GAME MANUAL

Larry Bond's

HARPOON

ULTIMATE EDITION™

HARPOON – COMMANDER'S EDITION

Advanced Gaming Systems

matrix games

EPILEPSY WARNING

PLEASE READ THIS NOTICE BEFORE PLAYING THIS GAME OR BEFORE ALLOWING YOUR CHILDREN TO PLAY.

Certain individuals may experience epileptic seizures or loss of consciousness when subjected to strong, flashing lights for long periods of time. Such individuals may therefore experience a seizure while operating computer or video games. This can also affect individuals who have no prior medical record of epilepsy or have never previously experienced a seizure.

If you or any family member has ever experienced epilepsy symptoms (seizures or loss of consciousness) after exposure to flashing lights, please consult your doctor before playing this game.

Parental guidance is always suggested when children are using a computer and video games. Should you or your child experience dizziness, poor eyesight, eye or muscle twitching, loss of consciousness, feelings of disorientation or any type of involuntary movements or cramps while playing this game, turn it off immediately and consult your doctor before playing again.

PRECAUTIONS DURING USE:

- Do not sit too close to the monitor.
  Sit as far as comfortably possible.
- Use as small a monitor as possible.
- Do not play when tired or short on sleep.
- Take care that there is sufficient lighting in the room.
- Be sure to take a break of 10-15 minutes every hour.

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1.0 HARPOON: COMMANDER'S EDITION™

Thank you for purchasing Harpoon: Commander's Edition!

1.1. MINIMUM SYSTEM REQUIREMENTS

To play Harpoon: Commander's Edition, your computer system must meet these requirements:

Pentium 166 MHz
64 MB RAM
Windows Compatible Soundcard
Display capable of 640x480 resolution
Windows 2000/XP/Vista/7 (Scenario Editor requires 32-bit OS)

1.2. RECOMMENDED SYSTEM REQUIREMENTS

For maximum performance, your computer system must meet these requirements:

1.2+ GHz CPU
1024 MB Free RAM
GeForce2 or equivalent Graphics Card with 64MB Video RAM
Windows Compatible Soundcard
Display capable of 1024x768 resolution
Windows 2000/XP/Vista/7 (Scenario Editor requires 32-bit OS)

1.3. INSTALLATION PROCEDURES

Insert the game CD into the CD-ROM drive. Setup will run automatically. If Setup does not start, run Setup.exe from the Windows directory on the CD.

When the Setup screen appears, click Install Harpoon: Commander's Edition. Double-click the Harpoon: Commander's Edition icon. On the introductory screen, click Play Harpoon: Commander's Edition.

1.4. UNINSTALLING THE GAME

Please use the Add/Remove Programs option from the Windows Control Panel to uninstall the game, or the Uninstall option in the Harpoon Commander's Edition menu item under the Start Menu.

1.5. PRODUCT UPDATES

In order to maintain our product excellence, Matrix Games releases updates containing new features, enhancements, and corrections to any known issues. Keeping up with these updates is made easy and is free by signing up for a Matrix Games Member. When you're signed up, you can then register your Matrix Games products in order to receive access to these important game-related materials. Doing so is a simple two step process:

Sign Up for a Matrix Games Member account – THIS IS A ONE TIME PROCEDURE; once you have signed up for a Matrix account, you are in the system and will not need to sign up again.

Go to www.matrixgames.com and click the Members hyperlink at the top. In the new window, select Register NOW and follow the on-screen instructions. When you're finished, click the Please Create My New Account button, and a confirmation e-mail will be sent to your specified e-mail account.

Register a New Game Purchase – Once you have signed up for a Matrix Games Member account, you can then register any Matrix Games title you own in your new account. To do so, log in to your account on the Matrix Games website (www.matrixgames.com). Click Register Game near the top to register your new Matrix Games purchase.

Once you've registered your game, when you log in to the Members section you can view your list of registered titles by clicking My Games. Each game title is a hyperlink that will take you to an information page on the game (including all the latest news on that title). Also on this list is a Downloads hyperlink that takes you to a page that has all the latest downloads, including patches, for that particular title.

Remember, once you have signed up for a Matrix Games Member account, you do not have to sign up again – at that point you are free to register for any Matrix Games product you purchase. Thank you and enjoy your game!

1.6. GAME FORUMS

Our forums are one of the best things about Matrix Games. Every game has its own forum with our designers, developers and the gamers playing the game. If you are experiencing a problem, have a question or just an idea on how to make the game better, post a message there. Go to http://www.matrixgames.com and click on the Forums hyperlink.

1.7. TECHNICAL SUPPORT

Should you have a technical problem with the game, the best way to get help is to post a note in the Technical Support sub-forum within the Harpoon: Commander's Edition forum at http://www.matrixgames.com. You'll then hear back from our personnel, or from one of the many helpful players of the game. This is usually the fastest way to get help. Alternatively, you can email your problem to support@matrixgames.com.

2.0 INTRODUCTION TO HARPOON: COMMANDER'S EDITION

There are two types of war games that rely on the use of actual data: historical and contemporary. Historical war games re-enact encounters set in the past, the object being to see how your decisions might have affected the course of history. Historical naval war games benefit from hindsight and the historical record. A contemporary naval war game, on the other hand, can be defined as a set of rules that simulate naval combat of the current era. There is little historical data from which one can benefit. Mostly, there is only raw unclassified data on the capabilities

of the contestants. There is no history as to what might constitute a "good" decision or a "bad" one; the results of the contest itself will bear the answer. Consequently, there are two tests a contemporary naval war game must meet: whether it can accurately duplicate existing naval scenarios, and whether it can accurately predict future ones. In this regard, Harpoon is the most sophisticated and realistic contemporary war game available to the public at this time.

Larry Bond's original naval war game appeared in 1980 as a board game. It drew on the experiences of the past in an effort to produce a true contemporary naval war game. Designed by an experienced naval officer, the game combined a simple game system with the specific details of a variety of naval weaponry. Because it was deliberately conceived as an open-ended game system, Bond's game could be fitted with new rules, statistics, or data as they became available, virtually guaranteeing that it would remain a viable, valuable resource for naval war gamers. In 1988, Larry Bond's board version of the game set the standard by winning a second H.G. Wells award at the prestigious Origins Wargaming Convention, the only game to ever do so.

Bond's game system is, at its heart, a simple one. Search, localize, attack. Sensors detect units based on a simplied physical model with adjustments made for relative technology levels. Weapons are fired and attempt to hit the target, with adjustments for physical attributes, and the impact of technology on electronic warfare. For those weapons that hit, damage point values for ships are based on their tonnage (with suitable modifications for ship type or construction), damage inflicted by warheads and guns is based on the weight and type of the explosive.

Your computer version of Harpoon is identical in concept to the original game. However, it also incorporates a few convenient features that allow for greater flexibility. Some of the main differences between the board game and this computerized version are as follows:

The most obvious time-saving feature is that the computer handles all the "number crunching" required to play the board game.

The computer version has a "layered" design. That is, the player can choose the amount of realism and/or detail, thus making this product an attractive challenge to both expert and novice war gamers. Toward this end, you have been furnished with a "Staff Assistant™." Normally, Task Force Commanders have staffs to help them keep track of the details regarding the conditions of the fleet, as well as intelligence concerning the enemy. Your Staff Assistant™ attempts to perform the same function. When you give an order, or ask for information, he will take care of it for you.

The computer lets you command many task forces instead of just a single one.

The computerized version incorporates a time-compression feature. Normally, naval engagements in the "real world" might require several days to resolve as units travel from one point to another. To alleviate this dead time, you can speed up computer time when nothing important is happening. The computer will automatically return you to "real time" once contact is made with the enemy. Or, you can slow Harpoon down whenever you want.

An exciting feature, especially for the war game aficionado, is the vast amount of detailed information available on both friendly and enemy units. With a keystroke, you can display

detailed data on dozens of different countries. This makes Harpoon a valuable learning experience, in addition to being a challenging war game simulation.

The latest version of Harpoon: Commander's Edition comes with many new features and fixes. First there is now a BattleSet™ Editor and a number of new BattleSet™ shells have been created for users to craft their own scenarios for the South Atlantic, South Africa, the Middle East and the Caribbean, in addition to the 25 original BattleSets™. You have hundreds of different scenarios, offering literally thousands of hours of game play. If you are truly hard core, you can create your own scenarios, platforms, weapons and sensors using the included editors.

In short, the computerized version of Harpoon can assist you in making the decisions that a ship commander or battle group commander makes in a modern sea battle. Harpoon displays information available to the commander, and shows how he uses it to make those decisions.

Most importantly, it allows you to make those decisions, and to see their results in a simulated combat setting. As Sir John "Sandy" Woodward says, "Wargaming allows you to try things out without getting wet if you make a mistake". (Sir John is also known as Admiral Woodward, Royal Navy (Ret). He was the commander of the naval portion of "Operation Corporate", the British response to the Argentinan invasion of the Falkland Islands in 1982.)

Although Harpoon is a "game," there is no built-in play balance. Harpoon is more accurately described as a simulation. The data is a reflection of real-world weapons and equipment, used with a computer system that allows them to interact. We cannot say that you will win 50% of the time. The vagaries of modern warfare do not allow for such niceties; neither does Harpoon. In fact, each time a scenario is played it will be different. Whether or not you win will depend on the initial situation presented to you by the computer, and how well you meet the challenges of those situations.

3.0 PLAYER'S GUIDE: INTRODUCTION

Welcome to one of the two (Harpoon Advanced Naval Warfare, by Matrix Games, is the other!) most realistic naval war simulation on the market! To help you get started, this section reviews the organization of this manual so that you will get the most enjoyment from the game simulation.

The introductory material discusses the basic concepts around which Harpoon is designed. You will find instructions on how to load the game, a description of the windows on which it is played, and some things that you'll need to keep in mind when playing. We have included a sample scenario.

If you are particularly anxious to play, we suggest that you first follow along with this sample scenario before attempting the more complicated scenarios.

Section 13.0, "Superpower Politics & Maritime Strategies," provides background information on the realities of geopolitics as related to modern conventional warfare, the capabilities of today's weaponry, and the real-world strategies which would be employed by both NATO and the Soviet Union in the event of actual hostilities. This appendix is somewhat technical in nature and will probably appeal mostly to the wargaming aficionado. Although this section is not critical for you to play Harpoon, the information will help you to get the most enjoyment from it because it will help you to understand the basis for modern tactics. Remember that Harpoon is a simulation and not an arcade-style game, so it is designed to reproduce actual tactics. For instance, you might order an ASW (anti-submarine warfare) helicopter to attack a submarine, yet it might appear that the helo is aimlessly wandering around instead of carrying out its attack order. But if you read Section 13.0, you will understand how things really work in modern warfare. That is, you would realize that the helo is actually flying to different locations, dipping its on-board sonar into the water, and trying to get a solid fix on the sub's location so that an attack can be launched. So take some time to read this appendix if you want to understand the basis on which Harpoon is designed.

Section 14.0 is a glossary of the terms, abbreviations, and acronyms found in this manual. Please refer to it if you have questions.

Since Harpoon is mouse and menu-driven, the technical aspects of controlling it are fairly easy. However, the realistic situations you will encounter, combined with user-selected options and variable windows, make Harpoon a continuing challenge even for the seasoned expert.

3.1 WHAT'S NEW IN HARPOON: COMMANDER'S EDITION

Harpoon: Commander's Edition is a major extension to Harpoon Classic 2002. If you're familiar with that version of the game, you should have little or no trouble picking up this version. Most of the game features are the same. However, you should become familiar with the following new features:

- New BattleSet™ Builder that significantly expands areas of operation
- Game Database Changes which include innumerable tweaks, fixes, and additions
- Surface gun model improvements that no longer heavily favor the AI
- Many changes to the interface to allow for better display, screen resolutions, and more
- Data export interface that allows gamers to export subsets of the data to 3rd party DLLs
- Improvements to the game engine to reduce the workload on the CPU

Changes between Harpoon v1.0, Harpoon Classic 95 and Harpoon Classic 97, Harpoon Classic 2002, Harpoon Classic Gold are many and significant. Please review the ReleaseNotes.txt file for a list of changes.

For information that didn't make it into this manual, or for newer features planned for the maintenance releases, we do our best to update those on our wiki and invite you come join us at:

http://wiki.computerharpoon.com/index.php/Main_Page

3.2 QUICK START

This walkthrough will help you familiarize yourself with the game commands while participating in an actual (albeit simple) scenario. Further down we will point out settings that will minimize other advanced (i.e. realistic) simulation settings.

To open the tutorial scenario first select the GIUK Battleset by clicking on its name in the text box and then clicking OK. This will bring up a list of 13 scenarios. Select the first, entitled BLUE SIDE ONLY: Beginners Walk-Thru Scenario. Before going further, there are a couple of things to take note of:

3.2.1 Harpoon Interface

The interface of Harpoon: Commander's Edition conforms to the standard Windows conventions. If you're familiar with the original Harpoon Classic, you'll see the differences immediately. However, you'll also notice that, by and large, the features are very similar.

3.2.2 Interface Definitions

The following terms are used throughout this manual:

- Click. Press and release the left mouse button.
- Double-click. Quickly press and release the left mouse button twice.
- Right-click. Press and release the right mouse button.
- Select. Choose a command, either with the mouse (by clicking) or by using the keyboard command.

3.2.3 Screen Layout

At any given time, there will be four to five different game windows open. The Unit and Group maps, the Strategic map, the Report window, and the Message Log usually appear on-screen at all times. As you play, you can lay out the windows yourself and the program will remember where you place everything. Just drag the windows around and resize them to fit your playing style. There are also pre-set window arrangements available via the window menu option.

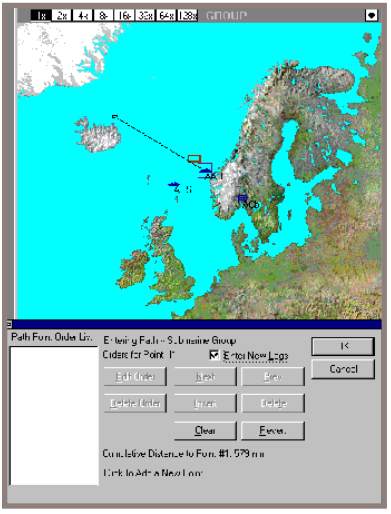
3.2.4 Using Buttons

Buttons are used on many windows within the program. To active a button, click it or use the keyboard command, if available. A button labeled Execute is activated by the E key, and the button labeled Full Report is activated by the F key. To activate a command by pressing a key, you must either press the Alt key or the Control key as well. The "Keyboard Commands" section has a full listing of the keyboard commands.

3.2.5 Using the Menus

To operate the menus using a mouse, move the mouse pointer to the menu heading and click the left mouse button.

Certain menu items are not always available. When a menu item is not available, then it is grayed out ("dimmed").



The Orders menu is always directly linked to the selected Group or Unit in the currently active window (that is, if the Group window is active, the selected group is active, and if the Unit window is active, the currently selected unit). Note that most of the Order items do not work for units.

3.3 MISSED CONTACTS

Throughout the walkthrough you will be encountering enemy ships. Because of the unpredictability built into the scenario design, sensor performance, and of the computer artificial intelligence, there is a chance that enemy ships will not appear where expected. If this happens to you, explore the expected meeting area (by setting your course with the Course button as explained in the walkthrough) at a slow speed. If you are still unable to make the enemy contact, either start over or skip to the next section.

3.4 SOSUS CONTACTS

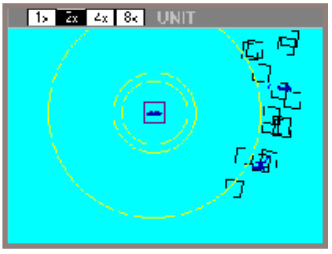
Occasionally, while playing this walkthrough, you may detect enemy units located far away from yours, via SOSUS (as indicated in the staff message that you receive). SOSUS are large fields of seabed sensors located in the North Atlantic which track enemy vessels through advanced passive sonar techniques. If you receive this type of contact, ignore it by clicking the Continue button in the Staff Message dialog box. You will quickly lose contact with the enemy ship.

3.5 PAUSING THE GAME

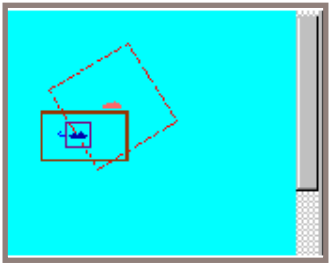
This walkthrough is best played by reading ahead a section at a time. While doing so, you can pause the game by pressing Ctrl-P. This will ensure that no game time passes while you are reading the text. Alternatively, time compression can be dropped to 0 so that the game will run as slow as possible without actually pausing: in real time.

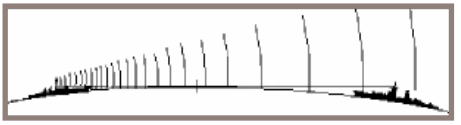
3.6 STARTING THE SCENARIO

Click OK on the game options and the scenario will begin.



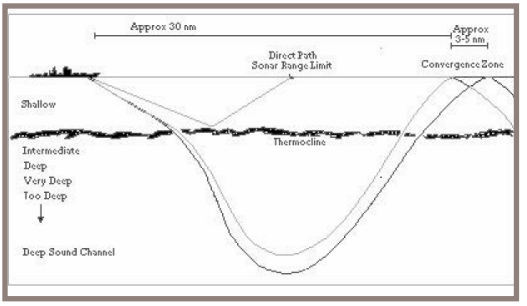
You will see there are two units in the Unit Window: Surface Unit AB01 and Submarine Unit AA01. Notice that green circles are around our Submarine Unit AA01 in the Unit window. These are the ranges for the passive sonar which we are currently using.





Select your submarine and click the Sensors button at the top of the main window. The Set Group Sensors dialog box is displayed. Currently, the sonar and radar (which is usable only because we are at periscope depth or less) are both off, or passive because the Active Sonar is off.

Set your submarine's radar to Active and click OK. Do the same for your ship. Now the range circles have changed to smaller yellow circles indicating the range of our active sonar.

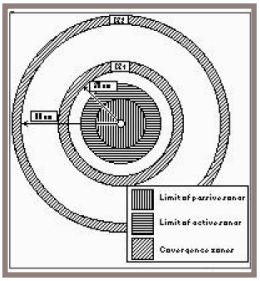


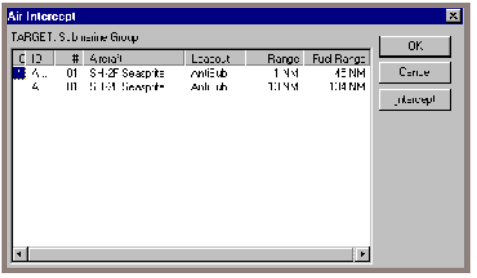
Since it is typically better to run with passive sonar and radar until an enemy is found, use the Set Group Sensors dialog box to turn off both your sonar and radar.

3.7 SUB-TO-SURFACE MISSILE ATTACKS

3.7.1 Time Compression

Okay, let's go hunting for an enemy. First, let's speed up the time compression so that things happen a little more quickly. Click on the + Fast button at the top of the main window. Notice that the text next to the button changes to 5 sec. This indicates that five seconds of game time are passing for each second of real time. Continue clicking the + Fast button until you are at "1 min." Your subs are now visibly moving in the Unit window.

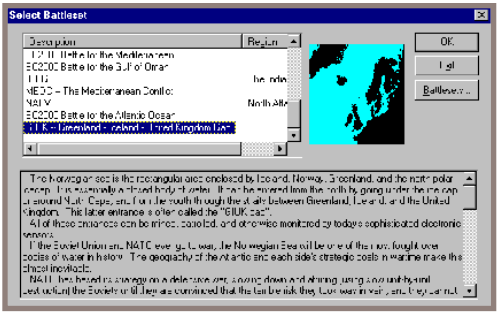




3.7.2 Mission Time & Orders

The time remaining indicator is in the lower right corner of the main window. This shows the time remaining to complete the current mission. It looks as though we have plenty of time, more than nine days.

Click the Reports menu and then the Show Orders menu item. This displays the Scenario Description dialog box, where you can review the mission orders.



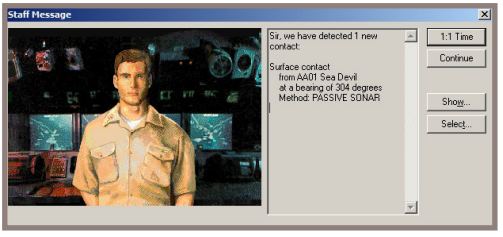
Click the Close button.

Click the + Fast button until the text next to the button reads 30 min. Your subs are now visibly moving in both the Unit and Group windows.

We have turned off the textured maps from this point forward to allow us to concentrate on the naval actions.

3.7.3 Encountering the Enemy

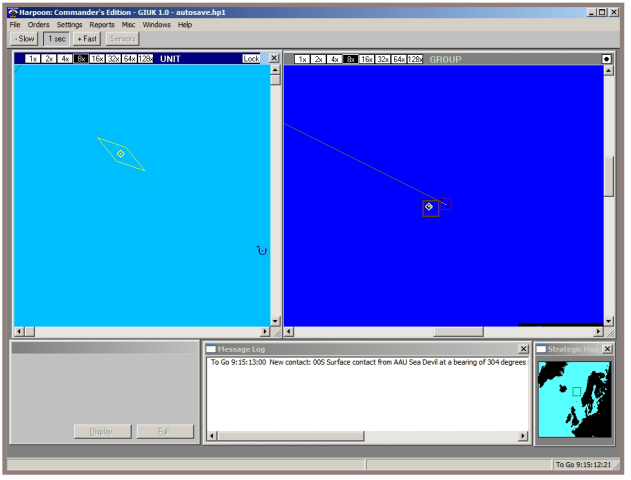
Soon, you receive a staff message indicating that your subs have made a contact.



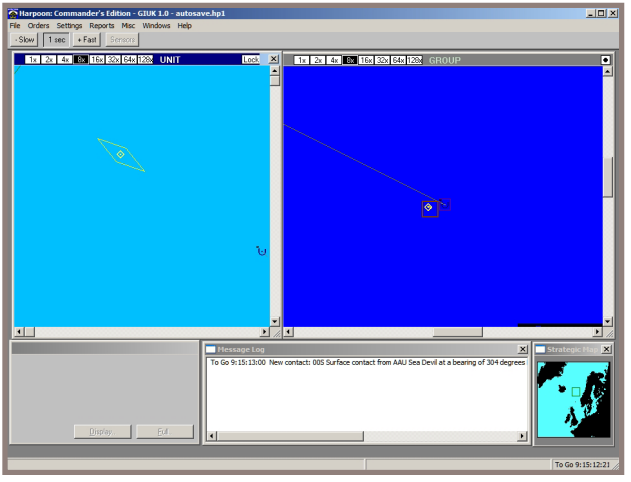
Click the 1:1 time button. This sets your time compression back to one second of real time equaling one second of game time, so that you have more time to react to the threat.

Depending on how the "dice" roll, you may detect

the group with enough data to know they are enemy, in which case, the contact will appear in red. In this shot we have changed the color of the water to more easily show the contact.



Otherwise, you will get a yellow icon indicating that you have a contact, but you don't have enough information to determine if it is enemy or neutral. NOTE: We changed the background color to help illustrate this point in this manual.

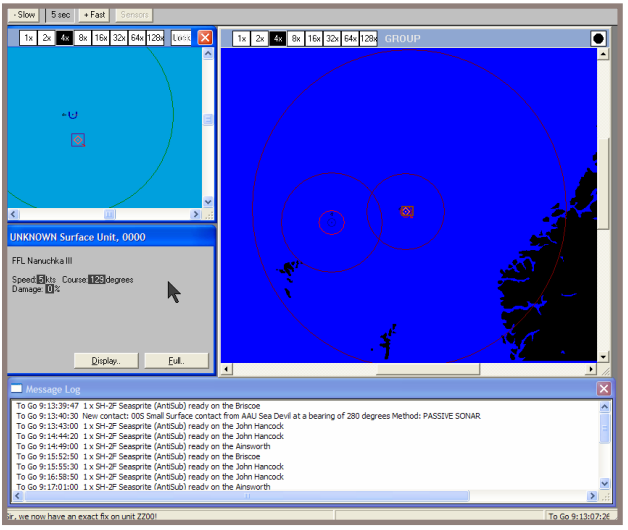


In this example you will get a yellow icon inside a yellow polygon indicating that you have a contact, but you don't have enough information to determine if it is enemy or neutral.

In this case, we will assume you will continue to close and in time, "resolve" the contact so that you do indeed know it is an enemy group (as we have intended in designing this scenario).

Click the red ship icon that has appeared in the Group Window (pressing the Backspace key to toggle between the groups may be helpful if the enemy group is difficult to select). The Report window indicates that this group, USSR Surface Group ZZS, contains one ship.

Right-click on the red Group in the GROUP Window and you will see it appear in the UNIT window. Select the Russian ship in this window. Due to the closeness of the detection (we let the game run for a bit before taking the screen shot) the US submarines have been able to process the acoustic information to the extent that the exact class, speed and course data is known to us as the Blue player. This is a good detection, usually, you will not have this level of detail without patience and some luck.

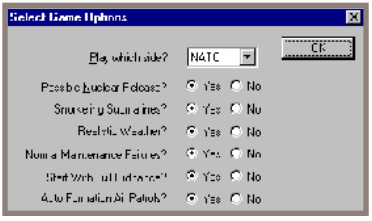


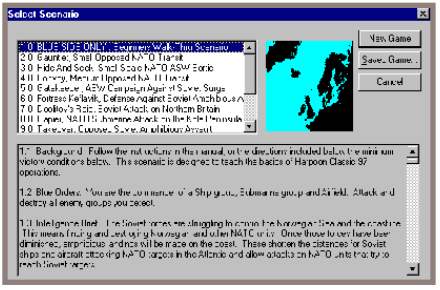
3.7.4 Getting a Fix on the Enemy

There may be an elongated diamond visible around the enemy ship. This indicates that the exact location of the enemy is unknown. We only know that it lies somewhere within the area of the diamond. Don't worry if you lose contact with the enemy. If this happens, slow your speed to "Creep" (5 knots) and continue moving in the same direction. You will soon pick up the enemy again. Notice that as your subs approach the enemy, the size of the diamond gets smaller and may disappear altogether, indicating that you have an exact fix. The loss and re-acquisition of detection are very much how real life sonar detection works.

3.7.5 Launching Missiles

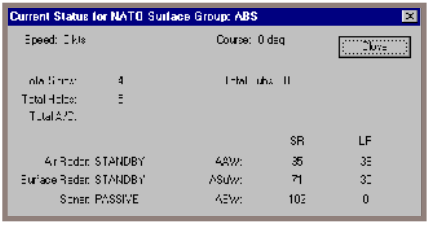
When the enemy is detected, select your sub group in the Group window.



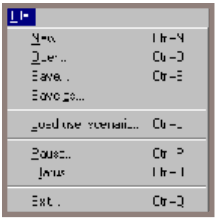


Now click the Attack button at the top of the main window. The Select Enemy Target dialog box is displayed. In this case there is only one enemy, so click the OK button. The Sub vs. Ship Attack dialog box is now displayed.

For this battle we will use missiles, so choose Missile Attack and click the OK button.

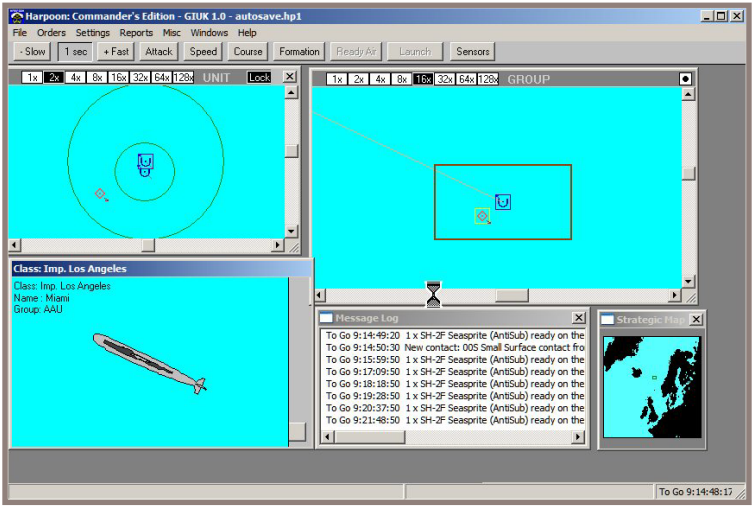


Now the Attack Allocation dialog box is displayed.

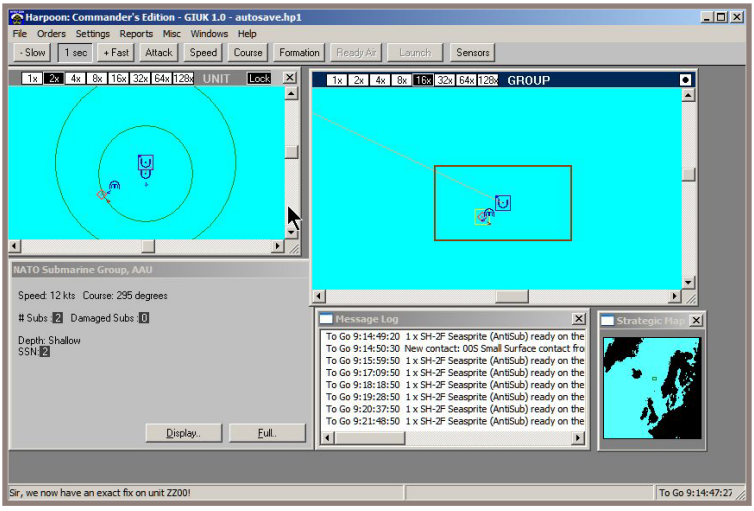


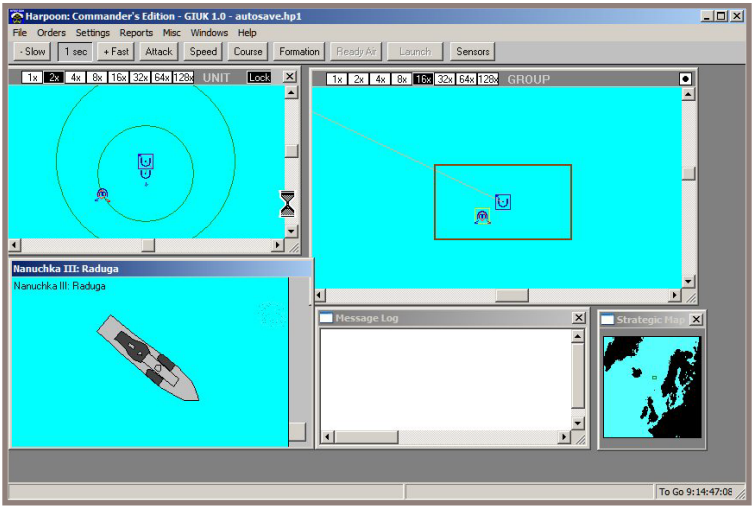
Your two subs are listed in the upper left list, and the lower left list shows the enemy targets. In the lower right are the current numbers of missiles allocated to be fired in this attack, in this case four Tomahawk missiles from the Miami. The upper right list indicates the weaponry that remains onboard, in this case five Tomahawk missiles and six Harpoon missiles on the Miami. The Sea Devil has additional Harpoons available.

Click the Execute button to launch your Tomahawks. You will see a graphic of the missiles being fired from the sub and a missile icon will appear in both the Unit and Group windows.



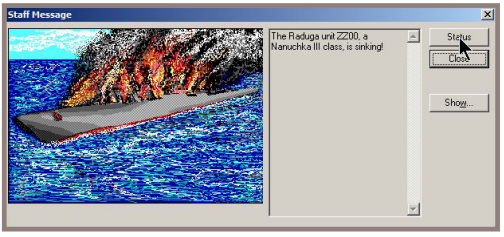
Watch until the missiles reach the enemy unit. You may want to increase the time compression slightly to speed the action. The enemy ship may attempt to down the incoming missiles as indicated by a graphic of the enemy ship firing and small explosions occurring on the missile icon.





Once the missiles reach the enemy, another graphic will appear showing their explosions on or near the enemy.

If the missiles are destroyed or miss, continue attacking until the enemy ship has been sunk. Once it is sunk, you will see a dialog with a graphic of the sinking ship to let you know that the enemy has been destroyed.



Click the Close button.

3.8 SUB-TO-SURFACE TORPEDO ATTACKS

3.8.1 Encountering the Enemy

Bring your submarine group to the surface by using the Set Speed and Depth dialog box, and if the speed is not set to Cruise, set it now.

Set the time compression to 1 sec. = 30 min. and continue on your way toward Iceland. Make sure your sonar and radar are off. You will soon encounter another single enemy ship, USSR Surface Group ZVS.

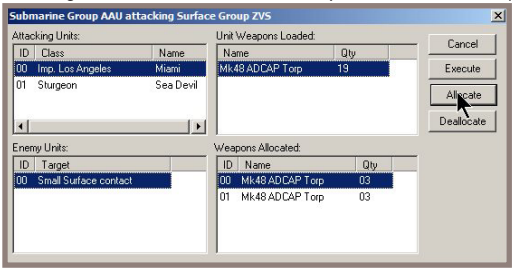
3.8.2 Using Torpedoes

Lower the time compression to 1 sec. equals 1 sec.

Set your course directly towards the enemy by displaying the Set Orders window, clicking the Clear button to clear the previous course, and entering a new course directly toward the enemy.

Attack this ship exactly as you did the previous one. When the Sub vs. Ship Attack dialog is displayed, choose Torpedo Attack and click OK.

You have allocated one Mk 48 torpedo to fire at the enemy. Increase this to three torpedoes by selecting the Mk 48 line in the Unit Weapons Loaded window (notice that you have 21 more onboard), and selecting the Allocate button twice.



Select the Sturgeon–class Sea Devil in the Attacking Units window. Notice that it has 17 torpedoes on board. Allocate three of this sub's torpedoes to fire as well by using the Allocate button. Each sub should now be firing three torpedoes.

Click the Execute button to begin the attack, which now proceeds exactly as before. Note that it is sometimes difficult to attack enemy ships with torpedoes without having an exact fix.

If you have trouble scoring a hit, try turning on your radar and sonar to get an exact fix or use a missile attack.

Continue the attack until the enemy vessel is destroyed.

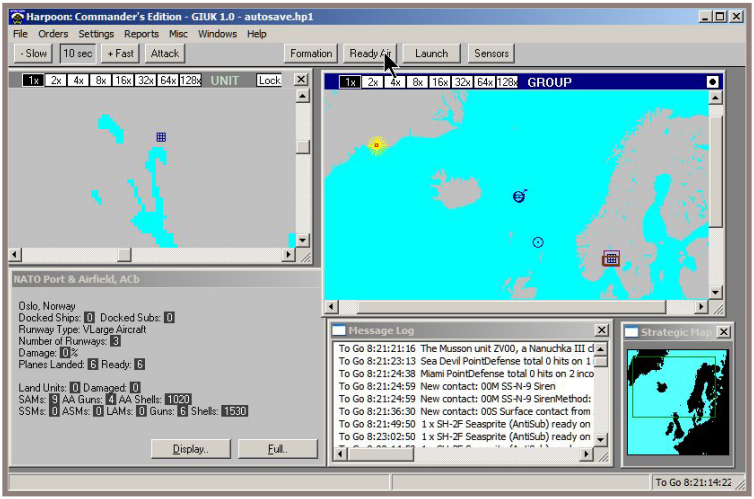
Once this is accomplished, set the speed of your sub group to 0 by using the Stop setting in the Set Speed and Depth dialog box.

3.9 ATTACKING FROM AN AIRBASE

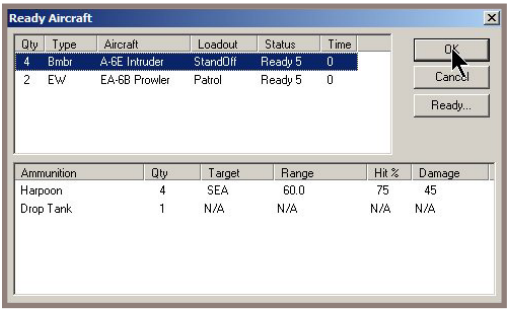
3.9.1 Viewing Your Aircraft

Select the NATO Port & Airfield, ACb, located at Oslo, Norway, in the Group window.

Click the Ready Air button near the top of the main window to display the Ready Air dialog box.



This dialog shows you the available aircraft at this airbase and the mission type for which they are currently ready. At the moment you have two EA-6B Prowlers available for patrol and a squadron of four A-6E bombers.

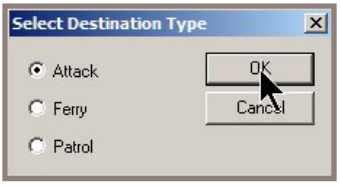


Click the Cancel button to close this dialog.

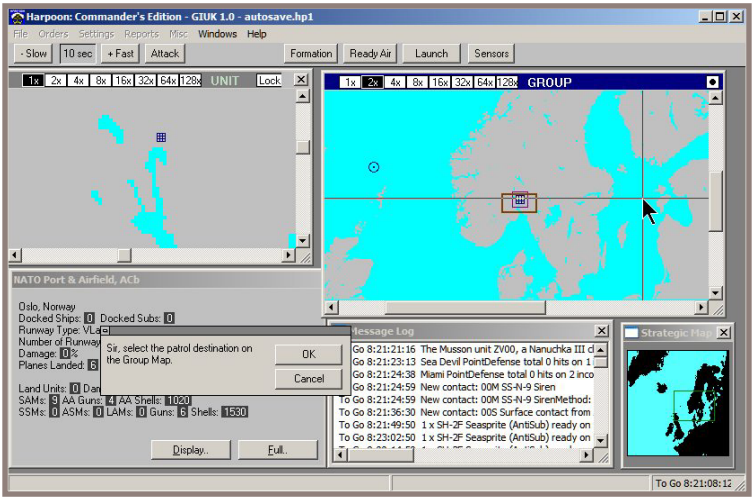
3.9.2 Setting Patrols

Select the Launch button.

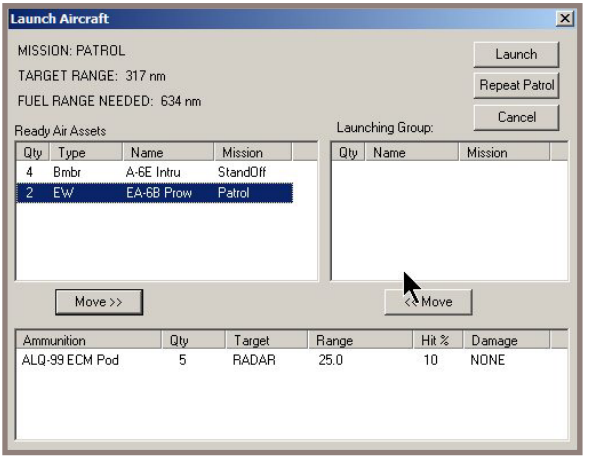
In the dialog that appears, select Patrol and click OK. Another dialog is displayed asking you to choose a patrol destination on the Group map.



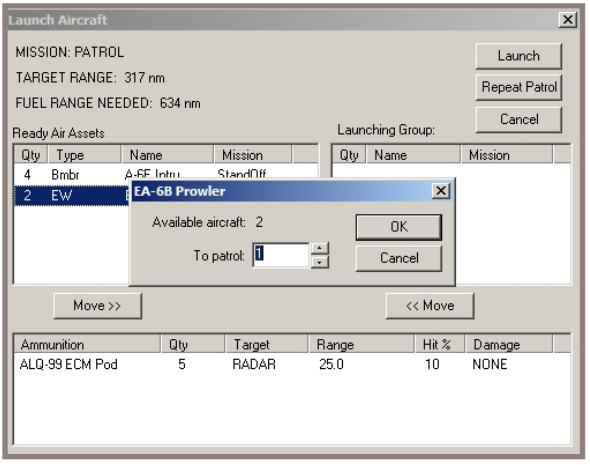
Click a point just to the west of the two small islands off of the Soviet coast in the Baltic Sea (due east of the airbase) and click OK. The Launch Aircraft dialog is displayed.



Select the row that contains the EA-6B Prowler aircraft and click the Move >> button.

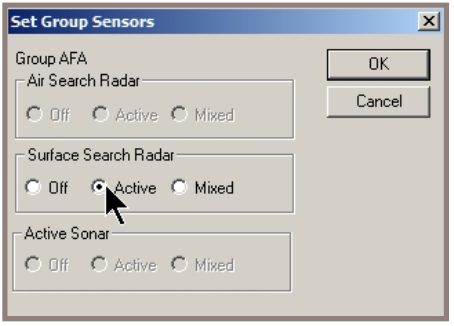


Another dialog is displayed asking you how many aircraft you want to move. Since this is a patrol, type 1 and click OK.



Now click Launch. The aircraft launches and begins moving toward its patrol point. Increase the time compression to 1 sec. equals 1 min.

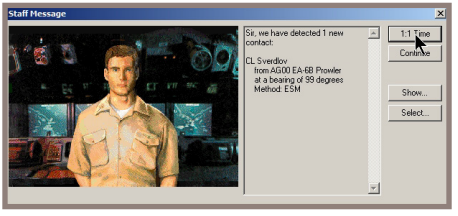
Set the radar on your patrol to Active by selecting it in the Group window and using the Sensors button.



If a staff message appears to inform you that your patrol is nearing Bingo fuel, launch your other EA-6B Prowler to patrol near the same point.

When the next staff message appears to inform you that your Air Group has reached Bingo fuel, order them back to the base by clicking Yes.

Continue patrolling in this way until you detect an enemy ship, USSR Surface Group ZWS, near the patrol point.



You may want to increase the time compression to speed things along. Remember to keep your radar active on your patrol aircraft.

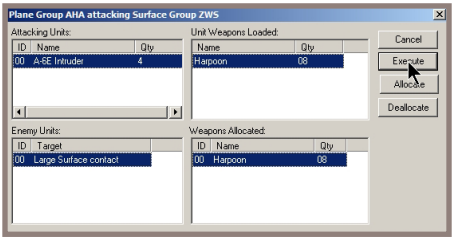
Be careful not to let your patrol approach the enemy ship too closely or it may be shot down. If this happens, remember the location of the enemy ship and quickly launch another patrol.

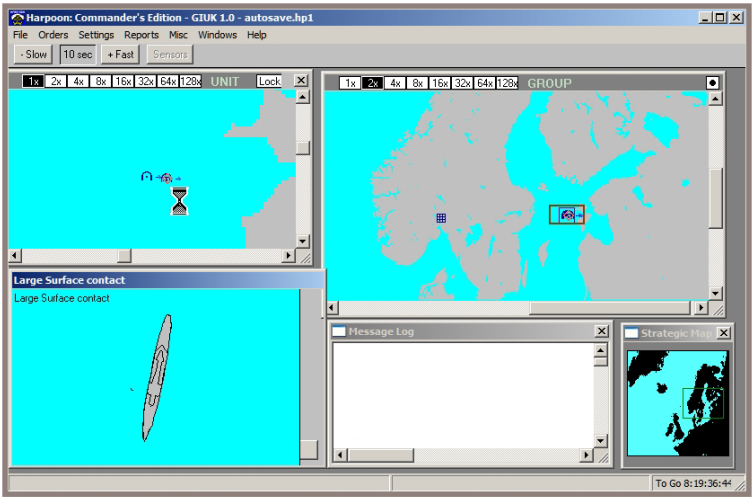
3.9.3 Launching an Attack

Once you've detected the enemy ship, launch your four bombers from the base on an attack mission against the enemy group.

Center the enemy ship in the Unit window.

Once your bombers arrive, attack the enemy using your Harpoon missiles according to the defaults suggested.





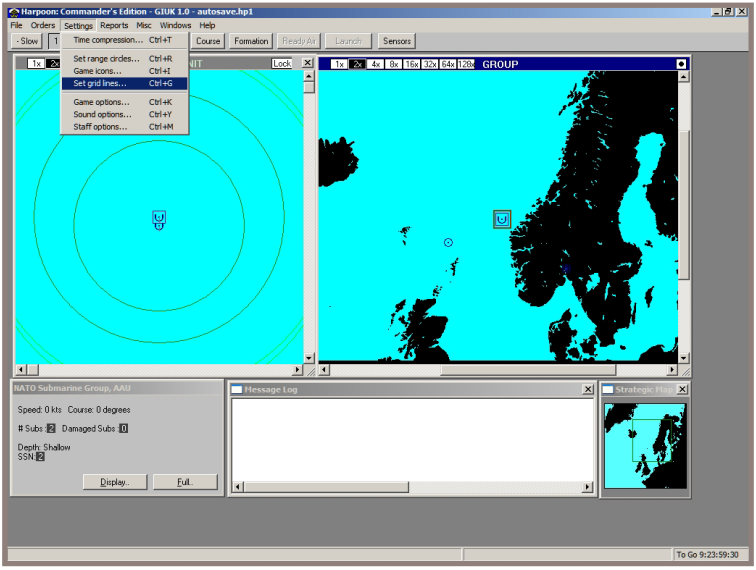
Continue flying patrols and attack missions until you have sunk the enemy ship. Note that the enemy ship may try to shoot down your aircraft when they approach too closely.

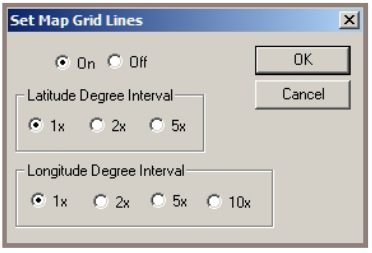
Send your aircraft units home by selecting them in the Group window and then selecting the Land Air button at the top of the window and clicking OK on the resulting dialog.

3.10 SURFACE-TO-SUB ATTACKS

3.10.1 Formation Editor

Set your time compression to 1 sec. equals 1 sec. And set Map Grid Lines on (Ctrl-G) or use the Settings Menu.

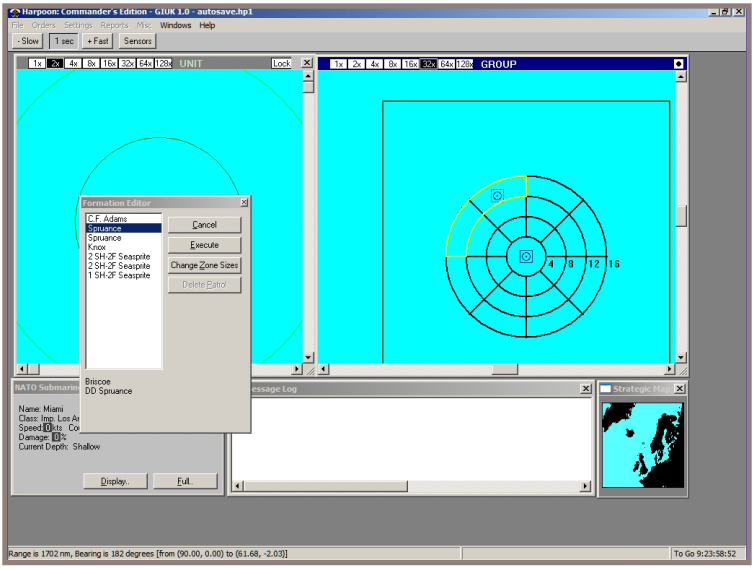




Select the NATO Surface Group ABs located north of the British Isles in the Group window.

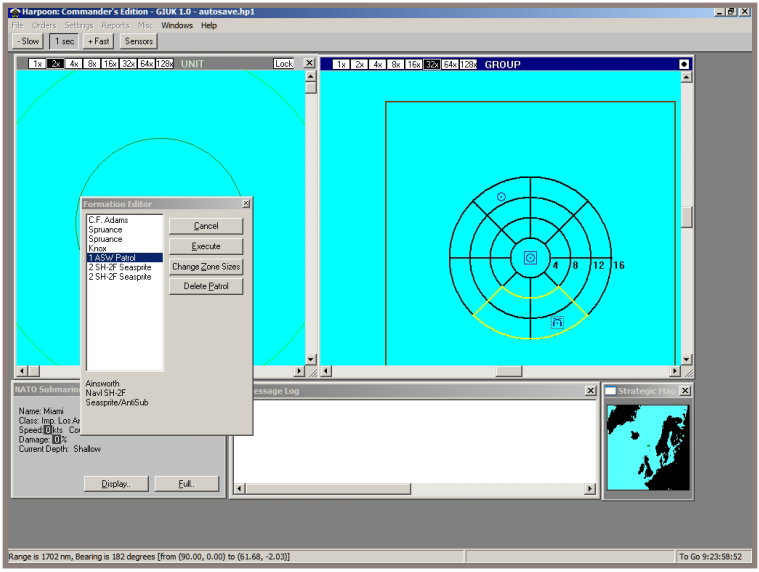
Notice in the Report window that these four ships have five helicopters landed. Let's use the helicopters to set patrols around the ship, as well as spread the ships out into a useful ASW formation. Select the Formation button at the top of the window. The Group window zooms, and the Formation Editor dialog box is displayed. Set the Group Window to 32x.

As shown below, we have selected the first Spruance in the Dialog and have then clicked on the Formation Editor to place it in two segments of the outermost ring. This is done by clicking on one segment and then SHIFT-Clicking on the the 2nd. Harpoon will then highlight the segments that will be patrolled by the selected unit (in this case the Spruance Destroyer).



We suggest you put the other Spruance on the other side of the Formation, and the Knox away from the center in one or more segments. This way your CF Adams stays in the center.

Next, select the 1 SH-2F Seasprite line and click Set Air Patrol.



Click the lowest left sector of the outer ring displayed in the Group window. A helicopter icon appears and this sector's outline turns to yellow. In the dialog, you now have 1 ASW Patrol listed.

Set another patrol to the left of your ship and another above it.

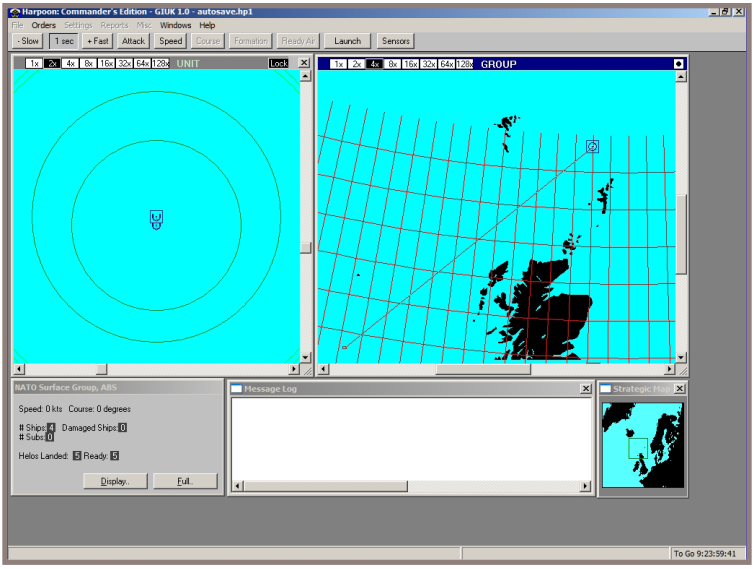
Now click Execute to set the patrols.

Zoom the Group window back out to 2x.

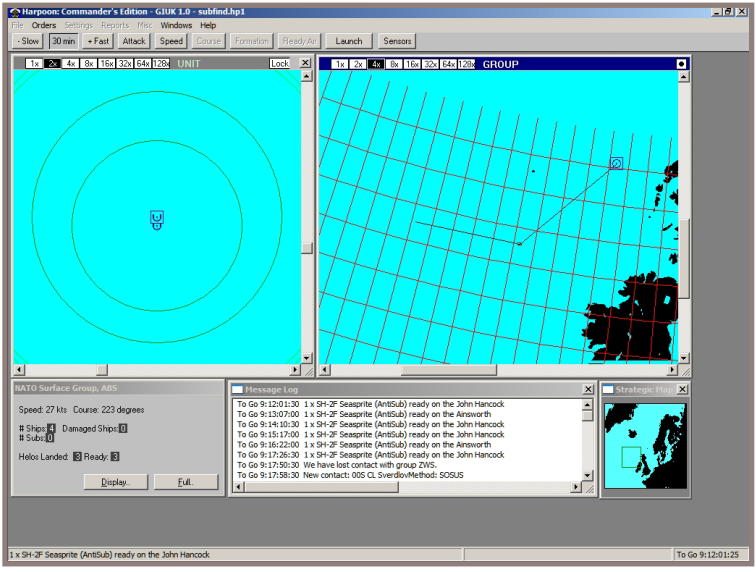
Aircraft patrolling in the Formation will be replaced at bingo fuel with another aircraft of the same type with the same Loadout, if available.

3.10.2 Searching for the Enemy

Set the Group map back to 4x. Select the Ship Group ABS and set the course to move it just west of the Scottish coast and then add another leg to move it west (or left) until it is away from the coast. Note that this example is going to show you just how big the Atlantic is and just how hard it is to find even a noisy submarine. Pay particular attention to the Grid – if you don't put your Ship Group within the right segment – you may never find the target submarine! Set your speed to Cruise (19 kts).



This sets the course south. Hit F2 to set your speed to Creep (5kts) before setting the 2nd leg.



This sets the course west.

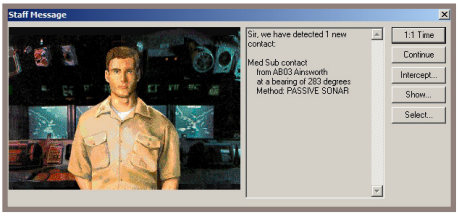
Click OK to set the course.

Center the group in the Unit window.

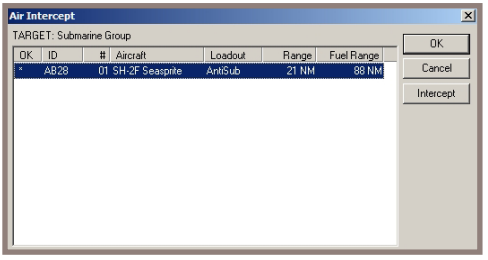
Now increase the time compression and notice that your helicopters are now flying patrols and dropping sonar buoys (small black squares) near your fleet.

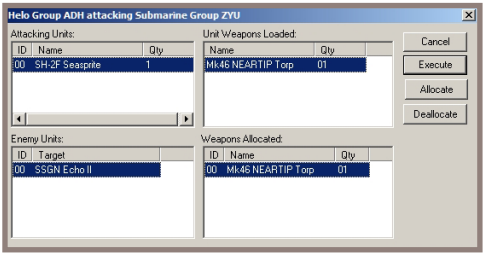
3.10.3 Attacking a Submarine

Somewhere far west of Scotland and due south of Iceland, you will detect an enemy USSR Submarine group ZYU, consisting of a single submarine. If you reach the end of your course without finding the enemy sub, set a course to backtrack along the northern Scottish coast at a speed of five knots until you find it.

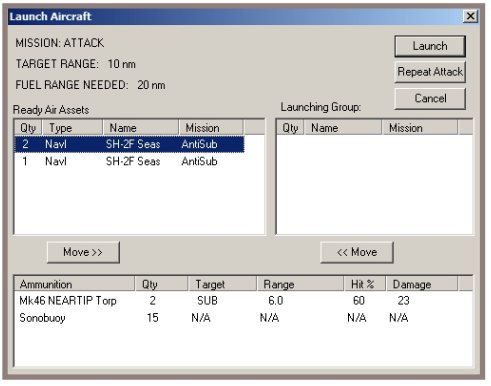


In the illustrations below we'll show you a running battle that starts with pressing the Intercept button above, thus vectoring in the first available helicopter: When you play this scenario – it probably won't unfold exactly like this – so try playing with just this surface group a few times and try adjusting the speed, time compression, and most importantly, where you position the ships and helicopters in the Formation Editor!

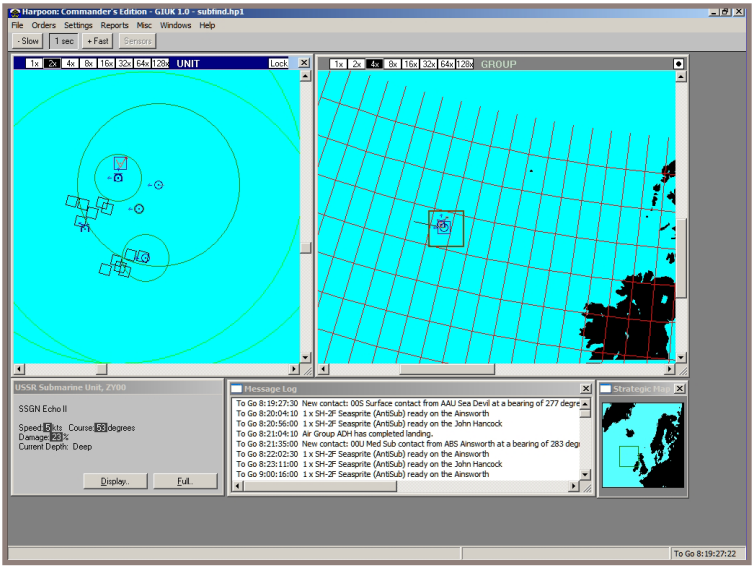


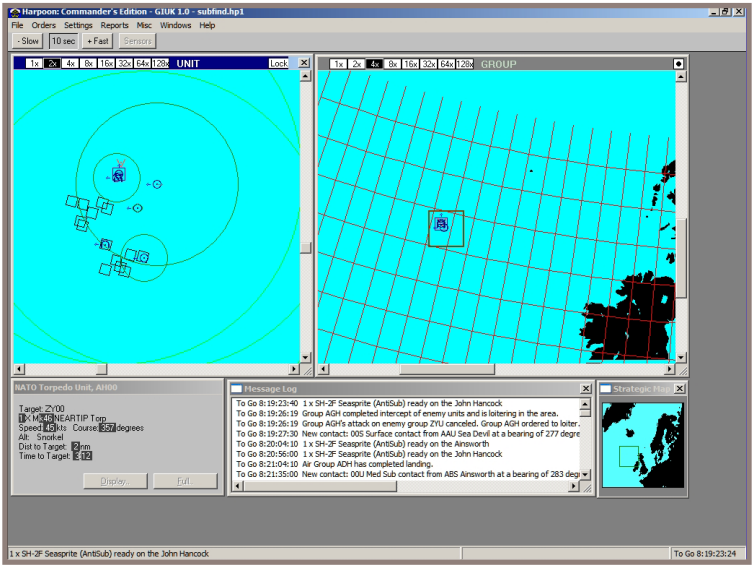


You will probably need to launch more helicopters as 1-2 torpedoes launched does not usually give you a sunken submarine.



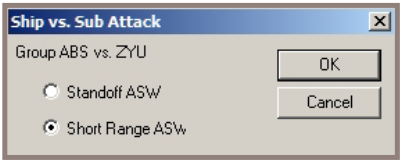
In this example, at least one torpedo hit the target as shown by the 23% damage in the Report window.


Harpoon: Commander's Edition - GUK 1.0 - subind.hp1
File Orders Settings Reports Misc Windows Help
- Slow 1 sec + Fast Sensors
1x 2x 4x 8x 16x 32x 64x 128x UNIT Lock
1x 2x 4x 8x 16x 32x 64x 128x GROUP
USSR Submarine Unit, ZY00
SSGN Echo II
Speed: 5 kts Course: 55 degrees
Damage: 26 %
Current Depth: Deep
Display... Full...
Message Log
To Go 8:19:27:30 New contact: 00S Surface contact from AAU Sea Devil at a bearing of 277 degre
To Go 8:20:04:10 1 x SH-2F Seasprite (AntiSub) ready on the Ainsworth
To Go 8:20:56:00 1 x SH-2F Seasprite (AntiSub) ready on the John Hancock
To Go 8:21:04:10 Air Group ADH has completed landing.
To Go 8:21:35:00 New contact: 00U Med Sub contact from ABS Ainsworth at a bearing of 283 degr
To Go 8:22:02:30 1 x SH-2F Seasprite (AntiSub) ready on the Ainsworth
To Go 8:23:11:00 1 x SH-2F Seasprite (AntiSub) ready on the John Hancock
To Go 9:00:16:00 1 x SH-2F Seasprite (AntiSub) ready on the Ainsworth
Strategic Map
To Go 8:19:27:22

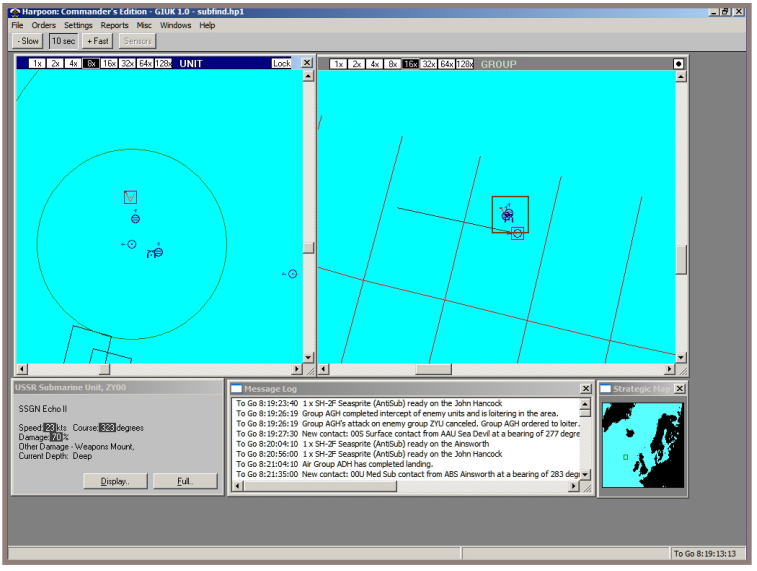

Harpoon: Commander's Edition - GUK 1.0 - subind.hp1
File Orders Settings Reports Misc Windows Help
- Slow 10 sec + Fast Sensors
1x 2x 4x 8x 16x 32x 64x 128x UNIT Lock
1x 2x 4x 8x 16x 32x 64x 128x GROUP
NATO Torpedo Unit, AH00
Target: ZY00
1 X MK48 ADCAP HEARTIP Torp
Speed: 45 kts Course: 357 degrees
Alt: Snorkel
Dist to Target: 9 nm
Time to Target: 0:15
Display... Full...
Message Log
To Go 8:19:23:40 1 x SH-2F Seasprite (AntiSub) ready on the John Hancock
To Go 8:19:26:19 Group AGH completed intercept of enemy units and is loitering in the area.
To Go 8:19:26:19 Group AGH's attack on enemy group ZYU canceled. Group AGH ordered to loiter.
To Go 8:19:27:30 New contact: 00S Surface contact from AAU Sea Devil at a bearing of 277 degre
To Go 8:20:04:10 1 x SH-2F Seasprite (AntiSub) ready on the Ainsworth
To Go 8:20:56:00 1 x SH-2F Seasprite (AntiSub) ready on the John Hancock
To Go 8:21:04:10 Air Group ADH has completed landing.
To Go 8:21:35:00 New contact: 00U Med Sub contact from ABS Ainsworth at a bearing of 283 degr
Strategic Map
1 x SH-2F Seasprite (AntiSub) ready on the John Hancock
To Go 8:19:23:24

As this example unfolds, it is clear that the distances are so short, that several ships can directly attack using either their own torpedoes, some of which can be shot at the target from some distance using a rocket (e.g. ASROC)

When both are available you will be asked to choose Short Range or Standoff ASW:



Note that the helicopters in the Formation are part of the Group and will function under the "Staff Assistant's™" control. While any helicopters you launch to attack the target – or that were selected for an Intercept, will become their own Group and thus allow you to manage them directly.



With some persistence – you will be rewarded:

3.11 SURFACE-TO-SURFACE ATTACKS

3.11.1 Searching for the Enemy

Once the enemy sub has been destroyed, set the course of your ship group south along the western coast of Ireland and set its speed to Cruise. Note that you may have to clear the previous course by clicking Clear from the Set Orders dialog box before entering your new course. This new course may require multiple legs to navigate around the coast of Ireland. Soon, you will encounter another enemy ship, USSR Surface Group ZXS. If you are unable to find this enemy, explore the waters to the west of Ireland and Scotland. You may also wish to move your submarine group, AAU, into the area to aid with the search.

3.11.2 Launching a Missile Attack

Select 1:1 Time from the Staff Message dialog box.

Select Attack from the buttons near the top of the window.

Your helicopters are useless in this attack, because they are equipped for anti-submarine warfare. Select the enemy unit and click OK.

The Ship vs. Ship dialog box is displayed. Choose Missile (most likely the only type of attack available) and click OK. Allocate some missiles from your fleet to fire and click Execute.

If this is a bearing-only attack (that is, you don't have an exact fix), the Bearing Only Attack dialog box is displayed. Select the default settings by clicking OK and continue to approach and attack the enemy ship until it is sunk.

Once the missiles are "off the rails", things get pretty intense. In this screen shot you can see multiple missiles flying from the Red Group up to the center of Blue, and Blue returning fire. If you click on each missile you can see what kind of missile it is (Anti-Ship, or SSM) or an Surface to Air (or SAM) missile. Note that many SSMs are so large, they can be attacked by SAMs! They can also be engaged with point defense weapons if the ship has a Snap Up/Down flag.

3.12 CONCLUSION

If you were able to sink all of the enemy craft, a victory dialog will soon appear, indicating to you that you have accomplished the mission objectives. Congratulations! You have just successfully completed your first Harpoon: Commander's Edition scenario and learned the fundamentals

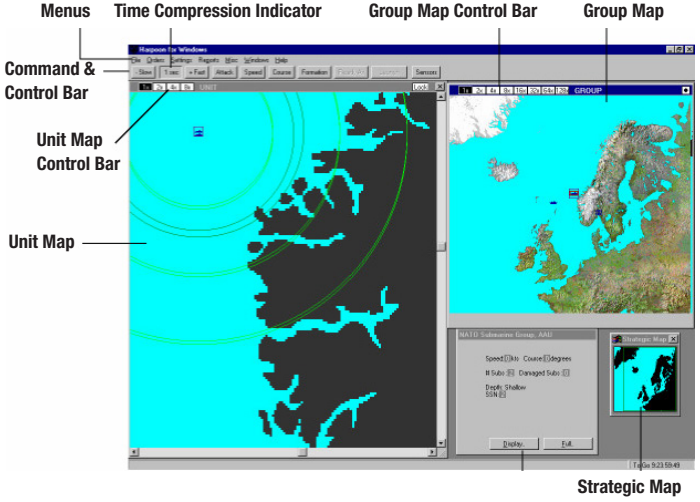
of movement and attack. Now you have more than 250 more scenarios to challenging your growing strategic naval warfare skills.

4.0 HOW TO PLAY

Harpoon's interface has a command & control bar, a main window showing a map of the area where the battles will be fought, and various dialog boxes, menus, report windows, and a status bar, which are displayed (or reflect information) during the contest.

4.1 MAIN WINDOW

The Main window associated with the scenario you have selected is displayed after you click the New Game button in the Scenario Selection window. This is where you play Harpoon, and it has three primary areas: command & control bar, maps, and a Reports window.



4.1.1 Command & Control Bar

The command & control bar contains frequently used orders; most of your commands should be initiated from here. The following commands are available when in the Group window:

- Attack (or intercept)
- Speed
- Course
- Formation
- Ready Air
- Launch

- Time compression
- Sensors

When in the Unit window, only time compression and sensors commands are available.

Note that some commands are available during other operations. For example a group can be ordered to attack or alter speed while in the course dialog.

Time Compression
The time compression indicator box is part of the command & control bar. Its default setting is one second. This indicates that one second of simulation time is equivalent to one second of real time. When Harpoon is compressing time, the number in this box indicates how much simulation time passes for each second of real time. For example, if time compression is set to "30 seconds," then one second of real time equals 30 seconds of simulation time (that is, Harpoon is set to operate 30 times faster than real time). To increase time compression, click the Fast button. To decrease the time compression, click the Slow button. (You can also press the + and - keys, respectively.) There is also a 1 hotkey that will automatically reduce time compression to 1:1. An additional hotkey has been added to allow for pausing without changing menus or screens; simply click Ctrl + Alt + P.

Game updates do not always occur each second, especially in the more complex scenarios.

4.1.2 Menus
Across the top of the window are seven menus: File, Orders, Settings, Reports, Misc, Windows, and Help. To use a menu command, place your cursor over a menu name and click and hold the left mouse button. This displays the menu. Continue to hold down the mouse button, and move your cursor to the choice you want. Release the mouse button to issue the command.

4.1.3 Maps
There are three maps on the Main window: the Strategic map, the Group map, and the Unit map.

To make anything happen on a map, you must first select that map by clicking it. The map's title bar changes color to indicate that it is active.

Strategic Map
The Strategic map represents the entire geographical area for the current BattleSet™. A rectangular box representing the Group window appears on this map. The area within this box is displayed on the Group map.

To move the Group window, click on the Strategic map. The rectangular box centers itself around the area where you clicked.

Group Map
The Group map has two main components:

- Group map. This represents the area enclosed by the rectangular box on the Strategic map. On this map you see symbols indicating the various groups that you control during the scenario.

When you first start a scenario, you will see a box surrounding one of your groups. The units in this group can be viewed on the Unit map. The unit window will be displayed on the Strategic map in a rectangular tan/burgundy box.

- Group map control bar. This is the bar across the top of the Group map. To the left are eight zoom boxes, marked 1x, 2x 4x, 8x, 16x, 32x, 64x, and 128x; the default setting is 2x. Press Z to zoom in on the Group map, and press X to zoom out. To zoom to a specific setting, click the appropriate zoom box.

- A tiny box appears on the Group map. This represents the Unit window. The area surrounded by this box is displayed on the Unit map.

- The group map is primarily used to select a group using the mouse. To select a group move the cursor over a group icon and click on it. If two or more groups overlap, continue clicking until the correct group has been selected.
Unit Map
The Unit map has two parts:

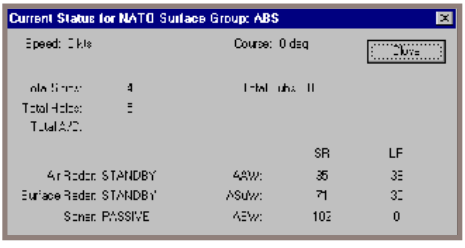
- Unit map. This is similar to the Group map, but is used for close-in viewing of a specific tactical situation. Symbols on this map indicate individual units, not groups.

- Unit map control bar. This is the bar across the top of the Unit map. Like the Group control bar, there are zoom boxes labeled 1x, 2x 4x, 8x, 16x, 32x, 64x, and 128x;. The zoom setting of the Unit map does not affect the zoom setting of the Group map.

- The unit map is primarily used to select a group using the mouse. To select a unit move the cursor over a unit icon and click on it. If two or more units overlap, continue clicking until the correct group has been selected.

4.2 REPORT WINDOW

The Report window displays information or options about items you select. Also, the Report window serves as an animation window. When an engagement between units occurs, an animation of the unit launching its point defense weapons and missile strikes is displayed. You also see animations of weapons arriving on their targets. These animations can be turned on and off in the options menu.



When you start Harpoon, the Report window contains information about the selected group. To view information about another group, you must first select it. Click a group to select it. If two or more groups overlap, you can click again to cycle through the overlapping groups. You can also press the spacebar

to select the next closest group to the south or Backspace to select the next closest group to the north. Alternately you may use your mouse wheel to cycle through the groups in a similar fashion.

Select the Full Report button at the bottom of the Reports window to display a report on the currently selected group or unit (depending on which window is active). Unit reports resemble the platform display for a class of units; but they also displays the unit's current status including damage, armament loads, and sensor status.

The Display button has the same effect as selecting the Reports menu and then the Platform Display item. The only difference is that if you are in the group window you see the normal platform display selection screen, which lets you choose between ships/subs/aircraft and all classes in the scenario or BattleSet™. In the Unit window, the platform display for the current unit's class is displayed.

4.2.1 Status Bar

The status bar at the bottom of the window shows the current date and time on the right. Initially, the time shown on this display is the Greenwich Mean Time (GMT), which corresponds to actual date and time as determined by your computer clock. This time can be compressed, as described in the "Time Compression" section.

The status bar also displays ongoing information, such as patrols being formed and patrol launches, on the left.

4.3 MESSAGE WINDOW

The Strategic, Unit and Group Maps, Report Window and Message Log can be moved anywhere on the screen and (except for the Strategic Map) resized to suit your needs.

5.0 COMMAND SUMMARY

This chapter contains detailed information on the commands you use to operate Harpoon: Commander's Edition. These commands can be accessing using the menus at the top of the main window, buttons on the control panel, or short-cuts. It is not necessary to memorize each and every item since many of the selections are self-explanatory. However, you can refer to this summary if you have any questions during a contest.

You can issue these commands using the menus or using keyboard commands. In this chapter, each menu's commands are described. Refer to the "Keyboard Commands" section for the corresponding keyboard commands. Most menu keyboard equivalent are also listed to the right of the menu item on the menu itself.

5.1 FILE MENU

This menu contains commands related to the interface between Harpoon and the player. It has little to do with the actual playing of the simulation itself. Commands contained in this menu are as follows:

5.1.1 New
Select this item to end the current game and start a new one.

CAUTION: The game being played will not be saved unless you first select the Save Game menu choice.

A dialog box is displayed. If you want a new game, click Yes or press Enter. If you want to return to the current game, click No or press Esc. If you select Yes, you are returned to the BattleSet™ Selection window.

5.1.2 Open
Lets you reload a saved game and continue play. A dialog box is displayed. If you want to open a saved game, click Yes or press Enter. If you want to return to the current game, click No or press Esc. If you select Yes, a standard Windows Load File dialog box is displayed.

5.1.3 Save
Lets you save the current game, so that you can continue playing the current game at a later time. If the file name you assign to the current game is the same as an existing file name, you are asked to confirm your decision to overwrite the existing file.

5.1.4 Save As
Lets you save the current game and specify a name for the file, even if you previously saved the game.

5.1.5 Load User Scenario
Select this option to load a scenario that you created using the Harpoon: Commander's Edition Scenario Editor.

5.1.6 Scenario Editor
Refer to the online documentation for information about the Scenario Editor.

5.1.7 Pause
Pauses the current game in the current setup. Press Enter to resume. A hotkey can also be used to pause the game: Ctrl + Alt + P. Additionally, time compression can be set to 0 so the game runs in real time.

Minimizing the Harpoon: Commander's Edition window will pause the game.

5.1.8 Status
Displays a status report for Blue, Red, and Green forces. The boxes on each side of the window show the losses and damage sustained by each side.

5.1.9 Exit
Lets you quit the game without saving it. If you want to continue the same game at a later time, first select Save Game and then select Quit. A dialog box is displayed. Press Enter to exit the game. Press Esc to cancel the Quit command.

5.2 ORDERS MENU

From the Orders menu, you can order forces to move, attack, launch aircraft, and adjust the composition and formation of your task forces.

5.2.1 Attack

This command allows you to attack with whatever forces and weapons you have. It takes the currently selected group, evaluates the weapons within your group, and then shows you a list of possible target group that you can attack.

If the target group contains more than one type of target, you choose which type of target within the group to attack.

Once you select the target group (and type) you want, one of three things happen.

If you are out of range of any of your weapons, the Staff Assistant™ will ask if you want to close and attack.

If the target has not been sufficiently localized, then the Staff will ask whether you want to attempt to get a better contact, then attack.

If you are in range of any of your weapons, you can select the type of weapon to use dependent on what type of group you are attacking from and what your target group is.

Once you are close enough to the target to be within the range of your weapons, the Weapons Allocation window is displayed. The screen has four boxes:

- Attacking Units. Lists the units in your attacking group.

- Unit Weapons Loaded. Lists the weapons each unit has at its disposal. If a particular weapon cannot be used against this target, the quantity column indicates why. The weapons shown belong only to the unit selected in the Attacking Units list.

- Enemy Units. Lists each of the enemy units in the group you are attacking.

- Weapons Allocated. Lists which weapons you have allocated against the enemy unit selected in the Enemy Units list.

The Staff Assistant™ will automatically allocate weapons against most targets.

If you want to change the allocations, follow these steps:

- In the Attacking Units list, select the unit with whose weapons you want to attack.

- Next, select the unit (in the Enemy Units list) you want to attack. If your unit has weapons that can attack this enemy unit, they are displayed in the Unit Weapons Loaded list. If this unit's weapons are already allocated or out of range, that information is displayed in the Weapons Loaded list.

- Find a unit that shows weapons within your Weapons Loaded list, then select the Allocate button. Notice that one weapon appears in the Weapons Allocated list. Also notice that one less weapon appears in the Unit Weapons Loaded list.

- Continue to allocate the units until you have allocated as many weapons as you want against that enemy unit. If you feel too many weapons are allocated, select one and select the Deallocate button.

- Repeat the above steps until you have allocated all the weapons you want to use against the various enemy units.

- Select the Execute button when you have finished allocating weapons. Select the Cancel button if you decide not to attack the enemy.

- Each type of group might have different behavior in handling an attack. If there complications the Staff Assistant™ will attempt to assist.

5.2.2 Set Depth & Speed

For Ship & Carrier Groups
For ship and carrier type groups you are only allowed to set the speed they will travel. There are four quick settings:

- Stop. Used to stop your group dead in the water.

- Creep. Normally 5 knots or less, just enough speed to maintain steerage. This speed also gives maximum sonar performance.

- Cruise. This is 60 percent of the slowest unit's maximum speed within the group, or 19 knots, whichever is less. Speeds of 20 knots or more eliminate hull sonar performance.

- Max Group. The maximum speed of the slowest unit within the group.

With surface units, you can also type a speed between zero and the Max Group speed in the Speed text edit box. If you enter a speed greater than the Max Group speed, it will be reduced to Max Group when you exit the dialog by selecting the OK button.

For Submarine Groups
Submarine group speeds are set in the same manner as surface groups. In addition you set the depth at which you want the group to operate at. The available depths are:

- Surface. Puts your submarine group on the surface.

- Periscope. Right below the surface where you can see out your periscope and sometimes be spotted by low flying aircraft.

- Shallow. Above the thermal layer, but deeper than Periscope depth.

- Intermediate. Below the thermal layer, but shallower than the maximum safe depth for most submarines. Submarines can go up to 24 knots without cavitating at this depth.

- Deep. The maximum safe depth for most submarines, used to evade detection. Submarines can go up to 29 knots without cavitating at this depth.

- Very Deep. Can only be achieved by a few submarine classes, and eliminates all cavitation noise.

For Aircraft Groups

Like submarines, aircraft groups can change both their speed and altitude. Unlike submarines and surface units, you can only use throttle settings, not enter a specific speed. The Harpoon: Commander's Edition system uses an endurance measurement which equates to how long an aircraft can stay aloft without crashing and still make base to the originating point; this measurement is expressed as a percentage of fuel.

You can display the available endurance by selecting the Settings menu, and then Set Range Circles. In the window that is displayed, select the Airborne Mission Radius checkbox to display available endurance on your Group and Unit maps. It is also
displayed as a percentage in the Reports window. This is calculated using the slowest speed.

The throttle settings available are:

- Loiter/Hover. A helicopter hovers in a single location; a fixed-wing aircraft flies in a tight circle at minimum speed. This increases your airborne endurance tremendously for planes; helicopters use the same endurance as cruise throttle setting while hovering. Aircraft with sonobuoys drop them at this throttle setting and helicopters with dipping sonar will lower this sensor when hovering at very low altitude.

- Cruise. The most efficient speed to cover distance.

- Full Military. This is the full rated speed of the engine without using an afterburner, and top speed for those without afterburners. Endurance is reduced at a rate of 2–3 times more than the rate at Cruise throttle setting.

For some types of aircraft, cruise and full military speed are the same.

- Afterburner. Some high-performance jet fighters have afterburners allowing them to dump fuel into the exhaust nozzle to increase speed. It reduces your airborne endurance at over 12 times the rate of Cruise speed, and should only be used in critical evasion/intercept situations.

Altitude settings available to aircraft are:

- Very Low. This is "wave-height" flying below 30 meters. If in a fixed wing aircraft, there is a significant chance that you will hit the water due to pilot error and lose aircraft, especially if you order a course change at this altitude.

- Low. Low altitude is between 30 meters and 600 meters.

- Medium. Medium altitude is between 600 meters and 3,500 meters.

- High. High altitude is between 3,500 meters and 20,000 meters.

- Very High. Very High altitude is 20,000 meters and up. Only some jet aircraft have the capability to reach this altitude.

5.2.3 Enter Group Course

This selection displays a window with several different options, where you can set up to 48 course legs for the selected group, and at the same time, give orders for that unit when it reaches each designated point. The following commands are available:

- Enter New Leg. Press L or click the check box to select it. On the Group map, click where you want your group to travel. For the next destination point, click again. When you have finished entering legs, click the Enter New Leg check box to deselect it. To cancel the leg when in the cross-hair mode, press Esc.

- Next and Previous. If you have entered a course with multiple legs, selecting either Next or Previous moves the small square on the course leg to the next or to the previous leg. This lets you insert or delete a course leg or add, edit, or delete an order at the point where the small square is located (see following paragraphs on how this is accomplished). To use these commands, you must first de-select the Enter New Leg check box.

- Insert. Lets you insert a course leg point. Click where you want your additional leg point to appear. You must deselect Enter New Leg before using Insert.

- Delete. Use Previous or Next to select the leg point you want to delete, then click Delete. In the confirmation dialog box, press Enter to confirm your choice. You must deselect Enter New Leg before using Delete.

- Clear Current Path. Completely clear the current path of your group, as well as any orders to be executed on these legs. Note some groups in the progress of filling out orders may require you to clear the current path before any modifications to the course can be made.

- Add Order Field. Lets you give your group an order at the completion of a specific leg. Use the Orders menu to add an order on any leg point.

- Edit Order. If the selected order is editable, you can use this command. Some orders cannot be edited; you must delete them and reenter them to change them.

- Delete Order. Deletes the selected order.

5.2.4 Formation Editor

The Formation Editor lets you review and change the disposition of the individual units within a group. When you select this option, the Group map focuses on the group you've selected on the map and zooms down to about x32. This allows you to rearrange the units of the group directly on the map

To start, we need to review the basic concepts behind a Harpoon formation. Harpoon uses a simplified model of a surface formation, dividing your formation into four rings and eight sectors. The four rings and their purpose are:

Main Body
The innermost circle of your formation, normally reserved for high-value units and units with limited defenses (such as aircraft carriers, oilers, and freighters). Units within the main body hold their position and have the exact course and speed of the entire group at all times.

AAW (Anti-Air Warfare) Ring
The second innermost ring of your formation. It should be used for platforms that have the ability to engage air targets such as missiles and aircraft (such as Aegis Missile Cruisers, Slaves). You should place them in sectors that correspond to the anticipated direction of an airborne threat.

ASW (Anti-Submarine Warfare) Ring
The next to outermost ring of your formation. Units placed in this ring should have ASW capabilities, so they can detect and kill any submerged threats before they penetrate into your main body or AAW ring. Typical units used in this ring would include ASW helicopters and destroyers and frigates with significant ASW weapons/ sensors. Units within this ring patrol within their sectors, sprinting from place to place, then slowing down or hovering to check for sonar contacts.

Picket Ring
The outermost ring of your formation. Used to place scouting assets that can give early warning of incoming threats. Units used for picket duty include AEW (airborne early warning) aircraft and low value ships with good sensors. All units in this ring patrol within their sectors, speeding up and slowing down to cover it while moving with the formation.

Each of the areas and buttons in the Formation Editor window is described below:

Unit Selection List
The box to the right of the window lists all the ships and aircraft in your group. Use the up/down arrow keys to move to and select the unit you want to position (or simply click it). When the cursor is placed over the name of a unit, a designation square (on the Group Map) will appear over that unit in the formation, and the sector being patrolled by that unit will be highlighted if it is not in the Main Body. A full description of the unit will appear below the Unit Selection list.

Set Air Patrol/Delete Patrol
If you select a helicopter or plane unit, you can set it up as an air patrol unit. If you select a unit that is already an air patrol unit, the Delete Patrol command appears, allowing you to stop the patrol.

To patrol multiple sectors with a mouse, hold down the Shift key when clicking on the sectors you want the unit to patrol. If you have sufficient units, you should only designate one sector per unit to improve the quality of the patrol coverage they can provide. If you only have a limited number of patrol units, you may have them patrol multiple sectors within a ring, but since they have more area to cover, the likelihood of a threat slipping in will rise.

Change Zone Sizes
This command lets you set the radius of each the four patrol zones. Each zone must be at least one nautical mile larger than the previous zone. The picket zone cannot be more than 255 nautical miles in radius for any formation.

Cancel
Select this button to cancel your changes.

Execute
Accepts all your changes to the formation. Units may take some time to reach their new formation locations, because they must keep moving with the formation while maneuvering to their new positions.

To move a unit from one ring/sector to another:

- Click the unit you want to move. This will highlight the sector that the unit is currently in and move the designation square over the unit.

- Click the ring/sector to which you want the unit to move. The unit will move to that ring/sector.

5.2.5 Ready Aircraft
This option allows you to prepare aircraft for particular mission profiles. Normally, your aircraft are readied by the Staff Assistant™ when they land into their default mission profile. To prepare them for particular missions, you can choose from the list of available loadouts.

When you select the Ready button, you can select how many aircraft you want to ready.

Once you have selected the number of aircraft to ready, the Loadout Selection window is displayed.

Use this window to browse the available loadouts and find one that matches the mission you need.

To select a loadout for your aircraft, click it or use the up/down arrow keys, then select the OK button.

5.2.6 Launch (Land) Aircraft
If your group is an air group, you see a selection of locations to land that can accept your aircraft (based on runway length and endurance).

Launching Aircraft
If your group has air assets you can launch, then you can select the mission type for the launch.

If you select the Attack destination, the Select Enemy Target selection box is displayed.
If you select the Ferry destination, you will be presented with the possible landing sites to ferry your aircraft to.

If you select the Patrol destination, one of two things will happen depending on whether or not you have the Repeatable Patrols Staff Option set. If it is set, you then pick a place or the patrol to go at this point. If not, you will go directly to the Launch Aircraft screen.

Once you select the type of mission for your launch and its particular information, the Launch Aircraft Selection window is displayed including loadout range.

All currently readied aircraft are shown in the list on the left. You can launch aircraft in groups.

To do so, select an aircraft and click the Move button to move that aircraft to the Launching Group list. Repeat this with each aircraft you want in your launching group.

Once you have the group you want to launch in the Launching Group list, then you can either launch it by selecting the Launch button or the Repeat Attack button (if it is available). If you select the Repeat Attack button, you must indicate how often to repeat the attack or patrol. A box appears in the Reports window, which lists the groups that can be joined to the group inside the designation square.

5.2.7 Join Group
Allows you to join two separate groups into a larger one. A box appears in the Reports window, which lists the groups that can be joined to the group inside the designation square.

Select the groups you want to join to your designated group, then select OK. If they are within range, a new window is displayed. All the units in one group are displayed in one list, and all the units in the other groups are displayed in the other.

In the left list, select the units you want to join to the units in the right list. Then select the Move button. Select OK when you are done to join the selected units.

5.2.8 Split Group
This is the opposite of Join Group command. To split a group, highlight the unit(s) to be split from the group and select the Move button to move them to the other list. Once you select the OK button, you return to the Main window.

If you want to issue commands to the group you have just split off, select the group. Even though the window does not change, you can see that you are on the new group by its call letters. After a split, the new group has no movement or other orders.

5.2.9 Sensors

This allows you to set sonar and radar of selected groups or units. The Set Group Sensors window shows all the types of sensors you have in your designated group. Off means that no sensors are emitting. Active means that they are on. Mixed means that sensors of units in a particular range ring have different settings, both active and off.

If you select Mixed for any sensor, another window is displayed. (The exact name of the window depends on which sensor you choose. For sonar, it is the Set Mixed Active Sonar window.) You can select On, Off, Mixed, and Intermittent for the main body, the AAW ring, the ASW ring, and the picket ring.

If a ring does not contain ships or if the ships in the ring do not have this particular type of sensor, the radio buttons for that ring are grayed out. For example, imagine that you select mixed on the Set Group Sensors window, your units are positioned in the main body circle and the AAW circle only, the main body has no air search radar. In this case, Set Mixed Air Search Radar window is displayed, and every line except the AAW line will be grayed out.

The intermittent setting lets you periodically activate, then automatically deactivate, your sensors. After you select Intermittent, another window is displayed where you set the base period, the variance, and the duration of emission. The base period is the time between sensor activations. The variance lets you make the base period irregular, and the duration is how long the sensor is active. For example, if you set the duration to 5 minutes, the variance to 2 minutes and the duration to 30 seconds, then the sensors will turn on every 5 minutes, plus or minus 2 minutes, for 30 seconds.

5.2.10 Enter Staff Note

When you select Enter Staff Note, a dialog box is displayed where you can type a message for your Staff Assistant™ to give to you. Type your note and click OK. Another dialog box prompts you to specify when you want the note delivered.

The time you specify will be elapsed time (delta time), not actual clock time. That is, the time will be measured from the time that the staff note is inserted.

5.3 SETTINGS MENU

The selections on this menu do not in any way affect the outcome of the game; they are used to set various references and game features.

5.3.1 Time Compression

Sets the time compression feature. The radio buttons are labeled with the compression factor. That is, if you select 1 minute, then 1 second of real time equals 1 minute of game time. To go back to regular time, click the 1 second button (1 second of game time equals 1 second of real time).

You can also set time compression using the command & control bar.

5.3.2 Set Range Circles

The Range Circles option lets you display information about your weapons' range on your maps. Note the window(s) in which each range circle is active and the color they display. By default, weapon range circles are red, active sensor range circles are yellow, passive sensor range circles are green, and airborne endurance range circles are in blue. If you want to change the colors, click the colored button, and select a new color. Range circles are centered around your group or unit icon, with the icon designating the center of your group formation in the Group window, and the actual location of the unit in the Unit window. Nota Bene: in this latest release the Group window and Unit window share the same zoom levels and that the Group window can now use textured land and water settings.

5.3.3 Game Icons

Lets you set different styles for game icons. The default setting is Stylized (that is, civilian symbols), the alternate style is a modified NATO CDS system. Select the Other button to display icons not listed on the main Show Game Icons window. These other icons cannot be changed.

5.3.4 Staff Options

This option is used to enable/disable various staff options. Below is a description of each option.

- Ignore options (New Contacts, Ships Running Aground, Ignore Subs Too Deep, No Movement Orders, Too Close To Map Edge, Lost Contacts). Selecting the Ignore options keeps the respective information from being displayed on the Staff Message window. In other words, during your play, you will not receive this information in updates.

- Repeatable Air Patrols/Attacks. Allows you set up repeatable patrol and/or attacks within the game. On any aircraft launch for patrolling or attack, a Repeat button lets you set that particular patrol or attack to be repeated at certain intervals.

- Enable Air Intercepts. Displays the Intercept button on the new contacts staff dialog window if any aircraft are available that could intercept the target detected. Without this button, you can still perform an intercept operation by selecting the enemy unit you want to intercept and selecting the Intercept button.

- Show Sonobuoys. Shows all sonobuoys laid by friendly units. They are represented as black squares on the Unit map.

- Show Active Towed Arrays. Displays all operating towed arrays on friendly ships and subs. The towed array is represented by a straight line coming from a ship or sub icon on the Unit map. Towed arrays are not displayed if the ship or submarine is moving too fast or erratically.

- Show Pulsing Radars. Pulses the selected group's radar at its three distinct ranges for very small, small, and large targets. Note that this is the best possible range and dependent on the height of your radar and line-of-sight calculations; thus, an object may be well inside the indicated ring before it is detected.

- Show Formation Grid. Shows the size and layout of the formation of the selected friendly group. It gives you a good idea of what area your formation covers.

Set Surface SAM Fire Rate. Gives you some control over the number of SAMs your units fire at each enemy aircraft or missile.

- Set Aircraft AAW Auto Fire Range. Lets you set the range at which units start firing at incoming aircraft or missiles. The default option is 3/4 Max.

5.3.5 Game Options

This option lets you configure which animations appear during game play. You can also toggle the display of killed ship pictures. You can toggle the time display on the Group window from a time of day display to a game time remaining display. You can change the color of the land to suit your monitor. You can change the color from Light to Dark. Finally, you can have the game automatically save at an indicated time. All these settings are saved.

5.3.6 Sound Options

You can choose which sounds you want during the game.

5.4 REPORTS MENU

This menu is used as an "intelligence" source. Use it to display information you may want.

5.4.1 Show Orders

Displays the orders you were given at the beginning of the game when you selected a scenario.

5.4.2 Order of Battle

Displays the Order of Battle window. The list on the left lists all the groups available to you. When you highlight a group, the list on the right displays the units associated with that group. To learn more about that highlighted group, double-click the group.

5.4.3 Platform Display

Displays a window with information about your platform types. Click a unit type to display a list of the active classes; that is, the unit classes associated with the scenario you are playing. To display all active unit classes for the selected type (ships, subs, or aircraft), select All Units.

The default setting lists only the classes used within this scenario. For instance, if Aircraft is highlighted, only information on the aircraft classes active in this particular scenario will be shown. You can use this to find out about the capability of various classes of units.

If you want to view details about a particular class, select the class on the Platform Display window, then click the Display button. This displays the Unit Display window with detailed information about that platform class.

Use the Next and Previous buttons to browse the various classes. By default, the radar information is displayed in the lower left of the window. Click the Sonar button to display the sonar of the class, and toggle the Sonar button to Radar. Click the Weapons button to view the weapons of the class.

5.4.4 Weather Report

Displays the weather conditions. Most of the report is self-explanatory. The report on "Seas" shows the height of sea swell, followed by a number for sea state. Sea state 1 means that there is virtually no "chop" to the waves— the sea is more or less glassy. As the wind picks up, seas will become more turbulent and the sea state number will grow larger. Weather can affect sensors, weapons, and smaller ships.

5.5 MISC MENU

5.5.1 Calc Range & Bearing

Lets you calculate range and bearing of a group or unit. The Reports window lists the objects on the map (other groups, ports, airfields, etc.).

Select an object and click OK. Another window gives the bearing and range to the object, the time to arrive there at the current speed, and the speed at which your selected group is now traveling. You can use this report to calculate a new time of arrival if you change speed.

5.5.2 Staff Report

The Staff Assistant™ will make any appropriate recommendations for the currently selected group.

5.6 WINDOWS MENU

The Windows menu is standard in most Windows applications. You can use the menu choices to arrange the open windows and to select an active window. For more information about the Windows menu, please refer to your Microsoft documentation.

5.7 HELP MENU

Use the Help menu to display the Harpoon: Commander's Edition on-line help. It also lets you display an information window showing you which version of Harpoon you are currently playing.

6.0 KEYBOARD COMMANDS

The table below lists the keyboard commands. The keyboard equivalents for the menu commands are listed in the following section.

Combat

F1	At-tak/Intercept
F5	Ready Air
F6	Launch / Land Air
B	Bearing-only Launch
Alt-3	Grants you nuclear release status in any scenario, regardless of the original setting in the scenario.

Movement

F2	Set Speed / Altitude
F3	Set Course
F4	Formation Editor

Display

Alt-T	Toggles paths on/off for all friendly groups.
V	Show / Hide Buoys
O	Show On Station Areas
Tab	Toggles whether Group or Unit window is active in the main window.
Z	Zooms in the current window (group or unit).
X	Zooms out the current window (group or unit)
Arrow keys	Scroll the currently selected window, either the Group window or the Unit window.
5 (keypad only)	Centers the map view in the currently selected window around the selected object.
C	Centers the Unit window around your currently selected group.
+	Compresses time by one increment.
-	De-compresses time by one increment.
L, Enter	Sets time compression to 1:1.
Spacebar	Selects the next object to the south (down) in the current window.
Backspace	Selects the next object to the north (up) in the cur rent window.

Sensors

F9	Sensnors
.	Drop Buoy

Organization

F7	Join Group
F8	Split Group

Reports

D	Displays unit display.
F	Gives a full report on the selected object if a mini report on the object is displayed in the dialog box.

Misc.

F10	Enter Note

6.1 MENUS

This section lists the keyboard equivalents for the menu commands.

6.1.1 Game Menu Commands

Command	Key
Pause Game	Ctrl-P

New Game	Ctrl-N
Load Game	Ctrl-O
Load User Scenario	Ctrl-L
Save Game	Ctrl-S
Game Status	Ctrl-H
Quit	Ctrl-Q

6.1.2 Orders Menu Commands

Command	Key
Attack or Intercept	Ctrl-1
Set Group Speed (Set Depth and Speed)	Ctrl-2
Enter Group Course	Ctrl-3
Formation Editor	Ctrl-4
Ready Aircraft	Ctrl-5
Launch (Land) Aircraft	Ctrl-6
Join Group	Ctrl-7
Split Group	Ctrl-8
Sensors	Ctrl-9
Enter Staff Note	Ctl-0
Force Refueling	Alt-R
Drop Sonobouy	.

6.1.3 Reports Menu Commands

Command	Key
Show Orders	Ctrl-E
Order of Battle	Ctrl-B
Platform Displays	Ctrl-D
Weather Report	Ctrl-W

6.1.4 Settings Menu Commands

Command	Key
Time Compression	Ctrl-T
Set Range Circles	Ctrl-R
Game Icons	Ctrl-I
Set Grid Lines	Ctrl-G
Game Options	Ctrl-K
Sound Options	Ctrl-Y
Staff Options	Ctrl-M

6.1.5 Misc Menu Commands

Command	Key
Calc Range & Bearing	Ctrl-F
Staff Report	Ctrl-A
Toggle Group/Unit IDs	I

7.0 OVERVIEW OF OPERATIONS

In computer Harpoon: Commander's Edition you play the role of a "side commander," commanding all naval and air units for one side of a scenario. Because the scenarios can vary from a single ship group to multiple ship groups and bases, the scope of the role you play can vary immensely. Your job is to direct all the groups within your control to achieve the task set in your scenario orders.

7.1 GROUPS, UNITS, & CLASSES

Understanding groups, units, and classes is the key to playing Harpoon effectively.

A class is a single platform type, such as an Iowa class battleship, a MiG-29 Fighter, or an Invincible–class aircraft carrier.

A ship or submarine unit consists of a single (named) individual class member, such as the New Jersey, an Iowa class battleship. In an aircraft or missile unit, a single unit may contain multiple members (for example, six F-15 fighters with the same air-to-air loadout, or nine Tomahawk missiles launched from the same ship at the same target, would be represented by a single unit).

A group is the primary unit of control in Harpoon and is defined as one or more units. An example ship group might contain one battleship unit and two destroyer units. As the side commander, you give orders to groups, and the (computerized) group commander uses the individual units to execute your orders.

7.2 SIDES & COUNTRIES

Three sides are modeled in each of the Harpoon BattleSets™. The two combatant sides typically represent alliances (such as NATO or the Warsaw Pact) made up of multiple countries. These two sides are labeled Blue and Red and all of their groups and units will be colored accordingly within the game.

Neutral units are just that – neither Blue nor Red. They can be attacked, but they can't be given orders. They don't report what they see either.

An uncertain contact will show up as the Unknown/yellow side/color until you establish an exact contact. Each side can have multiple countries represented. In the first BattleSet™, GIUK, the Blue side has the USA, United Kingdom, and Norway aligned together, although other countries may be in the alliance. Only countries with classes used in the BattleSet™ are represented in Harpoon. Countries have many variables associated with them, including the percentage of breakdowns their equipment will experience, how effective their repair capability is, how effective their weapons are, and more!

In Harpoon, you can either play the Red or Blue side. This allows you to see the conflict and its tactical nuances dictated by differing missions and equipment from both sides.

Some scenarios were developed for you to play either side, others are clearly marked in their titles as being Red or Blue only.

7.3 ENVIRONMENT

In Harpoon the environment consists of several elements. The first element is altitude (or depth). To simplify the range of possibilities, altitude bands (alt bands) are used.

VHigh. Very High altitude is 20,000 meters and higher. Only some jet aircraft have the capability to fly at this altitude.

High. High altitude is between 3,500 and 20,000 meters.

Medium. Medium altitude is between 600 meters and 3,500 meters. This is the maximum altitude for all helicopters.

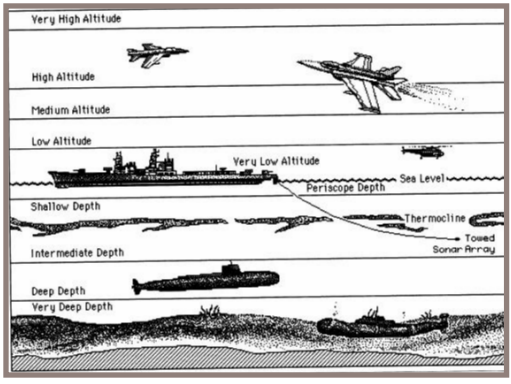
Low. Low altitude is between 30 meters and 600 meters.

VLow. Very Low, is "wave-height" or "terrain-following" flying, keeping your aircraft below 30 meters. In a fixed-wing aircraft (not a helicopter), there is a significant chance that you will hit the water due to pilot error and the aircraft will be lost. The advantage is that aircraft flying at the VLow altitude can only be detected at less than half the range of an aircraft flying at Low altitude.

Sea Level. The surface of the ocean.

Periscope. Right below the surface where you can see out your periscope. Use with caution because you can be spotted by low-flying aircraft.

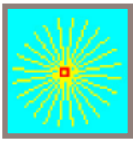
Shallow. Above the thermal layer, deeper than Periscope depth.



Intermediate. Below the thermal layer, but shallower than the max safe depth for most submarines. Submarines are harder to detect when at this depth or deeper. Speeds up to 24 knots are possible without cavitating at this depth.

Deep. The maximum safe depth for most submarines, used to evade detection. Submarines can go up to 29 knots without cavitating at this depth.

Very Deep. Can only be achieved by a few submarine classes, and eliminates all cavitation noise. The maximum depth units can reach in Harpoon.

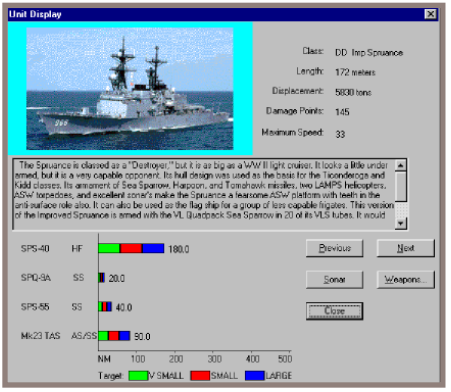


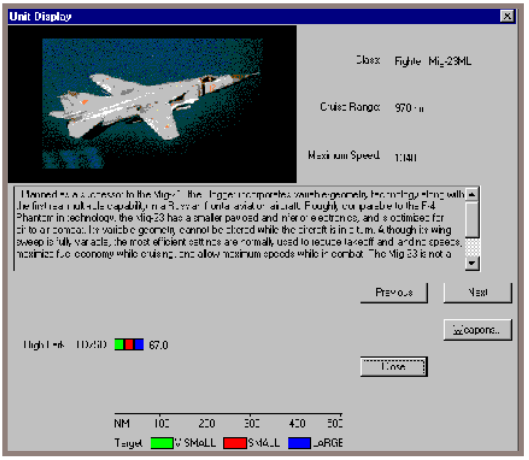
Weather systems or cells can appear in Harpoon, and your groups and units can be affected while within the range of the Weather icon. Some weapons cannot be used at certain sea states (which are directly linked to the strength of the weather cell) and you may not be able to be launch some aircraft. Weather also affects sensors making visual, radar and sonar contacts more difficult.

7.4 WEAPONS

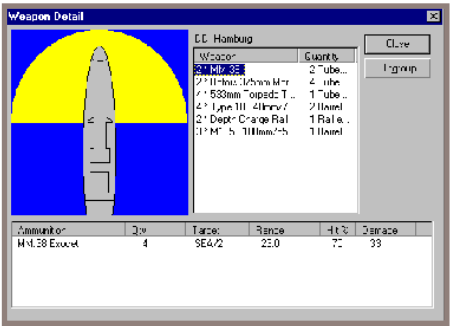
Weapons within Harpoon are organized into mounts. Each mount contains one or more weapons. A mount also has an associated number of barrels/rails/tubes, and ammunition available, a weapon firing arc and possibly a specific sensor for the mount, called a director. Directors direct weapons to specific target(s), and if the director is damaged the mount may not be capable of firing at all! Note that directors can only track a limited number of targets, so a major factor in maximizing the effectiveness of your attacks is overwhelming the capacity of the defending mounts.

To examine your weapons in computer Harpoon, select the Display button in the Report window to view the Platform Display window.

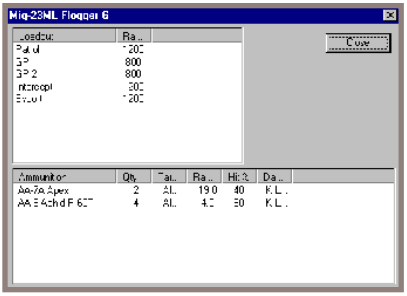




Select the Weapons button to display the Weapons window. For ships and submarines you get a window that looks like this:



For aircraft, the window looks like this:



The lower list in either window provides the following information about your mounts:

- Ammunition. The type of ammunition this mount fires or carries.
Qty. The maximum quantity of this ammunition in the mount.
- Target. The type of target this mount/ammunition can shoot. It is labeled AIR (flying targets), SURF (SEA and LAND), SEA (ships/surfaced submarines), LAND (installations/MLUs), SUB (submarines) or N/A (not applicable). The number following the "/" is the number of targets that the director can track concurrently.
- Range. The range in nautical miles that the weapon can hit targets. If HORIZ is listed, the lesser of your current radar horizon or weapon range is the weapons maximum range.
- Hit %. The percentage chance that this weapon will hit if fired at a target that is within range (and if it is not shot down by the target as in the case of a missile).
- Damage. The maximum number of damage points that this weapon can inflict if it hits a target. Some weapons have KILL listed, meaning if they hit the target type, they will kill it. Another special damage type is NUKE, where nuclear explosion damage is done to the target and nearby units.

When you start a game, one of the setup options is Possible Nuclear Release (see page 2-19). Nuclear weapons (nukes) are only available in computer Harpoon after you have been granted nuclear release. If you select Yes in the Possible nuclear release option, you may receive nuclear release at some point in the game. If the enemy uses a nuclear weapon, you are automatically granted nuclear release. Any nuclear weapons carried and/or aircraft loadouts are then available for use.

7.5 SENSORS

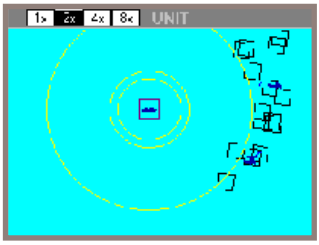
In computer Harpoon, enemy and neutral units are hidden until you detect them. Detection is always by a sensor, and the process of detection is called search. Every 30 seconds of game (internal simulation) time, each sensor on each Unit may "search" to see whether a non-friendly unit has been detected. Variables that affect this search process include distance, absolute

size, altitude/depth, weather, and speed of both the searching and detected units. In general, units that are larger in size, faster moving, and radiating energy (via propulsion noise or active radar or sonar) are easier to detect. A larger unit is easier to see, and returns more energy if "painted" or hit by radar or sonar waves. A faster-moving unit radiates more sound energy, and the air/ water it disturbs at high speeds also increases that unit's size for radar/ sonar detection. Finally, a radiating unit (radar or sonar) can always be passively detected beyond the effective range of whatever active sensor is used.

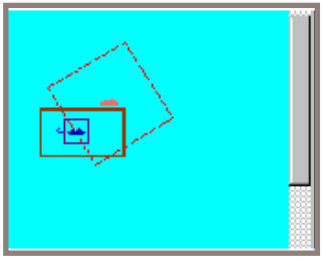
7.5.1 Passive & Active Contacts

Contacts are either passive or active, meaning either you are detecting radiated energy or you are detecting reflections of your own radiated energy. When you detect a radiating target (that is, their radar or sonar is on or they are making noise based on their movement) you have a passive detection. If you are radiating (that is, your radar or sonar is on) and detect a target, this is an active detection. Radios are not modeled in Harpon: Commander's Edition

7.5.2 Types of Contacts



Detection of either the passive or active type can be exact, area, or bearing-only. An exact detection means you know exactly where the detected unit is (and usually quite a bit of detail about it). An area detection means you know that the unit exists in a given area. This area is defined by an uncertainty zone or region represented by a yellow diamond shape that surrounds the detected unit. You will now if the detected unit is a land, air, sea or subsea unit, and how you are detecting it. Additional information depends on the detection method and the time the target is held. Over time an area contact may resolve into an exact contact. A bearing-only detection is a special case of an area detection in which you know that a contact is a certain bearing from your position, but you only know the minimum and maximum distance it might be from you. All detections degrade over time if not maintained. As contacts degrade, the area of uncertainty will grow at the rate the detected unit could move since the last detection. Thus a submarine contact's uncertainty zone will only grow slowly until contact is lost, while an fighter will grow quickly before disappearing. Of course a fresh detection will cause the uncertainty zone to shrink.



Notice that the submarine shown in the graphic above is an exact detection, with no uncertainty area shown. Notice the long diamond-shaped uncertainty zones that indicate bearing-only detection.

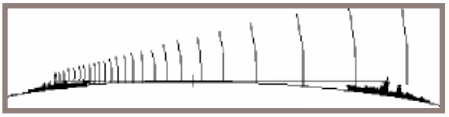
Notice the large diamond shaped uncertainty region in the graphics on the right indicating an area contact. This uncertainty region will decrease in size as the contact's position becomes more certain or increase as the contact's position becomes less certain.

7.5.3 Fire Control Solutions

Fire control solutions in computer Harpoon are either exact, nearly exact, or bearing-only. Whether a detection is from passive or active sensors is immaterial, only the accuracy and type of solution is important. Some weapons require an exact detection, others a bearing-only or nearly exact area detection. The computer determines whether you have a sufficient detection level to attack with your current weapons, and will either let you attack or inform you of an inadequate fire control solution.

7.5.4 Radar

Radar is the use of airborne radio waves sent out at a certain frequency, combined with a detector that listens for "returns" of this same frequency, caused by this energy bouncing off a potential target. Radars in Harpoon are divided into two classes: air and surface search. Radars are limited in the distance they can be effective by the radar horizon (i.e. the curvature of the earth):



The table below shows you the maximum distance you can pick up targets given the altitude of your radar transmitter and altitude of the target, assuming the radar would be strong enough to reach that far.

BEST CASE: SHIP TO SHIP LINE OF SIGHT TABLE									
Ht	**VHigh**	**High**	**Med**	**Low**	**Vlow**	**Lrg Ship**	**Med Ship**	**Sm Ship**	**Periscope**
VHigh	700	582	446	389	362	364	362	360	351
High	582	460	325	242	219	264	242	340	231
Med	446	325	191	134	108	109	107	105	96
Low	389	242	134	78	51	53	50	48	40
Vlow	362	219	108	51	25	26	24	22	13
Large Ship	364	264	109	53	26	27	26	24	15
Medium Ship	362	242	107	50	24	26	24	22	13
Small Ship	360	340	105	48	22	24	22	19	10
Perisicope	351	231	96	40	13	15	13	10	2

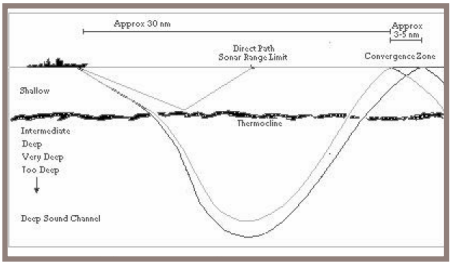
Air Search Radar

Air Search (AS) radar is used to locate and track airborne targets, such as missiles, planes, and helicopters. Air Search radar is generally used to detect targets at medium altitude or higher. These radars can be effective against targets at low or very low altitude, but only at five percent or less of their maximum range. Three special-purpose air search radars are:

- Height Finding (HF). A Height Finding (HF) radar not only detects airborne contacts, but also determines which altitude they are at. It can also detect surface contacts.
Range Only (RO). A Range Only (RO) radar can only detect targets directly in front of it, and is mainly used in aircraft as a gun-sight radar.
- Look Down/Shoot Down (LD/SD). A Look Down/Shoot Down (LD/SD) radar is an air search radar (mounted on an aircraft) that has much greater capabilities than a normal airborne radar, especially when looking down onto targets flying very close to the earth.

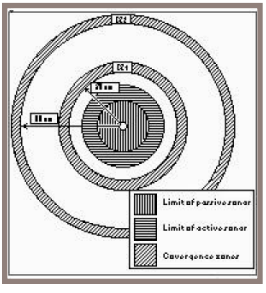
Surface Search Radar
Surface Search (SS) radar is used to detect surface units and airborne targets at Low and Very Low altitudes. A special surface search radar is the Periscope Radar (PR) which is mounted on the periscope of a submarine and is used to help targeting submarine weapons against surface targets.

7.5.5 Sonar
Sonar is the use of sound energy traveling through the water to detect and track surface ships or submarines. Sonar can be passive or active. Sound travels underwater in strange ways as shown in this illustration:



As you can see, direct sonar reflects off of many things including the thermocline (also called the thermal layer) and this limits its range. Sound that makes it through the thermocline "bends" also back to the surface due to the immense pressure of the ocean at depths over 1,000 fathoms, then may reflect off the surface and repeat the process.

This area where you can detect distant targets is called a convergence zone (or CZ). Modern sonar can sometimes detect targets out to three CZs. This illustration shows the areas where you might pick up a target, and the corresponding "blind" zones. If the water is not Very Deep, you will not get convergence zone detections.



Passive Sonar
Passive sonar works by listening to sounds traveling in the water, classifying them and refining the contact. The primary advantage of a passive sonar is that it does not give away your position. The main disadvantage is that it often takes a longer time to classify a target, and get an exact location on it.

Active Sonar
Active sonar works similarly to radar in that it sends out sound energy and then listens for reflected returns of this sound off possible targets. The main advantage of an active sonar is that it gives exact distance and bearing information

on any contact it detects. The disadvantage is that enemy units can detect the sound energy used in active mode at 2–3 times the range an active sonar can detect a target. A common tactic is to use passive sonar to generate an initial contact, then turn on active sonar just long enough to generate an exact contact for your fire control solution.

Hull Sonar
Hull Sonar (H) is built into the hull of a ship or submarine. They usually have both active and passive sonar capability. Hull sonar have two restrictions, the first being the "blind spot" in the baffles, caused by propulsion noise and turbulence. The second restriction is that when you travel at or above 20 knots, the flow noise caused by water flowing over the sonar eliminates the ability to detect anything.

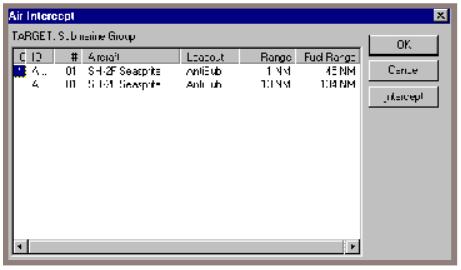
Towed Sonar
Towed Sonar (T) is trailed behind some ships and submarines on a long cable. Most towed sonar are always below the thermal layer, but units with variable depth sonar (VDS) can change the towed sonar depth to either above or below the layer. Towed sonar greatly increases the effectiveness of a unit, as you have a much better chance of detecting targets below the layer. In computer Harpoon all towed sonar deployment and retrieval is automatic. Each time you change course, towed sonar will stop working or work at greatly reduced effectiveness until it can straighten back out.

Dipping Sonar
Dipping Sonar (D) is used on helicopters. They are suspended on a cable and lowered into the water while the helicopter hovers. In computer Harpoon use of dipping sonar is mainly automatic, as any helicopter with this capability will use it if assigned to a patrol zone within the formation editor. To manually dip your sonar, hover your helicopter at very low altitude. If your unit has a dipping sonar, it will automatically lower it.

Sonobuoys
Sonobuoys (S) are small sonar sensors combined with a short-range radio transmitter. Sonobuoys are dropped into the water in "fields" of 6–12 sonobuoys by aircraft, and then monitored. Fields of sonobuoys only last a few hours then turn themselves off and sink to the bottom of the ocean. In computer Harpoon, this process is automatic if an aircraft with sonobuoys is in a patrol zone within the formation editor. To manually lay a sonobuoy field, hover/loiter your aircraft, and it will lay a sonobuoy field and begin to monitor it. The hotkey to release a sonobuoy is "." (the period key).

7.5.6 Visual Detection

Prior to modern times, human vision was the only way to detect distant threats. Human vision is limited to the visual line of sight and affected by time of day and weather conditions. In today's environment there are several visual methods of detection available.



The table below shows you the maximum distance you can pick up targets given your altitude and the target's altitude, assuming the perfect visibility.

MAXIMUM POSSIBLE VISUAL SIGHTING TABLE

Ht	VHigh	High	Med	Low	Vlow	Lrg Ship	Med Ship	Sm Ship	Periscope
VHigh	521	434	332	290	270	269	267	266	261
High	434	345	243	181	164	180	178	177	173
Med	332	243	143	101	81	80	77	76	72
Low	290	181	101	59	38	37	35	34	30
Vlow	270	164	81	38	19	17	15	14	10
Large Ship	269	180	80	37	17	19	17	15	11
Medium Ship	267	178	77	35	15	17	14	12	6
Small Ship	266	177	76	34	14	15	12	10	5
Periscope	261	173	72	30	10	11	6	5	1

A technological addition to vision is the detection of infrared (IR) radiation (that is, heat). On some aircraft, Forward-Looking Infrared (FLIR) and Infrared Search and Track (IRST) sensors are available. These sensors can spot surface ships and submarines on the surface or snorkeling. Ships may also have passive IR sensors to detect other ships or aircraft.

7.6 OTHER DETECTION METHODS

The other detection methods supported in computer Harpoon are described below:

- Electromagnetic Intercept/Electronic Support Measures (ESM). All combat ships of frigate size or better have ESM capability allowing them to rapidly detect any (active radar) radiating target within 110 percent of your current radar horizon (against the target). This is considered a passive radar detection, comparable to a passive sonar detection.
- Magnetic Anomaly Detectors (MAD). Some ASW aircraft carry a sensor that can detect large metal objects close beneath them under the surface of the water. The aircraft must be at low or very low altitude for this sensor to be effective. Some submarines have titanium hulls, which greatly reduce the effectiveness of this sensor.
- SOSUS/Caesar. In the GIUK BattleSet™, the NATO SOSUS system and USSR Caesar systems may generate detections. These systems are large fields of seabed sensors laid to track enemy vessels through advanced passive sonar techniques. Occasionally, you may be notified of a contact using this detection method, giving you advance warning of a threat.

8.0 AIRCRAFT

Aircraft are the primary scouts and a major portion of the offensive power available to today's naval forces. Effective use of aircraft is essential if you want to succeed in Harpoon.

Aircraft in Harpoon carry a selection of weapons/sensors/fuel pods for a specific mission in a grouping called a loadout.

8.1 LOADOUT TYPES

Loadouts are a function of the weapons an aircraft is capable of carrying, therefore not all Loadouts are available for all aircraft.

8.1.1 Search

Aircraft assigned only to look for the enemy carry only fuel, sensors, and crew. Some of these sensors may detect other aircraft, surface shipping, or even submarines.

8.1.2 Ferry

Normally has minimal or no weapons setup for a one-way trip to another base. Typically carries external tanks full of fuel.

8.1.3 Tanker

This configuration consists of many external or internal tanks and a special attachment so other planes can draw fuel. A tanker can refuel planes that are part of the same group. The tanker can originate with that group or join it while in flight. When a plane drops to approximately 25 percent of its fuel capacity, it is refueled by the tanker. You can force the plane group to refuel by pressing the Alt-R.

Tankers in a group may only offload fuel once per sortie. The available fuel is split equally among the recipients which must all be of the same type. Total fuel available for offload is equal to the number of tankers times the tanker loadout range.

Fuel Available or Fuel is displayed in the Report window when tanker refueling is permitted.

Tankers cannot refuel themselves.

8.1.4 Patrol

Used for electronic warfare and early warning aircraft.

8.1.5 Nuclear or Strike or SIOP

This loadout contains nuclear weapons ready to do massive damage to the enemy. The type of weapon depends on aircraft type and country.

8.1.6 Standoff

Cruise missiles that fly the distance from release to target without requiring guidance from the aircraft, thus reducing the risk to the launching aircraft.

8.1.7 LR Standoff
Same as above, but some cruise missiles (and/or AAMs) are replaced with fuel tanks to extend the range of the aircraft.

8.1.8 Anti-Radar
A special type of weapon, normally a missile, that looks for any enemy radar that is turned on. If it hits, the radar is destroyed. If used against ships, a great deal of additional damage may be caused. If the radar is turned off, most of these weapons "go stupid" and self-destruct; a few home in on the last broadcasting location.

8.1.9 LR Anti-Radar
Same as above, but some anti-radar missiles (and/or AAMs) are replaced with fuel tanks.

8.1.10 Guided
These are "smart bombs" or shorter-range missiles, which are guided by the launching aircraft to the target. Unlike cruise missiles, they have very short ranges, but the smart bombs can do more damage. They also cost a lot less, so a country is likely to have more of these than cruise missiles.

8.1.11 LR Guided
Same as above, but some smart bombs (and/or AAMs) are replaced with fuel tanks.

8.1.12 Unguided
This loadout represents rockets, cluster bombs, fuel-air explosives, and other "area" weapons. Typically, many unguided weapons are in a loadout due to their small size. These function like a grenade, spewing fragments over a wide area.

8.1.13 LR Unguided
Same as above, but some of the "area" weapons (and/or AAMs) are replaced with fuel tanks.

8.1.14 Iron Bomb
This is what most countries used in WWII. It is a simple weapon that is "thrown" at or dropped on the target based on the movement of the aircraft, the wind, and temperature. These weapons are very potent (they are all explosives and metal case), but are very difficult to target effectively.

8.1.15 LR IronBomb
Same as above, but some bombs (and/or AAMs) are replaced with fuel tanks.

8.1.16 Air to Air or Escort
Fighters and some better attack aircraft load with infrared and radar-guided missiles to destroy other aircraft and helicopters. Some extra fuel is carried for some aircraft types.

8.1.17 LR Air to Air
If the target is far away or the fighters must stay aloft for a long time, some missiles are replaced with additional fuel tanks.

8.1.18 AntiSub
Submerged submarines are only killed by torpedoes and depth charges. Some aircraft may be able to do this with nuclear depth charges (see “Nuclear or Strike” above).

8.1.19 LR AntiSub
Same as above, but some ASW weapons are replaced with extra fuel tanks. Helicopters that cannot carry extra fuel tanks drop weapons to reduce weight and increase airborne endurance.

8.1.20 AntiRunway
To destroy an enemy runway, iron bombs, guided weapons, or special “runway-busting” weapons can be used. (The type used depends on the aircraft and the country that owns it.)

8.1.21 LR AntiRunway
Same as above, but some anti-runway ordinance (and/or AAMs) are replaced with fuel tanks.

Most aircraft only have a limited number of possible and/or available loadouts. Loadouts are subject to both the missions for which the aircraft are designed and availability.

If you see some “extra” weapons in a loadout do not be surprised. For example, the UK Nimrod can carry torpedoes, Harpoon ASMs, and Sidewinder AAMs mixed on its various loadouts.

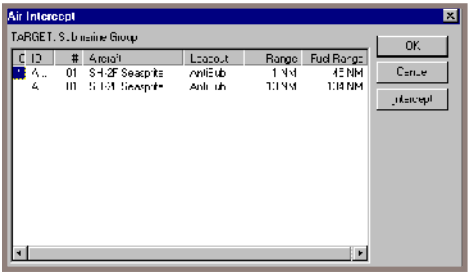
8.1.22 Cargo
The newer BattleSets™ have Cargo and Assault loadouts that represent troops and supplies capable of “damaging” a target when the carrying aircraft “attacks” it.

8.1.23 SEAD
Suppression of Enemy Air Defences loadouts combine Anti-Radar and ECM with the specific intent of attacking enemy radar, AAA and SAM sites.

8.1.24 Precis and LR Precis
These loadouts were added to model laser guided weapons.

8.1.25 AAmr
Anti-Armor - a new Loadout for use against land armored targets (i.e. tanks).

8.2 AIRBORNE THREAT DETECTION
Sometimes in computer Harpoon a new threat that can be countered by patrolling aircraft is detected. Instead of having to launch new aircraft or selecting a group with patrolling aircraft and splitting them off to attack the threat, we provide the Intercept window.
You see each available unit and its current distance to the intercept target. Select the units you want to use to intercept the threat and select the Intercept button. Selected intercept aircraft are marked with an asterisk (*) to the left of the number of aircraft. Select the OK button to finish your intercept assignments.



9.0 BASES

The following bases are available in Harpoon:

- Airfield. An airfield.
- Port. A port facility for submarines and surface craft.
- Port & Airfield. A combination of a port and an airfield.
- Installation. A facility for land-based units and nonmilitary structures.

Bases typically have various radar sensors and defense weapons mounts that automatically defend against attacking enemy targets (that is, you don't have to make your bases attack using the attack order).

9.1 DAMAGE & REPAIRS

Harpoon uses a simple damage point system to represent the possible damage to units. Each primary unit class in Harpoon has a certain number of damage points it can absorb before being destroyed. Each weapon can deliver a certain number of damage points. In addition to damage points, all bases, ship classes, and submarine classes can receive critical hits.

The categories of critical hits and which types of platforms they can apply to are shown in the table below.

Platform	Base	Ship	Carrier	Submarine
Weapon mounts	V'	V'	V'	V'
Sensors	V'	V'	V'	V'
Flooding		V'	V'	V'
Fire	V'	V'	V'	V'
Engineering		V'	V'	V'
Bridge/CIC		V'	V'	V'

Rudder		V'	V'	V'
Flight deck/runways	V'		V'	
Hanger	V'		V'	
Cargo		V'		
Pressure hull				V'
Keel		V'	V'	V'
Sonar		V'	V'	V'
Aircraft	V'	V'	V'	

Most of the critical hits have a chance of being repaired within 48 hours. Fire and flooding critical hits are the most distressing, because they can spread and cause additional damage and critical hits, destroying the unit.

Your unit reports in the Report window show both your current damage points and current critical hits. Note that in Harpoon all repairs are automatic and require no input from the side commander. If a surface or submarine unit is severely damaged, you might want to split it off from your group into its own group.

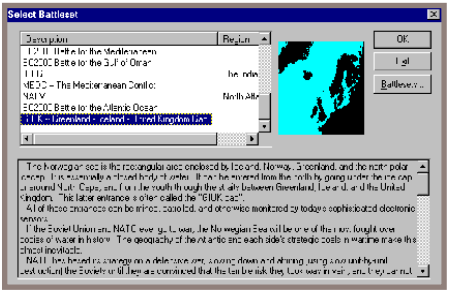
Aircraft in Harpoon can only be killed so they have no damage points or critical hit areas.

10.0 SET-UP WINDOWS

This section discusses the windows that you use to set up your Harpoon simulation.

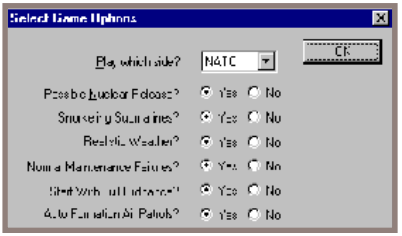
10.1 BATTLESET™ SELECTION WINDOW

A "BattleSet™" is a series of scenarios that simulate various naval engagements in a particular part of the world. The BattleSet™ Selection window lets you select any BattleSet™ you have loaded into your computer. You can create a maximum of 21 scenarios for any single BattleSet™.



When you start Harpoon, the BattleSet™ Selection window is displayed. Click a BattleSet to display its description in the lower half of the window. Select a BattleSet and click the OK button to load it. If you decide not to play, click Exit to quit.

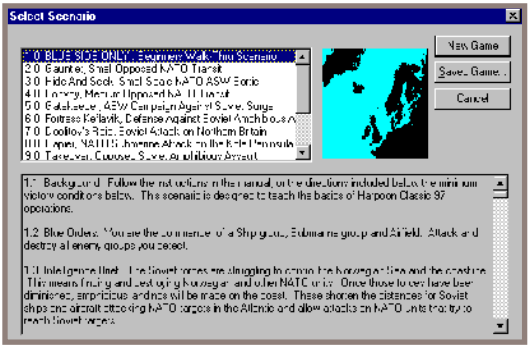
10.2 SELECT GAME OPTIONS WINDOW



After you select a BattleSet™, the Options window is displayed. Players can now add their own databases to allow for simpler inclusion of scenarios, maps, and data embedded in a BattleSet™.

The following options are available:

- Play Which Side? Your options are NATO and USSR in early BattleSets™ and BLUE and RED in other BattleSets™. NATO is the default setting, and allows you to control all NATO forces that are a part of the scenario you select in the next window. You can also choose to be the Soviet admiral in charge of Soviet task forces.
- Possible Nuclear Release? Your options are Yes and No. The default setting is Yes. If a scenario contains a nuclear release, this option will enable it. Some scenarios start with a "nuclear weapons free"; others may not give you release until later in the scenario. If one side uses nuclear weapons, the other side is granted immediate nuclear release. Whichever option you choose has profound implications for your tactics. For one thing, you will have to spread out the units which form your groups so that they will not be vulnerable to a single nuclear weapon. However, if you do so, then you are leaving them more open to attack by submarines.
- Snorkeling Submarines? Your options are Yes and No. Diesel-powered submarines must take in air to run their engines. If they need to go deep they run on batteries. If you choose Yes, then your radar and infrared sensors may be able to detect the snorkels of diesel subs when they are snorkeling. If you select No, then you will be able to detect submarines with your sonar only.



If you select No, the diesel subs will act like nuclear subs and never snorkel. If your active or passive sonar detects a sub, you can select the Display button in the Reports Window to learn whether it is diesel or nuclear powered.

- Realistic Weather? Your options are Yes and No. Weather can be a powerful factor in a naval engagement, especially in the Norwegian Sea, which is constantly whipped by gale-force winds. In high seas, your ships cannot travel at maximum speed. High seas also reduce your surface search radar's detection range. Some weapons cannot be fired in sea states of 5 or greater (see description of the "Weather Report" command on the Reports Menu). We recommend that you play the No option until you become familiar with the game and are able to operate under full simulation.
- Normal Maintenance Failures? Your options are Yes and No. In the real world, nothing works perfectly all the time. A modern naval vessel or aircraft is packed with electronic gear and high-tech weapons. Periodic breakdown of systems happens often. If you choose the Yes option, some of your units may experience electrical and/or mechanical failures during the course of the game just as they would in real warfare. Use the Yes option for maximum simulation and the No option while you are becoming familiar with Harpoon.
- Start with Full Ordnance? Again, your options are Yes and No. Real warfare is an exercise in logistics. That is, supplies, fuel, and ammunition must be transported from the supply bases to the combat units. When war breaks out, ships must begin with whatever they have on board. Often, they are not up to full strength. If you choose No, you are working under real-world conditions. A No setting in Harpoon means that you have a 50% chance that your missile and/ or torpedo loadout of any particular unit is 80–99% of full capacity. Beginners should start with full ammunition load-outs by selecting the Yes option.
- Auto Formation Air Cover? If this option is selected, the computer staff automatically puts up AAW, AEW, and ASW patrols for your groups that have this capability. If you do not select this option, you are responsible for all patrolling air asset deployment.

To select an option, click it. When you have selected all your options, press Enter or click OK to proceed.

Use the scroll bar or your up/down arrow key to move through the various scenarios. A description of the highlighted scenario is displayed in the lower half of the window. This text is divided into three paragraphs:
- Background. This paragraph gives you an overview of the strategic importance of the scenario and any other pertinent background information.
- Blue Orders (or Red Orders). These orders instruct you on what you must do to accomplish your mission.
- Intelligence Brief. This paragraph gives you a description of what is known about the enemy's intentions.

Press Enter or select the New Game button to choose the highlighted scenario and begin play.

10.3 BATTLESET™ BUILDER

A Harpoon BattleSet™ is a collection of scenarios that take place in the same geographical area. There may be other relationships between the scenarios, but this is not necessary. A BattleSet™ includes information that the scenarios access. Some of this information, such as the BattleSet™ map and the BattleSet™ database, is crucial. Some of the information, such as the background story, is useful, but the scenarios will still be playable if it is missing. The BattleSet™ information is contained in two files, one with a .res extension and one with a .rsr extension, but other files are needed (and available) in order to modify the BattleSet™.

A BattleSet™ map is a rectangular section of the world map. All scenarios of a BattleSet™ use the same map. It is also possible to create a BattleSet™ that uses a fictitious map. That would involve manual editing of several bitmap files.

Harpoon allows for an enormous amount of expansion by users. Two examples are that a user could modify an existing scenario with the Scenario Editor (SE), or create an entirely new scenario for an existing BattleSet™. The BattleSet Builder™ takes this to the next level - a user could create a set of scenarios in a geographical area not covered by an existing Battleset.

The general procedure to create (build) a new BattleSet™ is a three-step process:

1. Create the BattleSet without any scenarios.
2. Create scenarios for the BattleSet™ using the Harpoon Scenario Editor.
3. Create the BattleSet™ again, including the scenarios.

The purpose of the first step is primarily to create the map for the BattleSet™ region, as well as to assign a database and other information to the BattleSet™. All of this information will be necessary in order for scenarios to be created. After the scenarios have been created, the BattleSet™ is created again, this time including the scenarios. A Settings file is created during the first Battleset build to store settings so that the second BattleSet™ build uses the same settings.

10.3.1 Description of the Harpoon BattleSet™ Builder

The BattleSet Builder™ window has 4 tabs. In addition, there are 4 buttons on the left side of the program window, which are all active for each tab.

10.3.1.1 The Main Buttons

Make BattleSet™

Click this button to compile all the BattleSet™ information into the two files that the GE and SE use (hdsu.res and hdsu.rsr). If you later recompile the same BattleSet™, these files will be overwritten.

If you want to create more than one BattleSet™, you will need to move the earlier files to a different directory; if you rename them, they won't work.

Help

This gives a small amount of information about the program.

Load Settings

Click this button to load the settings from a previous BattleSet™ build. The Settings file has a .hcbs extension.

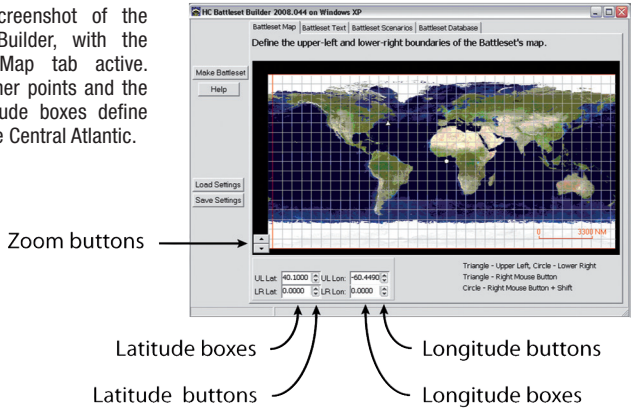
Save Settings

Click this button to create a file that stores the current settings for the BattleSet™. This Settings file has a .hcbs extension, and it is very important for long-term maintenance of a BattleSet™, as well as being crucial for the first build of a BattleSet™.

10.3.1.2 The BattleSet™ Map tab

Battleset Map Tab

This is a screenshot of the BattleSet™ Builder, with the BattleSet™ Map tab active. The map corner points and the latitude/longitude boxes define a region in the Central Atlantic.



Zoom Buttons

Use these to zoom the map in and out.

Latitude/Longitude Buttons (Arrows)

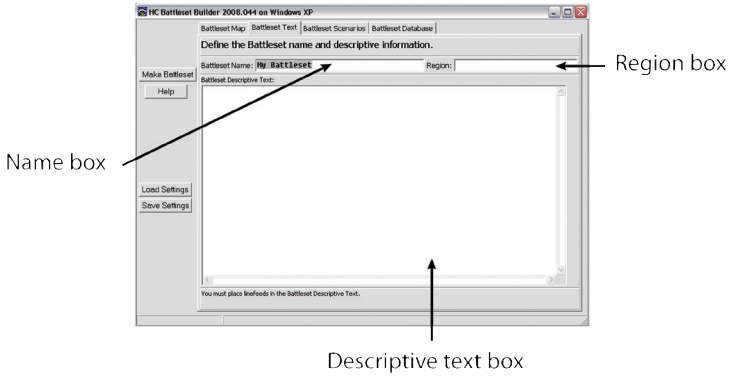
Use these to increment or decrement the latitude and longitude values for the upper left (UL) and lower right (LR) corners of the BattleSet™ map.

Latitude/Longitude Boxes

Enter specific latitude and longitude values for the upper left (UL) and lower right (LR) corners of the BattleSet™ map here.

10.3.1.3 The BattleSet™ Text tab

Battleset Text Tab



The information in these boxes is displayed in the GE and SE BattleSet™ Selector dialog.

Name Box

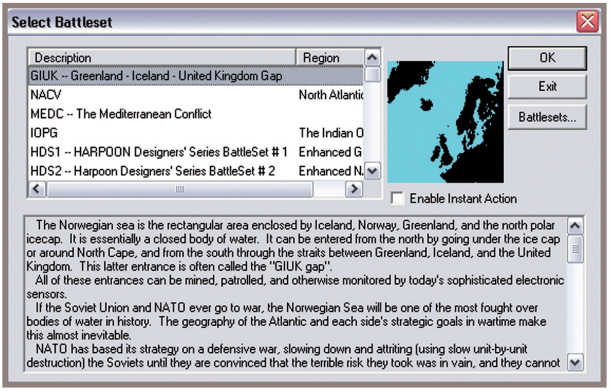
Enter the BattleSet™ name here.

Region Box

Enter the BattleSet™ region here. Ideally, this would be a very short description of the geographical region of the BattleSet™, or an acronym for it.

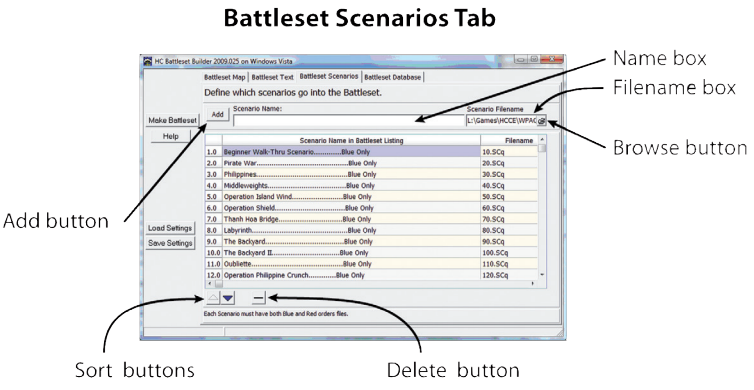
Descriptive Text Box

Enter text describing the BattleSet™ here. This should be the background story for the BattleSet™, or something similar.



This is a screenshot of the GE BattleSet™ Selector dialog. It shows an example of how the GE displays the information from the BattleSet™ Builder BattleSet™ Text tab.

10.3.1.4 The Battleset™ Scenarios tab



This is a screenshot of the BattleSet™ Builder, with the BattleSet™ Scenarios tab active. The scenario list is the one that would be seen during the creation of the WestPac BattleSet™.

Name Box
Enter scenario names here.

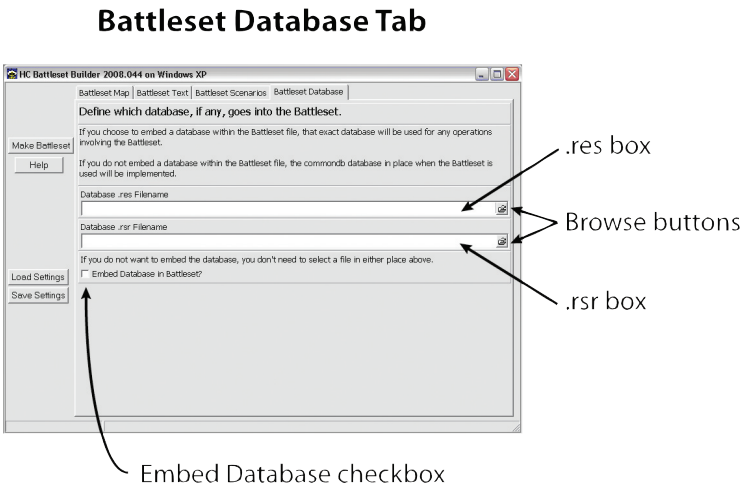
Filename Box (and Browse Button)
Use this to locate and select scenario files.

Add Button
Click this button to add a scenario to the BattleSet™.

Delete Button
Click this button to delete a scenario from the list.

Sort Buttons
These buttons are used to re-organize the scenario list by moving a selected scenario up or down in the list.

10.3.1.5 The BattleSet™ Database tab



All Harpoon databases are referred to as commondb databases or cdb databases, regardless of when they were designed or who designed them. If you do nothing in this tab, then the default commondb will be used with this BattleSet™, even if it was modified after the BattleSet™ was created.

Embed Database Checkbox
Check this box if you want the Battleset to use a specific database.

.res Box (and Browse Button)
Use this to locate and select the specific database.

.rsr Box (and Browse Button)
Use this to locate and select the specific database.

10.4 THE BATTLESET™ CREATION PROCESS

There are three major steps in the BattleSet™ creation process. The major steps generally need to be completed in sequence, although iteration is possible. There are a number of steps within each major step; these can generally be completed in different orders.

10.4.1 Step 1: Preliminary BattleSet™ Build

Load the Harpoon BattleSet™ Builder program, which is normally found in the BSBuilder directory. The default starting configuration has the Battleset Map tab selected.

10.4.1.1 BattleSet™ Map tab

Select the rectangular area that will be the BattleSet™ map. This is done by defining the upper left (UL) and lower right (LR) corners of the map rectangle, either with the mouse, with the latitude and longitude buttons (arrows), with the latitude and longitude boxes, or with some combination of these. Right-click to set the upper left corner; shift-right-click to set the lower right corner. This visual technique can be refined by entering the latitude and longitude values directly.

While any rectangular region could in principle be used for a BattleSet™ map, squarish regions are recommended. Keep in mind that any flat map projection will always be distorted in certain areas.

The world map can be grabbed and dragged around (hold the left mouse button down while moving the cursor). The map can be zoomed in or out using the zoom arrows or by dragging a rectangular region with the right mouse button. The map can be zoomed at least as far as 200 cm per inch. However, zooming in this far may cause some glitches in the map appearance after zooming back out.

10.4.1.2 BattleSet™ Text tab

There are three boxes in which you can enter text: the BattleSet™ Name box, the Region box, and the BattleSet™ Descriptive Text box. The box labels are self-explanatory. The information in these boxes is displayed in the GE and SE BattleSet™ Selector dialog.

10.4.1.3 BattleSet™ Database tab

Your new BattleSet can use either the default Harpoon database or a specific different database of your choice. Should you choose the second option, check the Embed Database checkbox, and select a .res file and a .rsr file. Should you choose the first option, do nothing in this tab.

10.4.1.4 BattleSet™ Scenarios tab
Do nothing in this tab at this time.

10.4.1.5 Make BattleSet™
After completing the necessary tasks in the Map, Text, and Database tabs, click the Make BattleSet™ button. There is no obvious indication that anything is happening. However, after a certain amount of time has passed, a small map of the BattleSet™ region should appear between the Help and Load Settings buttons. Shortly thereafter, a message informing you that the BattleSet™ has been created should appear. It might take several minutes for all this to happen. The new BattleSet™ always appears in the default directory.

Just before the final confirmation message appears, if a BattleSet™ with the same name already exists, you will be asked to confirm an overwrite.

10.4.1.6 Save Settings
In order to ensure that the main BattleSet™ build uses identical settings to the preliminary build, a Settings file is created. Click the Save Settings button to create this file.

An existing settings file of the same name will be overwritten without confirmation being requested.

Omit Step 1 if you are adding scenarios to an existing BattleSet™.

10.4.2 Step 2: Create Scenarios
Creating scenarios is not done with the BattleSet™ Builder, so it is not described here.

The BattleSet™ Builder requires each included scenario to have both a Blue and a Red orders file, even if the scenario is intended to be played by only one side.

10.4.3 Step 3: Main BattleSet™ Build
Load the Harpoon BattleSet™ Builder program.

Click the Load Settings button and load the proper Settings file.

10.4.3.1 BattleSet™ Map tab
Do nothing in this tab at this time!
Repeat, do nothing in this tab at this time!

You can zoom in or out if you want, but don't change the BattleSet™ map coordinates.

10.4.3.2 BattleSet™ Text tab
You shouldn't need to do anything in this tab at this time. However, you could rewrite all this text now and it won't cause problems, because it's just text. But make sure that the text stays consistent with the scenarios.

10.4.3.3 BattleSet™ Scenarios tab

For each scenario in the BattleSet™, locate and select the proper file using the Browse button, enter an appropriate scenario name in the Name box, and click the Add button. Scenarios can be removed from the list using the Delete button. Scenarios can be moved up or down in the list using the Sort buttons.

10.4.3.4 BattleSet™ Database tab

Do nothing in this tab at this time!
Repeat, do nothing in this tab at this time!

10.4.3.5 Make BattleSet™

After completing the necessary tasks in the Scenarios tab (and possibly the Text tab), click the Make BattleSet™ button. There is no obvious indication that anything is happening. However, after a certain amount of time has passed, a small map of the BattleSet™ region should appear between the Help and Load Settings buttons. Shortly thereafter, a message informing you that the BattleSet™ has been created should appear. It might take several minutes for all this to happen. The new BattleSet™ always appears in the default directory.

Just before the final confirmation message appears, if a BattleSet™ with the same name already exists, you will be asked to confirm an overwrite.

10.4.3.6 Save Settings

In order to ensure that any later BattleSet™ build uses identical settings to the current build, a Settings file is created. Click the Save Settings button to create this file.

An existing settings file of the same name will be overwritten without confirmation being requested.

You should store the settings file in an obvious location to avoid losing it, because it does not automatically get stored with the other BattleSet™ files.

Enjoy your new BattleSet™!

10.5. APPENDICES

10.5.1 Some Acronyms and Equivalences

BB: Battleset Builder, BS Builder, BSBuilder.exe
GE: Game Engine, Winharp32.exe
OW: Orders Writer, OrdWrite.exe
SE: Scenario Editor, WScenEdt.exe

10.5.2 Maintaining a BattleSet™

When a BattleSet™ is created (built), all the BattleSet™ information is contained in two files, one with a .res extension and one with a .rsr extension. However, if the BattleSet™ is to be modified later, other files are needed (and available). These additional files are two

commondb files, one scenario file plus two orders files for each scenario, and the BattleSet™ Settings file to specify how it all fits together. But if you just want to play the BattleSet™ scenarios, or send the complete BattleSet to someone else for them to play, then all you need or want are the two compiled BattleSet™ files. If the default commondb is to be used, then those two files can be omitted, because each user can be assumed to already have those files.

The Settings file saves the pathnames as full, not relative, paths, so if the BattleSet™ is moved to a different directory, the user will need to edit the Settings file accordingly. This file is a plain text file which can be edited with any text editor.

11.0 SCENARIO BACKGROUNDS

Since the very first version of Harpoon was published in 1989 there have been scenarios provided by the Publisher(s) and those provided by the players. All Publisher scenarios are provided as well as many player created scenarios.

The term BattleSet™ refers to a collection of maps, platforms, systems and scenarios bundled together for the enjoyment of the player. This edition features twenty BattleSets!

The original four BattleSets™ (GIUK, NACV, MEDC and IOPG) were designed with the original releases of the game and are mostly Cold War vintage (i.e. late 1980's, early 1990's).

There are eight upgraded, player generated versions (Harpoon Designer's Series 1 and 2) that are primarily early to mid 1990's.

There are four more that address a fictional war between the US/Israel and "everyone else in the world" designed by B.I. Hutchinson in 1996. More on those below in the Original Harpoon BattleSets™ section, below. These were called EC2000 and have been updated to become EC2003

Finally, for this release, there is a brand new map with a brand new BattleSet™ WestPac provided by Brad Leyte, Tony Eischens, Scott Boles, and crew that takes advantage of Harpoon: Commander's Edition specific features.

11.1 ORIGINAL HARPOON BATTLESETS™

11.1.1 GIUK BattleSet™

The Norwegian Sea is essentially an enclosed body of water bounded by Greenland, Iceland, the north polar ice cap, and Norway. This somewhat rectangular area can be entered by three ways:

- From the north by going under the polar ice cap
- Through the Denmark strait between Iceland and Cape Farewell in Greenland

- Through the opening between Iceland and the Faeroe Islands—the so-called GIUK gap.

NATO Strategy
Because of its geography, this area would be defended against Soviet air and naval attack by task forces composed of units from the United States, Great Britain, and Norway.

NATO forces would be attacking Soviet forces as they advanced along the Norwegian coast, pinning them down and even putting them on the defensive. This holding action would tend to draw valuable assets needed by the Soviets on the European central front. Simultaneously, NATO nuclear attack submarines would locate and destroy any Soviet nuclear ballistic missile submarines hiding in "The Bastion." If successful, these same attack submarines could also launch Tomahawk strikes against Soviet bases located on the Kola Peninsula adjoining Finland.

Soviet Strategy
From the Soviet viewpoint, their highest priority is to protect their nuclear ballistic missile submarines; keeping them secure as a "bargaining chip" for post-war negotiations. Their second priority is to defend their homeland against NATO strikes. To do this, they must detect and destroy NATO units as they enter the Norwegian Sea. Thirdly, they will send submarines and long-range aircraft into the North Atlantic to attack and destroy NATO convoys, for although control of this area is crucial to the Allies, requiring an immense investment in support of shipping, only a relatively small attacking force will be sufficient to wreak havoc on these convoys. Finally, they will support their army's attacks against Norway, gaining control of the coastal seas and providing air cover for support of their own sealifts. They will probably engage in a series of "coast-hopping" assaults with the idea of outflanking the defenders.

Playing This BattleSet™
In this BattleSet™ you will find twelve different scenarios, each requiring you to command a different NATO unit in implementing NATO strategy. In these scenarios, you will assume command of anything from a small squadron of missile boats up to a much larger unit, including the entire strike fleet in defense of the British Isles. (If you choose to play the Soviet side, you can even control a full-scale Soviet amphibious assault force.) You will be up against the powerful Soviet Northern Fleet which is composed of two aircraft carriers, 75 principal combatants (guided missile cruisers, frigates, destroyers, etc.), 88 other combatants (ASW and AAW escort vessels), 170 submarines (including nuclear ballistic missile and attack subs and diesel subs used primarily for coastal defense), along with over 440 naval aircraft of all types. Fighting in the North Atlantic environment is an arduous task for even the most experienced commander. Not only will you have to engage trained and committed Soviet forces, but you must also contend with high seas, fierce winds, and thousands of miles of craggy coasts that could afford hostile forces the opportunity for surprise attacks. You will be given orders for your mission and strategic objectives, as well as intelligence information about Soviet objectives and the forces you can expect to encounter. In addition, you will be briefed on the background behind your mission and its importance to the overall war effort. The success of the European defense is in your hands. Good luck and good hunting!

About the Maps
The on-screen maps used in this simulation are called "Lambert Conformal Conics." Because they have been digitally scanned from the Defense Mapping Agency Global Navigation charts GNC3 and GNC4, they are absolutely accurate in all detail. However, since the earth is a globe and not a flat plane, any map must necessarily contain distortions. Most maps used by the public (like street maps) use "Mercator projections." The Mercator projection is equivalent to putting a light inside a globe and wrapping a transparent cylinder around this globe, touching it at the equator only. With the light shining through the globe, the images of the land masses on the globe are projected onto the cylinder. As distance from the equator increases, both to the north and to the south, the images of the land masses are increasingly distorted. In fact, at or near each pole the distortion is so great that the map is virtually useless. Mercator projections are very useful in representing map data either of relatively small areas of the earth, or areas somewhat distant from one of the poles.

Because the BattleSet™ furnished with this module of Harpoon enacts situations at extreme northern latitudes, the Lambert Conformal Conic was used as the basis for the on-screen maps to eliminate the difficulties inherent with Mercator projections. To understand how this type of map is produced, imagine a transparent sheet of plastic is rolled into a cone with the tip of the cone placed directly over the North Pole. Now imagine that the cone is "pushed" down so that its edges pass through the earth at 65 degrees north latitude (about where Iceland is), and exit at 35 degrees north latitude (about where North Carolina is). Shine a light through the globe and project the images of the land masses onto this cone, you now have the type of map furnished with this BattleSet™. Although there are still distortions at extreme northern and southern latitudes, the distortion in the geographical area of where Harpoon is played is relatively slight.

11.1.2 NACV BattleSet™
It is the year 1996; "Perestroika" and "Glasnost" have backfired. The Soviet hardliners have ousted Gorbachev and seized power in the Kremlin. To turn the people's attention from the desperate condition of the Soviet economy and unite the various ethnic factions, they have launched an all-out attack on NATO.

The years of wishful thinking and premature defense cuts have taken their toll. The land forces on the European continent are few in number and ill-prepared for this lightning attack. At the same time, the Soviet forces are not prepared to engage in a long campaign and must secure all their objectives in less than one month's time. If NATO can rapidly resupply and augment their forces, the Soviets will be stalemated and possibly routed. If the Soviets can shut off the flow of supplies, they will almost certainly dominate the European battlefield, and thus all of Europe.

This BattleSet™ focuses on the NATO resupply effort and the Soviet effort to interdict it. You will be able to experience the strategic and tactical nuances of this resupply effort in scenarios that use the independent steaming, convoying, and defended sea-lane tactics.

NATO Strategy
Your overriding goal will be to get as many merchantmen and planes to Europe from the United States as quickly as possible. Every ship or plane lost is a double blow, in that the

supplies (or troops) carried are lost to the war effort, and lost units cannot be used for future shipments. Defense of these ships and planes is imperative. Offensive operations should be limited to those which can produce quick kills of threatening enemy units. As the majority of the threat is limited to air and submarine attacks, you should focus on aggressive ASW and AEW/ AAW patrolling, ringing your valuable transport vehicles with a shield composed of your warships and aircraft.

Soviet Strategy
As NATO desperately struggles to resupply and reinforce their limited continental forces, the Soviets must move to cut that supply line from a torrent to a mere trickle. Particularly aggressive naval and air tactics are encouraged, since limiting resupply guaranties an early ground war victory. Since the overall Soviet strategy depends on this early victory, the initial resupply effort must be stymied. Soviet submarines should search for enemy convoys, and coordinate their attacks with available long range aircraft. If no aircraft are available, they should strike as aggressively as possible on their own. Soviet aircraft must both monitor and harass the enemy escorts at every opportunity, and be prepared to deliver devastating attacks whenever possible.

Playing this BattleSet™
In this BattleSet™ you will find sixteen different scenarios, each requiring you to command large groups of forces with one or more objectives. While there were many threats in the GIUK BattleSet™, there are many more in the North Atlantic Convoys BattleSet™. The glory of naval combat is overshadowed by the vastness of the Atlantic and the critical nature of your mission. Here, the war is the worst combination of boredom, tension, and possibly an ugly and sudden demise. To make a bad situation worse, the world's attention is focused on the land and air battles on the European front, while your crews sweat and die to deliver the supplies that keep your side in the fight. The North Atlantic Convoys BattleSet™ will test your skills as a naval commander like nothing you have ever experienced.

The success of your forces fighting in Europe weighs in the balance. Your skill in directing these forces can make the difference! Good luck!

11.1.3 MEDC BattleSet™
The Mediterranean Conflict differs from the first two BattleSets™ in two significant ways.

First, the Mediterranean Conflict (MEDC) does not emphasize a US–USSR conflict. The conflicts in the Middle East have affected the Western powers have been affected, but never on a level remotely approaching the mobilization that a superpower confrontation requires.

The highest level of conflict potential for either of the two superpowers have been the "Superpower alert" during the October '73 War, the Kuwaiti tanker reflagging of '88–89, and of course, Operation "Desert Shield." The retaliatory strike on Libya was merely a live-fire exercise for two carriers and a squadron of USAF F-111s. The same could be said for the New Jersey's obliteration of several Syrian gun positions in Lebanon.

Consequently, we have tried to focus on this region's countries and their potential conflicts, bringing in the superpowers as needed for contrast and comparison. In fact, you might wonder why we left out the "whiz-bang" units, the reason is primarily play balance: the entire Syrian Air Force would be hard-pressed to penetrate any American task force centered on an Aegis Cruiser. One might consider the lack of "neat" units to be your portion of the U.S. "peace dividend."

The second difference is that we have included scenarios called "studies." In the earlier BattleSets, almost all of the scenarios followed a single central theme for the BattleSet™. The Med features a potpourri of different nationalities, each with long-standing blood feuds, special strengths, fatal weaknesses, numerous enemies, and too few real friends. Finally, we assume that the following countries have nuclear weapons that might be used if an enemy country detonated a weapon against home soil or a capital unit: USA, USSR, France, Israel, Syria.

Iraq and Libya probably don't have working nuclear weapons; if they did, they probably would not have such huge chemical weapons programs.

All of us hope that you find MEDC to be a fresh look at naval warfare And remember, you are much more likely to see some of these smaller battles on the evening news than you are full East-West confrontation.

Designers' Notes
Because "depth" in Harpoon is estimated, rather than based on actual data, portions of the Mediterranean Sea will appear to be "Very Deep," where in reality, the actual depth is closer to "Intermediate." To overcome this discrepancy, we have limited all submarines to "Intermediate" depth, even though they have the ability to descend to "Deep" depth. Additionally, the Mediterranean is also known for its poor sonar conditions: to reflect this, we have reduced sonar performance unilaterally. We believe that these adjustments will help to make the Mediterranean BattleSet™ more realistic and interesting to play.

11.1.4 IOPG BattleSet™

Welcome to the Indian Ocean/Persian Gulf BattleSet™. We have made several changes to the way Harpoon works in the IOPG, and think you will enjoy the changes. Some of these changes are obvious; others are more subtle.

First, we have attempted to include all the major platforms that are likely to appear in the Indian Ocean region, concentrating on the countries of the area. While we have left out a few classes, these will probably not play a significant role in any IOPG area–related conflict.

Second, we have attempted to add several "fun" units, while maintaining the accuracy of the simulation. Harpoon is first and foremost an accurate simulation of modern naval warfare. Unfortunately, due to limitations of the main Harpoon program (caused by the restraints of the computer platforms on which it executes), several unrealistic elements can develop. Among these are lack of logistic elements (for example, the lack of ordnance limits on aircraft) and lack of "full modeling of reality" (such as lack of realistic director limitations on some

units). We have attempted to design the included scenarios with a naval focus to minimize the effects of these inherent limitations of Harpoon. However, several units are included for those who like to "push Harpoon to the limit" (that is, write unrealistic scenarios) with the scenario editor.

In addition to the above, we have also attempted to add several new features for the "professional" wargamer/Harpoon user. Some examples of these features are:
- Iron bomb accuracy varies with aircraft, reflecting advanced bombing capabilities.
- Aegis-controlled guns and other autonomous point defense weapons have more accurate rates of fire.
- Stealth aircraft have been included (F-117A).
- Surface ships that carry helicopters can now have those helicopters assigned in the scenario editor, rather than the previous "automatic" loads.- Soviet standoff missiles are now capable of high and low cruise approaches. Satellite intelligence (RORSAT and PAVESAT) is implemented for the major powers and their allies.
- Sonobuoys now have differing characteristics based on nationality and type.

There have been several other changes (major and minor) to the BattleSet™ resource structure. Some of these are already incorporated into Harpoon (and you will be surprised by them when the time comes) while others are improvements that will only surface when future versions of Harpoon become available. We believe you will enjoy them all, whether you realize they are occurring or not.

We have also included some additions that are "realistic" but not necessarily accurate. We have attempted to minimize these additions, but felt that the simulation value of some elements outweighed the value of strict reality. One such element is the Indian "Cochin" class CV.

While not yet in service, it should be completed by the end of the century (when several of the "Bengal War" scenarios occur). Another element is the "Deadeye" SALH round for the Mk45. While also not in service, it could make a significant improvement in the quality of U.S. naval gunfire support. They are included for your experimentation. The battleships are also included for historical scenarios and use with the Scenario Editor; they will not be in service much longer. The subcaliber rounds on the battleships are included for your experimentation. They, along with battleships, will not be part of the future of the U.S. Navy. For those of you with the Scenario Editor, we would like to mention a few things about bases. Since Harpoon uses Lambert Conic map projections, it is not feasible to cover areas below the equator. However, Diego Garcia is a key to U.S. maritime strategy in the Indian Ocean Region. It had to be included, and it is. However, its placement in the IOPG is several degrees north of its actual location (we were considering calling it "Son of Diego Garcia"). However, since there is still plenty of blue water around it and it is comfortably distant from any enemy bases, this should not greatly affect its simulation value. Another base oddity is that the Afghani bases are represented in triplicate with widely varying statistics. These represent:

- The base under Soviet control.
- Mujahedin activity in the base region (that is, the firing of U.S.- built Stinger missiles at flare-chucking Soviet aircraft).

- The base without Soviet "advisors" and military equipment.

Several other bases are listed more than once. Dhahran and Ras Tanura are listed twice, the listing with the (USA) suffixed to the name is not meant to indicate that Saudi Arabia has become a state, but that American troops and Patriot missiles are present, helping to defend our Saudi brothers and allies. Other bases are included multiple times if they have historically been occupied by different countries, and their defenses are different for the different entries, or if the base could be on either side of a conflict; through diplomacy, treachery, military action, or a change in perspective of Red and Blue.

You may also notice that submarines can now only fire as many torpedoes as they have tubes. This was done to increase the accuracy of the simulation (no more 21 torpedo salutes) and to allow the IOPG to be compatible with possible future versions which will support reloading of torpedo tubes. Don't worry, the other torpedoes are in there, but the current Harpoon version can't find them. In order to be informed when future versions of Harpoon becomes available, just send in the warranty card which accompanied your original Harpoon program.

In conclusion, we hope that you enjoy the Indian Ocean/Persian Gulf BattleSet™. We would also like to point out the fact that Secretary of Defense Richard Cheney does not surf.

11.2 EC2003 SCENARIO BACKGROUND

Editor's Note: The original platform artwork was replaced by Darren Buckley and the WestPac team (see above) in 2007. The underlying database has also been updated to Brad Leyte's HCDB from the original database.

In the late summer of 1996, as the American presidential season was beginning in earnest, unknown terrorists conducted a series of suicide bomb attacks against American forces attached to the 1st Armored Division in Bosnia. Casualties were very high. The American president, bowing to growing election year pressures, announced an immediate withdrawal of all U.S. ground forces in the Bosnian theater of operations (BTO). The presidential declaration stated that peace in Bosnia was now at hand, that despite the recent U.S. casualties the ongoing U.S. military operation was a success, and that the mop-up phase now underway could be handled by NATO forces remaining in theater reinforced by additional European forces staged in nearby countries, if required.

Outraged at this unilateral action, senior members of the NATO military council appealed to the U.N. General Secretary to use the power of the U.N. Charter to block the U.S. action and order American forces to hold their ground and fulfill their U.N. commitment. Reluctantly, the General Secretary agreed and through his liaison officer attached to the NATO military council ordered that all forces operating under U.N. charter hold their position and maintain clear lines of communication with NATO high command in Brussels. The final instruction in this order noted that this order superseded all other operational orders, no matter what their source.

In a hastily called emergency meeting in Brussels, the U.S. Secretary of Defense (SECDEF) accompanied by the Chairman of the Joint Chiefs of Staff (JCS) was informed by the balance

of NATO commanders that U.S. forces assigned to a joint NATO operation could not unilaterally withdraw from that operation until their commitment had been fulfilled. The SECDEF repeated the presidential directive and told the NATO ministers that U.S. forces would indeed withdraw according to the announced time table. A German air force general, clearly the spokesman for the remaining NATO council members, repeated the NATO position again with one addition: Any forces assigned to NATO operations not following the U.N. directive would be declared a rogue force and be subject to further NATO action.

Outraged by this not-so-subtle threat, the SECDEF closed the meeting and with the JCS boarded his plane for the return trip to Washington. As the plane touched down in Iceland for refueling, word came that European forces using U.S.-devised counterterrorist plans for base security were seizing U.S. installations all over Europe.

The host governments of England, France, Germany, and Italy had acted on the U.N. declaration and seized U.S. forces operating on their territory. America was confronting the one world government it had worked so hard to create. The military command in Brussels again transmitted orders to the 1st Armored Division to hold its ground and maintain its defensive operations or face U.N. reprisal. U.S. operational commanders ignored the U.N. order and continued their preparations for withdrawal according to the presidential directive. The stage was now set for a world conflict few could have foreseen.

From the U.S. perspective, the European move caught the struggling American president off-guard and sealed his fate politically. The American press called the European action Pearl Harbor Part II and began to goad the President into military action. Faced with the loss of all in-theater air assets and facilities and with unknown numbers of hostages, the president ordered 1st Armor to hold its ground and await further orders.

The U.S. 6th Fleet, however, received a much different set of orders. Withdrawal of 1st Armor would take place only after the 6th Fleet had established a zone of control in the Adriatic that would permit a safe operation. NATO, it seems, had underestimated the desperation of the now wounded American President and the power of the U.S. 6th Fleet.

Russia was the first to warn that American naval forces were assembling in the safe waters off Israel under the protection of the Israeli Defense Forces. Israel was repaying America for the billions they received in aid. The cat, though, was out of the bag.

NATO forces were now aware of the upcoming American action and began to prepare for the engagement. Russia followed the satellite information with an offer that shocked most of the remaining NATO ministers. Russia would, as part of its military contribution to the NATO mission in Bosnia, provide elements of its military to replace U.S. forces no longer available. The initial shock of the offer was dwarfed by reaction to an agreement by the Russians to place these forces under the operational control of NATO commanders in-theater. A new age in European cooperation had arrived.

The outbreak of hostilities was sudden and severe. U.S. 6th Fleet forces entered the Adriatic and established local air superiority after a fierce air battle. The removal of the 1st Armored

Division began soon after. NATO, which was clearly unprepared for this conflict but holding large numbers of American military personnel, soon realized a negotiated peace would yield a higher return than the continued conflict in the Mediterranean.

The cessation of hostilities on terms that seemed to favor the Europeans gave those in power across Europe a badly needed political victory. Public concern over the incident quickly turned into a quiet euphoria. Many on the continent it seemed had a deep-seated desire to see the "Yanks" get theirs.

Negotiations soon began regarding the return of U.S. military personnel and equipment stationed in Europe when the conflict began. As the current administration drew to a close, negotiations with the U.N. stalled. The Europeans hoped to catch the new administration off guard and further improve their position. Much to their surprise, soon after the inauguration the new administration began to pursue a very hard line with the European Union, demanding the return of all U.S. property before negotiations could continue.

The U.N. General Secretary, backed by overwhelming support of the membership at large, passed a resolution ordering the United States to pay all back dues owed the U.N. or face immediate suspension from the Security Council.

The President's response to the U.N. was clear and to the point. The U.S. would not even discuss U.N. financial obligations until the U.N. addressed American military assets in the hands of the European Union. The general secretary wasted no time in convening the entire U.N. body; debate was short and the vote quick. America had become an outcast. With a few notable exceptions, the United States was isolated. The American president responded to the U.N. action by revoking all U.N. personnel visas and demanding that they leave the country within 48 hours.

In the months that followed the U.N. reconvened in Brussels and set about the business of condemning the U.S. and her few remaining allays for a host of alleged violations. The once bipolar world had now fragmented itself into four district trade and military organizations:

China, in a loose confederation with Japan and other Pacific Rim nations, established the Asia Pacific Pact (APP).

Iran, the most vocal of the Arab states established the Islamic Federation of Independent States (IFIS). This organization united the oil-producing states of the Persian Gulf—with one notable exception— and established close political and military ties with India and other nonaligned nations.

Former NATO and Warsaw Pact countries expanded the European Union and replaced the now defunct NATO military structure with the European command (EC).

The last trading block chaired by the United States shared almost no commonality with its members other than their reliance on the U.S. to protect them from their neighbors.

Kuwait Israel, Taiwan, and Norway are now all that stands between the United States and total isolation. Even Canada, a long-time ally of the U.S., has recalled all its military personnel and openly declared its neutrality.

As time passed, relations between the trading blocks ebbed and flowed. America and its allies had become the world's pariahs. The remaining trade coalitions began a wide-reaching plan under the auspices of the United Nations to strangle the economies of the U.S. block and force them under U.N. control.

As historians record the past, 1996 will be noted as a year to compare with the stark events of 1939 and 1941. Most of the major world's powers will for the first time in history see a dramatic change in leadership largely through peaceful means.

Elections in Russia, the United Kingdom, and Israel reversed the course of those nations' policy. The sudden fall of the House of Fahd in Saudi Arabia and the passing of the aged leadership in China set the stage for a vast realignment in the world's political environment.

11.3 WESTPAC

11.3.1 Geopolitical Situation – Battles in the Western Pacific

Since the close of the Cold War and disintegration of the Warsaw Pact military bloc, the expected arena of any major armed conflict has shifted more and more to the Western Pacific region. As this text is being written, conflict rages in Iraq, Afghanistan, Sri Lanka and any number of smaller conflicts around the world. However, the rocketing growth of the Chinese economy and the disquieting actions of North Korea dominate the specter of major military conflict in this 21st century.

China's growing military might creates uncertainty for the rest of the world. Will China use force to bring Taiwan back under its control, potentially dragging the USA and Japan into direct armed conflict? How fiercely will China exploit and defend deposits of natural resources and the sea lanes which carry the lifeblood of its burgeoning economy?

North Korea, always on the brink of mass starvation, continues its development of nuclear weapons and the long range missiles that could carry them. Will the world react at some point to enforce UN resolutions with military action? Will China come to North Korea's aid? Will North Korea continue to proliferate missile technology to dangerous nations around the world?

Japan, relaxing its pacifist constitution with each passing year, seeks to strengthen its own defensive capabilities in the face of the growing might of China and the constant danger posed by North Korea. Memories of a harsh Japanese colonial rule, however, continue to run deep in the Pacific Rim. How will its neighbors respond to a more offensively minded Japanese military?

Pocket democracies Australia and New Zealand, facing many potential enemies, meanwhile use every penny they can spare to defend hopelessly their large coastlines and their long and vulnerable trade routes.

The United States of America, embroiled in multiple conflicts around the world and the never ending War on Terror, is shifting a majority of its military power to the Pacific. Can the US keep pace with China's explosive growth? Can the global policeman meet every new challenge?

Welcome to WestPac, fertile ground for every facet of modern combat!

11.3.2 Design Notes - Battles in the Western Pacific

The WestPac BattleSet™ embodies the first newly designed scenarios included in Harpoon Classic since the release of the EC2003 BattleSets™ and HC97 a decade ago. Under the hood WestPac has the distinction of the first BattleSet™ to cross the Equator as well as model a larger land area than the other BattleSets™. WestPac also takes advantage of the underlying game improvements to provide an immersion beyond any release prior to Harpoon: Commander's Edition.

The scenario arrangement in WestPac adheres to no particular storyline. Leading off the collection of scenarios is a re-working of Original GIUK 1.0, a scenario introducing the player to the mechanics of Harpoon Classic and many of the improvements that come with Harpoon: Commander's Edition. Next are the first two WestPac scenarios, Pirate Wars and Philippines, mirroring today's world with piracy rampant in some areas and terrorist training going on in others. The next three scenarios highlight potential conflicts involving Japan, often with the USA at her side. These three show of some of the most engaging scenario design thus far in Harpoon Classic, making use of neutrals, difficult to detect air defenses, stealth, and area radar jamming. Next up, a blast from the past war in Vietnam with Crusader Rabbit's RA-5C Vigilante risking life and limb to aid in the destruction of a tactically unimportant but psychologically invaluable bridge. From there the player is brought into the Cold War with the USA and Japan facing off against the Soviet Union, Bears and Backfires galore bearing down upon tired F-14 pilots and outgunned Japanese defenders! The WestPac BattleSet™ closes out with an unexpected twist, Australia versus France…

12.0 OPERATIONS MANUAL

12.1 ORIGINAL HARPOON FOREWORD BY TOM CLANCY

I met Larry Bond as the result of an accident. Soon after joining the U.S. Naval Institute, I saw in their monthly journal, Proceedings, a small advertisement for the original Harpoon. I hadn't played war games since college days, but I knew that there had to be something better than those, and I figured that for ten dollars or so, I couldn't go too far wrong. On receiving the game, and reading it over a period of days, I availed myself of the comment sheet tucked in the back to offer a suggestion. I saw what I thought was an error in the damage points section, and pointed it out, along with some complimentary remarks on the overall quality of the concept. Larry replied almost at once, confirming that there was a goof in his numbers (he was in the process of doing a correction). The ready admission of error told me everything

about Larry that I'd ever need to know. Larry Bond is a serious student of this subject, a man for whom accuracy is more important than ego. In a word, Larry is someone of integrity. I know no higher praise.

Harpoon was a priceless asset in the preparation of my first novel, The Hunt for Red October. There are several reasons for this. First of all, the technical database included in the ship specification book is easily the equivalent of $5,000 in reference books, superbly organized. More importantly, however, the game rules explain, with the astounding combination of simplicity and detail, the mechanics of ships, sensors, and weapons. The principles explained can be easily applied to specific ships, called "platforms" by insiders, found in the ship specification book. Harpoon is a tool for understanding things that happen in the real world. The player can use this game to simulate reality. How closely, you ask? Closely enough that every naval officer I meet in more than one navy asks where I got my information, and frequently they don't believe my answer. The net result, however, is that Red October is now used as an introductory textbook at the Naval War College, Newport, Rhode Island. A lot of credit for this goes to Larry Bond. In short, Harpoon is almost certainly the best naval simulation available to the public. The only games more detailed are classified, which does not necessarily mean "better," by the way, and a lot more expensive. It is the perfect starting point for discovering what navies do, and how. It worked for me.

12.2 FINAL NOTE FROM LARRY BOND

Harpoon, the computer product, is a sophisticated version of the award-winning war game published by Games Designers' Workshop. You will assume the role of a fleet commander, making the same type of decisions he has to make, using the same type and quality of information he might expect to get in wartime. This does not mean worrying about the fuel state of a helicopter somewhere, or the present course and speed of a maneuvering ship. You are trying to keep the Big Picture, and move the course of the war in the direction desired.

We want you to have fun playing Harpoon. After all, that's why you bought it. But with that requirement satisfied, we want you to see some of the tactical and strategic problems that a modern formation commander faces. A modern carrier battlegroup has tremendous combat power, but also some very real limitations.

13.0 SUPERPOWER POLITICS & MARITIME STRATEGIES

13.1 SOVIET UNION

Prior to the October Revolution of 1917, power was in the hands of the Czars; today it is in the hands of the Communist Party of the Soviet Union (CPSU), especially those Party members who belong to the Politburo. Control of the Soviet military is exercised by Politburo members sitting on the Defense Council, chaired by the General Secretary of the Communist Party. Today, the only military officer of higher rank sitting on this council is the Minister of Defense.

He holds the military rank of "Marshall of the Soviet Union" and is its highest-ranking military of officer. The Defense Council is responsible for implementing all the Party's wishes with respect to national defense. The presence of the military on this council ensures that direct action is taken on its decisions.

The absence of checks, balances, civilian control, and diffused power makes the Soviet military a factor to be reckoned with in domestic and international strategic planning. However, Party control over the military establishment is solidly maintained by the KGB, which has political officers assigned to monitor the behavior of individual unit commanders.

Since the Soviet Union believes in the rapid and efficient transformation from peacetime to wartime posture, all major political and military structures approximate the anticipated wartime structure, thus ensuring minimal organizational disruption. Direct leadership of war is the responsibility of the Supreme High Command (VGK), composed of the Minister of Defense, his five commanders-in-chief, plus six other deputy Defense Ministers for civil defense and other matters. In the event of hostilities, the Soviets would create Intermediate High Commands (TVDs) in the various theaters of operation subordinate to the VGK. In this manner they would maintain a strong centralization of strategic planning and decentralized battle management. Moreover, subordinate Warsaw Pact members would instantly be integrated as an extension of the Soviet armed forces under a unified command structure within Western and Southwestern TVDs. The philosophy behind such an approach to war is that a unified, cohesive, well-trained force controlled by a superior command will defeat any loose coalition of forces such as NATO.

In light of the foregoing discussion, many people may consider the Soviets to be an aggressive people. But such is not the case, for the Soviet Union is not an overtly aggressive nation. Indeed, they have a healthy respect for war, having suffered staggering losses in World War II. But, like an enraged mother bear who senses a threat to her cubs, they will react violently towards any perceived threat to the Motherland.
And yet, parallel to this aspect of their national character is the fundamental tenet of communism that the inexorable forces of history will lead to the eventual victory of the communist system over the contradictions of capitalism. To this end, they will use any covert and/or political means to assist history in reaching its foregone conclusion. In short, the Soviets believe in taking the long view. They will wait patiently for their eventual triumph since they see long-term trends as being on their side. This means that they will only use military force when they think they are backed into a corner. When they do attack it will probably be because they see no other solution to their problem, and because they see the safety of their nation at stake. Strategically, they will fight a defensive war, one designed to remove some threat to the Soviet Union.

13.1.1 Maritime Strategy

This "scientific" view of history which is so peculiar to Communism also carries over into their military doctrine. The Soviet definition of military doctrine states that it is based on a "system of scientifically founded views." This theme of science is a constant throughout all aspects of the Soviet military. When a Soviet officer must decide how many aircraft to use in attacking a target, he uses a formula. When a Red Army lieutenant is asked how to act in a

specific tactical situation, there is only one correct solution, just as there is only one correct answer to a mathematical equation.

Soviet doctrine is based on both a combination of political and economic inputs from their leadership and on military science (the scientific "physics" of war). Based on these two sources they have developed the Military Art: the theory and practice of war in a specific time and place. From this formidable body of work, the Soviets have developed a list of missions to be performed by their Navy in wartime. In order of priority, they are:

- Operations against the land (strategic strike)
- Anti-naval nuclear forces (Anti-SSBN)
- Protection of their SSBNs (Pro-SSBN)
- Anti-surface lines of communication (anti-convoy)
- Protection of their own lines of communications
- Support of the army

When compared with an equivalent list of U.S. missions, there are many differences. The U.S. does not prioritize its missions, except to place primary emphasis on deterrence. Soviet missions are more carefully and completely defined. But this attention to detail and structure could be a two-edged sword: Soviet forces are less flexible than the NATO forces, imposing greater restriction on Soviet forces and allowing for less strategic and tactical creativity.

13.1.2 Strategic Strike

Since the Soviet Union bases its military strategy on the land, this is also called "Operations Against the Land." These missions would be executed by Delta and Typhoon class nuclear ballistic missile submarines (SSBN) firing from protected areas in the Barents and Kola Seas, and from under the polar ice cap. Older Yankee-class boats would have to fire from positions off the coasts of the United States. Today, the very newest Soviet attack submarines (SSN) also have a strategic strike capability as do American attack subs. However, unlike American submarines, which can launch either nuclear or conventional cruise missiles, Soviets submarines fire only the nuclear SS-N-21.

These subs are so valuable for other roles that their participation in a nuclear strike is unlikely.

13.1.3 Anti-Naval Nuclear Forces

Since World War II, the Soviet Union has viewed the nuclear strike capability of first the US, then other navies, as the primary naval threat to the Soviet State. These threats would come from American carrier-based strike aircraft, nuclear ballistic missile Subs (SSBN), and (most recently) from cruise missiles capable of being launched from a variety of platforms. Defense of the Motherland against nuclear strike is not the responsibility of the Navy, alone; the air defense force has a role to play in the event that missiles are launched. However, the role of the navy is to track and attack potential launch platforms as they approach within firing range. In actual wartime, they would immediately attempt to destroy such platforms.

13.1.4 Protection Of Their SSBNs

To protect their own nuclear strike force, the Soviet navy will probably form "bastions" in the Barents and Kola seas, even stationing ballistic missile subs under the polar ice caps. A bastion consists of an area of water, partially enclosed by friendly shoreline, cornered off by mines, Surface, submarine, and aircraft forces will patrol inside and outside this area. Acoustic sensors in the seabed will help detect hostile submarines. In the event that Soviet SSBNs are required to leave their bastion. they will be escorted by the newest and best attack submarines. Where there is no ice, patrol aircraft and helicopters will continuously patrol overhead. The most capable ASW ships will form hunter-killer groups. Hence, a major part of the Soviet navy will be organized with the one goal of preserving the land-attack capability of the Soviet naval forces.

13.1.5 Attacking Enemy Lines of Communications (Anti-Convoy)

Once the Soviets secure their own ability to strike the enemy's homeland and reduce its ability to strike their own country. they will use their remaining forces to attack the enemy's strategic and tactical supply lines, which would normally consist of large naval convoys and other merchant traffic. Given the fact that none of the NATO allies are economically, strategically, or militarily self-sufficient, this action would be aimed at strangling the NATO war effort on land. To accomplish this task, the Soviet navy would have to leave home waters and even go beyond the Norwegian Sea, using submarines and long-range strike aircraft. Mines would be laid in shallow waters near enemy ports, and the ports themselves might be attacked by air strikes and/or commando teams with sabotage responsibilities.

13.1.6 Support of the Army

The lowest-priority mission defined by the Soviet strategists is supporting the army. This would be performed by amphibious forces and small combatants. Small landings would be made to outflank the enemy. Supply cargo would be carried in the waters off friendly coasts, escorted by naval warships.

13.2 UNITED STATES AND HER ALLIES

To understand the thinking behind Western military philosophy and strategy you must remember that the United States and her allies represent the greatest coalition of economic powers ever witnessed in world history. Within this consortium of power, no nation is as economically self-sufficient as is the Soviet Union. Instead, the stability and wellbeing of the West is dependent upon an unimaginably complex web of financial and trade arrangements designed to allow each nation a maximum economic benefit consistent with the overall health of the other members of this trading society. Within this system, the economy of any one major nation is largely dependent upon the state of the economy of any other major nation. Because of this, the capitalistic societies have come to realize that no one nation can pursue a policy too detrimental to the well-being of any other nation. Should the economy of any one of the major trading partners collapse, the repercussions would be severely felt throughout the entire free world.

Western politics tends to be strategically less long-range than do Soviet politics, focusing more on the immediate state of the economies of member nations. But because of this world-wide economic arrangement, Western military planners have developed strategies

built around the rapid deployment of forces to sensitive areas, with the goal to protect the vital arteries which sustain the health of allied powers. So whereas the Soviets would view control of the seas as a means of both protecting the Motherland and isolating land-based battles from allied support, the U.S. and her allies view sea power as a vital necessity towards allowing the free flow of both economic and wartime materials.

Because of the nature of Western economic arrangements. American political and military philosophy with regards to communist countries is one of "containment"; that is, preserving the status quo by erecting a series of alliances with countries inside our sphere of influence. Of these alliances, the best-known, most powerful, and most crucial to the defense of worldwide democracy is the North Atlantic Treaty Organization (NATO).

By comparison to the relatively simple. straightforward, and somewhat streamlined peacetime military organization of the Soviet Union, that of the United States would appear absolutely muddled. And in many respects it is. Yet just as political ideologies and national self-perceptions have given rise to the Soviet military organization, so too have historical Western ideologies and concerns shaped our own political-military system.

The United States has traditionally avoided a centralized "general staff" concept in its military organization. In one respect, this concern originated with the framers of the Constitution, who realized that the British general Oliver Cromwell had established a military dictatorship that had almost throttled democracy in its infancy. In part, also, is the concern over the establishment of a general staff which would operate as a "state within a state" as did the German General Staff in World Wars I and II. As a result, control over the American military is diffused through a vast interlocking and complex bureaucracy of civilian agencies and military commands administered under civilian control through the Department of Defense. From the perspective of Western ideologies concerning the inviolability of personal and social freedoms, this concept is almost sacrosanct. There are, however, both organizational and economic prices to be paid for this concept: an economically wasteful lack of cohesiveness in military planning and procurement, unclear and uncoordinated objectives among the three armed services (Army, Navy, and Air Force), and a burgeoning military-civilian bureaucracy that consumes tax dollars at a formidable rate.

With regards to the administration of our military treaties, much the same ideology applies. Each member country is responsible for maintaining a military presence consistent with its national interests. In the event of a worldwide conflict, each nation would be faced with the dilemma of how best to contribute its military resources in defense of the common cause against the protection of its own borders and its own population. For example, in the event of a Soviet incursion into West Germany, our British allies would have to decide between committing their troops to that front, or protecting their own soil against a simultaneous Soviet threat.

Moreover, in the event of a large-scale conflict, the Western philosophy calls for a coalition between the armed services of each country, with strategic and tactical responsibility for the execution of the war falling upon military representatives from each member country

acting in concert. But while the difficulties inherent in a system lacking a strong monolithic command structure are obvious, there is also one very important strength. Once the fundamental strategy has been established, each military commander has great latitude on how best to execute his responsibilities. This concept of individual responsibility for decisions reaches down even to platoon and squad level. This strength of the democratic tradition renders a war effort less prone to deterioration should key individuals or units within the command structure be killed or otherwise removed from action.

13.2.1 Maritime Strategy

America's maritime strategy is a part of its overall National Military Strategy. National Military Strategy is built around the tripartite concepts of:

- Deterrence and transition to war
- Seizing the initiative
- Carrying the fight to the enemy

13.2.2 Deterrence and Transition to War

Deterrence, both nuclear and conventional, is designed to limit Soviet options and to convince them that any military solution to a crisis will fail. The concept of nuclear deterrence, the so-called "balance of terror," is familiar to everyone. Less well-understood is that of conventional deterrence. Under this concept, the U.S. and her allies will place naval and land units in or near crisis situations, altering the balance of forces so that the chance of a hostile military solution to the crises is lessened. Of course, the opponent may see these forces as something to be matched, so the amount and nature of the force is critical. However, a key factor in this philosophy is the fact that the Soviets and her Warsaw Pact allies enjoy a considerable advantage in the size of their conventional forces. In most scenarios it is assumed that the Soviets will enjoy a numerical superiority in the event of a full-scale conventional conflict. Therefore, for a Western conventional deterrence to be effective the Soviets must be made to realize that superiority by virtue of numbers is illusory. Critical to this strategy are superior NATO firepower resulting from technologically superior weapons systems, surrendering large tracts of territory in order to gain both maneuvering rooms for counterattack and to gain time in bringing our industrial superiority to bear, and superior mobility in placing both regular and reserve forces into theaters of crisis situations and in reinforcing the front with our industrial output.

13.2.3 Seizing the Initiative

If deterrence fails the Soviets will probably make the first move. Since NATO is a coalition, the Soviets have the initiative as a single player. Having the initiative is vital in a military campaign because the force with the initiative will get his enemy to react to his actions, and will be able to choose the time and place for engagement. The U.S., therefore, must seize the initiative and turn the battle to her favor.

The Allies will first try to counter the enemy's initial attack, causing them to stall and to lose the timing of their pre-planned campaigns. The Allies may also attempt to disrupt the Soviet's "scientific" approach to campaigns by launching attacks or maneuvers designed to force the Soviets to react to unanticipated threats. In this stage of conflict, the line between

NATO offensive and defensive actions may be blurred. For instance, an apparently offensive strike against airfields on the Kola Peninsula may, in fact, be designed to protect convoys from attacks by land-based bombers. "Seizing the initiative," then, refers to changing from a defensive posture to an offensive one. The amount of time this may take to happen will vary with the situation, but it has to happen.

13.2.4 Carrying the Fight to the Enemy

Once NATO has the initiative it will try to turn the tide of battle and carry the fight to the enemy. This is what the navy means by "power projection," and it entails moving into the adversary's home waters and attacking him there so that his forces will have to be used to defend his own territory. Tasks to be performed might include recapturing conquered territory, clearing the seas of submarines so that ships can move through it, or eliminating enemy air capability by striking at enemy bases. If the Navy is able to project its power, the U.S. and her allies should have the upper hand. Yet this might also be the most critical part of the war. Hopefully, of course, the enemy will sue for peace at this point, realizing that his military and political goals are now impractical or unobtainable. But, on the other hand, we cannot press a nuclear opponent too closely. If he thinks that his national survival is at stake he might use strategic nuclear weapons, or threaten their use, in order to gain better terms. The risk of nuclear weapons being used is present throughout modern conventional war, but the real danger of their being used will most likely occur if one side feels that it is losing, or has lost.

13.2.5 U.S. Navy Organization

The U.S. Navy engages in the projection of power all over the globe in support of American policy and goals. It maintains bases in, and has ships on, virtually every ocean in world. For command and control purposes, Naval forces are divided into numbered fleets, each with their own geographic responsibilities: Second Fleet (Atlantic), Third Fleet (Pacific), Sixth Fleet (Mediterranean), and Seventh Fleet (Far East). Within each Fleet, units are organized into "task forces"; that is, groups of ships chartered to perform specific tasks such as convoy escort, amphibious landing and support, strikes against enemy bases, etc. Because some tasks are constantly being undertaken, planners simplify matters by using several standard task force organizations.

13.2.6 Carrier Battle Groups (CVBG)

The first and most important type of task force is the Carrier Battle Group. Centered on a single aircraft carrier (CV), the CVBG includes two or three guided missile cruisers (CG) for long-range air defense, a few guided missile destroyers (DDG) for close-in air defense, two destroyers (DD) or frigates (FF) for anti-submarine defense, and a few submarines patrolling in front of the task force that are used for both offensive and defensive purposes. The CVBG may also include support ships and auxiliaries to support the task force with fuel, ammunition, and stores. A carrier battle group has an impressive array of firepower. It can attack surface targets with strike aircraft, missiles from the escorts, or torpedoes from the submarines. It can attack hostile submarines with ASW helicopters, its own subs, or ASW weapons from escort ships. It can destroy incoming aircraft with either its own fighters or surface-to-air missiles (SAM). It can also strike enemy shore bases either with aircraft or with long-range cruise missiles. The American CVBG is the most flexible and powerful combination of naval forces that exists.

The navy also uses light carrier battle groups centered on a VTOL (vertical take-off and landing) or helicopter carrier. Although these battle groups are quite inferior to the CVBG in terms of overall firepower, they are invaluable for ASW, escort, or support roles.

13.2.7 Surface Action Groups (SAG)

A surface action group is centered on one or more powerful surface ships such as cruisers and/or battleships, and includes several escort ships for protection. Its mission is to provide heavy firepower when needed, as in support of an amphibious landing. A SAG would also use missiles (or guns, in rare instances) to attack hostile surface units. But since the Soviet navy does not usually deploy its surface ships in distant waters, the chances of a SAG being used in this role is somewhat limited.

13.3 REVIEW OF MODERN WEAPONRY—THE IMPACT OF TECHNOLOGY

Technology is the driving force behind modern naval warfare, much more so than warfare on land. On land, there have certainly been technological improvements in such systems as tanks, troop carriers, helicopters, artillery and explosives, visual detection systems, and the like. Nevertheless, the dominant force on land continues to be the individual infantry soldier; technology has not changed this fact. At sea, however, the development of new weapons and sensors has had a dramatic effect. Modern naval warfare fundamentally involves machines fighting other machines, with humans directing them and serving as parts of the machines, performing tasks that electronic subsystems are not yet capable of doing. Ever since war at sea became mechanized, the goal has been to remove humans from the loop and to maximize speed and efficiency. The effect has been to improve reaction time and, simultaneously, to reduce manpower support overhead. The ultimate example, to date, is the Aegis anti-air warfare system: under human direction it detects, classifies, and engages hostile aircraft without human intervention. Advanced technology makes this system possible, but it also increases the burden on the person ultimately responsible—the naval commander.

13.3.1 Search and Detection Systems

Before an enemy can be engaged and destroyed he must first be detected. If he cannot be detected, located, and tracked no amount of firepower will be to any avail.

Modern detection and military intelligence capability commences with reconnaissance satellites orbiting the earth at a distance of 150 miles or further. These "spy-in-the-sky" systems can monitor the movement of enemy troops and materials in and out of port, as well as the location of hostile naval task forces at any point on the globe. Although they currently would play little part in an actual tactical engagement, their information is invaluable to military commanders in determining enemy positions and strengths. The capability of technological nations to exploit outer space is currently giving rise to a new phenomenon: space warfare. In order to deny an enemy access to intelligence data derived from spy satellites, we are now witnessing the advent of anti-satellite weapons such as killer satellites (orbiting satellites whose sole purpose is to destroy an enemy's reconnaissance satellites) and anti-satellite missiles.

At the tactical level, enemy forces are located, tracked, and identified by a variety of sophisticated sensors. Air search radar can detect and track aircraft at ranges of more than

200 miles, while surface search radar perform similar tasks on targets over 40 miles away. Passive electronic listening systems receive and analyze the various enemy radar emissions, allowing naval commanders to precisely classify what kinds of ships, aircraft, and other weapons systems he will be encountering. In fact, since receivers can detect emissions at distances far beyond radar range, task force commanders can know the composition of their adversaries long before they are detected and tracked by radar. Information from active and passive devices is fed into computers where it is analyzed, with the results displayed on consoles. In fact, the state of the art is such that all information being obtained by one naval unit can be networked to other units so that any one ship has access to the same information as any other ship.

But as important as it is to know the composition and the whereabouts of the enemy, it is equally important to deny him access to similar information. As a result, modern naval units employ a variety of systems designed to jam and/or deceive enemy radar. Such systems run the gamut from simple chaff (strips of aluminum foil cut to lengths effective against specific electromagnetic wavelengths), to electromagnetic jamming beams tuned to the specific frequencies of enemy radar, to systems designed to confuse enemy commanders by producing phantom or misleading electronic targets.

All that has been said about surface detection systems can also be said about subsurface systems. Sonar is to undersea warfare as radar is to surface warfare, with the difference being that sonar operates on the principle of reflected sound waves, as opposed to reflected electromagnetic waves. All submarines and surface combatants have onboard sonar systems which are used for precise target tracking and torpedo fire control. Some systems are integral to the ship itself, and some are towed behind the ship to reduce the effects of ship noise on sonar reception. In addition to these active devices, submarines are equipped with long-range passive listening devices. These systems are capable of alerting submarine captains to the presence of enemy subs at distances far beyond sonar range. By being passive they also have the advantage of not alerting the enemy to one's presence. Their only disadvantage is that they cannot track a target as precisely as can active sonar.

Anti-submarine helicopters use sonar devices which are dipped into the water from the hovering platform, as well as sonobuoys (expendable sonar devices dropped into the vicinity of where a submarine is suspected of being). Anti-submarine fixed-wing aircraft also employ sonobuoys as well as Magnetic Anomaly Detection (MAD), a system that is capable of sensing disturbances in the earth's magnetic field caused by the presence of a large metallic object, such as a submarine.

13.3.2 Air and Anti-Air Weaponry

It is an axiom of warfare that the force which controls the high ground controls the battle. Since World War II, winning the high ground has meant control of the skies. In the early 1940s, of course, controlling the skies meant controlling the airspace in the immediate vicinity of a task force. Today, however, advances in both aircraft design and in guided missile capability have expanded the threat envelope to ranges of hundreds of miles from the fleet.

Control of the skies (and hence, control of the seas) is a function of guided missile technology. Fundamentally, there are three types of guided missiles: Surface-to-surface missiles (SSM), surface-to-air missiles (SAM), and air-to-air missiles (AAM). Tactical missiles are normally guided to their targets by one or more types of guidance systems: inertial navigation, active homing, semi-active homing, or passive homing. (A fifth type of missile, the beam rider, has been phased out of active use).

Inertial navigation is primarily employed in SSMs, and means that the precise geographic location of both the launch platform and the target are fed into a computer on board the missile. Based on this information the computer programs the missile's flight to the target. Of course, in naval warfare the target is in motion and cannot be expected to be in the same location as it was when the missile was launched. Consequently, anti-ship missiles employing inertial navigation often have a second type of guidance system (normally active homing, as described below) which takes over once the missile approaches within a specified distance of the target. The Harpoon missile is an example of a SSM employing both inertial navigation and active homing guidance systems, as is the AMRAAM (Advanced Medium Range Air-to-Air Missile).

Active homing means that the missile itself radiates a coded radar beam, called an "illumination" beam. The beam is coded so that the missile can recognize its own beam from all the other radar beams that will exist in an hostile environment. When this signal is reflected from the target, the missile receives it, processes the signal for target location and predicted intercept point, then guides the missile to the target. The advantage of active homing is its "fire and forget" capability, that is, once the missile has been launched the platform can turn its attention to other threats. The disadvantage is that target destruction information may not be available except by search radar. Active homing systems are also complex and costly. Semi-active homing is similar in concept. except that the target is illuminated by a coded beam originating from the launch platform. Systems called Fire Control Directors radiate both a target tracking beam and a separate illumination beam electronically aligned to the axis of the tracking beam. Once the fire control director "locks on" with its tracking beam the missile is fired and uses the information received from the encoded illumination beam to process an intercept course. Because the target is being continuously tracked by the highly precise tracking beam, target destruction information can be immediately obtained. The disadvantage is that the fire control director must be occupied with a single target until intercept occurs; otherwise, the missile will have no target illumination information. Most SAMs and AAMs currently use semi-active homing systems, with the most notable shipboard missile being the Standard RIM-66/67 and the most notable air-launched missile being the Sparrow AIM-7.

Passive homing means that neither the missile nor the launch platform radiate a guidance beam. Instead, the missile homes in on specific radiation emitted from the target itself. Some missiles (such as the fabulously successful Sidewinder AIM-9) will home in on a source of intense heat, such as a jet engine's exhaust. Others, such as the Standard ARM (anti-radar missile), will home on any radar beam emitted by the target. Passive homing missiles generally have the advantage of simplicity and low cost, combined with a high degree

of effectiveness. However, they are usually of much shorter range than their semi-active counterparts, usually in the 15+ mile neighborhood.

Many guided missiles have back-up systems to increase their chance of intercept should the target employ some sort of defensive countermeasure. Active and semi-active homing missiles often have a "home-on jam" capability which is automatically activated should the target attempt to jam their illumination beams. Anti-radar missiles are designed to continue their flight to the last predicted intercept point if the enemy should turn off his radar; this can be fairly effective against slow-moving ships or stationary ground radar. And heat-seeking missiles, which formerly could be foiled by aircraft dropping flares, are now designed to ignore such spurious heat sources. Despite all the advantages of guided missiles, they are still ineffective against targets that are very close (inside one mile). Because of this fact, and because of the threat of low-flying cruise missile which might not be detected until impact is imminent, modern gun systems such as the 20-mm Phalanx MK 15 & 16 have been developed. Composed of a fire control radar and a six-barreled "Gatling gun," over 400 of these self-contained units have been installed on over 125 U.S. ships and many more supplied to foreign buyers. This "last-ditch" defense system has been proven effective against the French Exocet missile in live firing tests.

13.3.3 Warfare Systems

There are fundamentally only two major types of anti-submarine weapons: depth charges (conventional explosive and nuclear) and torpedoes (including rocket-boosted stand-off models).

The conventional depth charge, of course, was the old stand-by of World War II. Today, because of technological advances that have led to the increased reliability of torpedoes, the conventional depth charge generally plays a less important role than it did in the past. It sees greatest use in the navies of Europe and Asia, and is also used by the U.S. Navy when attacking targets in shallow water.

Western arsenals contain nuclear depth charges in yields ranging from 1.5–15 kilotons. These weapons can be rocket-launched from submarines or surface vessels or they can be dropped by aircraft. The danger, of course, in employing such weapons is the risk of further nuclear escalation. Therefore, for all practical purposes, any conventional undersea conflict would be fought using torpedoes with conventional warheads.

In many respects, modern torpedoes are like guided missiles adapted to an undersea environment, but instead of rocket motors, torpedoes are driven by propellers turned by steam, gas generators, or electric motors. Like missiles, torpedoes have various types of homing or guidance systems; or they can be free-running. However, the most effective ones incorporate self-contained guidance. Active homing systems are common; but unlike missiles which home on reflected electromagnetic energy, torpedoes utilize on-board sonar to detect and lock on targets. Many also incorporate either a passive homing system whereby the target is tracked by the noise it makes, or they use a wire-guidance system where data from shipboard sonar computers feeds target information to the torpedo through a thin wire

trailing behind it. Most torpedoes utilize a combination of either passive homing or wire guidance, along with active homing.

The key to a successful attack against submarines is to not let the enemy know that he is being attacked until it is too late for him to make effective evasive maneuvers. Consequently, ASW units will first try to locate and identify an enemy using passive means, for once a submarine hears the pinging of active sonar he is alerted to possible attack.

Torpedoes can be launched from a variety of platforms: surface ships, submarines, helicopters, or fixed-wing aircraft. The torpedo launched most often from helicopters or aircraft is the MK 46. This relatively light weight active/passive acoustic homing weapon uses a thermochemical cam engine to provide up to 45 knots of speed with a range of about 3–4 miles at a depth of 1500 feet. But the staple of today's submarine-launched arsenal is the MK 48. This torpedo has a diameter of 21 inches and carries 650 pounds of high explosive. It has a variety of sophisticated homing devices, including two-way wire-guidance (which allows the launching submarine to receive target data from the torpedo itself for greater control), along with active and passive sonar. It also incorporates a "fire-and-forget" mode which can be initiated if the torpedo's own noise masks the launch submarine's passive sonar detection system. It can attain speeds of up to 55 knots and has a range of over 23 miles.

Stand-off torpedo launch capability for surface ships is afforded by the ASROC (anti-submarine rocket) which incorporates a MK 46 torpedo with a rocket booster, propelling the weapon to submarine targets over 5 miles away. Some US submarines will achieve a stand-off capability with the Sea Lance anti-submarine stand-off weapon (ASW-SOW). This system uses either a MK 46 or MK 50 torpedo with a rocket booster. It is launched from a torpedo tube, and can be effective against subsurface targets at ranges of up to 100 miles.

14.0 GLOSSARY

AAM. Air-to-Air guided Missile. AAW. Air-to-Air Warfare.

AEW. Airborne Early Warning.

AIM. Department of Defense designation for any air-launched anti-aircraft missile.

Airfield. A base unit that has runways to launch aircraft.

Altitude Bands. The altitude and depth representations used in the Harpoon: Commander's Edition system.

ARM. Anti-radar missile.

AS. Air Search, used in Sensors Screen displays.

ASM. Air-to-Surface guided missile.

ASROC. Anti-Submarine Rocket. A ship-launched weapon composed of either a homing torpedo or a nuclear depth charge attached to a rocket booster.

ASuW. Anti-surface warfare.

ASW. Anti-submarine warfare.

AS/SS. Dual mode radar, both air and surface search capable in one unit, used in the Sensor Screen displays.

Baffles. The rear part of a ship or submarine where the power plant noise combined with the propulsion noise creates an area where hull sonar cannot detect contacts directly behind a platform in a 60-degree arc.

Base. In Harpoon: Commander's Edition the general term referring to airfields, ports, cities and combined port/ airfield units.

Bastion. Any heavily-defended area of water. Normally, a bastion includes water partially enclosed by friendly shoreline, and cornered off by mines. Surface, submarine, and aircraft forces would patrol inside and outside this area, and acoustic sensors in the seabed would help detect hostile submarines.

Bearing. The direction in degrees from a detecting unit to a contact.

Bridge. The place within a ship where navigation and piloting occurs.

Call Sign. In computer Harpoon: Commander's Edition, each unit and group has a call sign. Groups have a three-letter call sign, a BLUE group might be AAS, while a RED group could be ZS. Units within a group share the first two letters of the Group call sign, with a two digit unit indicator (i.e. the first unit of Group AAS would have the call sign of AA01). The third letter of the Group call sign indicates the known group type, namely:
C—Carrier Group
S—Ship Group
U—Submarine Group
A—Plane Group
H—Helicopter Group
M—Missile Group
T—Torpedo Group
a—Airfield Group
p—Port Group
b—Airfield and Port Group

Caesar. The Soviet fixed seabed passive sonar sensor system. Located on the ocean floor in the North Sea.

Cavitation. Submarine and surface ship propellers create small bubbles in the water if they spin at high speeds. These small bubbles almost immediately collapse, creating a sound called cavitation noise. As submarines go deeper, the pressure allows their propellers to spin faster without creating this sound.

CG. Cruiser Guided Missile. American designation for any cruiser armed with surface-to-air guided missiles.

Chaff. Strips of metallic foil, cut to the wavelengths of specific radar, used for jamming.

CIC. Combat Information Center, the tactical center of the ship, where enemy contacts are plotted and tactics planned and executed.

Class. In Harpoon: Commander's Edition this refers to a specific platform type, which may have many individual members. For example, the Iowa class of battleships includes the Iowa, New Jersey, Wisconsin and Missouri as members of that class of ship.

CSUP. Communist Party of the Soviet Union.

CV. American designation for any aircraft carrier.

CVBG. American designation for an aircraft carrier battle group.

CZ. Convergence Zone used in Sensor Screen displays.

D. Dipping Sonar used in the Sensor Screen displays.

DD. American designation for any destroyer.

DDG. Destroyer Guided Missile. American designation for any destroyer armed with surface-to-air guided missiles.

Director. A sensor specific to a particular weapons mount, used to target the weapon before and/ or during firing.

Electronic countermeasures. Any device or system capable of either jamming or deceiving enemy radar.

ELINT. Electronic Intelligence. The identification of specific enemy radar, as well as the platforms employing these radar, by the analysis of received radar signals.

Endurance. In Harpoon: Commander's Edition this refers to airborne endurance (that is, how far you can go before running out of fuel). By using the range circle options, you can visually determine your endurance distance for a currently set altitude and throttle setting.

ESM. Electronic Support Measures. Any system capable of detecting and analyzing enemy radar signals.

FF. American designation for any frigate. Frigates are normally smaller than destroyers.

FLIR. Forward Looking Infrared sensor, carried by some aircraft and used to spot surface ships and surfaced or snorkeling submarines, used in the Sensors Screen displays.

GIUK. Greenland-Iceland-United Kingdom. The opening between Iceland and the Faeroe Islands, leading to the straits between Scotland and Denmark.

Group. A collection of one or more units within computer Harpoon: Commander's Edition. Most of your orders are given to groups.

H. Hull Sonar, used in the Sensors Screen displays.

H/T. Combination Hull/Towed sonar. used in the Sensors Screen displays.

HF. Height Finding air search radar, used in the Sensors Screen displays.

Hunter-Killer. A naval unit whose purpose is to seek out and destroy enemy submarines.

IR. Infrared, detecting radiating heat.

KB. Kilobyte, or 1,024 bytes of information.

KGB. Governmental branch of the Soviet Union responsible for State security. Combines the functions of the American CIA, FBI, and NSA.

Knot. Nautical miles per hour. A nautical mile is about 14% greater than a statute mile.

LD/SD. Airborne Look Down/ Shoot Down radar, used in the Sensors Screen displays.
lo ado ut. In Harpoon: Commander's Edition this refers to an aircraft's' specific ordnance load for a given mission type.

LOC. Line of Communication. Military term for any supply line extending from a country engaged in hostile activities to the front lines.

LR. Long Range.

M. Mine Hunting Sonar, used in Sensors Screen displays.

MAD. Magnetic Anomaly Detection. A system which is capable of sensing disturbances in the earth's magnetic field caused by the presence of a large metallic object, such as a submarine.

MB. Megabyte, or 1 million bytes of information.

Mount. A weapons mount in Harpoon: Commander's Edition. A mount contains a weapon, the ready ammunition for that weapon and possibly a sensor used to target the weapon, called a director.

NATO. North Atlantic Treaty Organization, composed of the United States and her European Allies.

nm or NM. Abbreviation for Nautical Mile.

OTH. Over the Horizon radar (normally land based), used in the Sensors Screen displays.

Picket. A scout, looking for the enemy. In Harpoon: Commander's Edition this normally refers to the Picket zone of your formation, the outermost ring.

Platform. Any vehicle capable of carrying a weapons system.

PR. Periscope Radar, used in the Sensors Screen displays.

Radar. Radio Detection and Ranging. A sensor system capable of detecting targets using reflected electromagnetic energy.

RIM. Department of Defense designation for any ship launched anti-aircraft guided missile.

RO. Airborne Range Only radar, used in Sensors Screen displays.

S. Sonobuoys, used in Sensors Screen displays.

SAG. Surface Action Group. A surface action group is centered on one or more powerful surface ships such as cruisers and/or battleships and includes several escort ships for protection. Its mission is to provide heavy firepower when needed, as in support of an amphibious landing.

SAM. Surface-to-Air guided missile.

Side. In computer Harpoon: Commander's Edition, the alliance to which a group or unit belongs, represented as BLUE or RED.

Sonar. Sound Navigation and Ranging. A sensor system capable of detecting underwater targets whether actively (that is, through reflected sound waves) or passively.

Sonobuoy. An expendable sonar device used in anti-submarine warfare, normally dropped by aircraft.

SOSUS. The NATO seabed passive sonar listening system.

SOW. Stand-Off Weapon. Normally applied to an antisubmarine weapon (torpedo or depth charge) attached to a rocket booster.

SPIR. Shipboard Passive Infrared sensor, used in the Sensors Screen displays.

SR. Short Range.

SS. Either a Surface Search radar or the designation for a Diesel (non-nuclear) Attack Submarine, dependent on context.

SS-N-21. A type of Soviet cruise missile carrying a nuclear warhead.

SSBN. Submarine Ballistic Nuclear. American designation for any nuclear-powered submarine armed with intercontinental ballistic missiles.

SSM. Surface-to-Surface guided missile.

SSN. Submarine Nuclear. American designation for any submarine propelled by nuclear power.

T. Towed array sonar, used in Sensors Screen displays.

Thermal Layer. The depth at which a sudden temperature change creates a "layer" that tends to reflect sound waves, reducing sonar effectiveness. Also called the Thermocline.

Towed Array Sonar. Any sonar device capable of being towed behind a surface ship. The advantage of a towed array sonar is that it can be employed beneath ocean thermal layers where a submarine might hide.

TVD. Soviet Intermediate High Commands in the various theaters of operation. TVDs are subordinate to the VGK (the Supreme High Command).

Unit. In Harpoon: Commander's Edition, a unit consists of any single ship, submarine or base. Missiles, torpedoes and aircraft can have multiple members in a single unit, but must share the same target or loadout.

VDS. Variable Depth Sonar, normally a towed array sonar that can vary its depth, allowing it to listen both above and below the thermal layer, used in the Sensors Screen displays.

VGK. Supreme High Command of the Soviet Union responsible for all military actions. Composed of the Minister of Defense, his five commanders-in-chief, plus six other deputy Defense Ministers for civil defense and other matters.

VTOL. Vertical Take-off and Landing. Abbreviation for any fixed-wing aircraft capable of a direct vertical take-off.

Warsaw Pact. The Soviet equivalent of NATO, composed of the Soviet Union and her eastern European allies.

15.0 SCENARIO EDITOR

15.1 YOUR ROLE IN SCENARIO EDITOR

15.1.1 The Computer Opponent

In the Scenario Editor (SE), your primary role is that of the "brains" behind the computer opponent. You supply the mission objectives and long term strategic planning that the computer opponent is to carry out. You can rely on the computer to carry out attacks (including air strikes from bases) against all newly detected units. The only exception is bases, which are stationary, known targets. It is your responsibility to configure attacks against the computer opponent's bases in Scenario Editor yourself.

Hint: to set up potential strikes against surface and submarine units, you may want to station a long-distance air patrol in the vicinity of the target group. This will reduce prosecution time if the launching base is substantially far away from the target. (Most mainland Soviet bases fall into this category.) Just be careful to station this patrol where it won't be easily detected!

15.1.2 Playing Both Sides

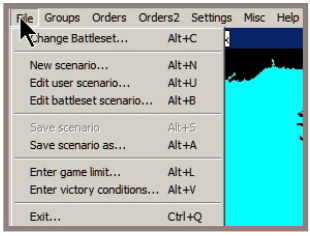
In Scenario Editor, it will be necessary for you to give orders for both the Blue and the Red sides. These orders will be carried out by the computer opponent when playing against a user, and most orders will be ignored when the user is playing that side, forcing him to supply his own. All that will remain for the user are the groups and units, and their initial movement orders, including starting points, paths, initial speeds, and formation patrols.

15.1.3 The Difference Between A BattleSet™ And A Scenario

Before editing your own scenarios, it is important to understand the difference between a BattleSet™ and a scenario. A BattleSet™ consists of the maps, data, pictures, and even songs that represent the area and nations involved in a related set of naval conflicts. These naval conflicts are referred to as scenarios, and they draw upon the data contained in the BattleSet™. In the Scenario Editor, you will be "editing" the way the BattleSet™ data will be used, rather than the data itself.

15.2 MENU ITEMS

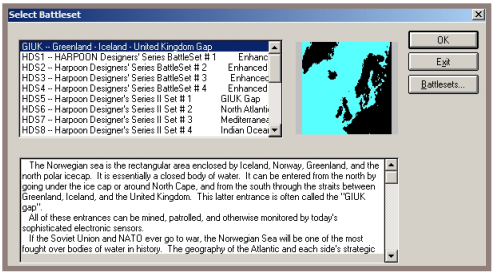
15.2.1 Game Menu

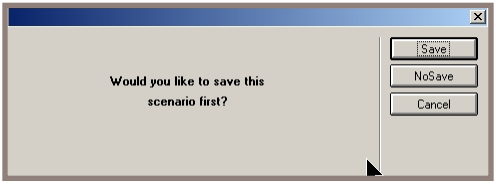


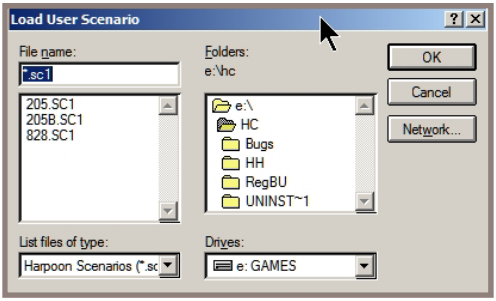
Change BattleSets™

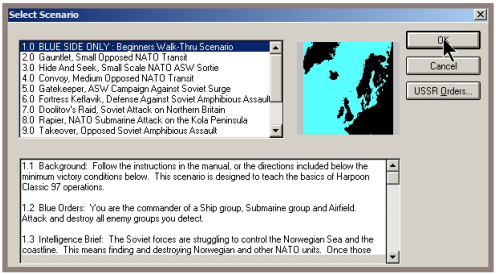
Allows you to edit scenarios for a different BattleSet™. A dialog will come up verifying that you are finished editing the current scenario. If ou have made any changes to your current scenario, you will be given the chance to save it. Unless you choose "Cancel" from the dialog, the next screen you will see is the familiar "BattleSet™ Selection" screen, where you may choose to load any of the BattleSets™ you

have. Selecting “OK” at this point brings you back to the Scenario Editor main screen with an empty scenario.









New Scenario
Allows you to restart with an empty scenario.

As with Change BattleSet™, you will first be presented with a verification dialog - this is you one chance to cancel. (Again, you will be able to save any changes you have made to your current scenario.)

Edit User Scenario
Allows you to edit previously saved scenarios.

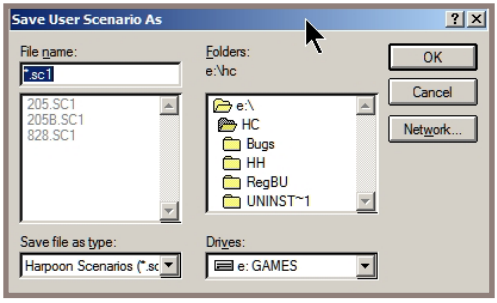
After verifying that you wish to quit your current scenario, the “Edit User Scenario” screen will appear. At the top of the screen, you will see the path of your current directory, followed by a box labeled “Edit:”. Under this box appears a scroll box listing all of the subdirectories and scenario files in you current directory.

When you have selected a scenario, its name will appear in the “File Name:” box. Selecting the “OK” button will return you to the Scenario Editor main screen with the selected scenario loaded and ready to edit.

Edit BattleSet™ Scenario
Allows you to load scenarios from you current BattleSet.™

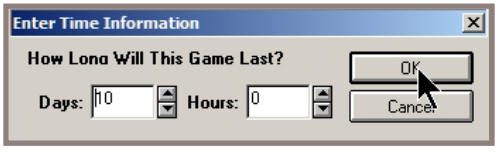
After verifying that you wish to quit your current scenario, a screen will appear that is similar to the Harpoon "Scenario Selection" screen. The top scroll box allows you to select a scenario, and the bottom scroll box displays the orders for that scenario.

Since editing a scenario involves creating units and orders for BOTH sides, the "xxxx Orders" button allows you to alternately display the orders for either side. The "BattleSets™" button will allow you to load scenarios from another BattleSet™. This is functionally equivalent to using the Change BattleSet™ command from the Game Menu. (NOTE: this does not allow you to transfer scenarios from one BattleSet™ to another.) Selecting "OK" will load a copy of the selected scenario for editing. When you save changes to this scenario, it will be saved as a "user scenario", and you will have to use "Edit User Scenario" to load it in the future. When editing a BattleSet™ Scenario, you WILL NOT be actually modifying the BattleSet™ itself. These BattleSet™ scenarios are provided as a starting point, and as examples of completed scenarios.



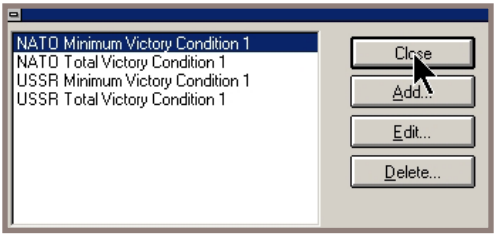
Save Scenario
Allows you to save your current scenario.

This command will bring up a screen very similar to the "Save Game" screen in Harpoon. As with "Edit User Scenario", you will be able to "navigate" your available disk drives using the "Change Directory" and "Change Drive" commands. Selecting a scenario from the scroll box or entering a new name with the "Save File As..." command will make the name appear the "Save: " box, and will activate the "Save" button. Selecting the "Save" button will save your current scenario and return you to the Scenario Editor main screen. If you attempt to save over an already existing scenario, a dialog will appear to confirm this action.



Enter Game Time Limit
Allows you to enter the time limit for the current scenario.

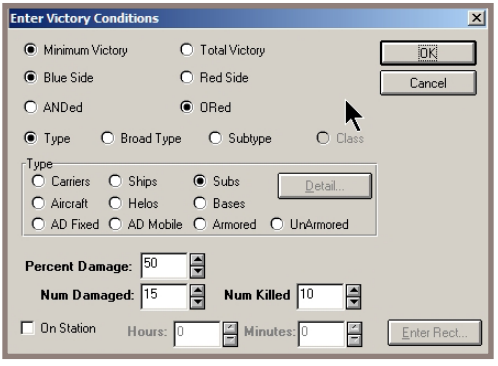
A dialog will appear in the lower right corner of the screen, allowing you to input the number of days and hours to be allowed for this scenario. If a time has already been entered, the dialog will come up with this time; otherwise, it will come up will all zeros. Selecting "OK" will cause the "To Go" time in the upper right corner of the main screen to be reset with the time you have entered.



Enter Victory Conditions
Allows you to Add, Edit, or Delete Victory Conditions for both sides.

This command will bring up a window in the lower half of the screen containing a scroll box and four buttons: Add, Edit, Delete, and OK. If no victory conditions have been entered for this scenario, the scroll box will be empty and the Edit and Delete Buttons will be disabled. Selecting the "Add" button will bring up the following dialog:

This dialog will allow you to set the parameters for a single victory condition. These parameters are as follows:



The first line of the victory conditions dialog allows you to choose whether you want this victory condition to be minimum or total. Minimum victory is the condition that a player must meet to minimally complete a mission. After a player has met minimum victory conditions, he can either quit the game or go for "total victory". Total victory is the complete defeat of the enemy, beyond merely carrying out orders. Note that one side's victory conditions may not be exclusive of the other side's victory conditions. Thus in a typical scenario, both sides can meet their victory conditions, minimum and total. In this case, the side reaching each victory level first is declared the winner.

The next line asks you which side this victory condition is for. The third line lets you choose whether this victory condition must be meet for victory (ANDed: a necessary condition), or whether meeting this victory condition will independently result in victory (ORed: a sufficient condition). This choice will determine how a victory condition will interact with others. For example, the minimum victory condition for the NATO side might be: sink 3 Soviet ships AND sink 2 Soviet subs. Both of these conditions must be met in order for victory to occur. On the other hand, if the victory conditions were: sink 4 Soviet ships OR sink 3 Soviet subs, then meeting either of these conditions would result in victory. These groupings apply to the victory conditions of the same level (minimum or total) and side (Blue or Red). In other words, all of the blue minimum conditions are grouped, etc. It is not a good idea to mix

AND's and OR's in the same grouping, for reasons explained in the "Hints for Entering Victory Conditions" section.

The next option determines the level of categorization for the victory condition, from "Type", the broadest level, to "Class", the most narrow level. These levels will be used to determine what kinds of units will be included in the victory condition.

- Type - the victory condition will apply to "all" of one type of unit: all carriers, all ships, all subs, etc.

- Broad type - allows a more refined choice such as "all large carriers", "all medium combat ships", "all primary bases." In this version of the game land units are not (yet) suitable for use in setting Victory Conditions.

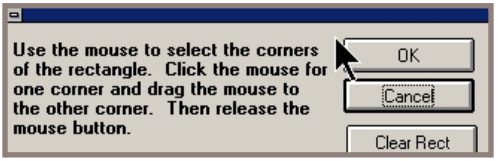
- Subtype - allows categorization by subtypes of units. For carriers, ships, and subs, it is the naval designation, such as "CV", "DDG", "FF", "SSN", etc. For planes and helos, the breakdown is by "Fighter", "ASW", "Bomber", etc. For bases, the categories are "Base", "Port", and "Airfield".

- Class - the most narrow category. For everything but bases, this denotes a particular class (such as Nimitz class carrier, O.H. Perry class frigate, F-1 5 class aircraft, etc.). For bases, it means a particular base (such as Keflavik, Iceland or London, UK).

After you have chosen the categorization level of the victory condition, you must select which type of unit will be included in the category (Carrier, ship, sub, etc.), before you can choose the actual category. If you have selected the "Type" level of categorization, you are finished with this step. If you have chosen one of the other levels, however, the second button at the bottom of the dialog will activate to let you choose the actual category. If you level of categorization is "Broad type", a scroll box will appear listing the predefined broad-type categories for that type of unit. If your level of categorization is "Subtype", a scroll box will appear allowing you to choose from the available subtype categories for that type of unit (for bases it will be a dialog). And finally, if you choose "Class" as you level of categorization, a scroll box listing available classes for that unit type will appear. (NOTE: in the above scroll boxes, carriers and ships will share categories, as will helicopters and planes.)

Once you have chosen your category, you will be given the opportunity to select whether the condition is to be a "friendly on-station" condition or an "enemy damage/ kill" condition. You do this by checking the "on-station" checkbox on or off (default). If you do not choose on-station, you will proceed to the damage/killed text boxes. The damaged and killed boxes work as follows: to translate "kill 3 enemy ships or damage 5 enemy ships at 60%", you would enter "60" in the "Percent Damage" box, "5" in the "Number Damaged" box, and "3" in the "Number Killed" box. If you only care about damage, leave the "Number Killed" box zeroed. (NOTE: When Harpoon checks victory conditions, "killed" ships also satisfy the "damaged" victory condition). If you select the on-station type victory condition, the "Percent/ Number Damaged" boxes will be disabled, the "Number Killed" box will change to "Number On Station", and the "Time On Station" box and the "Enter Rect" button will be activated.

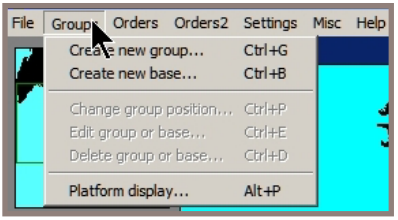
"Number On Station" refers to the number of friendly units that must be on-station for the condition to be satisfied. "Time On Station" refers to how long the units must be in the on-station area. The "Enter Rect" button brings up a dialog that allows you to define the on-station area as two opposite points in a rectangle on the Group Map (you will be able to scroll and zoom the map).



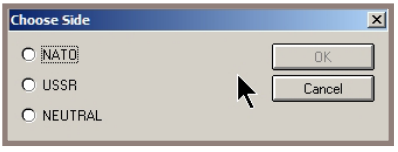
Once you have completed all of the above steps, selecting "OK" will return you to the Victory Conditions Edit window, where you will be able to add more conditions or edit or delete already existing conditions. The "Edit" button brings up the same dialog as before, with the selections filled in. The "Delete" button deletes the currently selected victory condition (after a confirmation dialog). "OK" quits from the victory conditions edit window.
Please refer to "Victory Conditions Walk-Through" section of this manual for more information and examples.

Exit
Exits the Scenario Editor but not before you asked if you want to save the scenario first.

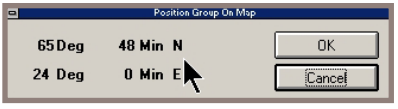
15.2.2 Groups Menu



Create New Group
Allows you to create surface and submarine groups.

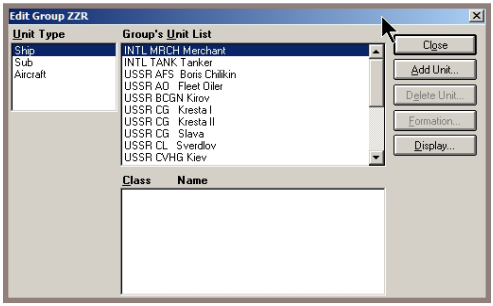


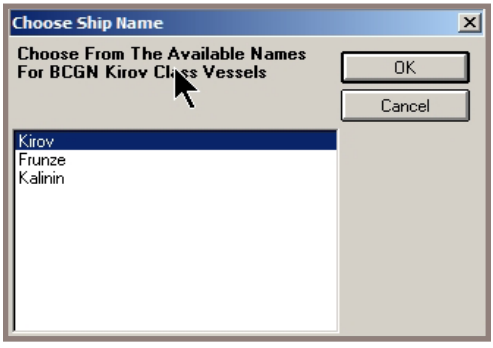
First, a dialog will appear, asking you to select the group's side.

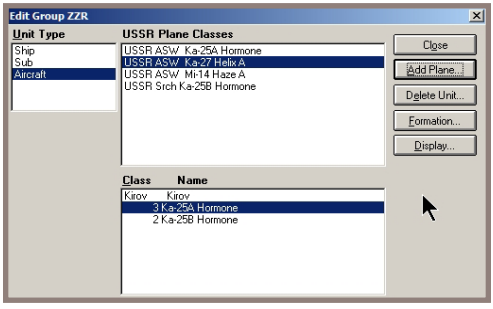


Next, you will be asked to position the group on the map. Click on the group map until you are satisfied with the group's position (the map can be scrolled or zoomed).

Next, a screen will appear that will allow you to edit the group's units.







You will be able to add surface units and submarines to the group, and add planes and helicopters to carrier and ship units with the capacity to carry them. (See Appendix B for the recommended carrier air wings.)

To add a surface unit, select "Ship" from the "Unit Type" scroll box. The "Class" scroll box will list the carrier and ship classes available for the group's chosen side. Select one of these classes and press the "Add Unit" button. You will then be asked to select a name from the list of available ships commissioned for this class in the BattleSet's™ area of the world. As you choose a name, it will be removed from the list to prevent duplicating an already existing unit.

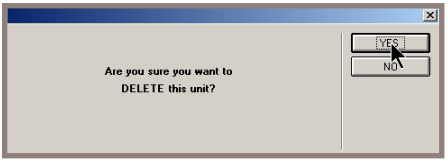
After you have chosen the unit's name, you will be asked for its probability of inclusion in the scenario (the default is 100%). Once you select "OK", the new unit will appear in the "Group's Unit List" scroll box. Submarine units are entered in the same way, except that you must first choose "Sub" from the "Unit Type" scroll box.

To add a plane to a surface unit, first select the unit in the "Group's Unit List" scroll box. Next, select "Aircraft" from the "Unit Type" scroll box, and the list of planes and helicopters able to be carried

by the selected unit will appear in the “Class” scroll box on the lower right. Select the aircraft you wish to add to the unit and press the “Add Plane” button.

You will be asked to enter the number of aircraft to add. The maximum allowable aircraft will appear in the text box. If you add more than the maximum, you will get the maximum, and if you enter zero, no planes will be added. Once you have selected the number of planes, you will be asked for their probability of inclusion in the scenario.

Creative use of this feature will enable you to automatically vary the strength of each side’s air assets each time a user plays your scenario. Some units will have their helicopters added automatically. These aircraft will be displayed for informational purposes, but you will not be able to delete them or give them any orders, including formation patrols. Harpoon handles these aircraft automatically for the enemy, to spare the scenario creator the tremendous overhead of dealing with them.

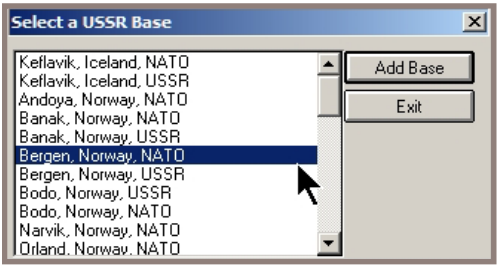


You may delete units or user-added planes by selecting them in the “Unit” scroll box and hitting the “Delete” button. (NOTE: the “Unit” scroll box must be active (have a yellow rectangle around it) for the delete button to be activated.)

You may get “Platform Display” reports on units or planes in the group by selecting them in the “Group’s Unit List” scroll and then selecting the “Display” button. Exiting from the Platform Display will return you to the “Edit Group” screen. Selecting the “Display” button when the “Unit Type” or “Class” scrolls are active will bring up Platform Display for the currently selected class in the “Class” scroll. You may also edit the group’s formation by selecting the “Formation Editor” button. Formation Editor differs slightly from the one in Harpoon, and will be explained in the “Orders Menu” description. Finally, selecting “Exit” will prompt you for the group’s probability of inclusion and will return you to the Scenario Editor main screen.

Create New Base
Allows you to create a new base group.

As with “Create New Group”, the first thing you’ll be prompted for is the base’s side.

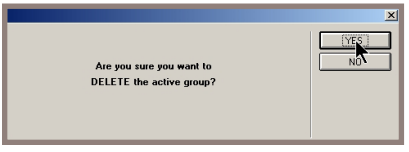


Next, a window containing a scroll box and two buttons will appear in the lower half of the screen. The scroll box will list that side's available bases. As you select a base from the scroll box, the map will scroll to show you the base's position on the group map. Selecting "OK" will choose the selected base and take you to the "Edit Group" screen (see "Create New Group".) You will notice that, this time, the "Group's unit list" scroll will not be empty, but will contain the base as the first unit in the list. You may not, however, delete the base or display it. You may only add aircraft to "airfield" type bases, or ships and subs to "port" type bases. You may add either to "base" type bases. (NOTE: it is not recommended that you add ships and subs to base groups, since the computer opponent will not make use of these assets.) Everything else works the same way as the "New Group" command, except that you will not be asked for the base's probability of inclusion - they are more or less "fixtures" in the scenario.

Change Group Position
This command allows you to reposition a group or base using the "Position Group" dialog as described in "Create New Group".

You will have the capability to reposition bases because we recognize that some of their positions are not optimal. This will also allow you a little more strategic flexibility.

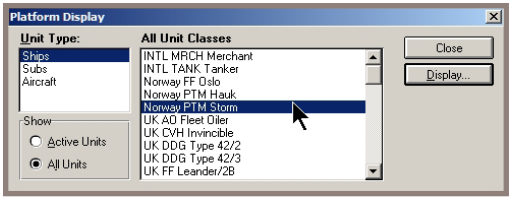
Edit Group/Base
Allows you to edit and display a group's unit list. Brings up the "Edit Group" screen as described in "Create New Group" or "Create New Base", with the units that have already been added listed in the "Group's Unit List" scroll.



Delete Group/Base
Allows you to delete a group that has already been created.

After selecting "Yes" to a confirmation dialog, the group, all of its units, and its orders will be flushed from the scenario. (CAUTION: There is no "undelete" command; this change will be permanent.)

Platform Display
As per the game, this menu selection brings up Platform details to aid the designer in creating his scenarios.

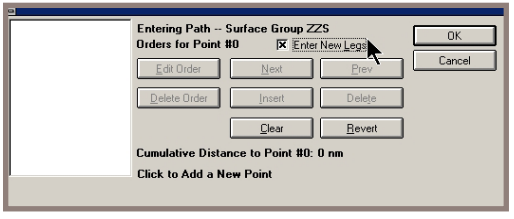


15.2.3 Orders Menu

This menu contains the orders from Harpoon. Please refer to you Harpoon manual for the basic operations of these menu items. What follows is a summary of the difference between the Scenario Editor Orders Menu and the Harpoon Orders Menu.

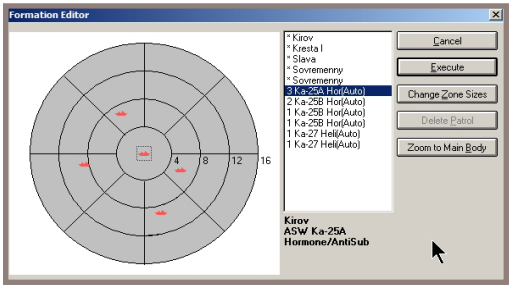
Attack

"Attack" works similarly to Harpoon, except for two major differences. First, you will only be able to order attacks against base targets, since the computer opponent automatically handles all other attacks. Second, you will not be asked for weapons allocation, since this also is handled by the computer opponent. Set Speed Speeds can only be set in the Scenario Editor using the Enter Group Course command. Initial speeds for groups must be set by putting a Set Speed order on the first point of a course.



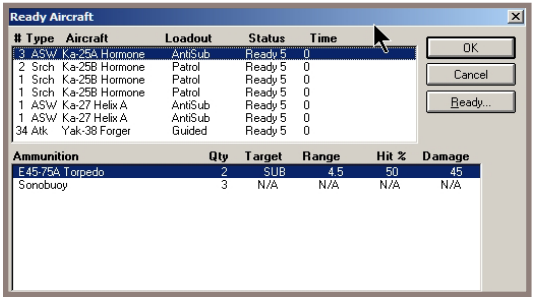
Enter Group Course

The functionality of this dialog is very close to that in the actual game and serves a similar purpose.



Formation Editor

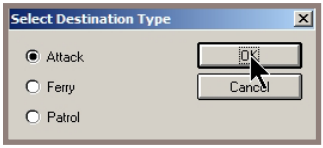
There are a few subtle but important differences between the Scenario Editor version of Formation Editor, and that of Harpoon. In Harpoon, you use Formation Editor to order ships and subs to move to a new location within the group, and to set air patrols. When you exit Formation Editor, the ships and subs start moving from their current locations to their new locations, and the aircraft begin launching for their patrols. In Scenario Editor, when you exit the Formation Editor, the ships will be located where you placed them - "magically" translocated to their new position within the group. This will be the unit's relative starting location when your scenario is played. Air patrols in Formation Editor will not be immediately launched, as they are in Harpoon. Instead, the scenario will "remember" to launch the patrols at game startup. Another item you may have noticed are the asterisks that appear next to some of the units in the scroll box. This indicates that this unit has not yet been placed in the formation circle. As soon as you place the unit, the asterisk will disappear.

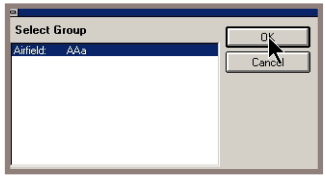


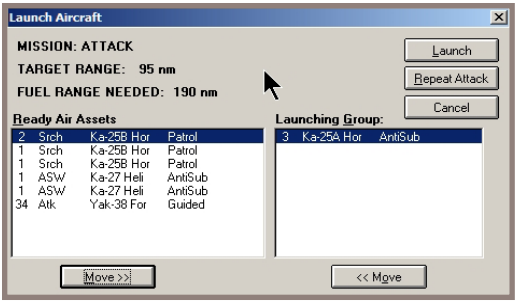
Ready Aircraft

Use the "Ready Aircraft" command to initialize the loadouts for the aircraft you have added to the scenario. The aircraft will be "readied" immediately, and will have this loadout at scenario startup when Harpoon is run. (CAUTION: changing loadouts for aircraft whose patrols or strikes have already been assigned will cancel these orders.)

Launch Aircraft

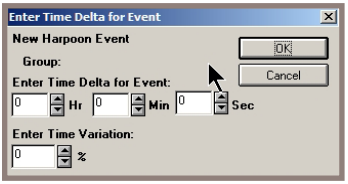






Works identically to Harpoon, with a few minor changes. When you select "OK" to accept your launch orders, you will be asked for a time delta; this will allow you to delay launching until a given amount of time has passed.

In this way, you can coordinate the computer opponent's air strikes as you would if you were playing Harpoon. Also, as with formation air patrols, your orders will not be carried out by Scenario Editor itself, but will be "remembered" in your scenario to be executed during Harpoon play.



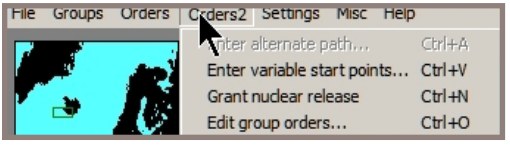
Join Group
Use "Join Group" in Scenario Editor to transfer all of the units from one group into another. These units will have to be repositioned in their new group using Formation Editor.

Split Group
Use "Split Group" in Scenario Editor to split units off from a group to form a new group. These units will have to be repositioned in this new group using Formation Editor.

Sensors
Works identically to Harpoon.

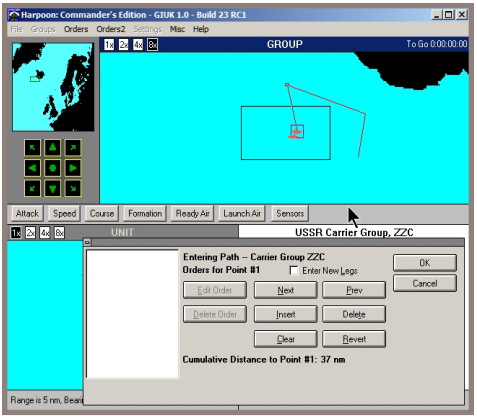
Edit Staff Note
Works identically to Harpoon.

15.2.4 Orders 2 Menu



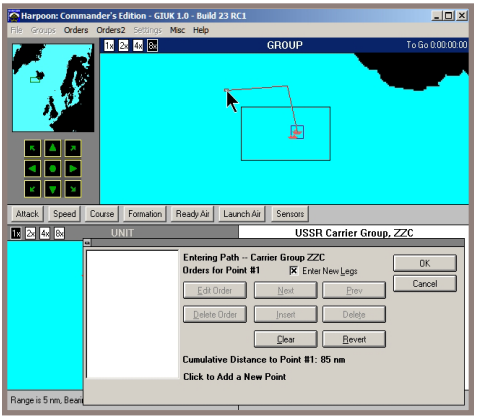
Enter Alternate Path

This command allows you to enter forks in the group's path. This command can only be accessed through Path Editor (Enter Group Course). To enter an alternate path from Path



Editor, use the "Prev" and "Next" buttons to position the leg marker on the path point at which you want the "fork" to originate. Use your mouse to access the menu as you would from the main screen.

When you have selected the "Enter Alternate Path" command, the group's path will be redrawn without the path points that come after the marked point.



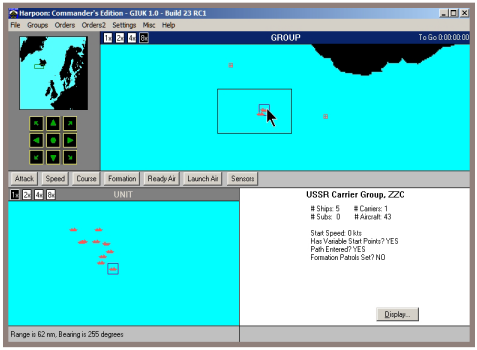
Once this is done, you may edit the group's "new" course as before, with one exception: you will not be able to edit points that came before the fork's originating point.

When you select "OK" to the alternate path, you will be asked for the fork's probability (i.e. the percent chance that the group will take this fork).

The group's course will then be restored to its state before you began entering the alternate path. If you look in the "Orders" box to the left, the words "Alternate Path" will appear, designating the fork you just entered.

You may then edit or delete this "order" like any other. If you choose to edit your alternate path, the group's course will be redrawn to show the alternate path you have already entered. When you have finished editing, selecting "OK" will save your changes and allow you to

reassign the fork's probability. And, once again, you will return to editing the group course at the point where you left. (NOTE: You may have more than one alternate path order at any one path point and you may also add an alternate path to an alternate path.)



Enter Variable Start Points

This command allows you to enter alternate starting points for a group.

Upon selecting this command, you will be presented with a half screen window containing a scroll box and buttons. Above the scroll box will be a box labeled "Default Starting Point:", followed by a percentage. This refers to the probability that the group will start where it is located on the map. As you enter variable starting points, this percentage will decrease accordingly.

To enter a variable starting point, select the "Add" button. A dialog will appear that is very similar to the one used to position the group originally. Click in the Group Map until you are satisfied with the starting point's placement (the starting point will appear as a "dimmed" square), and select "OK" to accept.

Another dialog will follow, asking for the probability that the group will start at this point. If you enter a value greater than the default percentage, then your starting points percentage will be the default percentage minus one. If you enter zero or less for the probability, the probability will be reset to one. In this way, the system prevents you from entering starting points that will never occur, or from having your cumulative percentage be other than 100%.

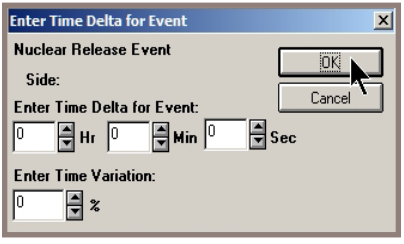
You may edit a starting point by selecting it in the scroll box (a square will be drawn around it on the Group Map), and selecting the "Edit" button. The edit procedure is the same as the add procedure.

You may also delete starting points using the "Delete" button (a confirmation dialog will appear). Finally, selecting the "OK" button will let you exit from the "Edit Variable Start Points" interface.

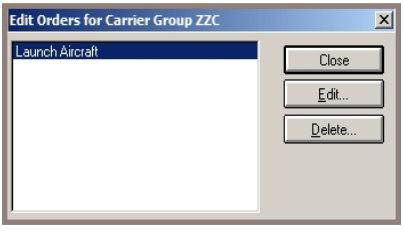
Grant Nuclear Release
Allows you to set a time for each side to be granted nuclear release.

If you do not grant nuclear release for a side, it will not be given in your scenario unless the player overrides the system and grants himself nuclear release.

First you must choose the side to be granted nuclear release. Next, you will need to provide the time point in the scenario at which you would like nuclear release to occur (the "time delta"). You may also enter a variation on this time (this translates to "time plus or minus variation %"). If you enter 100%, nuclear release will occur any time from game startup to twice the "time delta" you entered.



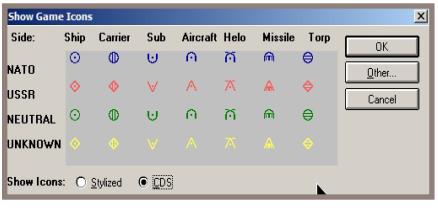
You may only enter one nuclear release order per side. If you select the "Grant Nuclear Release" command for a side that has already been given this order, you will merely be editing the existing order.

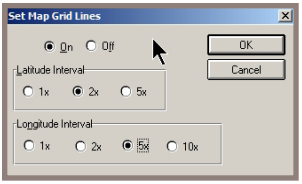


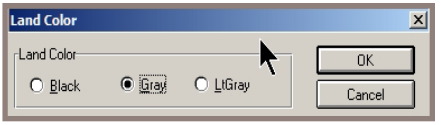
Edit Orders
This command allows you to edit or delete orders that have been given outside of Path Editor (Enter Group Course).

The orders will be shown one side at a time. To edit the other side's orders, select the "Change Side" button. If orders appear in the scroll box, you may "edit" or "delete" them. If you choose "Edit", the appropriate interface for entering that order will appear, with the information you have already supplied filled in for you. When you exit that interface, you will be returned to the "Edit Orders" interface. As usual, you may delete the currently selected order by selecting the "Delete" button and selecting "Yes" to the confirmation dialog that follows.

15.2.5 Settings Menu

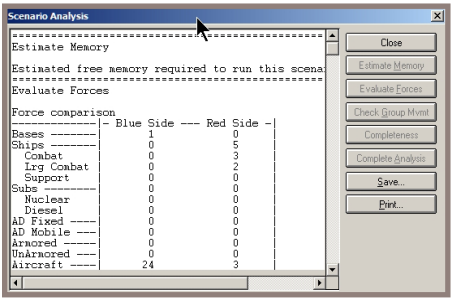






All of the Settings menu commands work the same as in Harpoon, except that “Set Land Color” is its own menu item.

15.2.6 Misc. Menu



Analyze Scenario
This command allows you to check your scenario in four key areas:

-How much memory the scenario will take when run from Harpoon.
-The relative strengths of the two opposing sides.
-Whether any group’s movement orders will cause any of its units to run aground.
-Whether your scenario has all of the components of a complete Harpoon scenario.

When you select the “Analyze Scenario” command, a full screen window will come up containing a large scroll box and eight buttons. The four buttons on the left will be used to access the analysis features mentioned above. The following is a snippit of the “Complete Analysis” button.

Estimate Memory
This feature will evaluate your scenario and estimate how much free memory your scenario will have at game startup. In addition, it will evaluate this amount to determine if it is enough to comfortably run Harpoon. Developer’s Note: This is pretty much a historical item, and has no value on Pentium 3+ class systems!

Evaluate Forces
This feature will evaluate the relative postures of both sides, both offensive and defensive.

Check Group Movement
This feature checks each unit in every group against that group’s movement orders, including paths, alternate paths, and variable starting points. If any units are aground at any of these points, you will be notified.

Check Completeness
This will check to make sure that your scenario contains every element of a complete scenario. These elements include: at least one group per side, at least one unit per group, and at least one total and one minimum victory condition per side. It will also give warnings about other missing but optional elements, such as nuclear release, variable starting points, alternate paths, planes on carriers, etc.

Do Complete Analysis
This command is equivalent to selecting all of the above buttons at once. This allows you to bypass pressing each button if you want the complete analysis.

Save to File
This command allows you to save the contents of the scroll box to a text file called ANALYSIS.TXT.

Save to Printer
This command allows you to print the contents of the scroll box. Note; We recommend that you save to a file, as not all printers will work with this command.

Rename Unit
Allows you to rename ships, sub, or carrier units, using the same scroll box that is used to name these units originally. (NOTE: You must select a unit in the Unit Window for this item to be activated.)

Calc Range and Bearing
Same as Harpoon.

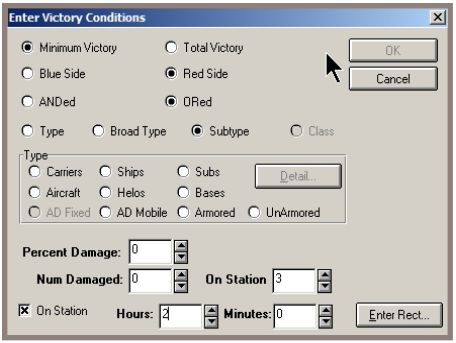
15.3 ADDITIONAL HELP

15.3.1 Victory Conditions Walk-Through

If you have not already done so, you may want to review the section entitled "Enter Victory Conditions". Select "Enter Victory Conditions" from the "Game" menu. A window will appear in the lower half of the screen containing a scroll box and four buttons. If no victory conditions have been entered, the scroll box will be empty. Select the "Add" button, using either the "A" key or your mouse. A large dialog will appear in the center of your screen, titled "Victory Conditions".

Example #1
"For the Blue Side to achieve minimum victory, it must destroy at least four enemy ships."

Select the following dialog items:
"Minimum Victory" "Blue Side"
"ANDed"
"Type"
Once you have selected "Type", the six type choices will be activated. Choose "Ships", move down to the "Number Killed" text-edit box, and enter "4". Now select "OK".



Example #2

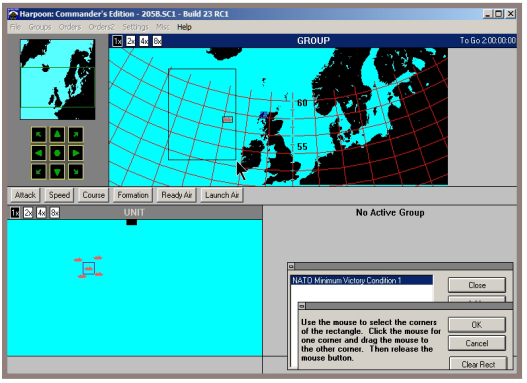
"For the Red Side to achieve minimum victory, it is sufficient for it to get three of its subs on-station south of Iceland for a minimum of two hours."

Select the following dialog items:

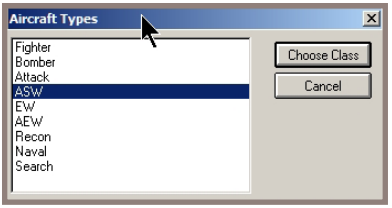
"Minimum Victory"
"Red Side"
"ORed" "Type" "Subs"
"On Station"

The "Number Killed" edit box will change to the "Number On Station", and the "Time On Station" box will be activated. Enter "3" for the "Number On Station" and "2" in the "hours" box next to "Time On Station".

Once this is done, select the "Enter Rect" button to enter the area that is to be considered "on station." A new dialog will appear, prompting you to enter two opposite corners of your on-station area rectangle.

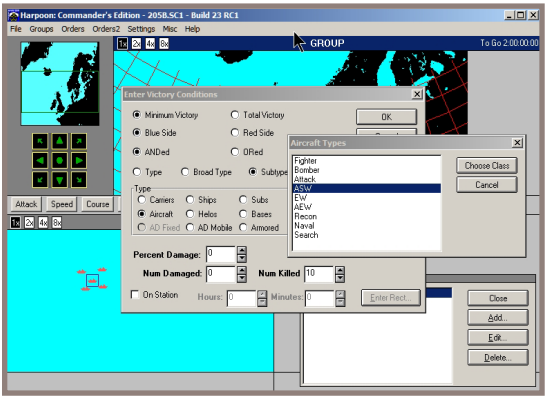


Use the map scrolling buttons to position the map so that Southern Italy is showing on the group map. We are about to draw a rectangle representing the waters south of Italy. Click on two points that will represent the on-station area; otherwise, you must move the cross-hairs to the desired points and press "Enter". If you are not satisfied with the selected on-station area, you may select "Start Over" to repeat this process. Once you select "OK", you will return to the "Victory Conditions" dialog. You are now finished entering this victory condition, so select "OK" to accept it.



Example #3
"In order to achieve minimum victory, it is necessary for the Blue Side to destroy ten (10) ASW aircraft."
Select the following dialog items:

- "Minimum Victory"
- "Blue Side""ANDed"
- "Subtype"



After you select "Subtype", you will be able to select a type. You must select a type so the dialog will know which subtypes to display. Select "Aircraft", then select the "Subtype" button at the bottom the dialog. A scroll box will appear, listing the available subtypes for all aircraft. Choose "ASW" and press "OK". The words "Subtype: ASW" will appear beneath the "Type" categories in the Victory Conditions Dialog. You will notice that the "Percent Damage" and "Number Damaged" boxes will be dimmed. This is due to the fact that aircraft cannot be damaged in Harpoon, only "killed". Enter "10" in the "Number Killed" box and select "OK".

If you combine this victory condition with the first Blue minimum condition, it translates to "In order to achieve minimum victory, the Blue Side must destroy at least five enemy ships and 10 enemy ASW aircraft."

15.4 HINTS FOR ENTERING VICTORY CONDITIONS

1. Do not try to mix AND and OR victory conditions for the same level (i.e. same side and same victory level: total or minimum). ANDed always takes precedence, which means that your ORed victory conditions will be ignored until the ANDed victory conditions are all met. Remember: "ANDed" means a necessary condition, whereas "ORed" means a sufficient condition. It is contradictory to use them together.

2. Always make your on-station area rectangles larger than you think you'll need. Experience has proven that making them small means that the victory conditions will not be met. Also, remember that if you create an on-station condition for a side, you must use the Path Editor

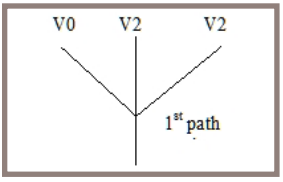
to direct the necessary groups to the on-station area; otherwise, the computer opponent will have no way of achieving this victory condition.

3. Get creative with your victory conditions. You will find that they can be very flexible - you just have to think about it a little.

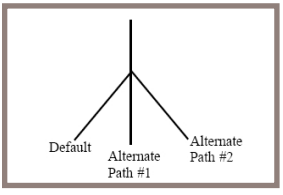
For more examples of victory conditions, refer to the victory conditions entered for the BattleSet™ scenarios.

15.5 HINTS FOR USING ALTERNATE PATHS AND VARIABLE START POINTS

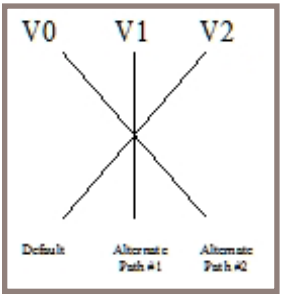
Graphically, you can think of the relationship between variable start points and paths like so:



A bunch of random starting points narrowing to a single path. Once the group reaches the first path point, the randomness is gone and its path becomes predictable again. The smart player will pick up on the fact that after a couple of hours of "game time", the enemy group always winds up in the same place, and will send a patrol out to that area to wait.



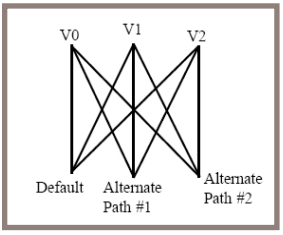
On the other hand, alternate paths can be represented as follows:



It starts out predictably, then branches out randomly, becoming less predictable. You can use Alternate Paths and Variable Start Points together like so:

This arrangement is suitable when you wish to insure that your group passes through a certain point. Notice that the middle point will always be passed through. This is useful for land avoidance or for coordinating orders. However, the player might catch on that the enemy always passes through this point, and set up an ambush for the enemy. An alternate way to arrange the variable starting points and alternate paths is to eliminate the center point by attaching alternate paths to the zero path point (that is, the path point that represents the group's current location).

This can be represented as:



It is not necessary to understand this diagram completely - simply notice that there is no longer a predictable center point that the group must pass through. With this method, group movement is now completely unpredictable. The pitfalls of this method are that land avoidance is no longer a clear cut problem, and orders must now be duplicated on each alternate path.

15.6 HOW TO RUN YOUR SCENARIO FROM HARPOON

After you have loaded Harpoon, and are at the main screen, select the "File" menu to bring up the "Load User Scenario" screen. This screen works identically to the "Load Game" screen in Harpoon and the "Edit User Scenario" screen in Scenario Editor. Select the scenario you wish to run and hit the "Load" button. Harpoon will be restarted with this new scenario.

15.7 SCENARIO EDITOR MENU COMMANDS

<Alt>+A - About Scenario Editor
<Alt>+C - Change BattleSets
<Alt>+N - New Scenario
<Alt>+U - Edit User Scenario
<Alt>+B - Edit BattleSet™ Scenario
<Alt>+S - Save Scenario
<Alt>+L - Enter Game Time Limit
<Alt>+V - Enter Victory Conditions
<Ctrl>+Q - Quit
<Ctrl>+G - Create New Group
<Ctrl>+B - Create New Base
<Ctrl>+P - Change Group Position
<Ctrl>+E - Edit Group/Base
<Ctrl>+D - Delete Group/Base
<Alt>+P - Platform Display
F1 - Attack
F2 - Set Altitude and Speed
F3 - Enter Group Course
F4 - Formation Editor
F5 - Ready Aircraft
F6 - Launch Aircraft
F7 - Join Group
F8 - Split Group
F9 - Sensors
F10 - Enter Staff Note
<Ctrl>+A - Enter Alternate Path
<Ctrl>+V - Enter Variable Start Points

<Ctrl>+N - Grant Nuclear Release
<Ctrl>+O - Edit Orders
<Alt>+I - Game Icons
<Alt>+G - Set Grid Lines
<Alt>+D - Set Land Color
<Ctrl>+Z - Analyze Scenario
<Ctrl>+U - Rename Unit
<Ctrl>+C - Calc Range & Bearing

15.8 SPECIAL KEYS

<Alt>+F1 - Show Variable Start Points for Active Group
<Alt>+F2 - Show Unit and Group Id's on Maps
<Alt>+F3 - Show Air Patrols / Strikes on Group Map
<Alt>+F5 - Show All On-Station Area Rectangles
<Alt>+F6 - Show Free Memory
TAB key - Alternates selected window between Group Window and Unit Window.
Arrow Keys - Scroll the currently selected window, either the Group Window or the Unit Window.
5 Key - Centers the map view in the currently selected window around the selected object.

You must use the "5" key on the numeric keypad, not the numbers across the top of your keyboard.

Z Key - Zooms in the current window (Group or Unit).
X Key - Zooms out the current Window (Group or Unit).
D Key - Brings up unit display.
SPACEBAR - Selects the next object to the south (down) in the current window.
BACKSPACE - Key Selects the next object to the north (up) in the current window.
U Key - Selects a Unit (in the Unit Window) of your currently selected Group.
C Key - Center the Unit Window around your currently selected Group.

15.9 ADDITIONAL NOTES

- Max Video Resolution is 1280x1024
- If you rename the installation folder - the ScenEdit will not start (as it uses a registry value to find the install folder - [B10]. Fix - either rename things back or reinstall.
- Groups must have units - or the Game Engine (GE) will crash.
- Scenarios must have time limits
- Scenarios should have victory conditions
- Scenarios may have scenario text (but the GE doesn't crash if we don't).

16.0 PLATFORM EDITOR

INTRODUCTION

Harpoon Classic has a user-editable database. What follows is an outline that will help you understand and utilize the Platform Editor that Jon Reimer so graciously and effectively designed for the community and is now part of the official AGSI software offerings, although it is not officially supported. Please be aware that our Wiki is where updates will occur as we expand this information with each new release of HCE. As such, we are providing you the most complete pieces to help you get started.

The Platform Editor allows you to manipulate existing data and add new items to the database for the EC2003 and WestPac BattleSets™ as of this writing. Other BattleSets™ may be enabled in a future revision.

***CAUTION: Never, NEVER, delete a Major Annex entry in your database. Doing so will almost certainly cause Harpoon: Commander's Edition to crash after exporting the database to the Game Engine (GE, henceforth). Major Annex entries are Aircraft, Ships, Submarines, Weapons, Sensors, Mounts, Installations and Text Descriptions (all the editable choices found in the Main Menu of the Editor).

Modifying data will affect performance in game play upon successful export, and usually this is the desired outcome. But deleting data outright, especially the Major Annex entries, can be very hazardous to the health of Harpoon Commander's Edition (HCE). Should you find this has occurred, there is a way to recover the lost data. So don't panic, just keep reading below.

16.1 VIEWING DATA IN THE EDITOR

Enter the Platform Editor (PE) via the "Platform Editor" icon in the Harpoon: Commander's Edition Start Menu Group or by opening your HCE root directory and clicking on "pfBuild2005.mdb"

Upon first using the PE, some versions of MS Access will show you two radio buttons and you will need to choose one. Please choose the bottom one for now (Open Database).

After a moment or two, you will get a message that says "Automatically linking to…" followed by the location and filename of your pfData2005 file.

Click OK and the Main Menu screen will open. You are now ready to browse around the PE. For now, please stick to the upper part of the menu, selecting the entries under Platforms and Components. "Other Tasks" in the lower half of the screen can adversely affect game play and should be avoided until they are more fully examined below.

16.2 MODIFYING EXISTING DATA

This is pretty straightforward. As you browse through the fields and buttons in the PE, you will find values and ID#'s.

Values are either numerical or string entries. Modify numerical entries by simply replacing the current value with a new one. Modify string entries via the dropdown menu by clicking the Down Arrow to the right of the current setting.

ID#'s are used to associate items that belong together in a game engine component. As you browse the buttons for Aircraft, Ships, and Subs, you will find items like LOADOUTS, MOUNTS, SENSORS, and MAGAZINES.

Clicking these buttons will unveil a dropdown that includes the various subcomponents for that item. The subcomponents are listed by ID# and double-clicking the > (right side pointing arrow) to the left of the ID# will open a new window, detailing that particular subcomponent.

Now go back to the previous window. To the right of the subcomponent ID# you will see a string value for its nomenclature, and immediately to the right of that is a Down Arrow. A single click there opens a dropdown that offers the "allowable" selections for that particular subcomponent. Choosing one of them will automatically update the ID# to the left.

IMPORTANT: To ensure your changes are accepted by MS Access, move to the next record. Assuming no error messages, your edit is now saved.

16.3 CREATING NEW ENTRIES

Two very important facts to keep in mind:
1) ALWAYS APPEND, NEVER REPLACE A RECORD.
2) DO NOT ENTER ANY ID#. The PE will assign the appropriate ID# as you move through the remaining data fields. Be very careful to enter all required data in the remaining data fields. Failure to do so will cause the SE and GE to choke upon export of your new data.

Mechanically speaking, creating new entries is otherwise similar to editing existing data described above.

16.4 EXPORTING AN EDITED DATABASE TO THE HCE GAME ENGINE

When you are ready to try out your edited database, CLOSE BOTH THE GE AND SE if you have them open. Return to the Main Menu and click on EXPORT DATABASE under Other Tasks in the bottom half of the screen. This step will take some time, and you will know it's finished when you see a DOS screen open, and soon thereafter close. At this point your Database is now ready to try out in the GE and SE.

16.5 IMPORTING DATABASES FROM THE GAME ENGINE (COMMONDB.RES)

This feature is particularly useful if you are using someone else's commondb and want to view and edit it in the PE. Sharing the commondb will be the primary mechanism for playing user created scenarios that were created using a different database than the one you are running.

Click on IMPORT DATABASE under Other Tasks in the bottom half of the screen. This takes some time to complete, depending on the speed of your system. On slower machines it may

even appear to freeze the Editor for a period of time. This is normal. Upon completion you will be able to edit the database in the PE as outlined above.

16.6 MANAGING MULTIPLE COMMONDB FILES

We plan to automate this so that when you load a scenario, both the GE and SE will seek out the correct commondb in your directory and load them into the game. Until this feature is ready, we recommend you do the following or something similar:

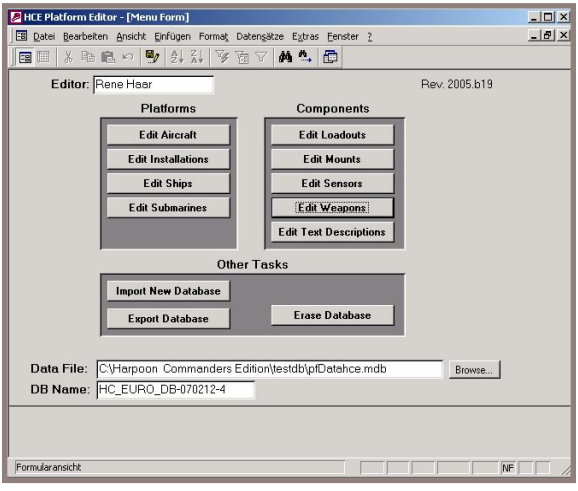
1) Place all scenarios you create with a given commondb in a separate folder, along with a copy of the commondb.res file the scenarios need to use.

2) Rename this commondb.res file to something that will help you identify it in the future. For example, commondb_orig.res might be your choice for the file needed to run scenarios created for the first commondb.res file. Similarly, you might use commondb_my_first.res for the scenarios you create using the first db you edit yourself.

3) You are now ready to swap out databases. To do so, rename the existing commondb.res file in your game root directory in order to preserve it, in a manner consistent with the convention described above. Next, create a new folder in your game root directory called Current_DB. Locate the commondb_whatever-you-named-it_.res file (the one you are about to use, not the one you just renamed) and Copy/Paste it into the Current_DB folder. This helps you remember which commondb you are using because the final step is to also paste it to the game root directory and rename it to commondb.res. You are now ready to run the scenarios created for the commondb you just installed.

16.7 MAIN SCREEN/MENU SCREEN

This screen is self-explanatory.

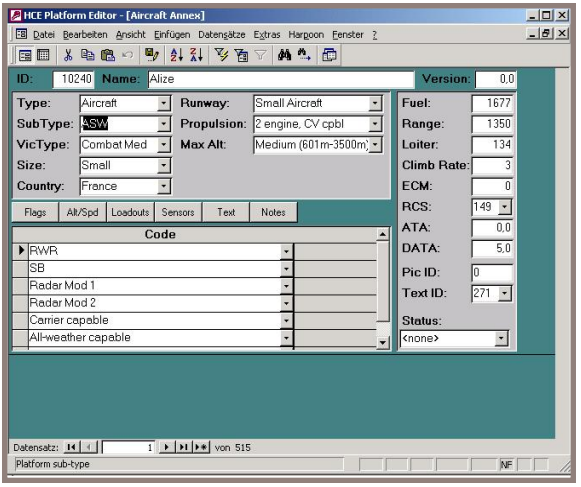


Only two fields would be Important to any DB-Designer:

1. The Data file field, here you chose which db you want to edit,
2. The DB Name field, give your db a good and well defined name, so you won't mix up DB versions

When you click on the other Fields you´ll enter the following Annexes
Under DB editor you may enter your name, this affects the view history entry under the Harpoon submenu.

16.8 EDIT AIRCAFT SCREEN



16.8.1 Aircraft Flags

Each of these Flags has the potential to affect aircraft behavior in the Game Engine (GE), depending on how they are treated in the source code. "Has the potential", because not all the Flags listed are actually employed by the source code as of this writing.

When building or upgrading aircraft in your database, you will want to associate as many of the Flags from the table below as are applicable to reflect the aircraft's characteristics and capabilities.

FLAG	DESCRIPTION
All-Weather Capable	This flag would indicate all weather capability for an aircraft, but is not currently modeled in the GE. Nevertheless, for the same reasons as above in the SB flag, it is recommended to include this flag where appropriate.

Blip Enhance	An electronic subterfuge that magnifies a small aircraft's radar signature, typically that of a helicopter, to make it appear much larger on enemy radar screens and to decoy radar homing missiles.
Carrier Capable	Carrier capable aircraft are just that -- capable of flight operations to and from an aircraft carrier. This flag is also needed to enable helos and VTOL aircraft to operate from ships.
DPS	Digital Processing System(?): We are unsure of this one's purpose, as it does not appear to be implemented within the source code and thus has no current function in game play.
ESM	Electronic Surveillance Measures: Systems that detect electronic emissions of platforms and weapons, providing a vector to the emitter,analyzing it against a known database and thereby enabling identification.
FLIR	Forward Looking Infra-Red: A Passive Air-to-Ground detection system based upon target's heat signature.
Inflight Refuelling	This flag means that an aircraft is capable of receiving inflight refueling from a tanker aircraft.
IRST	Infra-Red Search and Tracking: A passive Air-to-Air detection method using the target's heat signature to find it and track it.
LRMTS	Laser Ranger and Marked Target Seeker: Normally used in marking targets for bombing missions, this Flag is used by Harpoon Classic to indicate a plane's ability to safely fly Nap of the Earth (or VLOW altitude, as Harpoon Classic models it).
MAD	Magnetic Anomaly Detection: Used to locate Submarines from the air by finding the disruption in the Earth's Magnetic Field, caused by the boat's metal hull.
Mid-Course Guidance	Missiles with the mid-course guidance flag are capable of receiving course correction and new targeting information in mid-flight, thereby improving their Hit Percentage (PH) over missiles lacking this feature. While the GE currently treats all aircraft as if they have this flag, it may, in the future, come to model the comm link that is needed from aircraft to missile, so we recommend adding it where appropriate as well. Right now, only the missile that is mid-course guidance capable (not the aircraft itself) actually requires the flag to be present.

Radar Mod 1 — Radar Mod Flags 1 and 2: These flags are no longer implemented as of HC2005. However, in all earlier versions they were very important in modeling relative stealth of aircraft. Under the old system no radar mod flag was stealthiest, less stealthy was Radar Mod 1, even less so was Radar Mod 2, and any aircraft with Radar Mods 1 and 2 had the least stealth with respect to detection by radar.

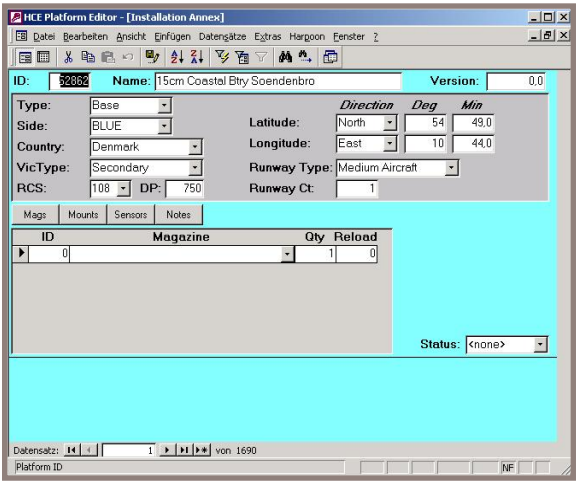
Radar Mod 2 — See Radar Mod 1.

RWR — Radar Warning Receiver: Alerts the pilot that his aircraft is under attack from a radar homing missile.

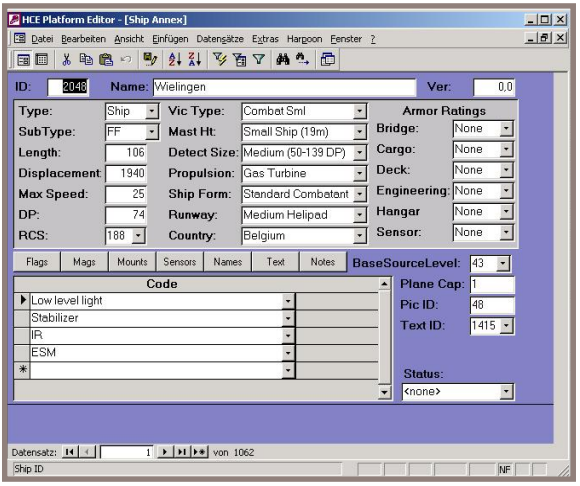
SB — Sonobuoy: Signifies an existing comm link for data transfer from sonobuoy to aircraft. While not currently implemented in the GE source code as such (Sonobuoys nevertheless do function properly via a different code mechanism), all platforms with SB comm links in real life should be given this flag for reference purposes and in case this flag is implemented in the GE at some future date.

TCS — Television Camera System: another passive Air-to-Air detection system using a specialized TV Camera to locate and track other aircraft.

16.9 EDIT INSTALLATIONS SCREEN



16.10 EDIT SHIPS SCREEN



16.11 DAMAGE POINTS

This is a numerical value of the ship's survivability in a combat situation. It's directly related to light displacement. The formulas for calculating vessel DP is as follows:

Displacement (in tonnes)	**Formula**
0-500	T/20
501-5000	(T/30) + 9
5001-12,000	(T/50) + 76
12,000 and over	(T/60) + 116

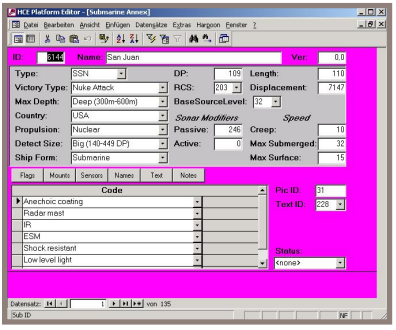
Once you have determined the damage points, multiply the value by any of the following multipliers that apply:

- Fleet Auxiliary (supply ships, container ships, tankers, ammunition vessels, etc.) not including converted merchant vessels 0.75
- Surface-Effect Ship (SES), Hovercraft, or Merchant (including all ships specified as being build to civilian standards) 0.5
- Supertankers 0.25
- Soviet Construction 0.9
- Composites; Aluminum, GRP, Wood 0.75

16.12 SHIP FLAGS/CODES

FLAGS	DESCRIPTION
ESM	Electronic Surveillance Measures: Systems that detect electronic emissions of platforms and weapons, providing a vector to the emitter, analyzing it against a known database and thereby enabling identification.
IR	Infrared optical system.
Low Level Light	System allowing better sight at night.
Rast	(for Recovery Assist, Secure and Traverse) recovery system for Helicopters used on the landing pad.
Shock Resitant	The ship was built to withstand explosive shocks. Common on MCM-vessels.
Silencing	System to reduce the noise emitted by a vessel. Makes it harder to detect by passive sonar.
Stabilizer	Ship stabilizers are fins mounted beneath the waterline and emerging laterally. In contemporary vessels, they may be gyroscopically controlled active fins, which have the capacity to change their angle of attack to counteract roll caused by wind or waves acting on the ship. This affects the accuracy of weaponsystems.
Stabilizer (Dual)	More effective than single Stabilizers.

16.13 EDIT SUBS SCREEN

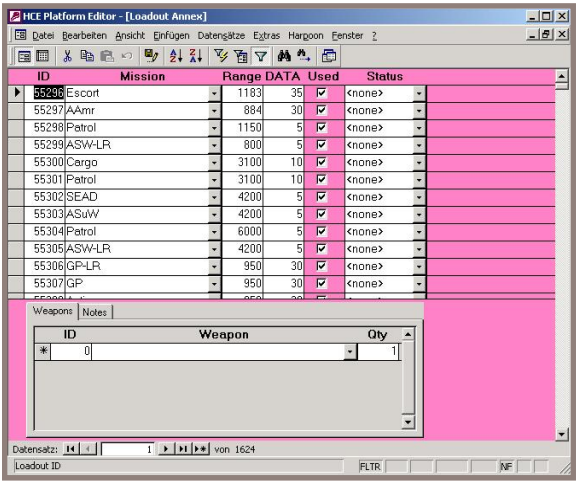


16.14 SUBMARINE FLAGS

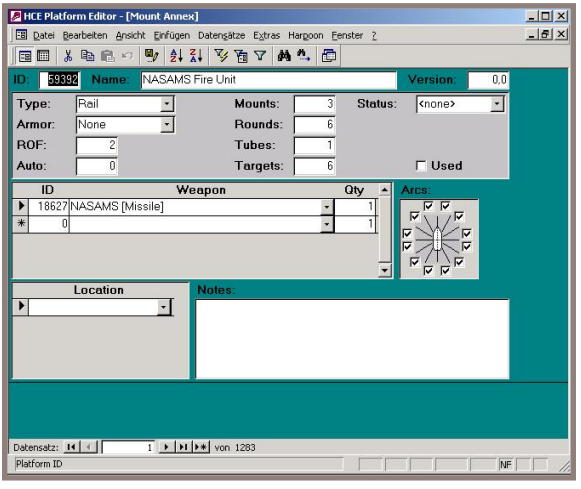
FLAGS	DESCRIPTION
Anechoic Coating	Made of rubber or Sorbothane-like tiles containing thousands of tiny voids, applied to the outer hulls of military ships and submarines. Their function is twofold: - To absorb the sonar sound waves of active sonar, reducing and distorting the return signal thereby reducing its effective range. - To attenuate the sounds emitted from the vessel, typically its engines, to reduce the range at which it can be detected by passive sonar.
DE Warhead Resistant	Resistant to DE warheads (which are directed energy/shaped charge warheads).
Does Not Cavitate	The noise created by cavitation is a particular problem for submarines, as it increases the chances of being detected by the enemy. Cavitation is a general term used to describe the behavior of voids or bubbles in a liquid. Cavitation is usually divided into two classes of behavior: inertial (or transient) cavitation and non-inertial cavitation. Inertial cavitation is the process where a void or bubble in a liquid rapidly collapses, producing a shock wave. So, this flag makes the sub quieter.
ESM	Electronic Surveillance Measures: Systems that detect electronic emissions of platforms and weapons, providing a vector to the emitter, analyzing it against a known database and thereby enabling identification.
IR	Infrared optical system.
Low Level Light	System that allows viewability at night.
Radar Mast	A radar mast.
Snorkel	A submarine snorkel is also a device that allows a submarine to operate submerged while still taking in air from above the surface.
Shock Resistant	The Ship was build to withstand explosion shocks.
Titanium Hull	Stronger hull than those made of steel.

Transient-Free Launch The torpedo tubes creates no air squall while firing a torpedo, so this system is quieter and reduces the chance to detect the submarine after a torpedo was fired.

16.15 EDIT LOADOUTS SCREEN



16.16 EDIT MOUNTS SCREEN

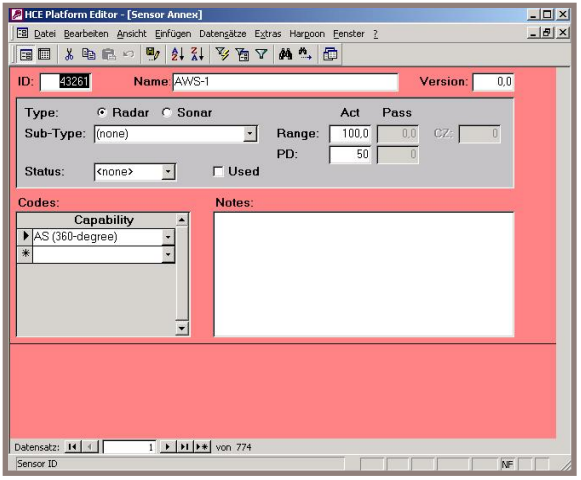


ROF this value effects the number of round that can be fired in a minute per mount.
ROF x Tubes = Rounds per minute

Auto 0 or 1 1 represents automatic systems like Vulcan Phalanx
The Arcs affects the direction a mount can fire the 12 o'clock direction represents the bow of a unit

Comment on the weapon selction: a mount can carry more than 1 weapon type!

16.17 EDIT SENSORS SCREEN



Range Range of an Senor in nm
PD Probability of Dection Value between 0-100%. The higher the value the higher the probability of detection.

16.17.1 Probability Of Detection

CZ Convergence Zone An effect benefitting sonar detection - sound travels in mileslong arcs under the surface of the ocean, producing a donut-shaped detection area (the annulus - see above) many miles from the detecting unit. If a sonar is capable of working with CZs you can add 1, 2, 3... to represent the capabilty of the sonar. The first Zone is around 30nm (20 for Medc), the Second 60(40nm, the third 90(60) nm, away from your unit, these Values have a random factor/modifier, too!

16.17.2 Sensor Types

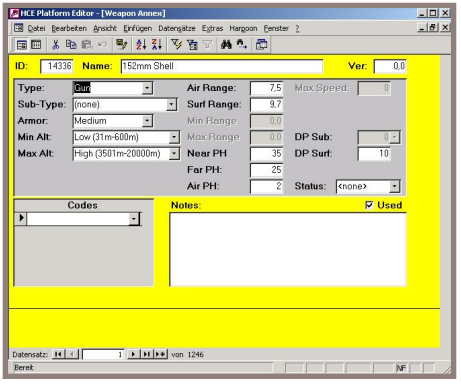
MAIN TYPE	SUB-TYPE	EXPLANATION
Radar		
	Air Search	Used for finding aircraft and missiles.
	Surface Search	Used for finding ships, submarine periscopes and sometimes very low-flying helicopters or missiles.
	Height Finding	An older radar used to provide a cross reference to the original Air Search Radars that only could provide bearing. Together one would know where the target was in 3 dimensions.
	Fire Control	Found on mounts; included for reference only.
	Aegis	Solid state, electronically sweeping.
Sonar		
	Dipping Hull	Sonar mounted on the Hull.
	Hull/Towed	Combined Hull and towed sonar.
	Localiser/Ranging Sonobuoy	A relatively small expendable sonar system that is dropped/ejected from aircraft or ships conducting anti-submarine warfare.
	Towed	Towed Array Sonar.

16.17.3 Sensor Codes/Capabilities

FLAGS	DESCRIPTION
AS (airborne)	Air seach radar carried by a plane.
AS (360-degree)	Air seach radar on the ground with 360 degree coverage.
HF (3D)	High Frequency 3D Radar.
LDSD	Look Down/Shoot Down radar mod. Without the LDSD flag, radar range is halved even one band below the emitting (so High vs Med would be penalized), or more than one altitude band above emitter (Low vs High would have penalty, Low vs Med would not).

RO (airborne)	Range Only Radar.
SPIR	Shipboard Passive Infrared Sensor.
SS (airborne)	Surface seach radar carried by a plane.
SS (360-degree)	Surface radar on the Ground with 360 degree coverage.

16.18 EDIT WEAPONS SCREEN



16.18.1 Weapon Types

MAIN TYPE	SUB-TYPE	EXPLANATION
ASW		
	Depth Charge	An underwater bomb. Very effective when detonated in proximity to submarines. Examples are the Mk54, Mk11, and B-1.
	Mortar	
	Standoff	Combined weapon like the ASRoc. Rocet + ASW Torpedo.
ECM		
	Chaff/Flare	
	Chaff	
	Type-D	
	ECM	

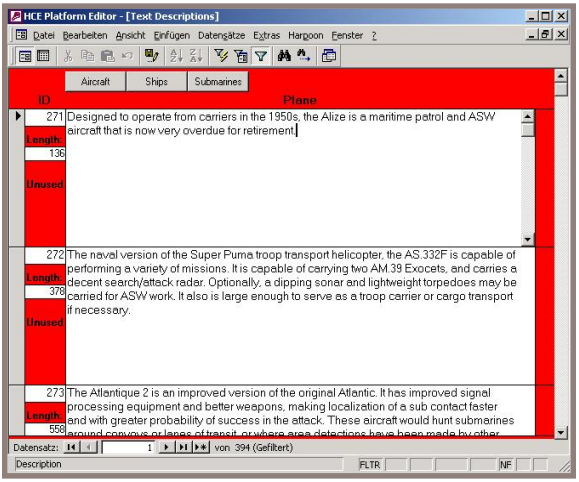
	Flare	
	IR	
	Laser	
	FLIR	Forwardlooking infrared.
Gun		A ballistic projectile that may or may not be unguided. Found on ships and aircraft.
Missile		Any guided weapon that has a self-sustaining motor and a guidance package.
Nuke		
	Airburst	
	Surface	
	Underwater	
Ordnance		
	Anti-runway	
	Bomb	A dumb weapon that is dropped from an aircraft with a steel casing and explosive filler.
	Cannon	
	Cluster bomb	
	Drop tank	A tank used to carry extra fuel aircraft.
	Rocket	A battlefield support weapon that is mainly a short-range missile with no guidance. Mainly fired from aircraft and a few ships.
Torpedo		"An underwater missile". The primary weapon of submarines, they are second only to missiles in their potency. Mk48, Spearfish, USET-95 are all torpedoes.
	Single-wire guided	
	Double-wire guided	
	Active/Passive seeker	
	Passive seeker	
	Straight-running	
	Wake following, term active	

16.18.2 Damage Point Calculation

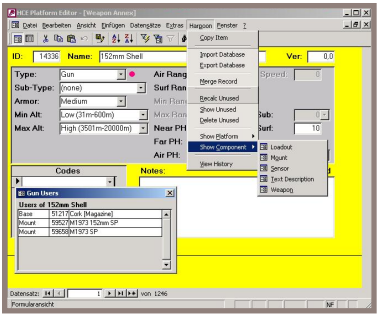
As a general rule, all DP calculations are based on the weight of the warhead in kilograms. Not the totally weight of the weapon, but the total weight of the warhead. Therefor a Mk84 2000lb bomb has a DP value of 91. 2000lbs = 909.1 kg, half of that being the HE of the warhead. That's 454.5 kg for a total of 91 DP. You round up the value. If you create a weapon carrying a payload (Asroc fx) you put the annexnummber of the payload in the dp field.

PH Probability of Hit – Value between 0-100%. the higher the Value the higher the Probability to hit a target.

16.19 TEXT DESCRIPTIONS SCREEN



16.19.1 Special Functions



16.19.2 Recovering From Problems

If you encounter errors in the PE, please consult the Matrix forums.

IMPORTANT: Taking a screenshot of the error message and saving it for our future review will be your best bet for helping us track down the cause of the problem. If you encounter errors in the GE using a newly created commondb, you will need to revert to a previously working version of commondb.res and invoke the Start_edit.bat file in your game root directory (by double-clicking on it) to make it run properly. Invoking the Rest_cdb.bat file will restore the most recent "official" commondb to the root directory.

17.0 CREDITS

ADVANCED GAMING SYSTEMS

Larry Bond and Chris Carlson created the Harpoon system. This product is based on their 3rd Edition of the Rules. The Harpoon Game System is © 1976-2010 by them. The Harpoon trademark is held by them as well.

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There have been several teams who have worked on the game since it first shipped in 1989. We have preserved credit where it is due in the About menu in the game. You will be amazed at how many people have contributed over the years.

This version calls out a thank-you for this specific version – Harpoon Commander's Edition HCE.

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- Larry Gertner - Quality Assurance
- Cameron Currie, Russell Sharp - Sysops
- HCDB Content, Copyright (c)2007 Brad Leyte.
- Don Gilman - Project Manager

Media Credits HCE

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- Christopher Skelton, Casey Skelton - Sound Developement
- Sean Choate - HCE specific artwork
- John Dye -- Splash Screen
- Don Gilman – Manual Updates
- Rene Haar, Tony Eischens, Bruce Fenster, Dale Hillier, Brad Leyte – Platform/DB Editor notes
- B.I. Hutchinson, for graciously letting us use the scenarios and background from his EC2000 to the EC2003 BattleSets™

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As AGSI intended to ship HC2005 as an update to their "Self-published' HC2002 and 2002 Gold product, there was a project called HC2005 Gold. That project ran "off the road" and became HCE...

HC2005 Gold credits

- John Dye, Splash Screen Artwork
- Anthony Eischens, Programmer
- Bret McKee, Programmer
- Mike Mykytn, Bret McKee, JP Koester - Contributors
- Didier Vanoverbeke, Orders Writer, Beta Tester
- Erik Mugele, for his generosity hosting the HULL, HGSL and the Teuton FTP sites
- B.I. Hutchinson, for graciously letting us use the scenarios and background from his EC2000 to the EC2003 BattleSets™
- Mike Mykytn, Tester, QA Lead
- Steve Eggleston, Kelly Crawford, Dewayne Harris, Larry Gertner, Greg McCrea, Thomas Ponta, Pete Maidhof, Ross Williams, Herman Hum, Vince Robinson, JoeK, Todd Rossel - Beta Tesers

A special thanks to the vast world of Harpoon players who refused to let the game die.

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Matrix NexGen
Alexander Rutins, Andrew Heath, Nicholas Heath, Shane Heath, Austin Stoltz, Noah Stoltz, Jesse Stoltz, Heidi Fiedler, Blake Fiedler, Harold Dupree.

Our†Strength
We thank God for giving us the ability and strength to complete this project and follow†our dream. We would also like to thank our families and friends for giving us their non-stop love and support during this project.

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