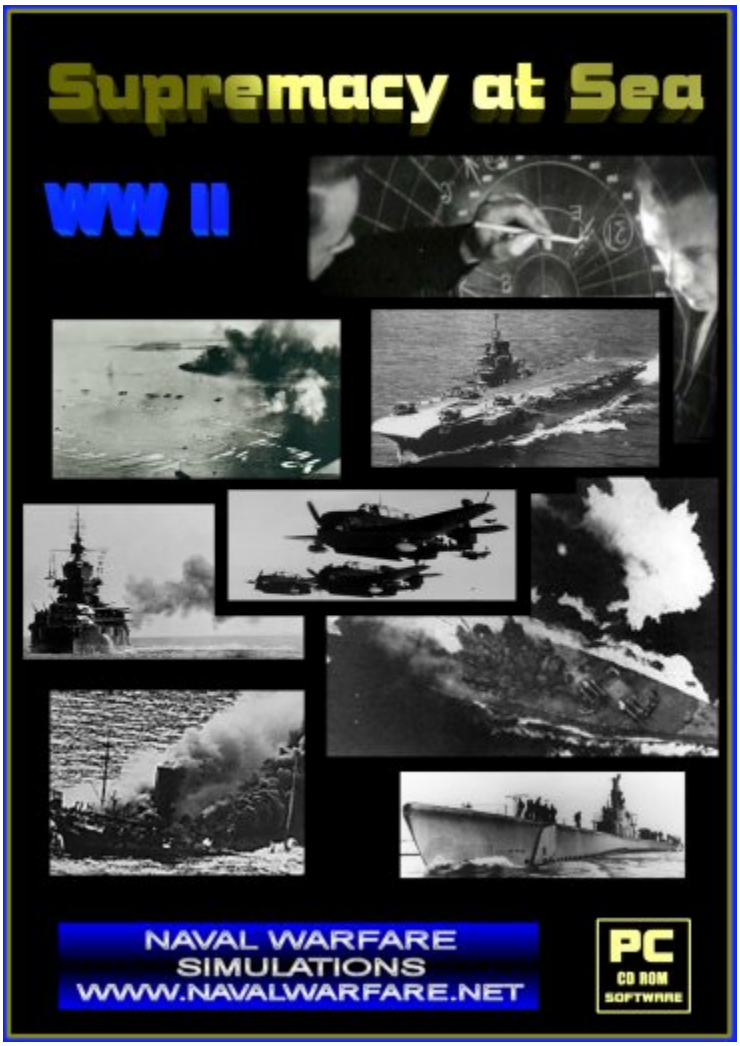
SUPREMACY AT SEA

USER MANUAL



Supremacy at Sea - WW2

User Manual

Note: Complete help is also available in-game, via indexed help pages as well as context help pages. These help pages are fully hyperlinked.

This manual is a hierarchical structuring of the main help pages, and is provided for those players who like to refer to a printed manual. It is not a replacement for the in-game help, which many users may find more convenient to use.

The moral is: please do not be discouraged by the apparent size of this manual. The in-game help simplifies the learning process by presenting you with just the help you need, when you need it.

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Overview

SAS re-creates the drama of conflict between the Great Naval Powers of World War 2: the United States, Japan, Great Britain, Germany, Italy and France.

The theatres include the Pacific, Atlantic and Mediterranean. By selecting from campaigns provided or creating your own – varying the countries, theatres and other parameters - you can play an endless variety of historical or hypothetical wars.

As your country's Supreme Naval Commander, and the Supreme Theatre Commander in the selected theatre, you have full control over naval resources and considerable control over aircraft and troops as well.

You play for nothing less than ultimate victory or defeat. And you also play for posterity, to be remembered as the greatest Admiral of all. Your chosen opponent - another player or the computer - is playing for the same goal.

This is a game that can be played at all levels: strategic, operational, and tactical.

You make the biggest decisions: what ships to build, infrastructure and technologies to develop, aircraft to construct and troops to raise. Then you plan the operations that determine their deployment and rules of engagement. And as if this were not enough, you can also decide fleet tactics in response to hourly reports on enemy forces.

When surface battles occur, re-playable footage shows your ships in action as they follow your rules of engagement and fight shell by shell, torpedo by

torpedo. All targeting, damage effects, flooding and ship movement are re-calculated by the minute.

Naval missions include convoys, amphibious assaults, shore bombardments, offensive and defensive patrols, blockades and interdictions, mine-laying and sweeping, and reconnaissance.

Naval forces include battleships and battle cruisers, heavy and light cruisers, destroyers, destroyer escorts, corvettes, submarines, and fleet and escort carriers. The ships are historical but include some planned but never completed – like the USS Montana. Best of all, with just a few mouse clicks you can modify them or create your own, setting size, gun calibre and number, armour, speed, range and so on. There are over two million design possibilities. Build battleships up to 130,000 tonnes that dwarf the Yamato and equal the biggest battleship ever conceived (by Germany, in its 'Z' plan)! More modestly, why not remedy some deficiencies? E.g., as the British player, you could up-gun the King George V class. The choices are endless, but you are always in charge.

Troop units range in size from company to army group, and have varying levels of equipment, mechanization, training and morale, thus covering the range of possible fighting capabilities.

Nearly 400 actual classes of carrier and land-based aircraft are available, including the main jet aircraft from late war and up to the late 1940s. By developing aircraft technology aggressively you can take earlier advantage of these superior aircraft. Aircraft characteristics that are modeled include firepower, bomb load, ASW detection and attack capability, maximum speed and cruising speed, endurance, ruggedness and maneuverability, plus special abilities such as carrier, night fighting and dive-bomb capable.

Behind everything lies the grim reality of your war economy, which must be sustained through production and trade. Everything has a cost. SAS models real-world constraints on your ability to wage war and in the process simulates the need to run convoys to maintain your industry, or supply your naval bases and troops in the field.

Yet this rich game play never sacrifices playability. You are ably assisted by a 2-I-C of your choice, a legendary Admiral. For example, as the American player, you can choose a Spruance, King, Halsey or Mitscher, who range in approach from very cautious to very aggressive. With a click of the mouse he can make any decision for you – such as designing your whole navy, planning a whole turn's operations or managing your budget. This frees you to concentrate on handling just the areas you are interested in or want to manage.

Simultaneous turn-based action

SAS is a turn-based simulation with a difference. The moves of both sides are calculated simultaneously, instead of one after the other as in most turn-based games. This allows for 'real-time' events and tactical responses on an hourly basis, giving SAS more realism and a genuine tactical dimension. In this way, SAS has elements of real-time strategy whilst remaining turn-based to properly allow for deep strategic play.

The strategies

As Supreme Naval Commander, you take the big decisions. What sort of navy do you want? Big-ship heavy, balanced, or centred on the small ships - fast torpedo armed ships and submarines?

What sort of ship characteristics do you want - raiders for fast, long range hit-and-run operations; or slower, well armoured ones that can defend as well as attack?

How large a merchant fleet do you need – for trade and for transport of troops and supplies?

How many and what kind of troops do you need to raise for defensive and offensive operations? How many and what types of aircraft?

How much do you spend on other assets - port infrastructure and industry, naval intelligence, fleet training or technology, and what research priorities do you set for technology R&D?

The options are endless but your resources are not, so trade-offs are necessary.

The operations

You also plan the big operations. What do you want to concentrate on? Protecting the precious convoys vital to your economy, or that transport troops or the supplies they need; running offensive sorties deep into enemy territory; bombarding enemy ports; mounting amphibious assaults; conducting offensive or defensive patrols by surface ships and submarines, or mine-laying and sweeping in home or enemy waters?

These operations should be in mind when you design your ships, so that you have the capability you need. Then you assemble the ships into fleets and give them their orders.

If all this sounds daunting, remember that you can delegate key decisions to

your 2-I-C and keep just the areas you want to handle. Playing the game can be as simple as you want. You can grow your areas of command as you get more experience.

The tactics

SAS is predominantly a strategic and operational simulation. Nevertheless, important tactical play is also supported. You can:

- Set rules of engagement for each fleet and for each ship in a fleet. These rules dictate how eager the fleet would be to seek and stay in battle, and how much risk each ship would accept.
- As a turn is calculated, you may optionally:
    - Order your fleets to avoid, shadow, intercept or ignore enemy fleets in response to new enemy intelligence. The order overrides the computer's recommendations.
    - Amend or cancel recommended air strikes against targets of opportunity.

- When surface battles occur, they are calculated according to sophisticated rules that track the movement, orders, and battle condition of each ship. Every shell and torpedo hit is calculated. Minute-by-minute records are kept of damage to main turrets, superstructure, fire control, bridge, fuel spaces, machinery spaces, main magazines, and progressive flooding and leaking from underwater belt hits and torpedo hits. All the action is re-playable.

Even so, for those grognards who need to be ships' captains as well as 6 star Admirals, a future release of SAS (toward the end of 2008) will allow linking to NWS's existing Warship Combat: Dreadnoughts and Battleships (WCDB) or up-coming Navies at War (NAW) titles so that battles can also be fought out with full tactical control, with the action then returning to SAS on battle completion.

The game-play

You play by making key decisions for each game turn and then letting the computer calculate the result, taking into account the enemy decisions that are executing in parallel.

During calculation, all fleet movements and events of significance are shown on the map as they occur. You can respond to enemy fleet sightings by accepting or amending emergency fleet response orders. After the turn is calculated, you can replay the whole turn and watch it all again, including watching full action replays of all surface battles.

Your opponent can be the computer, or another player via “hot-seat” play or play by email.

Timescales

Strategic time

Strategic time is relevant to ship construction, technology R&D and infrastructure development. At the strategic level, a turn can be set to between one week and twelve months. The value is set first in the Campaign Creator. But it can be changed at any time during game play. (See player options - timescales for more information).

As an example – if strategic time is three months per turn, it would typically take twelve turns (or three years) for a new battleship to be constructed and launched. (Ships selected at the start of a game become available immediately unless their commissioning is deferred. Construction rates only

affect ships laid down afterwards).

Operational time

Operational time is the amount of time in a turn for fleet movements, sightings, battles and so on. Operational time can be set to one week, two weeks or one month. The value is set first in the Campaign Creator. But it can be changed at any time during game play. (See player options - timescales for more information).

Normally, it is best for operational time to be the same as the strategic time, so everything remains ‘in synch’. However, operational time can not be longer than one month or greater than the strategic time.

When operational time is less than strategic time, we have time compression. In other words, strategic events are speeded up relative to the rate at which operations occur.

Why would a player want operational time less than strategic time? There are several situations when this could be an advantage:

- Whenever strategic time is more than one month, operational time must be less because it can't be more than one month.
- When strategic time is say one month, it can take a few minutes - up to 10 minutes or so, to calculate a full month's worth of operations. Impatient players may want to 'speed things up' by calculating only part of the action before advancing to the next turn.

It may be clearer to take an example. if strategic time is one month but operational time is one week, the planning of fleet orders and so on is unnaffected but fleets only get to do one week of their actual moves for every

game turn. A fleet sailing say between Alexandria and Malta in the Mediterranean might leave port on the first day - say the 1st of June. By the end of the week, the fleet may be half way to Malta. Now, the turn ends. Strategic time advances one month. It is now July. The fleet has not 'warped' anywhere. It starts the new turn where it ended the last, and it continues as per its orders. But the first day of the new turn will now be 1 July, not the 8th June. Only the dates have warped - nothing else.

Tactical time

Tactical time passes in hours and minutes: tactical fleet responses can be made at an hourly level, whilst surface battles are calculated minute-by-minute.

Map scales

A campaign theatre of action can be small scale – on a small Mediterranean-sized map, or it can be much larger – similar in size to the Atlantic or even Pacific theatres.

To allow varying size maps to be displayed without map hexes becoming too small, the size of the map hexes themselves can be of varying size - from 48 nautical miles across, for small maps like the Mediterranean, to double that size for the Pacific and Atlantic.

Campaign "size"

A campaign may commence with navies of any size: from very small, through to enormously big navies of nearly 3 million tones - with 30 or more battleships and carriers, 50 or more cruisers, and hundreds of escorts and

submarines. Then, growth during the war may multiply these numbers several fold again, so you can end up commanding extremely large navies indeed. The only artificial limit to the size of the navies you can have is your computer's memory.

Playability

Irrespective of the theatre scale and number of ships, making your decisions for a single turn can take as little as a few minutes - if you let your 2-I-C help you as much as possible. Or you can choose at any time to exercise greater hands-on control.

SAS can therefore be either a 'beer and pretzels' game, playable easily in a single sitting, or a seriously challenging game played over a longer period. The time taken will reflect how much of the decision-making you are doing, how big the game is and how easy are the starting odds.

Wining and Losing

The odds you face are set when a new campaign is created. Each country has historical strengths and weaknesses. But these characteristics can be varied to make a harder or easier game.

Though an easier game is recommended for beginners, a harder game is more rewarding and - just as importantly - if you do well, your place in history will shine even brighter.

The game calculates your performance annually based on your relative economic success and the starting odds. In a difficult game, your mistakes are more forgiven, your victories more praised.

A campaign can be played for as long as you want until a forced end occurs.

All campaigns must end when the year gets to 1950. (Beyond that, technology changes made WW2 style naval weapons and combat outmoded).

A forced end can also happen earlier, based on your performance. In January of every year (except the first) your performance vis-à-vis the enemy is reviewed. Your Situation Report includes extra information about the enemy economy. This data is evaluated by your country's leader. He assesses the growth you have achieved compared to the enemy, as well as the value of any supply targets that you have failed to meet. He then moderates the result for the odds you faced at the start of the war.

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Installing SAS

SAS WW2 is a java application and requires the Java 2 run-time environment Standard Edition. The *SAS WW2* installer includes and automatically installs the Java run-time (Java SE 6, update 5) to your computer for you.

System requirements

Release 1.0 of *SAS WW2* requires Microsoft Vista or XP.

Support for Linux and Macintosh systems is planned in a future release. Do not attempt to run this current release except on Windows XP or Vista. *No support can be given to users who attempt to run this application on other systems*.

Allow at least 500 MB of hard disk space for the game files plus saved game data.

A mouse is necessary.

Minimum and recommended system specifications are as follows:

	Minimum Specification (Note 1)	**Recommended Specification**
CPU	Single core processors: a 2.0+Ghz Pentium 4 or AMD Athlon 64	Fast dual-core processors such as a 2.66+Ghz Dual-Core Pentium 4 or the Athlon 64 X2 5000+ (Note 2)
RAM	512Mb under Windows XP 768Mb under Vista	1+Gb
SCreen Resolution	1024 * 768 pixels	1280 * 960 pixels in normal (4:3) aspect, or 1280 * 800 pixels in wide screen.
Colour	16 bit	24 bit
Video card	Any 2D/3D video acceleration card (64+Mb video memory)	Any 2D/3D video accelaration card (128+Mb video memory)

Footnotes:

1. The performance of larger scenarios is likely to require greater than the minimum specification, especially RAM. Nevertheless, see the troubleshooting guide for tips on getting the best performance from the hardware you have.
2. *SAS WW2* is a multi-threaded application and dual-core chips will show better performance than single-core chips with the same theoretical clock speed.

The screenshots in this manual are all taken at a resolution of 1280 * 800 on a Toshiba Satellite Pro laptop.

Installing ***SAS WW2***

- Insert the game disc into your DVD drive.
- If autorun does not work for some reason, double-click the file called 'SAS_Install.exe' that is on the game disc.
- When prompted, enter the licence key you will have been provided with, when you purchased *SAS WW2*.
- Then, follow the remaining on-screen instructions. The program will install the *SAS WW2* files first. Then, the installer for the Java run-time should automatically launch. You can exit from the Java run-time installer if you already have the same or a later version of the run-time installed. The Java run-time installer is also on the game disc as its own file, called 'jre-6u5-windows-i586-p-s.exe', and you can run it separately at any time if you wish by inserting the game disc and double-clicking it.

Running ***SAS WW2***

On a Windows PC, you can click on the icon on your desktop (that looks like this: ), or navigate through Start->Programs->SAS-WW2 to find the "SAS-WW2" start file to run.

Uninstalling ***SAS WW2***

On a Windows PC, navigate through Start->Programs->SAS-WW2 and click on the "uninstall" option. This removes all game files, including saved game data.

You will not need to reboot after the game is uninstalled.

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Scenarios

SAS WW2 comes with four scenarios: three full-scale campaigns, one in each main theatre of war, plus a small introductory campaign to help first-time players quickly learn the ropes of *SAS WW2*.

The Campaign Creator also lets you create your own campaigns, so the possibilities are endless.

Follow these links for information about the four scenarios that come with the game:

- Intro - a hypothetical, simplified US vs Japan scenario in the Pacific, intended as a learning tool.
- Atlantic 1 - a UK vs Germany scenario in the North and South Atlantic, commencing September 1940.
- Med 1 - a UK vs Italy scenario in the Mediterranean, commencing July 1941.
- Pacific 1 - a US vs Japan scenario in the Pacific, commencing June 1942.

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How to play SAS

Welcome to your one-stop-shop for instructions on playing *SAS*.

Playing *SAS* is as simple or complex as you want to make it. There are deep strategic and operational challenges; but you can automate any or all major tasks (steps 3 to 8 below) by using your computerised 2-I-C.

You can play a whole turn in just a few minutes by using all the automated help features. This is the best way to quickly start playing *SAS WW2*. It is recommended that you first read the how to play a turn in 5 minutes help page. And the length of the turn itself is variable' - it can be anywhere from 1 week to 6 months of 'real time'.

Then you can follow these links at your leisure to learn how to play the game in more depth. You will discover that *SAS WW2* gives you unparalleled flexibility by allowing you to take control of just the areas you want. This way, you can ease into the game play at your own pace, and according to your own areas of interest. Some players will want to design their own ships and select the best ships for their navy. Some will want to learn how to control operational orders - to varying levels of detail. Some will want to control spending on infrastructure, troops and aircraft more closely. Some will want to do all of it.

Follow these links, in the recommended order, to learn everything you need to know:

1. Load a game
2. Get full briefings on your situation
3. Build infrastructure

4. Design and build ships
5. Construct aircraft
6. Raise troops
7. Deploy fleets of ships, with appropriate mission orders
8. Deploy aircraft to carriers and airfields
9. Run the Turn!

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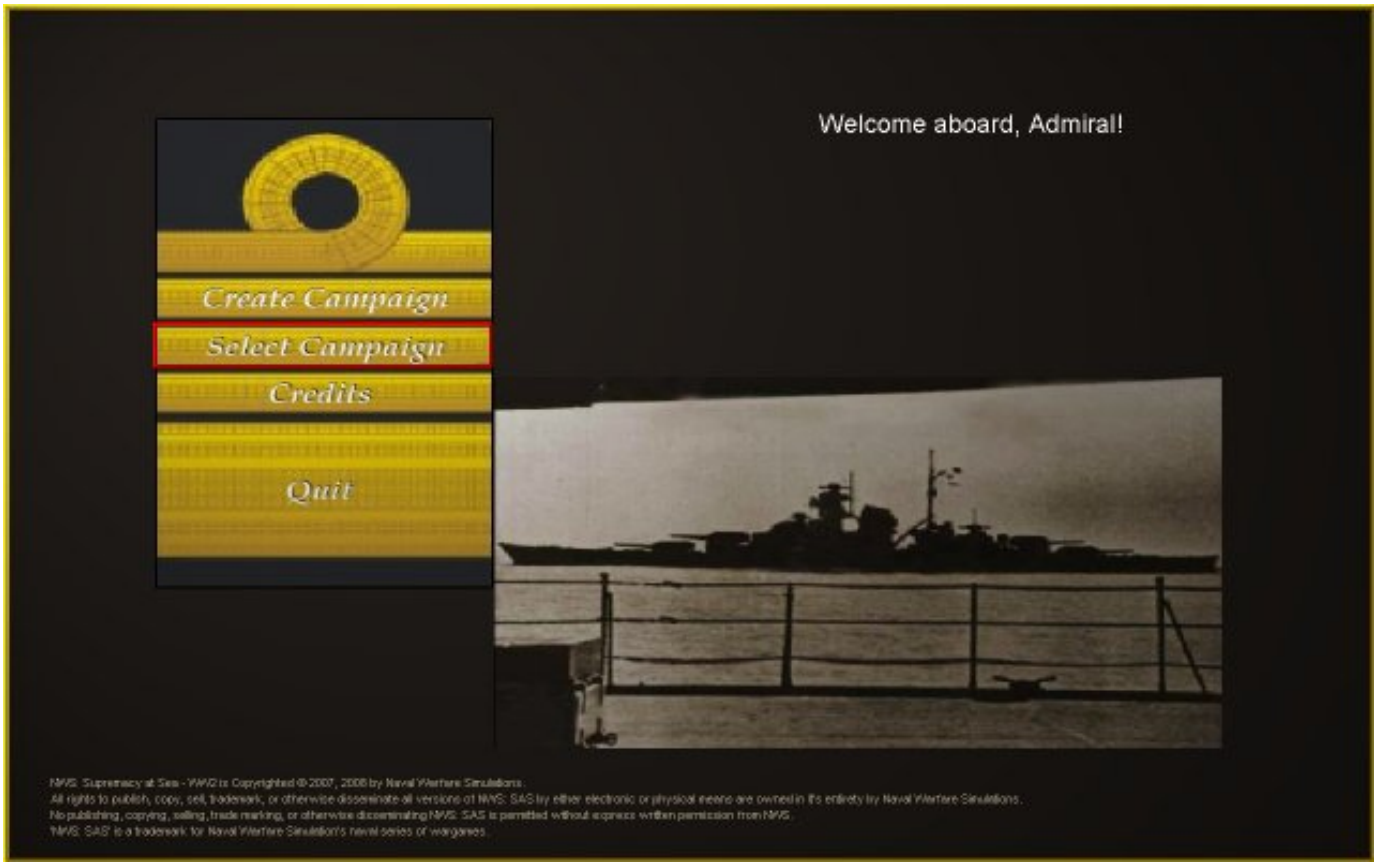
How to play a turn in 5 minutes

This overview guides you through playing a turn of the ***Intro*** campaign, which is a simplified, hypothetical Pacific scenario. In this scenario, a turn represents one month of real time.

This quick walk through will get you going in the minimum time. Many screens will be featured only cursorily. Later you can learn how to use the screen information and controls more thoroughly. Almost every screen has a '?' button, usually at the top-right side. Clicking this will bring up context help for that screen. You can use this feature during this walk through any time you want. But be aware that this will extend the time it will take to play the first turn.

You should be at the *Start Screen*:



Load the ***Intro*** campaign

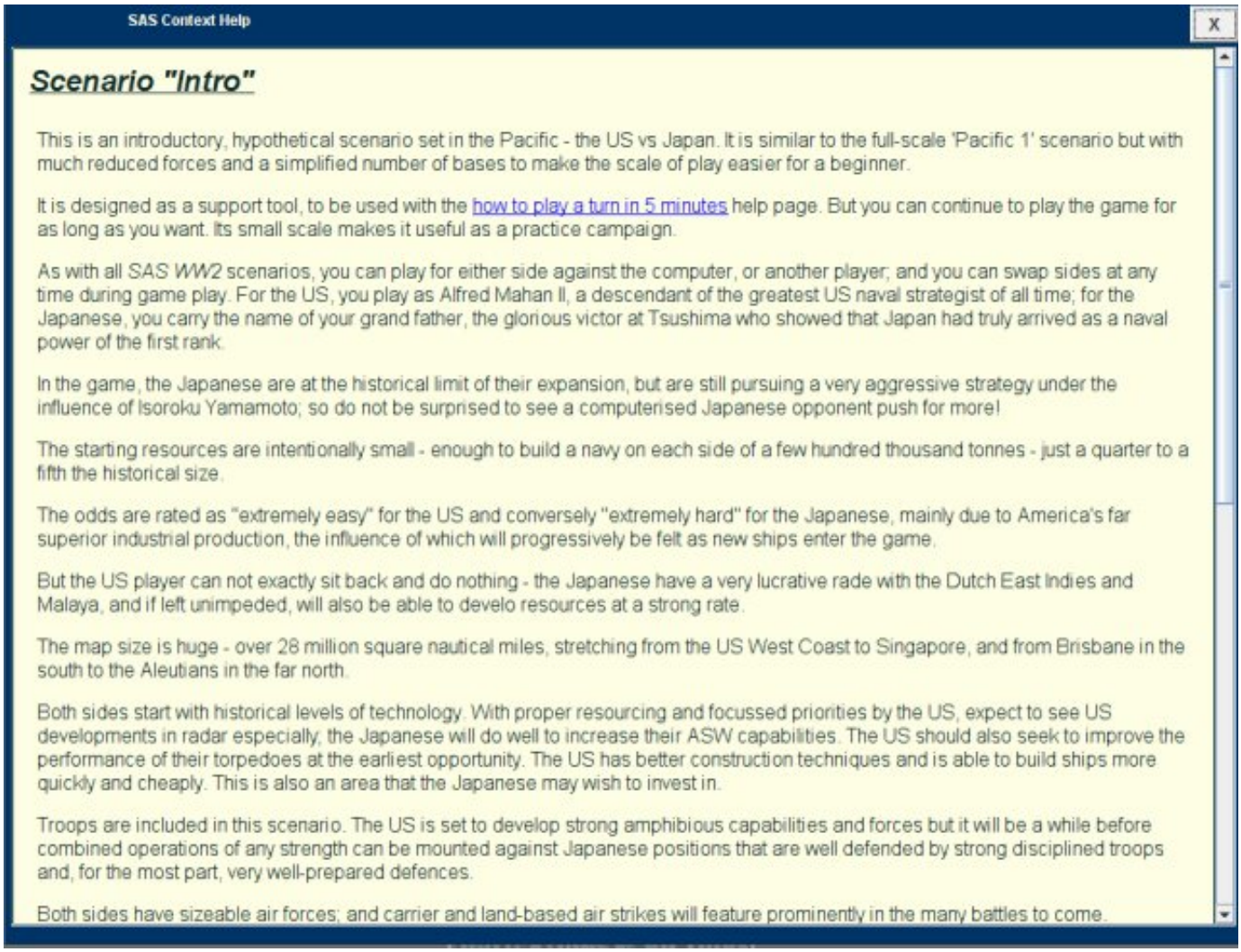
Move your mouse over the 'Select Campaign' option on the *Start Screen*. The option will now be bordered in red:

Click on the option. A new screen will now appear, where you select the campaign you want to play:

To select the *Intro* campaign:

- Click on 'Intro' in the top-left list, where it says *'1.Choose Game'*.

  You will now see a short description of the *Intro* campaign in a pop-up help page:



SAS Context Help

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Scenario "Intro"

This is an introductory, hypothetical scenario set in the Pacific - the US vs Japan. It is similar to the full-scale 'Pacific 1' scenario but with much reduced forces and a simplified number of bases to make the scale of play easier for a beginner.

It is designed as a support tool, to be used with the how to play a turn in 5 minutes help page. But you can continue to play the game for as long as you want. Its small scale makes it useful as a practice campaign.

As with all *SAS WW2* scenarios, you can play for either side against the computer, or another player; and you can swap sides at any time during game play. For the US, you play as Alfred Mahan II, a descendant of the greatest US naval strategist of all time; for the Japanese, you carry the name of your grand father, the glorious victor at Tsushima who showed that Japan had truly arrived as a naval power of the first rank.

In the game, the Japanese are at the historical limit of their expansion, but are still pursuing a very aggressive strategy under the influence of Isoroku Yamamoto; so do not be surprised to see a computerised Japanese opponent push for more!

The starting resources are intentionally small - enough to build a navy on each side of a few hundred thousand tonnes - just a quarter to a fifth the historical size.

The odds are rated as "extremely easy" for the US and conversely "extremely hard" for the Japanese, mainly due to America's far superior industrial production, the influence of which will progressively be felt as new ships enter the game.

But the US player can not exactly sit back and do nothing - the Japanese have a very lucrative rade with the Dutch East Indies and Malaya, and if left unimpeded, will also be able to develo resources at a strong rate.

The map size is huge - over 28 million square nautical miles, stretching from the US West Coast to Singapore, and from Brisbane in the south to the Aleutians in the far north.

Both sides start with historical levels of technology. With proper resourcing and focussed priorities by the US, expect to see US developments in radar especially; the Japanese will do well to increase their ASW capabilities. The US should also seek to improve the performance of their torpedoes at the earliest opportunity. The US has better construction techniques and is able to build ships more quickly and cheaply. This is also an area that the Japanese may wish to invest in.

Troops are included in this scenario. The US is set to develop strong amphibious capabilities and forces but it will be a while before combined operations of any strength can be mounted against Japanese positions that are well defended by strong disciplined troops and, for the most part, very well-prepared defences.

Both sides have sizeable air forces; and carrier and land-based air strikes will feature prominently in the many battles to come.

After reading the page, close it by clicking on the 'X' button at the top right of the screen:

- Click on 'United States' in the middle list where it says *'2. Choose Side'*. This selects the United States as the side to play for in this introductory walk-through.
- Click the 'Continue Game' button at the bottom-right of the screen, where it says *'3. Load File'*:

(Use of the separate 'Re-start Game from beginning' option is explained in how to load a game).

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You are now in your *Admiral's Office*, ready to start the game for the United States. Your *Admiral's Office* is your command centre for giving orders and reviewing information:

Playing one turn of the game involves doing four things in sequence. This help page sequentially takes you through all of them:

1. Reviewing your current situation
2. Building new resources: infrastructure, ships and - if these are enabled for the current campaign - aircraft and troops
3. Deploying your ships, aircraft and any troops being transported, using operational orders that include rules of engagement for your fleets
4. Running the turn and, while the turn is being played out, optionally intervening with hour-by-hour tactical responses.

Reviewing your current situation

There are three kinds of information available to you:

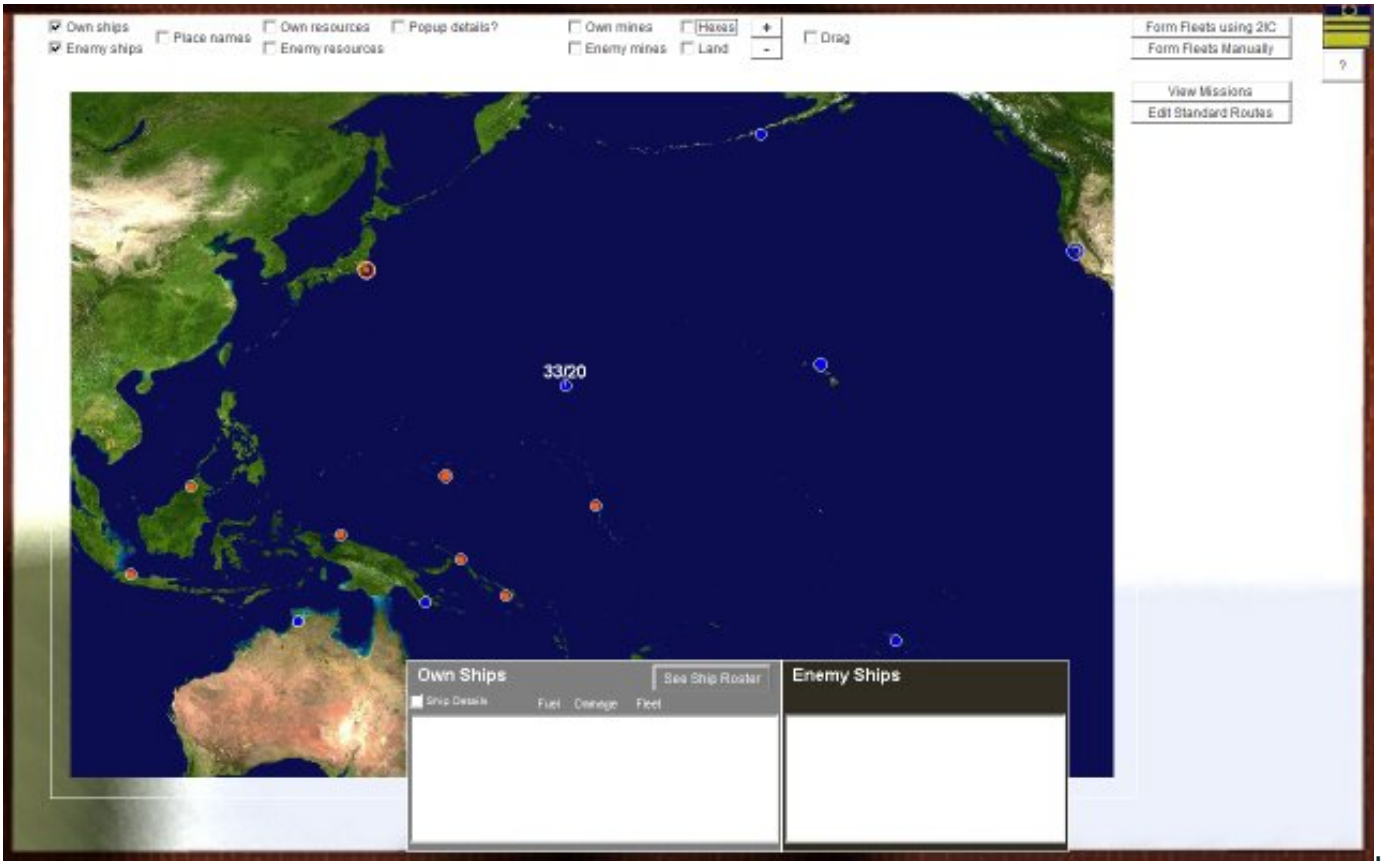
- Information on the Theatre Map.
- Information in the Briefing Report.
- Information in the Turn Replay.

For this 5 minute walk-through you will learn how to access this information. Later you can learn

how to make use of it.

Theatre Map

To access the Theatre Map, click on the big wall map on the wall of your Admiral's Office. The map will expand to full screen size. It should look like this:



The map shows the geographic location and status of your own fleets and and known enemy fleets and ships, as well as your own and enemy troop and aircraft strengths. You can also see your own minefields and suspected enemy minefields. And you can link to detailed information about the current orders for all of your fleets.

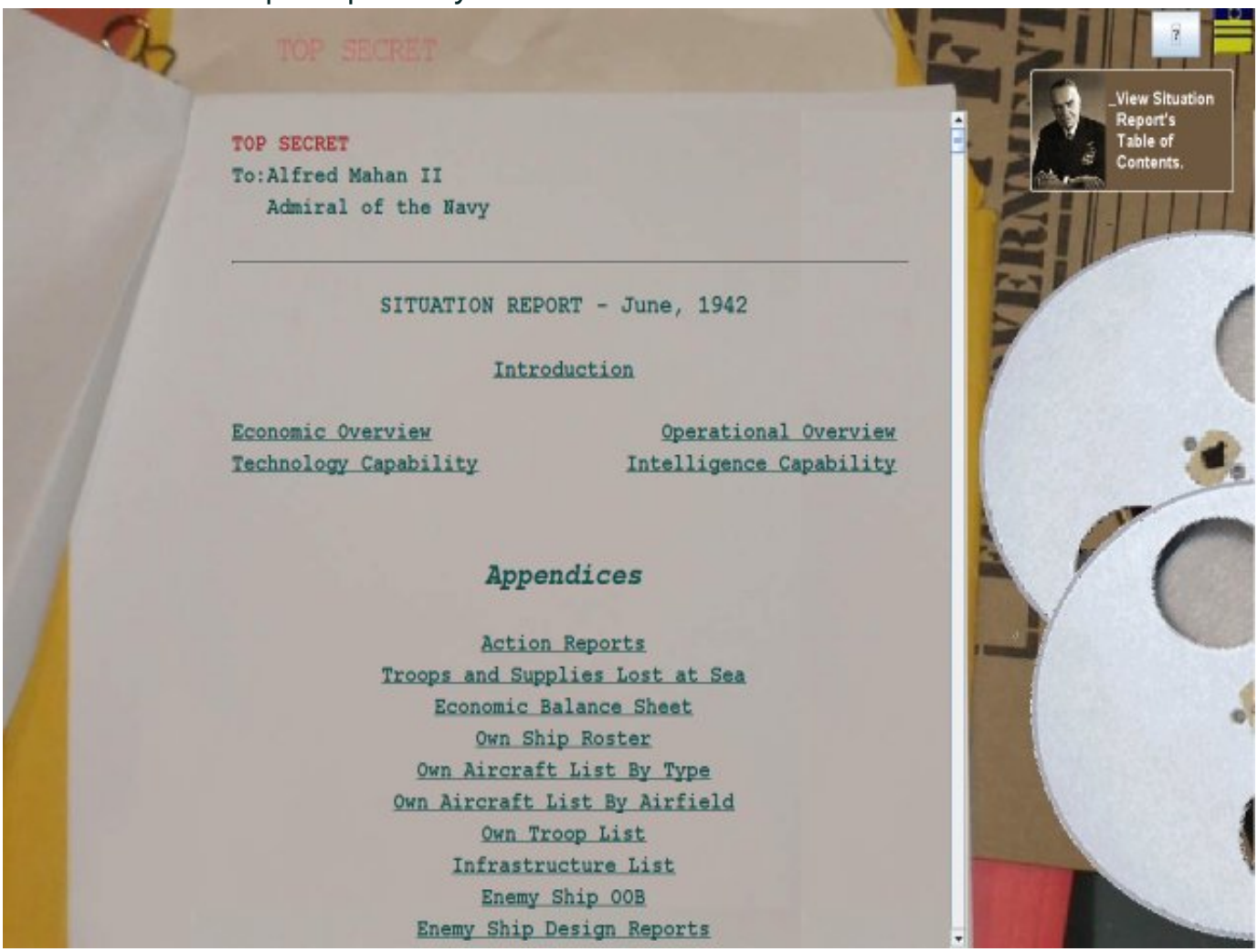
The map includes controls for enabling or disabling the display of various kinds of information.

Close the map by clicking on the top-right *SAS WW2* icon  .

Briefing Report

To access the Briefing Report, click on 'Briefings' on the blackboard to the left of your Admiral's Office:

You will see the report open on your desk. It will look like this:



Except for the first turn, the report gives an overview of action from the last turn with links to any battles and summary information on losses of ships, troops and aircraft and a detailed economic balance sheet. Enemy intelligence is also summarised - their technology, current order of battle for their navy, and intel on their ship characteristics. Details of all your own resources - ships, troops, aircraft and infrastructure at your ports and airfields is also provided.

You can jump to sections in the report using the links on the first page table of contents; and you can also just scroll through the report.

Turn Replay

The turn replay is not available at the start of the game. You will see the replay later on in this help guide.

Close the *Briefing Report screen* by clicking on the *SAS WW2* icon  at the top-right of the screen. This returns you to the *Admiral's Office*.

Building resources

You can now add to your ships, aircraft, troops and infrastructure by building more.

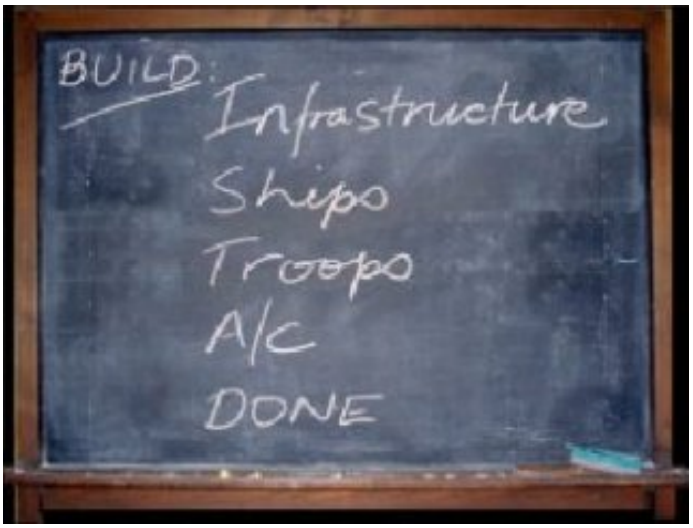
Automated help is available for all these tasks, so it takes a few seconds only to do all of this if you use the help to the maximum extent.

The recommended order of play is to build in this order:

- Build infrastructure.
- Build ships.
- Build troops.
- Build aircraft.

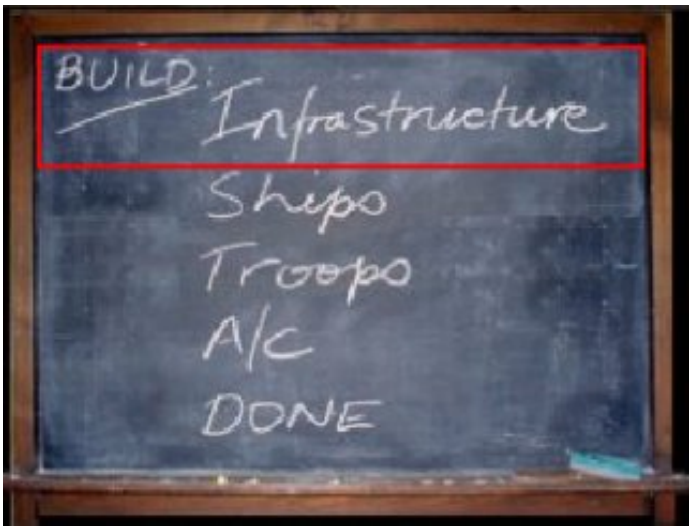
Click 'Build' on the top-left blackboard:

You will now see the *Build Menu* on the blackboard:

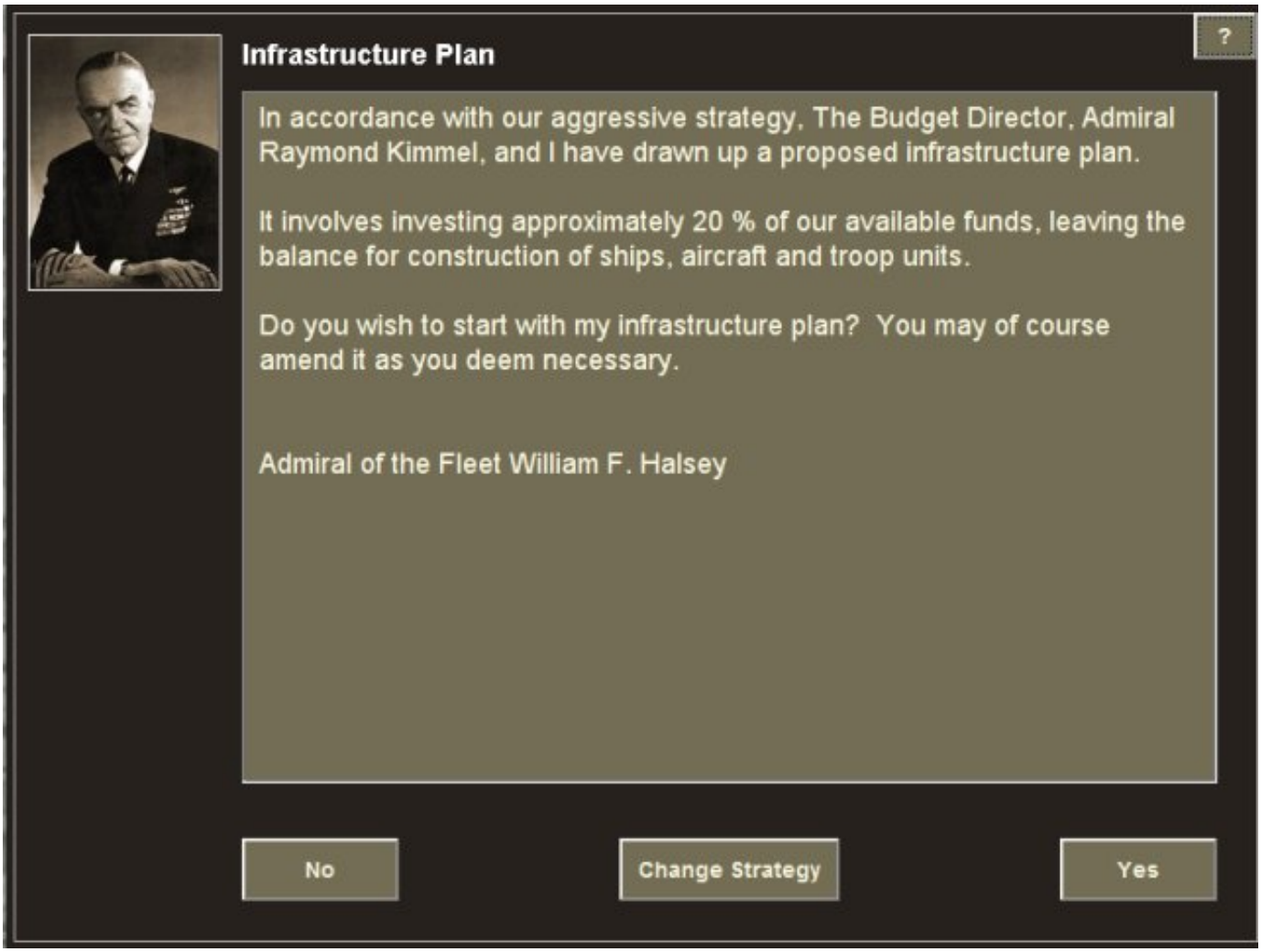


Build infrastructure

Click 'Infrastructure' on the blackboard menu:



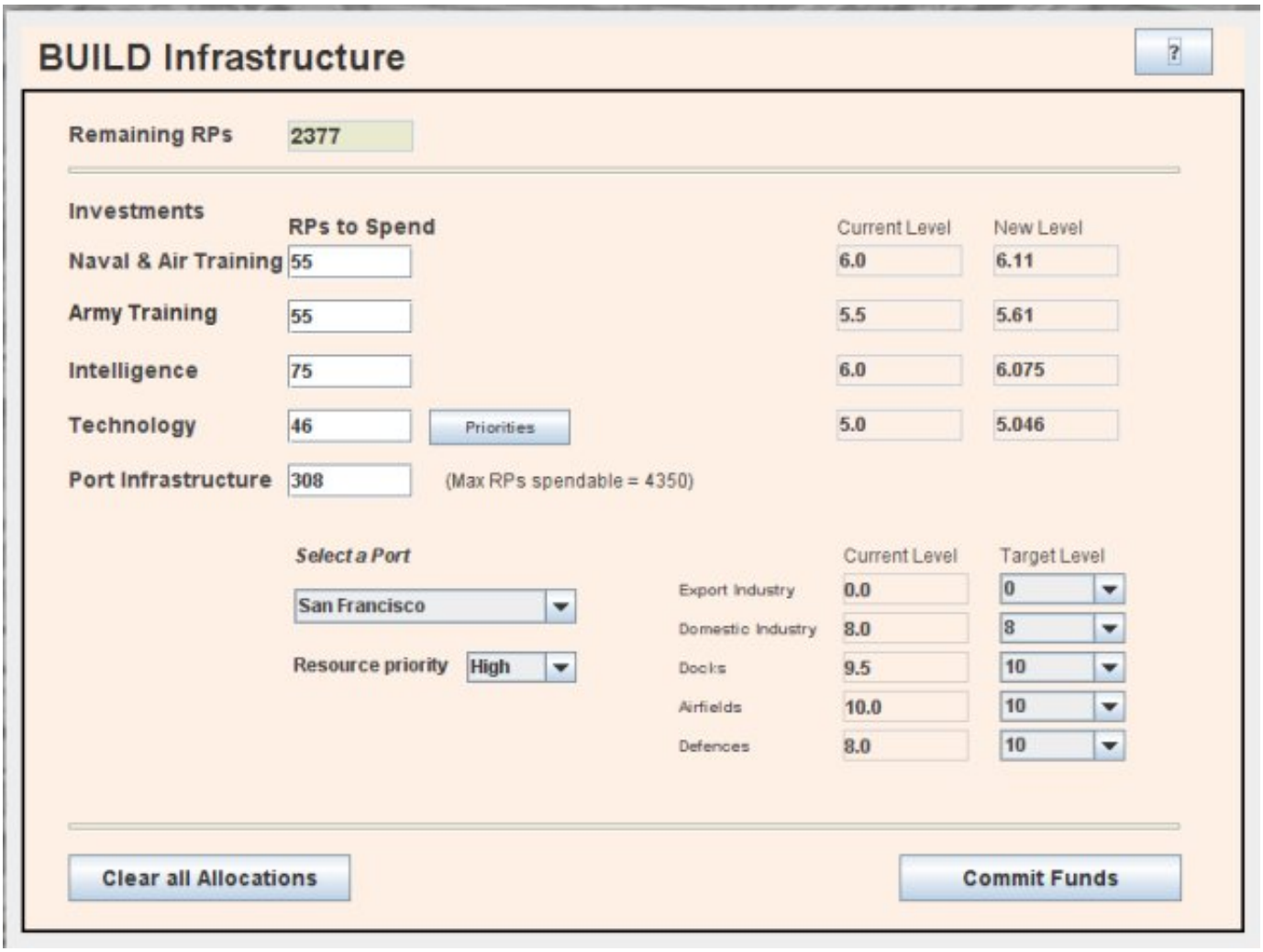
You will now see this screen:



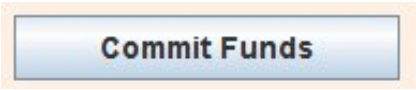
Infrastructure means the facilities at each of your ports - dockyards, defences and surrounding airfields as well as the level of industrial development servicing the port. It also includes your training facilities and levels of technology R&D and enemy intelligence.

Your 2IC has planned how many resource points (RPs) to spend on infrastructure, and where to spend them - based on your current 'aggressive' strategy. To see the plan, click the 'Yes' button at the bottom-right of the screen: 

The details of the plan will appear:



You can use this screen to edit any aspect of the plan; but for now, just accept it without amendment by clicking the bottom-right 'Commit Funds' button to lock in the plan:



You will be returned to your *Admiral's Office*. The phase of the turn related to building infrastructure is now complete.

Build ships

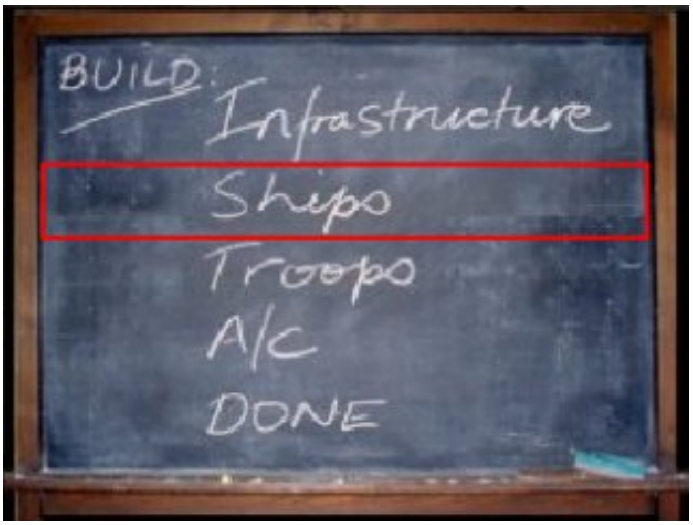
The *Intro* campaign starts with no ships on the US side so you must build them now. Ships built on the first turn then become available immediately (unless specifically delayed).

The simplest way to build a navy from scratch is to rely (again) on your 2IC. He can select the right types of ships and balance the numbers of battleships, cruisers, escort ships and so on, to suit your overall strategy.

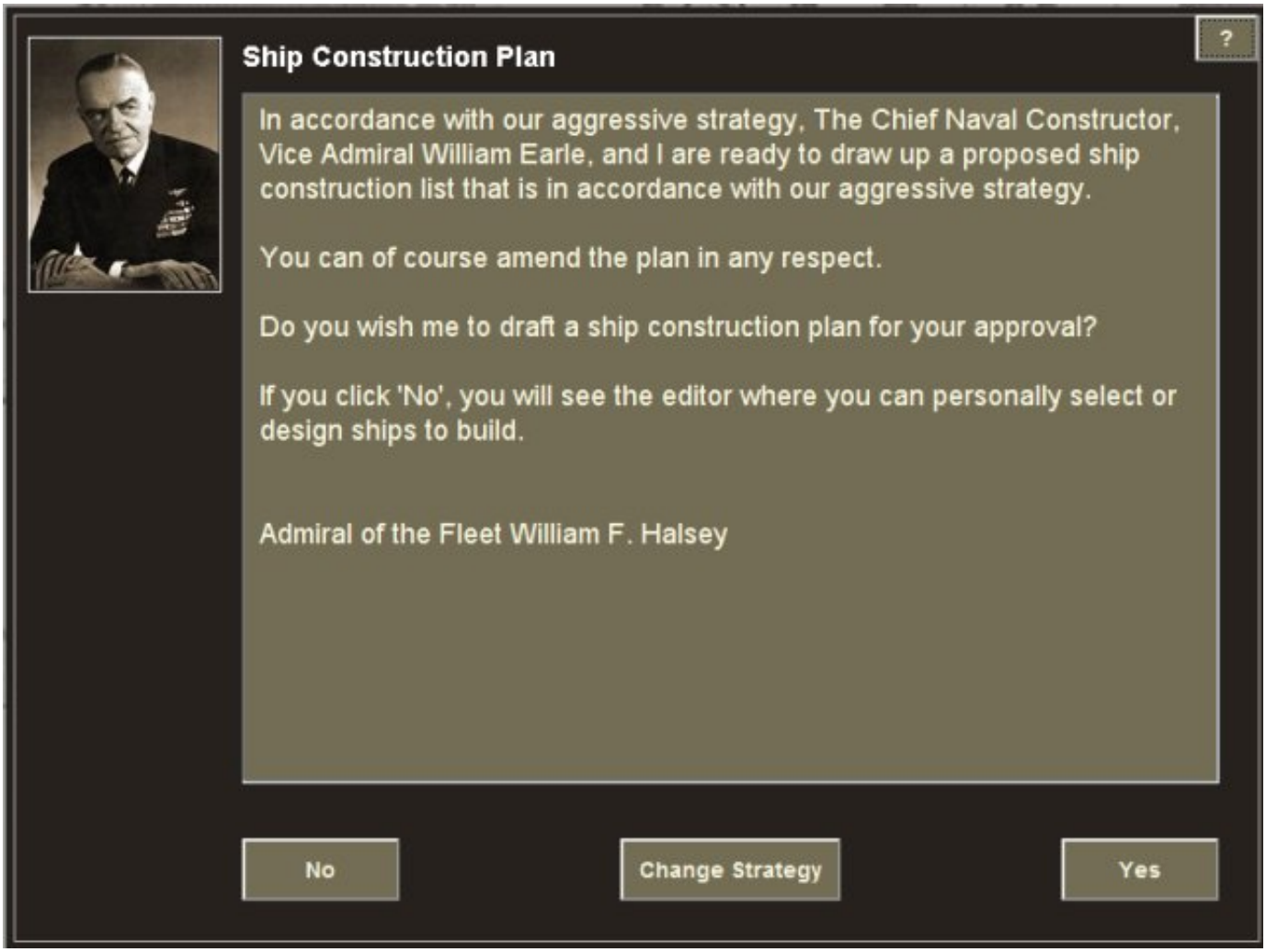
You can vary any part of his plan or do it all yourself and even design your own ships, but for now,

the simplest option will be followed.

Click 'Ships' on the blackboard menu:



You will now see this screen:

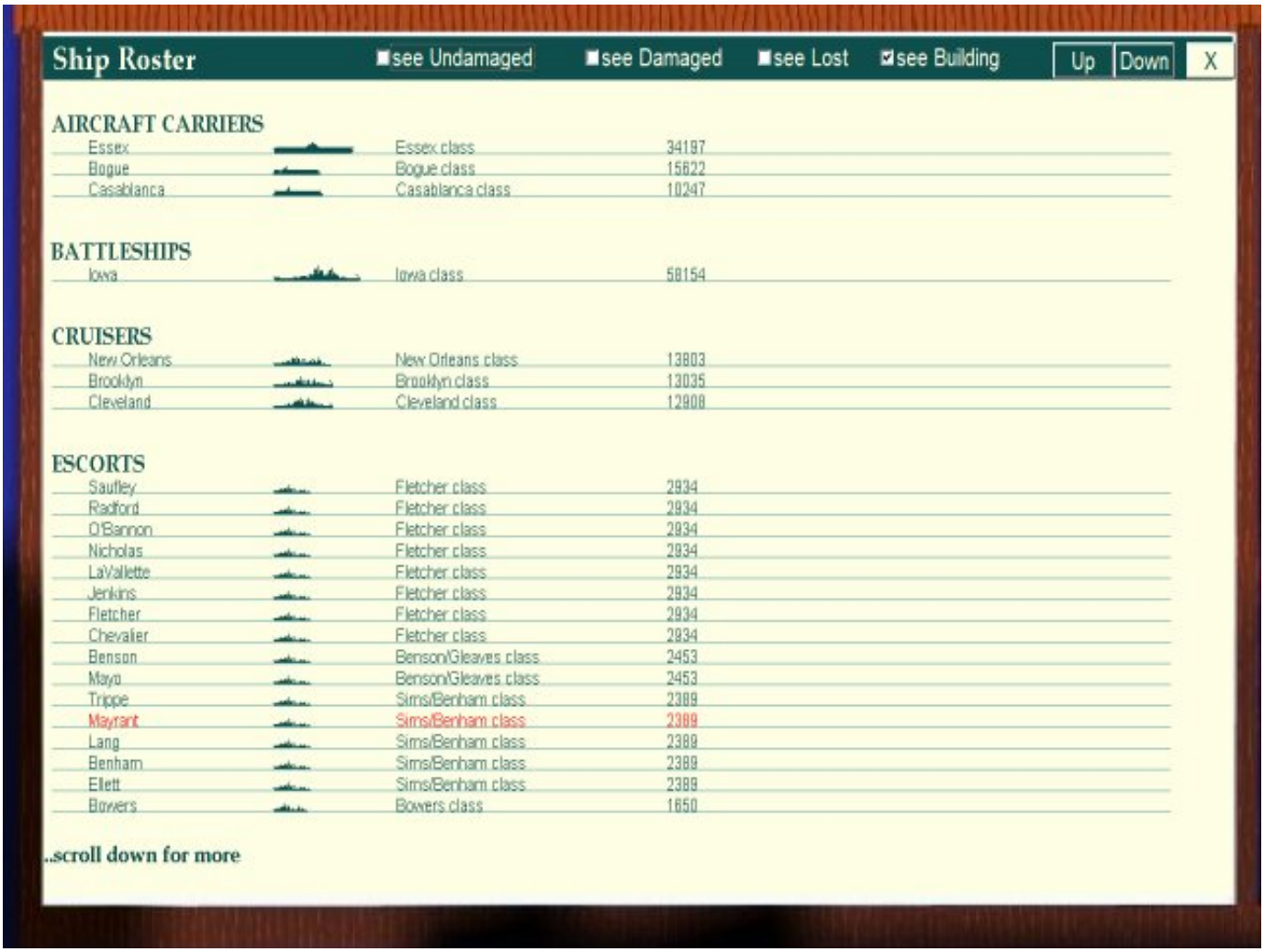


Click the 'Yes' button 

at the bottom-right of the screen to authorise the

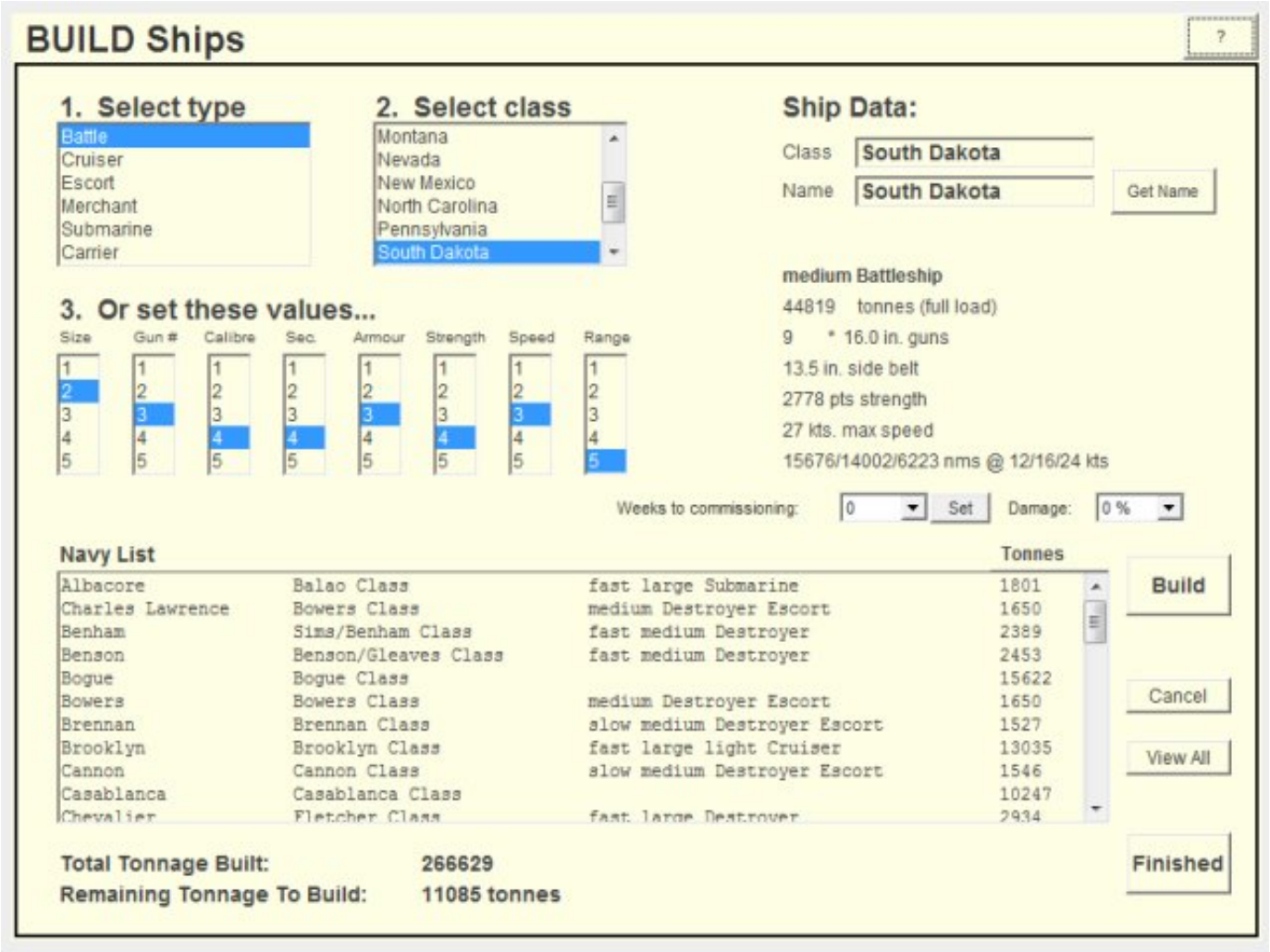
construction of a navy by your 2IC.

After a few seconds, you will see a scrollable list of the ships listed by type:



Close the screen by clicking the top-right 'X' button: 

. You will now see a screen where you can edit the plan by selecting or designing some of your own ships:



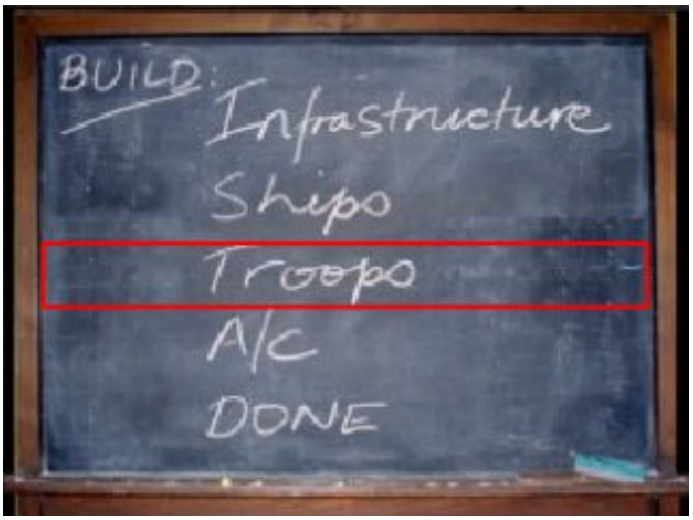
For this quick walk-through, no editing will be done. Just agree to the plan by clicking the 'Finished' button 

at the bottom-right of the screen. You will now be back in your *Admiral's Office*. The build ships phase of the turn is now complete.

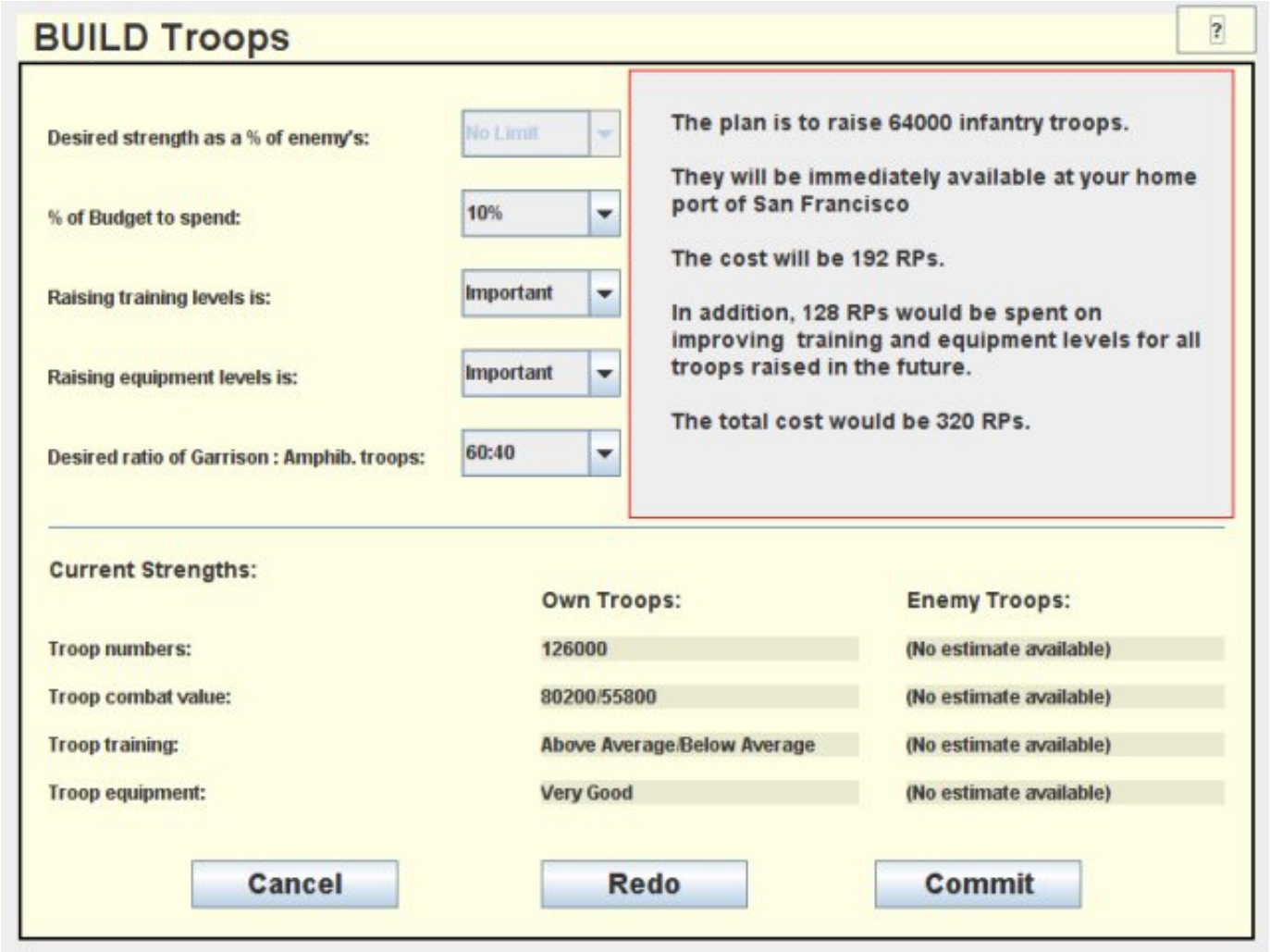
Build Troops

The *Intro* campaign starts with some troops on each side, but you can also raise some more. These always start at your home base.

Click 'Troops' on the blackboard menu:



You will then see this screen:

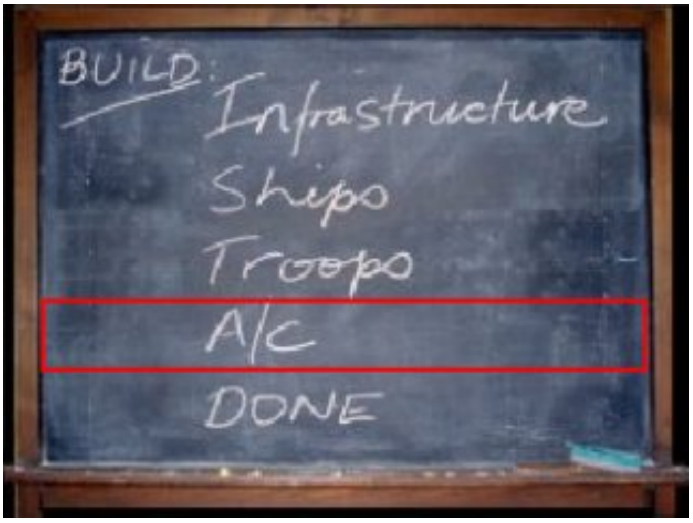


Again, your 2IC has prepared a plan based on your strategy and various specific attributes. Normally you may want to modify the plan, but for this quick run-through just agree to the plan by clicking the 'Commit' **Commit** button at the bottom-right of the screen. You will now be back in your *Admiral's Office*. The build troops phase of the turn is complete.

Build Aircraft

The *Intro* campaign starts with no aircraft yet available for your carriers and land-based airfields.

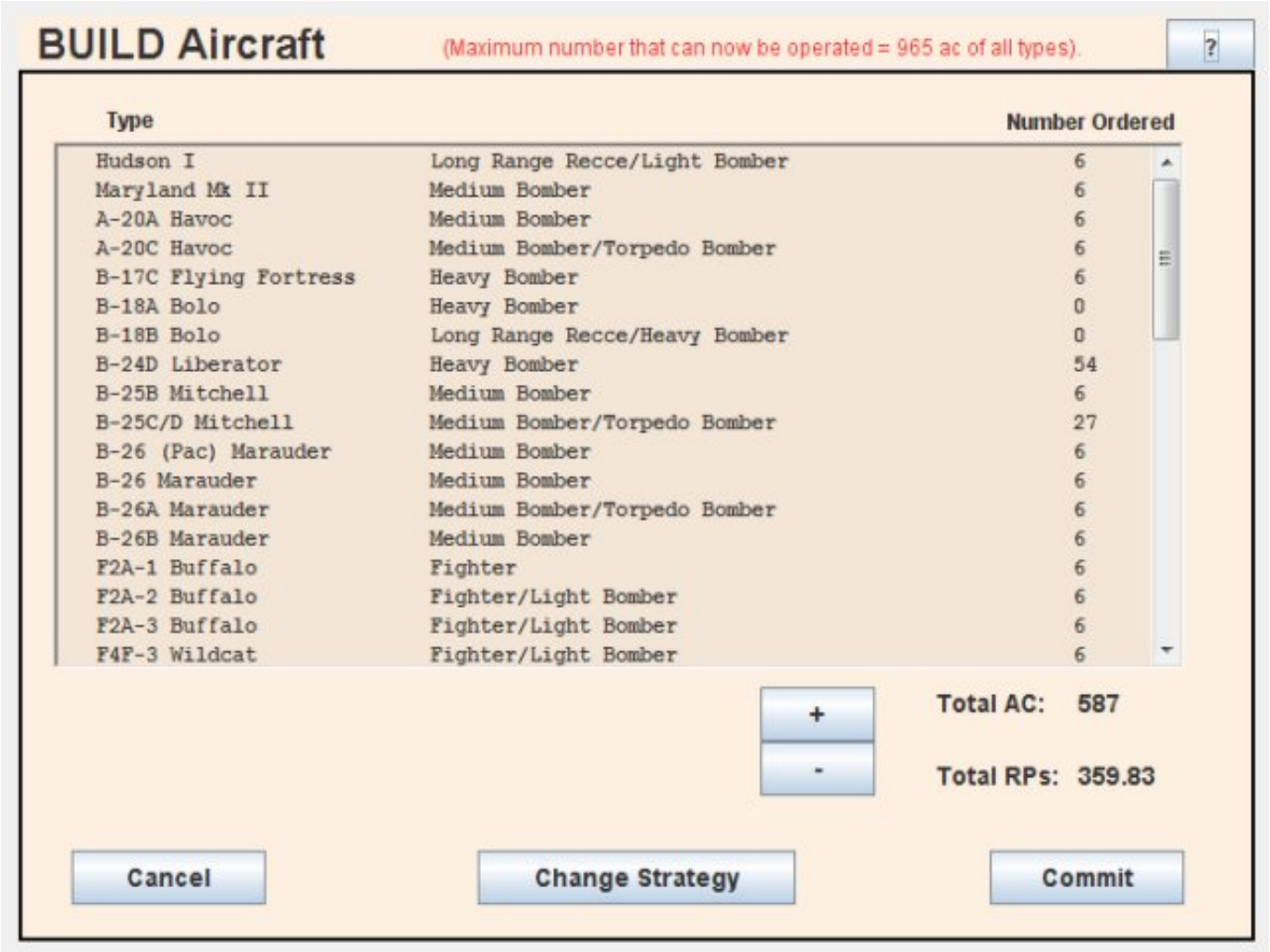
Click 'A/C' on the blackboard menu:



You will now see this screen:

Your 2IC is ready to plan the construction of new aircraft suited to your overall strategy. (For example, more aggressive strategies favour more bombers). You can change the strategy but for now, click the 'View' button 

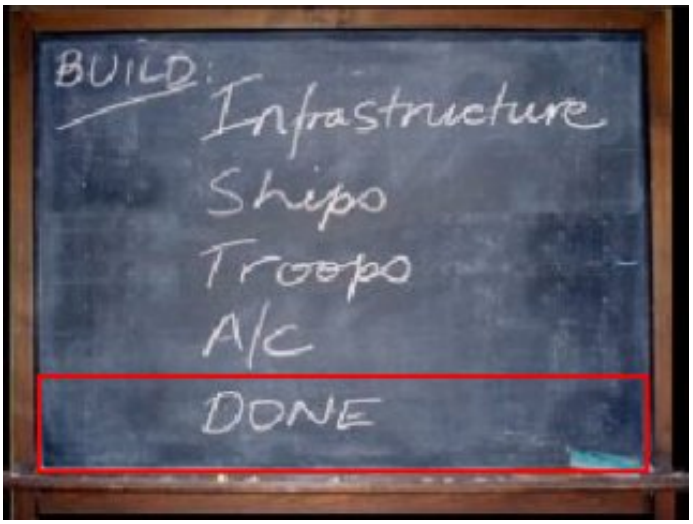
to see the plan:



You can amend the plan by prioritising or restricting certain aircraft or changing the resources spent on aircraft but for now, just accept the plan by clicking the 'Commit' button 

. You will now be back in your *Admiral's Office*. The build phase of the turn is now complete.

Now, click 'DONE' on the blackboard *Build Menu*:



This returns the blackboard menu to the main *To Do* menu:

From here, you can start your deployment tasks.

Deploying resources

Click 'Deploy' on the blackboard *To Do* menu:

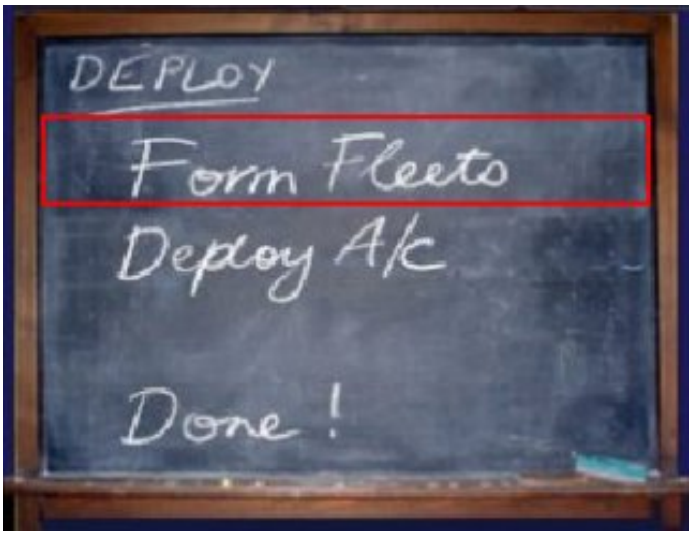
You will now see the *Deploy menu*:

Deploy fleets

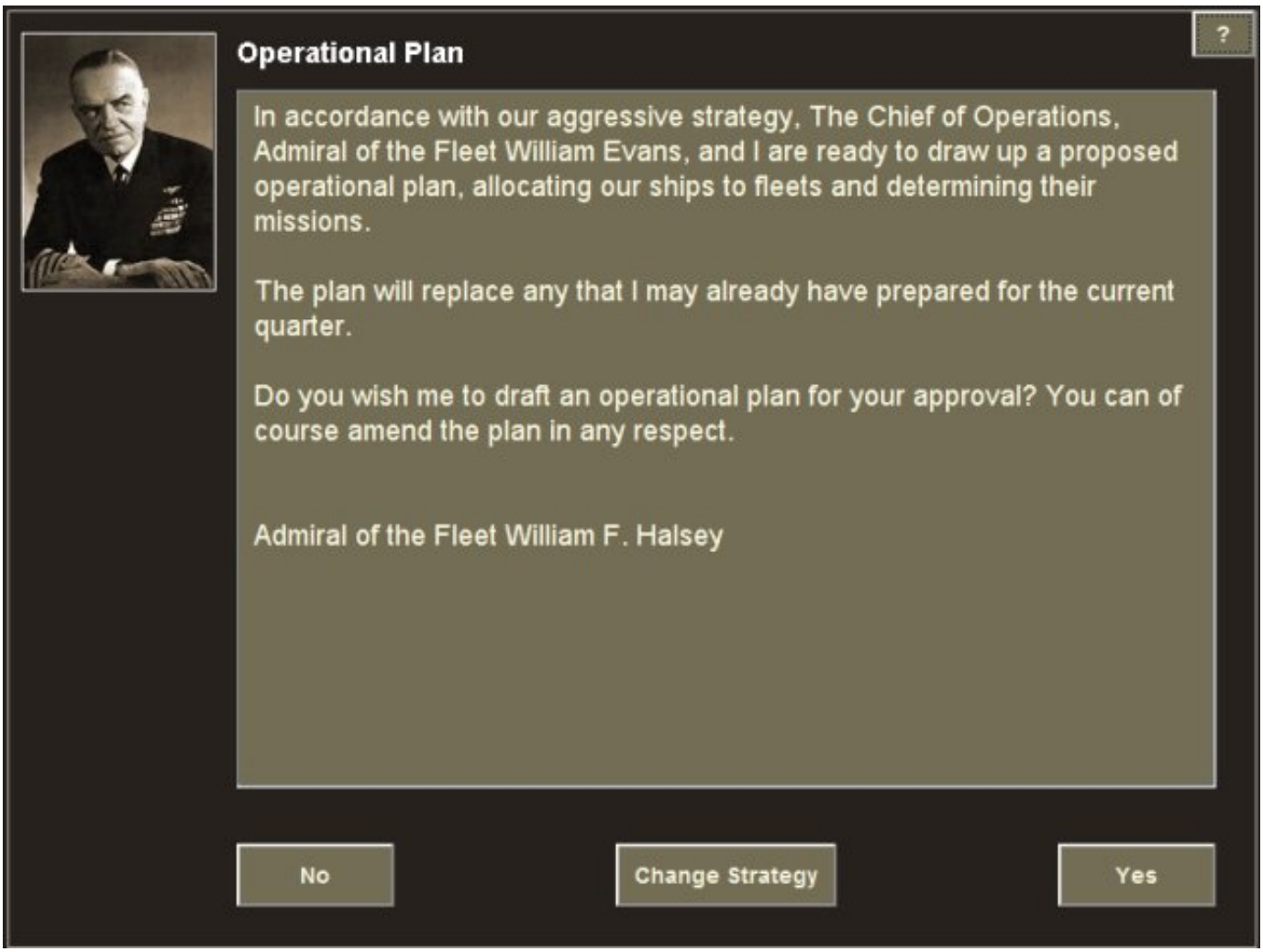
SAS WW2 gives you complete flexibility to choose the degree of control you want over this most important task. At the most extreme end, you can manually assign ships to fleets and set the route, rules of engagement and other orders for each fleet. At the most simple end, you can get your 2IC to plan everything for you with one mouse click. And there are many intermediate control options as well.

For this simple guide, you will use your 2IC to plan everything.

Click 'Form Fleets' on the blackboard:



You will now see this screen:



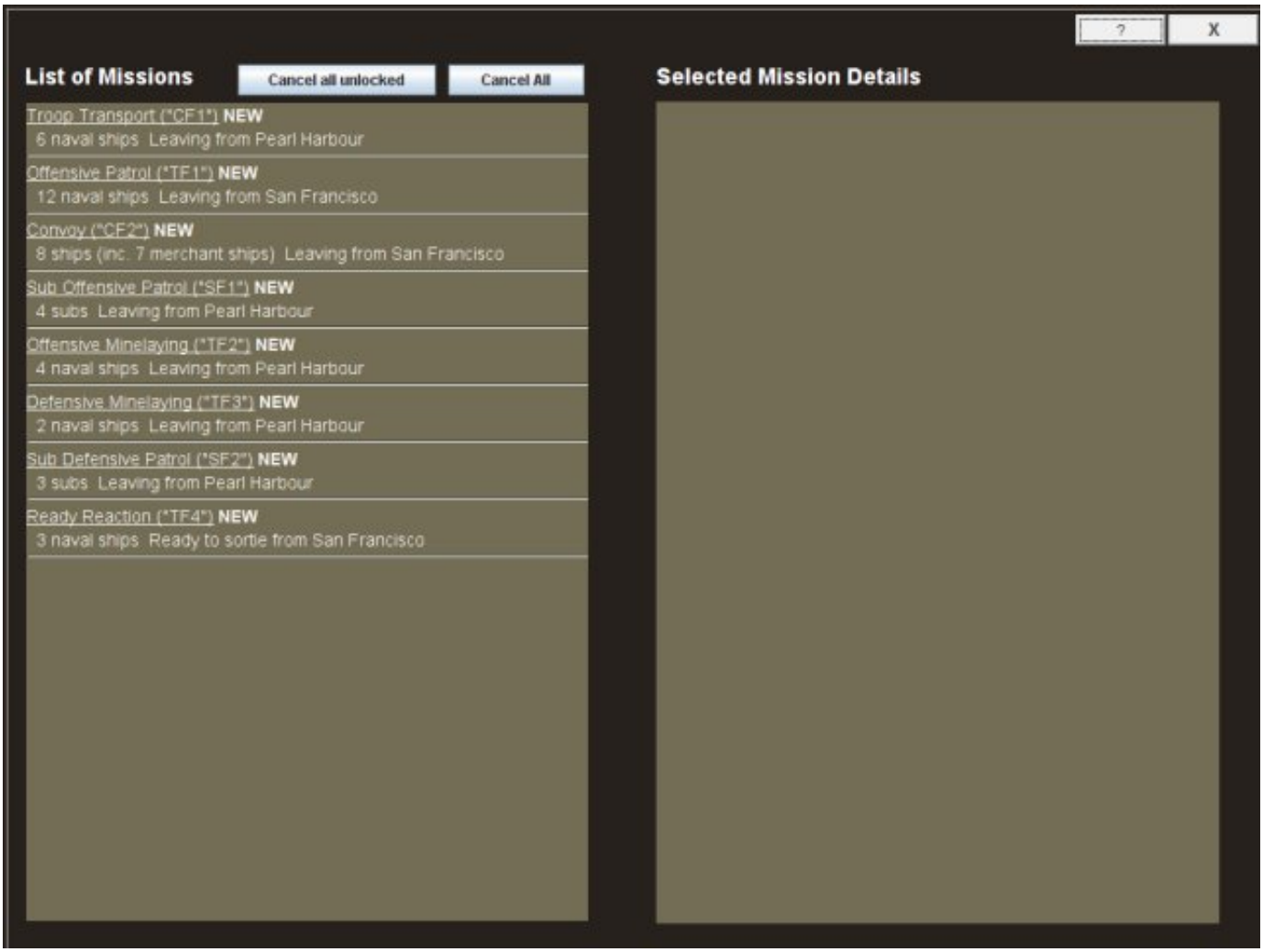
Your 2IC is ready to plan missions for your ships based on your strategy - from cautious patrols and convoys through to more aggressive bombardments, blockades and amphibious assaults. There are fourteen possible mission types. For each mission, the 2IC finds the best target hexes and the most suitable ships and sets up each mission if enough of the right ships can be found.

To authorise your 2IC to prepare the plan, click the 'Yes' button: 

.

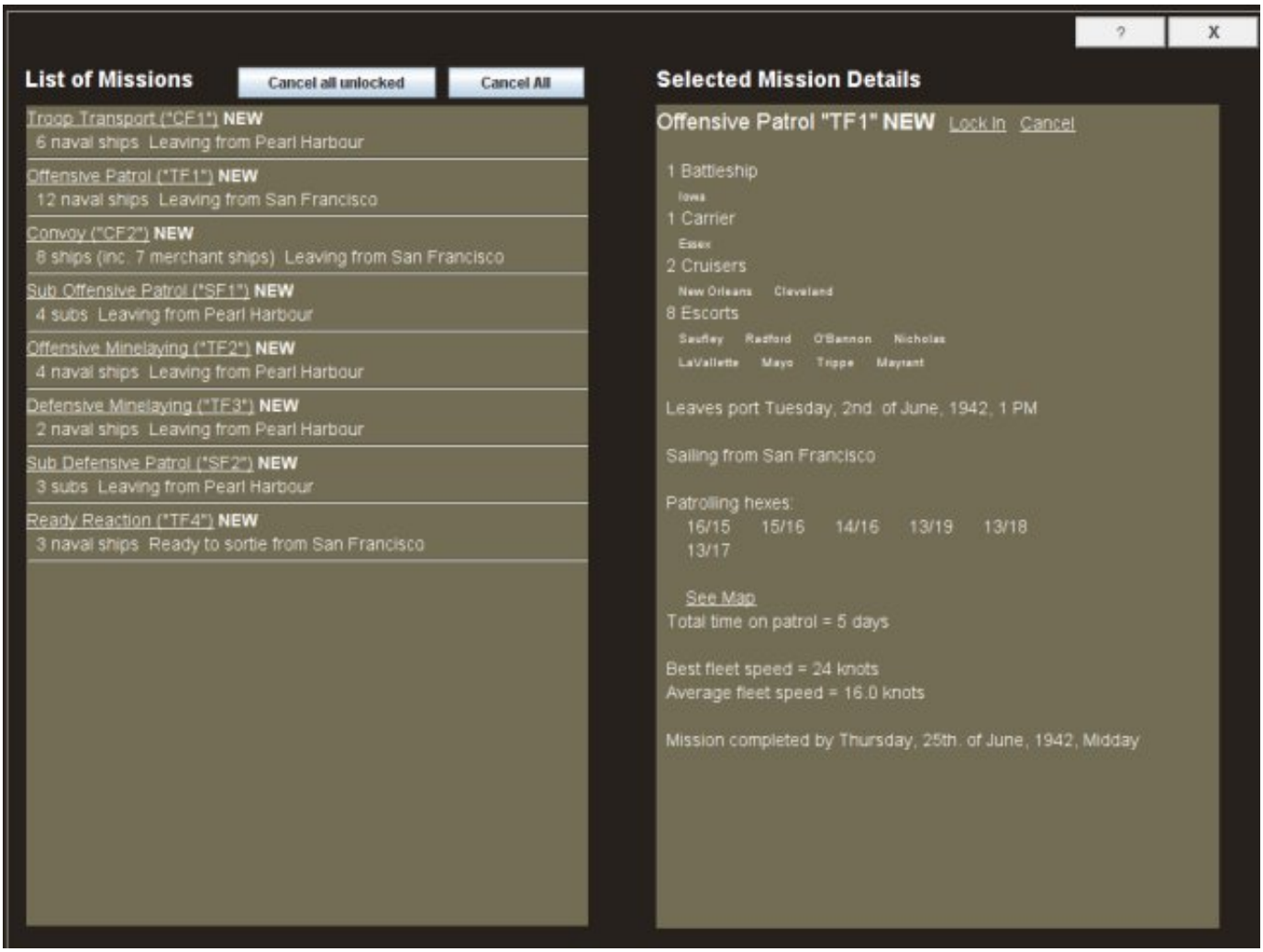
It may take a little time for your 2IC to plan all the missions, as there are many factors to consider. During this time, a progress bar and text message updates you on what is happening:

When the plan is complete, details of the planned missions will be listed:

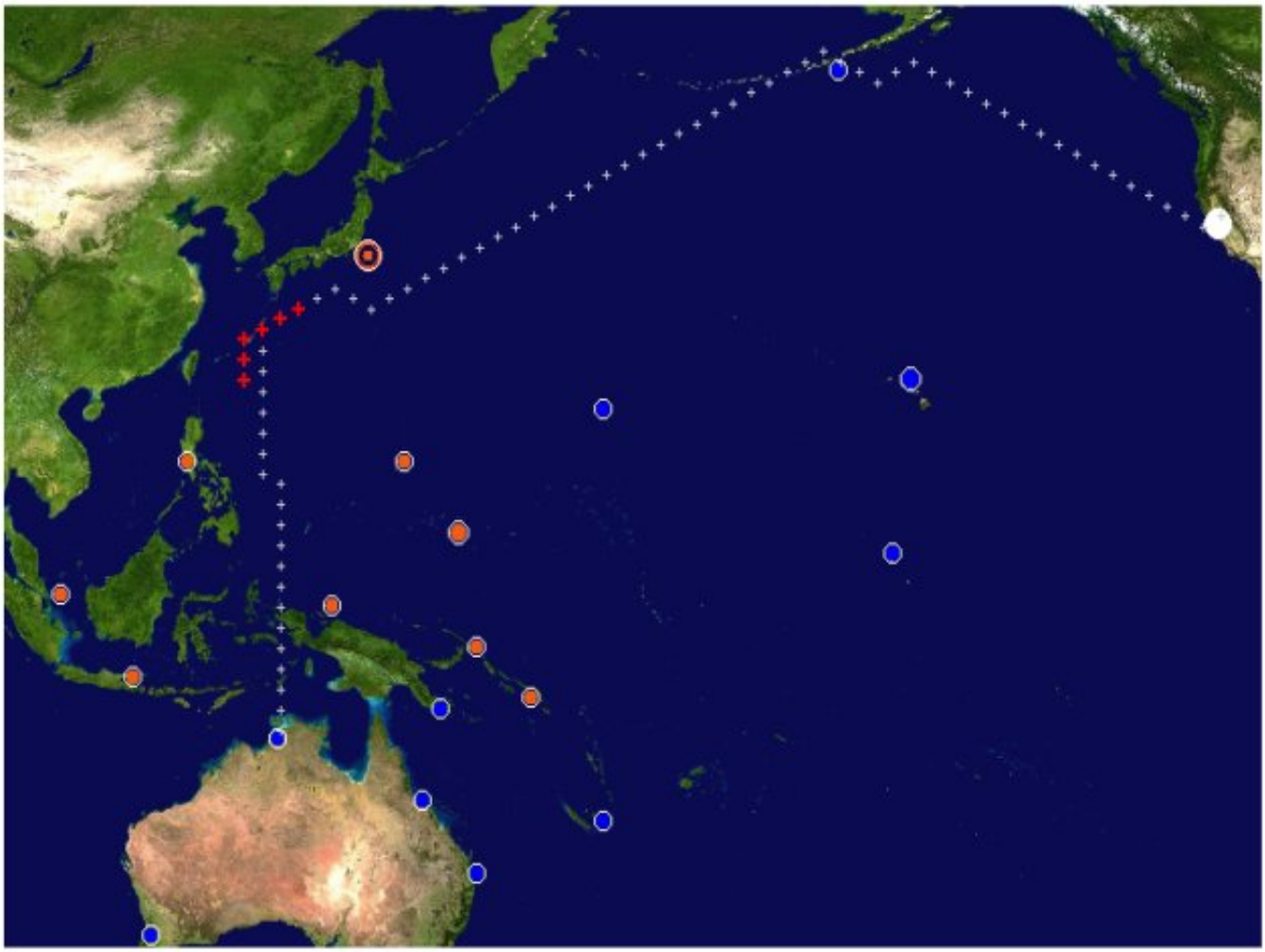


You can view the details of any of the missions, cancel any and try again, but for now, just note that that you have some convoy and troop transport missions, some offensive patrols by surface ships and subs, and some minelaying missions. The remainder of your ships are placed in 'Ready Reaction' fleets - available to steam out at short notice to intercept enemy that come close enough.

You can view the route any mission will take, and other mission details, by clicking on it in the left-hand list. Details of the selected mission now appear on the right. The illustration here shows details for the 'Offensive Patrol' by fleet 'TF1':



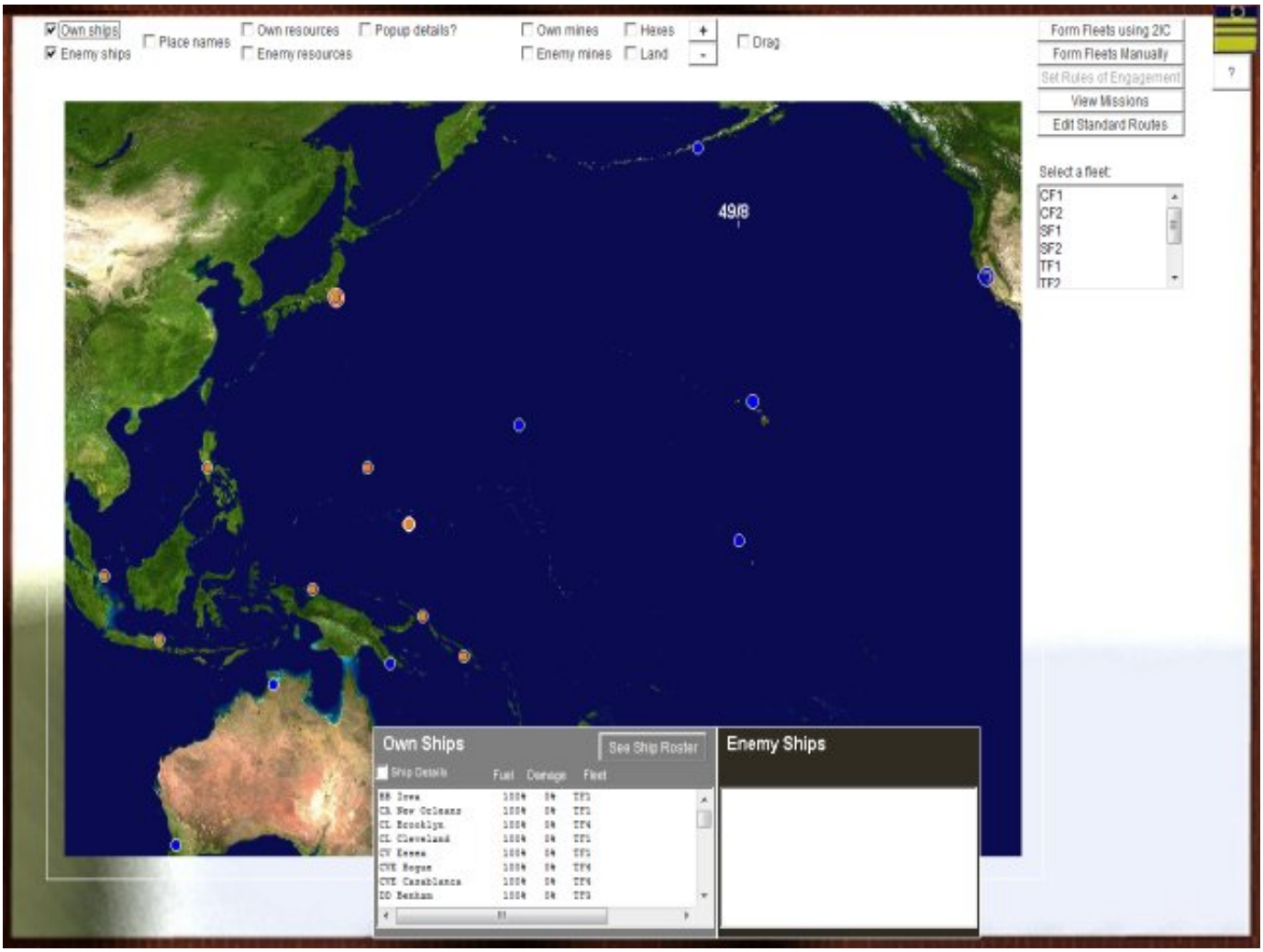
To view the proposed route on the map, click the See Map link in the details page. You will see the route marked as a series of white crosses, with the actual objective hexes for the mission marked as red crosses:



Close the map by clicking anywhere on it.

Now close the List of Missions list by clicking on the top-right 'X' button: 

The *Theatre Map* is now displayed, and the fleets involved in the missions are shown in a list on the right-side of the map:

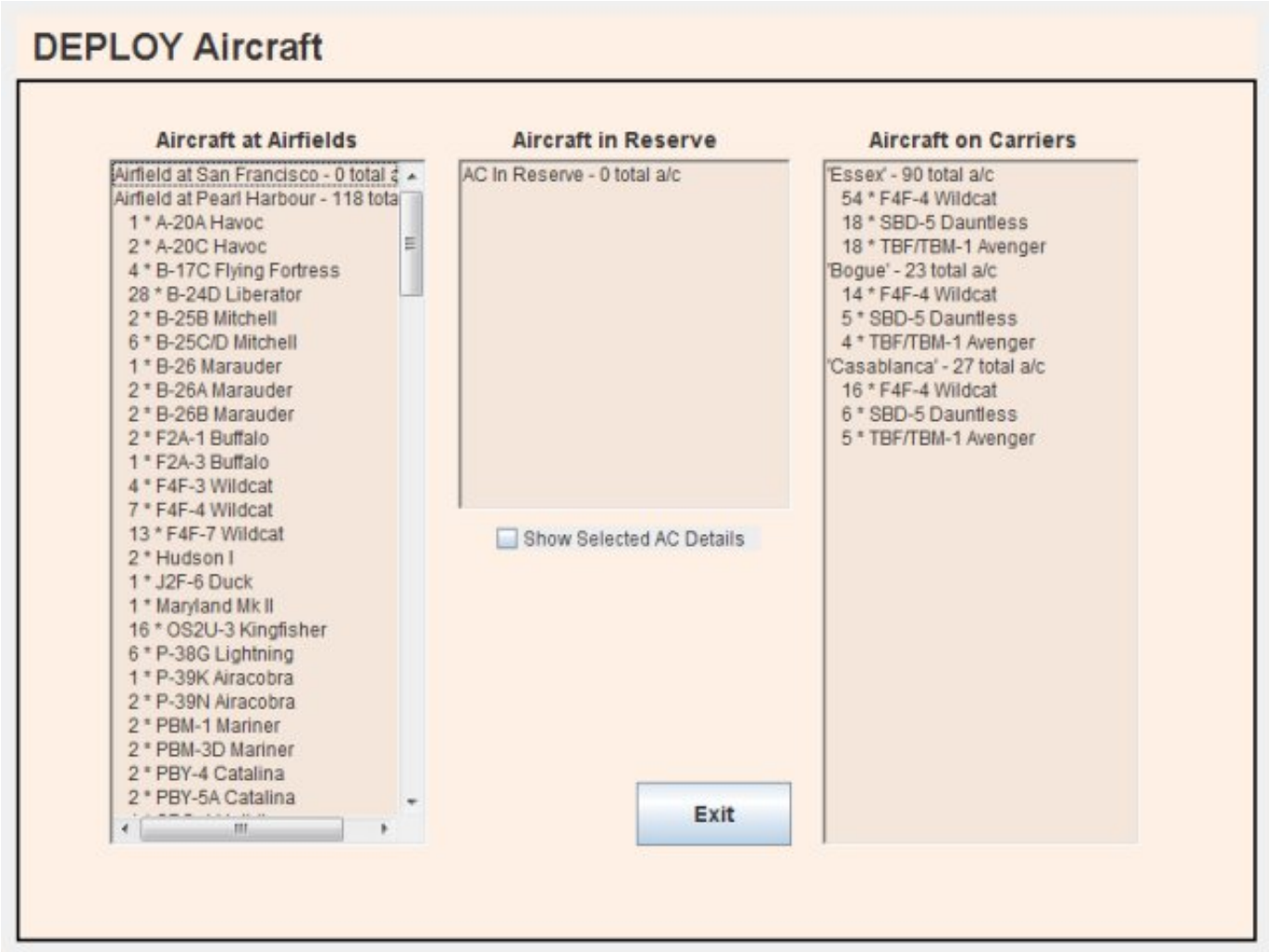


You can select any fleet and see more details of the route path and so on; but for this walk-through, just click the top-right SASWW2 icon to close the map and return to your *Admiral's Office*. You have now completed the task of deploying your fleets (including the transport of any troops to your own ports or to enemy ports to assault them).

Deploy A/C

Your last task before running the turn is to deploy aircraft to your carriers and airfields.

Click on 'Deploy A/C' on the blackboard *Deploy Menu*. You will see this screen:



Your 2IC has already planned the deployment of all available aircraft based on the type and number of aircraft you have, and the type and number that can be operated from each of your airfields and carriers.

You can change any of these decisions if you want, but for now, just click the 'Exit' button to agree to the plan: 

. This returns you to your *Admiral's Office*. Your deployment tasks for the turn are now finished.

So, click 'DONE' on the blackboard *Deploy Menu*:

This returns the blackboard menu to the main *To Do* list, where in a moment you will be choosing to run the turn:

Running the turn and making tactical responses

Now that you have finished your build and deploy tasks, you are ready to run the turn.

When you run the turn the computer first calculates all enemy build and deploy orders (if the enemy side is computer-controlled). Then the computer puts your orders together with your enemy's and calculates all the action hour-by-hour.

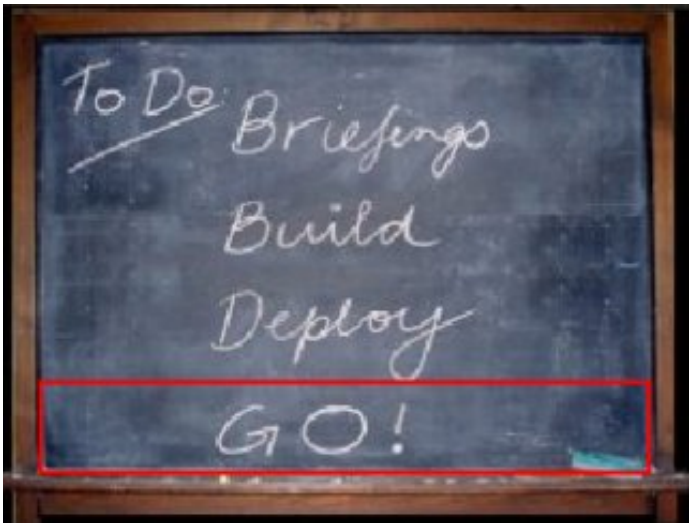
The calculation includes the very important task of making emergency responses for both sides. Your fleet deployments (and those of the enemy) were made by planning several weeks ahead; but the best laid plans always need minor or major modifications in the face of reality! The enemy may suddenly appear where he wasn't expected. New threats and opportunities arise all the time.

And your fleets may be unable to complete their assigned mission due to damage.

As the calculation progresses you can selectively override the computer's recommended emergency hourly responses for any of your fleets, airfields and airstrikes. But for this walk-through we will keep things simple.

Access the ***Run Turn Screen***

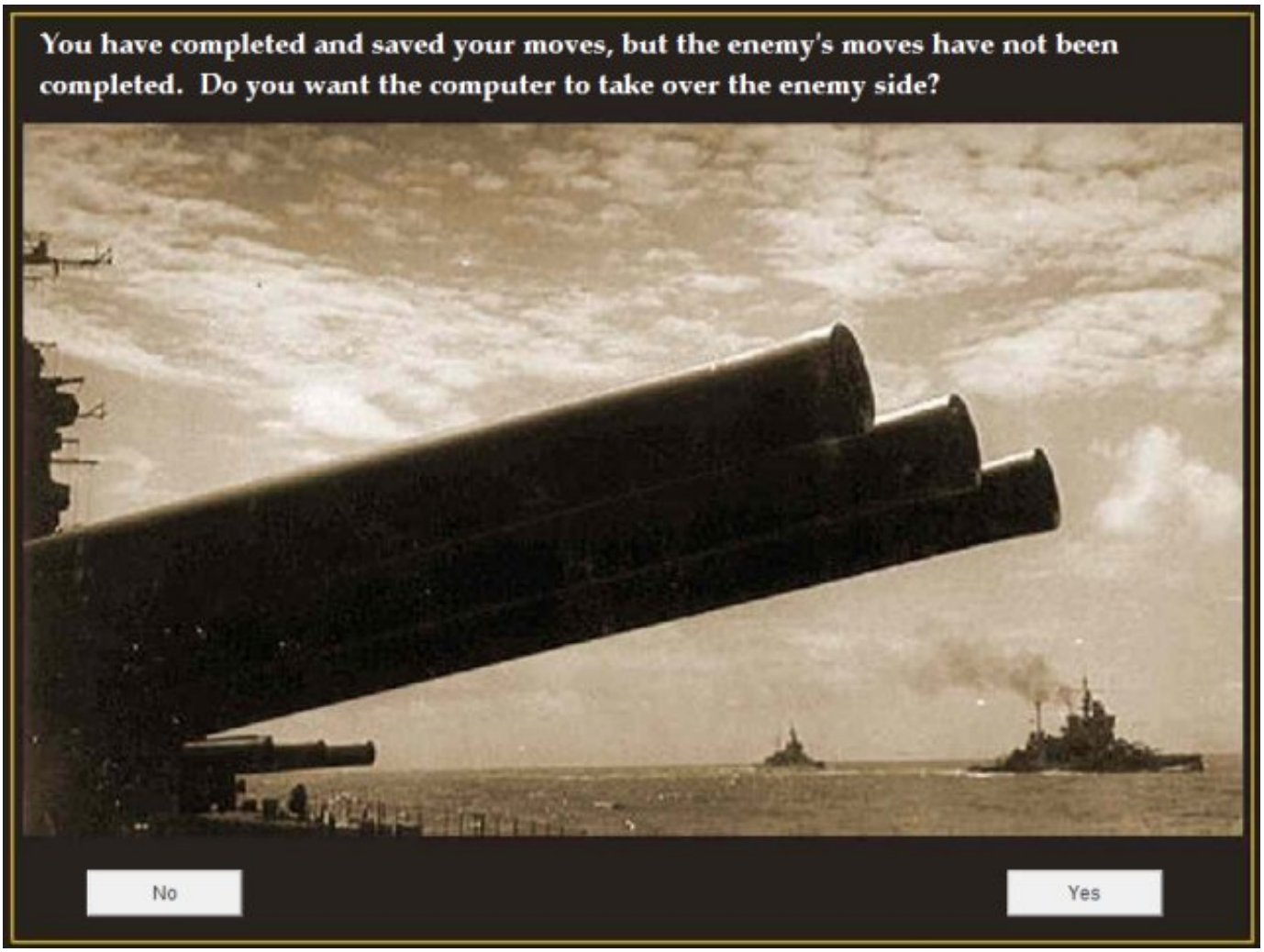
On the main *To Do* list, click 'GO!':



You will now be asked to confirm that you are ready to run the turn:

Click the 'OK' button at the bottom-right of the screen.

In the *Intro* campaign, the enemy's first turn moves have not yet been done. You will now see a screen that asks you if you want the computer to make moves for the enemy:

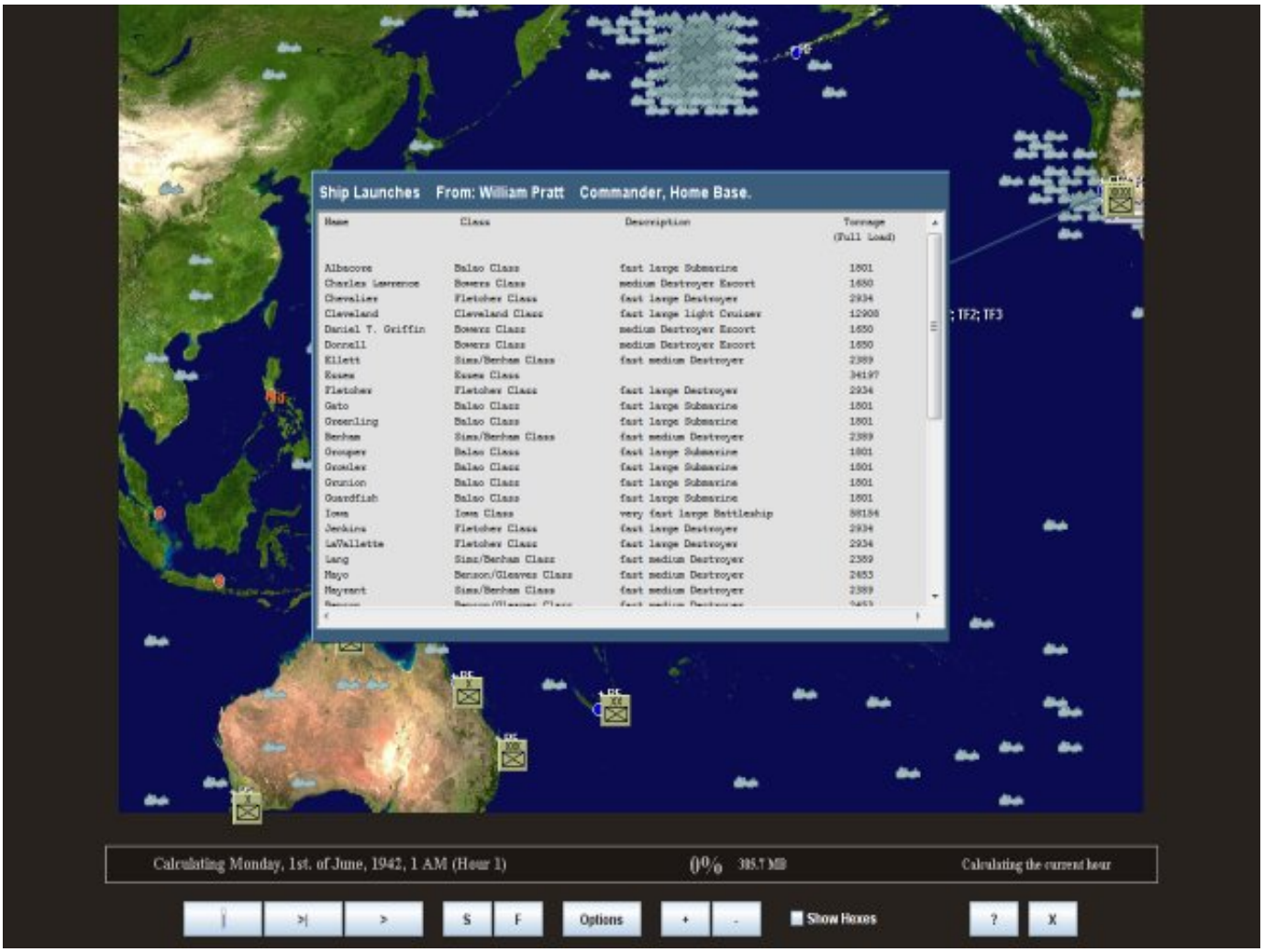


You could click 'No" and wait for another player to make moves for Japan. But for this run-through, and indeed anytime you want to just play against the computer, click 'Yes'.

The computer will now calculate all enemy moves. This may take a little time, but you get progress reports of the calculation:

Usually the phase that takes the longest is when the computer is forming enemy missions. This may take a little while, so please just wait until it is all finished. The screen will then close automatically, and you will briefly see this screen, telling you that data for the run turn calculation is being prepared:

After a few seconds, when this is complete, you will see the run turn screen:



The screen shows a map of the theatre, and some controls at the bottom for running the turn. The calculation is paused at the first hour, awaiting your command to start the hour-by-hour calculation.

The message in the middle normally shows on the first hour - it announces all new ships that are commissioning (becoming available for play) this turn:

Ship Launches From: William Pratt Commander, Home Base.

Name	Class	Description	Tonnage (Full Load)
Albacore	Balao Class	fast large Submarine	1801
Charles Lawrence	Bowers Class	medium Destroyer Escort	1650
Chevalier	Fletcher Class	fast large Destroyer	2934
Cleveland	Cleveland Class	fast large light Cruiser	12908
Daniel T. Griffin	Bowers Class	medium Destroyer Escort	1650
Donnell	Bowers Class	medium Destroyer Escort	1650
Ellett	Sims/Benham Class	fast medium Destroyer	2389
Essex	Essex Class		34197
Fletcher	Fletcher Class	fast large Destroyer	2934
Gato	Balao Class	fast large Submarine	1801
Greenling	Balao Class	fast large Submarine	1801
Benham	Sims/Benham Class	fast medium Destroyer	2389
Grouper	Balao Class	fast large Submarine	1801
Growler	Balao Class	fast large Submarine	1801
Grunion	Balao Class	fast large Submarine	1801
Guardfish	Balao Class	fast large Submarine	1801
Iowa	Iowa Class	very fast large Battleship	58154
Jenkins	Fletcher Class	fast large Destroyer	2934
LaVallette	Fletcher Class	fast large Destroyer	2934
Lang	Sims/Benham Class	fast medium Destroyer	2389
Mayo	Benson/Gleaves Class	fast medium Destroyer	2453
Mayrant	Sims/Benham Class	fast medium Destroyer	2389
Benson	Benson/Gleaves Class	fast medium Destroyer	2453

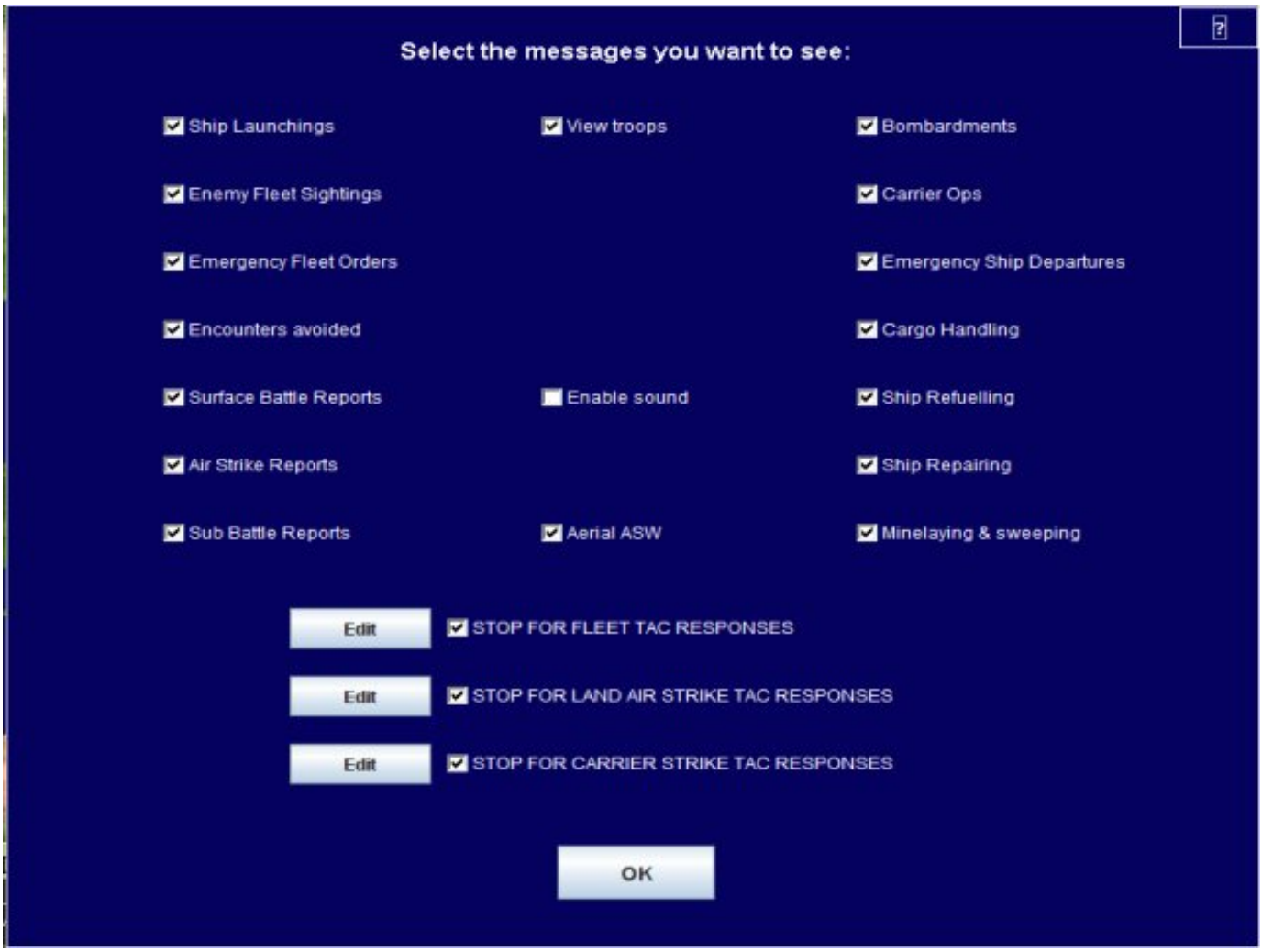
OK, we are ready to run the turn. But before proceeding, a little explanation of emergency tactical responses is needed.

Disabling emergency tactical respnses

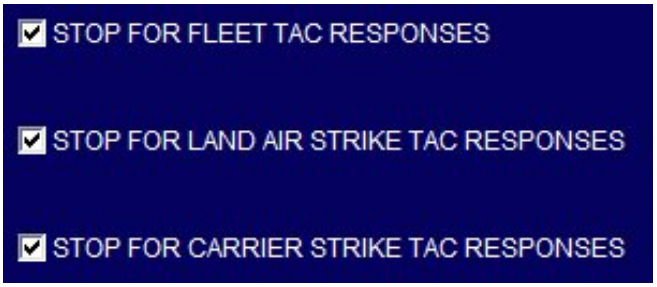
Normally, a player may want to control emergency tactical responses during calculation. A player can control the responses of specified fleets, or amend or cancel air strikes from selected carriers and airfields. But for this simple walk-through, you should disable all these options.

To disable emergency tactical responses, click on the 'Options' button at the bottom of the screen:

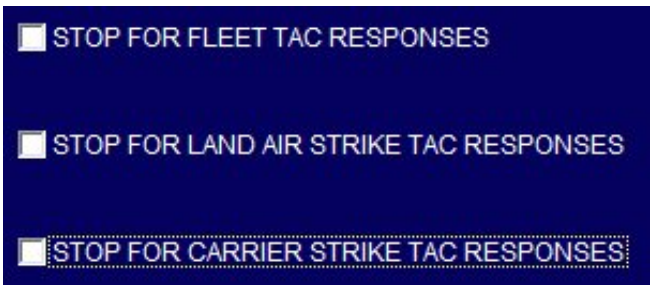
You will now see the options screen:



Emergency responses are enabled or disabled using the three tickboxes at the bottom of the screen:



For this run-through, we want to disable all three types of responses. Later, at your own leisure, you can learn how to use these important options, which greatly add to tactical control. Clear all three tickboxes:



Now click the 'OK' button: 

to close the options screen.

Run the Turn!

Now, to start the calculation, click on the '>' button at the bottom-left of the screen: 

Make sure you have not clicked the '>|' button: 

as this button calculates only *one hour of action at a time*.

The calculation will now run through the full four weeks of action, calculating all fleet and aircraft movements, battles, emergency responses and many other events.

As events occur, messages will appear on screen summarising the event and pointing to its location:

There are over thirty different message types; later, you can learn how to filter out the ones you

are not interested in.

Some events are more important than others of course - such as reports of surface battles, air strikes or submarines encounters. The battle messages have links to detailed reports and, in the case of surface battles, full shell-by-shell action replays! Do not be concerned at this stage about following all the action. Later you can learn how to slow down or pause the calculation. In any case, all of the action is fully replayable at your leisure in the turn replay, which you will see soon. And the action is also summarised in the *Briefing Report*.

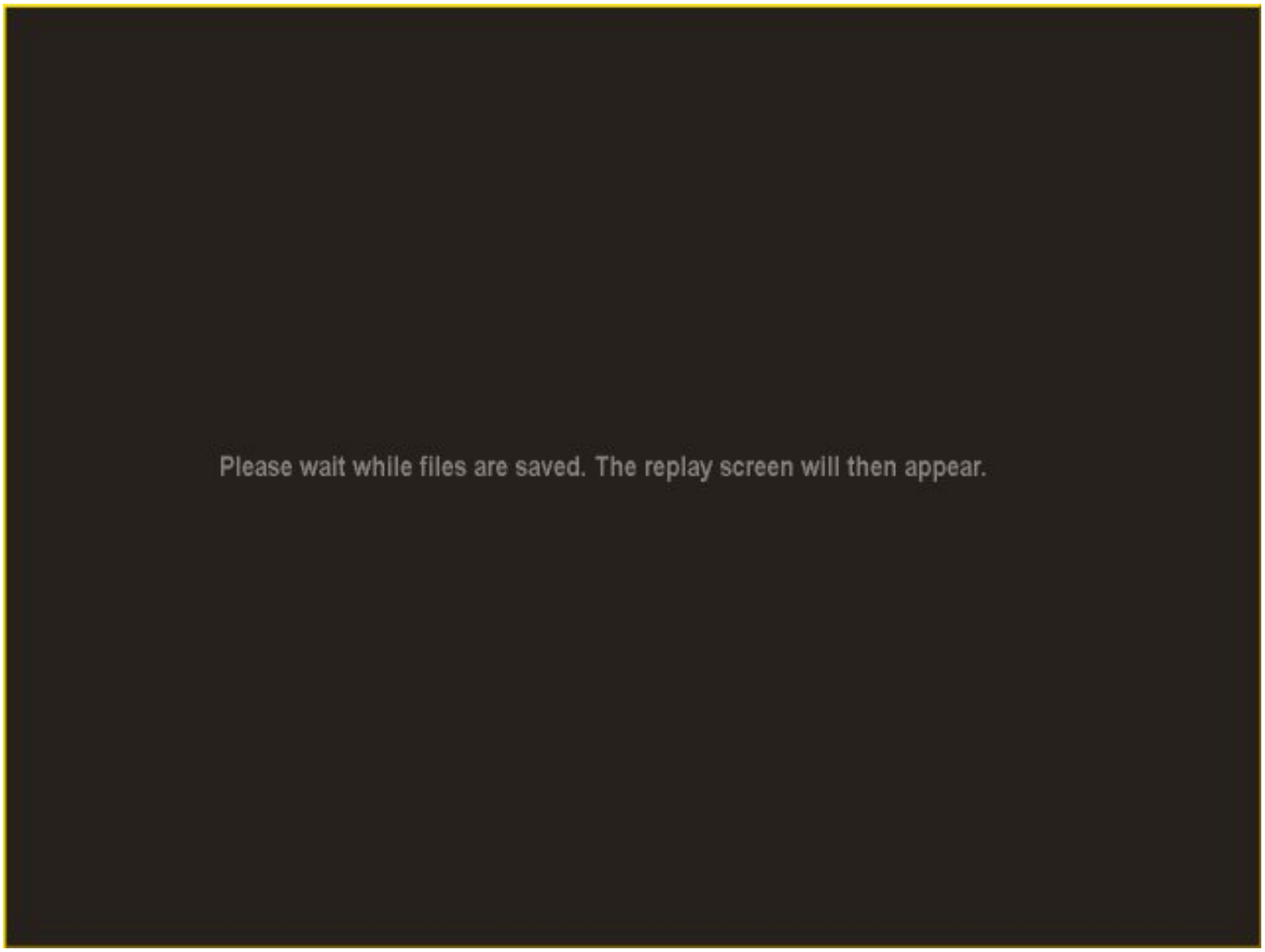
As the turn is calculated, the progress bar updates. Your fleets move on the map. Event messages of various kinds quickly flash before you. The current hour being calculated is shown at the bottom of the screen:

As the calculation progresses you can freely zoom in or out and drag the map around, and turn hexes on or off. You can pause the calculation at any time or slow it down. These features are best left for your later experimentation. For now, just let the calculation complete at maximum speed.

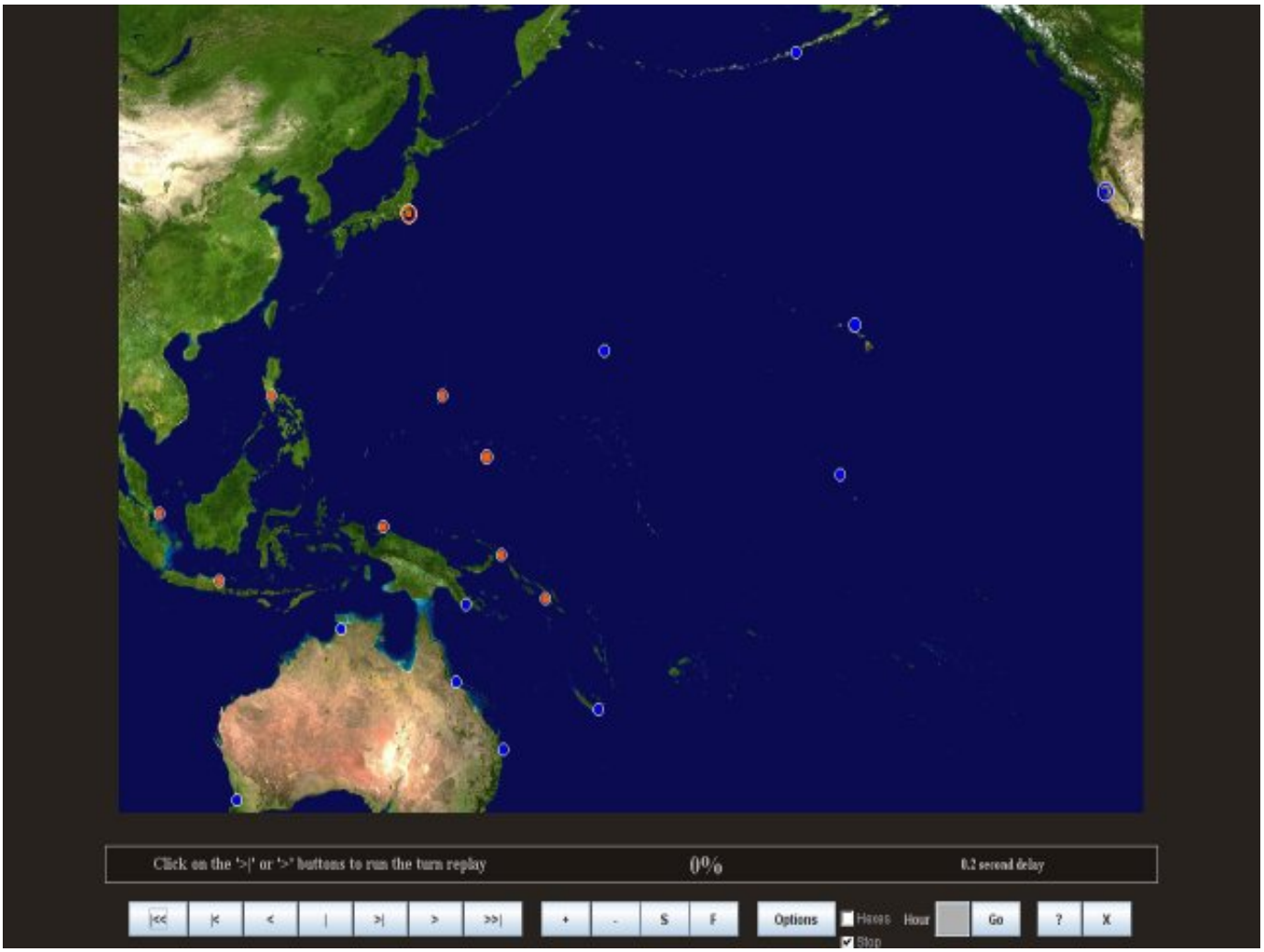
The calculation should take around a minute on a reasonably fast computer. If it takes significantly longer than this - say 4 minutes or more - then your computer specification may be too low for optimum gameplay. But there are also ways you can maximise performance with your existing hardware. You can consult the trouble shooting help page at any time if needed.

Replaying the turn

When the calculation is finished, a message will appear asking you to wait while the files are saved:



After a few seconds, the replay turn screen will then appear. It looks very much like the run turn screen but with a few more controls:



The replay is paused waiting for you to start it. Use the '>' or '>|' controls to move the replay forward either continuously or an hour at a time. The '>>|' control takes you to the end. The '|<<', '|<' and '<' controls work the same, but in reverse. The '|' button pauses the replay. For an overview of this and other features of the replay screen, see replay the turn.

For now, just close the replay screen by clicking on the close button at the bottom-right of the screen: 

This takes you back to your *Admiral's Office*.

You can bring up the replay screen again at any time by clicking 'Briefings' on the blackboard *To Do* main menu, and then clicking on the newsreels at the right-hand side of the screen.

Reviewing the Briefing Report

You have previously seen the Briefing Report in this overview, but at that stage, there was no action to report.

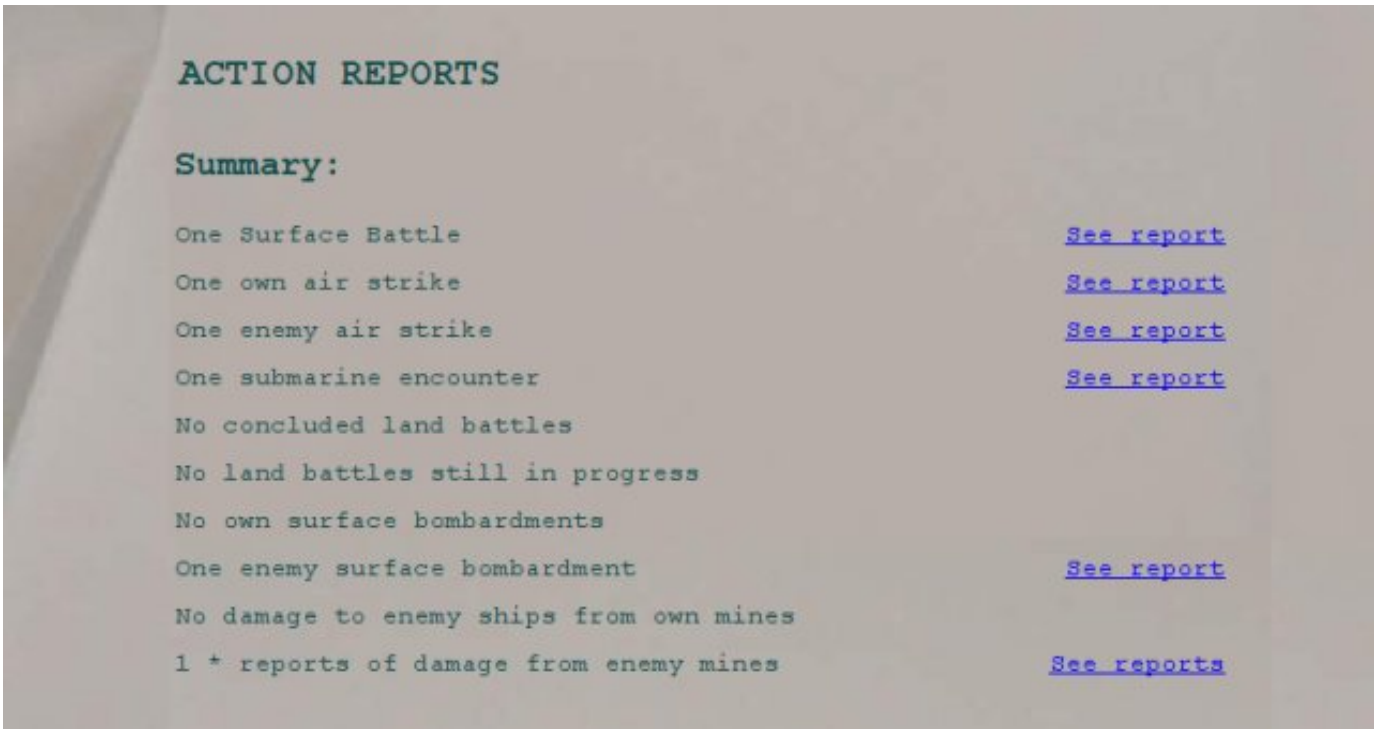
If you click on 'Briefings' on the blackboard *To Do* main menu, you will see the Briefing Report as updated for the events of the turn just calculated.

Action reports

In particular, the 'Action Reports' appendix lists all battles of any kind and provides hyperlinks to each battle report.

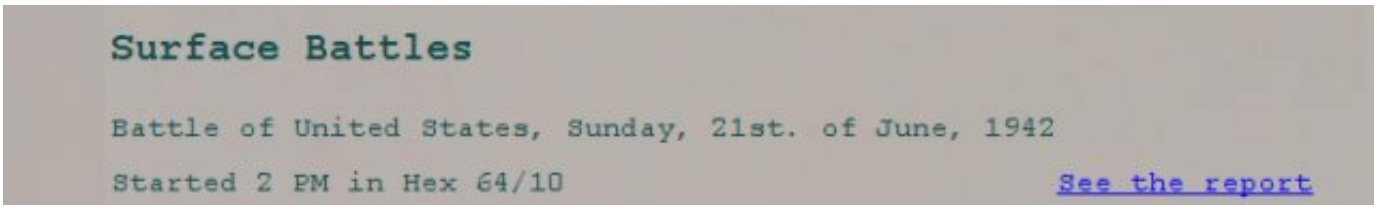
Go to this appendix now by clicking on 'Action Reports' in the front page table of contents - it is the first Appendix, or else by scrolling through the report:

The report should now display the Action Reports appendix. If you have played the *Intro* campaign exactly as instructed, making no emergency tactical responses of your own, the summary should list a variety of actions: one surface battle, an air strike by you and your enemy, a submarine encounter, a surface bombardment and one instance of damage from enemy mines:

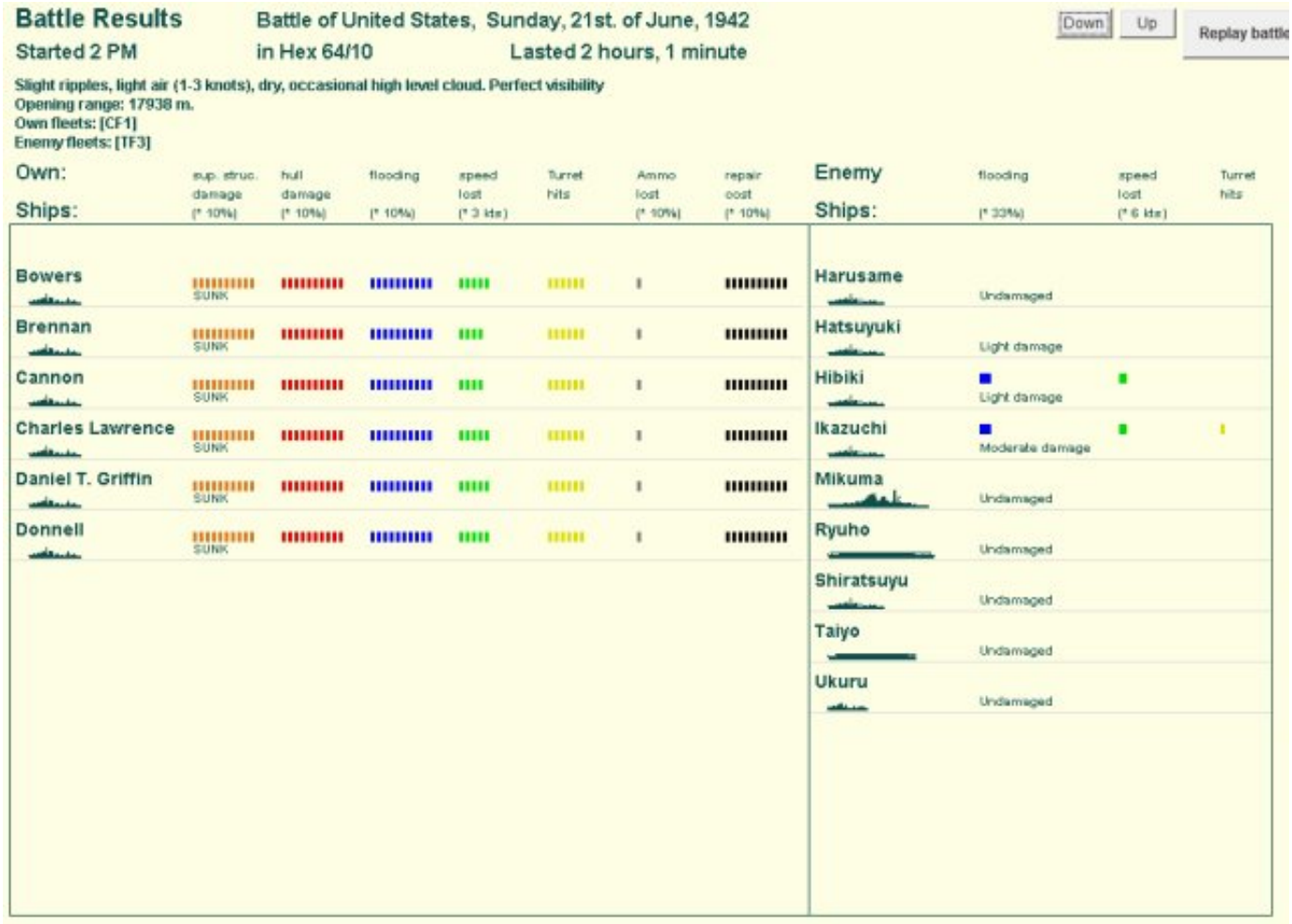


Summary report of a surface battle

If you click on the 'See report' hyperlink, adjacent to where it says "One surface battle", you will jump to the 'Surface Battles' section of the Action Reports. Here, any battles are listed in more detail:



Now click on the 'See the Report' hyperlink adjacent to where it says 'Battle of United States...'. You will see summary results of the battle:



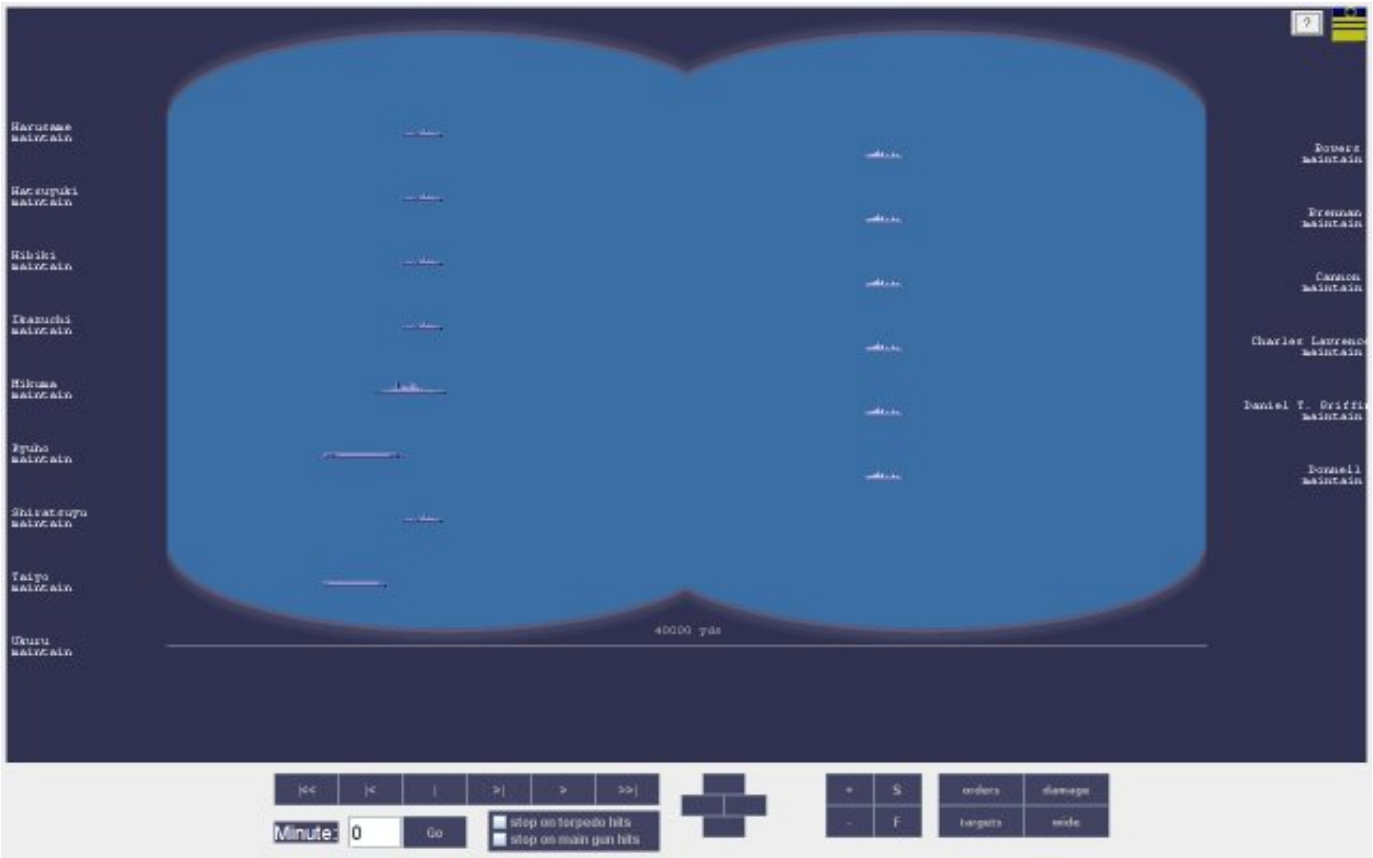
Help is available on how to interpret the information on the summary. But for now, just be aware that the summary graphically displays battle damage for all ships.

Replay a surface battle

Best of all is the unique feature that allows you to replay the entire battle, shell-by-shell. Simply click on the 'Replay battle' button at the top-right of the screen: 

. You will now see

this screen:



The screen has many controls for re-playing the battle forward or backwards at varying speed, zooming in and out, and optionally stopping on main gun or torpedo hits. You can view the ships changing target and movement orders and watch as damage of varying kinds accumulates on each ship.

For this walk through it is suggested that you simply close the screen by clicking on the *SAS WW2* icon at the top right side. Later you can explore this screen in more detail. Now click again on the *SAS WW2* icon at the top-right side of the battle summary screen to close it. You should now be back viewing the Briefing Report Action Reports appendix.

Summary reports of other actions

The Action Reports appendix should also have links to the other battles: two airstrikes and a submarine engagement. If it is not immediately visible, scroll through the Briefing Report until it is:

Own Air Strikes

Battle of Gulf of Papua, Monday, 22nd. of June, 1942

Started 11 AM in Hex 21/34 See the report

Enemy Air Strikes

Enemy strike on Port Moresby

Started 4 PM in Hex 24/34 See the report

Submarine Attacks

Battle of United States, Saturday, 20th. of June, 1942

Started 1 PM in Hex 63/13 See the report

Follow the links to see similarly presented summary reports on these battles. You may note that while the two air strikes were rather inconclusive, the submarine engagement was not - four allied merchant ships being sunk by Japanese submarines:

Battle Results Battle of United States, Saturday, 20th. of June, 1942 Down Up

Started 1 PM in Hex 63/13 Lasted

Ripples, light breeze (4-6 knots), mostly dry with patches of light drizzle, some high and medium level cloud. Very good visibility
Opening range: 13301 m.
Own fleets: [CF2]
Enemy fleets: [SF1]

Own: Ships:	sup. struc. damage (* 10%)	hull damage (* 10%)	flooding (* 10%)	speed lost (* 3 kts)	Turret hits	Ammo lost (* 10%)	repair cost (* 10%)
Lang	SUNK						
Small Merchant-1	SUNK						
Small Merchant-2	Undamaged						
Small Merchant-3	Undamaged						
Small Merchant-4	SUNK						
Small Merchant-5	Undamaged						
Small Merchant-6	SUNK						
Small Merchant-7	Undamaged						

Enemy Ships:	flooding (* 33%)	speed lost (* 6 kts)	Turret hits
I61	Undamaged		
I63	Undamaged		
I64	Undamaged		
I67	Undamaged		

Small Merchant-6 hit by 1 torpedo from submarine I67
Lang hit by 2 torpedoes from submarine I64
Small Merchant-4 hit by 2 torpedoes from submarine I63
Small Merchant-1 hit by 2 torpedoes from submarine I61
No damage to submarines.

Finally in terms of action reports, the appendix summarises details of an enemy bombardment of Port Moresby, and of damage to the Carrier *Essex* from enemy mines:

Enemy Surface Bombardments

Enemy bombardment in the last turn caused a loss of 2.6 RPs to storages at Port Moresby.

Damage was also done to port infrastructure. Refer to the Economic Balance Sheet appendix, in the Liabilities - Infrastructure, for the total current cost of infrastructure damage to date.
The details of the current infrastructure levels can be found in the Infrastructure List as well as viewed on the theatre map.

Damage from enemy mines

The following ships were damaged by enemy mines in the last turn:

CV Essex is flooded 12% after hitting an enemy mine in hex 15/30.

Remaining Briefing Report information

As well as battle summaries, the Briefing Report summarises your overall economic position, your naval, air and troop losses, provides updated intelligence on the enemy, and much else as well. You can learn how to read the Briefing Report at your leisure later. For now, just close the Briefing Report by clicking on the *SAS WW2* icon at the top-right hand corner.

The End!

You have now reached the end of this 5 minute walk-through. You have made all decisions for a whole turn (being four weeks of real action). And you have then played the turn out, seen the events unfold and learnt a little about the replay screen and the Briefing Report.

From here, it is up to you how deeply you wish to delve in your games. You have seen how easy it is to make all your crucial decisions simply by relying on your 2IC. But when you are ready and interested, you can learn how to take more control in any area: perhaps selecting or designing some ships, or even your whole navy; or taking a more active role in operational orders, using any of the multiple command levels that are possible. During turn calculation, you may want to take hands on control of specified fleets or airfields, determining fleet emergency orders and air strike targets and profiles. You may want to reduce the length of the operational turn to one or two weeks, so that you can direct the war effort in considerable detail. You can also learn to use the Campaign Creator to set up your own campaigns, accepting historical default values or playing with history as you see fit.

All these choices await you, and as explained below, in-built help pages guide you every step of the way.

How to get Help

The game has a rich set of hyperlinked help files to instruct you on every aspect of the game.

See How to Get Help for more information.

We at *NWS* hope you enjoy playing *SAS WW2* for many hours. We hope you find it both challenging and very playable.

Good luck Admiral!

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Your Admiral's Office

Welcome to your new office. To help you feel at home here, you can see your name plaque on top of the filing cabinet, a picture of the Battleship you commanded before your elevation to be *Supreme Naval Commander* (or "supreme desk jockey" more like!). And above that is a picture of your leader, who personally has approved your appointment because of the faith he has in your leadership.

You access all main functions from here:

- Making command decisions for a game turn.
- Getting information to base your command decisions on.
- Loading and saving files.
- Changing game options.

You can also bring up the complete help files for the game. These files are fully cross-referenced and hyperlinked for ease of navigation.

You can exit the office at any time by clicking on the *SAS* icon at the top right of the screen:

Just remember to save the game first, if you want to be able to come back to where you stopped. (See Loading and saving files for instructions.)

Making command decisions

Playing a turn in *SAS* is easy to do. There are two main steps to perform:

- First, you **build** the resources you need - ships, aircraft and troops.
- Then, you **deploy** them to where they are needed, along with their combat orders.

When you have done both steps, you are ready to run the turn.

You access all command functions through the menus on the blackboard at the top left of the office.

The top level menu looks like this:

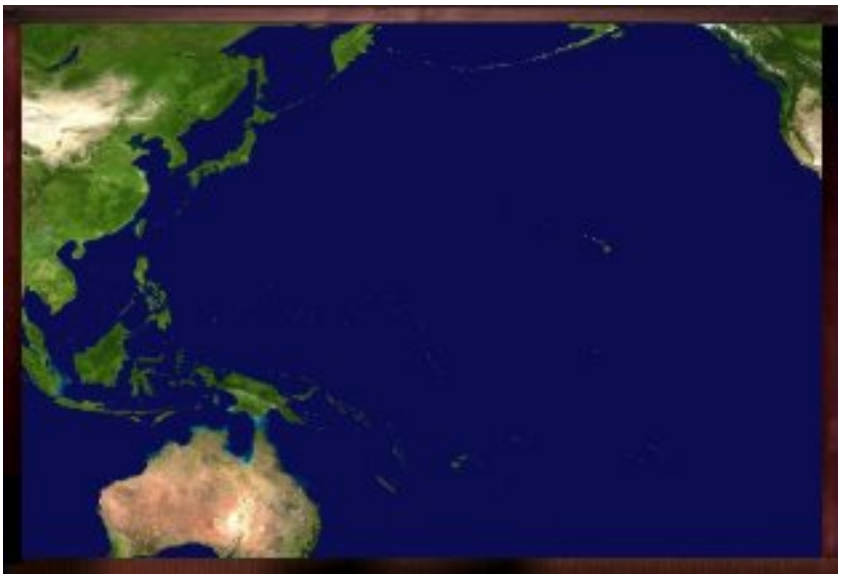
The build and deploy steps are done by clicking "Build" and "Deploy" on the menu. Follow this main menu link for more information.

Getting information

Before you build and deploy, you should be well informed of your situation vis-a-vis the enemy.

SAS gives you easy access to three kinds of information:

- A briefing report, showing key economic and other details.
    - Open the report by clicking on "Briefings" on the main menu.
- A full screen map view showing you the location of all your resources (and the enemy's also, where known).
    - See the full map view by clicking on the small theatre map on the wall. Shown below is the Pacific Map as it appears on your wall:

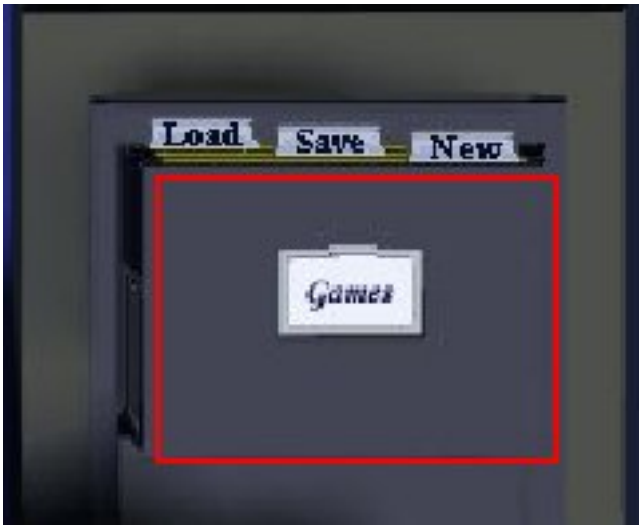


- An hour by hour action replay from the previous turn, showing you exactly what happened and when.
    - Get to the replay by clicking on "Briefings" on the main menu, and then on the news reels you will see lying on your desk.

Loading and saving files

The filing cabinet to the right of the office has a drawer labelled "Games". Open it to load and save games, or to jump to the screen to create new campaigns.

Click on the drawer to open it:



Loading a game

Move the mouse over the "Load"tab to highlight it:

Clicking on the "Load"tab will bring up the screen for selecting a saved campaign.

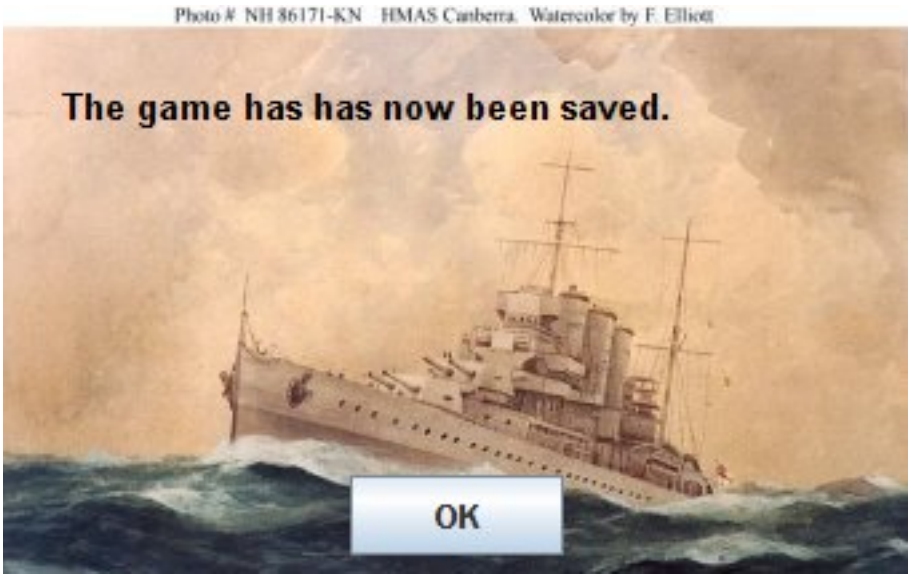
After completing actions on that screen you will return to the office, ready to play the game just loaded.

Saving a game

Move the mouse over the "Save"tab to highlight it:

Clicking on the "Save"tab will save the current game.

When the game is saved, you will see a message confirming the save:



Click on the "OK" button to close the message box.

Saving a game for Play by Email

You can play *SAS* against the computer or against another player.

If playing against another player, you do this by exporting your turn file, when you have finished all your moves. The other player does the same. Then you each give the other your turn file.

To save your file for export, when you are sure you have finished all your moves, simply click on the "Out" tray on your desk:

When the file is saved you will see a confirmation message:

Click the "OK" button to close the message box and continue.

See Play By Email for more information on how to send your turn file and receive the other player's file.

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Creating a new game

Move the mouse over the "New" tab to highlight it:

Clicking on the "New" tab will bring up the screen allowing you to create your own new campaigns. See creating campaigns - an overview

for more information.

Changing game options

Move the mouse over the filing cabinet drawer labelled "Options" to highlight it:

Clicking on the drawer will bring up the screen for changing game options. See game options for more information.

Complete help files

To bring up the complete help files for the game at any time, click on the bookshelf to the left of your Admiral's office:

A screen will appear with a navigation menu on the left and the text of the help files on the right.

Many of the text files are the ones you can also visit using the context help function.

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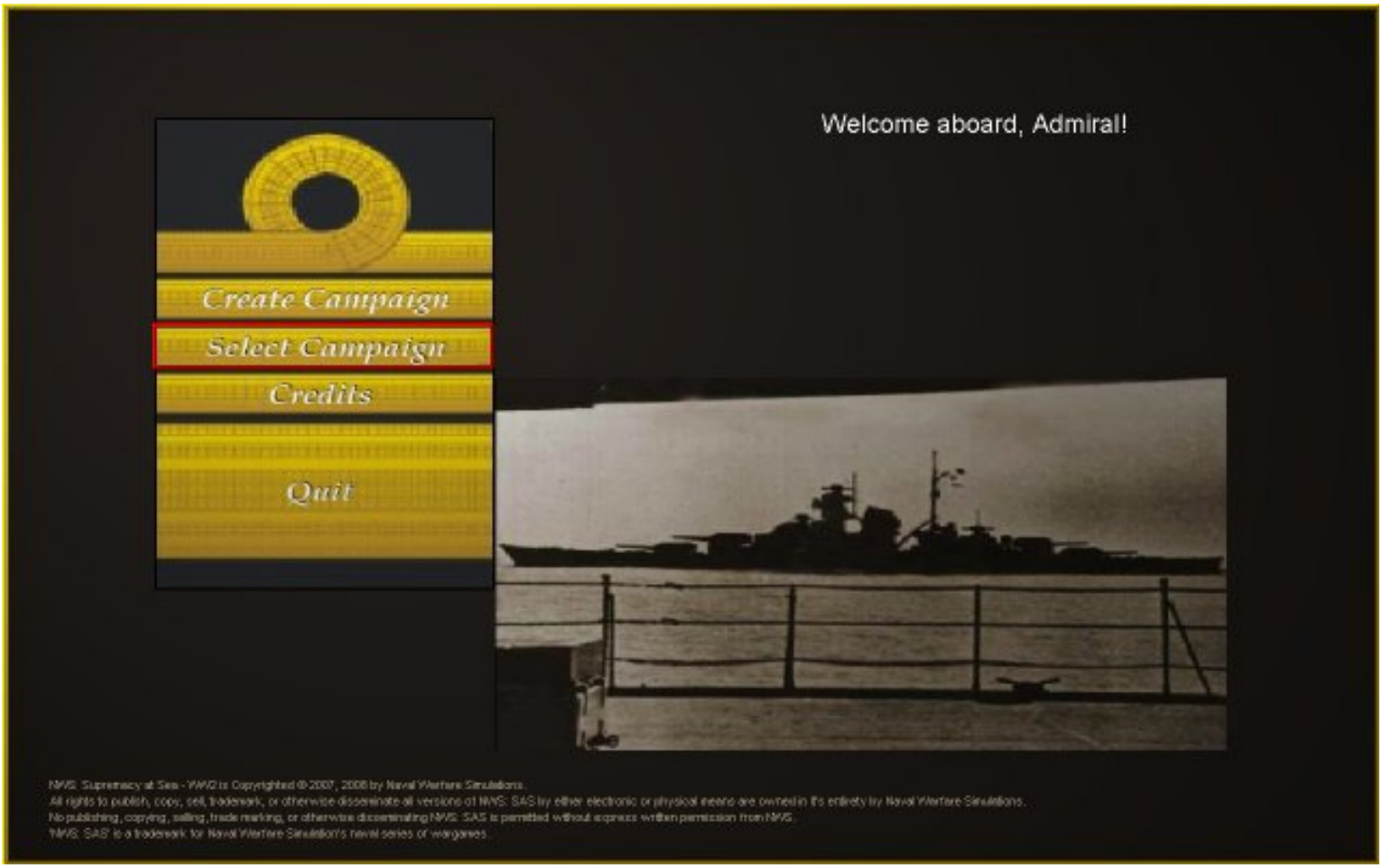
How to load a game

There are two points from which you can load a new game:

- From the SAS WW2 start screen
- From your Admiral's Office

From the Start screen

If you are at the start screen, move your mouse over the 'Select Campaign' option:



Now, click on the option and you will be taken to the screen for loading files.

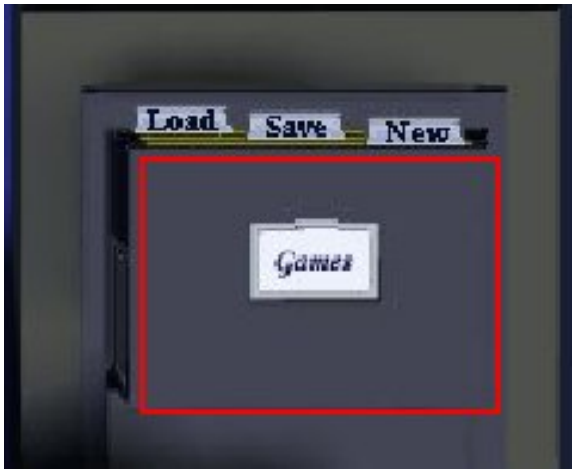
From your ***Admiral's Office***

If you are already playing a game and are in your Admiral's Office, you can load up

another game at any time and start playing that instead.

To do this, move your mouse over the top drawer of the filing cabinet, labelled 'Games':

Click on it to open it:



Move your mouse over the tab labelled 'Load':

Click on the tab, and you will be taken to the screen for loading files.

Screen for Loading Files

Either way, you should now see this screen:

To select a campaign, you follow three steps:

Choose the Campaign

Click on the campaign you want in the top-left list, where it says *'1.Choose Game'*.

You will now see a short description of the selected campaign in a pop-up help page.

After reading the page, close it by clicking on the 'X' button at the top right of the screen: 

Choose a side

Now click on the side you want to play for, in the middle list where it says *'2. Choose Side'*.

Load the Game

Now you have two options:

- You can continue with the game by clicking on the 'Continue Game' button. This will usually be your choice.
- OR, you can choose to re-start the campaign from the beginning by clicking the 'Re-start Game from beginning' button.

Warning!: If you click the restart from beginning button, all data that has been saved since you started playing this campaign will be deleted. Make sure this is the option you want! You will be prompted to confirm it.

When you click either button, the game will load and you will be taken to your Admiral's Office, ready to play.

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Briefing Report

The briefing report is your overall summary of the situation confronting you - good or bad - at the start of every turn.

Use this information to understand your relative strengths and weaknesses, to better plan how you build and deploy your ships, aircraft and troops.

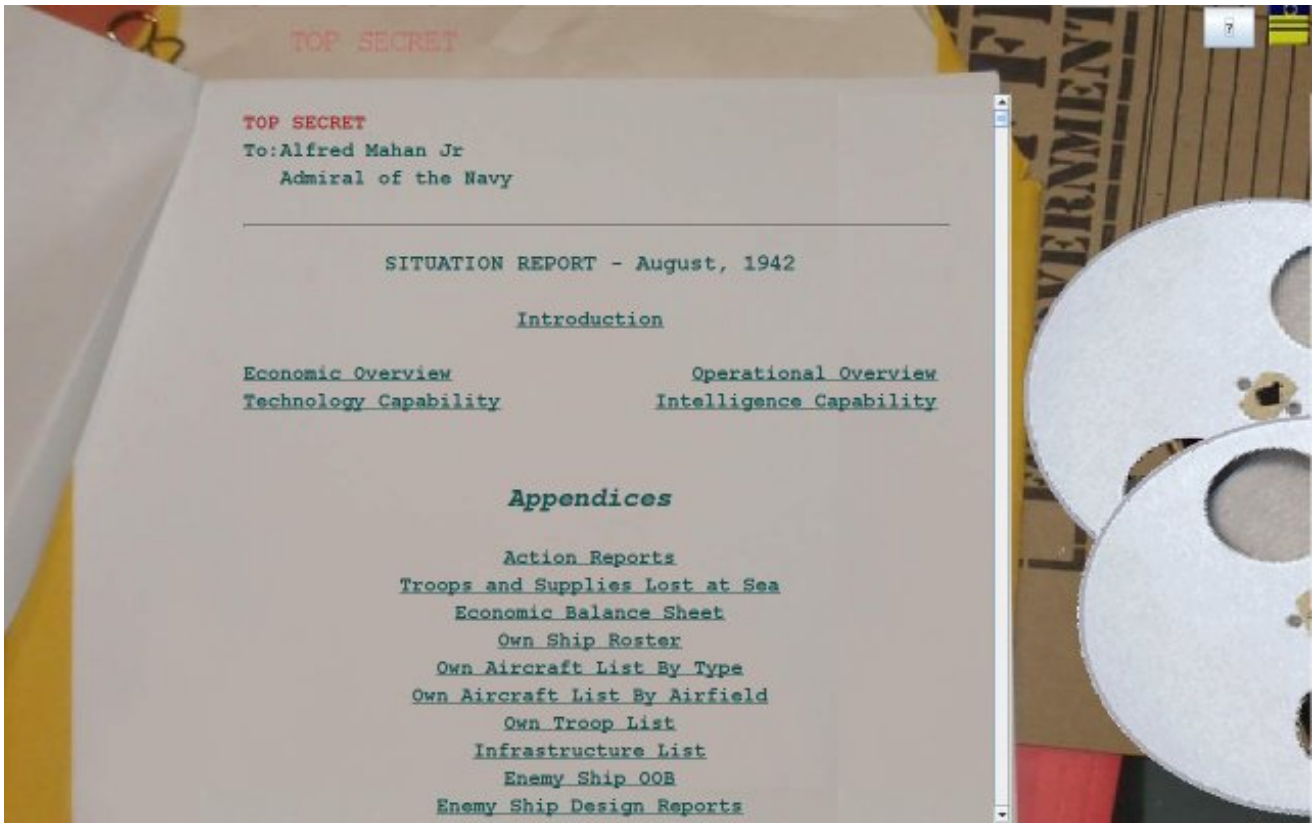
The situation report gives you static information - a text summary - compiled by the Head of your Naval Intelligence Department.

For a dynamic view of actions and events in the previous turn, use your turn replay function. This will help you understand how you got to where you are now!

Accessing the Situation Report

From your Admiral's Office, click on 'Briefings' on the main blackboard menu.

You will now see this screen:



The news reels at the right of the screen are your entry point to the turn replay screen. Here, we are interested in learning about the Situation Report.

The Situation Report

The report lies open at the first page. It is dated to the current turn, and has a table of contents. The entries in the table of contents are hyperlinked to the relevant sections of the report. Use the hyperlinks to jump forward, or just scroll through the report using the right hand scroll bar.

Throughout the report, there are many links to other sections within the report, to assist with navigation.

The report has these main sections:

It also has a number of major appendices:

Introduction

Here, the odds facing you at the start of the war are briefly summarised.

Economic Overview

The growth (or reduction) in the size of your economy – as measured by Resource Points –

is shown, both since the start of the War and since the last turn.

The value of any convoy shipments last turn is shown, as well as the total value of infrastructure investments.

In January of every year after the first, the Report also compares your situation with what is known of the enemy's economy.

Details of your economic balance sheet - the gains and losses in resource points in the last turn and the current balance - are available in an Appendix to the Report. The Appendix is hyperlinked for easy access.

Operational Overview

Ship Losses

The losses last turn in naval and merchant shipping are summarised, and estimated enemy losses are quoted.

A hyperlink is provided to the appendix that details all battles in the last turn.

There are also hyperlinks to appendices detailing your own and the enemy's current ships.

Aircraft Losses

Aircraft losses last turn and to date are summarised and a link is provided to the appendix listing all your current aircraft by type.

Troop Losses

Any troop casualties from the last turn are summarised and links are provided to any land battle reports as well as to the appendix detailing current troop strengths.

Supply Losses

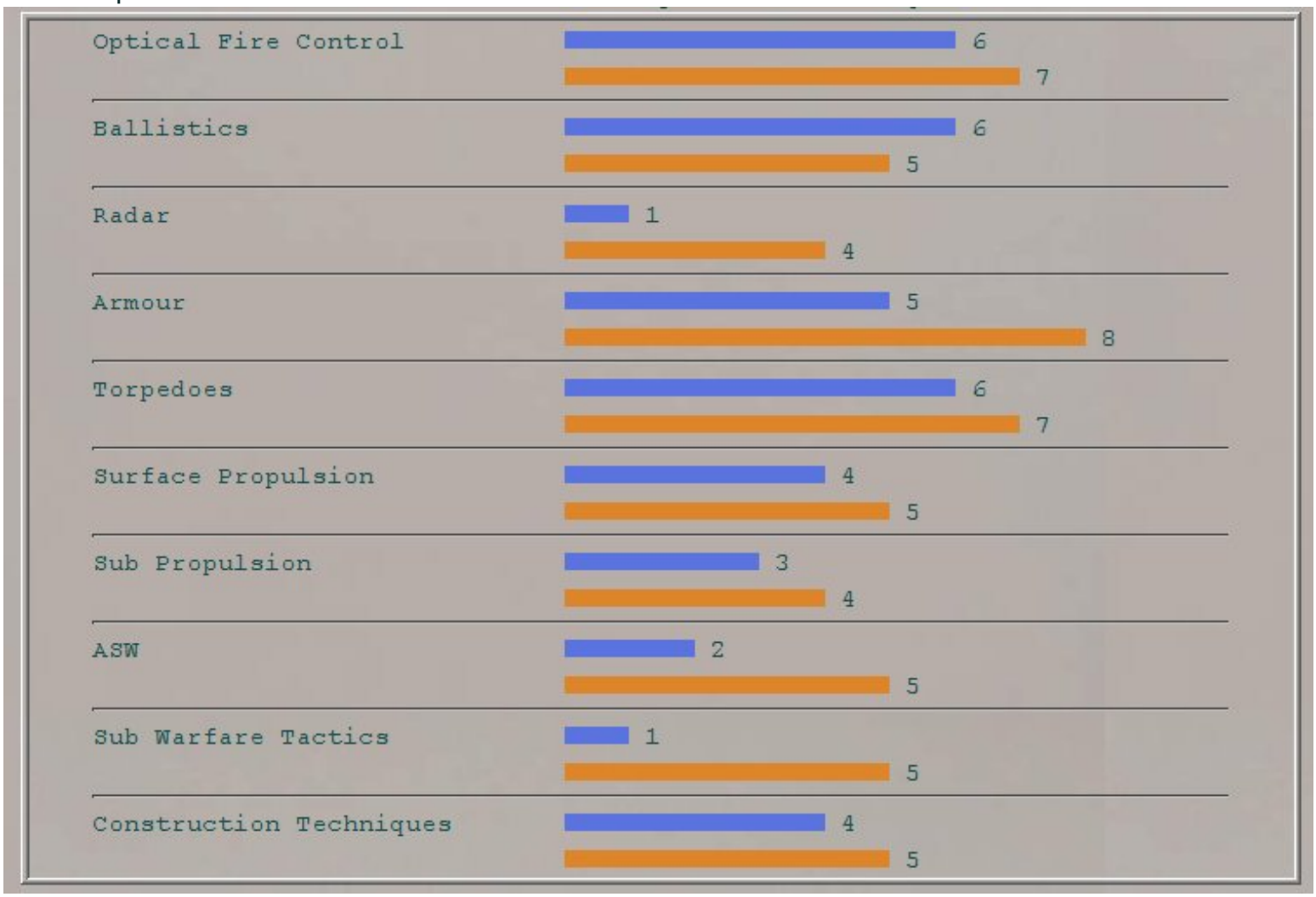
If supplies were lost at sea from transport ships being sunk or damaged, this will be summarised here and there will be a link to the appendix that details these losses.

Technology Capability

Your current position relative to the enemy's estimated strengths is summarised, and shown graphically. Your levels are shown in blue. The enemy's estimated technology levels

are shown in orange.

An example is shown below:

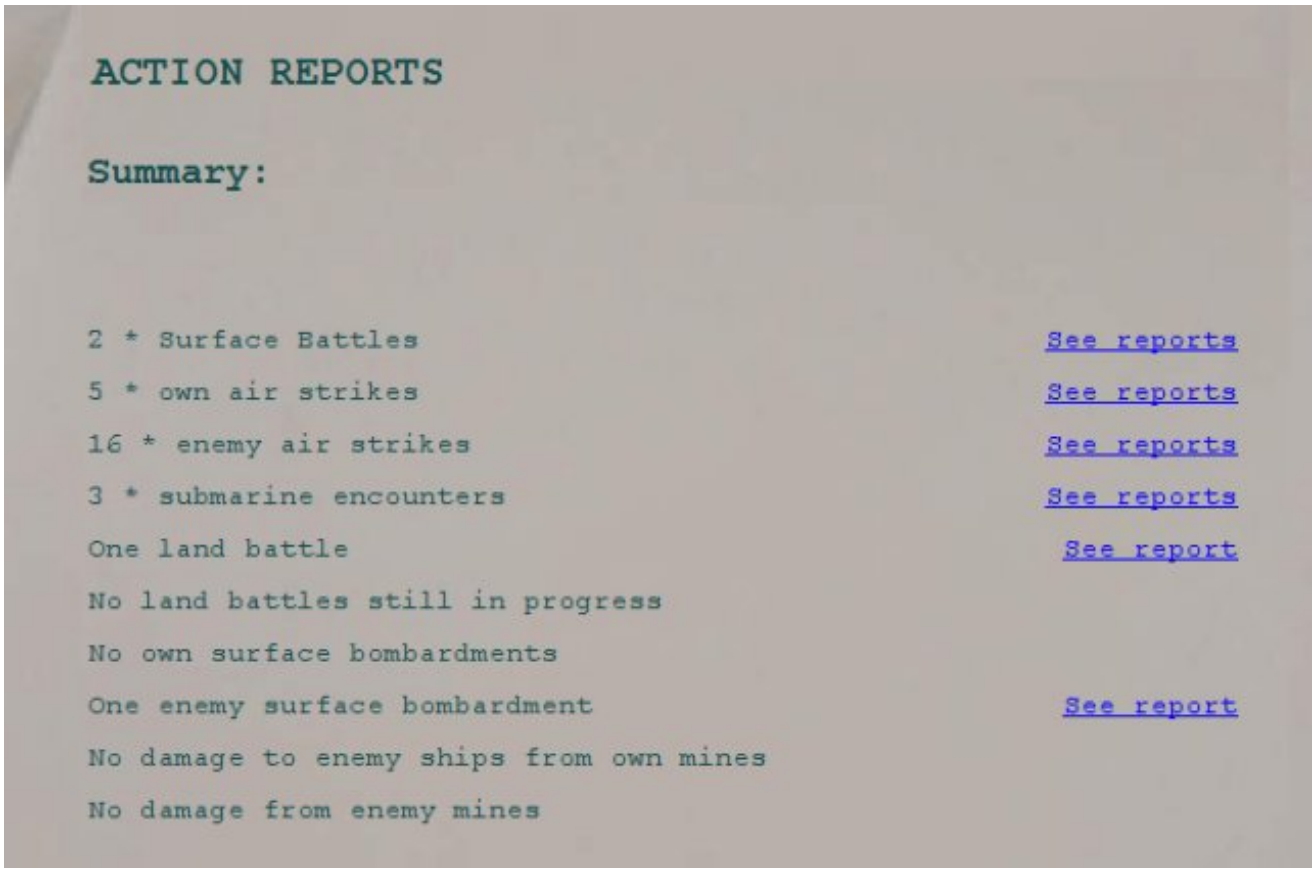


Intelligence Capability

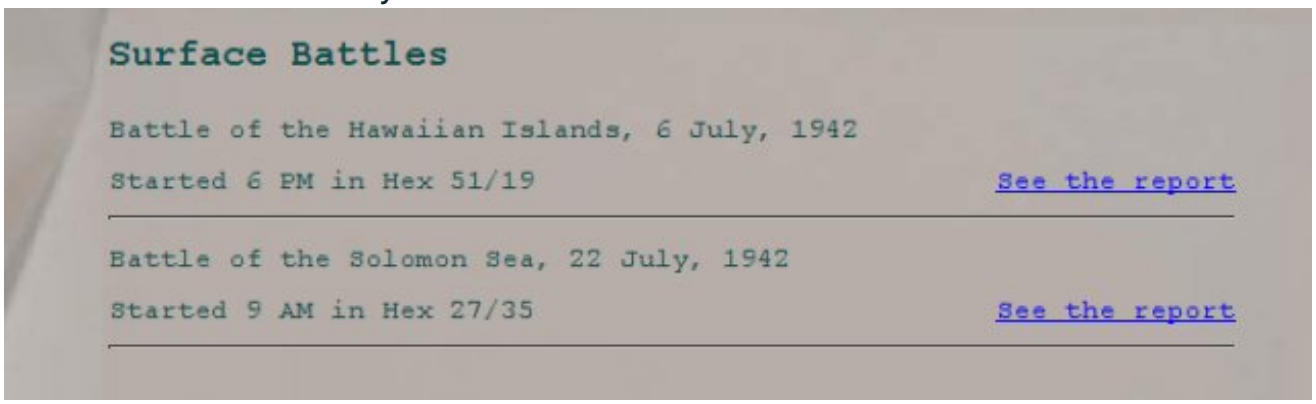
A brief note summarises the state of development of your intelligence compared to the assessed enemy strength. (Note - this assessment may not be accurate. As with all of your intelligence assessments they are likely to be more innacurate the weaker your level of intelligence and the stronger the enemy's.

Action Reports

This is the first appendix. It provides links to all battles that occurred last period. The battles may be between surface ships, or air strikes on ships or land targets, or submarine attacks, or surface ship or aerial bombardment of land targets, or amphibious assaults. Damage from mines is also summarised. An example is shown below:



Following the links leads to lists of each battle by category. Alongside each battle is a link to the actual Battle Summary:



See battle summary for information on the battle summary screen. The battle summary screen further links to a screen where surface battles can be replayed shell-by-shell!

Troops and supplies lost at sea

This appendix gives a ship-by-ship listing of troop and/or supply losses due to the ship's being damaged or sunk.

TROOPS AND SUPPLIES LOST AT SEA

The following details are for losses at sea in the last reporting period.

Troop Losses

None.

Loss of supplies at sea

Transport ship (the MS1-3) damaged by dive bomber attack on Friday, 3rd. of July, 1942, 9 AM

3136 tons of supplies were destroyed.

Transport ship (the MS1-11) damaged by dive bomber attack on Friday, 3rd. of July, 1942, 9 AM

3136 tons of supplies were destroyed.

Transport ship (the MS1-13) damaged by dive bomber attack on Friday, 3rd. of July, 1942, 9 AM

3136 tons of supplies were destroyed.

Transport ship (the MS1-15) damaged by dive bomber attack on Friday, 3rd. of July, 1942, 9 AM

3136 tons of supplies were destroyed.

Economic Balance Sheet

This very important Appendix shows where all the Resource points have been spent or gained, including expenditure on new ship construction, repairs, refuelling and rearming, aircraft production, lost points from bombardment damage, points gained from industrial production and convoy shipments, as well as points transferred between ports in supply operations. Liabilities in terms of outstanding repairs to ships and port infrastructure are accounted for. The number of Resource Points currently available at your ports are shown.

An example is shown below:

ECONOMIC BALANCE SHEET

Asset	Gains		Losses		Balance	RP Value
Navy (tonnes)	Launched:	26410	Sunk:	24741	2204853	22048
	Captured:	0	Captured:	0		
Merchant Navy (tonnes)	Launched:	26410	Sunk:	56840	325360	3253
	Captured:	0	Captured:	0		
Tokyo Bay Stores (RP's)	Supplies in:	0.0	Supplies out:	96.9	144	144
	Trade:	288.0	Troop supply:	0.0		
	Production:	46	Repairs:	67.0		
			Bombardment:	0.0		
			Refuelling /Rearming:	37.0		
Truk Stores (RP's)	Supplies in:	0.0	Supplies out:	65.0	0	0
	Trade:	94.0	Troop supply:	1.1		
	Production:	0	Repairs:	137.8		
			Bombardment:	0.0		
			Refuelling /Rearming:	419.0		
Manila Stores (RP's)	Supplies in:	0.0	Supplies out:	0.0	207	207
	Trade:	0.0	Troop supply:	2.3		
	Production:	6	Repairs:	0.0		
			Bombardment:	0.0		
			Refuelling /Rearming:	0.0		
Okinawa Stores (RP's)	Supplies in:	0.0	Supplies out:	0.0	90	90
	Trade:	0.0	Troop supply:	4.6		
	Production:	0	Repairs:	0.0		
			Bombardment:	0.0		
			Refuelling	0.0		

Main Assets

The top section of the report is organised as a table, with 5 columns and a number of rows. This is where information is given about your primary assets.

The most important information is given in the right-most column. Here, you can see the current RP value of:

- your navy and merchant navy. (The RP value here is the RPs that were spent to build these ships).
- war material stored at each of your ports.

The columns to the left show the gains and losses in the previous turn that resulted in the current totals.

On the first turn, the current RP values will be those you start the game with. The RPs at each port are set when a campaign is created. The naval and merchant tonnage is whatever has been built in the first turn out of the home port RPs you start with.

For example, suppose you are the British player in a Mediterranean scenario, starting with 3000 RPs at home port (Gibraltar), and 300 at Alexandria. The 3000RPs can be used to construct up to 300,000 tonnes of shipping. If you constructed say 150,000 tonnes of navy and another 100,000 tonnes of merchant ships, you would have used 2500RPs, and would have 500RPs left at Gibraltar, plus the 300 still at Alexandria. The Balance Sheet would show you having these tonnages of shipping, and with 500RPs at Gibraltar and 300RPs at Alexandria.

On subsequent turns, your current RP levels will be whatever you started the *previous* turn with, PLUS the gains noted in the 'Gains' column, and MINUS the losses shown in the 'Losses' column.

There are various kinds of gains and losses, as explained below.

Gains

Gains in naval or merchant shipping are produced whenever new ships are launched, as well as when enemy ships are captured. Each 100 tonnes of shipping equates to one RP.

Gains in RPs at each port can occur from various sources:

- *Supplies in*: this is the RP value of any supplies transported to the port during the previous turn. 'Supplies' are finished war goods of various kinds, such as oil fuel or ammunition or steel that can be used in refuelling, rearming, repair and construction at that port (provided the port has the infrastructure for these tasks). Each 1000 tones of supplies equates to one RP. On the first turn of the game, this value will be zero.
- *Trade*: this is the RP value of war material produced in the previous turn at the port by industry (if any) that is servicing that port, using raw materials shipped to the port (if any) in the previous turn. If the port has no industry, or there were no raw materials shipped in the previous turn, this value will be zero. Note that higher levels of industrialisation servicing the port can produce more RPs for a given amount of raw material. The industry level for each port is set when a campaign is created, but it can also be improved through infrastructure spending, and reduced by damage sustained from enemy attack. On the first turn of the game, this value will be zero.
- *Production*: this is similar to the Trade value, except that the industry at the port has used raw materials available locally or transported to the port by land, i.e. the amounts are not dependant on your convoy efforts. Like the level of industrialisation, the amount of raw materials available locally at each port is set when a campaign is created. Unlke the level of industrialisation, it cannot be further improved, nor can it be affected by enemy attacks. On the first turn of the game, this value will not be shown as it has been included in the RP value assigned (when the campaign is created) to the port as a starting value.

Losses

Losses in naval or merchant shipping are produced whenever your ships are sunk or captured by the enemy. Each 100 tonnes of shipping equates to one RP.

Losses in RPs at each port can occur from various sources:

- *Supplies out*: this is the RP value of any supplies transported out of the port during the previous turn. Each 1000 tones of supplies equates to one RP.
- *Troop supply*: this is the RP value of war material used in the previous turn by any troops drawing their supply from there, such as garrison troops. Troop consumption is calculated in tonnes, and each tonne equates to one RP.
- *Repairs*: this is the RP value of all ship repair work at the port in the previous turn.
- *Bombardment*: this is the RP value of war material destroyed at the port in the last turn by enemy attack. Note that this is the direct loss of RPs caused by damage to storages. Other damage, such as might have been sustained by your docks, defences or airfields, are accounted for as degraded infrastructure, and are shown in the 'Liabilities' section (explained below).
- *Refuelling/Rearming*: this is the RP value of war material used at the port last turn when refuelling or rearming ships.

Other assets

In addition to your main assets, which are described above, you have aircraft, infrastructure and troops.

Aircraft Investments

TOTAL AIRCRAFT INVESTMENTS	
RP Value	2882
RPs set aside for new a/c.	0

The Balance Sheet appendix next shows the total RP value of all the aircraft you currently have. (The RP value is the number of RPs spent to date in producing them).

Also shown are the number of RPs that are currently set aside for aircraft production in the current turn. These RPs have been set aside automatically. In the build aircraft phase of a turn, you use these RPs to actually order aircraft, which then become available for use in the same turn. Refer to how to build aircraft for more information.

Once you have completed the build aircraft phase, the Briefing Report will show zero for "RPs

set aside for new a/c"; and the RPs used to build the aircraft will have been aded to the total RP value of the aircraft you now have.

Note that the 'TOTAL AIRCRAFT' heading for this section of the report is underlined. It is a hyperlink to a listing in the report of all your current aircraft - by type and number.

Infrastructure investments

TOTAL INFRASTRUCTURE INVESTMENTS	
RPs spent to date	497
RPs set aside for new infra.	585

The RPs you have spent on infrastructure during a game are also considered assets. The next section of the Balance Sheet is titled 'Infrastructure Investments' and shows both the number of RPs you have spent in the game to date, and the number you intend to spend.

You spend RPs on infrastructure in the build infrastructure phase. Refer to how to build infrastructure for an explanation of the types of infrastructure you can build, and how you can allocate your expenditure.

Army investments

TOTAL ARMY INVESTMENTS	
RP Value	1611.4
RPs set aside for new troops	-12.0

The Balance Sheet appendix shows the total RP value of all the troops you currently have. (The RP value is the number of RPs spent to date in producing them).

Also shown are the number of RPs that are currently set aside for raising and training more troops in the current turn. These RPs have been set aside automatically. In the build troops phase of a turn, you commit this expenditure. Refer to how to build troops for more information.

Total Assets

TOTAL ASSETS	29326

The report now totals all your assets, as described above, to produce a value for your total assets.

Liabilities

LIABILITIES	
(Current repairs needed)	(607)
(Total infrastructure damage to date)	(49.5)
TOTAL LIABILITIES	**(656)**

Unfortunately, no balance sheet is complete without accounting also for your liabilities! In *SAS*, there are two kinds of liabilities that need to be tracked:

- The cost to repair all remaining damage to your ships. (Ships can be damaged badly enough to require several turns to fix. Repair work will also be outstanding whenever repairs have been halted due to shortage of resources at the port).
- The cost to repair all remaining damage to port infrastructure - docks, defences ad airfields - inflicted by enemy attack. The figure shown has been totalled across ALL of your ports.

These two liabilities are totalled in the 'Total Liabilities' value shown in the Report.

Balance

BALANCE	**28670**

Finally, the Report shows your net worth in RPs - your total assets less your total liabilities - as the 'BALANCE' value at the end of the Balance Sheet Appendix.

Note! The balance figure is much more than an academic value. It is the main figure that counts when your performance against the enemy is assessed every year by your political masters. To be considered a strong performer, you need to show strong relative growth in your net economic position - as measured by this balance figure - compared to the enemy. See Overview - Winning and Losing for more information.

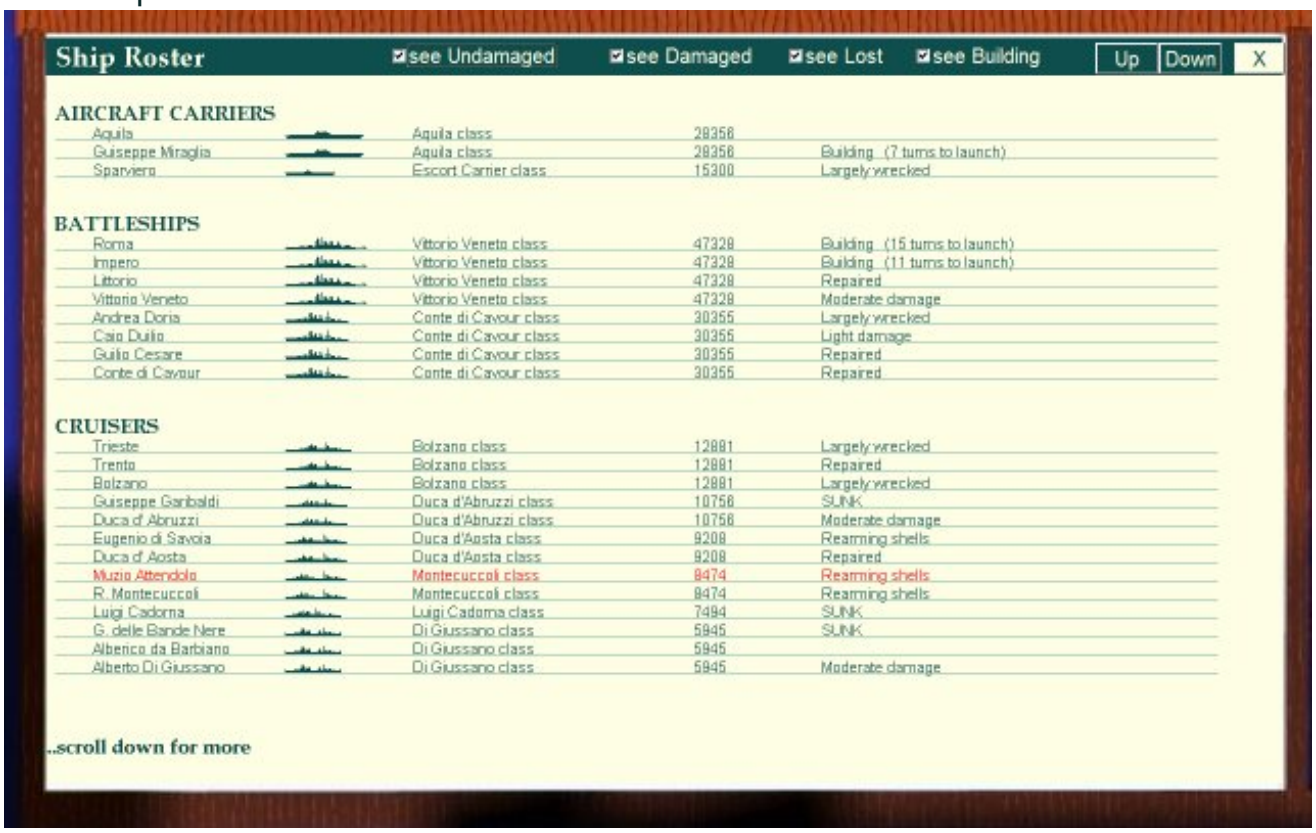
Own Ship Roster

The Ship Roster lists all your ships. Scroll down or up as you need.

The screen has tick boxes allowing you to filter the list to exclude or include ships that

are damaged, sunk or still building.

An example is shown below:



Ship Roster | see Undamaged | see Damaged | see Lost | see Building | Up | Down | X

AIRCRAFT CARRIERS			
Aquila	Aquila class	28356	
Guiseppe Miraglia	Aquila class	28356	Building (7 turns to launch)
Sparviero	Escort Carrier class	15300	Largely wrecked
BATTLESHIPS			
Roma	Vittorio Veneto class	47328	Building (15 turns to launch)
Impero	Vittorio Veneto class	47328	Building (11 turns to launch)
Littorio	Vittorio Veneto class	47328	Repaired
Vittorio Veneto	Vittorio Veneto class	47328	Moderate damage
Andrea Doria	Conte di Cavour class	30355	Largely wrecked
Caio Duilio	Conte di Cavour class	30355	Light damage
Guilio Cesare	Conte di Cavour class	30355	Repaired
Conte di Cavour	Conte di Cavour class	30355	Repaired
CRUISERS			
Trieste	Bolzano class	12881	Largely wrecked
Trento	Bolzano class	12881	Repaired
Bolzano	Bolzano class	12881	Largely wrecked
Guiseppe Garibaldi	Duca d'Abruzzi class	10756	SUNK
Duca d'Abruzzi	Duca d'Abruzzi class	10756	Moderate damage
Eugenio di Savoia	Duca d'Aosta class	9208	Rearming shells
Duca d'Aosta	Duca d'Aosta class	9208	Repaired
Muzio Attendolo	Montecuccoli class	8474	Rearming shells
R. Montecuccoli	Montecuccoli class	8474	Rearming shells
Luigi Cadorna	Luigi Cadorna class	7494	SUNK
G. delle Bande Nere	Di Giussano class	5845	SUNK
Alberico da Barbiano	Di Giussano class	5845	
Alberto Di Giussano	Di Giussano class	5845	Moderate damage

..scroll down for more

Close the Ship Roster by clicking on the 'X' button at the top-right of the screen. This returns you to the Briefing Report.

Own Aircraft List by Type

This appendix list all your current aircraft by type, showing for each type the number currently available, and the numbers lost last turn and in total since the start of the game:

OWN AIRCRAFT LIST BY TYPE

Aircraft Type	Available	Lost Last Period	Lost To Date
Hudson I	53	0	0
Maryland Mk II	53	0	0
A-20A Havoc	53	0	0
A-20C Havoc	53	0	0
B-17C Flying Fortress	447	0	0
B-17E Flying Fortress	0	0	0
B-18A Bolo	0	0	0
B-18B Bolo	0	0	0
B-24D Liberator	53	0	0
B-25B Mitchell	53	0	0
B-25C/D Mitchell	182	0	3
B-26 (Pac) Marauder	53	0	0
B-26 Marauder	53	0	0
B-26A Marauder	53	0	0
B-26B Marauder	53	0	0
F2A-1 Buffalo	60	0	0
F2A-2 Buffalo	60	0	0
F2A-3 Buffalo	1	0	0
F4F-3 Wildcat	60	0	0
F4F-4 Wildcat	825	4	12
F4F-7 Wildcat	408	0	0
J2F-5 Duck	0	0	0

Own Aircraft List by Airfield

This appendix list all your currently available aircraft by type and airfield:

OWN AIRCRAFT LIST BY AIRFIELD

San Francisco

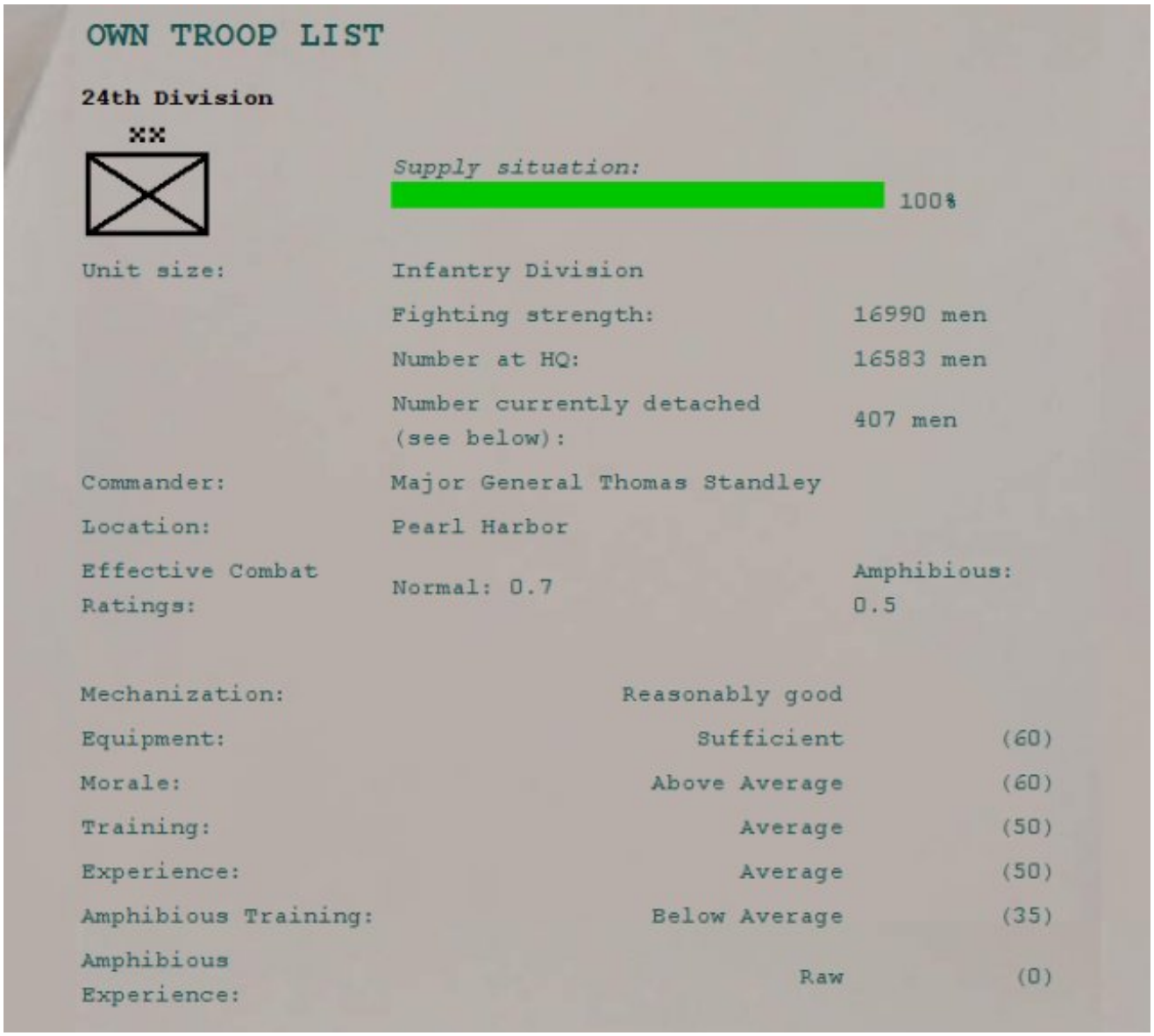
B-17C Flying Fortress	10
B-25C/D Mitchell	19
F4F-7 Wildcat	16
OS2U-3 Kingfisher	16
P-38G Lightning	50
SBC-4 Helldiver	9
TBF/TBM-1 Avenger	44

Pearl Harbor

B-17C Flying Fortress	10
B-25C/D Mitchell	16
F4F-7 Wildcat	16
OS2U-3 Kingfisher	16
P-39D Airacobra	14
P-39K Airacobra	20
SBC-4 Helldiver	9
TBF/TBM-1 Avenger	44

Own Troop List

This appendix details all your current troop units, including their forecast supply situation over the current turn. An example is shown below:



OWN TROOP LIST

24th Division

XX

Supply situation: 100%

Unit size:	Infantry Division	
	Fighting strength:	16990 men
	Number at HQ:	16583 men
	Number currently detached (see below):	407 men
Commander:	Major General Thomas Standley	
Location:	Pearl Harbor	
Effective Combat Ratings:	Normal: 0.7	Amphibious: 0.5

Mechanization:	Reasonably good	
Equipment:	Sufficient	(60)
Morale:	Above Average	(60)
Training:	Average	(50)
Experience:	Average	(50)
Amphibious Training:	Below Average	(35)
Amphibious Experience:	Raw	(0)

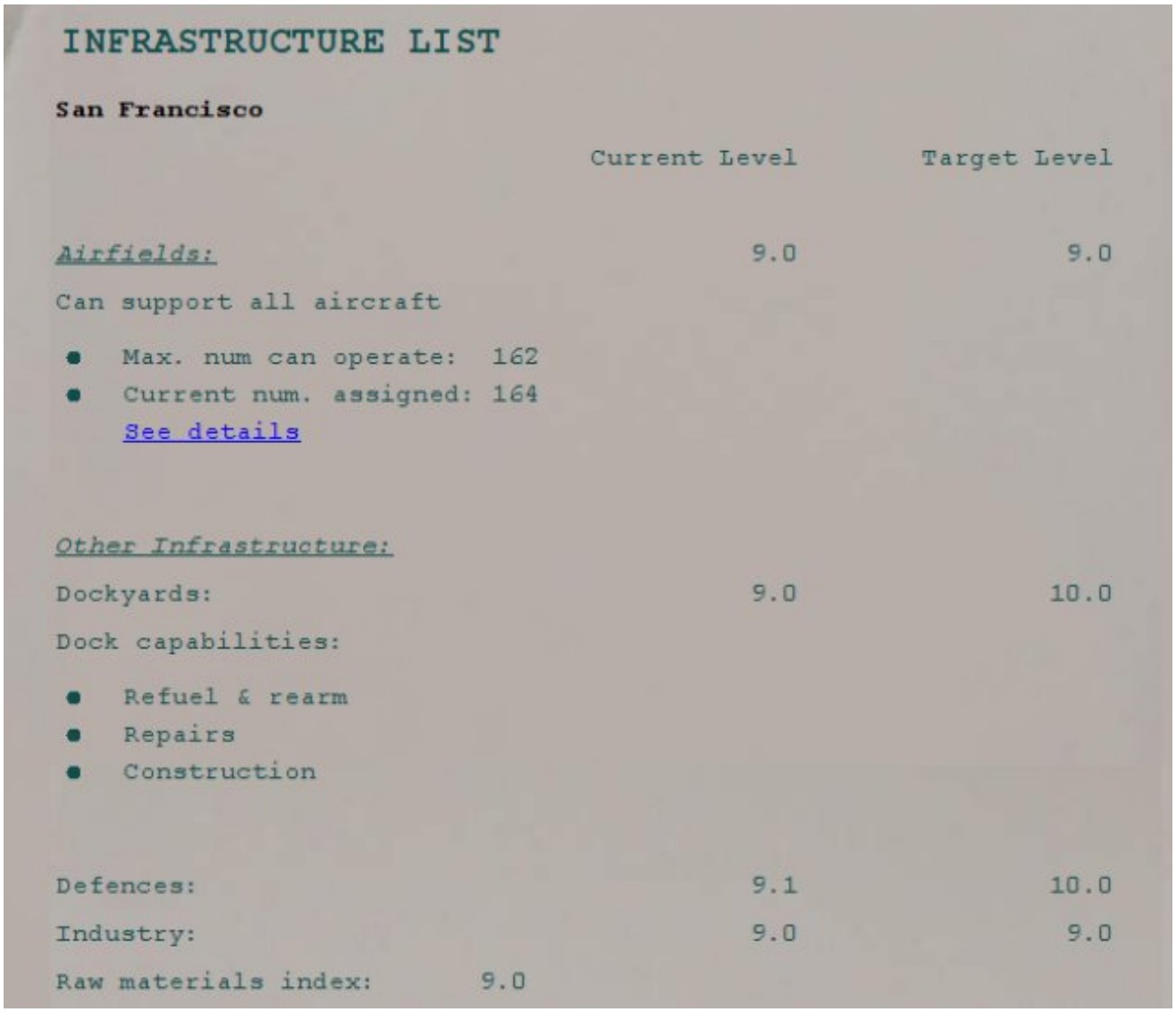
See the notes on combat value and other troop characteristics for more help on the meaning of the troop unit statistics.

Infrastructure List

This appendix is very detailed - it gives full information on the infrastructure at each of your ports:

- The current and planned infrastructure levels of surrounding airfields, and the current and maximum number of aircraft. A link is provided to the appendix that details aircraft by airfield.
- The current and planned levels of dockyard facilities, port defences and industrial plant.
- The 'raw materials index' (RMI) for the port.

An example is shown below:



INFRASTRUCTURE LIST

San Francisco

	Current Level	Target Level
Airfields:	9.0	9.0
Can support all aircraft		
• Max. num can operate: 162		
• Current num. assigned: 164		
See details		
Other Infrastructure:		
Dockyards:	9.0	10.0
Dock capabilities:		
• Refuel & rearm		
• Repairs		
• Construction		
Defences:	9.1	10.0
Industry:	9.0	9.0
Raw materials index: 9.0		

Note that very similar information is also available in the pop-up displays from on the theatre map when you elect to see the popups and then pass your mouse over any of your ports.

Enemy ship OOB

This section lists all known enemy ships, grouped into ship type categories. The status and location information is as last reported. Each ship has a hyperlink to details of the ship class design (in the next appendix).

An example is shown below:

ENEMY SHIP OOB

Battleships

Ship	*Class*	
Haruna	Kongo	At Advanced Port.
Hyuga	Hyuga	At Home Port.
Musashi	Yamato	At Home Port.
Mutsu	Nagato	At Advanced Port.
Nagato	Nagato	At Home Port.
Satsuma	Super Tosa	At Home Port.
Yamashiro	Fuso	At Advanced Port.
Yamato	Yamato	At Advanced Port.

Aircraft Carriers

Ship	*Class*	
Akagi	Akagi	At Advanced Port.
Chuyo	Taiyo	At Home Port.
Hiryu	Soryu	Involved in the Battle of the United States, 22 June, 1942. Damaged by air-surface attack. Reported to be sinking.
Junyu	Hiyo	At Advanced Port.
Kaga	Kaga	Sunk by air-surface attack in the Battle of the United States, 21 June, 1942.
Ryuho	Ryuho	Sunk by submarine attack in the Battle of the Solomon

Enemy Ship Design Reports

This appendix shows a summary of the design details for each enemy ship class. Remember – this information may be inaccurate in certain respects. The information is obtained from enemy ship sightings and general intelligence gathering. It will become more accurate as your naval intelligence level increases and also as you obtain more sightings of ships of the class.

An example is shown below:

```
class: Queen Elizabeth
Description:                    Battleship
Tonnage:                        37209
Armament:                       8 * UK 15
Armour:                         12.0 in. on belt
Strength:                       1969
Speed:                          24 kts.

class: Renown
Description:                    Battleship
Tonnage:                        40800
Armament:                       6 * UK 15
Armour:                         13.5 in. on belt
Strength:                       2088
Speed:                          30 kts.

class: Rother
Description:                    Escort ship
Tonnage:                        1908
Armament:                       2 * 4.0
Splinter armour:                0.25 in.
Strength:                       50
Speed:                          27 kts.
```

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How to build infrastructure

What is infrastructure?

Ships, fleets, aircraft and troops are the most obvious assets a player has in the game. But infrastructure - the tangible capabilities of your industry, ports and airfields to build and operate these assets - is just as important.

Infrastructure also includes less visible strengths - the quality of training for the crews of your ships and aircraft, and the levels of key technologies including the availability of suitable aircraft designs.

Finally, infrastructure includes the levels of industrialisation that can convert raw materials into the all-important resources you need.

See the overview of infrastructure for more information about what types of infrastructure there are.

A player starts a game with levels for these types of infrastructure that have been defined during campaign creation.

Some infrastructure - the defences, docks, stores, airfields and industrial plant at or near your ports - can all be degraded through enemy surface and aerial bombardment as well as amphibious asaults (and in the worst case, your ports and all their facilties can be captured).

Infrastructure can also be improved during each turn of a game by targeted spending.

To build new levels of infrastructure in any turn, from your Admiral's Office, click on "Build" on the main menu on the blackboard, and then on "Infrastructure" on the build menu.

2IC Help with Building Infrastructure

You will now see a screen like this:

Your 2IC is ready - with one button click - to plan all infrastructure spending for you for the turn in a way that accords with your overall strategy.

See how strategy affects infrastructure development for more information.

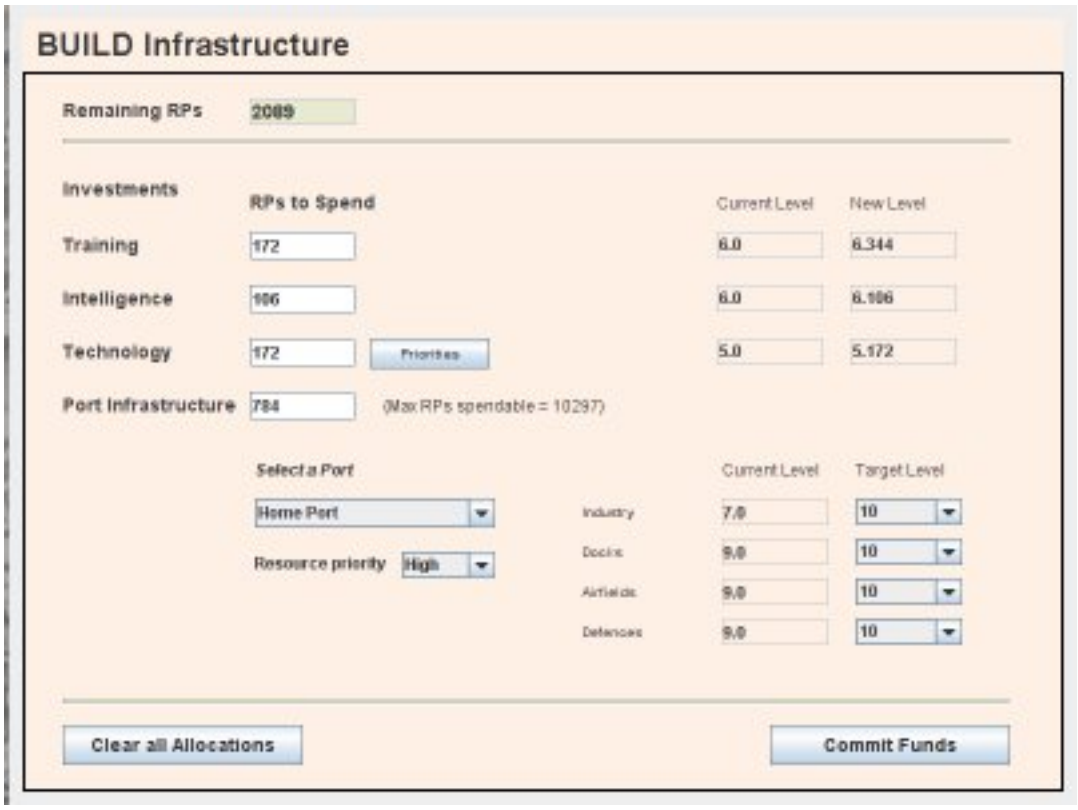
You have three options at this point:

- Go immediately to your 2IC's plan. Just click the "Yes" button to do this.

- Change strategy first - by clicking on the "Change Strategy" button.
- Elect to ignore your 2IC's help - by clicking the "No" button.

When you click either the "Yes" or the "No" buttons, you will see the Build Infrastructure Screen.

Build Infrastructure Screen



If you clicked "Yes", this screen will be pre-filled with expenditure amounts recommended by your 2IC. Otherwise, all amount fields will be empty.

The screen has a number of fields for viewing and editing allocations to various kinds of infrastructure.

To clear all current allocations to zero, click the "Clear all Allocations" button at the bottom left of the screen. Use this to quickly reset allocations to start

with a clean sheet of paper, or else to cancel all infrastructure spend this turn so as to leave the maximum possible resources for other purposes (such as ship building).

When you are finished, click the "Commit Funds" button at the bottom right of the screen. The set allocations will now be taken, and the screen will close, returning you to the Admiral's Office.

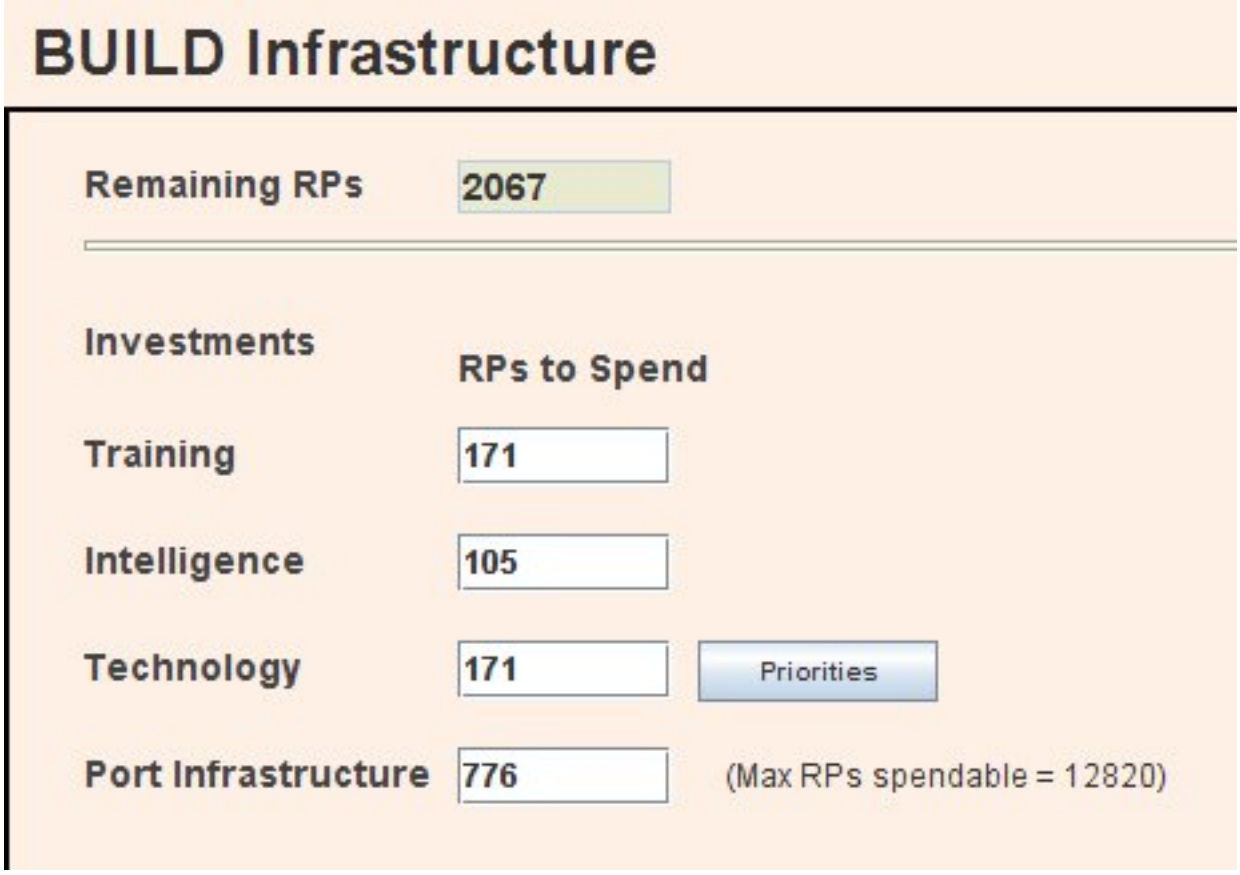
Remaining RPs

At the top of the screen is shown the total RPs you have left **at your home port** after all current spending plans. (Only RPs from your home port can be allocated to infrastructure spending, even though the spending itself may be on infrastructure at other ports).

Use this figure to determine whether you have left yourself enough RPs for other key spending this turn - including of course on new ship construction.

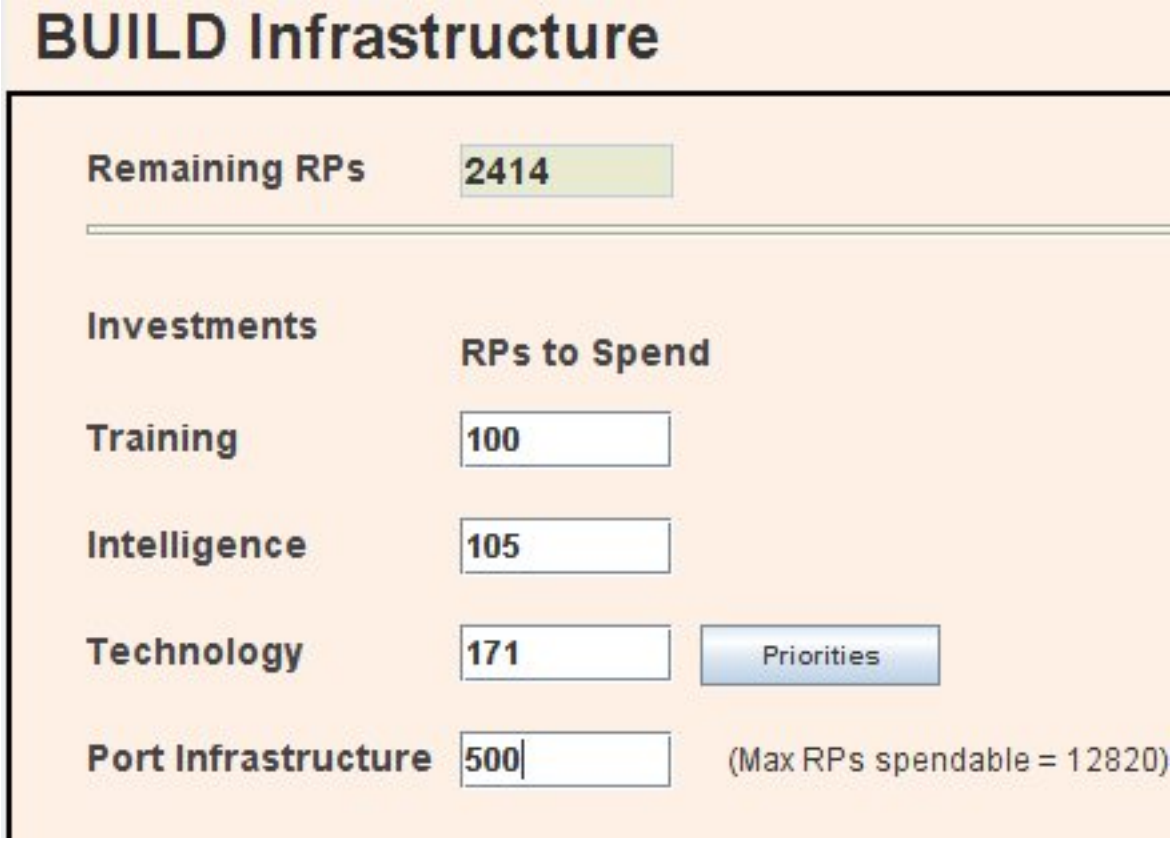
An Example

How this works is best explained by some simple examples. Pictured below is an part of the build infrastructure screen for the Italian player in a fictional Mediterranean campaign, on turn 1. The Italian player has just elected to build some infrastructure, accepting help from his 2IC:



The 'remaining RPs' value is 2067, i.e. the current RPs at home port, LESS the expenditures suggested by the 2IC, equals 2067. This means the Italian player has enough left to build up to 206,700 tonnes of shipping. (One RP buys 100 tonnes of new construction)

Reducing any expenditure amount on the build infrastructure screen correspondingly increases the remaining RPs. In the picture below, the player has reduced expenditure on training to 100, and that on port infrastructure to 500. The remaining RPs are now correspondingly increased to 2414:

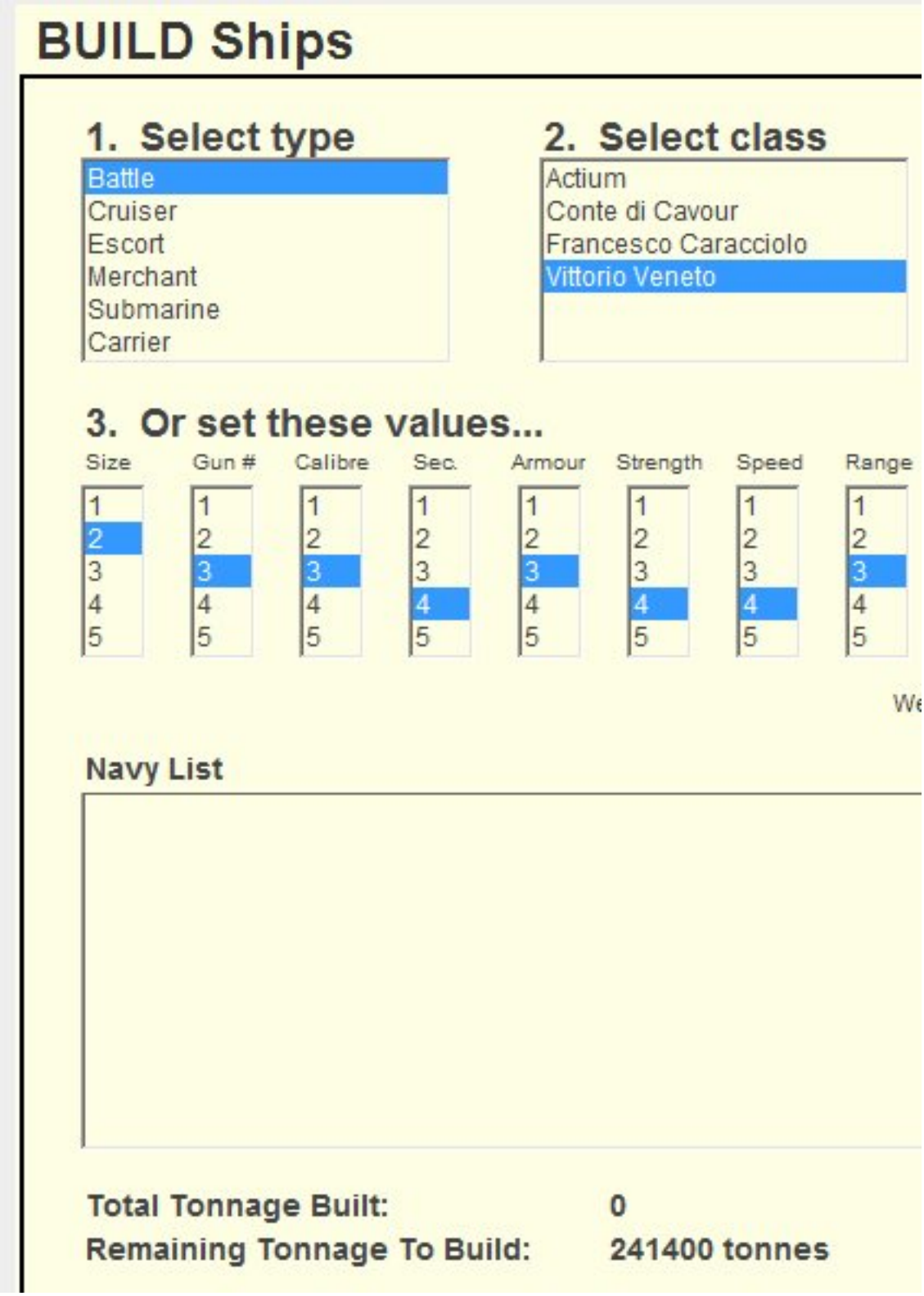


In this way, a player can juggle the amounts spent on infrastructure with an eye to leaving enough for new ship building.

If the player were now to commit this expenditure by clicking the 'Commit Funds' button, he would see (if he were to check on the Theatre Map) that the 'Resources' level for his home port of La Spezia is now shown as 2414:

If he were now to build some ships, he would see that the build ships screen

showed (at the bottom) that he could build up to 241,400 tonnes of ships:



After this example, we can now return to the detailed explanation of how to build different types of infrastructure.

Types of Infrastructure

You can develop these different kinds of infrastructure. (Follow the links to learn more):

- Training for your ship and aircraft crews.
- Naval intelligence.
- R&D in eleven key areas of technology.
- Infrastructure at your ports, namely the level of port defences, dockyards, industry and airfields.

Each of these has a current and a target value between 0.0 and 10.0 (10.0 is the maximum possible value).

Increasing Infrastructure Levels

For training and naval intelligence, all you have to do is simply enter the number of RPs that you want to spend this turn in the relevant field. Each RP spent increases the level by 1/500th of a point.

For technology, the process is slightly different.

Increasing the general technology R&D effort

Every RP spent improves the current level of technology by 1/500th of a point. The current and proposed levels of technology are shown alongside. These levels will be in a range between the lowest possible level of 1.0 and the highest of 10.0. When the current level is 10.0, more expenditure is simply wasted.

The chance of a breakthrough in any technology area is then related to the current level of attainment in that technology compared to the average R&D expenditure level. For example - if the average technology level is 5.0, it is much more likely that an advance in say radar will occur if the current level is markedly below 5.0. If it is close to 5.0 or even above that, further breakthroughs will be much less likely.

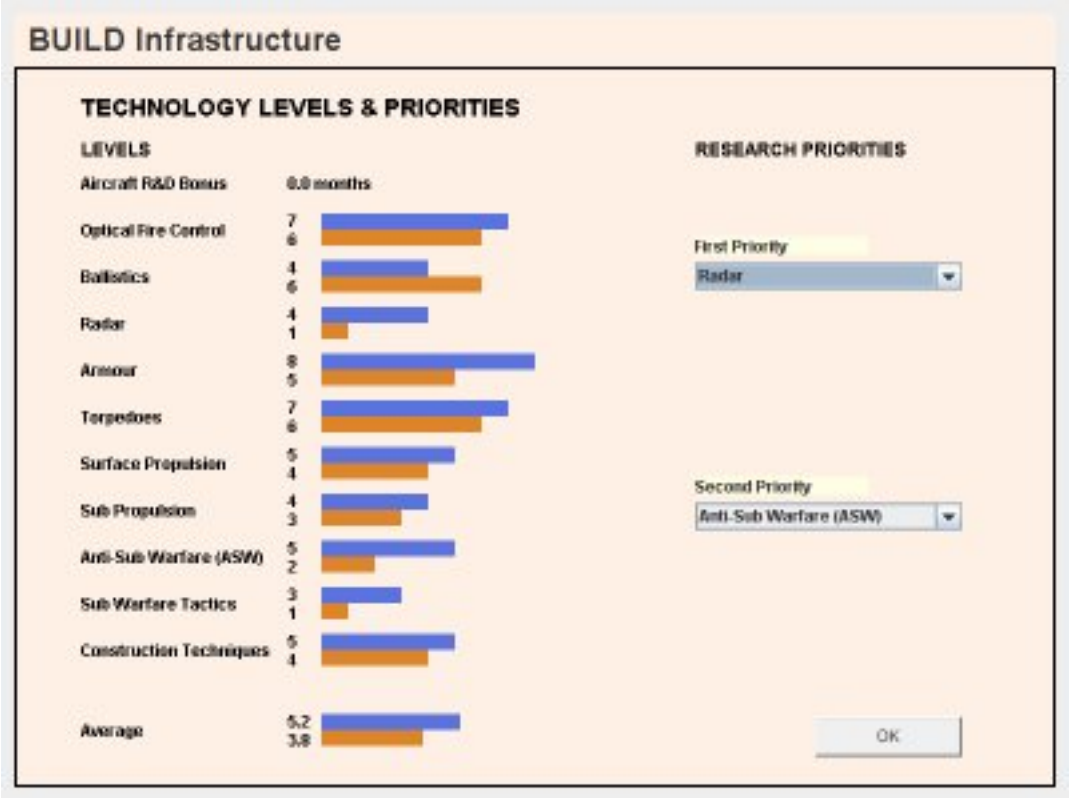
Aircraft Technology

Aircraft technology works in a slightly different way to the others. The basic way of determing advances is the same; but the effect of an advance needs some expanation. Instead of being shown as a level in the 0.0 to 10.0 range, aircraft technology is shown as a bonus of a certain number of months. The value is the number of months by which the availability of historical aircraft is brought forward. For example, if the aircraft technology bonus is shown as 11 months, it means that an aircraft type that was available in WW2 say in November 1943 would now be available 11 months earlier - in January 1943. In this way, more advanced later war aircraft can be brought in earlier.

Changing R&D priorities

You can also set priorities for the R&D effort. This is a way to increase expenditure in chosen areas - at the expense of areas you judge to be less important.

To do this, click on the "Priorities" button. You will see the Technology Levels and Priorities Screen:



Here you can set the top two priorities if you want (or spread the money equally across all areas). The top priority receives approximately 8 times the average share; the second priority receives roughly 3 times the average share.

Note that this screen also shows you the current levels of your technologies and the estimated comparative levels of enemy technology. (This same information is also shown in the Situation Report.

Click the "OK" button to close this screen and return to the Build Infrastructure screen.

Port Infrastructure

There are four kinds of port infrastructure. You build infrastructure at your ports by:

1. Setting a total budget for all port infrastructure work
2. Optionally setting target levels for the infrastructure at each of your ports
3. Optionally setting priorities for allocating the budget between your ports.

Setting a budget

To set a budget, in the "Port Infrastructure" field, just enter the number of RPs you want to set aside for all port infrastructure development.

This budget is the *maximum* RPs that can be spent this turn on port infrastructure. How much actually gets spent depends mainly on how much work needs to be done (as determined by the target levels you set). But - as explained below - there is also a limit to the amount of improvement that can be done in any one turn.

When setting a budget, take note of the "Max RPs spendable" figure quoted alongside. This is your 2IC's calculation of the total budget required to bring all areas of port infrastructure at all ports up to their target levels. You are not allowed to spend more than this (for obvious reasons!). If you enter a higher value, it will be reset to the maximum amount necessary to achieve your target levels. You will need to increase the target levels for one or more areas of port infrastructure before you can enter more than this.

The other limit on expenditure is a limit on the amount that can be spent per turn. Across all of your port infrastructure areas, no more than 100 RPs can be spent *per turn*.

If you set a budget at zero, obviously no port infrastructure development will occur this turn.

Rates of improvement

Some port infrastructure is harder to improve than others. Each RP spent, per month, can improve:

- the airfield level by 1/20th of a point, or
- the defence level by 1/50th of a point, or
- the dockyards level by 1/200th of a point.

Industry levels are a special case. It gets increasingly hard to increase industry levels. One RP increases industry levels by 1/100th of a point when industry is non existent. But each increase in level multiplies the cost. It takes over 4000 RPs to develop industry at a port from zero to maximum. The same RPs can build 4 million tonnes of shipping! It will also take over three years, even assuming all budget set aside for port infrastructure is devoted soley to this.

Setting target levels

Each port has default target levels for infrastructure, but you can change these levels if you want. To do this, you:

- Select any port in the "Select a Port" drop down list
- Then alter any target values for that port in the "Target Level" drop downs.

You can change the target levels up or down on any turn. The target level has to be at least equal to the current level.

Setting priorities

Each port has a default priority - either "High", "Medium", "Low" or "None".

A priority of "None" simply takes that port out of the loop for any further infrastructure work until a higher priority is set. This can be useful if you want to stop work on all ports except those where you want to concentrate all your resources.

Higher priority ports get a greater share of the budget pool and so develop at a faster rate.

Committing the expenditure

After you have changed any values you want in the Build Infrastructure screen, you can commit the spending by clicking on the "Commit Funds" button.

The expenditure is NOT committed until you do this, so you can change your mind any number of times before hand. But the expenditure is locked in once you click on "Commit Funds".

Clicking on "Commit Funds" will close the Build Infrastructure screen and return you to the Admirals Office.

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Infrastructure - an Overview

There are different types of infrastructure in *SAS*, all of which have an important effect on gameplay and can be upgraded during a campaign. The following is an overview.

Training

Every RP spent improves the current training level of ship and aircraft crews by 1/500th of a point. The current and proposed levels of training are shown alongside. These levels will be in a range between the lowest possible level of 1.0 and the highest of 10.0. When the current level is 10.0, more expenditure is simply wasted.

Training levels are crucial to the performance of your ships and aircraft in combat. In the case of ship crews, the effects are quite widespread and include not only the effectiveness of gun and torpedo-laying in combat, but also damage control, alertness of crews to visual searches and ability to use any radar installed aboard.

In the case of aircraft, training directly affects the offensive and defensive performance of your aircraft in air to air combat as well as the accuracy of bombs and torpedoes against ship and land targets.

Note that what is shown in this screen is the *average* training level. When new ships are commissioned, the training levels of crews for that ship are set based on this average level, but with some random variation.

When new aircraft are produced, the crews for them start at the current average training level.

Note that battle experience improves the performance of (surviving!) aircraft and ship crews. See battle experience for more information.

Intelligence

Every RP spent improves the current level of intelligence by 1/500th of a point. The current and proposed levels of intelligence are shown alongside. These levels will be in a range between the lowest possible level of 1.0 and the highest of 10.0. When the current level is 10.0, more expenditure is simply wasted.

The level of your military intelligence affects many things, and its effectiveness is always a function both of the absolute amount of expenditure and the *relative* intel expenditure compared to the enemy.

Intelligence comes in several forms:

- Information on enemy fleets from various sources. (Note, information also comes from visual and radar reconnaisanace from your fleets and aircraft but these are the result of operational deployments, radar technology and crew training, not intelligence expenditure as such):
    - Decoded enemy signals - the greater your intel advantage over the enemy the more messages you will be able to decode.
    - Coastwatcher reports - higher intel levels mean more resources for coastwatchers, who can sight enemy fleets that are in ports or pass by in visual range of land (including coastwatchers acting undercover in enemy territory). More resources means more and better trained coastwatchers, so reports will be both more frequent and more reliable. However, the enemy can

conduct counter intelligence efforts, the success of which is related to resources, so, again, relative resource expenditure on intelligence matters.

- Strategic enemy intel (summarised in your situation report):
  - Enemy economic data
  - Assessments of the levels of enemy technology
  - Data on enemy ship designs - which is cross referenced with information obtained from battle reports. Note that this explains why information in the Situation Report on enemy ship designs may change, and may be different to what you know historically was the case. In *SAS* an attempt has been made to recreate the fog of war by presenting you with enemy ship design data that is based purely on your own intel. As a game progresses and you have more opportunity to learn about enemy ship classes through intel and battle reports, the reliability of your information will improve.
- Counter intelligence - i.e. efforts to impede or mislead all aspects of the enemy's intelligence effort.

Technology

There are 11 key technologies in *SAS*. Refer to technologies for an overview of these and how they affect game play.

Unlike other infrastructure areas, technology R&D has somewhat unpredictable results. Scientific breakthroughs do not come routinely and rely on inspiration and luck as well as resources; but the greater the R&D expenditure, the more likely it is - other things being equal - that a break through in key technology areas will occur.

The R&D expenditure on key technologies can be increased in 2 ways:

- By increasing the general technology R&D effort
- By separately changing the R&D priorities.

Port Infrastructure

There are four kinds of port infrastructure:

- Port defences
- Dockyard facilities
- Industrial plant servicing the port
- Airfield infrastructure at or near the port.

Each has a current and a target value of between 0.0 and 10.0.

Port defences

These are used against enemy aerial and surface bombardment and amphibious assault and include all manner of typical defensive works such as guns and gun emplacements (for use against enemy ships, aircraft and troops), land minefields (mines at sea must be separately laid as part on minelaying missions), barbed wire, trenches, pillboxes, anti-torpedo harbour nets, blast proofing of key facilities, and so on. The higher the defence level, the greater the damage inflicted on the enemy and the less damage to port facilities will be sustained in return and the more entrenched any garrison troops will be, significantly helping them to resist enemy land attack.

Dockyard facilities

The ability of a port to service shipping - repair, rearm, refuel and construct ships - is directly dependant on this value:

- Refuelling and rearming of vessels requires a level of at least '2'.
- Repairing requires a level of at least '5'.
- In regard to construction:
    - Merchant ship consruction requires a level of at least '5'
    - Submarine contruction requires a level of '6' or more
    - Escort ship construction needs levels of '7' and above
    - Carrier and cruiser construction requires level 8 or more
    - Battleship construction requires level 9 or higher.

So, degradation of your facilities through enemy attack can have a critical effect of your ability to wage war. Make sure you monitor the current dock levels at your ports!

The *rate* at which repair and construction work takes place is also directly dependant on the dock facilities level. The higher the level, the faster the work can take place. (For example, a dockyard at level '9' can repair and construct almost twice as fast as a level '5' dock.

Industrial plant

The RPs you need to pay for everything in the game are produced by your industry when it is supplied with domestic or export materials.

The higher the industry level at a port, the more value can be extracted from the same amount of materials. An industry value of '0' means that no RPs can be produced.

Unlike most other infrasture costs, which are linear, the development of

industry becomes increasingly expensive. It is easy to build very basic industrial plant, but very costly to develop complex indutstry. Countries that start a game with more advanced industrial plant have a sizeable advantage.

Industry can be damaged through enemy attack, so make sure you monitor the condition of your industrial plant.

Because economic wealth is the key to victory in *SAS*, it is a legitimate strategy in the game to maximise reinvestment in industry. A cautious player may opt to do this, reducing dependance on vulnerable convoys and trying to survive on a relatively small navy and merchant fleet. Whether this is successful of course depends entirely on the execution of the strategy and how much the enemy is able to exploit any weaknesses.

Airfield facilities

The level of airfield facilities affects the number and type of aircraft that can be operated there:

Type of aircraft

- Heavy bombers can be operated only from airfields with a level of 8 or greater.
- Medium bombers and long range reconnaissance aircraft need a level of at least 5.
- Fighters, interceptors and short range reconnaissance aircraft need a level of at least 2.

Note that no aircraft can be operated once the level drops below 2.0. Monitor the condition of your airfields, and make sure that the key airfields are

developed to support the aircraft you need there. Airfields are easily damaged but are also quite quick to repair and develop compared to other forms of infrastructure.

Number of aircraft

Independently of limitations on aircraft type, the airfield level also limits the total number of aircraft that can be suported.

The formula is simple - the maximum number is 2 times the square of the airfield level. For example, a port with an airfields value of 6 can support a total of 72 aircraft (but no heavy bombers) from nearby airfields.

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Technologies

There are twelve individual technologies. Each has a level that is set when a campaign is created. They can increase throughout a campaign through investment in technology.

This investment does not automatically produce technology breakthroughs, but it makes them more likely. The greater the investment, and the higher the priority accorded to technology areas, the more likely it is that breakthroughs, small or large, will occur. Remember that scientific advancement is not pre-ordained and advances will come somewhat unpredictably.

Optical Fire Control

This is a combination of all the technologies associated with fire control of naval guns using optical instruments, and includes improvements in ballistics that relate to improved fire dispersal.

The higher the value, the greater the chance of scoring main gun hits at all ranges, in all weather conditions.

Ballistics

This value represents essentially the ballistic performance of main calibre guns in terms of armour penetration. It reflects a number of variables, including shell velocity and weight. (This is simplified into a single value; in reality, guns varied considerably in terms of their penetration capability against vertical as compared to horizontal armour.) The higher the value, the

better the overall penetration capability.

In reality, there were significant differences between different countries and even within a country, between different gun calibres, in terms of ballistic performance. For example, British guns had relatively poor ballistic performance generally, due in large part to conservative decisions regarding lower velocities (to preserve barrel life) and only moderate shell weights. US practice, which resulted in outstanding ballistic performance for their 16 inch guns, relied on very heavy shells and good though not exceptional velocity. European (French, German and Italian) practice preferred high velocity and relatively light shells.

Radar

This value indicates the capability of radar, both for long range enemy searching and shorter range fire control.

Armour

This value indicates the efficiency of face-hardened armour plate. In real life, significant differences existed between countries in terms of armour quality. Best by a considerable margin was Britain, with their face-hardened armour up to 20% better than US ‘A’ class armour; worst was probably Italy, which had difficulty producing single armour plates of sufficient thickness and had to rely on sandwiched layers of steel and wood.

The higher the value, the greater the protective value of armour for a given thickness.

Torpedoes

This is a simplified value representing the efficiency (speed, range and explosive power) of torpedoes, whether launched by surface ships or submarines. As this value increases, so does the range, speed and power of your torpedoes.

In WW2, big variations in torpedo technology existed. At the head of the pack by a long way was Japan, whose "Long Lance" oxygen-enriched torpedoes simply far outclassed any other navy's torpedoes in terms of speed, range and power. They were a true "secret weapon" for the Japanese in the early years of the War. Some countries, eg US and Germany, had surprising problems with their torpedoes, such as in the reliability of the magnetic detonators. Britain had relatively good all-round capability and reliability, but were well behind the Japanese.

Surface Propulsion

Although all navies used steam turbine machinery almost exclusively, especially for the faster naval vessels, the efficiency of the machinery and propulsion systems varied considerably.

The US and France had the best technology – relatively high pressures and temperatures and good gearing systems. Germany had high pressure and temperature systems but surprisingly poor reliability. British ships were generally rather poor steamers, due to a combination of conservative machinery design and single reduction gearing.

The better the value, the better the range your ships will have for the same amount of fuel.

Construction Techniques

This value represents design and ship building efficiency, i.e. the ability to minimise wasted tonnage: the higher the value, the lower the required total tonnage for a ship of given characteristics.

Various factors are included here, notably excellence in welding, use of aluminium and other weight-saving techniques, as well as good ship design.

Anti-Submarine Warfare (ASW)

This value represents the sum of various ASW technologies – sonar, ASDIC, hedgehog and other depth charge weapons, ASW tactics and so on. The higher the value the more effective your escorts will be in repelling and damaging enemy submarines when they attack.

Submarine Warfare Tactics

This value represents the effectiveness of your attacking submarine doctrine. The higher the value, the more your submarines can act in concert and the more effective they will be when attacking.

Germany pioneered the so-called wolf-pack tactics and attained probably the high-water mark of coordinated submarine offensive tactical doctrine.

Submarine Propulsion

All navies started the war with similar technology for submarine propulsion

underwater, but developments during the war, mainly by Germany, featured more efficient batteries, the so-called Schnorkel (allowing running under diesel power while submerged at schnorkel depth) and the Walter closed cycle hydrogen peroxide engine.

The higher the number, the more effective your submarines will be when attacking and also evading attack underwater, due to increased speeds and/or range underwater.

Amphibious Operations

All navies started the war with low or non-existent experience or doctrine in conducting amphibious operations, and with very little in the way of purpose-built designs for small craft designed to effectively deliver assaulting troops between their transports and the beachhead.

As the level increases, the chances of your troops making effective amphibious assaults increases significantly.

Aircraft Technologies

This represents all the relevant technologies used in WW2 aircraft design - chiefly engine (including jet engine), airframe and weapon systems.

As an exception to the other technologies, this one is measured not by a number in the 1.0 to 10.0 range but by a value representing a number of months bonus in design attainment. For example, if the bonus is shown as 11 months, this means that all aircraft available in *SAS* for that country are now available 11 months earlier than the date of their historical availability.

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How strategy affects infrastructure development

Your 2IC allocates available resources to infrastructure improvement based on your strategy.

Very cautious strategy

40% of available resources are earmarked for infrastructure - a very substantial investment as it leaves only 60% for new ships, aircraft and troops. Priority is on long-term war-winning factors such as technology R&D and port infrastructure. The strategy is to build a very solid base for victory, even if it takes time.

Cautious strategy

30% of available resources are earmarked for infrastructure. The remaining 70% is free for new ships, aircraft and troops. Planning assumes a moderately long war. Infrastructure priorities are on things that help both offensive operations(fleet training) as well as port facilities and defences.

Aggressive strategy

20% of available resources are earmarked for infrastructure. The remainder (80%) is to be spent on new ships, aircraft and troops, with the aim of achieving a moderately quick victory. Infrastructure priorities are on things that maximise offensive capability: fleet training, and ship building and repair

facilities.

Very aggressive strategy

Only 10% of available resources is earmarked for infrastructure. (The remaining 90% is to be devoted directly to building new front-line fighting capability: new ships, aircraft and troops, with the aim of an all-out quick and decisive victory). Infrastructure priorities are on things that maximise immediate offensive capability: fleet training, ship building and repair facilities and naval intelligence.

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How to design and build ships

SAS WW2 is primarily a naval game. Although aircraft can play a huge part, it is only through ships that you can really project your power. It is critical to have the right number and type of ships to suit the strategy you want to employ.

Every turn, you get to construct new shipping, assuming you have enough resources.

New ships always appear at your home port.

Ships take a realistic amount of time to construct, except on the first turn, when they can become immediately available.

The ships you build can be either historical ones, or semi-historical (eg, ships that were designed, maybe even launched, but never completed in WW2), or include modifications you want to make, or even be to your own design from the keel up.

Designing and modifying ships is one of the really enjoyable and novel aspects of *SAS WW2*, and best of all, it is incredibly easy to do. You do not have to be an engineer, or understand naval architecture. You just need to know what capabilities you want in your ships.

The ability to design your own, or modify, or to have semi-historical ships can be disabled for a campaign however. Players who want to run a strictly controlled campaign might want to do this.

SAS WW2 also makes it incredibly easy for you to construct large numbers

of ships. Even in moderately-sized campaigns, there are likely to be a hundred or more ships per side. You can specify the building of each one of these. But more usually, a player will want to concentrate on the key ships only - perhaps some of the battleships or cruisers - and have his 2IC take care of the hackwork by building all the rest.

SAS's very flexible command and control interface makes the task of building ships as simple or as involving as you want. You have a very able, computerised 2-I-C who is there to help with any aspect that you don't want to handle.

Follow these links to learn all you need to know about designing and building ships.

The links are arranged in order from the simplest to the most complex option. You can take any option on any turn, varying your approach as you want.

Option 1 - this is the simplest - just let your 2IC handle everything. He orders the construction of all your ships, selecting the numbers and types most suited to your strategy.

Option 2 - this is the next simplest - you can change the strategy your 2IC is using. He still does all the detailed planning though.

Option 3 - this is a good general option and one many players will want to exercise. You let your 2IC create the plan. But then you can edit it in any way you like - replacing particular ships with others of your own choice, or even ones you have designed yourself. This leaves the hackwork to the 2IC whilst giving you control over the construction of the key ships.

Option 4 - this is almost the same as option 3, but the order of actions is

reversed. First, you select or design the ships you want, and then get your 2IC to plan the rest of your navy with what tonnage remains. The effect of this option is the same as option 3, but some players may want to do things in this order.

Option 5 - this is the most time consuming option, but the one that power players may want to take. With this option, you select or design all of your shipping, and do not use the assistance of your 2IC.

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How to automatically build ships

The simplest way to create ships is to let your 2IC do it all for you.

This page just explains how to let your 2IC do it all.

How to invoke your 2IC

First, you have to call up your 2IC.

From the main menu on the blackboard to the left hand side of your office, click on "Build". Then, on the build menu that comes up, click on "Ships"

The 2IC Help Screen

You will now see the 2IC help screen for building ships. The screen has some help text, some buttons, and a picture of your 2IC. Shown below is an example for the US player, relying on Admiral Spruance as his (very cautious) strategist:

The help text indicates that the 2IC is ready to "draw up a proposed ship construction list that is in accordance with our very cautious strategy".

You can learn how changing strategy affects this plan by going to the how strategy affects ship building page.

For now, it is assumed that you are following the simplest of all options, and are not changing strategy.

To authorise your 2IC to draw up a plan, just click on the "Yes" button at the bottom right of the sreen.

He will then select the numbers and types of ships to suit your strategy.

This may take a few moments so please be patient while this is occurring.

When the plan is finished, the 2IC Help Screen will disappear and the ship roster screen will appear. (Follow the link for information about this screen).

Click the close button on the Ship Roster. The Build Ships screen will now appear, giving you a chance to edit what the 2IC has done. Just click the "Finished" button on the Build Ships screen.

That's it. The job of constructing all your ships for the turn is now complete.

Best of all, you can review what your 2IC has done, and change any part of it. See editing your 2IC's ship construction plan. This gives you the control you want while leaving the hackwork to your 2IC.

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How to edit the strategy for building ships

Your 2IC follows your overall strategy when selecting numbers and types of ships. See how strategy affects ship construction for more information.

To change your strategy at any time, just click on the "Change Strategy" button at the bottom of the 2IC Help screen for building ships.

You will now see a dialog box like this:

Just select a different strategy, and click on the "OK" button.

A warning!

Changing strategy affects every aspect of what your 2IC does, not just ship building. Read the overview of strategies if you are in doubt about the effects a change will have.

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How strategy affects ship building

Your 2IC selects numbers and types of ships based on your strategy.

Very cautious strategy

40% of available resources are earmarked for infrastructure.

The remainder will be used to build a large merchant fleet (close to 30% of total ship tonnage), supported by a navy with ships designed for defensive operations. There will be a relatively high ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (16: 3.5 : 1) and each ship type will be of moderate size only, as long range and high speed are not critical.

Cautious strategy

30% of available resources are earmarked for infrastructure.

The remainder will be used to build a fairly big merchant fleet (about 24% of total ship tonnage), plus a moderate-sized navy with ships designed for both defence and moderate offensive operations. All ship types will be of moderate size for their type and have balanced characteristics, and there will be a balanced ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (12: 3 : 1).

Aggressive strategy

20% of available resources are earmarked for infrastructure.

The remainder will be used to build a moderate-sized merchant fleet (about 20% of total ship tonnage), plus a big navy with ships designed for offensive operations in enemy territory, including occasional port bombardments. A good proportion of tonnage will go to Battleships and carriers, and this plus the need for all types to have good speed and range -and therefore be of large size for their type -will mean that there will be a relatively low ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (9: 2.5 : 1).

Very aggressive strategy

Only 10% of available resources is earmarked for infrastructure.

The remainder will be used to build a small merchant fleet (about 16% of total ship tonnage), and a very big navy with ships designed for offensive operations deep into enemy territory, including port bombardments. As much tonnage as possible will go to Battleships and carriers, and this plus the need for all types to have very good speed and range -and therefore be of very large size for their type -will mean that there will be a low ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (7.5: 2 : 1).

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How to edit your 2IC's ship construction plan

As explained in how to automatically build ships, your 2IC can be asked to plan a complete ship construction program for you for the current turn.

After the program has been prepared, the 2IC Help screen will close and the ships to be constructed will be listed in the ship roster.

If you do not like any aspect of the plan, you can amend it in any way, by removing any ships and replacing them with ones you select or design yourself.

You make these decisions from the *Build Ships* screen.

This screen will automatically appear when you close the Ship Roster.

To edit the 2IC's plan you need to understand how to select or design ships. Refer to the building ships page for full instructions.

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Building Ships

You can build ships - first select, modify or design them, and then lay them down, all from the "Build ships" screen.

You use this screen whenever you want to edit your 2IC's plan, or first build the key ships before using the 2IC, or when you are not using your 2IC at all and intend to manually give ship building orders for all of your navy. The process is the same in each case.

Accessing the ***Build Ships*** screen

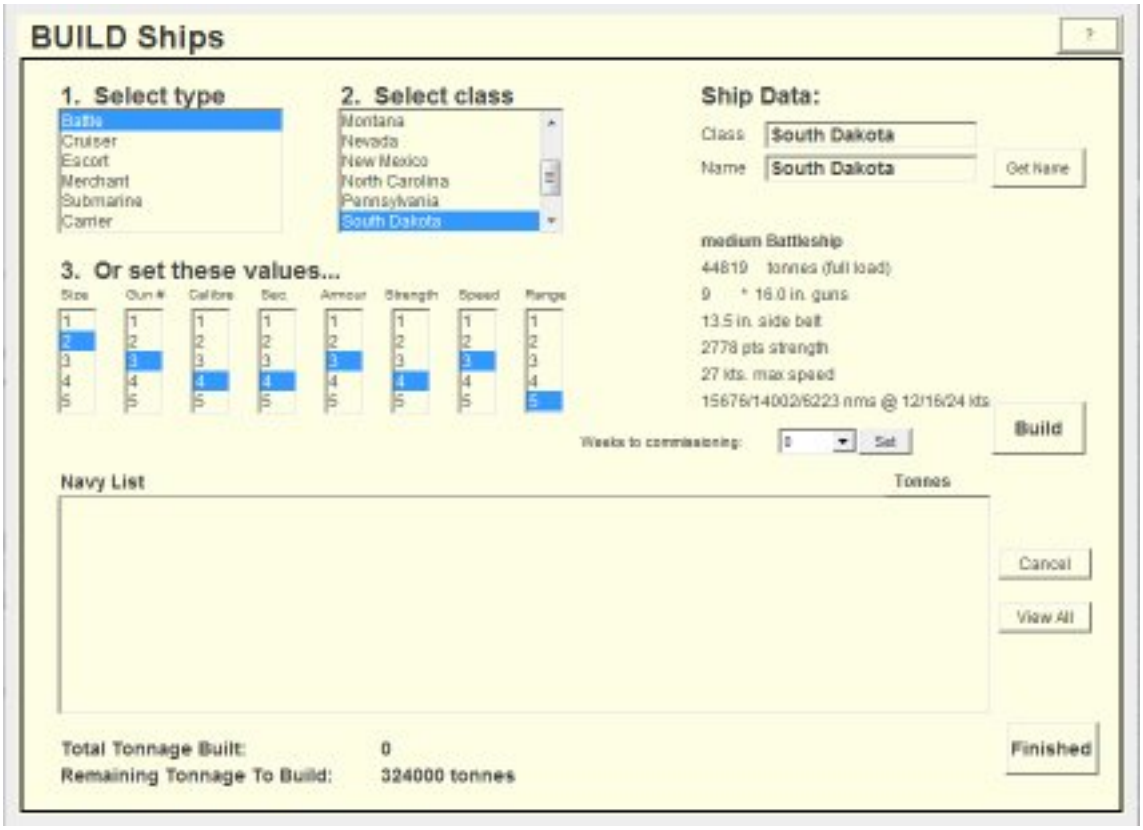
First, click on "Build" and then "Ships" on the blackboard in your Admiral's office.

When the *2IC Help Screen* appears, click on the "No" button. This takes you to the Build Ships screen.

You also get to the Build Ships screen automatically, after clicking "Yes" on the 2IC Help screen. In this case, the 2IC will take a few moments to plan ship construction and then the results will be displayed in the Ship Roster. When you close the Ship Roster, the Build Ships screen appears to allow you to make edits if you want.

The ***Build Ships*** screen

You will now see the screen for designing and building ships:



Before you start designing and building ships, you may want to first read the introduction to building ships, which explains what kind of ships you can construct.

Once you are ready, building ships is very easy. You can select historical ship designs, or modify them, or even create your own entirely new designs, all with just a few mouse clicks.

You can accept the suggested class and ship names, or select new ones or set your own names.

Then, if you have enough resources, you can build them.

You can also cancel any build command you have given in the current turn (but not in previous turns).

On the first turn of a campaign, you can also optionally delay the entry of any

ships that are built. (Normally, ships built on turn 1 of a campaign enter the game immediately, whilst those built on subsequent turns take a realistic time to construct. But sometimes - such as when you want to model historically accurate scenarios - you may want to delay the entry of ships that are ordered on turn 1.)

All of these operations are performed from the build ships screen.

Follow these links to learn more:

- Cancelling a ship.
- Selecting an historical design.
- Modifying an historical design.
- Creating a new design.
- Optionally changing ship and class names.
- Optionally delaying ship commissioning.
- Building a ship.

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Cancelling the Building of a Ship

You can cancel any command to build a ship that you or your 2IC have given in the current turn.

To do this, select the ship to cancel from the "Navy List" , and then click on the "Cancel" button: Cancel .

The "Navy List" updates automatically, and the tonnage allotted to building the ship is returned and available for the building of other ships.

Note though that you cannot cancel ships that were built on any previous turn.

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Selecting Historical Ships

First, bring up the build ships screen.

Then to select a historical class of ship to your navy, just two mouse clicks are required:

- Select the type of ship you want to build, from the top left list:

  

  Note that "Battle" means battleship or battlecruiser. "Escort" refers to naval vessels smaller than cruisers, that is ships from the very largest super destroyers approaching cruisers in size through to the very smallest sloops and corvettes (but excluding motor torpedo boats) of just several hundred tonnes.

- When you select the ship type, the adjacent ship class list is populated with the names of historical classes of ship that were available to your country in WW2. In addition, if the game options have been so set, you will see the names of some ships that were planned but never built, like the giant *USS Montana* class battleships, or even the much larger again *H Class* battleships planned by Germany. You may also see some "might-have-beens" - like an enlarged French *Richlieu* class battleship carrying the 16 inch guns actually designed in France but never employed. These "might-have-beens" add some play balance to certain navies to enable them to compete on more equal terms.

- Now select the class of ship from the adjacent ship class list:

- To make sure you are happy with your choice, review the ship details. You will see these displayed on the right hand side of the screen:

If you are completely happy with the selection, and have enough resources, you are now ready to optionally name the ship, and then to build it.

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Modifying Historical Ships

First, bring up the build ships screen.

Then, select an historical design.

If this option is enabled in the game options, you can now modify the design.

The design editor is extremely simple and intuitive to use. Just a few mouse clicks is all it takes to modify a design.

A design consists of a small number of design factors: the type of ship (eg, whether it is a battleship, cruiser, submarine etc); the size of the ship (which is a scaling factor for its type); the number and calibre of the main guns; the quantity of secondary/tertiary weapons; the amount of heavy armour; the hull structural strength and extent of light protection and compartmentation; the maximum speed, and the amount of fuel for cruising.

The design factors are *relative* factors. For example, a "Calibre" factor of 2 for a size 2 battleship means something different for a size 3 battleship, or of course, for a cruiser or escort of any size.

The screen lets you set any of these variables with one mouse click. As any factor is increased or reduced, the ship's fighting capability in the chosen area will be increased or lowered, as will the ship's full load tonnage. You can see the ship design details change as you change any of the factors.

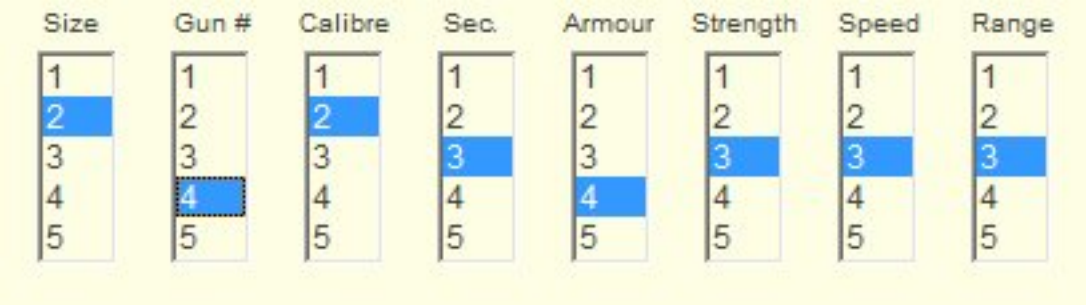
The factors are largely self-explanatory; but there is detailed information available on each of them if you want to know more. See ship design

factors for more information.

Let's take an example of modifying an historical design - we will be upgunning the *King George V* class - just as Churchill had wanted - with 10 * 15 inch guns instead of the 10 * 14 inch guns it actually carried.

Pictured below is the ship summary for the *King George V* class:

And here is the set of design factors that makes up this design:



To give the ship 15 inch guns instead of 14 inch, just increase the "Calibre" factor by 1. That's it. It is as simple as that. The ship now has 10 * 15 inch guns. You will see from the updated summary that some other details of the ship have also changed:

Ship Data:

Class **Medium Battleship**

Name **Jellicoe**

medium Battleship

45440 tonnes (full load)

10 * 15.0 in. guns

15.0 in. side belt

2726 pts strength

27 kts. max speed

8593/7675/3411 nms @ 12/16/24 kts

The changes are as follows:

- The ship class is no longer the "King George V". The computer has given the modified design a default name of "Medium Battleship". You can change this class name to anything you like - so long as it is unique - by typing in a suitable name in the "Class" text box. In the example below, the name of "Modified KGV" has been given to the new design:

  Class **Modified KGV**

- The default name is now "Jellicoe", which is a name chosen by the computer. As explained in naming ships, you can change this name to another by selecting another suggested name, or just typing in your own choice of name.

- The full load tonnage has increased by almost 100 tonnes.
- The structural strength of the ship has increased very slightly
- But the cruising range for the now heavier ship has been slightly reduced.

These changes illustrate an important fact about ship design - everything is a trade-off. As capability increases, so does tonnage: "you can not get a quart out of a pint pot", as the saying goes. To keep tonnage the same, you have to reduce some other design factor or factors.

Escort specialisations

Escort ships are a special case. They have an additional factor to denote if the design is "general purpose", i.e., able to carry out any function reasonably well, or is specialised for anti-submarine, anti-aircraft, minelaying and sweeping, or as a torpedo-attack vessel.

See escort specialisations for more information.

By default, escorts are general purpose (or "GP"). If you decide to specialise, the vessel's capability in the chosen area is doubled, and halved in all other areas.

As soon as you decide to build any ship to this new design, the design details will be saved as a template for you to use later. The illustration below shows the "Modified KGV" has been added as a battleship class to select at any time in the future in the current campaign. (Your own designs are not saved from one campaign to the next however).

If you are now completely happy with the modification, and have enough

resources, you are ready to build the ship..

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Naming Ships

First, bring up the build ships screen.

Then after selecting an historical ship design, or modifying an historical design, or creating a new design, you are ready to optionally name it.

Pictured below are details of the US battleship *South Dakota*.

The class name and ship name are both "South Dakota". It was common in most navies for the first ship of a class to have the class name.

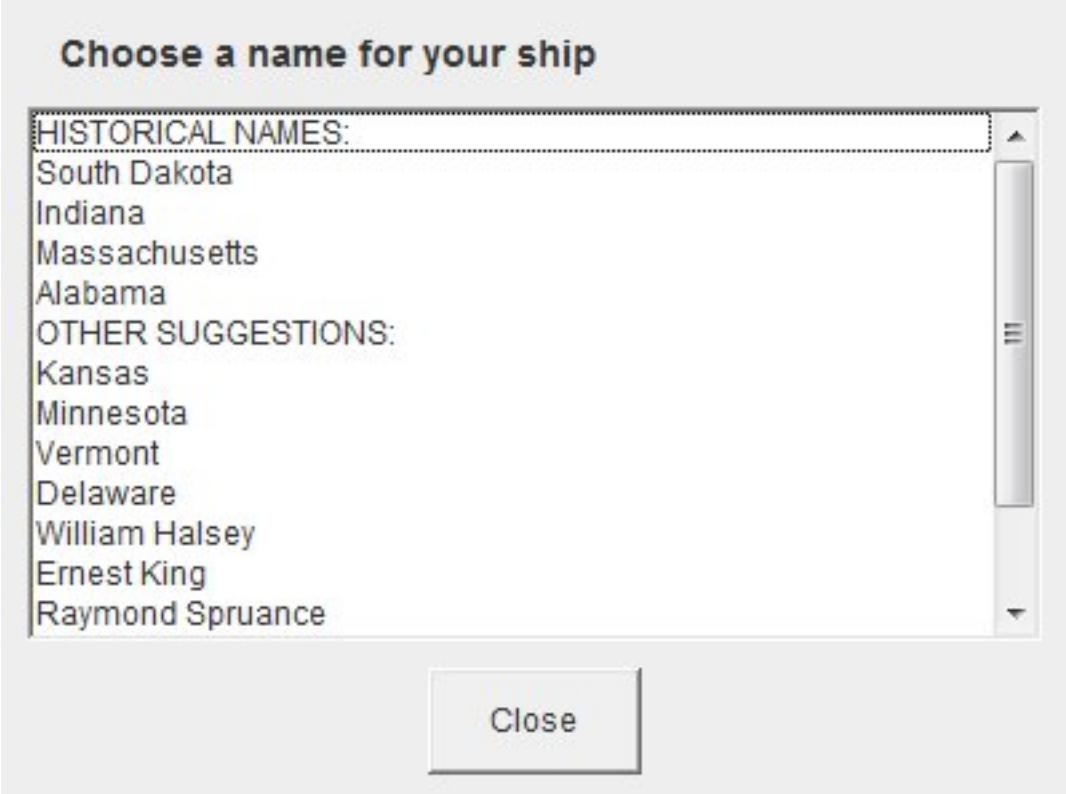
As you build more ships of the same class, the computer will select from the list of remaining available historical ship names. If you build more of a class than were built in WW2, the computer gives you a default unique name, like "South Dakota-1".

You can change this name by selecting something more appropriate from a

list of suggested names.

Bring up the list of names by clicking on the "Get Name" button: 

. You will see a list like this:



Just click on a suggested name to select it. The name list will then close.

Alternatively, *you can just type any name you want* into the "Name" field.

You will get an error if a ship to be constructed has no name or else the same name as one you have already. (*SAS* requires that each ship actually built has a unique name. Two or more ships can never share a common name.)

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Creating a New Ship Design

The process for designing your own ship is exactly the same as for modifying an historical design. Start with a ship type and adjust the factors until you are happy with the ship data summary.

You can optionally give the class a suitable name.

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Committing to building a Ship

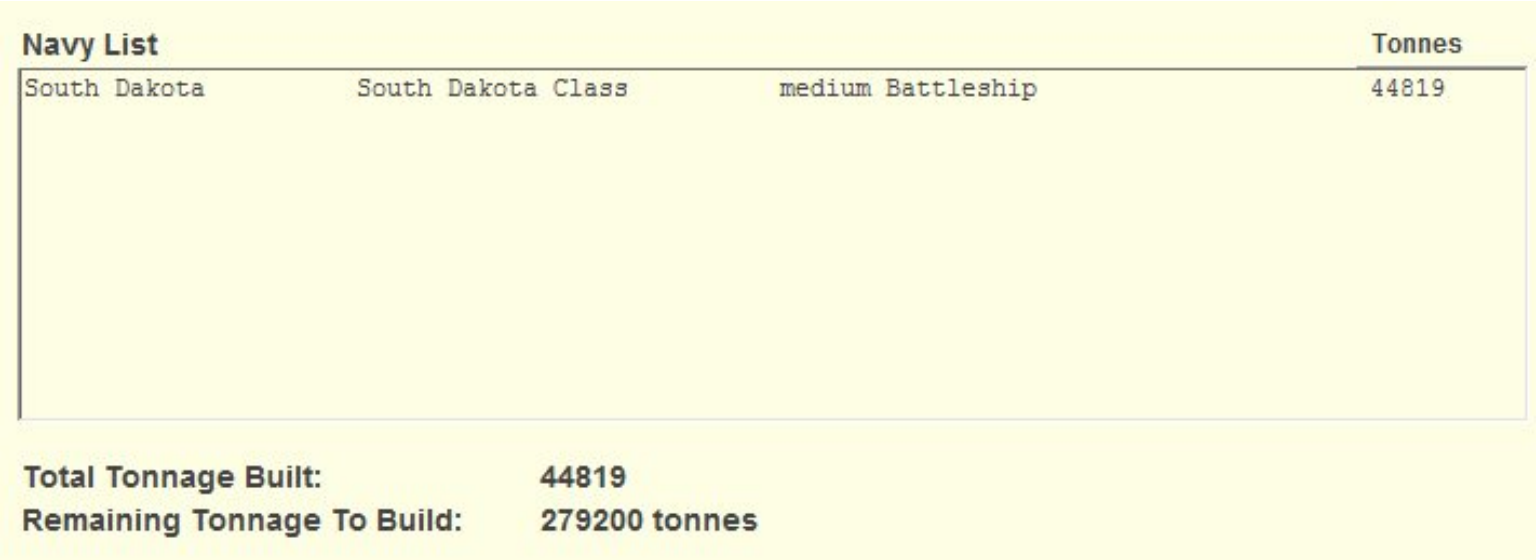
First, bring up the build ships screen.

Then after selecting an historical ship design, or modifying an historical design, or creating a new design, and optionally naming it, you are ready to build it.

To build one ship of the chosen design, click once on the "Build" button:

Each time you click on "Build", one ship of the selected class will be constructed.

You will see the ships progressively added to the "Navy List" at the bottom of the screen:



Navy List

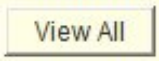
			Tonnes
South Dakota	South Dakota Class	medium Battleship	44819

Total Tonnage Built: 44819
Remaining Tonnage To Build: 279200 tonnes

At the bottom of the "Navy List" you can see a progressive total of the tonnage you have built so far, and the remaining tonnage that you have left to build.

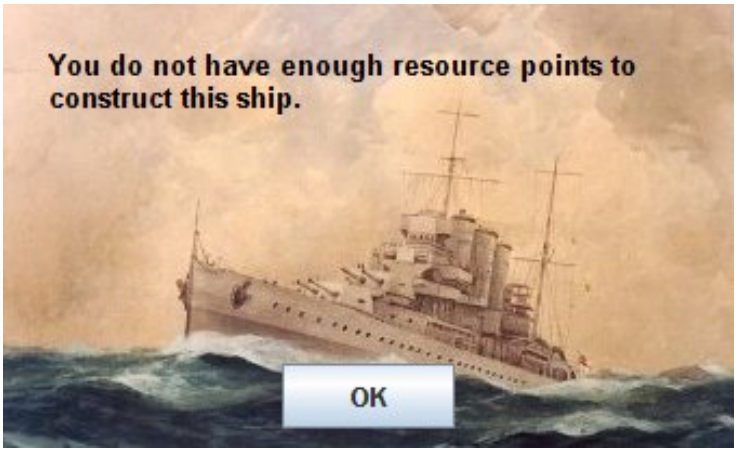
Note that ships built on turn 1 of a campaign are available immediately (unless they have been delayed), whereas those built on any subsequent turn take a realistic time to construct.

You can cancel any build command given in this turn.

To get a clearer view of your navy than the small "Navy List" gives you, just click on the "View All" button: 

. This brings up your detailed, full screen Ship Roster.

You will get an error message if you try to build a ship when you have insufficient resources for it:



You will also get an error if a ship to be constructed has no name or else the same name as one you have already.

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How to combine your own ship construction plan with your 2IC's plan

In the page on how to edit your 2IC's construction plan it was explained how you can make your own ship building decisions after the 2IC has prepared a plan.

Another way of achieving the same result - which some players may prefer - is to reverse the order of actions. The player selects or designs the ships of particular interest, and then lets the 2IC complete the plan for the turn using the remaining tonnage.

To do things this way, follow these simple steps:

1. Click on "Build" and then "Ships" on the blackboard in the Admiral's Office.
2. When the 2IC Help screen appears, click "No" to indicate you do not (yet) want 2IC assistance.
3. In the Build Ships screen that now appears, select or design your own ships and issue orders to construct them. See building ships for detailed instructions.
4. Click the "Finished" button to close the Build Ships screen.
5. Now, bring the 2IC Help screen back by clicking "Build" and then "Ships" on the blackboard once more.
6. Then click on the "Yes" button, to get your 2IC's assistance. He will now use whatever tonnage remains to plan construction of the rest of your navy, taking into account the types of ships you have already chosen to build.

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How to build ships without your 2IC's assistance

When you click the "No" button on the 2IC Help screen for building ships, you are taken straight to the Build Ships screen where you can manually select or design your own ship classes and give orders for ship construction.

Although most players would find it too time consuming to plan an entire navy, the option is available if you want it.

See building ships for full insructions.

Note that when you are building historical ships, the computer automatically selects historical names, so it is actually reasonably quick to order the building of multiple ships. Having selected a class, each time you click on "Build" a ship of that class will be named and added to the construction queue.

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How to build aircraft

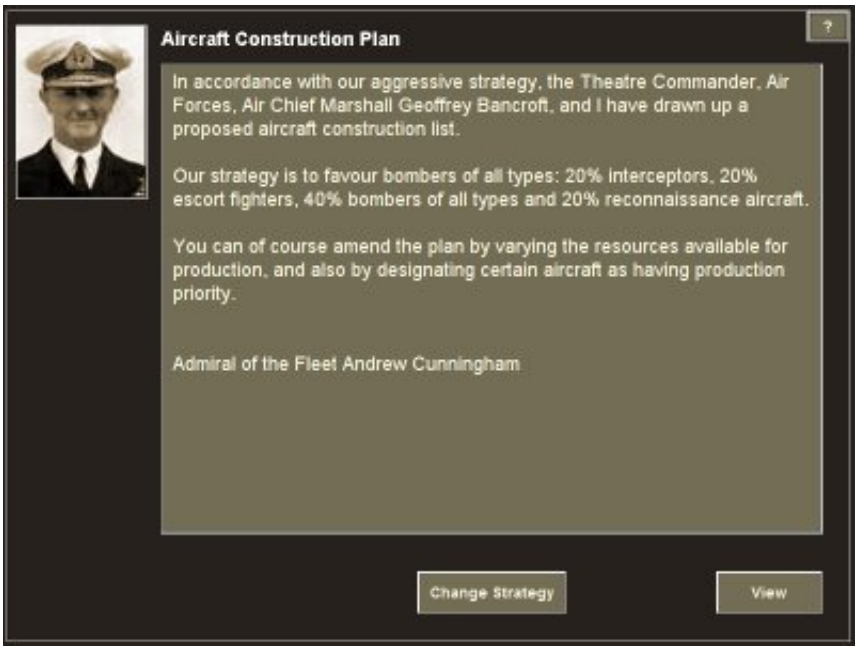
Every turn you can spend RPs on constructing more aircraft. You can vary the amount of expenditure (within limits), and you can also influence which types of aircraft get built.

Then, you can review the details of how they have been deployed by your 2IC to your airfields and carriers. He has taken the tedium away from you, but you can manually override any part of the plan and deploy chosen aircraft to selected locations.

2IC help with constructing aircraft

To build new aircraft, from your Admiral's Office, click on "Build" on the main menu on the blackboard, and then on "A/C" on the build menu.

You will now see a screen like this:



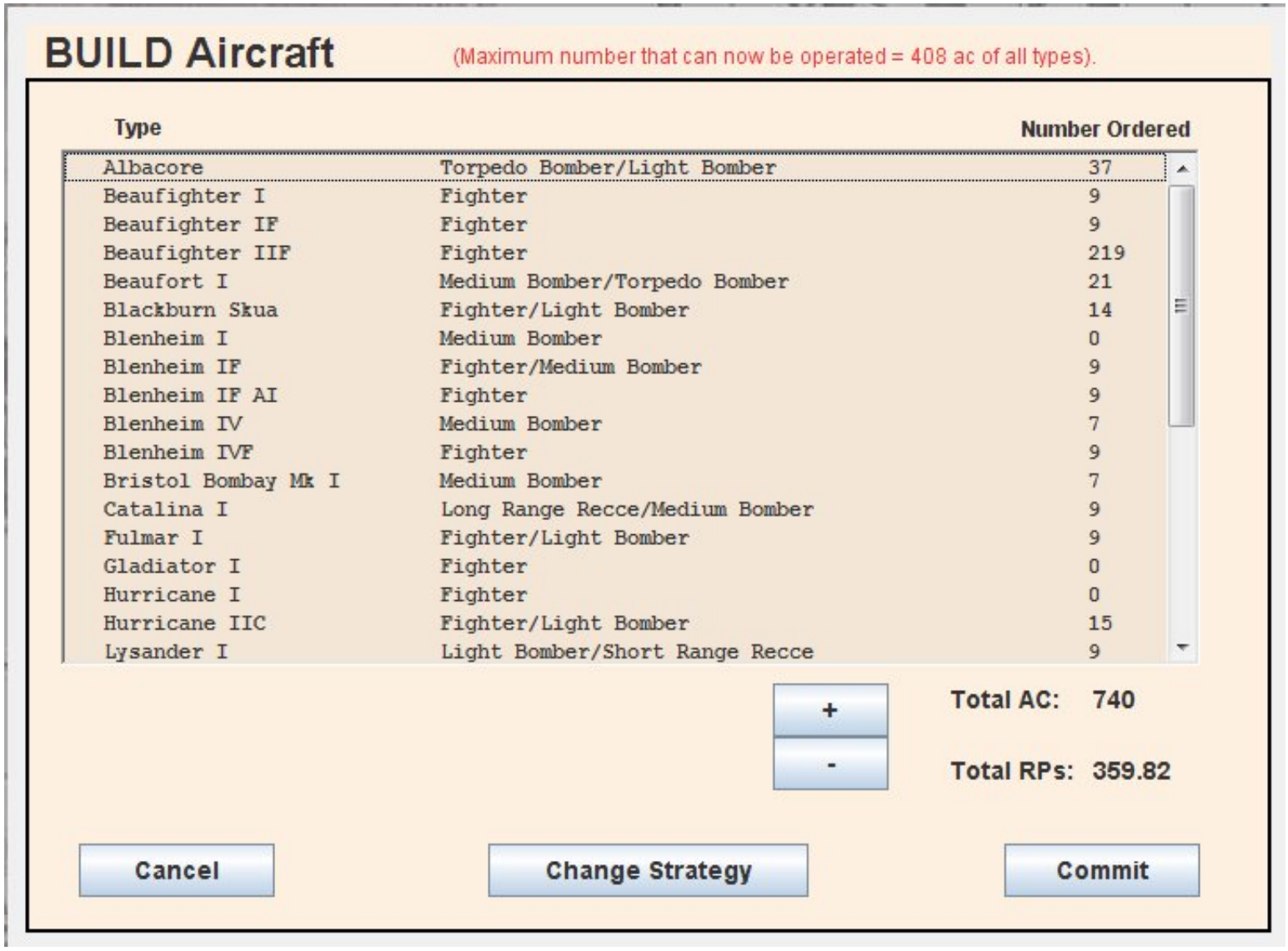
Your 2IC stands ready to present to you a plan for the construction of new aircraft, which is consistent with your country's overall strategy. It has been negotiated with your senior theatre land commander, who reports to the most senior army generals who have control over aircraft targets.

You have two options at this point:

1. Optionally change your strategy first, by clicking on the "Change Strategy" button. See how strategy affects aircraft construction for more information.
2. Then, view the plan by clicking on the "View" button.

The Build Aircraft Screen

Clicking the "View" button will bring up the Build Aircraft Screen:



Overview of the screen

Maximum number of aircraft that can be operated

At the top of the screen, in red, a message will appear telling you the maximum number of aircraft that currently can be operated from all your airfields and carriers.

(Maximum number that can now be operated = 408 ac of all types).

Proposed aircraft list

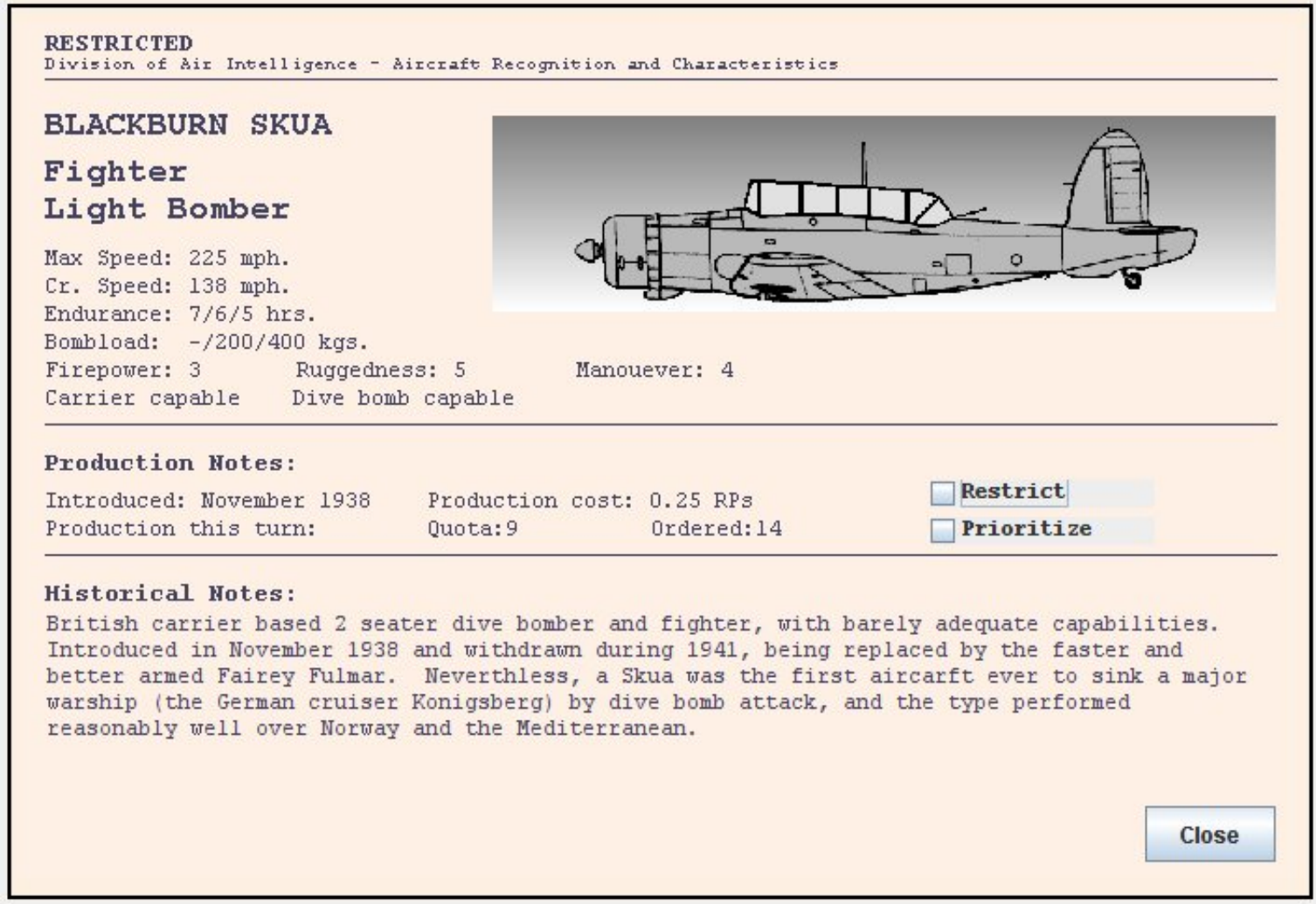
Most of the screen is taken up with the list of aircraft that your 2IC has proposed for construction. The list is scrollable and gives summary information of each aircraft type, the main and secondary roles that that type is intended to perform, and the number that is proposed for construction.

The number proposed for each type has been carefully determined by your 2IC to meet several criteria:

- The total cost should not exceed 10% of your available RPs.
- The balance of types - fighters, bombers and reconnaissance - should correspond to the 'ideal' as determined by your strategy.
- The selection of particular types has been done to maximise the best aircraft available - usually the more recently designed aircraft - that your country has currently designed and brought to being ready for production. As a game progresses, you will notice that the types will change. For example, in the late war period, jet aircraft become available for most countries. You can access the more advanced later war aircraft types earlier by spending resources on aircraft technology. (See how to build infrastructure for more information.)
- Neverthless, there is a minimum number of aircraft of even obsolescent types that will be included because production lines take some time to run down to nought.

Aircraft details

You can see the details of any aircraft type by clicking on it in the list. You will now see the Aircraft Details screen:



Many but not all aircraft will have a silhouette.

Endurance is hours flying time at light/medium/heavy load, and bombload is given also at light/medium/heavy load. Firepower (against fighters), ruggedness, maneuverability, and ASW attack and search (if any) are each values out of 10 (maximum). Special capabilities such as dive bombing, carrier capable and night-equipped are also listed if the aircraft has any of these.

Historical and production notes round out the details screen. 'Production cost' is the number of RPs (resource points) it takes to build one aircraft of the selected type. Note though that this value is a total cost figure, i.e. it is the cost not only of any one aircraft, but also the unitised cost of creating the factories to build it.

The use and meaning of the two tickboxes ('Restrict' and 'Prioritise'), as well as the meaning of the 'Quota' value, will be explained shortly, as they are some of the controls you can use to set aircraft production targets.

Click the 'Close' button to close the details screen and return to the build aircraft screen.

Totals

At the bottom of the list, on the right hand side, are two totals: 'Total AC' is the total number of aircraft that your 2IC plans to order. 'Total RPs' is the total resource points it would take to build them.

Plus and minus buttons

These buttons let you incrementally increase or decrease the RPs you wish to spend this turn on aircraft production. There are limits however to the amount that you can adjust the total aircraft construction budget each turn. This reflects real-world constraints: it was not possible to ramp up or down production lines for aircraft without restriction. A lot of investment was needed to tool up for new aircraft types, and to train factory workers in construction methods for each type.

As the number of RPs to be spent increases or reduces, your 2IC adjusts the 'number ordered' value in the list.

Changing the production numbers and types

As the above overview has indicated, you do not have a completely free hand to build any number of aircraft of a preferred type. This reflects real-world production constraints; and it also reflects real-world *political* constraints: although you are the *Supreme Naval Commander*, and also the supreme commander in the theatre of operations covered in any campaign, you are more directly in charge of naval affairs than you are of air forces. In all countries in WW2 the command of naval and airforces was separated (except for naval fleet air arms, where they existed). Your power is akin to that of Admiral King in WW2. He was Chief of Naval Operations and supreme commander of US naval forces, and he also sat with General Marshal as one of the two Joint Chiefs overseeing war strategy. But for many things, including production targets for aircraft, he had only high-level begging rights.

Given this, there are two ways to change the proposed production plan:

1. Change the total level of resources for aircraft production this turn.
2. Change the mix of aircraft types by prioritising or restricting certain types.

1. Changing the level of resources

As already noted in the overview above, you do this by clicking on the '+' or '-' buttons. Each click

incrementally increases or reduces the amount of RPs that will be spent this turn. You will see the 'Total RPs' and also the 'Total AC' values change as you do this.

Note that the new higher or lower level of spending will carry forward to the next turn. If you have reduced expenditure in a turn, the lower level will be the benchmark for the next turn, and it will take longer to get to a higher level again than if you had not reduced it.

Use the figure at the top of the screen for the maximum number of operable aircraft as a guide to deciding how many aircraft should be produced. You should always produce at least this number. You should actually produce a higher amount - the excess aircraft go into reserve and will be immediately available next turn to replace any losses in the current turn. A cautious player will want to have quite a high level of excess, especially on the first turn, as it is hard to predict aircraft losses.

2. Prioritising or restricting aircraft

Prioritising aircraft

To prioritise the production of a particular aircraft type, select it in the list, and then, in the aircraft details screen, tick the 'prioritise' tick box. Then close the screen. You should notice that more of this aircraft will now have been ordered, at the expense of other aircraft types competing with it in terms of role and capability. Prioritisation simply overrides the computer's assessment of what is the best aircraft type of those currently available for the role needed. You should therefore be a little careful before prioritising because the computer has a reasonably clever way of determining aircraft suitability.

Note that aircraft types that are prioritised are shown with an asterisk in the list.

Restricting aircraft

You can also put a restriction on selected aircraft. Only the minimum quota for any restricted aircraft will then be produced. The current quota for the aircraft is shown in the aircraft details screen.

To restrict a particular aircraft type, select it in the list and then, in the aircraft details screen, click on the 'Restrict' tick box. Then close the screen.

Note that an aircraft type cannnot both be prioritised and restricted - only one of these options (or none) can apply.

Committing the order

When you are satisfied with the current order, click on the 'Commit' button. This commits the order. The resource points will be taken and production of the aircraft commences immediately.

Warning!: the commit action can not be undone, so make sure you are ready before you commit. You can commit a production order for aircraft only once per turn.

After the 'Commit' button is clicked, the build aircraft screen will close and you will be returned to your Admiral's Office.

Cancelling out

If you are not yet ready to plan the construction of aircraft, click the 'Cancel' button. This returns you to your Admiral's Office.

Changing strategy

You can optionally change your overall strategy before you commit an order. The mix of aircraft will change to reflect the new strategy. You will also probably notice a change in the total *number* of aircraft as well. This is because smaller aircraft, such as fighters, are generally cheaper to build than bombers. More aggressive strategies favour a greater proportion of bombers and so the total number of aircraft that can be produced for the given resources will reduce.

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How strategy affects aircraft construction

Your 2IC selects types of aircraft based on your strategy.

Effect on the balance of aircraft types

Your 2IC always tries to maintain 20% of your total aircraft as fighters, and another 20% as reconnaissance aircraft.

But as the strategy gets less cautious, he will favour more bombers at the expense of interceptors. (An "interceptor" is a fighter designed primarily for attack against enemy bombers, rather than the usually faster and more nimble enemy fighters. Interceptors often favoured firepower over manouverability compared to the pure fighter type).

For example, a very cautious strategy favours 40% as interceptors, and only 20% as bombers (of all types). A very agressive strategy sees these proprtions reversed. Cautious and aggressive strategies lie in between.

Your 2IC strives to maintain these proportions in the face of losses. If all your losses were in fighter aircraft in the last turn, then construction this turn will predominantly be fighters, regardless of your strategy.

Note also that these proportions are based on aircraft *primary* roles. Most aircraft had two (or more roles), eg medium bomber and reconnaissance. But it is an aircraft's primary role that is always most important to your 2IC when

selecting more aircraft to build.

Within a given type, your 2IC always tries to select the best available aircraft, which will usually be those more recently designed and available.

Effect on numbers of aircraft

Because fighters are generally cheaper to build than medium and heavy bombers, a cautious or very cautious strategy will tend to "buy" more aircraft for the same expoenditure than an aggressive or very aggressive strategy. For example, it can take four times or more the RPs to build a heavy bomber than a small single-engined fighter.

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How to build troops

Players can start a game with troops of varying kinds and quality that located at any of their naval bases. These starting troops are specified when a campaign is created. (See creating a campaign - specifying troops for more information).

Once a game has started players can raise more troops and spend resources on improving their training and equipment.

A player can raise two basic types of troops during the game: infantry and amphibious troops.

While infantry are best suited for garrisoning naval bases, amphibious troops are best for offensive assaults on enemy bases.

Troops always become available at home port, after a period of time for training. The infantry join your standing infantry army; the amphibious troops join your standing marine corps.

From there, they can be shipped to wherever they are needed, for garrison duty or amphibious assault. (The transport of troops and planning of assaults can be performed either automatically - with the 2IC's assistance - or manually by a player).

Losing one or more bases to enemy attack can be a crucial blow; indeed, if your home port is captured the game ends with your immediate defeat!

So *SAS WW2* is not merely a game of sea power. It also challenges you to use naval, air and army resources in a combined strategy for victory.

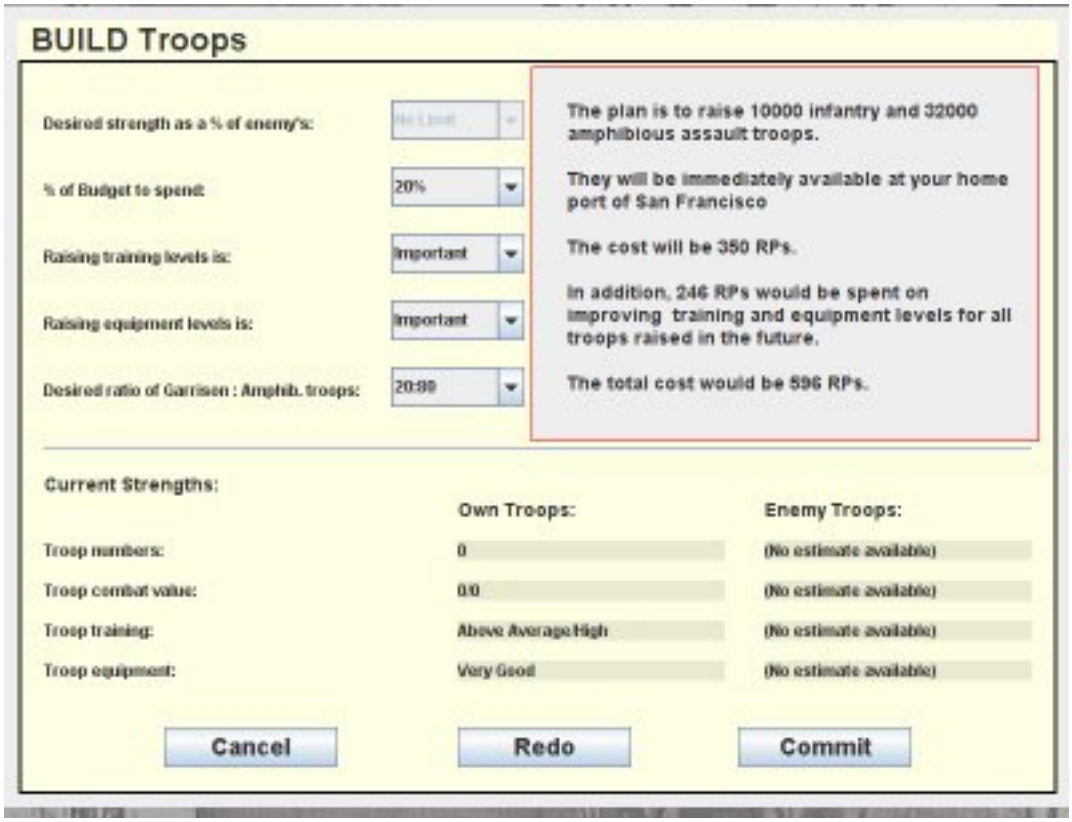
The following information guides you through the steps involved in building troops during a game.

Accessing the *Build Troops Screen*

Each turn you have the chance to build more troops (unless troops are disabled for this campaign. See Create a Campaign - Enabling Troops).

From your Admiral's Office, click 'Build' on the blackboard main menu, and then click 'Troops' on the blackboard build menu.

Now you will see the *Build Troops Screen*:



As explained below, this one screen has some simple controls that let you control how many (and what type of) troops you will raise this turn.

The screen has three sections:

- A summary of the current plan that your 2IC has prepared
- Comparative information on enemy troops
- Controls for changing the plan

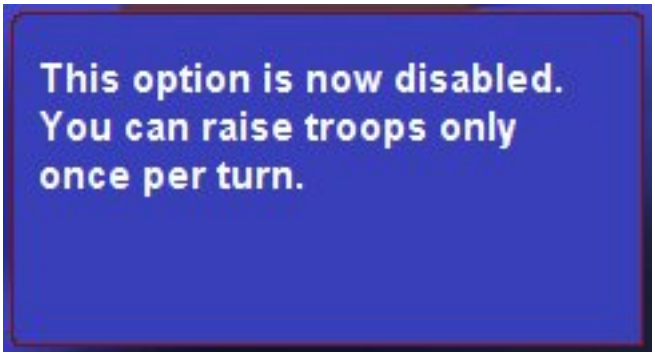
To learn more, especially if you want to learn how to adjust the plan to your own needs, follow these links for more information.

Commiting the Plan

Building troops for a turn can be as simple as just one mouse click - simply accept your 2IC's plan by clicking the 'Commit' button at the lower right of the screen:

The RPs for the plan will be immediately deducted from your home port stores, raising of the troops will commence, and the *Build Troops Screen* will close.

Note that you can commit to a plan only once in a turn, so make sure you are happy with it first. If you later in the same turn try to build more troops, you will see this message in your Admiral's Office:



Cancelling

To cancel out of the screen, click the 'Cancel' button: 

When you cancel, the screen simply closes. You can return to the same screen any time later in the turn and review and commit to a plan then.

More help

To learn more, especially if you want to learn how to adjust the plan to your own needs, follow the links above for more information.

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How to build troops - the Plan Summary

(The following assumes you have navigated to the *Build Troops Screen*. If you need help with how to do this, or what the screen is used for, see how to build troops.)

The Default Plan

When the screen first appears, your 2IC has already developed a plan, the details of which are summarised in the grey text area at the top right of the screen:

The plan is to raise 10000 infantry and 32000 amphibious assault troops.

They will be immediately available at your home port of San Francisco

The cost will be 350 RPs.

In addition, 246 RPs would be spent on improving training and equipment levels for all troops raised in the future.

The total cost would be 596 RPs.

The summary of the plan has some important elements, which are explained below.

Target number of troops

The Plan sets a target number of infantry and amhibious assault troops to raise. The numbers depend on the total RPs that are allocated and also the balance of types you want - the ratio of normal infantry to amphibious troops.

You can adjust both the RPs you wish to spend (see changing the budget, as well as the ratio of troop types (see changing the troop ratio).

You can also set a limit on the total number of troops you wish to have relative to the estimated number of enemy troops. (See Changing the limit on troop numbers.

Availability

The summary tells you when the troops will be available.

On the first turn, these troops become *immediately* available, without the usual training time. (This is the same as with ships - where those 'built' on turn one appear immediately - unless their commissioning has been deferred for some reason).

On all subsequent turns, troops require time to be trained before they can become available for operational use.

The training time is a function of the complexity of the unit's training needs. This depends mainly on the level of training to be given (including any amphibious assault training) and the degree of mechanisation.

It can take 3 months or so to train a very basic infantry unit, and 3 or 4 times that (or more) if training requirements are set very high and the unit is also to

be trained in amphibious assaults.

Training level

Each country starts a game with an historical training level for their troops. (Amphibious and non-amphibious training levels are recorded separately). For example, German troops have a very high level of training compared to say Italian troops. US amphibious troops (marines) are well trained - somewhat more so than the normal soldiery.

Through targeted expenditure, you can increase the training levels of all new troops you raise - see increasing training levels.

Cost

The cost (in RPs) of raising the troops is shown.

Investments in better training and equipment

There is a separate cost shown also for any planned expenditure to develop training or improve equipment levels for new troops.

Each country starts with priorities for improving training and equipment, based on the starting levels. For example, the US, which starts with high equipment levels, has a lesser priority on improving them further than the Italians, who sorely need much better equipment.

You can separately change the priority allocated to developing training or equipment - see increasing equipment levels.

Total cost

The plan shows, at the end of the summary, the total RP cost.

Use this information to help refine the plan. For example, if you want to reduce the cost, you can do so, without necessarily reducing troop numbers, by reducing expenditure on better training or equipment. Or you can scale everything down by reducing the budget expenditure for troops as a percentage of your overall budget.

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How to build troops - Using Comparative Enemy Information

(The following assumes you have navigated to the *Build Troops Screen*. If you need help with how to do this, or what the screen is used for, see how to build troops.)

Enemy Intelligence

Before you make any adjustments to the default plan, make sure you consult the comparative information at the bottom of the *Build Troops Screen*:

Current Strengths:

	Own Troops:	Enemy Troops:
Troop numbers:	0	(No estimate available)
Troop combat value:	0/0	(No estimate available)
Troop training:	Above Average/High	(No estimate available)
Troop equipment:	Very Good	(No estimate available)

Four kinds of information are shown for both your own troops and the enemy's:

- Troop numbers
- Troop combat value
- Troop training
- Troop equipment

All values shown for the enemy are estimates, which are based on your enemy intelligence and will be innacurate to a degree. (The better your intelligence, the more accurate they will be). The estimates may be over or under the real figure.

Note that on the first turn, you do not yet have sufficient information on the enemy to derive an estimate, and all values will be shown as '(No estimate available)'.

Troop numbers

Shown here are the raw numbers of troops - both infantry and amphibious-trained troops. These values are totals only. For the *location* of enemy troops, you can consult the theatre map.

Troop combat value

The combat value of all troop units is affected not just by the sheer number of men, but also by the quality of their training, experience, morale and equipment, as well as the degree to which they are mechanzed and the effectiveness of any localised entrenchments.

The values shown here take these factors (other than entrenchment) into account. As an example, an infantry unit with 'average' levels of training, experience, morale, equipment and mechanization has a combat value of 1.0 per man. An elite unit with much better factors would have a significantly increased combat factor per man.

The values shown here are the multiple of the number of men and the combat value of each unit.

For both yourself and the enemy two values are shown: first, the total non-amphibious combat value is shown; then, after the '/' separator, the amphibious combat value is shown. The values are computed separately because the strength of a unit when it is assaulting from the sea is greatly affected by any special amphibious training and experience it may have.

Remember that these are totals across all troop units. You can see these values broken down unit by unit in the Situation Report - Troop List as well as on the theatre map when you have ticked the 'Show own pop-ups' option. (See the theatre map for more information).

As an example: if you had 100,000 troops, and the average combat value was 0.9 normally and 0.4 for amphibious assaults, the value you would see here would be '90000/40000'.

Combat value is much better then raw troop numbers as a gauge of your total fighting strength compared to the enemy.

Troop training

Again, two values are shown for yourself and the enemy: first a normal training level and then the training for amphibious assaults.

These values are shown descriptively and in a broad brush way using terms like "High" or "Average". Behind the scenes, the computer keeps much more accurate records. (Training levels are recorded as a percentage where 100 is the maximum possible). You can see the exact rating for each unit in your Situation Report - Troop List, as well as on the theatre map when you have ticked the 'Show own pop-ups' option. (See the theatre map for more information).

Troop training is shown here because it is one of the things you can improve. (The other is troop equipment). See increasing training levels for more information.

Troop equipment

These values are shown descriptively and in a broad brush way using terms like "Good" or "Sufficient". Behind the scenes, the computer keeps much more accurate records. Equipment levels are recorded as a percentage where 100 is the maximum possible). You can see the exact rating for each unit in your Situation Report - Troop List, as well as on the theatre map when you have ticked the 'Show own pop-ups' option. (See the theatre map for more information).

Troop equipment is shown here because it is one of the things you can improve. (The other is troop training). See increasing equipment levels for more information.

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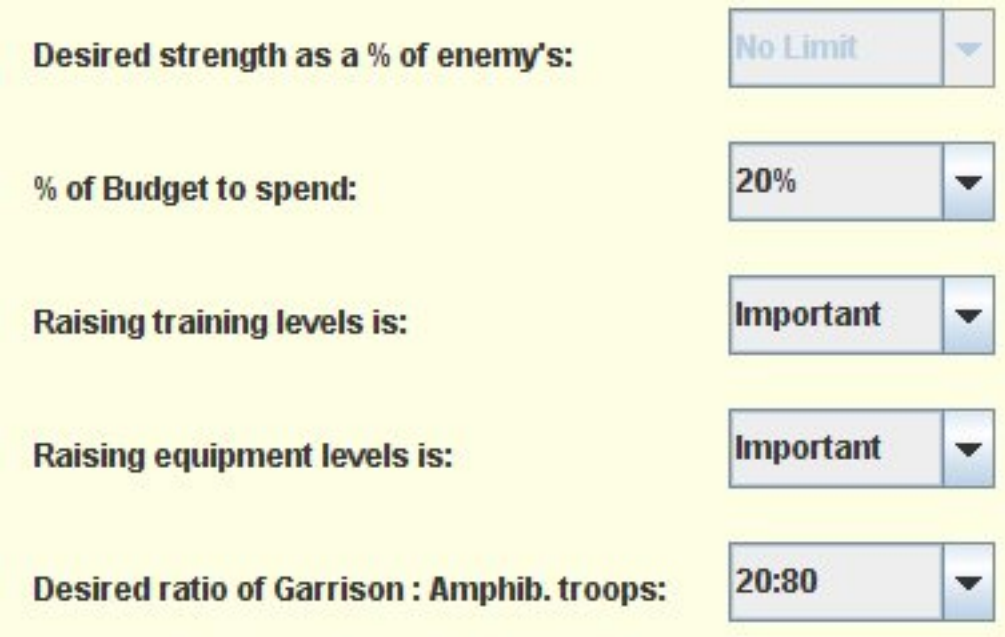
How to Build Troops - Controls for Adjusting the Plan

(The following assumes you have navigated to the *Build Troops Screen*. If you need help with how to do this, or what the screen is used for, see how to build troops.)

When you open the *Build Troops Screen*, it shows a default plan for more troops that your 2IC has prepared. A summary of the plan is shown on the screen. (See how to build troops - plan summary for help).

You can adjust any aspect of the plan using the five controls on the screen that are pictured here:



Use of these controls is explained below, in the order they appear on the screen.

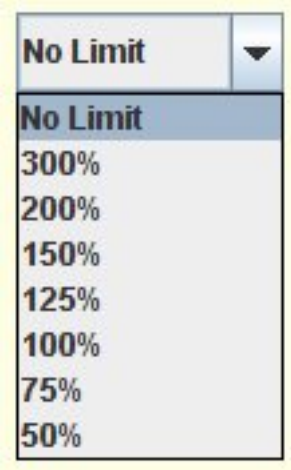
Changing the limit on troop numbers

By default, there is no limit on the number of new troops your 2IC will keep planning for. If you keep agreeing to these plans, your army training grounds will keep churning out new soldiers in regimental sized packets of 2000 as long as there is budget for it.

On the first turn of the game, your intelligence of the enemy armed forces is very limited, and the 'No Limit' option is sensible, and the only one you can take. (The control to change the option is disabled on the first turn).

However, on every subsequent turn, the screen allows you to change this. You can choose to set the limit as a percentage of the total estimated size of the enemy's troops.

The values you can choose are: 300%, 200%, 150%, 125%, 100%, 75% and 50%:



To change the plan, just select the new value. When you click the 'Redo' button at the bottom of the screen, your 2IC will redo the plan accordingly:

The value you select remains until you next change it. Your 2IC will each turn assess your own side's troop numbers against the currently estimated enemy troop numbers and plan accordingly taking the maximum limit into account.

Changing the budget for new troops

By default, 20% of the RPs available at your home port at the start of each turn will be allocated to raising new troops.

Of course, if you start a turn with very few RPs, it is likely that the budget for troops will be too low to raise any in that turn. Troops get raised in units of 2000 men, and it takes an average of 20RPs to raise a unit. The exact amount depends on the characterstics of the unit. Infantry are cheaper (and quicker) to raise than amphibious troops.

Every turn, you can adjust the 20% (within limits). The new figure remains until you next change it.

Limits on the amount by which you can change the figure apply. This is because, in the real world, resources could not be easily transferred between the services. Political and administrative problems prevented changes that were too rapid. In *SAS WW2*, when the strategic turn is one month long, the limit is that you can't increase or reduce the budget by a percentage that is more than 2%. (Longer strategic turns allow for bigger adjustments).

To change the plan, just select the new value. When you click the 'Redo' button at the bottom of the screen, your 2IC will redo the plan accordingly.

For example, if you reduce the budget, the numbers of troops you can raise will be reduced, and the cost shown for this will have been reduced to fit inside the available budget.

Increasing training levels

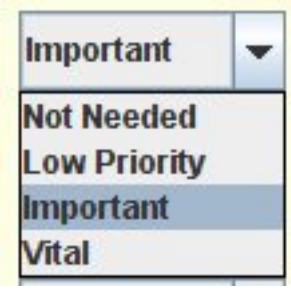
The training level of troops affects how good they are in combat. It also affects training times and costs. Higher training levels mean troops take longer to raise and are more expensive to produce.

Every country starts a game with levels of training approximating historical levels. Based on this level, each country also starts with a set priority for improving training. For example, Germany starts with high training levels and a low priority on improving it further; Italy starts with a low level and a high priority on improving it.

Every turn when troops get raised, a part of the RPs available for raising them is taken and used to improve training levels.

The amount that gets taken gets bigger as the training priority gets increased.

You can select the priority you want from the drop down list. There are four values: Not needed, low priority, important, and vital:



The 'Not needed' priority means that no budget gets taken for improving training. The low priority, important and vital priorities take 10, 20 and 30% respectively of the budget.

The value you select remains until you next change it.

Higher priorities mean that the troops you raise will (over time) be better trained. But it also means you are raising fewer of them because the budget remaining after training improvements is less.

Generally though, it is more efficient to have fewer, better trained troops. Smaller numbers are easier to transport and consume fewer supplies. (Remember that all troops raised except those that remain at home port will need to be supplied, putting demands on your navy and merchant navy to run convoys where necessary to mantain supply).

Increasing equipment levels

The equipment level of troops affects how good they are in combat. It also affects the cost to raise them. Higher equipment levels mean troops are more expensive to produce.

Every country starts a game with levels of equipment approximating historical levels. Based on this level, each country also starts with a set priority for improving equipment. For example, the US starts with guite high equipment levels and a moderate priority on improving it further; Italy starts with a low level and a high priority on improving it.

Every turn when troops get raised, a part of the RPs available for raising them is taken and used to improve equipment levels.

The amount that gets taken gets bigger as the equipment priority gets increased.

You can select the priority you want from the drop down list. The range of values is the same as for training: Not needed, low priority, important, and

vital:

The 'Not needed' priority means that no budget gets taken for better equipment. The low priority, important and vital priorities take 10, 20 and 30% respectively of the budget.

The value you select remains until you next change it.

Higher priorities mean that the troops you raise will (over time) be better equipped. But it also means you are raising fewer of them because the budget remaining after equipment improvements is less.

Generally though, it is more efficient to have fewer, better equipped troops. Smaller numbers easier to transport and consume fewer supplies.

Changing the troop type ratio

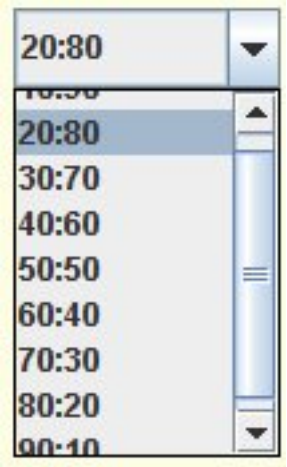
The last control on the screen allows you to set the ratio of troops produced: the proportion of infanry to amphibious troops.

The default ratio reflects a player's strategy:

- A 'very cautious' strategy has an 80:20 ratio, i.e. 8000 infantry troops get produced for every 2000 amphibiously trained troops. This reflects the priority of this strategy on defensive operations at minimal cost.
- A 'cautious' strategy has a 60:40 ratio

- A 'aggressive' strategy has a '40:60' ratio
- A 'very aggressive' strategy has a 20:80 ratio

You can change the ratio you want by selecting from the drop down list. As well as the values mentioned above, you can choose 10:90, 30:70, 50:50, 70:30 and 90:10:



The value you select remains until you next change it. Changing the ratio often is not recommended though because it can take a while for any desired ratio to be achieved.

Remember that amphibious troops are more expensive to produce than infantry which are better suited to a garrison role. If you have amphibious assaults in mind, make sure you prooduce enough amphibious troops to make the chances of success reasonable. Assaulting from the sea with troops not trained and equipped for it can be disastrous, and even relatively poor garrison infantry, if well supplied and entrenched, will often emerge victorious.

Redoing the Plan

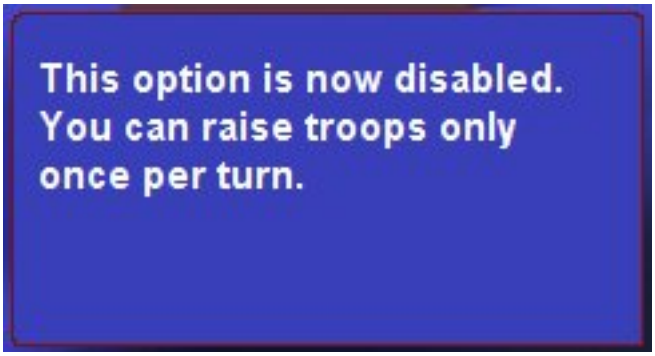
After chaning any of the control values, just click the 'Redo' button and your 2IC will immediately re-formulate and display the new plan:

Commiting the Plan

When you are happy with the plan, click the 'Commit' button:

The RPs for the plan will be immediately deducted from your home port stores, raising of the troops will commence, and the *Build Troops Screen* will close.

You can commit to a plan only once ina turn, so make sure you are happy with it first. If you later in the same turen try to build more troops, you will see this message in your Admiral's Office:



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How to form and deploy fleets of ships

SAS is primarily a naval game, and your main power is projected through your ships (and the aircraft they may carry). Where you deploy them and the orders they have are the most crucial elements in winning the game.

Ships are organised into fleets, and each fleet is given a mission - a purpose if you like - that is the rationale for the type and number of ships in the fleet, where the fleet is sent and what its rules of engagement are. There are over a dozen types of mission, including reconnaissance, patrol, bombardment, convoy, ready reaction, and so on. See the overview of missions for more information.

SAS's very flexible command and control interface makes the task of creating missions as simple or as complex as you want. You have a very able, computerised 2-I-C who is there to help with any aspect that you don't want to handle.

Follow these links to learn all you need to know about forming and deploying fleets.

The links are arranged in order from the simplest to the most complex option.

Option 1 - this is the simplest - just let your 2IC handle everything. He creates all the missions by assigning the most suitable ships, calculating fleet movement orders and setting rules of engagement.

Option 2 - this is the same as option 1, but, after reviewing in the *Mission List* what the 2IC has done, you can cancel any or all of the missions, returning the ships back to the available pool.

Option 3 - this is almost as easy as the above - while still letting your 2IC make the decisions you can change any of the default settings he relies on, such as the list of approved mission types, and their priority for obtaining the necessary shipping.

Option 4 - this is one step more detailed again. Your 2IC still does the detailed planning but you exercise more control by vaying certain parameters for selected mission types. The most important parameter is setting your own objective hexes (instead of leaving this decision to your 2IC).

Option 5 - here you can elect to edit the actual missions your 2IC creates, after he has created them. For any mission, you can swap ships in or out and change the fleet movemement orders or the rules of engagement.

Option 6 - lastly, you can use the same knowledge you exercised in option 5 to create your own missions from scratch. You can do this for all missions, or just for the ones your most care about, leaving your 2IC to handle the rest. Examples where this could be useful are minelaying and convoying: setting these missions up can be a little tedious and they may not be your most important priority. So, you can create your own "sexy" missions, such as offensive patrol, bombardment or close blockade, while leaving minelaying and convoys to your 2IC. *However*, if you are an experienced player you may want to manually create all missions without any reliance on your 2IC. This is the most satisfying and potentially the most beneficial option (if you trust your planning above your 2IC's abilities!). But it is also compex and more time-consuming and is best tried only after you have mastered all previous options.

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How to automatically create missions

The simplest way to create missions is to let your 2IC do it all for you.

You have many other options of course - including defining the rules he uses, editing the missions after he has created them, or even creating your own. (See options for deploying ships for more information).

This page just explains how to let your 2IC do it all.

How to invoke your 2IC

First, you have to call up your 2IC.

There are two alternate ways to do this. Both assume you are already in your Admiral's office.

Option A: from the blackboard menu

From the main menu on the blackboard to the left hand side of your office, click on "Deploy". Then, on the deploy menu that comes up, click on "Form Fleets"

Option B: from the theatre map

Click on the theater map on the wall of your office. A full screen map view will appear. On this map, click on the "Form Fleets using 2IC" button at the top right of the screen:

The 2IC Help Screen

Either of these options will bring up the 2IC help screen for forming fleets. The screen has some help text, some buttons, and a picture of your 2IC. Shown below is an example for the US player, relying on Admiral Spruance as his (very cautious) strategist:

The help text indicates that the 2IC is ready to "draw up an operational plan, allocating ships to fleets and determining their missions". It also says that the plan is being prepared "in accordance with our very cautious strategy".

You can learn how changing strategy affects this plan by going to the changing the strategy for missions page.

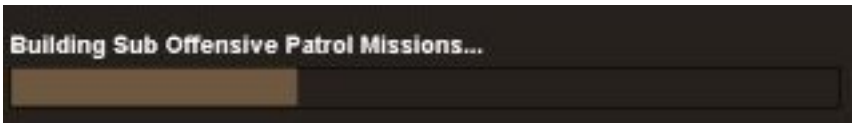
For now, it is assumed that you are following the simplest of all options, and are not changing strategy.

To authorise your 2IC to draw up a plan, just click on the "Yes" button at the bottom right of the sreen.

Calculating the operational plan

The assignment of the most suitable ships to fleets and the calculation of their movement orders, all in accordance with the overridng strategy, is one of the more complex calculations the computer AI must do in *SAS*. There are many variables to consider when selecting appropriate enemy objectives, including the cruising range of your ships. So please be a little patient while the calculation is being performed. (You can speed things up considerably, when you are ready to learn this, by setting your own objective hexes. see Editing mission parameters for information).

As the calculation is running you can see the rate of progress in a progress bar at the bottom of the help screen. It shows the progress graphically and describes the mission currently being calculated:



How to review the missions

As soon as the calculation is finished, the *Mission List* appears. This has a summary list of all missions in the left-hand pane. Here is a sample illustration:

Note: The summary list shows all missions created this turn as "NEW", to distinguish them from any that were created on a previous turn and that are still operative.

Click on any entry in the summary list to bring up details of the selected mission in the right-handpane. See using the mission list for more information.

The Mission List can be used for more than just reviewing. You can easily cancel all missions, or selected ones, or lock selected ones and cancel the remainder. See cancelling missions in the mission list for more information.

Close the Mission List when you are done, by clicking on the close button:

 at the top right of the List.

You will now see the theatre map, where you can review the missions in even more detail - and also edit them manually if you want to. See map view for more information.

Congratulations!

Congratulations - you have just learned the simplest way to form fleets of ships and give them all necessary orders. Your 2IC has done all this for you, taking probably less than a minute. The missions will be the ones appropriate to your strategy, and the best available ships for the tasks will have been selected.

You can learn how to guide or override what your 2IC has done. But in the meantime, you can be confident that he has done a very solid job. You may find that you are happy to leave it to him for quite a while, while you get up to speed with other areas of your command - such as ship design and construction, or infrastructure spending, or aircraft construction and deployment. Life is always busy for the *Supreme Naval Commander*!

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Missions - Available types

There are fourteen possible mission types. Your 2IC selects from these, based on your strategy and available forces, when creating missions. The following mission types all involve surface forces except where it is noted that they employ submarines instead. (In *SAS*, a fleet can not contain both submarines and surface ships).

- Aerial Bombardment
- Bombardment
- Close blockade
- Combined operations involving amphibious assault
- Convoy
- Defensive patrol
- Defensive patrol by submarines
- Defensive minelaying
- Offensive patrol
- Offensive patrol by submarines
- Offensive minelaying
- Ready reaction
- Reconnaissance
- Troop Transport

Aerial bombardment

In this mission type a fleet that includes one or more aircraft carriers will be sent out to attack one or more enemy ports with aircraft from the carriers. The

ports will be selected either by your 2IC or by you. The aircraft will attempt to damage not only infrastructure at the port, including RP storages, but also enemy ships in harbour. The fleet will come just close enough to the port to be in attack range by its own aircaft, but no closer.

Bombardment

This is similar to a aerial bombardment mission except that the fleet will be composed of ships intended to use naval guns for bombardment. (In *SAS*, this excludes submarines and aircraft carriers). The fleet will sail into an adjacent hex to an enemy port that has been selected as an appropriate target.

Close blockade

In this mission type the fleet will typically be very powerfully composed and will sail "into the lion's den", relatively close to an enemy port, and will patrol there waiting to intercept enemy ships attempting to sail into or out of the port. The port will have been selected either by your 2IC or you.

Combined operations - amphibious assaults

In this mission, one or more fleets will have orders to sail to a hex adjacent to the port to be assaulted, offload any troops and perform a preliminary bombardment. In missions of this type set up by your 2IC, the fleet(s) will arrive at a time that allows for a pre-dawn bombardment. When several fleets are involved they will sail from different points and converge on the enemy

port at the same time. The land battle may take some time to resolve or it may be very quick. When the battle is resolved, if the assault is successful, the enemy port and all its remaining facilities as well as any enemy ships in the harbour come under your control and can be used like any other of your ports and ships. If the assault is unsuccessful, all remaining troops from your assaulting units are captured.

If the port is the enemy's home port, a successful assault signifies that you have won the game.

The combined operations mission is the most complex of all as it can involve the coordination of several fleets plus any ground forces able to reach the target by land.

Your 2IC does a lot of complex planning when preparing a combined ops mission for you!

Note:Combined ops missions are not possible on the first turn of the game. Although you can always manually create your own amphibious assaults, your 2IC (as well as your computer opponent) will desist from planning combined ops missions on the first game turn. This is because, at the start of the game, your 2IC does not consider he yet has enough intelligence of enemy troop dispositions to sensibly plan. After the first turn however, your 2IC will have intelligence (of varying quality - depending on the level of you enemy intelligence) which he can use to plan combined ops missions.

Convoy

A convoy is any fleet with at least one ship carrying raw materials, troops or

supplies and that is sailing between your own ports, loading and unloading as it goes. The carrying will usually be done by merchant ships; but naval vessels can also carry troops and supplies (but not raw materials) when needed.

The ports can be selected either by your 2IC or you. If your 2IC is creating the mission, the ports will be selected according to need as well as profit. Need is determined by a calculation of the supply needs of a port (eg to support troop garrisons or to refuel, rearm or repairing your ships) compared to the current supply stocks. Profit is determined by calculating the value of routes between ports basd on the length of the route and the value of the cargo. (Typically, convoys will be plannned between rich sources of raw materials and ports with the industry to profitably process them. The shorter the route, the more valuable it is also, because more trips can be made in the same time).

If resource points (RPs) are your lifeblood in *SAS*, convoys are the main arteries that carry the ingredients necessary for making RPs and transporting them to where they are needed.

Convoys are typically relatively slow, and usually will include escorting naval ships to protect the merchants ships from aerial, surface and submarine attack.

Defensive patrol

In a defensive patrol mission, the fleet will be given one or more hexes to patrol. The hexes are set either by your 2IC or you. The fleet will usually have aggressive orders to intercept enemy fleets it encounters. Defensive patrols are useful to establishing defensive lines to secure important rear areas,

such as your key ports or convoy routes.

Defensive patrol by submarines

This is the same as a defensive patrol mission, but has submarines only.

Defensive minelaying

Ships that can lay mines (which in *SAS* means only escort ships) are tasked to lay them in nominated hexes. The hexes are specified either by your 2IC or you. The hexes will typically be chosen so that they form a defensive perimeter around your ports.

Offensive patrol

This is similar to a defensive patrol except that the patrol hexes will be inside enemy controlled sealanes, usually in areas that interdict key enemy convoy routes. The fleet will usually be given cautious attack orders.

Offensive patrol by submarines

This is the same as an offensive patrol mission, but has submarines only.

Offensive minelaying

This is the same as a defensive minelaying mission except that the hexes to lay mines in will be inside enemy controlled sealanes, such as on major enemy convoy routes, or close to enemy ports.

Ready reaction

In a ready reaction mission, the fleet will remain in port but with orders to aggressively sally and attack any enemy fleets that come too close.

Reconnaissance

A reconnaisance mission is like an offensive patrol but the fleet's orders will be to always avoid battle if possible. (Offensive patrols with rules of engagement like 'Hit and Run' can perform reconnaissance but can also be of some offensive use. Pure reconnaissance missions will typically contain a small number of fast ships, like fast cruisers, that can use their seaplanes for scouting and usually be fast enough to avoid battle).

Troop Transport

A troop transport mission is one in which ships capable of caryying roops are tasked with transporting a required number and type of troops from a place where there is sufficient surplus to one where there is a greater need to bolster the garrison.

The number of troops and the pors of embarkation and disembarkation ar selected by the computer based on where troops are currently distributed compared to where they are most needed for defence, as well as on where suitable transport is available.

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Missions - Using your Mission List

Missions created by your 2-I-C appear in the mission list after they have been created.

(Note! The Mission List shows *only* missions created by your 2IC. Fleets you have manually created and given orders to do not appear in this list. You can review these fleets separately, from the theatre map).

On the left side is listed summary information on all missions:

Each mission is shown by type (eg "Convoy"), and the name of the fleet associated with the mission is shown.

If a mission is newly created this turn it is marked as "NEW" to distinguish it from ones created on a previous turn and that are still operative.

Key information about the composition of the fleet is shown, as well as the port of departure. The following example shows the listing for a new convoy mission:

The underlined part is a hyperlink. Clicking on it will bring up details on the mission in the right hand pane:

Selected Mission Details

Convoy "CF1" NEW Lock In Cancel

15 Merchants

MS 1-11 MS 1-12 MS 1-13 MS 1-14
MS 1-15 MS 1-16 MS 1-17 MS 1-18
MS 1-19 MS 1-20 MS 2-4 MS 2-5
MS 3-3 MS 3-4 MS 3-5

1 Carrier

Sparviero

1 Cruiser

G. delle Bande Nere

4 Escorts

Pegaso Cicione Impavido Cassiopea

Leaves port Wednesday, 2nd. of July, 1941, 5 AM

Sailing La Spezia -> Palermo -> Piraeus -> Iraklion.

Total value of cargo carried = 96RPs

Loading 64848 tons of supplies at La Spezia
Unloading 64848 tons of supplies at Palermo
Loading 64848 tons of raw materials at Piraeus
Unloading 64848 tons of raw materials at Iraklion

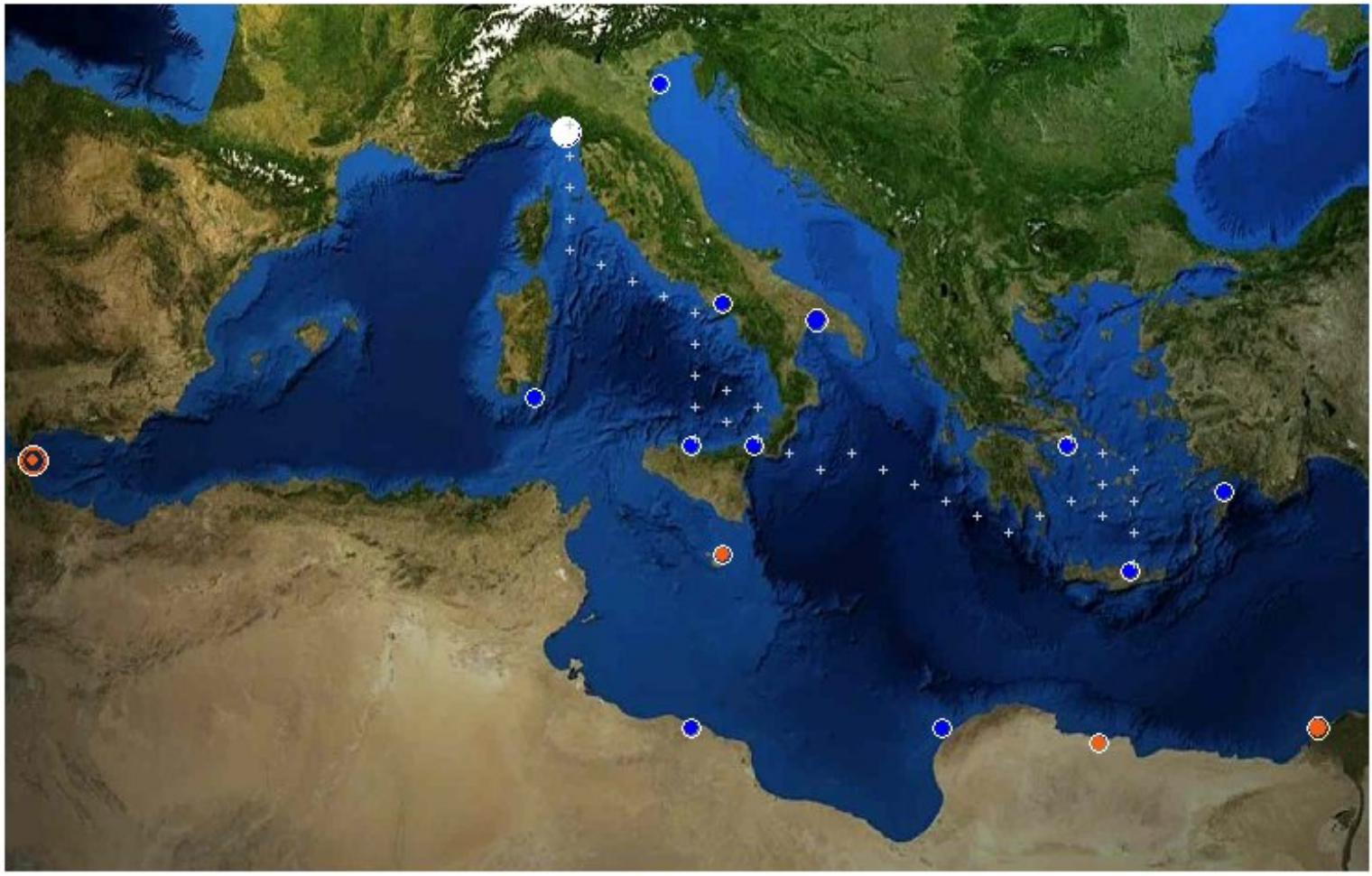
See Map

Best fleet speed = 8 knots
Average fleet speed = 8.0 knots

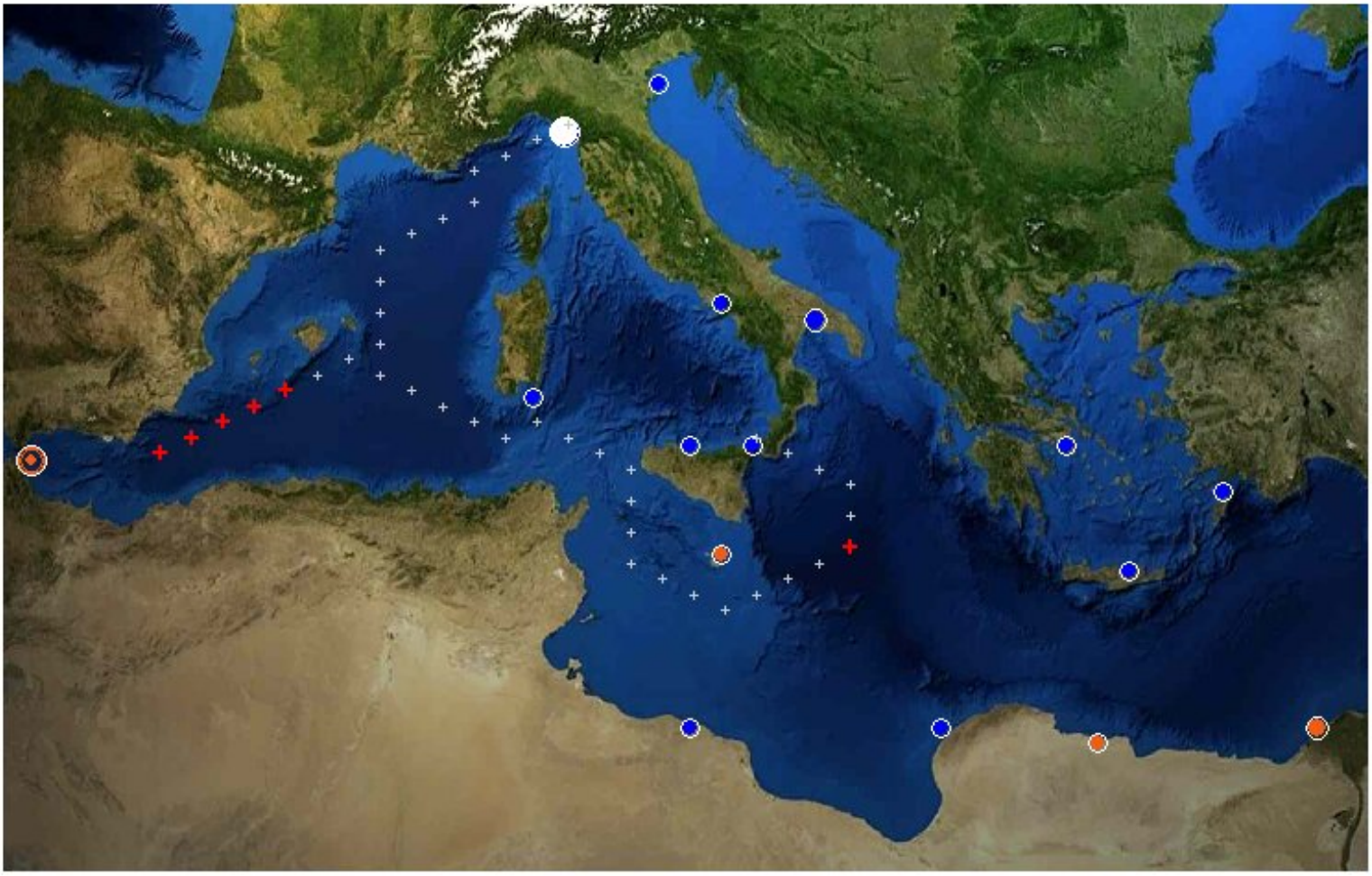
Mission completed by Sunday, 20th. of July, 1941, 10 PM

The details shown will be appropriate to the type of mission. All missions (except "Ready Reaction" missions - which stay in port until called out) will have a movement route set for them. You can see this route by clicking on the "See Map" hyperlink.

When you do this, you will see a small version of the theatre map, with the fleet's movement path shown by a series of white crosses:



If the mission is one for which hex objectives have been set - such as a patrol or minelaying mission, the objectives will be shown with a red cross:



To exit the map, click anywhere on it.

For use of the cancel and lock/unlock functions available from the left hand buttons or the right hand links, see cancelling missions in the mission list for more information.

For help on the whole subject of how missions get created (by your 2-I-C), how you can edit them, and even how you can create your own, start with how to deploy fleets of ships.

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Cancelling missions in the Mission List

The *Mission List* is where you review and optionally cancel missions that your 2IC has created.

Note:It is only possible to cancel missions where the fleet is in port. If it is a mission that was created on a previous turn and is still at sea, the mission cannot be canceled this turn using the cancel function. To terminate a mission that is at sea, you will need to manually edit the fleet's movement path. (See how to set the movement path for a fleet for information).

Accessing the Mission List

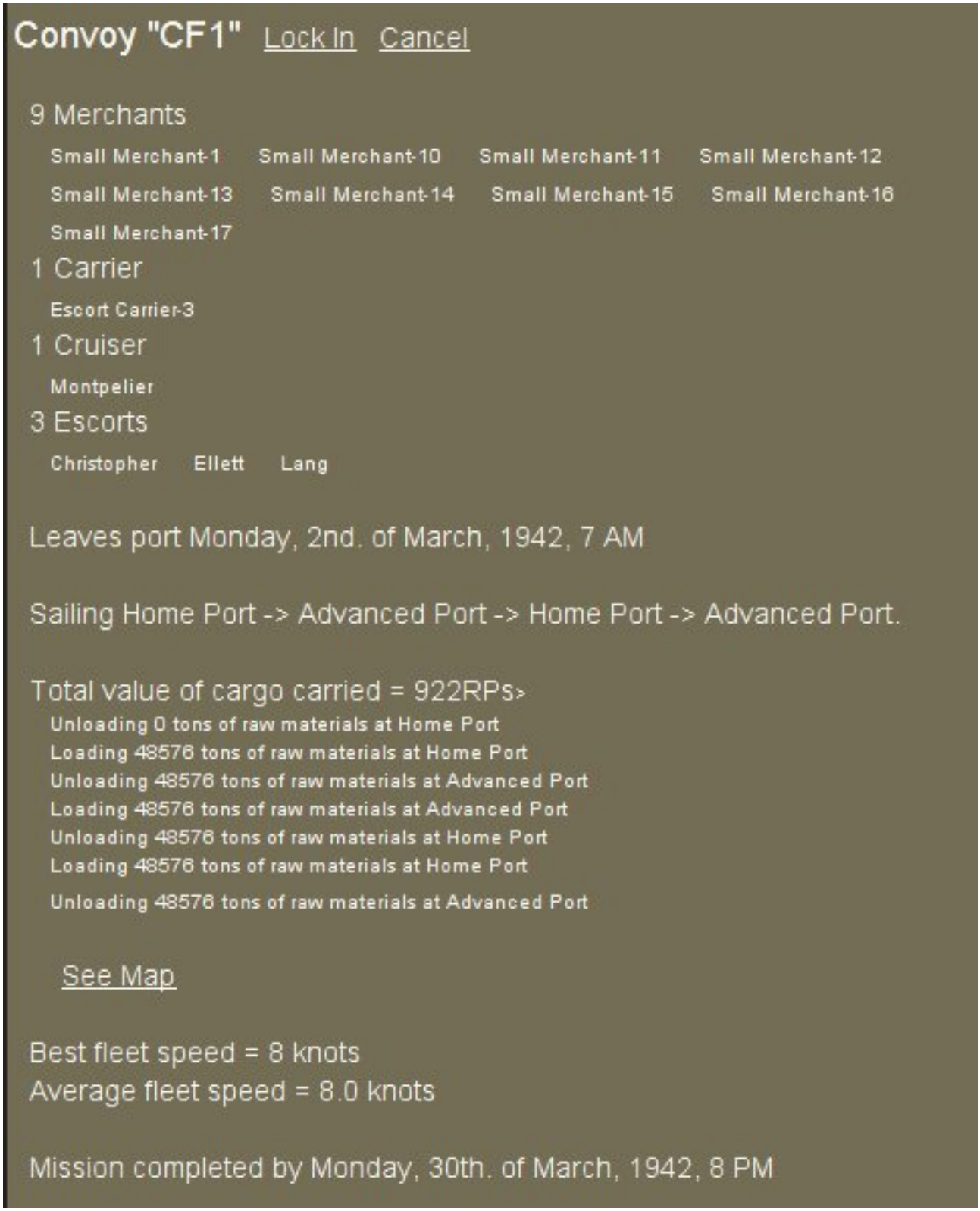
The Mission List appears automatically once your 2IC has finished creating missions. See automatically creating missions for how to invoke your 2IC to create missions.

The Mission List can also be brought up at any time from the theatre map. Get to the theatre map from your Admirals office by clicking on the map on the wall. Then click on the "View Missions" button on the top right hand side:
View Missions of the theatre map:

You will see a List something like this:

Cancelling a selected mission

To cancel a selected mission, first, select it in the left-hand summary pane. Details of the mission will appear in the right-hand pane, looking something like this:



To cancel the selected mission, just click on the "Cancel" link at the top of the right hand pane.

The mission will be deleted, all ships in it will be returned to the available pool where they came from, and the mission will be deleted from the Mission List

summary.

Also, on exiting from the Mission List and returning to the theatre map, you will see that the fleet associated with the mission has been deleted from the list of fleets. (See map view for more information.

Cancelling all missions

To cancel all missions in the list, just click on the "Cancel All" link at the top of the left-hand summary pane.

All missions will now be cancelled (regardless of their locked status - see below).

Locking missions

Sometimes, you may want to cancel most missions, keeping only some. This is what locking is used for.

Missions are locked individually. First, select the mission in the left-hand summary pane, then click on the "Lock" link at the top of the right-hand details pane.

If you click on the "Cancel All Unlocked" link in the left-hand summary pane, all missions not so locked will now be deleted.

Note that locking missions is used also for another purpose. Any mission that is locked will stay on the books even if you get your 2IC to issue another operational plan, perhaps to different parameters, perhaps not. At this time, all unlocked missions will be cancelled, but locked missions are retained and

are not touched.

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How to edit the strategy for missions

Each player has a strategy, which is set when a campaign is created and can then be changed during a game.

There are four strategies - very cautious, cautious, aggressive and very aggressive. Strategies affect many things, including how missions get created by your 2IC. (See strategy overview for more information of a general kind).

Accessing the mission strategy editor

To change your strategy as it affects missions, you need to call up your 2IC Help for creating missions.

There are two alternate ways to do this. Both assume you are already in your Admiral's office.

Option A: from the blackboard menu

From the main menu on the blackboard to the left hand side of your office, click on "Deploy". Then, on the deploy menu that comes up, click on "Form Fleets"

Option B: from the theatre map

Click on the theater map on the wall of your office. A full screen map view will appear. On this map, click on the "Form Fleets using 2IC" button at the top right of the screen:

Form Fleets using 2IC

The 2IC Help Screen

Either of these options will bring up the 2IC help screen for forming fleets. You have seen this screen before, in the help page covering automatic creation of missions.

The screen has some help text, some buttons, and a picture of your 2IC. Shown below is an example for the US player, relying on Admiral Spruance as his (very cautious) strategist:

The Mission Strategy Editor

To change strategy, click on the "Change Strategy" button at the bottom of the screen.

You will now see the mission strategy editor:

This screen allows you to make two kinds of edits:

1. Change the authorised list of missions
2. Change the priority of the missions

You can also launch the screen for editing more detailed parameters for selected missions - this is explained in the page covering editing mission parameters.

1. Changing the authorised missions

There are two ways to do this, as explained below.

A. Changing the strategy itself

The first way is simply to change the strategy itself. Because each strategy comes with a default set of authorised missions, changing the strategy will reset the list of authorised missions to the default list for the selected strategy.

The current list of authorised missions is shown in the *Selected Missions* list at the bottom right of the screen:

By way of some examples, a very cautious strategy will not by default include close blockade or bombardment missions and will limit offensive operations to submarine patrols. Conversely, a very aggressive strategy will favour aggressive patrols, bombardments and blockades ahead of defensive missions.

The current strategy is highlighted in the *Strategy Properties* list at the top left of the screen:

To change the strategy, simply select a different one in the list. When you do this, you will get a warning that changing the strategy will reset all defaults:

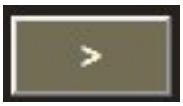
You can confirm the change, by clicking the "Change" button; or cancel out by clicking "Cancel".

You need to be aware also of other effects of changing strategy. Not only will the list of authorised missions change; but the new strategy will immediately apply to other areas of decision-making - most importantly in how your 2IC selects new ships and aircraft and how he allocates infrastructure spending. So make sure you understand these effects before proceeding to change the strategy. See overview of strategies for more information.

B. Directly setting authorised missions

The less impactful way to change the authorised missions is to directly swap authorised missions in and out using the mission strategy editor. Most players will want to exercise this option before long.

To add an authorised mission, select one currently not authorised in the *Available Missions* list at the bottom left of the screen:

Then, click on the ">" button:  next to the list.

The selected mission will now appear in the *Selected Missions* list at the bottom right of the screen:

You can of course also do the reverse operation, that is remove any mission from the Selected Missions list by selecting it and clicking on the "<" button:

next to the list. The selected mission will dissapear from the Selected Missions list and appear in the Available Missions list.

2. Changing the mission priorities

The Selected Missions list shows missions in priority order, from highest priority at the top to lowest at the bottom.

The priority of a mission is critical because it affects the chances of the mission actually going ahead. This depends on whether the appropriate ships are available. Higher priority missions have a higher claim on shipping.

Your 2IC allocates ships to missions in a sophisticated way - taking account of the minimum and optimum numbers of types of ships that the mission requires. (These minimum and optimum numbers can be changed - see the section on editing mission parameters).

Ships must also have the range for the mission, and otherwise be the most suitable of the ships available. For example, escort ships chosen for long range offensive patrols will be larger and more powerful than those selected for convoys or closer defensive patrols.

Your 2IC will try to form at least one mission of each of the authorised mission types. But lower priority missions may simply miss out for a given turn, as the ships needed have been claimed for other missions (or are otherwise unavailable, typically because they are under repair).

To change priority for a mission, simply select it in the Selected Missions list, and move it up or down the list using the "Up" 

or "down" 

buttons.

Ready Reaction missions

Ready Reaction missions are a special case in that your 2IC will always allocate remaining ships not otherwise employed to ready reaction fleets at each of your ports. They will be given orders to sortie as necessary to defend the port.

You can beef up the size of these fleets by making sure Ready Reaction missions are in the authorised list, and have a high priority. When they are in the authorised list, the rules regarding minimum and optmum numbers are applied, so you can enforce a certain size for these 'home' fleets. A cautious player may want to do this if he is uncertain of where or when to take the offensive and is anxious to keep a reasonable portion of the navy in home waters. The other advantage of ready reaction fleets is that they stay in port until called out in emergency. Until they are called out, they burn no precious fuel, so they are a more economical than running defensive patrols at sea. (But defensive patrols are often better at intercepting enemy threats earlier, before they get too close to your ports).

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Strategies

Strategy is defined in the Compact Oxford English Dictionary as "1. a plan designed to achieve a particular long-term aim. 2. the art of planning and directing military activity in a war or battle".

As the *Supreme Naval Commander* you make the strategic decisions: where to direct your resources and, what sort of navy, airforce and troops you want that will best achieve victory.

You also make the grand tactical decisions -deploying your ships in fleets and giving them operational orders,as well as deploying aircraft and troops for defensive or offensive operations.

To help you, you have a 2-I-C who will follow one of four pre-defined strategies -very cautious, cautious, aggressive or very aggressive.

Each of these strategies has a favoured approach to the kind of resources you build and how they are deployed.

Follow these links for more information:

- Very cautious strategy
- Cautious strategy
- Aggressive strategy
- Very aggressive strategy

You can change your strategy at any time, but first you should be aware of the need to avoid unwanted effects from too much change. Follow the links above to understand what the effects would be of a change in strategy.

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How to edit mission parameters

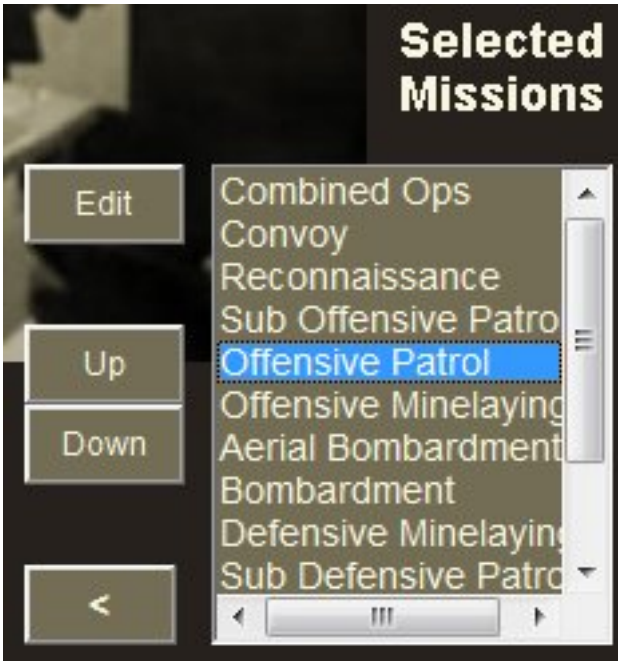
As well as changing the mission types and mission priorities (see editing mission strategy), you can set various parameters for any selected mission. This includes the important ability to set objective hexes. Many players will want to do this as a quick way of setting up missions targeted exactly where they want, without the extra work in having to manually set them up.

Mission parameters are edited in the *Mission Parameters Editor*, which is reached via the Mission Strategy Editor.

Accessing the ***Mission Parameters Editor***

First, bring up the Mission Strategy Editor. (Refer to accessing the mission strategy editor for instructions if needed on how to do this).

Then, in the Selected Missions list at the bottom right of the screen, select the mission for which you want to edit the parameters, and click on the "Edit" button just to the left of the list:



You will now see the Mission Parameters Editor for the selected mission type:

There are three main parameters you can set here:

1. Set objective hexes for the mission
2. Set ship numbers in the fleet - minimum and optimum

numbers and ratios of ships
3. For some mission types you can set other parameters

1. Setting objective hexes

The ability to set objective hexes is a very simple and powerful way to get your 2IC to send the missions where you want, without having to manually create them yourself.

Normally, your 2IC will select the best objectives for a mission. For example, for defensive or offensive minelaying, the hexes selected will those best calculated to protect (or attack) enemy shipping. Similarly for defensive or offensive patrols, the hexes selected will be those closest to your own or the enemy's main shipping lanes. Ports selected for bombardment will be those judged to be those most valuable to be attacked. And so on.

These calculations can take some time to complete. But more importantly, they may not be the exact objectives you had in mind.

For most mission types, you have the ability to set your own objectives instead. Your 2IC then selects the best ships that can reach them, and assigns them the necessary movement orders.

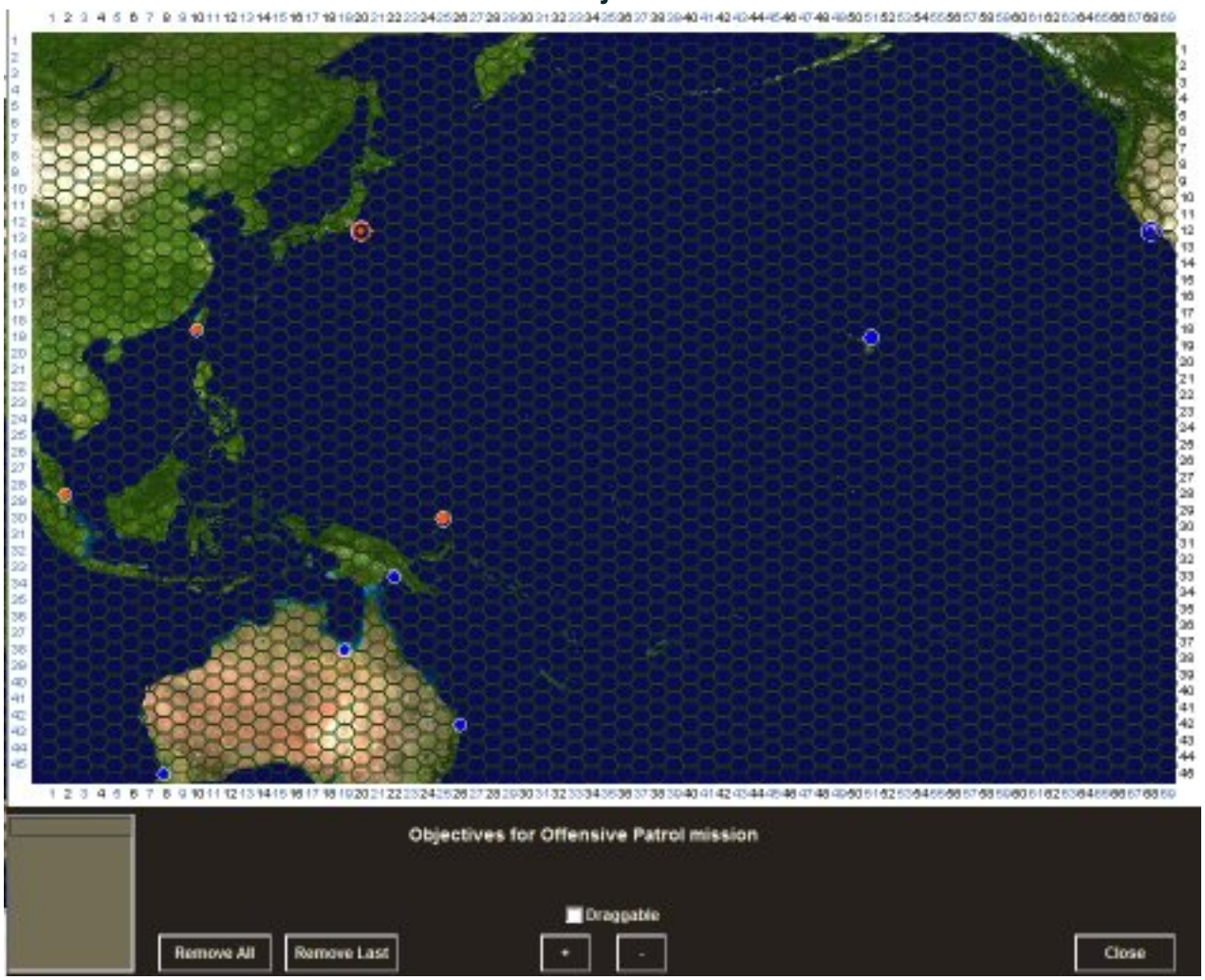
Note! The objectives you set are targets only, and will be acted on by your 2IC only of the available suitable ships can reach them. If the objectives you set are currently unreachable by available forces, your 2IC is likely to select other more suitable objectives for the mission concerned. The objectives you have set remain 'on the books' however until you change them, and will be acted on by your 2IC as soon as the appropriate ships are available at locations where they can reach the obejetive(s) you have set.

To set objective hexes, you need to call up the *Mission Objectives Editor*.

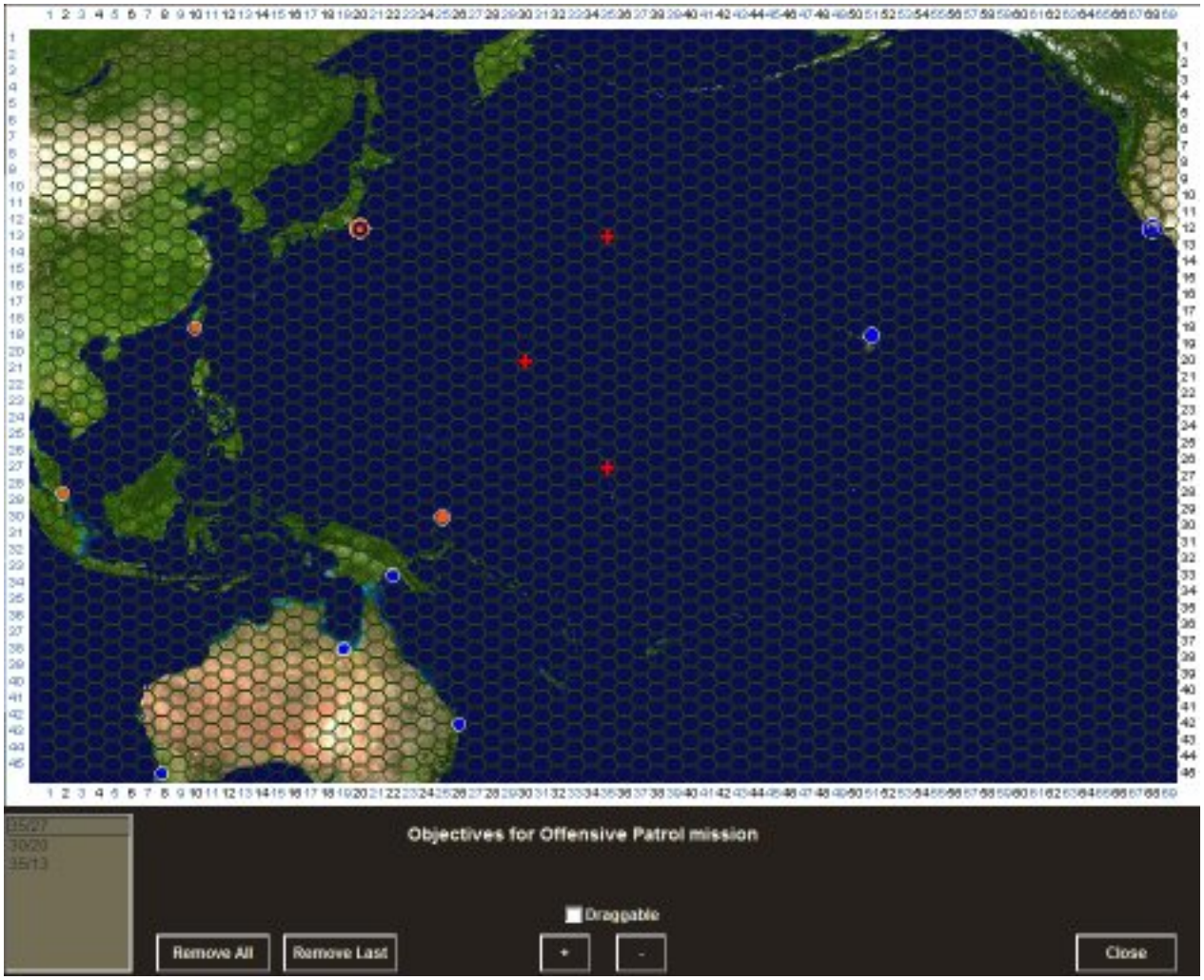
The ***Mission Objectives Editor***

To bring up the editor, just click on the "Objectives" button 

You will now see the Mission Objectives Editor:



To set an objective, just click on the hex in the map area. You can set multiple objectives. Each time you click, a hex is aded to the list at the bottom left of the screen, and the hexes are shown with a bold red cross in the map:



Normally, the hex will be an area of open sea. But for bombardment, aerial bombardment and combined ops missions, each objective hex must be an enemy port. The editor prevents you from selecting a hex that is invalid for the type of mission you have currently selected.

When the 2IC calculates the fleet's movement he will send it through the hexes in the order you that you entered them. (See how the 2IC calculates fleet movement for more information). The list at the bottom left of the screen shows the hexes in order from top to bottom.

It is important to understand that these objectives only apply to the selected mission type. You can set different (or the same) objective hexes for one or more selected mission types, and let your 2IC select objectives for the

remaining missions.

It is also important to know that these objectives stay active until you delete them. Your 2IC will apply them each turn until you change them.

Remember also that all you are doing here is setting objectives for one or more selected mission types. Your 2IC still decides which ships will be in the mission (and from where they will come). You can indirectly influence the composition of fleets by setting rules for the minimum and optimum numbers of types of ships for the mission - see setting ship numbers in the fleet in the next section. Or you can directly control the actual allocation of ships but for this you will need to know how to edit or create your own missions - see how to edit missions for more information.

Zooming and dragging

Just like the theatre map you can zoom in or out and drag the map around. The "+" and "-" buttons let you zoom in or out in increments.

Whenever you zoom in or out, the "Draggable" tick box is automatically ticked. The mouse now becomes a hand to drag the map around. To stop dragging and set more objectives, untick the tickbox and start clicking in the map again.

Deleting objectives

Click on the "Remove Last" button to remove the last objective entered. You can do this repeatedly if you wish.

Click on the "Remove All" button to remove all objectives.

Remember that the deletion affects only the currently selected mission type. Any objectives set for other mission types remain active.

2. Setting ship numbers in the fleet

Your 2IC decides which ships will be in the mission (and from where they will come). But you can indirectly influence the composition of fleets by setting rules for the minimum and optimum numbers of types of ships for the mission. This section explains how to do this. (You may also directly control the actual allocation of ships but for this you will need to know how to edit or create your own missions - see how to edit or create missions for more information).

You can specify the minimum and optimum numbers of different types of ship, as well as the ratios between ships of different types. All missions come with default values based on your strategy, and the values are different for different kinds of missions. But you can change these.

By way of some examples:

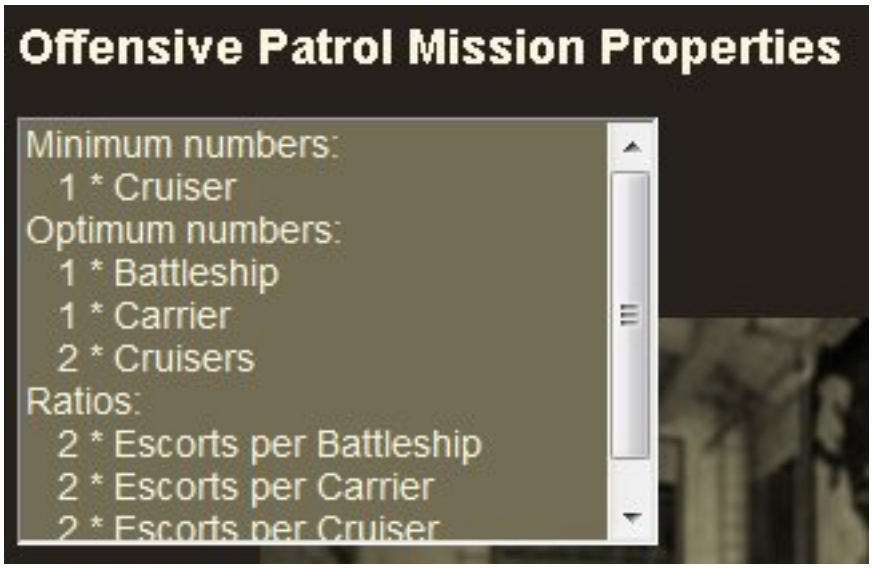
- In a convoy mission, a very cautious strategy by default has a minimum of 4 merchant ships, and a ratio of one escort, one cruiser, one carrier and one battleship for every for every 1, 4, 6 and 9 merchant ships respectively. If enough escorting ships can not be found, the convoy will not sail.
- In contrast, a convoy mission under a very aggressive strategy has a minimum ratio of one escort, cruiser and carrier to every 4, 10 and 12 merchants respectively and has no minimum required number of battleships. A convoy can sail with as little as one merchant ship, and if there less than four merchants requires no escorts at all. The logic of

these differences reflects different priorities - defensive strategies favour less risk taking and less emphasis on purely naval operations; more aggressive strategies free up the navy from much of the convoy work, making it available for more offensive operations. This is logical also because defensive strategies favour more, smaller escort ships whilst more aggressive strategies favour more big ships and fewer but larger, more powerful escorts for fleet work.

- In a bombardment mission, under a very aggressive strategy, by default there must be a minimum of one cruiser and optimally 2 cruisers and one battleship, plus two escorts for every cruiser and battleship.

Changing the numbers

A summary of the current parameters for the mission is given in the list at the top left of the screen:



To change any of these numbers:

1. Select the parameter type ("Minimum", "Optimum" or "Ratio" in the bottom left combo box:

2. Select the ship type (eg "Battleship", "Carrier" etc.) in the adjacent combo box:

3. Select the new number from the adjacent number combo box:

4. When you are happy to change to the new value, click on the "Change" button:

. You must click on the change button each time for each change to be registered.

3. Setting other parameters

Some missions have additional paremeters that you can set.

Sub Patrols - Preferred Target

Offensive and defensive submarine patrols have a default target priority of 'easiest target'.

You can change this to 'Naval ships' or 'Merchant ships' at any time by selecting this in the drop down list.

The selection applies to all of your new offensive and defensive patrols in the current campaign, until you change the setting again.

Note that the setting does not force target selection by sub comanders; they will still use their discretion. For example, if the setting is 'Merchant ships' but a juicy naval target presents itself with sufficient attack chances, the sub commander may choose that instead.

Combined Ops - Assault Odds

Combined Ops missions - which always involve troops - have default settings for minimum and optimum acceptable odds. (See overview of strategies for more information). This default is based on your strategy.

You can change the minimum and/or the optimum odds by selecting values from the drop-down lists.

The new odds apply to all of your new combined ops missions in the current campaign, until you change the odds again.

When these changes apply

The changes in numbers or objective hexes will apply the next time your 2IC is called on to draw up operational plans. You can ask him to do this any number of times in a single turn. Only the last set of orders, plus any previously locked missions, are saved and acted on (see locking missions for more information).

To apply the changes in the current turn, just close the current editor screen by clicking on the "Close" button at the top right of the screen: 

. Then close the strategy editor in the same way.

This will take you back to the 2IC Help screen. Now, just click on the "Yes" button at the bottom right of the screen.

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How the 2IC gives fleet movement orders

Movement routes

For reconnaissance, patrols and blockades, the 2IC will order the fleet to stay in each objective hex for as long as possible, given the endurance of the fleet and the length of the overall mission. In between these objectives, he will sail the feet at the standard cruising speed for the type of mission. (See Cruising speeds).

A note about minelaying hexes

Minelaying missions are special in that the 2IC will calculate the movement path of the fleet generally in acordance with the order of precedence of the objectives, but will change the order when necessary so as to attempt to a set minimum number of mines in all objective hexes before returning to add more.

The objective hexes themeselves can be set by yourself (setting your own objective hexes), or by your 2IC.

Cruising speeds

Wait times

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How to edit or create missions

Other chapters have covered how you can guide your 2IC before he creates missions, or cancel missions he creates.

Now you are going to learn how to edit in fine detail any mission after he has created it. You can, for example, add to or remove ships, or change the rules of engagement, or even alter the movement path and speed or the objectives.

The same knowledge will also allow you to create your own missions from scratch, without reliance on your 2IC.

All editing and manual creation of missions starts from the theatre map. (See accessing the theatre map for help on bringing up the map).

To edit or create missions you need to understand what the elements of a mission are.

The elements of any mission are:

- First and foremost, a mission must have a fleet, with at least one ship in it. (In *SAS*, fleet and task force have the same meaning).
- The fleet must have rules of engagement, telling it what to do when it encounters enemy forces.
- The fleet - in all cases other than ready reaction missions - must have movement orders - the path of hexes through which it is to travel, the speed or speeds during the path, and the length of time to spend in specified hexes that are important (the objective hexes).
- Certain missions - such as convoy, or bombardment or combined ops - will have some additional rules, such as the type and amount of cargo to

load or unload, the actual hex from which to bombard, and so on.

Follow these links in the suggested order to learn how to edit or create missions:

1. Creating a fleet
2. Assigning ships to a fleet
3. Setting rules of engagement
4. Setting the movement path

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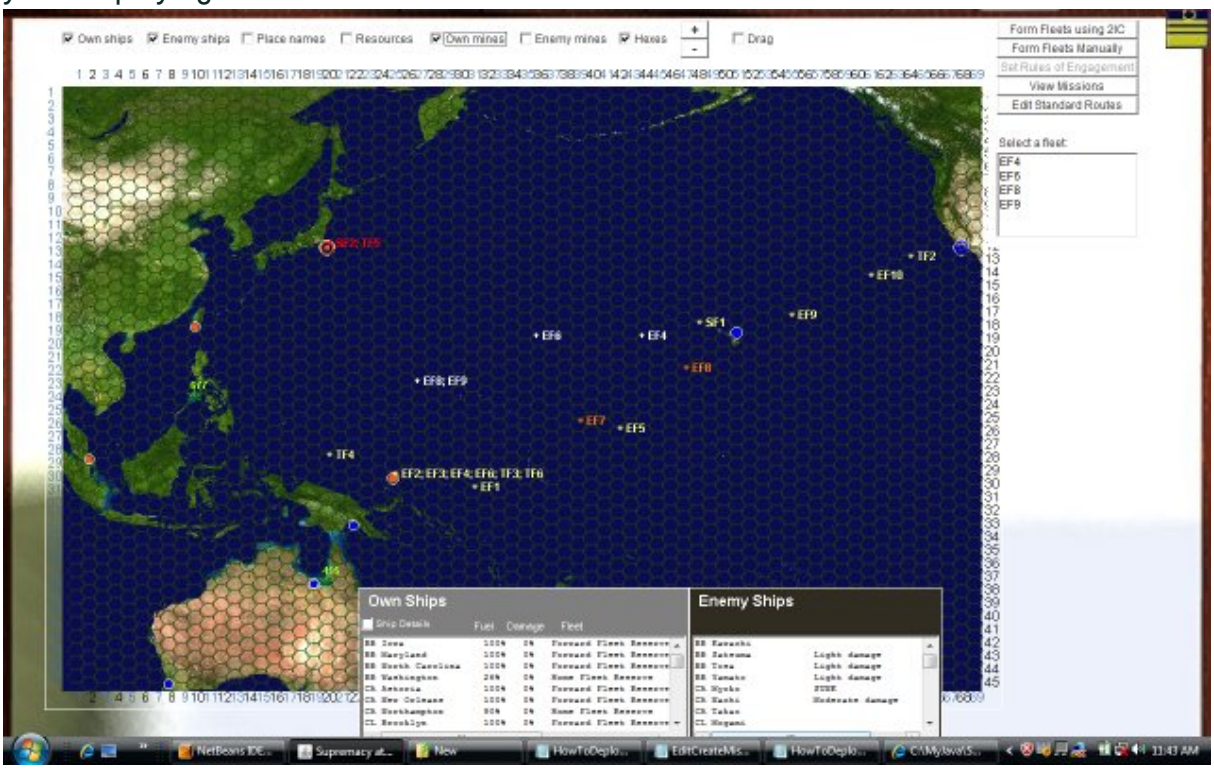
How to create (and delete) fleets

You can manually create your own fleets at any time during a turn.

Manual fleet creation is the precursor to creating your own missions, which is something that many players will want to do when they become more experienced with *SAS*. But some players may be quite happy to never learn this aspect of the game, being quite content to let the 2IC set up all missions. The choice is always yours.

When you are ready to manually create some fleets, you start with the theatre map.
(See accessing the theatre map for help if needed).

By way of illustration, the theatre map will look something like this, depending on the theatre you are playing:

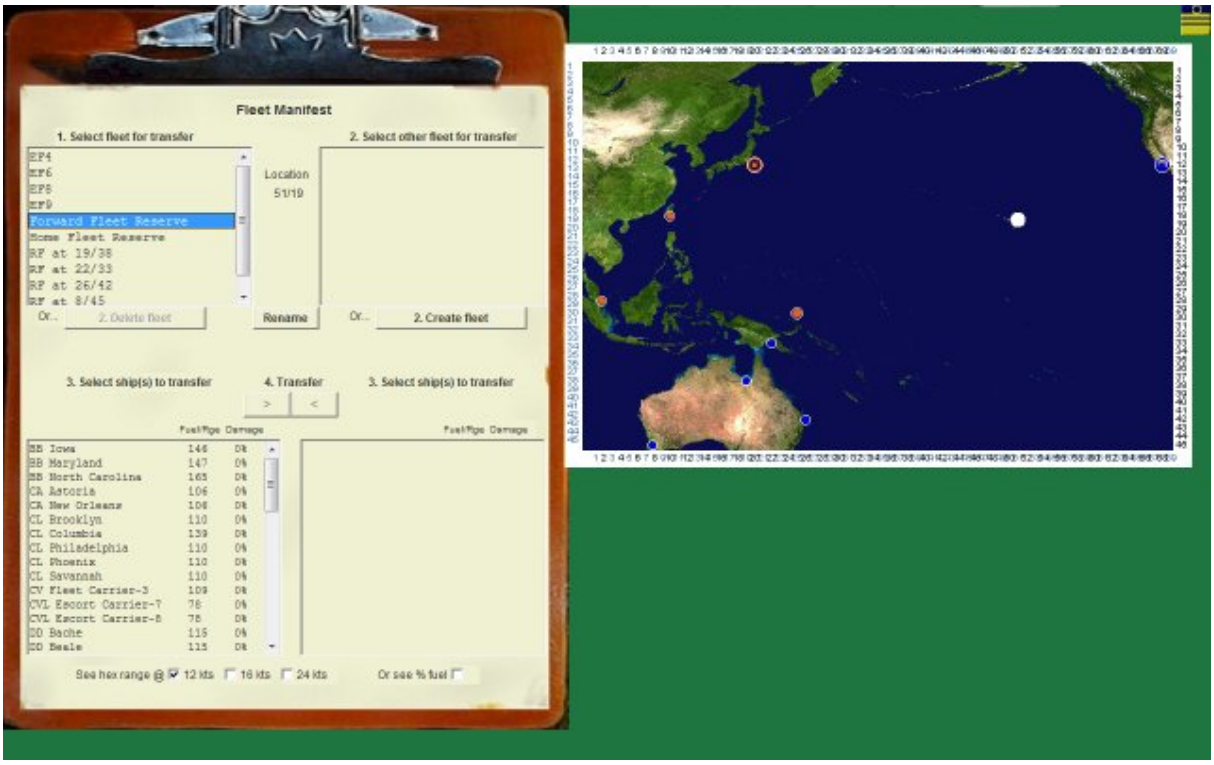


The ***Fleet Manifest***

You need now to bring up the fleet editor. Do this by clicking on the "Form Fleets Manually" button at the top right of the screen:

Form Fleets Manually

The Fleet Manifest will now appear:



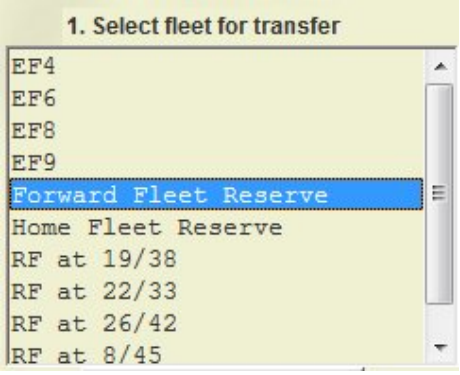
On the left is a clipboard with controls for creating and deleting fleets, and assigning ships between fleets.

On the right is a smaller map view. If a fleet is currently selected in the top left list on the clipboard, the map will show the location of the fleet with a big white circle.

The blue and red circles represent your own and the enemy's ports - just as they do on the theatre map.

Creating a fleet

To create a new fleet, first select a current fleet in the top left list on the clipboard:



The reason you have to first select a fleet is that when a new fleet is created it has to start at the location of an existing fleet. (This is to allow the transfer into it of ships).

Therefore, **the fleet you select must be where you want the new fleet to start.** Remember that the location of the selected fleet (and the soon-to-

be new fleet) is shown on the map with a big white circle).

You will now see the "Create fleet" button enabled. It is on the clipboard right hand side, half way down:

Special rule regarding Emergency Fleets

Note that if the fleet you have selected is an emergency fleet, the create fleet button will not be enabled. The reason for this is that emergency fleets are automatically created by the computer at run time, in response to things like fuel shortages, or damage. Ships in these fleets need to return to the nearest suitable port, and that is the orders that the computer has given the fleet. If you were able to move ships out of the emergency fleet, the computer at run time would just put them back again.

You can recognise emergency fleets because the computer always names them with an "EF" prefix. ("EF" stands for emergency fleet). (See fleet name conventions for more information about the names the computer uses when it creates other kinds of fleets).

As explained below, (see renaming a fleet), these names, like the names of the fleets you manually create, can be changed if you prefer more descriptive names.

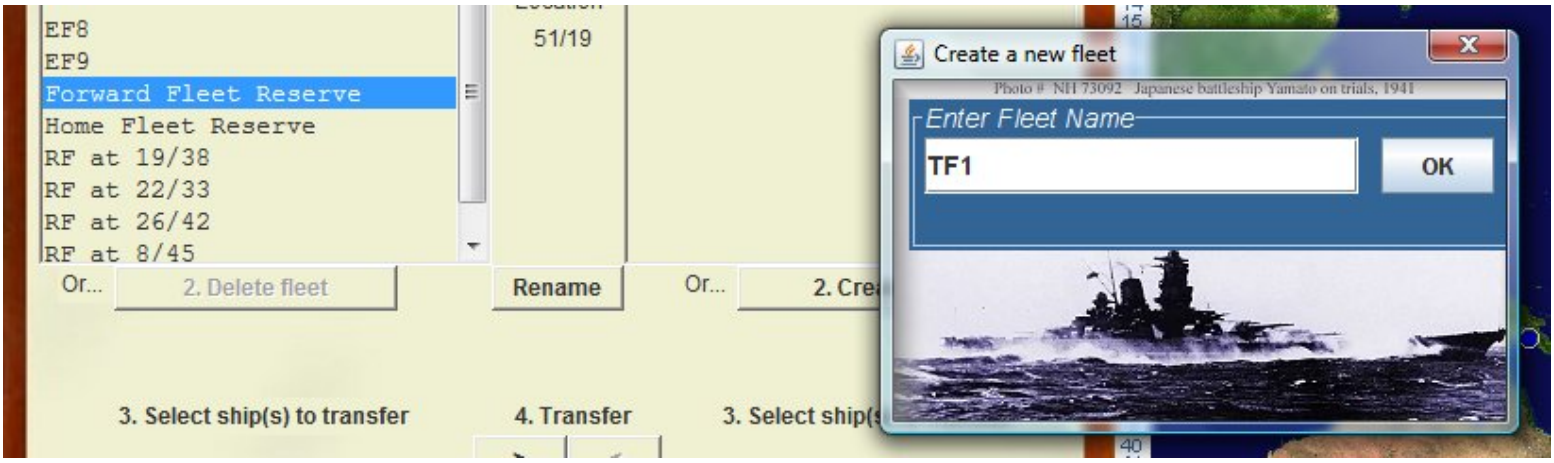
The *Fleet Name Editor*

Click on the "Create fleet" button now to see the *Fleet Name Editor*:

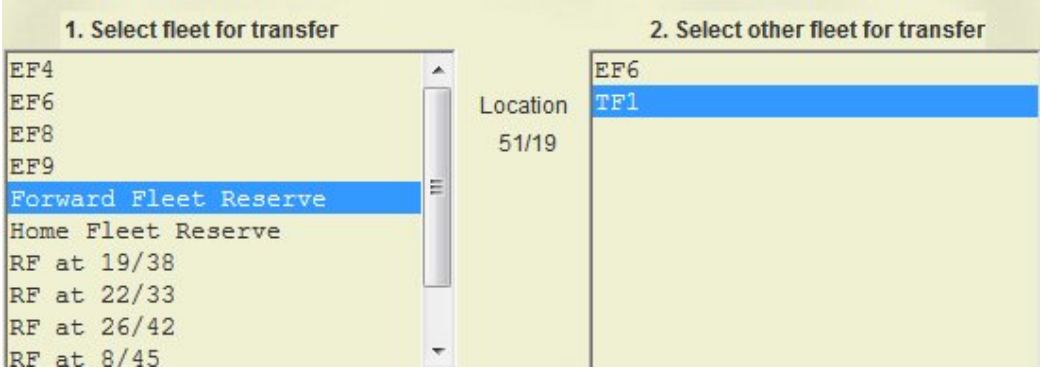
Type in a name, then click the "OK" button.

The name can be any name not currently given to an existing fleet. (Capitalisation is taken into account though). You will get an error if the name is not unique. In this case, and also if the name is blank, the fleet name editor will stay open waiting for you to enter a valid name.

In the illustrations below, a new fleet "TF1" is being created, at the location of the existing "Forward Fleet Reserve". Here, the fleet is being named:



And here, after clicking the "OK" button, you can see the new fleet listed in the clipboard:



The new fleet is shown in the right hand list. When a fleet is selected in both the top left and right hand lists, you can immediately start transferring ships. See assigning ships to fleets for more information.

Cancelling the create fleet operation.

If you change your mind, you can cancel the create fleet operation while the Fleet Editor is still showing (before you have clicked "OK"). Just click on the "X" button at the top of the Editor. This closes the Fleet Editor.

Renaming a fleet

Whenever a fleet has been selected, you can rename it. You can rename a fleet any number of times.

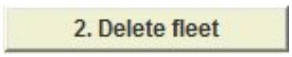
Just click on the "Rename" button.

The same Fleet Name Editor will appear. Type in the new name and click the "OK" button. The editor will close and you will see that the fleet name in the list has been changed.

Deleting a fleet

You can delete any fleet after it has been created, but first you have to transfer all the ships in it to one or more other fleets at the same location. See assigning ships to fleets for more information.

Once the fleet is empty of ships, provided it is showing as selected in the top left list, you can delete it simply by clicking on the "Delete fleet" button that is just below the top left list:



Special rules regarding Reserve Fleets

Every port has a reserve fleet that always stays in being, whether it is empty of ships or not. The reserve fleet is the home fleet for that port. **Reserve fleets can never be deleted.** When you select a reserve fleet you will notice that the "Delete fleet" button is disabled.

If the port is your home port, the reserve fleet there will be the one that takes newly constructed ships. Also, at the end of every turn, all ships in port are returned to the reserve fleet there. Think of the reserve fleet as your "pool" of ships available at the port. You (or your 2IC) can draw undamaged ships from this pool to create active fleets. The reserve fleets are non combatant - they can not move anywhere, although ships in them will fight back from inside the port, if bombarded by enemy forces.

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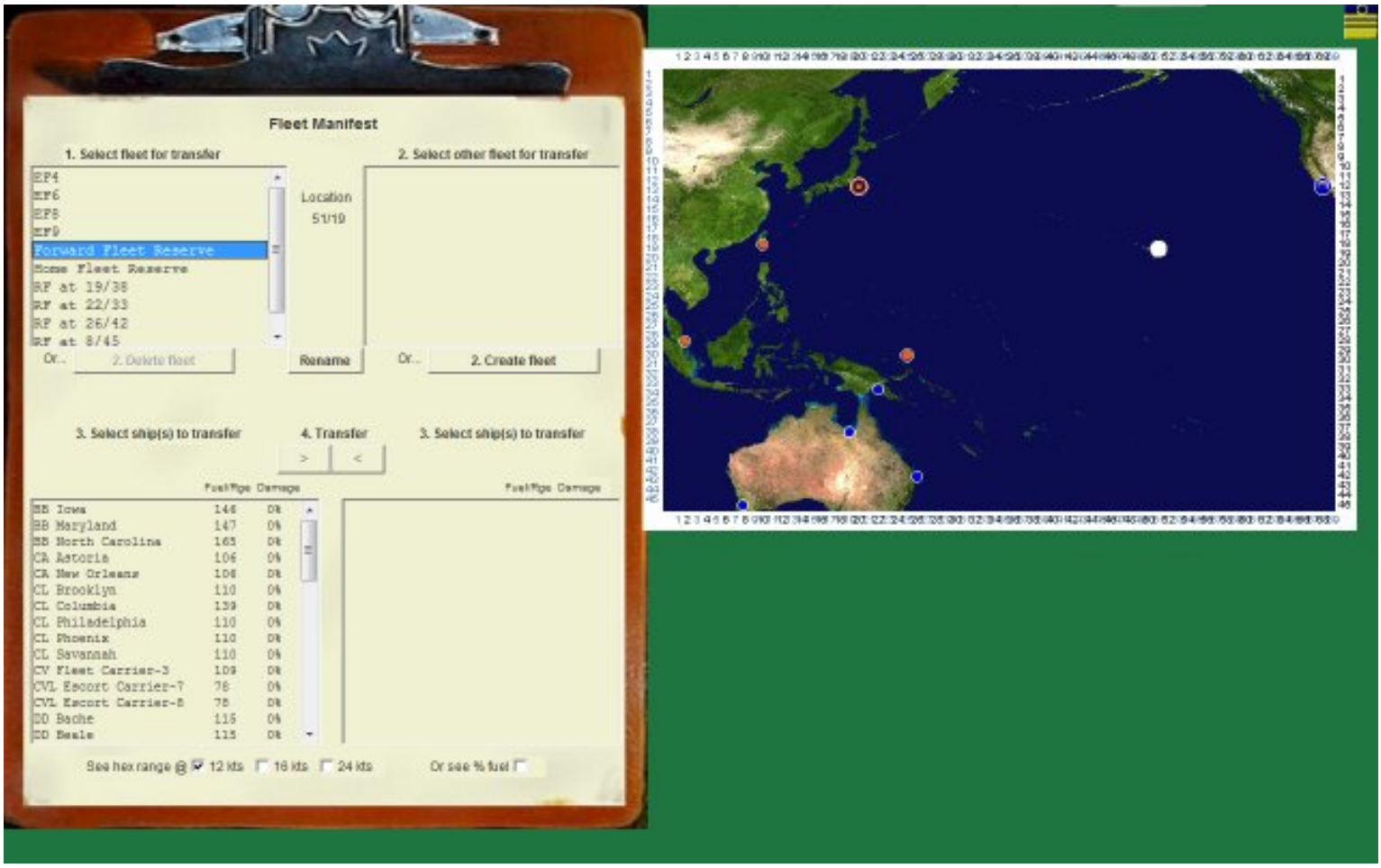
How to assign ships to a fleet

There are two situations whee you would want to assign ships to fleets:

- When you are manually creating your own missions from scratch. (In this case, you must first create some fleets yourself - see how to create (and delete) fleets).
- When you simply want to change the ships in the fleets that your 2IC has already created.

The ***Fleet Editor***

In either case, you start with the Fleet Editor. This is same screen you use to create fleets. If you need help to get to this screen - see how to create (and delete) fleets. The editor looks like this:



In summary, assigning ships to fleets is a simple 2 step process:

1. Select the fleet you want to assign ships to, and the fleet where the ships are to come from. (Both fleets must be at the same location).
2. Select the ships to move, and click on the appropriate button to transfer them.

These steps are explained in more detail below:

Selecting the fleets

You use the top two lists in the clipboard to select the fleets:

- First, select a fleet in the left hand list. The right hand list will now be re-populated with all fleets that are at the same location. If there are none, you will want to create one. (See how to create (and delete) fleets).
- Now, select a fleet from the right hand list.

Selecting the ships

When a fleet is selected, all ships in the fleet are listed in the bottom box directly beneath the fleet list.

To transfer one or more ships from one fleet to the other:

- First select the the ship(s) in the left or right ship list (the lists allow multiple selection)
- click on the ">" or the "<" transfer buttons to move them into the other fleet.

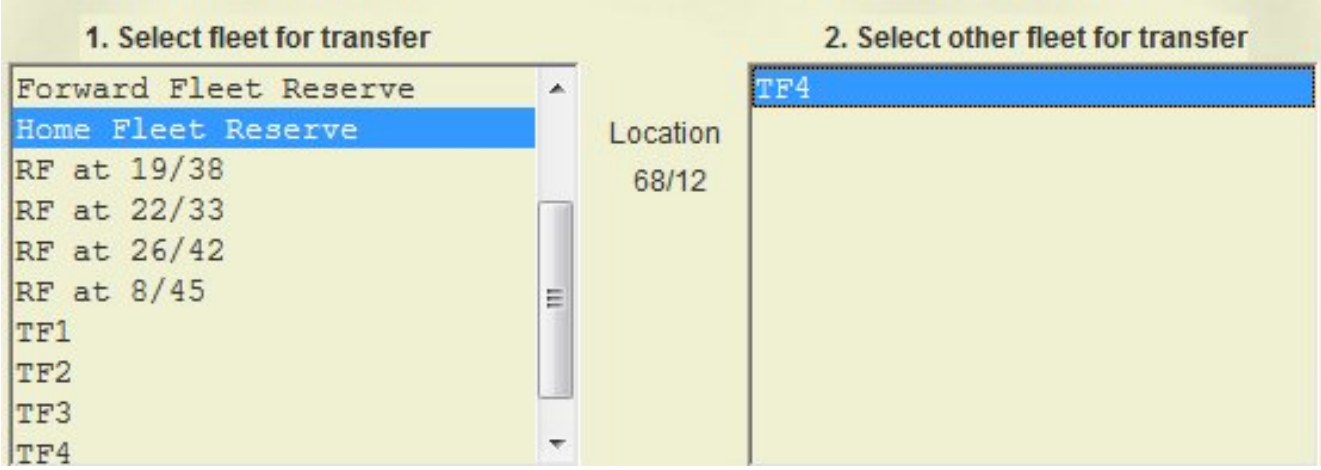
That's all there is to it. You can freely transfer ships between fleets at the same location, transferring them back if you change your mind.

An example

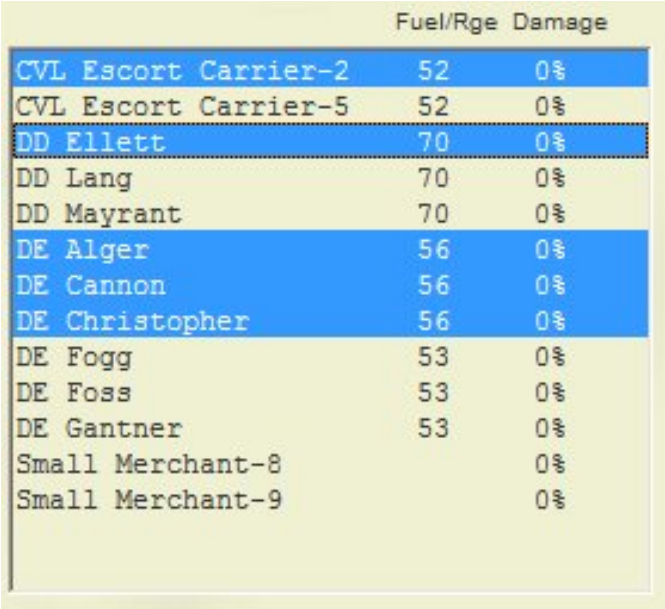
The following screen shots show some ships being moved from the Home Fleet

Reserve into fleet "TF4":

- The Home Fleet Reserve and fleet TF4 have been selected in the top lists:



- From the list of ships in the Home Fleet Reserve, five ships - an escort carrier and four destroyers/destroyer escorts - have been selected for transfer:



	Fuel/Rge	Damage
CVL Escort Carrier-2	52	0%
CVL Escort Carrier-5	52	0%
DD Ellett	70	0%
DD Lang	70	0%
DD Mayrant	70	0%
DE Alger	56	0%
DE Cannon	56	0%
DE Christopher	56	0%
DE Fogg	53	0%
DE Foss	53	0%
DE Gantner	53	0%
Small Merchant-8		0%
Small Merchant-9		0%

- The ">" transfer button  has been clicked, to move the ships from the left fleet to the right. The ships are now shown as part of fleet TF4, and they have been removed from the Home Fleet Reserve:

	Fuel/Rge	Damage
CVL Escort Carrier-5	52	0%
DD Lang	70	0%
DD Mayrant	70	0%
DE Fogg	53	0%
DE Foss	53	0%
DE Gantner	53	0%
Small Merchant-8		0%
Small Merchant-9		0%

	Fuel/Rge	Damage
CVL Escort Carrier-2	52	0%
DD Ellett	70	0%
DE Alger	56	0%
DE Cannon	56	0%
DE Christopher	56	0%

What to look for when assigning ships

Although you can freely assign ships, some basic guidelines apply:

- Check the cruising range of each selected ship to make sure it is sufficient for what you intend the fleet to do.
- Also check each ship's damage status. There is no point putting very damaged ships into fleets that are intended for an active role. They are better off in port where they will be undergo repair during the turn (provided the port has enough resources). Note that the percentage damage figure refers to the cost of repairing the damage as a percentage of the original build cost. Anything over 10% is more than a minor repair job, and the ship should probably not be put to sea unless things are desperate. The computer AI will send ships back to port when it calculates they are too damaged. The calculation depends on the amount of damage but also the aggressiveness of the ship's orders: if it has timid orders, it is sent back if damaged only slightly; with aggressive or very aggressive orders, it is almost never sent back as its role is to stay and fight.Cautious orders are somewhere in between.

The ship list shows at a glance the damage status and bunkerage or endurance of each ship. In the example below, the hex range and degree of damage (as a percent) are shown for the carrier and one of the destroyers:

	Fuel/Rge	Damage
CVL Escort Carrier-5	52	0%
DD Lang	70	0%

The fuel status is for a cruising speed of 12 knots - there is a selector at the bottom of the Fleet Editor where you can select different speeds, or show the bunkerage as a % of full:

See hex range @ ☑ 12 kts ☐ 16 kts ☐ 24 kts Or see % fuel ☐

Sometimes, it pays to check the other speeds. Here, the hex range is shown for a speed of 24 knots. It shows a much reduced range for the destroyer, and zero range for the carrier. This is a quick way to detect if ships are suited to the kind of operations you are planning:

	Fuel/Rge	Damage
CVL Escort Carrier-5	0	0%
DD Lang	28	0%

The selector is shown set to 24 knots:

See hex range @ ☐ 12 kts ☐ 16 kts ☑ 24 kts Or see % fuel ☐

To determine if this is due to design constraints or the current fuel position of the ships, you can elect to show bunkerage as a % of full. In this case, you can see that the ships are at 100% capacity:

	Fuel/Rge	Damage
CVL Escort Carrier-5	100%	0%
DD Lang	100%	0%

The selector is shown as set to %:

See hex range @ ☐ 12 kts ☐ 16 kts ☐ 24 kts Or see % fuel ☑

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How to set rules of engagement

Rules of engagement ("RoE") tell a fleet what odds it should accept when facing an enemy fleet, and, in combination with each ship's orders, determines the aggressiveness of each ship in a surface battle - how much damage it will accept before retiring and how close to the enemy it will try to get.

In fleets set up by your 2IC, as part of the missions he creates, default RoE apply based on the mission type.

You can change these orders; and you can also set up orders for the fleets you create yourself.

Before discussing how to do this, it is important to provide a short overview of the types of orders you can give.

Overview of fleet orders

The fleet RoE determine the odds a fleet will accept in a surface battle. The odds are calculated based on the total naval tonnage for each side, but accounting also for known and suspected damage.

When a fleet meets an enemy that is too strong given its RoE it will flee before battle if it can, or escape from battle as soon as it can (unless the odds change favourably during battle).

Who has the sighting advantage is therefore important and depends on the weather conditions, relative size of the fleets, the sighting range of units (including aerial reconnaissance from float or carrier-borne aircraft), crew experience and, if radar is present, its quality. There is also a degree of luck involved. But a small highly trained raiding fleet with say a battlecruiser stands a good chance of being able to escape from a large enemy fleet, especially if it has better radar.

There are seven standard RoE for a fleet, plus the ability to create custom RoE. In order of aggressiveness, from most to least, they are:

1. Sacrificial attack - to be reserved for fleets that are intended to fight to the last shell and torpedo against any odds. This is the default order for any mission involving submarine flotillas. (They are considered expendable, have special rules to determine if they can and should attack in a given situation, and can be attacked anyway only by ASW escorts (or patrolling aircraft). You could order it also for a fleet if you wanted to make a last, desperate "do-or-die" effort against a superior enemy, a last throw of the dice.
2. Bold attack - the fleet will accept battle against an enemy not more than twice as strong. This is the default order for a number of 2IC-generated missions: some key

offensive missions (bombardment, blockade, and combined ops (amphibious assault) - where you are walking into the lion's den and need to make the effort worthwhile, as well as the critical defensive missions (defensive patrol and ready reaction)- where you can not aford to let the enemy pass. It is also the default order for offensive patrols if your strategy is aggressive or very aggressive. You can also set it for any fleet you want if you are confident in the quality of your ships and crews.

3. Cautious attack - the fleet will accept battle against a slightly superior enemy (up to 25% stronger). This is the default order for offensive patrol (for cautious strategies) and aerial bombardment missions. It is a good choice in any situation where you want to make a controlled offensive operation with relatively acceptable risk.
4. Probing attack - the fleet will accept battle against an enemy not more than 80% as strong. In other words, the fleet needs to retain a small margin of superiority. This is not a default setting for any missions - it is in between "Hit and Run" RoE (which is the default order for some missions - see below) and "Cautious Attack". You may want to choose this for manually created raiding missions that are more than just hit and run affairs but where you still need to put self preservation first.
5. Hit and Run - the fleet will accept battle against an enemy no more than two-thirds as strong. In other words, the fleet needs to retain a fair margin of superiority. This is the default order for 2IC-generated minelaying missions which will be composed of escorts only and which do not want to be diverted from their principal task to chase enemy fleets they sight. It is also the default order for offensive patrols when your strategy is very cautious. You may also want to set this for raiding missions where self preservation is unequivocally your highest priority and you are happy if the mission achieves no more than nuisance value. (Of course, you might nevertheless strike it lucky and come upon a lightly escorted fat juicy convoy or two..!)
6. Reconnaissance - this is intended for fleets with a reconnaissance role only. The fleet will always try to avoid or disengage from battle. This is the default order for 2IC generated reconnaissance missions.
7. Convoy escort - this is the default order for all 2IC-generated convoy missions and is a hybrid order - the fleet always attempts to avoid battle, but once in one, the naval ships act as though they have sacrifical attack orders - to allow the merchants to escape. Protection of merchant shipping is the highest duty of ecsorting naval vessels by default. If you do not accept this should be so - as evidenced by the Royal Navy in the famous convoy PQ17 - you can change the order for any convoy you (or your 2IC) sets up.
8. Custom RoE - If these RoE are not quite what you want, you can select custom RoE and set some other odds, such as 1:2, 3:4, 1:1, 4:3, or 3:2 (expressed as a ratio of the enemy's strength to your's).

Overview of Ship Orders

Once in battle, each naval ship will fight until its orders indicate it should try to retire; and it will fight from a distance that also reflects its orders.

It is the combination of fleet and ship orders that determines ship behaviour.

There are four ship orders:

1. Extremely aggressive - the default order for escort ships, which are more expendable, need to fight for as long as possible often in order to get into attack range, and are tasked to screen the larger, more valuable cruisers and capital ships.
2. Aggressive - the default order for cruisers and submarines.
3. Cautious - the default order for battleships.
4. Timid - the default order for battlecruisers. (Note that the computer rates a capital ship as a battlecruiser based on its combination of speed, gun power and armour).

The fleet and ship order together determine the percentage of damage or ammunition loss a ship will accept before trying to retire. The more aggressive the combination, the higher the damage and ammunition loss that is acceptable. Also affected is the range the ship seeks to fight from. With cautious ship orders - such as battleships have by default - the ship will try to stay within its calculated immuity zone (if it has one) against the enemy it is currently targeting. More aggressive orders put higher priority on doing more damage, which means getting in closer, making more gun and torpedo hits but taking more punishment as well. With timid orders the ship will stay at the outer end of its maximum attack range, scoring less hits but also with reduced chance of hits from the enemy.

Note that carriers and merchant ships ALWAYS try to flee from a surface battle as quickly as possible.

The exact percentages of damage and ammunition loss are shown in the RoE Editor - which is explained shortly.

An example

Before discussing how you use the RoE Editor, an example may help illustrate how RoE work:

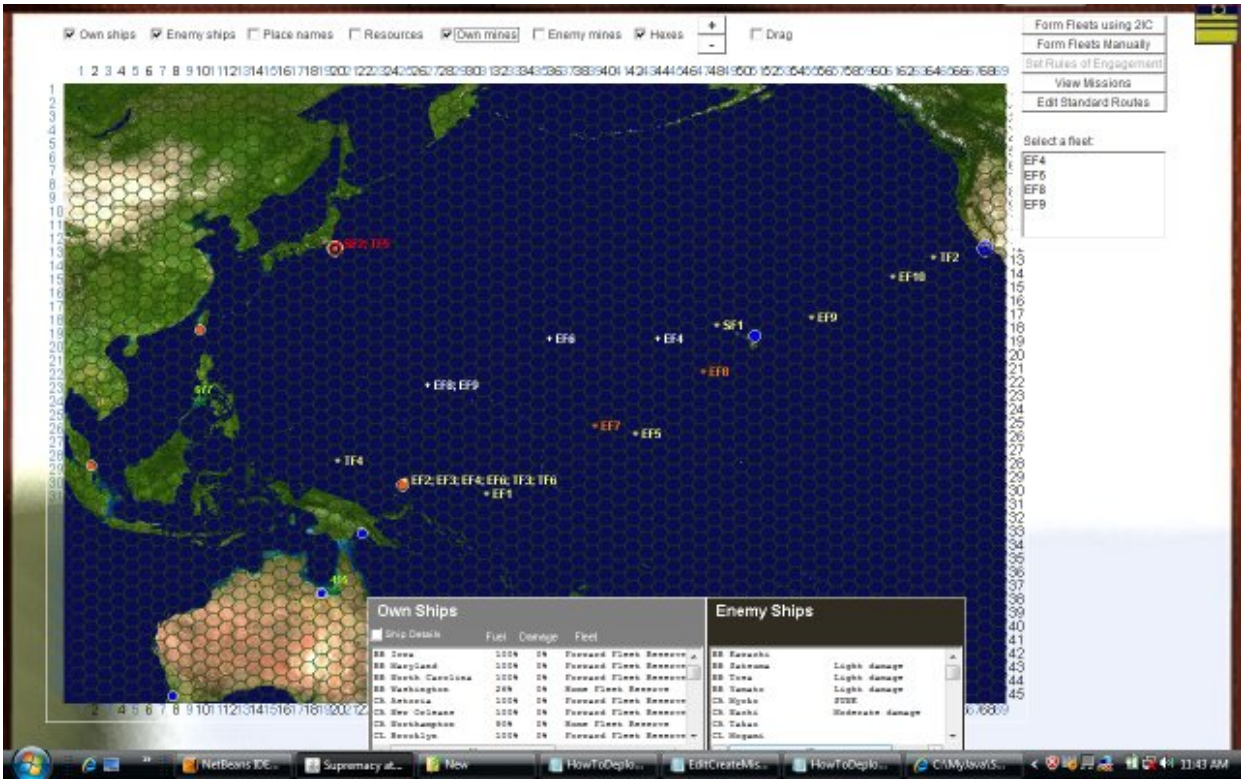
- If you wanted to set up a classic raiding fleet, say of a Battlecruiser, heavy cruiser and a few escorts, you would probably give the fleet "Probing Attack" or "Hit and Run" fleet orders. The Battlecruiser would probably have "Cautious" or even "Timid" ship orders, the heavy cruiser would be one step less cautious (say with "Cautious" or "Aggressive" ship orders), and the escorts would probably have at least "Aggressive" and probably "Very aggressive" ship orders so that they can shield the bigger ships, allowing them to escape if necessary.

The *Theatre Map*

To edit RoE for a fleet and the ships in it, you first need to access the theatre map.

(See accessing the theatre map).

The theatre map for the Pacific will look smething like this:

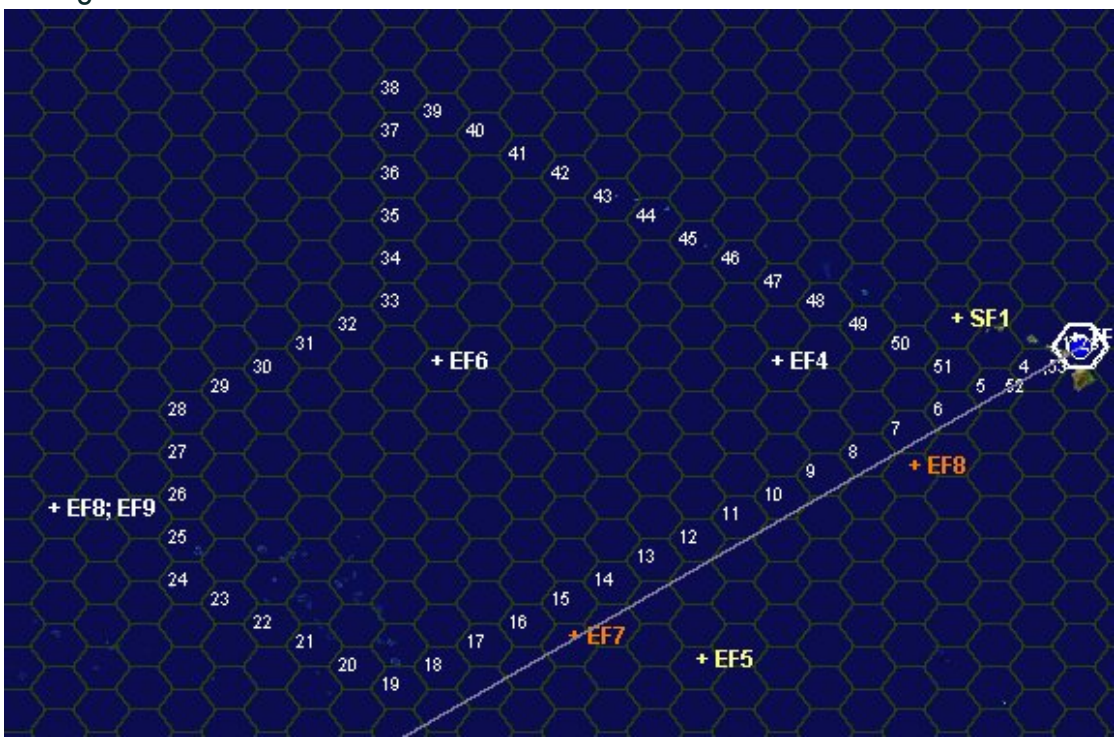


Now, from the fleet list to the right side of the map, select the fleet you want to edit. Illustrated below is the selection of fleet "TF2"

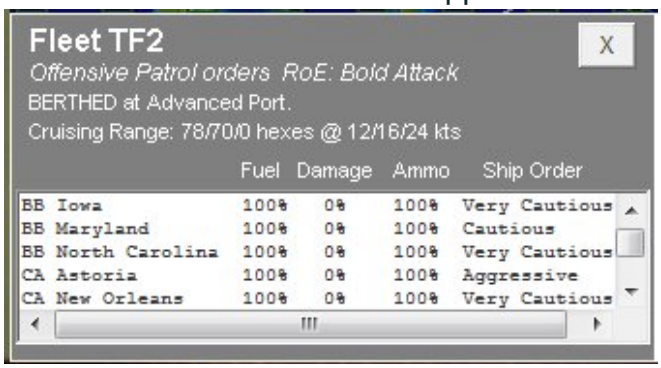
You will notice that when a fleet is selected, several pieces of information are displayed:

- The hex path for the fleet (if there is one) is displayed on the map, numbered in the order

through which the fleet will travel.



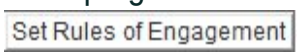
- A information box for the fleet appears at the lower left of the screen:



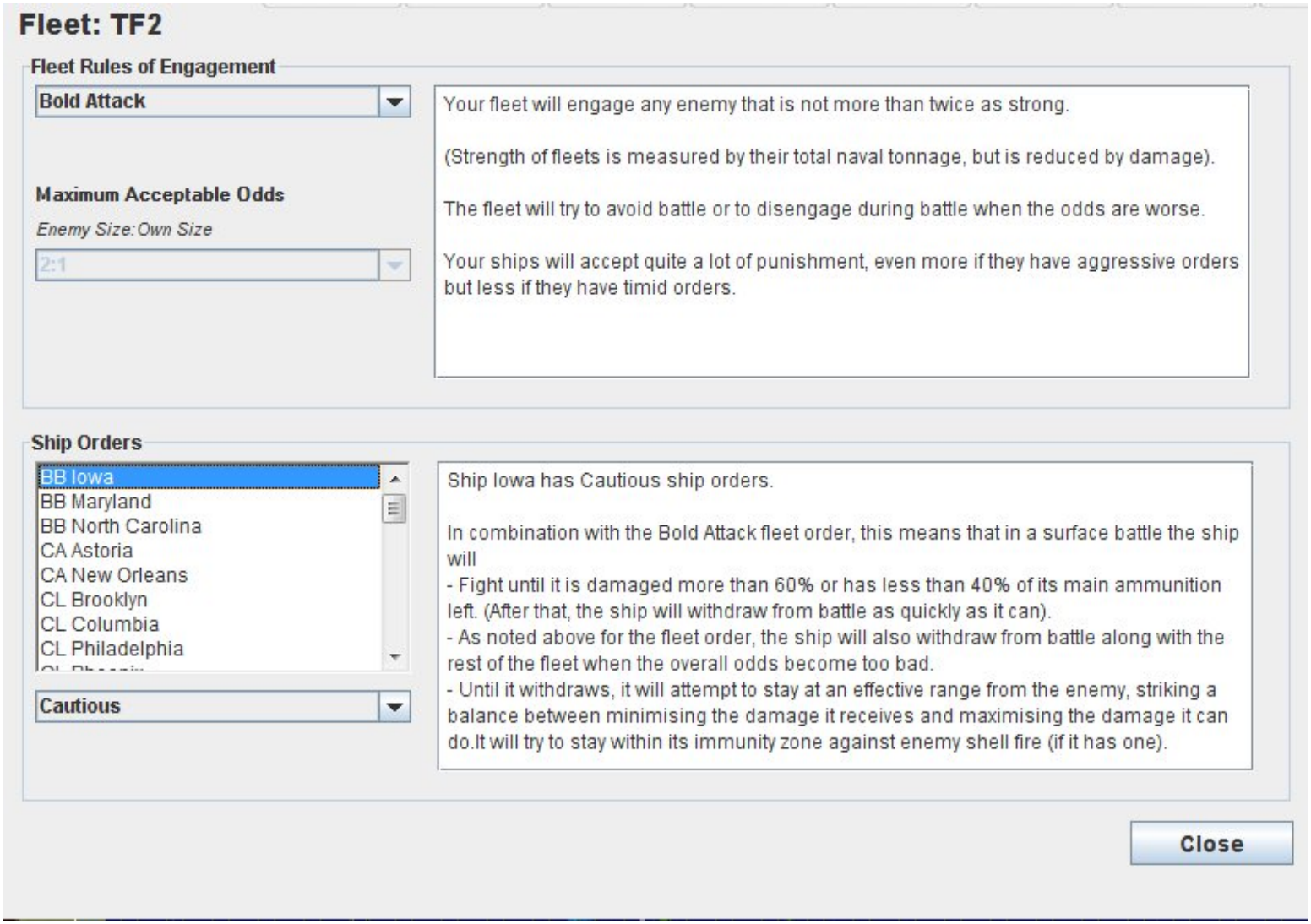
It tells you what the mission orders and current fleet RoE are, and for every ship, its fuel, damage, ammunition status and current ship order.
Use this information to determine if you need to edit the RoE.

The *RoE Editor*

Assuming you do want to edit the RoE, just click on the "Set Rules of Engagement" button to the top right of the theatre map:



This brings up the RoE Editor, which looks like this:

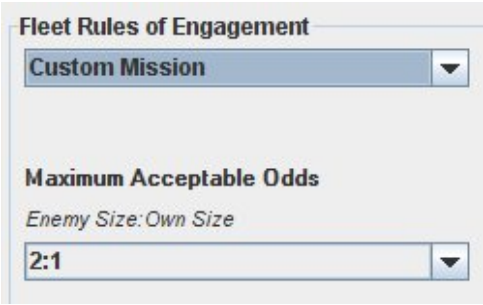


The RoEEditor lets you set any of the seven standard RoE for a fleet,as well as selecting custom RoE. It also lets you change ship orders for any ships.

Two text boxes give a clear explanation of how the current RoE and ship orders will affect fleet and ship behaviours in a surface battle.

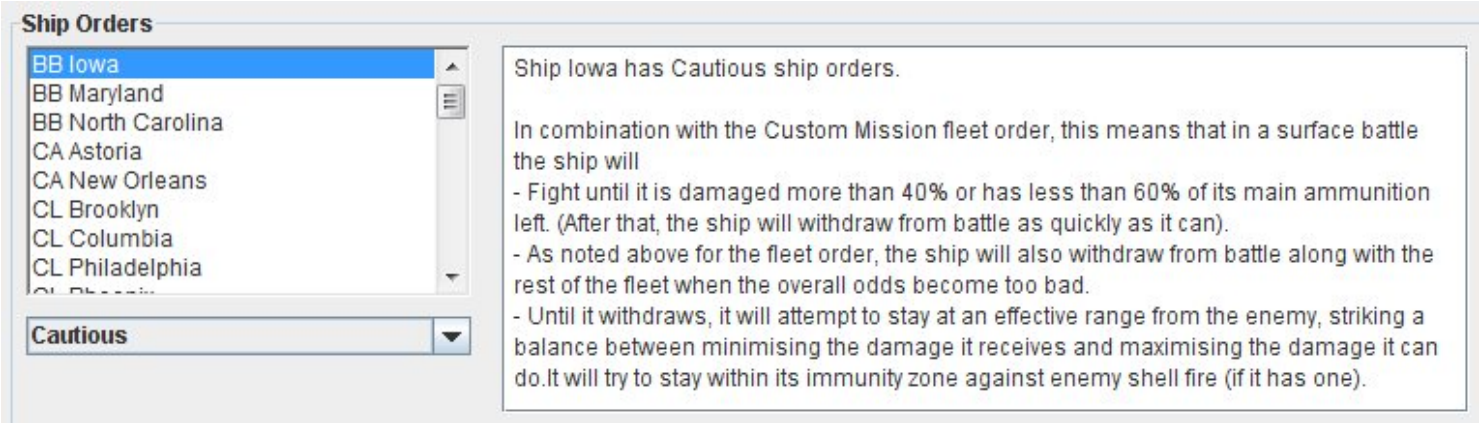
To change the fleet RoE, simply select a different one from the "Fleet Rules of Engagement" combo box:

If you select "Custom Mission", the "Maximum Acceptable Odds" combo box will become enabled, allowing you to set your own odds:

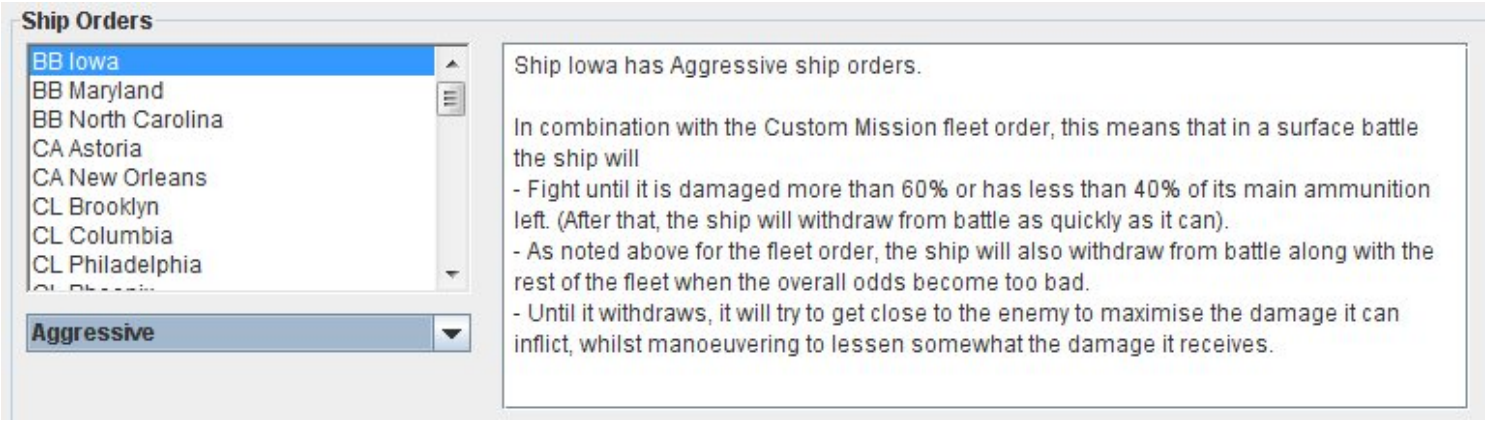


As you change the RoE, the text will update in both text windows. Review the text to make sure you are happy with the change.

Changing ship orders is just as easy. Simply select a ship in the "Ship Orders" section:



Then, select a different ship order from the combo box. The picture below shows the *Iowa* now with aggressive orders. The effect of this new order is clearly explained in the accompanying text window:



You can see that with the new, more aggressive order, the ship will accept more damage and fight from closer in instead of staying necessarily within its own immunity zone.

When you are happy with the fleet RoE and ship orders, just close the RoE Editor by clicking the "Close" button at the bottom of the screen. Ths returns you to the theatre map.

You can relaunch the RoE Editor any number of times, and change the orders whenever you want. It is only the last set of orders you give that takes effect at run time.

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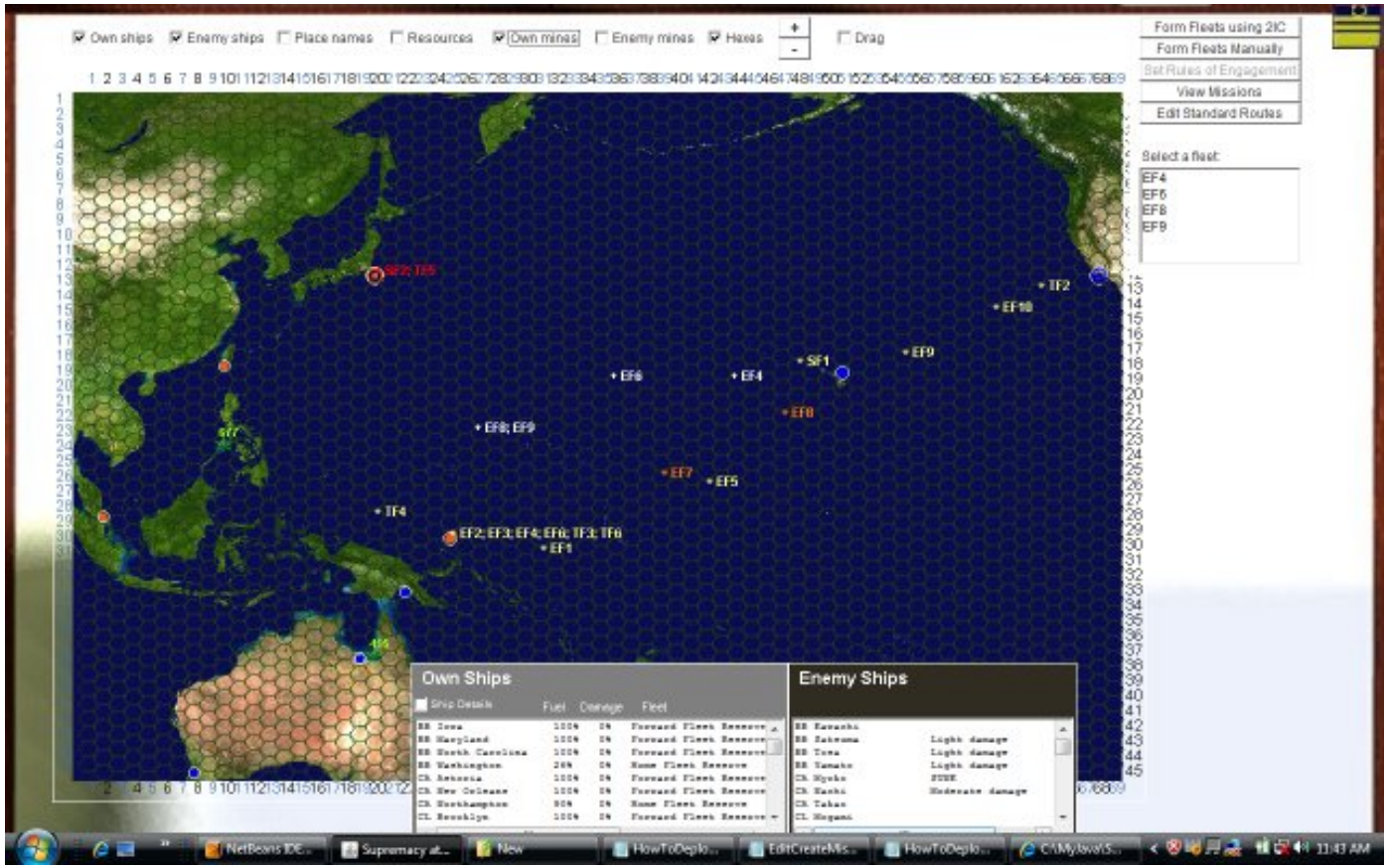
How to set the movement path for a fleet

You can manually set the hex path for any of your fleets, whether they are ones your 2IC generated for missions, or ones you created yourself for your own missions.

The *Theatre Map*

To edit the movement path, you need to be looking at the theatre map. (See accessing the theatre map).

The theatre map will look something like this, depending on the theatre you are playing in:



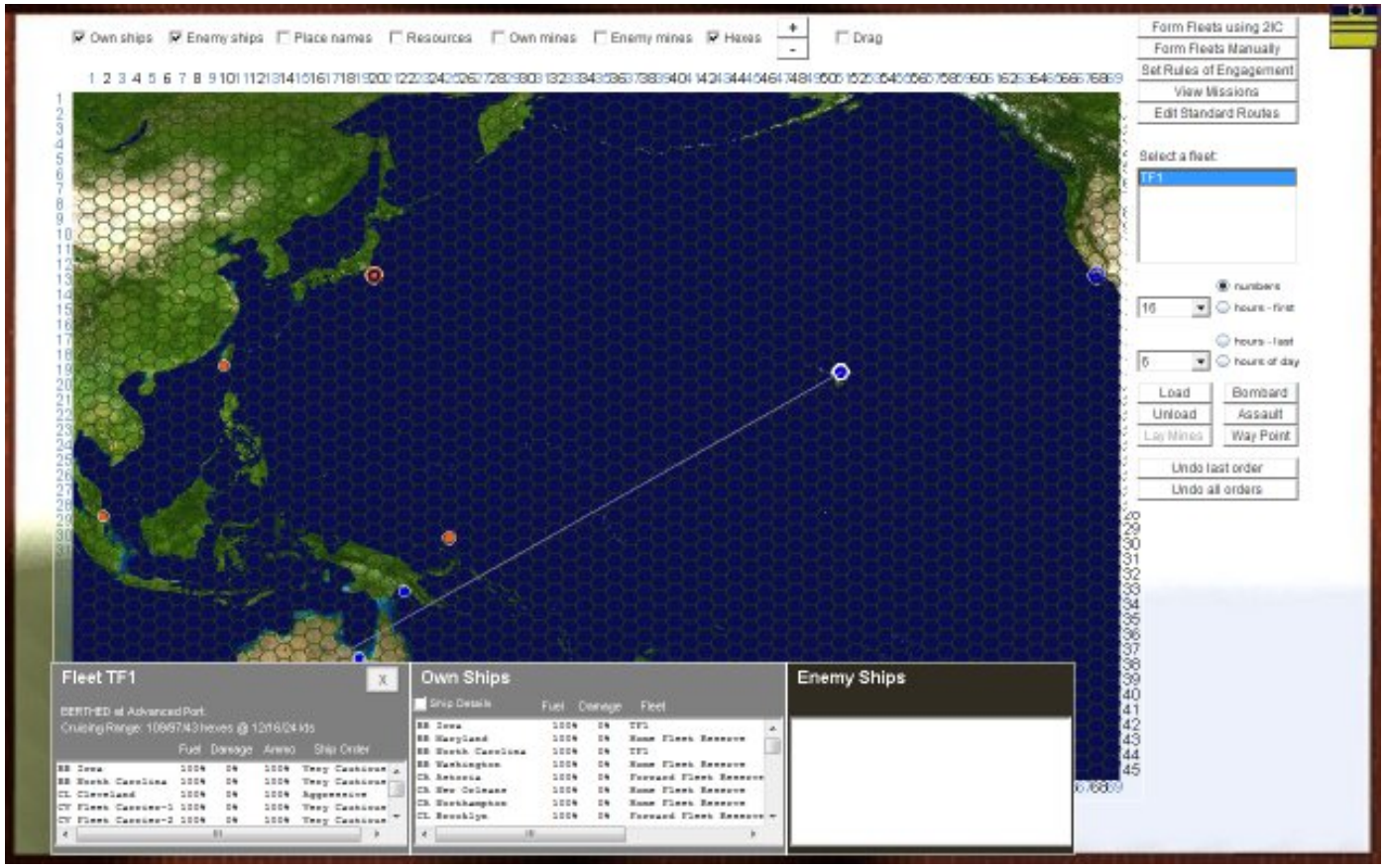
To set the movement path, follow these steps:

1. Select the fleet
2. Enable the map for data entry
3. Optionally select the mode of display for the hexes
4. Select a cruising speed
5. Select the hours per hex
6. Select a point to move to
7. Optionally set special commands
8. Optionally set standard routes

These steps are explained below.

Select a fleet

Fleet selection for all purposes in the theatre map is done using the "Select a fleet" list at the right side of the map. For illustration, shown here is the selection of fleet TF1 - with two BBs, two carriers a cruiser and several destroyers at Pearl Harbour. The fleet details box at the lower left of the screen gives details of the fleet and points to its current location:



In the following steps, we are going to manually create an offensive patrol for the fleet that will take it on a wide arc west of Pearl Harbour, returning to Pear Harbour for refuelling.

Enable map for data entry

By default, the map is ready for data entry, i.e., when you click in the map, the hex path will be added to.

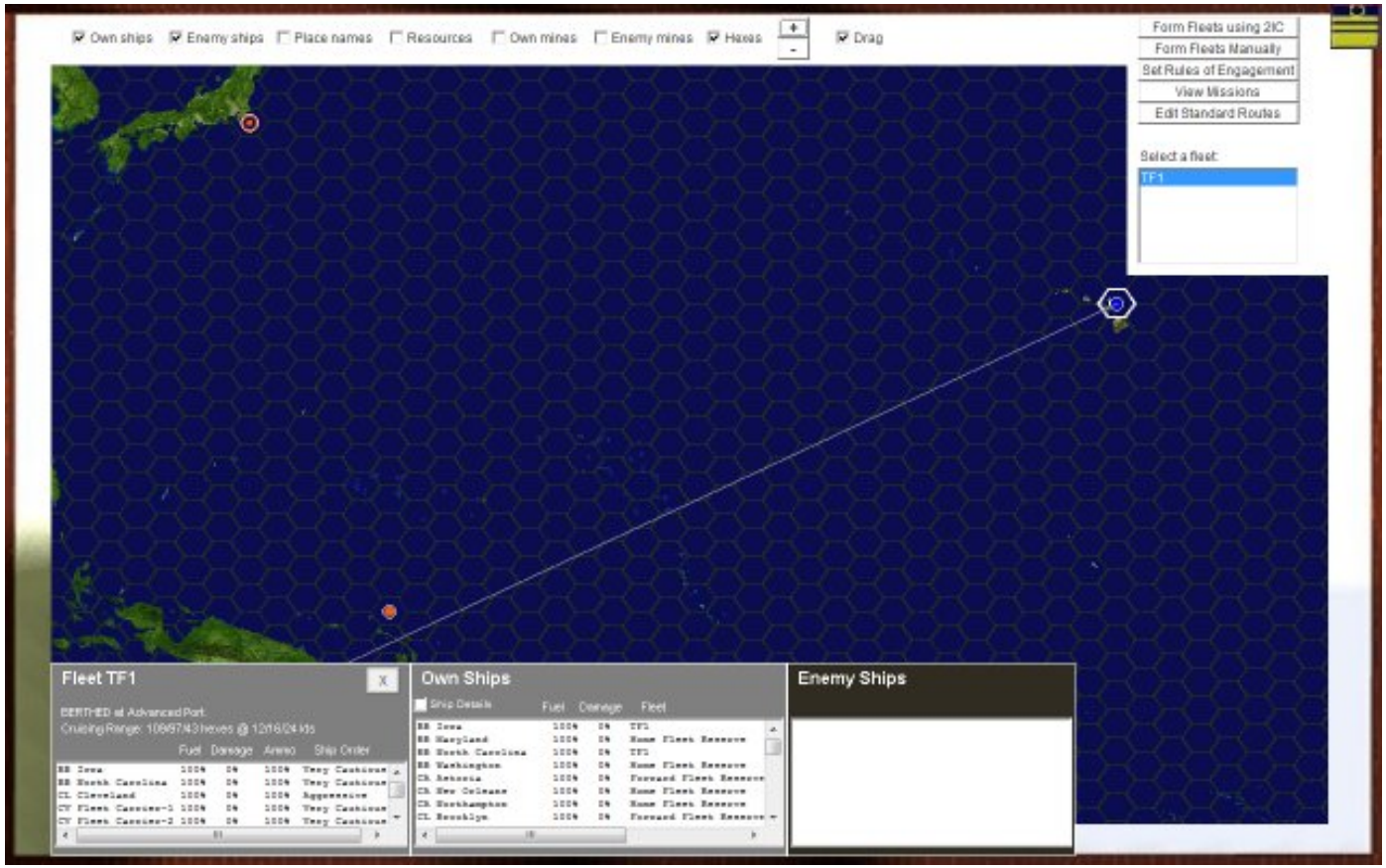
But often it will be handy to first zoom in or out and drag the map so that you can better see the area you are interested in. The zoom and drag feature is explained in map view but in summary, after zooming in or out, the mouse becomes a hand to drag the map instead of a pointer for entering hexes. A checkbox at the top of the screen indicates whether you are

in "Drag" mode:

☐ Drag

If so, uncheck the check box. You are now ready for data entry.

For illustration here, the map in which hexes will be entered has been zoomed in a little so that the hexes show more clearly:

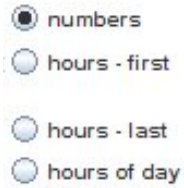


You can disable hexes in the theatre map, which gives a less cluttered view and is prettier, but for data enry it is strongly recommended that hexes are enabled. There is a "Hexes" check box at the top of the screen. If this is unchecked, make sure it is checked before you proceed further:

☑ Hexes

Optionally select the hex display mode

The hex path for a fleet can be displayed in any of four modes. These modes are selectable using the radio buttons at the right of the map:



Each mode provides a useful perspective that can help your planning.

The default mode is "numbers". In this mode. hexes are numbered in the order in which they are to be travelled through. This shows clearly the route order, but also tells you quickly how many hexes the feet is to sail through - which is important to cross check against the fleet crusing range data in the fleet details box at the bottom left of the screen:

The "hours - first" and "hours - last" modes are used for fine planning, when it may be important to know the exact hour that the fleet will first enter a hex or when it is due to exit. Also, toggling between these modes tells you clearly how many hours the fleet is scheduled to stay in a hex. Finally, for the power user, these two modes let you coordinate the actions of several fleets. For example, you may want two separate fleets to converge on an area at much the same time. You can delay or accelerate either fleet to achieve this - see select a cruising speed and select the hours per hex for more information).

The "hours of day" mode is very useful for quickly seeing what time of day it will be when the fleet is entering each hex. You can use this information to better plan approaches to enemy territory to maximise the darkness of night.

For illustration here, the default ("numbers") mode will be used.

Select a cruising speed

There are five standard cruising speeds: 6, 8, 12, 16 and 24 knots. A fleet though is limited to the maximum cruising speed of the slowest ship in the fleet, so not all these options may be available.

Those speeds that are available for your chosen fleet are selectable in the "Fleet Speed" combo on the right hand side of the map:

Simply choose one of the speeds, and this will apply *until you choose another one*. You can change the fleet speed any number of times during the course of setting a fleet's movement path. The choice of fleet speed applies to every hex until a new speed is chosen.

Select the hours per hex

As well as setting the fleet speed, you can also set the number of hours per hex that the fleet will spend as it moves. The *minimum* number of hours is always the hex size divided by the fleet speed. For example, in the Pacific theatre, where the map hexes are 96 nautical miles across, the minimum number of hours for a fleet cruising at 16 knots would be 6 hours. The computer prevents you from selecting less than that. But you can set more than this. Typically, you would do this for special hexes, such as hexes where you wanted the fleet to carry out extensive patrols. When your 2IC creates patrol missions, he will in fact try to maximise the time the fleet can spend in each of its objective hexes.

The "Hours in Hex" selector is also on the right hand side of the map, beneath the fleet

speed selector:

The selection of hours per hex applies to every hex until a new value is chosen.

Select a point to move to

Now you are ready to set the actual movement path.

When you click in the map on a valid hex, the computer calculates the path to it from where the fleet last was. This is unnecesary when the hexes selected are all adjacent to the previous hex; but it is much quicker to just select key hexes and let the computer calculate the path in between.

The computer will generally choose the shortest valid path. (But instead it will choose a "standard route" if you have created one between the points concerned (See setting standard routes for how to do this).

Valid hexes

All land hexes are invalid. Enemy port hexes are also invalid - you can not move into a hex containing an enemy port. It must be captured first by amphibious assault.

All other hexes are valid.

Auto berthing and unberthing

Note that whenever you click on a hex containing one of your own ports, the fleet hex path

will take it into the port itself and include the order to berth it, so that the ships may refuel, rearm and so on (provided the port has enough resources).

Then, when you click away from the port hex, the movement path will automatically include the command to unberth.

Berthing and unverthing both add a small amount of extra time to the fleet's movement schedule (a standard 12 hours in each case).

Cancelling auto berthing

Hexes are quite large - in the Pacific for example, they are 96 nautical miles across and certainly bigger than the size of any port.

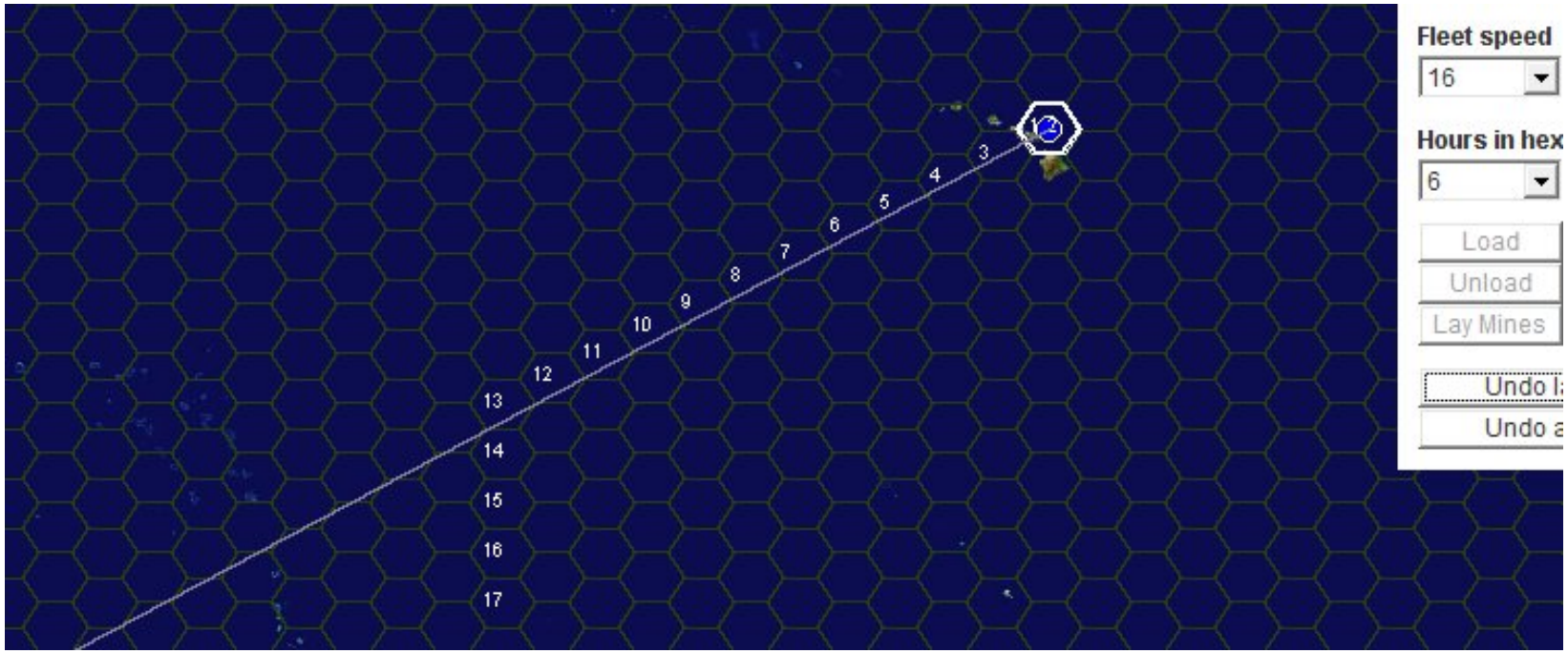
If for some reason you want to pass through a hex containing one of your own ports but not berth inside the port, click on the port hex as you normally would. Then click the "Undo last order" button. This will remove the additional berthing order that the computer has just automatically added. Effectively, this means that the fleet has been orderd into the hex where the port is but is cruising past.

An example

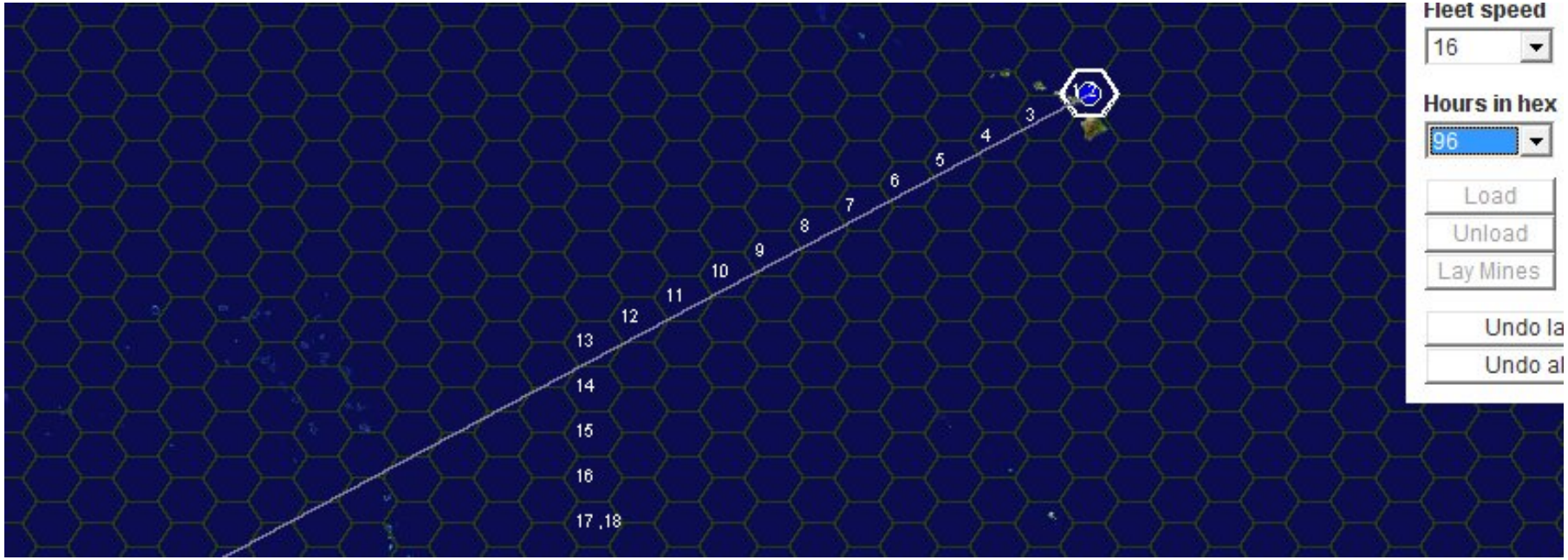
Now it is tme to put this together and show a working example.

In the illustration below, the route that is shown was created following these steps:

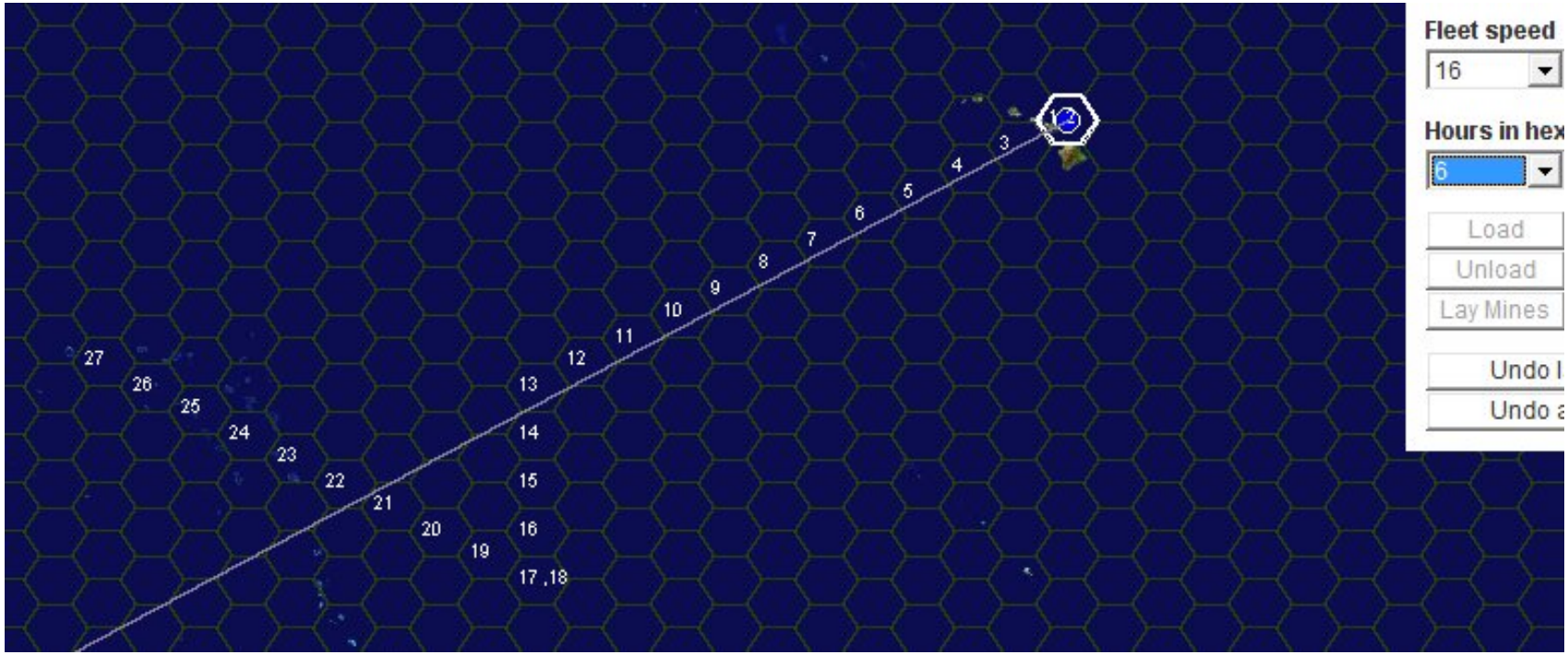
1. A speed of 16 and hours in hex of 6 was selected. Then a hex was selected south west of Pearl Harbour, almost due east of Rabaul and roughly midway between Pearl and Rabaul. The computer filled in the intervening route:



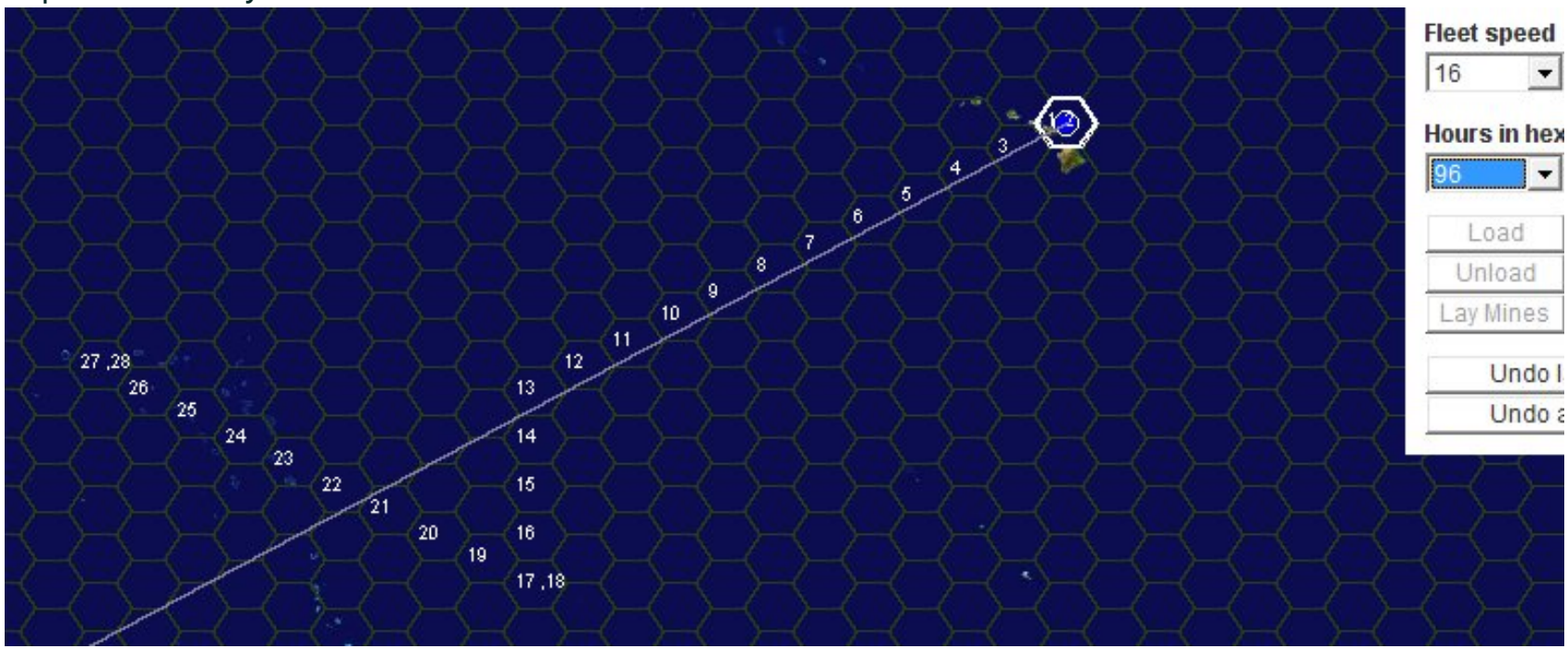
2. Then, the hours in hex was changed to 96 (ie 4 days) and the last hex was clicked in again, meaning that the fleet has been ordered to patrol (at the current fleet speed of 16 knots) in the hex for 4 days:



3. Then, the hours in hex was set to 6 again, and a hex north east of Rabaul was selected. Again, the computer calculates the shortest intervening path:

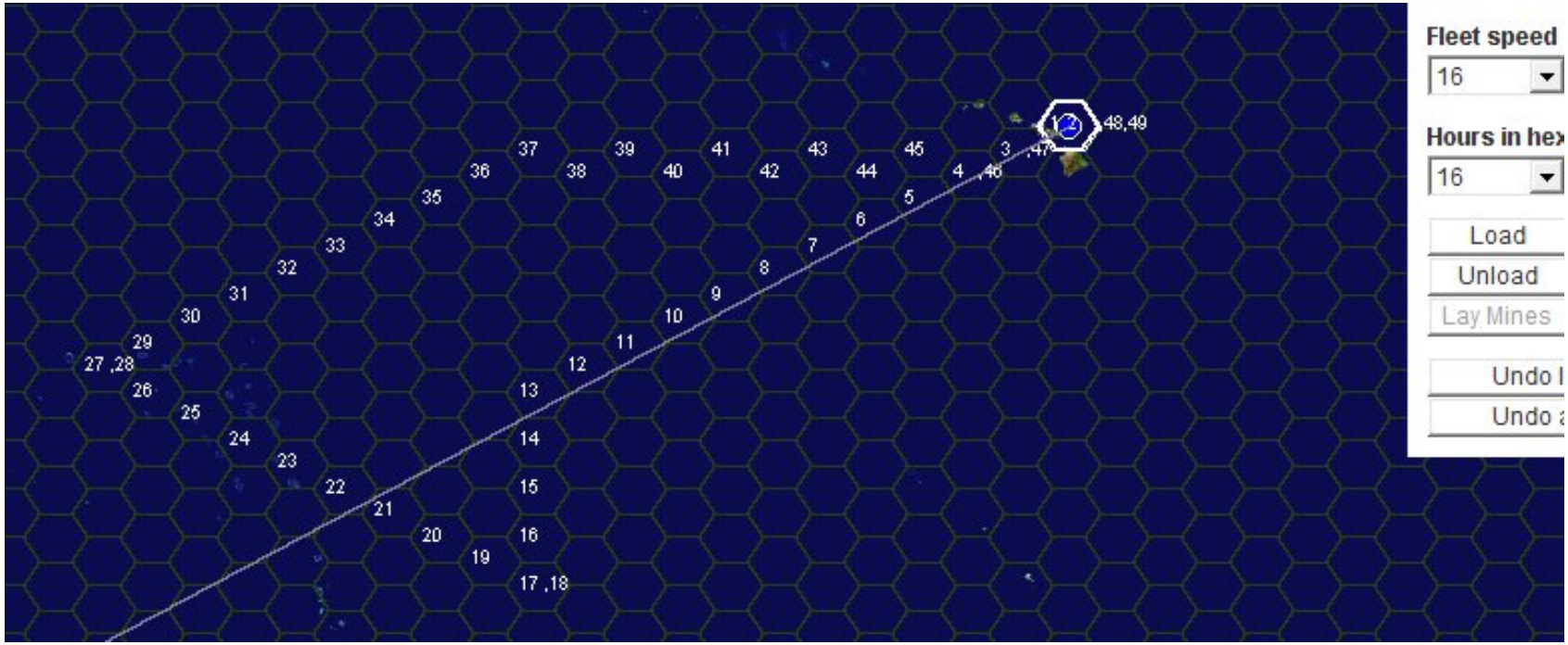


4. Again, the hours in hex was changed to 96, and the last hex clicked in again, to order the fleet to patrol for 4 days:

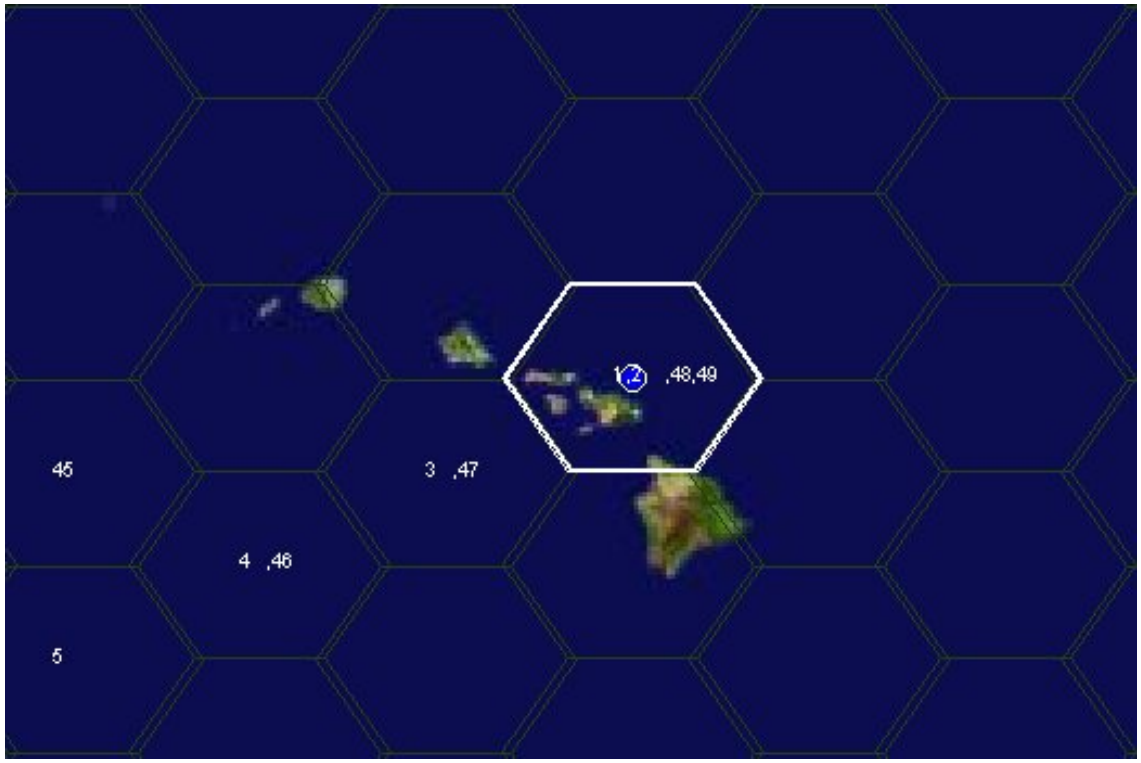


5. Finally, the hours in hex was set back to 6 again, and Pearl Harbour was clicked on to get the

fleet to sail back to Pearl. The computer calculated the return route.

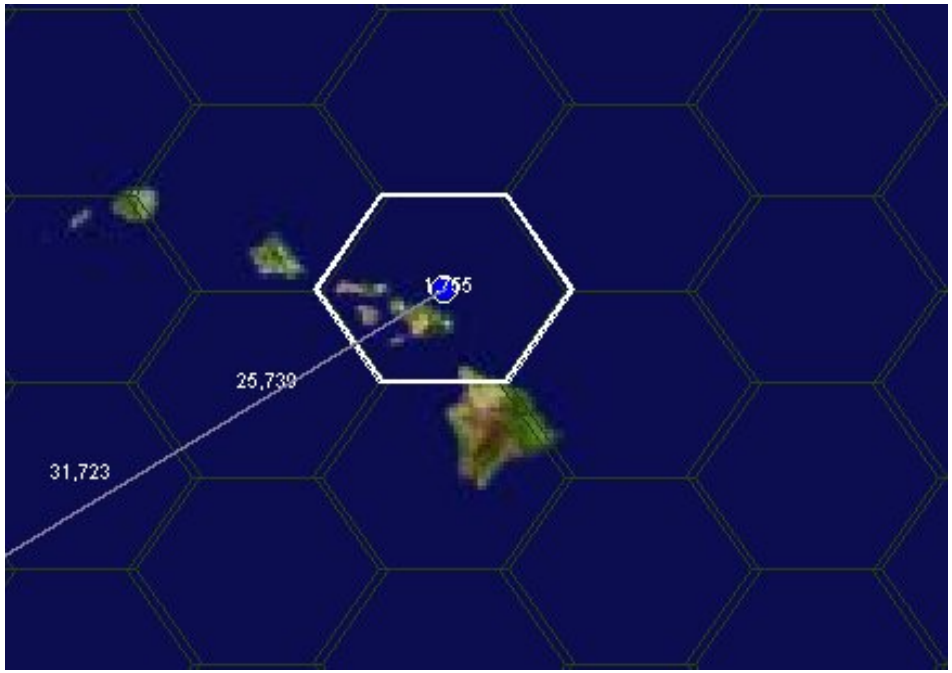


When you zoom in to the Pearl Harbour hex:



you can see there are four numbers in the hex:1,2,48, and 49. (Multple numbers in the same hex are displayed separated by commas). This indicates the auto unberthing and berthing feature mentioned earlier: number 2 refers to the auto-generated unberth command, and 49 to the auto-generated berth command. In both cases, an extra 12 hours has been added to the fleet schedule.

To check that the path gets the fleet back by the end of the turn, select the "hours - first" display mode. By zooming in you can see the fleet is entering Pearl Harbour on hour 755 - nearly four days after the end of the month. (This example was taken from a campaign where the operational turn was 4 weeks - or 672 hours in duration).



In view of this you may want to shorten the patrol somewhere - using the "Undo" feature discussed below. (It is often important to plan to have your ships returned to port by the end of the turn. They can refuel and rearm and be in the "pool" of ships available for deployment next turn (unless they have been damaged, or the fleet has deviated too much from its planned course due to emergency responses at run time). Using the "hours - first" or "hours - last" mode frequently during path creation will prevent mistakes like this.

This example shows that fleet movement orders can be set up in a few mouse clicks. For finer control of the route, you can select more way points, forcing the computer to follow more exactly the route you wanted. (You can even click on every single hex if you want to!).

Another way of controlling the route without clicking on too many hexes is by setting standard routes - see set standard routes.

Undo a movement path

If you change your mind at any stage, you can undo the hex path, hex by hex or in toto.

To undo (remove) the last hex from the path, click on the "Undo last order" button on the right side of the map:

Undo last order

Each time you click, the last hex will be removed.

To remove ALL hexes from the fleet movement path, click on the "Undo all orders" button:

Undo all orders

Be warned though that these undo operations can not themselves be undone, other than by recreating the movement path. So be careful before you click the "Undo all orders" button.

Set special commands

Waypoints

In any mission, you can set one or more way points.

A waypoint is a designated hex that the fleet must try to return to if at all possible, if it deviates from the scheduled route for any emergency reason at run time.

To designate a hex as a waypoint, simply click on the "Way Point" button at the right of the map:

Way Point

This designates the most recently entered hex in the hex path as a waypoint. You can set any hex or hexes to be a waypoint. This can be a useful means to - for example - force your fleets to return to designated patrol hexes after any emergency tactical maneuvers.

By default, key hexes in certain missions are automatically also waypoints. These are explained below.

Minelaying

In manually created missions, you need to tell the fleet where to lay mines. You do this by clicking on the "Lay Mines" button at the right side of the map just after entering a hex for the fleet to move to:

Note that fleets can often only lay mines in a single hex before needing to return to port to rearm.

Note also that the "Lay Mines" button will be disabled if the fleet is not capable of laying mines. (Only escort ships can lay mines). And the fleet must have a current cruising speed of 12 knots or less.

A hex designated as a minelaying hex is automatically also a waypoint - you do not have to separately designate it as one.

A final note on minelaying - because fleets need to frequently return to port to rearm, it can become tedious setting up minelaying missions. This is one case where using your 2IC to create these missions makes sense in almost all cases. You can still set the minelaying hexes by setting the objective hexes. (See setting mission objectives).

Bombardment

A bombardment mission is one where surface forces attack an enemy port from an adjacent sea hex. The adjacent hex becomes the bombardment hex.

Note that the concept of bombarding from an adjacent hex takes a small liberty with reality, because even large battleship guns had a maximum range of 40km or so - certainly less than the size of hexes in the Pacific and Atlantic. But it is necessary to bombard from an adjacent hex, not the port hex itself because of the hard and fast rule that you can never enter a hex containing an enemy port. (It must be captured first). It can be assumed that

when your fleet is bombarding, it is doing so from the outer edge of the adjacent hex, and the port extends to or close to the outer edge of the port hex in the direction where the bombarding is coming from.

To indicate a suitable adjacent hex to the enemy port as the hex to bombard from, select the hex to create a path to it, and then click on the "Bombard" button on the right side of the map:
Bombard

The bombard hex is automatically a waypoint.

Combined Ops/Assault

A combined Ops mission is one where surface forces, with or withour carrier air support but always including at least some convoyed troops, attempt an amphibious assault on an enemy port. The fleet automatically bombards the port at the same time - in effect an assault operation is also a bombardment mission. Just like a bombardment mission, your forces attack from an adjacent sea hex.

To indicate a suitable adjacent hex to the enemy port as the hex to assault from, select the hex to create a path to it, and then click on the "Assault" button on the right side of the map:
Assault

The assault hex is automatically a waypoint.

Aerial Bombardment

An aerial bombardment mission is identical to a bombardment mission except that because the bombardment is to be done by aircraft, from carriers in the fleet, the hex from which the bombardment is launched can be further from the enemy port than an adjacent hex.

To indicate a suitable hex in aerial attack range of the enemy port as the hex to bombard

from, select the hex to create a path to it, and then click on the "Bombard" button on the right side of the map:

Bombard

The bombard hex is automatically a waypoint.

Cargo missions

There are three kinds of cargo that ships can carry: raw materials, finished war materiel, and troops.

All ships can carry cargo. Obviously, merchant ships have the biggest capacity, but do not forget that your warships (except for all but very large submarines) can be useful carriers of cargo, especially troops.

Setting up a load and unload orders for a cargo mission (convoy or just warships) is a bit involved and is covered in a separate help page: see Ordering the loading and unloading of cargo.

Set standard routes

Sometimes, you may not like the computer's choice of the shortest route between points. When manually creating a movement path, you can overcome this by setting more points, thereby more closely defining the route. But the problem remains for all missions that your 2IC sets up - here the computer will use its shortest path algorithm.

To override the computer - for manual as well as for 2IC-generated fleet paths - you can set any number of "standard routes".

Your fleets will then use a standard route whenever they can.

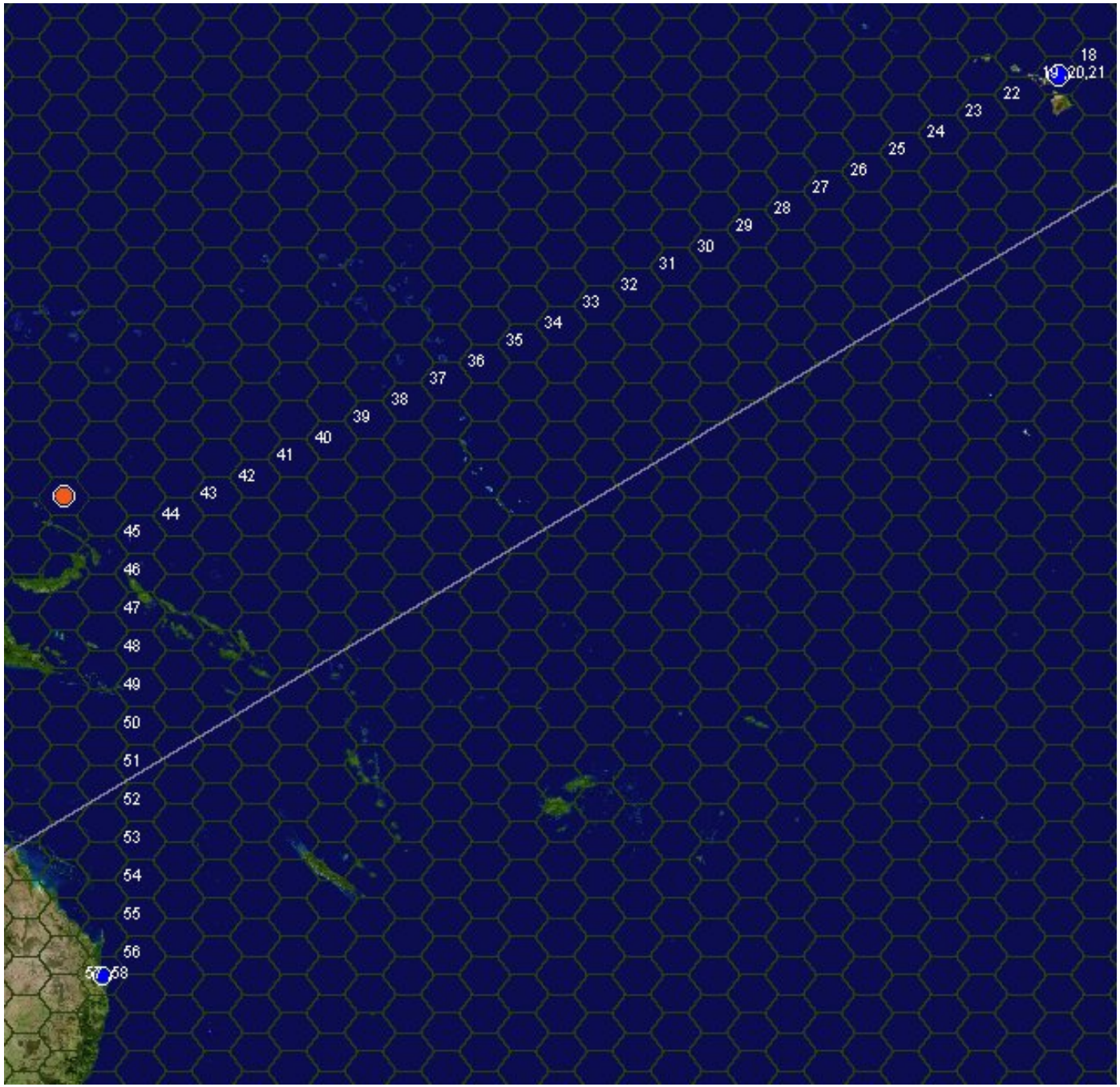
The most common use of standard routes is to set a safe convoy route between ports. It may be longer than the shortest path, but it can go around areas deemed unsafe, such as areas too close to enemy airfields and naval bases.

In the following example, we will see how a standard route can help keep US-Australian convoys safer.

Example: Route Between Pearl Harbour and Australia

The shortest route

First, we will see how a convoy from Pearl Harbour to Brisbane would be routed by the shortest path algorithm. Here, we have simply taken the convoy CF1 on to Brisbane from Pearl, by clicking on the port of Brisbane:



You can see that the shortest path takes the convoy within 2 hexes (about 200 nautical miles) of the enemy base at Rabaul - well within attack range by land-based aircraft, and dangerously close also to likely enemy naval units stationed there.

A new standard route

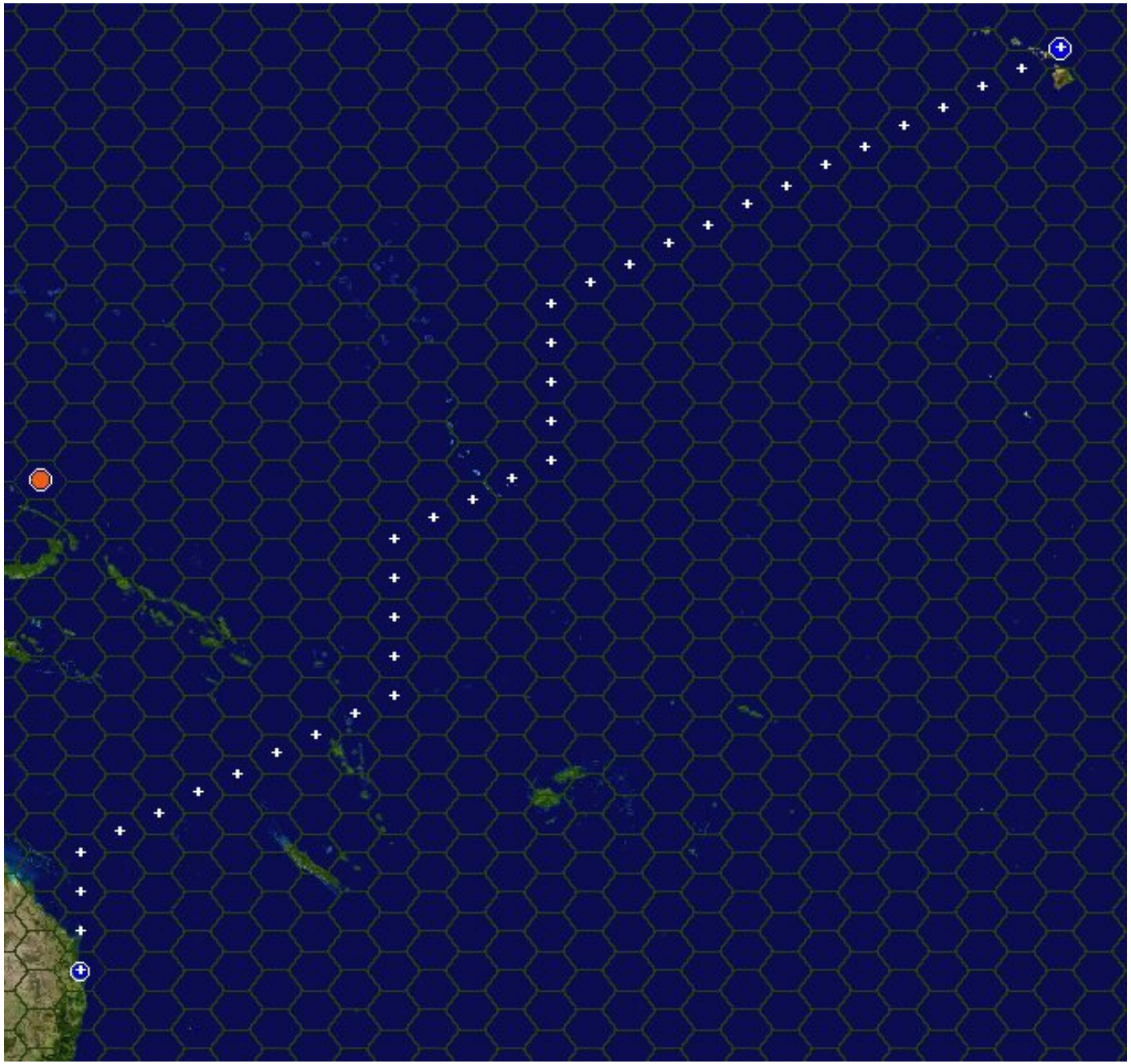
Now we will create an alternate, safer route that will be used by all fleets sailing between these points. It will sail much more to the south and east of Rabaul.

To activate the shortest path editor, click on the "Edit Standard Routes" button on the right side of the map:

Edit Standard Routes

If the "Drag" checkbox at the top of the map is checked, uncheck it, to enable data entry in the map.

Now, define a standard route by clicking in the map. The first time you click, the hex will be the starting point of the route. Each time you click, the computer calculates the shortest path to the hex you have selected - just as it does when you are creating an actual movement path for a selected fleet. To define a route more like the one we want, several intermediate hexes have been clicked, with the last hex being the port of Brisbane. You can see the standard route now marked as follows:



To clear ths route to start again, if you do not like it, click on the "Clear this Route" button on the right side of the map:

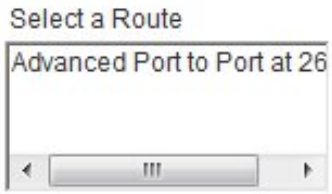
Clear this route

To save this route for use by all of your fleets sailing between directly between Pearl Harbour

and Brisbane, click on the "Save Route" button on the right side of the map:

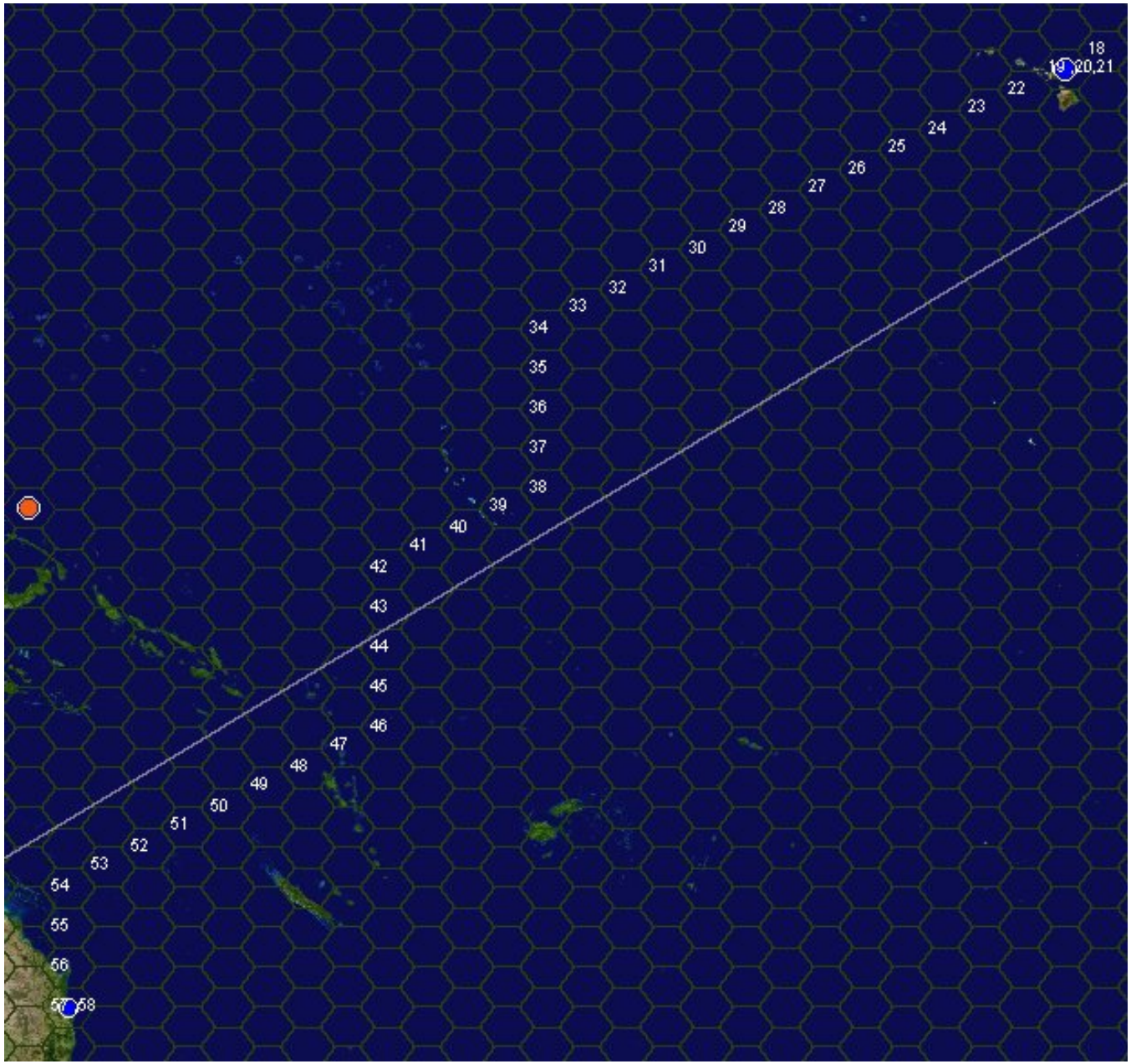
Here, we will save, this by clicking on the button. You will now see the route listed as a saved route in

You will now see the route saved in a list of routes on the right side of the map:



Applying the standard route

Now, by undoing the fleet path earlier created all the way back to Pearl Harbour, and clicking on Brisbane again, you will see that this time the computer has selected your saved standard route in preference to its shortest path calculation:

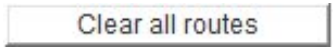


This new route is obviously much safer, and almost as importantly, it is no longer: you can see from the hex numbers that the length of the path is the same as the previous one. This highlights an important fact: the computer's choice of shortest path is governed by an algorithm (a version of the Dijkstra algorithm). This always finds the shortest path, but it is not guaranteed to find the path you most like if there are two or more that are equally short.

Deleting standard routes

You can delete any standard route you have defined: just select it in the list of standard routes and click on the &Clear this route" button:

To delete all current standard routes, click on the "Clear all Routes" button:



Note that deleting a route does not affect the movement path already set for any fleets that have used it. The deletion only has effect prospectively.

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How to deploy aircraft to carriers and airfields

Each turn, after you have built aircraft (see how to build aircraft), your 2IC will automatically deploy them to your airfields and aircraft carriers. This takes the tedium out of making decisions for hundreds of aircraft across multiple locations. The automatic deployment has regard to the desired balance of aircraft, and to the capabilities of your airfields and carriers. For example, only carrier-capable aircraft are deployed to carriers; and heavy bombers are deployed only to airfields that can support them.

Also, your 2-I-C automatically swaps aircraft around to ensure that the most capable aircraft reach the front-line, and more obsolete aircraft are progressively retired to reserve to make way for the better replacements.

But you can easily amend any planned deployments if you want to.

The Deploy aircraft screen

To view (and possibly amend) current deployments, from your Admiral's Office, click on 'Deploy' on the main blackboard menu, and then click on 'A/C' on the deploy menu.

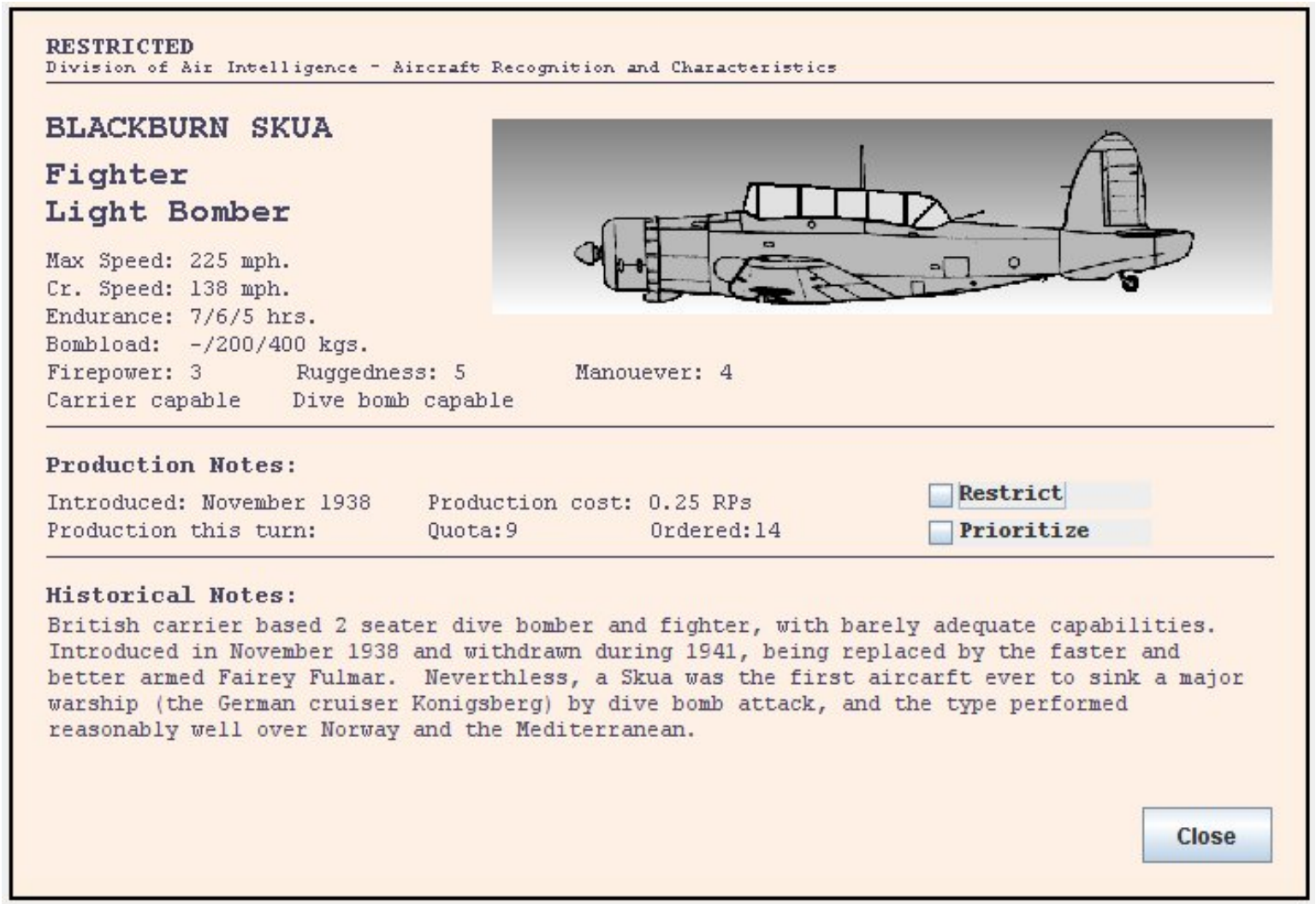
You will now see the Deploy Aircraft screen:

Listed on the left are the deployments of all aircraft to all of your airfields. On the right,

deployments to carriers are shown. In the middle, remaining aircraft - which are in reserve - are listed.

Viewing aircraft details

The lists show the numbers and locations of aircraft but to see the specifications of particular aircraft, you must select them individually. If the 'Show selected AC Details' tick box is ticked, you will see the aircraft details screen. (This is the same screen you can see also from the build aircraft screen):



Changing deployments

Limits on deployment

Each airfield and carrier can support a maximum number of aircraft. For carriers, the maximum is the number that historically were operated. For airfields, the maximum is determined by the

level of infrastructure. The infrastructure level also determines the *type* of aircraft that can be operated. In summary:

- The maximum *number* of aircraft is generally equal to the square of the infrastructure level, times 2. But the level must be at least 2 -if it is less, then no aircraft can be operated. For example, if the infrastructure level at an airfield is 4, then no more than 32 aircraft can be deployed there.
- The *type* of aircraft is limited as follows:
    - Airfields with a level of 8 or more can operate all kinds of aircraft
    - Those with a level of between 5 and 8 can operate all aircraft except heavy bombers.
    - Those with a level of between 2 and 5 can operate only fighters and short range reconnaissance aircraft.

The automatic deployment will send the maximum possible number of suitable aircraft to your airfields and carriers.

Changing a deployment

You can freely swap aircraft around, subject to the limits just mentioned. Aircraft can be deployed to airfields or carriers only from reserve; and if you are removing them from airfields or carriers, they return to reserve.

To return one or more aircraft of a selected type to reserve:

- Select the type in the left or right lists.
- Select the number to return.
- Click the 'Transfer' button.

To transfer one or more aircraft of a selected type from reserve to an airfield or carrier:

- Select the type in the middle list.
- Select the airfield or carrier you want to transfer to.
- Select the number to transfer.
- Click the 'Transfer' button.

Remember that you can not transfer aircraft to a carrier or airfield if it is at its limit already - you will get an error message in that event. You would need first to transfer some back to reserve to 'make room' for the new aircraft.

Remember also that an airfield or carrier has limits on the type of aircraft it can operate. If the selected aircraft is unsuitable, you will get an error message.

Exit

When you have finished, click the 'Exit' button. The screen will close, returning you to your Admirals Office.

Note that unlike building aircraft, which can be done only once per turn, you can re-visit the deployment screen any number of times, and change deployments if you want to. It is the final deployment before a turn is calculated that is important.

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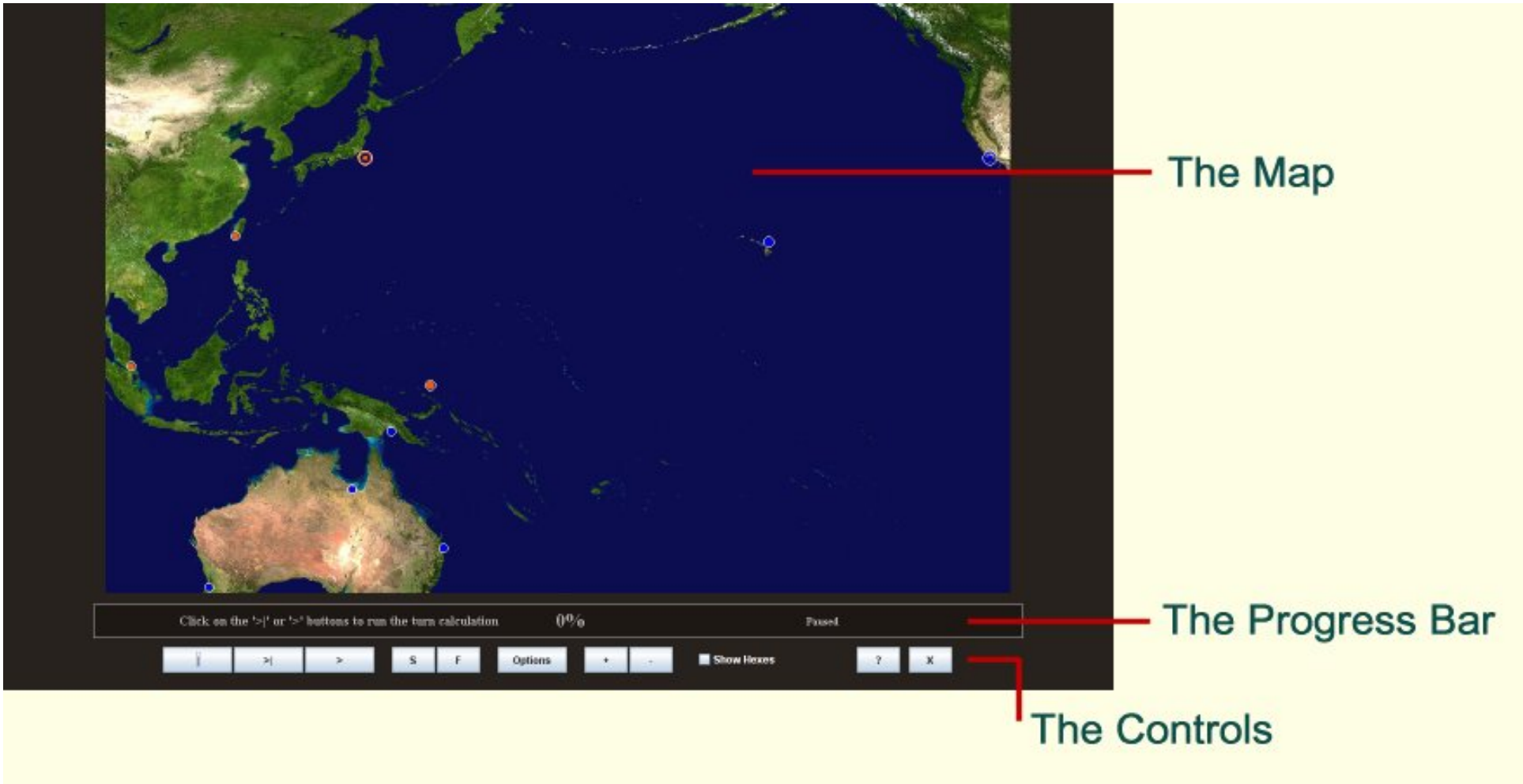
Run the Turn

After clicking on "Go!" on the blackboard in your Admiral's Office, provided both sides have finished their turns, the turn calculation screen will appear after a few seconds. The calculation is initially paused at hour one, having just calculated the first hour. The calculation is now paused, waiting for you to continue. The picture below is a sample sceen from running a demonstration Pacific scenario:



The screen shows the theatre map, controls for running the calculation, and a progress bar that gives status information on the calculation.

The Controls

The series of buttons and the checkbox at the bottom of the screen are your controls. They let you run the calculation at the speed you want, see just the information that is of interest, and zoom the map in or out at will.

You an also exit from the calculation at any time. This returns you to the state the game was in before any calculations were run.

The following is an overview of the controls.

Pause

To pause the calculation at any time, click on the Pause button: 

Note that the calculation is always paused when the screen first appears.

The Progess Bar shows whenever the calculation is paused: 

Run

To start (or re-start) the calculation after a pause, click on the Run button: 

The calculation will now run forward hour-by-hour, stopping only if you have elected to make tactical responses. (See tactical responses for more information.)

The **Progress Bar:** 

shows you how much of the turn has been calculated - as a percentage and a graphic, and also shows you the exact time that is currently being calculated.

You can control the speed of the calculation - as explained next.

Run slower or faster

These two buttons are labelled "S" and "F" respectively: 

They slow down or speed up the calculation. Each click will increase or reduce the amount of delay before a new hour is calculated.

The amount of delay is shown in the **Progress Bar**.It can vary from no delay through to many seconds.

The purpose of the delay is to allow you to follow the action. With no or minimal delay, the calculation will update the screen very rapidly. Any event messages you have enabled will appear only briefly, perhaps disappearing before you have been able to study them. (See Options for more information on enabling event messages.)

The default delay is 0.2 seconds between each hour - which is just enough to see key messages as they appear while keeping the pedal down on the calculation.

Neverthless, players who just want to run the calculation as fast as possible will want to have zero delay.

But be warned - you can not reverse the calculation - so events that are notified too quickly to

take in can not be seen again except in the turn replay - which is exactly like the turn calculation but without the chance to influence events with tactical responses.

There is one safeguard however: you can exit the calculation at any time, and re-start it. See the note below on the Exit button for information.

You will need to experiment yourself to find the speed that you are comfortable with. Every player is different.

Run one hour at a time

As an alternative to slowing down the calculation, you can elect to just run one hour at a time using this button: 

Each time you click the button, one hour's worth of action will be calculated, and any event messages you have enabled that are triggered will appear on screen and stay there until you click again.

Zoom in and out, and drag the map

You can zoom the map in or out during calculation using these controls: 

Click on the "+" button to zoom in (enlarge the map); the "-" button zooms out (makes the map smaller).

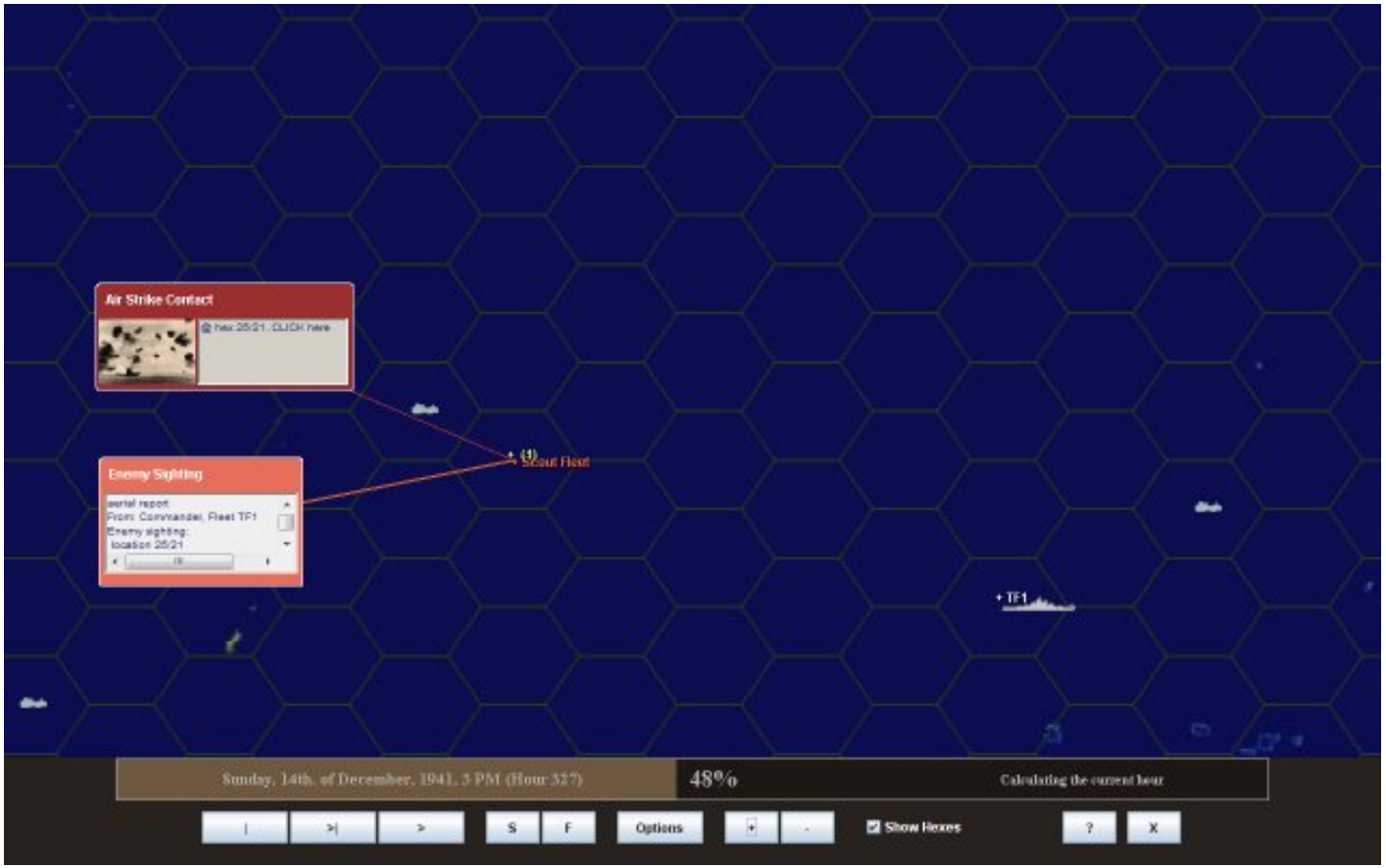
Each click will increase (or reduce) the map size by a set amount. You can zoom in and out virtually indefinitely.

When the map is bigger than the screen you will need to drag the map around. Do this simply

by clicking on the map and dragging.

An example of the zoom in feature is shown below. The first picture shows the map at the default size (which fits one screen):

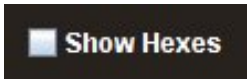
After zooming in several times, to enlarge where the action is, the map now looks like this:



Show hexes

Note that in the picture above, you can also see the hexes marked.

Hexes are turned off by default, but you can turn them on at any time by ticking the

Show hexes tick box: 

Note that the hex scale depends on the map. In the Pacific and Atlantic maps, each hex is 96 nautical miles across, whilst in the Mediterranean, each hex is half that size - only 48 nautical miles wide.

Exit

To stop the calculation and exit at any time, just click the Exit button: 

When you exit, you will be returned to your Admiral's Office, with the state of the game exactly as it was before any calculation was attempted.

Exiting is "cheating" in a way, in that it gives you advance information about how the "future" will pan out given your current orders and those of the enemy. Armed with this information, you can change your orders and try again! Beginning players are likely to find this useful.

Exiting also alows you to re-run the calculation at a different speed, in case you missed some events that you wanted to know about.

Remember though that you can replay the calculation later, forwards and backwards, at variable speed, as many times as you want if it is just information you want, rather than the chance to make different tactical responses.

Event messages

When the turn is being calculated, not only will you see your fleets move on the map, you will also see enemy fleets highlighted when they are spotted, and will see many different kinds of event messages telling you what is happening hour-by-hour.

Some players will want to see all or most messages; others may want to keep the "noise" to a minimum, concentrating on a selected few messages, such as reports of battles. As always in *SAS*, the choice is yours.

Moving the messages

The messages appear on the map in one or more popup boxes. They are all moveable if needed if they are currently obscuring parts of the map that are of interest. (Or the map can also be dragged around).

The message boxes appear by default in the top left of the screen.

To move a box if you want to see beneath it (instead of just moving the map instead) just click on the box and drag it/

To return it to its default position, just click on it again and move it a fraction in any direction. The box will "snap" back to its default position.

Message text

The message boxes have scrollable text, and also point to the map location of the event. Make sure you scroll down to get the full text.

Message colour coding

The boxes are colour coded: red boxes are for critical events such as battle reports (aerial; surface; submarine; bombardment and amphibious assaults) as well as ship sinkings and mine damage. Black is for enemy signal intercepts, while pale red is for enemy sightings and emergency fleet orders. Other colours are for less critical events: brown boxes show air strikes as they move; yellow boxes show cargo handling, and green boxes are used for everyday events such as ship refuelling and repairing.

Message types

There are over two dozen types of event messages.

For more information on message types, see event message types.

Options

The types of event messages you see are controlled via the Options button: 

When you click the Options button an options screen will appear, allowing you to enable or disable many different kinds of event messages. See Options when running and replaying a turn for more information.

The options screen also allows you to enable or disable the ability to make tactical responses for your surface fleets and air strikes. See tactical responses for more information.

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Tactical Responses

Although *SAS* is primarily a strategic and operational simulation you can also make critical tactical decisions *if you want to*. You are never forced to make them - the computer AI is very sophisticated and in most cases you will be hard pressed to improve on it. But some players will want to exercise this tactical control for at least some of their fleets or aircraft.

When you run the turn you can make three kinds of tactical responses to enemy sightings as they occur:

- Order your fleets to ignore, avoid, shadow or intercept nominated enemy fleets.
- Abort or amend air strikes from your airfields.
- Abort or amend airstrikes from your carriers.

You can elect to enable or disable any of these options. You can also fine tune each option by selecting just the fleets, airfields or carriers you want to tactically control.

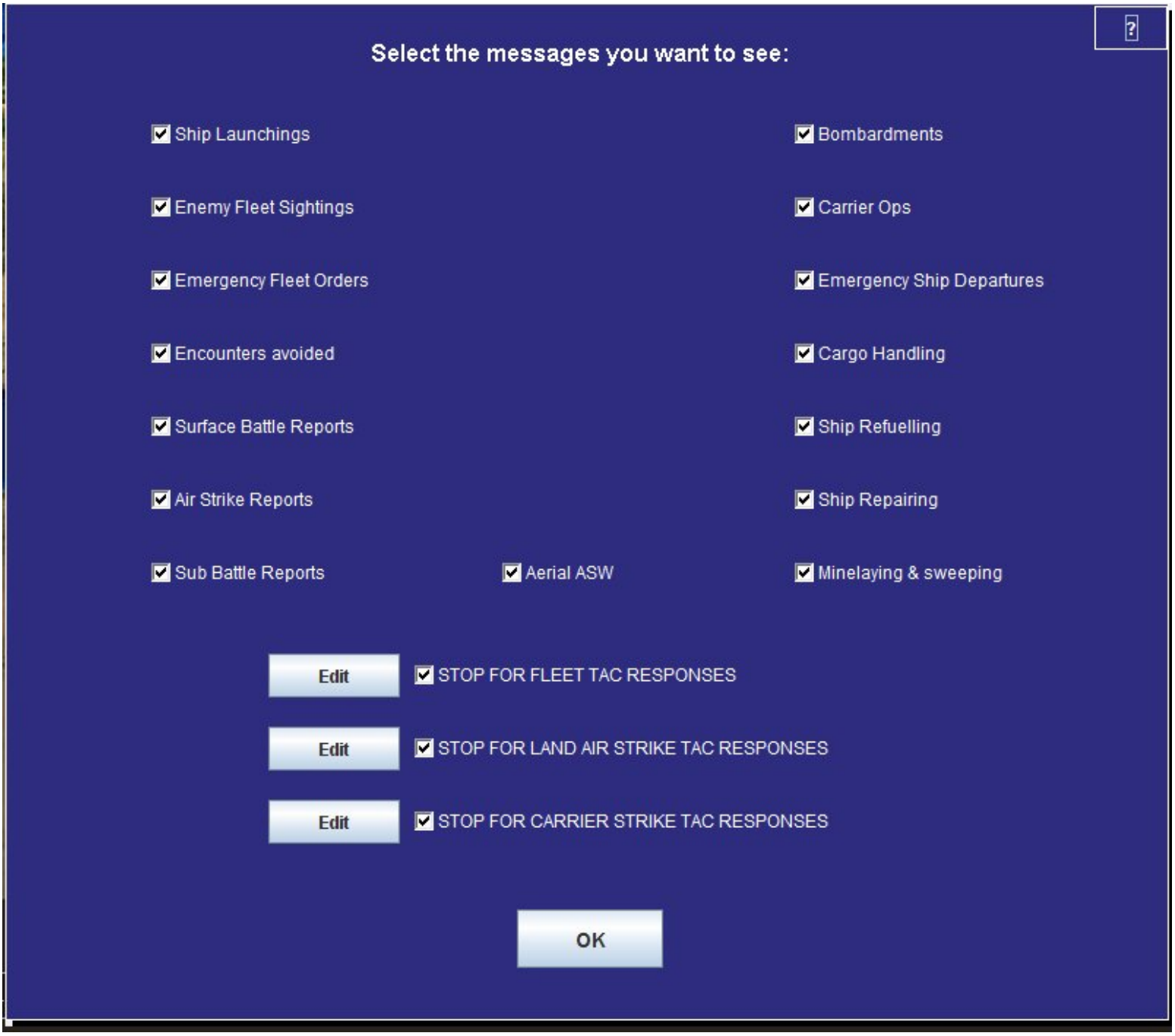
If you have all options enabled, for all of your fleets, airfields and carriers, you will potentially have dozens of tactical responses to make during a single turn's calculation. Although this can be extremely rewarding and challenging, it can also be time consuming. You will want to experiment with the options and with fine-tuning them so that the balance between playability and challenge is right for you.

You can also change your options at any time during the calculation.

Enabling tactical responses

At any time during turn calculation you can enable or disable tactical options from the Options screen. Click the "Options" button on the run turn controls to bring up this screen. The turn calculation will now be paused. (See running the turn for an explanation of how to run a turn and use the controls).

At the bottom of the Options screen (pictured below) there are three tickboxes and three buttons that you use to enable or disable tactical response options.



Fleet tactical responses

To enable tactical responses for your fleets, make sure the "Stop for fleet tac responses" tickbox is ticked.

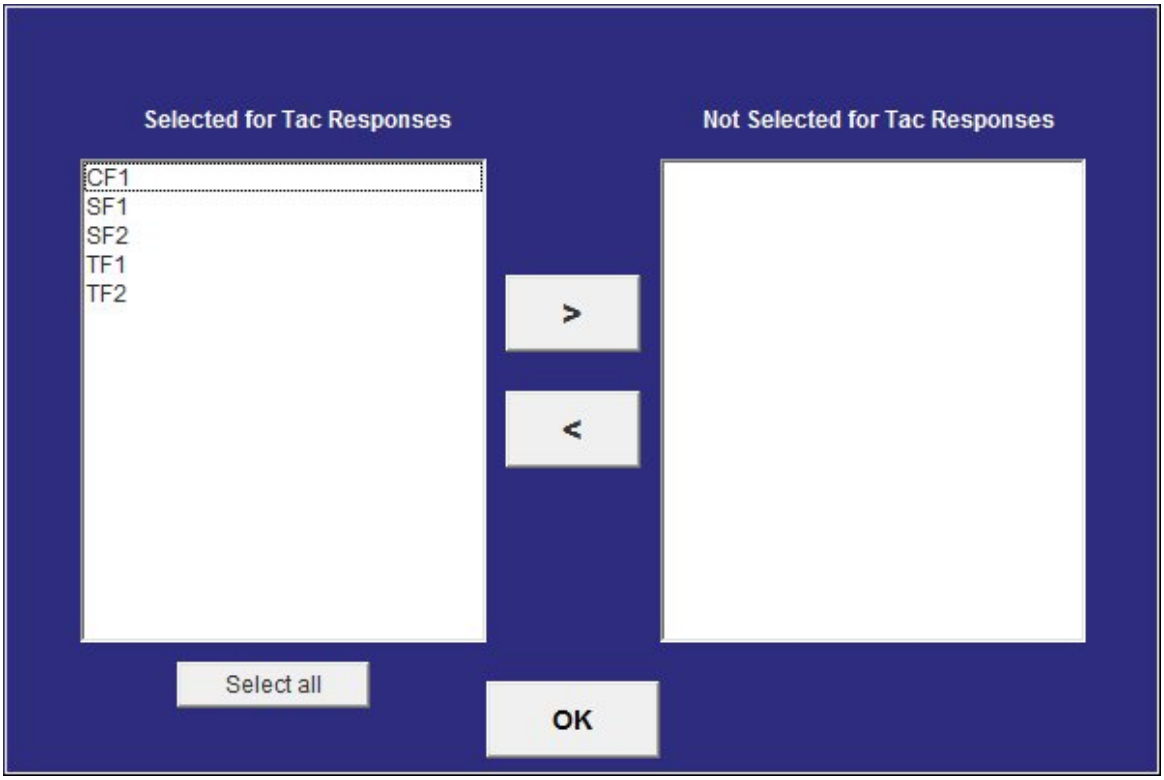
When it is ticked, the computer will alert you whenever any of the fleets you have selected for tactical control needs to decide whether to ignore, avoid, shadow or intercept the most dangerous (or attractive!) enemy fleet of those you currently know about. As your intelligence of the enemy changes during turn calculation, you will be prompted to make new decisions.

You will see a dialog giving you easy control over what your fleets do. For each of them, you

can accept the computer AI's recommendation, or override it. To help you decide you can view details of each of your fleets as well as current intel on enemy fleets as updated for the hour of the turn being calculated. See the tactical fleet response dialog help page for full instructions.

Note that by default ALL of your fleets are candidates for your intervention. To select only those you are most interested in click the "Edit" button alongside.

You will now see this screen:



Those of your fleets currently selected for player-controlled tactical responses are listed on the left. Your remaining fleets (if any) are listed on the right.

You can swap fleets freely between these lists by selecting one or more and clicking the '>' or '<' button as needed to move them to the other list. The 'Select all' or 'De-select all' buttons allow you to quickly select or de-select all fleets in a list.

Click the 'OK' button when you have finished.

Airfield air strike responses

To abort or amend air strikes from your airfields, make sure the "Stop for land air strike tac responses" tickbox is ticked.

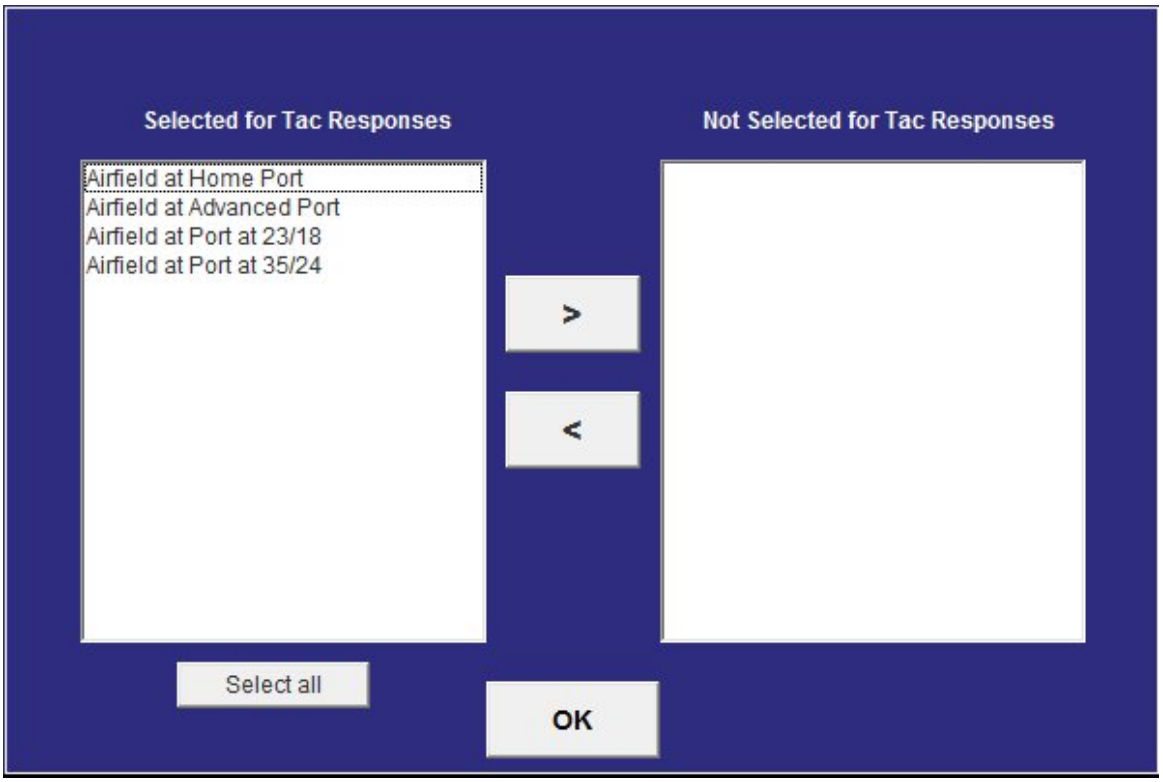
When it is ticked, the computer will alert you whenever you need to abort or amend an air strike from any of the airfields you have selected for tactical control. The computer

calculates potential strikes hour by hour based on the locations and characteristics of known enemy fleets and bases, and the number, type and endurance of your aircraft. As these factors change during turn calculation, you will be prompted to make new decisions.

You will see a dialog giving you easy control over each potential air strike. You can abort it, or just accept the calculated strike profile, or else change the number or type of participating aircraft as well as the bombloads and the bombing height. To help you decide you can view details of each of your aircraft types as well as current intel on the target (which could be an enemy fleet at sea, or a an enemy port, perhaps with ships in harbour also). See the tactical air strike dialog help page for full instructions.

Note that by default aircraft from ALL of your airfields are candidates for your intervention. To select only those you are most interested in click the "Edit" button alongside.

You will now see this screen:



This screen is identical to the one shown previously for fleets, except that it lists airfields instead.

Those of your airfields currently selected for player-controlled tactical responses are listed on the left. Your remaining airfields (if any) are listed on the right.

You can swap airfields freely between these lists by selecting one or more and clicking the '>' or '<' button as needed to move them to the other list. The 'Select all' or 'De-select all' buttons allow you to quickly select or de-select all airfields in a list.

Click the 'OK' button when you have finished.

Carrier air strike responses

You have the same options with carrier air strikes as with those from land based airfields.

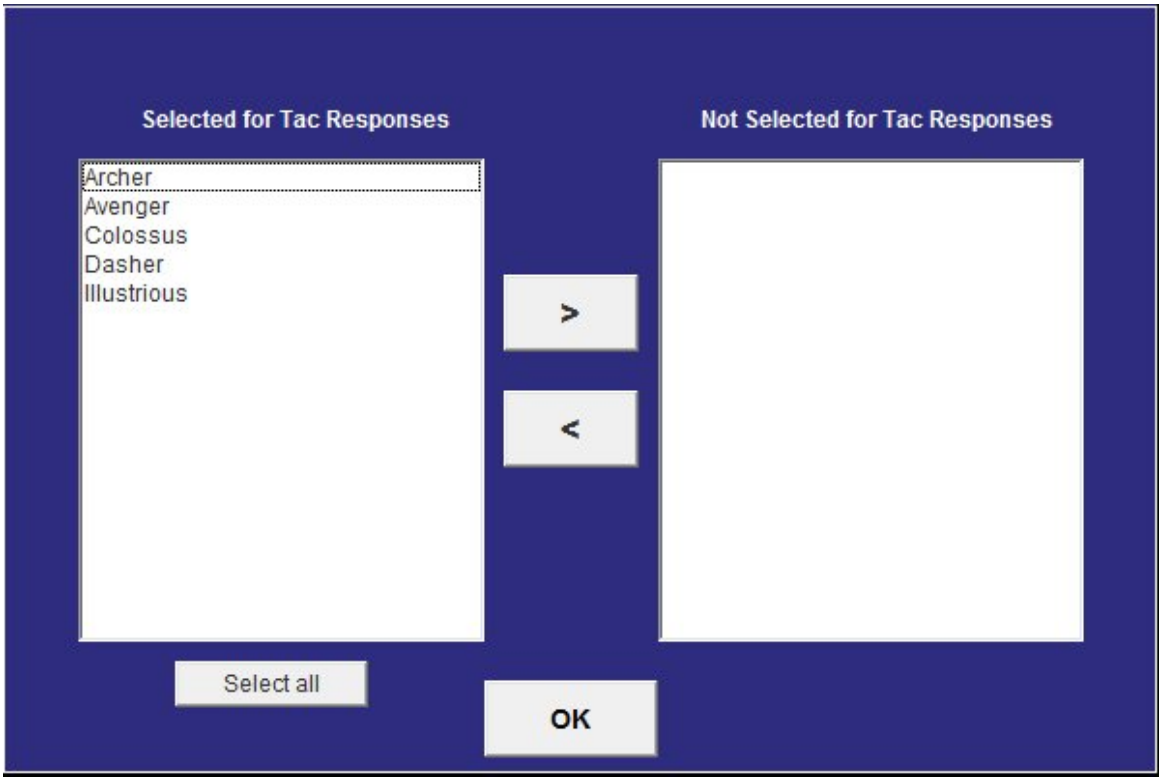
To abort or amend air strikes from your carriers, make sure the "Stop for carrier strike tac responses" tickbox is ticked.

When it is ticked, the computer will alert you whenever you need to abort or amend an air strike from any of the aircraft carriers you have selected for tactical control. The computer calculates potential strikes hour by hour based on the locations and characteristics of known enemy fleets and bases, and the number, type and endurance of your aircraft. As these factors change during turn calculation, you will be prompted to make new decisions.

If you click the "Edit" button you will see the same dialog for aborting or amending the air strike.

Note that by default aircraft from ALL of your carriers are candidates for your intervention. To select only those aircraft carriers you are most interested in click the "Edit" button alongside.

You will now see this screen:



This screen is identical to the one shown previously for airfields, except that it lists aircraft carriers instead.

The carriers currently selected for player-controlled tactical responses are listed on the left. Your remaining carriers (if any) are listed on the right.

You can swap carriers freely between these lists by selecting one or more and clicking the '>' or

'<' button as needed to move them to the other list. The 'Select all' or 'De-select all' buttons allow you to quickly select or de-select all carriers in a list.

Click the 'OK' button when you have finished.

Persistence of the options

The options you have selected, including the fleets, airfields and carriers you have selected if any, are saved at the end of the run turn calculation, and will be in force when next you run the calculation. But by then of course, you will have new fleets and perhaps new carriers, so you may want to re-visit these options each turn.

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Tactical Fleet Response Dialog

This pop up dialog box allows you to control the responses of your fleets to known enemy fleets.

As explained in the tactical responses help page, you can elect not to be notified at all (and let the computer decide for you). Or you can elect to be notified, but only for selected fleets.

If you have the option enabled, the popup will appear during turn calculation whenever one or more of your selected fleets needs to decide whether to ignore, avoid, shadow or intercept a known enemy fleet.

On the left is a list of your fleets for which a tactical decision is pending. On the right is the list of relevant known enemy fleets. In the middle is a list of tactical response options.

First, you need to select one of your fleets in the left-hand list. As soon as you do this:

- The fleet is highlighted in the list

- The dialog points to the location of this fleet on the map
- The enemy fleet that is the current most dangerous threat or attractive target is selected and highlighted in the right-hand list, and the dialog will point to its location on the map.
- The computer's recommended response is selected and highlighted in the middle list.

Dragging the dialog and map

The dialog points to the location of your own fleets and the enemy's fleets. If these are currently obscured on the map by the dialog itself, you can:

- move the dialog around - by clicking on the top brown bar, and dragging.
- or you can move the map around by clicking anywhere on the map and dragging.

It is usually best to drag the dialog around, if needed, rather than the map.

Changing the tactical response

Changing the computer's recommended response for the currently selected fleet is as simple as selecting a different tactical response in the middle list.

You can also select a different enemy fleet altogether as the main threat or opportunity, and then select the appropriate response.

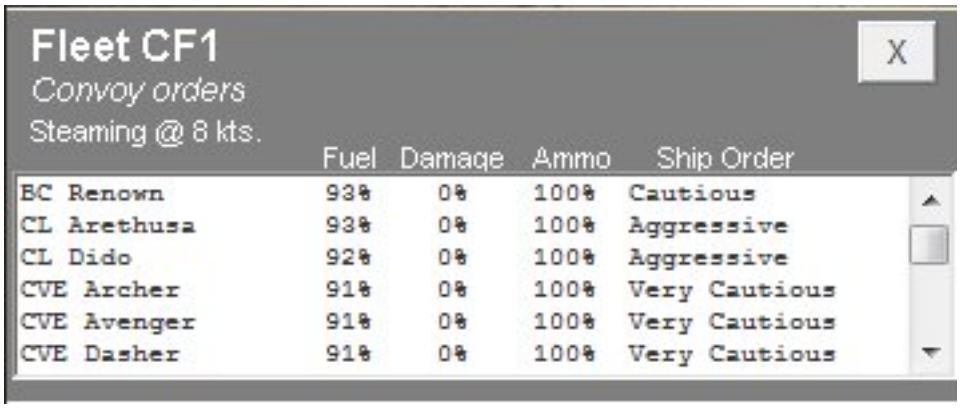
Reviewing fleet details

Often you will want to review the details of your own fleets and the enemy

fleets, especially if you are thinking of changing any tactical responses.

Details of your own fleets

To see details of your own fleets when they are selected, tick the 'Fleet details' tick box that is beneath the left hand list. You will now see details of your currently selected fleet:



The fleet details panel always appears immediately to the left of the fleet response orders dialog. The panel gives summary information on the fleet - its current orders and speed, plus summary details for each ship: its ship order and current fuel, damage and ammunition status.

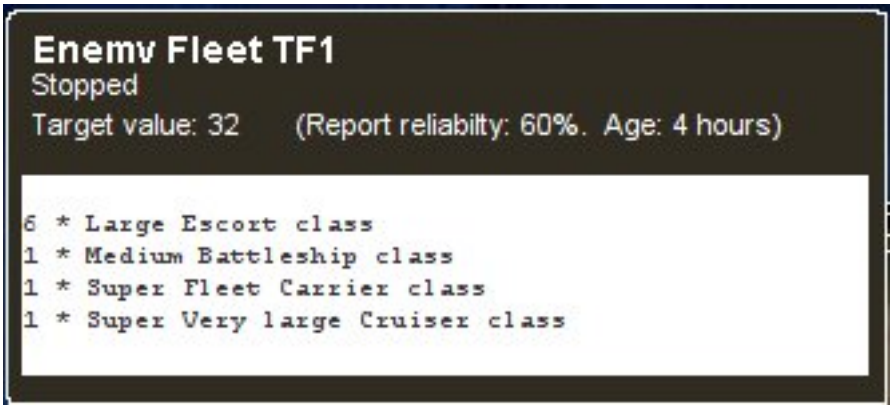
The fuel, damage and ammunition status of key ships will help you decide how aggressive to be if you intend on changing the fleet's current tactical response.

Note that you may have seen this information panel before - it is the same panel that appears on the Theatre Map when you select a fleet. (See the theatre map help page for more information.)

Details of enemy fleets

When the 'Fleet details' tick box beneath the right hand list is ticked, details

will be shown of the currently selected enemy fleet:



The enemy fleet details panel always appears immediately to the right of the fleet response orders dialog. The panel gives summary information about the currently selected enemy fleet - its speed, heading (if known) and composition. Also provided is the 'target value' for the fleet, the age of the last intelligence on the fleet, and the reliability of that intelligence.

Be wary of sending your own fleets on a wild goose chase. If the enemy fleet report is old, and especially if it was also of low reliability, the enemy fleet is likely now to be somewhere else altogether.

The 'Stop calc' feature

Sometimes, you may want to closely follow what happens in the hours immediately after making a tactical response.

To do this, tick the 'Stop calc' tick box at the top left of the dialog. This works in the same way as the same feature on the tactical air strike orders dialog. As soon as you close the dialog, the turn calculation will be paused. You can then repeatedly click the '>|' button on the run turn screen to advance the calculation hour by hour. This allows you to closely follow the action. All event messages for the hour (including reports of any

battles) will stay visible until you click again to calculate the next hour. To run the turn continuously again, simply click on the '>' button at the bottom of the screen.

The tick box remains ticked on all future tactical fleet response dialogs until you untick it.

Closing the dialog

To close the dialog when you have finished with it, click the 'OK' button.

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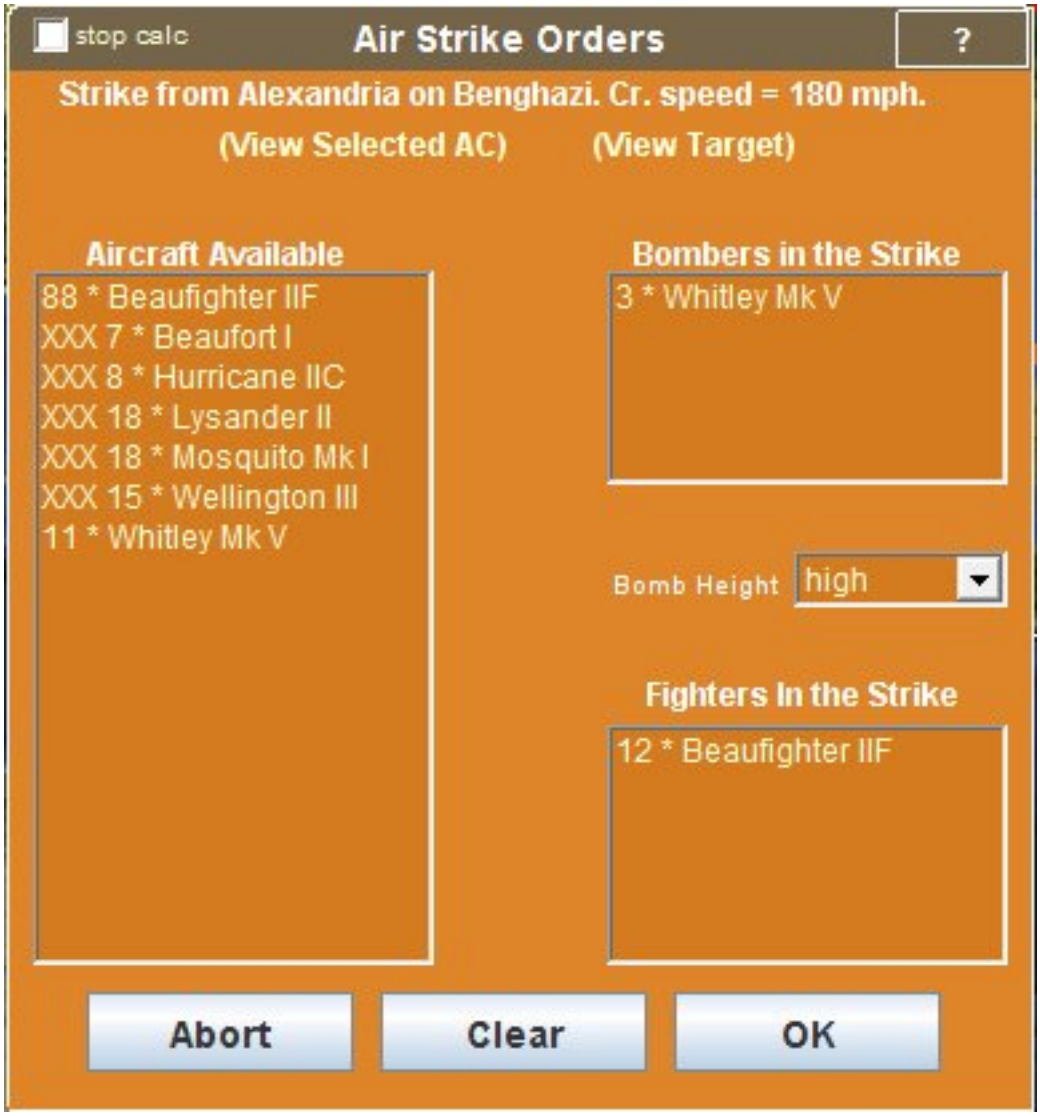
Tactical Air Strike Orders Dialog

This pop up dialog box allows you to abort or amend a proposed air strike against an enemy target from one of your airfields or carriers.



Dragging the dialog and map

The dialog points to the location of your airfield or carrier as well as to the location of the target. If either of these is currently obscured on the map by the dialog itself, you can:

- move the dialog around - by clicking on the top brown bar, and dragging
- or you can also move the map around by clicking anywhere on the map and dragging.

It is usually best to drag the dialog around, if needed, rather than the map.

Controlling the strike

Your subordinates have calculated the best strike profile they can - the best mix of aircraft that can reach the target, deliver a sufficient attack given what is known of the target, and also defend against suspected enemy fighter strength.

Note: The fighter aircraft available for the strike will have been reduced by the number required for constant combat air patrol ('CAP'). The number of aircraft required for CAP depends on your strategy, and it is doubled by default for escort carriers and halved for airfields (which are 'unsinkable' and more easily repaired than are ships). See the help available on very cautious, cautious , aggressive and very aggressive stratgeies for more information.

Within the limits of the aircraft that are available, you are free to make any changes you want using this dialog box. You are, after all, the *Supreme Naval Commander!*

The available aircraft are listed on the left. The currently assigned aircraft - bombers and fighters (if any) - are listed on the right.

A short description of the strike including cruising speed is given near the top of the dialog box.

Strike from Alexandria on Benghazi. Cr. speed = 180 mph.

Using the controls on the dialog box you can:

- Abort the strike entirely.
- Change the aircraft in the strike.
- Change the bombloads carried.
- Change the bombing height.

You can also very easily:

- View details of the target.
- View details of any selected aircraft.

To close the dialog box and continue, either abort the strike, or click the "OK" button when you are happy with the settings for the strike.

The "Stop Calc" feature

There is a 'Stop Calc' tick box at the top left of the dialog:

If you tick this, the turn calculation will stop as soon as it can after you close the dialog. This allows you to then step through the calculation progressively, hour-by-hour, following the course of any strikes you have just launched. To run the turn continuously again, simply click on the '>' button at the bottom of the screen. See running the turn for more information.

The tick box remains ticked on all future tac strike dialogs until you untick it.

Aborting a strike

Just click on the "Abort" button. This will abort the strike and the dialog box will close.

Note that if you click the "OK" button just after the strike has been cleared, this has the same effect as an abort - a strike must have at least one bomber in it.

Changing aircraft

You can freely assign to the strike any or all of the available aircraft that are suitable, and remove any that you don't want. Before changing any aircraft, you will probably want to review details of the target. See viewing target details.

Adding aircraft

To add more aircraft, select the type you want to add in the "Aircraft Available" list.

The list shows all available aircraft currently at the airfield or on the carrier. But not all aircraft are suitable for selection. An aircraft type may be unsuitable because it:

- Is too slow to cruise with the current strike
- Has insufficient endurance, even at light load
- Has insufficient endurance to carry any bombs or torpedoes to the target, and is also not suited to a fighter role.

All aircraft that are unsuitable are listed in the "Aircraft Available" list but are marked as unsuitable with three crosses ("XXX"). This gives you an immediate visual clue as to the currently unsuitable aircraft types. In the illustration below, the Beaufort, Hurricane, Lysander, Mosquito and Wellington are all marked as unsuited to to the current strike:

If you click on one of the unsuitable aircraft types, you will see a message explaining the particular problem, such as shown below:

If you click on one of the suitable aircaft instead you will see a button  and a combo box  .

If the aircraft is suited to both a bomber and a fighter role there will be two buttons shown, one alongside the list of bombers in the strike, and the other alongside the list of fighters. Such aircraft, when added as fighters, will carry no bombs, so will have their maximum capability as fighters to defend the bombers in the strike from enemy fighters. But those that are added as bombers will carry the maximum bombload they can. They will be less effective against enemy fighters because their maneuverability will be reduced.

Before adding any aircraft to the strike, you can review all the details of the aircraft type - its speed, bombload, maneuverability, ruggedness and so on. See viewing aircraft details.

To add aircraft to the strike, just select the number to add in the combo box, then click the button alongside the bomber or the fighter list to move the aircraft into the strike as a bomber or a fighter. You will see the numbers in the lists change to reflect the decision just made.

Repeat this procedure as needed, for the same or other aircraft types.

Deleting aircraft

To decrease the aircraft in the strike, follow a similar procedure: first, select from either the "Bombers in the Strike" or the "Fighters in the Strike" list the aircraft type whose numbers are to be reduced.

A combo box to select the number to remove, and a button to assign this number back  will appear.

Select the number and click the button. Repeat this procedure as needed, for the same or other aircraft types.

In the picture below the Whitley bomber has been selected, so that some or all of them can be removed from the strike.

The "Clear" button

Sometimes, an aircraft is unsuitable because its cruise speed is less than the

cruise speed for the strike. (A strike always flies at the speed of its slowest aircraft). To bring slower aircraft into the strike, you will need to first remove all assigned aircraft, then manually assign aircraft, type by type.

The current strike cruise speed is shown in the description at the top of the dialog box.

You can remove all currently assigned aircraft just by clicking the "clear" button.

You should then add aircraft starting with the slowest ones. You can check each aircraft's cruise speed by clicking on it in the "Available Aircraft" list and watching the description at the top of the dialog box. You can also review all the details of any selected aircraft type - see view aircraft details.

Removing all bombers

Note that if you have removed all bombers from the strike, this has the same effect as clicking the "Clear" button. A strike can not proceed without any bombers.

Changing bombload

Your subordinates have planned the strike to assign the heaviest bombloads possible for each type, in order to maximise efficiency. But the heavier the load, the less maneuverable is an aircraft, making it more vulnerable to enemy fighters.

To change the bomb load for an aircraft type, select it in the "Bombers in the Strike" list. You will then see a combo box labelled "Load"

The currently assigned bombload for all aircraft of this type in the strike is shown as selected.Note that the computer shows you only those choices that are possible given the type of aircraft and endurance required.

To change the selection, select the new load in the combo box.

The new bombload will now be carried by all aircraft of that type in the current strike.

There are up to four possible bombload choices: "Heavy", "Medium", "Light", and "Torpedo". (Choice of torpedo is only possible for aircaft that historically were equipped for them.

Note that "Heavy", "Medium", and "Light" are relative terms for the aircraft concerned. A heavy load for one aircraft, say a small light bomber, may be less than a medium or even light load for a very large bomber. The computer works out in actual weight of bombs what these settings mean, given the aircraft type.

Changing bomb height

Bombers in the strike attack in waves of related aircraft. All dive bombers will attack together. All low level bombers attack together. All torpedo bombers attack together. And the remaining bombers, which are neither dive bombers nor light bombers intended to attack only from low level, will also attack together.

This last group of bombers will drop their bombs from one of four altitudes: extremely high, very high, high or medium.

The higher the bombing height, the less accurate will be the bombing but the less susceptible to anti-aircraft fire and enemy fighters will be the bombers. So there is a trade-off.

The choice of altitude initially is set by your overriding strategy: a very cautious strategy - like the Italians had - favours extremely high altitude. As the strategy gets more aggressive, the default bombing height gets lower - making for more effective but also more risky attacks.

You can override the default setting here in this dialog box.

If any of the bombers assigned to the strike are designed for medium to very high level bombing you will see a combo box with the currently active bombing height selected. Open the combo box to see the options and change the selection if you want:

.

Note: the new selection will apply to ALL future strikes, until it is changed again.

Viewing target details

You can view details of the target at any time by moving your mouse over the text labelled "View target" towards the top of the dialog.

When you do this, you will see information on the target.

Enemy port information

If the target is an enemy port, you will see information on:

- the estimated number of resource points stored there
- the estimated levels of infrastructure - the dockyards, defences, industrial plant and airfields
- the estimated number of enemy aircraft currently based at the airfield.

An example is shown below:

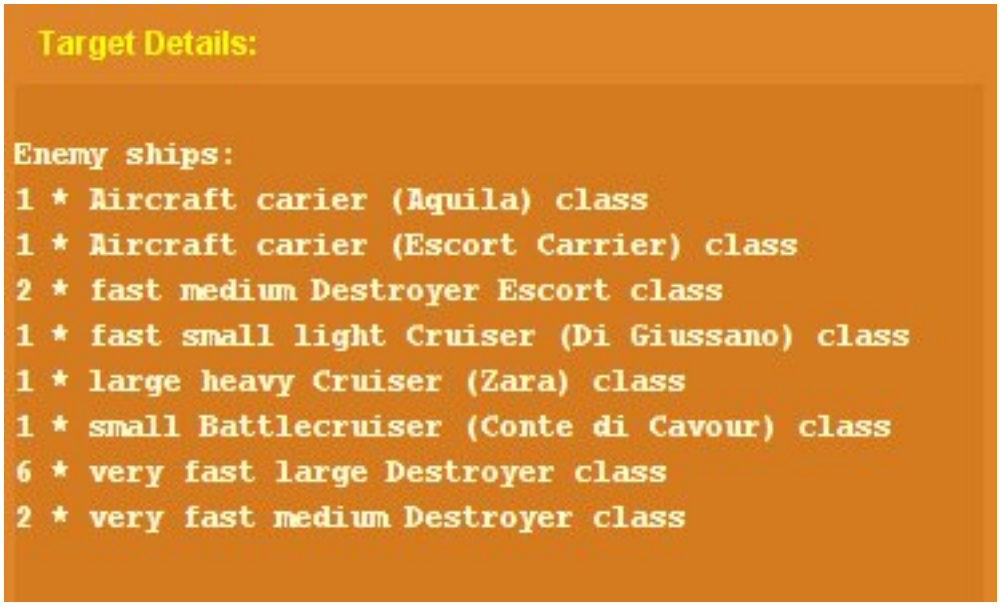
```
Target Details:

BENGHAZI
  Est storages: 20 RPs
  Est. Infrastructure levels (out of 10):
    Docks:       2 (no repairs or construction)
    Defences:    2
    Industry:    0
    Airfields:   3
  Est. Aircraft: 180
```

Enemy fleet information

If the port has ships in harbour, OR if the strike target is not a port but an enemy fleet at sea, you will also (or instead) see details of the enemy fleet.

The number and types of ship are listed. An example is shown below:



The target information automatically disappears, and is replaced by the normal dialog information, as soon as you move the mouse away.

Viewing aircraft details

When an aircraft type has been selected in any of the lists (the 'Aircraft Available', 'Bombers in the Strike' or 'Fighters in the Strike' lists), you can view details of the aircraft type by passing the mouse over the text labelled "View selected AC".

You will now see information on the aircraft's:

- main and secondary roles
- maximum speed and best cruise speed
- endurance (in hours) at light/medium/heavy load
- bombload (in kgs.) carried, if any, at light/medium/heavy load
- values (out of 10) for firepower (against enemy fighters), ruggedness and maneuverability
- values (out of 10), if any, for ASW (anti-submarine warfare) weapons: the detection factor followed by the attack factor

- any special capabilities, such as carrier capable, dive bomb capable and night-equipped
- and a silhouette of the aircraft. (Note: silhouettes are not available for some aircraft).

An example is shown below:

Note that the Hurricane IIc has no ASW or special capabilities, so this information is simply not listed.

The aircaft information automatically disappears, and is replaced by the normal dialog information, as soon as you move the mouse away.

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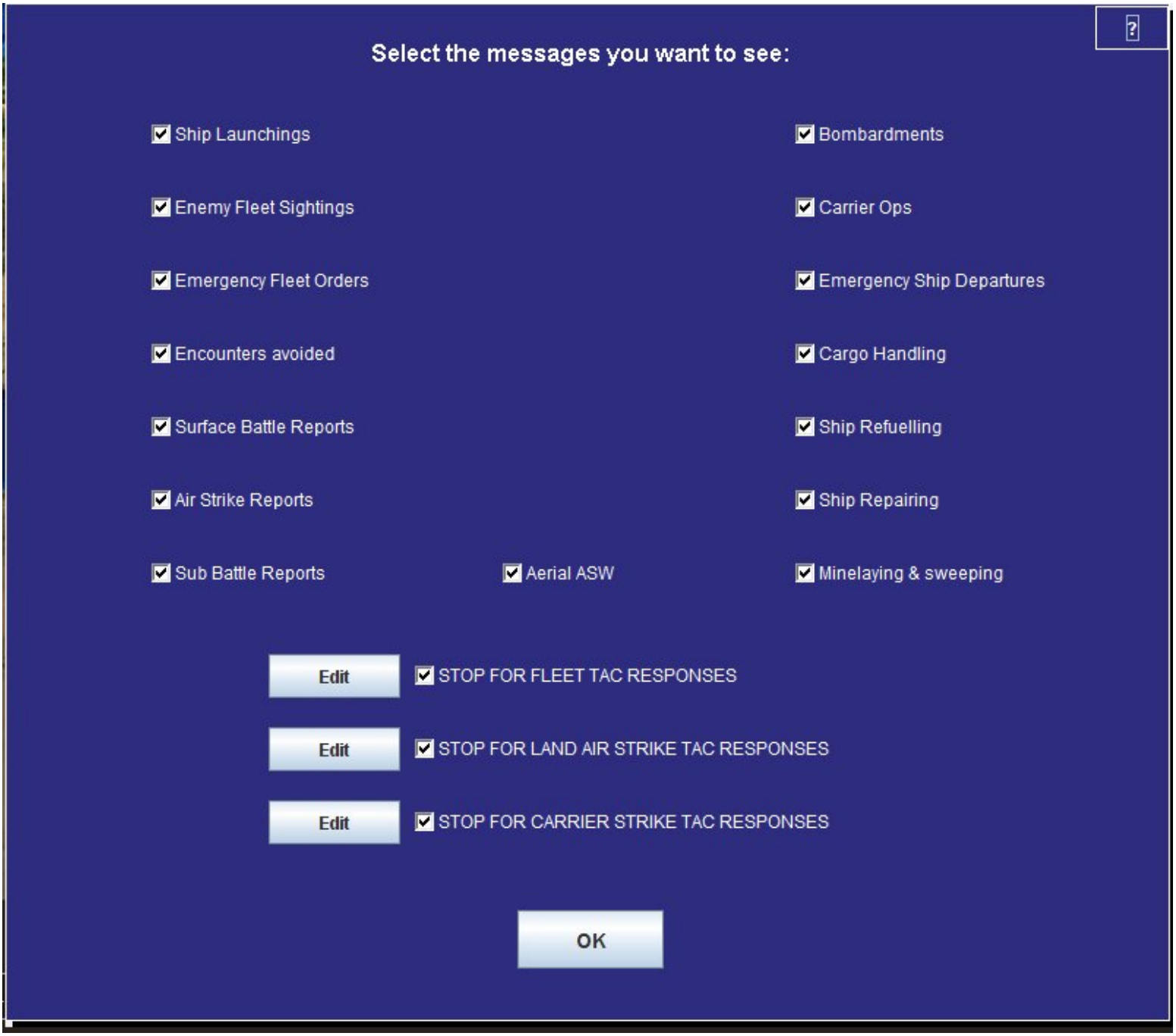
Options when Running and Replaying a Turn

The Options screen pictured below allows you to enable or disable the event messages you see when running and replaying a turn.

If you are running the turn (and not just replaying it) it also allows you to enable or disable the ability to make hour-by-hour tactical responses for your fleets and air strikes.



Persistence of the options

The options you have selected are saved are the end of the run turn calculation or when you manually save a game, and will be in force when next you run or replay the turn. You

can change the options again at any time of course.

Tactical responses

These are available during turn calculation, but not during replay.

When you tick the Stop for Fleet Tac Responses, the Stop for Land Air Strike Tac Responses or the Stop for Carrier strike tac responses tick boxes at the bottom of the screen, the turn calculation will stop whenever necessary - in response to updated intelligence of the enemy - to show you a dialog box for changing emergency response orders for your fleets, or for aborting or amending planned air strikes.

See tactical responses for more information.

Event messages

When the turn is being calculated or replayed, not only will you see your fleets move on the map, you will also see enemy fleets highlighted when they are spotted, and will see many different kinds of event messages telling you what is happening hour-by-hour.

Some players will want to see all or most messages; others may want to keep the "noise" to a minimum, concentrating on a selected few messages, such as reports of battles. As always in *SAS*, the choice is yours.

Moving the messages

The messages appear on the map in one or more popup boxes. They are all moveable if needed if they are currently obscuring parts of the map that are of interest. (Or the map can also be dragged around).

The message boxes appear by default in the top left of the screen.

To move a box if you want to see beneath it (instead of just moving the map instead) just click on the box and drag it.

To return it to its default position, just click on it again and move it a fraction in any direction. The box will "snap" back to its default position.

Message text

The message boxes have scrollable text, and also point to the map location of the event. Make sure you scroll down to get the full text.

Message colour coding

The boxes are colour coded: red boxes are for critical events such as battle reports (aerial; surface; submarine; bombardment and amphibious assaults) as well as ship sinkings and mine damage. Black is for enemy signal intercepts, while pale red is for enemy sightings and emergency fleet orders. Other colours are for less critical events: brown boxes show air strikes as they move; yellow boxes show cargo handling, and green boxes are used for everyday events such as ship refuelling and repairing.

Message types

See event messages for an onverview of the nearly thirty different messages you can see during turn calculation and turn replay.

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Event Messages

The following gives an overview of the nearly thirty types of messages you can enable (or disable) during turn calculation and also during turn replay.

Ship launchings

This message shows a summary of all new ship launchings at the start of the turn:

Ship Launches From: Marc Barbey Commander, Home Base.

Name	Class	Description	Tonnage (Full Load)
Albacore	Balao Class	fast large Submarine	1801
Blackfish	Balao Class	fast large Submarine	1801
Bluefish	Balao Class	fast large Submarine	1801
Bonefish	Balao Class	fast large Submarine	1801
Bostwick	Cannon Class	slow medium Destroyer Escort	1546
Bowers	Bowers Class	medium Destroyer Escort	1650
Breeman	Cannon Class	slow medium Destroyer Escort	1546
Brennan	Brennan Class	slow medium Destroyer Escort	1527
Brooklyn	Brooklyn Class	fast large light Cruiser	13035
Burrows	Cannon Class	slow medium Destroyer Escort	1546
Cannon	Cannon Class	slow medium Destroyer Escort	1546
Alger	Cannon Class	slow medium Destroyer Escort	1546
Cero	Balao Class	fast large Submarine	1801
Charles Lawrence	Bowers Class	medium Destroyer Escort	1650
Chevalier	Fletcher Class	fast large Destroyer	2934
Christopher	Cannon Class	slow medium Destroyer Escort	1546
Cleveland	Cleveland Class	fast large light Cruiser	12908
Cod	Balao Class	fast large Submarine	1801
Columbia	Cleveland Class	fast large light Cruiser	12908
Daniel T. Griffin	Bowers Class	medium Destroyer Escort	1650
De Haven	Fletcher Class	fast large Destroyer	2934
Donnell	Bowers Class	medium Destroyer Escort	1650
Amberjack	Balao Class	fast large Submarine	1801

Enemy Fleet Sightings

Messages apear when an enemy fleet is sighted - by coastwatch, aerial reconnaissance from your airfields, carriers or ship-based float planes, radar, as well as visual sighting from your surface ships. Shown below is a coastwatch report:

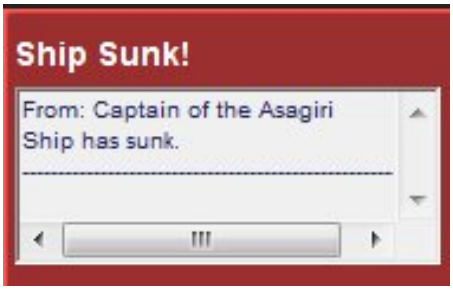
Enemy fleets can also be located by signal intercept:

Emergency fleet orders

You are told whenever one of your fleets is given an emergency order to avoid, shadow or intercept an enemy fleet based on latest intelligence of the enemy:

Ship sinkings

Whenever one of your ships sinks, your are notified:



Note that this message can not be disabled - it is assumed that you will always be interested in knowing when and where any of your ships are sunk!

Mine damage

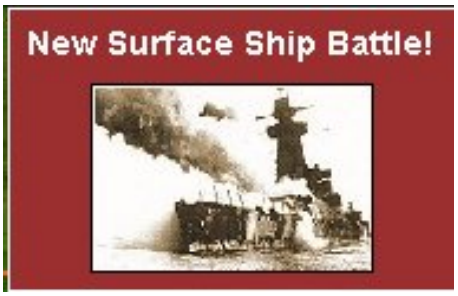
A message shows whenever any of your ships hits a mine:

As with the ship sinkings message, this one can not be disabled. You are always told of mine damage.

Surface battle reports

You are told when:

- A surface battle has started



- And when it has finished:

Clicking on the box will bring up a summary of the battle, and from there you can also replay the battle in full detail! See surface battle summary, and surface battle replay for more information.

Air strike reports

When one of your own air strikes finds its target, the ensuing battle is notified:

Clicking on the box brings up a summary of the battle. See air to surface battle summary for more information.

A similar message appears whenever you come under attack from an enemy air strike:

Submarine engagements

Every engagement between a surface fleet and an opposing submarine group is reported:

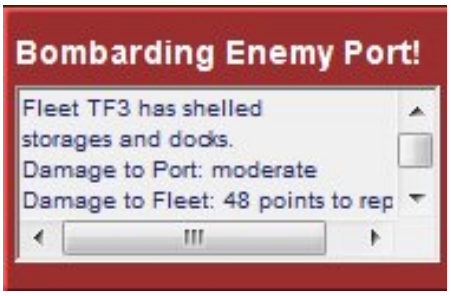
Clicking on the box will bring up a summary of the battle. See submarine battle summary for more information.

Bombardments

You are alerted when:

- Your own ports are under enemy bombardment:

- Your own forces are bombarding the enemy:



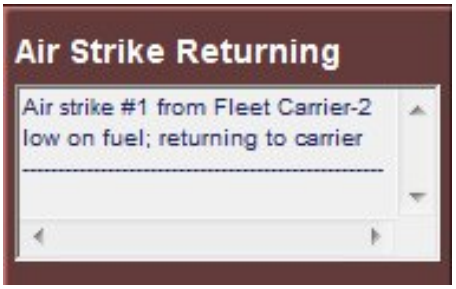
Carrier operations

Messages appear when each air strike:

- Is launched. The message box points to the target of the strike as well as the originating point (carrier or airfield):

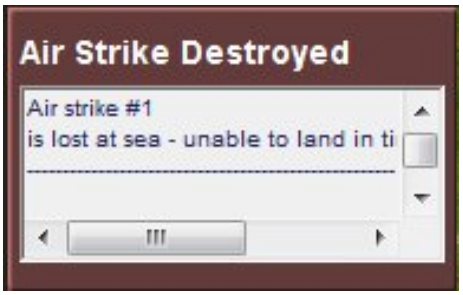
- Can not find the target and is searching for it:

- Needs to return to base due to fuel shortage:



- Is safely recovered:

- Or is lost - due usually to having no carrier to return to that is in range:



Emergency ship departures

You are told when any ship has to leave its fleet and make for your nearest suitable port because it is low on fuel, or too damaged or out of ammunition. The message below shows a ship departure due to fuel shortage:

The computer also automatically sends a ship to the nearest suitable port when the fleet originally had at least some destroyers, destroyer escorts or corvettes and now has none, *AND*:

- It is part of a fleet carrying cargo or troops and the player's strategy is very cautious

or cautious.

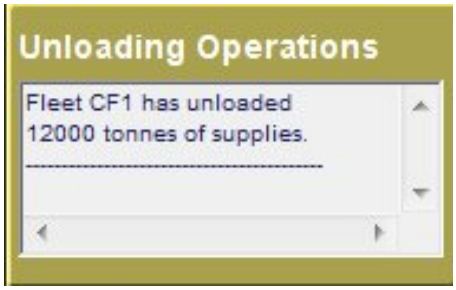
- It is a fleet carrier in a fleet with weak attack or cautious attack orders
- It is a battleship or battlecruiser in a fleet with weak attack or cautious attack orders that has other than hit and run orders
- It is an escort carrier that now has no other ships to escort (other than other escort carriers).

Cargo handling

Several messages relate to cargo handling:

- Loading of cargo, raw materials or troops:

- Unloading of same:



Ship refuelling or rearming

Messages indicate when any ship is being:

- Refuelled:

- Rearmed

Ship repairing

Messages indicate when any ship is being repaired:

Minelaying and sweeping

You are told when a ship:

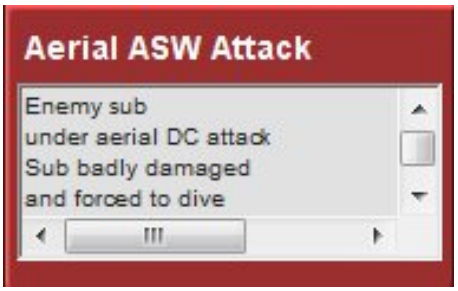
- Has laid mines:

- And also when it has encountered enemy mines and swept them:

Aerial ASW (Anti-Submarine Warfare)

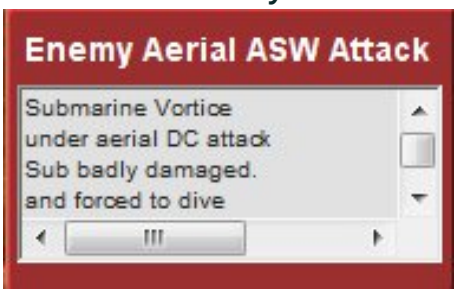
You are told when

- Your aircaft are attacking enemy submarines:



Approximate reports of any damage (or sinkings) are provided.

- And also when your own submarines are under aerial attack from enemy aircraft:



Reports of damage or sinkings are provided.

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Replay the Turn

In the turn replay screen you can replay all events from the last turn, and bring up detailed reports of all battles, and even replay surface battles.

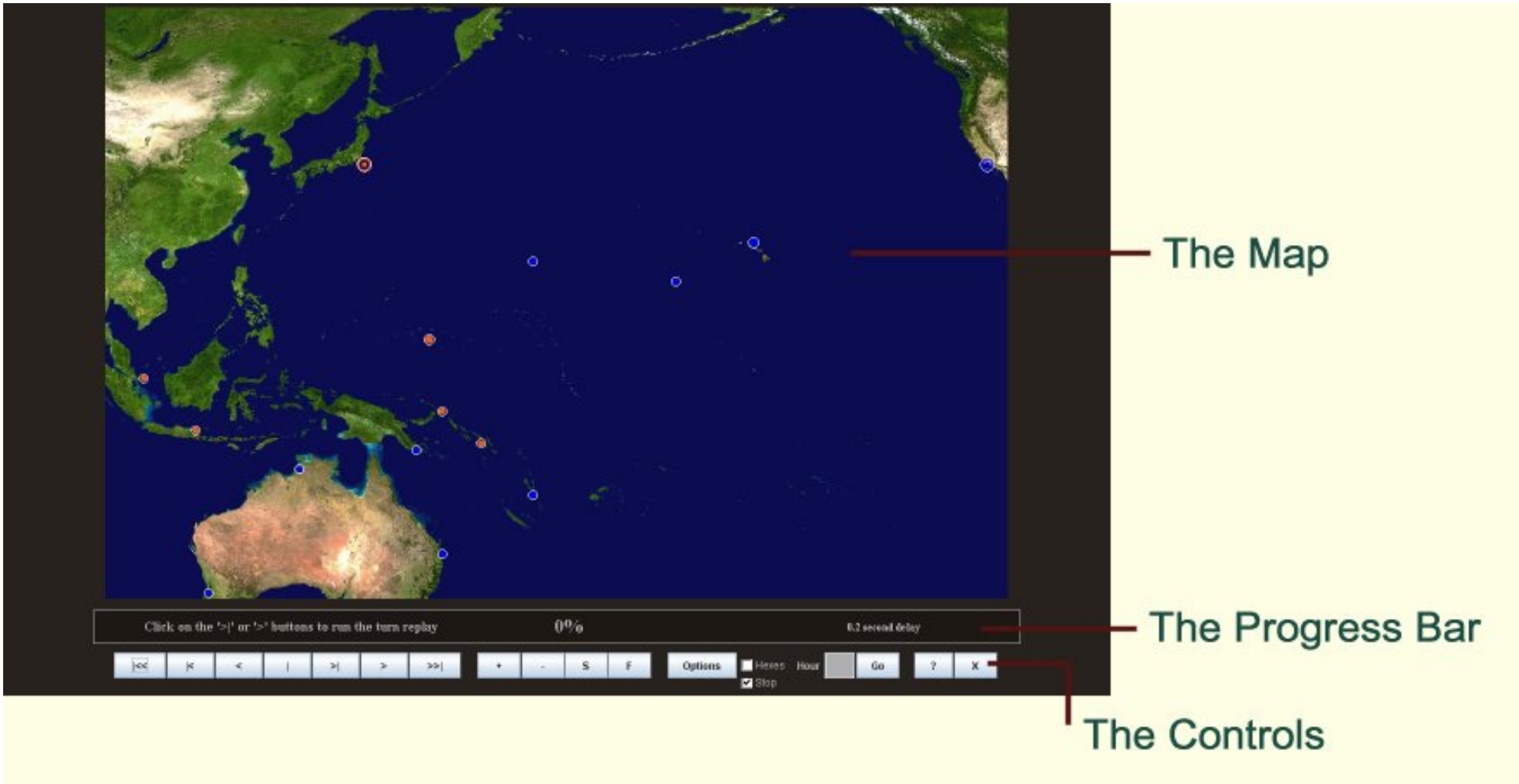
Accessing the Turn Replay screen

The screen comes up automatically after the turn has been calculated, (see run the turn).

You can also bring up the turn replay screen at any time from your Admiral's Office, by clicking on 'Briefings' on the main blackboard menu and then, clicking on the news reels at the right hand side of the screen.

The Turn Replay screen

The replay is initially paused at hour zero, waiting for you to commence. The picture below is a sample sceen from replaying a demonstration Pacific scenario:



The screen shows the theatre map, controls for replaying the calculation, and a progress bar that gives status information on the calculation.

You will notice that this screen is identical to the run turn screen except that it:

- Has some additional controls that allow you to replay backwards or jump to the end or beginning or to a set hour.
- Does not have player options for making tactical responses - the replay screen simply faithfully replays the action that has already been calculated during the run turn phase.
- Unlike the run turn screen, the default behaviour is for the replay to stop whenever an event message occurs. But this can be disabled.

The Controls

The series of buttons and the checkbox at the bottom of the screen are your controls. They let you run the replay at the speed you want, see just the information that is of interest, and zoom the map in or out at will.

You an also exit from the replay at any time. This returns you to your Admiral's Office.

The following is an overview of the controls.

Pause

To pause the replay at any time, click on the Pause button: 

Note that the replay is always paused when the screen first appears.

The Progess Bar shows whenever the replay is paused: 

Run

To start (or re-start) the replay after a pause, click on the Run button: 

The replay will now run forward hour-by-hour, stopping only when there is an event message of the type you want to see, unless you have disabled the stop by unticking the "Stop" tick box. (See stopping on event messages below.

The Progress Bar: 

shows you how much of the turn has been replayed - as a percentage and a graphic, and also shows you the exact time that is currently being replayed.

Stopping on event messages

The default behaviour is for the replay to stop whenever an event message appears that is of the type you want to see.(See Options for more information on enabling event messages.)

However, if you untick the "Stop" tick box, the replay will keep running, just like it does in the turn calculation.

Every time you stop the replay for some reason, such as pausing it, the "Stop" tick box will be automatically re-ticked, and you will need to clear it again if you want the replay not to stop on events when you resume the replay.

Run slower or faster

You can control the speed of the replay using the slower and faster buttons.

These two buttons are labelled "S" and "F" respectively: 

They slow down or speed up the replay. Each click will increase or reduce the amount of delay before a new hour is replayed.

The amount of delay is shown in the Progress Bar.It can vary from no delay through to

many seconds.

The purpose of the delay is to allow you to follow the action. With no or minimal delay, the calculation will update the screen very rapidly.

The default delay is 0.2 seconds between each hour.

Neverthless, players who just want to run the replay as fast as possible will want to have zero delay.

You will need to experiment yourself to find the speed that you are comfortable with. Every player is different.

Run one hour at a time

As an alternative to slowing down the replay, you can elect to show one hour at a time using this button: >|

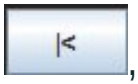
Each time you click the button, one hour's worth of action will be shown, and any event messages you have enabled that are triggered will appear on screen and stay there until you click again.

Run to the End

This button: >>| jumps you to the end of the replay.

Run backwards

You can run the replay backwards as well, with the same degee of control. You can run

backwards at the current speed with this button:  , or replay just the previous hour with this button:  , or jump back to the start with this button:  .

Jump to a specified Hour

You can also jump to a specified hour. Enter the number of the hour in this text box: 

, and then click on the "Go" button: 

.

The replay must first be paused before you can use the jump function.

Zoom in and out, and drag the map

You can zoom the map in or out during replay using these controls: 

Click on the "+" button to zoom in (enlarge the map); the "-" button zooms out (makes the map smaller).

Each click will increase (or reduce) the map size by a set amount. You can zoom in and out virtually indefinitely.

When the map is bigger than the screen you will need to drag the map around. Do this simply by clicking on the map and dragging, just as you can with the turn calculation screen.

Show hexes

Note that in the picture above, you can also see the hexes marked.

Hexes are turned off by default, but you can turn them on at any time by ticking the Hexes

tick box: ☐ Hexes

Note that the hex scale depends on the map. In the Pacific and Atlantic maps, each hex is 96 nautical miles across, whilst in the Mediterranean, each hex is half that size - only 48 nautical miles wide.

Exit

To exit from the replay screen at any time, just click the **Exit button**: x

When you exit, you will be returned to your Admiral's Office.

Event messages

When the turn is being replayed, not only will you see your fleets move on the map, you will also see enemy fleets highlighted when they are spotted, and will see many different kinds of event messages telling you what is happening hour-by-hour.

Some players will want to see all or most messages; others may want to keep the "noise" to a minimum, concentrating on a selected few messages, such as reports of battles. As always in *SAS*, the choice is yours.

Moving the messages

The message boxes behave just as they do in the turn calculation screen. They are all moveable if needed if they are currently obscuring parts of the map that are of interest. (Or the map can also be dragged around).

The message boxes appear by default in the top left of the screen.

To move a box if you want to see beneath it (instead of just moving the map instead) just click on the box and drag it/

To return it to its default position, just click on it again and move it a fraction in any direction. The ox will "snap" back to its default position.

Message text

The message boxes have scrollable text, and also point to the map location of the event. Make sure you scroll down to get the full text.

Message colour coding

The boxes are colour coded: red boxes are for critical events such as battle reports (aerial; surface; submarine; bombardment and amphibious assaults) as well as ship sinkings and mine damage. Black is for enemy signal intercepts, while pale red is for enemy sightings and emergency fleet orders. Other colours are for less critical events: brown boxes show air strikes as they move; yellow boxes show cargo handling, and green boxes are used for everyday events such as ship refuelling and repairing.

Message types

There are over two dozen types of event messages.

For more information on message types, see event message types.

Options

The types of event messages you see are controlled via the Options button: 

When you click the **Options button** an options screen will appear, allowing you to enable or disable many different kinds of event messages. See Options when running and replaying a turn for more information.

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Play By Email

SAS WW2 supports play by email ('PBEM').

To use the PBEM feature, follow these steps:

1. Complete all moves for your side for the current turn of the game you want to play by email.
2. Now, click on the 'Out' box on the desk of your Admiral's Office:
   

3. The computer will now save the game file with your latest moves, to a folder called 'PBEM'. This folder is located under the place where you installed to. For example, the default installation location is 'C:\NWS \SAS-WW2'. If this is where you installed *SAS WW2*, then the 'PBEM' folder can be found at: 'C:\NWS\SAS-WW2\GameData\PBEM'
4. You can email this file to your opponent when you are ready, attaching it to your email. He will then save the file to his PBEM folder.
5. Your opponent does the same by sending you his game file, and you save it to your PBEM folder.
6. Now, when you load up the game and click on 'GO', the computer will load up both files and start calculating the turn.

Note that to help you keep track of things and visually validate that you both have the most recent files, each turn file is appended with a suffix that shows the turn. Files are named by the computer in a standard way: the campaign name + a hyphen + the player name + a hyphen + the turn number + a standard '.sas' extension used for all SAS files. For example, the British player's file for the Atlantic1 scenario, for turn 5 would be 'Atlantic1__Harry

Nelson_t5.sas'

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How to Get Help

Apart from this manual, the game has a rich set of hyperlinked help files to instruct you on every aspect of the game.

Context Help

Almost every screen has a '?' button. When you press it, context help for that screen will be shown. The context help is tailored to tell you all that you need to know about the screen - how to read any information and how to use any controls it presents.

Full Help

In addition, there is a complete help guide available by clicking on the bookshelf in your *Admiral's Office*:

The full help guide has a left hand menu to help you navigate. Among other things, it has a 'How to Play' section that tells you all you need to know to harness the full power of *SAS WW2*.

We at *NWS* hope you enjoy playing *SAS WW2* for many hours. We hope you find it both challenging and very playable.

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Create a Campaign - An overview

SAS WW2 comes with three campaigns 'out-of-the-box': the US vs Japan in the Pacific, the UK vs Italy in the Mediterranean, and the UK vs Germany in the North and South Atlantic.

Using the campaign builder, you can create an infinite variety of additional campaigns, choosing the countries involved, the theatres, and the options and starting conditions - which affect the scope and scale and difficulty level of the game.

Follow these links to learn how to use the campaign builder:

- Start the campaign builder
- Choose the two countries involved
- Set parameters - Part 1
    - Select the theatre map
    - Enable aircraft
    - Enable troops
    - Set ship design options
    - Set port parameters
        - Rename a port
        - Set port as home or advanced port
        - Remove the port from play
        - Swap ownership of the port
        - Set starting RPs
        - Set the raw materials index
        - Set the domestic materials index

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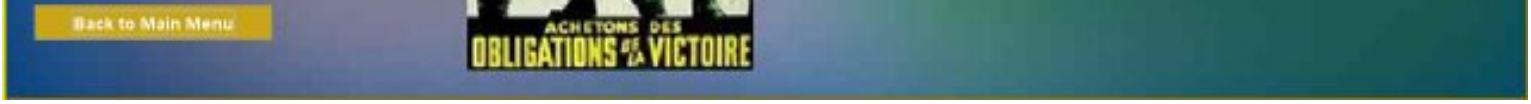
Create a Campaign - starting the campaign builder

If you have just started *SAS WW2* and are at the Start screen, click the 'Create Campaign' menu option.

Or, if you are have started playing a game, from your Admiral's Office, save your current game, then open the the filing cabinet 'Games' drawer again and then click the 'New' option.

In either case, you will now see this screen, which is the first screen of the Campaign Builder:



The screen shows recruiting posters for the navies of the six major naval powers of WW2: the United States, Japan, Great Britain, Germany, Italy and France.

This is the entry point to your first steps - which are to choose the two main countries represented in the game.

Click choose the countries to get help on this first task.

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Create a Campaign - Choosing the Countries

After accessing the Create Campaign screen (see creating a campaign), your first task is to choose the main countries involved.

SAS WW2 is a contest between two sides, each side represented by a country. It is assumed that in most campaigns, there will be an allied navy fighting an axis navy. You can deviate from this if you like and select two axis navies or two allied navies as opponents.

There are 6 countries to choose from: the United States, Japan, Britain, Germany, France and Italy. They are each identified by a WW2 era recruiting poster.

Adding other powers

At this time, *SAS WW2* does not support more than two sides in a game, and each side is associated with one of the six major powers.

You can, however, represent other countries in the game as allies for either side - by adding their ships to the list of those available. Using the ship design editor you can represent the design of almost every possible ship that ever floated (as well as a huge number of hypothetical designs). See overview of ship design for more information.

Step 1: Choosing the first country

The name of each country's navy appears as you move the mouse over each poster.

The screen asks you to first select the "Allied" navy. *SAS WW2* assumes by default that historical campaigns, involving an allied and an axis navy will be chosen. When you intend to build an historically-based campaign, make sure you first choose the allied side, as this affects how the ownership of naval bases on the map - which has yet to be selected - gets allocated. If you are wanting instead to design an entirely hypothetical scenario, the order of country selection is of little importance.

To make a selection, click on a poster.

Country Information

You will now see a popup screen with information about the navy’s strengths and weaknesses, as shown below in the popup for the Royal British Navy:

When the popup appears, a famous speech by the country's leader starts to play, and the words of the speech are shown. The speech will last for a few seconds only, but if you want to end it prematurely, click on the speaker icon at the bottom left of the screen: 

When the speech ends, some descriptive text about the selected country will appear, detailing some basic strengths and weaknesses that were historically true about the country.

Use this information as a guide only. You can play with history later by varying many parameters, making countries more or less advanced than they actually were. For example, Italy had more weaknesses than Britain as a naval power - in training, technology and so on. But by varying things, you can neverthless create a campaign where Italy starts with an advantage and should have the easier road to victory. These parameters are explained later. For now, it is important to consider that choice of country should only be influenced by perceived strengths and weaknesses if you do not intend to alter historical starting conditions.

Cancelling your choice

If, after reading thorugh the country information, you decide to try another country, just click the 'Choose another Navy' button. This takes you back to the screen with posters, where you can select another.

Confirming your choice

When you are happy with the choice of country, click the 'Select the ...Navy' button at the bottom right of the popup. The popup will now close and you will return to the screen with the posters to choose the opponent.

Step 2: Choosing the opponent

Simply now repeat the steps described above to select the opposing country.

You will be prompted this time to select the 'Axis' country, on the assumption that the first country was one of the allies. But if you are not creating an historically-based game, you can select any country you want, even the same country as the first! In this case, *SAS WW2* simply assumes that there are rival factions and you are in command of one of them.

Changing sides

Note that by default, the computer assumes that you intend to play against the computer, and that you will be in charge of the first country chosen, which would be an allied country in an historically-based campaign.

However, do not panic! You can swap sides or set both countries to be player-controlled during later stages of creating the campaign. And best of all, the choices can be changed *during game-play itself!* At any time during the playing of a game, you can elect to play the other side, or even both sides! In this way, you can play either or both sides of the 'out-of-the-box' campaigns that come with *SAS WW2*.

The next step..

The next step in creating the campaign involves selecting the theatre map and configuring economic and other starting conditions. Click here to go to the help file for this next step. Or click to return to the first help page for creating campaigns.

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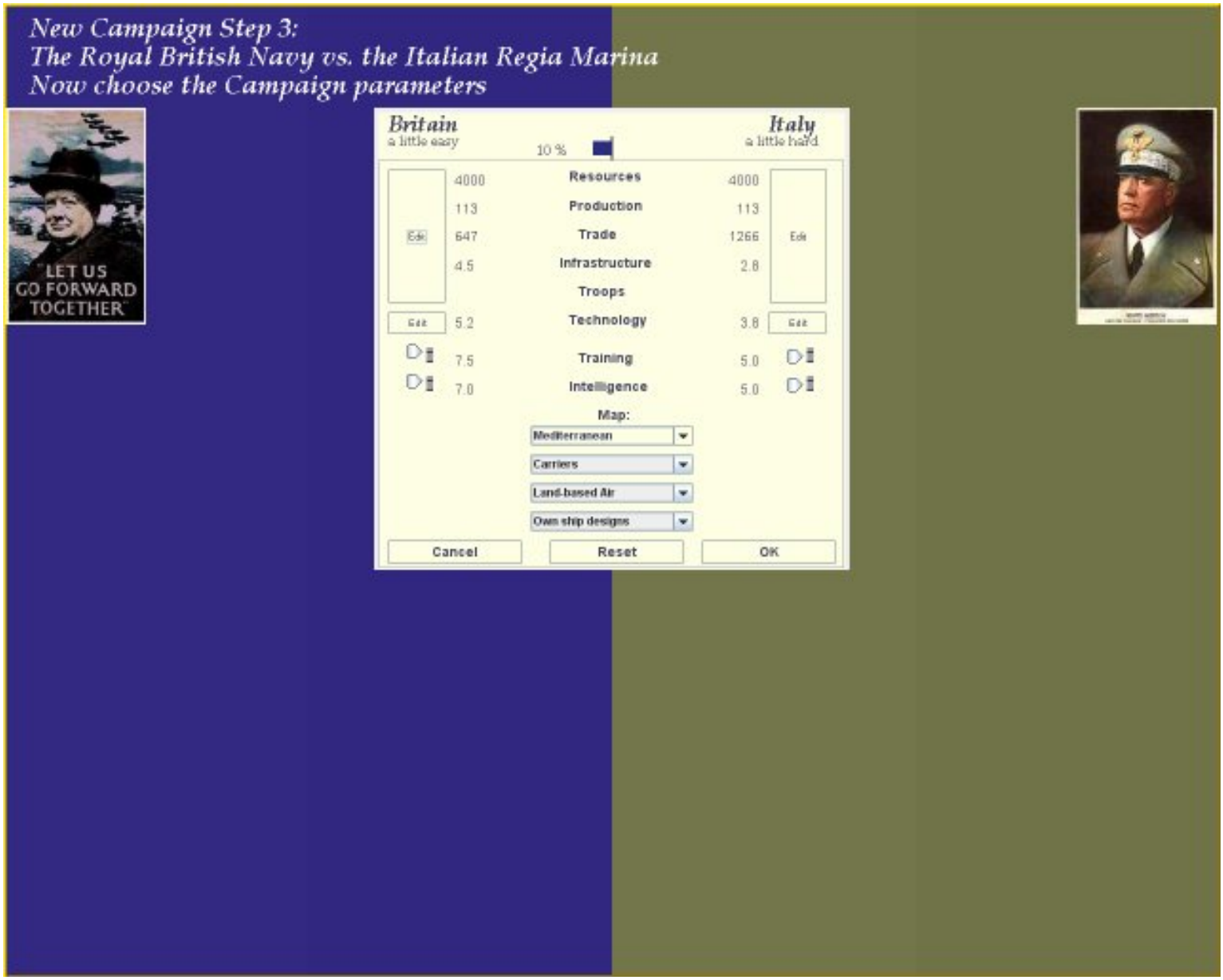
Create a Campaign - Set Parameters - Part 1

After choosing the countries in the previous steps (see create a campaign - choosing the countries), you will now see a screen like this:



The screen shows the chosen countries, and in the middle, a panel with controls for configuring important game parameters.

At the top of the panel, you will see the computer's evaluation of the current odds, both descriptively, and in terms of a bar that stretches right or left. For example, in the picture shown above, the computer is currently evaluating the game as "a little easy" for Britain, and conversely "a little hard" for Italy. The bar, which stretches to the left in

Britain's favour, rates the advantage as 10%. This figure is important because it affects how the computer evaluates your performance during the game - as the odds against you get easier, your failures are less forgiven and your successes less praised. Conversely, your opponent's failures will be less harshly judged. In an easy or very easy game, you can quickly find your performance fails to meet expectations and you can be peremptorily sacked! In *SAS WW2* you are playing not only to win the game, but to do so in a way that enhances your reputation.

As you use this screen to change various factors to the advantage of one side or the other you will notice the computer's evaluation changing.

This screen allows you to change a very large number of game parameters. They all have default values, so you only need to change the ones you want though.

What you can change

Follow the links below to learn more about the parameters you can change from the current screen:

- Selecting the theatre
- Enabling or disabling aircraft
- Enabling or disabling troops
- Setting ship design options
- Setting port parameters
- Setting technology levels
- Setting naval and airforce training levels
- Setting army training levels
- Setting intelligence levels

Resetting parameters

Sometimes, you may wish to return all parameters to their default values. You can do this by clicking the 'Reset' button.

Cancelling out of the screen

If you click the 'Cancel' button, the screen will close and you will be returned to the previous screen.

Continuing with campaign creation

When you have finished adjusting any parameters you want on this screen, click the 'OK' button. The current screen will close and you will be taken to the next (and second last screen) where you can set more parameters including the opening strategy for each side.

Click here to proceed to help for this next screen

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Create a Campaign - Select the Theatre

One of the most important choices to make when creating a campaign is the selection of the theatre.

SAS WW2 is a theatre-level game: you get to play in a chosen theatre. There are three theatres to choose: the Pacific, the Mediterranean, and the Atlantic (including both North and South Atlantic).

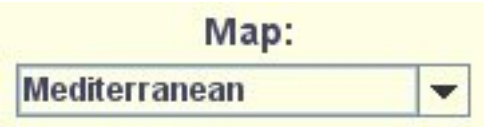
Default theatres

A default theatre will already have been chosen by the computer, based on your selection of countries:

- If either country is Italy, the default theatre is the Mediterranean.
- Else, if either country is Japan, the default theatre is the Pacific.
- Else the default theatre is the Atlantic.

Your selection

You can override the default selection if you want to and choose another theatre. To do this, simply choose it in the drop down list:



In this way, you can start to create non-historically-based campaigns (if you want to).

Effect on game odds

Note that as you select a different theatre, the calculation of the odds may change. This is for two reasons:

- The ships of some countries (like the United States) were designed for long range cruising in the Pacific whereas some others (eg Italian ships) were designed only for short ranges in the Mediterranean. Although you can design your own ships in *SAS WW2*, the 'out-of-the-box' ships that are selected for a country are historical designs. Consequently, as an example, the Italian player is faced with a disadvantage in theatres larger than the Mediterranean. Although the Italian player can overcome this disadvantage through designing his own ships, it takes additional experience with *SAS WW2* game functions, more thought and more time to do this.
- The arrangement of ports is different between different theatre maps. The computer calculates a country's economic strength based on factors that include the value of the convoys that can be run between ports. Convoy values reflect the value of available raw materials and industry as well as the length of the convoy routes. (All else being equal, a route is more valuable if the end points are closer).

Next steps

Click here to return to the help page detailing the next steps.

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Create a Campaign - Enabling or Disabling Aircraft

Aircraft - both carrier-based and land-based - were vital war-winning elements in WW2.

The default setting for a campaign is for both carriers and land-based air to be enabled - for *both* sides.

All countries had sizeable land-based airforces. The position with aircraft carriers was somewhat less even. Italy, France and Germany never had a viable aircraft carrier in WW2. But this was due mainly to political or economic considerations, not technological. Italy had two fleet carriers on the slipways, Germany had one building with another planned, while France had one in commission, though rather outdated. The fact that some countries were more advanced in carrier development than others at the start of the war can be modelled in other ways - when the starting naval forces are created - as will be explained later.

Disabling airpower

Neverthless, despite the historical situation, you may wish to disable airpower from either carriers or land-based airfields for the duration of the campaign you are creating. The choice is yours. Some players may wish to do this, for example, because they are more interested in surface ship combat, and wish to focus on the possibilities of a surface ship war, without the complication of airpower.

The settings are independant. You can have no carriers but retain land-

based air; or carriers and no-land-based aircraft; or you can disable ALL airpower as a factor in the game.

To disable carriers in the game, select 'No carriers' from the drop down list:

In the same way, you can disable land-based airpower by selecting 'No Land-based Air' in the drop down list:

Next steps

Click here to return to the help page detailing the next steps.

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Create a Campaign - Enabling or Disabling Troops

SAS WW2 is primarily a game of sea-power; but troops were vital to many naval operations. Operations in the Mediterranean were often driven by the need to convoy or supply troops in North Africa or, as the enemy, to attack those same convoys. In the Pacific, allied strategy, especially in the early war years, was largely founded on the need to conduct careful, step-by-step conquests of Japanese bases by amphibious assault. And in the Atlantic, long before D-Day, the convoying by the British of supplies to Russian armies set the stage for many grim battles in far northern waters as the Germans attempted to intedict them.

The default setting for a campaign is for troops to be enabled.

Disabling troops

Neverthless, despite the historical situation, you may wish to disable troops for the duration of the campaign you are creating. The choice is yours. Some players may wish to do this, for example, because they are more interested in ship combat and wish to focus on the possibilities of an exclusively naval war, without the complication of managing troop supply and amphibious assaults.

To disable troops in the game, select 'No troops' from the drop down list:

Next steps

Click here to return to the help page detailing the next steps.

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Create a Campaign - Setting Ship Design Options

One of the interesting possibilities that *SAS WW2* allows is for campaigns to feature not only historical ships but also those that were planned but never completed - like Germany's massive *H Class* battleships, as well as some 'might-have-beens' - like a French *Richlieu* class battleship armed with the 16 inch guns actually designed by the French. And, most interesting of all, you can also design and build your own ships from the keel up, using the ship design editor, which gives you over two million possible designs!

Yet some players may not wish for all this flexibility, preferring a campaign that is more historically-based.

You can choose any of four possible options regarding ship design, just by selecting the option from the drop-down list:

The options are explained below, in the order from most to least historically faithful:

Historical ships only

With this option, the ship design editor is disabled. Only ships actually launched in time for WW2 will be available for selection. Ships planned but never completed, or those that 'might-have-been' are also excluded.

Planned ships

Under this option, the list of available ships is expanded to include those that were planned in WW2, even if they were never completed. The US *Montana* class, the British *Lion* class, the German *H class* battleships are just some of those that are now available. Also available are some interwar designs - mostly battlecruisers - that were cancelled due to Treaty limitations. Examples here include the US *Lexington* class.

Hypothetical ships

With this selection, the list of available ships is further expanded to include some 'might-have-beens', such as a 16 inch gunned *Richlieu* and an enlarged *Littorio* class battleship with twelve instead of nine 15 inch guns. These might-have-beens are included to add further interest, as well as to help balance the options available to different countries.

Player-designed or modified ships

Finally, by selecting 'Own ship designs' you enable the ship design editor as well. This gives you, in addition to all the other possibilities, the option of creating your own unique designs, or of making modifications to historical ships. The simple-to-use editor allows you to create over two million possible designs, all with just a few mouse clicks. See building ships - an overview for more information.

Next steps

Once you have made your selection, you are ready to perform the next step in building a campaign.

Click here to return to the help page detailing the next steps.

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Create a Campaign - Setting Port Parameters

In *SAS WW2*, which is predominantly a naval game, ports are your key centres for ship construction, repair, refuelling and rearming; are the points for loading or unloading of raw materials, supplies and troops; are the centres for your industries that produce war material; and are also serviced by airfields for defensive and offensive aerial operations. They have varying levels of industry and other infrastructure and can be attacked by enemy surface and aerial bombardment as well as by amphibious or land troops and, in the worst case, be captured by the enemy, in which case all the infrastructure and war material at the port, and all the ships in the port are also captured. If it is your home port that is captured, you have lost the game!

Default Ports

Each theatre map comes with a default set of ports for each side, including two special ports - a 'Home Port', and an 'Advanced Port'. By default, these are the two largest and most important ports that a player starts with.

Home Port

The Home Port is where all new ship construction starts and it gets the lion's share of available resources when the computer initially allocates resources. It will usually have the highest infrastructure and industry levels also. The Home Port is also where all new troops enter the game (if troops are enabled); and capture of your Home Port by the enemy signals victory by

your opponent and an immediate end to the war. You can have only one home port.

Advanced Port

The Advanced Port is the second most important port and it will get most of the remaining resources, and have the second highest level of infrastructure. You can only have one Advanced Port.

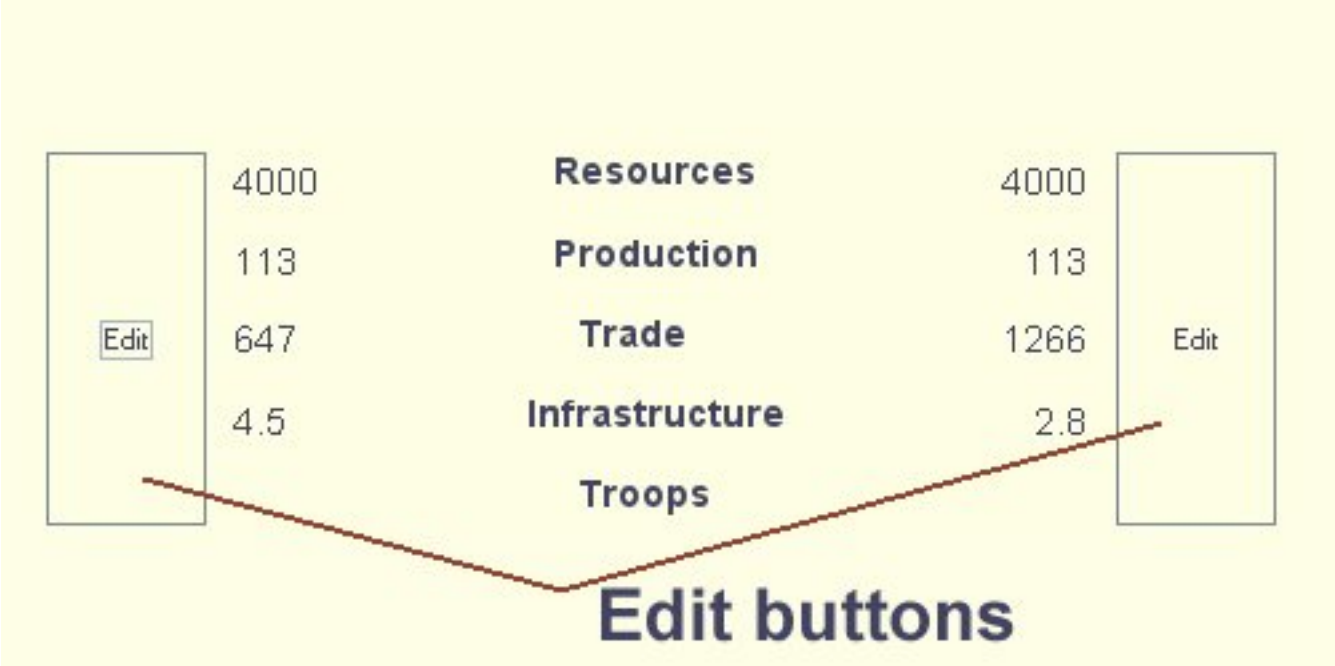
The location of these ports on the theatre map is based on actual locations, but simplified where necessary. For example, in the Pacific theatre, the home port and advanced ports for the US are San Francisco and Pearl Harbor, whilst for the Japanese they are Tokyo bay and Truk. In the Mediterranean theatre, the Italians have La Spezia and Taranto respectively while the British have Gibraltar and Alexandria.

Other ports

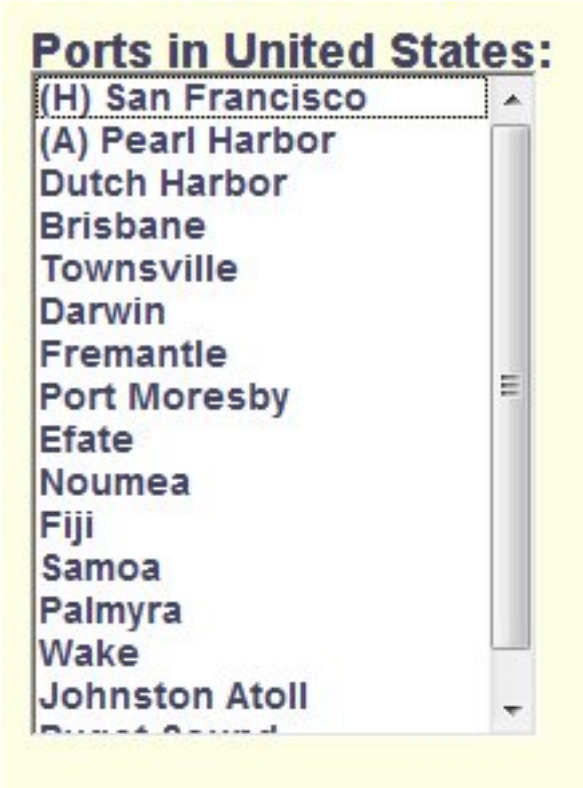
In addition, the theatre map also includes the locations of many less important ports, each of which will be under the initial control of one side or the other.

List of ports

To view the ports currently allotted to either side in the campaign, click on the large 'Edit' button at the left or right sides, depending on which country you are wanting to view details of:



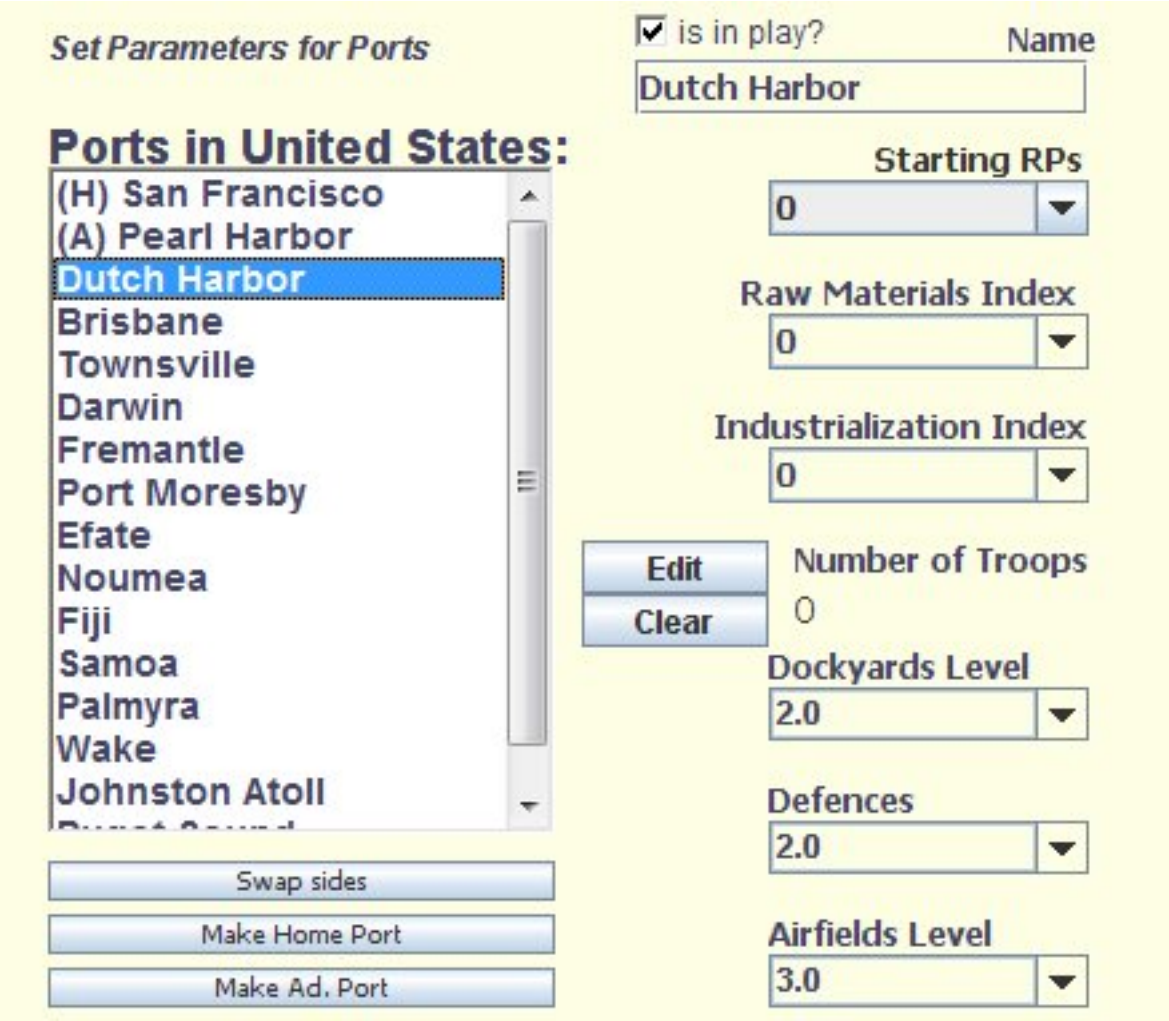
You will now see the ports listed like this:



The port with the '(H)' prefix is the current home port, while the one with the '(A)' prefix is the advanced port.

Selecting a port for view or edit

To view or edit the details of a port, just click on it in the list. Shown here for example are the details for Dutch Harbor, a minor US anchorage in the Pacific theatre:



What port parameters you can change

The screen you are looking at lets you customise any of the details that are shown *for the currently selected port*. Follow these links to learn more about how you can:

- Rename the port

- Set the port to be your home port or advanced port
- Remove the port from play
- Swap sides for the port
- Set the starting RPs
- Set the raw materials index
- Set the domestic materials index
- Specify any army units that start at the port
- Specify port infrastructure
- Specify any special objectives for the port

Next steps

Once you have finished with port parameters, click here to return to the help page detailing the next steps in building a campaign.

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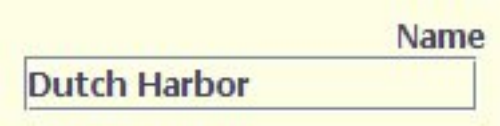
Create Campaign - Rename a Port

Each port has a default name from the theatre map, which is shown when you first select the port:



To change the name, just type in a new name.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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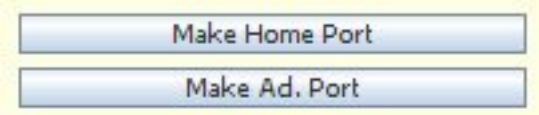
Create a campaign - set the selected port as the home port or advanced port

A player must have one home port and one advanced port. These are initially chosen by the computer.

You can change the selection and make the currently selected port the home port or advanced port.

To do this, just click on the appropriate button:



You will see the change in the list. The currently selected port will now have the prefix '(H)' or '(A)'.

When you change the home port or advanced port, the computer re-allocates the default RP and other values so that the new home or advanced port gets its expected share of resources. The port that *was* the home or advanced port gets re-classified as a ordinary anchorage and gets low levels of infrastructure accordingly.

But you can then change these levels again at any of these port if you wish.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create a Campaign - remove a port from play

The theatre map includes a default set of ports on either side.

Sometimes, you may want to remove some or all of these ports from play. Fewer ports makes for a less complex game generally.

Any currently selected port that is not a home port or advanced port can be removed from play.

To remove a port, just untick the 'Is in Play?' tickbox at the top of the screen:

☑ is in play?

Removing ports can have a noticeable effect on starting odds, not only because a player is losing possible RPs and infrastructure, but also because he is losing the potential trade value between that port and his other ports.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create a Campaign - swap sides for a port

The theatre map includes a default set of ports on either side.

Sometimes, you may want to swap the ownership of a port for the start of play. You may need to do this if, for the time period you are choosing (see create a campaign - setting the start date) the port was in the hands of the other player.

To swap the currently selected port to the opposing side, just click the 'Swap Sides' button:

The port will dissapear from the list of ports you can see. If you close the current screen and click the 'Edit' button for the other side, you will see the port now in the list for that side.

Swapping ports can have a noticeable effect on starting odds - even more so than removing ports, because not only does one side lose the value of the port, the other side gains it.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create Campaign - Set Starting RPs

Each port has a default level of resource points (RPs) at the start of the game. The home port will be allotted 3600 RPs; the advanced port will be allotted 400 RPs. The remaining ports start with zero RPs as their default level.

One RP can be used to construct 100 tonnes of shipping, 500 tonnes of oil fuel or 1000 tonnes of war material that can be used directly by troops in the field. See 'RPs' in the glossary for more information.

The default level of RPs gives you enough to build a smallish navy of a few hundred thousand tonnes - say the size of the German Navy - after allowing for expenditure also on aircraft and infrastructure.

The good news is that you can increase - or reduce - the starting levels *on either or both sides* as you wish.

This means not only that the *scale* of the campaign can be varied, but also the odds between the two sides can be varied. The easiest way to balance or unbalance the odds between countries is by setting differential starting levels of RPs.

As RP levels are changed you should notice the odds change also (unless the change is small).

You can allot up to 35000 RPs to any port! Realistically, you would only ever want to allocate this number, or anything approaching it, to your home port, because it is from your home port that RPs are taken for the building of new ships, aircraft and troop units.

The maximum amount of 35000, if used all for shipping, can buy a whopping 3.5 million tonnes. This allows for a very large navy indeed. And remember - this is the *starting value*. Growth during the game can multiply this several fold!

You may never want to have this amount of resources, for yourself or the enemy, because your command and control becomes more onerous as your navy gets bigger (unless you use your 2-I-C's assistance very heavily). But the option is there.

You can see the current amount of RPs for the port in the combo box:

To change the level of RPs for the currently selected port, just select a new value in the combo box.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create Campaign - Set the export materials index

Every port has an export materials index (emi) value of between zero and 10.

The EMI is a measure of the volume and value of materials available at the port for export. The export materials are also used by local export industry (if any) that is servicing the port to create RPs that are then stored at the port. The export materials can also be exported in merchant ship convoys to other ports for conversion into RPs by the industry there.

The EMI values at your ports, together with the industry levels (see setting industry levels for more information), are used by the computer when it calculates the total value of your economy. The value of every possible convoy route between your ports is calculated, and a weighting is also applied based on how short the route is: shorter routes are worth more because more goods can be carried in a given amount of time.

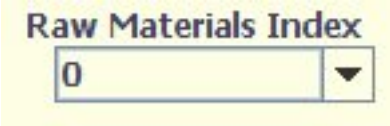
Changing the EMI levels can have a big affect on the value of a country's economy, and hence on the starting odds also.

As EMI values are changed you should notice the odds change also (unless the change is small).

Note that it is most productive to have a high RMI (and high industry level) at your home port, because this is where new aircraft and troop unit production and most new ship production is likely to take place. But this does not always accord with reality. In a simulation of a US vs Japanese contest in the Pacific, it would be more realistic to give higher RMI values to outlying ports in

Malaysia and the Dutch East Indies. Raw materials from there can be convoyed home but this takes time and involves risk of course.

To change the EMI level for the currently selected port, just select a new value in the combo box.



Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create Campaign - Set the domestic materials index

Every port has a domestic materials index ('DMI') value of between zero and 10.

The DMI is a measure of the volume and value of materials available at the port that are used domestically by the port's industry.

Unlike raw materials, domestic materials are not available for export.

By varying the levels of DMI and RMI and also the level of industrialisation you can set the effective production value of the port as well as the degree of its dependence on raw materials convoyed in. For example, a port with a very high industrialisation factor but very low DMI and RMI has a good potential to produce but will only fulfill that potential if you can convoy in raw materials in quantity.

Otherwise, they contribute to production at a port in the same way as do raw materials.

Changing the DMI levels can have a big affect on the value of a country's economy, and hence on the starting odds also.

As DMI values are changed you should notice the odds change also (unless the change is small).

Note that it is most productive to have a high DMI (and high industry level) at your home port, because this is where new aircraft and troop unit production and most new ship construction is likely to occur.

To change the DMI level for the currently selected port, just select a new value in the combo box.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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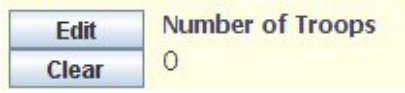
Create a Campaign - Specifying Troops

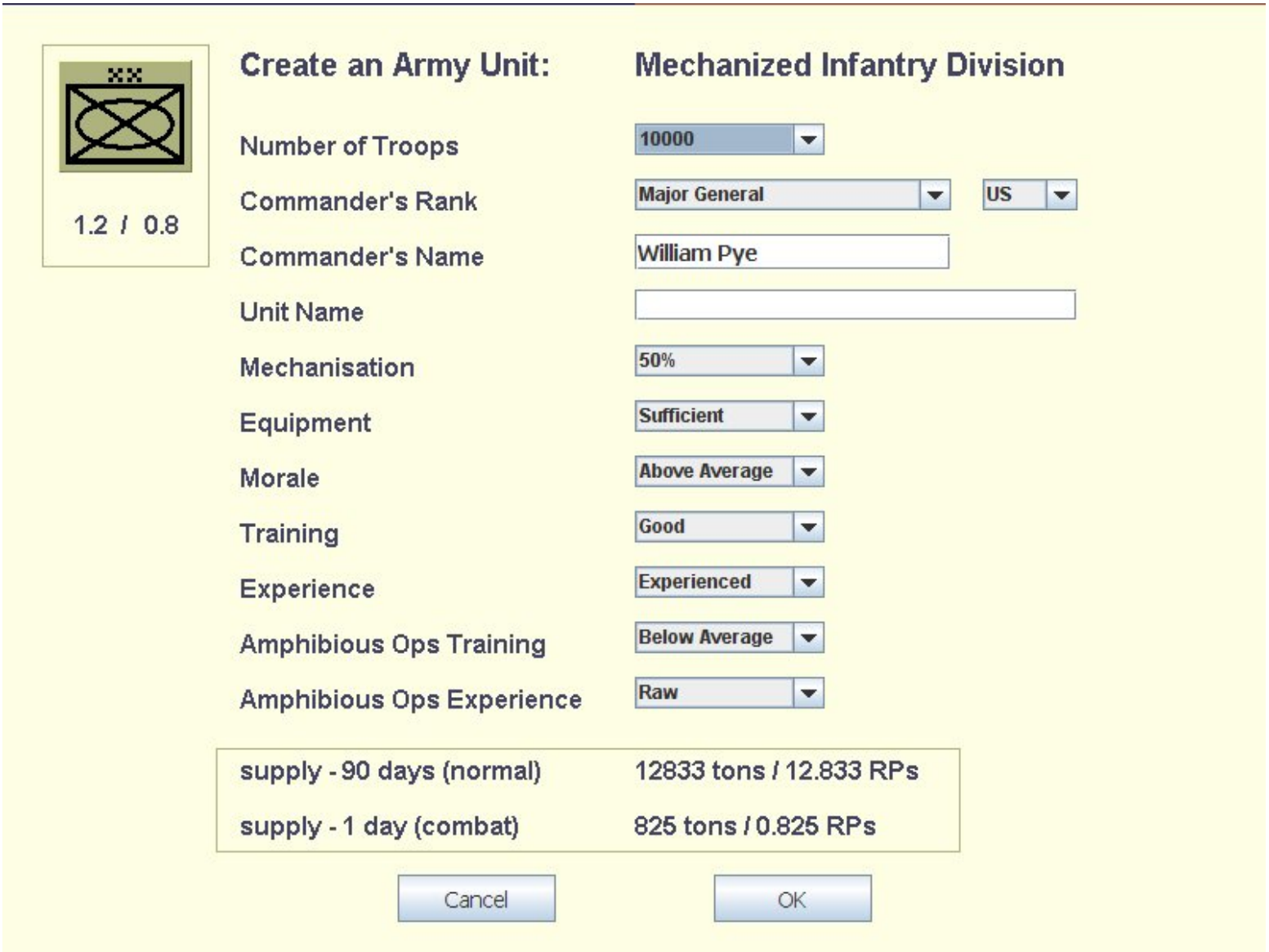
If troops have been enabled for the campaign (see create a campaign - enabling or disabling troops) you will see some controls for specifying troop units that start the game at the currently selected port:



Initially, each port starts with zero troops.

You can add any number of army units to start there.

To add a troop unit, click on the 'Edit' button. You will now see this screen:



Setting unit characteristics

The screen allows you to specify the unit characteristics in some details, as explained below.

Number of troops

Use the drop-down list to set the number of men in the unit. A unit can have between an enormously large 500,000 men down to ony 100 men. A single 'unit' in *SAS WW2* can represent anything from a small company through to the very largest army groups.

Commander's Rank

From the number of men, and the nationality of the unit, the computer determines the appropriate army rank.

The nationality is shown in the drop-down list to the right hand side of the rank. You can change the nationality using the drop-down list. You might want to do this if one side has mixed nationality army units - eg an Italian player may also have German Afrika Korps units to handle.

For example, in the Italian army, the commander of a 12000 strong division would normally be 'Generale di Divisione', whereas his German counterpart would be 'Generalmajor'. Changing the nationality changes the list of selectable rank names which you can then manually select.

Rank name is purely for display purposes and has no impact on combat or any any other tangible factor in the game.

Commander's Name

This is also purely for 'show'. The computer will randomly select a name, but you can change it here by typing another name into the text box. You might want to do this to add historical colour.

Unit name

You can optionally name the unit by entering a name here. The name is purely for display purposes.

Mechanisation

This is an important factor to set. You can choose a value between zero and 100%, in 10% increments.

As mechanisation increases, the mobility and combat effectiveness of the unit increases, as does also the cost of the unit and the supply requirements.

The mechanisation level also determines the unit classification: levels between zero and 30% are classified as Infantry; those with levels between 40 and 60% are classed as Mechanized Infantry, whilst those with levels of 70% or more are classified as armoured units.

Within this classification, the level determines the amount of mechanization for a unit of that type. The table below explains this more clearly:

Level of Mechanization	Type of unit
0%	Most basic infantry unit with no mechanization
10%	Infantry unit with very poor mechanization (few trucks)
30%	Infantry unit with average mobility (reasonable number of trucks)
30%	Infantry unit with above average mobility (some halftracks also)
40%	Mechanized infantry unit with minimum mechanization (basic number of trucks and halftracks)
50%	Mechanized unfantry unit with average mechanization
60%	Mechanized infantry unit with above average mechanization
70%	Basic armoured unit with a minimum number of AFV and SPG (self propelled guns)
80%	Armoured unit with reasonable number of AFV and SPG. Infantry well supplied with halftracks.
90%	Armoured unit with very good number of AFV, SPG and halftrack equipped infantry
100%	Armoured unit with a lavish supply of AFV, SPG and halftracks

Unit icon

At the top left of the screen, an icon for the unit is displayed:

The icon uses standard military symbols to represent the unit by both type and size:

Type of unit

An infantry unit is a crossed rectangle, an armoured unit is depicted with an oval, and a mechanised unit is a combination of the two.

Size of unit

Above the rectangle, symbols indicated the unit's size. 'X's are used for units brigade size and above. For example, one 'X' means brigade, two 'XX's means a division and so on. Below brigade size, the '|' symbol is used: one '|' means company, two '||'s means a battalion and three '|||'s is a regiment.

Equipment

You can set the quality of general equipment for the unit. The choices are: very poor, poor, sufficient, very good, extremely good.

Whereas the mechanization factor measures the *quantity* of equipment that affects mobility and fighting power, the equipment factor measures the *quality* of that equipment, plus the overall quality and availability of weaponry generally available to the unit, such as SMGs, mortars, infantry, towed anti-tank weapons and so on, depending on the type of unit it is.

Better equipment means a higher combat rating for the unit.

For example, a German armoured unit with an equipment rating of 'sufficient' might have PzIVDs and a few Panther tanks. If it had a rating of 'extremely good' it would have King Tigers and Tigers in its heavy tank regiments and Panthers in its medium tank regiments. In 1939, its rating might be 'poor', which would represent the fact that most of a Panzer division's tanks at that time were, relative to those that came later, small, undergunned and under armoured, such as the PzIIs.

A better equipment rating also affects the unit's supply requirements.

Morale

You can set the unit's morale level as any of 10 levels: lowest, very poor, poor, below average, average, above average, good, very good, elite and extreme.

Units with higher morale fight better and for longer. Morale is reduced (or increased) during combat depending on the course of the battle. When a unit's morale gets below a threshhold level, it becomes combat ineffective.

Training

You can set the unit's training level as one of 6 levels: minimal, below average, average, good, very good or elite.

Higher training levels obviously increase a unit's general combat effectiveness.

Experience

The unit can have one of 5 experience levels: raw, green, experienced, veteran or elite veteran.

Units gain experience through battle also.

Higher experience increases combat effectiveness.

Amphibious training

This acts exactly like the normal training level. It is a supplement to the normal training and comes into effect when the unit is offensively assaulting from the sea.

Amphibious experience

This acts just like normal experience, and comes into effect when the unit is offensively assaulting from the sea.

Units gain additional amphibious experience through participating in amphibious assaults.

Combat Values and Supply requirements

Many of these factors affect the unit's combat power; and some of them (size, mechanization and equipment) also affect the unit's supply needs.

As you change the factors, you may notice the combat ratings and supply needs changing.

Combat rating

The combat rating is a number that reflects the relative combat power of the unit *per man*. A value of 1.0 is the *average*. Units that are highly mechanised, equipped and trained and with high morale will have a combat rating that is multiples of that figure. Conversely, a unit with lower than average levels of these will have a lower rating.

The rating is an easy way to see the real combat effectiveness of the unit.

A unit has two ratings - one for normal combat, and one for when it is assaulting from the sea. (Defenders use their normal rating always).

The ratings are given in the order: normal rating/amphibious assault rating.

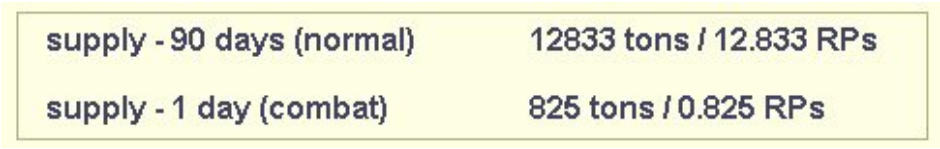
You can see the rating at the top left of the screen, beneath the image for the unit:

Supply requirements

Troop units require supply. The amount of supply is measured normally in tons. IN *SAS WW2* this is then converted to an RP cost.

There are two levels of supply: 'normal' supply, for when the unit is not in combat, and combat supply. A unit uses much more when it is in combat, particularly for mechanised units. The higher the mechanisation, the more supply that is needed in combat, eg for fuel for the fighting and transport vehicles.

The supply needs of the unit - in tons and RPs - is shown at the bottom of the screen:



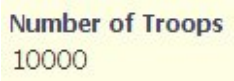
The supply needs are important to keep in mind because any unit that is stationed away from your home port will need this suppy level to be met. (For simplicity's sake, *SAS WW2* assumes that units that units at your home port have their supply needs met by your general eceonomy. The RP cost is not a drain on your resources.)

This supply is drawn each turn from the RP stocks at the ports where the units are. During the game, you will need pay careful attention to the supply situation of your troops!

Adding the Unit

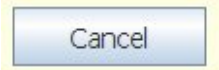
When you are satisfied with the unit's characteristics, click the 'OK' button to add the unit:

This closes the screen and adds the unit to the garrison at the port. You will now see that the number of troops in the unit has been added to the total number shown as at the port:



Cancelling

Otherwise, click the 'Cancel' button:



This just closes the screen.

Adding more units

You can add as many units as you like at the selected port. Just repeat the steps described above to add each unit.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create Campaign - Set port infrastructure

There are four kinds of infrastructure at a port:

- Industrial plant
- Dockyard facilities
- Airfields
- Port defensive works

See port infrastructure for more information.

Each can have a value between zero and 10.0.

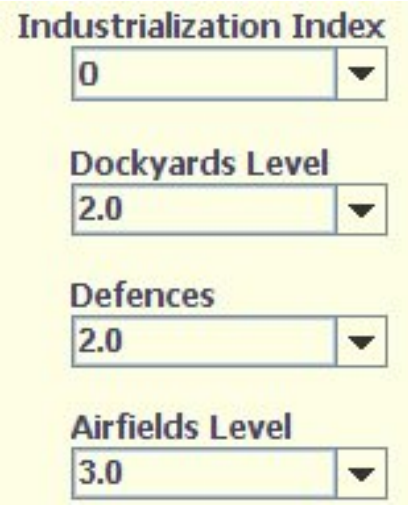
There are default values for these, based on the type of port:

Type of port	Industry level	Docks level	Airfields level	Defence level
Home Port	7	9.0	9.0	9.0
Advanced Port	3	5.0	6.0	5.0
All other ports	0	2.0	3.0	2.0

Changing infrastructure levels

You can change any of these values for the currently selected port.

Just select the value you want from the appropriate drop-down:



Special notes regarding industry levels

The industrialization index is a measure of the level of industrialisation that is able to sevice the port. The industry uses domestic materials, as well as raw materials (available locally or convoyed in), to create RPs that are then stored at the port. A higher industry value means not only more but more complex industry. The higher the level, the more the value that can be extracted from a given amount of domestic and raw materials.

The formula works like this - every month a port produces 10 * its DMI plus ten times its RMI in RPs. In addition, raw materials convoyed in are converted to RPs at the rate of 5 RPs for every 10000 tonnes of cargo times the average RMI value of the cargo times the port's industry factor.

The industry levels at your ports, together with the raw materials and domestic materials indices (see setting the raw materials index and setting the domestic materials index for more information), are used by the computer when it calculates the total value of your economy. The value of every possible convoy route between your ports is calculated, and a weighting is also applied based on how short the route is: shorter routes are worth more because more goods can be carried in a given amount of time.

Changing the industry levels can have a big affect on the value of a country's economy, and hence on the starting odds also.

As industry values are changed you should notice the odds change also (unless the change is small).

Note that although you can improve industry levels at selected ports during a game, this gets increasingly expensive as industry levels increase. It is relatively easy to establish small scale industry, but to create a fully sophisticated industrial base is very expensive (and time consuming) indeed. Giving a country an advantage with its industry at the start of the war represents a significant advantage (all else being equal).

Note also that it is most productive for industry levels to be highest at your home port, because this is where new aircraft and troop unit production as well as most ship constrcution is likely to take place. Surplus RPs can be convoyed in to home port but this takes time and involves risk of course.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Create a campaign - setting special objectives

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Create a Campaign - Setting technology levels

There are twelve key technologies - such as radar, ASW, machinery propulsion, ballistics, armour quality and so on - which have a significant impact on the performance of each country's naval and airforces. See technologies for more information.

The levels of technology that apply at the start of a campaign are factored into the starting odds.

Each country has default starting levels for these technologies as at the time of their entry into WW2.

Technology levels can be improved during the game - with targeted investment (see how to build infrastructure for more information.

But they can also be edited here, so that the starting levels can be any you want - either to more acurately reflect historical conditions as at the date you have chosen for the start of the campaign, or, conversely, to deliberately introduce a 'what if' element in to your campaigns, perhaps for interest or to change the starting odds.

Viewing and editing technology levels

Each technology has a level between zero and 10 (maximum). The *average* of these for each country across all the eleven technologies can be seen on the screen:

Aircraft technology is different to the others in that it can not be edited for the start of the campaign. But the other eleven technologies can be edited.

To view or edit the individual levels for each of the eleven other technologies, click the appropriate 'Edit' button for the country concerned. You will now see this screen:

The current value for each technology is shown, as well as the average of all

of these values.

To change a level, just drag its associated slider up or down. You will see the average value change as you do this.

Changes in technology starting levels can affect starting odds if they are big enough. You will see the new odds when you exit this screen.

Exiting

When you are satisfied with the levels, click the 'OK (Continue)' button. The screen will close and you will be returned to the previous screen, where yo can continue to set more campaign parameters.

Other Campaign Parameters

Click here to return to the help page detailing the next steps.

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Create a Campaign - Setting naval and airforce training levels

The level of naval and air training for a country can be between 1 and 10 (maximum). The default value is based on historical levels applicable when the country entered WW2. Training levels can have a significant effect on the performance of ships and aircraft. Ships and aircraft also gain experience from combat, which helps their effectiveness. But better training to begin with gives them a better chance of surviving!

Training can be increased during a game (see how to build infrastructure).

But the starting levels can also be changed here if you want. As the level for one side or the other is changed you will probably see the starting odds changing also.

The current level for each side is shown on the screen:

To change the level for one side or the other simply drag the associated slider up or down.

Other Campaign Parameters

Click here to return to the help page detailing the next steps.

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Create a Campaign - Setting army training levels

The level of army training for a country can be between 1 and 10 (maximum). The default value is based on historical levels applicable when the country entered WW2. Training levels can have a significant effect on the performance of your army units. Army units also gain experience from combat, which helps their effectiveness. But better training to begin with gives them a better chance of surviving!

Army training can be increased during a game (see how to build troops - controls for adjusting the plan).

But the starting levels can also be changed here if you want. As the level for one side or the other is changed you will probably see the starting odds changing also.

The current level for each side is shown on the screen:

To change the level for one side or the other simply drag the associated slider up or down.

Other Campaign Parameters

Click here to return to the help page detailing the next steps.

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Create a Campaign - Setting intelligence levels

The level of naval intelligence for a country can be between 1 and 10 (maximum). The default value is based on historical levels applicable when the country entered WW2. Intelligence levels significantly affect the quantity and accuracy of the information a player obtains about the enemy - such as the location and composition of his fleets, the characteristics of his ships, and the resources, troops and aircraft he has at his various bases.

Higher intelligence levels not only improve the quantity and accuracy of a player's information (eg through better code breaking) they also have a negative effect on the enemy's intelligence gathering. (Intelligence includes counter-intelligence efforts).

Intelligence can be increased during a game (see how to build infrastructure).

But the starting levels can also be changed here if you want. As the level for one side or the other is changed you will probably see the starting odds changing also.

The current level for each side is shown on the screen:

To change the level for one side or the other simply drag the associated slider up or down.

Other Campaign Parameters

Click here to return to the help page detailing the next steps.

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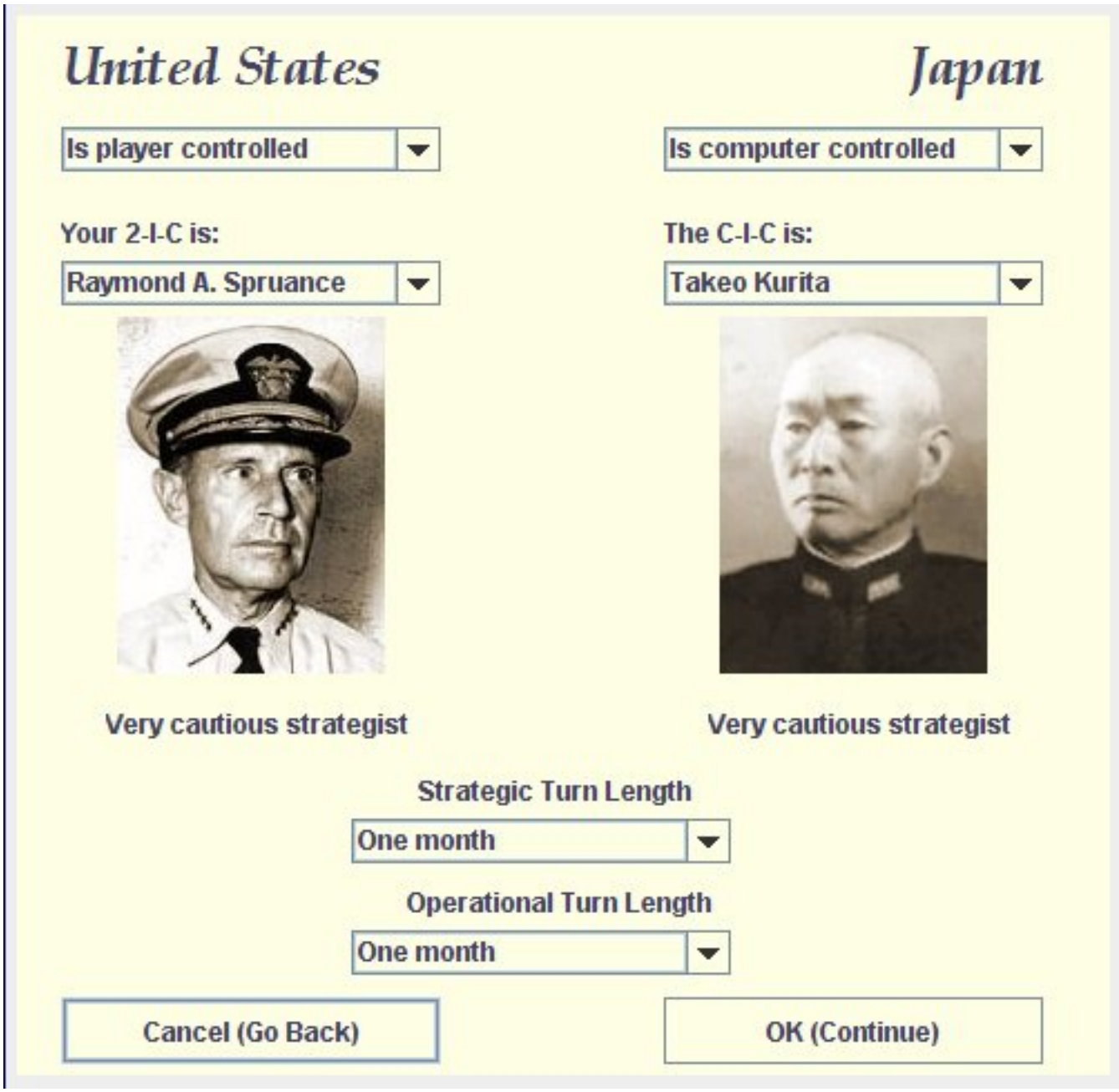
Create a Campaign - Setting parameters - Part 2

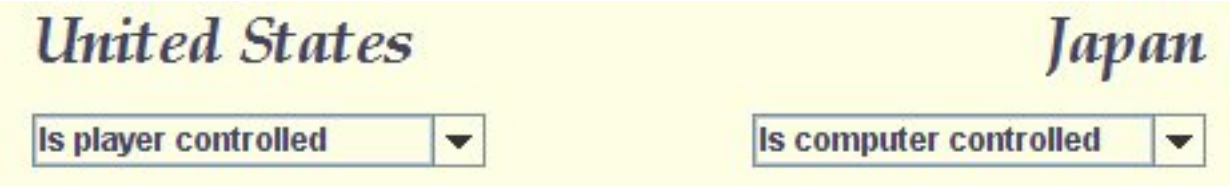
The screen pictured below lets you set additional game parameters, including the opening strategy for each side:



Setting initial player control

By default, the first country you selected for the campaign is player-controlled, and the second is computer-controlled.

You can change this around, or make both sides player-controlled using the drop down lists:



Note that to swap sides, you must first make the computer-controlled side player-controlled, then change the other to computer-controlled. The computer will reject any attempt to make both sides computer-controlled.

It is also important to note that these are initial choices only. You are free during the game to take control of the other side and let the computer control what was your side. (See swapping sides for more information).

When both sides are set as player-controlled, you have the option of using hot seat play, using the same computer, or of playing by email. See playing by email for help on this.

Setting the initial strategy for each side

SAS WW2 is primarily a strategic and high-level operational game. To help you make decisions your 2-I-C will develop plans for more ships, aircraft, troops and port infrastructure, and will plan missions. Thes plans will broadly aim to fulfill one of four general strategies: very cautious, cautious, aggressive or very aggressive. Your computer opponent also plans in this way.

The choice of strategy has a big effect on these plans, as well having more subtle effects, such as on the default fleet orders given to certain fleets. For more information, see the strategies help page.

You can change your strategy at any time during game play. The choices here simply set the strategy that applies from the opening of game play and until they are changed by a player.

When you select the strategy, you actually select the name of a famous Admiral, whose actions in war-time indicated the kind of strategy he preferred.

For example, Isoroku Yamamoto, the mastermind of the Pearl Harbor attack, is rated as 'very aggressive'. Dudley Pound, the British First Sea Lord most famous for his catastrophic decision to save his naval ships and leave convoy PQ17 to a merciless fate, is rated as 'very cautious'.

To make things more interesting, if one side is to be computer-controlled, you can select the strategy as '??'. This means the computer will randomly select

one of the four strategies, so you will have to deduce the enemy's strategy from his actions.

Strategic and operational turn lengths

SAS WW2 allows you to play a very quick or a very slow game according to your taste. You do this by varying the length of the strategic turn and the operational turn.

For more information on what these turn lengths mean, see Overview - timescales.

You can change these during game play. But you can also set the turn lengths here in the campaign creator. These settings apply from the opening of the game until they are changed by a player.

Cancelling out

If you want to return to reset parameters on a previous screen, click the 'Cancel (Go Back)' button'. The current screen closes and you will see the previous screen.

Continuing with campaign creation

When you are satisfied with the choices made on this screen, click the 'OK (Continue)' button. The screen will close and you will be taken to the *final* screen where you complete and save your campaign.

Click here for help on this last screen.

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Create a Campaign - final steps

The final screen for creating a campaign has controls to name the campaign and the players and set the start date:

Naming the player(s)

Each side that is player-controlled must have a name set here to represent

the player.

Just type the name in the text box.

Any side that is computer-controlled will have the name of the Admiral selected on the previous screen as the C-I-C.

You can optionally also change the players' titles. Those shown are the defaults selected by the computer.

Naming the campaign

In the middle text box, enter a name for the campaign. By default, the name shows the opposing countries, such as 'USvJap'.

Make sure you give the campaign a unique name, not shared by any other *SAS WW2* campaigns.

Set the start date

Using the selectors, choose the starting year and month.

The start year can be any between 1939 and 1949. It cannnot be later than 1949 because does not allow play to continue beyond 1950. A forced end to the game occurs when the date reaches 1950.

Cancelling out

To cancel out from this screen and return to the previous screen, click the

'Cancel (Go Back)' button.

Finishing and saving

To indicate that you have finished creating the campaign and wish to save it, click the 'OK (Create Campaign)' button.

If you have not entered names for the player(s) or for the campaign itself, or the campaign name is not unique, you will get an error message.

Oherwise, the game will be saved.

It may take a few seconds to save the campaign. When the save is finished you will see a confirmation screen:

Click the 'OK' button to exit the campaign creator and *SAS WW2*.

When you next re-start *SAS WW2* and click 'Select Campaign' on the start

screen, you will then see the campaign you have just created listed as available for selection.

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Player Options

At any time during game play, a player can change certain game options.

Accessing the Game Options screen

From the Admiral's Office, click on the 'Options' drawer of the filing cabinet:

You will now see the dialog for changing game options:

Timescales

Strategic Time

Strategic time is relevant to ship construction, technology R&D and infrastructure development. At the strategic level, a turn can be set to between one week and twelve months. The value is set first in the Campaign Creator. But it can be changed here at any time during game play.

To change the length of the strategic turn, just select a different value from the drop down list.

For more information about the concept of the strategic turn, see

Overview - timescales.

Note: If you are playing against another human player rather than the computer, your choice may not be implemented if it is different to what your opponent has selected. To resolve differences, the computer selects the *lowest* value chosen by you and your opponent. You will get a warning message about this when you run the turn.

Operational Time

Operational time is the amount of time in a turn for fleet movements, sightings, battles and so on. Operational time can be set to one week, two weeks or one month. The value is set first in the Campaign Creator. But it can be changed here at any time during game play.

Most players will want the operational tiurn to be completely 'in synch' with the strategic turn - say both being 1 week, 2 weeks or a month. But they can be different. (Though the operational turn can never be longer than the strategic turn).

To change the length of the operational turn, just select a different value from the drop down list.

For more information about the concept of the operational turn and in particular for an explanation of how differences between the strategic turn and operational turn length are handled, see Overview - timescales.

Note: If you are playing against another human player rather than the computer, your choice may not be implemented if it is different to what your opponent has selected. To resolve differences, the computer selects the

lowest value chosen by you and your opponent. You will get a warning message about this when you run the turn.

Turn calculation and message replay options

For ease of use, this screen has a button for linking to the same screen you can see during turn calculation and also during replay.

See options when running and replaying a turn for more information.

Sound

This screen has a button for toggling background music on or off.

You may want to toggle the music off at least during turn calculation if you have a slow computer. The turn calculation can be up to 20% quicker with the sound disabled.

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Troubleshooting

Follow these links to help troubleshoot problems with running *SAS WW2*:

- Memory problems
- Performance problems

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Fixing computer memory issues

SAS WW2 requires a minimum of 512 MB of dedicated memory (i.e. memory not used by your computer's operating system or any other applications running at the same time). A greater amount of memory is likely to improve performance on most computers.

SAS WW2 tries to acquire a minimum of 512 MB and up to 1024 MB of memory when you run it.

If you have more available - such as a GB or more - you can easily set up *SAS WW2* to take advantage of this greater amount of memory.

An easy way to gauge if you have enough memory is to look closely at the progress bar at the bottom of the screen during turn calculation:

The figure on the right shows the currently available free memory. If your free memory at any time falls below about 150MB, performance problems are much more likely. If it falls much below this, ***SAS WW2*** can stop working or experience intermittent issues.

If your computer has more than a MB of memort to spare and you want to optimise performance further, you can tell ***SAS WW2*** to use as much as you want.

You can do this by modifying the properties of the desktop icon for SAS WW2 (assuming you launch the application that way).

To do this, right-click on the ***SAS WW2*** icon on your desktop. It looks like this:

This brings up the windows properties dialog for the shortcut.

The "Target" command line string includes "-Xms512m" and "-Xmx1024m". The first means that a minimum of 512 megabytes of memory is required for the program to run. The second means that the program will try to get up to 1024 megabytes if it is available.

These values are on the low side in terms of guaranteeing optimum performance on your computer, but they have been set at these levels so that most computers can run ***SAS WW2***.

If you have more memory, it is highly recommended that you change the target string to higher amounts. For example, you could replace the default values with "-Xms1024m" and "-Xmx2048m", if your computer had up to 2GB or more of memory.

Note that the "Xmx" value must be equal to or greater than the "Xms" value.

The new values you enter should also be multiples of 64.

Don't forget to retain the string exactly as it is with only the two numbers changed.

Once you have made the change, click the "Apply" button, and close the dialog. Then close ***SAS WW2*** if it is running, and re-start it.

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Fixing computer performance issues

SAS WW2 has recommended hardware specifications to prevent performance issues arising.

If for some reason you are experiencing slower than expected performance, first consult the fixing computer memory issues.

You can also improve the speed of the calculations by up to 20%, especially on single processor computers, by disabling music. See player options for help on this.

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Glossary

Fleet

A collection of one or more ships belonging to the same player. If it is not a Reserve Fleet is able to move on the Map. (Ships must be organised in fleets before they can be moved.) Fleets cruise at one of 5 standard cruising speeds – 6, 8, 12, 16 or 24 knots, but never faster than the slowest ship. In Battle, all ships sail at their best possible speed.

Each Fleet must be given rules of engagement which determine the general behaviour in battle of all ships in the fleet.

Fleet names

Conventions the computer uses when it creates fleets are to use the prefix:

- "EF" for emergency fleets (ie those created by the computer at run time)
- "SF" for all submarine fleets
- "TF" (for "task force") for all fleets of surface ships other than merchant convoys
- "CF" for all merchant convoys
- "RF" for reserve fleets at minor ports, or "Home Fleet Reserve" and "Forward Fleet Reserve" for fleets based at your "home" port (which is where you major industry and shipbuilding facilities are located) or advanced base - which is, like Pearl Harbour was to the US - their major operational base.

The reserve fleets are automatically created when a campaign is set up.

The active fleets are created by you manually or else by your 2IC when he forms missions. For example, if he were to create missions that require three naval task forces, two submarine flotillas and a convoy, you would see in your list of fleets the names "TF1", "TF2" "TF3", "SF1", "SF2" and "CF1".

The emergency fleets are created by the computer at run time.

The names of the active and reserve fleets can be changed if you prefer more descriptive names. (See renaming a fleet)

Resource Points (RPs)

Resource points are measure of your economic ability to wage war. Everything of value to the war effort in *SAS WW2* has to be paid for in RPs.

One RP 'buys' you:

- 100 tonnes of new ship
- 500 tonnes of oil fuel, for refuelling ships.
- 1000 tonnes of supplies for troops.

RPs are also used to build aircraft, and to build port infrastucture. The RP cost depends on the type of aircraft or the kind of infrastructure. See how to build infrastructure and how to build aircraft for more information.

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Credits

Tony Glazebrook: concept, design, AI, programming

NWS Project Designers: Christopher Dean and William Miller

Production and extended concepts: Christopher Dean

Projects assistance and aerial combat mechanics: William Miller

Historical research: William Miller, Kyle Holgate, Ed Rotondaro

Beta testing: the NWS Beta Team, especially Kurt Schofield, Rober Schoneman, Scott Chisholm, Kristian Fischer

Theme music: Jeff Edwards

Map base graphics: Richard Beaudin

DVD Cover Art: Tony Glazebrook, Christopher Dean, William Miller

Help files and user guide: Tony Glazebrook

Thanks are also die to the *NogginSoft.com* team: (Srinivas Achanta, Garry Glazebrook, Simon Ng, Timothy White) for pre-beta testing and general encouragement. Deborah Yffer and Clare Glazebrook: special project support throughout.

Dedication

This game is dedicated to the memory of Robert James Glazebrook (1925-2006), who served with the RAAF in World War 2 and was an expert aircraft modeller. His model of the Boston was commissioned by the RAAF, and his Airacobra now is on display at the Australian War Memorial.

Acknowledgements

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Scenario "Intro"

This is an introductory, hypothetical scenario set in the Pacific - the US vs Japan. It is similar to the full-scale 'Pacific 1' scenario but with much reduced forces and a simplified number of bases to make the scale of play easier for a beginner. Both sides also have 'aggressive' strategy settings in order that there will be some action for you to see in the very first turn.

It is designed as a support tool, to be used with the how to play a turn in 5 minutes help page. But you can continue to play the game for as long as you want. Its small scale makes it useful as a practise campaign.

As with all *SAS WW2* scenarios, you can play for either side against the computer, or another player; and you can swap sides at any time during game play. For the US, you play as Alfred Mahan II, a descendant of the greatest US naval strategist of all time; for the Japanese, you carry the name of your grandfather, the glorious victor at Tsushima who showed that Japan had truly arrived as a naval power of the first rank.

In the game, the Japanese are at the historical limit of their expansion, but are still pursuing an aggressive strategy; so do not be surprised to see a computerised Japanese opponent push for more!

The starting resources are intentionally small - enough to build a navy on each side of a few hundred thousand tonnes - just a quarter to a fifth the historical size.

The odds are rated as "extremely easy" for the US and conversely "extremely hard" for the Japanese, mainly due to America's far superior industrial production, the influence of which will progressively be felt as new ships enter the game.

But the US player cannot exactly sit back and do nothing - the Japanese have a very lucrative trade with the Dutch East Indies and Malaya, and if left unimpeded, will also be able to develop resources at a strong rate.

The map size is huge - over 28 million square nautical miles, stretching from the US West Coast to Singapore, and from Brisbane in the south to the Aleutians in the far north.

Both sides start with historical levels of technology. With proper resourcing and focussed

priorities by the US, expect to see US developments in radar especially; the Japanese will do well to increase their ASW capabilities. The US should also seek to improve the performance of their torpedoes at the earliest opportunity. The US has better construction techniques and is able to build ships more quickly and cheaply. This is also an area that the Japanese may wish to invest in.

Troops are included in this scenario. The US is set to develop strong amphibious capabilities and forces but it will be a while before combined operations of any strength can be mounted against Japanese positions that are well defended by strong disciplined troops and, for the most part, very well-prepared defences.

Both sides have sizeable air forces; and carrier and land-based air strikes will feature prominently in the many battles to come.

GENERAL SETTINGS

Countries	US, Japan
Start Date	June 1942
Map	Pacific. 69 * 45 hexes; hex scale = 96nm.
Land-based air?	Yes
Carrier-based air?	Yes
Design your own ships?	Yes
Troops?	Yes

COUNTRY-SPECIFIC SETTINGS

	US	JAPAN
Ports	*San Francisco (Home Port)	*Tokyo Bay (Home Port)
	*Pearl Harbour	*Truk
	Dutch Harbor	Rabaul
	Wake Is.	Manila
	Palmyra	Guam
	Noumea	Biak
	*Brisbane	Guadalcanal
	Townsville	Surabaya
	Darwin	Singapore
	Fremantle	
	Port Moresby	

(* = has ship construction and repair facilities)

Good Luck, Admiral!

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Scenario "Atlantic 1"

This is a full-scale historically-based campaign between Britain and Germany in the North and South Atlantic, commencing in September 1940.

As with all *SAS WW2* scenarios, you can play for either side against the computer, or another player; and you can swap sides at any time during game play. For the British, you play as Harry Nelson, a descendant of the greatest British Admiral of all; for the Germans, you are Max von Tirpitz, with the blood of the Tirpitz and the von Spee families flowing in your veins.

The campaign starts with the moves for both sides already done, and unless players modify either or both sides before the turn is run, there will be a LOT of action in the first turn!

Note: By default, *SAS WW2* campaigns have 'emergency tactical responses' enabled for players. If you are inexperienced in *SAS WW2*, or just want a quicker game, you will need to disable some or all of the emergency tactical response options. See tactical responses for help on this topic.

The starting naval forces are historically accurate but with one important exception - for added interest, the Germans begin with around 350,000 tonnes of capital ship and cruiser construction already advanced on the slips - elements of Grossadmiral Raeder's famous 'Z' Plan. It will take between a few months and more than 2 years to complete these ships - which include two of the very large 'H' class battleships and some interesting new battlecruisers; they will give added punch to a navy whose main weapon remains the U-Boat. Two carriers - the *Graf Zepellin* and the *Peter Strasser* are also on the slips.

The British also have a very large construction programme in the pipeline - which reflects the programme they actually had as at September 1940. But both sides will be able to freely add to the construction schedules already laid down, as soon as resources permit. In just a few short years, there is potential for each side to have a very large navy indeed!

Remember though that there is a difference between absolute and effective numbers. For various reasons, many of your ships will be unfit for duty at any one time - mainly due to being low on fuel or damaged. Play-testing confirms the truth that only a fraction of the

available U Boat tonnage at any time is actually able to be employed. (For example, in the last quarter of 1942, the Germans had nearly 400 U Boats, but only around a quarter were operational, and not all of these could be employed in the Atlantic). The German player would do well to keep an eye on his 2-I-C's deployments; there could be room for some optimisations.

The map size is huge - over 33 million square nautical miles, stretching from the US East Coast to Archangelsk in Russia's far north west, and as far south as Montevideo in Uruguay.

The starting odds, especially given the boost in surface forces for the Germans, are rated as 'extremely difficult' for Britain and, conversely, 'almost unloseable' for Germany, which means that the German player has to work much harder for the same performance rating. Britain has the stronger initial position, yet strategically is much more vulnerable to attack. Germany is able to operate from the very well-placed and newly-acquired French and Norwegian ports. Most importantly, it has a very strong industrial base, shielded by large airforces. It will be quite some time before the British can muster sufficient carrier-based airpower to threaten Germany's homeland. (In this campaign, the effects of the massive land-based bombing effort against Germany have been abstracted out, to allow you to concentrate on the war at sea).

The game allows the Germans to more aggressively deploy surface raiders in the North and South Atlantic - despite what happened to the *Graf Spee*. The campaign settings allow the Germans to build stronger surface forces, and the oppportunities for success, especially against the Russian-bound convoys, are very real. Yet the campaign is *mainly* about the classic U-Boat vs convoy battles in the North and South Atlantic. These convoys are needed for three purposes:

- Materials for processing as well as finished goods must be convoyed from the US East Coast ports to Londonderry and especially Liverpool, to maintain British industry. Gibraltar is also a valuable pick-up point for raw materials, which are assumed to heve been shipped through the Mediterranean from India; these will be an important supplement to the war effort.
- Approximately 30000 tonnes of supplies must be transported to Gibraltar every month to support the war effort in the Mediterranean theatre, which is not otherwise represented in this campaign.
- From July 1941, Britain is also required to maintain similar monthly total supply levels to the Russians via Murmansk and especially Archangelsk.

Failure to maintain convoys to Londonderry and Liverpool will choke off the British war effort. Failure to maintain supplies to Gibraltar or the Russian ports will deduct victory points from the British; and in any case Gibraltar is a strategically placed naval base that needs supplies to continue operating effectively.

Britain starts with the much larger navy in the theatre - over 2.6 million tonnes compared to around 900,000 tonnes for Germany. But the campaign settings allow for a massive German industrial build-up that can see them catch up progressively. Their naval construction strategy favours the U-Boat, as it did historically once Grossadmiral Raeder assumed command of the Kriegsmarine. But the campaign also allows for Germany to build up their surface forces more aggressively than they did, resurrecting parts of the 'Z' plan: it is assumed for this scenario that Hitler has allowed the diversion of serious resources to the navy. But it will be quite some time before the German player will see new large battleships enter the game.

Note that this campaign assumes an increased shipyard infrastructure for the Germans - part of the assumed better resourcing of the Kriegsmarine. The German player will find he can build ships, especially U-Boats, a little more quickly than was the historical rate. In particular, the explosion in U Boat strength is set to take off in earnest around February 1942, as a large amount of new construction now on the slips becomes ready for service.

Both sides start with historical levels of technology. With proper resourcing and focussed priorities, it is likely that both sides will achieve a technological arms race just as they did in WW2. German advances in submarine propulsion and wolf pack tactics can be countered by better ASW and convoy tactics; but it will be up to the player to get the most from the possibilities of technology.

Troops are NOT included in this scenario. The focus is quite deliberately on the war at sea.

Both sides have sizeable air forces; and as British carriers come on-stream, their power will be increasingly felt. But the poor weather that affects northern latitudes including the North Sea will restrict the role of airpower in this game to a degree. The surface ship and submarine enthusiast will find plenty of opportunity to emply the gun and torpedo against the enemy!

GENERAL SETTINGS

Countries	Britain, Germany
Start Date	September 1940
Map	North *and* South Atlantic. 61 * 59 hexes; hex scale = 96nm.
Land-based air?	Yes
Carrier-based air?	Yes
Design your own ships?	Yes
Troops?	No

COUNTRY-SPECIFIC SETTINGS

	UK	GERMANY
Ports	*Scapa Flow (Home Port) *Liverpool Londonderry Gibraltar *New York *Boston Halifax Norfolk Bermuda Pernambuco Montevideo Freetown Capetown Reykjavik Murmansk Archangelsk	*Kiel (Home Port) *Hamburg *Wilhelmshaven *Danzig *Lubeck Narvik Trondheim Bergen Stavanger Brest St Nazaire La Rochelle Bordeaux

(* = has ship construction and repair facilities)

Starting Naval Forces	:	
Battleships	8 ready 1 repairing 6 building/commissioning/yet to be transferred to the Pacific	1 ready 10 building 3 repairing (Numbers include 8 ships from the 'Z' Plan on the slips, plus 2 'pocket battleships')
Aircraft Carriers	2 ready 5 building/converting	2 building
Cruisers	22 ready 24 building 4 repairing	3 ready 3 building/commissioning 1 repairing (Numbers include 4 'M' class cruisers from the 'Z' Plan)

Destroyers/Escorts	135 ready 145 building/re-fitting 12 repairing (Numbers include 45 Candian ships)	30 ready 33 building/commissioning 1 repairing
Submarines	16 ready 14 building 1 repairing	41 ready 106 building (Numbers include 10 Italian boats that were progressively introduced to the Atlantic from September 1940.

Notes:

- Construction times for ship building are accurate except where they are longer than the game engine allows for ships of the type. In these cases, the maximum permitted cosntruction time has been used instead.
- Ships still commissioning, or not transferred to the Atlantic, are shown as 'building' until they were ready.
- Type VIIB and VIIC U-Boats are both represented in the game as 'VIIC' as the design differences were not significant
- The Italian submarines represented in the game are all depicted as of the *Marconi* class, although there were actually several classes of Italian submarine involved. Their design differences were relatively minor however.
- The *Dorsetshire* and *London* class heavy cruisers are depicted as of the *Kent* class, as the design differences were not major.
- The re-modelled 'C' class British cruisers with 4 inch AA guns cannot be represented in the game due to constraints within the ship design programme.
- The small number of *M Class* British destroyers are referred to as *L Class* as the designs were essentially the same.

Good Luck, Admiral!

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Scenario "Med 1"

This is a full-scale historically-based campaign between Britain and Italy in the Mediterranean, commencing in July 1941.

As with all *SAS WW2* scenarios, you can play for either side against the computer, or another player; and you can swap sides at any time during game play. For the British, you play as Richard Howe, a descendant of one of Britain's most successful Admirals; for the Italians, you carry the name of your distant famous relative Francesco Carraciola, successful Admiral *and* Prince!

The odds are rated as "about even" for both sides.

The campaign starts with the moves for both sides already done, and unless players modify the moves for either or both sides before the turn is run, there will be a LOT of action in the first turn!

Note: By default, *SAS WW2* campaigns have 'emergency tactical responses' enabled for players. If you are inexperienced in *SAS WW2*, or just want a quicker game, you will need to disable some or all of the emergency tactical response options. See tactical responses for help on this topic.

Axis forces have captured Greece and Crete. Rommel's Afrika Korps has recently chased the British Western Desert Force all the way back to the Egyptian border. Only the small town of Tobruk holds out, garrisoned by tough Australian troops. All of Egypt - including the major port of Alexandria - now is like a ripe plum to be picked in the next Axis offensive. Malta lies battered under tons of Axis bombs.

The stage is set for a classic contest: the allies must strive to maintain the lifeline of convoys between Gibraltar, Malta and Alexandria; the Axis is determined to support and strengthen their forces in Libya, ready for the next offensive.

On paper, the Italians have the more powerful navy, a much larger airforce, and a strategically superior position. But they are prone to cautious moves. The better trained, more aggressive British navy is ready to accept the fight.

The starting naval forces, including ships under construction, are historically accurate except for the inclusion of three aircraft carriers for the Italians: the *Aquila* and an escort carrier, the *Sparviero*, have been completed ahead of time; while a sister to the Aquila, the *Guiseppe Miraglia*, is still under construction. Yet these carriers will do little to improve the fighting power of the Italian fleet - the Italian doctrine remains defensive, and the carriers are equipped with aircraft suited mainly to fighter defence.

Each side has a navy in the theatre of just under 1 million tonnes, and a merchant navy of over 200,000 tonnes. The British have a slight advantage in capital ships; the Italians, a substantial superiority in numbers of destroyers and especially submarines.

Players can of course add to the specified construction programs as resources allow, so this campaign can result in large navies by war's end.

The Italians start with nearly 1500 aircraft deployed, including over 200 German combat aircraft of Fliegerkorps X and Fliegerfuhrer Afrika, based in Sicily and Libya. The Sicilan-based aircraft in particular are especially suited to anti-shipping attacks and give the Italians a powerful punch. But they will not be replaced as they are lost - Hitler has the Russian Campaign on his mind and is diverting all important resources to that theatre.

Against that, the British can muster less than half that number; but they are well trained and the carrier-based aircraft are mobile and will remain a serious thorn in the Italian side.

The map covers over 2.6 million square nautical miles - which at around one tenth the size of the Pacific and Atlantic maps represents a relatively small-scale theatre.

Both sides start with historical levels of technology.

Troops are included in this scenario. For both sides, the supply and transport of troops to North Africa is the major strategic driver. Good play can see either side bring the land campaign in North Africa to a favourable conclusion. The loss of Alexandria would be a fatal blow to the British. The loss of Libya for the Italians less so. Both sides are re-building their ground forces after the failure of allied Operation Battleaxe to relieve Tobruk, which still holds out, encircled by strong Axis forces.

GENERAL SETTINGS

Countries	UK, Italy
Start Date	July 1941

Map	Mediterranean. 43 * 27 hexes; hex scale = 48nm.
Land-based air?	Yes
Carrier-based air?	Yes
Design your own ships?	Yes
Troops?	Yes

COUNTRY-SPECIFIC SETTINGS

	UK	ITALY
Ports	*Gibraltar (Home Port) *Alexandria Malta Tobruk	*La Spezia (Home Port) *Venice *Taranto Naples Palermo Cagliari Messina Piraeus Rhodes Iraklion Tripoli Benghazi Sallum

(* = has ship construction and repair facilities)

Starting Naval Forces	:	
Battleships	6 ready 1 yet to be deployed to the Mediterranean	4 ready 2 repairing 2 building
Aircraft Carriers	3 ready 1 yet to be deployed	2 ready 1 building
Cruisers	13 ready 2 yet to be deployed	14 ready
Destroyers/Escorts	48 ready 2 yet to be deployed	92 ready
Submarines	9 ready	36 ready.

Notes:

- Construction times for ship building are accurate except where they are longer than the game engine allows for ships of the type. In these cases, the maximum permitted construction time has been used instead.

- Ships still commissioning, or not transferred to the Mediterranean, are shown as 'building' until they were ready.
- Only the '600' class Italian submarines are represented at the start - other submarines were of older, less capable design, or were larger and employed in the Atlantic.
- The various *Pilo* class Italian torpedo boats are represented in the game as of the *Orsa* class.

Good Luck, Admiral!

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Scenario "Pacific 1"

This is a full-scale historically-based campaign between the United States and Japan in the Pacific, commencing in June 1942.

As with all *SAS WW2* scenarios, you can play for either side against the computer, or another player; and you can swap sides at any time during game play. For the US, you play as Alfred Mahan II, a descendant of the greatest US naval strategist of all time; for the Japanese, you carry the name of your grand father, the glorious victor at Tsushima who showed that Japan had truly arrived as a naval power of the first rank.

In the game, the Japanese are at the historical limit of their expansion, but are still pursuing a very aggressive strategy under the influence of Isoroku Yamamoto; so do not be surprised to see a computerised Japanese opponent push for more! In fact, the campaign starts with the moves for both sides already done, and unless players modify the moves for either or both sides before the turn is run, there will be a LOT of action in the first turn, and some very aggressive moves by the Japanese.

Note: By default, *SAS WW2* campaigns have 'emergency tactical responses' enabled for players. If you are inexperienced in *SAS WW2*, or just want a quicker game, you will need to disable some or all of the emergency tactical response options. See tactical responses for help on this topic.

The starting naval forces, including ships then under construction, are historically accurate. Each side has a large navy of over 1.5 million tonnes; but the Japanese have more of theirs available at the start. (The US has a greater proportion still building or commissioning). The US forces include a small Australian and Dutch contingent.

Players can of course add to the specified construction programs as resources allow, so this campaign can result in very large navies indeed by war's end.

The odds are rated as "quite easy" for the US and conversely "quite hard" for the Japanese. The US starts at somewhat of a disadvantage, but over time, as its enormous production capacity kicks in, the tide will turn unless the Japanese can continue to inflict disproportionate losses and/or, somehow maintain their rich convoys to the Dutch East Indies and Malaya. This will be difficult, as the Japanese start with low levels of ASW

capability and will be vulnerable to roving attacks from a large and effective US submarine force unless they quickly develop better ASW capability.

The Japanese will also struggle more than the US to replenish their losses of aircraft. As the Japanese player, you can help overcome this by progressively funneling more resources into aircraft production.

The map size is huge - over 28 million square nautical miles, stretching from the US West Coast to Singapore, and from Brisbane in the south to the Aleutians in the far north.

Both sides start with historical levels of technology. With proper resourcing and focussed priorities by the US, expect to see US developments in radar especially; the Japanese will do well to increase their ASW capabilities. The US should also seek to improve the performance of their torpedoes at the earliest opportunity. The US has better construction techniques and is able to build ships more quickly and cheaply. This is also an area that the Japanese may wish to invest in.

Troops are included in this scenario. The US is set to develop strong amphibious capabilities and forces but it will be a while before combined operations of any strength can be mounted against Japanese positions that are well defended by strong disciplined troops and, for the most part, very well-prepared defences.

Both sides have very sizeable air forces; and carrier and land-based air strikes will feature very prominently indeed in the many battles to come.

GENERAL SETTINGS

Countries	US, Japan
Start Date	June 1942
Map	Pacific. 69 * 45 hexes; hex scale = 96nm.
Land-based air?	Yes
Carrier-based air?	Yes
Design your own ships?	Yes
Troops?	Yes

COUNTRY-SPECIFIC SETTINGS

	US	JAPAN

Ports	*San Francisco (Home Port) *Pearl Harbour Dutch Harbor Johnston Is. Wake Is. Palmyra Samoa Kanton Bora Bora Fiji Noumea Efate *Brisbane Townsville Darwin Fremantle Port Moresby	*Tokyo Bay (Home Port) *Truk Rabaul Okinawa Iwo Jima Manila Brunei Guam Palaus Manus Is Lae Biak Hollandia Guadalcanal Tarawa Surabaya Jakarta Singapore

(* = has ship construction and repair facilities)

Starting Naval Forces	:	
Battleships	8 ready 1 repairing 6 building/ commissioning/ yet to be deployed to the Pacific	12 ready
Aircraft Carriers	5 ready 1 repairing 2 building/converting	8 ready 1 repairing 10 building
Cruisers	31 ready 7 building	30 ready 1 building/commissioning
Destroyers/Escorts	94 ready 20 building	111 ready 3 building
Submarines	60 ready 6 building	17 ready.

Notes:

- Construction times for ship building are accurate except where they are longer than the game engine allows for ships of the type. In these cases, the maximum permitted construction time has been used instead.
- Ships still commissioning, or not transferred to the Pacific, are shown as 'building' until they were ready.

- The two US *Portland* class heavy cruisers - Indianapolis and Portland - are categorised here as *New Orleans* class.
- US *Bristol* class destroyers are classed as *Fletcher*s.
- US *Clemson* class destroyers are categorised as *Wickes* class vessels.
- The two *Narwhal* class US submarines are not represented in the game: their design does not fit the constraints of the game engine's ship designer; and they were employed in secondary roles anyway, not being very successful ships. The *Argonaut* - a large, specialised mine-layer and then transport vessel - also does not fit within the design constraints.
- The US *Cachalot* and *Dolphin* class submarines are not represented - they were outdated by the start of the war and used mainly for training.
- The obsolete Japanese *Tenryu*, *Yubari* and *Katori* class light cruisers are not represented in the game.
- The representation of the many variants of the *KD* class of Japanese submarines has been simplified - all are categorised here as of the 'Kaidai' class, with a standard specification.

Good Luck, Admiral!

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Main Menu

The *Main Menu* on the blackboard at the left of your Admiral's Office gives you access to all the main functions you will need to play a campaign turn in *SAS*.

Briefings

You can bring up a briefing report at any time by clicking on "Briefings".

The report is a hyperlinked overview of the situation you face at the start of the turn, and will be useful background information for making decisions.

Build

Click on "Build" when you are ready to start building key resources - ships, troops, infrastructure and aircraft (if aircraft are enabled for the current campaign). The ***Build Menu*** will appear, giving you access to each of these build functions.

Deploy

Click on "Deploy" when you are ready to start deploying these resources. You obviously need to build them first!. The ***Deploy Menu*** will appear, giving you access to each of these deploy functions.

Go!

Click on "GO!" when (and only when!) you have finished all your build and deploy tasks and are ready to finish the turn and run the turn calculation.

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Map View

The large scale theatre map - which occupies a full screen - gives you quick access to important information, as well as to controls for manually setting up fleets and missions.

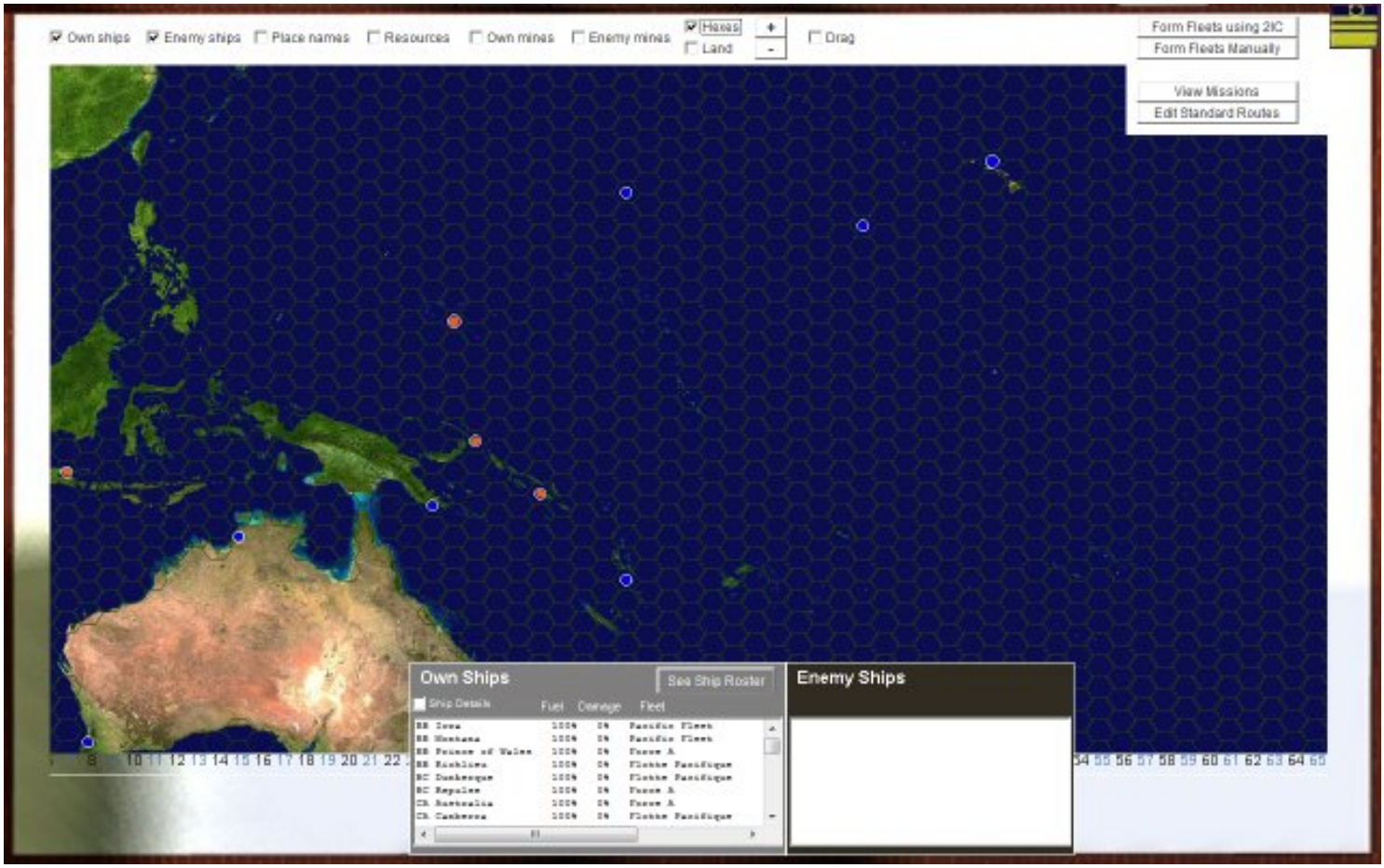
The controls for setting up fleets and missions are all on the right hand side of the screen. Their use is fully explained in how to edit or create missions.

Here, use of the map view for informational purposes is explained.

Accessing the Theatre Map

You access the theatre map by clicking on the wall map in the Admiral's Office.

The picture below is of the theatre map for the Pacific, and is taken from a sample scenario:



The actual map you see will of course be a map of the geographic theatre for the campaign you are playing, and the details will reflect the current state of game play.

Overview

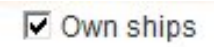
The theatre map is the place where you can quickly review the physical location and status of key resources:

- your fleets and ships
- known enemy fleets and ships
- the troops, aircraft and resource points at your ports
- ditto for the enemy
- the location (and number) of your mines or the enemy's (as estimated from intelligence sources).

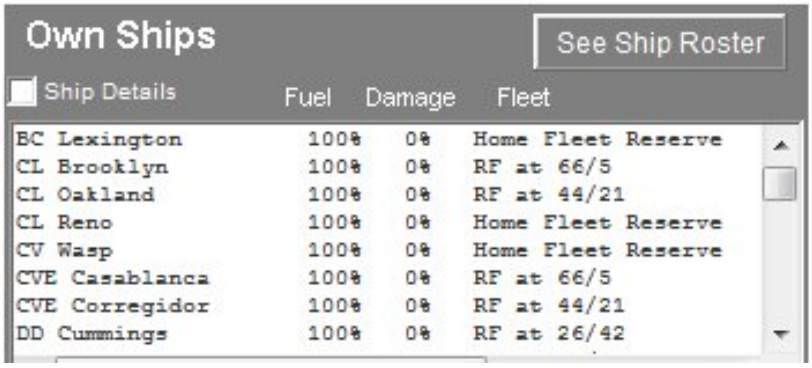
There are some other miscellaneous features also, which will be explained.

Location and status of your ships

At the top of the screen is a toggle for enabling the 'Own Ships' list:



When this is ticked, you will see a list of all your ships at the bottom of the screen:



The list shows the current fuel and damage status of each ship and the fleet it is attached to. If you click on any ship, a line pointing to its current location will appear on the map:

Clicking on the same ship again will de-select the ship, and the line will disappear.

The list is scrollable. Note that the ships are grouped by category - BBs, then CAs, then CLs, then CVs and CVLs, and so on. This is an alphabetical sorting by type but it has the effect that the larger ships appear first, so you can find them more easily.

Detailed ship status

To see more detailed ship status information, tick the tick box on the upper left corner of the list:

When this is ticked, details of the currently selected ship are shown in a panel:

The information presented is self-explanatory, but the coloured bar at the top right labelled 'Efficiency:' needs some explanation. The bar shows the current efficiency of the ship's crew, on a 0 (left-most) to 10 (right-most) scale. The blue portion of the bar shows the efficiency that is attributable to training. If a ship has been in battle, it will have acquired a degree of battle experience as well, which will further increase its efficiency. The amount of battle-experience is shown in red. For example, a ship may have a total efficiency of 7 out of 10 - 5 atributable to training and the remaining two points to battle experience.

The training level of the crew on any ship is a function of the overall level of your fleet training, but with some random variance. See infrastructure - an overview for more information about training and how you can improve it by expenditure of resource points.

If the ship is damaged, a summary of the damage will be shown.

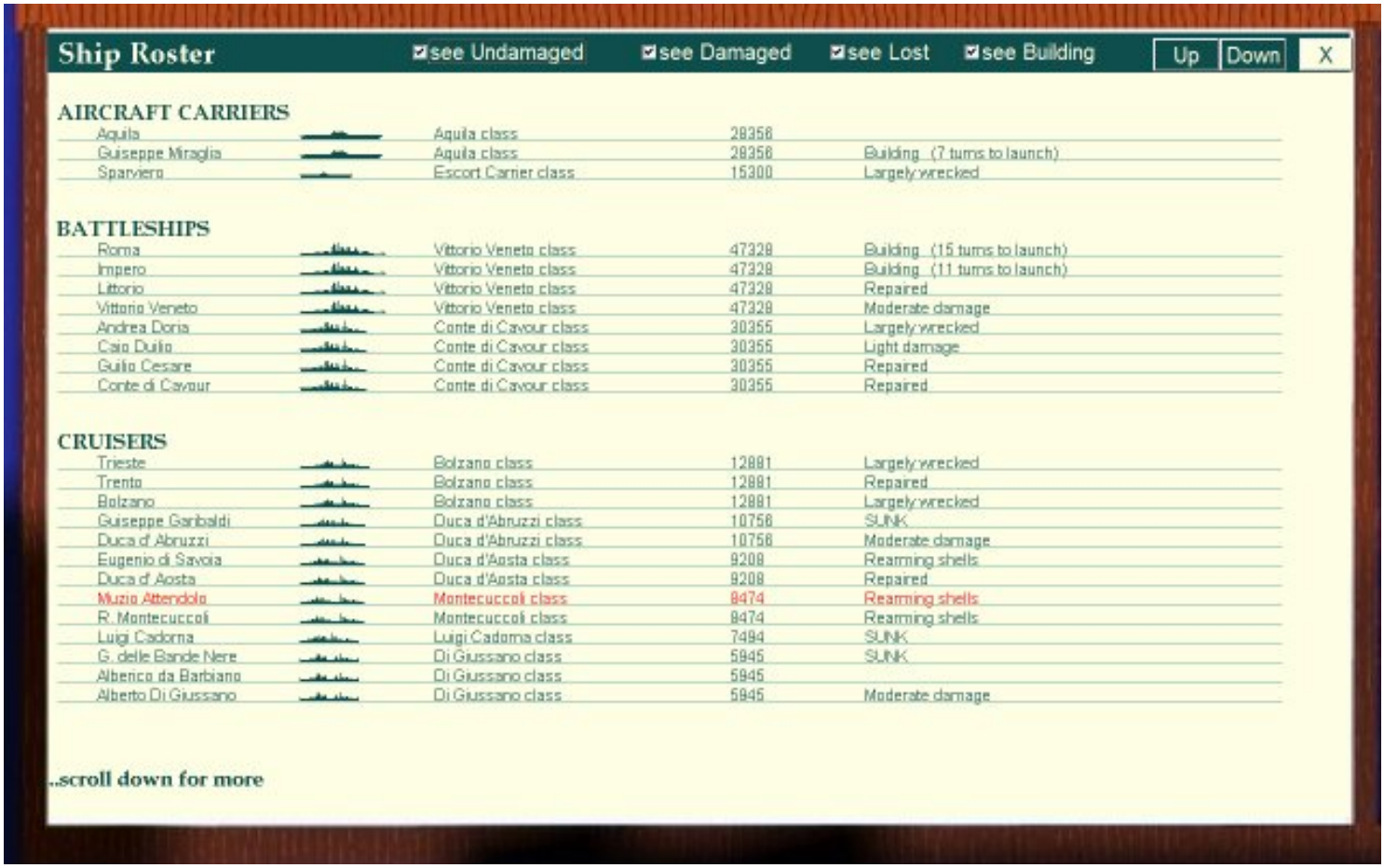
You can drag the panel around if you want to, eg if it is obscuring parts of the map you want to see.

Un-ticking the 'Ship details' tick box closes the panel.

Complete ship roster

If you click on the 'See Ship Roster' button on the ship list:

you will see the complete list of all of your ships in more detail:



Ship Roster | see Undamaged | see Damaged | see Lost | see Building | Up | Down | X

AIRCRAFT CARRIERS

Aquila	Aquila class	28356	
Guiseppe Miraglia	Aquila class	28356	Building (7 turns to launch)
Sparviero	Escort Carrier class	15300	Largely wrecked

BATTLESHIPS

Roma	Vittorio Veneto class	47328	Building (15 turns to launch)
Impero	Vittorio Veneto class	47328	Building (11 turns to launch)
Littorio	Vittorio Veneto class	47328	Repaired
Vittorio Veneto	Vittorio Veneto class	47328	Moderate damage
Andrea Doria	Conte di Cavour class	30355	Largely wrecked
Caio Duilio	Conte di Cavour class	30355	Light damage
Guilio Cesare	Conte di Cavour class	30355	Repaired
Conte di Cavour	Conte di Cavour class	30355	Repaired

CRUISERS

Trieste	Bolzano class	12881	Largely wrecked
Trento	Bolzano class	12881	Repaired
Bolzano	Bolzano class	12881	Largely wrecked
Guiseppe Garibaldi	Duca d'Abruzzi class	10756	SUNK
Duca d'Abruzzi	Duca d'Abruzzi class	10756	Moderate damage
Eugenio di Savoia	Duca d'Aosta class	9208	Rearming shells
Duca d'Aosta	Duca d'Aosta class	9208	Repaired
Muzio Attendolo	Montecuccoli class	8474	Rearming shells
R. Montecuccoli	Montecuccoli class	8474	Rearming shells
Luigi Cadorna	Luigi Cadorna class	7494	SUNK
G. delle Bande Nere	Di Giussano class	5845	SUNK
Albenco da Barbiano	Di Giussano class	5845	
Alberto Di Giussano	Di Giussano class	5845	Moderate damage

..scroll down for more

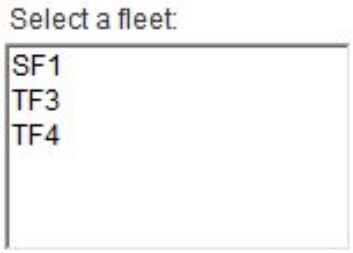
This is the same ship roster you can see as a link from you Briefing Report. (See briefing report - own ship roster for more information). Return to the map view by clicking on the 'X" button at the top-right of the ship roster; this closes the ship roster.

Location and status of your fleets

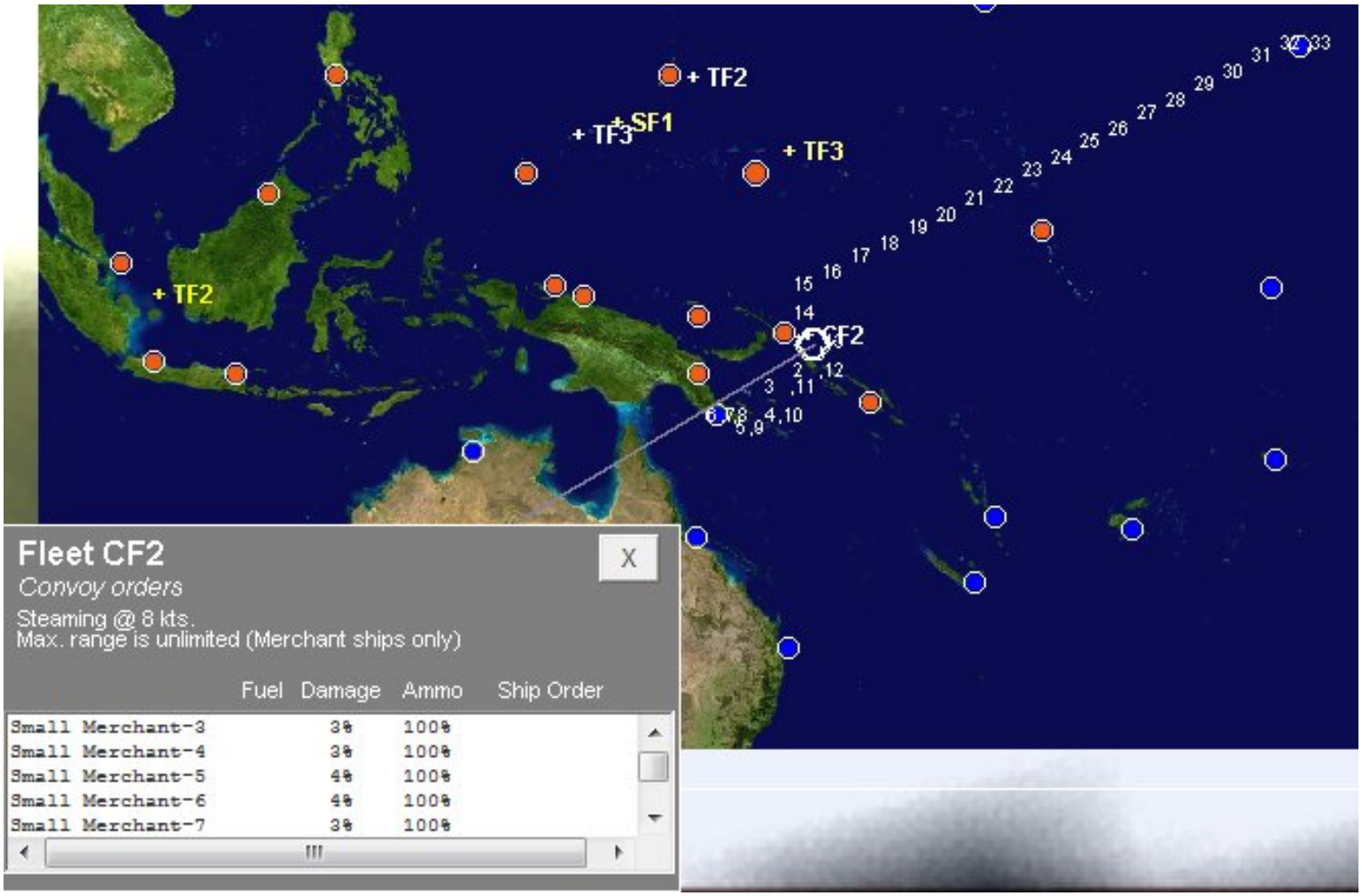
The locations of your own fleets are shown on the map - the name of each fleet is in white. (Enemy fleets are shown in red, orange or yellow - as explained below)

Detailed fleet status

All your current active fleets are listed on the right hand side of the map:



When you select a fleet by clicking it, a pointer shows its location on the map:



A list appears at the bottom left of the screen with summary information on the fleet: a list of all ships and information about the fleet orders. The map also shows the current movement path for the fleet as a series of hexes numbered in the order through which the fleet intends to travel.

If the 'Ship Details' box on the 'Own Ships' list is ticked, selecting a ship in the list will show details of the ship, in the same way as if you had selected the ship from the 'Own Ships' list.

De-select the fleet by clicking on it again in the fleet list at the right of the screen.

Location and status of enemy ships

At the top of the screen is a toggle for enabling the 'Enemy Ships' list:

☑ Enemy ships

When this is ticked, you will see a list of all known enemy ships at the bottom of the screen:

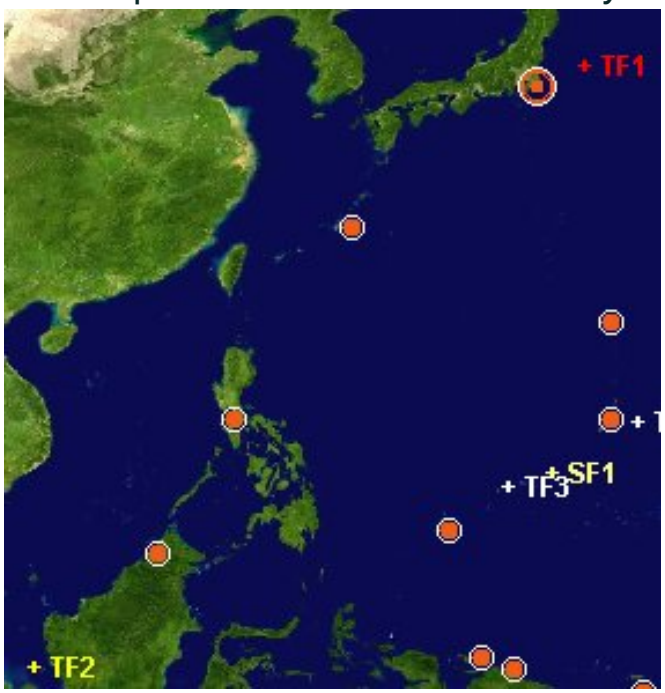
The list shows the current damage status of each ship. If you click on any ship, a line pointing to its current location will appear on the map:

Clicking on the same ship again will de-select the ship, and the line will disappear.

The list is scrollable. Note that the ships are grouped by category - BBs, then CAs, then CLs, then CVs and CVLs, and so on. This is an alphabetical sorting by type but it has the effect that the larger ships appear first, so you can find them more easily.

Location of enemy fleets

The map shows the location of every known enemy fleet:



The fleets are colour-coded to show the age of the latest report:

- red means the latest report for the fleet is less than 6 hours old:
- orange means it is between 6 and 12 hours old:
- yellow means it is betwen 12 and 24 hours old:
- pale yellow means it is older than 24 hours:

In the picture above, enemy fleet 'TF1' is red, fleet 'TF2' is yellow and fleet 'SF1' is pale yellow.

Own resources

A tick box at the top of the screen allows you to view the number of resource points, troops and aircraft at each of your bases:

☑ Own resources

When it is ticked, the information is displayed like this:

The tank symbol does not denote armour as such; it simply denotes the presence of troops.

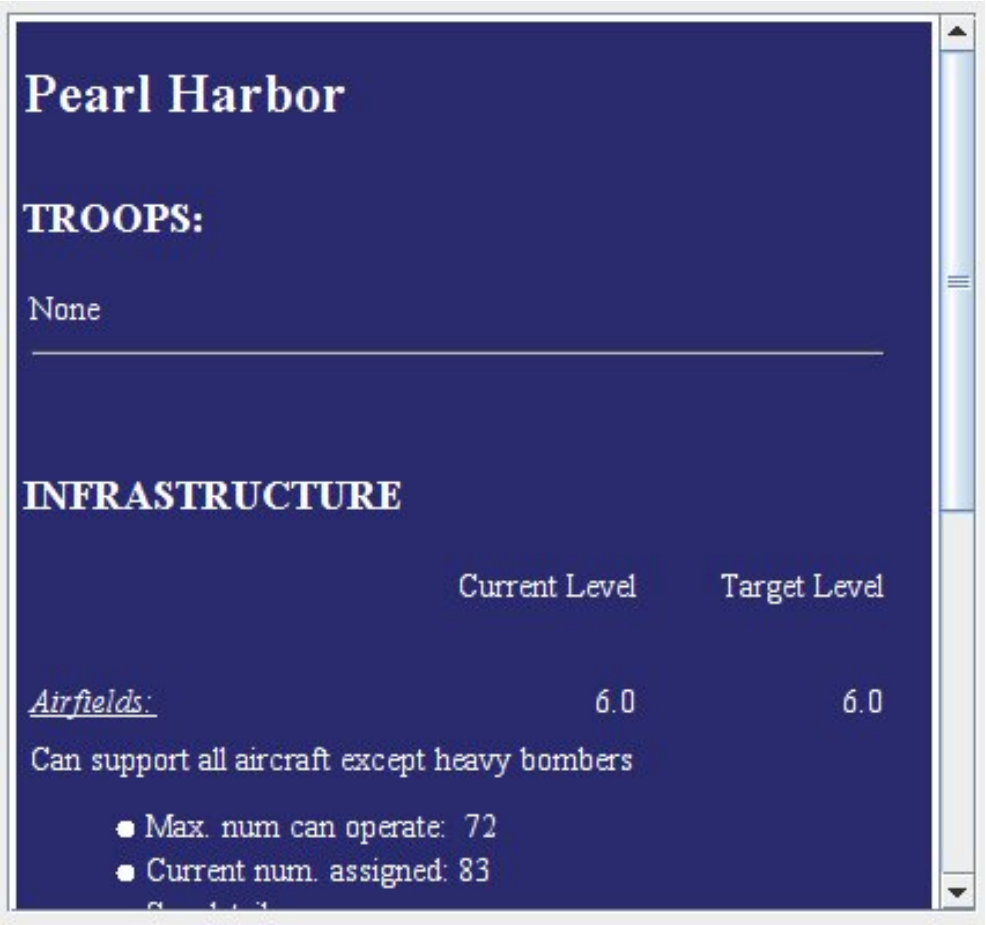
The green line under the number alongside the tank symbol indicates the surrent supply situation of the troops. If it is all green, then the troops should be fully supplied for the current turn (barring any unforeseen events). If it is all red, then the troops are completely unsupplied, and will suffer seriously from sickness and loss of morale. The amount of red indicates the degree of forecast under-supply. Use this information when planning supply missions.

Own resource details

More detailed information is also available. There is a tickbox at the top of the screen labelled 'Popup details?':

☐ Popup details?

When this is ticked, you will see a pop up panel whenever you pass you mouse over one of your ports:



The panel displays scrollable information on the troop units and infrastructure at the port. The information is very similar to what you can see in the Briefing Report - in the Troop List and the Infrastructure List. (See briefing report - own troop list and briefing report - infrastructure list for help on reading the information.

The popup panel disappears as soon as you move your mouse away.

Note that whenever the 'Popup details?' tick box is ticked, the 'Drag' tickbox is also ticked. This allows you to drag the map around freely. (Use of the drag feature is explained below). But it also prevents any data entry if you want to use the map controls to set up fleets and missions. You will need to clear both the 'Drag' and the 'Popup details?' tickboxes before setting up fleets or missions from the map.

Enemy Resources

Similar summary (bit not detailed) information on enemy resources is available by ticking the 'Enemy Resources' tick box at the top of the screen:

☑ Enemy resources

Enemy resources are shown like this:

Own mines

There is an 'Own mines' tickbox at the top of the screen:

☐ Own mines

When it is ticked, the map shows all your own minefields. The green numbers refer to the number of mines:

Enemy mines

There is also an 'Enemy mines' tickbox at the top of the screen:

☐ Enemy mines

When it is ticked, the map shows known (or suspected) enemy minefields. The green numbers refer to the estimated number of mines:

Zooming in and out and dragging

Sometimes you will want to see a section of the map in more detail. Each time you press the + button at the top of the screen, the map enlarges. Repeated pressing enlarges the view very greatly. The following picture shows a much enlarged view of part of the enemy mine fields previously shown:

Zooming out again is just as simple - click the - button at the top of the screen as many times as you want to zoom back out.

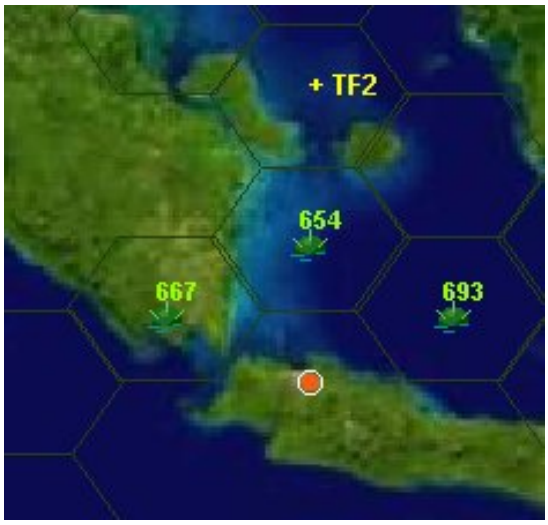
When you click the zoom in or out buttons, the 'Drag' tickbox is automatically ticked. The mouse changes to a hand. You can now click and drag the map around to see the areas you want.

Hexes

To see the hex grid on the map, tick the 'Hexes' tock box at the top of the screen:

☑ Hexes

A hex grid is now displayed on the map:

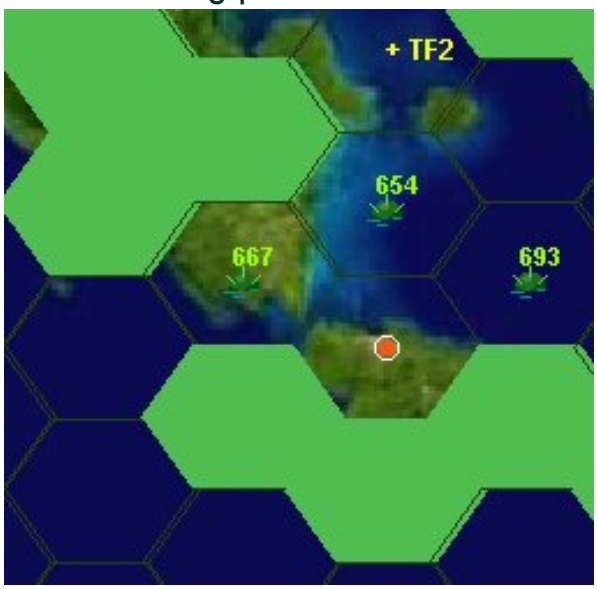


Land

Sometimes, you may want to see more clearly where the divisions are between land and sea hexes. To do this, tick the 'Land' tick box at the top of the screen:

☑ Land

The following picture shows the result:



Place Names

The map also has many place names on it - which are used when reports on battles and

other events are generated. To see these place names, tick the 'Place names' tick box at the top of the screen

☑ Place names

You will see place names appear:

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Select a Campaign

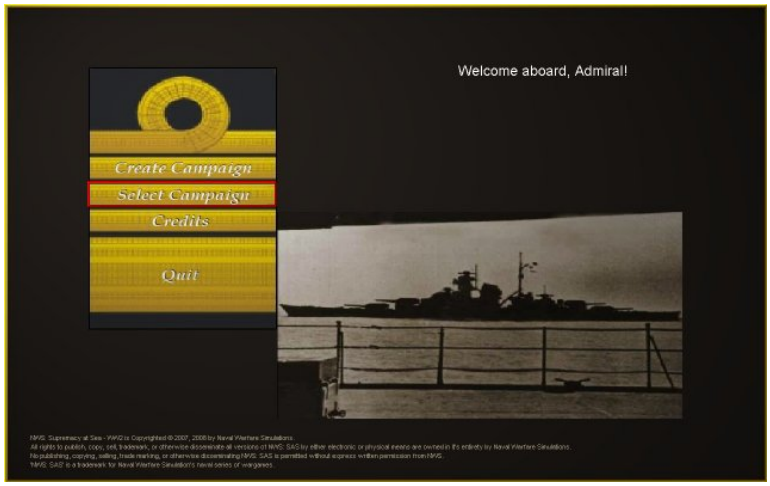
SAS has several pre-created campaigns for you to play - covering action in the Pacific, Atlantic and Mediterranean theatres.

You can also create your own campaigns whenever you like, selecting countries, maps and other parameters to create an endless number of historical or hypothetical campaigns.

To play any of these campaigns, first navigate to the *Select Campaign Screen*:

You get to this screen in either of two ways:

- From the *Start Screen*, by clicking on "Create Campaign".



- From the *Admiral's Office*, by clicking on the "Load" tab in the filing cabinet "Games" drawer. (See loading and saving files for more information.)

How to load a campaign

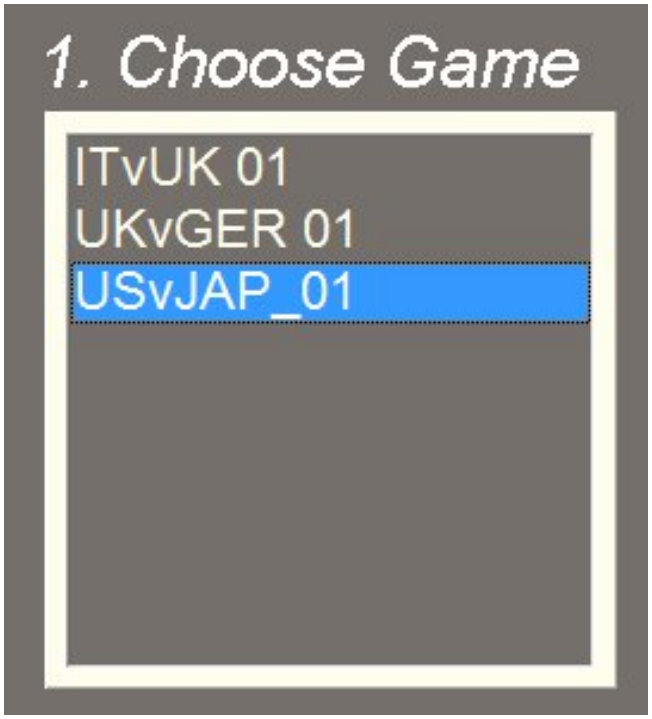
There are three simple steps to follow:

- Select the campaign from the list at the top left of the screen:
- Select the side you want to play from the list in the middle:
- Click the "Load File" button.

Alternatively, clicking on the "Cancel" button at any time will exit out of the *Select a Campaign* screen. Play will then return to where you were immediately beforehand.

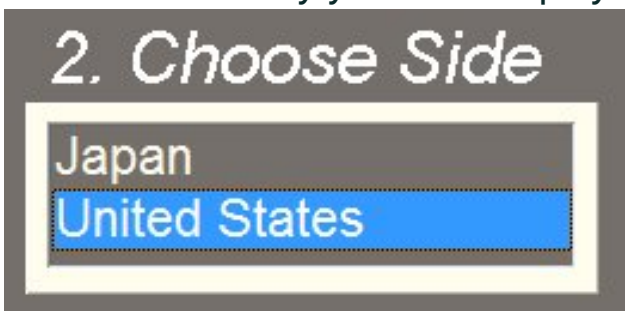
Select the campaign

Click to select the campaign you want to play from the list at the top left of the screen:



Select the country

Select the country you want to play from the list in the middle of the screen:



Note: Normally, you would play one side of a campaign all the way through. But you can swap sides at any time if you want - see swapping sides for more information.

Load the file

Finally, click the "Load File" button 

.

The campaign file for the selected country will now load, and you will return to the

office, ready to play from where the game was last saved.

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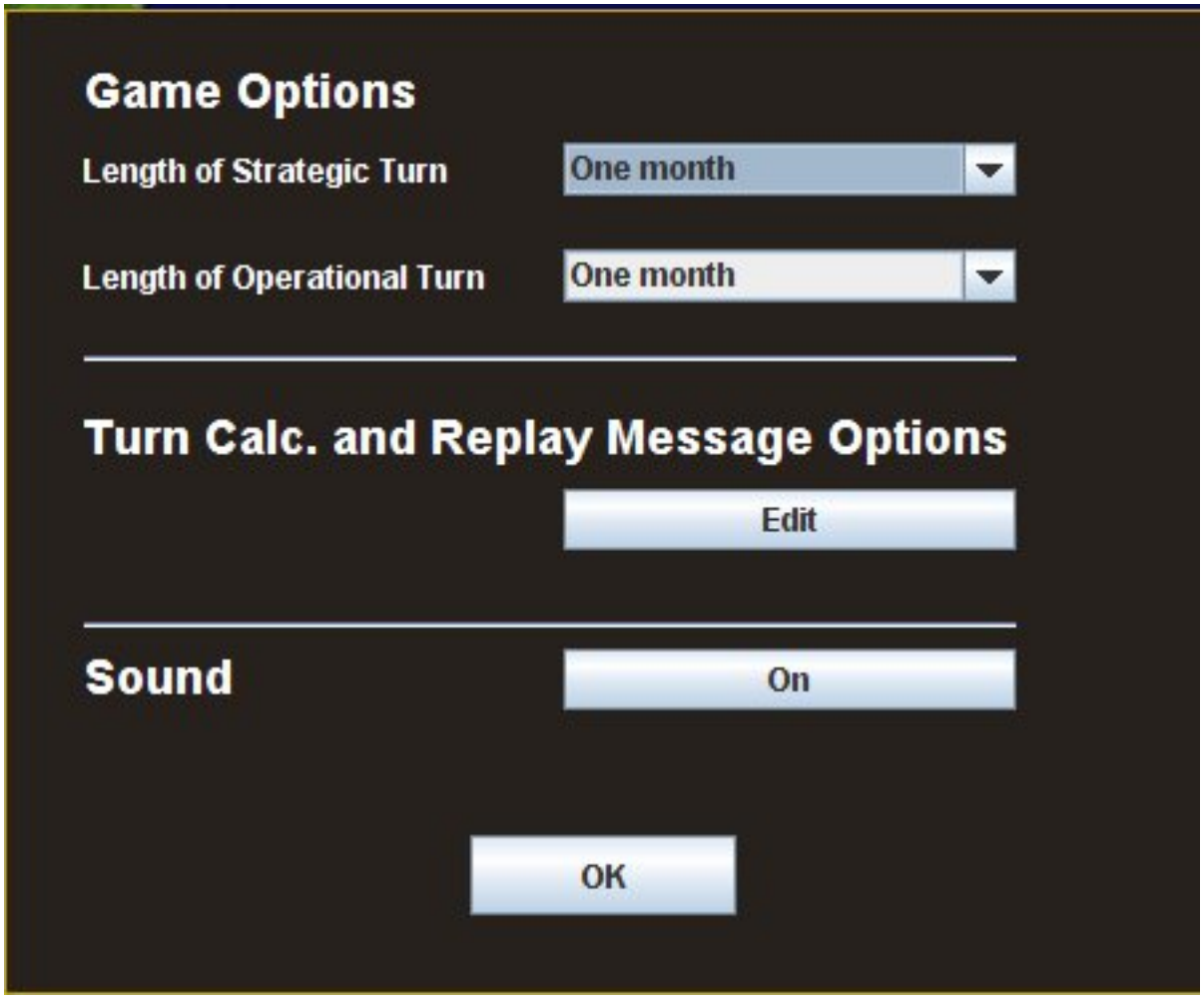
Game Options

During game play you can chnage various game options.

To bring up the edit screen, from your Admiral's Office, move the mouse over the filing cabinet drawer labelled 'Options' on the right-hand side of the screen:

Now click on the drawer. The screen for editing game options will appear:



Length of the strategic turn

Strategic time is relevant to ship construction, technology R&D and infrastructure development. At the strategic level, a turn can be set to between one week and twelve months.

As an example – if strategic time is three months per turn, it would typically take twelve game turns (representing three years of 'real time') for a new battleship to be constructed and launched. (Ships selected at the start of a game become available immediately unless their commissioning is deferred. Construction rates only affect ships laid down afterwards).

With a 3, 6 or even 12 month turn length, you would move through a

campaign pretty quickly, maybe completing it in one or two sessions. This setting could appeal to a player looking for a 'beer and pretzels' style quick game.

Alternatively, with a very short turn length of say one or two weeks, it would take many turns to complete a few years of war; but you will be able to exercise a much finer degree of control over the outcome.

Like many things in *SAS WW2* you have the choice of strategic turn length.

The length of the strategic turn is first set when a campaign is created. (See create a campaign -setting turn lengths).

But you can freely change it at any time during gameplay, either to speed things up or else to slow them down (eg if things are getting to a very critical stage.

To change the turn length, just select a different value from the drop down list:

Length of the operational turn

Operational time is the amount of time in a turn for fleet movements, sightings, battles and so on. Operational time can be set to one week, two weeks or one month.

Normally, it is best for operational time to be the same as the strategic time, so everything remains ‘in synch’. However, operational time can not be longer than one month or greater than the strategic time.

When operational time is less than strategic time, we have time compression. In other words, strategic events are speeded up relative to the rate at which operations occur.

Why would a player want operational time less than strategic time? There are several situations when this could be an advantage:

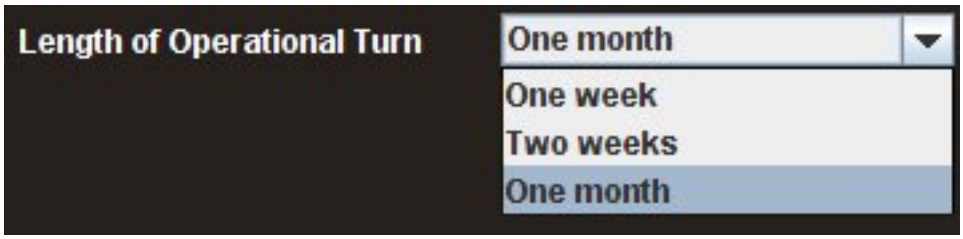
- Whenever strategic time is more than one month, operational time must be less because it can't be more than one month.
- When strategic time is say one month, it can take a few minutes - up to 10 minutes or so, to calculate a full month's worth of operations. Impatient players may want to 'speed things up' by calculating only part of the action before advancing to the next turn.

It may be clearer to take an example. if strategic time is one month but operational time is one week, the planning of fleet orders and so on is unnaffected but fleets only get to do one week of their actual moves for every game turn. A fleet sailing say between Alexandria and Malta in the Mediterranean might leave port on the first day - say the 1st of June. By the end of the week, the fleet may be half way to Malta. Now, the turn ends. Strategic time advances one month. It is now July. The fleet has not 'warped' anywhere. It starts the new turn where it ended the last, and it continues as per its orders. But the first day of the new turn will now be 1 July, not the 8th June. Only the dates have warped - nothing else.

Operational time is set when a campaign is created. (See create a

campaign -setting turn lengths).

But you can change it any time during game play using this screen. Just select a new value from the drop down list:



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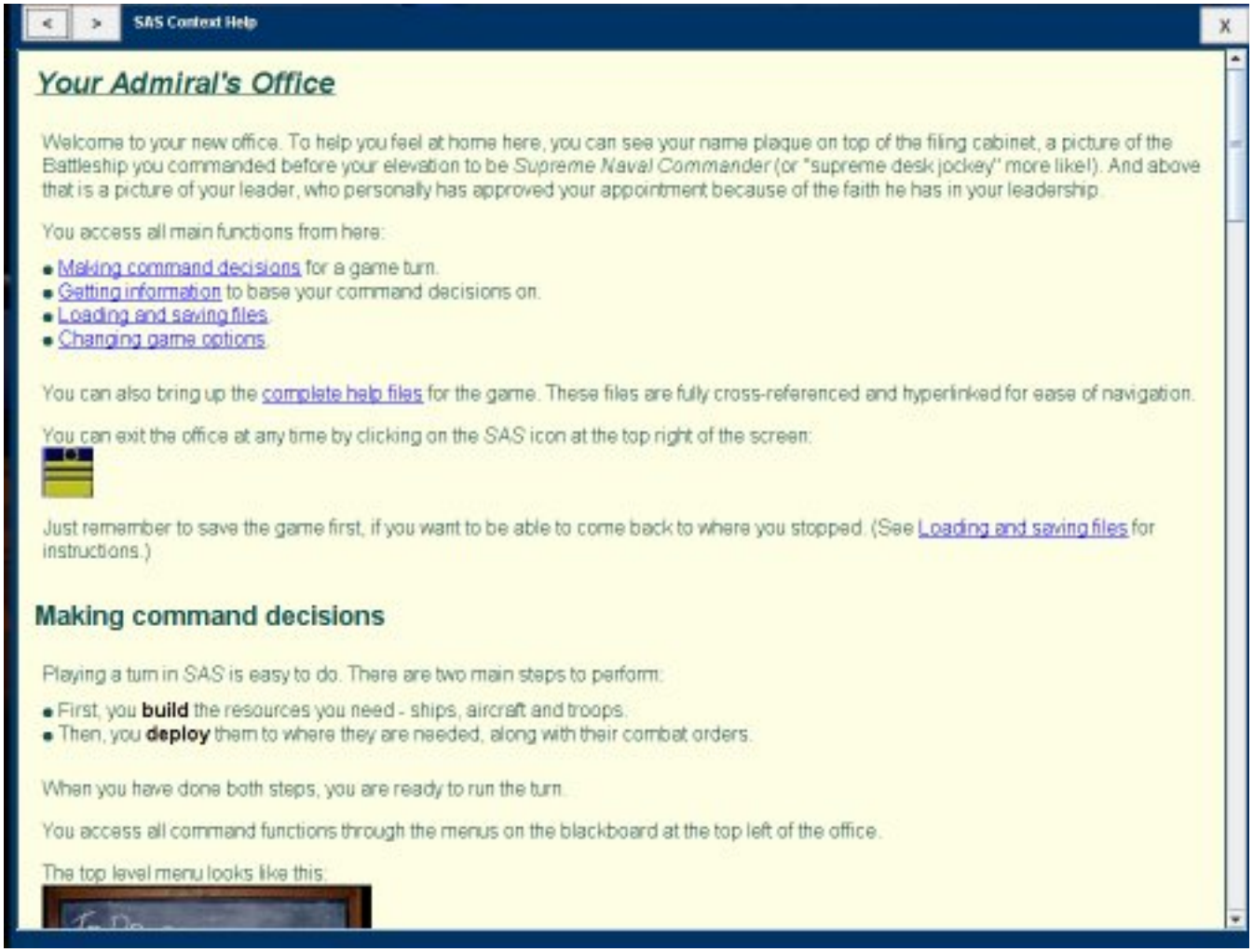
Context help

On almost all screens in *SAS* you can bring up immediate context help, i.e. help text that is tailored to the screen you are on.

To bring up context help, click on the button marked with a "?" symbol. The button will be to next to the button to close the screen, which is usually (but not always) located at the top right of the screen.

Illustrated below is an example of the context help screen for your Admiral's office:



You can navigate back and forward through links that you have visited by

clicking on the back button: <, or the forward button: > respectively.

To close the help screen, click on the close button: X.

These buttons are all at the top of the context help screen.

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Battle Summary

The results of all battles - between surface ships, or surface ships and submarines, or aircraft and surface ships or land targets, are reported in a summary screen.

Accessing the Battle Summary screen

Both the run turn screen and the replay turn screen will pop up a panel to report on battles, unless the player has disabled the reporting of these events. (See run and replay options for information on what events are notified and how to disable them).

When a pop up panel appears, it points to the location of each battle being reported on. It also will have one or more entries in a list, each entry corresponding to a battle that is being reported on for that hour.

Pictured below is the popup for a surface battle:

When you click on one of the entries in the list, the battle report screen for that battle will appear.

Surface Battle Reports

When two surface fleets engage in battle, the report will look something like this:

Battle summary

The top portion of the screen reports where and when the battle has taken place, how long it lasted, and will give the battle a name according to the location, such as "Battle of the Bismarck Sea".

The opening range and the weather at the start of the battle and the names of the participating fleets are also reported.

Own Ships Status

The left hand section of the screen will report the status of each of your ships in the battle.

The information provided includes:

- A general description of the ship's damage status, such as "Trivial damage".
- Approximate damage (in 10% increments) to:

    - superstructure
    - hull
    - flooding
    - ammunition loss
    - plus the overall damage cost (as a % of the full construction cost)
- In addition, the following danage is shown:
    - the number of main turrets lost
    - the amount of speed loss (in 3 knot increments)

Note that these stats are for display and have been rounded. The game engine keeps track of actual damage points in finer detail than this.

Note also that all damage shown for your own (and the enemy's) ships is the latest known damage status, regardless of the cause. The damage shown may include damage from previous surface battles, or damage from previous air strikes or submarine attacks.

Enemy Ship Status

Similar but less specfic and accurate information is provided for all enemy ships in the battle.

Here, only flooding, speed loss and turrets lost are individually reported, as these are the more observable signs of enemy damage. The stats are in 33% increments rather than 10% increments because judging enemy damage is a less accurate process than estimating damage to one's own ships.

Scrolling the Display

If there many ships involved, there will be too many to show in a single screen.

In this case, the screen will include a "Scroll down for more..." entry at the bottom of the list.

To scroll down the list, click on the "Down" button at the top of the screen. To scroll back up, click on the "Up" button.

Replay the Battle

For surface fleet battles only, you can also get a full action replay of the battle, not just the end-of-battle summary.

Click on the "Replay battle" button to bring up the surface battle replay screen. (Follow this link for help on using the Surface Battle Replay screen).

Note that the replay takes you through to the end of the actual battle. After every battle has ended, the computer performs some post-battle calculations in the immediate aftermath. Sometimes, a ship not yet sunk by battle's end will sink soon after, in which case it will show as sunk in the Battle Summary screen but not in the battle replay. Other times, a ship may be able to reduce damage such as flooding. What happens depends on the balance between the severity of damage and the remaining ability of the ship's damage control. This explains why there is sometimes a difference between the damage shown for ships at the end of the battle replay compared to what is shown for the same ships in the Battle Summary screen.

Encounters between submarines and surface fleets

These battles are reported on in an almost identical fashion.

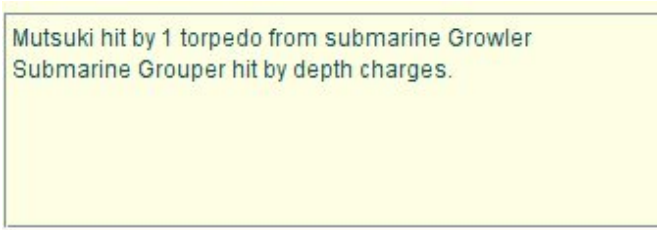
A panel like this one will popup in the run turn screen and also the replay turn screen (unless you have disabled reporting of submarine contacts):

As well as the kind of details mentioned above, a scrollable text box at the bottom of the

screen summarises the number of torpedo hits and depth charge attacks by individual submarines and surface escorts.

Note that all damage shown for your own (and the enemy's) ships is the latest known damage status, regardless of the cause. The damage shown may include damage from previous surface battles, or damage from previous air strikes or submarine attacks.

Pictured below is an example of this text box from a submarine encounter:



Encounters between aircraft and surface fleets or land targets

The same screen is also used to report on battles involving aircraft.

Additional text summarises:

- the number and types of aircraft on both sides
- the aircraft losses, to both Ack-Ack and enemy aircraft
- the torpedo hits and the bomb hits and near misses on shipping
- the damage caused to land installations, such as storages and airfields
- any aircraft destroyed on the ground.

Note that all damage shown for your own (and the enemy's) ships is the latest known damage status, regardless of the cause. The damage shown may include damage from previous surface battles, or damage from previous air strikes or submarine attacks.

Shown below is an extract of a battle involving aircraft from the carrier Formidable, on an

Italian fleet. The text shows several bomb and torpedo hits as well as aircraft losses:

The further extract below shows a typical aerial attack on a port. The attack destroys some enemy aircraft on the ground, and also causes minor damage to port and airfield facilities:

Land-based air strike involving 4 * Do 217ZE-1 and 6 * Do 217ZE-2 and 36 * Me 210A-2.

Attack catches the defenders partially unprepared

Defending fighters:
18 * Beaufighter IIF
11 * Hurricane IIC
11 * Sea Hurricane IA

Aircraft Lost:
Own:
4 * Do 217ZE-1
4 * Do 217ZE-2
10 * Me 210A-2
Enemy:
8 * Beaufighter IIF

All aircraft attack ground targets
minimal damage to port defences.
minimal damage to port infrastructure.
minimal airfield damage.

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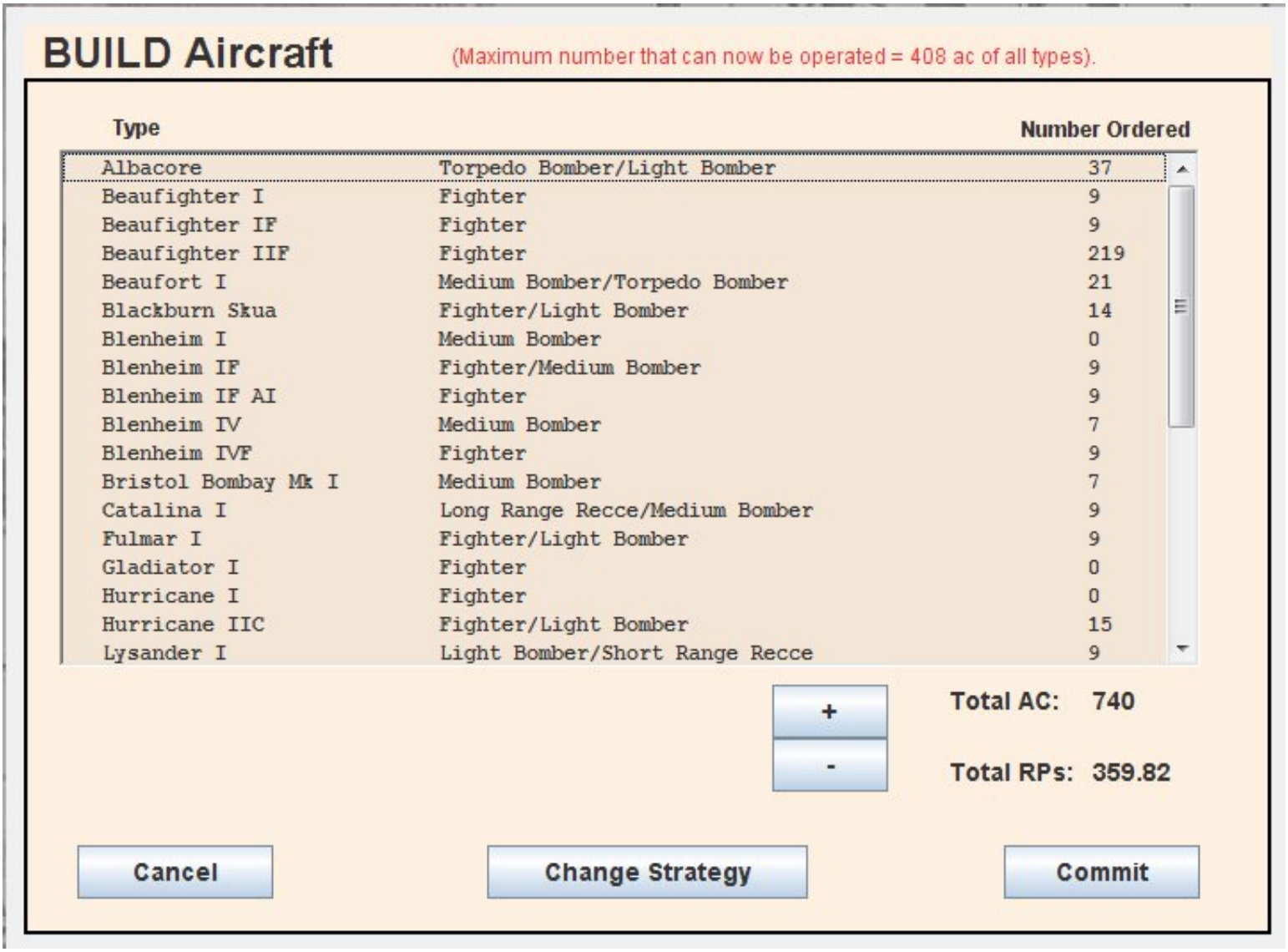
How to build aircraft

Every turn you can spend RPs on constructing more aircraft. You can vary the amount of expenditure (within limits), and you can also influence which types of aircraft get built.

First, you bring up your 2IC's help. He will prepare a plan for you, taking all the tedium out of making too many decisions. (See the 2IC help with aircraft construction help file for more information).

The Build Aircraft Screen

Clicking the "View" button on the 2IC help screen will bring up the Build Aircraft Screen:



BUILD Aircraft (Maximum number that can now be operated = 408 ac of all types).

Type		Number Ordered
Albacore	Torpedo Bomber/Light Bomber	37
Beaufighter I	Fighter	9
Beaufighter IF	Fighter	9
Beaufighter IIF	Fighter	219
Beaufort I	Medium Bomber/Torpedo Bomber	21
Blackburn Skua	Fighter/Light Bomber	14
Blenheim I	Medium Bomber	0
Blenheim IF	Fighter/Medium Bomber	9
Blenheim IF AI	Fighter	9
Blenheim IV	Medium Bomber	7
Blenheim IVF	Fighter	9
Bristol Bombay Mk I	Medium Bomber	7
Catalina I	Long Range Recce/Medium Bomber	9
Fulmar I	Fighter/Light Bomber	9
Gladiator I	Fighter	0
Hurricane I	Fighter	0
Hurricane IIC	Fighter/Light Bomber	15
Lysander I	Light Bomber/Short Range Recce	9

+ -

Total AC: 740

Total RPs: 359.82

Cancel | Change Strategy | Commit

Overview of the screen

Maximum number of aircraft that can be operated

At the top of the screen, in red, a message will appear telling you the maximum number of aircraft that currently can be operated from all your airfields and carriers.

(Maximum number that can now be operated = 408 ac of all types).

Proposed aircraft list

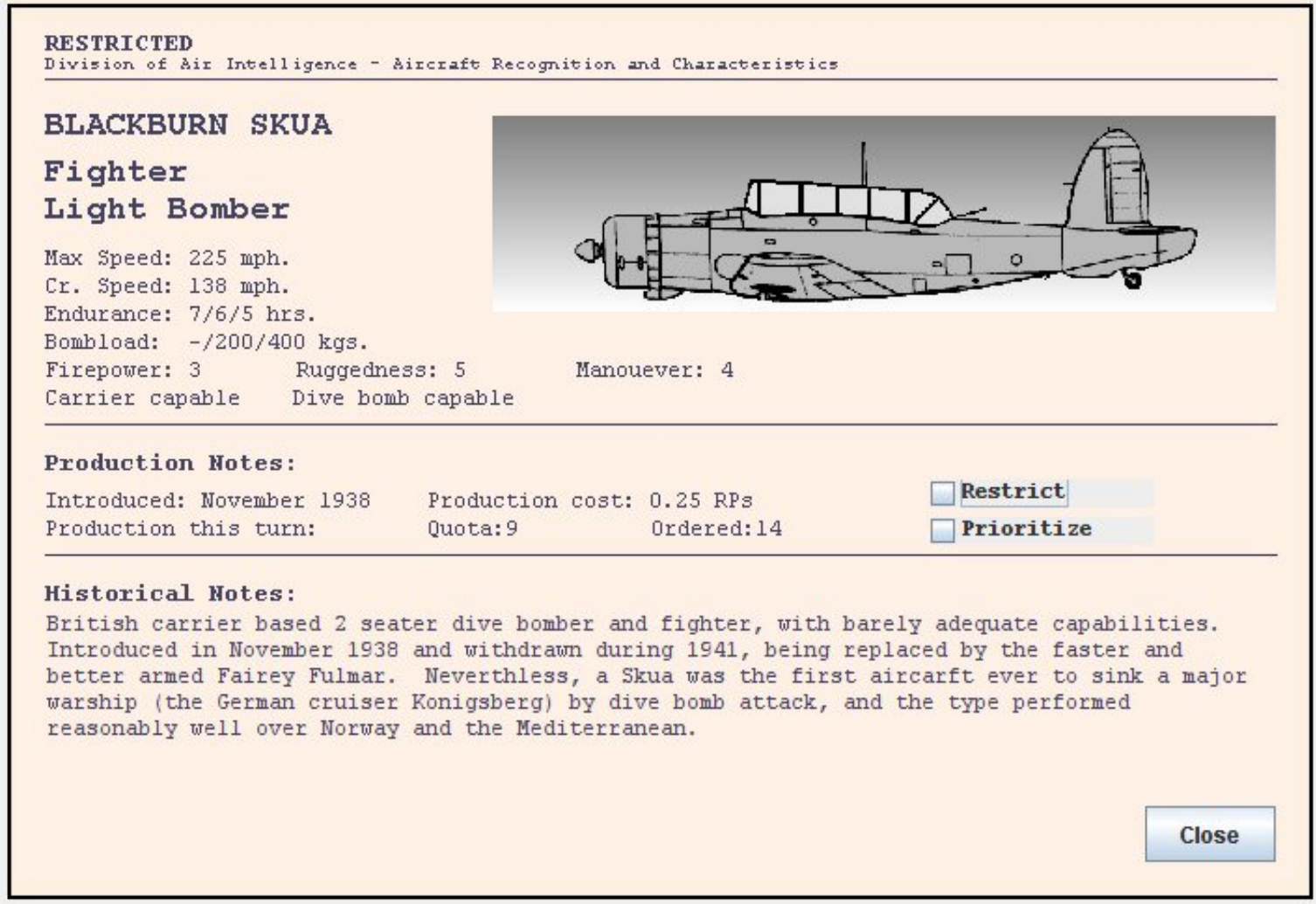
Most of the screen is taken up with the list of aircraft that your 2IC has proposed for construction. The list is scrollable and gives summary information of each aircraft type, the main and secondary roles that that type is intended to perform, and the number that is proposed for construction.

The number proposed for each type has been carefully determined by your 2IC to meet several criteria:

- The total cost should not exceed 10% of your available RPs.
- The balance of types - fighters, bombers and reconnaissance - should correspond to the 'ideal' as determined by your strategy.
- The selection of particular types has been done to maximise the best aircraft available - usually the more recently designed aircraft - that your country has currently designed and brought to being ready for production. As a game progresses, you will notice that the types will change. For example, in the late war period, jet aircraft become available for most countries. You can access the more advanced later war aircraft types earlier by spending resources on aircraft technology. (See how to build infrastructure for more information.)
- Neverthless, there is a minimum number of aircraft of even obsolescent types that will be included because production lines take some time to run down to nought.

Aircraft details

You can see the details of any aircraft type by clicking on it in the list. You will now see the Aircraft Details screen:



Many but not all aircraft will have a silhouette.

Endurance is hours flying time at light/medium/heavy load, and bombload is given also at light/medium/heavy load. Firepower (against fighters), ruggedness, maneuverability, and ASW attack and search (if any) are each values out of 10 (maximum). Special capabilities such as dive bombing, carrier capable and night-equipped are also listed if the aircraft has any of these.

Historical and production notes round out the details screen. 'Production cost' is the number of RPs (resource points) it takes to build one aircraft of the selected type. Note though that this value is a total cost figure, i.e. it is the cost not only of any one aircraft, but also the unitised cost of creating the factories to build it.

The use and meaning of the two tickboxes ('Restrict' and 'Prioritise'), as well as the meaning of the 'Quota' value, will be explained shortly, as they are some of the controls you can use to set aircraft production targets.

Click the 'Close' button to close the details screen and return to the build aircraft screen.

Totals

At the bottom of the list, on the right hand side, are two totals: 'Total AC' is the total number of aircraft that your 2IC plans to order. 'Total RPs' is the total resource points it would take to build them.

Plus and minus buttons

These buttons let you incrementally increase or decrease the RPs you wish to spend this turn on aircraft production. There are limits however to the amount that you can adjust the total aircraft construction budget each turn. This reflects real-world constraints: it was not possible to ramp up or down production lines for aircraft without restriction. A lot of investment was needed to tool up for new aircraft types, and to train factory workers in construction methods for each type.

As the number of RPs to be spent increases or reduces, your 2IC adjusts the 'number ordered' value in the list.

Changing the production numbers and types

As the above overview has indicated, you do not have a completely free hand to build any number of aircraft of a preferred type. This reflects real-world production constraints; and it also reflects real-world *political* constraints: although you are the *Supreme Naval Commander*, and also the supreme commander in the theatre of operations covered in any campaign, you are more directly in charge of naval affairs than you are of air forces. In all countries in WW2 the command of naval and airforces was separated (except for naval fleet air arms, where they existed). Your power is akin to that of Admiral King in WW2. He was Chief of Naval Operations and supreme commander of US naval forces, and he also sat with General Marshal as one of the two Joint Chiefs overseeing war strategy. But for many things, including production targets for aircraft, he had only high-level begging rights.

Given this, there are two ways to change the proposed production plan:

1. Change the total level of resources for aircraft production this turn.
2. Change the mix of aircraft types by prioritising or restricting certain types.

1. Changing the level of resources

As already noted in the overview above, you do this by clicking on the '+' or '-' buttons. Each click

incrementally increases or reduces the amount of RPs that will be spent this turn. You will see the 'Total RPs' and also the 'Total AC' values change as you do this.

Note that the new higher or lower level of spending will carry forward to the next turn. If you have reduced expenditure in a turn, the lower level will be the benchmark for the next turn, and it will take longer to get to a higher level again than if you had not reduced it.

Use the figure at the top of the screen for the maximum number of operable aircraft as a guide to deciding how many aircraft should be produced. You should always produce at least this number. You should actually produce a higher amount - the excess aircraft go into reserve and will be immediately available next turn to replace any losses in the current turn. A cautious player will want to have quite a high level of excess, especially on the first turn, as it is hard to predict aircraft losses.

2. Prioritising or restricting aircraft

Prioritising aircraft

To prioritise the production of a particular aircraft type, select it in the list, and then, in the aircraft details screen, tick the 'prioritise' tick box. Then close the screen. You should notice that more of this aircraft will now have been ordered, at the expense of other aircraft types competing with it in terms of role and capability. Prioritisation simply overrides the computer's assessment of what is the best aircraft type of those currently available for the role needed. You should therefore be a little careful before prioritising because the computer has a reasonably clever way of determining aircraft suitability.

Note that aircraft types that are prioritised are shown with an asterisk in the list.

Restricting aircraft

You can also put a restriction on selected aircraft. Only the minimum quota for any restricted aircraft will then be produced. The current quota for the aircraft is shown in the aircraft details screen.

To restrict a particular aircraft type, select it in the list and then, in the aircraft details screen, click on the 'Restrict' tick box. Then close the screen.

Note that an aircraft type cannnot both be prioritised and restricted - only one of these options (or none) can apply.

Committing the order

When you are satisfied with the current order, click on the 'Commit' button. This commits the order. The resource points will be taken and production of the aircraft commences immediately.

Warning!: the commit action can not be undone, so make sure you are ready before you commit. You can commit a production order for aircraft only once per turn.

After the 'Commit' button is clicked, the build aircraft screen will close and you will be returned to your Admiral's Office.

Cancelling out

If you are not yet ready to plan the construction of aircraft, click the 'Cancel' button. This returns you to your Admiral's Office.

Changing strategy

You can optionally change your overall strategy before you commit an order. The mix of aircraft will change to reflect the new strategy. You will also probably notice a change in the total *number* of aircraft as well. This is because smaller aircraft, such as fighters, are generally cheaper to build than bombers. More aggressive strategies favour a greater proportion of bombers and so the total number of aircraft that can be produced for the given resources will reduce.

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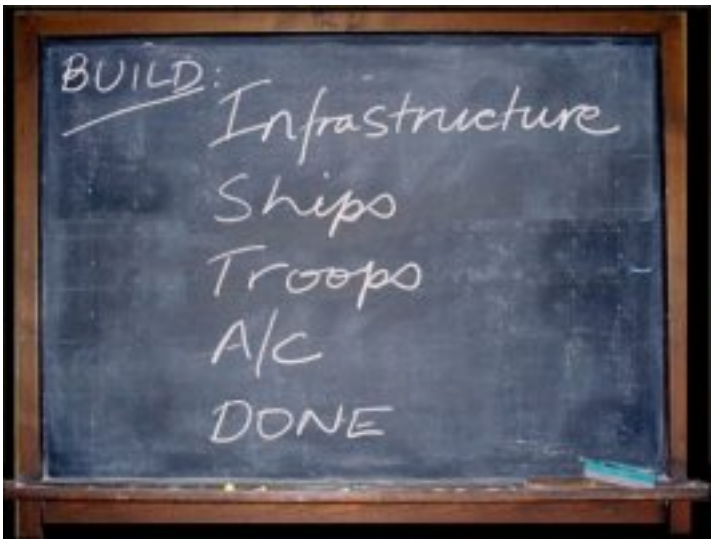
Build Menu

The *Build Menu* on the blackboard at the left of your Admiral's Office enables functions to build all your ships, troops, infrastructure and aircraft (if aircraft are enabled for the current campaign).



The recommended order to build these is as shown on the menu, from top to bottom. If you deviate from this sequence you can find that you do not have enough resources for infrastructure after first building ships. If aircraft carriers are enabled in the campaign, you can also find that after building aircraft their deployment will be wrong if you have not first built your aircraft carriers, and you will need to manually correct this from the *Deploy Menu*.

Build Infrastructure

Click on "Infrastructure" to bring up the screens for building infrastructure. "Infrastructure" here means the industry, docks, defences and airfield capacity at (or near to) your ports, plus your fleet training, expenditure and priorities for technology R&D, and your naval intelligence capability. Don't forget the importance of infrastructure in the rush to build more tangible

resources like ships and aircraft; success is likely to depend just as much on having good infrastructure.

Build Ships

This is self-explanatory. Clicking on "Ships" will bring up screens for ordering new ships. On the first turn, they can be available immediately; on following turns, they take a realistic time to enter the game.

Raise Troops

Click on "Troops" to raise troop units of specified size and quality at your Home Base. From here they can be shipped to where assaults are planned or garrisons needed.

Construct Aircraft

Click on "A/C" to access screens for building aircraft of all types.

(Note: the option to build aircraft will be disabled if neither land-based nor carrier aircraft have been enabled for the current campaign).

Done

Click on "Done" when all build tasks are finished. This returns you to the ***Main Menu***.

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The effects of battle experience on ship and aircraft crews

Battle experience improves the performance of surviving aircraft and ship crews. The computer AI tracks the battle experience of every ship and every aircraft crew. The best crews are likely to have been both well trained AND battle hardened.

The ship details panel shows current levels of training and experience. In the following picture, the blue line at the top right of the panel shows training levels, and the red bar shows the supplement due to battle experience:

In this example, it can be seen that the British battleship Invincible has a base training level of approximately 4.5, and has gained over half a point from battle experience, making the total crew efficiency just over 5 out of a possible 10.

In the case of aircraft, each surviving aircraft crew gains experience from combat, and that experience is then tracked at the air group to which the aircraft is attached, helping to raise the experience level of the group. (The experience level may also drop (or rise) when new aircaft crews join the group and have a lower (or higher) training level than the current group average).

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Building Ships - an Overview

This overview answers these questions:

- What type of ships can I build?
- How do I afford new ships?
- How long do they take to build?
- Can I design my own ships?

What type of ships can I build?

There are six types of ships you can build:

- Aircraft carriers
- Battleships and Battle cruisers
- Cruisers
- Escorts
- Submarines
- Merchant ships

Aircraft carriers

You can build fast, large fleet carriers for offensive operations, and smaller, slower escort carriers for protecting your own fleets, especially convoys. They can carry fighters and bombers (including torpedo bombers). Aircraft in enough number can sink even the largest ship, and have an unequalled range of attack. But aircraft cannot fly at night or in very poor weather, sometimes cannot locate their target and must break through the enemy's defensive fighters and anti-aircraft fire before attacking.

Aircraft and especially the pilots to fly them can only be replenished at a certain rate, so you must husband your resources and order offensive carrier operations carefully.

The carriers themselves are also very vulnerable to damage when their aircraft are away on a strike somewhere else.

Nevertheless, carriers became the dominant instrument of naval power in WW2, eventually replacing battleships in all navies that tried them.

Battleships and Battle cruisers

These ships can range from the size of the German "pocket battleship" *Graf Spee* class of less than 20,000 tonnes through to the biggest naval ships ever conceived – the German "H 43" class monsters of over 120,000 tonnes. Gun calibres can range from 11 through to 20 inches; speeds from 21 through to 33 knots. All ships of this type carry seaplanes that are very useful for aerial reconnaissance; and they can carry large amounts of fuel, giving them a very large cruising range.

Battleships rely on their big guns as the main weapon and often have very heavy armour and a high degree of survivability. Battle cruisers typically mount similar size guns but are faster and more lightly protected, although the German *Scharnhorst* class sacrificed gun calibre instead of armour. Battle cruisers originated as fast scouts for the main battle fleet and as raiders suited to hit-and-run attacks, alone or in small squadrons. The battle cruiser can be a very powerful attack vessel, suited to bombarding enemy ports and conducting hit and run attacks on enemy convoys and naval squadrons not protected by battleships.

Both battleships and battle cruisers can give tremendous punishment at ranges that make them immune to damage from smaller ships; nonetheless, without a proper escort they are vulnerable to torpedo attack from fast destroyers and submarines, and air attack remains their greatest threat. Though these ships can take a lot of punishment they are not unsinkable, and the loss of (or major damage to) one of them is a critical blow to any navy. Unless the ship is relatively small it will take a long time to launch a replacement or to repair major damage.

Cruisers

These ships make the best scouts: they carry seaplanes for reconnaissance and can carry more, tonne for tonne, than the larger ships; they can carry reasonable amounts of fuel for good cruising ranges and with speeds up to 36 knots (faster than battleships and battle cruisers) and relatively small size they are often able to see without being seen, or to escape unharmed if they are spotted.

But cruisers also fulfil many other roles: from small, fast torpedo-armed cruisers that are effectively enlarged destroyer-leaders, through medium size 6 inch gun cruisers with good range and all-round capability, to larger 8, 10 or even 11 inch gun cruisers, often more heavily armoured and able to be defeated only by battleships or battle cruisers. (In this game, cruisers can carry up to 11 inch guns and range up to 26000 tonnes, so there is some cross-over with the size and capability of small battle cruisers. But the “Cruiser” type is more vulnerable – it will generally have less armour and structural strength, and finer hull lines that allow for more speed but make anti-torpedo defences marginal at best).

A navy will often have between 2 and 4 cruisers (and escort carriers) for

every battleship battle cruiser or fleet carrier; the ratio depends on your overall strategy. (See strategies for more information.)

Note that some historical differences are built-in – namely all Japanese cruisers get a torpedo-armament bonus (in terms of a higher number of torpedo reloads).

Escorts

These do not carry seaplanes so have no aerial reconnaissance capability. But they are the only vessels that can fight submarines or lay mines, and they can carry more torpedoes than cruisers, tonne for tonne. Their fine lines allow them to be the fastest ships in the navy – up to 39 knots. They generally have less cruising range than cruisers and with little or no armour have low survivability. (Being small and quick to build, they are more expendable though).

The "escort" type represents what in reality was a wide range of small-ship types: from slow, small lightly-armed corvettes and sloops used mainly for anti-submarine work, through medium size general-purpose destroyer-escort vessels that were faster and better armed, to very large and fast fleet super-destroyers that were often armed with many torpedoes. While all the historical ships are classed as "General Purpose", in your own designs you can make them specialist mine-laying or minesweeping, torpedo-attack, anti-aircraft or anti-submarine warfare vessels. They will then have increased capability in the chosen area and reduced capability for other functions.

A navy will often have between 8 and 16 escort ships for every battleship, battle cruiser or fleet carrier; the ratio depends on your overall strategy. (See strategies for more information.)

Note that some historical differences are built-in – namely all Japanese escort vessels above size “2” get a torpedo-armament bonus (in terms of a higher number of torpedo reloads).

Submarines

In this game, each country has two basic historical types – a small sea and coastal-going type, and a larger ocean-going type. But you can design your own to a much greater variety of characteristics. Submarines do not carry seaplanes, so they will often rely on being guided to enemy fleet locations from fleet sightings picked up by other forces or signal intercepts.

They have good cruising endurance for their size and can only be attacked if they themselves launch an attack. Their survivability is generally low but can be improved through higher underwater speeds, stronger hulls and of course better training!

Merchant ships

Merchant ships carry cargo (raw materials or finished suplies), and cargo-carrying to your home and advanced ports is the major way of improving your resource position, so merchant ships are vital to your success. They are slow and have low survivability when damaged, so defence of them against enemy submarine, surface and air attack will be a major part of your operational plans. Unlike the naval vessels mentioned above, merchant ships are powered by diesel machinery for which oil fuel is plentiful; it is assumed they can easily carry enough for even the longest voyages, so running out of fuel is never a factor for merchant ships whereas it is a major factor for naval vessels.

Merchant ships can also carry troops.

How do I afford new ships?

Each turn, if you have enough resource points at your Home Port, you can lay down new ships.

One resource point can be used to construct 100 tonnes of shipping, so a medium size 45,000 tonne battleship like the South Dakota will require 450 points.

How long do they take to build?

On the first turn, unless their commissioning has been delayed, these ships become immediately available but on subsequent turns they take a realistic amount of time to build: big battleships may take 2-3 years or even longer. Escort ships may take up to a year, Cruisers perhaps 1 to 2 years. The construction rate for naval ships depends on the ship tonnage and your Home Port Docks efficiency. (See dockyard infrastructure for more information).

Merchant ships are of course much quicker to build than naval ships.

Can I design my own ships?

If this option has been enabled in game options you can freely create your own ship designs. For example, you can design battleships up to 130,000 tonnes in size - nearly twice the size of the Japanese *Yamato* class and equal to the biggest battleships ever conceived (by Germany, as part of its "Z Plan".)

See building ships for more information.

Designing ships (or selecting suitable designs) is a critical part of *SAS* because you only get real value from your ships when their design matches their intended role.

In WW2, each country tried out many different designs of each type of ship, always striving for the best combination of speed, range, armour, gun power and so on for the size of ship they could afford and the kind of role they wanted the ship to perform.

For example, a battleship suited to fast hit-and-run missions – such as the German *Scharnhorst* - should (and did) look very different to one suited for purely defensive escort work - like the British *Nelson* - even though their tonnage was rather similar.

As the *Supreme Naval Commander*, you take advice from your *Director of Naval Construction*, but the final decision is always yours to make.

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Delaying the Commissioning of a Ship

Normally, ships built on the first turn of a campaign enter the game immediately, whilst those built on subsequent turns take a realistic time to construct.

Sometimes - such as when you want to model historically accurate scenarios - you may want to delay the entry of ships that are ordered on turn 1.

You can do this when you are giving orders to build the ship.

To delay the launch of any ship ordered on turn 1, on the build ships screen, set the "weeks to commissioning value" to the desired figure, and click on the "Set" button:

Make sure you do this *before* you click on the "Build" button.

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Ship Design Factors

A ship design consists of a relatively small number of design factors. The following information about these factors will help you get the most out of your ship designs.

The design factors are *relative* factors. For example, a "Calibre" factor of 2 for a size 2 battleship means something different for a size 3 battleship, or of course, for a cruiser or escort of any size.

The factors are:

- Ship type
- size
- Number of main guns
- Calibre of main guns
- Secondary/tertiary armament
- Armour
- Structural strength
- Maximum speed
- Crusing range
- Escort specialisations

Ship Type

Size

A Battleship of size “1” will, all else being equal, be much smaller than a Battleship of size “5” but probably bigger than any “Cruiser”.

As the size factor is adjusted, not only will the tonnage go up or down, but also so will the real meaning of the other characteristics. For example, if you Take the King George V class and simply adjust the size to “1”. You will see that not only has the tonnage significantly dropped but so has the real value of the other factors – gun armament is now 9 * 13 inch instead of 10 * 14 inch; armour is 12.5 inches instead of 15 inches, and so on. Think of size as a scaling factor. You can only get so much out of a pint-pot.

Number of main guns

Not surprisingly, the higher the value here, the larger the number of main calibre guns, although again, this is relative. Actual number of guns depends on the interaction of all the characteristics and the ship type.

Calibre of main guns

The higher the value, the larger the main gun calibre. Actual calibre depends on the interaction of all the characteristics and the ship type.

Secondary/tertiary armament

The higher the value, the more powerful is the secondary armament. For battleships and cruisers, this value affects the number of secondary guns, which are very useful against small enemy targets like destroyers,

as well as for anti-aircraft defence. For escort ships, this value affects the number of torpedoes or mines or anti-submarine or ant-aircraft weapons (depending on the selected specialty).

How this translates to actual numbers of such weapons depends on the interaction of all the characteristics.

Escort ships are a special case in terms of how the secondary/tertiary armament is determined. See

Armour

This value helps determine the thickness of vertical (side) armour over the machinery and magazine spaces and main gun turrets. The actual thickness also depends on ship type and size.

In the game, the side armour is assumed to be uniformly thick and set at a vertical plane. In reality it was much more complicated. The side armour often varied in thickness and was sloped to increase effective thickness. It is also assumed that the horizontal armour – over decks and turret tops – was armoured in a fixed proportion to the side armour; but design practice in real life was again somewhat more varied - between different countries and even between different ship classes in the same country. However, the general rule of thumb that was used in practice still holds, namely that battleships facing enemy gun calibres of "x" inches need the same effective thickness of side armour to be immune from penetration at reasonable battle ranges. Well-armoured cruisers typically had side armour around 2 inches less than their own main gun calibre.

The purpose of armour is to stop shells from exploding in critical parts of

the ship and causing critical reductions in fighting ability. For example: penetrating hits over the machinery spaces reduce a ship's speed; those over a turret or its magazine spaces automatically disable the turret while the magazine explosion can cause massive structural damage; underwater hits cause flooding; all hits contribute to leaking (eg from popped seams) and all water ingress slows the ship and ultimately will sink it if the flooding rate is greater than the pumping ability and the potential loss of buoyancy is greater than the ship's reserve buoyancy. (Reserve buoyancy depends on ship type and size and "strength" value - see the next item).

Note that when battles are fought, the game engine generally tries to keep battleships and battle cruisers within their own immunity zone against the enemy's big ships. Manoeuvring to open or close the range to do this reduces your gun-laying accuracy.

All in all, the better your armour the better your odds of scoring hits and the smaller the chance of your being critically damaged. Note that destroyer "armour" is just splinter armour, which is nevertheless useful because it adds to overall strength (see "Strength" below).

Structural strength

This value helps determine the general structural strength of the ship, covering such things as the general thickness of steel used, the strength of construction, the degree of hull compartmentalisation, the thickness of armour (if any) to exposed 'soft' areas such as gun director systems, secondary guns and so on. It also determines the capability of your back-up damage control systems.

So for a given size and type of ship, a higher strength value will:

- Increase general structural strength.
- Increase reserve buoyancy.
- Reduce the rate of loss of damage control ability, including pumping systems that keep the ship afloat.
- Reduce the rate of loss of fire control ability.
- Reduce the rate of loss of secondary armament.
- All in all, keep the ship fighting more effectively for longer and keep it afloat longer.

Submarines will have stronger hulls and be able to dive to deeper depths when evading enemy depth charge attacks. The actual strength depends on the interaction of all the characteristics and the ship type.

Maximum speed

Submarines will have stronger hulls and be able to dive to deeper depths when evading enemy depth charge attacks. The actual strength depends on the interaction of all the characteristics and the ship type.

Note that these maximum speeds are in fair weather, undamaged. Maximum speeds are relevant mainly to tactical situations, i.e. during battles. But they are also relevant to cruising speeds because a ship cannot cruise faster than 3 knots less than its maximum speed. So a 24 knot ship can cruise at 18 knots but not at 24 knots.

Cruising range

This helps determine the range in nautical miles at the four possible varying cruising speeds (6, 12, 18 and 24 knots). Ship type and size and to a lesser extent the other factors also affect how much fuel the ship can carry and hence its range.

Technology in the form of machinery efficiency also significantly affects the range by making the ships more or less efficient as steamers. (US and French ships were very good steamers; British ships were poor steamers.

Remember that range means not just distance bit also time at sea. Your ships may be stationed close to home, on patrol, but to keep them there for as long as possible means they must have sufficient endurance. Bear in mind that some British, French and German and most Italian ships had low endurance and would struggle in theatres much bigger than the Mediterranean. Remember this in case you want to modify them!

Escort Specialisations

Escort ships have an extra characteristic, which determines the kind of role they are meant to perform.

When you select “Escort” as the ship type, you will see a new set of tick boxes: ☑ GP ☐ Torpedoes ☐ ASW ☐ Mines ☐ Ack-Ack

Ship Type

Ship Type

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Escort Ship Design Specialisations

Escort ships are a special case. They have an additional factor to denote if the design is "general purpose", i.e. able to carry out any function reasonably well, or is specialised for anti-submarine, anti-aircraft, minelaying and sweeping, or as a torpedo-attack vessel.

By default, escorts are general purpose (or "GP").

If you decide to specialise, the vessel's capability in one chosen area is doubled, and halved in all other areas.

A "GP" vessel has these capabilities:

Torpedoes	Escort ships all carry torpedoes in sets of 3. General Purpose escorts carry as many sets as their "sec." value, plus 1 if above a size of "2".
ASW	General Purpose escorts have a capability that is equal to their "sec." value plus 1 minus their size but is always a minimum of 1. So, the smaller the size, the greater the capability (all else being equal), which reflects the reality of the role that smaller escorts played.
Mines	General Purpose escorts carry a number of mines that is a function of their deck area, which is proportional to two-thirds the power of the tonnage. (So smaller ships are better minelayers tonne-for-tonne than larger ships).

Warning -Once a ship has been laid down as having a particular speciality, this cannot be changed. Think carefully before you specialise as the balance of your escort ships can become compromised by disproportionate damage to certain types. The only remedy then is to lay down more of the type you need, and these will take a little time to enter the game.

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Missions - an overview

Your 2IC gives orders to your ships and fleets by creating missions of different kinds.

A mission involves these elements:

- A fleet of one or more ships
- A movement order, specifying where the fleet is to sail and at what speeds
- A description indicating the overall purpose of the mission - such as "Convoy" or "Offensive Patrol". See mission types
- Rules of engagement, telling the fleet, and the ships in it, when enemy forces should be engaged and when they should not.

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Deploy Menu

The *Deploy Menu* on the blackboard at the left of your Admiral's Office gives you access to sceens to deploy all your resources: ships, troops and aircraft (if aircraft are enabled for the current campaign).

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Very cautious strategy

A very cautious strategy will favour a plan to build slowly and carefully, looking for a long-term victory:

- Investing 40% of available resources in infrastructure, with priority on technology R&D and on port defences.
- Using the remainder to build a large merchant fleet (close to 30% of total ship tonnage), supported by a navy with ships designed for defensive operations. There will be a relatively high ratio of escorts to cruisers/ escort carriers to battleships/fleet carriers (16: 3.5 : 1) and each ship type will be of moderate size only, as long range and high speed are not critical.
- Deploying naval forces close to home -to protect convoy routes and ports -in an essentially defensive posture.
- If land-based air is enabled, provisioning your air fields with aircraft mainly suited to defence: 50% fighters/interceptors, 40% reconnaissance and the remainder (10%) as bombers).
- If troops are enabled, planning on maintaining a ratio of 80% garrison troops to 20% amphibious troops. Also, in army assaults, the minimum aceptable odds are 5:1, and the optimum odds are 8:1.

Fleets also make cautious emergency responses - any fleet that at some point had some escort ships and then through attrition or fuel shortages now has none will tend to abort its current mission and head to the nearest suitable port if the fleet is of special value. It is of special value if it is carrying cargo or troops, or has any fleet carriers, or has some battleships that have rules of engagement that are more aggressive than 'hit and run'.

A very cautious strategy also affects the proportion of fighters that are

automatically held back for combat air patrol over your carriers and airfields. These aircraft are not available for offensive strikes. Under a very cautious strategy, 50% of the full establishment of fighters for each fleet carrier will be on CAP. On escort carriers, this proportion is doubled (to 100%) because of their primary defensive role. At airfields, the number is halved (to 25%) because airfields are 'unsinkable' and more easily repaired than are any ships.

In addition, a very cautious strategy has a default set of approved missions that your 2-I-C uses when building your fleets.

The following missions come by default with the strategy. They are listed in priority order, from top to bottom:

- Convoy
- Troop Transport
- Sub Defensive Patrol
- Ready Reaction
- Defensive Minelaying
- Defensive Patrol
- Reconnaissance
- Sub Offensive Patrol
- Combined Ops

Note that you can manually change the approved missions or change their priority, without changing your overall strategy. The strategy also has default values for certain other mission parameters, such as the minimum and optimum number of escorts for dfferent kinds of mission. See how to edit the strategy for missions for more information.

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Cautious strategy

A cautious strategy will favour a plan for a win over the medium to long-term:

- Investing 30% of available resources in infrastructure, with a balanced priority on things that help both offensive operations (fleet training) and defensive capability (port defences).
- Using the remainder to build a fairly big merchant fleet (about 24% of total ship tonnage), plus a moderate-sized navy with ships designed for both defence and moderate offensive operations. All ship types will be of moderate size for their type and have balanced characteristics, and there will be a balanced ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (12: 3 : 1).
- Deploying naval forces in forward defensive positions -as advanced cover for friendly convoys but positioned to intercept and attack enemy convoys and naval forces also.
- If land-based air is enabled, provisioning your air fields with aircraft mainly suited to defence: 40% fighters/interceptors, 40% reconnaissance and the remainder (20%) bombers.
- If troops are enabled, planning on maintaining a ratio of 60% garrison troops to 40% amphibious troops. Also, in army assaults, the minimum acceptable odds are 4:1 (and the optimum odds are 6:1)

Fleets also make cautious emergency responses - any fleet that at some point had some escort ships and then through attrition or fuel shortages now has none will tend to abort its current mission and head to the nearest suitable port if the fleet is of special value. It is of special value if it is carrying cargo or troops, or has any fleet carriers, or has some battleships that have rules of engagement that are more aggressive than 'hit and run'.

A cautious strategy also affects the proportion of fighters that are automatically held back for combat air patrol over your carriers and airfields. These aircraft are not available for offensive strikes. Under a cautious strategy, 40% of the full establishment of fighters for each fleet carrier will be on CAP. On escort carriers, this proportion is doubled (to 80%) because of their primary defensive role. At airfields, the number is halved (to 20%) because airfields are 'unsinkable' and more easily repaired than are any ships.

In addition, a cautious strategy has a default set of approved missions that your 2-I-C uses when building your fleets.

The following missions come by default with the strategy. They are listed in priority order, from top to bottom:

- Convoy
- Troop Transport
- Sub Defensive Patrol
- Defensive Patrol
- Defensive Minelaying
- Reconnaissance
- Sub Offensive Patrol
- Ready Reaction
- Offensive Minelaying
- Offensive Patrol
- Aerial Bombardment
- Combined Ops

Note that you can manually change the approved missions or change their priority, without changing your overall strategy. The strategy also has default values for certain other mission parameters, such as the minimum and

optimum number of escorts for dfferent kinds of mission. See how to edit the strategy for missions for more information.

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Aggressive strategy

An aggressive strategy will favour a plan for a medium term win:

- Investing 20% of available resources in infrastructure, with priority on things that maximise offensive capability: fleet training, ship building and repair facilities and also defence of the advanced port as the front line of battle.
- Using the remainder to build a moderate-sized merchant fleet (about 20% of total ship tonnage), plus a big navy with ships designed for offensive operations in enemy territory, including occasional port bombardments. A good proportion of tonnage will go to Battleships and carriers, and this plus the need for all types to have good speed and range -and therefore be of large size for their type -will mean that there will be a relatively low ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (9: 2.5 : 1).
- Deploying naval forces in fairly forward positions -as advanced cover for friendly convoys but also well located to intercept and attack enemy convoys and naval forces and sometimes bombard his ports.
- If land-based air is enabled, provisioning your air fields with aircraft suited to defence as well as attack: 30% fighters, 40% reconnaissance, and the remainder (30%) as bombers.
- If troops are enabled, planning on maintaining a ratio of 40% garrison troops to 60% amphibious troops. Also, in army assaults, the minimum acceptable odds are 3:1, and the optimum odds are 5:1.

An aggressive strategy also affects the proportion of fighters that are automatically held back for combat air patrol over your carriers and airfields. These aircraft are not available for offensive strikes. Under an aggressive

strategy, 30% of the full establishment of fighters for each fleet carrier will be on CAP. On escort carriers, this proportion is doubled (to 60%) because of their primary defensive role. At airfields, the number is halved (to 15%) because airfields are 'unsinkable' and more easily repaired than are any ships.

In addition, an aggressive strategy has a default set of approved missions that your 2-I-C uses when building your fleets.

The following missions come by default with the strategy. They are listed in priority order, from top to bottom:

- Combined Ops
- Troop Transport
- Convoy
- Sub Offensive Patrol
- Offensive Patrol
- Offensive Minelaying
- Aerial Bombardment
- Bombardment
- Defensive Minelaying
- Sub Defensive Patrol

Note that you can manually change the approved missions or change their priority, without changing your overall strategy. The strategy also has default values for certain other mission parameters, such as the minimum and optimum number of escorts for dfferent kinds of mission. See how to edit the strategy for missions for more information.

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Very aggressive strategy

A very aggressive strategy will favour a plan to go for the “knock-out-blow”:

- Investing only 10% of available resources in infrastructure, with priority on things that maximise immediate offensive capability: fleet training, ship building and repair facilities and naval intelligence.
- Using the remainder to build a small merchant fleet (about 16% of total ship tonnage), and a very big navy with ships designed for offensive operations deep into enemy territory, including port bombardments. As much tonnage as possible will go to Battleships and carriers, and this plus the need for all types to have very good speed and range -and therefore be of very large size for their type -will mean that there will be a low ratio of escorts to cruisers/escort carriers to battleships/fleet carriers (7.5: 2 : 1).
- Deploying naval forces deep into enemy controlled sealanes -to attack his convoys and naval forces and ports.
- If land-based air is enabled, provisioning your air fields with aircraft suited to attack as well as defence: equal numbers of fighters, reconnaissance aircraft and bombers.
- If troops are enabled, planning on maintaining a ratio of 20% garrison troops to 80% amphibious troops. Also, in army assaults, the minimum acceptable odds are 2:1 and the optimum odds are 3:1

A very aggressive strategy also affects the proportion of fighters that are automatically held back for combat air patrol over your carriers and airfields. These aircraft are not available for offensive strikes. Under a very aggressive strategy, 20% of the full establishment of fighters for each fleet carrier will be on CAP. On escort carriers, this proportion is doubled (to 40%) because of

their primary defensive role. At airfields, the number is halved (to 10%) because airfields are 'unsinkable' and more easily repaired than are any ships.

In addition, a very aggressive strategy has a default set of approved missions that your 2-I-C uses when building your fleets.

The following missions come by default with the strategy. They are listed in priority order, from top to bottom:

- Combined Ops
- Troop Transport
- Convoy
- Close Blockade
- Aerial Bombardment
- Bombardment
- Sub Offensive Patrol
- Offensive Patrol
- Offensive Minelaying
- Sub Defensive Patrol
- Defensive Minelaying

Note that you can manually change the approved missions or change their priority, without changing your overall strategy. The strategy also has default values for certain other mission parameters, such as the minimum and optimum number of escorts for dfferent kinds of mission. See how to edit the strategy for missions for more information.

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How to access the theatre map

The theatre map is the starting point for both reviewing your overall situation and also issuing orders to create or edit new fleets and missions.

To get to your theatre map, from your Admirals office, just click on the wall map.

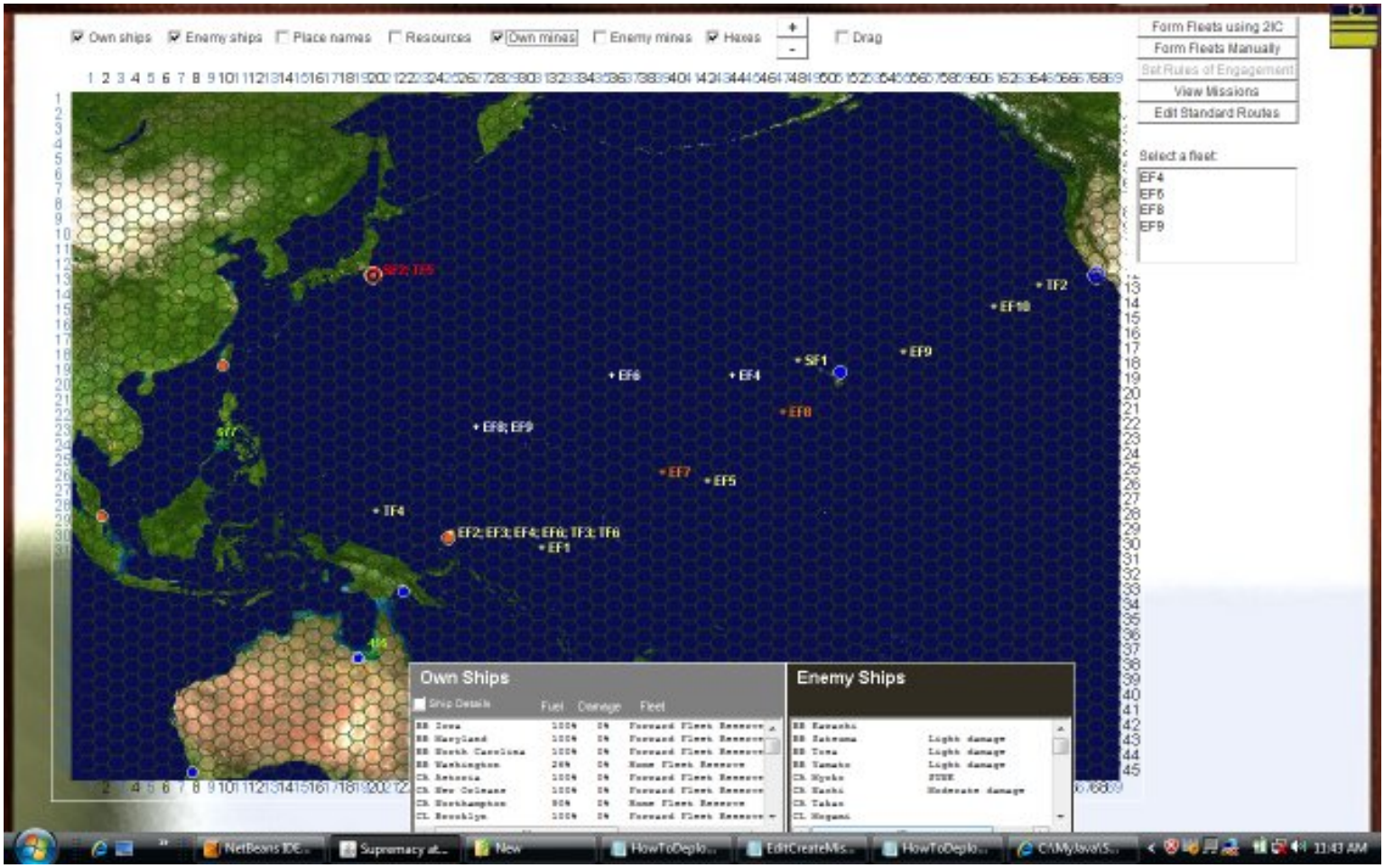
You also end up at the theatre map after using or refusing refusing your 2IC's help with forming fleets.

The Theatre Map

The theatre map is a full screen view of the map of the theatre for the campaign your are currently playing.

It aslo includes controls for filtering out the information displayed on the map, as well as for manually creating or editing fleets and missions.

The example shown below is from a sample Pacific theatre campaign:



See the map view for information on using the map to review the location and status of your main resources.

See how to edit or create missions for an overview of using the map controls to edit or create fleets and missions.

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Ordering cargo loading and unloading

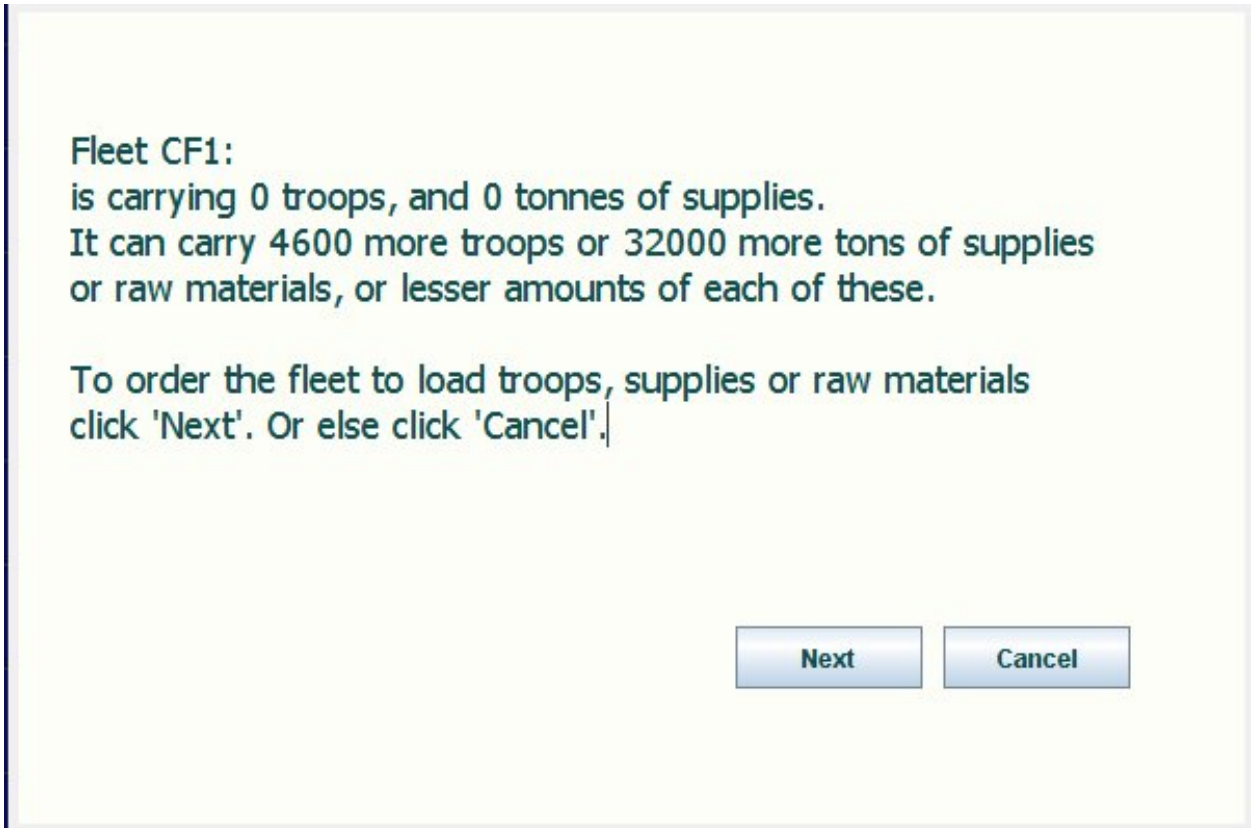
This is done as part of manually setting the movement orders for a fleet - see how to set a movement path for a fleet for the background to this task.

Loading Cargo

When a fleet is berthed in one of your ports that has any cargo to ship, and the fleet has spare load capacity, the "Load" button will be enabled. (The computer performs this calculation behind the scenes):

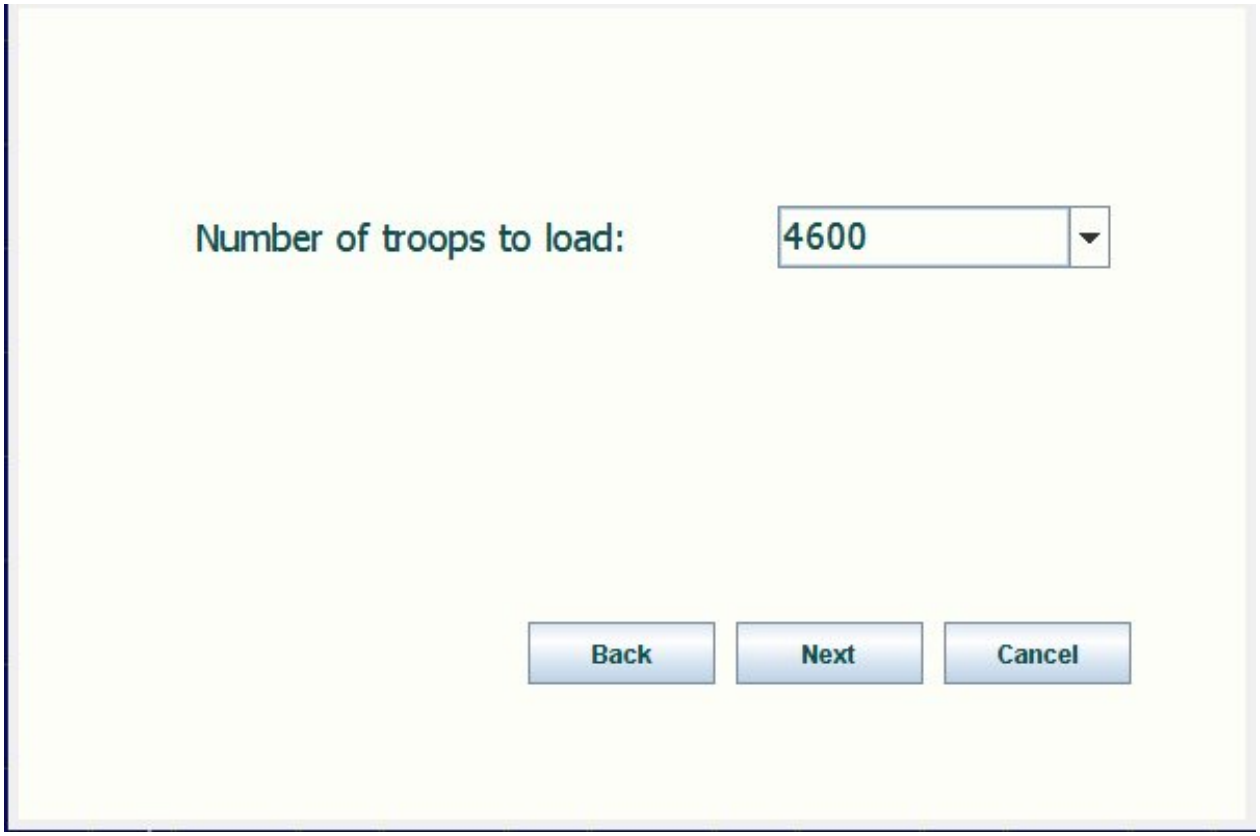
To load up cargo, click on the "Load" button. A series of dialogs - like a wizard - will now appear for you to specify how much and what type of cargo to load.

The first dialog tells you how much the feet is already carrying, how much more it can load, and asks for confirmation to proceed:



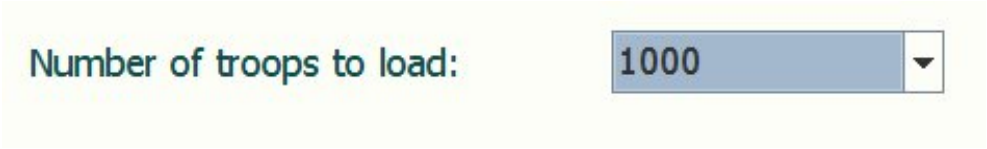
Loading troops

Clicking the "Cancel" button cancels the loading operation. Clicking the "Next" button takes you to the next dialog, for loading troops:



The combo box lets you choose the number of troops to load, up to the maximum the fleet can carry.

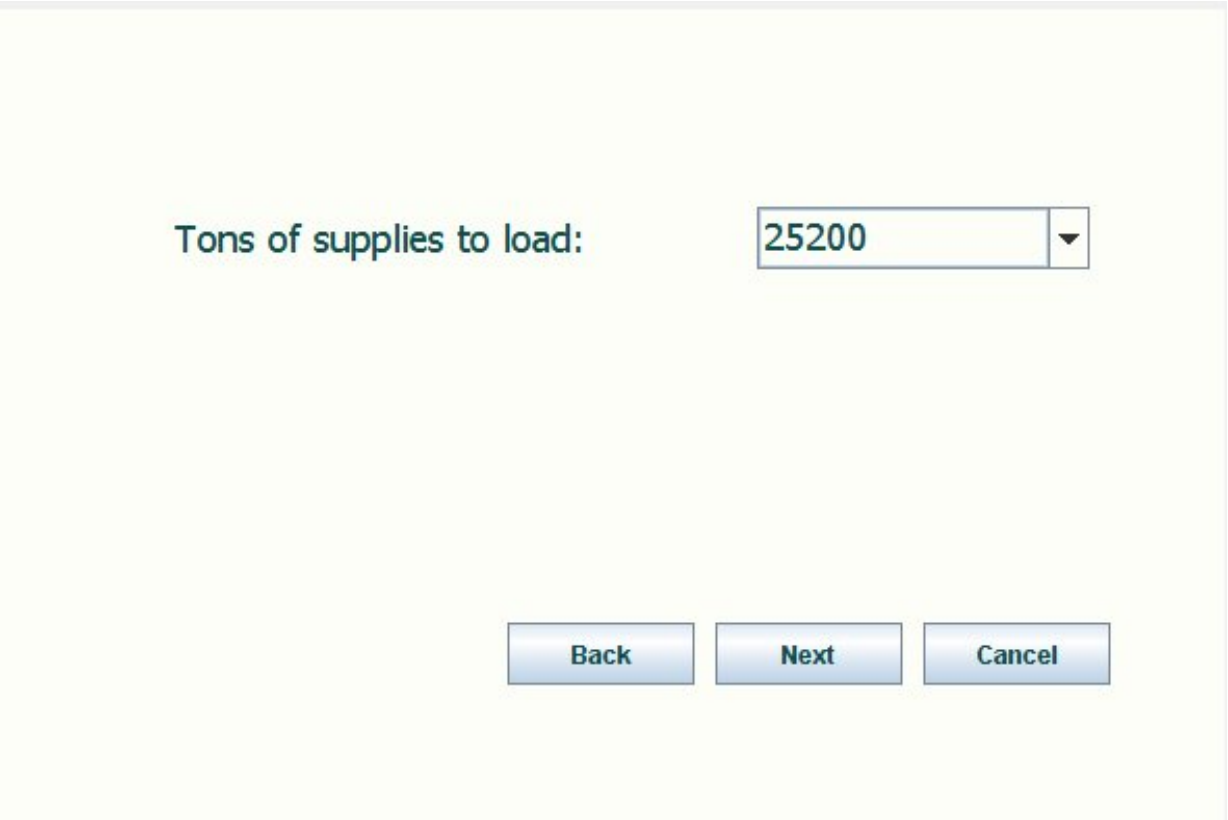
In this example, we will load a small battalion of 1000 troops:



Clicking the "Back" button takes you back to the start. Clicking the "Cancel" button cancels the load operation. Here, we will click "Next" to continue on.

Loading Supplies

You will now see a dialog for loading supplies:



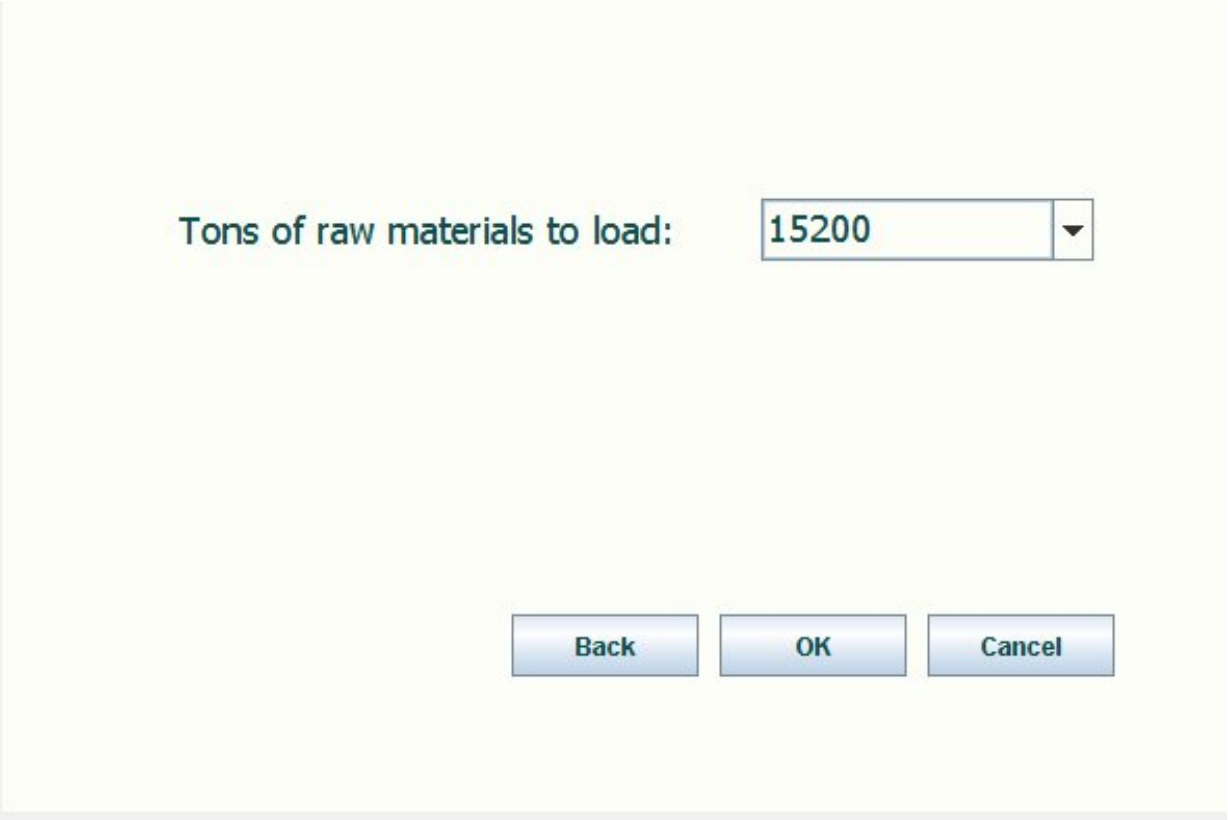
Note that the dialog says there are 25,200 tons of supplies to load, whereas there were 32000 tons at the start. Thie reduction is because the fleet has reduced load capacity (after loading the troops).

Here, we will load 10,000 tons of suppplies:

Again, you have a "Back" and a "Cancel" option, but we will click "Next" to proceed further.

Loading Raw materials

The final dialog lets you use remaining capacity (if any) to load raw materials:

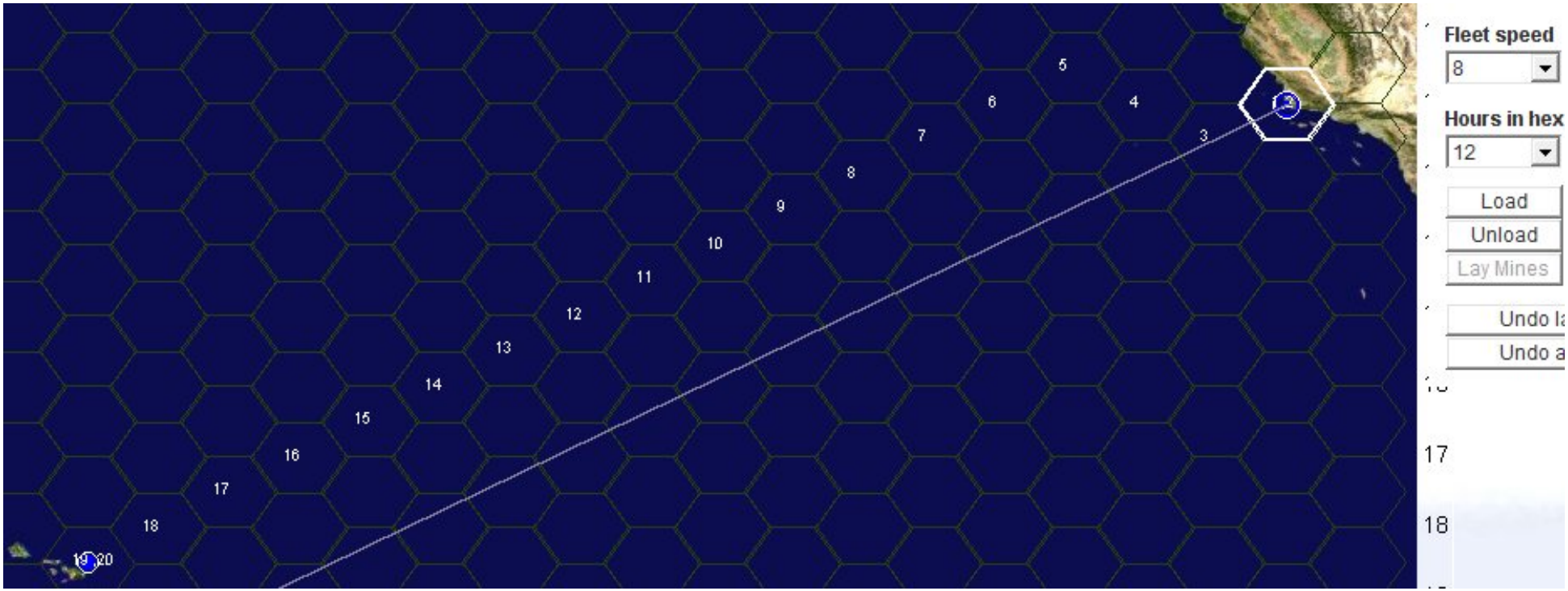


In this example, we will load to full capacity by accepting to load the maximum amount (15,200 tons) of raw materials we can. Just click the "OK" button. That completes the special commands need to set up cargo loading.

Cargo Unloading

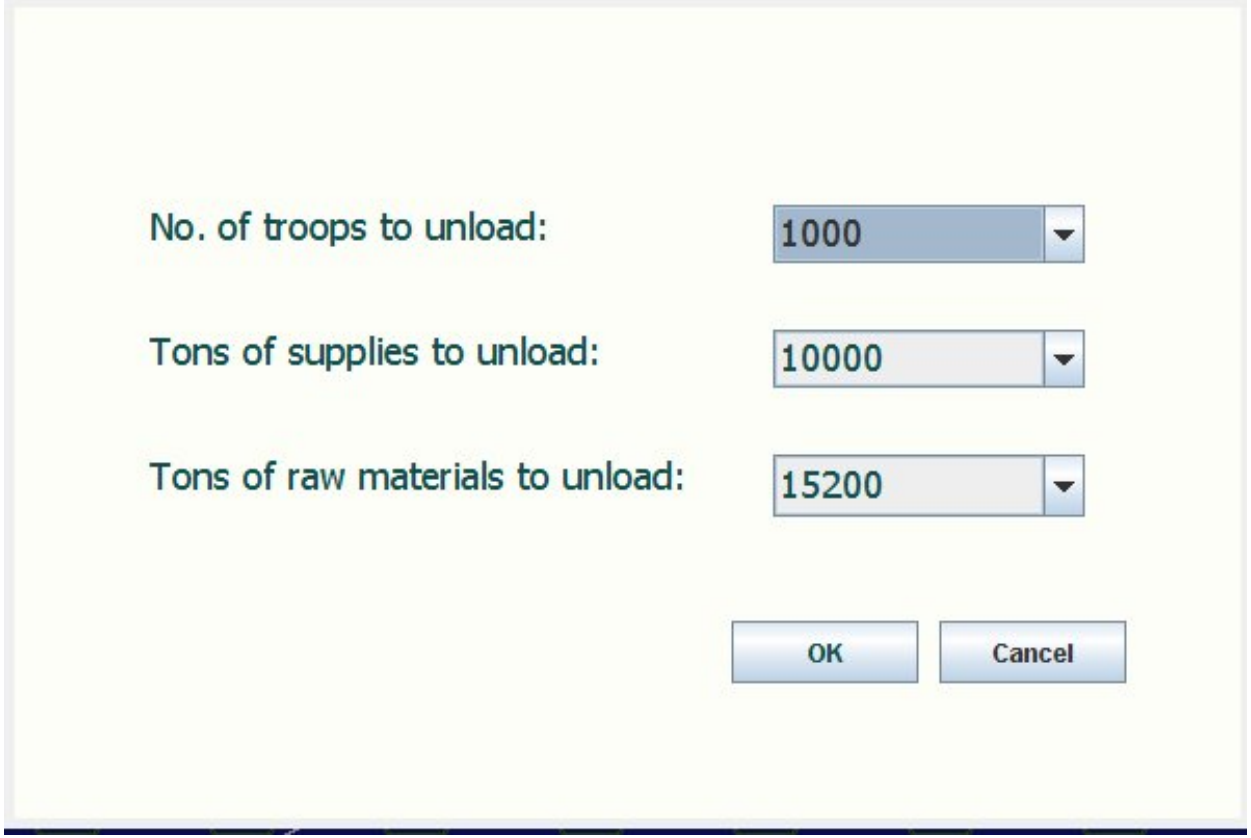
When a fleet carrying cargo is scheduled to berth at one of your ports, you can schedule to unload some or all of it at the port.

In the example shown below, after the loading operation above, fleet CF1 has been ordered to sail to Pearl Harbour at its maximum cruising speed of 8 knots:



The "Unload" button at the right of the map is now enabled

Clicking this button brings up a dialog to control the unloading operation:



You can see that it is showing as available for unload, the amounts and types of cargo it has been scheduled to load on the US west coast

You can unload none, some or all. Just select the amounts in each of the three combo boxes, and click "OK" to finish the order (or "Cancel" to cancel out of the order).

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Surface Battle Replay

Battles between surface fleets are replayable in the Battle Replay screen. Watch as ships move, fire shells and torpedoes, change orders and suffer damage. The action is calculated shell by shell, and the replay can be run forwards at varying speed, as well as backwards. You can also force the replay to stop on key events, such as torpedo or main gun hits.

Ship movement is shown in a simplified 2D representation. The position of ships in the horizontal axis measures the distance between them. The vertical positioning on screen is purely for display purposes, to allow ships to be separated.

Note that during battle, new fleets may join in. If so, the additional ships will appear in the battle replay at the time they join in.

Range information

The scale currently applying to the binocular view is shown just beneath the lower centre of the binoculars:

In the picture above, the width of the binocular view is 40000 yards.

You will notice that as you zoom in or out, this scale will change. (See zooming and scrolling.)

More detailed range information is displayed each time a hit occurs. With every hit, the range between target and firer is given.

Ship colours

To aid visual recognition, all ships of one side are colored pale grey, while ships of the other side are a darker grey.

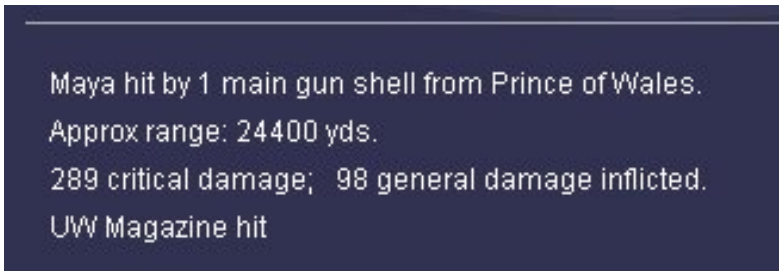
When a ship is firing guns or torpedoes, it is temporarily highlighted in a whiter colour. If it has been hit by shells or torpedoes, it is temporarily highlighted in a pinkish colour.

Ships that are sunk are shown in black.

Gun and torpedo hits are also shown visually as splashes. The larger the splash, the more damaging the hit. Also, hits that cause severe damage, such as a magazine explosion, are shown in red.

Hit data

In addition to the visual splashes for hits, each hit is described in the panel below the binoculars. Here is a sample:



The calculation of damage is quite sophisticated - refer to surface battle mechanics for more information.

Accessing the Battle Replay

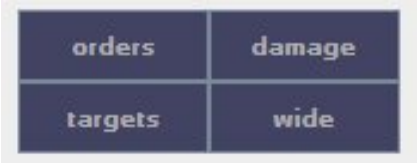
From the surface battle summary report, just click on the "Replay battle" button at the top of the report screen.

Battle Views

There are four views of the battle. While the central binocular view remains unchanged,

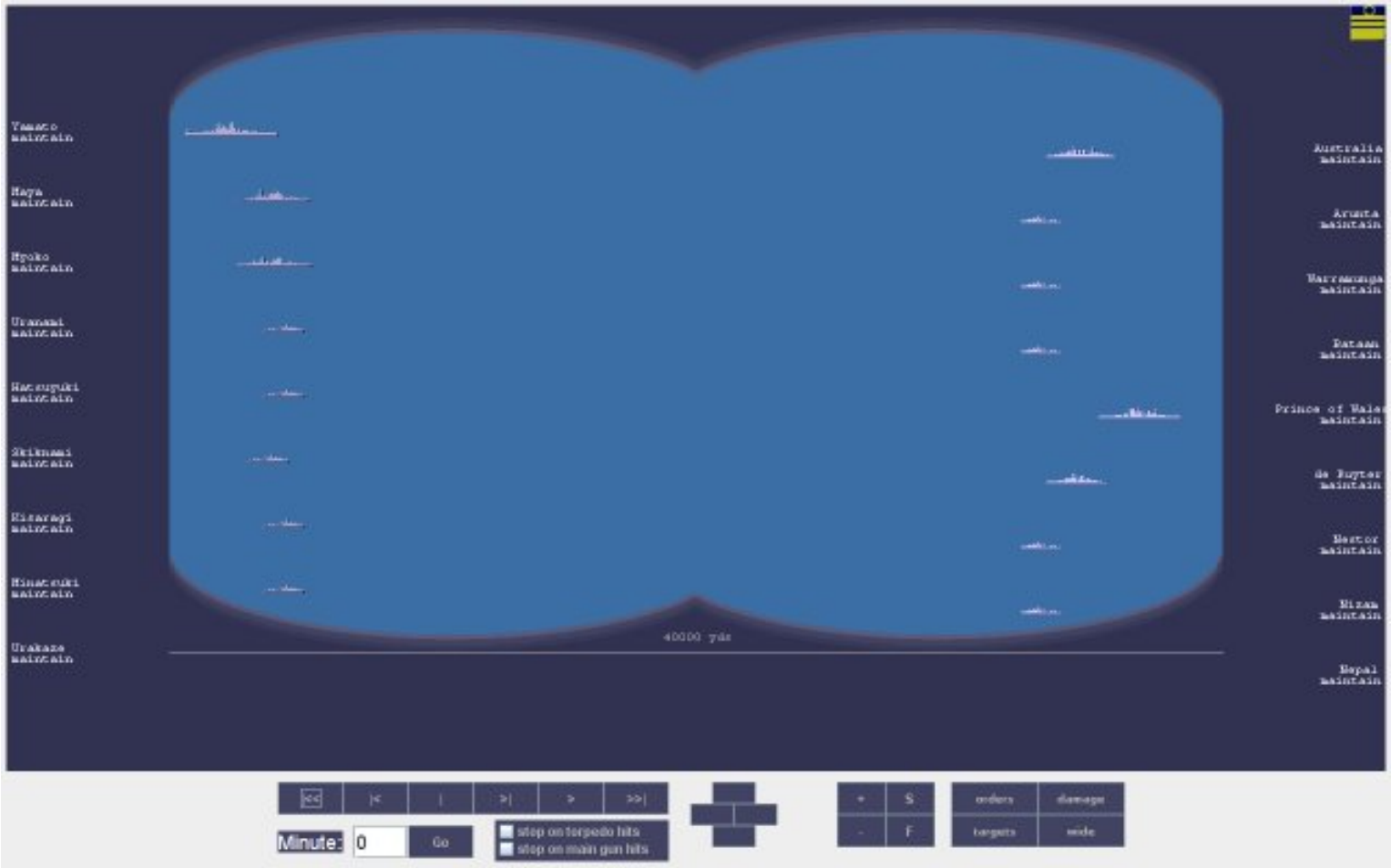
the four differerent views present different information in the side panels.

You can toggle between these views by clicking on the view buttons at the bottom right of the screen:



Orders View

The default view when the replay is opened is the orders view. It will look something like this:



Ships of both sides appear in the central binocular view. Each ship is shown by its silhouette. The ship's name and current orders are gven in either side panel, in the row corresponding to where the silhouette is located.

The side panels show the current orders for each ship. Two pieces of information are given:

- The ship's current movement intention is described. This will be either "maintain", "run", "open directly", "open", "close directly" or "close". These terms have the following meaning:
  - "maintain" means that the ship will try to maintain the current range to its current target.
  - "run" means that the ship will try to open the range from its current target as quickly as possible, without regard to the bearing of its own guns or torpedoes (if it has any). This order is given to a ship when it needs to escape due to excessive damage or because the enemy odds are too high.
  - "open directly" is similar to "run" but the line of retreat is not so fine and allows some tactical manouevering to improve the ship's ability to fire back while trying to temporarily increase the range.
  - "open" is similar to "open directly" but the withdrawal is more measured again, allowing for further improved tactical manoeuvers to preserve favourable offensive capabilities.
  - "close directly" is like "open directly" but this time the ship is trying to aggressively close the range on the enemy target whilst keeping some degree of tactical manouver.
  - "close" is a cautious approach to reduce the range to the enemy, yet trying to maintain full tactical manouever.
- In addition, the *reason* for the movement order will often be given. For example, if the order is to "open", the reason may be "low on ammo". The range of possible reasons is given below:
  - out of guns or ammo (run)
  - too damaged (run)
  - low on ammo (open)
  - get outside enemy gun range (open or open directly)
  - get inside IZ (open or open directly) (Note: "IZ" means immunity zone against the enemy target, if there is one)
  - avoid torpedoes (open or open directly)

- get to best gun range (close or close directly)
- get to torpedo range (close directly)
- no target in range (for close or close directly)
- defenceless target (close or close directly)
- making too few hits (close or close directly)

Target view

In this view, the movement order information is replaced by information about the current primary and secondary targets for each ship.

In the example below:

```
Myoko
vs Prince of Wales
vs Bataan
```

The Japanese cruiser Myoko is targeting the Prince of Wales as its primary target (ie, as the target for its main guns) while it is targeting the destroyer Bataan as its secondary target (ie for its secondary guns and torpedoes)

If no target info is shown for a ship it means that there are no enemy ships currently in range. If there is only one target entry, this will be because its primary guns are in range of enemy but its secondary guns and torpedoes are not.

Damage View

In this view, the current damage status of each ship is shown graphically, by means of coloured bar segments:

- white bars mean ammunition loss - each segment means 10% loss
- red bars mean hull damage - each segment means 10% loss
- brown bars mean superstructure damage - each segment means 10% loss
- blue bars mean loss of flotation - each segment means 10% loss
- yellow bars mean loss of main turrets - each segment means one main turret lost
- green bars mean speed loss - each segment means 3 knots lost speed

As an example, the following extract is of the damage bars for a ship:

The bars show that the ship has lost 10% of its ammunition, all of its superstructure is damaged, 40% of it's hull is damaged, its speed is down by 21 knots, there is 10% flooding and three main turrets are lost.

By toggling between the views, you will be able to quickly see how particular ships are doing - how damaged they are and what their movement and targeting orders currently are.

Note that the damage view shows the current damage status of the ship. Sometimes, ships will start a battle already damaged from a previous encounter. If so, the damage bars will show that damage as soon as the replay is started.

Note also that the replay takes you through to the end of the actual battle. After every battle has ended, the computer performs some post-battle calculations in the immediate aftermath. Sometimes, a ship not yet sunk by battle's end will sink soon after, in which case it will show as sunk in the Battle Summary screen but not in the battle replay. Other times, a ship may be able to reduce damage such as flooding. What happens depends on the balance between the severity of damage and the remaining ability of the ship's damage control. This explains why there is sometimes a difference between the damage shown for ships at the end of the battle replay compared to what is shown for the same ships in the Battle Summary screen.

Wide View

In this view, the side panels dissapear completely, and the full screen width is used for the binocular view.

Replay Controls

Running the replay

The replay can be run forwards, or backwards, or stopped at any point.

These functions are performed using these controls at the bottom of the battle replay screen:

The replay always starts paused at minute zero.

- use the '>' button to start the replay
- use the '>|' button to replay only the next event (shell or torpedo hit)
- use the '>>|' button to jump to the end of the battle.
- use the '|' button to pause the replay.
- use the '|<' button to jump back to the start of the previous minute
- use the '|<<' button to jump back to the start of the battle.

Stopping on events

While the replay is running, you can force it to stop whenever a main gun hit and/or a torpedo hit occurs.

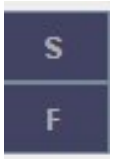
Select either or both these options using these tick boxes:

Jump to a selected minute

To jump to a particular minute of battle, enter the number and click the "Go" button:

Changing the replay speed

Speed up the replay speed clicking the "F" button; each click speeds the replay up by an increment. Slow it down clicking on the "S"button:



Zooming and scrolling

Zoom in on the binocular view clicking the "+" button; each click zooms in by an increment. Zoom out clicking on the "-" button:

As you zoom, the scale for the binocular view will change.

Often you will want to move the binocular view around to see all of the battlefield, especially if you are zoomed in.

Move the binoculars in any of four directions (up/down/left/right) using these buttons:

When ships are also under aerial attack

Note that it is possible for ships in a surface battle to be simultaneously under air attack at any point in the surface battle.

If this occurs, you may notice that damage to one or more ships from the air attack will suddenly appear in the surface battle replay even though the damage was not from a shell or surface-fired torpedo.

The surface battle replay always shows the up to date damage condition of ships (from all causes).

Exiting the replay

Exit the replay at any time by clicking on the SAS WW2 icon at the top right of the screen:

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Create a campaign - setting the start date

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Create Campaign - Set the industrialization index

Every port has a domestic and an export industrialization index value of between zero and 10.

The index is a measure of the level of industrialisation that is able to sevice the port. Export industry uses export materials available locally or convoyed in to create RPs that are then stored at the port. Domestic indutsry uses domestic materials available locally.

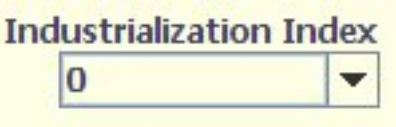
A higher industry value means not only more but more complex industry. The higher the level, the more the value that can be extracted from a given amount of materials.

The industry levels at your ports, together with the export and domestic materials indices (see setting the export materials index and (see setting the domestic materials index for more information), are used by the computer when it calculates the total value of your economy. The value of every possible convoy route between your ports is calculated, and a weighting is also applied based on how short the route is: shorter routes are worth more because more goods can be carried in a given amount of time.

Changing the industry levels can have a big affect on the value of a country's economy, and hence on the starting odds also.

As industry values are changed you should notice the odds change also (unless the change is small).

To change the industry level for the currently selected port, just select a new value in the combo box.



Note that although you can improve industry levels at selected ports during a game, this gets increasingly expensive as industry levels increase. It is relatively easy to establish small scale industry, but to create a fully sophisticated industrial base is very expensive (and time consuming) indeed. Giving a country an advantage with its industry at the start of the war represents a significant advantage (all else being equal).

Note also that it is most productive for industry levels to be highest at your home port, because this is where aircraft and troop unit production take place and most or all of your ship production also. Surplus RPs can be convoyed in to home port but this takes time and involves risk of course.

Other Port Parameters

Click here to return to the help page detailing what other port parameters you can change.

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Swapping Sides

2IC help with constructing aircraft

Every turn you can spend RPs on constructing more aircraft. You can vary the amount of expenditure (within limits), and you can also influence which types of aircraft get built.

Then, you can review the details of how they have been deployed by your 2IC to your airfields and carriers. He has taken the tedium away from you, but you can manually override any part of the plan and deploy chosen aircraft to selected locations.

To build new aircraft, from your Admiral's Office, click on "Build" on the main menu on the blackboard, and then on "A/C" on the build menu.

You will now see a screen like this:

Your 2IC stands ready to present to you a plan for the construction of new aircraft, which is consistent with your country's overall strategy. It has been negotiated with your senior theatre land commander, who reports to the most senior army generals who have control over aircraft targets.

You have two options at this point:

1. Optionally change your strategy first, by clicking on the "Change Strategy" button. See how strategy affects aircraft construction for more information.
2. Then, view the plan by clicking on the "View" button.

See how to build AC for help on how to amend your 2IC's plan.

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Surface Battle Mechanics