

# DECISIVE BATTLES OF WWII: THE ARDENNES OFFENSIVE™

## Hot Key list

- 1 ..... Hex-grid on/off  
z ..... Names on/off  
u ..... Clears units from the screen or returns them  
c ..... Shows current hex control  
p ..... Shows hex penalties  
space ..... Select all units in a stack  
space ..... Continues computer move after combat  
backspace ..... Ungroups a stack of units  
s ..... Shows the current supply net  
0 ..... Center the screen on the selected unit



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DECISIVE  
BATTLES  
OF WWII

# THE ARDENNES OFFENSIVE™



## USER MANUAL



A MINDSCAPE COMPANY

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## 1. INTRODUCTION

DBWWII: THE ARDENNES OFFENSIVE is the first in a new generation of World War II operational level games from Strategic Studies Group. It is a simulation of the last great German offensive in the west, popularly known as the Ardennes Offensive or the Battle of the Bulge. The Offensive, which commenced in December 1944, achieved some early success against the surprised American forces and a limited breakthrough by German panzer elements reached Dinant on the Meuse River - albeit temporarily. Without adequate air cover or supply, and against a battle hardened and resolute opponent, the plan was fore-doomed to failure but some 100,000 Americans, and an even greater number of Germans, would fall before the last blitzkrieg was stopped and the inexorable Allied drive to Berlin resumed.

The game's scenarios cover the most exciting aspects of the battle, including a campaign game which allows you to refight the entire conflict. A tutorial scenario covering the initial German drive to Bastogne takes you through the game mechanics.

This manual is written for WINDOWS® 95 computers. **Information on installing the game can be found on the Data Card.**

## 2. STARTING THE GAME

Go to the Start Menu or make your own shortcut to the file ARDENNES.EXE. The Game Type Dialog appears, giving you the choices of Solo or Network. A Solo game is played on a single computer, although more than one human can play.

A Network game is played on multiple computers, and there are four connection methods, IPX Connection, Internet TCP/IP, Modem and Serial (Direct Connect). Please see Appendix B, starting on page 49, for details.

### The Scenario Screen

This screen allows scenario choice, and sets various game options (see fig 2.1).

To choose a scenario, click in the list box. Details about the scenario appear in a box to the right. More information is available through the History button.

Buttons on the left of the screen allow starting a new Email game, and loading saved games.

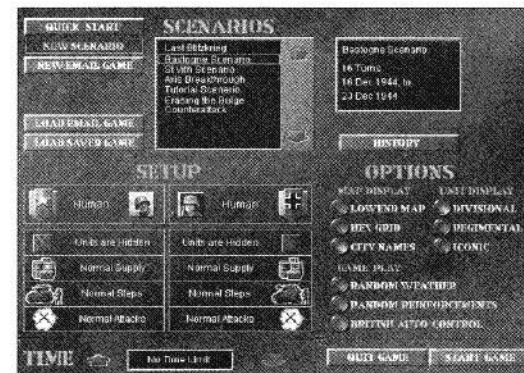


Fig. 2.1

### Setup

Each side has a series of setup choices. See Chapter 4 for an explanation of these game options. These are:

- Human, Computer, Computer+ or Computer++ play
- Hidden, Unknown or Exposed units
- Normal Supply, Supply +25%, Supply +50%
- Normal Replacement Steps, Steps +1, Steps +2
- Normal Attacks, Attacks +1, Attacks +2

### Options

Map Display Choices

Low Resolution or High Resolution Map

Hex Grid On or Off

City Names On or Off

### Unit Display Choices

Divisional, Regimental or Iconic Game Play

Random Weather On or Off

Random Reinforcements On or Off

British Auto-Control On or Off

### Time

Time limit for a player turn from no limit to 15 minutes.

Multiple Computer Games

### 3. THE TUTORIAL

DBWWII: THE ARDENNES OFFENSIVE gives you control of the regiment, and sometimes battalion, strength units which fought in the Battle of the Bulge. Your main combat units are infantry and armor. In an attack, you are able to augment their effectiveness by adding artillery, air strikes and the effects of leadership. In clear weather, your planes can hinder the enemy's movement. Just as in the real battle, combat units must ensure that a supply route exists or risk becoming isolated without fuel or ammunition. DBWWII: THE ARDENNES OFFENSIVE is played in a series of half day turns. Each turn is separated into a German player turn followed by an American player turn and, depending on the scenario, a British turn. During each turn a player may move all, some or none of his units, and may conduct attacks on enemy units.

Reading through this manual, some of the rules may seem rather complicated and the game may appear daunting because of this. In reality, the computer handles 90% of the detail in the game, leaving you to decide on the real tactical questions of where to move your combat forces and which enemy units to crush. The tutorial scenario is designed to introduce you to the game in under half an hour. DBWWII: THE ARDENNES OFFENSIVE is an easy game to learn.

The tutorial scenario commences on December 16, 1944 and deals with the German attack on Bastogne. Bastogne was a vital road junction, and its continued control by the Allies during the battle hampered the flow of supplies to the panzer spearhead as it approached the Meuse River. In this tutorial, your job is to take Bastogne within 5 turns, and thus clear the way for further advances.

#### Selecting the Tutorial Scenario

Start the game using the procedure described in Chapter 2. The first screen you see after the game titles have finished is the Scenario Select screen (fig 2.1). A scrolling menu in the top center of the screen lists the scenarios. Click on the Tutorial scenario within this menu. Details of the scenario appear in the top right of the screen.

The bottom left of the screen contains the setup options, Allies to the left, Germans to the right. We want to play the Germans, so click once on the word Human in the Allied leader box. It changes to Computer.

Underneath the leader boxes are a set of options. The default setting is that units are hidden, supply is normal, replacements are normal and attacks are normal. We don't want any nasty surprises from hidden Allied units so click on the hidden units option for the Allies. Keep clicking until you reach 'Units are Exposed'. Keep your own units hidden, there's no point making it easy for the enemy. Now go to the German side and give yourself maximum supply, replacements and attack bonuses. It's your first time, be generous! In the bottom right of the screen are a set of options which can alter display or game play. At this point there is no reason to change any of the default settings. Click the Start Game button to start the game.

#### The German Turn

As the German player you get to move first. Click on the Axis Turn 1 screen to start your turn. Scroll the map to the right to view your forces and take a moment to examine the map. Two regiments from the U.S. 28th Infantry Division confront your forces. Behind them is a unit from the 9th Armored Division, and a few strongpoints and non-divisional units.

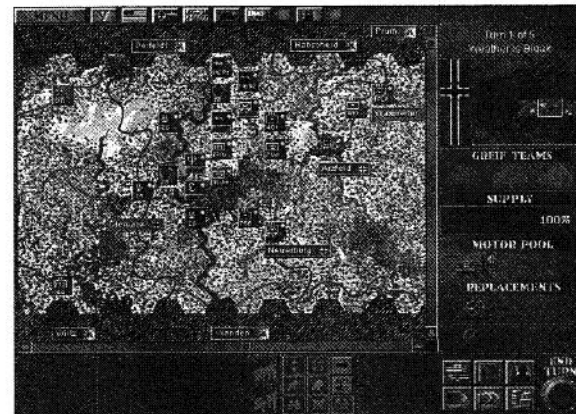


Fig. 3.1

Your forces consist of the Panzer Lehr, 2nd Panzer, 116th Panzer, 26th Volksgrenadier divisions, and two regiments of the 560th Volksgrenadier division, along with various engineer and non-divisional units.

This is hardly a fair match-up, but then this is a tutorial! Also, you have a few handicaps. The terrain is terrible, time is short, and some of your units are going to be ordered away by higher command, something no general enjoys.

All units have a dot in the top right corner of their icon. If it's green, then the unit is in supply, if it is red then the unit is out of supply. A red dot appears below the first dot when a unit has attacked, indicating that it can't attack again this turn. Certain other actions which take up a lot of time cause this red dot to appear as if the unit had attacked.

The most important obstacle is a unit of the 28th Infantry Division which is guarding the destroyed bridge just to the east of Clervaux. It is in a rather strong position, and we need to take some care to maximize our odds against it.

This unit is the 110th Infantry Regiment of the 28th Infantry Division, which we will simplify as the U.S. 110/28. Move the cursor over the unit, and click the right mouse button. The map popup appears and remains for as long as you hold down the button. Notice that the unit has three steps, has lost none, and therefore has an attack strength of 7 and a defense strength of 10. The unit is also entrenched, which can be seen from the way it appears to be sunken into the screen.

One of your units, the 39/26 starts the game across the river. Click on this unit. The hexes it can reach are highlighted. Move it to the hex west of the U.S. 110/28 by simply clicking on that hex.

Then click on the hex southeast of the U.S. 110/28, containing the 901/Lehr and the 78/26. A short cut to selecting new units is to move the cursor over the new unit and hold down the Ctrl key while clicking on the new unit.

We actually need to move the 78/26 across the river, and move the other two regiments of the Pz Lehr into this hex. To do this, examine the information area at the bottom of the screen. It is showing all the units in the hex, 901/Lehr and 78/26, each in its own panel. The panel has a large round button, which is either red or green. Green means a unit is included in a stack, red means it isn't.

We need the 78/26 to be green and the 901/Lehr to be red, so click on the buttons until this is the case. Then click one hex due south, across the river. The 78/26 should move one hex south, and the 901/Lehr shouldn't move at all. If this doesn't happen, use the Undo button from the central button palette.

You have just used the stack mechanism. Move orders apply to all units in a stack with green buttons. It's very easy to use, and there's always the Undo button if matters don't work out as you wished.

Now move the other two Lehr regiments over the first. When you click on these units the stack information shows only one unit selected. Hitting the space bar automatically groups all units in a hex into the same group so that they can be moved together.

Having done this, click on the 77/26 which is immediately northeast of the U.S. 110/28. We want all three regiments of the 2nd Pz Div. in that hex and because only three units can stack together in a hex the 77/26 must move out to make way. Move it across the river as far as possible, and then assemble all three regiments of the 2nd Pz Div. (with the trident symbol) in the hex adjacent to the 110/28.

You should end up with all three regiments of the 2nd Pz in one hex, all regiments of the Pz Lehr in another, and the 39/26 across the river, all in contact with the 110/28. Fig 3.1 shows how the screen should look after moving all your units.

When this has been accomplished, click on one of the attacking units, and then move the cursor over the U.S. 110/28. It should turn into a cross hair. Click to bring up the combat dialog.

### Examining the OB

The two buttons with the American and German flags bring up the Order of Battle display. In the top part of the screen are symbols representing the armies, corps and divisions which took part in the Battle of the Bulge with lines connecting headquarters with their subordinate units. Units not appearing in the current scenario are shaded while units that are active appear highlighted. Clicking on any symbol brings up information on that formation. In addition to the information on the screen there are two buttons, History and Done. Clicking on the History button brings up a dialog containing a short history of the currently selected unit. Clicking Done returns you to the game.

### Planning a Combat

First of all, there is no separate sequence for making attacks in Ardennes Offensive. Attacks can be made at any time, independent of whether some/all units have/haven't moved! Each unit, however, is limited to a maximum of one attack per turn! There are several ways of allocating units to an attack. The most basic is to hit the Max button in the bottom right corner, which commits every possible attacking unit as well as artillery, air strikes and a leader bonus, if available. Hit Max. The screen shows that you have combat odds of 5-1, the maximum possible odds. Your strength is 48 to the defender's 15, and you have two odds column shifts in your favor (see fig 3.2). Refer to Chapter 8 for a full description of combat. For now, all you have to know is that there are two elements to combat - strength and shifts. Strength is easy, the more men you have the more strength, and the better the chance your units have to overwhelm the enemy. Combat shifts affect the final odds table, shifting it up or down. Allocating artillery, air strikes or the leader bonus all give a positive column shift. There is also a column shift bonus for tactical position. Basically the more different hexes you attack a stack from, the greater the bonus. Finally, the defender gets a column shift bonus in his favor (in this example a bonus of 4 shifts) to reflect the strengths of his defensive position

Units can be clicked in and out of combat in the same way that they can with movement stacks. You can click on other hexes in the combat dialog and choose which units are to participate. Experiment a little with this, but click the Max button when finished.

Now that we're ready for combat, hit the large red button at the bottom of the combat planner. This initiates the attack! You're really hoping for the result to include a retreat result.

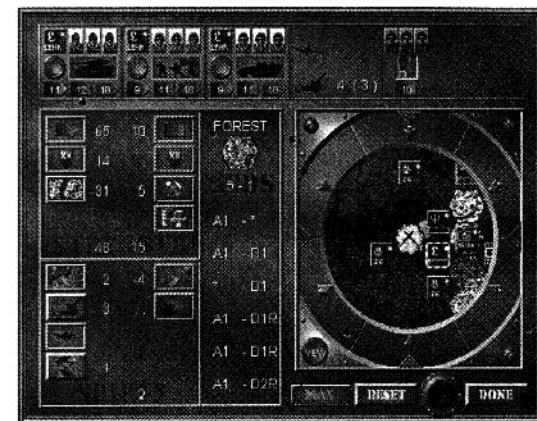


Fig. 3.2

The most likely result is that the enemy unit takes a step loss and be forced to retreat.

Hit the Done button when you've finished considering the result. Note the cratered appearance of the hexes around the battle hex. This indicates a movement penalty for units moving through a hex that has just been fought over.

### Bridge Repair

Assuming that the enemy has been forced to retreat, we need to get across the river. You need to move one of the 2nd Pz regiments back one hex along the road, and bring up the engineer unit that's two hexes to the rear. When it gets to the river, the blue bridge repair icon becomes highlighted. Click on that icon; the hex across the river also becomes highlighted, so click in that hex.

The Bridge Repaired message appears. When you click on this the bridge is repaired, but a heavy congestion marker appears in the hex. This simulates the time delay as units wait for the bridge to be repaired. Move as many of the panzer units as far across the river as possible, and then move the infantry units as well.

### Another Attack

The next obstacle is 112 Regt. of the 28th Division, at the top of the map.

To deal with this unit, use the three regiments of the 116 Pz Div. and the two regiments of the 560 VG Div. that start close to it. You want to attack from as many different hex-sides as possible, so as to maximize your tactical shift.

Right click on all the units to work out which is which. Start with the 156 PzGr/116 Pz Div., which is the panzer regiment furthest from the front by clicking on it. Move the cursor to the unoccupied hex to the northeast of the U.S. 112/28th, and click. The 156/116 move to that hex. Click on the 60/116 and move it to the hex occupied by the 1130/560, which is due south of the U.S. 112/28. Click on the last 116 regiment, and move it to the hex north of the U.S. 112/28.

When you're ready, select an attacking unit and move the cursor over the U.S. 112/28 and bring up the combat dialog. You should get better odds than the last attack, so hit the Max button and attack. The most likely result is that you'll cause some losses and force a retreat.

### After Combat

Even with only two attacks, there are many possible outcomes. You're trying to get as many troops as possible across the river, so now is the time to move your flak, artillery and other units as close to the front as possible. Don't move artillery units off the road, they'll take forever to get anywhere. Move your supply truck close to the now repaired bridge.

When you've moved all your forces, click on the End Turn button in the bottom right of the screen.

### Next Turn

Any U.S. units surviving are probably in retreat, leaving you to deal with the strong-points. Before you do this however, you should allocate replacements. Examine the tank and the infantry replacement symbol on the right of the screen. One or both of these may have an orange marker on them indicating that none of your units can accept replacements. If the infantry replacement is available, click on it. Stacks containing infantry units which have suffered a loss are highlighted. Click on one of them, then click on its panel at the bottom to deliver the replacement. A unit which has taken a replacement cannot attack that turn.

Now that your army is back to strength, send the 116 Pz, 2nd Pz and 560 VG west towards Houffalize, while the other units concentrate on clearing the way to Bastogne.

Try to attack at the highest possible odds, to minimize losses. Notice that unless a unit is attacked at overwhelming odds, it leaves behind a strong-point when it is destroyed. This represents the remnants of the unit, fighting a rearguard action in order to slow you down.

### Turn Three

U.S. units continue to retreat, and Bastogne is in sight, but time is running out. Any adverse result, even just a Retreat, destroys a strong-point, and you may need to make some low odds attacks to clear the way.

### Turn Four

Bad news! The High Command, in their ineffable wisdom, have taken the 116 Pz and 560 VG away, just when they were getting back into the fight. You'll just have to carry on with what you have left. Bastogne is the most important target, so the Pz Lehr and 26 VG should head straight for it, along with most of the artillery. You should still be trying to attack targets from as many hexes as possible, but that is the only tactical subtlety you need.

### Turn Five

Last chance. Bastogne should fall this turn, and you may get Houffalize as well.

### The End

If you didn't reach Bastogne, then a posting to the Russian Front probably awaits. Try again, and see how you go.

## 4. HOW TO PLAY THE GAME

### Choosing a Scenario

After the title screen, the first screen you see is the Scenario Select screen (fig 2.1). At the top of the screen are buttons which allow you to start a new scenario, or a new Email game. Below that are buttons to load saved games and Email games.

A scrolling menu in the top of the screen lists the scenarios. Click on the scenario you wish to play. Details appear in a box at the top right. Hitting the History button brings up a text screen designed to give you an idea of what happened historically.

### Scenario Setup

The Setup panel contains choices for how each side can play the game. At the top of the panel, you choose Human or Computer control for each side.

For each side you can also choose whether their units are hidden, unknown or exposed, what their supply status is, how many replacements they receive and whether they receive an attack bonus.

If your opponent's units are **hidden**, then you cannot see them until they are within a certain radius of one of your units. Even then full details about the enemy unit do not appear until you are quite close to it. If the enemy units are **unknown**, then you can see them at all times, but their identity and strength is uncertain until they are quite close to one of your units. If the enemy units are **exposed**, then you have full information as to their strength and identity at all times.

Supply is an important part of the game and, as in most wars throughout history the men who fought the Battle of the Bulge did not always receive as much food, fuel and ammunition as they would have liked! Dealing with lack of supply is one of the aspects of good generalship. We have allowed players to increase their supply level to the extent that the only supply problems they are likely to have is if units become surrounded. Under normal circumstances increasing the American supply by 25% relieves you of just about all of your supply problems. The Germans had more supply difficulties in the Ardennes so you would need to increase German supply by 50% to make up for this. A warning, however - a dramatic increase in German supply radically alters play balance in their favor.

Replacements are troops added to units to make up for combat losses, allocated in Steps. In game terms, however, the word "replacements" refers to any activity which makes an under-strength unit stronger. Many American units in the Battle of the Bulge were scattered by German attacks but later regained a large proportion of their strength, as individuals and small groups were reunited with their parent unit. Each replacement point in DBWWII: THE ARDENNES OFFENSIVE is equivalent to one combat step for a unit. Increasing replacements via the options menu at the start of a scenario, increases the resilience of an army in combat. It can have a strong effect on play balance.

Attack plus one or plus two adds one or two to the final die roll in combats. This is an extremely powerful modifier because each combat results table is made up of one bad result, four average results and one good result. Even a plus one modifier means that you will always get at least an average combat result.

Clicking on the Human/Computer control reveals two special options for computer controlled forces.

**Computer +**

At this level, computer forces get Supply +25%, Replacements +1, Attacks +1 and reinforcements 1 turn earlier than normal. Computer units are never surprised at the start of a scenario.

**Computer ++**

At this level computer forces get Supply +50%, Replacements +2, Attacks +2 and reinforcements 2 turns earlier. Again, computer units are not surprised. This setting is only for those feeling supremely confident - or needing a lesson in humility!

**Game Options****Map Display**

The hex grid, low resolution map and city names can all be turned on or off through this screen.

**Unit Display**

Divisional: Units show the emblem of their parent division.

Regimental: Units show their own regimental IDs.

Iconic: Unit icons show unit types rather than names.

**Game Play**

Random weather is likely to be similar to the historical conditions, just don't count on it.

Random reinforcements could show up slightly earlier or slightly later than their historical arrival time.

**British Auto-Control**

British units in the game are under special restrictions, and their turns can be uneventful. This option allows the computer to do all that's necessary.

**Time Limit**

You can specify a time limit for each side, from no limit up to 15 minutes.

**Using the Tactical Map**

The tactical map is where you move your forces and engage in attacks. The map shows a close up of a section of the total map (see fig 4.1).

As you move your cursor over the map, it changes in response to different conditions or key presses.

The possible cursors are explained below

**Arrow**

This is the standard cursor.

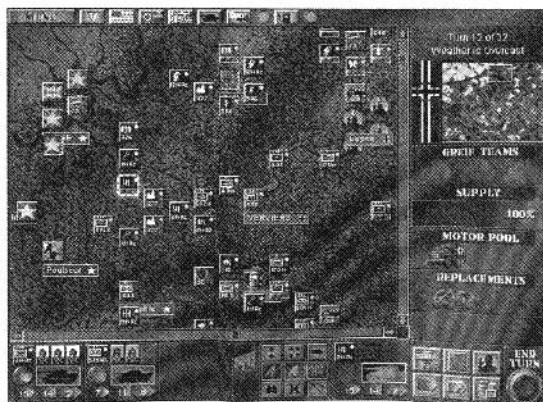


Fig. 4.1

**Circle with dot**

This is the unit selection cursor. It appears over friendly units. Clicking on a stack selects a unit or units for movement and brings up the stack palette below the map.

**Cross hairs**

This is the combat cursor. It appears over enemy units that you can attack. Clicking opens the combat display.

**Running Soldier**

This is the movement cursor. It appears when a unit or stack is selected. Clicking on the map moves the selected unit(s) to the selected hex or as close to the selected hex as the unit's current movement allows.

**Running Soldier with Stroke**

This is the illegal movement cursor. It appears when a unit is selected and the mouse is placed over a hex which the unit(s) could not move to, for instance a hex occupied by an enemy unit.

**Binoculars**

This is the deselect cursor. This appears over a selected unit. Clicking deselects the unit, allowing you to select a new unit.

**The Control Key**

Often you want to move a unit and then immediately move another unit, without going to the trouble of deselecting the first unit. Holding down the Control key makes the cursor to change to the unit selection cursor.

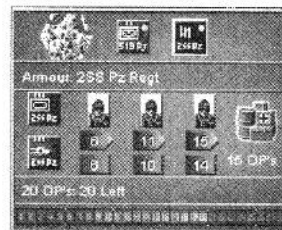
**The Right Mouse Button**

Fig. 4.2

Holding down the right mouse button over a hex brings up the map popup containing information about the hex and any units occupying it (fig 4.2). The top line of the dialog shows the hex being examined and any units occupying that hex. To examine the hex move the mouse over it. Similarly, to examine any unit move the mouse over that unit.

The other lines of the dialog contain information about the hex and/or the units in it. For more details on the contents of the information dialog, see Appendix F starting on page 55.

**Using the Strategic Map**

The Strategic Map (see fig 4.1) shows the entire area used in the game at a reduced scale. Terrain, rivers and cities are shown. Clicking on the Strategic Map scrolls the Tactical Map to the hex selected on the Strategic Map. The exception to this is if a scenario is being played which does not use the entire Strategic Map area. Clicking outside the scenario map area scrolls the Tactical Map to the edge of the scenario map closest to the point selected on the Strategic Map.

## 5. SCREEN LAYOUT

The screen in DBWWII: THE ARDENNES OFFENSIVE is divided into a number of areas. The first and largest is the tactical map. Below that is the unit display. This area contains information about the unit(s) currently selected (see Chapter 6). There are a number of distinct areas down the right hand side of the screen. At the top is the turn indication area. This tells you the turn number and the weather. Below this is the strategic map. Clicking on any point on the strategic map centers the main map on that point. On the left hand side of the strategic map is a flag showing which side is currently active. Underneath the strategic map are a series of boxes showing Greif Teams or interdiction, supply, motor pool and replacements. Clicking on the icons in these boxes can change the cursor and allow missions, motorized capacity or replacements to be allocated. In the bottom right hand corner of the screen are buttons which bring up screen information and the End Turn button.

### The Tactical Map

The tactical map is a representation of the actual terrain over which the battle was fought.

Various changes can be made to the tactical map by keystrokes.

Pressing the "1" key overlays a hex grid on the map. The hex grid can be removed by pressing "1" again.

Pressing the "2" key will remove the town names from the map. The names can be replaced by pressing "2" again.

The map exists in two versions, low and high resolution. The low resolution graphics use a lot less memory and may result in significantly faster game play on some machines. This can be changed in the Options section of the Menu dialog.

### The Movement Icons

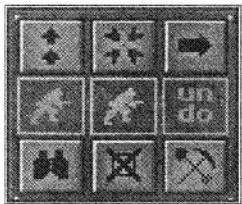


Fig. 5.1

The nine buttons at the bottom center of the main game screen (see fig 5.1) are mainly to help in moving units around.

#### Double Arrow

When a unit is selected, this button shows where it can move to and how many operations points (OPs) it expends when doing so. For more information on movement see Chapter 7, starting on page 16.

#### Centering Button

This button centers the map on the currently selected unit.

#### Single Arrow

Deselects the current unit and selects the next unit. If you have finished with a unit for the turn use the cross button.

*Note: When motor pool assets or replacements are selected, hitting the Single Arrow or the [ENTER] key cycles through those units which can mount trucks or take replacements.*

#### Running Soldier

Moves the unit along a movement path.

#### Crossed Running Soldier

Erases the current movement path

#### Undo

Undoes the last movement. This is useful if you accidentally move a unit to the wrong spot. Note that if you expose a hidden enemy unit, or access the combat screen immediately after moving, then you are not allowed to undo the move. Undo also reverses the allocation of Greif/Interdiction, trucks and replacements.

#### Binoculars

Deselects all units. This is a useful function to avoid accidentally moving one unit onto the top of the next unit you want to select.

#### Cross

Deselects the current unit and selects the next unit. Unlike the arrow button, this deselects the current unit for the rest of the turn.

#### Pick and Shovel

Deselects the current unit and selects the next unit. Unlike the cross button, this deselects the current unit for the rest of the turn and for all subsequent turns. The unit can be selected manually at any time.

### The Control Buttons

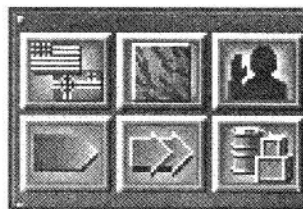


Fig. 5.2

The six control buttons which appear in the bottom right of the screen replicate commonly used menu functions (see fig 5.2).

#### Two Flags

The Side Control button displays the current front line on both the tactical map and the strategic map. Allied control is indicated by U.S. flags and German control by a modified Wehrmacht flag. On the strategic map, the front lines are shown by two lines, yellow for Allied and black for German. Clicking a second time on this button removes the side control icons from the tactical map. Clicking a third time removes the front lines from the strategic map as well.

#### Camouflage Tile

The Unit Removal button removes the unit graphics from the map. Clicking a second time restores them.

#### Traffic Cop

The Penalty button shows the movement penalties, if any, in every hex. The movement penalty appears as a number. The higher the penalty, the darker red the color used to display it is so it is possible to get a good idea of penalties just by the color. Clicking a second time removes the hex penalties.

### Drum and Crates

This is the Supply button. All hexes which began the turn outside the current supply network are shaded. Any unit which occupies an unshaded hex at any time during the turn can draw supply. Clicking a second time removes the shading.

### Red Attack Arrow

Clicking on this darkens all units that have already attacked this turn, highlighting those that haven't. Clicking a second time removes the shading.

### Yellow Movement Arrow

Clicking on this darkens all units that have already moved this turn, highlighting those that haven't. Clicking a second time removes the shading.

### The End Turn Button

This ends the turn. There is no going back, so be careful!

## 6. UNITS

The icons in DBWWII: THE ARDENNES OFFENSIVE represent the actual units which fought in the battle. The majority of units in the game are regiments although some brigades and battalions are included. Strong-points are shown by a round or square icon with a silhouette of one or two soldiers. Strong-points represent the many platoon and company size units scattered across the battlefield, particularly those rear area support troops who were called upon to defend against sudden attack.

### The Unit Icons on the Map

Units are either components of a division or non divisional assets. The default is for divisional units to display the divisional emblem, for instance the 101st Airborne Division's eagle or the 2nd Panzer Division's trident. Non divisional assets have a military symbol showing the size and type of the unit. The unit mode can be changed via the Options dialog in the Game menu. The units can also be changed to show military symbols or graphic icons.

Below the unit symbol is either a numerical unit designation or two or three small boxes. If two or three units are stacked together in the same hex, this is shown by an appropriate number of boxes. Blue boxes indicate a unit which has not been moved, Red indicates one which has. Note that a unit which has been moved may still have Operations Points remaining and therefore may be able to move further this turn.

At the right hand side of the unit are one or two colored dots. If the uppermost dot is green then the unit is currently in supply. Red means out of supply.

There may be a second, red, dot beneath the first. This means that the unit has expended its combat capability (see Chapter 8) and is unable to participate in any more attacks, take replacements, blow bridges or mount trucks during the current turn.

### The Unit Display

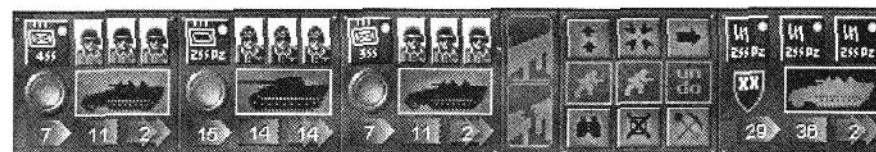


Fig. 6.1

At the bottom of the main screen is the unit display where extra information about units is displayed. Whenever you click on a unit, that unit becomes the currently selected unit. If you click on a stack, then that becomes the currently selected stack. Information is displayed about the currently selected units below the main map screen. Fig 6.1 shows a typical unit display with information about a stack of three German units. At the top left of the display is the unit icon precisely as it appears on the map. In this case we have all three units from the 2nd SS Panzer Division.

Underneath the units are rows of heads in German uniform. These show the number of steps in each unit, one head per step. Every unit in the game has between one and three 'steps', representing a combination of manpower and the ability to take casualties. A lost step is shown by a skull. Units can take 'replacements' which rebuild lost steps (see below).

If a unit loses all its steps in combat it is destroyed. Two or three step units can take losses and still function as combat units, albeit at reduced effectiveness.

Underneath the steps icon is an icon showing the dominant mode of transport used by the unit. There are four different modes, tracked, wheeled, horse and leg. These modes affect movement costs in different types of terrain.

Underneath the unit icon is a green or red button. This is used to group or ungroup units. Units which have been grouped together move and fight as if they were a single unit. Their combat values are added together but their movement value is that of the unit with the lowest number of OPS.

The units with a green button belong to the currently selected group. Those with a red button do not. To add a unit to a group, click on the red button. The red button becomes green, indicating that the unit has been added to the current group. To remove a unit from the currently selected group click on the green button. The green button becomes red, indicating that the unit has been removed from the current group. Note that the last unit in a group cannot be deselected. Hitting the space bar groups all units in the currently selected hex. Hitting the backspace key ungroups the units.

At the bottom left of the unit display and underneath the unit icon are two values representing the attack and defense strengths of the unit. The number inside the red or gray arrow is the attack strength of the unit and the number inside the blue box is the defense strength of the unit. A red arrow means the unit can still attack this turn, gray means it cannot.

Some units have a symbol instead of an attack value. Artillery units do not attack like other units. Artillery has a gun-sight symbol. If an artillery unit has already fired during the current turn, the cross hair icon has a gray background. Engineers have an engineer symbol (the tipped over E). Supply units (the trucks) have a supply symbol (a half filled circle).

In the bottom right of the unit display is a number in a brown double arrow, showing the number of operations points (OPs) which a unit has remaining. OPs are expended as a unit moves, the more harsh the terrain, the greater the rate of expenditure. The higher the number of operations points available to a unit, the further it can move. In general, mechanized units have a greater OPs' capacity than infantry or artillery. Whenever you move a unit, the computer automatically reduces that unit's OPs by the appropriate amount.

To the right of the unit display is a similar display, showing the statistics of the total stack. The strengths of all units in the stack are totaled. The number of OPs is the lowest of all units in the stack - if they move together they go at the pace of the slowest unit. It is not always sensible to move units as a stack.

### Unit Information

Unit information can be gained by several different methods. The first of these is via a right mouse click. Fig 6.2 shows a map popup for the same units we examined in fig 6.1.

Moving the mouse across the top line of the dialog shows details on the units in the hex and the hex itself. The second line of the dialog gives the class and name of the highlighted unit. The third line of the dialog shows the two other ways in which the unit may be displayed, in this case with

standard military symbol for armor or with a little tank symbol. To the right of these symbols are the strengths of the unit at each of its three steps.

The oil drum and crates symbol indicates that this unit is in supply. If the supply symbol had a red slash across it then the unit would be out of supply. The bottom of the dialog shows the OP status.

### Strong-points

Strong-points represent mainly rear echelon troops rounded up for desperate defense of towns and road junctions. Strong-points are stationary and cannot attack. They defend with a strength of either one (one figure on their icon) or two (two figures). If a strong-point suffers any adverse combat result, a step loss or a retreat, it is destroyed. Essentially, strong-points are just delaying forces.

Some strong-points are already present at the start of the game and some appear as the game progresses. Strong-points appear in friendly controlled towns with an enemy unit within 6 hexes. Towns which have been under friendly control for six turns or more generate two strength point strong-points. Towns which have been under friendly control for three to five turns generate one strength strong-points and towns which have been under friendly control for less than three turns are unable to generate strong-points at all.



Fig. 6.2

Strong-points are also generated when two or three step units are destroyed in combat unless they are attacked at overwhelming odds. Whenever a unit which began the game with two or three steps is destroyed while defending, a light strong-point appears on the spot the unit was destroyed. This represents the remnants of the destroyed unit which continue to hamper the attacker.

Strong-points that start the game disappear after seven turns if not already destroyed by the enemy. Those generated by combat disappear after three turns, or two if in the open. Units attacked at 8:1 or better odds do not generate strongpoints, nor do Flak, Anti-Tank or any British unit.

## 7. MOVEMENT

Units move in DBWWII: THE ARDENNES OFFENSIVE by expending Operations Points (OPs) which represent the ability of a unit to move. A unit's native ability to move (by walking, pushing vehicles, revealing that last hoarded can of gas etc.) is represented by that unit's Basic OPs (BOPs). BOPs are renewed at the start of each turn and are not affected by supply status. In addition to BOPs, a unit can receive OPs through the supply network up to a maximum level referred to as Maximum OPs (MOPs). Supply is dealt with more fully in Chapter 9. Typical OP values for mechanized units are BOP/MOP = 8/24 and for leg infantry are BOP/MOP = 8/12. Mechanized units can theoretically move a great deal further in a turn but are a lot more dependent on the supply network to keep their fuel tanks full. Infantry, on the other hand, can move almost as far without fuel as they can when supplies are getting through.

### How Units Move

Moving a unit in DBWWII: THE ARDENNES OFFENSIVE is simple. Click on the unit you wish to move. Any hex to which the unit may be moved in this turn is highlighted. Click where you want the unit to move. Note that this may be outside the highlighted area. The automatic movement routines move the unit as far along the movement path as possible. A unit may remain stationary, be moved once or a number of times in any one turn. For example, a unit which can move 10 hexes can move 10 hexes all at once or can move one hex ten times. It can stop to fight at any stage and continue movement afterwards!

Units may be moved singly, or as part of a group. Note that when a group of units is selected, many hexes are not highlighted even though the group possesses enough OPs to move to them. This indicates that if the group moved to that hex it would be in violation of stacking limits, i.e. there would be more than three units in the hex. A hex which is not highlighted can still be selected as the destination for a group, they move as close as the computer can get them.

*Note. When units with dissimilar movement modes are stacked together, they pay the highest possible cost for each hex. Dissimilar move mode units should be moved separately.*

### Factors Affecting Operations Points Expenditure

The map for DBWWII: THE ARDENNES OFFENSIVE is divided into hexes. Each hex has a base OP cost. The OP cost to enter any hex is the sum of the OP cost of the hex departed and the cost of the hex entered, divided by two. Therefore it is as expensive to move from the woods onto a road as it is to move back the other way. The base OP cost for each hex differs, depending on the movement type of unit (tracked, wheeled, horse or leg). See the "Movement Costs" chart on page 19 for specific information.

You can tell a unit's movement type by looking at the unit display. Tracked units are represented by a tank or a half track, wheeled units by a truck etc. Each movement type has its strengths and weaknesses. Obviously, trucks are great for zooming along roads but are pretty limited in dense woods.

Unmoved, non-mechanized units may acquire extra OPs by using a truck from the motor pool. This converts the unit to a wheeled unit and gives it extra OPs, above and beyond those gained through the supply network. To assign a truck to a unit, click on a truck symbol in the motor pool on the right hand side of the game screen. Any stack containing a unit eligible to become motorized is highlighted. Click on a highlighted stack and it appears in the unit display at the bottom of the screen. Click on the transportation icon of the unit you want to become motorized and a silhouette of a truck icon appears. Note that the further a unit is from the front line, the more additional OPs it receives from the allocation of a truck. If a unit is close to the enemy lines it is usually not worth giving it a truck. Also note that off road movement costs for motorized units are greater than for non-motorized. This means that in extreme cases allocating a truck to a unit may result in the number of hexes it can move being reduced.

Assigning a unit a truck from the motor pool must be done before that unit has moved, and the unit loses its attack capacity for that turn. No unit can move in two different modes during the same turn. Note that the British do not have a truck pool as all their infantry are already motorized.

Other factors affect OP expenditure. These factors result in OP penalties which increase the cost to move into a hex. OP penalties can range from 0-9 and have the following causes.

### **Zones of Control (ZOCs)**

A unit exerts an influence, or ZOC, into all adjacent hexes, including those containing enemy units. An OP penalty applies on movement into any hex which contains an enemy ZOC. The size of the penalty is dependent on the type and number of enemy units exerting a ZOC into the hex to be entered.

UNIT TYPE	OP PENALTY
Supply	0
Art/Rocket	1
AT/Eng	2
Others	5 (7 if current hex is also enemy controlled)

The ZOC penalty reflects how much more difficult it is for a unit to move when it is near the enemy. Moving into an enemy controlled hex converts that hex into a contested hex. At the end of each player turn, all contested hexes change to the control of the player who last entered them. ZOC OP costs are calculated as they apply. At the beginning of the phasing player's turn, any enemy controlled hex which is adjacent to friendly units but not to enemy units is converted to friendly control. Any unoccupied enemy hex automatically has a penalty of +1, roads are +3.

These penalties reflect the difficulty of moving into an area which may or may not contain enemy units. Historically, the rate of movement of units in enemy territory was only a fraction of that possible in their own rear areas. The main problem was uncertainty. Nobody knew what might lie around the next corner - an open stretch of road or an anti-tank gun!

### **Combat Residue**

An OP penalty is generated by several aspects of combat. Specifically, an OP penalty is applied whenever a unit is destroyed or forced to retreat, or whenever an artillery or air shift is used in a combat (see Chapter 8). Combat residue in a hex can either be heavy (4 OP) or light (2 OP). Penalties reduce by one level per turn, so that after one turn heavy combat residue goes to light and light to none. Combat residue appears as a series of shell craters in the affected hexes.

If a one step unit is destroyed in a hex, that hex acquires a light residue penalty. If a two or three step unit is destroyed in a hex, that hex acquires a heavy residue penalty. If the unit is Artillery, Rocket, Supply or a Strong-point then the OP penalty applies only to the hex vacated by the dead unit. If the unit was Armor, Tank Destroyer, Recon or Anti Tank, then the OP penalty applies to the hex vacated by the dead unit and all adjacent road hexes. If the unit was of any other type, then the OP penalty applies to the hex vacated by the dead unit and all adjacent hexes. Adjacent heavy forest hexes have the OP penalty reduced by one level (heavy goes to light and light goes to 0) as do adjacent hexes occupied by other enemy units. Hexes separated from the battle site by a non bridged river/stream receive no OP penalty.

This rule allows movement and combat within the same turn, without allowing units not involved in the combat to simply race through the gap left by a destroyed unit. The penalty reflects both the time taken for the combat to occur, as well as the added physical difficulty of crossing an area recently fought over.

If a unit is forced to retreat from a hex, that hex acquires a light penalty. If units are destroyed and other units from the same stack retreat as part of a single combat, then only the OP penalty resulting from the destruction of the unit(s) is applied. A unit cannot expect to be able to follow up a combat with no penalty.

If an artillery and/or air shift is used against a hex there is a light penalty against that hex and all adjacent hexes. The use of artillery prevents any friendly movement into the area during the bombardment and also make the ground more difficult to move through after the combat has taken place.

### **Air Interdiction**

Air missions include interdiction strikes on road hexes, which add to the OP costs of moving through that hex. OP penalties from multiple interdiction missions are not cumulative.

Interdiction is applied to any road hex and applies a congestion penalty (3 OP) to that hex and to all adjacent, connected road hexes.

Interdiction OP costs persist for the duration of the enemy turn following the turn in which they were generated. Interdiction can not be applied to roads under friendly control.

The way a player interdicts enemy road hexes is to place an air interdiction marker on a road hex during his player turn. This is done by left-clicking on the Air Interdiction icon, then left-clicking on the road hex to be interdicted. This has no effect until the enemy player turn. At the start of the enemy player turn, the air interdiction marker is removed. Light congestion symbols are then placed on all affected road hexes and movement is adversely affected for the remainder of the enemy player turn. The congestion symbols are removed at the end of the enemy player turn unless the hex is contested, in which case they remain.

### Greif Team Activity

This functions in exactly the same way as air interdiction (defined above). The Germans have a Greif team screen in place of an air interdiction screen. The Germans sent a number of squads of English speaking (well, sort of) commandos dressed in American uniforms behind Allied lines. These men created traffic congestion, suspicion and plain confusion out of all proportion to their numbers. Any hex subject to Greif team activity has an additional 3 OP movement penalty.

### Movement Costs in Operation Points (OP)

	OPEN	FOREST	HEAVY/ ROUGH	BUILT-UP/ TOWN	MINOR RIVER	MAJOR RIVER	MINOR * ROAD	MAJOR* ROAD
Leg	2	3	4	1	+1	+4	2	2
Horse/Wheeled	3	8	12	2	+3	N/A	3	2
Track	2	6	10	1	+8	N/A	2	2

\*Road movement rates only apply when moving to a road hex contiguous to the previous road hex whose roads actually connect.

### Operations Points and Combat

Operations Points are not expended in combat. Rather, each unit is provided with two values, an attacking combat capability (ACC) and a defending combat capability (DCC).

## 8. COMBAT

The aim of warfare is to destroy the opposing army while keeping your own army intact. In order to do this, you must attack the enemy. To launch an attack, the units which are to conduct the attack must be adjacent to the defending enemy unit (artillery is an exception). To initiate a combat, select a unit adjacent to an enemy and then click on the enemy unit. This brings up the combat screen. Some units, such as supply trucks, engineers and units which have expended their attacking combat capability are unable to initiate or contribute their strengths to a combat.

Combat results in the loss of a proportion of a unit's fighting power (steps) and/or units being forced to retreat. Attacking units don't retreat – all losses incurred by the attacker are in steps. Any unit which loses all its steps is destroyed and removed from the game. A unit which is removed from the game is not considered to have lost all its men and/or vehicles. It is considered to have been rendered useless as a fighting force. Normally, a unit which took 30% or higher losses was unable to continue fighting.

### The Combat Screen (Basic)

The combat screen is shown in fig 8.1

There is a lot of information on the screen, but it all boils down to a table of odds and a roll of the dice. All you have to do is decide which units and assets to allocate to the fight.

You should probably read the following detailed description of the combat screen at some stage, but it is not necessary to play the game. Basically, the more units you commit to an attack, the better your chances of success. The more directions you attack your enemy from, and the more artillery, air support and leadership that is committed to an attack, the more chance it has of succeeding.

In defense, the best formation is a continuous line of units. You are far better off placing one unit in each of three hexes than stacking three units in one hex. The basic rule of thumb is - don't let the enemy get around behind you!

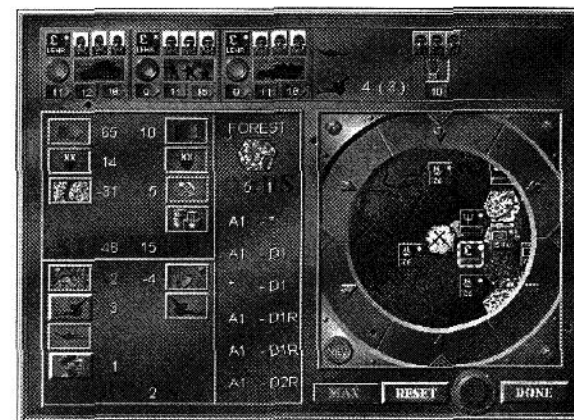


Fig. 8.1

### The Combat Screen (Detail)

At the top of the screen are the forces involved in the combat. The currently selected stack is shown at the left and the defending unit(s) are shown at the right. Units adjacent to the defending unit do not have to be committed to the attack. Units which are attacking have a green button below them, units which are not have a red one. Units which cannot attack, or have participated in a previous attack this turn, have a gray button. If you want a unit to take part in the current attack click on the red button, (or hit the SPACEBAR) – it changes to green.

At the top center of the screen is an airplane icon and, just below it, an artillery icon. Next to the airplane icon is a number showing how many air strikes are available in the current turn – in the case of fig 8.1, that's none! If air strikes are available then there is a number in brackets showing how many air strikes can be used in any given combat. Similarly, beside the artillery icon is a number showing how many artillery units are in range of the target unit. The bracketed number is the maximum number of artillery units which can be allocated to a given combat. At the start of the battle, the Germans had an excellent idea of the American positions and so were able to concentrate a massive amount of artillery in support of individual attacks. Later on in the battle, the ability of both sides to support with artillery was reduced.

The left side of the combat screen is divided into three boxes, the strength box, the shifts box and the odds box. At the top of the strength box the basic strengths of the opposing sides in the combat are shown, in this case 65 strength points of Germans are attacking an American unit with a defense strength of 10. Immediately below this are two shields. These indicate the additions for divisional integrity (see below). The Germans have a 14 strength point divisional integrity bonus and the allies have no bonus.

The third line of the strength box shows river penalties and entrenchment bonuses. Units attacking across a river suffer a penalty, representing the difficulty of such operations. In this combat, the Germans have two panzer divisions attacking from across a river and consequently suffer a penalty of -31 strength points. The American unit being attacked is entrenched, so it has a bonus of half its raw strength, in this case 5 strength points. Units which spend an entire turn in the same hex without doing anything are entrenched at the start of the next turn. Some units, like tanks, cannot entrench.

The fourth line of the strength box shows supply penalties. If the defending unit is out of supply, and has no defending combat capability, then its strength is halved. The total strengths of the attacking and defending forces are shown at the bottom of the strength box, in this case 48 attacking strength points and 15 defending strength points.

The final strengths of the two sides in a combat are used to calculate combat odds. The attacker's strength is divided by the defender's strength with the quotient being rounded down to the nearest simple odds ratio, in this case 3-1. So if the odds are 3-1, then how do we get to the 5-1 shown in the Odds box? The missing factor is combat shifts. Several factors shift the odds column in favor of the attacker, or defender. These include tactical position, artillery, air strikes and leadership.

The top line of the Shifts box shows tactical shifts. Put simply the more directions from which you simultaneously attack an enemy unit the more odds shifts you get in your favor. Defending units automatically get a negative tactical shift of four odds columns. This represents the enormous advantages accruing to a defender. The attacker can potentially receive a positive odds shift for each hex from which he is attacking. Note that stacks attacking across a river do not contribute a tactical shift. Attacking stacks which are adjacent to enemy units (other than the defending stack) contribute a shift only if the number of attacking steps is greater than the number of adjacent enemy steps (excluding the target unit).

For each of the first two contributing hexes the attacker receives a two column shift. For each subsequent contributing hex the attacker receives an additional one column shift.

Attacking a continuous line of units or attacking across a river can be very difficult.

Below the tactical shifts are the artillery shifts. Each artillery unit shifts the combat odds by one column. The attacker can allocate a number of artillery units to each combat up to the maximum number allowed for that turn. Each artillery unit must be in range of the target hex to be allocated. Range for Allied artillery varies between four and eight. Range for German artillery varies between three and five. In general, throughout World War II, artillery could only be effectively concentrated against static positions. Its use in mobile breakthroughs was more limited. Therefore the Germans can allocate up to three artillery units per combat at the start of the battle but only one later on. The defender automatically receives support from a single artillery unit if one is in range. In this combat, the Germans have allocated three artillery units, and the American's none (none are available).

The third line of the Shifts box shows air strikes. Air strikes can only be used by the attacker and function exactly the same as artillery, each air strike contributing one shift in favor of the attacker. In fig 3.2, the Air Strikes button is not active indicating that no air strikes are available to the Germans at this stage.

Directly underneath the Air Strikes button is the Leadership Bonus button. This button represents the effects of a hard driving, inspirational leader at a particular point on the battlefield. The leader can only be committed to one combat every turn and contributes one column shift in the attacker's favor.

The total odds column shifts are listed at the bottom of the Shifts box. A positive number indicates that number of shifts in favor of the attacker and a negative number indicates that the shifts are in favor of the defender. In the combat being initiated in fig 3.2, there are a net two shifts in favor of the attacker. Therefore, the final odds are increased from 3-1 to 5-1. The Odds box gives some idea of the likely outcome if an attack is carried out at the current odds. At the top of the box is an image of the hex being attacked, in this case a forest hex. At any given odds ratio you can expect more favorable results for the attacker as the terrain becomes more open. Roughly speaking, the 7-1 odds table in forest terrain is equivalent to the 6-1 table in clear terrain, the 8-1 table in heavy terrain and the 9-1 table in Urban terrain. There are six results listed in the odds box and if the attack is launched the computer randomly chooses one of these results. Each result includes attacker losses followed by defender losses. For example A1 - D2R means that the attacker loses one step, the defender loses two and is forced to retreat. Under some circumstances the defender may lose more men (steps) during his retreat (see below).

The remainder of the combat screen is a circular display centered on the current battle. Clicking on any friendly stack adjacent to the defending unit displays that stack in the top of the combat screen. Units can be committed to the combat by simply clicking on the red button beneath them so that it changes to green. Artillery units which are in range may be outside the display of the combat. Clicking the View button brings up a portion of the strategic map, again centered on the current attack. The currently selected friendly stack is shown as a green or gray square, all other units as squares with a military symbol. Artillery units are those with a single large dot. Using the strategic map view, artillery units can be selected and committed to the current battle. The six arrows around the display are to indicate tactical shifts. Hexes from which one or more units are attacking which are contributing a tactical shift are shown by a green arrow. Hexes from which one or more units are attacking but which are not contributing a tactical shift are shown by a red arrow. In this case, only the unit which has crossed the river is contributing a tactical shift.

In case you don't feel like committing units one by one, clicking the Max button commits all possible units to give the maximum possible odds. Even if you don't want to commit everything, it is often easier to hit Max and then take a couple of units out of the fight. If you want to start again all units may be uncommitted using the Reset button. Once you are satisfied that the combat has been set up exactly right, move the mouse over the large red button. Clicking now launches the attack.

A six-sided die appears at the top of the screen with a number displayed (where a large stack of defenders is being attacked two dice may appear). The result equivalent to the number(s) is highlighted in the Odds box. Any losses incurred by the defenders appear as red skulls below their icon. The defenders may also retreat. If a loss has been taken by one or more of the attackers, it appears as a red skull when the appropriate stack is examined.

## Combat Report

When you are being attacked, a combat report is displayed at the bottom of the screen. The top half of the report shows the attacker's details, while the bottom shows defenders. The icons used are small version of those shown in the combat dialog, and convey the same information.

The middle panel shows the dice roll for that combat, and the results for both sides. The far panel shows the defending units, if any, that casualties are applied to.

The computer move pauses for ten seconds after each combat, or until you hit the SPACEBAR.

## When Units are Able to Attack

### Basic

Any unit which starts a friendly turn within the supply net receives the capacity to attack. This is expended when the unit attacks, or performs a number of other significant actions, and is not renewed until the start of the next friendly turn. If the unit doesn't attack in that turn and goes outside the supply net it can still attack in a subsequent turn but it does not have its attack capability renewed until it moves back into supply.

Defending units which are attacked while they are out of supply lose part of their defensive capability and suffer additional losses when attacked in subsequent turns. These isolated units appear on a red background in the combat screen and the unit popup on the map. It is usually worth attacking isolated units even at normally unfavorable odds.

### More Detail

Each unit in DBWWII: THE ARDENNES OFFENSIVE is provided with two values, an attacking combat capability (ACC) and a defending combat capability (DCC). By definition, units with ACC can attack and units with DCC defend at full value; units without ACC cannot attack. Units without DCC defend at half strength (rounded up) and take additional combat losses. Units which have expended their ACC are marked with a red dot below the supply status dot (see Chapter 9). When a stack in which all defending units have no DCC is attacked, the defenders are displayed on a red background and take additional losses.

At the beginning of each player turn, all enemy and friendly units are checked for combat capability and those without it are upgraded immediately if they are within the supply net (see Chapter 9). On Turn 1 of any scenario, all enemy units are in supply and have ACC and DCC unless otherwise defined by the scenario designer. Units of the attacking (phasing) player can only receive ACC and DCC once in the course of the turn. Also note that a unit does not lose its ACC until it engages in an action which expends its ACC. The following actions expend a unit's ACC.

- A. Attacking
- B. Taking Replacements
- C. Bridge Demolition/Repair
- D. Mounting a Truck

Therefore, units which are out of supply at the beginning of a turn may still have ACC and may therefore attack. They are not, however able to regain ACC while out of supply. This simulates the ability of units to break out of encirclements. A unit which attempts to break out of an encirclement and fails is in big trouble.

DCC is not expended by any action unless a unit is out of supply. A unit loses its DCC if, at the beginning of its turn, it is out of supply and was attacked last turn. Note that a unit could have been attacked while in supply or for no result, but if it goes the whole turn without receiving supply, it is vulnerable during the opposing player's next turn.

If it is attacked without DCC, the following results apply. If there were no losses and no retreat, the unit still retreats. If there was a retreat, then an additional loss is applied. If there were also losses, then these are increased by one. Since units are most likely to be in this state through being surrounded, the results can be catastrophic.

## 9. SUPPLY

Supply is a vital function of the game and the system used in DBWWII: THE ARDENNES OFFENSIVE accurately simulates the problems of getting supply to combat units, while being easy to visualize and requiring the minimum of player input.

Units which are in supply have a green dot in the top right hand corner of their icon. Units which are out of supply have a red dot. American and British units have their own separate supply trucks so an area may be in the supply net of one ally and be outside the net of the other.

Supply is used to renew combat capability (ACC and DCC – see Chapter 8) and to add Operations Points(OP) to units, enabling them to move. All units are able to move a small amount even if they are out of supply. How much depends on the unit. In order to receive additional OPs, a unit must begin a turn in the friendly supply network or move into the supply net at some point during a turn. The amount of additional OPs allocated to units in the supply net depends on the type of unit and the current level of supply. For instance if a side is currently on 100% supply an average tank unit receives 8 OP free and 16 through the supply net. If the side is on 50% supply the same tank unit still receives 8 OP free but only receives 8 OP (50% x 16) through the supply net. Infantry units are less dependent than motorized or mechanized units for their movement capability but are just as vulnerable to expending their ammunition (i.e. losing their combat capability).

Any supply truck which is destroyed reappears at the start of the next turn in the friendly controlled town nearest to the point at which it was destroyed. The enemy player receives victory points for its destruction.

A supply truck out of supply last turn, and which would be still out of supply, is immediately relocated as if it had been destroyed, but the opposing player gets no points for this relocation.

*Important Note. OPs are not expended unless a unit moves. So, even when supply is only 25%, a unit which remains stationary long enough eventually tops up its OPs to maximum. In other words, unused OPs accumulate.*

## Supply Summary

The majority of your units are drawing supply from supply trucks. These supply trucks must themselves trace supply to a supply head on the map edge. You need to keep your supply trucks close to your lead elements, and to make moving your supply trucks an important part of your turn. As the Germans, you also need to be aware that U.S. air power can interdict road hexes behind your trucks, and possibly put them out of supply.

## Supply Details

### Supply Trucks

A supply truck in supply at the start of a turn provides supply to hexes within a certain range. This range is expressed in OPs. Typical ranges are 30 OPs for U.S. and 24 OPs for Germans. All hexes within this range (using the Leg movement rates) are in supply. A hex supplied at the start of the turn remains in supply for the whole turn.

### Supply Dumps

If a town has a Supply Dump, it supplies all units within a two hex radius that can trace line of friendly controlled hexes to that town. This only happens if the town can trace a supply line to a supply source as if it were a supply truck.

If the supply dump cannot trace a supply line, then its supply state is decremented by one per turn, and the units are still supplied. This is to simulate reserves held in the town itself. Towns can start with a supply state of 1 (Light) or 2 (Heavy). This number is never increased. Also, all friendly controlled hexes with a 2 hex radius of a Heavy or Light supply dump are deemed to be in normal supply for that turn, so units who were outside the supply burst radius can move through them and get whatever the supplies are available that turn.

### Towns as Supply Dumps

If a town has been owned for six turns it can act as source of supply, just like a Supply Dump. It can only do this if it is itself able to trace a supply line to a Supply Head. If it cannot do this, it does not supply anything.

### Supply Heads

Supply trucks or towns can only function as sources of supply if they themselves can trace a supply line to a Supply Head (the oil drum symbol on the edge of the map), using a maximum of 24 OPs. Roads do not cost any OPs while all other terrain costs 4 OPs, Minor Rivers are 4 OPs and Major River are 8 OPs, and all movement penalties are at their normal cost.

The map popup shows the cost that a supply truck incurred that turn in reaching a Supply Head. If this figure gets over 20, then the supply truck is close to being out of supply.

### Germans Capturing Supply

The Germans can capture a U.S. supply dump. If it is a Heavy Supply Dump, then all units within 5 hexes get their OPs increased to maximum on the following turn. For Light Supply Dumps, this radius is 3. Additionally, the two hexes around the town are considered to be supplied hexes, and thus other units may move through those hexes and get supply.

Once used, the supply state is decremented, Heavy becomes Light, and Light has no effect next turn.

### Westwall

Westwall hexes are always supplied (for Germans only, of course).

## 10. DATA SCREENS

### The Victory Screen

Clicking on the V button brings up the Victory Display (see fig 10.1). This display shows victory points gained for destroying enemy units and occupying towns. On the right hand side of the screen are side symbols. Below these are four buttons. The top two buttons are for displaying casualties. Clicking on the German button displays the Allied units destroyed by the German player and clicking on the Allied button displays the German units destroyed by the American and British player.

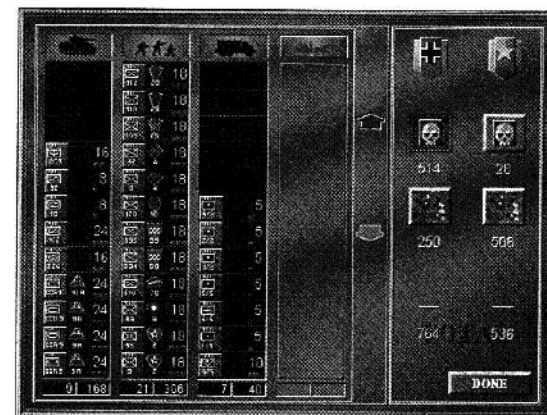


Fig. 10.1

Destroyed units are shown in four columns, one each for tracked, wheeled, horse drawn and leg units. Within each column the unit is shown on the left and its divisional symbol is shown on the right, along with the points gained for its destruction. If more than twelve units of any one type are destroyed the scroll buttons become active.

Below the casualty buttons are the objective buttons. Clicking on the objective buttons changes the left hand portion of the display to show the points gained for occupying objective towns (see fig 10.2). The list can be scrolled, or you can click on the town list or on the map to select a town.

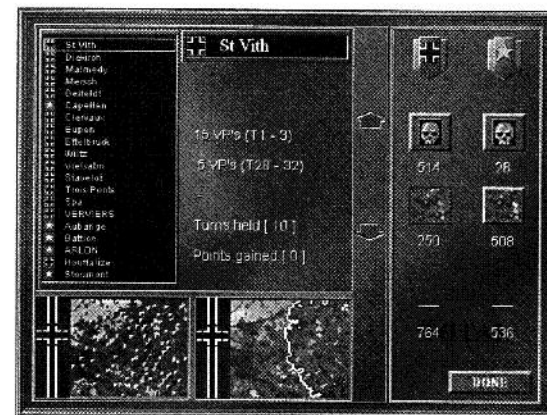


Fig. 10.2

The points allocated for control of each objective are shown as well as the total number of turns the objective was held for and the total number of points gained. At the bottom of the screen are two maps. The left hand map shows the position of each town with a flag of the owning nationality. The right hand map shows the German controlled portion of the map in gray and the American controlled portion in gold.

Below each button on the right hand side of the display are the points gained for destruction of units or occupation of objectives. The total number of victory points are shown at the bottom of the screen.

## The OB Screens

The two buttons with the American and German flags bring up the Order of Battle display (see fig 10.3). In the top part of the screen are symbols representing the armies, corps and divisions which took part in the Battle of the Bulge with red lines connecting headquarters with their subordinate units. Units not appearing in the current scenario are shaded. Clicking on any symbol brings up information on that formation. The information is displayed in the portion of the screen below the order of battle. In the case of army groups, armies, and corps, a photograph of the commanding officer appears on the left of the screen. This is accompanied by the name of the formation and of its commander. Below the commander's name are any non-divisional units attached to that headquarters. In the case of fig 10.3 there are nine subordinate units as well as the corps supply unit. When a division is selected, its divisional insignia is shown at the bottom left of the screen and the units shown are the component regiments or brigades of that division. In addition to the information on the screen there are two buttons, History and Done. Clicking on the History button brings up a dialog containing a short history of the currently selected unit. Clicking Done returns you to the game.

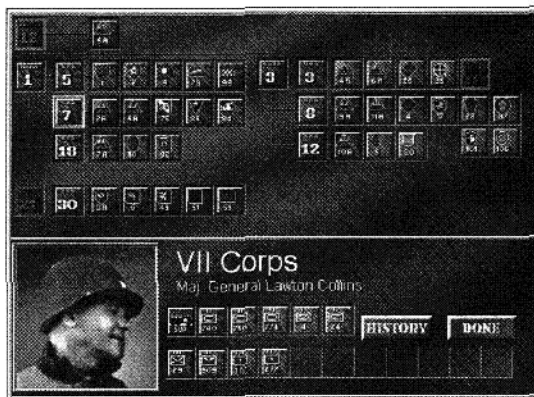


Fig. 10.3

## The Strategic Map

It is important, particularly when playing full map scenarios, to get an overview of the entire battlefield. This can be done by examining the Strategic Map. The Strategic Map (see fig 10.4) shows the entire battlefield area. The units are represented by olive, khaki or gray squares showing the correct military symbol.



Fig. 10.4

The buttons down the right hand side of the strategic map allow the player to replay the battle in various ways. The Combat button shows all the attacks made in the current turn. Attacks appear as small explosions on the screen. Below this are the two flags with the current number of victory points gained by each side. The Play button replays the entire scenario showing the position of units at the start of each turn and any attacks made. If a player wishes to look at the positions of units at any given turn they can do so using the Next and Prev(ious) buttons. This can also be done with the scroll bar underneath the map. Clicking the Done button returns you to the game.

## The Equipment Screen

Hitting the Equipment icon brings up the equipment dialog. The combatants used a variety of equipment, which is listed in four columns. Clicking on an equipment type brings up a picture of that equipment and information about it. Hitting the Done button exits the dialog.

## The Calendar

The calendar shows details of the weather, replacements, Greif/interdiction, reinforcements, supply and air strikes (see fig 10.5).

The calendar shows a period of 14 turns. Clicking on a turn shows a summary of that turn at the bottom of the screen. Clicking on the summary buttons changes the type of information displayed on the main calendar screen.

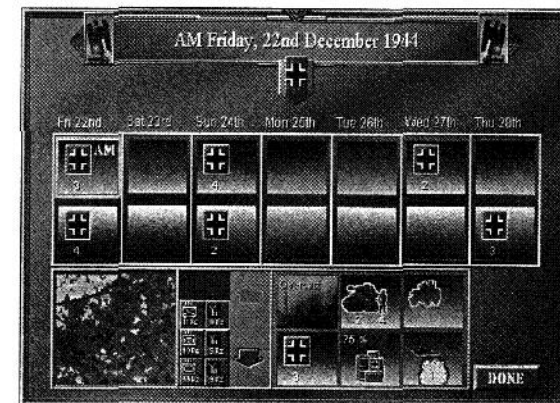


Fig. 10.5

If looking at reinforcements, the actual reinforcing units are shown in a scrolling list, and the location of the reinforcements are shown on the strategic map in the bottom left corner of the screen.

Hitting the Done button exits the screen.

## The Reinforcements Icon

The icon next to the calendar button lights up on any turn in which you receive reinforcements. You can then go to the calendar screen to check out their nature and location.

## The Message Screen

This screen allows players to send messages to each other during e-mail or network games. Simply type the message and click the Send button. Messages display the side symbol of the player who sent them as well as the turn number they were sent on. Clicking on the Done button returns you to the game.

## The Message Icon

The icon next to the Message button lights on any turn in which you receive a message.

## 11. THE GAME MENU

Clicking on the Menu button gives access to a range of game functions.

### Save Game

To save a game you must click on the Save Game menu item, which brings up the Save Game dialog. To save a game in a new slot, click in the text field and type in a name for the saved game. Then click the Save button. To save a game over a previously saved game double click on a saved game in the list below the text field and edit the name as desired before clicking Save. You can also Delete files from the dialog. There is a limit of 99 saved games.

### Load Game

To load a saved game, click on the Load Game menu item. Click on the game you wish to load and click the Load button.

### New Game

To start a new Game click the New Game button. This takes you to the scenario select screen.

### Options

Clicking on the Options button opens the Options screen. This allows you to set the options for this and subsequent games. Clicking on the Low End Map button substitutes the low-res map for the hi-res map. The main difference between the two maps is that the roads and rivers on the low end map are an overlay while on the high end map they are painted on. The low end map also uses less memory and on some machines using the low end map results in the game running significantly faster.

Although the map is divided into hexagons for movement purposes the high end map has been deliberately painted to reduce the hexagonal appearance. Some players therefore prefer to play with a hexagonal overlay which can be brought up by clicking on the Hex-grid button.

Most players prefer city names to be present on the map at all times. If you don't, you may remove the city names by clicking on the City Names button.

Clicking on the British Auto Controlled button places the British under computer control when the Americans are human controlled. In scenarios where the British units are inactive until approached by German units this saves the human player time. It is also good for a player who wishes to simulate the lack of coordination between the two Allies.

The bottom three buttons in the Options screen determine the way in which units are displayed. Normally units which are part of a division display the divisional symbol while non divisional units display a standard military symbol. Clicking on the Regimental Units button alters divisional units to display a standard military symbol rather than their divisional flash. Clicking on the Iconic Units button changes all units so that they have a silhouette of a man, a vehicle or a gun which represents the unit type.

### Quit Game

Clicking the Quit Game button brings up a screen asking you to confirm your request. Be warned that the game is not automatically saved before exiting.

### Continue Game

Returns you to the game.

### Sound

Sound Effects and Music can be switched on or off. The volume for Sound effects can altered in this dialog, but Music volume must be controlled through the Windows system.

### Briefing

This displays a side specific briefing for the scenario.

### About

This displays pertinent details about the game.

## 12. OTHER GAME ELEMENTS

### Exposure

Depending on the selection made on the Scenario Screen, not all units in DBWWII: THE ARDENNES OFFENSIVE are visible at all times. There are four states of unit exposure in the game. These are Hidden, nationality exposure, divisional exposure and fully exposed. If a unit is hidden it cannot be seen by the opposing player. If a unit is in a state of nationality exposure the opposing player sees the unit background (Gray - Wehrmacht, Black - SS, Green - U.S., Brown - British) with an appropriate national symbol (German - Maltese Cross, U.S. - Star, British - Roundel).

If a unit is in a state of divisional exposure, the opposing player sees the appropriate divisional symbol or the full unit details if the unit is a non-divisional unit. If a unit is fully exposed, the opposing player sees the full details of that unit. Supply units only have three states of exposure, hidden, divisional and fully exposed. Therefore they remain hidden until the criteria for divisional exposure are met.

The closer a unit approaches, or is approached by an enemy unit, the more exposed that enemy unit becomes. Similarly, the further away an enemy unit moves, the less exposed it becomes until it is hidden. This allows reserves to be moved in your rear areas without your opponent being aware of it. For a full explanation of unit exposure see Appendix E.

### The British

The British are, in effect, a third side in the game and they have separate turns from the American player. British units move and attack separately, have their own supply sources and cannot stack with American units. Furthermore the majority of British units are inactive until a German unit moves within three hexes of them. Whenever this occurs, the affected British unit, any other units in the same division and the nearest artillery unit are able to move freely from the beginning of the next British turn. Activating the British in this fashion may seem a silly thing for the Germans to do but for each three British units activated, OKW releases a fresh division to assist with the breakthrough. The German player also receives an extra 3 Armored and 6 Infantry replacements on any turn in which a British division is activated.

In the Battle of the Bulge, the British positioned themselves so that they could back up the Americans if things got really bad. The Americans were able to stop the German advance without British help and only a few British units were released into the battle in the later stages.

### Bridge Destruction and Repair

Any unit with Attacking Combat Capability can attempt to demolish a bridge. In order to attempt to demolish a bridge a unit must be adjacent to the bridge and must not be adjacent to any enemy units. For the purposes of bridge blowing, enemy strong-points do not count as units. To attempt to destroy a bridge, select a unit and then click on the Bridge Demolition button. Select which adjacent bridge to destroy by clicking in one of the highlighted hexes. A message appears telling you whether you have succeeded or failed. Engineers have a 66% chance of destroying a bridge, other units 50%. The unit which made the attempt loses its ACC whether or not the attempt was successful.

Only engineers can repair bridges and they cannot be adjacent to any enemy units. Repairing a bridge is done by selecting the engineer and clicking on the Bridge Repair button. Click in one of the highlighted hexes to select which bridge to repair. Repairing a bridge is always successful and expends the ACC of the repairing engineer unit. Bridges are considered rebuilt immediately, but a large movement penalty is imposed on any unit crossing the repaired bridge during the turn the bridge is repaired and a smaller penalty on the following turn.

### Replacements

Any unit which is in supply can take one, and only one, replacement step per turn. This expends its attack capacity. There are two types of replacements. Armored replacements can be used by any tracked or motorized unit and leg replacements can be used by any other unit. Step losses represent a reduction in fighting capability rather than the loss through death or injury of a third or more of a unit's men. Similarly, replacements represent a number of reorganizational activities such as the collection of stragglers and the repair of vehicles as well as the addition of fresh men to a unit and overall good morale and enthusiasm.

Replacements are represented on the main game map as a column of tanks and a column of infantry figures on the right hand side of the screen. To expend a replacement, click on the tank or infantry figure. A red circle appears over each stack containing one or more units which are eligible to take replacements of that type. To place the replacement step, click on the stack which appears in the unit selection area at the bottom of the screen. Decide which unit you want to give the replacement to and click on it.

If the unit has lost a step then one of the skull markers indicating a lost step is replaced with a soldier's head. A red dot also appears indicating that the unit has lost its ACC. The loss of attack capability represents the fact that units are unable to perform two major administrative tasks, i.e. fighting and reorganization at once.

The Undo button reverses the replacement.

If replacements are available and no units are able to accept them then a 'not allowed' sign appears on the replacements. Often this is due to a player having used his understrength units in attacks before worrying about replacements. Of course these units are now ineligible to accept replacements (having expended their ACC). Therefore it is always a good idea to assign replacements at the start of the turn. Note that the enemy player only receives victory points for units if those units are completely destroyed.

### High Command Directive

In certain scenarios, the High Command unilaterally orders certain units from the battlefield, in order to fulfill military requirements elsewhere. These units vanish at the start of the turn, and a message appears announcing it. Directives are mentioned in the Scenario Briefings, so it's a good idea to read them!

### The Motor Pool

The Motor Pool represents each side's ability to motorize infantry units and thereby increase their rate of movement. To assign a truck from the Motor Pool click on the truck icon. All stacks containing units eligible to be given motorized capability are highlighted. To assign a truck to an individual unit, click on a highlighted stack. The units in the stack appear in the unit selection area at the bottom of the screen. Any unit with a 'leg' movement symbol (three infantrymen) can be given a truck simply by clicking on that unit. Its movement symbol changes to a truck, indicating that the unit is now motorized. The unit also uses the movement costs for motorized units rather than the costs for leg units. In some circumstances this may result in the unit being able to move fewer hexes as the cost of some terrain types is greater for motorized units than it is for leg units. Don't motorize a unit which is about to slog through a forest, save the truck for the unit which is going to whiz down a road.

Only leg units which have not already moved in the current turn may be assigned motorized capacity.

Any unit which is assigned motorized capacity loses its ACC for that turn. The Undo button can be used to de-allocate a truck up until the moment the unit is moved or a new unit is selected.

### Westwall

The Westwall was a special defensive line on the German border. Westwall hexes are shown by a pillbox symbol. They are always a source of supply; even if surrounded, any German unit on a Westwall hex is always in supply. Westwall hexes are either active or non-active. Westwall hexes become active if any Allied unit moves within 6 hexes. Westwall hexes are equivalent to a 10 defense point strong-point.

### 13. HOW TO WIN

There is no magic solution to achieving victory and in Ardennes Offensive, as in war, victory often goes to the player who makes the least mistakes. Here are a few tips.

#### **Concentrate to Attack, Disperse to Defend (but Not Too Far!)**

Because of the way combat is structured you need to mass units when attacking. However, the best defense is a continuous line, so if you clump your units together but leave great yawning chasms in your line to do so then you can expect to be counterattacked strongly.

Attacking can be illusory, just about any force is large enough to be able to put in a useful attack but if it strips the rest of your line bare then you have entered a deadly game of attrition that you are unlikely to win. The German player in particular tends to keep attacking for longer than he should. The Americans receive so many reinforcements that it is almost impossible to keep attacking right till the end of the longer scenarios, however good you are.

It is very easy to keep the attack going just one or two turns too long only to find that your understrength units cannot resist the Americans. It is far better to pass up a few attacking opportunities, form a defensive line and try to boost your units back up to something near full strength with replacements.

#### **Keep Your Divisions Together**

Good divisions receive generous strength bonuses whenever all divisional units take part in an attack or when all units are in supporting range of each other in defense. This simulates the divisional assets, artillery, tank destroyers, engineers etc., which were designed to be used together, not separately. Therefore there is a real reason to keep divisional units close to each other, unless there are exceptional circumstances. Even if one regiment is destroyed divisions still receive a Kampfgruppe bonus when the remaining two or three regiments are acting together.

#### **Use Units in Their Historical Role**

The strengths and movement values of units have been set such that the best units in attack are tanks, and the best units in defense are infantry and anti tank guns. If you want to attack, don't use the infantry division that has just arrived as a reinforcement, put it into the line and use that armored division that you have been forced to use defensively instead. These sort of swaps are inconvenient but frequently pay off in terms of better results.

#### **Make Sure to Have Some Cannon Fodder for Attacks**

When a step loss is called for in an attack, the loss is taken by the unit with the highest number of steps. If units have equal steps, the weakest unit loses the step. So if you want to keep your armored spearhead in top shape it is useful to have some full strength infantry units also participating in any big attacks.

Be warned that the converse is true in defense. That is, the first step is lost by the unit with the lowest defense strength. Often this is an armored unit. Using armor for defense is a waste (but often you have no choice).

#### **Penetrate, but Not Too Far**

The key to breaking a line is to push units through gaps. However, if you push units too far through a gap they can be cut off and destroyed easily. The middle ground is to create a solid finger of units into and through the gap. Supply can be traced back through these units. The down side is that this sort of penetration is more easily sealed off and it takes more units than just barreling through into the rear areas.

#### **Reinforce Success but Not at the Expense of Disaster Elsewhere**

A lot of games see the attacking player probing all the way down a line. When a gap is formed, drive into it with everything you can spare. The way to kill units in this game is to surround them. The best way to do that is to break lines, and not allow them to reform.

If you are near parity, or actually defending, you need to watch every enemy success and prevent it from becoming a full scale breakthrough. If a whole line is being worn down it can disappear very quickly.

#### **Move Those Supply Trucks!**

There is nothing more frustrating than having a successful breakthrough grind to a halt through lack of supply, because sloppy staff work failed to move the supply trucks forward. The Germans have fewer trucks and are vulnerable to Allied air interdiction of their supply lines, so they must pay particular attention to this point. Keep the trucks close to the breakthrough points.

#### **Check and Move Reinforcements**

Sloppy staff work can also cause reinforcements to pile up as they patiently await orders to advance. Use the calendar to pinpoint the exact location of all reinforcements in a turn, and don't forget to move them in subsequent turns.

#### **Use the Max Button Carefully**

The Max button is a useful way of quickly allocating all possible units to an attack. There are many instances where you don't want this to happen. Units which have attacked are ineligible to receive replacements. You may wish to keep units who have taken step losses out of the attack, so you can give them a replacement. The Max button also allocates all possible artillery units, even when the odds are already 10:1. You may wish to keep those artillery units for other attacks.

## 14. BATTLE HISTORY

### The Battle of the Bulge

On June 6th 1944 the long-awaited second front became a reality as Allied troops came ashore on the Normandy beaches. For the next month and a half the Allies inched forward until, with the launching of Operation "Cobra" on the 25th of July, American forces broke out of Normandy. Exactly a month later Paris was liberated. With the capture of the French Capital and the closure of the Falaise Pocket, German resistance crumbled. The race across Northern France was dramatic, but could not be sustained as supply lines lengthened. As the front began to stabilize near the German Border, Hitler perceived he had one last chance to turn the tide of the War. On 16th September, during a briefing at OKW Headquarters the Fuhrer was told of some local successes in the Ardennes. His reaction was immediate, "I have just made a momentous decision, I shall go over to the counterattack. That is to say, here, out of the Ardennes, with the objective Antwerp."

### The Plans

The outlook for Germany at the time of Hitler's decision was dire. German armies were collapsing east and west and their Allies were leaving the sinking ship. Following the destruction of Army Group Center in the Soviet Spring Offensive, Romania and Bulgaria had declared war on Germany, and Finland had signed an armistice agreement with the USSR. Only Hungary and Japan remained as Germany's allies.

Germany was being forced back to its pre-war frontiers. The resultant contraction of the German frontage, however, coupled with the Allied supply difficulties brought on by their own advances, resulted in a stabilization of German defenses. As all sides regrouped, Hitler was faced by the reality that he could no longer hope to win the war purely by defending against future Allied attacks. The only alternative to this scenario of inevitable defeat was for Hitler to commit all his reserves into one final offensive to knock out one or other of the Allies. It was a huge gamble, but Hitler was a student of Clausewitzian theory. He realized that he had come to the point in the war when a great gamble, being the only alternative to certain defeat, was really no gamble at all.

Once the decision had been made to launch a great counterattack, it remained to be decided where the attack would stand the greatest chance of success. The Eastern Front was the decisive front of the Second World War, just as the Western Front had been in World War One. It was estimated that the Russians had 555 divisions facing the Germans. Hitler calculated that he could free up between 30 and 40 divisions for his counterattack. Even if these men could have destroyed double their number of Russians, the odds against the Germans would still have been overwhelming.

Italy was another possibility. However, the numbers fighting there were so small and the terrain so favorable to the defense that no significant advantage could be gained by an offensive there. The only alternative was the Western Front. The odds here were far better than in Russia and the terrain, as the Germans knew from 1940, was amenable to an armored breakthrough.

At the time Hitler settled on the Ardennes Offensive, the Western Front was being held by the Allies with 38 divisions (although on September 1st the allies had 2 million men in 38 combat divisions facing only 700 000 Germans in 41 divisions: This gives some idea of the relative sizes of the logistical "tails" of the two armies). A successful attack by 30 to 40 German divisions could totally change the complexion of the war in the West. Just as Hitler had no valid

military alternative but to throw all his reserves into a final counterattack, the only front on which it could be effective was the Western Front.

The decision to attack out of the Ardennes with Antwerp as an objective was intended to achieve two aims. Firstly the capture of Antwerp would deny this vital port to the Allies and force them to continue trucking supplies from Normandy across most of Northern France. Secondly, it would threaten to pocket the bulk of Montgomery's 21st Army Group.

Hitler's generals argued against the plan and offered several alternatives. Most of these were more limited in scope and involved a two-pronged attack at some point of the line to create a pocket. Hitler refused all alternative plans and fell back to his original idea of a single breakthrough, calling his plan "Wacht am Rhein" (Watch on the Rhine). His subordinates felt that this was beyond the abilities of the Wehrmacht in late 1944. If the offensive succeeded in reaching the coast it would create a giant pocket, if it failed it would result in a salient. This would be worse than useless as it would give the allies the opportunity to create their own pocket. As von Rundstedt accurately predicted, "Should the attack be stopped at the Meuse due to lack of reserves, the only result will be a bulge in the line. Model was more blunt when he said "This plan doesn't have a damned leg to stand on!...If it succeeds, it will be a miracle."

In reality both Hitler and his generals were right about *Wacht am Rhein* and in another sense they were both wrong. Hitler was right that the plans put forward by his staff, although practical, would have little effect on the overall outcome of the war. However the generals were right in stating that a plan of the scope of *Wacht am Rhein* was too optimistic and would not succeed.

Germany was at the stage where nothing in the military sphere could save them from defeat. Hitler should have realized this and been at the negotiating table before he ever thought about a counterattack. But of course by that stage of the war Hitler's capacity for self delusion was so great that peace would only be gained by the total destruction of Germany.

On the Allied side supply was still being trucked in from Normandy, the only other suitable Allied-held port being Antwerp. Although the Allies held Antwerp they did not hold the estuary of the Scheldt, the port's outlet to the sea. At the time when the capture of the Scheldt estuary should have taken top priority, Montgomery was launching his abortive attempt to cross the Rhine at Arnhem.

As German divisions were transferred from the eastern front the German strength in the west steadily increased. At the same time the Allied casualties at Aachen, Hurtgen Forest and in Lorraine were greater than the number of replacements. In order to maintain the offensives against the industrial regions of the Ruhr and the Saar it was necessary for the Allies to thin out other parts of the line.

The Ardennes was a quiet portion of the front and was considered, despite the Blitzkrieg of 1940, to be unsuitable for offensive operations. It was therefore held extremely lightly. Consequently the most thinly held portion of the Allied line was precisely where the Germans intended to attack.

The Ardennes was held by the men of General Hodges' 1st Army, part of Bradley's 12th Army Group. They had little warning of the impending attack due to the strict security under which preparations were carried out. When he was warned by an intelligence officer of a possible counterattack in the Ardennes Bradley over-confidently replied "Let them come."

## The Opposing Forces

The attacking German force was made up of three armies. The Sixth SS Panzerarmee was commanded by Josef "Sepp" Dietrich, an ardent Nazi, the Fifth was under Hasso von Manteuffel, an efficient East Front veteran and the Seventh Armee was commanded by Erich Brandenberger. The most powerful army was the Sixth which contained five infantry and four SS Panzer divisions. The Sixth SS was to cross the Meuse in the vicinity of Liege and was responsible for breaking through in an area between Monschau and St. Vith.

South of the Sixth, Manteuffel's Fifth consisted of four infantry and three Panzer divisions. Manteuffel was facing the most weakly held portion of the U.S. line and was probably the most competent of the three army commanders. His mission was to capture the vital road junctions of St Vith and Bastogne and cross the Meuse between Namur and Dinant.

Brandenberger's Seventh Armee was by far the weakest of the three. Containing four infantry divisions the army was also weak in artillery. The job assigned to Seventh Armee was one of flank protection. After making an initial breakthrough Brandenberger was to "peel off" his divisions one by one to protect the vulnerable southern flank of the salient.

The Germans had amassed a great enough superiority in ground troops but they were lacking one vital ingredient of Blitzkrieg warfare, air superiority. Since Normandy this had been the Allies' trump card. It had decisively slowed the movement of reserves and supplies to meet the Allied invasion, making road movement during daylight almost impossible.

Above all the Germans needed unhampered road movement in the Ardennes. Their offensive plans relied on speed. There was no way that German air superiority could be obtained for *Wacht am Rhein*. The best that could be achieved was for the attack to take place in weather conditions which rendered air operations impossible. Such conditions existed as the offensive opened at dawn on the 16th of December.

## The First Day

At the Northern end of the line the LXVII Korps was heavily repulsed from in front of Monschau. The armor was not to be committed in this sector until an infantry breakthrough had been made. ISS Panzer Korps, south of Monschau made slow progress, but the hoped for breakthrough eluded them as well. During the night of the 16th fierce fighting continued around the vital Losheim Gap. In the early hours of December 17th the way was cleared for the advance of Kampfgruppen Peiper and Hansen, the spearhead of the 1st SS Panzer Division.

The northernmost formation of Manteuffel's 5th was the under strength LXVI Korps. Their objective was the crossroads of St Vith. Facing them were two regiments of the U.S. 106th Infantry Division. These two units were in an exposed position and vulnerable to being pocketed. The encirclement operation was successfully carried out on the 16th. Despite this success the expected breakthrough to the south of the pocket was stopped by the resistance of the third regiment of the 106th. Consequently St Vith remained in U.S. hands at nightfall on the 16th.

LXVIII Panzer Korps, attacking between St Vith and Bastogne was facing only one regiment of the U.S. 28th Infantry Division. The GIs however, were occupying a particularly strong portion of the West wall. Despite their numerical superiority the Germans made only minor gains at the cost of heavy casualties.

Von Lutwitz's powerful XLVII PanzerKorps had the greatest numerical superiority at any point in the Ardennes. Their objective was to overrun the single infantry regiment opposing them and

drive for the critical road junction of Bastogne. Here, as elsewhere, resistance was surprisingly strong. It was only near the end of the day, when the tanks of the 2nd Panzer Division moved across a temporary bridge, that the American defense collapsed.

Brandenberger's Seventh Armee was attacking south of Bastogne. LXXXV Korps made slow but steady progress during the day against an understrength regiment of Hurtgen Forest veterans. LXXX Korps, the southernmost formation of *Wacht am Rhein* faced an infantry regiment and a combat command of the 9th armored division. Reasonable gains were made, the only significant result being the bypassing of Echternach and its garrison.

## The American Reaction

At the end of the first day of *Wacht am Rhein* the brilliant breakthroughs anticipated by Hitler had not materialized. Steady progress had been made and several U.S. units were on the verge of collapse but the overall result of the day was that the staunch resistance of the front line troops had gained the Allies the time they needed to react to the offensive.

Initially the Allies were slow to react. Hodges was not overly concerned and in any case only had two combat commands of the 9th Armored Division in immediate reserve. CCB was released and ordered to St Vith where a collapse of the Losheim Gap defenses seemed imminent.

Bradley suspected that it was a spoiling attack rather than a major offensive but Eisenhower was more troubled. He ordered the transfer of the 7th and 10th Armored divisions to 1st Army. The 7th, from 9th Army to the north, was ordered to St Vith and the 10th, from Patton's Third Army to the south, was ordered to Luxembourg.

On the morning of the 17th of December the Germans resumed their attempt to break through the U.S. positions around Monschau. The U.S. 2nd and 99th Divisions were forced to retreat but this was more because of the breakthrough in the Losheim Gap than pressure on their own front. If anything the American position was becoming stronger as a battalion of Rangers and CCR of the 5th Armored Division moved into the area. The 12th SS Panzer Division was committed to try to break the deadlock but merely contributed to mounting casualties on both sides.

Around Losheim Gap the 422nd and 423rd Regiments of the 106th Division had been pocketed and Kampfgruppe Peiper had pushed through to Malmedy, northwest of St Vith. Peiper had captured 50 000 gallons of fuel and pushed ahead. The other two Kampfgruppen of 1st SS Panzer Division were moving towards St Vith from the north.

Hodges intended to use 7th Armored Division to break into the 106th Division pocket but the proximity of the German spearheads north and south suggested that to do so would simply be to place themselves into the same pocket. The units were deployed for the defense of St Vith.

As the 110th Regiment of the U.S. 28th Division collapsed in front of von Lutwitz's XLVII PanzerKorps the Germans surged forward in the direction of Bastogne. Unable to make any progress on its own front the 116th Panzer Division was directed south to follow in von Lutwitz's wake.

The northern units of Seventh Armee were able to make use of the successes to their north and outflanked the 109th Regiment of the 28th. This unit was forced to retire southwards. Elsewhere Brandenberger met with limited success which prompted Allied leaders to bring two combat commands of 10th Armored Division into action to shore up the American line.

### Montgomery Steps In

By the end of the 20th there was a command crisis in Bradley's 12th Army Group. Headquarters was on the southern flank of the salient and control had largely been lost with those troops on the northern flank.

Consequently Eisenhower transferred control of the bulk of Hodges' 1st Army to Montgomery. Ike hoped by this move to draw British reserves into the fight and take some pressure off the Americans. What he gained was bad feeling between U.S. and British commanders. Within a few minutes of arriving at Hodges' HQ Montgomery had succeeded in offending everyone present.

Eisenhower did, however, get his reinforcements, in name anyway. XXX Corps was to be moved up to the Meuse as a second line of defense. There were to be no British lives risked, but if a real disaster threatened, the British were to be ready to play the role of the cavalry and come to the rescue of their unfortunate allies.

By the morning of December 21st the 2nd Panzer Division was across the Ourthe and would have been across the Meuse by that afternoon had it not been for one thing; they were out of fuel. The Division did not resume its forward movement until late in the day.

In the north the 12SS Panzer Division assaulted the 1st U.S. Division and was repulsed with heavy losses. A similar advance by the 3rd Panzergrenadier Division met a like fate.

Kampfgruppe Peiper was still isolated from the bulk of the German forces and, under constant attacks, its perimeter was shrinking fast. The 9 SS Panzer Division attacked just north of St Vith in an attempt to break through and create a new spearhead for Sixth SS Panzer Armee. This attack was repulsed the same as the others.

As German units both north and south of St Vith pushed westward the American hold on the town became increasingly tenuous. On the night of the 21st, after taking heavy casualties, the 7th Armored Division pulled out of St Vith. Even so, the area west of St Vith was still in danger of becoming a pocket. It was only lack of fuel that prevented the 2nd SS Panzer Division from driving north to complete the encirclement.

St Vith had held for six days and had put the Germans three days behind schedule. It had given the Americans enough time to bring up reserves and halt the one German breakthrough in the northern sector.

### Patton Counterattacks

On the 21st and 22nd of December the 116th Panzer Division made steady progress west against increasingly stiff opposition. The impetus of the spearhead was dying away as units were rushed in to extend the northern shoulder of the "Bulge." The 84th Infantry Division was moved up and placed squarely across the German line of advance, defending the major highway to the Meuse.

With the 101st Airborne firmly ensconced in Bastogne, the Panzer Lehr Division moved south around the town and continued westward towards the Meuse. The encirclement of Bastogne was complete. The 26th Volksgrenadiers could now begin to reduce the pocket. Initial attacks made ground but were costly to both sides. It became clear that the town was going to take several days to capture. In the meantime all supplies to the lead German units would have to take a circuitous route via back roads around Bastogne. This meant more delay for the Germans and gained more time for the Americans to seal off the breakthrough.

As Patton prepared his counteroffensive from the south, Brandenberger's Seventh Armee prepared to defend its gains. A request for reinforcements was met by the release of the 79th Volksgrenadiers and the elite Fuhrer Grenadier Brigade.

Patton had a series of objectives for his 22nd of December counterattack. Firstly he had to feed units into the line facing Seventh Armee to shore up the exhausted defenders of the shoulder. The first of these units was the 5th Infantry Division.

Patton's second and third objectives were to relieve Bastogne and to cut off the German spearhead. To achieve this he attacked with one armored and two infantry divisions. Steady progress was made against tough opposition and Patton ordered the attack to continue throughout the night.

As Third Army's attack continued, the final decision was made by Montgomery to retire from the positions around St Vith. Although the commanders on the spot argued with the decision it was agreed to by General Hodges. The position, which had become known as the "fortified goose egg", contained around 20,000 men. Withdrawal was not going to be a simple affair.

Inside Bastogne the 101st were cut off from outside supply. Ammunition was running low and, knowing this, General von Luttwitz called on the Americans to surrender. Hearing of the offer General McAuliffe's response was "Aw nuts." After some discussion this became the official response and a letter was drafted which read- "To the German Commander: NUTS! The American Commander." When this was handed to the Germans they were confused about its meaning. Colonel Harper of the 327th Regiment explained "If you don't understand what NUTS means, in plain English it is the same as 'Go to Hell'. And I will tell you something else: if you continue to attack, we will kill every goddamned German who tries to break into this city."

### The Weather Clears

On the morning of the 23rd the German spearhead was poised to push over the Meuse near Dinant. One factor changed that morning altering the entire nature of the Ardennes battle. The weather cleared allowing the Allied air forces to gain control over the battlefield. The Luftwaffe flew 800 sorties on the 23rd but was overwhelmed by the Allies who flew thousands.

The air cover came just in time for the defenders of Bastogne who received tons of supplies from the air. Also grateful were the forces retreating from the St Vith pocket. It was late afternoon before the air activity died down and the 2nd SS Panzer Division could start an attack to seal off the retreat path. Even allowing for their late start the fresh division sliced into the American line and made significant gains. Not significant enough, however, to prevent the successful retirement of the bulk of the occupants of the "fortified goose egg."

Throughout the 23rd and 24th the 2nd Panzer and the Panzer Lehr pushed west towards the Meuse. On the 24th advance elements of the 2nd clashed with the British 29th armored brigade.

On Christmas Eve the lead elements of the U.S. VII Corps came up on the right flank of the northern shoulder. Montgomery expected the lead two divisions to assume a defensive role but General "Lightning Joe" Collins had earmarked his elite 2nd Armored division to cut off the German spearhead.

At Bastogne the attacks continued with little to show on either side except casualties. Patton's 4th Armored Division got closer to relieving the paratroopers but were being forced to fight all the way. The 80th Division was stopped dead by the fresh Fuhrer Grenadier Brigade and 79th Volksgrenadiers. On the German side the prospects of breaking into the town were raised by the arrival of the 15th Panzergrenadier Division.

All thoughts that Sepp Dietrich may have had about a renewed breakthrough north of St Vith must have evaporated on the evening of the 24th of December as the 800 survivors of Kampfgruppe Peiper staggered back into German lines. Most of their heavy equipment had been abandoned.

As Christmas Eve passed into Christmas Day the 2nd Panzer Division was three miles from the Meuse. It was meant to have been supported by the 9th Panzer Division, but lack of fuel and American air interdiction saw that formation bogged down well to the rear.

General Joe Collins was in little doubt that Montgomery would refuse his request to attack with the over-strength 2nd Armored so he simply didn't consult his conservative superior. Collins had intelligence reports that the Germans were experiencing extreme supply problems. The 2nd launched an enveloping attack on its German counterpart and pocketed two Kampfgruppen. A counterattack by the Panzer Lehr Division was repulsed and the pocket stayed closed.

The 15th Panzergrenadiers launched an all-out assault on Bastogne on Christmas morning. The first line of defense was pierced and the attack was only halted by a second defensive line on the outskirts of the town. South of Bastogne Patton was bogged down in front of the stubborn 5th Fallschirmjagers. Swinging CCR of the 4th Armored Division around the western flank of the main fighting he found a largely unguarded road. The attack was pressed into the night, gaining considerable ground.

Patton also commenced an attack at the base of the salient with 4th and 5th Divisions. The Germans were forced to pull back from Echternach across the Sauer River. In one day the Americans had rubbed out the bulk of Seventh Armees gains for the entire battle.

Further withdrawals west of St Vith stabilized the American line along the northern shoulder. The two divisions of IISS Panzer Korps fought their opponents to a standstill in some of the most desperate fighting of the campaign. In fact most of the U.S. commanders on the ground were reticent about retiring but were ordered to do so by Montgomery. On top of his retrograde movements Montgomery confidently told Patton that 1st Army would be unable to attack for three months. He was evidently unaware of the successful counterattack taking place on his right flank at this very moment.

9th Panzer Division arrived at the tip of the bulge on the 26th in time to join with Panzer Lehr in another abortive attempt to rescue the trapped elements of 2nd Panzer. With the failure of this assault the men of VII Corps were free to reduce the pocket which they largely succeeded in doing by the end of the day.

### Bastogne Relieved

The other pocket, Bastogne was finally relieved in the late afternoon of the 26th. CCR of the 4th Armored had pushed through to the town but had suffered extreme casualties. The two latest divisions stripped from Third Army front, the 35th and the 6th Armored were detailed to expand the corridor and hold it open. 5th Fallschirmjager was on the point of collapse and it appeared as if the entire southern front was about to burst open.

The Germans could not compete with the Allied mastery of the air. 3,500 planes were flying multiple sorties every day and as well as being unable to move troops and supplies the average German soldier was losing morale fast under constant aerial bombardment.

With the relief of Bastogne and the destruction of the 2nd Panzer Division it was clear to the more capable Allied commanders like Patton and Bradley that the Germans had shot their bolt. The time to counterattack was the present and the attacks should be at the base of the salient in order to nip off the entire bulge. Eisenhower, however, was swayed by the pessimistic arguments of Montgomery and Hodges and settled on a compromise plan. In this plan attacks would be made half way up the bulge, from Bastogne, now a salient of its own, and from an equivalent area on the northern side of the bulge.

Without knowing the Allied intentions Hitler coincidentally ordered most of his armored divisions to concentrate around Bastogne. Having finally accepted that the operation was a failure Hitler petulantly decided that the defenders of Bastogne must be wiped out to a man.

All along the line German commanders decided on the 27th to suspend offensive operations. The exception was at Bastogne where the Fuhrer Begleit Brigade, just arrived in the area, launched an assault on the corridor into the town. The assault was repulsed but Hitler demanded more attacks and formed a new Korps, with the sole job of taking Bastogne.

Patton committed the 4th Armored Division to keeping communications open with Bastogne but moved his other reserve units further east. In the area just to the east of Bastogne fresh infantry divisions made gains, pushing back the tired units of Brandenberger's seventh Armees.

By the 29th of December Hitler had formed an ad hoc army purely for the purpose of reducing Bastogne. Von Luttwitz, whose XLVII Panzerkorps had made the deepest penetration was made commander of Armeegruppe von Luttwitz. On that day five divisions attacked the Bastogne corridor. The crucial Bastogne-Arlon highway was cut for a time before being recaptured by American armor. The raw U.S. 11th Armored Division took heavy casualties but was able to throw back the more experienced Germans.

The attacks continued for the next few days with both sides losing heavily. The one result of all the fighting around Bastogne was that Hodges 1st Army had a chance to take replacements and recover from the constant fighting of the last two weeks. By January 1st there were 38 Allied Divisions in the Ardennes, the same number as there had been on the entire front when *Wacht am Rhein* had been initiated!

Eisenhower was no doubt regretting his decision to put American troops under Montgomery. The British commander had sent Ike a letter demanding to be made supreme land commander in north-west Europe. Eisenhower was furious and was intending to write to the combined chiefs of staff giving them a choice of him or Monty. In the end Montgomery's chief of staff De Guingand persuaded his boss that it wouldn't be Ike who was sacked and Montgomery signed a prepared letter of apology. Hence Hitler's professed aim of splitting the Anglo-American alliance was nearly realized, though not in the way he envisaged.

On January 3rd Montgomery was finally persuaded to attack along the 1st Army front north of Bastogne. For the first time British units came into action as the 53rd and 6th Airborne Divisions attacked the nose of the salient. German resistance was initially light but, as the direction of the main thrust, towards Houffalize and a link up with Patton, became apparent the defenses hardened.

Despite the general advance to the north the Germans continued to attack Bastogne, this time frontally attacking the town itself. In a battle which drew praise from each side for the other the panzers were finally thrown back. A counterattack by the 17th Airborne Division ran into prepared positions manned by the Fuhrer Begleit Brigade. The horrendous casualties which followed shook most of the U.S. commanders. The Germans were down, but they were certainly not out. Between January 1st and 8th a huge artillery duel took place around Bastogne and the casualty lists rose and rose.

There was to be one final German attack on Bastogne, by the fanatical children of the Hitler Jugend Division and the veterans of the 15th Panzergrenadiers on the fourth of January. It was another blood-bath, with nothing to show for the attack but a huge butchers bill on either side. This was to be the last German attack of the Ardennes Offensive.

From January 5th to 11th the Allies pushed slowly forward with the Germans doggedly giving ground. Hitler gave permission for the 5th Panzer Armee to retire about half way to Houffalize in order to reduce the risk of encirclement. Both sides looked to be settling in for an agonizing battle of attrition before the Soviet winter offensive forced Hitler to pull men out of the Ardennes for the eastern front. The sixth SS Panzer Armee was to be pulled out of the line. On January 11th the last unit of the 5th Fallschirmjagers was pocketed south east of Bastogne. The German line was beginning to crumble.

Against diminishing resistance the Allied advance picked up pace with units of 1st and 3rd Armies linking up near Houffalize on the 16th. Eisenhower used this as an excuse to remove 1st Army from Montgomery and return it to Bradley. The British were no longer needed, XXX Corps had commenced its retirement from the Ardennes on January 14th.

Having fulfilled Eisenhower's orders Patton changed the axis of his advance. Rather than turning east from the junction he began attacks at the base of the remaining salient in an attempt to pocket what remained of the German forces in the Ardennes. Progress was rapid and despite failing to create his hoped for pocket, Patton's attack made the German positions to the west untenable.

By the 22nd, with continued withdrawal of units for the east front the German position was deteriorating. Hitler uncharacteristically allowed his forces to pull back to the Westwall. With morale at rock bottom and portions of the retreat route blocked by the advance of 4th and 5th infantry divisions from the south, what was planned as an orderly retreat became a rout. It took until January 28th before the bulge was finally erased.

The Battle of the Bulge started as a great breakthrough of the type that had given Germany victory in 1940. This time, however, the opponents were tougher, better led and had an overwhelming material superiority. The failure of the offensive was predicted by both von Rundstedt and Model, the men responsible for executing it. A Blitzkrieg required an efficient supply network and air superiority. The Germans had neither. The Allied air power made delivery of the meager supplies available almost impossible.

Both sides lost around 80,000 men in the Bulge. More importantly for the German war effort, their tank losses amounted to nearly 25% of total stocks. Ten percent of all Luftwaffe planes had been lost and 700 irreplaceable pilots were gone.

The Ardennes destroyed Germany's last reserves of manpower, munitions and fuel. After the Battle of the Bulge Germany was no longer capable of offensive action. The Western Allies, however, were not in a position to quickly exploit Germany's weakness. Infantry losses had been extreme and supplies that had been stockpiled for the assault on Germany had been consumed in the Ardennes.

The Russians were the only protagonist able to take real advantage of the German weakness brought on by the Battle of the Bulge. They launched their winter offensive against a paper thin defense and were spectacularly successful. It was they who ultimately gained the most from Hitler's last gamble.

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## APPENDIX A — INSTALLATION AND TROUBLE SHOOTING

### DirectX

DBWWII: THE ARDENNES OFFENSIVE uses Microsoft's DirectX routines in order to run. The routines we use are DirectDraw for graphics, DirectSound for sound and DirectPlay for networks. DirectX requires that your hardware, especially the video card, have drivers compatible with DirectX, and you may need to get and install the latest version of the drivers in order to run the game.

Other games may already have installed DirectX on your system. DBWWII: THE ARDENNES OFFENSIVE will not install its version of DirectX over a later version of these routines.

If you don't have DirectX installed, then it must be installed before DBWWII: THE ARDENNES OFFENSIVE can run.

### Video Problems

By far the most likely cause of video problems is an incompatibility between your video card/driver combination and DirectDraw. Some cards are not compatible, but for most cards the solution is to obtain and install the latest version of the video card driver.

### Sound Problems

Your sound card needs to be a 100% Windows 95 compatible sound card, running the correct Windows 95 drivers. If this is not the case, then you need to upgrade the sound card drivers.

## APPENDIX B — Starting Multiple Computer (Network) Games

To play a multiple computer game, choose Network Game from the Game Type dialog. You should specify a Net ID and a name in this dialog.

Since there are only two players in the game, there are two game positions, Creator and Connector. The Creator starts the game, and gets to choose the game options and setup. The Connector joins the game.

There are four ways of conducting a multiple computer game. The connection methods are described below.

### Network Game (IPX Connection For DirectPlay)

- ▶ Creator: Hit the Create button. (This should done first).
- ▷ Connector: Hit the Join button. The game looks for sessions to join and presents a list showing the Net ID of any game creators found in the Choose game section. Choose the game you wish to join and hit the Join Game button. A message stating that you have joined the game appears. Wait for the Creator to start the game.
- ▶ Creator: You see the Net ID of the person who has joined the game. Hit the Start Game button.
- ▷ Connector: Once the Creator starts the game, your game also starts. The Scenarios screen appears, but most choices are dimmed, as the Creator has control. You can change the Map and Unit Display options.
- ▶ Creator: You have control of all the game options. Make your choices and hit the Start Game button. You must specify a network save game name.

### Direct Connect (Serial Connection for Direct Play)

- ▶ Creator: Hit the Create button. (This should done first). A dialog of Serial Port Settings appears. Choose the COM port that the null modem cable is connected to. The default settings for the other choices should work.
- ▷ Connector: Hit the Join button. A dialog of Serial Port Settings appears. Choose the COM port that the serial cable is connected to. The default settings for the other choices should work. Wait for the Creator to start the game.
- ▶ Creator: You see the Net ID of the person who has joined the game. Hit the Start Game button.
- ▷ Connector: Once the Creator starts the game, your game also starts. The Scenarios screen appears, but most choices are be dimmed, as the Creator has control. You can change the Map and Unit Display options.
- ▶ Creator: You have control of all the game options. Make your choices and hit the Start Game button. You must specify a network save game name.

## Modem Connection for Direct Play

- ▶ Creator: Hit the Create button. (This should done first). A dialog showing your installed modem appears. Hit the Answer button, you see a message stating that you are waiting for a connection.
- ▷ Connector: Hit the Connect button. A dialog showing your installed modem appears. Hit the Connect button again; a dialog appears showing your installed modem, with a box for the phone number of the Creator. Enter the phone number and hit the Connect button. A dialog showing call status appears.
- ▶ Creator: Once the Connector has dialed, your modem should answer. The network dialog shows that you have joined the game, and are waiting for others to join.
- ▷ Connector: You will see the a game has been started by the Creator, so hit the Join button. You are now waiting for the Creator to start the game.
- ▶ Creator: You see a message stating that the Connector has joined. Hit the Start Game button.
- ▷ Connector: Once the Creator starts the game, your game will also start. The Scenarios screen will appear, but most choices will be dimmed, as the Creator has control. You can change the Map and Unit Display options.
- ▶ Creator: You have control of all the game options. Make your choices and hit the Start Game button. You will have to specify a network save game name.

## Internet Game (Internet TCP/IP Connection for DirectPlay)

- ▶ Creator: Connect to your Internet Service Provider before starting the game.
- ▷ Connector: Connect to your Internet Service Provider before starting the game.
- ▶ Creator: Hit the Create button. You are now waiting for the Connector.
- ▷ Connector: Hit the Connect button. Enter the IP address of the Creator. When the name of the game appears in the dialog, hit the Join button.
- ▶ Creator: When the Connector has joined, hit the Start Game button.
- ▷ Connector: Once the Creator starts the game, your game also starts. The Scenarios screen appears, but most choices are dimmed, as the Creator has control. You can change the Map and Unit Display options.
- ▶ Creator: You have control of all the game options. Make your choices and hit the Start Game button. You must specify a network save game name.

## APPENDIX C — COMBAT MECHANICS

- All A results apply to attacker
- All D results apply to defender
- 1, 2, 3 etc. equals number of step losses taken by attacker or defender.
- R = retreat. Only the defender is required to retreat. A retreat is always one hex. If no legal retreat hex is available, the defender loses one additional step and remains in place. If the hex retreated to is adjacent to an enemy unit and is not either occupied or adjacent to a friendly unit then the retreating unit loses one additional step during the retreat.

Units attempt to retreat to the most favorable hex. A hierarchy has been defined defining precisely what most favorable is. A unit attempts to locate a valid retreat hex possessing the criteria outlined in the first line of the hierarchy below. If the unit fails to find a valid retreat hex meeting those criteria it examines the criteria on the second line of the hierarchy, and so on.

1. Not occupied by a friendly unit, containing no enemy ZOCs, not across an intervening river/stream (non-bridge)
2. Not occupied by a friendly unit, containing no enemy ZOCs, across an intervening river/stream (non-bridge)
3. Occupied by a friendly unit, containing no enemy ZOCs, not across an intervening river/stream (non-bridge)
4. Occupied by a friendly unit, containing no enemy ZOCs, across an intervening river/stream (non-bridge)
5. Not occupied by a friendly unit, containing enemy ZOCs, not across an intervening river/stream (non-bridge)
6. Not occupied by a friendly unit, containing enemy ZOCs, across an intervening river/stream (non-bridge)
7. Occupied by a friendly unit, containing enemy ZOCs, not across an intervening river/stream (non-bridge)
8. Occupied by a friendly unit, containing enemy ZOCs, across an intervening river/stream (non-bridge)

If there are 2 or more possible retreat hexes the computer chooses the hex which is closer to the nearest friendly controlled town. The unit with the greatest number of steps retreats first. Where units have equal numbers of steps, leg units retreat before horse units, which retreat before wheeled units, which retreat before tracked units which, retreat before supply units. Units which cannot retreat, or those whose path of retreat takes them adjacent to an enemy unit suffer an additional combat loss of one step.

If a stack is required to take losses the first loss is suffered by the unit with the greatest number of steps, the second loss by the unit with the second greatest number of steps etc. If two or more units have equal numbers of steps then the unit with the lowest attack value (in the case of an attacking stack) or defense value (in the case of a defending stack) loses the first step, second lowest loses the second step etc. If all units have taken one step loss and the number of step losses required by the combat result has not been met then the above process is repeated until the required number of steps have been removed.

No defending unit may take more than 2 step losses in a single combat. This does not include losses incurred as a result of being unable to retreat.

There is no formal advance after combat. Attacking units can keep moving if they have enough OPs.

If all units in a group have no ACC or DCC then all ( - ) results become R, all D# results become D#+1R and all D#R results become D#+1R.

Units with 0 OP remaining are still capable of attacking if they have ACC.

**Tactical Shift.** All defenders receive a -4 Odds column shift which may be offset by the attackers. The attacker may receive a positive odds column shift for each stack contributing to the attack. The first stack in any particular attack contribute +1 Odds column shifts, the second +2 and subsequent stacks +1. Therefore a unit being attacked by stacks from the maximum six adjacent hexes has a +4 Odds column shift against it  $(2 \times 2) + (4 \times 1) - 4 = 4$ . Stacks which attack from across non-bridge river or stream hex-sides do not contribute a positive odds column shift. Stacks which are adjacent to an enemy stack, other than the one being attacked do not contribute a positive odds column shift.

Units attacking across a river hex-side have their combat strength halved. Bridges do not negate this.

### Divisional Combat Bonuses

A divisional attack bonus is applied to any combat where all units of the division are adjacent to the defender; in other words, stacked, in a line, and so on. A divisional defense bonus is applied to any combat where all units of the division are separated from another unit of the division by no more than one hex. This represents the divisional assets being applied to the combat, with the attacking or defending unit(s). The bonus applies to the units of that division. Therefore if 9 Pz Division with a divisional attack bonus of 50% and 246 VG Division with a divisional attack bonus of 20% are attacking together in two stacks the strength of 9Pz would be  $39 = (12 + 8 + 6) \times 150\%$  and the strength of 246 VG would be  $15 = (4 + 4 + 4) \times 120\% = 14.4$  rounded up to 15.

### Kampfgruppe Bonuses

A Kampfgruppe bonus is applicable in both attack and defense, being the same for either. The Kampfgruppe bonus is applied in an attack when a division has lost one or more regiments but all surviving regiments of that division are adjacent to the defender. The Kampfgruppe bonus is applied in defense when the division has lost one or more of its regiments but all surviving regiments of the division are separated by no more than one hex.

If there is an artillery unit within range of a defending unit then that unit gets a 1 column shift in its favor.

### Entrenchment

Any unit with the exception of armor and supply units which does not move and does not expend ACC during a friendly player turn are entrenched at the beginning of the next friendly player turn. Entrenchment give units a 150% multiple to their defensive combat strength. Any entrenched unit which expends ACC or moves automatically loses its entrenchment bonus. Units may be entrenched at the start of a scenario.

## APPENDIX D — SUPPLY MECHANICS

OP can be classified into four categories, Basic OP (BOP), Maximum OP (MOP), Additional OP (AOP) and Reserve OP (ROP). BOP is what you get free. It recognizes the fact that all units are able to move a little bit regardless of their supply status. The majority of the combat regiments in the game have a BOP of 8. MOP is the maximum number of OP a unit can expend in one turn. For the average infantry regiment MOP is 12 and for the average tank regiment it is 24. Therefore infantry get two thirds of their supply free while armor only gets one third. This represents the greater reliance of motorized units on the supply network. AOP is the proportion of your supply received through the supply network.  $AOP = MOP - BOP$ .

The average infantry regiment has an AOP of four (12-8) and the average tank unit has an AOP of 16 (24-8). ROP is the reserve of OP built up by units which do not expend their full movement in a turn. Any unused OP are transferred into ROP. When a unit's supply is reduced, OP are transferred from ROP and can be used by the unit. ROP is shown in the map pop-up under the supply icon. All these numbers might seem a little complex but read on, they all have their purpose.

At the start of each player turn supply is judged. All units which are in supply have their ACC and DCC (see Chapter 7) renewed. All units receive their Basic Operations Points (BOP) regardless of their supply status. Depending on the overall supply situation units in the Supply Network receive a proportion of their AOP between 0% and 100%. Because AOP is the difference between MOP (what you can use) and BOP (what you get free) 0% supply means that units receive only their BOP and 100% supply means that units receive all their AOP, taking them up to their MOP. Here are a couple of examples. Unit A is an infantry unit with BOP of 8 and MOP of 12. Its AOP is therefore 4 (MOP-BOP: 12-8). If Supply is at 0% then unit A receives its BOP (8) plus 0% of its AOP (0). Unit A receives a total of 8 OP. If supply is at 75% then unit A receives its BOP (8) plus 75% of its AOP ( $75\% \times 4 = 3$ ). Unit A receives a total of 11 OP.

An additional complication to the above mechanism is Reserve OP (ROP). Each unit can hold a number of OP up to twice its MOP although it can only expend its MOP in any one turn. At the end of a turn any unused OP go into ROP. If ROP is equal to MOP then any additional OP are lost. In any subsequent turn in which the total number of OP allocated is less than MOP extra supply, up to a total of MOP is drawn from ROP. For example, an armored unit (BOP/MOP = 8/24) is in supply. On turn X it receives 100% AOP from the mobile supply network (i.e.  $100\% \times (MOP - BOP)$  or 16 OP). This takes the unit to 24 total OP. On that same turn the unit expends 8 OP. Therefore the unused 16 OP become ROP. At the end of the turn the unit has 16 ROP. In turn X+1 the unit receives 50% AOP or 8 OP from the mobile supply network. Added to the 8 BOP it has 16 OP. The unit would then be able to receive 8 OP from ROP giving it an MOP of 24 and leaving 8 ROP. If the unit uses only 6 OP during the turn then 18 OP would be transferred to ROP. However this would make 26 ROP exceeding the permissible total of 24 ROP and so the additional two OP are lost.

The supply network exists for the duration of the friendly player turn and cannot be modified during the turn, even if supply units move. Units may become supplied at any time during a turn by entering the supply network. This is an exception to the rule that all units receive supply at the start of the turn. In some situations a unit may be able to move further by first moving back into the supply network

No unit which begins a scenario on the map has any OPs on the first turn but must receive these from one of the sources mentioned above. All units start a scenario with ACC and DCC. Reinforcements are considered to enter the game with ACC, DCC and a number of OP equal to their maximum.

The supply system reflects the difficulties encountered by the Germans in moving their enormous stockpile of supplies up to the spearhead of the attack. With adequate petrol in dumps behind the December 16 start line the petrol tanks of 2nd Panzer Division at the tip of the Bulge ran dry. Reserve OP allows units to hoard petrol and means that all units do not run out of movement simultaneously. However, with a maximum of one turn's movement in reserve a few turns of 50% supply or less coaxes out even the most jealously guarded hoards of gasoline.

## APPENDIX E — UNIT EXPOSURE

If a friendly unit comes within three or four hexes of a Hidden enemy unit that unit (X) becomes Nationality Exposed. However, for enemy unit X to become hidden once again, no friendly unit may be within 6 hexes of it (however see details below). This recognizes the fact that it is easier for a Hidden unit to remain hidden than for an exposed unit to disappear from view once it has been spotted.

If a friendly unit comes within two hexes of a Nationality Exposed enemy unit that unit (Y) becomes Divisional Exposed. However, for enemy unit Y to become Nationality Exposed once again no friendly unit may be within 4 hexes of it.

If a friendly unit comes adjacent to a Divisional Exposed enemy unit that unit (Z) becomes Fully Exposed. However, for enemy unit Z to become Divisional Exposed once again, no friendly unit may be within 3 hexes of it. Units become more exposed to the enemy during a turn as they are approached by enemy units. Units only become less exposed at the end of a player turn.

At the end of each player turn the exposure of all units is checked. Units become less exposed according to the mechanics set out above. However, units can only become a maximum of 2 states of exposure more hidden per full turn (in overcast weather-see below). Therefore if a friendly unit was fully exposed to the enemy during the last enemy player turn and it subsequently moves 6+ hexes away from the nearest enemy unit it becomes Nationality exposed (2 states less exposed) before the start of the next enemy player turn rather than fully hidden. This makes it difficult for players to instantly switch troops from one front to another without the knowledge of the other player. Players are forced to keep a reserve if they want to surprise their opponent with hidden troops.

As a large portion of reconnaissance is performed from the air, the maximum rate of change of exposure state (from more to less exposed) depends on the weather. In Bleak weather turns the maximum rate at which units become hidden is 3 states of exposure (i.e. units may move from fully exposed to fully hidden in one turn). In overcast weather turns the maximum rate at which units become hidden is 2 states of exposure. In clear weather turns the maximum rate at which Allied units become hidden is 2 states of exposure and for German units 1 state of exposure. This represents the Allied air supremacy and the fact that in clear weather it was almost impossible for a German unit to avoid being seen from the air.

## APPENDIX F — RIGHT MOUSE CLICK DIALOGS

Holding down the right mouse button over a hex brings up a dialog containing information about the hex and any units occupying it. The top line of the dialog shows the hex being examined and any units occupying that hex. To examine the hex move the mouse over it. Similarly to examine any unit move the mouse over that unit.

The second line of the dialog gives the terrain type, in this case forest, and the hex number, 33, 31. There are four distinct terrain types, Open, Forest, Heavy and Urban. Each of these terrain types has different effects on movement and combat. Open terrain is the easiest terrain to move through and provides the least defensive benefit. Forest, Heavy and Urban terrain are each more difficult to move through and provide a progressively higher benefit to units defending in that terrain. Villages can exist in any terrain except Urban.

The third line of the dialog shows a picture of the weather, a German cross or an American star to indicate which side controls the hex, an oil drum symbol if the hex is currently within the supply network. There are three different types of weather, Clear, Overcast and Bleak in decreasing order of pleasantness.

The fourth line of the dialog contains the hex penalties. Hex penalties are a value added to the movement cost of a hex to reflect the difficulty of entering that hex above and beyond the ruggedness of the terrain. Penalties are cumulative and can be the result of enemy control of the hex, the presence of an enemy unit adjacent to the hex, air or Greif Team interdiction of movement or combat having occurred in the hex or adjacent hexes.

The fifth line of the dialog shows the movement costs for units moving into that hex. The cost depends on whether a unit's dominant mode of transportation is by leg, horse or mechanized. The number next to the appropriate symbol gives the movement cost (in Operations Points) for the hex. Note that the cost of entering a hex is the average of the cost of the hex being entered and the hex the unit is vacating.

The final line of the hex dialog states the position of the hex in relation to victory point objective towns. Roads facilitate movement through rugged terrain.

## APPENDIX G — HOT KEYS

There are a number of active keys in the game which have the following effects.

- 1 . . . . . Hex-grid on/off
- 2 . . . . . Names on/off
- u . . . . . Clears units from the screen or returns them.
- c . . . . . Shows current hex control
- p . . . . . Shows hex penalties.
- space . . . . . Select all units in a stack
- space . . . . . Continues computer move after combat
- backspace . . . . . Ungroups a stack of units
- s . . . . . Shows the current supply net
- 0 . . . . . Center the screen on the selected unit

## APPENDIX H — DESIGN AND PRODUCTION

DBWWII: THE ARDENNES OFFENSIVE has the distinction, among all SSG games, of having the longest development time. Why so?

We began the project with the express intention of creating a game structure which would be, above all else, simple and exciting to play. To this end, we recognized that a fully integrated sequence of play was necessary, both to reduce complexity and to streamline human decision making, particularly for those scenarios using all the map and large numbers of units. Planning and executing a particular combat, then moving onto the next, eliminates the frustration of having to co-ordinate the movement of all units, then going back and remembering who was supposed to be attacking who.

We didn't fully appreciate just what a challenge we had set for ourselves in developing an AI structure to give the computer a chance to compete on equal terms. Determining which units should move first, does this unit move before or after which attack, added another order of magnitude to the already daunting task of creating a worthwhile computer opponent.

Over the last 15 years, SSG has deservedly earned the reputation of providing the best computer opponents in the industry. We were loathe to surrender that mantle without a fight. So, two-and-a-half years after first starting work on the AI, we have finished the job.

The AI in DBWWII: THE ARDENNES OFFENSIVE is the best we've ever done - the best done by anybody! The credit for this achievement belongs to Roger Keating, the co-founder of the company. Steve Ford and Stephen Hand assisted with development and plenty of others pitched in with advice and testing.

We expect that even experienced, hard-core wargamers will know they have been in a fight after taking on one of these computer opponents.

Ian Trout and Roger Keating  
*Strategic Studies Group*

If you'd like to contact Strategic Studies Group to comment on DBWWII: THE ARDENNES OFFENSIVE, or find out about other SSG games, please contact us at the addresses below. For any problems or technical support issues please contact SSI Technical Support using the information found on the datacard.

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