

## NOTES

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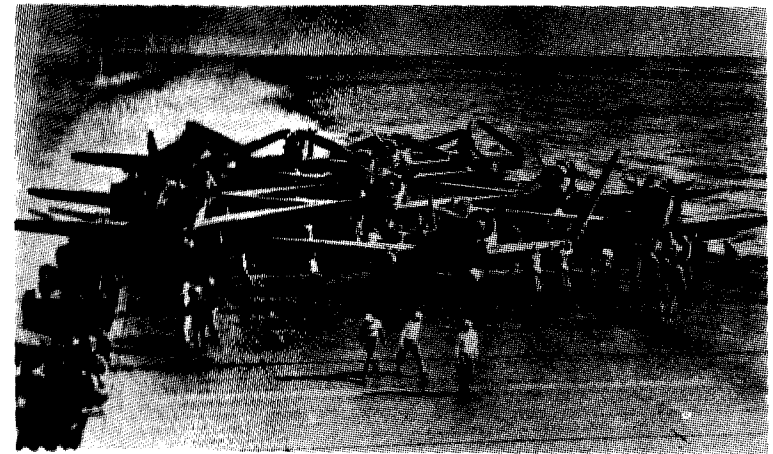
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# MIDWAY

## THE BATTLE THAT DOOMED JAPAN

### Second Edition



**GENERAL QUARTERS SOFTWARE**

## HISTORICAL NOTE

To many historians, the battle of Midway (June 4-6, 1942) marked the turning point of the war in the Pacific. Up to that point, the Japanese had achieved a nearly unblemished string of military victories. In the spring of 1942, Japanese naval command was faced with a major decision regarding the deployment of its carrier forces. Basically, there were three options: a southern thrust (toward Australia), an eastern thrust (toward Pearl Harbor) or a western thrust (toward India). In May they sent a modest carrier force to help secure Port Moresby located in southern New Guinea, which resulted in the indecisive battle of the Coral Sea. As a result of a number of factors, the naval command elected to move eastward and capture Midway Island. (The Doolittle air raid on Japan earlier in the same year represented a major factor contributing to the Japanese decision.) The task of organizing and executing this policy was given to Admiral Isoroku Yamamoto, Commander in Chief of the Combined Fleet. Yamamoto assembled a battle fleet of nearly 140 warships and supply ships. He entrusted command of the First Carrier Strike Force to Vice Admiral Chuichiagumo (the victor at Pearl Harbor). Nagumo's task was to destroy Midway's defenses and to guard against a possible counter attack from American carrier forces. The entire complex plan was to be carried out in complete secrecy. Unfortunately for Yamamoto, the Americans had "broken" the Japanese code and were routinely reading Japanese naval communications. Thus, Admiral Chester Nimitz, CIC of the Pacific fleet, prepared a trap for Yamamoto with the carrier forces under his command. The actual operational command was assigned to Rear Admiral Raymond Spruance on board the Enterprise. The resulting battle was a complete disaster for the Japanese. The battle fleet lost four front line carriers and over 200 experienced pilots. More information on this famous naval battle can be found in Miracle at Midway, by Gordon W. Prange, McGraw-Hill Book Company, and MIDWAY: The Battle that Doomed Japan by Mitsuo Fuchida, United States Naval Institute.

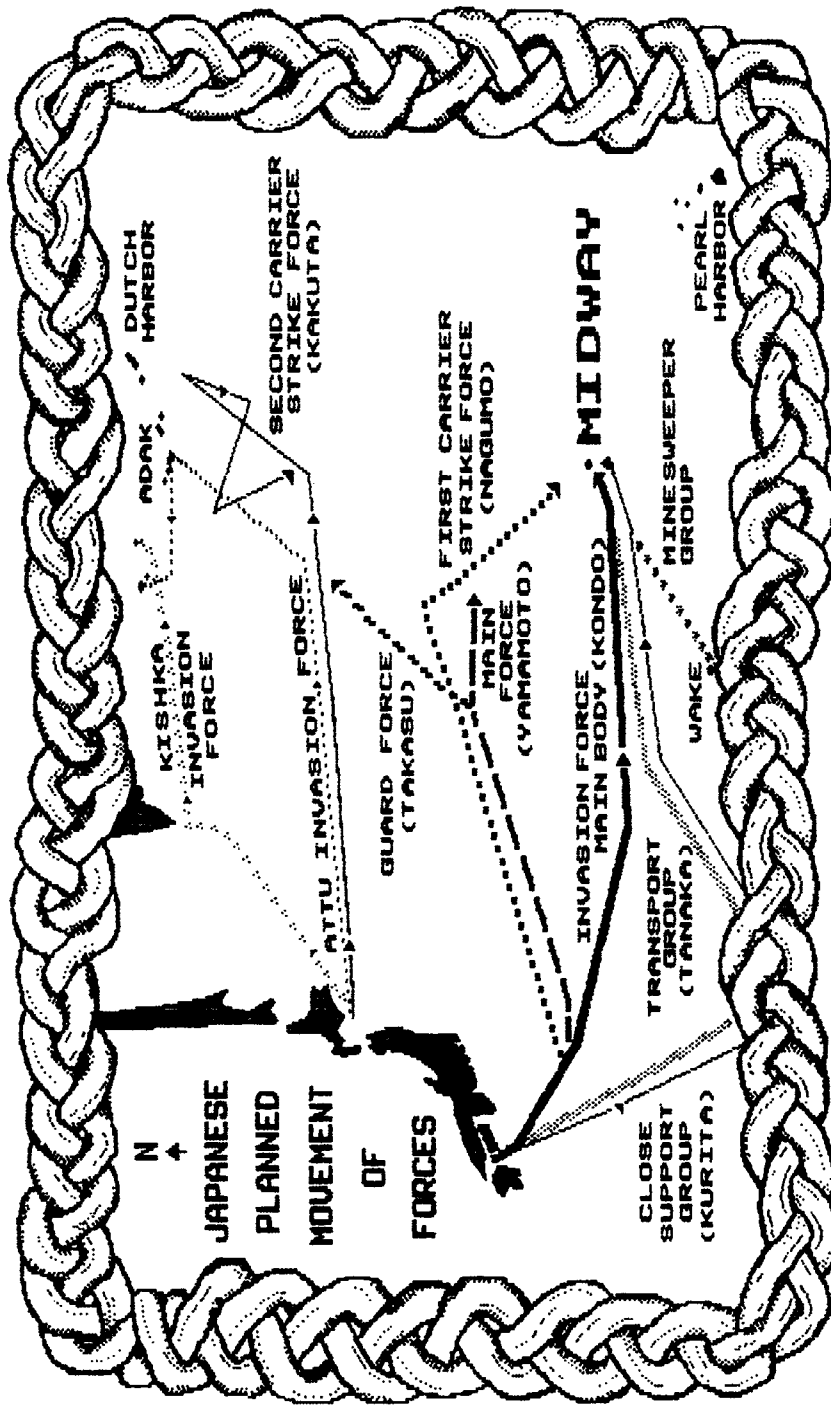
*Second Edition (May 1989)*

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## 1-INTRODUCTION

### 1.1 OVERVIEW

This battle manual describes the basic rules and operational commands for MIDWAY -- **The Battle That Doomed Japan**. This game simulates the classic battle between American and Japanese carrier forces that occurred during the early stages of World War II and has options for both solitaire and two player action. In addition to automating tedious calculations, the use of the computer permits truly "blind" play. Play balance and variability are assured by incorporating random factors in the placement of forces, occurrences, and outcomes.

The simulation takes place over a three to seven day period. Each day is divided into twelve turns (i.e., two-hour periods). Each turn consists of operational orders from the American player, followed by the Japanese player; as outlined in the Order of Battle (section 2.4). Operational orders are issued via the keyboard, by selecting options from menus and responding to prompts. Inappropriate responses are disregarded, and the request is repeated. Most keyboard interaction consists of single character commands (e.g., press the <S> key to search), and <enter> (or <return>) is not required: the computer acts as soon as valid input is detected. However, <enter> (or <return>) is required in cases where the command is critical or could be more than one character (e.g., number of degrees for new course). IBM users may enter all responses (except password) in either UPPERCASE or lowercase.

Several hours may be required to complete each simulation. The game may be stored via the saved game option which facilitates spreading the play over several sessions.

## 1.2 MINIMUM EQUIPMENT CONFIGURATIONS AND START UP PROCEDURES

The Apple Version runs on the Apple II series with a minimum of 64k memory and one 5 1/4" floppy disk drive. A color monitor and a parallel printer (port 1) are optional. Saved game diskettes must be formatted with DOS 3.3. The program disk is an auto-boot diskette.

- o Place the game diskette in the #1 drive.
- o Turn on the power to the computer.

The IBM version runs on the IBM PC series with a minimum of 256k, one 5 1/4" floppy disk drive, and a color or monochrome graphics card (which is completely compatible with standard IBM CGA). PC-DOS (or MS-DOS) version 2.1 (or greater) is required. The operating system must be active before the program disk will run. A printer is optional. If the printer is not a parallel printer which is assigned to LPT1, output must be redirected to the appropriate device before the game is started (check the printer manual and the DOS manual (refer to MODE) for specific procedures).

- o Place DOS disk in the A drive.
- o Turn on the power to the computer.
- o Wait until "A" prompt appears.
- o Place game diskette in the A drive.
- o Type ACTION and press <enter>.

## 1.3 PASSWORD

Before the game is completely loaded, the computer will request input of one of the five passwords (identified by Greek characters) listed on the inside cover of this battle manual. When requesting a password, the computer will supply the code (e.g., alpha), and the user must respond by typing the characters (exactly as shown (i.e., uppercase)) next to the code on the password page. After five incorrect responses, the start-up procedure is terminated.

## 1.4 OPTIONS

After the start-up procedure is complete, the computer will display an opening message which is addressed to the American commander. At this point, a stored game may be resumed or a new game may be started. Before a new game starts, a series of options are presented. These options include the number of players (1 or 2), side to control (if 1 player), length of simulation (3, 5, or 7 days), sound (on or off), task force alignments, and task force starting positions.

The initial task force alignments are listed in the tables of forces (sections 3.2 and 3.3). Either player may change these alignments during the setup procedure and/or during the progress of the simulation. Task force 'B' (Yorktown, Astoria, and Portland) is not available for operations until the second day. The American player can avoid this restriction by assigning warships to the other task forces.

Additionally, each side has the option of either assigning its forces to specific sea squares or allowing the computer to determine the initial starting positions. Initially, Japanese forces cannot be located east of Wake Island (11,19) and American forces cannot be located west of Midway (20,14). If the computer determines the initial assignments, the Japanese warships are randomly located east of Wake Island, and the American forces are located at or near Pearl Harbor and Dutch Harbor.

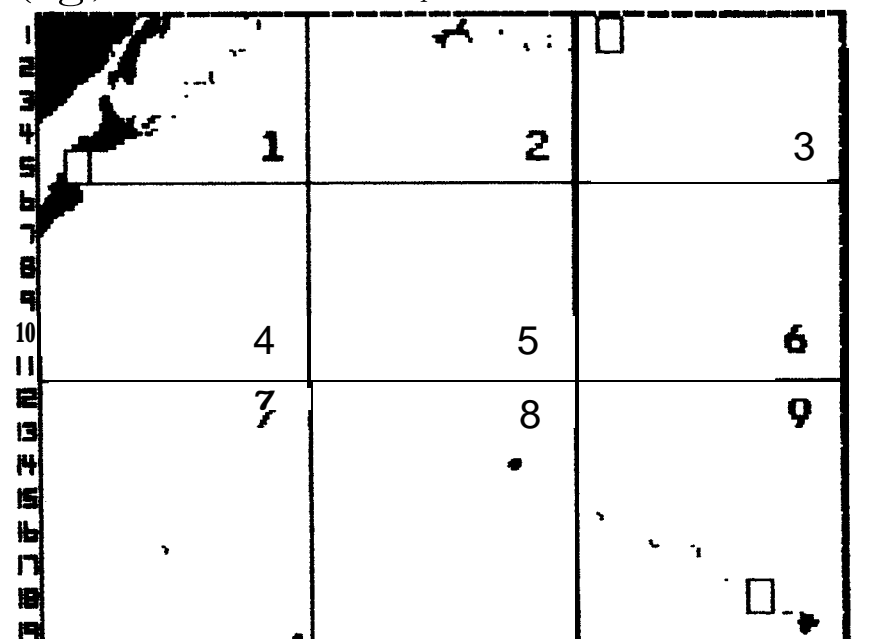
# 2-GENERAL INSTRUCTIONS

## 2.1 TIME PERIOD

There are twelve two-hour turns per day (i.e., 0200, 0400, 0600,...2400). Darkness occurs during the 2200, 2400, 0200, and 0400 time periods. Some operations, such as air search, may not be performed during periods of darkness. Time of day also impacts the effectiveness of some other operations, such as surface search and naval bombardment.

## 2.2 SEARCH BOARD

Most action occurs on the search board: a map of the mid Pacific area which has been divided into sea squares. A sea square is approximately 100 nautical miles on each side, and can accommodate an unlimited number of task forces. A two dimensional coordinate system (i.e., X,Y) is used for identifying locations; which are given to the nearest tenth of a sea square (e.g., 0.1 to 1.0 = sea square one).



LOCATION	INITIAL DEFENSE	FULL
SIDE (X,Y)	BASE FACTOR AIRBASE	REPAIR
A 17, 1	Kiska 1	N
A 24, 1	Dutch Harbor 100	Y
A 20,14	Midway 100	Y
A 30,18	Pearl Harbor 300	Y
J 11,19	Wake Island 100	Y
J 2, 5	Ominato	Y*

\* automatic search and attack only.

## 2.3 WEATHER

The vagaries of weather have been included in the simulation. Weather consists of a state, wind speed, and wind direction. The search board is divided into nine weather zones; conditions apply throughout each zone. The state can change up to four times per day (i.e., every six hours). The wind speed can change every two hours, and the direction may change every four hours. The following table summarizes the various weather states and their impact (A=Zones 1-3, B=Zones 4-6, C=Zones 7-9):

STATE	PROBABILITY OF OCCURRENCE			IMPACT
	A	B	C	
Calm Seas	20%	40%	60%	None
Rough Seas	30%	40%	30%	Reduced visibility Reduced air ops Max speed 25 knots
Fog	50%	20%	10%	No sea search No air ops Max speed 15 knots

Wind can have a significant impact on carrier operations. Generally, a carrier must be moving into the wind ( $\pm 30$  degrees) in order to launch and recover aircraft. Typically, the wind moves from east to west (i.e., right-to-left) across the strategic search board. This phenomenon gives the Japanese a distinct advantage since they can continue to steam towards their target (e.g., Midway) while launching and recovering aircraft. The American carriers usually must turn around from the advancing enemy in order to launch aircraft. Wind speeds vary between 0 and 30 knots, with higher speeds during rough weather. In order to launch aircraft, a minimum relative wind speed of 20 miles an hour across the flight deck is required. This requirement can be accomplished through a combination of wind and ship's speed.

## 2.4 ORDER OF BATTLE

- A. American Submarine Search and Attack (if any)
- B. American Command Level Operations (if any)
  - o Airbase Operations (e.g., search, ready aircraft)
  - o Task Force Alignment Operations (e.g., merge)
  - o Submarine Operations
- C. American Surface Search and Sea Combat (if any)
- D. American Task Force Operations
  - o Course/Speed changes
  - o Carrier Operations (e.g., search, ready aircraft)
  - o Movement
- E. Repeat steps A-D for Japanese
- F. Japanese Troop Transport Operations
- G. Air Attacks (if any)
  - 0 Americans, then Japanese, specify number of aircraft and attack locations
  - 0 American, then Japanese, air attacks
  - 0 American, then Japanese, aircraft recovery

## 3-FORCES

### 3.1 OVERVIEW

A task force is the lowest operational unit in the simulation (i.e, individual ship movement is not permitted). All warships are initially assigned to a specific task force (TF). Warships may be moved from one TF to another TF whenever the two existing TF's are in the same sea square. New task forces can be formed from an existing task force and existing task forces can be combined to form a single task force. The American side is limited to a maximum of six TF's (A-F) and the Japanese side is limited to a maximum of nine TF's (G-N).

The following tables identify the warships and aircraft available to the American and Japanese players. Each battleship and cruiser also operates several scout planes. Both sides also control three submarines. Each airbase supplies air reconnaissance.

## 3.2 AMERICAN WARSHIPS AND AIRCRAFT

SHIP	TYPE	TF	TF SYMBOL	MAXIMUM POINTS	GUN SIZE
				(SUNK)	
1. Enterprise	CV	1	A	200	8x5"
2. Hornet	CV	1	A	200	8x5"
3. Yorktown	CV	2	B	200	8x5"
4. Minneapolis	CA	1	A	40	9x8 "
5. New Orleans	CA	1	A	40	9x8"
6. Vincennes	CA	1	A	40	9x8"
7. Astoria	CA	2	B	40	9x8"
8. Northampton	CA	1	A	40	9x8"
9. Portland	CA	2	B	40	9x8"
10. Indianapolis	CA	3	C	40	9x8"
11. Louisville	CA	3	C	40	9x8"
12. Nashville	CL	3	C	40	15x6"
13. ST. Louis	CL	3	C	40	15x6"
14. Honolulu	CL	3	C	40	15x6"

CV-Aircraft Carrier  
 CA-Heavy Cruiser  
 CL-Light Cruiser



SHELL DAMAGE PER HIT	GUN RANGE	MAXIMUM SPEED	AIRCRAFT		SHIP
			INITIAL*	MAX	
			t d f		
1	12000	32	14/38/27	90	1
1	12000	32	15/37/27	90	2
1	12000	32	13/37/25	90	3
2	18000	32		-	4
2	18000	32		-	5
2	18000	32		-	6
2	18000	32	-	-	7
2	18000	32	-	-	8
2	18000	32	-	-	9
2	18000	32	-	-	10
2	18000	32	-	-	11
1	18000	32	-	-	12
1	18000	32		-	13
1	18000	32		-	14

The following land-based aircraft are also available:

#### AIRBASE

#### COMPLEMENT\*

			t d	f	m	h
Dutch Harbor	24,1		0/	0/	21/	20/ 0
Midway	20,14		6/	27/	27/	4/ 19
Pearl Harbor	30,18		50/	50/150/	75/	75

\* Number of attack and defense planes:  
 t-torpedo bomber d-dive bomber f-fighter  
 m-medium bomber h-heavy bomber

### 3.3 JAPANESE WARSHIPS AND AIRCRAFT

SHIP	TYPE	TF	TF SYMBOL	MAXIMUM POINTS	GUN SIZE
				(SUNK)	
15. Akagi	CV	7	G	200	12x4.7"
16. Kaga	CV	7	G	200	12x4.7"
17. Hiryu	CV	7	G	150	12x5"
18. Soryu	CV	7	G	150	12x5"
19. Zuiho	CVL	9	I	100	8x5"
20. Hosho	CVL	10	J	75	4x5"
21. Ryujo	CVL	11	K	100	12x5"
22. Junyo	CVL	11	K	125	12x5"
23. Yamato	BB	10	J	150	9x18"
24. Nagato	BB	10	J	100	8x16"
25. Mutsu	BB	10	J	100	8x16"
26. Haruna	BB	7	G	80	8x14"
27. Kirishima	BB	7	G	80	8x14"
28. Hiei	BB	8	I	80	8x14"
29. Kongo	BB	8	I	80	8x14"
30. Tone	CA	7	G	40	8x8"
31. Chikuma	CA	7	G	40	8x8"
32. Kumano	CA	8	H	40	10x8"
33. Suzuya	CA	8	H	40	10x8"
34. Mikuma	CA	8	H	40	10x8"
35. Mogami	CA	8	H	40	10x8"
36. Atago	CA	9	I	40	10x8"
37. Chokai	CA	9	I	40	10x8"
38. Myoko	CA	9	I	40	10x8"
39. Hagura	CA	9	I	40	10x8"
40. Ashigara	CA	10	J	40	10x8"
41. Nachi	CA	11	K	40	10x8"
42. Maya	CA	11	K	40	10x8"
43. Takao	CA	11	K	40	10x8"

CV- Aircraft Carrier  
 CVL-Light Aircraft Carrier  
 BB- Battleship  
 CA- Heavy Cruiser



SHELL DAMAGE PER HIT	GUN RANGE	MAXIMUM SPEED	AIRCRAFT INITIAL* t d f	MAX	SHIP
1	12000	32	21/21/21	75	15
1	12000	28	30/21/21	75	16
1	12000	32	21/21/21	70	17
1	12000	32	21/21/21	70	18
1	12000	28	12/ 0/12	30	19
1	12000	26	0/ 8/ 0	15	20
1	12000	28	21/ 0/15	45	21
1	12000	28	0/21/24	50	22
14	25000	27	-	-	23
10	25000	27	-	-	24
10	25000	27	-	-	25
8	25000	28	-	-	26
8	25000	28	-	-	27
8	25000	28	-	-	28
8	25000	28	-	-	29
2	18000	33	-	-	30
2	18000	33	-	-	32
2	18000	33	-	-	33
2	18000	33	-	-	34
2	18000	33	-	-	35
2	18000	33	-	-	36
2	18000	33	-	-	37
2	18000	33	-	-	38
2	18000	33	-	-	39
2	18000	33	-	-	40
2	18000	33	-	-	41
2	18000	33	-	-	42
2	18000	33	-	-	43

\* Number of attack and defense planes:  
t-torpedo bomber      d-dive bomber      f-fighter

The aircraft complement on Wake Island (11,19) consists of 20 fighters and 40 medium bombers.

### 3.4 SHIP SUBDIVISION

Each warship is divided into stations which are assigned a maximum damage level. Generally, warships contain ten stations, as listed below. However, the actual stations may vary (e.g., IJN Yamato has only three turrets). Secondary guns are only available on battleships (maximum range is 12,000 yards, shell damage is 1).

SECTION	BATTLESHIPS	CRUISERS	CARRIERS
1	Forward	Forward	Forward
2	A Turret	A Turret	Flight Deck
3	B Turret	B Turret	Guns
4	Fire Control	Fire Control	Fire Control
5	Bridge	Bridge	Bridge
6	Midships	Midships	Midships
7	Secondary	Torpedoes	Flight Ops
8	X Turret	X Turret	Guns
9	Y Turret	Y Turret	Flight Deck
10	Aft	Aft	Aft

A section's level of damage affects its performance in proportion to the percentage of maximum damage sustained. Damage received above the maximum level is assigned to the midship section. A warship is sunk when the damage to the midship section reaches the maximum level. Ship speed is affected by damage to the forward, midship, or aft sections. When the aft section is destroyed, the rudder may also be jammed.

### 3.5 AIRCRAFT CHARACTERISTICS

The following tables present the basic operating characteristics for the American and Japanese combat aircraft. "Combat radius" refers to the maximum distance that an aircraft can fly from its launch point. "Aim" refers to the accuracy of a particular combat aircraft type on a one to ten scale (with ten being most effective). "Dam" refers to the average effective damage level that can be achieved by a single attacking aircraft.

## AMERICAN COMBAT AIRCRAFT

NAME	SPEC	TYPE	COMBAT RADIUS	ARMAMENT	AIM	DAM
Devestator	TBF	Torpedo Bomber	200	1x18"	4	15
Dauntless	SBD	Dive Bomber	200	1x500#	7	4
Wildcat	F4F	Fighter	200	MG	8	0
Marauder	B-26	Medium Bomber	400	4x500#	4	8
Fortress	B-17	Heavy Bomber	600	10x500#	3	12

## JAPANESE COMBAT AIRCRAFT

NAME	SPEC	TYPE	COMBAT RADIUS	ARMAMENT	AIM	DAM
Kate	B5N2	Torpedo Bomber	250	1x24"	5	20
Val	D3A1	Dive Bomber	250	1x500#	7	5
Zeke	A6M2	Fighter	250	MG	8	0
Betty	G4M1	Medium Bomber	400	4x500%	5	8

## 4-OPERATIONAL COMMANDS

## 4.1 QUICK REFERENCE

Each commander may perform any (or none) of the following operations each turn. The task force level menu is repeated for each task force.

## OPTION

## DEFINITION

COMMAND LEVEL:	0	Operations
	M	Submarine Movement
	D	Data Report
	Q	Quit Game
	N	None
TASK FORCE LEVEL:	P	Patrol/Port
	C	Course & Speed
	D	Data Report
	S	Air Search
	R	Ready Aircraft
	A	Air Attack
	N	None

## 4.2 OPERATIONS (0)

The following list summarizes the operational options available to both sides:

- o Combine existing task forces.
- o Develop new task forces from existing ones.
- o Move ship from TF to TF (unless rudder jammed)
- o Scuttle ships (IBM only, Apple scuttle is under data report)
- o Conduct land based air search.
- o Conduct land based air attacks (attacking aircraft must be readied one turn in advance).
- o Ready aircraft including fighter defense.

## 4.3 SUBMARINE MOVEMENT (M)

Submarine(s) can be moved by indicating course in degrees. Submarines move at 15 knots.

## 4.4 DATA REPORT (D)

Data Reports provide information on the location of enemy task forces discovered, the number of Japanese troop transports sunk, the status of friendly and enemy bases, task force locations and alignment, airbase aircraft, carrier aircraft, and individual

warship damage. Individual warships may be scuttled to avoid sinking by the enemy (Apple only, IBM scuttle is under task force alignment operations).

#### 4.5 QUIT GAME (Q)

Either side can quit and view the results up to that point. The current game may also be saved. After saving a game, play may be resumed immediately or at a later date. Games may be stored on any separate, preformatted disk other than the program disk.

#### 4.6 NONE (N)

This command must be issued to move from command level to task force level, and to complete operations for each task force. Task forces retain prior course and speed unless a new movement command is issued.

#### 4.7 PATROL/PORT (P)

Task force remains in its current sea zone. This command will not be accepted if any member has a jammed rudder.

#### 4.8 CHANGE COURSE AND SPEED (C)

Player enters desired change in course and speed for specific task force. A change in course is given in degrees and the desired speed is given in knots: The maximum speed for a task force is restricted to the maximum speed of the slowest warship in the task force. This command will not be accepted if any member has a jammed rudder.

#### 4.9 AIR SEARCH (S)

Airbase and carrier air search operations can be conducted during daylight hours (except during fog).

#### 4.10 READY AIRCRAFT (R)

Player indicates the number and type of airbase or carrier aircraft to be readied for attack or for defense. Attack aircraft become available on the next turn. Defense aircraft are available immediately. Ready aircraft may also be moved to reserve. Ready fighters may be reassigned as defensive aircraft.

#### 4.11 AIR ATTACK (A)

This command must be issued to indicate that an air attack is to be performed at the end of the period. Each side can conduct air attacks during daylight hours (except during fog). Attacking aircraft must be readied one turn in advance.

### 5-TASK FORCE MOVEMENT

#### 5.1 MOVEMENT AND SPEED

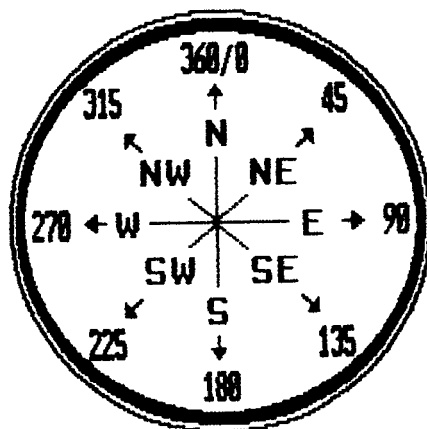
Each task force can move once per turn. A speed of 25 knots moves a task force approximately one half of a sea square per turn. Speeds above or below 25 knots yield proportional results. The maximum task force speed is constrained by the warship with the slowest speed. A task force may not steam above 25 knots for two consecutive turns. The maximum speed for a task force is 15 knots during periods of fog or when leaving or entering port. When a TF enters a port, the TF is centered in the square. When leaving, the TF is placed just outside the port square.

#### 5.2 ILLEGAL MOVEMENT

American task forces may not move into Ominato. Movement off the board or on Japan (proper) or Hawaii is not possible, and results in the following message: ILLEGAL MOVE. The task force involved in an illegal move is returned to its previous location, and the task force loses its turn.

### 5.3 COURSE DIAGRAM

In addition to remaining in its current sea square a task force may be moved into one of the eight adjacent sea squares. For example, to move into the sea square above your current position simply enter 0 (or 360). The following chart is designed as a navigational aid:



### 5.4 TERMINATION

The simulation is automatically terminated when the time limit is reached.

### 6-TASK FORCE SEA SEARCH

Each task force automatically searches approximately one-half of one sea square around its current position each turn (except during fog). The probability of detecting an enemy task force is a function of the weather and time of day. The search pattern is approximately doubled (i.e., one sea square) through the use of spotter aircraft during periods of daylight when weather conditions are calm.

## 7 - AIR OPERATIONS

### 7.1 LIMITATIONS

Air operations are not possible during darkness or fog. The maximum number of aircraft that can be launched from a carrier is somewhat reduced during rough weather. Each type of aircraft (e.g., torpedo bombers) launched from the same point may attack only one target location per turn. The maximum range for air attacks varies depending on the type of aircraft (see section 3.5). Attacking aircraft must be "readied" on a previous turn. All "readied" aircraft are automatically "dereadied" at the end of the 2400 turn. While land based airfields can operate an unlimited number of aircraft, the number of planes that a carrier can operate is limited by the maximum capacity (see sections 3.2 and 3.3). However, the actual mix of aircraft may vary as long as the total does not exceed this limit. Land based air fields become inoperable when captured or destroyed by enemy bombardment. Carriers may not launch aircraft if the forward flight deck or midship section are severely damaged (i.e., above 75 percent of the maximum damage level). Carriers may not recover aircraft if the aft flight deck or midship section are severely damaged. Damage to flight operations reduces the number of aircraft that may be launched and/or recovered.

### 7.2 AIR SEARCH

The probability of locating the enemy is a function of the weather and time of day. Each task force containing a carrier has the option of searching approximately a two square radius around itself. Search planes launched from land bases automatically search all sea squares in the immediate vicinity of the base. Both sides can also search three additional sea squares per turn per base. The maximum search range is about five squares from the base (actual range may extend somewhat further, depending on weather conditions). American forces that are discovered in the vicinity of Japan will be automatically attacked and sunk.

### 7.3 AIR ATTACK

The effectiveness of various types of aircraft is summarized in section 3.5. Attacks may be launched against both naval and land targets. The player indicates the sea square and the number & type of aircraft involved in the attack. Different types of aircraft may attack different locations. Aircraft launched from different points (i.e., individual carriers) may also attack different locations. All attacking aircraft are given orders at the same time. If the attacking squads find multiple targets at the specified location, the squad commanders may select individual targets. Targets that contain readied planes will experience more extensive damage (approximately twice the normal level). The number of aircraft on a carrier during an enemy attack is reduced in proportion to the sustained damage. Escorting an attack with offensive fighters reduces the effectiveness of enemy fighters defending the target.

### 7.4 AIR DEFENSE

Attacking aircraft can be shot down by either naval gunfire, land based gunfire, or fighter aircraft. Each base, except Kiska, contains anti-aircraft batteries which are used to defend the base against air attacks. All warships contain anti-aircraft guns. The effectiveness of point air defense is directly proportional to the number of warships in the task force, the status of the anti-aircraft guns, and/or the damage status of the base. Air defense (i.e., fighters) significantly improves the chances of effectively repelling enemy air attacks. Each side can specify the number of fighter aircraft for air defense at the beginning of each turn. Defensive aircraft are ready immediately, and operate during the entire turn. At the end of the current turn they return to the carrier. Unlike offensive aircraft, defensive aircraft may be used each turn.

### 7.5 FLIGHT ATTRITION, RECOVERY, TRANSFER

Aircraft suffer attrition due to flight operations, which ranges between one to three percent depending on time of day and sea state (higher rates occur during rough seas and twilight). Normally aircraft return to the launch point after the attack is complete. However, medium and heavy bombers engaged in long range attacks (i.e., greater than 300 miles from base) return to base on the next turn. Aircraft may not return to bases which have been destroyed, or to carriers which have been sunk or are unable to recover. Aircraft which cannot return to the launch point have the option of attempting to land at a local airbase or on any available carriers that are within range. Aircraft may also be transferred between land based airfields and carriers that are within range.

## 8-BASE BOMBARDMENT AND CAPTURE

The Japanese can bombard Pearl Harbor, Dutch Harbor, Midway, and Kiska. The American side can bombard Wake Island. Bombardment reduces the defense factor of a base. Bombardment can be carried out using either naval gunfire or air attacks. Bombardment can occur any time except when the target is obscured by fog. To bombard a target by gunfire, the task force must be located on the target sea square. Naval bombardment reduces the defenses by five points (during daylight) or three points (during darkness) per turn per battleship or cruiser in the task force. To bombard a target by air, the carrier task force must be within attack range. Air attacks reduce the defenses by one point per attacking dive bomber. Aircraft remaining on the ground during bombardment can be attacked by fighters as well as enemy dive bombers. All remaining base aircraft are destroyed when the base defense factor is reduced to thirty percent of the maximum or when enemy troops have landed. The maximum defense reduction by any combination of air attacks and naval bombardment is limited to 70% of the initial defense level.

The Japanese can capture Dutch Harbor, Midway Island and Kiska Island. Capture can occur after the target has been occupied by Japanese troops. A base is captured when its defense factor is reduced to zero. The troop convoy is required to capture either Dutch Harbor or Midway. Each troop transport located on an enemy base reduces the defenses by one point per turn. Similarly, troop transports can be destroyed by enemy defensive ground forces in proportion to the their current strength. For example, between 0 to 3 troop transports will be destroyed per turn when attacking a base that is at full strength. Kiska can be captured using any Japanese task force. Capture occurs after the Japanese have occupied Kiska for one turn.

## 9-SUBMARINE OPERATIONS

Initially, each side operates three submarines. Submarines automatically search their current sea square each turn (except during darkness or fog), and automatically attack any enemy forces located. The priorities given to targets are: 1) carriers, 2) battleships, and 3) cruisers. American submarines can also attack the Japanese troop transports. The probability of obtaining a torpedo hit is a function of weather and the enemy warship's speed. Submarines can be sunk by enemy action.

## 10-TROOP TRANSPORT CONVOY OPERATIONS

### 10.1 FORMATION AND MOVEMENT

A convoy consisting of 15 troop transports is available to the Japanese commander. This convoy can be used to capture Dutch Harbor, Midway, or Kiska Islands. The convoy moves at a speed of 12 knots. The Japanese player directs the convoy by indicating the desired course in degrees. An input of 360 moves the convoy north while an input of 0 results in the convoy remaining stationary.

### 10.2 INTERCEPTION

The troop transports can be intercepted and attacked by enemy aircraft, submarines, and warships. If the convoy is escorted, the American warships must engage the escort before attacking the convoy. After defeating all Japanese warships, the American forces may then attack the convoy. Convoy losses are proportional to the number of enemy aircraft or submarines, or size and composition of the task force involved in the attack.

## 11-INTELLIGENCE

Both sides receive information on the movement of enemy task forces through sea, air and submarine reconnaissance. Additionally, both sides will receive information on the bombardment and capture of bases. At the end of air combat, each player will receive a combat summary of the number of aircraft and warships damaged and destroyed on both sides. Estimates of enemy losses are usually greatly exaggerated.

American naval forces and airbases can receive advance warning of enemy air attacks via radar. American radar can also spot enemy search planes.

## 12-SHIP RESUPPLY AND REPAIR

Each task force contains a sufficient number of tankers to supply the task force during the short duration of this simulation.

Warships undergo repair in operational ports (defense factor 50 percent or above) with full repair facilities (Dutch Harbor, Pearl Harbor, Ominato) at the rate of one damage unit per section per turn. At sea, warships undergo repair at the rate of one midship damage unit per turn up to 50 percent of the maximum damage level. Additionally, carriers can repair damaged flight decks and flight operations up to 50 percent of the maximum. If the aft section is out and the rudder is jammed, the warship may experience repair to the aft in lieu of midships.

## 13--TACTICAL SHIP COMBAT

### 13.1 OVERVIEW AND QUICK REFERENCE

Ship combat can occur whenever enemy task forces are discovered within range (refer to Task Force Sea Search for details). Unlike strategic combat, tactical combat deals with ships on an individual basis only (versus a task force group). During tactical combat, limited repairs (at the rate of one damage unit every third turn) are made to the fire control and bridge sections. Each side can select from a number of tactical options as outlined below. While each warship is limited to one command per warship per turn (except for L, R, and D), the computer may perform multiple commands.

OPTION	DESCRIPTION
N	No Change
C	Change Course and Speed
T	Target Guns
F	Fire Guns
L	Launch Torpedoes
R	Report Range, Course, Speed
D	Damage Control Report
S	Disengage
K	Scuttle Ship

### 13.2 NO CHANGE (N)

Maintains warship's current heading and speed.

### 13.3 CHANGE COURSE AND SPEED (C)

The computer will display the maximum speed possible for the ship. Player indicates course heading (0-360) in degrees and speed in knots (0-max). Steering is transferred to aft control if the bridge has been "knocked out", and no change in course or speed is possible during this period.

### 13.4 TARGET GUNS (T)

The player selects target for main and secondary (battleships only) guns from among available enemy warships. The maximum range for targeting is 25,000 yards. An input of 0 aborts command (returns to tactical menu).

### 13.5 FIRE GUNS (F)

Guns are fired at the selected target. Guns will not fire if they are not targeted, are out of action, or if the target is out of range. The maximum range for main guns is given in sections 3.2 and 3.3. The maximum range for secondary guns is 12,000 yards.

The probability of obtaining a gunnery hit is a function of enemy speed, enemy range, number of guns firing, wind direction and status of fire control. Warships that are windward of their opponent have an advantage. As damage to a warship's fire control increases, the probability of obtaining a hit decreases. Warships carry sufficient munitions to engage in an unlimited number of tactical battles.

## 13.6 LAUNCH TORPEDOES (L)

Only cruisers carry torpedoes. The player selects a target from among available enemy warships. Torpedoes can be launched every 5 turns. The probability of obtaining a ship launched torpedo hit is a function of the enemy warship's speed and range. Torpedo hits are assigned to the midship section. The following table summarizes the performance characteristics:

	AMERICAN	JAPANESE
MAXIMUM RANGE	5,000	9,000
DAMAGE	10-15	15-25

## 13.7 REPORT COURSE, SPEED, RANGE (R)

Displays selected ship's course, bearing, speed, and range from the current ship. Enemy vessels must be within 25,000 yards.

## 13.8 DAMAGE CONTROL REPORT (D)

Displays warship's damage status for each station and compares with the maximum limits.

## 13.9 DISENGAGE (S)

Either side may disengage if the range between the closest enemy warship is greater than 25,000 yards.

## 13.10 SCUTTLE (K)

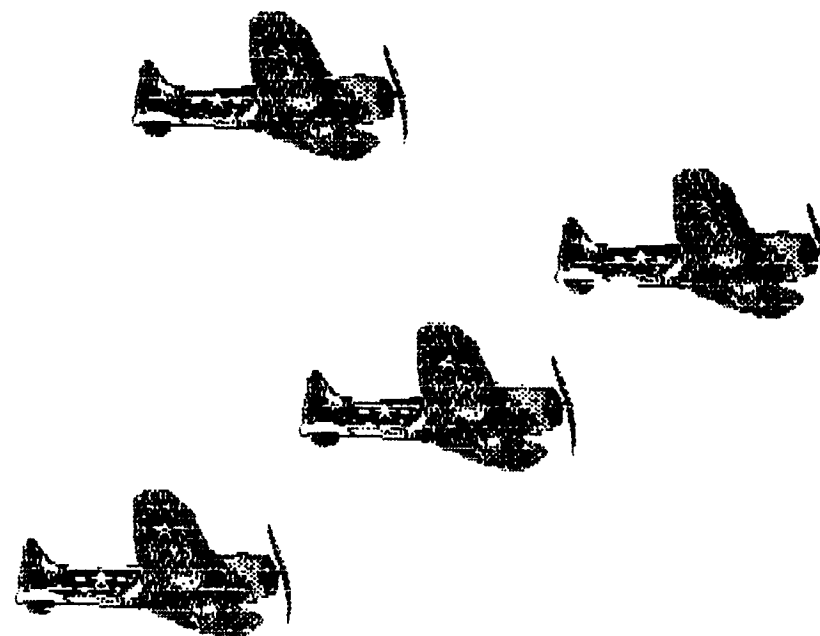
A warship may be scuttled to prevent sinking by enemy forces. Maximum point total for a scuttled warship is reduced by ten percent.

## 13.11 SMOKE

Either side may make smoke during the course of combat. Making smoke reduces the effectiveness of gunnery on both sides (approximately 10 percent for the ship making smoke and up to approximately 30 percent for enemy warships). When a ship makes smoke, its symbol disappears from the tactical sea square board. Smoke lasts for one turn.

## 13.12 TERMINATION

'Tactical ship combat is automatically terminated if all American or Japanese warships are sunk, or if either side withdraws.





## 14-VICTORY CONDITIONS

The winner is determined by a point system based on the following criteria:

### AMERICAN SIDE

- o Sinking enemy cruisers\* 40 points per ship
- o Sinking enemy battleships\* 80 to 150 points per ship
- o Sinking enemy carriers\* 75 to 200 points per ship
- o Damaging enemy warships 1 point per midship hit
- o Sinking troopships 10 points per ship
- o Air Bombardmentt 1 point per dive bomber
- o Naval Bombardment+ 5 points per warship
- o Avoiding Midway capture 100 points.

### JAPANESE SIDE

- o Sinking enemy cruisers\* 40 points per ship
- o Sinking enemy carriers\* 200 points per ship
- o Damaging enemy warships 1 point per midship hit
- o Air Bombardment+ 1 point per dive bomber
- o Naval Bombardment+ 5 points per warship
- o Capturing Midway 400 points
- o Capturing Dutch Harbor 400 points
- o Capturing Kiska 25 points.

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\* The maximum point total for a scuttled warship is reduced by 10 percent.

t Maximum of 70 percent of initial defense factor per base unless captured. Carriers do not perform naval bombardment.

## 15-GAME STRATEGY

### 15.1 AMERICAN

The American commander should concentrate his/her forces in an attempt to defeat the main Japanese carrier battle group. The primary goal of the American commander should be the destruction of the Japanese carrier forces. Care should be exercised in attacking the carrier forces because Japanese carrier aircraft outrange American aircraft by approximately 20 percent. Once the Japanese carrier forces have been neutralized, the American commander should seek out and destroy the Japanese troop convoy.

The American commander should use the air power located on Midway in conjunction with the available carrier forces in attacking the enemy. Efficient use of medium and heavy bombers can prove effective in reducing the Japanese margin of superiority. Although an attack against Pearl Harbor is highly unlikely, the American commander should guard against this possibility. Each turn, the American commander should ready a portion of the available fighter aircraft for defensive operations.

### 15.2 JAPANESE

The Japanese commander should seek out and destroy the American carrier forces prior to invading Midway. To accomplish this mission, the Japanese commander should consider-combining all carriers into a single task force. The Japanese commander should attempt to launch aerial attacks against enemy carriers while still out of range of enemy carrier aircraft. If the American carrier forces cannot be located then the Japanese commander should destroy Midway's offensive capabilities through air and surface bombardment. The Japanese troop convoy should be kept out of attack range until Midway's offensive capabilities have been destroyed.

The Japanese commander may wish to generate a diversion by slipping past Midway and launching an air attack against Pearl Harbor. This strategy should be well planned out because of the potential for significant losses. Attempting to capture both Kiska Island and Dutch Harbor represent another strategic alternative for the Japanese commander. Each turn, the Japanese commander should ready a portion of the available fighter aircraft for defensive operations.

## 16-COMPUTER GRAPHICS

The simulation does not perform animation. However, a number of graphic aids are provided to enhance game realism. Computer sounds are also enacted during phases of the simulation.

The strategic action takes place upon a map of the mid Pacific area which shows the relevant ports and islands. The strategic board also displays the date, time of day, current weather conditions, and information (e.g., X,Y location) for the task force (or submarine) currently being commanded. Task force location is depicted by the assigned symbol (e.g., A for American task force #1). Other symbols represent submarines and located enemy forces.

Tactical battle screens are used for both sea combat and air strikes. The tactical board for sea combat consists of the battle area, movement data, targeting data and wind data. A similar screen is displayed for tactical air strikes.

# YOUR PASSWORD IS

## MIDWAY

Alpha	=	FIRST7STAN
Beta	=	MARCH3FILL
Gamma	=	ROUGH5MEET
Delta	=	SIGHT4MAST
Epsilon	=	BAKERILAST

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## S E C R E T COMMANDS

The IBM versions of GOS naval war games contain secret options which are **not** listed on the menu or **explained** in the battle manual. These options require the use of the <alt> key (used just like <shift> key) in conjunction with a letter key. An \* signifies that option is not available in all scenarios.

### RECOGNIZED BY STRATEGIC COMMAND LEVEL MENU AND BY TACTICAL COMMAND MENU

- <alt> Q      quit immediately, **do not go through conclusion routine**, exit to **DOS**.
- <alt> c      **change color of background..** . cycles through 24 colors, some of which say be identical on some hardware configurations.
- <alt> S      **toggle sound on/off. Computer beeps immediately after sound toggled on.**
- <alt> T      \* **change amount of time messages stay on the screen. time can be from 0 to 9999,**  
with 0 = minimum **delay**, 9999 = longest **pause**.
- <alt> P      **instruct computer to take over and play the current side. Advisory messages are displayed if both sides are simulated.**
- <alt> x      **instruct computer to switch sides: play current side and turn opposition over to user.** Player **configuration** must be a solo simulation.

continued on other side...

...continued from other side

**S** stop a simulation... can be pressed any time during a simulated player's turn. If both sides are simulated, there **will** be a **short** pause and the configuration will change to a solo simulation. If only one **side** is simulated, this command must be given immediately- after issuing **the** last command for the team not being simulated.

## RECOGNIZED **BY TACTICAL** COMMAND MENU

**<alt> F** displays a firing summary for tactical combat. Summary report includes- **the number** of hits **and** misses for **both** sides **and** relative effectiveness.

**<alt> R** **either** restarts tactical combat of, if a strategic game is in progress, returns to strategic level without completing tactical combat.

## RECOGNIZED **BY ANTI-AIRCRAFT** ATTACK **WARNING** MESSAGE (PREPARE TO REPULSE)

**<alt> D** \* **decrease** the size of the hit area on the incoming torpedo **bombers**.

**<alt> I** \* increase **the** size of the hit area on the incoming torpedo bombers.

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Scenarios may contain additional secret commands. For example: **The** boot screen requests **<enter>** to continue. if **<space>** is pressed instead, the **bosun's** whistle (that follows password acceptance, will be silenced. **Feel free to** with the keyboard.