Campaign

USER GUIDE

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Campaign

Tactical and Strategic War Simulation

By Jonathan Griffiths

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SOFTWARE

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Jonathan

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Historical Background

The First World War saw the Germans defeated by the Allies, and the following Treaty of Versailles called for Germany to pay massive war reparations and impossed heavy restrictions on her future military forces. This was in 1919, immediately after the war and during the next few years Germany suffered from runaway inflation, followed by the worldwide Great Depression in the early 1930's. This was the background to Adolf Hitler's rise to power. He promised full employment, a return to German pride and a stable currency. With this formula, the Nazi party soon had the largest number of seats in the Reichstag, whereupon Hitler was declared Chancellor in January 1933. As soon as he had full power, he immediately banned all dissention. Fear was also used as a method for getting his own way and even his own followers were not above being murdered, with the Krystal Nacht (Night of the Long Knives) being the most notable. During one night (30 June 1934) he had the leader of the Nazi Brownshirts (Captain Roehm) murdered, together with a number of Brownshirts, and two generals that had gained his mistrust.

After getting Germany working for him, Hitler started work on his real plans. Full employment was achieved by expanding the armaments industries and the first Autobahns (Motorways) were built, with the intention of being able to move troops and equipment rapidly along them. Hitler was determined that he would expand German sovereignty by the means of short, sharp wars, with each being self-contained, if possible. He assumed that the weak and vacillating politicians would not honour their treaty obligations, which bound them together. In this he was wrong, although when Britain and France declared war on Germany after he invaded Poland, their military strength was not sufficient to help Poland in any tangible way.

▼ A B-26 Marauder of the 9th A.F. is cleared of snow prior to attacking enemy forces.



General Course of the War

In September 1939, Germany invaded Poland. A few days later, Russia also invaded from the east. The German forces were superior in manpower, technology and leadership to the Poles, who still relied upon horses for their cavalry attacks. Thus Poland was defeated in eighteen days by the new breed of warfare, Blitzkrieg (Lightning War). The idea behind Blitzkrieg was to choose a vulnerable point, and to attack it with overwheming force, both from land and the air, in a concerted manner. Once through the enemy line, the attack pressed on to the next point, whilst mopping up squads dealt with any resistance. Momentum and organization were the keys to this system.

Next, in November 1939 Russia invaded Finland. This was quite a different campaign to the Polish one. The Russians had modern tanks and aircraft, and vastly more men and material than the Finns at their disposal, but they had not learnt the methods of Blitzkrieg. Also, attacking Finland in November was not particularly clever, since the extreme cold favoured the defenders, and hampered the movements of the attackers. This campaign lasted three and a half months, and saw set-piece battles that would not have been out of place in the First World War, with massive artillery barrages and static defensive lines. The Russians eventually prevailed, but at a high cost when compared to the Finns.



▲ German troops during the counter-offensive in the Ardennes.

The war settled down temporarily on the Western Front, which was the German border with Holland, Belgium and France. The "Phoney War" lasted from September 1939 to May 1940. During this time no offensives were undertaken, but both sides readied themselves for the coming conflict. The German High Command had originally intended to launch a variation on the Schlieffen Plan of the First World War, when the Germans attacked Holland and Belgium, and then France, but an advance copy of these plans was captured by the Allies. This led to General Heinz Guderian's plan being adopted instead. This was much more daring, as it relied upon surprise. In this, a feint attack was launched along the original lines, and a second, larger attack through the Ardennes. This is a hilly, forested area, thought to be impassable to tanks, and thus only lightly defended. The French had a strong defensive line (the Maginot Line) along their border with Germany, but both German plans bypassed it, thus rendering it irrelevant. Blitzkrieg was again used, and thoroughly vindicated. This was not Poland, though, as the French tanks were excellent, as were the British aircraft. The problem was leadership, and communication,

where the Germans excelled. The campaign started on May 10, and finished on June 22, when the French sued for peace.

Now, German attentions were turned towards Britain. The first part of the plan was to gain command of the skies, since otherwise the troop convoys in the English Channel would have been easy targets for aircraft. The Battle of Britain was fought entirely in the air, since the Germans never got beyond their first requirement for the plan. Also, there was only a limited time to prepare for an attack, since, by September the English Channel is subject to violent winds. The Germans also made the mistake of changing their strategy during the air offensive. Initially they had attacked the airbases, and just when they might have won, they turned their attention to bombing cities. This allowed the RAF to build back up again, and so continue defending. Eventually by the end of October 1940, the plan was shelved.

Immediately after the Battle of Britain, the Axis forces (Italian and German) invaded the Balkans. This region includes Yugoslavia, Romania, Bulgaria, Albania and Greece. Britain had pledged to defend Greece, and so sent a force from North Africa across the Mediterranean to Greece. This force was too small to do anything other than delay the Germans, and they entered Athens on April 27, 1941. The island of Crete in the Mediterranean was taken next by German paratroopers, in the only large-scale German airborne invasion of the war. The casualties were so high that Hitler forbode further attacks of this nature. Nonetheless, the British garrison on Crete was again forced to evacuate.



▲ Armoured Infantry Regiment, mortar squad moving in to attack a German Infantry concentration, Belgium.

From the very start of the war, North Africa had seen various campaigns and battles. Initially, the Italians had invaded Ethopia, with dreams of re-creating the Roman Empire. The British had dispatched a force to Egypt to defend the oil supplies there. This was commanded by General O'Connor, who succeeded against the Italians, even though outnumbered. They were continually beaten back by the British. Then, in March 1941, General Erwin Rommel landed with a German expeditionary force. They quickly went to work, attacking the British, and in turn reversing the advance. The Italians fought alongside the Deutsche Afrkia Korps (DAK), but with lower morale and inferior equipment, they played a secondary role to the Germans. General O'Connor had been replaced by General Wavell, who was less able to deal with the new German threat. He, in turn was replaced by General Auchinleck, and then finally, when all seemed bleak, by General Montgomery in August 1942. From this point on, the British always won, finally defeating the DAK in May 1943 in Tunisia.

Meanwhile, Germany had invaded Russia on June 22, 1941. This was a complete surprise to the Russians, who Stalin had ordered not to exercise

too near the German border for fear of offending Hitler. The opening months of the campaign (codenamed Barbarossa) were extremely successful for the Germans, who, even though they underestimated the Russian strength, had still prevailed against it. In the main, the Russian tanks and aircraft did not compare with the Germans. The KV-I and T-34 tanks were not produced in sufficient numbers until 1941, and so had not yet appeared in quantity. Also, they were used to support infantry attacks, rather than as independant groups, thus compromising their efficiency. Most of the Russian airforce was destroyed on the ground in the opening weeks, and the Germans advanced 400 miles in 18 days. The Russians were beginning to fight back effectively, and the German advance slowed down, until, by November, the Germans were 30 miles from Moscow. Here the formidable Russian winter forced both sides to sit and wait. The Russians had another advantage here, since their tanks were less vulnerable to the cold than the Germans, and dawn raids were regularly used.

Field Marshal Erwin Rommel did not take part in the most famous desert battle - El Alamein, since he was in hospital in Germany. His acting commander had a fatal heart attack on the first day, and Rommel only arrived in time to organise a retreat.

The war at sea continued throughout the war years, but Germany had a smaller Navy than either Britain or the United States, and so did not engage in many set-piece battles (such as Jutland in the First World War). Instead, the Germans tied up Allied forces by sailing small forces around the world's shipping lanes, knocking out merchantmen. For this the submarine was especially effective, and almost beat Britain by destroying the trading routes from America. Luckily for the British, this disaster was averted by use of convoys with escorts, and also by the new submarine detection device, ASDIC.

The Japanese entered the war undeclared on December 7, 1941 when they attacked Pearl Harbour, in Hawaii. 350 aircraft attacked the Pacific Fleet in harbour, and managed to destroy a large number of ships and aircraft. However, the American aircraft-carriers were out on exercise, and so escaped. This one attack caused the Americans to declare war on all the Axis forces, whereas previously they had not been directly involved. The Pacific conflict was mainly fought using ships and aircraft, and so the aircraft-carrier reigned supreme. The Battle of the Coral Sea was notable for being carried out without either side's surface ships engaging the other. The Japanese had only rather poor tanks, and the island-hopping nature of the campaign did not lend itself to large tank-battles. Rather, the tanks were used to support limited infantry operations.

Back in the North African desert, the battle of El Alamein (October 1942) was swinging the tide of war in favour of the Allies, with the British Eighth Army newly reinforced with the modern American Sherman tanks and commanded by Lieutenant-General Montgomery. He was a more prudent commander than his predecessor, and refused to be drawn until he was ready. In consequence, he was able to attack with a very significant numerical advantage, and slowly and surely to wear the German and Italian forces



▲ 4th Armoured Division, 3rd US Army battle near Bastogne.

down. In all Montgomery's battles, attri tion was the order of the day. He preferre to let the enemy attack his well-defende position, and then, after he had reduce their force, to go over to the offensive The Americans landed in French Nort Africa for Operation Torch in Novembe 1942. This was to be a grand pince movement to trap the Axis armies. Th British advanced from the east, and th Americans from the West. They met up i Tunisia, from which they launched a join attack on Italy, described by Churchill a "the soft underbelly of Europe".

1942 also saw an attempt to re-launch the Russian invasion by the Germans. In this they were only partially successful. Whilst they made great strides through the Crimea, and on through the Caucasus Mountains to the shores of the Caspian Sea, they also made the mistake of attacking Stalingrad on the banks of the Volga River. This city defended itself, and managed to hold out long enough to allow the Russian Army to encircle the German forces. This disaster saw a quarter of a million German troops lost, together with sixty thousand vehicles, fifteen hundred tanks and six thousand guns.

In 1943 the tide of war was against the Axis on all fronts. The Germans launched Operation Zitadelle as their summer offensive in Russia. This was another huge mistake, since the Russians had fore-knowledge of the offensive, and had prepared for it by deploying vast defensive lines of mines and anti-tank guns. Behind and amongst these were huge numbers of tanks. The Germans were not short of material either, but were fighting a prepared enemy, and so lost the major element of surprise that had served them so well before.

Sicily was invaded by the joint Anglo-American attack on July 9 1943. This occurred during unpleasant weather conditions, but was otherwise largely unopposed. 39 days later, the island had fallen to the Allies. The Italian Campaign was less fast, and was still in progress when Germany fell in May 1945. The Italian dictator, Mussolini, fell on July 25, as the result of a palace revolution. The replacement government sued for peace, but the Germans, who had been expecting this move, secured Rome and managed to hold the entire Italian area. Thus, the Allies were forced to fight all the way through Italy against the Germans, who tenaciously held every town and junction.

June 1944 saw the launch of Operation Overlord, which was the Allied invasion of France that Stalin had long been insisting on to take the pressure

off him. This was a much larger Anglo-American effort than the Sicilian invasion of the year before. The landings were at Caen, since the closer ports of Calais and Boulogne were considered too obvious, and had indeed been heavily fortified by the Germans. The Allies managed to break out of their beachheads within a few days of landing, although Caen itself gave some trouble. From here, the Allies swept south and east, towards Germany.

After the initial invasion, France was re-captured within three months, with Paris rising in revolt against the Germans who surrendered there on August 25, 1944. The next stage was to win back the Low Countries of Belgium and Holland. A daring paratroop invasion was proposed, but the German defenders found out about the plan and prepared. Operation Market Garden, as it was called, thus suffered heavier casualties than had been expected, but nonetheless managed to secure the approaches to the rivers Maas and Waal.

In December 1944, the Germans launched their last major counter-attack of the war. This was the "Battle of the Bulge", so called because of the salient created by the initial German assault. The Americans, who held the sector, did not expect an attack there (even though the Germans had used the same area to attack France in 1940), and had it only lightly defended. The weather grounded the Allied air forces, and so the Germans managed to almost reach France again before lack of petrol, and improving weather stopped them in their tracks.

Back on the Russian Front, things were also going against the Germans. Everywhere they were on the defensive, and not helped by Hitler's insistence that they hold every inch of ground "to the last man". This meant that they lost the ability to manoeuvre, and were thus cut off by the advancing



Four Airbourne Pathfinders
et their watches before taking
ff. Their job was to go in
dvance of the invasion forces
nd light the beacons which
ould guide the main landing.



► Three British soldiers aboard a landing craft pass the time by reading about France.

Red Army. This led to many having to fight to reach the safety of their ow lines, and also to the Luftwaffe having to supply forces left stranded behin enemy lines. By September 1944, the Russians had re-captured all of thei former territory, and were beginning to penetrate into the Baltic states o Latvia, Lithuania and Estonia, as well as Poland and Czechoslovakia.

In the Pacific, the Americans were also prevailing against the Japanese who had to be winkled out of every island. They regarded surrender a unthinkable, and so made the American marines pay in blood for ever island conquered. As the Japanese became more desperate, they started th use of Kamikaze pilots. These were suicide pilots who flew old aircraf packed with explosives directly into American ships. This tactic was fairl successful, but luckily there were insufficient pilots and aircraft for th method to be completely overwhelming.

1945 was the last year of the war. Germany was over-run from both eas and west, by the Russians in the east, and the other Allies in the west Hostilites ceased with the surrender of the Berlin garrison on May 2, and th formal surrender was signed on May 7. In the Pacific, the war continue until September 2. This end was hastened by the dropping of the two atomi bombs, on Hiroshima and Nagasaki in August. This forced the Japanese t surrender, without a much bloodier invasion taking place.

The World Famous Volkswagen Beetle was commisioned by Hitler to Porsche as a car that anyone could afford. Volkswagen means 'Peoples Car' in German. Early Porsche cars drew much inspiration from the Beetle.

Installation and Loading

We strongly advise that you make a backup copy of you Campaign disks before playing the game or installation ont hard disk drive. Although replacements are available from u having your own backup will save you time should anything go wrong. Yo computer's User Guide will tell you how to make a backup copy.

***Note:** It is illegal to make copies of games to give to your friends, and a backup copies made of Campaign are for your use only.*

IBM PC and Compatibles

We strongly recommend that prior to playing Campaign, you read th README file on the Disk 1-Intro. This will contain details of any additio or alterations made after this manual was printed. To load the Readme fi simply type: `README`

To run Campaign on IBM PC and compatible machines, you will nee the following system requirements;

- IBM PC XT/AT/PS2 with at least 640K RAM, MSDOS or DRDOS 2. and above
- EGA, VGA or MCGA graphics
- Requires keyboard and Mouse controls
- Roland, Ad-Lib, Sound Blaster or PC internal sound

After making sure your computer has been loading with MS-DOS, inse the first Campaign disk into the floppy drive. Your computer should displa the prompt; `A:>` or `C:>`

▼ American .57mm anti-tank gun being moved into position on the German-Belgian frontier to hold the German counter attack.



Now type the following command t install the game from the floppy disks to th root directory of your hard drive (Cam paign requires 1.7Mb of storage space t install); `A: INSTALL C:`

You may play Campaign directly fro hard disk or the floppy disks by typing th following at the appropriate prompt;

`CAMPAIGN`

PC Introduction Sequence

The introduction sequence is fo MCGA and VGA displays only and re quires at least 1Mb of EMS memory (LIM

EMS V3.0 or later) to run with full animation and sound. If there is not enough EMS memory, or the game is run in EGA or Tandy 1000 mode, then a short title sequence is shown instead. If the Soundblaster sound option is selected, digitised speech is used, otherwise subtitles are displayed when the charaters are talking. Subtitles are also displayed if a non-English language is selected.

General Heinz Guderian largely invented Blitzkreig (lightning war) during the 1930's, and even published a book describing exactly how it worked. The method still came as a complete shock to the Allies in 1940.

Commodore Amiga

To run Campaign on an Amiga, you will need the following system requirements;

- A500, A500+, A600, A600HD, A1000, A1500, A2000 or A3000
- Workbench 1.2 and above (not Workbench 3.0)
- 1/2 Mb RAM (1Mb RAM required to show intro sequence)
- Mouse and Keyboard required

You can start the game by inserting the first Campaign disk (Introduction) and resetting the machine (either by turning on the power, or by holding down `Ctrl` and the two ***A*** keys). Alternatively, you can start from Workbench by double clicking on the Campaign icon.

Note: *half megabyte RAM users (unexpanded A500) cannot use the Introduction floppy, since this requires one megabyte to run. Instead, insert the second (Game) floppy and reset the machine.*

To install the game on your hard drive, insert the first (Introduction) floppy and copy everything on it to a new directory, called "Campaign". Do this opening the CLI and typing;

```
MAKEDIR Campaign
COPY DF0:#? Campaign
```

When this first disk has copied, insert the second (Game)disk and type;

```
COPY DF0:#? Campaign
```

Finally, insert the third disk (Maps) and final disk, and type the following commands;

```
CD Campaign
MAKEDIR Maps
CD Maps
MAKEDIR Simple
MAKEDIR Average
MAKEDIR Complex
COPY DF0:Simple/#? Simple
COPY DF0:Average/#? Average
COPY DF0:Complex/#? Complex
```

Atari ST

To run Campaign on an Amiga, you will need the following system requirements;

- 520ST, 1040ST, STE or Mega ST series
- Double sided disk drive
- 1/2 Mb RAM
- Keyboard and mouse controls required

To load Campaign insert the first (Game) floppy and either reset the computer, or double click on the "MASTER.PRG" icon.

To install the game to your hard drive, double click on the C (or D, etc) icon on the desktop. Now select the **New Folder** option in the **File menu**.

Call the new folder "CAMPAIGN" and insert the first floppy (Game) and drag the A icon to the CAMPAIGN folder that you have just created. When the floppy has finished copying, double click on the CAMPAIGN folder and open another new folder as before and call it "MAPS"

Now insert the second disk (maps), and drag the A icon to the MAPS folder. When this has finished, the game is installed.

To start, find the "MASTER.PRG" file in the CAMPAIGN folder, and double click on it.

Copy Protection

During Campaign, the game may ask you to answer a question based on the technical specifications of a vehicle, aircraft, ship or piece of artillery. Answers to these questions can be found in the **Vehicle Factfinder** sections at the back of this user guide.

The use of the **Vehicle Index** may help you locate the exact page.

Quick Guide to Campaign

ampaign is a campaign based wargaming system for the Second World War. A war contains a number of campaigns, which in turn consist of a number of different battles. The game is mainly based on land, although both aircraft and naval support can be called upon.

Control Convention

We have set a convention for the use of mouse buttons throughout Campaign.

The **left button** performs the appropriate action for the area of the screen that is being pointed to, eg. selecting the action of a particular icon.

The **right button** on the mouse is (nearly) always used to show information about what is under the pointer. The only time when this is not true is selecting a destination for a group on the map. So if at any time you are unsure of an icon or screen area then move the arrow over it and press the right button on the mouse to find out what it is.

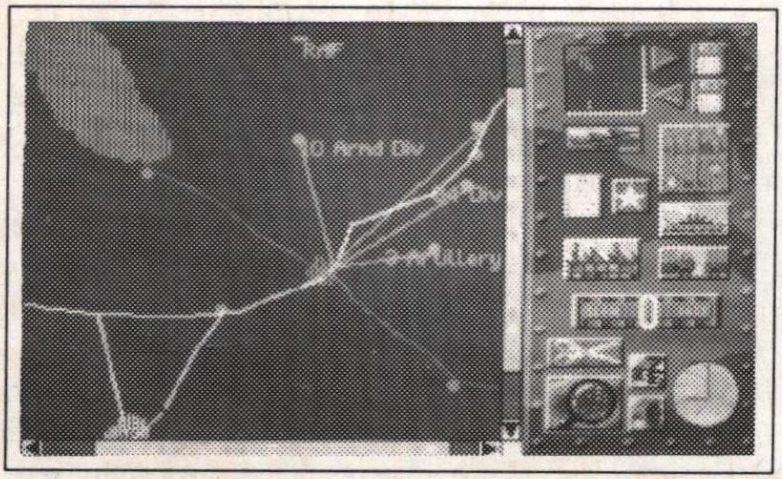
For this tutorial '**click on**' means move the arrow over and press the left mouse button and '**examine**' means move the arrow over and press the right mouse button.

Campaign also requires the use of the keyboard for controlling vehicles during 3-D combat sequences. Keyboard controls are discussed later in the '**Driving Vehicles**' section.

Getting started

When the game loads a predefined map (called DEFAULT.MAP) is loaded into the map area in the left half of the screen. This map (unlike some of the others) is not based on any actual event from World War II and is intended as a tutorial map to allow you to get to grips with some of the main features of the game

▼ Figure 1: Default Map



Once the map has loaded, the screen should look like Figure 1.

The scroll-bars at the side and bottom can be used to move the display over any selected part of the map. To do this, move the white arrow on the screen using the mouse which is attached to your machine. Move to the left-pointing black arrow at the far bottom left of the screen. Now click the left button on the mouse, and the map will be moved

sideways within the display. The map is too large to be fully displayed at any one time, so one must move the map under the window to see the whole thing.

The default map contains 5 objects under your control: 3 groups of vehicles, one airfield and a production centre. The groups of vehicles are represented by small yellow circles with names next to them (10 Armd Div, 3 Artillery, and 84 Div), the airfield is a small yellow rectangle with RAF next to it and the production centre is a yellow square. The vehicle groups and the production centre have destinations indicated by yellow lines. In the case of the production centre the destination is for a convoy produced by the centre, not the factory itself!



▲ Troops of the 2nd French Armored Division mount guns on their American built tanks at a marshalling area in France just after landing in Normandy.

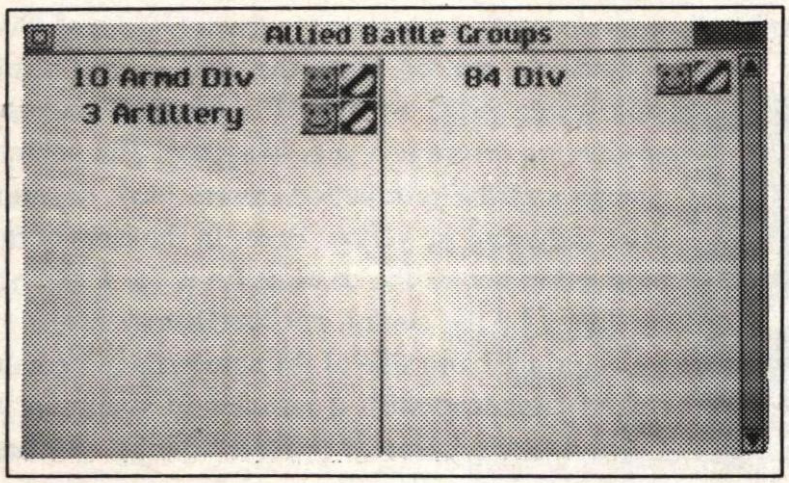
The right-hand side of the screen has a camouflaged backdrop with a number of icons on it. Each of these represent different things. To find out what, move the mouse pointer over one, and hold down the right button on the mouse. A text box will appear in the centre of the screen, telling you about the icon. For instance, move the pointer to the icon at the bottom right of the screen (the one with the sun burst in a circle). Now hold down the right mouse button, and the text box will display the time & date in the campaign. This icon changes to a sunny day icon between 6:00 am and 6:00 pm, and the red lines are the hour and minute hands of the clock. The time shown is 9.00 AM, and the text shows a 24 hour clock digital readout of the time (0:00). This clock is useful for keeping track of game time in the campaign.

To explore the map try examining various points of interest on the map area itself. (NB: If you use the left mouse button then you will select a group and it will turn blue. If this happens then click on the tanks icon on the right hand side of the screen to deselect it). A box will appear telling you exactly what is under your arrow so that we can discover that the default map consists mainly of grassland at 100 metres above sea-level with a small amount of marshland and various towns and villages. One very important area on the map is the town in the bottom left. If you examine the shaded area surrounding this town with the right mouse button it will tell you that this is the Allied objective. This area is where you are aiming for.

Note that roads and rivers (which are on the map) cannot be selected because the resolution of the map goes down to areas 100 metres across which is larger than both of these features. They can, however, be clearly seen on the map.

Once you have familiarized yourself with the map it is time to try some of the icons in the right hand side of the screen. If you examine (with the right mouse button again) the page-of-text icon (underneath the tanks with the red

rectangle around it), then you will be told that this will show information about the various battle- groups. Clicking on it (left button) brings up the battle group screen as shown in Figure 2.



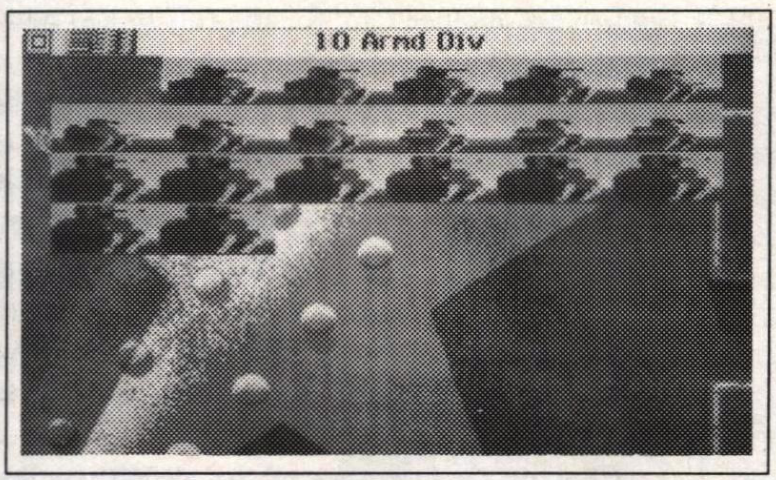
▲ Figure 2: Battle group screen

In the default map you are playing the Allied (British, American, French, Russian) side, so the title of the screen is "Allied Battle Groups". It is of course possible to play the Axis (German, Italian, Japanese) side in many of the maps. To the right of the title is an icon which is light brown, with a black dot on it and 4 crosses beside it. This shows that the battle groups are represented as large dots with names on the map. The other choices are small dot only, large dot with names, and small dot with names. Clicking on this area will change the representation. The icon at the far left at the top is the "quit page" icon. This icon occurs on several other screens and is always used for returning to the previous screen. Clicking here will take you back to where you were before (the main map display).

The screen contains the names of all of your battle groups followed by a smiley face and a de-restricted speed symbol. Each group has a status represented by a face showing various stages of well-being. In order for a group to be completely happy it must have at least 5 fuel refills per vehicle and have no breakdowns. This is the case with all of your groups at the start of the default map. The face also represents whether your group is under automatic or manual command. At the start of the default map all of these groups are manual (blue faces) but if you click on the face it will change to yellow which means that this group's strategy will be controlled by the computer. Clicking on the face again will return it to manual command. The de-restricted sign means that the group is on the move and has a destination. Clicking on this area will change the orders for the group. Click on it once and the group will dig in. Click on it again and the sign changes to a no-entry sign indicating that the group is stopped but ready to move. In order to get the sign back to move you have to return to the map area and give the group a destination.

The British army at Singapore in February 1942 greatly outnumbered the attacking Japanese, and yet they still surrended due to inadequate information about the size of the Japanese army.

To do this click on the quit icon to return to the map screen and observe that the group which you selected now has no yellow line indicating that it has no destination. Click on the group (with the left mouse button). The group will now be highlighted in blue indicating that you have selected that particular group. Now use the right mouse button (here is the only exception that proves the right mouse button rule) to select a destination. Try selecting a destination very close to the group itself. If you do this, the computer will ask you whether you wish to 'move' or 'shoot'. This means that the



▲ Figure 3: Group contents

destination is within firing range of the group and can be bombarded from your current position. These bombardments last for half an hour. Since there is no visible enemy to bombard at the start of the map anyway click on 'move' and reselect a destination just this side of the bridge across the river. When you have done this click on the tanks icon to reselect Battle Groups and then click on the page- of-text icon again to return to the Battle Group screen and observe that the group's command icon has changed back to a de-restricted sign.

Now, if you click on the name of a group you will get more detailed information about the contents of the group itself. Try clicking on '10 Armd Div' and the screen should look like figure 3.

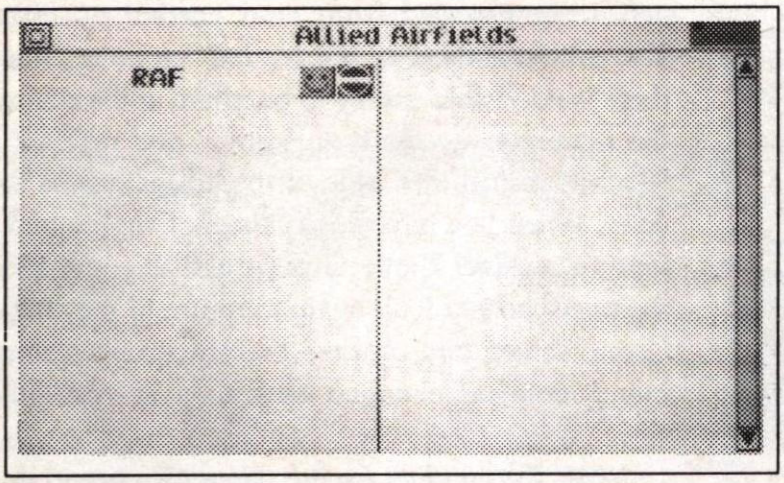
The full-screen graphic will not appear if you have insufficient memory, and you'll just have a white screen with the same icons on. The sequence of tanks shows the vehicles in the group individually. At the top of the screen is the title (in this case "10 Armd Div" because that is the name of the group that we are looking at). At the far left is the normal quit page icon, and next to that is an American flag (to indicate that this group is composed of American vehicles). As before, you can examine any icon (by using the right mouse button), and the various tanks will respond by printing their name. Clicking on a tank will show a full-screen picture as shown in figure 4.

▼ Figure 4: Vehicle information screen



This picture shows a Sherman M4A3E8 tank (the last eight tanks in the previous screen are all Sherman M4A3E8's). The main picture is just that - a picture. Underneath are some statistics. Each vehicle type has a different set of vital statistics, which are used throughout the game, so it is important to get to know which vehicles are good at which things. The first three items show how much defence the tank has (how thick its skin is). The next item (Maximum Armour Penetration) shows how good its gun is (how much armour can be defeated by the shell fired at point blank range). The last two items indicate how manoevreable the tank is. Each tank is a compromise of these three variables (defence, offence & speed).

The four icons at the bottom right tell you about the tank. Try examining them. The two icons directly above these information icons will show you the full page picture for the previous and next tanks in the battle group.



▲ Figure 5: Airfields List

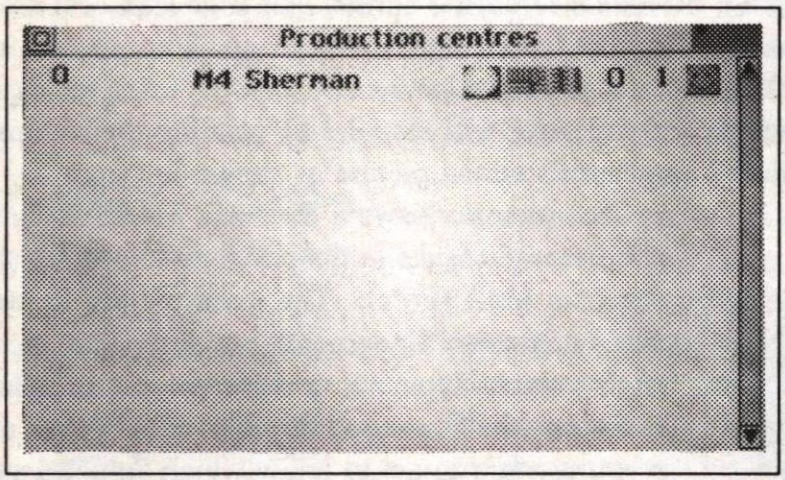
Alternatively, you can quit to the previous page and select another tank for the full-screen treatment. After you have seen how this works, select quit until you are back at the initial display (the campaign map).

There are other groups that we can look at apart from our vehicles. Click on the aircraft icon and a red rectangle will appear around it (and not around the tanks icon). Clicking on the page-of-text icon now will show you a list of all of the airfields available in the current map as shown in figure 5.

Clicking on the name of the airfield (in this case RAF) will take you down to a screen detailing the individual aircraft. Each one can be examined or clicked on to gain more information.

The only other group to look at on the default map is the production centres. Click on the factory icon and then the page-of- text icon to bring up the screen shown in figure 6.

▼ Figure 6: Production Centers



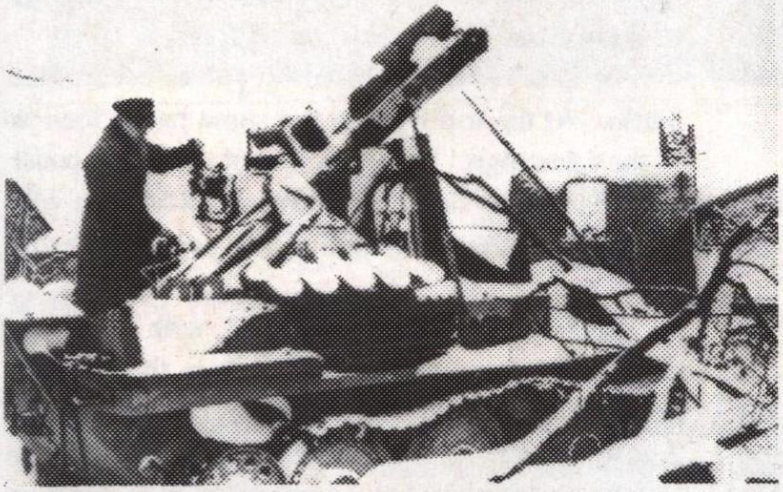
As we can see there is only one production centre in the default map which is producing Sherman tanks. Each centre can be changed to produce different objects simply by clicking on the name of what is currently being produced. When you click on this name, hold down the left mouse button before releasing it so that you can see the information printed up about how long it will take to convert the factory to produce the new item. Examine the clock icon to see how long each vehicle takes to produce. Since this tutorial is only a very short campaign reset the output to M4 Shermans to avoid any time penalty. The 2 numbers on the right can be examined as before. The first is the number of vehicles produced so far (0 obviously) and the number to produce before sending out a convoy. This second number can be changed at any time in the campaign simply by clicking on it to increase it to a maximum of 47 at which point it wraps around to 1.

Now we have examined all of our groups click on the quit icon to return to the main map screen.

We know what our battle groups look like, and what the map is like, so we are ready to start the game rolling. Note that we didn't need to see our forces before starting the game, but it is useful. Click on the Pause icon (the Z's to the left of the clock), and the clock will start ticking away. The speed

that the clock ticks over at can be modified by the slider just above the clock and pause icon. Clicking on the right of this slider will make the game run very fast while clicking on the left will make it run very slowly. Do not worry too much about the speed since the game can be paused at any time by clicking on the pause icon. Set the slider to about half-way (which equates to a screen update once every 3 seconds) and watch your groups trundle towards their destinations. Note that the speed of each group is determined by the vehicles contained in it and the terrain over which it is travelling.

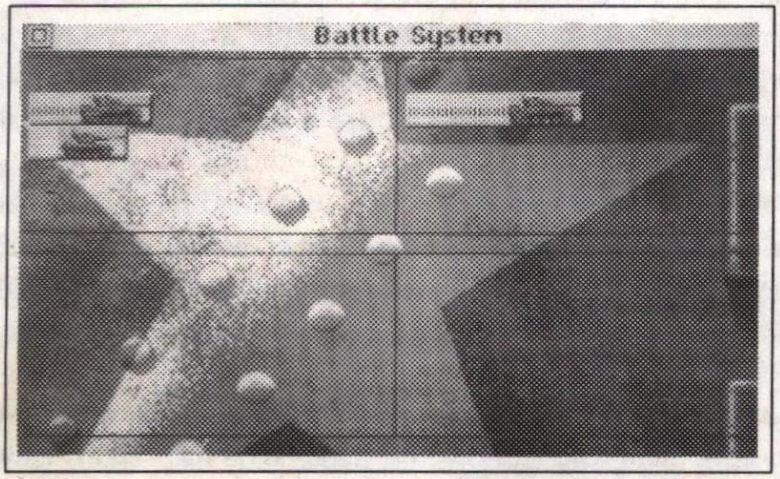
▼ Capt. Alfred E. Benton 9th TAC, 9th Air Force inspects a German howitzer knocked out by P.47 planes near Trois Ponts in Belgium.



When a manual group (in this case all 3 battle-groups are manual) reaches its destination a box will appear on the screen telling you that it needs a destination. Manual groups are completely controlled by the player. This box can be removed by pressing the left mouse button or letting it time out which takes 10 seconds. All events will be related to you in this way, allowing you time to react accordingly. In the case of needing a destination simply click on the stationary group and give it a new destination with the right mouse button. Note that certain groups cannot travel through rivers but need to cross at fording points or bridges. Fording points occur at certain bends in rivers and are completely invisible on the map so bridges are a more reliable option. Set a destination along the road and the group will automatically use the bridge. NB: The group must be on the road before the bridge in order to be able to cross.

Once your groups are over the river head for the first village. As soon as you get to this point you will almost certainly spot a dug in Panzer group waiting for you. Get close enough and a battle situation will occur.

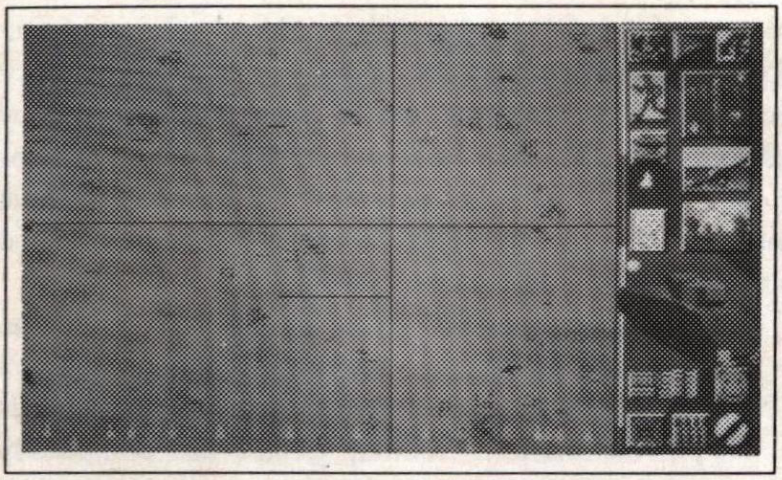
▼ Figure 7: Tank Overview



The screen as depicted in figure 7 shows an overview of your tanks on the left, and the enemy's on the right. As you can see, the enemy force outnumbers your force, but not by much.

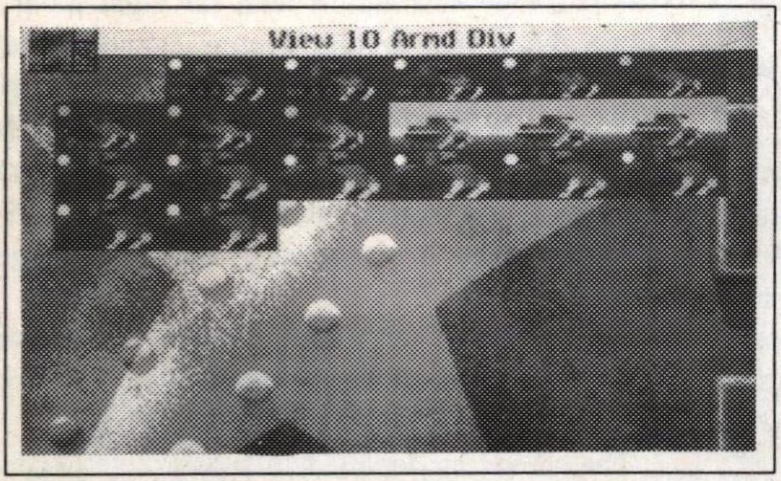
The quit box at the top left will start the battle, and, since it is a land battle, you will be presented with the choice of leaving it all to the computer (Automatic), or of taking direct command of the tanks involved (Manual).

If you select "Automatic" then the outcome of the battle will be calculated and you can continue with the campaign. In order to learn about the extra features however, select "Manual", and after a short reference to the disk, the following



▲ Figure 8: Features

▼ Figure 9: Battle Group



screen as shown in figure 8 will appear. This is the Battle section of the game, where everything is local to battle, not the campaign. The map which occupies most of the screen is the battle map (at a fixed scale of 2.5km by 2km). The flashing dots represent tanks. The light blue one is your current tank, the yellow ones are the rest of your force, and any red ones are enemy tanks who happen to be close enough to be seen by one of your tanks. Most of the map is grass land, but with the occasional house and clump of trees.

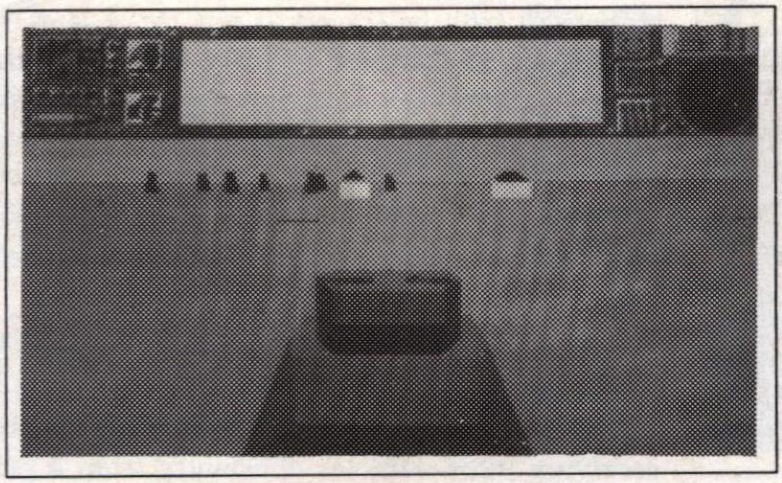
The icons at the right allow you to control the battle. At the top right is the same pause icon as in the campaign. Every section starts off in pause mode, to enable you to see what is going on before starting. The icon with two tanks, one facing right and the other left, will show you your battle group. See figure 9.

This is very similar to Figure 3, with the difference of having a map symbol where the quit box normally goes, and with the tanks drawn on a red background. The white dots represent sub-groups of tanks. All tanks are initially in the same group (white), but you can change the selection by moving the mouse pointer to a tank, pressing, and keeping pressed, the left button, and then moving the mouse pointer to another tank, and finally releasing the button. First, though, you must remove the tank from any group, by dragging it to an empty area of screen. Now, drag any tank to it, and they will have a new group colour. The tank will always join the group that it is dragged to.

Select the map icon (top left) to quit back to the battle map screen again. You can look from the current tank, by selecting the 3- D icon (Middle right, above the picture of the tank). Now you will see a screen similar to that shown in figure 10.

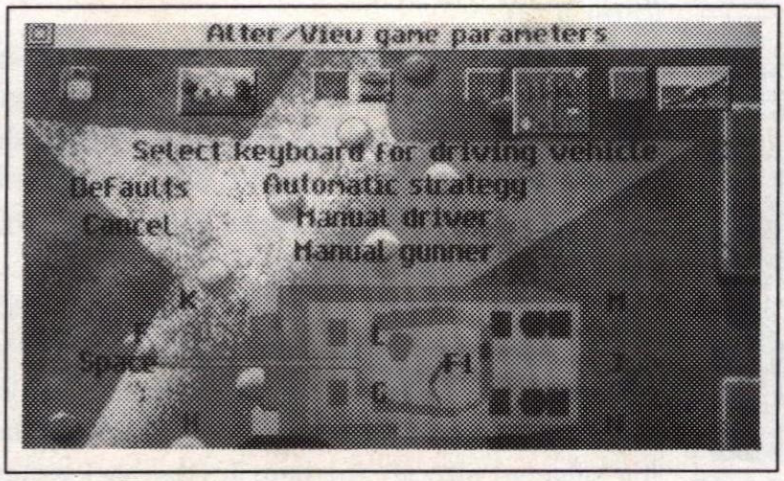
The top area of the screen is reserved for dials, icons and messages. The bottom shows the view from just behind your tank. Note that the game is still paused, so select the pause icon (the Z's in a small square), and the game will start. Your tank will just sit there, until you take control, but you will see, and hear, other tanks manoeuvring close by.

Select the pause icon again (to pause the game again), and now select the map icon (at the top left). You will be shown the main battle map again. Now select the page-of-text (to the left of the 3-D icon you selected earlier).



▲ Figure 10: 3-D View

▼ Figure 11: Vehicle Control



This screen will show you how to control your tank as can be seen in figure 11.

This screen looks complex, but can be split into three sections. At the bottom is a plan view of a tank, facing left. Around this picture are letters in black, which are the keys to control your tank. Thus H and K will drive both tracks forwards (making the tank go forwards). Pressing just one key (whilst in the 3- D view) will make the tank turn. M and N have the opposite effect, and make the tank go backwards. L and G turn the turret, F and; elevate the gun and the space bar will fire the gun. You can alter any of these keys if you wish by selecting the key to alter (with the mouse). That key will be printed in red. Now, touching a key on the keyboard will change the key, and make the next letter red. Select the "Cancel" or "Defaults" to put the keys back to their original settings.

The middle of the screen has options for how much of the tank to control (For instance you can decide to be in control of just the turret, by selecting Automatic driver).

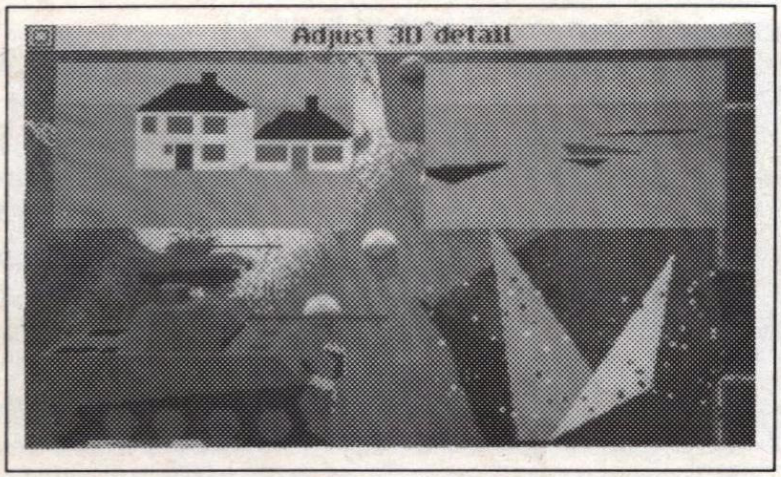
At the top are a row of icons. The floppy disc icon at the left allows you to save the new options to disc, so that they will be remembered in future. Next to this is the 3-D icon again. This time though, it means "Adjust 3D detail". If you select it, you will be shown this a screen similar to that depicted in figure 12.

If your machine is slower or faster than average, then you can change aspects of the 3D view to either show more detail (and thus slowing down the 3D animation), or show less detail (and speeding up the 3D). Selecting quit will take you back to the battle-map. You are now ready to start playing the game. Select the tank that you want to drive on the map (the default is one of the M36 GMCs). Now select the 3D view icon, and select the pause icon (to start the game). Use the keys on the keyboard to drive your tank, and good hunting!

In the battle, the objective is simply to achieve the upper hand. It could conceivably be that the enemy will retreat straight away because you are too powerful but generally the contest will be fairly even. Once the enemy (or you) start to retreat the computer will take over and finish the battle for you.

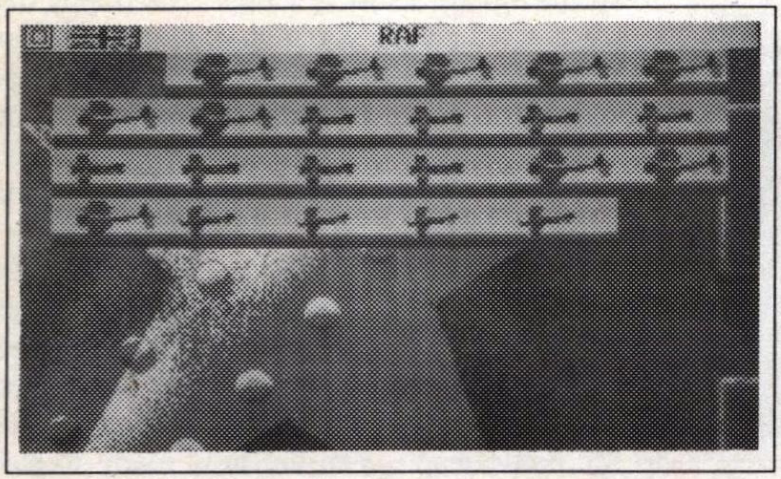
This is important since any retreating side tanks left on the battlefield at the end of the battle will be captured by the victorious group and repaired and used in later stages of the campaign.

At the end of the battle you will be given a rating showing your performance and the outcome of the battle before returning to the main map display.



▲ Figure 12: Adjust Detail

▼ Figure 13: Airfield Selection



On returning, the two groups involved in the battle will both be forced to rest for at least 16 hours (you are advised to leave them until the following morning). This does not mean that you cannot attack with another group however. Using all 3 of your groups plus air support should enable you to wipe out this first Panzer group without too much trouble before moving down to the objective itself.

The objective contains one quite strong group of various different Panzer tanks which are dug in in the centre of the town. This group is also receiving more vehicles constantly from 4 production centres to the north of the town. If you take too long to reach the objective and do not bother to destroy these production centres (by bombarding them from close range) then the group will almost certainly overwhelm your forces. Since this defending group is so strong you would be well-advised to dig in and bombard it with both the land-based groups and the RAF before going in to finish it off.

In order to instigate an air-strike against any group, click on the aircraft icon and then the page-of-text icon to get to the air screen. Select the airfield that you wish to use (in this case there is only one) so that you are faced with. See figure 13.

Now drag aircraft (by clicking on them with the left mouse button and holding the button down whilst moving the pointer to the destination) to the space in the top left of the screen. This will mark the selected aircraft for launch (the background will be displayed red). When you have selected enough, return to the main display area and click on the airfield to select it. When selected, you can click with the RIGHT mouse button on the area that you wish an air-strike to target and the marked aircraft will take off and bombard the selected area. Note that the computer will often call up automatic air-strikes throughout the campaign.

Finally

Once you have completed the default map try entering the editor (click on the scissors), loading in the default map and examining the way that it is set up. This should give you the best understanding of what is going on. Refer to the editor section in the manual.

The Campaign System

There are three main sections to the campaign system. These consist of **Campaign, Battle & Map Edit**. The campaign section is where the system starts. Initially, the campaign will have a default map, but you can select a different one from the disk if you wish. At the top right of the screen are some icons for saving and loading maps. Select Load Map, and a dialogue box is shown with a list of storage devices. The display only shows devices, directories and files that end in ".map". Selecting a ".map" file will load it into the game as the campaign map.

Using The Campaign Map

The campaign map is displayed on the left-hand side of the screen, and the icons for controlling it are on the right. The map shows the entire area over which the campaign can be fought. The map display can be scrolled in all directions by using the scroll bars at the right and the bottom of the map. Also, areas of the map can be studied in greater detail by selecting the Magnifying Glass icon. When this is selected, and the pointer is on the map display, then the left button will zoom in and the right one will zoom out.

The maximum zoom level is 1 screen pixel represents 100 x 100 metres. All campaign maps have an overall scale, which can vary from 25 km square to 3200km square. The smallest maps cannot be magnified, as they are already at maximum resolution.

The large slider two thirds of the way down on the right hand side is used to alter the speed of execution of the campaign. The default is half-speed, but this can be slowed down if required. Another way to speed up execution is to click on the clock-face icon with the left button. This causes the game to skip through until a message is displayed, whereupon it updates the map and returns to the previously selected speed. This is especially useful during the campaign night.

▼ A bren-gunner, Private W Wheatley of "A" Coy, 6 Durham Light Infantry, 50 Division, giving supporting fire from the ruins of a house in Douet, 11th June 1944



Groups

Armies contain groups, and groups contain vehicles. The campaign map display shows the positions of known groups. Red groups are enemy groups, yellow groups are friendly, and the cyan (light blue) group, if there is one, is the current friendly group. The lines (if any) connect the group to its destination. Friendly groups can be selected by clicking on that group (first ensuring that the magnifying glass is off). A message

General George Patton was thinking about retiring from the cavalry when the Germans invaded France. Thereafter, he played a leading role in North Africa, Sicily, France and finally Germany.

describing the selected group will appear, and the map will redraw with the current group in cyan. Now the right button will give the current group a destination as described earlier. As soon as the game is started (by deselecting the pause icon), all the groups will start moving towards their destinations.

Groups can be either resting or active. Groups start off active, but will rest after 8 hours continual action. They need to rest for 16 hours before being able to be active again. Resting friendly groups are shown in grey to distinguish them from active ones, and will ignore any orders given to them until they are fully rested. Note that enemy groups are always shown in red, regardless of activity level.

Each campaign move takes five minutes of game time. Groups will start moving as soon as they can, but must rest for sixteen hours out of every twenty four. They will normally start at 9:00 AM, and stop at 5:00 PM. Night moves are possible by giving an order at night to a fully rested group. They will then move for up to eight hours, and then wait for at least sixteen hours before moving again.

Battlegroups can contain six different types of vehicle; tanks and other offensive vehicles, anti-tank, engineer, spotter, artillery and infantry.

- *Anti-tank vehicles* include tank destroyers/hunters, as well as towed anti-tank guns.
- *Engineers* can be used to lay/sweep minefields.
- *Spotter vehicles* can call up artillery fire from other nearby groups.
- *Artillery vehicles* include self-propelled guns (SPG) as well as more conventional towed pieces. These are generally used for indirect fire (where the enemy cannot be seen directly).
- *Infantry vehicles* are included for completeness, although individual soldiers are not represented in the game.

All groups have support vehicles (which are not shown). These carry spare fuel, ammunition and repair workshops. Whenever a vehicle runs out of fuel or ammunition, it is automatically topped up from the support. Also, repairs are handled automatically by the same system.

Vehicles in the Groups

The vehicles in a single group can be examined by selecting the group then the "page of text" icon. All groups of one type can be viewed by selecting the type of group (land, air or sea), and then the "page of text" icon. If you select the type icon, then you will be shown a full list of all friendly groups of that type, together with a status face which reflects the whole group, and also a symbol showing the current orders for the group.

The status face can be shown in either yellow or cyan. Yellow means

"Automatic Strategy", and cyan means "Manual Strategy". In automatic mode, a group that has reached its destination will choose a new one. Manual mode will make that group stop and ask for a new destination.

The orders for a group are automatically set to "move" when a destination is chosen on the map, and can be changed here to "stop" or "dig-in" by clicking on the orders icon. Note that the only way to select "move" again is to give the group a new destination on the map. Selecting the name of the group will show the vehicles.

At the top left of the vehicles screen is a flag for the nation that the group belongs to, and in the centre at the top is the name of the group. Selecting any vehicle will show a full page picture of it, together with some statistics, and also individual status (smiley face, ammunition, fuel and group orders). One can display the next/previous vehicle in the list by using the arrow icons above the status face. To quit back to the previous page, just select the double square shape at the top right-hand corner.

If the group consists of aircraft on an airfield, then a small cross will appear at the top left, under the flag. Aircraft in the group can be dragged to the cross to mark them for inclusion in the next group to take off, and the cross can be dragged back to a marked aircraft to remove it from this sub-group. Aircraft are shown as being marked by using a red background.

▼ US Troops of the besieged garrison at Bastogne loading supplies and ammunition carried by the glider to a field near the town. The foxhole in the foreground is for the artillery unit protecting the town.



In this way one can examine and alter all aspects of the friendly forces. Enemy forces are only displayed when they come in range of any friendly groups. The range that groups can be seen over depends upon a number of factors, including numbers of vehicles, types of vehicles, whether they are moving, stopped or dug-in, etc. Thus a group containing just one stationary Jeep will only be visible from a very short distance, whereas ten battleships steaming at full speed will be visible from a greater distance.

Once a group has been spotted, its last position is remembered for one game hour, after which it disappears until it is seen again.

Note that the enemy's view of the world is calculated in the same way, so your moves are hidden until spotted. Of course, he may spot you before you spot him, so one should be aware of this.

Factories and Convoys



▲ American artillery being moved through Evezee, January 1945

Logistics (supplying the army in the field) plays a large part in any campaign. It allows you to keep going after your initial fuel and ammunition are used up, and to replace destroyed vehicles. For this purpose, factories can produce any vehicle (larger vehicles tend to take longer to make) as well as fuel and ammunition refills. Fuel and ammunition have been simplified in the interests of expediency. All vehicles have a known fuel consumption, and a refill will always completely top up the fuel state. Ammunition is similar, with each vehicle having a maximum number of rounds carried.

Each factory will make its designated product (from 9:00 to 5:00 each day), until a preset limit has been reached. Then it creates a convoy to transport the batch of items to the field. This convoy will head for the destination of the factory, which is why factories have destinations. The convoy will drive along the route specified, until it either reaches the end or a friendly group has come within 2km. As soon as a friendly group arrives, it will relieve the convoy of its contents. Convoys can be attacked at any point by the enemy, and will not return fire, since the vehicles are not battle ready when in convoy. Thus it makes sense to either have convoy destinations well behind the front line, or to escort them.

The product that the factory makes can be changed (select the product name in the factory list). A penalty is attached, depending on what the change is (one light tank to another is simple enough, but to convert to making fuel is quite difficult). Also the number to make before creating a convoy can be adjusted. Factories can also be damaged by enemy action, and will repair at 1% per game hour. The factory will only produce if it is entirely undamaged. 100% damage removes the factory from the map.

As the game time progresses, new equipment will become available, and factories can be converted to build the new vehicles. This reflects the continuing research and development programmes used by all nations. One disadvantage of new equipment is reliability. All vehicles can break down, but equipment that has only been available for the last year is more susceptible to failure. This simulates new designs requiring combat experience to put right all the teething problems that inevitably occur. (In case it is thought that quadrupling the chance is too high, bear in mind that the first time the German Panther and Tiger tanks were used, more broke down than were lost to enemy action!)

Ending Campaigns

The campaign system will continue issuing battles when they occur, until one side admits defeat. This happens automatically, and is calculated by comparing the total number of vehicles on each side. This calculation is performed after every battle (automatic or manual).

Another way to win (or lose) is if the campaign map has a geographical objective on it. These are shown as a white and black vertical bar pattern. If either side uncontestably holds their objective (ie no hostile forces are on it, and yet friendly ones are), then the campaign is terminated with an appropiate message, and the standard synopsis page is then displayed. Even if an objective is defined, the game can still be won by reducing the enemy to one quarter of your forces, and vice versa (as normal).

The Battle System

Each group has three ranges: visibility, artillery fire & battle distance. Visibility has been discussed earlier. Artillery fire is the range of the various guns in the group (If you select a destination for a group that is within its artillery range, it will ask whether you wish to move to the destination, or to shell it.). Battle distance is a fixed value of 2km for land-groups, 20km for sea-groups, and 20km for air-groups.

If an enemy and a friendly group get within the battle distance for either group, then a battle is signalled. Note that incompatible groups cannot battle. Sea and air battles are automatic, whereas land battles can be either manual or automatic. Initially an approximate disposition of the opposing forces is shown before battle is joined. The screen is split into quarters, with the top half being before the battle and the bottom after, and the left being the friendly force and the right the enemy force. The forces can be analysed, and then selecting the quit box starts the battle. If this is a land battle, a dialogue box appears asking whether to play it automatically or manually. Automatic means that the two forces will choose targets within the opposing force, and shoot at each other until one side decides to retreat (or is destroyed).

Manual battles are played through using the other main section of the game, the Battle section.

▼ Reconnaissance troops of the 83rd US Infantry Division in the Belgiun village of Bihain.



The Battle Map

The display will now show a maximum resolution (unzoomable) map where the battle is to be played out. The right is an icon area, as before. The flashing dots on the map represent individual vehicles (tanks, trucks, etc.). Selecting a new vehicle will show a picture of it on the right, together with its status underneath. Selecting the picture will show a full screen data sheet for the vehicle. Each time the orders icon is selected the current value alternates between "Stop" and "Dig-in".

To make a vehicle move, give it a destination (in the same manner as at the campaign level). Battle destinations are shown with an X.

The flashing dots on the map are of differing colours and shapes;

- *Yellow shapes* are friendly vehicles not directly under your control (drones)
- *Red shapes* are enemy vehicles.
- *Cyan shape* is your current vehicle.

The various possible shapes are:


Large square (4 by 4 pixels) is for heavy tanks.


Medium square (3 by 3 pixels) is for medium tanks.


Small square (2 by 2 pixels) is for light tanks.


Triangle (1, 3, 5 pixels) is for trucks and guns.


Cross is for aircraft flying over battle area.


In addition to the shapes, all vehicles have a direction indicator positioned on the appropriate face of the shape, which shows the direction that they are facing.

When the vehicles are alive, the shapes will flash, and when dead the shape will remain permanently on (until it is removed by the computer). Dead vehicles are removed so that new reinforcements can come on, since there is a limit of sixteen vehicles on either side fighting in the battle, and this includes dead vehicles.

As in the campaign map, each vehicle has a visibility rating, depending upon size and speed. Vehicles remain hidden to the other side until they are spotted, whereupon they remain visible until a short while after they have gone out of range. The visibility rating is updated whenever the vehicle changes state (Moving/Stopped/Dug-in).

The battle-map is not generated directly from the campaign map, but is given "hints" by the main map as to whether the battle area is built up, coastal, mined, etc. Also, the system knows which type of battle it is, out of three possible types: offensive-offensive, where both groups moved towards each other, defensive-offensive and offensive-defensive, where one group has run into the other when it is stationary. Defensive-defensive battles are assumed never to occur.

If either side is defensive, then they can place their vehicles freely on the battle map. Offensive groups can only start near their respective base lines.

▼ US soldier studies the track of a German Panther tank near Manhay, Belgium



Battle Vehicles

The battle map is always arranged so that the enemy starts at the top, and the player at the bottom. These are the base lines. Any vehicle that crosses its line is sent to the reinforcements. Up to sixteen vehicles can take an active part in the battle, with the rest of the group waiting in the wings. The entire group list can be called up by using the "View <group name>" icon. Now the screen shows the individual units in the same manner as in the campaign, but with extra information. Battle units are marked (by having a red background), and reinforcements are shown with a normal sky/ground backdrop. In addition, the marked vehicles can be linked into sub-groups.

The sub-groups are shown with a small coloured circle at the top right of each vehicle. Up to four sub-groups can be created like this. The initial deployment is for all heavy tanks to be in one sub-group, mediums in another, lights in a third, and trucks and guns in a fourth. These defaults can be changed by dragging vehicles to an undefined area (say the left or right margins) to remove them from any sub-group, or alternatively one can drag one vehicle to another to link them into the target sub-group. Sub-groups mean that if any vehicle in a sub-group chooses a new destination, then all the rest of the sub-group will change their destinations to be near the first one. Thus one does not have to instruct all vehicles independently, although this is possible.

Stalingrad in 1942 saw the defeat of the German Sixth Army under General Paulus. 280,000 men were encircled, of which 91,000 surrended. It was one of the worst disasters for the Germans during the war.

Reinforcements can be brought into the battle by dragging the vehicle to the map icon at the top left hand corner (up to a limit of sixteen vehicles). Selecting the map icon will quit back to the battle map display. Any attempt to put more than sixteen vehicles into the battle will be ignored.

Before the battle is unpaused, the vehicles can be moved about to different starting positions. To do this, select and hold down the button over a vehicle on the map. After a short time, the mouse pointer will change to a tank shape. Now one can drag the vehicle to somewhere else on the map and let go. Illegal positions are ignored (eg on top of a tree). Also, trying to move beyond the front line causes the vehicle to move up to the front line, at the same point along the horizontal axis as the pointer. Dragging a vehicle to the base line sends it to the reinforcements.

Minefields

If there are minefields on the battle map (because the battle area of the campaign map was mined), and your group is defensive, then it is assumed that they are your minefields. You are allowed to reposition them on the battle map, before the battle is started. Select the minefield icon (skull and



▲ British paratroops of the 1st (Br) Airbourne Division in their aircraft during the flight to Arnhem 17th September 1944. They had the toughest assignment of the operation, the capture of the bridge over the Neder Rijn at Arnhem. Despite the fact that they managed to seize control of the horthern end of the bridge, German resistance by SS Panzer Division was too strong. The British Armoured divisions arrived too late and on 25th September the surviving members had to be evacuated.

crossbones symbol), which is initially at half intensity, and now when you select areas of the battle map, you will pick up the nearest minefield. This can now be dragged to any area of grass (forest, houses, roads, etc. cannot be mined) and dropped.

Coastal Invasions

Coastal land battles against a defensive force will involve a sea-borne invasion, with any non-amphibious vehicles being put into landing craft. These will sail directly for the shore, and unload their vehicle. To re-embark, you must reverse back onto the landing craft. Then it will automatically turn around, and sail back to the base line.

Towing Guns

Towed guns can be towed by appropriate limbers. Each vehicle has a weight and a towing weight. Limbers may not tow guns heavier than their towing weight. There are two ways to move guns in the battle.

The first is to manually drive a limber near a gun, and hold down the "J" key (this key can be changed - see the "Defining Command Keys" section). When the two vehicles are close enough, the weight of the gun will be compared with the towing weight of the limber, and if they are acceptable, then the gun will attach itself, and the limber can be driven as normal. To disconnect the gun, hit the "J" key again.

The other way to move a gun is to select it on the map, and give it a destination. The nearest appropriate limber will then drive towards the gun, limber up, drive to the destination given, and unlimber.

3-D View of the Battle

The "view from unit" icon shows a 3-D view from the currently selected vehicle. The battle can be viewed from any vehicle by selecting it on the battle map, and then selecting the "3-D view" icon. The map icon at the top left of the 3-D view will return to the battle map display.

The various icons at the top of the screen are for the current vehicle. The shell icon shows whether the gun is able to fire, or whether it is being

reloaded. The larger the gun, the longer it will take to reload. The size of a gun is roughly proportional to its maximum armour penetration. The icon will go to half intensity immediately after the gun is fired, and will remain like that until reloading is complete. The sound icon and pause icon work as in the rest of the game, as do the status face, ammunition and fuel icons.

The status face presents an easily assimilated damage report about the current vehicle. The face will become progressively sadder as more damage is inflicted upon the vehicle, eventually turning very sad when the vehicle is destroyed.

The ammunition icon shows how many shells are left from the original amount. The four shells steadily lose their warheads as the total declines to seven eighths, five eighths, three eighths and one eighth of the initial quantity.

Fuel works in a similar manner to the ammunition icon, with the level of fuel in the can representing the proportion of a full tank.

The radar area consists of a circle, with a green line and some dots. The green line is the current direction of the vehicle (with North being up), and the dots are other vehicles in the usual colours (yellow for drone player vehicles, red for enemy, and cyan (always in the centre of the radar) for the player vehicle). Note that 'type of vehicle' and 'direction' indicators would clutter the radar display, and so are not shown.

In the middle at the top is a large white space. This is used for messages from your drone vehicles (such as "<drone vehicle> has seen <enemy vehicle>"). This can be useful if your forces are probing forward and waiting for contact to be made. All messages (eg information messages about icons) will appear in this space.



▲ U.S Troops come ashore at Normandy.

AMIGA A1200 USERS
Due to keyboard mapping differences with the A1200, we suggest you re-define the following keys for control;

Y - LT track forwards
N - LT track backwards
K - RT track forwards
L - RT track backwards
5 - Rotate turret/gun anti-clockwise
0 - Rotate turret/gun clockwise
6 - Depress gun barrel
9 - Elevate gun barrel
SPACE - Fire gun

Driving Vehicles

The vehicle can be driven directly from this view, by selecting pause (thus starting the game), and then using the following keys to control your vehicle;

H	Left track forwards	K	Right track forwards
N	Left track backwards	M	Right track backwards
G	Rotate turret/gun anti-clockwise		

[L] Rotate turret/gun clockwise

[F] Depress gun barrel

[;] Elevate gun barrel [SPACE] Fire gun

The first five keys in the list are the most useful, with the other four falling naturally to hand if the left hand is used for the left tracks, and the right hand for the right tracks. (Position the first finger of each hand on the backwards track keys and the other digits will automatically rest on the remaining keys.) Both thumbs can then use the space bar to fire the gun (if there is one). In order to drive forwards, press both forwards track keys. The vehicle will now build up speed until it reaches its maximum. Driving on roads will increase the maximum possible speed. The game includes momentum, so that the vehicle will slowly coast to a halt if all the keys are released.

To turn, release one of the forwards keys. To turn sharply, release the forwards key and press the backwards key (for the same track) of the side that you want to turn to. In order to turn on the spot, select the backwards track on one side and the forwards track on the other. To brake the vehicle, release both forwards keys, and press both backwards keys, until the vehicle has slowed down enough. If you continue to hold down the backwards keys after the vehicle has stopped, then it will start going backwards (up to one quarter of forwards speed). Again, to stop going backwards, press both forwards keys instead.



▲ American ambulance carrying wounded from front line passes a knocked out German Tiger tank that is being repaired before being transported back to the United States.

Firing Guns

The gun (if there is one) can usually fire two different types of shell. These are high-explosive (HE) and armour-piercing (AP). The two different shell types are appropriate for different kinds of target. AP shot is used for armoured vehicles, HE for unarmoured ones. Note that British two pounder and six pounder guns can only fire AP shells.

AP shot works by using the kinetic energy of the shot to punch a hole through the armour of the target. This energy falls off over distance, therefore the maximum penetration of the shot decreases over distance too.

HE shot works by detonating an explosive in the shell on impact. Thus distance travelled is not important, since the detonation will occur at any speed. AP shot would go straight through an unarmoured target, and HE shot



▲ Residents of Avranches stop to watch vehicules belonging to a US armored unit move through the street. Some of the destruction caused by the shelling of the town preceding its capture can be seen in the background.

would be deflected by the armor of an armored target, hence the need to use the correct type. All vehicles have an HE defence value (which is based upon bulk, so that larger vehicles have greater HE defences). HE attacks are cumulative, unlike AP attacks. The choice of whether to fire HE or AP is made by the computer, depending upon the target.

Reloading and Tracer Shot

The gun cannot be fired whilst it is being reloaded. The larger the gun size, the longer it takes to reload. If you try to fire during reloading, an instantaneous tracer shot is fired from a co-axial machine gun. This can be used for targetting the next shot, since the tracer bullets behave exactly as if they were a shell, except that they cannot destroy anything.

Gun Traversing

Not all vehicles have a turret, or even a gun. Some have a gun in a limited traverse mount. Most turreted vehicles (including tanks, armoured cars, and some half-tracks) will turn through 360 degrees, but other vehicles (mainly self-propelled guns) will only be able to traverse through a limited angle before reaching the end stop. Note that the leftmost position is not necessarily the same as the right-most limit. Vehicles with no traversing ability will ignore the traversing keys.

Initially, when the turret is traversed, the view will track the turret (so that the hull of the vehicle appears to rotate in the opposite direction under the turret). This can be changed so that the view will stay with the hull by pressing F1. Pressing it once more will again lock the view to the turret. Thus the view can be biased to the gunner/commander or to the driver, according to preference. When the turret is facing dead ahead, then it does not matter which view is selected, since they are both the same.

Gun Elevation

The gun barrel can be elevated or depressed to compensate for the angle of dip of the hull, and again the limits (maximum and minimum elevation) vary from vehicle to vehicle. If the vehicle is at an angle (eg climbing out

of a shell crater) then the gun barrel elevation might need to be adjusted to achieve the required trajectory. Also, if the gun is depressed below horizontal, then the maximum distance of the shell will be shortened, because it will hit the ground before running out of energy.

Changing Parameters

All of the keys mentioned above, and various other player parameters, can be altered by selecting the "page of text" icon in the battle map display. Now the screen changes to show the current states of various things. At the top is a row of 8 icons. The first one will save the current states. These are automatically loaded at the start of the game. The second one allows various aspects of the 3D view to be altered. This will be described later. The other three pairs are for automatic or manual control of reinforcements, air strikes and artillery bombardments.

Reinforcements

In July 1944, Adolf Hitler was almost assassinated. The "July Bomb Plot" made Hitler suspect everybody, and Rommel was forced to commit suicide by Gestapo.

Automatic reinforcements means that when a spare battle slot becomes available, the best vehicle in the reinforcements list will be brought onto the battlefield. Each vehicle has a value associated with it, based upon armour, firepower and speed. In this way, the vehicles can be compared and the best one (the one with the largest value) selected. This is how the computer knows which vehicles in the battlegroup to place in the battle initially. Manual reinforcements means that it is up to the player to bring on reinforcements when they are needed.

Air Strikes

Automatic air strikes allows the drone vehicles to call up air support from the nearest airfield to the battle. This means that if a vehicle spots something that it cannot attack directly, it has the option of asking for an aircraft to take off from a nearby airfield in order to attack the enemy.

Manual air strikes can be set up from the battle map display as follows:

Use the right mouse button to ask about the airfield. Now, whilst holding down the right button, move the pointer over the bottom line of text (giving the number of particular types of aircraft) in the message, and select it (with the left button, keeping the right one held down). In this way, one can see the contents of the airfield by repeatedly selecting the aircraft type until the

correct one appears. Now, releasing all mouse buttons will end the aircraft pre-selection. Drag the aircraft icon to the map (the pointer will change shape to confirm that an aircraft is ready), and release the button over the target area.

Different aircraft types have different methods of attack. Fighter aircraft only attack other aircraft, and so are used to shoot down spotters, etc. Fighters stay over the battlefield until shortage of fuel forces them to return to their airfield.

Bombers will fly to the target area, drop their bombs and return. Spotters just circle over the battlefield showing the positions of any enemy that they see, until their fuel runs low.

Ground attack and dive bombers fly to the target and then look around for hostile vehicles to attack. They will continue hunting and attacking until lack of either fuel or ammunition forces them to return to base.

The number of aircraft in the air at any one time is restricted to four per side. The airfield from which the aircraft emanate might be a long way away, with the aircraft having to fly the whole route. This means that they may take some time to arrive. The faster aircraft will arrive over the battlefield quicker, of course.



▲ SS man inspects captured 2.0cm AA weapon. Quad 50 cal M.G.'s in Maxim mount. 1st US Army 413 AAA Bn.

Artillery Fire

Automatic artillery is quite similar to air strikes, except that there is no choice as to which vehicles to use. The nearest group capable of indirect fire is used to provide artillery backup and can be called up by dragging the artillery icon to the target area. If there is no group capable of artillery support in the vicinity, then a message will be issued accordingly. The shells will arrive shortly afterwards. Artillery shells do not need to score a direct hit to damage targets, since they are high-explosive, rather than armour-piercing.

Each vehicle has an HE defence value, so that the vehicle will remain unharmed until that value is reduced to zero, whereupon it will be destroyed. Each high-explosive shell has an HE offence value, which depends upon the type of gun (heavier guns fire larger projectiles, with correspondingly larger HE attack values). All the guns in the artillery group will fire once at the target area.

Altering Vehicle Control

On the player parameters page is a line of text describing the current method of driving the vehicle. The default is from the keyboard, but a pair of joysticks can be used instead. When joysticks are selected, the mouse is disabled (since one of the joysticks will occupy the mouse socket). Either joystick will move the pointer, and the left and right fire buttons simulate left and right mouse buttons.

Changing the Gunner

Also on the player parameters page is a line saying either "Manual gunner" or "Automatic gunner". Manual means that you have control of the turret, whereas automatic means that the turret will line up on any enemy vehicles as they come into range, and the gun will fire when lined-up. All drone vehicles (and enemy vehicles) have automatic gunner set.



▲ Russian and United States soldiers rest on the banks of the Elbe following the link-up between the US 1st Army and the Russian 1st Ukrainian Army at Torgau sixty miles south of Berlin, 25th April 1945

Changing the Driver

The player parameters page also has a line for the driver. Manual driver means that you control the direction and speed of the vehicle, whereas automatic will drive to the selected destination (or stop or dig-in, depending on the last order). Again, all drone vehicles and enemy are always in automatic mode.

Strategy Selection

Automatic strategy means that as soon as a vehicle reaches its destination, it will choose another and start driving towards it. Manual means that it will issue a message to the player, asking for a new destination and then stop. Enemy vehicles are in automatic mode the whole time.

Defining Command Keys

The bottom half of the player parameters screen is occupied by an overhead view of a German Panther tank, with various letters drawn at

certain positions on it. These letters are the keys used for (manual) control of a vehicle from the keyboard. The current key is the one drawn in red. As soon as a key is pressed, the current key is updated, and the next key in the list is drawn in red. The positions of the letters on the tank indicate what they will control (the right mouse button will describe their function). The current key can be changed by selecting the new letter. In this way, all the keys can be altered to suit personal taste.

Finally on this page are two other labels, Cancel and Defaults. Cancel ignores all changes that have been made since selecting this screen. Defaults sets all options to their starting values. Note that the states of the options will be remembered until the machine is reset.

Adjusting 3-D Detail

The Adjust 3-D Detail icon appears on the player parameters screen. Selecting this changes the screen to show four different aspects of the 3-D world. From top left, these are Village complexity, quantity of ground patches, detail on objects and explosion types.

Setting all these to the simplest options will speed the game execution up when viewing the 3-D world. Thus speed can be traded against quality to get the best compromise for your machine. Machines with faster processors can set everything to complex and enjoy full speed, but for most computers a compromise is necessary. These things can be altered at any time during the battle, and will also be remembered by the program until a system reset.

▼ One of the refabricated Harbours goes to France. Air photograph of artificial harbour formed by shipping off the Normandy coast.



Villages (which are used whenever a battle is fought in a built-up area) can vary from simple to complex. Ground patches can be used to give a sense of motion when driving, and is otherwise ignored by the program. Detail on objects can vary from none at all (so that just the shell of the vehicle is drawn) through to full (so that the detail of all things is drawn even at long distances). Explosions can have dust and smoke particles drawn if preferred, or just the flash.

The Germans topped all tank development with the Maus. This was never completed, but would have featured a 170mm gun, with a co-axial Panther gun in a fully rotating turret. This had up to 240mm of armor and weighed a staggering 188 tonnes!

Increasing the Speed

One of the icons on the battle map display is a right pointing blue arrow. This icon can be used to speed up the battle when in the map mode. The current player tank is temporarily put under automatic control, and all action proceeds faster. (There is normally a delay to make the map mode run at the same speed as the 3-D mode.) Selecting this icon changes it to a fast forward symbol. Using the 3-D view or re-selecting the icon will revert to normal speed animation.

There is no actual necessity to use the 3-D mode, since the vehicles can be driven about in the battle map display using the control keys. If this is done, then messages will appear in the centre of the screen for 10 seconds, or until a mouse button is pressed.

Renovating Vehicles

Repairs, refuelling and re-arming can only be carried out when behind the lines in the reinforcements. Thus, if a vehicle is running low on fuel, it is wise to retreat and refuel, to avoid the vehicle will becoming stranded until the conclusion of the battle.

Retreating

The running man icon is for retreating (and ending the battle). When selected, this shows a dialogue box asking for confirmation, since the retreat sequence is not interruptable. The enemy will automatically retreat when they decide the odds favour the player too much, and they will advise you to retreat when the opposite occurs. Note that the calculation involves adding up the values for each of the vehicles in the battle (not reinforcements); this calculation is performed each time a vehicle is destroyed.

The retreat option causes the screen to show the battle map, and disables

the mouse buttons temporarily. The vehicles all head for the base line. The retreat phase lasts for a limited time after which any vehicles that have not reached the safety of the base line are captured by the victor. Also, the victor will be able to retrieve stranded friendly vehicles. Whilst retreating the full battle system applies, so that vehicles can be shot at and can defend themselves, although without player intervention.

Ending Battles

At the conclusion of the battle, the screen shows a summary of the battle, and you may be awarded you a medal if you deserve one. Pressing either mouse button now will reload the Campaign section, and show a battle synopsis, with a layout of the forces before and after the battle. Selecting the quit box from this battle page will return to the main map display, with pause enabled, so that you can consider your next move.

▼ Overturned German Panther lying in a village near Manhay, northern flank of salient.



Campaign Map Editor

The game features a map editor to enable you to create new campaign maps and to alter existing ones. The static landscape (ie lakes, road, hills, rivers, etc.) of a map can be altered, as can all aspects of the groups. To start editing, select the scissors icon on the campaign map screen.

The first screen that you are presented with shows the same map as before (but without the battlegroups), but with a different set of icons on the right hand side, which are used for altering the static landscape. These are activated by clicking on a marsh, wood, town, etc. icon. The icon will now be shown with a red box around it.

Moving the pointer over the map and pressing the left mouse button will draw a blob of the selected landscape on the map. This is similar to many paint packages available for your computer, and so will probably seem quite familiar. To erase an area (ie to return back to grass), use the right mouse button.

Drawing Roads and Rivers

Not all of the icons work in the manner described above. Roads and rivers are laid down on the map as a sequence of straight line segments. Thus, to use these, select the appropiate icon as before, and now move the pointer to the map. Press, and release, the left button to start a road (or river). Now move the pointer to the next road position, and repeat the process. A line will be drawn connecting the two points that were clicked on. Continuing the road is simply a matter of selecting further positions along its path. To terminate a road (or river), select any scenery icon (including road). The right mouse button will remove segments of road starting at the last one, and continuing until everything is removed.

▼ American 8in Howitzer traverses open fields to first US Army front. Roads rendered impassable by snow and ice.



Drawing Hills

Hills work in yet another manner. Selection is the same as before, but the hills are not just painted onto the map. Instead the map surface is treated like a sheet of rubber, which can be pulled up to form a peak, or pushed down to form a depression. From the map screen select the "Adjust Heights" icon. Now move to a blank area of map, and press the left button. The area around the pointer will



▲ Troops of the 424th Infantry Regiment US 106th Infantry Division were positioned around Medell, Belgium. This GI stands guard at the edge of a snow covered field. Medell is located NW of St Vith and SW of Bullingen, and was cleared of enemy by 29th January 1945

change colour, in a sequence of expanding circles. These represent different heights in a similar manner to contours on a map. The right button will push down areas, all the way to sea-level if desired.

The maximum and minimum allowed heights can be altered by using the two horizontal lines immediately to the right of the Adjust Heights icon. Dragging the bottom line upwards will alter the minimum height (ie the amount below which you cannot go any further using the right button), and the top line will alter the maximum height for the left button.

Information Associated with the Map

The "page of text" icon to the right of the Adjust Heights icon is for editing the information about the map, such as its climate, game start time, etc. Clicking on the icon will produce a large dialogue box in the centre of the screen. This shows six main headings.

- *"Time & Date:"* is the game time, and to alter this, move the pointer to the aspect to change, and click with the left mouse button. This will advance the selected section of the time.
- The *"Map Title:"* is a 19 character field for a more descriptive name for the map than the filename. Move the pointer to the area after the heading and type a new title. Any previous title or mistake can be removed by the Delete key on the keyboard.
- *"Climate:"* can change between Temperate, Tropical and Desert. This affects the colour of the map, and also a scenery icon.
- *"Map Size:"* is the scale of the map when fully zoomed out. Changing this will alter the area that the map occupies, and rescale all map features accordingly. The smallest area is 25 x 25 km, which is 625 square kilometres. The largest is 3200 x 3200 km, which is approximately 10,000,000 square kilometres! This means that the map can be set to the appropiate scale for the campaign, even if it is just a single island, or a continent.
- *"Current Map Size:"* and
- *"Maximum Map Size:"* are for information only, and cannot be adjusted. The values show how much memory (RAM) is available for the map. NB the amount of memory required for a map is dependent upon the level of

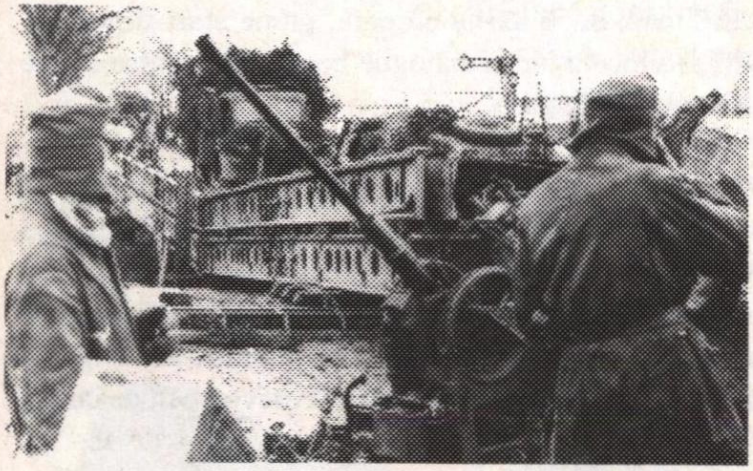
detail in the map, not the map scale, so that it is perfectly possible for a detailed 25km map to occupy more memory than a 3200km one.

The dialogue box will prevent all other icons on the screen working, as you would expect. Use the quit box at the top left of the dialogue area to remove it.

Minefields

The minefield icon (a skull and crossbones) allows any area on the map to be mined. Simply paint with the pointer in the same manner as for normal scenery. The map will show black for any mined area, but the underlying detail will not be lost - to prove this use the right button to clear the mines, and you will see that the map will be redrawn with the original colours. Mining roads will work correctly, even though the map update will remove the road from the display until the full map is next redrawn.

Objectives



▲ This US Army Engineer built bridge was found by the Germans during their counter-offensive and was used to carry nazi equipement.

Objectives are areas of ground that one side can gain to win the campaign. The two sides (Allied and Axis) have independent objectives. One can only see one's own objective, and not the enemy's. This means that scenarios can be set up where only one side has an objective, or where a side has multiple objectives. If all friendly objectives are free of enemy forces, and at least one objective is occupied by a friendly group, then the objective has been attained, and the campaign is over. The larger an objective is, the more difficult it is to be sure that it is clear of enemy forces.

Either side's objective can be set up. The first click on the icon will select it. Subsequent clicks will continually flip the side.

Editing the Groups

To edit the battlegroups, select the "Edit Forces" icon (shaped like a tank) at the bottom right of the Map Edit screen. This changes the icons at the right of the screen, and alters the map so that it now displays groups as well as scenery. The icons under the map save/load area should be familiar from the main game, as should the sound and zooming icons at the bottom. The

remaining three icons are to go back to editing the scenery (small square of jungle), restart the campaign game (mushroom cloud), and a trashcan for removing groups from the map.

Obersturmführer Michael Wittman, in command of a single Tiger 1 managed to stop the entire British 7th Armored Division with 5 minutes of attacking. He just traversed his turret, and drove beside a road, shotting at everything on it. He had already destroyed 119 Russian tanks previously.

Creating Groups

Battlegroups, fleets, airfields or production centres can be created by clicking and holding down the left mouse button when the pointer is over the appropriate icons, and then dragging the pointer (which will change to a tiny tank) to the map. The map will now display a new group at the position that the button was released. This group will be empty, and have the default name of "New Group". Selecting the "page of text" icon will show a full list of groups of the current type, as in the main game, but this time you can change the names of the groups by moving the pointer to the name, and typing. Again, all text typed is appended to the end of the name, so use the Delete key to erase the old name if necessary.

Editing the Contents of a Group

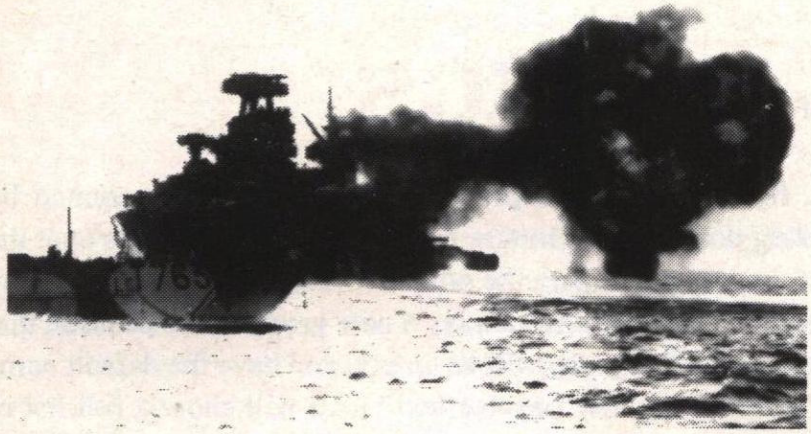
Clicking on the group name will display the contents of the group, again as in the main game, but the screen now has a new icon (a pair of scissors) at the top right of the screen. This is for editing the units in the group. Click on this edit icon, and a new screen will be presented showing two columns of names.

The left column shows all the vehicles that are available for your groups. This list is constructed according to the nationality of the group, the date on the map, and the icon at the top right of the screen. This icon can be clicked on, and any vehicles that match the new pattern of nationality, date and type are displayed in the left column.

The right column shows the contents of the current group, which may be empty. Even the left column may be empty if the date is suffiently early, since not all nations had all types of units in the opening stages of the war.

To add a unit to the group, drag a name from the left column to the right. To remove a unit, simply drag it back again. The pointer will change to a tiny tank during this operation. In some cases, the number of available units or currently selected units will be larger than the space on the screen, and the scroll bars at the right of each column can be used to move through the list.

To see the details of any unit, just click on it and release without dragging, and the normal full page display of the unit will be shown. The nationality flag at the top left of the screen can be changed to allow units from other



▲ While the guns of an American battleship blaze away at enemy targets on the shore, an LCT carrying reinforcements of American troops heads for a Normandy beach-head.

nationalities to be included in the group. This even allows captured units to be included. The French, Italian and Japanese have no units available at all.

Quitting each page in turn will eventually bring you back to the campaign map.

Repositioning and Removing Groups

To adjust the position of a group, click on the target group and hold the button down. Wait for the pointer to change to a tiny tank. Now drag it to the desired position and release the button. To remove a group, drag it to the trashcan icon in the same manner.

Strategies and Tactics

Strategy is the art of controlling multiple forces (groups or units). Tactics are the art of controlling individual vehicles.

Campaign Strategies

These include the grand plan of attack or defense, such as the Schlieffen Plan of World War 1. This grand strategy will require you to consider plans for moving your groups, how you will draw the enemy to battle, and how to cope when things go wrong. A well designed strategy will help to make the battles start more in your favour, and will increase your chances of winning the whole campaign.

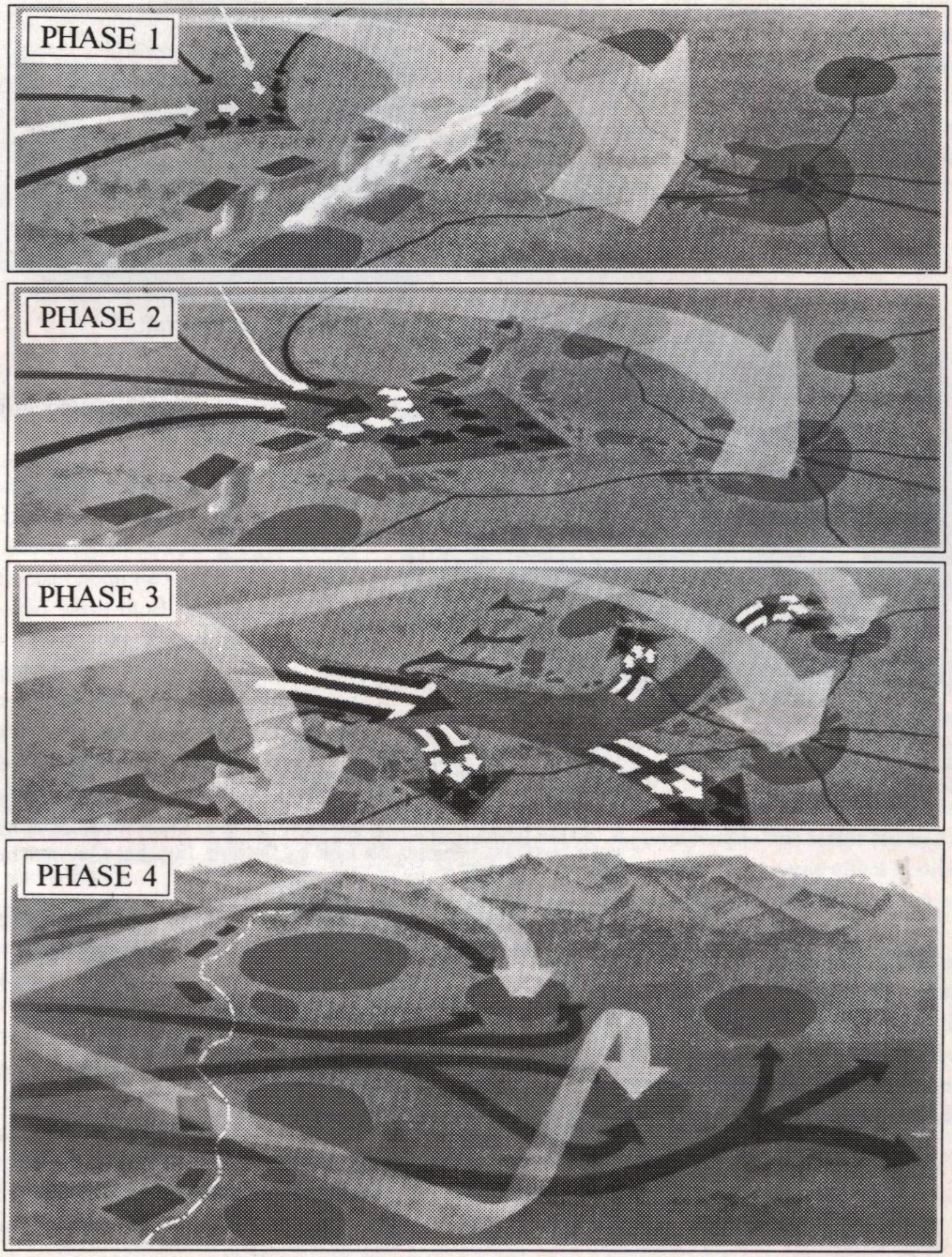
The most famous strategy of the Second World War was "Blitzkrieg" (which is German for "Lightning War"). This has been documented in innumerable books, and a full description is outside the scope of this publication, but basically it consists of using concerted air and land attacks to provide a rapid and powerful punch through the enemy's lines in order to attack them from behind. A diagrammatic explaination is shown opposite.

The Importance of Logistics

Logistics play a vital role in a campaign, and any commander would do well to give due consideration to supply routes to keep his/her groups going. As an example, the war in the Western Desert between the German Afrika Korps and the British 8th Army was largely dictated by logistics. When one side travelled too far from the supply lines, it was knocked out, and could not recover until it retreated back to near the rail heads, whereupon it was able to replace damaged equipment more quickly. Thus, in a fluid campaign one must continually check that the convoys are still reaching their targets fast enough to be useful.

Strategies must also be flexible, so that sudden changes can be accommodated with the minimum of fuss. For instance, you should not rely upon any one thing, such as a factory, or a battlegroup, since that might be attacked from the air, break down or be otherwise rendered useless. Also bear in mind that one can only see an incomplete picture of the campaign area; since one cannot be sure that all enemy forces are visible, it is best to "expect the unexpected"!

Main Phases of Lightning War 'Blitzkrieg'



The Role of Air Support

Synchronising air-support with land battles is difficult, but managing it is most certainly worth the effort, since ground-attack aircraft are extremely effective. As an example the Allies were able to invade France on D-Day mainly due to having complete air supremacy. Air supremacy means that the sheer volume of aircraft available will overwhelm any enemy aircraft attempting to attack. Again, air supremacy was considered absolutely necessary by the Germans before they could invade Britain in 1940, hence the Battle of Britain to crush the RAF. When this failed, they were unable to contemplate shipping their invasion army across the Channel, since the troop carrying ships would have been an easy target for any aircraft.



▲ Two British sailors man their Bofors anti-aircraft gun.

Battle Strategies

Battle strategies are smaller scale than campaign strategies, and do not require logistics. However, a good campaign strategy will ensure that any battle can call upon fast, effective air and artillery support. Both these factors can tip the balance, and make a numerically weaker force able to win. Even without this support, it is still possible to force an enemy to retreat. Firstly, set up the battlefield in your favour. Ensure that vehicles in the same sub-groups start off close to each other. Also adjust the sub-groups until they reflect how you wish to use them. Make sure that the reinforcements are configured as you wish them to be. The game will bring your heaviest vehicles on first by default, but that may not be your plan so adapt the forces until they are right.

If the battlefield is mined, and you are fighting defensively, then ensure that the minefields channel the enemy towards "killing grounds". The simplest way to do this is to have a line of minefields, with a gap. Behind the gap, site one or more dug-in anti-tank guns. The enemy will avoid the mines and will, hopefully, be drawn onto your guns.

Also, remember that defense is a very strong policy. If you are dug-in, it is very difficult to be hit. In addition, you are less visible to an enemy. Finally, firing on the move was extremely inaccurate, since the tanks of the Second World War either had no gyro-stabilisers, or largely ineffectual ones. Therefore a good strategy is to let the enemy rush into the attack, and, when enough of his tanks are destroyed, go over to the offensive yourself.



▲ Troops land on a beach in Normandy.

Aircraft and artillery have a role too. These are very effective, and are generally fairly cheap, since they are very difficult to knock out. In fact, during a battle, artillery cannot be attacked, and aircraft can only be destroyed by enemy fighter planes. Therefore one can use artillery and/or aircraft to "soften up" an enemy before attacking with your ground forces. This last method was recently used to devastating effect in the Gulf War against Iraq.

Battle Tactics

Battle tactics are dictated by the vehicle that you are driving. If this is a tank, then it is prudent to be familiar with its specification. For instance, virtually all tanks have a thicker frontal armour than side or rear; therefore keep your frontal armour facing the enemy at all times. It is sometimes worth reversing from an engagement rather than turning and running. Not all tanks are heavily armoured however. Some (notably American Tank Destroyers such as the M10, M18 & M36) had relatively thin armour in order to improve their top speed. These vehicles need different tactics to heavy tanks, which can slog it out with enemy guns. Also, knowing both the armour piercing capability of your gun and the enemy's armour layout can help immensely. With this knowledge, you can decide whether to engage head-to-head, sneak round the side, or just run away. The automatic systems are aware of these details, so the turret may often engage whilst the tank is running away!

The armour thickness of a tank is improved by sloping it, since this makes it appear thicker in the horizontal plane. As an example this factor led to the shape of the Russian T34 and the German Panther. This same effect applies to any shots that are not "square on". Therefore, a good tactic is to line up your shot so that it hits the target as "square-on" as possible.

Not all targets are armoured, and when attacking guns and trucks, be aware that a number of rounds may be needed to achieve a knock-out. If an armour piercing round fails to penetrate, then it might still cause damage, (jamming the gun elevation mechanism, possibly causing an internal fire, impairing the tracks, etc.), and so, if one has enough ammunition, it is often worth blazing away, just on the off chance of stopping the enemy pursuing you.

General Nikolai Valutin led the southern counter-attack at Kursk. From there he regained Kharkov, then the Ukraine, taking Kiev in January 1944. He was killed in March 1944 by anti-soviet partisans.

Maps Described

The maps consist of three sections: Simple, Average & Complex.

▩ There are sixteen *Simple Campaign maps*, all of which are small enough to be used in any machine, even one with only half a megabyte of RAM. These maps are designed to provide one, or possibly more, battles, which will conclude the campaign. Thus they should be able to be played through in a matter of minutes.

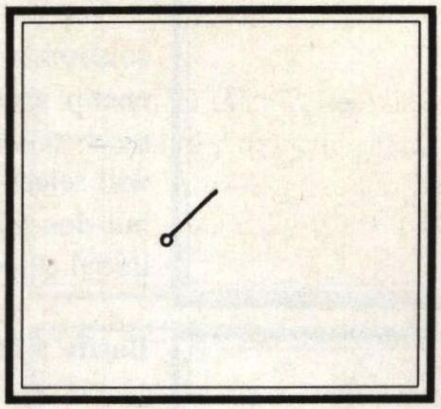
▩ The *Average campaign maps* are of greater complexity, with more groups available to both sides. The first battle is unlikely to terminate the campaign, since both sides have enough other forces to absorb even a complete rout during a battle. Thus, these maps should provide several hours of entertainment.

▩ Finally, the *Complex Campaign maps* contains some real-life campaigns taken from history. The initial set-up of the opposing forces is generally correct at a group level, but unfortunately details of the units within the groups are generally unavailable, or sketchy. I have endeavoured to reproduce the flavour of the campaign, by deliberately equipping the groups according to the state of the nations at that stage of the war. These maps will almost certainly take several days to complete.

▼ The White Ensign of a Naval Beach Party flying on the Normandy Coast as British troops move inland from the beached landing craft. 6th June 1944

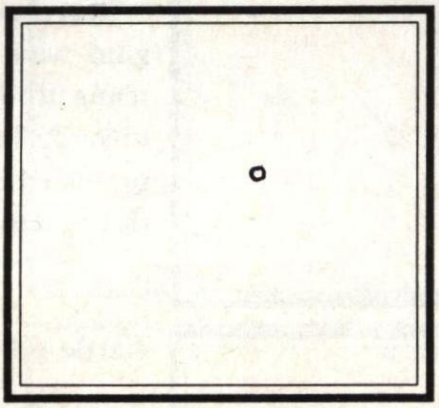


Simple Campaign Maps



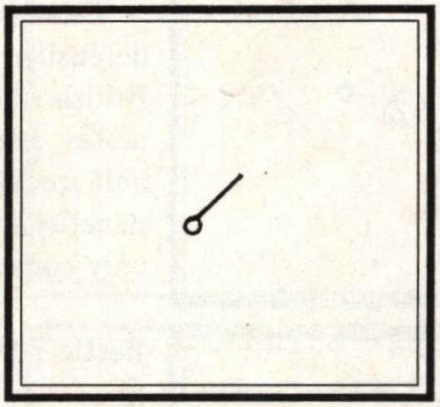
Battle Map

Just one group on each side. You will play the Germans against the Russians. Unpause the game, and a battle will start almost immediately. You have 12 tanks against the enemy's 14, but your two Panther tanks should give you the advantage.



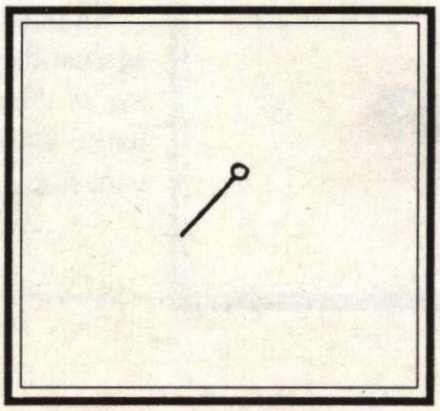
Battle 1 Map

Exactly the same campaign as before, but this time you have swapped sides, and must destroy the Germans. Try to get a side or rear shot on those Panthers, because their thick frontal armour is proof against your guns.



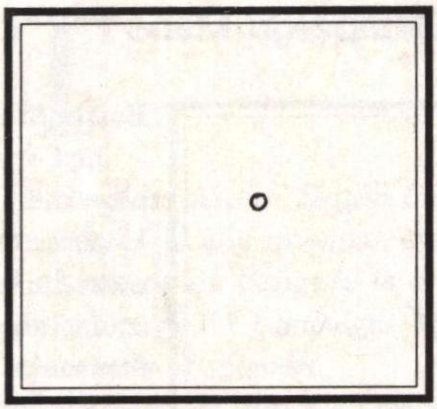
Battle 2 Map

One group on each side, as before, but now you have more heavier tanks (on both sides). Your Panthers and Tigers should do well against the British Fireflies and Churchills. Your twelve German tanks play the enemy's eighteen.



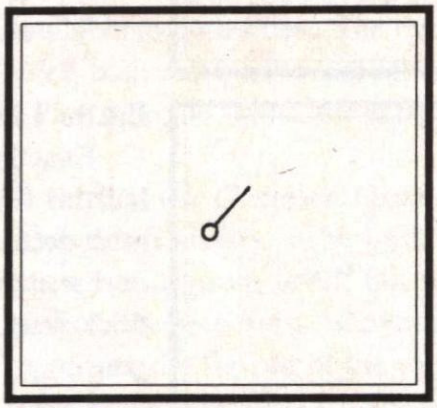
Battle 3 Map

Again, you have swapped sides from Battle 2 map, and now play the British 18 tanks against the German 12, so you start with a numerical advantage, even if not a technological one. The Churchill only really has a chance against the Panzer IVs or the side/rear of the Panthers.



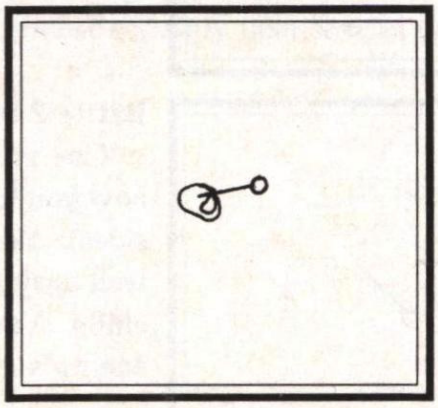
Battle 4 Map

You play the British in this single group confrontation. Both your group and the enemy group now have enough for proper reserves during the battle. The computer will select your best 16 tanks to start with, but don't forget that you can change the initial selection.



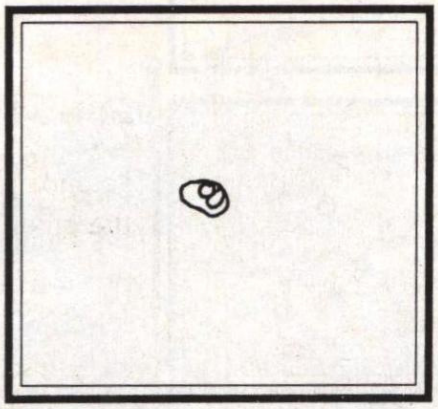
Battle 5 Map

Reverse of the above. Self-propelled guns were used very heavily by the Germans throughout the war, particularily towards the end, when they were being produced in approximately equal quantities to tanks.



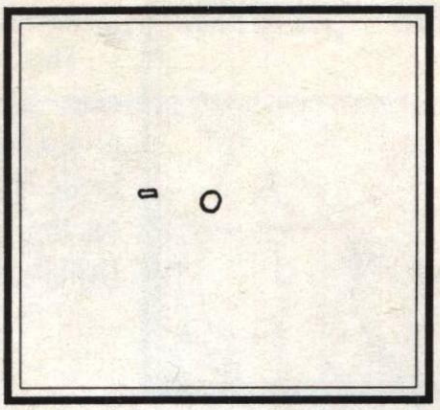
Battle 6 Map

This one requires you to assault a mined defensive position. You have the same British force as before, of 30 fighting vehicles, but now with two extra engineer half-tracks to clear a path through the minefield. The German force is dug-in, but only consists of 24 vehicles.



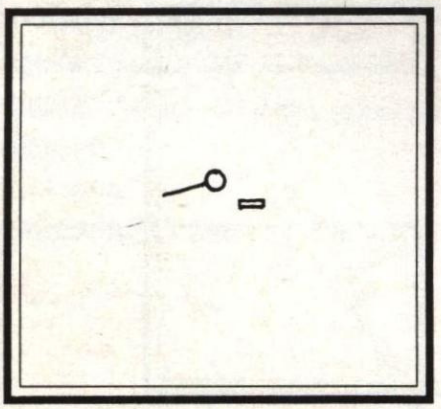
Battle 7 Map

Opposite of above. You must defend against the British attack. Skilful positioning of the minefields before unpausing the battle should help, especially if you site your forces to plug the gaps in the front line.



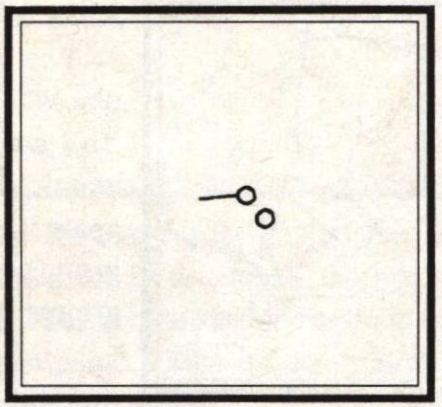
Battle 8 Map

You play the German side with the same trusted group of tanks. The difference is that you now have air-support, consisting of 4 bombers, 2 spotters and 4 ground-attack aircraft. The enemy (that familiar British group) also now have an airfield. Don't forget that aircraft can be used in the campaign as well as the battle.



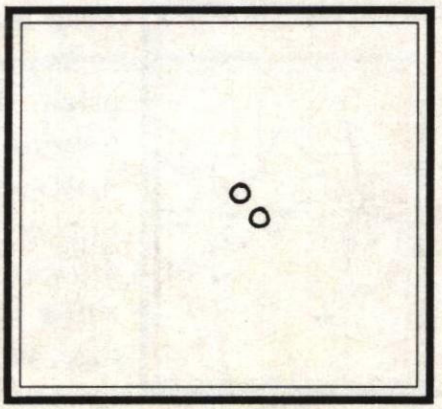
Battle 9 Map

Flip side of the above map. See if you can do as well when playing the British. Don't forget that bombers can attack the enemy airfield as well as the battle-group.



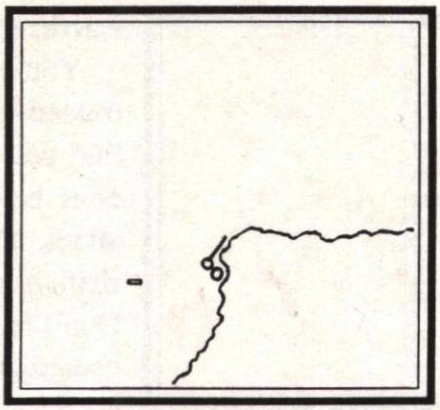
Battle 10 Map

Similiar to Battle 8 map, but your air support has changed into artillery. These can also be used in the campaign as well as the battle. Your battle-group also now has two spotter Jeeps assigned to it to act as the eyes and ears of the Artillery. The spotters can signal to the artillery to open fire on enemy targets.



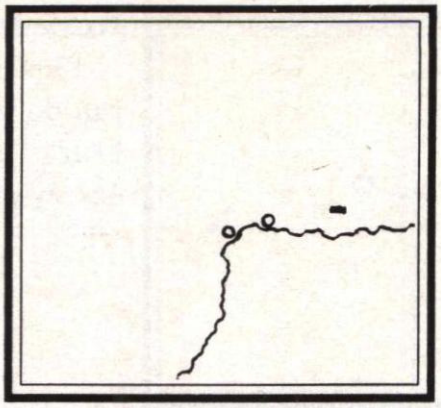
Battle 11 Map

This map has the sides swapped over. These maps occupy almost no disc space, and so you can play both sides of the "campaign" to see what it looks like from the other side of the hill.



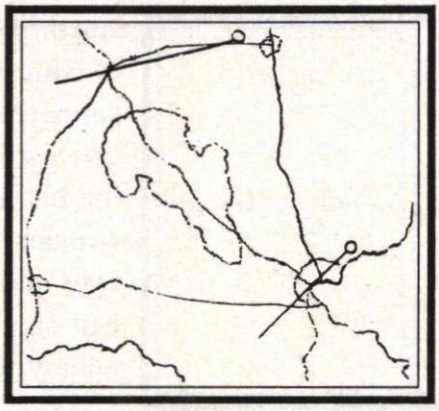
Battle 12 Map

This combines three groups on each side. You now control an airfield, a battle-group and also some artillery. Finally, the battle is going to be a water-borne invasion by the German forces, against a dug-in British position.



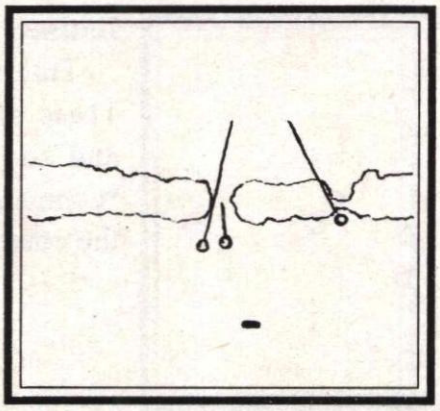
Battle 13 Map

Reverse of above. Repel the landing German forces by using your air-power and artillery to wear them down before they attack, and then you will have half won already.



River x 2 Map

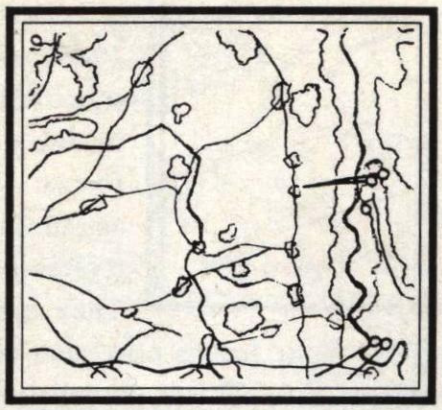
You must force a river crossing in two places to engage the enemy of the far side. You are in control of two approximately equal American groups, and standing against you are three smaller German groups. Can you control two moving groups simultaneously?



Trap Map

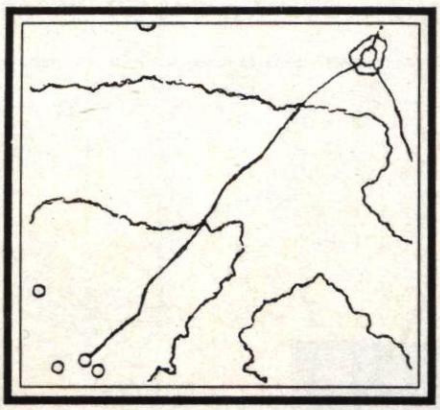
You control the Germans in this campaign. This campaign is a stepping-stone towards the Average section, since you must control 3 battle-groups and an airfield to play effectively. The campaign is not difficult, though, since although you do suffer from a slight numerical disadvantage, your heavy tanks will make mincemeat of the opposition.

Average Campaign Maps



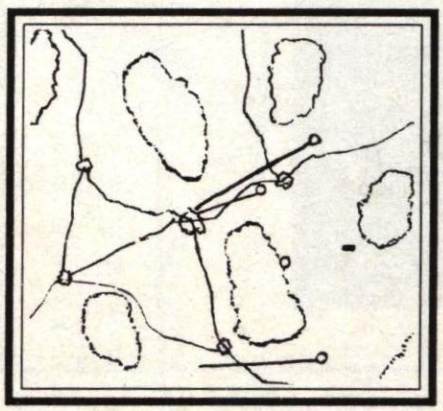
Ardennes Map

This is based upon a detail of the Battle of the Bulge. On 16th December 1944, the Germans attacked the weak American positions on the west side of the River Our in the Ardennes. The Americans managed (in real life) to hold up the German advance for two days, thus severely upsetting their timetable. This was crucial to the eventual halting of the German advance. You will play the Germans in this mini-campaign. Can you do better than General von Manteuffel?



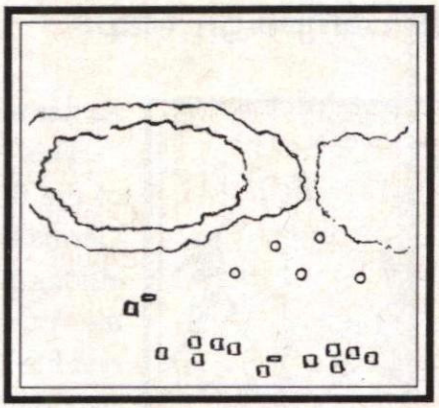
Pripet Map

The Pripet Marshes are a huge area in Belorussia, approximately 350km by 200km in size. The map consists of a small detail of this natural barrier that effectively split the Russian front in two. The map is set during July 1941, immediately after the German invasion of Russia (Operation Barbarossa). You command three German groups, and must cross the marsh to attack the Russian forces on the other side. One Russian group guards the road on the south of the marsh, though, so you must either neutralise this or by-pass it. The area around the town is an objective, so there are two ways to win this campaign, either by wearing the enemy down, or by holding the objective without contest.



Sahara 42 Map

You play the British during their second retreat from Rommel's DAK (Deutsche Afrika Korps) in April 1942. The map is a fictitious section of the campaign, with both forces on the offensive. Rommel's famous adversary, Monty (General Bernard Montgomery) did not appear on the scene until August. The British force was commanded by General Claude Auchinleck at this time.



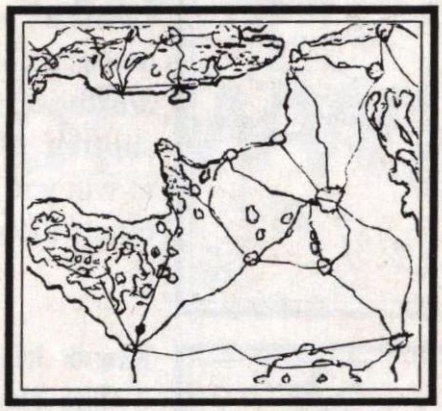
Steppes Map

You play the Russians against the retreating German forces. The date is June 1944, when the Germans were being squeezed from all sides, but still managed to delay the numerically superior Soviet forces. The Russians had excellent tanks, as did the Germans, so the normal German technological ascendancy was missing. They made up for this by superior tactics and strategies. Your forces now also contain production centres not far behind your front-line. This is unrealistic, but allows you to wait (and build up your forces more), or to charge straight in. The Germans have similar forces, but no factories, so they will not gain by waiting. The Germans will attack your factories if they spot them, so beware.

▼ The inhabitants of Brussels greet British and Belgian troops after the liberation of the city on 3rd September. Antwerp fell to the British the following day.

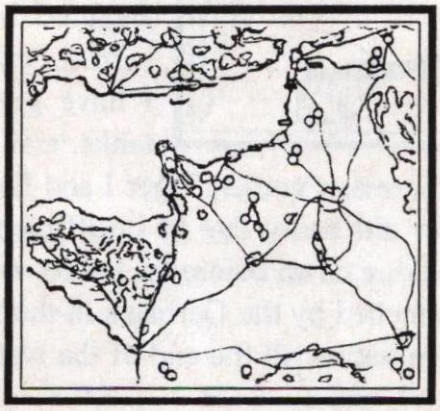


Complex Campaign Maps



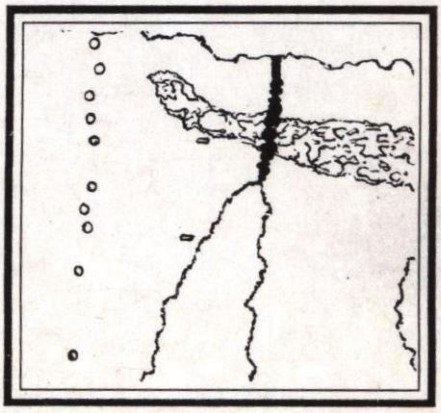
D-Day Ally Map

The largest sea invasion ever launched, Operation Overlord on June 6th 1944 was a huge operation, involving three million men, 4600 transports and almost 10,000 aircraft. The map is, of necessity, a simplified version of events. The approximate disposition of the opposing forces is correct, however, merely that each group contains a fraction of the actual number of vehicles fielded. The Germans were initially caught off-balance by the deliberate deceptions practiced by the Allies, but soon recovered enough to contain the beachheads.



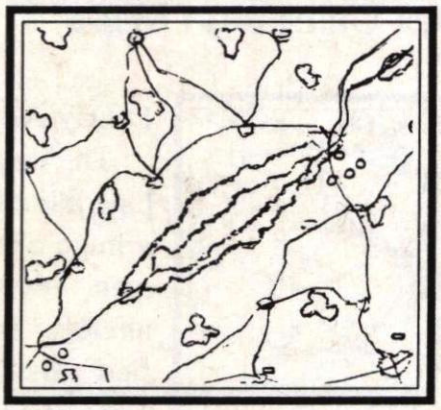
D-Day Axis Map

Same map, opposite side. In reality, the two main commanders, Rommel and von Rundstedt had different methods of dealing with the expected attack. Field Marshal Rommel favoured strong forces on the coast, to be able to counter-attack immediately, before the Allies could establish their beachheads. Field Marshal von Runstedt preferred the concept of a large mobile reserve, which could move to the exact invasion area and attack in force. In the event, Hitler compromised, and attempted to implement both plans, which meant that neither was given a proper chance.



Desert 1 Map

A fictional map, with the Germans attacking a defensive line in the desert, during April 1943, after the defeat at El Alamein. You control the German DAK, and must attack the numerically superior British positions. The obvious place to attack (between the quicksand and the minefield) is, of course, heavily defended. You do have a group (Pionier 1) who can clear a way through the minefield, so this is an alternative, especially since you need only take the whole objective to win, so by-passing the Allied groups will make that task easier.



Europe 1 Map

Set in Italy, April 1944, you play the Germans in attempting to force your way across a contested river. On the other side are the Americans, who are numerically superior. There is no objective to hold, so to win you must wear down the Allied side by attrition.



Kursk Map

The largest tank confrontation of the entire war was fought in Russia, near the town of Kursk. As before, I have not attempted to reproduce the 6000 tanks and 4000 aircraft exactly, but instead have captured the flavour of the operation (code-named Zitadelle by the Germans). In fact, I have given the Germans almost 1000 tanks, and the defending Russians almost 2000. The German Panther, Tiger I and Elefant tanks were all first fielded at Kursk, but did badly due to insufficient mechanical trials, with large numbers breaking down before the battles even started. This was the last big campaign launched by the Germans in the East, with the Red Army firmly holding the initiative till the end of the war.

Chronology of WW2

1939	1 September	Germany invades Poland.
	3	Great Britain and France declare war on Germany.
	5	United States proclaims neutrality.
	8	President of United States declares limited national emergency.
	6 October	Last remnant of Polish forces surrenders to German Army.
	4 November	Congress passes law permitting "cash and carry" sale of munitions to belligerents.
	30	USSR attacks Finland.
1940	12 March	Soviet-Finnish war ends.
	9 April	Germany occupies Denmark and invades Norway.
	14-20	British land troops in Norway.
	23	Greece concludes armistice with Germany.
	10 May	Germany launches invasion of Belgium, the Netherlands, Luxembourg, and France. Churchill succeeds Chamberlain as British Prime Minister.
	3 June	United States releases war material to Great Britain.
	4	Dunkerque is evacuated.
	10	Italy declares war on France and Great Britain.
	14	Germans march into Paris.
	21	France and Germany conclude armistice.
	3 July	British naval forces attack French fleet at Oran.
	10	Germany begins air offensive against Great Britain.
	27 August	Congress authorizes call of reserve components for 12 months' duty.
	3 September	United States and Great Britain conclude agreement to exchange destroyers (U.S.) for base rights (British).
	16	Selective Service law enacted by Congress.
	22	Japanese invade French Indochina.
	27	Germany, Italy, Japan conclude three-power pact.
	6-31 October	Last phase of air battle of Britain.
1941	29 January -29 March	British-American Staff Conversations.
	11 March	Congress passes Lend-Lease Act.

	27 May	President Roosevelt proclaims state of unlimited national emergency.
	22 June	Germany invades the USSR.
	7 July	United States forces land in Iceland.
	26	United States declares oil embargo on Japan.
	14 August	Roosevelt and Churchill announce Atlantic Charter.
	4 September	German torpedo attack on USS *Greer* opens undeclared shooting war in Atlantic.
	25	Army and Navy Secretaries, at President's direction, submit Victory Program - an estimate of U.S. forces needed to defeat the Axis and Japan.
	1 October	First Soviet Protocol signed by U.S., Great Britain, and USSR at Moscow.
	7-8 December	Japan delivers simultaneous bombing attacks on Pearl Harbor, the Philippines, Wake, and Guam, invades Malaya and Thailand, seizes Shanghai, and declares war on the U.S. and Great Britain.
	8	German offensive in Russia bogs down.
	9	China declares war on Japan, Germany, Italy.
	10	Japanese capture Guam, land on Luzon in Philippines.
	11	Germany and Italy declare war on United States, and United States declares itself at war with them.
	20	Chennault's Flying Tigers enter combat against Japanese in China.
	23	General MacArthur decides to evacuate Manila and withdraw to Bataan. Wake Island captured by Japanese.
	24-14 January	Anglo-American Conference (ARCADIA) at Washington.
1942	1 January	United Nations Declaration signed by twenty-six nations at war with Axis.
	2	Japanese occupy Manila.
	7	American and Filipino forces complete withdrawal into Bataan.
	9	Combined Chiefs of Staff established. United States Joint Chiefs of Staff established.
	19	Japanese capture British North Borneo.
	23	Japanese capture Rabaul and Kavieng in the Bismarck Archipelago, invade Bougainville in the Solomons.
	1 February	U.S. Navy bombards Gilberts and Marshalls.
	2	Singapore surrenders.
	27-28.	Battle of Java Sea. Japanese invade Java.

March - November	Submarine sinkings in Atlantic rise to record heights.
7	Japanese occupy Burma.
9	War Department is reorganized.
17	General MacArthur reaches Australia to take command of Allied forces.
8 -15.	British-American conversations in London result in conditional agreement on BOLERO-ROUNDUP Plan.
9	Surrender of Bataan.
18	First U.S. air bombardment of Tokyo.
2 May	Japanese land on Tulagi, adjacent to Guadalcanal, where they soon began to build an airstrip.
6	Surrender of all U.S. forces in Philippines.
8	Battle of the Coral Sea.
20	Japanese complete conquest of Burma.
27	Rommel opens drive into Egypt.
3-4 June	Battle of Midway.
7	Japanese invade western Aleutians.
21	Tobruk falls to Axis.
1 July	Germans capture Sevastopol.
2	Rommel's advance stops at border of Egypt.
4	One of the most devastating submarine attacks on convoy to USSR along the northern route.
7	Second Soviet Protocol signed.
15	British suspend convoys to USSR on northern route.
18-25	British-American conversations in London, resulting in decision to invade North Africa.
21	Japanese landing near Gona, New Guinea, starts Papua Campaign.
7 August	South Pacific forces invade Guadalcanal, Florida, and Tulagi Islands, in the Solomons.
19	British Commonwealth force raids Dieppe, France.
23	Churchill accepts Roosevelt's proposal that U.S. operate Persian Gulf facilities for aid to USSR.
14 September	Battle for Stalingrad begins.
23 October	British open counteroffensive at El Alamein.
8 November	Allies land at Casablanca, Oran, and Algiers in French North Africa.
10	Axis troops move into Tunis and Bizerte.

	11	British offensive reaches Libya.
		French resistance to Allies in North Africa ceases.
		Axis troops march into unoccupied France.
	13	British recapture Tobruk.
	15	Allied offensive in West reaches Tunisia.
	19	USSR opens offensive at Stalingrad.
	27	French fleet scuttled in Toulon harbor.
	24 December	Allied drive on Tunis ends in stalemate.
1943	14-23 January	Allied conference at Casablanca.
	22	Campaign for Papua, New Guinea, ends.
	27	Eighth Air Force makes its first attack on Germany, at Wilhelmshaven.
	2 February	Soviet Army destroys remnants of German Sixth Army at Stalingrad.
	9	Organized Japanese resistance on Guadalcanal ceases.
	20	Rommel breaks through Kasserine Pass, Tunisia.
	25	Allies retake Kasserine Pass.
	2-4 March	Battle of the Bismarck Sea.
	16	Final Allied offensive in Tunisia begins.
	18	Americans capture El Guettar.
	20-27	Montgomery breaks through the Mareth Line.
	11-31 May	With recapture of Attu by Allies Japanese are driven from the Aleutians.
	12-25	TRIDENT Conference in Washington.
	13	Axis forces in Tunisia surrender.
	1-30 June	Shipping losses reach new low, signalizing victory over U-boat.
	30	Allies begin operation for reduction of Rabaul (CART-WHEEL) with attacks in central Solomons and New Guinea.
	10 July	Allies invade Sicily.
	25	Fall of Mussolini proclaimed.
	14-25 August	QUADRANT Conference at Quebec.
	17	End of Sicily campaign.
	23	Germans abandon Kharkov.
	25	Allies complete occupation of New Georgia, Solomon Islands.
	3 September	British troops invade Southern Italy.
	4-16	Southwest Pacific forces recapture Lae-Sala-maua, New Guinea.
	8	Italy surrenders.

	9	Allies under U.S. Fifth Army land on the Salerno beaches; British troops land at Taranto.
	11	Italian Fleet is surrendered at Malta.
	1 October	Allies enter Naples and occupy Foggia airfields.
	2	Australians sieze Finschhafen, New Guinea..
	13	Italy declares war on Germany.
	14	Soviets reach Zaporodzhe, industrial center of Ukraine.
	19-30	Soviet, British, American Foreign Ministers and military representatives confer in Moscow.
	1 November	South Pacific forces invade Bougainville.
	5	U.S. Fifth Army attacks German Winter Line in Italy.
	20	Opening of Central Pacific offensive (Makin and Tarawa in Gilberts).
	22-7 Dec.	Allied conferences, Cairo-Tehran (SEXTANT, EUREKA).
	14 December	Soviet armies begin first phase of winter offensive.
	26	Southwest Pacific troops invade New Britain at Cape Gloucester.
1944	15 January	USSR opens offensive to relieve Leningrad.
	20	In Italy, beginning of unsuccessful operations to cross the Rapido River and seize Cassino.
	22	VI Corps, U.S. Fifth Army, lands at Anzio.
	31	Central Pacific forces invade the Marshall Islands.
	12 February	General Eisenhower is formally designated Supreme Commander, Allied Expeditionary Force, Europe, by Combined Chiefs of Staff.
	18	U.S. Naval forces attack Truk in Caroline Islands.
	20	Reduction of Rabaul completed with Japanese abandonment of it as an airbase.
	24	In Burma, Merrill's Marauders advance into Hukawng Valley, with the Myitkyina airfield as their goal.
	29	Southwest Pacific forces begin invasion of Admiralty Islands, Bismarck Archipelago.
	5 March	Soviet Army opens drive in the Ukraine to destroy enemy in Dnieper bend.
	20	German troops occupy Hungary.
	10 April	Odessa retaken by Russian troops.
	22	Southwest Pacific forces land at Aitape and Hollandia, New Guinea.
	9 May	Sevastopol retaken by Soviet forces.
	11	In Italy, Allies open a general offensive against the Gustav Line.

17	Myitkyina airstrip captured by Chinese forces.
18	Allied forces capture Cassino.
23	U.S. VI Corps launches offensive to break out of the Anzio Beachhead.
27	Southwest Pacific force lands on Biak Island, New Guinea.
4 June	U.S. Fifth Army enters Rome.
6	D-Day. Allied Forces invade France, landing on coast of Normandy, in Operation OVERLORD.
9	Soviet forces launch attack against Finnish positions on Karelian Isthmus.
12	Germans launch first V-1 bombs against England.
15	B-29's based in China, make their first attack on Japanese homeland. Central Pacific forces invade the Marianas.
19-20	First Battle of the Philippine Sea.
27	Organized resistance ceases at Cherbourg.
18 July	U.S. forces, concluding "the battle of the hedgerows" capture St. Lô.
19	Leghorn falls to the U.S. Fifth Army.
20	Attempt to assassinate Hitler fails.
25	U.S. First Army launches Operation COBRA from St. Lô area to gain a breakthrough.
1 August	Polish underground forces revolt as Soviet offensive nears Warsaw. U.S. Third Army becomes operational in France.
3	In Burma, Myitkyina is taken.
4	British Eighth Army reaches Florence.
7	In Normandy, Germans launch Mortain counter-attack.
15	American and French troops under U.S. Seventh Army, invade southern France in Operation DRAGOON-ANVIL.
20	Allied forces in France close pincers on Germans caught retreating from Mortain in Falaise-Argentan pocket.
25	U.S. Third Army crosses the Seine. U.S. and French troops liberate Paris.
28 August	Germans surrender Toulon and Marseille.
30	Ploesti, center of Rumanian oil industry, falls to Soviet troops.
31	In Italy, British Eighth Army penetrates the Gothic Line.
3 September	British liberate Brussels.
4	Hostilities between Finland and the USSR cease under truce agreement.
10	U.S. First Army liberates Luxembourg.
11	Patrols of U.S. First Army enter Germany.
12-16.	Second Quebec Conference (OCTAGON). German garrison of Le Havre surrenders.

		Rumania signs armistice with Allies. Southwest and Central Pacific forces reach Moratai and the Palaus.
	16	Soviet forces enter Sofia, capital of Bulgaria.
	17	First Allied Airborne Army launches Operation MARKET to secure axis of advance toward Arnhem for British Second Army. Ground forces (GARDEN) open assault northward.
	18	U.S. Ninth Army takes Brest.
		Finland signs armistice with Allies.
	20	In Italy, the British Eighth Army reaches the Rimini Line.
		Soviet troops cross the Danube in force and push toward Belgrade.
	1 October	U.S. First Army begins siege of Aachen. Germans suppress insurrection of patriots in Warsaw.
	13	Germans launch first V-bomb against Antwerp.
		Soviet troops overrun Riga, capital of Latvia.
	14	U.S. naval force in air attacks neutralizes Formosa.
	15	Northern China Area Command opens offensive to clear North Burma.
	18	Soviet troops advance from Poland into Czechoslovakia.
		General Stilwell is recalled from China by President Roosevelt.
	20	Belgrade falls to Soviet and Yugoslav forces.
		U.S. forces, landing on Leyte, invade the Philippines.
	21	Aachen surrenders.
	23-26	The battle for Leyte Gulf.
	28	Bulgaria signs armistice with Allies.
	8 November	U.S. Third Army begins drive to breach the West Wall and reach the Rhine.
	16	U.S. First Army begins drive to cross Roer River and reach the Rhine.
	24	B-29's begin attacks on Tokyo from bases in the Marianas.
	28	First Allied cargo ship drops anchor in Antwerp harbor.
	13 December	U.S. First Army launches attack to capture Roer River Dams.
	16	Germans open all-out counteroffensive in the Ardennes (Battle of the Bulge).
	26	In U.S. First Army area, enemy's westward drive is stopped short of the Meuse.
	27	U.S. Third Army raises siege of Bastogne. Soviet troops complete encirclement of Budapest.
1945	9 January	U.S. Sixth Army lands on Luzon.
	12	Soviet forces open powerful winter offensive across the Vistula in South Poland.
	16	U.S. First and Third Armies join at Houffalize.
	17	Warsaw falls to Soviet forces.

3 February	Sixth Army attacks Manila in a battle lasting until 4 March.
4-9	Conference at Yalta (ARGONAUT).
5-9	In Alsace, American and French forces wipe out the Colmar Pocket.
13	Soviet Army completes capture of Budapest.
19	U.S. Marines invade Iwo Jima.
25	In Italy, U.S. Fifth Army begins limited offensive in the Apennines.
6 March	U.S. Ninth Army units complete drive from Roer to Rhine. Soviet troops seize key point of German defense system on the lower Vistula in Poland.
7	Cologne falls to U.S. First Army. U.S. First Army seizes bridge at Remagen and establishes bridgehead across the Rhine.
10	U.S. Eighth Army units land on Zamboanga Peninsula, Mindanao.
15	VII Corps, U.S. First Army, crosses the Rhine. U.S. Seventh Army opens offensive to break through the West Wall and join U.S. Third Army in clearing the Saar-Palatinate triangle.
23	U.S. Third Army crosses the Rhine.
23-24	Allied forces, under Field Marshall Montgomery, cross the Rhine north of the Ruhr.
30	Soviet troops capture Danzig; other Soviet forces continue offensive in Hungary, Czechoslovakia, and Austria.
1 April	U.S. Tenth Army land on Okinawa. U.S. First and Ninth Armies complete encirclement of the Ruhr.
9	Organized German resistance, in East Prussia, ends.
11	The 2d Armored Division, Ninth Army, reaches the Elbe south of Magdeburg.
12	President Roosevelt dies at Warm Springs, Georgia. Harry S. Truman sworn in as president.
13	Vienna falls to Soviet troops.
20	U.S. Seventh Army captures Nuremburg, Germany.
23	Soviet Army forces break into Berlin. In Italy, U.S. Fifth Army units cross the Po.
24	United Nations Conference opens at San Francisco.
25	In Germany, U.S. and Soviet patrols establish contact on the Elbe near Torgau.
29	German forces in Italy surrender at Caserta, effective 2 May.
30	Adolf Hitler commits suicide in Berlin; Admiral Doenitz becomes head of state.
3 May	Hamburg surrenders to British Second Army. British recapture Rangoon, Burma.

7	German High Command surrenders all land, sea, and air forces unconditionally to Allied forces, effective 9 May. All offensive operations are immediately halted.
8	President Truman proclaims this day V-E Day (Victory in Europe).
5 June	The Berlin Declaration is made by France, Great Britain, United States, and USSR, announcing their assumption of supreme authority in occupied Germany.
18	Organized resistance ends on Mindanao.
22	U.S. Tenth Army completes capture of Okinawa.
26	The United Nations Organization Charter is signed at San Francisco by fifty nations.
10 July	Carrier-based and land-based planes open powerful and sustained attacks on Japan in preparation for invasion.
11	In Europe, Supreme Headquarters, Allied Expeditionary Force, is dissolved.
16-26	Potsdam Conference (TERMINAL). Potsdam ultimatum, issued on 26 July, calls for Japan to surrender unconditionally or face "utter destruction."
6 August	Atomic bomb dropped by U.S. Air Forces on Hiroshima. Second bomb dropped 9 August on Nagasaki.
8	USSR declares war on Japan.
14	Japanese Government agrees to unconditional surrender of its armed forces.
30	Occupation of Japan by U.S. forces begins.
2 September	V-J Day - Victory over Japan. Formal terms of surrender signed by Japanese envoys.

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