AIR FORCE / *DAUNTLESS*

PLANE TO PLANE COMBAT IN WW2

COMBINED RULES
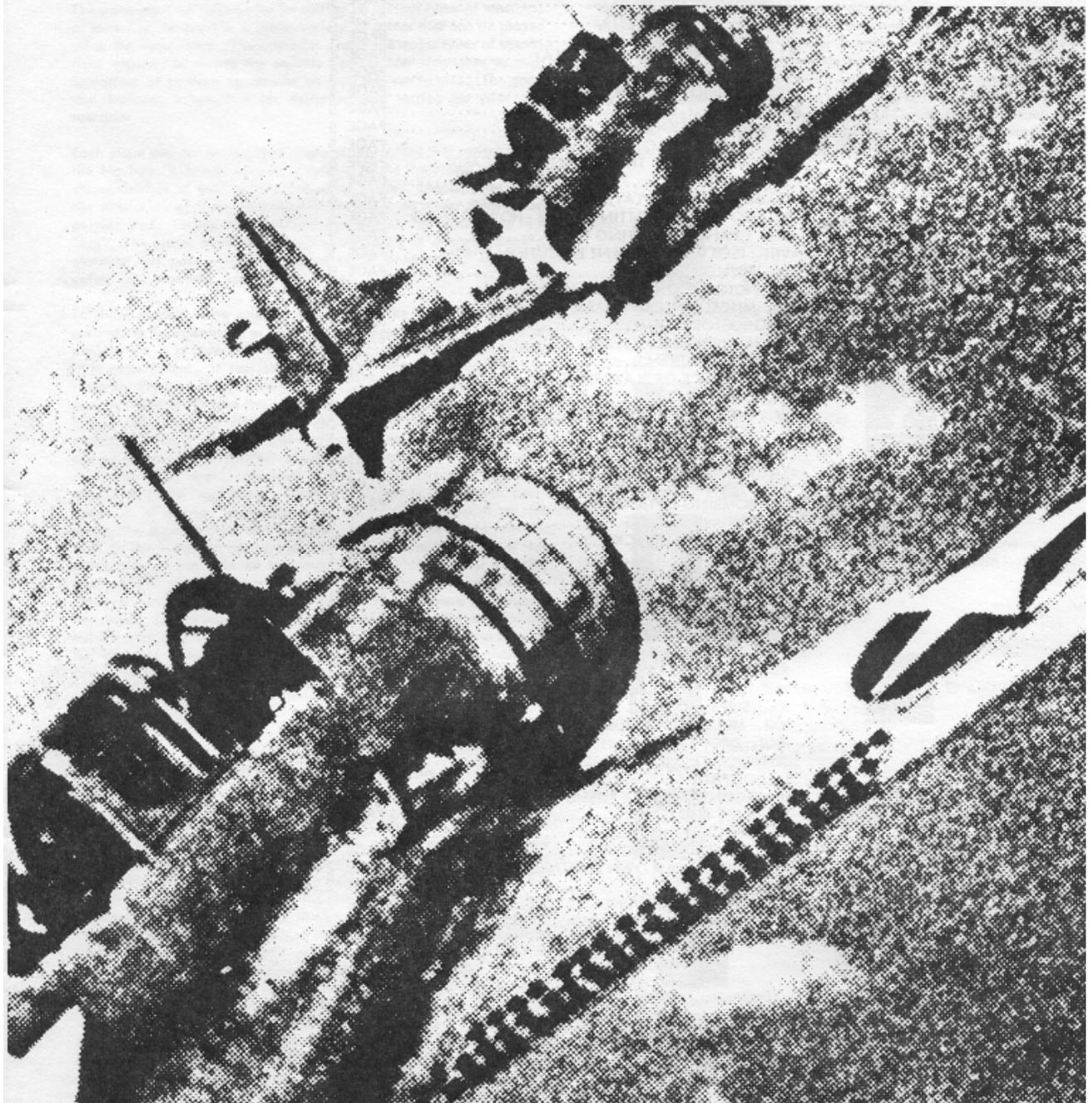
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INTRODUCTION TO THE RULES

I. __INTRODUCTION__: AIR FORCE, DAUNTLESS and The AF/DL Expansion Kit are tactical simulations of aerial combat which took place during the Second World War in the European, Mediterranean, Eastern Front, Pacific and the China Burma India Theaters. The scope of these games is such that the most important and/or interesting types of planes used by the Royal Air Force, Armée de l'Air (France), Voenno-Vozdushnye Sily (Soviet Union), United States Army Air Force, the United States Navy and Marine Corps, The Luftwaffe, Regia Aeronautica (Italy) and the Army and Navy of Imperial Japan are represented. This game is played by two or more players, each commanding an individual airplane, a formation of airplanes, or even entire aerial armadas.

The game provides information for setting up various types of missions, or scenarios, to provide a great variety of games that can be played using the same rules. The scenarios depict the major types of operations engaged in during the period, from fighter dogfights to mass formations of bombers to attacks on land and sea targets. The game also includes information for designing and setting up your own scenarios.

Each plane counter represents one single airplane, which is moved across the Map-Board's hexagonal grid according to the individual movement characteristics of each different type of plane. Special rules cover the simulation of three-dimensional movement on a two-dimensional playing area. Orders for movement are written for each plane in a "log". The planes are then moved simultaneously as written. Careful planning and maneuvering, and good aerial shooting are needed to defeat your opponent, and win the game.

To those reading these rules who are new to the hobby of simulation gaming, or "war-gaming", as it is more commonly known, a word of explanation is in order. AIR FORCE and DAUNTLESS are games that simulates reality in a game format. It represents the results of a long and extensive research effort to accumulate facts and data to duplicate conditions, as they were at the time the actual events were taking place. Simulations come in many different forms. A scene staged and shot for a movie is a "visual" simulation of reality. A scene described in a book can be regarded as a "written" simulation. Similarly, the Map-Board, counters, rules, etc., contained in this box constitutes a "gaming" simulation of the "real thing". Absolute realism in any type of simulation is, of course, impossible; but, within the framework of this game, the major factors and problems confronting the actual antagonists in the historical battles are duplicated. Through the use of this game, players can gain an increased appreciation of "how it really was", and of what influenced the actual participants in their actions. However, unlike visual or written simulations, the game player does not merely take a passive role in reading or watching the simulation, but becomes an active participant in it. The players take the roles of the opposing commanders - they are in command, and it is their decisions and their actions that will determine the result.

II. __GAME COMPONENTS__: The following items are used in the play of AIR FORCE and DAUNTLESS:

A. __MAP-BOARD__: The 20 1/2" by 26" Map-Board consists of six sections that can be joined together in a variety of ways to allow more freedom of movement. As initially laid out, the Map-Board is always put together in the manner shown in the diagram below, but can then be reconfigured during the game by rotating unused sections to edges where planes are about to "fly off the edge". The Map-Board forms the playing surface on which the counters are laid out and maneuvered. The hexagonal grid printed on the Map-Board is used to determine movement, firing ranges, and the positions of the counters. Each hex (hexagon) has a four-digit identification code, this being used to determine the initial placement of counters for the various scenarios. A directional hexagon is located in the center of each section of the Map-Board. This provides a reference for every hex, as this is the manner in which the sides of a hex are identified. It also provides a system for identifying the edges of the Map-Board. The four edges are labeled in clockwise order: "1", "2-3", "4", "5-6".

DIRECTIONAL HEX: Each side of a hex is identified by a number, that number corresponding to the number assigned to that same side of the directional hexes.
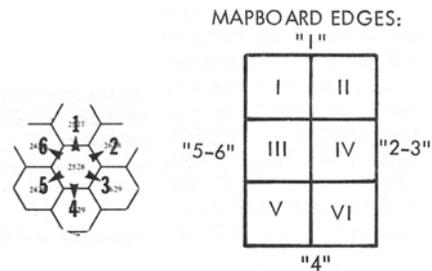
B. __UNIT COUNTERS__: Included in the game is a sheet of extra thick (for ease in handling) die-cut counters. These are the playing pieces used in the game, and when punched out provide 375 separate half-inch counters. Each counter is color-coded for easy identification. The Axis, German counters being white on black background, Italian counters being black on white background and Japanese counters being black on yellow background, The Allies American and British counters being white on red background, French counters being yellow on red background and Soviet counters being red on white background. Counters that may be used to represent either side (depending on the scenario) are blue and white, cloud counters are white on blue, and the sun counter is white on blue. Printed on each counter is information needed to play the game. Examine the examples below:

1. AIRPLANE COUNTERS:

B-25 Counter   Corsair Counter
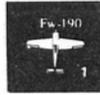
B-17 Counter   Fw-190 Counter

These counters are referred to as "planes" throughout the rules.

2. FLAK (ANTI-AIRCRAFT) COUNTERS:
(Optional Rules)

Heavy Flak Counter   Light Flak Counter

3. VEHICLE COUNTERS:
(Optional Rules)

Tank (Armored)   Truck (Un-armored)
Vehicle Counters

4. MISCELLANEOUS COUNTERS:
(Optional Rules)

Target Counter   Torpedo Counter

5. SKY "TERRAIN" COUNTERS:
(Optional Rules)

Sun Counter   Cloud Counter

Barrage Balloon Counter

6. SHIP COUNTERS:
(Optional Rules)

Aircraft Carrier Counter   Battleship Counter

Cruiser Counter   Destroyer / PT / CM Counter

Submarine Counter   Merchant/Transport/Tender Counter

Each counter contains a pictorial representation of the unit. Numbers or letters appearing on counters are for identification. The side of the counter towards which the symbol points is considered to be the direction in which the counter is pointing and/or moving. United States Army Air Force plane types are identified by their numerical designation (i .e., "P-38"), United States Navy and Marine Corps types by their popular designation (i.e., "Hellcat"), and Japanese types by the code names assigned to them by Allied intelligence (i . e., "Kate"). Ship types are identified by the usual naval code lettering system (i.e. "DD" for a destroyer).

C. COUNTER-SORTING TRAYS: Two counter-sorting trays are included, each having twenty-five pockets for use in separating and storing the counters after they have been punched out.

D. COMBAT TABLES CARD: This card contains all the charts and tables used in playing this game.

E. LOG SHEET PAD: These are used to write down the movement orders for the unit counters, and to record hits on them.

F. RULES OF PLAY AND SCENARIO MANUAL: This booklet contains all rules for the play of this game, and also the various scenarios. Additional reference material is also included.

G. AIRPLANE DATA CARDS: These cards give the individualized data for each type of airplane that can be used in this game. Note that some types of unit counters may be used with several different airplane data cards (i.e., the "P-40" counters are used with the "P-40N" and the "P-4OC" airplane data cards).

H. Not included in the game, but necessary for play are a pencil for each player to use in marking on the Log Sheets, and a pair of dice - one white die, and one colored die (referred to in the rules as the "red" die, although any color can be used).

III. BASIC CONCEPTS: Most players will find that DAUNTLESS is quite unlike any other game they may have played in the past. Their counters, flat chunks of chipboard moving across the level expanse of the Map-Board, represent far more than that. They simulate the maneuvers of actual airplanes, which are, of course, able to move vertically up and down, as well as to engage in level flight.

A bit of imagination is required for players to visualize what is being simulated. The player must envision that not only are the hexes laid out side-by-side, but also that the Map-Board hexes have thousands of feet of depth. It is possible for counters to occupy adjacent hexes, or even the same hex, and yet still be far apart if their altitudes are different .

Players must also be aware that their counters are not necessarily flying along straight and level. It is also possible for a plane to be flying with its wings banked to one side or the other, or even to be inverted, and flying upside-down. Likewise, the nose of a plane is not necessarily level, but

may be pointed up or down.

These concepts must be kept in mind while reading these rules, and while playing the game of DAUNTLESS. They are essential to gaining a firm grasp on the ideas found in the rules, and for becoming skillful in the play of this simulation.

SET UP AND PREPARATION FOR PLAY

I. <u>MAP-BOARD SET UP</u>: DAUNTLESS can be set up and played on any smooth, level surface, but a table that is large enough to allow room for the placement of the Map-Board and all other game materials (Log Sheets, airplane data cards, etc.) makes the ideal playing area.

A. A scenario is selected from the Scenario section of this booklet. All information necessary for the set up is given in the individual scenario. It is usually better for players to start with the simpler scenarios, and a small number of planes, and move on from there as experience is gained.

B. Select the counters needed for the scenario.

C. Select the airplane data cards for the planes being used.

D. Lay the Map-Board out, and place each counter in the hex corresponding to the hex code number given in the scenario. Place the counter facing in the numbered direction corresponding to the numbers on the directional hexagons on the Map-Board, if this information is given.

E. Layout a Log Sheet for each player in a convenient spot where it can be written on, and yet concealed from the other player's view. Airplane data cards should be laid out where they can be instantly referred to by the player using that type of plane. The Combat Tables Card should be laid out in some central location for use by both sides.

II. <u>LOG SHEET PREPARATION</u>:

A. Each player must fill in necessary information on a Log Sheet. Each Log Sheet is composed of four individual columns used for marking movement. Each of these individual columns is referred to as a "Log", and is used for marking the movement of an individual airplane counter. At the top of each Log is a "Hit Record", which identifies the airplane counter whose movements are recorded in that Log column, and which is used to mark damage on that plane. Each Log Sheet also contains an additional fifteen Hit Records; but these are not used in the Basic Game, their use being explained in the Optional Rules section. Also included on the Log Sheet is a list of notations used in marking movement on the individual Logs, and a list of maneuver costs, for easy reference.

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B. The airplane counter and Log shown in the above sample show the Log correctly filled out for this plane for the start of the game.

1. The type of counter the Log is to be used for is placed in the space to the right of the word "TYPE" (i.e. "Zero").
2. The number of the counter is placed in the space to the right of the word "NO." (i.e., "4").
3. This is the Hit record section of the Log for this plane. As hits are scored on the plane, they are marked with a line (i. .e., I equals one hit, III equals three hits, etc.) in the space to the right of the letter that identifies the part of the plane that was hit. These letters represent the following:
W: Wing Hits.
F: Fuselage Hits.
C: Cockpit Hits. There are two of these to cover planes that carried both a pilot and a co-pilot with two sets of cockpit instruments.
E: Engine Hits. There are four of these to cover planes that had up to four engines.
G: Gun Hits. This is filled in with a series of numbers copied from the Airplane Data Card. Each number represents an individual gun, or a battery of guns operated from a single crew position.
Cn, Mg: These notations are used to keep track of the expenditure of ammunition. They are not used in the basic game, but are explained in the optional rules section.
L: Fuel Tank Hits.

4. The Initial Speed of the plane at the start of the game is entered under this column. The Initial Speed at the start of the game may be any speed above stall speeds, and not over the maximum level speed.
5. The Initial Altitude of the plane at the start of the game is entered under this column. It is either given, or the means of determining it are given in the individual scenarios.
6. The Initial Bank of the plane at the start of the game is entered under this column. Planes may begin the game in any desired banking attitude.
7. This is the column where the first movement notation of the game is made when play begins. All planes are assumed to be in a nose level attitude, and to have moved a sufficient number of hexes during the previous Turn(s) to immediately perform any maneuver.
8. Any changing of the altitude of the plane (by diving or climbing) is noted in this column.

BASIC GAME

I. <u>INTRODUCTION</u>: The Basic Game rules cover all the information needed to play the simpler scenarios in DAUNTLESS. Once this section of the rules has been read,

it is suggested that the new player play through the Introductory Game (found in this rule book, following the Basic Game rules) for further clarification of the rules.

Although not an especially complex game to learn, the unusual concepts and mechanics of play make DAUNTLESS a game that requires practice and experience to master. The Basic Game is concerned only with the topic of air-to-air fighter combat. The Optional Rules section introduces further topics, and covers rules that provide additional realism and corresponding complexity. The only counters needed to play the Basic Game are counters for single engine fighters.

II. BASIC PLAY FLOW: Players check the Initial Speeds, Altitudes, and Banks of their various planes, as well as their previous movement notation(s). Comparing this with the information on their airplane data cards, they evaluate the situation and make decisions as to what moves should be made. Notations are then made in the plane's Logs for their individual moves, and their new Initial Speed, Altitude, and Bank entered for the next Turn, as these are a result of the moves just plotted. The planes are then moved exactly as marked. Firing is then computed, damage marked, and destroyed planes removed from the map-board. This cycle is repeated during every Turn.

III. INTERPRETING THE AIRPLANE DATA CARDS: The airplane data cards contain all the information necessary to "fly" and "fight" your planes. The same card serves as reference for all the plane counters of that type which the player may have on the Map-Board. All-important information regarding movement is given on the rules section identified as the Movement Characteristics Chart (hereafter referred to as the "MC"). All-important characteristics relating to the ability of the plane to fire and take damage is given in the section identified as the Target Characteristics Chart (hereafter referred to as the "TC "). Examine the following sample Airplane Data Card carefully:

PLANE TYPE: A6M5 "Zero"
Mitsubishi A6M5b Model 52b Zero-Sen — ① — Carrier day fighter.

POINT VALUE: 17 ⑯ ⑨

MOVEMENT CHARACTERISTICS CHART ②

ALTITUDE (x 1000') ③	STALL SPEED	MANEUVER SPEED	LEVEL SPEED	DIVE SPEED	POWER FACTORS	BRAKE FACTORS	CLIMB RATE	DIVE RATE	BANK	TURN	SLIP	HALF-LOOP	HALF-ROLL
					SPEED CHANGE ⑤		ALTITUDE CHANGE ⑥		MANEUVERS ⑦				
							-1/.4	+1/.3					
0-4.9	0-2	3-5	6	7-8	1	3	.5	.9	2	1	1	3	3
5.0-9.9	0-2	3-5	6	7-8	1	3	.5	1.0	2	1	1	4	3
10.0-14.9	0-2	3-5	6	7-8	1	2	.4	1.0	2	1	1	4	3
15.0-19.9	0-3	4	5-7	8-9	1	2	.3	1.0	3	2	2	5	3
20.0-24.9	0-3	4	5-7	8-9	1	2	.3	1.1	3	2	2	5	4
25.0-29.9	0-3	–	4-6	7-9	1	2	.2	1.1	3	2	2	6	4
30.0-34.9	0-4	–	5	6-9	1	2	.1	1.2	4	2	2	7	5
35.0-35.7	0-4	–	5	6-9	1	2	.1/2	1.2	4	3	3	7	5
--	–	–	–	–	–	–	–	–	–	–	–	–	–
LEVEL SPEED	–	–	–	–	–	–	–	–	+1	+1	+1	+1	+1
DIVE SPEED	–	–	–	–	P	–	+.2	–	+3	+3	+3	+3	+3
LOADED (OP.) ⑧	+1	-1	-1	-1	–	–	-.1	-.3	+1	+2	+3	P	P

MOVEMENT CHARACTERISTICS MODIFIERS

TARGET CHARACTERISTICS CHART ⑩

W	5		Cn	5	MG	8
F	4		L	3		
C	3		C	–		
E	3	E –	E	–	E	–
G	4C 1M 2M 4C					
	(4) 1(5) 1(5) 1(4) ⑪					
⑫ FF	FF FF FF					

SILHOUETTE MODIFIER: +2 ⑬
FIRE MODIFIER: +2
TYPE ENGINE(OP): R
BLIND SPOTS(OP):
H: A,12(+1),2,4,6(-1),8,10
M: 12(+2),2(+1),4(-1),6(-2),8(-1),10(+1) ⑭
L: B(-2),12(+1),2(-1),4(-1),6(-3),8(-1), 10(-1)

PRODUCER: Imperial Japan
Allied Code: "Zeke"

NOTES: A6M5 series introduced in Fall '43. The most produced variant of the Zero. Can carry one bomb loaded. ⑮

A. <u>KEY PARTS OF THE AIRPLANE DATA CARD</u>:

1. The plane type and the correct type of airplane counter is identified at the top of the card.

2. This is the Movement Characteristics Chart portion of the card. The movement characteristics of all planes will vary depending on their current altitude. The characteristics that apply to a given plane during the course of a T urn will be those that are on the same line with that plane's altitude at the start of that Turn (i.e. the Initial Altitude). For instance, a plane at 13,500 feet will behave using the characteristics found on the line to the right of the "10.014.9" altitude range. Only these will apply during that Turn, even if the plane moves into a different altitude range during that Turn's movement.

3. The left-hand column of the MC gives a series of altitude ranges, starting at "0" (ground level), and working up to that plane's ceiling (the maximum altitude at which the plane can fly). The numbers given are multiplied by 1,000 feet to give the actual altitude (i.e. 14.9 = 14,900 feet).

4. The "Speeds" column of the MC shows the various increments into which the plane's speed falls. For instance, a plane beginning its Turn at 3,000 feet at a speed of "4" would be in the "maneuver speed" increment. A plane at the same altitude doing a speed of "8" would be in the "dive speed" increment.

5. The numbers in the "Speed Change" column give the maximum number of power or brake factors that can be applied during anyone Turn.

6. The "Altitude Changes" column of the MC shows the climb rate and dive rate for the plane. The fractions at the top of the columns show the speed that can be lost or gained by changing altitude. For instance, "-1/.5" shows that a plane will lose one speed factor per 500 feet climbed. The "+1/ .3" shows that a plane will gain one speed factor per 300 feet dived. The numbers in the columns show the maximum amount of climbing or diving a plane can accomplish during one Turn. For instance, a climb rate of ".3" indicates that the plane can climb as much as 300 feet per Turn. A dive rate of "1.1" indicates that the plane can dive as much as 1100 feet per Turn.

7. The" maneuver" column of the MC shows five maneuvers that the plane can perform. The numbers in these columns show the minimum number of hexes that 0 plane must enter before it can perform a certain maneuver. For instance, a plane beginning its Turn at 12,000 feet would have to enter at least two hexes before it could perform a "turn".

8. The last three lines of the MC contains the Movement Characteristic Modifiers. The" loaded" line is optional, and is explained in the Optional Rules section. The "level speed" and "dive speed" lines show what effects a plane moving in these speed increments will have on its ability to change altitude and maneuver. For instance, a plane moving at a speed that falls within its dive speed increment would be able to climb an additional 200 feet ("+ .2") more during that Turn than it would normally be allowed. While moving in the level speed increment, the plane would have to enter three more hexes ("+3") than called for in order to perform a turn maneuver. The letter "P" means prohibited.

9. The boxed-in section of the card to the right of the MC is the Target Characteristic Chart.

10. The letters in the top section of the TC represent parts of the plane, as already explained in the Log Sheet Preparation section of the rules. The numbers next to these letters give the number of hits that will be required to destroy that part of the plane. The numbers next to the letter "G" are the "gun factors" of the various guns or batteries of guns found on the plane. The letters "C" and "M" next to the gun factors indicate that they represent "cannons" or "machine guns" .

11. The numbers in parenthesis in the TC give the range in hexes of the gun or battery of guns under which number this number appears.

12. The letters appearing in this section of the TC tell what the location of the gun or battery of guns directly above is. All plane types employed in play of the Basic Game have "FF" ("fixed forward") guns.

13. These two modifiers affect firing. The "Silhouette Modifier" affects firing at the plane using the card - it gives information on how large a target the plane is. The "Fire Modifier" is used when the plane using the card fires - it gives information as to how good a gun platform the plane is, and how good its gun sights.

14. The "Type Engine" and "Blind Spats" are not used in the Basic Game, and are explained in the Optional Rules.

15. This section of the card covers data unique to that particular type of plane.

16. This is the point value of the plane type. The point value considers not only the combat effectiveness of a plane, but also its relative cost to build. The higher the point value, the more valuable and useful the plane.

IV. <u>FACING</u>: The "front" of a counter is defined as being the edge to which the pictorial symbol points.

A. The plane must be moved with the front of the counter facing towards the direction of movement.

B. Counters must at all times be facing towards a definite hex side. They should not be facing towards the angle of a hex. Be very careful with the placement of counters with regard to their facing, so that no chances for confusion exist.

CORRECT	INCORRECT
Facing a hex-side	Facing a hex-angle

V. <u>SEQUENCE OF PLAY</u>: Play begins after all set up and preparation is complete. The game is played in "Turns" (each Turn representing the passage of approximately ten seconds of actual time). Most scenarios have a twenty Turn limit in length, although they may be carried on longer, in many cases. Each Turn is divided into four "phases", which must be carried out in a specific sequence. The sequence of play, which is repeated during every Turn of the game, is as follows:

A. <u>STEP #1: MOVEMENT PLOTTING PHASE</u>: Players secretly write in their proposed movements for each plane in their Logs. This writing of a series of numbers and/or notations in the Logs is referred to as

plotting the move. Each number and/or notation in the Log indicates that the plane will carry out a specific movement during the Turn.

B. STEP #2: CHANGES PLOTTING PHASE: After the movement is plotted, the new Initial Speed, Initial Altitude, and Initial Bank, which are a result of the plotted movement are entered in the appropriate columns of the Logs, on the next line down.

C. STEP #3: PLOTTED MOVEMENT EXECUTION PHASE: When the players have completed writing their moves, all planes are simultaneously moved, exactly as their movement was written in the Log (trying to move everything at once is usually a bit impractical, so the players can move the counters in any convenient order until all have been moved). If players wish, they may exchange Log Sheets, and move each other's planes. This is not essential, but does help to keep things honest. Collisions, if any (these are very rare), are resolved after all counters have been moved.

D. STEP #4: FIRING PHASE: All gunfire is resolved, and all hits marked on the Hit Records of the planes that were damaged.

VI. MOVEMENT PLOTTING PHASE - HOW TO MOVE: All planes are assumed to be moving simultaneously. The movement of each plane must be secretly plotted in its Log before any plane is actually moved. All movement of a plane is based on its Initial Speed, Initial Altitude, and Initial Bank at the start of the Turn. These should already be entered in the proper sections of the Log on the line where the movement plotting will be done, either (on the game's first Turn) having been determined at the start of the game, or written there during the previous Turn's Changes Plotting Phase. It is suggested that players mark their Logs with a pencil, instead of with ink, to facilitate erasing. Check over the plotted moves to ensure that they are correct, and represent legal movements.

A. SPEED FACTORS: Each plane has a certain capability to enter a certain number of hexes during the course of a Turn. The number of hexes that can be entered during a T urn represents the speed at which the plane is moving, and is expressed as a number called the "speed factor". One speed factor represents an actual speed of approximately fifty miles per hour.
1. A plane expends one speed factor per hex entered. Certain maneuvers (turns, slips, half-loops, and half-rolls) also expend a speed factor when their notations are plotted, even if (in the case of turns and half-loops) no new hex is entered.
2. Movement must be plotted so that all speed factors of the Initial Speed are expended, either by entering new hexes, performing maneuvers, or any combination thereof.

B. SPEEDS: Planes have four different columns listed under the "Speed" section of their MC. These give four different speed increments for the plane: stall speed, maneuver speed, level speed, and dive speed. The numbers listed under these columns give the number of speed factors the plane may have as its Initial Speed in order to fall within that speed increment. The plane's Initial Speed at the start of the Turn determines which of these speed increments will be used in plotting the movement.

1. STALL SPEED: Planes with an Initial Speed falling in this increment have reached a point where they are moving too slowly to maintain the lift required to make the plane fly.
a. Planes moving at stall speed will "stall", and go into a "spin". In a spin, the pilot has little control over the plane as it begins to fall earthward while spinning around, often quite violently.
b. SPIN PROCEDURE: Write the word "Spin" as the Log notation. The actual movement of the plane will be up to the die.
1) A plane in a spin will be moved straight forward the number of hexes given as its Initial Speed (it will remain in place if its Initial Speed was "zero").
2) Then roll one die - the number rolled is the number of hex-sides the front of the plane counter will turn through. The plane will turn to the left if in a left bank or inverted left bank, to the right if in a right bank or inverted right bank, and to the direction of the player's choice if in a level bank or inverted bank.
3) During the Turn the plane must dive at its maximum allowable rate. The speed that is gained by this diving is what will eventually end the spin.
2. MANEUVER SPEED: Planes with an Initial Speed falling in this increment are at a speed where they are most maneuverable. At maneuver speed, a plane can perform all "maneuvers" at the rates listed in the MC.
3. LEVEL SPEED: Planes with an Initial Speed falling in this increment are at, or close to, the best speed they can maintain. This is the highest speed range where power factors may be applied to increase the speed. At level speed, the plane is required to enter more hexes to perform maneuvers than is listed. The number of extra hexes that must be moved to perform a maneuver are listed on the "level speed" line of the maneuver Characteristics Modifiers section of the MC .
4. DIVE SPEED: Planes with an Initial Speed falling in this increment are using gravity to increase their speed over what could be maintained in level flight. Power factors may not be applied to planes during a Turn in which their Initial Speed is in the dive speed increment. At dive speed, the plane is required to enter more hexes to perform maneuvers than is listed. The number of extra hexes that must be moved to perform a maneuver are listed on the "dive speed" line of the maneuver Characteristics Modifiers section of the MC. Planes at dive speed must either continue diving at least enough to add a speed factor (these added speed factors could be counter-acted by brake factors, Or by speed-expending maneuvers), or lose enough speed during the Turn to drop down into one of the slower speed increments.

C. SPEED CHANGES: The speed of an individual plane can vary between zero and its maximum dive speed. A plane must always expend all speed factors of its Initial Speed.

1. The Initial Speed of a plane may increase as a result of diving or the application of power factors. It may decrease as a result of climbing, the application of brake factors, or the performance of certain maneuvers (turns, slips, and half-loops). All of these changes to the Initial Speed will apply only during the following Turn. The number of speed factors in the Initial Speed for that Turn cannot be changed as a

result of movement during that Turn; these changes are carried over when computing the Initial Speed for the following Turn.

2. POWER FACTORS: Power factors can be applied to compensate for speed factors lost through climbing and/or maneuvering, or to increase speed for the following Turn. Power factors cannot be used with planes whose Initial Speed lies in the dive speed range. Each power factor used adds one speed factor to the plane's Initial Speed for the following Turn.

3. BRAKE FACTORS: Brake factors can be applied to compensate for speed factors gained through diving, or to decrease speed for the following Turn. Each brake factor used subtracts one speed factor from the plane's Initial Speed for the following Turn.

4. All speed changes are cumulative, and are applied to the Initial Speed for the following Turn. For instance, a plane whose speed was increased by two speed factors, and decreased by three speed factors would have a total speed loss of one speed factor. 5. Power and/or brake factors cannot be accumulated from Turn to Turn. The given number is available for use on every Turn.

D. ALTITUDE CHANGES: Although the hex-grid Map-Board of this game provides only a two-dimensional playing surface, players must visualize that each hex has a "depth". It is possible for two or more planes to occupy the same Map-Board hex, and still be far apart due to the differences in altitude. Each type of plane has certain abilities to gain altitude (climb), and to lose altitude (dive). All altitudes used in this game are in increments of 100 feet.

1. CLIMB RATE: The numbers found under the climb rate column of the MC tell how many hundreds of feet a plane can climb during one Turn. For instance, the number" .6" indicates that the plane can climb a maximum of 600 feet during one Turn. The number" .1/3" indicates that the plane can climb 100 feet every three Turns. Note how this can be varied (increased) if the plane is moving at level or dive speeds (Note: If the climb rate is a fraction, any increase will change it to ".1", and any decrease will make climbing impossible). The fraction at the top of the column tells how much speed will be lost when the plane climbs. For instance, "-1/.3" indicates that the plane will lose one speed for every 300 feet climbed. This speed loss does not occur if only a fraction of this altitude is climbed - for instance, in the above example, the plane could climb up to 200 feet per Turn and suffer no speed loss. Remember that any speed losses will apply to the new Initial Speed for the next Turn; they will have no effect on the number of speed factors available on the T urn being plotted.

2. DIVE RATE: The numbers found under the dive rate column of the MC tell how many hundreds of feet a plane can dive during one Turn. For instance, the number "1 .1" indicates that the plane can dive a maximum of 1 , 1 00 feet during one Turn. The fraction at the top of the column tells how much speed will be gained when the planes dive. For instance, "+1/ .2" indicates that the plane will gain one speed for every 200 feet dived. This speed gain does not occur if only a fraction of this distance is dived; for instance, in the above example, the plane could dive 300 feet and only gain one speed (for the

first 200 feet, no gain for the additional 100 feet). Remember that all speed gains will apply to the new Initial Speed for the next Turn; they will have no effect on the number of speed factors available on the Turn being plotted.

3. A plane may never climb and dive during the same Turn.

4. If only a fraction of the altitude required to gain or lose speed by diving or climbing is taken during a Turn, this fraction will not carryover into subsequent Turns for purposes of determining if the plane will gain or lose speed.

E. MANEUVERS: To perform any maneuver, a plane must enter at least the number of hexes listed on the MC for that maneuver at that altitude (note how the number is modified if the plane's speed falls within the level or dive speed increments). All maneuvers are plotted on the Logs through the use of letter notations. The number of hexes to be entered in order to perform a maneuver must all be moved subsequent to the last maneuver notation. For instance, if a plane were required to enter three hexes in order to perform a turn maneuver, at least three hexes would have to be entered as indicated by numerical notations; letter notations, indicating the performance of other maneuvers, could not be used to count towards this required three hexes of movement. Note that hexes moved during a previous Turn or Turns can be carried over for performing maneuvers an the next Turn.

1. BANK MANEUVER: There are six bank attitudes - level bank, right bank, left bank, inverted bank, inverted right bank, and inverted left bank. These tell which of the plane's wings is dipped, and whether the plane is right-side-up, or up-side-down (inverted). Viewed from the rear, a plane would look as shown in the following diagram in the various banks:

LEFT BANK (LB), LEVEL BANK (L), RIGHT BANK (RB)
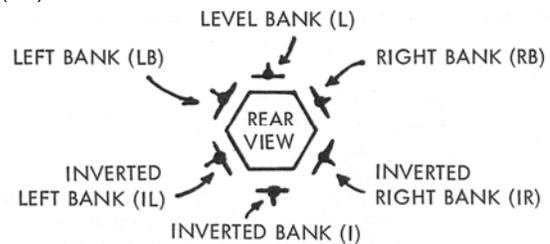
INVERTED LEFT BANK (IL), INVERTED BANK (I), INVERTED RIGHT BANK (IR)

a. A plane that banks during its movement will change to an adjacent banking attitude. For instance, a plane in a left bank attitude that banks to the right will end in a level bank attitude. A plane in a right bank attitude will end in an inverted right bank attitude, after banking to the right.

b. To indicate a banking maneuver, the plane must move the specified number of hexes, then make the desired bank notation.

c. A banking notation does not count as a hex moved, and causes no loss of speed. A plane can bank either to the left or to the right.

2. TURN MANEUVER: A plane can either make a right turn or a left turn.

a. A plane must be in a right bank or inverted right

bank attitude in order to make a right turn. A plane must be in a left bank or inverted left bank attitude in order to make a left turn. Planes in a level or inverted bank attitude cannot perform a turn maneuver.

b. A plane that turns during its movement will shift the front of the counter to face an adjacent hex-side from the hex-side it originally faced.

c. To indicate a turn maneuver, the plane must move the specified number of hexes, then make the desired turn notation.

d. A turn notation counts as one hex moved, and causes a loss of one speed factor.

ORIGINAL FACING
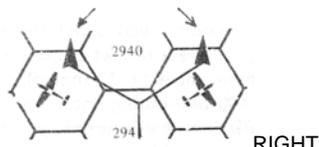

LEFT TURN   RIGHT TURN

3. <u>SLIP MANEUVER</u>: A plane can either make a right slip or a left slip.

a. A plane must be in a right bank or inverted right bank attitude in order to make a left slip. A plane must be in a left bank or inverted left bank in order to make a right slip. Planes in a level or inverted bank attitude cannot perform a slip maneuver. In other words, a plane will always perform a slip maneuver in the opposite direction from its bank attitude.

b. A plane that slips during its movement will shift into an adjacent hex (see diagram below), and remain facing in its original direction from its bank attitude.

c. To indicate a slip maneuver, the plane must move the specified number of hexes, and then make the desired slip notation.

d. Planes that perform a slip maneuver may also perform one or two turn maneuvers in the hex slipped into. These turns will be in the direction of the bank attitude (i.e., in the opposite direction from the slip). For instance, a plane that performed a left slip maneuver could make one or two right turn maneuvers. A slip notation counts as one hex moved, and causes a loss of two speed factors. If any turn maneuvers are performed with the slip, each turn would count as one hex moved, and cause the loss of one speed factor each.
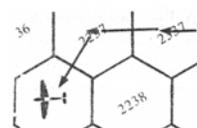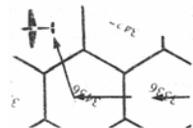
LEFT SLIP   RIGHT SLIP
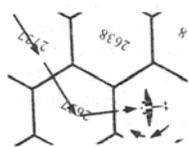
LEFT SLIP TWO RIGHT TURNS

4. HALF-LOOP MANEUVER: A plane can perform a half-loop either while diving or while climbing.

a. A plane may perform a half-loop while in any bank attitude.

b. A plane that half-loops during its movement will shift the front of the counter to face the hex-side

directly opposite from its original facing.
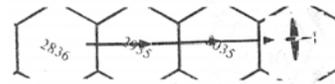
HALF-LOOP

c. A plane that half-loops during its movement will invert its banking attitude according to the diagram below. For instance, a plane in a left bank (LB) attitude that performed a half-loop would change to an inverted left (IL), (L) to (I) & (RB) to (IR) bank attitude as the result of the maneuver.
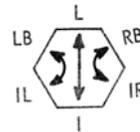
BANKING ATTITUDE CHANGES
IN A HALF-LOOP MANEUVER

d. To indicate a half-loop maneuver, the plane must move the specified number of hexes, and then make the half-loop notation. During the Turn or Turns that the specified number of hexes for the maneuver are being moved, the plane must dive the maximum allowable dive rate if performing a diving half-loop, or must climb the maximum allowable climb rate if performing a climbing half-loop. Note that if the required number of hexes to be moved for the maneuver are spread over two or more Turns, the plane would have to either dive or climb (it could not dive during one Turn, then climb during the next Turn) its maximum rate during all those Turns.

e. A half-loop notation counts as one hex moved, and causes a loss of two speed factors.

5. HALF-ROLL maneuvers: A plane can make either a right half-roll or a left half-roll.

a. A plane may perform a half-roll (to either side) while in any bank attitude.

b. A plane that half-rolls during its movement will shift into an adjacent hex (see diagram below), and remain facing in its original direction.

c. A plane that half-rolls during its movement will change its banking attitude to the opposite banking attitude (see diagram below).

BANKING ATTITUDE CHANGES
IN A HALF-ROLL MANEUVER

d. To indicate a half-roll maneuver, the plane must move the specified number of hexes, then make the desired half-roll notation.

e. A half-roll notation counts as one hex moved, and causes the loss of one speed factor.

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RIGHT HALF-ROLL   LEFT HALF-ROLL
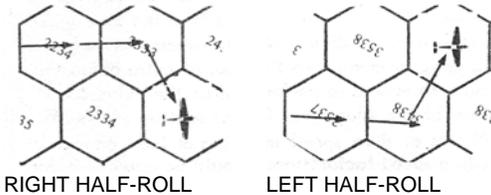
F. <u>LOG NOTATIONS</u>: The Log Sheet is used by each player for marking the movements of the planes under his command. A system of conventions and shorthand is used in making entries in the Logs of the various planes. All players must learn and use this system, so that any other player examining it could understand the entries.

1. Under the "Moves" section of each Log is written the proposed movement for each plane. The notations used in this section are as follows:

a. Any number written is the number of hexes the plane will enter in a straight line.

b. The notation "B" indicates that a plane is making a right bank from its present bank attitude. The notation "N" indicates a left bank.

c. The notation "R" indicates that a plane is changing its facing one hex-side to the right (i.e., making a right turn). The notation "L" is used to indicate a left turn.

d. The notation "5" indicates that the plane is performing a right slip. The notation "T" indicates that the plane is making a left slip. A combination of notations is used to indicate a plane that is slipping and turning. For instance, the notation "TRR" indicates that the plane is performing a left slip combined with two right turns.

e. The notation "V" indicates that a plane is performing a half-loop maneuver.

f. The notation "H" indicates that the plane is performing a right half-roll. Similarly, the notation "E" is used to indicate a left half-roll.

g. The notation "SPIN" indicates that the plane's Initial Speed falls within its stall speed increment, and the plane will perform a spin maneuver during the Turn. h. The notation "P" indicates that a power factor is being applied. The notation "K" indicates that a brake factor is being applied. Multiples of these notations indicate the application of more than one factor - for instance, the notation "PP" indicates the use of two power factors.

2. Under the "Altitude Change" section of each Log is written the proposed change in altitude for the plane. The notation "D" is used to indicate a dive (i.e. a loss of altitude), and the notation "C" is used to indicate a climb (i.e., a gain in altitude). Next to the notation is the change in altitude. For instance, the notation "D 1 .2" indicates that the plane is diving 1200 feet during the Turn.

3. SAMPLE LOG NOTATIONS:
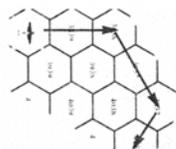
a. Move two hexes; right turn; move two hexes; right turn; move one hex; apply one power factor; dive 300 feet.
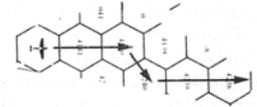
b. Move two hexes; right slip; move two hexes; apply one brake factor; climb 100 feet.
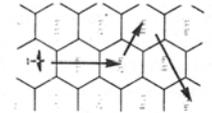
c. Move two hexes; left slip with one right turn; move two hexes; apply one power factor; dive 1 , 1 00 feet.
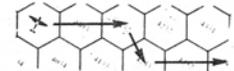
d. Right turn; move two hexes; right half-roll; move two hexes.

e. Move three hexes; half-loop; apply two power factors; dive 800 feet.

VII. <u>CHANGES PLOTTING PHASE</u>: After the projected movement of a plane is plotted, it is time to calculate the effect of these movements on a new Initial Speed, Initial Altitude, and Initial Bank. These apply to the plane at the end of the movement just plotted, as well as providing a starting point for the plotting of the next Turn. These are always written in on the line under the movement just plotted (i.e. for the next Turn).

A. <u>INITIAL SPEED</u>: This is computed by subtracting all speed losses and adding all Speed gains from the previous Initial Speed figure. For instance, a plane started a Turn with an Initial Speed of "6", and can gain one speed factor per 300 feet dived. Its movement was plotted as "2TR2P - D1 .1". Speed factors lost were 2 for the slip ("T"), and 1 for the turn ("R"), for a total loss of 3 speed factors. Speed factors gained were 1 for the power factor applied, and 3 for diving, for a total gain of 4 speed factors: 6 - 3 + 4 = 7, so the new Initial Speed is "7" .

B. <u>INITIAL ALTITUDE</u>: This is computed by subtracting all altitude lost through diving, or adding all altitude gained through climbing to the previous Initial Altitude figure. For instance, a plane that started a Turn with an Initial Altitude of "6,300 feet" (written as "6.3"), and climbed 400 feet (.4) during the Turn, would have a new Initial Altitude of 6,700 feet (6.7).

C. <u>INITIAL BANK</u>: This is figured by comparing any banking maneuvers with the previous Initial Bank. Notations for the six possible banking attitudes are as follows: "L": Level Bank; "LB": Left Bank; "RB": Right Bank; "I": Inverted Bank; "IL": Inverted Left Bank; and "IR": Inverted Right Bank. For instance, a plane that started a Turn at a bank attitude of a left bank ("LB"), and performed a right banking maneuver ("B") during the Turn would have a new Initial Bank attitude of level bank ("L"). A plane that started a Turn at "LB", and performed a half-loop maneuver would have a new Initial Bank attitude of "IR".

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VIII. <u>PLOTTED MOVEMENT EXECUTION PHASE</u>: The planes are now actually moved on the map-board.--

     A. If players are exchanging Log Sheets, do so now. If Log Sheets are not being exchanged, they should be laid out in full view of the other player(s).
     B. The counters should be moved on the Map-Board exactly as indicated by their Log notations. This movement is considered to be simultaneous, but can be carried out in any convenient order.
     C. <u>ILLEGAL MOVES</u>: From time-to-time, players will discover planes whose Log notations are incorrectly marked for movements that it is impossible for the planes to make. Since it is now too late to rewrite the notation, the following must be done to correct the illegal moves (Note: The Log notations should be changed to conform to these changes).

1. PLANE USED MORE SPEED FACTORS THAN ALLOWED BY INITIAL SPEED: Erase all portions of the plotted movement that exceeded the limit, and move the plane according to this reduced notation.
2. PLANE DIVED OR CLIMBED MORE THAN LEGAL RATE: Change the "Altitude Change" and new Initial Altitude notations to reflect the maximums allowed.
3. PLANE DID NOT ENTER ENOUGH HEXES TO EXECUTE AN INDICATED maneuver: Change the notation from the point of the infraction on to show the plane traveling in a straight line for the remainder of its movement, and move the plane according to this changed notation.
4. PLANE APPLIED MORE POWER OR BRAKE FACTORS THAN WERE AVAILABLE: Erase the excess notations, and alter the new Initial Speed to reflect this change. This procedure is also to be followed for any other errors made in computing the new Initial Speed.
5. PLANE EXCEEDED THE MAXIMUM ALLOWABLE DIVE SPEED: Plane is assumed to be destroyed, and is removed from play.
6. maneuver IS MARKED INCORRECTLY: An example of this would be a notation calling for a right turn by a plane in a left bank. Handle this as in #3 above.
7. PLANE USED LESS SPEED FACTORS THAN ALLOWED: Add these on at the end of the movement plot as straight ahead movement, and move the plane these extra hexes.
8. ILLEGAL MOVES DUE TO DAMAGE: A plane which suffers enough wing hits during the Turn to make its current speed in excess of its lowered' maximum speed is assumed to be destroyed, and is removed from play. A plane with cockpit hits that has moves plotted for it that, a plane with cockpit hits is not permitted to make is destroyed and removed from play.
     D. If, after all planes have completed their movement, it is found that two or more planes are in the same hex and at the same altitude, these planes have collided in mid-air. All planes involved in a collision are considered to be destroyed, and removed from play.

     IX. <u>FIRING PHASE</u>: Planes fire their guns at enemy planes, and the damage is marked and assessed.
A. <u>FIRE DETERMINATION</u>: All firing is conducted from the positions the planes occupy after all movement is completed. All firing is considered to be simultaneous, although it can be conducted in any convenient order (simply ignore the effects of hits until all firing is

completed) .
1. Guns must be fired at the nearest enemy plane within their play. If more than one enemy plane qualifies as being the nearest (i .e., they are at the same range), the player firing has his choice of which to fire at. Friendly planes between the firing plane and a target plane do not block the firing in any way.
2. All planes fire individually; the firepower of several planes cannot be added together for one shot. A single plane can fire only once per Turn, and can fire at only one single target per Turn.
3. PLAY OF THE GUNS: All plane types used for the Basic Game have "FF", or "fixed forward" firing guns. These guns can only be fired at enemy planes within their "play". The play of these guns covers a 600 arc, as shown in this diagram:
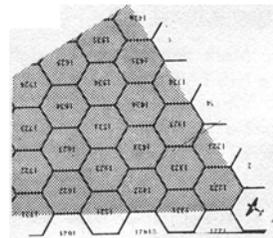
NOTE THAT AN ENEMY PLANE CANNOT BE HIT IF IT IS IN THE SAME HEX AS THE PLANE FIRING
Any enemy plane that occupies a hex that lies completely or partially within this play can be fired upon.
4. The various guns on a plane have their ranges (in parenthesis) listed on that plane type's TC. A target must be in range to be fired at. If a target is in range of some guns on the plane, but not of others, only the guns in range can be used to fire. Range is determined by counting the number of hexes to the target by the shortest possible route, this range to include the hex occupied by the target. If there is an altitude differential between the plane firing and the target, add one hex to the range as counted for every 500 feet difference in altitudes (ignore fractions of 500 feet).

     B. <u>FIRE PROCEDURE</u>: Once it has been determined that firing can be done, the following procedure is followed:

1. Add together the n umber of gun factors that are in range from the plane's TC. For instance, for a Hellcat this would be 2+4+4+2= 12 total gun factors firing.
2. Consult the RANGE TABLES AND MODIFIERS chart. Under the section labeled AIR GUNNERY, cross-grid the total number of gun factors firing with the range in hexes. The number found here is the number of the Basic Hit Table (BHT) to be used.
3. Now check the BASIC HIT TABLES MODIFIERS (ignore the Deflection modifier, as this is optional, and not used in the Basic Game). These are variables that will increase or decrease the BHT. These modifiers are cumulative, and are added together to produce a Total Modifier Number. For instance, if a plane with a Fire Modifier of +2 fired at a target with a Silhouette Modifier of +3, the Total Modifier Number would be +2 +3 = +5. On the MODIFIER CHART section, cross-grid the Total Modifier Number with the total number of gun factors firing. The number found here is the Final Modifier, and can be either "+" or "-", depending on whether the Total Modifier Number was positive or negative. For instance,

if the Total Modifier Number was "+5", and the number of gun factors firing was "12", the Final Modifier will be "+4".

4. The Final Modifier is added or subtracted from the BHT, the result being the Hit Table number.

5. Now go to the HIT TABLES, and consult the column bearing your Hit Table number, and roll one die. Cross-grid the number rolled on the correct Hit Table to find the number and types of hits scored on the target.

6. Mark these hits (using one vertical line per hit) on the target's Hit Chart.

C. BASIC HIT TABLE MODIFIERS: These modifiers apply only where applicable and accumulative to form the Total Modifier Number.

1. FIRE MODIFIER: This number, found on the airplane data card of the plane -firing reflects that plane's stability as a gun platform, a\d the quality of its gun sights.

2. SILHOUETTE MODIFIER: This number, found on the airplane data-card of the target plane reflects the size of the target.

3. FIRING INVERTED: If the plane firing is upside-down (in an inverted,-inverted right, or inverted left bank attitude) this modifier applies.

D. MARKING HITS AND THE EFFECTS OF DAMAGE: Hits are marked on the Hit Chart of a target plane by marking a vertical line for each hit in the space to the right of the letter that identifies the part of the plane that was hit. The Hit Chart shows six different parts of the plane that can be hit, each part corresponding to a type of hit found in the HIT TABLES.

1. WING HITS ("W"): Wing hits represent damage to the structural integrity of the planes wing structure, plus damage to the control elements found in the wings (i .e., the ailerons, etc.).

a. Mark one hit to the right of the "W" box per hit called for on the HIT TABLES.

b. When the number of wing hits marked equals or exceeds the number found on the plane's TC, the plane is destroyed, and is removed from play.

c. The plane's maximum dive speed is reduced by one for every two wing hits. For instance, a plane with a maximum dive speed of "9" that had four wing hits could not exceed a speed of "7".

2. FUSELAGE HITS ("F"): Fuselage hits represent damage to the structural integrity of the plane's fuselage.

a. Mark one hit to the right of the "F" box per hit called for on the HIT TABLES.

b. When the number of fuselage hits marked equals or exceeds the number found on the plane's TC, the plane is destroyed, and is removed from play.

3. COCKPIT HITS ("C"): Cockpit hits represent hits on the pilot and or control devices found in the cockpit of the plane.

a. Mark one hit to the right of the "C" box per hit called for on the HIT TABLES.

b. When the number of cockpit hits marked equals or exceeds the number found on the plane's TC, the plane is destroyed, and is removed from play.

c. Planes with one or more cockpit hits cannot perform half-loop or half-roll maneuvers. Planes with two cockpit hits cannot perform slip maneuvers, or move at speeds in the dive speed increment.

4. ENGINE HITS ("E"): Engine hits represent hits on the plane's power plant, super-charger, etc.

a. Mark one hit to the right of the "E" box per hit called for on the HIT TABLES.

b. When the number of engine hits marked equals or

exceeds the number found on the plane's TC, the plane is destroyed, and is removed from play.

c. The maximum allowable number of power factors for the plane is reduced by one for every engine hit (although it can never be reduced to less than "0").

5. FUEL TANKS (" L"): Fuel tank hits represent hits on the plane's fuel tanks, fuel lines, etc.

a. Mark one hit to the right of the "L" box per hit called for on the HIT TABLES.

b. When the number of fuel tank hits marked equals or exceeds the number found on the plane's TC, the plane is destroyed, and removed from play.

6. GUNS ("G"): Gun hits represent hits on the plane's armament, loading equipment, or hits that jam or render inoperable these systems.

a. The individual guns or batteries of guns are represented by a series of numbers (the gun factors) written next to the "G" box. A hit is marked by marking through one of these numbers per hit called for on the HIT TABLES.

b. Gun factors that are marked off can no longer be used for firing. c. HIT PRIORITIES: For planes where all gun factor numbers are of equal value and range it makes no difference which of them is marked off when a gun hit occurs. For planes where this does make a difference, the gun factor closest to the firing plane should be the one marked off, then the next closest, etc.

1) If the firing plane is closest to the right-hand side of the target plane, the gun factor number on the right-hand side of the Hit Chart is marked off, then the one next closest to the right-hand side, etc. The reverse of this is true if the firing plane is on the left-hand side of the target.

2) If the firing plane is not closer to one side or the other of the target (i .e., directly behind or directly in front of the target), the player firing has his choice of which gun factor number(s) to mark off. d. Gun hits scored after all gun factors have been marked off count as fuselage hits.

X. VICTORY CONDITION - HOW TO WIN: Victory conditions vary depending on-the scenario being played. The victory conditions of the various scenarios are explained in the scenario. In most scenarios, the victor is determined by the number of victory points accumulated during the game - the player or side with the most victory points being declared the winner. The number of victory points awarded is listed on the VICTORY POINTS CHART.

XI. MISCELLANEOUS-MAP-BOARD SECTIONS: Except for scenarios where surface terrain is present, it is possible for players to avoid "flying" off the edge of the Map-Board by taking an unused Map-board section and butting it up against the edge required. In this way, a practically "endless" Map-Board effect is created.

OPTIONAL RULES

I. <u>INTRODUCTION</u>: Once players have mastered the Basic Rules of AIR FORCE and DAUNTLESS they will undoubtedly wish to use some or all of the rules found in this section. These optional rules can be added in any combination to suit the players' tastes. Some optional rules are necessary to play certain scenarios, and others could be applied to any scenarios desired. Each optional rule adds greater scope and realism, as well as additional complexity to the play of the game. These rules, in most cases, simply add to the Basic Game rules. All Basic Game rules still apply, unless stated otherwise.

II. <u>SEQUENCE OF PLAY USING ALL OPTIONAL RULES</u>: This sequence covers the use of all optional rules. If some rules are not in use, the portions of the sequence pertinent to them can be ignored.

A. <u>STEP #1: SPOTTING AND STARTING PHASE</u>: Attempts are made to "spot" enemy units which cannot be "seen" under the rules by consulting the SPOTTING TABLE, and rolling the die. Attempts are also made at this time to "start" the engines of planes on the ground wishing to take off.

B. <u>STEP #2: MOVEMENT PLOTTING PHASE</u>: This is handled the some as for the Basic Game. A notation must be made if the plane intends to drop bombs or fire rockets during the Turn. Communication is done during this phase, which may be timed.

C. <u>STEP #3: CHANGES PLOTTING PHASE</u>: This phase is handled the same as in the Basic Game.

D. <u>STEP #4: NON-PLOTTED MOVEMENT EXECUTION PHASE</u>: During this-phase, all un-plotted movement is carried out:-This includes the turning of flak counters, and the movement of vehicle and ship counters.

E. <u>STEP #5: PLOTTED MOVEMENT EXECUTION PHASE</u>: This is handled the same as for the Basic Game. Collisions with hills and the crashes of kamikazes are resolved during this phase. The dropping of drop tanks is announced during this phase.

F. <u>STEP #6: FIRING PHASE</u>: This is handled the same as in the Basic Game. Flak fire is resolved simultaneously with the fire of the planes. If necessary, target identification should be resolved before a unit fires, and the resolution of hits on inline engines should be resolved immediately as such hits occur.

G. <u>STEP #7: BOMBING, ROCKET FIRE, AND TORPEDO PHASE</u>: After the resolution of the normal gunfire, the results of rocket fire and bombings are resolved, and damage marked and evaluated. Torpedoes are dropped and moved during this phase, and any damage caused by torpedo hits is marked and evaluated. Note that planes destroyed in earlier phases are not allowed to drop torpedoes, drop bombs, or fire rockets.

H. <u>STEP #S: BAIL OUT PHASE</u>: Attempts to bail out are resolved in this phase.

III. <u>CLOCK REFERENCE</u>: During World War II, extensive use was made of the "clock" reference system for calling out directions. This system envisions a clock laid flat in the axis of the plane, with the 12 o'clock position being directly ahead, and the 6 o'clock position being directly behind the plane, etc. A modified clock reference system is used in this game to cover various sectors of the sky with relation to the direction in which the plane is facing, as shown in this diagram:
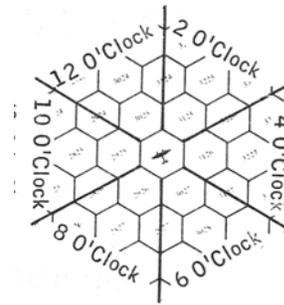
NOTE: THE 60° PLAY FOR "FF" GUNS REMAINS THE SAME - THIS COVERING A SLIGHTLY LARGER ARC THAN THAT COVERED BY THE 12 0'CLOCK SECTOR

A. In addition, the following letters are used to further narrow down a sector.

A: Directly above (any altitude) the reference counter.

B: Directly below (any altitude) the reference counter.

H: 500 feet or more higher than the reference counter.

M: At the same or within 400 feet of the altitude of the reference counter.

L: 500 feet or more lower than the reference counter.

For instance, the notation "12H" indicates a location directly ahead of and 500 or more feet above the reference counter. This notation system is used to define the various Blind Spots and the plays of the various guns in this game.

B. In cases of spotting or firing, a target in a hex that is split between two sectors is determined to be in the sector to the left. For instance, a hex split by the 12 and 2 o'clock sectors would be considered to be in the 12 o'clock sector, as this is the sector farthest to the left of the two.

IV. <u>SURFACE TERRAIN</u>: Some scenarios call for the use of terrain in the form of hills of various elevations. These hills are marked by using counters not involved in the scenario, turning them upside-down, marking on the back (in pencil) the height of the hill they represent, and placing these counters on the Map-Board. Surface terrain can create "dead zones" where spotting and/or firing at the enemy is impossible. These dead zones are determined as follows:

A. <u>PROCEDURE</u>: Run a straight edge from the center of the hex containing one unit to the center of the hex containing the other unit.

B. If the straight edge passes through any part of a hex that contains surface terrain that is higher than both units or higher than one unit and equal in height to the other unit, spotting or firing is possible between the units.

C. If the straight edge posses through part of any hex that is higher than one of the units, but not higher than both, a dead zone exists that is-calculated from the position of the higher of the two units being considered. This dead zone is equal to the range from the higher unit to the surface terrain. If it is determined that the higher unit is in a position to spot and/or fire, both units may do so. For instance, in the following example, plane #1 is at 1,000 feet, planes #2 and #3 are at 600 feet, and the hill between them is 800 feet

high. The range from the highest unit (#1) to the hill is two hexes; therefore the dead zone will extend for two hexes beyond the hill. This makes it impossible for #1 and #2 to spot or fire at each other. The range from the hill to plane #3, however, is three hexes, so it lies outside of the dead zone. Planes #1 and #3 can spot or fire at each other.
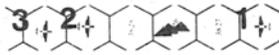
D. This dead zone is reduced by one hex for every 500 feet in altitude difference between the higher unit and the surface terrain. For instance, in the above example, if plane #1 were at 1,300 feet altitude and all other altitudes remained the same, the dead zone would be reduced to one hex beyond the hill, and planes # 1 and #2 could spot or fi re at each other.

V. VISIBILITY OPTIONS: These rules simulate the fact that a relatively small, fast-moving object, such as an airplane, is often very hard to pick out against the vastness of the sky.

A. On the airplane data card for each type of airplane is a section labeled as Blind Spots. This section lists, using a clock reference, the visibility from the plane of various sectors of the sky. If no number in parenthesis comes after the clock reference, the basic SPOTTING TABLE is used. If there is a number in parenthesis, this number will modify the number rolled on the die when consulting the SPOTTING TABLE.

B. SPOTTING PROCEDURE: This procedure is used to attempt to "spot" enemy planes. Prayers may make one "spotting" attempt per plane per Turn.

1. Player selects an enemy plane he will attempt to spot. All modifiers are considered, and their cumulative value figured.
2. The die is rolled, and the SPOTTING TABLE consulted. If the result, after modifying the number rolled is "Not Spot", the enemy has not yet been seen; if the result is "Spot", the enemy can now be seen.

C. SPOTTING MODIFIERS: These modifiers apply only where applicable, and are cumulative in figuring their modifying effect on the die roll.
1. BLIND SPOT MODIFIERS: These depend on the location of the enemy plane, and are given on the airplane data chart of the plane doing the search.
2. NIGHT: A modifier of -3 applies if the game takes place in darkness.
3. DISTANCE: A modifier of +1 applies if the plane is at a range (including altitude differences) of ten hexes or less.
4. EXPERIENCE: A modifier of +2 applies if an ace flies the plane doing the spotting.
5. RADAR: A modifier of +2 applies if the spotting plane is equipped with radar, and the plane to be spotted lies within the play of the radar equipment. Radar has a play of 12HML, to a range of 15 hexes.
6. PLANE ATTITUDE: The bank the plane is in will modify its ability to spot. If the plane is in any of the three inverted banking attitudes, a modifier of -2 applies. If the plane is in a right bank attitude a modifier of +1 will apply when attempting to spot to the right side of the plane, and a modifier of -1 will apply when attempting to spot to the left side of the plane. The reverse of this will be true for a plane in a left bank attitude.

D. GAME PROCEDURE WITH SPOTTING RULES: The fact that the two sides have-not yet seen each other is simulated by plotting their movement in advance, so that they cannot react well to each other's moves.
1. Movement is plotted six Turns in advance. At the start of the game, players would plot the first six Turns in their Logs. During the Movement Plotting Phase of Turn #1 the movement for Turn #7 would be plotted, etc.
2. If the planes on either side are considered to be ground controlled, these planes only need to be plotted three Turns in advance. Thus, during the Movement Plotting Phase of Turn #1 the movement for Turn #4 would be plotted, etc.
3. As soon as an enemy plane has been spotted, the player who did the spotting can erase all excess movement plots (including the one for the Turn in which the spotting occurred), and start to plot his movement from Turn to Turn in the normal manner. 4. Until such time as an enemy is spotted, the planes cannot exceed their maneuver speed increment (planes with no maneuver speed increment cannot exceed their lowest possible level speed). 5. An enemy plane is automatically spotted once it fires. 6. No plane can be fired at until spotted.

E. CLOUDS: The cloud counters included in the game are used to mark the center of a cloud mass, but can be defined as being of any desired size.
1. The size of a cloud is expressed by stating the altitudes through which it extends, and its size from the spot marked by the cloud counter. For instance, the notation "(10.0 - 21.0)6" denotes a cloud mass that extends from 10,000 to 21,000 feet, and covers an area six hexes in every direction from the hex containing the cloud counter. Cloud sizes can be agreed on by the players prior to the start of a game, or can be randomly determined by use of the die, as follows:
a. Place the cloud counter on the Map-Board.
b. Roll two dice and multiply the number rolled by 2,000 feet. This gives a basic Reference Altitude for the cloud. For instance, if an "8" were rolled, the Reference Altitude is 16,000 feet.
c. Now roll the red die and the white die, and multiply the numbers rolled by 1,000 feet. The red die indicates the size of the cloud below the Reference Altitude, and the white die indicates the size of the cloud above the Reference Altitude. For instance, if the Reference Altitude is 16,000 feet, and a "6" was rolled on the red die, and a "5" on the white die, the cloud's depth would run from 10,000 to 21,000 feet in altitude.
d. Roll one die. The number rolled is the size of the cloud in every direction from the hex containing the cloud counter. 2. Planes may fly through clouds without penalty. However, a plane that is located in a cloud cannot fire, nor can it be fired at. It also cannot be spotted. 3. Planes cannot spot or fire at enemy planes if there is a cloud mass between them (run a straight edge from the center of the hex containing one plane to the center of the hex containing another plane; if the straight edge passes through any part of a hex containing a cloud, no spotting is possible).

F. SUN: The sun counter included in the game can be placed in a hex along one of the edges of the Map-Board. It can hinder spotting. If the plane to be spotted is above the plane doing the spotting, and the sun is in the same clock position as the plane to be spotted, a

10

modifier of -3 is applied to the spotting attempt.

G. If using spotting rules with surface units such as vehicles or flak, additional modifiers are required. Surface units modify the die roll by +2 when used for spotting. Planes attempting to spot surface units must modify the die roll by -1.

VI. <u>MOVEMENT OPTIONS</u>: Some of these options are needed only under certain conditions, and will not be required in all scenarios. Other options can be used to expand the movement possibilities found in the Basic Game rules.

A. <u>LOADED PLANES</u>: This applies to planes carrying a load of drop tanks, bombs, and/ or rockets. The effect of carrying bombs on a plane is found on the "loaded" line of the Movement Characteristics Modifiers section of the MC. Note that the performance of some maneuvers is impossible (indicated by the letter "P", for prohibited) while loaded. When loaded planes slip, they may not execute any turns. Some speed increments will disappear and some higher altitudes cannot be reached due to these loaded modifiers. The effects of the loaded modifiers are cumulative with the level and dive speed modifiers, if these also apply. Using the airplane data card for the A6M5 Zero for illustration, examples of the effects of being loaded are explained below:
1. The plane's stall speed increment is increased by "+1". This means that the stall speed at "0-4.9" would increase from "0-2" to "0-3", for instance.
2. The plane's maneuver, level, and dive speed increments are all reduced by "-1". At an altitude of "10.0-14.9", this would change the increments to "4", "5", and "6-7", respectively. At an altitude of "15 .0-19.9", this would cause the maneuver speed increment to disappear, and change the other two increments to "5-6" and "7-8", respectively.
3. Being loaded has no effects on the plane's power or brake factors.
4. The plane's ability to climb is reduced by "-.1", and its ability to dive by "-.3". At an altitude of "10.0-14.9", this would change the climb from ".4" to ".3", and the dive from "1.0" to ".7". Note that the change in the climb makes it impossible for a loaded plane to fly higher than 29,900 feet.
5. The number of hexes a plane must move in order to perform a banking, turning, or slipping maneuver is increased. Note that these increases are in addition to any other increases due to the speed of the plane. The performing of half-loop or half-roll maneuvers is impossible while loaded.

A loaded plane that performs prohibited maneuvers is assumed to be destroyed and removed from play, the same as if it had performed a move illegal due to damage.

B. <u>MASS FORMATIONS</u>: This option permits the movement of large numbers of planes without the necessity of writing a move for all of them. It is most usefully employed for the movement of large formations of bombers.
1. A Hit Chart is filled in on the Log Sheet for each individual plane. The four Log columns are filled in with several numbers at the top to show that the movements written are for the planes with those numbers. One of these numbers should be circled to show that the Hit Chart at the top of the Log column applies to that particular plane, while the other numbers would be written on extra Hit Charts to keep up with their damage. For instance, the numbers '(D, 2, 3" could be

written at the top of the left-hand Log column to show that that column is to be used for the movement of plane counters #1, #2, and #3. The circled #1 shows that the Hit Chart in that column will show the damage to plane #1. The damage to the other two planes would be shown on two of the extra Hit Charts.
2. Any plane so damaged that it can no longer keep up with the speeds and maneuvers of the rest of the formation is assumed to be destroyed, and is removed from play. 3. Individual planes in a formation may begin at different altitudes, as long as their relative positions to each other remain the same. Mark these altitude differences on a separate sheet of paper at the start of the game if this is being done. 4. No more than one plane of a formation can be placed in one hex.

C. <u>TERRAIN COLLISIONS</u>: A plane that passes over a hex containing a hill must, at the conclusion of its movement, be at an altitude greater than the hill. If not, it has collided with the side of the hill, and is destroyed and removed from play.

D. <u>LANDINGS</u>: To land, a plane must complete its Turn at a speed that falls within its stall speed increment, and at an altitude equal to the altitude of its landing field (always "0" altitude in the case of an aircraft carrier). A plane at this altitude in a higher speed increment suffers a terrain collision.

E. <u>TAKING OFF</u>: In this game, planes will be taking off either from a runway or from the deck of a carrier. Several planes can take off at the same time, provided that they end the Turn in which they become airborne at different altitudes and/or in different hexes.
1. Unless the planes are defined as having their engines started at the beginning of the scenario, attempts must be made to start their engines. To attempt to start the engine of a plane, roll a die once per Turn per plane. A roll of "5" or "6" starts the engine (see the TAKING OFF TABLE).
2. <u>AIRFIELD TAKEOFFS</u>: The following procedure applies to takeoff from an airfield: a. On the Turn the engine is started, one power factor may be applied, to give the plane an Initial Speed for the following Turn of "1". On each Turn following, one additional power factor may be applied to further increase the speed. Note that the plane moves down the runway at these speeds, but does not go into a spin since it is still on the ground. b. On the first Turn that the plane's speed exceeds its maximum stall speed, the plane may climb either 100 or 200 feet, and apply as many power factors as are desired and/or available. The plane is now "flying", and can begin to maneuver normally.
3. <u>CARRIER TAKEOFFS</u>: Carrier takeoffs are handled the same as airfield takeoffs, with the following differences: a. The plane 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". b. No more than one plane per Turn may takeoff from a carrier. 4. There are no limits on the number of planes that can be in the same hex on the ground, or on the deck of an aircraft carrier.
5. Should a runway section in front of a plane be destroyed that the plane would have to enter in order to takeoff, the plane 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.
6. Planes can turn while on the ground at a rate of up to three hex-sides per Turn.

F. <u>OPTIONAL MANEUVER RULES</u>: Experienced

players may prefer these more realistic but slightly more complicated rules to those found in the Basic Game. The maneuvers are still handled as given in the Basic Game rules, with the following changes:

1. OPTIONAL SLIP maneuver: A plane can make either a right slip or left slip while in any left or right banking attitude. A slip still cannot be performed in a level or inverted banking attitude. a. If a plane slips in the direction of its bank, no turn maneuver can be performed in conjunction with this slip. Such a slip can only be done during a Turn in which the plane dives at least enough to gain one speed factor. b. If a plane slips in the opposite direction from its bank, it must perform at least one turn maneuver with that slip.

2. OPTIONAL HALF-LOOP MANEUVER: A plane performing a half-loop while banked to one side will move towards that side.

a. A plane performing a half-loop maneuver while in a right or inverted right bank attitude will be moved one hex to the right of its original heading when the maneuver is performed.

PLANE PERFORMING AN INSIDE HALF-LOOP WHILE IN A RIGHT OR INVERTED RIGHT BANK.
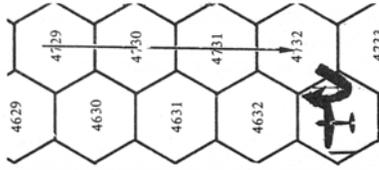
b. A plane performing a half-loop maneuver while in a left or inverted left bank attitude will be moved one hex to the left of its original heading when the maneuver is performed.

PLANE PERFORMING AN INSIDE HALF-LOOP WHILE IN A LEFT OR INVERTED LEFT BANK.
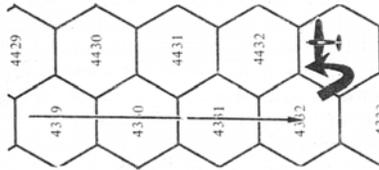
c. In combat a pilot would not normally perform an outside loop, that is, one in which the cockpit of the airplane faces outward from the maneuver. This causes unusual stress on the plane and pi lot.

INSIDE LOOP   OUTSIDE LOOP
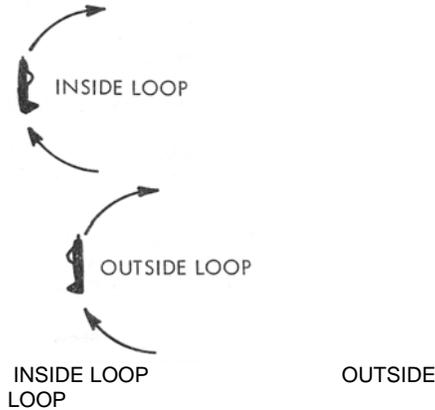
A plane cannot perform an "outside" half-loop maneuver during a Turn in which the plane begins or ends its movement at a speed falling within its dive speed increment. This will normally mean that a plane performing a diving half-loop maneuver will have to go into an inverted banking attitude before doing so. Aircraft that violate this rule are assumed to be destroyed and removed from play.

VII. FIRING OPTIONS: These options increase the number of variables to consider when firing, as well as providing for the fire of the large multi -crew bombers.

A. NOSE ATTITUDE: This option deals with the attitude of the nose of a plane equipped with "FF" (fixed forward firing) guns, or rockets.

1. A plane which did any diving during the Turn has a "nose-down" attitude. It can fire at any enemy plane at its altitude or lower that falls within the normal play of its guns. It can also fire at an enemy plane sharing its hex,

but at a lower altitude. It can fire at no enemy plane at an altitude higher than itself.

2. A plane that did any climbing during the Turn has a "nose-up" attitude. It can fire at any enemy plane at its altitude or higher that falls within the normal play of its guns. It can also fire at an enemy plane sharing its hex, but at a higher altitude. It can fire at no enemy plane at an altitude lower than itself.

3. A plane which did not dive or climb during the Turn fires the same as in the Basic Game. 4. When firing at a target in the same hex as the firing unit, the minimum range is defined to be 1 hex, even if the altitude difference is less than 500 feet.

5. Note that flak counters cannot climb or dive, and therefore can never fire at a target directly above them.

B. DEFLECTION MODIFIERS: Deflection is the angle formed between a firing unit and a target. Firing at some angles, requiring a different "lead" on the target, and entailing different rates of relative movement, is far more difficult than at others.

1. The DEFLECTION MODIFIER CHART is used to figure the results of various deflections. This is done by measuring the angle of deflection in degrees of the firing aircraft relative to the target aircraft.

Angle	Modifier
0°	+1; +2 if firing from target's 6 O Clock.
60°	0
120°	-2
180°	-3; -4 if both are at 12 O Clock.

a.   0 degrees

b.   60 degrees

c.   120 degrees
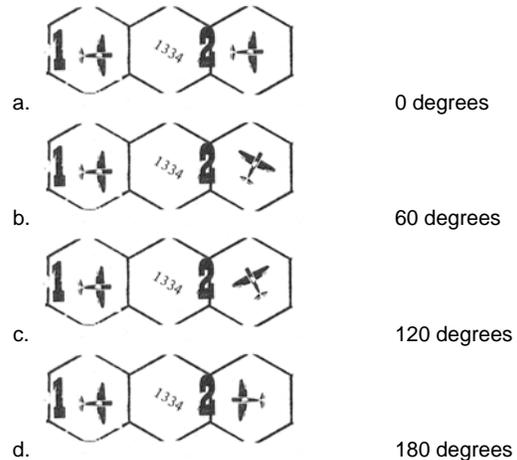
d.   180 degrees

For instance, in the accompanying diagram, example b. plane #1 is firing at plane #2. The firing unit's heading is 60 degrees relative to the target units heading. The modifier is "0".

2. Modifier values from the DEFLECTION MODIFIER CHART are used cumulatively with all other BHT modifiers, as covered in the Basic Game.

3. The speed and maneuvers just performed by a plane can make accurate firing more difficult, bath in the evaluation of a plane as a target and as a stable platform for firing.

a. Faster moving targets are harder to hit. Therefore, a target moving at a final speed of "8" or more has a -1 modifier effect on the BHT.

b. Targets maneuvering evasively are harder to hit. Therefore, a target which performed a slip maneuver

during the Turn has a -1 modifier effect on the BHT.
c. A fast moving plane makes a poor gun platform. Therefore, any plane firing while at a speed in its dive speed increment has a -1 modifier effect on the BHT.
d. A plane which is maneuvering violently makes a poor gun platform. Therefore, a plane which fires during a Turn in which it performed a slip, half-loop, or half-roll maneuver has a -2 modifier effect on the BHT for each such maneuver performed during the Turn.
e. A plane in a spin makes a poor gun platform. A plane which fires during a Turn in which it was in a spin has a -4 modifier effect on the BHT.

C. STRAFING: When firing airplane guns at surface targets, the plane is always assumed to be attacking the ground unit from a 6 o'clock position. Gun factors enclosed in brackets on the airplane data card can be used only against surface targets. They cannot be used against "flying" targets. Bracketed gun factors are added to any other "FF" gun factors in determining the total gun factors when strafing.

D. Unlike the Basic Game, all fire does not have to be directed at the closest target. Other targets may be fired on, if all closer targets are also fired at during that same Turn.

E. If players wish, they may require that an announcement be made as to which units will fire, and what their targets will be before any firing is resolved.

F. GUN POSITIONS: In the Basic Game only planes carrying "FF" (fixed forward) guns are considered. This section covers other types of guns.
1. "FH" (fixed high) guns are mounted to fire obliquely upward and forwards. These have a play of "12H" and "A". They cannot be fired when the plane is in any of the three inverted bank attitudes.
2. "FL" (fixed low) guns are mounted to fire obliquely downward and forwards. These have a play of "12", and can fire at any target at a lower altitude. They cannot be fired when the plane is in any of the three inverted bank attitudes.
3. "F" (flexible) guns are found on planes containing one or more gunner crewmen. For simplicity and playability, these crewmen are not considered in the game, nor are the individual gun positions.
a. Planes having "F" guns have on their airplane data cards the number of gun factors available to fire in various directions. For instance, the B-29 has 12 gun factors it can fire at a target in the "12H" sector, 20 gun factors it can fire at a target in the "4H" sector, etc.
b. Planes having "F" guns may fire at only one target with these guns per Turn. If the plane also carries other types of guns, these other types and the "F" guns may both fire once during the same Turn .
c. Hits on "F" guns are marked with vertical lines on the Hit Chart. Each hit reduces the available number of gun factors by one in every direction.

G. AIRPLANE IDENTIFICATION: Although not really a major problem in plane-to-plane combat the difficulty in distinguishing friend from foe was a major one for flak gunners. Planes operating within range of friendly flak were in constant danger of being shot down by their own side. The problem also occurred at times when fighters were operating too close to friendly bombers they were escorting.
1. Enemy planes can be fired at normally if they are the closest targets, or are at a range equal to that of a friendly plane or planes.
2. When flak or the "F" guns of a bomber formation are fired, and a friendly plane is closer than the desired enemy target, one die must be rolled and the TARGET IDENTIFICATION TABLE consulted prior to firing. If the

result is "Foe", the enemy plane can be fired at in the normal manner. If the result is "Friend", the friendly plane must be fired at (the firing player has the choice of which friendly plane to fire at if more than one is at the same range, otherwise he must fire at the closest one).
3. Attempts at target identification are made individually for each separate shot taken.

VIII. DAMAGE OPTIONS: These options cover damage to types of planes not covered in the Basic Rules, and the vulnerability of planes having inline engines.

A. Planes having more than one engine and/or more than one pilot (those carrying a co-pilot) handle these in the same manner as gun hits are handled in the Basic Game. For instance, a plane firing at the left-hand side of a target would hit the engine and/or cockpit located farthest to the left on the Hit Chart, etc.
1. EFFECTS OF DAMAGE ON DUAL COCKPIT PLANES: Cockpit hits have no effects until one cockpit section has been completely destroyed. Then, hits on the remaining section have the same effects as cockpit hits in the Basic Game.
2. EFFECTS OF DAMAGE ON MULTI-ENGINE PLANES: There are two types of multi -engine planes in the game - those with two engines, and those with four engines. a. Two engine planes lose one power factor if there is at least one hit on each engine, and two power factors if there is at least two hits on each engine. All power factors are lost if one engine is totally destroyed, plus, if the plane is loaded it must immediately jettison its load (of bombs or rockets), if possible (if the plane is "loaded" as a result of extra-heavy armament, which cannot be jettisoned, it is destroyed). The plane can then continue to fly', using its "loaded" modifiers on its movement characteristics. b. Four engine planes lose one power factor per engine destroyed. If two engines are destroyed, the plane is destroyed if these are both on the same side of the plane. If the two destroyed engines are on opposite sides of the plane, it must jettison its load, and can continue to fly using its "loaded" modifiers. If three engines are destroyed, or if two of the engines are destroyed, and both of the remaining engines have at least one hit, the plane is destroyed. c. Planes with two or four engines have their maximum dive speed reduced by one for every three wing hits.
3. EFFECTS OF DAMAGE ON PLANES WITH "F" GUNS: On planes carrying "F" guns plus other types ("FF", "FH", or-"FL"), a firing player who scores a "G" hit can choose to take it on the "F" guns, or on the closest gun of one of the other types.

B. INLINE ENGINES: The type of engine ("I" for Inline, and "R" for radial) in a plane is given on its airplane data card. Radial engines are air-cooled, and were very rugged. Inline engines, favored for their streamlining, were liquid-cooled, and could be knocked out by one bullet in the radiator.
1. For each hit scored on the engine of a plane with inline engines, two dice (a red die, and a white die) are rolled, and the INLINE ENGINES TABLE consulted.
2. The red die is considered to be the first number rolled, and the white die the second number rolled. If the result is that the engine freezes, the engine is destroyed. If the result is that the plane is destroyed. it is.
IX. BOMBING OPTIONS: All bombing is done after movement is complete, so that it is necessary for the plane to end its movement in position to drop its bombs. The fact that a plane will drop its bombs during the Turn

must be noted during the Movement Plotting Phase, although they are not actually dropped until the Bombing, Rocket Fire, and Torpedo Phase. The fact that a plane will drop its bombs (or torpedo) that Turn must be plotted with the movement, using the notation "BMB". This notation can be augmented by indicating the number of bombs to be dropped (i.e., "BMB-2" indicates that two bombs will be dropped), or, in the case of depth charges, the depth setting (i .e., "BMB-S" indicates a depth charge set for a shallow depth). A plane cannot fire "FF" or "FH" type guns during the same T urn as it drops its bombs. Bombs must be dropped if so marked, even if no chance for a hit exists.

A. HIGH LEVEL BOMBING: This type of bombing is done from high altitudes, and employs rather complex bomb sights (planes capable of performing this type of bombing are noted as used for level bombers on their airplane data cards). This type of bombing is directed against industrial and population targets, for the most part, although it was sometimes employed against shipping. When this is done, use the HIGH LEVEL BOMBING TABLE, noting the modifiers to the die roll due to the size of the target (number of adjacent hexes), altitude bombed from, the visibility of the target (night, or obscured by clouds or the smoke of earlier bombings, etc.), the size of the bomb load, or if the target is moving ships. The plane must end its movement directly over the hex to be bombed to do any damage. The die is rolled once for an entire bomb load, regardless of the number of bombs carried.

1. When bombing industrial and population centers on land, the modified die roll number determines the number of points of damage done to the target. 'n scenarios where this type of bombing takes place, each point of damage will be worth one Victory Point.

2. When bombing ships, or specific ground targets such as bridges, airfields, vehicles, or flak positions, an additional die roll is necessary. Roll one die, and multiply the number rolled times the paints of damage. The result is the number of hits scored on that specific target. 3. Note that planes listed as carrying bombing radar gain a +1 modifier to the die roll only in cases of night visibility and/or an obscured target.

4. Planes other than those listed as having sights for level bombing may employ this method. Planes doing so have a -2 modifier to the die roll, unless one or more of the planes in a formation are equipped with sights for this type of bombing. In a case where one or more of the planes do have these sights, all planes in a formation must drop their bombs at the same time as the plane or planes with sights, but the -2 modifier to the die roll can be ignored in this case.

5. Level bombing must be performed from an altitude of at least 6,000 feet.

B. GLIDE BOMBING: This type of bombing is done by fighter-bombers and level bombers operating at altitudes too low (3000 feet or less) to use their normal bomb sights. It is normally directed against tactical targets such as airfields, flak positions, enemy troop positions, and ships, although industrial targets can also be bombed in this manner. When this type of bombing is done, the fall of the bombs may be scattered, and must be checked by consulting the BOMBING CHARTS, and rolling two dice (red and white, the red number being the first one) once for each bomb dropped. Note that the lower the altitude, the better the chances for a direct hit. The numbers in the hexes on the BOMBING CHARTS show which hex is actually hit (the hex on these charts containing the arrow show the hex the plane is in, and the direction it

faces).

1. For ground targets, any target in a hex that is hit is totally destroyed. In addition, vehicles, flak, and planes on the ground may be damaged if in a hex adjacent to the one in which a bomb landed. Hits to these targets are diced for on Hit Table #8, rolling the die once for each separate target affected.

2. 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.

C. DIVE BOMBING: This type of bombing can be done only by planes noted as being dive-bombers. It is handled the same as glide bombing, only the altitudes are different (see the BOMBING CHARTS), and "1" is added to the number rolled on the red die.

D. SKIP BOMBING: Skip bombing, a technique widely used by the USAAF medium bombers (A-20, B-25, and B-26), required great skill, but was very deadly when used against Japanese shipping. It consisted of a low-flying plane 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 plane 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 plane 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 plane dropped one bomb, then rolled a "3" on the die. Since the relative attitudes of the plane 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 X 2 = 4 hits scored on the ship.
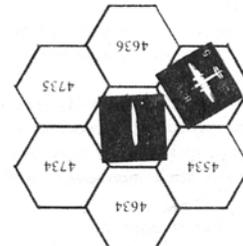
E. TORPEDO BOMBING: Torpedo bombing requires the plane to come in at low altitude, but, since the torpedo can move on its own once dropped, the plane does not actually have to pass over the target, but can make its drop at a distance.

1. American planes must be at an altitude of 100 feet to drop a torpedo. Japanese planes 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.

2. Once dropped, a torpedo counter is placed on the Map-Board and immediately moved one hex straight forward, in the same direction as the plane 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").

3. 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".

4. 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 die roll is then multiplied times four to give the number of hits scored on the ship.

F. <u>DEPTH CHARGE BOMBING</u>: Planes 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 plane-carried depth charges. The effectiveness of the planes 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. Planes carry an assortment of small bombs and depth charges far use against submarines. These are pre-set far 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 plane should select and write down on a separate sheet of paper the number of each his plane carries, and subtract from these totals as they are dropped. The player may carry any desired mix of the two depth settings on a plane. "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 1 00 feet, and may scatter, using the BOMBING CHARTS in the normal manner. 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.

G. For high level bombing, the entire bomb load must be dropped together. For all other types of bombing, the bombs may be dropped individually or in groups. No more than six depth charges can be dropped by one plane during anyone Turn.

H. Planes must be in a level bank attitude in order to perform high level Or torpedo bombing. Bombs cannot be dropped while in an inverted banking attitude except by dive-bombers. I. For glide and dive bombing, a bomb hit on a hex that is higher than the plane's altitude is ignored, and treated as a "miss" . Targets in hexes adjacent to a hit, but at a different elevation from the hex that was hit will not suffer any damage. Glide and dive bombing attacks against ships must be from an altitude of 200 feet or more.

J. Only one plane per hex per Turn can drop bombs. If two or more planes were in the same hex, only one of them could drop bombs during the course of a Turn.

X. <u>GROUND TARGETS</u>: The ground target counters included in the game can be used to represent various targets when laid out on the Map-Board. Ground target counters that are completely destroyed can be removed from play. Those which can absorb varying amounts of damage will have to be kept up with on a separate piece of paper.

A. Ground target counters can be laid out in a line to represent an airstrip or a bridge. Airstrips should be at least four hexes long, and bridges one to three hexes in length. A hit on any bridge hex will make the bridge unusable, and destroy that section. A hit on an airfield hex will destroy that section of the strip, and make it unusable.

B. Ground target counters can be used to mark the center of a large industrial or population target. For instance, the notation "GT6" would designate a ground target that extends six hexes in every direction from the hex containing the counter. Such a hex is assigned a Victory Point value (usually 3 - 6 points). High level bombing will gain Victory Points equal to the number of points damage scored on a hex. Glide and dive bombing hits will completely destroy the hex.

C. Ground target counters can be used to mark the locations of various fortifications (bunkers, pillboxes, etc.). These targets require two hits by dive or glide bombing attacks to be destroyed.

XI. <u>KAMIKAZE ATTACKS</u>: The Japanese used virtually every type of plane available to them during the last ten months of the war for their kamikaze suicide attacks. These attacks required less skill than normal bombing attacks, and could be carried out by the poorly-trained pilots available. To make a kamikaze attack and crash into a ship, the plane must end its movement at an altitude of "0", and either pass over or end its movement in a hex containing a ship.

A. When a single engine kamikaze hits a ship, roll one die. Multiply the number rolled times two to find the number of hits scored on the ship.

B. When a two engine kamikaze hits a ship, roll one die. The number rolled times three is the number of hits scored on the ship.

C. Kamikaze attacks were used only by the Japanese in the last stages of the war. In the game they can be made only by Japanese planes. Most kamikaze pilots were very poorly trained, and it is suggested that these rules be used with the TRAINING AND EXPERIENCE rules (Option XVII), treating the kamikaze pilots as "Green" .

XII. <u>FLAK</u>: These rules cover the operation of the flak (or "antiaircraft" counters in the game. A flak counter may be used to represent any number of actual guns. Each gun factor represents one actual gun.

A. Flak counters are placed on the Map-Board at the start of the game, and cannot be moved after that. They may be placed facing in any desired direction. The strength of each counter is indicated by writing the numbers of the gun factors found in the counter on an extra Hit Chart; the individual counters are identified by writing in the counter number at the top of the corresponding Hit Chart. (Note: Players could fool their opponents by having some flak counters containing no gun factors - i.e., these would be, in effect, "fake" counters) .

B. Although flak must remain in its original hex, it can be turned in place. Light flak counters can be turned one hex-side in either direction every Turn. Heavy flak counters can be turned one hex-side in either direction on even numbered Turns. This turning takes place during the Non-Plotted Movement Phase, and does not have to be written down.

C. Flak firing is handled the same as other firing, with the usual modifiers being handled in the usual way, except that the appropriate Flak columns of the RANGE TABLES AND MODIFIERS chart are used.

D. Hits scored on a flak counter are handled normally, except that only "G", "E", and "C" hits count (each hit destroys one gun). All other types of hits count as "misses".

E. Light flak counters can be made "mobile" if stacked on top of a vehicle counter at the start of the game. If this is done, it must remain stacked with that vehicle counter for the remainder of the game. It can move with the vehicle counter, as well as turning by itself. If the vehicle is destroyed, so is the flak counter on it.

F. Flak counters have a Silhouette of "0", and a Fire Modifier of "0".

G. Heavy flak guns can range in value from 5 to 12 gun factors each. Light flak guns can range in value from 1 to 4 gun factors each. All flak has ranges up to the maximums listed on their respective Range Tables.

XIII. VEHICLES: These rules cover the operation of the vehicle counters in the game. A vehicle counter represents a small number of individual vehicles.

A. Vehicle counters can be moved around the Map-Board during the course of the game. A vehicle counter can turn one hex-side, then move a hex; move a hex, then turn one hex-side; just move a hex; or just turn one hex-side when allowed to move. A truck counter can move every Turn, if it enters a "road hex", or simply turns in place. It can move only on even numbered Turns if it enters a hex that does not contain a road. A tank counter can turn in place every Turn, enter a road hex on even numbered Turns, or enter a hex that does not contain a road on Turns evenly divisible by 4. No movement is necessary.

B. Firing on a vehicle is handled normally, except that only "F" hits count. All other types of hits count as "misses". Machinegun gun factors cannot be fired at tank counters.

C. Vehicle counters have a Silhouette of "-2".

D. One hit will destroy a truck counter. Two hits are required to destroy a tank counter (a tank counter with one hit should be turned upside-down to indicate this single hit).

E. Any number of vehicle counters may be stacked together in the same hex. If strafed, the firing player decides which of the units in c stack is being fired at. If bombed, all units in a stack are destroyed; in the case of a bomb hit in an adjacent hex to c stack, Hit Table #8 is applied to only one of the units in the stack - this unit to be selected by the player dropping the bombs.

XIV. AMMUNITION SUPPLY: Planes carried limited amounts of ammunition into combat. For this game, only the ammunition for "FF", "FL", and "FH" type guns is considered, the ammunition (for planes carrying a mixed armament) being divided into ammunition for cannons ("C"), and ammunition for machine guns ("M"). The amount carried appears on each plane type's TC. Each time the guns are fired (note that it is possible that some guns will exhaust their ammunition sooner than others), place a mark next to the appropriate square on the plane's Hit Chart. When the number of marks equals the number found on that plane type's TC, all the ammunition has been fired, and those gun factors can no longer be used.

XV. ROCKETS: World War II rockets included air-to-air ("A/A"), and air-to-ground (" A/G") types. Both types were quite effective when they hit, but wildly inaccurate. Rockets used in the Pacific during World War II were all of the air-to-ground type. These were quite effective when they hit, but inaccurate. Therefore, the major considerations when firing rockets are the number being fired, and the size of the target (for instance, a dense column of vehicles is a better target than a single truck).

A. FIRING PROCEDURE: Rocket firing takes place after all gunfire is resolved, and simultaneously with bombing.

1. All rockets have a range of eight hexes.

2. All rockets have a "hit area" in which the spread of the rockets is effective, and may cause a hit. Air-to-ground rockets have a hit area consisting of the target hex plus all adjacent hexes. Air-to-air rockets have a larger area to include all hexes within a two hex range of the target hex (remember that 500 feet of altitude equals one hex of range, so that a plane within a two hex distance of the target hex, but at a different altitude, may not fall within the hit area).

AIR-TO-AIR HIT AREA   AIR-TO-GROUND HIT
AREA
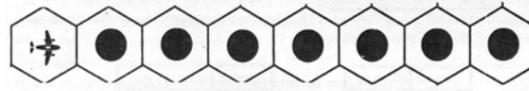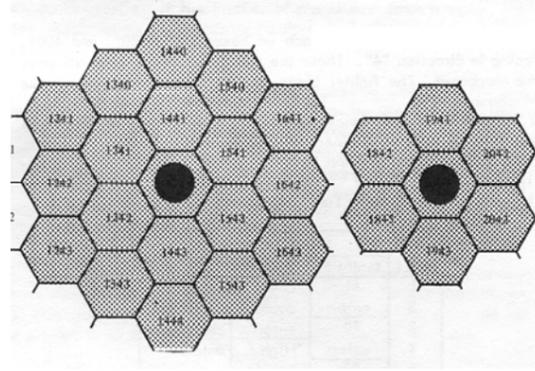
THE TARGET HEX SELECTED MUST BE DIRECTLY
IN FRONT OF THE PLANE FIRING.

3. To fire rockets (all must be fired together), the firing player selects a target hex within range (8 hexes), and directly in front of the plane firing. The exact altitude must also be specified, and must be within 400 feet of the altitude of the firing plane.

4. All modifiers listed under the ROCKET FIRING TABLE are then considered, their effect being cumulative in finding a total modifier. These modifiers are as follows:

a. Die roll is modified by -2 if only a single target lies in the target area.
b. If there are two or more possible targets in the target area, add + 1 to the die roll for each target.
 c. The die roll is modified according to the number of rockets fired. The more fired, the higher the probability of a hit, and, hence, the more added to the die roll.
d. The die roll is modified by +1 if the target is on the surface and mobile (i.e. a vehicle or taxiing plane), and +2 if the target is on the surface and is immobile (i .e., a flak unit or a plane whose engine has not yet started).
e. The die roll is modified by +1 if the target hex is at a range of four hexes or less.
f. 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.

5. The die is now rolled, and the number rolled modified, as explained above. The ROCKET FIRING TABLE is consulted for the results.

B. RESULTS: For targets other than ships, each hit will totally destroy one unit. Misses have no results. If more than one target lies in the target area, the player suffering the hits may decide which unit or units to remove from play. 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.

C. Air-to-air rockets can only be used against flying targets. Air-to-ground rockets can only be used against targets on the surface.

D. The number of rockets each plane can carry is listed in the "Notes" section of its airplane data card. Planes carrying rockets are treated as being loaded for movement purposes.

E. A plane can jettison rockets the same as it can jettison bombs.
F. A plane cannot fire its guns and rockets during the same Turn.

XVI. OPTIONAL ARMAMENTS: Many of the plane types covered in this game are very similar to Other types, except for a different armament. Such types have their different possible armaments listed in the "Notes" section of their airplane data cards.

XVII. TRAINING AND EXPERIENCE: The rules thus far have been concerned mainly with the quality of equipment. Often the training, experience, and expertise of the men using the equipment was as important as the quality of their equipment.
A. There are three experience levels covered in the game: Green., Average, and Ace, in ascending order of value. These can be applied to both air-crews and to anti-aircraft gunners. A high quality pilot or crew will tend to make more efficient use of their equipment.
1. Ace pilots and crews are those with the highest level of experience. They are masters of their trade.
2. Average pilots and crews are those with a good degree of training and expertise, but their experience is somewhat lacking. 3. Green pilots and crews are those whose level of training and/or experience is very low. These deficiencies make it impossible for them to make optimum use of the equipment at their disposal.

B. EFFECTS: The quality of a pilot or crew will effect combat performance.

1. ACE: Ace pilots and crews have one modifier added to their BHT when firing for every five "kills" they have scored. In addition, they have advantages in "spotting" (see V. VISIBILITY OPTIONS). Aces with twenty or more "kills" may use the "C" (for "concentrated") Hit Table. This Table works as follows:

a. The Hit Table number is figured in the normal manner, and the die rolled. Instead of using the hits listed, just count the number of hits scored. For instance, if a "2" were rolled on Hit Table #11, four h its would be scored.

b. Roll the die again, and consult the "C" column of the Hit Tables. This tells the type of hits scored. To carry the above example a little further, if a "3" were rolled on Hit Table "C", this would mean that the four hits scored are all engine hits.

2. AVERAGE: Average pilots and crews perform exactly as stated in the rules. They have no special advantages or disadvantages.

3. GREEN: Green pilots and crews have two modifiers subtracted from-their-BHT when firing. In addition, they must move one hex more than normal before performing any maneuver.

4. QUALITY EFFECTS ON BOMBING: In addition to influencing gunfire, the quality of a crew will influence the accuracy of their bombing.

a. Average quality crews perform normally.

b. HIGH LEVEL BOMBING: Add +1 to the die roll for Ace crews, and -1 for green crews when determining the points damage.

c. GLIDE AND DIVE BOMBING: Add +1 to the red die roll for Ace crews, and -1 for Green crews when using the BOMBING CHARTS. d. SKIP AND DEPTH CHARGE BOMBING: Add +1 to the die roll for Ace crews, and -1 for Green crews when determining the number of hits scored on a ship or submarine.

C. EARNING QUALITY: Good pi lots and crews are made, not born. Players may wish to Simply assign quality to various counters for the purpose of a game, or they may wish to allow them to "earn" their quality gradually. If this is done, old Log Sheets should be saved to verify the "kills" scored by various counters (Note: At the end of a game record all "kills" scored on the Log Sheet, and have it signed by your opponent).

1. A counter can continue to earn quality for its crew from game to game, as long as it remains undestroyed. Once destroyed, it must begin to earn quality anew.

2. All counters start rated as Average. Counters that are destroyed are rated as Green when used in a later game. These Green units would have to score a "kill" to rise to Average quality.

3. A unit can rise to Ace status only by scoring five "kills".

4. "Kills" are scored as follows:

a. One "kill" is scored for each enemy plane destroyed, either in the air or on the ground.

b. One "kill" is scored for every three successful bombing or reconnaissance missions a plane completes. To be successful, the bomber must hit some target, or the reconnaissance plane must win its scenario.

c. One "kill" is scored for every four flak guns and/or vehicles destroyed by strafing.

5. A "kill" is assigned to the last unit to fire at a target, that is, the unit whose fi re caused the hit that led to that unit's removal from the Map-Board. In cases where several units are firing at the same target, it may be necessary to use a die roll to resolve the order in which those units will fire.

XVIII. BAILING OUT: If the Training and Experience options are being used, players may wish to attempt to save the crews of planes which are shot down, so that they can continue to be used in future games.

A. Bailing out may be attempted from any plane that was destroyed during the Turn.

B. PROCEDURE: One die is rolled once, and the appropriate column BAILING OUT TABLE consulted. If the result is Bail out, the crew survives. Otherwise the crew is destroyed.

C. Players using this option should determine prior to the start of the game whose territory the battle is fought over. Bail ing out over enemy territory will usually result in the capture of the crews, as permanent a loss as if they were destroyed. Crews that bail out over friendly territory could often be back in the air in a few hours. Bailing out over or near a friendly or enemy naval force would work in the same manner.

XIX. SOLITAIRE PLAY: A solitaire game can never completely duplicate the presence of a live opponent making his own decisions. The following rules for solitaire play provide for "automatic" decision making in a solitaire game.

A. For solitaire play, do not turn the flak counters until after the plane counters have moved. If the flak counter can fire without turning, handle normally. If it has to be turned 600 to fire, use a -2 modifier to its BHT.

B. For solitaire play, "F" guns will always take their

best possible shot (i .e., the one with the highest Hit Table number).

C. 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 cross grid the result with the proper column of this Table. Move the unit to correspond with the movement given in the Table. Note that if a 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 "1 L" were called for during a Turn in which the unit could only turn in place, the "1" portion of that move notation would be ignored.

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

A. SHIP TYPES: Certain ship counters can be used to represent certain types of ships.

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

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

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

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

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

6. 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.

B. On the back of this rules booklet can be found charts of ship characteristics for major ships of the American and Japanese navies. These charts include information necessary for the use of these ships in DAUNTLESS. This information is broken down as follows:

1. CLASS ID#: This is an identifying code used to differentiate between the major types of ships, as used in the game.

2. 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 sector. For instance, the American CA-l class has 3 light and 9 heavy flak gun factors available for use in every clock sector. For instance, the ship could fire 3 light flak gun factors at a plane in its 2 o'clock, 3 light flak gun factors at another plane in its 4 o'clock sector, etc. At the same time, it could also fire 9 heavy flak gun factors at the same or at other planes in those same sectors. Each of these flak gun factor numbers can fire up to once per Turn at a target in any given clock sector. There are four exceptions to these general rules:

a. Ships listed with multiple numbers (i .e., 2 X 20) have two flak gun factor numbers that can be fired at targets in each clock sector - these can be fired at separate targets, or fired individually at the same target.

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

c. 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 0' clock sector.

d. 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 sector. Flak cannot be fired at planes in the same hex as the firing ship.

EXAMPLES: The following examples show the use of ship's flak against enemy planes:

EXAMPLE #1: This shows an American submarine with three enemy planes. The planes are all out of range of the submarine's light flak. The submarine's heavy flak is "6B", and cannot be fired at plane #1, which lies in its 12 o'clock sector. Both plane #2 and plane #3 can be fired at, plane #2 being in the 6 o'clock sector, and plane #3 being in the 4 o'clock sector. 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 planes can be fired at (probably #3, as it is the closest).
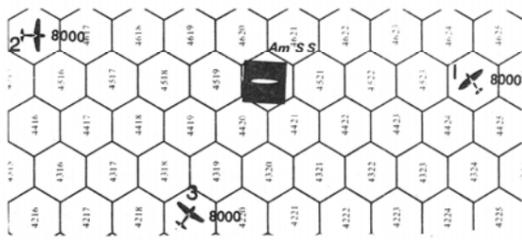
EXAMPLE #2: This shows an American CA-1 class ship with three enemy planes. Plane #1 is in the 8 o'clock sector at a range of 14 hexes, and can be fired at by both light and heavy flak. Planes #2 and #3 are both in the 2 o'clock sector, #2 being at a range of 3 hexes, and #3 being at a range of 12 hexes (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.
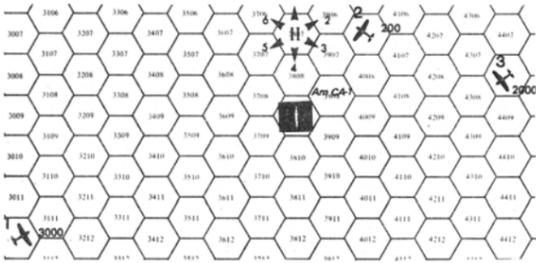
3. SPEED/TURN: This gives the speed at which a ship can move. For instance "1/1" indicates a ship that can move one hex per Turn. "1/2" indicates a ship that can move one hex only on Turn numbers evenly divisible by 2. "1/3" indicates a ship that can move one hex only on Turn numbers evenly divisible by 3.

4. TURNING/TURN: This gives the number of hex-sides a ship can turn through during a Turn. For instance, "1/1" indicates a ship that can shift the front of its counter one hex-side 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 hex-sides every Turn . NOTE: 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.

5. # 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 Option VII. C.).

6. SILHOUETTE #: Use this number as a modifier when firing guns at a ship.

7. POINT #: This is the number of Victory Points a ship is worth if it is sunk.

8. CLASS NAMES: These are the class names of the ships represented by each CLASS ID #.

C. Ships can be considered as either moving at sea, or as anchored in harbor. Ships at sea must move (enter a new hex) whenever possible, although they are not required to turn whenever possible. Ships at anchor cannot move or turn in place.

D. HITS ON SHIPS: Ships can be either hit with bombs and/or torpedoes, or by gunfire.
1. Hits scored by bombs or torpedoes are scored against the total number of hits the ship can take.
a. 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.
b. 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 1/2 to 1/4, etc.).
c. 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").
d. 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.
2. Hits scored on ships by bracketed gun factors are handled as follows: The plane fires at the ship in the normal strafing manner (remembering to use the ship's Silhouette # as a modifier), and a Hit T able 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.
3. Hits scored on ships by other guns are handled as follows: The plane 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.
4. Use extra Hit Charts to mark hits on ships. Set these up in any convenient manner.

E. 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 Map-Board at least five hexes apart. Japanese ships should be placed at least ten hexes apart.

F. SUBMARINES: Submarines can submerge at a rate of 15 feet per Turn. Thus a plane which catches a submarine on the surface will normally have only seven Turns before the 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.

XXI. MULTI-PLAYER RULES: These are same suggested rules for use in games where there are several players per side.

A. 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 writers to have to wait every Turn for the slowest writer involved to finish his notations. Besides, actual air combat calls for split-second decision making, and it is more realistic to have the players operating under a pressure-producing time limit.
1. To make the game move quickly, use a kitchen timer (one with a bell that rings when the time is up) to time the Movement Plotting Phase. The time limit should be agreed upon before the game begins. Two to three minutes is usually about right, being long enough to finish the task, but not long enough to permit prolonged contemplation of the current situation.
2. Players who are slow in making their Log notations should be given the command of a smaller number of planes or formations to enable them to meet the time limit restrictions.
3. Planes or formations whose movement is not noted when the time limit expires, should fly straight ahead, performing no maneuvers or altitude changes, unless these are absolutely necessary (i .e., a plane in the stall speed increment would have to perform a "spin", and a plane in the dive speed increment would have to apply brakes and/or continue diving to meet the requirements of the rules). Power factors cannot be used in any such case.

B. COMMUNICATIONS: Plane-to-plane communication during the Second World War was by radio, hand signals, and/or by plane motions such as "wagging the wings", etc. All of these methods proved less than perfect in the heat of action, even radio communication breaking down between the various formations involved in a battle.
1. Allow no talking between the players on a side.
2. Players may pass written notes during the timed Movement Plotting Phase. Such note writing and passing may only take place during this timed period.
3. Before a player may read a note that is passed to him he must roll a die to see if he sees or hears it. If the plane types of the players involved are the same (i.e., if both the player sending the note and the one receiving it were in Corsairs), the die roll must be "4 - 6" for successful communication. If the plane types of the players involved are different, the die roll must be a "5" or a "6" for successful communication.

XXII. DROP TANKS: Fighter planes and many bomber types would extend their range by carrying "drop tanks" under the fuselage and/or wings. These extra gasoline containers would be used during the flight to the target, then normally dropped before the plane entered combat. For game purposes, only the drop tanks used on fighter planes are considered. A. Players must decide prior to the game which planes are carrying drop tanks.

B. Drop tanks are considered to be dropped when the player announces that this has been done, during the Plotted Movement Execution Phase. They cannot be dropped prior to the planes entering the Map-Board, or (if Visibility Options are in use) until the enemy is sighted.

C. A plane can drop its tanks only during a Turn in which it ends in a level bank and moving in its maneuver speed increment (planes with no maneuver speed increment cannot be exceeding their lowest possible level speed). A plane cannot fire "FF", "FH", or "FL" guns during the same Turn as it drops its tanks.

D. Planes carrying drop tanks are considered to be loaded.

E. Planes carrying drop tanks require one less "L" hit than normal to be destroyed.

AIR FORCE SCENARIOS

The scenarios presented in this section provide a representative cross section of the types of operations carried out by the Air Forces of the various nations. Each scenario is, in effect, a separate game, and provides the information necessary to set up and play the mission. The solitaire scenarios are included for players who have difficulties in finding opponents, or who just want to practice. The scenarios are not intended to represent any specific actions, but are designed to capture the "flavor" of each different type of mission, and to provide sufficient flexibility for each game to be totally different. Once players have played through the scenarios given, they are encouraged to "try their hand" in designing their own scenarios, as the possibilities are virtually endless.

Each separate scenario is divided into four sections which contain the essential information in the following format: 1. SETTING UP THE SCENARIO: This gives the information needed to set up the game, place the counters on the map-board, etc. Unless otherwise stated, units can be set up facing in any desired direction, in any desired Initial Speed, Initial Altitude, and Initial Bank. Surface terrain is al ways set up by all players in an agreed upon manner before the sides are determined - this assures that it will not unduly favor one side or the other. Any variable placement or entry die rolls come during the Spotting and Starting Phase of a Turn. Notations as to the starting hex, direction, altitude, etc., should be written on a sheet of scratch paper, or some unused portion of the Log Sheet (if room is available). Units can always be moved during the same Turn as they are placed on the map-board. Planes are always assumed to have moved a sufficient number of hexes prior to entering the map-board to immediately perform any maneuver. 2. SPECIAL RULES: These are rules that apply only to that specific scenario. 3. SUGGESTED SIDES: This gives some ideas on what planes to use. Other combinations than those listed can easily be substituted for more variety. All scenarios (excepting, or course, the solitaire scenarios) are designed for play by one player on each side. They can easily be expanded for play by large groups of players by multiplying the number of units involved. 4. VICTORY CONDITIONS: Unless otherwise stated, the side that accumulates the most Victory Points is the winner, and points are always awarded for destroying enemy planes, flak, vehicles, and/or barrage balloons. Some scenarios list Victory Points awarded in a special manner for that scenario only.

I. SCENARIO #1: "V-I Solitaire Scenario": In mid-June, 1944 the Germans began firing their V-1 pilot-less bombs at English targets (primarily at London). The allies responded quickly with a defense network of radar, spotters, flak batteries, and fighter planes. The fighters proved to be very effective and efficient in destroying the "buzz bombs" .

A. BASIC LEVEL SOLITAIRE TRAINING GAME: This scenario should be used by players new to AIR FORCE for practicing the mechanics of the game - proper Log notations, movement, and firing procedures - prior to their attempting face-to-face games against live opponents.
1. Place one V -1 counter each on hexes 1601, 2801, and 4001, facing in direction "4". These are the hexes where they will enter the map-board. The fighter plane can be placed anywhere on the map-board.
2. The order of appearance, speed, and altitude of the V-I's will vary, and must be determined by rolling a die.
a. ORDER OF APPEARANCE: V-I's will enter the map-board singly on Turns #1, #4, and "7. Exactly which will enter is determined by rolling a die on those Turns, and consulting this Table:

DIE	TIME OF DIE ROLL		
ROLL	GT #1	GT #4	GT #7
1	#1	Low # counter enters	Remaining Counter enters
2	Enters		
3	#2		
4	Enters	High # counter enters	
5	#3		
6	Enters		

b. SPEED AND ALTITUDE: The speed and altitude of each V-I is determined when it enters the map-board by rolling a die once for each of the following Tables.

DIE ROLL	SPEED
1-2	7
3-4	8
5-6	9

DIE ROLL	ALTITUDE
1	1000 FT
2	2000 FT
3	2,500 FT
4	3,000 FT
5	3,500 FT
6	4,000 FT

c. The V-I 's will fly straight and level, never changing speed or altitude during their entire flight. map-board sections cannot be moved.
d. V-I CHARACTERISTICS: A V-I has a Silhouette Modifier of -4. Two wing, fuselage, or engine hits, or one fuel tank hit are enough to destroy it. Cockpit and gun hits count as "misses". 3. The Spitfire IX, P-5lD, P-47D, and Tempest V are all types that were used against the V-I. 4. To win, the player must destroy all three V-I 's before they exit the map-board.

B. ADVANCED LEVEL SOLITAIRE GAME: This provides a more challenging solitaire game for players who have mastered the rules. Play the same as above, only use the Deflection Modifier (Option VII. B.), rules, and other options that may appear interesting.

II. SCENARIO #2: "DOGFIGHTS": This scenario covers basic fighter to fighter, air-to-air combat, and is suitable for play with only the Basic Game rules, or with the addition of any desired optional rules. The minimum number of planes per side should be two, this being the smallest tactical fighter unit used in the war.

A. BASIC LEVEL GAME: This scenario is suitable for Basic Game play, as no optional rules are required for the game. It is recommended that novice players start out with only two planes each, then work their way up to four planes each as their expertise grows. This scenario should be played through several times before attempting games using any of the optional rules.
1. Planes are set up no more than three hexes from the edge of the map-board, one side starting on edge "5-6", the other side on edge "2-3". Players should then secretly write down the hex each plane will be placed in, and the direction it is facing. Then place the planes in their indicated hexes. Each side then rolls one die. The combined total rolled (i .e., "3" + "4" = "7") is multiplied by 2,000 feet (14,000 feet in the example). This will be the initial altitude for all planes.
2. map-board sections may be rotated as needed. 3. Good match-ups include: Spitfire I vs. Me-109E; Spitfire V vs. Me-109F; Spitfire IX, Tempest V, P-47B or D, or P-51B or D vs. Me-109G or FW-190A. 4. The side that has shot down the most enemy planes at the end of twenty Turns wins. If the number of planes shot down is equal, the side which has shot down planes totaling the highest number of Victory Points wins.

B. ADVANCED LEVEL GAME: This game is similar to the one above, only any desired optional rules can be used. In addition, variants on the set up method given above can be used; planes are not restricted to setting up along an edge. They can be placed in any hex on the map-board (the hex number and facing direction number being secretly noted prior to actual set up). .collisions can occur using this method, but they are very rare. Also, each player can roll two dice to determine the altitude of his planes only.

III. SCENARIO #3: "MASS BOMBERS": The primary concern of any air defense system was stopping enemy bombers. To play the following, it is necessary to either have a large number of players to run all the planes, or to use the Mass Formations (Option VI. B.) rules.

A. SOLITAIRE GAME: This solitaire version is useful to players for testing various defensive formations for bombers, and testing tactics for attacking these formations. 1. The bombers are set up on board sections I and/or II, facing in direction "4", in any desired formation. The fighters are set up anywhere on board sections V and/or VI. The player may use any desired altitudes for the planes (10 - 25,000 feet would be common), or use dice rolls to determine altitudes as in Scenario #2. 2. map-board sections cannot be moved. Bombers must fly straight and level throughout the game, and maintain a constant speed. 3. Suggested sides are: 12 He-111 H, Ju-87B, or Ju-88A vs. 4 Spitfire I or Hurricane I; 18 B-l7F, or B-24D vs. 8 Me-109F or G, or FW-l09A; 18 B-17G, or B-24J vs. 8 Me-109G, FW-109A, or Me110G, or 4 Me-262A. Up to 1/4 of the fighters may carry A/A rockets, except for the Me-110's and Me-262's, which may all be armed with A/A rockets. 4. Game ends when the last bomber exits the map-board off edge "4", or is shot down. Bombers get 5 Victory Points for each bomber that exits with its bomb load still aboard, plus the normal points for planes destroyed.

B. COMPETITION GAME: This is played similar to the above, only there are two sides, and the bombers have escorts. 1. Set up is as above, only the escorts are also placed on board sections I and/or II. 2. As soon as they are vacated, board sections I and II should be moved to butt up against edge "4". The defending player should then place four ground target counters of size GT -6 at least eight hexes apart (counter to counter) on these sections, as well as setting up the flak counters, also on those two sections, and at least 10 hexes apart. 3. Suggested sides are as above, only four escorts are added to the bombers, and the number of interceptors is doubled (use two types of planes, if necessary). The defender also has ten heavy flak guns (valued at 6 factors each), which can be placed in two heavy flak counters. 4. Bombers get one Victory Point for each point of damage done to the targets, plus the normal Victory Points awarded for planes and flak guns "destroyed.

IV. SCENARIO #4: "NIGHT FIGHTERS": Much of World War II's air combat took place at night, and the

belligerents worked hard to develop good night fighters and bombers. Nocturnal operations developed from crude, amateurish efforts early in the war to sophisticated operations in the later years. The Visibility Options (V.) must be used to fully capture the flavor of night combat (note that night fighters were usually ground controlled).

A. THE KAMMHUBER LINE: The first really well organized night fighter defense system was the Luftwaffe's so-called Kammhuber
Line. Prior to the great Hamburg raids of July, 1943, RAF night bombers flew singly, or in small groups, making their way independently to the target. The single German "nachtjager" patrolling each of the various sectors of the Kammhuber Line could thus handle the relatively small numbers of bombers that would pass gradually through its area. 1. Bombers will enter the map-board from edge "1", traveling in direction "4". All bombers must be at the same altitude, this altitude being determined by the bomber player rolling two dice, and multiplying the result by 2,000 feet. This altitude is known to the other player. The bomber player then secretly writes the number of the hex on which each of his planes will enter, these hexes being at least four hexes apart(the hex number should be shown to the fighter player as each bomber enters the map-board). The fighter player may place his plane anywhere on the map-board. Starting on Turn one, the bomber player will roll one die for each bomber not yet on the map-board. If a "6" is rolled, that bomber is placed on its hex, and begins movement. 2. map-board sections cannot be moved. 3. Suggested sides are: 4 Wellingtons or Lancasters vs. 1 Ju-88C or Me-110G. 4. Bomber player wins if two or more bombers can exit the map-board on edge "4" with their bomb loads. Otherwise, the fighter player wins.

B. BOMBER STREAM: From the Hamburg raids on the tactic of the "bomber stream" was used, with the bombers 'all flying to the target in a more or less massed group covering a narrow front to "flood" the defenses. The use of "window" (aluminum strips that jammed radar) made the radar carried on the night fighters useless. New night fighter tactics called for the fighters to enter the stream, move along with it, and shoot down any bombers encountered. 1. Bombers enter the map-board from edge "1", traveling in direction "4". Dice determine a "mean" altitude, which is known to the fighter player. The bomber player may set the actual altitudes of his various planes to as much as 3,000 feet higher or lower than this "mean" altitude. The bomber player divides his planes into four formations of three planes each, and secretly writes down the hex number where the lead plane of each formation will enter, these hexes being at least six hexes apart (these hex numbers should be shown to the fighter player as each formation enters the map-board). The fighter player rolls the die once for each of his planes - the number rolled gives the edge number where each fighter will enter the map-board. He then secretly writes down the exact hex number that each fighter will enter on, and its direction number (these are shown to the bomber player as each plan~ enters the map-board). The altitude of each fighter does not have to be decided upon until the plane actually enters. Starting on Turn one, both players will roll one die for each bomber formation or individual fighter plane not yet on the map-board. Ifa"5"or"6" is rolled, the unit is placed in its hex, and begins movement. 2. map-board sections can be rotated as needed. 3. Suggested sides are: 12 Lancasters or Mosquito IV vs. 4 Ju-88C or Me-110G. 4. Game lasts twenty Turns. Bombers get 4 Victory Points per bomber still flying and loaded with bombs at games end, in addition to points for both sides for planes shot down.

V. SCENARIO #5: "LOW LEVEL MISSIONS": The various Air Forces of World War II were expected to do more than just bomb cities and fight air-to-air combats. One of their more important, and hazardous tasks was to go to low altitude, and attack smaller ground targets.

A. SOLITAIRE VEHICLE ATTACKS: Fighter-bombers and dive-bombers saw extensive action strafing and bombing enemy vehicles. 1. The following surface terrain counters should be placed anywhere on the map-board, in an interesting manner: 5X1 00', 5X200', 3X300', 5X400', 25X500', 5X6oo', 5X1000', and 2X1500'. Roads are assumed to run down the 19 and 38 hundred rows. Six tank and six truck counters can be placed anywhere on road hexes in map-board sections III and/or IV. The sixteen light flak counters can be placed either on the vehicles, or distributed around the map-board at least five hexes apart. These contain 40 light flak guns (valued at 2 factors each). The attacking planes can be set up on an edge hex along edges "1" and/or "4", at an altitude of 5,000 feet, or less.
2. map-board sections cannot be moved. The Solitaire Flak rule (Option XIX. A.) should be used. Planes are carrying either bombs or A/G rockets. Vehicles should move their allowable maximums every T urn and must remain on the road.
3. The following plane types are effective in low level roles (use two of a type): Hurricane II, Tempest V, P-47D, Mosquito F.B.VI, Ju-87B, and Ju-87D. 4. To win, the player must gain at least twenty Victory Points, and have more Victory Points than are lost.

B. AIRFIELD RAID: This scenario represents a surface attack on an airfield complex. 1. Use the same mix of surface terrain counters as listed above in laying out the terrain. After determining sides, the defender distributes the sixteen light flak counters, spaced at least four hexes abort, over map-board sections III and/or IV. These contain 28 light flak guns valued at two factors each, and 3 light flak guns valued at four factors each. The twelve ground target counters are laid out to form three airfields, each four counters in length. These airfields must be at least twelve hexes abort. One plane is placed on each of two of these airfields, located on one end of the runway, and facing so as to move down the runway in order to take off. The attackers can be set up on edge hexes along edges "1" and/or "4", at an altitude of 2,000 feet, or less. 2. map-board sections cannot be moved. Attacking planes can carry bombs and/or be "clean". Defending planes must start their engines and take off. 3. The attacker has four planes, the defender two. Suggested sides are: 4 P-47B, P-47D, P-51B, P-51D, Tempest V, Spitfire IX, or Mosquito F. B. VI vs. 2 Me-1 09G, FW-190A, or Me-262; or 4 Me109E or Me-11OC vs. 2 Spitfire I or Hurricane I. 4. Attacker gets 10 Victory Points for each airfield bombed (at least one direct hit on any counter making up the airfield) plus 30 bonus Victory Points if all three airfields are bombed successfully. The attacker must have twenty-five or more Victory Points than the defender in order to win. The defender wins if he has more Victory Points than the attacker. Game lasts until all attackers are shot down, or have exited the map-board, or twenty Turns are completed.

C. PLOESTI REFINERY RAID: The following scenario is based loosely on the attack on the Rumanian oil refineries at Ploesti in August of 1943. This raid, which saw American heavy bombers attacking one of the most heavily defended targets in Europe at low level in broad daylight was one of the boldest and unusual raids of the entire war. The entire plan had been "snafued", and the attackers came at the objective piece-meal and from every direction. 1. The following surface terrain counters should be placed anywhere on the map-board: 30Xl00', 30X200', and 5X1000'. After determining sides, the defender distributes five heavy and eleven light flak counters, spaced at least four hexes apart over the map-board. These contain 10 light flak guns valued at two factors each, 20 light flak guns valued at four factors each, and 8 heavy flak guns valued at six factors each (only light flak in light flak counters, and only heavy flak in heavy flak counters). He can also place six barrage balloons in any hexes. Seven ground target counters of size GT-2 are placed at least twelve hexes abort (counter to counter). The attacker divides his planes into four formations of at least three planes each (NOTE: If two or more players are available for the attacker, these can be divided into eight formations of at least two planes each). Both players now roll a die once per formation of planes (the defender rolls for individual planes, the attacker for each of his formations). The die roll determines the edge on which they will enter the map-board. Players then secretly write down the exact hex their planes will enter on, the direction they will face, and their altitude (the attacker writes this information for the lead plane in each formation, the defender for each individual plane). Attacking planes must be at an altitude of300 feet or less. This information is shown to the opposing player whenever a new formation enters the map-board. Each formation (or individual defender's plane) is diced for once each Turn, starting on Turn one. If a "6" is rolled, the unit is placed in its hex, and begins movement. 2. map-board sections cannot be moved. Once any hex of a target has been bombed, the entire target is considered to be "obscured" for any later bombings - obscured targets can be marked by using cloud counters placed on the center hex of the target - their size is (0-1.0)2. 3. The attackers get 18 B-24D, the defenders 2 Me-109F. 4. The game continues until all bombers have exited the map-board, or been shot down. The attackers get 5 Victory Points for every target hex bombed (no additional points for hexes hit more than once), plus a 75 Victory Point bonus if all seven targets are hit.

VI. DOING YOUR OWN SCENARIOS: The scenarios included with this game barely scratch the surface as far as covering all possible games that could be set up. Ideas for additional scenarios can be gleaned from various aviation publications, books, movies, etc., or by just using your imagination. These scenarios give an idea of what can be done with the rules, and should give imaginative players plenty of ideas for devising their own scenarios.

DAUNTLESS SCENARIOS

The scenarios presented in this section provide a representative cross section of the types of operations carried out by the Air Forces in the Pacific. Each scenario is, in effect, a separate game, and provides the information necessary to set up and play the mission. The solitaire scenarios are included for players who have difficulties in finding opponents, or who just want to practice. The scenarios are not intended to represent any specific actions, but are designed to capture the "flavor" of each different type of mission, and to provide sufficient flexibility for each game to be totally different. Once players have played through the scenarios given, they are encouraged to "try their hand"

in designing their own scenarios, as the possibilities are virtually endless.

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Each separate scenario is divided into four sections which contain the essential information in the following format: 1. SETTING UP THE SCENARIO: This gives the information needed to set up the game, place the counters on the Map-Board, etc. Unless otherwise stated, units can be set up facing in any desired direction, in any desired Initial Speed, Initial Altitude, and Initial Bank. Surface terrain is always set up by all players in an agreed upon manner before the sides are determined - this assures that it will not unduly favor one side or the other. Any variable placement or entry die rolls come during the Spotting and Starting Phases of a Turn. Notations as to the starting hex, direction, altitude, etc., should be written on a sheet of scratch paper, or some unused portion of the Log Sheet (if room is available). Units can always be moved during the same Turn as they are placed on the Map-Board. Planes are always assumed to have moved a sufficient number of hexes prior to entering the Map-Board to immediately perform any maneuver. 2. SPECIAL RULES: These are rules that apply only to that specific scenario. 'n scenarios where the Map-Board sections cannot be moved a plane exiting the Map-Board is out of play, and cannot return . 3. SUGGESTED SIDES: This gives some ideas on what planes to use. Other combinations than those listed can easily be substituted for more variety. All scenarios (excepting, of course, the solitaire scenarios) are designed for play by one player on each side. They can easily be expanded for play by large groups of players by multiplying the number of units involved. 4. VICTORY CONDITIONS: Unless otherwise stated, the side that accumulates the most Victory Points is the winner, and points are

I. SCENARIO #1: "DOGFIGHTS": This scenario covers basic fighter to fighter, air-to-air combat, and is suitable for play with only the Basic Game rules, or with the addition of any desired optional rules. The minimum number of planes per side should be two, this being the smallest tactical fighter unit used in the war.

A. BASIC LEVEL GAME: This scenario is suitable for Basic Game play, as no optional rules are required for the game. It is recommended that novice players start out with only two planes each, then work their way up to four planes each as their expertise grows. This scenario should be played through several times before attempting games using any of the optional rules. 1. Planes are set up no more than three hexes from the edge of the Map-Board, one side starting on edge "5-6", the other side on edge "2-3". Players should then secretly write down the hex each plane

will be placed in, and the direction it is facing. Then place the planes in their indicated hexes. Each side then rolls one die. The combined total rolled (i .e., "3" + "4" = "7") is multiplied by 2,000 feet (14,000 feet in the example). This will be the initial altitude for all planes. 2. Map-Board sections may be rotated as needed. 3. Good match-ups include: A6M2 Zero vs. F4F Wildcat or P-4OC; P-38G, F6F Hellcat, or F4U Corsair vs. A6M5 Zero, N1KI George, or Ki-84 Frank; P-40N vs. Ki-43 Oscar, Ki-44 Tojo, or Ki-61 Tony. 4. The side that has shot down the most enemy planes at the end of twenty Turns wins. If the number of planes shot down is equal, the side which has shot down planes totaling the highest number of Victory Points wins. This scenario works only if both players are aggressive. If either, or both, of the players is cautious, it can drag on for some time, and have no result. If players wish, they may establish a 30 Victory Point penalty for a player who consistently avoids action, or runs from a fight. This condition can "force" players to be more aggressive, and leads to faster and more interesting games.

B. ADVANCED LEVEL GAME: This game is similar to the one above, only any desired optional rules can be used. In addition, variants on the set up method given above can be used; planes are not restricted to setting up along an edge. They can be placed in any hex on the Map-Board (the hex number and facing direction number being secretly noted prior to actual set up). Collisions can occur using this method, but they are very rare. Also, each player can roll two dice to determine the altitude of his planes only.

C. ANTI-TORPEDO PLANE PATROL: During most of 1942, the number of fighter planes 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. 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 planes will enter. The American player can then place his planes anywhere on the Map-Board, and at any desired altitude. Then the Japanese player places his planes in their designated positions, and play begins. 2. The Map-Board sections can be rotated as needed. The Japanese planes are loaded. Although the Map-Board can be rotated, the Japanese planes are supposed to be heading for American ships located somewhere off Map-Board edge "4", and would not be deviating much from a straight course to their

targets. Therefore, the Japanese planes that are still loaded may not leave the Map-Board through edges "2-3" or "5-6". 3. The sides are 4 SBD Dauntless vs. 4 B5N Kate. 4. 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 planes shot down .

II. SCENARIO #2: "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.

A. FLEET CONTACT: To locate enemy fleets at sea, numerous patrol planes would be sent out, each covering its own sector of the ocean. Once a plane 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 planes usually had to dart in and out of cloud cover to avoid enemy fighters. 1. Before the sides are determined, both players layout the ships and cloud counters. The ships should be set up in a standard formation grouped near the center of the Map-Board. 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

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the hex numbers where he wishes to place his planes, the directions they face, and any desired altitude. The player with the fighters may place his planes anywhere on the Map-Board. The player with the reconnaissance plane must start in a hex on the edge-of the Map-Board. Now the sizes of the cloud formations are determined, as covered in the rules. 2. The Map-Board sections can be rotated as needed. 3. Reconnaissance flights were generally made by bomber types, flying boats, or float planes, 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 plane 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. The game lasts twenty Turns. In addition to normal points for planes destroyed, the reconnaissance plane gets two Victory Points for each enemy ship spotted. The reconnaissance plane must end with at least twelve more Victory Points than the opposition in order to win.

B. PHOTO-RECONNAISSANCE: This was effectively practiced only by the Allies, the photographs being pieced together to form complete maps. 1. The set-up is as above, only instead of ships six target counters are laid out on the Map-Board. These represent features that must be photographed to complete the mission. 2. As the Map-Board represents a section of land, sections containing the target counters should not be moved, although other sections could be rotated as needed. 3. One photo-reconnaissance plane variant is used by the Allied player, the other player getting two Japanese fighters. 4. Game lasts twenty Turns. The reconnaissance plane must pass over at least five of the target counters and exit the Map-Board in order to win.

III. SCENARIO #3: "MASS BOMBERS": The primary concern of any air defense system was stopping enemy bombers. To play the following, it is necessary to either have a large number of players to run all the planes, or to use the Mass Formations (Option VI.B.) rules.

A. SOLITAIRE GAME: This solitaire version is useful to players for testing various defensive formations for bombers, and testing tactics for attacking these formations. 1. The bombers are set up on board sections I and/or II, facing in direction "4", in any desired formation. The fighters are set up anywhere on board sections V and/or VI. The player may use any desired altitudes for the planes (10 - 25,000 feet would be common), or use dice rolls to determine altitudes as in Scenario #1 . 2. Map-Board sections cannot be moved. Bombers must fl y straight and level throughout the game, and maintain a constant speed. 3. Suggested sides are: 12 G4M Betty, D3A Val, or B5N Kate vs. 4 F4F Wildcat, F6F Hellcat, F4U Corsair, P-39D, P-4OC, P-40N, P-38G, P-38L, or F2A Buffalo; 12 SBD Dauntless, TBF Avenger, SB2C Helldiver, or TBD Devastator vs. 4 A6M2 Zero or 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, N1KI- J George, Ki-45 Nick, or Ki-84 Frank; or 12 B-29 vs. 12 A6M5 Zero, Ki-44 Tojo, Ki-45 Nick, N1KI-J George, or Ki-84 Frank (combination). 4. Game ends when the last bomber exits the Map-Board off edge "4", or is shot down. Bombers get 5 Victory Points for each bomber that exits with its bomb load still aboard, plus the normal points for planes destroyed.

B. COMPETITION GAME: This is played similar to the above, only there are two sides, and the bombers have escorts. 1. Set up is as above, only the escorts are also placed on board section I and/or II . 2. As soon

as they are vacated, board sections I and II should be moved to butt up against edge "4". The defending player should then place four ground target counters of size GT -6 at least eight hexes apart (counter to counter) on these sections, as well as setting up the flak counters, also on those two sections, and at least 10 hexes apart.

3. Suggested sides are as above, only four escorts are added to the bombers, and the number of interceptors is doubled (use several types of planes, if necessary). The defender also has ten heavy flak guns (valued at 6 gun factors each), which can be placed in two heavy flak counters. Escorting fighters can be of any friendly type, but normally carrier fighters will escort carrier bombers. 4. Bombers get one Victory Point for each point of damage done to the targets, plus the normal Victory Points awarded for planes and flak guns destroyed.

IV. SCENARIO #4: "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 (V.) must be used to fully capture the flavor of night combat (note that night fighters were usually ground controlled).
A. BEDCHECK CHARLIE: The night harassment bombers were generally sent out singly, and were known as "Bedcheck Charlie" or "Washing machine Charlie". 1. Both players secretly mark the hex number and any desired altitude they wish their planes to start at. The fighter player may begin anywhere on the Map-Board, the bomber player must begin in a hex on the edge of the Map-Board. Bomber altitude is known to the fighter player at time of set up. 2. Map-Board sections cannot be moved. 3. Suggested sides are: 1 G4M Betty vs. 1 P-70 (A-20 Variant) or P-61 A; or 1 B-25C vs. 1 Ki-45 Nick. 4. Game lasts up to twenty Turns. The bomber gains one Victory Point for each Turn it remains on the Map-Board, and the fighter gains one Victory Point for each Turn the bomber is not on the Map-Board (i.e., if it drives it off the Map-Board or destroys it), in addition to points for both sides if a plane is destroyed. B. 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 planes that tried to attack the ships under the cover of darkness. 1. The Kamikaze will enter the Map-Board from edge" 1 ", traveling in direction "4". The Kamikaze can be at varying altitudes, these being determined by the Kamikaze player rolling one die per plane, and multiplying the result by 1,000 feet. These altitudes should be made known to the other player (who would have radar contacts on

these planes). The Kamikaze player then secretly writes the number of the hex on which each of his planes will enter, these hexes being at least four hexes apart (the hex numbers should be shown to the fighter player as each Kamikaze enters the Map-Board). The fighter player may place his plane anywhere on the Map-Board. Starting on Turn One, the Kamikaze player will roll one die for each plane not yet on the Map-Board. If a "6" is rolled, that Kamikaze is placed on its hex, and begins movement. 2. The Map-Board sections cannot be moved. Keep in mind that the Kamikazes are "loaded". 3. Suggested sides are: 1 F6F Hellcat or F4U Corsair night fighter vs. 4 Ki-45 Nick, G4M Betty, D3A Val, or B5N Kate. 4. The Kamikaze player wins if two or more of his planes can exit the Map-board on edge "4" with their bomb loads. Otherwise, the fighter player wins.

C. SUPERFORTRESS NIGHT RAI DS: 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. 1. Bombers enter the Map-Board from edge "1", traveling in direction "4". Dice determine a "mean" altitude by rolling two dice, and multiplying the result by 1,000 feet. This altitude is known to the Japanese player. The bomber player may set the actual altitudes of his various planes to as much as 2,000 feet higher or lower than this "mean" altitude. The bomber player divides his planes into four formations of three planes each, and secretly writes down the hex number where the lead plane of each formation will enter, these hexes being at least six hexes apart (these hex numbers should be shown to the fighter player as each formation enters the Map-Board). The fighter player rolls the die once for each of his planes - the number rolled gives the edge number where each fighter will enter the Map-Board. He then secretly writes down the exact hex number that each fighter will enter on, and its directional facing number (these are shown to the bomber player as each plane enters the Map-Board). The altitude of each fighter does not have to be decided on until the plane actually enters. Starting on Turn One, both players will roll one die for each bomber formation or individual fighter plane not yet on the Map-Board. If a "5" or "6" is rolled, the unit is placed in its hex, and begins

movement. 2. Map-Board sections can be rotated as needed. 3. Suggested sides are: 12 B-29 vs. 8 Ki-45 Nick. 4. The game lasts twenty Turns. 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 planes shot down.

V. SCENARIO #5: "LOW LEVEL MISSIONS": The various Air Forces of World War II were expected to do more than just bomb cities and fight air-to-air combats. One of their more important, and hazardous tasks was to go to low altitude, and attack surface targets.
A. SOLITAIRE VEHICLE ATTACKS: Fighter-bombers and dive-bombers saw extensive action strafing and bombing enemy vehicles. 1. The following surface terrain counters should be placed anywhere on the Map-Board, in an interesting manner: 5X1 00', 5X200', 3X300', 5X400', 25X500', 5X600', 5X1 000', and 2X1500'. Roads are assumed to run down the 19 and 38 hundred rows. Six tank and six truck counters can be placed anywhere on road hexes in Map-Board sections III and/or IV. The sixteen light flak counters can be placed either on the vehicles, or distributed around the Map-Board at least five hexes apart. These contain 40 light flak guns (valued at 2 factors each). The attacking planes can be set up on an edge hex along edges "1" and/or "4", at an altitude of 5000 feet or less. 2. Map-Board sections cannot be moved. The solitaire rules for firing flak and moving vehicles should be used. Planes can be carrying bombs, A/G rockets, or be "clean", in any combination the player desires. 3. The following plane types are effective in low level roles (use two of a type): Ki-45 Nick, Ki-84 Frank, D3A Val, F4U Corsair, SBD Dauntless, TBF Avenger, SB2C Helldiver, A-20G, B-25C or B-25G, B-26B, P-38G, P-38L, P-39D, P-40N, and P-61A. 4. To win, the player must gain at least twenty Victory Points, and have more Victory Points than are lost.

B. AIRFIELD RAID: This scenario represents a surprise attack on an airfield complex. 1. Use the same mix of surface terrain counters as listed above in laying out the terrain. After determining sides, the defender distributes the sixteen light flak counters, spaced at least four hexes apart, over Map-Board sections III and/or IV. These contain 28 light flak guns valued at two factors each, and 3 light flak guns valued at four factors each. The twelve ground target counters are laid out to form three airfields, each four counters in length. These airfields must be at least twelve hexes apart. One plane is placed on each of two of these airfields, located on one end of the runway, and facing so as to move down the runway in order to take off. The attackers can be set up on edge hexes along edges" 1" and/or "4", at an altitude of 2,000 feet, or less. 2. Map-Board sections cannot be moved. Attacking planes can carry bombs and/or be "clean". Defending planes must start engines and take off. 3. The attacker has four planes, the defender two. Suggested sides are: 4P-40C, P-39D, or F4F Wildcat vs. 2 A6M2 Zero or Ki-43 Oscar; P-38G, P-38L, F4U Corsair, or F6F Hellcat vs. A6M5 Zero, N1Kl-J George, Ki-44 Tojo, Ki-61 Tony, or Ki-84 Frank. 4. Attacker gets 10 Victory Points for each airfield bombed (at least one direct hit on any counter making up the airfield) plus 30 bonus Victory Points if all three airfields are bombed successfully. The attacker must have twenty-five or more Victory Points than the defender in order to win. The defender wins if he has more Victory Points than the attacker. Game lasts until all attackers are shot down, or have exited the Map-Board, or twenty Turns are completed. Draw results if nobody meets their victory conditions.

C. 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 planes in use. 1. The Japanese ship or ships are placed in Map-Board sections V and/or VI. The defending Japanese fighters (if any) can be placed anywhere in these same two sections. The American planes enter the Map-Board from edge "1", traveling in direction "4", and at an altitude of 5,000 feet or less, as individually decided for each plane. 2. Map-Board sections can be rotated as needed. 3. Suggested sides are: 2 B-25C or A-20G vs. 1 Japanese DD; or 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. The game lasts twenty Turns. The side with the most Victory Points at that time is the winner.

D. CARRIER STRI KE: 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 planes in use. 1. The ships are placed in Map-Board sections V and/or VI. The defending fighters (if any) can be placed anywhere in these same two sections. The attacking planes (including escorts, if any) enter the Map-Board from edge "1", traveling in direction "4", and at any individually decided altitudes. 2. Map-Board sections can be rotated as needed. 3. The naval forces should

consist of one major surface vessel (BB, CV, or CA) and two smaller vessels (DD, DE, etc.) of the opposite nationality of the attacking planes. The attacking planes 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. The game lasts twenty Turns. The side with the most Victory Points at that time is the winner.

E. 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. Map-Board sections I, II, III, V, and VI are considered to be land, and Map-Board section IV is considered to represent water. The following surface terrain counters should be placed anywhere on the" land" hexes, in an interesting manner: 25X1 00', 20X200', and 15X300'. After determining sides, the defender should place the following on the Map-Board, as desired: two M-l 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 made of four ground target counters, and located at least fifteen 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 planes will enter the Map-Board - attacking planes 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 planes. If a "1-3" is rolled, the plane may be placed anywhere on the Map-Board, and is "flying" at the start of the game. Any planes 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 planes are now placed, and the fi rst T urn starts.

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

3. 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-4OC, P-39D, F2A Buffalo, or F4F Wildcat; G4M Betty escorted by N1KlJ George, Ki-44 Tojo, or Ki-84 Frank vs. P-38l, P-40N, or F4U Corsair; SBD Dauntless, TBD Devastator, B-25C, or B-26B escorted by P-39D, P-4OC, 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 P-40N vs. Ki-44 Tojo, Ki-61 Tony, Ki-84 Frank, A6M5 Zero, or N 1 Kl-J George.

4. The game continues until all attackers have exited the Map-Board. Normal Victory Points apply for planes 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.

F. 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 planes, or as a two-player game, adding more Kamikazes and defending fighter planes.

1. The American DD and defending fighters (if any) are placed in Map-Board sections V and/or VI. The Kamikazes enter the Map-Board 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 planes will enter on after the American units have been placed. The Japanese player must roll the die once for each plane that has not yet entered once each Turn. When a "6" is rolled, the plane is placed in its hex and may begin movement.

2. The Map-Board sections can be rotated as needed.

3. For the solitaire version, use 3 Kamikazes vs. 1 DD. For the two-player version, use 6 Kamikazes vs. 1 DD and 2 American fighters. Any combination of plane types can be tried.

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

G. ASW: Aircraft were used against enemy submarines extensively by 1iOth sides, the Americans being far more advanced in this field than the Japanese. Some planes 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 plane 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. Place your plane 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 directional hex in the Map-Board 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. Map-Board sections may be rotated as needed . You may wish to use the Visibility Options and not allow the submarine to start submerging until the plane is "spotted". The submarine will move according to the Solitaire Movement Table, and will submerge as rapidly as possible. 3. Suggested sides are one submarine and one plane. Good planes 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. 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.

VI. DOING YOUR OWN SCENARIOS: The scenarios included with this game barely scratch the surface as far as covering all possible games that could be set up. Ideas for scenarios can be gleaned from various aviation publications, books, movies, TV shows, etc., or by just using your imagination. These scenarios give an idea of what can be done with the rules, and should give imaginative players plenty of ideas for devising their own scenarios.

The scenarios given are obviously not perfectly balanced due to the many different ways each can be set up. Facing a F4U Corsair with a Ki-43 Oscar is quite different from facing that same F4U Corsair with a Ki-84 Frank - the last two planes are much better matched, and will give a more evenly-balanced game. However, F4U Corsairs did engage Ki-43 Oscars, so this type of encounter cannot be ignored either. The important thing to remember when designing a scenario is to give both sides a chance - not necessarily an even chance - but some chance to win. Do not hesitate to try some new situation because it appears to be unbalanced. The most important reason to try a new situation should be because it looks interesting.

There are other points to keep in mind when doing your own scenarios, or even while playing the given ones; points that cannot be completely covered in any set of rules, even a set twice the length of these. These are points of doctrine and tactics, and contrast what could have been done with what actually was done. For instance, the skip bombing tactic was one that was almost exclusively practiced by the American A-20 and B-25 crews. Other planes and nationalities could have used the tactic, and sometimes did, but rarely. Thus, players should keep in mind that while there is no specific rule against an H8K Emily performing a skip bombing attack, and it was possible, in practice it was not done. The rules cover almost any possible tactic, but allowing all of them to be used in every scenario is not necessarily the most realistic manner to play each scenario.

Also not specifically covered in the rules is the influence of range on a plane's bomb load. Only the maximum load for each plane is given. Actually, the longer the range covered by a mission, the less of a bomb load could be carried (every 60-70 gallons of gasoline needed means 500 pounds less bombs). If players wish to simulate a mission flown a considerable distance, each plane's bomb load should be reduced to reflect that fact. Another factor of range is the tactics to be used when the target is reached. Navy bombers and medium bombers on low level missions would carry a reserve of fuel to enable them to go full tilt over the target, burning gasoline rapidly to exploit the situation to the fullest. On the other hand, heavy bombers, such as the B-29, and medium bombers at altitude for level bombing would carry little reserve fuel since hectic evasive maneuvers are not part of the mission plan. Such planes would fly the entire mission at maneuver speeds, counting on their tight formation and altitude for protection. It is not impossible for a plane on such a mission to use high speeds and hectic maneuvers to protect itself, but it would be unusual. Also, planes on such a mission could either fly further or carry a larger bomb load than planes on a low level mission.

Another issue that may surface during a game regards suicide attacks by planes. It is very tempting in a scenario where a ship must be sunk to win the game to try to crash into that ship after all bombs have missed. Is this realistic: Well, yes and no. Japanese and American pilots did, on occasion, make suicide dives into enemy ships. Except for the specially designated Kamikazes late in the war such suicide dives were extremely rare, and certainly were not part of either nation's training programs. Players must decide if such actions are to be allowed on their own.

As examples of historical situations turned into scenarios, two are included here that were drawn up while this game was undergoing play testing prior 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.

A. 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 plane 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. Place all Japanese planes in Map-Board section I, facing in direction 4, at maneuver speed, and at 500 feet altitude or less. Place two of the American planes anywhere in Map-Board section VI, and the other two in a hex in section VI that lies along edge "4". All American planes must be at 1 00 feet altitude. 2. Map-Board sections cannot be moved. No plane can exit the Map-Board 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. Sides: The Japanese have 2 G4M Betty and 6 A6M2 Zeros. The Americans have 4 P-38G. 4. Game 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.

B. 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. Place all American planes near the center of the Map-Board, all facing in the same direction, at maneuver speed, and at 2,000 feet altitude. Once these are placed, place the Japanese plane at least ten hexes behind the closest American plane, at any desired facing, speed, and at a 3,000 - 4,000 foot altitude. 2. Map-Board sections can be rotated as needed. All American planes have drop tanks attached. The Japanese plane 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. Sides: 1 A6M5 Model 52b Zero vs. 4 P-38L. 4. Game lasts twenty Turns. The Americans win if the Japanese fighter can be destroyed. The Japanese wins if he can destroy at least one American fighter, and avoid being shot down.

HINTS ON PLAY
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DAUNTLESS effectively simulates air warfare in the Second World War to the extent that the planes closely duplicate many of the important capabilities of their real-life counterparts. The tactics which were successful in actual air battles are those which are successful in the game. To play DAUNTLESS well, a player must develop mental attitudes and tactics similar to those of the actual combat pilots of the times. For air-to-air combat in DAUNTLESS, an adjunct to success as important as good tactics is having the right attitude or frame of mind. Although there is a place for defensive-minded admirals and land generals, history records no instances of successful defensively oriented fighter pilots. Even fighters engaged in defensive operations must employ aggressive tactics to be effective. The primary objective of a fighter pilot is to destroy enemy aircraft without being destroyed in return, if possible. Bomber pilots must be equally aggressive, though in a different way. Even in bomber operations where tight defensive formations are used to repel enemy interceptors, the mission is an offensive one, and the targets must be bombed if the mission is to be successful. You must be aggressive. You must enter every game with the determination of shooting at and/or bombing the other guy - thoughts that he will be shooting back should get only secondary consideration. In the long run, if you can shoot more often and more effectively than the other fellow, you will inflict greater losses than you will suffer.

An aggressive attitude must be coupled with effective tactics in order to achieve maximum results. Of course, everyone will develop his own "style", and a number of favorite "tricks", but there are several important points that all players should understand and try to put into practice.

Point number one is that players must learn to coordinate the movements of their various planes to achieve their maximum combined effect. Heavy American bombers should operate in tight mutually supporting formations for the maximum impact of their combined firepower. Medium and light bombers, lacking this massive defensive firepower, but having superior maneuverability, should operate in smaller, looser formations in which they can employ evasive movements. A two-plane element of fighters should not be used so much as two separate planes, but as one flying team. Their maneuvers should be coordinated so as to trap enemy planes in a deadly crossfire, and to cover each other's tai ls. When engaging enemy fighters, employ a loose, flexible formation, usually with

the planes two to four hexes apart, and possibly staggered somewhat. Keep at least a hundred-foot difference in altitude to avoid possible collisions. Using this formation, it is usually possible to cover any maneuvers by an enemy fighter to ensure that at least one plane will have a shot, and/or will be in a position to pursue. When attacking powerful formations of bombers, employ a tight formation to mass the firepower where desired. When attacking ground targets, have one plane (or formation) go after the target while another plane (or formation) supports and covers the attack by strafing the local flak positions.

Point number two is to derive the maximum potential from the particular plane or planes being used. What are the characteristics of the plane as compared to the enemy plane. Is it more maneuverable, faster, able to climb and/or dive better, have superior firepower, or possess the ability to absorb more damage? How can these advantages be maximized, and the disadvantages minimized? What tactics will give the best chances for success? Experience provides the answers to many of these questions, as does practice and familiarity with the rules. Although a player may have a favorite type of plane or planes he likes to use, other types should be used from time-to-time just for familiarization. This can be a great help later when facing that type.

A third important point is the advantage of altitude. A plane with an altitude advantage of several thousand feet can dive rapidly to the attack whenever convenient, while it is impossible to make an effective attack from a position at a much lower altitude. Interceptors at lower altitudes than the bombers they seek may find it very difficult to catch even a slow-moving formation if the altitude differential is great. A height advantage gives the initiative to the higher plane, allowing the luxury of deciding when and where to attack. Even a slight altitude advantage can be used to maintain speed while performing a series of speed-consuming maneuvers. Climb whenever possible, even if only a hundred feet or so. This extra altitude may prove very useful later. Remember that altitude is much easier to lose than it is to gain.

Point four is to always keep the nose of a fighter pointed at the enemy. Even a head-on pass is preferable to turning away from an approaching enemy fighter, and finding him on your tail! In other words, always turn into an attack, not away from it. When attacking bombers, try to attack from the position where the firepower is least effective, and where the fewest return shots can be made. Tough, heavy fighters with lots of firepower are best for bomber interceptions, but less suitable types must perform the job if they are all that is available. 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 planes to make massed attacks that permit one close-range attack, followed by a quick escape. Bombers often have their best firepower located elsewhere than in the nose. These planes should react to an attack by turning to present their most powerful firepower to an oncoming enemy. Bomber units should be formed so that the various planes in a formation can cover each other's weak spots.

The fifth point concerns speed. Bombers flying in tight formations should not move at their maximum rate as this will cause damaged planes to drop out of formation, and be destroyed. For fighters, it is important to remember that speed is easy to lose, if necessary, but hard to regain in a hurry without a great loss in altitude. Although high speed hinders maneuverability, the faster a plane is moving, the harder it is for an opponent to predict where it will be at the conclusion of movement. Properly exploited, a speed advantage can be used in a similar manner to an altitude advantage - to gain the initiative. The sixth point is to try and think and plan ahead. Not only try to visualize the possible positions of the planes at the conclusion of the Turn, but also the possibilities for the Turn after that. Can a plane be positioned or banked more effectively so that not only can it fire on this Turn, but also be in a good position to pursue on the following Turn? Keep in mind the relative positions, speeds, attitudes, and altitudes of the planes, their capabilities, and also the normal tactics of your opponent. Concentrating on this aspect of the game can dramatically increase the number of opportunities to fire.

The points covered so far are rather general in nature. Some more specific tactical hints can also be useful in various situations. When making a torpedo attack, line up the planes 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 ovoid 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 plane at an altitude of 2-3,000 feet. This will enable the plane to dive during the attack, and make the approach through the enemy's flak much faster. Dive-bombers should "spiral" down from an altitude of over 8,000 feet (so that they begin the attack out of range of light flak), turning gradually to keep the target under the plane. When at low level over land, plan an approach and an exit route that tokes maximum advantage of all available terrain. When placing flak

around a land target, place light flak near all heavy flak positions to defend the big guns from enemy planes that have gotten too close for the heavy flak to hit.

The final point is that all of the above are only ideas and suggestions, not hard and fast rules. There are times when a player will wish to try something different, and be totally unorthodox. Surprise can be a deadly weapon in your arsenal of tricks, too! The only hard and fast rule in aerial combat is to never become too predictable - a pilot who has become predictable will soon become a casualty.

HISTORICAL BACKGROUND
I. THE WAR IN THE PACIFIC:

The Far Eastern or Pacific Theater of Operations in World War II covered the most extensive battlefield in the history of warfare. It stretched over an area comprising more than one-half of the globe; from California in the east to India in the west, and from the Aleutians in the north to New Zealand in the south. Campaigns were fought over vast stretches of land, and even larger expanses of water. Fierce battles raged; from vicious sea battles in Arctic and tropical waters to bloody land engagements fought in parched deserts, drenched tropical rain forests, dense jungles, inhospitable mountain ranges, and sun baked coral atolls. The common denominator of all these actions was that, for the first time in history, airpower proved to be the decisive and deciding factor. land and sea forces could operate successfully only in areas where friendly airpower prevailed. From the surprise Japanese air attack on Pearl Harbor, which started the shooting, to the destruction of Hiroshima and Nagasaki, which ended it, the airplane played the dominant role in determining victory and defeat. By war's end, Japan found herself at war with most of the rest of the world, but from first to last the primary and decisive conflict was between Imperial 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 military 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 judgments.

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 an 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 stage 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 land based 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 undoubtably 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 fireb9mb "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 Emperor I will not die peacefully at home"), but the idea of basing training and tactics 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 sea-bee 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.

II. AIR ORGANIZATION AND AIRCRAFT: The echelons of command in theJapanese air organizations foTlowed fairly conventional patterns, as shown in this diagram:

AIR ORGANIZATION - JAPANESE ARMY
.. KOKU-GUN L--J CAir Army) I ~ HIKO-SHIDAN CAir Division) (2-3) I ~ HIKO-DAN CA ir Brigade) (2-3) I c:::1-L SENTAI (Group) ---r::c:::J(2-3) / \ ~ .. SENTAI HOMBU L--J (H.Q. Flight) (4 planes) I SHOTAI ~ (FI ightJ (3 planes each)
CHUTAI (Squadron) (2-4)
NOTES: 5rnWKI SENT AI: FIGHTER GROUP KEIBAKU SENTAI: LT. BOMBER GROUP JUBAKU SENTAI: HVY. BOMBER GROUP DOKURITSU DAI SHIJUGO CHAT AI: INDEPENDENT SQUADRON KONSEI HIKO-DAN: MIXED AIR BRIGADE T AIT AT ARI: JAPANESE ARMY COUNTERPART TO KAMIKAZE. SENTOKI SOHJU SHI: FIGHTER ACE
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 shi ps 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, 51 DB, 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 PLANES
1. "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 paints, 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" .
2. "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 maneuverability, 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.
3. "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.
4. "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.
5. "NICK": An unusual design for the Japanese, the Nick was originally intended to fill the role projected for the Luftwaffe's Me-ll0. 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.
6. "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 it's 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 KAld version carrying two 30mm cannons, and two heavy machine guns which entered action in the spring of 1944.
7. "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.

8. "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.

9. "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.

10. "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.

11. "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. 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:

AIR ORGANIZATION - U.S.A.A.F.

i

r::::J AIR FORCE ~~ BOMBER...., ..., FIGHTER COMMAND L-...J L-...J COMMAND I I WING ~arYing numbers) ~WING I I GROUPr---I, ~ GROUP (3-4) ~ ~(3-4) I I SQUADRON ~ ~SQUADRON ~ ~(USUaIIY3) I I FLIGHT rr,., r=J1, FLIGHT

NOTES: EACH AIR FORCE WOULD VARY IN STRENGTH. A LARGER AIR FORCE MIGHT HAVE SEVERAL AIR DIVISIONS, EACH COMPOSED OFANUMBEROF WINGS, ADDED TO THE CHAIN SHOWN. FEW AIR FORCES HAD FIGHTER WINGSUSUALLY THE GROUPS WOULD REPORT TO THE COMMAND LEVEL DIRECTLY. NIGHT FIGHTERS OPERATED IN INDEPENDENT SQUADRONS. SOME MIXED (COMMANDO) GROUPS ALSO WERE ORGANIZED.

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:

December7,1941: 18FTR, 36 DB, 18TB 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: 72FTR, 12DB, 10TB

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 sti II 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 PLANES

1. 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. It's popularity was due to it's toughness, and the "spare" engine, if one should quit. It's success lay in it's superior speed and altitude capabilities, and tactics that explaited 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 os F-5 photo planes, and the aircroft 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 2Omm cannon replacing the 37 mm gun in the propeller hub. The D-I also featured this change in armament, but also had two additional heavy machine guns and a better engine

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3. P-40: The standard USAAF. day fighter at the start of World WarII, 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.

4. 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.

5. "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-l 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.

6. "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.

7. "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 far 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 fighter, and the RNZAF 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) .

8. "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.

9. A-2O: The most produced and widely operated light bomber of World War II, the A-2O 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-2O 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.

10. B-25: A very popular and adaptable type, the B-25 saw action in AW-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-2O, the B-25 saw world-wide service with many nations. Extremely adaptable to carrying varying loads of armament and ordanance, each model had numerous variants and field modifications. The "C-I 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:

11. 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 .

12. B-29: Fast, heavil y-armed, and huge, the B-29 was more feared by theTc:iponese 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 I EVACUATE AT ONCEI" These were at first ignored, but after several bombing 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-

13. "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 found on american carriers from the beginning of the war until mid-1944. On December 10, 1941, a Dauntless sank submarine 1-70 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.

14. "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 to 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.

15. "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.

16. "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.

III. 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.

As many owner's of Battleline's AIR FORCE realize, DAUNTLESS is a "sister" game to AIR FORCE (which covers the ETO). The two games share the same mechanics, the Basic Games being virtually identical, and the Optional Rules of either game can be used with the other. Many of the planes included in one game were used in the other theater, so a large degree of crossaver is possible for players owning both sets.

UNITED STATES SHIP CHARACTERISTICS

Class ID No.	LIGHT FLAK 1941-1943	LIGHT FLAK 1943-1945	HEAVY FLAK 1941-1943	HEAVY FLAK 1943-1945	SPEED /TURN	TURN/ TURN	NO. HITS	SIL NO.	PT. NO.	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, Witchita
CA-3	–	2x20	14	14	1	1/2	18	+6	450	Baltimore
CL-1	2	7	7	5	1	1/2	13	+5	250	Omaha
CL-2	3	22	9	9	1	1/2	10	+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 No.	LIGHT FLAK 1941-1943	LIGHT FLAK 1943-1945	HEAVY FLAK 1941-1943	HEAVY FLAK 1943-1945	SPEED /TURN	TURN/ TURN	NO. HITS	SIL NO.	PT. NO.	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	1/2	18	+7	700	Hiryu, Soryu, Unryu
CV-3	18	2x20	19	19	1	1/2	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, Kamakaze
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

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