Close Combat Keyboard Quick Reference

You can choose commands and expand or scroll the Close Combat View Area using the following key combinations and sequences:

Function	In Windows95	On the Macintosh
Scroll the View Area	Arrow keys	Arrow keys
Expand the View Area	CTRL+G (or ALT, O, G)	COMMAND+G
Turn sound on/off	ALT, O, S	
Turn music on/off	ALT, O, M	
Turn videos on/off	ALT, O, V	
Remove trees	CTRL+T (or ALT, O, T)	COMMAND+T
Remove soldiers KIA	CTRL+K (or ALT, O, K)	COMMAND+K
Pause Close Combat	F3	COMMAND+P
Stop a game	CTRL+A (or ALT, G, A)	COMMAND+A
Exit Close Combat	ALT+F4 (or ALT, G, X)	COMMAND+Q
Get Help	F1	COMMAND+H
Issue a Move command	Select a team, then press Z	Select a team, then press Z
Issue a Move Fast command	Select a team, then press X	Select a team, then press X
Issue a Fire command	Select a team, then press C	Select a team, then press C
Issue a Smoke command	Select a team, then press V	Select a team, then press V

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Game Reference

Close Combat

Game Reference

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CLOSE COMBAT

Take command of men who act like real soldiers

Chapter 1

About Close Combat

June 6, 1944. The largest invasion fleet in history lies off the coast of Normandy, France. Four years ago, France surrendered to Germany, and the remnants of the British Expeditionary Force fled from the beaches of Dunkirk. Now the Allies are ready to strike back. Their goal is to liberate western Europe. The Germans' goal is to hurl the invaders back into the sea. Failing that, they must harass and delay the Allies and make them pay for every foot of ground. In this campaign, the fate of nations hangs in the balance.

The campaign you'll be fighting in Close Combat took place in Normandy between June 6 and July 18, 1944. It begins late on D-Day as units of the American 29th Infantry Division reach the high ground above Omaha Beach to meet the German 352nd Infantry Division. The campaign ends 20 miles inland at the strategic town of Saint-Lô.

During those six weeks, soldiers of the Allied and German armies endure some of the closest and most vicious combat of World War II, across one of the most bizarre terrains ever contested in any war: the Norman hedgerow country—the *bocage*. It's a place where rulebook tactics don't hold up; where a defense based on infiltration and ambush kills men and tanks who seldom see the enemy; where adaptability and improvisation become as important as tanks and guns in pressing the attack. No matter which side you choose to play, Close Combat is an intriguing mix of historically accurate weapons and terrain, realistic combat psychology, and opportunities to change history through superior skill and leadership.

The Close Combat campaign consists of six operations, each with distinct challenges and opportunities. The decisions you make and the leadership you provide decide the outcome of each operation, and shape the campaign to reflect your effectiveness as a commander.

Close Combat Game Theory

Historical accuracy and realistic psychology make Close Combat different from other strategy games. The forces, the locations, the weapons, all reflect the reality of the Normandy Campaign. And the Close Combat artificial intelligence (AI) tracks not only every round fired, but also the physical and psychological states of individual soldiers and their teams. Because the AI uses this information to vary soldier and unit performance in every situation, every game is different.

You Lead Human Beings, not Superheroes

One of the first things you'll notice when you play Close Combat is that you can't always make things happen when or as you want them to. Close Combat challenges the player with a realistic representation of complex and unpredictable human behavior under the stress of combat. For example, when you order your units to move or fire, they may respond immediately and move or fire quickly, or take a while to respond, or not respond at all. They may also react in a way that has nothing to do with your orders: They might take on an entirely different target, or dive for cover, or hide, or run away. This is because your soldiers behave not like robots or superheroes, but like—human beings!

Your troops' human behavior doesn't mean their reactions are out of your hands, however. The better you lead your men, the better they respond to your orders. Players who lead their squads into trouble—whose decisions result in squads becoming overly fatigued, suppressed by incoming fire, ambushed, captured, or killed—will find that their units' performance deteriorates: Incoming fire makes the men want to seek cover, and reduces their desire to attack. Fatigue also reduces the likelihood of soldiers hitting their targets, or obeying future orders that require physical effort. If the fire is heavy enough and their cover is insufficient, soldiers may disregard orders and stay put instead of moving and firing. As each side takes casualties, its cohesion—the willingness of its soldiers to fight—deteriorates. And if a player's leadership has resulted in heavy casualties or sufficient accumulated stress, soldiers may break and run.

Close Combat bases its psychological model on a study of the behavioral effects of combat stress by Dr. Steven Silver of Temple University. The game tracks the cumulative physical and emotional stress that soldiers and units on both sides experience. Given their current state at any point in a game, it determines whether or not soldiers will carry out orders, and how quickly and effectively they will carry out those orders.

You can choose to exercise "super" control over your troops by setting soldiers in the "always obey orders" mode before starting a game, but you can't switch them out of this mode during play, and gains made this way usually lead to increased casualties and decreased team performance. For more information, see the section titled "Who's in Control? You Choose."

Taking Other Realistic Factors into Account

You'll notice as you play that Close Combat tracks soldier fatigue and adjusts soldier and squad performance to reflect cumulative fatigue. As in actual battle, men who have run long distances carrying heavy loads, or who have to drag big weapons into position, become fatigued, and their morale suffers accordingly.

Another distinctive feature of Close Combat is that, as in real combat, players can never take for granted that a shot fired will hit or destroy a target. Terrain may shield the target and deflect the shot. And, as in real combat, soldiers who are pinned down by enemy fire, extremely tired, or low on morale don't shoot accurately.

Weapons have their limitations as well. Every weapon used in Close Combat has a base chance to hit, depending on the distance to the target and the type of ammunition used, and hitting a target doesn't guarantee its destruction. The game resolves the effect of each hit based on target protection in eight directions, on the weapon's penetrating power, and on its blast effect and lethal radius.

Dynamic Play Balancing Means No Two Games Play the Same

A major feature in Close Combat is the ability of the game to dynamically balance itself against its opponent. Close Combat adjusts the relative strength of each side—American and German—from one battle to the next throughout the campaign to represent historical strength. However, a player winning most battles decisively will face stronger enemy forces with each win. This dynamic play balancing means more challenge for expert players and less frustration for novices.

Play balancing also means that the game adjusts its level of difficulty to suit the quality of play in any given game. For example, players on the American side who do well in the first scenario are less likely to get reinforcements or replacements to bring their forces up to the full complement specified in the historical order of battle. If players lead less successfully, the reverse applies, and they get more reinforcements and replacements but at a cost in time, which delays their eventual assault on Saint-Lô.

Who's in Control? You Choose

As noted earlier, your teams may or may not obey an order you give them. However, you can avoid order overrides by selecting the "Soldiers always obey" game option. Even so, when a team receives orders to fire, it may decide that a different target represents a greater threat, and may fire at that alternate target instead.

A soldier's emotional state may also keep him from carrying out an order; he may remain in cover or run away. Again, you can override these states by setting troops in "Soldiers show no fear" mode before starting a game, but you can't switch them out of this mode during play, and units may follow orders with such enthusiasm that they sustain far more casualties. Choosing "Soldiers show no fear" mode is not only risky, but also makes game play less realistic.

To learn how to play Close Combat, turn the page.

For a detailed history of the Normandy Campaign depicted in Close Combat, including a discussion of defensive and offensive tactics in the hedgerow battle, see Chapter 4, "The Normandy Campaign in Close Combat."

To read about the larger events of World War II that led to or resulted from the Normandy Campaign, see Chapter 7, "The Big Picture: A Short History of World War II."

Chapter 2

Setup and Game Play

This chapter describes how to install and set up Close Combat, how to learn game-play basics using Boot Camp scenarios, and what type of games you can play (Maneuvers, Campaigns, and Replays). Finally, this chapter provides how-to-play procedures for Close Combat.

Installation and Setup

This section describes how to install and set up Close Combat.

To set up Close Combat in Windows 95

When you install Windows 95, AutoRun is enabled. To set up Close Combat in Windows 95:

1. Insert the Close Combat CD into the CD-ROM drive.

   Windows 95 displays the Close Combat AutoRun screen.
2. Click the Install button at the bottom of the dialog box.

   After installation is complete, the Close Combat AutoRun screen launches each time you insert the game CD.

To set up Close Combat in Windows 95 if AutoRun is disabled

1. Insert the Close Combat CD into the CD-ROM drive.
2. Double-click the My Computer icon.
3. Double-click the CD-ROM drive icon.
4. Double-click the Setup icon.

To launch Close Combat in Windows 95

1. Make sure the Close Combat CD is in the CD-ROM drive.
2. Click the Start button.
3. Click Microsoft Games.
4. Click Close Combat.

To set up Close Combat on the Macintosh

1. Insert the Close Combat CD into the CD-ROM drive.
   The Close Combat CD icon appears.
2. Double-click the Close Combat CD icon.
   This opens the Close Combat window.
3. Double-click the Close Combat Setup icon.

To launch Close Combat on the Macintosh

1. Double-click the Microsoft Close Combat folder, or the folder you specified during setup.
2. Double-click the Close Combat icon.

System Requirements

The following table shows the minimum system requirements for playing Close Combat in Windows 95 and on the Macintosh.

Minimum Windows 95 System Configuration	Minimum Macintosh System Configuration
Personal computer with Pentium processor	Macintosh with PowerPC processor
8 megabytes RAM (16 MB recommended)	12 megabytes RAM (16 MB recommended)
20 MB of free hard disk space	20 MB of free hard disk space
2X CD-ROM drive	2X CD-ROM drive
640x480x256-color video (800x600 higher resolution recommended)	13-inch monitor (15-inch or or larger monitor recommended)
Sound card (recommended but not required)	Sound Manager 3.1
9600-baud modem (for dial-up head-to-head play)	9600-baud modem and MacTCP 2.0.6 (for dial-up head-to-head play)
Microsoft Windows 95 operating system	Apple System 7.5. and QuickTime 2.1 (for playing QuickTime videos)
Network card (for head-to-head Local Area Network play)	Network card (for head-to-head Local Area Network play)
Headphones or speakers	

Close Combat Game Types

You can play four types of games with Close Combat: Boot Camp, Maneuvers, Campaigns, and Replays.

Boot Camp

Close Combat's Boot Camp includes scenarios you can use to learn and practice the skills you need to play, and win at, Close Combat.

Maneuvers

Maneuvers are single battles, such as Off The Beach 1, that represent actions from the Normandy Campaign. At the end of each battle in maneuver play, the Debriefing screen appears; you must return to the Command screen and choose another Maneuver, Campaign, or Replay to continue playing.

Campaigns

A Campaign consists of all six Close Combat operations played in a continuous sequence. During campaign play, each of these six operations is composed of several battles. For example, during campaign play, the Off The Beach operation is composed of one to three battles. The number of battles you fight depends on your success; if you don't win a battle, you may find yourself fighting for the same terrain again—just as the 29th and 352nd Divisions did in the Normandy Campaign.

Replays

Replays are "movies" of a battle you played and saved. You can create Replays at the end of a battle (Maneuver or Campaign), or when you choose to end a battle, by using the Save Replay button on the Debriefing screen. You can jump in and start playing a Replay at any point during playback—as soon as you issue a command, you're playing the game.

Playing Close Combat—An Overview

- In Windows 95, click the Start button, click Programs, click Microsoft Games, and then click Close Combat.

  On the Macintosh, double-click the Microsoft Close Combat folder, then double-click the Close Combat icon.
- If you want to skip the opening graphics and move directly to the Command screen, press any key.

On the Command screen, click to select the game options you want:

1. Click Boot Camp (basic training), Maneuvers (to fight single battles), Campaign (to fight all battles sequentially), or Replays (to play previously completed battles).

   Choosing any of these options displays a scrollable list from which you can choose the training scenario or action you want to play.

   Maneuvers is the default setting.

2. Select the training exercise, battle, Campaign (new or saved), or Replay you want.

3. Select the side you want to fight on (American or German).

   American is the default setting.

4. Select one-player or two-player game.

   When you start Close Combat, the default setting is one-player—you choose the side you want to play, and your computer plays the enemy side. Click the Two-Player button to connect by way of a modem or network with another player.

5. Select the level of difficulty you want for the upcoming game: Easy, Normal, Hard, or Custom.

   The default setting is Normal.

6. Click Begin to load the game. The game starts in Deploy mode.

7. Examine the game map, drag your teams to the positions you want, then click Begin again to start game play.

   Once you begin play, you issue commands (Move, Move Fast, Fire, Smoke, Defend, or Hide) until you win or lose.

   When the game is over, Close Combat tells you who won, then the Debriefing screen appears, summarizing the results of the battle. From this screen you can save any completed game as a Replay.

   If you have played a Maneuver (single-battle) game, you can return to the Command screen and select another battle. If you're playing a Campaign game, you can choose to play the next battle in the Campaign.

Going to Boot Camp

Boot Camp walks you through five sample battles to teach you Close Combat basics. You lead soldiers and issue orders while learning the basics of the game. The exercises are usually most valuable when you do them in order, but you can do them randomly if you prefer.

To start Boot Camp

1. Click the Boot Camp button.
2. Click a Boot Camp exercise in the list.
3. Click Begin.

During Boot Camp training, you follow the directions in the training messages appearing on the screen. You continue through the exercise by performing the action it prescribes. You can quit at any point during Boot Camp by choosing Abort Battle from the Game menu (File menu on the Macintosh). Close Combat Boot Camp consists of the following five exercises:

Quick Tour of Close Combat

This quick tour is the shortest of the five exercises. It takes you to the Command menu and gives you an opportunity to issue commands.

Viewing Terrain

The terrain-viewing exercise covers the screen elements in the View Area (play area). It shows you the landscape and how to move around the map to see the battle.

Monitors and Toolbars

This exercise describes the screen elements surrounding the play area, and teaches you how to interpret soldier information. You learn about changes displayed in the game monitors and how to use those changes to your benefit.

Infantry Strategies

This exercise lets you try a few basic strategies that you can use in the battles. It briefly explains soldier behavior and the best ways to use tanks.

Armor Strategies

This advanced exercise gives you a chance to use all the skills you've acquired in the previous exercises. You practice using all the commands while you fight a sample battle. If you think you already know most of the basics and want to give game play a try, run this exercise first.

Maneuver Play

When you start a Maneuver, the Game screen appears with Close Combat in Deployment mode. You use this mode to move your teams where you want them (on your side of the battle line) before you begin the battle. Once you have deployed your teams, you begin the battle, and issue commands until you win, lose, click End Battle, or choose Abort Battle from the Game menu (File menu on the Macintosh).

At the end of each Maneuver, the Debriefing screen appears. This screen summarizes the results of the just-completed battle. From the Debriefing screen, you can either display the Debriefing Details screen, save the Maneuver for replay, or go to the Command screen. Once back at the Command screen, you can choose to play another Maneuver, start a new or saved Campaign, or select a Replay.

To win at maneuver play, you need only win a single battle. You can take more chances during a Maneuver than you should during a Campaign because you receive fresh teams after playing a Maneuver. Because you keep the same teams throughout the Campaign (although you may receive replacements for killed or wounded soldiers), the cohesion of your teams at the end of each battle is carried over to the next battle.

Campaign Play

When you start a Campaign, the Game screen appears with Close Combat in Deployment mode. You can deploy your teams where you want them (on your side of the battle line), then begin the battle. When the battle starts, you issue commands until you win, lose, click End Battle, or choose Abort Battle from the Game menu (File menu on the Macintosh).

When the battle is over, the Debriefing screen appears. From the Debriefing screen you can choose to display the Debriefing Details screen, then play the next battle, or you can skip the Debriefing Details screen and move straight to the next battle.

Which battle you play next depends on whether you win (decisive, major, or minor victory) or lose (decisive, major, or minor defeat) and which side you're playing on. If you are playing as the Americans:

- You skip ahead two battles if you score a decisive victory.
- You skip ahead one battle if you score a major victory.
- You play the next battle if you score a minor victory.
- You play the same battle if you suffer a minor or major defeat.
- You play the previous battle if you suffer a decisive defeat.

If you play as the Germans:

- You play the previous battle if you score a decisive victory.
- You play the same battle if you score a major or minor victory.

- You play the next battle if you suffer a minor defeat.
- You skip ahead one battle if you suffer a major defeat.
- You skip ahead two battles if you suffer a decisive defeat.

You cannot skip over the first battle on a new map, nor can you back up to a previous map. Advances and regressions are possible only with multiple battles on the same map. For example, since Across the Aure 1 and Off the Beach 3 are on different maps, winning Off the Beach 3 decisively as the Americans will still take you to Across the Aure 1 just like a minor victory would, but in much less time than it would take for a minor victory.

The two exceptions are Across the Aure 1 and Across the Aure 3. The Americans only get one chance to cross the Aure bridge in Across the Aure 1. If they fail, they must take a detour to Bricqueville to fight Across the Aure 3. In Across the Aure 3, the Germans get one chance to launch a major counterattack. Unless the Americans get a major or decisive victory, play will progress to Across the Aure 4, but the amount of time that elapses between the battles will vary with the level of victory.

During campaign play, Campaigns are automatically saved when each battle ends. If you exit Close Combat at the end of a battle during campaign play, Close Combat displays the next battle when you restart your Campaign.

If you save a Campaign as a Replay, only the battle you were playing is saved for Replay. If you save Hedgerows! 2 as a Replay, you only play Hedgerows! 2 when you load the Replay. When you finish playing Hedgerows! 2 as a Replay, the game is over; if you want to complete the Campaign, you need to start the saved Campaign.

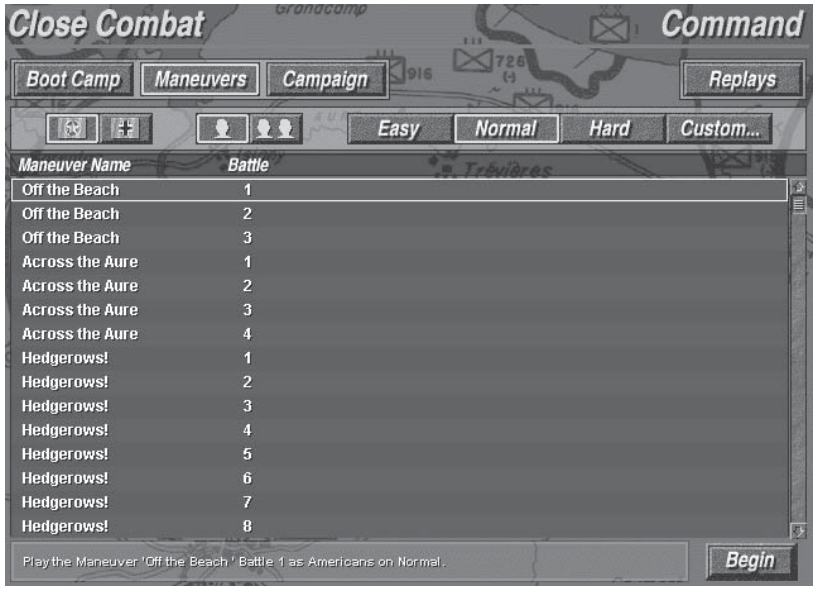
If the completed operation is the last operation, then you are shown a final video that congratulates the winner and offers advice to the loser.

To win at campaign play, you need to complete all six operations on or before the actual date on which Saint-Lô was secured. Remember that the condition of your teams at the end of each campaign battle is very important because you keep the same teams throughout the Campaign; you probably won't want to play as aggressively as you would in maneuver play.

Replays

You can choose to play back any game saved as a Replay. When you replay a saved game, you watch the action until the game is over. Or, you can issue a command that stops the Replay and lets you play the game to completion.

You can start a game by double-clicking the appropriate title in the scrollable list.



Reconnoitering Close Combat

Close Combat uses four screens: the Command, Game, Debriefing, and Debriefing Details screens.

Command Screen

The Command screen is the first screen that appears when you start Close Combat. You use the Command screen to select the type of game, side, number of players, and level of difficulty. The Command screen consists of the elements described in the following sections.

Menu Bar

Three items appear on the Close Combat menu bar: Game (File on the Macintosh), Options, and Help. The menu bar appears on all four Close Combat screens.

Game Buttons

Four game buttons appear on the Command screen; the button you select determines what is displayed in the scrollable list. The four buttons are:

Boot Camp button When you click the Boot Camp button, the available training exercises appear in the scrollable list.

Maneuver button When you click the Maneuver button, the available Maneuvers (single battles) appear in the scrollable list.

Campaign button When you click the Campaign button, the available Campaigns appear in the scrollable list. When you first start Close Combat, there are no Campaigns in the scrollable list; nothing appears in the scrollable list until you start a Campaign and complete the first battle. After you complete the first battle, the Campaign is automatically saved and appears in the scrollable list.

Replay button When you click the Replay button, the available Replays appear in the scrollable list. As with Campaigns, no Replays appear in the scrollable list when you first start Close Combat; there are no Replays to list until you create them.

Side Buttons

Two side buttons appear on the Command screen—the American and German side buttons. Click either button to select the side you want to play.

Number Of Player Buttons

Two Number Of Player buttons appear on the Command screen—One Player or Two Player. Clicking the One Player button means you play against Close Combat's artificial intelligence; clicking the Two Player button means you want to play another person using a local area network or modem.

Level Of Difficulty Buttons

You use the four Level Of Difficulty buttons to determine how hard a game will be to win. For a two-player game, the initiator controls the settings for both players. For example, if the initiator chooses Easy, then the opponent's level of difficulty is Hard; conversely, if the initiator chooses Hard, the opponent's level of difficulty is Easy. The initiator can also choose Custom settings for both players in the Custom Difficulty dialog box. The four buttons are:

Easy button Choosing Easy gives your side the advantage, making it stronger in numbers, weapons, and physical and psychological status, while making the enemy forces weaker, with poorer-quality troops. Your teams may be stronger, but this doesn't guarantee you will win; poor leadership on your part can dissipate your advantage.

Normal button Choosing Normal balances both sides, based on the historical order of battle, in numbers, weapons, and physical and psychological status. The historical order of battle reflects the actual distribution of troops in the Normandy Campaign.

Hard button Choosing Hard puts your side at a disadvantage because you receive a weaker force than the enemy. Selecting Hard tests your fighting skill to the maximum.

Custom button Choosing Custom lets you refine the level of difficulty.

Scrollable List

The scrollable list is the portion of the Command screen used to display Boot Camp exercises, battles (Maneuvers), Campaigns, and Replays.

Status Bar

The status bar displays the current selections made in the Command screen.

Begin Button

When you click the Begin button, Close Combat starts a game based on the selections you've made.

Game Screen

You use the Game screen to play Close Combat; the Game screen appears when you click Begin on the Command screen. The Game screen consists of the following:

- View Area
- Toolbar
- Command menu
- Game monitors

View Area

The View Area is the portion of the Game screen you use to play Close Combat. The battle map appears in the View Area; the map shown depends on the battle you play. You can scroll the battle map in the View Area by moving the mouse

pointer to the edge of the Game screen. For example, if you move the mouse pointer to the right side of the Game screen, the battle map scrolls from right to left.

You deploy your teams and issue commands in the View Area. When the Game screen appears, the View Area is set to normal view; you'll want to use this view most of the time. However, you cannot see the entire battle map in normal view, which can make monitoring a battle difficult. You can zoom out to display the entire battle map in the View Area, but doing so can make issuing commands more difficult.

To make monitoring a battle easy while using normal view, the Game screen includes five monitors you can use to "see" what's happening on the portion of the battle map not in view. These monitors can also help you move around the View Area more quickly than scrolling.

The battle map itself is composed of various terrain types that reflect the real terrain of the Normandy Campaign. All of the buildings on the battlefield are wooden or stone. The buildings all have roofs; however, the roof is "cut away" so you can see inside. If there are shell craters within the walls of a building, this indicates that the portion of the roof above the craters has been blown away.

Buildings or locations with flag symbols are Victory Locations. As the Americans, capturing Victory Locations is your primary goal—it's how you win the game. As the Germans, holding Victory Locations, and pushing back the Americans, is your primary goal. Structures with German flags are American Victory Locations; structures with American flags are German Victory Locations. If you have teams engaged in a battle for a Victory Location, the flag will be half German and half American. When you capture a Victory Location, your flag flies over it.

Toolbar in Deployment Mode

Toolbar in Game Play Mode

Toolbar

The Close Combat toolbar on the right side of the View area contains buttons you can click to change your view of the game screen, and to issue orders to friendly units. The buttons on the toolbar vary, depending on whether you are in Deployment mode or Game Play mode. For specific information on toolbar buttons and how to use them, see "Using the Toolbar."

Command Menu

You use the Command menu to issue commands to friendly units. The Command menu appears when you point at a unit, then click and hold down the mouse button. To issue a command to the selected unit, you drag toward you to select the command you want on the menu, then release the mouse button. For specific information on the Command menu, see "Issuing Commands."

Game Screen Monitors

Five monitors appear in the Game screen:

- Team monitor
- Soldier monitor
- Message monitor
- Overview monitor
- Zoom monitor

The monitors you see while playing Close Combat depend on your screen settings. If you play in 640x480, you see only the Team, Soldier, and Message monitors. If you play in 800x600, you also see the Overview monitor; if you play in 1024x768 or greater, you also see the Zoom monitor.

Before describing how to use the monitors in Close Combat, it's important to understand how color is used in the Team, Soldier, and Message monitors. Color is used to indicate quality in the Team and Soldier monitors and to indicate urgency in the Message monitor. The color green represents good condition in the Team and Soldier monitors. In the Message monitor, white indicates the lowest message priority.

In the Team and Soldier monitors, the color red indicates the terminally lowest quality—dead. Red indicates the highest message priority in the Message monitor.

Team Monitor

The Team monitor lists the teams that compose your fighting force during a battle. The Team monitor lists all your teams; each team is represented by a panel. Each panel consists of fields that list the team name, team type, team quality, current status, and the enemy threat indicator. For more information on using this monitor during a game, see "Using the Team Monitor."

The following sections describe the fields that compose the Team monitor.

Team Icon

The team icon is a graphical depiction of the personnel or vehicle that composes the team. For example, a group of soldiers indicates an infantry team, while two soldiers with a mortar indicate a mortar team. Vehicles include tanks, tank destroyers, halftracks, or other vehicle teams.

One to four gold bars are displayed in the upper-right corner of the team icon. These bars indicate the team's overall quality; the more bars, the higher the team's quality. Team quality does not represent the team's firepower; it represents the team's effectiveness as a unit, which is based on the team's average experience and base morale. Experience ranges from elite (most experienced) to

conscript (least experienced). Base morale is the team's morale at the start of a battle and represents the soldiers' willingness to fight.

If a team starts a Campaign with minimal quality but enjoys success in a given battle, the team can increase in quality, reflected by more gold bars in subsequent battles. Conversely, elite teams can lose quality when killed or wounded team members are replaced with new soldiers. If the replacements perform well, the team quality can improve back to elite.

When you start a Campaign, your name is entered as your side's leader. You are made a member of an elite team; you can never be killed, although you may be wounded or incapacitated for the duration of a given battle. If you are playing a Campaign, your wounds heal miraculously so you are ready for the next battle.

Teams are rated according to the following attributes:

Attribute	Description
Stress	Each team is tracked for having undergone stressful events. These events include: Gun Attack—Fired at by artillery. Ambushed—Attacked by unknown enemy while exposed. Outnumbered—More enemies than friendly teams are seen. Tank Attack—Fired at by a tank. Encircled—Fired at from opposite sides. Exposed—Pinned by fire in poor cover.
Anti-Stress	These events help reduce the effect of stress: Outnumbering—More friendly teams than enemy teams. Ambushing—Catching an enemy team in the open. Cohesion—The overall fighting ability of the team. As the team suffers losses and stress accumulates, the cohesion of the team is reduced. Reduced cohesion means the fighting ability of all soldiers on the team is reduced. The team's cohesion rating is represented by the background color in the Team Type panel; as with all color in Close Combat, green is good (high cohesion), red is low, and black indicates terminally low cohesion. Orders—The order given the soldier by the Close Combat AI or the player. Order Strength—The force of the order based on the overall leadership of the side, with a bonus if the player issued the order. Action—What the team is currently doing, which may or may not be what you commanded it to do. For more information, see "Close Combat Game Theory" in Chapter 1, "About Close Combat."

Leader Rank

An insignia indicates the team leader's rank. The leader of any given team can be either the leader of only that team, or the leader of several teams. You are the highest-ranking leader as company commander, but there are also platoon, squad, team, and assistant team leaders. Platoon leaders command four or more teams, squad leaders command two to four teams, and team leaders command only their own team.

If a leader is incapacitated, the subordinate leaders are "promoted" to fill the vacancy left by the incapacitated leader. The lowest level of leader is assistant leader (infantry) or assistant (vehicle); if either of these lowest-level leaders is incapacitated, an enlisted man is "promoted" to take the incapacitated leader's place.

If no insignia is displayed, the team is commanded by a team leader. Team leaders can affect only the men on their team; they cannot rally men on other teams. If an insignia is displayed, the team is commanded by a squad leader (or higher). Squad leaders can affect the men on all the teams under their command.

You can also determine a team leader's rank in the hierarchy by the size of the leadership circle that surrounds each team leader. If the circle is thick, the team leader is also the company commander. A medium-sized circle represents a platoon leader. If the circle is thin, the leader is a squad leader. Leadership quality is indicated by the color of the circle, ranging from green (best) to red (worst).

Team Type

The team's type is displayed against a color background; the color reflects the team's current cohesion. The basic team types are:

- Tank (tank, tank destroyer, or motorized artillery)
- Vehicles (halftrack, armored car, or light vehicle)
- Gun (antitank, artillery, flak, infantry gun)
- Machine Gun (MG42, .30 cal, .50 cal)
- Mortar (8 cm, 60 mm)
- AT Infantry (Bazooka, Panzerschreck)
- Heavy Infantry (Assault, Sturmgruppe)
- Medium Infantry (BAR)
- Light Infantry (Rifle)
- Scout (Recon)
- Sniper

Current Command

The command you most recently issued to a team is displayed beneath the team type, unless the command has already been carried out or the team has decided to disobey it. Commands are displayed in color; if the text is green, the team is

following the orders you issued. Red text indicates the team is intentionally acting against the command you issued due to local battlefield conditions. White text indicates you have issued no commands to the team, or the command you previously issued has been completed. In this case, the team will go into Defend mode (Ambush for the Germans) and select targets of opportunity based on local battlefield conditions.

Enemy Threat Indicator

The rosette to the right of the team type and current orders is the enemy threat indicator. The indicator is an eight-sided rosette; the eight points of the rosette represent eight compass points: north, northeast, east, southeast, south, southwest, west, and northwest.

These eight points are green at the start of the game and change to red when a team is threatened by the enemy. A team is threatened when it either sees, or is fired upon by, the enemy. For example, if one of your teams sees enemy troops to the north, the north point of the rosette turns red. If your team is taking fire, both the appropriate compass point and the center of the rosette turn red.

When you start a game, all American teams scan for threats using a 90-degree arc aimed west (the direction of the Germans); all German teams scan for threats using a 90-degree arc aimed east (the direction of the Americans).

If you issue a Defend command to a team, you manually set the arc the team uses to scan for threats. A blue circle appears, which you use to set the width of the arc the team uses to scan for threats.

This arc is used to scan the terrain for cover and potential ambush points; the scan arc works in the same manner as the scan for threats. For example, at the start of a game, all American teams scan in a 90-degree arc aimed west and all German teams scan in a 90-degree arc aimed east.

When you start a game, your teams start scanning for both threats and cover. For example, if a team starts in the middle of an open field, they scan for cover within their scan arc, then move toward the closest available cover. If there is a stone fence twenty meters away and a stone building fifty meters away, the team will move to the stone fence; even though it provides less protection than the stone building, as it's closer to the team. However, if the team's threat scan reveals an enemy threat, the team may move back to different cover, as the stone fence may not protect against fire from the enemy's direction.

A team's scan arc changes when you issue a Move or Move Fast command. When you issue one of these commands, the team scans 45 degrees to either side of the compass heading the team is ordered to move on. For example, if you order a team to move north, it will scan 45 degrees to the left of north (west and northwest) and 45 degrees to the right of north (east and northeast).

Soldier Monitor

The Soldier monitor lists the soldiers that compose each team in your fighting force. Selecting a team in the Team monitor displays the team members in the Soldier monitor. The Soldier monitor lists soldiers' health, fatigue level, and emotional state, along with their weapons and ammunition. For more information on using this monitor during a game, see "Using the Soldier Monitor."

The Soldier monitor displays panels for all members of the selected team. A Team panel also appears in the Soldier monitor; the Team panel consists of fields summarizing the vehicle or infantry team. There is a Vehicle Team panel and an Infantry Team panel. To view all the soldiers in the monitor, use the scroll bar.

Each soldier is continuously monitored and rated throughout the game. Soldiers are rated on the following abilities.

Ability	Description
Physical	Increases ability to withstand injury and perform tasks without becoming rapidly fatigued
Mental	Improves reaction time when ambushed, ability to repair and unjam weapons, and ability to learn quickly from combat experience
Leadership	Increases team cohesion, which reduces the chance that other soldiers in the leaders team will break and run
Morale	Decreases likelihood of a soldier being panicked or suppressed by enemy fire
Experience	Improves use of cover, weapons, and ammo selection, and decreases chance of being injured
Skill	Improves probability of hitting targets

During campaign or maneuver play, the interaction of these rated abilities and enemy fire results in states the game tracks for each soldier. These states are displayed in the Soldier monitor.

State	Description
Health	Each soldier starts the game healthy; a soldier's health obviously declines if he's injured.
Suppression	One effect of incoming fire is to make a soldier keep his head down and not return fire.
Morale State	Makes a soldier more susceptible to disobeying commands and more likely to surrender.

Fatigue	Fatigue accumulates as a soldier runs or carries heavy equipment; resting reduces fatigue.
Observation	If a soldier is observed by the enemy, he is more likely to be shot at. There are different levels of observation, ranging from hidden (not seen on the game map) to concealed (shadows on the game map) to observed (soldiers displayed on the game map).

Below the Vehicle or Infantry Team panel is a crew (vehicle) or soldier (infantry) panel for each member of the selected team. These panels are composed of fields; these fields are described in the following section.

Vehicle Team Panel

The Vehicle Team panel consists of the following fields:

Vehicle Icon The same vehicle icon displayed in the Team monitor.

Vehicle Name A more descriptive name than that displayed in the Team monitor. The same color-coding is used in both the Team and Soldier monitors; green indicates operational, and black indicates destroyed.

Current Order Same as Current Order in the Team monitor. Displays the last order you issued, or the last order the team has decided to carry out. Again, the same color-coding is used: Green indicates the team is following the order you issued, and red indicates the team is acting against your order, based on local battlefield conditions.

Team Effectiveness & Firepower The small graph indicates the vehicle's weapons rating in both antipersonnel (Anti Pers.) and antitank (Anti-Tank) firepower. A vehicle's firepower is based on the weapons it carries and the effectiveness of the crew. Note that most weapons' effectiveness drops as the range increases.

Firepower is listed according to range; range is indicated in tens of meters (20, 40, 80, 160, 320, and 640 meters). Colored bars indicate the vehicle's firepower at each range. A green bar means high firepower, while red means low firepower; the other Close Combat colors indicate relative degrees of firepower. For example, orange in the Antitank graph means you need a flank or rear shot to destroy a heavily armored enemy tank. A gray dash or black line shows the vehicle is not capable of delivering that type of fire. For example, if a vehicle has gray lines in the Anti-Tank portion of the graph, it means the vehicle has no antitank weapons.

Smoke Indicator A vehicle can fire smoke shells only if it has the Smoke symbol.

Vehicle Condition There are seven vehicle conditions; the condition text is color-coded to match the actual condition. The following table lists the condition text and associated color.

Condition text	Text	Color
Operational	In battle-ready condition.	Green
Damaged	Some of crew injured, weapons damaged, or speed reduced.	Orange
Immobilized	Vehicle can no longer move.	Red
Abandoned	Crew has left the vehicle or is dead.	Red
Burning	Vehicle is on fire.	Red
Exploded	Vehicle has exploded and crew inside is dead.	Red
Burned Out	Vehicle has burned.	Red

Status Fields These fields list the weapons with which the vehicle is armed. Vehicle weapons are color-coded; green indicates the weapon is operational, red indicates it's not operational. Each vehicle may have one or more of the following weapons.

Status field	Description
Main Gun	The vehicle's primary weapon. For example, on a Tiger tank, the main gun is an 88-mm high-velocity cannon.
Bow MG	Bow-mounted machine gun.
Coax MG	Coaxial-mounted machine gun.
Mobility	The vehicle's current mobility; the vehicle is either mobile or immobile.
AA MG	Antiaircraft machine gun.

Infantry Team Panel

The infantry header consists of the following panels:

Team Icon The same team icon displayed in the Team monitor.

Team Name A more descriptive name than that displayed in the Team monitor. The same color-coding is used in both the Team and Soldier monitors; green indicates operational, and red indicates destroyed.

Current Order Same as Current Order in the Team monitor. The last order you issued, or the last order the team has decided to carry out, is displayed. Again, the same color-coding is used; green indicates the team is following the order you issued, and red indicates the team is acting against your order, based on local battlefield conditions.

Team Effectiveness & Firepower The small graph indicates the team's weapons rating in both antipersonnel (Anti Pers.) and antitank (Anti-Tank) fire power. A team's firepower is based on the weapons it carries and the effectiveness of the team. Note that most weapons' effectiveness drops as the range increases.

Firepower is listed according to range; range is indicated in tens of meters (20, 40, 80, 160, 320, and 640 meters). Colored bars indicate the team's firepower at each range. A green bar means high firepower, and red means low firepower; the other Close Combat colors indicate relative degrees of firepower. A gray dash or black line shows that the unit is not capable of delivering that type of fire. For example, if an infantry team has gray lines in the Anti-Tank portion of the graph, it means the team has no antitank weapons.

Note that most German infantry teams have antitank capabilities even though the team may not have any antitank weapons listed in the Soldier monitor. This reflects the fact that many German infantrymen were issued *Panzerfausts* along with their primary weapon. When German units encountered tanks or other vehicles, soldiers could put down their rifles and use the *Panzerfaust*. This proved effective against the American forces in the Normandy Campaign, since the Americans never knew when an antitank weapon might be deployed against them.

Smoke Indicator A team can fire smoke shells or throw smoke grenades only if it has the Smoke symbol.

Soldier Panels

There is a Soldier panel for every team member; these panels are the same for both vehicle and infantry teams. The Soldier panel consists of the following fields:

Rank Icon An insignia indicating the soldier's rank.

Name The soldier's surname, as selected from a list of American or German names.

Current Action Displays what the soldier is doing. The current action text is color-coded; green indicates the soldier is following an order you issued, red indicates the soldier is taking action that countermands your order, and white indicates that no order has been issued and the soldier is acting on local battlefield conditions. The following table lists all the messages that can appear as current actions.

Current action	Description
Moving	Soldier is moving.
Resting	Soldier is too tired to do anything but rest.
Loading	Soldier is loading his weapon.
Aiming	Soldier is aiming his weapon or waiting for loader to finish loading.
Firing	Soldier is firing his weapon.
Taking Cover	Soldier is looking for better cover.
Assaulting	Soldier is moving forward and firing.
On Watch	Soldier is looking for targets.
Holding Fire	Soldier has loaded weapon and sees a target, but chooses not to fire.
Suppressed	Soldier is suppressed by enemy fire (takes cover), but will still fire.
Pinned	Soldier is pinned down by enemy fire, hides more than he shoots.
Cowering	Soldier is pinned down, but rarely fires and refuses to move.
Routed	Soldier is running away from the battlefield.
Panicked	Soldier is panicked and is seeking cover out of sight of the enemy.
Unjamming	Soldier is trying to clear a jammed weapon.
Assisting	Soldier is assisting another soldier with a crew weapon.
Firing/Target	Soldier is firing at a specific target.
Firing/Area	Soldier is firing at an area or location.
Firing Blind	Soldier is firing at a target he cannot see.
Out of Ammo	Soldier is out of ammunition.
Can’t See	Soldier cannot see target.
Friend Block	Soldier’s line of fire is blocked by friendly soldiers.
Gun Broken	Soldier’s gun is damaged.
No Target	Soldier cannot see a target at which to fire.

Crawling	Soldier is crawling toward cover or destination.
Ambushing	Soldier is ambushing the enemy.
Hiding	Soldier is hiding from the enemy.
Bad Shot	Soldier has a shot that is a waste of ammunition.
In Building	Soldier (mortar team) is inside building and cannot fire.
No Weapon	Soldier has no weapon.
Repairing	Soldier is repairing his weapon.
Can't Target	Target is outside the gun's firing arc.
Conserving	Soldier is running low on ammunition so he's conserving it.
Too Close	Soldier is too close to the target to fire.
Separated	Soldier is separated from his team.

Function in Team Describes the soldier's role on the team. The following table lists the team functions.

Function	Description
Leader	Leader of an infantry team
Assistant	Assists the driver of a vehicle and fires bow machine gun or is second in command on an infantry team
Soldat	German infantryman
G.I.	American infantryman
Cmdr.	Commander; leader of a vehicle team
Driver	Driver of a vehicle
Gunner	Fires vehicle's main weapon
Loader	Loads vehicle's main weapon

The next three components of the panel describe a soldier's physical state (Health), mental stability (Emotional State), and level of fatigue (Fatigue Level).

Only one factor determines a soldier's physical state: being wounded. The factor that determines a soldier's level of fatigue is also simple—physical exertion. For example, if you issue a command to a heavy mortar team to move fast for a long distance, the team will be tired when they complete the move. Extended combat also fatigues soldiers.

The factors that determine a soldier's mental stability are more complex. Good team leadership, team success, and lack of suppression fire from the enemy all contribute positively to a soldier's emotional state. Conversely, bad leadership, wounded or killed team members, and heavy suppression fire all contribute negatively to a soldier's emotional state.

Health Shows a soldier's physical state. These states are described in the following table.

Health	Description
Healthy (green background)	Soldier is physically able to obey all commands.
Hurt (yellow background)	Soldier is slightly wounded; physically able to obey orders at a reduced level of performance.
Incap. (orange background)	Incapacitated; soldier is severely wounded and unable to obey commands.
Dead (red background)	Soldier is terminally disobedient.

Emotional State Shows a soldier's mental stability. The states are described in the following table.

Emotional state	Description
Berserk (red text on black background)	Soldier is irrational and disregards personal safety to attack the enemy.
Fanatic (orange text on black background)	Soldier is slightly irrational and takes chances to be a hero.
Heroic (yellow text on black background)	Soldier fights aggressively and is capable of heroic acts.
Stable (black text on green background)	Soldier's default setting; in full control of emotions.
Panic (black text on red background)	Soldier is emotionally unstable and must be rallied to become effective.
Routed (black text on red background)	Soldier is running away from the battleground.

Fatigue Level Shows a soldier's level of fatigue. The states are described in the following table.

Fatigue level	Description
Rested (green background)	Soldier is well rested.
Winded (yellow background)	Soldier is temporarily out of breath but will recover quickly.
Fatigued (red background)	Soldier is so tired that his performance is affected.

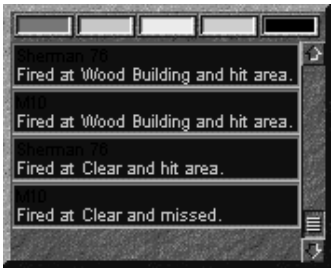
Weapon Icon Graphical display of the soldier's weapon.

Weapon Name Text describing the soldier's weapon.

Ammo Type Describes the type of ammunition used by infantrymen, crew weapon team members, or vehicle crew members. There are five types of ammunition, as shown in the following table.

Ammunition type	Description
AP	Armor piercing.
HE	High explosive; used against infantry, light vehicles, and structures.
HEAT	High explosive, antitank; used against tanks, tank destroyers, and motorized artillery. Not effective against infantry in the open, but can be effective against infantry in structures.
Smoke	Smoke shells or grenades; used to screen infantry and vehicle movement from the enemy.
SP	Special; includes canister and high velocity AP.

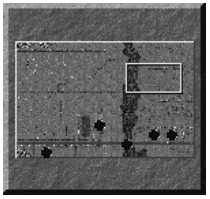
Ammo Rounds The number of rounds of the listed type the infantryman or crew member has in his possession.



Message Monitor

The Message monitor lists messages sent by your teams; you can use these messages to monitor what's happening to your teams. You receive messages when teams complete moves, when teams come under fire, and when a tank hits a target. For more information on using this monitor during a game, see "Using the Message Monitor."

The message text is color-coded according to the importance of the message; red indicates the most important messages while green indicates the least important. You can filter out less important messages if you want. You filter messages using the five color-coded Message Filter buttons at the top of the Message monitor.



Overview Monitor

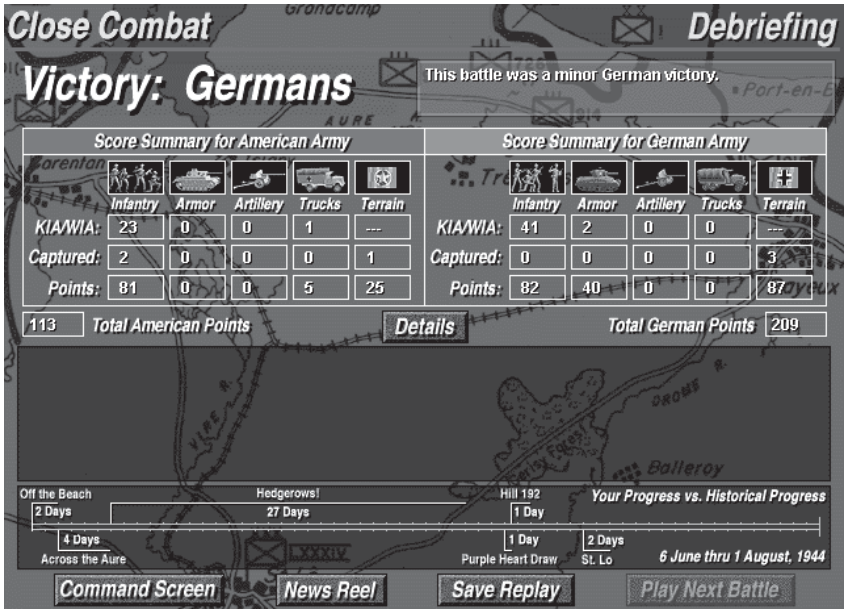
The Overview monitor displays a zoomed-out view of the battle map. This monitor appears only if you play at 800x600 resolution or higher. For more information on using this monitor during a game, see "Using the Overview Monitor."

Zoom Monitor

When the View Area is in normal mode, the Zoom monitor displays a zoomed-in view of the mouse pointer position in the View Area. When the View Area is zoomed in or zoomed out, the Zoom monitor is blank.

Debriefing Screen

The Debriefing screen appears at the end of each battle (unless you selected Abort Battle, in which case the Command screen appears). You use the Debriefing screen to see the results of the just-completed battle. You also use this screen to go to the Debriefing Details screen, back to the Command screen, to the next battle (Campaign only), or to save a battle as a Replay. The Debriefing screen consists of the elements described in the following sections.



Victory Information

This portion of the Debriefing screen displays the side that won and the type of victory (decisive, major, or minor).

Score Summaries

Two score summaries appear on the Debriefing screen: one for the American Army and one for the German Army. These summaries display the points each side earned based on casualties inflicted and terrain captured. Total points are also displayed; they are the sum of points each side has earned. For details on points, see “Scoring.”

Details Button

Clicking this button displays the Debriefing Details screen. For more information, see “Debriefing Details Screen.”

Historical Timeline

The Historical Timeline shows you how long it took the Americans to advance from Omaha Beach to Saint-Lô. This is the timeline you compete against during campaign play. If you play as the Americans, your goal is to secure Saint-Lô in 43 days or less. If you play as the Germans, your goal is to force the Americans to take more than 43 days to secure Saint-Lô.

Command Screen Button

You use the Command Screen button to display the Command screen.

Save Replay Button

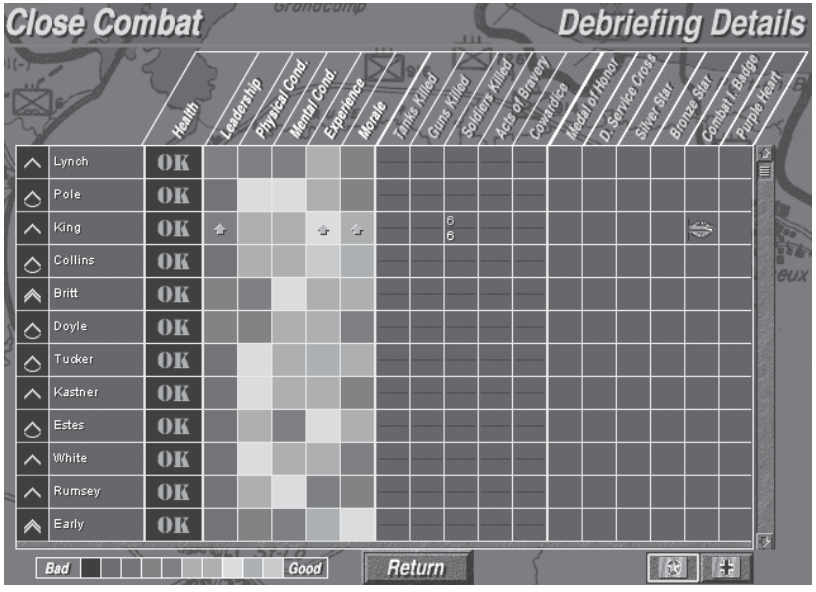
You use the Save Replay button to create a Replay. A Replay is a completed battle that you can play back; at any time during playback you can start issuing commands, which stops the playback and gives you the opportunity to complete the game as if it were a Maneuver. For more information, see "Replays."

Play Next Battle Button

You use the Play Next Battle button only during a Campaign. You click this button to start the next battle in the Campaign without displaying the Command screen.

Debriefing Details Screen

To view the Debriefing Details screen, click the Details button on the Debriefing screen. This screen provides detailed health, status, scoring, and performance information on every soldier under your command. While the Debriefing Details screen may look formidable when it first appears, it's very useful in understanding how Close Combat determines team cohesiveness, team quality, and scoring.



The Debriefing Details screen consists of the Return button, color scale, Side buttons (American and German), and Debriefing table.

Return Button

When you click the Return button, the Debriefing screen appears. For more information, see “Debriefing Screen.”

Color Scale

The color scales shows the range between good (green), bad (red), and dead or destroyed (black). These colors, along with text, are used throughout the Close Combat monitors to indicate a soldier’s health, fatigue level, emotional state, experience, and morale; the colors are also used to indicate a team’s cohesion and quality. Color is used to indicate the importance of messages, too.

Side Buttons

Two Side buttons appear on the Debriefing Details screen: American and German. Clicking the American button displays all American soldiers in the Debriefing table; clicking the German button displays all German soldiers in the table.

Debriefing Table

The Debriefing table consists of rows and columns; the soldiers under your command are listed in the rows. Columns representing the soldier’s health, status, scoring, and performance delineate each row into fields.

Text (characters and numbers), symbols, and colors are used, individually and in combinations, to indicate a soldier’s health, status, scoring, and performance.

Rank and Name The first two columns in the Debriefing table are not labeled. The first column displays the soldier’s rank; rank is indicated by the insignias used by the U.S. and German armies during World War II. The second column displays the soldier’s surname.

The remaining columns in the table are labeled; each labeled column is described in the following sections.

Health Both text and symbols are used to indicate a soldier’s health; the text and symbols used are:

OK	The soldier is healthy.
+	The soldier is slightly wounded.
++	The soldier is seriously wounded (incapacitated).
KIA	The soldier was killed in action.
Flag	A white flag indicates the soldier was captured.

The next five show the status of each soldier’s ability to lead, level of fatigue, emotional state, experience, and morale.

Leadership Leadership indicates the ability a soldier has to lead his team, rally his team, and rally other teams. Color is used to show a soldier's leadership ability. Green indicates the highest leadership ability, while black indicates the lowest. An arrow symbol is used to indicate whether leadership ability increased or decreased as a result of the just-completed battle. An up-arrow symbol means leadership ability went up; a down-arrow symbol means leadership ability went down.

Physical Condition A soldier's physical condition reflects the ability to perform strenuous actions without being fatigued quickly and to withstand injuries that would stop lesser men. Green indicates the best physical condition, while black indicates the soldier is dead. This attribute can decrease due to injuries received during combat and is indicated by a down arrow.

Mental Condition A soldier's mental condition reflects the ability to react quickly to battlefield conditions, to learn from those experiences, and apply them the next time. This attribute never changes.

Experience Soldiers gain experience by surviving battles. The amount depends on how well they perform and how easily they learn (mental condition). Experienced soldiers tend to perform better than inexperienced soldiers. Color is used to show a soldier's experience. Green indicates the highest level of experience (elite), while black indicates the lowest (conscript). Because soldiers can only gain experience and not lose it, only the up-arrow symbol is displayed.

Morale A soldier's morale represents how well the soldier can withstand the terrors of the battlefield and remain an effective fighter. This attribute can increase (up arrow) or decrease (down arrow) based on the amount of stress and how well the soldier handles it. Green indicates the highest morale while black indicates the lowest.

The next five fields show you how the soldier performed in terms of scoring in the just-completed battle.

Tanks Killed Two numbers may be displayed in this field; the top number indicates the number of tanks a soldier destroyed (or helped destroy) in the just-completed battle, while the lower number is the cumulative total of tanks destroyed during a Campaign.

Guns Killed Two numbers may be displayed in this field; the top number indicates the number of guns a soldier destroyed (or helped destroy) in the just-completed battle, while the lower number is the cumulative total of guns destroyed during a Campaign.

Soldiers Killed Two numbers may be displayed in this field; the top number indicates the number of enemy soldiers a soldier killed in the just-completed battle, while the lower number is the cumulative total of enemy soldiers killed during a Campaign.

Acts of Bravery Two numbers may be displayed in this field; the top number indicates the number of brave acts a soldier performed in the just-completed battle, while the lower number is the cumulative total of brave acts performed during a Campaign.

Cowardice Two numbers may be displayed in this field; the top number indicates the number of times a soldier acted cowardly in the just-completed battle, while the lower number is the cumulative total of times a soldier acted cowardly during a Campaign.

The next six fields indicate how a soldier performed in terms of medals won. Medals are awarded for acts of bravery and for being wounded.

Medal of Honor (American) Highest medal awarded to U.S. military personnel. The number displayed is the cumulative total of medals awarded during a Campaign.

Distinguished Service Cross (American) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Silver Star (American) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Bronze Star (American) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Combat Badge (American) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Purple Heart (American) Awarded to wounded soldiers. The number displayed is the cumulative total of medals awarded during a Campaign.

Knight's Cross (German) Highest medal awarded to German military personnel. The number displayed is the cumulative total of medals awarded during a Campaign.

Cross In Gold (German) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Iron Cross 1st (German) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Iron Cross 2nd (German) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Assault Badge (German) Awarded for bravery. The number displayed is the cumulative total of medals awarded during a Campaign.

Wounded Badge (German) Awarded to wounded soldiers. The number displayed is the cumulative total of medals awarded during a Campaign. Note that unlike the Purple Heart, the Wounded Badge is awarded only to soldiers severely injured or maimed in combat.

Starting Games

The following sections provide instructions for starting Maneuvers, Campaigns, and Replays.

Starting Maneuver Play

The procedure for starting maneuver play assumes that you have already started Close Combat and the Command screen is displayed.

To start maneuver play

1. On the Command screen, click the Maneuvers button (Maneuvers is the default setting).

   The available Maneuvers appear in the scrollable list.
2. Select the Maneuver you want to play by clicking it in the scrollable list.

   The Maneuver is selected and "Play the Operation [Maneuver] Battle [#] as [American or German] on [Difficulty]" appears in the status bar.
3. Select the side you want to play by clicking the American or German button.
4. Select the number of players by clicking the one- or two-player button.

   For information about how to set up a two-player game, see "Playing a Two-Player Game."
5. Select the level of difficulty by clicking on the Easy, Normal, Hard, or Custom button (see "Refining the Level of Difficulty").

   If you select Custom, the Custom Difficulty dialog box appears, allowing you to customize American and German strength. You can also choose the following options: make enemy units always visible, enemy intelligence always known, friendly units always obey orders, and friendly units fearless.
6. Click Begin.

   The Game Play screen appears with Close Combat in Deployment mode.
7. Deploy your teams where you want them, then click Begin again.

   The Maneuver starts and you can begin issuing commands.

Refining the Level of Difficulty

You can refine the level of difficulty of any game. When you select the Custom button on the Command screen, the Custom Difficulty dialog box appears.

The items in the Custom Difficulty dialog box are described in the following sections.

American Strength

You use this list box to select the strength of American forces; the available levels of strength are: very strong, strong, average (default setting), weak, and very weak.

To select American strength

1. Click the button next to the American Strength text box.

   The strength list appears with Average displayed in the text box and list box.
2. Click the up or down button next to the strength list to display the strength you want.
3. Point at the strength you want.

   The strength you want is selected.
4. Click the text box or press Enter.

   The selected strength appears in the text box.

German Strength

You use this list box to select the strength of German forces; the available l evels of strength are: very strong, strong, average (default setting), weak, and very weak.

To select German strength

1. Click the button next to the German Strength text box.
2. The strength list appears with Average displayed in the text box and list box.
3. Click the up or down button next to the strength list to display the strength you want.
4. Point at the strength you want.

   The strength you want is selected.

5 Click the text box or press Enter.

The selected strength appears in the text box.

American Units Always Obey Orders

You use this check box to make American units always obey your commands, regardless of battlefield conditions.

To make American units always obey orders

- Click the check box. When a check mark appears in the check box, this option is enabled.

American Units Are Fearless

You use this check box to make American units fearless, regardless of battlefield conditions.

To make American units are fearless

- Click the check box. When a check mark appears in the check box, this option is enabled.

German Units Always Obey Orders

You use this check box to make German units always obey your commands, regardless of battlefield conditions.

To make German units always obey orders

- Click the check box. When a check mark appears in the check box, this option is enabled.

German Units Are Fearless

You use this check box to make German units fearless, regardless of battlefield conditions.

To make German units fearless

- Click the check box. When a check mark appears in the check box, this option is enabled.

Enemy Units Are Always Visible

You use this check box to make sure you can always see enemy units in the View Area.

To make enemy units always visible

- Click the check box. When a check mark appears in the check box, this option is enabled.

Enemy Intelligence Always Available

You use this check box to make intelligence concerning the enemy always available.

To make enemy intelligence always available

- Click the check box. When a check mark appears in the check box, this option is enabled.

Starting Campaign Play

When you first load Close Combat, the only Campaign in the scrollable list is New Campaign. Campaigns appear in the scrollable list only after you've saved them.

If you don't want to see the Deployment video at the start of each operation in a Campaign, you can turn the videos on and off using the Options menu. If there is a check next to Videos on the Options menu, then videos are turned on.

When you start campaign play, you will either start a new or saved Campaign. The procedures for starting both new and saved campaigns assume that you have already started Close Combat and the Command screen is displayed.

To start a new Campaign

1. On the Command screen, click the Campaign button.

   Any saved Campaigns appear in the scrollable list with New Campaign at the top of the list.
2. Select the side, number of players, and level of difficulty.
3. In the scrollable list, double-click New Campaign.

   The New Campaign Game popup appears.
4. Type your commander's name, then press TAB.

   You can use up to 11 alphanumeric characters for the commander's name.
5. Type your Campaign's name.

   You can use up to 31 alphanumeric characters for the Campaign name.

6 Click OK.

The New Campaign Game popup disappears and your new Campaign is added to the scrollable list.

7 Click Begin.

The Deployment video plays, then the Game Play screen appears. Remember, when the Game Play screen first appears, the game is in Deployment mode.

8 Move your teams to the locations you want, then click Begin.

The first operation of the Campaign begins.

To start a saved Campaign

1 On the Command screen, click the Campaign button.

Any saved Campaigns appear in the scrollable list.

2 In the scrollable list, double-click the name of the unfinished Campaign you want to play.

The unfinished Campaign is loaded and the Game Play screen appears with Close Combat in Deployment mode. You have the opportunity to move your teams before you start playing.

3 Click Begin.

The Campaign resumes and you can begin issuing commands.

Starting Replays

When you start a Replay, you can choose to end playback and take command of the game at any time by issuing a command.

To start a Replay

1 On the Command screen, click the Replay button.

The saved games (Replays) appear in the scrollable list.

2 In the scrollable list, double-click the name of the Replay you want to play back.

The Replay begins to play back.

3 If you want to take command of the Replay, issue a command (Move, Move Fast, Fire, Smoke, Defend, or Hide).

Close Combat tells you that it's ending playback and you are taking command.

Winning Close Combat Games

Winning any battle is based on the following criteria, which are listed from most important to least:

- Pushing enemy force morale into red, causing the enemy to abandon the battlefield, while your force morale remains green or yellow.
- Securing more Victory Locations and inflicting more casualties before time runs out.

Winning Close Combat games also depends on which type of game you choose to play. Winning Maneuvers and Replays is determined by the criteria listed previously. An additional layer of criteria when you play a Campaign is the 43-day historical timeline; this is the number of days it took the Americans to move from Omaha Beach to Saint-Lô. If you play as the Americans and complete all six operations in 43 days or less, you win the Campaign. If you play as the Americans and complete all six operations in more than 43 days, the Germans win.

Scoring

Close Combat scores games based on casualties inflicted (incurred) and Victory Locations captured (held). Casualties and Victory Locations captured are scored as shown in the following tables.

Americans	Killed or Wounded	Captured
Soldiers	2	4
Light vehicles (trucks, personnel carriers, and halftracks)	5	10
Artillery	10	20
Heavy vehicles (tanks, tank destroyers, and motorized artillery)	20	40
Victory Locations	NA	1 to 100

Germans	Killed or Wounded	Captured
Soldiers	3	6
Light vehicles (trucks, personnel carriers, and halftracks)	7	15
Artillery	15	30
Heavy vehicles (tanks, tank destroyers, and motorized artillery)	30	60
Victory Locations	NA	1 to 100

If you capture a Victory Location and are not routed off the field, you receive all of the points for that location. For example, if the Americans capture a Victory Location worth 20 points and hold it until the game ends, the Americans receive 20 points.

If you start a battle holding a Victory Location and hold it throughout a battle, you receive half of the points for that location. For example, if the Germans hold a Victory Location worth 20 points throughout the game, the Germans receive 10 points when the game ends.

If both sides hold the same Victory Location, the Germans and Americans divide the points for that location. For example, if the Germans hold a 20-point location at the start of a battle, and the Americans and Germans are still fighting for possession of the location when the battle ends, the Americans receive 10 points (one-half of the total) while the Germans receive 5 points (one-quarter of the total).

The number of points assigned to each Victory Location depends on the strategic value of the location. Locations with nominal strategic value are worth 1 to 19 points, locations with moderate strategic value are worth 20 to 39 points, and locations with vital strategic value are worth 40 to 100 points. The strategic value of any Victory Location is indicated by the size of type that marks it; the larger the type, the higher the strategic value.

If one side is routed or chooses the End Battle button, the opposing side receives one-quarter of the points for all Victory Locations held by the team choosing to end the battle.

Deploying Teams

The game first begins in Deployment mode. During this time you can move your teams to any legal location within your setup area. For example, you can't deploy tanks in buildings or soldiers in rivers. There are three types of setup areas: Enemy Controlled (dark grey), "No Man's Land" (light grey), and Friendly (no shading).

To deploy a team, select it with the mouse, then drag the team to its destination and release the mouse button. All the members of the team will deploy to take advantage of the terrain in and around the location you select.

When you have finished deployment, click Begin to start the battle.

Issuing Commands

No matter what kind of game you choose—Maneuver, Campaign, or Replay—you can issue six commands to your teams: Move, Move Fast, Fire, Smoke, Defend, and Hide. To issue a command to a team, you need to perform these three steps:

1 Point at a unit, then click and hold down the mouse button.

Clicking a unit or a soldier in a unit selects the unit. The Command menu appears when you point at a unit or a soldier in a unit and hold down the mouse button.

2 While you hold down the mouse button, drag toward you to select the command you want from the menu, then release the mouse button.

3 Drag to draw a line from the unit to its destination or target, then release the mouse button.

Issuing Move and Move Fast Commands

You can select a team by clicking the team's icon in the Team monitor. Double-clicking selects the team and centers it in the View Area.

You issue the Move and Move Fast commands to tell teams where you want them to go, and how quickly you want them to go there. The team moves faster if you issue a Move Fast command, but becomes more fatigued in the process. When moving fast, teams are also less likely to be alert to enemy fire, to see the enemy, and return fire effectively.

Whether the team completes a Move or Move Fast command satisfactorily depends on several factors, including how far the team must move, available cover, team leadership, and enemy fire. For a more detailed description of the factors affecting team moves, see Chapter 3, "Tactics."

Once you select a team, you can issue a Move command by pressing Z. To complete the command, drag the destination line from the team to its destination, then click to place the destination marker.

To issue a Move command

1 Point at the team you want to move or click the team to select it.

When you select a team, the View Area displays blue boxes around each member of the team; a circle is always displayed around squad leaders (or higher), even when the team is not selected. The Team monitor displays a blue box around the selected team, and the Soldier monitor displays the names of the soldiers in the team.

2 Click and hold down the mouse button.

The Command menu appears.

3 While you hold down the mouse button, drag toward you to choose Move from the Command menu, and then release the mouse button.

4 Drag the destination line from the team's current location to the destination you want.

5 Click the mouse button again to place a destination marker.

When a team completes a successful move, the Message Monitor displays the message "Redeploying Successful" and the destination marker disappears.

To issue a Move Fast command

1 Point at the team you want to move fast or click the team to select it.

When you select a team, the View Area displays blue boxes around each member of the team; a circle is always displayed around squad leaders (or higher), even when the team is not selected. The Team monitor displays a blue box around the selected team, and the Soldier monitor displays the names of the soldiers in the team.

2 Click and hold down the mouse button.

The Command menu appears.

3 While you hold down the mouse button, drag toward you to choose Move Fast from the Command menu, and then release the mouse button.

4 Drag the destination line from the team's current location to the destination you want.

5 Click to place a destination marker.

When a team completes a successful Move Fast command, the Message Monitor displays the message "Redeploying Successful" and the destination marker disappears.

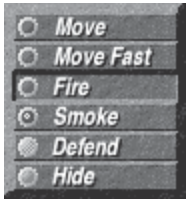
Once you select a team, you can issue a Move Fast command by pressing X. To complete the command, drag the destination line from the team to its destination, then click to place the destination marker.

Issuing Fire and Smoke Commands

To shoot at a specific enemy unit or at a suspected enemy location, you issue the Fire command. To place smoke screens that conceal your forces' movements from the enemy, you issue the Smoke command (to teams with smoke capability).

There are two types of fire used in Close Combat—direct and indirect fire. Direct fire weapons require a clear line of sight to fire; pistols, rifles, machine guns, submachine guns, antitank weapons, and most artillery are direct fire weapons. Mortars are indirect fire weapons; they do not require a clear line of sight to fire at the enemy.

Delivering effective fire depends on factors such as range, cover, team quality, and enemy suppression fire. For a more detailed description of the factors affecting firing and smoke screens, see Chapter 3, "Tactics."



Once you select a team, you can issue a Fire command by pressing C. To finish issuing the command, drag the target line from the team to its target, then click to place the target marker.

To issue a Fire command

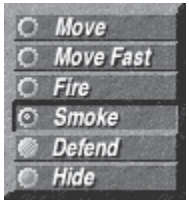
1. Point at the team you want to fire or click the team to select it.

   When you select a team, the View Area displays blue boxes around each member of the team; a circle is always displayed around squad leaders (or higher), even when the team is not selected. The Team monitor displays a blue box around the selected team, and the Soldier monitor displays the names of the soldiers in the team.
2. Click and hold down the mouse button.

   The Command menu appears.
3. While you hold down the mouse button, drag toward you to choose Fire from the Command menu, and then release the mouse button.
4. Drag the target line from the team to the target at which you want the team to shoot.

   The target line is red if nothing blocks the team's line of sight or line of fire to the target. If the target line changes to dark red, the team has line of fire, but their line of sight is blocked. If the target line changes from red, or dark red, to black, the team's line of fire is blocked at the point at which it turns black.
5. Click to place a target marker.

   No message is displayed when you issue a Fire command. The effectiveness of your proposed fire is denoted by the color of the target marker: As you drag toward the target it changes from red to green to black, like the weapons graph in the Soldier monitor.



Once you select a team, you can issue a Smoke command by pressing V. To finish issuing the command, drag the target line from the team to its target, then click to place the target marker.

To issue a Smoke command

1. Point at the team you want to order to fire smoke shells or throw smoke grenades or click the team to select it.

   When you select a team, the View Area displays blue boxes around each member of the team; a circle is always displayed around squad leaders (or higher), even when the team is not selected. The Team monitor displays a blue box around the selected team, and the Soldier monitor displays the names of the soldiers in the team.
2. Click and hold down the mouse button.

   The Command menu appears.
3. While you hold down the mouse button, drag toward you to choose Smoke from the Command menu, and then release the mouse button.
4. Drag the target line from the team to the location where you want the smoke screen.

The target line is red if nothing blocks the team's line of sight or line of fire to the target. If the target line changes to dark red, the team has line of fire but their line of sight is blocked. If the target line changes from red, or dark red, to black, the team's line of sight is blocked at the point at which it turns black.

5 Click to place a target marker.

If the target marker is green, you can fire smoke. If the target marker is black, the target is out of range. When you fire smoke shells or throw smoke grenades, the smoke lasts approximately one minute, and is thickest when the rounds first go off. Smoke plumes are as wide as they are tall. Because the game assumes that a light wind is blowing from west to east, you should keep the smoke between your team (or teams) and the enemy. Time your smoke rounds and assault with these factors in mind.

No message is displayed when you choose the Smoke command.

Issuing a Defend Command

You issue a Defend command when you want a team to defend its present position. When you issue a Defend command, you manually set the team's scan arc to specify the direction in which you want the team to watch for the enemy.

- For American teams, if enemy soldiers move into the team's defensive scan arc and are visible, the defending team automatically opens fire.
- For German teams, if enemy soldiers move into the team's defensive scan arc and are visible, the defending team waits to ambush instead of automatically opening fire.

When you issue a Defend command, the View Area displays a defense marker that indicates the team is defending. By default soldiers look for the best cover, then plan for possible ambush.

You use the scan arc to tell your soldiers where to watch for the enemy. Using a wide scan arc means the team must spread out to scan effectively. A spread-out team is more susceptible to enemy fire because soldiers may not use the terrain to their best advantage. For example, if you set the defend scan arc at 270 degrees to the east, soldiers may use terrain that protects them from fire coming from the northwest or southwest. However, these soldiers are vulnerable to fire from the east—the direction from which enemy fire is most likely to come.

To issue a Defend command

1 Point at the team you want to order to defend its present position or click the team to select it.

When you select a team, the View Area displays blue boxes around each member of the team; a circle is always displayed around squad leaders (or higher), even when the team is not selected. Once the team has found a target and opens fire, the defense marker switches to the enemy they are shooting at. The Team monitor displays a blue box around the selected team, and the Soldier monitor displays the names of the soldiers in the team.

2 Click and hold down the mouse button.

The Command menu appears.

3 While you hold down the mouse button, drag toward you to choose Defend from the Command menu, and then release the mouse button.

This displays a blue circle over the team, which represents its scan arc.

4 Set the width and direction of the defend scan arc.

Moving the cursor toward the center of circle widens the scan arc; moving the cursor toward the edge of circle narrows the scan arc. Moving the cursor around the circle aims the scan arc in the direction you want.

5 Click to set the scan arc and place a defense marker.

Issuing a Hide Command

You issue a Hide command when you want a team to take cover in a safe position and keep their heads down. When you issue a Hide command, the View Area displays a hide marker on the team, indicating that it's looking for the best nearby hiding place. Once a team finds suitable cover, it stays there until you issue another order. Hidden teams will fire on enemies that come within 30 meters of their hiding place.

To issue a Hide command

1 Point at the team you want to hide or click the team to select it.

When you select a team, the View Area displays blue boxes around each member of the team; a circle is always displayed around squad leaders (or higher), even when the team is not selected. The Team monitor displays a blue box around the selected team, and the Soldier monitor displays the names of the soldiers in the team.

2 Click and hold down the mouse button.

The Command menu appears.

3 While you hold down the mouse button, drag toward you to choose Hide from the Command menu, and then release the mouse button.

The team moves to the nearest cover and hides.

Using the Toolbar

The Close Combat toolbar on the right of the View Area contains buttons you can click to change your view of the game screen and to issue orders to all friendly units. The buttons available on the toolbar depend on whether you are currently in Deployment mode or Game Play mode. When you click a toolbar button, the button remains active until you click a different button or click the active button a second time to deactivate it.

Deployment Mode

In Deployment mode, the toolbar looks like the figure at left.

Toolbar in Deployment Mode

The Deployment mode toolbar buttons perform the following functions:

Zoom In (+) magnifies an area on a game map to get a closer look at the terrain. There are three zoom levels: the closest view (almost directly overhead), the normal view (a "bird's eye" view), and the farthest view (that you might see from a plane). Each time you click this button, the view zooms in one level.

Zoom Out (–) reduces the size of the map so you can see more of it in the view area. There are three zoom levels: the closest view (almost directly overhead), the normal view (a "bird's eye" view), and the farthest view (that you might see from a plane). Each time you click this button, the view zooms out one level.

Begin starts the battle with the troops in position as you have deployed them. This button is available only in Deployment mode.

Force Morale in Deployment mode displays the initial cohesion—the willingness of the soldiers to fight—for both sides. The color and length of the bars in the Force Morale monitor reflect the average physical and mental status of teams on both sides. The bars start out green and change color to reflect the status of each side. As a bar changes to yellow or red, it becomes shorter. If the bar representing your side turns red and your opponent's stays yellow or green, you lose. If both sides' bars turn red or both stay yellow, the victor is determined based on which side has taken the fewest casualties and gained the most ground.

Game Play Mode

In Game Play mode, the toolbar looks like the figure at left.

Toolbar in Game Play mode

The Game Play mode toolbar buttons perform the following functions:

Zoom In (+) magnifies an area on a game map to get a closer look at the terrain. There are three zoom levels: the closest view (almost directly overhead), the normal view (a "bird's eye" view), and the farthest view (that you might see from a plane). Each time you click this button, the view zooms in one level.

Zoom Out (–) reduces the size of the map so you can see the entire map in the view area. There are three zoom levels: the closest view (almost directly overhead), the normal view (a "bird's eye" view), and the farthest view (that you might see from a plane). Each time you click this button, the view zooms out one level.

Clicking the **Move Out** button cancels all current orders and issues a blanket order to all friendly troops to move forward to the next position with adequate cover.

Clicking the **Defend** button cancels all current orders and issues a blanket order to all friendly troops to defend when enemy units are sighted. This order causes your teams not only to defend themselves, but to take advantage of ambush opportunities as well.

Clicking the **Pull Back** button issues a blanket order to all friendly troops to retreat or fall back. Forces receiving this order return to previously occupied areas looking for adequate cover and protection.

Clicking the **End Battle** button ends the battle in progress, and displays a Debriefing screen that summarizes the status of the battle to the point at which you ended the game. Clicking End Battle forces your side to lose, and gives the enemy at least a minor victory.

Force Morale in Game Play mode displays the current cohesion for both sides. The color and length of the bars in the Force Morale monitor reflect the average physical and mental status of the teams on both sides. The bars start out green and change color to reflect the status of each side. As a bar changes to yellow or red, it becomes shorter. If the bar representing your side turns red and your opponent's stays yellow or green, you lose. If both sides' bars turn red or both stay yellow, the victor is determined based on which side has taken the fewest casualties and gained the most ground.

Monitoring the Game

Using Close Combat's monitors, you "see" what's happening to teams not in view. The maps used in Close Combat are too large to fit in the Game screen when you play in normal view. Because the normal view is best for playing Close Combat, you can't see all your teams without zooming out.

Close Combat's Game screen has a View Area and five monitors:

- Team monitor
- Soldier monitor
- Message monitor
- Overview monitor
- Zoom monitor

Using the View Area

The View Area is the portion of the Game screen where the battlefield action occurs. To scroll the View Area, move the mouse pointer to the edge of the screen. For example, if you move the pointer to the left edge of the Game screen, the View Area scrolls from the left; the game map appears to scroll to the right. If your screen resolution is 800x600 or higher, the Overview monitor is displayed; you can see the yellow rectangle (which represents the View Area) move in the same direction you move the mouse pointer. You can also scroll the View Area by using the arrow keys, the numeric keypad, or the number keys (1 through 9).

You can use the arrow keys to scroll the View Area; pressing the LEFT ARROW key scrolls the View Area to the left. You can use the numeric keypad to scroll the View Area. For example, pressing the 4 key on the keypad scrolls the View Area to the left; pressing the 7 key on the keypad scrolls the View Area diagonally (up and to the left).

You can zoom the View Area in and out. By zooming out, you see an overview of the map; the entire map is displayed in the View Area. By zooming in, you see less of the map, but you see more detail. If you play at a resolution of 800x600 or higher, an overview of the map is displayed in the Overview monitor.

You can click any team (yours or the enemy's) visible in the View Area and receive information about that team in the Team and Soldier monitors. When selected, your units have blue boxes around each soldier on the team and a yellow box around the selected soldier. There is a colored circle around the team leader; the color of the circle matches the color indicating the team's quality in the Team and Soldier monitors.

Using the Team Monitor

You monitor the status of your teams using the Team monitor. To view all the teams in the monitor, use the scroll bar.

To select a team, click its panel in the Team monitor. If you click an enemy unit during game play, the list is replaced by the text "Enemy unit selected," and the enemy soldiers appear in the Soldier monitor. In either case, when you click one of your teams in the Team monitor, or an enemy team in the View Area, the Soldier monitor lists the soldiers on that team.

To center a team in the View Area, click its panel in the Team monitor after you select it. To select the team and center it in the View Area, double-click the team's panel in the Team monitor.

When you select a team in the Team monitor, the team is highlighted by a blue box, the Soldier monitor shows information for each soldier on the selected team, and the team is selected in the View Area.

Using the Soldier Monitor

You use the Soldier monitor to monitor the status of individual soldiers. When you start a game, the Soldier monitor is not displayed; it appears only when you select a team in either the Team or View Area.

To select a soldier, click the appropriate panel in the Soldier monitor. When you select a soldier, a yellow box surrounds the soldier's name in both the Soldier and View Area. If you select an enemy team, its members appear in the Soldier monitor. However, question marks may appear in some portions of the panel if you don't have complete intelligence information. As an enemy team remains under observation, these question marks are replaced with more complete information about the enemy team.

Using the Message Monitor

You monitor the messages from your teams using the Message monitor. When you start a game, there are no messages displayed; messages display only when events affecting your teams occur. The Message monitor displays messages radioed, or shouted, to you. To see all the messages sent during a given battle, use the scroll bars. Double-clicking a message selects and centers the team that sent the message in the View Area so you can readily issue a command.

You can also filter messages by using the colored buttons at the top of the Message monitor. First you decide which levels of messages you don't want to see, then click the appropriate button. For example, if you click the red message filter,

red (the most important) messages do not appear in the monitor; you click the red button again to make these messages reappear. You can click more than one filter; If you click the red and orange message filters, both red and orange messages disappear from the monitor.

Using the Overview Monitor

The Overview monitor appears only when you play at 800x600 resolution or higher. This monitor displays a scaled-down version of the game map shown in the View Area; the Overview monitor enables you to see all of the game map throughout game play. All Victory Locations are displayed on this map; all friendly units are represented by blue dots while enemy units are represented by red dots.

A yellow rectangle appears over a portion of the map in the Overview monitor. Moving the rectangle in the Overview monitor changes the portion of the map you see in the View Area. Using the Overview monitor is often a faster way to move around the View Area than scrolling.

To use the Overview monitor

1. Move the mouse pointer to the Overview monitor.

   The mouse pointer changes to a magnifying glass.

2. Move the magnifying glass to the part of the map you want displayed in the View Area and click.

   The View Area displays the part of the map you want.

Pausing a Game

To pause during game play, press F3 (Windows 95), press COMMAND+P (Macintosh) or choose Pause Game from the Game menu (Windows 95), or File menu (Macintosh). The game pauses automatically when you:

- Display a menu
- End or stop a battle
- Press F1 for Help

You can instantly pause and minimize Close Combat in Windows 95 by clicking the Minimize button. When your “civilian duties” are complete, you can resume your battle by clicking the Close Combat button at the bottom of the screen.

On the Macintosh, you can instantly pause and minimize Close Combat by choosing Hide Close Combat from the Finder menu on the right side of the menu bar. To resume play, choose Close Combat from the Finder menu.

Ending Games

You can end a Close Combat game in three ways:

- You can end any game by clicking the End Battle button on the Toolbar. If you choose to end a battle, you suffer a minor, or worse, defeat. The Debriefing screen appears, summarizing the ended battle's results.
- You can stop any game using the Abort Battle command on the Game menu (Windows 95) or File menu (Macintosh). Unlike ending a battle, stopping a battle carries no penalty for the side choosing to stop. The Command screen appears when you stop any game; stopped battles are not saved as part of a Campaign.
- You can exit Close Combat using the Exit command on the Game menu (Windows 95) or using the Quit command on the File menu (Macintosh).

The following sections describe each method for ending a game.

Ending a Game

You use the End Battle button to end any game without exiting Close Combat. However, ending a battle is the equivalent of withdrawing from the battlefield; the side choosing to end any battle automatically suffers a minor defeat or worse.

To end a game

1. On the Toolbar, click End Battle.

   A popup appears asking if you're sure you want to forfeit the battle.
2. In the popup, click Yes. If you click Yes, you lose.

   The popup and the Game screen disappear, and the Debriefing screen appears.

Stopping a Game

To stop any game and return to the Command screen without exiting Close Combat, you use the Abort Battle command. Stopping a game carries no penalty to the side choosing to stop; unlike ending a battle, the side choosing to stop does not automatically suffer a defeat. Instead, the Command screen appears, and no victor is determined. If playing a Campaign, the stopped battle is not saved.

To stop a game

1 From the Game menu (Windows 95) or File menu (Macintosh), choose Abort Battle.

A popup appears asking if you're sure you want to stop the battle.

2 In the popup, click OK.

The popup and the Game screen disappear, and the Command screen appears.

To stop a game using the keyboard without exiting Close Combat, press ALT, G, A or CTRL+A (Windows 95), or COMMAND+A (Macintosh).

Exiting Close Combat

You can exit Close Combat at any time. The procedure differs slightly depending on whether you are playing in Windows 95 or on the Macintosh.

To exit Close Combat from Windows 95

1 From the Game menu, choose Exit.

A popup appears asking you if you're sure you want to exit Close Combat.

2 In the popup, click Exit.

The popup and the Game screen disappear, and Close Combat exits.

–or–

- Press ALT+F4.

To exit Close Combat using the keyboard, press ALT, G, X or ALT+F4 (Windows 95), or COMMAND+Q (Macintosh).

To exit Close Combat from the Macintosh

1 From the File menu, choose Quit.

A popup appears asking you if you're sure you want to quit Close Combat.

2 In the popup, click Quit.

The popup and the Game screen disappear, and Close Combat quits.

Saving Games

You can save any Close Combat battle as a Replay. You can create Replays at the end of a battle, or when you choose End Battle from the Toolbar. Replays are created using the Save Replay button on the Debriefing screen.

Campaigns are automatically saved at the end of each battle as a saved Campaign. You can also save a Campaign battle as a Replay; however, you can replay only the last completed battle of the Campaign. For example, if you complete the Hedgerows! 3 battle during a Campaign (named Campaign1) and save it as a Replay named Replay1, then Hedgerows! 3 (Replay1) is the only battle you can replay. (Replay1 appears in the scrollable list when you click the Replay button.) Campaign1 is saved in the scrollable list of Campaigns.

To save a battle as a Replay

1. When the Debriefing screen appears at the end of a battle, or after you've chosen End Battle from the Toolbar, click Save Replay.

   The Name The Replay dialog box appears.

2. Type the name you want to assign to the Replay.

   Replay names and Campaign names are governed by the same rules: You are limited to 31 alphanumeric characters.

3. Click OK.

   The dialog box disappears; the Debriefing screen is still displayed. You can continue playing or exit Close Combat. When you display the Command screen, your Replay is added to the scrollable list of Replays.

Remember, when you save a Campaign battle as a Replay, only the just-completed battle is saved as a Replay.

Using the Options Menu

You can specify various options and preferences to give Close Combat the look and feel you prefer. You can turn sound, music, videos, and other features on or off at any time.

To choose options in Windows 95

1. Click the Options menu (or press ALT+O).
2. On the Options menu, click the option you want to turn on or off, as described in the following sections.

To choose options on the Macintosh

1. Click the Options menu.
2. Choose the option you want to turn on or off, as described in the following sections.

Turning Sound On/Off

You can turn game sounds (gunfire, soldiers' voices, and other sounds) on or off.

To turn game sound on/off

1. Using the mouse, choose Sound from the Options menu.
2. To turn sound back on, repeat the process.

-or-

1. Using the keyboard, press ALT, O, S (Windows 95).
2. To turn sound back on, repeat the process.

Turning Music On/Off

You can turn game music (the drum roll that plays when the Command screen is displayed) on or off.

To turn music on/off

1. Using the mouse, choose Music from the Options menu.
2. To turn music back on, repeat the process.

-or-

1. Using the keyboard, press ALT, O, M (Windows 95).
2. To turn music back on, repeat the process.

Turning Videos On/Off

You can turn videos (Introduction, Force Deployment, What Really Happened, and Game End) on or off.

To turn videos on/off

1. Using the mouse, choose Videos from the Options menu.
2. To turn videos back on, repeat the process.

-or-

1. Using the keyboard, press ALT, O, V (Windows 95).
2. To turn videos back on, repeat the process.

Expanding the View Area to Use the Entire Screen

You can expand the View Area (which shows the game play area) to fill the screen, hiding all the monitors.

If you want to see the entire map, click Zoom Out. on the toolbar. To return to the previous view, click Zoom In.

To expand the View Area to use the entire screen

- Choose Expand View Area on the Options menu. To view all game monitors and return the play area to the previous view, repeat the process.

  –or–

- In Windows 95, press ALT, O, G or CTRL+G.
- On the Macintosh, press COMMAND+G.

Removing/Displaying Trees from the Map

You can remove trees from the View Area at any time during a game.

To remove trees from the map

- Click Remove Trees on the Options menu. To display the trees on the screen again, repeat the process.

  –or–

- In Windows 95, press ALT, O, T or press CTRL+T.
- On the Macintosh, press COMMAND+T.

Removing/Displaying Soldiers Killed In Action

You can remove soldiers killed in action at any time during a game.

To remove soldiers killed in action from the map

- Click Remove KIA Soldiers on the Options menu. To again display the soldiers killed in action, repeat the process.

  –or–

- In Windows 95, press ALT, O, K or press CTRL+K.
- On the Macintosh, press COMMAND+K.

Minimizing Close Combat

You can minimize Close Combat at any time.

To minimize Close Combat

- In Windows 95, click the minimize button, or press ALT, SPACEBAR, N.
- On the Macintosh, choose Hide Close Combat from the Finder menu on the right side of the menu bar. To resume play, choose Close Combat from the Finder menu.

Playing Head-to-Head

For information on head-to-head play, see the README file on the Close Combat CD-ROM, or look in the online Help Head-to-Head topic.

Troubleshooting

For more troubleshooting information, see the README file on the Close Combat CD-ROM, or look in the online Help Troubleshooting topic.

Getting Help

Close Combat provides two kinds of Help information:

- The online Help file with general information on a large number of game-related topics, including extensive information on weapons.
- Context-sensitive Help on specific game features. The Help file supplements these brief pop-up descriptions.

Finding a Topic in the Help File

- From the Help menu, choose Help Contents, or press F1.
- Click the Help Contents tab to browse through topics by category.
- To view the index of Help topics, click the Index tab, then scroll through the list, or type the word you're looking for and press ENTER.

You can also access Help by pressing F1 (Windows 95) or COMMAND+H (Macintosh).

Getting Context-Sensitive Help

While you're playing, you may want information about Close Combat screen features, including game controls, weapons, and terrain. Using context-sensitive Help, you click an area or feature on the game screen to display a specific Help topic in a small text box. To get that information quickly:

- Point at the feature.
- In Windows 95, click the right mouse button.
- On the Macintosh, hold down the Option key and click the mouse button.

To close the text box

- Press ESC or click anywhere on the screen.

Chapter 3

Tactics

This chapter describes tactics and provides game tips you can use while playing Close Combat.

Basic Tactics

You can use three basic tactics in Close Combat:

- Flanking
- Shoot it out
- Frontal assault

Flanking

The first basic tactic you can use is to try and flank the enemy—attack them from the side. For example, suppose an enemy rifle team is positioned behind a stone wall. The wall offers excellent protection against rifle, machine gun, and light artillery fire. However, using these weapons against the team behind the wall suppresses them—it makes them keep their heads down and minimizes return fire. After the enemy is suppressed, you can send another team around the enemy's flank. When your flanking team reaches its position, it can enfilade the enemy's position.

Shoot It Out

The second basic tactic is to just "shoot it out" with the enemy. You should use this tactic when you can bring superior forces and firepower against the enemy; all other things being equal, the side with superiority in numbers and firepower will eventually prevail.

Frontal Assault

The third basic tactic is the frontal assault. This tactic exposes your troops to the greatest risk, but can be successful if you can get your team (or teams) within grenade range without taking heavy losses. If you choose to make a frontal assault, you should first deploy teams to provide suppression fire. Next, you should fire smoke rounds along the path of the assault. After you've laid a smoke screen, you can send a team (or several teams) charging at the position you want to capture.

When you fire smoke rounds, the smoke lasts approximately one minute; the smoke is thickest when the rounds first go off. Smoke plumes are as wide as they are tall. Because the game assumes that a light wind is blowing from west to east, you should try to keep the smoke between your troops and the enemy. Time your smoke rounds and assault with these factors in mind.

As the German commander, you shouldn't defend positions to the last man. Defend a position as long as you can inflict more casualties than you receive, then move to another position; force the Americans to attack you and look for opportunities to counterattack.

Game Play Tips

This section lists game play tips according to the following categories:

- Infantry tips
- Vehicle tips
- Weapons tips
- General tips

Infantry Tips

You can use the tips in this section when issuing commands to your infantry teams. For information on the factors affecting infantry team effectiveness and performance, see "Monitoring the Game" in Chapter 2, "Setup and Game Play."

- Don't order your infantry teams to move through open terrain within the enemy's line of sight unless you provide suppression fire.
- Don't order an assault against an enemy position unless you have numerical or firepower superiority. You should not order a team of five soldiers with rifles to assault a position held by 10 enemy soldiers with a machine gun.
- Use smoke to cover the movements of your attacking team or teams. Providing a covering smoke screen diminishes the enemy's ability to hit the attackers. This keeps your team's effectiveness and morale high, which increases your chances of success.
- Use smoke whenever you can; fire into any smoke that the enemy creates.
- Don't order mortar or machine gun teams to move as part of an assault. When teams move mortars and machine guns, their fatigue levels go up; increased fatigue means the team will respond more slowly to an order to fire and the fire will be less accurate than that of a well-rested team. You should consider the deployment of such teams carefully; you'll want to position them where they can provide suppression fire for more than one infantry team.

- Don’t order units too far in advance of Victory Locations until these locations have been neutralized. Doing so is asking for an ambush.
- Make sure you order adequate fire against Victory Locations. Remember, you don’t necessarily need to hit enemy soldiers to drive them from a position; a high volume of fire can reduce the morale and effectiveness of an enemy team to make them panic and run.
- Don’t keep your teams too close together. This makes them more susceptible to casualties from grenades, mortars, and artillery. Close proximity can create another problem; if one teams panics, those in close proximity may panic, too.
- Move only one team at a time. This is not an ironclad rule; there may be times when ordering more than one team to move is an advantage. However, you want to use as much suppression fire as possible, and teams fire more effectively when they’re not moving.
- Use short moves to protect your teams. Teams that move long distances are more susceptible to ambush; the enemy may react to a long move by assaulting the moving team’s flank. Ambushes and flanking fire reduce effectiveness and morale. Orders to move a long distance also increase fatigue, which in turn reduces the team’s effectiveness.
- Don’t order a team to move or fire if their condition is not conducive to the order. For example, if you order a fatigued team to move fast for a long distance, their effectiveness, performance, and team quality will drop. The team is more likely to cower or break; the team’s accuracy of fire will drop.
- Move teams to locations that provide adequate cover. If soldier units feel overexposed or vulnerable, they may not go to the exact point you’ve designated.
- Moving fast over short distances allows soldiers to recover and keeps them from early fatigue. Remember that some foot soldiers can be carrying up to 70 pounds of gear. Running will tire them quickly.
- Note that many Recon (Reconnaissance) team members are armed with submachine guns. These weapons have a high rate of fire but their effective range is limited.

Vehicle Tips

You can use the tips in this section when issuing commands to your vehicle teams. For information on the factors affecting vehicle effectiveness and performance, the following table may prove useful.

Attribute	Description
Armor	The strength and thickness of the armor is rated in eight horizontal angles and three vertical angles, in addition to the top and bottom armor. The slope of the armor is factored into calculation of armor effectiveness. The vehicle is rated for both the hull and turret armor (if the vehicle has one). In addition, the passengers and crew are given protection values based on the type of vehicle (open top, open rear, unarmored).
Gun	Each vehicle can support up to three weapons on both the hull and the turret. Each of the guns is fired independently by the vehicular crew.
Fire-Angle	Each gun on the vehicle is rated for what angle the gun can fire at (360 degrees, 180 degrees, 90 degrees, and so on). Fire outside of that arc will cause the soldier firing that gun to rotate the hull or turret as necessary in order to fire.
Exposed	Each gun is denoted as to whether or not the soldier must be exposed in order to fire that particular weapon. Being exposed makes the soldier much more vulnerable to enemy fire.
Rotation rates	The speeds with which the hull and turret can rotate.
Mount type	Whether the mount exists, is a fixed mount, or can rotate. A mount is either the hull or turret.
Mount hit	Chance of the hull versus the turret being hit.
Acceleration	Rate at which the vehicle accelerates.
Max speed	Top off-road speed of the vehicle.
Move type	How the vehicle moves (tracked, wheeled, and so on)
Size	Profile given the enemy; affects ease of being hit.
Gyrostabilizer	Identifies whether or not the vehicle is equipped with a gyrostabilized gun. A gyrostabilizer improves main gun accuracy when the vehicle is on the move.

Schurzen	Identifies whether or not the vehicle is equipped with Schurzen plating (thin metal plates set a few inches out from the hull to detonate rounds before they hit the hull) to protect against HEAT ammo rounds.
Integrity	How well the vehicle can withstand being hit (brewups, spalling).

Specific tips for vehicles are as follows:

- The Close Combat game design accurately reflects the Normandy Campaign regarding vehicles. Specifically, the majority of German vehicles can defeat the majority of like American vehicles in a one-on-one fight. Consequently, if a American vehicle gets too close to any German position, it is in danger of being destroyed; remember, even German rifle teams have antitank weapons (*Panzerfausts*) capable of destroying every American vehicle. As the American commander, the only way you can successfully use your vehicles is to use numerical superiority (pit two or three Shermans against one Panther or Tiger) or flanking tactics.
- If you're the German commander, you should try to conserve your resources; this is especially true when playing a Campaign because the Americans will receive far more reinforcements than you (again reflecting the history of the Normandy Campaign).
- Halftracks, armored cars, and other vehicles are fast but vulnerable. Use them for rapid maneuvers where tanks and antitank weapons are not likely to be deployed. For example, you can use a halftrack to support an infantry assault against another infantry team.
- Don't order your tanks, tank destroyers, or other vehicles within range of known or suspected enemy antitank weapons. This is especially true for American commanders; remember, the Germans make American armor a priority target. And the Germans have more antitank firepower; both the *Panzerschreck* and *Panzerfaust* can destroy all American armor with a head-on shot. The Bazooka can only knock out heavily armored tanks and tank destroyers with a side or rear shot.
- When you order your tanks, tank destroyers, or vehicles to advance, use infantry support to provide suppression fire against antitank teams.
- Although you can send a tank over a hedgerow, doing so leaves the tank vulnerable to enemy antitank fire.

Weapons Tips

You can use the tips in this section when issuing commands to your vehicle teams. For information on the factors affecting vehicle effectiveness and performance, the following table may prove useful.

Attribute	Description
Rounds/clip	The number of ammo rounds in a clip.
Firing time	Time for the shot effect to occur (short for direct fire, longer for indirect fire).
Chamber load	Time to load a round into the chamber (very short for automatic weapons, longer for bolt action).
Clip reload	Time to load a new clip into the gun.
Burst rounds	Number of rounds typically fired in one burst for that weapon.
Weight	Weight of the gun.
Clip weight	Weight of each clip.
Heat rate	Rate at which the weapon gains heat while firing.
Cool rate	Rate at which the weapon loses heat while not firing.
Quality	Likelihood of the weapon jamming or malfunctioning. Chances are increased as heat builds up.
Bayoneted	Whether or not the weapon has a bayonet.
Assault fire	Whether or not the weapon can be used on the run.
Back blast	Whether or not the weapon causes a back blast.
Blast size	This is rated by ammo type and determines how big a crater the shot makes. Ammo types are AP, HE, Special, Smoke, or HEAT. Special refers to unique ammo types such as APCR, APDS, Canister, and so on.
Blast radius	This is rated by ammo and affects the range at which soldiers can be affected by the blast.
Min range	How far away the target must be in order to use the weapon.
Accuracy	The base chance to hit a target with the weapon moderated by range and ammo type.
Affect	What type of damage the shot does versus soldiers, vehicles, or terrain; rated by ammo and range.
Blast	What type of damage the blast from the shot does versus soldiers, vehicles, or terrain; rated by ammo and range from the point of the blast.

Specific tips for weapons are as follows:

- Don't order your mortars to fire at infantry hiding in bunkers or buildings because bunkers have very thick roofs; you can expend all of your mortar ammunition trying to blast your way through without killing or wounding the enemy. While you might be able to blast through the roofs of buildings, this still isn't an efficient use of ammunition.
- Because mortars lob a shell in an arcing rather than flat trajectory, you should use mortars against troops in the open, troops under trees (where airbursts can be deadly), or troops with protection only on one side (behind a stone wall).
- Don't order your antitank teams to fire at infantry. You'll want to save your antitank weapons (American Bazooka, German *Panzerfaust* and *Panzerschreck*) for enemy tanks and other vehicles. However, you may want to use an antitank team occasionally if the enemy infantry is hiding in a building or bunker.
- If you're the American commander, don't order an infantry team armed with rifles to fire at a tank and expect the tank to be disabled. Remember, Close Combat reflects the reality of the Normandy Campaign; you'll need either numerical superiority or superior firepower to engage German tanks.
- Don't order your machine gun teams to fire at a fixed target too long when you want suppression fire. You should switch the target at least once to maximize the effect of the suppression fire.
- If cover for both sides is equal, the team or teams with the most firepower wins. For example, if American and German rifle teams are both behind stone walls and firing at each other, the Americans will win (all other things being equal). This is because they are armed with Garand semiautomatic rifles, which have a faster rate of fire (rounds per minute or rpm) than the *Gewehr* 98 bolt action rifles the Germans use.
- When a mortar team is out of ammunition, you can send them to the front line to throw their smoke grenades and use their carbines.
- When you want to place a smoke screen, use your mortar teams first to place smoke for their ability to lob smoke over tall terrain. Smoke screens are the most useful coverage for open areas.
- Keep your antitank infantry teams (Bazookas or *Panzerschrecks* and *Panzerfausts*) spread out; deploying them too closely means one shell could wipe them out.

General Tips

- When a team is shot at or spots an enemy for the first time, the team cancels its goal. For example, if you issue a Move command and the team is fired on for the first time, the Move command is canceled.
- If the team leader is wounded or killed, the team's goal is canceled.
- The more intense the suppression fire, the closer safe terrain must be for a team to move to that terrain.
- You cannot place individual soldiers, but you can issue a Defend order with a very narrow scan arc in the direction you want the team to cover. This causes the team to reevaluate their cover based on the new scan arc, and position themselves better.
- Rallying troops doesn't happen immediately. Any leader can help to rally a soldier; the chance of doing so is based on the leader's proximity and leadership ability. A soldier can also rally himself given enough time.
- When you have no specific plan, put troops into defending mode.
- Don't assume that because you can see the enemy, your soldiers can, too. Hide your team, but don't forget about them.
- Set up your teams to enfilade the enemy (catch them in a crossfire) whenever possible.

Chapter 4

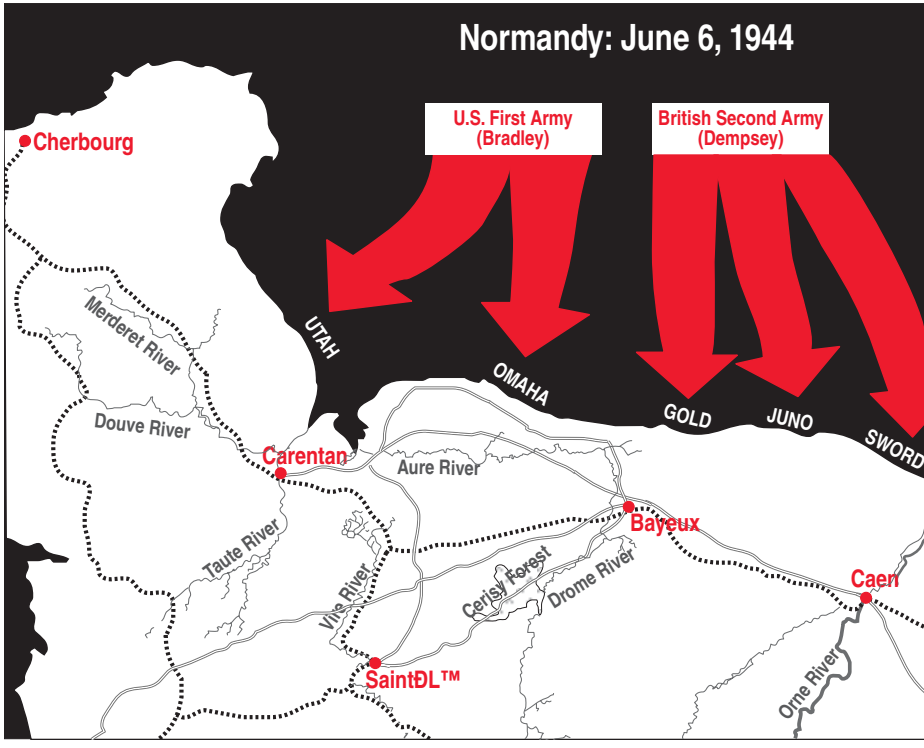
The Normandy Campaign in Close Combat

The Normandy campaign is a six-week series of battles that takes place in northwestern France. There, soldiers of General Omar Bradley's First Army attempt to fight their way from Omaha Beach to Saint-Lô, a strategic road and rail hub. Saint-Lô is the key to breaking out of the confining beachhead area. If Bradley's forces can capture this important town, they will finally be able to move onto ground that will allow them to take full advantage of their formidable mechanized and armored forces in a war of maneuver.

Standing in the way of the Americans and their objective are German army and paratroop units who have put up fierce opposition to the invading forces—first on the beaches, then inland through coastal villages, then at the river Aure, and finally in the hedgerows, marshes, hills, and draws. After six weeks, 20 miles, and 200,000 casualties, the two armies face off in the bombed-out rubble of Saint-Lô. An American victory here will allow the First Army to launch a drive across France and into Germany. But if the Germans can stop the Americans, they may be able to keep the invaders bottled up in northwestern France, jeopardizing their precarious toehold on the European continent.

"War is the last of all things to go according to plan."

Thucydides



The Evolution of Operation Overlord

"We must prepare to fight Germany by . . . defeating her ground forces and definitely breaking her will to combat. . . . adequate ground forces must be available to close with and destroy the enemy inside his citadel."

Maj. Albert Wedemeyer, in his "Victory Program"

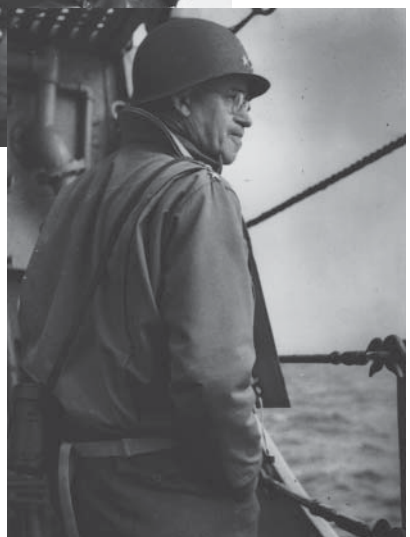
The Normandy Campaign is the end result of more than two-and-a-half years of planning, training, and preparation. The initial invasion plan that will eventually be called Operation Overlord is formulated before the United States even enters the war. It is the brainchild of Major Albert Wedemeyer, a war plans expert on the U.S. War Department General Staff, who had attended the German *Kriegesakademie* (War College), from which he graduated in 1938. This unique background gives Wedemeyer a keen understanding of the German philosophy of total war. His plan, aptly titled the "Victory Program," calls for a massive invasion of northwest Europe and a decisive confrontation with the German army.

Wedemeyer submits his Victory Program on September 21, 1941. Within three months, the Japanese attack on Pearl Harbor and German Chancellor Adolf Hitler's subsequent declaration of war forces the U.S. entry into World War II. At the Anglo-American Arcadia conference, held in Washington D.C. from December 22, 1941 to January 7, 1942, U.S. President Franklin D. Roosevelt and his Chiefs of Staff make it clear that, despite the Japanese aggression, they accept the principle of "Germany first." They believe that the German war machine represents the greatest threat to the Allies (Britain, the U.S., and the U.S.S.R.), and determine that the bulk of the U.S. Army will fight Germany and Italy, while the task of combating Japan will be the primary responsibility of the U.S. Navy.

U.S. General Dwight D. Eisenhower

In early 1942, Wedemeyer's Victory Program finds a strong supporter in General Dwight D. Eisenhower, who submits a revised version to Chief of Staff General George C. Marshall on March 25. That same day, Marshall presents the plan to Roosevelt, who decides that it should get direct approval from British Prime Minister Winston Churchill and the British military leadership. To win the British over, Eisenhower redrafts the plan, proposing an invasion of the French coast between Le Havre and Boulogne by 1.5 million American and British troops on April 1, 1943. Marshall submits the plan—now called the Marshall Memorandum—to Churchill and his General Staff. On April 13, they commit to the plan's key concept, a full-scale invasion of western Europe. Two months later, in Moscow, the Anglo-American commitment is announced at a meeting of the Supreme Soviet of the U.S.S.R., whose Premier, Josef Stalin, has been pressing the U.S. and Britain for the creation of a second front to relieve the Axis pressure on the besieged Soviet Union.

U.S. General Omar Bradley

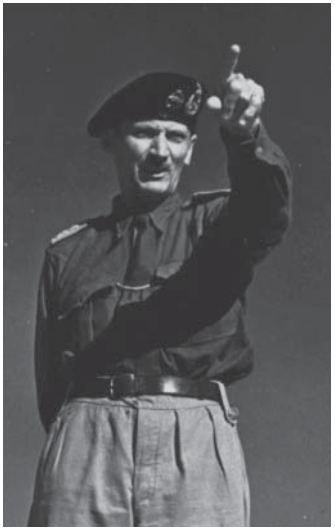


Soon after the Allies commit to the invasion of France, it becomes clear that an adequate troop and supply buildup for the landings will take longer than anticipated. In the interim, the Americans agree to join the British in invading North Africa, Sicily, and Italy. At the Trident conference, held in Washington in May 1943, the date for the invasion of France, known as "D-Day" is tentatively reset for May 1, 1944. Six months after the conference, Eisenhower is named Supreme Allied Commander, in charge of overall operations for the invasion. He then chooses British General Bernard Montgomery to head the combined Anglo-American ground forces, known as the 21st Army Group. Under Montgomery's command are U.S. General Omar Bradley, who leads the U.S. First Army, and General Miles Dempsey, who is in charge of the British Second Army. These men will command the troops that will attempt to storm the invasion beaches and press inland.

Preparations for Operation Overlord

Over the next twelve months, southern England resembles an enormous armed camp, as it becomes the site of the biggest buildup of men and materiel ever assembled for a military operation. By June 1944 nearly three million Allied troops have gathered under Eisenhower's command. The invasion now has a new codename: Operation Overlord, which Churchill has selected from a list compiled by his Chiefs of Staff. It also has a new location: the Calvados coast in Normandy, roughly between the town of Cabourg and the Cotentin Peninsula in northwestern France. Although this stretch of coastline is a greater distance from England than the Pas de Calais and the Cotentin Peninsula, it is less fortified and has fewer natural obstacles and better beaches for landing craft than either of those locations. The Normandy beaches are also within range of Allied fighter cover from airfields in southern England.

In the months before the invasion, the U.S. and British forces conduct training exercises that focus on the difficulties of amphibious landing operations. The training for the advance inland, held on the moors of southern England, relies on textbook tactics, notably the open order advance, two companies forward. Unfortunately, this training virtually ignores the actual hazards that await those who survive the assault on the beach. The Allied troops learn little about tactics for infiltrating the Norman hedgerow country, the *bocage*, with its small fields bounded by tall, dense hedges, an art the Germans have mastered. The invaders will pay a heavy price for this oversight.



British General Bernard Montgomery

*". . . the [*bocage*] area will not be an easy one for forces to advance through rapidly in the face of determined resistance . . . . The tactics employed in fighting through the* bocage *country should be given considerable study."*

Supreme Headquarters, Allied Expeditionary Force (SHAEF), April 1944

"We simply did not expect to remain in the bocage *long enough to justify studying it as a major tactical problem."*

An American senior staff officer, quoted by Max Hastings in *Overlord: D-Day and the Battle for Normandy*

German Field Marshal Erwin Rommel

The German Forces in Normandy

As the German High Command realizes that an invasion in the West is imminent, the number of combat divisions in France is increased from 46 in November of 1943 to 58 by June 1944. However, many of these divisions are below full strength. Some of them have had troops siphoned off to the war against the Soviets; others are shifted from the Eastern Front to France to rest and refit, their ranks decimated by combat with the Red Army. Many battalions are partially made up of Polish and Russian prisoners, known as *Osttruppen,* or "Eastern troops," most of whom lack any desire to fight for Germany. Allied deceptions have convinced the Germans to reinforce the Pas de Calais, which depletes the concentration of forces in Normandy even further.

In January, 1944 German Field Marshal Erwin Rommel is named head of Army Group B, which covers the Seventh and the Fifteenth Armies in northern France, and takes over the responsibility for defenses there. Although construction of a fortified coastal defense system, known as the "Atlantic Wall," had begun in 1942, Rommel immediately begins to strengthen it with mines, underwater obstacles, and concrete gun emplacements. This is in keeping with his belief that the only way to repulse

Fooling the Germans with "Fortitude"

While Rommel speeded his preparations, German forces in France increased to 55 divisions, many of them far from Normandy. In particular, the German Fifteenth Army remained in the Pas de Calais to repel an invasion force that would never strike there. This was partially due to a brilliant Allied deception called "Operation Fortitude." Its deceptions took a number of forms, all intended to divert German attention from the real invasion preparations in the south of England to a carefully orchestrated and entirely bogus buildup in the southeast, opposite the Pas de Calais.

German reconnaissance aircraft were allowed to fly over sites crammed with dummy tanks, trucks, and landing craft made of rubber, plywood, and canvas. Inflatable Sherman tanks that four men could easily carry looked real enough from the air, and the net effect was to trick the Germans into thinking they had found the growing stockpile for the coming invasion. Meanwhile false radio traffic convinced them that General Patton was preparing the fictitious "U.S. First Army Group" for an invasion at the Pas de Calais. For a month or more after D-Day, much of the German leadership continued in the conviction that the invasion in Normandy was merely a feint, and that the "real" invasion would soon fall where they had always known it would.

an Allied invasion is with a rapid counterattack on the beaches from behind a fortified coastal strip. However, Rommel's superior, Field Marshal Gert von Runstedt opposes his defensive philosophy. Believing that nothing can stop the Allied invasion, von Runstedt thinks that the majority of German defenses should be moved inland, away from Allied naval guns. From there, German tanks will be better able to strike at the invaders as they attempt to establish beachheads and supply lines. Because the German chain of command is unclear even at the highest levels, it is never determined whether Rommel or von Runstedt will control the battle after the invasion, and neither one gets all the defenses or forces he wants.

Preparation of the German defenses on the Normandy coast is hampered by shortages, and by the Allied air forces. Their bombing attacks on Germany have caused the German air force, the *Luftwaffe*, to largely abandon France to protect German skies. The knowledge that the Allies control the skies above western France adds fuel to Rommel's argument. In early 1944, German troop and supply movement is further hindered by an Allied aerial bombing campaign known as the Transportation Plan, which targets railroads and marshaling yards in western France.

Despite these numerous difficulties, six infantry divisions of the German Seventh Army, commanded by Colonel General Friedrich Dollmann and covering Normandy and Brittany, are available to oppose the Allied invasion. A single *Panzer* division is in reserve near Caen, with three more held inland—and effectively out of Rommel's reach—by the German High Command. These divisions can be released only under orders from Hitler himself, who wants to save them in case of an invasion at the Pas de Calais. Although Rommel's beach defenses are incomplete, they are still formidable, and have strong *Panzer* forces waiting behind them. The Germans have more than enough firepower and manpower to make the Allied invasion force pay a heavy price.

"The war will be won or lost on the beaches. We'll have only one chance to stop the enemy and that's while he's in the water."

Field Marshal Erwin Rommel

The Allies Invade on D-Day

After being pushed back a month to June 5, and then further delayed by bad weather for another day, the greatest armed assault ever attempted—the long-awaited Allied invasion of France—finally gets underway on June 6. The first troops to land on French soil are from three U.S. and British airborne divisions, which are dropped at night to seize towns and bridgeheads behind the invasion beaches. Simultaneously, an armada of 5,300 landing craft, supply vessels, and warships carrying over 150,000 Allied troops head across the English Channel for the Calvados coast.

U.S. soldiers crammed into landing craft

U.S. soldiers landing on Omaha Beach

"Everything was confusion. Units are mixed up, many of them leaderless, most of them not being where they were supposed to be. Shells were coming in all the time; boats burning; vehicles with nowhere to go bogging down, getting hit; supplies getting wet; boats trying to come in all the time, some hitting mines, exploding...everything jammed together like a junkyard."

Sgt. Ralph G. Martin, in *Yank*

The next morning, following a fierce air and naval bombardment, the first assault waves from five Allied divisions storm the five Normandy invasion beaches, code-named Utah, Omaha, Gold, Juno, and Sword. On the left flank of the invasion force, the British Second Army storms Gold and Sword beaches, then pushes southeast in an attempt to take the city of Caen and the airfield nearby at Carentan. At Juno beach, the Canadians come ashore. On the right flank of the invasion force, Utah, the westernmost of the Normandy beaches, is captured by the Fourth Infantry Division of the First Army's VII Corps. Its plan is to head to the northwest to cut off the Cotentin Peninsula and capture Cherbourg, which will give the Allies a major port for bringing in additional supplies.

Because Hitler is asleep during the morning of the invasion and has given orders not to be awakened, he does not release the German *Panzer* reserves until the afternoon. By then it is too late to stem the invasion. German resistance on the four landing beaches is relatively light, and although the Allied troops do not push as far inland as they had planned, they suffer fewer casualties than they had expected. But it is a far different story for the Americans who land at the beach code-named Omaha.

"Bloody Omaha" and Beyond

Of the vast number of Allied troops that wade or parachute into Normandy on June 6, the Americans who land on Omaha Beach have the toughest time of all. The beach itself has natural defenses in the form of high bluffs at either end, and only five exits, which the Germans have mined and wired. Concrete blockhouses and positions on the bluffs pour a murderous concentration of fire along every inch of the beach. The defenses are manned by the crack 352nd Infantry, a full-strength attack division brought in from the Eastern Front, and made up of some of the most combat-tested troops in the German army. By a quirk of fate, the Americans are also pitted against an extra German infantry division that is in the area practicing anti-invasion tactics. The German defenders get an additional break when the Allied naval bombardment before the landings is too brief to do much damage.

"There are only two kinds of people on this beach: the dead and those about to die. So let's get the hell out of here!"

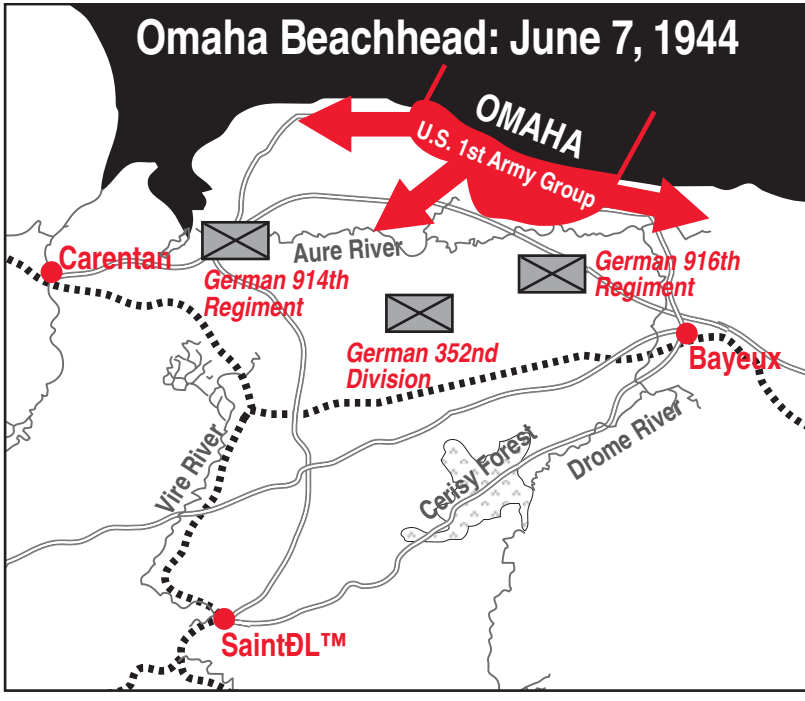
Colonel George Taylor, at Omaha Beach on June 6, 1944

As the smoke from the bombardment clears, the first U.S. invasion craft head for shore, carrying troops from the 29th and 1st Infantry Divisions. At first, confusion reigns as landing craft and vehicles, scattered by the rough seas they have just crossed, pile onto the beach. As the now-seasick soldiers disembark, they are blasted by well-aimed German gunfire. By 0915, as U.S. casualties mount, General Bradley fears he will have to call off the Omaha landing, as his forces are pinned down on the beach, huddled behind a seawall for survival.

"You know what I see up there? I see my old mother sitting on the porch waving my insurance policy at me."

A GI on Omaha Beach to *Life* photographer Robert Capa

Slowly, inexplicably, the tide of battle turns, as scattered groups of U.S. soldiers press forward, prompted by their own bravery, by the desire simply to survive or, in some cases, by the brandished weapon of a fellow soldier. Since nearly all of the U.S. amphibious tanks have sunk after being launched, the troops have to advance across open ground under heavy fire without supporting armor. Finally, as individual Navy destroyers move in and pound the German defenses at close range, small units begin to ram their way through Rommel's beach obstacles and scale the cliffs. The Germans of the 352nd, who by now are running low on ammunition and reinforcements, are



"The beach became strewn with dead, wounded, and shelter-seeking soldiers. They reached the low stone wall, but the safety offered there was temporary. Our mortar crews had waited for this moment and began to lay deadly fire on preset coordinates along the sea wall. Mortar rounds with impact fuses exploded on target. The shell splinters, wall fragments, and stones inflicted severe casualties. The waves of attackers broke against our defenses."

Grenadier Franz Gockel, describing the carnage at Omaha Beach

eventually overwhelmed by the increasing numbers of U.S. soldiers. By late afternoon, the Americans have captured the bluffs and secured the exits from the beach that will later be called "Bloody Omaha," in recognition of the 2,000 casualties that the U.S. has suffered there.

After taking Omaha Beach, the objective of the 29th is to proceed toward the river Aure, in the direction of their eventual goal, Saint-Lô. Scattered American units find themselves intermingled as they make their way inland. Just a few thousand yards from the beach, they encounter stiff German resistance in the villages of Vierville, Saint-Laurent, and Colleville. Although the fighting initially slows their advance, the Americans press on toward a line between Trévières in the east and Isigny in the west.

The following day, June 7, beach engineers are able to clear enough of the wreckage from D-Day to unload some supplies. A day later,

U.S. soldiers taking cover behind seawall on Omaha Beach

Off The Beach

Between midday on June 6 and the evening of June 7, elements of the 115th and 116th Infantry Regiments fight their way inland to the high ground beyond Omaha Beach. They clear the towns of Vierville, Saint Laurent, and Colleville on the coast road, then probe towards the Bayeux-Isigny highway and beyond—to the river Aure. The Americans outman and outgun the Germans. Although German resistance is fierce, the lack of centralized control hinders their efforts to organize resistance against the Americans.

Close Combat Operation: German Side

A "last man defense" will lead to a disaster for the German commander's teams. However, the stone walls, stone buildings, narrow roads, and hedgerows that are typical of the Norman countryside all provide excellent positions for German strongpoints.

Close Combat Operation: U.S. Side

The action starts with the 29th Division already moving into the terrain beyond Omaha Beach. Although the Americans have more men and supporting armor, the U.S. teams are about to bite into their first taste of the confining terrain of the Norman countryside—and the German defenses lurking within.

1,429 tons of supplies are moved, increasing to 7,000 tons a day by D-Day plus five. The paratroopers inland are resupplied by air drops from U.S. cargo planes. To prevent the Germans from moving reinforcements up, Allied fighter-bombers attack several river bridges and marshaling yards, although heavy cloud cover hinders their efforts and causes the cancellation of hundreds of missions.

By June 8, D-Day plus two, enemy defenses along the Trévières-Isigny line collapse as the 29th Division's 175th Infantry Regiment makes a determined and rapid advance, covering 12 miles in 36 hours. Assisted by two companies of tanks from the 747th Tank Battalion, the Americans fight through antitank gunfire at La Cambe and mobile 88-mm guns and infantry near Saint-Germain du Pert. At 0300 hours on June 9, Isigny falls to the onrushing Americans, who then capture the bridge over the Aure intact.

The loss of Isigny prevents the German 352nd Infantry Division from driving a wedge between Omaha and Utah beaches, and deprives the Germans of the defensive and artillery positions they have counted on to keep the U.S. forces from advancing far inland. The 175th Division's victory thwarts Rommel's plan to stop the invasion on the beaches. Three days later, Omaha and Utah beaches are linked together.

After capturing Isigny, American units cross the river Aure at various points along the line, many of them slogging across areas previously

Allied supplies pour inland from the Normandy beachhead

Across The Aure

On the morning of June 9, the 115th Infantry Regiment is ordered to cross the river Aure. With help from the 121st Engineer Combat Battalion, the Third Battalion makes a swampy crossing from Canchy to a point west of Colombieres. The First Battalion tries to cross the bridge just south of Ecrammeville. German machine gun and rifle fire from positions west of Trévières drives the Americans back; the First Battalion then marches to Canchy and follows the Third Battalion across the Aure.

Close Combat Operation: German Side

The German commander's teams are bolstered by armor and a deadly array of artillery, and can make the bridge an obstacle instead of an opportunity.

Close Combat Operation: U.S. Side

The American commander has an opportunity to change history by capturing the bridge across the river Aure near Trévières. Additional armor now supports the American heavy weapons and infantry teams.

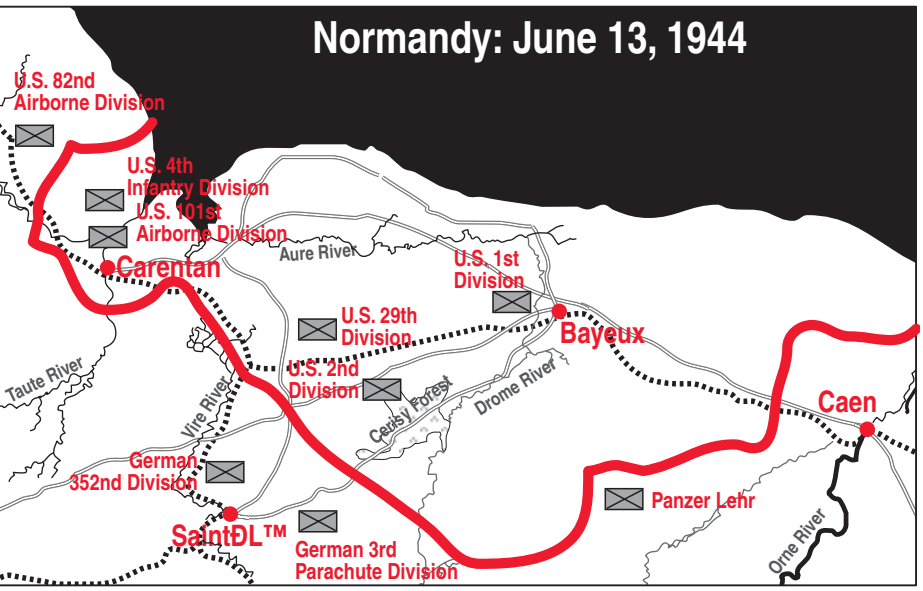
flooded by the Germans. But if the troops of Bradley's First Army think they will now have a few days' triumphant progress inland to Saint-Lô, they are mistaken.

"I had no intention of pinning down forces at Saint-Lô until Cherbourg was safely in hand . . . . Not until a few days before the breakout did I lift the prohibition on Saint-Lô."

Gen. Omar Bradley

The British Take The Heat Off

On D-Day, and in the days following the invasion, the British Second Army makes a determined assault on Caen. This convinces the Germans that this city, situated amid good tank terrain, is the Allies' major invasion objective, the key to a future Allied breakout across the plain running south to Falaise. But Montgomery's actual objective is to attract and hold as much German armor in the British sector as possible. Tying up the Germans on the Allies' eastern flank will free the American forces on the western flank to take the port of Cherbourg, then proceed south, and pivot to break out onto the high ground east of Saint-Lô.



Montgomery's plan works well, as the Germans deploy eight *Panzer* divisions with 500 to 700 tanks to defend Caen, making that area their center of resistance against the Allies. As a result, between June 15 and July 25, there are never more than 190 serviceable German tanks opposite the American sector.

The initial Allied assaults are also aided by the belief of many German commanders, including Hitler, that the Normandy invasion is a diversion. The main invasion, they insist, is still to come at the Pas de Calais. Because of this, German Fifteenth Army troops that could fight in Normandy remain stuck in Calais, defending against a landing that never comes. Reinforcements for those German Seventh Army troops who are actively combating the U.S. and British forces come slowly and sporadically, due to Allied air superiority and the infrastructure damage it causes.

"Even though we fell back other parts of our regiment were still fighting in the hedgerows. Sometimes it was only a handful of men, but here that could hold up a company."

Obergrenadier Karl Wegner, 352nd Infantry Division

German Defenses in the *Bocage*

Standing between Bradley's First Army and its goal of Saint-Lô are six German divisions of the Seventh Army, several of which are made up of units that have been shattered on D-Day. One of these, the 91st, has been reinforced by the Sixth Parachute Regiment, an élite volunteer group whose average age is 17. The 352nd Infantry, which opposed the Americans so fiercely at Omaha Beach, has been pulled back along the valley of the river Vire, which flows past Saint-Lô and between the two U.S. invasion beaches. The other German divisions in the area are the Third Parachute Division, the 353rd Division, and the 17th SS *Panzergrenadier*, although none of these is strong enough to mount an effective counterattack.

"We were flabbergasted by the bocage. . . . Our infantry had become paralyzed. It has never been adequately described how immobilized they were by the sound of small-arms fire among those hedges."

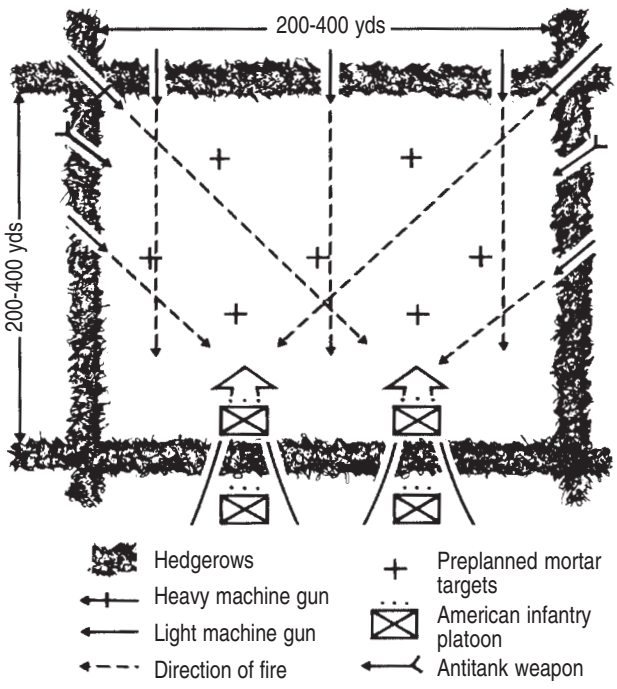
General Elwood Quesada, U.S. IXth Tactical Air Command

The best German defenses in Normandy weren't put there by Rommel in 1944, but by Celtic farmers more than a thousand years earlier. The Norman hedgerow country, or *bocage*, consists of small, irregularly shaped fields, only about 200 by 400 meters, enclosed by ancient, overgrown hedges that grow from earthen mounds flanked by drainage ditches. The hedgerows reach a height of 15 feet, limiting visibility to one field at a time. They are impenetrably dense—even for tanks. The hedgerows form a thousand square miles of tough patchwork terrain, connected by a network of dirt roads sunken far below field level by centuries of use. The towering hedges shade these roads, further decreasing visibility.

"Make every field a fortress."

Obergefreiter Paul Kalb, 352nd Infantry Division

"Every field a fort" is a phrase that recurs throughout the literature of the Normandy Campaign. It sounds like poetic exaggeration, but it's true. Allied troops advancing into a hedgerow enclosure are walking into an area soon to be covered by pre-planned fields of direct and indirect fire. Using the ideal camouflage and concealment of the *bocage* to their advantage, the Germans disperse small, heavily armed antipersonnel and antitank units through it, dug in at the bases of the hedgerows and nearly invisible to the oncoming Americans. Out of the silence a sudden, tearing burst of fire from an MG 42 machine gun, the chatter of a machine pistol, the detonation of a *Panzerfaust* antitank round, incoming mortar fire, or a single sniper shot is usually the first sign of the enemy's presence. Heavy German machine guns are dug into



German hedgerow defenses

American GI's examining German positions in the *bocage*

"The Allied soldier never seemed to be trained as we were, always to try to do more than had been asked of us."

Obergefreiter Adolf Hohenstein, 276th Infantry Division

opposite hedgerow corners at the back of the field to immobilize attacking infantry. Light machine guns and machine pistols in the hedgerows along the sides of the field can fire on soldiers seeking cover. An interconnected series of such strongholds forms a forward defensive line, behind which the Germans prepare a belt of battle positions with tanks and assault guns to add muscle to counterattacks. In these ideal defensive positions, small German units can sometimes repulse attacking forces five times as large.

The German *bocage* defenses are equally hazardous to tanks. Any tank that takes to the sunken roads between fields is in serious danger. Often, it can't turn around or traverse its gun in such a tight space. Attempting to climb over the embankment between fields will expose the tank's vulnerable underbelly to antitank weapons. Any tank crew unwary enough to motor into an enclosure unprotected will be blasted by antitank weapons. German 88-mm guns on the main roads pose a constant threat, and since the Germans have fortified the stoutly built stone houses of the villages along those roads, it is dangerous to move at all. Tanks and troops remain equally vulnerable in the *bocage* until the Allies develop tactics to enhance mobility and improve tank-infantry cooperation.

First Encounters in the *Bocage*

To reach Saint-Lô, the Americans have to traverse 20 miles of what Bradley calls "the damnedest country I've seen." Upon encountering the *bocage*, Allied infantry tend to stick to tactics learned in training, advancing two companies forward into a hedgerow enclosure. The

Hedgerow Hell

By June 10, the 29th Division has crossed the river Aure and is pushing south into the heart of the Norman hedgerow country—the *bocage*. Allied planners estimate it will take a few days to fight through the *bocage*; instead it takes weeks. The distance the division pushes forward is not measured in miles, but in yards.

Close Combat Operation: German Side

Now it is the German commander's turn to try to "change history" by bogging the Americans down in the *bocage*. He can deploy a full complement of armor, artillery, and heavy weapons to inflict maximum casualties on the Americans.

Close Combat Operation: U.S. Side

The American commander faces the same challenge faced by the 29th's commander—push through the *bocage* without decimating his unit.

Germans have mastered the advance by infiltration, sending small parties to turn the flank of the enemy advance. This means that U.S. soldiers suddenly find themselves under fire from three sides. Once U.S. forces are pinned down in the open, the Germans open up on them with pre-planned mortar and artillery fire. For the Americans, calling for artillery support in such close quarters is risky, because even accurate supporting fire can injure friendly troops.

Advancing through the hedgerows is an unnerving experience for the U.S. troops. The sense of isolation from comrades, the disorientation caused by moving from one small enclosure to another, and the dramatic contrast of silence punctuated by sudden bursts of deadly fire from well-hidden German defenders, all take their toll on morale. Inexperienced U.S. soldiers fling themselves flat when they come under fire; in some cases a German sniper can pick off several prone and immobilized victims.

"Sometimes you hold one end of a field and the enemy holds the other, and you maneuver around in two- or three-man patrols until either you or the enemy is thrown out. This kind of war is paradise for the sniper, the rifleman, the automatic weapons man, the bazooka man. Conversely, it's death on tanks and armored cars."

Sgt. Bill Davidson, in *Yank*

In the constricted *bocage* landscape of small, enclosed fields, American units grope forward through terrain that seldom allows more than a hundred yards visibility. Most of this vicious small-unit fighting takes place at distances of less than 300 yards. Worst of all, after penetrating one hedgerow, the U.S. troops are faced with the task of taking another, then another, then another. After two weeks of heavy casualties, the 29th grinds to a halt, exhausted. Clearly, they need to devise new tactics to keep the hedgerow battle from degenerating into a bloody stalemate.

U.S. troops under fire in the *bocage*

The hedgerows aren't the only natural phenomenon that hinders the Allied advance. The weather, although overcast part of the time, was better than expected for the two weeks following the invasion. During this period, two artificial harbors, called "Mulberries," were installed at Omaha and Gold beaches to make up for the lack of a natural harbor on the Calvados coast. But as the Mulberries near completion on June 19, a severe storm strikes and rages for nearly a week, damaging the Omaha Beach Mulberry facilities beyond repair. When the storm finally subsides, U.S. ships are forced to use the less-damaged British Mulberry. The storm and the damage it causes delay supplies, and force the U.S. armies to ration ammunition. However,

they quickly master the art of unloading directly onto Omaha and Utah beaches, and after a few days are actually moving more supplies than the British. For Montgomery, the storm has the additional consequence of delaying his plan to launch a new offensive against the Germans at Caen.

"Give me ten infantrymen in this terrain with the proper combination of small arms, and we will hold up a battalion for 24 hours."

Lt. Jack Shea, from *Yank*

Allied Improvisation in the *Bocage*

As the fighting through the Norman hedgerows drags into weeks of close and vicious combat, the immobilized Americans devise new methods and equipment to deal with the *bocage*. "Dozer tanks"—Sherman tanks with a bulldozer blade in front—can cut through any hedgerow, but too few are available to support large-scale operations. The 29th tries sending engineer squads to place two 24-pound (later 50-pound) explosive charges in the embankment beneath a hedge. Initial results are promising, but experience in the *bocage* quickly reveals that this method is impractical for large-scale operations. One informal field study shows that a tank company moving 1.5 miles through the *bocage* will come up against 34 separate hedgerows, requiring 17 tons of explosives to do the job.

"This was about as bad a place to mount an infantry assault as could be imagined, as bad as clearing out a town house-by-house or room-by-room, as bad as attacking a World War I trench system. But it had to be done."

Stephen Ambrose, in *Band of Brothers*

A more efficient, and more practical, technique is devised, in which tanks are used to bury smaller charges deeply in an embankment to increase their explosive force. Crews weld a pair of four-foot-long, 6½-inch-diameter steel pipes to the front of a Sherman tank. When they ram the tank into an embankment, then back away, the pipes leave two deep holes for explosive charges. Packing the explosives into empty artillery shell cases before placing them in the holes focuses the explosions even more effectively. However, blowing holes in the hedgerows involves one big drawback: The explosions announce to the Germans when and where an attack is beginning, and provide a handy aiming point for all types of defensive fire. Any tank that appears in the newly opened breach is a perfectly framed target.

The Americans try other methods. Some tankers weld bumpers made of railroad tracks to their Shermans and use them to ram through hedgerows. Even more successful is a hedgerow cutter devised by Sergeant Curtis Culin of the 102nd Cavalry Reconnaissance Squadron. It consists of scrap iron blades welded to the front of a Sherman tank. Equipped with these tusklike appendages, the retrofitted Shermans come to be called "rhino tanks," a name that proves appropriate, as the rhinos are nearly unstoppable. At a demonstration of the "Culin Device," General Bradley is impressed when he sees newly equipped tanks slice through hedgerows "as though they were pasteboard, throwing the bushes and brush into the air."

But all these technical advances aren't enough to keep the hedgerow battle from dragging on too slowly. The Americans need a new combination of technology, tactics, and techniques to speed their progress.

Breaking the Impasse

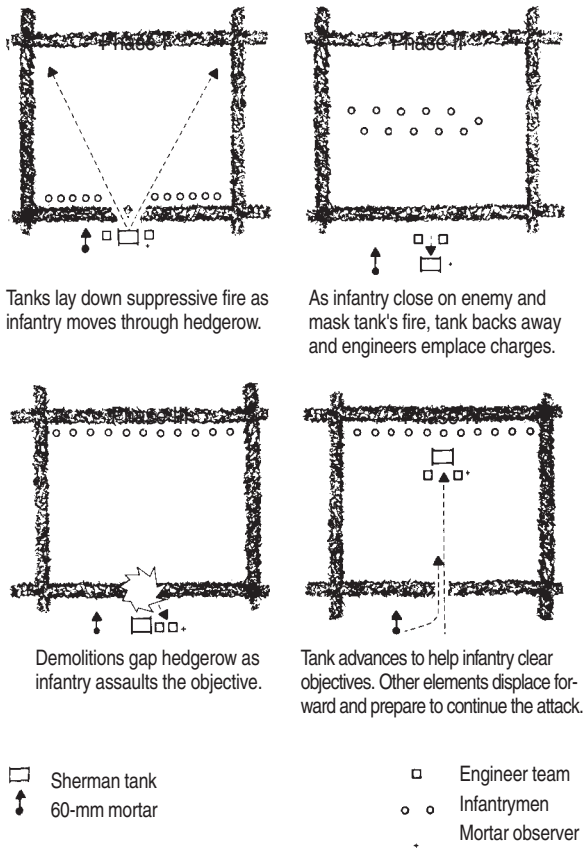
When the 29th finds itself stymied in the *bocage*, General Charles Gerhardt orders Brigadier-General Norman Cota, a veteran of the landings in North Africa, to devise new tactics for this hostile terrain. Cota decides to use small teams composed of a tank equipped with pipe devices in front to aid in the placement of explosive charges and a telephone on its rear deck for communication with infantrymen, an engineer team, an infantry squad, a BAR, and a 60-mm mortar. To begin the attack, the tank pushes into a hedgerow, then fires white phosphorus rounds from its main gun into the corners of the opposite hedgerow to suppress the German heavy machine guns. The tank then lays down machine gun fire along the base of the hedgerow. Meanwhile, the mortar team drops high explosive rounds into the fields behind the German positions, and smoke rounds to block the enemy's view. When the tank opens fire with its machine gun, the infantry attacks, moving across the field well away from the hedgerows on either side, and throwing grenades over the hedgerow to disrupt defenders on the other side.

"Every goddam field in this hedgerow country is a battlefield."

Pfc. Bob Sloane, in *Yank*

When the infantry has advanced far enough to block the tank's field of fire, the tank backs away, and the engineers place and detonate explosives in the holes the pipes leave in the embankment. The tank then rolls through the resulting hole, providing close support for the infantry, while the infantry suppresses antitank fire. Using this approach, the Second Battalion of the 116th Infantry makes better progress than ever in its push toward Saint-Lô.

The Third Armored Division devises an approach for larger-scale hedgerow operations, coordinating the efforts of a tank company and an infantry company to attack across a front three fields wide. The attack begins by penetrating the hedgerows of the two outer fields. When they are taken, the team moves to breach the hedgerows that border



Hedgerow assualt tactics

the center field and attack the flanks of the German positions there. This allows the U.S. soldiers to take more territory while facing less direct enemy fire.

The local dairy herd was a casualty in the Normandy Campaign

Overall, the Americans are developing *bocage* tactics that enhance their mobility and improve tank-infantry communication and cooperation. Out goes the rulebook tactic of infantry and armor advancing separately. Instead they begin to attack simultaneously, with small units of infantry going after German antitank crews and taking ground while the tanks take on enemy firing positions and strong points too tough for infantry to handle. Artillery spotter aircraft are an enormous help, since the limited line of sight in the hedgerows makes the job of forward observers on the ground almost impossible. With these tactical refinements, the Allied attack becomes as sophisticated and as effective as the determined German defense.

The increasing savvy of the now-veteran American units, combined with an increasing flow of Allied men and materiel into France, propels them through the *bocage* toward Saint-Lô.

Going for the High Ground: Hill 192 and Purple Heart Draw

While the 29th battles its way through the *bocage*, VII Corps is slowly advancing up the Cotentin Peninsula toward the heavily defended port of Cherbourg. Contradictory orders from the confused German chain of command make it unclear whether the defenders on the Cotentin are to head north to make a stand at Cherbourg, or head south to rejoin other German units. This confusion aids the Americans, who begin making rapid progress. On June 27, after five days of fierce fighting, Cherbourg falls to the U.S. troops, but the Germans sabotage the port facilities, knocking them out of action for three weeks. Three U.S. divisions that have helped capture Cherbourg are now ordered to move south, and assist in the hedgerow battle.

As the situation for the Germans in France worsens, Hitler relieves von Runstedt and replaces him with Marshal Gunther von Kluge on July 5. General Friedrich Dollmann, the commander of the Seventh Army, commits suicide after Hitler orders him court-martialed for the loss of Cherbourg. Meanwhile, as the Americans advance toward Saint-Lô,

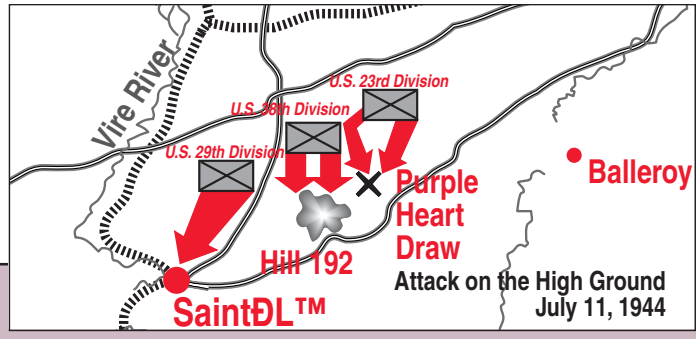
Seventh Army troops in the vicinity dig into defensive positions, including foxholes and even tunnels. The town itself is set in a depression next to the river Vire, surrounded by rolling hills and ridges, which are heavily fortified by the Germans. Any gaps between the hills are well-covered by German guns.

"The Germans adjusted much better to new conditions than we did."

British intelligence officer Brigadier Bill Williams

To the Americans, it soon becomes clear that approaching the German defenses around Saint-Lô indirectly is preferable to a frontal assault. As Bradley later notes in his memoirs, "I'd just as soon settle for the high ground east and west of Saint-Lô. . . we're not going to spend a division just to take a place name." This alternative calls for three divisions of the First Army to drive along a 10-mile front through the hills around Saint-Lô, then into the city itself. As part of this assault, the Americans will have to overrun the German defenders on Hill 192 and Purple Heart Draw, tactical strongpoints east of Saint-Lô that threaten any approaching Allied force. In both locations, the Germans hold the high ground, and the U.S. troops will have to fight their way uphill through a dauntingly vertical variation of the *bocage.*

Earlier U.S. efforts to take Hill 192 in mid-June failed in the face of the formidable German resistance. The Seventh Army troops on the hill were aided by the fact that they could see everything from the coast to Saint-Lô, including the attacking Americans. Instead of forming a defensive line, the Germans had built a series of strongpoints that could support the gaps between them with covering fire. All



Purple Heart Draw

The American Second Division reaches the foot of Hill 192 on June 12; two unsuccessful attacks result in over 1,200 U.S. casualties. Between June 16 and July 10, the Second Division receives intensive training in *bocage* tactics; on July 11, they renew the assault against Hill 192. The drive through Purple Heart Draw, on the northeast side of the hill, falls to the First Battalion, 23rd Infantry Regiment. After fierce fighting, in which one platoon is nearly wiped out crossing the draw, the battalion advances nearly a mile, within sight of the Saint-Lô–Bayeux highway.

Close Combat Operation: German Side

The draw is the perfect natural obstacle for stopping the Americans. It is wide enough to hinder tanks from crossing it. If U.S. soldiers climb down to the bottom to get across it, they can be easily picked off from above.

Close Combat Operation: U.S. Side

Since this draw is standing between the U.S. and its objective, Hill 192, it must be crossed or flanked. With the Germans holding the upper section of the hill, neither will be easy.

approaches to the hill were targeted with artillery, mortars, antitank weapons, and machine guns, and the German defenders, mainly from the Third Parachute Division, were well dug in.

Nearly a month later, on July 11, the Americans resume their attack on Hill 192, using their new hedgerow tactics to coordinate the efforts of infantry and armor. To the Second Division's 38th Infantry goes the task of capturing Hill 192. Because the weather that day is hazy and visibility is poor, the Allies cannot use air support. The Second Division advances up the gradual slope of Hill 192 behind a rolling artillery barrage. Those German strongpoints that survive the shelling put up fierce resistance, and the struggle for Hill 192 becomes a field-by-field battle. In the villages of Cloville and le Soulaire, which have been blasted by U.S. artillery, German troops dig into the rubble, and are cleared out only after hours of house-to-house fighting. The Norman terrain, coupled with fierce fire from German antitank guns and *Panzerfausts*, hinders the advance of U.S. tanks. In one area, six tanks are knocked out by German mortar and artillery fire in the first 30 minutes of an assault.

"Throughout the fighting, French farmers and their families live in holes dug into their cellars while the farmhouses are destroyed over their heads."

Sgt. Bill Davidson, in *Yank*

One of the obstacles that impedes the U.S. troops as they inch their way up Hill 192 is a narrow ravine they call "Purple Heart Draw." It is nearly wide enough to prevent tanks from crossing it, and is heavily fortified by the Germans. Supported by four tanks that are stopped at the edge of the draw, one platoon attempts to cross it. German mortar and artillery hold their fire until the Americans have reached the bottom of the draw, then open up, nearly wiping out the platoon. Another platoon attempts to outflank the defenses in the draw, and the U.S. tanks turn their attention to German defenders inside several nearby houses, firing on them from 30 yards away. When the defenders are silenced, the second platoon finds the survivors of the first platoon at the bottom of the draw, and the two platoons move up out of the ravine. Despite heavy mortar fire, the outflanking maneuver is a success, and by the end of the day, the Americans who have survived "Purple Heart Draw" have taken nearly all of the deadly ravine.

Throughout July 11, the German Seventh Army troops on Hill 192 are blasted by 20,000 rounds of artillery fire. While this does not destroy the sturdier German emplacements, it keeps the defenders pinned in their trenches, and helps speed up the U.S. advance. As the day ends, nearly all of the remaining German defenses on Hill 192 have been badly damaged, and several German units have been cut off and decimated. One U.S. battalion has captured a section of the Saint-Lô–Bayeux highway, which bisects the remaining German-held positions at the top of the hill, and other battalions have closed in on this key

roadway by nightfall. With the Seventh Army occupied on so many fronts, no reserves are left to reinforce the surviving Germans on Hill 192.

The following day, July 12, the fighting on Hill 192 is almost anticlimactic. After shelling the U.S. positions during the night, the Germans launch a counterattack, which is quickly repulsed, and the Second Division soon secures the hill. At a price of 69 dead, 328 wounded, and eight missing, Bradley's troops now hold the high ground above Saint-Lô.

"Eisenhower found as I did that the well-springs of compassion lie in the field. . . . There, like the others of us, he could see the war for what it was, a wretched debasement of all the thin pretensions of civilization. In the rear areas war may sometimes assume the mask of an adventure. On the front it seldom lapses far from what General Sherman declared it to be."

Gen. Omar Bradley in *A Soldier's Story*

Taking Saint-Lô at Last

With the capture of Hill 192, the stage is set for the U.S. assault on Saint-Lô. As planned, the three divisions of the First Army close in on the town from the east, north, and west. However, the 29th Division, which is responsible for the main American attack, will have to push along three parallel ridges east of Saint-Lô. These ridges are fiercely defended by members of the German Third Paratroop Division, who are dug in behind an endless series of hedgerows and new defensive lines. The 35th Division, which is to move in on Saint-Lô from the north, is opposed by the German 352nd Infantry, which inflicted so many casualties on the U.S. assault waves at Omaha Beach. Finally, the 30th Division needs to advance through four miles of heavily fortified ridges and valleys west of Saint-Lô, opposed by German *Panzers*.

For the 29th Division, progress along the eastern ridges is slow. Many airstrikes must be canceled due to bad weather, and although the advancing U.S. troops are aided by artillery, they are slowed by German

Hill 192

The main assault on Hill 192 falls to the First and Second Battalions, 38th Infantry Regiment. Following 100 meters behind a rolling barrage, the two battalions start up the hill at 0630 hours. Resistance is fierce around the hamlet of Cloville, where a self-propelled gun and Mark IV tank slow the advance. A Sherman knocks out both, and by 1700 hours elements of the 38th have pushed their way over the hill to the Saint-Lô–Bayeux highway.

Close Combat Operation: German Side

As the German commander, you can muster more armor and firepower than your campaign counterpart to hold Hill 192. This can keep the Americans from closing in on the strategic high ground east of Saint-Lô.

Close Combat Operation: U.S. Side

As the American commander, you can use superior tactics to take the hill more quickly and move on Saint-Lô ahead of schedule.

The ruins of Saint-Lô

". . . officers who have received the best peacetime training available find themselves surprised and confused by the difference between conditions as pictured in map problems and those they encounter in the campaign. . . . In our schools we generally assume that the organizations are well-trained and at full strength, that subordinates are competent, that supply arrangements function, that communications work, that orders are carried out. In war many or all of these conditions may be absent. The veteran knows that this is normal and his mental processes are not paralyzed by it. . . ."

Gen. George C. Marshall, *Infantry in Battle*, 1934

mortar and artillery fire. In the north, the 35th Division is fought to a virtual standstill by a sophisticated series of German defenses, and makes a breakthrough only after several days of fighting, by using tank destroyers to blast the fortified hedgerow positions. West of Saint-Lô, the 30th Division has its hands full with brutal counterattacks from *Panzer* Lehr—an elite armored unit—and the Third Parachute Division.

Over the next few days, the Americans begin to make steady progress against the entrenched German defenders. Supplies begin to reach the embattled U.S. divisions from the newly cleared port of Cherbourg, while the Seventh Army is experiencing acute resupply and reinforcement problems. Two battalions of the 29th make isolated advances on the key town of la Madeleine, near the Martinville Ridge, and when German troops fail to destroy them after cutting them off, other elements of the 29th make a renewed push, supported by artillery and air strikes. By July 17, the 29th has reached the eastern outskirts of Saint-Lô. The 35th keeps the pressure on the depleted German 352nd, which is gradually giving ground. When a *Panzer* Lehr counterattack on the advancing 30th Division fails on July 17, the deteriorating situation in the west finally makes the Germans think about withdrawing from the vicinity of Saint-Lô. Fearful of being trapped against the river Vire by the American forces, whose artillery has destroyed many of the river bridges, the bulk of the German defenders pull back to an area south of Saint-Lô, leaving a few pockets of determined resistance in and near the town itself.

On the morning of July 18, a task force of the 29th Division is assembled under Brigadier-General Norman Cota to move into Saint-Lô, which is in ruins after an intense U.S. aerial bombardment. Despite resistance by the Second Paratroop Corps, no reserves remain to support the defending Germans, and the U.S. task force quickly enters the town. The Americans capture a square near the town cemetery that has survived the bombing, then fan out on foot through streets too choked with rubble to allow much vehicle traffic. German artillery positions south of Saint-Lô shell the task force with artillery and mortar fire as it moves through the rubble, but the rapid advance of the U.S. task force has caught the Germans off guard. By 1900 hours on July 18, after a series of hot skirmishes and house-to-house fighting, U.S. troops have secured Saint-Lô. Shelling from the German defensive positions south of the town will continue for several more days, and the Germans even organize a counterattack on June 19, which U.S. troops break up.

For the Americans, the cost of capturing Saint-Lô and the surrounding countryside is steep: Nearly 11,000 U.S. troops are killed, wounded, or missing between July 7 and July 22. However, Bradley's forces now have the terrain they need to launch the breakout into the long-sought war of maneuver against the Third Reich.

"I have the honor to announce to the Corps Commander that Task Force C of the 29th Division secured the city of Saint-Lô after 43 days of continual combat from the beaches to Saint-Lô."

Gen. Charles Gerhardt, U.S. 29th Infantry Division

Epilogue: Operation Cobra and the Allied Breakout

While Bradley's troops are attacking Saint-Lô, the long British assault on Caen finally comes to an end with the capture of that city on July 8. The Germans suffer another loss on July 17: Rommel is seriously wounded when a British Royal Air Force fighter strafes his staff car, and von Kluge takes over his command. The next day, the British launch Operation

After the battle: Street scene in Saint-Lô

Saint-Lô

After providing flanking support during the assault on Hill 192, the three regiments of the 29th turn west toward Saint-Lô. The 116th and 175th advance on a front astride the ridges east of the town; by July 17, they fight their way over Hill 147, clear Martinville, and take up an advance position near la Madeleine.

For days the Americans pound Saint-Lô and the surrounding area with air strikes and up to 14,000 artillery rounds a day. On July 18, General Cota assembles Task Force C—a force consisting of reconnaissance, tank, tank destroyer, and engineer units—to race down the Saint-Lô–Isigny road and capture Saint-Lô. The task force rolls at 1500 hours, with infantry units joining along the way. By 1900 hours, after encountering pockets of resistance in what remains of the town, the 29th Division secures Saint-Lô.

Close Combat Operation: German Side

As the German commander, you can choose to defend Saint-Lô to the last man, in house-to-house fighting, and hope that reinforcements show up in time—or at all.

Close Combat Operation: U.S. Side

As the American commander, you have no more hedgerows to deal with—only blasted buildings, rubble-filled streets, and a shell-cratered cemetery. The Germans are holding out in the ruins, waiting for reserve troops to reinforce them. If you don't take Saint-Lô quickly, you may lose it altogether.

"I did not feel we owed an apology to anyone for our gains. At the end of one week ashore we had linked beachheads. During the second we cut the Cotentin. In the third we captured Cherbourg. During the fourth we attacked out of the neck. And when the fifth rolled around, we had put together our Cobra plan and were already edging toward a breakout."

—Gen. Omar Bradley, in *A Soldier's Story*

Goodwood, pushing the Germans east of Caen. Although the British suffer severe tank losses, the attack draws even more German troops into the vicinity of Caen—and away from the Americans.

Bradley characterizes the hedgerow battle as ". . . a slugger's match, too slow a process." To end the stalemate once and for all, he launches Operation Cobra. Bad weather delays the breakout for a week until July 25, when German positions five miles west of Saint-Lô are hit with a massive aerial bombardment by 2,500 Allied aircraft. The countryside quickly becomes a moonscape as this carpet bombing blasts several gaps in the German lines and decimates *Panzer* Lehr, but some of the bombs fall short, causing hundreds of American casualties. Next, the Americans launch a concentrated attack from the ground they have recently captured east of Saint-Lô. This attack initially meets with little success as the advancing troops are slowed by the vast number of bomb craters, and by the evacuation of casualties. Veterans of the hedgerow fighting also have trouble overcoming the caution learned in two months in the *bocage*, but "rhino tanks" play a significant role in the ongoing attack by speeding the process of penetrating the hedgerows.

"It was one terrible blood-letting."

Field Marshal Erwin Rommel's terse summary of the Normandy Campaign

German opposition is no longer organized in depth, and forms only a very tough but discontinuous crust against the onslaught. Those German soldiers who have survived the bombing repeatedly find themselves outflanked or bypassed. Since a significant portion of the German forces are still engaged against the British and Canadians to the east, there are no reserve troops or *Panzers* to fill in any holes in the front line near Saint-Lô. The Americans soon begin to make rapid progress, pushing 56 kilometers east toward Brittany, and capturing the coastal town of Avranches on July 31.

By the beginning of August, Cobra has clearly proved to be a success. The Avranches breakout frees the Americans from the *bocage*, and propels them into the battle of maneuver they have longed for.

Patton Unleashed

Following the success of Cobra, U.S. General George S. Patton's Third Army becomes operational on August 1, and takes its position on the Allies' right flank. Patton's troops quickly overrun much of Brittany, then head south toward the Loire valley. On August 4, Montgomery makes the first major change in the Overlord plan, ordering the Third Army to drive east toward Le Mans, while the First Army is to swing eastward to encircle the Germans. Montgomery also organizes a drive by British and Canadian forces south from Caen.

While Bradley's First Army threatens only the Germans in Normandy, Patton's Third Army threatens all German forces west of the Seine. Hitler himself decides to launch a major counterattack against the Third Army near Mortain, to push Patton's troops back to Avranches. He orders von Kluge to send all ten available *Panzer* divisions in Normandy on a strike toward the Atlantic to cut off the Allied breakout and, with luck, perhaps even to destroy the Normandy beachhead. Unfortunately for the Germans, the Allies intercept and decrypt von Kluge's orders, and when the counterattack begins, American troops stymie it, assisted by Allied air strikes.

Trapped in the Falaise "Pocket"

The German defeat at Mortain leaves the Seventh Army vulnerable to a counterattack that could encircle it—and finish it off in Normandy once and for all. After the Third Army takes Le Mans on August 9, Montgomery orders Patton's forces to proceed to the north, on the eastern flank of the battered *Panzers* at Mortain. On August 13, the American XV Corps reaches Argentan. Meanwhile, since the Germans have pulled troops away from Caen for their unsuccessful Mortain counterattack, more British and Canadian troops are able to move south from Caen, and the Canadian First Army captures Falaise on August 15.

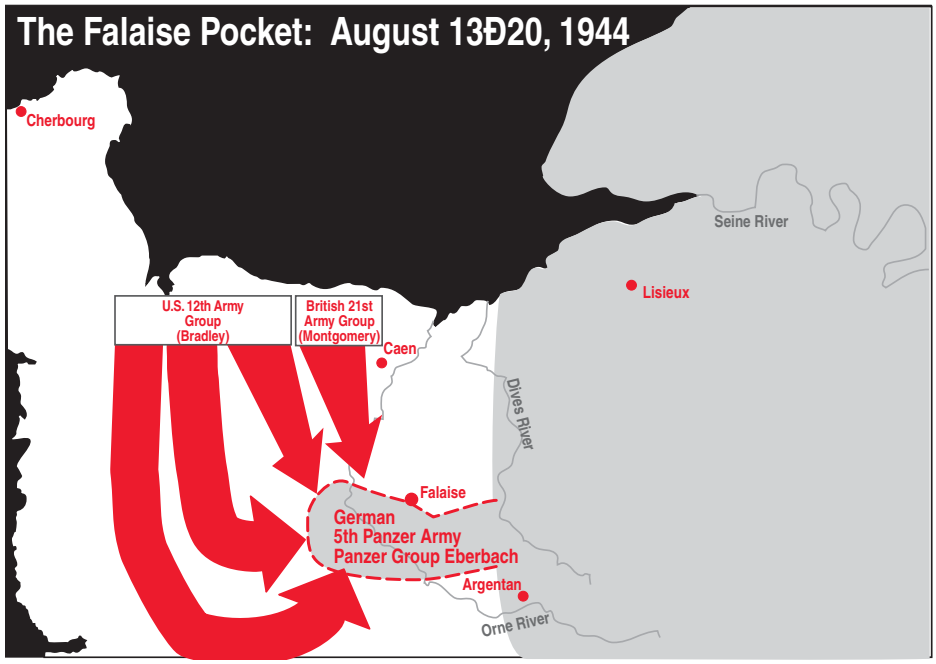
"We must strike like lightning. When we reach the sea the American spearheads will be cut off. . . . we might even be able to cut off their entire beachhead. We mustn't get bogged down with mopping up the Americans who have broken through—their turn will come later."

Adolf Hitler, shortly before launching the ill-fated German counterattack at Mortain on August 6, 1944

As the American and Canadian armies converge from the north, south, and west, virtually all the German troops in Normandy are trapped between them, in the ever-shrinking Falaise "pocket"—a 24-kilometer–wide salient along the river Orne. The only hope of escape for the remnants of the fifty divisions of the Seventh Army is to retreat to the east. As the Allied armies move in, the retreat becomes a rout, and within five days the pocket is closed. Strafed by Allied fighters and hampered by the narrow roads that they have used to their advantage in the preceding weeks, some 10,000 German soldiers are killed in what will later be called *le Couloir de la Mort,* or "Corridor of Death." An additional 50,000 Germans are taken prisoner. Perhaps 20,000 manage to escape across the Seine, alone or in small groups, leaving much of their equipment, especially vehicles, behind them.

With the closing of the Falaise pocket and the German retreat across the Seine, the chase is on, and the outcome of the war is no longer in doubt. The casualty figures for the 77 days of the Battle of Normandy are staggering: The Germans lose 450,000 men, including 240,000 killed or wounded. The Allies take 209,672 casualties, with 36,976 killed.

Casualty rates for the Allied and Axis sides, along with French civilians, average 10,000 a day, making the Battle of Normandy one of the bloodiest battles ever fought. With these momentous events, the first phase of the invasion is over—and the race to the Rhine is on.



Chapter 5

Weapons

Colt .45 model 1911

Operation Semiautomatic
Caliber .45 (11.4 mm)
Muzzle velocity 253 mps (830 fps)
Capacity 7-round detachable box magazine
Weight 1.1 kg (2.43 lbs)
Overall length 21.9 cm (8.62 in.)
Effective range 30 m (32 yds)

The most famous American handgun of World War II was the Model 1911 .45-caliber semiautomatic pistol invented by John M. Browning. This pistol was born out of the U.S military's frustration with the limited stopping power of smaller-caliber revolvers during the Spanish-American War. Both Colt and the Springfield Armory produced the pistol between 1911 and 1915, and by the end of World War I over 60 percent of the American soldiers in France were issued Colt 45s. After World War I, slight modifications were made to the trigger, hammer, grip, and frame. Although it was issued to officers and squad leaders, the .45 was not standard issue for infantrymen during World War II. This didn't keep many front line soldiers from obtaining them, and the regulation against their carrying pistols was rarely enforced. The Colt was recognized as a weapon of last resort—most soldiers had more effective weapons available, but no one denied the feeling of security the weighty .45 provided. It remained the standard U.S. sidearm until 1984.

Walther P 38

Operation Semiautomatic
Caliber 9-mm Parabellum (.354 in.)
Muzzle velocity 350 mps (1,149 fps)
Capacity 8-round magazine
Weight 0.96 kg (2 lbs)
Overall length 21.3 cm (8.25 in.)
Effective range 30 m (32 yds)

The Walther P 38 semiautomatic pistol, which eventually replaced the Luger P 08 as the standard German military sidearm, entered production in 1939. It was designed to be more quickly, cheaply, and easily manufactured than the P 08. In addition to these virtues, the sophisticated yet robust P 38 added several features that made it more convenient and safer than the Luger, which had been designed at the end of the previous century. The P 38 was a double-action firearm—after it was cocked and loaded, the user could lower the hammer, and then at any time pull back the hammer and press the trigger to fire the chambered round; in an emergency in which aim was less important than speed, simply pulling the trigger would cock the hammer and fire the chambered round. By the end of the war more than a million P 38s had been produced. In 1957 Walther resumed production of the P 38 in a slightly lightened version called the P 1, which was the standard German military sidearm until 1980. The P 38 remained in service in several countries into the 1990s.

Mauser *Kar* 98

Operation Manual, bolt-action
Caliber 7.92 mm (.31 in.)
Muzzle velocity 745 mps (2,445 fps)
Capacity 5-round magazine
Weight 3.9 kg (8.5 lbs)
Overall length 111 cm (43.75 in.)
Effective range 550 m (600 yds)

The Mauser *Gewehr* 98 (rifle, model 1898) was the archetype of most bolt-action rifles built in the 20th century, including the American Springfield model 1903 rifle. Its 7.92-mm Mauser cartridge was introduced in 1888 and is still in use today. Variants of the *Gewehr* 98 remained in general use in the German army through both world wars because it worked so well and so reliably. The *Kar* 98 carbine, about six inches shorter than the standard rifle, was issued to most German infantrymen in World War II.

Springfield ’03 Rifle

Operation Manual, bolt-action
Caliber .30 (7.62 mm)
Muzzle velocity 853 mps (2,800 fps)
Capacity 5-round internal magazine
Weight 4.2 kg (9.38 lbs) M1903A4 sniper model with scope
Overall length 110.5 cm (43.5 in.)
Range 550 m (600 yds)

Officially designated “U.S. Rifle, Caliber .30, Model of 1903,” it was better known as the Springfield, the Springfield ’03, or simply the ’03. This bolt-action rifle was adopted by the U.S. Army in 1903 and remained the standard issue rifle of America’s armed forces until 1936. In 1906, the .30-caliber cartridge was modified and designated the “M1906 Cartridge”; it became widely known as the .30-06. This cartridge was the standard U.S. rifle and machine gun cartridge for the next fifty years. In 1936, the Springfield ’03 was replaced by the M1 Garand, but many Springfields saw service in World War II. In the Normandy Campaign, the Springfield was used primarily as a sniper weapon; the vast majority of infantrymen preferred semiautomatic and automatic weapons to the bolt-action rifle. Any advantage the Springfield may have had in accuracy was more than offset by the rate of fire the Garand, M1 Carbine, and BAR offered.

Garand Rifle

Operation Semiautomatic
Caliber .30 (7.62 mm)
Muzzle velocity 853 mps (2,800 fps)
Capacity 8-shot clip
Weight 4.3 kg (9.5 lbs)
Overall length 110.7 cm (43.6 in.)
Effective range 550 m (600 yds)

The U.S. Rifle, Caliber .30, M1—or Garand—was the standard issue rifle for American infantry. Named after its inventor, John C. Garand, it was the first semiautomatic rifle widely used in combat. Although it was adopted by the Army in 1936, the Garand was in short supply until 1943, but by the end of the war over four million had been produced. The Garand was easy to disassemble and clean, and its combination of caliber, muzzle velocity, and semiautomatic operation provided superior firepower over bolt-action rifles. Its only weakness was that partially fired clips were so difficult to reload that GIs tended to simply fire off the remaining rounds and insert a new clip.

Gewehr 43 Semiautomatic Rifle

Operation Semiautomatic
Caliber 7.92 mm (.31 in.)
Muzzle velocity 745 mps (2,445 fps)
Capacity two 5-round magazines
Weight 4.55 kg (10 lbs)
Overall length 114.3 cm (45 in.)
Effective range 550 m (600 yds)

The Germans produced many superb weapons of almost every type, but their efforts to produce a semiautomatic rifle to match the performance of the American M1 Garand fell short. The semiautomatic *Gewehr* 43 (rifle, model 1943) improved upon the gas-operated, self-cocking mechanism of Carl Walther's G41 semiautomatic rifle, but both models were heavier, more complex, and less well-balanced or reliable than the Garand; neither supplanted the venerable bolt-action Mauser *Kar* 98 as the primary German infantry weapon.

M1 Carbine

Operation M1 & M1A1: semiautomatic; M2: selective fire (fully and semiautomatic)
Caliber .30 (7.62 mm)
Muzzle velocity 600 mps (1,970 fps)
Capacity 15- and 30-round detachable box magazines
Weight 2.3 kg (5 lbs)
Overall length 90.4 cm (35.6 in.)
Effective range 75 m (83 yds)

The M1 carbine was developed in response to the Germans' *blitzkrieg* tactics; the use of rapid mechanized divisions and airborne troops showed the Americans that fixed fortifications and static front lines were outmoded. *Blitzkrieg* tactics meant that rear echelon personnel could find themselves under attack with little or no warning, and a light rifle was needed to replace the standard issue pistol. However, the M1 carbine proved so versatile that over six million were produced by the end of the war. The M1 carbine was easier to master than a pistol, more effective at medium-to-long range than a submachine gun, and well suited as the small arm for mortar, machine gun, and bazooka teams. The M1A1 variant, with its folding stock, was specifically designed for paratroops.

Browning Automatic Rifle (BAR)

Operation M1918A1: selective fire (fully and semiautomatic); M1918A2: fully automatic
Caliber .30 (7.62 mm)
Muzzle velocity 853.4 mps (2,800 fps)
Capacity 20-round detachable box magazine
Weight 8.33 kg (18.5 lbs)
Overall length 119.4 cm (47 in.)
Rate of fire 550 rounds per minute
Range 550 m (600 yds)

The initial M1918A1 version of the Browning Automatic Rifle (BAR) was first used in combat by American soldiers during World War I, and many saw service in World War II. The BAR received high praise for its reliability under adverse conditions. In 1940, the model M1918A2 was adopted. Unlike earlier models, it could only be fired in two automatic modes—slow (300 to 450 rpm) or fast (500 to 650 rpm)—but not in semiautomatic mode. Both versions were widely used in the second world war. The BAR was a popular weapon in all theaters because it was reliable and offered an excellent combination of rapid fire and penetrating power. The BAR's only serious drawback was its lack of a quick-change barrel to reduce the chances of overheating.

Thompson Submachine Gun

Operation Selective fire (fully and semiautomatic)
Caliber .45 (11.4 mm)
Muzzle velocity 280 mps (920 fps)
Capacity 50-round drum
20- and 30-round detachable box magazine
Weight 4.9 kg (11 lbs)
Overall length 85.6 cm (33.7 in.)
Rate of fire 600 to 725 rounds per minute
Effective range 50 m (55 yds)

John T. Thompson, who helped develop the M1903 Springfield rifle and M1911 .45 caliber pistol, began work on a "trench broom" for close quarters combat shortly after his retirement from the Army in 1918. He recognized that the .45-caliber slug used in the M1911 pistol would be devastating when used in a fully automatic weapon. By the spring of 1920, Thompson's company (Auto-Ordnance) produced a prototype capable of firing 800 rounds per minute. Despite its excellent test performance, the Thompson was not adopted for use by either the U.S. Army or Marine Corps. Still, Thompson contracted with Colt for the manufacture of 15,000 guns, designated "Thompson Submachine Gun, Model of 1921." The 15,000 guns manufactured by Colt lasted until the eve of World War II. In 1940, the U.S. Army ordered 20,000 Thompson submachine guns; in 1941 the Army ordered an additional 319,000. One of the main assets of the Thompson submachine gun was reliability; it performed better than most submachine guns when exposed to dirt, mud, and rain. The main complaints against the Thompson were its weight (over ten pounds), its inaccuracy at ranges over 50 yards, and its lack of penetrating power (a common complaint with all submachine guns).

MP40 Machine Pistol

Operation Fully automatic
Caliber 9 mm (.354 in.)
Muzzle velocity 380 mps (1,247 fps)
Capacity 32-round magazine
Weight 3.97 kg (8.7 lbs)
Overall length 83.2 cm (32.75 in. with stock extended)
Rate of fire 500 rounds per minute
Effective range 100 m (110 yds)

The MP40 machine pistol was based on the prewar MP38, modifying the earlier design to make it more suitable for mass production; more than a million were produced during the war. Its folding metal stock made it compact and easy to carry, even in cramped circumstances; its startling staccato bursts of fire shattered the silence in many a Norman hedgerow. The MP40 won the admiration of Allied soldiers, who often referred to the MP40 as the "Schmeisser," despite the fact that firearms engineer Hugo Schmeisser, designer of the Bergmann MP18 submachine gun in 1918, was not involved in the design of either the MP38 or the MP40.

.30-caliber Air-Cooled Machine Gun (M1919A4)

Operation Fully automatic, air-cooled
Caliber .30 (7.62 mm)
Muzzle velocity 853.4 mps (2,800 fps)
Capacity 250-round belt
Weight 18.5 kg (41 lbs) with tripod
Overall length 104.1 cm (41 in.)
Rate of fire 400 to 550 rounds per minute
Effective range 1,000 m (1,100 yds)

Before the end of World War I, the U.S. Ordnance Department recognized that water-cooled machine guns took up too much space inside a tank. Consequently, the water-cooled M1917 was converted to an air-cooled model by surrounding the barrel with a perforated metal jacket. As World War II approached, the Ordnance Department was committed to developing an air-cooled machine gun for infantry use. The result was the M1919A4. At 41 lbs for gun and tripod, the M1919A4 was much lighter than the water-cooled M1917A1 (93 lbs for gun and tripod). Consequently, it was used more as an offensive weapon than the water-cooled guns. Although unable to maintain the same level of sustained fire as the water-cooled M1917A1, the M1919A4 air-cooled machine gun was truly one of the workhorse weapons of the American infantry.

MG 42 Machine Gun

Operation Fully automatic
Caliber 7.92 mm (.31 in.)
Muzzle velocity 755 mps (2,478 fps)
Capacity 50-round belt
Weight 11.5 kg (25.3 lbs)
Overall length 121.9 cm (48 in.)
Rate of fire 1,200 rounds per minute
Range 1,000 m (1,100 yds)

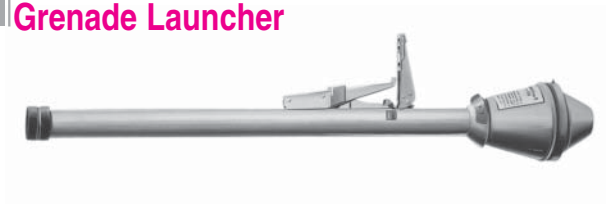
The MG 42 was one of the best light machine guns ever made; variants of this weapon are still in widespread use today. Its very high rate of fire made the MG 42 an intimidating weapon; those who faced its deadly hail of fire were equally impressed by the sound it made—"like ripping canvas." Its barrel could be quickly changed, and its design, using stamped and pressed steel, was well suited to mass production. The MG 42 was more reliable, and almost as versatile, as the MG 34 that it generally replaced, allowing use on bipod, tripod, and dual antiaircraft mounts. However, because the square barrel housing of the MG 42 was inappropriate for use as secondary tank armament, the MG 34 continued in that role. An assault variant of the MG 42 used a 75-round twin drum magazine like that made for the MG 34. The original design of the MG 42 was so successful that it was updated in the 1950s. The newer version, designated MG3, is still in use by a number of nations, including Germany.

.50-caliber Air-Cooled Machine Gun (M2-HB)

Operation Selective fire (fully or semiautomatic), air-cooled
Caliber .50 (12.7 mm)
Muzzle velocity 893 mps (2,930 fps)
Capacity 110-round belt
Weight 57.6 kg (128 lbs) with tripod
Overall length 165.4 cm (65.1 in.)
Rate of fire 450 to 550 rounds per minute
Range 1,800 m (1,970 yds)

The predecessors of the .50-caliber machine gun were German 12.7- and 13.2-mm antitank rifles used in World War I. Early tanks had thin armor that was easily pierced by such rounds. The U.S. Ordnance Department turned to John Browning to design a machine gun that would use a high-velocity .50-caliber cartridge, and Browning delivered a prototype gun the day after the Armistice was signed. While the vast majority of U.S. .50-caliber machine guns (both air- and water-cooled) were used in aircraft or mounted on vehicles (tanks, halftracks, jeeps, and trucks), the M2-HB air-cooled model was issued to infantry units. Weighing nearly 130 pounds (with tripod), the M2-HB was used mainly as a defensive weapon.

Panzerfaust Antitank Grenade Launcher



Operation Grenade launcher, percussion fired
Caliber 44 mm (1.73 in.)
Weight 5 to 7 kg (11 to 15.4 lbs)
Overall length approx. 104 cm (40.95 in.)
Range up to 80 m (88 yds)
Armor penetration 240 mm (9.4 in.)

Like the American Bazooka, the German *Panzerfaust* ("Tank Fist") was a simple device that delivered a potent punch. In the course of the war a series of models was produced, ending with the *Panzerfaust* 100. All *Panzerfaust* models consisted of a steel tube that contained a propellant charge. As in all small arms cartridges (and unlike the electrically fired Bazooka and *Panzerschreck* launchers), the charge in the tube was ignited by percussion, firing a 44-mm hollow-charge antitank grenade from the tube. When the grenade left the tube, spring-steel fins deployed to stabilize its flight. Early models were effective only at close range—about 30 meters. Later models improved the range, first up to 80 meters, and finally up to 150 meters. Allied tank crews trapped in the blind enclosures of the Norman *bocage* country often became aware of concealed *Panzerfaust* teams only when their vehicles were struck by exploding antitank grenades.

Bazooka

Operation Rocket launcher, electrically fired
Caliber 2.36 in. (60 mm)
Muzzle velocity 84 mps (275 fps)
Weight 8.1 kg (18 lbs)
Overall length 154.9 cm (61 in.)
Range 455 m (500 yds)

In response to the need for an infantry antitank weapon, Leslie A. Skinner and Edward G. Uhl of the Ordnance Department developed the bazooka—a metal tube that used an electrical firing mechanism—by early 1942. Until then American infantry had lacked an antitank rocket capable of stopping a tank. Another member of the Ordnance Department, Henry H. Mohaupt, had been working on a shaped charge grenade for use by infantry against tanks. Mohaupt's M10 grenade weighed over 3.5 lbs, making it nearly impossible to throw effectively. However, when Skinner and Uhl attached one of Mohaupt's grenades to a rocket, then hit a tank on three successive shots during testing, the Ordnance Department immediately recognized the value of this new weapon. Many bazookas were shipped to America's allies; in fact, when the Germans captured one from the Russians, they copied the design to produce the *Panzerschreck* ("Tank Terror"). The bazooka was named for a musical contraption devised by comedian Bob Burns.

Panzerschreck Antitank Rocket Launcher

Operation Rocket launcher, electrically fired
Caliber 88 mm (3.46 in.)
Weight 9.3 kg (20.5 lbs)
Overall length 163.8 cm (64.5 in.)
Range 120 meters (130 yds)
Armor penetration 230 mm (9 in.)

The German *Panzerschreck* ("Tank Terror") was a larger, more powerful antitank weapon than the more common *Panzerfaust*. Instead of firing an antitank grenade with a propellant charge inside the launcher tube, the *Panzerschreck*, like the American Bazooka, fired an antitank rocket electrically. The *Panzerschreck* consisted of a steel tube and a dry-cell electrical firing mechanism. An 88-mm hollow-charge rocket projectile was inserted into the rear end of the tube; pressing the trigger closed the contacts and ignited the propellant in the back of the rocket, firing the 3.2-kilogram projectile.

American Hand Grenades

Mark II Fragmentation Grenade

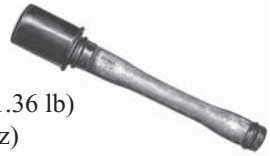
Grenade weight .59 kg (21 oz)
Charge weight .14 kg (5 oz)
Overall length 139.7 mm (5 in.)
Range 45 m (50 yds) maximum

American soldiers used many types of hand grenades during World War II, but the primary hand grenade issued to GIs was the Mark II fragmentation grenade. The Mark II was egg-shaped and constructed of cast iron. The outside of the Mark II was serrated to produce more fragments when it exploded.

The specifications for the Mark II called for a TNT filler, but because TNT was in short supply when the war started, many early Mark IIs were filled with a nitrostarch compound. The time delay on the Mark II's fuse was 4 to 4.8 seconds. The Mark II's killing radius was 5 to 10 yards, but fragments could kill at up to 50 yards. Because the accepted throwing range was 35 to 40 yards, soldiers were ordered to keep their heads down until after the grenade exploded.

Of the other types of hand grenades issued to GIs in Europe, the two most common were smoke and phosphorus grenades. Both these grenades were used to mask movements or mark artillery and ground-support aircraft targets.

German Hand Grenades



Stick Grenade

Grenade weight 0.61 kg (1.36 lb)
Charge weight .17 kg (6 oz)
Overall length 355.6 mm (14 in.)

Egg Grenade Specifications

Grenade weight 0.23 kg (0.5 lb)
Charge weight 0.115 kg (0.25 lb)
Overall length 134.6 mm (5.3 in.)

As they did with almost every other weapons type, the Germans developed a number of different hand grenades. There were, however, two primary types of German high-explosive hand grenades: the *Stielhandgranate* 24 ("stick hand grenade, model 24"), and the smaller, egg-shaped *Eihandgranate* 39 ("egg hand grenade model 39").

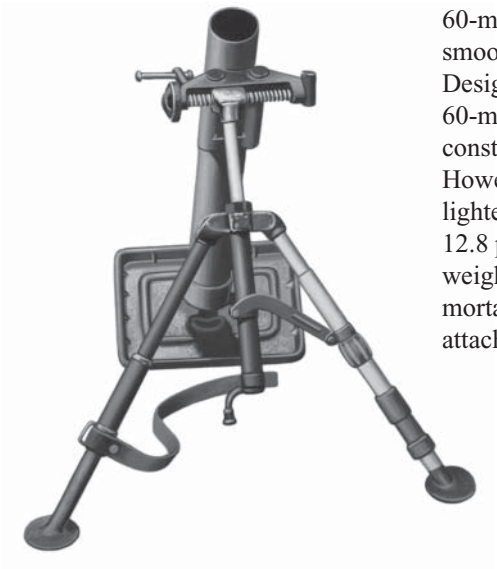
The stick grenade was the more familiar of the two, having seen widespread use in World War I, and undergoing various improvements in the interwar years. It consisted of a thin sheet-metal can containing a TNT charge, mounted on a hollow wooden handle. The handle provided leverage that made this grenade easier to throw than other egg- or pineapple-shaped German and Allied grenades. The stick grenade was armed by unscrewing the metal cap on the bottom of the handle to expose a porcelain bead attached to a cord in the handle. Pulling the bead actuated a friction igniter, and the TNT charge exploded after a four- to five-second delay. Late in the war variant stick grenade models substituted a concrete or wooden charge container for the original metal head.

The smaller, lighter, and less powerful egg grenade encased a TNT charge in a thin sheet-metal container. The grenade was armed by unscrewing a metal cap on the top and pulling the exposed ring of the friction igniter. As with the stick grenade, the TNT charge exploded after a four- to five-second delay.

60-mm Mortar (Mortar 60-mm, M2 and Mount M2)

Caliber 60-mm (2.36 in.)
Muzzle velocity 163 mps (535 fps)
Weight 18.9 kg (42 lbs)
Overall length 72.6 cm (28.6 in.)
Rate of fire 18 rounds per minute (normal), 35 rounds per minute (maximum)
Range 1,806 m (1,975 yds)

Mortars were the lightest and most mobile form of artillery used in World War II. The mortars used during the war ranged in size from the 50-mm mortar used extensively by the Japanese to a mammoth 305-mm mortar used by the Russian Army. The largest mortars that saw extensive use in combat were 120-mm mortars (usually mounted on wheels) used by both the Germans and Russians. The smallest mortar used by American troops was the 60-mm mortar. Like most mortars, it consisted of a smooth-bore barrel (or tube), base plate, and bipod. Designated "Mortar 60mm, M2 and Mount M2," the 60-mm mortar was almost identical in design, construction, and operation to the 81-mm mortar. However, the 60-mm mortar was considerably lighter. The tube weighed 12.8 pounds, the base plate 12.8 pounds, and the bipod 16.4 pounds—a total weight of 42 pounds compared to the 81-mm mortar's 136 pounds. The base plate was often left attached to facilitate rapid setup.



Standard and Short 8-cm Mortars

Caliber 81.4 mm (3.2 in.)
Weight 56.4 kg (124 lbs)/28.2 kg (62 lbs)
Overall length 123 cm (48 in.)/96 cm (37.8 in.)
Rate of fire 18 to 35 rounds per minute
Range 2,400 m (2,625 yds)/1,100 m (1,200 yds)

When the war began, the German army's primary mortar was the 8-cm *Schwerer Granatenwerfer* 34 (8-cm heavy mortar, model 34). As the war progressed, the Germans developed a short 81-mm mortar, the 8-cm *Kurzer Granatenwerfer* 42 (8-cm short mortar, model 42) in order to retain the firepower of the standard 8-cm mortar in a lighter, more easily portable weapon. Weighing half as much as the standard mortar, this shorter weapon had about half its range, but all of its destructive power. Weapons like this were ideal for close-in artillery support and for laying down harassing fire in the constricted hedgerow country of Normandy.

81-mm Mortar (81-mm Mortar, M1 with Mount M1)

Caliber 81 mm (3.18 in.)
Muzzle velocity 213 mps (700 fps)
Weight 61.2 kg (136 lbs)
Overall length 115.6 cm (45.5 in.)
Rate of fire 18 rounds per minute (normal), 35 rounds per minute (maximum)
Range 2,994 m (3,290 yds)

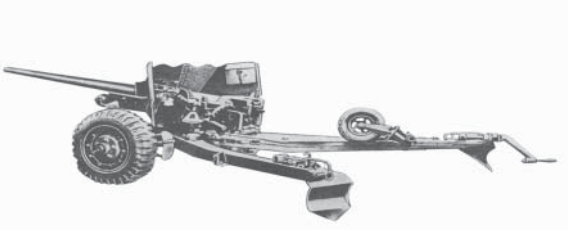
The 81-mm mortar used by the Americans had its roots in the mortar invented by Sir Frederick Wilfrid Scott Stokes, known as the "British Stokes" mortar. This earlier mortar consisted of a smoothbore tube with a fixed firing pin at the bottom. The tube was fitted into a base plate that rested on the ground; the plate helped dissipate the recoil shock. A bipod, which was adjustable for elevation, supported the front end of the tube. The 81-mm mortar used during World War II was similar to the Stokes, although this newer mortar embodied a number of important improvements. The tube was strengthened to handle the higher pressures created by modern ammunition, a cross-leveling mechanism was added, and the sight was much improved. The mortar crew usually consisted of three men, although two men could carry, set up, and fire this mortar. Hand carts were often issued with the 81-mm mortar; some were even mounted on halftracks.

50-mm Antitank Gun (Pak 38)

Caliber 50 mm (1.97 in.)
Muzzle velocity 550 to 1,200 mps (1,800 to 3,940 fps)
Weight 916 kg (2,016 lbs)
Barrel length 3.17 m (10 ft 4.96 in.)
Armor penetration 159 mm (6.25 in.) at 100 m (110 yds)

The German 50-mm Pak 38 antitank gun, introduced in 1941, replaced the earlier 37-mm gun in an effort to keep pace with the increasing thickness of tank armor. The Pak 38 was mounted on a carriage with solid rubber tires, and provided a crew shield made of two 4-mm armor plates spaced 2.5 cm apart. Ammunition types included high-explosive and armor-piercing rounds.

M1 57-mm Antitank Gun



Caliber 57 mm (2.24 in.)
Muzzle velocity 823 mps (2,700 fps)
Weight 1,215 kg (2,700 lbs)
Armor penetration 120 mm (4.7 in.) at 100 m (110 yds)

Based on the British six-pounder, the M1 57-mm antitank gun was the successor to the M3A1 37-mm antitank gun. It fired an armor-piercing round that could penetrate 70 mm of armor at 910 meters (1,000 yards). The 57 mm was light enough (1,215 kg/2,700 lbs) to be manhandled by a crew; however, it was often mounted on the M3 Halftrack and T49 GMC (Gun Motor Carriage) to provide improved mobility.

75-mm Antitank Gun (Pak 40)

Caliber 75 mm (2.95 in.)
Muzzle velocity 450 to 990 mps (1,476 to 3,250 fps)
Weight 1,425 kg (3,136 lbs)
Barrel length 3.45 meters (11 ft 4 in.)
Armor penetration 174 mm (6.88 in.) at 100 m (110 yds)

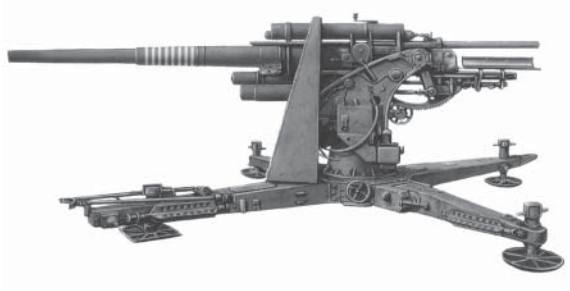
The German 75-mm Pak 40 antitank gun, introduced in 1942, was one of several larger-bore antitank guns introduced that year to deal more effectively with increasingly well-armored Allied tanks. It was somewhat more effective than another weapon Germany introduced that year, an updated version of the venerable but still potent "French 75" (75-mm gun, model 1897) mounted on a Pak 38 carriage. Like that ancient gun, the Pak 40 could fire armor-piercing, high-explosive, and hollow-charge rounds at fairly high velocities.

3-inch Gun M5

Caliber 76.2 mm (3 in.)
Weight 2,215 kg (4,875 lbs)
Muzzle velocity 792 mps (2,600 fps)
Armor penetration 122 mm (4.8 in.) at 100 m (110 yds)

The 3-inch Gun M5, which was adopted by the U.S. Army in 1939, used the same carriage as the new M2 105-mm Howitzer; both new guns were first used in combat in North Africa in 1942. Officially a light field gun, the M5 was often called the "3-inch antitank gun." It could fire high-explosive, armor-piercing, HEAT, and smoke rounds, and was used in both roles until the end of the war. At that time the U.S. Army discontinued use of the M5 and rebarreled many of them as 105-mm Howitzers.

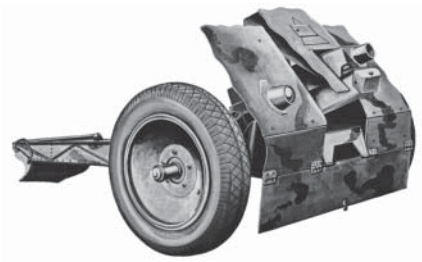
88-mm Antitank Gun (Pak 43)



Caliber 88 mm (3.46 in.)
Muzzle velocity up to 1,130 mps (3,705 fps)
Weight 3,636 kg (8,000 lbs)
Barrel length 6.58 meters (21 ft 7.25 in.)
Armor penetration 206 mm (8.1 in.)
at 100 m (110 yds)

The most famous—and the most feared—antitank weapon of the war was the German 88-mm gun. Introduced in 1934 as a mobile antiaircraft gun (in models designated Flak 18, 36, and 37), its effectiveness against ground targets was soon recognized. In the course of the war other models followed, notably the Flak 41 for use against air, ground, and sea targets, and the Pak 43 antitank gun. The "88" could throw a 16-pound armor-piercing projectile at over 3,700 feet per second; whether used as a standalone antitank gun or mounted in Tiger tanks and *Jagdpanther* tank destroyers, the effect of the 88 on even the heaviest Allied tanks was devastating.

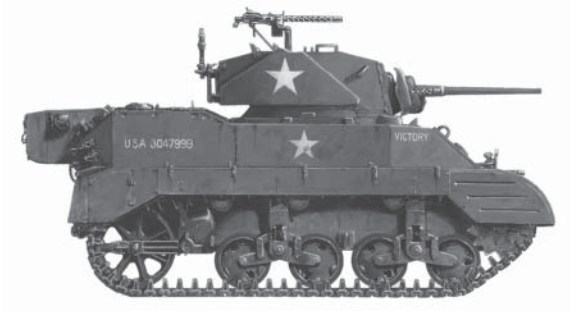
I.G. 18 7.5-cm Light Infantry Gun



Caliber 75 mm (2.95 in.)
Muzzle velocity 221 mps (725 fps)
Weight 400 kg (880 lbs)
Barrel length 883 mm (34.75 in.)
Range 3,566 m (3,900 yds)
Armor penetration 96 mm (3.8 in.)
at 100 m (110 yds)

The 7.5 cm *leicht Infanterie Geschutz* 18 (7.5-cm light infantry gun, model 1918) was a short-barreled, close-support weapon that fired high-explosive and hollow-charge rounds. Although more sophisticated light artillery designs became available in 1938, the I.G. 18 continued in service throughout the war.

M5A1 Light Tank



Weight 15,380 kg (33,912 lb)
Maximum speed 60 km/h (37.2 mph)
Main gun 37 mm (1.46 in.)
Armor 12 to 67 mm (0.47 to 2.64 in.)

The M5 light tank, introduced in 1942, was fitted with a larger turret and additional radio equipment early in 1943 to become the M5A1. Both were powered by twin Cadillac V-8s coupled to the Cadillac Hydra-matic transmission. The M5 became the basis of several variants, generally substituting other weapons for the 37-mm gun originally fitted in the M5 turret. Chief among these were the Howitzer Motor Carriage M8, which mounted a short 75-mm howitzer; and the T8 reconnaissance vehicle, with a .50-caliber (12.7-mm) machine gun on a mounting ring in place of the standard M5 turret. Both of these soldiered on until the end of the war.

Panzer III L Medium Tank

Weight 19,800 kg (43,659 lbs)
Maximum speed 40 km/h (25 mph)
Main gun 50 mm (1.97 in.) L/60
Armor 12 to 50 mm (0.31 to 3.15 in.)

The German *Panzer* III medium tank, manufactured from 1936 to 1943, was the primary German tank at the beginning of the war. Main armament in early models was a 37-mm gun; to meet the realities of armored warfare, later models substituted 5-cm and finally 7.5-cm guns. For the same reason, armor thickness was increased from 30 mm to 50 mm. Long after the *Panzer* III was superseded by more formidable medium and heavy tanks, its excellent chassis remained as the basis for numerous self-propelled artillery pieces (such as the StuG IIIG) and a variety of special-purpose vehicles, including flame-throwers, recovery vehicles, and a "swimming" version for a cross-channel invasion of England.

(75-mm) "Sherman" Tank

Weight 30,160 kg (66,352 lbs)
Maximum speed 38 km/h (23 mph)
Main gun 75 mm (2.95 in.)
Armor 25 to 51 mm (0.98 to 2 in.)

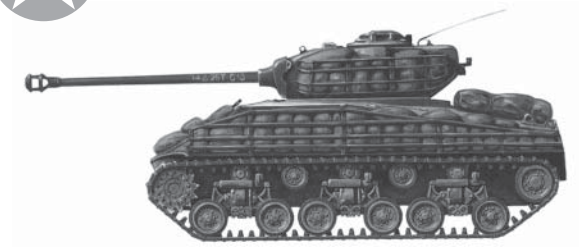
The American M4 medium tank, nicknamed the "Sherman," was the primary tank of the Allied armies; between 1941 and 1946 over 40,000 were built. Although more reliable than most German tanks, the Sherman was handicapped by its high profile, thin armor, and inadequate main gun. M4A1 Shermans were routinely knocked out and set ablaze by hand-held antitank rockets, antitank guns, and 88-mm armor-piercing rounds, while shells from their own 75-mm guns simply bounced off German Panthers and Tigers. Many crews added sandbags or logs to their tanks' armor. American tankers often referred to the Sherman as the "Ronson" (a popular cigarette lighter) because of its tendency to catch fire when hit. While this was commonly attributed to the Sherman's gasoline engine (rather than diesel, as used in German tanks), the main cause was the ammunition inside the tank. As the war progressed, the model M4A3 Sherman (described separately) was developed to counter the threat of increasingly heavy and powerful German tanks.

Panzer IV H Tank

Weight 25,000 kg (55,000 lbs)
Maximum speed 38 km/h (23 mph)
Main gun 75-mm (2.95-in.) L/48
Armor 8 to 80 mm (0.31 to 3.15 in.)

The German *Panzer* IV medium tank, introduced in 1937, was manufactured in larger numbers, over a longer period, and in a greater number of variants, than any other German tank. It remained in production until 1945. Early models were armed with a short-barreled 75-mm gun; models F and later mounted a long-barreled, high-velocity version. The *Panzer* IV chassis also carried a variety of self-propelled guns and special-purpose vehicles. Despite its inferiority in firepower and armor to later German tanks, the *Panzer* IV provided a mix of mobility, armament, and armor that kept it in production throughout the war.

M4A3 (76.2-mm) "Sherman" Tank



Weight 32,285 kg (71,027 lbs)
Maximum speed 47 km/h (28.7 mph)
Main gun 76.2 mm (3 in.) or 105 mm (4.13 in.)
Armor 38 to 63.5 mm (1.5 to 2.5 in.)

The American M4A3 "Sherman" medium tank was a better-armored version of the original M4A1 medium tank. Many M4A3s mounted a 3-inch (76.2 mm) gun; its HVAP (high-velocity armor-piercing) round made this upgunned Sherman a match for German tanks that the 75-mm version could not take on. One M4A3 variant mounted a 105-mm howitzer. While the Sherman was far from the finest of World War II tanks, its durability and sheer weight of numbers made it a major contributor to Allied victory.

Panzer V "Panther" Medium Tank

Weight 45,500 kg (100,100 lbs)
Maximum speed 46 km/h (28 mph)
Main gun 75-mm (2.95-in.) L/70
Armor 30 to 110 mm (1.18 to 4.33 in.)

The German Panther medium tank, introduced in 1943, was probably the best tank built during WWII. Designed in response to the Soviet T-34 medium tank, the Panther was larger, heavier, more powerful, and better armed and armored. Its excellent chassis and suspension gave the Panther speed over varying terrain to match its long-range firepower. In open country the American-built Sherman tank was no match for the Panther, but in the constricted hedgerow country of Normandy the Panther could not take full advantage of its superiority. Panther variants included the formidable *Jagdpanther* ("Hunting Panther") tank destroyer, which carried an 88-mm gun.

Tiger I Heavy Tank

Weight 57,000 kg (125,685 lbs)
Maximum speed 37 km/h (23 mph)
Main gun 88-mm (3.46-in.) L/56
Armor 25 to 100 mm (0.98 to 3.94 in.)

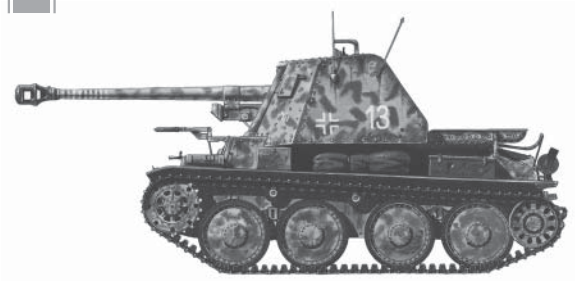
Introduced in 1942, the Tiger I heavy tank was larger, heavier, better armed, and better armored than any previous German tank. For most of the war it was more than a match for any Allied tank. What it lacked in speed, mobility, and fuel economy, the lumbering Tiger made up in firepower and armor protection. With 100 mm of frontal armor and its formidable 88-mm gun (in a very slow-traversing turret), the Tiger was far too dangerous for the American Sherman tank to fight head-on, although it was vulnerable to attack from the rear. The appearance of the American M36 tank destroyer with its high-velocity 90-mm gun meant that the mighty Tiger was no longer invincible. By late in 1944, 1,354 Tigers had been manufactured.

StuG IIIG/StuH 42 Infantry Support Tanks

Weight 23,900 kg (52,580 lbs)
Maximum speed 40 km/h (24.4 mph)
Main gun StuG IIIG: 75 mm (2.95 in.) L/48; StuH 42: 10.5 cm (4.13 in.) L/28
Armor 11 to 50 mm (0.43 to 1.97 in.)

Introduced in 1940 to provide supporting fire for infantry, the StuG (short for *Sturmgeschutz*—"assault gun") mounted a 75-mm main gun on a *Panzer* III tank chassis. Many *Panzer* III tanks were eventually converted to StuG specifications. The StuH variant mounted a 10.5-cm L/28 main gun. Their relatively heavy armor and low profile made these vehicles formidable weapons and difficult targets in their intended role. However, the limited traverse of their main guns put them at a disadvantage in combat against other tanks that could command a wider field of fire. Other StuG variants mounted larger guns, including the 150-mm howitzer, as main armament.

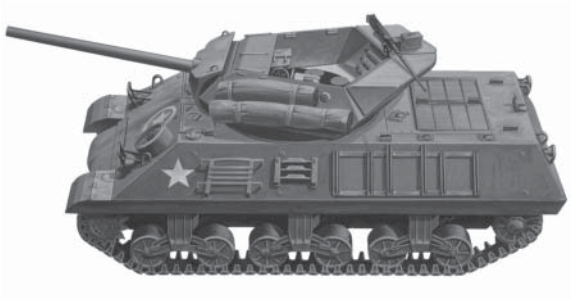
Marder III Self-Propelled Antitank Gun



Weight 9,700 kg (21,340 lbs)
Maximum speed 42 km/h (26 mph)
Main gun 76.2-mm Pak 36
Armor 10 to 50 mm (0.4 to 1.97 in.)

The *Marder* III was one of several German self-propelled artillery designs based on the Czech LT-38 light tank chassis. Its 76.2-mm Pak 36 antitank gun was actually a captured Russian FK296 gun modified to fire the German Pak 40 artillery round. The Germans built 344 of these hybrid vehicles in 1942 and made 19 more by modifying existing tanks. The *Marder* III first served in the North African campaign in 1942.

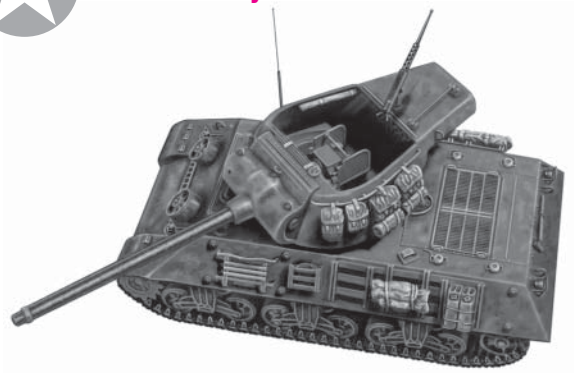
M10 Tank Destroyer



Weight 29,938 kg (66,013 lb)
Maximum speed 48 km/h (29.8 mph)
Main gun 76.2 mm (3 in.)
Armor 12 mm to 37 mm (0.47 to 1.46 in.)

The Gun Motor Carriage M10 was a tank destroyer based on the M4A2 (and later the M4A3) Sherman tank. The top of the hull was flattened to lower the profile, and lighter armor gave the M10 increased mobility. Its open-topped turret carried a converted 76.2-mm antiaircraft gun. Between June 1942 and December 1943, 7,000 M10s were built; they figured prominently in the fighting in Normandy, where their mobility and firepower were put to the test.

M36 Tank Destroyer



Weight 28,120 kg (62,004 lbs)
Maximum speed 48 km/h (29.8 mph)
Main gun 90 mm (3.54 in.)
Armor 12 to 50 mm (0.47 to 1.97 in.)

The Gun Motor Carriage M36 tank destroyer was the most powerful American antitank weapon of World War II. Its modified 90-mm high-velocity antiaircraft gun, in a newly designed turret, ended the reign of the German "88" as the dominant antitank gun of the war in Europe. Mounted on the Sherman M4A3 tank chassis, the big gun and its armor-piercing rounds proved more than a match for German Panther and Tiger tanks, even at long ranges. A variant model (the M36B2) mounted the new M36 turret and 90-mm gun on otherwise unmodified M4A3 Sherman tanks. The M36 soon superseded the successful M10 tank destroyer and established an impressive record against enemy armor.

Jagdpanther ("Hunting Panther") Tank Destroyer

Weight 46,000 kg (101,200 lbs)
Maximum speed 46 km/h (28 mph)
Main gun 88 mm (3.46 in.)
Armor 25 to 100 mm (0.98 to 3.94 in.)

The *Jagdpanther* tank destroyer, introduced just in time for deployment against the Allied invasion in Normandy in mid-1944, combined two formidable weapons: the Panther tank chassis and the very powerful Pak 43 88-mm antitank gun. The *Jagdpanther* could maneuver rapidly across most types of terrain, and it could stand off a thousand meters or more and destroy enemy tanks while remaining out of range of most antitank weapons. In the hedgerow country of Normandy, however, *Jagdpanthers* could not use these capabilities to best advantage. Some tank battalions used *Jagdpanthers* instead of tanks, but as with most self-propelled artillery, the limited traverse of the main gun proved to be a liability.

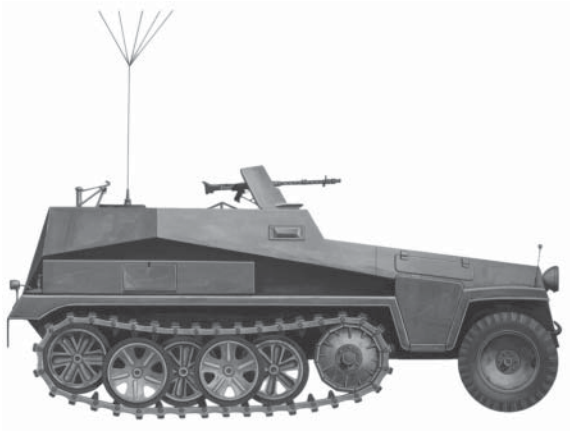
M3A1 Halftrack

Weight 6,660 kg (14,800 lbs)
Maximum speed 74 kph (45 mph)
Armament Various
Armor 6 mm (.24 in.)

The American military used a variety of halftracks during World War II; these half-tank, half-truck vehicles were used both as infantry carriers and weapons carriers because halftracks could traverse terrain that trucks could not, and they enabled infantry to be moved into combat with relative safety. The two most widely used were the M2 (later M5) and M3 (later M9). The M3 (M3A1) was powered by a White 147-hp engine. This model could carry 13 soldiers.

Halftracks were also used extensively as weapons carriers, mounting machine guns (both .30 and .50 caliber), mortars (81 mm and 4.2 in.), antitank guns (37 and 57 mm), and other armaments (40-mm antiaircraft, and 75- and 105-mm howitzers).

SdKfz 250 Light Armored Troop Carrier



Weight 5,909 kg (13,000 lbs)
Maximum speed 74 km/h (45 mph)
Armament MG 34 machine gun
Armor 6 to 10 mm (.24 to .4 in.)

The SdKfz 250 was a light halftrack troop carrier with light sloping armor based on the SdKfz 10 one-ton prime mover chassis. It provided a lower profile than its predecessor and omitted its windshield. This model, which carried a crew of eight, was one of several variants based on the one-ton chassis; others included an armored ammunition carrier and an armored observation post. A similar, but heavier, vehicle was the SdKfz 251 medium halftrack troop carrier, based on the SdKfz 11 three-ton prime mover chassis.

SdKfz 231 Armored Car

Weight 7,590 kg (16,700 lbs)
Maximum speed 32 km/h (51 mph)
Armament one 2 cm-gun (Kw.K30 or 38) and one 7.92-mm MG 34 machine gun
Armor 8 to 18 mm (0.3 to 0.7 in.)

The SdKfz 231 heavy eight-wheeled armored car was manufactured from 1937 to 1942. It mounted one heavy machine gun and one light machine gun in a rotating turret, and carried a four-man crew. Variants and successors included radio communications, antitank, and assault vehicles.

Kfz 1 *Kübelwagen*

Weight 986 kg (2,170 lbs)
Maximum speed 80 km/h (50 mph)
Engine 1,131 cc (69 cu. in.) 25 hp 4-cyl (rear-mounted, horizontally opposed, air-cooled)

Built by Volkswagen, the simple and reliable *Kübelwagen* ("bucket car") was the German equivalent of the U.S. Jeep. This nimble four-seater, based on Ferdinand Porsche's original "People's Car" design of the 1930s, used the same rear-mounted, air-cooled engine driving the rear wheels. Some standard models mounted an MG 42 machine gun, giving the innocuous *Kübelwagen* a deadly sting. Other variants included the amphibious *Schwimmwagen*, as well as radio communications, maintenance, ambulance, and survey versions. The *Kübelwagen* design survived the war to reappear in the 1970s as a Mexican-built Volkswagen sport-utility model called "The Thing."

Jeep

Weight 1,090 kg (2,400 lbs)
Maximum speed 105 km/h (65 mph)
Engine 2,200 cc (134.2 cu. in.) 72 hp 4-cyl

First produced for the American armed forces in 1940, the Jeep probably derived its name from the designation "GP" for General Purpose vehicle. Small and nimble but stoutly constructed and relatively powerful, this four-wheel-drive open vehicle served with American, British, and Soviet forces in every theater of operations. It could haul a half-ton load over nearly any surface or terrain, and many carried a .50-caliber Browning machine gun, which gave the humble Jeep a long reach and a powerful punch. More than 650,000 Jeeps were produced from July 1941 to the end of 1945. U.S. Army Chief of Staff George Marshall said the Jeep was America's greatest contribution to modern warfare; Eisenhower believed that three basic tools helped to win the war for the Allies: the Douglas Dakota (DC3/C47) aircraft, the landing craft—and the Jeep.

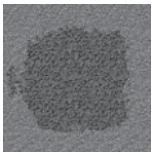
Chapter 6

Terrain

You fight battles on game maps that consist of interlocking tiles 40 pixels by 40 pixels large (or 8 meters by 8 meters in game scale). Each tile is composed of terrain elements reflecting the actual terrain found in the Norman countryside in 1944.

Basic Terrain

The basic terrain elements are those that occur naturally, such as grass, water, and trees.

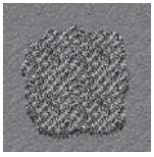


Dirt

Height: Flat
Concealment: Very poor
Visual hindrance: Very poor
Protection from aimed fire: Very poor
Protection from HE shells: Poor

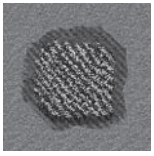
Grass

Height: Flat
Concealment: Poor
Visual hindrance: Very poor
Protection from aimed fire: Very poor
Protection from HE shells: Poor



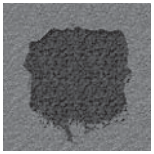
Tall Grass

Height: Short
Concealment: Fair
Visual hindrance: Fair
Protection from aimed fire: Very poor
Protection from HE shells: Poor



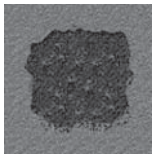
Wheat

Height: Short
Concealment: Fair
Visual hindrance: Fair
Protection from aimed fire: Very poor
Protection from HE shells: Poor



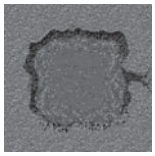
Mud

Height: Flat
Concealment: Very poor
Visual hindrance: Very poor
Protection from aimed fire: Very poor
Protection from HE shells: Fair



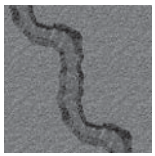
Marsh

Height: Flat
Concealment: Poor
Visual hindrance: Poor
Protection from aimed fire: Very poor
Protection from HE shells: Fair



Deep Water

Height: Flat
Concealment: Very poor
Visual hindrance: None
Protection from aimed fire: None
Protection from HE shells: Very good



Stream

Height: Flat
Concealment: Fair
Visual hindrance: Very poor
Protection from aimed fire: Good
Protection from HE shells: Excellent

Gully

Height: Flat
Concealment: Fair
Visual hindrance: Very poor
Protection from aimed fire: Good
Protection from HE shells: Very good

Woods

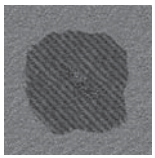
Height: Very tall
Concealment: Fair
Visual hindrance: Very good
Protection from aimed fire: Poor
Protection from HE shells: Very poor

Brush

Height: Short
Concealment: Fair
Visual hindrance: Very good
Protection from aimed fire: Poor
Protection from HE shells: Poor

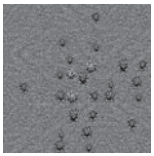
Civilian Terrain

Civilian terrain elements are those created by the Norman farmers and villagers, such as plowed dirt, stone fences, and *bocage*.



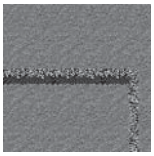
Plowed Dirt

Height: Flat
Concealment: Very poor
Visual hindrance: Very poor
Protection from aimed fire: Very poor
Protection from HE shells: Poor



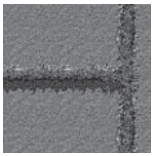
Orchard

Height: Very tall
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Very poor



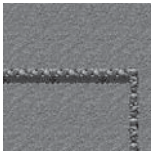
Bocage

Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Excellent
Protection from HE shells: Poor



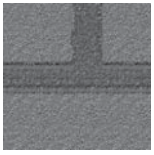
Hedge Fence

Height: Short
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Poor
Protection from HE shells: Poor



Stone Fence

Height: Short
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Poor

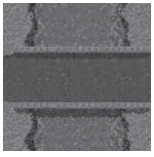


Dirt Road

Height: Flat
Concealment: Very poor
Visual hindrance: None
Protection from aimed fire: Very poor
Protection from HE shells: Poor

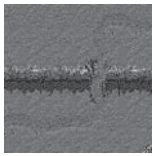
Paved Road

Height: Flat
Concealment: Very poor
Visual hindrance: None
Protection from aimed fire: None
Protection from HE shells: Poor



Bridge

Height: Flat
Concealment: Very poor
Visual hindrance: Fair
Protection from aimed fire: None
Protection from HE shells: Poor

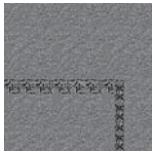


Break in Bocage

Height: Short
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Poor
Protection from HE shells: Poor

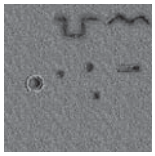
Military Terrain

Military terrain elements are those created by the war being fought in the Norman countryside, such as barbed wire, shellholes, obstacles, and rubble.



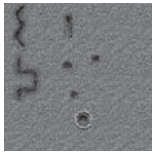
Barbed Wire

Height: Flat
Concealment: Very poor
Visual hindrance: Very poor
Protection from aimed fire: Poor
Protection from HE shells: Poor



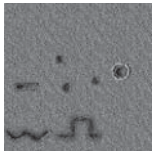
Rifle Trench

Height: Flat
Concealment: Good
Visual hindrance: Very poor
Protection from aimed fire: Very good
Protection from HE shells: Very good



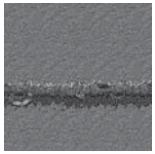
Foxhole

Height: Flat
Concealment: Good
Visual hindrance: Very poor
Protection from aimed fire: Very good
Protection from HE shells: Very good



Fortified Foxhole

Height: Flat
Concealment: Very good
Visual hindrance: Very poor
Protection from aimed fire: Excellent
Protection from HE shells: Very good

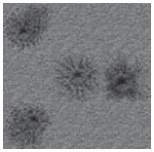


***Bocage* Rifle Pit**

Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Excellent
Protection from HE shells: Very good

Fortified *Bocage* Rifle Pit

Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Very good



Shellhole

Height: Flat
Concealment: Fair
Visual hindrance: Very poor
Protection from aimed fire: Very good
Protection from HE shells: Good

Wooden Barrier

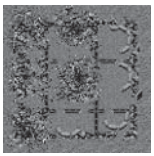
Height: Short
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Fair
Protection from HE shells: Poor

Wood Rubble

Height: Medium
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Fair
Protection from HE shells: Poor

Stone Barrier

Height: Short
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Poor



Stone Rubble

Height: Medium
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Fair

Metal Barrier

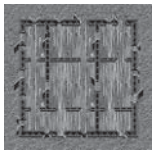
Height: Short
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Poor

Dead Animal

Height: Flat
Concealment: Good
Visual hindrance: Blocks view
Protection from aimed fire: Fair
Protection from HE shells: Poor

Structures

Structures are buildings constructed by the Norman farmers and villagers, by the German Army, or by the United States Army.



Wood Buildings

Wood buildings consist of civilian structures such as houses, barns, and outbuildings. These buildings also include those built by the military, such as barracks.

Interior (Floor)	Height: Flat Concealment: Poor Visual hindrance: Fair Protection from aimed fire: Very poor Protection from HE shells: Poor
Wall	Height: Tall Concealment: Very good Visual hindrance: Blocks view Protection from aimed fire: Fair Protection from HE shells: Poor
Door	Height: Tall Concealment: Very good Visual hindrance: Blocks view Protection from aimed fire: Fair Protection from HE shells: Poor
Fortified Door	Height: Tall Concealment: Very good Visual hindrance: Blocks view Protection from aimed fire: Good Protection from HE shells: Poor
Window	Height: Tall Concealment: Very good Visual hindrance: Blocks view Protection from aimed fire: Fair Protection from HE shells: Poor
Fortified Window	Height: Tall Concealment: Excellent Visual hindrance: Blocks view Protection from aimed fire: Good Protection from HE shells: Poor

Stone Buildings

Stone buildings include civilian structures such as houses, churches, and shops.

Interior (Floor)
Height: Flat
Concealment: Poor
Visual hindrance: Fair
Protection from aimed fire: Very poor
Protection from HE shells: Poor

Wall
Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Fair

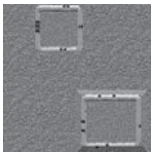
Door
Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Poor

Fortified Door
Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Excellent
Protection from HE shells: Poor

Window
Height: Tall
Concealment: Very good
Visual hindrance: Blocks view
Protection from aimed fire: Very good
Protection from HE shells: Poor

Fortified
Height: Tall

Window
Concealment: Excellent
Visual hindrance: Blocks view
Protection from aimed fire: Excellent
Protection from HE shells: Poor



Bunkers

Bunkers are structures built by the military specifically for defensive purposes.

Interior (Floor)

Height: Flat
Concealment: Fair
Visual hindrance: Fair
Protection from aimed fire: Poor
Protection from HE shells: Poor

Wall

Height: Tall
Concealment: Excellent
Visual hindrance: Blocks view
Protection from aimed fire: Excellent
Protection from HE shells: Poor

Chapter 7

The Big Picture: A Short History of World War II

The seeds of World War II were sown at the end of World War I—the "war to end all wars." The armistice signed by Germany (the Versailles Treaty) contains provisions that restrict its territory, limit German military buildups, and impose reparations. These reparations are the most devastating blow; the Allies essentially force Germany to pay the victor's war debts. The strain on the German economy causes widespread unemployment and rampant inflation—a wheelbarrow of paper money might buy a loaf of bread.

This grim economic climate proves ripe for the growth of a fiercely nationalistic party called the National Socialists. Led by a former German Army corporal, Adolph Hitler, the National Socialist movement gains popularity and power throughout the late 1920s. When Hitler becomes chancellor in 1933, he quickly consolidates his power. In August 1934, he proclaims himself *Führer*—leader—and forces Germany's military to proclaim personal loyalty to him.

In March 1936, German troops occupy the Rhineland, a direct violation of the Versailles Treaty. The German High Command opposes the occupation, but Hitler envisions a passive Allied response; when there is no military action by the British or French, Hitler is proven right. The *Führer* assumes supremacy over his military commanders.

In January 1937, Hitler formally renounces the Versailles Treaty in a speech at the *Reichstag*. He claims that no great world power can accept such restrictions. In November, Hitler explains his intentions for Germany at a party conference. His chief aim is to obtain *Lebensraum*—"room for living"—in Eastern Europe. He knows it will be necessary to use force; his first targets are Austria and Czechoslovakia. The Führer has no specific timetable, preferring to wait for a ripe opportunity.

In March 1938, Germany annexes Austria. One year later, Czechoslovakia comes under German control. Now Hitler looks east—toward Poland.

"Peace in our time": British Prime Minister Neville Chamberlain returns from Munich

Let Loose the Dogs of War: World War II Begins

On August 23, 1939 Germany and the Soviet Union sign a nonaggression pact that secretly divides Poland, Lithuania, Finland, Estonia, and Latvia between them. Neither side announces the pact's existence for almost a month.

World War II begins at 0445 hours on September 1, 1939 when 53 German divisions smash into Poland from the west. The attacking Germans introduce a new word to the world vocabulary: *blitzkrieg*—a "lightning war" of movement, using an overwhelming combination of armor, air power, and mobile infantry. By September 8, the German Tenth Army is fighting in the suburbs of Warsaw.

The Poles refuse a demand for their surrender on September 16. The next day, Soviet forces attack from the east, knifing through Polish units pared of troops to fight the Germans. By October 3 Polish resistance is crushed. About 900,000 Polish soldiers are taken prisoner; the number killed, wounded, or missing in action is unknown. The Germans report only 40,000 casualties, the Soviets far fewer.

Germany's *blitzkrieg* tactics prove devastatingly effective. While tanks play a leading role in the conquest of Poland, official reports give more credit to traditional infantry forces.

German armor on the road into Poland

Russia Invades Finland

Finland, one of the countries apportioned to the Soviet Union as part of the pact with Germany, becomes the next battleground. When the Soviets invade Finland on November 30, 1939, the attacking Red Army forces dwarf the Finnish army; there is every reason to expect a quick Soviet victory.

However, the Finns quickly learn how to stymie Soviet advances. Tanks are allowed to penetrate the Finnish lines during the daytime, while the Soviet infantry is held at bay. When night falls, the Finns emerge from hiding places and pick off the trapped Soviet tanks one by one. In other places, the Finns use highly mobile ski units to surround Soviet columns as they pass through dense forests; entire Red Army divisions are surrounded and beaten by the lightly armed Finns. But, after weeks of fierce fighting, the sheer weight of Soviet numbers begins to tell. On March 13, 1940, Finland signs a peace treaty in Moscow.

The Finnish Army never has more than 200,000 men in the field compared to the Red Army's 1,200,000; yet the Finns kill 48,000 and wound 158,000 Soviet soldiers. Because the Soviets have performed dismally given the disparity of resources, Allied and Axis observers see the Red Army as ineffective. Hitler decides Germany can defeat the Soviets; the Allies see no point in sending supplies to an army that will surely be beaten. Events will prove both sides wrong.

Germany Blitzes West

After Germany's success in Poland, Hitler looks west and sees the next victims if the *blitzkrieg*—France, Belgium, Holland, and Denmark. Hitler believes the defeat of these countries, along with the defeat of the British Expeditionary Force (BEF), will make Great Britain sue for peace. With England out of the war, he can focus Germany's armies on his ultimate goal—conquering Russia. Winston Churchill ultimately spoils Hitler's plan; Great Britain refuses to negotiate a peace with Germany.

German Field Marshal Gerd von Rundstedt

The German plan of attack calls for assaults by three army groups. The three group commanders, Field Marshals Wilhelm Ritter von Leeb, Gerd von Rundstedt, and Fedor von Bock achieve stunning success, although all will be dismissed from command within two years for failures on the Eastern Front.

Field Marshal Rundstedt's Army Group A roars across the French border on May 10 against light resistance. General Heinz Guderian, a leading proponent of German tank tactics, leads one of the *Panzer* corps driving into France. Bock's Army Group B races across Holland and Denmark.

On May 12, the French Seventh Army clashes with the Germans near Tilburg, but the French wither before a rain of German attacks. French troops are demoralized by the Germans' lightning-quick armored attacks; they are further harassed by attacks from German Stuka dive bombers.

Both Guderian and the commander of the Seventh *Panzer* Division, Erwin Rommel, show the world how the tank has changed the modern battlefield. Many in the German High Command believe rapid advances by armored units will leave exposed flanks that invite counterattack. In fact, the *Panzer* units are often ordered to halt so the rest of the army can catch up. In Western Europe, the rapidly moving armored columns do indeed expose their flanks, but these columns breed so much confusion and panic that counterattacks are impossible to organize.

On May 15, the Dutch surrender. Churchill, visiting Paris to meet with French leaders, asks where the reserves are. He is appalled at the answer: There are no reserves. On May 17, the Germans enter Brussels, the next day Antwerp. Three days later, Guderian's *Panzers* reach the coast.

The Germans have mowed a swath 20 miles wide from the Ardennes to the Atlantic. The French and British try to slice through the swath before it can be strengthened and widened. Rommel's division is attacked by British Matilda heavy tanks near Arras. These tanks make good progress because they can withstand most of the Germans' conventional antitank weapons. When the Germans are on the verge of defeat, some of their antiaircraft gun crews depress the barrels of their 88-mm guns, take aim at the Matildas, and fire. The result is disaster for the British—the 88-mm gun proves to be deadly against tanks. The British attack is blasted to a halt.

By May 26, it is clear the Belgian army is finished, and British units begin to fall back on the town of Dunkirk on the French coast. Belgium surrenders on May 28; British and French units race to cover the approaches to Dunkirk.

Confusion and misunderstanding among the German commanders prevent a coordinated assault on the Dunkirk perimeter. Ultimately the *Panzer* divisions are shifted from Dunkirk south to continue the attack toward Paris. The final push at Dunkirk falls to the infantry and the German air force—the *Luftwaffe*.

British and French units at Dunkirk put up a heroic fight while every available ship and boat is put to use evacuating troops to England. Over 220,000 British and 112,000 French soldiers are evacuated; but when the Germans reach Dunkirk early

Allied troops massed on the beach at Dunkirk

on the morning of June 4, they still capture some 40,000 men. While the success of the evacuation has exceeded Churchill's expectations, the troops arriving in England have lost virtually all their heavy equipment and weapons.

On June 5, the German attack on the Somme River Line begins. The French have reorganized their forces, but there is little they can do to stop the Germans. On June 6, the line is breached between Amiens and the coast. Eight days later Paris falls.

German troops marching through the *Arch de Triomphe* in Paris

"To make union with England was fusion with a corpse."

Marshal Henri Pétain, who capitulated to Germany rather than participate in what he saw as a doomed alliance with Britain

French signing armistice in 1940 with Germany—in the same railway car where the Germans signed their surrender in 1918

On June 22, the French sign an armistice with Germany. The Germans have won—they have crushed four Allied armies and driven a fifth, the British Expeditionary Force (BEF), off the continent.

The Allied armies have learned that they are unprepared for Germany's *blitzkrieg* tactics. They have inadequate tanks and antitank weapons; this inadequacy is compounded by poor deployments. The Germans mass their armor into divisions and even armies, while the Allies deploy armor in small units spread across wide fronts. The Allies also learn that they will need a force several orders of magnitude larger than those that "blitzed" in France to defeat Germany.

The Battle of Britain

England's victory in the Battle of Britain is one of the turning points of World War II, and an important factor in the ultimate success of Operation Overlord. The Allies' first victory boosts morale immeasurably and lays the foundation for the Allied air superiority that will play a crucial role in the Normandy Campaign. Perhaps most importantly, Churchill's gamble that the RAF can defeat the *Luftwaffe* keeps England in the war. With the British Isles available for marshaling the men, machines, and materiel necessary to carry out Operation Overlord, the logistics of the operation will be infinitely less complicated.

The idea of invading England has been broached to Hitler by several high-ranking officers. Hitler initially wanted a treaty with the British, but the unqualified success of the offensive against France, Belgium, and the Netherlands changed his mind. The German air offensive is intended to be the first step towards the

eventual invasion of Great Britain—an operation dubbed Sealion. The *Luftwaffe's* orders are to destroy the RAF.

In preparing for the expected German air attacks, the British develop an effective network of radar stations, observation posts, and radio listening stations tied into an equally efficient communications and command structure. This system, the first modern integrated air defense and command network, proves devastatingly effective against the *Luftwaffe*.

The *Luftwaffe* is also hampered by several internal factors. The primary German fighter, the Messerschmitt Bf 109, lacks the range necessary to escort bombers over England, allowing British Spitfires and Hurricanes to attack German bomber formations with impunity. The *Luftwaffe* also lacks bombers capable of carrying effective payloads; this problem is compounded when bombers and crew lost over England cannot be replaced rapidly enough. The *Luftwaffe* underestimates the effectiveness of British radar, and make a further mistake in believing they have destroyed most of the British radar installations before launching the major offensive in August.

The Germans start the battle in early July 1940 with numerical superiority in both fighters and bombers. On July 4, German Stuka dive bombers attack a column of nine British ships in the English Channel, sinking five. Between July 10 and July 24, the *Luftwaffe's* effort is aimed at shipping in the Channel. Both sides suffer losses: 48 RAF and 93 *Luftwaffe* planes are blown from the sky. The Germans do not aggressively push their numerical superiority, which gives the British vital time to build up their forces.

"Never in the field of human endeavor was so much owed by so many to so few."

Winston Churchill on the RAF's performance during the Battle of Britain

From mid-July through the early days of August, the Germans lose more planes than the British, but because the *Luftwaffe* has numerical superiority a war of attrition in the sky favors the Germans. However, by the time Reichsmarshal Hermann Goering can get the *Luftwaffe's* air offensive off the ground, the British enjoy an advantage in fighter planes—an advantage that increases as the battle wears on.

Finally, *Adlertag* (Eagle Day) arrives on August 13. The *Luftwaffe* launches its twice-delayed all-out air offensive against England. The German goal is to drive the RAF out of the skies over southern England in four days and destroy the RAF completely in four weeks. The British recognize that they must maximize the effectiveness of their resources. Air Marshal Sir Hugh Dowding decides that the most

One of the non-combat heroes of the Battle of Britain is Lord Maxwell Beaverbrook, named Minister of Aircraft Production by Churchill. By simplifying fighter production and through sheer force of will, Beaverbrook keeps British fighter production ahead of losses during the critical summer months. Between May 1 and early August, more than 1,200 fighters roll off British assembly lines.

Agents of the Italian Servizio Informazione Militare steal the "Black Code" from the U.S. Embassy in Rome. This is the code used by the U.S. Military Attache in Cairo to send accurate and detailed reports to the U.S. War Department concerning the British Eighth Army's plans. This intelligence source will prove invaluable to Rommel for almost a year.

effective strategy is to send small fighter formations to disrupt and harry the German bombers. It is a decision that proves correct; the British conserve valuable fighters while ravaging the German bomber formations.

On Eagle Day the *Luftwaffe* loses 45 planes while the British lose only 13. More importantly, of the 13 planes shot down, six of the pilots return to fly again; German crews escaping their damaged planes land on enemy soil and are out of the war. But over the next week, German bomber and fighter pilots fly over 5,000 sorties. As August draws to a close, the scales of victory are tipping in favor of the *Luftwaffe*; on August 31, the RAF loses 39 planes while the *Luftwaffe* loses 41.

The first week of September proves pivotal in the Battle of Britain. The *Luftwaffe* has succeeded in knocking out many RAF airfields but, perhaps due to intelligence failures, they inexplicably leave some airfields virtually untouched. Consequently, the *Luftwaffe* shifts its bombing efforts to industrial targets. This shift enables the British to bring some of their airfields back into operation. The Germans continue night raids against military, industrial, and civilian targets.

On September 3, the operational orders for Operation Sealion, the German invasion of Great Britain, are cut in Berlin. The invasion is scheduled for September 21; the decision to go will be made on September 10. The British lose 120 planes in the first week of September, and the Germans lose 148. It appears that the Germans are still winning the battle of attrition, but the British keep sending fighters up to meet the *Luftwaffe*; it is clear the British are not yet beaten.

Between September 7 and 15, the Germans launch several major bombing raids against targets in Great Britain. The first major daylight raid—500 bombers and 600 fighters—is aimed at London. Another 250 bombers, guided by the fires started during the day, hit the city at night. British civilians refer to the air raids as "the Blitz." To combat these large formations, Spitfire and Hurricane squadrons are combined into larger forces; these larger fighter groups succeed in breaking up most of the German formations.

On September 10, Hitler postpones his decision on Operation Sealion. He does not feel the *Luftwaffe* has won supremacy in the air. He postpones his decision again on September 14.

The Germans make another major effort against London on September 15. British fighters swarm upon the *Luftwaffe* formations on the incoming and return legs of the morning and afternoon raids. The battle between fighters is a draw, with both

sides losing about 25 planes, but the RAF stings the *Luftwaffe* by swatting 35 bombers out of the sky and damaging scores more. The raids on September 15 mark the last major effort by the *Luftwaffe* to destroy the RAF. On September 17, Hitler postpones Operation Sealion indefinitely. The scales of victory are now tipped in favor of the RAF.

During the last weeks of September and into October, the Germans continue nightly bombing of British cities. While there is much damage and loss of life, the effect is much less than the English government and military anticipated. Although German bombing of England will continue until March 1941, the *Luftwaffe's* effort to destroy the RAF has failed.

The British victory in the Battle of Britain changes the course of the war. The RAF's triumph points out the weaknesses of the *Luftwaffe* and Goering's leadership, and makes possible the next phase of the European air war—the Allied bombing of Fortress Europe.

The Desert Fox—The North Africa Campaign

Starting in early 1941, Axis and Allied forces surge back and forth across Egypt, Libya, Morocco, Algeria, and Tunisia for nearly 18 months. The prize is control of the Mediterranean Sea, the Middle East and, most importantly, enough oil fields to slake the victor's thirst for fuel.

This campaign is important for several reasons. It involves a number of the key players in the Normandy Campaign, including Eisenhower, Rommel, Montgomery, Bradley, and Patton. It is the first combat that pits American soldiers against German soldiers. The campaign reaffirms the power of the tank, the advantages of air superiority, and the need for effective supply lines.

General Erwin Rommel, with the sweet taste of his victories in France and Belgium still lingering, is given command of the *Deutsches Afrika Korps* (Afrika Korps). Rommel immediately begins pushing east from Tripoli on February 12, 1941. By April 11, Rommel has performed brilliantly; he has disregarded orders from above and driven the British all the way from El Agheila to Tobruk. There are attacks and counterattacks around Tobruk, but the British are compelled to retreat into Egypt on June 17. Rommel's performance is masterful; he is now known as the Desert Fox.

General Erwin Rommel in North Africa

From late June until early November, the British regroup and resupply. By late November, they are ready to launch a counterattack. Operation Crusader, aimed at retaking Tobruk, begins on November 28. The British outnumber the Germans in men, armor, and planes, and the Eighth Army pushes Rommel's forces back. By the end of 1941, the British have relieved the German siege around Tobruk.

Barbarossa Begins—Germany Attacks Russia

The war between Germany and the Soviet Union plays a crucial role in the Normandy Campaign—the Eastern (First) Front siphons most of Germany's forces away from Western Europe. When the Allies land in France only about 60 German divisions remain in Western Europe, while over 200 German divisions are fighting on the Eastern Front. The Americans and British also learn tactical lessons from the fighting between Germany and Russia, namely that it is futile to engage German tanks in anything approaching an even fight. The only way to defeat Germany's armored forces is through numerical superiority.

Directive 21

On December 18, 1940, Hitler releases Directive 21—"The German Armed Forces must be prepared, even before the conclusion of the war against England, to crush Soviet Russia in a rapid campaign." The campaign is code-named Barbarossa. The target date is May 15, 1941.

Comparison to the Normandy Campaign shows the immensity of the combat on the Eastern Front. In Normandy, the battle front during the drive to Saint-Lô will extend less than 50 miles; in Russia the front stretches over 1,000 miles from Leningrad to the Caucasus Mountains.

The conquest of Russia is a major goal of the National Socialists in Germany. It is a land of vast resources—iron ore, coal, and oil—that will fuel German industry. It has a large population that will provide cheap labor. And there is *Lebensraum*—room for Germany to grow, and room to exile the enemies of National Socialism. Perhaps Hitler recalls his visit to Napoleon's tomb in Paris, now that he is attempting what the great French emperor could not do—conquer Russia. The key to Operation Barbarossa is movement; the Germans must triumph before the autumn rains turn the Russian countryside into a sea of mud. Beyond the rains looms the killing cold of the Russian winter.

By mid-June 1941, nearly 140 German divisions are ready to smash eastward into the USSR. These forces are split into three army groups. One is poised to capture Leningrad; another to capture Smolensk, then Moscow; the third, Kiev. German units from Norway, along with 21 Finnish divisions, also join in the attack.

Opposing the German forces are approximately 130 Soviet divisions—nearly 2,900,000 men—but many are not deployed effectively. Also, the Soviet tanks are dispersed among infantry units and are thus no match for the massed armor of the

German *Panzer* armies. Still, the Red Army has a two-to-one advantage in tanks, including the superior T-34 and KV1 models. The Soviets also enjoy a nearly three-to-one advantage in aircraft, but German air strikes knock out communications and destroy many Soviet aircraft on the ground. In the first seven hours, the Soviets lose over 1,000 aircraft and the Germans quickly establish air supremacy over the battlefields. This supremacy cripples Soviet efforts to move men and materiel to meet the German offensive. Perhaps more importantly, Stalin's purges of the late 1930s have stripped away many experienced Soviet commanders; in their place are political generals with little or no experience. This lack of experienced commanders plagued the Red Army in Finland, and it will plague them again at the start of Barbarossa.

Scale of Forces

The scale of the fighting between the Soviet Union and Germany dwarfs the Normandy Campaign. The Allied forces amassed for the Normandy Campaign number approximately 1,500,000 men; by June 12, 1944 over 325,000 men are ashore.

In contrast, over 3,000,000 men are assembled for Germany's attack on the Soviet Union, along with 7,100 guns, 3,300 tanks, and 625,000 horses. The Soviets gather over 500,000 men for their counterattack at Stalingrad. At the Battle of Kursk, the Soviets and Germans together concentrate over 2,000,000 men and 6,000 tanks.

At 0300 hours on June 22, Germany looses its blitzkrieg on the Soviet Union. The Soviets are taken by surprise. Some German units advance 40 miles the first day. In a week General Guderian's Second *Panzer* Group pushes nearly 300 miles and traps the Soviet Third and Tenth Armies. The story is much the same all along the front: Rapid German advances trap many Red Army units, and wholesale surrenders begin. By July 9, more than 40 Red Army divisions are out of action, and 300,000 Soviet soldiers are captured. On July 12, the Germans bomb Moscow for the first time. It appears that Hitler's dream of conquering Russia may become a reality.

Then in late August, Hitler makes his first mistake of the campaign. He orders Guderian's Second *Panzer* Group and the Second Army to link up with Army Group South. Most generals disagree with the orders—they believe the drive to Moscow should continue rolling because the rapid capture of Moscow is one of the keys to the success of Barbarossa. In the short term, the move is a success; within three weeks the linkup is complete and another 600,000 Soviet troops are encircled. But the drive toward Moscow slows.

Germans advancing into Russia

Still, the Germans continue to taste nothing but success while the Soviets swallow the bitterness of defeat. The Germans capture Kiev at a cost of 100,000 casualties; the Soviets suffer 500,000 casualties. By early October, Army Group South has bottled up and destroyed Soviet units composed of 700,000 men.

Operation Typhoon—the final drive on Moscow—begins on October 2, 1941. Guderian's force turns north to join the other *Panzer* groups grinding toward the Soviet capital. But the autumn rains begin; German mobility falters in the mud while Soviet resistance stiffens.

In Moscow, diplomats and government officials begin leaving the city on October 16, but Stalin announces that he will remain. Work on the city's defenses continues at a feverish pace while the German forces are bogged down in Russian mud.

By early November, the ground is frozen enough for the Germans to again press the attack on Moscow, but the icy weather is scarcely an asset. It is one of the coldest winters on record in the Soviet Union. Motor oil freezes solid and rifle bolts become so brittle they break. The German soldiers' clothing is inadequate in the bitter cold, further sapping morale.

The Red Army is content to fight a holding action. Reinforcements are arriving daily from Siberia; tanks, guns, and supplies have been hoarded for the counter-offensive Stalin longs to launch. On November 18, Guderian's forces are hit by the first Soviet counterattack. Red Army troops fresh from Siberia attack the Germans several times over the next few days, blunting the German drive on Moscow.

By November 27, the Germans push to within 30 miles of Moscow. Two days later, *Panzer* units fight their way across the Moscow-Volga Canal. By December 2, German infantry units reach Moscow's northern suburbs—the Germans are less than 20 miles from the Kremlin, but they face even colder weather and winter storms.

Hitler and the *Wehrmacht*: Problems of Command

By the time the Allies land in Normandy, the German command structure has been badly fractured. Hitler has made a practice of dismissing or demoting generals who do not follow orders or fail to achieve victories. As the defeats mount, Hitler tightens his control over the German military. By the time of the Normandy Campaign (June 1944), he personally controls the vast majority of *Panzer* units in Western Europe. Consequently, when the invasion comes, the commanders in the field must send requests for armor to Berlin; by the time Hitler authorizes these requests, it is too late.

Two of the key commanders in Western Europe are Rundstedt and Rommel. Each has a plan to repel the Allied invasion—Rommel on the beaches, Rundstedt with a massive counter-attack inland. Neither gets his way as Hitler withholds the armor that either plan requires to succeed.

Finally, on December 5 Hitler agrees with his commanders—he must suspend the offensive against Moscow. The next day, Stalin orders a counteroffensive. The Soviets attack all along the 500-mile front. Their objective is to quickly drive two wedges deep into Army Group Center, isolate the Germans, then beat them in detail. From the beginning the attacks meet with success; the Germans are exhausted and overextended.

Enraged by the turn of events on the Eastern Front, Hitler replaces both Rundstedt and Bock. Then he dismisses General Walter von Brauchitsch as Commander in Chief of the German Army; Hitler himself takes the post. From this point forward, he will personally direct the German Army.

At first Hitler makes a wise move: He commands all units in Russia to stand fast and defend their ground. This stiffens resolve and prevents the Red Army from routing the Germans, who are able to fall back and establish defensive positions they will hold until spring. But this success leads Hitler to believe that his commanders are worthless; from now on he will often disregard their advice.

By year's end, the losses on the Eastern Front are staggering. The Red Army has endured at least 5,000,000 casualties and the Germans have taken 3,000,000 prisoners. The loss of materiel is also immense—30,000 guns and 20,000 tanks. The *Wehrmacht* (German Army) has also suffered huge losses. The difference is that the Germans have not destroyed the Soviets' ability to rearm, both from within and through Lend-Lease shipments from the United States.

Pearl Harbor
December 7, 1941

Sunday Surprise—The Japanese Bomb Pearl Harbor

A form of National Socialism took root in Japan in the 1920s; by the late mid-1930s Japan has invaded Manchuria in search of resources and cheap labor. Tensions escalate as the United States uses trade sanctions to cut off oil supplies to Japan. While negotiations continue between Tokyo and Washington, the Japanese mobilize for war. When diplomatic efforts fail to produce results acceptable to both sides, the Japanese government decides to take action.

On Sunday, December 7 at 0755 local time, Japanese carrier-based planes attack the U.S. Pacific fleet at Pearl Harbor, Hawaii. The Japanese achieve complete surprise. Resistance is token; the Japanese lose only 29 planes. In a matter of hours, five American battleships, three cruisers, and three destroyers are sunk, and

188 American aircraft are destroyed. But not all goes as the Japanese planned. By coincidence, the U.S. Navy's three aircraft carriers are not in port and escape destruction. And contrary to orders, the massive fuel oil storage tanks at Pearl Harbor are not destroyed. Admiral Isoroku Yamamoto, who planned the Pearl Harbor attack, estimates that it will set the Americans back only six months; he states that Japan cannot win an all-out war with the U.S. The Japanese gamble that the war in Europe will distract the Americans from focusing their war effort against Japan. Consequently, Japan can conquer the territory it needs to supply raw materials for war production, then present the U.S. and Britain with a ring of steel so formidable that they will sue for peace. On December 8, 1941 the United States and Britain declare war on Japan.

Germany and Italy Declare War on the United States

In support of their Axis ally Japan, Germany and Italy declare war on the United States on December 11. This is one of the biggest mistakes Germany makes during the war. Until this time, the outcome of the war in Europe is still very much in doubt. Roosevelt's Lend-Lease program has kept the Allies in the war, but now the full weight of America's industrial power will be brought to bear. More importantly, the American armed forces will add fresh troops to the battle-thinned ranks of the Allied armies. However, the United States faces a dilemma—how to fight a war on two fronts.

Omar Nelson Bradley (1893-1981). Although Bradley was not flamboyant or showy, he was a master of infantry tactics; Eisenhower called Bradley "the greatest battle-line commander I have met in this war."

Bradley was a West Point classmate of Dwight Eisenhower; both graduated in 1915, and neither saw action in World War I. By 1941 Bradley was a brigadier general in charge of the U.S. Army Infantry School, and became a major general in 1942. In 1943 under Eisenhower he succeeded Patton in command of the U.S. II Corps in North Africa. After the invasion of Sicily he was promoted to the rank of lieutenant general.

In 1944 Bradley was named senior commander of U.S. ground troops for the invasion of Europe. He commanded the U.S. First Army during the Normandy Campaign, then led the U.S. Twelfth Army Group for the remainder of the war. His coolness even in crises like the Battle of the Bulge won the confidence of his superiors, and his willingness to share danger and discomfort with his men earned him their respect; war correspondent Ernie Pyle called Bradley "the G.I. General."

The Allies Agree to "Beat Germany First"

In the months following the Japanese attack on Pearl Harbor, the U.S. is in no position to actively pursue the war in Europe. Its army is far below the strength required for the task, there are no U.S. forces in Europe, and the shipping needed to transport a massive invasion force does not exist. Despite these problems, Churchill meets with Roosevelt at the Arcadia Conference in Washington, D.C., where they agree on a "beat Germany first" strategy. The American leadership acknowledges that the bulk of Allied ground forces will have to confront the German threat as soon and as decisively as possible. From Pearl Harbor to D-Day, American determination to confront the German army never wavers, but events make it clear that half-measures will not lead to victory. In particular, the disastrous British raid on the French port of Dieppe in August 1942, in which half of the attacking force of 6,000 become casualties, shows that only a massive, coordinated Allied invasion will provide a firm foothold on the continent.

The Dieppe Debacle

Despite their commitment to a full-scale invasion, the British launch an ill-conceived cross-channel raid in August 1942 on the French port of Dieppe. This attack by 6,000 mostly Canadian soldiers is intended to provide combat experience and information about German coastal defenses. The plan is to seize and briefly hold the port, then return to England.

The raid is indeed a learning experience, imparting some bitter lessons. The Canadians are repulsed with heavy losses (about 50 percent), dampening British ardor for a large-scale invasion of France in 1943. Fortress Europe will remain firmly shut to the Allies for almost two more years, until they can accumulate the men, machines, and material—and the will—to mount Operation Overlord and kick the door down.

The Long Road to Normandy

With the Japanese attack on Pearl Harbor and America's entrance into the war, the conflict is now truly global. Over the next 30 months it will be fought on frozen plains, on steamy jungle-covered mountains, high in the sky, and under the sea. The Axis powers try to conquer territory for their empires; the Allies strive to push Germany, Italy, and Japan back within their borders. All the while the Allies plan and prepare for the decisive battle—the invasion of Europe.

Convoys and Wolfpacks—the Battle of the Atlantic

The Battle of the Atlantic revolves around the Allied need to ship men, machines, and materiel from the United States to Great Britain, Russia, and the Mediterranean—and the Axis efforts to disrupt the flow of supplies. Early in the war, the Germans used both surface ships and land-based aircraft to attack shipping in the Mediterranean and Atlantic, but the bulk of the German effort was made by submarines—the U-boats.

By the beginning of 1942, the U-boats are using the *Rudeltaktik*—wolfpacks consisting of as many as 40 submarines—to attack Allied convoys. While this tactic helps minimize the losses of experienced crews, it also pits the U-boats against Allied escorts. Over the next 18 months the escorts will steadily improve their submarine fighting capabilities.

Throughout 1942, the Allies make strides in improving their convoy system. They also begin installing radio direction finders to locate U-boats; the Germans counter by installing radar search receivers that detect Allied signals before the U-boat generates a return signal. Between August and December 1942, the Allies lose over 100 ships per month.

The Battle of the Atlantic crests in 1943. Axis subs sink 100 Allied ships in both January and February. Each side strives to gain an edge. The Allies begin equipping B-24s with new 10-cm radar sets that prove effective at finding U-boats; the radar search receivers installed on German submarines work only on the 1.5-meter radar.

The British Admiralty estimates that the Germans come closest to defeating the Allied convoy system during the first 20 days of March 1943. When the Allies lose 72 ships in the Atlantic to U-boats.

In April U-boats sink over 50 ships, but the Allies sink 15 U-boats. May proves pivotal; the Allies lose another 50 ships to subs, but the Germans lose 41 subs. The Germans attempt to regain the initiative, sending wolfpacks after the Atlantic convoys, but they lose 17 U-boats in June, 37 in July, and 25 in August—and the Battle of the Atlantic is essentially over. The remaining U-boats are ordered to

perform holding actions while the Germans develop a new generation of submarines.

The victory in the Battle of the Atlantic is critical to the success of Operation Overlord. The buildup of men, machines, and materiel necessary to launch the Second Front can now be marshaled in Great Britain, with relative impunity from the U-boat threat.

Germany Blitzes East Again

By March 1942, the German High Command estimates that the German Army has suffered 1,500,000 casualties in Barbarossa, and more than 250,000 in the first twelve weeks of 1942. The Germans are able to make up some of the loss; in

The War in the Pacific

Although the Pacific Theater takes a back seat to the efforts against Germany, America's initial battles are fought against the Japanese. One factor in America's favor is sea power; the size of the theater makes naval superiority a must for the victor.

When the Japanese fail to destroy the Pacific Fleet's aircraft carriers at Pearl Harbor, they seek a decisive battle to finish off the U.S. Navy. In early June 1942, the Japanese navy gets the decisive battle it seeks—and is dealt a vicious blow when it loses four heavy aircraft carriers (*Akagi*, *Kaga*, *Soryu*, and *Hiryu*) in one day during the Battle of Midway. The Americans lose the carrier *Yorktown*, but the American victory at Midway marks the beginning of the end for Japanese dreams of an empire in the Pacific.

By August 1944, the Americans have regained control of much of the territory lost to the Japanese in the first months of the war. New Guinea, the Solomon Islands (including Guadalcanal), Gilbert Islands (including Tarawa), Marshall Islands (including Kwajalein), Guam, and Saipan are all retaken. The Americans learn a great deal about amphibious landings in the process, primarily the value of pre-invasion bombardment from the sea and air. They will use this knowledge during Operation Overlord.

Guadalcanal is noteworthy because it is one of the first places American troops see combat in World War II. The battle proves quickly that the Americans can fight—and fight well. It is also a proving ground for many American weapons. The Garand rifle rapidly becomes a favorite among GIs and Marines alike. The Browning Automatic Rifle (BAR) reestablishes itself as a favored weapon; its mobility and rate of fire make it an excellent assault rifle. Air-cooled machine guns are found to be much easier to move and maintain than water-cooled models. However, the Americans gain little tactical experience beyond amphibious landings; the nature of the terrain throughout the theater and the radical contrast between Japanese and German combat tactics makes many lessons learned in the Pacific meaningless when applied in North Africa, Italy, and Normandy.

April, 51 divisions from Italy, Rumania, Hungary, Slovakia, and Spain arrive on the Eastern Front.

In preparation for the summer offensive, the Germans reorganize their forces in the south. Army Group South is divided into Army Groups A and B. Army Group A is to capture Rostov-on-Don, and drive southeast to Baku on the Caspian Sea. The prize: oil fields that can supply most of Germany's petroleum needs. Army Group B is to protect Army Group A's flank.

The offensive begins in early July. Initial success leads Hitler to change the plan on July 13; Army Group B's objective is now to capture Stalingrad. Hitler again meddles in the offensive on July 17, shifting *Panzer* units to Army Group A.

The Germans push steadily toward Stalingrad; they are within 16 miles of the city by the end of August. By mid-September, the Germans establish a 30-mile front surrounding the city. But there is a change in command for the Soviets; General Vasili Chuikov takes command of the 62nd Army and orders a close-quarters style of fighting that stymies the Germans. Chuikov's character is also a plus; he is firm and abrasive, but he exudes confidence that the Red Army will prevail. There is a change in the German command as well: on September 9, Hitler takes personal command of Army Group A.

On October 4, the Germans begin what they hope is the final drive on Stalingrad. The *Luftwaffe* flies thousands of sorties, dive bombing and strafing targets throughout the city. The Soviets counter by luring many advancing German units into prearranged killing zones, where they are decimated by automatic weapons, mortar, tank, and artillery fire. By October 18, the Red Army has fought the Germans to a standstill, and they have done so with a minimum commitment of reinforcements; they are hoarding resources for a counterattack at Stalingrad.

German intelligence reports a buildup of Soviet units north of Stalingrad; General Friedrich Paulus, commander of the German Sixth Army, orders what turns out to be the final German attack on the port city of Stalingrad. Over the next six days Stalingrad reverberates with the sounds of fighting. Casualties are heavy on both sides. The Soviets are able to splinter the German attacks; some units make slow and costly progress but most are stopped cold. A few units push to the River Volga. But the Germans cannot maintain central control over their advancing infantry and the battle degenerates into a series of unconnected firefights. The Red Army's small-unit, close-quarter tactics prevail.

The Axis Cracks—The German Defeat At Stalingrad

By November 1942, the German Army is badly overextended and its troops are exhausted. Every available German soldier has been thrown into the killing cauldron at Stalingrad. The Soviet counterattack calls for a pincer movement; one force attacking from the north and another attacking from the south.

Russian soldiers in winter camouflage on the attack

By being thrifty with reinforcements and resources, the Soviets have amassed 500,000 infantrymen and huge artillery batteries. More than 1,000 attack planes are poised to strike. And there are 900 new T34 tanks to spearhead the Soviet attack.

On November 23, forces forming the north pincer launch their attack against the exhausted and frozen Germans. In a matter of days the German siege of Stalingrad becomes a siege of the German Sixth Army. The Soviets trap 300,000 Germans in Stalingrad. The Soviet plan is to turn on the Germans and destroy them in detail.

Hitler summons Field Marshal Erich von Manstein to Army Group A headquarters and orders him to relieve the troops at Stalingrad. These orders seem hollow; Manstein has no troops and has to beg and cajole other commanders for men and machines. Even if he is able to assemble Army Group Don (named after the River Don) as ordered, Manstein fears he cannot accomplish his mission; there are more than 1,000 antitank guns between him and Stalingrad. Any attempt to break out the Sixth Army will leave Army Group Don open to another Soviet encirclement.

Despite all this, Hitler orders General Paulus to hold out; Goering has promised that the *Luftwaffe* can keep the encircled troops supplied. It is a promise soon broken. The *Luftwaffe* has too few planes and too few airfields; almost 500 of its aircraft are shot down trying to fly in supplies or fly out wounded. Over the next few weeks, Manstein assembles what forces he can while the Soviets tighten the noose around Stalingrad.

On December 12, Manstein launches Army Group Don's 13 divisions toward Stalingrad. Manstein's fear fast becomes a reality; Soviet antitank weapons decimate German armor. On December 19, Manstein orders Paulus to attempt a breakout immediately; Paulus refuses. Army Group Don's progress is grinding to a halt. On December 21, Manstein appeals to Hitler to change Paulus' mind; Hitler cites Paulus' report that he has insufficient fuel for a breakout. Finally, on December 23, the relieving force is stopped at the Myshkova River; the German troops in Stalingrad can hear their comrades fighting, but relief never comes.

The Soviets launch counterattacks against Army Group Don; Manstein's forces are retreating by Christmas. Everywhere along the Eastern Front the Soviets are advancing; it is an advance that will end only in Berlin.

On January 8, 1943, the Soviets demand surrender; Paulus ignores their demand. Two days later the Soviets attack. The Germans have more troops, but the Soviet troops are better fed, clothed, and supplied—and the Soviet soldiers sense victory. Preceded by a heavy artillery barrage, the Soviet attack further constricts the German perimeter.

By January 21, the Soviets recapture both airfields in Stalingrad; the Germans are completely cut off. Four days later, the Soviet forces attacking the city meet in the middle of Stalingrad. Only two pockets of German resistance remain. On January 31, Paulus surrenders the southern pocket; the northern pocket surrenders on February 2. All across the Eastern Front, those German units not cut off or encircled are retreating. The tide of Operation Barbarossa has crested.

About 40,000 Germans are evacuated from Stalingrad, most of them seriously wounded. Another 90,000 are taken prisoner; only 5,000 of the prisoners survive to return home, the last in 1955. The remaining Germans, about 150,000, are dead or missing. The Soviets report removing 147,000 German and 47,000 Soviet bodies for burial. The defeat enrages Hitler, saddens the German populace, and heartens Russia's allies.

The Germans retreat back across the Soviet Union throughout the winter and spring. Their chance for a counterattack comes when a huge bulge appears in the eastern front—the Kursk salient. German plans call for slicing through the base of the salient, cutting off several Soviet armies, then destroying them in detail. If the Germans succeed, they may turn the tide of the war. By mid-June, the Germans have 900,000 men, 2,700 tanks, and 1,800 aircraft ready for the attack.

On the evening of July 4, while the German units are assembling for their attacks, the Soviets begin the largest counter-preparation barrage of the war. The Soviet plan is to soak up the German advance in a massive web of defensive positions, make them pay for every meter of ground, then counterattack with armor. Although Kursk is the largest tank battle of World War II, it is Soviet artillery and

infantry that make the difference. A bloody toll is extracted from the German forces. Those not killed or wounded in the barrage are badly shaken; the attack itself is beset with problems. Many new Panther tanks break down with teething problems. Those Panthers still running, along with Tigers and other tanks, are met by coordinated antitank batteries that concentrate fire on one tank at a time. After five days of fighting, the German units attacking from the south advance only 20 miles. The story is worse on the north side of the Kursk salient. After five days of fighting, the Germans advance only eight miles.

When the Soviets commit their own armor, the German attacks are broken; the Germans surrender the initiative on the Eastern Front for good. Between now and the end of the war, the war on the Eastern Front is one long fighting withdrawal for the German Army; the Red Army doesn't stop until it reaches Berlin.

The lessons of the Eastern Front are hard ones for both sides. The Germans have lost over 1,000,000 men; the Soviets have lost far more, but the Soviet Union can absorb its losses and Germany cannot.

The impact of the fighting in Russia on Operation Overlord is undeniable. Many of the German units that will meet the Allies in Normandy have been transferred there to recuperate from the fighting in Russia. Other German divisions are conscripted from countries to the east, and have little incentive to fight the Allies. Perhaps most importantly, the Eastern Front is a constant crisis the German High Command must deal with throughout the Normandy Campaign. When the Allies land, Germany has 59 divisions in France and the Low Countries; there are 190 German divisions still on the Eastern Front.

Monty and Torch—The North Africa Campaign

After pushing the British into Egypt, the Afrika Korps has retreated before the forces of Operation Crusader since late November 1941. But as 1942 opens, the British have overextended themselves. The Desert Fox—Field Marshal Erwin Rommel—seizes the opportunity to counterattack.

British soldiers in North Africa

The Afrika Korps advances cautiously at first, but press their advantage when they discover the poor disposition of the British troops. By the end of January, Field Marshal Rommel's troops capture all the territory the British fought so hard to take in late 1941. There is a lull in the fighting while both sides accumulate supplies.

"I tell you no one on God's earth can follow what's going on. The boys are just weaving in and out… There's everything in the air—tracers, shells, bullets, ricochets, incendiaries, and bits of red-hot metal whanging off the burning tanks. Some of the tanks are blowing right up into the air, their petrol exploding, their ammunition popping off in every direction."

British officer on tank combat near El Alamein

On May 26, Rommel renews his offensive; he does not have enough fuel but has been promised more by German High Command. Throughout the battle, both sides lose many tanks, but the British are better able to sustain the losses. On May 28, the German's lack of fuel begins to tell—some of Rommel's tanks run out of gas in the desert.

Still, the Germans meet with more success. By June 21, Rommel recaptures Tobruk, taking 30,000 prisoners. More importantly, he captures a mountain of supplies—over 3,000,000 rations and 500,000 gallons of gasoline. Rommel sends a request to Berlin for permission to chase the British Eighth Army back into Egypt. He receives permission and a promotion to Field Marshal. On June 23, German forces cross the Egyptian border; the Eighth Army continues to retreat. Field Marshal Harold Auchinleck, the Eighth Army's commander, decides to make a stand at El Alamein.

The German advance reaches the El Alamein defensive perimeter on July 1. There is fierce fighting over the next few weeks, but the British focus their counterattacks on Italian troops rather than the Afrika Corps itself. As a result the Afrika Korps consumes precious fuel trying to reinforce the Italians. On July 21, British intelligence intercepts Rommel's reports on troop strength and supplies. When they learn Rommel has only 100 tanks compared to their 300, the British mount a major counteroffensive. The infantry, particularly the Australians and New Zealanders, make good progress initially. But again the British armor does not arrive at the right place at the right time, and the gains cannot be exploited. Although the British lose heavily in the counteroffensive, Rommel and Auchinleck both decide to hold their ground to rest and refit.

While in London, Roosevelt agrees with Churchill that there will be no Second Front in 1942. The President agrees with the British—they must find "another place for U.S. troops to fight in 1942." A plan for amphibious landings in North Africa, previously rejected, is quickly reworked and agreed upon. It is also renamed—Operation Torch. On August 14, General Dwight D. Eisenhower sets up headquarters in London to command the operation.

Rommel's forces are again desperately short of supplies, but after receiving promises that supplies will arrive soon, he decides to attack. As usual, Rommel's tanks lead the attack east. After traversing British minefields, Rommel's tanks turn north toward the Alam Halfa ridge. The attack is stopped at the ridge when British airplanes and artillery pound the German positions. The Germans try again on September 1, but the lack of fuel is debilitating—one *Panzer* division has no fuel at all. However, the German antitank guns continue to be effective against British armor. Two days later the New Zealand Division tries to cut off the German withdrawal, but is too heavily engaged to make any progress. Both sides settle in again to rest and refit.

In keeping with his ever-analytical character, General Bernard Montgomery, now commander of the British Eighth Army, spends over a month carefully planning his attack on Rommel. Shortly after midnight on October 23, "Monty" launches his attack. Despite all the training and elaborate timetables, the attack quickly lags

Erwin Rommel (1891-1944). Perhaps the best known and most charismatic German General of World War II, Rommel won the respect of friend and foe alike during the desert campaigns in North Africa. Rommel's military career began in 1910, and he finished the First World War as a captain, having won Germany's highest award for valor, the *Pour le Mérite*. In 1940 Rommel brilliantly led a panzer division in the campaign that led to the fall of France. Early in 1941 he was promoted to lieutenant-general and took charge of the fledgling Afrika Korps. Over the next 18 months his legend grew with his success in driving the British out of Libya. In June 1942 he captured Tobruk and became Germany's youngest field marshal. Even when the tide turned and the British under Montgomery defeated Rommel's forces in the second battle of El Alamein, his strategic retreat showed that the "Desert Fox," as he had come to be known, was a master of defensive as well as offensive tactics.

His defeat of an Anglo-American force at Kasserine Pass in Tunisia in February 1943 was the Americans' first encounter with Rommel, but by no means the last. In January 1944 he was sent to France to strengthen northern coastal defenses against the impending Allied invasion; his preparations made the Allies' task far more difficult and more costly, but the German High Command would not allow him to deploy the forces he felt would be necessary to stop the invaders on the beaches of Normandy.

Rommel was wounded In July 1944 when a British fighter strafed his car, and he was returned to Germany. Although he had not taken an active role in the failed attempt to assassinate Hitler, Rommel was implicated in the plot. Hitler offered him a grim choice: commit suicide and leave his family and his reputation intact, or face charges in a Nazi "Peoples' Court." He took poison and received a hero's funeral, the government announcing that he had died of his wounds.

behind schedule. On October 25, Monty personally intervenes in the battle to make sure that the advance is vigorous. The British have more men, tanks, and ammunition, as well as dominance of the airspace over the battlefield. By the end of the day the British have lost 250 tanks, but the Germans have only 40 tanks left. When the British renew the offensive against the middle of the German lines, there are again heavy losses among the British tanks, but these are losses they can absorb. On November 2, Rommel sends a message to Berlin stating that he cannot prevent a breakout and must withdraw. By November 6, the Battle of El Alamein is over; the Germans are retreating west toward Libya. The Eighth Army destroys hundreds of tanks, takes 30,000 prisoners, and captures 1,000 guns while suffering only 13,500 casualties and losing 150 tanks. By November 19, the Eighth has pushed the Germans back 600 miles.

Bernard L. Montgomery (1887-1976). Montgomery was one of the greatest—and most difficult—of the Allied commanders in World War II, best known for his successes in North Africa and for the major role he played in the Allied invasion of Europe.

Montgomery joined the British army in 1908, was severely wounded in 1914, and finished the First World War as a captain. His almost monastic devotion to the science of war was counterbalanced by an arrogant and abrasive personality. His egocentricity made him almost incapable of the kind of cooperation on which the Allied war effort depended, but his own men loved the flamboyant "Monty," who knew how to talk to them soldier-to-soldier in terms they could understand.

In 1942 Montgomery took command of the British Eighth Army in North Africa. His army was soon receiving modern equipment and ample reinforcements, while his opponent, German General Erwin Rommel, had rapidly advanced beyond his own supply line. Montgomery dealt defeats to Rommel's forces at El Alamein in Egypt, and eventually drove Axis forces from Libya and Tunisia. His success at El Alamein was the first major British victory of the war. It made Montgomery's reputation, won him promotion to Field Marshal, and in 1946 was commemorated in the title bestowed on him, "First Viscount Montgomery of Alamein."

Under Eisenhower's command, Montgomery led forces in Sicily and Italy, and in January 1944 he was recalled to England to help in the planning of Operation Overlord, the D-Day invasion. He forcefully made the case for a larger, more powerful initial assault. For the Overlord invasion Montgomery was named operational commander in charge of Allied ground forces. His protracted effort to take Caen reinforced the view of some that Montgomery was overcautious, and the failure of his ill-fated attempt to seize a bridgehead at Arnehm in Holland (Operation Market-Garden) further tarnished his reputation. His role in the Ardennes campaign and the subsequent crossing of the Rhine again demonstrated his ability, but Montgomery's tendency to lecture even his superiors, and his inclination to rewrite history in order to prove himself right, have diminished his rightfully earned reputation as one of the great Allied commanders.

On November 5, 1942, General Eisenhower arrives in Gibraltar to command Operation Torch. On November 8 three task forces begin landing troops in North Africa. The Western Task Force, commanded by General George Patton, lands on a 200-mile front between Safi and Port Lyautey. Within two days the Americans have secured their beachheads at Casablanca and Port Lyautey. The landing of the Center Task Force near Oran does not go well, but the task force establishes a secure beachhead and captures the airfield at Tafaraiu by nightfall; American-piloted Spitfires begin flying sorties from the airfield the next day. The Eastern Task Force lands at Algiers, and the town is quickly captured.

The Germans respond to Operation Torch by sending reinforcements to North Africa. By November 15, there are 10,000 German troops in Tunisia and 100 combat planes. The Germans use established French airfields with all-weather runways; the Allies must use temporary runways that are farther from the front.

As 1943 begins, the supply and manpower problems for the Axis forces in North Africa become acute because the U.S. has joined the fight. Without the presence of the Americans, the Germans would be facing only Montgomery. And the British troops in Operation Torch could have reached Montgomery only by running the gauntlet through German-held territory. With the Americans in the fray, the Germans are now badly outmanned and outgunned.

As the British Eighth Army continues to advance westward, the Germans evacuate large quantities of supplies out of Tripoli and demolish many of the port facilities. On January 26, after arguments with his nominal commanders (the Italians), Rommel is relieved of command. He is to be succeeded by General Messe of the Italian Army, but Rommel refuses to hand over command.

Axis forces mount a major attack against the US II Corps west of Faid. The attack begins only after Rommel argues over the plan of attack with his superiors; the Desert Fox wants to risk all to win all. However, Rommel's superiors order a more conservative plan. Regardless, the attack smashes through the inexperienced Americans, destroying two-thirds of the First Armored Division. Rommel quickly requests permission to step up the attacks, but there is no quick decision from Berlin. When the attack does begin again on February 19, it is aimed at Le Kef at the insistence of the Italians. The attack on Le Kef is what the Allies expect, and the two passes leading there are well defended. The attacks near Sbiba are fought off by British and American units. But at Kasserine Pass, the Americans initially hold the Germans, then break in panic.

By early March, the Germans have consolidated enough forces to attack near Medenine. The attack is a failure. The Germans have little spirit left; in fact, the veteran British and New Zealand units cannot believe they are fighting the same foe that drove them back into Egypt. British antitank gunners destroy 50 German tanks, leaving Rommel with only 100.

On March 9 Rommel leaves North Africa for good. On his way back to Germany he meets with Mussolini in Rome and Hitler in East Prussia; despite his best efforts, neither leader agrees to withdraw from North Africa.

Throughout March and early April, the Allies attack the Germans in North Africa on every front. By April 7, the fight has irrevocably turned against the Axis forces, and they begin to retreat. One week later, the Germans establish their final defensive line. They make two massive air transport efforts to resupply the Axis troops, but well over half the planes are shot down.

Using the support of artillery and air attacks, the American V Corps smashes into what is left of the 15th Panzer Division and drives toward Tunis. Further north, the Americans break through the Axis line in three places. The next day the German line crumples. Before the Afrika Korps can concentrate, the Eighth Armored Division slams into the retreating columns and panic ensues. There is no hope for evacuation, and mass surrenders begin.

The campaign in North Africa is over. For the Allies, it has been a successful campaign in many ways. Not only have they defeated the Axis forces in North Africa, they have defeated one of Germany's best field commanders, Rommel. Perhaps more importantly, the Allies have learned a great deal that they will apply in Normandy. The British have learned how to better coordinate infantry and armor, something Rommel mastered before arriving in North Africa. The British have also learned how to use their artillery effectively, massing batteries rather than dispersing them along the front. Finally, they have realized the importance of air superiority over the battlefield and beyond. British air superiority has contributed greatly toward preventing German reinforcements and supplies from reaching the front.

The Allies have also learned a great deal about their opponents' weapons. German antitank guns took a heavy toll in North Africa, while Allied antitank weapons often proved too light to stop many *Panzers*. This situation will still exist when the Allies land in Normandy.

The Germans have learned some lessons, too. They were astonished at the richness of the equipment they found abandoned by American troops. One German soldier said that fighting the Soviets was man against man, but fighting the Americans was man against machine. Clearly, the industrial might of the United States made itself felt in North Africa; without American industry the British could not have maintained numerical superiority in tanks. And American manpower helped tip the balance; American troops faced German troops for the first time in North Africa. While the Americans were inexperienced, they learned quickly—and they had manpower reserves the Germans could not match.

The Long Formation—The Air War In Europe

The air war raging over Western Europe turns in the Allies' favor in 1944. Three factors contribute to this turnabout. First, both the RAF and USAAF finally have enough long-range bombers to increase the monthly tonnage dropped to over 40,000 metric tons. Second, the P-51 Mustang becomes the first successful Allied long-range fighter escort. And, finally, the Allies make the *Luftwaffe* a primary target.

During January, the USAAF is still losing too many bombers; during a raid on Oschersleben, more than 75 of the 238 bombers are shot down, but the Allies' focus on aircraft manufacturing is beginning to hurt the German war effort. In February, the *Luftwaffe* tries to counterpunch by bombing targets in Great Britain; the effort, largely ineffective, is known as the "Little Blitz."

On February 20, the "Big Week" begins. The USAAF launches major attacks against the German aircraft industry. Over 900 bombers and 700 fighter escorts (most of them Mustangs) hit targets in Brunswick, Leipzig, and Regensburg. Another 800 bombers hit aircraft manufacturing targets on February 25. Between February 20 and 26, medium bombers and fighters attack *Luftwaffe* installations in France, Belgium, and Holland; many German aircraft are destroyed in the air, on the ground, and even while being transported to the front. The *Luftwaffe* is now clearly taking a beating. By the summer of 1944, German air forces are so reduced that Allied bombers and fighters roam freely across the skies of Europe.

The air superiority gained by the Allies during the first few months of 1944 is critical to the success of Operation Overlord. Air superiority means the Allies can hit strategic and tactical targets that reduce the Germans' ability to repel the invasion and move reinforcements to the front. Throughout the spring of 1944, heavy bombers continue to pound the German aircraft and fuel industries. However, many heavy bombers are diverted to other targets, such as railroads and bridges. Medium bombers and fighters add their weight to the attack. Some fighter squadrons lose more pilots to debris blown into the air from exploding locomotives, ammunition dumps, and airplanes in hangers than to enemy fire.

Stalin, Roosevelt, and Churchill at Tehran

"Major Martin"

There is an interesting prelude to the launch of Operation Husky. In late April, the British submarine HMS *Seraph* releases the body of "Major Martin" of the Royal Marines into the sea off the Spanish port of Huelva. Major Martin carries letters from the Vice Chief of the British General Staff and Chief of Combined Operations to Eisenhower and his staff outlining the Allied invasion of Greece. The Allies hope the Germans will recover the body and read the letters, because the body is not that of Royal Marine Major Martin. The letters are fakes intended to deceive the Germans as to the real invasion target, Italy. The deception works; the Germans recover the body, read the letters, and remain uncertain about Allied intentions.

By June 6, Allied air superiority makes it impossible for the Germans to move reinforcements to the front intact. It takes some units four days to travel distances that should take only one; other units, especially motorized units, are badly mauled before they even reach the front.

Allied air superiority also pays dividends to the soldiers on the ground. After campaigns in North Africa, Italy, and the Pacific, the Allied armies have developed excellent ground support tactics. Tens of thousands of ground support sorties are flown during the Normandy Campaign while German aircraft are seldom seen.

A Foothold in Europe—The Landings in Sicily

In January 1943, Allied strategy is again put to the test at the Casablanca Conference. Churchill meets with Roosevelt to discuss the next phase of Allied operations. When the meeting is over, they have agreed to a Second Front, a subsidiary operation in Italy, a major operation against U-boats, and the Combined Bomber Offensive against Germany. At their next meeting, in Washington, Churchill and Roosevelt set the invasion of northwest Europe for May 1, 1944.

General Dwight Eisenhower commands the offensive in Sicily—code named Operation Husky, with General Harold Alexander commanding the landing forces. General George Patton commands the U.S. Seventh Army landing west of Cape Passero; General Bernard Montgomery commands the British Eighth Army landing east of Cape Passero. Both Patton and Montgomery are veterans of the war in North Africa; both go on to play major roles in Overlord and the fighting in France.

These armies will face General Guzzoni's Italian Sixth Army. Guzzoni commands roughly 250,000 men, including about 75,000 Germans. The Italian troops are poorly equipped and demoralized from their mauling in North Africa. Guzzoni compounds his problems by tying up many units defending static coastal positions.

The assault on Sicily begins on the evening of July 9, 1943. General Matthew Ridgeway's 82nd Airborne Division drops over too large an area and cannot consolidate to take all its objectives. The British paratroopers fare better—but one-third of the British gliders are released too early and crash at sea. Still, the disruption caused by the airborne assault helps the seaborne assault the next day.

On July 10, General Patton's forces land, smash through light resistance, and quickly take Gela, Licata, and Vittoria; Montgomery's troops land unopposed and capture Syracuse by the end of the day.

The landing forces use, for the first time, two craft that will play important roles in the Normandy invasion: the landing ship, tank (LST) and landing craft, tank (LCT), which enable the Allies to land armor with the first wave of infantry.

Patton's forces swing west and capture Palermo on July 22; they surround 50,000 Italian soldiers, although motorized units, including most of the Germans, escape toward the northeast corner of the island.

On July 25 Mussolini is overthrown. Marshal Badoglio forms a new cabinet; he declares martial law and promises Germany that he will not negotiate a peace with the Allies. But Badoglio immediately breaks his promise. An armistice is signed on August 3 and announced to the public on August 8. Hitler responds by sending reinforcements to Italy.

The Americans use small amphibious landings on the north coast of Sicily to push the Axis forces back. There are landings at Santa Agata (August 8), Brolo (August 11), and Cape Milazzo (August 15); each compels the Germans and Italians to pull farther back. When American and British units capture Randazzo on the north side of Mount Etna on August 14, Axis defenses begin to crumble.

On August 17, Patton's troops enter Messina; British units a few hours later, and the campaign for Sicily is over. The Germans and Italians have evacuated more than 100,000 men across the Messina Strait. German casualties exceed 10,000 and the Italians lose over 100,000, mostly as prisoners. The Allies suffer 7,000 dead and 15,000 wounded, but their success in Sicily convinces many that the offensive in the Mediterranean should continue.

Fierce Encounters—The Landings in Italy

The campaigns in Sicily and Italy teach the Allies a number of important lessons that they will apply in France in 1944. Many of the commanders who bring units ashore here, including Eisenhower, Montgomery, Patton, General Omar Bradley, and General Norman Cota, will play major roles in Operation Overlord.

American First Division fighting in Italy

With the collapse of Sicily, Eisenhower wants to land on the Italian mainland. When he receives permission to proceed, he plans a diversionary attack across the Strait of Messina, carried out by Montgomery's Eighth Army on September 3. While there is good progress initially, Montgomery is cautious—a trait the Germans capitalize on by fighting an effective rear guard action. Eisenhower's main assault is an amphibious landing near Salerno on September 9. General Mark Clark commands the U.S. Fifth Army, which includes both American and British divisions.

The British First Airborne Division lands by sea at Taranto and captures the port city without opposition. The main landings near Salerno face strong resistance, but as more troops land, the beachheads are quickly expanded. Montgomery's advance is still slowed by poor roads and German demolition crews who blow up bridges and other structures to slow the Eighth Army's advance. By September 11 a pattern begins to emerge: the Allies make progress early in the day, but are pushed back by the end of the day. Morale among the Allied troops begins to flag in the face of tough German resistance.

By September 13, the Germans believe they can drive a wedge between the American and British sectors of the Salerno Beachhead. Units from the 16th *Panzer* and 29th *Panzergrenadier* Divisions slam into the Allied lines, and some German units drive to within one mile of the beach. But concentrated naval fire prevents the Germans from gaining a decisive victory; as the Allied lines stabilize, Eisenhower and Alexander agree on rapid reinforcement of the beachhead. On September 13 and 14, General Ridgeway's 82nd Airborne Division parachutes onto the beach. While the Germans continue to pound the Allied lines, air support and naval fire again prevent them from breaking through. They regroup on September 15, and the next day again try unsuccessfully to crack the Allied lines.

"Corporal Joseph Toporski, a paratrooper from Milwaukee, shot two snipers and was looking for a third when an Italian girl named Marissa tapped him on the shoulder as he peered around a building and asked him if he would like to go to her apartment and listen to American phonograph records. Corporal Toporski took an hour off for recreation. He got the third sniper on the way back to his unit."

From *Yank*, an American military publication

By the end of the month, the Allied armies are making steady progress north; the Germans fight delaying actions in several places, giving many of their units time to withdraw to the predetermined defensive lines. They blow up bridges and leave booby traps to further delay the Allied advance, but on October 1 Naples falls to the Fifth Army.

The Germans plan to fall back to two intermediate defensive lines before they reach their primary defensive positions at the Gustav Line (which runs from the mouth of the River Garigliano in the west to the mouth of the River Sangro in the east). The hilly terrain is excellent for defense—the Allies are funneled into valleys or forced to fight their

way up and over mountains, hills, and ridges. When the Germans do withdraw they do so in an orderly manner—there are no panicked mobs fleeing the front. Bridges are blown, mines sown, and booby traps rigged; the Germans do everything that can be done to slow the Allied advance.

On November 5 the Fifth Army begins attacking one of the Germans' intermediate defensive lines. The XIV *Panzer* Corps makes a brilliant stand, using the terrain and bad weather to maximum advantage, stalling the American advance. Attacks and counterattacks rage in the mountains. Still, the Allies slowly grind their way forward.

Then, as experienced units are pulled out of the line and sent to England to prepare for Operation Overlord, the advance begins to slow. By the end of 1943, both Allied armies find themselves bogged down by determined German defense and winter rain.

Despite the Allied advances since the September landings and heavy losses on both sides, the Germans remain ready and able to fight. None of their forces have been mauled, the terrain favors the defender in Italy, and the Germans use the terrain very well.

Problems of Supply

Both the Allies and Germans labor under supply problems during the Normandy Campaign. However, the German problems are much more acute. One problem the Germans face is dividing men, machines, and materiel between three fronts—Russia, Italy, and Normandy. Another is the systematic destruction of the German industrial base by Allied bombing.

The most immediate problem in supplying the German forces in Normandy is Allied air superiority. Throughout the Normandy Campaign, columns of reinforcements and supplies are ravaged from the air; troop movements which should take one day stretch to three or four because of a lack of motor transport, damaged railroads, and constant air attacks.

On To Rome

The fighting in Italy plays an important strategic role in the European Theater; it holds down a large number of German forces—forces that cannot be shifted to France. There are tactical lessons as well. The Allies learn more about amphibious landings. They learn more about German tactics: the use of strongpoints, infiltration and counterattack and, in the face of a superior force, the fighting withdrawal. They also discover that, even in the most dire circumstances, the Germans never break and run.

With Field Marshal Albrecht Kesselring's Tenth Army strongly entrenched behind the Gustav Line, the Allies face the prospect of attacking straight into the teeth of the German defense. There are changes in the Allied command structure as both Eisenhower and Montgomery leave to take their positions in Operation Overlord. Alexander takes overall command; his plan calls for the Fifth Army to smash through the German defenses into the River Liri valley and then move on Rome. The plan also calls for another landing—this time near Anzio—from which there will be a quick drive for Rome. With an Allied force behind them, Alexander believes the Germans will be compelled to fall back.

"Actually, I believe our fondness for the BAR was more concerned with the type of fire than with the weapon itself. We would have been equally pleased with the Bren gun—perhaps more so. What we yearned for was a good gun to throw a lot of lead, faster and harder than the Tommy Gun. This the Browning did..."

From *Shots Fired in Anger* by Lt. Col. John George

Over the first two weeks of January, both the Eighth and Fifth Armies close on the Gustav Line. On January 15, the II Corps captures Monte Trocchio, the last major obstacle between the River Rapido valley and Monte Cassino. The Fifth Army has now achieved contact with the Gustav Line along its entire front. During the next week, the British will make gains along the west coast, but near Monte Cassino the Americans are unable to maintain a foothold on the north bank of the Rapido. Several times small forces succeed in crossing the river, but all are subjected to vicious counterattacks which either drive the Americans back across the river or wipe them out. However, this offensive achieves one of its objectives—it pulls German forces away from Anzio.

The Anzio landings begin on January 22. General Lucas commands the U.S. VI Corps, which includes four American and four British divisions along with Commando and Ranger units. The landings are conducted in textbook style—there are only a handful of casualties as 36,000 men come ashore on the first day. The port at Anzio is captured intact and by the end of the day on January 23, there are 50,000 troops ashore.

Still, Lucas is cautious in his advance. The Allies push inland only a few miles, consolidating their gains as they advance, rather than racing for Rome. This lack of aggressiveness enables Kesselring to organize reinforcements, which he orders rushed to Anzio. These reinforcements begin to contest the Allied advance.

Elsewhere, the Fifth Army continues to hammer at the Gustav Line. The U.S. 34th Division keeps trying to establish a foothold across the Rapido; they finally succeed on January 26. Four days later, the British Fifth Division finally cracks the Gustav Line by capturing Monte Natale. On the same day (January 30), the Allies begin attacking the German defensive perimeter around Anzio. They suffer heavy losses and gain very little; only six members of the Ranger battalion leading the attack survive and evade capture. While the attack is called off on February 2, the attack does prevent the Germans from launching their own counterattack.

After regrouping, the Germans launch a major offensive against the Anzio beachhead. The *Luftwaffe* joins the attack, hitting targets on the ground and in the harbor. The Germans make some gains, but Allied artillery and naval fire slow, then stop the attack. It now becomes apparent to Kesselring that he cannot eliminate the Allied beachhead. Both sides settle in to rest and refit; the Anzio front is quiet for ten days.

On February 29, the Germans again try to break the Allied lines at Anzio. Elements of four German divisions hit the U.S. Third Division. Again the fighting is fierce and the casualties high, but again the Germans fail to break through. When a final attack on March 3 fails, the Germans go on the defensive.

When the Allies renew the offensive on May 11, four corps are thrown forward—the U.S. II, the Polish II, the British XIII, and the French Expeditionary Force. The twelve attacking divisions face only six German divisions. While there is general progress all along the Gustav Line, it is the French who finally crack the line for good. On May 14, they break into the Ausente Valley and race towards the next German line; they hope to crack this line before the Germans can settle into their defensive positions. By May 16, only the Poles face determined resistance, at the ruins of a monastery in Cassino; everywhere else the Germans are falling back to their next line of defense. The Poles finally capture the monastery at Cassino on May 18.

On May 23, the U.S. VI Corps slams into the German defenders at Anzio. No breakthrough is achieved, but the Germans are pushed steadily back. By May 25, the U.S. II Corps links up with the U.S. VI Corps from Anzio; the threat of the Anzio forces on their flank causes the Germans to withdraw further north.

Once the Allied forces begin to advance, General Clark shifts the axis of the attacks toward Rome. This ensures the liberation of Rome in early June, and also allows that Kesselring's forces escape to their next line of defense, the Viterbo Line north of Rome.

On June 5, 1944, the Allies roll into Rome. The thousands of Allied vehicles entering the city cause a traffic jam so bad that the Allies are unable to use their full strength to chase the retreating Germans. The next line of defense for the Germans is the Gothic Line, 150 miles north of Rome. By August 15, the Eighth and Fifth Armies are in contact with the this line. However, the drain on resources for Operation Anvil (the amphibious landings in southern France) forces the Allies to wait before any attacks can be launched.

The value of air attacks and naval bombardment before landing is proved in Italy—the toughest landing takes place where Clark has ordered that naval bombardment not be used in order to achieve surprise. Ground support from the air and bombing of the enemy's approaches to the battlefield continues to prove invaluable; the side that commands air superiority over the battlefield definitely has the advantage.

The Allies again encounter an enemy who is giving ground, but doing so grudgingly. The Germans have not been routed. They prove to be masterful at using terrain where a small force can easily hold up a much larger one. This tactic—using the terrain to maximize the effectiveness of small units—will be a major factor in the Normandy invasion. The ferocity of the German troops is also a factor both in Italy and France; not only do they contest ground stubbornly, they withdraw leaving blasted bridges, land mines, and booby traps.

"Garand rifles giving superior service to Springfield, no mechanical defects reported or stoppages due to dust and dirt from foxhole use. Good gun oil required as lubricant to prevent gumming, but have been used in foxhole fighting day and night for a week without cleaning and lubricating. All these weapons are excellent ones..."

General Douglas MacArthur in cablegram to General George Marshall (February 20, 1942)

Dwight D. Eisenhower (1890-1969). Eisenhower's distinguished military career began with his graduation from West Point in 1915. Although he was forced to remain in the U.S. throughout World War I, he formed America's first tank corps in 1918. By the end of the war he commanded 10,000 men. He performed brilliantly at the Army Command and General Staff College, then served as Chief of Staff to General MacArthur in the Philippines. By 1941 Eisenhower was promoted to Brigadier General and became Chief of Staff of the Third Army. In 1942 General George Marshall passed over hundreds of more senior officers to make Eisenhower a major general in charge of the Operations Branch in Washington. Eisenhower was sent to Britain to lead the U.S. Army staff there, and then was chosen to lead the Allied landings in French North Africa, where for the first time he heard shots fired in anger. In December 1943 Eisenhower was named Supreme Allied Commander in charge of the impending invasion of Europe—Operation Overlord; eventually he commanded a force of more than 4.5 million men.

As Supreme Allied Commander, Eisenhower performed a task of supreme importance: keeping the Alliance and its many forceful personalities—most notably Montgomery and Patton—focused not on their differences, but on working together to win the war against Germany. He said that he did not mind someone being called a son-of-a-bitch, but he was damned if he would have them called a British or an American son-of-a-bitch. He brought to this task a unique combination of intelligence, tact, toughness, diplomacy, patience, and personal charm.

Weapons are also put to the test of battle in Italy. The Garand rifle sees its first widespread use in the European Theater. The Garand is the only widely used semiautomatic infantry rifle in World War II; despite initial resistance because of its weight, the Garand quickly becomes a beloved weapon. Its semiautomatic operation and high muzzle velocity more than make up for its weight, and it proves to be extremely durable and easy to maintain in the field.

In Italy both the Americans and British find their tanks inferior to their German counterparts. A single Sherman stands little chance of defeating a single *Panzer* IV; the Allies instead rely on strength in numbers. And numerical advantages are something the Allies continue to achieve.

On the Eve of Operation Overlord

By May 1944, Germany has seen its fortunes fade; they are losing on every front. The promise of 1940 and 1941 is crushed under the reality of 1942, 1943, and the first six months of 1944. The Battle of Britain costs the *Luftwaffe* air superiority over Western Europe, and keeps Britain in the war. The Battle of the Atlantic robs Germany of the power to blockade the British; it enables the Allies to turn Britain into the largest marshaling area in history.

The North African campaigns take Germany's ally, Italy, out of the war, and give the U.S. Army its first combat experience of the war. The campaigns in Sicily and Italy cost the Germans more men and resources, but more importantly, they tie down forces that could be used in Russia or France. The Strategic Bomber Offensive damages German industry and civilian morale, and destroys the *Luftwaffe* when long-range fighters (the P-51 Mustang) make their appearance in early 1944.

America's victories in the Pacific are achieved with limited resources, ensuring that the creation of the Second Front remains the primary goal. Most importantly, Operation Barbarossa has turned out to be a hollow gamble; Hitler can do no better in Russia than Napoleon did. By the time Operation Overlord is taking place, the relentless pressure of the Red Army is never far from the minds in the German High Command.

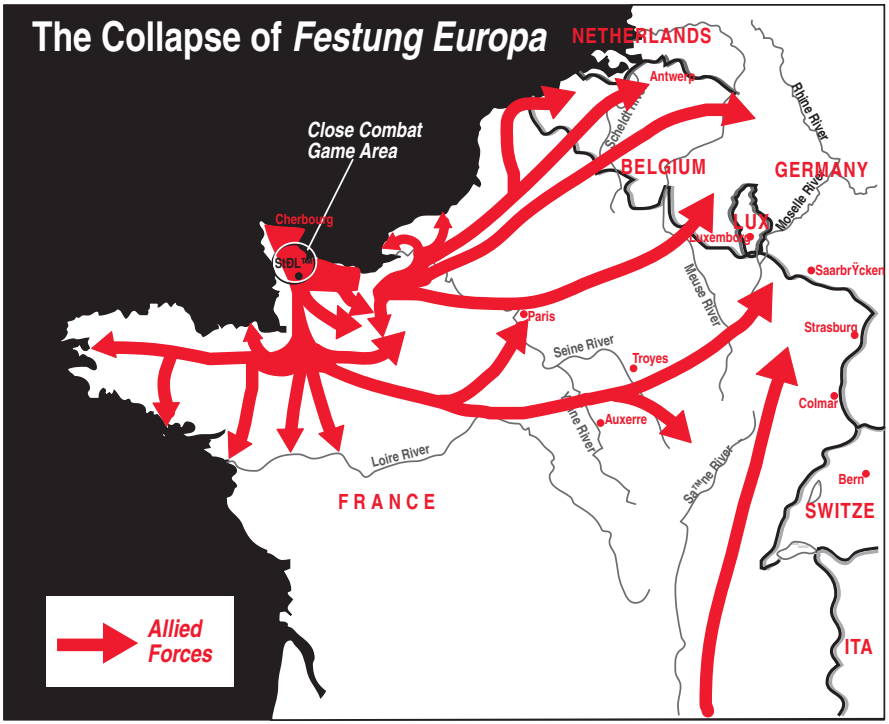
The End of *Festung* Europa

With the breakout from Normandy, the Allies now have the German army on the run. The Germans will throw a final counterpunch in the Ardennes, but it will be too little too late.

Racing Toward the Rhine

The Germans who escape the Falaise Pocket after the Allied breakout now become victims of Allied air superiority. Fighters and fighter bombers roam the summer sky, strafing troop concentrations and attacking anything with wheels. The roads leading north are strewn with blasted and burning equipment and dead German soldiers. When the retreating Germans aren't being ravaged from the air, Allied infantry and armor are biting at their heels.

On August 19, U.S. Third Army units cross the Seine at Mantes. On the same day, French resistance groups stage an uprising in Paris; the German response is token, and a plan to destroy bridges and public works goes unexecuted. Six days later the French Second Armored Division liberates the city.



While the Allies are breaking out in Normandy, more Allied troops came ashore in Operation Anvil, a landing in the south of France. These forces (Seventh Army) drive north through the Rhone river valley to link up with the forces from Normandy. By late August, leading units are closing on Grenoble. On September 11 units of the Seventh Army link up with the Third Army near Dijon.

The Red Army Marches To Vengeance

By April 1944, the Soviets have been on the offensive for four months. On the southern portion of the front, the German armies are destroyed. In the far north, the Red Army drives relentlessly from Leningrad. Hitler expects the Russians to overextend their resources; other commanders expect the spring "season of mud" to slow the Soviet advance. Neither occurs—the Red Army slows only to gather itself for the next strike west.

On the morning of June 23, the Red Army begins attacking Army Group Center; the Soviet intent is to crush the last major force on the Eastern front. The Germans face 1,200,000 Soviet troops supported by 31,000 guns and mortars, 5,200 tanks, and 5,000 airplanes. By July 4, most of the German forces are surrounded or retreating; by July 20 the surrounded forces have been destroyed. Throughout the battle, German commanders request permission to withdraw to save their units, but Hitler orders positions held to the last round and the last man. His order ensures the destruction of 17 divisions, and another 50 divisions lose half their strength. By the end of August the Red Army has pushed into Poland and East Prussia.

The Soviet campaigns of 1943–1944 have proved decisive. Russia regains most of the territory lost in 1941 and 1942; more importantly, the Soviets have destroyed entire German armies. Hitler contributes significantly to these losses, refusing to allow withdrawals that could have saved hundreds of thousands of soldiers for a final defense of Germany. Instead, the Red Army is now rolling inexorably toward Berlin.

The Last *Blitzkrieg*—The Battle of the Bulge

Even as Germany reels from blows from the east and west, Hitler looks for an opportunity to counterattack. He orders garrisons in port cities in France to hold out, and he stations forces in the mouth of the River Scheldt. This latter move prevents the Allies from using the harbor at Antwerp, even though the Allies capture the city on September 4. Hitler also orders the formation of 25 new *Volksgrenadier* divisions to man his western defenses.

The planned counterattack, code-named Autumn Mist, is intended to drive an armored wedge through the Ardennes forests, across the River Meuse, all the way to Antwerp. This wedge will divide the British and Canadian forces in the north from the Americans in the south. Hitler believes Autumn Mist will create enough confusion and buy enough time to transfer German forces east to launch a similar blow against the Red Army.

Rundstedt and Model disagree with Hitler, but to no avail. Eight *Panzer* divisions are re-equipped and ready to spearhead the assault, aimed at four inexperienced or worn-out American divisions. The Germans maintain strict radio silence concerning Autumn Mist, so for once there is no warning from the Allied codebreakers. Even when forward units report increased activity on their fronts, Allied commanders discount the reports; they believe the Ardennes forests are far too difficult for the Germans to advance through them.

The weather plays a crucial role in the German attack. The winter of 1944 proves to be one of the coldest on record. More importantly, the spell of bad weather the Germans had been hoping for—a heavy cloud cover to minimize Allied air power—finally arrives in mid-December.

On December 16, the Germans launch their last *blitzkrieg*. The Americans in front of the assault are soon overrun, but their unexpectedly stiff defense slows the German time table. Eisenhower

Scale of Area

The geographic area encompassed by the Normandy Campaign is minuscule compared to the Eastern Front. From Cherbourg to Caen is less than 80 kilometers by air, and it is less than 35 kilometers from Omaha Beach to Saint-Lô—roughly the distance between Washington, D.C. and Baltimore, Maryland.

At the height of the fighting between Germany and the Soviet Union, the Eastern Front stretched from Leningrad in the north to the Caucasus Mountains in the south. This distance—approximately 1,900 kilometers—is roughly the same as the distance between New York City and Bismarck, North Dakota.

reacts quickly, sending the Seventh Armored and 101st Airborne Divisions to hold the road junctions at Saint Vith and Bastogne. The Germans capture Saint Vith, but not before determined American resistance further slows the German attack. The Germans surround Bastogne, and the German commander sends a demand for surrender. American General McAuliffe sends back a one-word answer—"Nuts"—and the paratroopers settle in to hold Bastogne until they are relieved.

American tank rolls past wrecked tanks from both armies

By Christmas Eve, the German advance is stopped. Fuel supplies are low, and the fuel dumps they hoped to capture remain out of reach. The Allies begin counter-attacking on Christmas Day; the next day Patton's Third Army relieves Bastogne. Montgomery attacks from the north, cutting off the retreat of many German units. Finally, the weather clears and Allied fighters and fighter bombers take to the skies.

American tanks on the move in Germany

Allied aircraft prey on German formations from the clear winter skies; the *Luftwaffe* is no longer a factor. Fighters ravage armored columns and, as in the disaster at Falaise, they attack anything with wheels.

While the Germans manage to withdraw some troops back into Germany, they lose 100,000 men and 600 tanks. Allied casualties exceed 75,000, but the last *blitzkrieg* has been stopped. For his losses, Hitler has delayed the Allied advance by six weeks, but his last remaining armored divisions are destroyed.

The Road to Berlin

After the Battle of the Bulge, the Germans have only 26 divisions on the Second Front; most are either far below strength or consist of old men and young boys. Facing them are 57 infantry, 23 armored, and five airborne divisions, all at full strength. Eisenhower's three-phase plan calls for Montgomery's forces to clear the lower Rhine valley, Bradley's forces to clear the middle reaches of the Rhine, and finally encirclement of the German armies while other units race to link up with the Soviets near the Elbe.

Eisenhower's plan goes forward as planned, with one unexpected change. On March 7, the U.S. First Army surprises the Germans at Remagen on the Rhine; the Americans capture the bridge before the Germans can destroy it. American troops pour over the bridge, creating a lodgment from which they launch an attack on March 25.

German units begin to surrender *en masse*. Army Group B surrenders on April 18. Less than a week later, American units meet Soviet units on the Elbe near Torgau. Eisenhower has already decided to let the Soviets take Berlin; he believes that casualties for British, Canadian, and American units will be too high if he tries to take the German capital.

Red Sky in the East—the Soviets Capture Berlin

In early April, Stalin meets with his commanders (Marshals Koniev and Zhukov) to plan the final assault on Berlin. The Germans have prepared three major lines of defense; the Soviets fly hundreds of reconnaissance flights and photograph every sector. Zhukov has a scale model of Berlin built to plan artillery barrages and infantry movements. On Zhukov's front alone, the Soviets haul in over 7,000,000 artillery rounds. On April 16, the Red Army attacks.

Koniev's forces make good progress from the outset, but Zhukov's forces are stalled by fierce German resistance. Against orders from Stalin, Zhukov orders his armor forward to break the deadlock. By April 19, he has cracked all three German defensive lines. The next day, the bombardment of Berlin is well underway; the shelling is so intense that some civilians hiding in cellars are driven insane.

Berlin is completely surrounded by April 25. The next day, 500,000 Soviet troops converge on the center of Berlin. Finally, an assault on the *Reichstag* itself begins. At 1425 hours on April 30, two Red Army sergeants wave the Soviet

American and Russian soldiers

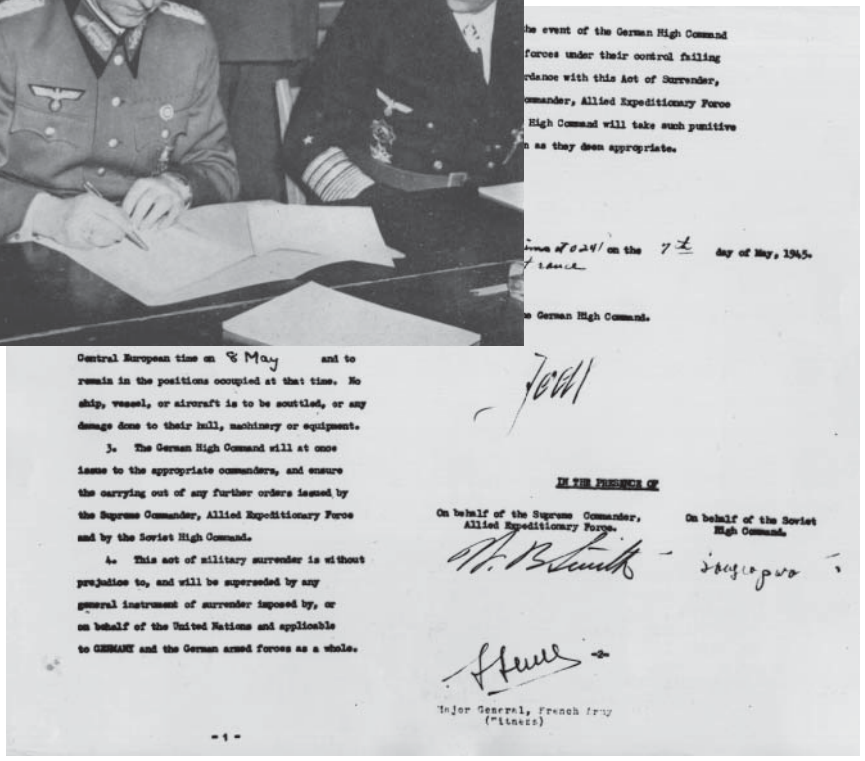
flag from a second story window of the *Reichstag*. An hour later, Hitler commits suicide. At 2250 hours, Soviet flags fly from the *Reichstag's* roof.

Negotiations between the Soviets and the Germans begin. They break off in the middle of the day on May 1; Marshal Chuikov (one of the heroes of Stalingrad) is exasperated and orders artillery fire to resume. Finally, early on May 2, the commander of force in Berlin drafts a surrender, which the Soviets accept. The Red Army ceases firing at 1500 hours. Berlin has fallen.

The Final Surrender—And Beyond

After Hitler's death and the fall of Berlin, the Third Reich collapses. The Germans sign an unconditional surrender at Rheims on May 7, but Army Group Center fights on. Surrounded by the Soviets near Prague, they ignore broadcast appeals to give up. Marshal Koniev orders a massive artillery barrage, followed by the

German General Jodl signing surrender



Central European time on 8 May and to remain in the positions occupied at that time. No ship, vessel, or aircraft is to be scuttled, or any damage done to their hull, machinery or equipment.

3. The German High Command will at once issue to the appropriate commanders, and ensure the carrying out of any further orders issued by the Supreme Commander, Allied Expeditionary Force and by the Soviet High Command.

4. This act of military surrender is without prejudice to, and will be superseded by any general instrument of surrender imposed by, or on behalf of the United Nations and applicable to GERMANY and the German armed forces as a whole.

-1-

the event of the German High Command forces under their control failing rdance with this Act of Surrender, ommander, Allied Expeditionary Force High Command will take such punitive n as they deem appropriate.

day of May, 1945.

e German High Command.

Jodl

IN THE PRESENCE OF

On behalf of the Supreme Commander, Allied Expeditionary Force.

On behalf of the Soviet High Command.

-2-

Major General, French Army (Witness)

Photostat of German surrender with Jodl's signature

advance of the Fourth Guards Tank Army. This force reaches Prague to find the Germans have gone.

The Russians finally bring Army Group Center to bay on May 10. Over the next two days, the Soviets pound German positions with every available weapon; those Germans not killed begin to surrender. On May 12 it is official: Army Group Center surrenders, and the last major German fighting force is no more. The war in Europe is over.

With the end of hostilities in Europe, the Allies turn their focus to defeating Japan. By May 1945, the Americans have already captured Iwo Jima and made strides toward capturing Okinawa. Although Japanese resistance in the Philippines continues, the battle there is no longer in doubt.

By late July, President Harry S Truman issues a surrender demand through the Japanese Embassy in Moscow. The Japanese respond with conditions that the Allies interpret as a refusal. Truman has already decided that if the Japanese fail to surrender, he will use America's most powerful and most secret weapon—the atomic bomb.

On August 6, the *Enola Gay* (a B-29 bomber named after the pilot's mother) drops the first atomic bomb on Hiroshima. The resulting explosion has the force of over 18,000 metric tons of TNT, destroying 60 percent of the city and killing 80,000 inhabitants. When Japan again fails to surrender, Truman orders a second bomb to be dropped.

Three days after the first atomic bomb is dropped, another B-29 (*Bock's Car*) drops the second bomb on Nagasaki. The result is the same: devastation and death on the ground. Still Japan's military leaders refuse to surrender. They insist that the Emperor's sovereignty must be maintained; the Allies refuse. Finally, Emperor Hirohito himself orders that the war end. He records a message for broadcast that asks the people of Japan to ". . . bear the unbearable . . ." When it is broadcast on August 15, it is the first time the vast majority of Japanese citizens hear their emperor's voice. World War II is over.

World War II ends—and the Cold War begins