markers

? When Fog of War is in effect for a side, its units are partially revealed—in the form of Unknown-Unit markers—whenever an enemy unit becomes adjacent to them. An Unknown-Unit marker indicates only the presence of a hidden unit; the actual type(s) and number of units are not revealed until the start of the next phase. A unit's move automatically ends when it reveals an adjacent Unknown-Unit marker.

5.5 GAME TURNS

Each scenario has a maximum number of playable Game Turns. When the specified number of Game Turns has been played, the game is over. The amount of Game Turns is displayed in two ways. "Turn # of #", indicating the current Game Turn and the maximum number of Game Turns, is part of the Phase Box that appears at the start of each new phase. In addition, "Time ## (Limit ##)" appears in the left-hand corner of the Status Bar, giving the current Game Turn and the maximum number of Game Turns as increments of time. In the latter format, Game Turn 1 appears as "Time 00:00", and at the start of Game Turn 2 it will change to "Time 00:10" to show that ten minutes (i.e., one Game Turn) have elapsed.

5.6 THE SEQUENCE OF PLAY

Each Game Turn comprises two Player Turns—one German and one U.S. (though which side goes first in the game depends on the scenario being played). Furthermore, each Player Turn is made up of six phases, which occur in the following order: *Prep Fire Phase*, *Movement Phase*, *Defensive Fire Phase*, *Offensive Fire Phase*, *Assault Phase*, and the *Mechanized Phase*. For simplicity, the player whose side is "active" in each of these phases (aside from the Defensive Fire Phase) is referred to below as the *Phasing Player*. Except in the last Player Turn of the game, the completion of each Mechanized Phase is followed by the Prep Fire Phase of the next Player Turn, in which the opponent becomes the Phasing Player. To advance the game to the next phase, Select either the "advance to next phase" Toolbox button or the **Next** command in the **Phase** menu.

In the **Prep Fire Phase**, the Phasing Player may fire some, all or none of his units that are capable of firing; see **INDIRECT FIRE** on p.30 and **DIRECT FIRE** on p.31. However, as the first action of this phase, the program checks for Disrupted units on the Phasing Player's side, and checks to see if each regains any previous Morale loss and/or returns to Good order. It then announces on-screen, in the form of the "Next Phase Report", the results of this check.

In the **Movement Phase**, the Phasing Player may move some, all or none of his units that are capable of movement and that did not fire in his Prep Fire Phase; see 5.8 **MOVEMENT**. If the opponent has air support, he may use it to initiate attacks at this time as well; see **AIR SUPPORT** on p.32.

In the **Defensive Fire Phase**, each of the Phasing Player's units that is in a



minefield hex is attacked by those mines. Then the Phasing Player's *opponent* may fire some, all or none of his Direct-Fire (only) units that are capable of firing; see DIRECT FIRE on p.31. Anti-Aircraft attacks may also be made at this time; see ANTI-AIRCRAFT FIRE on p.33.

In the **Offensive Fire Phase**, the Phasing Player may fire some, all or none of his Direct-Fire (only) units that did not fire in his Prep Fire Phase; see DIRECT FIRE on p.31. If he initiated any air attacks in the Movement Phase, they are resolved automatically at the start of the Offensive Fire Phase.

In the **Assault Phase**, the Phasing Player may conduct Assaults with some, all or none of his Good-Order, Assault-capable units that are adjacent to an enemy unit; see ASSAULTS on p.33.

In the **Mechanized Phase**, the Phasing Player may move certain vehicular units, within certain restrictions; see 5.8 MOVEMENT.

The Phase Box



At the start of each new phase, the Phase Box appears in order to announce the phase and give the current turn number. Left-click with the mouse on the Box to begin the phase—or *right-click* on it to begin the phase and make it disappear *automatically* after a few seconds each time it appears.

5.7 COMBAT

There are five basic types of combat in the game: Indirect Fire, Direct Fire, Assaults, Air Support, and Minefield attacks. There is also one specialized variation of Direct Fire: Anti-Aircraft Fire. The same unit *may* be attacked more than once in the same phase [Exception: if attacked by Assault or Air Attack].

Attacks other than Air Support, Assaults and Minefields use a combination of the firer's range to the target plus its H# (if firing at an armored ["hard"] target) or S# (if firing at a non-armored ["soft"] target) to determine the actual strength of the attack. A unit with a range of "3" or more has a Short Range in which its H#/S# is doubled, a Medium Range in which its H#/S# is unchanged, and a Long Range in which its H#/S# is halved. Certain specific units have additional range modifications to better reflect their real-life capabilities. The "leg" units in the game have an H# whose range is "1", which represents their hand-held anti-tank weapons—bazookas, panzerfausts and panzerschrecks; this H# is used at normal strength unless the firer is Disrupted. (All Disrupted units have their H#/S# halved prior to any other modification.)

LOS and terrain can also affect attacks. Direct Fire cannot be used vs. a target the firer has no LOS to. The defender's terrain may add a negative modifier to the attack, potentially benefiting the defender; however, the total of such modi-



fiers—excluding the one for firing uphill or downhill—cannot exceed "-4" for any given attack (see COMBAT RESOLUTION on p.34 for more details). In addition, a unit occupying a Fortification has its D# increased by "20".

A passenger unit cannot attack, and cannot be attacked directly; in the latter case its transport vehicle must be attacked, and the same result vs. the transport also applies to the passenger [Exception: a passenger aboard a *non-carrier* vehicle has a D# of "1", and is eliminated if the vehicle becomes even Disrupted].

Selecting either the "highlight fired units" Toolbox button or the **Fired/Fought** command in the **Display** menu will highlight all units on the map which have attacked thus far in the current phase.



Indirect Fire

Certain units (mortars, and most types of artillery) attack using Indirect Fire, which means they not only can attack targets in their LOS, but also have the ability to attack targets they cannot see. They are identified by their *red* H# and S# in the Unit List. Indirect Fire can be conducted only during the Prep Fire Phase. To use Indirect Fire, the attacking unit must have a LOS to its target, or the target must be in the LOS of a friendly (to the firer) unit

other than a truck, wagon or unarmed halftrack—and, of course, the target must be within the firer's range. Indirect Fire attacks all units in the target hex.

The easiest way to use Indirect Fire is via the "display Artillery Dialog" Toolbox button (or the **Artillery Dialog** command in the **Units** menu). Selecting either of these makes the Artillery Dialog appear, which lists all friendly Indirect-Fire units that are available in the Prep Fire Phase. To fire a unit using the Artillery Dialog, first Select the unit's name in the list, then right-click on the target hex. (Note that when a unit in the Artillery Dialog is Selected, all of its potential targets are highlighted on the map.) Once the unit fires, it disappears from the list and the next unit is automatically Selected, so all you have to do to fire it is to right-click again on a target hex. A unit name printed in light gray in the dialog means that particular unit currently has no eligible target.

An alternative way of using Indirect Fire is to Select the firing unit in the Unit List, then right-click on the target hex. Or, after you Select the firing unit in the Unit



List, place the cursor on the firing unit's hex, press and hold down the left mouse button, move the cursor to the target hex, and then release the mouse button. Note that these methods can be used only by Indirect-Fire units that are on the map. (See below for Off-Board Artillery.)

You can use either the "highlight Indirect-Fire units" Toolbox button or the **Indirect-Fire Units** command in the **Display** menu to highlight all Indirect-Fire units currently on the map.

Off-Board Artillery

A scenario may contain one or more artillery units that are defined to be "off-board". These units have a location outside the boundaries of the map, and cannot be moved or attacked. Off-board artillery units are identified in the Artillery Dialog by an asterisk (*) preceding their name. Using the Artillery Dialog is the only way to fire off-board artillery.

Smoke

Smoke is used to block LOS and/or reduce the strength of a non-Assault attack. It can be fired only by *Indirect-Fire* units whose weapons are between 75mm and 155mm in size (as indicated by each such unit's name in the Unit List).

Each side may make only a set number of smoke attacks per scenario. The number available can be found by Selecting the Terrain Info Box and holding down the mouse button. In that Box, "Smoke ###" will appear. These numbers represent the number of smoke attacks each side can make. The Allied number is on the left and the German number is on the right.

To fire smoke, Select (either in the Unit List or the Artillery Dialog) a unit qualified to fire it, then hold down the **Ctrl** (Control) key while right-clicking on the target hex. A message will appear on-screen to confirm that the smoke was placed successfully. The normal Indirect-Fire LOS requirement applies to firing smoke, but aside from that you can fire smoke into any hex, not just into one that contains an enemy unit. However, smoke cannot be placed again in a hex that already contains a smoke marker.

Smoke has the following effects: it is an obstacle that blocks LOS *through* its hex, up to the height limit set for it in the scenario; it halves the strength of each non-Assault attack made by a unit in a smoke hex; and it halves the strength of each non-Assault attack made vs. a unit in a smoke hex.



Direct Fire

Units with an H#/S# of at least "1" [Exception: mortars and most types of artillery] attack in the Offensive and Defensive Fire Phases using Direct Fire, which means they can attack only targets in their LOS. Of course, the target must be within the firer's range as well. A Direct-Fire attack can be made vs. only one target unit at a time. A unit that fired in the Prep Fire Phase cannot fire again in the Offensive Fire Phase. A unit that moved in the Movement Phase has its attack strengths halved in the

Offensive Fire Phase. Selecting either the "show LOS" Toolbox button or the **Spotted Units** command in the **Display** menu will highlight all units that have a LOS to at least one enemy unit.

To use Direct Fire, Select the firing unit in the Unit List, then right-click on the target hex. If the target hex contains only one unit, or several units all of the same type, the attack will be resolved automatically. (In the latter case the program chooses the unit to be affected.) If the target hex contains more than one type of potential target, a Target Dialog will be displayed to let you Select *one* of those units as the target.

Each unit may conduct only one Direct-Fire attack per fire phase. Selecting either the "highlight fired units" Toolbox button or the **Fired/Fought** command in the **Display** menu will highlight all units on the map which have fired thus far in the current phase.

Semi-Auto Attacks

You can also use "drag-and-drop" to conduct Direct and Indirect Fire [Exception: Off-Board Artillery] attacks. To do this, Select (in the Unit List) all the units you wish to attack with in a hex, then place the cursor on that *hex*, press and hold down the left mouse button, move the cursor to the hex you wish to attack, and *then* release the mouse button. If using Direct Fire vs. a hex that contains more than one type of potential target, a Target Dialog will be displayed to let you Select *one* of those units as the target.

Auto Attacks

You can have the program conduct Direct and Indirect Fire attacks for you even if not using the A/I. To do this, right-click on a target hex while holding down the Alt key. The program will find a unit eligible to attack that hex, will give that unit's name and location, and the Hot Spot will scroll to its hex. If you click **OK**, the attack will be made. If using Direct Fire vs. a hex that contains more than one type of potential target, after



you click **OK** a Target Dialog will be displayed to let you Select *one* of those units as the target.



Air Support

At the beginning of play you should check to see if your side has air support. To do this, Select the Terrain Info Box and hold down the mouse button. In that Box, "Air Power #/#" will appear. These numbers represent the number of air attacks each side can make. The Allied number is on the left, the German number on the right. To find the H# and S# of your aircraft, Select **Parameter Data** in the Help

menu.

You can initiate an air attack only during your own Movement Phase. First Select the hex to be attacked, then Select the "initiate air attack" Toolbox button or the **Air Attack** command in the **Units** menu, or press the Keypad 5 key. If the target hex contains more than one type of potential target, a Target Dialog will be displayed to let you Select one of those units as the target.

If initiation of the air attack is successful, an airplane icon will appear in the target hex. Each air attack you initiate will be resolved automatically at the beginning of your Offensive Fire Phase. The attack strength of an aircraft that was Disrupted by enemy Anti-Aircraft Fire is halved. No more than one aircraft can initiate an attack vs. the same hex per Player Turn.



Anti-Aircraft Fire

A unit whose H# and S# are printed in blue can use Anti-Aircraft Fire during its Defensive Fire Phase. Anti-Aircraft Fire is conducted like a normal Direct Fire attack (including the use of Auto Attacks; see p.32), but is made vs. an enemy airplane icon. An airplane is a "soft" target. Anti-Aircraft Fire can Disrupt or eliminate an airplane.



Assaults

To conduct an Assault, first choose—using the *right* mouse button—a defender-occupied hex adjacent to the unit(s) that will make the Assault. A special icon will appear in that hex to indicate that it is being Assaulted. Then Select each friendly unit (or stack of units) that will participate in the Assault and Select **Add to Assault** in the **Assault** menu. (Selecting **Show**

Odds in that menu will review the current odds associated with the Assault.) After you've Selected all Assaulting units and added them to the Assault, resolve the attack by Selecting either the "resolve Assault" Toolbox button or the **Resolve Assault** command in the **Assault** menu. A dialog will be displayed to give the results of the Assault. If all defending units are eliminated or forced to retreat, the Assaulting unit(s) will automatically occupy the defending hex, up to maximum stacking limits.

A unit can Assault only once per Assault Phase. Selecting either the "highlight fired units" Toolbox button or the **Fired/Fought** command in the **Display** menu will highlight all units that have Assaulted thus far in the current phase.

Semi-Auto Assaults

You can also use "drag-and-drop" to conduct Assaults. To do this, Select (in the Unit List) all the units you will Assault with in a *hex*, then place the cursor on that hex, press and hold down the left mouse button, move the cursor to the adjacent hex you wish to Assault, and *then* release the mouse button. Repeat this for each hex that contains one or more units you wish to add to that Assault, then resolve the Assault by Selecting either the "resolve Assault" Toolbox button or the **Resolve Assault** command in the **Assault** menu.

Auto-Assaults

You can have the program conduct an Assault for you even if not using the A/I. To do this, right-click on a target hex adjacent to at least one friendly, Assault-eligible unit while holding down the Alt key. The program will find *all* units eligible to Assault that hex, and will give their names, their locations and the Assault odds. If you click **OK**, they will automatically Assault the hex.

A/I Assaults

Another option for conducting Assaults is simply to Select either the "activate A/I" Toolbox button or the **Resolve Assault** command in the



Assault menu at the start of the Assault Phase. The program will then conduct all Assaults in that phase automatically.

Counter-Assaults

Whenever one or more units conduct an Assault, they are simultaneously Counter-Assaulted by the defending unit(s). Normal Assault rules apply to a Counter-Assault except: a Disrupted unit can make a Counter-Assault, but its A# is halved; no Terrain-Effects or +1 Assault modifier applies; no retreat is possible; and no advance into an enemy hex is possible.



Combat Resolution

Whenever a unit attacks, the program compares its applicable attack strength to the defender's D# to determine the attack odds ratio. For example, an attack strength of "13" vs. a defense strength of "6" would be a 2:1 attack, while a "13" vs. a "5" would be a 3:2 attack, and so on. The odds recognized by the program are 1:4, 1:3, 1:2, 1:1, 3:2, 2:1, 3:1, 4:1 and 6:1. These odds are listed in the Combat Results Table, which can be viewed by Selecting **Parameter Data** in the **Help** menu. An attack at less than 1:4 odds is treated as a 1:4 attack, while one at greater than 6:1 is treated as a 6:1 attack.

Each attack is resolved before the next one is made. An adverse combat result vs. a vehicle carrying a passenger also applies to the passenger [Exception: a passenger aboard a *non-carrier* vehicle has a D# of "1", and is eliminated if the vehicle becomes even Disrupted]. Note that Indirect Fire and Assaults—unlike Direct Fire and Air Attacks—can affect *all* units in the target hex.

Assaults differ further from other attacks in that all units Assaulting the same enemy unit(s) have their individual A#s combined into one overall Assault strength, while all defending units have their individual D#s combined into one overall Defense strength. In addition, the D# of a *Disrupted* unit is halved when it is the target of an Assault, and its A# is halved when it Counter-Assaults (see COUNTER-ASSAULTS on p.34).

Once the program has calculated the initial odds for an attack, it adjusts the odds using the applicable terrain Combat Effects modifier(s). An Assault also receives a special +1 modifier. Each -1 modifier shifts the attack to the next *worse* (for the attacker) odds; each +1 shifts it to the next better odds. (For example, a 1:1 attack with a -1 modifier becomes a 1:2 attack—or becomes a 3:2 attack if the modifier is a +1; a 1:4 attack with any "minus" modifier remains a 1:4 attack.) It then makes a die roll to resolve the attack. The possible results are:



- **No Effect ("–")**: The target unit is unaffected by the attack.
- **Disruption ("D")**: The target unit is Disrupted, meaning that its attack strengths (and, for Counter-Assault purposes, its A#) are now halved, it cannot Assault (but can Counter-Assault), and cannot move closer to an enemy unit in its LOS. In addition, the program makes a die roll to see if the unit must retreat. (See RETREATS below. To find how a Disrupted unit returns to Good Order, see MORALE below.) If a non-carrier vehicular unit transporting a passenger is Disrupted, its passenger is eliminated. Selecting either the "highlight Disrupted units" Toolbox button or the **Disrupted Units** command in the **Display** menu will highlight all currently Disrupted units.
- **Disruption and Morale Loss ("M")**: The target unit is Disrupted (as above) *and* its Morale drops by one. Its new current Morale is displayed in the Unit List.
- **Elimination ("X")**: The target unit, and any passenger it is carrying, are destroyed and removed from play.

Retreats

When a unit suffers a "D" or "M" combat result due to an attack *other than* an Assault, the program makes a die roll (*after* the unit's Morale drop occurs, if it suffered an "M" result). If this die roll is greater (higher) than the unit's current Morale, it automatically retreats one hex in a direction determined by the program.

A retreat occurs as the result of an Assault when every defending unit is Disrupted and/or has an A# of "0", and at least one Assaulting unit is in Good Order. Retreats are not possible in Counter-Assaults. If a unit must retreat, but has no legal hex to retreat to or its inherent movement allowance is "0" or "1", it is eliminated instead.

Morale

Each unit starts with a nominal Morale number between "1" (worst) and "9" (best). The program uses this number to represent a unit's ability to stand its ground instead of retreating when attacked, and to determine how quickly a Disrupted unit returns to Good Order. Each unit's current Morale is displayed in the Unit List.

A unit's Morale drops by one whenever it receives an "M" combat result. Nothing can raise a unit's Morale to higher than its nominal level, and no unit's Morale can ever exceed "9". The program automatically eliminates a unit whose Morale becomes "0".

At the start of each Player Turn, the program makes a die roll for each of the Phasing Player's Disrupted units whose current Morale is equal to its nominal level. If this die roll is less than or equal to the unit's current Morale, the unit returns to Good Order.

At the start of each Player Turn, the program makes a die roll for each of the Phasing Player's Disrupted units whose current Morale is less than its nominal level. If this die roll is less than or equal to the unit's current Morale, its Morale



increases by one.



5.8 MOVEMENT

The Phasing Player can move his units only during their Movement and/or Mechanized Phase. During the Movement Phase he may move all, some or none of his units that did not fire in the preceding Prep Fire Phase. During the Mechanized Phase he may move all, some or none of his *Good Order*, *vehicular* units that fired in neither the Prep nor the Offensive Fire Phase *and* did not *unload* a passenger in the Movement Phase. A unit just starting its Movement Phase can move one hex even if doing so exceeds its movement allowance—but it cannot exceed its movement allowance in the Mechanized Phase. A unit can move only if it has an inherent movement allowance of "1" or more.

To move a unit, Select it in the Unit List, then right-click in a hex adjacent to it. You can continue right-clicking in adjacent hexes until the unit either is where you wish it to stop or has used all of its movement allowance. You can also use "drag-and-drop" to move a unit; to do so, Select it in the Unit List, then place the cursor on that unit's *hex*, press and hold down the left mouse button, move the cursor to the hex you wish to move the unit to, and *then* release the mouse button. This *Auto Move* function lets the program move the unit from hex to hex for you.

If you wish to move all the units in a hex simultaneously, double-click with the left mouse button on their hex and all of them will be Selected. Note, however, that moving—or entering a hex that contains—a stack of units can negate the



benefits of moving along a road; see **STACKING** below.

If you move a unit but want to start its move over again, Select **Undo Last Movement** in the **Units** menu or press Ctrl-U on the keyboard. [Exception: A move cannot be undone if Fog of War is in effect for the opposing side.]

If you move a unit but use only *part* of its movement allowance, you can move one or more other units and still go back and finish moving the first unit.

A unit's movement allowance drops to "0" when it moves adjacent to an enemy unit or an Unknown-Unit marker.

Selecting either the "highlight moved units" Toolbox button or the **Moved Units** command in the **Display** menu will highlight all units that have moved thus far in the Movement Phase.

Stacking



No more than four units (excluding passengers but including wrecks) may occupy the same hex simultaneously. Two or more units stacked in a hex negate any road in that hex, meaning that whenever more than two units occupy a road hex—*counting the unit(s) entering it*—entry always incurs the non-road movement cost. (Passenger units do not count, but wrecks do.) Hence if you try to move three or more units simultaneously along a road, they must pay the non-road cost to enter that hex. Likewise, if two units already occupy a road hex and you attempt to move one or two more units into it, the non-road cost will be charged.

You can change the top-to-bottom order of units in a stack in the Hot Spot hex by Selecting the "to top of stack" Toolbox button or the **To Top of Stack** command in the **Units** menu. Either of these will move the bottom unit in the stack to the top. In addition, the **Units** menu also contains a **To Bottom of Stack** command, which moves the top unit to the bottom.

Terrain Effects

All the various types of terrain in the game have an associated movement cost, or provide some kind of benefit or restriction to movement. See 5.1 TERRAIN for details. Minefields, roadblocks and wrecks can affect movement too; see **SPECIALS** on p.23.

Loading & Unloading Passengers

Two broad categories of vehicular units can transport other units. "Carrier" vehicles—which are indicated by the presence (always) of a helmet icon in their data area in the Unit List—can transport any non-vehicular unit that also has a helmet icon. In addition, tanks, tank destroyers and assault guns can transport infantry-type units only.

Units can be loaded or unloaded only during their Movement Phase. A transport-capable unit can move and then unload a passenger, but cannot move and then load one. A unit capable of being a passenger cannot move "on its own" in the same turn that it loads or unloads.

To load a unit, Select both it *and* the unit to be used as its transport (which must be devoid of passengers and in the same hex with it) in the Unit List, then



Select the "load/unload" Toolbox button or the **Load/Unload** command in the **Units** menu, or press the Keypad 0 key.

To unload a passenger unit, Select its transport vehicle, then Select the "load/unload" Toolbox button or the **Load/Unload** command in the **Units** menu, or press the Keypad 0 key.

IMPORTANT: A passenger being carried by a transport unit does not appear on the map as a separate unit—nor does it appear automatically in the Unit List (only its transport, which will have a *full-color* helmet icon in its data box to show that it has a passenger aboard, does). To check for passengers in a hex, Select that hex to put the Hot Spot there, then *right-click* anywhere in the Unit List and keep the mouse button depressed. Each passenger in that hex will appear in the spot normally occupied by its transporting unit.

Reinforcements

Many of the scenarios have reinforcements, which are units that enter from off-map during play. You can display the Schedule Dialog to see when, where and how many reinforcements are available by Selecting **Scheduled** in the **Reinforce** menu. (However, no reinforcements will appear in the dialog for a side that has Fog of War in effect for it.) Selecting any line in this dialog automatically scrolls the map to the arrival hex of that reinforcement unit and makes that hex the current Hot Spot.

At the start of a Movement Phase in which reinforcements are due to arrive, a message to that effect will appear on the screen. The arriving units may be brought onto the map at any time during the Movement Phase, or they may be ignored and brought on in a subsequent Movement Phase (i.e., they will remain available indefinitely until entered).

To bring on reinforcements, Select **Arrived** in the **Reinforce** menu to display the Arrived Dialog, which will show a list of the available units, then double click with the left mouse button on the name of a unit in the list. Repeat this procedure until the hex has reached stacking limits (the program will not let you overstack) or you wish to move the reinforcements you've already brought on; then Select the **OK** button in the dialog. (Due to road-movement restrictions it's usually easiest to bring on two at a time, then move them before bringing on more.) Once you've moved them, you can Select **Arrived** again to bring on any remaining reinforcements.

6.0 MODEM PLAY

Modem play allows two people to play the opposing sides in a *BATTLEGROUNDS: ARDENNES* scenario without having to be together in the same place. All each player needs is an installed copy of the game, and a modem hooked up to his computer and phone line.

6.1 STARTING A NEW MODEM-PLAY SCENARIO

To start a new scenario and play it by modem, first call your opponent on the phone, pick a scenario to play, and agree on who will be the Caller



and who will be the Host. The Host will be responsible for opening and saving the scenario on his computer. The Caller will provide an encryption key at the start of the scenario to ensure that, when the scenario is saved, no one but the Caller will be able to open the saved-game file later (see 6.2).

Each player should launch *BATTLEGROUNDS: ARDENNES* and, when the Menu Screen appears, Select **Start Game as Modem Host** or **Start Game as Modem Caller** as agreed to beforehand. (If you're presently viewing the Scenario Selection Screen, Select **Previous** to go to the Menu Screen.)

For the Caller, a dialog box will appear, offering a choice of which game map to open. Be sure to Select the correct one for the scenario.

For the Host, a dialog box will appear, asking him to Select whether a new or a saved game will be played. Select a new game, and then the Scenario Selection Screen will appear. There, Select the appropriate scenario and the **Play** button.

Once the map and Modem Settings dialog box appear on-screen, the Host should configure his modem port. The most important setting is Baud Rate. If you're not sure what your modem's baud rate is, choose something conservative like 2400. If you have a 28.8 modem, select the baud rate 38400. The next most important setting is Port. A typical configuration is for the modem to be on COM2 (if the mouse is on COM1), but you may have to consult your hardware documentation (or use trial-and-error) to find your correct setting.

Once the map and Modem Settings dialog box appear on his screen, the Caller should configure his own modem port. The baud rates need not be the same. The modems will negotiate the highest rate both can handle.

Both sides now hang up the phone.

The Host clicks **OK** in the Modem Settings dialog box, and should see the Answer Dialog showing that it is waiting for a call. He then waits.

The Caller clicks **OK** in his Modem Settings dialog box, and should see the Dial Dialog. He then left-clicks in the phone entry line and types in the phone number of the Host system (i.e., the phone number of the line connected to his opponent's modem). He may also type in an encryption key now (see 6.2). Lastly he Selects the **Dial** button or presses the Enter key, and the modem will call the Host. The Host system should answer after the first or second ring.

Momentarily both players should see the Communications Dialog (a "chat window"). This may be used by both players to type messages to each other. One or both players may close his Communications Dialog at any time during modem play. It will automatically reappear if the other side types a message or, if due to a data transmission backlog, the number of messages waiting to be sent reaches 20. It can also be re-opened at any time by Selecting **Communication Dialog** in the **Modem** menu.

Immediately after the Communication Dialog appears, so will a dialog box enabling him to Select the side he has chosen to play and, if both players have agreed, Fog of War. Once he does this and clicks **OK**, the scenario will be transmitted to the Caller. Only the player who goes first will see the Phase Box that denotes the first Prep Fire Phase of the game. He should left-click with the mouse



on the Phase Box to make it disappear, and he may then begin playing in the normal manner.

As the game proceeds, both players will see their own and enemy units fire and move in turn. As each player completes a phase and advances the game to the next phase, the player who will be in control for that phase will see the Phase Box appear. He should left-click on the Phase Box and proceed with his actions for that phase. The Status Bar at the bottom of the screen will show whether the current phase is under Local (your) or Remote (your opponent's) Control. During a phase that's under Remote Control you should not attempt to move or fire any units, but rather wait until you see the Phase Box appear, indicating that you are now in control (i.e., it's your phase to move or attack). When the scenario is over, the Victory Dialog will be displayed for both sides to see.

If the game must be halted prematurely but the players wish to resume it later, the Host should choose **Save** or **Save As** in the **File** menu and save the scenario. Both sides then simply exit the program. Alternatively, after the Host saves the scenario he can Select **Host** and the Caller can Select **Caller** again in the **Modem** menu; doing this will close the scenario without exiting the program.

6.2 ENCRYPTION KEY

While the Caller has the Dial Dialog on-screen prior to the start of play, he should enter an encryption key (i.e., a password) in the appropriate spot in order to encrypt the saved-game file so that once it is saved the Host cannot open it. (If no encryption key is entered at this time, the file can still be saved later but it won't be encrypted.) The Caller should pick an encryption key that will be easy for him to remember but difficult for the Host to guess. It can be a word or a phrase, and numerals and/or punctuation marks can be used.

The extension *.btx* indicates a saved-game file that has been encrypted using the Caller's encryption key. Encrypted scenario files are stored in a binary format, and the user should not attempt to view or print them directly without using the *BATTLEGROUND: ARDENNES* program.

When re-opening a saved game, the Caller must specify the same exact encryption key that was in use when the scenario was last saved.

6.3 RESUMING A SAVED MODEM-PLAY GAME

The procedure for doing this is the same as starting a new modem-play scenario, except that when the Host is prompted to Select a new or saved game he must pick the latter. He then picks the agreed-upon scenario in the ensuing dialog box.

If the scenario doesn't open, the Host should check to make sure he Selected the right one. If that's not the problem, the Caller should Select **New Encryption Key** in the **Modem** menu and type in the key again, for he probably entered it incorrectly the first time.



7.0 APPENDIX



7.1 THE BATTLE OF THE BULGE: AN OVERVIEW

As the Allied offensives of summer 1944 ground to a halt after outrunning their supply lines, Hitler made a momentous decision. He would strip the front lines as much as possible to amass a secret reserve, strong in panzers, with which to launch a massive offensive. His target would be the Ardennes region of Belgium and Luxembourg—for the most part rugged, wooded terrain with steep river valleys—where the Germans had so completely surprised the French in 1940 by pouring two entire *panzerkorps* through it in just a few days. His ultimate goal was twofold: to seize the vital port of Antwerp, thereby splitting the Allied front in two and isolating the British-Canadian 21st Army Group in Holland; and to cause such consternation among the Western Allies that their coalition would fall apart. His generals gave the idea scant chance of succeeding, but Hitler no doubt felt that desperate times called for desperate measures—that any possibility of success was better than none. To his offensive he gave the defensive-sounding code name *Wacht am Rhein* ("Watch on the Rhine").

By December of 1944 the Germans had positioned the *5th* and *6th Panzer-armees* and the *7th Armee* east of the Ardennes, their units carefully hidden in the forests to prevent detection by Allied air reconnaissance. Nor did the Allies' super-secret ULTRA codebreaker—which could decipher almost all high-level German radio communications—detect any reference to a coming offensive, for Hitler had ordered that all messages relating to it be conducted in writing or via telegraph or



telephone.

The attack, originally scheduled for late November but postponed several times due to delays in assembling troops and supplies, and to the German generals' desire for at least a week of overcast skies (to keep the dreaded Allied air forces on the ground), was finally launched on December 16th. Even then, only about 70% of the forces envisioned were present, and many units were still understrength in men and equipment. (Some "motorized units were actually equipped with bicycles.) In all, five panzer and thirteen infantry-type divisions initiated the attack, with two more panzer divisions and a panzer brigade in immediate reserve. At daybreak on the 16th the Germans had over 400,000 men, more than 2,600 artillery pieces and rocket launchers, and some 1,400 tanks and assault guns along a front of just under seventy miles.



On the other side, the Americans were in a less than ideal condition to meet such a threat. With the Ardennes viewed as a quiet sector, a number of U.S. units had been moved there to rest and take on replacements after suffering heavy casualties in the autumn fighting. Moreover, several green units had been put into the line in order to let them gain combat experience gradually. The GIs were stretched so thinly that in some areas there was no continuous front line, the troops relying on the many small villages as company or platoon strongpoints instead.

The attack actually made little headway on the first day—and soon most of the *6th Panzerarmee*, the force designated to make the main effort, found itself hopelessly stalled against the defenses along the Elsenborn Ridge. South of it, however, the offensive picked up speed. Among the advancing formations were *Kampfgruppe Peiper*, a powerful mechanized battlegroup of the *1st SS-Panzer*



Division—and the *XXXXVII Panzerkorps*, which had as an intermediate objective the market town of Bastogne. Along their routes, many GIs fought to the end against overwhelming odds, while others began heading west—in both cases, sometimes under orders and sometimes not.

The weather for the first few days was below freezing and overcast, with thick fog throughout the region. Then on the 18th it got warmer, thawing the ground and making movement across country and along unpaved roads much more difficult. Neither the fog nor the clouds abated, however.

The Americans began rushing reinforcements to the inward "bulge" in their line, but the bad weather, general confusion, and the streams of men, vehicles and equipment pouring westward made their task in some cases exceedingly difficult. On the other side, the Germans were already starting to experience fuel shortages, and the long "tails" of their formations lining the relatively few roads inhibited the forward movement of their supplies and artillery.

American engineers blew bridges vital to the German advance, and U.S. reinforcements arriving piecemeal were thrown into roadblock-type defenses at crucial towns and road junctions. None of this stopped the seemingly juggernaut-like enemy advance, but it bought precious time for further reinforcements to arrive. Around St. Vith, the 7th Armored Division fought a bitter holding action for six days before finally being forced to withdraw.

East of Bastogne, elements of the U.S. 28th Infantry Division was mauled in desperate fighting along Skyline Drive, in towns such as Marnach and Clervaux, while the 9th and 10th Armored Divisions strove in vain to hold vital road junctions—but their sacrifices allowed the 101st Airborne Division and a number of artillery battalions to reach the town just as the Germans were approaching. Repulsed in their attempt to take Bastogne directly, the Germans flowed around it on both sides and eventually surrounded it. All attempts to break into the town failed, however; so, leaving behind the *26th Volksgrenadier Division* to invest the town, they resumed their westward advance despite the American "plug" in their supply line.

To the north, meanwhile, *Kampfgruppe Peiper*—later to become notorious for the massacre of dozens of GIs near Malmédy on December 17th—found itself cut into two pieces when the Americans retook the town of Stavelot behind Colonel Peiper and his advance units, which had been trying to find an exit from the valley of the Amblève River. Already low on fuel, he decided to sit tight while the troops behind him recaptured Stavelot. This was not to be, however, and on the night of the 23rd-24th, Peiper abandoned his heavy equipment, now concentrated around the village of La Gleize, and with some 800 men stole away on foot to regain the German lines.

Also on the 23rd the skies cleared, enabling swarms of fighter-bombers to attack the Germans wherever they could find them. As long as the clouds stayed away, German movement during the daylight hours was now almost suicidal, making it even more difficult for them to bring up reinforcements and supplies.



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