NEW
UPDATED
EDITION

15 NEW PLANES • NEW SCENARIOS
ADDITIONAL RULES & MODIFICATIONS

the time is: 0755 hours, 27 June 1979

AIR WAR

Modern Tactical Air Combat



GAME DESIGN
David C. Isby •
GRAPHIC DESIGN
Redmond A. Simonsen •
GAME DEVELOPMENT
Greg Costikyan

SPI

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AIRWAR

Modern Tactical Air Combat

RULES OF PLAY

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MODERN AIR COMBAT

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DEVELOPER'S NOTES

DESIGNER'S NOTES

Modern Air Combat

In a game as complex as *Air War,* it is easy for the players to become bogged down in play mechanics and forget what they are trying to accomplish. This booklet deals with modern air combat, and it divides its subject into three main sections: Principles of Air Combat; Basic Fighter Maneuvers; and Advanced Tactics. After perusing *Modern Air Combat,* the readers will be more acquainted with the principles guiding jet combat and, hopefully, will be able to translate these principles relatively easily into their play.

A word of caution about the game. Aircraft maneuver is a three-dimensional world with hundreds of variables affecting them in every second. The game-map, however, is two-dimensional; there are many limitations in every board game, and the mechanics of movement in a game such as this cannot possibly be a perfect copy of real life. In *Air War,* we have attempted to come as close as possible to real-life representation of the movement of jet aircraft, but adjustments have been made in places. All that can be said in our defense is that we attempted to game the game as realistically as possible with as much expertise as we were able to achieve with outside assistance. The result is quite close to representational reality, and we hope you will forgive the unavoidable imperfections.

PRINCIPLES OF AIR COMBAT

Detection

He who sees, wins. This is a principle that would seem to be obvious. In actual air combat, however, it is often impossible or difficult to spot enemy aircraft; many planes are extremely small. Experience in Vietnam showed us that most enemy aircraft were not seen until they were about to open fire.

In danger areas, keep your eyes open, and be sure to check your six-o'clock position early and often — that is where most attacks are likely to originate, and it is always a vulnerable spot. When in an area where there is a good chance of enountering enemy aircraft, it is wise to change the heading of your aircraft as often as possible; this changes the position of your six-o-clock, moving your blind spot, and allowing you to see areas previously not visible. Radar lookout is a must if available; it allows you an earlier warning than visual lookout, and it may permit the use of radar guided missiles.

In combat, never take your eyes off the enemy once you have spotted him. Many fights have been lost when one pilot lost sight of his opponent's plane.

Mutual Support is Everything

Mutual support provides more than someone to talk to on the radio; it provides overlapping visual and radar coverage, and makes you less vulnerable to surprise attack. In combat, mutually supporting planes can make coordinated attacks, and they can coordinate defense. Without mutual support, you're merely a target — or, if you're lucky, an escapee.

The need for mutual support has been recognized by all the world's air arms. Aircraft is never committed to battle except in elements or flights. The only times aircraft operate like the "lone wolves" of 1914-18 are during certain types of reconnaissance missions where air combat is to be avoided.

An important element in the use of mutual support is formation flight. Several formations are used:

Fluid Four: A Fluid Four formation is four aircraft patrolling approximately in line abreast. The formation is divided into two elements of two aircraft each, each element about one or one-and-a-half miles from the other, separated by altitude as well as distance. There are two leaders in the formation, one for each element; the other two pilots are wingmen.

In patrol, the wingmen remain slightly behind the leaders, loosely following with approximately 1000 feet of separation laterally. Once combat begins, the wingmen must attempt to get as close as possible to their respective leads, and attempt to stay on the inside of turns made by the leads. In a hard-turning environment, this latter is not always possible, but must be attempted.

The Fluid Four formation is somewhat wasteful, and has been discarded by the US Air Force. The concept was in use throughout both the Korean and Vietnam wars.

The disadvantages of the formation are obvious. Only two aircraft are being used to their full maneuvering potential, and wingmen are often lost because the cones of vulnerability of a wingmen and his leader overlap, allowing the enemy a better shot. The supposed advantage of the formation is that less-experienced crews gain knowledge by participating in combat with more experienced leading crews; but this is a debatable advantage, as even relatively inexperienced crews rarely need this sort of coddling, and, further, a pilot is unable to learn a great deal if he has to concentrate on flying close formation all of the time. There is some evidence to suggest that Fluid Four did not work even during the Korean War.

Loose Deuce: The Loose Deuce formation was developed by the U.S. Navy in 1968-1970, as a result of its experiences in Vietnam. In almost every way, it resembles the Fluid Four formation, the major difference being that two aircraft are involved instead of four, each operating as an independent element. Mutual support is accomplished in the same manner as with the older formation type, but with only half the aircraft. This may seem like a disadvantage at first, but, upon greater reflection, the advantages of Loose Deuce become apparent. The new formation is more "cost effective", since half the aircraft are used to what is basically the same effect: the same (or greater) offensive capability is maintained.

With only one aircraft per element, there is no need for the element lead to take his turns at less than maximum effort to allow the wingman to hang on. There is also a lessened "lethal cone" behind each element.

Fluid Two: The U.S. Air Force belatedly adopted a version of the Navy tactic near the end of 1972 fighting over Vietnam, although most of the war was fought under the older system. The Air Force's revised tactic was called Fluid Two, and it differed from the Navy tactic mainly in its approach to weapons systems: radar-homing missiles to be used at long range, infra-red missiles at medium range, and guns at close range. As the major Navy aircraft (including the Navy version of the F-4) did not mount a gun internally (although the F-4C and D models were able to carry a gun in a pod), this system was not necessary in Navy tactics.

Essentially, aircraft now usually fly in a two-ship formation, spread out several thousand feet with altitude separation. As enemy aircraft can easily see one element without seeing the other, there is a reduced visibility advantage as well.

Linked Pairs: Linked Pairs is a variation of the Fluid Two doctrine. As far as we know, it is not yet doctrine, although the concept has been much discussed. The formation consists of several flights of two aircraft (say four flights total), each flight in a Fluid Two formation, the flights arranged one behind the next with a separation of several miles. This has the advantage that each link is able to fight on its own, using up-to-date two-ship tactics, but can rely on support from several other formations in the immediate vicinity.

The prime idea in air combat, no matter what the formation, is mutual support in attack and defense. A coordinated attack is doubly difficult to counter, no matter what kind of aircraft are involved; and an attack made on a well-coordinated defense may turn into a disaster. Whichever your mission, it is essential that your flight be coordinated *before* you enter an area likely to contain the enemy.

Air Battles Are Lost ... Not Won

In almost any engagement, the victor wins not so much as a result of his consummate skill, but because the vanquished made a mistake that gave victory to their opponents.

Some mistakes are unavoidable. If, however, you make no avoidable mistakes, your chances of emerging victorious will be immeasurably improved.

In each battle, you will probably make several mistakes and see several made by your opponent. If you keep the pressure on the enemy, you will force him to make more mistakes, and one of them may be the mistake that gives you victory.

You'll be better in combat if you remember that you don't win ... your opponent just loses. Prevents ego trips, too.

Maintain Energy

Most Players will probably misunderstand what energy is, and, before playing the game a few times, what it can do. Energy is not a fudge invented to make the game work; energy maneuverability theory is real, and an important consideration in modern air combat. In *Air War,* your energy is represented by the amount of energy points accumulated and, most important, by your Movement Allowance. If you lose too much of your Movement Allowance, either by throttling down to take advantage of a better turn mode, by going through maneuvers, or going into a climb at the wrong time, you may end up running out of airspeed, altitude, and ideas simultaneously, which is normally rather fatal in an air combat situation.

Keeping his energy level up is a prime concern of any fighter pilot. This can be done by acceleration by power — increasing the throttle setting and keeping it high. Second, it could be done by avoiding tight turns and energy losing maneuvers, keeping the aircraft's wings level (unloading). Thirdly, reduce drag — jettison any external stores. Fourth, a pilot can trade off altitude for energy points, especially in a Type I dive with the aircraft's wings level. An F-4 will gain all sorts of energy that way.

Energy is your most valuable asset; don't deplete it too quickly. Energy means maneuvering potential, and if you lose it — piss it away, as they say in the trade — you become an easy target. Don't make high-G turns if easier turns will do. Be careful of altitude loss when flying at low altitudes — all other factors become irrelevant if you lose two altitude levels when flying at level one. Use energy to control altitude loss. Remember also that altitude can be exchanged for energy — the fastest way to get energy is to drop your nose and accelerate. Conversely, if you need altitude, it will cost you energy.

Different aircraft piss away energy at different rates. You may be fortunate enough to have a plane that keeps energy better than your op-

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AIRWAR

Modern Tactical Air Combat

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[1.0] INTRODUCTION

Air War is a simulation of modern air combat on an aircraft-to-aircraft level. The aircraft types available in the game are representative of those used by the major powers between the Korean War and the 1980's; although much effort has been made towards completeness, there are still many aircraft in existence that are not provided with the game.

Air War simulates as closely as possible all the facets of air combat that can be represented on the scale and with the system used. The basic rules of the game simply deal with movement and maneuvering by aircraft, as well as cannon combat and the use of air-to-air missiles. The Optional rules expand the game to include pilot capacity, natural phenomena, air and radar search, infra-red and radar counter-measures, bombing and strafing, air-to-surface missiles, surface-to-air missiles, and AA guns.

Air War is the most complete, most complex, and most realistic air game to be produced to date.

[2.0] GENERAL COURSE OF PLAY

CASES:

[2.1] COMPLEXITY

In games in general, there are two types of complexity: conceptual complexity, and mechanical complexity. Chess, for instance, is mechanically simple — the rules are easily explainable, the moves limited and obvious — but conceptually complex — strategies are complex and intricate, moves long-deliberated. Most wargames are the reverse; that is, mechanically complex — they have long rules, intricate procedures, and lengthy explanations — but conceptually simple — the movement of units occurs in a relatively simple manner, combat is resolved according to a rather simple procedure.

Air War, however, is both mechanically and conceptually complex. The rules are extensive, long, intricate and contain new concepts not often utilized in wargames; movement of aircraft occurs only after tremendous thought, manipulation of markers on the Aircraft Control Charts, and execution of procedures.

Therefore, *Air War* is a very difficult game, both to learn and to play. It is suggested that people purchasing the game would be better off if they have some previous knowledge of wargames or the concepts that go into them. Even then, Players may have some difficulty in learning the game. They should be warned that the first several times *Air War* is played, constant reference to the rules may be necessary, and, further, that expertise with the game should come only after it has been played a good many times.

However, it is the opinion of those who worked with the game that it is partly *Air War's* complexity that makes it an interesting game, and that its complexity will ensure that, unlike some other games, *Air War* will not become boring after a few playings.

[2.2] PLAYING THE GAME

Air War is played in successive Phases, in which the Players each execute various procedures alternately. During the Initiative Determination Phase of each turn, the Players determine who is to go first throughout that turn; the first Player then executes a given Phase before the second Player does, after which they proceed to the next Phase. Note that Initiative determination depends on aircraft position — so if one Player's aircraft have the "jump" on another's, he is more likely to have the initiative.

During the Movement Phases, the Players move their aircraft. Note that there are three separate Movement Phases. In the first, all aircraft that are at a disadvantage are moved; in the second, those that are neither advantaged nor disadvantaged are moved; and in the last, those that have an advantage are moved.

Movement of aircraft occurs according to a complex series of procedures. There are different rules for diving, climbing, turning, executing maneuvers, and so on. The movement rules are in fact so complex that four sections are devoted to various facets of movement.

Two of the basic concepts involved in movement are momentum and facing. Aircraft are forced to expend all of their Movement Points in every turn, unlike some other SPI games. That is to say, aircraft may alter their speed depending on certain conditions, but an aircraft must move as quickly as its current speed would allow it to — no more, no less.

In addition, *Air War* uses a unique twelve-point facing system; basically, this means that an aircraft may face either towards a hex-side, or towards the juncture between two hex-sides, known as a "hex juncture." This allows aircraft more flexibility in movement than in many other air games.

Combat in *Air War* occurs either through the use of cannons (air-to-air guns) or missiles — either Heat-Seeking or Radar-Homing. The optional rules add anti-aircraft guns, as well as SAM's and air-to-surface missiles.

Missiles in *Air War* are differentiated as to type; that is to say, an early Sidewinder missile will operate differently from an AA-8 Aphid missile, even though both are Heat-Seeking.

[2.3] SCENARIOS

Scenarios are dealt with in two different ways in *Air War*. Firstly, there are "Historical" scenarios, which present either an actual or a conjectural situation, complete with set-up hexes, weapons available, and special rules to cover the situation. These are analogous to those scenarios provided with other SPI tactical games, such as *Patrol!*. Included among these are two rather odd scenarios introduced to satiate the developer's sense of whimsy — one in which the Air National Guard is pitted against a dragon, and another in which a flight of F-15's attempts to destroy an intruding flying saucer.

In addition to these scenarios, the Players are provided with a list and description of "scenario types;" that is, general situations that often arise in modern air combat. At the end of the rules are a number of "Availability Charts" which detail aircraft, missiles, ECM devices, and so on which are or may be available to the various nations of the world at varying times.

Using the Availability Charts and the list of scenario types, the Players can easily construct their own scenarios, either pitting aircraft types of their fancy against each other, or specific nations' air forces against each other.

[2.4] GAME SCALE

Each counter in *Air War* represents an individual aircraft or missile. Each hex represents a space 500 feet in diameter; each level of altitude represents **250 feet. Each Game-Turn represents 2.5 seconds of real time.**

At sea level, a Movement Allowance of 5.61 represents a speed of Mach 1 (766 mph).

At 15,000 feet (60 levels of altitude), Mach 1 (722 mph) is equivalent to a Movement Allowance of 5.29

At 25,000 feet (100 altitude levels), Mach 1 (692 mph) is equivalent to a Movement Allowance of 5.07.

At 35,000 feet (140 levels), Mach 1 (666 mph) is equivalent to a Movement Allowance of 4.88.

At 45,000 feet (180 levels), Mach 1 (659 mph) is equivalent to a Movement Allowance of 4.83.

[2.5] GAME PARTS

Included in a game of *Air War* should be the following parts:

8 individual Map-Sections
1 Counter sheet containing 400 counters
1 Counter sheet containing 200 counters
4 Aircraft and Missile Control Displays
1 Game Chart booklet
1 Rules booklet
2 Plastic Dice
1 Game Box/Coversheet assembly

Questions concerning the **rules** to Air War that are phrased in such a way as to be answerable in a one-word reply will be answered if sent to the address below together with a stamped, self-addressed envelope. Mark inquiries "Air War Question" and address to:

Simulations Publications, Inc.
44 East 23rd Street,
New York, N.Y. 10010

[3.0] DEFINITION OF TERMS

Much of the terminology used in *Air War* is not standard usage, as many concepts in *Air War* are not common to most games. It is suggested that the Players familiarize themselves with these terms:

Advantaged: Basically, an aircraft is said to be "advantaged" when it is facing towards another **aircraft, and that aircraft is not facing towards it; an aircraft is considered "advantaged" when an enemy aircraft is in its "forward arc" (see Section 6.0).**

Aircraft and Missile Control Displays: The Aircraft and Missile Control Displays are the large sheets provided with *Air War;* there are four of each. Each Control Display is used to keep track of the various markers that each aircraft uses to represent various facets of its movement (and combat). Note that each Aircraft and Missile Control Display contains enough tracks to provide for the markers for four separate aircraft (or missiles).

Aircraft and Missile Performance Charts: The Aircraft and Missile Performance Charts are bound in a separate booklet. Each Performance Chart bears the tables and charts that contain all the data needed for use of one aircraft type (or missile type); therefore, each aircraft (or missile has its own Performance Chart, separate and different from all other Performance Charts.

Altitude Level: Altitude is not kept track of directly on the game-map; rather, each aircraft has a set of Altitude markers that are used to keep track of its altitude. Altitude is in terms of altitude levels; one altitude level represents 250 feet, or one-half of a hex.

Altitude Grouping: Various aircraft characteristics change as the altitude at which the aircraft is flying (see the Aircraft Performance Charts). For simplicity, altitude is broken up into four broad groupings: Low (symbol "LO"), from level 1 to 60; Medium-Low ("ML"), from 61 to 100; Medium-High ("MH"), from 101 to 140; and High ("HI"), above 140 altitude levels.

Arcs: The concept of arcs is one that is used often in the *Air War* rules, both for determining Initiative and for combat. Basically, the hexes around a given aircraft are divided into six different arcs, each arc taking up approximately 60° around the aircraft. For a more complete explanation, see Section 6.0.

Disadvantaged: Basically, an aircraft is considered "disadvantaged" if an enemy aircraft has the advantage over it.

Flight Attitude: Flight Attitude is a term which encompasses two facets of an aircraft's positioning; the position of its wings (i.e., how far the aircraft has rolled, how its wings are banked); and the rate at which it is diving or climbing. An aircraft's flight attitude is kept track of on the Flight Attitude Indicator of the Aircraft Control Chart.

Hex-juncture: A hex juncture is the point formed at the intersection of two hex-sides; note that there are six hex junctures around each hex.

Hex point: Each hex has twelve hex-points; essentially, a hex-point is a direction in which an aircraft may face. Each hex-side and each hex juncture is considered to constitute a hex point.

Loaded Condition: An aircraft is considered to be Loaded when it is carrying so much cargo (or stores or ECM devices) or has been damaged so extensively that its operation is severely affected.

Maneuver: A Maneuver (with a capital "M") is a specific way in which an aircraft may move that contravenes the normal rules of movement. Barrel-rolls and Immelmanns are cases in point.

Movement Allowance and Throttle Setting: An aircraft's Movement Allowance and its Throttle Setting are two independent but inter-related entities. Its Movement Allowance is its current airspeed, the number of Movement Points that it must expend in a single turn (providing that the Movement Allowance can be changed if the aircraft dives, climbs, or executes some kind of Maneuver). Its Throttle Setting is the thrust being applied by the aircraft's engines, and *does not* change if the aircraft dives or climbs; it may only be changed if the aircraft voluntarily accelerates or decelerates. In level flight, if no outside forces are acting upon an aircraft, its Movement Allowance will be equal to its Throttle Setting.

Probability Number: Under many circumstances, the rules direct the Players to generate a "Probability Number" in some way (usually by referring to a table). This number is the chance out of 36 of some event taking place—the event determined by the circumstances. For instance, when resolving Cannon Combat the Players must determine a firing aircraft's Probability Number of hitting its target. The Players then refer to the rules for Probability and the Probability Table to determine whether the event takes place—in this case, whether the firing aircraft hits its target.

Radar Lock-On: An aircraft is said to have a Radar Lock-On to an enemy aircraft when it has successfully "painted" that enemy aircraft with radar. Radar-Homing missiles home in on radar "paints" obtained by friendly aircraft, and thus an aircraft must obtain a Radar Lock-On before it may launch Radar-Homing missiles.

Tracking Cones: An aircraft's Tracking Cone is a cone which extends from its nose across the game-map. There are two types of Tracking Cones—Normal Tracking Cones, and Limited ones. Normal Tracking Cones are 60° across; the Limited ones are approximately 14° across.

[4.0] GAME EQUIPMENT

CASES:

[4.1] THE GAME MAP

The game-map is a blank map used to represent aircraft positions and movement. A hexagonal grid is superimposed to regularize movement. Although it is referred to as a "map," it bears no terrain—there are, after all, no mountains or forests in the air. However, clouds, the sun, and the height of the land are represented in certain scenarios, according to the optional rules for Natural Phenomena.

The game-map is divided into eight "map sections," each approximately 8½" x 11". They fit together to form a single map which is "geomorphic;" that is to say, individual map sections may be moved from one position to another as aircraft move and as the game progresses, so that it is impossible to "fly off the map"—as soon as an aircraft comes to the edge of a map section, another section is moved from its previous position to the map edge, so that the aircraft's position can continue to be represented.

On each map-section is a compass rose, indicating the twelve cardinal directions that are used in *Air War*; this may at first be confusing, but perusal of the rules for Turning should clear the matter up.

[4.2] THE PLAYING PIECES

The Playing pieces (hereafter "counters" and "markers") are colored, die-cut counters. They are divided into two general groups—*counters*, which are pieces representing actual aircraft; and *markers*, which are playing aids used for various functions in the course of the game. The counters are color-coded as to the country of origin of the aircraft represented—thus, American-built aircraft will be one color, Soviet-built aircraft another, and so forth.

There are two general types of markers; those that are used on the Aircraft and Missile Control Display and those that are not. Note that each aircraft counter has an *identification number,* which is a number between one and eight. The Control Display markers are grouped into two differently colored sets of markers, each set containing eight sub-sets of markers, each sub-set assigned a number between one and eight.

A given aircraft is represented on the Aircraft Control Chart by markers assigned the same subset number as the identification number of the aircraft. It may be necessary, however, to use markers number 5-8 for aircrafted numbered 1-4.

[4.21] Summary of Unit Types

AIRCRAFT COUNTERS



Aircraft
Note that there are 30 types of aircraft represented in *Air War*

AIRCRAFT CONTROL COUNTERS

All of these markers are used on the Aircraft & Missile Control Display. The particular track on which each marker is used and the Case which discusses each marker type is indicated next to the marker illustration below.



Damage
For use on Weapons Track
See Case 4.43



Cannon Shots Remaining
For use on Weapons Track
See Case 4.44



Radar-Homing Missiles Remaining
For use on Weapons Track
See Case 4.42



Heat-Seeking Missiles Remaining
For use on Weapons Track
See Case 4.42



Stores Remaining
For use on Weapons Track
See Case 4.45



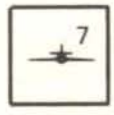
Movement Allowance
For use on Movement, Throttle, and Energy Points Track.
See Case 4.52



Throttle Setting
For use on Movement, Throttle, and Energy Points Track
See Case 4.53



Energy Points
For use on Movement, Throttle, and Energy Points Track
See Case 4.54



Flight Attitude
For use on Flight Attitude Indicator
See Case 4.61



Altitude
For use on Altitude Indicator (Altimeter)
See Case 4.7



Turning Point Accumulated
For use on Turning Indicator
See Case 4.63



Acceleration Progress
For use on Acceleration Progress Track
See Case 4.62

MISSILE CONTROL MARKERS

All of these markers are used on the Aircraft & Missile Control Display. The particular track on which each marker is used and the Case which discusses each marker type is indicated next to the marker illustration below.



Energy Points
For use on Movement, Throttle, and Energy Points Track
See Case 4.55



Altitude
For use on Altitude Indicator (Altimeter)
See Case 4.75



Turning Points Accumulated
For use on Turning Indicator
See Case 4.64



Game-Turns in Flight
For use on Weapons Track
See Case 4.46

MISCELLANEOUS COUNTERS (used on map)



Missile Target
See Case 14.23



Radar Lock-on
See Case 16.28



Chaff
See Cases 24.12, 24.13, 24.22, and 24.29



Chaff Rocket
See Cases 24.27 and 24.29



Heat-Seeking Missile
See Section 15.0



Radar-Homing Missile
See Section 16.0

NEUTRAL MARKERS (used on map)



Dragon
See Case 31.1



UFO
See Case 31.2



Cloud
See Case 22.2



Sun Direction
See Case 22.1



Game-Turn
For use on any unused Movement, Throttle, and Energy Track

TARGET COUNTERS



AA Gun
See Case 25.1



SAM
See Case 25.1



AFV SAM
See Case 25.1



Truck
See Case 25.1



Building
See Case 25.1



Dump
See Case 25.1



AFV
See Case 25.1



Bridge
See Case 25.1

[4.3] THE AIRCRAFT PERFORMANCE CHARTS

Provided with *Air War* is a booklet of Aircraft and Missile Performance Charts. This booklet contains all of these charts provided with the game — one for each aircraft and missile type.

[4.31] On the Aircraft Performance Chart of each aircraft, there are eight tables: Basic Aircraft Information Table; Turn Mode Table; Acceleration Table; Dive Table; Climb Table; Roll Table; Flight Parameters; and Loaded Characteristics.

[4.32] The Basic Aircraft Information Table lists information about the aircraft which is represented on the Performance Chart. The Maximum and Minimum Throttle Settings are listed, as are the aircraft's Cannon Type, the number of missiles and cannon shots the aircraft can carry, the aircraft's damage capacity, ceiling, size, number of crew members, special rules which apply to that particular aircraft, and — in relevant cases — data on other versions of the aircraft.

[4.33] The Dive Table indicates the way in which the aircraft may dive. For a fuller explanation, see the Diving Rules, Case 10.4.

[4.34] The Climb Table indicates the way in which the aircraft climbs. For a fuller explanation, see the Climbing Rules, Case 10.2.

[4.35] The Acceleration Table indicates the number of tenths of a Movement Point by which an aircraft can increase its Throttle Setting in a single Game-Turn. For a fuller explanation, see Case 8.3.

[4.36] The Roll Table indicates the cost in Movement Points for an aircraft to roll (i.e., bank) by a given number of Roll Points. For a fuller explanation, see Case 9.4.

[4.37] The Loaded Characteristics Table indicates the limitations placed on an aircraft when it operates under Loaded Conditions. For a fuller explanation, see Section 17.0.

[4.38] The Flight Parameters Table indicates the effects that occur when the aircraft performs certain Maneuvers, and also the number of Energy Points the aircraft loses under certain conditions. For a fuller explanation, see Section 11.0 and Case 10.6.

[4.39] The Turn Mode Table indicates the way in which the aircraft turns. For a fuller explanation, see Section 9.0.

[4.4] THE WEAPONS TRACK OF THE AIRCRAFT AND MISSILE CONTROL DISPLAY

Each aircraft is provided with fifteen markers, all of which are placed on the Aircraft and Missile Control Display. Each Aircraft and Missile Control Display carries six different Tracks, of which the Weapons Track is one.

Note that each aircraft is assigned an identification number between 1 and 8, and each set of aircraft markers is numbered with some number between 1 and 8. The set of markers numbered with the same number as a given aircraft is used to keep track of that aircraft on the Aircraft and Missile Control Display.

Note also that each Aircraft and Missile Control Display may carry all the markers for up to four aircraft.

Similarly, each missile is provided with seven markers, all of which are also placed on the Aircraft and Missile Control Display of the Aircraft which has launched the particular missile. **Note:** SAM's (Surface-to-Air missiles) may be kept track of on any Aircraft and Missile Control Display that is not currently in use.

[4.41] The Weapons Track bears six aircraft control markers: the Radar-Homing and the Heat-Seeking Missiles Remaining markers; the Cannon Shots Remaining marker; the Stores Remaining marker; and two Damage Record markers (one each for the "tens" digit and the "units" digit).

[4.42] When the Players play an Historical Scenario, the Scenario will determine the number and type of Heat-Seeking and Radar-Homing missiles to be used by each aircraft. Each aircraft has, on its Basic Aircraft Information Table of its Aircraft Performance Chart, a note indicating the maximum number of each missile type that the aircraft can carry. At the beginning of the game, an aircraft's Heat-Seeking and Radar-Homing Missiles Remaining markers are placed on the Weapons Track at the number of that type of missile carried in the Scenario by the aircraft. Each time that the aircraft launches a missile, the owning Player moves the appropriate marker down the track to a lower number, signifying that fewer missiles of that type remain.

[4.43] The Basic Aircraft Information Chart indicates the total number of Damage Points that an aircraft can sustain (see Section 13.0). The Damage markers are positioned on the Weapons Track at this number at the beginning of a game

and are moved back down the track when the aircraft takes damage. If the markers are ever set at zero, the aircraft is destroyed.

[4.44] The Basic Aircraft Information Chart also indicates the maximum number of cannon shots an aircraft can carry. At the beginning of a game, the Players place their aircraft's Cannon Shots Remaining markers on the Weapons Track to indicate the number of cannon shots that each aircraft can make. Each time that an aircraft fires its cannon, its Cannon Shots Remaining marker is reduced by one box. When the marker reaches zero, the cannon has run out of ammunition and the aircraft may no longer fire its cannon.

[4.45] The Stores Remaining marker is used in combination with the Bombing Rules (see Section 25.0). It is used to keep track of the number of loads of munitions that an aircraft carries.

[4.46] When an aircraft launches a missile, the missile's Game-Turns-in-Flight marker is placed at zero on the launching aircraft's Weapons Track and advanced one box every time the missile executes a turn-in-Flight Record Segment. The Basic Missile Information Chart indicates how many Game-Turns the missile can remain in flight; when the Game-Turns-in-Flight marker reaçhes this number on the Weapons Track, the missile is removed from play.

[4.5] THE MOVEMENT, THROTTLE, AND ENERGY POINTS TRACK OF THE AIRCRAFT AND MISSILE CONTROL DISPLAY

[4.51] The Movement, Throttle, and Energy Points Track carries three aircraft control markers: The Movement Allowance marker; the Throttle Setting marker; and the Energy Point marker.

[4.52] The Movement Allowance marker is placed on the Movement, Throttle and Energy Points Track in the box indicated by the Scenario which the Players choose to play.Its position on the track is changed as the aircraft increases or decreases its speed during the game.

[4.53] The Throttle Setting marker is placed as the Scenario directs on the Movement, Throttle, and Energy Points Track. Its position is altered as the aircraft accelerates and decelerates by power during the game.

[4.54] The Energy Points marker is placed as the Scenario directs, usually at zero on the Movement, Throttle, and Energy Points Track. It is moved up and down the track as the aircraft gains and expends Energy Points (see Case 10.6).

[4.55] When an aircraft launches a missile, the missile's Energy Points marker is placed on the aircraft's Movement, Throttle, and Energy Points Track to keep track of Energy Points accumulated by the missile.

[4.6] THE OTHER TRACKS OF THE AIRCRAFT AND MISSILE CONTROL DISPLAY

[4.61] The Flight Altitude marker begins the game on the Flight Altitude Indicator in the position that the Scenario directs (see Section 10.0).

[4.62] The Acceleration Progress marker begins on the Acceleration Gauge as the Scenario directs, and it is moved forward and backward on the gauge as the aircraft accelerates and decelerates by power.

[4.63] The Turning Points marker is placed on the Turning Indicator as the Scenario directs, and it is moved back and forth along the indicator as the aircraft accumulates Turning Points.

[4.64] When an aircraft launches a missile, the missile's Turning Points marker is placed on the aircraft's Turning Indicator to keep track of the Turning Points accumulated by the missile.

[4.7] USE OF THE ALTITUDE INDICATOR (ALTIMETER) ON THE AIRCRAFT AND MISSILE CONTROL DISPLAY

[4.71] The three aircraft Altitude markers are placed on the Altitude Indicator to indicate the altitude of the aircraft at the beginning of the game, as directed by the Scenario being played.

[4.72] Altitude is expressed in terms of levels. To indicate changes in altitude, the three counters on the Altitude Indicator are adjusted.

[4.73] An aircraft's altitude is expressed as a three-digit number. Each digit of an aircraft's altitude is represented by a separate Altitude marker — on the "hundreds," "tens," and "units" portion of the Altitude Indicator.

[4.74] The Altitude markers are placed directly on the numbers to which they are intended to refer.

Examples of Altitude Indicator:

1. To show that an aircraft is flying at an altitude of 209 levels (c. 52,250 feet), the owning Player would place an Altitude marker in the 200 (50,000 feet) box of the "hundreds" portion of the Altitude Indicator, another in the 00 (0000 feet) box of the "tens" portion of the Indicator, and another in the 9 (2250 feet) box of the "units" portion of the Indicator.
2. To show that an aircraft is flying at an altitude of 50 levels (c. 12,500 feet), the owning Player would place an Altitude marker in the 000 (00000 feet) box of the "hundreds" portion of the Altitude Indicator, another in the 50 (12,500 feet) box of the "tens" portion of the Indicator, and another in the 0 (000 feet) box of the "units" portion of the Indicator.

[4.75] When an aircraft launches a missile, the missile's Altitude markers are placed on the aircraft's Altitude Indicator to keep track of the missile's altitude.

[4.8] MISSILE PERFORMANCE CHARTS

[4.81] Missile Performance Charts, unlike Aircraft Performance Charts, have only three tables: Basic Missile Information Table; Climb Table; and Dive Table.

[4.82] The Basic Information Table indicates the missile's Maximum Speed, its First Game-Turn Movement Allowance Addition, its Tracking range, the number of Game-Turns it remains in flight, its Probability of Malfunction, and miscellaneous other information.

[4.83] The Climb and Dive Tables list modifications to a missile's Movement Allowance based upon the number of levels dived or climbed in a given Game-Turn by the missile (see Case 14.37).

[5.0] SEQUENCE OF PLAY

GENERAL RULE:

Air War is played in successive Game-Turns, each of which is composed of Phases. During the Phases of a Game-Turn, the Players maneuver their aircraft and resolve combat according to the Game-Turn outline that follows, and within the limits of the rules. The Players execute as many Game-Turns as the scenario that they are playing specifies, at the end of which the Victory Conditions are consulted, and a winner is determined.

Air War uses a sequential system with complications not normally present in SPI games. Rather than having one Player execute all the Phases in a single Game-Turn and then having the other Player do so for his units, both Players execute each Phase at the same time, and then progress to the next Phase. **The rules of Initiative (Section 7.0)** are used to determine who is to be the First Player, and who the second; the First Player executes a given Phase for all his units, and then the Second Player executes the same Phase for all of his, after which the Players proceed to the next Phase in the Game-Turn.

Note that there are three Movement Phases in a single Game-Turn. This is not to say that all aircraft are moved three times in a single turn; rather, the aircraft are classified either as *Advantaged, Disadvantaged* or *Normal,* according to the rules of Position (Section 6.0), and all Disadvantaged aircraft are moved before all Normal aircraft, which are moved before all Advantaged aircraft. Thus, even though Initiative governs which Player is to be first and which second, Advantaged and Disadvantaged status play a great part in determining the order of which aircraft are to be moved.

Note that this Sequence of Play is used only when none of the Optional Rules (Sections 18.0 through 28.0) are used. When the Optional Rules are used, the Sequence outlined in Section 18.0 is used. Note that the Sequence of Play for use with the Optional Rules is simply the Sequence of Play given below, with some additions necessitated by the addition of the Optional rules.

CASES:

[5.1] SEQUENCE OUTLINE

The activities which may occur in the various Phases are outlined below. Note that the Player who is currently taking an action is termed the "Phasing Player."

A. Position Determination Phase: Both Players examine the relative positions of their aircraft on the game-map, and, according to the rules of Position (Section 6.0), determine which are in Advantaged, which in Normal, and which in Disadvantaged positions.

B. Initiative Determination Phase: The Players determine which of them is to be the first Player, and which the second in the upcoming Game-Turn. They do so according to the rules for Initiative, Section 7.0.

C. Missile Launch Phase: During the Missile Launch Phase, both Players attempt to launch missiles and perform a number of other missile-related functions.

1. Tracking and Target Acquisition Segment: The Players examine all of the missiles that have already been launched, and determine whether they are still capable of tracking their targets. If it is determined that a missile cannot track its target (and, in the case of a Heat-Seeking missile, cannot acquire a different target), it is removed from play.

2. Missile Launch Segment: The Players each determine which of their aircraft they wish to have launch missiles, how many each aircraft will launch, and what the targets of the missiles are to be. They roll for missile malfunction for each of the launched missiles, and place missile counters on the game-map for each launched missile that does not malfunction.

3. Radar Lock-On Segment: The Players may now attempt to obtain radar lock-ons with aircraft that are carrying Radar-Homing Missiles.

D. Disadvantaged Aircraft Movement Phase: The first Player moves any one of his Disadvantaged

aircraft, according to the following sequence. Then, any Heat-Seeking missiles that are targeted against the aircraft just moved, are moved by the second Player. After this has been completed, the first Player moves another of his Disadvantaged aircraft, and so forth, until all of the first Player's Disadvantaged aircraft and all Heat-Seeking missiles targeted for any of these aircraft have been moved. Then, the second Player repeats the first Player's actions, moving each of *his* Disadvantaged aircraft. **Note:** Each aircraft's movement is independent; i.e., a Player completes one aircraft's movement before continuing on to execute his next aircraft's movement.

1. Acceleration/Deceleration By Power Segment: The Phasing Player increases or decreases his moving aircraft's Acceleration Gauge to reflect acceleration or deceleration by power. If this affects the aircraft's Throttle Setting, its Throttle Setting marker is moved accordingly.

2. Flight Attitude Decision Segment: During this segment, the Phasing Player determines the Flight Attitude of the aircraft he is moving. Basically, this means that he determines the wing position of the aircraft, and the angle at which it will dive or climb (or fly level). He also alters the aircraft's Altimeter to reflect any change in altitude that occurs because of a dive or climb, or as a result of wing attitude.

3. Acceleration and Deceleration Segment: The moving Player decides whether his moving aircraft will decelerate or accelerate by any means other than by power. If so, he adjusts the aircraft's Movement Allowance Marker to reflect its change in speed.

4. Expenditure of Energy Points Segment: If the aircraft is in a climb or in level flight, and it has Energy Points accumulated, it must expend one of those points. The Phasing Player determines how his moving aircraft will expend its point, and reduces the Energy Point Marker to reflect expenditure.

5. Movement Segment: The Phasing Player now actually moves the moving aircraft's counter, and performs any maneuvers with the aircraft that he wishes.

6. Accumulation of Energy Points Segment: If the aircraft is in a dive, the Phasing Player determines the number of Energy Points that the aircraft accumulated while in a dive and moves the Energy Point marker on the Aircraft Control Chart to reflect the accumulation.

7. Heat-Seeking Missile Segment:
Any Heat-Seeking Missiles targeted for the aircraft that was just moved are now moved, according to the following sequence:

Step a — Movement Allowance Determination: The owning Player of the missile determines whether it is to dive, climb or fly level, and determines its Movement Allowance.

Step b — Expenditure of Energy Points: See Phase D, Segment 4.

Step c — Movement: The owning Player proceeds to move the missile, according to the rules for missile movement.

Step d — Accumulation of Energy Points: See Phase D, Segment 6

Step e — Turns-in-Flight Record: The owning Player advances the Turns-in-Flight marker for his missile on the Missile Control Chart by one box. If the missile has spent as many turns in flight as it is able, it is removed from the game-map.

E. Normal Aircraft Movement Phase: The Players move all Normal aircraft, according to the same procedure used for Disadvantaged Aircraft movement.

F. Advantaged Aircraft Movement Phase: The Players now move all Advantaged aircraft, according to the same procedure.

G. Radar-Homing Missile Combat Phase: During this Phase, each of the Players moves each of the Radar-Homing missiles that are currently on the game-map. Radar-Homing missile movement occurs in the same manner as Heat-Seeking missile movement.

Step a — Radar Lock-on Breakage: The owning Player rolls to determine whether Radar Lock-ons have been broken by enemy aircraft.

Step b — Movement Allowance Determination: See Phase D, Segment 7, Step a.

Step c — Expenditure of Energy Points: See Phase D, Segment 7, Step b.

Step d — Movement: See Phase D, Segment 7, Step c.

Step e — Accumulation of Energy Points: See Phase D, Segment 7, Step d.

Step f — Turns-in-Flight Record: See Phase D, Segment 7, Step e.

H. Cannon Combat Phase: The first Player resolves Cannon fire from any of his aircraft that are in a position to fire their cannons. Then the second Player resolves cannon fire from *his* aircraft.

J. Bookkeeping Phase: The Players advance the Game-Turn Record marker one box along the Game-Turn Record Track.

[6.0] POSITION

GENERAL RULE:

In *Air War*, relative aircraft positions are often an important factor in a number of situations. Most important among these are Initiative Determination and missile tracking.

PROCEDURE:

Each aircraft is said to have six "arcs," each arc composing a sixty-degree field of hexes in one direction for the aircraft, the six arcs together forming three-hundred-sixty-degrees around the aircraft. Illustrations of the six arcs are shown below.

During the Position Determination Phase, both Players examine each of their aircraft, and determine which are in Positions of Advantage, and which are in Positions of Disadvantage.

CASES:

[6.1] ARCS

[6.11] An important concept in the determination of aircraft positions is that of arcs. Each aircraft has six arcs, each of which is a sixty-degree section to one side of the aircraft (see illustration).

[6.12] In *Air War*, unlike other SPI games, aircraft are able to face either towards a hex-side or a hex-juncture (that point at which two hex-sides meet). Therefore, arcs are given different definitions for aircraft facing towards hex-sides and aircraft facing towards hex-junctures.

[6.2] POSITION DETERMINATION

[6.21] For purposes of Initiative, an aircraft is in a Position of Advantage (or is "Advantaged") if:

a) it has at least one enemy aircraft in its forward arc, and that aircraft is no more than ten levels of altitude above the friendly aircraft, and

b) the friendly aircraft itself is not Disadvantaged by an enemy aircraft.

[6.22] An aircraft is said to be in a Normal Position if either,

a) it is neither Advantaged nor Disadvantaged, or

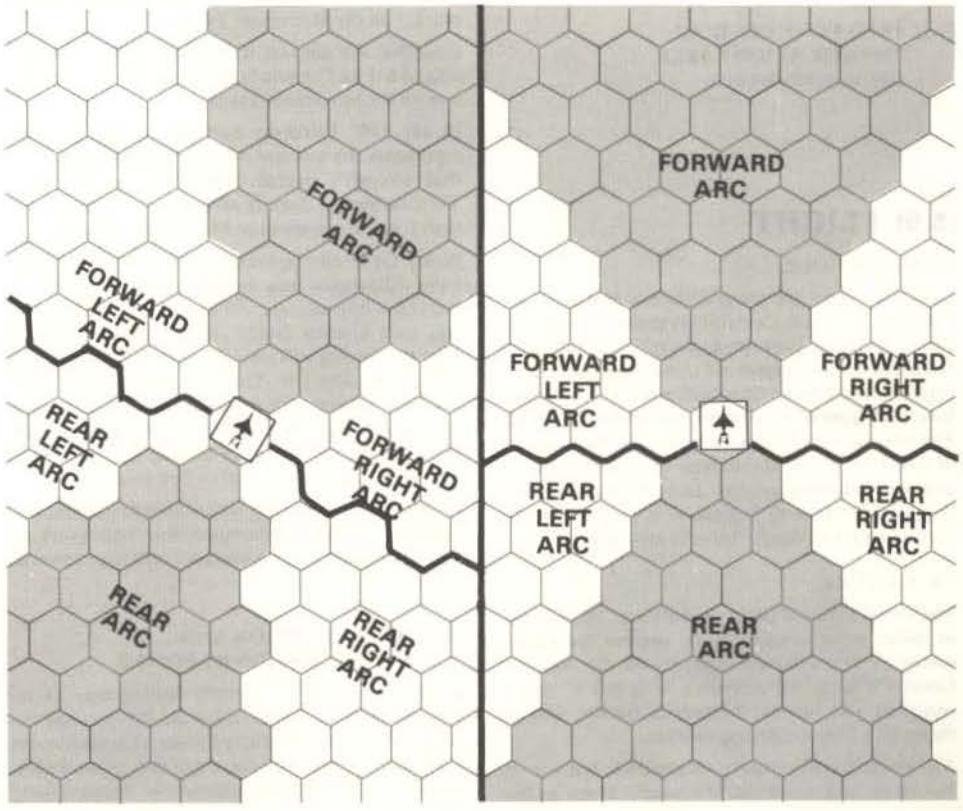
b) it is *both* Advantaged *and* Disadvantaged, (i.e., has an enemy aircraft in its forward arc and is in the forward arc of an enemy aircraft).

[6.23] An aircraft is said to be in a Position of Disadvantage (i.e., "Disadvantaged") if:

a) the aircraft is in the forward arc of an enemy aircraft, and

b) the enemy aircraft is no more than ten levels below the friendly aircraft, and

c) The friendly aircraft is itself not in a Position of Advantage over some other enemy aircraft.



[6.24] Optional Rule to go with Section 19.0 and 20.0. Aircraft which are not currently spotted by visual or radar search by enemy aircraft are automatically considered to be in Positions of Advantage.

[6.25] Although Initiative determines the order in which the Players make their moves, all Disadvantaged aircraft (of both sides) are moved before all Normal aircraft, which are moved before all Advantage aircraft (see Sequence of Play, Section 5.0).

[7.0] INITIATIVE

GENERAL RULE:

During the Initiative Determination Phase, the Players use the rules of Initiative to figure out which Player will be the first Player, and which the second throughout the Game-Turn. At the beginning of each turn, the Players figure Initiative anew, so it is quite conceivable that the second Player in one turn would become the first in the next.

CASES:

[7.1] HOW TO DETERMINE INITIATIVE

Both Players roll two dice, and each totals his die-rolls. The Player with the greater total is considered to "Have the Initiative." Note, however, that a Player's die-roll may be altered under certain circumstances. Each Player must refer to the Initiative Die-Roll Modification Table (7.2) to determine what the modification to his die-roll is. Determination of which Player has the Initiative is made after modifications to the die-rolls have been made. The Player who has the Initiative chooses which Player is to move first, and which second. That is, he has the option of being either the first or second Player. Note that being the *second* Player is usually advantageous in *Air War*. If, after all die-roll modifications have been applied, it is discovered that the Players have rolled the same number, they must repeat the procedure until one Player has a greater number than the other.

[7.2] INITIATIVE DIE-ROLL MODIFICATION TABLE
(see separate booklet)

[8.0] FLIGHT

GENERAL RULE:

Basically, there are three different modes or attitudes in which an aircraft may move: level flight, climb, and dive. Any single aircraft may only perform one of these types of movement in a single Game-Turn. This section deals with rules that pertain to all types of movement, and with level flight. The next section deals with turning and all aspects of aircraft movement that have to do with turning, and the following section deals with diving and climbing. Section 11.0 deals with special maneuvers that aircraft can perform in movement.

PROCEDURE:

The actual airspeed of an aircraft and the amount of thrust being applied by its engines are represented by two different markers on the Aircraft Control Chart. An aircraft's airspeed is represented by a Movement Allowance marker, and its thrust by a Throttle Setting marker.

An aircraft's Movement Allowance marker is moved up and down the Movement Track as the aircraft increases or decreases its speed, whether through increased thrust, diving, climbing or the performance of a special maneuver. The Throttle Setting marker is only moved on the Movement Track when the aircraft Accelerates or Decelerates by Power.

CASES:

[8.1] GENERAL MOVEMENT

[8.11] An aircraft's Flight Attitude and Movement Allowance are determined during the Movement Phase before the aircraft's counter is actually moved (see Section 5.0, Sequence of Play). Only after decisions about these aspects of an aircraft's movement have been made is the aircraft actually moved.

[8.12] An aircraft's Movement Allowance for a given turn is determined by the placement of its Movement Allowance marker on the Movement Track.

Example: An aircraft's Movement Allowance would be **5** if its Movement Allowance marker were set at **5** on the Movement Track.

[8.13] An aircraft is said to have as many Movement Points as its Movement Allowance; thus, an aircraft with, say, Movement Allowance of 10 would have 10 Movement Points.

[8.14] An aircraft *must* expend its full Movement Allowance every turn; in a given turn, an aircraft *must* expend all of its Movement Points.

[8.15] There are a number of ways in which aircraft may expend Movement Points. An aircraft expends one Movement Point every time its aircraft counter is moved one hex on the game-map. In addition, executing a turn, roll, or other maneuver may require the expenditure of Movement Points.

[8.16] An aircraft may not exceed its Movement Allowance; that is to say, it may never spend more Movement Points than it has.

[8.2] THROTTLE SETTING

[8.21] An aircraft's Throttle Setting is equal to the numbered box occupied by its Throttle Setting marker on the Movement Track.

Example: An aircraft would have a Throttle Setting of **5** if its Throttle Setting marker were in the **5** box on the Movement Track.

[8.22] The Throttle Setting of an aircraft represents the amount of thrust being applied by that aircraft's engine. Therefore, an aircraft's Throttle Setting directly affects, but is a factor distinct from, its airspeed or Movement Allowance.

[8.23] Generally speaking, an aircraft's Movement Allowance may be altered by a number of factors — the aircraft will lose speed when climbing, gain it when diving, and so forth — but its Throttle Setting will only change when the aircraft voluntarily alters it. The only time an aircraft's Throttle Setting will involuntarily be reduced is when by diving, the aircraft arrives at an altitude where its current Throttle Setting is greater than the maximum at the aircraft's new level.

[8.24] Unless altered by some other factor (such as diving or climbing or energy-killing maneuver), an aircraft's Movement Allowance will tend towards its Throttle Setting.

[8.3] ACCELERATION AND DECELERATION BY POWER

[8.31] An aircraft's Throttle Setting may be increased only by Acceleration by Power, and decreased by Deceleration by Power. (Exception: see Case 8.23). Note that there are two general categories of acceleration/deceleration. Acceleration/Deceleration by Power affects an aircraft's Throttle Setting and Movement Allowance; all other forms of acceleration/deceleration affect only the aircraft's Movement Allowance.

[8.32] During the Acceleration/Deceleration by Power Segment of an aircraft's Movement Phase, the aircraft may alter its Throttle Setting. The amount by which an aircraft may increase or decrease its Throttle Setting is dependent upon the aircraft type.

[8.33] On the Acceleration Table of an aircraft's Performance Chart is given the Acceleration Allowances of that aircraft. An aircraft's Acceleration Allowance is dependent upon the altitude grouping at which it is flying and its current Throttle Setting. Cross-reference the altitude grouping at which the aircraft is flying (found at the top of the table) with its current Throttle Setting (found in the left-most column of the table). This will yield a single number, which is the aircraft's Acceleration Allowance under those conditions. *Note:* The Throttle Setting and *not* the Movement Allowance of an aircraft is involved in this procedure.

[8.34] If a Player chooses to Accelerate by Power, he may advance the accelerating aircraft's Acceleration Marker along the Acceleration Gauge by as many boxes as the Acceleration Allowance of the aircraft. He is not required to accelerate the full allowance; he may accelerate fewer boxes, if he wishes.

[8.35] An aircraft's Deceleration Allowance is listed on the Basic Aircraft Information Table. If a Player chooses to have an aircraft Decelerate by Power, it may reduce (or "rewind") its Acceleration Marker by as many boxes as the Deceleration Allowance on the Acceleration Gauge. Again, an aircraft is not required to Decelerate by its full Deceleration Allowance; it may decelerate by fewer boxes, if its owning Player chooses.

[8.36] Every time that an aircraft's Acceleration marker enters the **0** box on the Acceleration Gauge going forwards (clockwise), the aircraft's Throttle Setting is increased by one point. Every time the Acceleration marker passes the **0** box moving backward (i.e., counter-clockwise), the Throttle Setting is reduced by one point.

[8.37] Note that, under certain conditions, some aircraft have an Acceleration Allowance of ½. If an aircraft with such an Acceleration Allowance accelerates by Power, move its Acceleration marker by one-half of a box — i.e., move it onto the line between two boxes on the Acceleration Gauge, and, if it accelerates on the following turn, move it into the next box.

[8.38] An aircraft may not Accelerate by Power while climbing, unless specifically allowed to do so by its Aircraft Performance Chart.

[8.39] If an aircraft's Throttle Setting is increased by one point, its Movement Allowance is also immediately increased by one point; if the Throttle Setting is decreased, so is the Movement Allowance. Note that any such increase is *in addition* to any creeping acceleration that may occur, (see 8.44).

[8.4] ACCELERATION

[8.41] An aircraft's Movement Allowance (as opposed to its Throttle Setting) may be increased in a number of ways.

[8.42] Note that an aircraft's Movement Allowance may never be greater than its Maximum Movement Allowance. An aircraft's Maximum Movement Allowance is equal to its Maximum Throttle Setting (see 8.43) when the aircraft is in level flight or climbing; when it is diving, its Maxi-

mum Movement Allowance is indicated on the Dive Chart (see Case 10.4).

[8.43] An aircraft's Maximum and Minimum Throttle Settings vary with altitude grouping, and are indicated on the Basic Aircraft Information Table. An aircraft's Throttle Setting may never be greater than its Maximum Throttle Setting, nor less than its Minimum.

[8.44] "Creeping" Acceleration:
If an aircraft's Movement Allowance is less than its Throttle Setting at the end of the Acceleration and Deceleration Phase (i.e., after the Movement Allowance marker has been moved to reflect airspeed changes resulting from all other types of Acceleration and Deceleration), its Movement Allowance is automatically increased by one. *Exception:* Creeping Acceleration does not occur if an aircraft is climbing.

[8.45] Acceleration by Energy Gaining Maneuver

Aircraft may increase their Movement Allowance (but *not* their Throttle Setting) by engaging in energy-gaining maneuvers, such as diving. When an aircraft dives, its Movement Allowance is usually increased (see diving rules, Case 10.4).

[8.5] DECELERATION

[8.51] An aircraft may decrease its Movement Allowance in three basic ways; Deceleration by Inducing Drag, by Energy-Losing Maneuver, and by Fade-back Deceleration.

[8.52] There is no Minimum Movement Allowance for any aircraft. Theoretically, an aircraft may have a Movement Allowance of zero; however, if it does, there is a chance that it will Depart Controlled Flight and begin plummeting towards the ground (see Case 10.8).

[8.53] Deceleration by Energy-Losing Maneuver
Aircraft may decrease their Movement Allowance (but not their Throttle Setting) by engaging in energy-losing maneuvers, such as climbing or barrel-rolling. Note that energy-losing maneuvers may be partially counteracted by "Creeping" Acceleration (see Case 8.44).

[8.54] Deceleration by Inducing Drag
Inducing Drag basically means "dirtying up" the exterior of an aircraft by opening flaps, slats, or speedbreaks. If an aircraft's owning Player decides to reduce its speed by Inducing Drag, he reduces its Movement Allowance during the Acceleration and Deceleration Segment of the aircraft's Movement Phase. An aircraft may reduce its Movement Allowance by one Movement Point in this manner.

An aircraft may *not* decelerate by Inducing Drag if its initial Movement Allowance is six or more and it is flying at LO or ML altitude groupings, or five or more at MH or HI altitude groupings. (For a definition of "altitude grouping," see Definition of Terms, 3.0).

[8.55] Fade-Back Deceleration
As indicated in the rules for Diving (10.4), an aircraft that pulls out of a dive has its Movement Allowance reduced to its Throttle Setting immediately, and does not undergo "Creeping Deceleration" in the same way that aircraft pulling out of climbs undergo Creeping acceleration. However, an aircraft that pulls out of a dive may, on the turn that it enters Level Flight execute fade-back deceleration; this means that, for this Game-Turn only, the aircraft's Movement Allowance is only decreased by *one* point, rather than to the aircraft's Throttle Setting. On the next Game-Turn, the aircraft must decrease its Movement Allowance to its Throttle Setting; fade-back deceleration may only be executed on the Game-Turn that an aircraft pulls out of a dive.

[9.0] TURNING

GENERAL RULE:
In *Air War*, an unique facing system is used that is dissimilar to that used in any other SPI game. Therefore, the Players would be well advised to study this rules section rather carefully before play.

Air War utilizes a 12-point facing system. This means that there are twelve directions in which an aircraft may face; an aircraft may, in fact, either face towards a hexside, or towards a hex juncture. (Note: A hex juncture is the point formed when two hexsides come together). Each aircraft counter has on it an aircraft "nose," and an aircraft's facing is indicated on the game-map by the direction its nose is pointing it. (See illustration.)

PROCEDURE:
Basically, turning one hex-point (i.e., turning from a hexside to an adjacent hex juncture or vice versa) means a turn of 30 degrees for an aircraft involved. As most aircraft are incapable of turning through thirty degrees in a single hex at most speeds, a rather complex system is utilized to keep track of the degrees through which an aircraft has turned, and the amount by which it turns in a given hex.

Each aircraft is assigned a Turn Mode by the Turn Mode Chart on its Aircraft Performance Chart. An aircraft's Turn Mode indicates the number of "Turn Points" that an aircraft can accumulate in each hex that it moves through. When an aircraft accumulates a total of Thirty Turn Points, it is turned by one hex-point.

On the Aircraft Control Chart is a "Turn Indicator" which has a Turn Points marker placed on it at the beginning of the game. Each time that an aircraft accumulates Turn Points, its Turn Points marker is moved along the Turn Indicator to reflect the accumulation. If the Turn Marker is in the *25* box, and the aircraft accumulates 5 more Turn Points, the Turn marker is returned to the *0* box and the aircraft is turned by one hex point.

Explanation of Facing Example:
In the illustration below, three aircraft are shown facing towards three of the 12 possible hex points. Aircraft A and C are facing towards hexsides; aircraft B is facing towards a hex juncture.

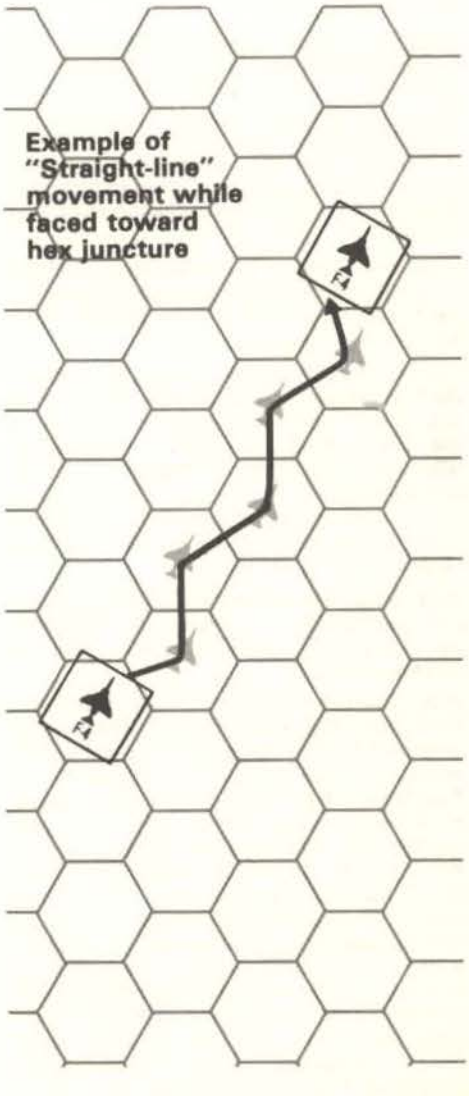
CASES:

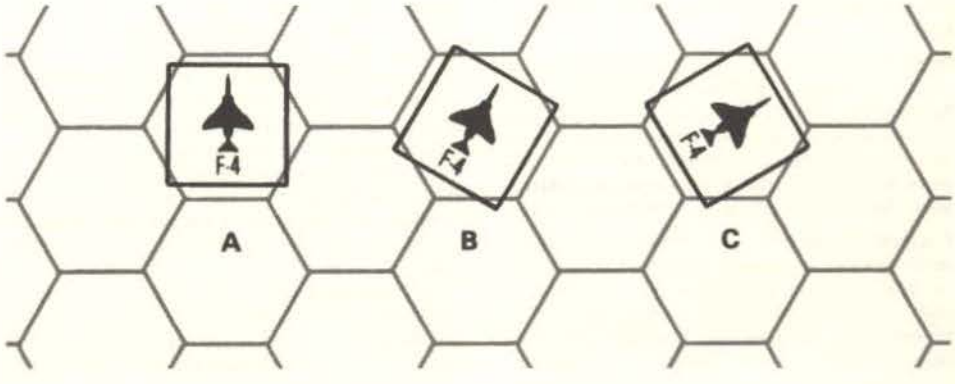
[9.1] PECULIARITIES OF TWELVE-POINT FACING

[9.11] When an aircraft is facing towards a hex juncture, it is incapable of moving in a perfectly straight line, as this would force it to move along hexsides.

[9.12] If an aircraft is facing towards a hex juncture and it is not sideslipping (see Case 9.7), it moves as follows: first, it moves to the hex immediately in front of it off to the right (see illustration); then it moves to the hex that is now in front of it to the *left*; then to the hex in front of it to the right; and so on. The aircraft continues to alternate between moving to the hex to the front and right and moving to the hex to the front and left, until it has completed its movement.

Explanation of Facing Example:
The aircraft in the following illustration begins pointing towards a hex juncture. In moving it, the Player chooses neither to accumulate Turn Points nor to sideslip, and thus moves the aircraft directly forwards. It is moved first to the hex in front of it and to the right, then to the one in front of it and to the left, and so forth, back and forth, for a total of six hexes before all its Movement Points are exhausted.





[9.2] ACCUMULATING TURN POINTS

[9.21] Before an aircraft can turn its facing by one hex-point, it must accumulate thirty Turn Points. Accumulation of Turn Points by an aircraft is **noted on the Aircraft Control Display by the movement of the aircraft's Turn Points marker.**

[9.22] When an aircraft moves into a hex in the course of its movement, it has the option of accumulating Turn Points. If the owning Player chooses to have the aircraft accumulate Turn Points, the aircraft must expend one Movement Point (in addition to any Movement Points expended to enter the hex); the aircraft's Turn Points marker is then moved along the Turn Indicator to reflect the accumulation. Note that any aircraft expends one Movement Point to accumulate Turn Points in a given hex, no matter how many Turn Points it accumulates.

[9.23] Each aircraft may only accumulate Turn Points once in a single hex. The number of Turn Points that an aircraft can accumulate in a single hex is determined according to a procedure outlined below, but the fact remains that, after accumulating Turn Points in a hex, an aircraft must move on to another hex (and expend another extra Movement Point) before accumulating more Turn Points.

[9.24] The number of Turn Points that an aircraft can accumulate in a hex is determined by the aircraft's **Turn Mode Table, which is situated on the** Aircraft's Performance Chart.

Find the aircraft's altitude grouping at the top of **the Turn Mode Table (either LO, ML, MH, or HI). This will determine the column to be used on the Table. Find the aircraft's Movement Allowance at the left-hand side of the Table;** this will determine the row to be used. Cross-reference the row and column being used on the table to yield a single number; this is the aircraft's Turn Mode under those conditions.

[9.25] **Note:** When an aircraft is flying banked at **a 45° angle (upright or inverted),** its Turn Mode will actually be somewhat *greater* than this number; see 9.6.

[9.26] Examine the Turn Mode/point Translation Table (9.29). Read down the left-hand side of the table until the Turn Mode of the turning aircraft is found. On the row of the Table determined by the Turn Mode will be a series of numbers separated by slashes (or a single number). If there is a single number, that number is the number of Turn Points that the aircraft can accumulate in each hex. If there is a series of numbers, the first in the series is the number of Turn Points that the aircraft can accumulate in the first hex it accumulates in; the second is the number it accumulates in the second hex; and so forth. (*Example:* **10/5/5** would indicate that the aircraft could accumulate 10 Turn Points in its first hex, five in the second, five in the third. If the aircraft continued moving and accumulating Turn Points after the third hex, it would begin the cycle again; thus, in its fourth hex, it would again accumulate Ten Turn Points; in the fifth, five; and so forth).

[9.27] Certain Turn Mode series have **0** terms in them (for example, **5/5/0**.) If an aircraft's Turn Mode series includes such a term, and the aircraft is accumulating Turn Points and wishes to continue accumulating Turn Points after it has come to the **0** term in its series, it must expend one Movement Point to accumulate *no* Turn Points in a hex.

Example: Using the Turn Point accumulation series given as an example previously (i.e., **5/5/0**) the aircraft would accumulate five Turn Points in each of the first two hexes it accumulated Turn Points in. In the third hex, it would accumulate none. However, if it wished to continue accumulating Turn Points after its third hex, it would be forced to expend one Movement Point in its third hex to accumulate zero Turn Points. If it had *not* done so, it would not return to the first **5** term until it had expended one Movement Point accumulating zero Turn Points.

[9.28] If an aircraft has a Movement Allowance of one at any time, it can *either* accumulate Turn Points *or* move one hex in its Movement Segment, as it does not have enough Movement Points to do both. However, if such an aircraft accumulates Turn Points in one Game-Turn, it *must* move one hex in the next; that is to say, if it were to accumulate Turn Points at the maximum rate, it would alternate accumulating Turn Points and moving from Game-Turn to Game-Turn.

[9.29] **Turn Mode/Point Translation Table**
(see separate booklet)

[9.3] TURNING AND THE TURN INDICATOR

[9.31] Aircraft may turn normally when executing any sort of dive or climb. Note however that aircraft rotational position (i.e., whether an aircraft is banked, inverted, or whatnot) *will* affect the rate at which an aircraft can turn (see Case 9.6).

[9.32] On the Aircraft Control Chart is a track known as the Turn Indicator. This track runs from **25° in one direction to 0° to 25° in the other direction,** at 5° intervals (examine the Aircraft Control **Display). A Turn Points marker is placed on this Indicator for each aircraft represented on the Control Display, and moved up and down it to represent the accumulation of Turn Points by the aircraft. Every time an aircraft accumulates 5 Turn Points, its Turn Points marker is moved one box along the indicator.**

[9.33] If an aircraft is turning to the right, its Turn Points marker is moved along the Turn Indicator to the right. If it is turning to the left, its marker is moved to the left.

[9.34] **If a Turn Points marker is in a 25° box, and the aircraft accumulates Turn Points so that the marker should be placed into a non-existant 30° box, the marker is instead returned to the 0° box on the Turn Indicator, and the aircraft's counter is turned one hex-point. If the Turn Points marker is moving off the right-hand edge of the Turn Indicator, the aircraft is turned to the right; if it is moving off the left-hand side, the aircraft is turned to the left.**

[9.35] It is perfectly possible for an aircraft to "fishtail" its Turn Point marker back and forth — that is to say, to turn a few Points to the right, then a few to the left — in order to kill Movement Points. This is called "jinking."

[9.36] Unless otherwise specified by a scenario, all aircraft begin with **0** Turn Points accumulated.

[9.4] ROLLING

[9.41] "Rolling" is the rotation of an aircraft around its longitudinal axis. Rolling is a prerequisite for many maneuvers; in addition, an aircraft's rotational position affects its Turn Mode.

[9.42] The rotational position of an aircraft (hereafter called the aircraft's Flight Attitude), or the angle at which the aircraft's wings are banked, is kept track of on the Flight Attitude Indicator (as is the Dive/Climb Type of aircraft, see 10.0). The Players will note that each box on the Flight Attitude Indicator has printed on it an "asterisk" of four lines intersecting to point in eight directions. They will further note that each Flight Attitude **marker has printed on it the *tail-view*** of an aircraft, showing the directions the wings and tail point in (see illustration). At all times, an aircraft's Flight Attitude marker must be lined up on one of the boxes of the Flight Attitude Indicator so that the wings of the marker are lined up between two of the points of the asterisk (see illustration). Which particular box of the Flight Attitude Indicator the Flight Attitude marker is placed in depends on whether or not the aircraft is diving or climbing (see Section 10.0).

[9.43] An aircraft flying completely horizontally (i.e., one that is not banked) would have the "wings" on its Flight marker aligned horizontally. To move the wings from one point on the asterisk (a rotation through 45°) is known as rolling one point; a complete roll of 360° would be rolling eight points.

[9.44] As well as bearing wings, each Flight Attitude marker bears an aircraft "tail." If the "tail" is pointing to the right of the vertical, the aircraft is said to be banked to the right; if it is pointing to the left of the vertical, it is said to be banked to the left.

[9.45] If the tail of an aircraft's Flight Attitude marker is pointing below the horizontal, the aircraft is said to be "inverted." If the wings of the marker are aligned along the horizontal, the aircraft is said to be horizontal; if they are aligned along the vertical, it is said to be vertical. See illustration.

[9.5] EFFECTS OF FLIGHT ATTITUDE

[9.51] An aircraft can only turn at its Turn Mode as indicated on the Turn Mode Chart if a) it is vertical (i.e., banked at a 90° angle), or b) it is banked at a 45° angle and has a Movement Allowance of *three or less*. Otherwise, the aircraft's Turn Mode is actually somewhat greater than the Turn Mode Chart specifies.

[9.52] An aircraft can turn only to the right if it is banked to the right; it can only turn to the left if it is banked to the left. A horizontal aircraft (whether inverted or not) may not turn at all; it must bank in one direction or the other first.

[9.53] If an aircraft is turning and it is *not* vertical (i.e., it is banked at a 45° or 135° angle), and its Movement Allowance is four or greater, its Turn Mode is somewhat greater than the Turn Mode Chart of the aircraft indicates.

If the aircraft's Turn Mode Chart indicates that it has a Turn Mode of 6 or less under these circumstances, *one* is added to its Turn Mode.

If it has a Turn Mode between 7 and 12 (inclusive), *two* is added to the Turn Mode.

If it has a Turn Mode of 13 or more, *three* is added to the Turn Mode.

[9.54] If, during the Flight Attitude Segment, an aircraft's wings are vertical (i.e., the aircraft is banked at a 90° angle), the aircraft loses one level of attitude (and has its Movement Allowance reduced, see 9.56). This is because aircraft banked at this angle are exerting little to no lift, and therefore tend to lose altitude.

Note that this means that an aircraft that is turning at the optimum rate must lose altitude, since an aircraft must have vertical wings in order to turn at the optimum rate, and must lose altitude if its wings are vertical.

[9.55] **Aircraft which have their wings at 90° during a Game-Turn have their Movement Allowance reduced by one or more Movement Points, adjusting the Movement Allowance marker, depending on the type of aircraft (see Aircraft Performance Charts, Flight Parameters) during the Flight Attitude Segment. Thus, for an aircraft to turn at its maximum rate, it loses Movement Allowance and Altitude (see Case 9.54). Note also that this loss in Movement Allowance may be restored, to an extent, by Creeping Acceleration (see Case 8.44) on the next Movement Phase. missiles automatically lose one Movement Point *during* their Movement if they accumulate turn points at the maximum rate. The reduction in**

movement Allowance occurs at the end of the aircraft's Movement and is in addition to the Movement Points aircraft uses to gain turn points. The Movement Points expended are expended per turn.

[9.6] ROLL COSTS AND INHIBITIONS

[9.61] Under certain conditions, an aircraft must expend Movement Points in order to roll. The number of Movement Points an aircraft must expend in order to roll a given number of points in a single Game-Turn is listed on the Roll Cost Table on the Aircraft Performance Chart.

[9.62] Roll costs are cumulative throughout an entire Game-Turn. Thus, if an aircraft were to execute a number of one-point rolls in a single Movement Phase, it would have to expend Movement Points corresponding to the total number of points rolled.

[9.63] An aircraft may roll at any time in its Movement Segment. It may roll a number of points in one hex, and another in the next; it may roll all the points it wishes to roll in one hex, or scatter its rolls among a number of hexes. Aircraft may roll normally while climbing, diving or flying level.

[9.64] No aircraft may roll more than sixteen points total in a single Game-Turn.

[9.7] SIDESLIPPING

[9.71] Sideslipping is a form of movement that combines both forward and lateral movement.

[9.72] An aircraft may sideslip at any time during its Movement Segment. An aircraft may sideslip while climbing, diving or flying level. An aircraft may expend part of its Movement Allowance sideslipping, and the rest in normal flight (or vice-versa).

[9.73] In order to sideslip, an aircraft must have at least 5 Turn Points accumulated in the direction it wishes to sideslip, and be banked in that direction. (I.e., if it wishes to sideslip to the left, it must be banked to the left and have Turn Points accumulated to the left.

[9.74] Sideslipping means moving a certain number of hexes directly forwards and then moving one hex to the side (laterally). Depending on the number of Turn Points that an aircraft has accumulated, it must move a greater or lesser number of hexes forwards before moving one sideways.

[9.75] As the Sideslipping Table (9.78) indicates, an aircraft with five Turn Points accumulated must move eleven hexes directly forward before moving one laterally; an aircraft with ten Turn Points must move six forward before moving one laterally; and so forth. An aircraft expends no Movement Points when it moves one hex laterally; this lateral movement is considered to occur without the expenditure of Movement Points. Movement Points are expended only when the aircraft is moving forward before moving laterally. Thus, sideslipping is "bonus" movement.

[9.76] An aircraft may sideslip more than once in a single Game-Turn. An aircraft may intermingle sideslipping and normal movement in any way its owning Player deems useful.

[9.77] If an aircraft is facing towards a hex-side when it begins its sideslip, it will be forced to move onto a hexside when it moves laterally one hex (see illustration). Since aircraft may not move onto hexsides, such an aircraft is moving *downwards* one hex (see illustration) so that it is positioned in a hex at the end of its sideslip. Note that aircraft facing towards hex-juncture have no such problem.

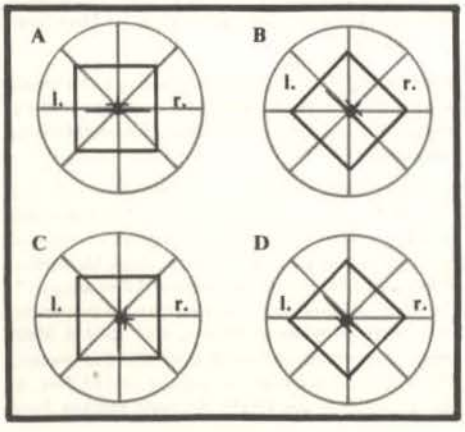
[9.78] Sideslipping Table (see separate booklet)

Explanation of Sideslip Example:

Three aircraft, A, B and C begin their movement with a sideslip; A is pointing towards a hexside, and B and C towards hex junctures. A and B have 15 Turn Points accumulated (to the right), and thus must move four hexes forwards before moving one laterally. C has 20 Turn Points accumulated, and must therefore move three hexes directly forwards before moving one to the left.

Explanation of Illustration:

Four aircraft are rolled in three different directions: A is horizontal; B banked to right; C vertical banked to right; D inverted banked to left.



[10.0] CHANGING ALTITUDE

GENERAL RULE:

During the Flight Attitude Segment of the Movement Phase, an aircraft's owning Player may move the Flight Attitude marker of the aircraft. During this segment, he decides whether his moving aircraft is to dive, climb, or fly level, and what type of dive or climb it will execute if it chooses either of those options. Generally speaking, climbing allows an aircraft to gain altitude while losing speed, while diving allows it to lose altitude and gain speed and momentum.

PROCEDURE:

Move the Flight Attitude Marker of the aircraft up or down the Flight Attitude Indicator on the Aircraft Control Chart. Note that the Flight Attitude Indicator is used to indicate both aircraft wing positions and dive and climb types — one is indicated by the facing of the Flight Attitude marker, while the other is indicated by the marker's position on the Indicator. The specific box in which a Flight Attitude marker is situated indicates whether the aircraft represented by that marker is in a Type I Dive, a Type II Dive, a Type III Dive, Level Flight, a Type I Climb, a Type II Climb, or a Type III Climb.

CASES:

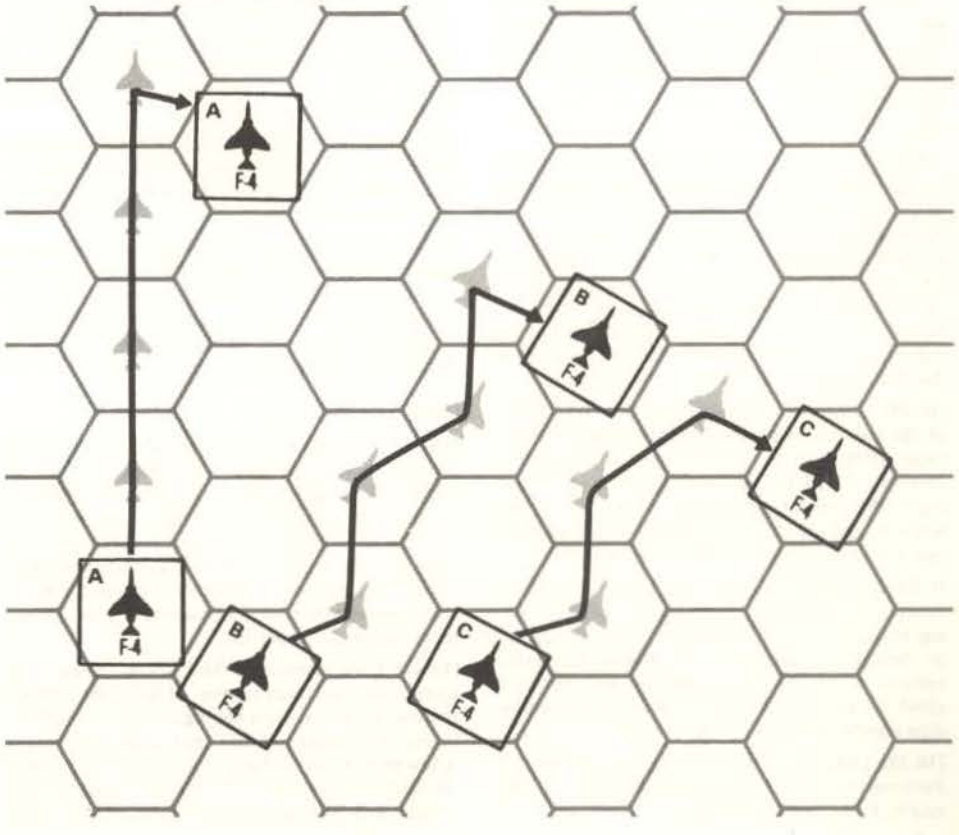
[10.1] GENERAL

[10.11] The Player must decide what type of climb, dive or level flight he wishes an aircraft to execute during the Flight Attitude Segment of the aircraft's Movement Phase. During this segment, he places the aircraft's Flight Attitude marker in the box on the Flight Attitude Indicator corresponding to the type of Climb, dive, or level flight that he wishes the aircraft to execute.

[10.12] During the Flight Attitude Segment of an aircraft's Movement Phase, the owning Player may only move the aircraft's Flight Attitude marker up by one box or down by one box on the Flight Attitude Indicator. For instance, if an aircraft's Flight Attitude marker began a Game-Turn in a Type I Climb, the aircraft might either execute a Type II Climb, a Type I Climb, or Level Flight, at the owning Player's option. The aircraft could not go into a Type III Climb or any type of dive, because doing so would necessitate moving the Flight Attitude marker more than one box.

[10.13] An aircraft may only execute one type of climb, dive, or Level Flight in any one Game-Turn. An aircraft could *not* for instance, execute one type of climb, dive, or Level Flight for part of its Movement Phase, and some other type for the rest (Exception: see Section 11.0, Maneuvers).

SIDESLIPPING



[10.14] When an aircraft changes its altitude by climbing or diving, the positions of the Altitude markers on its Altimeter on the Aircraft Control Chart must be altered. Each level of altitude that an aircraft climbs causes the number indicated by the Altimeter to be increased by one, and each level dived decreases it by one.

[10.15] When an aircraft changes its Movement Allowance because of a dive or climb, the aircraft's Movement Allowance marker is moved to reflect the increase or decrease in its speed.

[10.16] All effects of a dive or climb — changes in altitude and changes in Movement Allowance — occur during the Flight Attitude Segment.

[10.2] CLIMBING

[10.21] There are three types of climbs: Type I, Type II and Type III, Type III being the steepest. Not all aircraft are able to perform Type III climbs; if an aircraft is not permitted to execute a certain type of climb, such will be indicated in its Climb Chart.

[10.22] If an aircraft is to climb, its owning Player must determine what Type of climb it will execute, and then refer to the Climb Table.

[10.23] He finds the aircraft's current altitude grouping (LO, ML, MH or HI). He then compares the aircraft's Movement Allowance and Throttle Setting, and determines which is greater.

[10.24] The Player finds the altitude grouping of his climbing aircraft at the very top of the table. Immediately below this will be a number of columns; at the top of each column will be a single number. This number is the number of levels that the aircraft climbs.

[10.25] The Player finds his aircraft's Movement Allowance/Throttle Setting (whichever is greater) along the side of the Climb Table, and cross-references the row determined thereby with each of the columns determined by the altitude grouping.

[10.26] The Climb Table of each aircraft is color-coded as to Type of Climb. All permissable Type II Climbs are untinted. All tinted numbers to the *left* of the Type II Climbs are Type I Climbs. Tinted numbers, if any, to the *right* of Type II Climbs are Type III Climbs. A dash represents a prohibited action.

[10.27] The Player examines each of the numbers on the Climb Table that occur at the intersection of the row determined by the aircraft's Movement Allowance/Throttle Setting and the column under its Altitude grouping. All numbers which are tinted a shade that corresponds to a type of climb that the aircraft is *not* executing should be ignored; i.e., the Player now concentrates only on that part of the table that refers to the climb Type that his aircraft is executing.

[10.28] If there is only a single member on the row of the Table is determined by the aircraft's Movement Allowance/Throttle Setting that is tinted to correspond with the aircraft's Climb type, the aircraft's Movement Allowance is reduced to that number, and the aircraft climbs a number of levels equal to the number at *the top of the column*.

If there is more than one number on the correct row that is tinted the correct shade, then the owning Player of the climbing aircraft has the option of having the aircraft's Movement Allowance reduced to any of these numbers, and having it climb the number of levels equal to the corresponding number at the top of the column.

[10.29] Unless otherwise specified by the Aircraft Performance Chart, an aircraft may not Accelerate by Power while climbing.

[10.3] EXAMPLE OF CLIMB
(Refer to the F-4E Climb chart)

An F-4E begins its Movement Phase in Level Flight at an altutude of 10, with a Movement Allowance and Throttle Setting of 7 each. The owning Player decides that he wants the F-4 to execute a climb. Since the only type of climb that an aircraft may enter from Level Flight is a Type I Climb (any other Climb Type being more than one box away from Level Flight on the Flight Attitude Indicator), the Player puts the aircraft's Flight Attitude marker into the **Type I Climb** box on the Flight Attitude Indicator.

The Player determines that the aircraft is flying at LO altitude, and that the Movement Allowance and Throttle Setting are both seven — since neither is greater, the Player simply uses 7.

The Player refers to the F-4E's Aircraft Performance Chart and finds the Climb Table. He discovers that, at LO altitude and with a Movement Allowance/Throttle Setting of 7, two spaces on the table are tinted to correspond to a Type I Climb. One space contains the number 6 under the **1** column, while the other contains a 5 under the **2** column. Therefore, the aircraft may either climb one level and have its Movement Allowance reduced to six, or climb two levels and have its Movement Allowance reduced to five. The Player chooses the latter alternative.

Therefore, he performs the following actions: a) Adjusts the Flight Attitude marker from Level Flight to Type I Climb; b) Adjusts the Movement Allowance marker to 5; c) Moves the Altimeter upwards two levels (to 12).

Let us assume that, on the following turn, the Player wishes to increase his aircraft's climb to a Type II. (He could alternately choose to return to Level Flight, or to remain in a Type I Climb).

The aircraft is still at LO altitude, and its Throttle Setting (7) is greater than its Movement Allowance (5). Examining the Climb Table, the Player finds that there is only one section of the Chart along the row corresponding to a Movement Allowance/Throttle Setting of seven under LO altitude that is tinted to correspond to a Type II Climb. This part of the table yields the number 3, and at the top of the column is the number 3 as well. Therefore, if the aircraft is to execute a Type II Climb, it must climb three levels and have its Movement Allowance reduced to three.

Therefore, the Player: a) Adjusts the Movement Allowance marker to 3; b) Adjusts the Flight Attitude marker from a Type I to a Type II Climb; c) Adjusts the Altimeter to 15.

If, on the following turn, the Player wished to return the aircraft to a Type I Climb, climbing two levels, he would: a) Adjust the Flight Attitude marker from a Type II to a Type I Climb; b) *Increase* the Movement Allowance from 3 to 5; c) Adjust the Altimeter to 17.

[10.4] DIVING

[10.41] If the owning player decides he wishes his aircraft to dive, he then determines the Type of Dive (I, II, or III — the steepest) it will make, and refers to the aircraft's Dive chart. To determine the effects of a dive, the player cross-indexes the Type of Dive with the aircraft's altitude grouping. This will yield three columns: "Levels Dived", "Maximum Movement Allowance" and "Movement Allowance Addition".

[10.42] Each number in the "Levels Dived" column is the maximum number of levels the aircraft can lose by diving while having the particular Maximum Movement Allowance and Movement Allowance Addition figures next to it apply. Thus, on the F-4 Dive Chart, "2" in the "Levels Dived" column at LO means that an F-4 in a Type I Dive may dive 1 or 2 levels, have a Max. MA of 7, and add 0 Movement Points due to diving. The "5" below it means that an F-4 in a Type I dive, if it wished to dive more than 1 or 2 levels, could dive 3, 4, or 5 levels, while having a maximum MA of 10 and a Movement Allowance Addition of 3. Thus, when diving, a player looks in the "levels dived" column to sees how many levels he wishes to lose, then see what the aircraft's maximum Movement Allowance and MA addition are, taking care that the right line of the Type of dive is used where there are more than one. This is how it is determined which row of the dive table is used. Note that in each Type of dive, there is a maximum and minimum limit to the number of levels an aircraft can lose in that type of dive. (see 10.12)

[10.43] Once a Player has determined what row of the Dive Table is to be used by the number of levels dived, he reads across on that row of the Table to determine the Maximum Movement Allowance of the aircraft that is diving and its Movement Allowance Addition. When an aircraft dives, its maximum Movement Allowance is changed as a result of the dive (see Case 8.42). In addition, an aircraft's Movement Allowance is increased by the number listed under "Movement Allowance Addition;" unless this increase would cause the aircraft's Movement Allowance to become greater than its Maximum Movement Allowance, in which case the aircraft's Movement Allowance would be increased to its maximum.

An aircraft need not take its full Movement Allowance addition; the owning Player may increase the aircraft's Movement Allowance by a lower number than the Movement Allowance Addition, if he wishes. However, unless the "Movement Allowance Addition" is zero, the Player *must* increase the aircraft's Movement Allowance by at least one Movement Point — unless, of course, this increase would put the Movement Allowance over the maximum.

After the Player has altered the aircraft's Movement Allowance, he alters the position of the Altitude markers on the Altimeter to reflect the loss of altitude by the aircraft.

[10.44] *If an aircraft in a Type II OR III dive is not inverted it suffers the following penalties:* it may not use the steepest of Type III dives (if it makes more than one Type III dive in a row); the maximum Movement Allowance is reduced by two; the amount of energy gained each turn is reduced by 50%, rounding up.

[10.5] EXAMPLE OF A DIVE
(Refer to the F-4E Dive chart)

An F-4E begins its Movement Phase flying level at an altitude of 48 levels (LO altitude grouping), with a Movement Allowance and Throttle Setting of 6 each. The owning Player decides that he wants the F-4E to dive, and therefore puts its Flight Altitude marker into the **Type I Dive** box on the Flight Altitude Indicator. The aircraft could obviously not go into a Type II or Type III Dive from Level Flight.

The owning Player cross-references a LO altitude with a Type I Dive on the Dive Chart, and examines the single box that this cross-referencing produces.

The information in the box referred to tells him that the F-4 may execute one of two different kinds of Type I dives. The first kind will enable him to lose one or two levels with a gain of one Movement Point and a Maximum Movement Allowance of 7; the other will enable him to lose three to five levels, gain three Movement Points, and have a Maximum Movement Allowance of 10. The owning Player decides to make the second sort of dive, so he: a) Adjusts the Flight Attitude marker from

Level Flight to a Type I Dive on the Flight Attitude Indicator. b) Adjusts the Altitude markers to reflect the loss of altitude, Assuming the Player wanted to lose five levels, the Altimeter would be reduced from 48 to 43. c) Increases the F-4E's Movement Allowance (*not* its Throttle Setting) from 6 to 9.

If, on the following turn, the Player put the aircraft into a Type II Dive, he would cross-reference a Type II Dive with a LO altitude on the Dive Chart. Examining the box determined thereby, we see that the aircraft may again perform two different kinds of Type II Dives.

The Player decides that he wants his aircraft to dive the maximum number of levels, and thus lose 15 levels of altitude. The Movement Allowance Increase is 1, but the Maximum Movement Allowance is 9, and the aircraft's Movement Allowance is already 9. Therefore, the Player: a) Adjusts the Flight Attitude Indicator from a Type I to a Type II Dive; b) Adjusts the Altimeter from 43 to 28; c) Does not adjust the Movement Allowance marker.

On the following turn, the Player could either keep his aircraft in a Type II Dive, or put it into a Type I or Type III Dive.

[10.6] ENERGY STATUS

[10.61] Aircraft add energy while diving, as a car picks up speed while rolling down a hill. This additional momentum can be used to increase the speed of an aircraft when it leaves a dive and goes into level flight or a climb. The concept of Energy Status and the use of Energy Points are very important in the play of *Air War*, and players are advised to master it fully before playing.

7 Aircraft Energy

[10.62] The Energy Status marker, which is placed on the Movement Track, is used to keep track of the energy an aircraft gains while diving. The setting of the Energy Status marker is equivalent to the number of Energy Points that the aircraft possesses.

[10.63] The Energy Status marker is normally kept at **0** on the Movement Track. It is moved up the track as the aircraft gains Energy Points.

[10.64] During the Accumulation of Energy Points Segment of the Movement Phase, after an aircraft has completed all its movement, the number of Energy Points that each aircraft which dived has accumulated by diving in that Movement Phase is calculated, and the Energy Status marker moved to reflect the accumulation. The number of Energy Points that an aircraft accumulates in a Movement Phase is determined by the following procedure: a) Divide the number of levels dived by the aircraft by three (rounding down). b) If the aircraft is in a Type I Dive (only) add to this the total number of hexes moved through by the aircraft divided by three, rounding down. Note that one Movement Point expended in a sideslip is equivalent to one hex moved through for this purpose.

This total is the number of Energy Points that the aircraft may accumulate in that Game-Turn.

[10.65] An aircraft may never accumulate more than its maximum Energy Point Accumulation in a single Game-Turn. The Maximum number of Energy Points an aircraft can accumulate in a single Game-Turn is shown in the Basic Aircraft Information Table of each Aircraft Performance Chart. If, according to 10.64, an aircraft must accumulate more than Maximum Energy Points, it accumulates the Maximum and the excess are lost.

[10.66] On the Basic Aircraft Information Table of each Aircraft Performance Chart is indicated the Maximum Energy Points of each aircraft. An aircraft may never have more Energy Points total than its Maximum Energy Points. For instance, if an aircraft's Maximum Energy Points is seven, it may never have more than seven Energy Points. Any Energy Points accumulated in excess of this are lost.

[10.67] Note that aircraft only accumulate Energy Points while Diving. When an aircraft is in Level Flight or a Climb, and has at least one Energy Point, it must expend one Energy Point during the Expenditure of Energy Points Segment. By expending the point, the aircraft may do one of three things: a) It may lose the Energy Point. The energy is simply "bled off" into the air, the Energy Status marker is reduced by one, and no other effects occur. b) It may gain one "Bonus" Movement Point. During the aircraft's upcoming Movement Segment, it will have one extra Movement Point to expend, above and beyond that given it by its Movement Allowance. Its Movement Allowance marker is *not* increased, but is effectively one greater for that turn. Note that Turn Modes are calculated on the basis of Total Movement Points (i.e., the Bonus Movement Point *is* counted); but when calculating dives, the Bonus Movement Point *is not* counted, c) Gain two "Bonus" altitude levels. Obviously, the aircraft may only choose this option while climbing. The Climb Type of the aircraft does not change, but its altimeter is adjusted to reflect the altitude change. These levels are in addition to any levels climbed normally by the aircraft.

[10.68] If an aircraft brings its nose up (i.e., changes from a dive/climb type to another one box above it on the Flight Attitude Indicator), the aircraft will immediately lose a certain number of Energy Points. The number of Energy Points that an aircraft loses when it brings its nose up varies from aircraft to aircraft; the Energy Point loss is indicated on the Flight Parameters Table of an aircraft's Performance Chart.

[10.69] An aircraft may not accumulate Energy Points if it is executing a Push-Through or any other Maneuver, or if the aircraft has Departed Controlled Flight (see 10.8).

[10.7] ALTITUDE LOSS IN LEVEL FLIGHT

Any aircraft in Level Flight may perform what is known as a "descending maneuver." This means that the aircraft loses one level of altitude (maximum per Game-Turn), but remains in level flight. Descending in such a way is *not* diving.

[10.8] DEPARTING CONTROLLED FLIGHT

[10.81] Any aircraft that begins its Movement Phase with a Movement Allowance of zero has a change of departing controlled flight and entering free-fall.

[10.82] Before executing any of the segments of such an aircraft's Movement Phase, the owning Player checks to see whether or not the aircraft departs controlled flight. He calculates the probability number for it to depart controlled flight as follows:

The Probability Number is **12**. Add **5** is the pilot is a Novice, subtract **5** if the pilot is a Honcho. This is the Probability Number that the aircraft will depart controlled flight.

[10.83] Refer to the rules of Probability (12.0), and determine whether or not it departs controlled flight.

[10.84] If an aircraft departs controlled flight while in a climb or level flight, it immediately enters a Type I Dive. If it is in a dive, it immediately enters a dive one Type steeper than the type it is in. Its Movement Allowance remains zero (no matter what its Throttle Setting). The aircraft automatically dives the maximum possible number of levels for the Type of dive it is in.

[10.85] On the following turn, place the aircraft into a Dive Type one type steeper than the last it executed, and every turn thereafter increases its Dive Type until the aircraft is executing a Type III Dive. Every turn in which the aircraft remains departed from Controlled Flight, it dives the maximum number of levels for whatever type of dive it is executing. It continues to do so until it regains controlled flight, or until it goes splat.

[10.86] On every turn following that in which the aircraft departed controlled flight, an aircraft may attempt to regain controlled flight. The Probability Number that it will do so is a base of 6; add 6 if the pilot is a Honcho, and subtract 3 if he is a Novice.

[10.87] An aircraft that reenters controlled flight remains in whatever dive type it was in before it regained controlled flight for one Game-Turn, during which time it need *not* dive the maximum number of levels for that Dive type. On subsequent turns, it may begin to pull out of the dive.

[10.88] An aircraft that reenters controlled flight immediately gains a Movement Allowance equal to its Minimum Throttle Setting at its altitude grouping. It may increase its Movement Allowance thereafter in the normal manner.

[11.0] MANEUVERS

GENERAL RULE:

Maneuvers are special procedures which allow an aircraft to break the normal rules of flight. Thus, a maneuver will often enable an aircraft to perform an action that normally is not permitted. Many air combat maneuvers do not appear in this section because they do not require such special dispensation, and may be performed "normally."

PROCEDURE:

Each maneuver will be given a set of Prerequisites (conditions that an aircraft must fulfill before executing a maneuver); Procedures (actions that an aircraft must accomplish while undergoing the maneuver); and Postrequisites (actions that an aircraft must execute upon the completion of the maneuver); as well as special rules pertaining to that maneuver.

CASES:

[11.1] PULL-THROUGH MANEUVER

[11.11] Prerequisites:

An aircraft must execute a Type III Climb for a certain number of Game-Turns before executing a Pull-Through. The number of Turns that an aircraft must remain in a Type III Climb differs from aircraft to aircraft, and is indicated on the Flight Parameters Table of the aircraft's Performance Chart. Note that the number of Game-Turns may vary depending on the aircraft's altitude grouping.

[11.12] Procedure:

On the turn in which an aircraft executes a Pull-Through, place its Flight Attitude marker in the **Pull-Through** box of the Flight Attitude Indicator. The aircraft then:

a) Climbs one level *less* than it would if it were executing a Type III Climb at its current Movement Allowance/Throttle Setting and altitude grouping.

b) Automatically Decelerates by Power by as many points as possible every turn that it remains in a Pull-Through. In the case of aircraft which may accelerate while climbing, however, this may not exceed the number of points it may accelerate.

c) Has its Movement Allowance reduced to some number between zero and one fewer than it would

be reduced to normally in a Type III Climb. The owning Player determines its Movement Allowance, within these parameters.

Note that an aircraft executing a Pull-Through can have a Movement Allowance of zero, i.e., may climb straight up (see Case 11.14).

[11.13] Postrequisites:

An aircraft wishing to leave a Pull-Through must either enter a Type III Dive, or execute a manuever that will pull it out of the Pull-Through. Note that a Pull-Through is a prerequisite for a number of other maneuvers.

[11.14] No aircraft in a Pull-Through may climb less than one level. If it is forced to do so, it becomes susceptible to Departing Controlled Flight.

[11.15] Some aircraft are prohibited from executing Type III Climbs, but may still execute Pull-Throughs. Such aircraft may enter Pull-Throughs from a Type II Climb; note that they must, however, spend a certain number of Game-Turns in a Type II Climb before so doing. Aircraft which cannot make a Type II Climb must spend a certain number of Game-Turns in a Type I Climb before entering a Pull-Through. See Flight Parameters Tables on the concerned Aircraft Performance Table. Aircraft which are capable of a Type III climb may still execute a Pull-Through from a Type II climb if it is unable, at its Throttle Setting and Altitude, to attain a Type III climb. In this case, the aircraft must remain in the Type II climb for one turn longer than it would in a Type III climb.

[11.16] Example of a Pull-Through
(Refer to the F-4E Aircraft Performance Chart)

An F-4E is making a Type III Climb at HI altitude and has been doing so for 3 turns, and with a Throttle Setting of ten. In this Type III Climb the F-4E would gain three altitude levels and have a Movement Allowance of six. The Player wishes to perform a Pull-Through so he adjusts the Flight Attitude marker from the Type III Climb box to the Pull-Through box. He may now adjust the F-4's Movement Allowance to any number between five (one less than its normal Movement Allowance in a Type III Climb) and zero, inclusive. The F-4E now moves this number of Movement Points. He increases the F-4E's altitude only two levels, as this is one fewer than the three it would climb in a Type III Climb. The F-4E's Acceleration Marker on the Acceleration Gauge is moved backwards 10 boxes, as the F-4E must Decelerate by Power as fully as possible. This results in decreasing the F-4E's Throttle Setting by one.

[11.17] If an aircraft begins its Movement Phase in a Pull-Through, and wishes to continue executing a Pull-Through, it must either a) reduce its Movement Allowance by two, or b) reduce the number of levels it will climb in this Movement Phase by one from the number it climbed in the last. If the aircraft is incapable of doing either of these, it must pull out of the Pull-Through, and return to a Type III Climb.

Example: The F-4E which made a Pull-Through last Movement Phase gained **2** levels, and had its Movement Allowance reduced to **3**. The owning Player now must either reduce its Movement Allowance to **1** or climb only **1** level if he wishes the aircraft to continue Pulling Through. Note that the fact that the aircraft had to Decelerate by Power may force the Player to climb fewer levels and/or reduce its Movement Allowance; forced reduction caused by this *may* count towards the reduction in altitude levels climbed and Movement Allowance forced by Case 11.17.

[11.2] PUSH-THROUGH MANEUVER

[11.21] Prerequisites:
An Aircraft must execute a Type III Dive in the turn before it executes a Push-Through.

[11.22] Procedure:
On the turn in which an aircraft executes a Push-Through, place its Flight Attitude marker in the **Push-Through** box on the Flight Attitude Indicator, on the Aircraft Control Display.

a) The aircraft dives as many levels as it would if it were executing the steepest Type III Dive that it can. That is, it dives the maximum possible number of levels.

b) The owning Player may reduce the aircraft's Movement Allowance by as many as five points, or as few as none. The Movement Allowance need not be reduced, but it may be reduced by up to five points.

Note that an aircraft executing a Push-Through may have a Movement Allowance of zero , i.e., may dive straight downwards.

[11.23] Postrequisites:
Upon leaving a Push-Through, an aircraft must either enter a Type III Dive, or execute some sort of manuever.

[11.24] Aircraft executing Push-Throughs may not Depart Controlled Flight, even if their Movement Allowance falls to zero. That is, aircraft in Push-Throughs may have a Movement Allowance of zero with no ill effects.

[11.25] Example of Push-Through
(Refer to the F-4E Aircraft Performance Chart)

An F-4E is making a Type III Dive at MH altitude. The owning Player wishes it to go into a Push-Through. He places the F-4E's Flight Attitude Indicator in the **Push-Through** box, and may reduce the F-4E's Movement Allowance by up to five Movement Points. An aircraft may continue a Push-Through indefinitely (until it hits the ground). Note that an aircraft executing a Push-Through is not required to continue losing Movement Points, as an aircraft executing a Pull-Through is.

[11.3] WINGOVER MANEUVER

[11.31] Prerequisites:
For an aircraft to perform a Wingover, it must begin its Movement Phase in a Pull-Through maneuver.

[11.32] Procedure:
The aircraft counter is turned 180°, i.e., through six hex points so that its nose is pointing in the opposite direction from that in which it was previously pointing. The aircraft must roll at least four points. Its Movement Allowance marker is reduced by one Movement Point. It must fly level for the remainder of the Game-Turn, and its Flight Attitude marker is placed in the Level Flight box of the Flight Attitude Indicator.

[11.33] Postrequisites:
None.

[11.4] SPLIT-S MANEUVER

[11.41] Prerequisites:
An aircraft must begin its Movement Phase inverted and in a Push-Through in order to execute a Split-S. It must have been in a Push-Through for a certain number of turns before making a Split-S. The number of Game-Turns that an aircraft must remain in a Push-Through before executing this maneuver differs from aircraft to aircraft and by altitude grouping, and is indicated on the Flight Parameters Table of the aircraft's Performance Chart. See 11.44.

[11.42] Procedure:
The aircraft is turned 180° (i.e., through six hex-points). It neither expends nor accumulates Turn Points. It expends no Movement Points. It may make the six hex-point turn at any point during its Movement Segment.

[11.43] Postrequisites:
The aircraft must remain in a Push-Through for the remainder of the Movement Phase. On following turns, it may, if its owning Player desires, begin to pull out of the Push-Through normally.

[11.44] Some aircraft's Flight Parameters Table indicate that they need only remain in a Push-Through for zero turns before making a Split-S. This means that such aircraft may execute a Split-S in the same Movement Phase as that in which it enters a Push-Through from a Type III dive.

[11.5] LOOP MANEUVER

A Loop Maneuver is performed by executing a Wingover Maneuver (see Case 11.3) followed by a Split-S Maneuver (see Case 11.4).

[11.6] IMMELMANN MANEUVER

[11.61] Prerequisites:
In order to execute an Immelmann Maneuver, an aircraft must execute a Type III Climb for a certain number of Game-Turns. The number of Game-Turns that an aircraft must remain in a Type III Climb before executing an Immelmann is indicated on the Flight Parameters Table on the aircraft's Performance Chart.

In addition, the aircraft's wings on the Flight Attitude Indicator must be horizontal or at a 45° angle.

[11.62] Procedures:
Throughout the Movement Phase in which the aircraft performs the Immelmann, it is considered to be executing a Type III Climb. The aircraft is moved at least half of its Movement Allowance, then turns anywhere from one to six hex-points. The aircraft expends 1 Movement Point to turn these hex-points, and its Movement Allowance is reduced by 1. Its Turn Points marker is shifted to any box the Player desires. The aircraft then completes its movement with any remaining Movement Points. Note than an Immelmann basically allows an aircraft to turn as little or as much as its owning Player desires.

[11.63] Postrequisites:
After executing an Immelmann, an aircraft's Flight Altitude marker is placed in the Level Flight box of the Flight Altitude Indicator. In the Movement Phase following that in which the aircraft executed an Immelmann, it must execute a Type I Dive or Level Flight.

[11.64] Aircraft that are unable to execute Type III Climbs (such as the MiG-17) may enter Immelmann maneuvers from Type II Climbs, but, again, must spend a certain number of Game-Turns in Type II Climbs before executing the Immelmann, as determined by the Flight Parameters Table. Aircraft unable to execute Type II climbs may enter an Immelmann after a certain number of turns in a Type I Climb. This includes aircraft unable to make a Type II climb at a specific Throttle Setting and Altitude (e.g., F-4E at LO and Throttle Setting of 3). These must add 1 to the number of Game-Turns spent in Type II climb, however.

[11.65] Some aircraft need spend zero turns in a Type III (or II) Climb before entering an Immelmann. Such aircraft have **0** indicated on the Flight Parameters Table in the appropriate place. These aircraft may enter an Immelmann on the same turn that they enter a Type III (or II) Climb.

[11.7] LATERAL RUDDER ROLL MANEUVER

[11.71] Prerequisites:
In order to execute a Lateral Rudder Roll, an aircraft must begin its Movement Phase in a Dive or Level Flight. Aircraft may not execute this maneuver while climbing.

[11.72] Procedure:
A Lateral Rudder Roll basically allows a Player to move his aircraft along a path 60° from the aircraft's actual heading. He executes the maneuver in the following manner: The aircraft moves any part of its Movement Allowance forward, in the normal manner. It need not move any Movement Points forward, if the owning Player so desires. The aircraft must then roll at least one roll point, up to the maximum possible; thereafter, the aircraft expends any part of the remainder of its Movement Allowance traveling in a path at a 60° angle from its actual heading. The facing of the aircraft is *not* changed. See illustrations.

[11.73] Postrequisites:
At the end of the Movement Phase in which an aircraft executes a Lateral Rudder Roll, it must reduce its Movement Allowance by a certain number. The number by which an aircraft's Movement Allowance must be reduced varies from aircraft to aircraft, and is indicated on the aircraft's Flight Parameters Table on the Aircraft Performance Chart.

[11.74] Aircraft engaging in Lateral Rudder Rolls may neither launch missiles nor fire cannon in the same Game-Turn. Further, aircraft may not accumulate Turn Points while moving in the 60° path, although they may accumulate them while moving prior to or after executing the roll.

[11.75] Example of a Lateral Rudder Roll: The aircraft in the diagram both begin with 5 Movement Points. They each move forward one hex, roll 4 points (costing one Movement Point) and expend the remaining 3 Movement Points in a Lateral Rudder Roll.

[11.76] Note that, although an aircraft does not move directly forward in a Lateral Rudder Roll, neither is its facing altered.

[11.8] VERTICAL BREAK MANEUVER

[11.81] Prerequisites:
In order to perform a Vertical Break Maneuver, an aircraft must begin its Movement Phase in a Type II or Type III Climb, with a Movement Allowance of at least three. Its wings must be vertical (i.e., banked 90°).

[11.82] Procedures:
The aircraft is considered to execute a Type II or Type III Climb in the Movement Phase that it executes the Vertical Break Maneuver. At any point in the aircraft's normal movement, the owning Player may announce that the aircraft is performing a Vertical Break Maneuver. The aircraft expends a certain number of Movement Points; its Movement Allowance is reduced by one *less* than the number of Movement Points expended; the aircraft's Flight Attitude marker is placed three boxes downward. The aircraft then moves normally for the remainder of its Movement. The number of Movement Points expended in the maneuver is indicated on the aircraft's Flight Parameters Table.

[11.83] Postrequisites:
On the two Game-Turns following that in which an aircraft performs a Vertical Break Maneuver, it must execute a dive.

[11.9] BARREL ROLLS

[11.91] Prerequisites:
In order to perform a Barrel Roll, an aircraft must begin in a Dive or Level Flight. It may not begin in a Climb.

[11.92] Procedure:
The aircraft expends its entire Movement Segment in executing the Barrel Roll. It may not accumulate Turn Points or execute any other maneuver while executing the Barrel Roll. It *may* execute a Dive.

The aircraft's Movement Allowance is reduced by two if it was previously five or less, and by three if it was greater than five. The aircraft is then moved its full Movement Allowance (after modification) directly forward.

[11.93] Postrequisites:
In the subsequent Cannon Combat Phase, aircraft that performed Barrel Rolls may not fire. Aircraft shooting their cannon at aircraft that performed Barrel Rolls have their probability reduced by a quarter (25%).

[12.0] PROBABILITY

GENERAL RULE:

In various sections of the rules — Departing from Controlled Flight, Cannon Combat, Visual and Radar Search, and Missile Combat, as well as several others — it is necessary to randomly determine whether a certain action taken by an aircraft is successful. This involves the rules of Probability. In all such circumstances, the Players follow some procedure to generate a "Probability Number," which is then used to determine whether their actions are successful, using these rules.

PROCEDURE:

Refer to the Probability Table (12.2). Find the Probability Number in the left-hand column of the table, and roll two dice. If the number rolled on the two dice is equal to one of the numbers listed in the right-hand column of the table, the action in question is successful.

CASES:

[12.1] DISCUSSION

[12.11] Basically, a Probability Number is the chance out of thirty-six of an action being successful. For instance, a Probability Number of 9 means that there is a 25% chance of something occuring (9/36 = .25).

[12.12] In a number of different rules sections, the Players are directed to calculate a Probability Number, which is then used to determine whether a certain action is successful.

[12.13] If a successful die-roll is obtained when rolling on the Probability Table for Departure from Controlled Flight, the aircraft Departs Controlled Flight. A successful die-roll when rolling for Cannon Combat indicates that the firing aircraft has scored a hit. A successful die-roll when rolling for missile malfunction indicates that the missile has malfunctioned. For other cases in which the rules of Probability are used, the effect of a "successful" will be indicated.

[12.2] PROBABILITY TABLE
(see separate booklet)

[13.0] CANNON COMBAT

GENERAL RULE:

During the Cannon Combat Phase, the Players may engage in Cannon Combat. An aircraft may only fire its cannon at an enemy aircraft under certain conditions, as outlined in these rules.

PROCEDURE:

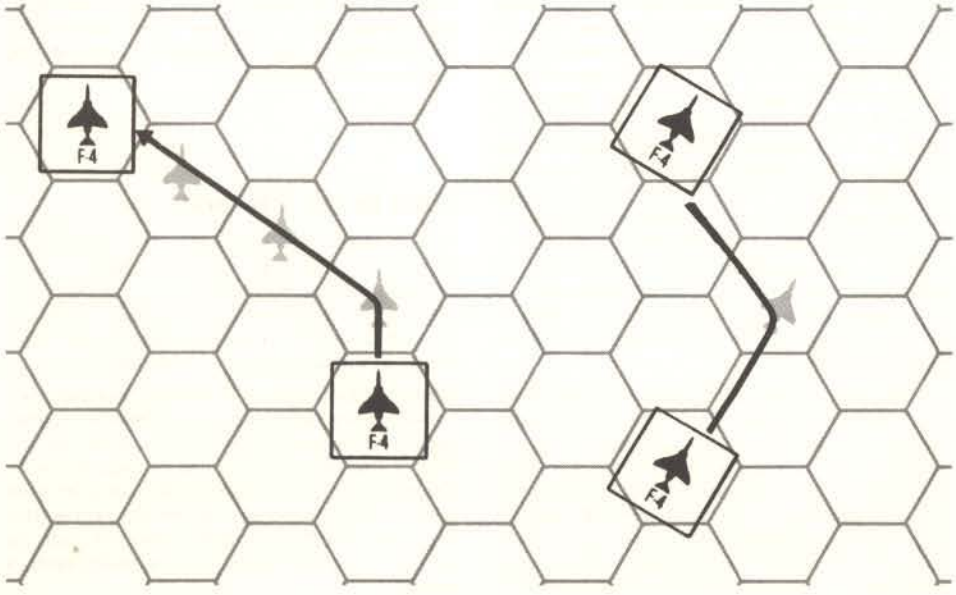
The owning Player of the firing aircraft determines the range between his aircraft and the enemy aircraft it is firing on. He cross-indexes the range with the aircraft's Cannon Type on the Cannon Base Probability Chart (13.4). He then examines the Cannon Probability Modifiers Chart (13.5), and modifies his base probability as the Modifiers Chart directs; this yields his final Probability Number. Following the rules of Probability (12.0), the Player determines whether or not his firing aircraft has hit its target. If it has, he refers to the Damage by Cannon Type Tables (13.6), and rolls two dice to determine the amount of damage that has been inflicted.

The Owning Player reduces the "Cannon Shots Remaining" marker on the Weaponry Track of the Aircraft Control Display to show that the aircraft has expended a portion of its cannon ammunition. The Damage marker of the target aircraft is moved on the target aircraft's Weaponry Track to reflect any damage that it took from the Cannon Combat. If the target aircraft was destroyed, it is removed from the game-map immediately.

CASES:

[13.1] LIMITATIONS AND PROHIBITIONS

[13.11] All Cannon types have a range of six hexes, except for Type E Cannons (actually .50 calibre machine guns), which have a maximum range of



four hexes. No aircraft may fire its cannon at a range greater than its maximum range.

[13.12] Range is computed by counting the shortest, most direct path of hexes from the firing aircraft to the target aircraft. One is added to the range for every two levels of altitude difference between the two aircraft.

[13.13] In order to fire its cannon at a target, an aircraft must have that target in its forward arc (see Case 6.1).

[13.14] The position of the target aircraft relative to the firing aircraft is of prime importance in determining the probability of the firing aircraft successfully hitting its target. If the firing aircraft is in the rear arc of its target, it is said to be executing normal cannon fire; if it is in one of the rear side arcs, it is said to be executing high-angle-off cannon fire (Exceptions: see Case 13.15); if it is in the forward arc of the target aircraft, it is said to be executing frontal cannon fire (see illustration). If the firing aircraft is in one of the front side arcs of the target aircraft, it is forbidden to fire at the target aircraft. If the firing aircraft is directly behind the target aircraft and is facing directly toward it, it is considered to be executing "slot" fire. If it is directly behind its target, but is not facing directly toward its target, its fire is merely normal cannon fire.

[13.15] If the firing aircraft is in Level Flight, its target aircraft may not be further away in terms of altitude than it is in terms of hexes; in other words, a target one hex away could only have an altitude one level different; one two hexes distant could be two altitude levels away; one three hexes distant could be three altitude levels higher or lower than the firing aircraft, etc. In other words, for every hex than an aircraft is distant, the firing aircraft can fire one level higher or lower.

[13.16] An aircraft in a Type I Dive may only fire at aircraft at its own level or on lower levels. An aircraft in a Type I Climb may only fire at aircraft at its own or higher levels.

[13.17] An aircraft in a Type II or III Dive or in a Pull-Through may only fire at aircraft at a lower altitude. Aircraft in Type II or III Climb or a Push-Through may only fire at enemy aircraft at higher altitudes. If the target aircraft is in a Dive/Climb Type three or more boxes away from the Dive/Climb Type of the firing aircraft (for instance, if the firing aircraft were in a Type III Climb and the target were in Level Flight), all cannon combat from any of the three rear arcs would be considered to be high-angle-off cannon fire.

[13.18] An aircraft may not engage in cannon combat if it has a Radar Lock-on (except that it may fire its cannon at the aircraft it is locked on to) or has attempted to obtain a Radar Lock-on in the same Game-Turn, or if it launched a missle of any type in the same Game-Turn.

[13.2] EXPLANATIONS

[13.21] Each aircraft has indicated on its Aircraft Performance Chart the Type of Cannon that it carries. Note that certain aircraft (notably, early models of the F-4 and reconnaissance aircraft) carry no cannon.

[13.22] Cannon Types are rated A through M. An aircraft's Cannon Type will determine its Base Probability Number when Cannon combat is resolved and will effect the amount of damage the firing aircraft will inflict on its target.

[13.23] When firing an aircraft's Cannon, the owning Player first determines whether the aircraft can fire its Cannon by referring to Case 13.1 above. He then determines the range between the firing aircraft and its target, and cross-references this range with the aircraft's Cannon Type on the Cannon Base Probability Chart. This cross-referencing will yield a single number, which is the Base Probability of hitting.

[13.24] The Player then determines whether the Cannon fire is normal, "slot," high-angle-off, or frontal, and refers to the Cannon Probability Modifiers Chart. This Chart will modify the Base Probability Number according to the type of Cannon fire being executed, and also according to a number of other circumstances (see Case 13.4).

[13.25] Using the rules of Probability (12.0) and the Probability Number found above, the Player determines whether or not his firing aircraft has hit its target. If not, the Cannon combat is over and no damage has been inflicted. If so, the Player proceeds to the Damage By Cannon Type Tables (13.6).

[13.26] If the owning Player has determined that his firing aircraft has hit its target, he refers to the Damage By Cannon Type Tables (see Case 13.6). He rolls two dice and refers to the table determined by his Cannon Type. He cross-references the two die-rolls on the appropriate table (the first die-roll determining the row, the second the column, to be used), to yield a single number.

This number is the number of Damage Points that the target aircraft takes. The Damage markers of the target aircraft on its Weaponry Track are moved backward one box (i.e., reduced by one point) for every point of damage that the aircraft has taken. If the markers are reduced to zero (i.e., the aircraft has taken as many hits as it can), the aircraft is removed from play and is considered destroyed.

[13.27] Whether or not the firing aircraft was successful in hitting its target, its "Cannon Shots Remaining" marker is moved down one box (i.e., reduced by one point) on its Weaponry Track on **the Aircraft Control Display to record the expenditure of ammunition. If an aircraft's Cannon Shots Remaining marker is at zero the aircraft is incapable of firing its cannon for the remainder of the game.**

[13.28] When an aircraft has taken half as many hits as it is capable of taking (i.e., when its Damage marker has been moved to one-half of its starting position), the aircraft is considered to have taken enough damage to affect its performance. Aircraft so damaged are considered to be in Loaded condition (see Section 17.0). If the aircraft was in Loaded condition to begin with, it must jettison its Stores during its next Movement Phase (see Case 25.1). In its subsequent Movement Segment, the aircraft may not execute any maneuver prohibited to Loaded aircraft. The aircraft's Throttle Setting and Movement Allowance markers are automatically reduced to the maximum permitted for the aircraft in Loaded condition. If the aircraft was at an altitude greater than that allowed for the aircraft in Loaded condition, the aircraft must dive as quickly as possible until it is at maximum altitude for its condition.

[13.29] When an aircraft is firing at a target from the front of the target (i.e., when it is executing frontal cannon fire), only one-quarter of the results on the Damage By Cannon Type Tables actually have effect; i.e., some of the results are ignored. Some results on the Damage By Cannon Type Table are asterisked (*); only these results have effect in frontal fire situations. All others are considered to have no effect. (See the Damage By Cannon Type Tables, 13.6, and the explanation thereof.)

[13.3] B-1's, B-52's, AND BACKFIRE BOMBERS

These three aircraft, unlike all the other provided with *Air War*, have rear-mounted guns.

[13.31] An aircraft with rear-mounted guns may fire at an enemy aircraft from any angle. The firing aircraft does *not* have to fire from one of the rear arcs or the forward arc of the enemy aircraft; the firing aircraft may be in any arc of its target.

[13.32] However, an aircraft with rear-mounted guns may only fire at aircraft in its rear arc. It may not fire at aircraft in any of its other arcs.

[13.33] Case 13.15 holds for aircraft with rear-mounted guns.

[13.34] Case 13.16 is superseded by this rule: An aircraft with rear-mounted guns that is in a Type I Dive may only fire at an aircraft that is at its own level or a ***higher*** level. An aircraft in a Type I Climb may only fire at an aircraft at its own or a *lower* level.

[13.35] Case 13.17 superseded by this rule: An aircraft with rear-mounted guns in Type II or Type III Climbs or in a Pull-Through may only fire at an aircraft at a higher altitude. Aircraft with rear-mounted guns in Type II or Type III Climbs or Push-Through may only fire at enemy aircraft at lower altitudes.

[13.36] Aside from the above exceptions, all rules regarding cannon combat apply to aircraft with rear-mounted guns.

[13.37] When a B-1, B-52 or Backfire Bomber is the target of cannon fire, "TE" results have effect only when they are asterisked on the Damage by Cannon Type Tables. That is to say, although all other results have effect, un-asterisked "TE" results do not.

[13.4] CANNON BASE PROBABILITY CHART (see separate booklet)

[13.5] CANNON PROBABILITY MODIFIERS CHART (see separate booklet)

[13.6] DAMAGE BY CANNON TYPE TABLES (see separate booklet)

Explanation of Cannon Arc Illustrations:

The following two illustrations depict 1) an aircraft pointing toward a hexside, and 2) one facing toward a hex juncture. They also show the three rear arcs, and the areas of those arcs in which a firing aircraft will be executing "slot" cannon fire, normal cannon fire, high-angle-off cannon fire, and frontal cannon fire.

Note to the Players:

At this stage, the Players have read a sufficient portion of the rules to allow them to play Scenarios 30.11, 30.12 and 30.13. If they first familiarize themselves with Sections 17.0 and Cases 29.1 and 29.2, they will be able to play these scenarios without reading the rest of the rules.

Since the rules to *Air War* are long, complex, and contain many innovations not common to other games, it is suggested that the Players take advantage of this fact and play one of these relatively simple scenarios to familiarize themselves with the basics of the game system before proceeding. It is suggested that Players simply "fly" the plane on several "training flights" before undertaking a game.

[14.0] GENERAL MISSILE COMBAT

GENERAL RULE:

Although Radar-Homing Missiles and Heat-Seeking Missiles are different in many ways, and thus have separate rules sections, they are also akin in many ways, simply because they are both missiles. Therefore, this rules section discusses characteristics common to all missiles.

PROCEDURE:

In *Air War*, missiles are differentiated as to model, make, and period. Each missile type has a Missile Performance Chart similar to the Aircraft Performance Charts, and the scenarios will generally indicate whether aircraft will be given missiles, and, if so, what type they will carry.

CASES:

[14.1] REQUIREMENTS FOR LAUNCH

[14.11] During the Missile Launch Phase, any aircraft that is carrying missiles may attempt to launch one (or two) missiles — assuming that the aircraft is in a position to launch missiles at an enemy aircraft.

[14.12] **(Optional Rule)**: An aircraft may only fire a missile at an enemy aircraft that it has obtained visual or radar contact with (see Sections 19.0 and 20.0).

[14.13] An aircraft may only fire a missile at an enemy aircraft if the enemy aircraft is in the Tracking Cone (see below) of the firing aircraft.

[14.14] Each missile and each aircraft is assigned either a Limited or Normal Tracking Cone. A missile's Tracking Cone type is indicated on its Missile Performance Chart; an aircraft's Tracking Cone type is indicated on the Aircraft Performance Chart.

For purposes of launching missiles, an aircraft is considered to have a Normal Tracking Cone *only* if *both* the missile it is launching *and* the launching aircraft have Normal Tracking Cones. If either has a Limited Tracking Cone, the aircraft is considered to have a Limited Tracking Cone for launch purposes.

A Normal Tracking Cone is a 60° cone extending from the front of the missile or aircraft; a Limited Tracing Cone is approximately a 14° cone.

[14.15] A target aircraft is within a firing aircraft or missiles' Normal Tracking Cone if a) it is in the forward arc of the firing aircraft/missile, and b) it is within the following altitude restrictions.

Examine the Altitude Restrictions Table for Normal Tracking Cones (14.16). Find the Dive/Climb Type of the firing aircraft/missile on the left-hand column of the Table, and note the two numbers in columns "A" and "B". Count the distance in hexes between the firing aircraft/missile and the target aircraft, and multiply this distance by the number found in column "A", again multiply this distance in hexes by the number found in column "B". The number found by multiplying the distance by the number in column "A" is known as the "A" product, and that resulting from multiplying it by the number in column "B" is the "B" product.

If the aircraft/missile is in a Climb, the target aircraft must be at least as many altitude levels as the "B" product above the firing aircraft/missile, and no more than as many levels as the "A" product. If the firing aircraft/missile is in a Dive, the target aircraft must be at least as many levels as the "B" product *below* the firing aircraft/missile, and no more than as many levels as the "A" product.

If the firing aircraft/missile is in Level Flight, the target may be nor more than one level above or below the firing aircraft/missile for every hex of distance between the two aircraft. Only when the firing aircraft/missile is in Level Flight may the target aircraft be either above or below the firing aircraft.

Example: the firing aircraft is in a **Type II Climb**, and there are **10** hexes between it and its target. The target aircraft, must be at least **5** levels of altitude above the firing aircraft, and no more than **8**.

[14.16] Altitude Limitation Table for Normal Tracking Cones (see separate booklet)

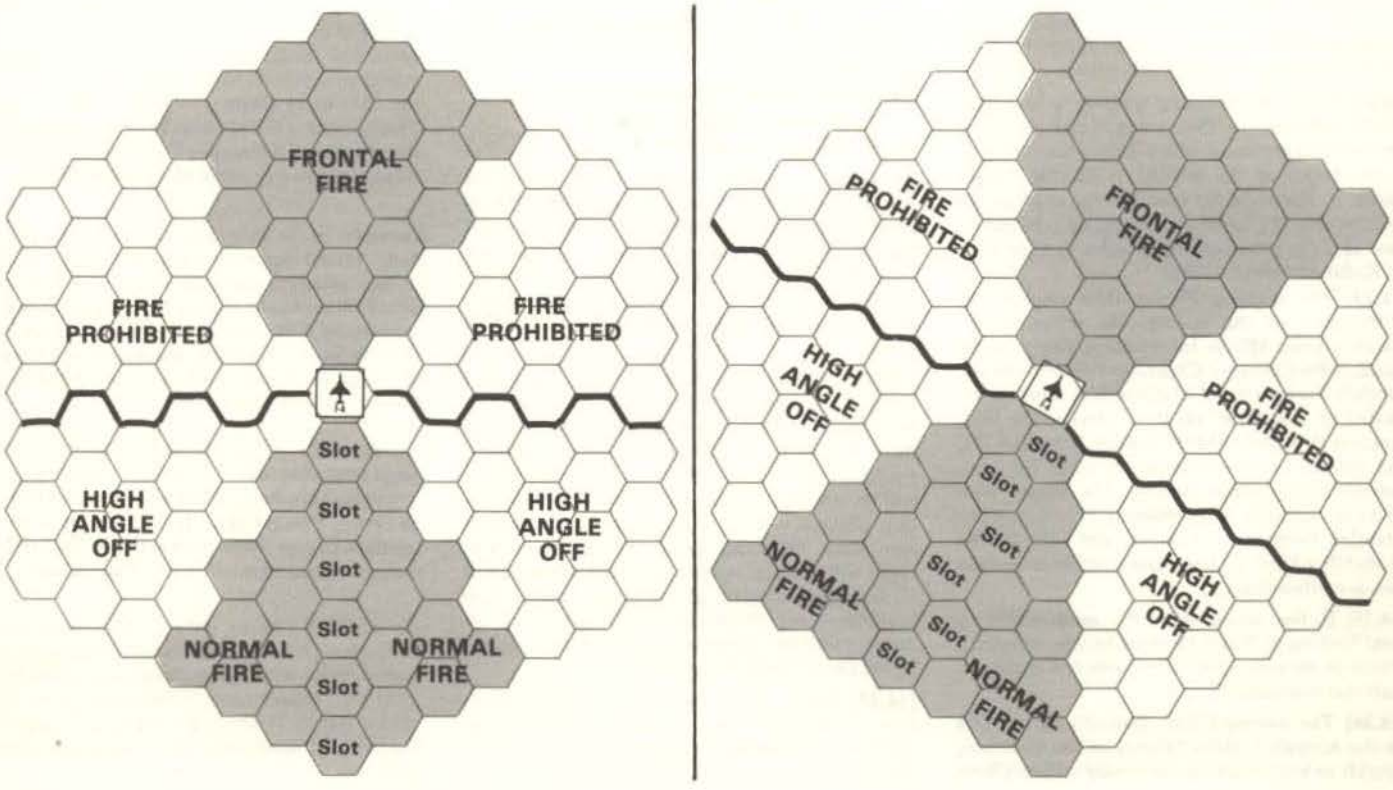
[14.17] A target aircraft is within a firing aircraft or missile's Limited Tracking Cone if a) it is within the forward "fan" of the missile/aircraft, and b) it fulfills a different set of altitude restrictions.

An aircraft or missile's forward "fan" is the hexrow immediately in front of the aircraft, plus a fan of hexes to the side of the hexrow increasing one hex row outward for every four hexes away from the firing aircraft/missile (see illustration).

Altitude restrictions for Limited Tracking Cones are calculated in the same way that they are for Normal Tracking Cones, except that the Altitude Limitation Table for Limited Tracking Cones is used, rather than the one for Normal Tracking Cones (see Case 14.18).

[14.18] Altitude Limitations Table for Limited Tracking Cones (see separate booklet)

[14.19] An aircraft may not launch a missile if the target aircraft is further away than the missile's Tracking Range. A missile's Tracking Range is indicated on its Performance Chart. **Note:** For range-tracing purposes, each difference of two altitude levels is counted as one hex of distance.

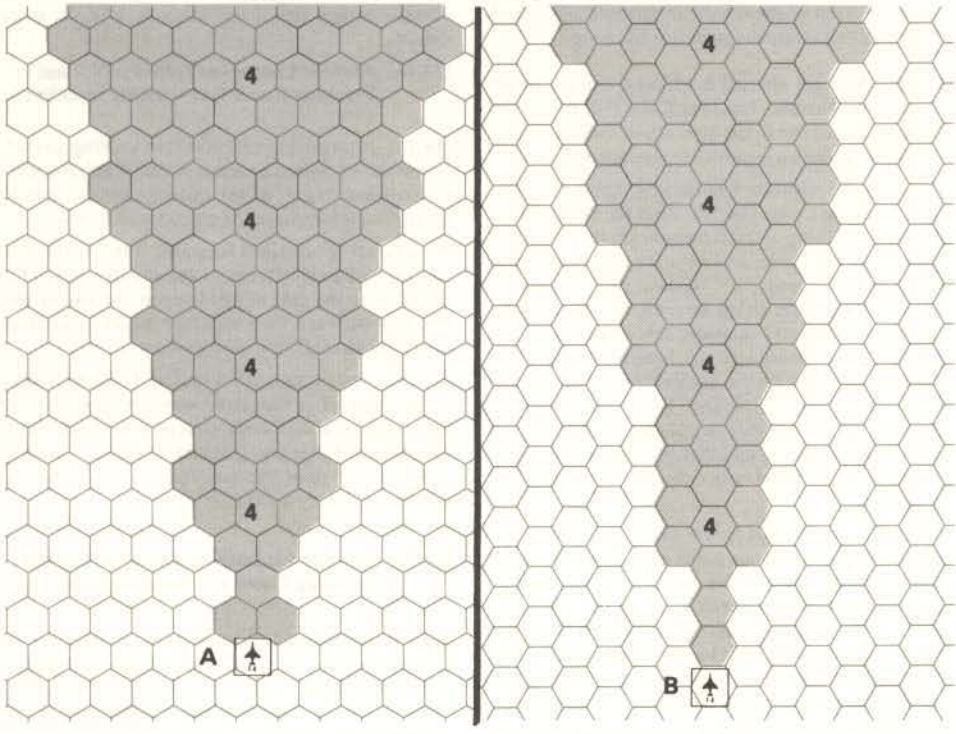


Explanation of Illustration of Limited Tracking Cone Fans:

The aircraft labeled "A" is facing toward a hex juncture; the pattern shown is the forward fan of the aircraft. The aircraft labeled "B" is facing toward a hex side.

Fans can be extrapolated from the illustrations shown and from the descriptions given in the rules. Quite simply, a fan extends one hex to either side for every four hexes it proceeds forward.

LIMITED TRACKING CONE FANS



[14.2] MISSILE LAUNCHING PROCEDURE

[14.21] After the owning Player of a firing aircraft has determined that his aircraft is eligible to launch a missile (i.e., the firing aircraft has an enemy aircraft in its Tracking Cone, etc.), he follows the missile launch procedure.

[14.22] An aircraft may launch either one or two missiles in a single Missile Launch Phase; it may not launch more than two missiles, except for F-14 and Tornado aircraft which may launch up to six.

[14.23] Before determining whether a launched missile malfunctions, the owning Player of the firing aircraft announces which enemy aircraft is to be the target of the missile. A Missile Target marker is placed on the board in the appropriate position near the target aircraft (as determined by Case 15.2 for Heat-Seeking missiles or Case 16.4 for Radar-Homing missiles).

[14.24] The owning Player then checks for malfunction of the missile. He refers to the Missile's Basic Missile Information Table on the missile's Performance Chart, and determines the missile's Probability of Malfunction, which is indicated on that table. He then refers to the Malfunction Probability Modification Table (14.28), and modifies the Probability Number for Malfunction as the table directs. The Player then refers to the rules of Probability (12.0) with the modified Probability Number, and rolls on the Probability Table to determine whether or not the missile malfunctions.

[14.25] If the missile does *not* malfunction, a Heat-Seeking or Radar-Homing Missile counter is placed on the game-map in the same hex as the aircraft that launched it.

[14.26] The owning Player then sets up markers on the Aircraft Control Display of the launching aircraft to keep track of the missile's Dive/Climb Type, Energy Points, Turns in Flight, and Altitude. A missile's Dive/Climb Type and altitude begin at the same settings as the launching aircraft's.

[14.27] The owning Player refers to the launching aircraft's Aircraft Control Display (more specifically, its Weaponry Track), and moves the Radar-Homing Missiles Remaining or Heat-Seeking Missiles Remaining marker to reflect the launch of a missile or missiles. If either marker is set at zero, the aircraft is incapable of launching any further missiles of that type.

[14.28] Malfunction Probability Modification Table (see separate booklet)

[14.3] MISSILE MOVEMENT

[14.31] Heat-Seeking Missiles move during the Aircraft Movement Phases. A given Heat-Seeking missile moves immediately after its target aircraft has completed movement for that turn. (See case 15.2, Heat-Seeking missile targeting and Section 5.0, Sequence of Play.) Radar-Homing Missiles move during the Radar-Homing Missile Combat Phase.

[14.32] On the first Game-Turn of a missile's flight, its Movement Allowance will be dependent on that of its launching aircraft. Examine the Basic Missile Information Table on the missile's Performance Chart; its First Turn Speed Addition will be indicated on the table. Note that the Addition changes with altitude grouping. A missile's Movement Allowance on its first Game-Turn of flight will be equal to the Movement Allowance of its launching aircraft at the instant the aircraft launches it, *plus* the missile's First Turn Speed Addition, (with any modifications that may be caused by the Dive/Climb Type of the missile).

[14.33] On all turns of a missile's flight after its first, its Movement Allowance will be equal to its Maximum Movement Allowance as indicated on the missile's Basic Missile Information Table on its Performance Chart (again, with any modification caused by the missile's Dive/Climb Type).

[14.34] A missile's First Turn Movement Allowance may never be greater than its Maximum Movement Allowance. If the formula in Case 14.32 would cause the missile to have a greater First Turn Movement Allowance, its Movement Allowance is instead its Maximum Movement Allowance.

[14.35] All missiles are assigned a Minimum Range (which is indicated on the missile's Performance Chart). On the first Game-Turn that a missile is launched, it must move as many hexes as its Minimum Range directly forward, and only after it has completed this may it be moved as its owning Player wishes. Note that a missile is not armed until it has moved its Minimum Range, and thus will *not* destroy any aircraft when moving through hexes in order to comply with this rule.

[14.36] All missiles move and accumulate Turn Points in the same manner as aircraft. They may sideslip in the same manner. They may only perform a maneuver if their target aircraft has just executed a maneuver; in other words, missiles may only perform maneuvers in order to follow their target aircraft. When diving, a missile may accumulate Energy Points in the same way as an aircraft. Missiles are assumed to roll any number of points without cost in Movement Points, and wing attitude is not kept track of on their Flight Attitude Chart.

[14.37] Missiles dive and climb in a manner different from aircraft. On each Missile Performance Chart is printed a Dive Table and a Climb Table. Dive and Climb Types are listed on these tables, but are used solely for determining missiles' Tracking Cones. A missile may go from any dive/climb type to any other in a single turn; unlike aircraft, missiles are *not* obliged to change their dive/climb type by a single type in a given turn but might, for instance, even flip from a Type III Climb in one turn to a Type III Dive in the next.

If a missile's owning Player determines that his missile is to dive or climb, he examines the appropriate table on the missile's Performance Chart. He decides how many levels he wishes his missile to dive or climb, and finds on the left-hand column of the Dive or Climb Table the row determined by the level change. He then reads across to the right-hand column, to yield a single number. This number is the addition to or subtraction from the Movement Allowance that is necessitated if the missile is to dive or climb that number of levels.

Example: In the second turn of its Movement, an Early Model Sparrow **(Aim-7B)** flying at **ML** altitude grouping dives **10** levels. The Sparrow's Dive Table indicates that its Movement Allowance must go up **3** Movement Points when the missile dives **10** levels; therefore, the missile will have **21** Movement Points (Maximum Movement Allowance of **18** plus **3**).

Assuming the missile moves **21** hexes directly forward (and does not, for instance, sideslip or accumulate Turn Points), the missile will accumulate **10** Energy Points **[(10 ÷ 3) + (21 ÷ 3)] = 10**; the missile's Energy Point marker is advanced to **10** to indicate the accumulation (see Case 10.64).

[A missile's loss or gain of Movement Points through a Dive or Climb is not cumulative from turn to turn, although such losses or gains by aircraft are. Therefore, in the example given, if the missile were to return to Level Flight in the following turn, its Movement Allowance would again be 18.]

[14.38] Before a missile moves in a given Game-Turn, the owning Player must determine whether or not it goes ballistic, and is therefore removed from play. He checks to see whether the missile's target is still in the missile's Tracking Cone (see Case 14.1). If the target is not in the Tracking Cone and the missile cannot acquire a new target, the missile is considered to go ballistic, and is removed from play.

[14.39] At the end of a missile's movement, during the Turns In Flight Record Segment, a missile's owning Player must check to see whether the missile has expired the number of turns it may remain in play. On a missile's Basic Missile Information Table on the Missile Performance Chart is indicated the number of Game-Turns that a missile may remain in play. During each Turns in Flight Record Segment, a missile's Turns in Flight marker is advanced one box on the Turns in Flight Track on the Aircraft and Missile Control Display. When the Turns in Flight marker indicates that the missile has spent as many turns as it may in flight, the missile is removed from the game.

[14.4] DESTRUCTION OF ENEMY AIRCRAFT

[14.41] If a missile moves through a hex containing its target aircraft at the same level as its target at any time during its movement, the target is considered destroyed.

[14.42] If a missile moves through a hex containing any aircraft other than its target, nothing happens. The aircraft is *not* considered destroyed.

[14.43] If a missile destroys its target, it is removed from play.

[15.0] HEAT-SEEKING MISSILE COMBAT

GENERAL RULE:

The Heat-Seeking missile is generally conceded to be the single most important weapon in modern air combat. It can operate at much greater ranges than cannon or other aircraft guns, and is cheaper and more used than Radar-Homing missiles.

CASES:

[15.1] TRACKING TARGETS

[15.11] Before a missile can be launched, the owning Player must determine whether the enemy aircraft that is to be the missile's target is within the Tracking Cone of the launching aircraft. If it is not, it may not be launched. In addition, during each Missile Launch Phase that the missile remains on the game-map, the owning Player must determine whether or not the missile is still able to track its target.

[15.12] Heat-Seeking missiles, unlike Radar-Homing ones, must fulfill two conditions in order to track their targets. *First*, Heat-Seeking missiles must have their target in their Tracking Cone (as all missiles must); *and second*, the missile must be in the *rear arc* of the target aircraft. Since Heat-Seeking Missiles track the heat emissions of enemy aircraft, and aircraft have their exhaust through the rear, Heat-Seeking Missiles must fulfill this requirement (Exceptions: see Cases 15.14, 15.15 and 15.16).

[15.13] In accordance with this criterion, aircraft may not launch Heat-Seeking missiles unless they are in the rear arc of an enemy aircraft. In addition, if an already-launched Heat-Seeking missile begins the Missile Launch Phase outside its target's rear arc, and it is unable to acquire a new target (see Case 15.2), it goes ballistic and is removed from play.

[15.14] There are two types of Heat-Seeking missiles that violate rules 15.12 and 15.13 above. These are Improved Heat-Seeking missiles and All-Angle Heat-Seeking missiles. If a given missile type is of one of these types, such will be noted on its Missile Performance Chart.

[15.15] Improved Heat-Seeking missiles may track their targets from *any* of the target's three rear arcs.

[15.16] All-Angle Heat-Seeking missiles may track their targets from any arc; i.e., they may track their target from any direction. Note that the target must still be in the missile's Tracking Cone.

[15.17] An aircraft may not launch Heat-Seeking missiles if it is flying in a dive or level and has a Movement Allowance and a Throttle Setting *both* less than four.

[15.18] An aircraft may not launch a Heat-Seeking missile if it has a Radar Lock-on unless the target is the aircraft onto which it is locked (see Section 16.0; Exception: the F-14A Tomcat, the F-15, and the MRCA Tornado *may* do so).

[15.2] HEAT-SEEKING MISSILE TARGETING

[15.21] Before a Heat-Seeking missile is launched, the owning Player must determine which aircraft is to be its target. A Heat-Seeking missile's target is *automatically* considered to be the nearest aircraft that the missile can track. Note: Heat-Seeking missiles *may* have friendly aircraft as their targets. Under such circumstances, the enemy Player would move the missile.

[15.22] During the Missile Launch Phase of each Game-Turn, both Players examine their missiles to determine which aircraft is each missile's target. Obviously, a Heat-Seeking missile may acquire a new target if some aircraft has come closer to the missile at this time than its original aircraft, by interposing itself. If, at this time, there is no aircraft that the missile can have as its target, the missile is removed from Play.

[15.23] After the target aircraft of a Heat-Seeking missile has moved — but before the missile itself is moved — a Heat-Seeking Missile Target marker is placed four hexes away from the target aircraft. This marker is positioned as follows:

Imagine a line drawn between the target aircraft and the missile that's tracking it. The hex that lies along this line that is four hexes away from the target aircraft is the hex in which the target marker is placed. For instance, if the missile is in hex 0716 and the target aircraft is in hex 0707, the target marker would be placed in hex 0711.

[15.24] At some point in its movement, the Heat-Seeking missile *must* move within two hexes of its target marker. Heat-Seeking missiles move directly toward their target markers until they have moved within two hexes of them, at which point they may move directly for their target. If a missile is unable to move within two hexes of its target marker (because it has insufficient Movement Points to do so), it must spend the entirety of its Movement Allowance moving toward its target marker.

[15.25] When moving toward its target marker, a missile may not turn away or accumulate Turn Points in such a way that the missile would be led to turn away from the target marker; nor may the missile move to a hex that is further away from its target marker than the previous hex it occupied.

[15.26] A target marker is considered to be on the same level of altitude as its aircraft. A missile may not climb if its target marker is at a lower altitude than it, nor may it dive if the marker is at a higher altitude. Note that two levels of altitude are equivalent to one hex for distance-determination purposes, and altitude is taken into consideration when determining whether or not a missile has moved within two hexes of its target marker.

[15.27] If a target aircraft has a Throttle Setting of **6** or more, it is considered to have "High Heat-Emission Signature." This means that a missile having the aircraft as its target must move within *four* hexes of its target marker, rather than the normal two.

[15.28] An aircraft with a Throttle Setting of **3** or less is considered to have "Low Heat-Emission Signature." A missile with such an aircraft as its target must move within *one* hex of its target marker.

[15.3] DESTRUCTION OF AIRCRAFT

[15.31] If a Heat-Seeking missile is to destroy its target, it must enter the same hex as its target from the rear. If the target is facing toward a hexside, the missile must enter from one of the three rear hexsides; if the target is facing toward a hex juncture, it must enter from one of the two rear hexsides.

[15.32] All-Angle Heat-Seeking missiles are an exception to this; they may enter the target's hex from any hexside. Note that Improved Heat-Seeking missiles are *not* an exception.

Note to the Players:

At this stage, the Players have read a sufficient portion of the rules to allow them to play scenario 30.32. If they now peruse rules Section 17.0 and Cases 29.1 and 29.2, they will be able to do so. It is suggested that they might find it advisable to do so, as this would give them a grasp of the rules read to date and allow them to proceed further with little difficulty.

[16.0] RADAR-HOMING MISSILE COMBAT

GENERAL RULE:

Radar-Homing missiles operate in a manner similar to that of Heat-Seeking missiles, but home in on a radar "paint" from their firing aircraft, rather than on the heat exhaust of their target. Therefore, Radar-Homing missiles may approach a target from any direction. Radar-Homing missiles tend to be larger, more sophisticated and more costly than Heat-Seekers.

CASES:

[16.1] OBTAINING RADAR LOCK-ONS

[16.11] Before an aircraft may launch a Radar-Homing missile, it must obtain a Radar Lock-On to the enemy aircraft that will be the missile's target.

[16.12] Aircraft attempt to obtain Radar Lock-Ons during the Radar Lock-On Segment of the Missile Launch Phase, after all missiles have been launched.

[16.13] An aircraft cannot attempt to obtain a Radar Lock-On to an enemy aircraft that is farther away than the Maximum Tracking Range of the aircraft. A missile's Maximum Tracking Range will be listed on the Basic Missile Information Table on the Missile Performance Chart; an aircraft's is listed on the Aircraft Radar Characteristics Table (28.1).

[16.14] An aircraft may have only one Radar Lock-on at any given time.

[16.15] The MRCA Tornado and the F-14 Tomcat are exceptions to 16.14. Either may have up to six Radar Lock-ons at once. These planes may attempt to obtain six Lock-ons in a single Game-Turn, but roll separately for each lock-on attempt.

They may have only one Lock-on per target, however.

[16.2] LOCK-ON PROCEDURE

[16.21] To fire a Radar-Homing missile at a target, the firing aircraft must be locked on to the target, and must have been locked on to the target for two complete Game-Turns. For a Radar-Homing missile to move during the Radar-Homing Missile Combat Phase, its firing aircraft must still have a lock-on to its target aircraft.

[16.22] An aircraft may attempt to lock on to any aircraft within its Tracking Range and its missile's Maximum Tracking Range. It is *not* limited to the closest aircraft, as is a Heat-Seeking missile.

[16.23] The ability of an aircraft to obtain and maintain Radar Lock-Ons may be affected by the use of ECM (see Radar Counter-Measures, Section 24.0).

[16.24] Once an aircraft has obtained a Radar Lock-On, it retains the Lock-On until it is broken. An aircraft does not have to re-obtain a Lock-On every turn.

[16.25] An aircraft may only attempt to Lock-On to an enemy aircraft if the enemy aircraft is in its Tracking Cone (see Case 14.1).

[16.26] Each aircraft is given a Radar Lock-On Strength on the Aircraft Radar Characteristics Table (28.1). (Note that aircraft that cannot carry Radar-Homing missiles have no Radar Lock-On Strength). If the owning Player of an aircraft has determined that his aircraft is to attempt to obtain a Radar Lock-On to an enemy aircraft, he first notes the relative positions of the two aircraft, and refers to the Radar Lock-On Chart (16.7). If the friendly aircraft is in one of the side arcs of the target aircraft, the Player refers to the first column of the Chart; if it is in the front or rear arc, he refers to the second column.

The Player then finds the Radar Lock-On Strength of his aircraft along the left-hand side of the table, and cross-references this with the column determined by the relative aircraft positions. This cross-referencing will yield a single number, which is the Base Probability Number of obtaining a Radar Lock-On.

[16.27] The Player modifies the Base Probability Number according to the Radar Lock-On Modification Table (16.8). Then, using the rules of Probability (12.0) and the Probability Number resulting after modification, the Player rolls on the Probability Table to determine whether or not his aircraft is successful in obtaining a Radar Lock-On.

[16.28] If an aircraft is successful in obtaining a Radar Lock-On, the owning Player places an upside-down "Lock-On" marker on top of the aircraft's target. At the end of the next Missile Launch Phase (during the Radar Lock-On Segment), the Player may flip the Lock-On marker rightside-up (assuming the lock-on has not been broken). On the following Missile Launch Phase during the Missile Launch Segment, the aircraft could launch a Radar-Homing missile.

[16.3] LAUNCHING RADAR-HOMING MISSILES

[16.31] In order for an aircraft to launch a Radar-Homing missile, it must have a Lock-On to an enemy aircraft, and it must have had this Lock-On for *two* complete Missile Launch Phases; in other words, the Lock-On marker on top of the enemy aircraft must have been flipped upright during a previous Missile Launch Phase.

[16.32] Each missile has listed on its Missile Performance Chart its Minimum Launch Ranges. An aircraft may not launch a Radar Homing Missile unless it is *at least an many hexes away from its target as the missile's Minimum Launch Range.* (Note again that two levels of altitude count as one hex for range-tracing purposes). In other words, there is a minimum distance at which an aircraft can launch a Radar-Homing missile.

[16.33] A missile's Minimum Launch Range changes with the relative positions of the firing aircraft and its target. If the firing aircraft is in its target's rear arc, the range indicated under "from rear" is used; if in a side arc, the range under "from side" is used; and if in the forward arc, the range under "from front" is used.

[16.4] RADAR-HOMING MISSILE TARGETTING

[16.41] After a Radar-Homing missile is launched, a Missile Target marker is placed directly in front of the missile's target aircraft. The target marker is placed as many hexes in front of the actual target aircraft as the target aircraft's Movement Allowance.

[16.42] A Radar-Homing missile must attempt to move within as many hexes of its target marker as is equal to the missile's Movement Allowance at some point in its movement. It may not turn or move away from its target marker, in the same manner that Heat-Seeking Missiles must follow similar restrictions (see Cases 15.24, 15.25, and 15.26). Once it reaches this point, the Radar-Homing missile may move so as to intercept and hit the target aircraft. If a radar homing missile ever begins its movement in a hex where it is *not* within its Movement Allowance of the target marker but *is* within its movement allowance of the target aircraft, it may still move to and destroy the target aircraft.

[16.43] At the beginning of each Missile Launch Phase, during the Tracking and Target Acquisition Segment, both Players move the Radar-Homing Target markers of each of their missiles, so that the target markers are moved from the previous turn's position to a new position in front of their aircraft, as per 16.41. In other words, Radar-Homing missile's target markers are moved to follow their aircraft at the beginning of each Missile Launch Phase *before* the aircraft moves.

[16.5] RADAR-HOMING MISSILE TRACKING

[16.51] During the Tracking and Target Acquisition Segment of each Missile Launch Phase, both Players check their Radar-Homing missiles to determine whether the missiles are still able to track their targets.

[16.52] Radar-Homing missiles track their targets by homing into a radar "paint" that the launching aircraft "paints" onto the target aircraft; this radar "paint" is the radar lock-on. Therefore, in order for a Radar-Homing missile to track its target, it must fulfill two criteria:

a) The firing aircraft of the missile must have a lock-on to the target aircraft (i.e., the aircraft must retain the lock-on if the missile is to be able to track its target.)

b) the target aircraft must be within the missile's tracking cone.

[16.53] If either of these conditions is not met, the missile is considered to go ballistic, and is removed from play.

[16.6] THE RADAR-HOMING MISSILE COMBAT PHASE AND BREAKING LOCK-ONS

[16.61] Radar-Homing missiles move in the Radar-Homing Missile Combat Phase, unlike Heat-Seeking missiles, which move in the Movement Phase of their target aircraft.

[16.62] The first segment of a Radar-Homing Missile Combat Phase is the Radar Lock-on Breakage Segment, during which the Players check to discover whether a target aircraft has succeeded in breaking the Lock-on of any enemy aircraft.

[16.63] During this Segment, the Players determine the Probability Number for a given aircraft to break a given lock-on in the following manner; add three for each hex-point turned by the target aircraft, add to the number for the effect of ECM (see Radar Counter-Measures, Section 24.0). This number is the Probability Number that the target aircraft will succeed in breaking the Lock-on; the Players refer to the rules of Probability (12.0), to determine whether or not the aircraft is successful. If it is successful, the Radar Lock-on marker is removed from the target aircraft, and any missile homing in on that Lock-on is considered to go ballistic and is removed from play.

[16.64] Note that Lock-ons may be broken in other ways; a Lock-on is considered broken during the Missile Launch Phase (during the Targetting and Tracking Segment) if the target aircraft is not in the Tracking Cone of the *firing* aircraft. In addition, a Player may voluntarily have any of his firing aircraft break their Lock-ons at any time; any missile that was following that Lock-on is removed from play, the Lock-on marker is removed, and the aircraft may not attempt to obtain a new Lock-on until the following Game-Turn.

[16.65] During the Movement Allowance Determination Segment, the owning Player of a missile determines whether the missile will dive or climb, and what its Movement Allowance will be. During the Movement Segment (of the Radar-Homing Missile Combat Phase), he moves the missile, and during the Turns in Flight Record Segment, he advances the missile's Turns in Flight marker to reflect the fact that the missile has been in flight for an additional turn.

[16.7] RADAR LOCK-ON CHART
(see separate booklet)

[16.8] RADAR LOCK-ON MODIFICATION CHART
(see separate booklet)

[17.0] LOADED CONDITION

GENERAL RULE:

When aircraft are loaded with large amounts of stores (i.e., bombs, ECM pods, or what-have-you), or are severely damaged, they operate less efficiently than when unloaded.

CASES:

[17.1] GENERAL

[17.11] Each aircraft has on its Aircraft Performance Chart a "Loaded Limitations Table." This lists the effects that being in Loaded Condition has upon the aircraft. Generally, an aircraft will be given a new Maximum Movement Allowance, a new ceiling (or Maximum Altitude), will be prohibited from making certain types of Climbs or Dives, and will have its Acceleration Allowance reduced and Turn Modes and Roll Costs increased.

[17.12] An aircraft is considered to be "loaded" if a) it is carrying any bombs or other munitions (see Section 25.0), or b) is carrying more than two Pods, or c) has taken at least half as many points of damage as it is able to take.

[17.2] E.C.M. PODS (Optional Rule for use with Sections 23.0 through 25.0)

[17.21] Certain aircraft are, at certain times, able to carry ECM pods.

[17.22] Any aircraft may carry one ECM pod and one Infra-Red Counter-Measures pod maximum. Wild Weasel aircraft (see Case 24.8) may carry up to three ECM pods and one Infra-Red Counter-Measure pod.

[17.23] For each ECM or Infra-Red Counter-Measure pod that an aircraft carries, it must subtract from its armament something. That is to say, if an aircraft that cannot carry munitions (see Section 25.0) carries an ECM pod, it may carry one fewer air-to-air missile than it normally could. If an aircraft that *can* carry munitions carries pods and is in fact carrying munitions, it may carry either two 1000 lb. bombs, three 750 lb. bombs, one ASM or rocket pod, or two bomblet or napalm units less than it normally could. In other words, if an aircraft carries pods, the number of munitions and/or air-to-air missiles that it may carry is reduced.

[17.24] If an aircraft that is able to carry munitions carries pods without carrying munitions, there is no problem; such an aircraft need *not* reduce its missile stock. Note that aircraft that carry munitions and pods, rather than reducing munitions loads, may instead reduce the number of air-to-air missiles carried.

[17.25] Certain aircraft are able to carry special pods containing chaff (six turns worth) or flares (four flares). An aircraft carrying these is automatically considered loaded. Such pods must be substituted for stores or missiles as above.

[17.26] While external drop-tanks play no part in *Air War* and thus are not included, due to the short duration of the scenarios, an aircraft carrying drop tanks is considered loaded.

[17.27] Note that aircraft carrying pods are *not* loaded as a result (Exception: see Case 17.25); however, if such an aircraft is *also* carrying munitions and thus is loaded, the number of munitions and/or missiles that it carries must be reduced, as per Case 17.23.

[18.0] OPTIONAL RULES

GENERAL RULE:

The following seven Sections of the *Air War* rules consist of optional rules — rules that are not necessary to play the game under most conditions, but which add complexities and new mechanics to the game that reflect additional facets of modern air combat. The Rules Sections are generally organized so that the latter Sections of the seven-Section group are dependent upon earlier Sections. For instance, it is impossible to use the Radar Counter-Measures rules (Section 24.0) without also using the Radar Search rules (Section 20.0). However, Sections 21.0 and 22.0 may be used with or without any of the other Sections; they are not dependent on any of the other optional rules Sections, nor are any dependent upon them.

In the Scenarios at the end of the rules, a Section devoted to "Optional Rules" will be included, which will list the modifications that are necessitated if that Scenario is to be played with the optional rules.

Note: Most Scenarios can be played without knowledge of the optional rules. If, at this point, the Players wish to familiarize themselves with the game further before continuing through the optional rules, they may play the Historical Scenarios in Cases 30.1 and 30.2 and then return to the rules.

SEQUENCE OF PLAY
(For Use with Optional Rules)

When *Air War* is played with all the optional rules, a number of additions and changes to the Sequence of Play must be made to accomodate the additional complexities. This section presents the full Sequence of Play for use with all optional rules.

A. Initial Position Determination Phase: As per Phase A of the regular Sequence of Play (4.0).

B. Visual Search Phase: Both Players conduct Visual Searches with all of their aircraft that are capable of conducting Visual Searches.

C. Radar Search Phase: Both Players may conduct Radar Searches with any of their aircraft that may conduct such searches.

D. Final Position Determination Phase: The Players again conduct a Position Determination Phase (as per Phase A of the regular Sequence of Play), taking into account this time aircraft that have now been spotted by the respective Players' aircraft.

E. Initiative Determination Phase: As per Phase B of the regular Sequence of Play.

F. Missile Launch Phase: As per Phase C of the regular Sequence.

G. Disadvantaged Aircraft Movement Phase: As per Phase D.

H. Normal Aircraft Movement Phase: As Per Phase E.

J. Advantaged Aircraft Movement Phase: As per Phase F.

K. Radar-Homing Missile Combat Phase: As per Phase H.

L. Cannon and AA Combat Phase: As per Phase H, except that ground AA installations may also fire at enemy aircraft.

M. Bombing Phase: The Players may have any of their bomb-laden aircraft release bombs. Effects of bombardment are resolved.

N. Bookkeeping Phase: As per Phase J.

[19.0] VISUAL SEARCH

GENERAL RULE:

Before aircraft actually fight, they must first determine where the enemy is. This involves visual and radar search. It is perfectly conceivable that aircraft will never see another group of enemy aircraft and fly past each other, or for one force of aircraft to be destroyed by another group that the former never sights. **Note:** In planes with crews of one or two, the crewman performing the radar search may not search visually at the same time.

PROCEDURE:

During the visual Search Phase, both Players conduct Visual Searches with all their aircraft that are capable of doing so and that the owning Player wishes to do so. Each aircraft may search only one of its six arcs. The arc an aircraft is to search is dependent either on plotting or choice of the owning Player, depending on the type of scenario being played. If there are enemy aircraft in the arc in which a given friendly aircraft is searching, the friendly Player determines the range in hexes to each of those enemy aircraft, and cross-references the range on the Visual Search Base Probability Table (19.7) to determine the Base Probability of obtaining visual contact with each aircraft. He then multiplies the Base Probability of obtaining visual contact with a given enemy aircraft by the aircraft's Size Multiple. The Player then refers to the Visual Search Probability Modification Table (19.8), and modifies the Probability Number as the table directs. Using the modified final Probability Number, the Player refers to the rules of Probability (12.0) to determine whether or not the friendly aircraft has spotted the enemy aircraft.

The friendly aircraft then repeats this procedure for any other enemy aircraft in the same arc. Upon completion of one aircraft's searches, the Players proceed to another aircraft, until all searches have been executed.

CASES:

[19.1] DIRECTIONAL SEARCH

[19.11] Each aircraft may only search visually one of its six arcs (i.e., it may search either its forward, forward right, forward left, rear right, or rear left; see Case 19.13; Exception: see Case 19.12).

[19.12] Certain aircraft are noted (on their Aircraft Performance Charts) as having two crew members. Aircraft with two or more crew members may search any *two* arcs in one Visual Search Phase, *or* may search the same arc two or more times.

[19.13] Most aircraft may *not* search their rear arcs. Because of the positioning of most cockpits, most aircraft's pilots are incapable of seeing to the rear of their aircraft. The only aircraft which may search their rear arcs are: F-14, F-15, F-16, F-18, and A-10. Exception: All aircraft may search their **rear arc for aircraft that are eight or more levels above the searching aircraft.**

[19.14] If an aircraft a) is inverted, b) executed any type of maneuver in the previous Game-Turn, or c) rolled more than 8 points in the previous Game-Turn, then it may not conduct a Visual Search during the Visual Search Phase.

[19.15] If an aircraft is banked to the right, it may not search either of its left side arcs; if banked to the left, it may not search either of its right side arcs.

[19.2] CONDUCTING VISUAL SEARCHES

[19.21] After the owning Player has determined the arc in which his aircraft is to make a Visual Search, he then determines the distance in hexes between his aircraft and each enemy aircraft in that arc (see Case 19.3).

[19.22] He then resolves the Visual Search separately for each enemy aircraft. He refers to the Visual Search Base Probability Table (19.7), and finds the distance in hexes between his searching aircraft and an enemy aircraft along the left-hand column of the table. Reading across on the row determined by the hex range, he finds the Base Probability Number of the Visual search in the corresponding position in the right-hand column of the table.

[19.23] He then multiplies this Base Probability Number by the Size Multiple of the enemy aircraft. *Note:* Aircraft Size Multiples are noted in the Basic Aircraft Information Table on the Aircraft Performance Chart of the aircraft.

[19.24] The Player then refers to the Visual Search Probability Modification Table (19.8) and modifies the product determined in Case 19.23 as the table directs. This modified number is the Probability Number that the aircraft will obtain visual contact with (i.e., see) the enemy aircraft.

[19.25] Using this Probability Number, the Player refers to the rules of Probability (12.0), and determines whether or not the aircraft has obtained visual contact with the enemy aircraft.

[19.26] If the Probability Number is fractional, round down. If the number is greater than 35, consider it to be 35.

[19.27] When one friendly aircraft has obtained visual contact with an enemy aircraft, all friendly aircraft are considered to have obtained visual contact with that aircraft.

[19.3] SEARCHING FOR MISSILES

[19.31] If an aircraft that has not been seen by enemy aircraft fires a missile, there is a chance that the enemy aircraft will not spot the missile.

[19.32] Visual searches for missiles are handled in the same way that they are for aircraft. However, a firing aircraft's Size Multiple is considered to be

one greater than its listed Size Multiple on the Game-Turn following that in which it launched a missile.

[19.33] All air-to-air missiles have a Size Multiple of 6 on the turn in which they are launched, and 4 thereafter.

[19.4] OUT-OF-CONTACT SCENARIOS

[19.41] In certain Scenarios, it will be indicated that the Players begin out of contact. This basically means that neither side has obtained visual or radar contact with the other. In addition, in some Scenarios, one Player begins out of contact, while the other *has* obtained contact with the first Player.

[19.42] In out-of-contact Scenarios, the out of contact Player or Players will be required to plot movement for their aircraft for a certain number of turns. Their aircraft will be required to follow their plotted movement until they obtain contact with the enemy.

[19.43] In addition to plotting movement for his aircraft, a Player must plot search arcs for his aircraft. This basically means that he must indicate which arc each of his aircraft will search in each Game-Turn of its out-of-contact movement. The Player may plot searches in any way he likes; two suggested ways are: a) he may indicate which arc each aircraft will search, i.e., "Aircraft A searches forward right arc," or b) he may indicate which direction each aircraft will search in, i.e., "Aircraft A searches to the East."

[19.5] VISUAL CONTACT

[19.51] When one of a Player's aircraft has spotted an enemy aircraft, the Player has "obtained visual contact" with that enemy aircraft. All of the searching Player's aircraft are considered able to "see" the enemy Aircraft.

[19.52] If, at any time, a spotted enemy aircraft moves in such a way that *all* of the opposing Player's aircraft are unable to see it, the opposing Player has *lost* visual contact with that aircraft. For purposes of this rule, an aircraft is unable to see any enemy aircraft in its rear arc (Exception: see Case 19.13); further, if an aircraft is banked to the left, it is unable to see any aircraft in any of its right arcs, and vice versa.

[19.53] If a Player loses visual contact with an enemy aircraft, none of his aircraft are able to "see" that aircraft until the Player re-obtains visual contact. All of the Player's aircraft are able to search for the enemy aircraft.

[19.54] Note that a Player may not fire any of his aircraft's cannons nor have any of his aircraft launch missiles at an enemy aircraft that the Player does not have contact (either visual or radar) with. In other words, if a Player loses visual contact with an aircraft, none of the Player's aircraft may fire at that aircraft until one of the Player's aircraft spots that aircraft again.

[19.6] VISUAL SEARCH FOR GROUND TARGETS

[19.61] Before an aircraft may bomb or strafe a ground target, the target must be visually spotted first.

[19.62] Visual searches for ground targets are handled in the same way as for aircraft, except that an aircrew member searching on the ground may not simultaneously search in the air.

[19.63] For search purposes, all Bridges, Buildings, and parked aircraft have a Size multiple of 12. All parked aircraft in hardened sites, dumps, Trucks, AFVs, SAM sites, and AA guns all have a Size Multiple of 8. Hardened AFVs and Trucks have a Size Multiple of 5.

[19.64] An exception to 19.61 is that aircraft that have an Accuracy Multiple (for bombing) of 1 or ½ and that have radar may bomb targets that have been spotted by radar search but not by visual search.

[19.7] VISUAL SEARCH BASE PROBABILITY TABLE
(see separate booklet)

[19.8] VISUAL SEARCH PROBABILITY MODIFICATION TABLE
(see separate booklet)

[20.0] RADAR SEARCH

GENERAL RULE:

Radar Search is much like Visual Search, in that it involves attempting to determine the positions of enemy aircraft. However, radar searches will usually be carried on at ranges far in excess of those used in visual searches.

PROCEDURE:

During the Radar Search Phase, the Players conduct Radar Searches with any of their aircraft that are capable of doing so and that they wish to do so. Each Player examines each of his searching aircraft and determines whether there are any enemy aircraft in its Radar Search Arc (see Case 20.1). Each then executes Radar Search for each aircraft that does not have enemy aircraft in its Radar Search Arc.

If a given aircraft is searching for enemy aircraft, the owning Player determines the range in hexes between the searching aircraft and the enemy aircraft. He then refers to the Radar Search Base Probability Table (20.3), and finds the searching aircraft's Radar Search Strength at the top of the table. (**Note:** Aircraft's Radar Search Strength are listed on the Aircraft Radar Characteristics Table, 28.1). He then reads down the column determined by the Strength until he finds the row of the table determined by the hex range between the two aircraft. He then reads across the table to the extreme left-hand column; the number in the left-hand column is the Base Probability Number for the Radar search.

The Player then modifies the Base Probability Number as the Radar Search Modification Table (20.4) directs. Thereafter, he multiplies the modified Base Probability Number by the Size Multiple of the enemy aircraft to yield the final Probability Number. The Player refers to the rules of Probability (12.0) to determine whether or not his searching aircraft has obtained radar contact with the enemy aircraft. The Player then repeats the procedure for each enemy aircraft in his searching aircraft's Radar Search Arc, then proceeds to execute the procedure for each of his other friendly searching aircraft.

CASES:

[20.1] SEARCH ARCS

[20.11] Each aircraft is assigned a Radar Type and a Radar Search Strength by the Aircraft Radar Characteristics Table (27.1). The Radar Search Strength is a number between 1 and 10, and the Radar Type is a letter — either A, B, C, or D, with A generally being the best type.

[20.12] Each aircraft is assigned a Radar Search Arc which is the arc to the front of the aircraft in which it can search for enemy aircraft.

[20.13] Type A Radar has a Radar Search Arc that extends through the front 180° of an aircraft. An aircraft with Type A Radar may search for all aircraft in its forward or forward side arcs.

[20.14] Type B Radar has a Radar Search Arc that extends throughout the front 120° of the aircraft's facing. An aircraft with Type B Radar may search for all aircraft in an arc defined as follows:

For hex-side facing aircraft, trace along the two hexrows formed by the two front-side hexes of the aircraft, and all hexes on or between these hexrows are part of the Radar Search Arc. (See illustration.)

For hex-juncture facing aircraft, trace along the front-side lines jutting from the aircraft's hex, and all hexes on or between these lines are within the Radar Search Arc.

[20.15] Type C Radar's Radar Search Arc extends throughout a 60° arc. An aircraft with this type of radar has a Radar Search Arc that extends throughout its forward arc.

[20.16] Type D Radar has a Radar Search Arc that extends throughout a 14° arc to the front of the aircraft. An aircraft with this type of Radar may search for all enemy aircraft within its fan, as defined in General Missile Combat, in Case 14.1. See illustration.

Explanation of Radar Search Arc Examples:

Each of the four types of Radar Search Arcs is shown, both for aircraft facing toward hexsides, and for those facing toward hex-junctures.

[20.2] CONDUCTING RADAR SEARCHES

[20.21] Aircraft conducting Radar searches *do not* have a choice of which arc to search, as those conducting visual searches do; rather, they must search only in their Radar Search Arc, as defined in Case 20.1.

[20.22] An aircraft that has obtained a Radar Lock-on to an enemy aircraft (see Case 16.1) may not conduct radar search.

[20.23] After a Player has determined that a given aircraft will conduct a radar search, he determines the distance in hexes between the searching aircraft and each of the enemy aircraft in his aircraft's Search Arc.

[20.24] He then resolves the Radar Search separately for each aircraft. He refers to the Radar Search Base Probability Table (20.4), and finds the column determined by the Radar Search Strength of his searching aircraft. (**For Example**, if the aircraft's Search Strength is **5**, he refers to the **5** column of the table). He reads down this column until he finds the distance in hexes between his aircraft and an enemy aircraft, then reads across the table along the row determined by this distance, until he comes to the Base Probability Number column of the table. The row determined by the distance will determine the Base Probability Number for the aircraft's search attempt on that particular enemy aircraft.

[20.25] The Player then modifies the Base Probability Number as the Radar Search Probability Modification Table (20.4). **Note:** Visual search Probability Numbers are modified *after* Size Multiple multiplication; radar search Probability Numbers are modified *before* Size Multiple multiplication.

[20.26] He then multiplies the modified Base Probability Number by the Size Multiple of the enemy aircraft, and refers to the rules of Probability (12.0) with the resulting number as the Probability Number. He rolls on the Probability Table to determine whether his searching aircraft is successful in obtaining radar contact with the enemy aircraft.

[20.27] The Player then repeats this procedure with each of the other enemy aircraft within his aircraft's Radar Search Arc. Once he has finished doing so, the Players proceed to the next aircraft that is conducting a radar search, and resolve that aircraft's radar search.

[20.28] If a Probability Number is fractional, round it down. If a Probability Number is less than 1, consider it to be 1; if it is greater than 35, consider it to be 35.

[20.3] RADAR CONTACT

[20.31] When one of a Player's aircraft has obtained radar contact with an enemy aircraft, all of

the Player's aircraft are considered to have obtained radar contact with it.

[20.32] If an aircraft that has been "spotted" via radar moves in such a way that *all* of the opposing Player's aircraft are unable to track it, the opposing Player is considered to have *lost* radar contact. For purposes of this rule, aircraft are unable to track with their radar outside of their Radar Search Arc. That is, an aircraft will lose radar contact with an enemy aircraft that moves outside of the first aircraft's Radar Search Arc.

[20.33] Note also that ECM devices (see Section 24.0) will occasionally allow an aircraft to lose radar contact with an aircraft that is *within* its Radar Search Arc, if the aircraft is using radar jammers.

[20.34] If a Player loses radar contact with an enemy aircraft (and does not have visual contact with it), he may attempt to regain radar contact with it by executing Radar Searches with his aircraft.

[20.35] If a Player does not have either radar or visual contact with an enemy aircraft, none of the Player's aircraft may fire their cannon or launch missiles at that enemy aircraft.

[20.36] If a Player obtains visual contact with an enemy aircraft, and he has not previously obtained radar contact with that aircraft (and his aircraft have a Radar Search Strength greater than zero), the Player automatically obtains radar contact with the aircraft. In other words, if a Player can see an aircraft, he can pick it up on his radar screen.

[20.4] RADAR SEARCH BASE PROBABILITY TABLE
(see separate booklet)

[20.5] RADAR SEARCH PROBABILITY MODIFICATION TABLE
(see separate booklet)

[21.0] PILOT CAPABILITY

COMMENTARY:
In actual air combat, pilot experience and capability is an extremely important factor. One Vietnamese pilot was responsible for nearly one-quarter of all Vietnamese kills in the latest American brush war. Approximately 65% of the American kills in the Pacific Theatre were made by 15% of American pilots.

GENERAL RULE:
Pilots are designated as either "Honchos," normal, or "Novices," In addition, there are two other classes of pilots to be used when extremes are called for; these are "Turkeys" and "Super-Honchos."

PROCEDURE:

The individual Scenario listings will indicate whether any pilot is to be anything other than normal. This indication will be made in the section of the Scenario listing reserved for Optional rules.

CASES:

[21.1] GENERAL EFFECTS

Pilot quality has an effect on initiative, on Radar and Visual Search, on Cannon Fire, on Missile Malfunction, on Radar Lock-ons, and on a number of other mechanics in the game. The specific effects of Honchos or Novices are indicated in the individual rules devoted to these mechanics; for instance, their effect on Initiative is indicated on the Initiative Die-Roll Modification Table (6.2). Where the effects of Honchos and Novices are indicated, they are labeled with the tag "Special Rule." Generally speaking, a Honcho will have a beneficial effect, while a Novice will have a detrimental one.

[21.2] EXTREME CASES

[21.21] If a pilot is classed as a Turkey, he is considered to be a novice, with the addition of the following effects: a) All additions or subtractions to die-rolls or Probability numbers that are made for Novice pilots are doubled; and b) An aircraft piloted by a Turkey has its Position degraded by one point, i.e., if the aircraft were in a Position of Advantage, it would be considered to be in a Normal position; if it were in a Normal Position or Position of Disadvantage, it would be considered Disadvantaged.

[21.22] Super-Honchos act as Honchos except for the following effects: a) All Honcho effects are doubled (i.e., as per Case 21.1 above, except that Honcho rather than Novice modifications are doubled); and b) An aircraft piloted by a Super-Honcho has its Position upgraded (i.e., if Disadvantaged, it is considered Normal, and if Normal or Advantaged, it is considered Advantaged).

[22.0] NATURAL PHENOMENA

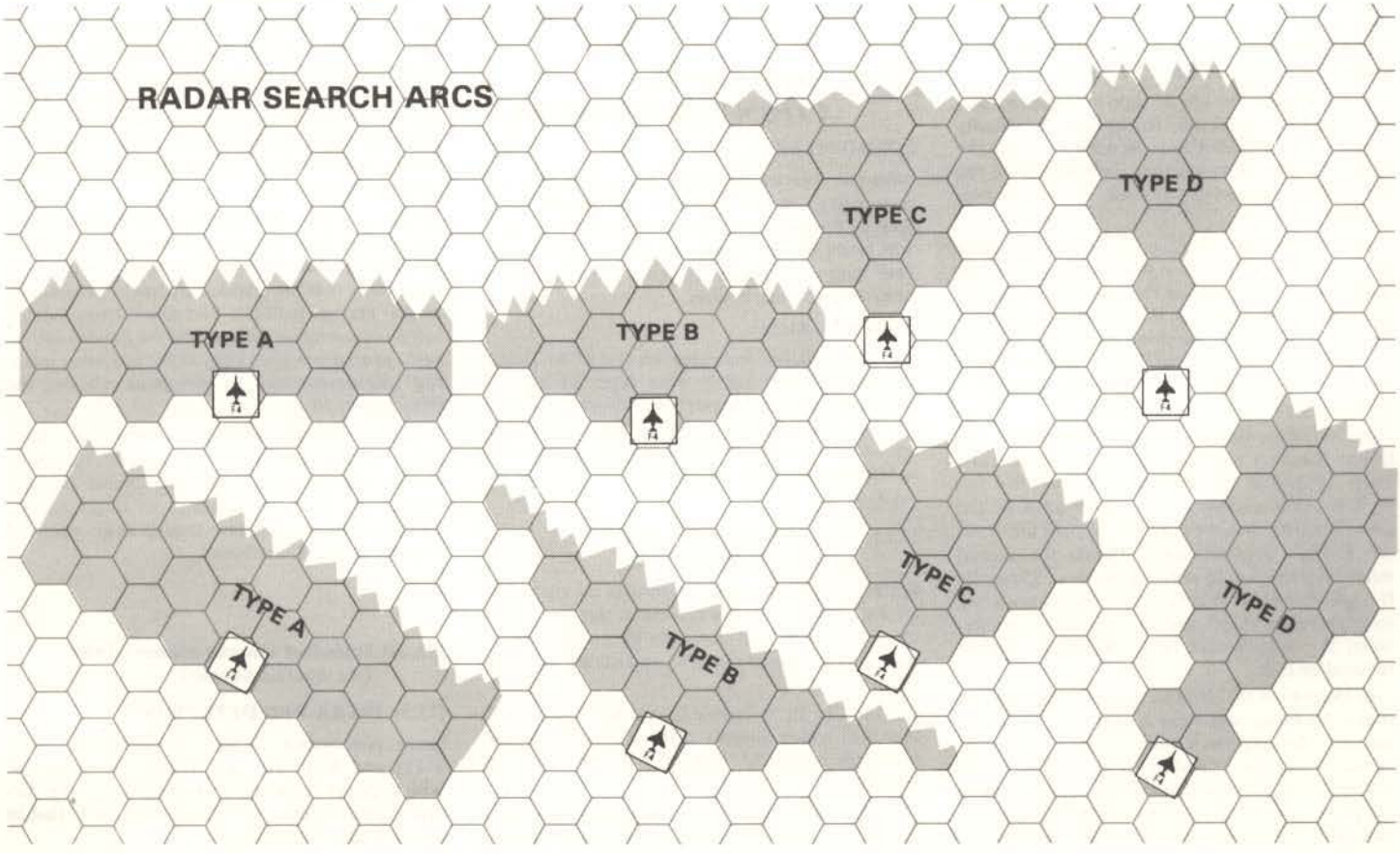
GENERAL RULE:
During air combat operations, natural phenomena such as clouds and the sun often have an effect on operations.

PROCEDURE:
At the beginning of a scenario, the Players determine where the sun and/or clouds will be located. Usually a Scenario will direct cloud and sun placement. In addition, some Scenarios will indicate that certain areas of the game-map are considered to have land at an altitude above zero, and thus that any aircraft flying lower than a given altitude on this portion of the game-map are destroyed. In Scenarios invented by the Players, the Players must determine the placement of clouds, the sun and land altitude by mutual agreement.

CASES:

[22.1] THE SUN

[22.11] In each of the Scenarios, the initial map arrangement is indicated. In addition, the Op-



tional rules section for a given Scenario will indicate whether or not the Scenario takes place at night, and, if not, in what direction the sun lies. The sun's direction will be given as one of the twelve directions of the hexgrid: N, NNE, NE, E, SE, SSE, S, SSW, SW, W, NW, or NNW. Throughout the duration of the game, the sun is considered to be in the direction indicated, and any aircraft facing in that direction is said to be facing directly into the sun. Any aircraft facing within one point of the sun (i.e., an aircraft facing SSW or W when the sun is to the SW) is said to be facing within one point of the sun.

[22.12] If an aircraft is facing into or within one point of the sun, its Probability Number for Visual Search and its Initiative die-roll will be reduced. See Sections 19.0 and 6.0.

[22.13] If the Infra-Red Counter-Measures rules (see Section 23.0) are used, the sun may act as an Infra-Red source.

[22.2] CLOUDS

[22.21] Each of the Scenarios indicates whether or not there are any clouds present, and if so, where they are located. Cloud positions are given in terms of a hex number followed by an altitude span. **Example: A0411, 24-28** would mean that a cloud is present in hex **0411** on map section **A** (and in all six hexes adjacent to hex **0411**), and that it extends through altitude levels **24, 25, 26, 27** and **28**. The Players place a "Cloud" marker in each of the hexes indicated by the Scenario they are playing, and make a mental note of the levels that the cloud extends through. Keep in mind that a cloud extends into the six hexes surrounding a cloud marker. When constructing scenarios of their own devising, the Players may place clouds more or less anywhere they like.

[22.22] An aircraft that is flying through a cloud may neither fire its cannon nor launch Heat-Seeking missiles (see below). It *may* launch Radar-Homing missiles if it has a lock-on. It may not conduct visual searches, but may conduct radar searches.

[22.23] This is an optional rule, and need not be used even if the rest of Case 22.2 is used.

If a cloud lies on the line of sight between two aircraft, neither aircraft may fire its cannon, visually search for, or launch a Heat-Seeking missile at the other. To determine whether a cloud lies on the line of sight between two aircraft, follow this procedure:

a) Take a straight edge (i.e., piece of paper, ruler or whatever) and hold it so that it forms a straight line between the center of the hex of one aircraft and that of the other. If this straight line passes through a cloud hex, the cloud may be on the line of sight; if it does not, there is no chance that it may be. If the cloud is along this line, proceed to the next step.

b) Determine the distance in hexes between the firing/searching aircraft and the other aircraft. Then determine the distance between the firing/searching aircraft and the near edge of the cloud (i.e., the cloud hex that the straight line from the aircraft went through). Divide the second number by the first to obtain a fraction. **Example:** If there were **12** hexes between the searching/firing aircraft and the cloud, and **30** between the two aircraft, the ratio would be **12/30**, which can be reduced to **2/5.**

c) Determine the distance in altitude levels between the firing/searching aircraft and the other aircraft. Multiply this number by the fraction obtained in step (b), rounding to the nearest whole number. The difference in altitude levels between the firing/searching aircraft must be equal to this number if the cloud is to be along the line of sight.

Note: If the cloud exists at more than one altitude level, some level of the cloud must be equal to this number. If some level of the cloud is the indicated number of altitude levels lower or higher than the firing/searching aircraft, the cloud blocks the line of sight. If not, the cloud does not block line of sight.

[22.24] If the Infra-Red Counter-Measure rules are used (see Section 23.0) clouds may under certain circumstances act as Counter-Measures.

[22.3] LAND ALTITUDE

[22.31] Altitude in *Air War* is calculated from a base at sea level, not from ground level, because the primary effect of altitude is dependent upon changing air pressure, and air pressure is based upon the distance above sea level and not the distance above the ground. Since, therefore, ground level is greater than sea level in certain areas in which air conflict can occur (such as, for instance, the Himalayas), provision must be made for ground level being at a greater altitude level than zero.

[22.32] In the Optional rules section of a Scenario, ground level will be indicated if it is any greater than zero. Occasionally, the level of one particular map-section will be higher than the level of another; alternately, the Scenario will often indicate that ground level is at a certain altitude no matter the map section. **Note:** There are no markers to represent land altitude; the players must simply keep track of it.

[22.33] Although no Scenario in the game does so, the Players may, if they wish while inventing their own Scenarios, designate certain hexes or groups of hexes as being at a higher altitude than the surrounding hexes.

[22.34] If an aircraft flies into a hex at which the ground altitude is the same as or lower than the level at which the aircraft is flying, the aircraft is destroyed. In other words, aircraft flying into the ground are destroyed.

[23.0] INFRA-RED COUNTER-MEASURES

COMMENTARY:

Infra-red counter-measures are devices that aircraft carry, either to throw off enemy Heat-Seeking missiles, or to detect the infra-red radiation given off by enemy aircraft at long range. They range in complexity from simple flares to complex electronic devices.

GENERAL RULE:

Each aircraft has indicated on the ECM Device Utilization Table (28.2) what types (if any) of Infra-red Counter-Measures the aircraft may use. If a Scenario directs (or if the Players wish), aircraft that are capable of mounting a given infra-red counter-measure may do so.

CASES:

[23.1] CARRYING INFRA-RED COUNTER-MEASURES

[23.11] Infra-red counter-measures are carried by aircraft in one of two ways; either they are equipment that is carried normally by an aircraft, or they are pods taken along by an aircraft for a specific mission.

[23.12] The ECM Device Utilization Table (28.2) indicates which aircraft carry infra-red counter-measures internally, and what devices such aircraft carry.

[23.13] In addition to these, all aircraft may carry any of the following Infra-red Counter-measure pods: flare pods (each containing four flares); ALQ-123 pods; improved ALQ-123 pods; and AAQ-4 pods. The ECM Availability Table will indicate which nations use what pod types (see this table, at the end of the rules).

[23.14] American, Israeli and NATO aircraft may carry one Infra-red counter-measure pod, and no more. Aircraft must subtract munitions and/or air-to-air missiles to reflect the space taken up by such pods, as per Case 17.2.

[23.15] All Infra-red anti-missile counter-measures are operated in the same manner (see Case 23.2); the only difference between internal and pod counter-measures is the weight involved. volved.

[23.2] ANTI-MISSILE COUNTER-MEASURES

Anti-Missile Counter-measures are devices designed to throw Heat-Seeking missiles off track, and thus allow the counter-measure-equipped aircraft some measure of protection against such missiles.

[23.21] After a missile's target aircraft has moved, but before the Heat-Seeking missile itself moves, the target aircraft may attempt to use any infra-red counter-measures it carries against the missile that is following it.

[23.22] The Players refer to the Infra-Red Counter-Measure Table (23.28). The owning Player of the target aircraft finds the type of counter-measure that his aircraft is utilizing on the top row of the table, and the missile type on the left-most column. He cross-references the row determined by the latter with the column determined by the former, to arrive at a single number. This number is the Probability Number that the counter-measure will throw the missile off track. The Players refer to the rules of Probability (12.0) to determine whether the missile is thrown off track. If it is, the missile is considered to go ballistic, and is removed from play.

[23.23] Infra-red counter-measures have no effect on Radar-Homing missiles.

[23.24] Each time an aircraft uses a flare, the owning Player should note the expenditure of a flare. The ECM Device Utilization Table (28.2) indicates the number of flares that each aircraft that can carry flares is able to carry. When an aircraft has used as many flares as it carries, it loses the ability to use flares as an infra-red counter-measure.

[23.25] If a Heat-Seeking missile is facing toward the sun (see Case 22.1) or within one point of the sun during infra-red counter-measure check, there is a chance that the missile may track the sun as its target, and go ballistic. The sun is treated as an infra-red counter-measure, and the Players use the same procedures and tables as for any other infra-red counter-measure to determine whether the missile does so.

[23.26] If a missile begins its movement in a cloud (or, if Case 22.23 is used, if a cloud lies between a missile and its target) there is a chance that the missile will track the cloud as its target and go ballistic. The cloud is also treated as an infra-red counter-measure, as above.

[23.27] Infra-Red Counter-Measure Table (see separate booklet)

[23.3] INFRA-RED DETECTORS

Some American-built aircraft (the F-4B, F-14, F-111 and B-1) have passive infra-red detectors, which detect infra-red emissions by enemy aircraft. These operate in a manner similar to that in which Radar Search does.

[23.31] Each aircraft that carries Infra-Red Detectors is assigned an Infra-Red Detection Strength and an Infra-Red Detection Arc by the ECM Device Utilization Table (28.2).

[23.32] Infra-Red Detection Arcs are either "front," "all front," "all rear," or "all around." "Front" means that the aircraft can attempt to detect aircraft in its front arc; "all front" means that it can attempt to detect in any of its three front arcs (forward, forward right side, forward left side); "all rear" means it can attempt to detect in any of its three rear arcs (rear, rear right side, rear left side); and "all around" means that it can attempt to detect in any of its six arcs.

[23.33] Infra-Red Detection Arcs act in the same way that Radar Search Arcs do, except that they are defined differently.

[23.34] Infra-Red Detections are resolved in the Radar Search Phase, after all Radar Searches have been executed. They are resolved as follows.

[23.35] The Players refer to the Radar Search Probability Table (20.4). The Infra-Red Detection Strength of the detecting aircraft is found at the top of the Table, and the Base Probability Number for the Infra-Red Detection is determined in the same way it would be if a Radar Search were being conducted.

[23.36] The Player then multiplies this Base Probability Number by the current Throttle Setting of the aircraft or missile it is attempting to detect. This final product is the Probability Number for the Infra-Red detection. The Players refer to the rules of Probability (12.0) to determine whether or not the detecting aircraft detects the enemy aircraft. If it does, the enemy aircraft is placed on the game-map, and the detecting Player knows of its position thereafter.

[23.37] Note that Infra-Red Detections are resolved in the same way as Radar Searches, except that the Base Probability number is multiplied by the enemy aircraft's Throttle Setting, rather than its Size Multiple.

[23.38] An aircraft that has spotted an enemy aircraft by this procedure is said to have obtained "infra-red contact" with the enemy aircraft. A player loses infra-red contact with an enemy aircraft if all of the Player's aircraft that are equipped with infra-red detectors are positioned in such a way that the enemy aircraft is in none of their Infra-Red Detection Arcs at any time. Infra-red contact is treated in the same basic way as radar contact.

[24.0] RADAR COUNTER-MEASURES

COMMENTARY:

Radar Counter-measures are devices carried by aircraft that confuse, jam, mislead or detect enemy radar. There are several types of such counter-measures, and each is given a rules section below. They range in complexity from simple strips of aluminum foil to complex electronic devices.

CASES:

[24.1] CHAFF

Chaff, consisting of strips of aluminum cut to the wavelength of enemy radar, remain one of the most primitive but effective radar counter-measures.

[24.11] Chaff may be dispensed in one of two ways: through airbrakes or through chaff dispensers. Each aircraft has indicated on the ECM Device Utilization Table (28.2) the types of ECM that it may carry; therefore, it indicates which aircraft may carry chaff, and in what way aircraft may dispense chaff.



[24.12] All aircraft (except those operated by Arab airforces) can carry chaff in their airbrakes. Such aircraft immediately release the chaff upon opening their airbrakes — i.e., the first time such an aircraft Decelerates by Inducing Drag (8.54), a chaff counter is placed in the hex containing the aircraft.

[24.13] Aircraft that can carry chaff dispensers are capable of placing one hex of chaff per Game-Turn. An aircraft will be limited in the number of Game-Turns' worth of chaff it can carry; an aircraft's dispenser's Game-Turn limitation will be noted on the ECM Device Utilization Table (see Case 28.2). An aircraft with a chaff dispenser may place a chaff marker in any one hex it moves through in the course of a Game-Turn's movement.

[24.14] If an aircraft dispensed chaff or moved within four hexes of a friendly chaff marker in one Game-Turn, any enemy aircraft that searches via radar for that aircraft in the next Game-Turn will have its Probability Number for the Radar Search reduced by one-quarter.

Example: If the Probability Number were **8** it would be reduced by one-quarter (**.25 x 8 = 2**) to **6** (**8 − 2 = 6**).

[24.15] Aircraft that have an enemy Lock-On marker on top of them and that dispense chaff in a given Game-Turn may attempt to break the enemy aircraft's Radar Lock-On. During the Radar Lock-On Breakage Segment, the owning Player of the aircraft adds 16 to his Radar Lock-On Breakage Probability Number (see Case 16.63) and subtracts the enemy aircraft's Radar Lock-On Strength from the Probability Number.

Example: The aircraft turned through **2** hex-points and dispensed chaff. The Player adds **6** to the Probability Number for the **2** hex-point turn (**3 + 3 = 6**), then adds **16**, and subtracts the enemy aircraft's Radar Lock-On Strength (say **8**, for a total of **14** (**6 + 16 − 8 = 14**). See Case 16.6 for a more complete exposition of Radar Lock-On Breakage rules.

[24.16] Chaff affects only enemy radar. It has no effect on friendly radar. (The chaff is considered to be cut only to enemy wavelengths).

[24.17] All chaff is removed from the game-map at the end of a Game-Turn, during the Bookkeeping Phase. Thus, chaff remains in play only for a single Game-Turn.

[24.18] Chaff exists only on one altitude level; that is to say, when an aircraft releases chaff, the chaff is considered to exist only in the hex in which it was released, at its releasing aircraft's level. The Players must note the chaff's altitude level (possibly on a sheet of scrap paper). For purposes of tracing distance to a chaff hex, two levels of altitude are equivalent to one hex.

[24.19] If an aircraft releases chaff while engaging in a climb or dive, the owning Player may designate the chaff as existing at any of the altitude levels that the aircraft passed through. I.e., the owning Player of the dispensing aircraft may decide what level the chaff is dispensed at, as long as the altitude level is somewhere between the aircraft's initial altitude and its final altitude.

[24.2] CORRIDOR CHAFF AND CHAFF ROCKETS

Corridor Chaff and Chaff Rockets operate in much the same manner as regular chaff, except that they are bombed or launched rather than dispensed, they affect a greater area, and they last longer.

[24.21] If an aircraft is capable of carrying corridor chaff, it will be noted on the ECM Device Utilization Table (28.2) that it can do so. An aircraft that carries corridor chaff is considered to operate under "Loaded" conditions (see Section 17.0). A corridor chaff pod (i.e., the mechanism by which an aircraft carries corridor chaff) carries enough chaff for forty Game-Turns of dispensing.

[24.22] If an aircraft wishes to dispense corridor chaff in a given Game-Turn, it must move in Level Flight and have a Movement Allowance less than or equal to six. Every hex it moves through while dispensing chaff has a chaff marker placed in it.

[24.23] Corridor chaff, unlike regular chaff, is considered to appear at an altitude twenty levels lower than that at which it was dispersed. For example, if corridor chaff were dispersed at an altitude of 80, it would appear at an altitude of 60.

[24.24] Corridor chaff, unlike regular chaff, lasts for a total of 250 Game-Turns. If the Players are crazy, they may keep track of the number of Game-Turns a given hex of corridor chaff has been in play; otherwise, they may assume corridor chaff to be effectively immortal.

[24.25] If an aircraft is able to mount chaff rockets, such will be indicated on the ECM Device Utilization Table (28.2). Except for the B-1 and B-52, an aircraft carrying chaff rockets is considered to operate under Loaded conditions (see Section 17.0).

[24.26] At any time during its Movement Segment, an aircraft mounting chaff rockets may launch one in a direction within two hex-points to either side of the aircraft's facing.

Example: An aircraft facing **N** could fire a chaff rocket in any of the following directions: **N, NNW, NW, NNE,** or **NE.**

[24.27] A chaff rocket moves ten hexes directly forward in the direction it was fired, leaving a chaff marker in each hex it moves through. Chaff **rockets** remain in existence for two turns. In the second turn of its flight, a chaff rocket continues to fly an additional ten hexes in the direction fired, laying out chaff markers. Chaff laid out by chaff rockets remains in play for 250 turns, as does corridor chaff.

[24.28] An aircraft that dispenses or moves within four hexes of corridor or rocket chaff in a Game-Turn has the Probability Number for an enemy aircraft's Radar Search in the following Game-Turn reduced by three-quarters (75%) rather than the one-quarter reduction called for by normal chaff.

[24.29] It will often occur that, when chaff rockets or corridor chaff is used, the Players will find that they have an insufficient number of chaff markers. If this occurs, they may use counters not in play as additional chaff markers.

[24.3] RADAR JAMMING

Certain aircraft either carry internally or can carry in a pod electronic devices that jam enemy radar. The comparative efficacy of such devices is indicated on the Radar Jamming Tables (24.7).

[24.31] Examine the Radar Jamming tables. Along the side of the tables are lists of aircraft types or radar-jamming pod types. The aircraft listed on the Internal Radar Jamming Tables (24.61, 24.63 and 24.64) are considered to carry internal radar jammers normally (unless excepted by a scenario, or unless the Radar Counter-Measures rules are not used). As noted on the ECM Device Utilization Table (28.2), certain aircraft are capable of mounting certain radar jamming pods at certain times. Usually, an aircraft that can carry a pod will carry one only if so directed by a Scenario.

[24.32] All radar jammers are basically capable of four effects: 1) blocking enemy radar searches; 2) breaking radar contact with enemy aircraft ; 3) preventing enemy aircraft from obtaining radar lock-ons; and 4) breaking radar lock-ons.

[24.33] When the owning Player of a jammer-equipped aircraft wishes to perform any of the four functions listed in 24.32, he examines the appropriate Radar Jamming Table. Note that the tables are differentiated as to the building nation of the aircraft, and that Radar Jamming Pods are given a table of their own.

If an American table is being used (either the American Aircraft Internal Radar Jamming Table or the American Pod Radar Jamming Table), the Player finds the aircraft's name (or the pod type) along the left-hand side of the table. Under the name or pod type will be four lines, labelled 1, 2, 3 and 4. Each number defines a specific row of the jamming table. The first line corresponds to function 1 (as described in 24.32), the second to function 2, and so forth.

The Player then finds the name of the aircraft (or SAM) that his aircraft/pod is attempting to jam at the top of the table and cross-references the column formed by this with the row of the table determined above. This cross-referencing will yield either a single number or a percentage (or a dash or "NE", both of which indicate that the radar jammer has no effect in that case).

If one of the other tables is being used, a slight modification is made to this procedure. Rather than finding the aircraft that is being jammed at the top of the table, the Radar Search and Radar Lock-on Strength is found on the table. The Radar Search Strength is used if the jamming aircraft is attempting to break radar contact or block radar search; the Lock-on strength is used if it is attempting to prevent a Radar Lock-on or break one.

Note that the A-7 is given a place both on the "American Aircraft Internal Radar Jamming Table" and the "Other Aircraft Internal Radar Jamming Table." When the A-7 is being used against a Russian-built aircraft, the first table is used; when not, the second is used.

[24.34] If an aircraft equipped with radar jammers is searched for by enemy aircraft during the radar Search Phase, it may reduce the Probability Number for the enemy aircraft's Radar Search. After the Probability Number for the radar Search is calculated, the Players refer to the Jamming Table to determine the multiplier that the aircraft's jammers cause; on the first of the four lines of the Jamming Table under the jamming aircraft is a decimal fraction. The Probability Number for the Radar Search is multiplied by this fraction.

Example: A MiG-21 is searching for an F-4J. Cross-referencing on the American Aircraft Internal Radar Jamming Table, we discover that the coefficient is .7. If the Search is taking place at a range of 50 hexes, the Probability Number is 5 (Base Probability number of 3/4 times Size Multiple of 7 equals 5). 5 multiplied by .7 is 3.5, which is rounded up to 4; so the final Probability Number for the Radar Search is 4.

[24.35] At the end of the Radar Search Phase, any aircraft that has been spotted by enemy Radar and that is equipped with radar jammers may attempt to break radar contact. The Probability Number of it being able to successfully do so is listed on the second line of the four under a given aircraft or jamming pod. The owning Player uses the rules of Probability (12.0) to determine whether or not he succeeds in breaking radar contact; if he is, the enemy Player is considered to have lost radar contact with the jamming aircraft, and all rules regarding loss of radar contact apply (see Case 20.3).

If an aircraft's position has been discovered *visually* (i.e., has been found by a visual search), it may not attempt to break radar contact, even if it had previously been discovered by a radar search.

[24.36] If an enemy aircraft attempts to obtain a Lock-on to an aircraft equipped with radar jammers during the Missile Launch Phase, the jammer-equipped aircraft may attempt to jam the Lock-on. On the third of the four lines under the jamming aircraft/pod on the appropriate Radar Jamming Table is found the coefficient by which the enemy aircraft's Probability Number for the Lock-on attempt is multiplied.

Example: A MiG-23 (with a Radar Lock-on Strength of 7) is attempting to lock-on to an F-4J. Examining the American Aircraft Internal Radar Jamming Table, we discover that the coefficient is .75. If the MiG is attempting to lock-on from the F-4J's side, and no modifications to the Probability Number are made, the Probability number is 24. 24 times .75 is 18; the final Probability Number for the Lock-on attempt is 18.

[24.37] During the Radar Lock-on Breakage Segment of the Radar Homing Missile Combat Phase, when the owning Player of an aircraft that has been locked-on to by an enemy aircraft determines whether his aircraft succeeds in breaking the enemy aircraft's lock-on, he may increase his Probability Number by breaking the lock-on if his aircraft is equipped with radar jammers.

The owning Player refers to the appropriate Radar Jamming table, and uses the number found on the fourth of the four lines on the appropriate area of the table. This number is added to the aircraft's Probability Number for breaking the lock-on during the Radar Lock-On Breakage Segment of the Radar-Homing Missile Combat Phase. **Note:** Other factors affect the Probability Number, such as the number of hex-points turned by the aircraft, as well as chaff (see Cases 24.15 and 16.6).

[24.38] Radar Jamming Pods (as opposed to Internal radar jammers) *may* affect friendly aircraft within a certain number of hexes of the aircraft mounting the pod. If the pod has a two-number designation (i.e., "ALQ-71"), the pod protects any friendly aircraft within one hex of the mounting aircraft. If it has a three-number designation, (i.e., ALQ-119), it protects friendly aircraft within *three* hexes (Exception: the ALQ-131 pod protects aircraft within *four* hexes).

[24.39] If an aircraft or pod type has five lines on the jamming tables, rather than the normal four, it has "Deception jamming capability." This means that the aircraft (or pod) has the ability to mislead enemy aircraft as to the jamming aircraft's true position, in addition to the other four capabilities listed in rules Case 24.32.

After an aircraft with deception jamming capability has been spotted via radar by the enemy Player, the owning Player of the jamming aircraft must determine whether the enemy Player obtains a spurious position for his jamming aircraft.

The fifth of the five lines on the radar jamming table is the Probability Number that the enemy searching aircraft will obtain a spurious position. The owning Player of the spotted aircraft uses the rules of Probability (12.0) to determine whether or not the searching aircraft obtains a spurious position.

If a spurious position is obtained, the Players make a mental note to that effect. Note that the Players must keep track of which aircraft have been spotted visually, which have been spotted by radar, which have not been spotted, and which have had a spurious position obtained.

If a Player has obtained a spurious position for an enemy aircraft, he has *not* obtained Radar contact with that aircraft even though his radar search was successful. He is considered to know the general location of the enemy aircraft, and thus the enemy aircraft remains on the game-map, but the Player remains under certain restrictions. The Player may *not* fire any of his aircraft's cannons nor have any of his aircraft launch Radar-Homing missiles at an aircraft that he has obtained a spurious position for. However, the Player's aircraft *may* launch Heat-Seeking missiles at the aircraft.

On all Game-Turns after that in which a Player has obtained a spurious position for an aircraft, the Player may Radar Search for the aircraft and attempt to obtain radar contact. Any successful radar search will result in the aircraft's obtaining radar contact.

If a Player has obtained radar contact with an enemy aircraft that has deception jamming capability, the owning Player of the enemy aircraft may attempt to break radar contact by giving the searching Player a spurious position. The enemy Player checks for spurious position according to the same procedure as previously.

In any given turn after radar contact has been obtained, the owning Player of a deception jamming aircraft may continue to attempt to set up a spurious position. Once an aircraft has been spotted visually, the aircraft becomes unable to set up a spurious position.

[24.4] RADAR DETECTORS

Some aircraft are equipped with electronic devices that detect the use of radar by enemy aircraft. These range in sophistication from devices that simply detect the presence of a radar lock-on to devices that can determine the exact type and position of any aircraft engaging in radar search.

[24.41] On the Aircraft Radar Characteristics Table (28.1) is listed each aircraft's Radar Detector Type — either none, A, B, C, D or E. An aircraft with no Radar Detector Type is unable to detect the use of radar by enemy aircraft.

[24.42] An aircraft with Type A or better Radar Detection is able to detect lock-ons obtained by enemy aircraft. When these rules are being used, the Players *do not* place lock-on markers on aircraft that have been locked on to; instead, they keep track of which enemy aircraft have been locked onto by friendly aircraft secretly. Only an aircraft with Radar Detection Equipment will know when an enemy aircraft has locked on to it.

[24.43] An aircraft with Type B Radar Detection is able to detect radar lock-ons (as above), *and* can detect Radar Searches made by enemy aircraft (or enemy Ground Installations, see Section 26.0). If an aircraft with this detection type is the object of a Radar Search made by an enemy aircraft, the Player is informed that an enemy aircraft (or Ground Installation) is searching for his aircraft. He is *not* informed of the position or type of the searching aircraft/Ground Installation.

[24.44] All aircraft with Type C Radar Detection are able to do everything aircraft with Type A and B Radar Detection can; additionally, their Players are informed of the type of search made for the aircraft if the aircraft is the object of enemy Radar search. The Player is told whether the search is being conducted by a Ground Installation or by an enemy aircraft.

[24.45] All aircraft with Type D Radar Detection are able to do everything aircraft with Type A, B, or C Radar Detection are able to do; moreover if subject to Radar Search from an enemy aircraft, they are able to detect the type of enemy aircraft. The owning Player of an aircraft equipped with this type of Radar Detection equipment is informed of the searching aircraft's type (i.e., MiG-21).

[24.46] All aircraft with Type E Radar Detection are able to do everything aircraft with Type A, B, C or D Radar Detection are able to do; in addition, they are able to detect the exact position of any enemy aircraft that conduct radar searches that the detecting aircraft is the object of. The owning Player of the detecting aircraft is informed of the hex number and altitude of the searching aircraft; the detecting aircraft is assumed to have automatically obtained Radar contact with the searching aircraft.

[24.47] For a handy summary of detection effects, see Case 24.48.

[24.48] **Radar Detection Type Effect Table** (see separate booklet)

[24.5] WILD WEASELS

A Wild Weasel aircraft is any aircraft that has been equipped for offensive Electronic Warfare. Wild Weasel versions exist of the following aircraft: F-105's, F-4E's, F-111's and MiG-23's.

[24.51] For the sake of simplicity, all Wild Weasel aircraft will be designated on the various charts and tables with their aircraft type followed by the letters "WW" (for instance, F-111EWW).

[24.52] A Wild Weasel aircraft may not carry air-to-air missiles. Other than this, it operates in all manners as a normal aircraft.

[24.53] Wild Weasel aircraft carry internal jammers. However, these internal jammers operate in a way radically different from all other internal jammer types. A Wild Weasel will protect all friendly aircraft that are in its Arc of Jamming. A Wild Weasel's Arc of Jamming is determined as follows:

a) Examine the relative positions of the Wild Weasel and the enemy aircraft or ground installation it is attempting to jam. Determine the facing of the enemy aircraft, and determine which hex-point that aircraft should be facing toward if it were to be facing most nearly directly toward the Wild Weasel.

Example: The Wild Weasel is on hex **0511**, and the enemy aircraft is at hex **0803**, and facing **N**. The enemy aircraft should be facing **SSW** if it is to face as close to directly toward the Wild Weasel as possible. **Note:** This judgment may be unclear at certain points — it may be unclear precisely which direction is closer to being "toward" the Wild Weasel. In this case, roll a die to determine which direction is to be used.

b) Using the hex-point determined above and the hex of the enemy aircraft as the source of a Radar Search Arc, trace a Radar Search Arc from the enemy aircraft. This is the Arc of Jamming. **Note:** This Arc does *not* emanate from the front of the enemy aircraft, as a regular Radar Search Arc does; rather, it emanates from the side of the aircraft determined in step (a). Note further that the Arc does *not* emanate from the Wild Weasel, but rather from the aircraft that the Wild Weasel is jamming.

[24.54] Any aircraft in a Wild Weasel's Arc of Jamming against a given enemy aircraft is protected by the Wild Weasel from that enemy aircraft. All such friendly aircraft are considered to have protection from Radar Searches and Lock-ons, and the ability to Break Radar Lock-Ons and radar contact in the same way that the Wild Weasel itself does.

[24.55] A Wild Weasel's jamming range and Arc of Jamming type is indicated on the Aircraft Radar Characteristics Table (28.1).

[24.56] MiG-23cWW's and pre-1972 F-105WW's have a Type C Arc of Jamming (see Radar Search Arcs, 20.15). Post-1972 F-105WW's, F-4EWW's, and F-111WW's have Type B Arcs of Jamming. **Note:** This information is repeated in 28.1. It is not necessary that the Player memorize it at this stage.

[24.57] Note that, normally, any aircraft carrying more than one ECM device (whether infra-red or radar) is considered to automatically operate under Loaded conditions. Wild Weasels are not considered Loaded. In addition, Wild Weasels may carry Anti-Radiation Missiles (see Case 25.6) without being considered in Loaded Condition.

[24.6] VARIABLE EFFECTS OF RADAR JAMMING

The effects of radar jamming are always subject to ECCM (Electronic Counter-Counter Measures). This rule is optional and players do not have to use it even if using the ECM rules.

The first time a radar jammer is used in a scenario, whether internal or pod mounted, the owning player rolls one die to determine whether its effectiveness has been increased, remained the same, or decreased due to ECCM modifications. A roll of 1 or 2 means that the effectiveness is increased, a roll of 3 or 4 means the effectiveness is unchanged; and a roll of 5 or 6 means the effectiveness is decreased.

If the effectiveness is unchanged, the radar jamming functions as normal. If it is increased or decreased, however, the owning player rolls another die. The effectiveness of the radar jammer is then either increased or decreased by .1 or 1 Probability Number for each number on the die roll, depending on the function it is performing, for the remainder of the Scenario. This applies to all radar jammers of that type. The effectiveness of a jammer, however, may not be decreased below .9 or increased above .2.

[24.7] RADAR JAMMING TABLES

[24.71] **American Aircraft Internal Radar Jamming Table** (see separate booklet)

[24.71] **American Radar Jamming Pods Table** (see separate booklet)

[24.73] **Soviet Aircraft Internal Radar Jamming Table** (see separate booklet)

[24.74] **Other Aircraft Internal Radar Jamming Table** (see separate booklet)

[25.0] BOMBING AND STRAFING

GENERAL RULE:

This rules section is generally divided into three parts dealing, respectively, with munitions, Precision Guided Munitions (or PGM), and strafing. All share something in common, but they differ in many respects. The Aircraft Munitions Characteristics Table (28.3) indicates which aircraft can carry munitions or PGM, and what type of these and how many of each an aircraft can carry. In addition, it gives the Accuracy Multiple for each aircraft with each type of normal munitions (as opposed to PGM). If a given Scenario directs that an aircraft is to carry a certain type of munition, the Players refer to this table to determine how many loads of this type of munition an aircraft can carry (or how many missiles of a given air-to- surface missile type it can carry) and what the aircraft's Accuracy Multiple with the munition is.

CASES:

[25.1] TARGETS AND GENERAL MUNITIONS RULES

[25.11] With *Air War* are provided a number of target markers; there are SAM markers (see also Section 26.0), AFV SAM markers, AA gun counters, AFV counters, Truck counters, Building markers, Dump markers, and a Bridge marker. In a bombing Scenario, (i.e., one in which some aircraft are loaded with bombs or some other munitions), the Intercepting Player will be directed to deploy a number of target markers on the game-map before the game begins. In addition, both Players will be told exactly what each target marker represents.

A given target marker can represent one of several types of targets. For instance, an AFV counter could represent either a medium tank or a light armor vehicle; a Dump marker could represent either a POL dump (either open or revetted), or an ammunition dump (again either open or revetted), and so forth. In a given Scenario, the Players will be told exactly what each marker represents in its general category.



[25.12] Included with the markers that are used on the Weaponry Track of the Aircraft Control Chart is a "Stores" marker. This is used to represent munitions carried by a given aircraft. When a Scenario begins, an aircraft's Stores marker is set at a number equaling the number of bombloads, napalm tanks, air-to-surface missiles, or whatever the aircraft is carrying. When an aircraft releases one of its stores — i.e., launches an air-to-surface missile, drops a bomb or whatever — its Stores marker is reduced one box.

[25.13] Any aircraft carrying munitions, PGM or air-to-surface missiles is considered to operate under loaded conditions (see 17.0; Exception: see Case 24.5). If such an aircraft takes half as much damage as it is able to take (see Case 13.29), it must jettison its stores. If it can, it may release its munitions (i.e., use them to bomb targets) in the immediately following Bombing Phase; if this is impossible, the stores are considered lost, and may not be fired at a target.

[25.14] If an aircraft's "Stores" marker is in the zero box of the Weaponry Track, the aircraft is considered to be carrying no munitions, and thus may not launch or drop any munitions on any target. In addition, such an aircraft does *not* operate under Loaded conditions, even if it previously was carrying stores.

[25.15] Certain targets (notably AA guns, AFV's, and parked aircraft) can be "hardened" — i.e., given some protection by being dug in, placed in protective bunkers, or camouflaged. A Scenario will indicate whether a given target is hardened (or, if the Players are using the rules to devise their own Scenarios, they may choose to designate a given target as hardened). Any hardened target has the Probability Number that it will be hit reduced by 50%.

[25.2] BOMBING

Bombing is a generic term for dropping bombs, bomblets, rockets, napalm or other non-guided munitions.

[25.21] An aircraft carrying bombs or any of the other munitions listed above may release them at any time during its Movement Segment, i.e., in any hex that it moves through. The bombs affect the hex in which they are released. However, these effects are not determined until the Bombing Phase.

[25.22] An aircraft may only bomb a target if 1) its wings are level (i.e., it is neither banked nor inverted); 2) it is either diving or flying level; and 3) it does not execute any type of maneuver in the Game-Turn that it drops its munitions.

[25.23] When an aircraft drops a bomb or other munitions during the course of its movement, the Players note the hex in which the stores are dropped. During the Bombing Phase of the same Game-Turn, the Players determine whether the released munitions will "hit" their target. To do so, they follow the procedure detailed in Case 25.24.

[25.24] On the Aircraft Munitions Characteristics Table (28.3) is listed each aircraft's Accuracy Multiple with the munitions listed in Case 25.2. In the Bombing Phase of a Game-Turn in which an aircraft dropped a type of munitions, the owning Player of the aircraft refers to this table and determines the dropping aircraft's Accuracy Multiple. He then determines the altitude at which the aircraft dropped the munitions, and multiplies the altitude by the Accuracy Number.

Note: The altitude used for this procedure is the net altitude; that is to say, if the ground level is greater than zero (see Case 22.3,) the ground's altitude is subtracted from the aircraft's Altitude.

Example: If the ground were at level **20** and the aircraft were flying at **40** levels of altitude, the net altitude level would be considered **20.** The product (the product of the Accuracy Multiple and the net altitude) is known as the Modified Altitude Level. The bombing Player then refers to the Bombing Hit Probability Table (25.91). He finds the current Movement Allowance of his bombing aircraft at the top of the table, and the Modified Altitude Level in the left-most column of the table. He then cross-references the column determined by the former with the row determined by the latter to yield a single number. This number is the Base Probability Number that the dropped munition will hit its target.

The Player then refers to the Bombing Probability Modification Table (25.92) and modifies the Base Probability Number as the table directs. This modified number is the final Probability Number that the munition will hit. The Player refers to the rule of Probability (12.0) to determine whether the munition hits its target or not.

[25.25] After a bomb or other munition has been dropped by an aircraft, it will take a certain number of Game-Turns to fall to its target — bombs will not drop instantaneously. The Players use the Falling Table (25.93) to determine how many turns the munitions will take to reach their target.

[25.26] On the Bombing Phase in which a load of munitions reaches its target, the Players refer to the Target Destruction Table (25.94) to determine whether the munitions will destroy their target (see Case 25.3). Therefore, dropping normal munitions takes place in four different stages: *Stage One:* and aircraft releases its munitions during a Movement Segment; *Stage Two:* in the Bombing Phase of the same Game-Turn the Player rolls for each load of munitions released to determine whether the munitions will hit their target; *Stage Three:* the Player continues play for a certain number of Game-Turns while the munitions drop towards their target, *Stage Four:* On the Game-Turn in which the munitions reach their target, the Player determines whether they destroy their target or not, according to the procedures in Case 25.3.

Note that, unless a load of munitions makes a successful roll in Stage One, the other Stages can be ignored. In other words, if it is determined when the Bombing Hit Probability Table is used that a load of munitions will not "hit" its target, the munitions load is considered lost, and the fact that it will drop to the ground need not be kept track of.

[25.27] No track or other playing aid is provided with the game for the Players to keep track of the number of Game-Turns that a load of munitions must drop. The Players must keep track of the hex in which munitions have been dropped, and the Game-Turn on which a load of munitions will reach its target on a piece of scrap paper.

[25.28] An aircraft may release any or all of the loads of munitions that it carries in a single hex. **Example:** An aircraft carrying **8 750-lb bombs** could, if it liked, release all **8** in a single hex. The Players roll independently and separately for each load of munitions released, so that, in the example above, the Player would have to refer to the Bombing Hit Probability Table **8** times, once for each of the **8** bombs.

[25.3] PAYLOADS AND TARGET DESTRUCTION

[25.31] When a bomb, other type of munition, PCM, or air-to-surface missile reaches its target, the Players refer to the Target Destruction Table (25.94). When an aircraft strafes its target, the Players refer to the Strafing Target Destruction Table (25.97).

[25.32] There are seven types of munitions payloads: 750-lb payloads, 1000-lb payloads, rockets, napalm, shaped-charge payloads, anti-personnel bomblets, and anti-tank bomblets. There are six types of bombs, corresponding to the six types of payloads (no shaped-charge bombs); there are four types of "smart" bombs ("smart" 750-lb bombs, "smart" 1000-lb bombs, "smart" anti-personnel bomblets, and "smart" anti-tank bomblets); each of the 9 different types of air-to-surface missiles has one of three different types of payloads (either 1000-lb payload, 750-lb payload, or shaped-charge payloads).

[25.33] When a dropped munition (from Case 25.2), a "smart" bomb, or an air-to-surface missile reaches its target, the Players refer to the Target Destruction Table (25.94). The owning Player of the munitions finds the payload of the munitions along the top of the table, and the target type along the side of the table. He cross-references the column determined by the payload type with the row determined by the target type to yield a single number; this is the Probability Number that the target will be destroyed. The Players refer to the rules of Probability (12.0) to determine whether or not the target is destroyed. If the target is destroyed, the target marker is removed from the game-map.

[25.34] When an aircraft strafes a target (see Case 25.7), the Players refer to the Strafing Target Destruction Table (25.98). The Players use this table in the same manner as the Target Destruction Table, except that the Cannon Type of the strafing aircraft, rather than the munition type, is found at the top of the table.

[25.4] "SMART" BOMBS

"Smart" bombs and air-to-surface missiles are collectively referred to as Precision Guided Munitions, or PGM. However, the two operate in dissimilar manners, and thus are given two different sections.

[25.41] "Smart" bombs are versions of normal bombs with laser or electro-optic guidance facilities. There are "smart" bomb versions of 1,000-lb and 750-lb bombs, as well as both types of bomblets. The 1,000-lb and 750-lb versions, unlike normal bombs, do *not* have to be dropped by an aircraft in the same hex as the bomb's target; rather, they may be dropped in any hex up to twelve hexes away from the target. This is because the bombs have fins for gliding.

[25.42] There are three types of guidance systems that PGM use: Command Guidance, Designator Guidance, and Independent Guidance. Only the last will be detailed in this rules section, because "smart" bombs either use Designator Guidance or Independent Guidance. Command Guidance will be detailed in the next rules section.

[25.43] Smart bombs were first used in late 1968. Up until 1973, all "smart" bombs effectively used Designator Guidance. Therefore, in any Scenario that the Players play that takes place before 1974, and in which "smart" bombs are used, the "smart" bombs are considered to use Designator Guidance; and in Scenarios that take place since then, they should be considered to use Independent Guidance.

[25.44] Certain aircraft are "Target Designators." These are aircraft that are able to guide Designator Guidance weapons to their target. All A-10, MiG-27, MiG-23B, Su-19 and Jaguar aircraft are automatically considered to have internal target designators; all other aircraft can mount Target Designation pods.

[25.45] No Soviet aircraft may mount Designator Guidance pods. In Scenarios taking place in 1972 or 1973, one out of every four non-Soviet aircraft (maximum) may mount these pods; in Scenarios taking place between 1974 and 1977 (inclusive), every other aircraft may mount such a pod; in Scenarios taking place at later dates, any non-Soviet aircraft may mount such a pod. **Note:** Although all smart bombs after 1973 use Independent Guidance, certain ASM's use Designator Guidance after that time.

[25.46] When a Designator Guided "smart" bomb is launched, the owning Player must determine which target marker is to be the bomb's target. He notes the target hex, and refers to the Falling Table (25.93) to determine how many Game-Turns it will take the bomb to fall to its target (as per Case 25.25). Until the "smart" bomb reaches its target, a designator-equipped aircraft must keep the bomb's target in its forward arc. If, at the beginning of any Bombing Phase of the Game-Turns in which the bomb is dropping, the bomb's target is outside of a designator-equipped aircraft's forward arc, the bomb is considered to automatically miss its target. Note that the designator-equipped aircraft *does not necessarily have to be* the aircraft that dropped the bomb, as long as some designator-equipped aircraft guides the bomb to its target.

[25.47] An Independently guided bomb operates under a "fire and forget" system; the bomb does *not* have to be guided to its target, and the bombing aircraft does not have to worry about guiding it.

[25.48] During the Bombing Phase of the Game-Turn in which a "smart" bomb (or "smart" bomblets) is released, the owning Player refers to the PGM Hit Probability Table (25.94). He finds the current Movement Allowance of the bombing aircraft at the top of the table, and the type of PGM that the aircraft launched along the side of the table. He cross-references the column determined by the former with the row determined by the latter to yield a single number; this is the Probability Number that the PGM will hit its target. The Players refer to the rules of Probability (12.0)

to determine whether or not the munition hits its target.

In other words, "smart" bombs and other PGM use the PGM Hit Probability Table (25.94) rather than the Bombing Hit Probability Table (25.91). Note that the altitude of the bombing aircraft is not a factor in the PGM Hit Probability Table, as it is in the Bombing Hit Probability Table. Only the "smart" bomb (or bomblet) or missile type and the Movement Allowance of the aircraft is taken into account.

[25.49] Note that, except for the fact that "smart" bombs have a guidance system and may be dropped from up to twelve hexes away from their target, they operate in precisely the same way as normal bombs. Note also that, when "smart" bombs and bomblets reach their target, target destruction is resolved in the same manner as for all other munitions, as per Case 25.3.

[25.5] AIR-TO-SURFACE MISSILES

Air-to-surface missiles (hereafter ASM) are a form of PGM. Unlike air-to-air missiles and surface-to-air missiles (i.e., SAM's), ASM's are not actually represented by missile counters on the game-map; like bombs, they are kept track of by bookkeeping, on a piece of scrap paper.

[25.51] All ASM's have four characteristics: range, speed, payload, and guidance system. An ASM's payload is either a 1000-lb payload, a 750-lb payload, or a shaped charge payload, as discussed in Case 25.3. Their guidance system is either Designator Guidance, Command Guidance, or Independent Guidance. Designator Guidance and Independent Guidance are detailed in 25.4. These four characteristics are detailed on the ASM Characteristics Table (25.96).

[25.52] Any aircraft carrying an ASM may launch it at any target marker within the ASM's range. Note that, for range-counting purposes, every two levels of altitude difference counts as one hex. A given ASM's range is listed on the ASM Characteristics Table, 25.96.

[25.53] ASM's, like bombs, may be released by an aircraft at any time during its Movement Segment. During the Bombing Phase of the Game-Turn in which the ASM was launched, the owning Player of the launching aircraft must determine the range in hexes between his launching aircraft and the target hex. Again, two levels are counted as one hex for range-counting purposes.

The Player then divides the total range between the hex the ASM was launched in and the target hex by the Speed of the ASM. A given ASM's speed is listed on the ASM Characteristics Table, (25.96). This number (the distance divided by the speed) is the total number of Game-Turns that it will take the missile to reach its target. **Note:** Round the number of Game-Turns up to the nearest whole number.

The Player then refers to the PGM Hit Probability Table (25.95) and determines the Probability Number that his ASM will hit its target. He then refers to the rules of Probability (12.0) to determine whether or not his ASM will hit its target. If it is determined that it will, the Player notes the target hex, the type of ASM launched, and the Game-Turn on which the ASM will reach its target on a piece of scrap paper.

[25.54] On the Game-Turn in which an ASM reaches its target, the Player refers to the Target Destruction Table to determine whether it destroys its target. He finds the payload type of the ASM on the ASM Characteristics Table (25.87), and uses this to resolve the target destruction.

[25.55] If a given ASM has a Designator Guidance System, it operates under the rules for Designator Guidance outlined in Cases 25.44 and 25.46. That is to say, the ASM's target must remain in the forward arc of some designator-equipped aircraft, or the missile is considered to lose its target.

[25.56] An Independently guided ASM operates under the rules outlined in Case 25.47. That is to say, it need not be guided and will fly to its target with no outside interference.

[25.57] A Command Guided ASM must be guided to its target by its launching aircraft, but there is no "Designator" involved. At no time may the target of the ASM be in the rear arc of the launching aircraft; if the aircraft ever moves in such a way that the target is in its rear arc, the ASM is considered to lose its target, and will not hit its target, even if the PGM Hit Probability Table had previously been referred to and the ASM designated as able to hit its target. The launching aircraft of the Command Guided ASM may not launch any other missile or fire its cannon or execute any maneuver while guiding the ASM.

[25.6] ANTI-RADIATION MISSILES

Anti-Radiation Missiles (hereafter ARM's) are missiles that home in on enemy radar emissions.

[25.61] ARM's act in all ways as ASM's, except that their guidance system is considered to be "Anti-Radiation," rather than Command Guidance, Designator Guidance, or Independent Guidance. This means that the missile does not have to be guided by any aircraft, and will simply head for a radar-emitting target.

[25.62] When an ARM is launched by an aircraft, the owning Player of the aircraft designates a specific target as the aircraft's target. ARM's may only be used against SAM sites, AFV SAMs, radar sites, and radar-aiming AA guns (see Ground Installations, Section 26.0). An ARM may not be fired at any other target.

[25.63] ARM's may be carried by F-105's, F-4's, A-4's, A-7's and all Wild Weasel aircraft. An aircraft carrying ARM's is considered to operate under loaded conditions, *except* that a Wild Weasel aircraft or an F-4 is not considered loaded *unless* it is *also* carrying Radar-Homing air-to-air missiles.

[25.64] Only Israeli and American aircraft may use ARM's. There are three types of ARM's; the Shrike has been used since 1966; the Standard since 1972; and the Harm will be used from 1980 onward. Exception: MiG-23WWS may use AS-7 ARM's (equivalent to Shrike).

[25.7] STRAFING

Strafing occurs when an aircraft fires its cannon at a ground target.

[25.71] Any cannon-equipped aircraft may fire its cannon at a ground target that is within the cannon's range. An aircraft may fire its cannon at any target that was within its forward arc at some time during its Movement Segment, although strafing attacks are resolved during the Cannon Combat Phase.

[25.72] The range between a strafing aircraft and a target is considered to be the shortest distance between the two that existed during the aircraft's movement.

[25.73] An aircraft in level flight may only strafe a ground target if it is at one or two levels of altitude above the ground. A climbing aircraft may not strafe. A diving aircraft may fire at any target within its range.

[25.74] When resolving a strafing attack, the owning Player of the strafing aircraft refers to the Strafing Hit Probability Table (25.97). He finds the aircraft's Cannon Type at the side of the table, and the Movement Allowance of the aircraft at the top of the table. He cross-references the row determined by the former with the column determined by the latter to yield a single number. This number is the Probability Number that the strafing aircraft will hit its target.

[25.75] The Player then refers to the Strafing Probability Modification Table (25.88) and modifies the Probability Number as the table directs. This modified number is the final Probability Number that the strafing aircraft will hit its target; the Player then refers to the rules of Probability (12.0) to determine whether or not the aircraft does hit its target.

[25.76] If the aircraft hits its target, the Player refers to the Strafing Target Destruction Table (25.99) and determines whether or not the target is destroyed as per Case 25.3.



[25.77] When an aircraft strafes, it is considered to fire its cannon, and thus the Cannon Shots Remaining marker is moved down the weaponry track one box.

[25.78] An aircraft may strafe more than one hex in a single Game-Turn. However, its Probability Number of hitting the target is reduced it if does so; if it fires at targets in two hexes, the Probability Number of hitting each is halved; if it fires at three, the Probability Numbers are each reduced to a third; and so forth.

[25.79] Note that strafing is resolved in the Cannon Combat Phase, *not* the Bombing Phase. Note also that, unlike munitions bombardment, strafing occurs immediately; the Players are not required to wait for the bullets to fall to their target.

[25.8] FORWARD AIR CONTROLLERS

U.S. and NATO air forces may use Forward Air Controllers to increase the accuracy of bombing.

[25.81] Any two-seat aircraft may be used as a Forward Air Controller aircraft. While the F-16, F-15, F-18 and A-10 are normally single-seat aircraft, two-seat versions exist for use by Forward Air Controllers.

[25.82] The Forward Air Controller aircraft must be armed with Rockets. However, these are considered to be White Phosphorous Rockets. Their Probability of Destruction of a target is reduced by 50%. However, any target that is hit by White Phosphorous Rockets, whether destroyed or not, is considered "marked." Use an inverted cloud marker to designate which target is marked. Aircraft bombing a marked target on any turn following the one in which the target is marked have their Probability Number of hitting the target increased by 20%.

[25.83] The back-seat crewmen of all Forward Air Controller aircraft are considered to be Honchos for the purpose of visually spotting targets on the ground.

[25.84] All Forward Air Controller aircraft are, since 1972, considered to be equipped with target designators for use with PGM's.

[25.9] BOMBING AND STRAFING TABLES

[25.91] Bombing Hit Probability Table (see separate booklet)

[25.92] Bombing Probability Modification Table (see separate booklet)

[25.93] Falling Table (see separate booklet)

[25.94] Target Destruction Table (see separate booklet)

[25.95] PGM Hit Probability Table (see separate booklet)

[25.96] ASM Characteristics Table
(see separate booklet)

[25.97] Strafing Hit Probability Table
(see separate booklet)

[25.98] Strafing Probability Modification Table
(see separate booklet)

[25.99] Strafing Target Destruction Table
(see separate booklet)

[26.0] GROUND INSTALLATIONS

COMMENTARY:

The rules in Section 25.0 allow an aircraft to shoot at targets on the ground. It seems only fair to allow targets to shoot back.

GENERAL RULE:

There are three types of ground installations that are dealt with in this section: AA guns, Surface-to-Air missiles (hereafter SAM's and radar installations.



CASES:

[26.1] ANTI-AIRCRAFT GUNS

[26.11] When a Scenario indicates that one Player is to have anti-aircraft guns — or the Players decide to give one (or both) Players AA guns — he uses AA gun target markers to represent the guns. In some Scenarios, one side will be given a number of Russian tanks as targets for bombing missions run by the other side; some Russian tanks are mounted with .50 caliber machine guns, which may act as AA guns. Therefore, under certain circumstances, tanks may operate as AA guns.

[26.12] There are fourteen different types of AA guns. However, all AA guns are represented by the same AA markers. The Players will have to mentally keep track of which type of AA gun a particular AA marker represents.

[26.13] The types of AA guns and statistics about them are listed on the AA Gun Hit Probability Table (26.51). Note that AA guns are classified as being either "with Radar" or "without Radar;" generally, AA guns with Radar have a greater chance of hitting their target, and ARM's may not home onto AA guns without Radar (see Case 25.6).

[26.14] AA guns are also classified as being either "Light" or "Heavy" AA guns. The only difference between the two is that heavy AA guns are generally more difficult to destroy than light AA guns; this fact is represented on the Target Destruction Table (25.94).

[26.15] AA guns do not have arcs. Unlike aircraft cannons, AA guns may fire at any aircraft within their range; they do not have to be in an enemy aircraft's rear arc in order to fire at it. Further, since AA guns do not have arcs, they may fire from any direction *vis a vis* the aircraft counter.

[26.16] When an AA gun's fire is to be resolved, determing the range between it and its target aircraft. Note that an AA gun may only fire at one enemy aircraft in a given Game-Turn. Refer to the AA Gun Hit Probability Table (26.51).

[26.17] On the AA Gun Hit Probability Table are three columns labelled respectively "Close Range," "Med. Range," and "Max. Range." When an AA gun is firing, find its type on the left-hand column of the table and read across under each of these three columns. Under each column will be a span of numbers; for instance, under the "Close Range" for 85mm AA guns without radar, the numbers are **1-33**; under "Med. Range," they are **34-66** and under "Max. Range," they are **67-100**. If the distance between a firing AA gun and its target is greater than the second number under the "Max. Range" column (**100**, in the example given), the target is out of range of the AA gun and may not be fired on. If the target is within range, determine which of the three spans of numbers the distance between the AA gun and its target lies.

Example: If the **85mm** gun was firing at a target **50** hexes distant, it would be firing at **Med. Range**, since **50** lies between **34** and **66**.

[26.18] Immediately to the right of these three columns is a column labelled "Hit Probability." Note that each of the three range columns has its own Hit Probability column. The number in the Hit Probability column corresponding to a given range column on a given AA gun's line on the table is the Hit Probability Number of that AA gun at that range.

Example: In the example previously given — that of an **85mm** AA gun without radar firing at medium range — the Probability Number is **1**. This number is the Probability Number that the AA gun will hit its target. The Players refer to the rules of Probability (12.0) to determine whether or not it does so.

[26.19] If an AA gun hits its target, the Players then refer to the Damage by AA Gun Type Tables (26.52). The firing Player refers to the specified table determined by his AA gun type; note that some AA guns use one or another of the Cannon combat tables, while others are given damage tables of their own. If a Damage by Cannon Type Table is referred to, the Players refer to the table indicated in Section 13.6.

The Player rolls two dice and cross-references it on the table as directed to yield a single result, and this result is applied to the target aircraft. Damage results are treated in the same manner as cannon combat damage results.

[26.2] SURFACE-TO-AIR MISSILES (SAM's)

SAM's come in three types; Radar-Homing, Heat-Seeking, and Beam-Riding. Radar-Homing and Heat-Seeking SAM's are treated as any other Radar-Homing or Heat-Seeking missile is treated, and they obey the same rules, except that they are fired from ground installations, rather than aircraft. Beam-Riding missiles are treated more or less as Radar-Homing missiles are, with a few exceptions.

[26.21] SAM's, like all other types of missiles, each have Missile Performance Charts. They operate in all ways as missiles of their type do, but are launched from a "SAM" or "AFV SAM" target marker, and begin at the same altitude as the ground.

[26.22] If SAM's are to be used in an Historical Scenario, the Scenario will indicate which side is to have them, how many, what type, and the number of sites he is to have. If the Players are playing a Scenario of their own devising, they may choose to use SAM's or not as they see fit. Each SAM or AFV SAM marker represents a SAM launcher; each SAM launcher contains between one and six SAM's. The number of SAM's at a site in an Historical Scenario will be determined by the Scenario. A SAM marker may represent any type of SAM site; an AFV SAM marker may only represent SA-6, AIM-9, SA-7, or SA-D missiles.

[26.23] SAM's may be launched with any facing the owning Player desires, and with as many Turn Points accumulated as he desires. If the missile being **launched** is a SA-6, AIM-9, SA-D, or Hawk I Missile, it must move in a Type I Climb for the first turn of its movement; if it is a SA-2 or SA-3, it must move in a Type III Climb for its first turn of movement; if it is a SA-7, it may move in any Dive/Climb Type the owning Player desires.

[26.24] Since a SAM is launched from the immobile ground, rather than from a moving aircraft, its Movement Allowance on its first turn of movement is equal to its First Turn Movement Allowance on its Performance Table.

[26.25] The SA-2 is a Beam-Riding missile, the only one in the game. It acts in all ways as a Radar-Homing missile, except that its target marker is placed *in the same hex* as its target aircraft, not a number of hexes in front of it.

[26.26] Most SAM's are Radar-Homing. Therefore, a SAM site must obtain a Radar Lock-on to an enemy aircraft before it can launch a Radar-Homing missile at it. Lock-on attempts by SAM sites are handled in the same way attempts by aircraft are. On the Aircraft Radar Characteristics Table, toward the bottom, each SAM missile type is given a Radar Lock-on Strength. This is used when a SAM site containing that SAM type attempts to obtain a Radar Lock-on.

[26.27] A SAM site containing SA-3 or AIM-9's has two launchers; one containing SA-6's, SA-D's or Hawk I's has three launchers; all other SAM sites have one launcher. A given SAM site may have as many lock-ons at a single time as it has launchers; it may launch as many missiles in a single Missile Launch Phase as it has launchers.

[26.28] SA-2, SA-3, and SA-6 SAM's have the capability to be launched relying purely on visual guidance, although this is primarily an emergency measure used in electronics-heavy environments. This allows a Player to launch these missiles at a target that it does not have a lock-on upon. When a missile is launched visually guided, it cannot go back to beam-riding or radar-homing after launch, and vice-versa. SAM's fired relying on visual guidance have their Turn Modes increased by three. The target marker for such a SAM is placed in the same hex as the target aircraft.

[26.3] RADAR INSTALLATIONS

All SAM sites are considered to have Radar Search capabilities; in addition, certain Scenarios may direct that other ground targets have such capabilities.

[26.31] Each SAM type is given a Radar Search Strength on the Ground Installations Radar Characteristics Table (26.11) in addition to the Radar Lock-on Strength mentioned previously. A SAM site containing a given type of SAM is capable of carrying Radar searches with a Radar Search Strength equal to that assigned to its SAM type.

[26.32] Searches by SAM sites are carried out in the same way that any other radar search is executed, except that SAM sites may search all around them, in all arcs extending from their hex, in a 360° arc around the SAM site.

[26.33] A Scenario may specify that some ground target (such as a field bunker) has radar search equipment; if so, the Scenario will also indicate the Radar Search Strength of the equipment. Such a target is then able to radar search for enemy aircraft in the same way that SAM sites are.

[26.34] Note also that the Players may choose to give one side or another a radar search site as above when devising their own Scenarios, at their option.

[26.35] If an aircraft that is the object of a radar search made by a ground radar installation is at an altitude less than one-sixth of the distance between the installation and the aircraft, the installation may not search for the aircraft. **Note:** This implies *relative* altitude. Subtract the altitude of the land from both the installation's and the aircraft's

altitude.

Example: The distance between the installation and the aircrft is **48**, and the aircraft is at altitude level **5**; one-sixth of **48** is **8**, and the aircraft is at an altitude less than **8**, so the installation may not search for the aircraft.

[26.36] Note that, when a Player's ground installations discover enemy aircraft through Radar Search, any friendly aircraft also obtain radar contact with the enemy aircraft; radar contact obtained by any of a Player's installations or aircraft is considered to be effective for all of a Player's installations and aircraft.

[26.4] ECM EFFECTS ON GROUND INSTALLATIONS

[26.41] If an aircraft's or pod's radar jammers are effective against an AA gun type, AA guns of that type with radar are considered to operate without radar. That is to say, when referring to the AA Gun Hit Probability Table, the Players refer to AA guns of that type with *no* radar, even if the AA gun actually has radar, to represent the fact that the AA gun's radar is being jammed.

[36.42] Ground radar search installations may be jammed in the same way as aircraft. On the American radar jamming tables, radar search ground installations are given a column of the table which is referred to when such an installation is being jammed. On all other radar jamming tables, the Radar Search Strength of the installations is found at the top of the table, according to the procedure used for all radar searching aircraft.

[26.43] Radar jamming against SAM's is resolved in the same way that it is against aircraft.

[26.5] ANTI-AIRCRAFT GUN TABLES

[26.51] AA Gun Hit Probability Table
(see separate sheet)

[26.52] AA Damage Tables
(see separate booklet)

[27.0] EJECTING

COMMENTARY:

One of the most expensive and least easily replaceable components of an aircraft is the pilot. Pilots are expensive to train, few in number, and difficult to replace. Therefore, most nations will go to great lengths to preserve the lives of their pilots.

PROCEDURE:

Immediately after it has been determined that an aircraft is about to be destroyed (i.e., immediately after a missile enters its target aircraft's hex, or an aircraft has taken as many Damage Points as it can sustain), the crew members of the aircraft may attempt to eject.

CASES:

[27.1] HOW TO EJECT

[27.11] The Probability Number that a crew member will successfully eject is 17. When a crew member attempts to eject, refer to the rules of Probability (12.0), and determine whether or not he does so successfully.

[27.12] If an aircraft has two crew members, each must attempt to eject separately; i.e., the Player rolls for each crew member independently, and one crew member may be able to eject, even if the other is not.

[27.13] If an aircraft is about to be destroyed by a missile, and the owning Player of the aircraft has not successfully obtained visual, radar or infra-red contact with the missile (i.e., the crew members in the aircraft don't see the missile), the crew members may *not* attempt to eject. They never saw what was coming.

[27.2] EFFECT OF EJECTING

Ejection has little to no effect on the play of *Air War* itself. The only purpose ejection serves is to influence the number of Victory Points one side or another will accumulate in the course of a Scenario.

[28.0] AIRCRAFT EQUIPMENT TABLES

COMMENTARY:

These tables, to be found on a separate sheet, are used in conjunction with numerous rules. Whenever a procedure calls for the use of one of these tables, the Players are referred to that sheet.

CASES:

[28.1] AIRCRAFT RADAR CHARACTERISTICS TABLE
(see separate booklet)

[28.2] ECM DEVICE UTILIZATION TABLE
(see separate booklet)

[28.3] BOMB CAPACITY TABLE
(see separate booklet)

[29.0] PLAYING THE SCENARIOS

COMMENTARY:

The next several rules sections following this one detail the various Scenario types — the Historical and Odd Scenarios, the General Scenario Types, and the Availability Tables. Basically, the Historical Scenarios (as well as the Odd Scenarios) are used in the same way that most Scenarios in SPI games are used — they detail the starting positions for each of the aircraft in a given Scenario, as well as the information needed about the aircraft, in addition to any special rules and victory conditions that may be needed to play the Scenario.

The General Scenario types are used in combination with the Availability Tables. The Players choose a General Scenario Type (for instance, "Ground-Controlled Interception Point Defense"), then choose the aircraft and equipment each side may use in the Scenario. The Players may decide to play a Scenario that could have or might happen between two nations, and, referring to the Availability Tables, choose to take aircraft compatible with those currently available to those nations.

CASES:

[29.1] WINNING THE GAME

Each Scenario or Scenario type gives Victory Conditions for that Scenario or Scenario type. Generally, these will be in the form of "Player A wins if" a set of conditions are fulfilled, and "Player B wins if" a different set of conditions are fulfilled. There may also be a section stating under what conditions the game is to be considered a draw. Quite simply, a Player wins if he fulfills his victory conditions.

[29.2] HISTORICAL SCENARIOS

[29.21] Section 30.0 of the rules contains the Historical Scenarios provided with *Air War*; Section 31.0 contains the "Odd" Scenarios. Both sections are organized in basically the same manner.

[29.22] Each Scenario contains seven sections; these are "General Situation," "Map Arrangement," "Deployment," "Optional Rules," "Game Length," "Victory Conditions," and "Special Rules."

[29.23] The General Situation section of a Scenario provides what are in essence historical notes — it describes the situation as it existed during the actual historical action and its final result (or the situation as it is envisioned as occuring).

[29.24] The Map Arrangement section indicates how the maps are to be set up at the beginning of the Scenario. The maps are set up in the order and position indicated by this section, with all map section compass roses pointing in the same direction.

[29.25] The Deployment section of the rules indicates the hexes that each of the aircraft involved in the Scenario are to be set up in, as well as their facing, and the positions of all their Aircraft Control markers on the Aircraft Control Chart. Hex numbers are given in terms of a letter followed by a four-digit number; for instance, **G1213** would mean hex 1213 on map section **G**. The section also indicates what type of armament — cannon and missiles — the aircraft carry.

[29.26] The Optional Rules section is used when the Optional rules in sections 19.0 through 27.0 are used. It indicates how the use of the optional rules affects the Scenario — whether any of the aircraft pilots are to be considered Honchos, Novices or whatnot, in what direction the sun lies, ground altitude, and so forth.

[29.27] The Game-Length section indicates the number of Game-Turns for which the Scenario is to be played. At the end of this number of Game-Turns, the game is stopped (no matter what the situation is), and victory is determined. This is to represent the fact that aircraft have only a limited amount of maneuvering fuel.

[29.28] The Victory Conditions section is self-explanatory.

[29.29] The Special Rules section gives any special rules that may be in effect for that particular Scenario, but which do not apply to any other scenario. These are *not* considered optional rules.

[29.3] GENERAL SCENARIO TYPES

[29.31] Each of the General Scenario Type rules sections defines a type of air combat operation that occurs fairly regularly. It defines the manner in which a Scenario about that type of air operation is to be played and the objectives (i.e., victory conditions) of the opposing Players in such a Scenario.

[29.32] Each General Scenario type contains seven sections, divided in the same manner as the seven sections for Historical Scenarios. The only difference is that, rather than being as rigid as the sections for Historical Scenarios (which define absolutely the positions and rules under which both sides operate) the General Scenario Type defines parameters within which both Players must remain. For instance, no General Scenario Type indicates what type of aircraft are to be used by the opposing Players; it leaves the choice of aircraft up to the Players.

[29.33] Players may, if they wish, use the General Scenario Types and any arbitrary aircraft to play out a Scenario devised from one of the Scenario Types. Alternatively, they may choose to play a Scenario in which aircraft from two opposing nations encounter each other. In this case, the Players would refer to the Availability Tables (Section 33.0).

[29.34] For instance, if the Players wish to fight a battle between Kenyan aircraft and Ugandan aircraft, they could refer to the Aircraft Availability Table under the Kenya and Uganda sections and determine what aircraft those countries have at the moment. They could then determine from among these aircraft which each side should use in the Scenario.

[29.35] The Missile Availability Table and ECM Availability Table also indicates which missiles and ECM devices the varying nations have had operational at various times. Thus, when playing a Scenario as above, the Players should refer to these tables to see what missile types and ECM devices are available to the nations that they are playing.

[29.36] The Aircraft Availability Table (33.1), in addition to indicating which aircraft each nation has operational, contains a column for "Pilot Capability." Referring to the Air Crew Quality Table (33.18) and rolling a die, the Players can determine whether a pilot of a given aircraft owned by a given nation is a Honcho, Novice, Turkey, or whatnot.

[29.37] Usually, playing a General Scenario Type will require that the Players mutually agree on a number of things before beginning a game. In addition to the choice of aircraft type, many Scenarios will give the Players not an exact number of aircraft, but rather a range. For instance, in the "Ground Controlled Interception Point Defense" Scenario type (32.4), the Intruder may have anywhere between two and ten aircraft. craft.

[29.4] PLOTTING AND OUT-OF-CONTACT SCENARIOS

[29.41] A Scenario is said to be an "out-of-contact" Scenario if one side or the other is unaware of the positions of the opposing side's aircraft at the beginning of the game. That is, a Scenario is an out-of-contact scenario if either side has not "seen" the other side at the beginning of the Scenario.

[29.42] The Special Rules section of a Scenario's listings will indicate whether the scenario is an out-of-contact scenario, and, if so, which side begins out of contact with the other. Note that it is possible for both sides to begin out of contact.

[29.43] The Player (or Players) that begins out of contact must plot movement for his aircraft. That is to say, the Player must note on a sheet of paper exactly where his aircraft are to move and what they are to do in the course of their movement for a certain number of Game-Turns. The Special Rules of a Scenario will either specify the number of Game-Turns that a Player must plot movement for his aircraft; or else it will state that the Player must plot movement for his aircraft, beginning from the initial positions of the aircraft and ending up at some specified point. (I.e., "plot movement for the aircraft from the eastern side of map section E off the western side of map section A."

[29.44] The out-of-contact Player must note precisely what each of his aircraft must do; each aircraft will follow precisely the instructions plotted for it at the beginning of the game until it or a friendly aircraft spots (either through Radar or visual search) some enemy aircraft. When the aircraft of the out-of-contact Player attain radar or visual contact with any enemy aircraft, the aircraft may "break" their plot; thenceforth, the owning Player may move the aircraft as he desires, with no attention to the plot. **Note:** A Player may also break his aircraft's plots if any of his aircraft detect enemy aircraft via Infra-red or Radar Detections.

[29.45] As well as plotting aircraft's movement, the out-of-contact Player must plot which arcs each of his aircraft is to search visually before attaining contact with enemy aircraft. An aircraft may only use visual search in the arc which the owning Player plotted as being the arc in which the aircraft was to search on a given Game-Turn. After the out-of-contact Player's aircraft attain contact with enemy aircraft, the Player's aircraft are free to search any arc at the discretion of the Player.

[29.46] At certain times in an out-of-contact Scenario, a Player may have radar contact with certain enemy aircraft but not all of them. Note that a Player may not launch missiles or fire cannon at an enemy aircraft that he has not obtained radar or visual (or infra-red) contact with. However, all aircraft remain on the game-map at all times for the same of simplicity.

Note: Players should not attempt to plot intricate maneuvers. They may also wish to set up a "cycle" of actions that are repeated each turn or several turns. the detail of the plot may vary with whatever the players consider required to hold the aircraft to a pre-set plan.

[30.0] HISTORICAL SCENARIOS

CASES:

[30.1] INTRODUCTORY SCENARIOS

In the following Scenarios, neither Player's aircraft are endowed with missiles; thus, the Players may play these Scenarios by reading rules sections 1.0 through 13.0, plus section 17.0, without knowledge of the rest of the rules.

[30.11] Action over MiG Alley, 13 September, 1952

General Situation: Two intruding MiG-15's flying over "MiG Alley" near Hungnam in Korea encountered two F-86's of the 4th Fighter Wing in a classic dogfight. The MiG's got quite close to the F-86's before spotting them, but were spotted in turn almost immediately. A quick-moving positional battle began, with both sides maneuvering violently. The F-86's managed to split up and double back, Cpt. Palmer getting off a couple of shots at one of the MiG's and destroying it, the pilot bailing out. At this point, the remaining MiG lit out for home, and the F-86's, running low on fuel, did likewise.

Map Arrangement:

north
A B
C D

U.S.A.F.
Aircraft type: two F-86's
Movement Allowances: 4
Throttle Setting: 4
Energy Pts: 0
Accel. Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: C1211, C1411
Altitudes: 73, 73
Headings: N, N

Chinese
Aircraft type: two MiG-15's
Movement Allowance: 4
Throttle Setting: 4
Energy Pts: 0
Accel. Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: D0511, D0711
Altitudes: 75, 75
Headings: N, N

Optional Rules:
Sun direction: SW.
Land altitude: 30.

Game Length:
20 Game-Turns.

Victory Conditions:
Each Player receives two Victory Points for each enemy aircraft shot down, and one for each enemy aircraft that takes enough damage for it to operate under Loaded Conditions (see 17.0). The Player with the greater number of Victory Points at the end of the game is the winner. If the Players have an equal number of Victory Points, the game is a draw.

[30.12] El Arish, 31 October, 1956

General Situation: While patrolling over El Arish during the 1956 Arab-Israeli War, two Mystere IVA's encountered three Egyptian MiG-17's. One of the MiG's was destroyed in the ensuing dogfight without loss to the Israelis.

Map Arrangement:

north
A B
C D

Israelis
Aircraft type: Two Mystere IVA's.
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: A1211, A1313
Altitude: 80, 81
Heading: N

Egyptians
Aircraft type: three MiG-17's
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: A0707, A0907, A0808
Altitude: 72, 72, 72
Heading: NW

Optional Rules:
Sun Direction: E
Clouds: the Egyptian player places cloud markers on the game-map at the beginning of the game; all clouds must be between levels 36 and 44; clouds may be no more than three levels thick, and no more than half of the hexes on a given map section may be taken up by clouds; if new map sections are brought into play, the Egyptian player may place clouds on these as well.
Pilot Capability: One Mystere is flown by a Honcho, one MiG by a novice.

Game Length: 20 Game-Turns.

Victory Conditions: The Israeli Player wins if his aircraft shoot down at least one enemy aircraft, and he loses no aircraft. The Egyptian Player wins if the Israeli Player fails to fulfull his victory conditions.

Special Rules: One is added to the Israeli Player's Initiative die-roll in addition to any other modifications that may be made.

[30.13] Over Mufang Fubar, 6 September, 1965

General Situation: Three Indian Mystere IVA's met three Pakistani F-86's over Mufang Fubar in Kashmir. A dog-fight ensued, with the Mystere's superior turning ability giving it a slight edge. However, before either side took any real damage,

the Pakistanis ran low on fuel and decided to head for home.

Map Arrangement:

north

A B

C D

Indians
Aircraft type: three Mystere IVA's
Movement Allowance: 3
Throttle Setting: 3
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: C0617, C0716, C0916
Altitude: 155
Heading: NNW

Pakistanis
Aircraft type: three F-86's
Movement Allowance: 3
Throttle Setting: 3
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: A0710, A0810, A0910
Altitude: 150
Heading: S

Optional Rules:
Sun Direction: W
Land Altitude: 60

Game-Length: 15 Game-Turns.

Victory Conditions:
Each Player receives two Victory Points for each enemy aircraft shot down, one for each enemy aircraft that takes enough damage for it to operate under Loaded conditions (17.0), and one for each friendly aircraft that is *not* shot down. The Player with the greater number of Victory Points at the end of the game is the winner. If the Players have an equal number of points, the game is a draw.

[30.2] INTERMEDIATE SCENARIOS

These Scenarios are of intermediate complexity; most can be played without the optional rules. In fact, only in Case 30.23 (The Death of Colonel Tomb) are the optional rules a real necessity. Although the missile rules are used extensively (and thus all of rules sections 1.0 through 17.0 must be used), radar and visual search is not necessary as the aircraft begin in contact and no ECM devices are used.

[30.21] The First Kill, 10 July, 1965

General Situation: Two F-4C's covering another F-4 element were attacked by two MiG-17's. Although the MiG's soon swung into attack position, the F-4's increased separation and reversed into the MiG's, though not before some close calls. Both MiG's were destroyed by Sidewinders as they attempted to disengage, the first U.S.A.F. kills in Vietnam.

Map Arrangement:

north

A B

C D

U.S.A.F.
Aircraft type: two F-4C's
Movement Allowance: 6
Throttle Setting: 6
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: both with 4 Early Sidewinders; #1 (C1209) with 4 Early Sparrows as well
Hexes: C1209, C1412
Altitudes: 78, 80
Heading: N

North Vietnamese
Aircraft type: two MiG-17's
Movement Allowance: 6
Throttle Setting: 6
Energy Points: 4
Acceleration Points: 0
Wings: rolled 45° to right
Dive/Climb: Type I Dive
Missiles: none
Hexes: C0913, C0915
Altitude: 81
Heading: NE

Game Length: 30 Game-Turns

Victory Conditions: The U.S.A.F. Player wins if he destroys at least one MiG, and none of his own aircraft are destroyed or take more than 9 points of damage from cannon fire. The Vjetnamese Player wins either if a) he destroys an F-4, or b) none of his aircraft are destroyed, *and* his aircraft have collectively fired their cannons at the U.S.A.F. aircraft at least four times in the course of the Scenario. Any other result is a draw.

[30.22] "Thud Ridge," 21 March, 1967

General Situation: Two F-105D's returning from a strike over North Vietnam were bounced by two MiG-21's. Despite the MiG's superior speed and maneuverability, the Thuds were able to reverse into them, which forced the MiG's to withdraw without losses to either side.

Map Arrangement:

north

A B

C D

U.S.A.F.
Aircraft type: two F-105D's
Movement Allowance: 5
Throttle Setting: 5
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 1 Early Sidewinder each
Hexes: C1117, C0915
Altitude: 48
Heading: S

North Vietnamese
Aircraft type: two MiG-21C's
Movement Allowance: 9
Throttle Setting: 7
Energy Points: 4
Acceleration Points: 0
Wings: level
Dive/Climb: Type I Dive
Missiles: 2 Atolls each
Hexes: A1014, A0907
Altitude: 54
Heading: S

Optional Rules:
Sun Direction: E

Game Length: 15 Game-Turns.

Victory Conditions: The Player to destroy the most aircraft wins. If no aircraft are destroyed, the U.S.A.F. Player wins. If both Players destroy an equal number of aircraft, the game is a draw.

[30.23] The Death of Colonel Tomb, 10 May, 1972.

General Situation: Randy "Duke" Cunningham and Willie Driscoll had just shot down two MiG's, giving them a total of four kills, when they encountered another MiG, flown by Colonel Tomb, the highest-scoring ace to emerge since Korea. Cunningham and Driscoll were looking for kill number five, to make them the first U.S. aces of Vietnam. Tomb was looking for kill number fourteen. Battle between these three masters of air combat then ensued. It ended with Cunningham and Driscoll scissoring with Tomb. Normally, scissoring in an F-4 against Col. Tomb in a MiG-17 entitled you to a one-way ticket to the Hanoi Hilton — but Cunningham and Driscoll hung in there, although Tomb was peppering the F-4 with cannon fire. At the end, the Americans were out of airspeed, altitude and ideas. Tomb was out of fuel. He tried to break away and land, but the crippled F-4 got off one last sidewinder at him. Cunningham and Driscol ejected safely over an American ship. Tomb went down with his MiG. Both had scored their kills.

Map Arrangement

north

A

U.S.N.
Aircraft type: one F-4J
Movement Allowance: 6
Throttle Setting: 6
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Improved AIM-9's, 4 Early AIM-7's
Hex: A0804
Altitude: 22
Heading: S

People's Air Force of Vietnam
Aircraft type: one MiG-17
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 9
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Atolls
Hex: A0816
Altitude: 22
Heading: N

Optional Rules:
Sun Direction: West.
Pilot Capability: The U.S.N. pilots are Honchos; Col. Tomb is a Super-Honcho.

Game Length: 30 Game-Turns.

Victory Conditions: If either Player's aircraft shoots the other's down, he wins the game. If neither aircraft is shot down *and* the MiG-17 is *not* in the forward arc of the F-4 and within 24 hexes of it at the end of the game, the P.A.F. Vietnam Player wins. Any other outcome is considered to be a draw.

[30.3] COMPLEX SCENARIOS

These Scenarios are generally more complex than the previous ones, and a full knowledge of the panoply of optional rules is necessary to play them.

[30.31] Action over the Mediterranean, 14 September, 1973

General Situation: At the outbreak of the '73 War, the Syrians attempted to provoke the Israelis into a

dogfight. They found that the Israelis had lost none of their skill. The Israelis destroyed fourteen Syrian MiG's while losing but one aircraft. The Israelis used AIM-7's to break up the Syrian formations at long range, and then moved in with their Shafirs and cannon, finishing off the survivors.

Map Arrangement:

north

A

B

C

D

Israelis
Aircraft type: two F-4E's
Movement Allowance: 8
Throttle Setting: 8
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiels: 2 Early AIM-7's and 4 Shafrir each.
Hexes: D0815, D1017
Altitudes: 66, 70
Heading: N

Syrians
Aircraft type: four MiG-21's (late)
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 4 Atolls each
Hexes: A0805, A0904, A0704, A0503
Altitude: 62
Heading: S

Optional Rules:
Sun Direction: E.
Pilot Capability: two of the MiG's are flown by Novices, one F-4E is flown by a Honcho.
All aircraft are capable of conducting Radar Searches, and all carry Radar Detectors.

Game Length: 30 Game-Turns.

Victory Conditions: The Israeli Player wins if his aircraft shoot down two or more Syrian aircraft, and no Israeli aircraft are shot down. The Syrian Player wins if the Israeli Player fails to fulfill his victory conditions.

Special Rules: The Syrian aircraft begin out of contact with the Israeli aircraft; i.e., the Israeli Player's aircraft know where the Syrian aircraft are at the beginning of the game, but not vice versa. Rather than plotting according to 29.4, the Syrian aircraft must fly straight and level without turning, until:

a) An Israeli aircraft or missile is sighted visually or by radar.

b) The Syrian Radar Detectors detect the presence of an Israeli Radar lock-on, or

c) A Syrian aircraft is damaged by Israeli cannon fire or destroyed by an Israeli missile.

If any of these circumstances comes about, the Syrian Player gains full control of his aircraft, and may thereafter move them as he chooses.

Only two Syrian aircraft may conduct visual searches in any one Game-Turn. The Syrian aircraft *may* search in any arc except the rear arc (as per the rules); that is, the Syrian Player does not have to plot the arcs in which his aircraft will search.

[30.32] Formosa Straits, 14 August, 1958

General Situation: In one of the earliest usages of heat-seeking missiles, four Nationalist Chinese F-86 Sabres confronted 8 Chinese MiG-17's over the Formosa Straits. The Communist aircraft were approaching the Nationalist-held island of Matsu when the Sabres struck, and in the dogfight four MiG's perished without loss.

Map Arrangement:

north

A B C D

E F G H

Nationalist
Aircraft type: four F-86's
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Early Sidewinders each
Hexes: H1311, H1111, H1113, H1115
Altitude: 55
Heading: NW

Communist
Aircraft type: eight MiG-17's
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: A1108, A1107, A1007, A0908, A0704, A0705, A0605, A0506
Altitude: four at 60; four at 65
Heading: SE

Optional Rules:
Sun Direction: W.
Pilot Capability: four of the MiG's are flown by Novices.

Game Length: 25 Game-Turns.

Victory Conditions: Each Player receives one Victory Point for each enemy aircraft that is damaged to the extent that it operates under loaded conditions, and two Victory Points for each destroyed aircraft. At the end of the game, the Nationalist Player is the winner if he has at least 6 Victory Points and has at least twice as many Victory Points as the Communist Player. The Communist Player wins if he has at least three Victory Points, and has more than half as many Victory Points as the Nationalist Player. Any other result is a draw.

Special Rules: Both sides begin out of contact with each other. Only visual searches may be conducted; there are no radar searches. Each Player must move all of his aircraft directly forward in straight, unaccelerated, level flight until he obtains visual contact with an enemy aircraft. The Players need not plot as per Case 29.

When a Player's aircraft obtain visual contact with some enemy aircraft, the Player regains full control over his aircraft, and may move them freely. The opposing Player will not gain control over his aircraft until he obtains visual contact with the aircraft or missiles of the first Player.

[30.33] Chittagong Airfield, 7 December, 1971

General Situation: Two Su-7's and one MiG-21 on their way to bomb Chittagong airfield were intercepted by two Pakistani Sabres. The MiG jettisoned its munitions and engaged the Sabres while the Sukhois continued onward. One Fitter was destroyed by a Heat-Seeking missile and AA fire, and one Sabre destroyed by cannon fire. In essence, the Indian mission was a success despite the loss, because both Fitters fulfilled their mission and bombed the airfield despite the Pakistani interception.

Map Arrangement:

north

A B C D

E F G H

Indian
Aircraft types: two Su-7's; one MiG-21C
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: Su-7's, 0; MiG-21C, 5
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: Su-7's, A1315, A1116; MiG-21C, 1413
Altitudes: Su-7's, 40; MiG-21C, 45
Heading: SE

Pakistani
Aircraft types: two F-86's
Movement Allowance: 5
Throttle Setting: 5
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Early Sidewinders each
Hexes: C1204, C1206
Altitude: 45
Heading: SW

Optional Rules:
Sun Direction: East.
Pilot Capability: one Su-7 flown by a Novice.
Bombing and Ground Installations: See special rules.

Game Length: 20 Game-Turns.

Victory Conditions: The Pakistani Player receives five Victory Points for each Indian aircraft destroyed, and two for each Indian aircraft that jettisons its munitions. The Indian Player receives two Victory Points for each Pakistani aircraft destroyed, plus victory points as follows if his aircraft destroys by bombing any of the targets on the game-map (see special rules):

parked aircraft	= three Victory Points
building	= five Victory Points
truck	= two Victory Points
POL dump	= three Victory Points
Ammo dump	= three Victory Points
40mm AA gun	= three Victory Points
20mm AA gun	= two Victory Points

Special Rules: All Indian aircraft (including the MiG) begin the game with as much munitions as they are capable of carrying. The Indian Player may load 750 lb. bombs, 1000 lb. bombs, napalm, or rockets onto his aircraft, within the limitations laid out in the bombing rules and the rules for Loaded Limitations. He may not use any PGM.

The Pakistani Player must place the following target markers on the game-map at the beginning of the game:

building markers (small masonry); **H1212, H1213**
building markers (small steel); **H1312**

truck markers (trucks): **H1311, H1113;**
F-86 aircraft counter (parked aircraft): **H1211;**
dump marker (POL dump, open): **H1012;**
dump marker (ammo dump, revetted): **H1216;**
AA gun counters (40mm AA guns): **H1217, H0516, H1610, H1208** (no radar);

AA gun counters (20mm AA guns): **H0915, H1010, H1410, H1515**

The Pakistani Player may use the 40mm and 20mm AA guns as the rules for Ground Installations (26.0) indicate; i.e., he may fire them at the Indian aircraft.

[30.34] Abu Sueir, 0930, 6 June, 1967

General Situation: As the second wave of the devastating Israeli first strike of the 1967 War penetrated Egyptian air space, the strike wave of Mysteres was bounced by the remnants of the Egyptian fighter force. One Mystere was shot down, but soon the top cover of the Mirages showed up and destroyed most of the intruding MiG's with cannon fire. The surviving MiG's had no place to land. They either crashed attempting to land on cratered airfields or were abandoned in flight.

Map Arrangement:

north

A B C D

E F G H

Israeli
Aircraft Type: four Mystere IVA's; two Mirage IIIC's
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: Mystere IVA's, none; Mirage IIIC's, 1 M.530 and 2 Early Sidewinders each
Hexes: Mysteres D0905, D0907, D1108, D1309; Mirages D1104, D1106
Altitude: Mysteres, 70; Mirages, 78
Heading: SW
Egyptians
Aircraft type: six MiG-21's
Movement Allowance: 6
Throttle Setting: 7
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Type I Climb
Missiles: 2 Atolls each
Hexes: E0913, E0712, E0413, E0614, E1014, E0511
Altitude: 64
Heading: NE

Optional Rules:

Sun Direction: W

Pilot Capability: one of the Mirage Pilots is a Honcho; two of the MiG pilots are Novices, and one is a Turkey.

Game Length: Until one Player or the other fulfulls his Victory Conditions.

Victory Conditions: The Israeli Player wins if he manages to fly at least three of the Mystere IVA's off the western edge of map-section **E**. These Mysteres must still be carrying their munitions when they do so. As soon as the Israeli flies three or more munitions-loaded Mysteres off the western map-edge of section **E**, the Israeli Player wins.

The Egyptian Player wins by forcing two or more of the Israeli Mysteres to jettison their munitions, or by destroying Mysteres. If, at any time, two Mysteres have been destroyed or have jettisoned their munitions, the Egyptian Player wins.

Note that the game continues until one or the other Player wins.

Special Rules: The Mysteres are considered to be carrying loads of munitions to an unidentified target off the western edge of map section **E**. The Mysteres are considered loaded, and must jettison their stores as per the rules if they take enough damage to force them to operate under loaded conditions. The bombing rules are not actually used in this Scenario; the Mystere's target is not on the game-map.

Map section **E** is "frozen" into place in this Scenario; it may not be moved to a new position as the aircraft move. Any aircraft flying off the western edge of section **E** are considered to be out of the game, and may not reenter.

The Israeli Player begins out of contact with the Egyptian Player, and must plot movement for all of his aircraft from their initial positions off the western edge of map section **E**. The Mirages may conduct radar searches, and all Israeli aircraft (and all Egyptian aircraft) may conduct visual searches.

The Egyptian Player begins with *radar* (but not visual) contact with the Israeli aircraft. His aircraft may search visually for the Israeli planes.

[30.35] Return of the Red River Rats, Route Pack Six, 22 December, 1972.

General Situation: This strike was part of Linebacker II, the late 1972 air offensive against North Vietnam, and had the aim of supporting B-52 strikes in the Hanoi-Haiphong area while also disrupting North Vietnamese communications. To jam North Vietnamese radars, there were "Wild Weasel" aircraft from the 561st Tactical Fighter Squadron, A-7E attack bombers from the 353rd (Green Hornet) Fighter Squadron with strong MiGCAP of F-4E's from the 555th (Triple-Nickel) Tactical Fighter Squadron. This force was intercepted by a gaggle of MiG-21's who went for the A-7's. The F-4's soon ended their fun, and LTC James E. Brunson and his back-seater Maj. Ralph Pickett downed a MiG. There were no other losses, and the U.S.A.F. then treated the North Vietnamese to a display of the deadly effectiveness of "smart bombs."

Map Arrangement:

north

A B C D E F G H

U.S.A.F.
Aircraft types: one F-105WW; three F-4E's; four A-7E's
Movement Allowance: 5
Throttle Setting: F-105WW, 5; F-4E's, 5; A-7E's, 4;
Energy Points: F-105WW, 0; F-4E's, 0; A-7E's, 4
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: F-105WW, none; F-4E's, 4 Improved Aim-9's, 4 early Aim-7's each; A-7E's, 2 Improved Aim-9's each
Hexes: F-105WW, H1109; F-4E's, H0807, H1010, H0811; A-7E's, H0207, H0309, H0311, H0212
Altitudes:: F-105WW, 55; F-4E's, 54; A-7E's, 44
Headings: W

North Vietnam
Aircraft type: six MiG-21's (early)
Movement Allowance: 4
Throttle Setting: 4
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Atolls each
Hexes: A0415, A0517, A0402, A0501, A1110, A1309
Altitudes: 50
Headings: E

Optional Rules:
Sun Direction: W
Pilot Capability: One F-4E is piloted by a Honcho (see Special rules)

Game Length: 30 Game-Turns.

Victory Conditions:

The Vietnamese Player receives ten Victory Points for each enemy aircraft destroyed, fifteen points for destroying the F-105WW. He also receives five Victory Points for each aircraft that he inflicts enough damage upon that it takes at least half as much as it is capable of taking. In addition, he receives two Victory Points for each friendly lighter (see special rules) that is *not* destroyed by the U.S.A.F. Player.

The U.S.A.F. Player receives Victory Points according to the following schedule. At the end of the game, the Victory Points of each Player are totaled. The Player with the greater number at that time is the winner. If the Players have an equal number of Victory Points, the game is a draw.

Destroyed Item	*VP*
enemy aircraft	2
building	3
SA-2 site	5
AA gun	1
lighter	5
bridge	5
POL dump	2
truck	1

Special Rules: The U.S.A.F. A-7's are loaded with munitions. At the beginning of the game, the U.S.A.F. Player must secretly determine what types of munitions each A-7 is carrying. The A-7's may carry any mixture of the following munitions types: 1000 lb bombs, 1000 lb smart bombs, 750 lb bombs, 750 lb smart bombs, rockets, and Bullpup II Air-to-Surface missiles. All other munitions types are forbidden.

The F-105WW is a target designator. Note that Radar Search and radar counter-measures (as well as infra-red counter-measures) are active in this Scenario. The F-105WW begins the game with a Chaff dispenser (not a pod, see 28.2) able to disperse 20 hexes of chaff, and 8 flares (as infra-red counter-measures). One F-4E begins the game with 6 flares; the other have no infra-red counter-measures.

At the beginning of the game, the Vietnamese Player should place the following target markers in the following hexes:

Building markers (small steel): **A0607, A0611, A0408, A0411;** Truck markers (trucks): **A0513, A0409;** Dump markers (revetted POL dumps): **A0511, A0509;** Bridge Marker (Bridge); **A0212;** AFV markers (lighters, see below): **A0608, A0609, A0510, A0710, A0711;** SAM counters (SA-2 missile sites, see below): **A0508, A0515;** AA gun counters (100mm AA guns): **A0410, A0610, A0707;** AA gun counters (85mm AA guns): **A0407, A0413;** AA gun counters (37mm AA guns): **A0308, A0507, A0514**

The AA guns have no radar; in actuality, they did, but the internal jamming devices with which all the

U.S.A.F. aircraft involved are equipped are effective against the AA gun's radar.

Note that the AFV markers actually represent lighters docked in the Red River. For target destruction purposes, they are treated as being Light Armor Vehicles (see Target Destruction Table, 25.93). Each lighter mounts a .50 cal machine gun, which may be fired as a .50 cal AA gun (see the Ground Installations rules, Section 26.0).

Each SAM counter represents a SA-2 site; each site contains four SA-2 missiles (see Ground Installations rules, Section 26.0). The SA-2 sites and AA guns may be used as the Ground Installations rules direct; i.e., the Vietnamese Player may launch SAM's and fire his AA guns as per those rules.

The building on hex A0611 should be considered a radar installation with a Radar Search Strength of **10.** The U.S.A.F. gains no extra Victory Points for destroying it, but the Vietnamese Player may use it to Radar Search for the U.S.A.F. aircraft.

Any U.S.A.F. aircraft that moves onto map-section **A** is automatically spotted by the Vietnamese Player; if the Vietnamese Player had not previously obtained Visual Contact with the U.S.A.F. aircraft, he does so at this time.

Both sides begin out of contact with each other. Both Players must move their aircraft directly forward until visual contact or radar contact is obtained. All aircraft must remain in Level Flight except for the A-7's, which must go into a Type I Dive on the first Game-Turn and dive one level each turn. No aircraft may accumulate Turn Points until radar and/or visual contact is obtained.

Once a Player has obtained visual or radar contact with the enemy Player's aircraft, he regains full control of his aircraft, and may thenceforth move them as he wishes.

[31.0] ODD SCENARIOS

[31.1] ST. GEORGE ALOFT

General Situation: On 23 April, 1978, a huge pyrogenic saurian flew low over the isle of Manhattan and put the torch (as it were) to the Statue of Liberty. As the flaming symbol of America crashed into New York Bay, an element of F-105's of the 141st Fighter Squadron scrambled from McGuire Air Force Base to protect America's largest city. Winging up the New Jersey coast, they encountered this fearsome and obviously communist creature, and battle was joined.

Map Arrangement:

north

A	B	C	D
E	F	G	H

New Jersey Air Nat'l Guard
Aircraft type: two F-105's
Movement Allowance: 7
Throttle Set: 7
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb:: Level Flight
Missiles: 1 Aim-9D each
Hexes: F0301, F0103
Altitudes: 45
Headings: NE

Dragon
Aircraft type: one dragon
Movement Allowance: 1
Throttle Set: N/A
Energy Points: N/A
Acceleration Points: N/A
Wings: N/A
Dive/Climb: N/A
Missiles: none
Hex: C0909
Altitude: 47
Heading: SW

Optional Rules:
Sun Direction: NE.

Game Length: 20 Game-Turns.

Victory Conditions: The New Jersey Air National Guard Player wins if he shoots down the dragon before the end of the game. The dragon wins if he survives until the end of the game, and is able to continue to terrorize the east coast.

Special Rules: The dragon does not move as an aircraft; rather, it has a Movement Allowance of one on every Game-Turn. The Dragon Player may move the dragon counter (note that there *is* a dragon counter provided with the game) one hex in any direction during the Aircraft Movement Phases. Note that Initiative and disadvantaged/advantaged positions are calculated as they are normally for aircraft.

After the dragon is moved, its facing is altered so that the rear of the dragon counter is facing towards the hex the dragon moved from.

The Dragon Player need not keep an Aircraft Control Chart for the Dragon, as the dragon moves in a simplified manner, and has unlimited "ammunition" for its breath weapon.

The Dragon has one weapon; its breath weapon. It may use its weapon during the Cannon Combat Phase, and combat between the dragon and an enemy aircraft is resolved as if Cannon fire from a Type A Cannon were being resolved. The dragon must have its target in its forward arc in order to "breathe" on it, as is normal for cannon fire.

The Dragon has a Damage Capacity of 10 for Cannon fire purposes. Note that the New Jersey Air National Guard aircraft may fire their cannon at the dragon from any arc; the arc limitations placed on cannon fire in the cannon rules do not apply when firing on a dragon. That is to say, the dragon is considered to be receiving "normal" cannon combat, no matter what arc the firing aircraft is in.

However, when breathing on an F-105, the dragon *must* take arcs into consideration. That is, a dragon is executing "normal" cannon fire only when breathing on an aircraft from its rear arc, "high angle off" cannon fire when breathing from a rear side arc, and "frontal" cannon fire when breathing from the forward arc.

Normally, Heat-Seeking missiles are unable to track the dragon, as the dragon leaves no contrail. However, the dragon *may* be tracked by Heat-Seeking missiles when breathing. Therefore, on the turn following one in which the dragon breathes, a heat-seeking target marker is placed in the dragon's hex before it moves. It disappears during the Bookkeeping Phase at the end of the Game-Turn, *unless* the dragon used its breath weapon again in the Game-Turn. Any Heat-Seeking missile launched by one of the F-105's that can track the hex in which the target marker is placed may have the dragon as its target.

Designers Comments: With a bit of fiddling and ingenuity, it is perfectly possible to come up with other Scenarios involving dragons. As a rule, aircraft should not be able to lock-on to dragons, and therefore Radar-Homing missiles should be ineffective against them.

In any case, a Scenario pitting a dragon or two against some Soviet aircraft seems a reasonable turnabout, and with expansion, I can easily see Gandalf riding Smaug on a SAM suppression mission . . .

[31.2] CHARIOTS OF THE GODS

General Situation: On Friday 13, December 1979, a flight of F-15's encountered an extraterrestrial vehicle engaged in a reconnaissance mission over one of the northern continents of Sol III. In keeping with top-secret Pentagon doctrine (the Pentagon, of course, possesses knowledge about flying saucers that it has long withheld from the world at large in order to prevent chaos and panic), the F-15's immediately attacked the alien vessel and attempted to destroy it. Responding to this unprovoked attack, the aliens released their fantastic ray weapons upon the F-15's.

Map Arrangement:

north

A	B	C	D
E	F	G	H

Deployment:

U.S.A.F.
Aircraft Type: two F-15's
Movement Allowance: 7
Throttle Setting: 7
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 4 Aim-7F's, 4 Aim-9L's
Hexes: G0301, G0103
Altitudes: 75
Headings: NE

U.F.O
Aircraft type: one UFO
Movement Allowance: 10
Throttle Setting: N/A
Energy Points: N/A
Acceleration Points: N/A
Wings: N/A
Dive/Climb: N/A
Missiles: none
Hex: A0909
Altitude: 80
Heading: N/A

Optional Rules:
Sun Direction: Scenario takes place at night.
The Players may use any or all other optional rules.

Game Length: 20 Game-Turns.

Victory Conditions: The UFO Player wins if he destroys both F-15's; the U.S.A.F. Player wins if he destroys the UFO. Any other result is a draw.

Special Rules: The UFO does not move as an aircraft does. Rather, it has a Movement Allowance of **10**, and does *not* have to expend its full Movement Allowance each turn; the saucer could move one hex, or ten hexes, as its owning Player desires.

The UFO is considered to be equipped with inertialess drive; therefore, it has no "momentum" and may be moved in any direction or combination of directions in a single Game-Turn and consequently has no facing. When moving, two levels of altitude is equivalent to one hex; for instance, the saucer could, if it were to expend ten movement Points in a given Game-Turn, move 3 hexes north, 4 northeast, and 6 altitude levels up. The UFO has no flight attitude, and the owning Player need not keep an Aircraft Control chart for the

UFO; the only thing the owning Player of the UFO must keep track of is the UFO's altitude.

The saucer is equipped with two weapons; one is called an Inertia Disruptor, and the other, a Ray of Destruction. The saucer may use either (but not both) of its weapons in a given Game-Turn; it fires its weapons during the Cannon Combat Phase. The Player refers to the UFO Hit Probability Table (31.11) below, and cross-references the weapon the UFO is using with the hex range to the aircraft it is firing at, to yield a single number. He then refers to the rules of Probability (12.0) and determines whether or not the UFO hits its target.

If the UFO hits its target with the Ray of Destruction, its target is considered to take damage as if it had just been hit by a cannon shot from a Type A Cannon. The Players refer to the Type A Damage by Cannon Type Table to determine the amount of damage taken by the aircraft.

If the UFO hits its target with the Inertia Disruptor, the aircraft immediately Departs Controlled Flight (see Case 10.8), and must attempt to regain controlled flight on a subsequent Game-Turn.

The UFO may fire the Inertia Disruptor at an enemy missile during the Cannon Combat Phase, following the same procedure outlined above. If the UFO hits the missile, the missile is removed from the game-map.

The UFO has no facing, and may fire either of its weapons at an enemy aircraft from any angle.

For Cannon Combat purposes, the UFO is considered to have a damage capacity of 30 Damage Points. Any cannon shot taken at the UFO is considered to be a "normal" cannon shot; i.e., the Players ignore the arcs of the UFO when resolving cannon fire.

Heat-Seeking missiles may *not* track the UFO, as it leaves no contrail. However, Radar-Homing Missiles *may* be fired at the UFO if the launching aircraft first obtains a lock-on to the UFO. The saucer acts as if it were presenting a "side arc" to an aircraft attempting to lock on to it. The saucer may not break a lock-on except by moving out of the Tracking Cone of the locked-on aircraft.

The UFO is destroyed if hit by a missile.

UFO Hit Probability Table

Hex Range	*Inertia Disruptor*	*Ray of Destruction*
1-2	10	20
3-4	6	15
5-6	4	10
7-10	3	6
11-15	2	4
15-20	0	3

[32.0] SCENARIO TYPES

[32.1] SCENARIO TYPE ONE: THE DUEL

General Situation: A Duel type Scenario is a dogfight between two forces of opposing aircraft that begin the game in visual contact. This Scenario is perhaps the most "even" Scenario type, as the aircraft begin in approximately even positions, and only the quality of the aircraft and the skill of the Players will determine the outcome of the game.

Map Arrangement:

north

A B C

Deployment: Before the Players set their aircraft up on the game-map, they must determine which aircraft each Player is to take, and how many each side is to have. By referring to the Aircraft Performance Charts, the Players may determine the approximate relative "worth" of all the aircraft types in a dogfight; by comparing the values given on this table, and by allowing both Players to choose aircraft with approximately the same total point values, the Players may construct a relatively balanced Scenario. In a Duel Scenario, each side may have up to six aircraft.

The aircraft are set up in the following manner. **Note:** The hexes in which the aircraft are to be set up are in ascending order; that is to say, if a Player has three aircraft, he places one aircraft in each of the first three hexes listed; if he has four, he places one in each of the first four hexes, and so forth.

Side A & Side B

Movement Allowance: Any number between the aircraft's cruising speed (as indicated on the Basic Aircraft Information Table) and it's Maximum Movement Allowance.
Throttle Setting: The Throttle Setting is the same as the aircraft's Movement Allowance at the beginning of the game.
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: Both Players may have on each of their aircraft as many missiles as that aircraft is capable of carrying; the Players may limit the number and/or type of missile carried by mutual consent.
Hexes: Side A: A0808, A0711, A0508, A0206, A0613, A0616; Side B: C0808, C0911, C1108, C1406, C0914, C1210
Altitudes: The lead aircraft (i.e., the aircraft that start in A0808 and C0808) start at the same altitude — the Players determine what altitude by mutual consent. All other aircraft must be within four altitude levels of the lead aircraft, as determined by the owning Player.
Headings: Side A: NE Side B: NW

Optional Rules:

Sun Direction: If the scenario is taking place north of the equator, roll a die: 1 = SW; 2,3 = W; 4 = SE; 5,6 = E. If it takes place south of the equator: 1 = NW; 2,3 = W; 4 = NE; 5,6 = E. If the Players are playing a Scenario as two countries fighting each other (as per 29.34), they can determine whether the Scenario takes place north or south of the equator by determining whether the nations involved are north or south of the equator. Otherwise, they may determine this by mutual consent.

Whether there are to be Clouds or land altitude, and whether ECM devices are to be used are left to the discretion of the Players.

Game Length: Roll the die six times at the beginning of the game, and add the die-rolls; this total is the number of Game-Turns in the Scenario.

Victory Condtions: Each Player receives two Victory Points for each enemy aircraft destroyed, and one for each enemy aircraft that is damaged so that it has taken at least half as many points of damage as it is capable of sustaining. The Player with the larger Victory Point total at the end of the game is the winner.

[32.2] SCENARIO TYPE TWO: THE BOUNCE

General Situation: A Bounce type Scenario is a fight between two opposing forces of aircraft in which one force begins out of contact with the other. In other words, this type of situation results when one side has been able to locate the other's aircraft through one means or another, but the second side has not spotted the first side's aircraft. Obviously, the side that begins out of contact in this type of Scenario is at a disadvantage.

Map Arrangement:

north

A

Deployment: Before the Players begin the Scenario, they must determine which aircraft they will each use, and so forth. Each Player may have up to four aircraft. The setup hexes are listed in ascending order — i.e., if a Player has two aircraft, he sets aircraft up only on the first two hexes listed, and so forth.

Side A & Side B

Movement Allowance: Any number between the aircraft's Minimum Throttle Setting and one greater than its Cruise Speed.
Throttle Setting: Same as Movement Allowance.
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: All aircraft may have up to as many missiles as they are capable of carrying; the Players may limit the number or type of missiles used by mutual consent.
Hexes: Side A: A0402, A0604, A0808, A0610 Side B: After the A Player has set up his aircraft, the B Player rolls two dice, and multiplies the die-roll total by ten. His aircraft must be *at least* this number of hexes away from Side A's aircraft. The Player may place map sections on the table adjacent to section A and each other as needed. He may place his aircraft anywhere he likes, as long as the minimum distance between his aircraft and Side A's aircraft is maintained. If the B Player has fewer than four aircraft, all his aircraft must begin within six hexes of each other; if he has four aircraft, he may split them into two groups of two each, and place each group at widely separated positions, as long as all the aircraft in a single group are within six hexes of each other, and as long as the minimum distance requirements are fulfilled.
Altitudes: Altitudes of Side A's aircraft determined by the mutual consent of the Players. The Side B Player then rolls the die three times and adds the die-rolls; he then adds this total to the maximum altitude for Side A's aircraft. This number is the maximum altitude at which Side B's aircraft may begin the game.

Headings: Side A: SE; Side B: Aircraft may begin with any heading the Player desires.

Optional Rules:

Sun Direction: Roll the die for sun direction as the optional rules in Scenario type 32.1 indicate.
All other optional rules may be used at the discretion of the Players, although it is suggested that radar jammers are useful in this Scenario, as one Player begins out of contact.

Game Length: Roll the die six times at the beginning of the game, and add the die-rolls; this total is the number of Game-Turns in the Scenario.

Victory Conditions: Each Player receives two Victory Points for each enemy aircraft destroyed, and one for each enemy aircraft that is damaged so that it has taken at least half as many points of damage as it is capable of sustaining. The Player with the larger Victory Point total at the end of the game is the winner.

Special Rules: Side A begins out of contact with Side B. Consequently, the Player for Side A must plot movement and visual search for his aircraft for the first fifteen Game-Turns, as per Case 29.4 or for as many Game-Turns as are in the Scenario, whichever is less.He plots *before* the Player for Side B sets up, so he doesn't know what direction Side B's aircraft will be coming from. When any

Side A aircraft obtains Visual or Radar contact **with any of Side B's aircraft, the Player for Side A** may break his plot and move his aircraft as he wishes thereafter. If, by the fifteenth Game-Turn, Side A still has not obtained full control of his aircraft, he automatically obtains such.

Rules of Engagement (ROE): During the Vietnam war, U.S. regulations forbade aircraft from firing at aircraft they had not visually sighted. This means, in game terms, that U.S. aircraft of the Vietnam War era (1965-72) may not fire Radar-Homing Missiles at targets they have not yet visually sighted.

[32.3] SCENARIO TYPE THREE: PATROL

General Situation: A Patrol situation occurs when two opposing flights of aircraft, unaware of each other's existence are on patrol in the same area. Because of the way in which the Scenario type is constructed, it is possible that both Player's aircraft will never spot each other, and that they will continue to fly past each other; however, this rarely happens.

Map Arrangement:

north

A B C D

E F G H

Deployment: Before the Players begin, they must determine which aircraft types each is to take. In a Patrol Scenario, each Player may take up to eight aircraft. Note that the Players plot movement for their aircraft before actually placing the aircraft counters on the game-map (see below and special rules).

Side A & Side B

Movement Allowance: Any number between the aircraft's Minimum Throttle Setting and one greater than its Cruise Speed.
Throttle Setting: At the same number as the aircraft's Movement Allowance.
Energy Points: 0
Acceleration Points: 0
Wings: Level
Dive/Climb: Level Flight
Missiles: The Players may have their aircraft carry as many missiles as they desire, up to the limits of the aircraft type. The Players may agree to limit the number and/or type of missiles by mutual agreement.
Hexes: see below
Altitudes: see below
Headings: see below

Before placing the aircraft on the game-map, the Players must roll on the following table to determine what edge of the game-map their aircraft will enter on. Each Player rolls secretly, and does not inform the other Player where his aircraft will enter. After rolling a die, a Player refers to the column of the table that refers to his side, and finds the result corresponding to the die-roll; this yields the side of one map-section; all of the Player's aircraft enter the game-map on this side of the map section.

Die	*Side A*	*Side B*
1	Sec. B, north	Sec. C, north
2	Sec. A, north	Sec. D, north
3	Sec. A, west	Sec. D, east
4	Sec. E, west	Sec. H, east
5	Sec. E, south	Sec. H, south
6	Sec. F, south	Sec. G, south

A Player may have his aircraft begin on any hex along the edge of the game-map determined as above. The aircraft may enter on different hexes and on any hex of the map-edge side. By mutual agreement, the Players determine what is to be the maximum altitude at which aircraft may begin the Scenario; aircraft may begin at an altitude level equal to or less than the agreed maximum. A Player's aircraft may begin with any heading that the Player desires.

Optional Rules:

The Players may use any optional rules they desire by mutual agreement.

Game Length: Roll a die eight times and add the respective die-rolls; this total is the length in Game-Turns of the scenario.

Victory Conditions: Each Player receives two Victory Points for each enemy aircraft that is destroyed, and one for each enemy that takes half as many Damage Points as it is able to take. In addition, each Player receives one Victory Point for each friendly undamaged aircraft that remains on the game-map at the end of the game.

Special Rules: At the beginning of the game, both Players are out of contact. The Players may choose to represent this situation in one of two ways:

a) Both Players must plot movement and visual search for their aircraft as per Case 29.4. They must plot movement for their aircraft so that the aircraft remain on the game-map for at least fifteen Game-Turns and move off the game-map off the same map section as they entered some time thereafter. Player's aircraft must follow their plot until the Player obtains visual or radar (or infrared) contact with some aircraft of the enemy Player; at this time, the Player who obtained contact may break his plot and move is aircraft freely. The other Player must continue following his plotted movement until he obtains radar or visual contact.

b) The Players note on a piece of scrap paper which hexes each of their aircraft are entering on, and what their initial altitudes and heading will be. The aircraft thereafter move directly forward without accelerating or accumulating Turn Points, remaining in Level Flight, until radar or visual contact is obtained. Once a Player obtains radar or visual contact with the enemy Player's aircraft, he regains full control of his aircraft and may move them as he wishes.

Note that method a) is more realistic, but requires a large amount of book work, while method b) is less realistic but quite a bit simpler.

[32.4] SCENARIO TYPE FOUR: INTERCEPTION POINT-DEFENSE

General Situation: An Interception Point-Defense situation occurs when one force of aircraft on its way to bomb or photograph a given point is intercepted by a force of enemy aircraft. The intruding Player's objective is to reach a certain specified point and return. The defending Player's objective is to destroy as many intruding aircraft as possible, and to delay the intruding aircraft in the performance of their mission.

Map Arrangement:

north

A B C D E

Deployment: Before the game begins, the Players must determine how many aircraft each Player will take, and what types of aircraft each will use. In an Interception Point-Defense Scenario, a Player may take up to eight aircraft.

Both Sides:

Movement Allowance: Any number between the Cruise Speed and the Maximum Throttle Setting of the aircraft, at the owning Player's discretion.
Throttle Setting: All aircraft's Throttle Settings are initially the same as their Movement Allowance.
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: The aircraft of both Players may carry as many missiles as they are able, at the discretion of the Players.
Hexes: see below
Altitudes: The ***Intruding Player's*** aircraft may enter at any altitude in LO or ML altitude grouping. If the Intruding Player's aircraft begin in LO altitude grouping, the ***Defending Player's*** aircraft may begin in LO or ML altitude; if the *Intruding* aircraft begin in ML altitude grouping, the *Defending* aircraft may begin in LO, ML or MH altitude grouping.
Headings: ***Intruding:*** W. ***Defending:*** see below.

All Intruding aircraft begin the Scenario along the eastern edge of map section **E**. Before the Defending Player sets his aircraft up, the Intruding Player must place his aircraft along the eastern edge of the map.

The Defending Player then refers to the northernmost Intruding aircraft and rolls a die, referring to the following table to determine in what arc of that Intruding aircraft the defending aircraft begin.

Die	**Arc**
1	forward
2	forward right side
3	forward left side
4	rear
5	rear right side
6	rear left side

After determining what arc of the Intruding aircraft his aircraft lie in, the Defending Player rolls the die twice again, and adds these two die-rolls. He then rolls the die a third time and multiplies the total of the first two die-rolls by the third die-roll. This number is the minimum distance in hexes between the nearest Intruding aircraft and Defending aircraft at the beginning of the Scenario.

The Defending Player then places his aircraft any place he wishes, as long as a) all his aircraft are in the appropriate arc of the northernmost intruding aircraft, and b) all his aircraft are at least the minimum distance away from all intruding aircraft. His aircraft may begin with any heading the Defending Player desires.

Under certain conditions, the Defending Player will be required to lay down additional map sections adjacent to those indicated in ***Map Arrangement*** in order to set his aircraft up. He may do so as necessary.

Optional Rules:

The Players may use any or all Optional rules by mutual agreement. However, Visual Search and Radar Search (19.0 and 20.0) *must* be used.

Game Length: 50 Game-Turns.

Victory Conditions: The Intruding Player's general objective is to move his aircraft to within four hexes of **A0209**, and back off the eastern edge of map section **E**. The Intruding Player receives three Victory Points for every friendly aircraft that moves to some hex within four hexes of **A0209** at any altitude at some point during its movement during the first twenty-five Game-Turns, and then moves off the eastern edge of map-section **E** before the end of the game. He also receives two Victory Points for each Defending aircraft that takes at least half as many Damage Points as it is able to take.

The Defending Player receives five Victory Points for each enemy aircraft that is destroyed, and two

for each enemy aircraft that takes at least half as many points of Damage as it is able to take.

Special Rules: The Intruding Player begins out of contact with the Defending Player. The Defending Player begins with radar (but not visual) contact with the Intruding Player.

Before the Defending Player places his aircraft on the game-map, the Intruding Player must plot movement and visual search for his aircraft. They must have movement plotted to some hex within four hexes of **A0209** and back off the eastern edge of map-section **E**. The Defending aircraft must follow their plot until they obtain radar or visual contact with the Intruding aircraft, at which time the plot is broken and the Defending Player regains complete control of his aircraft.

The Defending Player should use only fighters or fighter-bombers for this Scenario type; the Intruding Player may take any mix of fighters, fighter-bombers, ground attack aircraft, or bombers. Any ground attack aircraft or bombers taken by the Intruding Player should be considered to begin the game under loaded conditions (17.0), i.e., carrying loads of munitions. Upon reaching their objective (i.e., within four hexes of **A0209**) these aircraft "drop" their munitions, and cease to be loaded (unless, of course, they were forced to jettison the munitions previously).

The Players may use any ECM devices they like by mutual agreement. The Defending Player may be given a SAM site or AA guns if the Players agree to this before the scenario begins; such ground installations should be placed within four hexes of **A0209**.

[32.5] SCENARIO TYPE FIVE: PHOTO-RECONNAISSANCE

A Photo-reconnaissance mission is one in which an aircraft or group of aircraft are charged with the mission of flying over a specific point and photographing it, and then returning the photograph home. Conversely, the job of the aircraft intercepting a photo-recon mission is to shoot the intruding aircraft down. This situation lends itself to a fairly uncomplex Scenario type.

Map Arrangement:

north

A B C D E F G H

Deployment: The Intruding Player may take up to four aircraft and the Intercepting Player up to the same number; the Players should determine by mutual agreement before the scenario begins what aircraft each is to take. Note that the Intruding Player is more dependent on speed and less on maneuverability or combat effectiveness than in other Scenarios.

Side A & Side B

Movement Allowance: Interceptors: Refer to the aircraft's Maximum Climb Chart and determine what its Movement Allowance would be in a Type III Climb with its Maximum Throttle Setting in the altitude grouping that it begins the game with. Intruding: Maximum.

Throttle Setting: All aircraft begin with their Maximum Throttle Setting.
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: ***Intercepting:*** Type III Climb. ***Intruding:*** Level Flight.
Missiles: All aircraft except the Reconnaissance aircraft (see special rules) begin with as many missiles as they can carry. The only limitations on missiles are those placed on the aircraft by the Basic Aircraft Information Table, and any the Players may set up by mutual agreement.
Hexes: see below
Altitudes: The ***Intruding*** aircraft may begin at any altitude in HI altitude grouping, up to their ceiling. The ***Intercepting*** aircraft may begin at any altitude in MH altitude grouping.
Headings: ***Intercepting:*** E. ***Intruding:*** W

Notes: If the Intercepting aircraft cannot execute Type III Climbs, they begin in Type II Climbs.

The Intercepting aircraft enter the game-map from the western edge of map-section **A** on Game-Turn one; the Intruding aircraft enter from the eastern edge of map-section **H** on Game-Turn one. The Players may enter their aircraft on any hex or hexes along the appropriate map-edge; aircraft expend no movement points entering the game-map.

Optional Rules:

The Players may use any optional rules they desire by mutual consent.

Game Length: Until one Player or the other fulfills his Victory Conditions.

Victory Conditions: The Intercepting Player wins if he destroys all Intruding aircraft. The Intruding Player wins if the Photo-reconnaissance aircraft moves within four hexes of **A0209** and back off the eastern edge of map section **H**. Any other result is a draw. The game is over when either Player fulfulls his Victory Condition.

Special Rules: At the option of the Players, both sides either begin in contact, or both out of contact. If both begin out of contact, all aircraft must move directly forward without accumulating acceleration or Turn Points, the Intruders in Level Flight and the Interceptors in Type III Climbs. If the latter option is chosen, both Players' aircraft must maintain the desired conditions until visual or radar contact is obtained; once a side obtains visual or radar contact, its aircraft become free to move as the owning Player wishes.

At the beginning of the game, the Intruding Player must designate one of his aircraft as the Photo-reconnaissance aircraft. He wins the game only if this aircraft is able to move close to hex **A0209** and back off the board; the other aircraft act only as escorts. The Photo-reconnaissance aircraft may not carry missiles or any type of pod. The Players may use ECM devices by mutual agreement.

[32.6] SCENARIO TYPE SIX: MUSHROOMS

General Situation: Mankind has been fighting wars for six millennia throughout recorded history. Don't try to pretend that we're going to stop now.

This Scenario presumes that a group of B-52's, B-1's or Backfire Bombers are attempting to reach a fairly well-defended city in the hinterland of the Soviet Union/United States — say Chicago/Minsk — and that a group of interceptors are desperately attempting to destroy the bombers before they reach their target. The Victory Conditions are quite straightforward — either a city goes skyward in a nice, neat cloud of radioactive particles, or it doesn't.

Map Arrangement:

north

A B C D E F G H

Deployment: One Player takes a B-1 or B-52 bomber or a Tu-26 Backfire Bomber. If the Soviet Union is being bombed, the other Player should take four Soviet fighters; if the U.S. is being bombed, the opposing side should take four American fighters; if France or Great Britian is being bombed, he should take four fightrers of appropriate nationality. The Israelis use F-4E's to carry their nuclear weapons, targets can be Russian or Arab.

Side A & Side B

Movement Allowance: Any number between the aircraft's Cruise Speed and its Maximum Throttle Setting.
Throttle Setting: Same as Movement Allowance.
Energy Points: 0
Acceleration Points: 0
Wings: level
Dive/Climb: Level Flight
Missiles: ***Bomber:*** none. ***Interceptors:*** as many missiles of whatever type as his aircraft can handle.
Hexes: ***Bomber:*** H1609. ***Interceptors:*** A0414, A0316, A0404, A0303.
Altitudes: ***Bomber:*** any altitude the Player desires. ***Interceptors:*** any altitude the Player desires, but at least one altitude grouping below the bomber if possible.
Headings: ***Bomber:*** W. ***Interceptors:*** E

Optional Rules:

Infra-Red and Radar Counter-Measure rules *must* be used. Any other rules may be used by mutual consent of the Players.

Game Length: Until one Player achieves his Victory Conditions.

Victory Conditions: The Bombing Player wins the game if his aircraft passes through or within five hexes of hex **A0109** at any time. The Intercepting Player wins if he destroys the bomber. Note that, in actuality, both Players have lost the game before it began.

Special Rules: Both Players begin in radar contact. If the players desire, they may place a number of SAM installations and/or AA gun installations near hex **A0109**.

[32.7] SCENARIO TYPE SEVEN: GROUND SUPPORT AND BOMBING

General Situation: Ground support and Bombing missions are those in which a force of ground support and/or bombing aircraft, supported by escorts, attack a series of ground installations. Usually, the ground installations will have some aircraft protecting them by flying combat air patrol, as well as AA guns and (occasionally) SAM sites.

Map Arrangement:

north

A B C D E F G H

Deployment: Before the Players choose what aircraft each is to take in a Bombing or Ground Support Scenario, they must determine the composition of the ground targets that are to be attacked. The Players must come to mutual agreement over precisely what target markers are to be placed on the game-map, and where the targets should be placed.

In essence, the Players have complete freedom in the determination of what targets are to be attacked. It is suggested that the Players determine what general installation the bomb/ground support Scenario deals with (i.e., a SAM site, an airfield, a column of tanks, etc), and then decide what target types would be present at such an installation.

Although the Players have complete freedom in the determination of target types, they may, if they wish, refer to Scenario 30.33 (Chittagong Airfield) to see what a typical airfield looks like, and Scenario 30.35 (Return of the Red River Rats) to see what a typical dock facility looks like. As well, at the end of the Special Rules for this Scenario are given examples of the target types that would be present at a typical SAM site, in a typical column of tanks, and in a typical rear area.

After the Players have determined the types of target markers to be used, they must determine where the target markers are to be placed by mutual agreement. All target markers *must* be placed on map section **H**.

Thereafter, the Players determine what aircraft each Player shall use in the Scenario. Refer to the Aircraft Performance Charts. This table assigns arbitrary point values to all the aircraft provided with *Air War;* each aircraft is assigned an "air-to-air" value and an "air-to-surface" value (the second value).

The Players should determine how many "points" worth of aircraft each Player will be able to use in the Scenario they wish to play. Generally, giving each Player about 50 points of aircraft will produce a relatively small scenario.

The Players then refer to the Values Section of the Aircraft Performance Charts, each Player chooses aircraft so that the total point values of the aircraft he takes is equal to or less than the number of points allocated to him (i.e., if the Bombing Player were, for instance, given 50 Points, he would be able to "buy" 50 points worth of aircraft).

Note: aircraft come in pairs. That is to say, if a Player decides to take an aircraft of one type, he must take two; Players may not take odd numbers of any aircraft type.

Aircraft that are to be used as bombers (i.e., that will carry munitions) in the Scenario should have their "air-to-surface" value counted toward the points assigned to the Player; aircraft that are to be used as fighters (i.e., escorts for the bombers and interceptors) should have their "air-to-air" value counted for this purpose.

In addition, the Intercepting Player should subtract three points from the number of points allocated him for aircraft "purchasing" for each light AA unit that he is given; five for each heavy AA unit he is given; and ten for each SAM site he is given.

After the Players have determined what aircraft each Player will take, they must then determine what missiles, what munitions, and what ECM devices are to be permitted, all by mutual agreement.

Side A & Side B

Movement Allowance: Any number between the aircraft's Cruise Speed and its Maximum Throttle Setting.
Throttle Setting: Same as Movement Allowance.
Energy Points: ***Bombing Player:*** 0 or one Game-Turn's accumulation (see Dive/Climb). ***Intercepting Player:*** 0.
Acceleration Points: 0
Wings: level
Dive/Climb: The ***Bombing*** aircraft may, at the option of the Bombing Player, enter in a Type I Dive; otherwise, all aircraft begin in Level Flight. If Bombing aircraft enter in Type I Dives, change the settings of the Movement Allowance and Energy Points markers to reflect the dive.
Missiles: The Players may use any or all missiles that they are allowed by the Missile Availability Table and the restrictions of the aircraft types. The Players may restrict missile usage by mutual consent.
Hexes: The ***Bombing*** aircraft may enter on the western edge of map-section **A** on Game-Turn one; the ***Intercepting*** aircraft enter on the eastern edge of map-section **H** at the same time.
Altitudes: As agreed to by the Players.
Headings: ***Bombing:*** E. ***Intercepting:*** W

Optional Rules:

The Players may use any or all optional rules by mutual consent. Obviously, the Players *must* use the rules for bombing.

Game Length: Before the game begins, the Players roll the die nine times and total the die-rolls. This number is the length of the Scenario in Game-Turns.

Victory Conditions: The Bombing Player is awarded Victory Points for destroying ground targets as follows:

Target Type	*VP*
parked aircraft	5
radar van	5
mobile RL	2
truck	2
POL dump	7
ammo dump	6
light armor vehicle	4
medium tank	6
light AA gun	5
heavy AA gun	7
field bunker	5
small wood building	3
small masonry building	5
small steel building	7
bridge	10
SAM site	10

The Intercepting Player is awarded Victory Points as follows: he totals the number of Victory Points that the Bombing Player would receive were he to destroy all the ground targets present in the Scenario the Players are playing, and divides this number by the number of enemy aircraft in the Scenario.

Example: There are a total of **6** target markers on the game-map. One is a parked aircraft (**5** Victory Points), **2** are POL dumps (a total of **14** Victory Points), one is a truck (**2**), and **2** are light AA guns (**10**). The total potential Victory Points for the Bombing Player is **31**. The Bombing Player has three aircraft; **31** divided by **3** (rounding to the nearest whole number) is **10**.

This final number after division (in the example above, **10**) is the number of Victory Points that the Intercepting Player receives for the destruction of each enemy aircraft. The Intercepting Player receives *half* this number of Victory Points (rounded to the nearest whole number) for each Bombing aircraft that takes half as many points of Damage as it is capable of taking. (I.e., for the example given, the Intercepting Player would receive **5** Victory Points for each severely damaged aircraft).

At the end of the Scenario, the Players total their respective Victory Points; the Player with the greater total is the winner. If both Players receive the same number of Victory Points, the game is a draw.

Special Rules: The Players may begin either out of contact or in contact, by mutual agreement. If they begin out of contact, both must plot movement and visual search for their aircraft. The Bombing Player must plot movement for his aircraft from the map-edge they begin at to map section **H**. The other Player must plot movement for his aircraft for twenty Game-Turns.

Examples of Targets:

A SAM site: between one and four SAM site markers, four to eight heavy AA units and eight to sixteen light AA units. The SAM sites should be grouped in a circle, with the heavy AA units in a concentric circle around the SAM sites, and the light AA units in a concentric circle around them. Alternatively, each SAM site may be the center of a circle.

A tank column: four to ten tanks stretched out in a line, one or two tanks to each hex. If Russian or Russian-built tanks are being attacked, the chances are they will have .50 calibre machine guns that can be used as AA guns. A truck or two can be thrown in for variety.

A typical rear area: A POL dump and an Ammo dump (both probably revetted), 6 or so trucks, a couple of AFV's, a bunker, several wood buildings.,

A typical town: a large number (15 or more) of small wood and masonry buildings (use upside-down unused aircraft markers for the buildings, as only 4 building markers are provided). In addition, there should be a POL and/or Ammo dump present in the town, to make it a legitimate military objective.

[33.0] AVAILABILITY TABLES

EXPLANATIONS:

The lists and tables contained in this section are those which enable the Players to construct their own scenarios. The first section is devoted to aircraft, the second to air-to-air missiles, the third to anti-aircraft guns, the fourth to SAM's, the fifth to munitions, and the sixth and last to ECM devices.

All Aircraft Availability Tables are organized on a national basis; that is, a nation is listed, and then the aircraft owned by that nation — along with the dates that the aircraft types have been operational — are listed. Thus, the Players may examine these charts to see which nations own which aircraft types.

All other Availability Tables (with the exception of the ECM Device Availability Table) are organized in the exact opposite manner. That is to say, the equipment type is listed, and under each equipment type is indicated the nations which operate that type of equipment and the dates that the equipment has been in operation in each nation.

Dates are represented either by two numbers (e.g., 59-67, meaning "in use between 1959 and 1967") or by a single number (e.g., 67, meaning "in use *since* 1967, inclusive).

These tables are provided with the game so that the Players may determine which nations are capable of fielding what types of aircraft and equipment in a war or conflict. This information will enable Players to construct their own Scenarios, pitting one nation against another as they wish.

The following is a list of past wars that can be simulated (at least in their air combat aspects) in *Air War*. The aircraft in use during these wars can be determined by checking dates in the Availability Tables.

1. *Korean War (1950-53)*, U.S. and South Korea vs. USSR, China, North Korea.
2. *Arab-Israeli War (1956)*, Israel vs. Egypt.
3. *Formosa Straits (1954-59)*, (AAM's first introduced 1957), China vs. Taiwan.
4. *India-Pakistan War (1965)*, India vs. Pakistan.
5. *Vietnam War (first phase 1965-68)*, U.S. vs. N. Vietnam.
6. *Arab-Israeli War (1967)*, Israel vs. Egypt, Syria, Jordan, Iraq.
7 *Vietnam War (second phase 1972)*, U.S. vs. N. Vietnam.
8. *Arab-Israeli War (1973)*, Israel vs. Egypt, Syria, Iraq.

The following is a list of possible upcoming wars that can be simulated in *Air War* by consulting the various availability tables to see what types of hardware may be used.

1. *NATO vs. Warsaw Pact* World War III, brought to you by popular demand.
2. *Armageddon* All-out nuclear onslaught.
3. *Soviets vs. "Neutral" European nations* (Yugoslavia, Austria, Switzerland).
4. *Israel vs. the usual crew of Arabs* (Egypt, Syria, Iraq). Algeria, Morocco, Saudi Arabia, Kuwait, Oman, and Yemen might also be involved.
5. *India vs. Pakistan.*
6. *North Korea vs. South Korea* (possibly reinforced by the U.S.)
7. *China vs. Taiwan.*
8. *South Africa vs. Zambia, Mozambique, Angola or similar nations.*
9. *Morocco vs. Algeria.*
10. *Iran vs. Iraq* (Iranian Expansion).
11. Iraq vs. Kuwait (disputed boundaries).
12. *Somalia vs. Kenya* (more dislike here).
13. *Uganda vs. Kenya or Tanzania* (Idi's air force swings into action).
14. *El Salvador vs. Honduras* (my personal favorite — these two intellectual groups fought the 1969 "Football War" and are arming for a rematch — Ouragons vs. Mysteres!)
15. *Peru vs. Ecuador* (a rematch of the 1940 war).
16. *Peru vs. Chile* (more border disputes).
17. *Soviet Union vs. China.*
18. *Soviet Union vs. minor Warsaw Pact powers.*
19. *Greece vs. Turkey.*
20. *US vs. Kuwait, Iraq, Iran.*
21. *US vs. any number of Latin American countries* (gun boat diplomacy and the Monroe Doctrine).
22. *North Yemen vs. South Yemen* (they hate each other).

CASES:

[33.1] AIRCRAFT AVAILABILITY TABLES

[33.11] United States

U.S. Air Force

52-63	F-86E through H
62-	F-105D
63-	F-4C
64-	RF-4C
66-	F-105FWW; F-4D
67-	F111A
68-	F-4E unslatted; A-7D
72-	F-4E slatted
73-	F-111E
75-	F-15
76-	F-4GWW; A-10, B-52H (mod.)
77-	EF-111EWW
78-	F-16
81(?)	B-1

Air Crew Quality:

52-53	3
54-68	5
69-72	4
73	3

U.S. Navy & Marine Corps

59-65	F-4B
67-	A-4F
68-	F-4J
70-	A-4M (USMC only); A-7E
73-	F-14A
74-	F-4S
82(?)	F-18

Air Crew Quality:

52-53	3
54-68	5
69-71	4
72-	3

[33.12] Soviet Union

52-62	MiG-15bis
54-	MiG-17
59-	MiG-21 (early); Su-7
65-	MiG-21 (late)
67-	MiG-25A
68-	MiG-25C
74-	Tu-26
75-	MiG-23B; MiG-27; Su-19
76-	MiG-25D; MiG-23CWW
79(?)	MiG-29

Air Crew Quality:

52-54	10
54-76	6
77-	5

[33.13] Europe

Albania (Neutral)

55-	MiG-15
57-	MiG-17
69-	MiG-21 (early)

Air Crew Quality: 7

Belgium (NATO)

68-	Mirage 5R; Mirage 5
80-	F-16

Air Crew Quality: 4

Bulgaria (Warsaw Pact)

53-64	MiG-15
54-	MiG-17
65-	MiG-21 (early)

Air Crew Quality: 6

Czechoslovakia (Warsaw Pact)

53-	MiG-15
54-	MiG-17
63-	MiG-21 (early)
65-	Su-7
69-	MiG-21 (late)

Air Crew Quality:

63-76	6
77-	5

Denmark (NATO)

80-	F-16

Air Crew Quality: 4

Finland (Neutral)

64-	MiG-21 (early)

Air Crew Quality: 4

France (NATO?)

52-62	Ouragon
55-	Mystere IV
65-	Mirage IIIC
66-	Mirage IIIE
67-	Mirage V; Mirage IIIC Recon
68-	Mirage IIIE Recon
71-	Jaguar

Air Crew Quality

52-72	5
73-	6

Germany, East (DDR) (Warsaw Pact)

54-	MiG-17
55-63	MiG-15
63-	MiG-21 (early)
65-	Su-7
67-	MiG-21 (late)
73-	MiG-23B

Air Crew Quality:

53-76	6
77-	5

Germany, West (Bundesrepublik) (NATO)

57-64	F-86E
71-	RF-4E; F-4F
79-	Tornado

Air Crew Quality:

57-70	4
71-	3

Great Britain (NATO)

54-58	F-86F
66-	F-4M; F-4K
74-	Jaguar
79-	Tornado

Air Crew Quality:

54-58	2
59-70	3
71-	4

Greece (NATO)

75-	F-4E
76-	A-7E

Air Crew Quality: 4

Hungary (Warsaw Pact)

53-65	MiG-15
54-	MiG-17
63-	MiG-21 (early)
65-	Su-7
68-	MiG-21 (late)

Air Crew Quality: 6

Italy (NATO)

80-	Tornado

Air Crew Quality: 4

Netherlands (NATO)

54-62	F-86F
80-	F-16

Air Crew Quality: 4

Norway (NATO)

56-62	F-86F
80-	F-16

Air Crew Quality: 4

Poland (Warsaw Pact)

53-65	MiG-15
57-	MiG-17
62-	MiG-21 (early)
65-	Su-7
67-	MiG-21 (late)
73-	MiG-23B
77-	MiG-27

Air Crew Quality:

63-76	6
77-	5

Rumania (Warsaw Pact)

53-65	MiG-15
57-	MiG-17
63-	MiG-21 (early)

Air Crew Quality: 5

Spain (Neutral)

56-68	F-86F
70-	F-4E
81-	F-16

Air Crew Quality: 4

Switzerland (Neutral)

67-	Mirage IIIC
76-	F-5E

Air Crew Quality: 4

[33.14] Africa

Algeria

62-69	MiG-15
66-	MiG-17; MiG-21 (early)
70-	Su-7

Air Crew Quality: 8

Angola

74-	MiG-17; MiG-21 (late)

Air Crew Quality: 8

Ethiopia

62-	F-86F
70-	F-5E

Air Crew Quality: 7

Guinea

69-	MiG-17

Air Crew Quality: 8

Kenya
76- F-5E
Air Crew Quality: 6

Libya
69- Mirage IIIE
70- Mirage V
74- MiG-23E
Air Crew Quality: 11

Mali
68- MiG-15; MiG-17
Air Crew Quality: 8

Morocco
61-64 MiG-15; MiG-17
Air Crew Quality: 7

Nigeria
67-69 MiG-15; MiG-17
Air Crew Quality: 7

Somalia
68-69 MiG-15
68- MiG-17
Air Crew Quality: 8

South Africa
52- F-86F
64- Mirage IIIE
Air Crew Quality: 4

Sudan
66- MiG-17
78- F-5E
Air Crew Quality: 8

Tanzania
67- MiG-17
72- MiG-21 (early)
Air Crew Quality: 8

Tunisia
61- F-86F
Air Crew Quality: 8

Uganda
72- MiG-15; MiG-17; MiG-21 (early)
Air Crew Quality: 11

Zaire
74- Mirage V
Air Crew Quality: 6

[33.15] Asia and Oceania

Afghanistan
57- MiG-17
64- MiG-21 (early)
69- Su-7
Air Crew Quality: 7

Australia
55-62 CA-27
64- Mirage IIIE
66-70 F-4E
67- F-111c
Air Crew Quality: 4

Bangladesh
72- MiG-21 (early)
Air Crew Quality: 7

Burma
61- F-86F
Air Crew Quality: 8

Cambodia
61-68 MiG-15
61-70 MiG-17
Air Crew Quality: 11

China, People's Republic of
50- MiG-15
54- MiG-17
60- MiG-21 (early)
82- F-16C(?)
Air Crew Quality:
52-54 10
55-70 8
71- 7

India
54-68 Ouragon
66- MiG-21 (early)
67- Su-7
68- Mystere IVA
70- MiG-21 (late)
Air Crew Quality: 5

Indonesia
58-65 MiG-15; MiG-17
63-65 MiG-21 (early)
66- CA-27
Air Crew Quality:
58-65 8
66- 6

Iran
56-64 F-86F
65- F-4D
68- F-14A; RF-4E; F-4E
81- F-18, F-16
Air Crew Quality: 6

Japan
57- F-86F
59-77 RF-86F
70- F-4E
Air Crew Quality: 4

Malaysia
66- CA-27
73- F-5E
Air Crew Quality: 5

Mongolia
68- MiG-15
71- MiG-21 (late)
Air Crew Quality: 6

New Zealand
67- A-4K
Air Crew Quality: 4

North Korea
51- MiG-15
55- MiG-17
64- MiG-21 (early)
68- Su-7
Air Crew Quality: 8

Pakistan
58- F-86F
70- Mirage IIIE; F-5E
Air Crew Quality: 4

Philippines
58- F-86F
70- F-5E
Air Crew Quality: 6

Singapore
70- A-4K
Air Crew Quality: 5

South Korea
54- F-86F
69- F-4D
70- F-4E; F-5E
Air Crew Quality: 4

Sri Lanka
64- MiG-15; MiG-17
Air Crew Quality: 6

Taiwan
53- F-86F
54- RF-86F
Air Crew Quality: 4

Thailand
62- F-86F
70- F-5E
Air Crew Quality: 5

Turkey (NATO)
53-68 F-86E
69- F-4E
Air Crew Quality: 4

Vietnam
65-66 MiG-15
65- MiG-17
66- MiG-21 (early)
70- MiG-21 (late)
73- Su-7
Air Crew Quality:
65-10/5/65 9
11/5/72- 8

[33.16] The Americas

Argentina
59- F-86F
6- A-4F
71- Mirage IIIC
Air Crew Quality: 6

Bolivia
64- F-86F
Air Crew Quality: 7

Brazil
66- A-4F
70- F-5E
71- Mirage IIIC
Air Crew Quality: 6

Chile
72- F-5E
Air Crew Quality: 6

Colombia
61- F-86F
72- Mirage IIIE
Air Crew Quality: 7

Cuba
62- MiG-17
63- MiG-21 (early)
67- MiG-21 (late)
Air Crew Quality: 6

Ecuador
77- Jaguar
Air Crew Quality: 7

Honduras
76- Mystere IV
Air Crew Quality: 7

Peru
63- F-86F
69- Mirage IIIC
77- MiG-21 (late)
Air Crew Quality: 7

San Salvador
76- Ouragon
Air Crew Quality: 7

Venezuela
61- F-86F
71- Mirage IIIC
Air Crew Quality: 6

[33.17] The Middle East

Abu Dhabi

74- Mirage IIIE

Air Crew Quality: 7

Iraq

58-68 MiG-15
58- MiG-17
63- MiG-21 (early)
71- Su-7
76- MiG-23E

Air Crew Quality: 8

Israel

55-77 Ouragon
55- Mystere
63- Mirage IIIC
69- F-4E; A-4H; RF-4E
72- Neshr
73- A-4M
74- Kfir
77- F-15
81- F-16

Air Crew Quality: 2

Jordan

68-69 F-86F
74 F-5E

Air Crew Quality: 7

Kuwait

77- A-4K

Air Crew Quality: 7

Lebanon

68-71 Mirage IIIC

Air Crew Quality: 7

Oman

78- Jaguar

Air Crew Quality: 7

Saudi Arabia

57-64 F-86F
75- F-5E

Air Crew Quality: 11

Syria

56-68 MiG-15
57- MiG-17
63- MiG-21 (early)
69- Su-7
76- MiG-23E

Air Crew Quality:

56-71 8
72- 7

United Arab Republic

55-59 MiG-15
57- MiG-17
61- MiG-21 (early)
68- Su-7
72- MiG-21 (late)
74- MiG-23E
75- Mirage IIIE

Air Crew Quality:

67-71 8
72- 7

Yemen Arab Republic

70- MiG-15; MiG-17

Air Crew Quality: 8

Yemen Democratic People's Republic

70- MiG-15; MiG-17
73- MiG-21 (early)

Air Crew Quality: 8

[33.18] Air Crew Quality Table

Air Crew Quality	DIE 1	2	3	4	5	6
1	Sh	H	Nm	Nm	Nm	Nm
2	H	H	Nm	Nm	Nm	Nm
3	H	Nm	Nm	Nm	Nm	Nm
4	H	Nm	Nm	Nm	Nm	Nv
5	Nm	Nm	Nm	Nm	Nm	Nv
6	Nm	Nm	Nm	Nm	Nv	Nv
7	Nm	Nm	Nm	Nv	Nv	T
8	Nm	Nm	Nv	Nv	Nv	T
9	Sh	Nm	Nm	Nv	Nv	T
10	H	Nm	Nv	Nv	T	T
11	Nm	Nv	Nv	Nv	T	T

KEY:

Sh = Super-Honcho; H = Honcho; Nm = Normal; Nv = Novice; T = Turkey

EXPLANATION:

Under each country on the Aircraft Availability Tables, that nation's Air Crew Quality is indicated. When the optional rules for pilot quality are in use, Players may (at their option) determine the pilot quality of their aircraft by rolling for each aircraft individually on Table 33.18. Find the Air Crew Quality (as determined by the Aircraft Availability Table) of the nation along the left-hand side of the table; roll a die and find the number rolled at the top of the table. Then cross reference the die roll with the Air Crew Quality to yield a single result. This result is the pilot quality of the aircraft being rolled for.

[33.2] AIR-TO-AIR AVAILABILITY TABLE

Early AIM-9 Sidewinder: Carried by virtually all non-Soviet-built aircraft that are capable of carrying Heat-Seeking missiles. In use since 1957. Many are still in use today, especially with smaller air forces, although the larger nations tend to use more advanced missiles.

Improved AIM-9 Sidewinder: Used since 1970 by the U.S. and since 1972 by U.S. Allies using U.S.-built aircraft. Smaller and poorer air forces will rely primarily on the Early version of the Sidewinder. The Improved version will be used on *all* F-14, F-15, F-16 and F-18 aircraft.

All-Angle AIM-9L: Not fully operational, the AIM-9L should be in use within a few years (by 1980?). A few years thereafter, NATO, Israeli, and Iranian aircraft will probably be equipped with it, as well as the United States.

AIM-7 Earl Model: Carried by all U.S.-built aircraft since c. 1960.

AIM-7 Late Model: The AIM-7 Model came into service in 1974-75, but large-scale deliveries will begin only in 1977-78. Will initially be carried by the F-15, F-14 and MRCA Tornado, and will eventually replace the Early AIM-7.

Phoenix: Used only by F-14's.

SRAAM Dogfight Missiles: Not yet operational, the Dogfight missile is likely to begin coming into service on non-Soviet-built aircraft in the early 80's, replacing the earlier AIM-9 and supplementing the improved types.

Shafrir: Israeli only. Replaced early Sidewinders on Israeli aircraft c. 1972. Will probably be used into the 1980's.

Atoll: Used by most Soviet-built aircraft (see exceptions below) since c. 1959.

AA-6 Acrid: Used by MiG-25A and MiG-25D Foxbats since c. 1970.

AA-7 Apex: Used by MiG23s (*not* MiG-23E) and MiG-25D.

AA-8: Currently replacing the Atoll in the Soviet Air Force, not supplied abroad as of 1977. Carried by MiG-21, MiG-23 (not MiG-23E), and MiG-29 since c. 1976.

MATRA R. 530: Carried by all Mirage aircraft since 1962.

MATRA Magic: Carried by Jaguars and Tornados; also carried by Mirages in the service of France, South Africa, Spain, Greece, Venezuela, Brazil, and Argentina.

[33.3] ANTI-AIRCRAFT AVAILABILITY

85mm radar-directed, 100mm radar directed, 57mm, 37mm, 20mm, double 20mm: All supplied by the USSR. The Soviets are the prime purveyors of anti-aircraft artillery, and most nations that use Soviet-built aircraft are likely to have the "basic line" of Soviet anti-aircraft guns. Soviet-style anti-aircraft is normally used *en masse*; the flak over North Vietnam was thicker than that over Nazi Germany, and the Arabs also tended to be lavish with their guns. In Soviet and Warsaw Pact use, however, the AA role has been largely taken over by SAM's, and the 100mm and 85mm weapons are rarely found. Note that practically all nations have non-radar directed weapons that can be used as AA guns.

23mm self-propelled: This is the infamous ZSU -23. The Soviets attach one of these per company of ten AFV's. It is used only in the USSR, the Warsaw Pact nations, Egypt, Syria and Iran.

40mm radar-directed and 20mm non-radar -directed: Used by most western nations and most nations not using Soviet aircraft (as well as several who do, such as India and Finland). Western-style AA tends to be less dense than Soviet-style. 20mm guns are used less frequently than 40mm ones. Older models of 40mm guns used by poorer nations are not radar-directed.

20mm (six-barreled) self-propelled: This is the self-propelled Vulcan gun, used only by the U.S. Army.

.50 cal machine-gun: This, along with the similar 14.5mm Soviet-built gun, is an almost universal weapon.

[33.4] SURFACE-TO-AIR MISSILE AVAILABILITY TABLE

SA-2 Guideline: Afghanistan (65), Albania (66), Algeria (67), Bulgaria (63), China (61), Cuba (62), Czechoslovakia (61), Egypt (65), East Germany (60), Hungary (61), India (66), Iraq (66), Libya (69), North Korea (65), Poland (60), Rumania (60), USSR (59), Vietnam (65), Yugoslavia (66).

SA-3 Goa: Egypt (68), Iraq (70), Libya (70), Peru (77), Syria (68), Uganda (74), USSR (61), Vietnam (73), Warsaw Pact Nations (63), Yugoslavia (68).

SA-6 Gainful: Egypt (72), Iraq (74), Libya (74), Syria (72), USSR (67), Vietnam (73), Warsaw Pact Nations (69).

SA-7 Grail: Angola (71), China (69), Cuba (72), Egypt (72), Libya (71), Morocco (70), Mozambique (71), Syria (72), Uganda (75), USSR (68), Vietnam (71), Warsaw Pact Nations (69), Yemen (71), Yugoslavia (72).

Hawk: Iran (68), Israel (69), Japan (67), Kuwait (72), NATO (Belgium, Denmark, France, Greece, Italy, Netherlands, Norway, Turkey, West Germany) (c. 62), Saudi Arabia (71), South Korea (62), Spain (65), Sweden (64), Taiwan (62), Thailand (64), U.S. (59).

AIM-9B: U.S. (71).

AIM-9L: U.S. (80).

SAM-D: U.S. (80).

[33.5] MUNITIONS AVAILABILITY TABLE

AS-7: USSR (75)

Bullpup: NATO (Belgium, Britain, Denmark, France, Greece, Italy, Netherlands, Turkey, West Germany) (c. 62), U.S. (USAF, USN, USMC) (59).

Harm: U.S. (USAF, USN) (82)

Matrel: Britain (72), France (72), Germany (73)

Maverick: Iran (74), Israel (14/10/73), Saudi Arabia (75), U.S. (USAF) (72).

Shrike: Israel (10/73), U.S. (USAF, USN) (65).

Smart Bombs/Bomblets: Israel (10/73), NATO (c. 74), U.S. (USAF, USN, USMC) (c. 69).

Standard: U.S. (USAF, USN) (68)

Walleye I: Israel (14/10/73), U.S. (USAF, USN, USMC) (68).

Walleye II: Israel (15/10/73), U.S. (USAF, USN, USMC) (72).

[33.6] ECM DEVICE AVAILABILITY TABLE

Radar Jamming Pods

ALQ-71: U.S. (65-70), NATO (67-), ANZAC (70-), Iran (70-), Israel (68-73), Japan & Taiwan (70-).

ALQ-72: U.S. (65-70), NATO (68-), ANZAC (70-), Iran (70-), Israel (68-73), Japan & Taiwan (70-).

ALQ-87/91: U.S. (67-), NATO (69-), ANZAC (70-), Iran (70-), Israel (68-73), Japan & Taiwan (70-).

ALQ-31: U.S. (67-69; USN and USMC only, in limited numbers).

ALQ-101: U.S. (70-), NATO (71-), Iran (73-), Israel (70-), Spain (71-).

ALQ-119: U.S. (72-), NATO (74-), Iran (75-), Israel (72-).

ALQ-119 modified: U.S. (10/73-), NATO (74-), Israel (10/73-).

ALQ-131: U.S. (76-).

Infra-Red Counter Measure Pods

AAQ-4: U.S. (67-75; F-4C, RF-4C, A-7D, and F-105FWW only, in limited numbers).

ALQ-123: U.S. (75-).

ALQ-123 improved: U.S. (80-).

Flare Dispensers

U.S. (70-), NATO (70-), ANZAC (70-), Iran (70-), Israel (70-), Japan & Taiwan (70-), Spain (70-).

Chaff

chaff dispensers: U.S. (70-), NATO (70-), ANZAC (70-), Iran (70-), Israel (70-), Japan & Taiwan (70-), Spain (70-).

corridor chaff: U.S. (67-), NATO (67), ANZAC (67-), Iran (67-), Israel (67-), Japan & Taiwan (67-), Spain (67-).

Notes: Certain devices (hot gas, chaff rockets) are mounted only internally on certain aircraft (see the ECM Device Utilization Table, 28.3).

The only pod type that Soviet or Soviet-built aircraft may mount is a corridor chaff dispenser; only the MiG-23WW (Wild Weasel) may mount this device.

Outside the U.S., ECM pods are relatively rare. The Israelis had insufficient numbers until halfway through the 1973 War. In NATO, the more central members are more likely to have more and better pods pods than the southern or Scandinavian members. In infra-red countermeasures, AAQ-4 pods were always scarce, and ALQ-123 pods are apparently still limited in use as of 1977.

Flare Dispensers contain four flares; chaff dispensers contain six hexes-worth of chaff; corridor chaff contains 100 hexes-worth of chaff.

Note: *Air War* coverphoto of an F-14 courtesy of Grumman.

A NOTE ON SOURCES

Air War was designed purely from unclassified sources. When unclassified information was not obtainable on a particular point, we estimated. Much of the data as to guided weapons performance and electronic warfare are estimates, as these are the most sensitive areas. Some aircraft performance data has been estimated as well, and the presentation of any data in game form is always an approximation, and errors are made. The performance figures of the MiG-29, for example, are almost completely an approximation, as very little data about this aircraft appeared in late 1976 and early 1977 when this game was designed.

Books Used

Lou Drendel, *And Kill MiGs; Jane's All the World's Aircraft; Jane's World Weapons Systems;* U.S. Army, *FM-105, Maneuver Control* (source of much air-to-ground data); Jack Broughton, *Thud Ridge;* Jack Gee, *Mirage;* Robert Jackson, *The Israeli Air Force Story;* E. O'Ballance, *The Electronic War in the Middle East;* J.W.R. Taylor, *Combat Aircraft of the World;* W. Green, *The Observer's Book of Aircraft;* W. Green, *The World Guide to Combat Planes;* W. Green and D. Punnett, *World Airpower Guide;* W. Holder and W. Surur; *General Dynamics F-16;* J.P. Stevenson, *Grumman F-14;* N. Krivinyi, *World Military Aviation;* D.W. Wragg, *World's Air Forces;* N. Polmar, *World Combat Aircraft Directory;* J.W.R. Taylor and G. Swanborough, *Military Aircraft of the World;* S. Chopra, *India's Second Liberation;* W. Green, *Observer's Book of Basic Military Aircraft;* several of the Squadron *In Action* series (esp. the F-8); "Dash-One" and "Dash-Thirty Four" manuals for several modern U.S.A.F. aircraft (most useful, especially that on the F-4); U.S.A.F. TAC, *Air Combat* (the best single guide); A.J.C. Lavalle, *Tale of Two Bridges and The Battle for the Skies over North Vietnam;* W. Green and G. Swanborough, *The Observer's Soviet Aircraft Directory; Pilot's Handbook of Aeronautical Knowledge;* H. Homes and M. Patterson, *Visualized Flight Maneuvers;* J.E. Allen, *Aerodynamics; Flight Without Formulae;* Jean Alexander, *Russian Aircraft Since 1940;* B. Gunston, *Attack Aircraft of the West, Bombers of the West, Early SuperSonic Fighters of the West;* P. Futtrell, *The U.S. Air Force in Korea.*

Periodicals Used

Aviation Week and Space Technology (best data around); *U.S.A.F. Fighter Weapons Review* (excellent tactics, the "how to" of air combat); *International Defense Review* (detailed hardware review); *Interavaia,* (similar to *IDR*); *Flight International; U.S. Naval Institute Proceedings; Air University Review; Tac Attack; The Interceptor; Air International; Air Progress; Air Pictorial; Aviation News; Aviation & Marine; Electronic Warfare; Countermeasures; Flug Revue; Air Force; Combat Crew; Aeronautics and Astronautics.*

This is not a complete or exhaustive list of the sources used, and does not include those sources consulted purely on technical matters.

DEVELOPER'S NOTES

What you are holding in your sweating palms is, with the possible exception of *War in Europe,* the most complex game anyone, SPI or other, has produced to date. All told there are some 96 (approximately) pages of rules, charts, and prose, which compares favorably with the number of pages devoted to WIE.

Our initial conception of *Air War* was that it would have everything that *Foxbat* hadn't; it would go into the complexities of air combat that *Foxbat* had ignored or glossed over, and it would cover every aspect of modern air combat that we could get data on (and some that we couldn't). Combined with this was a desire to "one up" Battleline's *Air Force.*

We didn't really realize what a massive project we had prepared for ourselves, nor that *Air War* would grow from a moderately complex $12 game to an incredibly complex, detail-rich, realistic game covering almost every aspect of air combat. We didn't realize that the thing would continue to grow and grow, apparently without bound, that new rules covering further aspects of air combat would continually be added, that *Air War* would go through four versions of the rules before its completion, nor that the (manuscript) rules *text* would be 280 pages long.

By the time *Air War* was ready for the Art department (three months after its theoretical deadline), everyone involved with the game was wandering around in a myopic daze, attempting to cope with the game. The Art Department's initial reaction was one of total disbelief.

Now its *your* turn; I guarantee that, no matter how much of a complexity freak you think you are, you're going to be staggered by the sheer magnitude of the game.

In an attempt to ease the players into the game gently, rather than brutally exposing them to the full complexity of the whole thing, we've inserted notes at various points in the rules suggesting that the players stop reading the rules at that point and play one or more of the scenarios. Hopefully, the players will, in this way, be able to get the feel of the game before proceeding with the rest of the rules. We've also included a Rules Summary to enable the players to refer to some of the rules more easily; hopefully, the combination will serve to enable people to grasp the game more easily.

Nonetheless, it is to be expected that no one will have a full grasp of the tactical potential of *Air War* until they've played it four or five times.

Dave Isby and I are quite proud of our accomplishment; we're sure there are flaws in the rules which we haven't caught, and we're sure that many of you will be turned off because its *too* complex; but we do believe that what we have produced is an excellent simulation and even, once the complexities have been mastered, an excellent game in its own right.

DESIGNER'S NOTES

Air War is a game I have wanted to do for a long time. I had worked on *Flying Circus, Spitfire, Sturmavik,* and *Foxbat and Phantom,* and so I had wanted to try and do a game to show how it should be done. The result is *Air War.* I suppose the most notable thing about *Air War* is the mass and volume of the rules. I knew we were evolving a complex game, but when Greg Costikyan showed me the 270+ pages of the manuscript, with narrow margins and little blank space, I felt like Dr.

Frankenstein must have felt when the Thing Under The Sheet started to move — did I really do this? Did I really *mean* to do this? Yet *Air War* is, for all its size, not an unduly complex game. I wanted a game to show the interaction of hardware — can the F-105D outmaneuver the SA-2 if its ALE-36 RH&W receiver warns it in time? I also wanted to reduce the omniscience of the players — hence the visibility and search rules. Above all, I wanted a game as realistic as I could make it — bearing in mind that I am neither a combat aircrewman or an aeronautical engineer — with, above all, the constraint that the game will have to played and understood by our customers.

At first glance, *Air War* appears a massive, indigestible lump. This really is not the case. We tried to keep the basic "flying" of the aircraft relatively simple. The only part that is complex is the idea of Energy Points and the difference between types of turns. Once these two concepts have been understood, the basic game should be rather simple. One can analogize the game of *Air War* to an airplane. The basic rules of flying and the airframe are kept relatively clean. The "drag" is increased when other things are put on to the basic airframe, such as radar-homing missiles, radar, ECM, air-to-ground, and so on. Those interested in a quick, simple game have only to kick the tires and light the fires of their Sabre or MiG-15 and roar off toward 'MiG Alley." Those with a taste for the more complex can always get into things like "The Return of the Red River Rats," which is much more involved.

For all the effort that went into making *Air War* accurate, I am still willing to admit that any air game will have a certain amount of artificiality. Time must be divided into segments, or turns. Aircraft which move through the air in three dimensions in a fluid motion must be transformed to cardboard counters moving over a two-dimensional hexagonal grid. Combined with this was the overwhelming need to keep things relatively simple. I especially wanted to keep such things as the turning and rolling rules — which proved to have great potential for complexity — relatively clean. Even the purist, however, should find that he can do in *Air War* whatever a real airplane can do, in about the same time, although the procedures may be different in game terms than they are in reality. Those who know more about air combat and flying than I do should feel free to modify the game to incorporate their expertise — if you do, let me know.

Air War would probably have remained a collection of ideas and rules flying in loose formation, rather than a coherent, playable game, were it not for the Herculean efforts of the developer, Greg Costikyan. Most people outside SPI have no idea what a developer is. He is the second most important man in the work on any game, and for this he gets a disproportionately high share of the work dumped on him (especially stuff like typing, supervising test games, making changes) while getting a disproportionately low share of the credit if the game succeeds. Greg did a lot of work on *Air War*. He made the 12-point turning system work after I had abandoned it. He fleshed out my ideas for the air-to-ground mechanics into a workable system. This Armenian dynamo typed and re-typed rules, often while the designer drank his tea in the next office and complained of the impossibility of deadlines. And, for better or worse, Greg also came up with the two weird scenarios.

I did not do the research alone either. Tom Gummo, an F-4 driver, gave valuable advice on aerodynamics and how airplanes fly and how this might be transferred to paper. Andy Munzing lent the experience of his 220 combat missions to the air-to-ground rules. The most tireless worker, however, was Damian "Snake" Housman, who helped originate the idea for *Air War* and came up with much data and hundreds of good ideas. There were also many others — aircrew, aeronautical engineers, manufacturers representatives, who had their brains picked for the benefit of *Air War*.

What you have, therefore, is the most accurate, yet still playable game of modern air combat that Dave Isby and Greg Costikyan could come up within the time and money budgeted to the project. It was designed to be what we thought was accurate and playable, rather than to any formula or to generate mass appeal. Don't get us wrong — we hope the game is popular and sells a million copies, and we get feted as geniuses; but this is secondary to the design and development itself. To return to the airplane analogy, *Air War* has been delivered to you from the makers (SPI) fully designed and ready for combat. Now it is for you, the player, to learn to fly it and take it into action.

MODERN AIR COMBAT

[continued from page 2]

ponent's plane; then again, you may be cruising along in a flying speed brake. Maneuver accordingly, but always be cognizant of the need to maintain energy levels that will permit maneuver.

Be Aggressive

Take rapid and decisive action. If you delay, the enemy will know you don't know what you're doing and will act accordingly. By acting rapidly and decisively, you keep the enemy off guard; he won't be as sure of himself. You can keep the pressure on him and force *him* to make the mistakes. By being aggressive, you make your opponent more interested in saving his own ass than in getting yours.

A word of caution is in order; aggressive action must be tempered by judgment. Don't get your fangs out too far — if you do, a smart enemy can play you for a sucker. Then you can be as aggressive as you want. On the ground.

Know When to Reverse

A reverse is a rapid change of direction, a turn of 180 degrees. When you're the defender and the enemy overshoots you in a tight turn, a well-timed reverse can put you in a good position to get a kill. However, you must make sure that the reverse is unmistakeable: reversing too soon will probably end your opponent's tracking problem and *all* of yours, while reversing too late won't give you much of an advantage.

When in doubt, don't reverse — you may be heading for disaster. Since an engagement is not the best place to pick up a new trick, learning when to reverse is best done in practice before combat. Whether or not you should turn with an enemy is dependent partially on the type of aircraft your opponent is flying; if you have an F-4 to his MiG-17, a reverse will make his day. Although there is probably a circumstance in which an F-4 can successfully turn with a MiG-17, I can't think of one.

If All Else Fails: Point Your Nose At the Enemy

Even experienced pilots can run out of ideas during an engagement; but you can never go far wrong if you simply point your nose at the enemy. This at least will give you time to plan.

If you are on the defensive, turning toward your opponent will increase angle-off — this is important, and you should check the cannon combat tables for head-on shots. If you have room to work with, you may get a head-on pass; don't pass up such a shot. Although the probability of a kill with this type of shot is not especially high, your opponent is going to have to take the chance of a kill into account.

The entire principle involved is an illustration of the point that the best defense is a good offense: by pointing your nose at the enemy, you also get into a better position to separate, if that is what you want to do. Separating can get you home safely, or it can bring you far enough away to re-enter on your own terms.

Never Give Up!

Let us assume you have your opponent "trapped neatly at your six-o'clock position." The situation may be deteriorating, but don't panic! Remember that your opponent has the same problems you do when you are on the attack; he has to get into firing parameters to employ his weapons. It is your job to make sure he has to work to stay in position; there may be something going on to your advantage that you are not aware of. Perhaps he looks like he is in a perfect kill position for a heat-seeker; maybe his missiles are not working. Maybe his guns are jammed. You get the idea — make him earn a victory, don't just give it to him. Always have some last-ditch maneuvers to disrupt his tracking. Jink!

On the Attack, Take the High Man

If there is any doubt in your mind as to which plane to attack, take the high man — that is, the one who, after a split, is going high. The high man is losing energy faster (by climbing) than the low man (who is diving); thus, if you started the attack with sufficient energy, you can trade it for altitude, climb and stay with him easier than you could with the low man. In addition, it takes the low man longer to come up and support his high man than it would for the high man to dive down and support his low man against you. It may turn out that the high man is the better pilot; in that case, it's still possible to switch to the low man. If however, you had gone after the low man, it would be more difficult to switch the other way around.

Learn to Know What a Victory Is

In many cases, survival is as much a victory as can be hoped for. Everyone likes to have a star painted on the side of his cockpit, but the main concern is to prevent yourself from becoming a star on the side of your opponent's cockpit.

Always Check Six

Most of the planes and crews lost in Vietnam never saw what hit them. A MiG is a hard thing to see from any distance, and it doesn't help much if you keep your eyes glued to the front.

Don't just look over your shoulder; yank the plane to one side and get a good look at what is gaining on you. Then fly straight and level for a while, then yank the plane to the other side. This is basically what "check turns" are, and they're similar in many respects to "jinks," which is turning to evade enemy fire.

When flying in formation, don't all turn at the same time. Coordinate all turns so that not everyone keeps the lethal cone pointed in the same direction all the time. If, for example, you have two elements flying formation and want to make a left turn, have the righthand element start first. Since that element should pass behind the left element. As the right element gets to about the four-o'clock position of the left element, the left element should start its turn. When everyone is rolled out, the new heading should be line abreast and the relative positions switched (i.e, the left element is now the right element).

Check turns should be made frequently, and in no case should you allow more than 20 seconds to go between checks.

BASIC FIGHTER MANEUVERS

This section of *Modern Air Combat* is about the maneuvers that fighters often execute in combat. Many of these maneuvers are utilized by fighters alone, and not by other jet aircraft. Before an aircraft pilot is exposed to a real combat situation, he is expected to be competent in all of the maneuvers described. Some of the maneuvers are accompanied by a diagram showing how the maneuver appears in reality.

Note that the effectiveness of maneuvers is dependent upon a given aircraft's performance; because a maneuver works to your advantage in one aircraft, it does not necessarily follow that it will work as well in another. By noting the differences in performance of fighter maneuvers between various aircraft, you will gain information necessary in the development of tactics.

Defensive Maneuvers

Maximum Performance Turn: This is not simply a roll of 90 degrees (to the vertical) and a hard G turn. The aircraft is rolled 135 degrees to one side and put into a dive, resulting in something midway between a 90 degree roll and a Split-S. The aircraft gains energy because of its altitude loss, but not as much altitude is lost as would be in a Split-S.

It is possible to reverse your direction using the maximum performance turn. Continue to pull at 135 degree bank until the aircraft is pointed straight down; then roll another 45 degrees to a completely inverted position, and pull up to level. The Throttle should be as low as possible to minimize altitude loss. In game terms, this is accomplished by turning the aircraft as much as possible while diving; inverting the aircraft makes it possible for it to gain more energy in Type II and III dives.

Defensive Turn: This is a turn towards your opponent. If he is not yet near firing position, you need not turn very hard. Add power and bank toward your opponent, and then turn as required. As your opponent nears firing position, tighten up the turn. However, you should not dissipate all your speed by turning too fast too soon. In game terms, this is turning towards an opponent, at whatever rate is optimum in that tactical situation.

Reversal: There are two methods of "reversing" or changing the direction of your turn. The Aileron Reverse is the faster of the two, and for that reason may be less desirable. Just stop your hard turn by releasing G, rolling 180 degrees towards your overshooting opponent, and then pulling hard into him. The other method is the rudder reverse. Pull your nose up at the same time that you roll 180 degrees. This should help slow you down. Depending on your aircraft, you may also wish to decrease power. With good timing and execution, the reversal can put you on the offensive. Poorly timed, a reversal will get you killed faster than anything else you can do. Make sure that you reverse only when your opponent is definitely overshooting. He must pass your six-o-clock position with noticeable overtake and angle-off, and should be within 3000 feet horizontal range. If you reverse at any other time, your opponent will only run up his bill at the O-Club Bar. An aileron reverse is performed in *Air War* by rolling four points and turning in a direction opposite to the one previously turned in during that turn. This is also a good way to kill off excess speed in some cases. The rudder reverse is the same as the aileron reverse, with the additional touch of climbing and accelerating, either by power or by inducing drag, in some situations.

Scissors: A scissors is a series of reversals made in an attempt to wind up behind your opponent. It takes two to tango, and so both aircraft would have to be reversing into each other, going canopy to canopy. The object is to slow down enough to force your opponent out ahead of you, thus giving you an opportunity to fire at him. The decision to scissor or not will be dependent upon your aircraft; if you have a highly maneuverable aircraft, such as most MiG's, scissoring is a good idea; if you have a less maneuverable aircraft, such as an F-4. . . forget it. If you allow yourself to be sucked into a scissor while flying a less maneuverable aircraft than your opponent's, you may have opportunity to find out whether or not the Martin Baker ejection system works as advertised.

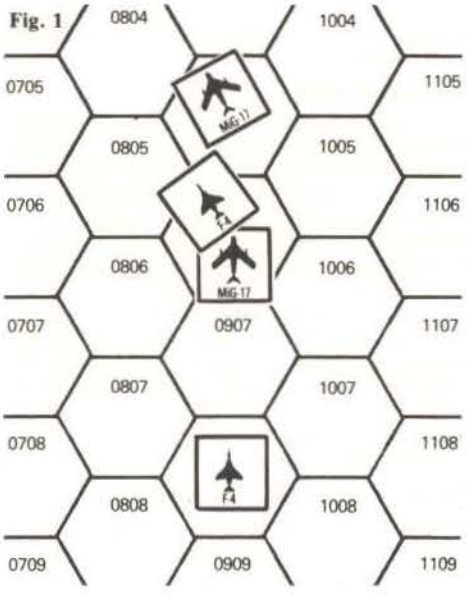
Fig. 1: *Reversal and Scissors Diagram*

The pilot of the MiG-17 (altitude: 25 levels, Throttle Setting and MA of 5; wings banked one point left nose level, no energy points.) is in trouble. Behind him, at the same altitude and attitude, but with a Throttle Setting and Movement Allowance of 7, is an F-4D Phantom, whose crew can already visualize the red star painted under their canopy. The MiG pilot, however, decides to go into a scissors. The MiG is disadvantaged, so he performs the following actions in his Movement Phase.

1. Decelerates by Power ("chops the throttle") by six points, bringing him down from 5 MA and Throttle Setting to 4.
2. Goes into a Type I Climb ("brings his nose up").
3. Decelerates by inducing drag, losing 1 MP ("slams open his air brakes).
4. Rolls one point left into a 90 degree bank.
5. He now has a MA of 2 (he started at 5, lost one by deceleration at power. In a Climb at an MA or Throttle Setting of 4, the MiG-17 has a MA of 3, which, reduced by 1 for the airbrakes, brings it down to 2). The MiG now turns his maximum rate ("pulls hard G") to the left. Note that the MiG gains one level of altitude, and is now in position 2.

Our bright blue USAF heroes, however, might well figure that two can play at this game, and perform the following actions:

1. Decelerate by Power by ten points, bringing MA and Throttle Setting down to six.
2. Go into a Type I climb, going up two levels at an MA of 4.



3. Roll one point left into a 90° bank.
4. He cannot open his speed brakes — he was too fast.
5. The F-4D now has a Movement Allowance of 4. He gains one altitude level (climbing two, but losing one for the maximum performance turn), ending up in position 2.

Now note that the F-4D has lost its slot position. If he goes on scissoring with the MiG, he is going to overshoot and, if he cannot get his speed up fast enough, end up as non-paying guests in the local Hanoi Hilton.

Separation Maneuver: A separation maneuver increases range between you and your opponent. Your goal may be to split for home, or it may simply be to get space enough to turn around in, allowing you to get back in the battle. The precise maneuver you use to obtain separation depends on your speed advantage/disadvantage, and the ability of your opponent to fire missiles at you.

If your opponent is not missile armed and is unable to go as fast as you, the easiest way to separate is a straightaway acceleration maneuver. Trade altitude for airspeed and get out. This may also apply if you have a *significant* advantage over an early Atoll- or AIM-9B-equipped opponent. With high speed and a good lead (at least 2500 feet), you can actually outrun a missile. This will put you well out of the battle for quite a while, however, and thus should be used primarily to escape a battle. You had also better be sure that the missile you think is being fired is indeed the one you can outrun.

If your opponent has missiles and you don't know if you can outrun them, pull into a spiral. If you have a decisive rate of climb or speed advantage, use a climbing spiral. Pull only enough G to generate angle-off, and climb until you have a definite altitude advantage. After that, you can trade altitude for airspeed and be at the O-Club bar in an hour. If you have a higher rate of climb *capability* than your opponent (but not the advantage), use a diving spiral and increase throttle. Make the turn toward your opponent, but don't turn too hard unless he's getting ready to fire. This maneuver is also useful in getting rid of SAM's, but it assumes you have the altitude to lose. If you don't, try something less suicidal.

High-G Roll: The High-G Roll is a last-ditch maneuver, like the "break." In reality, it makes a difference whether the roll is executed under or over, in what is actually a barrel roll; in the game there is no difference, but this is not terribly important. The purpose of a high-G roll is to destroy your opponent's tracking solution, and force him to concede lateral separation. The disadvantage is that you are left with little maneuvering potential, so you must add power. If the maneuver works you may see your opponent overshoot, and perhaps even be forced out in front of you. This gives you a first-class view of his tailpipe, and you can take advantage of that with your gun. Your opponent may have guessed what you're up to, and have done the same thing. He might also have put his nose up, slowed down, and waited for you to stop your "wiffordill." In either case, stop your barrel roll and either head for mother earth and separate, or try to pull into your opponent, unload, and separate toward his six o'clock position. In *Air War* this is done by performing a barrel roll, while simultaneously decelerating.

Split S: The Split-S is a maneuver which can be used either offensively or defensively. In this case, let us assume that you've been caught with your speed down, and your opponent is bearing down on you from six o'clock, thrying for a gun kill. If you have practiced this maneuver, you will already know just how much altitude you will lose and how close

to the ground you can begin at. Go inverted, cut the throttle, and slow down as much as possible. Pull and head for the ground with your opponent in hot pursuit. Continue the pull-through as hard as your airplane allows. If your opponent didn't realize what you were up to, and if he started off with higher speed than you did, the cumulogranite clouds will scrape him off your tail before you are again in level flight. Do not add throttle until you are sure you will clear the terrain. By that time you should already be faster than lightning.

Snap-Shot Attack: A snap-shot is a gun-firing position which is not ideal. Sometimes you will be engaged in a maneuver which causes your opponent to appear in front of you for only a brief instant. This may be at a high angle-off, maybe even head-on. In any case, take whatever shot is available. The probability of a kill or even a hit is relatively low with a snap-shot, but that's better than no chance at all. In addition, your opponent must take the fact that you are obviously willing to fire at less than ideal angle into account, and this will lead to more caution. Putting pressure on your opponent and forcing him to make mistakes is, after all, the whole idea.

Offensive Maneuvers

The easiest way to describe offensive maneuvers is to say that they are designed to point your nose at the target and keep it pointing there. To begin with, your speed should be up to the most advantageous maneuvering speed for your aircraft. Your first objective is to establish a "lead pursuit" course (that is, aim your nose just in front of your target). As you close with your opponent, you will have to decide whether to continue the lead pursuit for a quick kill, or convert a lag pursuit (following the tail of the target) to maintain a nose-tail separation. If the latter, you can conserve energy and maneuver in the vertical to gain angle-off.

Acceleration Maneuver: The best way to accelerate is to go into a shallow (Type I) dive, throttle up, and gain speed as quickly as possible.

Low Speed Yo-Yo: A yo-yo is basically a dive into an opposing aircraft, then pulling up to fly level behind the aircraft. A low speed yo-yo is one in which the acceleration maneuver is used to effect closure.

First, point your nose at the enemy. As you pick up speed with a shallow dive and increased throttle, you will have established overtake. As this happens, begin a lead pursuit course. Do not allow your aircraft to go more than one "dive level" below your opponent, or the energy you lose pulling up into him again will negate the speed you have just gained. While accelerating, start a gentle pull back up to your opponent's "dive type."

Countering the Lo Speed Yo-Yo: If you are defending against an opponent who is executing a Lo Speed Yo-Yo toward you, you may counter his maneuver in several ways.

1) Do what he does. Dive when he dives, pull up when he pulls up. This will keep you in front of him and won't allow him to close the distance.

2) You might ease off your defensive turn into him. This will encourage him to establish more cutoff and go deeper.

3) When your opponent starts to pull back toward the horizon, roll out some bank and start climbing. This increases vertical separation.

4) When your opponent reaches the horizon, you should be nose high with less airspeed. A hard turn into your opponent should result in a front-quartering attack. You will be nose down, airspeed increasing, and he will be nose up, airspeed decreasing.

5) If he continues to zoom without attempting cutoff, unload, increase throttle, and dive for separation.

6) If he performs a rollaway and follows you, continue to dive for separation, but expect him to be much closer than if he had zoomed.

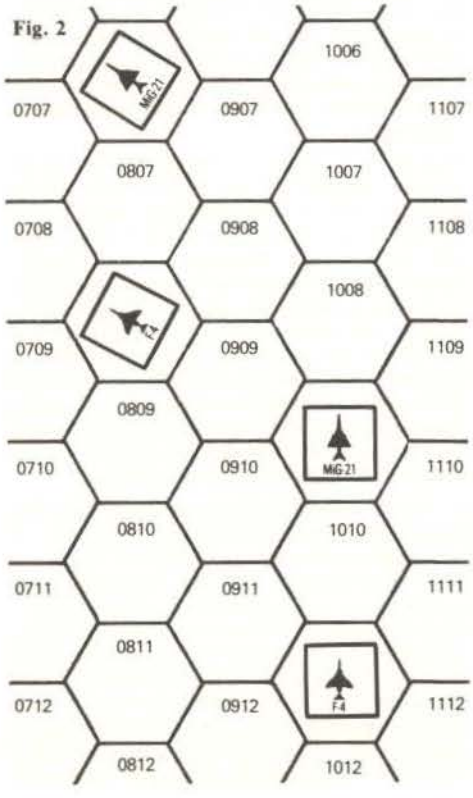
7) If he tries to cut inside your turn, he will overshoot in the vertical plane.

High Speed Yo-Yo: As you close rapidly with your opponent, you may find that, due to angle-off problems, you are in danger of overshooting. If you overshoot, your opponent will probably reverse on you, ruining your advantage. This high speed yo-yo uses a plane of maneuver perpendicular to the opponent, to prevent overshooting, while maintaining nose-tail separation. It is also a counter to the defensive turn.

First, close and track until you see that, if you continue, you will overshoot. Then start the yo-yo. Maintian your high-G loading. By applying top rudder, you can put your nose above the defender. Pull your nose up about the same number of degrees as angle-off. Go just high enough to prevent overshoot. Do not maintain this attitude and zoom to a high apex, or your opponent will dive away from you. Your speed should drop as you raise your nose, but don't tinker with the throttle setting. Your forward motion will be reduced enough to maintain nose-tail separation, and you should be able to reduce angle-off sufficiently to get near his six o'clock position. Then apply bottom rudder, and start to dive on him. Don't commit your nose too low. Just slide down into firing position in increments. Since you're now diving, your speed will increase and give you plenty of overtake.

Fig. 2: *Hi Speed Yo-Yo Diagram*

Here, a late model MiG-21 is being chased by a F-4E Phantom (with slats) at 50 levels altitude, both with a Throttle Setting and MA of 7. The MiG rolls left and makes a maximum performance turn to position 2. The F-4E pilot realizes he cannot stay with the more maneuverable MiG in a turning contest in the horizontal. If he does, the MiG will eventually out-turn him. The F-4E pilot therefore decides to initiate a high yo-yo, hoping to cut inside the MiG's turn and take advantage of the F-4E performing better in the horizontal than the vertical planes. He goes into a Type I climb, trying to gain two levels of altitude, which reduces his Movement Allowance to five, and hence the F-4E's turn mode to three, the same as the MiG's, so he can turn with the MiG, ending up in the second position in the diagram.



Countering the High Speed Yo-Yo: When you're defending and your attacker's yo-yo is too late or too shallow and overshoots your turn, perform a nose-high reversal. If he yo-yo's too high or too early, increase throttle, relax G, and dive 180° away. If he yo-yo's properly, unload some G, allowing your aircraft to accelerate into a shallow spiral. If your attacker attempts a quick kill and commits himself to a nose-low attack, add top rudder and pull up hard into him. When he overshoots below and outside your turn, reverse into his six o'clock.

Barrel Roll Maneuver: This is not a barrel roll *per se,* but a maneuver to reduce angle-off and range. The high speed yo-yo is useful for angles-off up to 40° or so; the barrel roll maneuver effectively changes your heading by 90° with less loss of energy than a regular 90° turn. Certain prerequisites must be met:

1) You must be at high speed.

2) Your opponent must be causing increasing angle-off.

3) You must be in lead pursuit.

4) The present range must be between 2 and 2½ nautical miles.

To perform the maneuver:

1) Roll the wings level and start a pull up into the true vertical.

2) Establish in excess of 70° nose-up pitch (a Type II or III climb), unload the aircraft, and roll toward your opponent from 90° to 180°. Note: in real life, you would have rolled *away* from your opponent 180° to 270°. Our roll does the same thing in game terms.

3) Slide your nose toward the inside your opponent's turn and observe his actions. If he breaks down, immediately pull down after him with a maximum turn. If he continues his original turn, continue to slide toward the inside of his turn, reestablishing a lead pursuit. If he pulls up into the attack, continue to float while maintaining nose-tail separation. Because of your speed advantage, he will not be able to reach you, and he will have to start back down in front of you. You can then kill him at your leisure. If you begin your maneuver at less than 12,000 feet range, you will find that you are on the outside of the defender's turn and separating. If this is the case, simply continue to pull completely over the top and roll out once again on the inside of his turn; this will closely resemble an Immelmann maneuver.

You will rarely end a barrel roll maneuver in gun range. Normally you will have to go into a low-speed yo-yo plus whatever might be necessary to get into range. If you have missiles, forget the yo-yo; instead, overshoot the defender's turn slightly and roll out at his six o'clock position. Play the roll off to get the range you need.

Countering the Barrel Roll Maneuver: If the barrel roll maneuver is executed well, it is difficult to counter. The best counter is probably the same procedure as used against a low-speed yo-yo. In most cases you won't have to worry, as the average pilot is unable to execute a barrel roll maneuver perfectly.

Not all maneuvers work equally well with all aircraft. You may find that the aircraft you are using

has certain superior characteristics which make maneuvers here unnecessary. However, it is always good to know these maneuvers since you cannot always count on a superior maneuvering aircraft.

ADVANCED TACTICS

Actual tactics (as opposed to maneuvers) that are used in air combat are generally classified; however, some tactics can be derived from non-classified sources and common sense.

First, discussion of a few facts about aircraft handling against opposing aircraft is in order. Unlike actual pilots, the players are not restricted in the number or type of aircraft they can fly, and they are free to change aircraft from game to game. They can also change nationality, something which is rarely done in the real world (Lt. Belenko and a few others being the exceptions). Therefore, they must become familiar with many types of aircraft with vastly different handling characteristics.

The F-4, for instance, has good speed, but comparatively high wing-loading. This means it won't turn nearly as well as a MiG-17, which has lower wing-loading and a much slower speed. The tactics used when flying an F-4 would be radically different from those used when flying a MiG-17. An F-4 must fight in the vertical; this makes use of its superior speed, climb, and dive capabilities. If an F-4 tries to fight in the horizontal (that is, tries to out-turn its opponent) against a lower wing-loaded opponent, the F-4 will lose (unless the enemy pilot is totally incompetent).

A low wing-loaded aircraft, on the other hand, may fight quite well in the horizontal. It can outturn a higher wing-loaded aircraft, and a player owning such an aircraft should make full use of this advantage. This section will show the players some of the ways they can take advantage of their own aircraft's assets, as well as some of the ways they can take advantage of their opponent's aircraft's faults.

Attack

1. This is a very dirty trick. Your opponent has a flight coming through your territory and you have at least two aircraft at your disposal. Your first aircraft should get up to high speed and the same altitude as the enemy. It should fly at the enemy head-on, straight through the middle of their formation, and keep going, making a gentle turn to one side or the other. Your second aircraft should keep low and out of sight during this time, and stay between two and five miles behind the first aircraft. If the enemy takes the bait and turns after your first aircraft, you are perfectly set up to "bounce" them from behind and below, where they will have great difficulty in seeing you. Then fire at will...or Charley, or Ivan, or Yosef, or anyone else you prefer.

You can vary the attack so that your aircraft come in from the sides if you prefer. If the enemy is smart and sees you, all is not lost; just break it off, head for home, and try it again tomorrow. With his speed up, your first aircraft should have no difficulty in getting away. This tactic, widely used, is called "Kuban."

2. A second form of attack does not involve deception at all, but knowledge of the maneuvering potential of the respective aircraft is a necessity. Your aircraft should begin several thousand feet below a flight of oncoming aircraft, at high speed. Time an Immelmann maneuver so that you come out of it behind the enemy and at his altitude or slightly lower. You should be able to get off at least one missile before you are spotted. If you are spotted and they start a hard turn, you have a choice; you can either press the attack as best you can, or get separation and leave. To accomplish the latter, turn in the opposite direction from the enemy. He will believe he is under attack, and by the time he gets around to face you, you'll be long gone.

3. Several scenarios require a player to obtain visual contact with the enemy before firing. This is a reconstruction of the Rule of Engagement imposed on US forces in Vietnam. Some aircraft have good radar missile capability, but are unable to utilize it to full capacity when restricted by this ROE. A method used to get around the visual contact ROE is as follows:

Get a radar lock-on on your target, then send another aircraft in your flight ahead to check out the target. The aircraft you send ahead should have as high a speed as possible, and head straight for the target. As soon as he comes into visual contact with the target, he should call back to his comrades the information that the target is indeed the enemy. The identifying aircraft should be going too fast for the target aircraft to engage, and the Plane with the radar lock-on is now cleared to fire. The radar missile will not be confused by multiple targets in the same way an infra-red missile might be. This was a favorite US Navy tactic and is also used by the Russians.

4. Even when outnumbered by the enemy, it is possible to cause confusion by applying the proper tactics. Always try to attack from the rear and below; this is where an aircraft's visibility is poorest. Many flights are arranged in elements: a lead element and a second element. There may be one or two (or more) aircraft per element. If you're playing a multi-player game and the enemy flight is commanded by more than one person, begin your attack on the second element from the lead element's side, if possible. That is, attack from "inside" the formation; the person flying the lead element is usually the more competent pilot, and, by attacking from the lead element's side, you make the second element break *toward* his lead element. The latter makes it difficult for the lead to support the second element under attack.

If you're flying a low wing-loaded aircraft, slow down to slightly over the speed of the enemy, to take advantage of your turn capabilities. If you have a high wing-loaded aircraft, you can't afford to slow down; you will have to take one kill and climb into the vertical. A low wing-loaded aircraft would give you a chance for more than one kill if there are at least two enemy aircraft in the element under attack.

If there are two aircraft in the element, first hit the element's wingman. If you kill or cripple him, he will be out of the way and no threat; thereafter, try for the element leader, since you'll wind up at his six o'clock anyway. Never get between a healthy wingman and his leader; before hitting the leader, make sure the wingman is killed or incapable of attacking you. When you're sure, you can continue the attack on the leader and polish off the wingman later. Do not lose sight of the flight leader while attacking the wingman; if he knows his business you won't have time to finish off the crippled wingman. Just do your damage and get out of the area, playing it by ear from there.

5. If you have a single aircraft attacking two enemy aircraft in a single element, the enemy will often split in the vertical. This is a "defensive split." Keep your speed up; one of them will go up and the other down, forcing you to make a decision. Generally it is best to take the high man. Your speed is high and so you can stay with him as he climbs; in fact, since he'll be starting at a slower speed, he'll only be able to climb so far before he has to come down. If you start with a higher speed, you'll simply outlast the climbing aircraft and get a kill. The low man will be getting into the action as well, but he must climb to do so, losing speed along the way.

If you see that the high man is going to be too tough for some reason, switch to the low man. While the low man is busy trying to climb (and losing speed) you are descending and picking up speed.

6. When in doubt, attack. This has been said earlier, but, like other basic principles, it bears repeating. Experience and coordination are needed to defeat a surprise attack, and a leader can accidentally hang a wingman out to dry in the confusion. When attacking, take what you can and run. Aggressiveness and guts will do for a while, but after that you'll need skill. If it looks as though the enemy is finally coordinating his defense, you must decide either to stay or separate; if you're new at the game, separation is your best bet unless you have a real advantage. Maneuver your aircraft like every pilot you run into is the best the enemy has.

7. While it's good to be aggressive, aggressiveness should be tempered with judgement. If your fangs are too long and you attack in a rash and impetuous manner, sooner or later you will meet an opponent who specializes in defanging people like you. You would be surprised at how many overly aggressive pilots let their fangs grow too long and wind up in the ground while the cool old heads are having a tall cool one at the O-Club bar.

Defense

Often, the formation you fly in is not one of your choosing. Because of the limitations of a scenario, you may be forced to fly in a less-than-desirable formation.

With two or more aircraft, you will normally be spread into two elements. When one of the elements is attacked, your response should depend on the range from the attacking aircraft to the defender. If the attacker was discovered late, break hard into the attack: mutual support may be temporarily lost, but the free element should maneuver as quickly as possible to get back into the battle. Defense must be as carefully coordinated as offense; if you lose and don't regain mutual support, you will lose the battle.

The engaged element should take the attacker to a position favorable to the free element, if possible. If the engaged element is composed of two aircraft and the attacker is in firing position, a defensive split should be considered. A defensive split, as noted above, sends one aircraft high and the other low, forcing the attacker to commit himself. However, since this will result in the loss of mutual support within the element, it must be considered as a last-ditch maneuver. Once the attacker commits himself, try to sandwich him. This is also what the free element should be trying to do.

If the attacker was spotted farther out, and he appears to be going for, say, the left element, that element should start a defensive turn to the left, in the hopes of suckering the attacker into following. The right element can then slice left and sandwich the attacker. The engaged element should also dive, while the free element climbs; this will allow the free element a height advantage which it can convert to a speed advantage during its attack.

Conclusion

However, even with all the modern, sophisticated aircraft around today, air combat has remained effectively unchanged from its inception over fifty years ago. If you remember nothing else from this manual, remember the words of Manfred von Richthofen: "Rove your assigned airspace, spot the enemy, shoot him down, and anything else is rubbish."

Damian Housman

AIRWAR '80

additional

RULES OF PLAY & SCENARIOS

101.0 INTRODUCTION
102.0 NEW MANEUVERS
- **102.1** Diving Vertical Roll
- **102.2** Climbing Vertical Roll
- **102.3** Horizontal Break

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DESIGNER'S NOTES

plus Addenda for Rules Sections 1.0-33.0

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[101.0] INTRODUCTION

Air War '80 expands upon and modifies the game of *Air War*. It includes a number of different elements:

1. Fourteen new aircraft types: the MiG-19/F-9, Hunter, Meteor, Harrier, Mirage F-1, Lightning, Draken, Viggen, Su-15, A-6, F-100, F-104, F-106, F-8 and five new air-to-air missiles are included. In addition, the charts of many aircraft in the original *Air War* game have been modified to reflect other versions or to show new information that has come to light. In addition, the "MiG-29" of the original game has been replaced by the "AAF(L)."

2. A new and improved addenda. This is more than addenda in the standard sense of the word, which accounts for its considerable length. It is keyed to the original rules and contains many changes, additions, and options not included in the original game. In this sheet, not only have we corrected errors, we have expanded parameters.

3. New additional rules. These include new maneuvers for aircraft, improved air-to-ground rules which include the forward motion of bombs, special rules for individual peculiarities of aircraft types, and special rules for different types of airborne weapons systems.

4. Fourteen new scenarios. Twelve historical and two "type" scenarios running the gamut from MiG Alley in 1951 to the Golan Heights in 1979 — all exciting, informative situations.

[102.0] NEW MANEUVERS

COMMENTARY:

These are more maneuvers which aircraft may perform in addition to those listed in Section 11.0 of the original *Air War* rules. All the conditions that apply to the maneuvers in Section 11.0 apply to the maneuvers in this Section. These maneuvers are procedurally identical and are additions to the maneuvers in the original rules.

CASES:

[102.1] DIVING VERTICAL ROLL

[102.11] Prerequisites
The aircraft must be in the Push-Through with wings banked at zero degrees or 180 degrees to execute a Diving Vertical Roll.

[102.12] Procedure
An aircraft making a Diving Vertical Roll is turned zero to six hex points in place by the owning Player, and its Turning Indicator may be placed in any box. The Flight Attitude Indicator is rolled four Movement Points at no movement cost.

[102.13] Requirements and Postrequisites
Aircraft which have a zero listed for their "Turns in Push-Through" on the Flight Parameters Chart may go from a Type III Dive to a Push-Through, execute a Diving Vertical Roll, and return to a Type III Dive all in the same Game-Turn. Furthermore, if the aircraft has a Turning Mode of 3 or less at the Movement Allowance and Altitude at which it performed the Diving Vertical Roll, it may be placed in a Type II Dive rather than a Type III Dive after performing the Diving Vertical Roll.

Aircraft with a 1 or a higher number listed for their "Turns in Push-Through" on the Flight Parameters Chart, must immediately be placed in a Push-Through, with the following exceptions:

1. If the aircraft was not turned or if it turned only one hex point, the aircraft may be placed in a Type III Dive immediately after completing its Diving Vertical Roll, *if* the number listed for "Turns in Push-Through" is 1. If the number is 2 or greater, the aircraft is placed in a Type III Dive on the subsequent Game-Turn's Movement Phase.

2. If the aircraft was turned two or three hex points, it must remain in a Push-Through for at least half (rounding up) of the number of Game-Turns indicated in "Turns in Push-Through" before it may pull up into a Type III Dive.

3. If the aircraft was turned four to six hex points, it must remain in a Push-Through for the full number of "Turns in Push-Through" before being placed in a Type III Dive.

[102.2] CLIMBING VERTICAL ROLL

[102.21] Prerequisites
The aircraft must be in a Pull-Through with wings banked at zero degrees or 180 degrees.

[102.22] Procedure
An aircraft making a Climbing Vertical Roll is turned zero to six hex points in place by the owning Player, and its Turning Indicator may be placed in any box. The Flight Attitude Indicator is rolled four Movement Points at no movement cost.

[102.23] Requirements and Postrequisites
Aircraft with a zero or 1 listed under "Game-Turns in Type III (or II or I) Climb" on the Flight Parameters Chart, may enter a Pull-Through on the same Game-Turn that they enter a Type III Climb.

An aircraft starting in a Type III Climb with a zero or 1 listed under "Game-Turns in Type III (or II or I) Climb," before entering a Pull-Through, may go from a Type III Climb (or Type II or Type I Climb for aircraft which cannot perform Type III Climbs) to a Pull-Through, execute a Climbing Vertical Roll maneuver, and re-enter a Type III (or II or I) Climb all in the same Game-Turn, without having to decelerate by power through being in a Pull-Through, as per Case 11.12.

[102.3] HORIZONTAL BREAK

[102.31] Prerequisites
In order to perform a Horizontal Break, the aircraft must have its wings vertical and be in Level Flight or a Dive.

[102.32] Procedure
Any aircraft attempting a Horizontal Break must immediately determine if it departs controlled flight. If it does depart controlled flight, it does not perform a Horizontal Break, but rather follows the Departing controlled Flight Procedure. If the aircraft does not depart controlled flight, it may accumulate Turning Points at one Turning Mode less than its normal maximum for the Movement Phase. At the conclusion of the Movement Phase, in addition to the Reduction of the aircraft's MA caused by collecting Turning Points at the Maximum Rate with wings vertical, the MA is also reduced by the number of Movement Points required for executing a Break.

[102.33] Postrequisites
The aircraft may not execute another Horizontal Break until a Game-Turn subsequent to a Game-Turn in which the aircraft accumulated no Turning Points.

[103.0] ADVANCED AIR-TO-GROUND RULES

GENERAL RULE:

These air-to-ground rules are intended to supplement those that appear in the basic *Air War* rules by introducing greater realism and complication into air-to-ground combat.

CASES:

[103.1] FORWARD MOTION OF BOMBS

When an aircraft drops a bomb, bomblet, or napalm, the effect of momentum will move the munition forward. Therefore, the aircraft dropping the munition will have to be a certain number of hexes from the target it is attacking when it releases the munitions. This number is determined by consulting the Effect of Forward Motion on Bombs Chart [103.16], before the release of the munitions.

[103.11] When an aircraft releases a bomb, bomblet, or napalm, the owning Player must determine which hex directly forward of the aircraft it will impact in, if the munition does not scatter. This hex is referred to as the *target hex*. To determine what the target hex is, the owning Player performs the following procedure:

1. He subtracts the altitude of the target from the altitude of the aircraft dropping the munition. This only applies, of course, when the target is above sea level. This difference is the aircraft's height Above Ground Level (AGL).

2. The owning Player then consults the Effect of Forward Motion on Bombs Chart and cross-indexes the aircraft's AGL and the number of altitude levels it dove in the preceding Movement Phase. This cross-indexing yields a number.

3. The owning Player then multiplies the aircraft's current Movement Allowance by the number derived from the Forward Motion of Bombs Chart. The result is the number of hexes the target hex is directly ahead of the dropping aircraft.

EXAMPLE: An aircraft drops a munition. It is at altitude level 17. The target is located on top of a hill at altitude level 3. The aircraft's height Above Ground Level is then 14. In the preceding Movement Phase, the aircraft dove three levels. The owning Player now consults the Effect of Forward Motion on Bombs Chart, cross-indexing the aircraft's AGL (14) and the number of levels it dove (3). The number yielded by the cross-indexing is 3. The owning Player now multiplies this number by the aircraft's current Movement Allowance, which is four. The product of this multiplication is 12, which is the number of hexes the target hex is from the hex where the munition was released.

[103.12] If the aircraft releasing bombs, bomblets or napalm has any Turning Points accumulated, the munitions will not fall directly straight ahead, as the aircraft is not pointing straight ahead. In this case, the munitions *sideslip* (see Section 9.7). This is done by referring to the Sideslipping Table [9.78]. The owning Player consults this table and moves the target hex laterally one hex depending on how many Turning Points the dropping aircraft has accumulated. For example, if the dropping aircraft has 5 Turning Points accumulated, the owning Player would have to shift the target hex location laterally one hex for every 11 hexes the bomb would travel forward in flight; if the dropping aircraft had a total of 25 Turning Points accumulated at the moment the munitions were dropped, the location of the target hex would shift one hex laterally for each two hexes of the munitions' forward travel. The procedures for determining such lateral shifts can be found in Section 9.7.

[103.13] The Effect of Forward Motion on Bombs Chart only has entries for aircraft releasing their munitions at 52 levels or less above ground level. If an aircraft is more than 52 levels above ground level when it releases its munitions, the following procedure is used to determine the extent of the munitions' forward motion:

1. The Player divides his aircraft's height above ground level by 52, obtaining a whole number and ignoring any *remainder* for the moment.

2. The Player then cross-indexes the number of levels the aircraft dove in the preceding Movement Phase with 52 on the Effect of Forward Motion on Bombs Chart. The result indicated on the Chart is multiplied by the figure obtained in Step 1.

3. On the Effect of Forward Motion on Bombs Chart, the Player now cross-indexes the number of levels the aircraft dove in the preceding Movement Phase with the *remainder* obtained from the calculation in Step 1.

4. The Player adds the product of the multiplication in Step 2 with the number derived from the Chart in Step 3; the sum is then multiplied by the aircraft's Movement Allowance to produce the number of hexes that the target is in front of the hex in which the munition was released.

EXAMPLE: An aircraft with a Movement Allowance of 6, is releasing its munitions from a height of 126 levels above ground level. The aircraft dove 10 levels in the preceding Movement Phase. The first step in determining the extent of the munitions' forward motion is to divide 126 by 52. This yields a quotient of 2, with a remainder of 22. Next, the Player cross-indexes the number of levels the aircraft dove (10) with 52 on the Forward Motion Chart. The number thus derived from the Chart (4) is multiplied by the quotient (2), producing 8. The Player then cross-indexes the number of levels the aircraft dove with the remainder from the first step (22), which yeilds the number 2. This number is then added to the product from above (8), yielding the number 10. Finally, 10 is multiplied by the aircraft's Movement Allowance (6) to produce the distance, in hexes, from the munitions release hex to the target hex. Thus, the target hex is 60 hexes in front of the hex in which the munitions were released.

[103.14] The time it takes a munition to impact is determined according to the procedure described in Case 25.25 and through the use of the Falling Table (25.93).

[103.15] When certain munitions are used, there are modifications to the number derived from the Effect of Forward Motion on Bombs Chart. These modifications are performed by multiplying the number derived from the Table with the appropriate coefficient. For example, if the munition being dropped were napalm, and the number derived from the Table were 6, the coefficient for napalm (0.33) would cause the final figure for the determination of the location of the target hex to be 2. If, after modification, the final figure is a fraction, the number is then rounded off to the nearest whole number.

[103.16] Effect of Forward Motion on Bombs Chart
(see separate booklet)

[103.2] SCATTER OF MUNITIONS

If a Player whose aircraft has dropped munitions on a hex, fails to roll the correct probability number on the Bombing Hit Probability Table (25.91), the munitions are assumed to have missed the target hex. They do, however, impact in another hex. To determine the hex in which the munitions actually have impacted, the Scatter procedure is followed.

[103.21] Any munition that does not hit its target hex will scatter. A munition does not hit its target hex if the correct probability number on the Bombing Hit Probability Table (25.91) is not rolled. This is determined during combat resolution during the Bombing Phase of a Game-Turn. If a munition does not hit its target hex, the owning Player must immediately determine where it actually landed by using the Scatter Procedure before resolving any further combat.

[103.22] To determine which hex scattered munitions have impacted in, the owning Player must determine:

1. The direction from the target hex in which the munitions scattered.

2. The number of hexes away from the target hex the munitions scattered.

[103.23] To determine the direction away from the target hex the munitions scattered in, the owning Player rolls one six-sided die per munition. A die-roll of one indicates that the munitions have scattered to the hex row directly north of the target hex. A die-roll of two means that the munitions have scattered to the hex row directly to the northeast of the target hex. Die-rolls of three, four, five and six mean that the munitions have scattered to the hex rows to southeast, south, southwest, and northwest, respectively.

[103.24] Once the direction in which the munitions have scattered has been determined, the owning Player next determines how many hexes away from the target hex the munitions actually impacted. To do this, the Player rolls one die and cross-indexes the die-roll result with the Accuracy Multiple (AM) of the munition of the Munition Scatter Distance Table (103.26). This shows the number of hexes away from the target hex that the munitions impacted.

[103.25] If there are any targets in the hex where the munitions have actually impacted, those targets are attacked normally, using the Target Destruction Table (25.94). However, the Probability Number of Destruction for each target is reduced by 50%, rounding fractions down.

[103.26] Munition Scatter Distance Table
(see charts and tables)

[103.3] MORE THAN ONE TARGET PER HEX

When a munition load strikes a target hex according to the procedure set out in Case 25.91, and the target hex contains more than one target, all the targets in that hex are subject to possible destruction, as indicated on the Target Destruction Table (25.94).

[103.31] The Target Destruction Table is consulted for each target in a hex that is hit by a munition under the procedure of the Bomb Hit Probability Table (25.91).

[103.32] The following are exceptions to Case 103.31:

Shaped Charges: A shaped charge may never destroy more than one target in a hex.

750 lb. bombs: Each 750 lb. bomb may only destroy half (rounding fractions down) of the targets in a hex. The Target Destruction Table is checked for only half the targets in the hex.

1000 lb. bombs: Each 1000 lb. bomb may only destroy three-quarters of the targets in a hex. Thus, the Target Destruction Table is checked only for that number of targets.

Rockets: A rocket attack causes no more than four targets to be checked on the Target Destruction Table.

[103.33] In those cases where a munition cannot destroy all the targets in a hex, as outlined in Case 103.32, the Player whose aircraft dropped the munitions decides for which of the possible targets the Target Destruction Table will be checked.

[103.4] USE OF ROCKETS

Rockets act differently from other unguided munitions as they move under their own power.

[103.41] For an aircraft to fire rockets at a ground target, that aircraft must fulfill the following two conditions:

1. The target must be within a limited tracking cone of the aircraft, taking into account the aircraft's Dive/Climb Type.

2. The target must be within 18 hexes of the firing aircraft.

[103.42] Neither the Falling Table (25.93) nor the Effect of Forward Motion of Bombs Chart (103.16) is used with rockets. Rather, rockets move like missiles, with a Movement Allowance of *six*. A rocket remains in flight for a maximum of three Game-Turns. Other than that, rockets are treated exactly as other munitions.

[104.0] SPECIAL AIRCRAFT RULES

GENERAL RULE:

Certain aircraft types have special capabilities and limitations that are not shared by other aircraft types. In this section, the special characteristics of these aircraft types are described.

CASES:



[104.1] F-8 GUN JAMMING

The Mk 12 cannon used in the F-8 Crusader are of World War II design. Because of the way they are mounted, in the sides of the airplane, the cannon's shells often misfeed when the aircraft is engaging in high-G maneuvering.

[104.11] In any Cannon Combat Phase, the Player must roll two dice for each of his F-8 aircraft engaging in cannon combat that has accumulated Turning Points at its maximum rate *or* performed a Split-S, Wingover, Immelmann, or Break maneuver during the preceding Movement Phase.

[104.12] A die-roll of 4 means that all of the F-8's cannon have jammed under high-G forces and the aircraft may not engage in cannon combat for the remainder of the game. A die-roll of 5 means that half of the F-8's cannon have jammed, and for the remainder of the game, or until the rest of the F-8's cannon jam, the aircraft is treated as if it had Type J cannon.

[104.13] An F-8 that has had half of its cannon jam must still be checked to see if the rest of its cannon jam during each subsequent Movement Phase in which the aircraft sustains high-G forces, as described in Case 104.11. A die-roll of 4 or 5 causes the aircraft's remaining cannon to jam.

[104.2] F-4 SMOKE TRAILS

At high power settings, the F-4 Phantom's engines make a smoke trail, which makes the Phantom more visible. Consequently, any F-4 with a Throttle Setting of 4, 5, or 6 has its Size Multiple (for visual sighting purposes only) increased to 8. At Throttle Settings less than 4 or greater than 6, the Size Multiple for visual sighting purposes is 6. This lower Size Multiple is due to the fact that the smoke trail disappears when the afterburner is used or when the Phantom's engines are at a low power setting.

[104.3] FOXBAT-A MISSILE LAUNCH LIMITS

The MiG-25A Foxbat-A has a unique Fire-control system that limits the way it can fire missiles.

[104.31] The owning Player of a Foxbat-A may use only AA-6 Acrid missiles on the aircraft. It requires eleven Game-Turns for an AA-6 to arm. The owning Player must announce he is arming an AA-6 in the Missile Launch Phase eleven Game-Turns before it can be launched.

[104.32] Each Foxbat-A can have a maximum of one pair of AA-6 Acrids armed at any one time.

Note that the first pair can be armed soon after take-off, so a Foxbat-A may begin a scenario with a pair of armed missiles.

[104.33] AA-6 Acrids are always mounted in pairs: one heat-seeking, one radar-homing. The first missile a Foxbat-A must fire is always a radar-homing AA-6. It may however, launch the heat-seeking missile of that pair in the same Phase or any subsequent Missile Launch Phase. However, the AA-6's must be launched in strict sequence: radar-homing/heat-seeking/radar-homing/heat-seeking. The only way a missile may be removed from sequence is if it is jettisoned.

[104.34] The second pair of AA-6's may not have their arming procedure started until the Missile Launch Phase after the first radar-homing AA-6 is fired.

[104.35] The Movement Allowance of the Foxbat-A may not exceed the Maximum Loaded MA when carrying four AA-6 Acrid Missiles. The Movement Allowance may be increased by one for each missile fired or jettisoned. When all four missiles are gone, there is no further restriction.

[104.4] THE HAWKER HARRIER

The Hawker Harrier is a unique aircraft that requires unique rules. The Harrier is capable of vertical take-off and landing and, by using its flexible engine exhaust nozzles in flight, can do things impossible for most aircraft.

This use of the exhaust nozzles is termed VFF (Vectored Forward Flight, pronounced "viff"). The owning Player of any Hawker Harrier aircraft may declare, during the Acceleration/Deceleration by Power Phase of a Game-Turn, which Harrier will use VFF in the subequent Movement Phase. Harriers using VFF have the following capabilities:

1. They can perform a number of maneuvers — listed in this rules Section—that are not possible to normal aircraft. These are maneuvers as defined as per Section 11.0.

2. Harriers using VFF are more vulnerable to heat-seeking missiles (see Section 15.0).

The Harrier is a controversial airplane. The Royal Air Force and US Marine Corps pilots who fly them believe they are excellent dogfighters, and that VFF gives them a powerful advantage. Its numerous detractors consider the Harrier a noisy toy, a "novelty A-4" and that VFF is overrated. These rules, after much study, present a view of reality close to that of the Harrier jocks. Only actual air combat will show which view is correct.

[104.41] Vertical Lift VFF: Reducing Minimum MA

A Harrier using Vertical Lift VFF substitutes engine power for aerodynamic lift. In this maneuver a Harrier can reduce its Minimum Movement Allowance to 1.

In a Climb, a Harrier using this maneuver can reduce its Movement Allowance to any amount less than the maximum, as long as it climbs at least two levels. Thus, a Harrier using this maneuver can go "straight up"—which is how they get to "shoot down" F-4's.

[104.42] Use of VFF to Pitch And Roll

The Harrier may use VFF to push its nose up or to the side at a fantastic rate—30 degrees a second has been reported.

A Harrier performing this maneuver may, in addition to any normal flight functions, do one or both of the following:

1. Move its Attitude Marker one box up or down on the Flight Attitude Indicator.

2. Allow the Harrier aircraft counter to have its facing changed by up to two hex points in the direction it is banked. This does not affect the number of Turning Points accumulated nor does this require the expenditure of Turning Points. Post Requisites of this maneuver are:

1. The Harrier's Movement Allowance is reduced by 2 Movement Points at the end of the Phase.

2. It may not perform this maneuver again in the same Game-Turn or during the following Game-Turn—thus, the most often this maneuver could be performed by an individual Harrier is once every other Game-Turn.

[104.43] VFF to Reduce Turning Circle

Harriers can use VFF to push them tighter into a turn by turning the nozzle sideways.

To use VFF to reduce turning circle, a Harrier must meet all the following prerequisites at the point during its movement where the owning Player wishes to perform the maneuver:

1. The Harrier's wings must be vertical (banked 90 degrees).

2. The Harrier must have accumulated the maximum number of Turning Points in the preceding hex into which it moved. It is allowable that this hex was entered at the end of the last turn's movement. If these prerequisites are met, the owning Player may then move the Harrier counter one hex *sideways* in the direction it is banked. If the Harrier is pointed toward a hexside, it is moved into the forwardmost of the two hexes on the side of the hex. If it is pointed toward a hexpoint, it is moved into the hex directly to the side.

Postrequisites of this maneuver are:

1. The Harrier's Movement Allowance is reduced by two Movement Points at the end of the Phase. This is in addition to any Movement Point loss for accumulating Turning Points at the maximum rate.

2. It may not perform this maneuver again in the Game-Turn or during an immediately subsequent Game-Turn. An individual Harrier may perform this maneuver a maximum of once every other Game-Turn.

This maneuver does not affect the number of Turning Points accumulated, nor does it require any expenditure or accumulation of Turning Points.

[104.44] Vertical Lift VFF: Hovering Harriers

Using the jet nozzles downwards gives the Harrier vertical lift. It can use this to accomplish a number of maneuvers.

A Harrier can hover. This entails remaining motionless in a hex while airborne. For a Harrier using Vertical Lift VFF to hover, it must meet the following prerequisites:

1. It must be four or fewer levels above the ground (or sea).

2. Its Movement Allowance must be 2 or less.

A hovering Harrier may remain in the hex it is hovering in. It can also move and turn in place. A Harrier that is hovering, however, has a Movement Allowance of zero. Despite this, it is not subject to departing controlled flight, nor is it immobile. A Harrier that is hovering at the start of a Movement Phase may perform both or either of the following maneuvers if it wishes to remain hovering: it can change facing in place, as many hex-points as is desired; or it can move to any adjacent hex in the aircraft's *forward arc*.

Otherwise, a hovering Harrier is treated as a normal aircraft. When it leaves hovering flight (putting the nozzles aft), its Movement Allowance becomes equal to its Throttle Setting automatically.

[104.45] VFF to Gain Altitude

Harriers using VFF can gain altitude levels—in effect, climb—while in Level Flight. This is possible because of the vectored thrust of the engines. The number of altitude levels gained in this way is limited to 2 at LO and ML Altitude Groupings at Throttle Settings of 3 or more, and to 1 level at all other times. This gaining of altitude is performed in lieu of any other VFF maneuver in that Movement Phase. Note that it can be performed in conjunction with Vertical Lift VFF (104.44)—a most effective tactic in a climbing battle.

[104.46] Harrier Vulnerability When Using VFF

Harriers are more vulnerable to Heat-Seeking Missiles than normal aircraft when using VFF because of the huge amount of thrust they generate. The effects of this are:

1. Harriers using VFF always have High Heat-Emission Signatures for purposes of Case 15.27.

2. All heat-seeking missiles have improved capabilities when homing in on a Harrier using VFF. If the Harrier has used VFF in its preceding Movement Phase, all heat-seeking missiles may home in on it from any arc except the Forward Arc.

[104.5] KFIR FLAMEOUT

The Israeli Kfir C2 fighter has a tendency to "flame out" when it fires Shafrir or Sidewinder air-to-air missiles, before 1980.

[104.51] Whenever a Shafrir heat seeking missile is fired from a Kfir C2, the owning Player must roll two dice for each Shafrir. A probability number of 3 means that the Kfir has flamed out.

[104.52] A flamed-out aircraft has its Throttle Setting reduced to 1 (idle). The aircraft immediately undergoes fade-back deceleration (see Case 8.55). When the aircraft's Movement Allowance becomes less than the aircraft's minimum Throttle Setting, the owning Player must roll to see if the aircraft departs controlled flight (see Case 10.8). A flamed-out aircraft must go into a Type I Dive normally and stay there until the engine restarts (see Case 104.54) or it departs controlled flight.

[104.53] A flamed-out aircraft is considered to be in a loaded condition (see Section 17.0). Moreover, a flamed-out aircraft may not engage in any sort of combat and it may not attempt to sight, either visually or by radar (the pilot has his hands full just trying to fly the thing). A flamed-out aircraft, however, may jettison weapons and munitions normally.

[104.54] Each Acceleration/Deceleration by Power Segment, the Player rolls two dice for each of his flamed-out aircraft to see if the aircraft's engine has restarted. A probability number of 9 is required to restart. Once an aircraft's engine has restarted, the engine may accelerate normally, beginning with the same Segment in which it restarts.

[104.6] THIRD GENERATION LOOK-DOWN, SHOOT-DOWN CAPABILITY

Three aircraft have third generation look-down, shoot-down capability: The Foxbat-E, the JA 37 Viggen, and the F-14. The only effect of this is that their Probability Number for achieving radar lock-on is not reduced because of the height of the target aircraft or because of the height differential between the two aircraft. This makes it easier for these aircraft to shoot down low-flying aircraft with radar-homing missiles while they remain at high altitude. Note that the F-14 loses this ability when the target aircraft is over hilly or mountainous terrain — surface clutter interferes.



[104.7] HAWKER HUNTER SELECTIVE CANNON USE

The Hawker Hunter has the unique capability to fire half its four cannons at one time, conserving

ammunition. The owning player of a Hawker Hunter has the option to convert, at any time, one of the Hunter's four "Type P" cannon shots into two "Type G" cannon shots. The owning player may mix the two types of fire as he wishes.

[105.0] AIRCRAFT USE

The following additional aircraft are used by various air forces as follows:

Viggen: Sweden AJ-37 (71-); JA-37 (76-)

Draken: Sweden (57-); Denmark (69-); Finland (68-)

Crusader: U.S. Navy (A: 57-; D: 59-; E: 62-); French Navy (65-); Phillipines A.F. (F-8E: 79-)

SU-15 Flagon: Soviet Union (Flagon-A: 67-; Flagon-E: 73-)

Foxbat-E: Soviet Union (78-)

AA (F)-L: Soviet Union (83-)

MiG-19: Soviet Union (54-69); Czechoslovakia (58-); China (61-); Cuba (64-); Indonesia (61-65); North Korea (58-); Syria (64-); Albania (65-); China (61-); Pakistan (68-); Tanzania (71-); Vietnam (71-). All are Farmer-C except early Soviet and Czech.

F-9 Fantan: China (78-); Egypt (?79-)

F-100: USAF (C: 56-; D: 58-; F: 58-; WW: 64-66); France (58-77); Taiwan (61-); Turkey (61-); Denmark (61-)

A-6E: U.S. Navy and Marines (67-); EA-6A (67-); EA-6E (72-)

Harrier: RAF (68-); USMC (72-); Spanish Navy (72-); Indian Navy (81-); China (82-)

Lightning: RAF (62-); Saudi Arabia (65-)

Hunter: RAF (57-); Royal Navy (57-); Abu Dhabi (68-); Chile (59-); India (61-); Iraq (65-); Kenya (64-); Kuwait (68-); Lebanon (58-74); Oman (68-); Peru (62-); Qatar (68-); Rhodesia (63-); Singapore (68-); Switzerland (59-); Jordan (62-68)

Meteor: RAF (48-58); Australia (51-53); Brazil (48-68); Egypt (52-58); Israel (52-62); Ecuador (54-); Venezuela (54-69); Syria (52-59)

F-104S: Italy (68-); Turkey (72-)

F-104C: Pakistan (64-); USA (58-74)

F-104G: W. Germany (63-); Netherlands (64-); Italy (64-); Norway (63-); Taiwan (63-); Turkey (65-); Greece (66-)

RF-104G: Netherlands (66-); Taiwan (66-)

F-104J: Japan (64-)

Mirage F.1: Egypt (75-); France (73-); Kuwait (74-); Morrocco (75-); South Africa (74-); Spain (75-); Ecuador (78-); Greece (77-); Iraq (79-); Libya (79-)

F-86D & L: USAF (54-68); Denmark (58-66); France (58-67); Greece (58-71); Phillipines (60-68); Turkey (58-69)

F-86K: France (56-); Italy (56-68); Netherlands (62-67); Norway (62-67); Turkey (64-68); Venezuela (64-); Honduros (75-)

F-5A: Canada (67-); Brazil (70-); Thailand (66-); U.S. (65-66); Netherlands (67-); Greece (67-); Norway (66-); Spain (67-); Ethiopia (72-); Morocco (66-); Turkey (72-); Saudi Arabia (72-); Jordan (72-); Pakistan (71-71)

[106.0] SPECIAL WEAPONS RULES

CASES:

[106.1] THE AIR LAUNCHED CRUISE MISSILE

The Boeing Air Launched Cruise Missile (ALCM) will be a crucial element of US strategic forces in the closing decades of this violent century. It is a missile, but, because of its wings and air-breathing engine, it is treated as an aircraft for all purposes except impacting its target.

[106.11] The ALCM's characteristics remain constant throughout its flight, regardless of altitude.

Size Multiple: 1

Throttle Setting: 5 (always)

Range: 3,500 hexes

Turn Mode: 4 (always)

Climb and Drive: Use SAM-D Climb and Dive Tables

Damage Capacity: 1

[106.12] Before a scenario in which an ALCM is to be used (i.e., while the carrying aircraft is still on the ground), the owning Player must write down:

1. Any turns the ALCM will make once leaving its launch hex.
2. What altitude level it will fly at.
3. Its target hex(es).

If this information is not provided, or if the Player wishes to disregard it (i.e., "blank out" the ALCM's memory) the ALCM will fly straight and level after diving (or climbing) to an altitude of 1 level.

ALCM's fly like aircraft. They have terrain following radar and will climb over any obstacles to maintain their pre-programmed cruising altitude, diving back to this altitude once the obstacle is passed over.

[106.13] ALCM's may be shot down like any aircraft.

[106.14] To impact a target hex, nuclear-armed ALCM's must fly into the target hex. Nuclear-armed ALCM's (most are) need only fly into the hex at any altitude of 80 levels or less. Bomblet-armed ALCM's may fly at any altitude, but the altitude will affect their accuracy. Bomblet-armed ALCM's drop their munitions just like a conventional bomber. Bomblet-armed ALCM's are treated as carrying six loads of A-T or A-P bomblets. Bomblet armed ALCM's may have up to six target hexes, bombing each one in turn. The Accuracy Multiple for all ALCM's is ½. Normal bomb-dropping procedures are used to determine which hex either the entire ALCM explodes in, if it is nuclear armed, or where the bomblets hit their targets, if the ALCM is bomblet-armed.

[106.15] Use of the ALCM is currently intended to be limited to B-52's, each of which will carry four, and A6E's which will carry two. This may be extended to the Tornado, A-7 and F-4 aircraft when the ALCM enters service in the early 1980s.

[106.2] BLIVETS

A Blivet is a big, unguided, nuclear tipped air-to-air rocket. The only Blivet used in *Air War* is the AIR-2 Genie which can be used only by F-106's of the USAF once the National Command Authority has authorized the use of such weapons.

[106.21] Blivets are similar to normal air-to-air missiles with one key exception: they are unguided. The direction a Blivet will travel is determined at its instant of launch. A Blivet will always travel in the same Attitude the Launch aircraft was in at the moment of launch. Thus, if the launch aircraft was in a Type III Climb at the moment of launch, the Blivet must remain in a Type III Climb for all its movement. In types of Climbs and Dives in which the Blivet has more than one alternative of how far it goes forward or how far it will travel, the owning Player may select any one of these alternatives, but, again, it must be used every Game-Turn. Blivets may never accumulate Turning Points. They retain the Turning Points the launch aircraft has at the moment of launch, as a normal missile does.

[106.22] Performance of the AIR-2 Genie is identical to the Red Top AAM. Use that missile's chart for performance statistics.

[106.23] A Blivet is not armed until it has travelled 13 hexes. After it is armed, it will detonate whenever it enters a hex within 12 hexes of an enemy aircraft and exiting that hex in the Blivet's straight-ahead course would make it further away from the enemy aircraft than it was in that hex. At this point, the nuclear warhead explodes in a very impressive visual display. All aircraft within 12 hexes are destroyed. Any aircraft from 13 to 18 hexes range from the detonation are not automatically destroyed; rather, they are treated as if hit by a Type A cannon and damage is resolved normally. Remember that 2 altitude levels equal 1 hex for range purposes.

[106.3] AIR-TO-AIR ROCKETS

Air-to-air rockets were developed in the late 1940s and early 1950s from the German R4M. They were intended to be used against heavy bombers.

[106.31] Air-to-air rockets must be fired in multiples of eight. They are fired during the cannon combat phase of a game-turn. For an air-to-air rocket-armed aircraft to actually fire these weapons, it must meet the following conditions:

1. The target aircraft must be in a limited tracking cone from the firing aircraft.
2. The firing aircraft must be in either the forward or aft arc of the target aircraft.
3. The target aircraft must be at a range greater than two hexes and equal to or less than a range in hexes equal to the firing aircraft's Movement Allowance plus eight — never more than 15.

[106.32] The target must be the closest aircraft (enemy or friendly) in the firing aircraft's limited tracking cone. In addition, all aircraft within two hexes of the target aircraft that also meet the above requirements are attacked as well.

[106.33] The basic PN of an eight-rocket salvo hitting a target aircraft is 5. Subtract 1 for each size multiple of the target aircraft less than 7. Subtract 1 for every five hexes of range separating the firing aircraft from the target. Minus 50% of the modified PN if the firing aircraft is in the target aircraft's rear arc. An aircraft hit by an air-to-air rocket salvo uses Cannon table "M" to resolve damage. An aircraft may not fire cannon in the same cannon combat phase as it fires air-to-air rockets.

[106.34] Air-to-air rockets are now obsolete, but in the 1950s and early 1960s they were carried by F-8A's (24), F-86D and K (24), Mystere (16, not in Israeli service), MiG-17A (16), MiG-19A and B (24).

[106.4] ECM SPECIFICITY

The radar jamming tables (24.71 through 24.74) show the ability of specific jammers or internal jamming systems to jam enemy radars. In addition to the limits shown in those charts, however, certain jammers are ineffective against certain radars. The following chart shows a number of jammers which cannot jam certain radars. This is in addition to any restrictions in Case 24.7.

Jamming System or Aircraft Internal Jammer	Radars Unable to be Jammed
DB-3163 (French)	SA-2, SA-6, Soviet AAA radar
ALQ-71	all except Soviet AAA, MiG-19, MiG-17

ALQ-105	**SA-6**
EF-105 (early)	**SA-6, MiG-21 (late), MiG-23, MiG-25**
EA-6A	**SA-3, SA-6,**
A-7 pre-1974	**SA-6, Hawk, MiG-19, 21, 23, Lightning, Jaguar**
MiG-25, MiG-27, SU-19, TU-26 internal jammers	**SA-2, SA-66, AAA, MiG-19**

[107.0] HISTORICAL SCENARIOS

CASES:

[107.1] INTRODUCTORY SCENARIOS

In the following scenarios, no air-to-air missiles are used. Players may play these scenarios by reading Rules Sections 1.0 through 13.0, plus Section 17.0, without knowing the rest of the rules.

[107.11] Aussies Over MiG Alley 1120, 29 August, 1951

General Situation: Number 77 Squadron, Royal Australian Air Force, had recently traded in its P-51D Mustangs for Meteors and was out for MiG. After several unsuccessful sweeps, at 1120 on 29 August 1951, Squadron Leader Wilson (in Meteor 1) spotted six MiG's. With Flying Officer Woodroffe (in Meteor 2), he dived on the bottom MiG's. They soon found themselves in trouble and Flying Officer Ken Blight (in Meteor 3) and Flight Lieutenant Cedric Wilson (in 4) came down to chase the MiG's off Wilson. All shot full of holes, the Meteors limped back to base. A few miles away, another flight of four Meteors had met MiG's and lost one of their number without scoring any kills. The Meteor was no match for the MiG-15. In their mess, between tubes of Foster's, the aircrew of 77 Squadron started singing "All We Want for Christmas is Our Wings Swept Back" (tune of "All I Want for Christmas Is My Two Front Teeth"—lyrics consist of repeating title). It sounds better after a few lagers when tomorrow is a stand-down.

Map Arrangement:

north
A
B

Royal Australian Air Force

Aircraft Type: four Meteor F.8's
Movement Allowances: 4
Throttle Settings: 4
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: (#1) B0805; (#2) B1006; (#3) B0816; (#4) B1018
Altitude: 140
Heading: N

Soviet Air Force

Aircraft Type: 6 MiG-15bis's
Movement Allowances: 4
Throttle Settings: 4
Energy Pts: 4
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: (#1) A0708; (#2) A0710; (#3) A1309; (#4) A1311; (#5) A1313; (#6) A1113
Altitudes: (#1-2) 120; (#3-6) 160
Headings: SE

Optional Rules:

Sun Direction: North
Land Altitude: 30

The MiG's have not spotted the Meteors at the start of the scenario. They must fly straight and level until they visually spot a Meteor.

Game Length: 20 Game-Turns

Victory Conditions: The Royal Australian Air Force Player receives three Victory Points for each MiG-15 shot down and two Victory Points for each that takes enough damage to force it to operate under Loaded conditions (see 17.0). The Soviet Air Force Player receives Victory Points in the same manner, but the totals are reduced to two and one Victory Points respectively. The Player with the higher total is the winner. If totals are equal, it is a draw.

[107.12] Return of the Red, Red River Rats 7 March, 1979

General Situation: On 7 March 1979, four pilots of the People's Liberation Army Air Force joined the elite fraternity of men who have been "Downtown" — penetrated the dense defenses of Route Pack Six, the Hanoi/Haiphong area. The four Chinese F-9's were intercepted by the Vietnamese F-5E's, scrambled from Hanoi's Noi Bai field. Though no losses ensued, it marked the furthest Chinese penetration of Vietnamese airspace.

Map Arrangement:

north
A B
C D
E F

People's Liberation Army Air Force

Aircraft Type: four F-9 Fantans
Movement Allowances: 4
Throttle Settings: 4
Energy Pts: 2
Acceleration Pts: 6
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: A1102, A0903, A1304, A1105
Altitude: 24
Heading: SSE

People's Air Force of Viet Nam

Aircraft Type: three F-5E's
Movement Allowances: 2
Throttle Settings: 6
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Type II Climb
Missiles: none
Hexes: E0214,E0414, E0312
Altitude: 12
Heading: NNE

Optional Rules:

Pilot Capability: May be determined using Table 7 for the Chinese and Table 8 for the Vietnamese.

Sun Direction: Northeast

Game Length: 30 Game-Turns

Victory Conditions: Victory is based on the accumulation of Victory Points. The Player with the most points wins. Victory Points are awarded as follows: 6 points for each F-5E destroyed, 10 points for each F-9 destroyed. Moreover, the Chinese Player receives one Victory Point for each F-9 on the original six map sections at the end of the scenario.

[107.2] INTERMEDIATE SCENARIOS

[107.21] Meteors Over Mitla 1600, 31 October, 1956

General Situation: Four Egyptian Meteor F.8's made an attack against Israeli paratroops advancing through the Mitla Pass area. The Israelis had a section of Mysteres as air cover, which intercepted the Meteors after some had attacked the paratroopers. The Mysteres downed one and chased the others home.

Map Arrangement:

north
A B C
D E F

Egyptians

Aircraft Type: four Meteor F.8's
For other data, see Special Rules.

Israelis

Aircraft Type: two Mysteres
Missiles: none
For other data, see Special Rules.

Game Length: 20 Game-Turns

Optional Rules:

Sun Direction: West
Pilot Capability: One Meteor must be flown by a Novice.One Mystere may be flown by a Honcho.
Bombing and Ground Installations: See Special Rules.

Special Rules:

Setting Up the Scenario: All Egyptian aircraft enter the Game map from the west edge of map sections A and D. They may enter on any Game-Turn with any Movement Allowances or Throttle Settings. They must enter in Level Flight with wings level and with no Energy Points accumulated. They may enter at any altitude level up to 61. The Egyptian Player must secretly write the Game-Turn, hex, and altitude of entry for each aircraft before the game begins. After the Egyptian Player has written down his entry data, the Israeli Player may position his two Mysteres anywhere on the six map segments. They may have any facing, altitude, attitude, Movement Allowance, or Throttle Setting. They may have no Acceleration or Energy Points accumulated. Play then proceeds normally. All aircraft on the map sections are considered to be in visual contact.

Ground Targets: The Israeli Player must place the following target markers on the Game-Map at the beginning of the game:

Building markers (small wood): B0718, E0701.
Truck markers (trucks): B0907, B0908, B0909, B0910, E0911, E0912
Tank marker (light AFV): E0913, E0914
Dump marker (ammunition, open): B1015
AA Gun marker (.50 quad): B0816

Each Truck and AFV is armed with one .50 calibre AA gun. The Israeli Player may use his AA guns as the rules for ground installations indicate (See 26.0)—he may fire them at Enemy aircraft.

Armament of Egyptian Aircraft: In addition to their cannon armament, some, none, or all of the Egyptian Meteors may carry air-ground munitions. The Egyptian Player may decide which shall carry such munitions. Consult the Bomb Capacity Table (28.3) for the amount of these munitions

each Meteor can carry. Remember that any Meteor carrying air-ground munitions will be in a Loaded condition until it drops or jettisons its load.

Ground Elevation: All terrain on map sections A, C, D and F is considered to have an altitude of eight. On map section B and E, the terrain in hex columns 07xx, 08xx, 09xx, and 10xx has an altitude of four. All other hexes in map sections B and E have an altitude of twelve. Aircraft flying at or below these altitude levels will fly into the ground.

Victory Conditions: Victory is determined according to the number of Victory Points received by the Egyptian Player.The Egyptian Player is awarded Victory Points for the following actions:

Destroying truck	1 VP
Destroying tank	3 VP
Destroying building	3 VP
Destroying ammo dump	4 VP
Destroying Quad .50 AA gun	1 VP
Destroying Mystere	6 VP
Damaging Mystere (more than 2 hits)	2 VP

The Egyptian Player's Victory Point total may be reduced for actions taken by the Israeli Player. The Victory Point awards listed below are subtracted from the Egyptian Player's total.

Destroying Meteor	4 VP
Damaging Meteor (more than 2 hits)	2 VP

If the Egyptian Player has a final total of 9 or more Victory Points, he wins the game; if not, the Israeli Player wins.

[107.22] Sixty Seconds Over Sargodha 7 September, 1965

General Situation: Wing Commander Mohammed Alam and his wingman, Flying Officer Masood, were scrambled to defend their airfield from incoming Indian air raids. The two Pakistanis engaged six Indian Hunters. Although their F-86's were inferior to the Indian fighter, the Pakistanis had heat-seeking missiles, which the Indians had not encountered before, as well as an apparent edge in skill. All six Hunters were shot down.

Map Arrangement:

north

A B
C D
E F

Pakistani

Aircraft Type: two F-86's
Movement Allowance: 5
Throttle Setting: 5
Energy Pts: 6
Acceleration Pts: 0
Wings: level
Dive/Climb: Type I Dive
Missiles: 2 Early Sidewinders each
Hexes: (#1) E1401; (#2) E1505
Altitude: 80
Heading: NW

Indian

Aircraft Type: six Hawker Hunters
Movement Allowances: (#1-4) 3; (#5-6) 4
Throttle Settings: (#1-4) 4; (#5-6) 4
Energy Pts: (#1-4) 3; (#5-6) 0
Acceleration Pts: 0
Wings: level
Dive/Climb: (#1-4) Type I Dive; (#5-6) Level Flight
Missiles: none
Hexes: (#1) C0613; (#2) C0714; (#3) C0814; (#4) C0915; (#5) E0609; (#6) E0811
Altitudes: (#1-4) 76; (#5-6) 84
Heading: N

Optional Rules:

Sun Direction: Southeast
Pilot Capability: F-86 #1 is flown by a Honcho. All Hunters are flown by Novices.
Bombing and Ground Installations: See special rules.

Game Length: 24 Game-Turns

Victory Conditions: The Pakistani Player receives five Victory Points for each Hunter destroyed and two for each Hunter that jettisons its munitions. The Indian Player receives two Victory Points for each F-86 destroyed. He receives an additional two points if the pilot of F-86 #1 is killed. **(Important Note:** Shooting at parachutes is not cricket—the Indian Air Force would not do such a thing). The Indian Player also receives Victory Points for destroying any of the targets on the game map, representing Sargodha field (see special rules):

Parked F-86	3 VP
Building	5 VP
Truck	1 VP
POL Dump	4 VP
Ammo Dump	4 VP
AA Gun	2 VP

Special Rules: Hunters #1-#4 begin the game with as much munitions as they are capable of carrying. The Indian Player may load 750 lb. bombs, 1000 lb. bombs (including retarded bombs), or napalm onto his aircraft within the limitations of the bombing rules and Loaded condition. He may not use PGM or rockets. The Pakistani Player must place the following target markers on the game-map at the start of the game:

Building markers (small masonary): A1212, A1213
Building markers (small steel): A1312
Truck markers (trucks): A1311, A1113
F-86 aircraft counter (parked aircraft): A1211
Dump marker (POL dump, revetted): A1012
Dump marker (ammo dump, revetted): A1216
AA gun markers (40mm AA guns, no radar): A1217, A0516, A1610, A1208, A0915, A1010, A1410, A1515

The Pakistani Player may use the 40mm AA guns as the rules for ground installations (26.0) indicate: he may fire them at the Hunters.

[107.23] Formosa Straits 1300, 13 January, 1967

General Situation: As China suffered in the wake of the Great Cultural Revolution, some of the revolutionary fervor was directed against a patrol of four Nationalist F-104G Starfighters north of Quemoy. The Nationalists, however, showed that revolutionary spirit was no match for better aircraft and pilots, as two MiG-19's were downed without loss.

Map Arrangement:

north

A B
C D
E F
G H

Nationaist

Aircraft Type: four F-104G's
Movement Allowance: 5
Throttle Setting: 5
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 4 Early Sidewinders each
Hexes: (#1) D0710; (#2) D1109; (#3) D0201; (#4) B0516
Altitude: 105
Heading: (#1-2) SSW (#3-4) SW

Communist

Aircraft Types: twelve MiG-19C's
Movement Allowance: 5
Throttle Setting: 5
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: (#1) C06907; (#2) C0509; (#3) C0909; (#4) C1010; (#5) E0607; (#6) E0305; (#7) E1004; (#8) E1207; (#9) E0616; (#10) G0302; (#11) G1004; (#12) G1409
Altitude: (#1-3) 80; (#4) 77; (#5) 100; (#6) 99; (#7) 101; (#8) 103; (#9) 118; (#10) 120; (#11) 112; (#12) 117
Heading: N

Optional Rules:

Sun Direction: Southwest
Pilot Capacity: F-104G #1 is flown by a Honcho; MiG-19's #4, #5, #9 are flown by Novices, #11 and #12 are flown by Turkeys (all the decent pilots have been denounced as technocrats and sent off to pick rice—after all, all you need is revolutionary zeal . .).

Game Length: 45 Game-Turns

Victory Conditions: The Nationalist Player receives one Victory Point for each MiG-19 shot down. The Communist Player receives three Victory Points for each F-104G shot down. The Player with the higher Victory Point total at the end of the game is the winner. If both Players have the same Victory Point total, the game ends in a draw. The game will end *before* 45 Game-Turns have elapsed if, at any point during the game, no Enemy aircraft are within 18 hexes of each other.

[107.24] Battle Over Iraq 6 June, 1967

General Situation: During an afternoon strike against an Iraqi airfield, the Israeli Air Force suffered one of their few defeats in the 1967 War. A formation of Mirages was intercepted by Iraqui Hunters at low altitude, losing three of their number to one Hunter.

Map Arrangement:

north

A B C D
E F G H

Israeli

Aircraft Type: eight Mirage IIICJ's
Movement Allowance: 5
Throttle Setting: 5
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: none
Hexes: F1004, F1204, F1308, F1507, F0502, F0603, F0606, F0708
Altitude: 4
Heading: NE
Armament: two 1000 lb. bombs with shaped charged warheads each.

Iraqi

Aircraft Type: eight Hunter F.6's
Movement Allowances: (#1-6) 6; (#7-8) 5
Throttle Settings: 5
Energy Pts: (#1-6) 8; (#7-8) 6
Acceleration Pts: 8
Wings: (#5-6) 45° left bank; all others: level
Dive/Climb: (#1-6) Type I Dive; (#7-8) Level Flight

Missiles: none
Hexes: (#1) F1214; (#2) F0915; (#3) E1410; (#4) E1412; (#5) A1516; (#6) A1216; (#7) B0509; (#8) B0611
Altitude: (#1-6) 8; (#7-8) 14
Heading: (#1-2) N; (#3-4) NE; (#5-6) SSE; (#7-8) S

Optional Rules:

Sun Direction: Northeast
Pilot Capability: Roll for each aircraft, Table 2 for the Israelis, table 4 for the Iraqis (this was an elite Iraqi squadron, combat experienced against Kurdish rebels).
Bombing and Ground Installations: See Special Rules.

Victory Conditions: The Player who achieves the higher Victory Point total wins the game. If both Players have the same number of Victory Points, the game ends as a draw. The Iraqi Player is awarded five Victory Points for each Mirage he destroys and two Victory Points for each that jettisons its munitions. The Israeli Player receives two Victory Points for each Hunter shot down and a number of Victory Points for each target destroyed through bombing. The Victory Point awards for bombing targets are as follows:

MiG-15	4 VP
Building	4 VP
Truck	2 VP
POL dump	4 VP
Ammo dump	4 VP
37mm AA gun	2 VP
23mm AA gun	1 VP

Special Rule: The Iraqi Player must place the following target markers on the game-map at the start of the game:

Building markers (small masonry): H1212, H1213
Building markers (small steel): H1312
Truck markers: H1311, H1113
MiG-15 aircraft counter (Parked aircraft): H1211, H1214, H1218
Dump marker (POL dump, open): H1012
Dump marker (ammo dump, revetted): H1216
AA gun markers (37mm, no radar): H0516, H1610, H1208.
AA gun markers (23mm, no radar): H1217, H1010, H1410, H1515

The Iraqi Player may use the AA guns to fire at aircraft as per 26.0.

[107.25] Crusaders and Frescoes 21 June, 1967

General Situation: Four F-8E Crusaders from the carrier *Hancock* were circling a downed U.S. pilot when they encountered North Vietnamese resistance. First, one Crusader stopped a flak shell and they were then bounced by a flight of MiG-17's. In a fierce low-altitude dogfight, one of the Crusaders was shot down. The remainder used their superior speed to escape, but after the MiG's broke off, LT Vampatella (in F-8E #4) turned his F-8E around and evened the score by blasting a MiG on its way home to base.

Map Arrangement:

north
A B C
D E F

U.S. Navy

Aircraft Type: four F-8E's
Movement Allowance: 4
Throttle Setting: 4
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 4 Early Sidewinders each
Hexes: (#1) A0705; (#2) 0709; (#3) F0310; (#4) F1617
Altitude: (#1 and #2) 7; (#3 and 4) 14
Heading: NNW
Damage: F-8E #4 has already taken four Damage Points

People's Air Force of Vietnam

Aircraft Type: six MiG-17C's
Movement Allowance: 5
Throttle Setting: 5
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Atolls each
Hexes: (#1) A1214; (#2) A1015; (#3) A1516; (#4) B0117; (#5) D1210; (#6) D1412
Altitude: (#1-4) 10; (#5-6) 14
Heading: N

Special Rules: All terrain is considered to be two levels high. Any aircraft flying at level 1 or 2 hits the ground. All hexes are assumed to have clouds in them at level 16 except any hex within two hexes of hex 0809 in any map (gaps in the overcast).

Optional Rules:
Sun Direction: West

Game Length: 20 Game-Turns

Victory Conditions: The Player who achieves the higher Victory Point total wins the game. The U.S. Navy Player is awarded one point for each F-8E on map sections A and B of the original map arrangement and one point for each MiG-17 shot down. The North Vietnamese Player is awarded two Victory Points for each F-8E shot down. If both Players have the same Victory Point totals, the game is a draw.

[107.26] Over Tawi Bridge 8 December, 1971

General Situation: In a resurgence of Pakistani air activity over the Western Front, Pakistani MiG-19's made a strike at Indian close-support aircraft. In this case, the intended victims, a flight of Indian Hawker Hunters, turned the tables on the Pakistanis and destroyed three MiG-19's for the loss of one of their own number.

Map Arrangement:

north
A B
C D

Indian A.F.

Aircraft Type: four Hawker Hunters
Movement Allowance: 4
Throttle Setting: 5
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Type I Climb:
Missiles: none
Hexes: (#1) C1004; (#2) C1202; (#3) B0912; (#4) B1009
Altitude: 5
Headings: (#1-2) NNW; (#3-4) NW

Pakistani A.F.

Aircraft Type: four MiG-19's
Movement Allowance: 5
Throttle Setting: 5
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Early Sidewinders each
Hexes: A1002, A1202, A1305, A1307
Altitude: 4
Heading: NE

Optional Rules:
Sun Direction: Northeast

Victory Conditions: Each Player receives two Victory Points for each Enemy aircraft shot down, one for each Enemy aircraft that takes enough damage for it to operate under Loaded Conditions (17.0), and in addition, the Indian Player receives ½ Victory Point for each Hunter that is not shot down. The Player with the greater number of Victory Points at the end of the game is the winner. If the Players have an equal number of points, the game is a draw.

[107.3] COMPLEX SCENARIOS

[107.31] The Death of Major Lodge 10 May, 1972

General Situation: A flight of the 555th Tactical Fighter Squadron, the "Triple Nickle MiG Killers," were on MiGCAP when they picked up a flight of MiG-21's on their radar. Leading the flight in F-4D #1 was Major Robert A. Lodge with Capt. Roger Lochner in the back seat, a pair which had already accounted for two MiG's. Flying Lodge's wing in #2 was 1st Lt. John Markle and Capt. Stephen Eaves in the back seat. Leading the second element in #3 were two new guys, Capt. "Steve" Ritchie and Capt. Chuck de Bellevue, covered by 1st Lt. Tom Feezel and Capt. Lawrence Pettit in #4. All four F-4D's engaged the MiG-21's at long range with AIM-7 Sparrows. The MiG's must have seen the missiles too late; Lodge's, Markle's, and Ritchie's Phantoms all scored kills within a few seconds. But now the tables were turned, as four MiG-19's appeared out of nowhere and closed in on the Americans' tails. Led by the capable Senior Lt. Le Thanh Dao with two Americans already to his credit, the MiG-19's had been part of a tactical sandwich along with the MiG-21 flight. In a turning dogfight, Dao got behind Lodge's Phantom and triggered off an Atoll. The F-4 was hit and spun into the ground. Surprised, the rest of the F-4 flight were unable to destroy any of the MiG-19's.

Map Arrangement:

north
A
B
C
D
E F G
H

People's Air Force of Viet Nam

Aircraft Type: four MiG-21's (early)
Movement Allowance: 6
Throttle Setting: 6
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: two Atolls each
Hexes: (#1) A1115; (#2) A1313; (#3) A0713; (#4) A0409
Altitude: 70
Heading: S

U.S.A.F.

Aircraft Type: four F-4D's
Movement Allowance: 7
Throttle Setting: 7
Energy Pts: 0

Acceleration Pts: 0
Wings: level
Dive/Climb: Type I Climb
Missiles: All aircraft have four AIM-9D, two AIM-7D
(note that eight missiles are in flight as the scenario begins)
Hexes: (#1) F0612; (#2) F0317; (#3) F1115; (#4) F1417
Altitude: 64
Heading: N

Optional Rules:
Sun Direction: East
Pilot Quality: F-4D's #1 and #3 are crewed by Honchos. MiG-19 #1 is flown by a Honcho. MiG-21's #2 and #4 are flown by novices.

Game Length: 25 Game-Turns.

Special Rules:

The MiG-21's do not have visual contact with either the F-4D's or the Sparrow missiles at the start of the scenario, but they use visual or radar search to attempt to detect them.

In addition to the four MiG-21's on the map at the start of the game, the North Vietnamese Player also receives four MiG-19C's. These airplanes enter play in a unique manner to simulate the fact that they took the Phantoms by surprise. At the end of each Advantaged Aircraft Movement Segment, the North Vietnamese Player rolls one die. If a six is rolled, the four MiG-19's enter play. The North Vietnamese Player may place them in any hexes on the edges of map segments E, G, and H. Each MiG-19 Farmer-C may have any Wing Attitude and permissible Movement Allowance and Throttle Setting the North Vietnamese Player chooses. Moreover, they may be in any Type climb or Level Flight. Each MiG-19 is armed with two Atolls. Each has accumulated no Energy or Acceleration Points. The North Vietnamese Player may choose each MiG-19's heading. Finally, the Altitude of each MiG-19 when it is placed on the map, must be within 10 levels of the Altitude of an F-4.

Each F-4 has a radar lock-on on one of the MiG-21's at the beginning of the game. F-4 #1 is locked on to MiG-21 #3. F-4 #2 is locked on to MiG-21 #4. F-4 #3 is locked on to MiG-21 #1. F-4 #4 is locked on to MiG-21 #2.

Eight AIM-7D (early Sparrow) radar homing missiles are already in flight at the beginning of the game. The missiles, located in the following hexes, have been in flight for two Game-Turns: #21: D0313, #22: D0609, #23: D1111, #24: D1415. The missiles located in the following hexes have been in flight for one Game-Turn: #25: F0307, #26: F0603, #27: F1106, #28: F1407. All missiles are at their maximum speed, in level flight, and have no turn points accumulated. Moreover, the missiles are tracking the MiG-21's as indicated below:

Missiles #21 and #25 are tracking MiG-21 #4
Missiles #22 and #26 are tracking MiG-21 #3
Missiles #23 and #27 are tracking MiG-21 #1
Missiles #24 and #28 are tracking MiG-21 #2

Victory Conditions: The U.S.A.F. Player receives two Victory Points for each MiG destroyed and one point for each which suffers enough damage to put it into loaded condition. The North Vietnamese Player receives four points for each F-4 destroyed and one point for each F-4 which suffers enough damage to put it into loaded condition. The Player with the higher total of Victory Points at the end of the game wins. If both Players have the same total, the game ends as a draw.

[107.32] Over the Golan
June 27, 1979

General Situation: Under pressure from other Arab nations, the Syrians sent up a gaggle of MiG-21F's to intercept Israeli planes striking Palestinian terrorist bases. The MiG's themselves were intercepted by the Israeli top-cover, which consisted of Kfirs and American supplied F-15's. The Israeli's downed five MiG's without loss, in the first confirmed combat action of the F-15.

Map Arrangement:

north
A B
C D
E F

Israeli

Aircraft types: two F-15A's; two Kfirs
Movement Allowance: F-15's: 8; Kfirs: 6
Throttle Setting: 4
Energy Pts: 3
Acceleration Pts: 0
Wings: level
Dive/Climb: Type I Dive
Missiles: Kfirs: 4 Shafrirs each; F-15's: 4 Shafrirs and 4 Sparrows each.
Hexes: (F-15 #1) E0806; (F-15 #2) E0407; (Kfir #1) E1212; (Kfir #2) E1513
Altitude: 47
Heading: N

Syrian

Aircraft: twelve Mig-21F's
Movement Allowance: 4
Throttle Setting: 4
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: 2 Atolls each
Hexes: (#1) B0717; (#2) B0917; (#3) B0614; (#4) B0513; (#5) B1013; (#6) B1213; (#7) B0911; (#8) B0809; (#9) B0405; (#10) B0605; (#11) B0303; (#12) B0201
Altitude: (#1-4) 38; (#5-8) 40; (#9-12) 42
Heading: All SSW

Optional Rules:

Sun Direction: East
Pilot Capability: Both F-15 pilots are Honchos. Both Kfir pilots are normal. Syrian pilots #1,5, 10 and 11 are novices. Pilots #8 and 12 are turkeys. All other Syrian pilots are normal.

Victory Conditions: The Israeli Player receives 2 Victory Points for each Syrian plane shot down, and 1 point for each Syrian plane that takes enough damage to force it to fly under loaded conditions (planes that are shot down are only worth two points whether they were previously forced to operate under loaded conditions or not). The Syrian Player receives 10 points for each F-15A shot down, and 5 points for each Kfir shot down. The Syrian Player does not receive any points for damaging planes.

[108.0] SCENARIO TYPES

CASES:

[108.1] SCENARIO TYPE EIGHT: CLOSE AIR SUPPORT

General Situation: Close air support is an air-to-ground mission performed against enemy troops which are in contact with friendly troops. It is difficult because in addition to having to bomb very accurately, aircraft must also watch for enemy fighters and ground fire.

Map Arrangement:

north
A B C
D E F

Hills: The 0908 and 0415 hexes of each map section are hilltops. They are at an elevation six levels greater than the rest of the hexes. All hexes adjacent to a hilltop hex are four levels above the rest of the terrain and all hexes two hexes from a hilltop hex are two levels above the rest of the terrain.

Game Length: 35 Game-Turns

Victory Conditions: Victory is based on Victory Points. The Player with the higher Victory Point total at the end of the game wins. If both Players have the same number of Victory Points, the game ends as a draw. Each Player receives the following Victory Points for each enemy target destroyed:

Tank	6 VPs
Light AFV	4 VPs
AA gun	5 VPs
SAM launcher	8 VPs

Moreover, for each Enemy air-ground aircraft destroyed, a Player receives a number of Victory Points equal to the air-ground point value of the aircraft. Similarly, for each enemy air defense aircraft destroyed, a Player receives a number of Victory Points equal to the air-air point value of the aircraft. Friendly targets and aircraft destroyed by mistake count as double point value to the enemy (due to morale effects).

Deployment: Each Player has four basic forces:
1. A number of air to ground aircraft
2. A number of air defense aircraft
3. Several tanks (positioned on the map at the start of the game)
4. Several AA guns and SAM launchers (on the map at the start)

The composition of the air-ground forces and air defense forces is determined by the Players. They may do this by mutual consent or they may use a mutually agreed upon number of points with which they can "buy" air-ground and air defense aircraft. The cost for an air-ground aircraft equals its air-to-ground point value. The cost of an air defense aircraft equals its air-to-air point value. These values appear on each aircraft's Aircraft Performance Chart. The air-ground aircraft are bought with the air-ground points the Players have by agreement, while the air defense aircraft are bought with the air-air points the Players have.

Munitions, missiles, and ECM are determined according to the time period and nationality of each Player's forces. The Players should consult Section 33.0 for available equipment.

Note that usually a good game would have four air-ground and two air defense aircraft on each side.

Both sides' aircraft must enter the map area at any time in the first three Game-Turns. Each Player must write down all pertinent entry information before the start of the game: this includes the aircraft's entry hex, Movement Allowance, Throttle Setting, Dive/Climb, Altitude, Heading, munitions and missiles. Player A's aircraft may enter at any hex on the north edge of the map and Player B's aircraft may enter at any hex on the south edge of the map. Players may choose which Altitude, Movement Allowance, Throttle Setting, Dive/Climb and Heading their aircraft have when they enter. All aircraft have no Energy Points and no Acceleration Points, and all have level Wings at the start of the game.

As no aircraft have visual or radar contact with any air or ground targets, the flight of each aircraft and its search must be plotted as per Case 29.4.

Placement of Ground Targets

Each Player places his ground targets on the map sections at the start of the scenario as follows:

Player A

Tanks: A1017, A1316, A1513, B0415, B0615, B0918, B1216, B1515, C0316, C0617.
Light AFV's (APC's): A0416, A0914, B0313, B0912, B0913, B0914, C0813, C1316, C1617.
Anti-Aircraft guns: A0908, C0908
SAM launchers: B0908

Player B

Tanks: D1002, D1601, D1403, E0601, E0901, E1201, E1503, E0201, E0402, E1401
Light AFV's (APC's): D0302, D0703, E0202, E0405, E1104, E1409, E1606, E1508, F0903
Anti-Aircraft guns: D0908, F0908.
SAM launchers: E0906

Optional Rules:

The Players may use any or all optional rules, but the rules for bombing and visual and radar search must be used.

[108.2] SCENARIO TYPE NINE: LOW LEVEL PENETRATION

General Situation: This scenario represents an attempt by an aircraft — either a bomber or a tactical reconnaissance aircraft — to get past an interceptor and exit the map area. In the case of aircraft carrying cruise missiles, all that is necessary is for the missiles to exit.

Map Arrangement:

north
A B C D E F

Side A (Penetrator)

Movement Allowance: any
Throttle Setting: any
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: as carried by aircraft
Hex: A0901
Altitude: 1 or 2
Heading: W

Side B (Interceptor)

Movement Allowance: cruise speed
Throttle Setting: cruise speed
Energy Pts: 0
Acceleration Pts: 0
Wings: level
Dive/Climb: Level Flight
Missiles: as carried by aircraft
Hex: F0918
Altitude: 22 minimum, 32 maximum
Heading: E

Optional Rules:

All aircraft start the game in visual and radar contact. Players may use any other optional rules.

If the Interceptor (Side B) Player believes that his aircraft is clearly inadequate to deal with his opponent's aircraft (e.g., Su-15 against a B-52 with ALCM's), he may use a second interceptor. The second interceptor begins the game exactly as the first does. It must be positioned within four hexes of the first aircraft.

Game Length: the Game continues until the penetrator has exited or has been destroyed.

Hills: The 0908 and 0415 hexes of each map section are hilltops. They are at an elevation six levels greater than the rest of the hexes. All hexes adjacent to a hilltop hex are four levels above the rest of the terrain and all hexes two hexes from a hilltop hex are two levels above the rest of the terrain.

Victory Conditions: Victory is based on Victory Points. The Player with the higher Victory Point total at the end of the game is the winner. If both Players have the same Victory Point total, the game is considered a draw. Victory Points are awarded as follows:

The Interceptor Player receives:

15 VPs for each ALCM (if used) which does not exit the east mapedge.
30 VPs for each penetrator destroyed.

The Penetrator Player receives:

15 VPs for each ALCM (if used) which exits the east mapedge.
15 VPs for each interceptor destroyed.
20 VPs for each penetrator that exits the east mapedge

Note that ALCM's which have not been launched have no effect on the victory conditions. That is, the Interceptor Player receives no Victory Points for ALCM's that were not launched and did not exit the east mapedge. Similarly, the Penetrator Player receives no points for ALCM's that have not been launched but have exited the east map edge.

DESIGNER'S NOTES

"A doctor buries his mistakes. A pilot is buried with his."

In the original *Air War*, I drew the analogy of the game as airplane. To continue with the analogy, this is the "-B" version. It's still the same basic airframe, but cleaned up and with additional capability. Like all improved aircraft, the improved and updated *Air War* costs more as well. But the basic design is the same. I have succumbed to the temptation to redesign parts of the game by using addenda. This may well have been a mistake, and I should have left well enough alone. But I realize now that many of the compromises I made in the name of playability were really not the best way things might have been done. Thus, you will see some compromises removed in the Update and as a result, things like the Bomb Forward Motion Chart appear. Many compromises are too intrinsic to the design to be changed. Don't get me wrong. I think *Air War* is a good game. But it reflects the state of the art circa 1976. One day, however, I would like to do another modern air game—I have some ideas that I think you may find interesting. But until this replacement comes off the drawing board, the Mark II *Air War* should be servicable for hours of flying and combat.

One change that merits some explanation is the modification to the Turning Modes and Wing-Overs and Split-S maneuvers. In the original game, in the name of ease of play, I compromised rate of turn and radius of turn, both sustained and maximum instantaneous "G" into the concept of the turning mode. This was probably not the best decision, I now believe, and in its unmodified form it will lead to some mistakes. So, in the first errata sheet, I made a "suggested change" and, when that proved effective, I had the Split-S and Wingover rules changed and Table 9.29 modified. Thus, you will find that aircraft and missiles turn slower and at a more realistic radius in the Updated *Air War* than in the original. You will also find Immellmanns, Split-S's, and Wingovers different in the Update. Other maneuvers introduced in the "New Maneuvers" section may also change your *Air War* tactics somewhat. It was a difficult decision to do this. I perhaps should have left well enough alone, but it disturbed me that a compromise should not have been completely effective.

The aircraft that appear in the Update were all democratically chosen by popular vote of *Air War* fans. If any of your favorites are missing, write in and we shall perhaps update it again. Due to limitations of time and budget, I was unable to take full advantage of all the possible alteration in the Charts booklet. I hope you'll be satisfied with the F-86A's and early model MiG-15's which will open up the glory days of "MiG Alley." It was not possible to do everything, and probably not even worthwhile.

Air War Update owes much to the squadrons of *Air War* fans literally all over the world, but special thanks must go to Robert Hopkins, an *Air War* ace whose unquenchable enthusiasm led him to originate several of the scenarios, special rules, and to do the physics behind the bomb forward travel rule, a superb effort for which I am most grateful. Gray Boak unceasingly championed the cause of Isaac Newton against my violations of the laws of physics and lent his aerodynamicist's skills to a great deal of the addenda. The ever-dynamic Damian "Captain Snake" Housman put in a repeat performance, including acting as opponent for many games of *Air War* and joining in on the chorus of many fighter pilot songs. Others who contributed ideas include Jerry Worley, Terry Terry, Robert Collins, Martin Spef, and many more gamers, including all those who sent in game questions (all of which were xeroxed and studied for errata). I also had the development help of Joe Perez and Anthony Buccini, a former F-104 pilot in the Royal Dutch Air Force. All these gentlemen are definitely "Sierra Hotel"!

AIR WAR UPDATE DESIGN CREDITS:

Design and Research: **David C. Isby**
Development: **Anthony F. Buccini, Joseph Perez**
Rule and Scenario Creation and Research: **Robert Hopkins**
Playtesting: **T. Hnatyshyn, Jacob Edwards, Scott Janssens, Tom Zombek, Pete Herzig, Bob Mandell, Winston Forrest**
Blindtesters: **Robert Hopkins, Gray Boak, Damian Housman, Paul Brown, Jay Vadanis**
Production: **Rosalind Fruchtman, Ted Koller, Manfred F. Milkuhn, Michael Moore, Bob Ryer**

AIRWAR ADDENDA

As of October 1979

[3.0] *Addition: Point Values.* The Point Values on each Aircraft Chart are for air-air/air-ground combat.

[7.2] *Clarification:* The last sentence at the bottom of the Table means the following: If there is an Enemy aircraft in the arc between the spotting aircraft and the sun (an arc that is sixty degrees total, extending thirty degrees on each side of the line between the spotting aircraft and the sun), then that Enemy aircraft is between the spotting aircraft and the sun for purposes of Initiative die-roll modifications.

[8.34] *Correction:* "Acceleration Gauge" means Acceleration progress.

[8.44] *Clarification:* Creeping acceleration may not occur in a dive when the Movement Allowance is at the Maximum for that Dive Type. *Correction:* Creeping Acceleration may occur when an aircraft is climbing. Acceleration by power, however, cannot occur for those aircraft who are not specifically capable of it.

[8.53] *Addition:* There is a limit to the number of Movement Points an aircraft may lose through Energy killing maneuvers. In addition to any Movement Points lost through Climbing and Rolling, an aircraft may only lose the maximum Movement Point cost for any Energy killing maneuver listed at the appropriate Altitude grouping.

[8.55] *Clarification:* This case is subject to Case 10.41 and the example of the F-4 pulling out in that Case should be examined.

[9.13] (Optional) *Addition:* Aircraft moving toward a hex-point move in a sequence of entering the right-front hex, then the left-front hex, as shown in the diagram appended to Case 9.12. This sequence should not be broken at the conclusion of a Movement Phase and may be "carried over" into the subsequent Movement Phase. This means that an aircraft that has moved toward a hex-point, and so ended its Movement Phase by entering the right-front hex, must at the start of the next Movement Phase, enter the *left* front hex. Otherwise, the aircraft would enter two right-front hexes in a row, forcing it to "slide" to the right. **Example:** If an aircraft begins its Movement Phase facing a hex-point and moves directly forward five Movement Points, Case 9.12 would require the aircraft to enter the hexes in the following order: right front, left front, right front, left front, right front (see 9.12 diagram). At the start of the aircraft's next Movement Phase, however, if the aircraft wishes to move straight ahead, it would *not* enter the right front hex as might seem to be required by Case 9.12. Rather, it would enter the *left* front hex, carrying on the sequence interrupted by the end of the aircraft's Movement Phase. Aircraft which may "carry over" the sequence in such a manner may be designated by putting an inverted counter under them.

[9.14] *Addition:* An aircraft may always roll at least one point even if it would not otherwise be capable of doing so (e.g., a Loaded Su-7).

[9.22] *Clarification:* Example: An aircraft with a Turning Mode of 3 and 25 Turning Points accumulated to the right enters a hex and, by expending one Movement Point above the normal one Movement Point required to enter the hex, the aircraft may accumulate another 20 Turning Points to the right. In this case, the first 5 Points of these new Turning Points would require the aircraft counter be turned one hex-point to the right. The player would then be left with 15 Turning Points (the remainder of the 20 accumulated that turn) accumulated to the right. If, on entering the next hex, the aircraft rolls left and turns to the left, thus accumulating 20 Turning Points to the left, it would then have 5 Turning Points accumulated to the left, as 15 of the Turning Points were required to move the Turn Point Marker from 15 Points Right to 0. *Clarification:* Aircraft are never compelled to accumulate the maximum possible number of Turning Points in a hex. Note that the Aircraft's Movement Allowance Marker is *not* adjusted to reflect the Movement Allowance in the accumulation of Turning Points or in rolling.

[9.23] (Optional) *Addition:* Aircraft which have moved through an odd number of hexes, however, can "carry over" the last hex they entered into their next Movement Phase. Thus, such an aircraft may, at the start of the next Movement Phase, accumulate Turning Points in the hex it occupies prior to movement. This is normally not permitted, and it is possible here only because the player "carries over" the Movement Point spent for entering the hex from the previous Movement Phase. Otherwise, aircraft with an odd Movement Allowance would be disadvantaged. Players should note such aircraft mentally or place an inverted counter on them.

[9.26] *Clarification:* In regard to aircraft which accumulate Turning Points in a series (e.g., 5/10/5), the series continues from Game-Turn to following Game-Turn.

[9.28] *Clarification:* An aircraft may accumulate Roll Points and Turning Points both in the same hex.

[9.41] *Clarification:* Aircraft may roll at any time during their Movement so long as they have sufficient Movement Points. *Addition:* An aircraft (except those in a Pull-Through) may be restricted in the number of Points it may roll in a Movement Phase to the number of points amount it can roll without Movement Point cost *if*, because of the expenditure of the Movement Point cost for rolling, the aircraft would move a number of hexes equal to or less than its Minimum Throttle Setting. Thus, Rolling cannot be used to excessively slow down an aircraft.

[9.53] *Addition:* **Exception:** Aircraft which are in inverted and in 45° or 135° banks and in Type II or III dives may turn at their Maximum Possible Turn Mode without losing Movement Allowance or Altitude as in Rule 9.55. This maneuver is called a MaxPerf Turn.

[9.55] *Clarifications:*

1. The Movement Allowance Marker is moved backwards to reflect the required loss of speed, and the altimeter is adjusted to show the loss of one level of altitude after the Movement Phase in which such losses occur.
2. For an aircraft to have its Movement Allowance and Altitude reduced under this rule, it must have accumulated Turning Points at its Maximum Turn Mode while its wings were vertical.
3. Note that the shift in the Movement Allowance may be partially or completely cancelled out by Creeping Acceleration in the next Acceleration/Deceleration segment.
4. When missiles turn at their Maximum Rate, they lose one Movement Point for the whole Phase, not one Point per hex.

[9.61] *Clarification:* The aircraft's Movement Allowance marker is *not* adjusted downward to show the effect of Movement Points expended for Rolling.

[10.28] *Clarification:* Note that the number found by cross-indexing the Levels Climbed and the Movement Allowance or Throttle Setting is the Maximum Movement Allowance. The aircraft's Movement Allowance may be less than this Maximum and it can be increased to this Maximum only through acceleration.

[10.3] *Correction:* The F-4E is at ML (not LO) Altitude. Add 60 to all altitude levels to represent this. *Clarification:* The Movement Allowance figures that comprise the body of each aircraft's Climb Chart are the *Maximum* Movement Allowance possible in that particular Climb. The Movement Allowance may be, and frequently is, less than this maximum. *Correction:* Paragraph 3, (b). Increase the Movement Allowance from 3 to 4. Next turn, it will increase to 5, trying to "catch up" with the Throttle Setting.

[10.4] *Addition:* An aircraft coming out of a dive into either level flight or a less steep dive has its Movement Allowance immediately reduced in certain circumstances. If its Movement Allowance in the dive is greater than its Maximum Movement Allowance in level flight or the less steep dive, the Movement Allowance is immediately reduced to the Maximum Movement Allowance (if in a Dive) or the Maximum Throttle Setting (if in level flight). It is then reduced an additional one Movement Point for the effects of Fade-Back Deceleration (8.55). If the aircraft's Movement Allowance is still greater than its Throttle Setting, it *must* undergo Deceleration (8.55). Note, however, that under no circumstances can an aircraft's Movement Allowance exceed its Maximum Throttle Setting (while in level flight) or its Maximum Movement Allowance as listed on the Dive Table (when diving). *Exception:* In certain situations, an aircraft cannot have its MA increased by going from a higher type of climb to a lower type or to level flight unless it could conceivably have "earned" the increase through acceleration, either by creeping or by power. Example of prohibited conduct: An F-4E begins a Movement Segment of its Movement Phase with a Throttle Setting of 8 and a MA of 2 at ML altitude. The F-4E goes into a Type I Climb. Its MA increases by 1 to 3 (heading towards the Maximum MA of 7 for that type of climb at that throttle setting) due to Creeping Acceleration. The next turn, the F-4E goes into a Type II Climb and climbs the three levels. Its maximum MA is four, so that its MA increases through creeping acceleration; it may not exceed 4 so long as the F-4E remains in a Type II Climb at ML altitude with a Throttle Setting of 8. On the next Game-Turn, however, the F-4E could not go back to a Type I Climb and claim the maximum MA of 7 for climbing one level with a throttle setting of 8. The F-4E *could* do this if it had been in a Type II climb for three Game-Turns, as in that number of Game-Turns, the F-4E *could have* "earned" (even if it was not able to increase its MA) the difference between four Movement Points and Seven Movement Points in creeping acceleration. The fact that it was not actually possible to so accelerate does not matter. This rule exists only to prevent a "free ride" acceleration of aircraft accelerating faster than they otherwise should by bringing the nose up, then down. It

would not prejudice the ability of, say, an F-4E at ML altitude with a Throttle Setting and Movement Allowance of 8 in level flight from: on the first Game-Turn it goes into a Type I Climb, climbs one level, MA of 7; Game-Turn 2: goes into a Type II climb, climbs three levels, MA of 4; Game-Turn 3: Returns to a Type I climb, climbs one level, MA of 7. Remember that Movement Allowance is the horizontal component of true velocity.

[10.41] *Addition:* If an aircraft pulls out of a dive (e.g., goes to a shallower type of dive or level flight) it *must* undergo Fade-Back Deceleration (8.55) for *one* Game-Turn if the difference between the aircraft's Throttle Setting and Maximum Movement Allowance is more than one, and for *one additional* Game-Turn for every two Movement Points difference between the aircraft's Throttle Setting and Movement Allowance. **Example:** An F-4E comes into level flight from a Type I dive at LO altitude with a Movement Allowance of 10. It goes into level flight with a Movement Allowance of 7 and its Throttle Setting remains at 3. On the first turn in level flight, the Movement Allowance is reduced to 6 (7 for the Maximum Movement Allowance and one for Creeping Deceleration). On the next Game-Turn, it is reduced by one as the F-4 has a difference of 3 (more than 2) between its starting Movement Allowance and its Throttle Setting.

[10.42] *Clarification:* The figures on the Aircraft Performance Charts Dive Tables under the "Lvls Dvd" column represent the maximum number of levels that can be dived at that type of dive (e.g., on the F-4 dive table, LO altitude, the four possible dives — two Type I and one each Type II and Type III — are for 1-2, 3-5, 6-15, and 16-18 levels respectively). If an aircraft goes from one Type of dive to another with less of a Maximum Movement Allowance (e.g., a MiG-17 diving at the Maximum Movement Allowance of 6 in a Type II dive at LO Altitude going into a Type III dive), its Movement Allowance cannot exceed the Maximum Movement Allowance for the new Type dive and must be reduced if necessary.

[10.45] *Addition:* Reduction in levels dived. Aircraft in a Type II or III dive (*not* a Pull-Through) have the maximum number of levels they can dive reduced if their Movement Allowance is less than the Maximum permitted at that Altitude. For every Movement Point less than the Maximum Movement Allowance in that type of dive that an aircraft has at the start of its Movement Phase, the maximum number of levels it can dive that Game-Turn is reduced by one. Thus, an F-4E with a Movement Allowance of 5 making a Type III dive at LO Altitude could lose only 14 levels — four less than the maximum — because its Movement Allowance is also four less than the Maximum.

[10.5] *Correction:* Third Paragraph, fourth line: "one Movement Point" should be "No Movement Points." Fifth Paragraph, fifth line: "two different kinds" should read "one kind."

[10.64] *Clarification:* Note that the sums of a and b (where applicable) are added together before being divided by three. *Deletion:* Delete the last sentence.

[10.67] *Clarification:* Energy Points are not expended (except for Pull-Ups) in a dive.

[10.68] *Clarification:* The one Energy Point loss due to Case 10.67 *must* count toward the loss in Energy Points required by Case 10.68. Energy Points lost under the provisions of Case 10.68, however, do *not* receive the benefits of Case 10.67.

[10.69] *Addition:* An aircraft which accumulates Turning Points at its maximum rate with its wings banked vertically in the same Movement Phase as it dives, has the amount of Energy Points it accumulates reduced by 50%.

[10.81] *Clarification:* Aircraft that *begin* a Movement Phase with a Movement Allowance of zero are subject to departing controlled flight. *Addition:* An aircraft is also subject to departing controlled flight if it does not move at least one hex *and* is not in the steepest type of climb the aircraft can make or in a Pull-Through. *Addition:* Aircraft in a Type II or III Climb or a Pull-Through are subject to departing Controlled flight only if their Movement Allowance is zero or they have not entered another hex in that Movement Phase *and* the aircraft has climbed a number of levels less than a sum equal to twice the aircraft's Minimum Throttle Setting. *Correction:* "Change" should read "chance." *Clarification:* An aircraft is subject to departing controlled flight if, in a Movement Phase throughout which it is in Level Flight or a dive, the aircraft did not move a number of Movement Points equal to its Minimum Throttle Setting. Note that the total Movement Point requirement *does* include the Movement Points gained by the expenditure of Energy Points

[10.84] *Addition:* In addition to entering a steeper dive, the aircraft may spin. The owning Player rolls one die for each aircraft which is not in controlled flight at the beginning of its Movement Phase. If the die-roll is one or two, the aircraft does not spin. Die-rolls of three, four, five and six cause the aircraft's nose to be moved three, four, five and six hex points respectively. On die-rolls of two and four, the aircraft's nose is moved clockwise. On die-rolls of three and five, the aircraft's nose is moved counter-clockwise.

[10.86] *Addition:* The probability for regaining controlled flight, however, can never be less than four minus the aircraft's Minimum Throttle Setting, regardless of pilot quality.

[11.12] *Clarification:* The reduction in Movement Allowance required by section (b) may be counted toward the reduction required by section (c). *Addition:* **Exception:** This Deceleration by Power does not occur in instances where it would make it impossible for the aircraft to make a Type III Climb (or II in the case of aircraft incapable of Type III climbs) at its new Throttle Setting. *Clarification:* Note that the automatic Deceleration by Power applies *only* on the Game-Turn in which an aircraft enters a Pull-Through from a Type III (or II) Climb. In subsequent Game-Turns in which it begins a Pull-Through, only the penalty in Case 11.17 applies; this is notwithstanding the example appended to that Case.

[11.13] *Correction:* Type III Dive should read Type III Climb.

[11.23] *Clarification:* When an aircraft enters a Type III Dive from a Push-Through, it is treated as "pulling up" into a less steep dive.

[11.3] *Correction:* Reduce all "Game-Turns in Type III climb" by 1. Aircraft with a "0" may execute the Wingover in the same Game-Turn as they enter a Pull-Through. Aircraft completing a Wingover are placed in a Type III climb from which they must pull out normally.

[11.4] *Correction:* Players should use these changes to the Split-S rules. Other than these changes, the Split-S rules remain the same.

1. Aircraft which have a "0" listed for their "Turns in Push Through" on the Flight Parameters chart may go from a Type III Dive into a Push-Through, execute a Split-S, and then be put back in a Type III dive all in one Turn. If, however, the aircraft has a Turning Mode of 2 or 3, it may be placed in a Type II rather than a Type III Dive at the Player's option.

2. Aircraft with a "1" or more in the "Turns in Push-Through" on the Flight Parameters Chart must begin that number of Movement Phases in a Push-Through before executing a Split-S. Thus, aircraft with a "1" may execute the Push-Through on the first turn the aircraft starts off in Push-Through.

3. Aircraft are placed automatically in the Type III Dive box after completing a Push-Through and must pull out of the dive normally.

[11.42] *Addition:* Aircraft should roll four points when completing a Split-S. As with a Wingover, there is no additional Movement Point cost for this roll.

[11.43] *Correction:* At the completion of a Split-S, an aircraft's Flight Attitude Marker is placed in the level flight box of the Flight Attitude Indicator, just as with a Wingover.

[11.44] *Clarification:* An aircraft's Movement Allowance when re-entering level flight from a Split-S is increased by a number of Movement Points equal to one-third (ignoring fractions) the number of Levels the aircraft dove in the last turn of the preceding Push-Through. This represents the "conversion" of the vertical vector of movement into the horizontal by bringing the nose up.

[11.6] *Correction:* Increase all "Game-Turns in Type III (or II) Climb before making Immelmann" by 2.

[11.62] *Clarification:* An aircraft with a Movement Allowance of one may make an Immelmann, expending that one Movement Point to perform the maneuver.

[11.71] *Clarification:* An aircraft need not be rolled in the direction in which it intends to make a lateral rudder roll. *Addition:* An aircraft may not perform any other maneuvers in the same Movement Phase in which it executes a Lateral Rudder Roll.

[11.81] *Addtion:* An aircraft may not perform any other maneuvers in the same Movement Phase in which it executes a Vertical Break.

[11.82] *Clarification:* The aircraft's Movement Allowance is reduced by one less than the number of Movement Points as stated on the Aircraft's Flight Parameters. This reduction takes place after the aircraft has completed its Movement. *Correction:* The Flight Attitude Marker is placed *two* boxes downwards.

[11.83] *Clarification:* The aircraft must either execute a dive or go toward a dive (i.e., move the Flight Altitude Marker downward) on the Game-Turns following a Vertical Break.

[13.0] *Addition:* More than one aircraft may occupy the same hex, even at the same altitude. Aircraft may engage in combat with aircraft occupying the same hex, treating it as occurring at a range of at least one hex, provided the firing aircraft could have fired at the target aircraft from the level it maintained in the hex from which it entered the target hex.

[13.17] *Correction:* The words Pull-Through and Push-Through should be transposed.

[13.18] *Addition and Clarification:* An aircraft may engage in cannon combat if it successfully attempted a lock-on. Note, however, that Case 13.18 does not apply to F-14, F-15, Tornado ADV, and Foxbat-E aircraft.

[13.19] *Clarification:* Additionally, an aircraft may not engage in Cannon Combat if, in its previous Movement Phase, it has:

1. Performed a Lateral Rudder Roll (11.74)
2. Performed a Barrel Roll (11.93)
3. Rolled six or more points.
4. Rolled four or more points and "jinked" (accumulated Turning Points in two different directions).

[13.29] *Addition:* **Exception:** Fire from rear-mounted bomber guns (those on the B-1, B-52, and Tu-26B) that is in the frontal arcs of their target aircraft is not reduced. It is considered to be a normal, rear-arc shot. Rear-mounted bomber cannon are never subject to reduction in effectiveness due to firing at the frontal arc of an enemy aircraft.

[14.14] *Clarification:* Note that for use of Heat-Seeking Missiles, an aircraft has the same tracking cone as the missile it is attempting to fire. *Clarification:* The aircraft tracking cone type is listed on 28.1, Radar Chart, not on each Aircraft Performance Chart.

[14.15] *Correction:* In the last sentence, **8** should read **80**.

[14.16] *Correction:* The word "below" in italics, ninth line, center column, should read "above."

[14.17] *Correction:* An aircraft pointed at a hex-point has its "Slot" hexes slightly altered when the aircraft has Turning Points accumulated to the right. In that case, the hexes immediately to the left of the slot hexes (see diagram) at one, three, and five hexes range are treated as slot hexes instead of the hexes marked as slot hexes in the diagram. The slot hexes as they appear in the diagram are correct when the aircraft has no Turning Points accumulated or has Turning Points accumulated to the left. The rationale for this correction becomes obvious when you bear in mind where the nose of the aircraft is actually facing.

[14.19] *Clarification:* An aircraft may not launch a missile if, in its preceding Movement Phase (which occurred on the previous Game-Turn), it performed any of the actions which would prevent Cannon Combat under the provisions of Case 13.19.

[14.26] *Clarification:* Remember that a Missile, at the moment it is launched, acquires the same number of Turning and Energy Points that its launching aircraft has.

[14.35] *Clarification:* Remember, SAM's, like all other weapons, include the vertical distance in their ranges.

[14.36] *Clarification:* The maneuvers missiles perform need not be precisely the same as those which the target aircraft performed, and they need not perform them in the same Movement Phase. *Clarification:* Thus, an air-to-air missile may execute any maneuver its target performs if this is required for the missile to home in on that target.

[14.37] *Clarification:* A missile in a dive need not increase its Movement Allowance by the Maximum possible addition (Case 10.42, 2nd paragraph applies here). *Addition:* Only SAM's may make Immelmann and Wingover maneuvers in the same manner as aircraft, if this is necessary for them to track and strike their targets. They may do this even if the target aircraft does not make an Immelmann or Wingover maneuver. The SAM's perform this maneuver in exactly the same manner as aircraft. However, the number of Turns a SAM must spend in a Type III Climb before making an Immelmann or Wingover maneuver, is not shown on the missile's performance Chart. Rather, it is determined by cross-referencing the Turn Mode of the missile with the maneuver to be performed on the chart below.

	Turn Mode						
	4	5	6	7	8	9	10
Turns in Type III Climb before Immelmann	1	1	2	2	2	3	4
Turns in Type III Climb before Pull-Through	1	1	1	1	1	2	3

[14.41] *Clarification:* If a missile moves through a hex containing the target aircraft at the same Altitude level as the target at any time during the *missile's* movement (*not the target's movement!*), the target is considered destroyed.

[14.44] *Optional Addition:* **Exception:** If an aircraft is hit by an Early Sidewinder or Atoll R.530, SA-2, SA-3 Missile, it is not automatically destroyed. Rather, the owning Player may roll two dice for a Saving Throw. If the required probability number is rolled, the target aircraft is not destroyed, but rather loses half of its Damage Capacity (rounding upwards). The maximum probability numbers for this saving throw depends on the aircraft's Damage Capacity and are as follows: Damage Capacity 1-6: PN of 1; DC 7-12: PN of 2; DC 13-18, DC of 4; DC of 19+: PN of 6.

[15.23] *Clarification:* This procedure is altered slightly for targets which are at a range that is *less* than six hexes. In such a case, the Target Marker is not placed four hexes away from the target aircraft, but rather it is placed halfway between the Minimum Range of the missile (usually the hex two hexes in front of the firing aircraft) and the target aircraft. Note that Heat-Seeking Missiles may never be fired at a target less than two hexes away. If they are fired at such a target, all Heat-Seeking Missiles go ballistic and are lost.

[16.28] *Clarification:* An aircraft may maintain a radar lock-on even while the aircraft itself is performing maneuvers.

[16.52] *Addition:* If the firing aircraft's lock-on is broken, a radar homing missile will continue to track its target, *if* another Friendly aircraft of the same type as the firing aircraft has a lock-on on the same target at the instant the firing aircraft's lock-on is broken. *Addition:* When firing the AIM-54 Phoenix RH missile, only condition "B" need be fulfilled. The Phoenix is a "fire and forget" missile and it does not matter if the firing aircraft no longer is tracking the target.

[16.63] *Addition:* The second part of the first sentence should read: add three for each hex-point turned by the target aircraft (including those turned through maneuvers); add to the number for the effects of ECM (see Radar Counter Measures, Section 24.0) and subtract the Enemy (non-target) aircraft's Radar Lock-On Strength. (See Case 24.15 for an example).

[17.1] *Clarification:* Aircraft carrying only 25% or less of their maximum ordnance load are not considered loaded due to carrying this armament.

[17.11] *Clarification:* Note that when an aircraft's Loaded characteristics say that its MA in a dive may not exceed its Maximum Throttle Setting, that is *after* any other subtractions from its Maximum MA in a dive, such as that required in Case 10.44.

[17.12] *Correction:* "Two pods" should read "one pod."

[19.28] *Addition:* An aircraft at an Altitude level from 60 to 160 in a cold climate will stream contrails. The effect of contrails is to cause three to be added to the aircraft's Size Multiple for visual spotting purposes only. In addition, any aircraft with four or more engines will leave a cloud marker in each hex through which it passes while streaming contrails. These clouds dissapate after 80 Game-Turns. Note that Players will have to use their own judgment in determining whether a scenario is taking place in a cold climate.

[19.34] *Clarification:* Note that if an aircraft spots a missile, it does not necessarily spot the firing aircraft. Each search must be resolved separately.

[19.51] *Clarification:* Although all Friendly aircraft are considered to have been warned of the Enemy aircraft when the first Friendly aircraft spots one, and thus are released from pre-plotted courses and similar considerations, each Friendly aircraft must *still* spot each Enemy aircraft visually for combat searches. This is accomplished through the usual visual search procedures, although aircraft attempting to visually spot Enemy aircraft that have already been visually spotted by Friendly aircraft have the final PN for attempting to spot them visually increased by 50%. (This duplicates the familiar situation where the wingman has spotted a target "big as a house" while the leader can't seem to locate it).

[19.55] Aircraft with TISEO capability (e.g., F-4's, F-14's) has its probability of visual spot of a target aircraft increased by + ½ PN of spotting.

[19.8] *Clarification:* Aircraft in clouds cannot search visually (see case 22.22).

[20.0] *Clarification:* Surface-to-Air Missiles may be detected only by Radar Search by aircraft with a Radar Search Strength of 9 or 10. For Radar search purposes, the size multiple of all SAM's is reduced by 50% (rounding down). Air-to-air missiles may never be detected in flight by radar search.

[20.17] *Addition:* **Tail Mounted Radar**
In recent years, B-52 and Tu-26B aircraft have had radars installed to look behind them. These radars are mounted in the aircraft's tails, and thus a search arc is determined from that point. Note that these radars are in addition to those mounted in the aircraft's nose. They are used normally and their characteristics are found in Table 28.1

[20.31] *Clarification:* Add after last sentence. However, if the aircraft which obtained radar contact subsequently has its contact broken, all unearned radar contacts are broken as well. "Unearned" radar contacts can be converted into normal radar contacts by going through the normal procedure, but with basic PN increased by 50%.

[20.36] *Clarification:* Note that this is only the case when the newly spotted aircraft is within the spotting aircraft's radar search arc, if it has one.

[20.92] *Addition:* If the dropping aircraft is an F-111 or A-6, add ½ PN regardless of whether it is day or night.

[21.23] *Addition:* If a Turkey attempts the following maneuvers: a Wingover, Immelmann, Lateral Rudder Roll, Vertical Break, or Barrel Roll, he must roll two dice, with a Probability number of 7 of immediately departing controlled flight. If a Novice attempts a Vertical Break or Lateral Rudder Roll, he has a Probability number of 3 of immediately departing controlled flight.

[21.24] A Novice has the Turn Mode of his aircraft increased by one (e.g., a Turn Mode of 3 is treated as a Turn Mode of 4). A Turkey has his Turn Mode increased by two. Novices also have all Game-Turns expressed in the Flight Parameters table increased by one Game-Turn. Turkeys have them increased by two Game-Turns.

[22.12] *Clarification:* For visual search, of course, the reduction takes place if the aircraft is *searching* in the direction of the sun.

[22.23] The last sentence in step C should read: The difference in altitude levels between the firing/searching aircraft and *other aircraft* must equal this.... (Note that this range is counted including two levels as one hex.)

[23.0] *Clarification:* Aircraft using radar may not attempt infra-red contact from *forward-looking* infra-red detectors. F-106's have forward-looking infrared detectors.

[23.24] *Clarification:* An aircraft may drop only one flare per Game-Turn (it represents several flares of varying intensity).

[24.13] *Correction:* The words "one hex" should read "three adjacent and contiguous hexes along the aircraft's flight path."

[24.15] *Clarification:* This includes Corridor Chaff and Chaff Rockets as well.

[24.24] *Clarification:* If more than one radar-equipped aircraft searches for an ECM-equipped aircraft, the ECM-equipped aircraft may reduce the effectiveness of all the radars attempting to obtain or maintain contact or lock-on.

[24.36] *Clarification:* If aircraft have lost contact for any reason (including by virtue of Case 24.39, Deception Jamming), they must re-search and obtain a new contact.

[24.4] *Clarification:* Radar Detectors detect lock-ons during the first Game-Turn of lock-on attempt.

[24.46] *Clarification:* "Enemy aircraft" should read "enemy aircraft or ground radar."

[24.54] *Clarification:* If an aircraft is protected by a Wild Weasel, it may use either the Wild Weasel's or its own ECM for radar jamming, breaking lock-on, and so forth.

[24.56] *Omission:* The Ranges of Jamming are: MiG-23CWW: 36 hexes; F-4GWW: 48 hexes; EF-111EWW: 60 hexes; F-105GWW: 36 hexes pre-1973 and 48 hexes post-1973. For Arcs of Jamming, see Case 24.56.

[24.71] *Omission:* The EF-111EWW should use the same table as the F-4GWW. The F-111A, C, D, and E should use the ALQ-87/91 table (ignoring line 5) prior to 1978 and the ALQ-119M table thereafter.

[25.22] *Clarification:* Aircraft may drop bombs in the same Game-Turn in which they fire their cannon.

[25.41] *Clarification:* The range of 12 hexes does not include levels of altitude.

[25.44] *Addition:* The Harrier also has a laser target designator.

[25.46] *Addition:* If an A-10 is attacking a ground target which is spotted by an F-4E, F-16, F-18, A-6, F-111 or Tornado IDV and that aircraft also has a radar lock-on to that hex, the A-10's probability number for hitting that target with any ordnance other than PGM's is increased by 50%.

[25.62] *Addition:* Shrikes or AS-7's may not be used against a target unless that target has fired or used its radar at least once in the preceding 20 Game-Turns. For Standards and Harms, this figure is increased to 60 and 80 respectively. *Addition:* An anti-radiation missile must attempt to lock-on to the emitter which it is attempting to destroy. The probability numbers for lock-ons are: Shrike: 26; ARM: 28; HARM: 30; AS-7: 20. To obtain a lock-on, the emitter radar must fulfill the requirements of Case 25.62. If the firing aircraft has a radar spot of the ARM's target, add *four* to the probability number for a lock-on. The anti-radiation missile may be fired during the subsequent Missile Launch Phase once lock-on is maintained.

[26.27] *Clarification:* The AIM-9 Chapparel, used as a SAM, is mounted on a quadruple launcher.

[26.35] *Clarification:* All ground-based radars, including those of AA guns, are subject to this restriction. Thus, a gun cannot fire at an aircraft it cannot see or an aircraft its radar cannot detect.

[27.0] *Clarification:* Note that aircrew normally eject after their aircraft has been shot down. Those aircrew who, for some reason, wish to eject before having been shot down, add 10 Probability Numbers to their chance of safely ejecting.

[28.3] *Correction:* The MiG-23WW may carry 4 ASM. *Clarifications:* The chart should actually be called "Aircraft Munition Characteristic Table". Accuracy Multiple and "accuracy number" mean the same as "Altitude Multiple".

[30.21] *Correction:* MiG's Throttle Setting is 5.

[30.34] *Clarification:* The MiG-21's are *C* Models.

[30.35] Players should note that the U.S. Player may arm his Wild Weasels with Shrike ARM's.

[33.0] *Additions:*

9. *India-Pakistan War (1971),* India v. Pakistan

10. *Ogaden War (1977-78),* Ethiopia v. Somalia

11. *Egyptian-Libyan Fighting (1977),* Egypt v. Libya

12. *War of Ugandan Liberation (1978-79),* Tanzania v. Uganda and Libya

13. *Sino-Vietnamese War (1979),* China v. Vietnam

[33.1] *Corrections:*

Iran
75- F-14A
Ethiopia
77- MiG-21 (late)
Somalia
76- MiG-21 (late)
Vietnam
10 May 1965 should be 10 May 1972

[33.1] Aircraft Availability *(Additions)*

The following are nations which have purchased additional aircraft since the original listing was compiled:

Spain: F-4C, RF-4C (69-)
Australia: A-4G (66-), RF-111C (79-)
Indonesia: A-7 (77), F-5E (77-)
Morrocco: F-5E (76-)
Taiwan: F-5E (77-)
Tunisia: F-5E (75-)
Venezuela: F-5E (75-)
North Yemen: F-5E (78-)
Phillipines: F-5E (76-)
Saudi Arabia: F-15 (81-)
Turkey: F-4E (72-)
Chile: A-4F (74-)
Brazil: A-4F (74-), F-5E (73-)
Argentina: A-4F (74-), Neshr (78-)
Peru: F-5E (74-)
Egypt: F-5E (80-), F-4E (81-), F-9 (79?)
Libya: MiG-27 (79-), MiG-25A (79-)
Cuba: MiG-23B (78-), MiG-27 (78-)
Mozambique: MiG-21 late model (78-)
India: Jaguar (80-)
Portugal: F-5E (81-)
North Korea: MiG-23B (79-)
Oman: Jaguar (78-)
Soviet Union: Foxbat-E (81-), AAFL (83-)
Finland: MiG-21 late (79-)
Sudan: MiG-21; late (73 –), Mirage V (78 –)
Japan: F-15 (81-)
Vietnam: F-5E (75 –)
Honduras: Neshr (79-)
Venezuela: Mirage V (73-)

[33.16] *Addition:*

Canada

51-68	F-86
64-	CF-104
83-	F-16, F-18 or F-14

Air Crew Quality:

48-57	2
58-64:	3
65-78:	4
79+:	4

Yugoslavia (Neutral)

58-	F-86E
63-	MiG-21 early

Air Quality: 5

[33.2] *Additions:* Mirage F.1 normally carries Magics. JA 37's will use late model AIM-7F, AA-3 used by Su-15's, Red Top by Lightnings (no other missiles on Lightnings).

[33.6] *Correction:* Corrdior Chaff pods have forty Game-Turns worth of chaff.

Aircraft and Missile Control Charts: Clarification: All speeds are in Knots *true* Air Speed.

Basic Fighter Maneuvers, Fig. 1 *Addition:* Note that the MiG would need to have 5 (or more) Turning Points already accumulated before moving to turn one hex point. Note also that after each aircraft moves, its Movement Allowance and Altitude markers on their Control chart are adjusted as both aircraft have accumulated Turning Points at the Maximum Rate with their wings banked at a 90° angle (the only way you can accumulate Turning Points at the maximum rate except in a Type II or III dive). The MiG has its MA marker reduced by 2 and the F-4 (being an unslatted "D" model) has its Movement Allowance marker reduced by one. (This information may be found in the Flight Parameters Chart of each aircraft). Both aircraft also have their altitude decreased by one. The MiG ends up at 25 levels, the F-4D at 26. See Cases 9.54 and 9.55 and note that these reductions are made after each aircraft moves. (Note that this description is based on the original version of chart 9.29 without the changes in these errata).

Basic Fighter Maneuvers, Fig. 2 *Addition:* Note that both the MiG and the F-4E must lose airspeed and altitude for turning at their maximum rate as under Cases 9.54 and 9.55.

If the F-4 pilot had been a better tactician and less keen on showing how to yo-yo, he might have done the following:

A. Position Determination Phase: The F-4 is advantaged.

B. Initiative Determination Phase: The pilot decides to move second.

C. Missile Launch Phase: MiG's too close — use the gun.

D. Disadvantaged Aircraft Movement Phase: The MiG moves as shown, then has its MA reduced by 2 and its Altitude by 1 for the maximum rate turn.

F. Advantaged Movement Phase:

1. Acceleration/Deceleration by Power Segment: None.

2. Flight Attitude Decision Segment: No change.

3. Acceleration and Deceleration Segment: None.

4. Expenditure of Energy Points Segment: None.

5. Movement Segment: The F-4E moves as follows:

a. He enters hex 1010, (which takes one Movement Point), while simultaneously rolling two points to the left (which takes no Movement Points) so that it may accumulate Turning Points at the maximum rate. It then does so, accumulating the Maximum of 15 Turning Points in hex 1010 (which takes another Movement Point). The Turning Marker is adjusted to show 15 turn points accumulated to the left.

b. The F-4 enters hex 1009 (one Movement Point) and again accumulates 15 Turning Points

(one Movement Point). The aircraft is now moved one hex-point to the left.

c. Examining the diagram in Case 9.12, the F-4 now enters hex 1008, (one Movement Point) and does not accumulate any Turning Points.

d. Similarly, he now enters hex 0908 (one Movement Point).

e. Similarly, he now enters hex 0907 (one Movement Point).

The F-4E has now expended all seven of his Movement Points that made up his Movement Allowance for that turn. As he accumulated Turning Points at the maximum rate with his wings vertical under Cases 9.44 and 9.55, the F-4's Movement Allowance Marker is reduced to show a Movement Allowance of 5 (Throttle Setting remains unchanged) and the Altitude is reduced by one level to show 49 levels of altitude.

Note that now the F-4 is in the MiG's "slot hex." The F-4E is at one hex range; there is no altitude difference as the MiG also lost a level for turning at the maximum rate and is at 44. The F-4E has a probability number of 36 (the maximum, from adding 34 and 9) of hitting the MiG with its cannon. Goodbye MiG.

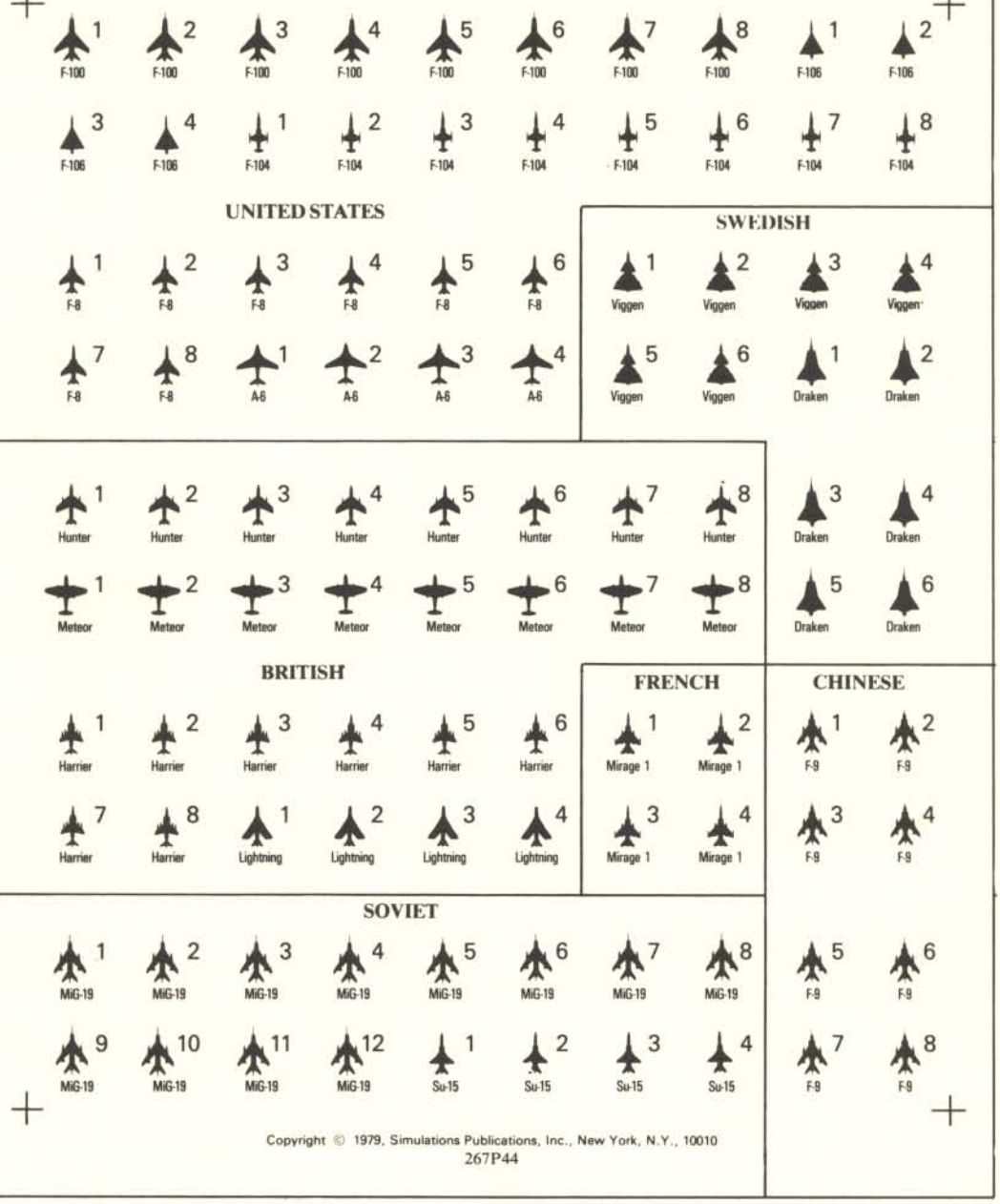
Note: This example shows the aircraft using the original version of Table 9.29 without the changes now incorporated in that table.

Designer's Notes: *Addition:* The fact that most aircraft have three different types of Climbs and dives does not go against the fact that some aircraft can get their nose up (or down) faster than others — as in turning, it depends on the amount of G force an aircraft can pull. This is reflected in the game by the fact that a Type I climb may represent climbing at a 30° angle for a maneuverable aircraft, while only 15° for a less maneuverable one. This, like maneuverability, also decreases with altitude, which is also built into the charts.

Images of the counters for this game are provided here as an aid to players in reproducing damaged or misplaced playing pieces.

Air War '80 Counter Section Nr. 4 (100 pieces)

Quantity of Sections of this identical type in AIR WAR '80: 1; in UPDATE KIT: 1.
Quantity of Sections (all types) in AIR WAR '80: 4; in UPDATE KIT: 1.



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NEW EDITION

AIRWAR

Game Charts and Tables & Aircraft and Missile Performance Charts

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Note that the center 56 pages of this booklet are the Aircraft and Missile Performance Charts (independently numbered PC1 through PC56). See PC1.

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[9.29] TURN MODE/POINT TRANSLATION TABLE

Turn Mode	Turn Points
1	20
2	15
3	10/15
4	10
5	10/10/5/10
6	10/5
7	5/10/5
8	5/5/10/5/5
9	5/5/10/5/5/5
10-11	5
12	5/5/0/5/5/5
13	5/5/0/5/5
14	5/5/0/5
15	5/0/5
16	5/0/0/5
17-27	5/0/0/5/0
28-34	5/0/0/5/0/0

When an aircraft is turning, find its Turn Mode on the Turn Mode Table on its Aircraft Performance Chart. Refer to this Table, and find the Turn Points series that corresponds to its Turn Mode. The first number in a series is the maximum number of Turn Points the aircraft can accumulate in the first hex it accumulates Turn Points in; the second is the number it can accumulate in the second hex; and so forth. Once an aircraft has reached the end of its Turn Points series, it restarts the series; i.e., an aircraft with a Turn Mode of "3" would accumulate 10 Turn Points in its first hex, 15 in its second, and 10 again in the third, and so forth.

IMPORTANT NOTE: If an aircraft has a Movement Allowance of four or greater, and is rolled so that its wings are *not* vertical (i.e., the aircraft is banked at a 45° angle, or is inverted)...

...a) and its Turn Mode is six or less, **ONE is added to the aircraft's Turn Mode.**

...b) and its Turn Mode is between 7 and 12, **TWO is added to the aircraft's Turn Mode.**

...c) and its Turn Mode is 13 or greater, **THREE is added to the aircraft's Turn Mode.**

IMPORTANT NOTE: If an aircraft does turn with its wings vertical (i.e., at maximum rate), it loses one level of altitude and one or more Movement Points. (See 9.5 and the Flight Parameters section of each Aircraft Performance chart.)

[9.78] SIDESLIPPING TABLE

Turn Points Accumulated	*5°*	*10°*	*15°*	*20°*	*25°*
hexes aircraft must move forward before sideslipping	11	6	4	3	2

[7.2] INITIATIVE DIE-ROLL MODIFICATION TABLE

modification	circumstance
– 1	for each friendly aircraft in a Position of Disadvantage (see 6.13).
+ 1	for each friendly Advantaged aircraft (see 6.11).
*+ 1**	if there are no enemy aircraft between friendly aircraft and the sun (see 22.0).
*+ 1**	for each friendly aircraft flown by a Honcho that is *not* Disadvantaged.
*– 1**	for each friendly aircraft flown by a Novice that is *not* Advantaged.

EXPLANATION

A Player's Initiative die-roll is modified by the number in the "modification" column if the corresponding circumstances in the "circumstance" column arise. All those modifications noted with an asterisk (*) are made only when optional rules 22.0 and 21.0 are used. If an aircraft is facing into or within one point of the sun, and there is an enemy aircraft in its forward arc, this means there is an aircraft between it and the sun.

[11.0] SUMMARY OF MANEUVERS

Pull-Through:

Prerequisites: Aircraft must execute Type III Climb for certain number of Game-Turns before entering, as indicated on Flight Parameters Table.

Procedure: Flight Attitude marker placed in Pull-Through box, aircraft climbs one less than it would in Type III Climb, must Decelerate by Power, has its Movement Allowance reduced to a number between 0 and one less than it would be in a Type III Climb.

Postrequisites: None.

Push-Through:

Prerequisites: Aircraft must execute Type III Dive before entering Push-Through.

Procedure: Flight Attitude marker placed in Push-Through box, aircraft dives at maximum Type III Dive, aircraft has its Movement Allowance reduced by between zero and 5 points.

Postrequisites: None.

Wingover:

Prerequisites: Must begin turn in Pull-Through.

Procedure: Aircraft turned six hex points and rolls four points, Movement Allowance reduced by one, Flight Attitude marker placed in Level Flight.

Postrequisites: None.

Split-S:

Prerequisites: Must begin inverted and in a Push-Through, must have been in Push-Through for a certain number of turns (see Flight Parameters Table).

Procedure: Aircraft turned six hex points at any point during its movement. Aircraft stays in Push-Through.

Postrequisites: None.

Lateral Rudder Roll:

Prerequisites: Aircraft must begin in dive or Level Flight.

Procedure: Aircraft may move any part of its Movement Allowance moving at a 60° angle.

Postrequisites: Aircraft's Movement Allowance reduced after executing Rudder Roll, as indicated by Flight Parameters Table.

Break:

Prerequisites: Must begin in Type II or III Climb with Movement Allowance of at least three, banked at 90°.

Procedure: Aircraft expends Movement Points as indicated by Flight Parameters Table, has its Movement Allowance reduced by one less than this number; Flight Altitude Marker moved down three boxes.

Postrequisites: Aircraft must stay in Type II or III Dive on the following two Game-Turns.

Barrel Roll:

Prerequisites: Aircraft must begin in dive or level flight.

Procedure: Movement Allowance reduced by three if greater than 5, or two if 5 or less.

Postrequisites: Aircraft may not fire or launch in same turn; if fired upon, Probability Number of firing aircraft reduced by a quarter.

Immelmann:

Prerequisites: Aircraft must have been in Type III Climb for a certain number of Game-Turns before entering Immelmann as indicated by Flight Parameters Table. Aircraft must be banked at a 45° angle.

Procedure: Aircraft moves half of its movement, then turns between one and six hex points, Movement Allowance is reduced by one.

Postrequisites: After Immelmann is over, Flight Attitude marker moved to Type I Dive or Level Flight, must stay in either on following Game-Turn.

[12.2] PROBABILITY TABLE

Probability Number											
1	2										
2	–	3									
3	–	–	4								
4	–	–	–	5							
5	–	–	–	–	6						
6	–	–	–	–	–	7					
7	2	–	–	–	–	7					
8	–	3	–	–	–	7					
9	–	–	4	–	–	7					
10	–	–	–	5	–	7					
11	–	–	–	–	6	7					
12	2	–	–	–	6	7					
13	–	3	–	–	6	7					
14	–	–	4	–	6	7					
15	–	–	–	5	6	7					
16	2	–	–	5	6	7					
17	–	3	–	5	6	7					
18	–	–	4	5	6	7					
19	2	–	4	5	6	7					
20	–	–	–	5	6	7	8				
21	2	–	–	5	6	7	8				
22	–	3	–	5	6	7	8				
23	–	–	4	5	6	7	8				
24	2	–	4	5	6	7	8				
25	–	3	4	5	6	7	8				
26	2	3	4	5	6	7	8				
27	–	–	4	5	6	7	8	9			
28	2	–	4	5	6	7	8	9			
29	–	3	4	5	6	7	8	9			
30	–	–	4	5	6	7	8	9	10		
31	2	–	4	5	6	7	8	9	10		
32	–	3	4	5	6	7	8	9	10		
33	2	3	4	5	6	7	8	9	10		
34	–	3	4	5	6	7	8	9	10	11	
35	2	3	4	5	6	7	8	9	10	11	
36	2	3	4	5	6	7	8	9	10	11	12

EXPLANATION OF TABLE:

When the rules direct the Players to refer to the Probability Table, the Players find the Probability Number that they have generated along the left-hand column of this table. They then roll two dice, and add the dice results together to form a single number. If this number is exactly equal to *any* of the numbers listed on the row corresponding to the Probability Number, the circumstance that the Players are rolling for has occured.

[13.5] CANNON PROBABILITY MODIFIERS CHART

Modification at range:			Circumstance
1-2	*3-4*	*5-6*	
–3	–4	–9	firing plane firing from a high-angle-off hex
+9	+6	+3	firing plane firing from a slot hex
+8	+8	+8	firing plane not sighted by target plane*
+6	+4	+2	firing plane piloted by a Honcho*
–2	–4	–6	firing plane piloted by a Novice*
+3	+3	+6	firing plane has Radar Lock-on to target
–5	–4	–3	target plane collected Turn points both to the right and to the left (i.e., jinked its tail around) in the same Game-Turn

EXPLANATION OF TABLE:

If the circumstance under the "circumstance" column exists, the Cannon Base Probability Number is modified. The modification depends on the range at which the firing plane is firing; cross-reference the row determined by the circumstance with the column determined by the range to yield the modification to the Probability Number.

*Those circumstances marked with an asterisk (*) apply only when optional rules 19.0, 20.0 and 21.0 are used.

[13.4] CANNON BASE PROBABILITY CHART

Cannon Type	Target Range 1–2	3–4	5–6
A	34	13	9
B	24	7	8
C	19	6	3
D	19	7	5
E	11	5	P
F	7	4	1
G	30	13	11
H	12	9	3
I	15	7	4
J	12	5	3
K	35	30	28
L	14	12	10
M	30	15	12
N	24	9	6
O	22	10	6
P	34	20	17
Q	27	10	7
R	15	7	6

When an aircraft fires its cannon, find its Cannon Type along the left-hand side of the table, and the range to its target along the top. Cross-reference the two to yield a single number; this is the Probability Number for the cannon combat. P = Prohibited (may not fire).

[14.16] ALTITUDE LIMITATIONS TABLE FOR NORMAL TRACKING CONES

Dive/Climb Type	*A*	*B*
Type I Climb or Dive	3	0
Type II Climb or Dive	8	½
Type III Climb or Dive	U	2
Level Flight	1	–1

EXPLANATION OF TABLE:

When the Players are determining whether a target aircraft is within an aircraft's Normal Tracking Cone, they determine the range between the firing aircraft and the target aircraft. They find the firing aircraft's current Dive/Climb Type in the first column of the table, and find the corresponding numbers under the "A" and "B" columns. The Player multiplies the distance between the two aircraft by the number from column "A"; if the firing aircraft was in a climb, the target aircraft may be no more than this number of levels *above* the firing aircraft. The Player then multiplies the distance by the number from column "B"; if the firing aircraft was in a climb, the target must be *at least* this number of hexes above the aircraft; if it was in a dive, it must be at least this number of hexes *below* the aircraft.

A zero (0) in column B means that the target may be on the same level as the firing aircraft.

"U" means that the target may be an unlimited number of hexes above (in the case of a climb) or below (in the case of a dive) the firing aircraft.

–1 in column B indicates that the target may be either above or below the firing aircraft when the firing aircraft is in Level Flight.

[13.6] DAMAGE BY CANNON TYPE TABLES

Type A
(1 × 20mm M61A1 Vulcan)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	2	2	2
2	3	Ef	3	4f	4	4f
3	5	5	E	6	6	6
4	7	7f	7	Ef	8	8f
5	9	9	9	10	E	10
6	11	11f	11	11f	11	Ef

Type B
(2 × 23mm GsHs)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	2	2
2	2	Ef	3	3f	3	3f
3	4	4	E	4	5	5
4	5	5f	6	Ef	6	6f
5	7	7	7	7	E	8
6	8	8f	9	9f	9	Ef

Type C
(3 × NR-23 23mm)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	1	1
2	1	Ef	2	2f	2	2f
3	2	2	E	3	3	3
4	3	3f	3	Ef	4	4f
5	4	4	4	4	E	5
6	5	5f	5	5f	5	Ef

Type D *(2 × 30mm NR-30)* and Type I *(2 × 20mm MK 30 or 4 × 20mm Hispano-Suiza)*

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	1	1
2	2	Ef	2	2f	2	2f
3	3	3	E	3	3	3
4	4	4f	4	Ef	4	4
5	5	5	5	5	E	5
6	6	6f	6	6f	6	Ef

Type E
(6 × 12.7mm M2)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	1	1
2	2	Ef	2	2f	2	2f
3	2	2	2	2	2	2
4	3	3f	3	3f	3	3
5	3	3	3	3	E	3
6	4	4f	4	4f	4	Ef

Type F
(1 × 37mm NS-37, 2 × 23mm)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	1	1
2	1	Ef	1	1f	1	1f
3	1	1	E	1	2	2
4	2	2f	2	Ef	2	2f
5	2	2	2	3	E	5
6	5	5f	6	6f	6	Ef

Type G *(2 × 30mm ADEN or SNCA or 27mm Mauser)*

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	1	1
2	2	Ef	2	3f	3	4f
3	5	6	E	6	7	7
4	8	8f	9	Ef	9	9f
5	10	10	10	11	E	11
6	11	11f	12	12f	12	Ef

Type H *(1 × 30mm GAU-8)* and Type K *(1 × laser cannon "death ray")*

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	3	3	3	6	6
2	6	Ef	9	9f	9	12f
3	12	12	E	18	18	18
4	24	24f	24	Ef	27	27f
5	27	30	30	30	E	33
6	33	33f	36	36f	36	Ef

Type L
(1 × GsHs 37mm)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	TE	3	3	3	3	3
2	3	TEf	3	3f	3	3f
3	6	6	TE	6	6	6
4	6	6f	6	TEf	6	6f
5	9	9	9	9	TE	9
6	9	9f	9	9f	9	TEf

Type M
(1 × 23mm "gatling gun")

1st DIE \ 2nd Die	1	2	3	4	5	6
1	TE	1	1	1	1	2
2	2	TEf	2	3f	3	3f
3	4	4	TE	4	5	5
4	6	6f	7	TEf	7	8f
5	8	9	9	10	TE	10
6	11	11f	12	12f	13	TEf

Type N
(3 × 30mm NR-30)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	2	2	2
2	3	Ef	3	3f	3	3f
3	4	4	E	4	5	5
4	5	5f	5	Ef	6	6f
5	7	7	7	8	E	8
6	9	9f	9	9f	9	Ef

Type 0
(4 × 20mm MK12)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	2	2	2
2	3	Ef	3	3f	4	4f
3	4	4	E	5	5	5
4	6	6f	6	Ef	6	7f
5	7	7	7	8	E	8
6	8	8f	8	9f	9	Ef

Type P
(4 × 30mm ADEN)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	2	2	2
2	3	Ef	4	5f	6	7f
3	10	12	E	13	14	15
4	16	17f	18	Ef	18	19
5	19	20	21	22	E	22
6	23	24f	25	26f	26	Ef

Type Q
(4 × 20mm MK39)

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	2	2
2	2	Ef	2	3f	3	3f
3	4	4	E	5	5	5
4	6	6f	6	Ef	6	7
5	7	7	7	8	E	8
6	8	8f	9	9f	9	Ef

Type R *(1 × 30mm ADEN or Oerlikon)*

1st DIE \ 2nd Die	1	2	3	4	5	6
1	E	1	1	1	1	1
2	1	Ef	1	1f	2	2f
3	2	3	E	3	4	4
4	4	4f	4	Ef	5	5f
5	5	5	5	5	E	5
6	5	6f	6	6f	6	Ef

Refer to these tables when an aircraft hits its target. Roll two dice on the table applying to the cannon type, and cross reference the two die rolls. # = target aircraft Damage markers are moved back along the Weapons Track by the indicated number of boxes. **E** or **TE** = target eliminated. **f** = when firing aircraft is executing frontal fire, *only* results marked with **f** apply.

[14.18] ALTITUDE LIMITATIONS TABLE FOR LIMITED TRACKING CONES

Dive/Climb Type	*A*	*B*
Type I Climb or Dive	1½	½
Type II Climb or Dive	3½	1
Type III Climb or Dive	13	3
Level Flight	½	– ½

EXPLANATION OF TABLE:

See explanation of 14.16.

[14.28] MALFUNCTION PROBABILITY MODIFICATION TABLE

Modification	Circumstance
–3	if the pilot of the launching aircraft is a Honcho.
+3	if the pilot of the launching aircraft is a Novice.
+18	if the missile is Heat-Seeking and the target aircraft is 1 to 3 levels above the ground.
+9	if the missile is Heat-Seeking and the target is 4-5 levels above the ground.
+3	if the missile is Heat-Seeking and the target is 6-8 levels above the ground.
+3	if launching aircraft is in a Type II or III Dive and less than 40 levels above the ground.

EXPLANATION:

The indicated addition or subtraction (as indicated under the "modification" column of the table) is made to the Probability Number of Malfunction for a missile if the circumstance indicated under the "circumstance" column of the table is in existence.

[16.7] RADAR LOCK-ON CHART

radar lock-on strength	from front or rear	from side
1	0	0
2	12	6
3	18	12
4	19	13
5	20	14
6	22	16
7	24	18
8	28	20
9	30	22
10	32	24

EXPLANATION:

When determining the Probability Number for an aircraft attempting to obtain a Radar Lock-on, cross-reference the aircraft's Radar Lock-on Strength with the arc of the target aircraft that it is positioned in (i.e., one of the side arcs for "from side," and the forward or rear arc for "from front or rear"). This will yield a single number, which is the Base Probability Number, to be modified by table 16.8.

[16.8] RADAR LOCK-ON MODIFICATION CHART

Modification	and circumstances
−12*	if the target aircraft is 1 to 10 levels above the ground and the firing aircraft is at the same or lower altitude.
−18*	if the target aircraft is 1 to 10 levels above the ground and the firing aircraft is at a *higher* altitude.
−7*	if the target aircraft is 11 to 20 levels above the ground and the firing aircraft is at the same or lower altitude.
−9*	if the target aircraft is 11 to 20 levels above the ground and the firing aircraft is at a *higher* altitude.
−6*	if the firing aircraft is 20 or more levels above the target aircraft.
−6	if there are other enemy aircraft within 4 hexes range of the target aircraft.
+½PN	if the target aircraft has not sighted the firing aircraft (optional rule)
+5	if the firing aircraft is piloted by a Honcho.
−5	if the firing aircraft is piloted by a Novice.

Modifications for appropriate circumstances are made to the Base Probability Number of obtaining a Radar Lock-On. "+½" PN means that the Base Probability Number is increased by one-half (50% of the number) before any other modification. *This modification is halved if the aircraft attempting to lock-on is equipped with Look-Down, Shoot-Down missiles. The only two such missiles are the Phoenix, when the target is over water, and the AA-9.

[19.7] VISUAL SEARCH BASE PROBABILITY TABLE

Range in hexes	Base Probability Number
1 to 5	6
6 to 9	5
10 to 14	4
15 to 20	3
21 to 27	2
28 to 36	1
36 to 45	½
46 to 60	1*

Explanation: By cross-referencing the range in hexes on the table, a Player may determine the Base Probability Number of an aircraft attempting to visually search for an enemy aircraft. "1*" means that the final Probability Number is *always* one, regardless of Size Multiple of modification.

[19.8] VISUAL-SEARCH PROBABILITY

modification	circumstance
+3	if the pilot of the searching plane is a Honcho
−3	if the pilot is a Novice
−9	if the search is conducted at night
−4	if either or both aircraft is flying through a cloud bank
−7	if the aircraft is searching in the direction the sun lies
−4	if the aircraft is searching within one point of the direction in which the sun lies
−½ PN	if the searching aircraft has an enemy aircraft that it has already obtained visual contact with in its forward arc
+2	if searching aircraft is an F-86, Mystere, F-14, F-15, F-16, F-18, A-10

If the circumstance indicated in the right column exists, modify the Probability Number as indicated in the left column. **Note:** −½PN means *halve* the Base Probability Number. Aircraft in clouds cannot search visually (see Case 22.24).

[20.4] RADAR SEARCH BASE PROBABILITY TABLE

Base Prob. #	Radar search strength 1	2	3	4	5	6	7	8	9	10
2½	2	3	4	5	6	8	10	12	15	20
2	8	12	16	20	24	31	40	47	59	78
1½	17	26	34	44	52	70	88	105	131	202
1¼	31	47	62	78	94	125	156	187	234	312
1	49	73	98	122	146	195	244	293	366	487
¾	63	94	126	156	188	250	312	375	469	625
½	96	144	192	241	288	385	482	578	722	962
¼	110	165	220	275	330	440	550	660	825	1100
*1**	125	188	250	313	375	500	625	750	938	1250

EXPLANATION OF RADAR SEARCH BPN

Determine the Radar Search Strength of the searching aircraft and locate this strength at the head of one of the columns in this table. Then read down this column until you find the first Range number that is equal to or *greater* than the actual range (in hexes) between the searching aircraft and the object of the search. This number locates the horizontal line across which you should read (right or left) to either of the extreme outer columns which contain the Radar Search Base Probability numbers.

EXAMPLE: Radar Search Strength of "6" and a range of "32" yields a Base Probability Number of "1½".

Note that the "1*" result is the *final* probability number (i.e., modifications have no effect).

[20.5] RADAR SEARCH PROBABILITY MODIFICATION TABLE

Modification and	Circumstance
+ ½	if the searching plane is piloted by a Honcho
– ½	if the searching plane is piloted by a Novice
+ ½	if the search occurs at night
– *1*	if the searching plane is 10+ levels above the enemy and has a Radar Search Strength of 1 or 2
– ½	if the searching plane is 10+ levels above the enemy and has a Radar Search Strength of 3 or more

Modifications are halved if the searching aircraft is an F-14, MiG-29, Viggen, or late production F-5E.

[24.48] RADAR DETECTION TYPE EFFECT TABLE

type	effects
A.	detects radar lock-ons
B.	detects radar lock-ons + searches
C.	detects radar lock-ons + searches + general type of search
D.	detects radar lock-ons + searches + type of search + searching radar type
E.	detects radar lock-ons + searches + type of search + radar type + exact position

[25.92] BOMBING PROBABILITY MODIFICATION TABLE

Modification and	Circumstance
+ *12*	if munition is napalm or bomblets
+ *2*	if the pilot of the bombing plane is a Honcho
– *2*	if the pilot of the bombing plane is a Novice
– ½*PN*	if the operation is conducted at night
+ *1*	for each load of munitions after the first released at a single target (see 25.16).
– ½*PN*	if the bombing plane is the target of a missile or is fired upon in the Game-Turn it drops the munitions.
+ ¼*PN*	if the target is marked by a Forward Air Controller (ignore fractions).

EXPLANATION:
The modification to the Base Probability Number of hitting a target in the left-hand column is made if the circumstance in the right-hand column exists. "– ½PN" means that the Probability Number is reduced by a half; a number is an addition or subtraction to be Probability Number itself.

[23.28] INFRA-RED COUNTER-MEASURE TABLE

Counter-Measure►	Flare	Hot Gas	AAQ-4	ALQ-123	ALQ-123 Impvd	Sun	Cloud
AA-1, Atoll	14	16	18	24	28	27	20
Early AIM-9	12	12	14	18	24	12	14
Impvd AIM-9/ Shafrir/AIM-4	4	6	7	12	18	3	3
AA-7 Apex	5	7	8	14	20	5	4
AA-8 Aphid	6	8	9	16	22	5	5
AA-6 Acrid/ AA-3 Anab	8	8	10	14	20	9	10
Dogfight Missile SRAAM/Mantra Magic	4	5	6	10	16	3	2
AIM-9L	4	6	6	10	16	6	5
SA-7	16	16	14	16	26	8	10
Red Top	7	8	9	10	18	14	12

When a check is made to determine whether or not an infra-red counter-measure succeeds in deterring a Heat-Seeking missile, the target aircraft's owning Player refers to this table and cross-references his counter-measure type with the missile type. This will yield a number, which is the Probability Number that the counter-measure will succeed in throwing the missile off.

[25.91] BOMBING HIT PROBABILITY TABLE

modified altitude level	Movement Allowance 1	2	3	4	5	6	7	8	9	10
1-3	27	20	18	16	14	9	6	5	2	1
4-8	23	18	16	14	12	10	8	6	3	2
9-12	18	16	14	12	10	8	6	5	4	3
13-18	14	12	10	8	7	6	5	4	3	2
19-25	10	8	7	6	5	4	3	2	1	1
26-35	8	7	6	5	4	3	2	1	1	1
36-45	7	6	5	4	3	2	1	1	1	0
46-60	6	5	4	3	2	1	1	1	0	0
61-75	5	4	3	2	1	1	1	1	0	0
76+	1	1	1	1	1	1	1	0	0	0

EXPLANATION:
Multiply the bombing aircraft's altitude level by its Accuracy Multiple. Cross-reference this product with the Movement Allowance on the table, to yield a single number. This is the Base Probability Number that the munition load will hit its target.

[25.93] FALLING TABLE

altitude level	Game-Turns to fall
1	**1**
2	**2**
3-4	**3**
5-6	**4**
7-10	**5**
11-14	**6**
15-20	**7**
21-27	**8**
28-32	**9**
33-40	**10**
41-48	**11**
49-58	**12**
59-68	**13**
69-78	**14**
79-90	**15**
91-102	**16**
103-116	**17**
117-130	**18**
131-144	**19**
145-160+	**20**

EXPLANATION:
Find the altitude level at which the munitions were released in the left-hand column. The number in the corresponding position in the right-hand column is the number of Game-Turns the munitions will take to fall.

[24.7] RADAR JAMMING TABLES

[24.71] American Aircraft Internal Radar Jamming Table

Jamming Aircraft	Aircraft or SAM Site Being Jammed: MiG 21,23E	MiG 23B,C	MiG 25	MiG 29	Su 19	Tu 26	SA 2	SA 3	SA 6	gun radar	radar search grnd install.
F-105WW (1966-70)											
1. Coefficient of RS	0.4	NE	0.6	NE	NE	NE	0.4	0.5	NE	eff*	0.5
2. PN for Break Contact	6	NE	4	NE	NE	NE	6	6	NE	eff*	—
3. Lock-On Coefficient	—	NE	—	NE	NE	NE	0.5	0.6	NE	eff*	—
4. PN to Break Lock-On	—	NE	—	NE	NE	NE	6	5	NE	eff*	—
F-105WW (post 1970)											
1. Coefficient of RS	0.2	0.6	0.4	0.5	0.6	0.7	0.3	0.3	0.6	eff	0.4
2. PN for Break Contact	8	4	6	5	4	3	7	7	4	eff	6
3. Lock-On Coefficient	—	0.7	0.3	0.5	—	—	0.4	0.4	0.7	eff	—
4. PN to Break Lock-On	—	5	8	6	—	—	7	7	3	eff	—
F-4J, N, S, K, and M; F-104G (W.German and Italian; F-104S											
1. Coefficient of RS	0.7	0.8	0.8	0.8	0.8	0.8	0.5	0.7	0.9	eff*	0.7
2. PN for Break Contact	3	2	2	2	2	2	5	3	1	eff*	3
3. Lock-On Coefficient	—	0.75	0.7	0.6	—	—	0.7	0.8	0.9	eff*	3
4. PN to Break Lock-On	—	4	5	6	—	—	4	3	1	eff*	—
5. Spurious Position PN	14	6	10	12	6	4	10	7	3	eff*	7
F-4WW; EF-IIIWW; EA-6E											
1. Coefficient of RS	0.2	0.3	0.3	0.4	0.5	0.6	0.2	0.2	0.3	eff	0.3
2. PN for Break Contact	8	7	7	6	5	4	8	8	7	eff	7
3. Lock-On Coefficient	—	0.4	0.2	0.4	—	—	0.3	0.4	0.6	eff	—
4. PN to Break Lock-On	—	7	10	7	—	—	8	7	5	eff	—
5. Spurious Position PN	18	12	14	16	9	6	16	15	14	eff	12
A-7E; A-GE											
1. Coefficient of RS	0.8	0.8	0.8	NE	NE	NE	0.5	0.7	0.8	eff*	0.7
2. PN for Break Contact	2	2	2	NE	NE	NE	5	3	2	eff*	3
3. Lock-On Coefficient	—	0.75	0.75	NE	NE	NE	0.6	0.7	0.8	eff*	—
4. PN to Break Lock-On	—	4	4	NE	NE	NE	5	4	2	eff*	—
5. Spurious Position PN	8	6	6	NE	NE	NE	9	6	6	eff*	10
F-16 and F-18											
1. Coefficient of RS	0.7	0.7	0.7	0.7	0.9	0.9	0.4	0.7	0.7	eff	0.7
2. PN for Break Contact	3	3	3	3	1	1	6	3	3	eff	3
3. Lock-On Coefficient	—	0.8	0.7	0.7	—	—	0.5	0.7	0.8	eff	—
4. PN to Break Lock-On	—	4	5	5	—	—	5	4	2	eff	—
5. Spurious Position PN	15	9	10	11	7	6	12	10	9	eff	10
F-15A											
1. Coefficient of RS	0.6	0.7	0.7	0.6	0.8	0.8	0.3	0.4	0.6	eff	0.6
2. PN for Break Contact	4	3	3	4	2	2	7	4	4	eff	4
3. Lock-On Coefficient	—	0.7	0.65	0.6	—	—	0.4	0.5	0.8	eff	—
4. PN to Break Lock-On	—	5	6	5	—	—	7	6	3	eff	—
F-14A											
1. Coefficient of RS	0.5	0.7	0.6	0.6	0.7	0.7	0.2	0.3	0.5	eff	0.5
2. PN for Break Contact	5	3	4	4	3	3	8	5	5	eff	5
3. Lock-On Coefficient	—	0.6	0.55	.6	—	—	0.3	0.4	0.6	eff	—
4. PN to Break Lock-On	—	6	7	5	—	—	9	7	5	eff	—
5. Spurious Position PN	12	9	12	12	9	9	12	15	10	eff	9
B-1 and B-52H											
1. Coefficient of RS	0.2	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.2	eff	0.2
2. PN for Break Contact	8	8	8	8	7	6	8	8	8	eff	8
3. Lock-On Coefficient	—	0.2	0.2	0.2	—	—	0.2	0.2	0.3	eff	—
4. PN to Break Lock-On	—	8	11	7	—	—	10	9	6	eff	—
5. Spurious Position PN	20	16	16	18	12	10	20	19	18	eff	15

For Explanation of Radar Jamming Tables, see next page.

[24.72] American Radar Jamming Pods Table

Jamming Pods	Aircraft or SAM Site Being Jammed: MiG 21	MiG 23	MiG 25	MiG 29	Su 19	Tu 26	SA 2	SA 3	SA 6	gun radar	radar search grnd install.
ALQ-71											
1. Coefficient of RS	0.5	NE	0.8	NE	NE	NE	NE	0.8	NE	NE	NE
2. PN for Break Contact	5	NE	2	NE	NE	NE	NE	2	NE	NE	NE
3. Lock-On Coefficient	—	NE	0.75	NE	NE	NE	NE	0.75	NE	NE	NE
4. PN to Break Lock-On	—	NE	4	NE	NE	NE	NE	4	NE	NE	NE
ALQ-72											
1. Coefficient of RS	NE	NE	NE	NE	NE	NE	0.7	NE	NE	eff*	NE
2. PN for Break Contact	NE	NE	NE	NE	NE	NE	3	NE	NE	eff*	NE
3. Lock-On Coefficient	NE	NE	NE	NE	NE	NE	0.75	NE	NE	eff*	NE
4. PN to Break Lock-On	NE	NE	NE	NE	NE	NE	4	NE	NE	eff*	NE
ALQ-87/91 and F-111A, C, D, E (pre-1975 internal jammer)											
1. Coefficient of RS	0.4	NE	0.7	NE	NE	NE	0.6	0.8	NE	eff*	0.7
2. PN for Break Contact	6	NE	3	NE	NE	NE	4	2	NE	eff*	3
3. Lock-On Coefficient	—	NE	0.75	NE	NE	NE	0.7	0.8	NE	eff*	—
4. PN to Break Lock-On	—	NE	4	NE	NE	NE	5	4	NE	eff*	—
5. Spurious Position PN	12	NE	6	NE	NE	NE	6	4	NE	eff*	6
ALQ-31											
1. Coefficient of RS	0.4	NE	0.7	NE	NE	NE	0.6	0.8	NE	eff*	0.7
2. PN for Break Contact	6	NE	2	NE	NE	NE	4	3	NE	eff*	3
3. Lock-On Coefficient	—	NE	0.75	NE	NE	NE	0.7	0.8	NE	eff*	—
4. PN to Break Lock-On	—	NE	4	NE	NE	NE	5	4	NE	eff*	—
ALQ-101											
1. Coefficient of RS	0.3	0.8	0.6	NE	NE	NE	0.5	0.7	NE	eff*	0.6
2. PN for Break Contact	7	2	4	NE	NE	NE	5	3	NE	eff*	4
3. Lock-On Coefficient	0.3	0.65	0.7	NE	NE	NE	0.4	0.75	NE	eff*	—
4. PN to Break Lock-On	—	4	5	NE	NE	NE	7	4	NE	eff*	—
ALQ-119 M and F-111A, C,D, E (post-1976 internal jammer)											
1. Coefficient of RS	0.2	0.6	0.5	0.6	0.7	0.8	0.4	0.4	NE	eff*	0.5
2. PN for Break Contact	8	4	5	4	3	2	6	6	NE	eff*	5
3. Lock-On Coefficient	—	0.55	0.4	0.4	—	—	0.5	0.55	NE	eff*	—
4. PN to Break Lock-On	—	6	7	5	—	—	6	4	NE	eff*	—
ALQ-119M											
1. Coefficient of RS	0.2	0.6	0.5	0.6	0.7	0.8	0.4	0.4	0.7	eff	0.5
2. PN for Break Contact	8	4	5	4	3	2	6	6	3	eff	5
3. Lock-On Coefficient	—	0.55	0.4	0.4	—	—	0.5	0.45	0.75	eff	—
4. PN to Break Lock-On	—	6	7	5	—	—	10	4	3	eff	—
ALQ-131											
1. Coefficient of RS	0.2	0.3	0.3	0.4	0.5	0.6	0.2	0.2	0.3	eff	0.3
2. PN for Break Contact	8	7	7	6	5	4	8	8	7	eff	7
3. Lock-On Coefficient	—	0.4	0.3	0.4	—	—	0.3	0.3	0.4	eff	—
4. PN to Break Lock-On	—	7	9	7	—	—	8	7	6	eff	—

EXPLANATION OF RADAR JAMMING TABLES:

First, determine which of the four Jamming Tables is to be used. Then, find the aircraft or pod type of the jamming aircraft along the side of the table. If either of the first two (American: 24.71 or 24.72) jamming tables is being used, find the aircraft type of the aircraft *being jammed* at the top of the table. If either of the latter two jamming tables (24.73 or 24.74) is being used, find the Radar Search Strength or Radar Lock-on Strength, as applicable, along the top of the Radar Jamming Table.

In either case, cross-reference the column determined as above with the row determined by the jamming aircraft or pod. Four lines on the Jamming Table will result (except that some aircraft have five, rather than the four normal lines on the table).

The decimal fraction listed on the first line of the table (Coefficient or RS) is the multiplier that the Radar jammers apply to the Probability Number of the aircraft that is being jammed for Radar Search. in other words, when the aircraft that is being jammed Radar Searches for the jamming aircraft, the Probability Number for the Radar Search is multiplied by this number after all other modifications to the Probability Number.

The number listed on the second line of the table is the Probability Number that the jamming aircraft will break the Radar Contact of the jammed aircraft. In other words, this is the Probability Number that the jammed aircraft with "lose" the jamming aircraft and lose radar contact. See Radar Contact, 20.5. The Players determine whether aircraft lose Radar Contact during the Radar Search Phase after all Radar Searches have been completed.

The third number is the multiple which the radar jammers apply to the Probability Number for Radar Lock-on. In other words, if the aircraft that is being jammed attempts to lock-on to the jamming aircraft, the Probability Number for the lock-on attempt is multiplied by this decimal fraction,

after all other modifications to the Probability Number have been made.

The fourth number is the Probability Number that the jamming aircraft will be able to break a Radar Lock-on that was previously obtained by the jammed aircraft. In other words, if the jammed aircraft has a Radar Lock-on to the jamming aircraft, the jamming aircraft may attempt to break the Radar Lock-on; the fourth number is the Probability Number that it will be able to do so. The Players determine whether aircraft succeed in breaking Radar Lockpons during the Radar Lock-on Breakage Segment of the Radar Homing Missile Combat Phase.

Some aircraft have five lines on their section of the jamming tables. These aircraft have Spurious Position capability; this means that, once an enemy aircraft has obtained Radar Contact with the jamming aircraft, there is a chance that the jamming aircraft will be able to mislead the enemy aircraft as to its true position. The number listed on the fifth line is the Probability Number that the enemy aircraft will obtain a Spurious (i.e., false) Position for the jamming aircraft after having obtained Radar Contact with it.

There is one column on the Jamming Tables that operate in a different manner; this is the AA gun column. A given aircraft's or pod's jamming capability is either effective ("eff") or not effective ("NE") against AA gun radar. If the jamming is effective, the AA gun is treated as having no radar when firing on the jamming aircraft. "Eff*" means that the jammer is effective against all AA gun radars *except* 23mm AA gun radar; in other words, all AA guns would be treated as having no effect against an aircraft equipped with such jammers, except for 23mm AA guns.

[24.73] Soviet Aircraft Internal Radar Jamming Table

Jamming Aircraft	Radar Search or Lock-on Strength of Aircraft Being Jammed 1	2	3	4	5	6	7	8	9	10	AA guns
MiG-25											
1. Coefficient of RS	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8	NE
2. PN for Break Contact	6	6	5	5	4	3	3	2	2	2	NE
3. Lock-On Coefficient	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	NE
4. PN to Break Lock-On	9	9	8	8	7	7	6	5	4	3	NE
5. Spurious Position PN	12	11	10	8	8	8	7	7	4	4	NE
MiG-23 CWW											
1. Coefficient of RS	0.2	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.7	eff
2. PN for Break Contact	8	8	8	7	6	5	4	3	3	3	eff
3. Lock-On Coefficient	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.8	eff
4. PN to Break Lock-On	12	10	10	10	8	8	8	8	6	4	eff
5. Spurious Position PN	12	12	10	10	8	8	6	6	4	4	4ff
MiG-27 and Su-19											
1. Coefficient of RS	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.9	eff
2. PN for Break Contact	3	3	3	3	3	3	2	2	2	1	eff
3. Lock-On Coefficient	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	eff
4. PN to Break Lock-On	6	6	6	5	4	4	3	2	2	1	eff
Tu-26											
1. Coefficient of RS	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	NE
2. PN for Break Contact	4	4	4	3	3	3	2	2	1	1	NE
3. Lock-On Coefficient	0.6	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	NE
4. PN to Break Lock-On	8	8	8	7	7	7	6	6	2	2	NE

[24.74] Other Aircraft Internal Radar Jamming Table

Jamming Aircraft	Radar Search of Lock-on Strength of Aircraft Being Jammed 1	2	3	4	5	6	7	8	9	10	AA guns
A-6E; A-7											
1. Coefficient of RS	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	eff
2. PN for Break Contact	3	3	2	2	2	2	2	1	1	1	eff
3. Lock-On Coefficient	0.6	0.6	0.7	0.7	0.75	0.75	0.75	0.8	0.9	0.9	eff
4. PN to Break Lock-On	6	6	5	5	4	4	3	2	1	1	eff
5. Spurious Position PN	8	8	7	7	6	6	6	4	3	2	eff
Mirage V; Mirage F.1											
1. Coefficient of RS	0.7	0.7	0.7	0.8	0.8	0.8	08	0.9	0.9	0.9	eff
2. PN for Break Contact	3	3	3	2	2	2	2	1	1	1	eff
3. Lock-On Coefficient	0.6	0.6	0.7	0.7	0.75	0.75	0.75	0.8	0.9	0.9	eff
4. PN to Break Lock-On	6	6	5	5	4	4	3	2	1	1	eff
5. Spurious Position PN	8	8	7	6	5	5	4	3	3	2	eff
Jaguar; Viggen & Draken (Swedish A.F. only)											
1. Coefficient of RS	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.9	eff
2 PN for Break Contact	8	8	7	6	5	4	3	2	2	1	eff
3. Lock-On Coefficient	0.2	0.3	0.3	0.4	0.4	0.5	0.55	0.7	0.8	0.9	eff
4. PN to Break Lock-On	9	9	8	7	7	6	6	4	3	2	eff
Viggen & Draken											
1. Coefficient of RS	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	eff
2. PN for Break Contact	4	4	3	3	3	2	2	2	1	1	eff
3. Lock-On Coefficient	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	eff
4. PN to Break Lock-On	9	8	8	7	7	6	5	4	3	2	eff
5. Spurious Position PN	8	7	7	6	6	5	5	4	3	2	eff

[25.94] TARGET DESTRUCTION TABLE

target	Payload Type						
	1000 -lb	750 -lb	shpd chrg	rckts	nplm	A-P bmlt	A-T bmlt
*parked aircraft**	36	27	20	22	32	32	32
Trucks:							
radar van	34	33	35	32	22	22	32
mobile RL	16	9	30	19	0	0	19
truck	35	19	36	36	32	27	35
Dumps:							
POL (revtd)	18	11	10	36	27	24	18
POL (open)	35	17	15	36	36	36	18
Ammo (revtd)	36	32	12	32	22	27	12
Ammo (open)	36	36	36	36	35	36	36
*AFVs:**							
light AFV	15	9	33	32	27	0	27
tanks & SAMs	7	6	30	16	10	0	20
*AA guns:**							
light or medium	13	11	12	9	3	19	15
heavy or SAMs	4	2	6	0	0	0	5
Small Buildings:							
field bunkers	4	2	22	0	0	0	8
wood	36	36	36	22	36	0	2
masonry	36	18	10	0	0	0	0
steel	14	11	0	0	0	0	0
Bridge	4	2	1	0	0	0	0

EXPLANATION:
When a load of munitions hits a target, the Players refer to this table. The type of payload that the munitions or PGM was carrying is cross-referenced with the target type. This yields a single number, which is the Probability Number (see 12.0) that the munitions will destroy the target.

* = if target of this type is a *hardened* site, halve Probability Number.

[25.95] PGM PROBABILITY TABLE

PGM	Movement Allowance									
	1	2	3	4	5	6	7	8	9	10
"smart" bomb	35	34	33	31	28	24	19	13	10	7
"smart" bomblet	35	35	34	33	32	31	30	25	22	19
Bullpup Rb04, Rb05	28	28	28	28	28	28	28	28	28	28
Maverick	28	28	28	28	28	28	28	28	28	28
Walleye I	30	30	30	30	30	30	30	30	30	30
Walleye II	32	32	32	32	32	32	32	32	32	32
AS-7	24	24	24	24	24	24	24	24	24	24
Martel	31	31	31	31	31	31	31	31	31	31
Shrike	26	26	26	26	26	26	26	26	26	26
Standard	30	30	30	30	30	30	30	30	30	30
Harm	34	34	34	34	34	34	34	34	34	34

EXPLANATION:
When any sort of PGM is launched or dropped, the owning Player cross-references the PGM type with the Movement Allowance of his aircraft on this table, to yield a single number. This is the Probability Number that the PGM will hit its target.

[25.97] STRAFING HIT PROBABILITY TABLE

Canon Type	Movement Allowance									
	1	2	3	4	5	6	7	8	9	10
A	34	31	28	25	22	19	16	13	10	7
B	24	21	18	15	12	9	6	4	2	1
C	19	16	13	10	7	5	4	3	2	1
D	14	12	10	8	6	5	4	3	2	1
E	11	9	7	6	5	4	3	2	1	1
F	7	6	5	4	3	2	1	1	1	1
G	30	27	24	21	18	15	12	9	6	3
H	32	31	30	27	24	21	18	16	12	10
I	15	13	11	9	7	6	5	4	3	2
J	13	11	9	8	7	6	5	4	3	1
K	34	32	31	30	29	27	25	23	20	17
M	30	27	24	21	19	17	14	11	8	5
N	24	21	18	16	14	10	7	5	3	1
O	22	19	16	13	10	7	5	3	2	1
P	34	32	30	28	24	20	17	14	12	9
Q	27	25	22	20	18	15	13	10	8	6
R	15	14	12	11	9	8	6	5	3	2

Cross-reference the strafing aircraft's cannon type with the Movement Allowance of the strafing aircraft; this will yield a single number, which is the Probability Number that the aircraft will hit its target. Note that aircraft with rear-mounted cannon (such as the B-1, B-52, and Backfire Bombers) may not strafe.

[25.99] STRAFING TARGET DESTRUCTION TABLE

target type	Cannon Type			
	A,B,C,D,F,I, J,N,O,P or Q	G,M or R	E	H, K
*parked aircraft**	25	35	12	35
Trucks:				
radar van	18	27	9	30
mobile RL	9	12	4	18
truck	9	12	4	18
Dumps:				
POL (revtd)	23	30	14	33
POL (open)	30	35	22	35
Ammo (revtd)	10	15	5	30
Ammo (open)	16	27	11	35
*AFVs:**				
light AFV	6	9	3	28
tanks & SAMs	4	6	2	25
*AA guns:**				
light or medium	–	3	–	7
heavy	–	–	–	4
SAMs	–	–	–	7
Small Buildings:				
field bunkers	–	–	–	–
wood	7	10	–	10
masonry	–	–	–	5
steel	–	–	–	3
Bridge	–	–	–	1

EXPLANATION:
When strafing hits a target, Players refer to this table. The type of cannon that is firing is cross-referenced with the target type. This yields a single number, which is the Probability Number (see Section 12.0) that the strafing will destroy the target.

* = If target of this type is in a *hardened* site, halve Probability Number.

[25.96] ASM CHARACTERISTICS TABLE

ASM name	builder	range	speed	payloadguidance system
Bullpup	USA	120	6	1,000-lbCommand Guidance
Maverick	USA	120	5	shpd chrgIndependent
Walleye I	USA	150	5	750-lbDesignator Guidance
Walleye II	USA	350	6	1,000-lbIndpendent
Shrike	USA	100	14	1,000-lbARM
Standard	USA	150	16	1,000-lbARM
Harm	USA	2000	17	1,000-lbARM
AS-7	USSR	144	6	750-lbDesignator or ARM
Martel	UK & Fr	400	5	1,000-lbIndependent
Rb04E	Sweden	60	5	1,000-lb Command Guidance
Rb05A	Sweden	75	6	750-lb Command Guidance

[25.98] STRAFING PROBABILITY MODIFICATION TABLE

Modification and Circumstance	
+4	if the pilot is a Honcho
−4	if the pilot is a Novice
−½PN	if the plane is strafing two targets
−⅔PN	if the plane is strafing three targets
−¾PN	if the plane is strafing four or more targets
−6	if the operation is conducted at night
−8	if the strafing aircraft is the target of cannon or AA fire in the same turn it strafes
−1	for each hex beyond the first that the aircraft is distant from its target; i.e., if the aircraft is 4 hexes away, subtract 3.

[26.51] AA GUN HIT PROBABILITY TABLE
(By Gun Type)

100mm:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	12	12	12	12	12
2	12	E	18	18	18	18
3	18	18	E	24	24	24
4	24	24	24	E	30	30
5	30	30	30	30	E	36
6	36	36	36	36	36	E

57mm:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	4	4	4	5	5
2	5	E	8	8	8	11
3	11	11	E	14	14	14
4	14	17	17	E	17	21
5	21	21	24	24	E	25
6	26	26	28	28	28	E

85mm:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	8	8	8	8	8
2	8	E	12	12	12	12
3	12	12	E	16	16	16
4	16	16	16	E	20	20
5	20	24	24	24	E	28
6	28	28	32	32	32	E

37mm or 40mm:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	3	3	3	3	3
2	6	E	6	6	6	9
3	9	9	E	9	9	9
4	9	12	12	E	12	12
5	15	15	15	15	E	15
6	18	18	18	18	18	E

20mm:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	1	1	1	1	1
2	1	E	1	1	1	1
3	1	1	1	1	1	1
4	2	2	2	2	2	2
5	2	2	2	2	E	2
6	2	2	3	3	3	E

.50calQuad:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	1	1	1	1	1
2	1	E	1	1	1	1
3	2	2	E	2	2	2
4	2	2	2	E	2	2
5	3	3	3	3	E	3
6	3	3	3	3	3	E

23mmQuad:

1st Die	2nd DIE 1	2	3	4	5	6
1	E	1	1	1	1	2
2	2	E	2	2	3	3
3	3	3	E	4	4	4
4	4	4	4	E	5	5
5	5	5	5	6	E	6
6	6	6	7	7	8	E

12.7mm, 14.5mm, or .50 cal:

1st Die	2nd DIE 1	2	3	4	5	6
1	1	1	1	1	1	1
2	1	E	1	1	1	1
3	1	1	1	1	1	1
4	1	1	1	E	1	1
5	1	1	1	1	1	1
6	2	2	2	2	2	E

EXPLANATION:
When it has been determined that an AA gun has hit its target, the Players refer to these tables. They find the specific table determined by the AA Gun type and roll two dice. The first die-roll is found at the top of the table and cross-referenced with the second, which is found along the side.
# = Number of boxes along which the aircraft's Damage markers are moved on the Weapons Track
E = Target eliminated

[28.1] AIRCRAFT RADAR CHARACTERISTIC TABLE

	Search Strength	Radar Search Arc	Max. Lock-on Range	Lock-on Strength	Tracking Cone	Radar Detector Type
MiG-21 (early)	1	D	0	0	–	none
MiG-21 (late); MiG-23E	2	D	0	0	–	A
MiG-23B	7	B	420	7	N	B
MiG-23CWW	7	B	420	7	N	E
MiG-25A	5	C	300	4	L	B
MiG-25B	7	B	0	0	–	B
MiG-25D	7	B	420	7	N	B
MiG-27	0	–	0	0	–	B
MiG-29	6	C	250	6	L	B
Su-7	0	–	0	0	–	A
Su-19	7	B	0	0	–	D
Tu-26 (rear)	9(4)	A(B)	0	0	–	D
F-4B, C, D, K&M	7	B	420	7	N	[C,D*,D]
F-4E-J	8	B	500	8	N	[C,D*,D]
F-4EWW	8	B	500	8	N	E
A-4	4g	Bg	0	0	–	[C,D*,D]
A-7	8g	Bg	0	0	–	[C,D*,D]
F-16	8	B	500	8	N	D
F-105	3	B	0	0	–	[C,D*,D]
F-105WW	3	B	0	0	–	E
F-5E/F	3	B	0	0	–	C
F-111E	10	B	0	0	–	E
F-111EWW	10	B	0	0	–	E
F-14A	10	B	1125	10	N	E
F-15A	9	B	850	9	N	E
F-18	8	B	500	8	N	D
A-10	0	–	0	0	–	E
B-1	10	A	0	0	–	E
Mirage IIIC	2	C	150	4	L	B
Mirage IIIE	2	C	150	4	L	C
Mirage V	1	C	0	0	–	D
Jaguar	0	–	0	0	–	E
Tornado	9	B	700	8	N	E
Kfir	3	B	0	0	–	C
F-111 A-C	8	B	0	0	N	D
B-52H (rear)	10(5)	A(B)	0	0	–	E
F-104C	2	B	0	0	–	none
F-104G	3	B	0	0	–	none
F-104G(Norway)	3	B	0	0	–	D
CF-104	4g	B	0	0	–	C
F-104S	4	B	150	4	L	B
F-104J	4	B	0	0	–	none
F-8A-D	2	B	0	0	0	A
F-8E	3	B	0	0	0	C
F-8E(France)	4	C	150	4	L	C
F-8J	4	B	0	0	–	D
MiG-19D,B,F,G	1	D	30	2	L	none
MiG-17E	1	D	30	2	L	none
F-9	2	B	150	3	N	A
F-106	6	B	360	6	N	B
Su-15A	4	B	300	4	L	A
Su-15E	7	B	420	7	N	B
A-6E	8g	Dg	0	0	0	[C,D*,D]
EA-CeWW	8g	Dg	0	0	0	E
F-100D&F	0	–	0	0	–	B
F-100FWW	0	–	0	0	–	D
Mirage F.1	5	B	360	5	N	D
AV-8A/ Harrier pre-78	0	–	0	0	–	none
Harrier post-78	0	–	0	0	–	D
Sea Warrier	5	B	0	0	–	D
Lightning F.6	6	B	0	0	–	B
JA37 Viggen	7	B	420	7	N	D
AJ37 Viggen	6g	Bg	420	6	L	D
Draken	3	B	175	3	L	C
Draken (Danish)	4	C	200	4	N	D
F-86D,L	2	B	0	0	0	none
F-86K	1	B	0	0	0	none
F-5A	2	B	0	0	–	B

* = An aircraft that has its Radar Detector Type starred may use it in the same way as any other Radar Detector of that type *except* that the Radar Detectors are ineffective against SA-6's and MiG-23's. [] = these aircraft have three *different* Radar Detector Types at three different times. Note that there are three Radar Detector Types listed; the aircraft has the first type in the period before 1968; the second type in the period including 1968 and extending to October 1973, and the third type after October 1973. **g** = radar may only search for ground targets. – = not applicable. **N** = Normal. **L** = Limited. **Search Strength** = the Radar Search Strength of the aircraft (see 20.0). **Radar Search Arc** = see 20.2. **Max. Lock-on Range** = the maximum range at which the aircraft may attempt to get a Radar Lock-on. A lock-on range of "0" means that the aircraft does not carry Radar-Homing missiles. If an aircraft only has one line on the table and is not given multiple entries for its various sub-types (the way, for instance, that the F-4E, the F-4B, and the F-4EWW each have different lines), that line applies to all sub-types of that aircraft.

[26.51] AA GUN HIT PROBABILITY TABLE

AA type	Radar?	Lt/Hvy	Close Range	HP	Medium Range	HP	Max. Range	HP
100mm	no	hvy	1-43	1	44-77	1	78-130	1
100mm	yes	hvy	1-43	1	44-87	1	88-130	2
85mm	no	hvy	1-33	1	34-67	1	68-100	1
85	yes	hvy	1-33	1	34-57	1	58-100	2
57mm	no	hvy	1-21	2	22-42	2	43-62	2
37 or 40mm	no	lt	1-17	3	18-34	2	35-50	1
37 or 40mm	yes	lt	1-17	10	18-34	6	35-50	4
20mm Vulcan	no	lt	1-9	5	10-18	1	19-26	1
20mm Vulcan	yes	lt	1-9	17	10-18	4	19-26	3
23mmQuad	no	AFV	1-11	6	12-22	1	23-32	1
23mmQuad	yes	AFV	1-11	16	12-22	4	23-32	2
20mmDbl	no	lt	1-9	5	10-18	1	19-26	1
50 cal. Quad	no	lt	1-2	4	3-4	1	5-6	1
12.7mm	no	AFV	1-2	1	–	–	–	–

Explanation of Table: The AA gun type is listed in the first column; whether it is equipped with radar or not is indicated in the second. Note that many guns have versions both with and without radar. The target type (for bombing or strafing) of the AA gun is listed in the third column: lt = light AA gun; hvy = heavy AA gun; AFV = tank. The span of hexes at which the AA gun is considered to be firing at close range is indicated in the fourth column, and the Hit Probability of the AA gun at that range in the fifth; the span of hexes for Medium Range in the next, and the Hit Probability at that range in the next; and finally, the span of hexes at Maximum Range in the next, and the Hit Probability at that range in the last.

[26.6] GROUND INSTALLATIONS RADAR CHARACTERISTICS TABLE

ground install.	Search Strength	Max. Lock-on Range	Lock-on Strength	Tracking Cone
SA-2	2	188	4	limited
SA-3	3	250	4	limited
SA-6	4	313	7	normal
HAWK	3	250	8	normal
SAM-D	5	375	9	normal
Any radar search ground installation	10	0	0	NA

EXPLANATION:

See explanation of 28.1. **Note:** all ground installations have a 360° Radar Search arc. No ground installation has radar detection equipment.

[28.2] ECM DEVICE UTILIZATION TABLE

aircraft	can carry pods?	chaff dispensers carried internally	IR ECM types carried internally	IR Detector Strength and Arc
MiG-23CWW	no	10	10 flares	0
MiG-25	no	4	–	0
Su-19	no	4	4 flares	0
Tu-26	no	12	12 flares	0
F-4B, C, D, K & M	yes	0	–	5 front (B,C,D only
F-4E-J	yes	*6	6 flares*	0
F-4GWW	yes	20	8 flares	5 front
A-4	yes	*6	6 flares*	0
A-7	yes	*6	6 flares*	0
A-10	yes	0	–	0
F-5	yes	0	–	0
F-14	yes	*6	6 flares*	7 all front
F-15	yes	*6	6 flares*	0
F-16	yes	6	6 flares	0
F-18	yes	6	6 flares	0
F-105	yes	0	–	0
F-105GWW	yes	20	8 flares	0
F-111A, C & E & F-111E	yes	6	hot gas	6 all rear
F-111EWW	yes	20	hot gas	6 all rear
B-1 & B-52H	no	60 +4 chaff rockets	two internal ALQ-123 pods and 15 flares (B-52-10)	8 all around B-52H- 6 all rear
Jaguar, Tornado, Kfir, F-100FWW, F-104G,C,J	yes	0	–	0

Only the aircraft listed on this table may carry chaff dispensers, pods and/or Infra-Red ECM devices.

If a given aircraft is indicated as being able to carry pods under the "can carry pods?" column, it may carry pods as indicated in the optional rules in loaded Condition, section 17.0. If there is a number greater than zero on the "chaff dispensers carried internally" column of an aircraft's line on the table, that aircraft is considered to carry chaff dispensers normally. These dispensers are *not* considered to be pods, and are not counted toward the ordnance that an aircraft may carry. The number in this column is the number of Game-Turns that the aircraft may dispense chaff before its chaff dispenser is empty. Any Infra-Red Counter-measures normally carried by aircraft are listed under the "IR types carried internally." Any aircraft with a listing in this column is considered to carry infra-red counter-measures internally (*not* in a pod), and thus carrying these counter-measures does not count toward maximum ordnance limitations. If, for instance, the entry in the "IR types carried internally" is "4 flares," the aircraft normally carries four flares. Note that the B-1 normally carries two ALQ-123 pods; these are not actually *pods,* but are mounted internally in the aircraft, and do not count toward ordnance limitations. For infra-red counter-measure purposes, the aircraft operates as if it were mounting two ALQ-123 pods. Note also that the B-1 carries 4 chaff rockets in addition to chaff dispensers. Any aircraft that may carry pods can carry any Infra-red Counter-measure pod, limited only by ordnance limitations (see 17.0). *Certain aircraft have the numbers under the "chaff dispensers carried internally" and "IR types carried internally" columns asterisked (*). This indicates that these aircraft may *either* carry chaff dispensers internally, *or* carry flares internally. The owning Player of the aircraft may choose which the aircraft is to carry, or mix them.

[28.3] AIRCRAFT MUNITION CHARACTERISTIC TABLE

Aircraft	1000 lb #	1000 lb AM	750 lb #	750 lb AM	rcktpod #	rcktpod AM	bomblet #	bomblet AM	napalm #	napalm AM	ASM #	ASM AM
F-86	2	2	2	2	2	3	2	4	2	4	0	
F-4	11	2	18	2	15	3	11	4	11	4	4	
F-105	11	2	18	2	15	3	11	4	11	4	4	
F-14	12	1	16	1	16	2	12	3	12	4	4	
F-15	15	1	20	1	16	2	15	3	15	4	4	
F-16	12	2	15	2	12	3	12	4	12	4	4	
F-18	10	1	15	1	12	2	10	3	10	4	4	
B-1	115	½	144	½	0	–	115	½	0	–	0	
A-4	9	1	12	1	14	2	9	3	9	4	4	
A-7	16	1	20	1	16	2	16	3	16	4	6	
A-10	12	1	16	1	18	2	12	3	12	4	3	
F-5	5	2	9	2	8	3	5	3	5	4	3	
F-111	28	1	34	1	0	–	28	3	28	4	6	
MiG-15	0	–	0	–	2	4	0	–	0	–	0	
MiG-17	0	–	2	2	4	3	0	–	0	–	0	
MiG-21	0	–	2	3	2	4	0	–	0	–	0	
MiG-23B (only)	10	2	15	2	10	3	10	4	0	–	0	
MiG-27	10	1	15	1	10	2	10	3	0	–	0	
MiG-29	2	3	2	3	4	3	24	4	0	–	0	
Su-7	2	3	4	3	2	4	24	4	0	–	0	
Su-19	12	1	18	1	6	2	12	3	0	–	6	
Tu-26	16	1	20	1	0	–	16	3	0	–	8	
Mystere	2	2	2	2	2	3	2	4	2	4	2	
Mirage IIIC	4	2	6	2	4	3	4	4	4	4	4	
Mirage IIIE	4	2	6	2	4	3	4	4	4	4	4	
Mirage V & Neshr	8	2	12	2	10	3	8	4	8	4	4	
Jaguar	8	1	11	1	10	2	8	3	8	4	5	
Ouragon	2	2	2	2	2	3	2	4	2	4	0	
Tornado	20	1	24	1	12	2	20	3	20	4	7	
Kfir	8	2	12	2	4	3	8	4	8	4	4	
B-52H	60	½	80	½	0	–	0	–	0	–	0	
F-104G, C, S	4	2	6	2	2	3	2	3	2	4	2	
CF-104	41	1	6	1	2	2	2	3	2	4	2	
F-104J	0	0	0	0	0	0	0	0	0	0	0	
F-8	5	2	6	2	5	3	5	4	4	4	2	
MiG-19	0	0	2	2	4	3	0	0	0	0	0	
F-9	2	2	2	2	4	3	0	0	0	0	0	
Hunter	3	2	4	2	4	3	0	0	4	4	0	
Meteor	0	0	2	2	2	3	0	0	2	4	0	
F-106	0	0	0	0	0	0	0	0	0	0	0	
F-100D	6	2	9	2	6	3	6	3	6	4	2	
F-100F	6	2	6	2	5	3	5	3	5	4	0	
F-100FWW	6	2	8	2	0	0	5	3	0	0	2	
SU-15	0	0	0	0	0	0	0	0	0	0	0	
Harrier	5	1	7	1	5	2	5	2	5	4	4	
A-6E	15	1	19	1	0	0	15	2	15	4	5	
Mirage F.1	8	2	10	2	5	3	5	3	6	4	2	
Lightning	2	2	2	2	2	3	2	3	2	4	0	
AJ37 Viggen	13	1	13	1	0	0	5	2	5	5	4	
JA37 Viggen	6	2	6	2	0	0	2	2	2	4	2	
Draken	2	2	2	2	2	3	2	4	2	4	0	
MiG-23 CWW	10	2	15	2	10	3	10	4	0	–	4	
MiG-23 D&E	6	3	10	3	6	3	6	3	0	–	0	

Each munitions type is divided into two columns: "#" and "AM". The "#" indicates the maximum number of munitions loads of the indicated type the aircraft is able to carry; "AM" is the **Altitude Multiple** for the aircraft with that particular munitions type (see bombing rules, 25.0). The "#" column indicates the maximum number of munitions loads carried if *nothing else* is carried. Note that no Altitude Multiple is given for air-to-surface missiles (ASM's). This is because ASM's do not have altitude multiples; see 25.5. If an aircraft has "0" under the "#" column of any munitions type, it may not carry that type of munition. Note that because of their small size, aircraft that are carrying *Maverick* Air-to-surface missiles may carry triple their normal number of air-to-surface missiles when carrying Mavericks. All aircraft *not* listed on this table are unable to carry any type of munitions.

Effect of Forward Motion on Bombs Table Modifications

Modification Coefficient	Cause
0.33	If munition being dropped is napalm
0.125	If munition being dropped is retarded (SNAKE) bomb
0.33	If munition being dropped is AP bomblets
0.25	If munition being dropped is AT bomblets

[103.16] EFFECT OF FORWARD MOTION ON BOMBS CHART

= Movement Allowance Multiple (see Case 103.11)

Aircraft Height Above Ground Level

ALTITUDE LEVELS DIVED	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**
0	2	2	3	3	3	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	7	7	8	8	8	8	8	8	9	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11
1	1	1	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	10	10	10	10	10	10	10
2	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9
3	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8
4	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	7
5	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	7	7	7	7
6	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6
7	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	6	6	6
8	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2

AIRWAR
Sequence of Play

A. Position Determination Phase: Both Players examine the relative positions of their aircraft on the game-map, and, according to the rules of Position, determine which are in Advantaged, Normal, and Disadvantaged positions. Section 6.0

B. Visual Search Phase (*Optional Rules*): Both Players conduct Visual Searches with all their aircraft that are capable of conducting such searches. Section 19.0

C. Radar Search Phase (*Optional Rules*): Both Players conduct Visual Searches with all their aircraft that are capable of conducting such searches. Section 19.0

D. Final Position Determination Phase (*Optional Rules*): Both Players conduct Position Determination as per Phase A, taking into account aircraft that have been spotted. Section 6.0

E. Initiative Determination Phase: The Players determine which of them is to be the first Player in the upcoming Game-Turn according to the rules for Initiative. Section 7.0

F. Missile Launch Phase: Both Players attempt to launch missiles and perform numerous other missile-related functions. Section 14.0

1. *Tracking and Target Acquisition Segment:* The Players examine all missiles that have already been launched and determine whether they still track their targets. If a missile cannot track its target (and, in the case of Heat-Seeking missiles, cannot acquire a new target), it is removed from play.
2. *Missile Launch Segment:* The Players determine which of their aircraft will launch missiles, how many each aircraft will launch, and what the targets are. They roll for missile malfunction for each launched missile and place missile counters on the map for each launched missile that does not malfunction.
3. *Radar Lock-on Segment:* The Players attempt to obtain Radar Lock-ons with aircraft that are carrying Radar-Homing missiles.

G. Disadvantaged Aircraft Movement Phase: The first Player moves any one of his Disadvantaged aircraft according to the sequence below (Segments 1-7). Any Heat-Seeking missiles targeted against the aircraft just moved are moved by the second Player. The first Player then moves another of his Disadvantaged aircraft, and so forth, until all the first Player's Disadvantaged aircraft and all Heat-Seeking missiles targeted for any of those aircraft are moved. The second Player then repeats the first Player's actions, moving each of his Disadvantaged aircraft. Section 8.0

H. Normal Aircraft Movement Phase: The Players move all Normal aircraft, following the same procedure outlined for Disadvantaged aircraft (Phase G). Section 8.0

J. Advantaged Aircraft Movement Phase: The Players move all Advantaged aircraft, following the same procedure outlined for Disadvantaged aircraft (Phase G). Section 8.0

K Radar-Homing Missile Combat Phase: Each Player moves each of his Radar-Homing missiles currently on the map. Radar-Homing missile movement occurs in the same manner as Heat-Seeking missile movement. Section 16.0

a. Radar-Lock-on Breakage: The owning Player rolls to determine whether Radar Lock-ons have been broken by Enemy aircraft.
b. Movement Allowance Determination: (as in Phase G, Segment 7, Step a)
c. Expenditure of Energy Points: (as in Phase G, Segment 4)
d. Movement: (as in Phase G, Segment 7, Step c)
e. Accumulation of Energy Points: (as in Phase G, Segment 6)
f. Game-Turns-in-Flight Record: (as in Phase G, Segment 7, Step e)

L. Cannon Combat Phase: The first Player resolves cannon fire from any of this aircraft that are in a position to fire their cannons. The second Player then resolves his cannon fire. Section 13.0 **or Cannon and AA Combat Phase** (*Optional Rules*): As per Cannon Combat Phase above, except that ground AA installations may also fire at Enemy aircraft. Section 26.0

M. Bombing Phase (*Optional Rules*): Players may have any store-carrying aircraft release bombs. Effects of bombardment are resolved. Section 25.0

N. Bookkeeping Phase: Players advance the Game-Turn Record marker one box.

1. *Acceleration/Deceleration by Power Segment:* The phasing Player increases or decreases his moving aircraft's Acceleration Gauge to reflect acceleration or deceleration by power. If this affects the aircraft's Throttle Setting, the Throttle Setting marker is moved accordingly.
2. *Flight Attitude Decision Segment:* The phasing Player determines the Flight Attitude of the aircraft he is moving. He determines the wing position of the aircraft and the angle at which it will dive or climb (or fly level). He also alters the aircraft's Altitude Indicator to reflect any change in altitude resulting from a dive or climb, or as a result of wing attitude.
3. *Acceleration and Deceleration Segment:* The phasing Player decides whether his moving aircraft will decelerate or accelerate by any means other than by power. If so, he adjusts the aircraft's Movement Allowance marker to reflect the change in speed.
4. *Expenditure of Energy Points Segment:* If the moving aircraft is in a climb or in level flight and has Energy Points accumulated, it must expend one of those Points. The phasing Player determines how the aircraft will expend the Point and reduces the Energy Point marker to reflect the expenditure.
5. *Movement Segment:* The phasing Player actually moves the moving aircraft's counter and performs any maneuvers he wishes.
6. *Accumulation of Energy Points Segment:* If the moving aircraft is in a dive, the phasing Player determines the number of Energy Points the aircraft accumulated while in the dive and moves the Energy Point marker on the Aircraft and Missile Control Display accordingly.
7. *Heat-Seeking Missile Segment:* Any Heat-Seeking missiles targeted for the aircraft just moved are moved according to the following sequence (Steps a-e):
   a. Movement Allowance Determination: The owning Player determines whether the moving missile is to dive, climb, or fly level, and determines its Movement Allowance.
   b. Expenditure of Energy Points: (as in Phase G, Segment 4)
   c. Movement: The owning Player moves the missile according to the rules for missile movement.
   d. Accumulation of Energy Points: (as in Phase G, Segment 6)
   e. Game-Turns-in-Flight Record: The owning Player advances the Game-Turns-in-Flight marker for the moving missile on the Aircraft and Missile Control Display by one box. If the missile has spent as many turns in flight as it is able, it is removed from the map.

NEW EDITION

AIRWAR

Aircraft and Missile Performance Charts

Aircraft and Missiles by Country of Manufacture

AIRCRAFT

United States of America

Boeing B-52H Stratofortress PC11
Northrop F-5E Tiger II PC12
Republic F-105D Thunderstreak PC13
McDonnell Douglas F-4E Phanton PC14
Vought A-7D and E; Corsair II "Sluf" PC15
McDonnell Douglas A-4F-M Skyhawk PC16
General Dynamics F-111E Aardvark PC17
Fairchild A-10A PC18
General Dynamics F-16A PC19
McDonnell Douglas F-15A Eagle PC20
Grumman A-6E Intruder PC29
Lockheed F-104G Starfighter PC30
Vought F-8E Crusader PC31
North American F-100D Super Sabre PC32
Convair F-106 Delta Dart PC33
McDonnell Douglas F-18 Hornet PC37
Grumman F-14A Tomcat PC38
Rockwell B-1 PC40
North American F-86E-H Sabre PC52

Union of Soviet Socialist Republics

Mikoyan MiG-19C Farmer PC35
Sukhoi Su-15 Flagon-E PC36
Mikoyan MiG-17D Fresco PC41
Mikoyan MiG-15bis Fagot PC42
Sukkoi Su-19 PC43
Sukhoi Su-7C Fitter PC44
Mikoyan MiG-21E, F, J, and K Fishbed (late) PC45
Air-to-Air Fighter "L" PC46
Mikoyan MiG-25A, B, and D Foxbat PC47
Tupolev Tu-26B Backfire PC48
Mikoyan MiG-27 Flogger D PC49
Mikoyan MiG-23B, CWW, and E Flogger PC50

China

Shenyang F-9 Fantan PC35

France

Dassault Mirage F-1C PC34
Dassault MD-450 Ouragon PC51
Dassault Mirage IIIC, IIIE, V, and IAI Neshr PC53
Dassault Mystere IVA PC54

Europe (Britain, Germany, Italy)

Panavia MRCA Tornado ADV PC55

(Britain, France)

BAC/Sepecat Jaguar PC56

Britain

Gloster Meteor F.8 PC23
BAC Lightning F.6 PC26
Hawker Harrier PC27
Hawker Hunter PC28

Sweden

Saab J35F Draken PC24
Saab AJ-37 and JA-37 Viggen PC25

Israel

IAI Kfir C2 PC39
IAI Neshr PC53

MISSILES

United States of America

SAM-D Patriot PC2
Hawk-1 PC4
Early Sparrow AIM-7B through AIM-7E1 PC5
Phoenix AIM-54A PC5
Late Sparrow AIM-7E2 and AIM-7F PC6
Brazo PC6
Late Sidewinder AIM-9E through AIM-9J PC6
Early Sidewinder AIM-9B through AIM-9D PC9
Atoll PC9
Dogfight Missile PC10
Huges AIM-4 Falcon PC22

Union of Soviet Socialist Republics

SA-2 PC3
SA-6 PC3
SA-3 PC4
AA-6 Acrid PC7
AA-8 Aphid PC7
AA-7 Apex PC8
SA-7 PC8
SA-9 PC8
Atoll PC9
AA-3 Anab PC21
AA-1 Alkali PC21
AA-9 PC22

France

Matra Magic R550 PC9
Matra R530 PC10

Britain

Red Top PC2
SRAAM PC10

Israel

Shafrir PC6

Note that the Aircraft and Missile Performance Charts are perforated so that they may be removed from the booklet. To remove them, fold back along the perforation and tear out gently.

SAM-D Patriot

Basic Missile Information

Missile Type: radar-homing SAM (surface-to-air missile)
Tracking Cone: Normal
Turns of Flight: **49**
Tracking Range: **750 hexes**
Probability of Malfunction: **3**
Minimum Range: **2**
Minumum Launch Range: From all angles: **7 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	19	18	17	16
1st GT Move Add:	6	6	6	6
Turn Mode:	5	6	6	7
Maximum Energy:	26	25	23	22

Maximum Energy Add per Game-Turn: **5**
Ceiling: 440 levels
Size multiple: **4**

SAM-D Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	−1
	7	−2
	10	−3
	13	−4
	15	−5
II	17	−6
	19	−7
	21	−8
	23	−9
III	25	−11
	27	−13
	31	−15
	32	−18

SAM-D Dive Table

Dive Type	Levels Dived	MA Addition
I	4	0
	5	+1
	10	+2
	14	+3
II	20	+3
	25	+2
	32	+1
III	34	0
	36	−1
	40	−2
	42	−3
	45	−5

Missile Name:
Red Top

Basic Missile Information

Missile Type: heat seeking (improved)
Tracking Cone: normal
Turns of Flight: **66**
Tracking Range: **90**
Probability of Malfunction: If launched in enemy rear arc: **5**, otherwise **12**
Minimum Range: **2**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	15	14	13	12
1st GT Movement Add:	4	4	4	3
Turn Mode:	4	5	5	6
Maximum Energy:	21	20	19	18

Maximum Energy Add per Game-Turn: **3**
Use: Lightning

Red Top Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	5	−1
	7	−2
II	8	−3
	9	−4
	10	−5
	11	−6
III	12	−7
	13	−8

Red Top Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	5	+1
	7	+2
II	17	+3
	21	+2
	25	+1
	28	0
	31	−1
III	33	−2
	35	−3

SA-2

Basic Missile Information

Missile Type: beam-riding SAM (surface-to-air missile)
Tracking Cone: limited
Turns of Flight: **24**
Tracking Range: **400 hexes**
Probability of Malfunction: **5**

Minimum Range: **2**
Minimum Launch Range: **30 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	14	14	13	12
1st GT Move Allowance:	11	11	11	11
2nd GT Move Allowance:	12	12	12	12
3rd GT Move Allowance:	13	13	13	13
Turn Mode:	8	9	9	10
Maximum Energy:	18	17	16	16

Maximum Energy Add per Game-Turn: **2**
Ceiling: **510 levels**
Size multiple: **6**

SA-2 Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	−1
	6	−2
	8	−3
	10	−4
II	13	−5
	15	−7
	17	−8
III	19	−10
	21	−11
	22	−12

SA-2 Dive Table

Dive Type	Levels Dived	MA Addition
I	4	0
	6	+1
	10	+2
II	20	+3
	25	+2
	28	+1
	30	0
III	32	−1
	34	−2
	36	−3
	37	−5

SA-6

Basic Missile Information

Missile Type: radar-homing SAM (surface-to-air missile)
Tracking Cone: Normal
Turns of Flight: **29**
Tracking Range: **500 hexes**
Probability of Malfunction: **5**
Minimum Range: **2**
Minimum Launch Range:
From all angles: **7 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	14	14	13	12
1st GT Move Allowance:	5	5	5	5
Turn Mode:	5	6	7	7
Maximum Energy:	20	19	19	18

Maximum Energy Add per Game-Turn: **4**
Ceiling: **472 levels**
Size multiple: **4**

SA-6 Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	−1
	7	−2
	9	−3
	11	−4
II	13	−5
	15	−6
	17	−7
III	19	−8
	21	−9
	23	−10
	24	−11

SA-6 Dive Table

Dive Type	Levels Dived	MA Addition
I	4	0
	6	+1
	11	+2
II	20	+3
	25	+2
	29	+1
III	30	0
	32	−1
	34	−2
	36	−3
	38	−4

SA-3

Basic Missile Information

Missile Type: radar-homing SAM (surface-to-air missile)
Tracking Cone: limited
Turns of Flight: **17**
Tracking Range: **250 hexes**
Probability of Malfunction: **6**
Minimum Range: **2**
Minimum Launch Range: From all angles: **10 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	11	11	10	10
1st GT Move Allowance:	6	6	6	6
2nd GT Move Allowance:	5	5	5	5
Turn Mode:	6	7	8	8
Maximum Energy:	16	16	15	15

Maximum Energy Add per Game-Turn: **3**
Ceiling: **380 levels**
Size multiple: **5**

SA-3 Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	−1
	7	−2
	9	−3
II	11	−4
	13	−5
III	15	−5
	18	−6

SA-3 Dive Table

Dive Type	Levels Dived	MA Addition
I	4	0
	7	+1
II	10	+2
	15	+3
	20	+2
III	25	+1
	29	0
	30	−1

Hawk I

Basic Missile Information

Missile Type: radar homing SAM (surface-to-air missile)
Tracking Cone: Normal
Turns of Flight: **22**
Tracking Range: **350 hexes**
Probability of Malfunction: **4**
Minimum Range: **2**
Minimum Launch Range: From any angle: **12 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	14	14	13	12
1st GT Movement Add:	9	9	9	9
Turn Mode:	6	6	6	7
Maximum Energy:	21	20	19	18

Maximum Energy Add per Game-Turn: **5**
Ceiling: **400 levels**
Size multiple: **4**

Hawk I Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	−1
	7	−2
	10	−3
	12	−4
II	14	−5
	16	−6
	18	−7
	20	−8
III	22	−9
	24	−10
	26	−11

Hawk I Dive Table

Dive Type	Levels Dived	MA Addition
I	4	0
	6	+1
	8	+2
	10	+3
II	16	+2
	20	+1
	25	0
	29	−1
III	30	−2
	35	−3
	39	−4

Early Sparrow AIM-7B through AIM-7E1

This Missile Performance Chart is valid for any of the above missile types.

Basic Missile Information

Missile Type: radar-homing
Tracking Cone: Normal
Turns of Flight: **5**
Tracking Range: **168 hexes**
Probability of Malfunction: **7**
Minimum Range: **2**
Minimum Launch Range:
From rear: **10 hexes**
From side: **20 hexes**
From front: **30 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	18	18	17	15
1st GT Movement Add:	4	4	4	4
Turn Mode:	7	7	8	8
Maximum Energy:	23	22	21	20

Maximum Energy Add per Game-Turn: **3**

Early Sparrow Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	0
	4	−1
	7	−2
II	8	−3
	10	−5
	11	−6
III	12	−8
	13	−12
	14	−14

Early Sparrow Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	5	+1
	8	+2
	10	+3
II	21	+4
	24	+3
	28	+2
III	32	+1
	40	+0
	44	−1

Phoenix AIM-54A

Basic Missile Information

Missile Type: radar-homing
Tracking Cone: Normal
Turns of Flight: **50**
Tracking Range: **1,320 hexes**
Probability of Malfunction: **4**
Minimum Range: **2**
Minumum Launch Range:
From rear: **12 hexes**
From side: **24 hexes**
From front: **36 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	23	21	19	17
1st GT Movement Add:	6	6	5	5
Turn Mode:	7	7	6	6
Maximum Energy:	27	25	23	21

Maximum Energy Add per Game-Turn: **5**

Phoenix Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
	8	−3
II	10	−4
	12	−5
	14	−6
III	16	−7
	17	−8
	18	−9

Phoenix Dive Table

Dive Type	Levels Dived	MA Addition
I	4	+1
	8	+2
	12	+3
II	19	+3
	21	+2
	26	+1
	30	0
	34	−1
III	37	−3
	40	−6
	41	−10
	42	−12
	43	−14
	44	−16
	45	−18
	46	−19

Late Sparrow AIM-7E2 and AIM-7F and Brazo

This Missile Performance Chart is valid for any of the above missile types.

Basic Missile Information

Missile Type: radar-homing
Tracking Cone: Normal
Turns of Flight: **8**
Tracking Range: **210 hexes**
Probability of Malfunction: **4**
Minimum Range: **2**
Minimum Launch Range:
From rear: **7 hexes**
From side: **15 hexes**
From front: **20 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	21	20	19	17
1st GT Movement Add:	5	5	4	4
Turn Mode:	6	6	7	7
Maximum Energy:	26	25	24	23

Maximum Energy Add per Game-Turn: **4**

Late Sparrow/Brazo Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
	8	−3
II	11	−4
	12	−5
III	14	−6
	15	−7
	16	−8
	17	−9

Late Sparrow/Brazo Dive Table

Dive Type	Levels Dived	MA Addition
I	3	+0
	4	+1
	6	+2
	8	+3
	13	+4
II	24	+4
	25	+3
	29	+2
III	32	+1
	40	+0
	44	−1

NOTES:

The Brazo missile is identical to the AIM-7F except that it does not require a radar lock-on to its target. Rather, the target marker is placed in front of the aircraft that is using radar; as long as that aircraft continues to use Radar Search every turn, or as long as it retains a radar lock-on, the Brazo will be able to track its target. If, on a given Game-Turn, the Brazo's target does not use Radar Search, does not attempt to get a radar lock-on, and either does not have radar contact with any aircraft or voluntarily breaks such contact, the Brazo goes ballistic and is removed from play.

Late Sidewinder AIM-9E through AIM-9J and Shafrir

This Missile Performance Chart is valid for any of the above missile types.

Basic Missile Information

Missile Type: Improved Heat-seeking
Tracking Cone: Normal
Turns of Flight: **6**
Tracking Range: **120 hexes**
Probability of Malfunction: **5**
Minimum Range: **2**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	16	15	14	13
1st GT Movement Add:	4	4	3	3
Turn Mode:	4	4	5	5
Maximum Energy:	21	20	19	18

Maximum Energy Add per Game-Turn: **4**

Note: The AIM-9L is identical to other Late model Sidewinders, except that is is an all-angle heat-seeking missile.

Late Sidewinder/Shafrir Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
II	8	−3
	9	−4
	10	−5
	11	−6
III	12	−7
	13	−8

Late Sidewinder/Shafrir Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	6	+1
	9	+2
II	16	+3
	21	+2
	26	+1
III	28	0
	30	−1
	32	−2
	33	−3
	34	−4
	37	−5

AA-6 Acrid

This Missile comes in two versions; one heat-seeking, one radar-homing.

Basic Missile Information

Missile Type: heat-seeking or radar-homing
Tracking Cone: HS/normal, RH/limited
Turns of Flight: **19** for HS, **38** for HR
Tracking Range: **250** for HS, **500** for RH
Probability of Malfunction: **9**
Minimum Range: **4**
Minimum Launch Range: (for RH)
From rear: **18 hexes**
From side: **32 hexes**
From front: **42 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	16	15	14	13
1st GT Movement Add:	4	4	3	3
Turn Mode:	6	6	6	7
Maximum Energy:	21	20	19	18

Maximum Energy Add per Game-Turn: **3**

Acrid Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
II	8	−3
	9	−4
	10	−5
	11	−6
III	12	−7
	13	−8

Acrid Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	6	+1
	8	+2
II	16	+3
	21	+2
	25	+1
	28	0
	30	−1
III	33	−2
	37	−3

AA-8 Aphid

Basic Missile Information

Missile Type: improved heat-seeking
Tracking Cone: Normal
Turns of Flight: **2**
Tracking Range: **50**
Probability of Malfunction: **8**
Minimum Range: **2**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	15	14	13	12
1st GT Movement Add:	5	4	3	2
Turn Mode:*	3	4	4	5
Maximum Energy:	20	19	18	18

Maximum Energy Add per Game-Turn: **4**

Aphid Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
II	8	−4
	9	−5
	10	−7
III	11	−8
	12	−9

Aphid Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	6	+1
	8	+2
II	16	+3
	21	+2
	25	+1
III	28	0
	30	−1
	33	−3

AA-7 Apex

This Missile comes in two versions; one heat-seeking, one radar-homing.

Basic Missile Information

Missile Type: heat-seeking or radar-homing
Tracking Cone: Normal
Turns of Flight: **6** for HS, **12** for RH
Tracking Range: **100** for HS, **200** for RH
Probability of Malfunction: **8**
Minimum Range: **2**
Minimum Launch Range: (radar-homing)
From rear: **12 hexes**
From side: **24 hexes**
From front: **36 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	15	14	13	12
1st GT Movement Add:	3	3	3	2
Turn Mode:*	5/6	5/6	6/7	6/7
Maximum Energy:	20	19	18	17

Maximum Energy Add per Game-Turn: **3**
*First number for HS, second for RH.

Apex Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
II	8	−4
	9	−6
	10	−7
III	11	−8
	12	−9

Apex Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	6	+1
	8	+2
II	16	+3
	20	+2
	24	+1
III	27	0
	30	−2
	32	−3

SA-7 and SA-9

This Missile Performance Chart is valid for both of the above missile types.

Basic Missile Information

Missile Type: heat-seeking SAM (surface-to-air missile
Tracking Cone: Limited
Turns of Flight: **4/5**
Tracking Range: **30/35 hexes**
Probability of Malfunction: **12/10**
Minimum Range: **9/7 hexes**

Within Altitude Groups:	LO*
Max. Move Allowance:	8
1st GT Move Allowance:	4
Turn Mode:	5
Maximum Energy:	5

Maximum Energy Add per Game-Turn: **1**
Ceiling: **20/25 levels**
Size multiple: **4**

*Because of its ceiling, an SA-7 may never be above LO altitude.
(second figure relates to SA-9)

SA-7 Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	−1
	4	−2
	6	−3
II	7	−4
	9	−5
III	10	−6
	11	−7
	12	−8

SA-7 Dive Table

Dive Type	Levels Dived	MA Addition
I	6	0
II	14	+1
III	19	+2

NOTE:

Unlike all other missiles, the SA-7 does not automatically destroy a target that it hits. Rather, the target undergoes damage as per being hit by a Type E cannon. See 26.0 in the Ground Installations rules. The SA-9 is the same as the SA-7 except that it is always AFV-mounted and, where different figures appear, the SA-9 uses the one after the slash. When a target is hit by an SA-9, it is like being hit by a Type I cannon.

Matra R530

Basic Missile Information

Missile Type: radar-homing
Tracking Cone: limited
Turns of Flight: **9**
Tracking Range: **150 hexes**
Probability of Malfunction: **9**
Minimum Range: **3**
Minimum Launch Range:
From rear: **18 hexes**
From side: **30 hexes**
From front: **48 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	15	14	14	13
1st GT Movement Add:	4	4	3	3
Turn Mode:	6	7	7	7
Maximum Energy:	19	18	17	16

Maximum Energy Add per Game-Turn: **4**

Matra R530 Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	6	−2
II	8	−3
	9	−4
	10	−6
III	11	−7
	12	−8

Matra R530 Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	6	+1
	8	+2
II	14	+3
	21	+2
	25	+1
III	28	0
	30	−1
	32	−2
	35	−3

Early Sidewinder AIM-9B through AIM-9D and ATOLL

This Missile Performance Chart is valid for any of the above missile types.

Basic Missile Information

Missile Type: Heat-seeking
Tracking Cone: Normal
Turns of Flight: **2**
Tracking Range: **30 hexes**
Probability of Malfunction: **8** for Early Sidewinder, **11** for Atoll
Minimum Range: **2**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	14	14	13	12
1st GT Movement Add:	3	3	3	3
Turn Mode:	6	6	7	7
Maximum Energy:	19	18	18	17

Maximum Energy Add per Game-Turn: **3**

Early Sidewinder/Atoll Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	−1
	6	−2
II	7	−3
	8	−4
	9	−5
III	10	−6
	11	−8

Early Sidewinder/Atoll Dive Table

Dive Type	Levels Dived	MA Addition
I	4	0
	6	+1
	10	+2
II	14	+3
	20	+2
	22	+1
	25	0
III	26	−1
	28	−2
	30	−3
	32	−5
	34	−7

PC10

Matra Magic R550

Basic Missile Information

Missile Type: improved heat-seeking
Tracking Cone: Normal
Turns of Flight: **2**
Tracking Range: **50 hexes**
Probability of Malfunction: **5**
Minimum Range: **2**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	15	14	13	12
1st GT Movement Add:	5	4	4	3
Turn Mode:	3	4	4	5
Maximum Energy:	21	20	19	18

Maximum Energy Add per Game-Turn: **4**

Matra Magic Climb Table

Climb Type	Levels Climbed	MA Subtract
I	4	0
	6	−1
II	9	−2
	10	−3
III	11	−3
	12	−4

Matra Magic Dive Table

Dive Type	Levels Dived	MA Addition
I	2	0
	5	+1
	8	+2
II	18	+3
	21	+2
	25	+1
III	26	0
	28	−1
	30	−2
	31	−3

Dogfight Missile and SRAAM

This Missile Performance Chart is valid for any of the above missile types.

Basic Missile Information

Missile Type: improved heat-seeking
Tracking Cone: Normal
Turns of Flight: **5**
Tracking Range: **120 hexes**
Probability of Malfunction: **3**
Minimum Range: **2**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	18	17	16	15
1st GT Movement Add:	9	8	7	6
Turn Mode:	3	3	3	4
Maximum Energy:	24	23	22	21

Maximum Energy Add per Game-Turn: **4**

Dogfight/SRAAM Climb Table

Climb Type	Levels Climbed	MA Subtract
I	4	0
	6	−1
II	9	−2
	11	−3
III	12	−5
	13	−8

HPDogfight/SRAAM Dive Table

Dive Type	Levels Dived	MA Addition
I	2	0
	5	+1
	7	+2
	10	+3
II	20	+3
	22	+2
	24	+1
	26	0
	28	−1
	30	−2
	31	−3
III	32	−5
	33	−6



Aircraft Name:

Boeing B-52H Stratofortress

Basic Aircraft Information Table

Aircraft Type: Strategic Heavy Bomber
Cannon Type: **A, rear mounted**
Cannon Shots: **20**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **50**
Ceiling: **244**
Deceleration: **30**
Size: **9**
Number of Crew Members: **6**
Point Value: **5/44**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	2	2	2
Maximum Energy:	9	10	12	13

Maximum Energy Addition/Turn: **4**
Cruise Speed: **4**

Special Rules:

1. Electronics given for rules are only for modified B-52s existing since c. 1976.
2. The B-52s tail-mounted cannon has a range of nine hexes, with the three divisions being 1-3, 4-6, 7-9 hexes respectively. Other than this they are treated as normal.

B-52 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	5	6	7	8
1	5	6	7	8
3	5	7	8	9
4	6	7	8	9
5	6	7	8	9
6	7	9	10	11

B-52 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	2	1	1	1
2	1	1	1	½
3	1	1	1	½
4	1	1	½	½
5	—	—	—	—

B-52 Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	5	1	3	6	1	3	6	1
II	4	6	1	5	6	1	5	6	1	6	6	1
III	9	4	0	10	4	0	10	5	0	10	5	0

B-52 Roll Table

Movement Points	Points Rolled
1	1
2	2

B-52 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO			ML			MH		HI
	1	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**1**
5	4	3	2	3	2	1	3	1	2
4	3	2	1	2	1	–	2	–	1
3	2	1	–	1	–	–	–	–	–
2	1	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–

B-52 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	may not perform			
...Entering Pull-Through:	may not perform			
Game-Turns in Push-Through before...				
...Making Split-S:	may not perform			
Reduction in Movement Allowance for..				
...Making Lateral Rudder Roll:	may not perform			
...Executing Break:	3	3	4	4
Energy Points Lost in each Pull-Up:	2	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

B-52 Loaded Characteristics:

Maximum Throttle: **4** at LO & ML; **5** at MH & HI.
Dive: No type III, may not exceed maximum throttle setting.
Climb: No type III, MA – 1.
Acceleration: Treat all **1**'s as ½'s.
Turn Mode: Add **2** to all turn modes.
Roll Cost: Add **1** MP to all costs.
Ceiling: **220 levels.**







Aircraft Name:
Northrop F-5E Tiger II

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **1**
Cannon Shots: **6**
RH Missiles: **0**
HS Missiles: **2**
Damage Capacity: **7**
Ceiling: **207**
Deceleration: **8**
Size: **5**
Number of Crew Members: **1**
Point Value: **6/3**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	7	7	8
Minimum Throttle:	1	2	2	2
Maximum Energy:	12	13	13	14

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none.

Other Versions:
F-5A: The F-5A differs from the F-5E as follows. *Ceiling:* 200; *Deceleration:* 7; *Maximum Throttle:* ML (6), HI (7); *Maximum Energy:* ML (12), HI (13); Climb: LO+ (–2) from all Type III, (–1) from others, LO, ML, HI (–4) from all Type III, (–2) from all others; *Dive:* LO Type II (Max MA 6), LO Type III (Lvls Dvd 11), ML (Max MA when diving 2 levels, 6), ML Type II (Max MA 6), ML Type III (Max Lvls Dvd 13), HI (Max MA may not exceed 7), HI (Max Lvls Dvd 14); *Turn Mode:* ML with MA of 5 (3), MH with MA of 1 (3), MH with MA of 4 (4), MH with MA of 5 (5), HI with MA of 1 (3), HI with MA of 5 (6); *Acceleration:* LO with TS of 4 (2), ML (–1 from all numbers above 3), MH (halve all numbers above 2), HI (halve all numbers above 1); *Flight Parameters:* MH (increase numbers for Immelmann and Split-S by 1; *Loaded Characteristics:* Ceiling of 105.

F-5E Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

F-5E Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	3	4
3	2	2	3	4
4	2	2	3	5
5	2	2	4	5
6	3	3	5	6
7	4	4	6	7
8	–	–	7	8

F-5E Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	2
2	3	3	2	2
3	3	3	2	2
4	3	3	2	1
5	2	2	2	1
6	–	2	1	1
7	–	–	–	1

F-5E Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	6	0	2	7	0	2	7	0	2	8	0
	3	7	2	5	7	2	5	8	2	5	8	1
II	10	7	1	10	7	1	10	8	1	10	8	1
				15	7	1	15	7	1	15	7	1
III	14	6	0	16	6	0	17	6	0	19	6	0

F-5E CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO						ML				MH			HI		
	1	2	3	4	5	6	1	2	3	4	1	2	3	1	2	3
8	–	–	–	–	–	–	–	–	–	–	–	–	–	7	6	4
7	–	–	–	–	–	–	6	5	3	3	6	5	3	6	5	3
6	5	4	3	3	3	2	5	4	2	2	5	4	2	6	4	2
5	4	2	2	2	1	1	4	2	1	1	4	2	1	5	3	1
4	3	1	1	1	–	–	3	1	1	–	3	1	–	4	2	–
3	2	1	–	–	–	–	2	1	–	–	2	1	–	3	1	–
2	1	–	–	–	–	–	1	–	–	–	1	–	–	2	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

F-5E Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	3	3	3	4
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

F-5E Loaded Characteristics

Maximum Throttle: **5** at all altitudes.
Dive: may not exceed maximum throttle setting.
Climb: no type III climb, MA reduced by 2.
Acceleration: **halved,** retaining fractions.
Turn Mode: increased by **one-third.**
Roll Cost: **1-2** pts: **0** MP, **3+** pts.: **1** MP.
Ceiling: **120 levels.**





Aircraft Name:

Republic F-105D Thunderstreak

Basic Aircraft Information Table
Aircraft Type: fighter-bomber
Cannon Type: **A**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **1**
Damage Capacity: **13**
Ceiling: **208**
Deceleration: **9**
Size: **6**
Number of Crew Members: **1**
Point Value: **7/6**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	7	7	8	8
Minimum Throttle:	2	2	2	2
Maximum Energy:	13	14	15	15

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules: none

Other Versions:
F-105WW: Two seat Wild Weasel version. See "Wild Weasel" rules for full explanation of differences and functions.

Note:
The performance figures on this chart reflect a typical F-105 of the 1967-68 era when their performance was considerably less than it had been when the aircraft were younger. In the early 60's, the speed of F-105's was comparable to that of the F-4, and they would carry up to four Sidewinders.

F-105D Roll Table

Movement Points	Points Rolled
0	1
1	2+

F-105D Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	3	4	6	7
2	3	4	6	7
3	4	5	8	8
4	5	7	9	9
5	5	8	10	12
6	6	9	11	13
7	6	9	12	14
8	6	9	12	14
9	7	10	12	14
10	8	10	13	15

F-105D Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	3	3	2	1
3	3	2	2	1
4	2	2	2	½
5	2	2	1	½
6	1	1	1	½
7	–	–	½	½

F-105D Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	7	0	2	8	0	2	8	0
	5	10	3	5	10	2	5	10	2	5	10	2
II	15	9	1	15	9	1	15	10	1	15	10	1
III	17	9	0	19	9	1	20	9	1	21	9	1

F105D CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO						ML					MH			HI		
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	1	2	3
8	–	–	–	–	–	–	–	–	–	–	–	7	6	4	7	6	4
7	6	5	3	2	2	1	6	5	3	2	2	6	5	3	6	5	3
6	5	4	3	2	1	1	5	4	3	2	1	5	4	2	5	3	2
5	4	3	2	2	1	–	4	2	2	1	–	4	2	1	4	2	1
4	3	2	1	1	–	–	3	1	1	–	–	3	1	–	3	1	–
3	2	1	1	–	–	–	2	1	–	–	–	2	–	–	2	–	–
2	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

F-105D Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	2	3	5	6
...Entering Pull-Through:	1	2	4	5
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	3	4
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	3	3	3	4
...Executing Break:	3	3	3	4
Energy Points Lost in each Pull-Up:	1	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

F-105D Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: MA may not exceed max. Throttle Setting.
Climb: No Type III Climbs; MA reduced by **2** from that indicated on Climb Table.
Acceleration: **halve** all Accel. Allowances, retaining fractions.
Turn Mode: **add one-third** to all Turn Modes, rounding down.
Roll Cost: rolling one point costs **1** Movement Point, more costs **2**.
Ceiling: **150 levels**.







Aircraft Name:

McDonnell Douglas F-4E Phantom

Basic Aircraft Information Table

Aircraft Type: fighter and fighter -bomber
Cannon Type: **A**
Cannon Shots: **3**; F-4D: **6**
RH Missiles: **4**; **6** if no HS missiles carried
HS Missiles: **4**
Damage Capacity: **14**
Ceiling: **249**
Deceleration: **10**
Size: **7**
Number of Crew Members: **2**
Point Value: **9/6**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	10
Minimum Throttle:	2	2	2	3
Maximum Energy:	13	14	15	16

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules: none.

Other Versions:
F-4B and C: delete cannon. Use second of two Turn Mode, Acceleration, and maneuver figures after slashes where they differ. "B" has infra-red detector.
RF-4B and RF-4C: unarmed reconnaissance versions of the above aircraft. No missiles or cannon.
F-4D: as an F-4C, only with a Type A cannon and 5 cannon shots.
RF-4E: unarmed reconnaissance version of basic "E" aircraft. No missiles or cannon.
F-4E without slats: use Turn Mode and Maneuver figures after slashes.
All F-4Es are assumed to have slats unless otherwise noted.
F-4F: As standard, slatted, F-4E, but cannot use radar homing missiles.
F-4J: As unslatted E; delete cannon; has internal ECM.
F-4GWW: "Wild Weasel" version of standard slatted F-4E. See Wild Weasel rules.
F-4K and **M:** As F-4J (inc. ECM).
F-4S: As slatted F-4E; delete cannon; has F-4J electronics.

F-4 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	3/4	4/5	5/6
2	2	3/4	4/5	5/6
3	3	4	4/6	6/7
4	3	4/5	5/6	6/7
5	3/4	5/6	6/7	7/8
6	4/5	6	7/8	8/9
7	4/5	6/7	8/9	9/10
8	5/6	7	8/10	9/11
9	6	7/8	9/10	10/12
10	6/7	7/9	9/11	11/12
11	–	–	10/12	12/13
12	–	–	–	12/14

F-4 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4/3	3	3/2	1
2	3	3	3/2	1
3	3	3	2	1
4	3	3/2	2	1
5	3/2	2/1	2/1	1
6	2	1	1	1
7	–	1	1	1/½
8	–	–	1	½
9	–	–	–	½

F-4 Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

F-4 Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	10	3	5	11	3	5	11	2	5	12	2
II	15	9	1	15	10	1	15	11	1	15	11	1
III	18	9	1	20	9	1	20	10	1	20	10	1
							21	9	1	22	9	1

F-4E CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO					ML				MH			HI		
	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
10	–	–	–	–	–	–	–	–	–	–	–	–	9	8	6
9	–	–	–	–	–	–	–	–	–	8	7	5	9	7	5
8	–	–	–	–	–	7	6	4	2	7	6	4	8	6	4
7	6	5	4	3	2	6	5	3	1	6	5	3	7	5	3
6	5	4	3	2	1	5	4	2	–	5	4	2	6	4	2
5	4	2	2	1	–	4	2	2	–	4	2	–	5	3	–
4	3	2	1	–	–	3	1	1	–	3	1	–	4	1	–
3	2	1	–	–	–	2	1	–	–	2	–	–	3	–	–
2	1	–	–	–	–	1	–	–	–	1	–	–	1	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

F-4 Loaded Characteristics:

Maximum Throttle: **5** at LO and ML, **6** at MH and HI.
Dive: Movement Allowance may not exceed Maximum Throttle.
Climb: No Type III Climbs; all Movement Allowances on Climb Table are reduced by two.
Acceleration: **halve** all Acceleration Allowances, retaining fractions.
Turn Mode: add **one-third** to all Turn Modes, rounding up.
Roll Cost: rolling **1** to **2** points costs **1** Movement Point, more costs **2.**
Ceiling: **150 levels.**
Missiles: may not carry HS missiles when loaded before 1968.

F-4 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	2	3	3(4)
...Entering Pull-Through:	1	1	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	1	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	2	3/2	3
...Executing Break:	3/2	3	3	4/3
Energy Points Lost in each Pull-Up:	2/1	2	3/2	3
MP Lost each Game-Turn Wings Vertical:	2/1	2	3/2	3/2







Aircraft Name:
Vought A-7D & E Corsair II "Sluf"

Basic Aircraft Information Table
Aircraft Type: strike aircraft
Cannon Type: **A**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **2**
Damage Capacity: **13**
Ceiling: **200**
Deceleration: **7**
Size: **6**
Number of Crew Members: **1**
Point Value: **4/16**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	2	2
Maximum Energy:	8	9	10	10

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**
Special Rules: none.

A-7 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	3	3	5	6
2	3	3	5	6
3	4	4	6	7
4	5	5	7	8
5	5	6	8	9
6	5	7	8	10

A-7 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	2	2	1	1
2	2	2	1	½
3	1	1	1	½
4	1	1	½	½

A-7 Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	5	1	3	6	1	3	6	1
II	4	6	1	5	6	1	5	6	1	6	6	1
III	10	5	0	10	5	0	11	5	0	11	5	0

A-7 Roll Table

Movement Points	Points Rolled
0	**1**
1	**2+**

A-7 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

Number of Levels Climbed (by Altitide Grouping)

	LO		ML		MH		HI
	1	**2**	**1**	**2**	**1**	**2**	**1**
5	4	3	4	3	3	1	3
4	3	2	3	2	3	–	2
3	2	2	2	1	2	–	2
2	1	–	1	–	1	–	1
1	–	–	–	–	–	–	–

A-7 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	4	4	6	7
...Entering Pull-Through:	3	3	4	6
Game-Turns in Push-Through before...				
...Making Split-S:	3	3	4	5
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	3	3	3
...Executing Break:	3	3	3	3
Energy Points Lost in each Pull-Up:	1	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

A-7 Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: no restrictions.
Climb: May not make Type II climb, MA reduced by one.
Acceleration: **halve** all numbers retaining fraction.
Turn Mode: add **1** to all numbers five and under, **2** to all others.
Roll Cost: **double.**
Ceiling: **160 levels.**







Aircraft Name:

McDonnell Douglas A-4F-M Skyhawk

Basic Aircraft Information Table

Aircraft Type: strike aircraft
Cannon Type: **G** in A-4H; **J** in all others
Cannon Shots: **3** in A-4H; **5** in A-4M; **4** in all others
RH Missiles: **0**
HS Missiles: **2**
Damage Capacity: **5**
Ceiling: **192**
Deceleration: **6**
Size: **5**
Number of Crew Members: **1**
Point Value: **4/9**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	2	2
Maximum Energy:	7	8	8	9

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**
Special Rules: none.

A-4 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	2
3	2	2	3	3
4	2	3	3	4
5	3	3	4	5
6	3	5	5	6

A-4 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	2	2	2	1
3	2	2	1	1
4	2	1	1	½

A-4 Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	5	1	3	5	1	3	6	1
II	5	6	1	5	6	1	5	6	1	5	6	1
III	9	5	0	9	5	0	10	5	0	10	5	0

A-4 Roll Table

Movement Points	Points Rolled
0	1
1	2+

A-4F-M CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO			ML			MH		HI	
	1	2	3	1	2	3	1	2	1	2
5	3	2	1	3	2	1	3	1	3	1
4	2	2	1	2	1	–	2	1	2	1
3	2	1	–	2	–	–	2	–	1	–
2	1	–	–	1	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–

A-4 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	3	3	4	4
...Entering Pull-Through:	3	3	3	3
Game-Turns in Push-Through before...				
...Making Split-S:	1	2	2	3
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	3	3	3
...Executing Break:	3	3	3	3
Energy Points Lost in each Pull-Up:	2	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

A-4 Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: no restrictions.
Climb: No Type II or III climb, MA reduced by one.
Acceleration: **halve** all numbers, retaining fractions.
Turn Mode: add **2** to all modes.
Roll Cost: **double** costs.
Ceiling: **142.**
Missiles: may not carry air-air missiles when loaded.







Aircraft Name:

General Dynamics F-111E Aardvark

Basic Aircraft Information Table

Aircraft Type: Fighter-bomber.
Cannon Type: **A**
Cannon Shots: **8**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **24**
Ceiling: **240**
Deceleration: **10**
Size: **7**
Number of Crew Members: **2**
Point Value: **8/26**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	8	10	12
Minimum Throttle:	1	2	3	3
Maximum Energy:	12	14	16	18

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules: none.

Other Versions:

EF-111EWW: "Wild Weasel" version. See Wild Weasel Rules for differences from standard F-111E.

F-111A and C: Reduce maximum Movement Allowance by one in all dives of over two levels. Also add one to all turn modes at a Movement Allowance of seven or greater.

F111E Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

F-111E Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	3	4	6	7
2	3	4	6	7
3	4	5	7	8
4	4	5	7	9
5	5	6	8	10
6	6	7	10	11
7	7	8	11	12
8	7	8	12	13
9	8	9	13	14
10	9	10	14	15
11	–	11	15	16
12	–	–	16	17
13	–	–	–	18

F-111E Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	2	2	1
2	3	2	2	1
3	3	2	2	1
4	2	2	1	1
5	2	1	1	1
6	–	1	1	½
7	–	1	1	½
8	–	–	1	½
9	–	–	1	½
10	–	–	–	½
11	–	–	–	½

F-111E Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	6	0	2	8	0	2	10	0	2	12	0
	5	10	3	5	11	3	5	12	2	5	13	2
II	10	9	1	15	11	1	15	12	1	15	12	1
	15	8	1									
III	20	8	1	20	10	1	20	11	1	20	11	1
				22	9	1	23	10	1	24	10	1

F111E CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO							ML						MH				HI		
	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	1	2	3
12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	8	3
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	7	2
10	–	–	–	–	–	–	–	–	–	–	–	–	–	9	7	4	3	9	6	1
9	–	–	–	–	–	–	–	–	–	–	–	–	–	8	6	3	2	8	5	1
8	–	–	–	–	–	–	–	7	6	5	4	3	2	7	5	2	1	7	4	–
7	–	–	–	–	–	–	–	6	5	4	3	2	1	6	4	1	1	6	3	–
6	5	5	4	4	3	3	2	5	4	3	2	1	1	5	3	1	–	5	2	–
5	4	4	3	3	2	2	1	4	3	2	1	–	–	4	2	–	–	4	1	–
4	3	3	2	2	1	1	–	3	2	1	–	–	–	3	1	–	–	3	1	–
3	2	2	1	1	–	–	–	2	1	–	–	–	–	2	–	–	–	2	–	–
2	1	1	–	–	–	–	–	1	1	–	–	–	–	1	–	–	–	1	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

F-111E Flight Parameters

Game-Turns in Type III Climb before...	LO	ML	MH	HI
...Making Immelmann:	2	3	3	4
...Entering Pull-Through:	1	2	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	1	1	2	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	3	3	4
...Executing Break:	3	4	4	4
Energy Points Lost in each Pull-Up:	1	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

F-111E Loaded Characteristics:

Maximum Throttle: **6** at LO and ML; **7** in MH, **8** in HI.
Dive: Movement Allowance may not exceed Maximum Throttle.
Climb: reduce all Movement Allowances on Climb Table by **2**; No Type III Climbs.
Acceleration: **reduce all Acceleration Allowances greater than 1** by **50%**.
Turn Mode: add **one-third** to all Turn Modes, rounding up.
Roll Cost: rolling **1-2** points costs **1** Movement Point, **3** or more costs **2.**
Ceiling: **180 levels.**







Aircraft Name:
Fairchild A-10A

Basic Aircraft Information Table
Aircraft Type: ground attack "sturmavik"
Cannon Type: **H**
Cannon Shots: **9**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **20**
Ceiling: **144**
Deceleration: **16**
Size: **5**
Number of Crew Members: **1**
Point Value: **3/14**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	3	3	3	3
Minimum Throttle:	1	1	1	1
Maximum Energy:	5	5	5	5

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **3**

Special Rules:
may visually search rear arc.

A-10 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	1	1	1	1
2	1	1	1	2
3	2	2	3	4
4	2	2	3	4

A-10 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	2
2	3	3	2	2

A-10 Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	4	1	2	4	1	2	4	1	2	4	1
II	4	4	1	4	4	1	4	4	1	4	3	0
III	6	3	0	6	3	0	6	3	0	5	3	0

A-10 Roll Table

Movement Points	Points Rolled
0	1
1	2+

A10A CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

Number of Levels Climbed (by Altitude Grouping)

	LO	ML	MH	HI
	1	1	1	1
3	2	2	2	2
2	2	1	1	1
1	1	–	–	–

A-10 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type I Climb before...				
...Making Immelmann:	3	3	3	4
...Entering Pull-Through:	2	2	3	4
Game-Turns in Push-Through before...				
...Making Split-S:	1	1	1	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	2	2	3
...Executing Break:	2	2	3	3
Energy Points Lost in each Pull-Up:	1	1	1	2
MP Lost each Game-Turn Wings Vertical:	1	1	2	2

A-10 Loaded Characteristics:

Maximum Throttle: **3** at all altitudes.
Dive: no restrictions.
Climb: Movement Allowance may not exceed one.
Acceleration: reduce by **50%**, losing fractions.
Turn Mode: no change.
Roll Cost: no change.
Ceiling: **89 levels.**



Aircraft Name:
General Dynamics F-16A

Basic Aircraft Information Table
Aircraft Type: fighter and fighter -bomber
Cannon Type: **A**
Cannon Shots: **2**
RH Missiles: **2** (post c. 1980)
HS Missiles: **6, 4** if RH missiles carried
Damage Capacity: **13**
Ceiling: **240**
Deceleration: **16**
Size: **5**
Number of Crew Members: **1**
Point Value: **10/6**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	7	8	9	10
Minimum Throttle:	1	1	2	2
Maximum Energy:	14	15	16	17

Maximum Energy Add per Game-Turn: **5**
Cruise Speed: **4**

Special Rules:
May visually search rear arc.

F-16A Roll Table

Movement Points	Points Rolled
0	1-4
1	5+

F-16A Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	2
3	2	2	2	3
4	2	2	2	3
5	2	2	2	3
6	2	2	3	4
7	2	3	3	4
8	3	3	4	5
9	3	3	4	5
10	3	4	4	6
11	–	5	5	6
12	–	–	–	7

F-16A Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	6	6	5	2
2	6	6	4	2
3	6	6	4	2
4	6	6	4	2
5	5	5	3	2
6	4	4	3	2
7	–	3	2	1
8	–	2	2	1
9	–	–	–	1
10	–	–	–	–

Note: May accelerate while climbing.

F-16A Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	10	3	5	11	3	5	11	2	5	12	2
II	15	10	2	10	11	2	15	11	2	10	12	2
				15	10	2				15	12	1
III	22	9	1	20	10	1	20	11	1	20	11	1
				23	9	1	24	10	1	25	10	1

F16A CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO										ML										MH							HI					
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	1	2	3	4	5	6
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	8	7	6	5
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	7	6	5	4	3	9	8	7	6	5	4
8	–	–	–	–	–	–	–	–	–	–	8	7	6	6	5	4	4	3	2	1	8	7	6	5	4	3	2	8	7	6	5	4	3
7	7	6	6	5	5	4	4	3	3	2	7	6	6	5	4	3	2	2	1	–	7	6	5	4	3	2	2	7	6	5	4	3	2
6	6	5	5	4	4	3	3	2	2	1	6	5	5	4	3	2	2	1	–	–	6	5	4	3	2	–	–	6	5	4	3	2	–
5	5	4	4	3	3	2	2	1	1	–	5	4	4	3	2	1	1	–	–	–	5	4	3	2	–	–	–	5	4	3	2	–	–
4	4	3	3	2	2	1	1	–	–	–	4	3	3	2	1	–	–	–	–	–	4	3	2	1	–	–	–	4	3	2	1	–	–
3	3	2	2	1	1	–	–	–	–	–	3	2	1	1	–	–	–	–	–	–	3	2	1	–	–	–	–	3	2	1	–	–	–
2	2	1	1	–	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	2	1	–	–	–	–
1	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–

F-16A Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	0	0	0	1
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	1	2
...Executing Break:	1	2	2	2
Energy Points Lost in each Pull-Up:	1	1	1	2
MP Lost each Game-Turn Wings Vertical:	1	1	1	2

F-16A Loaded Characteristics:

Maximum Throttle: **6** at LO; **7** at ML; **6** at MH & HI
Dive: May not exceed maximum throttle setting.
Climb: Reduce MA by two.
Acceleration: **reduce all acceleration allowance by one-third, rounding to nearest number.**
Turn Mode: **add 1** to all turn modes LO & ML, **2** at MH & HI.
Roll Cost: **1-3** cost **1** MP, **4+ 2** MP.
Ceiling: **144 levels.**
Missiles: May only carry two HSM when loaded.







Aircraft Name:

McDonnell Douglas F-15A Eagle

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **A**
Cannon Shots: **4**
RH Missiles: **4**
HS Missiles: **4**
Damage Capacity: **18**
Ceiling: **312**
Deceleration: **17**
Size: **5**
Number of Crew Members: **1**
Point Value: **11/15**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	7	9	10	12
Minimum Throttle:	1	1	1	2
Maximum Energy:	14	16	17	19

Maximum Energy Add per Game-Turn: **5**
Cruise Speed: **4**

Special Rules:
May have up to 2 lock-ons simultaneously. May fire HSM at other targets while having lock-on.

Other Versions:
RF-15A: armed reconnaissance version. Retains armament.

F15A Roll Table

Movement Points	Points Rolled
0	1-4
1+	5+

F15A Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	1	1	1	1
2	2	2	2	3
3	2	2	3	4
4	2	2	3	4
5	2	2	3	4
6	2	3	4	5
7	3	3	4	5
8	3	4	5	6
9	4	4	5	6
10	5	5	6	7
11	6	6	7	7
12	–	7	8	8

F15A Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	7	6	5	2
2	6	6	4	2
3	6	6	4	2
4	6	6	4	2
5	6	5	3	2
6	5	4	3	2
7	–	4	3	1
8	–	3	2	1
9	–	–	2	1
10	–	–	–	1
11	–	–	–	1

Note: May climb while accelerating.

F-15A Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	8	1	2	10	1	2	11	1	2	12	1
	5	11	4	5	12	4	5	12	3	5	12	3
							10	12	2	10	12	2
II	10	11	2	15	11	2	15	12	2	15	12	2
	15	10	2				20	11	1	20	12	1
III	20	10	1	20	10	1	25	11	1	25	11	1
	21	9	1	24	9	1	26	10	1	27	10	1

F15A CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO													ML										MH							HI						
	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12	11	9	8	7	5	3
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	10	8	7	6	4	2
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	8	7	6	5	3	10	9	7	6	5	4	1
9	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	7	6	5	5	4	4	2	1	9	8	7	6	5	4	2	9	8	6	5	4	3	–
8	–	–	–	–	–	–	–	–	–	–	–	–	–	8	7	6	5	4	4	3	2	2	–	8	7	6	5	4	3	1	8	7	5	4	4	2	–
7	7	6	5	5	5	4	4	4	3	3	2	2	1	7	6	5	4	3	3	2	1	1	–	7	6	5	4	3	3	–	7	6	4	3	3	1	–
6	6	5	4	4	4	3	3	3	3	2	2	1	–	6	5	4	3	2	2	1	–	–	–	6	5	4	3	2	2	–	6	5	3	2	2	–	–
5	5	4	3	3	3	2	2	2	2	1	1	–	–	5	4	3	2	2	1	–	–	–	–	5	4	3	2	1	1	–	5	4	2	1	1	–	–
4	4	3	2	2	2	1	1	1	1	–	–	–	–	4	3	2	1	1	–	–	–	–	–	4	3	2	1	–	–	–	4	3	1	–	–	–	–
3	3	2	1	1	1	–	–	–	–	–	–	–	–	3	2	1	–	–	–	–	–	–	–	3	2	1	–	–	–	–	3	2	–	–	–	–	–
2	2	1	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	2	1	–	–	–	–	–
1	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–

Eagle Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	0	0	1	1
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	2	2	3
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	1	2	2	2

Eagle Loaded Characteristics:

Maximum Throttle: **6** at LO; **7** at ML and MH; **8** at HI
Dive: May not exceed max. Throttle Setting.
Climb: reduce MA by two.
Acceleration: Reduce all acceleration allowances by one-third, rounding fractions to nearest number.
Turn Mode: Add **1** to all modes LO and ML, **2** at MH and HI.
Roll Cost: **1-4** cost one MP, **5+** cost two MP.
Ceiling: **150 levels.**

Missile Name:

AA-3

Anab (This missile comes in two versions: heat seeking and radar homing.)

Basic Missile Information

Missile Type: heat-seeking or radar homing. (Heat seeking version has normal tracking against targets with a Throttle Setting of 7 or more, when it is Improved)
Tracking Cones: normal
Turns of Flight: **7** for HS; **10** for RH.
Tracking Range: **150** for HS; **200** for RH
Probability of Malfunction: **7**
Minimum Range: **2**
Minimum Launch Range (for RH)
From rear: **14 hexes**
From side: **28 hexes**
From front: **42 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	16	15	14	13
1st GT Movement Add:	4	3	3	3
Turn Mode:	5	5	6	7
Maximum Energy:	20	19	18	17

Maximum Energy Add per Game-Turn: **3**
Use: **Su-15,** possible **MiG-23**

Anab Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	4	−1
	5	−2
II	9	−3
	10	−4
	11	−5
III	12	−8

Anab Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	5	+1
	10	+2
II	16	+3
	21	+2
	24	+1
	29	0
	30	−1
III	33	−2
	36	−4

Missile Name:

AA-1

Alkali (This missile comes in two versions: radar homing and heat-seeking.)

Basic Missile Information

Missile Type: heat seeking or radar homing
Tracking Cone: limited
Turns of Flight: **6** for HS; **5** for RH.
Tracking Range: **70** for HS; **60** for RH.
Probability of Malfunction: **12**
Minimum Range: **4**
Minimum Launch Ranger (for RH)
From rear: **12 hexes**
From side: **24 hexes**
From front: **36 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	11	10	9	8
1st GT Movement Add:	3	2	2	1
Turn Mode:	6	7	8	9
Maximum Energy:	11	10	9	8

Maximum Energy Add per Game-Turn: **1**
Use: MiG-17's and MiG-19's in '50s and early '60s.

Alkali Climb Table

Climb Type	Levels Climbed	MA Subtract
I	1	−2
	2	−3
II	3	−4
III	4	−5

Alkali Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
II	6	+1
III	8	0

Missile Name:

AA-9

Basic Missile Information
Missile Type: radar homing
Tracking Cone: normal
Turns of Flight: **42**
Tracking Range: **600 hexes**
Probability of Malfunction: **6**
Minimum Range: **4**
Minimum Launch Range:
From rear: **16 hexes**
From side: **30 hexes**
From front: **40 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	18	17	16	15
1st GT Movement Add:	5	5	4	4
Turn Mode:	6	6	6	7
Maximum Energy:	24	23	22	21

Maximum Energy Add per Game-Turn: **3**
Use: Foxbat-E

AA-9 Climb Table

Climb Type	Levels Climbed	MA Subtract
I	2	0
	5	−1
	7	−2
II	9	−3
	10	−4
	11	−5
III	12	−7
	13	−8

AA-9 Dive Table

Dive Type	Levels Dived	MA Addition
I	4	+ 1
	8	+ 2
	15	+ 3
II	20	+ 3
	22	+ 2
	26	+ 1
	30	0
	35	− 1
III	39	− 3
	40	− 6
	41	−10
	42	−12
	43	−13
	44	−16

Missile Name:

Hughes AIM-4 *Falcon*

Basic Missile Information
Missile Type: heat seeking or radar homing
Tracking Cone: **HS:** normal, **RH:** normal
Turns of Flight: **4** for HS, **6** for RH
Tracking Range: **60** for HS, **100** for RH
Probability of Malfunction: HS pre-1969: 12, RH and HS post-1969: 7
Minimum Range: **2**
Minimum Launch Range (RH:)
From rear: **18 hexes**
From side: **30 hexes**
From front: **36 hexes**

Within Altitude Groups:	LO	ML	MH	HI
Max. Move Allowance:	18/15	18/14	17/13	15/12
1st GT Movement Add:	5/4	4/4	4/3	3/2
Turn Mode:	7	8	8	9
Maximum Energy:	20	20	18	18

Maximum Energy Add per Game-Turn: **3**
When two numbers appear, first is for heat-seeking AIM-4D, second for radar-homing AIM-4F.
Use: F-106's, F-4's (68), Viggen, Draken (Swedish only).

AIM-4D Climb Table

Climb Type	Levels Climbed	MA Subtract
I	3	0
	4	− 1
	6	− 2
II	7	− 3
	8	− 5
	10	− 6
III	11	− 7
	12	− 8
	(13)	−14
	(14)	−16

Numbers in parenthesis can only be climbed by heat-seeking version.

AIM-4 Dive Table

Dive Type	Levels Dived	MA Addition
I	3	0
	6	+1
	9	+2
	10	+3
II	19	+4
	22	+3
	26	+2
III	32	+1
	36	0
	38	−1





Aircraft Name:
Gloster Meteor F.8

Basic Aircraft Information Table
Aircraft Type: fighter and fighter-bomber
Cannon Type: **1**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **6**
Ceiling: **176**
Deceleration: **5**
Size: **7**
Number of Crew Members: **1**
Point Value: **4/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	4	4	4	4
Minimum Throttle:	1	1	1	2
Maximum Energy:	8	8	9	9

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **3**

Gloster Meteor F.8 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	3	3	3
3	2	3	3	4
4	3	3	4	4
5	4	5	5	6

Gloster Meteor F.8 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	5	3	2
2	5	5	3	1
3	4	4	2	1
4	3	2	1	1

Gloster Meteor F.8 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	2	2	3	3
...Entering Pull-Through:	2	2	3	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	3
...Executing Break:	2	2	3	3
Energy Points Lost in each Pull-Up:	1	1	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Gloster Meteor F.8 Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Gloster Meteor F.8 DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	4	1	2	4	1	2	4	1	2	4	1
II	5	5	1	5	5	1	5	5	1	5	4	1
III	6	4	0	6	4	0	6	4	0	6	3	0

Gloster Meteor F.8 Loaded Characteristics:

Maximum Throttle: **3**
Dive: May not exceed 4 MP.
Climb: No Type II Climb, MA reduced by 1.
Acceleration: **Halve** all numbers, retaining fractions.
Turn Mode: Add **1** to all modes.
Roll Cost: **doubled**
Ceiling: **100 levels**

Gloster Meteor F.8 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO		ML		MH		HI
	1	2	1	2	1	2	1
4	3	2	3	2	2	1	2
3	2	1	2	1	2	1	2
2	2	1	1	1	1	–	–
1	1	–	–	–	–	–	–







Aircraft Name:
Saab J35F Draken

Basic Aircraft Information Table
Aircraft Type: fighter and fighter-bomber
Cannon Type: **R**
Cannon Shots: **3**
RH Missiles: **2** (Falcon only)
HS Missiles: **2** (Falcon or Sidewinder); **0** (on Finnish aircraft)
Damage Capacity: **11**
Ceiling: **240**
Deceleration: **8**
Size: **5**
Number of Crew Members: **1**
Point Value: **7/5**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	7	9	10
Minimum Throttle:	1	2	2	2
Maximum Energy:	12	14	15	16

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none

Other Versions:
There is an unarmed reconnaissance version. Danish aircraft have improved air-ground capability. See 28.1, 28.2, 28.3.

Draken Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	5
4	2	2	4	5
5	2	3	4	6
6	2	3	5	6
7	3	4	6	7
8	4	4	6	7
9	5	6	7	8
10	–	7	8	9
11	–	8	9	10

Draken Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	3	3	2	1
3	3	3	2	1
4	3	2	2	1
5	2	2	1	1
6	2	1	1	1
7	–	1	1	½
8	–	–	½	½
9	–	–	–	½

Draken CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO						ML					MH				HI		
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	6
9	–	–	–	–	–	–	–	–	–	–	–	8	7	5	3	8	7	5
8	–	–	–	–	–	–	7	6	4	3	3	7	6	4	2	7	6	4
7	–	–	–	–	–	–	6	5	3	2	2	6	5	3	1	6	5	3
6	5	4	3	2	2	2	5	4	2	1	1	5	4	2	1	4	4	2
5	4	3	3	2	2	1	4	3	2	1	–	4	3	1	–	4	3	1
4	3	2	1	1	–	–	3	2	1	–	–	3	2	–	–	3	2	–
3	2	1	–	–	–	–	2	1	–	–	–	2	1	–	–	2	1	–
2	1	1	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Draken Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Draken DIVE TABLE

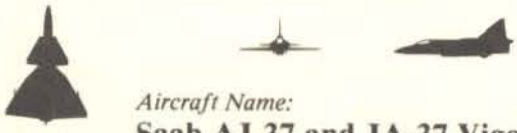
Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	9	2	5	10	2	5	11	2	5	11	2
II	10	9	2	15	9	1	15	10	1	15	10	1
	15	9	1									
III	16	8	0	19	8	0	19	9	0	20	9	0

Draken Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	2	2	3	3
Energy Points Lost in each Pull-Up:	2	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

Draken Loaded Characteristics:

Maximum Throttle: **5** at all altitudes
Dive: may not exceed maximum Throttle Setting, no Type III
Climb: No Type III Climb, MA reduced by 2
Acceleration: **halved,** retaining fractions
Turn Mode: increased by **one-third**
Roll Cost: **1-2** Points: **0** MP; **3+: 2** MP
Ceiling: **120 levels**
Missiles: not when loaded.



Aircraft Name:

Saab AJ-37 and JA-37 Viggen

Basic Aircraft Information Table

Aircraft Type: fighter-bomber (fighter—JA-37 version)
Cannon Type: **R** (JA-37 version only)
Cannon Shots: **3**
RH Missiles: **2** (AIM 7F or Falcon, JA-37 only)
HS Missiles: **2** (AIM-9 or Falcon)
Damage Capacity: **13**
Ceiling: **240**
Deceleration: **11**
Size: **6**
Number of Crew Members: **1**
Point Value: **9/3** for JA-37; **6/8** for AJp37

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6/7	7/8	9	10
Minimum Throttle:	1	1	2	2
Maximum Energy:	13	14	16	16

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none

Other Versions:
SK-37 is a two seat version and uses figures for the AJ-37.
JA-37 (interceptor) uses second of two figures where they differ.

Viggen Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	5/4
4	2	2	4/3	6/5
5	2	3/2	4	6
6	2	3	4	7/6
7	3	3/4	5	8/7
8	4/3	4	5	8/7
9	5	5	6	9/8
10	6	6	7/6	9/8
11	–	7	7	10/9

Viggen Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3/4	3/4	2/3	2
2	3	3	2	1/2
3	3	3	2	1
4	2/3	2/3	1/2	1
5	2	2	1	1
6	2	2	1	1
7	–	1/2	1	1
8	–	–	1	½
9	–	–	½/1	½
10	–	–	–	½

Viggen Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2/1	2
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1/0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	3	3	3	3
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Viggen Loaded Characteristics:

Maximum Throttle: **5** at LO and ML, **6** at MH and HI.
Dive: MA may not exceed 5 at LO and ML, 6 at MH and HI.
Climb: No Type III Climb, reduce MA by 2/1.
Acceleration: Reduce by **one-third, rounding fractions up.**
Turn Mode: increase by **25%**, ignoring fractions.
Roll Cost: **double**
Ceiling: **155 levels**
Missiles: 2 HS while loaded.

Viggen DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
Viggen I	2	6/7	0/0	2	7/8	0/0	2	9	0	2	10	0
	5	8/9	2	5	9/10	2	5	11	2	5	12	2
II	10	7/8	1	10	8/9	1	10	10	1	15	11	1
III	14/15	7/8	0	15	8	0	16	9	0	18/20	10	1

Viggen Roll Table

Movement Points	Points Rolled
0	1-2/3
1	3+/4+

Viggen CLIMB TABLE

Throttle Setting (whichever is higher) / Movement Allowance or

	Number of Levels Climbed (by Altitude Grouping)																							
	LO							ML						MH					HI					
	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4		
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6/9	–/8	–/6	–/2		
9	–	–	–	–	–	–	–	–	–	–	–	–	–	7/8	4/6	–/4	–/2	–/1	6/8	–/6	–/4	–/1		
8	–	–	–	–	–	–	–	–/7	–/6	–/5	–/4	–/4	–/2	6/7	4/5	–/3	–/1	–/1	5/7	–/5	–/3	–		
7	–/6	–/5	–/5	–/4	–/3	–/3	–/2	6/6	4/5	–/4	–/3	–/3	–/1	6/6	3/5	–/2	–/1	–	5/6	–/4	–/2	–		
6	5/5	4/4	3/4	–/3	–/2	–/2	–/1	5/5	3/4	–/3	–/2	–/2	–/1	5/5	3/4	–/1	–	–	4/5	–/3	–/1	–		
5	4/4	3/3	2/3	–/2	–/1	–/1	–/1	4/4	2/3	–/3	–/1	–/1	–	4/4	2/2	–/1	–	–	3/4	–/2	–/1	–		
4	3/3	2/2	1/2	–/1	–/1	–/1	–	3/3	1/2	–/1	–/1	–	–	3/3	1/1	–	–	–	2/3	–/1	–	–		
3	2/2	1/1	–/1	–/1	–	–	–	2/2	–/1	–/1	–	–	–	2/2	–/1	–	–	–	1/2	–/1	–	–		
2	1/1	–/1	–/1	–	–	–	–	1/1	–/1	–	–	–	–	1/1	–	–	–	–	–/1	–	–	–		
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		







Aircraft Name:

British Aircraft Corporation Lightning F.6

Basic Aircraft Information Table

Aircraft Type: fighter
Cannon Type: **Type G** (not on RAF aircraft)
Cannon Shots: **2**
RH Missiles: **0**
HS Missiles: **2** (Red Top only)
Damage Capacity: **12**
Ceiling: **240**
Deceleration: **10**
Size: **5**
Number of Crew Members: **1**
Point Value: **7/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	11
Minimum Throttle:	2	2	3	3
Maximum Energy:	12	13	14	15

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**
Special Rules: none

Lightning Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	4
4	2	2	3	5
5	2	2	3	5
6	2	3	4	5
7	3	4	5	6
8	4	4	6	7
9	5	5	7	7
10	–	6	8	8
11	–	–	9	10

Lightning Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	3	3	2	1
3	3	3	2	1
4	3	2	1	1
5	2	1	1	1
6	1	1	1	1
7	–	1	1	½
8	–	–	1	½
9	–	–	–	½
10	–	–	–	½

Lightning Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	3
...Executing Break:	3	3	3	4
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

Lightning DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	11	0
	5	9	2	5	10	2	5	11	2	5	11	1
II	15	8	1	15	9	1	15	10	1	10	11	1
										15	10	1
III	17	8	0	19	8	0	20	9	0	21	9	0

Lightning Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Lightning CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping)																									
	LO										ML							MH						HI			
	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4
11	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	7	6
10	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	6	4
9	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	8	7	6	5	4	3	8	7	5	3
8	–	–	–	–	–	–	–	–	–		7	6	6	5	4	4	3	7	6	5	4	4	2	7	6	4	2
7	7	6	6	5	5	4	4	3	2		6	5	4	4	3	3	2	6	5	4	4	3	1	6	5	2	–
6	6	5	5	4	4	3	3	2	2		5	4	4	3	2	2	1	5	4	3	3	2	1	5	4	1	–
5	5	4	4	3	3	2	2	2	1		4	4	3	3	2	1	1	4	3	2	2	1	–	4	3	–	–
4	4	3	3	2	2	2	1	1	–		3	3	2	2	1	–	–	3	2	1	1	–	–	3	1	–	–
3	3	2	2	1	1	–	–	–	–		2	2	1	–	–	–	–	2	1	–	–	–	–	2	–	–	–
2	2	1	1	–	–	–	–	–	–		1	1	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–
1	1	–	–	–	–	–	–	–	–		1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Lightning Loaded Characteristics:

Maximum Throttle: **5** at all altitudes
Dive: No Type III, MA may not exceed 5
Climb: no Type III climb, MA reduced by 2
Acceleration: **halved,** retaining fractions
Turn Mode: increased by **one-third,** round fractions to nearest number
Roll Cost: **1** point: **0, 2+: 1** MP
Ceiling: **144 levels**







Aircraft Name:
Hawker Harrier

Basic Aircraft Information Table
Aircraft Type: fighter-bomber
Cannon Type: **G**
Cannon Shots: **3**
RH Missiles: **0**
HS Missiles: **2**
Damage Capacity: **8**
Ceiling: **208**
Deceleration: **30**
Size: **5**
Number of Crew Members: **1**
Point Value: **5/3**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	1	2
Maximum Energy:	10	11	12	13

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: capable of V/STOL flight: see 104.4.

Other Versions:
AV-8B and **Sea Harrier** with improved electronics. See 28.1.

Hawker Harrier Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	2
3	2	2	2	3
4	2	2	3	3
5	2	2	3	3
6	2	2	3	3
7	3	3	4	4

Hawker Harrier Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	6	6	5	4
2	6	6	4	3
3	5	5	4	2
4	5	5	4	2

Hawker Harrier CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO						ML					MH				HI		
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	1	2	3
5	5	4	4	3	3	2	5	4	4	3	2	5	4	3	2	5	4	3
4	4	3	3	2	2	1	4	3	3	2	1	4	3	2	1	4	3	2
3	3	2	2	1	1	–	3	2	1	1	–	3	2	1	–	3	2	1
2	2	1	1	–	–	–	2	1	–	–	–	2	1	–	–	2	1	–
2	1	–	–	–	–	–	1	–	–	–	–	1	–	–	–	1	–	–

Hawker Harrier Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

Hawker Harrier DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	6	0	2	6	0	2	6	0	2	6	0
	5	7	2	5	7	2	5	7	2	6	7	2
II	10	7	1	10	7	1	10	7	1	10	7	1
III	12	6	0	12	6	0	14	6	0	16	6	0

Hawker Harrier Loaded Characteristics:

Maximum Throttle: **5** at all altitudes
Dive: no restrictions
Climb: reduce MA by 2
Acceleration: reduce all acceleration allowances by **one-third,** rounding fractions to nearest number.
Turn Mode: add **1** to all numbers at an MA of **5** or less, add **2** to all numbers at greater MAs.
Roll Cost: **double**
Ceiling: **152 levels**

Hawker Harrier Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	2	2	2	2
...Entering Pull-Through:	2	2	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	2	2	3
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	1	2	2	2







Aircraft Name:
Hawker Hunter

Basic Aircraft Information Table
Aircraft Type: fighter and fighter-bomber
Cannon Type: **P**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **0** (except on modified aircraft)
Damage Capacity: **9**
Ceiling: **200**
Deceleration: **7**
Size: **5**
Number of Crew Members: **1**
Point Value: **5/2**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	1	2
Maximum Energy:	10	11	11	12

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**

Other Versions:
All Hunters from the F.6 on up use these statistics. There is a fully armed reconnaissance version, the F.R.10.

From c.1966 on, most Hunters in active service were modified to carry four Sidewinders. (Hunters flown by Iraq were apparently an exception to this)

Hawker Hunter Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Hawker Hunter Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	3
2	2	2	2	3
3	2	2	2	4
4	2	2	2	4
5	2	2	2	4
6	2	2	3	4

Hawker Hunter Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	5	4	3
2	4	4	3	2
3	4	4	3	1
4	4	3	2	1

Hawker Hunter CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO 1	LO 2	ML 1	ML 2	MH 1	MH 2	HI 1	HI 2
5	4	3	4	3	4	2	3	2
4	3	2	3	2	3	2	2	2
3	2	2	2	1	2	1	2	1
2	1	1	1	1	1	–	1	–
1	–	–	–	–	–	–	–	–

Hawker Hunter Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	2	2	2	2
...Entering Pull-Through:	2	2	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	2	3	3
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

Hawker Hunter DIVE TABLE

Type	LO Altitude Lvls Dvd	LO Altitude Max MA	LO Altitude MA Add	ML Altitude Lvls Dvd	ML Altitude Max MA	ML Altitude MA Add	MH Altitude Lvls Dvd	MH Altitude Max MA	MH Altitude MA Add	HI Altitude Lvls Dvd	HI Altitude Max MA	HI Altitude MA Add
I	2	5	1	2	5	1	3	6	1	3	6	1
II	4	6	2	4	6	2	4	6	2	6	6	2
III	11	5	0	11	5	0	12	5	0	12	5	0

Hawker Hunter Loaded Characteristics:

Maximum Throttle: **4** at all altitudes
Dive: Maximum Movement Allowance may not exceed maximum Throttle Setting.
Climb: No Type II climbs, MA reduced by 1.
Acceleration: reduce by **half**, retaining fractions.
Turn Mode: add **1** at LO and ML, **2** at MH and HI.
Roll Cost: **1** MP: **1-3** Pts., **2** MP: **4+** Pts.
Ceiling: **140 levels.**
Missiles: may not carry air-air missiles while loaded.



Aircraft Name:
Grumman A-6E
Intruder

Basic Aircraft Information Table
Aircraft Type: strike aircraft
Cannon Type: **no cannon carried**
Cannon Shots: **0**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **12**
Ceiling: **179**
Deceleration: **7**
Size: **6**
Number of Crew Members: **2**
Point Value: **1/6**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	2	2
Maximum Energy:	8	9	10	10

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**

Special Rules: none
Other Versions:
Wild Weasel (see 24.5).

The EA-6EWW is identical in all Special rules with the EF-111EWW.

A-6E Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	3	3
3	2	3	3	4
4	3	3	4	4
5	3	4	4	5
6	4	4	5	6

A-6E Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	2	2	1	1
3	2	2	1	1
4	1	1	1	½

A-6E CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)	Number of Levels Climbed (by Altitude Grouping) LO		ML	MH	HI
	1	2	1	1	1
5	4	2	4	3	2
4	3	1	3	2	1
3	2	–	1	1	–
2	1	–	1	–	–
1	–	–	–	–	–

A-6E Roll Table

Movement Points	Points Rolled
0	1
1	2+

A-6 DIVE TABLE

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	6	1	3	6	1	3	6	1
II	4	6	1	5	6	1	5	6	1	6	6	1
III	10	5	0	11	5	0	12	5	0	1	5	0

A-6E Intruder Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	3	3	3	4
...Entering Pull-Through:	2	3	3	3
Game-Turns in Push-Through before...				
...Making Split-S:	1	1	2	3
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	2	3	3
...Executing Break:	3	3	4	4
Energy Points Lost in each Pull-Up:	1	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

A-6E Loaded Characteristics:

Maximum Throttle: **5** at all altitudes
Dive: no restrictions.
Climb: No Type II Climb
Acceleration: **halve** all numbers, retaining fractions
Turn Mode: add **2** to all modes
Roll Cost: **double**
Ceiling: **150 levels**



Aircraft Name:
Lockheed F-104G *Starfighter*

Basic Aircraft Information Table
Aircraft Type: fighter and fighter bomber
Cannon Type: **A** (not in CF-104, pre-1971)
Cannon Shots: **4** (0 in CF-104, pre-1971)
RH Missiles: **0**
HS Missiles: **4**
Damage Capacity: **7**
Ceiling: **232**
Deceleration: **7**
Size: **5**
Number of Crew Members: **1**
Point Value: **7/2**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	10
Minimum Throttle:	2	2	3	4
Maximum Energy:	13	14	16	17

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Other Versions:
See tables 28.1, 28.2, and 28.3 for differences between CF-104 and F-104J versions.
F-104C: use numbers after slash where two numbers appear.
F-104S: see table 28.1 for difference. Can carry two AIM-7E-2 RH missiles in place of two heat-seekers.

F-104G Starfighter Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	4	6	7	10
2	4	6	7	10
3	5	7	8	11
4	6	8	9	12
5	7	9/10	11	14/15
6	8	11/12	13	16
7	8/9	11/12	13/14	16/17
8	9	13/14	14	16/17
9	–	13/14	14/15	17
10	–	–	14/15	17/18
11	–	–	–	18
12	–	–	–	–

F-104G Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4/3	3	3	1
2	3	3	3	1
3	3	3	3/2	1
4	3	3/2	2	1
5	3/2	2	2/1	1
6	2	2/1	1	1
7	–	1	1	1/½
8	–	–	1	½
9	–	–	–	½

F-104G Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	3	4	5	6
...Entering Pull-Through:	3	4	4	5
Game-Turns in Push-Through before...				
...Making Split-S:	2	3	4	5
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	3	3	4
Energy Points Lost in each Pull-Up:	1	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2/3	3/4

F-104G Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

F-104G CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)	LO 1	2	3	4	5	6	7	8	ML 1	2	3	4	5	6	MH 1	2	3	4	5	6	HI 1	2	3	4
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	6	4
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	7	6	5	4	4	8	7	5	3
8	–	–	–	–	–	–	–	–	7	6	5	5	4	3	7	6	5	4	3	3	7	6	4	2
7	6	6	5	4	4	3	3	2	6	5	4	3	3	2	6	5	4	3	2	1	6	5	3	1
6	5	5	4	3	3	2	2	1	5	4	3	2	2	1	5	4	3	2	1	–	5	4	1	–
5	4	4	3	2	2	1	1	–	4	3	2	1	1	–	4	3	2	1	–	–	4	2	–	–
4	3	3	2	1	1	–	–	–	3	2	1	–	–	–	3	2	1	–	–	–	3	1	–	–
3	2	2	1	–	–	–	–	–	2	1	–	–	–	–	2	1	–	–	–	–	2	–	–	–
2	1	1	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–
1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

F-104G DIVE TABLE

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	9/8	2	5	10/9	2	5	10/9	1	5	11/10	1
II	10	9/8	1	15	9/9	1	15	10	1	15	10	1
	15	8	1									
III	16	8/7	0	17	8/7	0	18	8/7	0	19	8	0

F-104G Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: Movement Allowance may not exceed Maximum Throttle Setting.
Climb: No Type III Climb, all Movement Allowances on Climb Table are reduced by **2.**
Acceleration: Reduces all Acceleration Allowances greater than one by **1.**
Turn Mode: Add **one-third** to all turn modes, rounding up.
Roll Cost: Rolling **1** or **2** points costs **1** Movement Point, **3+** pts: **2** MP.
Ceiling: **146 levels.**
Missiles: may only carry two HSM while loaded.







Aircraft Name:
Vought F-8E
Crusader

Basic Aircraft Information Table
Aircraft Type: fighter
Cannon Type: **O**
Cannon Shots: **3**
RH Missiles: **0**
HS Missiles: **4**
Damage Capacity: **10**
Ceiling: **232**
Deceleration: **8**
Size: **6**
Number of Crew Members: **1**
Point Value: **6/2**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	7	7	8
Minimum Throttle:	2	2	3	3
Maximum Energy:	12	13	14	14

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: Cannon may jam when turning tightly. See Rule 104.1.

Other Versions:
F-8A/B/C/D: use first figure in parenthesis where different from those given.

F-8J: use second figure in parenthesis where different from those given. See also Radar chart for improved radar.

There exist unarmed photo recon versions of all F-8 sub-types

F-8E(FN): French Navy version of the F-8E, with improved French Radar. Can carry 2 RH (Matra), 2 HS missiles (R.550 or Sidewinder)

F-8 Crusader Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	3	4
3	2	2	3	4
4	2	2(3/–)	4	5(–/4)
5	2(3/–)	3	5(–/4)	5
6	3	3	5	6
7	–	4	6	7
8	–	–	8	9

F-8 Crusader Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3(–/4)	3	2	2
2	3	3	2	2
3	3	3	2	1(–/2)
4	3(2/–)	3(2/–)	2(–/1)	1
5	2	2	1(–/2)	1
6	–	1	1	1(½/–)
7	–	–	–	½(–/1)

F-8E Crusader CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO					ML				MH			HI	
	1	2	3	4	5	1	2	3	4	1	2	3	1	2
8	–	–	–	–	–	–	–	–	–	–	–	–	7	5
7	–	–	–	–	–	6	5	3	1	6	4	2	6	4
6	5	4	3	3	1	5	4	2	1	5	3	1	5	3
5	4	3	2	2	–	4	2	1	–	4	2	–	4	2
4	3	2	1	–	–	3	1	1	–	3	1	–	3	1
3	2	1	–	–	–	2	1	–	–	2	–	–	2	–
2	1	–	–	–	–	1	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–

F-8 Crusader Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2(3/–)	3
...Entering Pull-Through:	1	1	2	2(3/–)
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	3
...Executing Break:	3	3	4	-4
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	3

F-8 Crusader Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

F-8E Crusader DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	6	0	2	7	0	2	7	0	2	8	0
	5	8	2	5	9	2	5	9	1	5	9	1
II	10	7	1	10	8	1	15	8	1	15	8	0
III	14	6	0	15	7	0	16	7	0	17	7	0

F-8 Crusader Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: may not exceed Maximum Throttle Setting.
Climb: No Type III climb, MA reduced by 1.
Acceleration: **halved,** retaining fractions.
Turn Mode: increased by **one-third.**
Roll Cost: **1-2** pts: **0** MP, **3+** Points: **1** MP
Ceiling: **110 levels**







Aircraft Name:

North American F-100D *Super Sabre*

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **Q**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **4**
Damage Capacity: **9**
Ceiling: **204**
Deceleration: **7**
Size: **6**
Number of Crew Members: **1**
Point Value: **6/2**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	6	6	6
Minimum Throttle:	1	2	2	2
Maximum Energy:	9	9	10	10

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none

Other Versions:
There is a two seat version (F-100F) which uses Cannon table I. There is a Wild Weasel version of the F-100F which, unlike other Wild Weasels, has no internal jammer.

F-100 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	3	3	4
3	3	3	4	4
4	3	4	4	5
5	3	4	5	6
6	4	5	6	7
7	5	6	7	9

F-100 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	4	3	2
2	4	4	3	1
3	3	3	2	1
4	3	2	1	1
5	2	1	1	½

F-100 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

Number of Levels Climbed (by Altitude Grouping)

	LO			ML			MH		HI
	1	2	3	1	2	3	1	2	1
6	5	4	3	4	3	2	4	3	3
5	4	3	2	3	2	1	3	1	2
4	3	2	1	2	1	–	2	1	1
3	2	1	–	1	–	–	1	–	–
2	1	–	–	1	–	–	–	–	–
1	1	–	–	–	–	–	–	–	–

F-100 Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

F-100 DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	0	2	6	0	2	6	0	2	6	1
	4	7	1	4	7	1	4	7	2	4	7	2
II	10	7	1	10	7	1	10	7	1	10	7	2
III	12	6	0	12	6	1	13	6	0	14	7	1

F-100 Loaded Characteristics:

Maximum Throttle: **4** at LO and ML altitude, **5** at MH and HI altitude.
Dive: May not exceed Maximum Throttle Setting
Climb: No Type III Climbs, reduce MA by 1.
Acceleration: **halve**, retaining fractions.
Turn Mode: add **1** at LO and ML, **2** at MH, **3** at HI to each number.
Roll Cost: **1** MP: **1-3** points, **2** MP: **4+** points.
Ceiling: **144 levels**
Missiles: may not carry air-to-air missiles while loaded.

F-100 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	2	2	3	3
...Entering Pull-Through:	2	2	3	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	1	2
...Executing Break:	2	2	2	3
Energy Points Lost in each Pull-Up:	1	1	1	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2



Aircraft Name:
Convair F-106
Delta Dart

Basic Aircraft Information Table
Aircraft Type: fighter
Cannon Type: **A** (non pre-1975)
Cannon Shots: **4**
RH Missiles: **4** (Falcon only—may carry any mix of AIM-4s)
HS Missiles: **0**
Big Nuclear Rockets: **1**
Damage Capacity: **10**
Ceiling: **229**
Deceleration: **7**
Size: **6**
Number of Crew Members: **1** in F-106A, **2** in F-106B
Point Value: **7/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	10
Minimum Throttle:	1	2	2	3
Maximum Energy:	13	14	14	15

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: Can use Big Nuclear Rocket (blivet). See Case 106.2.

F-106 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	4	4
4	2	3	4	5
5	2	3	4	5
6	3	4	5	6
7	4	4	6	6
8	4	5	6	7
9	5	6	7	8
10	-	7	8	8
11	-	-	8	8

F-106 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	3	2	2
2	3	3	2	2
3	3	3	2	2
4	3	3	2	2
5	3	2	2	1
6	2	2	1	1
7	-	1	1	1
8	-	-	1	1
9	-	-	-	1
10	-	-	-	1

F-106 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	3
...Executing Break:	3	3	4	5
Energy Points Lost in each Pull-Up:	3	3	4	5
MP Lost each Game-Turn Wings Vertical:	2	3	3	3

CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO									ML							MH						HI				
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	8	6	5	4
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	7	6	5	4	4	8	7	5	3	2
8	-	-	-	-	-	-	-	-	-	7	6	6	5	5	4	3	7	6	5	4	3	3	7	6	4	2	1
7	6	6	5	5	4	4	3	3	2	6	5	5	4	3	3	2	6	5	4	3	2	1	6	5	3	1	-
6	5	5	4	4	3	3	2	2	1	5	4	4	3	2	2	1	5	4	3	2	1	-	5	4	1	-	-
5	4	4	3	3	2	2	1	1	-	4	3	3	2	1	1	-	4	3	2	1	-	-	4	2	-	-	-
4	3	3	2	2	1	1	-	-	-	3	2	2	1	-	-	-	3	2	1	-	-	-	3	1	-	-	-
3	2	2	1	-	-	-	-	-	-	2	1	1	-	-	-	-	2	1	-	-	-	-	2	1	-	-	-
2	1	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-
1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

F-106 Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

F-106 DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	1	10	0
	5	9	2	5	10	2	5	10	2	5	11	2
II	15	9	1	15	10	1	15	10	1	15	10	1
III	17	8	0	19	8	0	20	9	0	21	10	0

F-106 Loaded Characteristics:

Maximum Throttle: **6** at all altitudes
Dive: No Type III Dives, may not exceed Maximum Throttle.
Climb: No Type III Climb, MA reduced by 1.
Acceleration: **halve** all acceleration allowances, retaining fractions.
Turn Mode: add **one-third** to all turn modes, rounding up.
Roll Cost: **double**
Ceiling: 229 levels
Missiles: same as normal







Aircraft Name:
Dassault Mirage F-1C

Basic Aircraft Information Table
Aircraft Type: fighter and fighter-bomber
Cannon Type: **G**
Cannon Shots: **4**
RH Missiles: **2**
HS Missiles: **2**
Damage Capacity: **10**
Ceiling: **242**
Deceleration: **9**
Size: **5**
Number of Crew Members: **1**
Point Value: **9/2**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	11
Minimum Throttle:	1	2	2	3
Maximum Energy:	13	13	14	15

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none

Other Versions:
There is a two seat fighter (F-1B) and armed reconnaissance (F-1R) aircraft.

The Mirage F-1 has the same internal jammer as the Mirage V.

Mirage F-1 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	3	3
3	2	2	3	4
4	2	2	3	4
5	2	3	3	4
6	2	3	4	5
7	3	4	5	6
8	4	5	6	7
9	4	5	7	8
10	–	6	8	9
11	–	–	9	10

Mirage F-1 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	4	3	3
2	4	3	3	2
3	4	3	3	2
4	3	3	2	2
5	3	3	2	1
6	3	2	2	1
7	–	2	2	1
8	–	–	1	1
9	–	–	1	1
10	–	–	–	½

Mirage F-1 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO							ML					MH				HI		
	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	1	2	3
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	8	5
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	7	5
9	–	–	–	–	–	–	–	–	–	–	–	–	8	7	5	4	8	7	4
8	–	–	–	–	–	–	–	7	6	4	3	2	7	6	4	3	6	6	4
7	6	5	5	4	3	3	2	6	5	3	2	1	6	5	4	2	6	5	3
6	5	5	4	4	3	2	1	5	4	2	2	–	5	4	2	1	5	4	2
5	4	4	3	3	2	1	–	4	3	2	1	–	4	3	1	–	3	3	1
4	3	3	2	2	1	–	–	3	2	1	–	–	3	2	–	–	2	2	–
3	2	2	1	1	–	–	–	2	1	–	–	–	2	1	–	–	1	1	–
2	1	1	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–
1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Mirage F-1 Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

Mirage F-1 DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	11	0
	5	9	2	5	10	2	5	11	2	5	11	2
II	10	9	1	10	10	1	10	11	0	10	11	0
	15	9	1	15	10	1	15	10	1	15	10	1
III	19	9	0	21	9	0	23	10	0	24	10	0

Mirage F-1 Loaded Characteristics:

Maximum Throttle: **6** at LO and ML, **5** at MH and HI
Dive: may not excced maximum Throttle Setting
Climb: No Type III Climb, reduce all MA by 1.
Acceleration: **halve** all numbers, retaining fractions.
Turn Mode: add **one-third,** rounding up.
Roll Cost: **1-3** Points cost **1** MP, **4+: 2** MP.
Ceiling: **144 levels**
Missiles: **2**

Mirage F-1 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	3	3	3	4
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2



Aircraft Name:

Mikoyan MiG-19C *Farmer* and Shenyang F-9 *Fantan*

Basic Aircraft Information Table

Aircraft Type: fighter and fighter bomber
Cannon Type: **N** (F/B)
Cannon Shots: **4 (3)**
RH Missiles: **0**
HS Missiles: **4 (0/2)**
Damage Capacity: **6**
Ceiling: **230 (208)**
Deceleration: **7 (6)**
Size: **5**
Number of Crew Members: **1**
Point Value: **6/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	5	6	7	7
Minimum Throttle:	2	2	2	3
Maximum Energy:	10	11	12	12

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**

Special Rules: none.

Other Versions:
MiG-19A and **MiG-19B:** use first figures in parenthesis where they differ from standard figures.
MiG-19D: see radar chart for differences.
F-9 *Fantan:* where more than one figure appears in parenthesis, use second figure. Where only one figure appears in parenthesis, use it. Use separate climb table. Differences also appear on radar chart.

MiG-19 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2(3/2)	3(4/3)	3	5(5/4)
4	3	3(4/3)	4	5
5	3	4	5	6
6	4	5	6	7
7	6	6	7	8
8	–	8	9	10

Mig-19 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5(4/6)	4(3/5)	2(2/3)	2(2/3)
2	4(3/5)	4(3/5)	2(2/3)	2
3	3(3/4)	3(3/4)	3(2/3)	2
4	3	3	2	1
5	–	2	2	1
6	–	–	1	1(½/1)

Shenyang F-9 *Fantan* CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

Number of Levels Climbed (by Altitude Grouping)

	LO						ML					MH					HI			
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	1	2	3	4
7	–	–	–	–	–	–	–	–	–	–	–	6	5	4	3	2	6	4	3	2
6	–	–	–	–	–	–	5	4	3	2	1	5	4	3	2	1	5	3	2	1
5	4	3	3	2	2	1	4	3	3	2	1	4	3	2	1	1	4	2	1	–
4	3	3	2	2	1	1	3	2	1	1	–	3	2	1	1	–	3	1	–	–
3	2	2	1	1	–	–	2	1	1	–	–	2	1	–	–	–	1	–	–	–
2	2	1	–	–	–	–	1	1	–	–	–	1	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

MiG-19 DIVE TABLE

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	5	0	2	6	0	2	7	0	2	7	0
	3	6	1	3	7	1	3	8	1	3	8	1
II	5	7	1	10	8	1	10	8	1	10	8	1
III	10	6	0	13	7	0	14	7	0	16	8	0

MiG19 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	2	3(3/2)	3
...Entering Pull-Through:	1	2	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	3(3/2)	3	3	3
Energy Points Lost in each Pull-Up:	1	1	2	3(4/2)
MP Lost each Game-Turn Wings Vertical:	2	2	3	3

MiG-19 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

Number of Levels Climbed (by Altitude Grouping)

	LO				ML			MH			HI	
	1	2	3	4	1	2	3	1	2	3	1	2
7	–	–	–	–	–	–	–	6	3	2	6	3
6	–	–	–	–	5	3	2	5	2	1	5	2
5	4	3	2	1	4	3	1	4	1	–	3	1
4	3	2	2	1	3	2	1	3	1	–	2	1
3	2	2	1	–	2	1	–	2	–	–	1	–
2	2	1	–	–	1	1	–	1	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–

MiG-19 Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: No Type III Dives, may not exceed Maximum Throttle Setting.
Climb: No Type III Climbs, all Movement Allowances on climb table reduced by two.
Acceleration: **Halve** all acceleration allowances, retaining fractions.
Turn Mode: add **one-third** to all turn modes, rounding fractions up.
Roll Cost: rolling **1** or **2** points costs **1** Movement Point.
Ceiling: **130 levels.**

MiG-19 Roll Table

Movement Points	Points Rolled
0	1-3/1-2
1	4-5/3-4
2	6+/5+

Use second figure at Movement Allowance of 5 or greater.

F-9 Roll Table

Movement Points	Points Rolled
0	1-3
1	4
2	5+





Aircraft Name:
Sukhoi SU-15
Flagon-E

Basic Aircraft Information Table
Aircraft Type: fighter
Cannon Type: **B/none**
Cannon Shots: **4/none**
RH Missiles: **1** (AA-3a)
HS Missiles: **1** (AA-3b)
Damage Capacity: **11/10**
Ceiling: **270/260**
Deceleration: **8/7**
Size: **6**
Number of Crew Members: **1**
Point Value: **7/0**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	9	10	12
Minimum Throttle:	1	2	3	3
Maximum Energy:	10	12	13	15

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**
Special Rules: none
Other Versions:
For Flagon-A version, use number after the slash where the two differ.

Su-15 Flagon-E Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	3	4	5
2	2	3	4	5
3	3	4	4	5
4	3	4	5	5
5	3	5	6	6
6	5	6	6	7
7	5	6	7	8
8	5	7	8	9
9	6	7	8	9
10	–	8	9	10
11	–	–	11	12
12	–	–	–	13

Su-15 Flagon-E Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	4	3	2
2	4	4	3	2
3	4	4	3	2
4	4	4	3	2
5	4	3	2	2
6	3	2	2	1
7	–	2	1	1
8	–	1	1	1
9	–	–	1	1
10	–	–	1	1
11	–	–	–	1

Su-15 Flagon-E Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	2	3	3
...Entering Pull-Through:	1	1	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	1	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	2	3	3
...Executing Break:	2	2	3	4
Energy Points Lost in each Pull-Up:	2	3	3	4
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Su-15 Flagon-E Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Su-15 Flagon-E CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping)																													
	LO										ML								MH						HI					
	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5
12	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	12	11	10	8	6
11	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	10	9	7	5
10	–	–	–	–	–	–	–	–	–		–	–	–	–	–	–	–	–	10	9	8	5	4	3	10	9	8	6	3
9	–	–	–	–	–	–	–	–	–		9	8	7	7	6	3	2	1	9	8	7	5	4	3	9	8	7	5	2
8	–	–	–	–	–	–	–	–	–		8	7	6	6	5	4	3	2	8	7	6	4	3	2	8	7	6	3	1
7	7	6	6	5	5	4	4	3	2		7	6	5	5	3	3	2	1	7	6	5	3	2	1	7	6	4	2	–
6	6	5	5	4	4	3	3	2	1		6	5	4	4	3	2	1	–	6	5	4	2	2	–	6	5	2	1	–
5	5	4	4	3	2	2	2	1	–		5	4	3	3	2	1	–	–	5	4	2	1	1	–	5	4	1	–	–
4	4	3	3	2	1	1	1	–	–		4	3	2	2	1	–	–	–	4	3	1	–	–	–	4	3	–	–	–
3	3	2	2	1	–	–	–	–	–		3	2	1	1	–	–	–	–	3	2	–	–	–	–	3	2	–	–	–
2	2	1	1	–	–	–	–	–	–		2	1	–	–	–	–	–	–	2	1	–	–	–	–	2	1	–	–	–
1	1	1	–	–	–	–	–	–	–		1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–

Su-15 Flagon-E Loaded Characteristics:

Climb: No Type III Climbs, MA reduced by two
Maximum Throttle: **5** at LO and ML altitudes, **6** at MH and HI
Dive: No Type III Dives, may not exceed Maximum Throttle
Acceleration: **halve** all Acceleration Allowances, retaining
Turn Mode: add **one-third** to all Turn Modes, rounding up fractions
Roll Cost: **double**
Ceiling: **175 levels**
Missiles: **2**

Su-15 Flagon-E DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	9	0	2	10	0	1	12	0
	5	9	2	5	10	2	5	11	2	5	12	2
II	10	9	1	10	10	1	10	10	1	10	11	1
	15	9	1	15	9	1	15	10	1	15	10	1
III	17	8	0	19	9	0	22	9	0	23	9	0







Aircraft Name:

McDonnell Douglas F-18 Hornet

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **A**
Cannon Shots: **2**
RH Missiles: **2**
HS Missiles: **4**
Damage Capacity: **15**
Ceiling: **220**
Deceleration: **14**
Size: **5**
Number of Crew Members: **1**
Point Value: **9/10**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	10
Minimum Throttle:	1	1	2	2
Maximum Energy:	13	14	15	16

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules:
May visually search rear arc.
May accelerate while climbing

Hornet Roll Table

Movement Points	Points Rolled
0	1-3
1	4

Hornet Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	2
3	2	2	2	3
4	2	2	2	3
5	2	2	3	4
6	2	3	3	4
7	3	3	4	5
8	3	3	4	5
9	3	4	4	6
10	4	5	5	6
11	–	6	6	7
12	–	–	–	8

Hornet Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	6	6	5	2
2	6	6	4	2
3	5	5	4	2
4	5	5	3	2
5	5	5	3	1
6	4	4	3	1
7	–	3	2	1
8	–	–	2	1
9	–	–	–	1

May accelerate while climbing.

Hornet Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	10	3	5	11	3	5	11	2	5	12	2
II	15	10	2	10	11	2	15	11	2	10	12	1
				15	10	2				15	11	1
III	20	9	1	22	9	1	23	10	1	20	11	1
										25	10	1

Hornet CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)	LO 1	2	3	4	5	6	7	8	9	ML 1	2	3	4	5	6	7	8	9	MH 1	2	3	4	5	6	HI 1	2	3	4	5	6
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	8	7	5	4
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	7	5	4	2	9	8	7	5	4	3
8	–	–	–	–	–	–	–	–	–	8	7	6	6	5	4	3	2	1	8	7	6	5	3	2	8	7	6	5	3	2
7	7	6	6	5	5	4	4	3	2	7	6	5	5	4	3	2	1	–	7	6	5	4	2	1	7	6	5	4	2	1
6	6	5	5	4	4	3	3	2	1	6	5	4	4	3	2	1	–	–	6	5	4	3	2	–	6	5	4	3	1	–
5	5	4	4	3	3	2	2	1	–	5	4	3	3	2	1	–	–	–	5	4	3	2	1	–	5	4	3	2	–	–
4	4	3	3	2	2	1	1	–	–	4	3	3	2	1	–	–	–	–	4	3	2	1	–	–	4	3	2	1	–	–
3	3	2	2	1	1	–	–	–	–	3	2	2	1	–	–	–	–	–	3	2	1	–	–	–	3	2	1	–	–	–
2	2	1	1	–	–	–	–	–	–	2	1	1	–	–	–	–	–	–	2	1	–	–	–	–	2	1	–	–	–	–
1	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–

Hornet Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	0	0	1	1
...Entering Pull-Through:	1	1	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...:Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	1	2	2	2
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	1	1	2	2

Hornet Loaded Characteristics:

Maximum Throttle: **6** in LO; **7** in ML; **8** in MH or HI.
Dive: MA may not exceed max. Throttle Setting.
Climb: Reduce all Movement Allowances on Climb Table by **2**.
Acceleration: **reduce all Acceleration Allowances by one-third**, rounding to nearest number.
Turn Mode: **add 1** to all Turn Modes in LO and ML, **2** in MH and HI.
Roll Cost: **rolling 1 to 3 points costs 1** MP, more costs **2**.
Ceiling: **140 levels**.
Missiles: may only carry **2** HS missiles when loaded.







Aircraft Name:

Grumman F-14A Tomcat

Basic Aircraft Information Table

Aircraft Type: Fighter and fighter-bomber.
Cannon Type: A
Cannon Shots: 3
RH Missiles: 6, Sparrow or Phoenix only.
HS Missiles: 4 (2 if Phoenix carried)
Damage Capacity: 17
Ceiling: 285
Deceleration: 16
Size: 7
Number of Crew Members: 2
Point Value: 10/12

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	11
Minimum Throttle:	1	1	1	2
Maximum Energy:	14	16	17	18

Maximum Energy Add per Game-Turn: 5
Cruise Speed: 4
Special Rules: May visually search rear arc. May have up to 6 lock-ons simultaneously. May fire HSM at other targets while having lock-on.

Tomcat Loaded Characteristics:

Maximum Throttle: **6** at LO and ML; **7** at MH and HI.
Dive: May not exceed maximum throttle setting.
Climb: reduce MA by **2.**
Acceleration: reduce all acceleration allowances by one-third, rounding fractions to the nearest number.
Turn Mode: add **1** to all turn modes LO & ML, **2** at MH and HI.
Roll Cost: **1-3** cost **1** MP, **4+** cost **2** MP.
Ceiling: **156 levels.**
Missiles: May carry no more than four RHM and four HSM when loaded.

Tomcat Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	4
4	2	3	4	4
5	2	3	4	5
6	3	4	5	5
7	3	4	5	6
8	4	5	6	7
9	4	5	6	7
10	5	6	7	8
11	7	8	9	10
12	–	9	11	12
13	–	–	12	13
14	–	–	–	15

Tomcat Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	6	5	3	2
2	6	5	2	2
3	6	4	2	1
4	5	4	2	1
5	5	3	2	1
6	4	3	2	1
7	–	2	1	1
8	–	–	1	1
9	–	–	–	1
10	–	–	–	1

May accelerate while climbing.

Tomcat Roll Table

Movement Points	Points Rolled
0	0-4
1	5+

Tomcat Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	10	0	2	11	0
	5	11	3	5	12	3	5	12	3	5	13	3
	10	10	3	10	11	3	10	13	3	10	14	3
II	20	10	2	15	11	2	20	12	2	15	13	2
				20	10	2				20	12	2
III	23	9	1	25	10	1	25	11	1	25	11	1
							27	10	1	31	10	1

Tomcat CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO								ML								MH					HI				
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	8	6	5
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	7	5	4	9	8	7	5	4
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	7	6	4	3	8	7	6	4	3
8	–	–	–	–	–	–	–	–	8	7	6	5	4	3	2	1	7	6	5	3	2	7	6	5	3	2
7	7	6	5	5	4	3	3	2	7	6	5	4	3	2	1	–	6	5	4	2	1	6	5	4	2	1
6	6	5	4	4	3	2	2	1	6	5	4	3	2	1	–	–	5	4	3	1	–	5	4	3	1	–
5	5	4	3	3	2	1	1	–	4	4	3	2	1	–	–	–	4	3	2	–	–	4	3	2	–	–
4	3	3	2	2	1	1	–	–	3	3	2	1	–	–	–	–	3	2	1	–	–	3	2	1	–	–
3	2	2	1	1	–	–	–	–	2	2	1	–	–	–	–	–	2	1	1	–	–	2	1	–	–	–
2	1	1	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–
1	1	1	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–

Tomcat Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	0	1	2	2
...Entering Pull-Through:	0	0	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	1	2	2	2
Energy Points Lost in each Pull-Up:	1	1	1	2
MP Lost each Game-Turn Wings Vertical:	1	2	2	2







Aircraft Name:

Israeli Aircraft Industries Kfir C2

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **G**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **4**
Damage Capacity: **9**
Ceiling: **240**
Deceleration: **10**
Size: **5**
Number of Crew Members: **1**
Point Value: **9/4**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	11
Minimum Throttle:	1	2	2	2
Maximum Energy:	12	13	14	16

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none.

Kfir Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	3	4
3	2	2	3	4
4	2	2	3	4
5	2	3	4	5
6	3	3	5	6
7	3	4	6	7
8	4	5	7	8
9	4	5	8	9
10	–	6	9	10
11	–	–	10	11

Kfir Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	3	3	2
2	4	3	3	2
3	4	3	3	2
4	3	3	2	2
5	3	3	2	1
6	2	2	2	1
7	–	2	2	1
8	–	–	1	½
9	–	–	–	½
10	–	–	–	½

Kfir Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	11	0
	5	9	2	5	10	2	5	11	2	5	11	2
II	10	9	1	10	10	1	10	10	1	10	11	1
	15	9	1	15	9	1	15	10	1	15	10	1
III	17	8	0	20	9	0	22	9	0	24	9	0

Kfir C2 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)	LO 1	2	3	4	5	6	7	8	ML 1	2	3	4	5	6	MH 1	2	3	4	HI 1	2	3
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	8	6
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	7	6
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	7	5	4	8	7	5
8	–	–	–	–	–	–	–	–	7	6	4	3	2	1	7	6	4	3	6	5	4
7	6	5	5	4	3	3	2	2	6	5	3	2	1	1	6	5	3	2	6	5	3
6	5	5	4	4	3	3	2	1	5	4	2	2	–	–	5	4	2	1	5	4	2
5	4	4	3	3	2	2	1	–	4	3	2	1	–	–	4	3	1	–	3	3	1
4	3	3	2	2	1	1	–	–	3	2	1	–	–	–	3	2	–	–	2	2	–
3	2	2	1	1	–	–	–	–	2	1	–	–	–	–	2	1	–	–	1	1	–
2	1	1	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Kfir Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

Kfir Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	3	3	4	4
Energy Points Lost in each Pull-Up:	2	2	3	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Kfir Loaded Characteristics:

Maximum Throttle: **6** at LO and ML; **5** at MH and HI.
Dive: may not exceed maximum throttle setting
Climb: no type III climb, reduce all MA by 1.
Acceleration: **reduce all numbers by 50%,** rounding fractions up
Turn Mode: **add one-third, rounding up.**
Roll Cost: **1-3** pts. cost **1** MP, **4+: 2** MP
Ceiling: **135**
Missiles: **1**







Aircraft Name:
Rockwell B-1

Basic Aircraft Information Table
Aircraft Type: Strategic Heavy Bomber
Cannon Type: **A,** rear mounted
Cannon Shots: **20**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **60**
Ceiling: **290**
Deceleration: **5**
Size: **7**
Number of Crew Members: **4**
Point Value: **6/49**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	10
Minimum Throttle:	1	2	2	2
Maximum Energy:	11	12	13	14

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **6** (LO/ML); **7** (MH/HI)

Special Rules:
May use Type K cannon with unlimited shots after c. 1984.
Tail-mounted cannon has range of nine hexes, range divisions at 1-3, 4-6, 7-9 hexes

B-1 Roll Table

Movement Points	Points Rolled
1	1
2	2
3	3+

B1 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	4	5	5	6
2	4	5	5	6
3	5	6	6	7
4	6	7	8	9
5	6	8	9	11
6	6	9	10	12
7	7	9	11	13
8	8	10	12	14
9	–	11	13	15
10	–	12	14	15
11	–	–	–	16

B-1 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	2	2	1	1
2	2	2	1	1
3	2	1	1	½
4	1	1	1	½
5	1	1	1	½
6	1	1	1	½
7	–	1	½	½
8	–	–	½	½
9	–	–	–	½

B-1 Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	9	0	2	10	0
				5	9	1	5	10	1	5	11	1
II	5	9	1	10	10	1	10	10	1	10	11	1
III	10	7	1	12	9	1	14	10	1	16	10	1

B-1 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO					ML				MH			HI		
	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
10	–	–	–	–	–	–	–	–	–	–	–	–	9	5	2
9	–	–	–	–	–	–	–	–	–	8	6	4	8	4	1
8	–	–	–	–	–	7	6	4	2	7	5	3	7	3	–
7	6	5	4	3	2	6	5	3	1	5	3	2	5	2	–
6	5	4	3	2	1	5	4	2	–	4	2	1	4	1	–
5	4	3	2	1	–	4	3	1	–	3	1	–	3	–	–
4	3	2	1	–	–	3	1	–	–	2	–	–	2	–	–
3	2	1	–	–	–	1	–	–	–	1	–	–	1	–	–
2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

B-1 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	may not execute			
...Entering Pull-Through:	may not execute			
Game-Turns in Push-Through before...				
...Making Split-S:	may not execute			
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	may not execute			
...Executing Break:	3	3	4	4
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

B-1 Loaded Characteristics:

Maximum Throttle: **6** at LO and ML; **6** at MH **7** at HI.
Dive: No type III, may not exceed maximum throttle setting.
Climb: No type II, Movement Allowance reduced by **1.**
Acceleration: **Treat all 2's as 1's.**
Turn Mode: **Add 2 to all turn modes.**
Roll Cost: **Add 1 MP to all costs.**
Ceiling: **250**



Aircraft Name:
Mikoyan MiG-17C *Fresco-C*

Basic Aircraft Information Table
Aircraft Type: fighter and fighter-bomber.
Cannon Type: **C**
Cannon Shots: **2**
RH Missiles: **0**
HS Missiles: **2** (sometimes)
Damage Capacity: **5**
Ceiling: **210**
Deceleration: **6**
Size: **5**
Number of Crew Members: **1**
Point Value: **5/1**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	2	2
Maximum Energy:	9	9	9	10

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**

Special Rules: none

Other Versions:
MiG-17 Fresco-A: Use smaller number of cannon shots and lower acceleration figures. **MiG-17 Fresco-E:** Has radar; can use AA-1 missiles; otherwise like MiG-17C/D.

MiG-17 Roll Table

Movement Points	Points Rolled
0/1	1-3
1/1	4-5
2/3	6+

Use second MP cost if MA is 5 or more.

MiG-17 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	3
2	2	2	2	3
3	2	2	2	3
4	2	2	3	4
5	2	2	3	4
6	3	5	6	7

MiG-17 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4/3	4/3	3/2	2/1
2	4/3	4/3	2/2	2/1
3	3/2	3/2	1/1	1/1
4	3/2	1/1	1/1	½/½

MiG-17 Dive Table

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	0	2	5	0	2	5	0	2	5	0
	3	6	1	3	6	1	3	6	1	3	6	1
II	5	6	1	5	6	1	5	5	0	5	5	0
III	10	3	0	10	3	0	9	3	0	9	3	0

MiG-17 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

Number of Levels Climbed (by Altitude Grouping)

	LO		ML		MH		HI	
	1	2	1	2	1	2	1	2
5	4	3	4	3	3	2	3	2
4	3	2	3	2	2	2	1	1
3	2	2	2	2	2	1	1	–
2	1	–	1	–	–	–	–	–
1	–	–	–	–	–	–	–	–

MiG-17 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	2	2	3	3
...Entering Pull-Through:	2	2	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	3	3	3
...Executing Break:	3	3	3	3
Energy Points Lost in each Pull-Up:	1	1	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

MiG-17 Loaded Characteristics:

Maximum Throttle: **4** at all altitudes.
Dive: No Type III dives, MA may not exceed maximum throt. set.
Climb: no Type II climb, MA reduced by **1**.
Acceleration: reduce by **half**, retaining fractions.
Turn Mode: add **1** at LO and ML, **2** at MH and HI.
Roll Cost: use **2nd** column.
Ceiling: **120 levels.**
Missiles: air-air missiles may not be carried while loaded.





Aircraft Name:
Mikoyan MiG-15bis *Fagot*

Basic Aircraft Information Table
Aircraft Type: fighter
Cannon Type: **F**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **4**
Ceiling: **204**
Deceleration: **4**
Size: **5**
Number of Crew Members: **1** *Point Value:* **3/1**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	2	2
Maximum Energy:	8	9	9	10

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**(LO/ML(; **3**(MH/HI)
Special Rules: none
Other Versions:
Early model MiG-15's use second figure where two appear.

MiG-15 Roll Table

Movement Points	Points Rolled
0	1
1	2-3
2	4+

MiG-15 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	2
3	2	2	3	3
4	2/3	3/4	3	4
5	3/5	4/5	4/5	5/6

MiG-15 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	4	4/3	3/3
2	4	4	3	2
3	4/3	3	3	1
4	3	2	2	1

MiG-15 Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	5	1	2	5	1	2	5	1
II	5	4	1	5	4	1	5	5	1	5	5/4	1
III	7	4	0	7	4	0	7	4	0	7	4	0

MiG-15 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO 1	LO 2	ML 1	ML 2	MH 1	MH 2	HI 1	HI 2
5	4	3	4	3	3	2	3	2
4	3	3/2	3	2	2	2/1	2	2/1
3	2	2/1	2	2/1	2	1	1	1
2	1	–	1	–	–	–	–	–
1	–	–	–	–	–	–	–	–

MiG-15 Loaded Characteristics:

Maximum Throttle: **4** at all altitudes.
Dive: No type III dives, MA may not exceed maximum throttle setting.
Climb: No Type II climb, MA reduced by **1.**
Acceleration: **halve,** ignoring fractions.
Turn Mode: **increase all modes by 2.**
Roll Cost: **doubled.**
Ceiling: **99 levels.**

MiG-15 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	2	2	3	3
...Entering Pull-Through:	2	3	3	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	2	3	3	3
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2



Aircraft Name:
Sukhoi Su-19 *Fencer*

Basic Aircraft Information Table
Aircraft Type: strike aircraft
Cannon Type: **B**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **16**
Ceiling: **250**
Deceleration: **10**
Size: **7**
Number of Crew Members: **2**
Point Value: **9/12**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	8	10	12
Minimum Throttle:	1	2	3	3
Maximum Energy:	12	14	16	18

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **5**
Special Rules: none.

Su-19 Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

Su-19 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	4	6	7
2	2	4	6	7
3	3	4	6	7
4	4	5	7	8
5	4	5	7	8
6	5	6	8	9
7	5	7	9	10
8	6	8	10	12
9	7	8	10	12
10	7	9	11	12
11	–	10	12	13
12	–	–	12	14
13	–	–	–	14

Su-19 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	4	3	2
2	4	4	3	2
3	4	4	3	2
4	4	4	2	1
5	3	3	2	1
6	–	2	1	1
7	–	2	1	1
8	–	–	1	1
9	–	–	1	1
10	–	–	–	1
11	–	–	–	1

Su-19 Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	6	0	2	8	0	2	10	0	2	12	0
	5	10	3	5	11	3	5	12	3	8	13	3
II	10	10	1	10	10	1	11	12	2	12	13	2
	15	10	1	15	10	1	15	12	1	15	12	1
III	18	10	1	22	9	1	20	11	1	20	11	1
	20	9	0				24	10	1	26	10	1

Su-19 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO								ML							MH					HI			
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4
12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	9	7	2
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	8	5	1
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	7	6	3	2	9	6	3	1
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	6	5	2	1	8	5	2	–
8	–	–	–	–	–	–	–	–	7	6	5	4	3	2	1	7	5	4	1	–	7	4	1	–
7	–	–	–	–	–	–	–	–	6	5	4	3	2	1	–	6	4	3	–	–	6	3	–	–
6	5	5	4	4	3	3	2	2	5	4	3	2	1	–	–	5	3	2	–	–	5	2	–	–
5	4	4	3	3	2	2	1	1	4	3	2	1	–	–	–	4	2	1	–	–	4	1	–	–
4	3	3	2	2	1	1	1	–	3	2	1	1	–	–	–	3	1	–	–	–	3	–	–	–
3	2	2	1	1	–	–	–	–	2	1	–	–	–	–	–	2	–	–	–	–	2	–	–	–
2	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Su-19 Loaded Characteristics:

Maximum Throttle: **5** at LO and ML; **6** at MH and HI.
Dive: Movement Allowance may not exceed Maximum Throttle.
Climb: No Type III Climbs; reduce all Movement Allowances on the Climb Chart by 2.
Acceleration: reduce all Acceleration Allowances of 3 or more by 2, **halve** all other numbers (except ½).
Turn Mode: add **25%** to each Turn mode, rounding fractions
Roll Cost: **double** all roll costs.
Ceiling: **150 levels.**

Su-19 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	2	3	4
...Entering Pull-Through:	1	1	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	2	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	2	3	3
...Executing Break:	2	3	3	3
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

PC44







Aircraft Name:
Sukhoi Su-7B *Fitter*

Basic Aircraft Information Table
Aircraft Type: strike aircraft
Cannon Type: **D**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **5**
Ceiling: **197**
Deceleration: **4**
Size: **5**
Number of Crew Members: **1**
Point Value: **5/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	5	6	7	8
Minimum Throttle:	2	2	2	3
Maximum Energy:	9	10	11	12

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**
Special Rules: none.
Other Versions:
There is an unarmed reconnaissance version.

Su-7 Roll Table

Movement Points	Points Rolled
1	1
2	2

Su-7 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	4	5	7	8
2	4	5	7	8
3	5	6	8	9
4	5	8	10	12
5	6	9	12	14
6	7	10	12	15
7	–	12	14	16
8	–	–	15	16

Su-7 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	2	1	1
2	2	2	1	1
3	2	2	1	1
4	1	1	1	½
5	–	1	½	½
6	–	–	½	½
7	–	–	–	½

Su-7 Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	5	0	2	6	0	2	7	0	2	8	0
							5	8	1	5	8	1
II	5	6	1	10	7	1	10	8	1	10	8	1
III	9	5	0	11	6	0	13	6	0	14	7	0

Su-7 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO					ML				MH			HI		
	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
8	–	–	–	–	–	–	–	–	–	–	–	–	6	4	3
7	–	–	–	–	–	–	–	–	–	6	3	2	6	3	2
6	–	–	–	–	–	5	3	2	1	5	2	1	5	2	1
5	4	3	2	2	1	4	3	2	–	4	2	1	3	2	1
4	3	2	2	1	–	2	2	1	–	2	2	–	2	1	–
3	2	1	1	–	–	1	1	–	–	1	–	–	1	–	–
2	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Su-7 Loaded Characteristics:

Maximum Throttle: **4** in LO, **5** in ML, **6** in MH and HI.
Dive: no Type III Dives, Movement Allowance may not exceed Maximum Throttle.
Climb: no Type III Climbes.
Acceleration: **halve** all Acceleration Allowances greater than ½, retain fractions.
Turn Mode: **Add one-third to all Turn Modes, rounding up.**
Roll Cost: **all roll costs are doubled.**
Ceiling: **105.**

Su-7 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	5	5	6	6
...Entering Pull-Through:	3	3	4	6
Game-Turns in Push-Through before...				
...Making Split-S:	4	4	5	5
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	3	4	5
...Executing Break:	3	3	4	4
Energy Points Lost in each Pull-Up:	2	2	3	3
MP Lost each Game-Turn Wings Vertical:	2	2	3	3







Aircraft Name:

Mikoyan MiG-21E, F, J and K
Fishbed (late model)

Basic Aircraft Information Table
Aircraft Type: Fighter
Cannon Type: **B**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **4**
Damage Capacity: **8**
Ceiling: **251**
Deceleration: **8**
Size: **5**
Number of Crew Members: **1**
Point Value: **8/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7	8	9	10
Minimum Throttle:	1	2	2	3
Maximum Energy:	12	13	14	15

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none.

Other Versions:
MiG-21 C & D (early model): Cannon: Type D. HS Missiles: 2 Ceiling: 230 levels. Turn Mode: use figures after slashes where different. Acceleration: use figures after slashes where different. Roll: 1-2 Pts., 0 MP cost; 3-5 Pts., 1 MP cost; 6+ pts, 2 MP cost.

MiG-21 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	4
4	2	2	4	5
5	2	3	4	5
6	3	3	5	6
7	3	4	5	6
8	4	4	6	7
9	5/6	5/6	6/7	7/8
10	–	6/7	7/8	8/9
11	–	–	–	8/10

MiG-21 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4/3	4/3	2	2
2	4/3	4/3	2	2/1
3	3	3	2	1
4	3	3/2	2	1
5	3/2	2	2/1	1
6	2/1	2/1	1	1
7	–	1	1	½
8	–	–	1	½
9	–	–	–	½

MiG-21 Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	9	2	5	10	2	5	10	2	5	11	1
II	10	9	1	15	9	1	15	10	1	15	10	1
	15	8	1									
III	16	8	0	18	8	0	19	9	0	20	9	0

MiG-21 Roll Table

Movement Points	Points Rolled
0	1-3
1	4-5
2	6+

MiG-21 CLIMB TABLE

	Number of Levels Climbed (by Altitude Grouping) LO					ML				MH			HI		
	1	2	3	4	5	1	2	3	4	1	2	3	1	2	3
10	–	–	–	–	–	–	–	–	–	–	–	–	9	7	6
9	–	–	–	–	–	–	–	–	–	8	7	5	8	7	5
8	–	–	–	–	–	7	6	4	4	7	6	4	8	6	4
7	6	5	3	3	3	6	5	3	3	6	5	3	7	5	–
6	5	4	3	2	1	5	4	2	1	5	4	3	6	4	–
5	4	2	1	1	–	4	3	2	1	4	3	2	5	3	–
4	3	1	1	–	–	3	2	1	–	3	2	1	4	2	–
3	2	1	–	–	–	2	1	–	–	2	1	–	3	1	–
2	2	–	–	–	–	2	–	–	–	1	–	–	1	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

MiG-21 Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: No Type III Dives, may not exceed Maximum Throttle.
Climb: No Type III Climbs.
Acceleration: **halve** all Acceleration Allowances, retaining fractions.
Turn Mode: add **one-third** to all Turn Modes, rounding up.
Roll Cost: rolling **1** or **2** points costs **1** Movement Point.
Ceiling: **same.**
Missiles: May not carry air-to-air missiles while loaded; must jettison.

MiG-21 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	3
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	2
...Executing Break:	3	3	3	4
Energy Points Lost in each Pull-Up:	2	3	4	4
MP Lost each Game-Turn Wings Vertical:	2	2	3	3

Aircraft Name: *PC46*

Air-to-Air-Fighter "L"

(possibly MiG-29, possibly MiG-31, possibly Su-?)

Basic Aircraft Information Table

Aircraft Type: fighter
Cannon Type: **M**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **4**
Damage Capacity: **12**
Deceleration: **13**
Size: **5**
Number of Crew Members: **1**
Point Value: **9/2**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	7	8	9	10
Minimum Throttle:	1	1	2	2
Maximum Energy:	12	13	14	15

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules: May visually search rear arc. May accelerate while climbing.

AA-F "L" Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

AA-F "L" Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	2
3	2	2	2	3
4	2	2	2	3
5	2	3	3	3
6	3	3	4	4
7	3	3	4	5
8	3	3	4	6
9	3	4	4	6
10	4	5	5	7
11	–	–	6	7
12	–	–	–	8

AA-F "L" Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	6	5	5	2
2	5	5	4	2
3	5	5	4	2
4	5	4	3	2
5	4	4	3	2
6	4	3	3	1
7	3	2	2	1
8	–	2	2	1
9	–	–	–	1

AA-F "L" DIVE TABLE

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	10	2	5	11	2	5	11	2	5	11	2
II	15	10	2	15	10	2	15	11	2	15	11	1
III	20	9	1	22	9	1	23	10	1	25	10	1

AA-F "L" CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO									ML									MH						HI					
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	1	2	3	4	5	6
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10	9	8	7	5	4
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	7	5	4	2	9	8	7	5	4	3
8	–	–	–	–	–	–	–	–	–	8	7	6	6	5	4	3	2	1	8	7	6	5	3	2	8	7	6	5	3	2
7	7	6	6	5	5	4	4	3	2	7	6	5	5	4	3	2	1	–	7	6	5	4	2	1	7	6	5	4	2	1
6	6	5	5	4	4	3	3	2	1	6	5	4	4	3	2	1	–	–	6	5	4	3	2	–	6	5	4	3	1	–
5	5	4	4	3	3	2	2	1	–	5	4	3	3	2	1	–	–	–	5	4	3	2	1	–	5	4	3	2	–	–
4	4	3	3	2	2	1	1	–	–	4	3	3	2	1	–	–	–	–	4	3	2	1	–	–	4	3	2	1	–	–
3	3	2	2	1	1	–	–	–	–	3	2	2	1	–	–	–	–	–	3	2	1	–	–	–	3	2	1	–	–	–
2	2	1	1	–	–	–	–	–	–	2	1	1	–	–	–	–	–	–	2	1	–	–	–	–	2	1	–	–	–	–
1	1	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–

AA-F "L" Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	0	0	1	1
...Entering Pull-Through:	1	1	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	1	2	2	2
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	1	1	2	2

AA-F "L" Loaded Characteristics:

Maximum Throttle: **5** at LO and ML, **6** at MH or HI
Dive: May not exceed 5 at LO and ML, 6 at MH or HI
Climb: MA reduced by 2
Acceleration: reduce by **one-third,** rounding up
Turn Mode: increase by **25%,** ignoring fractions.
Roll Cost: **double**
Ceiling: **140 levels**







Aircraft Name:

Mikoyan MiG-25A, B, and D

Foxbat

Basic Aircraft Information Table

Aircraft Type: fighter and strategic reconnaisance
Cannon Type: **None/None/M**
Cannon Shots: **0/0/4**
RH Missiles: **2/0/2**
HS Missiles: **2/0/2**
Damage Capacity: **12**
Ceiling: **328**
Deceleration: **9**
Size: **8**
Number of Crew Members: **1/1/2**
Point Value: **8/5/9** (0)

Within Altitude Grp:	LO	ML	MH	HI
Maximum Throttle:	7/8	9/11	11/14	13/16
Minimum Throttle:	2	3	3	4
Maximum Energy:	12	14	16	19

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4** (LO/ML); **5** (MH); **6** (HI)

Special Rules:
Maximum Throttle figures refer to A [# before slash (/)] and **B** [# after slash], respectively.

Other Versions:
When three figures appear on the Basic Aircraft Information, the first is for the A model, the second for the B,, and the Third for the D. Where 2 appear, the first is for the A and D Models and the second for the B.

MiG-25B: Unarmed, high-speed reconnaissance. Use figures in parenthesis. Use 2nd figure in dive chart where two appear.

MiG-29(?) Foxbat-E: new interceptor version. Reduce all turn modes by one, use acceleration figures in parenthesis. Use first figures in dive chart. Where one figure appears, use it for all Foxbats.

MiG-25 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	4	6	8	12
2	4	6	8	12
3	5	7	9	13
4	6	8	10	14
5	7	9	11	15
6	7	10	13	16
7	8	11	14	17
8	8	12	15	18
9	9	12	15	18
10	9	13	15	18
11	10	14	16	19
12	11	16	17	19
13	–	18	18	20
14	–	–	19	20
15	–	–	–	21
16	–	–	–	21

MiG-25 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	3	3	2	1
3	3	3	2	1
4	3	2 (3)	2	1
5	3	2	1(2)	1
6	2(3)	2	1(2)	1
7	1(2)	1	1	½(1)
8	–	1	1	½(1)
9	–	1	1	½
10	–	1	1	½
11	–	–	1	½
12	–	–	½	½
13	–	–	½	½
14	–	–	–	½
15	–	–	–	½

MiG-25 Roll Table

Movement Points	Points Rolled
0	1
1	2
2	3
3	4+

MiG-25 Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7/8	0	2	9/11	0	2	11/14	0	2	13/16	
	5	10/12	2	5	11/13	2	5	13/15	2	5	14/16	2
II	10	10/12	1	10	11/13	1	10	12/14	1	10	13/15	1
	15	9/11	1	15	10/12	1	15	11/13	1	15	12/14	1
III	18/20	9/11	1	20	9/12	1	20	10/12	1	20	11/13	1
				21	9/11	0	21/23	10/12	0	22/25	11/13	0

MiG-25 CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)

	Number of Levels Climbed (by Altitude Grouping) LO												ML									MH								HI					
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	1	2	3	4	5	6
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	15	13	11	9	6	4
15	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14	12	10	9	6	3
14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13	11	10	9	7	5	3	2	13	11	9	8	5	3
13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12	10	9	9	7	5	3	1	12	11	9	7	5	3
12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	9	8	8	6	5	3	1	11	10	8	6	4	3
11	–	–	–	–	–	–	–	–	–	–	–	–	10	9	8	7	5	4	3	2	2	10	8	7	7	6	4	2	–	10	9	8	6	4	2
10	–	–	–	–	–	–	–	–	–	–	–	–	9	8	7	6	5	4	3	2	1	9	7	6	6	5	4	2	–	9	8	7	5	3	2
9	–	–	–	–	–	–	–	–	–	–	–	–	8	7	6	5	4	3	3	2	1	8	7	6	5	4	3	2	–	8	7	6	5	3	1
8	7	6	6	5	5	4	4	3	3	2	2	1	7	6	6	5	4	3	3	2	1	7	6	5	4	4	3	1	–	7	6	5	4	3	1
7	6	5	5	4	4	3	3	2	2	1	1	–	6	5	5	4	3	2	2	1	–	6	5	4	3	3	2	–	–	6	5	4	3	2	1
6	5	4	4	3	3	2	2	1	1	1	–	–	5	4	4	3	2	1	1	–	–	5	4	3	2	2	1	–	–	5	4	3	2	1	–
5	4	3	3	2	2	1	1	–	–	–	–	–	4	3	3	2	1	–	–	–	–	4	3	2	1	1	–	–	–	4	3	2	1	–	–
4	3	2	2	1	1	1	–	–	–	–	–	–	3	2	2	1	–	–	–	–	–	3	2	1	–	–	–	–	–	3	2	1	–	–	–
3	2	1	1	–	–	–	–	–	–	–	–	–	2	1	1	–	–	–	–	–	–	2	1	–	–	–	–	–	–	2	1	–	–	–	–
2	1	1	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

MiG-25 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	2	4	5	6
...Entering Pull-Through:	2	3	4	5
Game-Turns in Push-Through before...				
...Making Split-S:	2	3	4	5
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	3	4	4	5
...Executing Break:	3	3	3	4
Energy Points Lost in each Pull-Up:	2	2	3	3
MP Lost each Game-Turn Wings Vertical:	2	2	3	3

MiG-25 Loaded Characteristics:

Maximum Throttle: **6** at LO and ML; **5** at MH and HI.
Dive: No Type III dive, may not exceed max. throttle setting.
Climb: No Type III Climb, MA reduced by **2**.
Acceleration: **halved**, retaining fractions
Turn Mode: **doubled**, ignoring fractions.
Roll Cost: **doubled**, ignoring fractions.
Ceiling: **144 levels**.





Aircraft Name:

Tupolev Tu-26B *Backfire*

Basic Aircraft Information Table

Aircraft Type: strategic medium bomber
Cannon Type: **L** (rear mounted)
Cannon Shots: **15**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **26**
Ceiling: **219**
Deceleration: **6**
Size: **8**
Number of Crew Members: **4**
Point Value: **6/18**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	7	8	10
Minimum Throttle:	1	2	2	3
Maximum Energy:	9	10	11	12

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **5**
Special Rules: Cannon has range of 9 hexes, divisions being 1-3, 4-6, 7-9 hexes.

Tu-26 Roll Table

Movement Points	Points Rolled
1	1-2
3	3+

Tu-26 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	4	5	6	9
2	4	5	6	9
3	5	6	7	10
4	5	6	8	11
5	6	7	9	12
6	6	8	10	13
7	–	9	12	14
8	–	9	13	15
9	–	–	14	16
10	–	–	–	17
11	–	–	–	18

Tu-26 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	4	3	2
2	4	4	2	2
3	2	2	1	1
4	2	1	1	1
5	–	1	1	½
6	–	1	½	½
7	–	–	½	½
8	–	–	–	½
9	–	–	–	½

Tu-26B Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	7	1	2	8	1	2	10	1
							5	9	1	5	11	1
II	5	6	1	5	8	1	10	9	1	10	10	1
III	9	6	1	10	8	1	11	9	1	12	9	1

Tu-26B CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO					ML				MH		HI	
	1	2	3	4	5	1	2	3	4	1	2	1	2
10	–	–	–	–	–	–	–	–	–	–	–	8	4
9	–	–	–	–	–	–	–	–	–	–	–	6	2
8	–	–	–	–	–	–	–	–	–	6	4	4	1
7	–	–	–	–	–	6	4	3	1	4	3	3	–
6	–	–	–	–	–	5	3	2	–	3	2	2	–
5	4	3	3	2	1	4	2	1	–	2	1	1	–
4	3	2	2	1	1	2	1	–	–	1	–	1	–
3	2	1	1	–	–	1	–	–	–	1	–	–	–
2	1	1	–	–	–	–	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–

Tu-26 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	may not execute			
...Entering Pull-Through:	may not Pull-Through			
Game-Turns in Push-Through before...				
...Making Split-S:	1	2	2	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	3	3	4
...Executing Break:	1	1	2	2
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Tu-26 Loaded Characteristics:

Maximum Throttle: **5** in LO; **6** in ML; **7** in MH; **9** in HI.
Dive: No Type III dives, may not exceed max. Throttle Setting.
Climb: No Type III climbs, MA reduced by **1**.
Acceleration: **halved**, retaining fractions.
Turn Mode: **add 25%**, ignoring fractions.
Roll Cost: **double.**
Ceiling: **193 levels.**



Aircraft Name:
Mikoyan MiG-27 *Flogger-D*

Basic Aircraft Information Table
Aircraft Type: fighter-bomber
Cannon Type: **M**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **4** (Atoll only)
Damage Capacity: **13**
Ceiling: **210**
Deceleration: **8**
Size: **5**
Number of Crew Members: **1**
Point Value: **8/9**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	7	8	8
Minimum Throttle:	1	2	2	3
Maximum Energy:	11	12	13	13

Maximum Energy Add per Game-Turn: **3**
Cruise.Speed: **4**
Special Rules: none.

MiG-27 Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

MiG-27 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	5
4	2	2	3	6
5	2	2	4	6
6	2	3	4	7
7	3	4	5	8
8	4	4	5	8
9	5	5	6	9

MiG-27 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	2
2	3	3	2	2
3	3	2	2	1
4	2	1	1	1
5	1	1	1	1
6	–	1	1	½
7	–	–	½	½

MiG-27 Dive Table

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	6	0	2	7	0	2	8	0	2	8	0
	5	9	2	5	9	2	5	9	2	5	9	1
II	10	8	1	10	9	1	15	9	1	15	9	1
III	14	8	0	15	8	0	16	8	0	16	8	0

MiG-27 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	1	2
...Entering Pull-Through:	1	1	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	3	3	3	3
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

MiG-27 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)	LO					ML				MH			HI	
	1	2	3	4	5	1	2	3	4	1	2	3	1	2
8	–	–	–	–	–	–	–	–	–	7	4	2	6	3
7	–	–	–	–	–	6	4	2	1	6	4	2	5	3
6	5	4	3	2	1	5	3	1	–	5	3	1	4	2
5	4	3	2	1	–	4	2	1	–	4	2	1	3	1
4	3	2	1	–	–	3	1	–	–	3	1	–	2	–
3	2	1	–	–	–	2	–	–	–	2	–	–	1	–
2	1	–	–	–	–	1	–	–	–	1	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–

MiG-27 Loaded Characteristics:

Maximum Throttle: **5** at LO and ML; **6** at MH and HI
Dive: Movement Allowance may not exceed maximum Throttle Setting.
Climb: No Type III climb, reduce MA by 2.
Acceleration: reduce by one-third, rounding up.
Turn Mode: increase by **25%**, ignoring fractions.
Roll Cost: **double.**
Ceiling: **161 levels.**
Missiles: may not carry air-to-air missiles while loaded.







Aircraft Name:

Mikoyan MiG-23B, CWW, and E *Flogger*

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **B**
Cannon Shots: **3**
RH Missiles: **2** (B only)
HS Missiles: **4** (B); **6** (E)
Damage Capacity: **14**
Ceiling: **240**
Deceleration: **9**
Size: **7**
Number of Crew Members: **1, 2** in C
Point Value: **9/5** (B only)

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	7	8	10	11
Minimum Throttle:	1	2	2	3
Maximum Energy:	13	14	16	17

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules: MiG-23B normally carries 2 or 4XAA – 8(HS) & ZXAA-7(1HS, 1RH, or 3RH).

Other Versions:

MiG-23B: normal version.

MiG-23CWW: Wild Weasel version. Crew of two. See Wild Weasel rules.

MiG-23E: Cheap, export version. Modified electronics. May only use Atoll missiles.

MiG-23 Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

MiG-23 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	4
4	2	2	4	5
5	2	2	4	5
6	2	3	4	6
7	3	3	5	6
8	4	4	5	7
9	5	5	5	7
10	6	6	6	8
11	–	7	7	8
12	–	–	–	9

MiG-23 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	4	2	2
2	3	3	2	2
3	3	3	2	1
4	3	3	2	1
5	2	2	1	1
6	2	2	1	1
7	–	2	1	½
8	–	–	1	½
9	–	–	1	½
10	–	–	–	½

MiG-23 Dive Table

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	7	0	2	8	0	2	9	0	2	11	0
	5	10	2	5	11	2	5	11	2	5	12	2
II	15	9	1	10	10	1	10	11	1	10	12	1
				15	9	1	15	10	1	15	11	1
III	16	8	0	18	9	0	20	10	0	20	10	1
										22	9	0

MiG23 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Throttle Setting (Movement Allowance or whichever is higher)	LO							ML						MH					HI			
	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4
11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		10	8	6	2
10	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	6	3	2	9	8	6	1
9	–	–	–	–	–	–	–	–	–	–	–	–	–	9	7	5	2	2	9	7	5	–
8	–	–	–	–	–	–	–	7	6	5	4	4	2	8	6	4	2	1	8	6	4	–
7	6	5	5	4	4	3	3	6	5	4	3	3	1	9	5	3	2	1	7	5	3	–
6	5	4	4	3	3	2	2	5	4	3	2	2	–	5	4	2	1	–	6	4	2	–
5	4	3	3	2	2	1	–	4	3	2	1	1	–	4	3	1	–	–	5	3	1	–
4	3	2	2	1	1	–	–	3	2	1	–	–	–	3	2	–	–	–	4	2	–	–
3	2	2	1	–	–	–	–	2	2	–	–	–	–	2	1	–	–	–	2	1	–	–
2	1	1	–	–	–	–	–	1	1	–	–	–	–	1	–	–	–	–	2	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

MiG-23 Loaded Characteristics:

Maximum Throttle: **5** at LO and ML; **6** at MH and HI.
Dive: may not exceed maximum throttle setting.
Climb: No type III climb, reduce MA by 2.
Acceleration: reduce by **one-third,** rounding fractions up.
Turn Mode: increase by **25%,** ignoring fractions.
Roll Cost: **double.**
Ceiling: **180 levels.**
Missiles: may not carry air-to-air missiles while loaded.

MiG-23 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	1	2
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	3	3	3	3
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2



Aircraft Name:

Dassault MD-450 Ouragon

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **1**
Cannon Shots: **5**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **5**
Ceiling: **197**
Deceleration: **6**
Size: **5**
Number of Crew Members: **1**
Point Value: **4/1**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	4	4	4	4
Minimum Throttle:	1	1	1	2
Maximum Energy:	8	8	9	9

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **3**

Special Rules: none.

Ouragon Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	3	3
3	2	2	3	4
4	3	3	4	5
5	3	4	5	6

Ouragon Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	1
2	2	2	2	1
3	1	1	1	1

Ouragon Dive Table

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	3	5	1	3	5	1	4	5	1	4	5	1
II	6	5	1	6	5	1	7	5	1	7	5	1
III	10	4	0	11	4	0	11	4	0	11	4	0

Ouragon Roll Table

Movement Points	Points Rolled
0	**1-2**
1	**3+**

Ouragon CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO		ML		MH		HI	
	1	**2**	**1**	**2**	**1**	**2**	**1**	**2**
4	3	3	3	2	2	2	2	2
3	3	2	2	2	2	1	2	1
2	2	1	2	1	1	1	1	–
1	1	–	–	–	–	–	–	–

Ouragon Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	2	2	3	3
...Entering Pull-Through:	2	2	3	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	2	2	3
Energy Points Lost in each Pull-Up:	1	2	2	3
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Ouragon Loaded Characteristics:

Maximum Throttle: **4** at LO and ML; **3** at MH and HI.
Dive: may not exceed maximum throttle setting.
Climb: No Type II Climb.
Acceleration: reduce all numbers greater than **1** by **1.**
Turn Mode: Add **1** to all modes.
Roll Cost: **doubled.**
Ceiling: **102 Levels.**



Aircraft Name:

North American F-86E-H Sabre

Basic Aircraft Information Table
Aircraft Type: fighter and fighter-bomber
Cannon Type: **E**
Cannon Shots: **10**
RH Missiles: **0**
HS Missiles: **2** (sometimes)
Damage Capacity: **6**
Ceiling: **215**
Deceleration: **7**
Size: **5**
Number of Crew Members: **1**
Point Value: **4/1**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	1	2
Maximum Energy:	9	9	10	10

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: None.

Other Versions:
RF-86F: Unarmed reconnaissance version. Delete all armament.
CA-27: Cannon-armed version, built in Australia. Use Type B cannon, 4 shots.
F-86A: Use second figure where two appear.
F-86D,K,L: As F-86E; delete all cannon; may use missiles and rockets; has radar.

F-86 Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

F-86 Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	3
2	2	2	2	3
3	2	2	3	4
4	2	2	3	4
5	2	2	3	4
6	2	3	3	4

F-86 Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	4	3	2
2	4	4	3	1
3	3	3	2	1
4	2	2	1	1

F-86 Dive Table

Type	LO Altitude *Lvls Dvd*	*Max MA*	*MA Add*	ML Altitude *Lvls Dvd*	*Max MA*	*MA Add*	MH Altitude *Lvls Dvd*	*Max MA*	*MA Add*	HI Altitude *Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	5	1	3	6	1	3	6	1
II	4	6/5	1	5	6	1	5	6	1	6	6	1
III	9	4	0	9	4	0	10	5	0	10	5	0

F86 CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO		ML		MH		HI	
	1	2	1	2	1	2	1	2
5	4	3/2	4	3	3	2	3	2
4	3	2	3	2/1	2	2/1	2	2/1
3	2	2/1	2	1	2	1/0	2	1
2	1	–	1	–	1	–	1	–
1	–	–	–	–	–	–	–	–

F-86 Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type II Climb before...				
...Making Immelmann:	2	2	2	3
...Entering Pull-Through:	2	2	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	2	3	3
Energy Points Lost in each Pull-Up:	1	1	1	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

F-86 Loaded Characteristics:

Maximum Throttle: **4** at all altitudes.
Dive: Maximum Movement Allowance may not exceed maximum throttle setting.
Climb: No Type II climbs, MA reduced by **1**.
Acceleration: reduce by **half**, retaining fractions.
Turn Mode: add **1** at LO and ML; **2** at MH and HI.
Roll Cost: **1** MP: **1-3** pts.; **2** MP: **4+** pts.
Ceiling: **131 levels.**
Missiles: May not carry air-air missiles while loaded.



Aircraft Name:

Dassault Mirage IIIC, IIIE & V and IAI Neshr

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **G**
Cannon Shots: **5**
RH Missiles: **1**
HS Missiles: **2**
Damage Capacity: **8**
Ceiling: **216** (Mirage III); **236** (Mirage V and Neshr)
Deceleration: **8**
Size: **5**
Number of Crew Members: **1**
Point Value: **9/2**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	7/6	8/7	9	10
Minimum Throttle:	2	2	2	3
Maximum Energy:	12	13	14	15

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**
Special Rules: none.
Other Versions:
Mirage IIIE: use Kfir climb chart
Mirage V: use the second figure when two numbers appear in basic aircraft information. Use Kfir climb chart.
There are also unarmed reconnaissance versions of all three types of Mirage.
IAI Neshr: treat as a Mirage V, except that is has the radar, and ECM equipment of a Kfir, is treated as a Kfir for air-to-ground purposes, including stores carried, and loses Energy in a pull-up like Kfir, rather than like a Mirage V.

Mirage Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

Mirage Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	2	2	3	5
4	2	2	4	6
5	2	2	4	6
6	3	3	4	6
7	3	3	5	7
8	4	4	5	7
9	5	5	6	8
10	–	6	6	9
11	–	–	7	9

Mirage Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	3	2
2	3	3	2	2
3	3	3	2	2
4	3	3	2	1
5	3	3	2	1
6	3	3	2	1
7	–	2	1	½
8	–	–	1	½
9	–	–	–	½

Mirage Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	7	0	2	8	0	2	9	0	2	10	0
	5	9	2	5	10	2	5	11	2	5	11	2
II	10	9	1	15	9	1	15	10	1	15	10	1
	15	8	1									
III	17	8	0	20	8	0	21	9	0	23	9	0

Note: Mirage IIIE, Mirage V and Neshr use the Kfir Dive Table, rather than this one.

Mirage Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	2	4
...Entering Pull-Through:	1	1	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	2	2	3
...Executing Break:	3	3	4	4
Energy Points Lost in each Pull-Up:	2	3	3	4
MP Lost each Game-Turn Wings Vertical:	2	2	3	3

Mirage IIIc CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)

	LO						ML					MH			HI		
	1	2	3	4	5	6	1	2	3	4	5	1	2	3	1	2	3
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	8	6
9	–	–	–	–	–	–	–	–	–	–	–	8	7	5	8	7	5
8	–	–	–	–	–	–	7	6	4	3	3	7	6	4	7	6	4
7	6	5	4	3	3	2	6	5	3	2	2	6	5	3	6	5	3
6	5	4	3	2	2	1	5	4	2	1	1	5	4	2	5	4	2
5	4	3	2	2	1	–	4	3	2	–	–	4	3	1	4	3	1
4	3	2	1	1	–	–	3	2	1	–	–	3	2	–	3	2	–
3	2	1	–	–	–	–	2	1	–	–	–	2	1	–	2	1	–
2	1	1	–	–	–	–	1	–	–	–	–	1	–	–	1	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Mirage Loaded Characteristics:

Maximum Throttle: **6** in LO and ML; **5** in MH and HI
Dive: may not exceed Maximum Throttle Setting
Climb: No Type III Climbs. Reduce all Movement Allowances by **1**.
Acceleration: reduce any numbers greater than one by **50%**.
Turn Mode: Add one-third to all Turn Modes, rounding up.
Roll Cost: **more than one point rolled costs 1** Movement Point
Ceiling: **110** for Mirage III, 130 for Mirage V and Neshr
Missiles: may not carry air-to-air missiles when loaded; missiles must be jettisoned.



Aircraft Name:

Dassault Mystere IVA

Basic Aircraft Information Table

Aircraft Type: fighter and fighter-bomber
Cannon Type: **G**
Cannon Shots: **6**
RH Missiles: **0**
HS Missiles: **0**
Damage Capacity: **7**
Ceiling: **180**
Deceleration: **7**
Size: **5**
Number of Crew Members: **1**
Point Value: **4/1**

Within Altitude Groups:	**LO**	**ML**	**MH**	**HI**
Maximum Throttle:	5	5	5	5
Minimum Throttle:	1	1	1	2
Maximum Energy:	8	9	9	10

Maximum Energy Add per Game-Turn: **2**
Cruise Speed: **4**

Special Rules: none.

Mystere Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	2
2	2	2	2	3
3	2	2	2	3
4	2	2	3	4
5	2	2	3	4
6	2	3	4	4

Mystere Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	5	4	3	2
2	4	4	3	1
3	4	3	2	1
4	3	2	2	1
5	–	–	–	–

Mystere Dive Table

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	5	1	2	5	1	2	5	1	2	6	1
II	5	6	1	5	6	1	5	5	0	5	5	0
III	9	4	0	9	3	0	9	3	0	9	3	0

Mystere Roll Table

Movement Points	Points Rolled
0	1-3
1	4+

Mystere IVA CLIMB TABLE

Movement Allowance or Throttle Setting (whichever is higher)	Number of Levels Climbed (by Altitude Grouping) LO		ML		MH	HI
	1	2	1	2	1	1
5	4	2	3	2	3	2
4	3	2	2	1	2	1
3	2	1	1	–	1	1
2	1	–	1	–	1	–
1	–	–	–	–	–	–

Mystere Flight Parameters

Game-Turns in Type II Climb before...	LO	ML	MH	HI
...Making Immelmann:	2	2	3	3
...Entering Pull-Through:	2	2	2	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	2	2	3
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Mystere Loaded Characteristics:

Maximum Throttle: **4** at all altitudes.
Dive: Movement Allowance may not exceed maximum throttle setting.
Climb: No Type II Climb, reduce MA by **2**.
Acceleration: reduce all numbers above **1** by **1**.
Turn Mode: add **1** to all modes.
Roll Cost: **doubled.**
Ceiling: **110 levels.**



Aircraft Name:

Panavia MRCA Tornado ADV

Basic Aircraft Information Table

Aircraft Type: Fighter-bomber and fighter
Cannon Type: **G**
Cannon Shots: **3**
RH Missiles: **4**
HS Missiles: **4**
Damage Capacity: **17**
Ceiling: **260**
Deceleration: **12**
Size: **7**
Number of Crew Members: **2**
Point Value: **9/16**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	8	9	10
Minimum Throttle:	—1	1	2	2
Maximum Energy:	12	14	15	16

Maximum Energy Add per Game-Turn: **4**
Cruise Speed: **4**

Special Rules:
May have up to 6 lock-ons simultaneously.
May fire HSM while having lock-on.

Other Versions:
It is believed that the versions (IDV) used by the Italian and West German Air Forces will not carry RH Missiles. The ADV version, to be used by the RAF, will be equipped with RH missiles.

Tornado Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	2	3
2	2	2	3	4
3	2	2	4	4
4	3	3	4	4
5	3	4	5	5
6	4	4	5	5
7	4	5	6	6
8	5	6	6	6
9	6	6	7	7
10	6	7	7	8
11	–	8	8	9
12	–	–	–	9

Tornado Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	4	4	2	2
2	4	3	2	2
3	3	3	2	2
4	3	3	2	1
5	3	3	2	1
6	–	2	1	1
7	–	2	1	1
8	–	–	1	½
9	–	–	–	½
10	–	–	–	–

Tornado Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Tornado Dive Table

Type	LO Altitude Lvls Dvd	Max MA	MA Add	ML Altitude Lvls Dvd	Max MA	MA Add	MH Altitude Lvls Dvd	Max MA	MA Add	HI Altitude Lvls Dvd	Max MA	MA Add
I	2	6	0	2	8	0	2	9	0	2	10	0
	5	9	3	5	11	3	5	11	2	5	12	2
II	15	10	2	10	11	2	15	11	2	10	12	1
				15	10	2				15	11	1
III	20	9	1	23	9	1	24	10	1	20	11	1
										25	10	1

Tornado CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)	LO 1	2	3	4	5	6	7	8	ML 1	2	3	4	5	6	MH 1	2	3	4	HI 1	2	3
10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	7	6
9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8	7	5	4	8	7	5
8	–	–	–	–	–	–	–	–	7	6	4	3	2	1	7	6	4	3	7	6	4
7	–	–	–	–	–	–	–	–	6	5	3	2	1	1	6	5	3	2	6	3	–
6	5	5	4	4	3	3	2	2	5	4	2	2	–	–	5	4	2	1	5	2	–
5	4	4	3	3	2	2	2	1	4	3	2	1	–	–	4	3	1	–	4	–	–
4	3	3	2	2	1	1	1	–	3	2	1	–	–	–	3	2	–	–	3	–	–
3	2	2	1	1	–	–	–	–	2	1	–	–	–	–	2	1	–	–	–	–	–
2	1	1	–	–	–	–	–	–	1	–	–	–	–	–	2	–	–	–	–	–	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Tornado Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	1	1	2
...Entering Pull-Through:	1	1	1	2
Game-Turns in Push-Through before...				
...Making Split-S:	0	0	0	2
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	1	1	2	2
...Executing Break:	2	3	3	3
Energy Points Lost in each Pull-Up:	1	1	2	2
MP Lost each Game-Turn Wings Vertical:	1	2	2	2

Tornado Loaded Characteristics:

Maximum Throttle: **6** at LO and ML; **7** at MH and HI.
Dive: May not exceed max. Throttle Setting.
Climb: reduce all MA by **2.**
Acceleration: Reduce all Acceleration Allowances greater than one by **50%**.
Turn Mode: Add one-third to all Turn Modes, rounding fractions to nearest number.
Roll Cost: **1-2** cost 1 MP, **3+** cost 2 MP.
Ceiling: **120 levels.**







Aircraft Name:
BAC/Sepecat Jaguar

Basic Aircraft Information Table
Aircraft Type: strike aircraft
Cannon Type: **G**
Cannon Shots: **4**
RH Missiles: **0**
HS Missiles: **2**
Damage Capacity: **9**
Ceiling: **210**
Deceleration: **8**
Size: **5**
Number of Crew Members: **1**
Point Value: **6/8**

Within Altitude Groups:	LO	ML	MH	HI
Maximum Throttle:	6	7	7	8
Minimum Throttle:	1	1	2	2
Maximum Energy:	11	12	12	13

Maximum Energy Add per Game-Turn: **3**
Cruise Speed: **4**

Special Rules: none.

Other Versions:
There is a reconnaissance version of the Jaguar (mk.G.R.1), but this retains its full armament.

Jaguar Roll Table

Movement Points	Points Rolled
0	1-2
1	3+

Jaguar Turn Mode Table

Movement Allowance	Altitude Grouping LO	ML	MH	HI
1	2	2	3	4
2	2	2	3	4
3	3	3	3	4
4	3	3	4	5
5	3	4	5	6
6	4	4	6	8
7	5	5	7	9
8	–	6	8	10
9	–	–	9	11

Jaguar Acceleration Table

Throttle Setting	Altitude Grouping LO	ML	MH	HI
1	3	3	2	2
2	3	3	2	2
3	3	2	2	2
4	2	2	1	1
5	2	2	1	1
6	–	2	1	½
7	–	–	–	½

Jaguar Dive Table

Type	LO Altitude			ML Altitude			MH Altitude			HI Altitude		
	Lvls Dvd	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*	*Lvls Dvd*	*Max MA*	*MA Add*
I	2	6	0	2	7	0	2	7	0	2	8	0
	5	7	2	5	8	2	5	9	2	5	9	1
II	10	7	1	20	8	1	10	7	1	10	9	1
				15	8	1	15	8	1	15	8	1
III	15	6	0	17	7	0	18	7	0	19	7	1

Jaguar CLIMB TABLE

Number of Levels Climbed (by Altitude Grouping)

Movement Allowance or Throttle Setting (whichever is higher)	LO					ML					MH			HI	
	1	2	3	4	5	1	2	3	4	5	1	2	3	1	2
8	–	–	–	–	–	–	–	–	–	–	–	–	–	7	4
7	–	–	–	–	–	6	4	4	3	1	6	4	2	6	3
6	5	4	4	3	2	5	3	3	2	–	5	3	1	5	3
5	4	3	2	2	1	4	2	2	1	–	4	2	–	4	2
4	3	2	2	1	–	3	1	1	–	–	3	1	–	3	1
3	2	1	1	–	–	2	1	–	–	–	2	–	–	2	–
2	1	–	–	–	–	1	–	–	–	–	1	–	–	1	–
1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Jaguar Flight Parameters

	LO	ML	MH	HI
Game-Turns in Type III Climb before...				
...Making Immelmann:	1	2	3	4
...Entering Pull-Through:	1	2	2	3
Game-Turns in Push-Through before...				
...Making Split-S:	0	1	1	1
Reduction in Movement Allowance for...				
...Making Lateral Rudder Roll:	2	2	3	3
...Executing Break:	2	3	3	3
Energy Points Lost in each Pull-Up:	1	2	2	2
MP Lost each Game-Turn Wings Vertical:	2	2	2	2

Jaguar Loaded Characteristics:

Maximum Throttle: **5** at all altitudes.
Dive: No Type III dives, may not exceed maximum throttle setting.
Climb: No Type III climbs, MA reduced by one.
Acceleration: **halve,** retaining fractions.
Turn Mode: add **one-third.**
Roll Cost: **double.**
Ceiling: **151 levels.**

AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
approx. knots:	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400	2520	2640	2760	2880	3000	3120	3240	3360	3480	3600

Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
approx. knots:	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400	2520	2640	2760	2880	3000	3120	3240	3360	3480	3600

Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

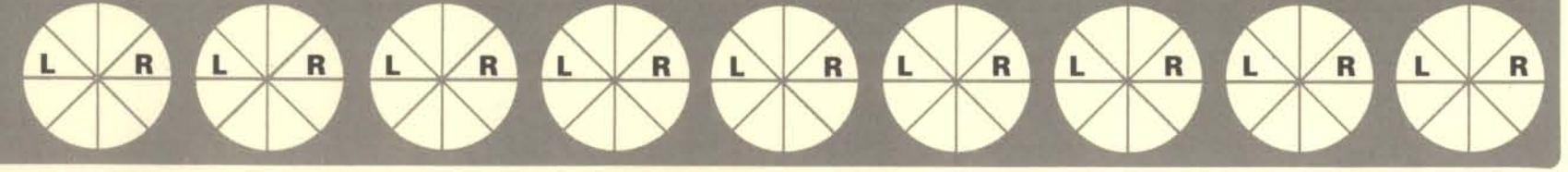
Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
approx. knots:	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400	2520	2640	2760	2880	3000	3120	3240	3360	3480	3600

Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Weapons

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Turning

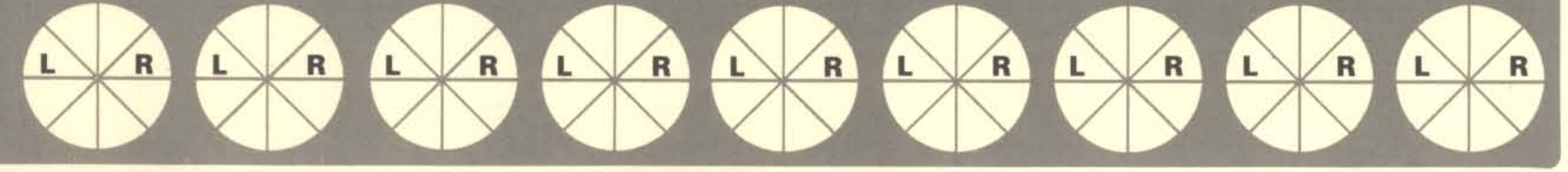
Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
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Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
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Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Altitude feet

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Flight Attitude Indicator

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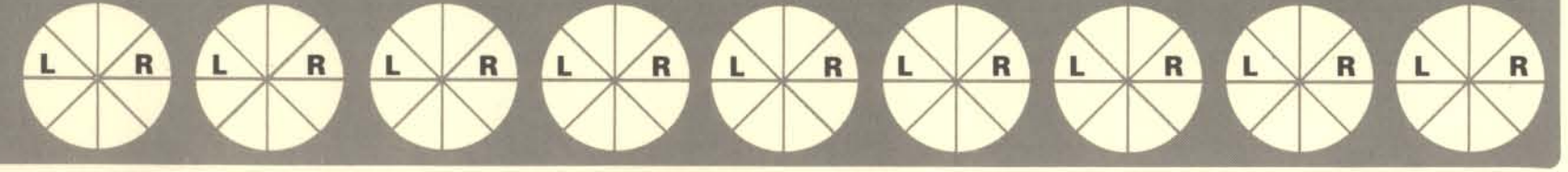

AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
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Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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0	1	2	3	4
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Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
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Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
approx. knots:	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400	2520	2640	2760	2880	3000	3120	3240	3360	3480	3600

Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR

AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
approx. knots:	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400	2520	2640	2760	2880	3000	3120	3240	3360	3480	3600

Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9

Turning

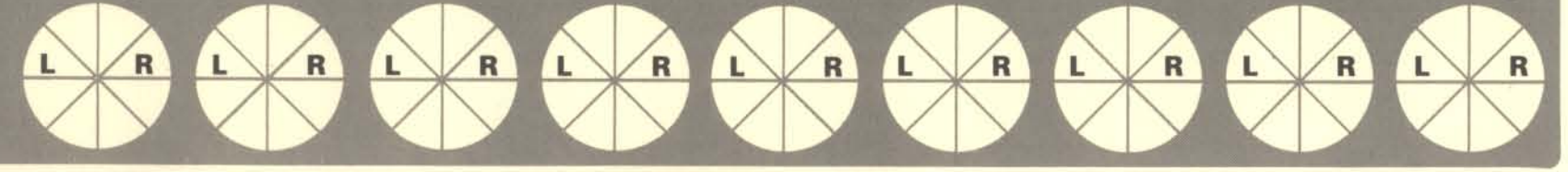
Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400	—	00	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
00000	25000	50000	75000	100000		0000	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

Flight Attitude Indicator

Push Through · Dive III · Dive II · Dive I · Level Flight · Climb I · Climb II · Climb III · Pull Through



AIRWAR AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0	1	2	3	4	5	6	7	8	9	10	11	12	13
approx. knots:	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560

Acceleration Progress

0	1	2	3	4
9	8	7	6	5

Weapons

00	10	20	30	40	50	60	70	80	90

Turning

Face Left & Reset	25° ◄	20° ◄	15° ◄	10° ◄	05° ◄	0° ▲	05° ►	10° ►	15° ►	20° ►	25° ►	Face Right & Reset

Altitude feet

000	100	200	300	400
00000	25000	50000	75000	100000

00	10	20	30
0000	2500	5000	7500

0	1	2	3	4	5	6	7	8	9

AIRWAR AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0 approx. knots: | 1 120 | 2 240 | 3 360 | 4 480 | 5 600 | 6 720 | 7 840 | 8 960 | 9 1080 | 10 1200 | 11 1320 | 12 1440 | 13 1560

Acceleration Progress

0 | 1 | 2 | 3 | 4

9 | 8 | 7 | 6 | 5

Weapons

00 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90

Turning

Face Left & Reset | 25° ◄ | 20° ◄ | 15° ◄ | 10° ◄ | 05° ◄ | 0° ▲ | 05° ► | 10° ► | 15° ► | 20° ► | 25° ► | Face Right & Reset

Altitude feet

000 00000 | 100 25000 | 200 50000 | 300 75000 | 400 100000

00 0000 | 10 2500 | 20 5000 | 30 7500

0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

AIRWAR AIRCRAFT and MISSILE CONTROL DISPLAY

Movement Throttle and Energy Points

0 approx. knots: | 1 120 | 2 240 | 3 360 | 4 480 | 5 600 | 6 720 | 7 840 | 8 960 | 9 1080 | 10 1200 | 11 1320 | 12 1440 | 13 1560

Acceleration Progress

0 | 1 | 2 | 3 | 4

9 | 8 | 7 | 6 | 5

Weapons

00 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90

Turning

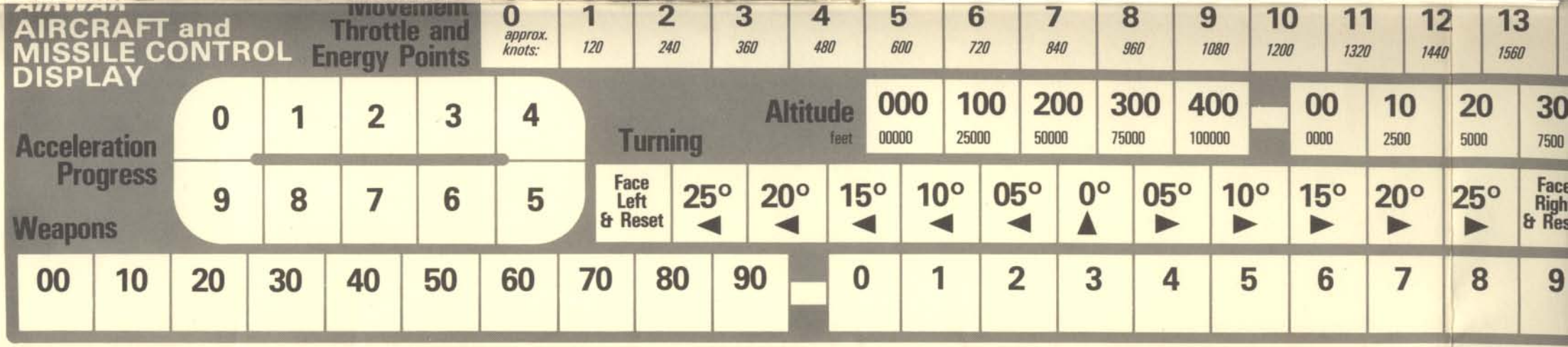
Face Left & Reset | 25° ◄ | 20° ◄ | 15° ◄ | 10° ◄ | 05° ◄ | 0° ▲ | 05° ► | 10° ► | 15° ► | 20° ► | 25° ► | Face Right & Reset

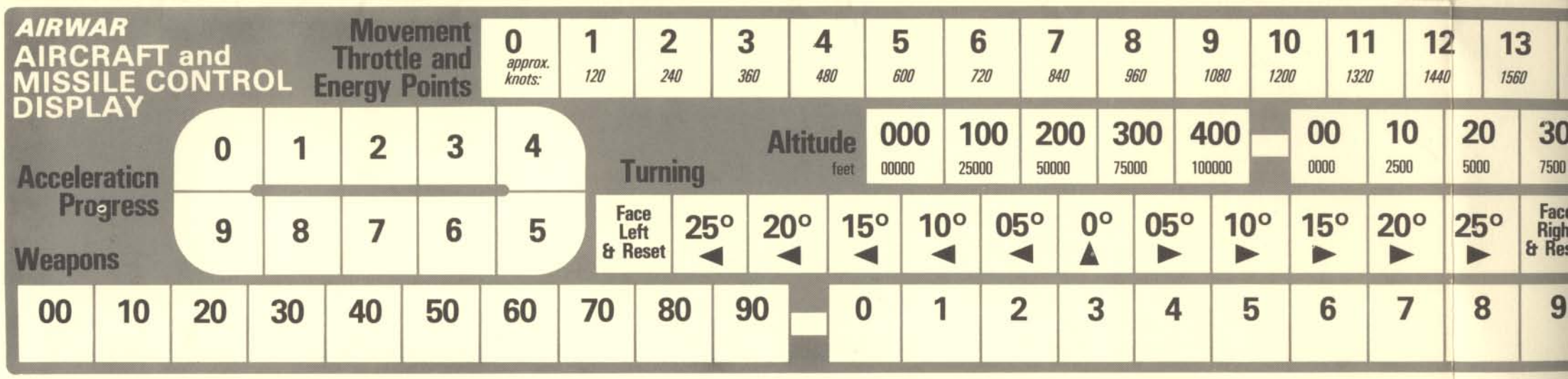
Altitude feet

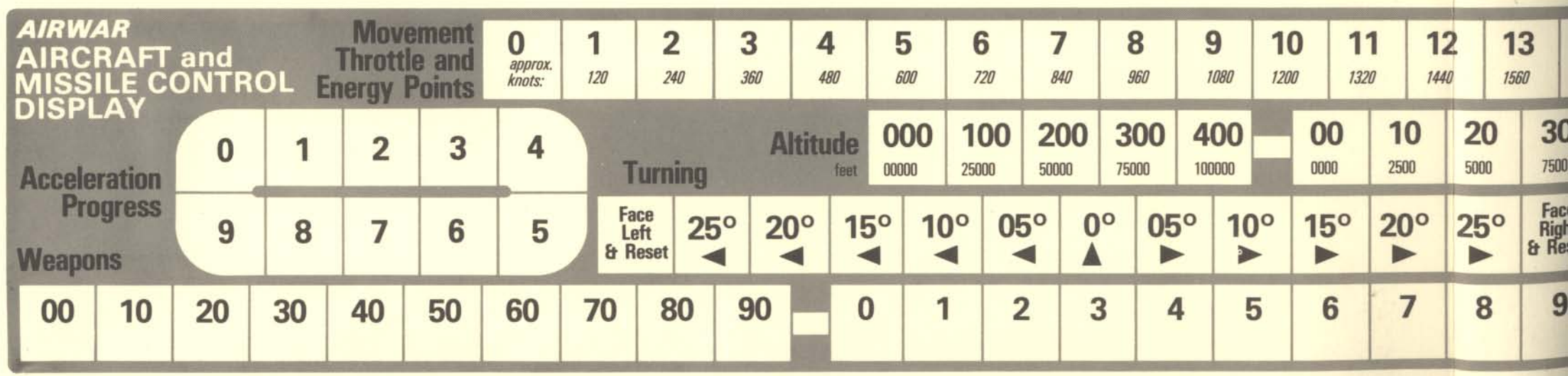
000 00000 | 100 25000 | 200 50000 | 300 75000 | 400 100000

00 0000 | 10 2500 | 20 5000 | 30 7500

0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9


AIRWAR
AIRCRAFT and MISSILE CONTROL DISPLAY
Movement Throttle and Energy Points
0 approx. knots:
1 120
2 240
3 360
4 480
5 600
6 720
7 840
8 960
9 1080
10 1200
11 1320
12 1440
13 1560
Acceleration Progress
0 1 2 3 4
9 8 7 6 5
Weapons
00 10 20 30 40 50 60 70 80 90
Turning
Face Left & Reset
25° ◄ 20° ◄ 15° ◄ 10° ◄ 05° ◄ 0° ▲ 05° ► 10° ► 15° ► 20° ► 25° ►
Face Right & Reset
Altitude feet
000 00000
100 25000
200 50000
300 75000
400 100000
00 0000
10 2500
20 5000
30 7500
0 1 2 3 4 5 6 7 8 9


AIRWAR
AIRCRAFT and MISSILE CONTROL DISPLAY
Movement Throttle and Energy Points
0 approx. knots:
1 120
2 240
3 360
4 480
5 600
6 720
7 840
8 960
9 1080
10 1200
11 1320
12 1440
13 1560
Acceleration Progress
0 1 2 3 4
9 8 7 6 5
Weapons
00 10 20 30 40 50 60 70 80 90
Turning
Face Left & Reset
25° ◄ 20° ◄ 15° ◄ 10° ◄ 05° ◄ 0° ▲ 05° ► 10° ► 15° ► 20° ► 25° ►
Face Right & Reset
Altitude feet
000 00000
100 25000
200 50000
300 75000
400 100000
00 0000
10 2500
20 5000
30 7500
0 1 2 3 4 5 6 7 8 9


AIRWAR
AIRCRAFT and MISSILE CONTROL DISPLAY
Movement Throttle and Energy Points
0 approx. knots:
1 120
2 240
3 360
4 480
5 600
6 720
7 840
8 960
9 1080
10 1200
11 1320
12 1440
13 1560
Acceleration Progress
0 1 2 3 4
9 8 7 6 5
Weapons
00 10 20 30 40 50 60 70 80 90
Turning
Face Left & Reset
25° ◄ 20° ◄ 15° ◄ 10° ◄ 05° ◄ 0° ▲ 05° ► 10° ► 15° ► 20° ► 25° ►
Face Right & Reset
Altitude feet
000 00000
100 25000
200 50000
300 75000
400 100000
00 0000
10 2500
20 5000
30 7500
0 1 2 3 4 5 6 7 8 9

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1320	*1440*	*1560*	*1680*	*1800*	*1920*	*2040*	*2160*	*2280*	*2400*	*2520*	*2640*	*2760*	*2880*	*3000*	*3120*	*3240*	*3360*	*3480*	*3600*

	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

	20° ►	25° ►	Face Right & Reset
	7	8	9

Flight Attitude Indicator

Push Through	Dive III	Dive II	Dive I	Level Flight	Climb I	Climb II	Climb III	Pull Through
L R	L R	L R	L R	L R	L R	L R	L R	L R

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1320	*1440*	*1560*	*1680*	*1800*	*1920*	*2040*	*2160*	*2280*	*2400*	*2520*	*2640*	*2760*	*2880*	*3000*	*3120*	*3240*	*3360*	*3480*	*3600*

	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

	20° ►	25° ►	Face Right & Reset
	7	8	9

Flight Attitude Indicator

Push Through	Dive III	Dive II	Dive I	Level Flight	Climb I	Climb II	Climb III	Pull Through
L R	L R	L R	L R	L R	L R	L R	L R	L R

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1320	*1440*	*1560*	*1680*	*1800*	*1920*	*2040*	*2160*	*2280*	*2400*	*2520*	*2640*	*2760*	*2880*	*3000*	*3120*	*3240*	*3360*	*3480*	*3600*

	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

	20° ►	25° ►	Face Right & Reset
	7	8	9

Flight Attitude Indicator

Push Through	Dive III	Dive II	Dive I	Level Flight	Climb I	Climb II	Climb III	Pull Through
L R	L R	L R	L R	L R	L R	L R	L R	L R

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1320	*1440*	*1560*	*1680*	*1800*	*1920*	*2040*	*2160*	*2280*	*2400*	*2520*	*2640*	*2760*	*2880*	*3000*	*3120*	*3240*	*3360*	*3480*	*3600*

	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

	20° ►	25° ►	Face Right & Reset
	7	8	9

Flight Attitude Indicator

Push Through	Dive III	Dive II	Dive I	Level Flight	Climb I	Climb II	Climb III	Pull Through
L R	L R	L R	L R	L R	L R	L R	L R	L R

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1320	*1440*	*1560*	*1680*	*1800*	*1920*	*2040*	*2160*	*2280*	*2400*	*2520*	*2640*	*2760*	*2880*	*3000*	*3120*	*3240*	*3360*	*3480*	*3600*

	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

	20° ►	25° ►	Face Right & Reset
	7	8	9

Flight Attitude Indicator

Push Through	Dive III	Dive II	Dive I	Level Flight	Climb I	Climb II	Climb III	Pull Through
L R	L R	L R	L R	L R	L R	L R	L R	L R

11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1320	*1440*	*1560*	*1680*	*1800*	*1920*	*2040*	*2160*	*2280*	*2400*	*2520*	*2640*	*2760*	*2880*	*3000*	*3120*	*3240*	*3360*	*3480*	*3600*

	10	20	30	40	50	60	70	80	90	—	0	1	2	3	4	5	6	7	8	9
	2500	5000	7500	10000	12500	15000	17500	20000	22500		000	250	500	750	1000	1250	1500	1750	2000	2250

	20° ►	25° ►	Face Right & Reset
	7	8	9

Flight Attitude Indicator

Push Through	Dive III	Dive II	Dive I	Level Flight	Climb I	Climb II	Climb III	Pull Through
L R	L R	L R	L R	L R	L R	L R	L R	L R

Air War '80 Counter Section Nr. 1 (200 pieces): Front

Quantity of Sections of this identical type in AIR WAR '80: 1. Quantity of Sections (all types) in AIR WAR '80: 4

1 damage	2 damage	3 damage	4 damage	5 damage	6 damage	7 damage	8 damage	1 damage	2 damage
3 damage	4 damage	5 damage	6 damage	7 damage	8 damage	1 Cannon Remain	2 Cannon Remain	3 Cannon Remain	4 Cannon Remain

5 Cannon Remain	6 Cannon Remain	7 Cannon Remain	8 Cannon Remain	1 RH Remain	2 RH Remain	3 RH Remain	4 RH Remain	5 RH Remain	6 RH Remain
7 RH Remain	8 RH Remain	1 HS Remain	2 HS Remain	3 HS Remain	4 HS Remain	5 HS Remain	6 HS Remain	7 HS Remain	8 HS Remain

1 Stores Remain	2 Stores Remain	3 Stores Remain	4 Stores Remain	5 Stores Remain	6 Stores Remain	7 Stores Remain	8 Stores Remain	1 Move Allow	2 Move Allow
3 Move Allow	4 Move Allow	5 Move Allow	6 Move Allow	7 Move Allow	8 Move Allow	1 Throttle	2 Throttle	3 Throttle	4 Throttle

AIRCRAFT CONTROL CHART MARKERS Side A

5 Throttle	6 Throttle	7 Throttle	8 Throttle	1 Aircraft Energy	2 Aircraft Energy	3 Aircraft Energy	4 Aircraft Energy	5 Aircraft Energy	6 Aircraft Energy
7 Aircraft Energy	8 Aircraft Energy	1	2	3	4	5	6	7	8

1 Aircraft Altitude	2 Aircraft Altitude	3 Aircraft Altitude	4 Aircraft Altitude	5 Aircraft Altitude	6 Aircraft Altitude	7 Aircraft Altitude	8 Aircraft Altitude	1 Aircraft Altitude	2 Aircraft Altitude
3 Aircraft Altitude	4 Aircraft Altitude	5 Aircraft Altitude	6 Aircraft Altitude	7 Aircraft Altitude	8 Aircraft Altitude	1 Aircraft Altitude	2 Aircraft Altitude	3 Aircraft Altitude	4 Aircraft Altitude

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11 damage	12 damage	13 damage	14 damage	15 damage	16 damage	17 damage	18 damage	11 damage	12 damage
13 damage	14 damage	15 damage	16 damage	17 damage	18 damage	11 Cannon Remain	12 Cannon Remain	13 Cannon Remain	14 Cannon Remain

15 Cannon Remain	16 Cannon Remain	17 Cannon Remain	18 Cannon Remain	11 RH Remain	12 RH Remain	13 RH Remain	14 RH Remain	15 RH Remain	16 RH Remain
17 RH Remain	18 RH Remain	11 HS Remain	12 HS Remain	13 HS Remain	14 HS Remain	15 HS Remain	16 HS Remain	17 HS Remain	18 HS Remain

11 Stores Remain	12 Stores Remain	13 Stores Remain	14 Stores Remain	15 Stores Remain	16 Stores Remain	17 Stores Remain	18 Stores Remain	11 Move Allow	12 Move Allow
13 Move Allow	14 Move Allow	15 Move Allow	16 Move Allow	17 Move Allow	18 Move Allow	11 Throttle	12 Throttle	13 Throttle	14 Throttle

AIRCRAFT CONTROL CHART MARKERS Side B

15 Throttle	16 Throttle	17 Throttle	18 Throttle	11 Aircraft Energy	12 Aircraft Energy	13 Aircraft Energy	14 Aircraft Energy	15 Aircraft Energy	16 Aircraft Energy
17 Aircraft Energy	18 Aircraft Energy	1	2	3	4	5	6	7	8

11 Aircraft Altitude	12 Aircraft Altitude	13 Aircraft Altitude	14 Aircraft Altitude	15 Aircraft Altitude	16 Aircraft Altitude	17 Aircraft Altitude	18 Aircraft Altitude	11 Aircraft Altitude	12 Aircraft Altitude
13 Aircraft Altitude	14 Aircraft Altitude	15 Aircraft Altitude	16 Aircraft Altitude	17 Aircraft Altitude	18 Aircraft Altitude	11 Aircraft Altitude	12 Aircraft Altitude	13 Aircraft Altitude	14 Aircraft Altitude

Air War '80 Counter Section Nr. 2 (200 piece): Front

Quantity of Sections of this identical type in AIR WAR '80: 1. Quantity of Sections (all types) in AIR WAR '80: 4

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5 Aircraft Altitude	6 Aircraft Altitude	7 Aircraft Altitude	8 Aircraft Altitude	1 Aircraft Turning	2 Aircraft Turning	3 Aircraft Turning	4 Aircraft Turning	5 Aircraft Turning	6 Aircraft Turning
7 Aircraft Turning	8 Aircraft Turning	1 Aircraft Accel	2 Aircraft Accel	3 Aircraft Accel	4 Aircraft Accel	5 Aircraft Accel	6 Aircraft Accel	7 Aircraft Accel	8 Aircraft Accel

15 Aircraft Altitude	16 Aircraft Altitude	17 Aircraft Altitude	18 Aircraft Altitude	11 Aircraft Turning	12 Aircraft Turning	13 Aircraft Turning	14 Aircraft Turning	15 Aircraft Turning	16 Aircraft Turning
17 Aircraft Turning	18 Aircraft Turning	11 Aircraft Accel	12 Aircraft Accel	13 Aircraft Accel	14 Aircraft Accel	15 Aircraft Accel	16 Aircraft Accel	17 Aircraft Accel	18 Aircraft Accel

1 Radar Lock-on	2 Radar Lock-on	3 Radar Lock-on	4 Radar Lock-on	chaff	chaff	chaff	chaff	21 Missile Energy	22 Missile Energy
chaff	chaff	chaff	chaff	chaff	▲ Chaff Rocket	▲ Chaff Rocket	23 Missile Energy	24 Missile Energy	25 Missile Energy

31 Missile Energy	32 Missile Energy	11 Radar Lock-on	12 Radar Lock-on	13 Radar Lock-on	14 Radar Lock-on	chaff	chaff	chaff	chaff
33 Missile Energy	34 Missile Energy	35 Missile Energy	chaff	chaff	chaff	chaff	chaff	▲ Chaff Rocket	▲ Chaff Rocket

26 Missile Energy	27 Missile Energy	28 Missile Energy	21 Missile Altitude	22 Missile Altitude	23 Missile Altitude	24 Missile Altitude	25 Missile Altitude	26 Missile Altitude	27 Missile Altitude
28 Missile Altitude	21 Missile Altitude	22 Missile Altitude	23 Missile Altitude	24 Missile Altitude	25 Missile Altitude	26 Missile Altitude	27 Missile Altitude	28 Missile Altitude	21 Missile Altitude

36 Missile Energy	37 Missile Energy	38 Missile Energy	31 Missile Altitude	32 Missile Altitude	33 Missile Altitude	34 Missile Altitude	35 Missile Altitude	36 Missile Altitude	37 Missile Altitude
38 Missile Altitude	31 Missile Altitude	32 Missile Altitude	33 Missile Altitude	34 Missile Altitude	35 Missile Altitude	36 Missile Altitude	37 Missile Altitude	38 Missile Altitude	31 Missile Altitude

MISSILE CONTROL CHART MARKERS Side A

22 Missile Altitude	23 Missile Altitude	24 Missile Altitude	25 Missile Altitude	26 Missile Altitude	27 Missile Altitude	28 Missile Altitude	21 Missile Turning	22 Missile Turning	23 Missile Turning
24 Missile Turning	25 Missile Turning	26 Missile Turning	27 Missile Turning	28 Missile Turning	21 Missile G-Turns	22 Missile G-Turns	23 Missile G-Turns	24 Missile G-Turns	25 Missile G-Turns

MISSILE CONTROL CHART MARKERS Side B

32 Missile Altitude	33 Missile Altitude	34 Missile Altitude	35 Missile Altitude	36 Missile Altitude	37 Missile Altitude	38 Missile Altitude	31 Missile Turning	32 Missile Turning	33 Missile Turning
34 Missile Turning	35 Missile Turning	36 Missile Turning	37 Missile Turning	38 Missile Turning	31 Missile G-Turns	32 Missile G-Turns	33 Missile G-Turns	34 Missile G-Turns	35 Missile G-Turns

26 Missile G-Turns	27 Missile G-Turns	28 Missile G-Turns	21 Missile Target	22 Missile Target	23 Missile Target				
24 Missile Target	25 Missile Target	26 Missile Target	27 Missile Target	28 Missile Target					

				36 Missile G-Turns	37 Missile G-Turns	38 Missile G-Turns	31 Missile Target	32 Missile Target	33 Missile Target
	Game Turn				34 Missile Target	35 Missile Target	36 Missile Target	37 Missile Target	38 Missile Target

NEUTRAL COUNTERS

Air War '80 Counter Section Nr. 3 (200 pieces): Front

Quantity of Sections of this identical type in AIR WAR '80: 1. Quantity of Sections (all types) in AIR WAR '80: 4

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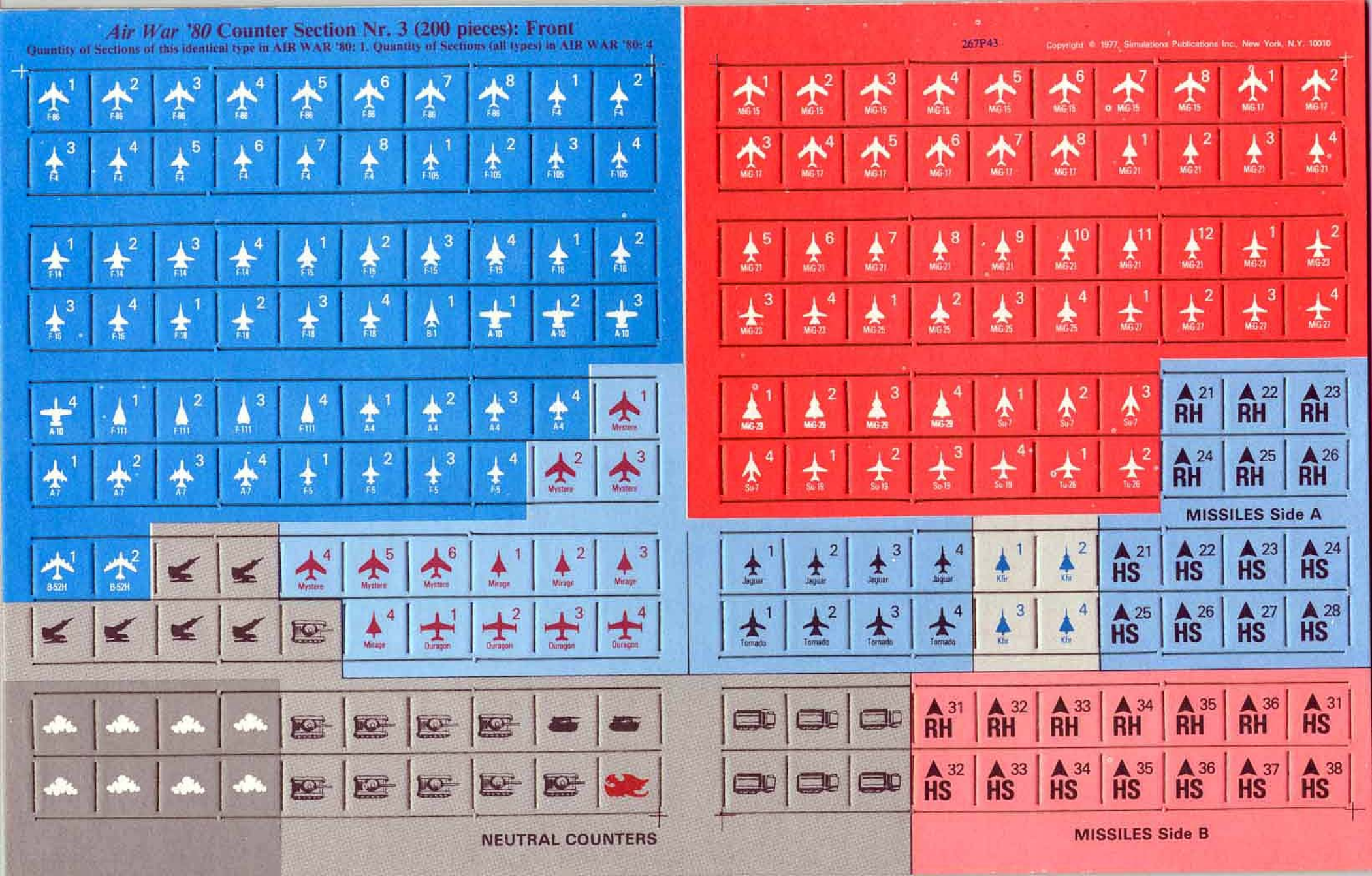


Air War '80 Counter Section Nr. 4 (100 pieces)

Quantity of Sections of this identical type in AIR WAR '80: 1; in UPDATE KIT: 1.
Quantity of Sections (all types) in AIR WAR '80: 4; in UPDATE KIT: 1.

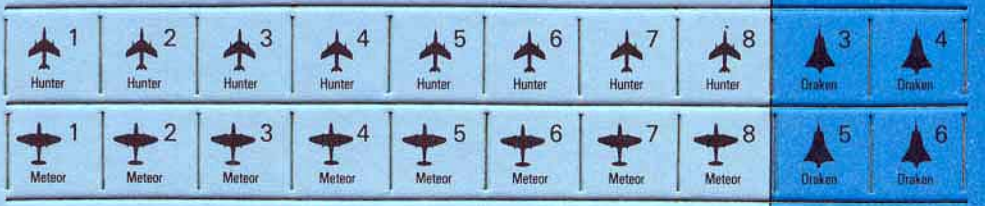


UNITED STATES



SWEDISH





BRITISH



FRENCH



CHINESE



SOVIET



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267P44

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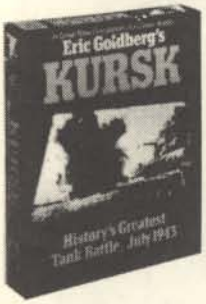
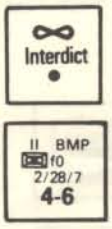
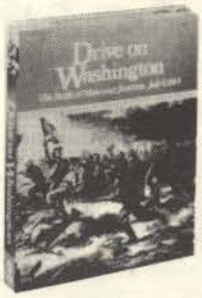


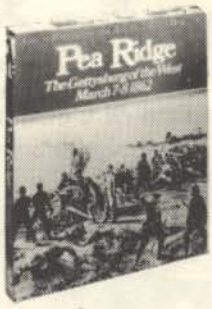










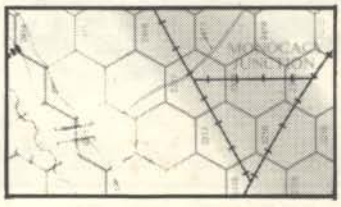














Kursk

HISTORY'S GREATEST TANK BATTLE July 1943

The battle that turned the tide of WWII. German panzers attempt to break through solidly entrenched Soviet forces to capture Kursk. Three scenarios cover the campaign from a hypothetical May assault to the overwhelming August Soviet counteroffensive.

2680, $15.00

NATO Division Commander

LEADERSHIP UNDER FIRE

Over 20 different aspects of modern combat are covered as the Warsaw Pact attempts to break through NATO forces in Germany. Rules cover chemical, nuclear and electronic warfare; battle modes; and combat support elements. Two-player, solitaire and "controller" versions.

2310, $27.00

Drive on Washington

THE BATTLE OF MONOCACY JUNCTION, July 9, 1864

Simulation of the last offensive in the East by Confederate forces as they cross the Monocacy River to brush aside the defending Union army, and threaten Washington, D.C. Based on the *TSS* system, the game covers fighting in wheatfields and the effect General Jubal Early hand on his troops.

2940, $10.00

Pea Ridge

THE GETTYSBURG OF THE WEST, March 7-8, 1862

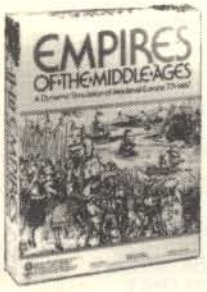
Based on the *TSS* system, *Pea Ridge* recreates the battle that gave control of the trans-Mississippi area to the Union. The Union army must withstand an attack by Rebel forces almost twice its size. Special rules cover night time maneuvers and the battle lasting into the second day.

2950, $10.00

















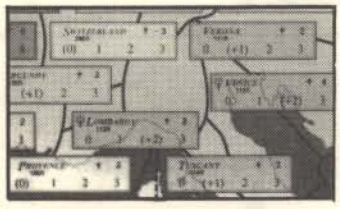




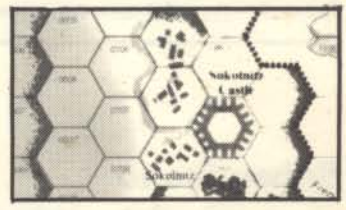












The Big Red One

(FORMERLY 'BULGE')

Based in part of Samuel Fuller's movie, this game follows the action of the First U.S. Infantry Division in the Battle of the Bulge. Weather, air missions, supply lines, bridge interdiction. Contains historical background article.

3130, $6.00

Empires of the Middle Ages

A DYNAMIC SIMULATION OF MEDIEVAL EUROPE, 771-1467

A multi-player game in which up to six players become dynasts and build historical kingdoms into vast empires. Special rules cover Crusades, the Schism, plagues, and invasions by Mongols, Saracens and Vikings.

2700, $18.00

Across Suez

THE BATTLE OF THE CHINESE FARM, October 15, 1973

An operational level simulation of the Israeli drive to cross the Suez Canal in the October War. Rules include combined arms attacks, artillery bombardment, crossing of the canal, as well as the shock of first combat.

2640, $6.00

The Battle of Austerlitz

December 2, 1805

One of Napoleon's greatest victories, the Battle of Three Emperors saw the French Army defeat an enemy half again its size. Richly detailed game includes army morale, artillery bombardment, cavalry charges, and the French Army reserve.

3050, $6.00

Here are the rest of SPI's most current releases...

Fifth Corps ($10.00) **Battle for Stalingrad** ($15.00) **Tito** ($10.00) **Leningrad** ($6.00)
City Fight ($23.00) **Berlin '85** ($10.00) **Air War** UPDATED EDITION ($22.00) **Commando** ($19.00)
Campaign for North Africa ($44.00) **Battle for the Ardennes Quad** ($20.00)
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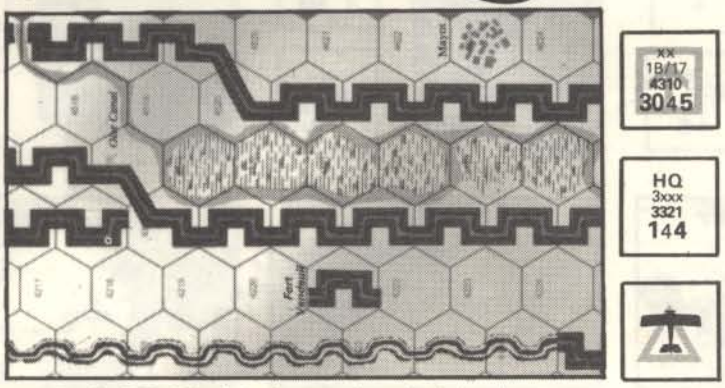
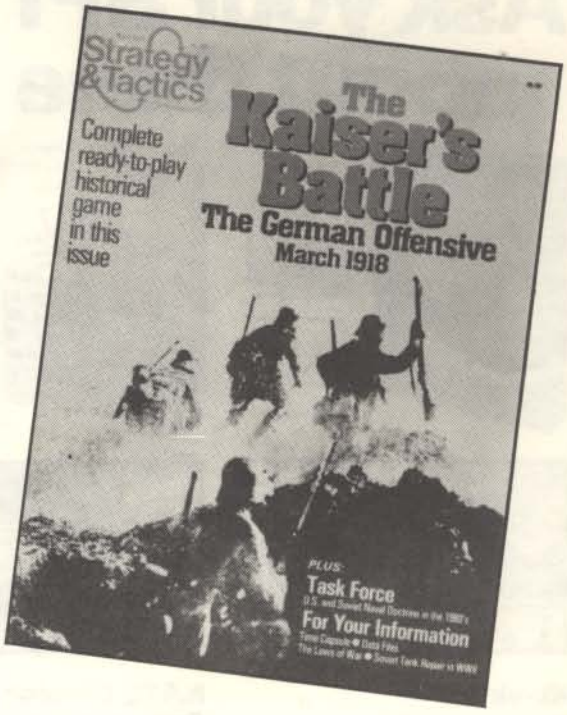


Detail of *The Kaiser's Battle* map and sample playing pieces (200 playing pieces in game).



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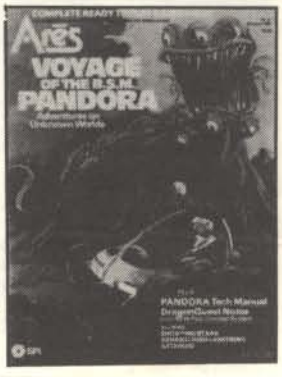

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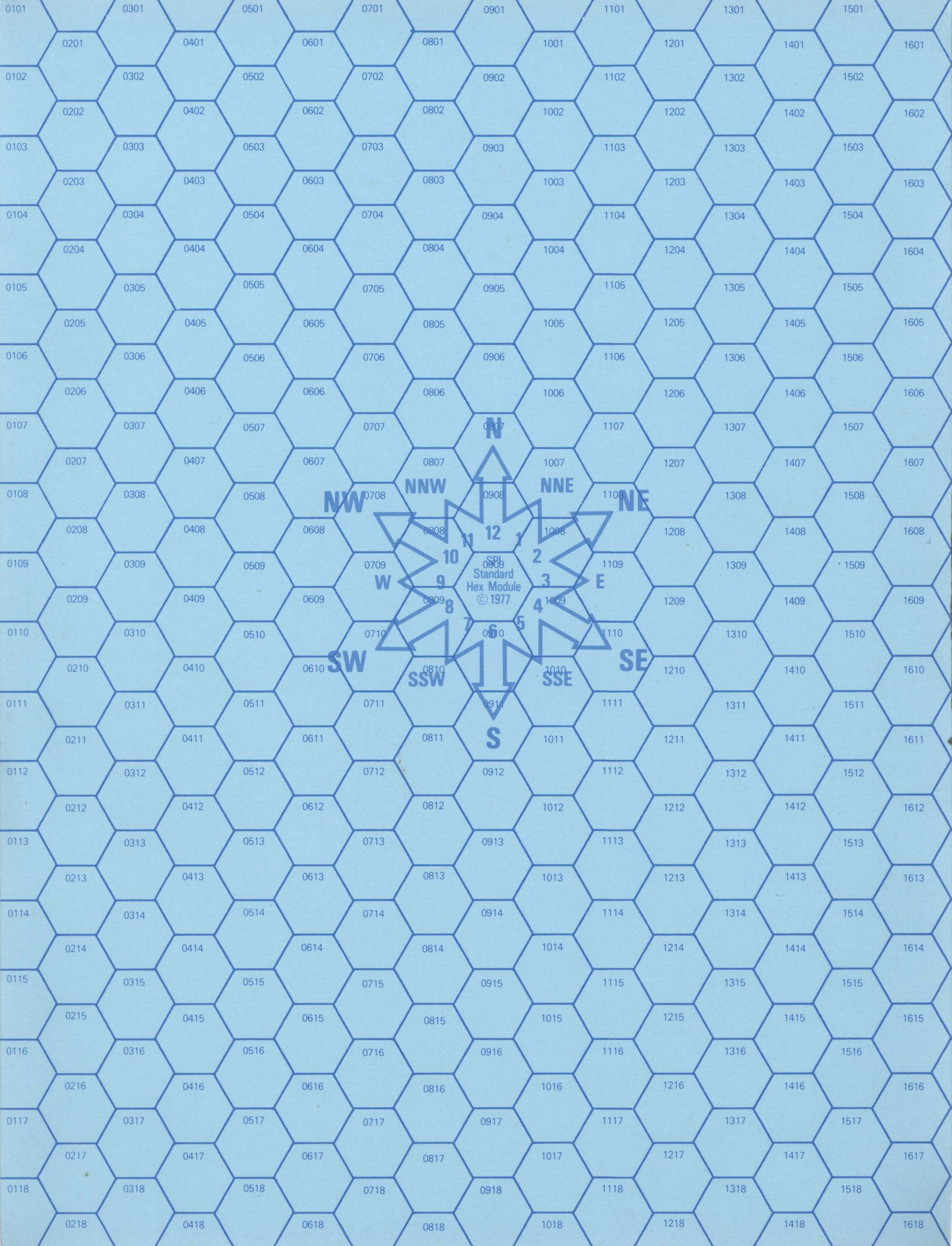
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