

U S E R S M A N U A L

IBM® PC CD-ROM

NOVA



LOGIC™

WOLF PACK

WOLFPACK

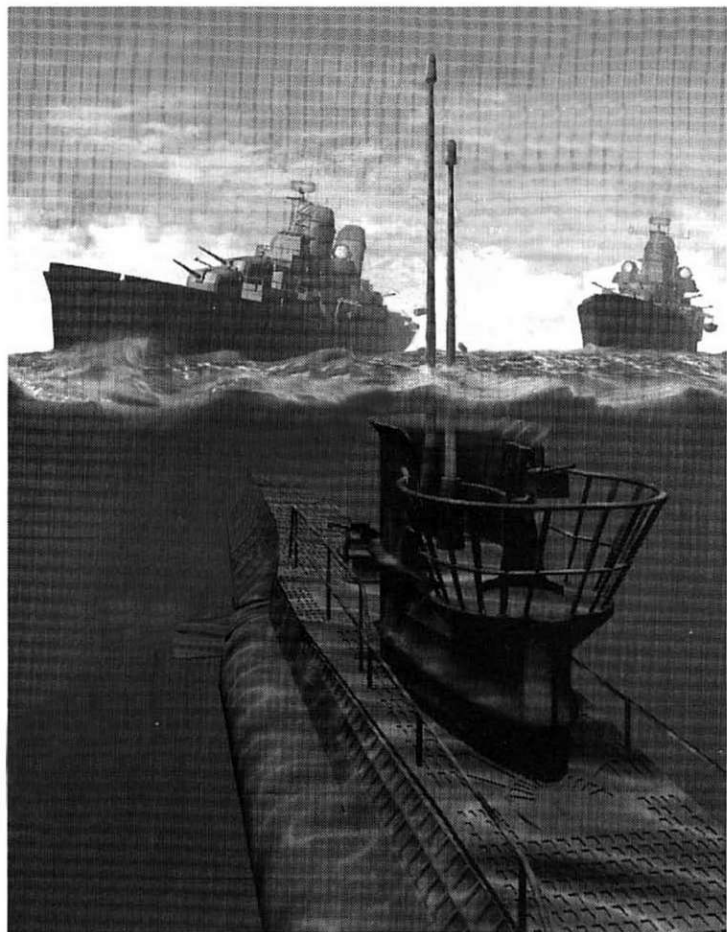


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WolfPack CD Credits

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Getting Started

What you will need:

Wolfpack is designed to work on 100% IBM-PC compatible machines equipped with the following:

- a) 640K of conventional RAM
- b) DOS 3.1 or higher and Microsoft's CD-ROM extensions
- c) VGA or MCGA display adapter
- d) Mouse, Joystick, or Keyboard
- e) Adlib, CMS Sound Blaster, or compatible sound card

Hard Disk Installation

You can install Wolfpack by performing the following steps:

- a) Start your computer with your CD-ROM drivers.
- b) Insert the Wolfpack CD in your CD-ROM player.
- c) Run **Install** from the CD.
- d) Now follow the prompts.

Setup Menu

You can run Wolfpack by typing **WOLFPACK** followed by the enter key.

The first time you run Wolfpack, a menu for customizing Wolfpack to your system is displayed. Here, you may select what type of input device, and sound board you intend to use.

After you have selected these items and played a game, you will not be prompted again unless the equipment inside of your PC changes. Wolfpack will retain the information you gave it for future games.

If you wish to choose other options from this menu after you have already gone through the setup procedure, simply type **SETUPWP** from the drive or directory where the Wolfpack program files are located.

Starting the game by typing in **WOLFPACK ?** will display other command line options.

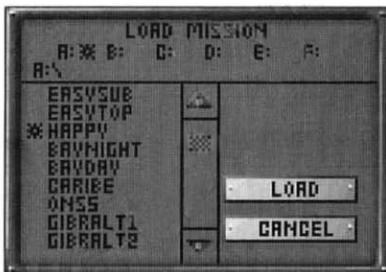
Quickstart

If you are familiar with games and your computer, you might want to follow this section in order to get up and running in a minimum amount of time.

After you have installed, configured and run Wolfpack as per the instructions above, you will be presented with the **Startup Menu**.



Press "S", this will bring up the **Load Dialogue Box**.



Now, press the "-" key until the asterisk points to "HAPPY" (you can also click directly on "HAPPY" to get the same result. Press "L", this will load and run the game.

If you have a mouse or a joystick, playing the game is very intuitive. If you are using the keyboard, read the section below on keyboard interface.

Experiment with this mission and the ones entitled "EASYSUB" and "EASYTOP", referring to this manual for specific details as you go along.

Read the manual once you get the basic feel for the game, so that you can experience all of the detail included in this simulation.

Startup Menu



After the Title Screen has been displayed for a few moments the Startup Menu will be displayed. At this point you will be able to select one of the following options:

Start Mission

If you choose this option, you will be able to play one of the 36 available missions that come with the game or you can load a mission that you have created and saved.

- Keyboard - Press **S**

Construction Set

This option will bring you to the command screen where you may create your own missions.

- Keyboard - Press **C**

Demo Mission

This option will run a demonstration of what the game will do. It is intended to give you a look at the possibilities you'll have with Wolfpack.

- Keyboard - Press **D**

Quit

If you have loaded the game to this point and decide not to go any further, you may select this choice to return to DOS.

- Keyboard - Press **Q**

Wolfpack

Object of the Game

The game is played by either loading a predefined mission off the disk, or creating one with the construction set. If you are playing the submarine side, the object is to defeat the Allied side by inflicting as much damage as possible and avoiding damage to your u-boat. If you are in charge of the surface fleet, you want to fend off the enemy attacks and protect your merchant ships. For the most part the best way to do this is to sink as many submarines as possible, preferably the ones that pose immediate threats to your ships.


There are 4 ways to end the game:

1. The mission time limit expires.
2. The convoy reaches it's destination.
3. One side is completely killed off.
4. "Ctrl Q" is pressed. If this option is chosen, the game can be resumed by selecting **GO** from the construction set.

Scoring

The scoring system is based on a zero sum approach. Whatever the number of ships on the surface, they always equal 50% of the total ship units. Likewise, all of the submarines add up to 50% of the total ship units. For instance, if you start off with 20 surface ships and 10 submarines, each submarine sunk, will equal 2 surface ships. A further ten percent of the scoring is influenced by overall fleet damage. A tie will result in a loss for the submarines. Keep in mind that, through the use of the construction set, one could build extremely unbalanced scenarios, yet the scoring system will still reflect the outcome accurately.

The Pointer

 The pointer is used to select commands and actions in Wolfpack. Depending on the interface used (see below), the pointer is positioned by moving either a mouse, a joystick or the keyboard arrow keys on the standard IBM style keyboard.

Clicking



Placing the pointer over the Periscope Up selector and clicking the button raises the periscope.

Clicking refers to the action of moving the pointer over some portion of the screen and pressing the selector button.

Clicking the button means pressing:

mouse - the left mouse button.

joystick - joystick button 1.

keyboard - the "Ins" key.

Clicking the alternate button means.

mouse - the right mouse button.

joystick - joystick button 2.

keyboard - the "Del" key.

Mouse

Wolfpack uses a Graphic User Interface (GUI). The mouse is the preferred method of communicating with the computer. If you have been thinking of getting a mouse, this is a great time to do it, as Wolfpack works exceptionally well with any Microsoft™ compatible mouse. To use, you should install the mouse making sure that the mouse driver software has been installed as per the mouse manufacturer's specifications.

Joystick

Wolfpack can also be operated with a joystick. If you are an experienced game player you probably already have a joystick. The joystick interface works the same as the mouse based interface.

There are two different methods of operating the joystick, which are chosen at the time you first configure the game for your machine. If you want to access this option, start the game with the "R" option.

The first method Joystick direct, will place the cursor on a spot relative to the current displacement of the joystick. If you have the right computer/joystick combination, this will work quite well.

The second method Joystick push, operates similarly to a Nintendo™ joystick. Pushing the joystick in any given direction will make the cursor move in that direction, centering the joystick will stop joystick movement.

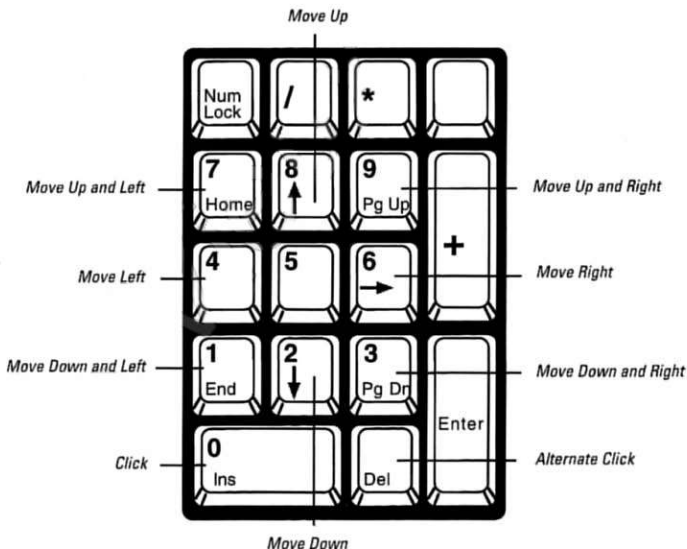
Try out both methods and see which one you like best; it often comes down to personal preference.

Keyboard

If you have neither a mouse nor a joystick, Wolfpack can be operated satisfactorily with any standard IBM type keyboard. There are two different ways to operate Wolfpack with the keyboard, the **Mouse Emulation Mode** and the **Shortcut Keys Mode**. While these two modes work independently of each other, they can be used along with each other to great advantage. In fact, the **Shortcut Keys Mode** also works very well in conjunction with either a mouse or a joystick.

Keyboard Mouse Emulation

IBM type keyboards have a numeric keypad with arrow keys, usually located on the right side of the keyboard. When Wolfpack is running, the arrow keys can be used as if they were a mouse to position the pointer. Pressing the left arrow key makes the pointer move left, pressing the right arrow key makes the pointer move right, etc. *When the instructions ask for you to "Click", you should instead press the "Ins" key on the keypad. If you are asked to "Click the alternate button", you should press the "Del" key.*



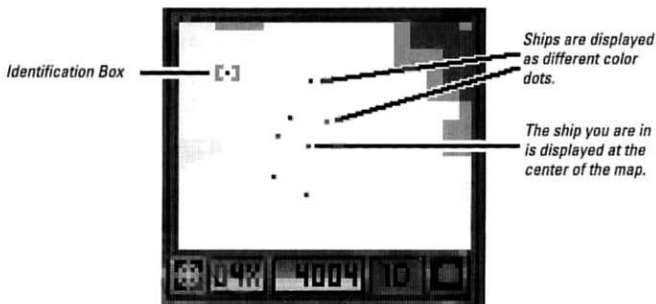
Shortcut Keys

One of the most useful features of Wolfpack is the **Shortcut Keys Mode**. This mode operates in conjunction with all of the other input methods, thereby making some operations simpler to access. In **Shortcut Keys Mode** different keys on the keyboard have different meanings. For example, pressing the "A" sets the command mode for the current ship to **Auto** and pressing the "U" key sets the command mode to **User Control**. Sometimes you will be asked to press two keys. For example, pressing the "P" key first and then the "+" key will cause the periscope to be raised. Pressing the "P" key first and then the "-" key will cause the periscope to be lowered.

Appendix B describes all of the keyboard equivalents.

Common Displays and Controls

Tactical Map



The tactical map is displayed at all times during game play. It is analogous to the map table maintained by the yeoman. It helps the captain make informed decisions. The ship you are currently in usually appears as a flashing dot at the center of the map. Ships leave light colored wakes behind them. The wakes are useful in determining what the different ships' rudder settings are. Depending on the **Recon** (Reconnaissance) setting, it will display ships according to the following rules:

Day Mode

- Map displays all ships on your side.
- Map displays any opponents ships that show up on your sensors such as SONAR and RADAR.

- Map displays opponent ships that can be spotted visually as per the tables in **Appendix A**.
- Map displays the location of all opponent ships that have been observed by other ships on your side and their position transmitted by radio to your current ship.

Night Mode

- Same rules as in Day Mode but with reduced vision as per the visual tables in **Appendix A**.

Aerial Mode

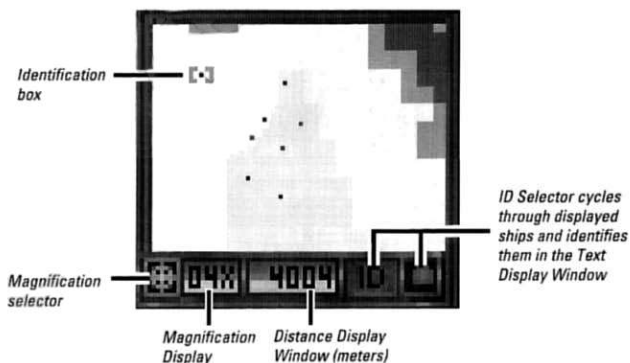
- Displays all ships on all sides at all distances. This is meant as a simple way to orient the new game player.

Color Coding on Tactical Map

Ships appear as colored dots on the Tactical Map. The colors are:

Subs	Blue
Destroyers	Red
Freighters	Yellow
Tankers	Black

Tactical Map Magnification and ID Selector



Magnification Selector

This selector (see picture above) allows the magnification of the map to be altered to accommodate the current action area. The magnification can be set in 1X increments from 1X to 20X.

- Clicking on the magnify icon, magnifies a single step. Clicking on the alternate button, reduces one step. Doing either with the "ALT" key depressed, gives maximum or minimum magnification.
- Keyboard - "Z+" magnifies a single step. Pressing "Z-" reduces one step.

ID Selector

This selector (previous page) allows the user to identify and range all of the ships displayed on the **Tactical Map**.

- Clicking over the selection button labeled ID, located at the lower right hand corner of the **Tactical Map**, cycles through all of the ships visible on the map and temporarily puts an identification box around the selected ship. The distance from your ship (meters) to the selected ship is displayed on the **Distance Display Window**, and the name of the ship is given in the **Text Display Window**. *If the selected ship is on your side, then you can jump to it by clicking on the alternate button while pointing to it with the cursor.*
- Keyboard - pressing the "I" key will cycle you through the displayed ships as above. Pressing "Ctrl I" allows you to jump to that ship (if it is on your side).

Moving from Ship to Ship

One of the most interesting features of Wolfpack is its ability to let you control any ship on your side. You can jump to the bridge of any of your ships by selecting it in one of several ways:

- You can cycle through all of the ships on your side by pressing the "TAB" key or clicking on the ship's insignia directly. This will sequentially take you through all of the available ships on your side. You can tell which ship you are in by looking at the ship's insignia and name. While this is a very easy way to move from ship to ship, you will move in a pre-set order and you can not directly access any specific ship.



U-boat Insignia



Destroyer Insignia



Tanker Insignia



Freighter Insignia

Note that U-boats and destroyers all have individual insignias, but tankers and freighters have just one insignia per type.

- If the ship that you want to jump to can be seen directly through the window or periscope, and it is on your side, you can click on it with your alternate button and be transported to its bridge directly. Clicking on the same spot with your primary button will just ID the ship (either side) on the **Text Display Window**.
- If the ship that you want to jump to is displayed on the tactical or strategic map and it is on your side, you can click where it appears on the map with your alternate button and be transported to its bridge directly. Clicking on the same spot with your primary button will just ID the ship (either side).
- If you have used the ID function in the **Tactical Map** and an **Identification Box** currently surrounds the ship that you want to go to, you can jump to it by pressing the alternate button. With the keyboard the corresponding command is "**Ctrl I**" (see above under **ID Selector**).
- To jump to any ship on your side you can bring down the **Status** display (see below) and click on the leftmost column of the row corresponding to the ship you wish to select. Using this method ensures that you can always directly access any ship on your side provided that it has not been destroyed.

All of the methods described above will have the same effect, however, some might be easier to use at different points of the game. Try different ways of doing this and you will soon get the hang of it.

Command Group

The **Command Group** lets the user select what control mode the ship is operating in. The **Current Orders** box lets the user know which orders are currently being executed by the ship's crew.



Clicking here lets the Auto Captain control the ship.

Clicking here lets you take direct command of the ship

The Current Orders box displays the ship command status.

In **Auto** mode the ships will follow their preset courses and they will be under the control of the captain assigned to that ship when the mission was created (the current captain can be seen by activating the **Status** display). While in **Auto** mode, the user can activate controls which do not alter the ships heading, depth or speed. Altering speed, heading or depth will place the ship under **User Control**.

- **User Control** can be selected directly by clicking on the **User Control** icon. Auto Mode is selected by clicking on the **Auto** icon.
- Keyboard - Select **Auto Mode** by pressing "**A**", **User Control** by pressing "**U**".

Text Display Window



The Text Display Window appears in all of the ships' bridges. Informative messages appear in this window. Warning sounds accompany some of the more important messages.

- Clicking anywhere on the text box will clear the text box of all previous messages.
- Keyboard - Pressing "**Ctrl T**" will clear text box.

Strategic Map





The **Strategic Map** is similar to the **Tactical Map** but it is directly available from a running game.

- This map is displayed by selecting it with the **Map Selection Button** found above the **Viewport** on the submarine bridge and above the **Tactical Map** on the destroyer and merchant ship bridges. The map displays all available map information using the same rules as the **Tactical Map**, The Strategic Map also displays torpedoes, they show up as relatively fast moving dots.

Strategic Map Tools

The **Strategic Map** can be manipulated with controls which operate similarly to those used in the **Construction Set**. They are as follows:

-  - **The Centering Tool**. Clicking on this icon centers your current ship on the map.
- Keyboard - Press “.”
-  - **The Pointer Tool**. Selecting this tool allows you to click over any displayed ship and ID it on the **Text Display Window**. Clicking on the alternate button, allows you to jump to that ship, provided it is on your side.
- Keyboard - Press “**Ctrl V**”



- **The Magnification Tool.** Picking up this tool and clicking it over any desired part of the map, will cause the map to be magnified and centered over that spot. Clicking with the alternate button causes the map to be scaled down. Doing either of the above actions with the “**Alt**” key depressed, will take the map to the maximum enlargement or reduction respectively.

- Keyboard - Press “**Ctrl X**”



- **The Movement Tool.** This tool is used by clicking *and keeping the button down* over a spot on the map that you wish to drag over to a new location. Move the tool over to the desired location and release the button. The map will now move to the new location. On slower computers, there may be a noticeable lag between the time you release the button and the map actually moves.

- Keyboard - Press “**Ctrl H**”

Order Selection Buttons

The **Order Selection Buttons** are located at the bottom of the Strategic Map on the same row as the **Strategic Map Tools**. These buttons determine what orders the current captain will follow. Order options for submarines are: ANCHOR, SHADOW, PATROL. For destroyers they are: ANCHOR, CONVOY, PATROL. For merchants they are: ANCHOR, JOIN CONVOY, LEADER. These orders are described in detail in the sections pertaining to the the different ships below.

- The **Order Selection Buttons** can not be accessed by the **Shortcut Keys**.

ANCHOR: This selection will leave the ship where it is currently located unless it is engaged, in which case, most captains will take over and will either attack or take evasive action. Captains O. Nemenz, Bockman, Acker and Morton will stay anchored under all circumstances.

SHADOW: The submarine will retain it's relative position to a moving convoy. **Shadow** will only operate if the U-Boat is between 4km and 10km from the convoy. If the distance is greater than 10km the convoy will not be spotted, if the distance is less than 4km the U-boat captain will start an attack run on an individual target. Captains O. Nemenz and Bockman will not attack, so **shadow** will work for them at any distance less than 10km.

PATROL: Will allow the user to reset the **Ocean Patrol Waypoints** for the current ship.

CONVOY: Will put destroyer in **Convoy Patrol** mode and allow user to re-set waypoints.

JOIN CONVOY: Will allow any merchant including a convoy leader to become a convoy follower. There are two reasons for doing this; First to have an anchored ship become a member of the convoy, or if you have a damaged leader you might want to replace him with an undamaged one (a damaged leader might not be able to reach full speed, etc.). If you use this selection on the current leader, a new leader will be chosen at random.

LEADER: Will set current merchant as the convoy leader. This is used to replace a damaged leader.

Status Screen



NAME	TYPE	CAPTAIN	DAMAGE
HEFFRON	FREIGHTER	CONVOY	00%
OLOPANA	FREIGHTER	CONVOY	00%
TANEV	FREIGHTER	CONVOY	00%
KENTUCKY	TANKER	CONVOY	00%
BENSEN	DESTROYER	DISSETTE	00%
* NIBLACK	DESTROYER	KOSOV	00%
USS KIDD	DESTROYER	GARCIA	00%
PLUNKETT	DESTROYER	RATCLIFF	00%
MADISON	DESTROYER	SEEHOLZER	00%
TOTAL DAMAGE			06%

At the bottom of the screen, there are control buttons: a left arrow button labeled "LEFT", a scroll indicator showing "330" and "0", and a right arrow button labeled "RIGHT".

The status screen allows the player to review his entire fleet at a glance. All of the ships on your side are displayed in a tabular format. The ship you are in is indicated by an asterisk on the leftmost column of the display. The ships' name, type, captain and percent damage are also shown. At the bottom of the display, the total fleet damage is displayed.

- The **Status Screen** is toggled in and out by clicking on the button labeled STATUS or STAT. Once the **Status Screen** is displayed, you can jump directly to any ship which has less than 100% damage, by clicking on the leftmost column of the corresponding row. Since you may have more ships than can be displayed at one time, clicking on the arrows at the bottom of the display will either scroll the roster up or down.
- Keyboard - Pressing "S" will toggle the **Status Screen** in and out. You can use the **Mouse Emulation Mode** to jump to a ship by clicking on the leftmost column of the corresponding row. You can scroll the roster up or down by pressing "Ctrl +" or "Ctrl -" respectively.

Damage Screen

Click here to display damage screen.



The **Damage Screen** lets the player know what the current percent of damage is for the current ship. Additionally there is a visual representation of damage to specific systems. Note that the ship can have a great deal of general damage with no specific system being out of commission.

For the most part, if a specific system is damaged such as a periscope, it will stop functioning, other systems might degrade performance in more subtle ways. Flooding in a submarine, will eventually cause it to sink unless it is taken up to the surface immediately. In such a case it would probably be best if the sub could be taken away from action so that it would at least count in the final score (see **Scoring** above). Fuel leaks will make the sub more visible to the enemy. Dive plane and Rudder damage will make it difficult to maintain correct depth and heading.

For surface ships, Fire and Flooding damage will deteriorate the overall performance of the vessel. Radio damage will make it harder for ships to radio enemy locations, so less information will be available to the captain. Depth charge damage on destroyers usually lengthens reload time.

- The Damage Screen is toggled in and out by clicking on the button labeled DAMAGE or DAM.
- Keyboard - The Damage Screen is toggled in and out by pressing "W".

Timing Selector



This control allows the user to change the time base of the game being played. Normally (**Timing 1**) the simulation runs in real time, that is, one second in the real world corresponds to one second in the computer. If the **Timing** is increased to 2, then the simulation executes twice as fast as things would happen in the real world, for instance a ship that would normally take 1 hour to get to its destination will now only take 30 minutes to get there. This is a good feature to use when

large distances are to be crossed or searched. The maximum setting is 64. The game will automatically slow down to 1 anytime a weapon is fired. On slower computers, the actual maximum timing increase might be limited.

- Clicking on either **Timing Selector** arrow will increase or decrease the rate of play. Clicking on the center of the numerical display, will reduce the **Timing** to 1. Clicking over the center of the numerical display with the alternate button will set the **Timing** to 64.
- Keyboard - pressing the "T" key followed by either the "+" or "-" keys, will either increase or decrease the rate of play. Pressing "T Ins" will set **Timing** to 1. Pressing "T Del" will increase **Timing** to 64.

Repeater Telegraph

Click here to select speed



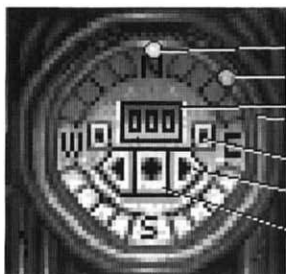
Speed indicator (on U-boats)

This control is used to set the ships speed when under **User Control** (**User Control** will automatically be selected if the **Telegraph** is activated). It transmits the captain's desired speed to the engine room. The engines are then adjusted to match this speed. In the case of the submarine bridge, the **Knot Indicator Window** is also included at the bottom of the **Telegraph** housing.

- Clicking on the desired speed setting on the face of the **Telegraph** will request that speed and force the command mode to **User Control** if not already set that way.
- Keyboard - pressing the number keys "0", "1", "2", "3", "4", "5" will set the speed to Stop, 1/4, 1/2, 3/4, Full and Flank respectively. Pressing "B" will set the speed to Back which is the same as 1/4 speed in reverse.

Compass/Rudder Control

This is a combination control that displays the current heading and when under **User Control** allows the user to to either automatically set the desired heading or to manipulate the rudder directly.



This pointer indicates current heading.

This pointer indicates desired heading.

Clicking on perimeter of compass sets desired heading.

Clicking here moves the rudder 1 degree.

Clicking here sets the rudder to starboard.

Successive clicks (up to 3) turn the rudder harder.

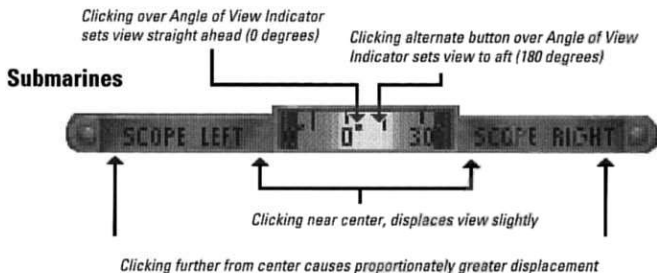
Clicking here sets the rudder straight ahead.

Clicking on the circumference of the control, sets the desired heading, and the ship will turn until it reaches this heading, provided the engines are moving the ship forward. For close in maneuvering it might be more desirable to operate the rudder directly by clicking on the rudder control arrows.

- Keyboard- While the direct setting of heading is not available through the **Shortcut Keys Mode**, the rudder can be set directly by pressing "**Ctrl L**" or "**Ctrl R**". Doing either will turn the rudder respectively to the left or right. Repeating the command up to 3 times will turn the rudder harder in that direction. Pressing "**Ctrl C**" centers the rudder.

Viewport Right/Left Controls and Angle of View Indicator

These controls located below the the **Viewport** allow the user to look either to the right or to the left of the current heading. Aiming of deck guns and torpedoes is also accomplished by lining up the target with the center of the viewport. The **Angle of View Indicator** shows how many degrees from the bow the view is displaced.



Destroyers & Merchant Ships



- The controls are proportional. Clicking on the alignment areas will cause the view to change. The further away from the **Angle of View Indicator** that the user clicks on the control, the more that the view will be displaced. For very fine adjustment of the viewport, clicking very near the indicator will cause a small change of view. To move quickly, the user should click further away from the indicator. To align the view with the ship's heading, the middle of the **Angle of View Indicator** (numerical display) can be Clicked, this will automatically center the view at 0 degrees. Clicking on the center of the **Angle of View Indicator** with the alternate button will set the view to 180 degrees (straight back). This is a good thing to do if you are in a destroyer and want to see the depth charges being dropped.
- Keyboard - Pressing the "V" key and the "+" key simultaneously, will cause the viewport to look to the right. Pressing the "V" key and the "-" key simultaneously, will cause the viewport to look to the left. Pressing the "V" key and the "Ins" keys simultaneously, will cause the viewport to align the view with the ship's heading. Pressing the "V" key and the "Del" key simultaneously, will cause the viewport to face directly aft (180 degrees).

Viewport Magnification Lever



This device allows the user to select a normal viewing angle (1.5X) or a telephoto view (6X). The normal view is useful for general orientation, while the 6X view is useful for aiming at far away targets.

Clicking on the **1.5X Icon**, displays a normal view, Clicking on the **6x Icon**, shows a magnified view.

- Keyboard - pressing "**X+**" keys displays a magnified view, pressing the "**X-**" keys shows the normal view.

Reticule Control



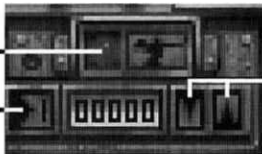
By selecting the reticule, an aiming mark is displayed on the viewport. The reticule is useful in aiming deck guns and torpedoes. The reticule is particularly useful under 6x magnification.

- Clicking on the **Reticule Icon**, displays the aiming reticule, Clicking on the **Reticule Icon** again, removes the reticule.
- Keyboard - pressing the "**O**" key displays the reticule, pressing the "**O**" key again, removes the reticule.

Deck Guns

Click here to fire deck guns

Click here to range targets (meters)



Gun elevation trim adjustment

All ships except Type XXI U-boats, have deck guns. The reload time reflects the number of guns actually carried by the specific ship. Destroyers reload quickly, while merchant ships and submarines which normally carried only one deck gun, take longer before the gun can be fired again. Submarines must be completely surfaced before they can fire the deck gun.

Deck guns must be both aimed and ranged before they have much chance of being effective.

- Clicking on the **Gun Ranging Icon** while a target ship is centered on the **Viewport** (the target reticule might be helpful), displays the range to the target ship in meters on the **Gun Range Indicator Window**, simultaneously, the name of the ship being ranged is displayed on the **Text Display Window**. *The range derived from this action, is automatically fed into the deck gun's elevation mechanism.* The Deck Gun can then be fired by clicking on the **Gun Icon**. Under most circumstances, this range is very accurate, but the elevation of the gun can further be adjusted by clicking on the **Elevation Trim Controls**. *The gun ranging device can also be used to generally provide range and ID information on any ship centered on the aiming reticule.*
- Keyboard - gun ranging is performed by pressing "**R**". Firing the deck gun is accomplished by pressing "**G**". The gun can be trimmed up by pressing "**E+**" and trimmed down by pressing "**E-**".

Bottom Depth Indicator



All vessels have a **Bottom Depth Indicator**. The depth to the bottom is indicated in meters. Knowing the bottom depth is important for all ships. All ships have to be careful not to run aground, when maneuvering at shallow depths, the captain should keep a close eye on the map to make sure that the ship will

not collide with the bottom. This situation is particularly critical for submarines. Because some computer displays, such as those of EGA, and CGA do not have enough colors to code all the different map depths, a forward looking depth meter constantly scans the bottom and warns the captain through the **Text Display Window**, of an impending upward change in depth. The captain should take immediate corrective action if this happens.

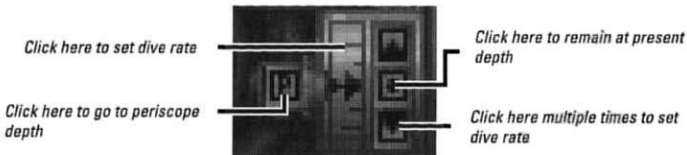
Submarine Displays and Controls

Depth Gauge



In the submarines, the Depth Gauge tells the user what the current depth of the submarine is. Depth is indicated both in digital form and by the analogue needle.

Dive Control



While under **User Control** submarines can be made to dive or surface by manipulating the **Dive Control**. The left side of the gauge indicates the rate at which the submarine is diving or surfacing as well as allowing the user to set this rate. The right side of the gauge is also used to control the dive rate. In addition, clicking on the **Periscope Depth Icon** selection located to the left of the **Dive Control**, will bring the sub to periscope depth and keep it there until there is further intervention by the user.

- Clicking on the left hand central area of the control will cause the sub to stop diving or surfacing. Clicking the scale marks above or below the central portion will make the sub dive or surface in a proportional fashion. Clicking on the indicator arrows on the right hand side of the control will make the sub dive or surface at a rate proportional to the number of times that the arrow has been clicked. *Clicking on the **Periscope Depth Icon** will bring the sub to periscope depth and keep it there until there is further intervention by the user.*
- Keyboard - pressing "**D +**", will cause the sub to surface. Pressing this combination more than one time will have a cumulative effect and will cause the sub to surface more rapidly. Pressing "**D -**" will cause the sub to dive. Pressing this combination more than one time will have a cumulative effect and will cause the sub to dive more rapidly. Pressing the "**D**" key and the "**Ins**" keys simultaneously, will cause the sub to stop diving or surfacing. *Pressing "**Ctrl P**", will cause the sub to go to periscope depth.*

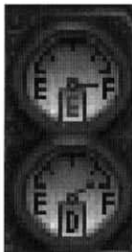
Periscope Up/Down Control



These controls raise or lower the submarine periscope. The periscope is effective at 15 meters. It is a good idea to lower the periscope whenever submerged, otherwise it is highly prone to be damaged.

- Clicking on the **UP Control Arrow**, raises the periscope, Clicking on the **DN Control Arrow** lowers the periscope.
- Keyboard - pressing "**P+**", will cause the periscope to be raised. Pressing "**P-**" will cause the periscope to be lowered.

Fuel Gauges



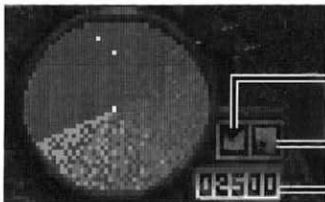
There are two fuel gauges in the submarine bridge. The gauge on top, is the **Electric Power Gauge**, the one below is the **Diesel Fuel** gauge. The **Electric power Gauge** lets the user know how much power remains for the electric motors. There is one hour of running time under electric power, and it takes 1 hour of running under Diesel power to re-charge the batteries to their full capacity. *Type XXI's can run indefinitely under electric power*. The Diesel Fuel Gauge always remains at full (U-Boats of these classes had ranges of over 3000 miles on Diesel). Switching to electric power is always done automatically by the crew whenever the U-Boat or it's snorkel (if so equipped) goes below water level. The crew, however, will not switch the engines to diesel after surfacing from a dive.

- Clicking on the "E" icon will switch the sub to electric power.

Clicking on the "D" icon will turn on the diesel power if the submarine is at a depth where it can get intake air for the engines.

• Keyboard - Pressing the "Ctrl E" key will switch the sub to electric power. Pressing the "Ctrl D" key will switch the sub to Diesel power.

Hydrophone Display



Click here to decrease display range

Click here to increase display range

Maximum range in meters

This gauge allows the operator to hear any ships that have their engines running, with the exception of submarines running on electric power. This device works by listening to faint sounds transmitted by the water, if your Diesel engines are running, they will mask these faint sounds and the **Hydrophone** will not work. The range of the display can be adjusted by clicking on the arrows to the right of the **Hydrophone Range Display Window**. Range is as per the tables in **Appendix A**. Colors of contacts correspond to the colors of the **Tactical Map** (see above), however, torpedoes are also visible on this display and they show up as brown dots on VGA monitors.

• Clicking on the up arrow icon will increase the range of the **Hydrophone Display**. Clicking on the down arrow icon will decrease the range of the **Hydrophone Display**.

• Keyboard - Pressing "K +" will increase the range of the display, pressing "K -" will reduce the range of the display.



Snorkel Indicator

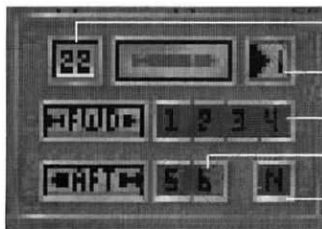
The **Snorkel Indicator** lights up whenever the snorkel tube is being used to run the Diesel engines. The snorkel is raised automatically whenever the following conditions occur: The year is 1943 or greater, the sub is below the surface, at periscope depth or above and the Diesel engines are selected. Running with the snorkel up, allows the sub to run on diesel engines with only the relatively small snorkel intake above the surface (RADAR can usually see a snorkel tube). This is a good way of re-charging the batteries or crossing large distances without running the batteries down. The noise of the Diesel engines however, make the sub relatively vulnerable to destroyers.



Metox/Naxos Indicator

The **METOX Indicator** (or from 44 on, **NAXOS**) will flash whenever the sub is being painted by Allied RADAR. Essentially, these devices acted like today's automotive RADAR detectors. When this indicator lights up, the submarine is in danger of immediate attack. METOX was introduced in 1942 and it was replaced in 1944 by NAXOS when Allied centimetric radar made METOX ineffective.

Torpedo Control Group



Torpedoes remaining

Click here to compute torpedo lead

Click here to release torpedo from forward tubes

Click here to release torpedo from aft tubes

Click here to release decoy noisemaker

The **Torpedo Control Group** lets the user select, compute firing solutions (lead), and fire torpedoes.

The numerical window indicates how many torpedoes are remaining at any given time. The number includes the torpedoes loaded into the front and aft tubes.

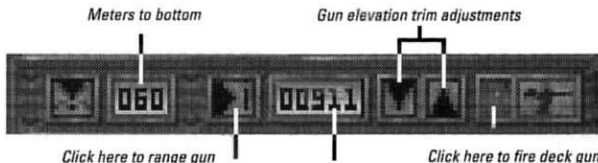
By clicking on the lead computation icon (firing solution) while the closest target is lined up within 2 degrees of the aiming reticule, the torpedo gyro-steering mechanism will be set to lead the torpedo accordingly. Once the lead is computed, the icon will flash to indicate that it will be fired with a lead. The lead computation will be maintained for 12 seconds or until a torpedo is fired. Using the lead computation is extremely effective if the ship that is sighted continues on the same course during the travel time of the torpedoes. If, however, the target ship changes it's direction during that period, such as might be the case if the target ship is on a Zig-Zag course, then it might be more effective if the the captain sights and leads the torpedo visually by using the periscope reticule and his intuition instead of using this device.

Clicking on any of the forward tube icons or the aft icons, releases the corresponding torpedo. Once a torpedo is fired, additional torpedoes take a set time to be reloaded into the tube. Torpedoes have a + or - 90 degree steering range. Thus torpedoes shot from the forward tubes can cover the forward 180 degrees and the aft torpedoes can only cover the rear 180 degrees of the ship.

The decoy noisemaker or Pillenwerfer can be deployed during evasive maneuvers. If the submarine is being chased by destroyers, the captain might choose to run very silently, release a noisemaker and make an unpredictable turn. The "bright" sound image of the noisemaker might fool the enemy captains into chasing it rather than their intended target. Pillenwerfers were available as of 1942.

- Keyboard - Forward torpedoes can be fired by pressing "**Ctrl F**", aft torpedoes are fired by pressing "**Ctrl A**". Noisemakers are fired by pressing "**Ctrl N**". Lead computation is performed by pressing "**Ctrl M**".

Bottom Depth Indicator / Deck Gun Control Group

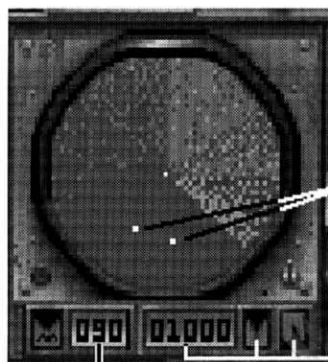


By clicking on the **Gun Ranging Icon** while a target ship is lined up in the reticule crosshairs or is generally centered on the screen, the range to the target ship will be displayed in meters on the **Gun Range Indicator Window**, simultaneously, the name of the ship being ranged is displayed on the **Text Display Window**. The range derived from this action, is automatically fed into the deck gun's elevation mechanism. The **Deck Gun** can then be fired by clicking on the **Gun Icon**. Under most circumstances, this range is very accurate, but the elevation of the gun can further be adjusted by clicking on the **Elevation Trim Controls**. The gun ranging device can also be used to generally provide range and ID information on any ship centered on the aiming reticule.

- Keyboard - Gun ranging is performed by pressing "**R**". Firing the deck gun is accomplished by pressing "**G**". The gun can be trimmed up by pressing "**E+**" and trimmed down by pressing "**E-**".

Destroyer Displays and Controls

RADAR



RADAR display is installed in Allied destroyers beginning in 1942.

Blips indicate surface contacts. Bearing relative to your ship's heading.

RADAR range and adjustments

Meters to bottom

RADAR only appears in ships in a mission that takes place in 1942 or greater war year (otherwise a metallic plate covers the area where the RADAR display would otherwise be). The range of the RADAR also improves in later war years. RADAR can be very useful in locating submarines, even their snorkel or periscope, particularly in later war years. Display colors for the RADAR blips, correspond to those of the **Tactical Map** outlined above.

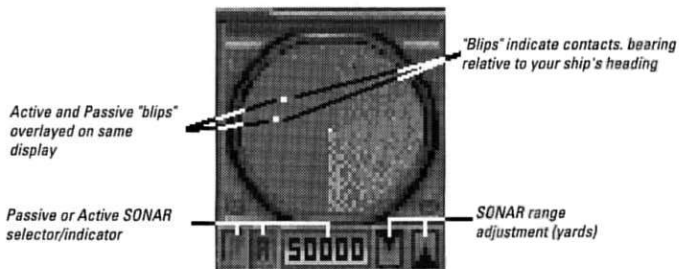
On the base of the RADAR display, the **RADAR Range Indicator**, displays the range that the unit is set to. This range can be adjusted by clicking on the range adjustment arrows as shown in the figure above.

- Clicking on the up arrow icon will increase the range of the **RADAR Display**. Clicking on the down arrow icon will decrease the range of the **RADAR Display**.
- Keyboard - The display range of the RADAR may be adjusted up by pressing "**Q +**", and down by pressing "**Q -**".

Bottom Depth Indicator

Also located at the base of the RADAR display, the **Depth Indicator Window**. Ships continuously display the bottom depth (from sea level to bottom) on the **Depth Indicator Window**. The destroyer captain can use this reading to help him estimate at what depth to set the detonation depth of depth charges.

SONAR/Hydrophone



Passive (hydrophone)

Wolfpack's SONAR display is actually two instruments combined into one. The output of the Passive sonar is always displayed on the SONAR display. The output of the Active SONAR is superimposed on the same display whenever the Active selector is clicked (see picture above).

- On the base of the SONAR display, the **SONAR Range Indicator**, displays the range that the unit is set to. This range can be adjusted by clicking on the range adjustment arrows as shown in the figure above.
- Keyboard - The SONAR display range may be adjusted up by pressing "K +", and down by pressing "K -".

Passive SONAR, called a hydrophone is always on. It can detect the sound of any ship moving on the surface under turbine or Diesel power. The main weaknesses of the hydrophone are that if your engines are on or if the submarine is running under quiet electric power, you probably won't detect any of the faint sounds.

Active SONAR

Active SONAR is true SONAR. The device works by generating sonic "pings" which bounce off metallic targets such as submarines. By measuring the time that it takes for the "ping" echo to return to the ship, the location of the submarine can be estimated. Active SONAR works under most conditions but has different probabilities of detecting submerged U-boats depending on the distance to the target. Beyond a certain range, the probability of detecting someone actually decreases.

Range in yards	Probability of a return
-----------------------	--------------------------------

0-100	5%
250-500	25%
500-750	50%
750-1000	75%
1000-1250	50%
1250-1600	25%

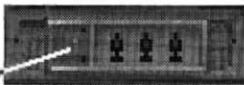
If more than one destroyer is "pinging" the same target, the probability of seeing the target increases. The probability of hearing the target decreases with target depth.

The major disadvantage of using the active SONAR is that the target submarines can also hear the "ping" (usually at a greater range than they can be detected) and they might take evasive action. A captain should use Active SONAR judiciously.

- Active SONAR can be selected from 1943 on, by clicking on the "A" icon (see above) When active SONAR is operative, the passive hydrophone is still operational and it's output is overlaid on the same instrument face.
- Keyboard - Press "Ctrl S" to toggle Active SONAR on or off (year must be '43 or greater.).

Hedgehogs

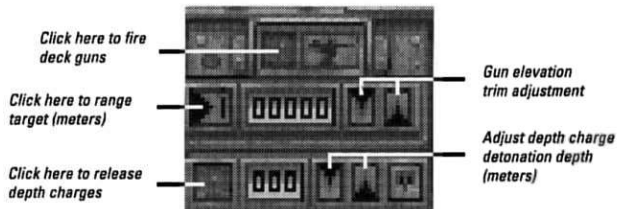
*Click here to fire Hedgehogs
(forward facing mortars)*



Hedgehog forward firing spigot mortars became available in 1940, a metal grille occupies their location prior to this year. Unlike depth charges, they explode on contact with the submarine, thus making the need to set the detonation depth unnecessary. They fire a 130 foot circular pattern 200 yards in front of the destroyer. This is one of the most effective weapons at the captain's disposal.

- Hedgehogs are fired by clicking on the Hedgehog Icon. The indicator flashes whenever the weapon is loaded and available.
- Keyboard - Hedgehogs can be fired by pressing "H".

Deck Guns



- A target can be ranged by clicking on the **Gun Ranging Icon** while a target ship is lined up in the reticule crosshairs, the range to the target ship will be displayed in meters on the **Gun Range Indicator Window**, simultaneously, the name of the ship being ranged is displayed on the **Text Display Window**. *The range derived from this action, is automatically fed into the deck gun's elevation mechanism.* The deck gun can then be fired by clicking on the **Gun Icon**. Under most circumstances, this range is very accurate, but the elevation of the gun can further be adjusted by clicking on the **Elevation Trim Controls**. *The gun ranging device can also be used to generally provide range and ID information on any ship centered on the aiming reticule.*
- Keyboard - The gun can be ranged by pressing "R". Elevation can be adjusted up or down by pressing "E +" or "E -" respectively.

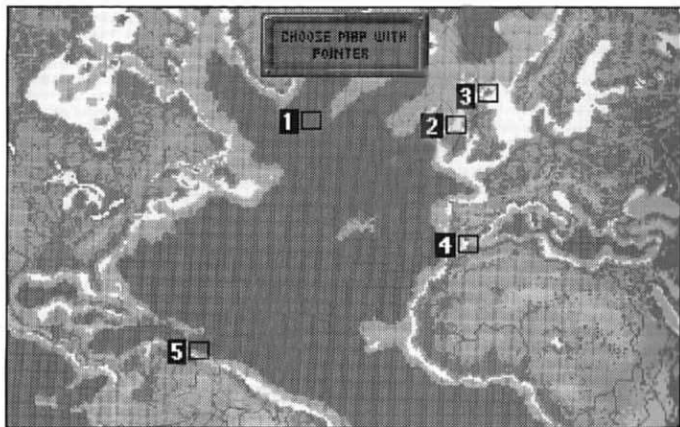
Depth Charges

- The depth charges are fired from the the stern of the destroyers by clicking on the **Depth Charge Fire Button** (above). *Note that clicking on the alternate button will fire a salvo of 4 depth charges will be fired.* The detonation depth should be set prior to releasing the depth charges. Estimating the depth at which the charges should detonate is a trial and error procedure. The charges should be set to detonate above the sea bottom (see the **Bottom Depth Indicator** above). A submarine seen diving will be relatively near the surface. An explosion at 25 yards from the U-boat will cause a submarine to sink. Explosions at greater distances, will cause less damage. Depth charge explosions will also cause both active and passive SONAR contact to be lost for a period of time.
- Keyboard - Pressing "C" releases a depth charge, pressing "C" followed by "Ins", will release a salvo of 4 depth charges. Pressing "J +" or "J -" will increase or decrease the detonation depth of the depth charges.

Creating or Modifying A Mission

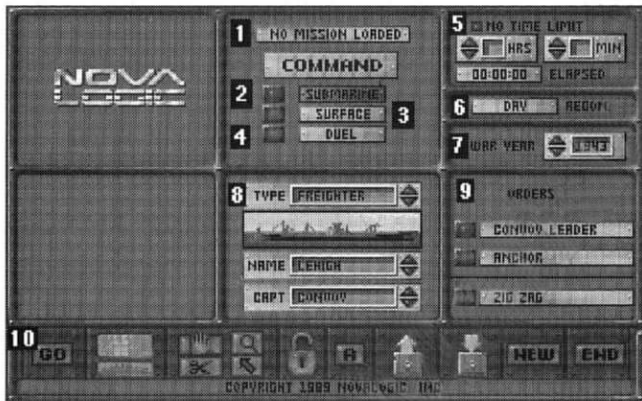
Master Map and associated selection rectangles:

The Master Map contains a general view of the North Atlantic. Within the Master Map, selection rectangles indicate available playfields which can be selected by the player. Selection is performed by either clicking on the appropriate rectangle or by cycling through the selection rectangles by pressing the tab key and accepting the selection by pressing enter. Either of these actions will load the selected map into memory thereby replacing the Master Map and initiating the scenario building phase.



1. Atlantic Gap 2. North Channel 3. Scapa Flow 4. Gibraltar 5. Caribbean

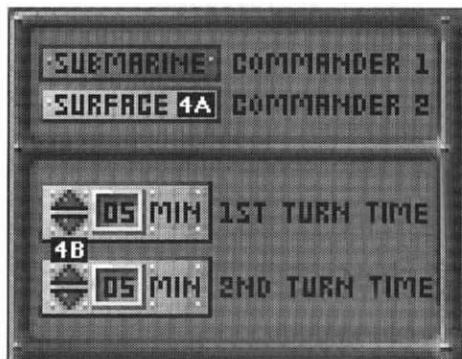
The Construction Set



Players can set up their own missions or modify unlocked saved missions through the use of the **Construction Set**.

The **Construction Set** screen allows the player(s) to select how the game is to be set up. The choices are:

- 1. Mission Name** This is the name of the currently loaded mission
- 2. Submarine** You will assume the role of Wolfpack Commander, command up to several German IX U-boats, XXI U-boats and a U-boat re supply submarine (Milk Cow). The primary mission is to sink as much Allied tonnage as possible and/or to keep the convoy from reaching its final destination. The computer plays the Convoy Destroyer Commander.
 - Keyboard - Press "**Ctrl S**"
- 3. Surface** You assume the role of the Convoy Destroyer Commander, you'll control destroyers, tankers and freighters. Your primary mission is to defend the convoy against German submarines. The computer plays the Wolfpack Commander.
 - Keyboard equivalent - Press "**Ctrl D**"
- 4. Duel** One player assumes the role of Wolfpack Commander, the other is the Convoy Destroyer Commander. The time allotted to each player is user definable and the computer sequentially allows each player to have his turn. The time for each players' turn is individually set when the game is set-up.
 - Keyboard - Press **Ctrl B**



When choosing the **Duel** (two player mode) timeshare mode, the players are then asked to choose which fleet they will command (**Command Toggle**). Clicking on **4A** will select which side goes first. when playing, the computer will keep track of each players turn time, and will switch sides at the correct point. A warning in the **Text Display Box** is given 30 seconds before the switch takes place.

- Keyboard - "F"

In **Duel Mode**, each player gets to set his turn time individually. This is done by clicking on the corresponding up/down arrow icons, as shown in **4B**.

- Keyboard - For player 1, pressing "**Tab +**" will increase his turn time, pressing "**Tab -**" will decrease the time. Player 2 will get the same effect by pressing "**Caps Lock +**" and "**Caps Lock -**".

5. Mission Time Limit Missions can be played with or without a time limit. Clicking on the **Mission Time Limit Icon** will toggle between time limit or no time limit. If a time limit is chosen, the mission will end when the preset time is reached. If a time limit has been chosen, clicking on the corresponding up/down arrow icons will set the desired time.

- Keyboard - Pressing "**Ctrl L**" will toggle between time limit and no time limit. Pressing "[" or "]" will increase or decrease play hours. Pressing "**Ctrl +**" and "**Ctrl -**" will increase or decrease play minutes.

6. Recon (Reconnaissance) This mode determines the rules that govern the display of ships on the **Tactical** and **Strategic Maps** during game play. Clicking on 5 cycles through the three setting which are as follows:

Day Mode

- Map displays all ships on your side.
- Map displays any opponents ships that show up on your sensors such as SONAR and RADAR.
- Map displays opponent ships that can be spotted visually as per the distance table in **Appendix A**.
- Map displays the location of all opponent ships that have been observed by other ships on your side and their position transmitted by radio to your current ship.

Night Mode

- Same rules as in **Day Mode** but due to reduced visibility, it favors U-boats, particularly prior to the introduction of RADAR in 1942.

Aerial Mode

- Displays all ships on all sides. This is meant as a simple way to orient the new game player.

- Keyboard - Press **Ctrl R** cycles through the three choices.

7. War Year Clicking on the corresponding up/down indicator arrows sets the year of conflict for the mission. The war year can be set from 1939 to 1945. Ships rely on the weaponry and sensors of the period. The war year of the mission is very important because it determines which side has the technological advantage and thus the best chance of winning. 1939 to 1942 were good years for U-boats, the Allies had not yet perfected RADAR and SONAR, and their anti submarine tactics were not fully developed. This meant that during a night attack, the submarines could actually surface in the middle of a convoy and fire at will with virtual impunity.

1943 through 1945 things had changed dramatically. Allied advances in sensor technology such as RADAR and SONAR as well as in weapons such as improved depth charges and Hedgehog mortars led to a 96% kill rate on submarines. As an additional point of interest to the submarine player, setting the war year at 1945 allows the use of type XXI submarines in game play. While there were only 12 type XXI's in service at the end of the war, these improved U-boats could operate at greater depths, stay submerged indefinitely and were fast underwater. Had the type XXI been deployed in greater numbers earlier in the war, they would once again have turned the tables in the Battle of the Atlantic.

- Keyboard - Press "**Y+**" (up) / "**Y-**" (down)

8. Ship Selection The **Ship Selection Icons**, can easily be manipulated to arrange the ships prior to laying them down on the **Mission Map**. There are six different types of ships; Destroyers, Freighters, Tankers, Type IX U-boats, Type XXI U-boats, Type VII U-boats, and Milk Cow U-boats. Each one of these ships has a set of mission orders associated with it.

The type of ship can be selected by clicking on the arrow icons in the uppermost box (above the ship's image). Successive clicks cycle through the available ship types. Clicking in the box below the ship image, cycles through the available ships of that particular type. Captains for the ships are selected with the **Captain Selection Arrows**. Captains have different personalities and avail themselves of different tactics when in combat. It is important to take this into consideration when choosing a captain. See the **Captain Personalities** section below for a more in-depth description of this feature.

- Keyboard - Pressing "**Ctrl T**" cycles through ship types. Pressing "**Ctrl N**" cycles through the ship names and pressing "**Ctrl C**" selects captain names.

9. Orders Selector The Ship Orders Selector is located at the rightmost third of the **Ship Selection Dialogue Area**. Clicking on the individual selections allows you to give the particular ship a general set of orders that will be followed under most circumstances. The orders chosen can be changed during game play through the use of the **Order Selection Buttons** accessible from the **Strategic Map** (see above) or they can be completely overridden by the **User Control Mode**. The available orders correspond to each type of ship. Once contact is established with the enemy, destroyer and submarine captains will take over with their own tactics and override the selected orders. The "**By The Book**" captains (see below) are the exceptions and will not deviate from the orders under any circumstances. These captains are useful as milk cow captains, damaged ship captains that you might want to keep out of trouble for scoring reasons or reserve ships which you do not want to engage in combat.

- Keyboard - For the various types of ships, the different orders can be selected by pressing the keys shown below:

Merchants

Convoy leader/Follow Convoy	'1'
Anchor	'2'
Zig/Zag	'3'

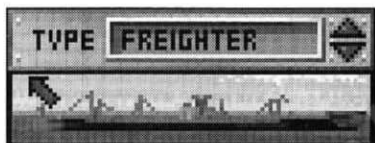
Destroyers

Ocean patrol	'1'
Convoy patrol	'2'
Anchor	'3'
Zig/Zag	'4'

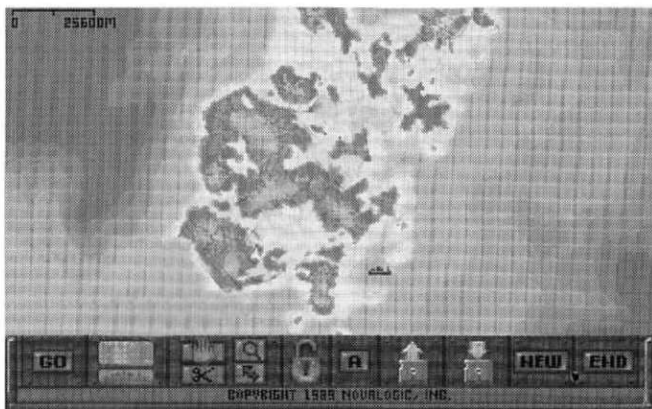
Submarines

Ocean patrol	'1'
Anchor	'2'
Surface	'3'
Periscope depth	'4'
Maximum depth	'5'

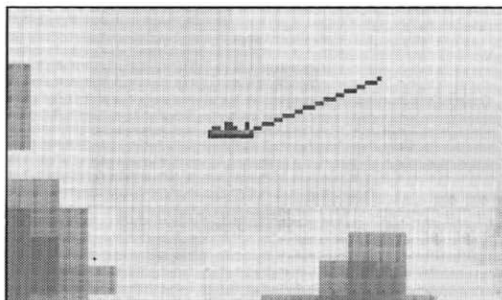
Once you have selected a ship **Type**, **Name**, and **Captain**, you are ready to lay it down on the **Mission Map**. If the mission is to have a convoy, it makes the most sense to pick a freighter first since the first merchant ship that you select, will have **Convoy Leader** selected as the default orders, all other members of the convoy will automatically follow this ship through out the game. It might also be a good idea to select **Zig/Zag**. This will make the entire convoy more difficult to hit with torpedoes.



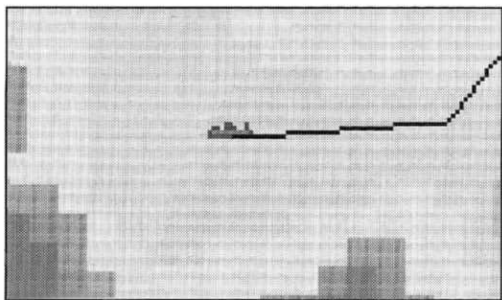
Click on the ship icon on the **Command Screen**, and your cursor will turn into a smaller version of the icon. The **Mission Map** will now replace the top portion of the **Construction Set** screen.



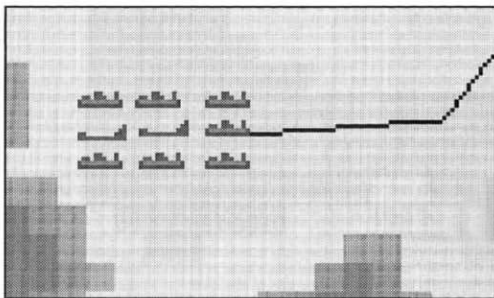
The scale of the **Mission Map** is shown in meters on the upper left hand portion of the map. At this stage you usually you want to magnify the map to the greatest magnification possible. You can do this by pressing "**Alt +**". Note that the scale of the map at the upper left hand corner will change accordingly if you do this. *At any time during this process, you can you can press "+* or *"-"* and enlarge or reduce the size of the map. Pressing "**Alt +**" or "**Alt-**" will enlarge to the maximum or minimum scale.



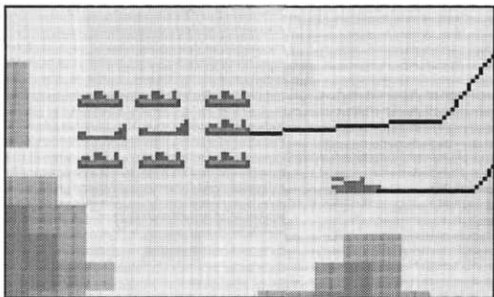
Position your ship cursor over the area where you would like the convoy to start. Click the button, and the ship icon will now be attached to the map, your cursor now becomes the end of a "rubber band" line with it's other end attached to the ship icon. *Pressing the "Esc" key at any time during this process will erase any ship which has been partially laid down.*



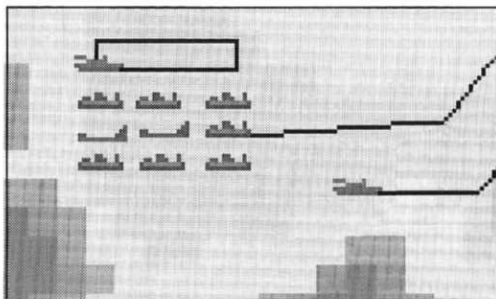
By sequentially clicking on other locations on the map, you can define up to 9 additional waypoints in this manner. You can also terminate the sequence at any time by pressing the alternate button. The last waypoint set for the **Convoy Leader** will be the convoy's destination. *The game will end once the **Convoy Leader** reaches the destination.*



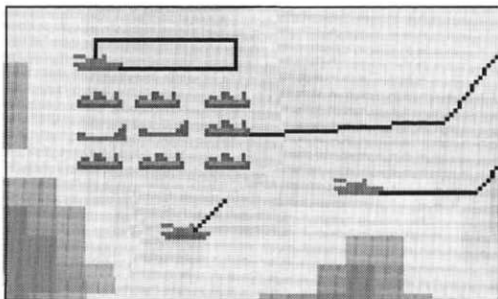
Once you have laid down the convoy route as described above, you can now add more ships to form a convoy. You do this by picking up additional merchants (note that their **Orders** now say "**Join Convoy**") and clicking with their icons on an area near the leader. It is a good idea to put freighters on the perimeter of the convoy, and tankers on the more protected inner rows. You should also take into consideration the ship to ship distance, which can easily be determined by looking at the map scale located at the upper left of the map. Distances between 300 and 1000 meters between convoy ships work well. *On slower computers, you might want to limit the number of ships that you put down. The more ships, the slower the simulation will run.*



Once you have laid down the merchant ships, you can now lay down the destroyers. Destroyers can be set in one of 2 different ways; **Ocean Patrol** and **Convoy Patrol**. If you select **Ocean Patrol** from the **Orders Selection Buttons**, waypoints are set in the same way as above. The destroyer will move independently of the convoy and follow its own set of waypoints. If the first waypoint is set near to the last waypoint, then the computer will beep and join the paths into a loop. The destroyer will now travel in that loop as long as there are no enemy contacts.

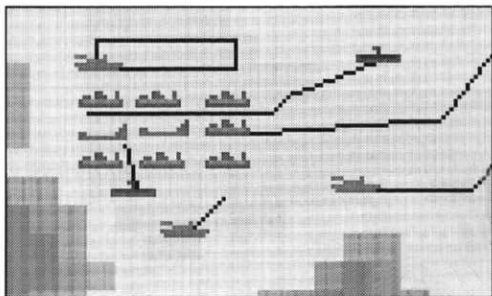


Choosing **“Convoy Patrol”** will allow the user to set waypoints the same as above. In this mode, the path should be made into a closed loop. The destroyer will now follow this patrol loop, however, the loop will also move relative to the convoy’s movement. Thus, convoys can be escorted through their entire route.



Any ship can be set down at anchor, this is done by selecting the **Anchor** button from the **Orders Selection Buttons** prior to pasting the ship on the **Mission Map**. After the ship is clicked on to the desired location on the map, a short line will extend from it’s icon. This line can be moved in a circular fashion so that it points to any desired angle. Clicking the button again, will set the line at that angle. *The angle of the line corresponds to the direction that the ship will be facing while laying at anchor.*

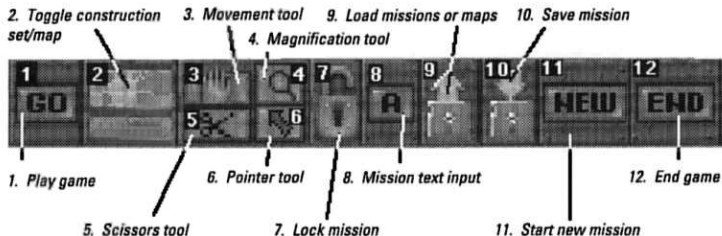
Note that a ship set at Anchor, (with the exception of the **“By The Book”** captains) will still revert to the selected captain’s control, if it becomes engaged with the enemy.



Submarines are selected and placed in the same way as destroyers on **Ocean Patrol** or at **Anchor**. Additionally, submarines can be set at one of three depths; **Surface**, **Periscope Depth**, **Maximum Depth**. Submarines placed on the surface have a very high probability of being attacked, so for the most part, they should be set at either **Periscope Depth** or at **Maximum Depth**. At **Maximum Depth**, the U-boat will be positioned either at it's nominal maximum dive depth, or a few feet from the bottom (whichever comes first).

The Mission Construction Set Menu Bar

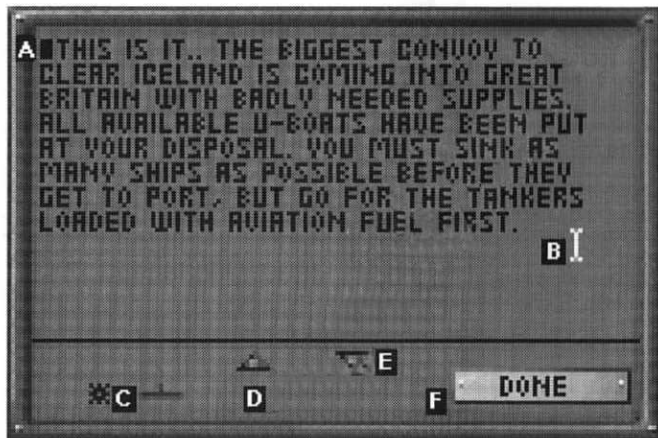
The **Mission Construction Set Menu Bar** gives the user a great deal of control over many Construction Set features.



- 1. GO** Play Game. Clicking here starts the game with the parameters that are currently displayed. While playing the game, the user can at any time press "Esc" or move the cursor to the upper left hand corner of the screen and press the mouse button, he will be returned to the **Construction Set** screen. The player is now free to change any parameters (if the mission is not locked) and resume the game by pressing **GO**.
 - Keyboard - Press "G".
- 2. Map/Construction Set** Clicking here toggles the view from the **Construction Set** to the **Mission Map**. This feature is not available if the mission is locked.
 - Keyboard - Press "M".
- 3. The Movement Tool** This tool is used by clicking *and keeping the button down* over a spot on the map that you wish to drag over to a new location. Move the tool over to the desired location and release the button. The map will now move to the new location. On slower computers, there may be a noticeable lag between the time you release the button and the map actually moves.
 - Keyboard - Press "H"
- 4. The Magnification Tool** Picking up this tool and clicking it over any desired part of the map, will cause the map to be magnified and centered over that spot. Clicking with the alternate button causes the map to be scaled down. Doing either of the above actions with the "Alt" key depressed, will take the map to the maximum enlargement or reduction respectively.
 - Keyboard - Press "X"
- 5. The Scissors Tool** Clicking over a ship that appears on the **Mission Map**, will remove it along with it's associated waypoints, and add it back to the **Construction Set** so that it can be re-used.
 - Keyboard - Press "C".
- 6. The Pointer Tool** Selecting this tool allows you to click over any displayed ship and ID it at the bottom of the screen. The ship's Type, Name, Captain, Orders and depth will be shown. This is an useful feature for editing a mission.
 - Keyboard - Press "P"
- 7. Mission Lock** Clicking on this icon, will lock a mission. This is useful if you do not want people who will be playing the mission to alter it's parameters or view the **Mission Map**. *While in the Construction Set, the mission can be unlocked by clicking on the icon again, however, once the mission has been saved in the locked mode, it can never be unlocked again!* Some of the missions included with the game are locked.
 - Keyboard - Press "K".

8. Text Input At the start of any mission, **Mission Text** is displayed by a typewriter located in the **Viewport**. This text usually includes a description of the mission about to be played. The Surface Commander is shown a different message than the Wolfpack Commander. Since missions can be created by the player through the use of the **Construction Set**, the user is also provided with a means for inputting the associated mission text for the missions that he has created. The **Text Entry Box** provides a means for entering mission text.

Clicking on this icon brings up the **Text Entry Box**. The Text Entry Box is actually a mini word-processor.



Text can be input by typing at the keyboard, it is inserted at the **Block Cursor (A)**. The **Back Arrow** key will erase text to the left of the cursor. The **Block Cursor** can be moved by moving the **I Beam Cursor (B)** with the mouse and clicking on the area where you want to insert or delete text. The up/down arrows (**E**) will scroll text when it occupies more than one screen full. Clicking on the submarine or destroyer icons (**C**) and (**D**) allows the user to input the desired message for either the submarine or surface sides. Clicking on "DONE" (**F**) saves the text and removes the **Text Entry Box**.

- **Keyboard** - Press "A" brings up the **Text Entry Box**. Pressing "Ctrl +" or "Ctrl -" scrolls text up or down. "Ctrl S" and "Ctrl D" selects submarine or surface text respectively. Pressing "Esc" saves the text and removes the **Text Entry Box**.

9. Load Dialogue Box This option allows the user to either load a mission that has been previously saved, or to load a new mission map. To load a new **Mission Map**, you click on "New Map" then click on the map name which you wish to load and then click on "Load". To load a previously saved mission, you click on "Mission" followed by "Load".

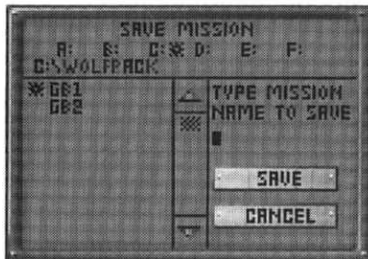


The **Load Dialogue Box** also allows the user to load files that reside in disks or directories other than the current default. To select a different disk, click on either the A:, B:, C:, D:, E:, or F: (A). To choose a different directory, click on the line displaying the directory path (B). Doing so will display either a list of available directories, or "*.*". Clicking on either will allow the user to navigate through the available directories. Clicking on either the **Up** or **Down** arrows (C) will scroll through different file names if there are too many to fit in the file display window at one time. Clicking and dragging on the "Elevator" (D) will quickly move through file names.

- Keyboard - Press "L" to bring up dialogue box. Once the dialogue box is displayed: "N" = "New Map", "M" = "Mission", "L" = "Load", "+" = move up files, "-" = move down files, "C" or "Esc" = "Cancel".

10. Save Dialogue Box Clicking on this icon lets the user save the current mission. Missions can be saved after they are created, and played several times, or they can be saved in the middle of game play, to be played at a later time. Keep in mind that if a mission saved with the **Lock** option (see above) you will not be able to modify it from that point on. To do this you type in a name **up to 8 characters long**, and click on "Save". Disk and directory selection are performed the same as on the **Load Dialogue Box** (above).

- Keyboard - Press "S"



11. New Mission Clicking here will clear the current mission. A confirmation dialogue box will follow this selection.

- Keyboard - Press "N". Once the dialogue box is displayed: "+" = move up files, "-" = move down files, "Esc" = "Cancel".

12. End Game Clicking here will end the game. A confirmation dialogue box will follow this selection.

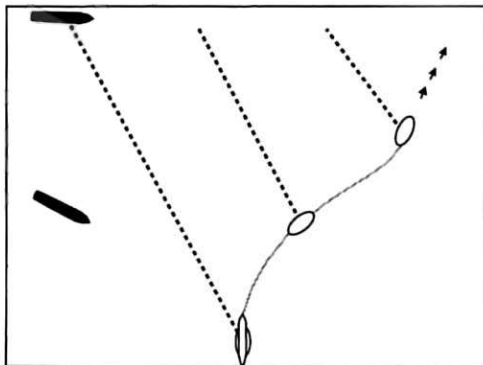
- Keyboard - Press "E".

Submarine Tactics

For the most part, your job is to maneuver into firing position and dispatch the transports before the escorts drive you to evasive action. Try to keep your periscope up for the shortest time possible to locate your targets. Get out of visual or radar range and use diesel engines to maneuver into favorable positions in front of the convoy.

When attacked by a destroyer, try to run and line up a stern shot "down the throat" when he gets close. This can be deadly to either one of you, so be prepared to dive deep and evade once you have fired your torpedoes! Try running at less than full speed underwater while you are being tracked and you will have a better chance of escaping. The torpedoes have a range of 4000 meters and you might fire at this range, however, historically captains would close to no more than 1800 meters if they wanted to be sure of a hit.

When you have the opportunity, have one of your subs (preferably out of torpedoes) make a lot of noise and draw off the escorts while the rest of the wolfpack attacks from another quarter. In the same manner, if several destroyers are attacking a submerged sub, another sub can sneak up and try to kill the circling destroyers as they drop depth charges.

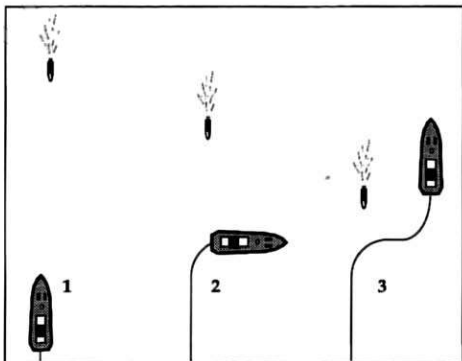


The preceding diagram shows the typical way that a submarine stalked a surface ship. The ship was sighted from maximum distance. Once the enemy was sighted, the submerged U-boat would calculate an interception course and proceed towards the target. A good captain, would infrequently raise the periscope for not more than 5 to 7 seconds until he was within firing range. The U-boat would approach to firing distance at anywhere between 90 and 120 degrees to the target. Once in place, the sub would compute a firing solution, feed it into the torpedoes' gyros and let out a salvo, the exact number determined by the importance of the target and it's contents.

Destroyer Tactics

For the destroyer captain, the primary consideration is the disruption of the submarine attack on the transport ships he is escorting. Try to anticipate where the subs are going to be waiting and head them off before they can set up their torpedo runs. Several destroyers traveling back and forth in front of the advancing convoy will make it more difficult for the sub commander. In the pre-1942 missions, the only way that you can find the submarines is by using "sprint and drift" techniques. This means cutting your engines to full stop and listening for the subs on your hydrophones. After you locate a sub, head for it at max speed, after traveling for 500 to 1000 yards stop your engines and search again.

When attacking a sub on the surface, fire as soon as possible. Any damage that you inflict will help diminish your opponent's chances for victory. If you are attacking a submerged sub, watch to see if he has fired any torpedoes as this will give you an indication that he is still near the surface. If not, then set your depth charges to go off at 200 meters or at the bottom depth (whichever is less) since that is the most likely depth to find an evading submarine. Watch for any decoys that might be used to confuse you. Decoys don't move once they are released! If your sound man announces that high speed screws are in the water, be prepared to take evasive action to avoid being torpedoed in the line of duty. Skillful ship handling might allow you to dodge them. Steer a course 90 degrees. to the torpedoes for a few moments and then turn back into them so as to sidestep or "comb the wakes", the charge down their trail and try to destroy the submarine before he can get off another salvo.



The preceding torpedo avoidance manoeuvre is called "Combing the Wakes". Once an incoming torpedo is detected (1), the ship makes a sharp 90 degree turn at maximum speed (2). The ship maintains this course for as long as it takes to get off the torpedoes course. Once this is done, the ship turns directly into the oncoming torpedo, so as to present a narrower profile to the incoming torpedo (3).

Milk Cow Submarines

Because of their massive displacement and slow response, all type IX U-boats were known as Sea Cows. This is why the derivative, re-supply U-boats came to be called Milk Cows (Milchkuh). Fitted with as many torpedoes as they could carry (38), they would re-supply other U-boats on the high seas.

In game play, a Milk Cow can be deployed so as to re-supply other submarines. In order to transfer torpedoes and Pillenwerfers to a depleted U-boat, you must do the following: Bring the sub to be re-supplied to within 50 meters of the Milk Cow. The engines on both subs must be stopped. Torpedoes will be transferred every 25 seconds. After all the torpedoes have been transferred, Pillenwerfers will be loaded. Be careful, this is a tricky operation, and you become very vulnerable to enemy attack.

Pillenwerfers

In 1942 some U-boats were outfitted with decoy noise makers, known as Pillenwerfers. A canister containing calcium hydride was released. This canister floated at a depth of about 30 meters and emitted a large number of hydrogen bubbles. These bubbles produced a sound similar to that of a submarine, and could be mistaken for a submarine.

In game play, the Pillenwerfers are always released from tubes at the rear of the U-boat. A smart destroyer captain will observe that the noise makers remain stationary, therefore giving a clue to their true nature.

Captain Types

Since it is difficult to command every ship at once, you assign default captains of differing personalities to each of the vessels in the game. This is primarily important when you are creating your own missions in the **Mission Construction Set**. (Missions included in Wolfpack already contain assigned captains.) Listed below are the personality types for each of the captains.

Relentless - This personality type will engage enemy vessels on contact and will not break loose until its target is lost or destroyed. Other traits include the use of sprint and drift tactics when on the surface (destroyer and submarine under diesel engines). Submarines attack destroyers first. If this captain is placed in charge of a destroyer, he will leave the convoy to hunt and kill a submarine. These Captains are:

Destroyer

BROOKS
ENRIGHT
GLENNON
REED

U-boat

STADLBAUER
KRATZ
RADDATZ
KAISER
BERGER
ISBRUCHT
EGEN

Resourceful - Captains who fall under this category will be more conservative than the **Relentless**. They also use use radio contacts. If this personality is assigned to a Submarine captain, he will chase merchant ships first and only attack destroyers if there are no other contacts. Usually he will use evade techniques to avoid destroyers. These Captains are:

Destroyer

DISSETTE
KOSOY
RATCLIFF
SEEHOLZER
MAGGRUDER
MASSEY
BRUTON
DYKERS
TILLMAN
SHUBRICK
TALBOT

U-boat

SAGEBRECHT
V WATZDORF
BOCKMEIER
M HOCHBERG
H FRITSCH
KENDERK
SCHUG
SCHULTE

Cautious - This personality only attacks when attacked first or contact is within easy striking distance. He will not break away from the convoy or wolfpack. This is a good personality type to use if you are low on destroyers and have a lot of merchants to protect. If he is a Submarine Captain he will never attack destroyers. These Captains are:

Destroyer

GARCIA
KOSOY
BUTROVICH
SIMON
BECKTON
SHEA
MCCLUSKY
CARMICK
COWIE

U-boat

KAUFMANN
ROLFE
KORBER
SCHLEIF
STEINHOFF
ROMBERGER
MUTZELBURG
HINDERKS
ROLFE

By The Book - Will not attack or deviate from his original orders. He will do absolutely nothing except carry out the orders you issued him. This personality type is especially good for milk cows or reserve convoy escorts. These Captains are:

Destroyer

ACKER
MORTON

U-boat

O.NEMENZ
BOCKMAN

Missions

Wolfpack CD comes with 36 missions that you can play right out of the box. After you become familiar with the game, you can build more missions through the use of the Mission Construction Set.

Load the missions by either selecting Start Mission from the Startup Menu or with the Load Dialogue Box from the Construction Set Menu Bar (see above). After the mission has loaded, you will see the Mission Construction Set screen, and if the mission is not locked, you will be able to alter all of the parameters and/or look at the Mission Map.

Missions have been set up so that they are challenging if played from the default side. Missions that are not locked can be played from either side. At any time you can get your current score by pressing "Ctrl Q". This action will show you the current score and put you in the Construction Set. You can then resume the game by pressing "G". In general you should play missions to completion in order to get a score that reflects the difficulty of playing the entire game.

Missions in progress can be saved via the save function and resumed at a later time. You can also start out with an unlocked mission, modify it at will and save it under a different name.

Missions have a high level of randomness. Every time that you play the mission, results will likely differ, but in general, the level of difficulty will remain constant (a difficult mission will always be difficult). Winning a mission is not enough, a good commander will try to get the highest possible score for that mission.

We included several locked missions. We did this because we feel that in a simulation in which strategy is a significant factor, it is important to keep some knowledge from the player, otherwise the game may not be fun. Keep this in mind in particular when constructing Duel 2 player missions. The amount of information that the individual players have, makes a big difference to the outcome of the game.

Appendix A Tables

Visibility

Ships are visible at the following distances:

10500 meters after firing weapon
10000 meters surface ship day
2000 meters surface ship night
3000 meters submarine day
800 meters submarine night
800 meters periscope day
100 meters periscope night

RADAR

RADAR use started in 1940 but was inaccurate and unreliable until mid 1942 when decimetric RADAR was introduced. In early '43 centimetric radar was introduced which in particular could see periscopes much more accurately.

METOX could detect RADAR in 1942 only. From 44 on, NAXOS could detect Allied RADAR.

Maximum RADAR distances for surfaced U-boats :

distance (meters)	year
1000	1940
2000	1941
5000	1942
6000	1943
7000	1944
7500	1945

Maximum RADAR distances to detect periscopes :

distance (meters)	year
1000	1943
1400	1944
1700	1945

Maximum RADAR distances to detect surface ships :

distance (meters)	year
1000	1940
2000	1941
40000	1942
45000	1943
50000	1944
55000	1945

Hydrophone

Hydrophone only works if diesel engines are stopped.

Hydrophone Ranges:

	Back-1/4	STOP	1/4	1/2	3/4	FULL	FLANK
Surface Ships	20K	N/A	20K	40K	50K	70K	80K
Subs Diesel	10K	N/A	10K	15K	20	K50K	60K
Subs Electric	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SONAR (Active)

Active SONAR works under all conditions but has different probabilities of detecting submerged ships. The probability of hearing the target grows down with depth.

Active sonar probability of detection:

5% at	100 meters
25% at	500 meters
50% at	750 meters
75% at	1000 meters
50% at	1250 meters
25% at	1600 meters
5% at	2500 meters

Active sonar characteristics at different depths:

-0% to 50 meters
-5% to 100 meters
no response below 122 meters

Misc

Milkcow logic:

both subs must be:

- 1) stopped
 - 2) on surface
 - 3) with in 50 meters of each other
- then every 25 seconds a torpedo will be passed over to receiving sub

Torpedoes carried:

Type VII	14
Type IX 22	22
Type XXI	23
Mick Cows (Type IX)	38

Years specific systems become available:

Hedgehogs	1942
Pillenwerfer (noisemaker)	1942
Snorkels	1943
Noise Makers	1942
Active SONAR	1943
RADAR	1942
METOX	1942
NAXOS	1944
Type XXI U-boats	1945

Appendix B Shortcut Keys

F1	Pressing the "F1" key during game play will pause the game and halt the mission timer. Pressing "F1" again, will continue the game.
F2	Global sound ON/OFF
F3	Engine noise toggle
F8	RADAR sweep toggle (for slow machines)
F9	Land generation toggle (slow machines)
F10	Fizzle toggle
Ctrl Alt F10	Emergency Exit
Ctrl Alt Del	Reboots computer

Startup Menu

Start mission
Construction Set
Demo
Quit game

'S'
'C'
'D'
'Q'

Construction Set Screen

Play game
Lock game
Load dialogue box
Save dialogue box
New game
Exit
Map/Construction Set
Positioning
Scissors
Magnifier
Pointer tool
Text input window

'G'
'K'
'L'
'S'
'N'
'E'
'M'
'H'
'C'
'X'
'P'
'A'

Ship Orders

Convoy leader/Follow Convoy	'1'
Anchor	'2'
Zig/Zag	'3'
Ocean patrol	'1'
Convoy patrol	'2'
Anchor	'3'
Zig/Zag	'4'
Ocean patrol	'1'
Anchor	'2'
Surface	'3'
Periscope depth	'4'
Maximum depth	'5'
Choose submarine side	'Ctrl S'
Choose surface side	'Ctrl D'
Choose two player mode (Duel)	'Ctrl B'
Mission time limit toggle	'Ctrl L'
mission time hours +	[
mission time hours -]
mission time minutes +	'Ctrl +'
mission time minutes -	'Ctrl -'
Recon day/night/aerial	'Ctrl R'
War year +	'Y +'
War year -	'Y -'
Ship type	'Ctrl T'
Ship name	'Ctrl N'
Captain name	'Ctrl C'

Two player mode (Duel)

First player toggle	"F"
Player one turn time +	"Tab +"
Player one turn time -	"Tab -"
Player two turn time +	"Caps Lock +"
Player two turn time -	"Caps Lock -"

Text Input Window

Scroll text up	'Ctrl +'
Scroll text down	'Ctrl -'
Submarine text	'Ctrl S'
Destroyer text	'Ctrl D'
Done	'Esc'

Load/Save dialog boxes

Load map	'N'
Load mission	'M'
Load whatever	'L'
File selector up	'+'
File selector down	'-'
Cancel	'Esc'

All ships

Exit game to- construction set	'Esc'
Sequentially jump- from ship to ship	'Tab'
Auto Mode	'A'
User Control	'U'
1.5 X magnification	'X -'
6X magnification	'X +'
Damage screen toggle	'W'
Strategic map screen toggle	'M'
Status screen toggle	'S'
Scroll up status roster	'Ctrl +'
Scroll down status roster	'Ctrl -'
Move outside- view to port (left)	'V -'
Move outside view- to starboard (right)	'V +'
Align view to 0 degrees	'V Ins'
Align view to 180 degrees	'V Del'
Timing down	'T -'
Timing up	'T +'

1/1 timing	'T Ins'
1/64 timing	'T Del'
Range deck gun	'R'
Fire deck gun	'G'
Elevate deck gun	'E +'
Tilt deck gun down	'E -'
Zoom out Tactical Map	'Z +'
Zoom in Tactical Map	'Z -'
Sequentially ID ships- displayed on Tactical Map	'I'
Jump to currently ID'd ship	'Ctrl I'
Aiming reticule on/off	'O'
Clear the Text Window	'Ctrl T'
Heading left 1 degree	'Ctrl <'
Heading right 1 degree	'Ctrl >'
Rudder left - (cumulative up to 3 times)	'Ctrl L'
Center rudder	'Ctrl C'
Rudder right- (cumulative up to 3 times)	'Ctrl R'
Engines Stop	'0'
Engines 1/4	'1'
Engines 1/2	'2'
Engines 3/4	'3'
Engines Full	'4'
Engines Flank	'5'
Engines Back	'B'
Set cursor to pointer tool	'Ctrl V'
Set cursor to magnify tool	'Ctrl X'
Set cursor to move tool	'Ctrl H'
Center view	''

Submarines

Periscope up	'P +'
Periscope down	'P -'
Hydrophone range- increased	'K +'
Hydrophone range- decreased	'K -'
Compute torpedo lead	'Ctrl M'
Fire torpedo forward tube	'Ctrl F'
Fire torpedo from aft tube	'Ctrl A'
Fire noise maker	'Ctrl N'
Run on electric engines	'Ctrl E'
Run on diesel engines	'Ctrl D'
Surface one notch up	'D +'

Center dive plane	'D Ins'
Dive one notch down	'D -'
Go to periscope depth	'Ctrl P'

Destroyers

Fire hedgehogs	'H'
Release Depth Charges	'C'
Depth Charge,- less depth	'J -'
Depth Charge,- greater depth	'J +'
SONAR range greater	'K +'
SONAR range decrease	'K -'
RADAR range greater	'Q +'
RADAR range decrease	'Q -'
Active SONAR on/off	'Ctrl S'

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