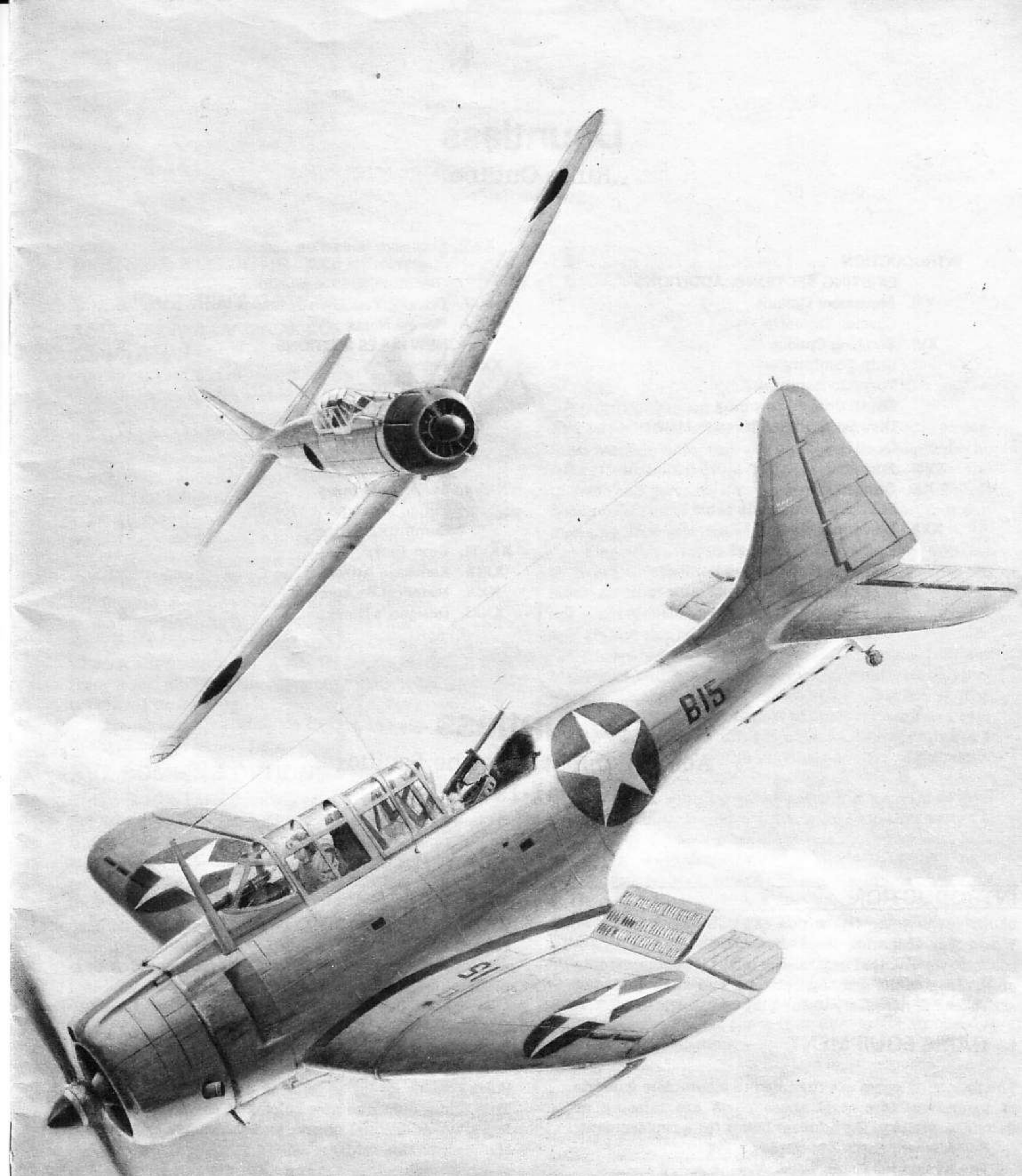


Rules

Dauntless Gamette

Ownership of Avalon Hill's AIR FORCE game is necessary to play this gamette.

Dauntless

Rules Outline

Dauntless

Aerial Combat Over the Pacific: 1941-1945

INTRODUCTION

DAUNTLESS is a gamette which expands the coverage of World War II tactical-level air combat, begun with AIR FORCE, to the Pacific Theatre. The formats of components and rules are the same; game map and rules folder of AIR FORCE are **necessary** to the play of DAUNTLESS.

I. GAME EQUIPMENT

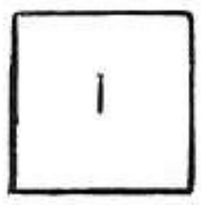
The following parts are included in a complete gamette of DAUNTLESS. If any of these parts are missing or damaged, write to the address below for a replacement:

Replacement Parts: Dauntless
The Avalon Hill Game Co.
4517 Harford Road
Baltimore, MD 21214

UNIT COUNTERS (354 pieces)

Two sheets of die-cut counters are provided, compatible with AIR FORCE counters in all respects. Lt. Red counters are Japanese, blue are U.S. Navy.

Sample Torpedo Counter
(All other types identical to AIR FORCE.)



OTHER COMPONENTS

Aircraft Data Cards (15 Cards)
All information on these cards is presented as explained in AIR FORCE.

Log Sheet Pad
Identical to those provided with AIR FORCE.

Rules Folder
This folder contains new rules and scenarios required for play. Additional charts and tables are included at the back of this folder.

PRESENTATION OF RULES
Rules in this folder follow the sequence of presentation set forth in AIR FORCE. Numbering of individual sections corresponds. Rules which change or ramify concepts already presented in AIR FORCE follow under headings which can be identified therein. New considerations, such as ships, are grouped in rules sections which follow those Additions to Existing Sections.

PUBLICATION HISTORY

First Printing: 1977 by Battleline Publications, Inc.
Second Edition (Second AH Printing): January 1981

EXISTING SECTIONS, ADDITIONS

XIII. MOVEMENT OPTIONS

TAKE-OFFS AND LANDINGS, CONT'D

Carrier Takeoffs:

Carrier takeoffs are handled the same as airfield takeoffs, with the following differences:

1. The aircraft does not move down a runway (since the aircraft carrier counter is only one hex in size), but remains in place as power factors are applied, one per Turn, until enough speed is available to permit a takeoff and allow the plane to "fly".

2. No more than one aircraft per Turn may takeoff from a carrier.

There are no limits on the number of aircraft that can be on the deck of an aircraft carrier.

Should a runway section be destroyed that the aircraft would have to enter in order to takeoff, the aircraft must end its movement and remain on the ground when it enters that hex. A carrier that takes bomb hits from level, glide, or dive bombing cannot be used for taking off or landing.

Planes can turn while on the ground at a rate of up to three hexsides per Turn.

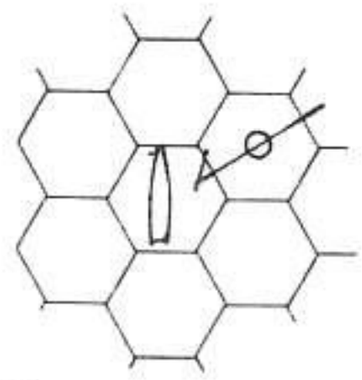
XVI. BOMBING OPTIONS

Glide and High Level Bombing—Ship Targets

For hits on ships, an additional die roll is necessary. Roll one die for each bomb that hits a ship. The number rolled on the die is the number of hits scored on the ship by that bomb.

SKIP BOMBING

Skip bombing, a technique widely used by the USAAF medium bombers (A-20, B25 and B-26), required great skill, but was very deadly when used against Japanese shipping. It consists of a low-flying aircraft dropping its bomb just before reaching the ship. The fast-moving bomb then "skipped" across the water and into the ship's side. To use this technique, the aircraft must end its movement at an altitude of 100 feet, at a speed of "4" or more, pointing directly at a hex containing a target ship, and in a hex adjacent to the target ship. If these conditions are not fulfilled, an automatic miss results. If the conditions are fulfilled, one die roll is made for each bomb. The number rolled on the die is modified according to the relative attitudes of the aircraft and the ship to each other, as shown on the SKIP BOMB/TORPEDO MODIFIERS CHART. This modified die roll is then multiplied times two to give the number of hits scored on the ship. For example, in the situation shown below, the aircraft dropped one bomb, then rolled a "3" on the die. Since the relative attitudes of the aircraft and ship, as shown on the Chart, yields a "-1" modifier to the die roll, this reduces the die roll number from "3" to "2". Thus, the final result is 2 × 2 = 4 hits scored on the ship.



TORPEDO BOMBING

Aircraft must be in a level bank attitude in order to perform torpedo bombing. Torpedo bombing requires the aircraft to come in at low altitude, but, since the torpedo can move on its own once dropped, the aircraft does not actually have to pass over the target, but can make its drop at a distance.

American aircraft must be at an altitude of 100 feet to drop a torpedo. Japanese aircraft can drop a torpedo from as high as an altitude of 300 feet. A torpedo dropped from a higher altitude is an automatic "miss", and should not be put into play.

Once dropped, a torpedo counter is placed on the Mapboard and immediately moved one hex straight forward, in the same direction as the aircraft is facing. The torpedo counter will continue to move forward at a rate of one hex per Turn until it enters a hex containing a ship, or moves out of the playing area (i.e., an obvious "miss").

A torpedo counter must enter a minimum of two hexes before it can score a hit. A torpedo that enters a hex containing a ship before it has moved at least two hexes is an automatic "miss".

When a torpedo enters a hex containing a ship, one die is rolled. The number rolled on the die is modified according to the relative attitudes of the torpedo and the ship to each other, as shown on the SKIP BOMB/TORPEDO DIE ROLL MODIFIER CHART (i.e., Handle the same as for skip bombing, considering the hex occupied by the torpedo prior to entering the hex with the ship.) This modified roll is then multiplied times four to give the number of hits scored on the ship.

DEPTH CHARGE BOMBING

Aircraft were used extensively by both sides in attacks against submarines, using both conventional bombs (against submarines on the surface—handle the same as for normal glide or dive bombing), and aircraft-carried depth charges. The effectiveness of the aircraft was largely due to the fact that they were able to "see" a submarine at depths up to 100 feet under most conditions. Normal Bombs are effective against submarines which are at a depth of less than 60 feet. For depths of 60 feet or more, depth charges must be used. Aircraft carry an assortment of small bombs and depth charges for use against submarines. These are pre-set for depth. For game purposes there are two depth settings, shallow ("S") for use against submarines on the surface to 60 feet deep, and deep ("D") for use against submarines over 60 feet deep. The player using the aircraft

should select and write down on a separate sheet of paper the number of each his aircraft carries, and subtract from these totals as they are dropped. The player may carry any desired mix of the two depth settings on the aircraft. "S" depth charges can cause no damage to submarines located at a depth of over 60 feet, and "D" depth charges can cause no damage to submarines located at a depth of 60 feet or under.

Depth charges must be dropped from an altitude of 100 feet, and may scatter, using the DIVE & GLIDE BOMBING CHARTS normally. For each depth charge that is of the correct depth setting, and ends in the same hex as a submarine, roll one die. The number rolled equals the number of hits scored on the submarine. No more than six depth charges can be dropped by one aircraft during any one Turn.

ALTERNATE DIVE BOMBING RULE

In WW2, dive-bomber attacks were carried out at angles up to 90 degrees, from about 12000 ft or higher. The aircraft would spend perhaps 12 seconds in the vertical, at 300 to 400 miles per hour, hence diving some 6000 ft, pulling out some 3000 ft above the target. It must have seemed forever at Midway, coming down from 19000 ft. For non-specialized dive-bombers, there was also a shallower dive-bombing attack, at up to 60 degrees, carried out by fighter-bombers and some light twins, up to the size of the Ju 88. Thus any new rules must reflect these two techniques, and the first part to be modelled is the nose-over from level flight into the dive.

Nose-Over Maneuver—Costs Two MPs. Increases AirSpeed by One. (Code = NO.)
The aircraft moves 1 hex forward and 500 ft downwards, accelerating by 1 MP. This maneuver can be carried out at any time, even directly after any other maneuver, but must be begun with the aircraft in level flight or a standard dive. After the 2 MPs have been used, the aircraft is committed to a dive using the following rules. It cannot return to normal game movement mechanics without carrying out a Pull-Out maneuver (see below).

Vertical Dive-Bombing Attack—Costs Zero MPs. Does not reduce Air Speed.
Following a Nose-over, 1 MP counts as 700 ft vertically downwards. There is no movement forward, except under the circumstances explained later. The aircraft accelerates to its maximum dive speed as in the normal dive rules, but cannot exceed this speed nor reduce speed from this, except where loss of altitude reduces the maximum permitted. If a change of direction is desired, facing can be changed using BANK OR HALF ROLL costs. BANK cost alters facing by one hexside, HALF ROLL cost by three hexsides. Aircraft are considered loaded at dive speed, naturally. No other maneuver is permitted.

At least 7 MPs must be expended in the vertical dive. After this has been done, the aircraft can carry out a Pull-Out maneuver (see below). Whenever the aircraft expends the whole of one turn in the vertical (this can include a Nose-Over, if this starts the turn, or a Pull-Out, if this ends the turn) then the aircraft can move forward one hex without penalty. This move forward must be done before the Pull-Out (if applicable).

The code for vertical movement is VERT, followed by the number of MPs so expended.

Steep Dive-Bombing Attacks—Costs Zero MPs. Does not reduce Air Speed.
Following a Nose-Over, 1 MP counts as 500 ft downwards. The aircraft moves without penalty 1 hex forward for every 1000 ft dived (round height loss downwards to the nearest 1000 ft). The aircraft accelerates to its maximum dive speed as in the normal dive rules, but cannot exceed this speed nor reduce speed from this, except where loss of altitude reduces the maximum dive speed permitted. If a change of direction is desired, facing can be altered using the BANK column of the Characteristics Card. No other maneuver is permitted.

At least 7 MP must be expended in steep dive. After this has been done, the aircraft can carry out a Pull-Out maneuver. Steep Dive-Bombing attacks are recommended for Kamikaze attacks. Only trained crews can carry out Vertical Dive-Bombing attacks—such were not generally available for Kamikaze attacks.

The code is STEEP, followed by the number of MPs so expended.

Pull-Out Maneuver—MP Cost and Airspeed Reduction Varies:

Pull-Out Type	Wing Points Remaining	Move Forward	Altitude Lost	MP Cost	Airspeed Lost
1	5+	1	500/300	2	3/2
2	3, 4	1/2	1000/500	2/3	2
3	2	2/3	1500/800	3/4	2/1
4	1	2/4	2000/1000	4/5	1

Figures before slashes apply to vertical dives, those after slashes to steep dives. Aircraft can carry out whichever Pull-Out type they prefer, unless limited by Wing hits. Thus a Dauntless with four Wing hits could only use types 3 or 4.

If an aircraft suffers Wing damage in the firing phase immediately following the Pull-Out, such as would have prevented it carrying out the Pull-Out type used, then the aircraft is shot down.

Pull-Out types 1, 2 and 3 are not permitted with 2 Cockpit hits.

Pull-Out types 1 and 2 are not permitted with 1 Cockpit hit.

After completion of a Pull-Out maneuver, the aircraft reverts to normal game mechanics, in level flight unbanked.

The code is PO, followed by the type number.

Bombing Results
Vertical Dive-Bombing uses Dive-Bombing Rules as presented.

Steep Dive-Bombing uses Dive-Bombing Rules, but does not gain + 1 on the red die.

The bomb is dropped on the first hex entered during the Pull-Out.

Dive-Bombing may not be carried out through clouds.

NOTE: These rules do contradict the standard rules which state that the aircraft should end its movement in the hex being bombed, and that only one aircraft may bomb that hex.

QUALITY EFFECTS

Skip and Depth Charge Bombing
Add + 1 to the die roll for Ace crews, and - 1 for Novice crews when determining the number of hits scored on a ship or submarine.

Pilot Characteristics Determination Table
Japanese pilots use the "German" line, but enter the final column early 1944.

XVIII. ROCKETS

The die roll is modified by an amount equal to the size of a ship's silhouette number when rockets are fired at a ship. If several ships fall within the hit area, add their silhouette values together. For each hit scored on a ship, roll one die. The number rolled on the die is the number of hits of damage scored on the ship by each rocket hit.

XX. SOLITAIRE PLAY

SOLITAIRE MOVEMENT TABLE

To provide for the random movement of surface targets such as vehicles and ships, use the SOLITAIRE MOVEMENT TABLE. To use this table, roll one die for each unit, and crossgrid the result with the proper column of this Table. Move the unit to correspond with the movement given in the Table. Note that if the die roll is made during a Turn in which the unit can either turn or move, but not both, the extraneous portion of the notation is ignored. For instance, if a "1L" were called for during a Turn in which the unit could only turn in place.

XXII. UNIVERSAL SCENARIOS

The following scenarios use the same basic formula presented in AIR FORCE. For example, for "Scenario Nr. 1: Dogfight", all the information on Set-Up, Special Rules, and Victory Conditions can be used exactly as it appears in the AIR FORCE folder, changing only the suggested sides to accommodate aircraft provided with DAUNTLESS. In other cases an entirely new version of a familiar scenario may be provided, with all new Set-Up, Special Rules, etc. In every instance, the numbering follows the sequence of the Scenarios in the AIR FORCE Folder; paragraphs presented here replace the corresponding paragraph in AIR FORCE.

SCENARIO NR 1: DOGFIGHT

3. Suggested sides:
Good match-ups include: A6M2 Zero vs. F4F Wildcat or P-40C; P-38G, F6F Hellcat, or F4U Corsair vs. A6M5 Zero, N1K1 George, or Ki, 84 Frank; or P-40N vs. Ki.43 Oscar, Ki. 44 Tojo, or Ki. 61 Tony.

Anti-Torpedo Plane Patrol (Advanced Level Game)
During most of 1942, the number of fighter aircraft carried on American carriers was small. To augment the weak Combat Air Patrol the fighters could fly in defense of their Task Forces, Dauntless dive bombers were stationed at low altitude to intercept low-flying enemy torpedo bombers.

1. Set Up and Entry
The Japanese player must enter from edge "1", facing in direction "4", and at an altitude that may be individually set at 3,000 feet or less. The Japanese player must write down the hex on which each of his aircraft will enter. The American player can then place his aircraft anywhere on the Mapboard, and at any desired altitude. Then the Japanese player places his aircraft in their designated positions, and play begins.

2. Special Rules
The Mapboard sections can be rotated as needed. The Japanese aircraft are loaded. Although the Mapboard can be rotated, the Japanese aircraft are supposed to be heading for American ships located somewhere off of Mapboard edge "4", and would not be deviating much from a straight course to their targets. Therefore, the Japanese aircraft that are still loaded may not leave the Mapboard through edges "2-3 or 5-6".

3. Suggested Sides
The sides are 4 SBD Dauntless vs. 4 B5N Kate.

4. Victory Conditions
The game lasts twenty Turns. The American player gets 10 Victory Points for each B5N Kate that was not shot down, but was forced to jettison its torpedo. The Japanese player gets 10 Victory Points for each B5N Kate that was not shot down, and was not forced to jettison its torpedo. Both sides get normal points for enemy aircraft shot down.

SCENARIO NR. 2: MASS BOMBERS

3. Suggested Sides:
12 G4M Betty, D3A Val, or B5N Kate vs. 4 F4F Wildcat, F6F Hellcat, F4U Corsair, P-39D, P-40C, P-40N, P-38G, P38L, or F2A Buffalo; 12 SBD Dauntless, TBF Avenger, SB2C Helldiver, or TBD Devastator vs. 4 A6M2 Zero, Ki. 43 Oscar; 12 B-25C, A-20G, or B-26B vs. 6 A6M2 Zero, Ki. 43 Oscar, or Ki. 44 Tojo; 12 B-26C or A-20G vs. 4 A6M5 Zero, M1K1-J George, Ki. 45 Nick, N1K1-J George, or Ki. 84 Frank (combination). Escorting fighters can be of any friendly type, but normally carrier fighters will escort carrier bombers.

SCENARIO NR. 3: NIGHT FIGHTERS

Both sides employed bombers at night, either singly, or in small groups to harass enemy positions and to keep enemy personnel awake. Later in the war, the Japanese sent out Kamikaze at night. The Americans developed a number of effective night fighters, but the Japanese never managed to develop effective airborne radar for their night fighters. The Visibility Options must be used to fully capture the flavor of night combat (note that night fighters were usually ground controlled).

Bedcheck Charlie
The night harassment bombers, generally sent out singly, were known as "Bedcheck Charlie" or "Washingmachine Charlie." Bomber Player is intruder; Fighter Player is interceptor.

1. Set Up and Entry
Both players secrety mark the hex number and any desired altitude they wish their aircraft to start at. The fighter player may begin anywhere on the Mapboard, the bomber player must begin in a hex on the edge of the Mapboard. Bomber altitude is known to the fighter player at time of set up.

2. Special Rules
Mapboard sections cannot be moved.

3. Suggested Sides:
1 G4M Betty vs. 1 P-70 (A-20 Variant) or P-61A; or 1B-25C vs. 1 Ki. 45 Nick.

4. Victory Conditions:
Game lasts up to twenty Turns. The bomber gains one Victory Point for each Turn it remains on the Mapboard, and the fighter gains one Victory Point for each Turn the bomber is not on the Mapboard (i.e., if it drives it off the Mapboard or destroys it), in addition to points for both sides if an aircraft is destroyed.

Night Kamikaze
The Kamikaze posed a severe threat to the American fleet, and stringent methods had to be used to combat the menace. The proportion of fighters aboard American carriers was increased from about 40% to 70%, and a proportion of these were the new night fighter versions of the Hellcat and Corsair. These were

used to combat the Kamikaze aircraft that tried to attack the ships under the cover of darkness. Use "Kammhuber Line" Scenario for Set Up and Entry, etc. Kamikaze player is intruder.

2. Special Rules:

Keep in mind that the Kamikazes are "loaded".

3. Suggested Sides:

1 F6F Hellcat or F4U Corsair nightfighter vs. 4 Ki. 45 Nick, G4M Betty, D3A Val, or B5N Kate.

Superfortress Night Raid

For use in mass night incendiary raids, the B-29 bombers were stripped of all but their tail guns, and sent in at low to medium altitudes. These posed great problems for the Japanese, whose night fighters, though in contact with surface radar stations, carried no airborne radar. Use "Bomber Stream" scenario for Set Up and Entry, etc.

3. Suggested Sides

12 B-29 vs. 8 Ki. 45 Nick.

4. Victory Conditions:

Bombers get 8 Victory Points per bomber still flying and loaded with bombs at game's end, in addition to points for both sides for aircraft shot down.

SCENARIO 4: LOW LEVEL MISSION

Solitaire Vehicle Attacks

2. Special Rules

The solitaire rules for firing flak and moving vehicles should be used.

3. Suggested Sides

Ki. 45 Nick, Ki. 84 Frank, D3A Val, F4U Corsair, SBD Dauntless, TBF Avenger, SB2C Helldiver, A-20G, B-25G, B-25C or B-25G, B-26B, P38G, P-38L, P-39D, P-40N, and P-61A.

Airfield Raid

3. Suggested Sides

4P-40C, P39D, or F4F Wildcat vs. 2 A6M2 Zero or Ki. 43 Oscar; P-38G, P-38L, F4U Corsair, F6F Hellcat vs. A6M5 Zero, N1K1-J George, Ki. 44 Tojo, Ki. 61 Tony, or Ki. 84 Frank.

XXIII. EXCLUSIVE SCENARIOS

SCENARIO 4: LOW LEVEL MISSIONS, CONTINUED

Shipping Strike

The low-level attacks by American medium bombers on Japanese ships were a key factor in maintaining blockades on by-passed Japanese held islands. These were often small, but bitter actions. The following scenario can be played solitaire, using only the ship and the bombers, as a two-player game by adding escorting and defending fighters (two or four per side), or as a multi-player game by multiplying the number of ships and aircraft in use.

1. Set Up and Entry

The Japanese ship or ships are placed in Mapboard sections V and/or VI. The defending Japanese fighters (if any) can be placed anywhere in these same game sections. The American aircraft enter the Mapboard from edge "1", traveling in direction "4", and at an altitude of 5,000 feet or less, as individually decided for each aircraft.

2. Special Rules

Mapboard sections can be rotated as needed.

3. Suggested Sides

2 B-25C or A-20G vs. 1 Japanese DD; pr 3 B-25C or A-20G vs. 1 Japanese CL. Escorting and defending fighters can be added as desired in games not played solitaire.

4. Victory Conditions

The game lasts twenty Turns. The side with the most Victory Points at that time is the winner.

Carrier Strike

This scenario represents a carrier attack on a small naval force or on a small portion of a larger force. This scenario can be played solitaire, using only the ships and bombers, as a two-player game by adding escorting and defending fighters (two or four per side), or as a multi-player game by multiplying the number of ships and aircraft in use.

1. Set Up And Entry

The ships are placed in Mapboard sections V and/or VI. The defending fighters (if any) can be placed anywhere in these same two sections. The attacking aircraft (including escorts, if any) enter the Mapboard from edge "1", traveling in direction "4", and at any individually decided altitudes.

2. Special Rules

Mapboard sections can be rotated as needed.

3. Suggested Sides

The naval forces should consist of one major surface vessel (BB, CV, or CA) and two smaller vessels (DD, EE, etc.) of the opposite nationality of the attacking aircraft. The attacking aircraft should consist of 8 D3A Val and/or B5N Kate, or 8 SBD Dauntless, TBD Devastator, SB2C Helldiver, and/or TBF Avenger. Escorting and defending fighters can be added as desired in games not played solitaire, but should be carrier types.

4. Victory Conditions

The game lasts twenty Turns. The side with the most Victory Points at that time is the winner.

Atoll Attack

Attacks on enemy positions located on small atolls, islands, or positions near the sea often encountered a variety of targets, and fierce opposition.

1. Set Up And Entry

Mapboard sections I, II, III, V, and VI are considered to be land, and Mapboard section IV is considered to represent water. The following surface terrain counters should be placed anywhere on the "land" hexes, in an interesting manner: 25X100', 20X200', and 15X300'. After determining sides, the defender should place the following on the Mapboard, as desired: two M-1 or LS class ships and one DD class ship in water hexes—these ships are not anchored, and can be moved during the game; two airfields, each of four ground target counters, located at least 15 hexes apart; four truck counters, two of which are to be placed within three hexes of each of the airfields; and an additional ground target counter that represents an installation of size GT-2. Once these are placed, the attacker should secretly write down the hexes, direction numbers, and altitudes where his aircraft will enter the Mapboard—attacking aircraft may enter from edge hexes along edges "1" and/or "4", and at any altitude of 10,000 feet or less. The defender now places nine light and four heavy flak counters, spaced at least three hexes apart, and containing 15 light flak guns valued at two gun factors each, and 6 heavy flak guns valued at five gun factors each. The defender then rolls a die once for each of his aircraft. If a "1-3" is rolled, the aircraft may be placed anywhere on the Mapboard and is "flying" at the start of the game. Any aircraft for which a "4-6" is rolled

must be placed at the end of a runway, ready to take off when they start their engines. The attacker's aircraft are now placed, and the first Turn starts.

2. Special Rules

Mapboard sections cannot be moved. The attacking bombers are loaded, and their escorting fighters can be either loaded or "clean".

3. Suggested Sides

The attacker has six bombers and four fighters, the defender four fighters. Suggested sides are: G4M Betty, D3A Val, or B5N Kate escorted by A6M2 Zero, Ki. 43 Oscar, or Ki. 61 Tony vs. P-40C, P39D, F2A Buffalo, or F4F Wildcat; G4M Betty escorted by N1K1-J George, Ki 44 Tojo, or Ki. 84 Frank vs. P39L, P-40N, P-38G, or F4F Wildcat vs. A6M2 Zero or Ki. 43 Oscar; SBD Dauntless, TBF Avenger, SB2C Helldiver, B-25C, or A-20G escorted by F4F Wildcat, F6F Hellcat, F4U Corsair, P-38L, or P40N vs. Ki. 44 Tojo, Ki. 61 Tony, Ki. 84 Frank, A6M5 Zero, or N1K1-J George.

4. Victory Conditions

The game continues until all attackers have exited the Mapboard. Normal Victory Points apply for aircraft or ships destroyed. In addition, the attacker gets 10 Victory Points for each airfield bombed (at least one direct hit on any counter making up the airfield), plus twenty bonus Victory Points if both airfields are bombed successfully. The attacker can also get four Victory Points for every target hex of the installation bombed (no additional points for hexes hit more than once). The attacker must gain at least twenty Victory Points more than the defender in order to win. The defender must gain more Victory Points than the attacker in order to win. Otherwise, a draw results.

Kamikaze Attack

This scenario represents an attack by Kamikazes on an American radar picket destroyer. At the height of the suicide attacks off Okinawa, American destroyers were deployed individually at some distance from the main fleet to provide advance warning. These ships often became prime targets for heavy Kamikaze attacks. This scenario can be played solitaire, using only the ship and the Kamikaze aircraft, or as two-player game, adding more Kamikazes and defending fighter aircraft.

1. Set Up and Entry

The American DD and defending fighters (if any) are placed in Mapboard sections V and/or VI. The Kamikazes enter the Mapboard from edge "1", traveling in direction "4", and at any individually decided altitudes. The Japanese player should secretly write down the hex each of his aircraft will enter on after the American units have been placed. The Japanese player must roll the die once for each aircraft that has not yet entered once each Turn. When a "6" is rolled, the aircraft is placed in its hex and may begin movement.

2. Special Rules

The Mapboard sections can be rotated as needed.

3. Suggested Sides

For the solitaire version, use 3 Kamikazes vs. 1DD and 2 American fighters. Any combination of aircraft types can be tried.

4. Victory Conditions

The Japanese win if the destroyer is sunk. The American player wins if it is not sunk.

ASW: Anti-Submarine Warfare

Aircraft were used against enemy submarines extensively by both sides, the Americans being far more advanced in this field than the Japanese. Some aircraft were specially armed and equipped for this mission, while others were used since nothing else was available, or had an accidental encounter. Almost any armed aircraft would attack a submarine, given the chance, even if not armed for it (normal bombs and rockets are as effective against a submarine on the surface as against any other ship). The key to any such attack was to destroy or severely damage the submarine before it could dive to a safe depth. Such short encounters make for a fast, but interesting solitaire scenario.

1. Set Up and Entry

Place your aircraft in any edge hex, facing in any desired direction, and at any altitude. The placement of the submarine (which is on the surface, i.e., at "0" depth) is determined by a number of die rolls: Roll the die and place the submarine counter in the "compass" hex in the Mapboard section whose number corresponds to the number rolled on the die. Roll the die again, and face the submarine in the direction that corresponds to the number rolled on the die.

2. Special Rules

Mapboard sections may be rotated as needed. You may wish to use the Visibility Options and not allow the submarine to start submerging until the aircraft is "spotted". The submarine will move according to the Solitaire Movement Table, and will submerge as rapidly as possible.

3. Suggested Sides

Suggested sides are one submarine and one aircraft. Good aircraft to try are the B-25C, SBD Dauntless, TBF Avenger, and SB2C Helldiver for the Americans, and the Ki. 45 Nick, B5N Kate, G4M Betty, and H8K Emily for the Japanese.

4. Victory Conditions

The game has no time limit, but is usually short (unless the submarine is forced to the surface, and a protracted duel begins). The winner is the side that destroys the other's unit.

SCENARIO 5. RECONNAISSANCE MISSION

Reconnaissance flights were a very important function of Pacific airpower, being used to locate enemy ships or positions prior to launching an attack, and to determine the effects of previous attacks

Fleet Contact

To locate enemy fleets at sea, numerous patrol aircraft would be sent out, each covering its own sector of the ocean. Once an aircraft spotted some enemy ships it had to observe the composition of the task force, and radio back reports, usually while being hotly pursued by the enemy fighters. The Visibility Options should be used with these scenarios, as the reconnaissance aircraft usually had to dart in and out of cloud cover to avoid enemy fighters.

1. Set-Up and Entry

Before the sides are determined, both players lay out the ships and cloud counters. The ships should be set up in a standard formation grouped near the center of the Mapboard. Then the cloud counters should be laid out, at least 13 hexes apart. Then the sides should be determined, and both players should secretly write down the hex numbers where he wishes to place his aircraft, the directions they face, and any desired altitude. The player with the reconnaissance aircraft

must start in a hex on the edge of the Mapboard. Now the sizes of the cloud formations are determined, as covered in the rules.

2. Special Rules

The Mapboard sections can be rotated as needed.

3. Suggested Sides

Reconnaissance flights were generally made by bomber types, flying boats, or float aircraft, the SBD Dauntless, TBF Avenger, SB2C Helldiver, B-25C, G4M Betty, D3A Val, B5N Kate, and H8K Emily all being common types for this work. Any enemy fighter types can be used to intercept. One reconnaissance aircraft is used by one player, and two fighters by the other player. The fleet should consist of 12 ships of various types, and these will not use their flak during the game (to avoid giving away their positions).

4. Victory Conditions

The game lasts twenty Turns. In addition to normal points for aircraft destroyed, the reconnaissance aircraft must end with at least twelve more Victory Points than the Opposition in order to win.

Photo Reconnaissance

This was effectively practiced only by the Allies, the photographs being pieced together to form complete maps.

1. Set-Up and Entry

The set-up is as above, only instead of ships six target counters are laid out on the Mapboard. These represent features that must be photographed to complete the mission.

2. Special Rules

As the Mapboard represents a section of land, sections containing the target counters should not be moved, although other sections could be rotated as needed.

3. Suggested Sides

One photo-reconnaissance aircraft variant is used by the Allied player, the other player getting two Japanese fighters.

4. Victory Conditions

Game lasts twenty Turns. The reconnaissance aircraft must pass over at least five of the target counters and exit the Mapboard in order to win.

XXIV. CREATING YOUR OWN SCENARIOS

As examples of historical situations turned into scenarios, two are included here that were drawn up while this game was undergoing playtesting pror to publication. The information for both came from Edward Jablonski's AIRWAR, a two-volume set that provides an excellent general history of World War II in the air.

Get Yamamoto

Allied intelligence, which had broken the Japanese code, intercepted a message giving the travel itinerary for Admiral Isoroku Yamamoto, the brilliant commander of the Japanese Navy. One point in this trip was found to be just within range of the P-38 fighter, and it was decided that an attempt would be made to intercept the Admiral's aircraft at that point. Sixteen P-38's were sent, but twelve of these were to provide top cover. The actual interception was left to one flight of four fighters. The time is 0935, April 18, 1943.

1. Set Up and Entry

Place all Japanese aircraft in Mapboard section I, facing in direction 4, at maneuver speed, and at 500 feet altitude or less. Place two of the American aircraft anywhere in Mapboard section VI that lies along edge "4". All American aircraft must be at 100 feet altitude.

2. Special Rules

Mapboard sections cannot be moved. No aircraft can exit the Mapboard during the game. All Japanese fighters have drop tanks, and, if Visibility Options are in use, the Americans have spotted the Japanese, but have not yet been spotted. Three of the Americans are 5 "kill" Aces. One of the Japanese fighters can be designated as a 15 "kill" Ace.

3. Suggested Sides

The Japanese have 2 G4M Betty and 6 A6M2 Zeros. The Americans have 4 P-38G.

4. Victory Conditions

Games lasts fifteen turns. The Americans win if they can destroy both G4M Betty bombers (since Yamamoto is in one of them, both must be destroyed to insure his loss). The Japanese win if at least one G4M Betty survives.

The Enemy Ace

Thomas McGuire was the second ranked American Ace with 38 "kills" to his credit. Shoichi Sugita was the second ranked Japanese Ace with 80 "kills" to his credit. The two met on the morning of January 7, 1945, and McGuire, with odds of 4-1 in his favor, came out second best when he stalled out at low altitude and crashed into the jungle.

1. Set Up and Entry

Place all American aircraft near the center of the Mapboard, all facing in the same direction, at maneuver speed, and at 2,000 feet altitude. Once these are placed, place the Japanese aircraft at least ten hexes behind the closest American aircraft, at any desired facing, speed, and at a 3,000-4,000 foot altitude.

2. Special Rules

Mapboard sections can be rotated as needed. All American aircraft have drop tanks attached. The Japanese aircraft is an 80 "kill" Ace. Designate one American as a 38 "kill" Ace, one as Average and two as Green. Do this secretly so that the Japanese player will not know which is which.

3. Suggested Sides

1 A6M5 Model 52b Zero vs. 4 P-38L.

4. Victory Conditions

Game lasts twenty Turns. The American wins if the Japanese fighter can be destroyed. The Japanese wins if he can destroy at least one American fighter, and avoid being shot down.

XXV. PLAYERS NOTES

POINT Nr. 9: Japanese Aircraft and Torpedo Attacks

Many Japanese fighters lack the firepower and toughness to stay and shoot it out with the American bombers (especially the B-29's). It is therefore essential for these aircraft to make massed attacks that permit one close-range attack, followed by a quick escape. When making a torpedo attack, line up the aircraft to launch their torpedoes ahead of the target ship. Try to make a simultaneous attack from several directions (the so-called "Anvil" tactic), so that any evasive maneuver by the ship to avoid the torpedoes from one side will place the ship in danger from torpedoes on the other side. Torpedo attacks have to be made from very low altitudes, but start the aircraft at an altitude of 2-3,000 feet. This will enable the aircraft to dive during the attack.

NEW RULES SECTIONS

XXVI. SHIPS

These rules cover the operation of ship counters in the game. A ship counter represents a single actual ship.

SHIP TYPES

Certain ship counters can be used to represent certain types of ships.

The **"CV"** (Aircraft Carrier) counters can be used to represent any "CV" class ships listed on the American or Japanese Ship Characteristics Charts.

The **"BB"** (Battleship) counters can be used to represent any type of heavy surface ship listed as "BB".

The **"CA"** (Heavy Cruiser) counters can be used to represent surface ships listed as "CA" or "CL" (Heavy or Light Cruisers).

The **"DD"** (Destroyer) counters can be used to represent any type of light surface warship, listed as **"DD", "DE", "E", "CM", or "PT"** (Destroyer, Destroyer Escort, Escort, Minelayer, or Patrol) classes.

The **"SS"** (Submarine) counters can be used to represent any "SS" class ships.

The **"TP"** counters can be used to represent any non-warship vessels, listed as **"M"** (Merchant), **"LS"** (Landing Ship), or **"A"** (Tenders, Transports, Oilers, etc.) classes.

SHIP CHARACTERISTICS

The Ship Characteristics charts for major ships of the American and Japanese navies, include information necessary for the use of these ships in DAUNTLESS. This information is broken down as follows.

Class ID NR:

This is an identifying code used to differentiate between the major types of ships, as used in the game.

Light and Heavy Flak:

This gives the value of the various light and heavy flak guns found aboard the various ships. As this varied during the course of the war, this is further broken down into a column for 1941 to early 1943, and from late 1943 through 1945 (the increase is quite dramatic in many cases). The numbers found in these columns are, with the exceptions listed below, the number of gun factors a ship can fire at a target in each clock arc. For instance, the American CA-1 class has 3 light and 9 heavy flak gun factors available for use in every clock arc. For instance, the ship could fire 3 light flak gun factors at an aircraft in its 2 o'clock, 3 light flak gun factors at another aircraft in its 4 o'clock arc, etc. At the same time, it could also fire 9 heavy flak gun factors at the same or at other aircraft in those same arcs. Each of these flak gun factor numbers can fire up to once per Turn at a target in any given clock arc. There are four exceptions to these general rules:

SHIPS LISTED WITH MULTIPLE NUMBERS (i.e., 2 × 20) have two flak gun factor numbers that can be fired at targets in each clock arc—these can be fired at separate targets, or fired individually at the same target.

NUMBERS WITH THE LETTER "A" next to them indicate flak gun factor numbers that cannot be fired into all six clock arcs during the same Turn. They cover two larger sectors, one consisting of the 10, 12, and 2 O'Clock arcs, and the other consisting of the 4, 6, and 8 o'clock arcs. Such a ship can fire at only one target in each of these two larger sectors with each gun factor number.

NUMBERS WITH THE LETTER "B" next to them indicate that the listed flak gun factors can only be fired at one target falling within the large 4-6-8 o'clock sector.

NUMBERS WITH THE LETTER "C" next to them indicate that the listed flak gun factors can only be fired at one target falling within the large 10-12-2 o'clock sector.

Ship's flak fires similarly to flak counters. The usual modifiers and Range Tables are used. For deflection, a ship's flak is always considered to be firing into its 12 o'clock arc. Flak cannot be fired at aircraft in the same hex as the firing ship.

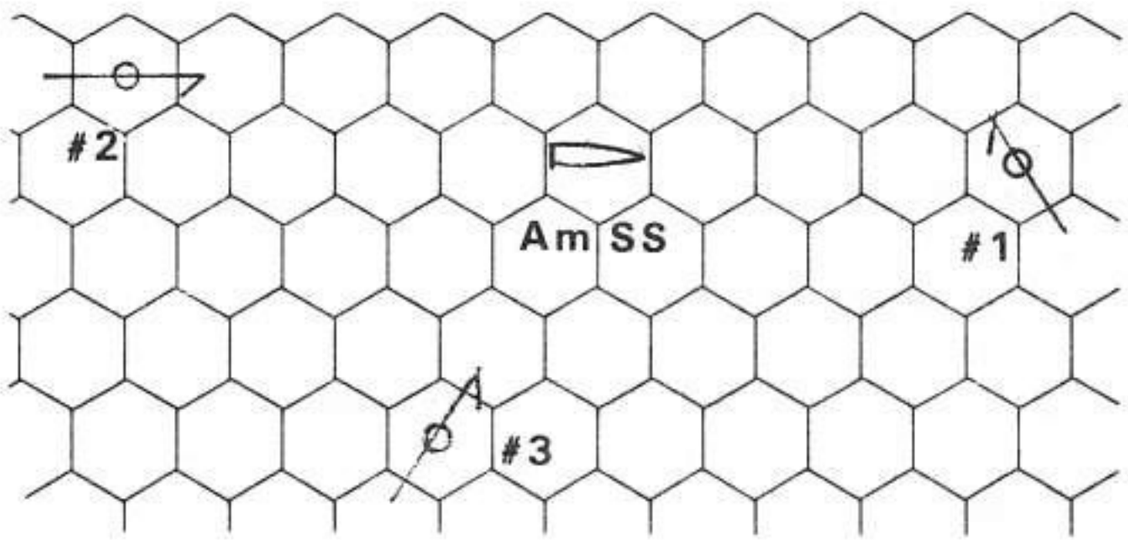
Examples:

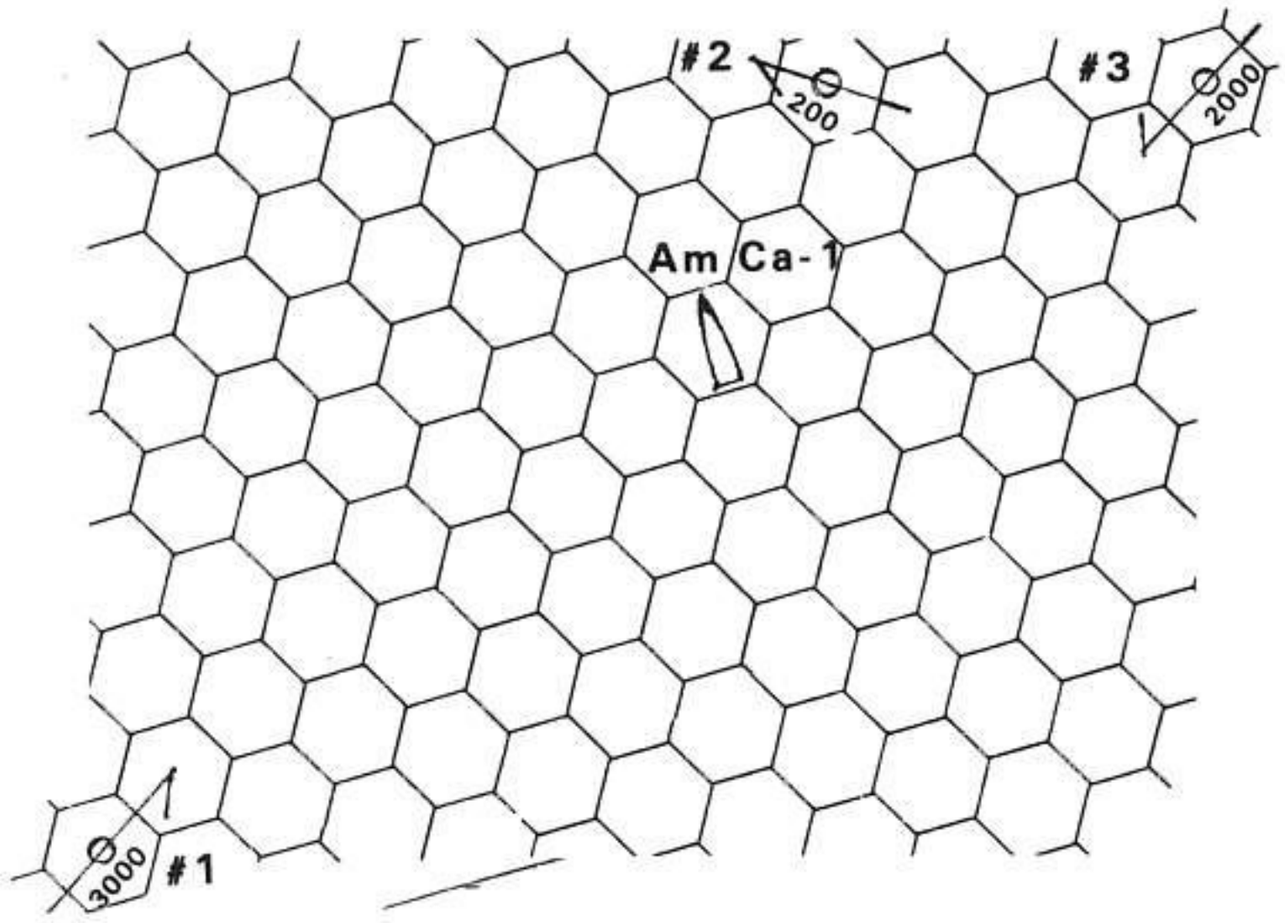
The following examples show the use of ship's flak against enemy aircraft.

EXAMPLE 1:

This shows an American submarine with three enemy aircraft. The aircraft are all out of range of the submarine's light flak. The submarine's heavy flak is "6B", and cannot be fired at aircraft #1, which lies in its 12 o'clock arc. Both aircraft #2 and aircraft #3 can be fired at, aircraft #2 being in the 6 o'clock arc, and aircraft #3 being in the 4 o'clock arc. Since a "B" flak gun factor can only be used against one target in its 4-6-8 o'clock sector, only one of the aircraft can be fired at (probably #3, as it is the closest).

Altitude of all three aircraft is 8000 ft.





EXAMPLE 2:

This shows an American CA-1 class ship with three enemy aircraft. Aircraft #1 is in the 8 o'clock arc at a range of 14 hexes, and can be fired at by both light and heavy flak. Aircraft #2 and #3 are both in the 2 o'clock arc, #2 being at a range of 3 hexes, and #3 being at a range of 12 hexes (too close to use the heavy flak). Only one of these can be fired at, this being #2, as it is the closest. Had #3 been 13 or more hexes away, the heavy flak could have been fired at it.

Speed/Turn:
This gives the speed at which a ship can move. For instance, "1/1" indicates a ship that can move one hex per Turn. "1/2" indicates a ship that can move one hex on Turn numbers evenly divisible by 2. "1/3" indicates a ship that can move one hex only on Turn numbers evenly divisible by 3.

Turning/Turn:
This gives the number of hexsides a ship can turn through during a Turn. For instance, "1/1" indicates a ship that can shift the front of its counter one hexside every Turn. "1/2" indicates a ship that can do so only on Turn numbers evenly divisible by 2. "3/1" indicates a ship that can pivot through three hexsides every Turn.

Ships that can both move and turn during the same Turn must move into the new hex before executing the turn—the ship cannot turn in its original hex, then enter a new hex during the same Turn.

Nr. Hits
This is the number of hits that must be scored on a ship in order to sink it. Such hits can only be scored on a ship by bombs, torpedoes, or bracketed gun factors (see "Firing Options—Strafing").

Silhouette Nr.
Use this number as a modifier when firing guns at a ship.

Point Nr.
This is the number of Victory Points a ship is worth if it is sunk.

Class Names:
These are the class names of the ships represented by each CLASS ID NR. Ships can be considered as either moving at sea, or as anchored in harbor. Ships at sea must move (entering next hex) whenever possible, although they are not required to turn whenever possible. Ships at anchor cannot move or turn in place.

HITS ON SHIPS

Ships can be either hit with bombs and/or torpedoes, or by gunfire.

Bomb and Torpedo Hits

Hits scored by bombs or torpedoes are scored against the total number of hits the ship can take.

When the total number of hits scored on a ship equals or exceeds the number of hits listed on the ship's characteristics, the ship is sunk.

When the total number of hits scored on a ship equals or exceeds 50% of the number listed on the ship's characteristics, the ship's speed will drop to half of its listed speed (i.e., from ½ to ¼, etc.)

When the total number of hits scored on a ship equals or exceeds 75% of the number listed on the ship's characteristics, the ship will no longer be able to move or turn (i.e., it will be "dead in the water").

Each hit scored by bombs and/or torpedoes will reduce a ship's heavy and light flak gun factor numbers by one gun factor in every direction.

Strafing Hits

Hits scored on ships by bracketed gun factors are handled as follows: The aircraft fires at the ship in the normal strafing manner (remembering to use the ship's Silhouette # as a modifier), and a Hit Table number is obtained. The die is rolled, and the results noted. Only "C", "E", and "G" hits count. "C" hits eliminate one gun factor of heavy flak in every direction. "E" hits count against the ship in the same way as a bomb hit would. "G" hits reduce the ship's light flak factor numbers by one gun factor in every direction.

Other Hits

Hits scored on ships by other guns are handled as follows: The aircraft fires at the ship in the normal manner for strafing, a Hit Table number is obtained, the die is rolled, and the results noted. Only "C", "E", and "G" hits count. Each of these hits will reduce the ship's light flak by one gun factor in every direction.

Recording Ship Hits

Use extra Hit Charts to mark hits on ships. Set these up in any convenient manner.

SHIP INTERVALS

Ships normally sail in formation, with certain intervals between the ships to avoid possible collisions. American and Japanese policy on this was different. American ships should normally be placed on the Mapboard at least five hexes apart. Japanese ships should be placed at least ten hexes apart.

SUBMARINES

Submarines can submerge at a rate of 15 feet per Turn. Thus an aircraft which catches a submarine can reach a depth of over 100 feet (the deepest at which the submarine can be seen from the air), and is safe. Submarines can rise to the surface at a rate of 7 feet per Turn. A submarine that suffers 50% or more of the hits listed must, in addition to dropping to half its listed speed, come to the surface as quickly as possible.

XXVII. MULTI-PLAYER RULES

These are some suggested rules for use in games where there are several players per side.

TIMED MOVEMENT PLOTTING

Different players take different lengths of time to make their Log notations. In games involving a large number of players, it can become very frustrating for the faster

Japan and the United States of America. These two countries, vastly different in culture and outlook, were the major Pacific powers of the time. Both powers sadly misjudged and misunderstood the other's capabilities and intentions, and this, combined with the current economic and political scene, led to war.

Imperial Japan was greatly underrated by the Western powers in 1941, and this arrogance of ignorance was similarly applied in reverse by the Japanese. In the West, Japan was regarded as a rather "quaint", though industrious group of Orientals. In return, the Western powers were thought of in Japan as being soft, decadent colonial powers with no stomach for a long, hard war. The course of the war forced both sides to revise their judgements.

The quality of Japanese airpower at the beginning of the war was much undervalued. In part, this was due to Japanese propaganda and stringent security measures, based on the slogan "Every foreigner is a spy". In part, it was also due to a tendency by Western intelligence organizations to scoff at the reports of Japanese efficiency in their war against China (which had been dragging on for some ten years). This attitude was displayed in the September, 1941, issue of AVIATION MAGAZINE, in an article titled "Japanese Air Power", which stated, in part, that the Japanese air forces had poor pilots and planes, were of low offensive strength, and would crumble "like a house of cards" if engaged in a great air war. As a matter of fact, in 1941, the Japanese had the largest and most efficient naval air arm in the world, and a fine modern army air force. This gross underestimating of Japanese capabilities led to the Western powers attempting to maintain their Pacific bases with weak forces of obsolescent planes, and with large portions of their navies stationed in the Atlantic.

The Japanese, on the other hand, although taking a realistic approach in comparing their industrial capacity to that of the United States, believed that their superior "moral force" could more than compensate for any disparity in numbers and equipment. They felt that things of the spirit are always superior to material things, and that they could successfully match American numbers with training and moral superiority. It is difficult for a Westerner to conceive of how ingrained this idea was in the Japanese people. Japanese training manuals often opened with the statement, "Read this, and the war is won". This assumption that the Western powers were a soft and contemptible foe, further strengthened by the easy initial victories,led to a crass overconfidence on the part of the Japanese, who, as a result, failed to capitalize on their early opportunities, or to make the best possible uses of the resources at their disposal.

The War opened with the Japanese military machine, spearheaded by excellent and experienced air forces, winning a series of overwhelming victories. The Allied Buffaloes, Airacobras,and Tomahawks, among other types, were flown by less experienced pilots, and proved no match for the superbly-trained Japanese in their Zeros. Under an umbrella of fighters, the Japanese bombers (also flown by elite crews—the least experienced flyers in the Pearl Harbor raid had over 800 hours of flying time) were able to wreak havoc below. In a few short months, the latter day Samurai had taken Hong Kong, Malaya and Singapore, the Philippines, Guam, Wake, Borneo, Sumatra, and many other key points, as the Western Allies suffered repeated defeats.

The Japanese suffered their first major check in the Battle of the Coral Sea, in May 1942; the first major naval engagement fought totally between opposing carrier forces. Although the Americans lost a large carrier to the Japanese loss of a small carrier, the remaining two Japanese carriers lost so many planes and aircrew that they could no longer guarantee control of the local airspace, and an entire Japanese invasion fleet was forced to retire. The first real major Japanese defeat followed at the Battle of Midway in June, 1942. For the loss of one large carrier, the American Dauntless dive bombers and their young naval reserve crews sent four large Japanese carriers to the bottom. This gave the Americans complete control of the air, and forced the Japanese surface fleet, their largest and most powerful assembled during the war, to beat a hasty retreat.

The most realistic of the Japanese commanders, Admiral Yamamoto, had predicted before the war that he could guarantee six months of victory, but after that he had no confidence in the chances of Japan's ultimate victory. Midway came almost exactly six months after Pearl Harbor, and Imperial Japan was forced back on the defensive. At this state in the war, the Japanese high command felt that it would be possible to establish a vast perimeter of defense, a network of airfields and fortified islands stretching throughout the Pacific. This defensive system would be so bloody and time-consuming to breach and capture that the United States and her Allies (who, remember, were felt to have no stomach for a long, costly war) would eventually give in to a negotiated settlement that would permit Japan to retain most of her conquests. As a matter of fact, territory still under Japanese control at the moment of surrender still included vast portions of Asia and hundreds of Pacific islands. That these conquests played no part in preventing the Japanese defeat was due to the nature of the use of Allied airpower in this theater.

The first American offensive came at Guadalcanal in the Solomon Islands. The sole strategic importance of this island was that it contained an airfield. Heavy land fighting, several big carrier battles, and the most bitterly contested surface naval actions since the Anglo-Dutch wars of the Seventeenth century followed. In the end, the Americans retained their airfield, and the battered Japanese had to retire. The superior Japanese surface fleet had been unable to force a decision, despite a number of successes, as they could not operate in daylight within range of the American planes on Guadalcanal, and their own bases (at Rabaul, 600 miles away) were too distant to effectively dispute the airspace around the island.

This initial American success was followed up during 1943 and early 1944 by a series of amphibious operations that moved up the Solomons chain and the coast of New Guinea, and into the Gilbert and Marshall islands. This advance, contrary to Japanese expectations, was not a comprehensive reduction of every key-point, but a series of "hops", each invasion taking place within range of the landbased planes stationed at the previous conquest. Allied engineers used their mechanized equipment to quickly carve out or expand

airfields at each stage of the advance. Allied planes at the new fields were then used to "neutralize" Japanese bases, to "soften-up" the next objectives, and to impose an aerial "blockade" on by-passed Japanese strongholds. This technique, combined with the flexibility and growing power of the American carrier task forces, gave complete control of the air to the Allies at each stage of their advance. The powerful surface units of the Japanese fleet were forced to abandon their imposing fortress base at Truk Atoll almost without a fight when it became vulnerable to mass attacks by American land and carrier planes.

Japanese airpower had been frightfully mauled in the first two-and-one-half years of war. Airframe losses were barely made good, and pilot replacements were totally deficient in both numbers and training. Allied industrial superiority, combined with excellent training for their aircrews, was beginning to show. The Allies now had not only superior numbers and material, but also qualitatively superior planes and pilots. The invasion of the Marianas in June 1944 brought out the Japanese fleet for a major confrontation. Basing their plan on the premise that the American fleet could be simultaneously attacked by both land and carrier planes, the Japanese miscalculated, and were defeated in detail. The American carrier planes aboard the fleet carriers of Task Force 58, and the various task groups of "baby flattops", had already destroyed the Japanese land-based planes in a series of raids prior to the arrival of the Japanese fleet. The Japanese carrier planes were then ripped apart in a one-sided exhibition of American qualitative superiority known as the "Great Marianas Turkey Shoot", where some 400 Japanese planes were shot down.

The destruction of the Japanese carrier squadrons left the Japanese helpless to seriously contest the next major American offensive, the invasion of the Philippines. In the Battle of Leyte Gulf, in October, 1944, the Japanese surface fleet, lacking air cover, was largely annihilated. Imperial Japan, left without a fleet, and her remaining planes manned by inexperienced pilots, had technically lost the war at this point, and undoubtedly should have surrendered on any available terms.

Already the shape of things to come was becoming all too apparent in the Japanese home islands. Superfortress bombers from bases first in China, then later in the Marianas were mounting increasingly destructive raids on the cities of Japan. Although American heavy bombers in Europe had been used exclusively for precision daylight raids on industrial and military targets, discussions were already in progress for firebomb "terror" raids on the flammable Japanese cities. Not only was it felt by the military that such raids would destroy the important "cottage" industries in the city's residential areas, but American public feeling was high to exact a measure of revenge on the Japanese for their unprovoked attack on Pearl Harbor. Even the Walt Disney studios produced a propaganda cartoon advocating the bombing of Japanese cities. These feelings finally resulted in a series of mass night firebomb raids that burned out the centers of all the major Japanese metropolitan areas.

The Allied forces continued to close in on the Japanese home islands. Iwo Jima, a convenient site to land damaged Superfortresses returning from raids, and on which to base fighter escorts for the big bombers was taken in February, 1945. The last big battle took place at Okinawa in May. Here the Japanese army fought a delaying action to keep the Allied fleet in the area to provide a target for the last desperate weapon in the Japanese arsenal.

This weapon was the Kamikaze ("Divine Wind"), suicide planes that deliberately crashed into ships to ensure their own and the ship's destruction. First used on a small scale during the Philippines battles, the Japanese expended literally thousands of Kamikazes off Okinawa. This, to Western minds, unprecedented and incomprehensible weapon was a direct outgrowth of the Japanese training and belief in the superiority of moral to material force. The Japanese realized that the conventional war was lost, time was running out, and only unorthodox methods could save the empire. With the poorly-trained pilots available, the best way to assure a hit on a target was to actually fly a plane into that target. To sacrifice one's life for the Emperor was not a new concept to the Japanese ("Thus, for the Emperior I will not die peacefully at home"), but the idea of basing training and tatics solely to this end was. Although there appears to have been no lack of volunteers for the Kamikaze units, the idea was regarded as farfetched even by many Japanese. Strange though the concept was, the Kamikazes crashed into many ships, and their attacks led to some of the most desperate fighting of the war. Despite heavy losses, Okinawa finally fell, the Allied fleets continued their operations, and massive preparations for the invasion of the Japanese homeland began.

Okinawa was to be the prime staging area for the most massive amphibious operation in history. Dozens of engineer and seabee battalions went to work preparing for an unprecedented number of planes. As planned, the island was to have over twenty-five miles of paved airstrips, plus their associated hardstands, taxiways, and service aprons. Planes from the Pacific Air Forces (Fifth, Seventh, and Thirteenth) were to be based there, as well as the Eighth Air Force moving from Europe. The land based bombers from Okinawa joined the Superfortresses from the Marianas and the carrier planes from Task Force 38 in a continual bombing of Japan in preparation for the landings to come. The Japanese prepared for the invasion by fortifying suspected landing beaches, arming civilian militia, and by hoarding a reserve of over 5,000 Kamikazes.

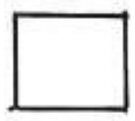
The projected invasion of Japan (Operation Olympic) was called off due to the Japanese surrender following the dropping of Atomic bombs on Hiroshima and Nagasaki. This finally convinced the Japanese that further resistance was futile, and Imperial Japan became the first great nation in history to surrender solely because of the effects of aerial attack.

AIR ORGANIZATION AND AIRCRAFT

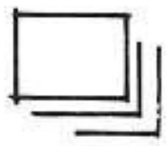
The echelons of command in the Japanese air organizations followed fairly conventional patterns, as shown in this diagram:

AIR ORGANIZATION—JAPANESE ARMY

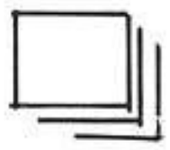
KOKU-GUN
(Air Army)



HIKO-SHIDAN
(Air Division)
(2-3)



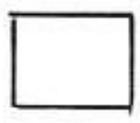
HIKO-DAN
(Air Brigade)
(2-3)



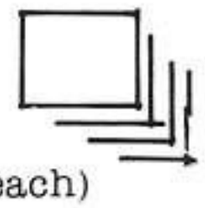
SENTAI (Group)
(2-3)

CHUTAI
(Squadron)
(2-4)

SENTAI HOMBU
(H.Q. Flight)
(4 planes)



SHOTAI
(Flight)
(3 planes each)



TERMINOLOGY

Sentoki Sentai: Fighter Group
Keibaku Sentai: Lt. Bomber Group
Jubaku Sentai: Hvy. Bomber Group
Dokuritsu Dai Shijugo Chatai:
Independent Squadron
Konsei Hiko-Dan: Mixed Air Brigade
Taitatari: Japanese Army Counterpart to Kamikaze.
Sentoki Sohju Shi: Fighter Ace

AIR ORGANIZATION—JAPANESE NAVY

The Organization of naval aviation was similar, although unit sizes had to be varied somewhat to allow for the different plane-carrying capabilities of the different carriers. Japanese carriers were organized into divisions of two or three ships, and all of the planes on those ships would operate together, both ashore and afloat. The exact organization of these carrier units varied widely during the war, especially with regards to the number of fighters carried:

December 7, 1941: Fifth Carrier Division: Zuikaku, Shokaku: 36 Ftr, 54 DB, 54 TB
May 7, 1942: Fifth Carrier Division: Zuikaku, Shokaku: 42 Ftr, 41 DB, 42 TB
August 24, 1942: First Carrier Division: Zuikaku, Shokaku: 53 Ftr, 51DB, 36 TB
June 19, 1944: First Carrier Division: Zuikaku, Shokaku, Taiho: 81 Ftr, 90 DB, 54 TB

Japanese planes at the start of the war were built to obtain the maximum maneuverability and range possible. Since reliable Japanese engines lacked the horsepower of current engines then in use in the west, their aircraft could only have the desired characteristics by sacrificing weight and protection. This Japanese design philosophy goes a long way towards explaining why so many of their planes were unable to absorb damage.

Japanese plane designations were usually not known to Allied intelligence, and, even today, seem somewhat strange and awkward. For easy identification purposes, a system of code names for Japanese planes was devised by Captain (later Colonel) Frank T. McCoy, U.S.A.A.F. and his staff. The "hillbilly" names assigned were short, but unusual enough to stick in the memory. To this day, most writers still refer to Japanese planes by these designations, and it is due to their common usage that these names have been used to identify Japanese planes in this game.

JAPANESE AIRCRAFT

10A & 15A. "Zero" ("Zeke")

The finest fighter plane in the Pacific at the start of the war. These fighters paved the way for the early Japanese victories. The plane had many strong points, and its weak points did not really become apparent to the Allies until one was captured intact. The Zero was extremely maneuverable at lower speeds, but was sluggish at higher speeds. The lack of cockpit armor and self-sealing tanks were additional weak points. Although sturdy and dependable, the plane could not absorb much damage. The Rufe floatplane version was excellent as far as floatplanes go, but the floats hindered performance, and this version was no match for conventional Allied land or carrier fighters. The A6M5 version was intended to correct earlier deficiencies. Although heavier than earlier models, and slightly less maneuverable, this model had a better roll rate, some pilot armor, self-sealing tanks, and a higher ceiling. More firepower became available during the production run, as better 20mm cannons were installed, then a heavy machine gun to replace one of the light guns in the nose. The A6M6 Model 53c version was very heavily armed, and had some success on home defense duty against the B-29 raids. Most of the top Japanese "Aces" flew the Zero, including Hiroyishi Nishizawa ("The Devil"), who had 102 confirmed "kills".

13A. "George"

This was probably the best Japanese navy fighter of the war, and was one of the most formidable fighter planes employed in any quantity by them. Designed to replace the obsolescent Zero, the George incorporated decent protection as well as "combat flaps" that gave it excellent manueverability, especially at low altitudes. Few good pilots were left to fly the type, however, and the large new 1990 HP Nakajima NK9H Homare 21 engine proved to have a low serviceability rate, and the landing gear suffered constant structural failures.

8B. "Oscar"

The standard Japanese army fighter for much of the war, the Oscar is probably the ultimate expression of the Japanese doctrine of building fighters designed for maneuverability. In addition to its light weight and low wing loading, the Oscar incorporated "butterfly" flaps which provided even better low speed maneuverability. The Oscar had no pilot armor or self-sealing tanks, and to further reduce weights was armed with only two

machine guns and a limited supply (250 rpg) of ammunition.

9B. "Tojo"

The Tojo was designed as a "point defense" fighter. Drastically different from most contemporary Japanese designs, the Tojo's design philosophy stressed speed and climb rate to the exclusion of maneuverability. Intended as a bomber interceptor, the plane's toughness (compared to other Japanese fighters) made it a useful fighter bomber. The IIc model was retained mainly in the home islands to combat B-29 raids.

15B. "Nick"

An unusual design for the Japanese, the Nick was originally intended to fill the role projected for the Luftwaffe's Me-110. This two-engine heavy fighter was used as a fighter bomber, and as an anti-shipping attack plane. Later pressed into service as a night fighter, the type enjoyed some success, although severely handicapped by the lack of airborne radar. Initially rather poorly armed, versions from the KAIb (KAI = Kaizo = modified) on carried a 37mm cannon, and a steadily increasing air-to-air punch.

14A. "Tony"

The only important Japanese fighter to use an inline engine, the Tony employed a license-built version of the German Daimler Benz engine (used in the Me-109). Not as maneuverable as its army stablemate, the Oscar, the Tony was tougher, better-armed, and could dive with most Allied types. Initially armed with two heavy and two light machine guns, the type proved adaptable to carrying increasingly heavier armaments as the war progressed, culminating in the powerful KAId version carrying two 30mm cannons, and two heavy machine guns which entered action in the spring of 1944.

5B. "Frank"

This was probably the best Japanese army fighter of the war. Like most late-war Japanese fighter designs, it was heavier and less maneuverable than its predecessors but faster and tougher. It was built in fairly large numbers, but was plagued by troubles with its large new engine. In the hands of a competent pilot, the Frank was a match for the best of the Allied single-engine fighters. The Ic version was employed in the home islands to combat the B-29 raids.

8A. "Val"

The standard Japanese carrier dive bomber at the start of World War II, the Val was employed in all theaters. Having a fixed undercarriage like the German Stuka, the Val was a much better plane, and featured surprisingly good speed and altitude capabilities for such a configuration. A sitting duck for enemy fighters, the Val owed its early successes to Japanese air superiority, and the superb crews available. Somewhat heavy on the controls, but quite maneuverable for its type, the Val lacked self-sealing tanks, and could absorb only limited damage.

12A. "Kate"

Undoubtedly the best operational carrier torpedo bomber in the world in December 1941, the Kate was equally efficient at delivering torpedoes and bombs. Having an outstanding range, the Kate was also widely employed for search and anti submarine patrols. Again, the Kate, like many other Japanese types, lacked protection.

2B. "Betty"

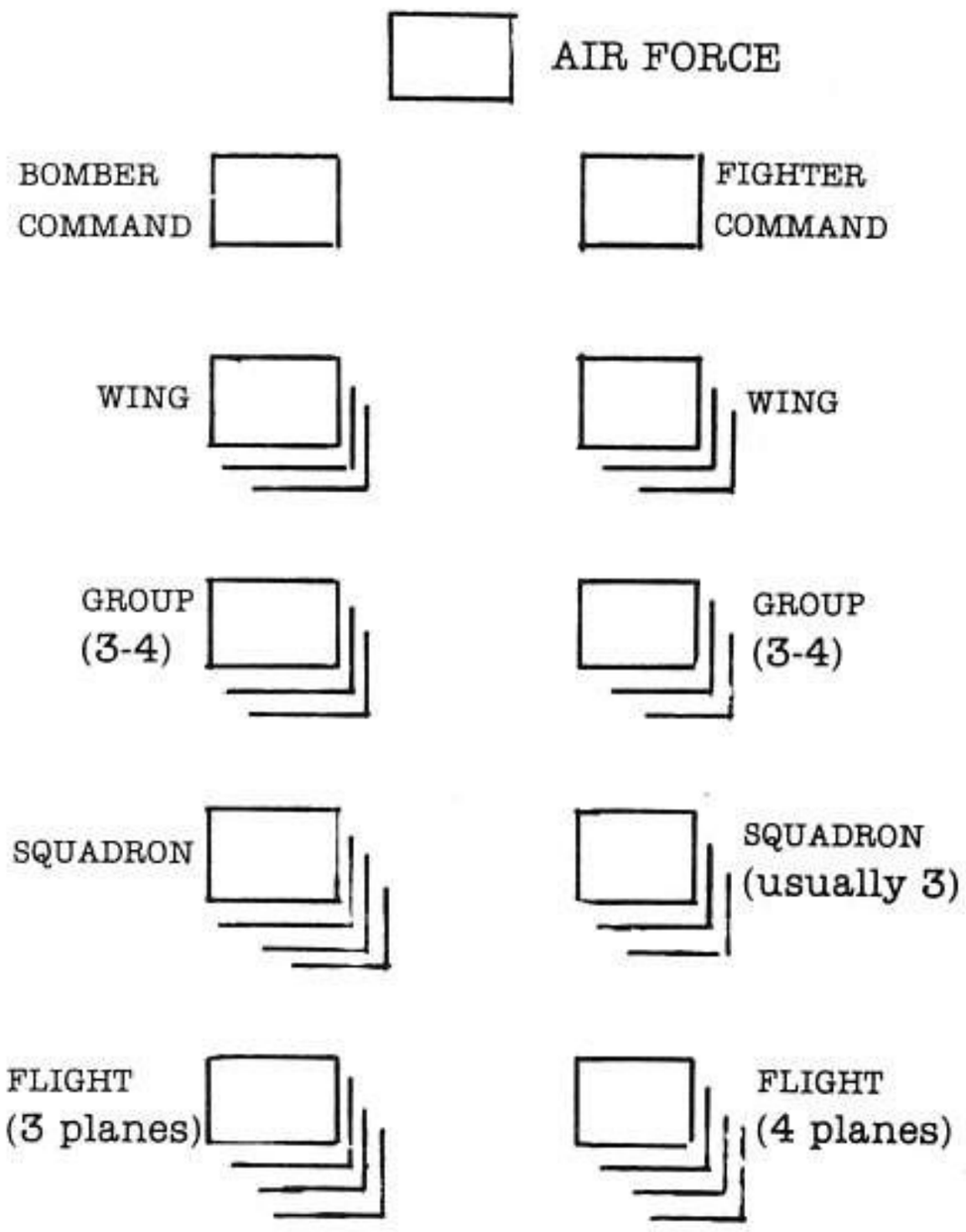
The standard Japanese two-engine navy bomber throughout the war. Large enough to have had four engines, the Betty was underpowered for its size. The plane had excellent range, as every stray space contained a gas tank, but had an indifferent load-carrying ability, and absolutely no protection in the form of armor or self-sealing tanks.

3A. "Emily"

The best flying boat of World War II. Very tough, well-armed, fast, and possessing a range that enabled it to remain in the air for 24 hours, the Emily ranged the Pacific. Most often used for patrol and ASW work, the Emily could also carry a useful bomb load.

AIR ORGANIZATION—U.S.A.A.F.

The echelons of command in the U.S.A.A.F. organizations also followed fairly conventional patterns, being divided into a number of Air Forces (each of which was numbered), as shown in this diagram:



NOTES:

Each air force would vary in strength. A larger air force might have several air divisions, each composed of a number of wings, added to the chain shown. Few air forces had fighter wings—usually the groups would report to the command level directly. Night fighters operated in independent squadrons. Some mixed (commando) groups also were organized.

AIR ORGANIZATION—U.S. NAVY

The organization for naval aviation was similar, although, again unit sizes had to allow for the different plane-carrying capabilities of the different carriers. The types and numbers of planes carried varied as the war progressed, the figures below showing the composition of an average carrier air group:

December 7, 1941: 18 Ftr, 36 DB, 18 TB
May 7, 1942: 21 Ftr, 37 DB, 12 TB
August 24, 1942: 36 Ftr, 36 DB, 15 TB
October, 1944: 41 Ftr, 42 DB, 18 TB
February, 1945: 72 Ftr, 12 DB, 10 TB

Note how the number of fighters carried shot up with the initiation of Kamikaze attacks in late 1944, and the loss of targets due to the sinking of most Japanese warships. Some carriers were converted to carry nothing but night fighter versions of the Corsair and Hellcat to combat nocturnal visitors.

The planes of the U.S. Marine Corps were usually deployed by individual squadrons, operating independently, or attached to some larger Air Force or Navy formation.

American planes at the start of the war were built to obtain maximum toughness for use as fighter bombers and to combat enemy close-support bombers. They lacked maneuverability and altitude capabilities. Later development of far more powerful engines enabled the later model planes to combine toughness with speed, altitude capability, and heavy firepower. Always able to absorb combat damage, American fighter and bomber types never could match the lightweight Japanese in maneuverability or range, although they later exceeded them in every other respect.

In July of 1944, the U.S.A.A.F. alone, not counting the thousands of planes with the Navy and Marines, numbered 79,908 planes on strength. Although very large numbers of these were still stateside or engaged in Europe, a virtual armada of the air was poised to topple the overextended Japanese Empire. Some of the most prominent types are included in the game.

For some reason, most U.S.A.A.F. planes are usually referred to by their numerical designation, while U.S.N. planes are more often called by name. These are the identifications that are used in the game.

AMERICAN AIRCRAFT

1B. P-38

The P-38 was the only mass produced, twin engine, single seat propeller driven fighter plane of World War II. More than just an unusual design, the P-38 fighter types shot down more Japanese planes than any other fighter. Fast and rugged, the P-38 was equipped with maneuver flaps and was surprisingly maneuverable, especially considering its size. Early models could not fully exploit its diving abilities, due to compressability problems, and possessed a poor roll rate. Its popularity was due to its toughness, and the "spare" engine, if one should quit. Its success lay in its superior speed and altitude capabilities, and tactics that exploited these advantages. The P-38L was the ultimate production version. Earlier problems had been cleared up by the addition of dive flaps and boosted flight controls. The large payload these planes could carry made them excellent fighter bombers. Many P-38's were completed as F-5 photo planes, and the aircraft was widely used in this role. Although no P-38M night fighters saw any actual combat action, a number of very similar field conversions did. A very adaptable plane, the P-38 was the mount of many top Aces, including Richard Bong, America's Ace of Aces (40 "kills").

2. P-39

A very unusual design, with the engine mounted behind the cockpit, the P-39 was a constant maintenance nightmare. Rugged and well-armed, the P-39 proved to be a poor fighter due to its poor maneuverability. It possessed a good roll rate, and its 37mm cannon made it an effective fighter bomber, but it was very unpopular with the pilots who flew it. Surprisingly, the plane was very popular when sent lend-lease to the U.S.S.R. Russian pilots used it extensively at low level, and appreciated its stout construction and reflector sights (not found in Russian fighters of the period). The P-400 was an export version with an unsupercharged engine, and 20mm cannon replacing the 37 mm gun in the propeller hub. The D-1 also featured this change in armament, but also had two additional heavy machine guns and a better engine.

10B & 14B. P-40

The standard U.S.A.A.F. day fighter at the start of World War II, the P-40 would not have been considered a first-line day fighter in Europe, but it was the best fighter available to army pilots in the Pacific for the first year of the war. Sometimes referred to as the "best second best" fighter of the war, the P-40 was strong but not outstanding. Using proper tactics, as was done by the Flying Tigers in Asia, or as a fighter bomber, as was done by the British in Africa, the P-40 could be deadly, especially against the poorly protected Japanese planes. The P-40 continued development throughout the war, the P-40N being the last mass-produced type. Increases in weight reduced the type's speed and maneuverability somewhat, but it still remained an excellent ground support machine.

6A. P-61

A night fighter designed as such from the ground up, the P-61 was one of the most formidable fighters of the war. Big, heavy, larger than a B-25 bomber, this twin-engine fighter was also amazingly maneuverable due to its use of full span "spoilers" which proved swifter and more efficient than conventional ailerons. The plane was an efficient night fighter, and could also carry a useful bomb load for day or night attack missions. Very successful, the type was only criticized for its indifferent climb rate and rather low (for 1944) top speed. These problems were not corrected until the "C" post-war model was built.

7B. "Buffalo"

The U.S. Navy's first monoplane fighter, the Buffalo was obsolescent by the start of fighting in the Pacific. Early versions (the F2A-1 and F2A-2) were maneuverable and pleasant to fly, as built. Later additions of armor plate and self-sealing tanks caused weight increases that ruined the plane's performance. More widely used by the British in combat than by the Americans, the Buffalo was massacred wherever the Japanese encountered it.

5A. "Wildcat"

The standard U.S.N. carrier fighter for the first half of the war, variants of the Wildcat continued on duty on the CVE "Jeep" carriers until the end of the war. Less maneuverable than the standard Japanese fighters, the Wildcat was able to hold its own thanks to its ruggedness and firepower.

7A. "Corsair"

The first 400 mph navy fighter. Used by the U.S.M.C. from land bases for most of the war, the Corsair was not approved for carrier operations until late in 1944. Fast, maneuverable, tough, and an efficient fighter bomber,

the Corsair achieved a spectacular record. Not as maneuverable as the Japanese types, the Corsair was noted for its ability to roll at high speeds. Built in greater numbers than any other navy type (12,571 total), the Corsair remained in production until 1953. The Corsair proved popular in many countries, Great Britain alone taking 2,012 of the fighter, and the R.N.Z.A.F. using 370 of the type. The top-rated Marine Ace, Gregory "Pappy" Boyington shot down 22 enemy planes while flying Corsairs (he had an additional 6 "kills" with the Flying Tigers for a total of 28).

9B. "Hellcat"

The standard U.S.N. carrier fighter for the second half of the war, the Hellcat was designed specifically to beat the Japanese Zero fighter. The Hellcat exceeded the Zero in every category except maneuverability at low speeds, but this was easily compensated for by maintaining high speeds in combat. The most famous Hellcat battle was the "Marianas Turkey Shoot", where the Hellcat CAP tore into and destroyed succeeding waves of Japanese carrier planes. Hellcat pilots shot down 4947 of 6477 planes destroyed by navy pilots. Adding in Marine "kills" in the type, Hellcats accounted for 5156 enemy planes. The night fighter version was introduced late in the war to combat Japanese tactics of night bombing and kamikaze attacks. The top navy Ace of World War II, David McCampbell, scored 34 "kills" while flying Hellcats.

11B. A-20

The most produced and widely operated light bomber of World War II, the A-20 saw extensive combat duty in the United States, British, Russian, and French air forces, to name a few. Fast and maneuverable, for a bomber, the A-20 operated efficiently from medium altitudes to right down on the deck. The "G" model, with its powerful nose armament, was a very popular model in the Pacific, especially in the Fifth Air Force. The P-70 night fighter, although a stop-gap measure for use until the P-61 became available, enjoyed some success in the Pacific against night raiders, and as "intruders" with the RAF in Europe.

9A. B-25

A very popular and adaptable type, the B-25 saw action in ASW patrols, medium level bombing, and low level strafing and anti-shipping strikes. Most famous for their use in the Doolittle raid on Tokyo in April, 1942, the B-25 proved especially useful on the short, rough Pacific landing strips. Like the A-20, the B-25 saw world-wide service with many nations. Extremely adaptable to carrying varying loads of armament and ordnance, each model had numerous variants and field modifications. The "C-1 Strafer" version was employed by the Fifth and Thirteenth Air Forces, a field modification that was noted for its use in the Battle of the Bismarck Sea. The "G" model mounted a 75mm cannon, and additional nose armament as shown on the card. Some "G" models had additional nose armament as follows:

G	4M	2M	[9]		2M	4M	
	(6)	(6)	(6)	(6)	(6)	(6)	
	FL	FL	FL	F	FL	FL	

4A. B-26

The B-26 was employed in the pacific only until 1943, when use of that type was restricted to the European theater, where better airfields were available. Fast, and very "hot" for a plane of its size, the B-26 required longer runways than were generally available in the Pacific. The short-winged "B" model was dubbed the "Flying Prostitute" since its wings gave it no visible means of support, and it was considered to be dangerous to fly and a "widow maker". Despite this, the B-26 saw extensive action early in the Pacific war, operating out of Australia and New Guinea, and later earned an excellent record in the ETO.

12B. B-29

Fast, heavily-armed, and huge, the B-29 was more feared by the Japanese than any other type—with good reason. B-29 raids destroyed most of the Japanese industry, and laid waste to their cities. B-29 attacks totally disrupted life in the Japanese home islands. B-29 boss General Curtiss LeMay had warning leaflets dropped on cities in advance of raids reading "CIVILIANS! EVACUATE AT ONCE!" These were at first ignored, but after several bombings followed as scheduled, they led to a mass exodus when dropped, and often this evacuation would cause more disruption of Japanese production than the actual bombing. The B-29 finally forced the Japanese surrender with the atomic bombing of Hiroshima and Nagasaki.

6B. "Dauntless"

Known variously as "The Barge", "The Clunk", the "Speedy Dee", the "Daunty Lass", and the "Slow But Deadly", the Dauntless was the major dive bomber type found on American carriers from the beginning of the war until mid-1944. On December 10, 1941, a Dauntless sank submarine I-70 for the first Japanese warship loss of the war, and was still in action from land bases with the U.S.M.C. when the war ended. Sturdy and reliable, and fantastically maneuverable for its class, the Dauntless suffered the lowest loss rate of any carrier type. Originally designed as a "stop-gap" aircraft until something better became available, the Dauntless soldiered on until long after other contemporary types had been relegated to second-line duties. Their most famous operation was the destruction of four Japanese fleet carriers at the Battle of Midway ("The Angel of Midway"), and the Dauntless sank more Japanese warships than any other type of plane. Used defensively when fighters were scarce, one Dauntless shot down seven Japanese planes during the Battle of the Coral Sea.

11A. "Helldiver"

The replacement for the Dauntless, the Helldiver proved to be a long time in development, and was only marginally better. Sleek and fast for a dive bomber, the Helldiver suffered severe buffeting at high speeds, and throughout its operational career was restricted in dives with its flaps out (no "clean" dives). Heavily armed, the type's speed and firepower were usefully exploited in the closing stages of the war.

2A. "Devastator"

The standard U.S.N. carrier torpedo bomber at the start of the war, the Devastator was slow, a slow climber, vulnerable, underpowered, and obsolescent. Slated for early replacement by the Avenger, the Devastator was the only torpedo bomber available in the early months, and had to bear the brunt of early fighting. The type had some success, but most had been lost before they could be replaced, especially at Midway, where they were massacred.

4B. "Avenger"

A very useful and adaptable plane, the Avenger served on land, on fleet carriers, as ASW craft off "Jeep" carriers, and with many nations. Able to perform well carrying either torpedoes or bombs, the Avenger was also widely used for patrol and search missions. Used postwar as an ASW plane for many years, the Avenger is still used actively in a fire-fighting role to this day.

XXXI. DESIGNER'S NOTES

DAUNTLESS is focused on the air aspects of the war in the Pacific. As such, land and sea elements are abstracted to the point where only their influence and relationship to the planes is shown, playing the role of targets in the game's various scenarios. The game is designed to show the interaction of the various planes on each other, and on surface elements as they effect air operations. It was not designed to show the interaction of the various surface forces to one another. The game is totally air oriented.

The game design is also highly tactically oriented, which causes some limitations in play. The game works well in recreating battles between comparatively small forces. It becomes quite time-consuming and dragged-out if used to recreate actions involving large forces, due to the large number of units that would have to be plotted, moved, and fired on every Turn.

Reflected in the game is a long period of research and the accumulation of data from literally thousands of sources—books, magazines, periodicals, pilot manuals, technical publications and manuals, and in-person interviews. There is no single source where more than a small fraction of the information reflected in this game can be found. All of this information had to be assembled and converted into the game format. This data, codified into a simplified and somewhat abstract format is reflected in the play of the game. The planes do perform similarly to their historic counterparts in relation to one another, and the game can be used to accurately recreate many actual air actions. In the final analysis, however, the game was not specifically designed to appeal only to air "buffs", but, hopefully, to be a challenging and entertaining experience for those whose interests in air operations are less pronounced. The balance of historical accuracy to playability (or "fun value", or the "romance" of air operations, as it could be called) in the game was intentionally formulated, and the designer has to assume full responsibility for any manner in which it fails in either respect. As such an intentional compromise, DAUNTLESS tries to provide a game that will give players many hours of both educational and entertainment value.

The Optional Rules of Dauntless can be used with Air Force. Many of the planes included in one game were used in the other theater, so a large degree of crossover is possible.

GAME DESIGN CREDITS

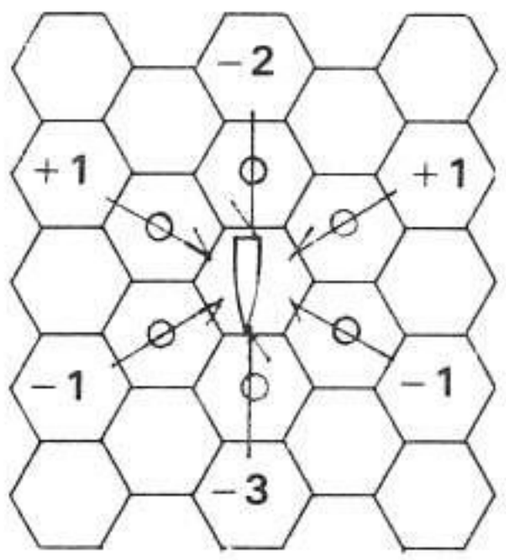
DESIGN AND DEVELOPMENT: S. Craig Taylor, Jr.
PLAYTESTERS: Special thanks to **Nolan Bond, Chris Chandler, Don Cole, Jim Henson, Tim McGary, Jim Morrison, Steve Peek, George Petronis, Phil Poulos,** and **Ken Thurmond.**
GAME REALIZATION: **Kevin Zucker**
ASSISTANCE: **David C. Isby**
ALTERNATE DIVE BOMBING RULE: **Gray Boak** (from Perfidious Albion, 14 Osprey Gardens, Selsdonvale, S. Croydon, Surrey, U.K.)

BOMB HIT MULTIPLES

Multiples are used to determine how many hits are recorded on ships.

Type of Attack	Type of a/c	Multiply Die Roll by:	Multiply Pts. Damage by:
Skip		2	
Torpedo		4	
Kamikaze	one-engine	2	
	two-engine	3	
Dive, Glide, Depth Charge		1	
High Level			extra die roll

SKIP BOMB/TORPEDO MODIFIERS



SKIP BOMBING QUALITY EFFECTS

Ace: +1
Novice: −1

How to Record Hits on Ships:

Ships have Sil. listed on Characteristics Chart. along with nr. of hits required to sink. When nr. of hits reaches 50% of max., ship's speed is reduced by 50%; with 75% damage, ship cannot move or turn.

Each bomb hit reduces heavy and light flak by one gun factor in all directions. For Hits by Bracketed gun factors, C and G hits reduce one factor of heavy and light flak, respectively, while E hits count the same as a bomb hit, and all other results are ignored. For Hits by other aircraft guns, C, E and G hits reduce one factor of light flak.

SOLITAIRE MOVEMENT TABLE

Die Roll	Movement of . . . Ships	Vehicles
1	1L	1L
2	1L	L1
3	1R	1R
4	1R	R1
5	1	1
6	1	●

Key: 1 = move one hex forward.
L, R = turn in appropriate direction
combination = must be executed in order.
● = no movement.

UNITED STATES SHIP CHARACTERISTICS

Class ID Nr.	Light Flak 1941-1943	Light Flak 1943-1945	Heavy Flak 1941-1943	Heavy Flak 1943-1945	Speed/ Turn	Turning/ Turn	Nr. Hits	Sil. Nr.	Pt. Nr.	Class Name
BB-1	3	2X16	7	9	1/2	1/2	33	+5	1000	Arkansas, Texas
BB-2	4	2X17	14	17	1/2	1/2	41	+5	1200	Oklahoma, Pennsylvania, New Mexico, California, Maryland
BB-3	2X20	3X20	24	24	1	1/2	44	+6	1300	North Carolina, South Dakota
BB-4	—	3X23	—	24	1	1/2	59	+8	1800	Iowa
BB-5	—	2X24	—	14	1	1/2	35	+7	1000	Alaska
CV-1	6	3X25	14	19	1	1/2	37	+8	1500	Saratoga
CV-2	5	20	10	10	1	1/2	17	+7	700	Ranger, Wasp
CV-3	8	2X17	10	10	1	1/2	23	+7	900	Yorktown
CV-4	—	2X24	—	14	1	1/2	31	+8	1200	Essex
CV-5	—	22	—	—	1	1/2	13	+6	500	Independence
CV-6	2	27	3	7A	1/3	1/2	12	+5	400	Long Island, Sangamon, Commencement Bay, Charger
CV-7	—	17	—	7A	1/3	1/2	11	+4	300	Bogue
CV-8	—	14	—	7B	1/2	1/2	9	+4	300	Casablanca
CA-1	3	20	9	9	1	1/2	13	+5	350	Pensacola, Northampton
CA-2	3	20	9	9	1	1/2	14	+5	350	Indianapolis, Astoria, Wichita
CA-3	—	2X20	14	14	1	1/2	18	+6	450	Baltimore
CL-1	2	7	7	5	1	1/2	10	+5	250	Omaha
CL-2	3	22	9	9	1	1/2	13	+5	350	Brooklyn
CL-3	9	17	19	14	1	1/2	9	+5	250	Atlanta
CL-4	—	22	—	14	1	1/2	14	+5	400	Cleveland
DD-1	1	2	5	5	1	1	3	+3	50	"Flush-Deck"
DD-2	1	5	6	5	1	1	4	+3	75	Farragut, Mahan, Sims
DD-3	1	7	9	6	1	1	4	+3	75	Porter, Somers
DD-4	2	4	5	5	1	1	4	+3	75	Craven, Benson/Livermore
DD-5	2	6	6	6	1	1	4	+3	75	Fletcher
DD-6	—	10	—	7	1	1	5	+3	100	Sumner, Gearing
DE-1	—	5	—	3	1/2	1	2	+3	50	Evarts, Edsall, Cannon, Buckley
DE-2	—	8	—	7A	1/2	1	2	+3	50	Rudderow, Butler
SS	2A	2A	6B	6B	1/3	1	3	+1	60	Submarines
CM	—	13	5	5	1/2	1	6	+4	125	Minelayers
PT	2	3	—	—	1	3/1	1	−1	25	Motor Torpedo Boats
LS	5	7	5C	5C	1/3	1/2	3	+3	50	LST, LSD, LSV, etc.
A-1	4	7	5	5	1/3	1/2	6	+4	90	Tenders-AS, AV, AD, etc.
A-2	—	4	—	7	1/3	1/2	6	+4	90	Lg. Transports-AP, etc.
A-3	4	7	4	4	1/3	1/2	5	+4	80	APA, AO, AE, AK, AP, etc.

JAPANESE SHIP CHARACTERISTICS

Class ID Nr.	Light Flak 1941-1943	Light Flak 1943-1945	Heavy Flak 1941-1943	Heavy Flak 1943-1945	Speed/ Turn	Turning/ Turn	Nr. Hits	Sil. Nr.	Pt. Nr.	Class Name
BB-1	9	2X19	9	14	1/2	1/2	45	+6	1300	Nagato, Fuso, Ise
BB-2	10	2X23	9	14	1	1/2	39	+6	1200	Kongo
BB-3	5	3X19	14	21	1	1/2	78	+8	2400	Yamato
CV-1	11	27	9	9	1	1/2	12	+6	500	Ryujo, Shoho, Chiyoda
CV-2	17	26	14	14	1	12	18	+7	700	Hiryu, Soryu, Unryu
CV-3	18	2X20	19	19	1	12	27	+8	1100	Shokaku
CV-4	—	26	—	12	1	1/2	30	+7	1200	Taiho
CV-5	13	—	17	—	1	1/2	38	+7	1500	Kaga, Akagi
CV-6	19	24	9	9	1/2	1/2	15	+6	500	Ryuho, Kaiyo
CV-7	4	27	7	7	1/2	1/2	19	+5	600	Taiyo, Shinyo
CV-8	12	2X18	14	14	1/2	1/2	25	+6	700	Hiyo
CA-1	6	21	5	5	1	1/2	13	+5	350	Furutaka, Aoba
CA-2	7	27	9	9	1	1/2	16	+6	400	Tone, Mogami
CA-3	5	27	9	9	1	1/2	17	+6	450	Myoko, Takao
CL-1	2A	7	5B	7	1	1	6	+4	150	Tenryu, Yubari
CL-2	2A	20	5A	7A	1	1	8	+5	200	Nagara, Sendai
CL-3	2A	22	5A	7A	1	1	9	+5	200	Kuma
CL-4	16	2X15	4	4	1	1/2	10	+5	250	Agano
DD-1	3	10	5	4	1	1	3	+3	50	Minekaze, Mutsuki, Kamikaze
DD-2	7	12	6	6	1	1	4	+3	75	Hatsuhoru, Shiratsuyu
DD-3	8	14	7	5	1	1	4	+3	75 100	Fubuki, Akatsuki, Kagero, Asashio, Shimakaze, Yugumo
DD-4	2	16	8	8	1	1	5	+4	100	Akitsuki
E-1	2	8	4	4	1/2	1	2	+2	50	Escorts
E-2	4	4	—	—	1/3	2/1	1	+1	25	Coastal Escort
E-3	1A	5	4	7A	1	1	2	+2	50	Torpedo Boats
SS	2B	2B	5C	5C	1/3	1	3	+1	60	Submarines
M-1	2A	2A	—	—	1/4	1/2	3	+1	50	Small Cargo Ship
M-2	2A	2A	—	—	1/3	1/3	5	+3	80	Large Cargo Ship

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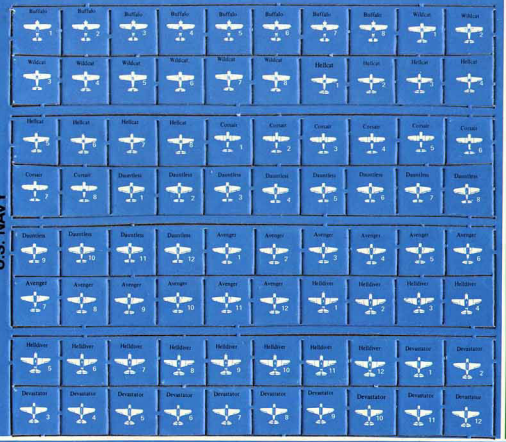
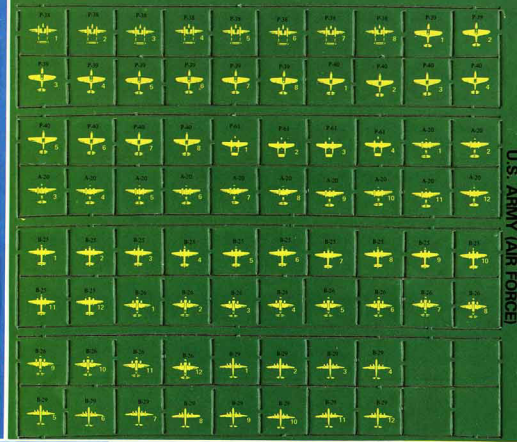
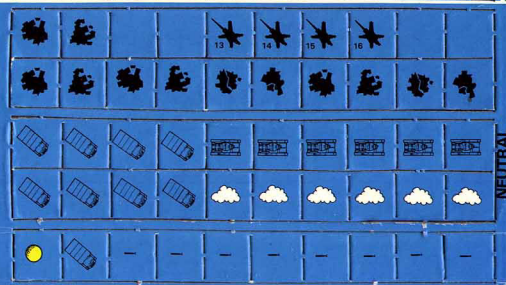
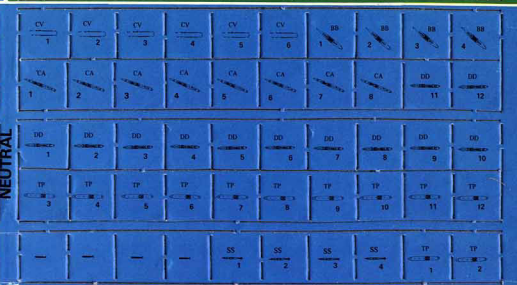
New Dauntless American and Neutral Counter Sheet









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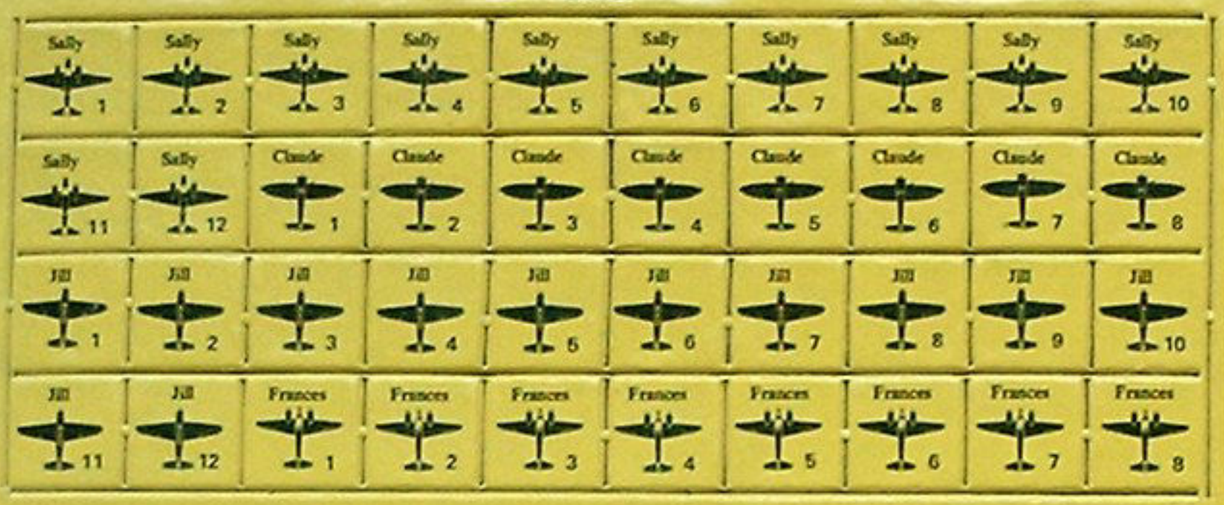
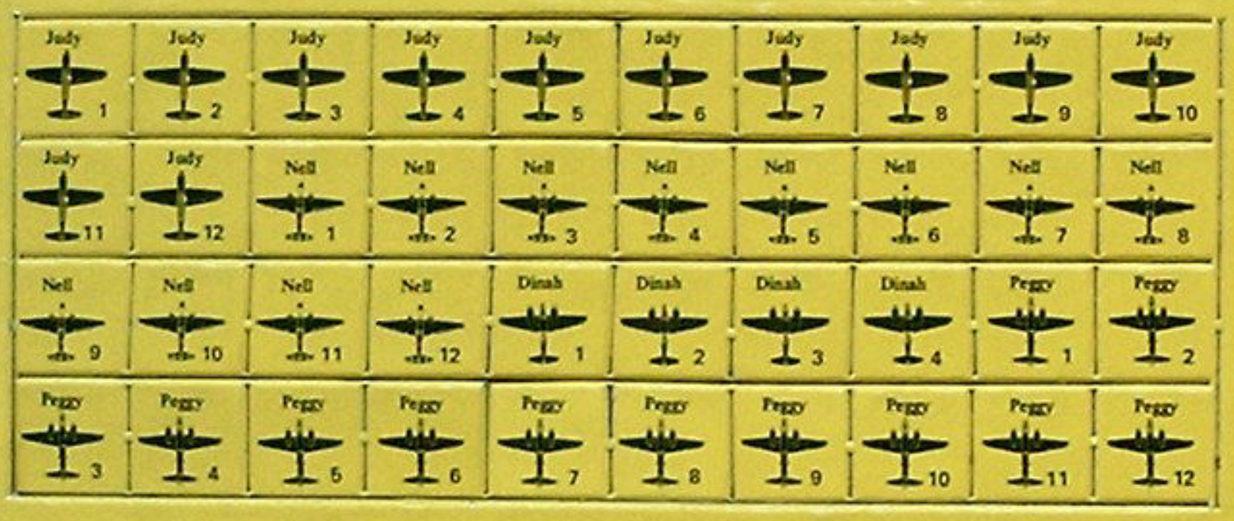
AIR FORGE/DAUNTLESS EXPANSION KIT

FRANCE

WESTERN ALLIES

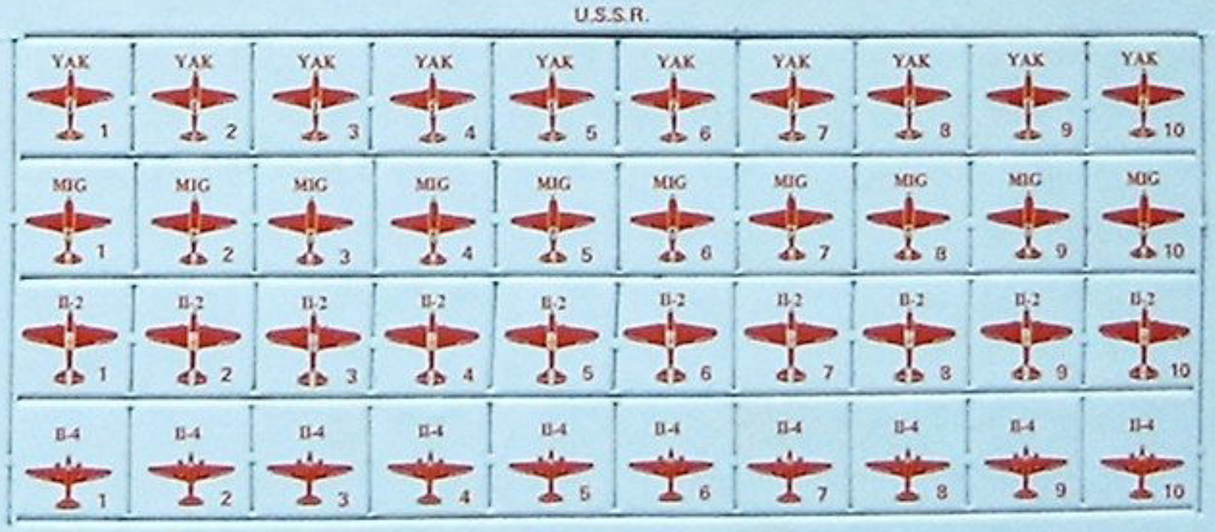
JAPAN



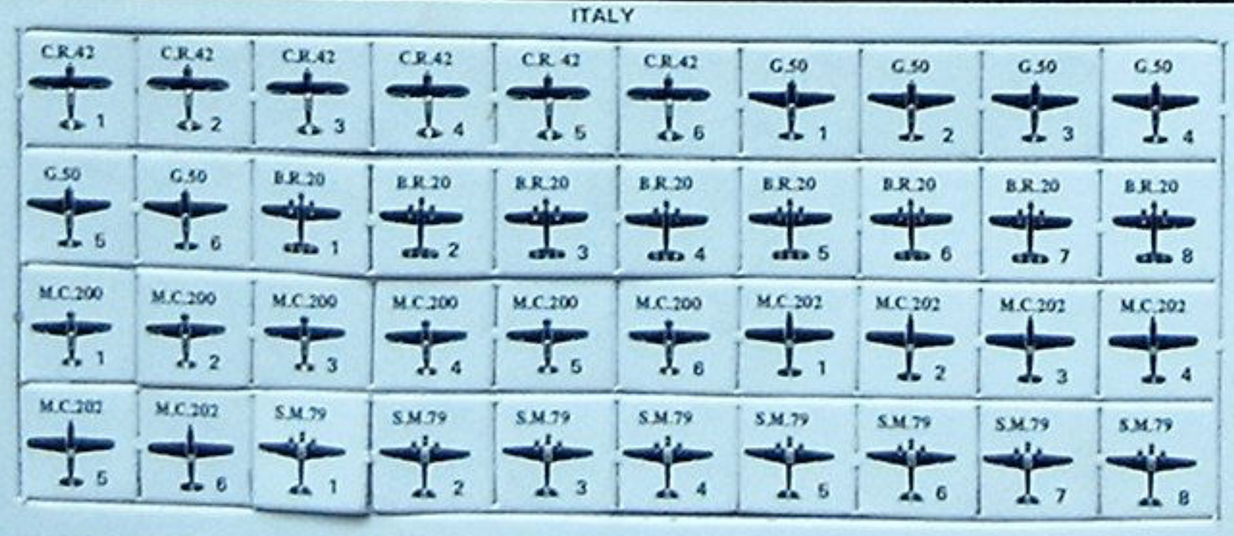


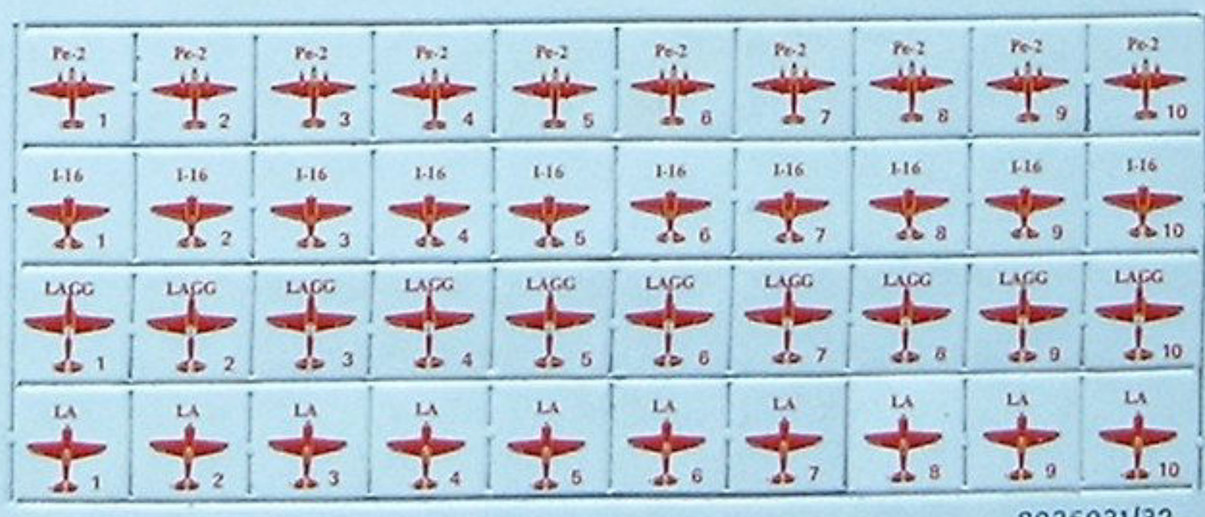
THIRD REICH

U.S.S.R.



ITALY





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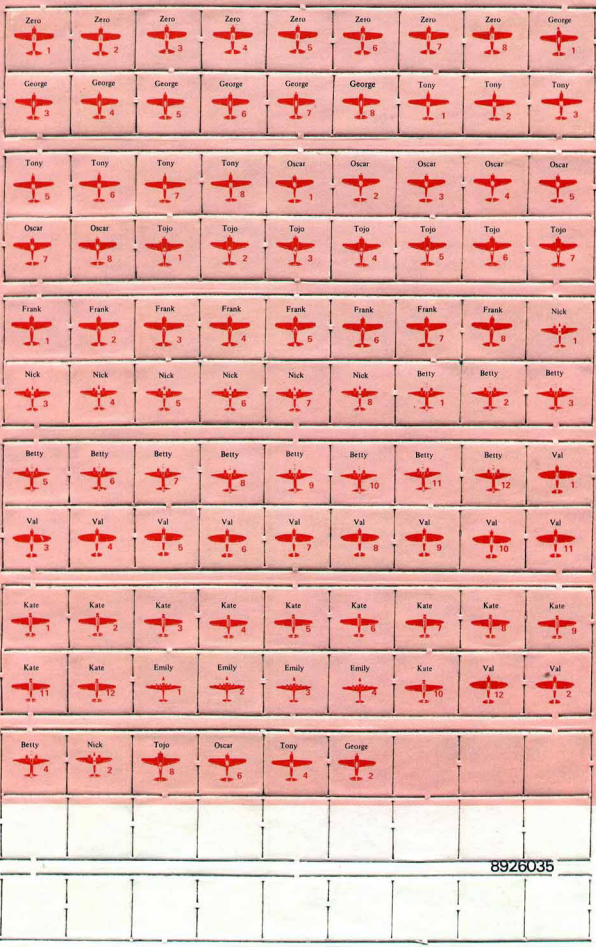
New Dauntless Japanese Counter Sheet



PLANE TYPE: Me-109C

Messerschmitt BF-109C-1 — Day Fighter

POINT VALUE: 15

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS: STALL SPEED	SPEEDS: MANEUVER SPEED	SPEEDS: LEVEL SPEED	SPEEDS: DIVE SPEED	SPEED CHANGE: POWER FACTORS	SPEED CHANGE: BRAKE FACTORS	ALTITUDE CHANGE: CLIMB RATE -1/.3	ALTITUDE CHANGE: DIVE RATE +1/.3	MANEUVERS: BANK	MANEUVERS: TURN	MANEUVERS: SLIP	MANEUVERS: HALF -LOOP	MANEUVERS: HALF-ROLL
0-4.9	0-2	3-4	5	6-8	1	2	.4	0.9	2	2	2	4	3
5.0-9.9	0-2	3-4	5	6-8	1	2	.3	1.0	2	2	2	4	3
10.0-14.9	0-2	3-4	5-6	7-9	1	1	.3	1.0	2	2	2	5	4
15.0-19.9	0-3	4	5-6	7-9	1	1	.3	1.0	3	3	3	6	4
20.0-24.9	0-3	–	4-5	6-9	0	1	.2	1.1	3	3	3	7	5
25.0-27.6	0-3	–	4-5	6-9	0	1	.1	1.1	4	3	3	7	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.1	-.1	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

TARGET CHARARTERISTICS CHART

W	5			Cn	–	Mg	6		
F	4			L	2				
C	2			C	–				
E	3	E	–	E	–	E	–		
G	1M	1M				1M	1M		
	(4)	(5)				(5)	(4)		
	FF								

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2,4,6,8,10(-2)
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name:

NOTES:BF-109B -2 Introduced in late summer1937. First used in Spain July 1937. BF-109C-1 Introduced summer 1938. First used in Spain August 1938. About 200 BF-109Bs and 100 BF-109Cs were produced by September 1939.

Variant: B-2 (14 pts):

G	1M				1M				
	(5)				(5)				
	FF								

PLANE TYPE: He-112

Heinkel He-112 B-0 — Day Fighter

POINT VALUE: 15

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS: STALL SPEED	SPEEDS: MANEUVER SPEED	SPEEDS: LEVEL SPEED	SPEEDS: DIVE SPEED	SPEED CHANGE: POWER FACTORS	SPEED CHANGE: BRAKE FACTORS	ALTITUDE CHANGE: CLIMB RATE -1/.3	ALTITUDE CHANGE: DIVE RATE +1/.3	MANEUVERS: BANK	MANEUVERS: TURN	MANEUVERS: SLIP	MANEUVERS: HALF -LOOP	MANEUVERS: HALF-ROLL
0-4.9	0-2	3-4	5	6-7	1	2	.4	0.9	2	2	2	4	4
5.0-9.9	0-2	3-4	5	6-7	1	2	.3	1.0	3	2	2	4	4
10.0-14.9	0-2	3-4	5-6	7-8	1	1	.3	1.0	3	3	3	5	4
15.0-19.9	0-3	4	5-6	7-8	1	1	.3	1.0	3	3	3	6	5
20.0-24.9	0-3	–	4-5	6-9	0	1	.2	1.1	4	3	3	7	6
25.0-27.6	0-3	–	4-5	6-9	0	1	.1	1.1	4	4	4	7	6
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.1	-.1	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

TARGET CHARARTERISTICS CHART

W	5			Cn	3	Mg	12		
F	4			L	2				
C	2			C	–				
E	3	E	–	E	–	E	–		
G	3C	1M				1M	3C		
	(3)	(5)				(5)	(3)		
	FF								

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2,4,6,8,10(-2)
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name:

NOTES:Pre-production He-112B-0's were introduced in Spring1938. 17 were supplied to Spain in Nov. 1938 Japan purchased 30 He-112's in late Spring '38 and Romania purchased 24 in Spring '39.

PLANE TYPE: I-15

Polikarpov I-15 and I-15bis — Day Biplane Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2-3	4	5-6	1	3	.3	.8	1	1	1	3	2
5.0-9.9	0-1	2-3	4	5-6	1	3	.3	.8	1	1	1	3	2
10.0-14.9	0-2	3	4	5-7	1	3	.3	.8	2	1	1	4	3
15.0-19.9	0-2	3	4	5-7	0	3	.2	.9	2	2	2	4	4
20.0-24.9	0-2	3	4	5-8	0	2	.2	.9	3	2	2	5	4
25.0-26.3	0-3	–	4	5-8	0	2	.1	.9	3	2	2	5	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	0	0	0	0	0
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 12

(C parenthesis apply to I-15bis only.)

TARGET CHARARTERISTICS CHART

W	4		Cn	–	Mg	9	
F	4		L	2			
C	2(3)		C	–			
E	3	E	E	–	E	–	
G	1M	1M			1M	1M	
	(4)	(5)			(5)	(4)	
	FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +1
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A,12,2,4(-1),6(-2),8,10(-1)
M: 12,2(+1),4(-2),6(-3),8(-2),10(+1)
L: B(-2),12(+2),2,4(-1),6(-3),8,10(-1)

Producer:U.S.S.R.
Name: "Chata" or "Superchata"

NOTES: The I–15 entered production in 1934. The I-15bis in1935. The I-15 first appeared in Spain Nov. 1936.
Can carry one bomb loaded.

PLANE TYPE: I-16

Polikarpov I-16 Type 10 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.4	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5	6-7	1	2	.5	.9	2	2	2	3	3
5.0-9.9	0-2	3-4	5	6-7	1	1	.4	1.0	2	2	2	4	3
10.0-14.9	0-2	3-4	5-6	7-8	1	1	.4	1.0	2	2	2	4	3
15.0-19.9	0-2	3-4	5	6-9	0	1	.3	1.1	3	2	2	5	4
20.0-24.9	0-3	–	4-5	6-9	0	1	.2	1.1	3	3	3	5	4
25.0-26.2	0-3	–	4	5-9	0	1	.1/3	1.1	4	3	3	6	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+2	+4	+4	+3	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 13

TARGET CHARARTERISTICS CHART

W	4		Cn	–	Mg	8	
F	4		L	2			
C	3		C	–			
E	3	E	– E	–	E	–	
G	1M	1M			1M	1M	
	(4)	(5)			(5)	(4)	
	FF						

SILHOUETTE MODIFIER: +1
FIRE MODIFIER: +0
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A(-1),12(+1),2,4,6,8,10(-2)
M: 12(+2),2,10(+1),4,8(-2),6(-3),
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: U.S.S.R.
Name: "Mosca" or "Rata"

NOTES:The first I-16 type 5's were used in Spain Nov. 1936, type 6 in Spring 1937, type 10 in March 1938.
About 475 I-16's were supplied to Republican forces in Spain.

Variants: I-16's type 5 and 6 had reduced armament. (12pts)

G	1M			1M	
	(4)			(4)	
	FF			FF	

PLANE TYPE: Ju–52

Junkers Ju-52/3m g3e /3m g9e — Transport / Bomber

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.1	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2	3	4-5	1	3	.1	.6	4	4	5	–	–
5.0-9.9	0-1	2	3	4-5	1	2	.1	.6	4	4	5	–	–
10.0-14.9	0-1	–	2-3	4-5	1	2	.1	.6	5	4	5	–	–
15.0-19.4	0-2	–	3	4-6	0	2	.1/2	.7	5	5	6	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	P	P
DIVE	–	–	–	–	P	–	–	–	+3	+3	+3	P	P
LOADED	0	0	0	-1	–	–	–	-.2	+1	+2	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Entered production early '32.A total of 3225 were produced from early '39 until production ended in mid '44. German equivalent of the C-47, used on all fronts rlght up until the end of the war. Bomber version could carry up to 3300 pounds (up to 6 bombs low level) of bombs loaded. Has sights for level bombing. Used in Spain as both a transport and a bomber.

POINT VALUE: 16

TARGET CHARARTERISTICS CHART

W	6			Cn	–	Mg	–	
F	6			L	2			
C	2			C	–			
E	2	E	–	E	2	E	2	
G								

(5)

"F"

SILHOUETTE MODIFIER: +5
FIRE MODIFIER: +0
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A,12(+2),2,4,6,8,10(+1)
M: 12,2,10(+2),4,8(+2),6(+1),
L: B(-2),12(+1),2,4,8,10(-1),6(-2)

"F" Gunnery Play (OP)
H: A(1),12(0), 2(0), 4(1), 6(1), 8(1), 10(1)
M: 12(0), 2(0), 4(2), 6(2), 8(2), 10(0)
L: B(1)12(0), 2(0), 4(1), 6(1), 8(1), 10(1)
or
H: A(1),12(1), 2(1), 4(3), 6(2), 8(3), 10(2)
M: 12(1), 2(1), 4(3), 6(2), 8(3), 10(1)
L: B(1)12(0), 2(0), 4(3), 6(1), 8(3), 10(1)

Producer: Third Reich
Name: "Tante Ju"("Aunte Ju")

PLANE TYPE: Me-323

Messerschmitt Me-323D/E — Heavy Transport

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.1	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2	3	4-5	1	3	.1	.6	5	9	10	–	–
5.0-9.9	0-1	2	3	4-5	1	2	.1	.6	5	9	10	–	–
10.0-14.8	0-1	–	2-3	4-5	1	2	.1	.6	6	10	11	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+2	+2	+2	P	P
DIVE	–	–	–	–	P	–	–	–	+4	+4	+4	P	P
LOADED	0	0	0	-1	–	–	-.05	-.2	+1	+3	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Entered service '42. Powered version of Me-321 glider. When loaded climb rate is reduced to .1/2 at -1/.05 loss rate. If any 3 engines are knocked out plane is destyoyed.

POINT VALUE: 16

TARGET CHARARTERISTICS CHART

W	8			Cn	–	Mg	–	
F	10			L	2	E	2	
C	2			C	1	E	2	
E	2	E	2	E	2	E	2	
G								

(5)

"F"

SILHOUETTE MODIFIER: +10
FIRE MODIFIER: +0
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H:
M:] +2 in all directions
L:

"F" Gunnery Play (OP)
H: A(2), 12(4), 2(3), 4(1), 6(2), 8(1), 10(3)
M: 12(4), 2(6), 4(3), 6(3), 8(6), 10(6)
L: B(2), 12(2), 2(6), 4(6), 6(2), 8(6), 10(6)
Or
H: A(10), 12(12), 2(10), 4(8), 6(8), 8(8), 10(12)
M: 12(10), 2(12), 4(10), 6(10), 8(10), 10(12)
L: B(2), 12(2), 2(6), 4(6), 6(2), 8(6), 10(6)

Producer: Third Reich
Name:"Gigant"

PLANE TYPE: Cr.32

Fiat C.R. 32 — Day Biplane Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2-3	4	5-6	1	3	.3	.8	1	1	1	3	2
5.0-9.9	0-1	2-3	4	5-6	1	3	.3	.8	1	1	1	3	3
10.0-14.9	0-2	3	4	5-7	1	3	.3	.8	2	1	1	4	4
15.0-19.9	0-2	3	4	5-7	0	3	.2	.9	2	2	2	4	4
20.0-24.9	0-2	3	4	5-8	0	2	.2	.9	3	2	2	5	4
25.0-25.8	0-3	–	4	5-8	0	2	.1/2	.9	3	2	2	5	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	--	–	0	0	0	0	0
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 11

TARGET CHARARTERISTICS CHART

W	4		Cn	–	Mg	6
F	5		L	2		
C	2		C	–		
E	3	E	E	–	E	–
G	2M (5)				2M (5)	
FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +1
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A(-1),12,2,4(-1),6(-2),8,10(-1)
M: 12(+2),2(+1),4(-2),6(-3),8(-2),10(+1)
L: B(-2),12(+2),2,4,8,10(-1),6(-3)

Producer: Italy
Name: "Freccia" ("Arrow")

NOTES: Entered production in 1933. The CR.32bis was introduced in 1935. First used in Spain in Aug. 36)

Variants:.CR.32bis(12pts)

G	1M (4)	2M (5)	2M (5)	1M (4)
FF				

PLANE TYPE: He-51

Heinkel He-51B-1 and He-51B-2 — Day Biplane Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2-3	4	5-6	1	3	.3	.8	1	1	1	3	2
5.0-9.9	0-1	2-3	4	5-6	1	3	.3	.8	1	1	1	3	3
10.0-14.9	0-2	3	4	5-7	1	3	.3	.8	2	1	1	4	4
15.0-19.9	0-2	3	4	5-7	0	3	.2	.9	2	2	2	4	4
20.0-24.9	0-2	3	4	5-8	0	2	.2	.9	3	2	2	5	4
25.0-25.8	0-3	–	4	5-8	0	2	.1/2	.9	3	2	2	5	5
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	--	–	0	0	0	0	0
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 11

TARGET CHARARTERISTICS CHART

W	4		Cn	–	Mg	10
F	5		L	2		
C	2		C	–		
E	3	E	E	–	E	–
G	1M (5)				1M (5)	
FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +1
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A(-1),12,2,4(-1),6(-2),8,10(-1)
M: 12(+2),2(+1),4(-2),6(-3),8(-2),10(+1)
L: B(-2),12(+2),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name:

NOTES: Entered production in late 1935. First used in Spain in August 1936.

PLANE TYPE: Ta-152H

Focke Wulf Ta-152H — High Altitude Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.2	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6-7	8-9	3	2	.6	1.1	1	2	2	3	2
5.0-9.9	0-2	3-5	6-8	9-10	3	2	.5	1.2	1	2	2	4	2
10.0-14.9	0-2	3-5	6-8	9-10	3	2	.5	1.2	1	3	3	4	2
15.0-19.9	0-3	4-5	6-8	9-10	2	1	.5	1.2	1	3	3	5	3
20.0-24.9	0-3	4-5	6-9	10-11	2	1	.4	1.3	2	3	3	5	3
25.0-29.9	0-4	5	6-9	10-11	2	1	.4	1.3	2	4	4	6	4
30.0-34.9	0-5	–	6-9	10-11	2	1	.3	1.3	2	4	4	6	5
35.0-39.9	0-6	–	7-9	10-11	2	1	.2	1.3	3	4	4	7	6
40.0-44.9	0-6	–	7-9	10-11	1	1	.1	1.3	4	5	5	7	7
45.0-48.5	0-7	–	8	9-12	1	1	.1/2	1.3	4	5	5	8	7
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Production started in Nov. '44. About 150 Ta-152H's were produced. Most were used for top cover at Me-262 bases.

POINT VALUE: 25

TARGET CHARARTERISTICS CHART

W	5			Cn	5	Mg	–
F	7			L	4		
C	3			C	–		
E	3	E	–	E	–	E	–
G	4C			8C		4C	
	(4)			(6)		(4)	
	FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2,4,6,8,10(-2)
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name:

PLANE TYPE: He-162

Heinkel He-162A-2 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.4	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-6	7-10	11-13	1	1	.6	1.5	5	6	6	8	7
5.0-9.9	0-3	4-6	7-10	11-13	1	1	.5	1.5	5	7	7	9	8
10.0-14.9	0-4	5-6	7-10	11-12	1	1	.4	1.4	6	8	8	10	9
15.0-19.9	0-5	6	7-10	11-12	1	1	.3	1.4	6	9	9	11	10
20.0-24.9	0-5	–	6-10	11-12	1	1	.3	1.4	7	9	9	12	11
25.0-29.9	0-6	–	7-10	11-12	1	1	.2	1.4	7	10	10	13	12
30.0-34.9	0-7	–	8-10	11-12	1	0	.1	1.4	8	11	11	14	13
35.0-36.5	0-7	–	8-9	10-11	1	0	.1/2	1.4	8	12	12	15	14
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.4	–	+1	+1	+1	+1	+1
LOADED	0	-1	-1	-1	–	–	-.2	-.4	+1	+2	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Deliveries started in Feb- Mar. '45. About 170 were produced and a further 100 examples were in advance stages of production at the end of the war. It was assigned to one operational unit (I/JG1) but had no record of combat.

Variants:
A-1 (28 pts):
Cn ammo 3

G	8C	8C
	(6)	(6)
	FF	FF

POINT VALUE: 27

TARGET CHARARTERISTICS CHART

W				Cn	4	Mg	–
F				L	3		
C				C	–		
E	E	–		E	–	E	–
G	4C					4C	
	(5)					(5)	
	FF						

SILHOUETTE MODIFIER:+2
FIRE MODIEFIIER:+2
ENGINE TYPE(OP): I (Jet)
BLIND SPOTS(OP):
H:A(-1),12(+1), 2, 4, 6(-1), 8, 10
M:12(+2), 2,10(+1), 4, 8(-1), 6(-3)
L:B(-2).12(+1),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name: "Volksjäger (Peoples Figher)"
or "Salamander "

PLANE TYPE: Ar-234B

Arado Ar-234B-2 — Reconnaissance Bomber

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-3	4-6	7-8	9-11	1	1	.4	1.3	5	5	5	7	5
5.0-9.9	0-3	4-6	7-8	9-11	1	1	.4	1.3	5	5	5	8	6
10.0-14.9	0-4	5-6	7-9	10-12	1	1	.4	1.2	6	6	6	9	7
15.0-19.9	0-5	6	7-9	10-12	1	1	.3	1.2	6	7	7	10	8
20.0-24.9	0-5	–	6-9	10-12	1	1	.3	1.2	7	8	8	11	9
25.0-29.9	0-6	–	7-9	10-12	1	1	.2	1.2	7	9	9	12	10
30.0-32.8	0-6	–	7-9	10-12	1	1	.1	1.2	8	9	9	14	12
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+1	+1	+1	+1	+1
LOADED	0	-1	-1	-1	–	–	-.1	-.3	+1	+2	+3	P	P
LOADED*	+1	-2	-2	-2	–	–	-.2	-.5	+2	+3	+4	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 35

TARGET CHARARTERISTICS CHART

W	6		Cn.	8	Mg.	–	
F	6		L	3			
C	3		C	–			
E	2	E –	E	–	E	2	
G	4C				4C		
	(6)				(6)		
	FR				FR		

SILHOUETTE MODIFIER: +3
FIRE MODIFIER: -2
TYPE ENGINE(OP): I (JET)
BLIND SPOTS (OP):
H: A(+1),12(+1),2(-1),4(-1),6(-1),8(-1),10(-1)
M: 12(+2),2(+1),4(-2),6(-3),8(-2),10(+1)
L: B(-2),12(+1),2(-1),4(-1),6(-3),8(-1),10(-1)

Producer: Third Reich
Name: "Blitz"

NOTES: Operational in late Sept. 1944. Can carry up to 1100 pounds (one bomb low level) loaded. *Or 3300 pounds of bombs (three bombs low level) over loaded. Has sights for use as a level bomber. Tail gun has Fixed Rear field of fire. Use opposite of normal nose attitude rules with no firing allowed directly above or below. Reconnaissance versions did not have armament.

PLANE TYPE: Me-163B-1

Messerschmitt Me-163B-0 & B-1 — Day Fighter (Rocket)

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.6	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-6	7-10	11-13	4	1	2.7	1.5	3	5	5	7	6
5.0-9.9	0-3	4-6	7-11	12-13	4	1	2.7	1.5	3	5	5	8	6
10.0-14.9	0-3	4-5	6-12	–	4	1	2.6	1.4	3	6	6	9	6
15.0-19.9	0-3	4-5	6-12	–	3	1	2.1	1.4	4	6	6	10	7
20.0-24.9	0-4	5	6-12	–	3	1	1.6	1.4	4	7	7	11	7
25.0-29.9	0-4	–	5-12	–	2	1	1.4	1.4	4	7	7	12	7
30.0-34.9	0-5	–	6-12	–	2	1	1.4	1.4	5	8	8	14	8
35.0-39.5	0-6	–	7-11	–	2	1	1.4	1.4	5	8	8	16	8
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	–	–	+1	+1	+1	+1	+1
LOADED	0	-1	-1	-1	–	–	–	–	+1	+2	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 35

TARGET CHARARTERISTICS CHART

W	4		Cn	3	Mg	–	
F	4		L	2			
C	3		C	–			
E	2	E –	E	–	E	–	
G	8C				8C		
	(6)				(6)		
	FF						

SILHOUETTE MODIFIER: -4
FIRE MODIFIER: -2
TYPE ENGINE(OP): I (ROCKET)
BLIND SPOTS (OP):
H: A(+1),12(+1),2(-1),4(-1),6(-1),8(-1),10(-1)
M: 12(+2),2(+1),4(-2),6(-3),8(-2),10(+1)
L: B(-2),12(+1),2(-1),4(-1),6(-3),8(-1),10(-1)

Producer: Third Reich
Name: "Komet"

NOTES: Operational on a limited basis in late June '44. About 300 ME-163B-0 &B-1's were produced. Can carry 24 A/A rockets loaded. No outside loops or double turns after slip allowed. Any speed gain that exceeds max level or dive speed is ignored.

Optional: Roll a 20 sided die before the ploting phase , if the result is less than the current game turn the rocket hasquit and must operate at idle for the rest of the game. When at idlepower factors are prohibited, the climb rate is reduced by 75% and the climb rate speed loss is increased by a factor of 3.

PLANE TYPE: Defiant I

Boulton Paul Defiant I-II — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
							-1/.2	+1/.3					
0-4.9	0-2	3-4	5	6-8	1	2	.3	1.0	3	3	3	5	5
5.0-9.9	0-2	3-4	5-6	7-8	1	2	.3	1.0	3	4	4	6	5
10.0-14.9	0-2	3-4	5-6	7-9	1	2	.3	1.1	3	4	4	6	6
15.0-19.9	0-2	3-4	5-6	7-9	1	2	.3	1.1	4	4	4	7	6
20.0-24.9	0-3	–	4-6	7-9	1	1	.2	1.2	4	5	5	8	7
25.0-29.9	0-3	–	4-6	7-9	1	1	.1	1.2	5	5	5	9	7
30.0-30.4	0-4	–	5	7-10	0	1	.1/2	1.2	6	5	5	10	8
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	–	–	–	–	–	–	-.1	-.2	–	–	–	–	–

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Entered service in Spring '40. About 900 produced.

Variant: IA &II Night fighter carried radar. (18pts.) Use loaded climb and dive modifiers.

POINT VALUE: 15

TARGET CHARARTERISTICS CHART

W	6			Cn	–	"F"	7	
F	5			L	3			
C	3			C	–			
E	3	E	–	E	–	E	–	
G								
			(5)					
	"F"							

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: 0
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A(+1),12(+2),2,4(+1),6(+2),8,10(+1)
M: +2 in all directions
L: B(-2),12,2(+2),4,6,8(+1),10(2),

"F" Gunnery Play (OP)
H: A(4), 12(0), 2(4), 4(4), 6(4), 8(4), 10(4)
M: 12(0), 2(4), 4(4), 6(4), 8(4), 10(4)
L: 0 in all directions

Mg "F" ammo = 7

Producer: Great Briton
Name: Defiant

PLANE TYPE: P-35

Seversky(Republic) P-35 and P–35A / EP-106 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
							-1/.3	+1/.3					
0-4.9	0-2	3-4	5	6-8	1	2	.3	1.0	2	2	2	4	3
5.0-9.9	0-2	3-4	5	6-8	1	2	.3	1.0	2	2	2	4	3
10.0-14.9	0-2	3-4	5-6	7-9	1	2	.3	1.1	2	2	2	5	3
15.0-19.9	0-2	3-4	5-6	7-9	1	2	.3	1.1	3	3	3	5	4
20.0-24.9	0-3	–	4-5	6-9	0	1	.2	1.2	3	3	3	6	4
25.0-29.9	0-3	–	4-5	7-9	0	1	.1	1.2	3	3	3	7	5
30.0-30.6	0-4	–	5	7-9	0	1	.1/2	1.2	4	4	4	8	6
– (-31.4)	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.2	-.4	+1	+2	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Entered service in spring '38. A total of 197 P–35's were produced, 77 as P-35's and 120 as EP–106's ordered by Sweden, 60 of which were taken over by the USAAF in June '40 as P-35A's (40 were sent to the Phillipines in '41, 12 were sent to Equador). Can carry 1 bomb loaded. Altitude numbers in parenthesis apply to P-35A. Listed cannon is actually a heavy machine gun.

POINT VALUE: 14

TARGET CHARARTERISTICS CHART

W	5			Cn	4	Mg	6	
F	6			L	2			
C	2			C	–			
E	3	E	–	E	–	E	–	
G	2C						1M	
	(6)						(5)	
	FF							

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A(-1),12(+1),2,4,6,8,10(-2)
M: 12(+2),2,10(+1),4,8(-2),6(-3)
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: USA
Name:

Variant: P-35A (14pts)

G	1M	2C					2C	1M
	(4)	(6)					(6)	(4)
	FF							

PLANE TYPE: P–40F

Curtiss P–40E, P-40F and P-40K / RAF Kittyhawk I, II & III — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5-6	7-9	1	2	.4	1.1	2	2	2	4	3
5.0-9.9	0-2	3-4	5-6(7)	(8)7-9	1	2	.3	1.1	2	2	2	4	3
10.0-14.9	0-2	3-4	5-7	8-10	1	2	.3	1.1	2	2	2	5	4
15.0-19.9	0-3	4	5-7	8-10	1	1	.3	1.2	3	3	3	6	4
20.0-24.9	0-3	–	4-7	8-10	1	1	.2	1.2	3	3	3	7	5
25.0-29.9	0-4	–	5-6	7-10	1	1	.1	1.2	4	3	3	7	5
30.0-34.4	0-4	–	5	6-10	0	1	.1/2	1.3	4	4	4	8	6
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.3	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES:P–40E deliveries started in Sept. '41, P-40F in Jan. '42 and P-40K in May '42.
About 2300 P–40E's,1300 P-40F's and 1300 P-40K's were produced. Can carry 1 bomb loaded.
Altitude after 29.0 (29.1-34.4) refers to P-40F. Numbers in parenthesis refers to P-40E.
P-40E's ceiling is 29.0, P-40K's ceiling is 28.0.

POINT VALUE: 16

TARGET CHARARTERISTICS CHART

W	5			Cn	–	Mg	6
F	7			L	3		
C	3			C	–		
E	3	E	–	E	–	E	–
G	2M	4M				4M	2M
	(5)	(5)				(5)	(5)
	FF						

SILOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2, 4, 6(-2), 8, 10
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,10(-1),4,8(-1),6(-3)

Producer: USA
Name: "Kittyhawk or Warhawk"

PLANE TYPE: P-39Q

Bell P-39Q — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5-6	7-9	1	2	.4	1.1	1	2	2	4	3
5.0-9.9	0-2	3-4	5-7	8-9	1	2	.4	1.1	2	3	3	5	3
10.0-14.9	0-2	3-4	5-7	8-10	1	2	.4	1.1	2	3	3	6	4
15.0-19.9	0-3	4	5-7	8-10	1	1	.3	1.2	3	3	3	6	5
20.0-24.9	0-3	–	4-7	8-10	1	1	.3	1.2	4	3	3	7	6
25.0-29.9	0-4	–	5-6	7-10	1	1	.2	1.2	4	4	4	8	7
30.0-34.9	0-4	–	5-6	7-10	1	1	.1	1.3	5	4	4	9	7
35.0-38.5	0-5	–	6	7-10	0	1	.1/2	1.3	5	5	5	9	8
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	0	-1	-1	-1	–	–	-.1	-.3	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES:P–39N deliveries started in Jan. '43, P-39Q in May '43. Both used primarily by the Soviet Union.
About 2095 P–39Ns and 4905 P-39Qs were produced. Can carry 1 bomb loaded.
Ceiling on P-39Q is35.0.

POINT VALUE: 17

TARGET CHARARTERISTICS CHART

W	6			Cn	5	Mg	5
F	6			L	4		
C	3			C	–		
E	3	E	–	E	–	E	–
G	2M		2M	[5C]	2M		2M
	(5)		(6)	(6)	(6)		(5)
	FF						

SILOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2, 4, 6(-2), 8, 10
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,10(-2),4,8(-2),6(-3)

Producer: USA
Name: "Airacobra"

Variants: P-39N (16 pts)
Increase Mg ammo to 8.

G	2M		2M	[5C]	2M	2M
	(4)		(6)	(6)	(6)	(4)
	FF					

PLANE TYPE: P-47M

Republic P-47M — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
							-1/.3 (-1/.2)	+1/.2					
0-4.9	0-2	3-5	6-7	8-9	2	3	.5(.3)	1.1	1	2	2	4	2
5.0-9.9	0-2	3-5	6-8	9-10	2	3	.5(.3)	1.1	1	3	3	4	2
10.0-14.9	0-2	3-5	6-8	9-10	2	2	.5(.3)	1.2	1	3	3	5	2
15.0-19.9	0-2	3-4	5-8	9-10	2	2	.5(.3)	1.2	1	3	3	5	3
20.0-24.9	0-3	4	5-9	10-11	2	2	.4(.3)	1.3	2	4	4	6	3
25.0-29.9	0-4	4	5-9	10-11	2	1	.3	1.3	2	4	4	6	3
30.0-34.9	0-4	–	5-9	10-12	2	1	.2	1.4	2	4	4	7	3
35.0-39.9	0-5	–	6-8	9-12	1	1	.1	1.4	2	4	4	7	4
40.0-41.0	0-6	–	7	8-12	1	1	.1/2	1.4	3	5	5	8	4
(-43.0)	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	+.1	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.4	–	+2	+2	+2	+2	+2
LOADED	+1	-1	-1	-1	–	–	-.2	-.4	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 23(24)

TARGET CHARARTERISTICS CHART

W	6			Cn	–	Mg	6(8)
F	10			L	4		
C	3			C	–		
E	3	E	–	E	–	E	–
G	4M	4M				4M	4M
	(5)	(5)				(5)	(5)
	FF						

SILHOUETTE MODIFIER: +3
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A,12(+1),2,4,6,8,10(-1)
M: 12(+2),2,10(+1),4,8(-1),6(-2)
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: USA
Name: "Thunderbolt" or "Jug"

NOTES: P-47M was first operational in Jan. 45 (Europe only). P-47N was operational in Apr. 45 (Pacific only).
About 130 P-47M's were produced by VE Day and 1816 P-47N's were produced (250 by VJ Day).
P-47M can carry 3 bombs low level. P-47N can carry 3 bombs or 10 A/G rockets loaded.
All numbers in parenthesis apply to P-47N.

Variant: Some models had reduced armament. Increase ammo to 7 on P-47M.

G	2M	4M			4M	2M
	(5)	(5)			(5)	(5)
	FF					

PLANE TYPE: P-51H

North American P-51H — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
							-1/.3	+1/.2					
0-4.9	0-2	3-6	7-8	9	2	3	.5	1.0	1	2	2	4	2
5.0-9.9	0-2	3-6	7-9	10	2	3	.5	1.1	2	2	2	4	2
10.0-14.9	0-2	3-5	6-9	10	2	3	.5	1.2	2	3	3	5	3
15.0-19.9	0-2	3-5	6-9	10	2	2	.4	1.2	2	3	3	5	3
20.0-24.9	0-3	4-5	6-9	10-11	2	2	.4	1.2	2	3	3	6	3
25.0-29.9	0-4	5	6-9	10-11	2	2	.3	1.3	3	4	4	6	4
30.0-34.9	0-4	–	5-9	10-11	1	1	.2	1.3	3	4	4	7	4
35.0-39.9	0-5	–	6-8	9-11	1	1	.1	1.3	3	4	4	8	5
40.0-41.6	0-6	–	7	8-11	1	1	.1/3	1.3	4	5	5	9	5
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.4	–	+2	+2	+2	+2	+2
LOADED	+1	-1	-1	-1	–	–	-.2	-.5	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 22

TARGET CHARARTERISTICS CHART

W	5			Cn	–	Mg	6
F	7			L	4		
C	3			C	–		
E	3	E	–	E	–	E	–
G	2M	4M				4M	2M
	(5)	(5)				(5)	(5)
	FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A,12(+1),2,4,6,8,10(-1)
M: 12(+2),2,10(+1),4,8(-1),6(-2)
L: B(-2),12(+1),2,4(-1),6(-3),8,10(-1)

Producer: USA
Name: "Mustang"

NOTES: A total of 555 P-51H's were produced (about 270 before V.J. day). Did not see combat.
Can carry 2 bombs or 6A/G rockets loaded.

Variant: Some models had reduced armament. Increase ammo to 7.

G	2M	2M			2M	2M
	(5)	(5)			(5)	(5)
	FF					

PLANE TYPE: Me-109G–10

Messerschmitt BF-109G–10 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS: STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	SPEED CHANGE: POWER FACTORS	BRAKE FACTORS	ALTITUDE CHANGE: CLIMB RATE -1/.3	DIVE RATE +1/.3	MANEUVERS: BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6-7	8-10	2	2	.6	1.0	2	2	2	4	4
5.0-9.9	0-2	3-5	6-7	8-10	2	1	.6	1.1	2	3	3	5	4
10.0-14.9	0-2	3-5	6-7	8-10	2	1	.6	1.1	3	3	3	6	5
15.0-19.9	0-2	3-4	5-8	9-10	2	1	.6	1.2	3	4	4	7	5
20.0-24.9	0-3	4	5-8	9-11	2	1	.5	1.2	4	4	4	8	6
25.0-29.9	0-4	–	5-8	9-11	2	1	.4	1.3	4	4	4	9	7
30.0-34.9	0-5	–	6-7	8-11	1	1	.3	1.3	4	5	5	10	8
35.0-39.9	0-5	–	6	7-11	1	1	.2	1.3	4	6	6	11	8
40.0-41.6	0-5	–	6	7-11	1	1	.1/2	1.3	5	6	6	11	8
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.4	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: The Me-109G-10 first appeared in the Spring of '44, the G-14 in the late Summer of '44. Can carry one bomb or two A/G or A/A rockets loaded.

POINT VALUE: 18

TARGET CHARARTERISTICS CHART

W	5		Cn	5	Mg	5
F	6		L	4		
C	3		C	–		
E	3	E –	E	–	E	–
G	2M (5)		8C (6)		2M (5)	
FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2,4,6,8,10(-2)
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name: "Gustav"

Variant: G-14 (18 pts)
Cn. ammo 6
Mg. ammo 5

G		2M	4C	2M			
		(5)	(5)	(5)			
FF							

Variant: G-10/R4 (19 pts):
Cn. ammo 4

G	8C		2M	8C	2M		8C		
	(5)		(5)	(6)	(5)		(5)		
FF									

Variant: G-10/R6 (18 pts):
Cn. ammo 5

G	4C		2M	8C	2M		4C		
	(4)		(5)	(6)	(5)		(4)		
FF									

Treat as loaded in these configurations.

PLANE TYPE: FW-190A-3

Focke Wulf FW-190A-3 & A-4 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS: STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	SPEED CHANGE: POWER FACTORS	BRAKE FACTORS	ALTITUDE CHANGE: CLIMB RATE -1/.2	DIVE RATE +1/.3	MANEUVERS: BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6	7-9	2	2	.4	1.1	1	2	2	3	2
5.0-9.9	0-2	3-5	6-7	8-9	2	2	.4	1.1	1	3	3	4	2
10.0-14.9	0-2	3-4	5-8	9-10	2	2	.4	1.2	1	3	3	5	2
15.0-19.9	0-3	4	5-8	9-10	2(1)	1	.3	1.2	1	3	3	5	3
20.0-24.9	0-3	–	4-8	9-10	1	1	.3	1.2	2	4	4	6	3
25.0-29.9	0-4	–	5-7	8-11	1	1	.2	1.3	2	5	5	6	4
30.0-34.8	0-5	–	6	7-11	1	1	.1	1.3	2	5	5	7	5
–	–	–	–	–	—	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.4	–	+2	+2	+2	+2	+2
LOADED	+1	-1	-1	-1	–	–	-.2	-.4	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES:The FW-190A-1 was introduced in July '41. The FW-190A-2 was introduced in August '41 as the first true production model. The FW-190A-3 was introduced in Spring '42. The FW-190A-4 & A-5 were very similar to the A-3. Power factor in parenthesis applies to A-1.

POINT VALUE: 20

TARGET CHARARTERISTICS CHART

W	5		Cn	5	Mg	5
F	7		L	3		
C	3		C	–		
E	3	E –	E	–	E	–
G	3C 4C 1M (3) (4) (5)		1M (5)		4C 3C (4) (3)	
FF						

SILHOUETTE MODIFIER:+2
FIRE MODIEFIIER:+2
ENGINE TYPE(OP): R
BLIND SPOTS(OP):
H:A(-1),12(+1), 2, 4, 6(-1), 8, 10
M:12(+2), 2,10(+1), 4, 8(-1), 6(-3)
L:B(-2).12(+1),2,4,8,10(-1),6(-3)

Producer: Third Reich
Name: "Würger" ("Butcher Bird")

Variants:
A-1 (17 pts):

G	1M	1M				1M	1M	
	(4)	(5)				(5)	(4)	
FF	FF					FF	FF	

A-2 (19 pts):

A-4 Trop (19 pts):

G	4C	1M			1M	4C		
	(4)	(5)			(5)	(4)		
FF	FF				FF	FF		

A-3/U1 & U3 (20 pts):
Can carry one bomb loaded.
Delete outer cannons on U1 only.
A-4/R6 & A-5R/6 (20 pts):
Can carry two A/A rockets loaded.

PLANE TYPE: G.55/O

Fiat G.55/O — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6-7	8-9	2	2	.6	1.1	2	2	2	4	4
5.0-9.9	0-2	3-5	6-7	8-9	2	2	.5	1.1	2	2	2	4	4
10.0-14.9	0-2	3-5	6-7	8-9	2	1	.4	1.2	3	3	3	5	5
15.0-19.9	0-2	3-5	6-8	9-10	2	1	.4	1.2	3	3	3	6	5
20.0-24.9	0-3	4	5-8	9-10	2	1	.4	1.2	4	3	3	6	6
25.0-29.9	0-3	–	5-8	9-10	2	1	.3	1.3	4	4	4	7	6
30.0-34.9	0-3	–	4-7	8-10	1	1	.2	1.3	4	4	4	7	7
35.0-39.9	0-4	–	5-7	8-10	1	1	.1	1.3	5	4	4	8	7
40.0-42.7	0-5	–	6-7	8-10	0	1	.1/2	1.3	5	5	5	8	8
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.1	-.1	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 19

TARGET CHARARTERISTICS CHART

W	6			Cn	10	Mg	5		
F	5			L	3				
C	3			C	–				
E	3	E	–	E	–	E	–		
G	2M		2M	4C	2M		2M		
	(4)		(5)	(5)	(5)		(4)		
	FF								

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A (-1),12 (+1),2 ,4 ,6 ,8 ,10 (-2)
M: 12(+2),2,10(+1)4,8(-2),6(-3)
L: B(-2),12(+1),2,4,8,10(-1)

NOTES:Deliveries began in September 1943. Did not see service with the Regia Aeronautica before Italy capitulated on 9-8-43, but was used by Aeronautica Nazionale Repubblicana. A total of 105 G.55's were produced. Can carry 1 bomb loaded.

Producer: Italy
Name: "Centauro"(Centaur)

Variants: G-55/I (22 pts)
Wing Cn ammo 8
Center Cn ammo 10
Must fire at same time.

G	4C		2M	4C	2M		4C		
	(4)		(5)	(5)	(5)		(4)		
	FF								

PLANE TYPE: M.C. 205

Macchi M.C. 205V — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6-7	8-9	2	2	.6	1.1	2	2	2	4	3
5.0-9.9	0-2	3-5	6-7	8-9	2	2	.6	1.1	2	2	2	4	3
10.0-14.9	0-2	3-5	6-7	8-9	2	2	.5	1.2	2	3	3	5	3
15.0-19.9	0-2	3-5	6-8	9-10	2	1	.5	1.2	3	3	3	5	4
20.0-24.9	0-3	4-5	6-8	9-10	2	1	.4	1.2	3	3	3	6	4
25.0-29.9	0-3	4	5-7	8-10	2	1	.3	1.2	3	4	4	6	5
30.0-34.9	0-3	–	4-7	8-10	1	1	.2	1.2	4	4	4	7	5
35.0-36.1	0-4	–	5-6	7-10	1	1	.1	1.2	4	5	5	7	6
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+1	+2	+2	+2	+1
LOADED	+1	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

POINT VALUE: 19

TARGET CHARARTERISTICS CHART

W	5			Cn	10	Mg	7		
F	5			L	3				
C	3			C	–				
E	3	E	–	E	–	E	–		
G	4C	2M		2M	4C				
	(4)	(5)		(5)	(4)				
	FF								

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A(-1),12(+1),2,4,6,8,10(-2)
M: 12(+2),2,10(+1)4,8(-2),6(-3)
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

NOTES: First operational in July 1943. Used by both Regia Aeronautica and Aeronautica Nazionale Repubblicana. A total of 262 M.C. 205V's were produced. Can carry one bomb loaded.

Producer: Italy
Name: "Veltro" (Greyhound)

PLANE TYPE: YFM–1

Bell XFM–1 and YFM–1 — Fighter Multiplace

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.2	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5	6-7	1	3	.3	.9	4	3	3	–	–
5.0-9.9	0-2	3-4	5	6-7	1	2	.2	1.0	4	4	4	–	–
10.0-14.9	0-2	3-4	5	6-8	1	2	.2	1.0	5	4	4	–	–
15.0-19.9	0-2	3	4-5	6-8	1	2	.2	1.1	5	5	5	–	–
20.0-24.9	0-3	–	4-5	6-8	1	1	.2	1.1	6	5	5	–	–
25.0-30.0	0-3	–	4	5-9	1	1	.1	1.1	6	5	5	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	P	P
DIVE	–	–	–	–	P	–	+.2	–	+3	+3	+3	P	P
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: XFM–1 first flew in Sept. 1937, deliveries started in Mar '40. A total of 12 YFM–1's were produced. Can carry 1 bomb loaded.

POINT VALUE: 17

TARGET CHARARTERISTICS CHART

W	7			Cn	–	Mg	4
F	7			L	2		
C	2			C	–		
E	3	E	–	E	–	E	3
G							
				(5)			
				"F"			

SILHOUETTE MODIFIER: +4
FIRE MODIFIER: +0
TYPE ENGINE(OP): I
BLIND SPOTS (OP):
H: A,12(+2),2,4,6,8,10(+1)
M: 12,2,10(+2),4,8(+2),6(+1),
L: B(-2),12(+1),2,4,8,10(-1),6(-2)

"F" Gunnery Play (OP)
H: 4, 8(1)
M:12([5C], [5C], 2), 4, 8(2), 6(1)
L: 4, 8(1)

Producer: U.S.A.
Name: "Airacuda"

PLANE TYPE: Hudson

Lockheed RAF Hudson/ USAAF A-28 & A-29 — Light Day Bomber

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.2	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2-4	5	6-7	1	2	.3	.8	3	3	3	6	6
5.0-9.9	0-2	3-4	5	6-7	1	2	.2	.9	3	3	3	6	6
10.0-14.9	0-2	3-4	5	6-8	1	2	.2	1.0	4	3	3	7	7
15.0-19.9	0-2	3	4-5	6-8	1	2	.2	1.0	4	4	4	8	8
20.0-24.9	0-2	–	3-5	6-8	1	1	.1	1.0	4	4	4	9	8
25.0-26.5	0-3	–	4	5-8	1	1	.1/2	1.0	5	5	5	9	9
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.1	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Production started in Dec. '38. About 2800 were produced. Could carry up to 1,600 pounds of bombs (2 bombs low level) bombs loaded. Has sights for level bombing.

POINT VALUE: 19

TARGET CHARARTERISTICS CHART

W	7			Cn	–	Mg	6
F	5			L	3		
C	2			C	2		
E	3	E	–	E	–	E	3
G							
		1M			1M		
		(5)	(5)	(5)			
		FF	F	FF			

SILHOUETTE MODIFIER:+4
FIRE MODIEFIIER: 0
ENGINE TYPE(OP): R
BLIND SPOTS(OP):
H:A(-1),12(+1), 2, 4, 6(-1), 8, 10
M:12(+2), 2,10(+1), 4, 8(-1), 6(-3)
L:B(-2).12(+1),2,4,8,10(-1),6(-3)

"F" Gunnery Play (OP)
H: A(2), 12, 2, 4, 6, 8, 10(2)
M: 12, 2, 4, 6, 8, 10(2)
L: B(1), 12, 2, 10(0), 4, 6, 8(1)

Producer: U.S.A.

PLANE TYPE: B-17D

Boeing B-17C & D/ RAF Fortress I — Heavy Bomber

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.1	DIVE RATE +1/.5	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5-6	7	2	3	.2	.7	5	8	9	–	–
5.0-9.9	0-2	3-4	5-6	7	2	3	.2	.7	5	9	10	–	–
10.0-14.9	0-2	3-4	5-6	7	2	2	.2	.8	6	10	11	–	–
15.0-19.9	0-2	3	4-6	7-8	1	2	.2	.8	6	11	12	–	–
20.0-24.9	0-3	–	4-6	7-8	1	2	.2	.8	7	12	14	–	–
25.0-30.6	0-3	–	4-6	7-8	1	2	.1	.8	8	14	15	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+2	+2	+2	P	P
DIVE	–	–	–	–	P	–	+.1	–	+4	+4	+4	P	P
LOADED	0	-1	-1	-1	–	--	-.1	-.2	+3	+8	+7	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: B-17C deliveries started in July '40. B-17D deliveries started in Feb. '41. "L" hit in parenthesis refers to B-17C, but most were brought up to B-17D standard. A total of 38 B-17C's (20 supplied to RAF) and 42 B-17D's were produced. Can carry up to 9,000 pounds of bombs loaded (up 6 bombs low level). Has sights for level bombing.

POINT VALUE: 28

TARGET CHARARTERISTICS CHART

W	9			Cn	–	Mg	–	
F	10			L	3(2)			
C	2			C	2			
E	2	E	2	E	2	E	2	
G								
			(6)					
	"F"							

SILHOUETTE MODIFIER: +6
FIRE MODIFIER: +0
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H:]
M:] +2 in all directions
L:]

"F" Gunnery Play (OP)
H: A(2), 12(2), 2, 10(2), 4, 6, 8(2)
M:12(2), 2, 10(2), 4, 8(2), 6(0)
L: B(4), 12, 2, 10(0), 4, 6, 8(4)

Producer: U.S.A.
Name: "Flying Fortess"

PLANE TYPE: B-32

Consolidated B-32 — Very Heavy Day Bomber

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.1	DIVE RATE +1/.4	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5-6	7-8	4	4	.3	.8	2	10	11	–	–
5.0-9.9	0-2	3-4	5-6	7-8	4	4	.3	.8	2	11	12	–	–
10.0-14.9	0-2	3-4	5-6	7-9	3	3	.2	.9	2	12	13	–	–
15.0-19.9	0-2	3	4-6	7-9	3	3	.2	.9	3	14	15	–	–
20.0-24.9	0-3	–	4-7	8-9	3	3	.2	1.0	3	15	16	–	–
25.0-29.9	0-3	–	5-7	8-9	3	2	.1	1.0	4	17	18	–	–
30.0-32.0	0-4	–	5-7	8-9	2	2	.1/3	1.0	4	18	19	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+2	+2	+2	–	–
DIVE	–	–	–	–	P	–	+.2	–	+4	+4	+4	–	–
LOADED	0	-1	-1	-1	–	–	-.1	-.3	+4	+12	+11	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: 115 B-32's were produced before VJ Day. Only 15 saw limited action starting in late May '45. Can carry up to 20,000 pounds of bombs loaded (14 bombs low level).

POINT VALUE: 48

TARGET CHARARTERISTICS CHART

W	10			Cn	–	Mg	–	
F	10			L	3			
C	2			C	2			
E	2	E	2	E	2	E	2	
G								
			(6)					
	F							

SILOUETTE MODIFIER: +7
FIRE MODIFIER: 0
TYPE ENGINE(OP): R
BLIND SPOTS(OP):
H:]
M:] +2 in all directions
L:]

"F" Gunnery Play (OP)
H: A(12), 12, 2, 4, 6, 8, 10(12)
M:12(10), 2, 10(6), 4, 8(14), 6(10)
L: B(4), 12, 2, 4, 6, 8, 10(8)

Producer: USA
Name: "Dominator"

PLANE TYPE: Ki-43 "Oscar"

Nakajima Ki-43-IIb — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.4	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5-6	7	1	2	.6	.8	2	1	1	3	3
5.0-9.9	0-2	3-4	5-6	7	1	2	.5	.9	2	1	1	3	4
10.0-14.9	0-2	3-4	5-6	7-8	1	2	.5	1.0	3	1	1	4	5
15.0-19.9	0-3	4	5-6(7)	7-8(8)	1	2	.4	1.0	3	1	1	4	5
20.0-24.9	0-3	–	4-6(7)	7-8(8)	1	2	.3	1.0	4	2	2	5	6
25.0-29.9	0-3	–	4-6	7-8	1	1	.2	1.0	4	2	2	5	7
30.0-34.9	0-4	–	5	6-8	1	1	.1	1.1	5	2	2	6	8
35.0-36.8	0-4	–	5	6-8	1	1	.1/2	1.1	6	3	3	7	9
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+2	+1
DIVE	–	–	–	–	P	–	+.2	–	+3	+3	+3	+3	+3
LOADED	+.1	-1	-1	-1	–	–	-.2	-.4	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Operational in Summer '43. About 5000 –II series built. Can carry one bomb loaded.
Variant: Ki-43IIIa (17 pts.) production started in Dec. '44. About 100 produced. Use numbers in parenthesis.

POINT VALUE: 16

TARGET CHARARTERISTICS CHART

W	4			Cn	–	Mg	4
F	4			L	3		
C	3			C	–		
E	3	E	–	E	–	E	–
G		2M		2M			
		(5)		(5)			
	FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS(OP):
H: A ,12(+1), 2,4,6,8,10(-1)
M:12(+2), 2,10(+1),4,8(-1), 6(-2)
L:B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Imperial Japan
Name: "Hayabusa (Peregrine Falcon)"
Allied Code: "Jim" in CBI

PLANE TYPE: Blenheim IV

Bristol Blenheim Mk IV — Medium Day Bomber

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.2	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2-4	5	6-7	1	2	.3	.8	3	3	3	–	–
5.0-9.9	0-1	2-4	5	6-7	1	2	.2	.8	3	3	3	–	–
10.0-14.9	0-2	3-4	5	6-8	1	2	.2	.9	4	3	3	–	–
15.0-19.9	0-2	3	4-5	6-8	1	1	.2	.9	5	4	4	–	–
20.0-24.9	0-2	–	3-5	6-8	1	1	.1	1.0	5	4	4	–	–
25.0-27.3	0-3	–	4	6-8	1	1	.1/3	1.0	6	5	5	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	P	P
DIVE	–	–	–	–	P	–	+.1	–	+3	+3	+3	P	P
LOADED	0	-1	-1	-1	–	–	-.1	-.2	+3	+4	+4	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES:Production started in Sept. '38. A total of 3,989 were built. Could carry up to 1000 pounds (2 bombs at low level) loaded or two depth charges loaded. "F" gunery in brackets applies to variant.

Variants:
IVF Strike Fighter (20 pts)
Mg ammo: 7
1 bomb low level.

G	1M	2M		2M			
	(4)	(5)	(5)	(5)			
	FF	FF	F	FF			

POINT VALUE: 19

TARGET CHARARTERISTICS CHART

W	7			Cn	–	Mg	6
F	5			L	3		
C	2			C	–		
E	3	E	–	E	–	E	3
G		1M					
		(4)	(5)				
	FF	F					

SILHOUETTE MODIFIER:+3
FIRE MODIEFIIER:+2 (FF); 0 (F)
ENGINE TYPE(OP): R
BLIND SPOTS(OP):
H: A(+1), 12(+2), 2, 4(+1), 6(+2), 8,10(+1)
M:12(+2), 2(-1), 4(+2), 6(+2), 8(+1),10(-1)
L: B, 12(+1), 2(+1), 4, 6(-2), 8, 10(+1)

"F" Gunnery Play (OP)
H: A(2), 12(3), 2(3), 4(2), 6(2), 8(2),10(3)
M:12(3), 2(3), 4(2), 6(3)[2], 8(2),10(3)
L: B(0), 12(0), 2(0), 4(0), 6(1)[0], 8(0), 10(0)

OR

H: A(2), 12(2), 2(2), 4(2), 6(2), 8(2),10(2)
M:12(2), 2(2), 4(4), 6(4), 8(4),10(2)
L: B(2), 12(0), 2(0), 4(2), 6(2), 8(2), 10(2)

Producer: Great Briton

PLANE TYPE: FM-2 "Wildcat"

General Motors FM-2/ RAF Wildcat VI — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.2	DIVE RATE +1/.2	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-4	5-6	7-8	2	3	.5	.9	2	2	2	4	3
5.0-9.9	0-2	3-4	5-6	7-8	1	3	.3	1.0	2	2	2	4	3
10.0-14.9	0-2	3	4-6	7-8	1	3	.3	1.0	3	2	2	5	4
15.0-19.9	0-2	3	4-6	7-9	1	3	.2	1.1	3	2	2	6	4
20.0-24.9	0-3	–	4-6	7-9	1	2	.2	1.1	3	3	3	6	5
25.0-29.9	0-4	–	5-7	8-10	1	2	.2	1.1	4	3	3	7	5
30.0-34.7	0-4	–	5-6	7-10	1	2	.1	1.1	4	3	3	7	6
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+2	+2	+2	+2	+2
LOADED	+1	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: General Motors production version of Grumman XF4F-8. Deliveries began in September '43. A total of 4777 FM-2's were produced. Can carry one bomb or 6 A/G rockets loaded.

POINT VALUE: 17

TARGET CHARARTERISTICS CHART

W	5			Cn	–	Mg	7
F	6			L	3		
C	3			C	–		
E	3	E	–	E	–	E	–
G	2M	2M				2M	2M
	(5)	(5)				(5)	(5)
	FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A(-1),12(+1),2,4,6,8,10(-2)
M: 12(+2),2,10(+1)4,8(-2),6(-3)
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: USA
Name: "Wildcat"

PLANE TYPE: Ki-27 "Nate"

Nakajima Ki-27a and Ki-27b Type 97 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.4	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-1	2-4	5	6	1	3	.6	.8	2	1	1	3	3
5.0-9.9	0-1	2-4	5	6-7	1	3	.5	.8	2	1	1	4	4
10.0-14.9	0-1	2-4	5-6	7	1	2	.4	.8	3	1	1	4	5
15.0-19.9	0-1	2-3	4-5	6-7	0	2	.3	.9	3	1	1	5	5
20.0-24.9	0-2	3	4	5-8	0	2	.2	.9	4	2	2	5	6
25.0-29.9	0-2	–	3-4	5-8	0	1	.1	.9	4	2	2	6	7
30.0-32.2	0-2	–	3	4-8	0	1	.1/3	.9	5	2	2	6	8
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.2	–	+3	+3	+3	+3	+3
LOADED	+1	-1	-1	-1	–	–	-.1	-.2	+1	+1	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES:The Ki-27 series entered service in July '38 A total of 2005 Ki-27a & b's were produced by Japan. An Additional 1379 were produced by Manchukuo (Manchuria). Primary Japanese Army Fighter in December '41.

POINT VALUE: 13

TARGET CHARARTERISTICS CHART

W	4			Cn	–	Mg	5
F	4			L	2		
C	2			C	–		
E	3	E	–	E	–	E	–
G		1M				1M	
		(5)				(5)	
	FF						

SILHOUETTE MODIFIER: +2
FIRE MODIFIER: +1
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A,12(+1),2,4,6,8,10(-1)
M: 12(+2),2,10(+1),4,8(-1),6(-2),
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Imperial Japan
Name: Army Type 97 Fighter
Allied Code: Nate (Abdul in CBI)

PLANE TYPE: Ki-100

Kawasaki Ki-100a and Ki-100b Type 5 Fighter — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.3	DIVE RATE +1/.2	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6	7-8	2	2	.5	1.0	2	2	2	4	3
5.0-9.9	0-2	3-5	6-7	8	2	2	.5	1.1	2	2	2	4	3
10.0-14.9	0-2	3-5	6-7	8-9	1	2	.4	1.1	2	2	2	5	3
15.0-19.9	0-3	4-5	6-7	8-10	1	1	.4	1.1	2	3	3	6	4
20.0-24.9	0-3	4	5-7	8-10	1	1	.3	1.2	3	3	3	7	4
25.0-29.9	0-3	4	5-7	8-10	1	1	.2	1.2	3	3	3	7	5
30.0-34.9	0-4	–	5-7	8-10	1	1	.1	1.2	4	4	4	8	6
35.0-36.1	0-5	–	6	7-10	1	1	.1/3	1.2	5	4	4	9	7
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+2	+2	+2	+2	+2
LOADED	+1	-1	-1	-1	–	–	-.1	-.3	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Production began in spring of 1945. Radial engine version of Ki-61 "Tony". About 400 were produced by the endof the war. Variant Ki-100b has different blind spot modifiers [in brackets]. Can carry two bombs loaded.

POINT VALUE: 18

TARGET CHARARTERISTICS CHART

W	5			Cn	10	Mg	5		
F	6			L	3				
C	3			C	–				
E	3	E	–	E	–	E	–		
G	2M	4C				4C	2M		
	(4)	(5)				(5)	(4)		
	FF								

SILOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2,10, (0),4,8(-1) ,6(-2)
A[+1], 12,2,10,[+1]; KI-100B
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,10(-1),4,8(-2),6(-3)

Producer: Imperial Japan
Name: Army Type 5 Fighter

PLANE TYPE: J2M3 "JACK"

Mitsubishi J2M3 Model 11 Interceptor — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE -1/.4	DIVE RATE +1/.3	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
0-4.9	0-2	3-5	6-7	8-9	2	2	.8	1.1	2	1	1	4	3
5.0-9.9	0-2	3-5	6-7	8-9	2	2	.7	1.1	2	2	2	5	4
10.0-14.9	0-3	4-5	6-7	8-9	2	2	.7	1.1	3	2	2	6	5
15.0-19.9	0-3	4-5	6-7	8-10	2	1	.6	1.1	3	3	3	6	6
20.0-24.9	0-3	4	5-8	9-10	1	1	.5	1.2	4	3	3	7	6
25.0-29.9	0-4	–	5-7	8-10	1	1	.4	1.2	4	4	4	7	7
30.0-34.9	0-4	–	5-7	8-10	1	1	.2	1.2	5	4	4	8	8
35.0-38.4	0-5	–	6	7-10	1	1	.1/2	1.2	6	5	5	9	9
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.4	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.2	-.4	+1	+2	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES:The J2M series was introduced in the summer of 1944. About 500 were produced by the end of the war. Can carry one bomb loaded. Variants are field modifications with 1 or 2 3C in FH position.

POINT VALUE: 18

TARGET CHARARTERISTICS CHART

W	5			Cn	5	Mg	–		
F	6			L	2	FH	3		
C	3			C	–				
E	3	E	–	E	–	E	–		
G	4C	4C				4C	4C		
	(4)	(5)				(5)	(4)		
	FF								

SILHOUETTE MODIFIER:+2
FIRE MODIEFIIER:+2
ENGINE TYPE(OP): R
BLIND SPOTS(OP):
H:A(-1),12(+1)2,10(0),4,6,8,(-2)
M:12(+2),2,10(+1),4,8(-2),6(-3)
L:B(-2).12(+1),2,4,8,10(-1),6(-3)

Producer: Japan
Name: "Raiden" ("Thunderbolt")

Variants: J2M3 Mod.#1
(19 PTS.)
FH Ammo 3
Add +1 to all maneuvers

G	4C	4C		3C			4C	4C		
	(4)	(5)		(4)			(5)	(4)		
	FF	FF		FH			FF	FF		

Variants: J2M3 Mod.#2
(20 PTS.)
FH Ammo 3
Add +2 to all maneuvers

G	4C	4C		6C			4C	4C		
	(4)	(5)		(4)			(5)	(4)		
	FF	FF		FH			FF	FF		

This is a Battleline format translation of a data card that was published in The General Vol 23 #1 1986

PLANE TYPE: J1N1 "Irving"

Nakajima J1N1-S Model 11 — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
							-1/.2	+1/.3					
0-4.9	0-2	3-4	5	6-7	2	2	.3	.9	3	2	2	6	6
5.0-9.9	0-2	3-4	5-6	7	2	2	.2	1.0	3	3	3	6	7
10.0-14.9	0-2	3-4	5-6	7	2	2	.2	1.0	4	3	3	6	7
15.0-19.9	0-2	3-4	5-6	7-8	1	2	.1	1.0	4	3	3	7	8
20.0-24.9	0-3	4	5-6	7-8	1	1	.1	1.0	5	4	4	8	9
25.0-29.9	0-4	–	5	7-8	1	1	.1	1.1	6	5	5	8	10
30.0-30.6	0-4	–	5	7-9	0	1	.1/3	1.1	7	6	6	9	11
–	–	–	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+2	+2	+2	+2	+2
DIVE	–	–	–	–	P	–	+.3	–	+3	+3	+3	+3	+3
LOADED	0	-1	-1	-1	–	–	-.2	-.4	+1	+2	+2	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Introduced in August '43; about 470 were built. Some carried radar. Primary Japanese night fighter.

POINT VALUE: 18

TARGET CHARARTERISTICS CHART

W	6		Cn	8	Mg	–	
F	6		L	2			
C	3		C	–			
E	3	E –	E	–	E	3	
G		8C		8C			
		(5)		(5)			
		FH		FL			

SILHOUETTE MODIFIER: +3
FIRE MODIFIER: 0
TYPE ENGINE(OP): R
BLIND SPOTS (OP):
H: A(-1),12(+1),2,4,6,8,10(-2)
M: 12(+2),2,10(+1),4,8(-2),6(-3)
L: B(-2),12(+1),2,4,8,10(-1),6(-3)

Producer: Imperial Japan
Name: "Gekko"

This is a Battleline format translation of a data card that was published in The General Vol 23 #1 1986

PLANE TYPE: Ki-100

Kawasaki Ki-100a and Ki-100b Type 5 Fighter — Day Fighter

MOVEMENT CHARACTERISTICS CHART

ALTITUDE (x1000)	SPEEDS				SPEED CHANGE		ALTITUDE CHANGE		MANEUVERS				
	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF -LOOP	HALF-ROLL
							-1/.3	+1/.2					
0-4.9	0-2	3-5	6	7-8	2	2	.5	1.0	2	1	1	3	2
5.0-9.9	0-2	3-5	6-7	8	2	2	.5	1.1	2	2	2	3	2
10.0-14.9	0-2	3-5	6-7	8-9	1	2	.4	1.1	2	2	2	4	3
15.0-19.9	0-3	4-5	6-7	8-10	1	1	.4	1.1	2	2	2	4	3
20.0-24.9	0-3	4	5-6	8-10	1	1	.3	1.2	3	3	3	5	4
25.0-29.9	0-3	4	5-6	8-10	1	1	.2	1.2	3	3	3	5	5
30.0-34.9	0-4	–	5-6	8-10	1	1	.1	1.2	4	4	4	6	6
35.0-36.1	0-5	–	6	7-10	1	1	.1/3	1.2	5	4	4	7	7
–	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE	–	–	–	–	P	–	+.3	–	+2	+2	+2	+2	+2
LOADED	+1	-1	-1	-1	–	–	-.1	-.3	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

NOTES: Production began in spring of 1945. Radial engine version of Ki-61 "Tony". About 400 were produced by the endof the war. Variant Ki-100b has different blind spot modifiers [in brackets]. Can carry two bombs loaded.

POINT VALUE: 18

TARGET CHARARTERISTICS CHART

W	5		Cn	10	Mg	5	
F	6		L	3			
C	3		C	–			
E	3	E –	E	–	E	–	
G	2M	4C			4C	2M	
	(4)	(5)			(5)	(4)	
		FF					

SILOUETTE MODIFIER: +2
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS(OP):
H: A(-1) ,12(+1), 2,10, (0),4,8(-1) ,6(-2)
A[+1], 12,2,10,[+1]; KI-100B
M:12(+2), 2,10(+1),4,8(-2), 6(-3)
L:B(-2),12(+1),2,10(-1),4,8(-2),6(-3)

Producer: Imperial Japan
Name: Army Type 5 Fighter

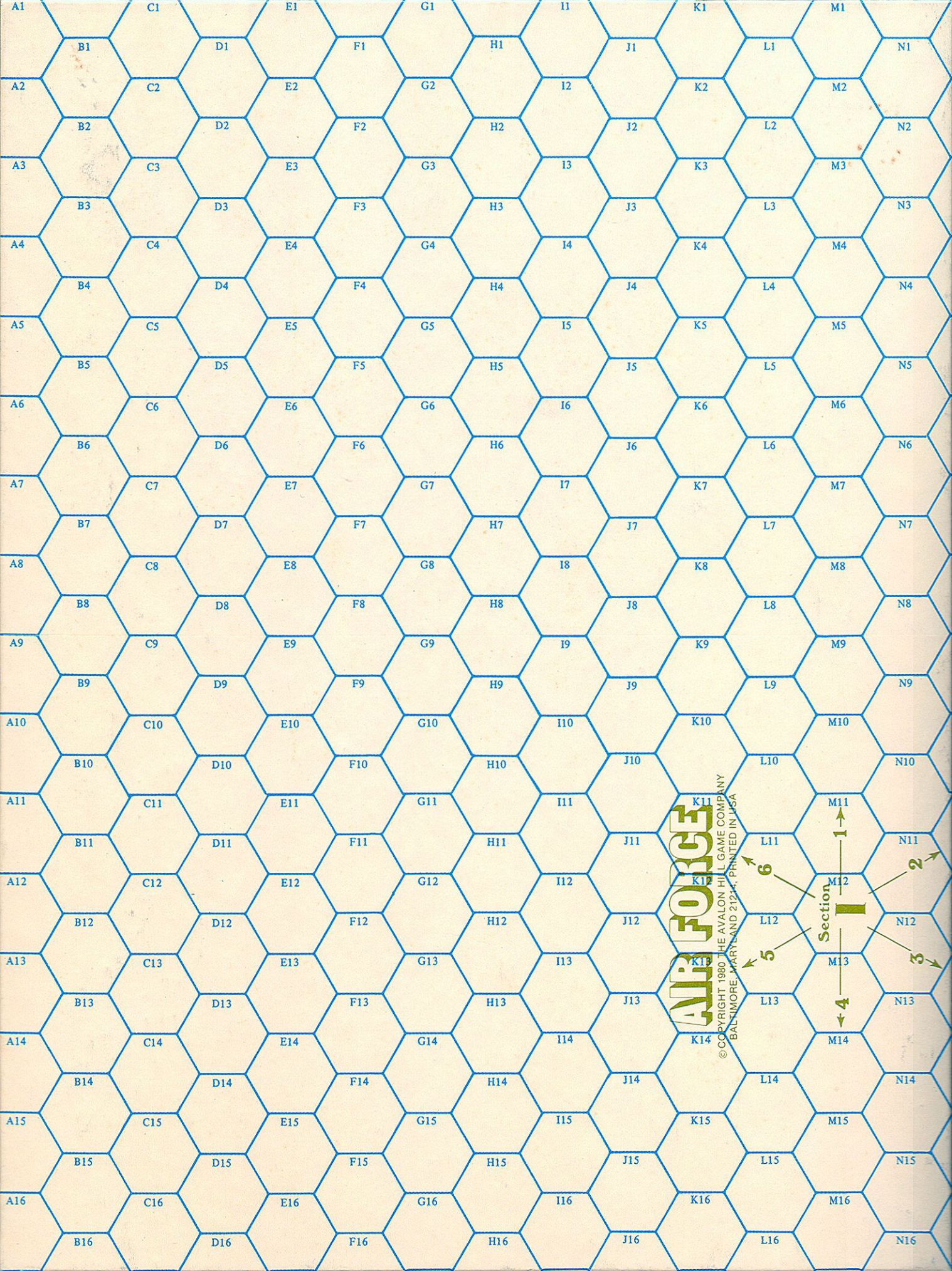
This is a Battleline format translation of a data card that was published in The General Vol 23 #1 1986

Notes: I've been playing Air Force and Dauntless off and on since the summer of 1976. I remember being disappointed that some datacards left out of the expansion kit for whatever reason. The Ki-100, P-47M/N, P-51H, Me-163 etc... In the days before home computers I experimented with rub off letters purchased from an art supply store and I also tried cutting & pasting photocopied Air Force datacards. The first time I saw an original 128K Mac back in 1984 or 85, it was like a light bulb going off "that's the way to do it". So after I bought a Mac Plus in Jan of 88 I started using MacDraw to make these datacards. Some years later I converted them to MacDrawII format.

The Blenheim IV and MC-205 datacards were by Mike Telson. The Ki-100, J2M3 "Jack" & J1N1 "Irving" are from The General Vol 23 #1 1986 by Leighton Kato. I converted them to Battleline format for people like me who perfer that over the AH format. Note that there are 2 Ki-100 cards. I had already done a version of the Ki-100 a couple of years before based on the Ki-61. My version is the one not identified as from the General V 23 #1.

Most of these are extrapolations of datacards in Air Force, Dauntless or the expansion kit. Ones that don't have a earier or later version in AF, DL or the Exp kit were more or less guestimated. The speeds & climb rates are right on.

mrowles@visi.com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B1 D1 F1 H1 J1 L1 N1
A2 C2 E2 G2 I2 K2 M2
B2 D2 F2 H2 J2 L2 N2
A3 C3 E3 G3 I3 K3 M3
B3 D3 F3 H3 J3 L3 N3
A4 C4 E4 G4 I4 K4 M4
B4 D4 F4 H4 J4 L4 N4
A5 C5 E5 G5 I5 K5 M5
B5 D5 F5 H5 J5 L5 N5
A6 C6 E6 G6 I6 K6 M6
B6 D6 F6 H6 J6 L6 N6
A7 C7 E7 G7 I7 K7 M7
B7 D7 F7 H7 J7 L7 N7
A8 C8 E8 G8 I8 K8 M8
B8 D8 F8 H8 J8 L8 N8
A9 C9 E9 G9 I9 K9 M9
B9 D9 F9 H9 J9 L9 N9
A10 C10 E10 G10 I10 K10 M10
B10 D10 F10 H10 J10 L10 N10
A11 C11 E11 G11 I11 K11 M11
B11 D11 F11 H11 J11 L11 N11
A12 C12 E12 G12 I12 K12 M12
B12 D12 F12 H12 J12 L12 N12
A13 C13 E13 G13 I13 K13 M13
B13 D13 F13 H13 J13 L13 N13
A14 C14 E14 G14 I14 K14 M14
B14 D14 F14 H14 J14 L14 N14
A15 C15 E15 G15 I15 K15 M15
B15 D15 F15 H15 J15 L15 N15
A16 C16 E16 G16 I16 K16 M16
B16 D16 F16 H16 J16 L16 N16
AIR FORCE
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