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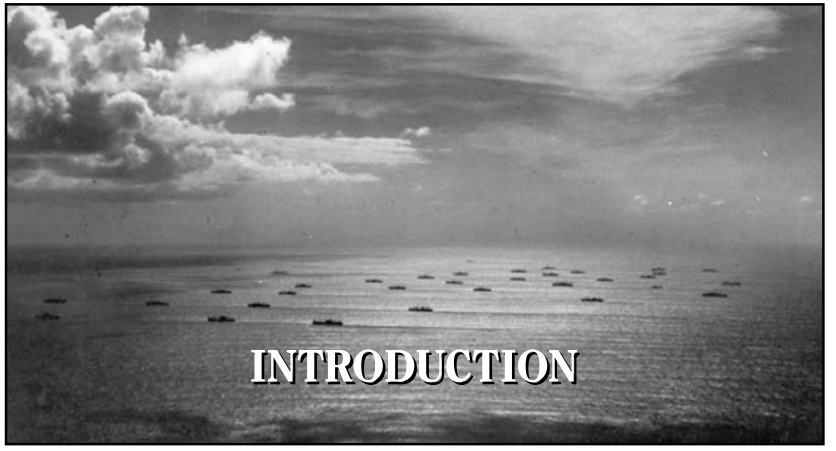

PACIFIC WAR *is a strategy game that covers the entire war between the Japanese Empire and the Western Alliance. All facets of the war are covered; carrier battles, amphibious assaults, strategic bombing, kamikazes, and the submarine war against merchant shipping are all critical in determining the outcome.*

Pacific War places you in the role of a Nimitz or Yamamoto. You deploy all of your nation's strategic assets, and plan naval, air, and land campaigns in an effort to crush your opponents.

YOUR GAME BOX SHOULD CONTAIN: *• A Game Disk • This Rule Book • A Data Card*

STARTUP

Backup Disks

Your game disk has no physical copy protection, so please make a backup copy and put the original away for safekeeping. Use the information that came with your computer to make the backup copy.

README File

Your game disk may come with a README file that contains rules updates and/or errata. Please read the file carefully before playing the game.

Installing the Game

Use the instructions on your data card to install and play the game.

Documentation Check

To verify that you have a legitimate copy of the game you will be asked to answer a question using information from this rule book.

Note: Do not count section headings as part of paragraphs.

PLAYER AIDS

The scope of the game is immense — about 200 bases and all of the land, air, and sea forces available. The player aids listed below were designed to help you get started.

How to Play

For a tutorial that gives you an idea of how to play the game, see the "Tutorial" section on page 55.

Amphibious Landings

In order to capture most of the bases in the game, amphibious assaults must be made. Review this section to give you an idea of the many different types of TFs you will need to make a successful landing against a heavily defended base. See "Amphibious Operations" on page 54.

Scenario Objectives

Due to the large number of bases and the size of the map, each scenario has some suggestions as to what to do. See "Setting Up the Game" on page 4 for more details.

List of Battles

See the "Timeline" section on page 65 to review the dates for the various battles that took place in the Pacific theatre.

Player's Checklist

In the section "Orders Phase-Player's Checklist" on page 14 you can review some of the important tasks you need to perform in any given turn.

Strategy and Tactics Hints

A section on "Strategy and Tactics" on page 62 gives you some helpful hints on game play.

Summary of Game Menus

A few of the important game menus have been duplicated and grouped together on page 100. These are especially useful when using the keyboard.

GAME CONCEPTS

Game Scale

Each hex is 100 miles across. Each turn is 1 week long.

Game Map

Pacific map areas will contain the following types of terrain:

- *Open sea* (light blue or light blue with a red dot)
- *Coastal* (gray, green, and light blue)
- *Land* (gray and green)

Terrain will effect naval movement as follows:

TFs may never enter a land hex.

TFs may never move through a land hexside.

Only Task Forces (TFs) will be displayed with ship icons on the map. Land Combat Units (LCUs) and aircraft are placed inside bases. The various icons are listed below:

One blue ship	*One Allied TF*
Two blue ships	*Multiple Allied TFs*
One red ship	*One Japanese TF*
Two red ships	*Multiple Japanese TFs*
*US Flag**	*US controlled base*
*British Flag**	*Other Allied controlled base*
*Japanese Flag**	*Japanese controlled base*

* A flag with a green colored border shows that both sides have Land Combat Units in the hex.

Combat Forces

A Pacific scenario will contain some or all of the following:

Carriers (CV,CVL)

Escort Carrier Groups (CVE)

Battleships (BB)

Battlecruisers (BC)

Heavy Cruisers (CA)

Light Cruisers (CL)

Antiaircraft Cruisers (CLAA)

Seaplane Cruisers (CS)

Destroyers (DD)

Destroyer Escorts (DE)

Patrol Craft (PC)

Destroyer-Transports (APD)

Transports (AP)

Landing Ships (LST)

Merchant Cargo Ships (MC)

Oilers (AO)

Tankers (TK)

Submarines (SS)

Land-based Air Groups

Land Combat Forces

Headquarters

Leaders

Game Abbreviations

A list of the game abbreviations appears on page 101.

TALKING TO THE COMPUTER

Using the Keyboard

Note for IBM users: Make sure your [Num Lock] and [Caps Lock] are off before playing.

Use the following keys to move the cursor around the map in large increments:

I

J K

M

Use the following keys on the numeric keypad to move the cursor:

7 9

4 6

1 3

Other options can be accessed with hotkey commands. These commands are listed on the back of this rule book, and can be displayed during the game by pressing the '/' key.

Horizontal and Vertical Menu Selections

Use the "4" and "6" keys or the left and right arrow keys to move horizontally across the menu. Use the "8" and "2" keys or the up and down arrow keys to move vertically in the menu. Press <Enter> to accept your selections. Some of the menus that require these keystrokes are the Setup Menu, Delay/Display Menu, Aircraft Factory Change Menu, and Standoff Range Menu.

Using the Mouse

Use the mouse to move the pointer over the menu items and buttons. To move around the map, click the pointer at the

edges of the map. To select hexes, move, or transfer units, click the pointer over a desired hex. Click the left mouse button to activate the Unit Menu over a particular unit (Task Force, Base, Army, or Airfield). Click the right mouse button to get information about friendly units in the hex.

All keyboard commands also work if you are using a mouse.

SETTING UP THE GAME

When you start a game, the Setup Menu allows you to load saved games or set up new ones. You can return to this menu while playing by selecting ESC or pressing "Q" on the General Orders Menu and SETUP on the Options Menu.

Each scenario has a list of short term objectives that you can review to give you an idea what bases you need to be concerned with in either attacking or defending.

SETUP MENU

SCENARIO	PLAYER	BALANCE
Saved game	Japanese Computer	Max Help Japanese
Campaign 41	Allied Computer	Help Japanese
Campaign 42	Both Human	Even
Rising Sun	Both Computer	Help Allied
Coral Sea/Midway		Max Help Allied
Guadalcanal		
Marianas		
Leyte Gulf		
	ACCEPT SETUP	

If you are using the keyboard, see the section on "Horizontal and Vertical Menu Selections" on page 3 to make your menu selections.

SCENARIO selection allows you to load a saved game or start one of the scenarios:

Saved Game loads a previously saved game. You will be asked to choose from a list of five different saved games (a-e). It would be helpful to look at your directory before playing the game or keep a list of your saved games.
Note: When you load a saved game remember to reset the Player and Balance options.

Campaign 41 (7 December 1941 to End of the War)

Japanese Short Term Objectives:
Capture and hold Rabaul, Rangoon, and all the bases in Malaya, Philippines, Borneo, Sumatra, and Java.

Allied Short Term Objectives:
Defend Port Moresby, Milne Bay, Espirtu Santo, Noumea and all the bases in India, Australia, and Hawaii.

Campaign 42 (2 May 1942 to End of War)

Japanese Short Term Objectives:
Capture Midway, Johnston Island, Kauai, Oahu, Maui, Hawaii
or
Capture Guadalcanal, Buna, Milne Bay, Port Moresby, Espirtu Santo, Noumea, Suva.

Allied Short Term Objectives:
Defend Port Moresby, Milne Bay, Espirtu Santo, Noumea, Suva, and all the bases in India, Hawaii, and Australia

Rising Sun (7 December 1941 to 31 March 1942)

The objectives are the same as Campaign 41.

Coral Sea/Midway (2 May 1942 to 30 June 1942)

The objectives are the same as Campaign 42.

Guadalcanal (7 August 1942 to End of War)

Japanese Short Term Objectives:
Capture Milne Bay and Port Moresby.

Defend Guadalcanal, New Georgia, Shortland, Buna, and Rabaul.

Allied Short Term Objectives:
Capture Guadalcanal, Buna, and New Georgia.

Defend Port Moresby, Milne Bay, Espirtu Santo, Noumea, Suva, and all the bases in India and Australia.

Marianas (12 June 1944 to End of War)

Japanese Short Term Objectives:
Defend Saipan, Tinian, Guam, Iwo Jima, Palau, all the bases in the Philippines, and New Guinea.

Allied Short Term Objectives:
Capture Saipan, Tinian, Guam, Ulithi, Palau, Sorong, Morotai, and Leyte.

Leyte Gulf (13 October 1944 to End of War)

Japanese Short Term Objectives:
Defend Iwo Jima, Okinawa, and all the bases in the Philippines, Formosa, and Japan.

Allied Short Term Objectives:
Capture Leyte, Cebu, Iwo Jima, Okinawa, and all the bases on Luzon.

PLAYER control selections choose whether sides are human or computer controlled. These options may be changed during play by selecting the Setup option in the Options Menu. With these options you may play through games commanding the side with the most interesting strategic situation, or replay saved games to see if you could do better than your opponent in an identical situation.

BALANCE selections allows you to play with both sides on equal footing or to favor one side over the other.

EVEN means the game will operate with normal rules for both players.

HELP gives the player being helped the following advantages:

• Air Groups will gain experience faster.

• Ship reinforcements will be received sooner.

• Airfields and ports will be constructed and expanded faster.

• Ports will have their repair capacity increased.

• Factories will expand faster.

• Japanese industry will be more efficient converting oil into fuel.

• Land combat units will suffer less routine readiness loss.

• Enemy submarines will make fewer attacks.

MAX HELP gives the player being helped the same advantages listed above at the HELP level, but the effect is doubled.

Options Menu

JAPANESE/ALLIED PLAYER
ORDERS
END TURN
SAVE
SETUP
ACCEPT

ORDERS takes you to the Orders Phase where you issue all orders regarding forming task forces and assigning them movement objectives, positioning your air and submarine assets, marching your land units or embarking them (on Transport TFs) for amphibious operations. You may also examine friendly airfields and sighted enemy TFs and evaluate the overall strategic situation.

END TURN will end the orders phase of each player's turn and start the Execution Phase.

SAVE allows you to store the current game to disk. Select one of five different letters (a-e) to save your game under. It might be helpful to keep track of your saved games.

SETUP returns you to the Setup Menu described on page 4.

ACCEPT puts your choice into action.

Display/Delay Menu

DISPLAY	DELAY
NONE	NONE
LOW	LOW
MEDIUM	MEDIUM
HIGH	HIGH
ACCEPT	

DISPLAY regulates the amount of information the player will receive as combat is resolved. A High selection will display all combat but will slow the execution considerably.

DELAY determines how long each message will be displayed on the screen. Play with this to find the level that works for you.

ACCEPT sets your selections and exits the menu.

You can change the display/delay levels during the Orders Phase by selecting UTIL then DELAY with the mouse, or by pressing the F10 key. You can change the levels during the Execution Phase by pressing <Space>.

Historical First Move

This option gives you the choice of having the computer make the historical movement/attacks on the first turn.

TURN SEQUENCE

Each game turn consists of the following sequence of phases:

Japanese Player Turn:

Routine Convoy Phase

Orders Phase

Allied Player Turn:

Routine Convoy Phase

Orders Phase

Execution Phase:

Resolve land combat between Land Combat Units

Resolve land-based air strikes against land targets

Move TFs and resolve enemy reaction attacks

Resolve naval combats at each TF's destination

Unload transport and cargo ships and resolve amphibious assault combat

Move TFs back towards their Home Base and resolve reaction attacks.

Resolve land-based air strikes against land targets

Resolve land combat between Land Combat Units

Perform logistic operations

ORDERS PHASE

At the start of the player's orders phase, the map is displayed. Just below the map are 13 mouse function 'buttons'. These functions may be performed by moving the pointer over the desired button and clicking the mouse. Listed below is a brief description of the mouse function buttons and their keyboard equivalents:

GENERAL ORDERS MENU

BUTTON	DESCRIPTION	KEYBOARD
MODE	Set Display Mode (TF, PORT, AF, ARMY)	none
←→↑↓	Move Large Increments	I, J, K, M
CNTR	Center Cursor	F2
MAP	Change Map Scale	F1
ZONE	Display Friendly Air ZOC	Shift-Z
UTIL	Utility Menu	none
NEXT	Next Unit*	N, O, S, Z
HQ	HQ Menu	none
PATH	Show Overland March Paths	F3
ESC	Quit, Return to Last Menu	Q, Esc

* the type of Unit is set with the Display MODE button.

MODE (None) allows you to cycle through four different unit modes: TF Mode, Airfield Mode, Port Mode, and Army Mode. Pressing the left mouse button while in any Mode brings up the Unit Menu.

TF Mode displays the various ships in the current TF displayed on the bottom line of the right side of the text window by clicking the right mouse button or by pressing the "G" key.

Airfield Mode displays the various aircraft groups on the base by clicking the right mouse button or by pressing the "A" key.

Port Mode displays the various ships in port by clicking the right mouse button or by pressing the "P" key.

Army Mode displays the various Land Combat Units (LCUs) by clicking the right mouse button or by pressing the "W" key.

←→↑↓ (I, J, K, M keys) allows you to move the cursor on the map in large increments in order to move around the map very quickly.

CNTR (F2 key) centers the map on the present cursor location.

MAP (F1 key) switches the map scale displaying either a tactical or strategic view of the map.

ZONE (Shift Z key) displays the friendly Air Zones of Control (AZOC) that your aircraft have created. For more details see "Air Zones of Control" on page 50.

UTIL (None) accesses the Utility Menu (see page 8).

NEXT (N, O, S, Z) displays the next unit or port. Using the mouse if you are in TF Mode, Port Mode, Army Mode, or Airfield Mode, you will have displayed the next TF, Port, Army, or Airfield respectively. Pressing the N, O, S, or Z key will display the next TF, Port, Army, or Airfield respectively.

HQ (None) displays the HQ Menu which is described in detail on page 12.

PATH (F3 key) displays the available land march paths between bases for Land Combat Units.

ESC (Q or ESC key) exits to the Options Menu (see page 5).

The following icons may be displayed on the map:

ICON	DESCRIPTION	KEYBOARD
Ship (TF)	Examine TF	G
Ships (TF Stack)	Examine TF Stack	Space Bar
Base	Examine PORT, ARMY, AF*	P, W, A

The icon functions may be performed by moving the pointer to the icon and clicking the right mouse button.

* When using a mouse the Display Mode determines the type displayed.

To examine information about a base (flag symbol) or TF (ship(s) symbol), move the cursor over the icon. Using a mouse, press the left button to place the cursor over the hex. Press the right button to examine the Port, Army, Airfield, or TF. If there is more than one TF in a hex, a display of all the TFs will come up on the screen. Place the pointer in one of the TF boxes and click the left button to display the ships in the TF. Using the keyboard, press the keys shown above to display the base or TF information. If there is more than one TF in a hex, press the space bar to bring up the display of all the TFs. Use the up and down arrow keys or the "2"and "8" keys to highlight (in yellow) the TF you wish to examine. Press <Enter>. Once the ships in the TF are displayed, you will have the option of assigning a leader if the TF begins the turn in its Home Port.

Utility Menu Options

The Utility Functions may be listed by selecting the Utility Menu (UTIL Button) shown above:

UTILITY MENU

BUTTON	DESCRIPTION	KEYBOARD
SUNK	List Types of Ship Sunk	F8
LOSSES	Show Casualty Points	F9
SCORE	Display Current Score	F9
POOLS	Aircraft Replacement Pools	F4, F7
INDUSTRY	Show Locations of Factories	none
SIGINT	Reveal Japanese Objectives and Unit Locations	F5
BATTLE	View Last Turns Battle Reports	ALT/B
AIR ZONES	Show Enemy Air ZOC	ALT/Z
DELAY	Set Delay/Display Levels	F10
ISO-BASE	Show Isolated Friendly Bases	ALT/O
DELAY	Set Delay/Display Levels	F10
EXIT	Exit Game - Return to DOS	ALT/Q
QUIT	End Orders Phase	Q

SUNK (F8 key) displays the type of ships and the number that have been sunk for each player.

LOSSES (F9 key) displays the total number of points *lost* for the air, land, and sea units for each country. The number of points are calculated according to the formulas in the section "Victory Conditions" on page 61. Also displayed is the score as noted below.

SCORE (F9 key) displays the current score for each player showing the number of points awarded for kills, control of bases, production. The total points possible are displayed as well.

POOLS (F4, F7 keys) displays the ships that are in the Ship Pool and the aircraft that are in the Aircraft Replacement Pool. The F4 key displays the Ship Pool and the F7 key the Aircraft Replacement Pool. When the Aircraft Replacement Pool is displayed, you can also view the Factories, Shipyards, and Oil/Resource bases with the keyboard commands ALT/H, ALT/A, ALT/R, ALT/S, and ALT/O. See "Industry" explained below.

INDUSTRY (none) allows you to view the various bases with their number of production points. You can view the Heavy Industry Factories, Artillery Factories, Armored Vehicles Factories, Shipyards and Total Ship Construction Points Available, and the Oil/Resource List. Using the keyboard you can view these lists by pressing the F7 key and then the ALT/H, ALT/A, ALT/R, ALT/S, and the ALT/O keys as explained in "Pools" above.

SIGINT (F5 key) represents the Allies' Signal Intelligence ability to decipher Japanese communications. The game system allows the Allied player to target those areas in which he most wants

intelligence. The computer will display the number of SIGINT targets allowed for that turn. To obtain information on a target move the cursor to the target's location and then press the letter "H", "P", "A", "R", or "T" or click the button for the type of target you wish to examine. The quality of the information you receive will depend on the current effectiveness of your codebreakers. Each turn the Allied player may select from 1 to 5 targets for his codebreakers. There are 5 types of targets: Headquarters, Ports, Armies, Airfields, and Task Forces.

BATTLE (ALT/B) allows you to review the combat and TF movement that occurred in the previous Execution Phase. While in Battle Report Mode the TF and base symbols will be erased and circle, triangle, and square symbols will be shown to indicate the areas where combat occurred.

Circles represent air strikes or naval bombardments, squares represent land combat, and triangles represent naval surface combat. All of the combat that occurred in a hex may be reviewed by moving the cursor to the hex and clicking the left mouse button or pressing G.

By clicking the NEXT button or pressing "N" each friendly TF may be located. By clicking the PATH button or pressing "P" the TF's movement and combat during the previous turn may be reviewed.

AIR ZONES (ALT/Z) displays the enemy Air Zones of Control from enemy air bases. See "Air Zones of Control" on page 50.

ISO-BASE (ALT/O) lists the bases which cannot be supplied by the Routine Convoy system due to the threat of enemy air attacks as shown by the enemy Air Zones of Control option explained above.

DELAY (F10 key) allows you to adjust the Display and Delay Levels. For more details see "Display and Delay Menu" on page 6.

EXIT (ALT/Q) allows you to exit to DOS. You will be given an option to exit ("Y") or return to the game ("N").

QUIT (Q key) allows you to return to the Orders Menu in order to End Turn, Save, Setup. See "Orders Menu" on page 7 for more details.

Unit Menu Options

A Unit Function may be listed by moving the pointer over a friendly unit and clicking the mouse:

UNIT MENU

BUTTON	DESCRIPTION	KEYBOARD
FIND SHIPS	Locate any Ship on the Map	ALT/U
MARCH	March Land Unit to Base	ALT/W
SET DEST	Set TF Destination Base	D
SET BASE	Set TF Home Base	H
REMOVE TF	Remove/Disband TF at Base	R
SHIP TRAN	Transfer Ships into Current TF from Port or Other TF	T
UNLOAD TF	Unload Current TF at Base	U
LOAD TF	Load Current TF at Base	L
CREATE TF	Create a New TF at Cursor	C
REPLENISH	Replenish Current TF	Y
MOVE OPTION	Set TF Standoff Range and Return to Port Orders	F
AIR TRAN	Transfer Air Group to Current Airfield	ALT/A
AIR TARGET	Set Priority Target Base for an Airfield	B
SUB MODE	Move Submarines	ALT/M

FIND SHIPS (ALT/U) allows you to locate any ship on the map. Place the cursor over any base and press ALT/U or click the left button and select FIND SHIPS. A list of the ship types will be displayed. Select the type of ship desired. Next will be displayed a list of all the locations

(base or TF) of the ships. Select the ship you wish to look at and the map and cursor will center on that ship's location.

MARCH (ALT/W) allows you to march LCUs to a different base. Move the cursor over the base you wish to move to and press ALT/W or click on MARCH from the Unit Menu. Then move the cursor to the base with the LCUs to be moved and click the left button or press "W". The available LCUs will be displayed in the window. Select the unit(s) you wish to march to the Destination Base. In order to march normally, units need at least a readiness of 50 or more. Also the necessary PPs must be available. See "March Mode" on page 16.

SET DEST (D key) allows you to set a destination for the current TF by moving the cursor to the desired Destination Base and pressing <Enter> or pointing the cursor at the destination and clicking the left mouse button. The TF's destination will be displayed at the top of the TF display. Whenever an Air Combat or Surface TF has a Destination Base that is the same as its Home Base, then those TFs will be eligible for reaction movement during the Execution Phase.

SET BASE (H key) allows you to change the Home Base for the current TF. When a TF is formed in a port, its Home Base will be that port. To change a Home Base for the current TF, press "H" or click SET BASE on the unit menu. Move the cursor to the desired Home Base and press <Enter> or point to the base and click the left mouse button. The TF's Home Base will be displayed at the top of the TF display. A TF will return to its assigned Home Port after it has reached its Destination Base and performed its mission. A TF that Remains on Station at the destination will stay there unless the TF's fuel level is low.

REMOVE TF (R key) allows you to remove the current TF from the map by moving the cursor to the TF's hex and pressing "R" or selecting REMOVE TF. If more than one TF is in the hex, make sure the desired TF is displayed in the information window below the map. A TF with no ships may be removed from any hex on the map. A TF with ships must be in a hex with a friendly base or it may not be removed. Ships assigned to the TF will be transferred to the port. Ships carrying any form of cargo will automatically unload at the port when their TF is removed from play.

SHIP TRAN (T key) allows you to transfer ships between a port and any TFs in the port or between any two TFs in the same hex. Move the cursor to any port with at least one TF in the port. You must be in either PORT or TF MODE. Select SHIP TRAN or press "T" to enter Ship Transfer Mode. Click the right button or press the <Space> to view all the TFs in the port. Press the "G" key or click the TF button or one of the TFs boxes displayed in the upper left corner to select a TF. Select the PORT button or press "P" to access the ships in the Port. A list of ships will be displayed. Select whichever ships you wish to transfer. A maximum of fifteen ship units can be included in any one TF.

UNLOAD TF (U key) allows you to unload a TF in a hex with a friendly or enemy base. When unloading at a friendly base all of the TF's cargo and passengers will be transferred to the base. When unloading at an enemy base, only land combat units and supplies will unload. Supply points will never be accumulated at an enemy base but will be consumed immediately to increase the readiness of friendly Land Combat Units at the base.

LOAD TF (L key) allows you to select the type of cargo or the unit to be loaded (Land Combat Units or Air Groups only), and the ship units that will load them. When loading supply, fuel, oil, or resource, a ship will load up to its capacity. When loading 'mixed' cargo, a ship will load 1/2 its capacity with supply and 1/2 with fuel. Note: If there is more available capacity in a multiple ship unit than there is cargo to load into it, then the excess ships will be removed from the unit and added to the ship pool. The ships that remain in the unit will always be loaded to capacity.

CREATE TF (C key) allows you to create a new TF by moving the cursor to any hex with a friendly port or another friendly TF. Press "C' or click the CREATE TF item on the Unit Menu. Each player may have a maximum of 50 TFs in play. When a TF is created, it must have a mission. See "Selecting a TF Mission" on page 22 for more details.

REPLENISH (Y key) automatically attempts to refuel a TF's ships from stores at their origin base. A TF's ships may also be refueled from a friendly land (destination) base or TF that has a Replenish mission or from other (larger) ships in the same TF. When refueling from ships in the same TF, only ships with more than 30 fuel points may transfer fuel to other ships.

MOVE OPTION (F key) allows you to set/reset the standoff/reaction range, give return to port orders, and select the air target (Air Combat TFs only) for his TFs. TFs with a standoff range greater than zero will halt their movement when they come within that range of their destinations. If the TF is eligible for reaction, then the TF can react to enemy TFs within range. This is useful for Air Combat TFs that need to remain at a distance from possible enemy opposition. The return to port option allows the player to instruct a TF to remain on station, return to port, or allow the TF's leader to determine where to go after the TF reaches its destination. If the TF is an Air Combat TF, then you must also select the air priority target to attack: Task Force, Ship in Port, Airfield, Depot/Factory, or Land Units. During the Execution Phase the computer will attempt to carry out your instructions. Even though your target selection is heavily weighted in order to be carried out, if a much better target appears during combat, the computer will attack the new target. If no priority target is selected then the computer will select targets using the normal method for assigning values to targets and attacking the target with the highest value.

AIR TRAN (ALT/A) transfers land-based Air Groups between friendly airfields of the appropriate capacity. Move the cursor to the airfield that is to receive the Air Group(s) and press ALT/A or select AIR TRANS from the unit menu. Move the cursor to the losing airfield and press <Enter> or click the left mouse button. Select the Air Groups you wish to transfer. If the range between airfields is greater than 4 times the range rating of the aircraft being transferred, then the transfer will not be allowed. See "Air Transfer" on page 17 for more details. Note: When transferring aircraft between bases, if the HQ that the aircraft group is attached to does not have sufficient Preparation Points, then all of the planes will be damaged. Airfields can only have a maximum number of ready (undamaged) aircraft per air group operating which is Airfield Capacity x 10. Any planes in excess of this limit become damaged (see Airfield capacity on page 17).

AIR TARGET (B key) allows you to select the enemy base to attack with your aircraft on the currently selected friendly base. You must also select the air priority target to attack: Task Force, Ships in Port, Airfield, Depot/Factory, or Land Units. During the Execution Phase the computer will attempt to carry out your instructions. Even though your target selection is heavily weighted in order to be carried out, if a much better target appears during combat, the computer will attack the new target. If no priority target is selected then the computer will select targets using the normal method for assigning values to targets and attacking the target with the highest value.

SUB MODE (ALT/M) moves submarines by clicking the left mouse button on an empty ocean hex, by pressing ALT/M, or by selecting SUB MODE with the mouse. If the cursor starts on an empty hex, then the computer will cycle through the list of sub groups available in ports on the map. The player may select the sub group he wishes to move into the patrol zone at the cursor location. If the cursor starts on a hex containing a friendly sub group, then the player may move the cursor to a new patrol zone and press <Enter> or click the left button to move the sub group to the new hex. A delay will be set whenever sub groups are moved.

HQ Menu

BUTTON	DESCRIPTION	KEYBOARD
RELOCATE HQ	Move HQ to New Base	ALT/E
HQ TO TF	Move HQ to a TF	ALT/S
NEW LEADER	Change HQ Leader	ALT/L
AIR LEADER	Change HQ's Air Leader	ALT/P
REINFORCE	Find & Move Air, Land, Sea Forces to Base	ALT/R
CHANGE BASE	Set New HQ for Base	ALT/C
HQ CONTROL	Set Human & Computer Control Level	ALT/K
SET TARGET	Set New HQ Target	ALT/G
GET TRANSPORT	Find & Move Transports to Base	ALT/T
FIND AN HQ	Lists & Finds HQs	ALT/F
HQ UNITS	Lists HQ's Land Units	ALT/D
HQ AIR	Lists HQ's Air Units	ALT/X
ESC	Exit the Menu	NONE

RELOCATE HQ (ALT/E) moves an HQ from one base to another base. The HQ moved is the HQ listed on the second line of the text window underneath the base name. Move the cursor to another friendly base controlled by the HQ and hit ALT/E or click the RELOCATE HQ selection from the HQ Menu. Moving an HQ requires 10 Preparation Points. HQ's cannot be moved from a TF at sea.

HQ TO TF (ALT/S) moves an HQ from the current base to the TF listed on the bottom line of the text window. First access the TF you wish to move the HQ to if there is more than one TF in the port. Next select the HQ TO TF option or press ALT/S to move the HQ to the TF. It costs 10 Preparation Points to move the HQ to a TF. This option helps when the HQ's target is over 29 hexes away. TFs receive more PPs if the HQ is closer to the target.

NEW LEADER (ALT/L) allows you to select a new leader for your HQ. Select NEW LEADER from the HQ Menu or press ALT/L. The available leaders will be displayed and the desired leader may be selected at this time. Selecting a new HQ commander costs 5 Preparation Points.

AIR LEADER (ALT/P) allows you to select an air leader in charge of air operations for your HQ. To change or select an air leader press ALT/P or click AIR LEADER from the HQ Menu. Changing or adding an Air Leader costs 1 Preparation Point.

REINFORCE (ALT/R) allows you to reinforce the current base with LCUs, ships, groups, and supplies. This function is an extremely useful and time saving procedure that may be used at a cost of 25 PPs. When this function is selected:

- AP and LST type ships will be immediately sent to the current base in sufficient numbers to load all "active" LCUs at the base.
- The airfield at the base may be reinforced.
- The airfields nearest the current HQ's target may be reinforced.
- Task Forces containing carriers, surface combatants, tankers and oilers loaded with fuel, merchant ships loaded with supplies, transports loaded with LCUs, and MTBs to protect the base will be formed at various locations and sent to the current base. These TFs will begin their move during the Orders Phase. If the TFs started close enough to the current base, then their ships may be assigned to other TFs/missions during the current Orders Phase.

CHANGE BASE (ALT/C) allows you to change the HQ in control of a base. Place the cursor over the base that you wish to change HQ control. Select the CHANGE BASE option from the HQ Menu or press ALT/C and then from the Headquarter List Menu select the new HQ you wish to control the base. Changing the control of a base requires 5 Preparation Points from the new HQ.

HQ CONTROL (ALT/K) allows you to select the level of computer control over your HQ's units. A player may place an HQ and all of its subordinate combat units under three levels of control: Human Full Control, Computer Operational Control, and Computer Full Control. To set the Computer Control HQ feature press ALT/K or click HQ CONTROL on the HQ Menu. The three levels are explained below:

Full Human Control: The human player controls all land, sea, and air forces subordinate to an HQ.

Computer Operational Control: The human player selects an HQ's target base and the computer will deploy the HQ's assets to capture or defend the target base. HQs with this status will have a * after their name on the display.

Computer Full Control: The computer will be in full strategic and operational control of all of the HQ's assets. HQs with this status will have ** after their name on the display.

SET TARGET (ALT/G) allows you to select a target base for your HQ. Select SET TARGET from the HQ Menu or press ALT/G. Move the cursor to the desired "target" base hex and press <Enter> or click the left mouse button. Changing an HQ's target costs 10 Preparation Points.

GET TRANSPORT (ALT/T) is useful for ensuring the availability of AP (or LST), MCS, and APD type ships at bases where they are needed. At a cost of 10 PPs the GET TRANSPORT function will:

- Send AP and LST type ships immediately to the current base in sufficient numbers to load all "active" LCUs at the base.
- Send MCS type ships with capacity sufficient to load supplies equal to Port Size x 500.
- Send one APD unit.

The above will occur only if the required ships are available in a port (not a TF) and are of the right nationality. Ships may also be transferred out of the Ship Pool to fulfill the requirements.

FIND AN HQ (ALT/F) allows you to select an HQ from the Headquarters List Menu and center the cursor on its location on the map. Select FIND AN HQ from the HQ Menu or press ALT/F. Next select one of the listed HQs by pressing the left button or <Enter>. The computer will center the map and place the cursor at the HQ's base.

HQ UNITS (ALT/D) allows you to view the Land Combat Units attached to the last HQ accessed by selecting HQ UNITS on the HQ Menu or by pressing ALT/D. Selecting one of the LCUs with the left button or <Enter> centers the map and places the cursor at the location of the unit.

HQ AIR (ALT/X) allows you to view the Air Groups attached to the last HQ accessed by selecting HQ AIR on the HQ Menu or by pressing ALT/X. Selecting one of the Air Groups with the left button or <Enter> centers the map and places the cursor at the location of the unit.

ESC (NONE) allows you to exit the menu.

Hotkeys

The following is a list of "Hotkey" Functions:

HOTKEY	DESCRIPTION
N	Next TF, switch to TF mode
Z	Next Airfield, switch to AF mode
S	Next Army, switch to Army mode
O	Next Port, switch to Port Mode
F3	View All March Paths
F4	View Ship Pools
F6	View/Change Factories

Orders Phase-Player Checklist

The players should perform the following actions each turn to ensure their forces are properly positioned and supplied:

❑ Review last turn's Battle Reports, use SIGINT (Allied player), and access spotted enemy TFs to see the number and type of ships in the TF in order to gather as much intelligence information as possible.

❑ Adjust submarine patrol locations.

❑ Use the ISO-BASE and AIR ZONES functions to check the Isolated Base list to determine the need for special supply convoys and what enemy bases are exerting the AZOCs.

❑ Check Tokyo or San Francisco, Calcutta and Sydney to determine if any reinforcements have arrived.

❑ Activate any LCUs that you wish to attack during the Execution Phase.

❑ Use the MARCH function to move LCUs by land.

❑ Use the AIR TRAN function to position Air Groups.

continues....

❑ Use the AIR TARGET function to set the enemy base to attack and the priority target in the hex.

❑ Check the HQ List and assign new HQ targets.

❑ Scan the supply levels at your bases. Create Transport or Cargo TFs to resupply any bases with low supply.

❑ Create TFs and/or assign them destinations. Use the MOVE OPTION function to set the standoff range, deployment orders, and set priority targets (Air Combat TFs only).

❑ Use the REINFORCE or GET TRANSPORT function to accumulate forces quickly.

❑ If you need better planes, you can use the (C)hange function on the Air Unit Display. You can also switch factories over to produce a new type of plane.

Land Combat Unit Orders

In order to give Land Combat Units (LCUs) orders, you must be over a base with friendly LCUs and be in Army Mode if using a mouse. Keyboard users have hotkeys and do not need to be in ARMY MODE. You can click the right button or press the "W" key to access the Unit Display. You can also press the left button and then select MARCH or press ALT/W to march a unit to another base. You can cycle through friendly LCUs by clicking the NEXT button or pressing the "S" key. You can view all available land march paths by clicking PATH or pressing the F3 key. The various orders are explained in more detail below.

Unit Display

You can access the Unit Display by placing the cursor over a base. If using a mouse, you need to be in ARMY MODE. Click the right button or press "W" to access the display. The base name appears at the top of the display followed by the total combat value of the forces in the base. The combat value is determined by taking the total number of squads, artillery, and AFVS and modifying the values by the entrenchment, experience, and readiness factors. Listed next are all the combat formations in the base and their data. A "$" after the unit name signifies that the unit has not been activated. The "size" column shows the transport capacity needed to load the unit. To access a specific unit, click on the unit name or press the corresponding letter to the left of the unit name. The Unit Data Display will now come up. You can now either Activate or Divide the unit as explained below:

Unit Activation

At the start of each turn all Land Combat Units (LCUs) that are not on ships will be automatically deactivated. Deactivated LCUs must spend PPs to be activated before they may be loaded onto ships or marched to a different location. Deactivated LCUs will consume fewer supplies than active LCUs but they will never participate in land attacks. To activate a unit press "A" or click the (A)ctivate box on the Unit Data Display.

Dividing Units

A Land Combat Unit may be broken down into smaller sub-units by pressing "D" or clicking the (D)ivide box on the Unit Data Display. The unit must have a minimum of 20 squads in order to divide. There can be only 50 sub units in the game at the same time for each player.

March Mode

Army Movement is handled abstractly in the game. Land Combat Units (LCUs) may only exist in base hexes (designated by flag symbols on the map). LCUs may be marched directly from one base hex to another "connected" base hex. To see which bases are connected to a particular base, click the PATH button or press F3 to view the overland march paths.

To march LCUs to a different base move the cursor over the base you wish to move to and press ALT/W or click on MARCH from the Unit Menu. Then move the cursor to the base with the LCUs to be moved and press "W" or click the left button. The available LCUs will be displayed in the window. Click on the unit name or press the letter corresponding to the units you wish to march to the Destination Base.

Only LCUs with a readiness of 50 or greater may be marched. LCUs will lose readiness when they march. The percentage of readiness lost is equal to 50% plus 2% for every terrain level in the starting hex and 2% for every terrain level in the destination hex. Thus an LCU with a readiness of 80 that marches from a terrain level 6 base to a terrain level 9 base will have its readiness reduced to 16 (50%+6x2%+9x2%=80% lost, 80% of 80 readiness is 64 readiness points lost, leaving 16). Before moving, the unit must be activated which costs Preparation Points. If a unit has not been activated prior to moving, then the computer will automatically activate the unit, spending the required number of PPs. LCUs may not march from an enemy controlled base to another enemy controlled base. A unit can move from an enemy base to a friendly base even if the unit's readiness is less than 50.

Get Transports for Land Units

In order for LCUs to move from one port to another port by sea movement, the LCU must be loaded onto transports. If there are not enough transports in the port, use the GET TRANSPORT (ALT/T) option which is explained in more detail on page 30. Units may only be loaded onto the following ship types: CS, DD (Japan), DE (Japan), APD, AP, and LST. See "Loading Task Forces" on page 23.

Air Unit Orders

In order to give Air Groups orders, you must be over a base with friendly Air Groups and be in AF mode if using a mouse. Keyboard users have hotkeys and do not need to be in AF mode. You can click the right button or press the "A" key to access the Air Unit Display.

Aircraft have two types of bases to operate from: land bases and aircraft carriers. Each land base and carrier can hold only so many aircraft. When the cursor is over a base, you will see displayed on the top line of the right side of the text window a message such as "AF:3" which means that the airfield on the base can hold 3 Air Groups (excluding Patrol and Transport Air Groups). Carriers have a load capacity shown on the carrier's information screen when the ship is accessed. You can assign aircraft specific bases to attack and also select the type of target at the base: Task Force, Ships in Port, Airfield, Depot/Factory, or Land Units. During the Execution Phase the computer will attempt to carry out your instructions. Even though your target selection is heavily weighted in order to be carried out, if a much better target appears during combat, the computer will attack

the new target. Aircraft can also be allocated to certain specialized missions such as Naval Interdiction, Atomic Bomb, and Night Combat. The various orders for Air Groups are explained in more detail below.

Locating Air Units

Locating an HQ's Air Groups

You may view all of the Air Groups attached to the last HQ accessed by selecting HQ AIR on the HQ Menu or by pressing ALT/X. Selecting one of the Air Groups with the left button or <Enter> centers the map and places the cursor at the location of the unit.

Locating Specific Aircraft Types

If you are looking for specific types of aircraft, you can cycle through all of the airfields one at a time. If using a mouse, you must first be in Airfield Mode. Click on the NEXT button or press "Z" to go to the next airfield. If you wish to examine the airfield's Air Groups in detail, click the right button or press "A".

Changing the Type of Aircraft

You can also change the type of aircraft in a base. If using a mouse, you must first be in Airfield Mode. Access the airfield's Air Groups by clicking the right button or pressing "A". Select which Air Group you wish to change. Next select the (C)hange box or press "C". A list of the available aircraft to replace the current Air Group will be displayed along with the number currently in the Aircraft Replacement Pool. Select one of the types. Note: All of the replacement aircraft in the Air Group will become damaged. The aircraft that was replaced will go into the pool.

Air Transfer

Carrier Air Groups

Carrier Air Groups are assigned to a specific carrier and may never be transferred off that carrier. A Replenishment TF with replacement aircraft may transfer or replenish aircraft to a carrier.

Land-based Air Groups

Land-based Air Groups may be transferred within the aircraft's transfer range to another base of the appropriate capacity. Move the cursor to the airfield that is to receive the Air Group(s) and press ALT/A or select AIR TRANS from the Unit Menu. Move the cursor to the losing airfield and press <Enter> or click the left mouse button. Select the Air Groups you wish to transfer. If the range between airfields is greater than 4 times the range rating of the aircraft being transferred, the transfer will not be allowed. Note: When a transfer occurs, all of the damaged aircraft in the group will be returned to the replacement pool. After the transfer, 10% of the ready aircraft will become damaged. Upon transferring aircraft between bases, if the HQ that the aircraft group is attached to does not have sufficient PPs, all of the planes will be damaged. There is no limit to the number of times a group may be transferred in a turn.

Airfield Capacity

An airfield's capacity refers to the number of combat Air Groups that may be stationed there. Patrol and Transport Air Groups do not count against the capacity limits. When the cursor is over a base, you will see the airfield capacity shown in the text window after the base

name (ex: AF:3). Due to the size of the airfield required to take off and land, each aircraft type is rated for minimum airfield capacity. For example, a Heavy Bomber may not land on any airfield with a capacity less than four. The minimum airfield capacity required for each type of aircraft is:

AIRCRAFT TYPE	MINIMUM CAPACITY
Fighter	2
Fighter-Bomber	2
Dive Bomber	2
Torpedo Bomber	2
Tac-Bomber	4
Heavy Bomber	4
Transport	2
Patrol	1

Note: The number of ready (undamaged) aircraft per air group that can operate from an airfield is Airfield Capacity x 10. Any aircraft above this limit will become damaged. Example: An airfield has a capacity of 3. It can have a maximum of 30 ready aircraft per air group. If an Air Group has 52 aircraft, then 22 will be damaged.

Air Group Missions

Air Groups can be assigned many different air combat missions. All air mission phases are divided into Day and Night segments. Air reaction attacks to moving enemy TFs may only be flown as day missions. The possible missions are:

Day Combat (D): Groups with this mission will perform all of their actions during daylight.

Night Combat (N): Groups with this mission will perform all of their actions at night. Bombing missions will suffer from reduced accuracy and will not have a fighter escort. Only enemy fighters with a night mission will intercept and will do so at reduced effectiveness. Kamikaze groups with experience greater than 90 will fly day or night missions. Atomic Bomb missions are only flown at night.

Naval Interdiction (NI): Groups with this mission will never participate in attacking enemy bases, ports, depots/factories, land units, or airfields. Naval Interdiction groups will normally attack enemy TFs during daylight.

Special Attack-Kamikaze (SA): Only Japanese groups may be assigned this mission. This mission will only be allowed late in the war, starting in 1944, after the Allies have cracked the Japanese inner defense perimeter. During 1944 the Japanese may convert 5 Air Groups per week to Kamikaze missions. During 1945 the Japanese may convert 10 Air Groups per week to Kamikaze missions. If the Japanese player is eligible to use Kamikaze missions and does not convert the allowed number of groups to Kamikaze missions, then the unused conversions may be accumulated and used during later turns. SA groups will only attack enemy TFs. SA aircraft that survive enemy CAP and flak will have their accuracy multiplied by 10. All aircraft in an SA group that participate in an attack will be eliminated at the conclusion of the attack. Kamikaze groups with experience greater than 90 will fly day or night missions.

INNER DEFENSE PERIMETER

Starting in 1944 the Japanese may assign Kamikaze missions to some of their Air Groups if the Allies have control of any of the following bases in the areas around Japan, Philippines, and Malayasia:

Amami I	Aomori	Balikpapan
Bataan	Batan I.	Bonin I.
Cagayan	Cebu	Clark Field
Davao	Etorofo Jima	Iwo Jima
Kitaktyushu	Lagaspi	Leyte
Lingayen	Manila	Mindoro
Miri	Nagoya	Negros
Okinawa	Osaka	Palawan
Palembang	Panay	Paramushiro
Sakhalin I.	Samar	Sapporo
Sasebo	Shimushiri Jima	Takmatsu
Tarakan	Tawi Tawi	Tokyo

Okha Attack-Baka Bomb (OA): Only Japanese G4M Betty bomber groups may be assigned this mission starting in 1945. Only a few groups per turn may be assigned Okha missions. Okhas were manned missiles launched by Bettys within 20 miles of an enemy TF. The Bettys must survive enemy CAP but are never exposed to enemy flak. The Okha missiles that survive enemy flak will attack an enemy ship with their accuracy multiplied by 5.

Atomic Bomb (AB): Only Allied B-29 Superfortress bomber groups may be assigned this night bombing mission. Starting in August 1945 there is a random chance that one atomic bomb will be received each week. A group with an AB mission is considered to have one atomic bomb available. When an AB mission is flown, the group will send all available aircraft over the target (most as decoys, recon, weather, and observation aircraft). For each bomber destroyed by the Japanese there is a chance (1/total # of aircraft) that the one carrying the atomic bomb is destroyed. If the bomber is not destroyed, then it will successfully attack the target base. AB attacks will completely destroy 1 factory and cause a random number of civilian losses.

Training (T): Groups with training missions will never perform combat operations. These groups will attempt to gain experience through flight training only if their home airfield has enough fuel (fuel must be greater than the number of aircraft in the group). See the section below on "Air Group Experience Gain".

Disband (D): If this mission is selected, the group will be removed from the game. The group will reappear as a reinforcement group after six months.

Air Group Experience Gain

Air Groups may gain experience in three different ways:

- routine training
- intensive training
- combat

Routine training occurs every turn for all Air Groups that are not assigned a Training mission. With routine training, groups will gain 1 experience point if Experience is less than Random(80). In addition to this, Allied Air Groups with less than 55 experience will gain 2 experience points.

Intensive training occurs every turn for all Air Groups that are assigned a Training mission. With intensive training, groups will gain 1 experience point if Experience is less than 70+Random(30). In addition, Allied Air Groups with less than 55 experience will gain 2 experience points.

Fighters and fighter-bombers may gain experience during air-to-air combat. Experience may be increased by one each time an enemy aircraft is hit. The experience rating will be increased if Random(100) is greater than Experience and Random(100) is less than 25.

Bombing Air Groups will gain experience equal to Random(101-Experience)/10. If Random(100) is less than 5 and Experience is less than 99, then an additional experience point will be gained.

Air Leaders

There are two types of Air Leaders. A leader can be placed in charge of an HQ's air operations by using the AIR LEADER function in the HQ Menu or by pressing ALT/P. Also, leaders can be placed in charge of an Air Combat TF only if the TF begins its turn in its Home Port.

Arctic Weather Zone

The area of the map east of x-row 45 and north of y-column 12 is the Arctic Weather Zone (AWZ). Air operations in this zone may be aborted or disrupted by harsh arctic weather. If the target or origin base of an air strike is in the AWZ then the weather must be determined. Weather is determined separately for each strike at both the origin and target locations. There are three types of weather in the AWZ:

- Clear: air operations are performed normally.
- Overcast: each group in the mission is subject to an abort roll.
- Storm: the entire mission is aborted.

The weather determination is effected by the month of the year:

- May, Jun, Jul, Aug, Sep: Clear 34%, Overcast 33%, Storm 33%
- Apr, Oct: Overcast 50%, Storm 50%
- Nov, Dec, Jan, Feb, Mar: Overcast 5%, Storm 95%

The effects of Overcast and Storm weather are as follows:

- If the weather in the target hex is Overcast, then each CAP fighter group has a 33% chance of aborting.
- If the weather in the origin or target hex is Overcast, then each attacking group has a 33% chance of aborting.
- If the weather in the origin and target hex is Overcast, then each attacking group has a 67% chance of aborting.
- If the weather in either the origin or the target hex is Storm, then the entire mission is aborted.

For carrier based air strikes, if the weather in the origin hex is Overcast, then the PP cost for launching the strike is multiplied times 1.5 (22 PPs for a full strike and 15 PPs for a half strike).

Air Targets

In the Orders Phase you can access a friendly base and select the enemy base to attack with the base's Air Groups. You must also select the air priority target to attack: Task Force, Ships in Port, Airfield, Depot/Factory, or Land Units. During the Execution Phase, the computer will attempt to carry out your instructions. Even though your target selection is heavily weighted in order to be carried out, if a much better target

appears during combat, the computer will attack the new target. If no priority target is selected then the computer will select targets using the normal method for assigning values to targets and attacking the target with the highest value.

Aircraft Ranges

Group Attack Ranges

During the Execution Phase, Air Groups may attack enemy TFs that are within their normal range. Air Groups may attack enemy land targets (airfields, ports, depots, factories, land units) that are within 1.5 times their normal range.

Group Transport Ranges

Transport Air Groups will fly resupply missions to friendly airfields at twice their normal range. Transport Air Groups will air drop supplies to friendly LCUs on enemy controlled bases within their normal range. Transport missions will not be flown into enemy bases that have a Fighter Zone of Control. These missions are flown automatically by the computer.

Air Zones of Control

Fighters and Bombers exert a Zone of Control (ZOC) over the hexes near the base. The ZOC influences the effectiveness of enemy searches, passage of Routine Convoys, and can trigger Reaction Searches and Air Strikes when enemy TFs enter the ZOC. See the section "Air Zones of Control" on page 50 for more details.

Changing Aircraft Factories

You can select certain aircraft factories to switch production to a different aircraft type by placing the cursor over a base and pressing the F6 key. A list of factories will appear. Select the factory you wish to change. A list of aircraft types will appear. Select the new aircraft type you wish to produce. Keep in mind though, that changing the production will result in a drop in production and suspension of all aircraft production for a month.

Task Force Orders

In order to give a TF orders, you must be over a TF or a port with friendly TFs and be in either PORT MODE or TF MODE if using a mouse. Keyboard users have hotkeys and do not need to be in PORT MODE or TF MODE. You can click the right button or press the "P" or "G" key to access the Ship Unit Display.

During the Orders Phase, the player may create TFs, assign them missions, select ships for the TF, load the ships with troops or cargo, and assign the TF a Destination/Home Base. During the Execution Phase, the TFs will automatically move toward their destination, perform combat or unload their ships at the destination, and return to their assigned Home Base.

Task Force Movement

A TF's speed is always equal to the speed of the slowest ship in the TF or 30, whichever is lower. A TF's speed will never be lower than 9. During the Execution Phase of each turn, a TF will move a distance equal to its TF speed. If a TF arrives at its destination with movement remaining, it may move towards its Home Base after completing its mission, depending upon the orders selected. The number of hexes a TF will move is roughly equivalent to its speed. A TF will move about 15 hexes if its speed is 15. Note: TFs move along set paths between bases, therefore they may not take the most direct route. A TF may choose a different route depending upon its TF Mission type (Air Combat or Cargo) and the presence of enemy Air Zones of Control.

Radar

At the start of the war both sides lack radar. As of Janauary 1942 all Allied ships have radar. As of January 1943 all Japanese ships have radar.

Reinforce HQ Function

The REINFORCE (ALT/R) function on the HQ Menu is an extremely useful and time saving procedure that can be used at a cost of 25 PPs. When this function is selected:

- AP and LST type ships will be immediately sent to the current base in sufficient numbers to load all "active" LCUs at the base.
- The airfield at the base may be reinforced.
- The airfields nearest the current HQ's target may be reinforced.
- Task Forces containing carriers, surface combatants, tankers and oilers loaded with fuel, merchant ships loaded with supplies, transports loaded with LCUs, and MTBs to protect the base will be formed at various locations and sent to the current base. These TFs will begin their move during the Orders Phase. If the TFs started close enough to the current base, their ships may be assigned to other TFs/missions during the current Orders Phase.

Get Transport Function

The GET TRANSPORT (ALT/T) function on the HQ Menu is useful for ensuring the availability of AP (or LST), MCS, and APD type ships at bases where they are needed. At a cost of 10 PPs the GET TRANSPORT function will:

- Send AP and LST type ships immediately to the current base in sufficient numbers to load all "active" LCUs at the base.
- Send MCS type ships with capacity sufficient to load supplies equal to Port Size x 500.
- Send one APD unit.

The above will occur only if the required ships are available in a port (not a TF) and are of the right nationality. Ships may also be transferred out of the Ship Pool to fulfill the requirements.

Create TF Function

A new TF may be created by moving the cursor to any hex with a friendly port or another friendly TF and pressing "C" or clicking the CREATE TF item on the Unit Menu. Each player may have a maximum of 50 TFs in play.

Selecting a TF Mission

When a TF is created it must have a mission. The following missions may be selected:

Air Combat: TFs with this mission should contain aircraft carriers and their escorts. Air Combat TFs will attempt to launch air strikes against enemy ships or land targets, and will fly protective CAP (Combat Air Patrol) to defend friendly TFs in the same hex.

Escort Carrier: When this mission is selected the computer will auto-select a TF consisting of CVE type carriers with an escort of DDs and DEs. This TF will be assigned an Air Combat mission.

Surface Combat: TFs with this mission should contain some of the following types of ships: BB, BC, CA, CL, and DD. Surface Combat TFs will attempt to engage enemy TFs in gun and torpedo

combat. If a Surface Combat TF has a destination that is an enemy controlled base and there are no enemy TFs present, the TF will bombard the enemy base.

Bombardment: TFs with this mission should contain some of the following types of ships: BB, BC, CA, CL, and DD. If a Bombardment TF has a destination that is an enemy controlled base, the TF will bombard the enemy base unless it is forced to abort due to enemy attacks.

Cargo: TFs with this mission should contain an escort of DDs, DEs, or PCs and some of the following types of cargo carrying ships: CVE, CL, CS, APD, AP, LST, MCS, and TK. Cargo TFs may carry troops, supplies, air groups, fuel, oil, or resources. Note: Cargo TFs will never voluntarily enter an enemy air zone of control. Cargo TFs will attempt to unload their cargos at their Destination Base.

Transport: Transport TFs function the same as Cargo TFs except that Transport TFs will enter enemy air zones of control.

Replenish: Replenish TFs should contain AO/TK type ships carrying replacement fuel for ships and/or CVE type ships carrying replacement aircraft for friendly carriers.

Tokyo Express: A fast TF for transporting troops or supplies with minimum exposure to enemy attack. May include CL and DD type ships. Only the Japanese may select this mission.

Evacuation: A transport TF for evacuating friendly troops from enemy held bases. An Evacuation TF will load the friendly unit with the lowest readiness at the Destination Base.

Motor Torpedo Boat: When this mission is selected (Allied player only) the computer will auto-select a surface combat TF consisting of PT or MTB type ships. This mission is useful to force enemy transport TFs to abort.

Transferring Ships into a TF

SHIP TRAN (T key) allows you to transfer ships between a port and any TFs in the port or between any two TFs in the same hex. Move the cursor to any port with at least one TF in the port. You must be in either PORT or TF MODE. Select SHIP TRAN or press "T" to enter Ship Transfer Mode. Click the right button or press the <Space> to view all the TFs in the port. Press the "G" key or click the TF button or one of the TF boxes displayed in the upper left corner to select a TF. Select the PORT button or press "P" to access the ships in the Port. A list of ships will be displayed. Select whichever ships you wish to transfer. A maximum of fifteen ship units can be included in any one TF.

Loading Task Forces

Transport and Cargo TFs that occupy the same hex as a base may load various Combat Forces or Supply Cargos onto certain types of ships:

Supply	CL, CS, APD, AP, LST, MCS
Fuel	AO, TK
Mixed	MCS
Oil	AO, TK
Resource	MCS
Land Combat Unit	CL, CS, DD*, DE*, APD, AP, LST
Air Group**	CVE, CS, MCS
Carrier Replacement Aircraft	CVE

* Only Japanese DDs and DEs can load infantry.

* Air Groups loaded onto ships cannot fly any missions.

The player will be prompted to select the type of cargo or unit to be loaded (Land Combat Units or Air Groups only), and the ship units that will load them. When loading supply, fuel, oil, or resource, a ship will load up to its capacity. When loading "mixed" cargo a ship will load 1/2 its capacity with supply and 1/2 with fuel.

Land Combat Units that are too large to be loaded by a TF may be split with a fractional sub-unit being loaded and the original (reduced strength) unit staying at the base. If there are two or more ship units in the TF whose combined capacity is great enough to load the entire LCU unit, then the LCU will not be "divided" but will be shared between ships in the TF.

Air Groups that are too large to be loaded will return the excess aircraft to the replacement pool. CVEs may carry double their capacity when loaded with replacement aircraft.

When CVE, AO, or TK ships are selected for Replenish TFs, these ships will automatically be loaded (CVEs will load replacement aircraft, AOs and TKs will load fuel).

If there is more available capacity in a multiple ship unit than there is cargo to load into it, the excess ships will be removed from the unit and added to the ship pool. The ships that remain in the unit will always be loaded to capacity.

Find Ships

You can locate any ship on the map by placing the cursor over any base or TF and pressing ALT/U or clicking the left button and selecting FIND SHIPS. A list of the ship types will be displayed. Select the type of ship desired. Next will be displayed a list of all the locations (base or TF) of the ships. Select the ship you wish to look at and the map, and the cursor will center on that ship's location.

Setting TF Destinations

To set a destination for the current TF press "D" or click SET DEST on the Unit Menu. Move the cursor to the desired Destination Base and press <Enter>, or point to the destination and click the left mouse button. A TF's destination will be displayed at the top of the TF display. Whenever an Air Combat or Surface TF has a Destination Base that is the same as its Home Base, those TFs will be eligible for reaction movement during the Execution Phase.

Setting TF Home Bases

When a TF is formed in a port, its Home Base will be that port. To change a Home Base for the current TF press "H" or click SET BASE on the Unit Menu. Move the cursor to the desired Home Base and press <Enter>, or point to the base and click the left mouse button. A TF's Home Base will be displayed at the top of the TF display. A TF will return to its assigned Home Port after it has reached its Destination Base and performed its mission. A TF that Remains on Station at the destination will stay there unless the TF's fuel level is low.

Selecting a TF Leader

To select a TF leader you must first enter the TF Display by pressing "G", or by clicking the right mouse button over the current TF and then pressing F1, or clicking the Leader Box at the bottom of the display. You may select a leader for a TF only if the TF begins the turn in its Home Port. The available leaders will be listed along with their Naval, Air, Land, and Aggressiveness ratings. If the leader

is currently assigned to a land base, that base will be displayed under heading "Location".

A high Naval rating is useful for leading all types of TFs. A high Air rating is useful for Air Combat TFs. A high Land rating is useful for Transport TFs that will be unloading troops at enemy controlled bases. The Aggressiveness rating determines how soon a TF will abort its mission due to enemy opposition or friendly losses.

Unloading TFs

A TF may be unloaded in a hex with a friendly or enemy base. Press "U" or select UNLOAD TF in the Unit Menu to unload the ships in the current TF. When unloading at a friendly base, all of the TF's cargo and passengers will be transferred to the base. When unloading at an enemy base, only Land Combat Units and supply will unload. Supply points will never be accumulated at an enemy base but will be consumed immediately to increase the readiness of friendly LCUs at the base.

Removing TFs

A TF may be removed from the map by moving the cursor to the TF's hex and pressing "R", or by selecting REMOVE TF from the Unit Menu. If more than one TF is in the hex, make sure the desired TF is displayed in the text window below the map. A TF with no ships may be removed from any hex on the map. A TF with ships must be in a hex with a friendly base or it may not be removed. Ships assigned to the TF will be transferred to the port. Ships carrying any form of cargo will automatically unload at the port when their TF is removed from play.

TF Move Option

A TF may be given further options to set/reset the standoff/reaction range, give return to port orders, and select the air target (Air Combat TFs only) for its TFs. Place the cursor over the TF and press the "F" key or select the MOVE OPTION. TFs with a standoff range greater than zero will halt their movement when they come within that range of their destinations. If a TF is eligible for reaction, the TF can react to enemy TFs within its range. The return to port option allows the player to instruct a TF to remain on station, return to port, or allow the TF's leader to determine where to go after the TF reaches its destination. If the TF is an Air Combat TF, you must also select the air priority target to attack: Task Force, Ship in Port, Airfield, Depot/ Factory, or Land Units. During the Execution Phase the computer will attempt to carry out your instructions. Even though your target selection is heavily weighted (8 times the normal value assigned) in order to be carried out, if a much better target appears during combat, the computer will attack it. If no priority target is selected the computer selects targets using the normal method for assigning values to targets and attacking the target with the highest value.

TF Reaction Movement and Combat

When TFs move into enemy air zones of control, they may trigger enemy reaction attacks and movement.

When an undetected TF enters an enemy air zone of control, it will trigger an enemy reaction search by all enemy patrol and bomber groups in range.

When a detected TF enters an enemy air zone of control it will trigger an enemy

reaction air strike by all enemy carrier and land-based combat Air Groups in range.

When a detected TF enters an enemy air zone of control it may also trigger a reaction move by enemy carrier TFs within 15 hexes.

When a detected non-carrier TF enters an enemy air zone of control, it may also trigger a reaction move by enemy surface combat TFs within 15 hexes (if the TF has an MTB as its flagship, it must be within 3 hexes to react).

For an enemy TF to perform a reaction move, the TF's destination must be the same as its Home Base and it must start the Execution Phase on its Home Base.

A random element has been added to vary the occurrence of reaction movement. The chance of a reaction move occuring is increased:

- as the range between the moving and reacting TFs grows smaller
- by the speed of the reacting TF
- with the number of AZOCs the moving TF has entered

When a reaction move occurs, the reaction TF is placed in the same hex the moving TF just entered. If the reacting TF is an Air Combat TF, it will immediately launch an air strike. If the reacting TF is a Surface Combat TF, it will initiate surface combat.

Submarines

Submarine units may exist in friendly ports where they are inactive, or on patrol where they may interdict enemy shipping. Submarines may change their location at any time, but a delay will be imposed while they move. During the delay period, submarines may not engage in combat.

The player may move submarines by clicking the left mouse button on an empty ocean hex, by pressing ALT/M, or by clicking the UTIL button and selecting SUB MODE with the mouse. If the cursor starts on an empty hex, the computer will cycle through the list of sub groups available in ports on the map. The player may select the sub group he wishes to move into the patrol zone at the cursor location. If the cursor starts on a hex containing a friendly sub group, then the player may move the cursor to a new patrol zone and press <Enter>, or click the left button to move the sub group to the new hex. A delay will be set whenever sub groups are moved.

Whenever a sub group is moved from a port to a patrol area, the port will serve as the sub group's Home Base. The effectiveness of the sub group will be affected by the patrol range, which is the distance from the Home Base to the patrol zone. This and other submarine data may be displayed while in SUB MODE by pressing the "G" key or clicking the DATA button with the mouse.

As a rule, the greater the patrol range the less effective the sub group will be. You should review all of your subs periodically to make sure they are making contacts with enemy forces. If a sub is not being effective you should consider moving it to a new location. A sub group may change its Home Base by moving it to a hex containing a different port, reentering SUB MODE and typing "R", or clicking the REMV button with the mouse. The sub group will be removed from the map and placed in the new port. At the end of the delay period the sub group may be placed on patrol with a new Home Base and a different patrol range.

HQ and Leader Orders

All combat units in the game are subordinate to a Headquarters (HQ). Many of the HQs in the game are subordinate to other higher level HQs. HQs are commanded by various Generals and Admirals whose leadership ratings are used to influence various combat and logistical functions. HQs also provide planning support in the form of preparation points. HQs will focus their planning efforts on attacking or defending a particular target base.

Types of HQs

The game includes 4 types of HQ as listed below:

- Administrative HQs (AD) provide leadership and preparation points for lower echelon HQs.
- Combined arms HQs (CA) provide leadership and preparation points for subordinate TFs, Air Groups, Land Combat Units, and Bases.
- Naval HQs (NV) provide leadership and preparation points for subordinate TFs and Carrier Air Groups.
- Army HQs (AR) provide leadership and preparation points for subordinate Land-based Air Groups, Land Combat Units, and Bases.

Japanese HQs

Listed below are the Japanese HQs included in the game:

Imperial GHQ (AD,AR): Tops the chain of command for all Japanese Army forces. Also in direct command of "Home Defense" forces in Japan.

China AG (AR): In command of all Japanese Army land and air forces in China.

South AG (AD,AR): In overall command of all Japanese Army land and air forces in the Philippines, Indo-China, Burma, the East Indies, New Guinea, and the Solomons.

8th Area (AD,AR): Created in October 1942 to command the 17th Army in the Solomons and the newly formed 18th Army in New Guinea.

Kwantung AG (AR): In command of all Japanese Army land and air forces in Manchuria and Korea.

10th Area (AR): Created in 1944 to command Japanese Army land and air forces on Formosa and Okinawa.

Burma Area (AR): Created in 1944 to command Japanese Army land and air forces in Burma.

2nd Area (AR): Created in 1944 to command Japanese Army land and air forces in Western New Guinea, Celebes, Ceram, and Halmahera.

14th Army (AR): In command of all Japanese Army land and air forces involved in capturing and defending the Philippines.

15th Army (AR): In command of all Japanese Army land and air forces involved in capturing and defending Burma.

16th Army (AR): In command of all Japanese Army land and air forces involved in capturing and defending the Dutch East Indies.

17th Army (AR): In command of all Japanese Army land and air forces involved in capturing and defending the Solomons and (before October 1942) Eastern New Guinea.

18th Army (AR): Formed in October 1942 to command Japanese Army land and air forces in Eastern New Guinea.

25th Army (AR): In command of all Japanese Army land and air forces involved in capturing and defending Malaya, Singapore, and Western Sumatra.

32nd Army (AR): Formed in 1944 to command Japanese Army land and air forces in Okinawa.

35th Army (AR): Formed in 1944 to command all Japanese Army land and air forces in the Southern Philippines.

Combined Fleet (AD,CA): In overall command of all Japanese Navy land, air, and fleet units.

North Seas Fleet (CA): In command of Japanese Navy fleet units defending the northern island outposts.

South Seas Fleet (CA): In command of Japanese Navy fleet units defending the southern island outposts.

Allied HQs

Listed below are the Allied HQs included in the game:

SEAC (AD,CA): In overall command of all Allied land, air and fleet units in the Southeast Asia theatre.

ABDA (CA): The Joint Command of American, British, Dutch, and Australian forces at the start of the war. The command was dissolved following the capture of Java in the Dutch East Indies.

ANZAC (CA): American, New Zealand, and Australian joint command took over following the collapse of ABDA in April 1942. Commanded Australian and New Zealand home defense forces.

Malaya AG (AR): Commanded all Commonwealth land and air forces in Malaya and Singapore. Ceased to exist in February 1942.

Nat. China (AR): Commanded Nationalist Chinese forces in unoccupied China.

SW Pacific (AD,CA): In overall command of all Allied land, air, and fleet units in the Southwest Pacific area (Philippines, Dutch East Indies, Australia, New Guinea, and the Bismarck Islands).

South Pacific (CA): In command of all Allied land, air, and fleet units in the South Pacific area.

Central Pacific (AD,CA): In overall command of all Allied land, air, and fleet units in the Pacific areas (excluding SW Pacific). In direct command of all Allied land, air, and fleet units in the Central Pacific area.

North Pacific (CA): In command of all American land, air, and fleet units in the North Pacific area (Alaska and the Aleutian Islands).

West Coast (AR): In command of all U.S. Army land and air units defending the West Coast of the United States.

6th Army (AR): Created in 1944 to spearhead the amphibious operations of the SW Pacific command.

8th Army (AR): Created in late 1944 to command the numerous secondary amphibious operations during the liberation of the Philippines.

10th Army (AR): Created in 1945 to command U.S. Army and Marine forces in the assault on Okinawa.

North CAC (AR): North Combat Area Command was created in 1943 to coordinate Allied Land Forces (American, Chinese and Commonwealth) operating in Northern Burma.

14th Army (AR): Created in 1943 to command Allied land and air forces in India and Burma.

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Asiatic Fleet (NV): Commanded U.S. Navy fleet units defending the Philippines at the start of the war. Disbanded in March 1942.

3rd Fleet (NV): Created in 1943 to command Allied naval units in the South Pacific area. During 1944 and 1945 the 3rd Fleet alternated with the 5th Fleet in command of U.S. Navy fast carrier task forces.

5th Fleet (NV): Created in 1943 to command Allied naval units in the Central Pacific area. During 1944 and 1945 the 5th Fleet alternated with the 3rd Fleet in command of U.S. Navy fast carrier task forces.

7th Fleet (NV): Created in 1943 to command Allied naval units in the South West Pacific area.

Eastern Fleet (NV): In command of Commonwealth Naval units operating in the Indian Ocean.

Headquarters Functions

The player may perform various HQ related functions by using a mouse to click the HQ button and then select items from the HQ menu, or by pressing the various "hotkeys" described below.

Relocate HQ to a New Base

RELOCATE HQ (ALT/E) moves an HQ from one base to another. The HQ moved is the HQ listed on the second line of the text window underneath the base name. Move the cursor to another friendly base controlled by the HQ and hit ALT/E or click the RELOCATE HQ selection from the HQ Menu. Moving an HQ requires 10 Preparation Points. HQ's cannot be moved from a TF at sea.

Move HQ to a TF

HQ TO TF (ALT/S) moves an HQ from the current base to the TF listed on the bottom line of the text window. First access the TF you wish to move the HQ to if there is more than one TF in the port. Next, select the HQ TO TF option or press ALT/S to move the HQ to the TF. It costs 10 Preparation Points (PP) to move the HQ to a TF.

Select New HQ Leader

NEW LEADER(ALT/L) allows you to select a new leader for your HQ. Move the cursor to a base controlled by the HQ whose air leader you wish to change. Select NEW LEADER from the HQ Menu or press ALT/L. The available leaders will be displayed and the desired leader may be selected at this time. Selecting a new HQ commander costs 5 Preparation Points (PP).

Select New HQ Air Leader

AIR LEADER (ALT/P) allows you to select an air leader in charge of air operations for your HQ. Move the cursor to a base controlled by the HQ you wish to change air leaders. To change or select an air leader press ALT/P or click AIR LEADER from the HQ Menu. Changing or adding an Air Leader costs 1 Preparation Point (PP).

Reinforce HQ

REINFORCE (ALT/R) allows you to reinforce the current base with LCUs, ships, Groups, and supplies. This function is an extremely useful and time saving procedure that may be used at a cost of 25 PPs. When this function is selected:

- AP and LST type ships will be immediately sent to the current base in sufficient numbers to load all "active" LCUs at the base.
- The airfield at the base may be reinforced.

- The airfields nearest the current HQ's target may be reinforced.
- Task Forces containing carriers, surface combatants, tankers and oilers loaded with fuel, merchant ships loaded with supplies, transports loaded with LCUs, and MTBs to protect the base, will be formed at various locations and sent to the current base. These TFs will begin their move during the Orders Phase. If the TFs started close enough to the current base, their ships may be assigned to other TFs/missions during the current Orders Phase.

Change Base's HQ

CHANGE BASE (ALT/C) allows you to change the HQ in control of a base. Place the cursor over the base whose HQ control you wish to change. Select the CHANGE BASE option from the HQ Menu, or press ALT/C and then select the new HQ from the Headquarter List Menu. Changing the control of a base requires 5 Preparation Points from the new HQ.

Change HQ's Human/Computer Control Level

HQ CONTROL (ALT/K) allows you to select the level of computer control over your HQ's units. A player may place an HQ and all of its subordinate combat units under three levels of control: Human Full Control, Computer Operational Control, and Computer Full Control. To set the Computer Control HQ feature press ALT/K or click HQ CONTROL on the HQ Menu. The three levels are explained below:

Full Human Control: The human player controls all land, sea, and air forces subordinate to an HQ.

Computer Operational Control: The human player selects an HQ's target base and the computer deploys the HQ's assets to capture or defend the target base. HQs with this status will have a * after their name on the display.

Computer Full Control: The computer will be in full strategic and operational control of all of the HQ's assets. HQs with this status will have ** after their name on the display.

Set HQ's Target Base

SET TARGET (ALT/G) allows you to select a target base for your HQ. Select SET TARGET from the HQ Menu or press ALT/G. Move the cursor to the desired "target" base hex and press <Enter> or click the left mouse button. Changing an HQ's target costs 10 Preparation Points.

Get Transport

GET TRANSPORT (ALT/T) is useful for ensuring the availability of AP (or LST), MCS, and APD type ships at bases where they are needed. At a cost of 10 PPs the GET TRANSPORT function will:

- Send AP and LST type ships immediately to the current base in sufficient numbers to load all "active" LCUs at the base.
- Send MCS type ships with capacity sufficient to load supplies equal to Port Size x 500.
- Send one APD unit.

The above will occur only if the required ships are available in a port (not a TF) and are of the right nationality. Ships may also be transfered out of the Ship Pool to fulfill the requirements.

Find an HQ

FIND AN HQ (ALT/F) allows you to select an HQ from the Headquarters List Menu and center the cursor at its location on

the map of the HQ. Select FIND AN HQ from the HQ Menu or press ALT/F. Next, select an HQ by pressing the left button or <Enter>. The computer will center the map and place the cursor at the HQ's base.

FIND HQ'S LAND COMBAT UNITS

HQ UNITS (ALT/D) allows you to view the Land Combat Units attached to the last HQ accessed by selecting HQ UNITS on the HQ Menu or by pressing ALT/D. Selecting one of the LCUs with the left button or <Enter> centers the map and places the cursor at the location of the unit.

FIND HQ'S AIR GROUPS

HQ AIR (ALT/X) allows you to view the Air Groups attached to the last HQ accessed by selecting HQ AIR on the HQ Menu or by pressing ALT/X. Selecting one of the Air Groups with the left button or <Enter> centers the map and places the cursor at the location of the unit.

Special Headquarters Movement Restrictions

Certain HQs in the game have restrictions on their movement and the movement of their subordinate units. The following HQs will be restricted:

Imperial GHQ
China AG
Kwangtung
ANZAC
West Coast
National China

It costs 50 PPs to move the above HQs.

LCUs subordinate to the above listed HQs pay 10 times the normal PP cost for activation and they may not be loaded onto ships.

With the exception of ANZAC, bases subordinate to the above HQs may not be reassigned to a different HQ.

Air Groups that are located in bases subordinate to Kwangtung or China AG may not be transferred or loaded onto ships.

Preparation Points

HQs provide planning support in the form of Preparation Points (PPs) for all of the land, air, and sea units under their command. In order to perform various actions, PPs must be available and expended. Preparation Points are needed to activate LCUs to move/attack, select a new HQ target, select a new HQ or Air leader, select a new HQ location, change a base's HQ, boost the readiness of TFs at sea, change a mission, or move Air Groups.

ACQUIRING PREPARATION POINTS

Players receive PPs according to the following formulas:

- Each week the Japanese Player will receive Preparation Points (PPs) equal to his Oil Reserve / 40 + 100.
- Each week the Allied Player will receive PPs equal to 500 x (Year-40).

DISTRIBUTING PREPARATION POINTS TO HQS

PPs are then distributed one at a time to each of the HQs. If there are remaining PPs after each HQ has been evaluated, each HQ again will be given additional PPs. The distribution is as follows:

- HQs with less than 125 PPs will automatically gain 1.
- HQs with from 125 to 200 PPs will gain 1 if Random(20) is less than the HQ Leader's Aggressiveness rating.

PPs may be transferred from a higher HQ to a subordinate HQ. If the higher HQ has 100 or more PPs, a subordinate HQ may gain 1 PP in the same manner as described above.

LAND COMBAT UNIT ACTIVATION

PPs must be spent when Land Combat Units are activated. The amount of PPs spent depends on the size of the Land Combat Unit being activated:

Army	12
Division	12
Brigade	6
Regiment	3
Battalion	1
Engineer	1
SBF	1

HQ STATUS CHANGE

PPs must be spent to change the status of an HQ as follows:

Set New HQ Target	10
Select New HQ Leader	5
Select New HQ Location	10
Select New HQ Air Leader	1
Change HQ Controlling Base*	5

* Costs the new HQ 5 PPs to change the HQ controlling base.

TF PREPARATION POINT INCREASE

Any remaining PPs of a HQ are distributed to a TF after the Orders Phase. The amount of PPs that a TF has will directly affect the performance of the TF in combat situations. PPs will be spent to enhance the readiness of TFs at sea:

- If the TF's destination is the same as its Home Base and the Home Base is under friendly control, the TF's HQ will spend 1 PP and the TF will gain 25 PPs (plus 2 times the size of its Home Port if it starts at its Home Port)

Otherwise the following procedure is used to assign PPs to a TF:

- the TF starts with 5 PPs
- if the TF starts its move at its Home Port, add 2 times the size of the Home Port
- if the TF has moved fewer than 60 hexes since it left its Home Port, add 5 PPs
- if the TF has moved fewer than 30 hexes since it left its Home Port, add 10 PPs
- if the TF's destination is the same as its HQ's target, add 20 PPs
- if the TF has a leader, add that leader's appropriate rating (Air for Air Combat TFs, Land for Transport TFs, otherwise Naval is used - this number is the Leader rating)
- if the TF's HQ has more than 9 PPs, the HQ will lose 10 PPs and the TF will add 5+Leader PPs

AIR GROUP'S MOVEMENT OR CHANGE MISSION

Preparation Points must be spent to move or change the mission of Air Groups. The PP cost will be according to the type of aircraft in the group:

PP	TYPE
1	Fighter
1	Fighter-Bomber
2	Dive Bomber
2	Torpedo Bomber
3	Tactical Bomber
4	Heavy Bomber
1	Transport
1	Patrol

Note: Upon transferring aircraft between bases, if the HQ that the aircraft group is attached to does not have sufficient PPs, all of the planes will become damaged.

LEADERS

Leaders in the game will greatly influence the fortunes and performance of the formations under their command. Leaders are individually rated for Air Operations, Naval Operations, Land Operations, and Aggressiveness. None of the leaders in the game are superior in all of the leadership categories listed above. You should avoid placing leaders in a command where their weakness can hurt you.

Leaders may be placed in command of TFs, Land Bases (even those under enemy control), and HQs. Leaders may also be placed in charge of an HQ's air operations.

Admirals in command of Surface Combat TFs should have a high Naval Rating. Admirals in charge of Carrier TFs should have a high Air Rating. Admirals commanding Transport TFs should have a high Land Rating. Leaders assigned to land bases should also have a high Land Rating. The requirements for commanding an HQ will vary depending on the role you choose for that HQ.

In resolving land combat there may be several leaders with some jurisdiction over the units involved. The computer will determine which leader to use in resolving the combat. If there is a leader assigned to the base where combat occurs, he is considered the 'on-the-spot-commander' and if Random(10) is less than his Aggressiveness rating, then his Land Rating will be used. 'On-the-spot-commanders' have 1 added to their Land Rating when resolving combat. If there is no 'on-the-spot-commander' or if he fails the Aggressiveness roll, the commander of the HQ in charge of the land combat forces will be selected if he passes his Aggressiveness roll. If this leader fails his Aggressiveness roll and there is a higher level HQ, the leader of the higher HQ will be used to resolve the combat.

The procedure for determining the leader for land-based air operations is similar to that for land combat, but leaders will have their Aggressiveness halved when rolling for the active leader. Also, if there is an air operations leader assigned to the HQ in charge of the airfield, his Air Rating will be used instead of a higher level HQ Leader, if Random(8) is less than his Aggressiveness Rating (not halved).

The procedure for determining the leader for carrier-air operations is similar to that for land-based air combat. In carrier operations the carrier TF commander is the 'on-the-spot-commander'. In carrier operations the TF commander does not add 1 to his Air Rating.

For non-carrier naval operations the only leader that counts is the TF commander.

Leaders of TFs may only be changed while the TF is on a friendly port hex. Leaders of HQs and bases may be changed at any time.

Many of the leaders in the game are not available at the start of the war. These leaders will become available after a certain delay period has elapsed.
Note: These leaders may become available before their delay has expired if all of the non-delayed leaders have been assigned.

EXECUTION PHASE

During the Execution Phase the computer automatically performs the following procedures:

- resolve land combat between opposing forces at each location
- resolve land-based air strikes against land targets (airfields, cities/depots)
- replenish TFs may replenish friendly TFs at sea
- move TFs to their assigned destinations and resolve enemy reaction attacks against the moving TFs
- resolve naval combats at each TF's destination (includes carrier strikes, surface combats, shore bombardments, and land-based air strikes against shipping)
- unload Tokyo Express TFs and load Evacuation TFs
- resolve a second round of naval combats at each TF's destination (includes carrier strikes, surface combats, shore bombardments and land-based air strikes against shipping)
- unload transport and cargo ships at the TF's destination and resolve amphibious assault combat
- move TFs back towards their Home Base and resolve reaction attacks
- resolve land-based air strikes against land targets (ports, armies)
- resolve land combat between opposing forces at a location
- air transport fuel and supplies
- perform logistic operations such as expanding bases, repairing ships, and aircraft damage, overland supply movement, adding replacements and reinforcements, etc.

Army Combat Operations

Army Combat operations are performed by Land Combat Units (LCUs). LCUs must be used to capture or defend the geographical objectives that are required for victory.

Land Combat may only occur if opposing forces occupy the same base. If only one player has combat units in the hex but his opponent controls the base, Land Combat must be initiated to capture the base. Land combat occurs automatically at the start and end of the Execution Phase. A land attack will occur if one player's activated force has roughly a 4 to 1 advantage over his opponent or the leader of either players' force passes an aggressiveness check.

Land Combat Sequence of Play

Land Combat is resolved in the following sequence:

Attacker Artillery Fire:
Participating Artillery fires at Participating Infantry and Artillery

Defender Artillery Fire:
Participating Artillery fires at Participating Infantry and Artillery

Defender Anti-Tank Fire:
Participating AFVs, Artillery and Infantry fire at Participating AFVs

Attacker Anti-Tank Fire:
Participating AFVs, Artillery and Infantry fire at Participating AFVs

Defender Assault Fire:
Participating AFVs and Infantry fire at Participating Infantry

Attacker Assault Fire:
Participating AFVs and Infantry fire at Participating Infantry

continues....

Compute Odds:

Compare Surviving Attacker Participating Infantry and AFVs x 4 to Surviving Defender Participating Infantry and AFVs x 2

Check for Base Capture

Check for Defender Retreat/Surrender

Assault Value Calculation

During Land Combat the number of weapons that are allowed to participate is equal to:

Total Weapons x (Readiness/100) x (Experience/100)

During Land Combat only participating weapons may fire and only participating weapons will suffer losses from enemy fire.

Each Weapon is rated according to the type of fire it is performing:

	TYPE OF FIRE		
WEAPON	ARTILLERY	ANTI-TANK	ASSAULT
Infantry	0	1	1
Artillery	1	2	0
AFV	0	4	3

When combat occurs on an atoll (small island) hex, all defender weapons have their Assault Value multiplied by 3 and all attacker weapons have their Assault Value multiplied by 9. For each TF that unloads troops on an enemy held atoll, there will be up to 4 rounds of combat. If the defender still holds the base at the end of all land combat on the atoll, the attackers will automatically attempt to evacuate the island.

Inactive LCUs will not participate in an attack. Inactive defending LCUs do not require or consume Preparation Points.

Unit Experience, Leadership and Combat Performance

For each LCU that participates in combat, an Experience Check and a Leadership Check will be made. The LCU passes its Experience Check if Random (900) is less than Experience squared. The LCU passes its Leadership Check if Random(200) is less than Leadership squared. The Leader's Land rating is used for this check. If the Leader is assigned to the base where the combat occurs, 1 is added to the rating before it is squared. If the LCU fails both checks its readiness equals one for the purpose of calculating its combat strength. This readiness loss is not permanent.

If the LCU is not reduced by the above procedure, another Experience and Leadership Check will be made. The LCU passes its Experience Check if Random (2500) is less than Experience squared. The LCU passes its Leadership Check if Random(100) is less than Leadership squared. If the LCU fails both checks its readiness is quartered for the purpose of calculating its combat strength. This readiness loss is not permanent. Units in mainland Japan or the U.S. never have their readiness reduced by the above checks.

If the LCU is not reduced by either of the above procedures a third Experience and Leadership Check will be made. The LCU passes its Experience Check if Random(10000) is less than Experience squared. The LCU passes its Leadership Check if Random(100) is less than Leadership squared. If the LCU passes both checks, its readiness is increased by 50 (to a maximum of 99) for the purpose of calculating its combat strength. This readiness gain is not permanent.

Bombardment Of LCUs

Land combat units may be attacked by TFs performing Bombardment Missions or by air units. Land units attacked by naval or air bombardment will suffer losses and readiness reduction the same as during the attacker artillery fire and the attacker anti-tank fire segments of the Land Combat Sequence of Play. The air or naval bombardment strength would replace the artillery strength used in the land combat formulas.

LCU Flak Strength

An LCU's flak strength is:

Artillery/4 + Infantry Squads/10

LCU Readiness Loss

Land combat units may lose readiness during air, naval, or artillery bombardment. There are five different checks to determine readiness loss each time an LCU is attacked:

if Random(1500) is less than Bombardment Strength: lose 1%

if Random(3000) is less than Bombardment Strength: lose 5%

if Random(6000) is less than Bombardment Strength: lose 10%

if Random(12000) is less than Bombardment Strength: lose 15%

if Random(24000) is less than Bombardment Strength: lose 20%

The results of the five checks are cumulative. An LCU may lose up to 51% of its readiness in a single attack. A unit's readiness cannot go below 20%.

Base Capture

An enemy base is captured if the odds are greater than the Terrain Level + 1 in the hex. When a base is captured, the units at the base belonging to the former owning player will suffer damage or destruction as follows:

LCUs are not immediately affected by the capture of the base. They may continue to exist in the enemy controlled hex until forced to retreat or completely destroyed in combat.

Leaders assigned to the base will surrender only after all friendly LCUs at the base have been eliminated.

All supplies and half of the fuel at the base are destroyed.

Air groups will have 3/4 of their aircraft destroyed. The group will return as a reinforcement in two weeks.

All ships in the port are sunk.

All HQs at the base are destroyed and their leaders captured or killed.

All factories at the base are destroyed.

Defender Retreat/Surrender

After the battle, each of the defending units individually will check for retreat if:

Allied Defender: the odds are greater than the Terrain Level + Defender's Entrenchment Level.

Japanese Defender: the odds are greater than 125. Note: As you can see, Japanese forces rarely retreat!

If a defending unit must retreat and if the defender is on an atoll or has no infantry squads left, the unit surrenders.

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If there is no retreat path for the defending unit, the unit might surrender, depending upon the unit's nationality, experience, entrenchment level, terrain, and the odds. If a unit does not surrender, the unit's entrenchment value may be reduced.

Land-Based Air Missions

Land-based search missions are flown before each player's orders phase. Land-based strike and airlift missions are flown after both players have completed their orders phase.

Searching for Enemy TFs

Land-based search missions will be flown by all eligible Patrol aircraft, Heavy Bombers of all nationalities, and all IJN, USN and USMC Bombers (Dive, Torpedo and Tac Bombers).

The area a search will cover depends on the range of the searching aircraft. The range is halved when searching at night. The search value (SV) of a group equals 1/2 the number of ready aircraft in the group. The search value is then modified depending on the range to each enemy TF they attempt to sight:

SV halved when searching at aircraft maximum range.

SV quartered when searching at a range greater than 5.

SV divided by 10 when searching at night.

SV halved for daylight search in enemy fighter zone of control.

If Random(SV+Aircraft Max Range) is greater than Range to TF, then that TF is sighted.

Searching for Enemy Subs

The SV is modified differently when attempting to contact an enemy sub group:

SV is quartered (this does not apply to carrier groups flying ASW search).

SV divided by 10 when searching at night.

SV quartered for daylight search in enemy fighter zone of control.

Aircraft Max Range is halved (quartered at night).

If Random(SV+Aircraft Max Range) is greater than Range to Sub, then the sub group is detected.

Heavy Bombers may never detect enemy sub groups.

Land-based Strike Missions

Land-based strike missions are flown at the start and end of the Execution Phase. It is possible for an air group to fly a mission in each of the two phases. Bomber groups that have night missions will conduct all of their attacks at night. During the 1st phase, land-based air groups will select one of the following missions, listed in priority order:

a. Airfield attack
b. City/Depot attack

During the 2nd phase, the following missions may be flown:

c. Port Attack
d. Land Unit Attack

Carrier Combat Operations

Carrier operations were crucial in determining the balance of power in the Pacific. A disastrous carrier battle could shatter a navy's offensive potential. Special rules have been included in the game to properly simulate a complex exchange of carrier air strikes.

Launching Carrier Air Strikes

When Carrier Strike Operations are performed, the attacking TF may launch anywhere from a Full Strike down to a One Eighth Strike. A Full Strike represents a well coordinated strike that concentrates most of your carrier air power against your opponent's TF. A TF must spend 15 Preparation Points to launch a Full Strike and 10 to launch a Half Strike or less. If the combat is in the Artic and the weather overcast, the cost will be 50% more in PPs. If no surprise occurs and one of the leaders fails his checks (see below), 33% more PPs must be expended.

To succeed in launching a Full Strike you must pass two Leader/Carrier Coordination Checks (LCC Checks). If surprise is achieved, the first Check automatically passes. If surprise is achieved and the enemy does not have radar, then both Checks automatically pass. For each check that you fail to pass, your strike is halved. If you run out of PPs, the strike is also halved. Note: You may end up in a Full Strike, Half Strike, Quarter Strike, or One Eighth Strike. Allied ships have radar starting in January 1942; Japanese ships have radar starting in January 1943.

The two checks are based on the Air Leader Rating of the TF, the number of Carrier Points in the launching TF, and a random factor. The number of Carrier Points in the launching TF is determined by the table below:

TYPE	CARRIER POINTS
Allied CV	3
Japanese CV	2
CVL	1
CVE	1

First Check: The percentage chance of receiving a successful result in the first check is shown in the table below. If the result fails, the strike is halved.

FIRST LCC CHECK TABLE:

CARRIER POINTS	AIR LEADER RATING						
	3	4	5	6	7	8	9
4	100	100	100	100	100	100	100
5	75	80	83	86	88	89	90
6	50	60	67	71	75	78	80
7	25	40	50	57	63	67	70
8	0	20	33	43	50	56	60
9	0	0	17	29	37	44	50
10	0	0	0	14	25	33	40
11	0	0	0	0	12	22	30
12	0	0	0	0	0	11	20

Second Check: The percentage chance of receiving a successful result in the second check is shown in the table below. If the result fails, the strike is halved.

SECOND LCC CHECK TABLE:

CARRIER POINTS	AIR LEADER RATING						
	3	4	5	6	7	8	9
7	100	100	100	100	100	100	100
8	83	86	88	89	90	91	92
9	67	71	75	78	80	82	83
10	50	57	63	67	70	73	75
11	33	43	50	56	60	64	67
12	17	29	37	44	50	55	58
13	0	14	25	33	40	45	50
14	0	0	12	22	30	36	42
15	0	0	0	11	20	27	33

Example: Your Allied Air Leader in the Air Combat TF is rated at a 7. You have 2 CVs and 2 CVLs, which is 8 Carrier Points. For the first check you have a 50% chance of success and for the second check a 90% chance of success.

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When a Carrier TF launches a strike against an enemy Carrier TF, the enemy force will attempt to launch a Counterstrike. If the Counterstrike TF has fewer than 9 Preparation Points and Random(9) is less than its leader's Air Rating, the strike will be halved and consume its remaining Preparation Points. A Counterstrike TF with 15 or more Preparation Points will attempt a Full Strike (the same requirements in the paragraph above must be met).

Surprise Carrier Air Strikes

When an undetected Carrier TF launches a strike, there is a chance that surprise will be achieved. Surprise will be achieved if Random(20) is less than the Leader Air Rating of the launching TF. A Surprise Air Strike will encounter reduced enemy CAP and Flak. If surprise is achieved, the first Leader/Carrier Coordination Check (LCC Check) does not have to be made; and if the enemy ships do not have radar, both LCC Checks do not have to be made.

Air to Air Combat

When an air strike attacks a target, it must first engage enemy CAP fighters in air-to-air combat. Aircraft flying CAP (Combat Air Patrol) are the carrier's defensive air screen against attacking enemy fighters and bombers. Each CAP fighter group will attack each strike air group in the following order:

1. Fighters
2. Fighter-Bombers
3. Dive Bombers
4. Torpedo Bombers
5. Tac-Bombers
6. Heavy Bombers

Fighter-bombers that are carrying bombs will jettison them and act as escorts if engaged in air-to-air combat.

In air-to-air combat when an attacking aircraft scores a hit against a defending aircraft, the defending aircraft is damaged if Random(100)<67 and Random(Defender Durability) is greater than Random(AttackerCannon); otherwise the defending aircraft is destroyed.

Air to Sea Combat

During air-to-sea combat each bomber group in the strike will be subjected to flak attack, then the surviving bombers will select a target and attack with bombs or torpedoes.

TF Flak Fire

Task Force Flak Strength is calculated by adding the flak ratings of each effective gun in the target TF. The effective flak strength of a ship is equal to Number of Guns x Flak Rating x (100-Ship Damage Level)/100. Flak strength of ships is modified according to the nationality of the ship and the date of the scenario:

Japanese Ship	x 0.75
USN Ship (Jul-Dec 42)	x 1.10
USN Ship (1943-1945)	x 1.25

Flak Combat is resolved for each bomber in the strike before it attacks its target. The bomber is hit if Random(6000) is less than Random(Flak Strength). If the aircraft is a heavy bomber, a hit occurs when Random(25000) is less than Random(Flak Strength). For each bomber hit by flak, a roll is made to determine if the bomber is damaged or destroyed. The bomber is only damaged if Random(100) is less than

Random(Aircraft Durability); otherwise the bomber is destroyed. If the bomber is not hit by flak, it may still have its accuracy reduced by the intensity of the flak.

Ship Target Selection

Ship Target Selection occurs after air-to-air combat is concluded. The surviving bombers in the group break up into sub-groups of four, with each sub-group selecting and attacking a single ship target. If the number of bombers in the group is not divisible by four, the last sub-group will have 1, 2, or 3 bombers. If a carrier TF is being attacked and a non-carrier target is selected, the sub-group will consist of only one bomber. In the target selection procedure each ship type is assigned a Selection Value (SV) as listed below:

CV, CVL, CVE	150
BB, BC	15
CA, CL, CLAA, CS	5
DD, DE, APD, PC	1
AP, AO, LST, MCS	4

The chance of any ship being selected as a target is equal to the SV of the ship divided by the Total SV of the target TF.

Ship Evasion Rating

Ship Evasion Ratings are calculated by multiplying the speed of the target ship (reduced by damage) times the Ship Evasion Modifier for that type of ship. Ships in port are further reduced. Ship Evasion Modifiers are listed below:

CV, CVL, CVE, BB, BC, CS	x 3
CA, CL, CLAA	x 5
DD, DE, APD, PC	x 6
AP, AO, LST, MCS	x 1

Aircraft Accuracy Ratings

Aircraft Accuracy Ratings must be considered in the bomb/torpedo hit determination procedure. Accuracy ratings for each type of aircraft are listed below:

Fighter	2
Fighter-Bomber	5
Dive Bomber	9
Torpedo Bomber	8
Tac-Bomber	7
Heavy Bomber	1
Patrol Bomber	8

Adjusted Accuracy Ratings are calculated by multiplying the Aircraft Accuracy Rating above by the Weapon Accuracy Rating of its bomb or torpedo.

Hit Determination

In order to hit the target, the attacking bomber must pass 3 different accuracy checks as listed below:

Random(Pilot Experience) > Random(Ship Evasion Rating)

Random(100) > Random(Air Group Disruption)

Random(Adjusted Accuracy Rating) > Random(1000)

If the bomber fails any of the three tests, the bomb/torpedo will fail to hit its target.

Ship Damage

Ships receive damage whenever they are hit by a torpedo, bomb, or gun shell. Ships may repair their damage during the course of the game.

Armor Penetration

Shells, bombs, and torpedoes can cause much greater damage if they successfully penetrate a ship's armor. An armor penetration has occurred if Random(Warhead) > Random(Armor). If the attacking weapon is a torpedo, Armor is randomized for the purpose of determining penetration. The effects of penetration are covered in the "Damage Points" section below.

Damage Points

Whenever a ship is hit by any type of weapon it will gain 1 damage point before any other factors are checked.

If the warhead penetrates the armor, the ship will receive the following additional flotation damage:

Random(Warhead) x Random(40) / Durability

There is a 5% chance that any penetration will be a critical hit. Critical hits will cause the above damage to be doubled.

A ship's damage level will never exceed 99. A damage level of 99 means the ship is sinking.

Special Carrier Damage

When an aircraft carrier is hit, there is a random chance that the air groups aboard the carrier may suffer casualties.

Crippled Ships

Ships with greater than 66% flotation damage are considered crippled. They are automatically detached from their TF and move towards their Home Base. Destroyers will usually be detached as escort. Crippled aircraft carriers cannot perform flight operations. A crippled ship can be scuttled. Access the TF, select the ship, and select (S)cuttle.

Base Damage

Bases may be damaged by either naval or air bombardment. Damage for each type of attack is described below.

Naval Bombardment

During naval bombardment, each ship in the bombarding TF with more than 3 ammo points will fire their primary guns. Ships firing during a naval bombardment will spend 2 ammunition points. The bombardment value of each ship is equal to:

8 x Number of Guns x Warhead x (100-Ship Damage)/100

The bombardment strength of the TF is equal to the combined bombardment values of all the ships in the TF.

Air Bombardment

Base Flak

When airfields, depots, or factories are bombed, the base flak strength is:

100 + Port x 5 + Airfield x 5 + Factory Capacity x 10

Air Bombardment Strength

For airfield bombing attacks the number of bombers that successfully release their bombs in the target area is equal to:

Total Bombers x Bomber Experience/100

The bombardment strength is equal to:

Bombers on Target x Bomber Load

Base Disruption

The base will gain one level of disruption if Random(1000) is less than Bombardment Strength. Bases may suffer a maximum of one disruption level in a single attack. Bases that suffer two levels of disruption may not be

replenished by Routine Convoys or generate Air Zones of Control. After each attack on the base, * or ** will appear after "Defender Losses" to reflect the disruption level. The disruption level is reduced by one at the end of each Execution Phase. Base disruption is reset to zero at the end of the friendly routine convoy phase. Disrupted bases may show up on the Isolated Base display.

Airfield/Aircraft Damage

Several random checks are required to determine the number of aircraft destroyed on a bombarded airfield:

if Random(500) < Bombardment Strength, add 10% damage

if Random(1000) < Bombardment Strength, add 10% damage

if Random(2000) < Bombardment Strength, add 20% damage

if Random(4000) < Bombardment Strength, add 30% damage

if Random(100) < 33 damage is halved

The number of aircraft hit is equal to the damage percentage times the number of ready aircraft at the airfield (1/4 of the aircraft hit will be destroyed and 3/4 will be damaged).

City/Factory/Depot Damage

When Bases are attacked, either a factory or the supply/fuel depots at the base will be specifically targeted. Several random checks are required to determine the percentage of damage done to the target:

Bomb = Random(Bombardment Strength)

if Random(10000) < Bomb x 100, add 10% damage

if Random(10000) < Bomb x 10, add 10% damage

if Random(10000) < Bomb, add 10% damage &

if Random(100) < 5, add Random(40%) damage

The damage percentage will be the percentage of lost capacity for a factory or the percentage of supply and fuel points destroyed at a depot.

If the target base is a major city in Japan (Tokyo, Nagoya, Osaka, Kitakushu, Sasebo, Takamatsu, and Aomori) or the United States (Seattle, San Francisco, Los Angeles, and San Diego), the attacking player may score victory points for killing civilians. The VPs scored is equal to the percentage squared, and each VP equals 10 civilians killed.

EXAMPLE: 30% damage equals 900 VPs (9000 civilians killed)

The computer will abort an air attack against factories/depots (due to heavy losses) if there is not a sufficient number of aircraft in the Replacement Pool.

Surface Combat

Surface combat may occur when Surface Combat or Bombardment TFs occupy the same hex as an enemy TF. For surface combat to occur, a Surface Combat or Bombardment TF must be eligible to initiate the combat. There is a random chance that Surface Combat will occur at night. Surface combat may not be initiated by a TF if any of the following is true:

- The TF is retiring due to mission completion or damage.
- One or more of the ships in the TF has less than 6 ammunition points remaining.

Surface Combat Resolution

Surface combat consists of one or more rounds in which each ship has a chance to fire. When surface combat begins, a starting range will be determined.

During daylight combat the starting range will be equal to 20 + Random(15). During night combat the starting range will be 5+Random(15). After each round of combat the range will be adjusted and another round will be fought if the TFs are still in range. During daylight the maximum range is 35 (thousand yards). During the night the maximum range is 20.

Between rounds the new range is determined by comparing the convergence speed of the initiating TF with the withdrawal speed of the defending TF. If the convergence speed is greater than the withdrawal speed, the new range will be less than the previous range. If the withdrawal speed is greater than the convergence speed, the new range will be greater. If both TFs in a surface combat were eligible to initiate the combat, both TFs will try to converge. The maximum range change between rounds is 10.

Example: A Surface Combat TF with a speed of 25 engages a Transport TF with a speed of 18 at a range of 22 for round 1. The range for round 2 would be 15 (22-25+18).

During each round of combat the ships will pair off and fire at their opponent's ships on a one for one basis. Any extra ships in the larger TF will select the best (usually the biggest) ship in the smaller TF. Ships will fire only those weapons that are in range of the enemy TF. Ships will spend 1 ammunition point each time their main guns are fired. Ships with torpedoes remaining will fire and expend one torpedo salvo each round. A torpedo salvo will consist of all, one half, or one fourth of the total torpedoes a ship starts the scenario with. Listed below are the types of ships and numbers of salvoes they may fire:

JAPANESE SHIP	# SALVOES
CA	4
CL	2
DD	2
DE	2

ALLIED SHIP	# SALVOES
CL	2
CLAA	2
DD	1

Note: Most Japanese cruisers and destroyers carried extra torpedoes and had the ability to reload during a battle.

After one or more rounds of combat the initiating TF may be forced to try to disengage. When this happens both of the TFs will diverge at the maximum rate. The following factors will cause the initiating TF to disengage:

- Any ship in the TF has less than 6 ammunition points after firing.
- The range falls below 5 for a night battle or 10 for a daylight battle.
- One or more ships in the initiating TF is sunk.

Reaction Movement and Combat

When TFs move into enemy air zones of control, they may trigger enemy reaction attacks and movement.

When an undetected TF enters an enemy air zone of control, it will trigger an enemy reaction search by all enemy patrol and bomber groups in range.

When a detected TF enters an enemy air zone of control it will trigger an enemy reaction air strike by all enemy carrier and land-based combat Air Groups in range.

When a detected TF enters an enemy air zone of control it may also trigger a reaction move by enemy carrier TFs within 15 hexes.

When a detected non-carrier TF enters an enemy air zone of control it may also trigger a reaction move by enemy surface combat TFs within 15 hexes (if the TF has an MTB as its flagship, it must be within 3 hexes to react).

For an enemy TF to perform a reaction move, the TF's destination must be the same as its Home Base and it must start the Execution Phase on its Home Base.

A random element has been added to vary the occurance of reaction movement. The chance of a reaction move occuring is increased:

- as the range between the moving and reacting TFs grows smaller
- by the speed of the reacting TF
- with the number of AZOCs the moving TF has entered

When a reaction move occurs, the reaction TF is placed in the same hex the moving TF just entered. If the reacting TF is an Air Combat TF, it will immediately launch an air strike. If the reacting TF is a Surface Combat TF, it will initiate surface combat.

Submarine Combat Operations

When a submarine contacts a TF it will select a target and fire a spread of torpedoes. The submarine may then be attacked by escorts in the TF or nearby aircraft if the attack occurs in an AZOC.

The following factors will reduce the threat of enemy submarines:

- fast TFs will be harder to contact
- fast ships will be harder to hit
- submarines detected during prior searches will be less effective
- more escorts will make the target harder to hit and increase the chance of damaging or destroying the submarine
- AZOCs will make the target harder to hit and increase the chance of damaging or destroying the submarine

Following each submarine attack, the escorts in the TF or nearby aircraft will counterattack.

Submarines are most effective when they are undetected. Following detection, a submarine will lose much of its effectiveness until it can be repositioned. Submarines can be detected by air search missions or when they attack enemy shipping.

Submarine Contact

Whenever enemy TFs or routine convoys enter a hex with a sub patrol that has no delay, the sub group will attempt to contact and then attack the TF/convoy. The following factors will increase the detection of enemy submarines:

- the fewer number of subs in the group
- if the sub group has already been detected
- if the sub is Japanese and the year is 1943-1945

Note: If the year is 1943-1945, Allied subs have a lower chance of being detected.

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The following factors will decrease the chance of a successful submarine contact of an enemy TF:

- the fewer number of subs in the group
- play balance is set to HELP or MAX HELP enemy player

A submarine attack will always follow a successful contact.

Submarine Attacks

Submarine attacks are executed following each successful submarine contact. Submarine attacks are resolved as follows:

If the sub makes a successful contact, one of the ships in the enemy TF will be randomly selected. The chance that the ship will be hit depends on the accuracy of the torpedo, the number of torpedoes carried by the sub, the durability rating of the sub, and the amount of damage the enemy ship has currently suffered.

The chance that the sub will be hit depends on the speed of the enemy ship, the speed of the sub, the durability rating of the sub, and the Anti-Submarine Warfare (ASW) of the TF/Convoy in which DDs are worth 4 points and other escorts are worth 3 points (in 1943 the ASW value is x 3, from 1943-1945 the ASW value is x9). Depending upon the sub's durability, the sub may be either damaged or sunk.

REPAIR PHASE

Aircraft Repairs

At the end of each turn, damaged aircraft may be repaired at an airfield. Each airfield can have a maximum number of ready aircraft for each Air Group equal to ten times the Airfield Capacity. Any aircraft above this limit will become damaged. The number of damaged aircraft to be repaired will be either 75% of the number of damaged aircraft or the number of aircraft needed to bring the airfield up to maximum capacity. Usually 75% of the number of damaged carrier aircraft may be repaired per turn.

Ship Repairs

At the end of each turn, ships will have a chance to repair damage. The rate at which ships may be repaired depends on whether the ship is at sea or in port.

Repairs at Sea

Ships at sea may repair 1 point of damage if:

Random(333) < Ship Durability.

Repairs in Port

Each ship in port may repair 1 damage point according to the formula in "Repairs at Sea". In addition, ships in port may be repaired as follows. At the start of each Repair Phase, each port will receive repair points equal to its Port Capacity plus its Shipyard Capacity. Ships in port are repaired in the following priority order:

CV, CVL, CVE, BB, BC,
CA, CL, CLAA,
CS, DD, DE, PC,
APD, AO, AP, LST,
MCS, TK, and SS.

During the Repair Phase, ports will spend their repair points when ships in the port remove damage points. The number of repair points spent (COST) and number of damage points removed (RATE) will vary according to the type of ship being repaired:

SHIP TYPE	COST	RATE
CV	3	2
CVL	3	2
CVE	2	3
BB	4	1
BC	4	1
CA	3	1
CL	3	1
CLAA	3	1
CS	2	2
all others	1	3

For each ship being repaired, the owning player loses Ship Construction Points equal to COST. When Ship Construction Points are reduced to zero, 1 additional port repair point must be spent for each ship repaired.

Accelerated Ship Repairs

Ships may remove an additional damage point each turn if:

Remaining Port Repair Points >
Random(Ship Durability)

SUPPLY

Supply Points in the game are used to increase the readiness of LCUs and to activate Infantry, Artillery, AFV, and Aircraft Replacements. At the end of each turn LCUs may spend supply points to increase their readiness level. Each supply point can increase the readiness of 1 infantry squad by 100 (or 10 Infantry squads by 10, etc.), 1 Artillery by 50 or 1 AFV by 33.

Supply and Fuel Production

Supplies and fuel are produced each turn in the following locations:

Japanese Production

The major cities in Japan are: Tokyo, Nagoya, Osaka, Kitakyushu, Sasebo, Takamatsu, and Aomori.

Any major Japanese city that starts a turn with fewer than 10000 supply points will gain 10000 supplies if there are 1000 or more in the Resource Pool. When this occurs 1000 will be deducted from the Resource Pool.

Any major Japanese city that starts a turn with fewer than 4000 fuel points will gain 4000 fuel if there are 4000 or more in the Oil Reserve. When this occurs 1000 will be deducted from the Oil Reserve.

United States Production

The major cities in the United States are Seattle, San Francisco, Los Angeles, and San Diego.

Any major U.S. city that starts a turn with fewer than 10000 supply points will gain 10000 supplies.

Any major U.S. city that starts a turn with fewer than 10000 fuel points will gain 10000 fuel.

Routine Convoys are automatically loaded to maximum capacity. The Allied player's Routine Convoy ships never take away any of the supplies at an Allied base. The supplies at a base are to be used by the Allied player for any non-Routine Convoy supply purpose. Therefore, only Transport, Cargo, and Replenishment TF's can reduce a base's supply points.

Chinese Production

Any city controlled by Nat.China or North CAC that has less than 10000 supply points will gain supply points equal to:

(10-Terrain Level in city hex) x 10

Supply centers receive supplies first and then distribute them to the various bases by the following methods:

Base Resupply

Bases can receive supplies by:

1. Routine Convoys
2. Overland Supply Movement
3. Cargo and Transport TFs

Routine Convoys

At the start of each player's turn the computer will run the routine convoy system. Routine convoys are used to transport fuel and supplies to those uncontested areas of the map that require them. Routine convoys will also transport oil and resource cargo from the outposts of the Japanese Empire to the Japanese Industrial Centers. Routine convoys will never be run into areas where naval or air combat would be expected. Routine convoys may be subject to submarine attack if the convoy path passes through a hex that contains an enemy submarine patrol. Routine convoys will only move through coastal waters and sealanes which are preset paths that all TFs will move on between bases.

Routine convoys will be formed from MCS and TK units. They will be escorted by DD, DE, and PC units. DDs will only be selected as escorts if they begin the routine convoy phase in one of the following ports: Nagoya, Los Angeles, or Calcutta.

TK units will only be included if the destination base requires fuel or if the destination produces oil to be transported back to Japan. Routine convoys will requisition their ships from friendly ports without the player's control. Ships may not be added to a TF on the same turn they were used in a routine convoy.

Routine convoys are automatically loaded to maximum capacity for the Allied player only. Japanese Routine Convoys use the supplies available at the base. The Allied player's Routine Convoy ships never take away any of the supplies at an Allied base. The supplies at a base are to be used by the Allied player for any non-Routine Convoy supply purpose. Therefore, only Transport, Cargo, and Replenishment TF's can reduce an Allied base's supply points.

Overland Supply Movement

At the end of each turn fuel and supplies may automatically move between friendly connected bases. If a base has more than twice as many supply/fuel points as one of its neighboring connected bases, it will ship some of this excess to that base. The amount of fuel and supply that may be transported between bases in a turn is determined by the terrain ratings of the two bases as shown below:

S = Losing Base Supply or Fuel
(if S>20000 then set S=20000)

T1= Losing Base Terrain

T2= Gaining Base Terrain

P = Percentage of S transported

P = 50 - T1 x 2 - T2 x 2

If the Losing Base was bombed or bombarded during the previous Execution Phase, add 1 or 2 to T1. If the Gaining Base was bombed or bombarded during the previous Execution Phase add 1 or 2 to T2.

Cargo and Transport TFs

Cargo and Transport TFs may carry troops, supplies, airgroups, fuel, oil, or resources from one port to another port. Cargo TFs may not enter an enemy Air ZOC. Transport TFs can enter an enemy Air ZOC.

Unit Resupply

Units can receive supplies from:

1. The friendly controlled base in the hex
2. Transport TFs at enemy controlled bases
3. Replenishment TFs
4. Airlift-Transport Aircraft

Friendly Base Supply

If the LCU occupies a friendly base, supply is drawn from that base.

Transport TF Supply

LCUs may take supply directly from Transport TF ships only when they are located at an enemy controlled base. This is called Over the Beach Supply, and it can occur any time a friendly TF is unloaded in the hex. When taking Over the Beach Supply, an LCU's readiness can never be increased above 49.

Replenishment TF Supply

Replenishment TFs may give fuel to other ships or replacement aircraft for friendly carriers. Use the REPLENISH function on the Unit Menu.

Airlift Supply

Airlift Supply is performed automatically by the computer after the second Land-based Air Operations Phase. The computer will determine which areas require airlift and will use any Transport Air Groups in range. Each transport aircraft can carry 1 supply point. An LCU's readiness can never be increased above 49 due to airlift supply.

Factories

Factories are located in Japan, the United States, Australia, and India. Factories produce aircraft, ships, artillery, and AFVs. Also, heavy industry factories influence the expansion of the weapons industry and the conversion of resources into supplies. Listed below are the types of factories used in the game:

Heavy Industry

Shipyard

Artillery

Armored Vehicle

Aircraft

Each aircraft factory in the game will produce a specific model of aircraft. Artillery and armored vehicle factories produce generic artillery and AFVs. Shipyards produce shipyard points which are used to repair damaged ships or activate new ships when they become available.

For the Japanese player only, for each AFV, gun, aircraft, or shipyard point produced, one is deducted from the Resource Pool. For each heavy industry point produced, 25 will be deducted from the Resource Pool and 25 will be deducted from the Oil Reserve.

Industrial Expansion of Factories

Factories may increase their capacity each turn. The increase will be very rapid until they reach their optimum capacity. Factories at or above their optimum capacity will expand very slowly.

Changing Aircraft Factories

As the war progresses, aircraft factories may automatically change the models of aircraft they produce. The player may also alter the production of aircraft factories to a different model of aircraft. Move the cursor to the base where aircraft factories are located and press F6 to view the factories at that location. Select an aircraft factory to change. The computer will list the various aircraft models available to be produced. Select one of the aircraft models, or exit by pressing "ESC" or the right button. Changing an aircraft factory will result in a drop in capacity and suspension of output for a month.

BASE CONSTRUCTION AND EXPANSION

At the end of each turn any base which contains Engr or SBF units and has at least 1000 supplies is eligible to expand. A base may only expand if either its Airfield or its Port are below the Maximum Size for the Terrain at the base. Maximum Size limits for each type of terrain are listed below:

TERRAIN	MAX SIZE
1	4
2	6
3	8
4	9
5	9
6	9
7	8
8	6
9	4

Each Engr at the base is eligible to perform 1 airfield and 1 Port expansion per turn. The expansion is successful if: Random(100) < Squads and Random(80) < Readiness. SBF units will use only half of their squads for the expansion check.

If both expansion checks are successful, 100 supply points will be consumed. If an airfield is successfully expanded, the number of squads is divided by 4 before rolling for port expansion.

It will require 5 successful expansions to increase the size of an airfield by 1 and 10 expansions to increase the size of a port by 1.

FUEL/SUPPLY CONSUMPTION

Ship units spend fuel points whenever they move. Land-Based Air Groups spend fuel points whenever they fly missions.

Ships

Ships will consume 1 fuel point for each hex they move. If a ship runs out of fuel the TF speed will be reduced to 9 knots.

Fuel is transferred from a port to a ship whenever the ship replenishes at the port, or when the ship is transferred from the port to a TF. When transferred from a port to a ship, fuel points are multiplied according to the type of ship:

CV, CVL, CVE, BB, BC	x 4
CA, CL, CLAA, CS, AO, AP, LST, MCS, TK, SS	x 8
DD, DE, PC, APD	x 16

A TF's ships may also be refueled from a TF that has a Replenish mission or from other (larger) ships in the same TF. When refueling from ships in the same TF, only ships with more than 30 fuel may transfer fuel to other ships. When TFs replenish at sea, fuel is transferred from ship to ship. The transferred fuel is multiplied by 2 if the receiving ship is a DD, DE, PC or APD.

Aircraft

Air Groups flying fighter intercept missions will consume 1 fuel point (for the entire group) if more than 4 aircraft intercept. If 4 or less aircraft intercept, zero fuel is spent. The group will launch its maximum intercept number if the amount of fuel at the base exceeds the maximum intercept number. The group will launch a reduced intercept number if the maximum intercept number exceeds or equals the amount of fuel at the base.

Air Groups flying strike missions will consume both fuel and supplies. The consumption rate varies with the type of aircraft:

AIRCRAFT TYPE	CONSUMPTION RATE
Fighter	1
Fighter-Bomber	1
Dive-Bomber	2
Torpedo Bomber	2
Tac-Bomber	3
Heavy Bomber	4

The number of fuel points and supply points consumed flying strike missions equals:

(Consumption Rate x Number Flying) / 50

If the base does not have adequate fuel or supply to support the entire air group a reduced number of aircraft will fly the mission.

Air Groups flying search or airlift missions will consume fuel and supplies the same as for strike missions. Consumption rates are shown below:

Transport Aircraft	1 + 1 transported supply point
Patrol Aircraft	1

AIR ZONES OF CONTROL

There are two types of Air Zones Of Control (AZOC): Fighter ZOCs and Bomber ZOCs. Fighter ZOCs will influence the effectiveness of enemy searches. Bomber ZOCs prevent the passage of Routine Convoys and Trigger Reaction Searches or Reaction Air Strikes when enemy TFs enter a Bomber ZOC.

AZOCs are created up to 7 hexes away from Airfields, or 9 hexes away from Carrier TFs that contain air groups of the proper type. Fighter ZOCs are created by fighter groups, and Bomber ZOCs are created by bomber and Patrol Groups. Both Fighter and Bomber ZOCs may exist in the same hex. If Allied and Japanese Fighter ZOCs exist in the same hex, the side with the strongest fighter presence in the area will cancel out the opposing Fighter ZOC.

If an undetected TF moves into an enemy Bomber ZOC, all Enemy Patrol and Bomber Groups within range may attempt a Reaction Search against the moving TF.

If a detected TF moves into an enemy Bomber ZOC then each enemy Airfield within 6 hexes and each enemy Carrier TF within 3 hexes may attempt a Reaction Strike against the moving TF. Also, enemy Air Combat and Surface Combat TFs may attempt a Reaction Move and attack.

A Surface Combat TF will create a Bomber ZOC in the hex it occupies. This will prevent Routine Convoys from moving through areas patrolled by enemy surface forces.

Air Combat TFs that enter an enemy ZOC will cancel out the ZOC (after any reaction searches/attacks/moves) and will create a friendly ZOC in its place.

Surface Combat TFs that enter an enemy ZOC will partially cancel out the ZOC (after any reaction searches/attacks/moves). Any other friendly TFs that enter that hex will not be subject to enemy Surface Combat Reaction Attacks.

SIGINT

SIGINT or Signals Intelligence represents the Allies' ability to decipher Japanese communications. Allied SIGINT effectiveness will vary as the war progresses. SIGINT will show long periods of increasing effectiveness followed by abrupt declines (as the Japanese change their codes). Allied radio stations intercepted tons of coded transmissions and had to be selective in what they attempted to decipher. The game system allows the Allied player to target those areas in which he most wants intelligence.

The Allied player may select from 1 to 5 targets for his codebreakers in each turn. There are 5 types of target:

1. Headquarters 2. Ports 3. Armies
4. Airfields 5. Task Forces

To obtain SIGINT information, press F5 or select SIGINT from the Utility Menu. The computer will display the number of SIGINT targets allowed for that turn. To obtain information on a target, move the cursor to the target's location and press the letter H, P, A, R, or T, or click the button for the type of target you wish to examine. The quality of the information you receive will depend on the current effectiveness of your codebreakers.

RADAR

At the beginning of the war both sides lack radar. As of January 1942 all Allied ships have radar. As of January 1943 all Japanese ships have radar.

REPLACEMENTS

LCUs that are below their Table of Equipment (TOE) strength may take replacement infantry, artillery, or AFVs. Air Groups that are below TOE may take replacement aircraft. Replacements of the proper type must be available in the national replacement pool and adequate supplies must be available at the LCUs locations to activate those replacements. The supply cost for activating replacements is listed below:

UNIT TYPE	SUPPLY COST
Infantry	1
Artillery	10
AFV	20
Fighter	20
Fighter-Bomber	20
Dive-Bomber	20
Torpedo Bomber	20
Medium Bomber	30
Heavy Bomber	40
Air Transport	40
Patrol Aircraft	20

Land-Base Air Groups may receive a maximum of 10 replacement aircraft each turn. Carrier Air Groups may be brought up to full TOE any time they receive replacements through Replenishment. LCUs may take replacements whenever they are resupplied (except for airlift supply).

Air groups and LCUs will have their experience reduced whenever they receive replacements.

LCUs may receive replacements if their strength is below their TOE level. LCUs may receive replacements at the end of the Execution Phase and each time they receive over-the-beach supply. An LCU may receive the following maximum number of men/equipment each time it receives replacements:

UNIT TYPE REPLACEMENTS	MAXIMUM	SUPPLY COST
Infantry Squads	10*	10 supply
Artillery	4	40 supply
AFV	3	60 supply

* if the LCU is Chinese or there are more than 999 squads in the infantry pool, 20 squads may be added at a cost of 20 supply points

Chinese replacements may be added without any reduction in the Allied infantry replacement pool.

Philippine and Dutch LCUs may never receive replacements.

REINFORCEMENTS

Reinforcement Arrival Bases

The bases at which reinforcements arrive are listed below:

COUNTRY	BASE
Australia	Sydney
Britain	Calcutta
Britain-Naval	Columbo
China	Kweiyang
China-Air	Kunming
Dutch	Soerabaja
India	Calcutta
Japan	Tokyo
Japan-China	Shanghai
Japan-Kwantung	Port Arthur
NCAC	Kunming
New Zealand	Auckland
Philippines	Manila
United States	San Francisco

Land Combat Unit Reinforcements

Land Combat Unit reinforcements arrive in the month shown on the "LCU Reinforcement Table" starting on page 103. If the base that the LCU is supposed to arrive at has been captured by enemy forces, all reinforcements will be delayed until recaptured.

Air Group Reinforcements

New Air Groups arrive periodically during the war. If the base that the Air Group is supposed to arrive at has been captured by enemy forces, all reinforcements will be delayed until recaptured.

Ship Reinforcements

Ship reinforcements are scheduled to arrive at various times during the war. Reinforcements will arrive as they did historically as long as the Japanese and American shipyards remain supplied and undamaged. Reinforcements may be delayed if the shipyards are overloaded repairing damaged ships. Ship reinforcement units arrive according to the Allied and Japanese Ship Tables, starting on page 121. Choosing HELP or MAX HELP will speed up the arrival of units. Transport and Cargo type ships will, for the most part, not arrive in new ship units, but either go into the Ship Pools or into existing ship units on the map. These reinforcements are not listed in the Ship Tables, but come at specific intervals during the game.

Shipyards produce ship construction points. Ship construction points must be used to activate ship reinforcements. The cost for activating a ship is equal to (Ship Durability + Ship Armor). For multiple ship groups the cost is multiplied by the number of ships in the group. If adequate ship construction points are not available to activate a ship, its arrival will be delayed until adequate points are available. Note: At various times the Japanese player will have units in the China theatre transferred to Haiphong or Shanghai which can be used in other HQs.

VICTORY CONDITIONS

A Decisive Victory is achieved if either player outscores his opponent by a 2 - 1 margin; otherwise the match is a draw. Please review the data card for any changes in victory condidtions.

Points are scored for production, control, and kills as described below:

Production Victory Points

- 50 points are scored for each heavy industry capacity
- 15 points are scored for each shipyard capacity
- 5 points are scored for each aircraft, artillery, and vehicle factory capacity

The Japanese player may have his production points reduced if his reserves of oil or resources fall below a critical level:

- Japanese production points will be halved if either his oil or resource reserves fall below 10000. An '*' will appear after this number on the score display.
- Japanese production points will be divided by three if both his oil and resource reserves fall below 10000. A '**' will appear after this number on the score display.

Control Victory Points

Points scored for each base controlled is equal to:

(AF Capacity + Port Capacity + Oil + Resource) x 10

If the base is a major Japanese (Tokyo, Nagoya, Osaka, Kitakyushu, Sasebo, Takamatsu, and Aomori) or United States (Seattle, San Francisco, Los Angeles, and San Diego) city, the above total will be multiplied by 10.

Kill Victory Points

Kill victory points are awarded as follows:

- 1 point is scored for each squad, artillery, AFV, and aircraft destroyed.
- 1 point is scored for every 10 civilians killed by strategic bombing
- points are scored for sinking enemy ships according to the following formula:

Ship Durability x Value = Kill Points

if the ship is a CV, CVL, or CVE, then Value = 3

otherwise if it is a combat ship, then Value = 2

if it is an auxiliary ship, then Value = 1

Japanese Kill Multiplier

The Americans were more sensitive to losses than the Japanese. If the war had dragged on with continuous high losses, there was a chance that the Americans would elect a leadership less insistent on unconditional surrender. With this hope in mind, the Japanese would be less likely to surrender as long as they were inflicting damaging losses on their enemies. The effect of these multipliers is to prolong the war if the Allies have suffered heavy casualties. Note: The Kill Points below are the accumulated Kill Points the Japanese player has won since the start of the scenario.

During 1944 Japanese Kill Points are multiplied x 1.5.

During 1945 Japanese Kill Points are multiplied x 2.0.

AMPHIBIOUS OPERATIONS

The players must plan and perform amphibious operations in order to capture enemy controlled bases. Amphibious assaults against undefended bases may be successfully executed by battalion sized units loaded onto destroyers or APDs. Amphibious assaults against bases with large entrenched land forces with potential air and naval support will require much greater land assault forces and a mixture of naval support forces. The following actions should be considered when planning an amphibious operation:

• *Selecting an Assembly Port*

An assembly port should be a friendly controlled port that is as near as possible to the enemy objective and yet free of the threat of enemy air attack. An assembly port should never be isolated from routine supply. All of the land forces and combat ships that will be used in the assault should first be sent to the assembly port. The amphibious assault procedure should be started only when all of the necessary combat ships and land combat units start the turn in the assembly port and the commanding Headquarters has more than 100 Preparation Points available.

• *Activating Land Combat Units*

Those land forces that are to be loaded by your transport ships should first be activated. Move the cursor to the assembly port, or point the arrow and click the right mouse button to list the LCUs at the location. Inactive units will have a "$" printed after their name. Select the desired unit and click the Activate box, or press 'A'.

• *Get Transports*

The Get Transport function is the best way to obtain the necessary transport ships for an amphibious operation. This function should be used after the Land Combat Units have been activated. Move the cursor over the assembly port and press ALT/T, or select GET TRANSPORTS from the HQ MENU. Subject to availability, the necessary transports will be immediately moved to the assembly port at a cost of 10 preparation points. Each transport unit will contain the correct number of ships to move one of the activated LCUs.

• *Form TFs*

A mix of the various types of TF will be required for amphibious operations. The "AUTO SELECT" feature is useful for beginning players to become familiar with the types of ships that belong in each type of TF. Listed below are the types of TFs that may be used in an amphibious operation:

• *Transport TF*

This TF is required to move the LCUs to the objective base. If significant enemy ground opposition is expected, an Admiral with a high (L)and rating should be assigned to command the TF.

• *Air Combat TF*

Air Combat TFs are required to neutralize enemy land and carrier air opposition at or around the objective. Air Combat TFs also cancel out enemy Air ZOCs that they enter, thus clearing the way for other friendly TFs moving on the same path.

continues....

• *Surface Combat TF*

Surface Combat TFs are useful for protecting friendly Transport TFs from enemy surface combat forces in the objective area. Surface Combat TFs also partially cancel enemy ZOCs that they enter. Other friendly TFs that move on a path cleared in this manner will be immune to enemy surface combat interception.

• *Bombardment TF*

Bombardment TFs are useful for softening up enemy LCUs and airfields at the objective. This is extremely important if the objective contains powerful enemy ground units.

• *Cargo TF*

These TFs will unload their supplies 'over the beach' to give previously unloaded LCUs a readiness/replacement boost.

• *Replenish TF*

These TFs are extremely important when attacking an objective 15 or more hexes from the assembly base. If the objective is not cleared on the turn of the assault, Air/Surface Combat TFs may be refueled at sea and remain on station at the objective. If the Replenish TF contains CVE type ships, they may also replace aircraft losses for Air Combat TFs they refuel.

TUTORIAL*

This tutorial is provided to get new players involved in a typical game situation in which most of the important actions are covered. The Guadalcanal scenario is best suited for new players because most of the activity occurs in a small portion of the map and the availability of combat forces is relatively limited.

• *The Set Up*

To start the game type PAC and press <Enter>, then select the Guadalcanal scenario, Japanese Computer, and Even balance. In answering the question, "HISTORICAL FIRST MOVE Y/N", select NO. Set the DISPLAY and DELAY levels to Medium. The game will start with the Allied Supply Phase in which routine convoys are sent to Allied controlled bases that require supplies. At the end of the Supply Phase the Supply Convoy Report will summarize the convoy activities.

• *The Headquarters List*

Next is the Allied Player Phase. Select Orders from the menu. It is time to spend a few minutes reviewing your Headquarters and the units they control. Start by clicking the HQ button at the bottom-right section of the display. Select FIND ANY HQ from the menu. All of the active Allied Headquarters will be listed. Move the arrow over the South Pacific entry. Notice that the HQ LOCATION is Noumea, the HIGHER HQ is Central Pacific and, under PP, there is "150 fc" (this means that the South Pacific HQ has 150 Preparation Points available and the HQ is currently under full computer control). There should be nothing listed under OBJECTIVE; you will soon be required to select one.

* This tutorial assumes that you are using a mouse.

• *Finding any HQ on the MAP*

With the South Pacific HQ highlighted, click the left mouse button. The Headquarters List will disappear and the map will center on Noumea. On the map display Noumea will be highlighted and all other bases that are subordinate to South Pacific will also be highlighted. Click the MAP button at the bottom center of the display. This will zoom the map in for a closer look at the Noumea area. Click the MAP button again. Notice that only the Noumea base is now highlighted — this is the cursor location.

• *The Text Window Display*

Examine the information in the text window below the map on the right side. The top row of the window will list the name of the base in the cursor-hex and some of the data that describes the base. This line should read: "Noumea AF:4 Port:3 Ter:6. This means that Noumea has a size 4 airfield, a size 3 port and terrain type 6. The meaning of these ratings will be described later. On the second row the name of the current HQ will be listed, along with the HQ's objective if one has been selected. One or two asterisks will be displayed next to the HQ name if that HQ is under some level of computer control. This line should currently read: "South Pacific**". On the third line of the window, the Leader(s) of the current HQ will be listed. The leader on the left is in overall command of the HQ. The leader on the right is the Air Leader. This line on your display should read: "Vice Adm Ghormley Rear Adm Fitch." Ghormley is in overall command of the South Pacific HQ and Fitch is the Air Leader. On the bottom line of the window "PP: 150" should be displayed. This is a reminder that the South Pacific HQ has 150 Preparation Points available. If a friendly TF were present in the hex, its number and mission would also be listed on the bottom line.

• *The Airfield Display*

Now click the DISP button twice. The text under the button should read "DISPLAY AF". Point the mouse at Noumea on the map and click the right mouse button. The air groups based on Noumea will be listed. Point the mouse at the B-17 symbol on the left side of the menu and click the left mouse button to view a more detailed display of the B-17 group and aircraft characteristics. Click the right mouse button twice to exit the displays.

• *The Air Group List*

Click the HQ button again and select HQ AIR from the menu. All of the air groups assigned to South Pacific airfields will be listed along with their locations. Point the mouse to any air group you wish to examine and click the left mouse button. The air group list will disappear and the cursor will be centered on the location of the air group you selected. Follow the procedure described in the last paragraph to examine the selected air group.

• *The Unit List*

Click the HQ button again and select HQ UNITS from the menu. All of the Land Combat Units assigned to the South Pacific will be listed along with their locations. Point the mouse to the 1st Mar Div and click the left mouse button. The unit list will disappear and the cursor will be centered on the 1st Mar Div location.

• *The Land Unit Display*

The cursor should be located back at Noumea. To examine the land units at Noumea, click the DISP button until "DISPLAY ARMY" is shown below the button. Point the mouse at Noumea on the map and click the right mouse button. All of the land units located on Noumea will be listed on the Land Unit Display. Point the mouse at 1st Mar Div

and click the left mouse button. The 1st Mar Div Action Display will now be shown. This display must be used to activate or divide the unit. Click the right mouse button twice to exit.

• *The Port Display*

Click the DISP button until "DISPLAY PORT" is shown below the button. Point the mouse at Noumea and click the right mouse button. Ships in port at Noumea may be viewed on this display. If more than 15 ships are in port click the Page button at the bottom of the screen to view additional ships. To view a more detailed display of a particular ship, point the mouse at the ship's symbol and click the left mouse button. Click the right mouse button to exit a ship display and again to exit the port display.

• *The Ship List*

Any friendly ship may be easily located by using the FIND SHIPS function. Point the mouse at any base and click the left mouse button. Select FIND SHIPS at the top of the menu. Select CV as the type of ship to be located. Notice the Allies have three carriers (CVs) at Noumea and one at San Francisco. Click the right mouse button to exit the ship list.

• *Setting an HQ Objective*

Click the HQ button and select SET TARGET from the menu. Point the arrow at Guadalcanal (the Japanese flag symbol located 10 hexes north of Noumea) and click the left mouse button. The cursor will return to Noumea and Guadal canal will be listed as the South Pacific HQ Objective/Target in the text window below the map. Notice that the number of Preparation Points (PP) shown in the text window has been reduced to 140. It costs 10 PPs to select a new HQ objective.

• *Changing an HQ Commander*

Click the HQ button and select NEW LEADER from the menu. A list of available leaders will be displayed along with their skill ratings for Naval, Air, Land, and Aggressiveness. Point the arrow at Vice Admiral Halsey and click the left mouse button. Halsey will become the new leader of the South Pacific HQ. Note: whenever the NEW LEADER function is used the old leader is automatically removed from command. If you exit the menu (by pressing Esc) without selecting a new leader, the command will be left vacant. Changing an HQ commander costs 5 Preparation Points.

• *Changing an HQ Air Leader*

Changing the Air Leader of an HQ is similar to changing an HQ Commander. Click the HQ button and select AIR LEADER from the menu. Changing an Air Leader costs 1 Preparation Point.

• *Setting the HQ Control Level*

Click the HQ button and select HQ CONTROL from the menu. Select Full Human Control from the menu. Notice that the HQ name in the text window is no longer followed by '**'.

• *Moving an Air Group*

Now is a good time to reinforce Espirtu Santo, the airfield nearest Gaudalcanal. Point the mouse at Espirtu Santo, the base located 4 hexes NNE of Noumea. Click the left mouse button and select AIR TRAN from the menu. Now point the mouse at Noumea again and press the left mouse button. The air groups that are eligible to be transferred will be displayed. Point the mouse at the Hudson icon and click the left mouse button to transfer the Hudson group to Espirtu Santo. Click the right mouse button to exit the Noumea Airfield Display and click the ESC button to exit Air Transfer Mode.

• *Creating a Task Force Using Auto-Select*

Point the mouse at Noumea and click the left mouse button twice. Select CREATE TF from the menu. On the SELECT TF MISSION menu select Surface Combat. The text window will display the question "Auto-Select Y/N". Click the YES button. A Task Force with a Surface Combat mission will be automatically selected from the ships in port at Noumea. When using the Auto-Select feature a leader will automatically be assigned to command the TF, and the TF Destination will be set the same as the HQ Objective. Click the right mouse button to examine the TF Display. Click the Leader box at the bottom of the display if you wish to assign a new commander to the TF. Click the right mouse button to exit the TF Display.

• *Creating a Task Force Without Auto-Select*

Point the mouse at Noumea and click the left mouse button. Select CREATE TF from the menu. On the SELECT TF MISSION menu select Air Combat. The text window will display the question "Auto-Select Y/N". Click the NO button. Click the PORT button above the right side of the text window. A ship may be transferred from the port at Noumea into the new TF by pointing at the ship icon and clicking the left mouse button. Select ships A, B, C, D, E, F, and L; then click the Page box at the bottom of the display. A second screen listing different ships will be displayed (a maximum of 15 ship units can fit on one page of the display). Select ships A, B, C, and D from the second page and click the right mouse button to return to the map menu.

• *Using the Task Force Stack Display*

Click the right mouse button on Noumea. If there were only one TF in the hex, then this would open the TF Display for that TF. Since there are now two TFs in the hex, the TF Stack Display will be opened. The stack display creates an information box for each TF in the hex. The box will include the TF number, the total number of ships in the TF, and a listing of the most important ship types in the TF. Point the mouse at TF 50 and click the left button once. The TF 50 box will be highlighted. Click the right button to exit the Stack Display. Notice that TF 50 is now listed as the current TF at the bottom of the text window. Click the right mouse button again to reopen the Stack Display. Point at TF 51 and click the left button twice. The TF Display for TF 51 will be opened. Click the right mouse button to return to the map display.

• *Setting a Task Force Destination*

Since TF 51 was not formed using Auto-Select, its destination base will be Noumea, the port where it was created. Make sure TF 51 is displayed as the current TF in the text window. Point the mouse at TF 51, click the left mouse button, and select SET DEST from the menu. Now point the mouse at Guadalcanal and click the left button. Guadalcanal will be set as the destination for TF 51.

• *Preparing a Transport Mission*

Point the mouse at Noumea and click the left mouse button. Select CREATE TF from the menu. Pick Transport on the SELECT TF MISSION menu. Choose YES for Auto-Select. On the SELECT TYPE OF CARGO menu select combat forces. Select the 1st Mar Div from the Noumea unit display. Next, a ship must be selected on which to load the 1st Marine Division. The TF Display will list only those ships which are

eligible to load combat forces. Select ship unit A by pointing at the ship icon (AP x 5) and clicking the left button. Click the right mouse button to return to the map.

• *Preparing a Cargo Mission*

Point the mouse at Noumea and click the left mouse button. Select CREATE TF from the menu. Pick Cargo on the SELECT TF MISSION menu. Choose YES for Auto-Select. On the SELECT TYPE OF CARGO menu select supply. Next, a ship must be selected on which to load the supplies. The TF Display will list only those ships which are eligible to load supplies. Select ship unit A by pointing at the ship icon (MCS x 6) and clicking the left button. Click the right mouse button to return to the map.

• *Placing Submarines on Patrol*

Use the FIND SHIPS function and select ship type SS. All Allied sub units start the scenario in a port. Click the right mouse button to exit the ship list. Point the mouse to the sea hex two spaces north of Guadalcanal. Click the left mouse button once to move the cursor to the hex and again to enter SUB ADD mode. The second line of the text window will show SS x 6 Gato from Brisbane. Click the left mouse button again to assign the 6 Gato subs to patrol the hex. A sub icon will appear at the cursor location. Click the left button again. The second line of the text window should read SS x 6 Gato Delay:1. The sub unit may not perform any additional moves or combat operations until the Delay reaches zero. The delay represents the time a sub spends moving from its starting location to its new patrol zone. The further you move the sub unit, the longer the delay will be. Click the right mouse button to return to map mode.

• *Moving Combat Forces by Land*

Move the cursor to the Cooktown base at location 31,49. Click the PATH button above the right side of the text window. The land march paths are shown as yellow lines connecting the bases on the map. If any two bases on the map are connected by a yellow line, Land Combat Units may be moved overland between them. We can now march a unit from Townsville to Cooktown since these bases are connected. Click the right button to exit the Path Display. Point the mouse at Cooktown, and click the left button twice. Select MARCH from the menu. Point the mouse at the Townsville base 3 hexes south of Cooktown and click the left mouse button. Point to the 7th Inf Div icon and click the left button. Click the right button to exit and then click the ESC button to return to map mode. Point at Cooktown and click the right button. The Cooktown Unit Display will now list the 7th Inf Div. Notice that the number listed under ready has dropped from 99 to 21. The 7th Inf Div lost over 75% of its readiness by marching to its new location. Click the right mouse button to return to the map.

• *Summary*

You may now click the ESC button to exit the Orders Phase. Select End Turn from the Allied Player menu. Since most of the Allied HQs are under full computer control, the computer will go through its own Orders Phase for those HQs. During the Execution Phase all of the TFs that you formed will move toward their destinations and perform their missions. The Surface Combat TF will attempt to engage enemy TFs that enter the Guadalcanal hex. The Air Combat TF will launch air strikes against both land and sea targets in the Guadalcanal area and will also provide limited fighter cover for friendly TFs in the Guadalcanal hex. The

Transport TF will unload the marines at Guadalcanal and probably capture the base. The Cargo TF will resupply the marines on Guadalcanal and make them better prepared to resist the inevitable Japanese counterattack.

DESIGNER'S NOTES

PACIFIC WAR is by far the most difficult subject I have ever attempted. Starting in August 1990 and ending in November 1992, both computer and game technology changed quite a bit. By September 1990 the alpha version was up and running with the game scale set at 100 mile hexes and 12 hour turns. The overall game system changed twice during development due to the immense scope of the game and the time that it took to test the campaign games. One consideration was to have only 6 month or 1 year scenarios. The final decision was to make each turn one week long. By June 1992 the game system had solidified, and was upgraded to support a mouse driver and improved graphics, and menus were put in place. The rule book expanded from 20 to 30 pages for the testers. Additional human/computer control features were implemented, allowing players more control over their forces. In November 1992, after 27 months of starts and stops, doubts, and delays, PACIFIC WAR was finally completed.

The Player's Role

PACIFIC WAR puts the player in the role of a Yamamato or Nimitz, with extensive strategic control over operations but only limited tactical input. Just making strategic deployments for the entire Pacific theatre is a daunting task. The program allows the player to personally control forces in the critical areas, and leave the secondary or routine operations under computer control. Thus the Allied player could choose to control the Central Pacific and South Pacific Headquarters and leave MacArthur's Southwest Pacific and British SEAC commands under computer control.

Orders Phase

The PACIFIC WAR system is structured so that first the Japanese player and then the Allied player give orders to all of their forces and then an entire week of movement and combat is resolved. This system has several advantages, the most important being that it is perfect for two player games. After the Japanese player completes his orders, the game can be saved and the save-disk delivered to the Allied player. The system works equally well in an E-mail situation. The saved-game files can be sent via modem to a far-away opponent. The disadvantage of E-mail games is that only one player can watch the Execution Phase. However the game does contain a Review Battle feature that allows the players to examine all of the combats of the previous turn.

The Execution Sequence

PACIFIC WAR does not attempt to resolve movement and combat in real-time order. Instead it resolves movement toward, and combat around, each location, one location at a time. Thus all TFs with a destination of Guadalcanal will all move at the same time and then resolve all possible combats at that location before continuing with the next set of moves and combats at a different location. The system allows the player to view the combat results one operation at a time insead of jumping randomly around the map.

Carrier Combat

When forming Air Combat TFs the player must be aware of the problems in coodinating multiple carrier air operations. Putting too many carriers in a single TF may greatly reduce the effectiveness of the TF's air operations. The optimum Japanese Air Combat TF would include four CVs or two CVs and four CVLs. The optimum Allied carrier TF would have two CVs and two CVLs or three CVs.

Kamikazes

Kamikazes give the Japanese player a chance to inflict serious damage on Allied shipping in the last year of the war. Kamikazes should be hoarded and used in key situations where damage can be maximized. Kamikazes will seldom cause significant damage to American fleet carrier TFs. If possible, they should be used against weakly defended transport TFs.

Routine Convoys

The routine convoy system is intended to simplify the process of supplying the numerous island outposts. Routine convoys will automatically be sent to any base which has open sealanes, free of enemy air zones, leading to a supply source. This allows the players to focus their efforts on those areas that are contested by enemy forces. Of course, in areas where enemy submarines are prowling the sealanes, the term "routine" may seem inappropriate.

Land Combat

The land combat system was designed to produce realistic results in a wide range of environments. Combat on an atoll will be short and very bloody. In fact, the system will seldom allow opposing forces to exist on an atoll at the end of land combat. Combat in dense jungle terrain will be dominated by the supply situation. If an experienced defender can remain supplied, his force can survive in the jungle indefinately. Many jungle engagements will turn into indecisive slugging matches that drag on for months.

Victory Conditions

The victory conditions have been fudged to give the Japanese a significant chance to win. Historically, the only Japanese chance to avoid total destruction was if the Allies grew weary of the fight and agreed to a negotiated peace. In PACIFIC WAR this can happen in two ways. If the Japanese run wild in 1942 and achieve a 2-1 victory point ratio, the Allies will sue for peace and the Japanese will win a decisive victory. If the Japanese fail to win early, they can still win a draw just by avoiding an Allied victory until January 1946. This makes even the late war invasion of Japan a race against time and keeps things interesting for both players. This greatly exaggerates the Japanese chances for victory, but in this case I sacrificed some realism to improve the game.

STRATEGY AND TACTICS

Land Operations

In order to have a successful land operation to capture an enemy base you must try to maximize your forces while minimizing the enemy forces. You should have an overwhelming land force (more squads) than your opponent. Build up a good supply base to draw upon with enough preparation points to activate your attacking units each turn. Having a good aggressive leader will give your HQ more preparation points and also allow you to attack more often, especially if the odds are low. Use your land artillery, aircraft, and any naval bombardment to reduce the enemy forces and lower their readiness value. Having an Air Zone of Control over the base will reduce the chances of the enemy being resupplied. If enemy ships attempt to resupply, your air forces and any naval surface combat forces in the area may intercept.

If you have more bases to defend than the number of units, use the divide function when you display the land units in a base. Engineer units are especially useful in building ports and airfields. Build up your forward bases and keep some engineer units ready to land on an enemy base once it has been captured. The more engineers and the more squads they have will increase the rate of building ports and airfields.

Air Operations

When attacking a heavily defended base using amphibious operations, use all available land-based airfields to target their strikes against the base, and any other enemy bases which may be within range. Use carrier based air strikes and bombardment TFs to reduce the enemy forces, readiness, and resupply operations. Make sure that you have a good air leader in charge of your air operations. Set your HQ target to the base you will be assaulting. To soften up other enemy bases in the area, use the Air Target function.

When deciding which bases to attack, review the range of your planes. Having land-based aircraft to attack the next enemy base will help to reduce the enemy's effectiveness. The range factor that is displayed in the game and rule book is the range to enemy TFs. The range to enemy bases is 1.5X the normal range, and aircraft transfer missions are at 4X the normal range. All damaged aircraft that are transferred are placed into the pool and 10% of the planes become damaged at the new base. If the aircraft's HQ has insufficient preparation points to make the transfer, then all planes become damaged!

Training air groups with low experience will help boost their experience level over time. You should be able to safely put air groups on training in bases far in your rear area. Air groups being trained will not perform any missions.

Aircraft can also help reduce the effectiveness of enemy submarines. The Japanese player has many resource and oil bases in the western and south-western areas of the Pacific and, therefore, a majority of the convoys will be traveling toward Japan. If the Allied player places most of his subs in this area (west of the Philippines), the Japanese player should place a lot of airpower in bases to cover this area. Spotted subs are reduced in their effectiveness until moved.

Naval Operations

The most complicated operation to perform is an amphibious assault on an enemy base. Read the "Amphibious Operations" section on page 54 to get a feel for the numerous types of TFs that need to support a successful landing. The critical aspects of the operation revolve around the preliminary bombardments from aircraft and bombardment TFs, to soften up the enemy defenses and reduce the resupply of the base; good experienced land units with high readiness; plenty of supplies that can be unloaded to boost the readiness of land units to keep up the attack; and good aggressive leaders with plenty of preparation points. Any hexes containing both friendly and enemy land units can only be supplied by Transport TFs or by Air Transport groups (if the base is not in an enemy Fighter AZOC). Make sure that you have enough transports and supplies close at hand for resupply operations. Land Combat Units (LCUs) or Transport TFs loaded with LCUs should have a good land leader. Air Combat TFs should have a good air leader. Other TFs should have a good naval leader. Also, more aggressive leaders will be able to accumulate additional preparation points.

Usually it is a good tactic to keep your carriers together as a large group to help give air support to one another in defending against enemy attacks. This reduces the chance that your carriers will be damaged or sunk. As a large group they can have enough air power to overwhelm any land-based enemy air groups. The disadvantage is that a lot of fuel will be consumed in moving large fleets around, and your strength is focused in one area on the map. Each situation needs to be determined depending upon the threat of the enemy's air and naval forces.

Once you have set the destination of your TF, you can modify how far the TF will move towards the destination by setting the standoff range. This can be very helpful in providing more escort to the slower, more vulnerable transport TFs, or to help keep your TFs outside the range of enemy based aircraft. You can also keep transports away from enemy attack until the enemy air and naval threats have been neutralized.

For your HQs that are under full human control, you should check the bases which might be isolated using the ISO-BASE command. Routine convoys will not supply isolated bases, which means that you must manually form resupply TFs to send supplies.

In order to maximize the number of PPs that a TF can receive you should make sure that the TF's target is the same as the HQ's target, the target is less than 30 hexes from the TF's home port, and the TF should be formed in the home port for a few turns with its destination set to the home port. See "Preparation Points" on page 31.

When ships become damaged, do not try to overload any one port with a huge number of damaged ships that need extensive repair work. Check the port's size and shipyard capacity to determine how many ships can be repaired. Move other damaged ships to nearby ports to be repaired. If you especially need a particular ship to be repaired quickly, be careful about the number of other damaged ships in the port. Accelerated repairs can be done on ships in ports with leftover ship repair points.

Remember to deploy your submarine forces on the first turn of a scenario. They are sitting in various ports on the map. Use FIND SHIPS to locate the subs. Decide where you wish to deploy your subs. If the sub's home port is too far away from its deployment area, you should first relocate the sub to a closer port before placing the sub on patrol. The closer subs are to their home port, the more effective they are. Check your subs every few turns. If they have not had any contacts with enemy shipping, you should redeploy them to another area. Usually the most effective Allied submarine deployment area is to the west of the Philippines.

General

Watch for new arrivals of reinforcements. Most of them come into San Francisco, Sydney, Calcutta, and Tokyo. Getting new Land Combat Units will require organizing some transport TFs to move them to the front. You can transfer air groups from base to base or load them onto CVE, CS, and MCS type ships.

You can delete obsolete air groups by selecting (C)hange when reviewing a specific air group's data. You can then replace the old planes with better ones.

The Japanese player must capture the high oil and resource bases to keep his forces supplied. Some of the high oil and resource cities that are needed are: Miri, Tarakan, Balikpapan, Sarawak, Batavia, Soerbaja, Bangka I., Palembang, Medan, Kuala Lumpur, Bangkok, Rangoon, Dacca, Port Arthur, and Shanghai.

TIMELINE

Below is a summary of the battles over the various bases included in the game showing the date, base name, x/y coordinate of the base, and battle information.

DATE	BASE	X/Y	BATTLE INFO.
12/41	Bangkok	20,12	Japanese capture
12/41	Batan I.	31,17	Japanese capture
12/41	Clark Field	30,20	Japanese capture
12/41	Davao	29,26	Japanese capture
12/41	Guam	39,29	Japanese capture
12/41	Hong Kong	29,14	Japanese capture
12/41	Jitra	17,15	Japanese capture
12/41	Khota Bharu	19,16	Japanese capture
12/41	Kuantan	18,17	Japanese capture
12/41	Lagaspi	32,20	Japanese capture
12/41	Lingayen	29,19	Japanese capture
12/41	Makin I.	53,41	Japanese capture
12/41	Miri	23,22	Japanese capture
12/41	Oahu	70,30	Japanese carrier attack
12/41	Sarawak	20,22	Japanese capture
12/41	Singora	18,15	Japanese capture
12/41	Tarawa	53,42	Japanese capture
12/41	Wake	51,29	Japanese capture
01/42	Balikpapan	22,27	Japanese capture
01/42	Bougainville	41,43	Japanese capture
01/42	Ceram	27,33	Japanese capture
01/42	Gasmata	39,42	Japanese capture
01/42	Kavieng	40,39	Japanese capture
01/42	Kuala Lumpur	16,17	Japanese capture
01/42	Manila	29,21	Japanese capture
01/42	Menando	26,29	Japanese capture
01/42	Parepare	22,29	Japanese capture
01/42	Rabaul	40,41	Japanese capture
01/42	Tarakan	24,24	Japanese capture
02/42	Bali	17,30	Japanese capture
02/42	Bangka I.	16,22	Japanese capture
02/42	Buka I.	42,42	Japanese capture
02/42	Emirau I.	40,37	Japanese capture
02/42	Green I.	42,41	Japanese capture
02/42	Macassar	21,31	Japanese capture
02/42	Palembang	15,22	Japanese capture
02/42	Shortland	42,44	Japanese capture
02/42	Singapore	17,19	Japanese capture
02/42	Teloekbetoeng	15,24	Japanese capture
02/42	Timor	22,36	Japanese capture
03/42	Andaman I.	17,08	Japanese capture
03/42	Batavia	14,25	Japanese capture
03/42	Cape Gloucester	37,41	Japanese capture
03/42	Lae	36,42	Japanese capture
03/42	Medan	15,15	Japanese capture
03/42	Rangoon	21,08	Japanese capture
03/42	Soerabaja	16,28	Japanese capture
03/42	Tjilatjap	14,27	Japanese capture
03/42	Wewak	36,39	Japanese capture
04/42	Admiralty I.	38,38	Japanese capture
04/42	Aitape	35,38	Japanese capture
04/42	Biak	33,35	Japanese capture
04/42	Cebu	29,23	Japanese capture
04/42	Flores I.	20,34	Japanese capture
04/42	Hollandia	34,37	Japanese capture
04/42	Lashio	24,06	Japanese capture
04/42	Madang	36,40	Japanese capture

DATE	BASE	X/Y	BATTLE INFO.
04/42	Manokwari	31,33	Japanese capture
04/42	Negros	28,23	Japanese capture
04/42	Noemfoar	33,34	Japanese capture
04/42	Panay	28,22	Japanese capture
04/42	Sarmi	34,36	Japanese capture
04/42	Soembawa I.	19,32	Japanese capture
04/42	Sorong	29,33	Japanese capture
05/42	Bataan	29,20	Japanese capture
05/42	Cagayan	29,24	Japanese capture
05/42	Guadalacanal	45,46	Japanese capture
05/42	Halmahera	29,30	Japanese capture
05/42	Leyte	30,23	Japanese capture
05/42	Mandalay	23,06	Japanese capture
05/42	Mindoro	28,21	Japanese capture
05/42	Morotai	29,29	Japanese capture
05/42	Nauri I.	49,42	Japanese capture
05/42	New Georgia	43,45	Japanese capture
05/42	Palawan	26,22	Japanese capture
05/42	Samar	31,22	Japanese capture
05/42	Tawi Tawi	25,23	Japanese capture
05/42	Waigen I.	30,32	Japanese capture
05/42	x	x	Carrier battle Coral Sea
06/42	Attu I.	58,09	Japanese capture
06/42	Kiska	60,10	Japanese capture
06/42	Midway	60,25	Carrier battle
07/42	Buna	35,43	Japanese capture
07/42	Kiriwina I.	38,44	Japanese capture
07/42	Owens Stanley M	34,43	Japanese capture
07/42	Tenimbar I.	26,37	Japanese capture
08/42	Guadalcanal	45,46	Allies land
08/42	Milne Bay	36,45	Japanese landing repulsed
08/42	x	x	Naval Battle Savo I.
08/42	x	x	Carrier battle Eastern Solomons
10/42	x	x	Naval battle Cape Esperance
10/42	x	x	Carrier battle Santa Cruz
11/42	Owens Stanley M	34,43	Allies capture
01/43	Buna	35,43	Allies capture
02/43	Guadalcanal	45,46	Allies capture
05/43	Attu I.	58,09	Allies capture
06/43	Kiriwina I.	38,44	Allies capture
06/43	New Georgia	43,45	Allies land
08/43	Kiska	60,10	Allies capture
09/43	Lae	36,42	Allies capture
11/43	Bougainville	41,43	Allies land
11/43	Makin I.	53,41	Allies capture
11/43	Tarawa	53,42	Allies capture
12/43	Cape Gloucester	37,41	Allies capture
02/44	Eniwetok	48,33	Allies capture
02/44	Green I.	42,41	Allies capture
02/44	Kwajalein I.	51,36	Allies capture
03/44	Admiralty I.	38,38	Allies capture
03/44	Emirau I.	40,37	Allies capture
04/44	Hollandia	34,37	Allies capture
04/44	Imphal	23,04	Japanese attack
04/44	Madang	36,40	Allies capture
05/44	Biak	33,35	Allies capture
06/44	Changsha	30,09	Japanese capture
06/44	x	x	Carrier battles Philippine Sea
07/44	Noemfoar	33,34	Allies capture

continues....

DATE	BASE	X/Y	BATTLE INFO.
07/44	Saipan	41,28	Allies capture
07/44	Tinian	40,28	Allies capture
08/44	Guam	39,29	Allies capture
09/44	Morotai	29,29	Allies capture
09/44	Palau	33,29	Allies capture
09/44	Ulithi	36,29	Allies capture
10/44	Leyte	30,23	Naval Battles Leyte Gulf
11/44	Kunming	26,07	Japanese capture
11/44	Kweilen	29,10	Japanese capture
11/44	Nanning	27,11	Japanese capture
12/44	Kweiyang	29,07	Japanese capture
12/44	Leyte	30,23	Allies capture
01/45	Clark Field	30,20	Allies capture
01/45	Lingayen	29,19	Allies capture
01/45	Mindoro	28,21	Allies capture
02/45	Bataan	29,20	Allies capture
02/45	Iwo Jima	41,21	Allies capture
02/45	Palawan	26,22	Allies capture
03/45	Cebu	29,23	Allies capture
03/45	Lashio	24,06	Allies capture
03/45	Mandalay	23,06	Allies capture
03/45	Manila	29,21	Allies capture
03/45	Panay	28,22	Allies capture
03/45	Samar	31,22	Allies capture
04/45	Lagaspi	32,20	Allies capture
04/45	Negros	28,23	Allies capture
05/45	Cagayan	29,24	Allies capture
05/45	Davao	29,26	Alies capture

DATE	BASE	X/Y	BATTLE INFO.
05/45	Nanning	27,11	Allies capture
05/45	Rangoon	21,08	Allies capture
05/45	Tarakan	24,24	Allies capture
06/45	Bangkok	20,12	Allies capture
06/45	Jitra	17,15	Allies capture
06/45	Khota Bharu	19,16	Allies capture
06/45	Kuala Lumpur	16,17	Allies capture
06/45	Kuantan	18,17	Allies capture
06/45	Okinawa	36,16	Allies capture
06/45	Phnom Penh	22,14	Allies capture
06/45	Saigon	22,16	Allies capture
06/45	Sarawak	20,22	Allies capture
06/45	Singapore	17,19	Allies capture
06,45	Singora	18,15	Allies capture
06/45	Wenchow	32,13	Allies capture
07/45	Balikpapan	22,27	Allies capture
07/45	Kweilen	29,10	Allies capture
08/45	Harbin	40,05	Russians capture
08/45	Mukden	39,07	Russians capture
08/45	Peking	36,05	Allies capture
08/45	Port Arthur	38,08	Russians capture
08/45	Sakhalin I.	48,08	Russians capture
08/45	Tientsin	37,06	Russians capture
08/45	Hiroshima	x	Atomic bomb dropped
08/45	Nagasaki	x	Atomic bomb dropped
08/45	x	x	Japan surrenders

PACIFIC WAR

CONTENTS

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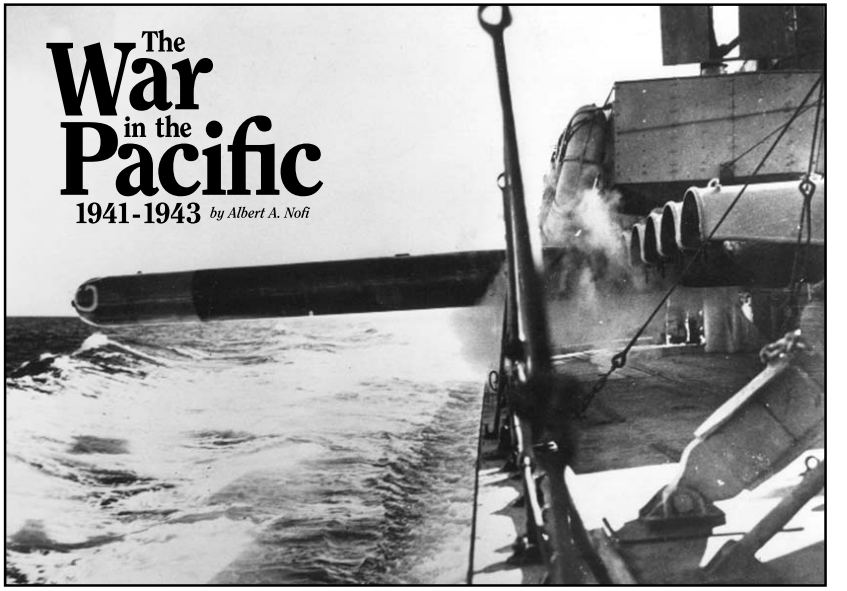

Between December of 1941 and September of 1945, there was fought, on the vast expanse of the Pacific, the greatest naval war in history. In the event, a decision was reached in the first eighteen months of the conflict, though the fighting would drag on senselessly for years until Japan was ready to admit defeat. It is with this vital eighteen months that we will concern ourselves here.

I. Origins of the Pacific War.

A complete analysis of the origins of the Pacific War would take far more space than is available to us at the present, however we may briefly outline the long-term and immediate issues.

Among the long-standing issues underlying the immediate causes of the Pacific War, we may enumerate (but not discuss) Japan's relative poverty in raw materials, a poverty illustrated by her pattern of importation in 1940; then too, we may note the long-standing traditions of military service and imperial grandeur which drove Japan's militarists to opt for greater and greater visions of empire; the inability of Japan to establish a functioning democratic system was also a part, for politicians hostile to expansionist schemes tended to be assassinated with sickening frequency. We might also mention Japan's rightful resentment over the essentially racist attitude of the U.S. towards Japan and the Japanese, a racist attitude which almost caused a war between the two nations in 1907.

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Probably the three most important immediate causes of the war, however, were the conflict in China, the American preoccupation with European affairs, and a certain basic misunderstanding.

The "China Incident" involved Japan in a long and apparently insoluble involvement in the affairs of that unfortunate nation. At the same time, the U.S. was suffering from a kind of moral hangover as a result of the actually worthless "Open Door Policy", which made many Americans, and some Japanese, believe this country had a vested interest in the defense of China. Further increasing American involvement in the Far East was the annexation of the Philippines in 1898, which involved the U.S. in the intimate details of imperial rivalry in that sector, and which also stood in the way of any potential Japanese expansion in the East Indies.

With American attention focused on the European conflict, time and temper devoted to the Chinese and Pacific crises grew short. American embargoes on munitions and aircraft in July 1940; scrap iron and steel, September 1940; and finally on oil and oil products in July 1941 certainly did nothing either to make Japan better disposed towards the U.S. or to materially aid China. American Lend-Lease aid to China also did little to improve the American image in Japan, where the political leadership and the generals were beginning to think that the U.S. was just biding its time until it was ready to go to war. In a sense, of course, they were correct, but they had the intended victim all wrong: It was Germany, not Japan with which the U.S. was actively seeking a quarrel.

The final straw came from a source which might otherwise have smoothed things over: the peace negotiations. Being essentially ill-disposed towards each other, neither side was quite honest in these negotiations and neither laid its cards on the table. Thus, when the U.S. insisted that Japan get out of "China" it meant China proper; Japan could keep Manchuria. Unfortunately, the Japanese assumed the U.S. intended for them to get out of Manchuria also, an intolerable situation in the view of the Army. Then too, messages between the two parties were often garbled or mistranslated, with the tendency being to select the less compromising and more belligerent connotations. This sort of thing did nothing to cool tempers and so it went. In the end both sides found themselves at war without really understanding why.

II. Economic Preparations.

More than any other war in history, the Second World War was a war of material attrition. Ultimately the outcome of the war was decided as much, if not more, by the economic might of the United Nations as by any fighting skill they might have possessed. This situation was particularly evident in the Pacific War where a secondary industrial power challenged the mightiest industrial base in the world.

Japan, generally considered one of the industrialized nations of the world before 1941, was actually possessed of a rather feeble industrial base. Indeed, in terms of both per capita and total production, she exceeded only Italy among the "great" powers in ingot steel production, the basic measure of industrial viability. When compared with the other major powers the picture was even drearier:

INGOT STEEL PRODUCTION – 1937

	TOTAL	TONS PER CAPITA
U.S.A.	51.0	.40
Germany	19.8	.18
U.S.S.R.	17.5	.10
Britain	13.0	.28
France	7.9	.19
Japan	5.8	.07
Italy	2.3	.05

1,000s of tons

During the 1930's, by a prodigious but ill-planned and poorly organized effort, certain industries vital to war purposes had been built up, though at a cost in efficiency which would not emerge until the pressures of war production proved too much for the thin reed which Japan's industrial base actually was. Thus, while actual steel output increased some 14% between 1941 and 1943 (Japan's peak steel production year) worker efficiency declined to but 59% of the prewar levels. The problem was, simply put, that the entire industrial base had not been broadened. Thus, while total aircraft production was force-fed into a 1300% increase between 1931 and 1941 (from 368 airplanes to 5,088), between 1941 and 1944 with the immediate pressures of war upon them, the Japanese were only able to increase aircraft production by 443%, to 28,180 airplanes, for their peak production year.

During the same period the U.S. increased production of military aircraft by something like 3,238%, from about 600 to 19,432 (and from 1941 to 1944 by about 500%, to some 96,318). Of course in 1931 military production was rather a small part of total aircraft production but by 1944 it had become virtually all of total production. Meanwhile, in the U.S., aircraft industry worker efficiency was actually increasing as advanced assembly line methods — adopted from automobile manufacturing — were introduced and utilized.

Japan's basic problem, then, was that the pressure was not spread around, but merely applied to certain obviously necessary industries, such as electrical equipment, in which production scarcely increased by 30% between 1941 and the peak war year of 1944. Lack of this sort of equipment would hinder any increases in production of other types of vital materials.

By contrast the United States, which had more or less embarked on a consumer economy in the 1920's, only to be interrupted by the Great Depression, found itself actually possessed of reserve production capacity resulting from the 1929 crash, and also from the experience of World War I, in which an enormous amount of waste had gone into our industrial expansion. In point of fact, the American standard of living continuously increased during World War II — an occurrence without precedent in history. It would be this reserve capacity, coupled with an enormous wealth of experience, which would permit the United States to out produce Japan by enormous amounts in virtually every category of military equipment once it got its industrial capacity into full swing.

This, of course, was the key. As an examination of the accompanying warship production chart will demonstrate, it took the U.S. a little time to get fully into production, particularly in as much as it started its preparations for war rather later than any of the other powers. Thus, during all of 1942, the U.S.

would add but one first line carrier (100 A/C) to its fleet, while Japan would add four (184 A/C). Of course, during the Second World War, the U.S. produced 108 aircraft carriers of all types, carrying spaces for 5,500 aircraft, as against Japanese production of 17, with spaces for 740 aircraft. Indeed, Japan's total production of warships of all types barely approached 200, a figure exceeded by U.S. submarine production alone.

What it all boils down to is that economically Japan was a minor-league team, able to upset the pros occasionally, but in trouble over the long haul.

III. Strategic Considerations and Plans.

The most important strategic consideration of the Pacific War was that the conflict was determined by naval/air operations.

The accompanying Situation Map will give a good idea of the general strategic dispositions on the outbreak of the Pacific War. In effect, this was the general situation throughout the entire period of tension as well, roughly 1937 - 1941, and, in geographical terms, represents the situation as early as the beginning of World War I, when the United States and Japan both began to plan for an eventual Pacific War.

American planning initially tended to be rather general — something on the order of a staff study on the possibility of war with Japan known as Orange. Eventually, however, these plans became rather detailed and were continued year after year, with suitable adjustments as the balance of strength changed. Among the changes not really taken into consideration, however, was the increasing power and flexibility of aircraft and of the aircraft carrier. In effect, the plan was principally (perhaps purely) battleship oriented.

The outlines of the Orange Plan remained the same for decades so it is relatively easy to consider it. On the outbreak of a war with Japan the fleet — initially based at San Diego but moved to Pearl Harbor in the late 1930's — would immediately begin to seek a surface action with the Imperial Navy. Meanwhile, the forces in the Philippines would retreat into the Manila Bay area, where it was expected that they could hold out for three or four months until the fleet had fought its way back across the Pacific. In the process, small contingents of marines would seize occasional bases from the Japanese, but the main fleet base would become Manila Bay. Using the Philippines as a springboard the fleet would then advance to threaten Japan herself in the hopes of provoking a general fleet engagement with whatever was left of the Japanese Navy.

On paper the Orange Plan was a rather good one, fully within the capabilities of the U.S. Navy during the period up to the mid-1930's, however, the increasing strength of air power should have been taken into consideration but was not. To be sure, thought the planners, aircraft carriers would now accompany the fleet on its drive across the Pacific, but primarily for reconnaissance and skirmishing purposes. Pearl Harbor effectively killed the Orange Plan.

From the Japanese viewpoint a series of study plans had also been formulated, but only the most fanatical officers could ignore the very great numerical disparity between Japan and the United States. In the period during the final drift into war, the strategic problem of how Japan could

successfully take on the United States was studied by her most brilliant naval strategist, Admiral Yamamoto.

Perhaps more fully than any other Japanese officer, Yamamoto was aware of the great strength and potential of the United States, having served as naval attaché in Washington for several years. A member of what might be termed the "peace party" in the debate over the decision to go to war, once the decision was made, Yamamoto began studying the options open to Japan. He concluded that a limited offensive in the Central Pacific, having primarily a defensive purpose, would have to supplement a general offensive against the rich lands of Southeast Asia and Indonesia. This limited offensive was the Pearl Harbor Operation.

Yamamoto believed that by striking at and crippling the main U.S. battlefleet, while overrunning huge areas in the South and Southwest Pacific it might just be possible not to defeat the United States — an accomplishment which he felt was beyond Japan's capabilities — but to make it willing to settle for a negotiated peace, a peace from which Japan could legitimately be expected to come away with some gain. Thus, the entire purpose of the Pearl Harbor and Central Pacific operations was the damaging of America's capability to immediately strike back at Japan and the extension of Japan's defensive frontiers hundreds of miles further east through the seizure of certain British and American territories in the Central Pacific.

As things turned out the Pearl Harbor Operation, while a far greater success than anticipated, was something of a psychological failure for it united the American people such as they had never been united before in wartime. Indeed, World War II was probably the most generally popular war in American history, including the Revolutionary War. It was the only American war initiated by a direct enemy attack. A second benefit arising from the Pearl Harbor disaster, was that the United States was forced to fall back upon its handful of carriers as its first line of defense in the Pacific while Japan was still relying primarily on the battleship. This would have serious consequences as the war dragged on.

The first error was that Yamamoto miscalculated America's recuperative powers. As early as February 1942, American air reinforcements were reaching the Netherlands Indies via Australia and a build-up of air and ground forces was begun in that country.

Meanwhile raids, were made against the Mandates and Tokyo itself. Obviously something would have to be done to slow down American preparations further, but the conquest of the Philippines — which dragged on until May — and of Indonesia and Malaya tied up Japan's slender resources. Still, small forces occupied portions of New Guinea and the Solomons including the excellent harbor of Rabaul, as anticipated in Yamamoto's plans. With the release of forces from the conquest of other areas, the decision was made to step beyond the originally planned defensive line in an effort to seize all of the Solomons and New Guinea. At this point things began to go awry.

American strategist, notably Admirals King and Nimitz, had been avoiding a general action where their few aircraft carriers would be risked until something really important turned up. The Japanese

threat to the air and sea lanes to Australia and New Zealand was important and the carriers were committed successfully at Coral Sea and, a month later, when Japan again stepped beyond the boundaries of her planned defensive line to try to seize Midway, another success was obtained.

The carrier battle effectively determined the course of future American strategy in the Pacific. It would be to use fast carrier task forces to project American air power into Japanese controlled areas so that the Marines and Army could seize and hold needed air and naval bases. Guadalcanal was the first such operation (and a close one at that). It proved successful, however, and coupled with the fact that Japan failed to commit her fleet after the numerous air and surface actions in the area, marked the beginning of the long push back as American industrial might outstripped Japan's rather feeble ability to replace lost ships and planes.

After Guadalcanal the United States adopted a cautious offensive policy, while Japan decided to stand on the defensive, and avoid general engagements if at all possible. (This was probably an error, however, for by husbanding their resources the Japanese would accomplish very little, while trying for some sort of general action during 1943 might well have gained them a bit more time than they actually had. During early 1943 the relative strengths of the two powers were rather close, particularly in aircraft carriers, where Japan had something of an edge. So much so that the U.S. borrowed a Royal Navy carrier to help out for a time.)

IV. The Fleets.

A trans-oceanic war is fought primarily with naval forces and the Pacific War was even more water-oriented than hitherto had been the case in the history of warfare. The naval forces ranged against each other in the Pacific War amounted to the two greatest navies in the world, each a well-trained, aggressive force willing to fight as hard as would be necessary for the ultimate victory each hoped for. At the same time, each had certain advantages and disadvantages.

The Japanese Navy's greatest asset was that it possessed the largest carrier air fleet in the world in 1941, manned by well trained, well equipped pilots who knew their business and who were led by air-oriented officers — though the traditions of the battleship fleet died hard. A fuller discussion of naval air power will be found below, but suffice it to say for the present that it was through an aggressive and judicious use of this large aircraft carrier fleet that the bulk of Japan's early victories were achieved, and through the constant dragging effect of the battleship tactics (which still dominated Japanese naval thought) that Japan was not able to successfully prolong the war even more than was the case.

One of Japan's greatest advantages, in addition to the high state of her carrier forces, was the tremendous efficiency of her surface combat forces. Training in all aspects of surface combat was highly realistic and extremely arduous. It would not be far off the mark to say that, ship for ship, the Imperial Navy was more than a match for the U.S. Navy in surface action during the period under discussion. Certainly the numerous surface actions in the Solomons, during this time, prove this without question.

There are a number of reasons for this Japanese superiority in surface action, and particularly in night action where they proved virtually invincible for a time. Fundamentally the reason is simply that the Japanese considered training serious business while the U.S. Navy consider it a form of competition. Thus, while the Imperial Navy gunnery training went on regardless of weather, in the U.S. Navy, since it was competitive and prizes were awarded for high scores, gunnery training was held only under ideal conditions of sea and wind, and almost never at night, when the fall of shell could not be properly observed or scored.

There was at least one, and probably no more than this one, material advantage which the Japanese held and which tended to help them a great deal in surface actions: torpedoes. Japanese cruisers and destroyers carried large batteries of torpedoes, often with one or two sets of reloads, while American cruisers tended to lack these altogether, and even some classes of destroyer were built to carry but a handful. Then too, there was the Japanese 24" "Long Lance" torpedo itself, which was materially superior to American torpedoes in virtually very category. In fact, the "Long Lance" was the finest torpedo in the world at the time.

While the average torpedo of the period might possibly be coaxed to 7,000 yards, the "Long Lance" was capable of several times that and, with its greater size packed a bigger punch. It also had a considerably more efficient firing mechanism than the American torpedoes, as well as a better depth control. All in all a powerful asset to any surface force in heavy action and, as it turned out, the main killer of American ships during the surface battles for control of the Solomons.

Any discussion of torpedoes quite naturally leads to a discussion of submarines and in this particular arm the U.S. Navy had a distinct advantage. Training and numbers were certainly more or less on a par at the beginning of the war, and the Japanese may even have had slightly better submarines, and certainly better torpedoes — although the "Long Lance" was not carried in submarines at this time. The difference was not material, but doctrinal and the doctrine favored the U.S. Navy in the end.

At the beginning of the war Japanese submarine doctrine stressed the use of the submarine as a weapon designed to snipe at and pick off enemy warships. American doctrine at this time envisioned the submarine as a weapon to snipe at and pick off enemy warships too, but shortly after Pearl Harbor the submarines were unleashed against the Japanese merchant marine. Ultimately, if anything could be said to have won the war single-handedly it would be these submarines, which usually reduced the size of Japan's merchant marine to the point where imports came to a virtual standstill. Probably no other strategic error made by the Japanese during the war was as far reaching as their refusal to let their submarines go after American merchant shipping. Japan's available submarine strength in 1941 was more than three times greater than Germany's in 1939 and the damage it could have inflicted would have been enormous, particularly in view of the tremendous shipping needs of the global conflict. As it was, as a result of this unrealistic policy, the U.S. Navy did not have to provide escorts for convoys outside of the immediate battle areas, thus permitting it to muster every destroyer to combat

duty. A little ambitious Japanese whittling away of American shipping might have prolonged the war by a year or more, though the outcome, made inevitable by America's might and moral indignation, would not have changed greatly.

Similar to Japan's refusal to employ her submarines against merchant shipping, was the Imperial Navy's refusal to do anything about its own shipping. Thus a convoy system was not instituted until very late and actually after the U.S. had adopted a "wolf pack" system (learned and taken over from the U-boat experts, the Germans).

To briefly recapitulate then, Japan's chief errors in naval strategy were two-fold. First, she failed to press her advantage after Pearl Harbor, when her naval aircraft strength was 672 planes to the U.S. Navy's 280 in the Pacific, and, second, she failed to properly employ her large and efficient submarine fleet. The U.S. Navy's chief error was in attempting to operate its few carriers in too widely dispersed operations, though this sort of thing gradually cleared itself up as additional carriers arrived. In addition, it is probably unfortunate that surface-oriented admirals continued to dominate much of American naval operations in the Pacific far too long after Pearl Harbor.

Ultimately, of course, doctrine, tactics, and strategy were not nearly so important as strength. At the beginning of the Pacific War Japan was considerably stronger than the United States in the Pacific, but as American combat skill improved the tide would begin to turn. And as American economic might began to get into stride the change would become swifter and swifter.

V. The Air Forces.

Though the more glamorous warship and the more heroic amphibious operations have tended to take the lion's share of most accounts of the Pacific War, the fact remains that the decisive combat arm was air power, in both land and carrier based forms. From beginning to end, the Pacific War was dominated by aerial conflict and the importance of the control of the skies was recognized very early by both sides. The U.S. however, was better able to handle this problem than were the Japanese.

Both the U.S. and Japan had not one, but two Air Forces: one Army controlled and one Navy controlled. In both nations each service had been allowed to develop its air arm with little or no coordination with the other. However, in the U.S. there was some tradition of inter-service cooperation to overcome the strong rivalry existing between the Army (particularly the Army Air Force) and the Navy. In Japan, inter-service cooperation was considerably less.

Both nations had serious drains on their air power. For the U.S. Air Force, and to a lesser extent the Navy, the demands of the European War had to be met, but the issue here was primarily a strategic one and Europe was considered the primary combat theatre. An effort was made to carefully evaluate the needs of both theatres before any decision was made on shipping men and aircraft off to the one or the other. While theatre commanders would opt for an increased importance for their theatre, using all sorts of rather unethical techniques to do so, ultimately the matter was decided dispassionately and after a careful evaluation of the needs and intentions in each theatre.

Not so for the Japanese. Of roughly 2,700 Army and Navy first line combat aircraft, on hand in December of 1941, a quarter were assigned to the job of keeping an eye on the Russians in Manchuria and China. For the entire war, this task would tie up enormous numbers of aircraft and ground support elements with no increase in the war effort. A significant and ultimately disastrous course of action.

In terms of aircraft and airmen Japan was probably second to none in 1941. Her pilots were probably the finest in the world. Pre-war pilot training was a rigorous, lengthy process taking years and washing out far more men than it passed through. For high school graduates, roughly 26 months were consumed in ground and flight training, plus another year of operational training from land bases, for an average of 3 1/4 years before a man could qualify as a first line pilot, assuming he was lucky and everything went well and he did not try for carrier training, which would add another year. Needless to say this gave Japan an extremely well-trained, aggressive, professional bunch of combat pilots, those few that it produced. The rigorous training program was, in fact, far too rigorous for operational needs. While the pilots were good, there just were not enough of them. In December of 1941, there actually were not enough pilots to fully man all available aircraft, provide replacements, man training centers and maintain a comfortable reserve. Men washed out of the pilot training program before the war were often far better material than would be acceptable later, when men would be sent into combat with barely a year or less of preparation by 1943. A significant error in pilot training was the fact that men were kept with operational squadrons far too long, indeed generally until they were killed or wounded. This had two negative influences. First, it tended to impair the efficiency of units whose men had been on the line for too long and, second, it deprived training centers of the wealth of experience these seasoned men could have provided.

By contrast, American pilot training was rather sloppy, and American pilots, both Army and Navy, received far less flight training than did their Japanese counterparts at the beginning of the war (though the flight time needed to qualify would roughly reverse by the end of the war). While this did not produce pilots trained to the same fever pitch of efficiency as Japanese training techniques did, it did produce large numbers of good pilots quickly.

Of course Japan's troubles in the air did not begin and end with pilot training. The aircraft produced for Japan (and let us not forget that they were produced by an overstrained industrial system) were exceptionally maneuverable, fast planes but terrible in anything but attack. Japanese air combat doctrine was all-out attack oriented and aircraft were built to reflect this doctrine. Thus, their first line fighter for much of the war, the "Zero" had a very feeble construction and would literally fall apart under any sort of pounding, though in the attack is was invincible. Even the long obsolete P-26 could on occasion bring down a Zero, provided it got in the first shot.

By contrast, the most obsolete operational first line American fighter, the Brewster "Buffalo" was able to take a great deal more punishment, and, as

time went on, American planes, designed on the principle that defense and attack capabilities were equally important, would sport armor plated cockpits, self-sealing fuel tanks, and other plane and pilot saving mechanisms. In short, Japanese aircraft could "dish it out" but not "take it". American aircraft could do both well.

A final error made by the Japanese was their critical misuse of carrier pilots during the Solomons Campaign of 1942-1943. In effect, the Imperial Navy took these highly trained specialists and, because the Army could not provide enough land-based air power (due, undoubtedly, to the huge air forces sitting out the war in Manchuria and China) grounded them to provide land-based air power for the support of ground operations in the Solomons. This left Japan's aircraft carriers with no air groups and they effectively retired from the war for over a year, when, re-equipped with green air groups, they emerged for the slaughter of the Battle of the Philippine Sea in 1944.

American carrier tactics, partially copied from the initial Japanese strike on Pearl Harbor would never have permitted this sort of thing to happen. The theory was to use the high-speed carrier to take aircraft where they could operate against the enemy's bases, execute the air strikes, and then get out as quickly as possible, particularly if numerous enemy land-based aircraft were in the area.

In conclusion we must attribute the ultimate American victory in the air to the more effective aircraft produced by the United States and particularly to the great numbers of both planes and pilots turned out by the U.S.

VI. The Ground Forces.

Ground combat in the Pacific War was conducted primarily as an adjunct to the naval/air conflict going on around it. Virtually all ground operations were launched principally to gain forward air and naval bases from which to project American power further along on the road to the ultimate goal: Japan. Though limited in this sense, ground combat in the Pacific War was as intense as ground combat in the Hitlerian War, though, of course, the numbers involved were smaller. But certainly the 75% casualties suffered by some units in Iwo Jima were not insignificant when compared with fighting in Europe at the time.

When the war began, the Japanese Army had several distinct advantages. For one thing, it had the benefits of combat experience in China and it was generally better equipped than the forces opposing it. In some cases the Chinese armies may even have proven better equipped than some of the Allied units the Japanese encountered on their march of conquest in early 1942. However, as time went on, the experience gained in the "China Incident" would betray the Japanese Army.

One of the key reasons for Japanese success in China, Burma, Malaya, the Philippines, and Indonesia was the near-total unpreparedness for war among the defending forces. Training and equipment were both at a premium and the Japanese, who had more of each, were clearly the superior forces. In the Philippines, where a partially trained native army was on hand, the Japanese were, in fact, given a bit of difficulty. A more effectively trained and better equipped Philippine Army might well have held them up far longer than was the case.

China adversely influenced Japanese doctrine in several ways, but most notably in tactics and equipment. Thus, tactically, the "banzai" charge seemed an efficient solution to the problem of attacking defensive positions. In China, it invariably tended to work more often than not. Of course, the Chinese troops who broke under such an attack were usually untrained, ill-equipped conscripts who would have preferred to have been elsewhere. Indeed, several well trained Chinese units were fully the equal of the Japanese counterparts as early as 1938, and a fully equipped and trained U.S. Infantry or Marine Division had a great deal more going for it than mere training, though the archaic Japanese tactical doctrine certainly gave U.S. forces an advantage from the start.

The second inheritance from the Chinese Campaign, and one compounded by Japan's inefficient industrial base, was the fact that heavy firepower was not really needed in China. Not seeing a need for heavy artillery, the Japanese Army never developed it. This decision was undoubtedly reinforced by the fact that Japanese industry would have been hard pressed to manufacture such equipment. The end result, then, was that a division of 20,000 Japanese troops would be supported by some 36 pieces of 75mm howitzer, while an American division of some 15,000 men would have almost twice as much artillery firepower!

Of course, Japan, though it had a population roughly 50% the size of the United States, managed to get far more of its men into combat units. Throughout the war Japan raised over 100 divisions, to the U.S.'s 95. Why, then were the Japanese not able to overwhelm American formations in combat? There are two reasons for this, the first being that American domination of the seas and skies made it increasingly difficult for the Japanese to move their troops around as the war progressed. The second is more basic: the troops were just not available. Throughout he course of the war, roughly half of the Japanese Army was busy holding down the Chinese or keeping an eye on the Russians. Though these garrisons were drawn upon for replacements and occasional reinforcements, they effectively failed to pull their weight in the war effort. In a sense, China was not only the cause of the Pacific War, but also a key factor in the Japanese defeat.

VII. The course of the Pacific War.

A rough outline of the course of the operations in the Pacific is of value here.

Briefly, the Japanese attack on Pearl Harbor gave the initiative to Japan and for roughly six months she expanded to her planned defensive line. It was hoped that the U.S. would decide the Orient was not worth the effort, but Pearl Harbor mobilized American opinion and the U.S. determined to carry the war through at any cost.

As a result of minor pinprick operations like the carrier raids on the Mandates and the Doolittle Tokyo Raid in the Spring of 1942, the Japanese decided to extend their defensive perimeter in two directions, towards Australia, in an effort to cut the tenuous supply lines to that country, and towards Midway, in an effort to force the U.S. Navy to abandon Hawaii as its main Pacific base and to fall back on California. Both these efforts were frustrated by the carrier battles of the Coral Sea and Midway in May and June, partially due to a Japanese

inclination to devise overly ingenious plans which had the net effect of dividing their available forces.

Despite the loss of her main carrier strength in Midway, Japan still attempted to cut the Australian life line by operations in the Solomons and it was in this area that the first determined counter offensive began (at Guadalcanal in August 1942). In this bloody operation, the land battle actually was of relatively little importance compared with the numerous naval air and surface actions fought over control of the waters around the island. In effect, between the Battle of the Coral Sea and the Battle of the Santa Cruz Islands (May-October 1942) Japan lost her edge in naval air power, and between the Battle of Savo Island and the Battle of Vella Lavella (August 1942 - October 1943) she lost her edge in surface combat as well. After this, the Japanese carrier fleet effectively retired from the war for over a year, partly because their air groups were heavily engaged in land-based combat in the Solomons. After the Battle of the Santa Cruz Islands, Japan would hoard her carriers and other heavy ships until mid-1944, by which time it would be too late and they would be so greatly outnumbered in both planes and ships as to make the outcome obvious to anyone.

Meanwhile, in the Solomons, the basic pattern by which the U.S. would achieve final victory was emerging, as, one after another, key islands were seized, while others, less important or too tough to crack, were "neutralized" by a combination of air power and naval blockade. In late 1943 the Navy and Marines launched a drive across the Central Pacific to supplement the drive in the South Pacific and both would meet in 1944 in the Philippines. Japan, having entered the war in hopes of a swift victory, could but try to hold the line and try to find a way out.

VIII. Conclusions and Considerations

Of several general conclusions which may be drawn from a study of the Pacific War, two stand out above all: the vital role played by the American submarine offensive against Japan and the overwhelming efficiency of the American industrial establishment, which provided the means once the decision to carry the war through had been taken. To be sure, the airplane, and the aircraft carrier, proved potent and ultimately decisive weapons but the root cause of the American victory was the enormously successful submarine operations linked with the cornucopia of American productivity.

In other areas, several important developments occurred, the most important probably being the reinforcement of amphibious techniques into a precise military art, an art still almost totally dominated by the United States.

The Pacific War also has the distinction of being the first extensive and lengthy naval campaign in history and, at the same time, totally altering the pattern of naval warfare which had existed since the emergence of the ship of the line, in the Seventeenth Century.

There are several interesting speculations, or "What ifs..." in the Pacific War. Obviously the most interesting is the possibility that, with

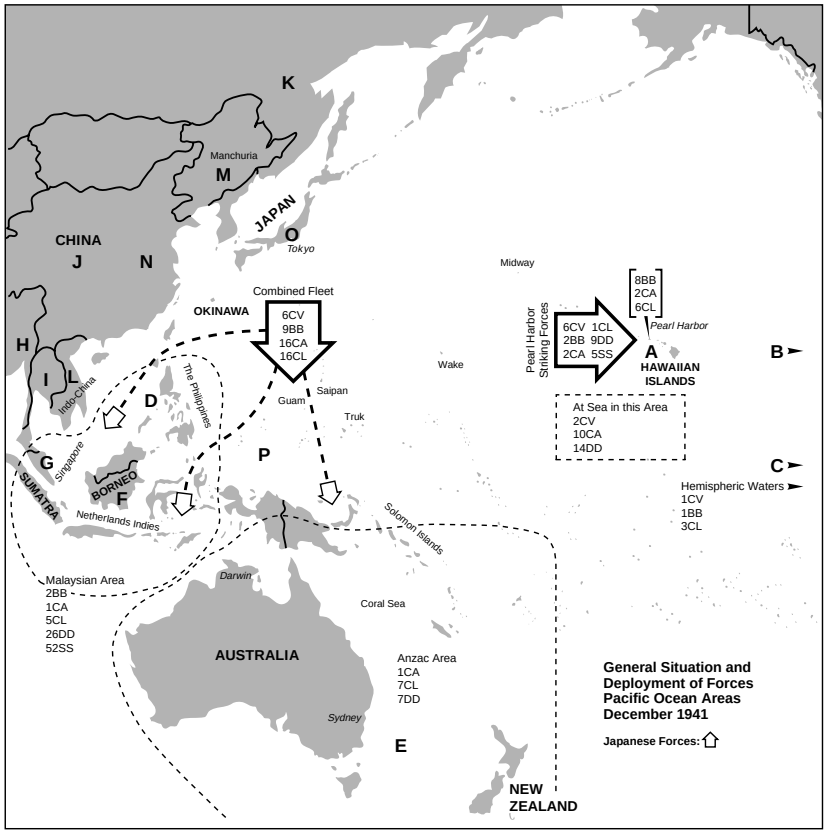
just a bit more good will and understanding on both sides, the entire thing might have been avoided. The net result of this might well have meant the defeat of Germany at an earlier time and a totally altered world situation. Or it may not have.

Certainly, if Japan had managed to keep her Pearl Harbor Striking Force in operation a bit longer, things may well have gone smoother during her conquest of the Pacific and if the troops and aircraft idling away in China and Manchuria had been committed to the main theatre, things would almost certainly have moved along faster. At the least, a bit more time may have been gained.

From the American standpoint we may consider the possibilities of a "Japan First" strategy—one in which all of America's budding military might was hurled into defeating Japan—which probably would have been an error, since Germany was the more dangerous enemy (although ultimately, in the face of Allied economic and manpower resources it would have mattered little). On the other hand, the U.S. certainly could have made a substantially greater effort in the Pacific without seriously impairing the war against Germany. For example, the Navy actively considered converting several very large liners into aircraft carriers in late 1941, which would have increased the numbers of this critical class available in the Pacific in 1942-1943, when at one point there were but two U.S. carriers operational. Of course, as the Army pointed out, such a conversion might have impaired troop shipment overseas but, as things turned out, American mobilization and staging overseas actually took place at least a year too early for the European Theatre.

One interesting speculation is to consider the situation which might have obtained if the Philippine Army and American formations in the Philippines had been up to full strength, a condition which was planned for October 1942, but which could have occurred earlier if pre-war planning had been different. This possibility, however, would seem to be something of a two-edged sword, for MacArthur, an aggressive general if ever there was one, may well have tried to fight it out with the Japanese in the open. An American-Filipino Victory would have resulted in a delayed Japanese occupation of the islands but, isolated as they were, they would have fallen eventually anyway. A Japanese victory would have speeded up Japanese occupation and possibly extended the war.

Ultimately, the occurrence of any of the foregoing possibilities would not have altered the fundamental outcome. Once the U.S. decided to fight on to final victory (thus not doing what Japan anticipated i.e., deciding that the cost was too much for the gain) American economic might took over. In the face of that the Japanese never had a chance.



General Situation and Deployment of Forces Pacific Ocean Areas December 1941

This map represents, in an outline form, the locations and strengths of the major combat forces of the various Pacific Powers on the eve of the outbreak of the Pacific War. The key-letters in the paragraphs below refer the reader to the map.

A. There were some 42,000 ground troops in Hawaii, organized into two weak infantry divisions with supporting artillery, anti-aircraft and tank units. Of about 400 Army and Navy aircraft in the islands only some 140 fighters, 6 bombers, and a number of PBYs were of first line quality, the remainder being either obsolete or obsolescent.

B. By late 1941 the U.S. had some 1,800,000 men under arms, including overseas garrisons, but the bulk of these were only partially trained and poorly equipped by the outbreak of the war. In the entire Army there existed not one combat ready division. The Army Air Forces were in similar condition, though a trickle of first line equipment was

coming into service, much of it earmarked for overseas garrisons.

C. The Panama Canal Zone was defended by some 21,000 Army and 11,000 Army Air Force personnel. Equipment was meagre and training was not particularly good. The coast defense system, however, was one of the finest in the world.

D. Including the recently mobilized Philippine Army, there were some 120,000 ground combat troops in the Philippines, of whom only 32,000 could be considered well trained, first line troops, being Regular Army, Marines, Regular Philippine Army, and Philippine Constabulary. The balance of the ground forces were hastily organized, badly trained, and poorly equipped Philippine Army Reservists. These troops comprised roughly a dozen divisions plus some supporting independent artillery, cavalry, tank, and engineer formations. Including Army Air Force, Philippine Army Air Force, and Naval aircraft, there were over 250 aircraft in the islands, but only 30 B-17's, 72 P-40s, and 32 PBY's could be considered operational first line aircraft.

E. The Anzacs suffered under the considerable handicap that the best parts of their land and air forces were off fighting in the Mediterranean Theater when the Pacific War began. There was one first line regular brigade in Australia with a tankless regular armored division and the equivalent of nine militia divisions, plus a regular brigade in Fiji and one militia brigade in New Zealand. Finally, the Australians could fall back upon 32,000 World War I Veterans who constituted a sort of Home Guard reserve. The lack of first line aircraft was keenly felt, but about 100 useful aircraft were on hand, largely divided between Australia and Papua.

F. In the Netherlands Indies there were some 124,000 troops and militarized police divided into two divisions and some 15 independent battalions, plus an odd lot of supporting units. Roughly a fifth of these troops were Dutch. Equipment, training, and particularly morale were very poor - Holland had been in Nazi hands 18 months by late 1941 and the Indonesians were restless, and growing more so. Of 312 aircraft on hand the most modern were the Brewster Buffalo and B-10's.

G. In addition to the Singapore Fortress there were four divisions and four independent brigades of British, Indian, Australian, and Malayan regular troops, all badly equipped and not well trained — one division had been fully equipped and trained for the Western Desert. In addition there were a few nearly useless local formations maintained by the princely states. A few relatively modern aircraft were among the 100 at hand, but none could match the Japanese.

H. Approximately two British-Indian-Burmese regular divisions were available in Burma, with little to recommend them and virtually no air support. More or less available in India were another division and a poorly equipped armored brigade. A number of Chinese divisions, varying from good to worthless, were also available, just over the border.

I. The Siamese Army was the best Asian army excepting only the Japanese. There were four fairly well equipped and well trained regular divisions available for foreign service and a small not overly useful air force and navy. In the event, the Siamese would first resist, then join the Japanese.

continues...

J. On paper the Chinese armies totaled some 300 divisions, but none were up to strength and perhaps not more than 100 T/O&E divisions could have been formed from them. Badly equipped, poorly led, shabbily clothed, and generally ill-treated, the Chinese would resist feebly and would have potential but would be hindered by domestic political entanglements from capitalizing on this. Some Chinese formations, however, would prove very valuable and equal to anything the Japanese could throw at them, particularly the Communists and certain German-trained Nationalist units. In the air, the "Flying Tigers" an American volunteer Group managed to keep a small number of P-40's and older aircraft in action against the Japanese, but rarely more than 100.

K. Though of indeterminate strength, the Soviet Far Eastern Army was the finest portion of the Red Army, and highly respected by the Japanese, who had been bested by it in two bloody battles in the late 1930's. This respect would work in the Soviet's favor when, in the desperation of the struggle for Moscow, many first class combat units would be sent to the West. Constantly keeping an eye on the Japanese in Manchuria, this force would significantly influence the course of the war long before it ever fired a shot.

L. The French had approximately two divisions in Indo-China, plus support elements and a small, but relatively modern air force. There was a small naval squadron as well. These forces acquitted themselves well in a brief war with Siam in 1941, but, under the advice of President Roosevelt that resistance was rather useless; had acquiesced in a peaceful Japanese occupation of portions of the country during 1940. The French Indo-Chinese forces would have no influence on the coming conflict.

M. The Japanese Army of occupation in Manchuria comprised 13 divisions, 24 independent brigades, and some 560 aircraft, supported by a small and inefficient Manchukuoan puppet state army. The primary mission of these forces would be to keep an eye on the Russians. Most of them would still be there in 1945, though this army was often used for drafts of experienced men into depleted combat units elsewhere.

N. Twenty-two divisions, 21 brigades, and about 120 aircraft held Japanese occupied China and prepared for additional gains when the Pacific War began, supported by a large, ineffective Chinese puppet army.

O. In the home territories Japan maintained six divisions, 11 brigades, 10 depot divisions and some 90 Army aircraft. The Navy maintained a number of aircraft and several Special Naval Landing Force units.

P. Japan had available for immediate occupation in the "Southern Army" sector — which extended from Burma to the Solomon's — 10 divisions, 4 brigades, 5 Special Naval Landing Forces, and some 700 Army, and large numbers of navy aircraft. These units were actually located in such diverse places as Indo-China, Hainan, Formosa, Truk, and Japan itself.

Selected Raw Materials

1940 Japanese Production and Importation

MATERIAL	TOTAL	%HOME	IMPORTS %Controlled	IMPORTS %Uncontrolled
Iron Ores	6,846+	16.4	24.2	59.4
Alloying Ores	366	37.7	0.0	62.3
Aluminum Ores	438	22.6*	17.2	60.2
Coal	67	84.7	15.3	0.0
Oil	36	5.5*	0.0	94.5

This table uses a sampling of the basic "strategic" materials — those vital for heavy industry, and military production in particular — to demonstrate Japan's dependence upon imports in virtually all categories. Imports noted under "% Controlled" came from areas under Japanese domination: Manchuria, Formosa, Korea and North China. Those indicated under "% Uncontrolled" are those coming from outside the confines of the Japanese Empire. All figures in thousands of tons or barrels. "+" indicates figures are incomplete. "*" indicates that Formosan production is included with Japanese.

Naval/Aircraft Strength Available

Outbreak of the Pacific War — December 1941

TYPE	JAPAN	UNITED STATES *Pacific*	UNITED STATES *Total*	ALLIES
CV	12	3	8	-
A/C	672	280	671	-
BB	11	9	17	2
CA	18	13	18	1
CL	17	11	19	10
DD	104	80	183	20
SS	67	73	112	13

These forces were available to the belligerent powers when the war began. The Allied Powers, chiefly the British Commonwealth and the Netherlands, had additional forces available outside the Pacific Area but the pressure of other commitments would preclude their strengthening their forces in the Pacific, unlike the United States which would draw upon the Atlantic Fleet in early 1942 for both carriers and battleships. Not included in the table are one French light cruiser and several destroyers in Indo-China, which took no part in the campaign.

Warship Construction
January 1941 To June 1943

PERIOD	JAPAN	UNITED STATES
Jan-Jun1942	1CV, 1CVL, 1CVE (110 A/C), 1CL, 3DD	1CVE (21A/C), 3BB, 5CL, 25DD, 16SS
Jul-Dec 1942	1CV, 1CVL, 1CVE (128 A/C),	1CV, 10CVE (362 A/C), 1BB, 3CL, 53DD, 21SS
	1BB, 1CL, 6DD	
Jan-Jun 1943	1CL, 5DD	5CV, 2CVL, 5CVE (695 A/C), 2CA, 2CL,
		28DD, 48DE, 25SS

As can be seen, the U.S. was actually out producing Japan in warships from the very beginning of the war and increased its margin of superiority with each month that passed. By June 1943 the American industrial establishment was fully under way and ships were coming down the ways with great rapidity. Roughly speaking, it takes from six months to a year from completion-which is what is indicated above-to reporting for duty with the fleet. The totals:

	JAPAN	UNITED STATES
CV/CVL/CVE	6 (238 A/C)	24 (1,052 A/C)
BB	1	4
CA	-	2
CL	3	10
DD	13	146
DE	-	48
SS	-	62

Abbreviations:
CV = Aircraft Carrier; CVL=Light Aircraft Carrier; CVE=Escort Aircraft Carrier; A/C=number of aircraft carried; BB=Battleship. CA=Heavy Crusier (8" guns); CL = Light Cruiser (6"guns); DD = Destroyer Escort; SS = Submarine.
Not shown on this chart are approximately 26 CVE (546 A/C) and 21 DE produced for (and turned over to) the British during this period.

Divisions Available
December 1941 To June 1943

MONTH	JAPAN	UNITED STATES	
		Total	*Pacific*
Dec 1941	51	30	4
Jun 1942	56	49	9
Dec 1942	56	76	12
Jun 1943	67	87	14

This table illustrates the increasing tempo of American mobilization in terms of Army and Marine combat divisions as compared with Japanese efforts. Not included in American totals are the divisions of the Philippine Army, Australia and New Zealand. Losses are not included, nor is any attempt made to equate non-divisional combat elements into divisional equivalents, though large numbers of these were available. "Pacific" is here used to mean areas bordering on the Pacific Ocean and includes the American West Coast.

AIRCRAFT AVAILABLE DECEMBER 1941 TO JUNE 1943

MONTH	JAPAN	UNITED STATES	U.S./JAPAN
Dec 1941	2,685	1,459	54%
Jun 1942	2,661	9,185	290%
Dec 1942	3,674	12,039	304%
Jun 1943	5,431	17,738	307%

Just in terms of aircraft available in the Pacific it can be seen that the U.S. had an enormous superiority over Japan relatively early in the war. As time went on this superiority would become greater and greater, even excluding aircraft assigned to the European Theater or retained for training purposes in the U.S. Also not included, though not of enormous numbers during this period, are the Australian and other Commonwealth air forces which also fought in the theatre. Roughly speaking, somewhat more than 19% of American aircraft in December 1941 were carrier-borne. After the war began, the figure tended to fluctuate greatly but ran about 10-15%.

ON THE NAVAL AIR POWER REVOLUTION

The aircraft carrier was originally conceived as a means of providing a conventional battleship fleet with the advantages of aerial reconnaissance. Thus it was that in World War I the British Grand Fleet came to possess a number of aircraft tenders, and, later, actual carriers. In time the advantages of using these carriers in combat roles were also realized and limited combat missions were assigned, more or less commensurate with the limitations of the aircraft involved. In the period between world wars the nations owning aircraft carriers, Japan, the U.S., Britain, and France held a generally similar view on the uses of naval air power. To wit, that the aircraft carrier was to act as the "cavalry of the sea," scouting far ahead of the battle fleet, annoying and sniping at the enemy before the main engagement, falling back far behind the Battle Line during the heavy gunnery exchange, and then, when it was all over, either following up the victory with a hard pursuit or, in a reverse, covering the retreat of friendly forces. This was, in essence, the doctrine of both the Japanese and American navies at the outbreak of World War II, though a few voices were heard in both nations proposing that the naval air arm assume a strike role totally independent of the battle fleets. Indeed, on maneuvers in the early 1930's, an American carrier force proved highly successful in a surprise, independent raid on the Panama Canal. And another did very well against Pearl Harbor on a Sunday morning. However, like prophetic voices everywhere, these individuals went unheard, except when they made such wild claims that any hearing they received was more in the form of ridicule.

Yamamoto, who planned the Pearl Harbor operation and the sweep of Japanese victories which followed after it, had some insight into the potential of independently operating naval air forces based on carriers, but had doubts as to their effectiveness even after the overwhelming success at Pearl Harbor (where, it must be remembered, it was the battleships which were the prime target, not the carriers assumed to be there). Thus, except for the Pearl Harbor operation, the Japanese Navy generally operated on the theory that the carrier forces were ancillary to the battle fleet throughout the war, even though accepting the carrier as supreme in theory.

The Americans were on no higher level of thinking when the war began, but the elimination of the battle fleet-then the mainstay of sea power-suddenly made the handful of carriers in the Pacific the first, and only, line of defense. Until newer battleships came along, the carriers would have to maintain the fight alone. Through the first six months of the war, up to Midway, the U.S. Navy clung ever more feebly to the theory that using carriers in the first line was a temporary expedient and that it was surface action which was still the thing to do. Meanwhile, led increasingly by enthusiastic younger, air-minded officers, the carrier forces became more skillful and more accustomed to operating independently. The overwhelming victory at Midway-where relative air parity existed but where the Japanese could have wiped the

Americans out in a surface battle, more or less sealed the fate of the battle fleet as the backbone of the sea power. After Midway, the aircraft carrier became the main arm of the fleet, a situation confirmed in the great carrier battles of the Guadalcanal campaign. Though, of course, battleship admirals and doctrine did operate as a drag on the carriers throughout the war.

It would be useful examine the elements which made the carrier/carrier' plane combination supreme.

To begin with, of course, carriers could conduct reconnaissance better than any other vessels, even when the others were equipped with float planes. A carrier's reconnaissance elements were able to conduct an aggressive, far reaching search, whereas float planes were virtual sitting ducks. Then too, the carrier could stand far off of its target and conduct operations out of range of most conventional defensive forces. To be sure, operating carriers in the presence of strong land based air power was somewhat suicidal, but by late 1944 the U. S. Navy was able to send literally thousands of aircraft into action on carriers, more or less overwhelming land-based air power. Then too, if action got too hot, carriers were better able to run due to their very high speed. And the endless seas gave, them plenty of room to hide in, as well as the ability to strike anywhere.

Trying to get to an opposing carrier with a battle force was virtually impossible, unless the carriers were employed in a clumsy and careless manner, as did happen on a couple of occasions in World War II, none of consequence. In effect, to kill a carrier you needed another carrier. The aircraft, operating as "expendable" weapons-planes being easily replaceable, as were, to a somewhat lesser extent, pilots-had the reach and agility to make deep strikes and get home again without imperiling their base(another advantage). Indeed, you could think of a carrier as a battleship which fires piloted shells, with the advantage of being able to recover the unexpected ones.

Finally, two very important elements, time and cost. An aircraft carrier was considerably cheaper to build than a battleship and took a lot less time to put together. During the war the American record for battleships was something like 36 months whereas, on the average, two carriers could have been built in the same time.

With all of these advantages, the supremacy of the carrier became more and more evident as the war progressed. In point of fact, of course, the battleship had had its day before the first shot had been fired. It just took a little time to realize that and to find the right formula for employing the replacement: the fast carrier task force.

OTHER WARSHIPS

Both sides were just about evenly matched, on paper, in the other categories of warships. The Japanese had an advantage early in the war because of superior crew training, tactics and, in some cases (as with torpedoes), weapons. Battleships were never really decisive during the Pacific War. They were the slowest (outside of the "combat" transports which carried ground troops) warships in use. Their size made them good targets. Most of the decisive surface actions were fought at night in restricted waters. Not good conditions for using 30,000 ton battleships. More easily used in this role were cruisers, which were faster than the battleships and averaged about 10,000 tons. Even more actively used were the destroyers. These ships were the "infantry" of the Pacific Naval War, and suffered accordingly. Japanese battleships were somewhat heavier than US vessels, although American ships were, on the average, more heavily armed. In addition, the Japanese had four "fast" battleships which could keep up with carriers and cruisers. Japanese battleships were from 31,000 to 64,000 tons in weight and armed with eight to twelve large caliber guns (14 inches in most cases, 18 inches in the largest ships). Their secondary armament consisted of twelve to eighteen 5.5" to 6" guns plus twenty or so 25mm anti-aircraft guns. Speed varied from 25 to 30 knots. American battleships fell naturally into two groups. First was a collection of World War I vintage vessels armed primarily with 14" guns, though one had 12" pieces. These tended to be very slow, more heavily protected, and equipped with huge amounts of anti-aircraft guns (as compared with the older Japanese ships). Most carried from eight to sixteen 5", something around forty 40mm and upwards of fifty 20mm guns. some of the very oldest vessels also carried from six to ten 5" single-purpose guns as well. They displaced from 26,000 to 36,000 tons and generally served as gunfire support ships in as much as none of them could keep up with the aircraft carrier task forces, since their speed was only some 20-21 knots under the best of conditions. The second group of American battleships comprised vessels completed from 1941 on. These were uniformly fast vessels, of about 28-30 knots and were armed with nine 16" guns apiece. Displacement was 35,000 tons. These vessels provided excellent anti-aircraft coverage for the carrier forces, mounting sixteen to twenty 5" guns, from fifty to a hundred 40mm, and some forty to seventy 20mm pieces. In addition to providing anti-aircraft coverage for the fleet, these vessels were designed to meet and fight the Japanese battle fleet should the opportunity arise. The next most important class of surface combat vessels was the cruiser. The cruiser was initially conceived to fill two separate, but occasionally complementary functions. The first was to act as a reconnaissance and scout vessel for the main fleet (a function which, by the outbreak of the war, had been taken over by carrier-borne aircraft) and the second was to provide protection to the more important warships during close combat. In this second role the cruiser proved particularly useful, adding its anti-aircraft fire into the defensive screens thrown up around carriers. A totally new role also evolved during the war: that of substituting for battleships when the latter were needed but not around. Japan, like the US, favored the 8" gunned, or "heavy" cruiser and most of her pre-war light cruiser

construction was converted to carry 8" guns as soon as it was convenient for the Japanese Navy's shipments to do so. This meant, in effect, that the available Japanese light cruisers were very small vessels indeed, displacing between 2,800 and 5,800 tons and armed with from four to seven 5.5" guns, some anti-aircraft and, a feature missing and to be missed in the US cruisers, from four to eight torpedo tubes of from 21" to 24" caliber. On the other hand, in compensation for their small size and hitting power these vessels had a relatively high speed of from 31 to 36 knots. The Japanese employed them primarily as flotilla leaders for their destroyers and in this role they served rather well.

Japanese heavy cruisers were formidable, sturdy machines displacing from 9,300 to 13,300 tons and carrying from six to ten 8" guns, generally in double turrets, though occasionally in single ones. Anti-aircraft armament ranged from four to eight 4.7" or 5" guns, between eight and twelve 25mm, and a number of smaller pieces. All were equipped with from eight to sixteen 24" torpedo tubes. Training in the use of these weapons, particularly at night, was extremely fine. Speed hovered between 33 to 35 knots. By contrast, the American cruisers, whether heavy or light, were very similar to each other except for minor differences in age and design. The oldest class displaced some 7,050 tons and could make 34 knots carrying ten 6" guns and eight 3" anti-aircraft. Unique among American cruisers, they carried six 21" torpedo tubes. All other classes of consequences during the critical period displaced 9,100 to approximately 10,000 tons and were armed with either nine or ten 8" or fifteen 6" guns, eight 5" anti-aircraft, plus some smaller pieces and could make 32 to 34 knots. Fundamentally the designs for all of these vessels, as well as the superior classes which followed towards the end of the war, were identical.

In terms of destroyers, vital for escort of the larger combat elements in battle and of the non-combat supply elements behind the battle lines, the significant differences were in training, where the Japanese tended to have the edge, particularly at night and in torpedo actions. Excepting coastal vessels, of which Japan had a number, destroyers tended to displace between 1,190 and 2,090 tons with the edge to the Japanese. On the other hand, in terms of armament the Americans tended to have the edge, particularly as the war went on. Most destroyers carried from four to eight 4" to 5" guns, frequently dual-purpose types, with a number of anti-aircraft machine guns thrown in.

The anti-aircraft armament increased considerably during the war as the destroyers also took a hand in covering carrier operations. Most destroyers carried from six to sixteen torpedo tubes, with some of the Japanese torpedoes being 24". Here, of course, lay a major advantage of the Japanese, for their 24" torpedo was a particularly potent and accurate weapons system. In speed there was also little difference, both sides having vessels capable of making from 34 to 38 knots with ease. Thus, in this vital category of warship-perhaps the most vital category after the carrier-there was little to choose from the one side or the other.

Both sides had a considerable number of submarines on hand at the beginning of the war and these proved a mixed bag. The Japanese badly mishandled theirs,

attempting to use them against "military" targets exclusively, rather than against shipping. The US, of course, loosed its submarines against Japan's merchant marine. In effect, the submarines won the war.

Japanese submarines were not materially inferior to American ones and were, in some respects, superior. Most displaced from 1,140 to 2,900 tons, with occasional units above and below these figures. Deck armament was usually one or two guns of from 3" to 5.5" caliber, supported by up to as many as four 25mm anti-aircraft guns, though occasionally these were missing. From four to eight 21" torpedo tubes were carried, generally with from two to three torpedoes per tube available. Speed was from 14 to 23 knots on the surface and from 7 to 10 knots submerged, which was rather typical for the period. Endurance tended to be good and many Japanese submarines carried mines, which were rare among American submarines.

American submarines did not differ greatly from Japanese ones, though there probably were more older ones on hand. They displaced from 500-for the very oldest-to 2,730 tons, with a deck armament usually comprising a gun of 3" to 5" caliber, though three vessels carried two 6" pieces. From four to ten 21" torpedo tubes were carried, with one or more sets of reloads. Unfortunately, the American submarine torpedo was rather poor at the beginning of the war and time was required to remedy the faults in the system. Speed was from 14 to 21 knots on the surface and from 8 to 11 submerged, fairly typical of the period. The average endurance of the US submarines at the start of the war was less than that of their Japanese counterparts.

Fundamentally, there were few marked differences between Japanese and American warships. What made the difference was the degree of training, tactical skill, and the material advantages gained from superior torpedoes and such. This helped the Japanese keep ahead for the early part of the war. But as the US Navy became more proficient, more sophisticated, and more technically skillful, these advantages melted away.

THE AIRPOWER/INFANTRY/ ENGINEERS COMBINATION

In a very real sense the key to the American advances in the Pacific was extremely elementary. In essence, it consisted of never advancing beyond the reach of friendly land-based air power, particularly of fighters. Doing this required considerable advanced planning but was not overly difficult and became easier as the war went on. Tactically and logistically, of course, this sort of thing proved to be something of a "monster" at times. What it all came down to was what may be termed the airpower/infantry/ engineers combination.

AIRPOWER. To be reasonable, fighter-range during most of the war was about 400 miles. This worked out to something like 400 miles out, 200 miles in reserve for combat and whatnot, and 400 miles back, with a little left over, just in case. Significantly, not until 1944, when the U.S. had the capability of lifting something over 2,500 aircraft in carriers, were any advances made beyond this 400 mile limit. The fighters gave you security from enemy airpower. Under their cover you prepared to leap forward-but not over 400 miles-to establish a forward base. Consider: From Guadalcanal (taken

before a full understanding of the combination tactics was held) to the Russells is only some 75 miles; the Russells to Rendova, 120 miles; Rendova to New Georgia, 25 miles; New Georgia to Vella Lavella, 60 miles. And so it went, not merely in the South Pacific, but also in the Central Pacific (where no landings were undertaken before late 1943, when over 1,400 aircraft were available on carriers) and in the South West Pacific, where somewhat larger leaps were undertaken. Having attained air superiority over an area the next thing to do was to send in the infantry.

INFANTRY. These could be either Army or Marines and would be supported by appropriate amphibious elements to help them get ashore in the fastest time with the fewest casualties. Usually a combat loaded division meant for amphibious assault could consume up to 100,000 tons of shipping, or about eight or ten Liberty ships. Then we have non-divisional combat elements, add in transport for the amphibious elements supporting them, the construction engineers along for the ride, and the mountains of ammunition and supplies needed, and we have a considerable armada. But it didn't stop there. Destroyers would have to accompany the transports as escort; command ships to provide direction; and cruisers and battleships to pound the beaches and provide air defense. Obsolete battleships proved highly useful in the role of beach softening up. They were much better at it than the more modern ones, which were meant to fight other battleships. Curiously the biggest battleship fight of the Pacific war was a case of obsolete vessels fighting on both sides: Surigao Strait. For good measure, as they became available, escort aircraft carriers would also be provided to give really close-to-hand air support. These additional vessels would require more destroyers and escorts and so it would go. Even a relatively small, one-division assault could run to well over 100 ships of all types by the time all calculations were finished. Then, of course, the Japanese occupying the target had to be dealt with, which tended to be a bloodier business than conventional fighting anywhere else. Roughly speaking casualties were high and generally equal in amphibious operations, except that most Japanese casualties were killed in action (Iwo Jima: Japanese had.21,000 KIA; U.S. had 6,800 KIA, 18,000 WIA). Once the infantry had taken the place (indeed often while they were still in the process of taking it), the engineers would move in.

ENGINEERS. Often neglected is the vital role of the engineers in Pacific operations. Landing with the invasion troops, to whom some engineers provided amphibious assault assistance, construction engineer elements would immediately begin airfield construction. Sometimes this was not difficult and where an already existing strip could be found it was possible to refurbish it and get it back into use within 24 hours or so (48 hrs. if heavy fighting had taken place over it). Where no airfield existed things began to get tough. A light, airborne-type construction battalion, functioning in heavy kunai grass such as was often found in New Guinea during Mac Arthur's advances, could get a 4,500 feet fighter strip into action in about 20 days given good drainage and fair soil bearing qualities. These would be fairly ideal conditions however, and in most cases

things were considerably less than ideal. Thus, on some islets, dredging operations had to be undertaken to get coral from lagoons to provide a good base on which to lay the steel matting found so valuable in airfield construction. Once the engineers finished their job, and often while they were still doing it, fighter aircraft could begin to operate out of the new airfield, which in the Pacific often meant the heavy, long range P-38. This, of course, would start the whole cycle over again. Even late in the war the importance of using land-based air to cover advances was conceded. Thus Leyte was invaded before Luzon and Luzon before Okinawa, as the Amukusa Islands were to be occupied before Kyushu, and as Kyushu was to be taken before Honshu. It was a good formula, and it worked, which was the basic proof of its value.

THE SHIPPING WAR

The War in the Pacific depended, like any other, on supply. Being an ocean war, the supplies, quite naturally, had to go by ship. At the beginning of the war, the shipping available to both Japan and the United States was, surprisingly enough, quite equal. Japan had some 5.98 million tons of shipping while the USA had some 6.7 million tons. The crunch, however, came when one compared the shipbuilding capabilities of the two nations. Japan, an island nation, had to import to survive. Japan had few natural resources. And Japan could only build some 600,000 tons of new shipping each year. America could build over ten times that amount, and was doing so by 1943. Before the war began, the United States had already started on a shipbuilding campaign which was to produce 10.8 million tons during 1942-43. This was increased once America entered the war. Of course, the majority of American shipping was to be engaged in getting material to Europe and fighting its way through Nazi U-Boats in the North Atlantic. The Germans lost the Shipping War in the Atlantic, but only after sinking 23.3 million tons of shipping. On the other hand, the Japanese sank or seized only a million tons of shipping during 1942 (and not much after that). Much of this, of course, was not American shipping, but these ships were lost to the Allied cause. The Allies eventually built far more (some 19 million tons more) shipping than was sunk. The Japanese weren't so fortunate.

From the very beginning the Japanese realized that they would have to carefully ration their available shipping. They were all too correct in this estimation. In fact, from the very beginning (despite the 400,000 tons of enemy shipping they seized initially) the Japanese merchant marine declined. Slowly at first (a net loss of less than 200,000 tons in 1942), but the effects of the American "U-Boat" campaign soon took hold. By mid-1943 the net loss (from the 1941 tonnage) was 440,000 tons. After that one crisis followed another as the Japanese vainly tried to do more with less shipping. What DO you do with shipping ? You carry troops. An American infantry division required from 70,000 to 100,000 tons of shipping. Once carried across the Pacific it required another 15,000 tons a month to maintain it. The "lift" tonnage fell as the war went on due to increased experience and expertise in putting men and equipment aboard ships. Other units required more tonnage to "lift". Overall, the 518,000 men carried to the Pacific in

the first eighteen months of the war required some 3.6 million tons of shipping. Once there, they required some 500,000 tons of shipping a month for maintenance. In the first eighteen months of the war, the United States Army moved some 1.6 million men and some 23 million tons of material overseas (only 6 million tons went to the Pacific). The US Navy tied up some 600,000 tons of shipping, mostly for maintaining the fleet. By mid-1943 some 200,000 naval personnel (including Marines) were in the Pacific. Over half of the US fleet was concentrated in the Pacific. This increased after mid-1943 with the neutralization of the German U-Boat offensive in the Atlantic. This German defeat was but another nail in Japan's coffin.

At the beginning of the war, Japan calculated that 3 million tons would be needed to maintain their economy. This left some 3 million for the military to use in their offensive. But to support an offensive in the Pacific would require some 2.1 million tons for the Army alone, plus 1.8 million tons needed by the Navy. Of course, the shipping allocated for the Army would gradually decrease as the Army completed its troop movements. Initially the Japanese Army had to move some ten divisions (or their equivalent) by sea. This took up some 700,000 tons of shipping. Also to be moved were engineer, aircraft support and base maintenance units. Finally, all of these units had to be supplied. Not as lavishly as American units, but you couldn't grow ammunition and equipment locally. By the Spring of 1942, the Japanese had some 250,000 land-based troops in the central and south Pacific. These required nearly 200,000 tons of shipping a month to supply. In addition, every time a unit was to be moved, more shipping was tied up. The Japanese planned to reduce army shipping to one million tons by August of 1942. Navy shipping was expected to remain constant at 1.8 million tons. This would leave 3.2 million tons for the civilian economy, which produced all that the armed forces needed to wage war.

In early August 1942 American forces went over to the offensive, seizing Guadalcanal Island. The Army, in the course of its attempts to retake the island, took away from the homeland shipping fleet some 400,00 tons of shipping. But this was quickly stopped, for since the war began, Japan had not been able to muster the necessary three million tons of shipping needed for her economy. At the outbreak of the war the Army had 2.15 million tons, the Navy 1.55 million and the economy 1.71 million tons. By August 1942 this had changed to Army, 1.27 million tons; Navy, 1.5 million; and the economy 2.76 million tons. by January 1943, at the peak of the Army's build-up to retake the "Southern Areas" held by the Americans, the Army controlled 1.41 million tons of shipping, the Navy 1.46 million and the economy 2.34 million tons. American attacks on Japanese shipping increased throughout 1943 (the Japanese refused to adopt a convoy policy until too late, and then American subs had adopted the "wolf pack" technique). The Japanese managed to build 3.2 million tons of shipping during the war, but Allied air and naval units managed to sink some 7.5 million tons, all but a million tons of it after mid-1943. All things considered, Japan never had enough shipping to meet the demands of a naval war in the Pacific. The United States was not much

better off for the first eighteen months of the war. At the beginning of the war the Army had 778,000 tons of shipping available to it. By the end of 1942 this had risen to 3.9 million tons and by mid-1943 approached 5 million tons. But after the Spring of 1942 the bulk of available shipping went to the Atlantic. Shipping in the Pacific reached a peak in May 1942 with 2 million tons in use. By the end of the year there was but 1.14 million tons available 1.7 million tons and this amount continued to grow until the war's end. Even though the United States committed itself from the beginning to the defeat of Germany first, additional tonnage had to go to the Pacific in order to move ground troops and aircraft units into what, for all practical purposes, was a vacuum. Once this had been accomplished (and particularly after Midway crippled the Japanese carrier force) the Pacific had to get along on what could be spared from the Battle for the Atlantic. This meant that much of the American material superiority could not be brought to bear on Japan immediately. For example, in 1942 Japan produced 12,100 combat aircraft, the USA produced 30.800. But only B-17 heavy bombers could be flown out to Pacific bases, all others had to come by ship, as well as the base equipment and personnel for all aircraft. What about Japan's submarine Fleet? It was, initially, the equal of America's. It was crippled by a doctrine which prohibited the wasting of torpedoes on merchant ships. Japanese submarines were expected to go after combat ships, and nothing else. The Japanese held to this doctrine throughout the war. What if they had adopted the more logical approach, and gone after US merchant ships? This would have probably had a two-fold effect. First, it would have inhibited the US fleet in the Pacific. Destroyers and other light fleet units would be taken away for escort duty to a much greater extent than was actually the case. The second effect would have been felt in the Atlantic. Shipping lost in the Pacific would have to be made up, it was at the bare survival level as it was. This would have probably meant that the American invasion of North Africa in late 1942 would have been put off, or at least seriously curtailed. Much of the same effect would have been evident had the Japanese not been stopped at Midway. But the Japanese could have hurt the Allied cause tremendously simply by changing their submarine doctrine. They didn't, and the Pacific War ended that much sooner. Decided, to a large extent, by hundreds of lightly armed and rather unmilitary looking merchant ships.

A footnote on Japanese and American Merchant Ships

As the war progressed the USA gained not only a quantitative edge over the Japanese in military equipment, but a qualitative one also. This was also evident in the wartime merchant shipping built by both nations. During 1941 America began building a new class of merchant ships, the Type EC2-S-C1 (or "liberty" ship). During the course of the war over 2500 of these vessels were produced. The basic version (there were numerous sub-types for special applications) was 441 feet long and had a lift-capacity of over 14,000 tons. Vessels of this type alone amounted to over 30 million tons of shipping. The EC2-S-CS1cruised at about 12 knots and had a

crew of 45 (plus a gun crew of 36). The Japanese never had anything like it. At the outbreak of the war the Japanee merchant fleet had only 19 ships with a lifting capacity of over 10,000 tons. The ships they built during the war averaged between 2,000 and 3,000 tons each. Their performance was also below the American standard. Their cruising speed, for example, was often 30 to 50% less than that of American merchant ships. This was not particularly crucial during normal operations, but when these ships were used to transport troops in the combat zone their slow speed became decisive. Even during normal shipping operations this slow speed had its effect. For all their shipping tonnage, the average "time" from Pacific areas to the Japanese homeland was greater distances to the US West Coast. The main reason for the slowness of Japanese shipping was the "bottleneck" in their shipbuilding industry caused by an inadequate engine industry. Japan could have produced twice as many merchant ships had they a larger marine engineering capacity. They spread this capacity as thin as possible, thus producing smaller, slower ships. Both Japan and the United States produced special "fast transports." Both nations usually used converted destroyers. In addition the United States was able to produce a special line of "fast transports" built specifically for the task. The United States was also far ahead in its ability to produce amphibious shipping. Even in 1942 the United States was able to unload merchant ships in the combat zone in one third to one half the time it took the Japanese.

MENUS & TABLES

General Orders Menu

BUTTON	DESCRIPTION	KEYBOARD
MODE	Set Display Mode (TF, PORT, AF, ARMY)	none
←→↑↓	Move Large Increments	I, J, K, M
CNTR	Center Cursor	F2
MAP	Change Map Scale	F1
ZONE	Display Friendly Air ZOC	Shift-Z
UTIL	Utility Menu	none
NEXT	Next Unit*	N,O,S,Z
HQ	HQ Menu	none
PATH	Show Overland March Paths	F3
ESC	Quit, Return to Last Menu	Q, Esc

Utility Menu

BUTTON	DESCRIPTION	KEYBOARD
SUNK	List Types of Ship Sunk	F8
LOSSES	Show Casualty Points	F9
SCORE	Display Current Score	F9
POOLS	Aircraft Replacement Pools	F4, F7
INDUSTRY	Show Locations of Factories	none
SIGINT	Reveal Japanese Objectives and Unit Locations	F5
BATTLE	View Last Turns Battle Reports	ALT/B
AIR ZONES	Show Enemy Air ZOC	ALT/Z
ISO-BASE	Show Isolated Friendly Bases	ALT/O
DELAY	Set Delay/Display Levels	F10
EXIT	Exit Game - Return to DOS	ALT/Q
QUIT	End Orders Phase	Q

Unit Menu

BUTTON	DESCRIPTION	KEYBOARD
FIND SHIPS	Locate any Ship on the Map	ALT/U
MARCH	March Land Unit to Base	ALT/W
SET DEST	Set TF Destination Base	D
SET BASE	Set TF Home Base	H
REMOVE TF	Remove/Disband TF at Base	R
SHIP TRAN	Transfer Ships into Current TF from Port or Other TF	T
UNLOAD TF	Unload Current TF at Base	U
LOAD TF	Load Current TF at Base	L
CREATE TF	Create a New TF at Cursor	C
REPLENISH	Replenish Current TF	Y
MOVE OPTION	Set TF Standoff Range and Return to Port Orders	F
AIR TRAN	Transfer Air Group to Current Airfield	ALT/A
AIR TARGET	Set Priority Target Base for an Airfield	B
SUB MODE	Move Submarines	ALT/M

HQ Menu

BUTTON	DESCRIPTION	KEYBOARD
RELOCATE HQ	Move HQ to New Base	ALT/E
HQ TO TF	Move HQ to a TF	ALT/S
NEW LEADER	Change HQ Leader	ALT/L
AIR LEADER	Change HQ's Air Leader	ALT/P
REINFORCE	Find & Move Air, Land, Sea Forces to Base	ALT/R
CHANGE BASE	Set New HQ for Base	ALT/C
HQ CONTROL	Set Human & Computer Control Level	ALT/K
SET TARGET	Set New HQ Target	ALT/G
GET TRANSPORT	Find & Move Transports to Base	ALT/T
FIND AN HQ	Lists & Finds HQs	ALT/F
HQ UNITS	Lists HQ's Land Units	ALT/D
HQ AIR	Lists HQ's Air Units	ALT/X
ESC	Exit the Menu	NONE

Game Abbreviations

A/C	Aircraft
AD	Administrative
Adm	Admiral
AF	Airfield
AFV	Armored Fighting Vehicle
Aggr	Aggressiveness
AIR TRANS	Air Transfer
Amp	Amphibious
AR	Army
ARM	Armor
ASW	Anti-Submarine Warfare
AUS	Australian
Avail	Availability
AZOC	Air Zone of Control
Bn	Battalion
Bde	Brigade
Brig	Brigadier
BRIT	British
CA	Combined Arms
Can	Cannon
Cav	Cavalry
CHIN	Chinese
Div	Division
DP	Dual-Purpose
Dur	Durability
DUT	Dutch
Eng	Engineer
Gen	General
HQ	Headquarter
I.	Island
IND	Indian
Indep	Independent
Inf	Infantry
ISO-Base	Isolated Base
JA	Japanese Army
JN	Japanese Navy
Lab	Labor
LCU	Land Combat Unit
LDR	Leader Decision
Load	Bomb Load
Lt	Lieutenant
Maj	Major
Mar	Marine
Mvr	Maneuver
Nat	Nationality
NV	Naval
Para	Paratroop
PP	Preparation Points
Res	Resource
Rgt	Regiment
ROS	Remain on Station
RP	Return to Port
SB	Seabees
SBF	Special Base Force
SIGINT	Signal Intelligence
SNLF	Special Naval Landing Force
Tac	Tactical
Ter	Terrain
TF	Task Force
Tnk	Tank
Torp	Torpedo
US	United States
USA	United States Army
USMC	United States Marine Corps
USN	United States Navy
ZOC	Zone of Control

Flak Modifiers

Japanese Ship	x 0.75
USN Ship (Jul-Dec 42)	x 1.10
USN Ship (1943-1945)	x 1.25

Target Selection Values (Air to Sea)

CV, CVL, CVE	150
BB, BC	15
CA, CL, CLAA, CS	5
DD, DE, APD, PC	1
AP, AO, LST, MCS	4

Ship Evasion Modifiers

CV, CVL, CVE, BB ,BC ,CS	x 3
CA, CL, CLAA	x 5
DD, DE, APD, PC	x 6
AP, AO, LST, MCS	x 1

Aircraft Accuracy Ratings

Fighter	2
Fighter-Bomber	5
Dive Bomber	9
Torpedo Bomber	8
Tac-Bomber	7
Heavy Bomber	1
Patrol Bomber	8

Aircraft Ordnance Options

JAPANESE:

Fighter Bomber	250 kg. Bomb, HE Bomb
Dive Bomber	250 kg. Bomb, HE Bomb
Torpedo Bomber	250 kg. Bomb, HE Bomb, Type 91 Torpedo
Medium Bomber	250 kg. Bomb, HE Bomb, Type 91 Torpedo

ALLIED:

Fighter Bomber	500lb Bomb, HE Bomb
Dive Bomber	500lb Bomb, HE Bomb, 1000lb Bomb
Torpedo Bomber	500lb Bomb, HE Bomb, Mk.13 Torpedo
Medium Bomber	500lb Bomb, HE Bomb, Mk.13 Torpedo
Heavy Bomber	500lb Bomb, HE Bomb, 1000lb Bomb

Description of Box Cover Pictures

Below are descriptions of the pictures shown on the front of the Pacific War box:

Aircraft Carrier

The aircraft carrier Valley Forge, later renamed the Princeton, is shown with rows of Corsairs on the flight deck.

Aircraft in Flight

Six Hudson bombers are shown in flight. The Hudson was designed originally for reconnaissance work, but was widely used as an all-purpose aircraft for raiding, dive bombing, convoy protection, and even as a fighter. It was the first American-made bomber to see action in World War II.

Aircraft on Ground

The crews of Fleet Air Arm Torpedo bombers have just returned from another flight training to be more effective in learning how to attack enemy submarines.

Paratroop Soldiers

Shown here are American sky troops, paratroopers, who have just bailed out of their planes.

LAND COMBAT UNIT TABLES

The Japanese and Allied lists of Land Combat Units are shown below. The tables list the unit name, unit type, unit nationality, the HQ the unit is attached to, the date the unit arrives in the game, and the scenario the unit belongs in. The scenario letters (C, G, L, M, and R) are described below:

(C)ampaign 1942 and Coral Sea/Midway
(G)uadalcanal
(L)eyte Gulf
(M)arianas
(R)ising Sun and Campaign 1941

• *JAPANESE LAND COMBAT UNITS*

NAME	TYPE	NAT	HQ	AVAIL	SCEN
1st	SBF	JN	Combined Fleet	12/41	CGLMR
1st Amp	Bde	JA	South AG	12/41	CGLMR
1st Inf	Div	JA	Kwantung AG	12/41	CGLMR
1st Lab	Engr	JA	South AG	12/41	CGLMR
1st Para	Bde	JA	South AG	12/41	CGLMR
2nd	SBF	JN	Combined Fleet	12/41	CGLMR
2nd Inf	Div	JA	16th Army	12/41	CGLMR
2nd Lab	Engr	JA	South AG	12/41	CGLMR
3rd	SBF	JN	Combined Fleet	12/41	CGLMR
3rd Inf	Div	JA	China AG	12/41	CGLMR
3rd Lab	Engr	JA	South AG	12/41	CGLMR
4th	SBF	JN	Combined Fleet	12/41	CGLMR
4th Inf	Div	JA	14th Army	12/41	CGLMR
4th Lab	Engr	JA	South AG	12/41	CGLMR
5th	SBF	JN	Combined Fleet	12/41	CGLMR
5th Inf	Div	JA	25th Army	12/41	CGLMR
5th Lab	Engr	JA	South AG	12/41	CGLMR
6th	SBF	JN	Combined Fleet	12/41	CGLMR
6th Inf	Div	JA	China AG	12/41	CGLMR
6th Lab	Engr	JN	Combined Fleet	12/41	CGLMR
7th	SBF	JN	Combined Fleet	12/41	CGLMR
7th Inf	Div	JA	N. Seas Fleet	12/41	CGLMR
7th Lab	Engr	JN	Combined Fleet	12/41	CGLMR
8th	SBF	JN	Combined Fleet	12/41	CGLMR
8th Inf	Div	JA	Kwantung AG	12/41	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
8th Lab	Engr	JN	Combined Fleet	12/41	CLMR
9th	SBF	JN	Combined Fleet	12/41	CGR
9th Inf	Div	JA	Kwantung AG	12/41	CGLMR
9th Lab	Engr	JN	Combined Fleet	12/41	CLMR
10 Indep	Rgt	JA	Combined Fleet	12/41	M
10th Inf	Div	JA	Kwantung AG	12/41	CGLMR
10th Lab	Engr	JN	Combined Fleet	12/41	CGLMR
11th	Engr	JN	8th Fleet	12/41	G
11th Inf	Div	JA	China AG	12/41	CGLMR
12th Inf	Div	JA	Kwantung AG	12/41	CGLMR
13th	Engr	JN	8th Fleet	12/41	G
13th Inf	Div	JA	China AG	12/41	CGLMR
14th Inf	Div	JA	Kwantung AG	12/41	CGLMR
15th Inf	Div	JA	China AG	12/41	CGLMR
16th Inf	Div	JA	14th Army	12/41	CGLMR
17th	Bde	JA	Imperial GHQ	12/41	CG
17th Inf	Div	JA	China AG	12/41	CGLMR
18th Inf	Div	JA	25th Army	12/41	CGLMR
19th Inf	Div	JA	Kwantung AG	12/41	CGLMR
20th Inf	Div	JA	China AG	12/41	CGLMR
21st Inf	Div	JA	14th Army	12/41	CGLMR
22nd Inf	Div	JA	China AG	12/41	CGLMR
23rd Inf	Div	JA	Kwantung AG	12/41	CGLMR
24th Inf	Div	JA	Kwantung AG	12/41	CGLMR
25th Inf	Div	JA	Kwantung AG	12/41	CGLMR
26th Inf	Div	JA	China AG	12/41	CGLMR
27th Inf	Div	JA	China AG	12/41	CGLMR
28th	SBF	JA	Combined Fleet	12/41	M
28th Inf	Div	JA	Kwantung AG	12/41	CGLMR
29th Inf	Div	JA	Kwantung AG	12/41	CGLMR
32nd Inf	Div	JA	China AG	12/41	CGLMR
33rd Inf	Div	JA	15th Army	12/41	CGLMR
34th Inf	Div	JA	China AG	12/41	CGLMR
35th Inf	Div	JA	China AG	12/41	CGLMR
36th Inf	Div	JA	China AG	12/41	CGLMR
37th Inf	Div	JA	China AG	12/41	CGLMR
38th Inf	Div	JA	16th Army	12/41	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
39th Inf	Div	JA	China AG	12/41	CGLMR
40th Inf	Div	JA	China AG	12/41	CGLMR
41st Inf	Div	JA	China AG	12/41	CGLMR
47 Indep	Bde	JA	Combined Fleet	12/41	M
48 Indep	Bde	JA	Combined Fleet	12/41	M
48th Inf	Div	JA	14th Army	12/41	CGLMR
50th	Rgt	JA	Combined Fleet	12/41	M
51st Inf	Div	JA	China AG	12/41	CGLMR
52nd Inf	Div	JA	Imperial GHQ	12/41	CGLMR
53rd Inf	Div	JA	Imperial GHQ	12/41	CGLMR
54 Indep	Bde	JA	35th Army	12/41	L
54th Inf	Div	JA	Imperial GHQ	12/41	CGLMR
55 Indep	Bde	JA	35th Army	12/41	L
55th Inf	Div	JA	15th Army	12/41	CGLMR
56th Inf	Div	JA	15th Army	12/41	CGLMR
57 Indep	Bde	JA	35th Army	12/41	L
57th Inf	Div	JA	Kwantung AG	12/41	CGLMR
58 Indep	Bde	JA	10th Area	12/41	L
65 Indep.	Bde	JA	14th Army	12/41	CGLMR
104th Inf	Div	JA	China AG	12/41	C G L M
110th Inf	Div	JA	China AG	12/41	CGLMR
116th Inf	Div	JA	China AG	12/41	CGLMR
144th	Rgt	JA	S. Seas Fleet	12/41	CGLMR
146th	Rgt	JA	16th Army	12/41	CGLMR
222nd	Rgt	JA	18th Army	12/41	M
Aoba	Rgt	JA	South AG	12/41	CG
Imp Guard	Div	JA	25th Army	12/41	CGLMR
Kanno	Rgt	JA	South AG	12/41	R
Kimura	Rgt	JA	South AG	12/41	R
Kitao	Bn	JA	South AG	12/41	CGR
Kure SNLF	Bde	JN	Combined Fleet	12/41	CGLMR
Mai SNLF	Bde	JN	Combined Fleet	12/41	CGLMR
Miura	Rgt	JA	South AG	12/41	R
Sas SNLF	Bde	JN	Combined Fleet	12/41	CGLMR
Tanaka	Rgt	JA	South AG	12/41	R
Yok Para	Bn	JN	Combined Fleet	12/41	CGLMR
Yok SNLF	Bde	JN	Combined Fleet	12/41	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
21 Indep.	Bde	JA	17th Army	1/42	CGR
35 Indep.	Bde	JA	17th Army	1/42	CGLMR
58th Inf	Div	JA	China AG	1/42	CGLMR
59th Inf	Div	JA	China AG	1/42	CGLMR
60th Inf	Div	JA	China AG	3/42	CGLMR
68th Inf	Div	JA	China AG	3/42	CGLMR
69th Inf	Div	JA	China AG	3/42	CGLMR
70th Inf	Div	JA	China AG	3/42	CGLMR
71st Inf	Div	JA	Kwantung AG	3/42	CGLMR
2nd Amp	Bde	JA	South AG	6/42	CGLMR
124th Inf	Div	JA	China AG	6/42	CGLM
1st Arm.	Div	JA	China AG	7/42	CGLMR
2nd Arm.	Div	JA	Kwantung AG	7/42	CGLMR
3rd Amp	Bde	JA	South AG	9/42	CGLMR
3rd Arm.	Div	JA	Kwantung AG	9/42	CGLMR
4th Amp	Bde	JA	South AG	12/42	C G L M
31st Inf	Div	JA	15th Army	1/43	CGLMR
61st Inf	Div	JA	China AG	1/43	CGLMR
1st Gds	Div	JA	Imperial GHQ	4/43	CGLMR
30th Inf	Div	JA	Kwantung AG	4/43	CGLMR
42nd Inf	Div	JA	N. Seas Fleet	4/43	CGLMR
43rd Inf	Div	JA	Imperial GHQ	4/43	CGLMR
46th Inf	Div	JA	Imperial GHQ	4/43	CGLMR
47th Inf	Div	JA	Imperial GHQ	4/43	CGLMR
62nd Inf	Div	JA	China AG	4/43	CGLMR
63rd Inf	Div	JA	China AG	4/43	CGLMR
64th Inf	Div	JA	China AG	4/43	CGLMR
65th Inf	Div	JA	China AG	4/43	CGLMR
49th Inf	Div	JA	15th Army	11/43	CGLMR
44th Inf	Div	JA	Imperial GHQ	1/44	CGLMR
72nd Inf	Div	JA	Imperial GHQ	1/44	CGLMR
77th Inf	Div	JA	Imperial GHQ	1/44	CGLMR
81st Inf	Div	JA	Imperial GHQ	1/44	CGLMR
86th Inf	Div	JA	Imperial GHQ	1/44	CGLMR
91st Inf	Div	JA	N. Seas Fleet	1/44	CGLMR
50th Inf	Div	JA	14th Army	2/44	CGLMR
3rd Gds	Div	JA	Imperial GHQ	3/44	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
4th Arm.	Div	JA	Kwantung AG	3/44	CGLMR
100th Inf	Div	JA	14th Army	4/44	CGLMR
102nd Inf	Div	JA	14th Army	4/44	CGLMR
103rd Inf	Div	JA	14th Army	4/44	CGLMR
105th Inf	Div	JA	14th Army	4/44	CGLMR
107th	Div	JA	Kwantung AG	4/44	CGLMR
108th Inf	Div	JA	Kwantung AG	4/44	CGLMR
109th Inf	Div	JA	S. Seas Fleet	4/44	CGLMR
111th Inf	Div	JA	Kwantung AG	4/44	CGLMR
112th Inf	Div	JA	Kwantung AG	4/44	CGLMR
115th Inf	Div	JA	China AG	4/44	CGLMR
117th Inf	Div	JA	China AG	4/44	CGLMR
118th Inf	Div	JA	China AG	4/44	CGLMR
66th Inf	Div	JA	14th Army	4/44	CGLMR
73rd Inf	Div	JA	Imperial GHQ	4/44	CGLMR
84th Inf	Div	JA	Imperial GHQ	4/44	CGLMR
93rd Inf	Div	JA	Imperial GHQ	4/44	CGLMR
114th Inf	Div	JA	China AG	6/44	CGLMR
119th Inf	Div	JA	Kwantung AG	7/44	CGLMR
94th Inf	Div	JA	25th Army	7/44	CGLMR
120th Inf	Div	JA	Kwantung AG	8/44	CGLMR
125th Inf	Div	JA	China AG	8/44	CG
88th Inf	Div	JA	South AG	11/44	CGLMR
89th Inf	Div	JA	South AG	11/44	CGLMR
96th Inf	Div	JA	South AG	11/44	CGLMR
121st Inf	Div	JA	China AG	12/44	CGLMR
122nd Inf	Div	JA	China AG	12/44	CGLMR
123rd Inf	Div	JA	China AG	12/44	CGLMR
79th Inf	Div	JA	China AG	12/44	CGLMR

• ALLIED LAND COMBAT UNITS

NAME	TYPE	NAT	HQ	AVAIL	SCEN
1st	Engr	AUS	ANZAC	12/41	CGLMR
1st	Engr	USMC	C. Pacific	12/41	CGLMR
1st	Army	CHIN	Nat.China	12/41	CGLMR
1st	Bde	USMC	C. Pacific	12/41	L
1st	Engr	BRIT	SEAC	12/41	CGLMR
1st	Engr	IND	SEAC	12/41	CGLMR
1st Burma	Div	BRIT	SEAC	12/41	CGLMR
1st Inf	Div	DUT	ABDA	12/41	CGLMR
1st Inf	Div	AUS	ANZAC	12/41	CGLMR
1st Inf	Div	PHIL	SW Pacific	12/41	CGLMR
1st KNIL	Bn	DUT	ABDA	12/41	CGMR
1st KNIL	Rgt	DUT	ABDA	12/41	CGMR
1st Malay	Bde	BRIT	Malaya AG	12/41	CGLMR
1st Prov.	Bde	USMC	C. Pacific	12/41	M
1st SB	Engr	USN	C. Pacific	12/41	CGLMR
2nd	Army	CHIN	Nat.China	12/41	CGLMR
2nd Inf	Div	DUT	ABDA	12/41	CGLMR
2nd Inf	Div	AUS	ANZAC	12/41	CGLMR
2nd KNIL	Bn	DUT	ABDA	12/41	CGMR
2nd KNIL	Rgt	DUT	ABDA	12/41	CGMR
2nd Malay	Bde	BRIT	Malaya AG	12/41	CGLMR
3rd	Army	CHIN	Nat.China	12/41	CGLMR
3rd Inf	Div	AUS	ANZAC	12/41	CGLMR
4th	Army	CHIN	Nat.China	12/41	CGLMR
4th Inf	Div	AUS	ANZAC	12/41	CGLMR
4th Inf	Rgt	USA	N. Pacific	12/41	CGLMR
4th Mar	Rgt	USMC	SW Pacific	12/41	CGR
5th Inf	Div	AUS	ANZAC	12/41	CGLMR
5th Inf	Bde	NZ	ANZAC	12/41	CGLMR
6th Rangr	Bn	USA	SW Pacific	12/41	L
7th	Army	CHIN	Nat.China	12/41	CGLMR
7th Gurka	Rgt	BRIT	SEAC	12/41	CGLMR
7th Mar	Div	USMC	C. Pacific	12/41	LM
8th	Army	CHIN	Nat.China	12/41	CGLMR
8th Cav	Rgt	USA	6th Army	12/41	L
8th Inf	Bde	NZ	ANZAC	12/41	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
8th Inf	Div	AUS	Malaya AG	12/41	CGLMR
9th	Army	CHIN	Nat.China	12/41	CGLMR
9th Inf	Div	IND	Malaya AG	12/41	CGLMR
10th	Army	CHIN	Nat.China	12/41	CGLMR
11th	Army	CHIN	Nat.China	12/41	CGLMR
11th Inf	Div	IND	Malaya AG	12/41	CGLMR
11th Mil	Div	PHIL	SW Pacific	12/41	CGLMR
12th	Army	CHIN	Nat.China	12/41	CGLMR
12th Cav	Rgt	USA	6th Army	12/41	L
13th	Army	CHIN	Nat.China	12/41	CGLMR
16th Inf	Bde	IND	Malaya AG	12/41	CGLMR
17th Inf	Div	IND	SEAC	12/41	CGLMR
20th Inf	Div	IND	SEAC	12/41	CGLMR
21st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
22nd	Bde	IND	Malaya AG	12/41	CGLMR
22nd Inf	Bde	IND	SEAC	12/41	CGLMR
23rd Inf	Div	IND	SEAC	12/41	CGLMR
24th Inf	Div	USA	C. Pacific	12/41	CGLMR
25th Inf	Div	USA	C. Pacific	12/41	CGLMR
26th Inf	Div	IND	SEAC	12/41	CGLMR
27th Inf	Div	USA	C. Pacific	12/41	CGLMR
28th Inf	Bde	IND	Malaya AG	12/41	CGLMR
29th Inf	Bde	BRIT	SEAC	12/41	CGLMR
30th	Bde	AUS	ANZAC	12/41	CGM
31st Inf	Div	USA	C. Pacific	12/41	CGLMR
31st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
34th	Engr	USA	C. Pacific	12/41	CGLMR
37th Inf	Rgt	USA	N. Pacific	12/41	CGLMR
40th Inf	Div	USA	C. Pacific	12/41	CGLMR
41st Inf	Div	USA	SW Pacific	12/41	CGLMR
41st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
43rd	Engr	USA	SW Pacific	12/41	CGLMR
46th	Engr	USA	SW Pacific	12/41	CGLMR
47th	Engr	USA	C. Pacific	12/41	CGLMR
49th	Bn	AUS	ANZAC	12/41	R
51st Inf	Bde	USA	S. Pacific	12/41	CGM
51st Mil	Div	PHIL	SW Pacific	12/41	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
53rd Inf	Bde	USA	C. Pacific	12/41	CGM
54th Inf	Bde	USA	C. Pacific	12/41	MR
61st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
71st	Army	CHIN	North CAC	12/41	M
71st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
79th NatG	Bde	USA	West Coast	12/41	CGLMR
80th NatG	Bde	USA	West Coast	12/41	CGLMR
81st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
81st NatG	Bde	USA	West Coast	12/41	CGLMR
89th NatG	Bde	USA	West Coast	12/41	CGLMR
91st	Engr	USA	SW Pacific	12/41	CGLMR
91st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
93rd	Engr	USA	North Pacific	12/41	CGLMR
101st Mil	Div	PHIL	SW Pacific	12/41	CGLMR
124th Cav	Rgt	USA	North CAC	12/41	L
201st Inf	Rgt	USA	N. Pacific	12/41	CGLMR
251st Tnk	Bde	IND	SEAC	12/41	CGLMR
254th Tnk	Bde	IND	SEAC	12/41	CGLMR
475th LRP	Rgt	USA	North CAC	12/41	L
Guam	Bn	USMC	C. Pacific	12/41	CGLMR
Hawaii	Bn	USMC	C. Pacific	12/41	CGLMR
Island	Bde	BRIT	Malaya AG	12/41	CGLMR
Kauai	Bn	USMC	C. Pacific	12/41	CGLMR
Main Land	Bde	BRIT	Malaya AG	12/41	CGLMR
Maui	Bn	USMC	C.Pacific	12/41	CGLMR
Midway	Bn	USMC	C.Pacific	12/41	CGLMR
Palmyra	Bn	USMC	C.Pacific	12/41	CGLMR
Phil.Inf	Div	USA	SW Pacific	12/41	R
Wake	Bn	USMC	C.Pacific	12/41	CGR
3rd Inf	Div	NZ	ANZAC	1/42	CGLMR
5th	Army	CHIN	Nat.China	1/42	CGLMR
6th	Army	CHIN	Nat.China	1/42	CGLMR
7th Inf	Div	AUS	ANZAC	1/42	CGLMR
1st Arm	Div	AUS	ANZAC	3/42	CGLMR
6th Inf	Div	AUS	ANZAC	3/42	CGLMR
32nd Inf	Div	USA	SW Pacific	3/42	CGLMR
66th	Army	CHIN	Nat.China	3/42	CGR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
158th	Rgt	USA	SW Pacific	3/42	CGLMR
Americal	Div	USA	S. Pacific	3/42	CGLMR
2nd	Engr	USMC	C. Pacific	4/42	CGLM
R 2nd Raid	Bn	USMC	C. Pacific	4/42	CGLMR
10th Inf	Div	AUS	ANZAC	4/42	CGLMR
50th Tnk	Bde	IND	SEAC	4/42	CGLMR
1st Mar	Div	USMC	S. Pacific	5/42	CGLMR
5th Inf	Div	BRIT	SEAC	5/42	CGLMR
37th Inf	Div	USA	S. Pacific	5/42	CGLMR
147th	Rgt	USA	S. Pacific	5/42	CGLMR
1st Raid	Bn	USMC	S. Pacific	6/42	CGLMR
2nd Inf	Div	BRIT	SEAC	6/42	CGLMR
2nd SB	Engr	USN	C. Pacific	6/42	CGLMR
5th Inf	Div	IND	SEAC	6/42	CGLMR
112th Cav	Rgt	USA	SW Pacific	6/42	CGLMR
1st Par	Bn	USMC	S. Pacific	7/42	CGLMR
2nd Mar	Div	USMC	C. Pacific	7/42	CGLMR
25th Inf	Div	IND	SEAC	8/42	CGLMR
43rd Inf	Div	USA	S. Pacific	9/42	CGLMR
503 Para	Rgt	USA	SW Pacific	10/42	CGLMR
3rd Raid	Bn	USMC	S.Pacific	11/42	CGLMR
33rd Inf	Div	USA	C. Pacific	11/42	CGLMR
12th Inf	Div	AUS	ANZAC	12/42	CGLMR
6th Inf	Bde	BRIT	14th Army	1/43	CGLMR
9th Inf	Div	AUS	ANZAC	1/43	CGLMR
11th Inf	Div	AUS	ANZAC	1/43	CGLMR
14th Inf	Div	IND	14th Army	1/43	CGLMR
81st Afr	Div	BRIT	14th Army	1/43	CGLMR
3rd Armor	Div	USA	10th Army	2/43	CGLM
7th Inf	Div	USA	C. Pacific	2/43	CGLMR
3rd Inf	Div	IND	SEAC	3/43	CGLMR
44th Inf	Div	IND	SEAC	3/43	CGLMR
4th Mar	Div	USMC	S. Pacific	4/43	CGLMR
4th Raid	Bn	USMC	C. Pacific	4/43	CGLMR
71st Inf	Bde	BRIT	14th Army	4/43	CGLMR
77th Inf	Div	USA	C. Pacific	4/43	CGLMR
1st Cav	Div	USA	SW Pacific	5/43	CGLMR

NAME	TYPE	NAT	HQ	AVAIL	SCEN
3rd Mar	Div	USMC	S. Pacific	5/43	CGLMR
6th Inf	Div	USA	C. Pacific	6/43	CGLMR
2nd Par	Bn	USMC	S. Pacific	8/43	CGLMR
3rd Par	Bn	USMC	C. Pacific	8/43	CGLMR
11th Afr	Div	BRIT	SEAC	8/43	CGLMR
81st Inf	Div	USA	C. Pacific	8/43	CGLMR
5307 Comp	Bde	USA	North CAC	9/43	CGLMR
96th Inf	Div	USA	C. Pacific	10/43	CGLMR
0111th	Rgt	USA	C. Pacific	11/43	MR
38th Inf	Div	USA	C. Pacific	11/43	CGLMR
93rd Inf	Div	USA	C. Pacific	11/43	CGLMR
11th Air	Div	USA	SW Pacific	2/44	CGLMR
82nd Afr	Div	BRIT	SEAC	2/44	CGLMR
98th Inf	Div	USA	C. Pacific	2/44	CGLMR
5th Mar	Div	USMC	C. Pacific	5/44	CGLMR
6th Mar	Div	USMC	C. Pacific	7/44	CGLMR
36th Inf	Div	BRIT	North CAC	9/44	CGLMR
7th Inf	Div	IND	SEAC	12/44	CGLMR
19th Inf	Div	IND	SEAC	10/45	CGLMR

LEADER TABLES

The Japanese and Allied lists of Leaders are shown below. The tables list the leader's name, rank, air rating, naval rating, land rating, aggressiveness rating, the leader's nationality, the date the leader arrives in the game, and the scenario the unit belongs in. The scenario letters (C, G, L, M, and R) are described below:

(C)ampaign 1942 and Coral Sea/Midway
(G)uadalcanal
(L)eyte Gulf
(M)arianas
(R)ising Sun and Campaign 1941

• *JAPANESE NAVAL LEADERS*

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Abe	Rear Adm	1	4	2	3	JN	12/41	C G L M R
Akiyama	Rear Adm	4	3	4	4	JN	3/43	C G R
Endo	Vice Adm	2	5	3	5	JN	12/41	L
Fujita	Rear Adm	6	4	2	5	JN	12/41	C G L M R
Fukadome	Vice Adm	6	3	2	4	JN	12/41	C G L M R
Goto	Rear Adm	4	5	2	5	JN	12/41	C G L M R
H. Yamada	Rear Adm	5	4	2	4	JN	12/41	C G L M R
Hara	Rear Adm	4	5	2	5	JN	12/41	C G L M R
Hashimoto	Rear Adm	1	7	2	6	JN	12/41	C G L M R
Hayakawa	Rear Adm	3	6	1	6	JN	12/41	L M
Hirose	Rear Adm	4	5	5	5	JN	12/41	C G L M R
Hosogawa	Vice Adm	2	5	3	3	JN	12/41	C G L M R
Ijuin	Rear Adm	2	5	3	4	JN	1/42	C G L M R
Inouye	Vice Adm	6	5	1	4	JN	12/41	C G L M R
Izaki	Rear Adm	1	5	2	5	JN	3/42	C G L M R
Joshima	Rear Adm	5	5	2	5	JN	6/43	C G L M R
K. Suzuki	Vice Adm	2	3	6	7	JN	2/43	C G L M R
Kaijioka	Rear Adm	1	3	2	4	JN	12/41	C G L M R
Kakuta	Rear Adm	5	5	1	5	JN	12/41	C G L M R
Kobayashi	Vice Adm	3	6	3	4	JN	12/41	L M
Koga	Admiral	4	6	4	4	JN	7/42	C G L M R
Kondo	Vice Adm	3	6	2	5	JN	12/41	C G L M R
Koyanagi	Rear Adm	1	6	3	6	JN	12/41	C G L M R
Kubo	Rear Adm	1	5	4	4	JN	12/41	C G L M R
Kurita	Vice Adm	2	6	3	5	JN	1/42	C G L M R

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Kusaka	Vice Adm	5	4	2	4	JN	3/42	C G L M R
M. Kimura	Rear Adm	3	3	2	6	JN	12/42	C G L M R
Matsunaga	Admiral	7	2	2	7	JN	12/41	C G L M R
Mikawa	Vice Adm	2	8	2	6	JN	12/41	C G L M R
Mori	Rear Adm	1	6	1	5	JN	2/43	C G L M R
Nagumo	Vice Adm	7	4	1	5	JN	12/41	C G M R
Nishimura	Rear Adm	2	7	3	8	JN	12/41	C R
Obayashi	Rear Adm	6	4	1	5	JN	12/41	L M
Okochi	Vice Adm	4	4	4	5	JN	10/43	C G L M R
Omori	Rear Adm	2	4	3	4	JN	12/41	C G L M R
Ozawa	Vice Adm	6	5	4	5	JN	12/41	C G L M R
R. Tanaka	Rear Adm	2	8	6	9	JN	12/41	C G L M R
S. Ito	Vice Adm	2	6	2	7	JN	2/44	C G L M R
S. Kimura	Rear Adm	2	6	3	6	JN	5/42	C G L M R
S. Nishimura	Rear Adm	2	7	3	8	JN	12/41	G L M
Sakonju	Rear Adm	2	6	2	3	JN	10/43	C G L M R
Shibasaki	Rear Adm	2	2	7	6	JN	8/42	C G R
Shima	Rear Adm	3	4	3	4	JN	12/41	C G L M R
Shimada	Admiral	4	5	2	3	JN	12/41	C G L M R
Shiraishi	Rear Adm	1	5	2	4	JN	12/41	C G L M R
Tada	Rear Adm	5	3	1	4	JN	12/41	C G L M R
Takagi	Vice Adm	4	5	4	5	JN	12/41	C G L M R
Takahashi	Vice Adm	4	4	3	6	JN	12/41	C G L M R
Takama	Rear Adm	1	6	1	6	JN	1/42	C G L M R
Takasu	Vice Adm	1	6	1	6	JN	12/41	C G L M R
Takenaka	Rear Adm	6	3	3	4	JN	12/41	C G L M R
Toyoda	Admiral	4	5	2	7	JN	11/42	C G L M R
Tsukahara	Vice Adm	7	3	2	5	JN	12/41	C G L M R
Ugaki	Vice Adm	4	6	1	6	JN	12/41	G L M
Yamaguchi	Rear Adm	7	5	1	6	JN	12/41	C R
Yamamoto	Admiral	6	8	3	6	JN	12/41	C G R

• JAPANESE ARMY LEADERS

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Adachi	Lt Gen	3	1	7	6	JA	12/41	C G L M R
Anami	Lt Gen	3	1	7	6	JA	9/42	C G L M R
Harada	Lt Gen	4	2	6	5	JA	6/42	C G L M R
Homma	Lt Gen	7	4	4	5	JA	12/41	C G L M R
Honda	Lt Gen	4	1	6	5	JA	12/42	C G L M R
Horii	Maj Gen	4	3	7	8	JA	12/41	C G L M R
Hyakutake	General	3	3	6	5	JA	12/41	C G L M R
Iida	Lt Gen	4	1	5	7	JA	12/41	C G L M R
Imamura	Lt Gen	5	3	7	6	JA	12/41	C G L M R
Inoue	Lt Gen	3	2	8	7	JA	11/42	C G L M R
K. Kimura	Maj Gen	5	2	5	5	JA	1/43	C G L M R
K. Yamada	Lt Gen	2	3	6	6	JA	12/41	L
Kanda	Lt Gen	3	1	6	5	JA	5/42	C G L M R
Katamura	Lt Gen	2	1	5	7	JA	12/41	C G L M R
Kawabe	Lt Gen	4	1	7	4	JA	4/42	C G L M R
Kitagawa	Lt Gen	2	2	7	6	JA	12/41	L
Kitano	Lt Gen	2	2	7	6	JA	12/41	C G L M R
Kitazono	Maj Gen	4	1	6	5	JA	6/42	C G R
Kuribayashi	Lt Gen	3	1	8	6	JA	12/41	L
Maeda	Lt Gen	3	1	7	3	JA	12/41	C G L M R
Maruyama	Lt Gen	2	1	5	5	JA	12/41	C G R
Matsui	Lt Gen	2	1	7	8	JA	12/41	C G L M R
Mutaguchi	Lt Gen	4	1	6	8	JA	1/42	C G L M R
Okamura	General	4	1	6	6	JA	12/41	C G L M R
S. Suzuki	Lt Gen	3	2	7	7	JA	12/41	L M
Saito	Lt Gen	2	1	7	6	JA	10/42	C G M R
Sakaguchi	Maj Gen	4	1	5	5	JA	12/41	C G L M R
Sakai	Lt Gen	3	1	5	4	JA	12/41	C G L M R
Saki	Lt Gen	4	1	6	6	JA	12/41	C G L M R
Sakurai	Lt Gen	2	2	7	6	JA	12/41	C G L M R
Sato	Lt Gen	5	1	6	5	JA	6/43	C G L M R
Sugiyama	General	3	2	6	5	JA	12/41	C G L M R
T. Ito	Maj Gen	2	3	5	6	JA	12/41	C G L M R
T. Nishimura	Lt Gen	2	1	5	6	JA	12/41	C G L M R
Takashima	Lt Gen	2	1	6	5	JA	7/42	C G M R
Tanabe	Lt Gen	3	2	5	7	JA	4/42	C G L M R
Teramoto	Lt Gen	7	1	4	5	JA	12/41	C G L M R

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Terauchi	General	2	2	5	6	JA	12/41	C G L M R
Teshima	Lt Gen	3	2	6	6	JA	4/44	C G L M R
Tsuchibashi	Lt Gen	4	2	6	6	JA	12/41	C G L M R
Ushijima	Lt Gen	3	1	8	6	JA	12/41	M
Watanabe	Lt Gen	3	1	6	5	JA	11/42	C G M R
Yamashita	Lt Gen	5	4	8	9	JA	12/41	C G L M R
Yokoyama	Lt Gen	3	1	7	7	JA	11/42	C G L M R

• ALLIED NAVAL LEADERS

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
A. Burke	Captain	2	8	1	9	USN	9/43	C G L M R
A.E. Smith	Rear Adm	2	6	1	7	USN	4/42	C G L M
Ainsworth	Rear Adm	1	6	1	7	USN	12/42	C G L M R
Barbey	Rear Adm	2	3	7	6	USN	12/42	C G L M R
Berkey	Rear Adm	2	5	1	6	USN	12/41	L M
Blandy	Rear Adm	2	5	5	5	USN	2/44	C G L M R
Bogan	Rear Adm	6	4	1	4	USN	3/44	C G L M R
Brown	Vice Adm	3	4	1	3	USN	12/41	R
C. Pownall	Rear Adm	5	4	2	4	USN	6/43	C G R
Callaghan	Rear Adm	2	6	1	8	USN	8/42	C G R
Conolly	Rear Adm	1	4	5	5	USN	10/43	C G L M R
Crace	Rear Adm	2	5	1	5	AUS	12/41	C G L M R
Crutchley	Rear Adm	1	4	2	4	AUS	12/41	C G L M R
Davison	Rear Adm	6	4	1	6	USN	7/43	C G L M R
Denfield	Rear Adm	2	6	2	6	USN	12/41	L M
Deyo	Adm	2	5	3	6	USN	3/42	L M
Doorman	Rear Adm	1	6	1	8	DUT	12/41	C R
Durgin	Rear Adm	6	3	2	4	USN	5/44	C G L M R
F.S. Low	Rear Adm	3	4	3	6	USN	3/42	L M
Fetchteler	Read Adm	2	3	6	4	USN	6/43	C G L M
Fitch	Rear Adm	6	3	2	5	USN	12/41	C G R
Fletcher	Rear Adm	5	4	2	3	USN	12/41	C G L M R
Fraser	Admiral	6	6	1	5	BRIT	7/44	C G L M R
G.B. Davis	Rear Adm	2	5	1	5	USN	7/43	C G L M R
Gardner	Rear Adm	6	4	1	5	USN	8/42	L M
Ghormley	Vice Adm	2	4	3	2	USN	4/42	C G R
Giffen	Rear Adm	2	3	1	4	USN	4/43	C G R

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Glassford	Vice Adm	2	4	1	5	USN	12/41	C R
Hall	Rear Adm	2	4	5	5	USN	12/41	L
H. Hill	Rear Adm	3	4	6	5	USN	9/43	C G L M R
Halsey	Vice Adm	7	7	3	9	USN	12/41	C G L M R
Harrill	Rear Adm	5	3	1	2	USN	6/44	C G L M R
Hart	Admiral	3	5	2	5	USN	12/41	R
Helfrich	Vice Adm	2	5	2	4	DUT	12/41	R
Hoover	Rear Adm	6	3	1	5	USN	9/43	C G L M R
J. Clark	Rear Adm	6	4	1	7	USN	10/43	C G L M R
J.C. Jones	Rear Adm	3	7	1	6	USN	5/42	L M
Joy	Rear Adm	2	5	2	7	USN	12/41	L M
Kiland	Rear Adm	2	2	5	5	USN	12/41	L M
Kimmel	Admiral	3	4	2	6	USN	12/41	R
Kinkaid	Rear Adm	5	6	4	6	USN	1/42	C G L M R
Layton	Vice Adm	3	4	1	4	BRIT	12/41	C G L M R
Leary	Vice Adm	4	5	1	3	USN	12/41	C G R
Lee	Rear Adm	3	8	1	7	USN	7/42	C G L M R
McCain	Rear Adm	7	2	2	5	USN	1/42	C G L M R
McCormick	Rear Adm	2	6	1	4	USN	9/42	G L M
McMorris	Rear Adm	2	6	2	3	USN	10/42	C G R
Merrill	Rear Adm	2	7	1	6	USN	12/42	C G L M R
Mitscher	Rear Adm	8	5	2	6	USN	8/42	C G L M R
Montgomery	Rear Adm	7	3	2	5	USN	10/42	C G L M R
Mountbatten	Admiral	5	7	5	6	BRIT	6/43	C G L M R
Nimitz	Admiral	5	8	5	6	USN	12/41	C G L M R
Noble	Rear Adm	2	4	5	4	USN	4/42	L M
Noyes	Rear Adm	5	3	1	4	USN	5/42	C G R
Oldendorf	Rear Adm	1	7	3	6	USN	12/43	C G L M R
Palliser	Rear Adm	4	3	1	4	BRIT	12/41	C G L M R
Phillips	Vice Adm	2	5	1	6	BRIT	12/41	R
Purnell	Rear Adm	3	4	2	4	USN	12/41	R
Pye	Vice Adm	2	5	1	3	USN	12/41	C G R
Radford	Rear Adm	6	3	1	5	USN	8/43	C G L M R
Ragsdale	Rear Adm	6	3	2	5	USN	9/43	C G L M R
Rawlings	Vice Adm	6	5	1	5	BRIT	8/44	C G L M R
Reeves	Rear Adm	6	5	1	5	USN	6/43	C G L M R
Riggs	Rear Adm	2	6	1	7	USN	12/41	L M

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Royal	Rear Adm	2	3	5	5	USN	8/43	C G L M
Ruddock	Rear Adm	2	5	1	6	USN	12/41	L M
Scott	Rear Adm	2	7	1	6	USN	4/42	C G R
Shalfroth	Rear Adm	2	5	1	5	USN	12/41	C G L M
Sherman	Rear Adm	8	4	1	6	USN	10/42	C G L M R
Somerville	Vice Adm	4	6	2	5	BRIT	4/42	C G L M R
Sprague	Rear Adm	7	4	2	4	USN	4/44	C G L M R
Spruance	Rear Adm	7	6	2	6	USN	12/41	C G L M R
Struble	Rear Adm	2	4	7	6	USN	8/43	C G L M
Stump	Rear Adm	6	4	1	5	USN	3/44	C G L M R
Theobald	Rear Adm	2	6	1	4	USN	12/41	C G R
Tisdale	Rear Adm	1	5	1	5	USN	8/42	C G R
Turner	Rear Adm	4	3	8	5	USN	6/42	C G L M R
Vian	Vice Adm	7	4	1	5	BRIT	8/44	C G L M R
W. Purnell	Rear Adm	3	4	2	4	USN	12/41	C
Weyler	Rear Adm	2	5	4	6	USN	12/41	L M
Wilkinson	Rear Adm	2	5	6	4	USN	7/42	C G L M R
Wiltse	Rear Adm	3	6	2	6	USN	12/41	G L M
Wright	Rear Adm	1	3	1	5	USN	7/42	C G R

• ALLIED ARMY LEADERS

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Barrowclough	Maj Gen	2	1	5	5	AUS	12/41	C G L M R
Bennett	Maj Gen	3	2	4	4	AUS	12/41	C G L M R
Blamey	General	3	1	5	5	AUS	12/41	C G L M R
Brereton	Maj Gen	6	1	3	4	USA	12/41	C R
Brett	Lt Gen	6	1	4	5	USA	2/42	C G L M R
Bruce	Maj Gen	3	2	6	5	USA	12/41	L M
Brush	Maj Gen	1	1	5	5	USA	12/41	C G L M
Buckner	Lt Gen	3	2	5	5	USA	12/41	C G L M R
Butler	Brig Gen	5	1	4	5	USA	12/41	C G L M R
Chennault	Brig Gen	9	1	4	8	USA	2/42	C G L M R
Chg Kai-chek	General	1	1	2	1	CHIN	12/41	C G L M R
Christison	Maj Gen	4	1	4	5	BRIT	12/41	C G L M R
Corlett	Maj Gen	4	2	6	5	USA	5/43	C G L M R
Eichelberger	Lt Gen	3	2	8	6	USA	12/41	C G L M R
Fuller	Maj Gen	3	2	5	5	USA	12/41	C G L M
Geiger	Maj Gen	7	1	7	7	USMC	4/42	C G L M R
Gill	Maj Gen	2	2	5	6	BRIT	7/43	C G L M
Griswold	Maj Gen	2	1	6	6	USA	1/43	C G L M R
H. Pownall	Lt Gen	3	2	5	5	BRIT	12/41	C G L M R
H.M. Smith	Maj Gen	3	1	7	8	USMC	10/42	C G L M R
Hale	Maj Gen	7	1	3	6	USA	5/43	C G L M R
Harmon	Maj Gen	3	1	6	6	USA	9/42	C G L M R
Heath	Lt Gen	2	1	3	4	BRIT	12/41	R
Hodge	Maj Gen	3	1	7	5	USA	4/43	C G L M R
Hutton	Lt Gen	3	1	4	4	BRIT	12/41	C G R
J.C. Smith	Maj Gen	2	1	6	5	USMC	12/42	C G L M R
Kenney	Maj Gen	8	1	3	7	USA	7/42	C G L M R
Krueger	Lt Gen	4	1	6	5	USA	12/41	C G L M R
Lavarack	Lt Gen	2	1	6	6	AUS	12/41	C G L M
LeMay	Maj Gen	8	1	2	9	USA	4/44	C G L M R
MacArthur	General	4	2	6	7	USA	12/41	C G L M R
Merritt	Brig Gen	6	1	4	5	USMC	12/41	C G L M R
Messervy	Lt Gen	3	2	6	6	BRIT	4/43	C G L M R
Parker	Brig Gen	2	1	4	4	USA	12/41	R
Patch	Maj Gen	2	1	7	5	USA	2/43	C G L M R
Peirse	General	6	1	4	4	BRIT	12/41	C G L M R

NAME	RANK	AIR	NAV	LAND	AGGR	NAT	AVAIL	SCEN
Percival	Lt Gen	2	1	3	3	BRIT	12/41	R
Persons	Maj Gen	2	1	6	5	USA	12/41	L M
Poorten	Lt Gen	2	1	5	5	DUT	12/41	R
R.C. Smith	Maj Gen	4	1	6	5	USA	10/42	C G L M R
Rupertus	Maj Gen	2	1	7	6	USMC	8/42	C G L M R
Schmidt	Maj Gen	3	1	6	6	USMC	6/43	C G L M R
Scoones	Maj Gen	3	2	6	5	BRIT	1/42	C L M
Sharp	Brig Gen	3	1	4	4	USA	12/41	R
Short	General	2	1	3	2	USA	12/41	R
Sibert	Maj Gen	3	2	6	6	USA	6/43	C G L M
Slim	Lt Gen	5	1	8	6	BRIT	4/42	C G L M R
Stillwell	Maj Gen	4	1	6	6	USA	12/41	C G L M R
Stratemeyer	Maj Gen	6	2	4	6	USA	7/43	C G L M R
Sturdee	Maj Gen	3	1	4	5	BRIT	12/41	C G L M R
Symes	Maj Gen	3	1	5	5	BRIT	8/42	C G L M
Vandegrift	Maj Gen	3	1	7	7	USMC	2/42	C G L M R
Wainwright	Maj Gen	2	2	5	4	USA	12/41	R
Watson	Maj Gen	2	1	5	6	USMC	8/43	C G L M R
Wavell	General	3	2	7	6	BRIT	1/42	C G L M R
Wheeler	Lt Gen	4	1	6	6	USA	2/43	C G L M
Wingate	Brig Gen	3	1	8	9	BRIT	3/43	C G L M R
Woods	Brig Gen	6	1	4	6	USMC	6/42	C G L M R

SHIP TABLES

The Japanese and Allied lists of ships on December 7, 1941 are shown below. The tables list the ship's name, type, class, the nationality, and the date the ship arrives in the game. Note: In the name column where there appears a number enclosed in parentheses, the number represents the amount of ship units of that type that will arrive that month. As the war progresses, the ships may receive anti-aircraft weapons, secondary armament, and torpedo modifications.

• *JAPANESE SHIPS*

NAME	TYPE	CLASS	NAT	AVAIL
Akagi	CV	Akagi	JN	12/41
Hiryu	CV	Hiryu	JN	12/41
Kaga	CV	Kaga	JN	12/41
Shokaku	CV	Shokaku	JN	12/41
Soryu	CV	Soryu	JN	12/41
Zuikaku	CV	Shokaku	JN	12/41
Junyo	CV	Junyo	JN	5/42
Hiyo	CV	Junyo	JN	7/42
Taiho	CV	Taiho	JN	1/44
Amagi	CV	Unryu	JN	8/44
Unryu	CV	Unryu	JN	8/44
Katsuragi	CV	Unryu	JN	10/44
Shinano	CV	Shinano	JN	12/44
Hosho	CVL	Hosho	JN	12/41
Ryujo	CVL	Ryujo	JN	12/41
Zuiho	CVL	Zuiho	JN	12/41
Shoho	CVL	Zuiho	JN	1/42
Ryuho	CVL	Ryuho	JN	11/42
Taiyo	CVE	Taiyo	JN	12/41
Unyo	CVE	Taiyo	JN	5/42
Chuyo	CVE	Taiyo	JN	11/42
Kaiyo	CVE	Kaiyo	JN	10/43
Shinyo	CVE	Shinyo	JN	11/43
Fuso	BB	Fuso	JN	12/41
Haruna	BB	Kongo	JN	12/41

NAME	TYPE	CLASS	NAT	AVAIL
Hiei	BB	Kongo	JN	12/41
Hyuga	BB	Fuso	JN	12/41
Ise	BB	Fuso	JN	12/41
Kirishima	BB	Kongo	JN	12/41
Kongo	BB	Kongo	JN	12/41
Mutsu	BB	Nagato	JN	12/41
Nagato	BB	Nagato	JN	12/41
Yamashiro	BB	Fuso	JN	12/41
Yamato	BB	Yamato	JN	12/41
Musashi	BB	Yamato	JN	8/42
Aoba	CA	Aoba	JN	12/41
Ashigara	CA	Myoko	JN	12/41
Atago	CA	Takao	JN	12/41
Chikuma	CA	Tone	JN	12/41
Chokai	CA	Takao	JN	12/41
Furataka	CA	Aoba	JN	12/41
Haguro	CA	Myoko	JN	12/41
Kako	CA	Aoba	JN	12/41
Kinugasa	CA	Aoba	JN	12/41
Kumano	CA	Mogami	JN	12/41
Maya	CA	Takao	JN	12/41
Mikuma	CA	Mogami	JN	12/41
Mogami	CA	Mogami	JN	12/41
Myoko	CA	Myoko	JN	12/41
Nachi	CA	Myoko	JN	12/41
Suzuya	CA	Mogami	JN	12/41
Takao	CA	Takao	JN	12/41
Tone	CA	Tone	JN	12/41
Abukuma	CL	Nagara	JN	12/41
Isuzu	CL	Nagara	JN	12/41
Jintsu	CL	Sendai	JN	12/41
Kashii	CL	Katori	JN	12/41
Kashima	CL	Katori	JN	12/41
Katori	CL	Katori	JN	12/41
Kinu	CL	Nagara	JN	12/41

NAME	TYPE	CLASS	NAT	AVAIL
Kiso	CL	Kuma	JN	12/41
Kitikami	CL	Kitikami	JN	12/41
Kuma	CL	Kuma	JN	12/41
Nagara	CL	Nagara	JN	12/41
Naka	CL	Sendai	JN	12/41
Natori	CL	Nagara	JN	12/41
Oi	CL	Kitikami	JN	12/41
Sendai	CL	Sendai	JN	12/41
Tama	CL	Kuma	JN	12/41
Tatsuta	CL	Tenryu	JN	12/41
Tenryu	CL	Tenryu	JN	12/41
Yubari	CL	Yubari	JN	12/41
Yura	CL	Nagara	JN	12/41
Agano	CL	Agano	JN	10/42
Oyodo	CL	Oyodo	JN	3/43
Noshiro	CL	Agano	JN	5/43
Yahagi	CL	Agano	JN	11/43
Sakawa	CL	Agano	JN	9/44
Chitose	CS	Nisshin	JN	12/41
Chiyoda	CS	Nisshin	JN	12/41
Kamikawa	CS	Kamikawa	JN	12/41
Kimikawa	CS	Kamikawa	JN	12/41
Mizuho	CS	Nisshin	JN	12/41
Nisshin	CS	Nisshin	JN	12/41
(6x)	DD	Fubuki	JN	12/41
(5x)	DD	Kagero	JN	12/41
x	DD	Yugumo	JN	12/41
x	DD	Yugumo	JN	12/41
x	DD	Akatsuki	JN	12/41
x	DD	Asashio	JN	12/41
x	DD	Hatsuharu	JN	12/41
x	DD	Hatsuharu	JN	12/41
x	DD	Asashio	JN	12/41
x	DD	Asashio	JN	12/41
(3x)	DD	Shiratsuyu	JN	12/41

NAME	TYPE	CLASS	NAT	AVAIL
(5x)	DD	Kamikaze	JN	12/41
x	DD	Yugumo	JN	3/42
x	DD	Yugumo	JN	4/42
x	DD	Akitsuki	JN	7/42
x	DD	Akitsuki	JN	12/42
x	DD	Yugumo	JN	12/42
x	DD	Yugumo	JN	1/43
x	DD	Akitsuki	JN	3/43
x	DD	Shimakaze	JN	4/43
x	DD	Yugumo	JN	6/43
x	DD	Yugumo	JN	9/43
x	DD	Yugumo	JN	11/43
x	DD	Yugumo	JN	1/44
x	DD	Akitsuki	JN	2/44
x	DD	Akitsuki	JN	9/44
x	DD	Akitsuki	JN	12/44
x	DE	Matsu	JN	4/44
x	DE	Matsu	JN	6/44
x	DE	Matsu	JN	7/44
x	DE	Matsu	JN	9/44
x	DE	Matsu	JN	11/44
x	DE	Matsu	JN	12/44
x	DE	Matsu	JN	12/44
x	DE	Matsu	JN	2/45
(9x)	PC	Torpedo Boat	JN	12/41
(19x)	PC	Sub Chaser	JN	12/41
(4x)	APD	Minekaze	JN	12/41
(2x)	APD	Mutsuki	JN	12/41
(3x)	APD	Wakatake	JN	12/41
(5x)	AO	Fleet Oiler	JN	12/41
(11x)	AP	Large	JN	12/41
(17x)	AP	Medium	JN	12/41

NAME	TYPE	CLASS	NAT	AVAIL
(22x)	AP	Small	JN	12/41
(6x)	MCS	10000 Ton	JN	12/41
(17x)	MCS	6000 Ton	JN	12/41
(35x)	MCS	3000 Ton	JN	12/41
(4x)	TK	12000 Ton	JN	12/41
(29x)	TK	8000 Ton	JN	12/41
(9x)	SS	I-176	JN	12/41
(2x)	SS	RO	JN	12/41
x	SS	I-176	JN	5/42
x	SS	RO	JN	5/42
x	SS	I-176	JN	12/42
x	SS	RO	JN	12/42
x	SS	I-176	JN	4/43
x	SS	RO	JN	4/43
x	SS	I-176	JN	11/43
x	SS	RO	JN	11/43
x	SS	RO	JN	4/44
x	SS	I-400	JN	10/44

• *ALLIED SHIPS*

NAME	TYPE	CLASS	NAT	AVAIL
Enterprise	CV	Yorktown	USN	12/41
Lexington	CV	Lexington	USN	12/41
Saratoga	CV	Lexington	USN	12/41
Yorktown	CV	Yorktown	USN	12/41
Hornet	CV	Yorktown	USN	3/42
Wasp	CV	Wasp	USN	6/42
Essex	CV	Essex	USN	4/43
Bunker Hill	CV	Essex	USN	6/43
Intrepid	CV	Essex	USN	11/43
Franklin	CV	Essex	USN	3/44
Hancock	CV	Essex	USN	5/44
Ticonderoga	CV	Essex	USN	6/44
Bennington	CV	Essex	USN	10/44
Randolph	CV	Essex	USN	10/44
Shangri-La	CV	Essex	USN	11/44

NAME	TYPE	CLASS	NAT	AVAIL
Bon Hom.Ric.	CV	Essex	USN	12/44
Antietam	CV	Essex	USN	7/45
Indomitable	CV	Indomitable	BRIT	12/41
Formidable	CV	Illustrious	BRIT	2/42
Illustrious	CV	Illustrious	BRIT	4/42
Victorius	CV	Illustrious	BRIT	1/43
Indefatigable	CV	Implacable	BRIT	7/44
Implacable	CV	Implacable	BRIT	2/45
Belleau Wood	CVL	Independence	USN	5/43
Independence	CVL	Independence	USN	5/43
Princeton	CVL	Independence	USN	6/43
Cowpens	CVL	Independence	USN	7/43
Monterey	CVL	Independence	USN	9/43
Cabot	CVL	Independence	USN	10/43
Langley	CVL	Independence	USN	10/43
Bataan	CVL	Independence	USN	12/43
San Jacinto	CVL	Independence	USN	1/44
Hermes	CVL	Hermes	BRIT	12/41
Colossus	CVL	Colossus	BRIT	12/44
Venerable	CVL	Colossus	BRIT	2/45
Vengeance	CVL	Colossus	BRIT	2/45
Glory	CVL	Colossus	BRIT	3/45
x	CVE	Bogue	USN	9/42
x	CVE	Sangamon	USN	1/43
x	CVE	Bogue	USN	5/43
x	CVE	Casablanca	USN	7/43
x	CVE	Casablanca	USN	9/43
x	CVE	Casablanca	USN	11/43
x	CVE	Casablanca	USN	12/43
x	CVE	Casablanca	USN	12/43
x	CVE	Casablanca	USN	1/44
x	CVE	Casablanca	USN	2/44
x	CVE	Casablanca	USN	2/44

NAME	TYPE	CLASS	NAT	AVAIL
x	CVE	Casablanca	USN	3/44
x	CVE	Casablanca	USN	4/44
x	CVE	Casablanca	USN	5/44
x	CVE	Casablanca	USN	5/44
x	CVE	Casablanca	USN	8/44
x	CVE	Casablanca	USN	9/44
x	CVE	Sangamon	USN	11/44
x	CVE	Commence.Bay	USN	12/44
x	CVE	Commence.Bay	USN	2/45
x	CVE	Bogue	USN	3/45
x	CVE	Attacker	BRIT	8/43
x	CVE	Ruler	BRIT	12/43
x	CVE	Ruler	BRIT	10/44
x	CVE	Campania	BRIT	11/44
x	CVE	Attacker	BRIT	11/44
x	CVE	Ruler	BRIT	12/44
x	CVE	Attacker	BRIT	12/44
x	CVE	Ruler	BRIT	1/45
x	CVE	Attacker	BRIT	2/45
x	CVE	Ruler	BRIT	3/45
x	CVE	Ruler	BRIT	4/45
Arizona	BB	Pennsylvania	USN	12/41
California	BB	Tennessee	USN	12/41
Maryland	BB	Colorado	USN	12/41
Nevada	BB	Nevada	USN	12/41
Oklahoma	BB	Nevada	USN	12/41
Pennsylvania	BB	Pennsylvania	USN	12/41
Tennessee	BB	Tennessee	USN	12/41
W.Virginia	BB	Colorado	USN	12/41
Idaho	BB	Tennessee	USN	3/42
N.Carolina	BB	North Carolina	USN	5/42
Colorado	BB	Colorado	USN	3/42
New Mexico	BB	Tennessee	USN	3/42
South Dakota	BB	South Dakota	USN	8/42
Washington	BB	North Carolina	USN	8/42

NAME	TYPE	CLASS	NAT	AVAIL
Mississippi	BB	Tennessee	USN	3/42
Indiana	BB	South Dakota	USN	10/42
Massachusetts	BB	South Dakota	USN	1/43
Alabama	BB	Alabama	USN	7/43
Iowa	BB	Iowa	USN	11/43
New Jersey	BB	Iowa	USN	11/43
Wisconsin	BB	Iowa	USN	8/44
Missouri	BB	Iowa	USN	9/44
Prin of Wales	BB	King George V	BRIT	12/41
R.Sovereign	BB	Ramilles	BRIT	12/41
Ramilles	BB	Ramilles	BRIT	12/41
Resolution	BB	Ramilles	BRIT	12/41
Revenge	BB	Ramilles	BRIT	12/41
Warspite	BB	Warspite	BRIT	2/42
Valiant	BB	Warspite	BRIT	6/42
Q.Elizabeth	BB	Warspite	BRIT	11/43
Richelieu	BB	Richelieu	BRIT	1/44
Howe	BB	King George V	BRIT	4/44
King George V	BB	King George V	BRIT	7/44
Nelson	BB	Nelson	BRIT	12/44
Anson	BB	King George V	BRIT	2/45
Duke of York	BB	King George V	BRIT	3/45
Alaska	BC	Alaska	USN	10/44
Guam	BC	Alaska	USN	11/44
Repulse	BC	Renown	BRIT	12/41
Renown	BC	Renown	BRIT	11/43
Astoria	CA	New Orleans	USN	12/41
Chester	CA	Northampton	USN	12/41
Chicago	CA	Northampton	USN	12/41
Houston	CA	Northampton	USN	12/41
Indianapolis	CA	Indianapolis	USN	12/41
Louisville	CA	Northampton	USN	12/41
Minneapolis	CA	New Orleans	USN	12/41

NAME	TYPE	CLASS	NAT	AVAIL
New Orleans	CA	New Orleans	USN	12/41
Northampton	CA	Northampton	USN	12/41
Pensacola	CA	Pensacola	USN	12/41
Portland	CA	Indianapolis	USN	12/41
Salt Lake Cty	CA	Pensacola	USN	12/41
San Francisco	CA	New Orleans	USN	12/41
Vincennes	CA	New Orleans	USN	3/42
Quincy	CA	New Orleans	USN	5/42
Wichita	CA	Indianapolis	USN	12/42
Baltimore	CA	Baltimore	USN	6/43
Boston	CA	Baltimore	USN	10/43
Canberra II	CA	Baltimore	USN	12/43
Tuscaloosa	CA	New Orleans	USN	10/44
Pittsburg	CA	Baltimore	USN	11/44
St.Paul	CA	Baltimore	USN	2/45
Cornwall	CA	Kent	BRIT	12/41
Dorsetshire	CA	Norfolk	BRIT	12/41
Exeter	CA	Exeter	BRIT	12/41
Devonshire	CA	London	BRIT	3/42
Suffolk	CA	Kent	BRIT	4/43
Sussex	CA	London	BRIT	7/43
Cumberland	CA	Kent	BRIT	4/44
London	CA	London	BRIT	7/44
Norfolk	CA	Norfolk	BRIT	2/45
Australia	CA	Kent	AUS	12/41
Canberra	CA	Kent	AUS	12/41
Shropshire	CA	London	AUS	7/43
Boise	CL	Brooklyn	USN	12/41
Detroit	CL	Omaha	USN	12/41
Helena	CL	Brooklyn	USN	12/41
Honolulu	CL	Brooklyn	USN	12/41
Marblehead	CL	Omaha	USN	12/41
Phoenix	CL	Brooklyn	USN	12/41
Raleigh	CL	Omaha	USN	12/41
St.Louis	CL	Brooklyn	USN	12/41
Nashville	CL	Brooklyn	USN	3/42

NAME	TYPE	CLASS	NAT	AVAIL
Columbia	CL	Cleveland	USN	11/42
Cleveland	CL	Cleveland	USN	12/42
Denver	CL	Cleveland	USN	12/42
Montpelier	CL	Cleveland	USN	12/42
Richmond	CL	Omaha	USN	12/42
Santa Fe	CL	Cleveland	USN	1/43
Mobile	CL	Cleveland	USN	5/43
Birmingham	CL	Cleveland	USN	7/43
Biloxi	CL	Cleveland	USN	10/43
Concord	CL	Omaha	USN	12/43
Miami	CL	Cleveland	USN	2/44
Trenton	CL	Omaha	USN	4/44
Pasadena	CL	Cleveland	USN	8/44
Wilkes-Barre	CL	Cleveland	USN	8/44
Vicksburg	CL	Cleveland	USN	10/44
Springfield	CL	Cleveland	USN	11/44
Duluth	CL	Cleveland	USN	12/44
Topeka	CL	Cleveland	USN	12/44
Dayton	CL	Cleveland	USN	1/45
Oklahoma City	CL	Cleveland	USN	1/45
Amsterdam	CL	Cleveland	USN	2/45
Achilles	CL	Leander	NZ	12/41
Leander	CL	Leander	NZ	12/41
Gambia	CL	Fiji	NZ	6/44
De Ruyter	CL	De Ruyter	DUT	12/41
Java	CL	Java	DUT	12/41
Tromp	CL	Tromp	DUT	12/41
Heemskerck	CL	Capetown	DUT	2/42
Caledon	CL	Caledon	BRIT	12/41
Danae	CL	Danae	BRIT	12/41
Dragon	CL	Danae	BRIT	12/41
Durban	CL	Danae	BRIT	12/41
Enterprise	CL	Enterprise	BRIT	12/41
Glasgow	CL	Southampton	BRIT	12/41

NAME	TYPE	CLASS	NAT	AVAIL
Mauritius	CL	Fiji	BRIT	12/41
Birmingham	CL	Southampton	BRIT	3/42
Newcastle	CL	Southampton	BRIT	3/42
Emerald	CL	Enterprise	BRIT	7/42
Dauntless	CL	Danae	BRIT	8/42
Caradoc	CL	Caledon	BRIT	9/42
Gambia	CL	Fiji	BRIT	11/42
Kenya	CL	Fiji	BRIT	5/43
Newfoundland	CL	Fiji	BRIT	12/43
Ceylon	CL	Fiji	BRIT	3/44
Swiftsure	CL	Minotaur	BRIT	6/44
Nigeria	CL	Fiji	BRIT	8/44
Uganda	CL	Uganda	BRIT	8/44
Bermuda	CL	Fiji	BRIT	12/44
Ontario	CL	Minotaur	BRIT	1/45
Belfast	CL	Belfast	BRIT	2/45
Jamaica	CL	Fiji	BRIT	3/45
Adelaide	CL	Adelaide	AUS	12/41
Hobart	CL	Perth	AUS	12/41
Perth	CL	Perth	AUS	12/41
Atlanta	CLAA	Atlanta	USN	3/42
San Diego	CLAA	Atlanta	USN	5/42
San Juan	CLAA	Atlanta	USN	6/42
Juneau	CLAA	Atlanta	USN	8/42
Oakland	CLAA	Oakland	USN	9/43
Reno	CLAA	Oakland	USN	1/44
Flint	CLAA	Oakland	USN	9/44
Tucson	CLAA	Oakland	USN	1/45
Capetown	CLAA	Capetown	BRIT	12/41
Ceres	CLAA	Capetown	BRIT	12/41
Colombo	CLAA	Capetown	BRIT	12/41
Argonaut	CLAA	Dido	BRIT	5/44
Black Prince	CLAA	Dido	BRIT	6/44
Euryalus	CLAA	Dido	BRIT	7/44

NAME	TYPE	CLASS	NAT	AVAIL
Phoebe	CLAA	Dido	BRIT	8/44
Royalist	CLAA	Dido	BRIT	12/44
Cleopatra	CLAA	Dido	BRIT	1/45
Curtiss	CS	Tangier	USN	12/41
Pocomoke	CS	Tangier	USN	12/41
Tangier	CS	Tangier	USN	12/41
(3x)	DD	Benham	USN	12/41
(6x)	DD	Clemson	USN	12/41
(2x)	DD	Farragut	USN	12/41
x	DD	Gridley	USN	12/41
(4x)	DD	Mahan	USN	12/41
(4x)	DD	Porter	USN	12/41
(2x)	DD	Sims	USN	12/41
x	DD	Sims	USN	1/42
x	DD	Bristol	USN	3/42
x	DD	Livermore	USN	3/42
x	DD	Clemson	USN	4/42
x	DD	Livermore	USN	5/42
x	DD	Benham	USN	6/42
x	DD	Mahan	USN	7/42
x	DD	Bristol	USN	8/42
x	DD	Fletcher	USN	8/42
x	DD	Livermore	USN	8/42
x	DD	Bristol	USN	10/42
x	DD	Fletcher	USN	10/42
(3x)	DD	Fletcher	USN	12/42
x	DD	Fletcher	USN	1/43
x	DD	Fletcher	USN	3/43
(2x)	DD	Fletcher	USN	4/43
(2x)	DD	Fletcher	USN	5/43
(2x)	DD	Fletcher	USN	6/43
x	DD	Fletcher	USN	7/43
(3x)	DD	Fletcher	USN	8/43
x	DD	Fletcher	USN	9/43
(2x)	DD	Fletcher	USN	9/43

NAME	TYPE	CLASS	NAT	AVAIL
(5x)	DD	Fletcher	USN	10/43
x	DD	Bristol	USN	11/43
(2x)	DD	Fletcher	USN	11/43
(5x)	DD	Fletcher	USN	12/43
(2x)	DD	Gleaves	USN	12/43
x	DD	Fletcher	USN	1/44
(3x)	DD	Fletcher	USN	2/44
x	DD	Fletcher	USN	3/44
(2x)	DD	Fletcher	USN	4/44
x	DD	Fletcher	USN	5/44
x	DD	Sampson	USN	5/44
x	DD	Fletcher	USN	6/44
x	DD	Sampson	USN	6/44
(2x)	DD	Sampson	USN	7/44
x	DD	Fletcher	USN	8/44
x	DD	Sampson	USN	8/44
x	DD	Sampson	USN	9/44
x	DD	Fletcher	USN	10/44
x	DD	Sampson	USN	10/44
x	DD	Livermore	USN	11/44
(2x)	DD	Sampson	USN	11/44
x	DD	Fletcher	USN	12/44
x	DD	Livermore	USN	12/44
x	DD	Benham	USN	1/45
x	DD	Livermore	USN	1/45
x	DD	Sampson	USN	1/45
x	DD	Bristol	USN	2/45
x	DD	Sumner	USN	2/45
x	DD	Bristol	USN	3/45
x	DD	Bristol	USN	3/45
x	DD	Sumner	USN	3/45
x	DD	Livermore	USN	3/45
x	DD	Sampson	USN	3/45
x	DD	Fletcher	USN	4/45
x	DD	Livermore	USN	4/45
x	DD	Sampson	USN	7/45
(2x)	DD	Evartsen	DUT	12/41

NAME	TYPE	CLASS	NAT	AVAIL
x	DD	Sweers	DUT	2/42
x	DD	Napier	DUT	6/42
x	DD	Electra	BRIT	12/41
x	DD	Fantastique	BRIT	12/41
x	DD	Intrepid	BRIT	12/41
x	DD	Paladin	BRIT	12/41
(2x)	DD	Stronghold	BRIT	12/41
x	DD	Comet	BRIT	1/42
x	DD	Napier	BRIT	1/42
x	DD	Greyhound	BRIT	2/42
x	DD	Napier	BRIT	7/42
x	DD	Quickmatch	BRIT	2/43
x	DD	Quickmatch	BRIT	6/43
(2x)	DD	Quickmatch	BRIT	10/43
x	DD	Paladin	BRIT	12/43
(2x)	DD	Ulster	BRIT	6/44
x	DD	Scorpion	BRIT	8/44
(2x)	DD	Wizard	BRIT	8/44
(2x)	DD	Ulster	BRIT	9/44
x	DD	Scorpion	BRIT	10/44
x	DD	Tribal	BRIT	10/44
(2x)	DD	Zephyr	BRIT	12/44
(2x)	DD	Battle	BRIT	3/45
x	DD	Cavalier	BRIT	3/45
x	DD	Stewart	AUS	12/41
(2x)	DD	Vampire	AUS	12/41
x	DD	Tribal	AUS	11/42
x	DD	Quickmatch	AUS	10/43
x	DE	Evartsen	USN	4/43
x	DE	Evartsen	USN	6/43
x	DE	Evartsen	USN	7/43
x	DE	Cannon	USN	8/43
x	DE	Evartsen	USN	8/43
x	DE	Evartsen	USN	9/43

NAME	TYPE	CLASS	NAT	AVAIL
x	DE	Evartsen	USN	10/43
(2x)	DE	Buckley	USN	11/43
x	DE	Evartsen	USN	11/43
(2x)	DE	Buckley	USN	12/43
x	DE	Cannon	USN	12/43
x	DE	Buckley	USN	1/44
x	DE	Evartsen	USN	1/44
x	DE	Buckley	USN	3/44
x	DE	Butler	USN	3/44
x	DE	Cannon	USN	3/44
x	DE	Butler	USN	4/44
x	DE	Butler	USN	5/44
x	DE	Evartsen	USN	5/44
x	DE	Butler	USN	6/44
x	DE	Butler	USN	7/44
x	DE	Buckley	USN	8/44
x	DE	Butler	USN	8/44
x	DE	Cannon	USN	8/44
(2x)	DE	Rudderow	USN	8/44
x	DE	Buckley	USN	9/44
x	DE	Butler	USN	9/44
x	DE	Evartsen	USN	9/44
x	DE	Rudderow	USN	9/44
x	DE	Buckley	USN	10/44
x	DE	Butler	USN	10/44
x	DE	Rudderow	USN	10/44
x	DE	Butler	USN	11/44
(2x)	DE	Buckley	USN	12/44
x	DE	Buckley	USN	1/45
x	DE	Cannon	USN	2/45
x	DE	Cannon	USN	3/45
x	DE	Hunt II	BRIT	10/44
x	DE	Hunt III	BRIT	12/44
x	DE	Hunt IV	BRIT	3/45
(6x)	PC	PT	USN	12/41

NAME	TYPE	CLASS	NAT	AVAIL
(4x)	PC	MTB	BRIT	12/41
(2x)	APD	Manley	USN	12/41
x	APD	Manley	USN	10/42
x	APD	Manley	USN	11/42
x	APD	Manley	USN	1/43
x	APD	Manley	USN	3/43
x	APD	Rudderow	USN	5/44
x	APD	Rudderow	USN	9/44
x	APD	Rudderow	USN	10/44
x	APD	Rudderow	USN	11/44
(6x)	AO	Fleet Oiler	USN	12/41
x	AO	Fleet Oiler	BRIT	12/41
x	AO	Fleet Oiler	BRIT	10/44
(4x)	AP	Large	USN	12/41
(6x)	AP	Medium	USN	12/41
(6x)	AP	Small	USN	12/41
x	AP	Large	USN	1/42
x	AP	Medium	USN	1/42
(2x)	AP	Small	USN	1/42
x	AP	Large	BRIT	12/41
x	AP	Medium	BRIT	12/41
x	AP	Large	BRIT	10/44
x	AP	Medium	BRIT	10/44
x	AP	Small	BRIT	10/44
x	AP	Medium	BRIT	11/44
x	AP	Small	BRIT	11/44
x	LST	None	USN	4/43
x	LST	None	USN	11/43
x	LST	None	USN	3/44
x	LST	None	USN	9/44
x	LST	None	USN	10/44

NAME	TYPE	CLASS	NAT	AVAIL
x	LST	None	USN	2/45
x	LST	None	BRIT	10/44
(4x)	MCS	14000 Ton	USN	12/41
(37x)	MCS	8000 Ton	USN	12/41
x	MCS	8000 Ton	USN	12/42
x	MCS	8000 Ton	USN	11/43
x	MCS	14000 Ton	USN	4/44
(25x)	MCS	12000 Ton	BRIT	12/41
(14x)	MCS	8000 Ton	BRIT	12/41
(5x)	TK	13000 Ton	USN	12/41
x	TK	13000 Ton	USN	12/42
(2x)	TK	15000 Ton	BRIT	12/41
(6x)	SS	Gato	USN	12/41
(4x)	SS	"S"	USN	12/41
x	SS	Salmon	USN	12/41
x	SS	Shark	USN	12/41
x	SS	Gato	USN	5/42
x	SS	"S"	USN	5/42
x	SS	Gato	USN	12/42
x	SS	Gato	USN	4/43
x	SS	Gato	USN	11/43
x	SS	Gato	USN	3/44
x	SS	Gato	USN	10/44
(2x)	SS	K.XIV	DUT	12/41
x	SS	K.XIV	DUT	12/42
x	SS	"T"	BRIT	12/41
x	SS	"T"	BRIT	12/42
x	SS	"T"	BRIT	11/43
x	SS	"T"	BRIT	3/44
x	SS	"T"	BRIT	10/44

SHIP CLASS TABLES

The Japanese and Allied lists of ship classes are shown below. The tables list the ship class, ship type, speed, durability, armor rating, capacity, and weapons. Durability represents the level of damage the class of ship can sustain. The greater the durability, the harder it is to sink the ship. Armor is the level of defensive armor plating the ship is covered with. Capacity is the number of planes a carrier can carry or for transport type ships, the amount of supplies that they can transport.

• *JAPANESE SHIP CLASSES*

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Akagi	CV	31	108	40	72	6x8/50,
						12x4.7/45
						28xMG
Hiryu	CV	34	68	22	64	12x5/40,
						31x25mm
Junyo	CV	25	48	2	53	12x5/40,
						24x25mm
Kaga	CV	28	108	45	84	10x8/50,
						16x5/40,
						22x25mm
Shinano	CV	27	240	60	47	16x5/40,
						145x25mm,
						12x4.7 AA R
Shokaku	CV	34	100	30	84	16x5/40,
						42x25mm
Soryu	CV	34	64	15	63	12x5/40,
						28x25mm
Taiho	CV	33	116	35	84	12x3.9/65,
						71x25mm
Unryu	CV	32	70	16	64	12x5/40,
						89x25mm
Hosho	CVL	25	25	1	18	4x5.5/50,
						8x25mm,
						12xMG
Ryuho	CVL	26	54	4	31	8x5/40,
						38x25mm
Ryujo	CVL	29	32	2	37	8x5/40,
						4x25mm,
						24xMG
Zuiho	CVL	28	45	1	30	8x5/40,
						8x25mm
Kaiyo	CVE	24	30	1	24	8x5/40,
						24x25mm
Shinyo	CVE	22	39	1	33	8x5/40,
						30x25mm
Taiyo	CVE	21	36	1	27	8x5/40,
						8x25mm
Fuso	BB	25	120	93	0	12x14/45,
						14x6/50,
						8x5/50,
						16x25mm
Kongo	BB	30	105	70	0	8x14/45,
						14x6/50,
						8x5/50,
						16x25mm
Nagato	BB	25	130	103	0	8x16/45,
						18x5.5/50,
						8x5/50,
						20x25mm
Yamato	BB	27	213	160	0	9x18.1/45,
						12x6/60,
						12x5/50,
						24x25mm
Aoba	CA	33	31	26	0	6x8/50,
						4x4.7/45,
						8x25mm,
						8xType 93
Mogami	CA	34	41	26	0	10x8/50,
						8x5/40,
						8x25mm,
						12xType 93
Myoko	CA	33	44	43	0	10x8/50,
						8x5/40,
						8x25mm,
						16xType 93

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Takao	CA	34	43	43	0	10x8/50,
						8x5/40,
						8x25mm,
						16xType 93
Tone	CA	35	37	26	0	8x8/50,
						8x5/40,
						12x25mm,
						12xType 93
Agano	CL	35	22	6	9	6x6/60,
						4x3/60,
						32x25mm,
						8xType 93
Katori	CL	18	19	10	9	4x5.5/50,
						2x5/50,
						4x25mm,
						4xType 6
Kitikami	CL	33	19	10	0	4x5.5/50,
						2x3/60,
						6xMG,
						40xType 93
Kuma	CL	33	19	10	9	7x5.5/50,
						2x3/60,
						8xType 93
Nagara	CL	36	17	10	9	7x5.5/50,
						2x3/60,
						2xMG,
						8xType 93
Oyodo	CL	36	27	10	9	6x6/60,
						8x3.9/60,
						12x25mm
Sendai	CL	35	18	10	9	7x5.5/50,
						2x3/60,
						2xMG,
						8xType 93
Tenryu	CL	33	10	10	9	4x5.5/50,
						1x3/60,
						2xMG,
						6xType 6

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Yubari	CL	35	9	10	9	6x5.5/50,
						1x3/60,
						2xMG,
						4xType 93
Kamikawa	CS	18	20	0	12	2x6/60,
						2xMG
Nisshin	CS	28	36	0	20	6x5.5/50,
						12x25mm
Akatsuki	DD	38	7	0	9	6x5/50,
						2xMG,
						9xType 93
Akitsuki	DD	33	9	0	9	8x3.9/65,
						15x25mm,
						4xType 93
Asashio	DD	35	6	0	9	6x5/50,
						4x25mm,
						8xType 93
Fubuki	DD	34	7	0	9	6x5/50,
						2xMG,
						9xType 93
Hatsuharu	DD	33	6	0	9	5x5/50,
						2xMG,
						6xType 93
Kagero	DD	35	7	0	9	6x5/50,
						4x25mm,
						2xMG,
						8xType 93
Kamikaze	DD	36	4	0	9	4x4.7/45,
						10x25mm,
						4xType 6
Shimakaze	DD	39	8	0	9	6x5/50,
						4x25mm,
						15xType 93
Shiratsuyu	DD	34	5	0	9	5x5/50,
						4x25mm,
						2xMG,
						8xType 93
Yugumo	DD	35	7	0	9	6x5/50,
						4x25mm,
						8xType 93

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Matsu	DE	27	4	0	0	3x5/50,
						24x25mm,
						4xType 93
Sub Chaser	PC	21	1	0	0	2x40mm,
						2xMG
Torpedo Boat	PC	30	2	0	0	2x4.7/45,
						1xMG,
						3xType 6
Minekaze	APD	20	4	0	25	1x4.7/50,
						2xMG
Mutsuki	APD	33	4	0	9	4x4.7/50,
						10x25mm,
						6xType 93
Wakatake	APD	35	3	0	9	3x4.7/50,
						6x25mm
3000 Ton	MCS	15	10	0	50	None
6000 Ton	MCS	15	20	0	100	None
10000 Ton	MCS	10	30	0	200	None
8000 Ton	TK	15	20	0	100	None
12000 Ton	TK	10	35	0	200	None
I-176	SS	23	5	0	2	1x4.7/45,
						2x25mm,
						6xType 95
I-400	SS	19	7	0	5	1x5.5/50,
						10x25mm,
						8xType 95
RO	SS	14	3	0	2	2x25mm,
						4xType 6

• ALLIED SHIP CLASSES

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Essex	CV	33	108	30	91	12x5/38,
						32x40mm,
						46x20mm
Illustrious	CV	30	92	42	33	16x4.5/45,
						48x40mm
Implacable	CV	31	92	38	60	16x4.5/45,
						44x40mm
Indomitable	CV	30	92	38	45	16x4.5/45,
						48x40mm
Lexington	CV	33	126	35	90	8x8/55,
						12x5/25,
						8xMG
Wasp	CV	29	56	10	76	8x5/38,
						16x20mm,
						24xMG
Yorktown	CV	33	78	25	91	8x5/38,
						16x20mm,
						24xMG
Colossus	CVL	25	52	1	37	24x40mm
Hermes	CVL	25	36	1	12	6x5.5/50,
						3x4/50,
						18xMG
Independence	CVL	32	44	30	33	24x40mm,
						22x20mm
Attacker	CVE	18	20	1	20	2x4/50,
						8x40mm,
						20x20mm
Bogue	CVE	18	19	1	28	2x5/51,
						4x40mm,
						10x20mm
Campania	CVE	16	25	1	18	2x4/45,
						16x40mm,
						16x20mm
Casablanca	CVE	19	18	1	27	1x5/38,
						8x40mm,
						12x20mm

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Commence Bay	CVE	19	37	1	33	2x5/38,
						8x40mm,
						12x20mm
Ruler	CVE	18	23	1	24	2x5/38,
						16x40mm,
						30x20mm
Sangamon	CVE	18	21	1	31	2x5/51,
						8x40mm,
						12x20mm
Alabama	BB	28	116	123	0	9x16/45,
						20x5/38,
						12x40mm
Colorado	BB	21	108	120	0	8x16/45,
						12x5/51,
						8x5/25
Iowa	BB	33	150	140	0	9x16/50,
						20x5/38,
						80x40mm
King George V	BB	29	116	113	0	10x14/45,
						16x5.25/50,
						32x40mm
Nelson	BB	23	113	116	0	9x16/45,
						12x6/50,
						6x4.7/45
Nevada	BB	20	96	110	0	10x14/45,
						12x5/51,
						8x5/25
North Carolina	BB	28	116	123	0	9x16/45,
						20x5/38,
						16x40mm
Pennsylvania	BB	21	110	120	0	12x14/45,
						12x5/51,
						8x5/25
Ramilles	BB	22	97	93	0	8x15/42,
						12x6/50,
						8x4/45

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Richelieu	BB	30	116	130	0	8x15/42,
						9x6/53,
						12x3.9/60
South Dakota	BB	28	116	136	0	9x16/45,
						16x5/38,
						12x40mm
Tennessee	BB	21	108	120	0	12x14/50,
						12x5/51,
						8x5/25
Warspite	BB	25	102	93	0	8x15/42,
						8x6/50,
						8x4/50
Alaska	BC	33	91	86	0	9x12/50,
						12x5/38,
						56x40mm
Renown	BC	28	107	70	0	6x15/42,
						12x4/45,
						8x4/50
Baltimore	CA	33	44	53	0	9x8/55,
						12x5/38,
						48x40mm
Exeter	CA	32	27	20	0	6x8/50,
						8x4/45,
						16x40mm,
						.6xMk-IX
Indianapolis	CA	32	32	23	0	9x8/55,
						8x5/25,
						8xMG
Kent	CA	31	35	23	0	8x8/50,
						8x4/45,
						8x40mm
London	CA	31	32	23	0	8x8/50,
						8x4/45,
						16x40mm,
						8xMk-VII
New Orleans	CA	32	33	46	0	9x8/55,
						8x5/25,
						8xMG

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Norfolk	CA	32	33	23	0	8x8/50,
						8x4/45,
						16x40mm,
						8xMk-VII
Northampton	CA	32	30	23	0	9x8/55,
						8x5/25,
						8xMG
Pensacola	CA	32	30	23	0	10x8/55,
						8x5/25,
						8xMG
Adelaide	CL	24	17	16	0	8x6/50,
						3x4/45,
						12xMG
Belfast	CL	32	33	16	0	12x6/50,
						12x4/45,
						16x40mm,
						6xMk-IX
Brooklyn	CL	33	33	43	0	15x6/47,
						8x5/25,
						8xMG
Caledon	CL	29	13	16	0	5x6/50,
						6x3/60,
						11xMG,
						8xMk-IX
Cleveland	CL	33	33	43	0	12x6/47,
						12x5/38,
						28x40mm
Danae	CL	27	16	16	0	6x6/50,
						3x4/45,
						12xMG,
						12xMk-IX
De Ruyter	CL	32	21	13	0	7x6/50,
						10x40mm,
						16xMG
Enterprise	CL	33	25	16	0	7x6/50,
						5x4/45,
						9xMG,
						16xMk-IX

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Fiji	CL	32	27	26	0	12x6/50,
						8x4/45,
						8x40mm,
						6xMk-IX
Java	CL	31	22	16	0	10x6/50,
						8x40mm,
						10xMG
Leander	CL	33	24	20	0	8x6/50,
						4x4/45,
						8x40mm,
						8xMk-VII
Minotaur	CL	31	29	26	0	9x6/50,
						10x4/45,
						16x40mm,
						6xMk-IX
Omaha	CL	33	23	33	0	10x6/53,
						8x3/60,
						8xMG,
						6xMk-15
Perth	CL	32	23	20	0	8x6/50,
						4x4/45,
						8xMG,
						8xMk-VII
Southampton	CL	32	30	26	0	12x6/50,
						8x4/45,
						8x40mm,
						6xMk-IX
Tromp	CL	33	12	13	0	6x6/50,
						8x40mm,
						4xMG,
						6xMk-VII
Uganda	CL	33	29	26	0	12x6/50,
						8x4/45,
						8x40mm,
						6xMk-IX
Atlanta	CLAA	33	20	23	0	16x5/38,
						24x40mm,
						8x20mm,
						8xMk-15

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Capetown	CLAA	29	14	16	0	8x4/45,
						8x40mm,
						12xMG
Dido	CLAA	32	18	20	0	10x5.25/50,
						8x40mm,
						8xMG,
						6xMk-IX
Oakland	CLAA	33	20	23	0	12x5/38,
						32x40mm,
						8x20mm,
						8xMk-15
Tangier	CS	17	40	0	12	1x5/38,
						4x3/60,
						8x40mm
Battle	DD	35	8	3	0	4x4.5/45,
						1x4/45,
						20x40mm,
						8xMk-IX
Benham	DD	35	5	6	0	4x5/38,
						4xMG,
						16xMk-15
Bristol	DD	35	5	6	0	5x5/38,
						6xMG,
						10xMk-15
Cavalier	DD	36	6	3	0	4x4.5/45,
						4x40mm,
						4x20mm,
						8xMk-IX
Clemson	DD	35	4	6	0	4x5/51,
						1x3/60,
						2xMG,
						6xMk-15
Comet	DD	35	5	3	0	4x4.5/45,
						4x40mm,
						4x20mm,
						4xMk-IX

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Electra	DD	36	5	3	0	5x4.7/45,
						8xMG,
						8xMk-IX
Evartsen	DD	36	4	3	0	4x5/50,
						2x3/60,
						4xMG,
						6xMk-VII
Fantastique	DD	41	9	6	0	5x5.5/50,
						4x40mm,
						4x20mm,
						9xMk-VII
Farragut	DD	36	5	6	0	5x5/38,
						4xMG,
						8xMk-15
Fletcher	DD	38	7	6	0	5x5/38,
						4x40mm,
						4xMG,
						10xMk-15
Gleaves	DD	35	5	6	0	5x5/38,
						6xMG,
						10xMk-15
Greyhound	DD	36	4	3	0	4x4.7/45,
						8xMG,
						8xMk-IX
Gridley	DD	40	5	6	0	4x5/38,
						4xMG,
						16xMk-15
Intrepid	DD	36	5	3	0	4x4.7/45,
						8xMG,
						10xMk-IX
Mahan	DD	36	5	6	0	5x5/38,
						4xMG,
						12xMk-15
Napier	DD	36	6	3	0	6x4.7/45,
						4x40mm,
						2x20mm,
						10xMk-IX

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Paladin	DD	36	5	3	0	4x4.7/45,
						4x40mm,
						8x20mm,
						8xMk-IX
Porter	DD	37	6	6	0	8x5/38,
						8x40mm,
						2xMG,
						8xMk-15
Quickmatch	DD	36	6	3	0	4x4.7/45,
						4x40mm,
						8x20mm,
						8xMk-IX
Sampson	DD	36	7	6	0	8x5/38,
						8x40mm,
						2xMG,
						12xMk-15
Scorpion	DD	36	6	3	0	4x4.7/45,
						2x40mm,
						8x20mm,
						8xMk-IX
Sims	DD	37	5	6	0	5x5/38,
						4xMG,
						8xMk-15
Stewart	DD	36	5	3	0	5x4.7/45,
						4x40mm,
						8x20mm
Stronghold	DD	36	3	0	0	3x4/45,
						2x40mm,
						4x20mm,
						4xMk-IX
Sumner	DD	34	8	6	0	6x5/38,
						12x40mm,
						11x20mm,
						10xMk-15
Sweers	DD	37	4	3	0	5x5/50,
						4x40mm,
						4xMG,
						8xMk-VII

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Tribal	DD	36	6	3	0	8x4.7/45,
						4x40mm,
						8xMG,
						4xMk-IX
Ulster	DD	36	6	3	0	4x4.7/45,
						2x40mm,
						8x20mm,
						8xMk-IX
Vampire	DD	32	4	0	0	4x4/45,
						4x40mm,
						8x20mm,
						6xMk-IX
Wizard	DD	36	6	3	0	4x4.7/45,
						2x40mm,
						8x20mm,
						8xMk-IX
Zephyr	DD	36	6	3	0	4x4.5/45,
						4x40mm,
						4x20mm,
						8xMk-IX
Buckley	DE	23	5	0	0	3x3/60,
						4x40mm,
						2xMk-15
Butler	DE	21	4	0	0	3x3/60,
						2x40mm,
						3xMk-15
Cannon	DE	21	4	0	0	3x3/60,
						2x40mm,
						3xMk-15
Evartsen	DE	20	4	0	0	3x3/60,
						2x40mm
Hunt II	DE	25	3	0	0	6x4/45,
						4x40mm
Hunt III	DE	25	3	0	0	4x4/45,
						4x40mm,
						2xMk-IX
Hunt IV	DE	25	4	0	0	6x4/45,
						6x40mm,
						3xMk-IX

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Rudderow	DE	23	5	0	0	2x5/38,
						2x40mm,
						3xMk-15
MTB	PC	35	1	0	0	2xMG,
						2xMk-IX
PT	PC	40	1	0	0	2x40mm,
						2xMG,
						4xMk-15
Manley	APD	24	4	0	15	3x3/60,
						5x20mm
Rudderow	APD	22	4	1	20	2x5/38,
						4x40mm
8000 Ton	MCS	15	20	0	100	None
12000 Ton	MCS	10	35	0	200	None
14000 Ton	MCS	10	35	0	200	None
13000 Ton	TK	10	35	0	200	None
15000 Ton	TK	10	35	0	200	None
"S"	SS	14	3	0	2	1x4/50,
						2xMG,
						4xMk-14
"T"	SS	15	5	0	0	1x4/50,
						2xMG,
						10xMk-VII
Gato	SS	20	9	0	2	1x3/60,
						4xMG,
						10xMk-14
K.XIV	SS	17	3	0	0	1x3/60,
						2x40mm,
						8xMk-VII
Salmon	SS	21	8	0	2	1x3/60,
						4xMG,
						8xMk-14
Shark	SS	19	7	0	2	1x3/60,
						2xMG,
						6xMk-14

• GENERIC SHIPS

CLASS	TYPE	SP	DURAB	AMR	CAP	WPNS
Fleet Oiler	AO	15	35	0	200	None
Small	AP	16	10	0	50	None
Medium	AP	18	20	0	100	None
Large	AP	20	30	0	200	None

• JAPANESE AIRCRAFT BY AVAILABILITY DATE

NAME	TYPE	MVR	CAN	LOAD	RANGE	DURAB	COST	AVAIL
D3A Val	Dive-Bomber	11	2	8	3	10	4	12/41
A5M Claude	Fighter	19	2	1	2	7	2	12/41
A6M2 Zero	Fighter	22	8	1	6	7	3	12/41
Ki-27 Nate	Fighter	19	2	2	2	7	2	12/41
Ki-43-I Oscar	Fighter	21	4	1	2	7	3	12/41
Ki-45 Nick	Fighter-Bomber	17	7	11	4	36	4	12/41
Ki-46 Dinah	Patrol	17	1	0	5	15	4	12/41
H6K Mavis	Patrol	1	6	22	13	44	9	12/41
Ki-32 Mary	Tac-Bomber	11	4	10	3	19	3	12/41
Ki-51 Sonia	Tac-Bomber	12	4	4	2	24	3	12/41
Ki-48 Lily	Tac-Bomber	10	2	9	4	20	4	12/41
Ki-21 Sally	Tac-Bomber	9	6	22	5	38	6	12/41
Ki-49 Helen	Tac-Bomber	10	7	22	5	40	6	12/41
G3M Nell	Tac-Bomber	7	6	17	6	12	5	12/41
G4M Betty	Tac-Bomber	7	7	18	9	13	6	12/41
B5N Kate	Torp-Bomber	11	3	16	3	11	4	12/41
Ki-54 Hickory	Transport	9	0	12	3	18	5	12/41
Ki-57-II Topsy	Transport	10	0	15	6	20	6	5/42
J1N1 Irving	Fighter	18	16	0	4	38	5	10/42
Ki-43-II Oscar	Fighter-Bomber	22	4	10	3	14	3	10/42
H8K Emily	Patrol	1	16	44	16	66	9	12/42
Ki-44 Tojo	Fighter-Bomber	23	8	4	3	19	4	1/43
D4Y Judy	Dive-Bomber	13	3	11	3	12	5	2/43
Ki-61 Tony	Fighter	20	8	2	2	20	4	3/43
A6M5 Zero	Fighter-Bomber	23	11	3	4	18	3	8/43
J2M Jack	Fighter	20	16	0	3	22	4	9/43
B6N Jill	Torp-Bomber	12	1	16	4	13	5	9/43
Ki-67 Peggy	Tac-Bomber	14	10	18	6	43	6	1/44
N1K2 George	Fighter-Bomber	23	16	11	3	23	4	4/44
Ki-102 Randy	Fighter	21	16	0	3	34	5	5/44
Ki-84 Frank	Fighter-Bomber	22	12	11	3	21	4	5/44
P1Y Frances	Tac-Bomber	10	4	22	8	39	6	11/44
B7A Grace	Torp-Bomber	17	4	18	5	25	5	1/45
A6M8 Zeke	Fighter-Bomber	24	11	3	4	15	3	5/45

• JAPANESE AIRCRAFT BY TYPE

NAME	TYPE	MVR	CAN	LOAD	RANGE	DURAB	COST	AVAIL
D3A Val	Dive-Bomber	11	2	8	3	10	4	12/41
D4Y Judy	Dive-Bomber	13	3	11	3	12	5	2/43
A5M Claude	Fighter	19	2	1	2	7	2	12/41
A6M2 Zero	Fighter	22	8	1	6	7	3	12/41
Ki-27 Nate	Fighter	19	2	2	2	7	2	12/41
Ki-43-I Oscar	Fighter	21	4	1	2	7	3	12/41
J1N1 Irving	Fighter	18	16	0	4	38	5	10/42
Ki-61 Tony	Fighter	20	8	2	2	20	4	3/43
J2M Jack	Fighter	20	16	0	3	22	4	9/43
Ki-102 Randy	Fighter	21	16	0	3	34	5	5/44
Ki-45 Nick	Fighter-Bomber	17	7	11	4	36	4	12/41
Ki-43-II Oscar	Fighter-Bomber	22	4	10	3	14	3	10/42
Ki-44 Tojo	Fighter-Bomber	23	8	4	3	19	4	1/43
A6M5 Zero	Fighter-Bomber	23	11	3	4	18	3	8/43
N1K2 George	Fighter-Bomber	23	16	11	3	23	4	4/44
Ki-84 Frank	Fighter-Bomber	22	12	11	3	21	4	5/44
A6M8 Zeke	Fighter-Bomber	24	11	3	4	15	3	5/45
Ki-46 Dinah	Patrol	17	1	0	5	15	4	12/41
H6K Mavis	Patrol	1	6	22	13	44	9	12/41
H8K Emily	Patrol	1	16	44	16	66	9	12/42
Ki-32 Mary	Tac-Bomber	11	4	10	3	19	3	12/41
Ki-51 Sonia	Tac-Bomber	12	4	4	2	24	3	12/41
Ki-48 Lily	Tac-Bomber	10	2	9	4	20	4	12/41
Ki-21 Sally	Tac-Bomber	9	6	22	5	38	6	12/41
Ki-49 Helen	Tac-Bomber	10	7	22	5	40	6	12/41
G3M Nell	Tac-Bomber	7	6	17	6	12	5	12/41
G4M Betty	Tac-Bomber	7	7	18	9	13	6	12/41
Ki-67 Peggy	Tac-Bomber	14	10	18	6	43	6	1/44
P1Y Frances	Tac-Bomber	10	4	22	8	39	6	11/44
B5N Kate	Torp-Bomber	11	3	16	3	11	4	12/41
B6N Jill	Torp-Bomber	12	1	16	4	13	5	9/43
B7A Grace	Torp-Bomber	17	4	18	5	25	5	1/45
Ki-54 Hickory	Transport	9	0	12	3	18	5	12/41
Ki-57-II Topsy	Transport	10	0	15	6	20	6	5/42

• ALLIED AIRCRAFT BY AVAILABILITY DATE

NAME	TYPE	MVR	CAN	LOAD	RANGE	DURAB	COST	AVAIL
SB2U Vindactor	Dive-Bomber	8	2	12	3	16	2	12/41
SBD Dauntless	Dive-Bomber	13	4	12	3	22	4	12/41
F2A Buffalo	Fighter	17	8	0	2	19	3	12/41
F4F Wildcat	Fighter	19	12	5	2	20	3	12/41
Gladiator	Fighter	17	4	0	2	17	2	12/41
Fulmar	Fighter	18	8	5	2	20	3	12/41
P-36A Mohawk	Fighter	18	3	0	2	9	3	12/41
P-39 Aircobra	Fighter	17	13	0	2	25	3	12/41
P-40 Warhawk	Fighter	19	8	10	3	24	3	12/41
Hurricane II	Fighter	19	8	0	2	20	3	12/41
CA-3 Wirraway	Fighter-Bomber	12	6	5	2	20	2	12/41
Blenheim IF	Fighter-Bomber	10	5	8	4	34	6	12/41
B-17 Fortress	Heavy-Bomber	1	11	60	8	80	7	12/41
Hudson	Patrol	10	2	7	5	32	5	12/41
PBY Catalina	Patrol	2	1	40	9	45	7	12/41
Blenheim	Tac-Bomber	7	1	10	4	34	5	12/41
B-18A Bolo	Tac-Bomber	2	2	65	3	30	4	12/41
A-20 Havoc	Tac-Bomber	10	12	20	4	36	5	12/41
B-26 Marauder	Tac-Bomber	9	8	48	4	45	5	12/41
TBD Devastator	Torp-Bomber	8	2	10	2	18	4	12/41
Swordfish	Torp-Bomber	6	1	16	2	18	2	12/41
Vildebeast	Torp-Bomber	3	2	22	2	9	2	12/41
C-47 Dakota	Transport	11	0	40	4	20	5	12/41
Martin 139	Tac-Bomber	2	2	22	3	16	3	12/41
Beaufort	Tac-Bomber	7	3	20	4	26	5	1/42
B-25 Mitchell	Tac-Bomber	4	6	52	4	43	5	1/42
Wellington	Tac-Bomber	6	2	45	6	45	6	2/42
Albacore	Torp-Bomber	6	2	16	3	20	4	5/42
TBF Avenger	Torp-Bomber	11	4	20	3	23	4	6/42
Spitfire VIII	Fighter	24	12	0	2	27	3	6/42
B-24 Liberator	Heavy-Bomber	1	9	90	7	60	7	6/42
Sunderland	Patrol	1	4	49	10	62	9	6/42
BeauFighter	Tac-Bomber	13	16	21	4	39	5	7/42
Vengeance	Dive-Bomber	10	4	20	5	20	4	10/42

NAME	TYPE	MVR	CAN	LOAD	RANGE	DURAB	COST	AVAIL
P-38F Lghtning	Fighter	20	12	20	4	37	4	10/42
Seafire	Fighter	23	12	0	2	24	3	2/43
FM2 Wildcat	Fighter-Bomber	20	12	6	2	24	2	4/43
F4U Corsair	Fighter-Bomber	22	12	20	3	26	3	4/43
Barracuda	Torp-Bomber	10	2	17	2	30	4	4/43
F6F Hellcat	Fighter-Bomber	23	12	20	3	27	3	6/43
P-47 Thundrblt	Fighter-Bomber	23	16	25	4	39	3	8/43
SB2C HellDiver	Dive-Bomber	10	6	13	3	22	4	9/43
P-38J Lghtning	Fighter-Bomber	22	12	25	6	37	4	9/43
B-29 Sprfrtrss	Heavy-Bomber	1	16	150	10	75	9	9/43
TBM Avenger	Torp-Bomber	11	4	20	3	26	4	9/43
CA-12 Boomerng	Fighter-Bomber	21	16	5	3	30	3	11/43
Firefly	Fighter-Bomber	19	16	4	3	25	4	12/43
Mosquito VI	Fighter-Bomber	18	20	20	4	37	4	12/43
P-61 Blck Wdw	Fighter-Bomber	20	16	64	7	44	7	5/44
P-51 Mustang	Fighter	24	12	20	8	33	3	6/44
A-26 Invader	Tac-Bomber	13	16	60	4	64	6	11/44

• ALLIED AIRCRAFT BY TYPE

NAME	TYPE	MVR	CAN	LOAD	RANGE	DURAB	COST	AVAIL
SB2U Vindactor	Dive-Bomber	8	2	12	3	16	2	12/41
SBD Dauntless	Dive-Bomber	13	4	12	3	22	4	12/41
Vengeance	Dive-Bomber	10	4	20	5	20	4	10/42
SB2C HellDiver	Dive-Bomber	10	6	13	3	22	4	9/43
F2A Buffalo	Fighter	17	8	0	2	19	3	12/41
F4F Wildcat	Fighter	19	12	5	2	20	3	12/41
Gladiator	Fighter	17	4	0	2	17	2	12/41
Fulmar	Fighter	18	8	5	2	20	3	12/41
P-36A Mohawk	Fighter	18	3	0	2	9	3	12/41
P-39 Aircobra	Fighter	17	13	0	2	25	3	12/41
P-40 Warhawk	Fighter	19	8	10	3	24	3	12/41
Hurricane II	Fighter	19	8	0	2	20	3	12/41
Spitfire VIII	Fighter	24	12	0	2	27	3	6/42
P-38F Lghtning	Fighter	20	12	20	4	37	4	10/42
Seafire	Fighter	23	12	0	2	24	3	2/43
P-51 Mustang	Fighter	24	12	20	8	33	3	6/44

NAME	TYPE	MVR	CAN	LOAD	RANGE	DURAB	COST	AVAIL
CA-3 Wirraway	Fighter-Bomber	12	6	5	2	20	2	12/41
Blenheim IF	Fighter-Bomber	10	5	8	4	34	6	12/41
FM2 Wildcat	Fighter-Bomber	20	12	6	2	24	2	4/43
F4U Corsair	Fighter-Bomber	22	12	20	3	26	3	4/43
F6F Hellcat	Fighter-Bomber	23	12	20	3	27	3	6/43
P-47 Thundrblt	Fighter-Bomber	23	16	25	4	39	3	8/43
P-38J Lghtning	Fighter-Bomber	22	12	25	6	37	4	9/43
CA-12 Boomerng	Fighter-Bomber	21	16	5	3	30	3	11/43
Firefly	Fighter-Bomber	19	16	4	3	25	4	12/43
Mosquito VI	Fighter-Bomber	18	20	20	4	37	4	12/43
P-61 Blck Wdw	Fighter-Bomber	20	16	64	7	44	7	5/44
B-17 Fortress	Heavy-Bomber	1	11	60	8	80	7	12/41
B-24 Liberator	Heavy-Bomber	1	9	90	9	60	7	6/42
B-29 Sprfrtrss	Heavy-Bomber	1	16	150	10	75	9	9/43
Hudson	Patrol	10	2	7	5	32	5	12/41
PBY Catalina	Patrol	2	1	40	9	45	7	12/41
Sunderland	Patrol	1	4	49	10	62	9	6/42
Blenheim	Tac-Bomber	7	1	10	4	34	5	12/41
B-18A Bolo	Tac-Bomber	2	2	65	3	30	4	12/41
A-20 Havoc	Tac-Bomber	10	12	20	4	36	5	12/41
B-26 Marauder	Tac-Bomber	9	8	48	4	45	5	12/41
Beaufort	Tac-Bomber	7	3	20	4	26	5	1/42
B-25 Mitchell	Tac-Bomber	4	6	52	4	43	5	1/42
Wellington	Tac-Bomber	6	2	45	6	45	6	2/42
BeauFighter	Tac-Bomber	13	16	21	4	39	5	7/42
A-26 Invader	Tac-Bomber	13	16	60	4	64	6	11/44
TBD Devastator	Torp-Bomber	8	2	10	2	18	4	12/41
Swordfish	Torp-Bomber	6	1	16	2	18	2	12/41
Vildebeast	Torp-Bomber	3	2	22	2	9	2	12/41
Albacore	Torp-Bomber	6	2	16	3	20	4	5/42
TBF Avenger	Torp-Bomber	11	4	20	3	23	4	6/42
Barracuda	Torp-Bomber	10	2	17	2	30	4	4/43
TBM Avenger	Torp-Bomber	11	4	20	3	26	4	9/43
C-47 Dakota	Transport	11	0	40	4	20	5	12/41
Martin 139	Tac-Bomber	2	2	22	3	10	3	12/41

WEAPON DATA TABLE

The weapons used by land, air, and sea units for both sides are shown below. The table lists the weapon name, type, warhead rating, flak rating, range of the weapon, and the accuracy rating. Warhead rating is the amount of damage and penetration the weapon can inflict. Flak is the effectiveness rating of the weapon against enemy aircraft. Range is the weapon's surface combat range for ship-to-ship fire. Accuracy is the weapon's rating to determine if a hit has been made.

• WEAPON DATA

NAME	TYPE	WAR	FLAK	RANGE	ACC
18.1/45	Gun	160	0	42	30
16/50	Gun	120	0	42	40
16/45	Gun	120	0	40	35
15/42	Gun	95	0	38	30
14/50	Gun	70	0	36	35
14/45	Gun	70	0	34	30
12/50	Gun	44	0	36	40
8/55	Gun	13	0	32	45
8/50	Gun	13	0	31	40
6/60	Gun	5	0	30	45
6/53	Gun	5	0	26	40
6/50	Gun	5	0	20	45
6/47	Gun	5	0	26	40
6/45	Gun	5	0	18	45
5.5/50	Gun	4	0	19	55
5/51	Gun	3	0	13	55
4/50	Gun	2	0	14	60
5.25/50	DP-Gun	4	7	22	50
5/50	DP-Gun	3	6	20	55
5/40	DP-Gun	3	5	16	60
5/38	DP-Gun	3	8	17	55
5/25	DP-Gun	3	6	14	50
4.7/50	DP-Gun	2	5	18	55
4.7/45	DP-Gun	2	4	16	55
4.5/45	DP-Gun	2	7	17	50
4/45	DP-Gun	2	5	16	65
3.9/65	DP-Gun	2	7	20	60
3.9/60	DP-Gun	2	7	18	60
3/60	DP-Gun	1	5	15	60
4.7 AA Rckt	Flak	1	7	10	1
45mm	Flak	0	3	5	25
40mm	Flak	0	5	5	20
25mm	Flak	0	2	5	20
20mm	Flak	0	2	4	20
MG	Flak	0	1	2	15
Type 93	Torpedo	108	0	35	21
Type 6	Torpedo	44	0	11	16
Mk-15	Torpedo	82	0	15	9
Mk-VII	Torpedo	74	0	16	16
Mk-IX	Torpedo	81	0	15	17
Mk-14	Torpedo	64	0	9	10
Type 95.m1	Torpedo	89	0	13	23
Type 95.m2	Torpedo	121	0	8	22
Mk-13 Torpedo	Air-Torpedo	60	0	6	22
Mk.XII Torpedo	Air-Torpedo	39	0	2	34
Type 91 Torpedo	Air-Torpedo	45	0	2	42
2000 lb. Bomb	Bomb	95	0	0	50
1000 lb. Bomb	Bomb	47	0	0	60
500 lb. Bomb	Bomb	24	0	0	60
250 lb. Bomb	Bomb	12	0	0	60
250 kg. Bomb	Bomb	25	0	0	60
120 kg. Bomb	Bomb	12	0	0	60
MXY7 Ohko	Bomb	130	0	40	80
Kamikaze	Bomb	0	0	0	90

BASE DATA

The bases on the map are listed below showing the base name, terrain level at the base, oil production value, resource production value, port size, and airfield size. Following this table are two other tables showing the highest oil and resource bases on the map.

• BASE DATA

NAME	TER	OIL	RES	PORT	AIRFIELD
Adak I.	7	0	0	1	1
Adelaide	5	0	3	4	4
Admiralty I.	7	0	0	4	1
Aitape	9	0	0	1	1
Amami I.	7	0	0	1	2
Amchitka	7	0	0	1	1
Amoy	6	0	0	2	4
Anchorage	7	5	0	4	4
Andaman I.	6	0	0	1	1
Anjiang	7	0	0	0	2
Ankang	7	0	0	0	2
Aomori	6	5	0	8	9
Attu I.	7	0	0	1	1
Auckland	5	0	0	4	4
Bali	5	0	0	1	1
Balikpapan	7	15	0	4	2
Bangka I.	8	2	10	2	1
Bangkok	7	0	6	5	4
Bataan	6	0	0	3	2
Batan I.	2	0	0	1	1
Batavia	4	5	0	5	4
Biak	7	0	0	2	1
Bikini I.	1	0	0	3	1
Bonin I.	2	0	0	1	2
Bougainville	9	0	0	1	1
Brisbane	5	0	0	6	6
Broome	5	0	18	4	6
Buka I.	7	0	0	1	2
Buna	9	0	0	1	2
Cagayan	5	0	0	2	4
Calcutta	5	0	0	6	6
Canton	6	0	0	0	4
Canton I.	1	0	0	2	2
Cape Gloucester	9	0	0	1	1
Cebu	6	0	0	2	3
Ceram	7	0	5	2	1
Changsha	7	0	0	0	3
Charter Towers	5	0	0	0	4
Chengtu	8	0	0	0	4
Chilung	5	5	0	4	6
Christmas I.	1	0	0	3	2
Chungking	7	0	0	0	4
Clark Field	4	0	0	0	6
Cloncurry	6	0	0	0	4
Columbo	5	0	0	6	5
Cooktown	7	0	0	2	6
Dacca	5	0	18	4	4
Darwin	6	0	0	5	6
Davao	7	0	3	4	1
Dimapur	6	0	0	0	4
Dutch Harbor	6	0	0	3	4
Eastern U.S.	7	80	80	9	9
Efate	2	0	0	1	1
Emirau I.	2	0	0	1	1
Eniwetok I.	1	0	0	4	2
Espirtu Santo	6	0	0	3	3
Etorofo Jima	6	0	0	1	1
Flores	7	0	0	1	1
Gasmata	9	0	0	1	1
Green I.	2	0	0	2	1

NAME	TER	OIL	RES	PORT	AIRFIELD
Guadalcanal	9	0	0	2	1
Guam	7	0	0	2	1
Hainan	4	0	0	5	5
Haiphong	6	0	0	6	4
Halmahera	7	0	0	2	1
Hankow	5	0	0	0	4
Harbin	4	0	0	0	4
Hawaii	7	0	0	3	3
Hengyang	7	0	0	0	2
Hobart	5	0	0	4	4
Hollandia	8	0	0	4	2
Hong Kong	4	0	0	6	5
Hughes	8	0	5	0	1
Imphal	8	0	0	0	5
Iwo Jima	2	0	0	2	4
Jaluit I.	1	0	0	3	1
Jitra	7	0	3	1	2
Johnston I.	1	0	0	4	4
Juneau	7	0	0	4	4
Kaifeng	5	0	0	0	4
Kauai	8	0	0	2	3
Kavieng	8	0	0	3	2
Khota Bharu	7	0	3	1	2
Kiriwina I.	2	0	0	1	1
Kiska	7	0	0	1	1
Kitakyushu	6	0	0	5	9
Kuala Lumpur	8	0	12	1	2
Kuantan	8	0	0	1	2
Kunming	8	0	0	0	4
Kwajalein I.	1	0	0	4	4
Kweilen	7	0	0	0	2
Kweiyang	8	0	0	0	3
Lae	8	0	0	4	2
Lagaspi	6	0	0	1	2
Lanchow	8	0	0	0	2

NAME	TER	OIL	RES	PORT	AIRFIELD
Lashio	9	0	0	0	2
Leyte	6	0	0	2	3
Lingayen	4	0	3	3	2
Los Angeles	5	40	0	8	9
Macassar	6	0	0	2	2
Madang	8	0	0	2	2
Makin I.	1	0	0	3	1
Mandalay	9	0	0	0	4
Manila	5	0	0	6	4
Manokwari	9	2	0	1	1
Marcus I.	1	0	0	1	2
Maui	7	0	0	3	3
Medan	8	4	0	2	3
Melbourne	5	15	0	6	6
Menando	6	0	0	2	2
Midway	1	0	0	2	3
Milne Bay	9	0	0	3	1
Mindoro	6	0	0	2	3
Miri	7	15	0	3	2
Morotai	6	0	0	1	1
Mukden	5	0	0	0	4
Nagoya	6	0	0	8	9
Nanchang	7	0	0	0	4
Nanking	5	0	0	0	4
Nanning	5	0	0	0	2
Nassau	1	0	0	2	2
Nauru I.	1	0	1	1	1
Ndeni	2	0	0	1	1
Negros	6	0	0	2	3
New Georgia	9	0	0	1	1
Noemfoar	7	0	0	1	1
Noumea	6	0	0	3	4
Oahu	6	0	0	8	8
Okinawa	6	0	0	4	6
Osaka	6	0	0	7	9

NAME	TER	OIL	RES	PORT	AIRFIELD
Owens Stanley M	9	0	0	0	1
Palau	2	0	0	4	4
Palawan	6	0	0	2	3
Palembang	6	45	0	4	4
Palmyra	1	0	0	3	2
Panay	8	0	0	2	2
Paramushiro	5	0	0	2	3
Parepare	7	0	2	3	2
Peking	5	0	0	0	6
Perth	5	0	12	4	6
Phnom Penh	7	0	0	0	5
Ponape	1	0	0	2	1
Port Arthur	7	5	30	5	4
Port Moresby	8	0	0	4	3
Pusan	6	0	0	2	4
Rabaul	7	0	0	6	3
Rangoon	8	5	0	4	4
Rennell I.	9	0	0	1	1
Rockhampton	7	0	0	2	6
Rossel I.	2	0	0	1	1
Saigon	7	0	0	6	9
Saipan	6	0	0	2	4
Sakhalin I.	7	10	0	4	2
Sakishima I.	6	0	0	1	2
Samar	8	0	0	1	1
San Diego	5	0	0	9	9
San Francisco	5	0	0	9	9
Sapporo	6	5	1	6	5
Sarawak	5	5	0	2	2
Sarmi	9	0	0	1	1
Sasebo	5	0	0	9	9
Seattle	7	0	0	8	6
Seoul	6	0	0	3	5
Shanghai	5	0	110	6	6
Shimushiri Jima	5	0	0	1	1

NAME	TER	OIL	RES	PORT	AIRFIELD
Shortland	2	0	0	2	1
Singapore	5	0	2	8	6
Singora	6	0	0	2	2
Soembawa I.	7	0	0	1	2
Soerabaja	4	5	0	5	4
Sorong	8	2	0	2	2
Suva	6	0	0	4	4
Sydney	5	0	0	6	6
Takamatsu	6	0	0	6	9
Takao	5	0	0	5	8
Tarakan	6	5	0	5	2
Tarawa	1	0	0	3	1
Tawi Tawi	7	0	0	4	2
Teloekbetoeng	5	0	0	4	3
Tenimbar I.	8	0	0	1	1
Tientsin	4	0	0	2	4
Timor	7	0	0	1	2
Tinian	3	0	0	1	2
Tjilatjap	5	0	0	4	4
Tokyo	5	0	1	9	9
Tonga	1	0	0	3	1
Townsville	7	0	0	2	4
Trincomalee	7	0	0	4	4
Truk	2	0	0	6	6
Tsingtao	6	0	0	2	4
Ulithi	1	0	0	4	2
Waigen I.	6	0	0	1	1
Wake I.	1	0	0	2	2
Wenchow	4	0	0	2	4
Wewak	9	0	0	2	2
Woleai I.	1	0	0	2	1
Wotje I.	1	0	0	3	1
Yap	1	0	0	2	2
Zhanjiang	7	0	2	2	4

• HIGHEST OIL BASES TABLE

NAME	OIL
Eastern U.S.	80
Palembang	45
Los Angeles	40
Balikpapan	15
Melbourne	15
Miri	15
Sakhalin I.	10
Anchorage	5
Aomori	5
Batavia	5
Chilung	5
Port Arthur	5
Rangoon	5
Sapporo	5
Sarawak	5
Soerabaja	5
Tarakan	5
Medan	4
Bangka I.	2
Manokwari	2
Sorong	2

• HIGHEST RESOURCES TABLE

NAME	RES
Shanghai	110
Eastern U.S.	80
Port Arthur	30
Broome	18
Dacca	18
Kuala Lumpur	12
Perth	12
Bangka I.	10
Bangkok	6
Ceram	5
Hughes	5
Adelaide	3
Davao	3
Jitra	3
Khota Bharu	3
Lingayen	3
Parepare	2
Singapore	2
Zhanjiang	2
Sapporo	1
Nauru I.	1
Tokyo	1

CREDITS

Game Design and Programming
GARY GRIGSBY

Producer
GEORGE MACDONALD

Game Development
JOEL BILLINGS, DAVID LANDREY, AND JAMES YOUNG

Rules
GARY GRIGSBY AND DAVID LANDREY

Historical Research
MICHAEL MUSSER, ALLYN NEVITT, AND GUNTER MEYER

Rule Book Editing
SSI Tech Writing

Playtesters
ROBERT ARNOLD, JIM BARBIN, WILLIAM BARNARD, ROBERT BRUGGER, PAT CHARLTON, FORREST ELAM, ROBERT GUERSKE, BOB HARE, TOM HAZLEWOOD, MARK HORAN, TOM HUGHES, RICHARD IVES, BRUCE KOHRN, JEFF LACKEY, GUNTER MEYER, ED MORRIS, ED MORRISON, KEN MORROW, MICHAEL MUSSER, LES ODGERS, WILLIAM QUIRK, STEVE RAEFORD, VINCENT REEVERS, KIM RITCH, ROBERT RUPPERT, JOHN SCHULER, JOHN SHELLEY, MICHAEL SILEN, BILL SULLIVAN, JIM WIRTH

Art, Graphic Design, and Desktop Publishing
LOUIS SAEKOW DESIGN: DAVID BOUDREAU, LEEDARA SEARS, ROB GOODMAN, MARK D. PULE

Printing
BANTA ISG

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