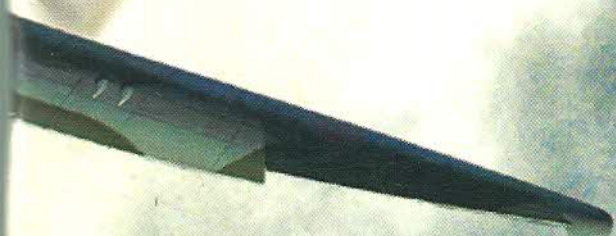


COLLECTION

SERIES



ACES



SIERRA®



Courtesy National Air & Space Museum, Smithsonian Institution

American William Thaw on far left, leader of the Lafayette Escadrille.

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Courtesy Ray Rimell, Albaros Productions Ltd.

The Nieuport 28. Fragile and not very maneuverable, the 28 was soon replaced by the SPAD 13.

FOREWORD

Welcome to *Aces: The Complete Collector's Edition* CD, including all of the award-winning historical flight simulators from Dynamix. These simulations ("sims") redefined "State of the Art" for the industry, and still are unsurpassed for their balance of historical authenticity, comprehensiveness, and playability. They not only depict pivotal eras in aviation history, but contributed tremendously to the success of Dynamix and our parent company, Sierra On-Line.

In 1989, Damon Slye, along with a small team of artists and programmers, set out to create the company's first flight simulator. By the spring of 1990, their effort paid off with the shipping of *A-10 Tank Killer*. It featured campaigns based on a fictional European WWII, external camera views, and introduced our now-famous 3Space simulation environment to PC flight sims. After the Gulf War, the simulation was updated to include Desert Storm scenarios and improved graphics, and was re-released as *A-10 1.5* (included here). *A-10* is one of the few products Dynamix



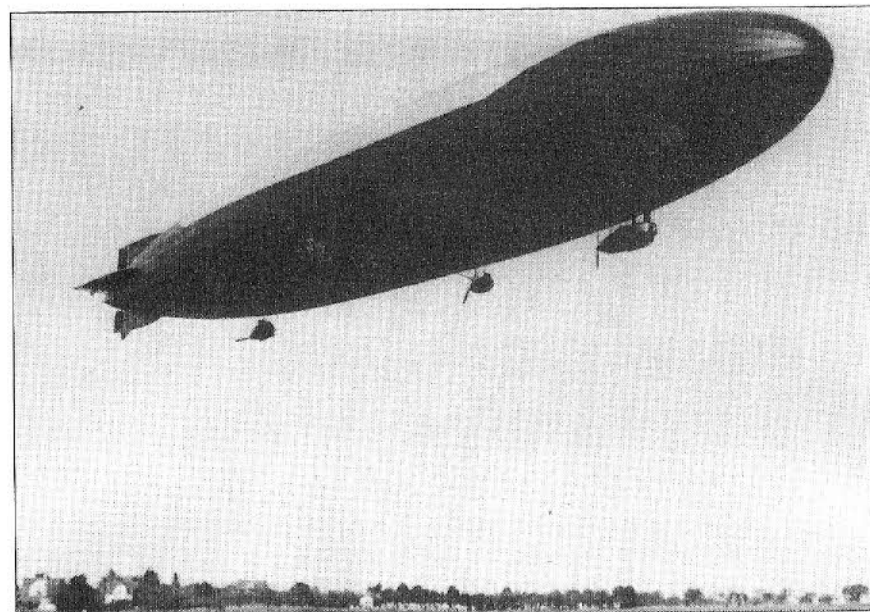
Courtesy National Air & Space Museum, Smithsonian Institution

One of the few Fokker D.VIII's delivered before the end of WWI. The D.VIII's excellent flight characteristics were offset by weak construction. Several pilots were killed when the parasol wing snapped in flight.

produced as an independent company. A few months later, Sierra On-Line purchased Dynamix, providing us with the means to build bigger and better products.

1990 proved to be a busy year. Damon and the team began what turned out to be the best World War I flight simulation ever: *Red Baron*. Shipped on Christmas Eve, *Red Baron* allowed players to fly careers for either side, challenge historical aces, and replay the best moments with a VCR-style mission recorder. But most importantly, it provided the tension and exhilaration of dogfighting within an authentic and immensely playable simulation. *Red Baron* was an instant success, and in just months blew all other WWI sims off the shelves. Even today, *Red Baron* is a steady seller, and most flight sim aficionados still consider it the best WWI sim ever shipped. The successful *Red Baron Mission Builder* (included here), an expansion pack that shipped a year and a half later, allowed the player to "program" their own missions, and added several new aces, planes, and features.

In the spring of 1991, after recovering from the final push for *Red Baron*, we set to work on our follow-up sim: *Aces of*

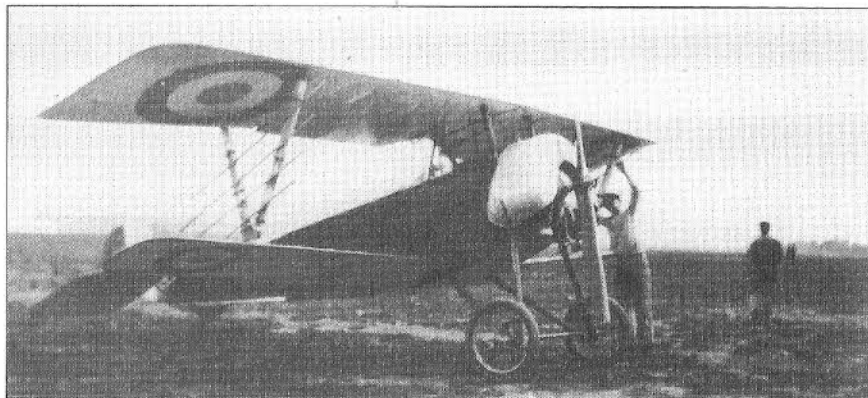


Courtesy National Air & Space Museum, Smithsonian Institution

A late model Zeppelin. The panic that Zeppelin raids caused in British political arenas led to the birth of the first independent air force, the RAF.

the Pacific. For the next year, we updated our technology, improved our graphics, and spent immense effort researching the Pacific air war. It paid off—to date, no other flight sim lets you experience the full scope of the conflict and fly for either side from Pearl Harbor and Clark Field all the way through to V-J day. Released in May, 1992, *Pacific* did not have an easy birth—the programmers basically lived in their offices for the last three months, with some work-weeks topping 100 hours. But seeing *Aces of the Pacific* on the shelves and the rave reviews that summer made the long hours more than worth it. We had another winner.

Even as *Pacific* was finishing up, we began work on the add-on disk. *WWII:1946* proposed an entirely plausible "what if" rewrite of the Pacific war's end. What if the A-bombs weren't dropped, and the Soviet Union remained neutral—the U.S. would have been forced to invade Japan's main islands to end the war. Based on actual U.S. invasion plans, *WWII:1946* lets you fly for or against the invasion campaigns in the awesome new aircraft that appeared just after the war's end.



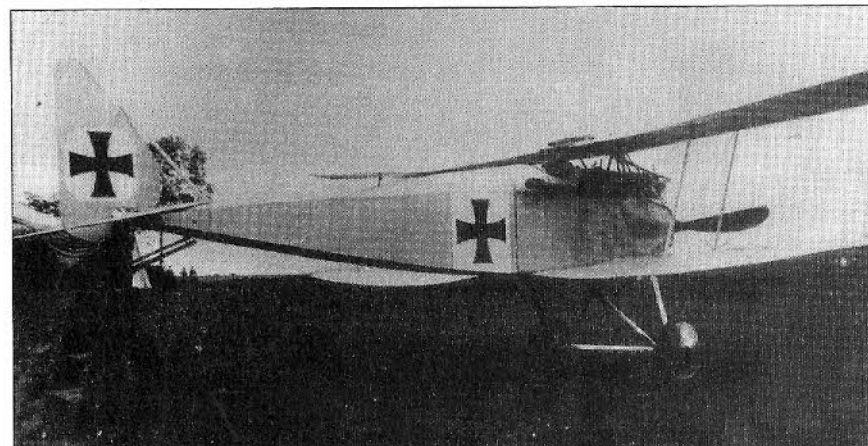
Courtesy National Air & Space Museum, Smithsonian Institution

A Nieuport Scout with rocket rails on its struts. The rockets were fired electronically from the cockpit against targets such as observation balloons.

For our next full simulation, we turned to the European Theater during WWII. Rather than focusing on just the strategic bombing campaign, we decided that *Aces Over Europe* would also explore the tactical air campaign. The unrelenting ground attack and fighter sweep missions before and after D-Day initiated the most desperate battles of the air war, as the Allies tried to establish air superiority and cut off German supply lines and troop movement against grim German resistance. Started in November, 1992, programming continued feverishly (despite a move to a new building) until the release one year later. To the now-classic Dynamix format, *AOE* added enhanced graphics, and even more detailed (and challenging) flight models. Again, the product released to industry acclaim.

Released for the first time on this CD is *Aviation Pioneers*, a new multi-media look at the people and planes that contributed to the advance of aviation between 1903 and 1939. You will also find each of the simulation manuals on the CD, presented on-line.

In a market where games are obsolete in a matter of months, Damon Slye's designs have endured for years, enlightening players as well as entertaining them. We



Courtesy Ray Rimell, Albatros Productions Ltd.

Halberstadt D.II, a sturdy durable German fighter that could handle the best Allied planes of early 1916.

hope our players get a truer sense of the part combat fighter pilots played in World War I and II, and in the process, gain an appreciation for what was accomplished in the skies above Europe and the Pacific.

Looking forward, Dynamix is at work on a new generation of flight simulators. Not only has the Great War Planes series spawned the inevitable competitors, but technology has opened vast new possibilities in computer graphics, modeling, and interactivity that require us to redesign from the ground up. With *Red Baron II* and beyond, we intend to leap ahead of the industry standards all over again. Until then, we hope you enjoy these truly classic simulators for endless hours as you relive the thrilling achievements of the Aces.

— John Bruning, Jr.
Dynamix Historian



Courtesy Robert L. Lawson Photography

Planes being readied for takeoff from a Japanese carrier.

GETTING STARTED

About This Manual

This manual contains the essential Installation procedures and commands for the *Aces Collector's Edition (Aces)* CD. It also shows how to use the Windows on-line manuals, as well as *Aviation Pioneers*.

For a summary of flight commands, refer to the quick reference card for each simulation.

To see detailed historical overviews, and introductions to weapons, tactics, and flight, refer to the Windows on-line documentation for each simulation.

For Technical Help and Troubleshooting, see the back of this manual.

To see any changes made to the *Aces* CD after the manual is printed, click on the READ ME icon in each simulation's Windows program group.

System Requirements

To run the *Aces* CDs, you must have a 486SX or better with the following minimum requirements:

- Four megabytes (MB) of RAM
- MS-DOS® version 5.0 or higher
- Microsoft Windows™ 3.1 or higher (for on-line manuals and *Aviation Pioneers*)
- Microsoft Windows 95™ for A-10 2: Silent Thunder
- Expanded memory manager: EMM386, QEMM386™ or equivalent
- Available hard disk space (for FULL installation):
 - 8 MB *Aces Over Europe*
 - 6 MB *Aces of the Pacific & WWII:1946*
 - 5 MB *Red Baron & Red Baron Mission Builder*
 - 3 MB *A-10 Tank Killer 1.5*
 - 10 MB *Aces of the Deep*
 - 35 MB *A-10 Tank Killer 2: Silent Thunder*
 - 5 MB *Aviation Pioneers*
- VGA graphics
- MPC-1 or better CD-ROM drive

Please note that *Aces of the Pacific* and *WWII:1946* are installed as one integrated simulation, as are *Red Baron* and *Red Baron Mission Builder*.

Installation

Before You Start...

As a collection spanning several years, the *Aces* CDs contain both DOS and Windows programs. The flight simulations (with the exception of A-10 2) are all designed to be played from DOS, but *may* also run from Windows. *Aviation Pioneers* and the on-line manuals accompanying each simulation *must* be installed and run from Windows. **For best results, install the programs from Windows, but run the flight simulations from DOS** (with the exception of A-10 2).

Minimum/Full Installation

For some simulations, you may choose a Minimum or Full installation. The Minimum option puts just a few files on your hard disk (about 120 KB), and leaves the rest on the CD. The Full option puts all the simulation files on your hard disk (as noted in System Requirements). Fully installed simulations will run faster, and can be run without using the CD. However, you must *always* insert the CD to open *Aviation Pioneers* or the on-line manuals.



Courtesy National Air & Space Museum, Smithsonian Institution

Hellcats, Dauntlesses, Avengers and night-fighter Corsairs of the *U.S.S. Enterprise*, early 1944.

Installing from Windows 3.X:

1. Start up (boot) your PC. Insert one of the *Aces* CDs in your CD-ROM drive.
2. Start Windows. From the Program Manager, select RUN from the FILE menu. Use the BROWSE button to change to your CD drive (usually D:). Click on the file SETUP.EXE, and then click the OK button in the RUN window.
3. Click INSTALL, and then select the program you want to install.
4. Follow the on-screen instructions to set up the game for your PC's specific requirements.
5. To install additional programs, click INSTALL again and repeat for each program you wish to install at this time.

Each simulation will be installed in its own Windows program group, along with its on-line manual and other files.

Installing from Windows 95:

1. Start up (boot) your PC. Insert one of the *Aces* CDs in your CD-ROM drive.
2. Double-click on the My Computer icon. Double-click on the CD-ROM icon. Double-click on the file setup.
3. Follow the on-screen instructions to set up the game for your PC's specific requirements.

Note: To make sure the games are installed correctly, do not try to install the *Aces* simulations to your hard drive with "copy" commands.

Starting *Aces* CD Programs

Starting Flight Simulations

For best performance, start the appropriate simulations (AOE, AOP, RB, A-10) from DOS. If you used the

Minimum installation option, you must first insert the appropriate *Aces* CD.

To play go to this subdirectory* and Type

<i>Aces Over Europe</i>	SIERRA\AOE	aoecd [Enter]
<i>Aces of the Pacific</i>	SIERRA\AOTP	aotpcd [Enter]
<i>Red Baron</i>	SIERRA\REDBARON	baroncd [Enter]
<i>A10</i>	SIERRA\A10	a10cd [Enter]

* For example, type c: [Enter] to change to your hard drive, if you haven't already. Then for *A10*, you would type cd \sierra\A10 [Enter]. This puts you in the correct directory to start the game. If you installed to a different drive or directory, substitute as needed.

If you get "Insufficient Memory" message starting a simulation in DOS, try creating a "Boot Disk" for it. See page 96.

Depending on your PC's configuration, you may also be able to run one or more of the simulations from Windows.

Simply open the Sierra program group and double-click the simulation's icon. If you experience problems, however, start the appropriate simulation from DOS. Please note that the Windows "task switching" feature is disabled—you'll still need to exit the simulation to open another Windows program (such as the on-line manuals).

Note: You must install each simulation from Windows to use its on-line manual.

Starting Aviation Pioneers and On-line Manuals

To open an on-line manual for any simulation, or *Aviation Pioneers*, first be sure the appropriate *Aces* CD is loaded in your CD drive. Start Windows.

To open an on-line manual, first go to the program group for the appropriate simulation. Then double-click on the simulation's Manual icon, or select it and press [Enter].

To open *Aviation Pioneers* after you have installed it, go to the *Aviation Pioneers* program group. Then double-click on the *Aviation Pioneers* icon, or select it and press [Enter].

Changing Preferences

You may change your game configuration (sound card, video, etc.) from DOS or from Windows. In DOS, change to the appropriate game's directory on your hard disk and type **install** [Enter]. In Windows, open the simulation's program group and click on the Setup icon.



Courtesy National Air & Space Museum, Smithsonian Institution

Pilots and deckcrew pose in front of the Navy's standard fighter for the last two years of the war, the F6F Hellcat.

USING THE WINDOWS™ ON-LINE MANUALS

The *Aces Collector's Edition* CD includes complete on-line game manuals for each simulation that you can explore at your leisure. Follow the directions to install the simulation(s) from Windows. For each simulation you install, you will see an accompanying icon for its manual.

To open one of these manuals, first make sure the *Aces* CD is in your CD-ROM drive. Then, simply go to the program group for the appropriate simulation and double-click on the manual icon: for example, to see the manual for *Red Baron*, double-click on the RED BARON MANUAL icon.

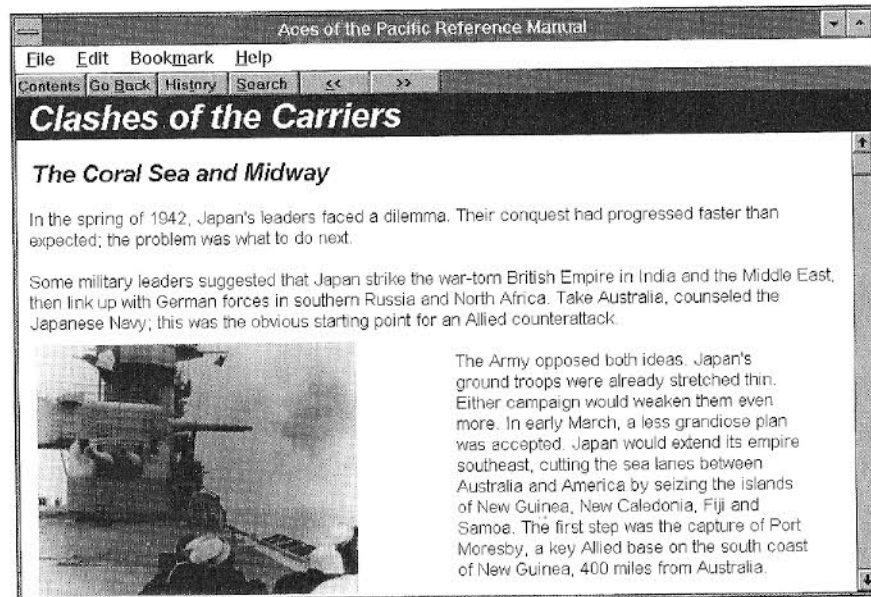
Note: While the manuals must be run in Windows, you may find that the simulations themselves run better when started in DOS.

Navigating through the Manuals

Each manual opens with a Contents screen outlining the major sections and articles. You can return to the Contents screen from anywhere in the manual by clicking the CONTENTS button at the upper left.

Any topic or word you see highlighted in green is a hypertext "jump" to a related article: simply click on the highlighted text to go to the related topic. To return along the path of your jumps, click the GO BACK button.

To see a list of all the topics you have been to, click on HISTORY. From this list, you can go directly to any previous topic by double-clicking it, or by highlighting it and clicking GO TO.



To "scroll" through long articles, click on the scroll bar or the Up/Down arrows at right, or use your [PG UP] and [PG DN] keys.

Click on SEARCH to look for a specific word or phrase in the text. In the SEARCH field, type the word you want to find, and then click OK or press [ENTER]. You get a list of any topics containing that word. Click on the HINTS and OPTIONS buttons to see other Search functions.

To move back and forth through articles in sequence, click on the Browse arrow buttons, [<<] and [>>].

You can place your own notes in the manual with the ANNOTATE feature, or save your place anywhere in the manual by defining a BOOKMARK there.

To close the manual at any time, open the FILE menu and select EXIT.

Note: Windows must be set up for 256-color mode to display the high-resolution color pictures correctly.

ACES OF THE DEEP

GAME PLAY TUTORIAL

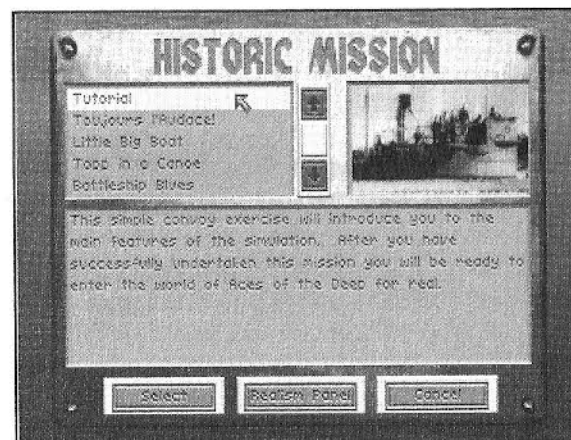
The following "Tutorial" section introduces *Aces of the Deep* through a step-by-step orientation tour as you set up and initiate a convoy attack. This is a good way to learn U-boat command procedures. (Actually, you can learn by playing any mission type, but use the easier Encounter Options and Realism settings until you know your way around.)

For a menu-by-menu description of each mission selection function, see the "Ashore" section beginning on page 132. U-boat controls are described in "At Sea," starting on page 151.

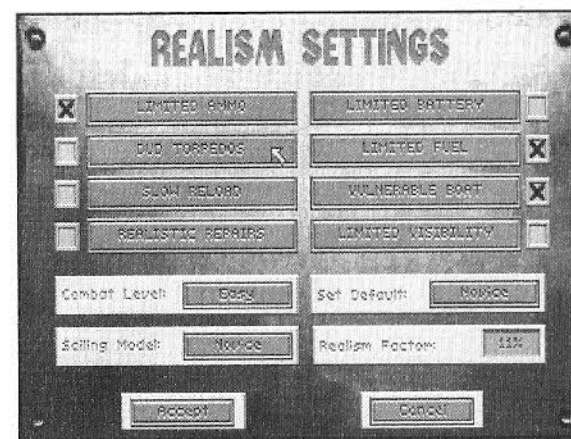
- A. First, install *Aces of the Deep* (AOD) as described on page 8.
- B. After AOD is installed, go to the directory in which you installed AOD, type `aod` and press [ENTER] to start the game. (To skip the title sequence, press [SPACE].) After the title sequence, you will see the Main Menu.
- C. To start the tutorial, select SINGLE MISSION, and then HISTORIC MISSION.

Mission Setup

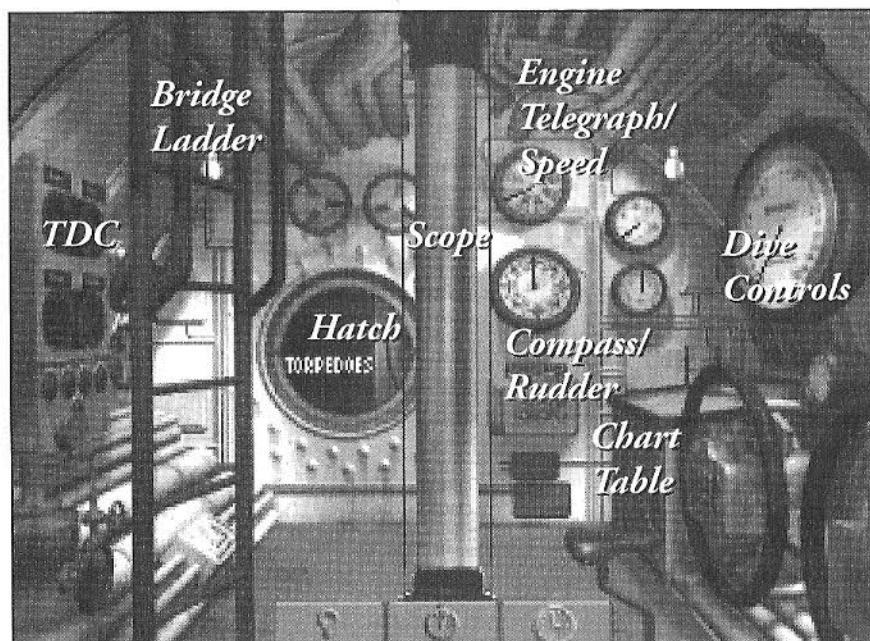
In the Historic Mission screen, click on the first mission, TUTORIAL, to highlight it and read its descriptive text. As with the Historical and Career missions, the TUTORIAL mission conditions (number of ships, aircraft, weather, etc.) are pre-defined. It is dusk, March 1, 1941, and you are commanding a Type VIIC U-boat. The Allies have yet to deploy effective radar or anti-submarine tactics, so you may conduct a night surface attack. Your boat is operating alone, and the sea is calm. (In the Convoy and Warship Encounters, you may define these and other mission conditions variables yourself.)



To adjust the realism settings, click on the REALISM button. The more options you select (X), the more realistic and difficult the mission becomes. For now, use the default settings—press DONE to return to the Historic Mission screen.



With the TUTORIAL mission highlighted, click the SELECT button. You will then see the Mission Briefing screen, which recaps your mission selection. To continue, click ACCEPT. After a few seconds, you will see the Control Room of your U-boat.



Voice Tube Stopwatch Clock

Control Room

For a quick tour, move your mouse cursor through the Control Room from the left. (You can control the entire mission with the mouse, and many controls also have key commands.) You'll see labels appear as you point to the TDC (Torpedo Data Computer), the Bridge ladder, and the hatch leading to the Torpedo Room, Radio, Damage Report and Captain's Log. In the middle is the Scope, and to the right of that are the Engine Telegraph/Speed controls (top) and Compass/Rudder controls (bottom). The large Dive Controls are on the right bulkhead. Just below (on Type VII boats) is the Chart table. The command buttons along the bottom provide other controls: the Voice Tube (to give crew commands), Stopwatch (for timing torpedo runs) and the Clock (for time compression). Different buttons appear in other screens.

Bridge

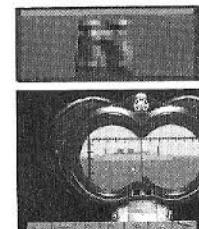
By now, you should have received a contact report from your Watch officer. Click on the ladder to go to the Bridge and investigate. From the Bridge, click the mouse to scan the horizon for ships: click near the middle of the screen (small cursor) to scan slowly, and click near the edge (big cursor) to scan quickly. If you see ships, click on the Binoculars button, and scan with the binoculars to locate the ships again—you'll see their relative compass bearing below the eyepiece. Click on the Engine button at the bottom—the engine room telegraph—and click AHEAD FULL. Then click on the Compass button and drag the compass indicator to the target bearing. Your boat will begin to head directly for the target. Right-click to close the Compass and Telegraph display. Click the far-left "ladder" button to return to the Bridge view.



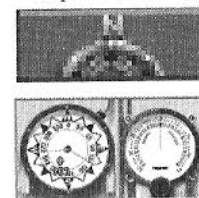
Clock

From the Bridge, click on the Clock button. The clock shows the time (in 24-hour notation) and lets you speed time up while getting into position, and slow it down again when ready to attack. Click the right-hand scroll bar arrows or press the [+] key until the display shows 32X or so. (Each click greatly increases the speed: be careful with time compression, or you may zip right past the convoy.) Press [ENTER] to return to 1X time.

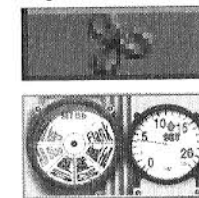
Binoculars



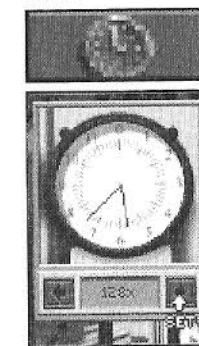
Compass

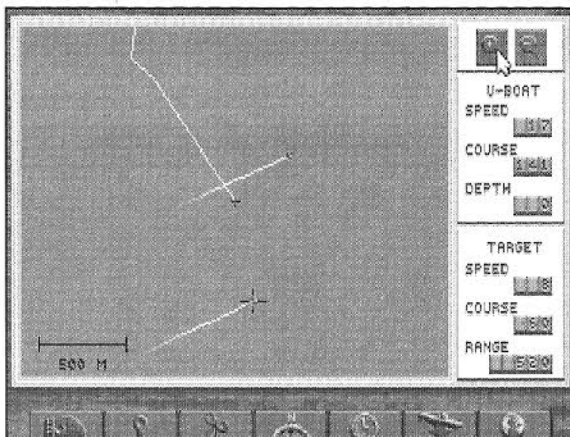


Engine (Propeller)



Clock

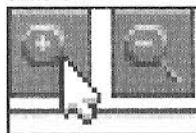




Tactical Chart

To see a “map” view of the convoy as you approach, press [F5] to open the tactical chart. This display helps you see the convoy’s zigzags and true course, range, and can also show where the largest targets and escort ships are if you zoom in close. Click the magnifying glass buttons to zoom in and out. By clicking the Compass button here, you can adjust your intercept course more accurately. Now click the Globe button on the far right. This gives you the strategic chart you’ll use to navigate to and from base in Career missions. For now, click the Globe button again to return to the tactical chart.

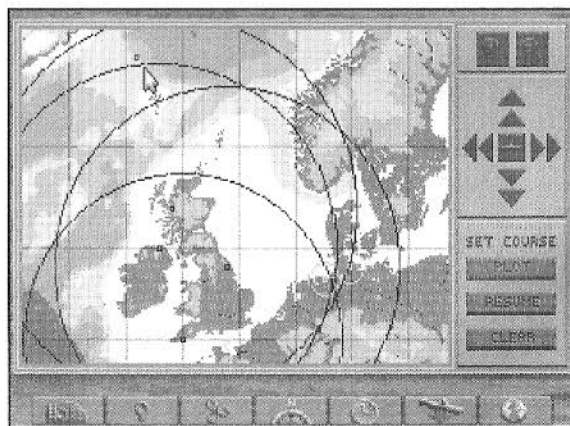
Magnifying Glass buttons



Compass



Globe



Setting Up the Attack

While stalking the convoy, you can switch directly between the Chart [F5] and the Binoculars [F3] to monitor target course and range. You want to pull even with or ahead of the convoy at a safe distance (5,000 meters or so), and then angle in from the side to firing range (under 1,000 meters). Remember, the Binoculars bearing display is relative—a reading of 90 degrees means you are looking 90 degrees starboard of the bow, regardless of your boat’s compass heading. When you start getting close, click on the Clock button to slow down time again to 1X (normal). Keep an eye on the escort—if you see an escort suddenly head for you, your surprise attack is blown. At any time, you can press [CTRL]+[P] to Pause the game if you need a moment to decide your next move.

Clock

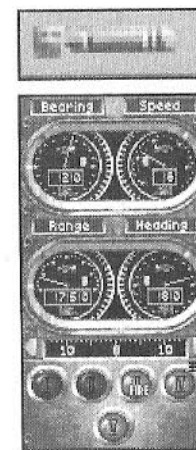


Aiming with the TDC

When your U-boat is to the side of the convoy, go to the bridge Binoculars view [F3]. Locate a ship in the vertical crosshair and press [SPACEBAR]. This selects the target, distinguishing it with a red crosshair and entering its data into the TDC. Click the Torpedo button to see this TDC data, which includes target bearing (relative to your boat’s heading), speed, range, and actual compass heading (if within range). The crosshairs grow brighter the longer the target is selected, showing the increasing accuracy of the firing data. To see your Watch Officer’s estimate of the selected target vessel’s type and gross tonnage, press [I].

Before firing, you want the U-boat pointed within 20 degrees of the target for best accuracy. (To turn toward a selected target you’re currently viewing, press [H]—this turns your heading to the current view. To change the view to the current heading, press [V].) You want to be between 300-1,000 meters from the target, and perpendicular to it—check your firing angle using the chart.

Torpedo



Fire

When the firing conditions are acceptable, click the red fire buttons I and II on the TDC. You can switch to the chart to see the torpedoes' course, and switch back to the binoculars in time to watch them hit (if your aim was true) or watch them hit using "Victim View" [F10]. Two torpedo hits will sink all but the largest ships.

Evade

Once your first "eel" hits, the escorts will be alerted and will try to attack you quickly. In many night attacks early in the war, you can evade slower escorts on the surface by using your speed and the chart to outmaneuver them. You may be able to line up and sink other targets while the escorts pound the wrong area to a froth. If the escorts are cornering or overtaking you, you should dive before their deck guns hit your boat and prevent you from diving (track them in the TDC to check range).

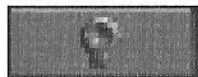
Diving

If forced to dive, return to the control room [F1]. Click the Voice Tube button, select CHIEF ENGINEER, and order CRASH DIVE. You may also click the Dive Controls and drag the depth indicator to the desired depth. Below 150 meters, depth charges will have little chance of hitting you (this changes later in the war). Once you reach your depth, go to your Engine ("propeller" button) and reduce speed to Ahead 1/3—this will reduce your engine noise so the escort hydrophones cannot detect you as readily, but gives you enough headway to turn. You can also use the noise from the merchant ships to cover your sounds.

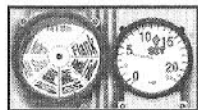
Go to the chart. You should see the escort charging to the point where it saw you last. If you make it safely below, the escort will start "pinging" with ASDIC (sonar) pulses as it tries to box you in with its search patterns. Keep turning your boat end-on to these pulses to reduce your echo. You can also use the noise of the merchant ships to cover your sounds. Using depth and the chart, and constantly angling away from the escort, you should be able to slip away fairly soon.



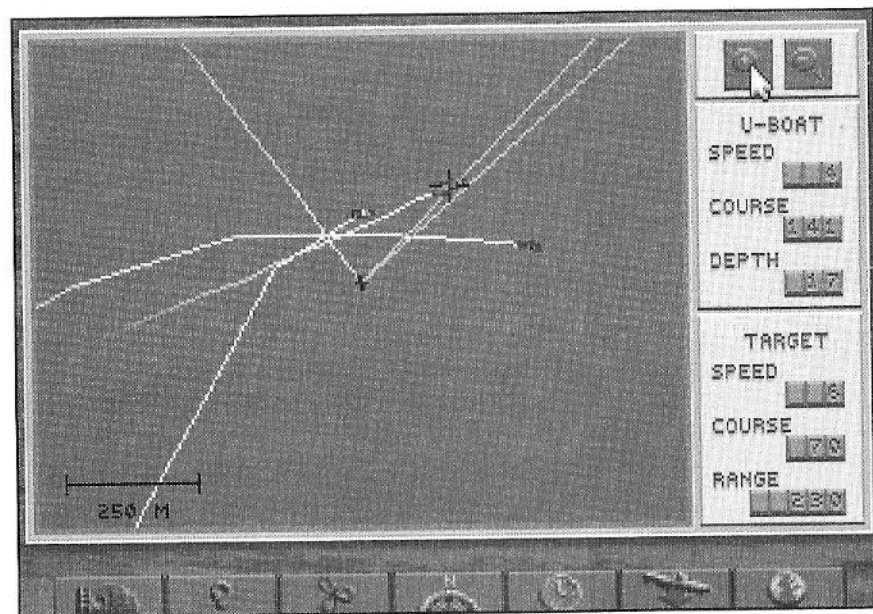
Voice Tube



Engine (Propeller)



You may then surface and make another approach on the convoy, or retire from the engagement.



Ending the Mission

Any Single Mission where you sink a ship and get away is a good one. The mission will continue as long as you maintain contact with the enemy—if you lose contact with the enemy ships or sink them all, the mission ends. (Naturally, the enemy can end your mission by sinking or capturing *you*.)

In Career mode, you end missions (war patrols) by navigating back to a friendly base and radioing for an escort into the harbor.

You can also end missions in progress by selecting ABORT MISSION from the Simulation Options menu ([CTRL]+ [O]), or by pressing [CTRL]+[D]. If you abort the mission while engaged in combat, however, your mission score will be zero.

ASHORE

Main Menu Overview

This section introduces the AOD mission setup options, starting with the main menu. Each subscreen is described in detail on the following pages. For a guided tour of the U-boat, try the preceding "Tutorial" section. For a U-boat control reference, see "At Sea" starting on page 151.



Single Mission

Launch one U-boat combat mission at a time, selecting all aspects of the mission conditions and setup. Single missions get you into specific convoy, warship, or historic actions quickly, and are scored independently. (See page 134 for more.)

Career Menu

Undertake an entire career as a German U-boat commander, starting with assignment to your first command. Your career will be composed of patrols, each a series of actions that correspond to the actual circumstances, technology, and events in the Battle of the Atlantic. Career scores are cumulative, accounting for performance on all missions. (See page 143 for more.)



Wolfgang Lüth, second highest scoring U-boat ace, and his new bride.

Hall Of Fame

Review your highest-scoring single missions and careers. You may also view profiles of the most famous historic U-boat aces. (See page 149 for more.)

Vehicle Preview

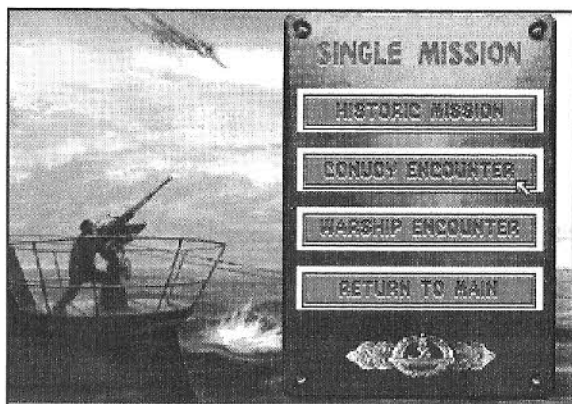
View the ships and planes you will encounter on patrol, and learn to recognize them from any direction or distance. The more familiar you are with appearance and capabilities of the enemy units, the better your chances of surviving your encounters with them. (See page 150 for more.)

Exit To DOS

Leave *Aces of the Deep* and return to DOS.

SINGLE MISSION

The options on this menu let you undertake one combat mission at a time, and give you control of each mission's setup. If you select CONVOY ENCOUNTER or WARSHIP ENCOUNTER, you may select the number of ships, time of day, weather, as well as the difficulty and realism levels you will encounter. In a HISTORIC MISSION (including the TUTORIAL), the mission options are predetermined, but you may still adjust the realism settings.



To begin the selected mission using the current Encounter Options (page 136) and Realism (page 139) settings, click SELECT. This takes you to the mission briefing, which will describe your objectives for this mission. You may CANCEL from the Mission Briefing and return to your mission menu. If you ACCEPT the mission, you will go to sea in your U-boat.

Single missions begin with your boat near the enemy, and end when you lose contact with the enemy or are killed or captured. When your mission ends, you will see the Patrol Summary screen, which shows the number of ships you sank, their cumulative gross tonnage, and your mission score based on your achievements, mission difficulty, and realism factor. Unlike Career missions, you cannot save a Single Mission in progress.

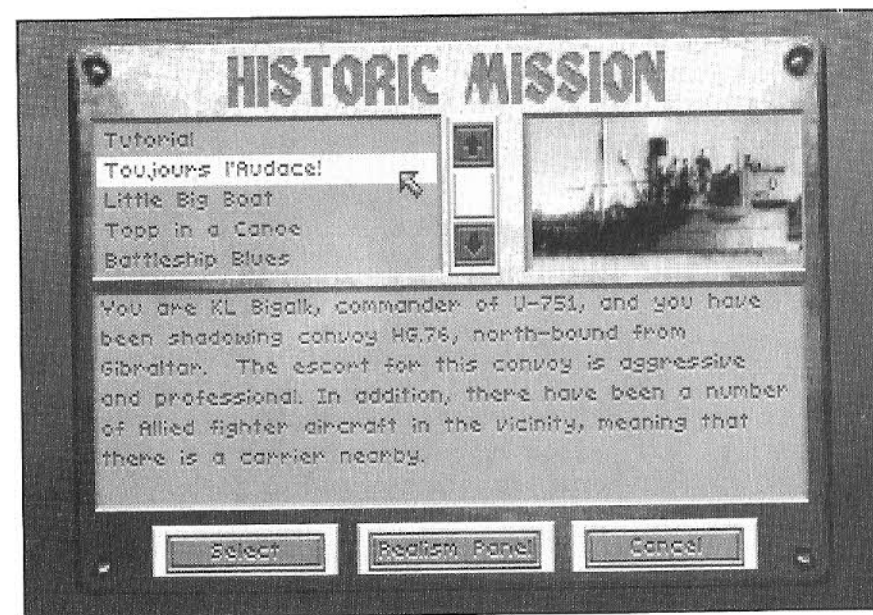
Note: If you abort a mission ([CTRL]+[D]) while engaged in combat, your mission score will be zero.

MISSION TYPES

This section describes the types of missions you will encounter in AOD Single Missions or Careers.

Historic Mission

The screen lets you experience an actual historical U-boat action from the Battle of the Atlantic. The mission conditions and forces will be those of the actual battle, but now you will be commanding the U-boat. Also included is the Tutorial mission, which guides you step by step through an example convoy action. (The "Tutorial" section starts on page 124.)



The menu at the upper left lists the available missions. Click on the mission name to highlight it and see its corresponding description below. To see other missions on the list, click on the scroll bar arrows.

Convoy Encounter

On this mission type, you will intercept a convoy and attempt an attack.

Warship Encounter

On this mission type, you will intercept and attempt to attack a group of Allied warships. Warships are much faster than convoys—often faster than your U-boat—and are always heavily guarded and risky to attack.

Encounter Options

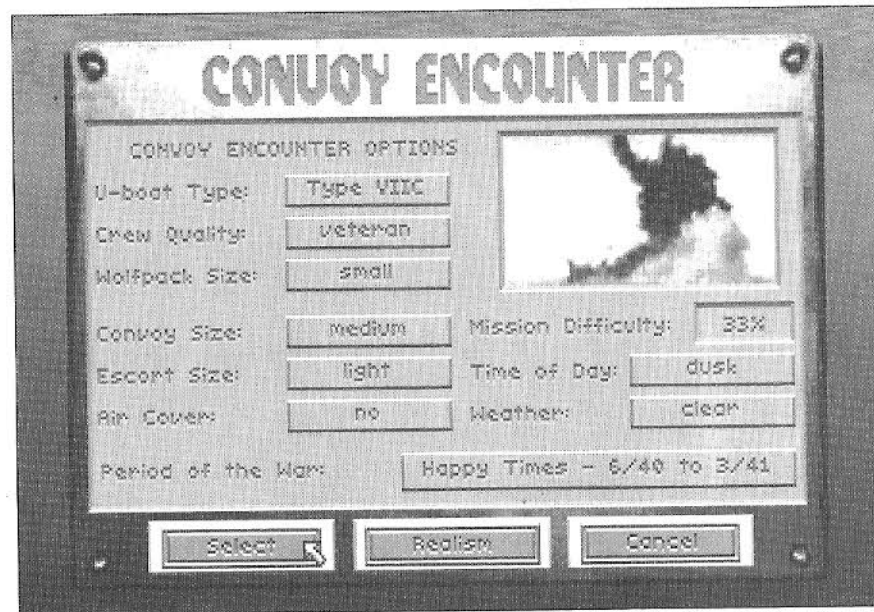
When you select a Single Mission Convoy or Warship Encounter, you may change the encounter options that, together with the Realism Settings you select, will affect the difficulty and scoring potential of your mission. The same options are available in both Encounter types, except WARSHIP TYPE replaces CONVOY SIZE in the Warship Encounter screen.

To change a default encounter option, first click that option button to open its menu. Double-click the option you want, or highlight the option and then click the SELECT button. Long option menus have scroll bars: click the arrows to see other options. The CANCEL button takes you back to the previous menu without changing the setting.

U-boat Type. Choose which type of U-boat you will command for this encounter. Selecting a Type II U-boat will increase the difficulty of this encounter, since these smaller U-boats were not as fast as the larger Type VII and Type IX boats, and carried fewer torpedoes. See the “U-boats” section (page 78) for details on each type and variant.

Crew Quality. Choose the quality of the crew of your U-boat. Crews may be GREEN, VETERAN, or ELITE. Skilled crews are able to crash dive more quickly, reload torpedoes more rapidly, etc. The more highly skilled your crew, the less difficult your mission will be.

Wolfpack Size. Select the size of the U-boat pack attacking the enemy ships: NONE, SMALL (2-3), MEDIUM (4-6), or



LARGE (6 or more). The more U-boats there are to gather at the convoy, the less likely it is that the escorts will be able to concentrate on you.

Convoy Size. (Convoy Encounter only). Choose the size of the convoy you wish to attack: SMALL (5-15), MEDIUM (20-35), or LARGE (40-60). Larger convoys decrease the mission difficulty since they provide more targets and their escort perimeter is easier to penetrate.

Warship Type. (Warship Encounter only). Select what kind of warship group to attack: a CRUISER, BATTLESHIP, or CARRIER group. This option defines the main target in the warship group, the one you should try to sink. All warship attacks are difficult. There is no greater glory for a U-boat skipper than to sink one of the enemy's priceless capital ships. However, warship tonnage is not added to your tonnage list, since your primary mission is to sink merchant shipping.

Note: You must radio in convoy contacts to gather a wolfpack.

Escort Size. Select the number of warships escorting the target: NONE, LIGHT (2-3), MEDIUM (4-6), or HEAVY (7+) escorts. The more escorts there are, the easier it will be for them to detect and attack you successfully. Increasing the escorts greatly increases the mission difficulty: it is very difficult for even the most skilled skipper to evade a coordinated attack by several escorts.

Air Cover. Choose whether or not your target will have air cover: YES or NO. Anti-submarine aircraft will make operations much more difficult for your U-boat, subjecting you to the constant threat of sudden attack.

Mission Difficulty. This displays the relative difficulty of the mission encounter options you have currently selected, indicated as a percentage. The tonnage you sink on a given mission is weighed against the Mission Difficulty, Realism Factor, and other variables to determine your mission score.

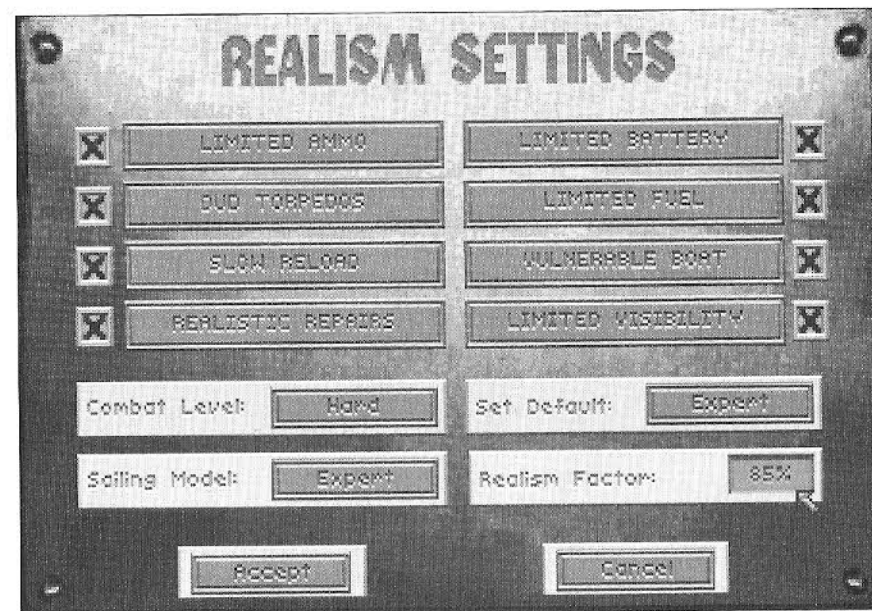
Time of Day. Select what time of day the mission simulation begins: DAWN, DAY, DUSK, or NIGHT. Early in the war, U-boats conducting night attacks on the surface are almost invisible. Later, radar makes night approaches much more difficult.

Weather. Select the weather conditions for the mission scenario. You may choose from CLEAR, OVERCAST, CLOUDY, or STORMY. Inclement weather reduces visibility, which usually favors the U-boat (but also conceals approaching aircraft).

Period of the War. Choose the time period in which the encounter will take place. Different periods will present different advantages and challenges to the player (see the "Historic Overview" for details). In general, the later in the war, the more difficult the mission will be. Note: You may select Encounter Options that do not correspond historically to the selected period (i.e., selecting a Type VII C in 1939, before they were available).

REALISM SETTINGS

This screen lets you determine how realistic and difficult your mission conditions will be, and is available for both Single Mission and Career play.



You may set the default realism level at NOVICE, INTERMEDIATE, or EXPERT to match your level of experience. You may also turn the specific realism settings on or off, and set general difficulty settings for COMBAT and SAILING independently. Once you have defined your Realism settings, press ACCEPT to continue with your mission setup using those settings, or press CANCEL to return with no change in the default settings.

You may switch the following eight specific realism settings on ("X") or off (blank) by clicking on them. Each box selected increases the Realism Factor of your mission, and thus also increases your potential score in proportion to its relative difficulty. Once you begin a mission or war patrol, you cannot change the realism settings until your return.

Limited Ammo—If selected, this setting limits your submarine to the actual number of torpedoes your U-boat type could carry historically: 14 for a Type VIIC, for example. Running out of torpedoes effectively ends your offensive mission, and indicates a good time to return to base. Turning this setting off gives you an unlimited number of torpedoes.

Dud Torpedoes—If selected, this setting subjects you to an historically accurate percentage of “dud” torpedoes: some of your torpedoes will go too deep, explode early, or fail to explode even if they hit a target. The percentage of duds on a given mission depends on the period of the war in which the mission takes place. Turning this selection off means your torpedoes always work if you aim and fire them correctly.

Slow Reload—If selected, this setting imposes realistic torpedo reload times on your crew. If you switch it off, you can reload torpedoes much more rapidly than was actually possible. On either setting, better crews reload the tubes faster.

Realistic Repairs—If selected, this setting makes damage repairs at sea much more realistic. Some repairs may put you out of action for days—others may force you to surface, or return to base in Career missions. If you switch this option off, you will be able to repair any damage to your U-boat relatively quickly.

Limited Battery—If selected, this setting models the U-boat's consumption of battery power realistically. (If you run out of battery power when submerged, you may sink!) If you switch this option off, you will not run out of battery power.

Limited Fuel—If selected, this setting models the U-boat's consumption of diesel fuel realistically. You will have to monitor fuel carefully, or you might run out in mid-ocean. If you switch this option off, your sub will not run out of diesel fuel.



Courtesy National Archives

Depth charge exploding behind an American escort vessel.

Vulnerable Boat—If selected, this setting makes your U-boat vulnerable to damage from enemy weapons. If this option is not selected, your boat cannot be damaged by enemy depth charges, torpedoes, hedgehogs, or guns.

Limited Visibility—If selected, this setting limits your [F5] tactical chart to show only those ships currently visible from the bridge as indicated by the red ring. At more difficult combat settings, the chart will not show ships beyond the visible horizon, and won't show any ships if you submerge below periscope depth. If you switch this option off, all vessels in your area will be visible on the tactical display.

Combat Level—This setting determines your general advantage, if any, in offensive and defensive action. For example, it affects visibility, the accuracy of your torpedo targeting computer and of your deck gun and AA fire, as well as the damage caused by your weapons' hits.

It also determines how easy you are to spot on radar, how much damage your boat suffers from an enemy hit, and how much information is displayed on your tactical chart (including ASDIC pings and torpedo tracks). On the EASY setting, your boat is relatively hard to hit, while you can hit and sink enemies rather easily. On MEDIUM or HARD, your advantage is reduced. On EXPERT, you have no advantage.

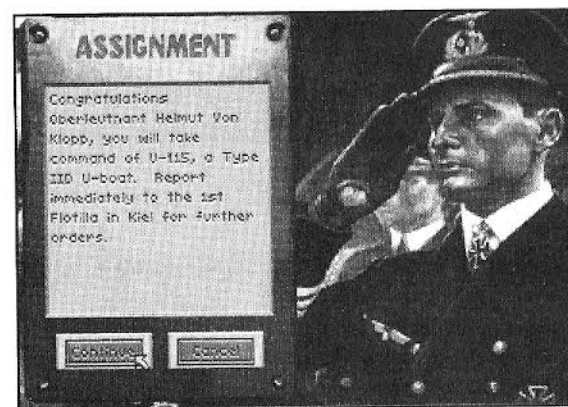
Sailing Model—This setting determines the realism of your U-boat's maneuverability, a critical factor in avoiding enemy attacks. Specifically, it affects how long it takes your boat to crash dive, change depth by a given number of meters, or complete a turn at a given speed. The NOVICE setting makes your boat much more maneuverable than historical boats, while EXPERT models maneuvering rates realistically.

Set Default—This setting lets you define all your Realism Defaults with a single selection. The options are NOVICE, INTERMEDIATE, and ADVANCED. You may still modify the individual default settings as you wish.

Realism Factor—This setting displays the realism level (and scoring potential) of the realism settings you have currently selected. This level is expressed as a percentage, with 100% as a maximum. Your mission score is determined as follows: tonnage (or warship sinkings) are combined with your selected realism factors and mission difficulty (Encounter Options). At 100%, your achievements at sea can be scored at their highest potential value. You will see your score in the Patrol Summary screen that appears at the end of each mission.

CAREER OPTIONS

Select CAREER to begin or resume a career as a U-boat commander in the German Navy, the *Kriegsmarine*.

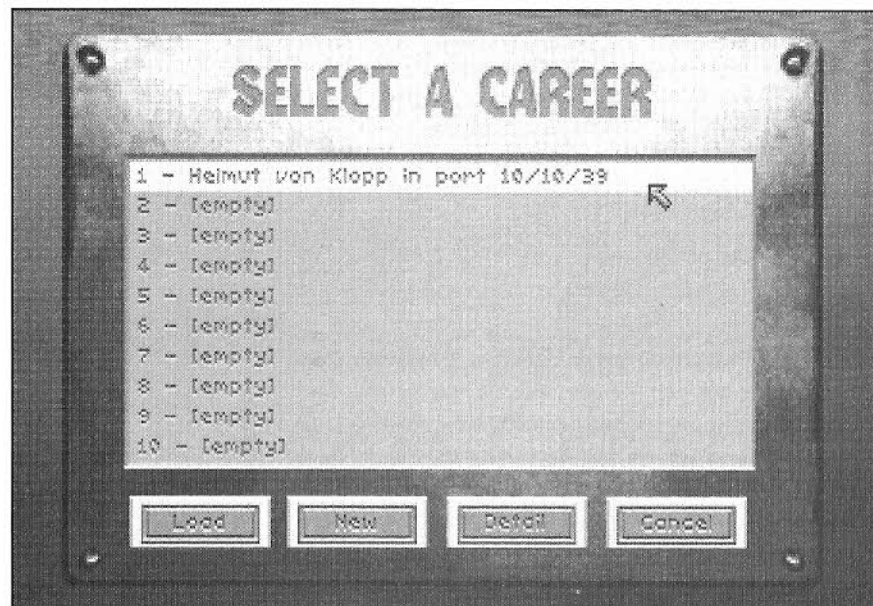


Careers begin with your assignment to your first command. Your career will then be composed of war patrols. Each patrol is a mission that corresponds to the actual circumstances, technology, and events of that period in the Battle of the Atlantic. You will sail from historical bases and navigate the hazardous course to your patrol area. Following radio orders from BdU (U-boat Headquarters) or engaging targets of opportunity, you may encounter enemy convoys or warship groups and then return to base.

Between patrols, you may relax on well-deserved shore leave. You may also be assigned to a new base or U-boat, be decorated for your victories, or be promoted. If you succeed and survive, your weapons will become better, and your crew more proficient—as will those of the enemy. You may become a legendary skipper, competing for medals and glory and the top ranking in the Hall of Fame. You may end up in an a prison camp. Or you and your crew may end up in a dark iron tomb on the cold floor of the Atlantic. Your luck and skill as a commander will decide.

Select a Career

This screen lets you create a new career (captain), load an existing career to continue, or see details of existing careers. Initially, the career roster will be empty. You may save multiple careers for each captain you create, but you can have no more than 20 saved careers at a time.



Load. To load an existing career to continue, click on the career to highlight it, and then click **LOAD**. A Career labeled “At Sea” will resume the war patrol at sea from the point it was saved. A Career labeled “In Port” is between patrols, and will resume from the Career menu (page 145).

New. To create a new career, click the **NEW** button on the Select a Career screen to open the New Career screen. Type your captain’s name in the Your Name box exactly as you want it to appear. Then click on the **STARTING PERIOD** button to select when your career will begin. You may then select the personal emblem that will decorate your U-boat

conning tower: click the arrows next to the emblem window until the emblem you want is displayed.

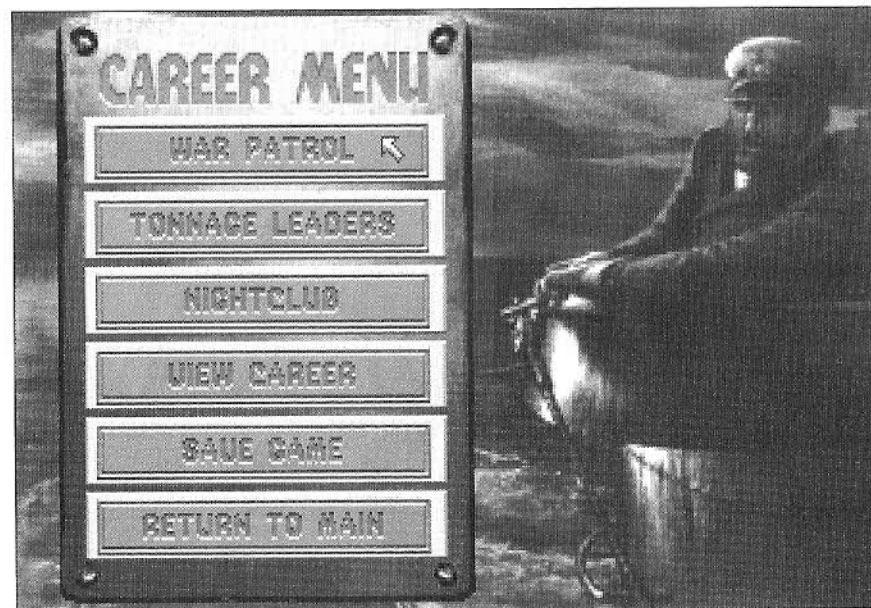
When your selections are complete, click **SELECT** to go to the Assignment screen. Here you will be given the number and type of your new U-boat and assigned a base of operations for your first patrol. You may **CANCEL** to return to the Select a Career screen, or **CONTINUE** to go to the Career Menu (see below).

Detail. Click this button to see details on the progress of the current career. Click **DONE** to exit.

Cancel. Click this button to return to the Main Menu

Career Menu

Once you start a career, or resume one saved “in port,” you will play from this menu.



War Patrol

This option sends you first to a mission briefing. Here you may review the mission objectives for this patrol and adjust your Realism settings. When ready to ship out, click **ACCEPT** to leave port and go to sea on your next War Patrol.

War Patrols differ from Single Missions in that you must make the journey to your patrol area (using the Strategic

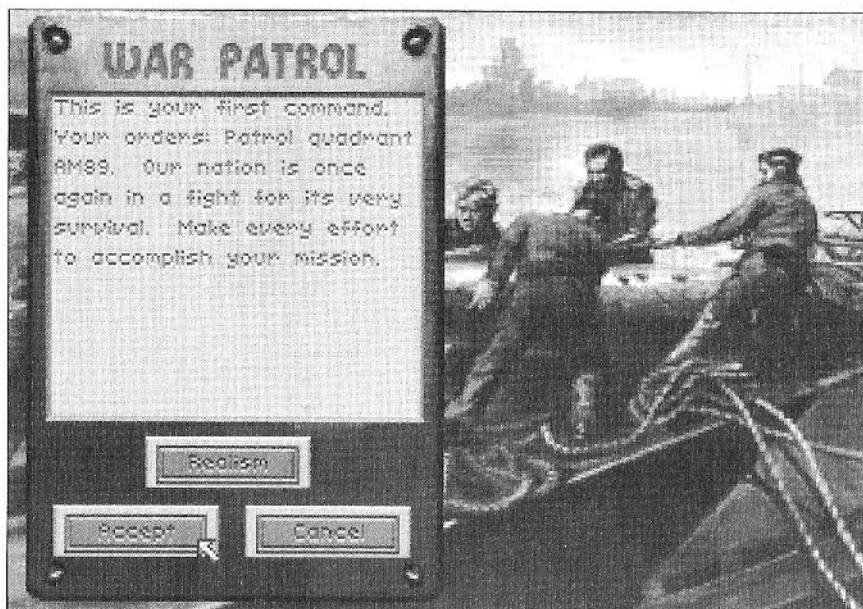


Chart to navigate) before engaging in assigned missions. To end a patrol (after you run out of torpedoes or targets, or run low on fuel), you must return to the escort perimeter of your base (green circle on strategic chart) and request an escort to finish the mission. You can also end missions in progress by selecting **ABORT MISSION** from the Simulation Options menu ([CTRL]+ [O]), or by pressing [CTRL]+[D]. If you abort the mission, however, your mission score will be zero.

Tonnage Leaders

This screen will give you a list of the top U-boat skippers up to the current month. This lets you compare your performance against that of the historic aces.

COMMANDER	TONNAGE
Lemp	23206
Schubert	19405
Liabe, H.	16698
Schulze, Herbert	14777
Heinicke	14018
Rollmann, W.	13891
Haberst	8706
Prier	8270
Helmut von Klopp	0

With enough sinkings, your current captain's name may some day top this list.

Nightclub

This is your chance to relax between patrols with your fellow U-boat captains in the company of the lovely Elise, sweetheart of the U-boats.

Here you may pick up interesting gossip, rumors, and current war news from your comrades. Click **NEXT** to hear the next bit of "news," and click **DONE** when you've heard enough. Be careful, though...you cannot believe everything you hear in a bar.

June 1942.
Captain Erich
Topp is back safe
from another war
patrol. He wears
his brand new
Knight's Cross
around his neck.



Courtesy United States Naval Institute

Save Game

Select this option to save the current career when you are "in port" between patrols. If you already have 20 careers saved, you will need to replace a previous career to make room. You may also save your career at sea during a mission (if you are not in combat with the enemy) using the SAVE GAME option on the [CTRL]+[O] pop-up menu. Using this option, you just click on a blank slot or existing career to replace it with the current career. Enter a description for the saved game and press [ENTER].

Return to Main

Exits the Career Menu and returns you to the Main Menu.

Hall of Fame

Use this screen's options, available from the Main Menu only, to compare your current performance with your earlier missions or with the greatest submarine commanders of the Battle of the Atlantic.

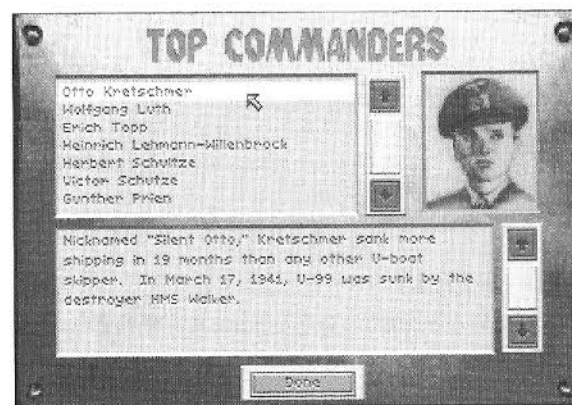
The primary mission of the U-boat forces is to sever the ocean supply routes to England. Accordingly, your performance is scored by factoring the cargo tonnage or warships you sink with the overall mission and realism difficulty.

Top Missions—This screen shows you a list of your highest-scoring single missions, ranking them by tonnage, ships sunk, and score. Click the **DETAIL** button to see a more detailed list of ships sunk; click **DONE** to exit.

Top Careers—This screen lists your highest final career scores by name, tonnage, ships sunk, and score. For more information about the career, click the **DETAIL** button; click **DONE** to exit. Careers are eligible for the top career list when you finish the war, are killed, captured, or you retire.

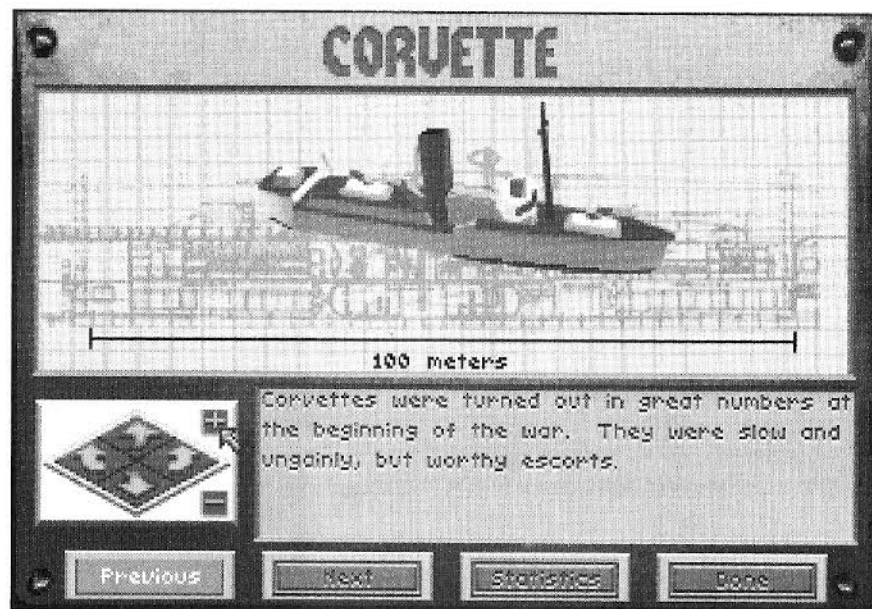
Historic Aces—This screen profiles the most successful historic U-boat aces. You may click on an ace's name to see his picture and a brief description of his war record.

Return to Main—Exit the Hall of Fame and return to the Main Menu.



Vehicle Preview

This screen displays views, descriptions, and statistics for the ships, aircraft, and submarines featured in the simulation.



Click on the arrow buttons on the right or left to rotate the vehicle horizontally; click on the up and down arrow buttons to rotate the vehicle view vertically. Click on the "+" or "-" buttons to zoom the view in or out

Click the STATISTICS/DESCRIPTION button to learn about the vehicle's history and capabilities.

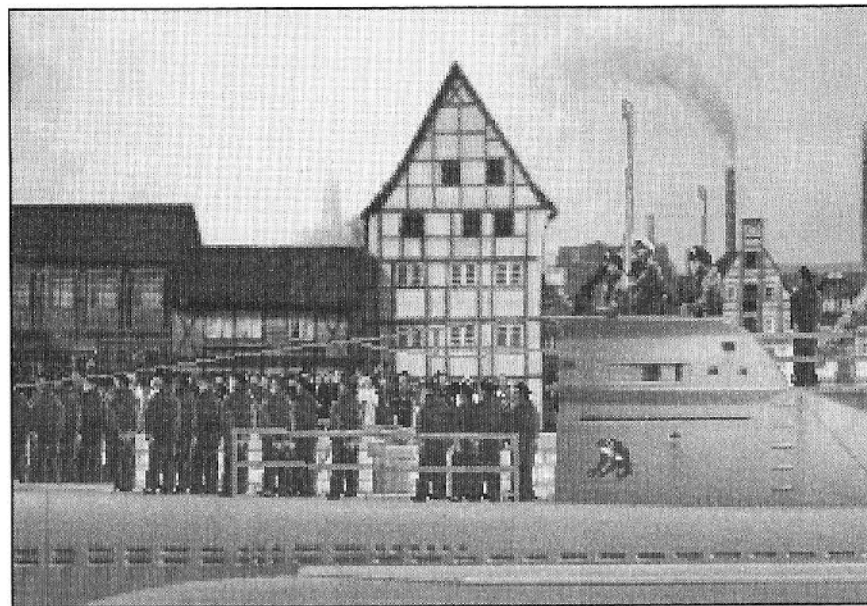
Click NEXT or PREVIOUS to see other vehicles, or click DONE to return to the Main Menu.

Exit to DOS

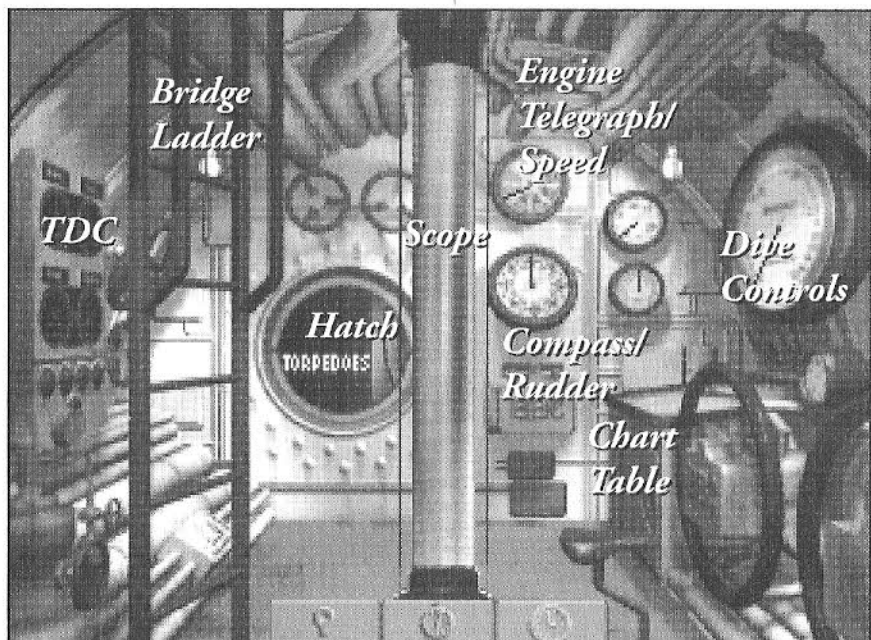
This Main Menu option lets you leave *Aces of the Deep* and return to DOS.

At Sea

Once you have chosen to undertake either a Single Mission or a career War Patrol you will receive a Mission Briefing summarizing your initial orders. After you click ACCEPT to end the Briefing, your boat puts to sea.



At sea, you can move to the different areas of the boat (see Command Screens) and give commands with the mouse. Many commands have keyboard equivalents as well. Command screens also have a row of command buttons across the bottom that provide related functions. See "Buttons" (page 169) for command button functions.



Voice Tube Stopwatch Clock

COMMAND SCREENS

Control Room

The Control Room is the command center of your U-boat, and the place where you begin each mission at sea. You can access it throughout the boat by pressing [F1] or by clicking the Control Room command button found in most other screens. The Control Room provides point-and-click access to most of the command screens and controls you use to maneuver your boat and conduct attacks. As you point to each area of the Control Room, you will see the name of the corresponding screen or control appear: Torpedo Data Computer (detailed on page 175), the ladder leading to the Bridge (page 155), and the hatch leading to the Torpedo Room (page 165), Radio Room (page 163), Damage Report (page 168) and Captain's Log (page 162) screens. Dividing the Control Room is the Periscope. Just to the right of the periscope are the Engine Telegraph/Speed (page

172) and Compass/Rudder controls (page 170). On the right bulkhead are the Dive Controls (page 171), used to submerge or surface the boat. On Type II and Type VII boats, the Chart table (page 157) is below the Dive Controls; on Type IXs, the Chart table is on the left, behind the ladder.

The Control Room has the following command buttons: Voice Tube, Stopwatch, and Clock. Different buttons appear in other screens: all are described in the "Buttons" section (page 169).

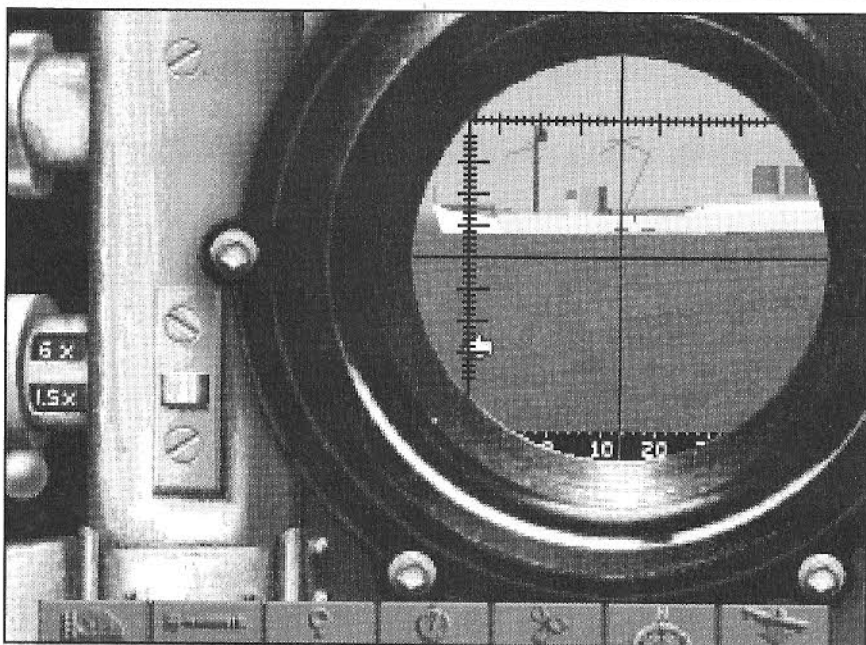
Periscope

You can access the Periscope from the Control Room by clicking the periscope column, or by pressing [F2] when the boat is at periscope depth or surfaced. It allows you to scout the horizon or conduct attacks while submerged. Keep in mind, however, that the periscope can be spotted by lookouts or radar, especially if the water is smooth or the moon is behind you, and that your visibility and speed are greatly reduced at periscope depth. Also, you are vulnerable to ramming or air attack at periscope depth. Take quick peeks to update your target contacts, and lower the scope as you move into position.

To scan the horizon with the periscope, click the arrow cursor right or left near the middle of the screen (small cursor) to scan slowly, and click near the edge (big cursor) to scan quickly (or use the [<] [>] keys). The periscope has two magnification settings: click on the knob at the far left of the eyepiece to change the setting between 1.5X and 6X, or press [Z] for Zoom.

You can select a ship you see in the periscope to input its targeting data (bearing, speed, range, and heading) into the Torpedo Data Computer, or TDC. To select a target, center the periscope on the target and

Note: To go to periscope depth, press [P].

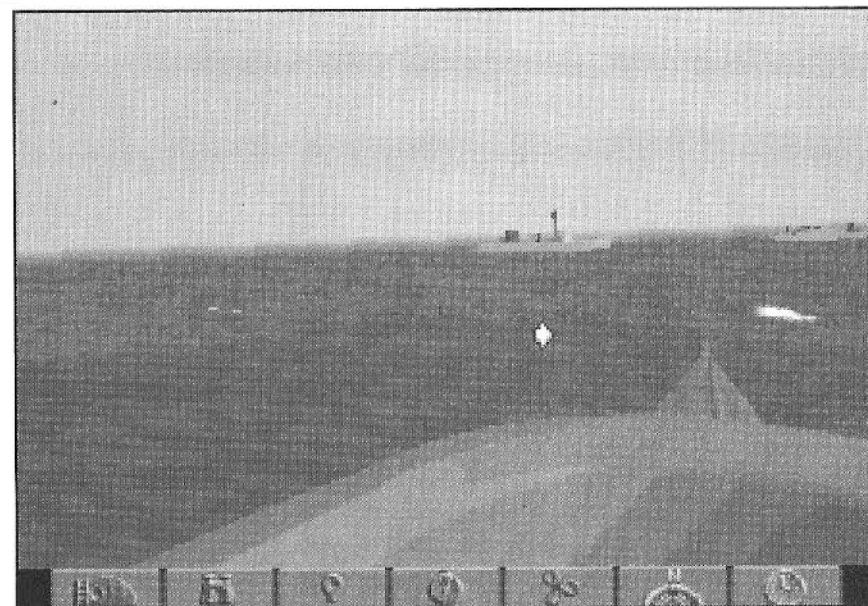


Control Room TDC Voice Tube Stopwatch Engine Compass Dive Controls

press [SPACEBAR]. This selects the current target (indicated by a red cross) and sends its data to the Torpedo Data Computer. (When surfaced, you may also select targets using the Binoculars or by clicking on them in the Tactical Chart.) To “padlock” the selected target (keep it centered in the periscope), press [ALT]+[F2]. To break the lock, select another view.

The bearing indicator at the bottom of the eyepiece displays the bearing of the current view relative to the bow of your boat (*not* your compass heading).

The Periscope screen also uses the following command buttons: Control Room, TDC, Voice Tube, Stopwatch, Engine, Compass, and Dive Controls. See “Buttons” (page 169) for details. Related quick keys: Periscope Depth [P]; Crash Dive [C]; Set Heading to View [H]; Set View to Heading [V]; Identify Target [I]; Surface [S]; Zoom View [Z].

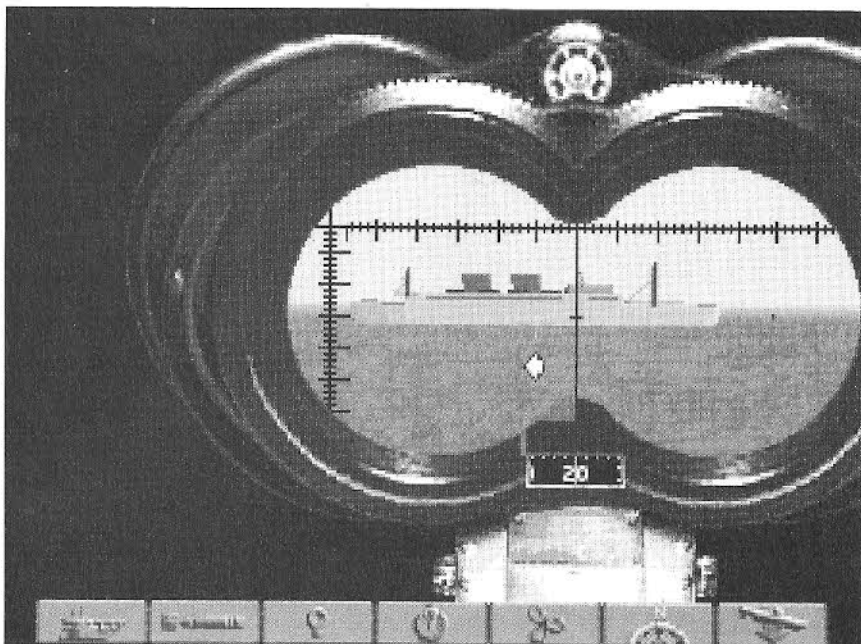


Control Room Binoculars Voice Tube Stopwatch Engine Compass Clock

Bridge

When your boat is surfaced, you can access the Bridge from the Binoculars or the Bridge ladder, or by pressing the [F4] key. It provides a panoramic view of the surrounding ocean from the conning tower, and allows the best vantage point for spotting aircraft. Facing forward, you will see the smoothly pointed bow; facing astern, you will see the railing around your antiaircraft gun platform.

As with the periscope, click the arrow cursor to scan the horizon right or left: click near the middle of the screen (small cursor) to scan slowly, and click near the edge (big cursor) to scan quickly (or use the [<], [>] keys). The Bridge uses the following command buttons: Control Room, Binoculars, Voice Tube, Stopwatch, Engine, Compass, and Clock. See “Buttons” (page 169) for details. Related quick keys: Crash Dive [C]; Set Heading to View [H]; Set View to Heading [V]; Identify Target [I]; Man/Unman AA Guns [A]; Man/Unman Deck Gun [D].



Bridge TDC Voice Tube Stopwatch Engine Compass Dive Controls

Binoculars

Accessed via the Bridge or the [F3] key when your boat is surfaced, the Binoculars provide a magnified (7X) view of the horizon, and, like the Periscope, function as a target bearing transmitter for torpedo attacks. As you do with the Bridge and Periscope view, click near the middle of the eyepiece (small cursor) to scan the horizon slowly, and click near the edge (big cursor) to scan quickly (or use the [←] [→] keys). You cannot change the Binoculars magnification level.

Below the eyepiece is a gauge showing the relative bearing of the current view. For example, a reading of 90 degrees means you are looking 90 degrees (due starboard) of the bow, regardless of your boat's compass heading.

To select a target ship in the Binoculars, move the center vertical crosshair over the target and press [SPACEBAR]. This selects the current target (indicated by a red cross) and sends

its data to the Torpedo Data Computer (TDC). To "padlock" the selected target (keep it centered in the binoculars), press [ALT]+[F2]. To break the lock, select another view. The longer a target is selected, the more accurate the TDC data will be (crosshairs brighten).

The Binoculars screen uses the following command buttons: Bridge, TDC, Voice Tube, Stopwatch, Engine, Compass, and Dive Controls. See "Buttons" (page 169) for details.

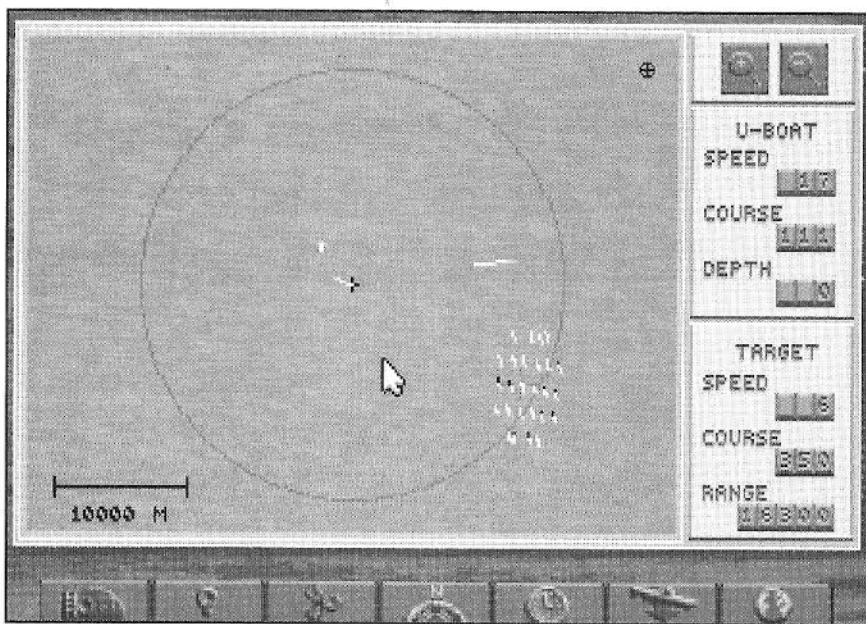
Related quick keys: Crash Dive [C], Set Heading to View [H]; Set View to Heading [V]; Identify Target [I]; Man/Unman AA Guns [A]; Man/Unman Deck Gun [D].

Charts

Accessed from the Control Room or [F5], your Tactical Chart displays a "map view" of the nearby tactical situation, while the larger scale Strategic Chart helps you navigate long distances. To switch between the Tactical Chart and Strategic Chart, click on the Globe button (far right) or press [F5]. The other Chart command buttons are Control Room, Voice Tube, Engine, Compass, Clock, and Dive Controls. See "Buttons" (page 169) for details. Related quick keys: Up/down periscope [ALT]+[P]; Identify Target [I]. (Must be at periscope depth; watch officer performs both.)

Tactical Chart

The tactical chart displays the vessels, ocean, and land in your immediate area. It is always centered on your U-boat and oriented to compass North. Your boat is marked with a black cross, and surrounded by a red circle showing your approximate range of visibility. (If the Limited Visibility realism setting is disabled, you can see all ships in the chart range, regardless of the weather, time of day, or whether you are submerged or not.) If you dive, your dive point is marked with a red square. The charts are animated to provide tactical updates in real time. The tactical chart automatically plots and displays all visible ships, and displays their wakes to highlight course changes. It also



Control Room Voice Tube Engine Compass Clock Dive Controls Globe

The charts are animated to provide tactical updates in real time. The tactical chart automatically plots and displays all visible ships, and displays their wakes to highlight course changes. It also displays hydrophone contacts from your sound room as lines along the contact bearing: bright red for high-speed screws (escorts), and gray for low-speed screws (merchant ships), and white for convoys. Similarly, when an enemy is using ASDIC or SONAR to find your boat, you will see the directional “pings” of its underwater search pattern as it tries to locate you (except in Expert Combat mode). You can pick up hydrophone contacts far beyond visual range.

Zoom. Click on the Magnifying Glass buttons to zoom the chart scale in “+” and out “-.” The tactical chart has several display scales from 50 meters to 20,000. For larger-scale views, use the Strategic chart (Globe button).

Note: your U-boat must be stopped or moving slowly to use the hydrophone.

U-boat. These indicators display your U-boat’s current SPEED (in knots), COURSE (compass heading), and DEPTH (in meters).

Target. These indicators display the current estimated SPEED, COURSE, and RANGE (in meters) of the selected target vessel. Estimate accuracy varies with crew experience, your selected Combat level, and how long the target is selected. To select a target ship from the tactical chart, click on it. (You can also select the ship from the Periscope or Binoculars.) The selected ship will be marked with a red cross, and its estimated target data will be input to all ready torpedoes.

Periscope. If you have selected Limited Visibility, your target data will “fade” when you submerge unless you regularly check the periscope or surface to keep the contact current. To have your watch officer raise or lower the periscope from the chart and update the contacts, press [ALT]+[P]—you will see a periscope icon on the upper right of the chart as long as the scope is up. Press [ALT]+[P] again to lower it.

Note: Don’t leave the periscope up, or it will be spotted.

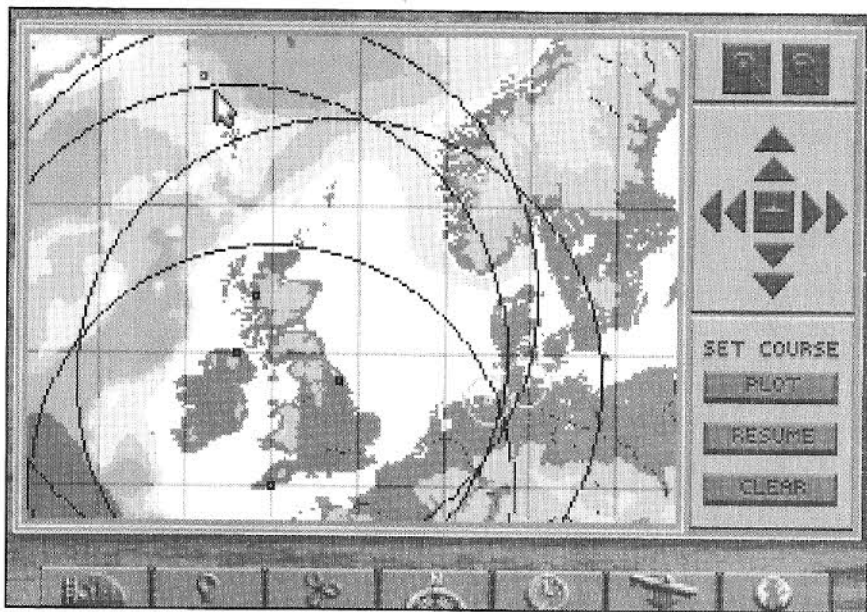
Strategic Chart

The Strategic chart shows you events on an oceanwide scale, and allows you to plot a course to join up or avoid them.

Coordinates. The chart will display the latitude, longitude, and *Kriegsmarine* patrol quadrant coordinates of your current mouse cursor position whenever you click on the chart. Use this feature to fix your position and plot courses.

Zoom. As in the tactical chart, click on the Magnifying Glass buttons to zoom the chart scale in “+” and out “-.”

Scroll buttons. To center the chart on your sub, click on the U-boat button. To scroll the chart North, South, East, or West, click on the corresponding arrow buttons surrounding the U-boat. The inner arrows scroll slowly, and the outer arrows scroll quickly.



Control Room Voice Tube Engine Compass Clock Dive Controls Globe

Set Course. These buttons allow you to plot courses all around the North Atlantic. You draw a course as a series of legs, or line segments, with the **PLOT** function.

PLOT. To set a course, first change the Zoom level to where you can see your destination. Click the **PLOT** button. Now when you move the mouse cursor, you will see a line stretching between the cursor and your boat's current location. At lower left, the chart will now display the cursor's location in longitude, latitude, and *Kriegsmarine* patrol quadrant, and the **PLOT** button will now read **ENTER**.

Ideally, you can plot a straight line course to your destination. (Prevailing winds and currents are not factors.) However, you will usually have to plot the course in segments (legs) to avoid enemy coastlines, aircover, or formations. As you move the cursor to the next navigation waypoint, a valid course is shown with a light gray line. (If the line crosses land, it turns red.) Click at the waypoint, and the line turns dark gray to set the course for that leg. Continue setting waypoints

until you have plotted the course to your destination. To lock in the course, right-click the final waypoint or click on the **ENTER** button.

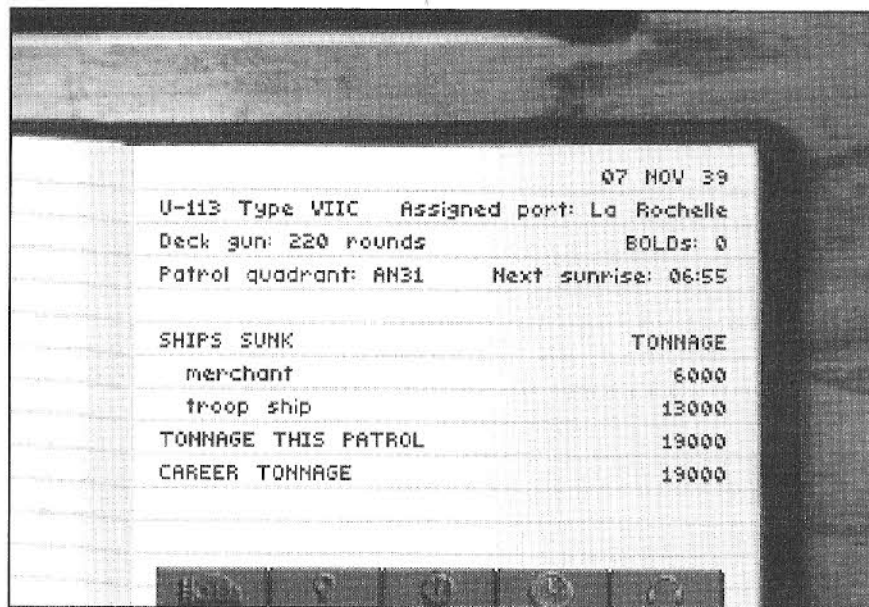
Your boat will now undertake that course until you interrupt with new orders or reach your destination. You can use the **Clock** to compress time on your journey: it returns you to normal time if your lookouts spot a target or threat. Note: Your navigator will inform you of arrival at your destination, but your boat continues on its last heading and speed until you give new orders.

RESUME. If your U-boat's course is interrupted (you spot a target or are jumped by aircraft, for example), you may return to your course afterward by clicking on the "Resume" button.

CLEAR. To erase a set course, click on the **CLEAR** button.

Strategic Chart Symbols

- Your U-boat is a red square. Click the U-boat button to center the map on your sub.
- Other U-boats appear as light yellow squares.
- Enemy convoys and warships appear as black or gray squares. Black squares indicate current, reliable contacts. At easy Combat levels, contact courses are displayed as white lines. At more difficult Combat levels, the course plots disappear, and the black contacts soon fade to gray (become less reliable) if not updated by new intercepts or shadowing reports.
- Enemy air bases appear as blue squares. Each base is surrounded by a blue circle indicating the reported scope of its air patrols. (As escort carriers become more common later in the war, you can expect air attack anywhere.)
- Friendly bases appear as green squares within a green circle. If your U-boat is within one of the green circles, you may radio for a friendly vessel to escort you into the base. This is how you end a War Patrol in the Career mode.

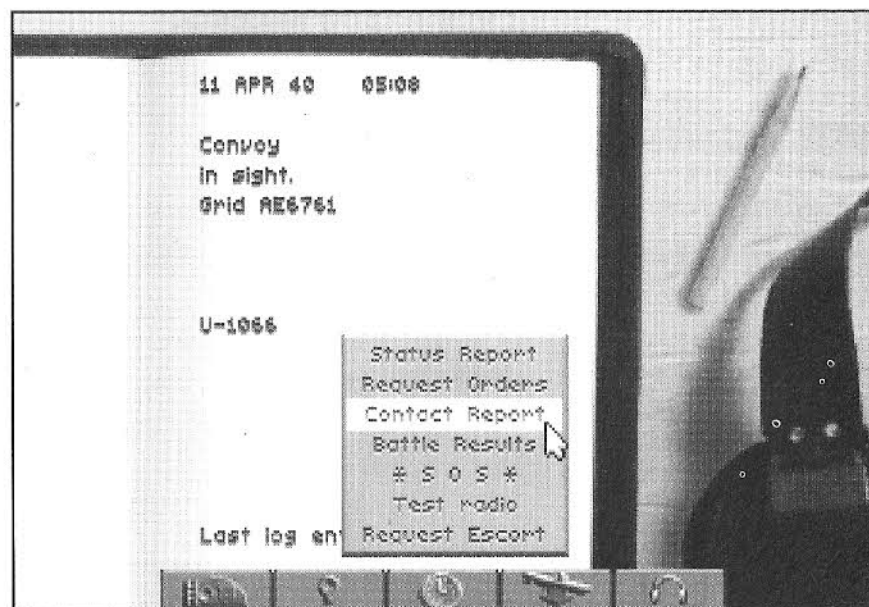


Control Room Voice Tube Stopwatch Clock Radio

CAPTAIN'S LOG

The Captain's Log (accessed from the Control Room hatch or by pressing [F9]) displays the name of your captain (in Career mode), the current date, the number and type of the current U-boat, and its home port. It also shows the number of deck gun rounds and BOLD canisters remaining, and the current patrol quadrant (location), along with the times for the next sunrise or sunset. Below that, the log records a complete list of ships sunk, with the type and tonnage of each vessel sunk for this single mission or for your career (in Career mode).

In Career mode, your log may be many pages long. Click on the left-hand page to page back through the Log, or the right-hand page to page forward. The Captain's Log uses the following command buttons: Control Room, Voice Tube, Stopwatch, Clock, and Radio. See "Buttons" (page 169) for details.



Control Room Voice Tube Clock Dive Controls Radio

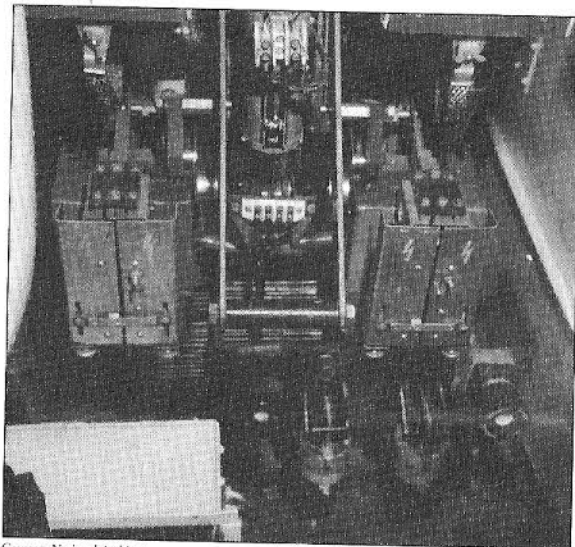
RADIO ROOM

Accessed from the Control Room hatch or by pressing [F8], the Radio Room lets you send, receive, and log various messages from U-boat Headquarters (BdU) and other U-boats by clicking on the Radio button. (You cannot use your radio below periscope depth.) It may take a while for a response—your radio mate will alert you when a message is received. Note: Later in the war, any radio use may be detected by Allied HF/DF. Other Radio Room command buttons are the Control Room, Voice Tube, Clock, and Dive Controls. See "Buttons" (page 169) for details.

Orders and information are tracked in the Radio Log for the duration of your patrol. On long patrols, your radio log may be many pages long. Click on the left-hand page to page back through the Log, or the right-hand page to page forward.

Note: All reports include current date, time, U-boat number, and patrol quadrant (grid).

Hydrophone gear in the sound room of *U-505*.



Courtesy National Archives

Message Options:

Status Report—Inform BdU of fuel status, torpedoes remaining, and location. (See Torpedo room for complete torpedo inventory.)

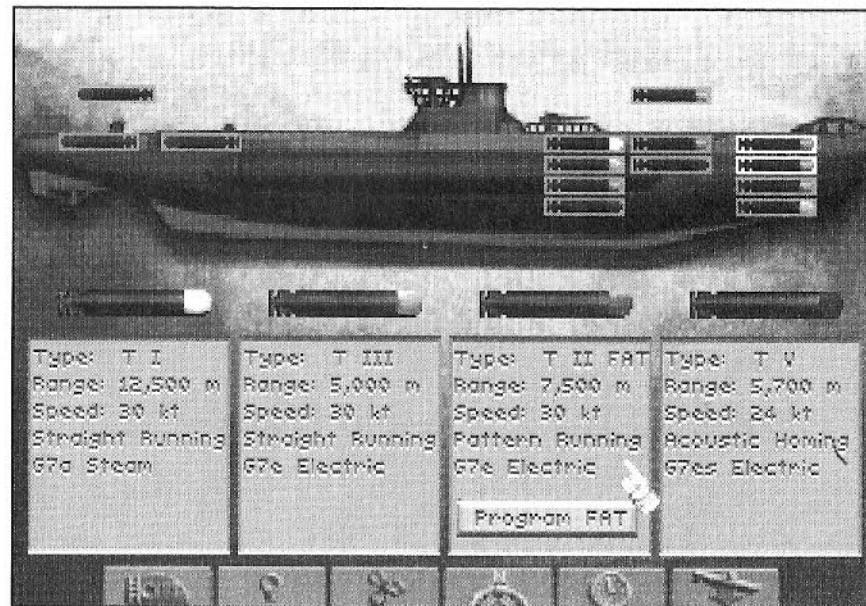
Request Orders—Request new or additional orders from BdU on a arrival at a designated area.

Contact Report—Report or update an enemy ship sighting. This will help BdU and other U-boats coordinate a wolf pack attack on the contact.

Battle Results—Reports type, number, and estimated tonnage of any sinkings to date on this patrol. Sinkings you report are added to your record, even if you do not survive the patrol. See "Captain's Log" (page 162) for Career sinkings.

SOS—Broadcasts "Attacked! Sinking!" Sending an SOS is your only chance of being assisted or rescued by friendly forces.

Request Escort—Asks for an escort ship or minesweeper to guide you into a friendly base. You must be within the range of a friendly base's escorts (green circle on strategic map). This is how you end a War Patrol in Career mode.



Control
Room

Voice
Tube

Engine

Compass

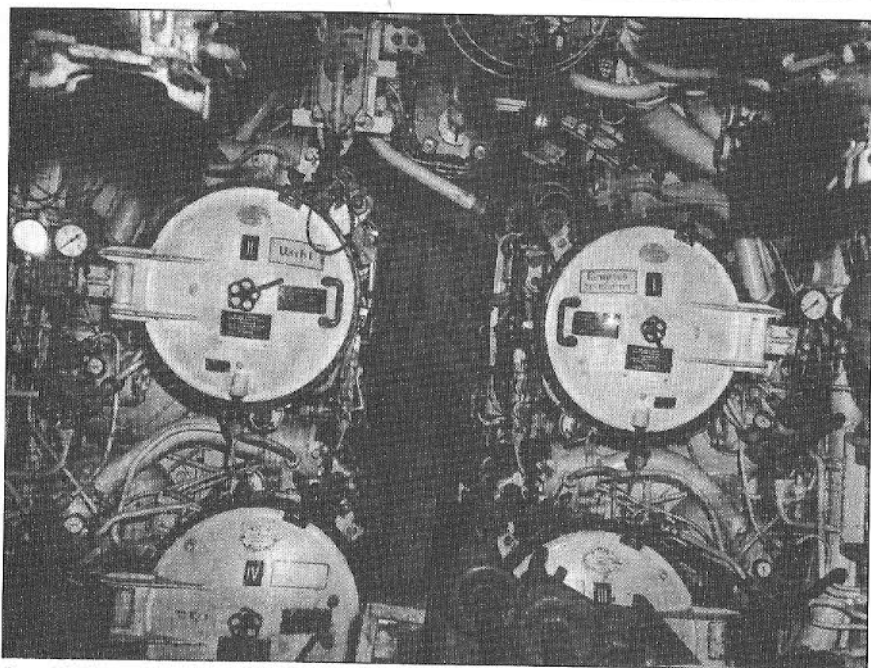
Clock

Dive
Controls

TORPEDOES

Accessed from the Control Room hatch or by pressing [F6], the Torpedoes screen helps you manage torpedo moving and reloading. (You will use the TDC—Torpedo Data Computer—to fire torpedoes.) The Torpedoes screen uses the following command buttons: Control Room, Voice Tube, Engine, Compass, Clock, and Dive Controls. See "Buttons" (page 169) for details.

The U-boat diagram displays your current torpedo location and status. Depending on your boat type, you may have torpedoes located in bow and stern torpedo firing tubes, interior storage slots (inboard of the torpedo tubes) and external storage slots (shown above deck). Torpedoes that are ready to move or fire are shown with a green background. If a torpedo is being moved to or from a tube, both the tube and storage slot will have a yellow background until the transfer is complete. To see how much longer the transfer will take, point to the firing tube ("Status" cursor) and click, and the mate will tell you the time remaining. (You may not cancel a transfer in the mate will tell you the



Courtesy National Archives

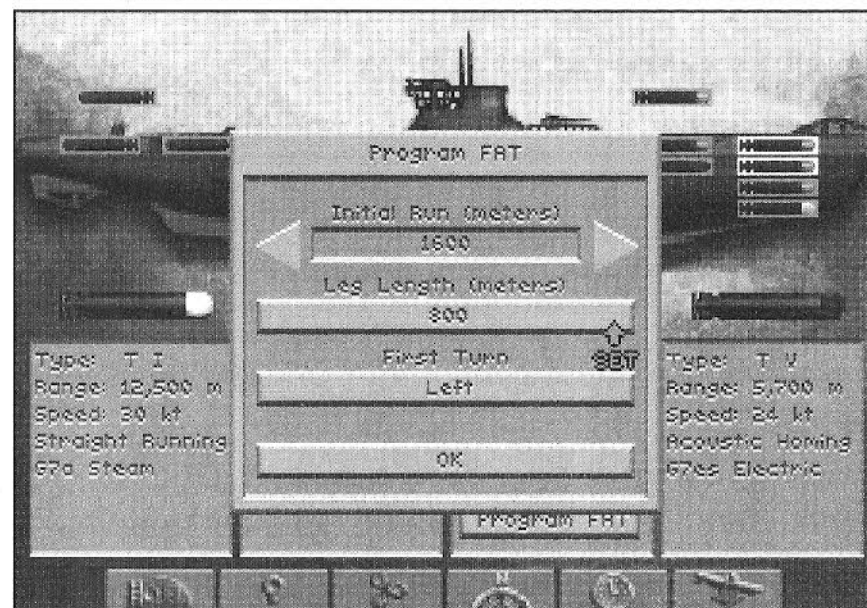
The forward torpedo tube interior doors on a Type IX U-boat.

time remaining. (You may not cancel a transfer in progress.) A damaged tube is shown in red, and is unusable until repaired.

You may make torpedo loading automatic by enabling the Autoreload function (see "Simulation Options," page 180). If you prefer to manage torpedoes yourself, turn Autoreload OFF and use the following procedures.

To load a torpedo from storage to an available firing tube (empty, green) click on a stored torpedo (green background) to select it, then click on the empty tube. Both "slots" will turn yellow to indicate the transfer is underway, and the torpedo mate will tell you how much time loading will take.

You may move externally stored torpedoes inboard at either end. Be aware that your deck hatches must remain open throughout the transfer, and you will not be able to dive for up to two hours. Also, you may not transfer internally stored torpedoes to the other end of the boat.



Control Room Voice Tube Engine Compass Clock Dive Controls

The available torpedo types increase during the course of the war. You may have up to four types: each will be described below the sub diagram. See "U-boat Weapons" for details.

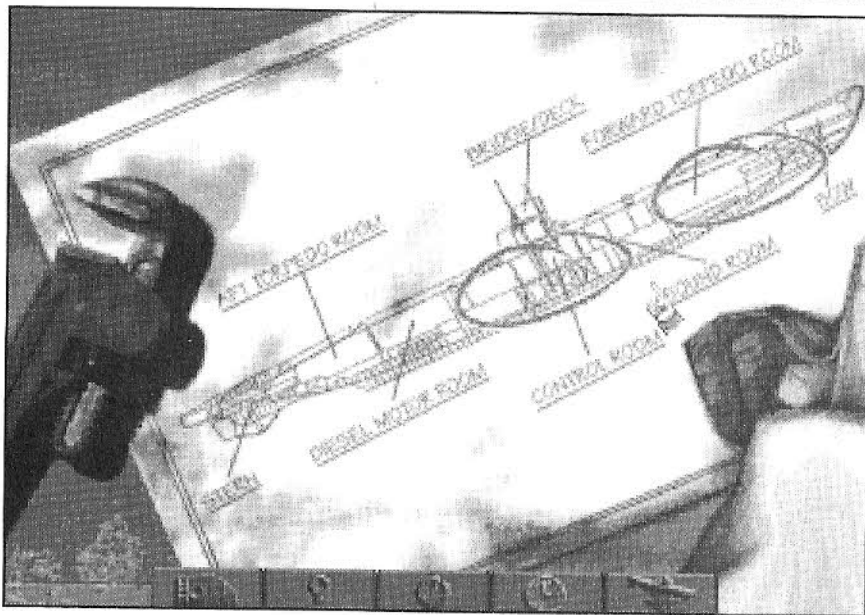
Program FAT—If you are carrying FAT torpedoes, you can click this button to view or change the default running pattern of all your FATs. (FATs became available later in the war.) If a FAT misses on its initial run, it will run a large zigzag to the left or right until it hits something or depletes its batteries.

Initial Run (Meters)—This is the distance the FAT will run straight before starting a zigzag pattern. This entry should be the distance to your initial target or greater.

Leg Length (Meters)—This defines the width of the zigzag pattern: either 800 or 1,600 meters.

First Turn—After its initial run, the FAT turns to the left or right to start the zigzag. Make this turn into the main body of the convoy to maximize odds of a hit.

Note: Once you fire a FAT, dive or steer clear of its pattern—it doesn't care what it hits.

Control
RoomVoice
Tube

Stopwatch

Clock

Dive
Controls

DAMAGE REPORT

Accessed from the Control Room hatch or by pressing [F7], the Damage Report screen shows you a blueprint of your boat, with any damaged areas circled in red. To see a list of the damaged equipment in a circled area, click on the area. You can then click on the listed item(s) to see a report of the damage severity, estimated repair time, status, and notes relevant to operations. You may continue to monitor repairs as they are being completed. Not all items could be repaired at sea—at higher levels of realism, you may have to return to base before some items can be fixed. The Damage Report screen provides the following command buttons: Control Room, Voice Tube, Stopwatch, Clock, and Dive Controls. See “Buttons” (page 169) for details.

BUTTONS

This section describes (in alphabetical order) the gray command buttons that appear throughout the simulation to provide access to controls, menus, or other screens or areas of the boat: Binoculars, Bridge, Clock, Compass, Control Room, Dive Controls, Engine, Globe, Headphones, Stopwatch, TDC, and Voice Tube. Most of these buttons appear in several screens. Click the button to access the associated control or areas. When done with the control, you may right-click or press [ESC] to close the display, or leave it open—the next screen or control you open will replace it.

Binoculars [F3]

On the Bridge, click this button to bring up the Binoculars and the surface targeting sight. See the “Binoculars” command screen section for details on using the Binoculars and tracking surface targets. Related quick keys: Crash Dive [C], Set Heading to View [H]; Set View to Heading [V]; Identify Target [I]; Man/Unman AA Guns [A]; Man/Unman Deck Gun [D].



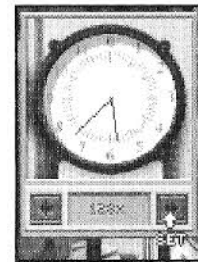
Bridge [F4]

In the Binoculars screen, click this button to go to the Bridge view. See the “Bridge” Command Screen section for details on Bridge operations. Related quick keys: Crash Dive [C], Set Heading to View [H]; Set View to Heading [V]; Identify Target [I]; Man/Unman AA Guns [A]; Man/Unman Deck Gun [D].



Clock

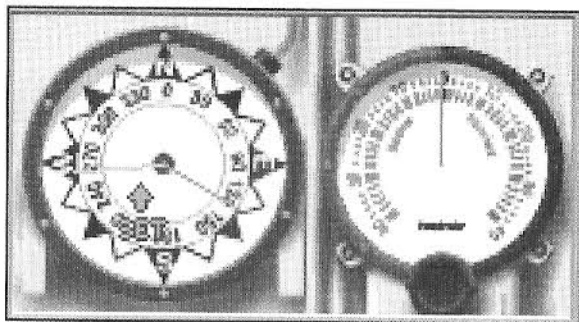
Click this button to see the local time in military notation (0-12 for am, 13-24 for pm) and to check or set the current level of time compression. Related quick keys: [+] to increase or [-] to decrease time compression, [ENTER] to set to 1:1.



To set/change time compression, click on the clock's scroll bar arrows—compression may be set from 1 to 4096 by powers of two. Time compression is automatically halted if your crew spots a new enemy target or threat. Higher levels of time compression may not always be available due to the combat situation or your PC's computing capacity.

Compass

Click this button to access the interlinked Compass and Rudder controls. You may also access these controls directly from the Control Room (middle right). Related quick keys: Right Rudder (right cursor or keypad [6]); Left Rudder (left cursor or keypad [4]); Center Rudder [5].



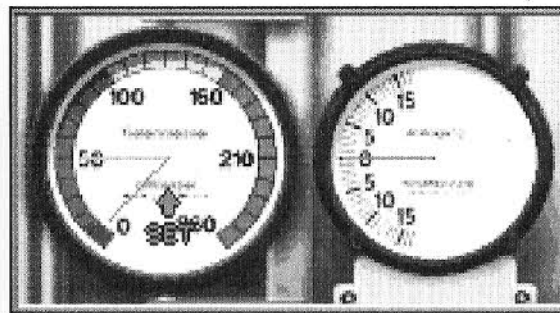
The Compass shows your current course as a red line, and your ordered course (if different) as a blue line. To change course, click on the Compass "rose" in the desired direction, and a blue line will appear to mark the new heading. The boat will then come around to the chosen compass heading automatically. (Note: the boat must be underway to change course.) In contrast, the Rudder lets you manually set the boat's rudder from 1-40 degrees port (left/red) or starboard (right/green). The vertical red line shows a straight rudder: click on the desired number of degrees rudder left or right, or press [4] or [6] on the numeric keypad. Once the rudder is set, it keeps turning the boat until you recenter the rudder. To recenter the rudder, click on the rudder's red center line, click on the Compass, or press the center key [5] on your numeric keypad.

Control Room [F1]

Click this button to go to straight to the Control Room. The various screens and controls you can access from the Control room are described in their specific sections.

Dive Controls

Click this button to access the interlinked Depth Gauge and Dive Plane (Inclinometer) controls and change the boat's depth. These controls are directly available on the right bulkhead of the Control Room. Related quick keys: Crash Dive [C]; Periscope Depth [P]; Surface [S]; and Dive Planes Up [8], Down [2], Level [5].



Depth Gauge. The Depth Gauge shows the current depth of the boat as a red line, and the ordered depth (if different) as a blue line. To move the boat to a specific depth, click on that depth: a blue line will appear there, and the boat will make its best climb or descent to the indicated level. Safe depths are shown in the green part of the gauge, and you may descend to depths in the yellow range if your pumps or hatches are not seriously damaged. Your boat is not rated for depths marked in red—if you descend into the red, you risk discovering your particular U-boat's crush depth firsthand. Note: you may make the boat descend or ascend without



forward motion, as long as you have sufficient compressed air and working pumps. To ascend immediately to the surface, Blow Tanks (from Voice Tube—Chief Engineer).

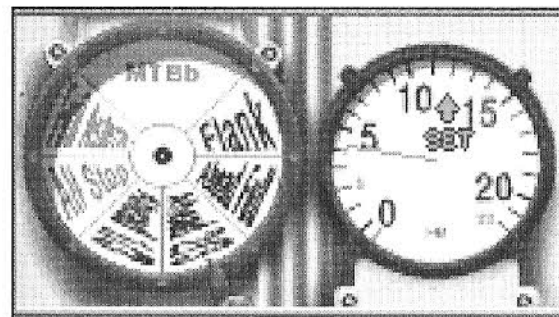
Akin to the rudder, the Inclinator shows the up or down angle of the dive planes (hydroplanes), the small horizontal “wings” on the boat that allow it to use engine thrust to dive or climb through the water when submerged. To set the dive planes manually, press the Up arrow [8] or Down arrow [2] keys on your numeric keypad, and press [5] to level off. In a crash dive, the Engineer puts the engine at flank speed and sets the dive planes to drive the boat deep quickly. A crash dive continues to 150 meters, unless you select another depth. If you order crash dive from below 150 meters, the dive continues (past crush depth!) unless you select a specific depth to level off.

Note: The speed with which your boat can change depth depends on your boat's speed, your crew quality, and your Sailing Model settings. It takes a long time to surface from a great depth, even if you blow your ballast tanks. If you have an emergency, such as a severe leak, or chlorine gas contamination from cracked battery casings, you may not have time to reach the surface. Also, outside pressure may prevent your pumps from ejecting water from the boat, and the bilges will begin to fill—the only remedy is to come up to a depth that allows the pumps to work.

Engine

Click this “propeller” button to access the interlinked Engine Room Telegraph and Speed Gauge controls. You may also access these controls directly from the Control Room (upper right). Related quick keys: Battery Gauge [B]; Fuel Level [F], Engine Setting [1]...[6].

Together, these controls set your U-boat's speed. Click on the Telegraph or press number keys [1] through [6] to order your diesel engines or electric motors to a given direction



and power level setting: Full Astern, All Stop, Ahead 1/3, Ahead 2/3, Ahead Full, or Flank (emergency). Alternatively, click on the Speed Gauge to set a specific speed in knots, and the Telegraph will shift to the appropriate settings. The boat's actual speed depends on if you are surfaced, submerged, or damaged. It also depends on your Sailing Level realism selection.

Note: By default, the boat runs on diesel engines when surfaced and electric motors when submerged. Low speeds conserve fuel. When your boat is submerged, higher engine settings are more easily detected by enemy hydrophones. Flank speed on the electrics will deplete the batteries in about one hour. If you lose power, you will be unable to run your pumps, and will have no power to drive the boat to the surface.

Globe

In the Charts screens, click this button or press [F5] to switch between the Tactical Chart and the Strategic Chart. See the “Chart” section, page 157, for details on using the charts.





Radio Headphones

Click this button to choose the type of radio message to send. Where appropriate, the response to your message will appear in the radio log.

Radio Message Options:

(Note: All reports include current date, time, U-boat number, and location.)

Status Report—Inform BdU of fuel status, torpedoes remaining, and location. (See Torpedo room for complete torpedo information.)

Request Orders—Request new or additional orders from BdU on a arrival at a designated area.

Contact Report—Report or update an enemy ship sighting. This will help BdU and other U-boats coordinate a wolf pack attack on the contact.

Patrol Results—Reports type, number, and estimated tonnage of any sinkings to date on this patrol. Sinkings you report are added to your score even if you are sunk later in the mission. See Captain's Log for Career sinkings.

SOS—Broadcasts "Attacked! Sinking!" Sending an SOS is your only chance of being assisted or rescued by friendly forces.

Request Escort—Asks for an escort ship or minesweeper to guide you into a friendly base. You must be within the range of a friendly base's escorts (green circle on strategic map). This is how you end a War Patrol in Career mode.

Stopwatch [W]

Click this button or press [W] to see estimated run time and status for all fired torpedoes.

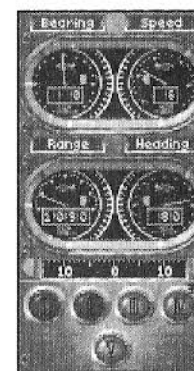
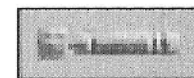
Whenever torpedoes are launched, your crew will mark the status of each on the stop watch as follows: Black mark=torpedo has over one minute to go; Blue mark=torpedo should hit when the sweep second hand reaches the mark; Red mark=past due to hit—a probable miss or dud. At higher realism levels, this may be your only indication that a torpedo has missed the target.

Torpedo Data Computer (TDC) [T]

Click this button to access the Torpedo Data Computer, or TDC. This panel is also directly available on the left bulkhead of the Control Room, but you will normally operate it from the Binoculars or Periscope.

The TDC gives you information about your selected target, calculates the proper torpedo firing angle or "solution," and allows you to fire "spreads" of torpedoes. It continually updates target information on the selected ship for all torpedoes. (To select a target, you must center it in the Binoculars or Periscope and press Spacebar, or click on it in the Tactical Chart.) Note: TDC data is supplied by your lookouts—its accuracy depends on your crew's experience, and how long you have been tracking this particular target.

Bearing—Indicates in degrees the direction to the selected target relative to your boat. 0 or 360 degrees is straight ahead, 90 degrees is off the starboard beam, 180 is due astern, etc.. Although advanced torpedoes can follow course changes of up to 135 degrees, your firing tube(s) should be aimed within 20 degrees of the selected target to give the eel's gyroscopes the best chance of guiding it accurately the rest of the way.



Note: Your targeting crosshairs will brighten as the data becomes more accurate.

Speed—Indicates the estimated speed of your target in knots. Fast, agile targets such as warships can be difficult to hit with anything less than a perfect firing solution.

Range—The estimated range to the selected target in meters. Torpedoes must run at least 250 meters before their detonators are armed. Beyond that, distance increases the difficulty of the shot.

Heading—The estimated current heading of your selected target. Expect convoys to change course frequently. Plan your firing solution so the torpedoes hit the target at as close to a right angle as possible, and avoid head-on or tail shots if you can.

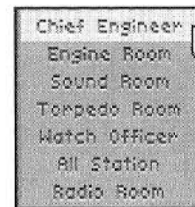
Fire Buttons—The numbered button lights at the bottom of the TDC show the status of your corresponding torpedo tubes. Ready tubes are bright red. Tubes that are empty or being loaded are dark red. To fire a ready torpedo using the current TDC data, click the corresponding tube's button.

The number of torpedo tubes depends on your U-boat type: the top row shows forward tubes, and the bottom row shows stern tubes (if any). A Type II boat has three forward tubes only; a Type VII has four forward tubes and a fifth stern tube; a Type IX has four forward tubes and two stern tubes.

Offset—Torpedoes fired together will normally follow the same track to the target, differing only by the movement of your boat between launches. While you always want to fire your first eel straight, you may also fire subsequent torpedoes in a "spread," each with a slightly different course, to ensure a hit. To define a spread, use the Offset "dial" just above the Fire Buttons. Zero represents center, the TDC bearing; click the arrows on the dial sides to offset this bearing by X degrees for the next torpedo.

VOICE TUBE

Click this button, available in all command screens, to give or delegate orders to crew members in other sections of the boat. You'll first select the crew member/area, and then the specific order, from the menus that open. To cancel a voice command, right-click or press [Esc]. Options that don't apply to your particular boat or mission will be grayed-out (not available). Related quick keys are shown next to the appropriate commands. Note: To see the last voice message to you, press [BACKSPACE].



Archives

Chief Engineer

Periscope Depth—Submerge (or rise) to periscope depth. Quick Key = [P]

Crash Dive—Dive as rapidly as possible: flood tanks, down dive planes, flank speed. Continue diving to 150 meters unless told otherwise. Quick Key = [C]

Blow All Tanks—Rise as rapidly as possible: blow out ballast water with compressed air, elevate dive planes, flank speed.

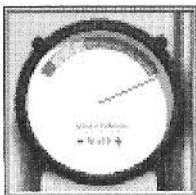
Surface—Bring the boat to the surface. Quick Key = [S]

Damage Report—Go to Damage Report screen.

Oxygen Remaining—Show how much breathable air is inside the U-boat. Quick Key = [O]

Deploy Snorkel—(if equipped with snorkel). Go to snorkel depth and raise snorkel. This device, available towards the end of the war, allows U-boats to pipe down air from the surface to run diesel engines while submerged. The snorkel lets you travel submerged without draining batteries, but its large head may be spotted visually or by radar more easily than the periscope. Note: You must keep your speed under seven knots for the snorkel to work properly.

Stow Snorkel—(if equipped with snorkel). Lower snorkel and switch to electric motors.



Engine Room

Battery Level—Shows amount of remaining battery power. (If you have selected the Unlimited Battery realism setting, you will always have a full battery charge.) Quick Key = [B]

Fuel Level—Shows amount of remaining diesel fuel. (If you selected the Unlimited Fuel realism setting, you will always have full diesel tanks.) Quick Key = [F]

Sound Room

Report Contacts—Report current or last hydrophone contact. You must be running slowly to use hydrophones. Also, hydrophones work very poorly below 200 meters.

Depth under Keel—Report distance between keel and bottom. Use to check diving room, and avoid running aground.

Record Player—Select a record to pipe through the boat for the crew.

Torpedo Room

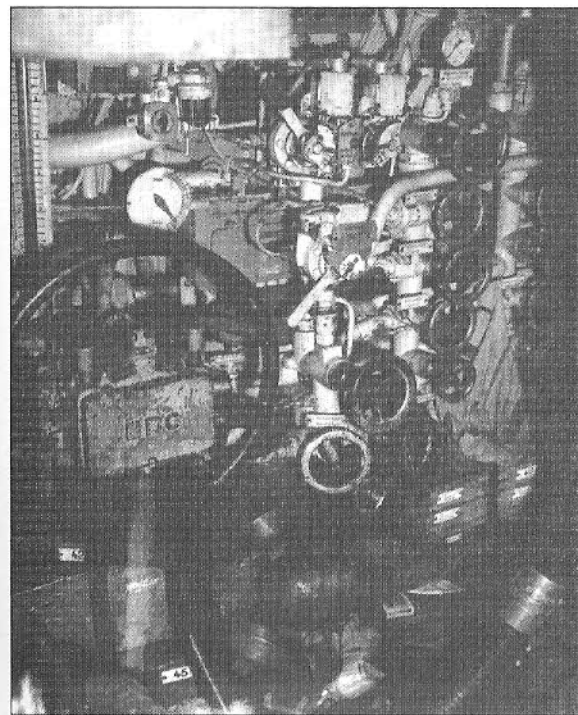
Report—Brings up Torpedoes screen.

Launch BOLD—Launches a bubbling canister that interferes with ASDIC.

Watch Officer

Man/Unman AA Guns—Orders men to antiaircraft (flak) guns. AA fire is automatic. Quick Key = [A]

Man/Unman Deck Guns—Prepares deck gun for firing, for boats that have one. Once a target is selected, firing will continue until the target is destroyed, a new target is chosen, or you order the gun abandoned. Quick Key = [D]



Courtesy National Archives

Diving plane control station and valve set aboard U-505.

Report Contacts—Report current or last contact.

Identify Target—Estimates vessel type and gross tonnage of currently selected target. The estimates improve at close range. Quick Key = [I]

Rig for Silent Running—Must be submerged. Lower speed to two knots, turn off pumps and ventilation, and send non-essential personnel to bunks.

All Stations

Abandon Ship—If your boat is on the surface or in shallow water, your crew will abandon the vessel as best they can. This usually results in your capture, but you may be rescued if you radio an SOS first.

Radio Room
Opens Radio Room screen.

SIMULATION OPTIONS MENU

At any point in the simulation (at sea), you may access the following options by pressing [CTRL]+[O] and clicking on the appropriate button. The simulation is paused until you select OK to close the Options menu.

Music On/Off—Turns the music sound track on or off. Also [CTRL]+[M]

Sound Effects On/Off—Turns all simulation sound effects on or off.

Engine Sound On/Off—Turns the engine sound effect on or off.

Crew Speech—Requires installation of additional Speech Disk. Turns the crew speech sound effect on or off, and toggles between English and German.

Torpedo Screen On/Off—Turns the torpedo firing animation on or off.

Torpedo Autoreload On/Off—If turned on, Autoreload automatically reloads empty torpedo tubes with the next available torpedo (selected by shortest reload time). With Autoreload turned off, you manage all aspects of torpedo reloading yourself in the Torpedoes screen [F6].

Calm Ocean On/Off—This setting overrides the weather simulation, providing you with smooth sailing as long as it is turned on.

Status Line On/Off—This setting displays your current course, speed, and time compression settings in the upper left of the simulation screen as long as it is turned on.

Load Game—Careers only. End current mission, resume previously saved career.

Save Game—Careers only. Save current mission (must not be in combat with the enemy.) If the Saved Careers list is full, select an earlier career to overwrite. You may add descriptive text to help you select the mission later.

Abort Mission—Abort current mission and return to the menus. Note: If you abort on a war patrol, you will lose any score earned on the mission so far.

Quit to DOS—Exit immediately to DOS.

OK—Close the Options menu and return to the simulation.

AVIATION PIONEERS

Aviation Pioneers is a new multi-media look at the early years of powered flight, from Kitty Hawk through aviation's Golden Age. It complements the detailed historical sections of the Great War Planes on-line manuals with extensive photos, videos, and hundreds of pages of newly researched articles on the inventors, companies, planes, and pilots who "pushed the envelope" on aeronautics in its dizzying first decades. *Aviation Pioneers* focuses on the inside story, the seldom-told human side of the record books.

As well as presenting new material not covered in the Great War Planes on-line manuals, *Aviation Pioneers* also presents several new features, described in the following section.

Starting Aviation Pioneers

To start *Aviation Pioneers*, first insert the *Aces* CD in your CD-ROM drive. Start Windows, and open the *Aviation Pioneers* program group. Double-click the *Aviation Pioneers* icon, or select it and press [Enter]. This opens the Introduction screen.

Click on GREAT WAR PLANES GUIDED TOUR to see a slide show of the Great War Planes simulations on this CD. Click on AVIATION PIONEERS GUIDED TOUR to be introduced to the features of *Aviation Pioneers*. To end the Tour, press [Esc] or click the mouse.

Click on START AVIATION PIONEERS to go to its main screen.

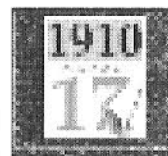
Note: You must install *Aviation Pioneers* from Windows before you can start it.



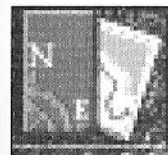
Getting Around

Use your mouse to point-and-click your way around in *Aviation Pioneers*, and to use the “global” command buttons across the top of each screen.

Select an era, topic, or specific article by clicking on its title. Pointing at a title makes an underline appear: you can then click the mouse to go that item. From the *Aviation Pioneers* main screen, for example, point to the “Dawn of Flight” era. When the underline appears, click to go to the Dawn of Flight topics menu. Click on the topic title “Airplanes” to see the available airplane articles, and so forth. To back up, click on the Back Up button.



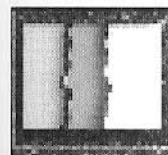
TimeLine. The TimeLine helps you find and open articles using a graphic timeline of each era. Click the TimeLine button, and then choose the era you want. You will see an enlarged timeline of the era you selected and a list of all articles concerning that period. Point to a listed article to highlight it and see where it occurs on the timeline. Click the title to go to that article immediately.



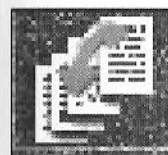
RoadMap. Click the RoadMap button to see where you are in *Aviation Pioneers*, or find your way back. This feature outlines all of the available topics and articles in each era. Click on any article title on the screen to go there instantly.



Glossary. Click the Glossary button to see definitions of the many specialized terms used in the *Aviation Pioneers* articles. Click on the term you want to see its definition. This feature also provides a Bibliography and a list of Suggested Reading, as well as the Credits.



Era. Click this button to return to the main Era Selection screen.



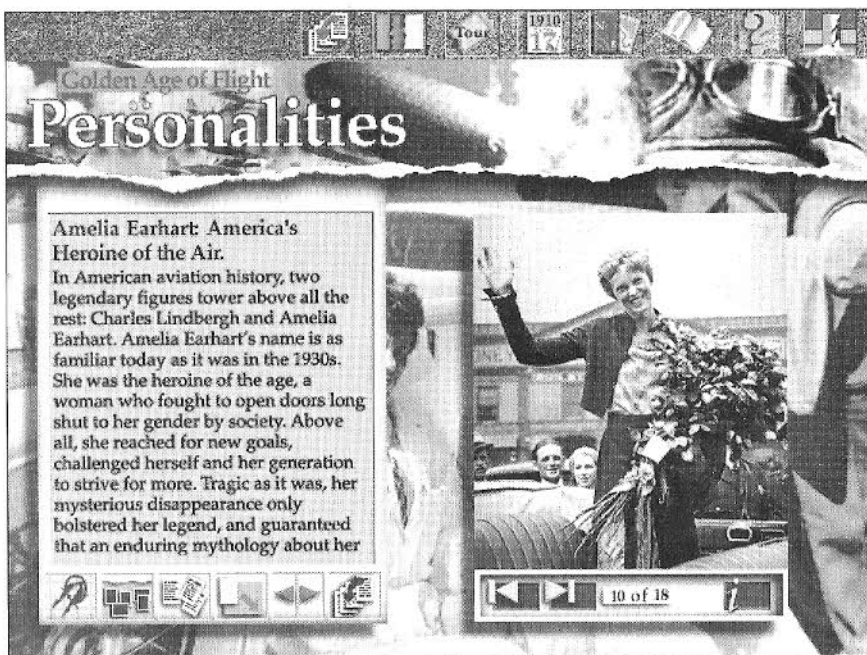
Back Up. Click this button to return to the preceding menu or screen. (To leave *Aviation Pioneers*, use the Exit button.)



Info. Click this button to see on-line descriptions of the current *Aviation Pioneers* screen or feature. To see what a particular button does, point to it and right-click.



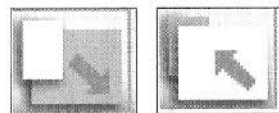
Exit. Click this button to close *Aviation Pioneers* and return to the Windows Program Manager.



Article Screen

Once you open a specific article, you will see the Article screen. This provides several tools to help you view the article's text and images.

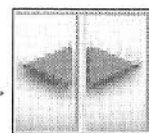
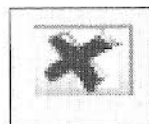
Page Zoom. Click the Page Zoom button to expand the text window to full size for easier reading of long articles. Click it again to return to the narrow window or to see related images.



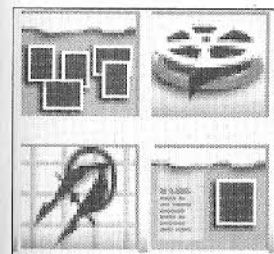
Related Articles. Click the Related Articles button to see a list of closely related articles. Simply click on the title you want to jump right to that article.



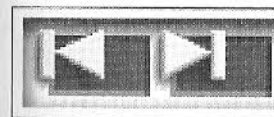
To close the list, click the Close button at the bottom of the list.



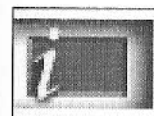
Forward/Back. Click the Forward/Back arrow buttons to page or scroll through the current article.



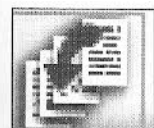
Related Media. These buttons show if there are photos, charts or maps, narrated slide shows, or videos accompanying the current article. Click the button for the item you want to see.



Arrow buttons will then appear under the viewing window for you to control the display.



Click the I (Information) button for captions.



Back Up. Click the Back Up button to return to the previous menu or screen.

ACES of the DEEP™ Quick Reference

Game Commands

Abort Mission	CTRL+D
Options Menu	CTRL+O
Pause	CTRL+P
Music On/Off	CTRL+M
Music Up or Down	ALT+] or ALT+[
Sound Up or Down	CTRL+] or CTRL+[
Quit to DOS (confirm first)	CTRL+Q or ALT+X
Quit to DOS (don't confirm)	CTRL+ALT+DEL

View Commands

Select/Deselect Target	SPACEBAR
Identify Target	I
View Left	<
View Right	>
Set View to Heading	V
Set Heading to View	H
Raise/Lower Scope (in chart)	ALT+P
Zoom Periscope Mag.	Z
Torpedo Camera	F10
Padlock View	ALT+F2

Additional Commands

Man/Unman AA Gun	A
Man/Unman Deck Gun	D
Check Battery Level	B
Check Fuel Level	F
Check Remaining Oxygen	O
Launch BOLD	CTRL+R
Increase Time Compression	+
Decrease Time Compression	-
Reset Time to 1/1	ENTER
Repeat Last Message	BACKSPACE

Command Screens

Control Room	F1
Periscope	F2
Binoculars	F3
Bridge	F4
Charts	F5
Torpedoes	F6
Damage Report	F7
Radio Room	F8
Captain's Log	F9

Maneuvering

Dive Planes Up	↑
Left Rudder	←
Straight and Level	Keypad 5
Right Rudder	→
Dive Planes Down	↓
Engine Speed	1...6
Crash Dive	C
Periscope Depth	P
Surface Boat	S

Torpedo Firing

Open IDC	T
Fire Tube	CTRL+1...CTRL+6
Stopwatch	W

Courtesy United States Naval Institute



Voice Tube

Note: Some selections have quick key equivalents.

Chief Engineer

- Periscope Depth [P]
- Crash Dive [C]
- Blow All Tanks
- Surface [S]
- Damage Report
- Oxygen Remaining [O]
- Deploy/Stow Snorkel

Engine Room

- Battery Level [B]
- Fuel Level [F]

Sound Room

- Report Contacts
- Depth Under Keel
- Record Player

Torpedo Room

- Report
- Launch BOLD [CTRL]+[R]

Watch Officer

- Man/Unman AA Gun [A]
- Man/Unman Deck Gun [D]
- Report Contacts
- Identify Target [I]
- Rig for Silent Running

All Stations

- Abandon Ship

Radio Room



Radio Messages

- Status Report
- Request Orders
- Contact Report
- Battle Results
- *SOS*
- Request Escort



Dynamix
PART OF THE SIMULATIONS GROUP

Courtesy United States Naval Institute

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QUICK REFERENCE CARD



General Key Commands

- F10 Preferences Panel
- Alt-R Realism Panel
- B Display full screen background art in the shell.
- Alt-J Joystick on/off
- Alt-S Sound on/off
- Alt-M Music on/off
- Alt-D Mouse on/off
- P Pause Game
- Esc End Mission (exit menu)
- Alt-X Exit to DOS

Viewpoint Controls

Views using the Mouse

From within the cockpit:
Hold down the right mouse button, then move the mouse to look left, right, ahead, and back.



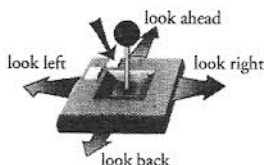
From outside your aircraft:
Hold down the right mouse button, then move the mouse to smoothly pan around the aircraft.

Note: In an external view, hold down both buttons and move forward or back to zoom viewpoint in or out.

Views using the Joystick

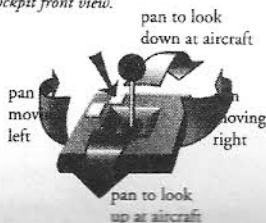
From within the cockpit:
Hold down joystick button 2, then move the joystick to look left, right, ahead, and back.

Note: With the joystick centered, pressing and releasing button 2 will switch from the cockpit to the outside rear view.



From outside your aircraft:
Hold down joystick button 2, then move the joystick to smoothly pan around the aircraft. To zoom the view in or out, hold down both buttons, then move the joystick or mouse forward or back.

Note: With the joystick centered, pressing and releasing button 2 will switch to the cockpit front view.



Views using the Keyboard

Enter Switch between cockpit and external view.

From within the cockpit:

- F1 Look forward
- F2 Look back
- F3 Look left
- F4 Look right
- F5 Look up and forward

From outside your aircraft:

- F1 Front of your aircraft
- F2 Rear of your aircraft
- F3 Left side of your aircraft
- F4 Right side of your aircraft
- F5 Look up from a lower altitude
- F6 Look down from a higher altitude
- [Zoom in the view
-] Pull back the view

- F7 Chase plane view
- F8 Weapon view

- Alt-T Create an LBM screen shot
- Ctrl-T Create a 640x400 screen shot of the simulation in tall res mode.

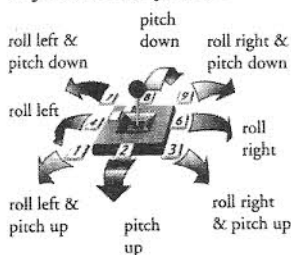
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006131100

Flight Stick

You can use a variety of controllers to imitate the plane's flight stick.

Keyboard or Joystick 1



Mouse

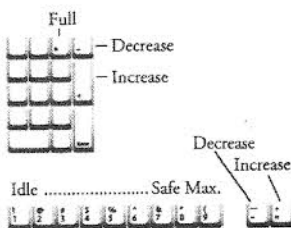
When using a mouse, remember that it will re-center automatically after each movement.



Throttle

Keyboard only

Use the keyboard from any view:



Joystick 2

If you use a second joystick, pushing it forward and back will increase and decrease the throttle ranging from idle to full.

Slider on Joystick 1 or Yoke

If you have a joystick or yoke with a throttle slider, you can use it to control your engine speed.

Rudder

Keyboard only

- < Left Rudder
- > Right Rudder

Joystick 2

If you have a second joystick, move the stick left or right to apply left or right rudder. If your stick is self-centering, releasing the stick will re-center the rudder.

Rudder Pedals

Press the left or right rudder pedal. Center the pedals to re-center the rudder.

IMPORTANT: If you are using additional devices, such as a second joystick, you will need to first make configuration selections from the Preferences Panel (F10) for these devices to function properly in the simulation.

CH FlightStick Pro™

- Button 1 Fire currently selected gun
- Button 2 Change view between cockpit and external
- Button 3 Drop bombs
- Button 4 Change selected guns
- Hat Change your view within the cockpit
- Wheel Throttle control

CH FlightStick Pro™ is a trademark of CH.

Additional Flight Controls

- B Dive Brakes - Raises or lowers dive brakes (P-38) only.
- W Wheel Brakes - Applies or releases the wheel brakes (on ground).
- D Droptanks - Release the external fuel tank.
- F Flaps - Move flap position to up, halfway or down.
- L Landing Gear - Raise or lower landing gear.
- M Flight Map
- A Autopilot (compress time)
- S Send a radio message
- Ctrl-B Bail Out

Weapons

- Spacebar Fire the selected guns.
- Controller
- Button 1 Fire the selected guns.
- Backspace Release bombs.
- R Fire a salvo of rockets.
- G Change the currently selected guns (primary, secondary/external or all).
- U Unjam Gun - Try to clear jammed guns by repeatedly pressing U.

ThrustMaster®

Flight Control System Mark I

- Button 1 Fire currently selected gun
- Button 2 Change view between cockpit and external
- Button 3 Drop bombs
- Button 4 Change selected guns
- Hat Change your view within the cockpit; rotate your view outside the cockpit

Weapons Control System

- Button 1 Send radio message
- Button 2 Unjam guns
- Button 3 Engage autopilot
- Button 4 View map
- Button 5 Drop external fuel tank
- Button 6 Dive brakes
- Toggle 7a Flaps
- Toggle 7b Neutral position
- Toggle 7c Landing gear

ThrustMaster® is a registered trademark of ThrustMaster.

A* C* A* P* S* OF THE PACIFIC

QUICK REFERENCE CARD

Dynamix
PART OF THE SEEREA FAMILY

General Key Commands

F10	Preferences Panel
Alt-R	Realism Panel
Alt-J	Joystick on/off
Alt-S	Sound on/off
Alt-M	Music on/off
Alt-D	Mouse on/off
P	Pause Game
Esc	End Mission (exit menu)
Alt-X	Exit to DOS

Viewpoint Controls

Views using the Mouse

From within the cockpit:
Hold down the right mouse button, then move the mouse to look left, right, ahead, and back.



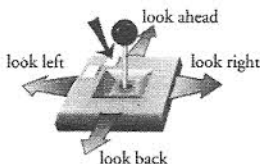
From outside your aircraft:
Hold down the right mouse button, then move the mouse to smoothly pan around the aircraft.

Note: In an external view, hold down both buttons and move forward or back to zoom viewpoint in or out.

Views using the Joystick

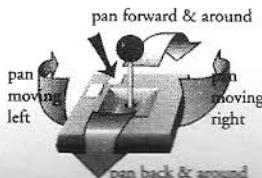
From within the cockpit:
Hold down joystick button 2, then move the joystick to look left, right, ahead, and back.

Note: With the joystick centered, pressing and releasing button 2 will switch from the cockpit to the outside rear view.



From outside your aircraft:
Hold down joystick button 2, then move the joystick to smoothly pan around the aircraft. To zoom the view in or out, hold down both buttons, then move the joystick or mouse forward or back.

Note: With the joystick centered, pressing and releasing button 2 will switch to the cockpit front view.



Views using the Keyboard

Enter Switch between cockpit and external view.

From within the cockpit:

- F1 Look forward
- F2 Look back
- F3 Look left
- F4 Look right
- F5 Look up and forward

From outside your aircraft:

- F1 Front of your aircraft
- F2 Rear of your aircraft
- F3 Left side of your aircraft
- F4 Right side of your aircraft
- F5 Look up from a lower altitude
- F6 Look down from a higher altitude
- [Zoom in the view
-] Pull back the view
- F7 Chase plane view

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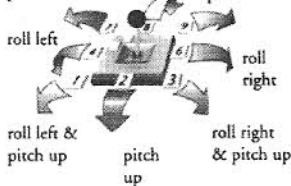
006121100

Flight Stick

You can use a variety of controllers to imitate the plane's flight stick.

Keyboard or Joystick 1

roll left & pitch down pitch down roll right & pitch down



Mouse

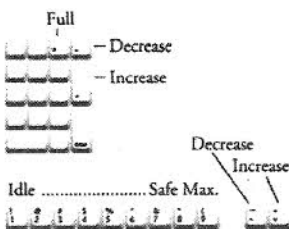
When using a mouse, remember that it will recenter automatically after each movement.



Throttle

Keyboard only

Use the keyboard from any view:



Joystick 2

If you use a second joystick, pushing it forward and back will increase and decrease the throttle ranging from idle to full.

Slider on Joystick 1 or Yoke

If you have a joystick or yoke with a throttle slider, you can use it to control your engine speed.

Rudder

Keyboard only

- < Left Rudder
- > Right Rudder
- / Center the Rudder

Joystick 2

If you have a second joystick, move the stick left or right to apply left or right rudder. If your stick is self-centering, releasing the stick will recenter the rudder.

Rudder Pedals

Press the left or right rudder pedal. Center the pedals to recenter the rudder.

Weapons

Spacebar Fire the selected guns.

Controller

Button 1 Fire the selected guns.

Backspace Release bombs or torpedo.

R Fire a salvo of rockets.

G Change the currently selected guns (primary, secondary or all).

U Unjam Gun - Try to clear jammed guns by repeatedly pressing U.

Additional Flight Controls

B *Dive Brakes* - Raises or lowers dive brakes (when dive-bombing).

W *Wheel Brakes* - Applies the wheel brakes (on ground).

D *Droptanks* - Release the external fuel tank.

F *Flaps* - Move flap position to up, halfway or down.

L *Landing Gear* - Raise or lower landing gear.

M *Flight Map* -
Spacebar or **Controller Button 1** supplies info on ground-based items at the cursor location.

Enter or **Controller Button 2** supplies information on the air group at the cursor location.

D selects the current cursor location as the autopilot destination.

Exit or **Esc** closes your map.

A *Autopilot* (compress time)

S *Send* a radio message

Ctrl-B *Bail Out*

IMPORTANT: If you are using additional devices, such as a second joystick, you will need to first make configuration selections from the Preferences Panel (F10) for these devices to function properly in the simulation.

ThrustMaster®

Flight Control System Mark I

- Button 1** Fire currently selected gun
- Button 2** Change view between cockpit and external
- Button 3** Drop bombs or torpedo
- Button 4** Change selected guns
- Har** Change your view within the cockpit

Weapons Control System

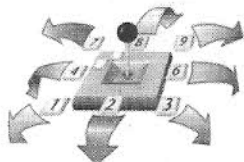
- Button 1** Send radio message
- Button 2** Unjam guns
- Button 3** Engage autopilot
- Button 4** View map
- Button 5** Drop external fuel tank
- Button 6** Air brakes
- Toggle 7a** Flaps
- Toggle 7b** Neutral position
- Toggle 7c** Landing gear

ThrustMaster® is a registered trademark of ThrustMaster.



Mouse controls are identical to those of the joystick.
joystick button #1 = left mouse button
joystick button #2 = right mouse button

FLIGHT MOVEMENTS



THROTTLE

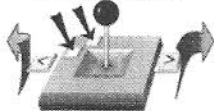
while in cockpit view



Throttle Control 1..9 keys
Increase Throttle + key
Decrease Throttle - key

RUDDER

while in cockpit view



< Left Rudder
> Right Rudder

VIEW COMMANDS

Cockpit Views

- F1 Look Forward
- F2 Look Back
- F3 Look Left
- F4 Look Right
- F5 Look Up
- F6 Look Down

External Views

- F1 View front
- F2 View rear
- F3 View left side
- F4 View right side
- F5 View bottom
- F6 View top
- F7 Chase view

FIRE MACHINE GUN

- Press Spacebar from keyboard.
- Press Button #1 from joystick.
- Press Left Button from mouse.
- Press 'U' key to unjam machine gun.

FLIGHT LEADER COMMANDS

- DROP BELOW Press D
- JOIN Press J
- ATTACK Press A
- MINOR WING ATTACK Press M
- WARNING Press W

VIEW COMMANDS

Switch between external/internal views:
Press Button #2 from joystick.
Press ENTER from the keyboard.

From any outside view, press Ctrl-F1.. F10 to save off the current view.
To switch to any of these saved views use Alt-F1.. F10.

Press & hold button #2 while inside to look left, right, fore & aft.



Press & hold button #2 while outside to move viewpoint around plane.



Press & hold both buttons to move viewpoint toward and away from plane.



KEYBOARD HOT KEYS

- ESC End Mission
- Alt-R Realism Menu
- F-10 Preferences Panel
- Alt-S Sound Effects ON/OFF
- Alt-M Music ON/OFF
- Alt-C Calibrate Joystick
- Alt-J Joystick ON/OFF
- Alt-D Mouse ON/OFF
- P Pause
- C Time Compress ON/OFF
- U Unjam Gun
- Alt-Q Quit to DOS



836481100

Red Baron MISSION BUILDER

PATH POINTS

Button 1 selects or adds a path point.
(More points can be added by moving the cursor and pressing button 1.)

Moving Path Points

Hold down button 1 to drag a path point to a new location.

Deleting Path Points

Click on point with button 2.

Object Path Display

To adjust a path point altitude, place the cursor on an altitude button and press button 1 or 2.

SELECTING A GROUP

Click on group with button 1.

DELETING A GROUP

With the cursor on the group's map icon, press button 2.

SELECTING AIRCRAFT GROUPS

Moving the cursor over map icons highlights them with brackets.

A group that has been selected by pressing button 1 will have a box around it.

A group or path point that is about to be deleted with button 2 will display a box with a X.

- German Zeppelin [grey]
- Allied Balloon [gold]
- German Balloon [grey]
- Allied Plane [gold]
- German Plane [grey]
- Allied Aerodrome
- German Aerodrome
- Supply Dump
- Train Station
- Artillery
- Town
- Factory

REQUIREMENTS FOR SPECIFIC MISSION TYPES

Mission Type	Player's Target
Dogfight	Enemy Scouts
Escort Bombers	Friendly Bombers
Stop Bombers	Enemy Bombers with a bombing target
Destroy a Zeppelin	Enemy Zeppelin without a bombing target
Intercept a Zeppelin	Enemy Zeppelin with a bombing target
Escort Reconnaissance	Friendly Recon Planes
Balloon Defense	Friendly Balloons
Balloon Busting	Enemy Balloons
Patrol	Any other target or no target

POSSIBLE ORDERS FOR EACH GROUP TYPE

Group Type	Target	Orders
Scouts	Enemy Airplane group	Dogfight Intercept Destroy
	Friendly Airplane group	Escort Protect
	Enemy Balloon group or Zeppelin	Destroy
	Friendly Balloon group or Zeppelin	Protect
All Planes	Friendly Airplane group	Escort
Bombers or Zeppelins	Enemy Factory, Supply Dump, Train Station	Bomb
	Friendly Factory, Supply Dump, Train Station	Bomb
Recon Planes, Bombers, Zeppelins	No target	Traverse
Scout groups	No target	Patrol

Balloons are stationary, so they aren't able to target objects or receive new orders.

MISSION BUILDER HOT KEYS

Main Screen	
F File	? Group Assignment
M Mission	G About RBMB
N New Group	F1-F8 Highlight current group's pathpoint 1-8
A All Groups	1-8 Altitude of path points 1-8
D Display	

File Menu	
N New	L Load
S Save	D Delete
F Fly	E Exit

Mission Menu	
M Map	C Clouds
T Time of Day	B Briefing Text

Display Menu	
G Grid On/Off	S Show One/All paths

Exiting to DOS	
Pressing CONTROL-ESC or ALT-Q will quit to DOS at any time.	
Dual Joystick and Rudder Support To disable press ALT-J.	

TANK KILLER

Version 1.5

QUICK REFERENCE

View Commands

Preset Views

Cockpit

F1 Look Forward
F2 Look Left
F3 Look Right

External

F4 Front View
F5 Left Side View
F6 Right Side View
F7 Rear View
F8 Victim View
F9 Engagement View

Floating Camera Views

Use **Alt - V** on the keyboard or the Control menu (**F10**) to toggle the Floating Camera on/off.

Re: When Floating Camera is ON, only Backspace key will fire weapon.

With the Joystick

From Within the Cockpit

Press **button #2** and move the joystick to change views. Press and release **button #2** with the joystick centered will switch to outside rear view.

Press & hold button #2 while in the cockpit to look left, right & forward.



From Outside the Aircraft

Press **button #2** while moving the joystick to pan the view around the aircraft. Hold down both buttons while moving the joystick to move the camera closer to or away from the aircraft. Pressing and releasing **button #2** with the joystick centered will switch to the cockpit view.

Press & hold button #2 while outside to move viewpoint around plane.



With the Keyboard

To use the previous commands from the keyboard, the numeric keypad will function like the joystick, the **Space Bar** will function like **button #1**, and the **Enter** key will function like **button #2**.

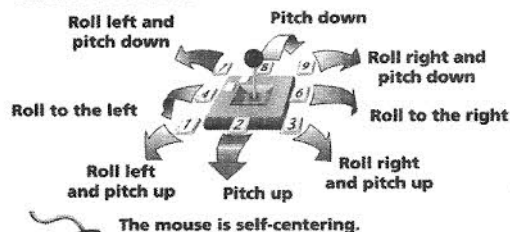


Mouse controls for view commands are identical to those of the joystick.

Joystick #1 **Mouse**
Button #1 = Left Button
Button #2 = Right Button

Flight Controls

Movement



Rudder

Control the rudder with the keyboard or second joystick.

Joystick #2



Keyboard

< left rudder
> right rudder

Throttle

Control the throttle from the keyboard.



Weapons Control

Joystick #1

Button #1 = Fire Avenger Cannon
Button #2 = Fire Selected Weapon

Joystick #2

Button #1 = Chaff Release
Button #2 = Flare Release

Keyboard

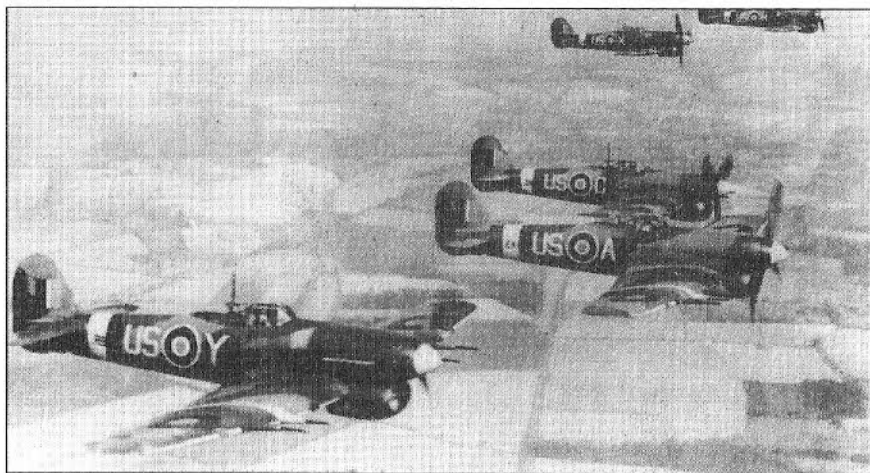
SPACEBAR = Fire Avenger Cannon
BACKSPACE = Fire Selected Weapon
ENTER = Fire Selected Weapon or control Floating Camera View

Weapons Select

H Maverick	L Durandal	C Release Chaff
J LGB	; Sidewinder	[I] Weapons Cycle
K Rockeye	F Release Flare	Tab Target Cycle

Additional Controls

G Landing gear up/down	Esc Quit mission requestor
P Pauses game	Alt M Music on/off
M Bring up strategic map	Alt S Sound effects on/off
S Bring up status screen	Alt J Joystick(s) on/off
D Display message log	Alt C Calibrate joystick(s)
Q Quit mission requestor	Alt D Mouse on/off
F10 Display control menu	Alt Q Quit to DOS



Courtesy National Air & Space Museum, Smithsonian Institution

A formation of Hawker Typhoons on patrol.

CUSTOMER SERVICE

TROUBLESHOOTING

Problem: *I'm unable to run a simulation from Windows, or I get an error message that the Adlib™ or Sound Blaster™ devices are already in use.*

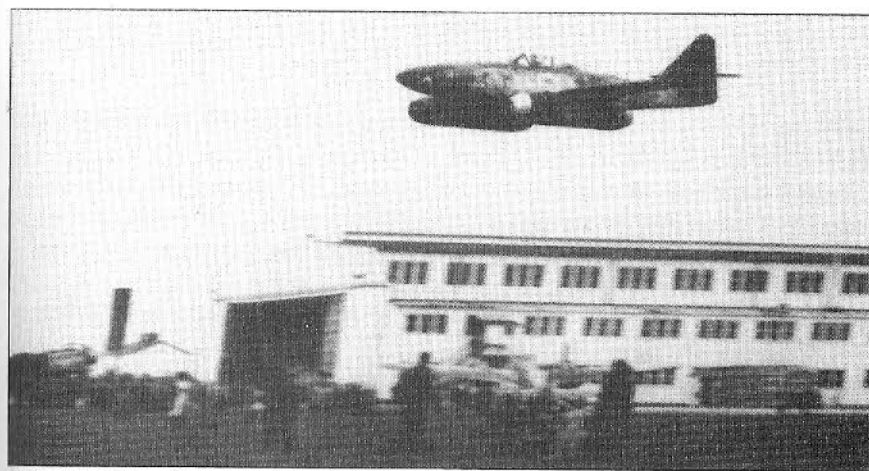
Possible solution: Your Windows environment is "confused" about which video or sound drivers to use. You may be set up for multiple cards, or may be using the wrong card driver. The quickest solution is to run the game from DOS.

Problem: *Joystick behavior is erratic, or rudder pedals don't seem to center correctly. Recalibrating the joystick doesn't seem to help.*

Possible solution: If you are using the joystick port on a sound card, or a multi-IO card, the problem may be that the card is not in sync with your computer. This problem is particularly noticeable on fast systems. We recommend that you disable the joystick port on your current controller and/or sound card and use a dedicated, speed-adjustable joystick card for optimal performance.

Problem: *I have installed the game on a compressed drive, and it doesn't run.*

Possible solution: The game may need more disk space. Compression software estimates available disk space using an expected compression ratio of 2 to 1 or more. However, many game files won't compress much. This means you may need to free up to twice as much space as the compression software says.



Courtesy National Air & Space Museum, Smithsonian Institution

A Messerschmitt 262 pilot buzzes his airdrome. The Me 262 was the first operational jet fighter.

Problem: *After upgrading to MS-DOS 6.0, I can no longer run the game. I keep getting an "Out of Memory" error.*

Possible solution: If you have installed MS-DOS 6.0 and run the MemMaker utility, it may have configured your computer's memory so that there is no longer enough conventional memory to run the game. See your MS-DOS manual, or try the Boot Disk option in the game's program group.

Problem: *My computer has at least 4 megabytes of memory, but I receive an error message saying that I don't have enough conventional or expanded memory.*

Possible Solution: To run correctly, *AOE* requires 614,000 bytes (600 KB) of conventional RAM, and 2,048,000 bytes (2,000 KB) of free *Expanded* memory (EMS). *AOTP* requires 610,000 bytes (595 KB) of conventional, and 1,024,000 bytes (1,000 KB) of *Expanded*. *Red Baron* requires 583,000 bytes (570 KB) of conventional memory only. *A-10 1.5* requires 571,000 bytes (557 KB) of conventional memory only. To configure expanded and/or extended memory, you'll need a memory manager such as EMM386 (which comes with MS-DOS 5.0 or higher) or QEMM386 by Quarterdeck. Your computer's conventional memory may also be taken up by background programs or device drivers, or not configured correctly for the game. See "Freeing Up Memory," page 93.

Problem: *My computer has at least 4 megabytes of memory, but even after creating a boot disk, I still receive a message saying that I don't have enough memory to run the game.*

Possible Solution: Your boot disk may require further modifications to load your device drivers correctly into upper memory. See the "Customizing the Boot Disk"

section on page 95, or refer to your computer system manual or manufacturer for assistance.

Problem: *When trying to load the program or after running the program, the computer locks up or I am returned to the MS-DOS prompt.*

Possible Solution: Although your computer may satisfy all of the hardware and software requirements, there may be a configuration or software conflict in your computer while running the game. Try starting the program from a boot disk.

Problem: *My program hesitates or locks up during game play. I am using a Sound Blaster or compatible sound card.*

Possible Solution: Run the setup program from Windows and select "PC Internal Speaker" for the sound option. If the program operates properly, there may be a configuration problem with your sound card. Call your sound card manufacturer for assistance in configuring your sound card for proper operation, or call Technical Support at Sierra On-Line.

Problem: *My mouse is not responding.*

Possible Solution: Your mouse driver may not be loaded for MS-DOS programs. You will need to edit the AUTOEXEC.BAT or CONFIG.SYS files on the boot disk to include the command to load your mouse driver. Also, run the game's setup program in Windows and make sure the mouse button option is turned ON.

Problem: *The joystick is not responding properly in the simulation, or the cursor skips through the menu options on its own.*

Possible Solution: This may happen if you have a fast computer and have connected your joystick using a sound card's joystick port. Try re-calibrating your joystick from the Preferences Panel. If this doesn't work, you may need to use a dedicated game card with a speed-adjustable joystick adapter, or simply disable the joystick with the Alt-J command.

Problem: *The ThrustMaster Weapon Control System (WCS) is not responding correctly.*

Possible Solution: You may have an incompatible version of the WCS, or the DIP switch settings may not be set correctly for the simulations. The Revision D Model is the first model compatible with the simulations. Consult your ThrustMaster owner's manual for the appropriate DIP switch settings for the WCS.

Problem: *The color pictures in Aviation Pioneers and the on-line manuals look strange.*

Solution: To display the high-res color art correctly, Windows needs to be using a video driver capable of 256-color mode or better. If the pictures look strange, go to your Windows Setup utility in the Main group. From the Options menu, select Change System Settings, and then, under Display, choose a driver that supports 256-color mode. See your Windows manual for more information.

TECHNICAL SUPPORT

Configuring Memory

Even if you have the minimum 4MB of RAM, an *Aces* simulation may not run correctly unless the RAM is configured (set up) correctly. To run correctly, *AOE* requires 614,000 bytes (600 KB) of conventional RAM, and 2,048,000 bytes (2,000 KB) of free *Expanded* memory (EMS). *AOTP* requires 610,000 bytes (595 KB) conventional, and 1,024,000 bytes (1,000 KB) *Expanded* memory. *Red Baron* requires 583,000 bytes (570 KB) of conventional memory only. *A-10 1.5* requires 571,000 bytes (557 KB) of conventional memory only. To configure expanded and/or extended memory, you'll need a memory manager such as EMM386 (which comes with MS-DOS 5.0 or higher) or QEMM386 by Quarterdeck.

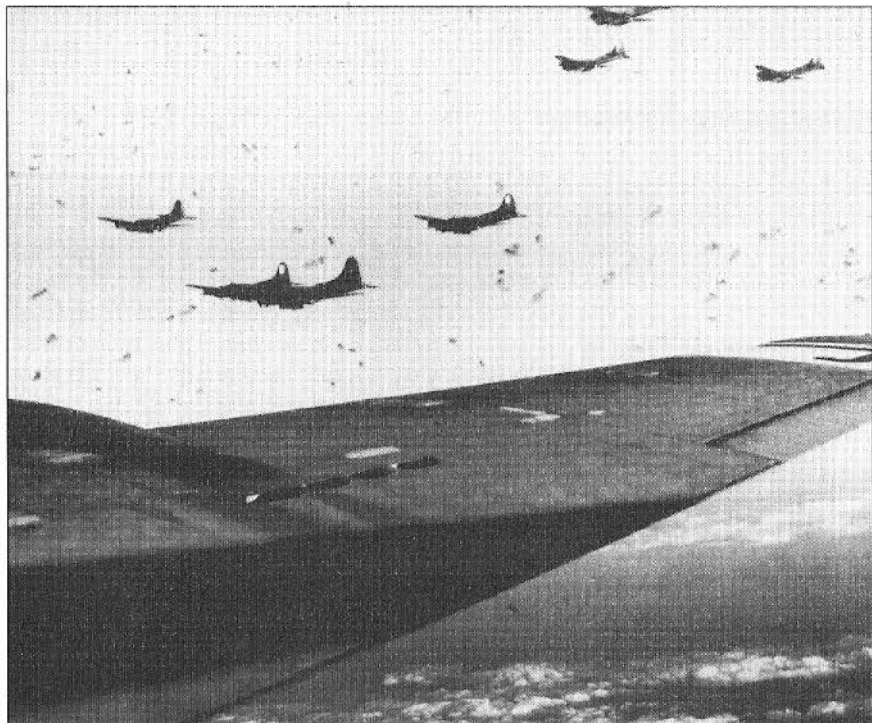
If a game *DOES NOT* start correctly, use the MS-DOS MEM command to see if you need to free up some of your computer's memory. From your MS-DOS prompt, type MEM and press [Enter]. "Largest executable program size" is your free conventional memory. If you do not have enough memory, you probably have resident or "background" programs and device drivers taking up memory that the game needs. This means you'll need to free up memory by removing one or more of these background programs or moving them into "upper memory." Consult your DOS and memory manager software documentation for detailed information about system memory and how to optimize it, or see "Creating a Boot Disk" below.

Freeing up Memory

1. If you cannot run a game because of low memory, try the "Make Bootable Floppy Disk" option as described below. A boot disk is a fast and effective way of freeing more memory to run the game.
2. Try customizing the AUTOEXEC.BAT and CONFIG.SYS start-up files *on your Boot Disk* if you continue to have problems. See "Customizing the Boot Disk" on page 95 for details.
3. Consult your DOS and memory manager software documentation for detailed information about system memory and how to optimize it.

Creating a Boot Disk

A boot disk is the simplest way to configure your computer's memory for running the *Aces* simulations (See "Configuring Memory," above.) The *Aces* CD boot disk program makes creating a boot disk easy. If you set the boot disk up successfully, all you will have to do is put the boot disk in your floppy drive and restart the computer to configure its memory correctly and launch the game.



Courtesy National Air & Space Museum, Smithsonian Institution

Flying through flak was a nerve-racking experience.

Although the boot disk option does a very good job of configuring most systems, it may not be able to properly recognize every possible sound card, mouse, or disk controlling device driver. This means that you might have to make additional changes to the boot disk to get the program running. If you're having trouble starting the game, try running the Boot Disk Maker from the simulation's program group or on your *Aces* CDs—it can't hurt. If it doesn't work, see the "Customizing the Boot Disk" section.

"Make Bootable Floppy Disk" Option

You can use the boot disk program to format and create a boot disk for your computer's A: drive. Before you start, have a blank or formattable floppy disk for your A: drive ready. (Any files on it will be erased.)

1. You can run the boot disk maker from DOS or from Windows. From DOS, change to the game directory on the hard disk, type `INSTALL [Enter]`, and select the option "Make Bootable Floppy Disk." From Windows, open the simulation program group, and click on the Boot Disk Maker icon.

2. The boot disk program will guide you through the process—follow the on-screen prompts carefully. Insert the blank diskette into your A: drive when prompted. The boot disk maker will use DOS commands to format the floppy disk and write all the necessary start-up files to it.

When the process is finished, you will be returned to your starting point in Windows or DOS. You can then re-boot your computer with the boot disk in the A: drive. Note: if you are running the boot disk program from Windows, make sure you completely exit Windows before you reboot.

Using a Boot Disk

The boot disk you've created with the boot disk program contains a stripped-down version of your usual start-up files. You must start (or restart) your computer with the boot disk in the A: drive for it to work. (Note: a boot disk will work only in the A: drive.)

1. Place the boot disk in the A: drive and start the computer. (If your computer is already running, exit any programs and restart the system with your PC's Reset button, or use `[Ctrl]+[Alt]+[Del]` from the keyboard.)
2. The computer will start up using the boot disk's memory configuration. You should now be able to run the game normally from Windows or DOS. In Windows, just open the game program group, click on the game icon, and then click the Start Game button. From DOS, change to the game directory *on your hard disk*, and type the appropriate command for the game: Type `AOECD`, `AOTPCD`, `BARONCD`, or `A10CD`, and then press `[Enter]` to run the game. (To return your computer to its normal setup later, just restart it again without using the boot disk.)

If your PC ignores the boot disk and starts normally, you'll need to consult your system's documentation or manufacturer for a solution. If your PC starts with the boot disk, but still can't run the game, or fails to load your mouse, sound card, or CD-ROM drivers correctly, you'll need to customize the boot disk manually. See the following section "Customizing the Boot Disk."

Customizing the Boot Disk

To customize a configuration for your specific system, you can edit the `CONFIG.SYS` and `AUTOEXEC.BAT` start-up files *on the boot disk*, or create a new Boot Disk from scratch. `CONFIG.SYS` and `AUTOEXEC.BAT` are simple text files that you can edit using your DOS `EDIT` utility, the Windows Notepad, or your preferred word processor in its text-only mode. On your hard drive, these files tell your computer how to arrange its memory for normal operation. On the boot disk, these files tell your computer how to arrange its memory specifically for running your *Aces* simulation.



Courtesy National Air & Space Museum, Smithsonian Institution

A German pilot on his Bf 109 describes his latest combat by "flying" with his hands.

Warning: Manually altering the CONFIG.SYS and AUTOEXEC.BAT start-up files can be a trial and error process. When opening a file to edit, triple-check to MAKE SURE you are working with the files on your boot disk in the A: drive. Otherwise, you may change the CONFIG.SYS and AUTOEXEC.BAT files on your hard drive instead, which in turn may impair the normal operation of your system.

Note: If you haven't already tried the Install program's "Make Bootable Floppy Disk" method, try that first before starting here. Even if that boot disk itself doesn't let you run your simulation, it will at least give you a good place to start customizing the configuration files.

If you prefer to create a boot disk from scratch, you'll need a freshly formatted system diskette for your A: drive. (See your MS-DOS manual for details on how to create a system diskette.) You can then create a new CONFIG.SYS and AUTOEXEC.BAT from scratch right on the boot disk.

Compare the CONFIG.SYS and AUTOEXEC.BAT files on your boot disk to the following examples. Differences may indicate places where you can remove a driver, load it into upper memory, or change a device switch to use less memory. As always, refer to your system reference manuals if unsure about anything.

Sample Boot Disk Config.sys File

These examples show a "minimum configuration" that will let you run the *Aces* simulations on many PCs. The lines in your start up files will differ according to your system's drivers and directory names, and the version of DOS you use. (Note: Parentheses indicate comments that are *NOT* part of the file.)

DEVICE=C:\DOS\HIMEM.SYS

DEVICE=C:\DOS\EMM386.EXE RAM 2048

(You may use a different expanded memory manager.)

DOS=HIGH,UMB

(Loads DOS into Upper Memory)

FILES=30

BUFFERS=20

BREAK=ON

LASTDRIVE=Z

DEVICEHIGH=C:\MOUSE\MOUSE.SYS

(Only if using a mouse. See "Mouse Drivers," below.)

DEVICEHIGH=C:\DOS\DBLSPACE.SYS /MOVE

(Only if using DBLSPACE. See "Disk Compression Drivers," below.)

DEVICEHIGH=C:\DRV\CDROMDRV.SYS /D:MSCD001 /P:220

(See "CD ROM Drivers," below.)

Sample Boot Disk AUTOEXEC.BAT file

PROMPT Sierra Boot Disk \$P\$G

(If you are working with files created with "Make Bootable Floppy Disk.")

PATH=C:\DOS

SET COMSPEC=C:\COMMAND.COM

LOADHIGH C:\MOUSE\MOUSE.COM

(Only if you *don't* use MOUSE.SYS in CONFIG.SYS. See "Mouse Drivers," below.)

C:\DOS\MSCDEX /D:MSCD001

(See "CD ROM Drivers," below.)

To disable a line in one of your start-up files, you can just type **REM** in front of it. For example, **REM LOADHIGH=C:\MOUSE\MOUSE.COM** will disable the mouse driver. To re-enable it, just take the REM back out again.

Mouse Drivers

If you have a mouse, the boot disk program will have assumed that you want to be able to use it with the simulation, and will put a mouse statement on the boot disk. This means you should have one mouse driver line in either your CONFIG.SYS or AUTOEXEC.BAT file—but not both! For example:

```
DEVICEHIGH=C:\MOUSE\MOUSE.SYS
```

(Used in the CONFIG.SYS file only)

```
LOADHIGH C:\MOUSE\MOUSE.COM
```

(Used in the AUTOEXEC.BAT file only)

If you have a different mouse driver name (MOUSE.EXE, IMOUSE, GMOUSE, HP MOUSE, etc.) or if you keep the driver in a different directory (C:\MSMOUSE, C:\DRIVERS, etc.) the path and driver name will be different. See your mouse manual if unsure.

Mouse Hints

If you don't want to use a mouse at all, "REM" the mouse driver statement from your boot disk's CONFIG.SYS or AUTOEXEC.BAT file as described above. This will free up memory.

Use MOUSE.SYS rather than MOUSE.COM or MOUSE.EXE, if possible. MOUSE.SYS is smaller and takes less memory.

Make sure you don't have a mouse driver line in *both* the CONFIG.SYS or AUTOEXEC.BAT files. If you do, remove one, because you're needlessly loading *two* mouse drivers into memory.

CD-ROM Drivers

To run the *Aces* simulations from the CD (required for running a MINIMUM Install or for viewing the on-line manuals) you'll need to include a CD-ROM line in both the CONFIG.SYS and the AUTOEXEC.BAT files. Refer to your CD-ROM manual for your specific details.

The Boot Disk AUTOEXEC.BAT file needs an MSCDEX line. Depending on your CD-ROM type, it should look much like one of the following:

```
C:\DOS\MSCDEX /D:MSCD001
```

```
LH C:\DOS\MSCDEX /D:MSCD001
```

```
LOADHIGH /L:14429 C:\DOS\MSCDEX /D:MSCD001
```

NOTE: We recommend that you use the latest version of MSCDEX.EXE to insure the best CD access. As of this writing, the current version of MSCDEX is 2.23.

The Boot Disk CONFIG.SYS file needs a CD device driver line. Depending on your CD-ROM type, it should look much like one of the following:

```
DEVICE=C:\DRV\CDROMDRV.SYS /D:MSCD001 /P:220
```

```
DEVICEHIGH=C:\DRV\CDROMDRV.SYS /D:MSCD001 /P:220
```

```
DEVICEHIGH /L:14652 =C:\DRV\CDROMDRV.SYS /D:MSCD001 /P:220
```

For *AOE* and *AOTP*, you will also want to add the "/E" switch to the end of the MSCDEX line. For example:

```
DEVICE=C:\DRV\CDROMDRV.SYS /D:MSCD001 /P:220 /E
```

Note: If you don't have enough memory to start a simulation on the CD, try a FULL install. With a full install, you don't have to use your CD-ROM drivers on the boot disk, which in turn can free up some memory.

Disk Compression Drivers

If you use disk compression on your hard disk, you must include the correct disk compression driver statement on your boot disk, or your mouse or other drivers may not load correctly. The example CONFIG.SYS shows the correct statement if you are using the DBLSPACE utility from MS-DOS 6.0 or later. If you are using Stacker 3.1 or later, use the following line instead:

```
DEVICEHIGH=C:\STACKER\STACHIGH.SYS
```

For other compression utilities, refer to your manual.

Reminder: For the boot disk to work, you must REBOOT your computer with the boot disk in your A: drive. Place the boot disk in drive A: and press your PC's Reset button, or [Ctrl]+[Alt]+[Del]. Your computer will now reboot, using the start-up files on the boot disk in A:. Have a great time!

Additional Boot Disk Instructions

If you have a modem, you can download additional boot disk instructions from the Sierra Bulletin Board Service, or BBS. The file to download is BDALL.EXE or BDALL.ZIP (BDALL.ZIP is compressed—you'll need the PKUNZIP shareware utility to open it.). After downloading this file, select the set of instructions that will match your system best.

In the U.S., the BBS number is 206-644-0112; in the U.K., the BBS number is (44) 734 304227.

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 (CD/Disk replacements after 90 days are £6.00 in U.K., £7.00 outside U.K. Add ATTN: Returns)

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 Immeuble "Le Newton" Fax (33)1-46-31-7172
 25 rue Jeanne Braconnier Hint line (33)1-36-68-4650
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Sierra Coktel Vision Deutschland Fax (49) 06103 994035
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A-10 pilots, left to right: Lt. Heironimus, Lt. Le Blanc, Lt. Isenstadt, Lt. Radovcich, Lt. Runkle.

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If your Sierra software or disk fails within 90 days of purchase, we'll replace it free of charge. Return the CD or diskette #1 directly to us, including a copy of your sales receipt, and a note stating your game machine and disk type. More than 90 days after purchase, include the replacement fee as noted.

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 Technical Support Fax (206) 644-7697
 P.O. Box 85006 8:15 a.m. – 4:45 p.m. PST, Monday–Friday
 Bellevue, WA 98015-8506

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Sierra Bulletin Board Service (BBS): U.S. (206) 644-0112 or U.K. (44) 734 304227
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Sierra offers technical support and patch files on its CompuServe forum, as well as product demos, hints, and reviews. CompuServe members can type GO SIERRA to reach the forum. To join CompuServe, call toll-free (800) 848-8199 and ask for Representative 461 for your FREE introductory membership and usage credit.

Patch Disks

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 P.O. Box 485
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