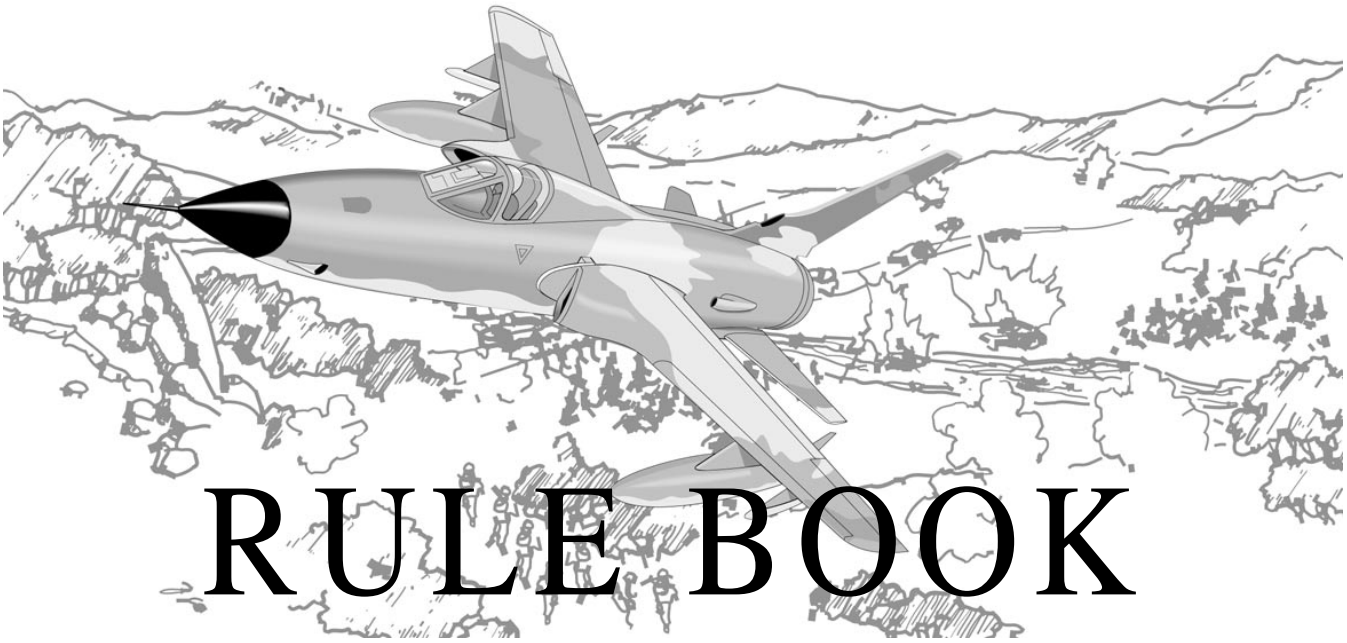
DOWNTOWN

The Air War Over Hanoi, 1965 to 1972

By Lee Brimmicombe-Wood

For Glyn Roberts, who would have rather enjoyed this



RULE BOOK

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1. Introduction

Downtown is a game of air warfare over North Vietnam. During the Rolling Thunder (1965-68) and Linebacker (1972) campaigns the Red River Valley was the focus of American air attacks intended to pressure the Communist leadership in Hanoi into ceasing their attacks on South Vietnam. Against US jets, the Vietnamese deployed anti-aircraft artillery (AAA), surface-to-air missiles (SAMs) and MiG fighters.

In *Downtown,* the players command the air defenses of North Vietnam and the combined air forces of the United States: the US Air Force (USAF), US Navy (USN) and US Marine Corps (USMC). (Treat Marine forces as Navy units in this game.)

1.1 Players

Two players are required, one to play the North Vietnamese (the Democratic Republic of Vietnam, or DRV player) and one to play the Americans (the US player).

The US player controls formations of aircraft known as 'raid packages' attempting to bomb targets in the Red River Valley. Packages include mutually supporting forces of bombers, fighters, recon planes, jamming and defense suppression aircraft. Success for the US results from integrating all the elements in a package to complete the bombing mission.

The DRV player controls concentrations of AAA, Fire Can radar-directed AAA, SAM battalions and MiG fighters. Success for the DRV results from disrupting enemy attacks.

1.2 Rules

The rules are divided into standard and advanced rules. The advanced rules add detail and make for a more complete simulation. Players learning the game may skip the advanced rules until they are familiar with the standard game mechanics.

Some rules are marked OPTIONAL and should be used only if all players agree.

1.21 Rule Conventions

Rules are numbered. Cross-references to other rules are listed [in square brackets]. Design notes describe some of the background and the thinking behind the rules.

1.22 Learning Downtown

New players might wish to start by learning the simple Introductory scenario, titled Surfin' Bird, in the scenario book. This tells you which rules sections to read first and summarizes some of the more important combat rules.

When you finish the Introductory Scenario there's some guidance on scenarios to practice before trying a full scenario.

A complete game of *Downtown* contains:

1 Map Sheet
2 Sets of Counters (280 units total)
1 Rules Booklet
1 Scenario Booklet
3 Aircraft Data Cards (DRV, USAF, USN)
4 Player Aid Cards (one green, one brown, two blue/green)
3 DRV Flight Log and Planning Sheets
3 USAF/USN Flight Log and Planning Sheets
2 10-sided dice

1.3 Glossary of Game Terms

AAA. Anti-aircraft artillery. Also termed 'Flak'.

Abort. Flights that are no longer able to conduct their mission may 'abort' or run for home.

ADC. Aircraft Data Chart, a play aid that lists the performance and capability data for aircraft.

Aggression Value. A value representing pilot training, leadership and élan.

Arcs/Hemispheres. Arcs are 60-degree areas around a flight, Fire Can or SAM unit.

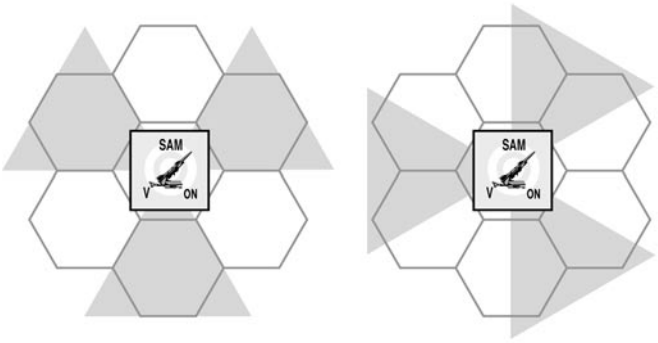

Illustration: For ground units, arcs can be defined in two ways, depending on the grain of the hex grid. For aircraft units see the Arcs and Hemispheres display on the play aids.

The three forward arcs of an aircraft flight make up the front hemisphere, and the three rear arcs constitute the rear hemisphere. (See the Arcs diagrams on the play aids.)

ARM. Anti-Radiation Missile.

BDA. Bomb Damage Assessment.

BVR. Beyond Visual Range.

Campaign. A campaign consists of a number of raids that take place over one or more game days.

CAP. Combat Air Patrol. CAP is a term applied to any US flight tasked with protecting against enemy aircraft.

CSAR. Combat Search and Rescue.

Disordered. Units that are scattered and uncoordinated.

Downtown Hanoi. (Hex 2028) Downtown Hanoi is the center of the DRV capital and the hub of Vietnam's air defenses.

Enemy/Friendly. Friendly units are all units assigned to the player by the scenario or campaign. An enemy unit is a unit controlled by the other player.

EOGB. Electro-Optical Guided Bombs.

Fire Can. A radar-direction system for AAA.

Flight. A unit of 1-4 aircraft of the same type in formation.

GCI. Ground Controlled Intercept.

IFF. Identification Friend or Foe.

IRM. Infrared Missile, a heat-seeking air-to-air weapon.

Iron Hand. (See SEAD.)

LOAL. Lock-On After Launch.

LGB. Laser-Guided Bomb.

MAP. MiG Availability Point.

NVA. North Vietnamese Army.

PGM. Precision Guided Munition. A generic term covering ARM, EOGB and LGB weapons.

Raid. A raid is a scenario in which US flights enter the map, conduct combat and leave.

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RHM. Radar Homing Missile, a radar-guided air-to-air weapon.

RWR. Radar Warning Receiver.

SAM. Surface-to-Air Missile.

SEAD. Suppression of Enemy Air Defenses (or 'Iron Hand'). The term for missions to suppress ground-based defenses.

SSR. Scenario Special Rule. A scenario special rule is only applicable to that scenario or campaign. If a regular rule and SSR conflict, the SSR takes precedence.

TFR. Terrain Following Radar.

Wild Weasel. Wild Weasel is the codename for the USAF's specialist SEAD aircraft and crews.

1.4 Scale

Hexes are 2.5 nautical miles across (approx. 4 kilometers). Movement Points are multiples of 150 knots (approx. 280 kph). Game turns are 1 minute long. There are four altitude bands, representing a flight's height above the ground, as follows: Deck (0–2,500 feet), Low (3,000–8,000 feet), Medium (9,000–21,000 feet) and High (22,000+).

1.5 Dates

Downtown scenarios represent battles that took place from 1965 to 1972, during which time tactics and military technology changed. Some rules, weapons or capabilities are used on or after certain dates. Dates are usually listed by month and year.

EXAMPLE: Sep 67 is September 1967.

2 Game Equipment

2.1 Dice

Downtown uses ten-sided dice, with 0 read as ten and not zero. Some die rolls are the sum of two dice, generating numbers from 2 to 20. Play aid tables have bullet symbols printed after the title. One bullet means one die is rolled on that table. Two bullets means two dice are rolled.

2.11 Die Roll Modifiers: Some tables require players to apply die roll modifiers. These are added to or subtracted from the dice result.

2.2 Map

DESIGN NOTE: The map shows the infamous Route Package 6 and surrounding areas: the most heavily defended region of North Vietnam.

The game map portrays North Vietnam's Red River valley, with the capital Hanoi at the center.

2.21 Hex Grid

A hex grid has been superimposed on the map to regulate the position and movement of the playing pieces. Each hex is individually numbered. Where a four-number map reference is given, the first two digits (00xx) indicate the hex column on the map, while the last two digits (xx00) indicate the hex row.

Distances on the map are counted in hexes. To calculate a distance, trace the shortest possible path from one map hex to another and count the number of hexes the path enters.

EXAMPLE: An adjacent hex is one hex distant, the hex beyond is two hexes distant, and the one beyond that three hexes.

When counting the distance to a flight occupying a hexside count to the nearer of the hexside's two hexes and vice versa (count from the nearer hex when counting distance from a flight on a hexside to another hex.)

2.22 Terrain Features

A key describes the features of the map. Land, marsh, rough or urban artwork indicates types of land. Sea and mud flat artwork indicate sea. Land hexes must contain at least 50% land artwork, otherwise they are treated as sea hexes. If players are in dispute as to whether a hex is land or sea, flip a coin to settle the matter.

A hex with any portion of urban, marsh or rough artwork is considered an urban, marsh or rough hex. Any hex that railroad or highway artwork runs through is treated as a railroad or highway hex.

The terrain type extends to the hexsides so that flights on hexsides are 'in' that terrain. Ridgelines affect only hexsides.

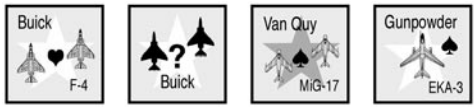
DESIGN NOTE: Rough terrain represents forested hills above 1,000 feet, where low-flying aircraft can avoid radar detection. Ridgelines are mountainous obstacles to flight.

2.3 Playing Pieces

Punch out the counters from the sheets of colored die-cut playing pieces. Counters come in four general types: air units, ground units, chits and markers.

2.31 Air Units

Air units are called flights and represent small groups of 1-4 aircraft. US flights are blue in color and DRV flights are tan.

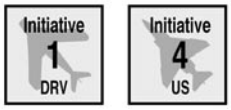


2.32 Ground Units

Ground unit types include: AAA concentrations, Fire Can units, SAM battalions, North Vietnamese Army (NVA) units, and downed US aircrew.

2.33 Chits

Initiative chits are used to order the movement of flights.



2.34 Markers

All other counters are markers for indicating the status of air or ground units, or act as a reminder for the players of the game turn or weather state.

2.4 Game Charts and Tables

Various charts and tables are provided for the player as reference and to resolve certain game functions.

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2.5 Scenarios

Players have a choice of game scenarios to play. Scenarios are listed in the scenario book and describe the forces, objectives and special rules for a raid [27] or campaign [28].

2.6 Orders of Battle

DESIGN NOTE: To defeat the DRV's air defenses the US attacked in strength, using large formations of aircraft. The US Air Force referred to these raid formations as 'packages' and the Navy as 'Alpha Strikes'. During the air campaigns the US used standard force compositions for its raids. But over time there were changes to the formations and aircraft used.

The orders of battle in the scenario book list the composition of US raids for different campaigns. When planning a raid, the tables determine the units and aircraft types used [27.31].

2.7 Planning Map

The planning map is a reduced-size copy of the map and is used to plot raid flight paths before starting play [8.31].

2.8 ADC

DESIGN NOTE: Both sides use many types of aircraft. The game not only distinguishes between major types of aircraft, such as the F-4 Phantom or the A-4 Skyhawk, but the versions of each type. So the F-4C, F-4D and F-4E Phantom are regarded as three separate types of aircraft in the rules and have different capabilities.

The Aircraft Data Charts (ADC) list all the movement and combat information for aircraft.

2.81 Data

The ADC data includes the number of crew; the aircraft's fuel allowance [20.1]; the aircraft's bomb strength [16.12]; the bombsight modifier; the Radar Warning Receiver (RWR) rating and the aircraft's jamming strength [19.1].

The aircraft's Combat throttle, Dash throttle and Maneuver rating for each altitude band are listed. There are three numbers, separated by a slash: one each for low, medium and high altitude band. (Low band values are also used for aircraft flying on the deck.) Where there are two rows of numbers, the bottom is for laden and the top for clean flight [16.21].

The ordnance column lists special ordnance that may be carried [16.11]. The number of ordnance shots is given (in parentheses) [16.14]. The capabilities column lists any special abilities the aircraft possesses. Air-to-Air lists all the air-to-air weapons the aircraft may carry [11.12]. The depletion number for air-to-air weapons is given {in curled brackets} [11.33].

2.82 Notes

Reminders on large aircraft types, SAM defense and slash attacks are listed in the notes column, with letters referencing special notes on the reverse of the ADC. Special notes include the dates when weapons or capabilities become available.

2.9 Flight Logs

There are separate flight log sheets for the US and DRV players. These track the status of air units [see 4.2]. The DRV flight log also has spaces to keep track of SAM battalions, AAA concentrations and Fire Can units [27.33].

3 Raid Sequence of Play

A raid is a scenario in which US air units enter the map, attack a ground target and leave. The DRV player defends with air units and AAA or SAM defenses.

Raids must be planned in advance. After setting up the map and components, the raid is then played out. Scenarios are divided into game turns. During each turn the players follow a sequence of play in which they conduct various game actions.

The Sequence of Play for a raid scenario is as follows. Where several activities are listed for a phase, perform them in the order indicated:

3.1 Prior to the Raid

DRV Planning Phase. The DRV player selects map locations for SAM battalions, dummy SAMs, dummy radars, AAA concentrations and Fire Can units and records these on the DRV flight log sheets [27.33].

DRV Ground Deployment Phase. The DRV player sets up non-hidden AAA and located SAMs on-map [27.61, 27.62].

US Planning Phase. (Not in Campaign Scenario.) The US Player selects the target and plots the flight path for the raid. US flight log sheets are filled out [27.32].

Early Warning Phase. Roll for weather [22.2]. Roll for the raid's early warning level [27.5]. The US player provides raid information to the DRV player based on the result.

DRV Air Deployment Phase. The DRV player purchases flights [27.21]. Set up DRV flights at readiness at airfields, in unready/revetted states, or in the air [27.63].

US Deployment Phase. US flights entering on the first game turn set up off-map near their ingress hex [27.64]. Detection states of flights are set according to the early warning level. Optionally, pre-raid forces may be set-up on the map [27.66]. If using the detailed CSAR rules, set up a USN helicopter [26.41].

DRV Radar Phase. The DRV player may switch on any Fire Can or SAM radars. AAA may be activated [27.65].

3.2 During the Raid

During a raid, resolve each game turn as follows:

Random Events Phase. One player rolls dice and checks for Random Events [21]. (No random events on first game turn.)

Jamming Phase. The US player places or moves standoff jamming and spot jamming markers [19.32, 19.33, 19.34].

Detection Phase. Roll to detect undetected flights [10.2].

Movement Phase. Flights enter/exit defensive wheels [7.11, 7.13]. Draw initiative chits [5.2]. Flights move in initiative order. During movement, flights may engage enemy air units [11.2]. AAA (including Fire Can) and SAMs may fire on moving flights [14.3, 14.43, 15.4]. Bombing attacks may take place [17.1]. Photo recon runs take place [24.1].

Fuel Phase. Flights that used dash throttle and/or engaged in air-to-air combat note the fuel usage on their flight logs [20.1]. Recover aircraft that have landed or left the map [20.2].

SAM Location Phase. The US player rolls to locate SAM battalions [15.13].

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Track Phase. Some detected flights automatically become undetected. Both players roll on the Track Table to determine which detected enemy units become undetected [10.3].

SAM Acquisition Phase. Switch on SAM radars attempting quick acquisition [15.2]. SAM battalions attempt to acquire or maintain acquisition on enemy flights [15.3]. Resolve pre-emptive ARM attacks [17.58].

Admin Phase. Flights roll for disorder recovery [13.11]. Remove all spot jamming markers [19.34]. Split flights [4.14]. Switch Fire Can radars on or off [14.44]. Switch SAM radars on or off (roll to switch on if radar was shut down [17.53]) and place SAM Warning Counters [15.12, 15.2]. Remove SAM Launch counters [15.42]. Generate dummy counters [4.13]. Make DRV flights ready or move them into revetments at airfields [9.42]. Roll for loss of AAA suppression [18.21]. Activate AAA [14.2]. Parachuting crewmen land [26.1]. Roll for crew capture [26.2, 26.3]. Roll for crew rescue [26.2, 26.44]. Roll for USAF or USN CSAR mission entry [26.3]. Remove suppression on NVA units [26.31]. The US player sets up his flights that will enter the map next game turn off-map near their entry hex [27.64].

After the Admin Phase has finished, begin a new game turn.

3.3 After the Raid

The raid finishes when the last US flight in the raid has left the map or is destroyed, or when both players agree to quit [27.7]. After the raid, conduct the following phases:

Recovery Phase. Roll for recovery of any remaining on-map flights [20.2].

Bomb Damage Assessment Phase. (Not in campaign scenarios.) Roll for all non-assessed air-to-ground damage [18.1, 24].

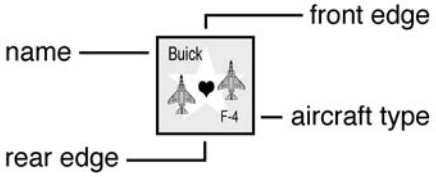
Victory Phase. (Not in campaign scenarios.) Players check for victory in the raid [27.8].

4 Air Units

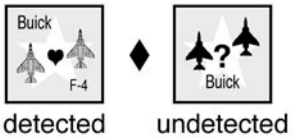
Air units represent flights of between one and four aircraft, all of the same type. The number of aircraft in a flight is determined by aircraft purchase [27.21] or the order of battle tables [27.31].

4.1 Flights

Flights have the characteristics of the aircraft that make up that flight, as described on the ADC [2.8]. Flight counters have a front (or forward) and rear edge.



Flights have a name designation. US flights have a historical call sign name, printed on the counter. DRV flights carry the name of a famous MiG pilot or ace. This should be noted on the log sheet. The flight counter also indicates the general type of aircraft in the flight.

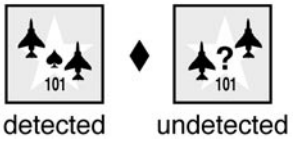


All flight counters have two sides: the detected side, bearing a heart, spade or diamond suit icon, and the undetected side, bearing a question mark ('?') icon.

4.11 Generic Counters

DESIGN NOTE: Generic counters are used to conceal the true identity of air units.

Until it is visually identified [10.4], a flight is represented on the map by a generic counter. Generic counters are identified by a letter or three-digit number. Players should note the number of each flight's generic counter on the log sheet.



No call sign or aircraft type is listed on a generic counter. When a flight is visually identified, replace the generic counter with the actual flight counter. A generic counter's suit icon does not need to match that of the flight it represents.

4.12 Dummies

DESIGN NOTE: Dummy flights are more than fake air units. They represent false warnings and imagined MiG threats that confuse the US forces. The US does not get any dummies. Their predictable tactics and the excellence of the DRV radar network make it difficult to fool the defenders.

A scenario will allocate the DRV player a number of dummy flights. Dummies use generic counters. Dummies contain no aircraft and only exist to confuse the US player. These may be moved as if they were real units. However, they may not engage or attack enemy flights.

Detected dummy flights are immediately removed from the map. They are also removed if a flak barrage achieves a combat result against them. Dummies can be voluntarily removed from the map at any time. Removed dummies can reappear through dummy generation [4.13]. The DRV is not required to have its entire allotment of dummies on the map and may keep unused dummies 'in reserve' for later use.

4.13 Dummy Generation

In the Admin Phase the DRV player may generate a dummy flight by placing it on the map at any open airfield. The dummy sets up ready, unready or in revetments [9.42].

Dummies may also be generated in the same hex and altitude band and with the same heading as an undetected generic DRV flight counter. Only generic flight counters (including other dummy counters) generate dummies. Flights that have been visually identified [10.4] no longer generate dummies. Each DRV flight counter may generate one dummy every Admin Phase.

When a dummy is generated by a DRV flight, that flight may secretly swap its current generic counter for the dummy counter. Note the flight's new counter ID on the log sheet.

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EXAMPLE: A flight using generic counter H generates a dummy. Dummy counter B is placed in the same hex at the same altitude and with the same heading. The DRV player may choose to keep counter H as the flight's generic counter, or adopt counter B instead. He decides to swap the flight to counter B, making counter H the new dummy.

Dummies may be regenerated any number of times, but the DRV may never have more dummies than their starting allowance in play at any time.

4.14 Splitting Flights

A flight of three or more aircraft may split into two flights in the Admin Phase. This may only be done if one or more aircraft in the flight are crippled. Add a new flight counter to the map and create a flight log for the split flight.

One flight must comprise all the crippled aircraft and one non-damaged aircraft (if this cannot be achieved, the flight may not split). The other flight contains the remaining aircraft. Both flights have the same aggression value, ammo, fuel, ordnance, disordered and tasking status as the original.

DESIGN NOTE: This rule allows the player to escort a crippled aircraft home, freeing the rest of the flight to continue with its mission.

4.2 Log Sheets

Each flight has a space on the log sheet noting the flight's name, generic counter, task, aggression value and various ordnance and formation states. These states apply to all aircraft in the flight. In addition there are check boxes to note air-to-air weapons depleted and fuel expended in a raid.

Log sheets should be filled out in the Planning Phases and the DRV Air Deployment Phase.

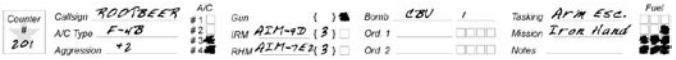

Illustration: This log sheet shows Rootbeer flight at the start of play. Generic counter #201 is used to represent this flight until it is visually identified. It is a two-aircraft F-4B flight (the spaces for aircraft #3 and #4 are crossed out) tasked with Armed Escort and attached to an Iron Hand mission. Its Aggression value is +2. The unchecked fuel boxes indicate it has five points of fuel remaining. It is armed with AIM-9D IRM and AIM-7E-2 RHM. The scribbled out gun box indicates it has no gun weapons. One strength point of CBU ordnance is carried.

4.21 Aircraft Boxes

The log sheet has four boxes numbered one to four. Each box represents the status of a single aircraft in the flight.

Aircraft with empty boxes are operational and undamaged. A slash through a box indicates the aircraft is damaged. A crossed out box indicates the aircraft has been crippled. A crossed out and circled box means it has been shot down. Black out a box if the aircraft does not exist in the flight. (For example: if the flight starts with two aircraft, black out boxes three and four.)

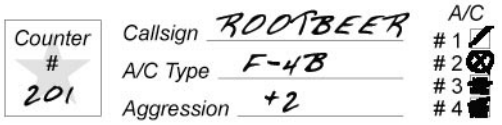

Illustration: Rootbeer flight is having a bad day. Aircraft #2 has been shot down while aircraft #1 is damaged.

4.22 Visual ID Information

Players keep the information on their log sheet secret from their opponent. However, if a flight is visually identified [10.4], the following information must be given:

a. The type of aircraft. (The exact variant is not necessary. For example: state 'F-4 Phantom' rather than 'F-4C'.)
b. The total number of aircraft.
c. The number of damaged and crippled aircraft.
d. Whether the flight is clean or laden.

5 Initiative

DESIGN NOTE: Air battles are fluid and dynamic. The initiative system models this 'organized chaos'.

At the beginning of each Movement Phase, the DRV player will decide whether to move first or second. Once this decision has been made the US and DRV players alternate movement, the number of aircraft flights moved being determined by the draw of initiative chits.

5.1 The Chit Pool

The DRV and US players maintain a 'chit pool' consisting of numbered initiative chits, usually kept in a cup or other receptacle.

Chits are drawn from the pool during play. The chits are double-sided with a US side and DRV side. The US player checks the value on the US side and the DRV player the DRV side. Players may not look at the chits while drawing. After a chit has been drawn and flights equal to the chit value have moved, it is immediately placed back in the cup.

5.2 Drawing Initiative Chits

DESIGN NOTE: The DRV radar network and centralized system of ground control gives the defenders an edge over the US. They get to choose to move first or second.

At the beginning of the Movement Phase, before any chits are drawn, the DRV player decides whether to move first or second. If the DRV player moves second, the US player must move first.

The player for the side that moves first draws an initiative chit from the pool. The resulting value is the number of flights the player must move. The player may choose which flights to move and in which order. Once flights equal to the chit value have moved, play passes back to the other player who must draw a chit and move the requisite number of flights.

Play passes back and forth between the players until all flights on the map have moved. Drawing a '0' chit immediately passes play back to the other player without moving any friendly units. No flight may move more than once per Movement Phase. If all flights on one side have moved, play passes to the other player who must move all remaining flights. (No chit draws necessary.)

EXAMPLE: The US player has ten flights in play. The DRV player has three flights. The DRV player decides the US player will go first. The US player draws a '3' initiative chit. He moves three US flights. Play passes to the DRV player. He draws a '0' chit. The DRV player does not move any flights and play passes back to the US player.

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The US player now draws a '4' chit. He must move four US flights. (These can't be flights that have already moved.) The DRV player now draws a '1' chit, which means he must move a single DRV flight.

After the DRV flight has moved, the US player draws a '5' chit. However, he only has three unmoved flights remaining. So the US player moves the three US flights and immediately passes play to the DRV player. Since all the US flights have moved, the DRV player does not need to draw again. He just moves his remaining two flights.

6 Movement

DESIGN NOTE: When wargaming large-scale air battles, it's not necessary to portray the physics of flight or three-dimensional movement in detail. However, aircraft must keep moving or they will fall out of the sky, while altitude bands show how high above the ground they are.

6.1 Counter Placement

Flight counters are placed on the map either in the center of hexes, or on hexsides facing a hex corner.

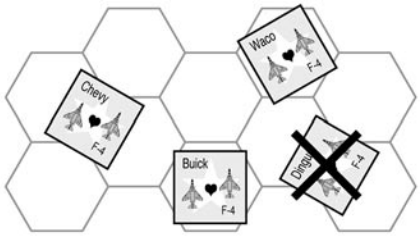

Illustration: Counter placement on the map. Note the leftmost flight is on a hexside, facing a hex corner. (In this picture its front edge overlaps the corner it is facing.) The rightmost flight is crossed out because it is not facing a corner.

6.11 Flight Facing

Flights must face their front sides toward hexsides or hex corners. When moving, move flights into the hex directly ahead, unless they are pointing at a hex corner, in which case move them onto or off the hexside.

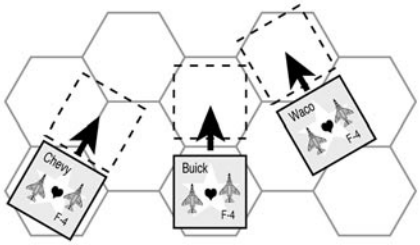

Illustration: Counters moving. The dashed box represents the hex or hexside they are moving to.

Turning alters facing. Each hex corner or hexside turned is an increment of 30 degrees.

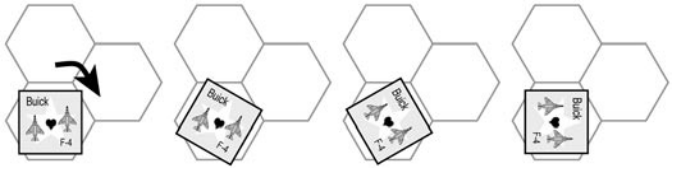

Illustration: From left to right in this sequence, a flight turns 30, 60 then 90 degrees clockwise.

A flight that turns while occupying a hexside moves into the hex in the direction of the turn.

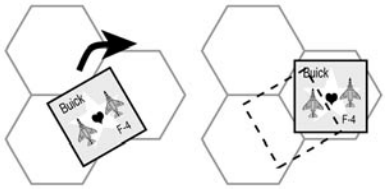

Illustration: A flight on a hexside turns 30 degrees clockwise. It moves into the hex in the direction of the turn, and is now facing 30 degrees away from its original heading.

6.12 Hexsides

For the purposes of combat and stacking, a flight occupying a hexside occupies *both* hexes sharing that hexside. Attacks against the flight can be made into either hex. When attacking a flight on a hexside, designate which hex the attack takes place in. Treat the flight as if it occupies that hex, without changing its location or facing. If a flight is forced to scatter [13.2] or perform SAM avoidance [15.43], immediately slide it sideways into the designated hex before scattering or avoiding.

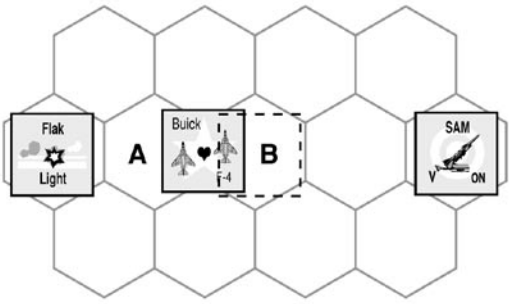

Illustration: Buick flight occupies hexes A and B for the purposes of combat. It can be attacked in hex A by the flak barrage and in hex A or B by the SAM battalion. If an attack by the SAM into hex B results in SAM avoidance, the flight will slide into that hex, as indicated by the dashed outline.

Air-to-air attacks by a flight on a hexside can be made from either hex. If the attack results in an engagement, slide the flight into the hex the attack takes place from.

Air-to-ground attacks can be made from a hexside (do not slide the flight) provided the target is not in either adjacent hex. (In other words, flights can't bomb 'sideways'.)

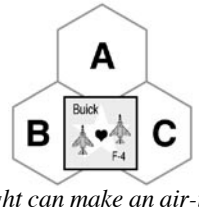

Illustration: Buick flight can make an air-to-ground attack into hex A ahead, but cannot bomb 'sideways' into B or C.

6.13 Altitude

Flights can fly in four altitude bands. From lowest to highest they are: Deck, Low, Medium and High. Mark the altitude of each flight by placing an altitude counter on or near it.

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6.2 Movement Points

DESIGN NOTE: Speed determines how far a flight moves on the map. Combat throttle represents 'military power'—a high thrust engine setting. Dash throttle is maximum power, usually obtained by engaging afterburners.

Flights move in the Movement Phase by expending movement points (MP). A flight's total MP for the Movement Phase is known as its speed. A flight's speed is determined by its aircraft type, altitude and throttle selection.

The ADC lists maximum speed values in two columns for Combat and Dash throttle. Values are listed for each altitude band and for clean and laden flight. (Low band values are also used for aircraft flying on the deck.) US flights carrying air-to-ground ordnance are laden [16.21]. Aircraft use the speed value for the altitude band in which they begin the game turn. If no value is listed for an altitude band, the aircraft cannot enter or move in that band.

To move a flight, first decide whether to use combat or dash throttle. Then announce the flight's total MP before it begins to move. This MP total is the flight's speed for the game turn. The flight must expend all its MP when moving.

6.21 Combat Throttle

If combat throttle is selected, announce MP equal to the maximum combat speed, or one less than this number. A flight's speed may never be less than one MP.

EXAMPLE: If the maximum speed for Combat throttle on the ADC is 3, a speed of 2 or 3 MP can be announced.

On the game turn that landing begins a flight may announce MP between 1 and the maximum combat speed, inclusive [9.44].

6.22 Dash Throttle

If dash throttle is selected, announce MP between the combat and maximum dash speeds, inclusive.

6.3 Movement

6.31 Movement Actions

Each of the following actions costs one movement point:

- **Move.** Move one hex straight ahead. On entering a hex the flight may do one or both of the following: (a) make a free turn up to the allowance indicated on the Turn Table [6.32]; (b) freely descend one altitude band.
- **Turn.** Turn up to the flight's maximum turn value. On completing a turn action the flight may freely descend one altitude band.
- **Climb.** Climb one altitude band (i.e., increase the altitude band by one). On completing a climb action the flight may make a free turn up to the allowance indicated on the Turn Table. Subsequent climbs in the same Movement Phase cost two movement points [6.33]. Flights that declared Anti-Radar Tactics [15.35] cannot climb.
- **Dive.** Dive to any lower altitude band (i.e., decrease altitude to any lower band). On completing a dive action the flight may make a free turn up to the allowance indicated on the Turn Table.
- **Special Attack.** Execute a toss bombing attack [17.34] or lofted ARM attack [17.52].
- **SAM Avoidance.** Perform SAM Avoidance [15.43].

Flights may climb or dive more than once in the same hex but may not expend MP to climb AND dive in the same hex.

6.32 Turning

DESIGN NOTE: Jet speeds are so fast that aircraft describe circles in the sky many miles across. The turns represented by this rule are not the maximum performance turns of the dogfight battle but sustained formation turns.

The Turn Table lists a free turn allowance, based on the flight's speed that applies whenever a flight moves a hex, climbs or dives. On entering a hex or expending MP to climb or dive, a flight may freely change facing at no MP cost up to its free turn value. (Exception: not directly after making an air-to-ground attack [17.2].)

Speed (MP)	*Free Turn*	*Max Turn*
1-2	90°	180°
3-4	60°	120°
5+	30°	90°

If a flight turns greater than its free turn allowance in a hex at the same altitude it must pay one MP [6.31]. The Turn Table lists the maximum amount an air unit can turn in a hex at the same altitude band, based on its speed. A flight cannot add this maximum to the free turn allowance; the maximum is the limit for *all* turning in that hex and altitude band.

Flights may not make consecutive turns in the same hex and altitude band. They must leave the hex or change altitude band before turning again.

EXAMPLE: A flight at speed 3 expends 1 MP to enter a hex at Medium altitude. It turns 60 degrees for no MP cost (a free turn). Because of the turn the flight cannot turn again in that hex without changing altitude, so its next MP is spent diving one altitude band to Low in the same hex. It now spends its final MP for the Movement Phase executing a maximum turn of 120 degrees.

A flight that begins its Movement Phase in a hex and altitude band it did not turn in during the previous Movement Phase may expend its first MP to turn up to its max turn allowance.

6.33 Zoom Climbs

DESIGN NOTE: Exceptionally steep climbs slow aircraft down and leave them vulnerable in combat.

A flight that climbs twice or more in the Movement Phase is executing a zoom climb. The second and subsequent altitude bands climbed cost two MP, not one.

Laden flights and flights at combat throttle cannot zoom climb. Flights that have zoom climbed suffer combat penalties for the remainder of the game turn. The penalties apply from the moment the second climb takes place.

Defending flights that commence combat against a higher enemy are considered to have zoom climbed [11.24].

6.34 Ridgelines

Flights on the deck may not cross ridgeline hexsides. (The hexside includes the corners of hexes touched by the ridgeline artwork.) If forced to cross a ridgeline as a consequence of scatter, treat it like the edge of the map [13.2].

6.35 Maneuver Markers

DESIGN NOTE: Maneuver markers represent the consequences of dogfight combat, where hard turns eat up speed and reduce movement.

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Maneuver markers are placed on flights after scattering in air-to-air combat (see 13.2 for exceptions). Do not place markers on flights already marked with Maneuver markers.

A flight that begins movement with a Maneuver marker must expend half its MPs (round fractions up) to remove the marker before it expends any other movement points.

6.36 Large Aircraft

It takes ten game turns for large aircraft to climb an altitude band. To change altitude flights must expend MP on climbing for ten consecutive turns, but they may not expend more than one MP on climbing per movement phase. On expenditure of the tenth climbing MP the flight climbs an altitude band.

6.37 Entering and Exiting the Map

It costs one MP to enter the map. However, players may elect to expend more MPs to enter if they wish (so as to stagger the entry of flights, for example).

Flights exit by moving off the map edge at a cost of one MP.

6.4 Stacking

DESIGN NOTE: Some aircraft units take up a lot of airspace. For example, USAF CAP flights are spread 2.5 miles from wingtip to wingtip. To prevent collisions, doctrine requires that flights maintain separation.

Stacking occurs when a flight occupies the same hex and altitude band as another friendly flight. Flights occupying hexsides are stacked with flights in both hexes [6.12], but not with flights on different sides of the same hex. Stacking is permitted during movement to allow flights to move through each other. But a flight's last movement point cannot be used to stack it with another unit.

6.41 Stacking Exceptions

Stacking is allowed when a flight enters another flight's hex and altitude as a result of scatter or SAM avoidance, or it halts in place as a result of combat. Defensive Wheels and Close Formations permit stacking with friendly flights [7.1, 7.2]. Flights may stack with enemy flights without restriction.

7 Formations

Flights may fly in special formations during movement. A formation is a state that provides special benefits.

7.1 Defensive Wheel

DESIGN NOTE: In the defensive wheel aircraft fly in a circle so that each plane covers the tail of the one in front. Wheels are used as 'bait' to draw in enemy fighters, or to loiter in wait for passing enemies.

7.11 Entering Defensive Wheels

A non-disordered DRV flight may enter defensive wheel formation at the beginning of the Movement Phase, before any other flights move. Place a defensive wheel marker on the flight. Defensive wheels cannot be used prior to April 1967.

Only a dummy or a DRV flight comprising two or more MiG-17 aircraft may form a defensive wheel. If a defensive wheel is reduced to a single aircraft, the wheel marker is removed. Multiple flights may enter a defensive wheel and stack in the same hex and altitude. Additional MiG-17 flights (up to a maximum of eight aircraft in the wheel) may subsequently join the formation at the instant they enter the hex at the same altitude.

Flights in a defensive wheel do not expend MP. The DRV player cannot move flights in defensive wheels or count them toward the number of flights moved for initiative purposes.

7.12 Defensive Wheel Benefits

Flights in a defensive wheel have no heading. All arcs are treated as the forward arc for combat purposes and the flight is at combat throttle while in the wheel.

Flights in a wheel never suffer the penalties of disadvantage and attackers can never claim surprise against them [11.43]; they do not scatter and cannot be marked with a maneuver marker. However, if a flight exits the wheel as a result of becoming disordered in combat it is scattered and marked with a maneuver marker [13.21].

In air-to-air combat an attacker rolls once to engage all the flights in a defensive wheel and can split shot opportunities between different target flights in the stack. (Declare targets before resolving the shots.) Regardless of the number of flights in a wheel, a wheel rolls once on the Maneuver Table for shots against the enemy.

7.13 Exiting Defensive Wheels

DRV flights may exit defensive wheel formation at the beginning of any Movement Phase, before any flights on the map move. To exit, remove the marker from the flight(s). Each flight may face in any heading desired. The flight may move in that Movement Phase.

7.2 Close Formation

DESIGN NOTE: Close formations are used by the USAF to create jamming cells and perform pathfinder bombing.

US flights may fly in close formation. Up to six flights in close formation may stack in the same hex and altitude band. Close formation cannot be used at night.

Close formations are assigned before the start of play. Flights enter the map in close formation. If they leave formation they may not re-enter close formation again.

7.21 Close Formation Movement

Close formations move as a stack of counters as if they were a single unit. Stacked flights have the speed of the slowest flight in the stack; they expend the same MPs and perform the same actions during movement.

Flights can leave close formation at the beginning of or during movement. Separate the unit from the formation and move it as a regular flight. A flight also leaves formation if it declares Anti-Radar Tactics [15.35], scatters [13.2], performs SAM avoidance [15.43] or turns more than 30 degrees in a hex. Flights that separate during movement complete the remainder of their move after the close formation has finished moving.

A stack of flights in close formation count as one flight moved for the purposes of initiative [5.2], even if some of them separate.

EXAMPLE: Four F-105D flights begin the Movement Phase stacked in close formation. The US player pulls a '3' initiative chit and decides to move the stack. One F-105 flight elects to leave the formation at the beginning of the stack's movement. It is left behind and moves only after the other three flights in the stack have finished their movement. The movement of the stack and the separated flight

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count as just one flight moved and so the US player still has two more flights to move before passing play back to the DRV player.

7.22 Close Formation Detection

If one flight in a close formation is detected, all the flights are detected. Flights in a close formation only become undetected if they all lose detection simultaneously in the Track Phase.

7.23 Close Formation Combat

Flights in close formations cannot initiate air-to-air combat, not even as a defender engaging an unsuccessful attacker [11.24]. Close formations cannot conduct dive bombing, toss bombing or strafing attacks. Close formations are a prerequisite for pathfinder attacks [17.62].

In air-to-air combat an attacker can choose to engage and attack one of the formation flights as normal (or two if performing multiple attacks [11.51]). Combat does not affect other flights in the formation except to modify the MiG Panic roll [13.12].

A jamming cell is a variant of the close formation that provides combat benefits [19.53].

8 US Organization

DESIGN NOTE: US raids are carefully planned operations, comprising many aircraft. Missions define which air units enter the map together. Tasks define what units do during raids. Navigation defines the path the raid's bombers take.

8.1 Missions

A mission is an organizational term for a group of units that are plotted to enter the map together. A US raid comprises several missions. A mission may include flights with different tasks. Missions are listed in the Order of Battle tables.

The mission type describes in general terms the primary role of the units in that mission. Types of missions include: Strike Missions, Iron Hand Missions, Chaff Missions, Jamming Missions, CSAR Missions, Recon Missions and MiGCAP.

8.11 Ingress and Egress Hexes

Each mission has an ingress and an egress hex plotted on the Planning Map. Ingress and egress hexes must be on the same map edge and within five hexes of an entry arrow. (They do not have to use the same entry arrow.) USAF units may use any red or blue entry arrows on the map. USN units may only use blue entry arrows. The USAF uses green entry arrows only during Linebacker II (December 1972) scenarios or where otherwise designated.

All flights in a mission enter the map within two hexes of their ingress hex. Flights do not all have to enter at the same time or on the same game turn. US flights that exit more than five hexes from their egress hex must make a recovery roll [20.2].

8.2 Tasks

DESIGN NOTE: Each US flight in a raid has a specific job to perform, as reflected by their tasking.

US flights are assigned tasks that determine their behavior for the raid. Note tasking on the flight log in the Planning Phase.

Tasks are listed below. The air-to-ground entry lists the ground targets the flight is allowed to attack. If 'none' is listed, the flight may not attack ground targets. If the air-to-air entry lists 'attack and defend' the flight may freely attack or defend against enemy flights. If it lists 'defend', the flight may not attack in air-to-air combat.

Task	*Behavior*
Bombing	*Air-to-Ground:* Raid targets in the target hex; also AAA concentrations, Fire Can and SAM targets in or adjacent to the target hex. *Air-to-Air:* Defend. *Other Behavior:* Must abort if ordnance jettisoned prior to the target.
SEAD	*Air-to-Ground:* SAM battalions, AAA concentrations and Fire Can units. *Air-to-Air:* Defend. *Other Behavior:* Must abort when all ordnance is expended or jettisoned.
CAP	*Air-to-Ground:* None. *Air-to-Air:* Attack and Defend. *Other Behavior:* Must abort when all air-to-air missiles are depleted.
Armed Escort	Only USN flights may perform this task. The flight is tasked with SEAD. However, if all ordnance is expended or jettisoned the flight does not abort. Instead its task changes to a CAP task.
Rescue Support	*Air-to-Ground:* NVA units, SAM battalions, AAA concentrations and Fire Can units. *Air-to-Air:* Attack and Defend. *Other Behavior:* Must abort when all air-to-air missiles and ordnance are depleted or expended.
Recon	Only Recon-capable flights may fly this task. *Air-to-Ground:* None. *Air-to-Air:* Defend. *Other Behavior:* Conducts reconnaissance of target hexes.
Jamming	Only aircraft with Standoff Jamming capability may fly this task. *Air-to-Ground:* None. *Air-to-Air:* Defend. *Other Behavior:* Must abort if damaged.
Chaff Laying	*Air-to-Ground:* None. *Air-to-Air:* Defend. *Other Behavior:* Lays chaff. If chaff is expended or jettisoned the flight must abort.
Strike/CAP	Only USAF flights may perform this task. The flight is tasked with Bombing. However, if all ordnance is expended or jettisoned the flight's task changes to a CAP task.

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8.3 US Navigation

US flights tasked with Bombing and Recon are restricted in how they move. They must follow a path defined by waypoints on the map.

8.31 Flight Path

Each raid has a flight path. This is a series of imaginary straight lines drawn on the map that connect to make a path. The flight path starts on the map-edge in the ingress hex for the bombing and recon flights [8.11] and ends on the map-edge in their egress hex. At some point the flight path must pass through the hex containing the raid's target. By drawing a straight line from the ingress hex to the target, then another line from the target to the egress hex, the flight path can be drawn in a 'join-the-dots' fashion.

One to five waypoints can be added to a flight path. Waypoints may be inserted into the flight path to create 'doglegs' in the path. Adding a waypoint between two existing points on the map (such as the ingress hex and target) 'bends' the line to that waypoint. On the Planning Map draw a straight line from the first point to the waypoint and then another straight line from the waypoint to the next point.

EXAMPLE: A waypoint is inserted between the target and egress hex. The flight path is now drawn as a straight line from target to waypoint, and as another line from waypoint to egress hex.

Plot the flight path and all waypoints on the Planning Map in the Planning Phase.

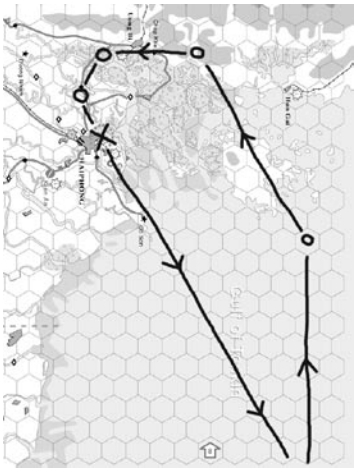

Illustration: This Navy raid is plotted to attack a target in Haiphong (marked with an 'X'). The raid enters at hex 3902 and flies a series of dog-legs to a point north of the target (waypoints marked with a 'O'). The raid then attacks and takes the short route back to egress at hex 3903.

8.32 Navigating the Flight Path

Flights tasked with Bombing or Recon follow the raid flight path, from ingress hex to target hex to egress hex. For the purposes of navigation, the ingress, target and egress hexes are treated as waypoints.

Bombing and Recon flights enter the map within two hexes of the ingress hex. They must fly direct to their next waypoint, following the line plotted on the Planning Map. No flight may intentionally stray more than two hexes from this line.

Each hex moved into must be closer to the next waypoint than the last hex. When a flight moves within two hexes of a waypoint it has 'reached' that waypoint—it must begin moving to the next waypoint in order. Again, the flight must follow the line projected between these two points.

8.33 Target Hex

Within two hexes of the target, Bombing and Recon flights move freely, without restriction. They must return to the flight path when they leave the vicinity of the target.

8.34 Other Tasking

Flights tasked with Armed Escort, CAP, Chaff Laying, Jamming, Rescue Support or SEAD do not have to follow the flight path and may move freely, without restriction.

8.35 Multiple Target Hexes

A scenario may specify that a raid must attack multiple targets spread across more than one hex.

Plot a single flight path. It must pass through at least one target hex, but does not have to pass through all of them (though it is recommended the flight path pass close to all of them). Within two hexes of any target hex, Bombing and Recon flights may move freely, without restriction.

8.36 Multiple Raids

Some scenarios may specify that there are multiple raids on the map at the same time. Each raid has a different target and plots a separate flight path from the other raids.

8.4 US Abort

DESIGN NOTE: Sometimes flights 'abort' or break for home and safety. If the abort movement restrictions prove unreasonably restrictive, feel free to loosen them, provided the spirit of the rule is maintained: aborted flights are making a run for it.

US flights abort as a consequence of morale; random events; damage, lack of ordnance or depletion of air-to-air ammunition. The US player may choose to abort a flight at any time. Note the abort state on the flight log sheet. Optionally, use an abort counter to mark the flight.

Any flight that aborts may move freely, unrestricted by the flight path rules. Aborted flights cannot initiate air-to-air combat or conduct air-to-ground attacks. There are no specific restrictions on aborted flight behavior because there are so many variables that affect it, but an aborted flight should try and exit the map directly and recover, preferably close to its egress hex.

8.5 Advanced Navigation Rules

8.51 Rally Point

DESIGN NOTE: If aircraft become separated from a flight due to disorder, they can head for a pre-planned rally point near a landmark where the flight can reform.

The US player may plot a Rally Point for each raid. Rally points may be plotted in any hex containing rough or urban terrain, or part of a river. Rally Points must be at least 10 hexes from the raid target hex. Rally Points modify disorder recovery rolls [13.11].

8.52 Plotting Altitude

DESIGN NOTE: In the standard rules bombers can change altitude freely. In reality they fly at pre-plotted altitudes and do not vary their height unless planned to.

When plotting the raid the US player must note the altitude band used by all bombing-tasked flights and the flight path hexes in which the altitude band changes. Bombing flights must fly at the plotted altitudes, climbing and diving as necessary to match any changes in the plot.

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A flight cannot deviate from the plotted altitude until one of the following trigger events occurs:

- The flight aborts.
- The flight performs SAM Avoidance [15.43].
- The flight performs Anti-Radar Tactics [15.35].
- The flight participates in air-to-air combat.

From this point on the flight may change altitude freely. Bombing flights may freely change altitude within two hexes of the raid target.

9 DRV Organization

DESIGN NOTE: DRV MiG fighters are under the command of ground controllers who direct them to intercept enemy flights. Under ground control, DRV flights can fly without the navigation or combat restrictions of US raids.

9.1 Orbit Points

DESIGN NOTE: Orbit points are assembly areas where MiGs can wait until ground controllers vector them to their targets.

There are three MiG orbit points marked on the map. The DRV uses these orbits to set up flights and as rally points. Orbit points may not be used for any purpose prior to 1967.

DRV flights use orbit points and any hexes containing open airfields as Rally Points. Rally Points modify disorder recovery rolls [13.11].

9.2 DRV Abort

DRV flights abort as a consequence of morale or random events. MiG-17 and MiG-19 flights abort if all their gun and air-to-air missile ammunition is depleted. MiG-21 flights abort if their air-to-air missiles are depleted. The DRV player may choose to abort a flight at any time. Note the abort state on the flight log sheet. Optionally, use an abort counter to mark the flight.

Aborted flights may not initiate air-to-air combat. There are no specific restrictions on aborted flight behavior because there are too many variables that would influence it, but an aborted flight should avoid all combat and attempt to land at an airfield [9.44] or fly to China [9.3].

9.3 China

DESIGN NOTE: The US instituted a thirty-mile zone extending from the Chinese border into North Vietnam. American pilots are prohibited from entering this area in order to prevent an international incident. China is often used as a safe haven for Vietnamese pilots and their aircraft.

The northeast corner of the map is designated the China Buffer Zone. Scenarios apply a victory penalty to the US player for each US flight that enters the Buffer Zone (even if it entered due to scatter) and/or attacks DRV flights in the zone [27.82, 28.61].

DRV flights may only leave the map by moving off the North edge or any map edge hex within the China Buffer Zone. Such flights have landed in China and may not re-enter the map.

9.4 DRV Airfields

There are two types of airfield: major and minor. The DRV can have air units on the ground at airfields. Flights on the ground are always undetected.

Airfields are marked with takeoff arrows [9.43]. If an airfield has a date next to it, it does not exist prior to that year.

9.41 Airfield Operations

DRV flights can take off from and land at airfields. Minor airfields may take off and land one flight per raid (do not count dummies toward this total); major airfields take off and land any number of flights each raid. Airfields may not be used for takeoffs and landings in a single turn.

Airfields are 'open' or 'closed'. The scenario will indicate which airfields are open. Flights may only take off and land at open airfields. Airfields become closed the moment an attack success of 1 or greater is achieved against the runway target in the airfield's hex [17.42].

9.42 Flights on the Ground

DESIGN NOTE: Ready flights are sitting on an airfield runway, ready to take off. Unready flights are positioned on an airfield taxiway or apron and are not able to take off. Revetted aircraft are in bombproof revetments.

DRV flights may begin a raid on the ground at an airfield. Flights on the ground may not move except to takeoff.

Flights on the ground are in one of three states: 'ready', 'unready' and 'revetted'. No more than one MiG flight may be ready at any time at an airfield—all other flights must be unready or in revetments. However, dummy flights are exempt from this restriction and may be ready at the same time as a non-dummy flight.

Unready flights take 5 game turns and revetted flights take 10 game turns to be made ready. Commencement of readiness is noted in the Admin Phase; the flight is ready on the fifth or tenth Admin Phase after commencement, as appropriate.

Unready flights take 5 game turns to move into revetments. Note the flight is moving into revetments in the Admin Phase. It enters revetments on the fifth Admin Phase following commencement.

Ready flights may be made unready at any time. Just-landed flights are unready.

Mark ready and unready flights with ready, unready and revetment counters. Ready and unready flights are Target Profile D; flights in revetments are Target Profile B [17.13]. Any number of flights may be unready or in revetments at an airfield. Any damage to a flight on the ground means that it cannot take off or fly for the remainder of the raid.

OPTIONAL RULE: the DRV player does not place any flights at airfields on the map. Instead he keeps readiness information secret from the US player on a scrap of paper. Only when a flight takes off does a counter appear on the map. However, if the US player is within one hex of the airfield and has a line of sight to it [22.1] all air units there are placed on the map.

9.43 Takeoff

Ready flights (including dummies) may take off in any Movement Phase. Place the flight on the airfield flipped to its undetected side. It must be facing in the direction of one of the takeoff arrows printed on the edge of the airfield hex.

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On the first turn of movement, the flight remains in the airfield hex and is marked with a deck altitude counter. The flight may not initiate air-to-air combat on the first turn of movement. On the second turn of movement, the flight moves MP equal to half (round up) of its speed. On the third and subsequent turns of movement the flight may move normally.

9.44 Landing

It takes three game turns to land. Once landing has begun the procedure cannot be stopped or interrupted unless the flight is attacked, in which case it recommences normal movement.

To begin landing the flight must be on the deck and at combat throttle. On the game turn landing begins the flight may select any speed between 1 and their maximum combat speed [6.21]. The flight must end movement in a hex adjacent to the airfield, with the airfield in its forward arc, and pointed in the same direction as one of the airfield's takeoff arrows.

Next game turn, instead of regular movement, the flight advances into the airfield hex, without changing altitude. On the following turn, instead of regular movement, it lands. A flight that has landed is unready and may not take off again in that scenario.

10 Detection

DESIGN NOTE: The detection of enemy flights is vital to combat. Detection is the product of many factors, from radar tracking to visual observation to signals intelligence.

10.1 Detection States

DESIGN NOTE: Detected units have been located and friendly units alerted to their presence. Undetected units are not necessarily 'invisible'. They could equally represent fleeting contacts or the products of garbled radio calls.

Flights are either detected or undetected. Mark undetected flights by flipping the flight counter to its undetected side (with the '?'). A detected flight is flipped to its detected side (with the heart, spade or diamond icon).

10.11 Detection Levels

DESIGN NOTE: The DRV detection levels represent the network of early warning radars and ground observers across North Vietnam. US detection levels represent radar ships and airborne radar planes, which have problems tracking MiGs at low altitudes. Over time American detection improves with equipment that could see enemy aircraft identification beacons, and real-time signals intelligence tracking enemy radio transmissions.

The US and DRV each have a detection level, lettered from A (best) to F (worst). The detection level may be column-shifted right by one (i.e., from A towards F) by random events.

10.12 GCI Level

DESIGN NOTE: GCI stands for Ground Controlled Intercept, the DRV's system of commanding jets from the ground. DRV ground controllers can only handle a limited number of aircraft at a time.

The DRV player has a GCI level specified in the scenario. For each DRV flight in the air greater than the GCI level, shift the DRV detection level one column to the right. Detection levels may not be column-shifted past F. Dummy and aborted flights do not count as flights for this purpose.

EXAMPLE: The DRV Detection level is B. The GCI level is 3. If four DRV flights and two dummy flights are in the air, reduce the detection level to C (not E, because dummies don't count).

OPTIONAL RULE: Because GCI Level gives the US player information on the number of real flights the DRV has in the air, the DRV player can disguise this by rolling secretly for detection and track.

10.2 Detecting Flights

Each Detection Phase both players roll two dice for each undetected enemy flight on the map and consult the Detection Table. Use the column corresponding to the player's detection level and modify the roll depending on whether the detection attempt is being made against a US or DRV flight.

EXAMPLE: The US player's detection level is E. He rolls on the E column to detect DRV flights, applying the Modifiers vs. DRV flights.

The result will be no effect (the flight remains undetected), or detection. Flip detected flights to their detected side. If the detected flight is a dummy, remove it from the map [4.12].

In addition to regular detection rolls, the US player may make visual sighting attempts and radar searches against DRV units.

10.21 Visual Sighting

DESIGN NOTE: Under GCI control, DRV MiGs are directed toward known radar contacts. However, US planes are forced to keep a constant, sharp lookout for trouble. This is represented with a separate dice roll.

The US player makes an additional detection roll for each DRV flight within 4 hexes and line of sight [22.1] of a non-disordered US flight. Choose an eligible US flight to make the sighting attempt. Roll on the Visual (Vis) column and apply the visual sighting modifiers. Make only one visual sighting attempt per DRV flight in each Detection Phase regardless of the number of US flights eligible to sight.

Do not roll for visual sighting at night [23.12].

10.22 F-4 Search Radar

DESIGN NOTE: The F-4 Phantom's powerful air search radar can pick up enemy aircraft at great distances.

The US player makes an additional detection roll for each DRV flight within 12 hexes and the forward arc of a non-disordered F-4 flight. (Exception: RF-4Cs may not radar search.) Choose an eligible US flight to make the search attempt. Roll on the F-4 column and apply the F-4 radar search modifiers. Make only one radar search attempt per DRV flight in each Detection Phase regardless of the number of F-4 flights eligible to search.

If Lookdown applies [10.23], a flight cannot radar search.

10.23 Lookdown

DESIGN NOTE: The F-4's radar cannot detect targets near the ground, hidden in the ground clutter. But the Doppler radar of the Navy's F-4J has improved performance against low targets.

Lookdown applies if the target is at an altitude band below that of the F-4 flight.

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If the F-4 flight comprises F-4B, C, D or E aircraft, lookdown also applies if the target is at Low band or on the deck and the F-4 flight is at the same altitude. (F-4J flights are not so restricted.)

Lookdown affects BVR Missile shots [11.53]. Lookdown has no effect on radar searches [10.22] if the F-4 flight also has IFF interrogator capability [11.54].

10.24 Large Aircraft

Detected US flights composed of large aircraft (see ADC notes) must be indicated to the DRV player. The aircraft type is not revealed-only that the flight contains large aircraft.

10.25 Jamming

Detected US flights with defensive jamming capability [19.2] must be indicated to the DRV player. If jamming is lost for any reason, that must also be indicated.

10.3 Track Phase

DESIGN NOTE: A detected target can be lost as a result of radar or communications failure. Low altitude flight can mask aircraft from detection, particularly over hill terrain.

In the Track Phase, all detected DRV flights on the deck become undetected. All detected US flights in chaff corridors, or on the deck in rough hexes become undetected. Flip detected counters over to their undetected side.

Each player then rolls two dice and consults the Track Table, using the column corresponding to their detection level. The result on the table will be no effect, or one or more symbols: a heart, spade and/or diamond.

Each detected flight counter has a heart, spade or diamond printed on it. If a symbol is rolled, all enemy detected flight counters with matching symbols become undetected and are flipped over to their undetected side.

If the result is in {curled brackets} it only applies to US flights on the deck and DRV flights at low altitude that are greater than 10 hexes from an all-sea hex.

10.4 Visual Identification

Flights use generic flight counters [4.11] until they are visually identified, at which point they are replaced with the actual flight counter. Flights are visually identified if one of the following events occurs:

a. The flight enters air-to-air combat [11.3]. (Exception: Does not apply to BVR Missile attacks [11.53].)

b. Flak barrage or a Fire Can unit attacks a US flight and there is a line of sight from the ground unit to the air unit. (AAA Ambush random events [21] do not result in visual identification.)

c. A SAM unit within two hexes attacks a US flight and there is a line of sight from the SAM to the air unit.

Successful visual sighting rolls [10.21] do not result in visual identification. Visual identification does not result in detection: undetected units can be visually identified and yet remain undetected. Flights cannot be visually identified at night [23.14].

10.41 Effects of Visual Identification

Once visually identified the flight uses its actual counter for the remainder of the scenario. Replace the generic counter with the flight counter set to its detected or undetected side, as appropriate. The flight counter and generic counter suit icons do not have to match [4.11].

Identified flights no longer generate dummies [4.13]. The owner of the identified flight must give Visual ID information to their opponent [4.22].

11 Air-to-Air Combat

DESIGN NOTE: Air-to-air combat in Vietnam is primarily visual range 'dogfighting' with guns and missiles.

Flights may attack enemy flights in air-to-air combat. A flight must first engage an enemy flight. If successful it can then maneuver for a shot. Shots are resolved to determine damage.

11.1 Air-to-Air Weapons

11.11 Weapon Classes

DESIGN NOTE: Guns are rapid-fire cannon, useful at very short ranges. IRM are infrared-guided missiles, a short range weapon. RHM are radar-guided missiles designed for medium range but often used close-in.

The ADC lists the types of air-to-air weapon an aircraft can carry. There are three classes of air-to-air weapon: Guns, IR Missiles (IRM) and Radar Homing Missiles (RHM).

11.12 Air-to-Air Loadout

Some ADCs list multiple air-to-air weapons. Flights may carry one type of each class of weapon, so a flight may never carry more than one type of IRM, RHM and Gun. Choose weapons in the Planning Phases [3.1].

EXAMPLE: In a December 1972 scenario a USN F-4J flight has the choice of AIM-9D, G or H IRM, and the choice of AIM-7E or AIM-7E-2 RHM. The AIM-9H is selected as the flight's only IRM type and the AIM-7E-2 as the flight's RHM type.

A weapon that depletes its ammo [11.33] can't be used for the rest of the scenario. The flight no longer has that weapon type.

11.13 Combat Values

DESIGN NOTE: As the war draws on, US forces see a general improvement in missile effectiveness. In spite of this, missiles continually fail to perform at low level where ground clutter interferes with their guidance.

Each weapon has a combat value listed in the Air-to-Air weapon charts on the ADCs.

IRM and RHM combat values are reduced to zero if used to shoot a target on the deck. AIM-7 missiles used in BVR Missile attacks [11.53] have a combat value of zero.

11.2 Engagement

DESIGN NOTE: To initiate combat an attacking flight has to spot an enemy and maneuver into an attack position. If a defender fails to spot the enemy or react in time they may be jumped on by surprise and disadvantaged. Most air-to-air kills are the result of surprise.

Flights may attempt to attack an enemy flight at any point during their movement. The moving flight is the attacker and the non-moving flight is the defender. Engagement must be rolled to determine whether combat can begin [11.22].

A flight may not attack more than once per Movement Phase (Exception: it may make a BVR missile attack, then engage in

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air-to-air combat against the same unit [11.53]). However, if the attacking flight fails to engage it may try to attack another flight in a different hex or altitude band later in that Movement Phase.

11.21 Prerequisites

A flight may not attack in air-to-air combat unless it has moved at least one hex or changed altitude in the Movement Phase. The following additional conditions must be met:

a. The attacker must have an air-to-air weapon. (Depleted weapons can't be used in combat.)

b. The defender must be detected.

c. The defender must be within one hex (inclusive) of the attacker and in the same altitude band, or the band immediately below.

d. If in different hexes, the attacker must have the defender in its forward arc. (Arcs do not prevent engagement if the flights are in the same hex.)

e. The attacker must not be in close formation; disordered; aborted; have performed a SAM Avoidance maneuver or declared Anti-Radar Tactics in the current turn. Flights may not attack if all aircraft in that flight are damaged or crippled.

11.22 Engagement Roll

If the prerequisites have been met, the attacker and defender make separate engagement rolls. The engagement value used for the roll is shown on the Engagement Table and is based on the detection status of the enemy flight and whether it is day or night. If a flight has no line of sight to the target [22.1], use the night values.

EXAMPLE: An undetected US flight is attempting to engage a detected DRV flight during the day. The US rolls against the daytime detected engagement value. The DRV rolls against the daytime undetected value.

Roll two dice on the engagement table and modify as indicated. If the result is equal to or greater than the engagement value, the flight engages the enemy.

11.23 Engagement Roll Modifiers

Aggression and disordered/ chaff/ close formation modifiers apply to the flight making the roll. Target modifiers are applied to the enemy flight. Night-related modifiers are applied to both flights.

11.24 Engagement Results

There are four possible results of the engagement roll:

a. If the attacker engages but the defender does not, combat commences. The attacker has surprise and the defender is disadvantaged. Move the attacking flight to the defender's altitude band.

b. If attacker and defender both engage, combat commences but there is no surprise or disadvantage. Move the attacking flight to the defender's altitude band.

c. If neither attacker nor defender engages no combat takes place (do not resolve combat or post-combat effects) and the attacker continues its movement.

d. If the defender engages but the attacker does not, the defender can choose to commence combat. If combat begins move the defending flight to the attacker's altitude band; if the attacker is higher, the defender is considered to have zoom climbed [6.33]. There is no surprise or disadvantage.

The defender cannot commence combat if it has no air-to-air weapons, is in close formation; disordered; aborted; is marked with a maneuver marker, or participated in air-to-air combat earlier in that Movement Phase.

If the defender does not begin combat, treat as result c. above—no combat takes place.

11.25 Surprise and Disadvantage

The engagement roll may give the attacker the advantage of surprise and bonuses in combat. The defending flight may start the engagement disadvantaged, resulting in penalties to combat and morale.

A flight can jettison its air-to-ground ordnance prior to combat being rolled, so as to permit the use of its clean maneuver values [16.23]. Disadvantaged flights cannot jettison.

Defensive wheels never suffer disadvantage penalties and attackers can never claim surprise against them [11.43].

11.3 Combat

If combat commences as a result of engagement, it uses up all the attacking flight's remaining MPs. (Exceptions: Slash attacks [11.52]; BVR Missile shots [11.53].) All flights involved in a combat are visually identified [10.4], except at night [23.14].

11.31 Maneuver

DESIGN NOTE: To shoot, a flight has to maneuver into a good shooting position, usually right on the enemy aircraft's tail. This is difficult if the enemy is maneuvering to avoid the shot.

Each attacking and defending flight in a combat rolls for maneuver. (Exception: defensive wheels roll once, regardless of the number of flights in the wheel.) Roll two dice, modify as indicated and consult the Maneuver Table, cross-referencing the roll on the Air-to-Air Column with the number of undamaged aircraft in the flight.

Always use the 1 aircraft column if:

- The flight is flying Fluid Four doctrine. (All USAF air units fly Fluid Four doctrine unless otherwise indicated.)
- Rolling for a defensive wheel [7.1, 11.43].
- The flight is disordered [13.11].
- The flight is making multiple attacks [11.51].

The value obtained from the Maneuver Table is the number of shot opportunities the flight has. Shot opportunities are resolved using the shot resolution system.

If a flight has no air-to-air weapons it may not roll for maneuver or take shots at enemy flights.

11.32 Shot Resolution

DESIGN NOTE: Deficient training and unreliable weapons mean that few shots ever hit. Aircraft with multiple weapon types may let fly with everything they have.

To resolve a flight's shot, select an air-to-air weapon to shoot with, roll two dice and modify before consulting the Shot Resolution table.

Shots are resolved in an order determined by the players. Allocate and apply damage [12.1, 12.2] after all shots have been rolled. A player may refuse to roll a shot if they wish.

EXAMPLE: An F-4 flight has two shots. The first succeeds in shooting down the last aircraft in an enemy flight. The second shot can be refused.

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11.33 Ammo Depletion

DESIGN NOTE: A shot can represent one missile or ALL a flight's missiles. Sometimes pilots would fire off their entire weapon load trying to get a kill.

After all shots in a combat have been resolved, roll one die for each flight that resolved a shot. (Roll per flight that took a shot and NOT per shot taken.) If a flight resolved multiple shots, subtract one from the roll for each shot after the first.

Look up the depletion number of the weapon used to shoot (if more than one weapon was used to shoot, select the one with the highest depletion number). If the result is equal to or less than its depletion number, that weapon is depleted and can no longer be used in combat [11.12].

If the modified result is 1 or less, a second weapon (if the flight has one) is also depleted. This may be any other non-depleted air-to-air weapon carried by the flight.

11.4 Special Combat Rules

The following rules cover special combat situations.

11.41 Disengagement

Prior to the maneuver rolls the defending flight can elect to disengage. Disengaging flights do not roll for maneuver and take no shots. Flights attacking a disengaging unit apply a modifier to their maneuver roll.

Disengaging flights do not scatter and are not marked with a maneuver marker after combat [13.24]. They apply a modifier to their Morale Table roll.

11.42 Climbing

DESIGN NOTE: Aircraft that climb into combat are at a significant disadvantage.

Decrease a flight's maneuver rating [2.81] by one if it climbed that Movement Phase. Decrease the rating by two instead if the flight zoom climbed [6.33]. A flight's maneuver rating may never be less than zero.

11.43 Defensive Wheels

DESIGN NOTE: The wheel is not an offensive formation, allowing no more than one aircraft a shot at any passing enemy, but it is difficult to catch at a disadvantage.

Defensive wheels [7.1] engage and fight as if they were a single unit. When rolling to engage, roll once for all flights in the wheel. If successful, roll once on the Maneuver Table, using the 1 column [11.31]. Attackers may not claim surprise against defensive wheels [11.25]. Units in a wheel do not suffer disadvantage penalties and do not scatter [13.21].

11.5 Advanced Air Combat Rules

11.51 Multiple Attacks

If an attacking flight comprises two or more aircraft it may try to engage two enemy units if it meets the prerequisites for attacking both. The attacker rolls to engage each defender separately. Each defender rolls separately to engage the attacker. If combat occurs, the attacker rolls two combats; one against each enemy. In each case the attacker uses the 1 column of the Maneuver Table. Both defenders roll for shots against the attacker as normal.

Following a multiple attack, the attacker is disordered in addition to any other combat or morale result.

11.52 Slash Attacks

DESIGN NOTE: High-speed 'slashing attacks' are a popular hit-and-run tactic for the DRV.

To launch a slash attack the attacker must be in the second or subsequent turn of dash throttle and cannot have climbed prior to the attack in that Movement Phase. The target cannot be on the deck. The attack must be made from the target's rear hemisphere. Announce the slash attack before rolling for engagement.

Apply the slash attack modifier to the engagement roll. If the attacker doesn't achieve surprise then reduce the number of shot opportunities in the combat by one, to a minimum of zero. The attacker (only) does not scatter or place a maneuver marker following combat and continues movement [13.22].

The US can always use slash attacks. The DRV may not use slash attacks prior to August 1967.

11.53 BVR Missile Shots

DESIGN NOTE: The medium-range AIM-7 Sparrow is designed for shots at enemies Beyond Visual Range (BVR). Because of the difficulties of verifying a target's identity when out of visual range, strict rules of engagement limit shooting to prevent 'friendly fire' incidents.

F-4 aircraft equipped with AIM-7 weapons can engage flights from 2 to 5 hexes away. All other prerequisites for combat [11.21] must be met and Lookdown must not apply [10.23].

BVR Missile shots are allowed only if the Rules of Engagement restrictions permit it [11.54]. A BVR missile shot may not target multiple flights; only one target is permitted. A flight may not attempt more than one BVR Missile shot each Movement Phase.

The F-4 flight automatically engages the target. No attacker or defender engagement rolls are necessary and there is no surprise or disadvantage. Roll on the Maneuver Table using the BVR Missile shots column. Apply only the modifiers indicated for BVR shots. The defending flight may not shoot back. Roll for shot resolution as normal [11.32] using a combat value of 0 [11.13]. Note that Fluid Four doctrine effects [11.31] also apply to BVR shots.

When checking for depletion, only AIM-7 RHM weapons deplete. No other weapons deplete, even if the depletion roll is 1 or less [11.33].

Following a BVR Missile shot, neither unit scatters. Only the defending flight makes a Morale Check. The attacker must complete its remaining movement and may engage the same defending flight in regular air-to-air combat [11.2, 13.23].

11.54 BVR Missile Rules of Engagement

DESIGN NOTE: IFF Interrogators codenamed 'Combat Tree' track enemy identification beacons, permitting Phantoms to separate friends from enemies. The MiG screen is a way of ensuring F-4s have a clear sky to shoot in after the strike has finished its job.

BVR Missile shots are permitted only when rules of engagement allow. Random events may permit BVR Missile shots, otherwise the following rules apply:

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IFF Interrogator. F-4 flights with IFF interrogators may take BVR shots at detected DRV flights. F-4 flights may only use IFF interrogator capability if designated by SSR.

MiG Screen. From November 1967 on, USAF MiGCAP missions (only) may act as a MiG Screen. F-4s in a MiG Screen are permitted to take BVR shots at any detected DRV flight provided all bombing-tasked flights in the mission have attacked their target(s) or aborted.

For all BVR attacks, if the attacker is in the defender's forward arc or beam (see Arcs play aid), the shot is not permitted if a friendly flight is within 6 hexes of the target. If the attacker is in the defender's rear arc, the shot is not permitted if a friendly flight is within 2 hexes of the target.

12 Air Unit Damage

12.1 Damage Allocation

Randomly allocate damaged/crippled/shot down results among the aircraft in a flight by rolling a die on the damage allocation table, cross-referencing with the total aircraft in the unit.

The result is the number of the aircraft affected. If the result is C# and a crippled aircraft is present, allocate the damage to any crippled aircraft (attacking player's choice). Otherwise allocate damage to the damage # indicated. Note the damage on the flight log [4.21].

If a combat generates multiple damage results, roll to allocate each one separately. Results may be allocated in any order selected by the attacker. If a damaged/crippled aircraft is damaged or crippled again, its damage is increased by one level, from damaged to crippled and crippled to shot down. Apply the effects of damage before allocating the next result.

EXAMPLE: A flight with two aircraft receives a shot down, crippled and damaged result against it. The attacking player decides to allocate the shot down result first and rolls a result on the #1 aircraft, which is shot down. This leaves the #2 aircraft to which the crippled result is applied first, then the damaged result. The aircraft is shot down.

12.2 Damage Effects

12.21 Damaged Aircraft

Damaged aircraft are not counted toward the total aircraft available to make air-to-air or air-to-ground attacks.

EXAMPLE: a four-ship flight with one damaged aircraft rolls on the 3 column of the Maneuver Table in air-to-air combat.

12.22 Crippled Aircraft

Crippled aircraft are treated the same as damaged aircraft, except a flight with one or more crippled aircraft may not select dash throttle in future game turns. Flights with crippled aircraft may be split [4.14].

12.23 Shot Down Aircraft

Shot down aircraft are removed from the flight. If all the aircraft in a flight are shot down the air unit is eliminated. Shot down US aircraft may generate bailed out crewmen [26.1].

13 Post-Combat Procedure

Following air-to-air combat, flights must perform the following actions in order: (1) check for morale and MiG Panic; (2) scatter; (3) place maneuver markers; (4) become undetected. Following AAA and SAM combat that inflicts damage or losses, simply check the flight's morale.

These procedures take place immediately, before any other movement or combat action is performed.

13.1 Morale Check

All attacking and defending flights in an air-to-air combat roll a morale check after combat has been resolved (Exception: BVR missile attackers [11.53, 13.23]). Flights that take damage or losses from a AAA, Fire Can or SAM attack also roll a Morale Check.

To make a morale check, roll two dice and consult the Morale Check Table. Modify the roll as indicated. Apply damage/loss modifiers only for aircraft damaged or lost in the just-resolved combat. Refer to the column for air-to-air combat or SAM/AAA combat as appropriate.

Apply the results. Reduce the flight's aggression value by the amount in the Aggression Value column (but never below *–3*).

13.11 Disordered State

DESIGN NOTE: Combat can break up a flight and scatter it across the sky, or simply take the fight out of a unit.

Flights that become disordered are noted as such on the flight log sheet. Optionally, mark the flight with a disorder counter.

Disordered flights cannot enter defensive wheels [7.1] and immediately leave on becoming disordered. They may not visually sight [10.21], radar search [10.22], initiate air-to-air combat, make air-to-ground attacks, or lay chaff. Modifiers apply to engagement and air-to-air combat.

Flights can recover from disorder in the Admin Phase. Disordered flights roll two dice and add their aggression value. Modify the roll by +8 if in or adjacent to a Rally Point hex [8.51, 9.1]. On a 20 or more, remove disordered status.

Do not roll for disorder recovery if the flight was:
- Attacked by SAM or AAA that turn.
- Involved in air-to-air combat that turn.
- Acquired by a SAM unit.

13.12 MiG Panic

DESIGN NOTE: A flight caught in air combat will jettison its ordnance rather than be weighed down by the bomb load. However, an air combat can convince jittery flights nearby to dump their bombs, too.

After any air-to-air attack on a flight tasked with bombing, roll one die for each bombing-tasked flight in the same mission [8.1] (do not roll for flights in different missions or raids). On a roll of 1 or less, that flight jettisons its ordnance. Subtract 1 if in close formation with the flight that was just attacked.

13.2 Scatter and Maneuver Markers

DESIGN NOTE: In dogfights flights just have time for one or two maneuvers before they lose track of an enemy or run out of speed and the battle ends. Flights spit out of a combat in all sorts of directions and usually at a lower altitude. The scatter roll represents this.

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After air-to-air combat flights scatter from their hex. Roll a die for each flight in the combat and follow the instructions in the scatter diagrams. If instructed to descend an altitude band and the flight is on the deck, do not descend further.

After scattering the flights, mark them all with a Maneuver marker (Exception: Defensive wheels, slash attacks, BVR Missile shots, disengaging flights).

If forced to scatter off map, or into a ridgeline while on the deck [6.34], keep rolling until a legal movement result occurs.

13.21 Defensive Wheels

Flights in defensive wheels [7.1] do not roll for scatter. However, flights that lose wheel formation as a result of a morale check do scatter.

13.22 Slash Attacks

Do not scatter or place a Maneuver marker on a flight that makes a slash attack [11.52] (scatter the defending flight and place a Maneuver marker on it, as usual). The attacker continues movement if it has any MP remaining.

13.23 BVR Missile Shots

Following a BVR Missile shot [11.53] do not scatter or place a Maneuver marker on either flight. Only the defender rolls a morale check. The attacking flight moves any remaining MP and may engage the same target in regular air-to-air combat. (It may not engage any other flight.)

13.24 Disengaging

Do not scatter or place a Maneuver marker on a disengaging flight [11.41]. (The attacking flight scatters and has a Maneuver marker placed, as usual.)

13.3 Post Combat Detection

DESIGN NOTE: For ground and air controllers, sorting out the result of a 'merged' radar plot following a battle takes some time. We show this by making air combat participants undetected.

Following an air-to-air combat, all participating flights immediately become undetected. Flip the counters to the undetected side. (Exception: BVR Missile Attacks [11.53] do not change detection status.)

14 Anti-Aircraft Artillery

DESIGN NOTE: Anti-Aircraft Artillery (AAA) concentrations represent areas of flak barrage. Fire Can units model radar-directed flak. SAM units and parts of the Vietnamese infrastructure also have AAA capability.

14.1 AAA Concentrations

DESIGN NOTE: Concentrations of AAA reflect the density of overall firepower projected rather than the caliber of weapons used.

AAA concentrations are ground units and come in three densities: Light, Medium and Heavy.

Some AAA concentrations are printed on the map. Additional AAA concentrations can be purchased in scenarios and are represented on the map by counters. There can be no more than one concentration in a hex [27.61].

14.11 AAA Points

In the DRV Planning Phase the DRV player receives AAA points. These can be spent to upgrade printed AAA. Upgrades cost AAA points as follows:

Light to Medium = 1
Medium to Heavy = 2

EXAMPLE: A printed Light concentration is upgraded to Medium for 1 AAA point. It can be upgraded to Heavy for a further 2 AAA points for a total cost of 3.

Place a counter of the upgraded density over the printed concentration on the map.

Additional AAA concentrations may be purchased for the following cost in AAA points:

Light = 1
Medium = 2
Heavy = 4

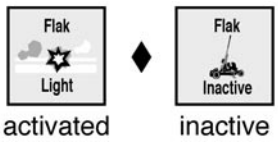
The DRV player secretly plots the locations of additional AAA in the DRV Planning Phase [27.33]. Some of these AAA concentrations are set up on-map in the DRV Ground Deployment Phase [see 27.61] on their active or inactive side. The remaining AAA concentrations are hidden (i.e., not placed on the map) and are inactive.

14.12 AAA as Targets

AAA concentrations are target profile C [17.13].

14.2 AAA Activation

DESIGN NOTE: AAA active state represents the AAA being cleared to shoot at anything that enters their barrage zone. Inactive AAA is lying in wait, ready to spring a 'flak trap'.



AAA concentrations are either active or inactive. The DRV player chooses when to activate AAA. Once active, AAA cannot become inactive. Inactive AAA concentrations can be activated only at the following times:

a. The DRV Radar Phase.
b. The Admin Phase.
c. When a US flight moves adjacent to the concentration.
d. When a US flight expends an MP while adjacent.

When an AAA concentration is activated, flip the AAA counter to its active side. Hidden AAA is revealed and placed on the map. Once revealed, AAA cannot become hidden again.

Printed concentrations may start a scenario inactive. Indicate this by using any spare AAA counter.

14.3 Flak Barrage

DESIGN NOTE: AAA barrage fills an area of sky with shrapnel and blast in the hope of hitting jets flying past.

An active AAA concentration projects a flak barrage zone into its hex and all adjacent hexes. Roll a barrage attack on a US or DRV flight immediately each time the following applies to it:

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a. It enters a hex in a flak barrage zone via movement, scatter or SAM avoidance (Exception: MiG/AAA deconfliction [14.53]).

b. It changes altitude band in a barrage zone as a result of movement, scatter or SAM avoidance (note that a flight that enters a barrage zone and descends an altitude band on the same movement point need only have one barrage attack rolled against it, not two).

c. It expends an MP turning in a barrage zone.

d. It expends an MP to conduct a toss bombing [17.34] or lofted ARM attack [17.52].

e. It presses a dive bombing attack [17.31].

f. It attacks an enemy flight in a barrage zone (not applicable to BVR Missile attacks). Use the defending flight's hex and altitude to resolve combat.

Flak barrage rolls are made regardless of whether the target is detected or undetected.

14.31 Resolving Flak Barrages

Roll two dice on the AAA Table using the column for the density of AAA being projected into that hex, cross-referenced with the flight's altitude. If the flak barrage roll is as a result of a change in altitude, the DRV player may choose to attack either the altitude where the flight started or where it ended.

EXAMPLE: A flight at Low altitude climbs to Medium. The DRV player may select either the Low or Medium bands as the flight's altitude for the barrage attack.

If more than one AAA concentration projects barrage into the hex, the DRV player chooses one concentration (only) to roll the barrage attack.

EXAMPLE: A flight moves into the barrage zone of a Light and Medium concentration. One barrage attack is rolled, using the Medium column. The light concentration does not attack.

If the roll is equal to or greater than the AAA number listed, the target flight is hit. If the target is hit, roll for damage on the Barrage column of the Flak Damage Table. Roll two dice and apply the barrage flak modifiers to obtain the damage result.

A 'D' result means one aircraft is damaged; 'C' that an aircraft is crippled, and 'K' that an aircraft is shot down [12.2]. If more than one result is listed, all are applied to the flight.

14.32 Air-to-Ground Modifiers

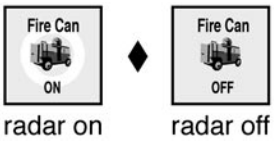
DESIGN NOTE: One of the chief effects of flak is to disrupt bombing attacks by interrupting the pilots' aim.

Flak barrage also applies a modifier, listed on the AAA Table (in parentheses), to those visual bombing air-to-ground attacks where the bomb run passed through a flak barrage zone [17.42]. Apply the modifier even if flak fails to hit the bombers. Where more than one barrage zone affects the attack, apply the greatest negative modifier.

Flak modifiers are reduced by 1 (towards 0) for each level of suppression on the concentration. Flak modifiers are not applied to blind bombing attacks.

14.4 Fire Can

DESIGN NOTE: Fire Can is the NATO codename for a radar system capable of directing AAA guns by providing target range and altitude information. A unit represents a Fire Can directing a battery within the AAA concentration.



Fire Cans are special AAA ground units possessing a radar.

14.41 Fire Can Deployment

The DRV player is allocated a number of Fire Cans by the scenario. In the DRV Planning Phase secretly plot the locations of Fire Can units on the DRV log sheet. Fire Cans must be placed in hexes containing AAA concentrations. The maximum number permitted in a hex varies with the density of the AAA concentration:

Light—1 *Fire Can*
Medium—2 *Fire Cans*
Heavy—3 *Fire Cans*

Though Fire Cans set up in the same hex as AAA concentrations, they operate as separate units.

14.42 Fire Can Status

Fire Can units remain hidden-not placed on the map-until they switch their radars on. When a Fire Can switches on its radar, place a Fire Can counter on the map; the unit has been located and may be attacked by US flights. A located Fire Can never becomes hidden again.

14.43 Fire Can Attacks

A Fire Can with its radar switched on can shoot once per game turn, during enemy movement. It can shoot at an enemy flight within two hexes following the expenditure of a Movement Point, or immediately after the target has scattered or performed a SAM avoidance maneuver. Fire Cans cannot shoot at flights on the deck. Resolve all flak barrage attacks on the flight first before rolling Fire Can attacks.

Roll two dice on the AAA Table using the Fire Can column referenced with the target flight's altitude. If the roll is equal to or greater than the AAA number listed, the flight is hit and damage should be determined using the Fire Can column of the Flak Damage Table. Roll two dice and apply the Fire Can modifiers to obtain the damage result.

A 'D' result means one aircraft is damaged. 'C' means an aircraft is crippled. 'K' means an aircraft is shot down [12.2]. If more than one result is listed, all are applied to the flight.

14.44 Fire Can Radars

Fire Cans have their radar switched on or off. Flip the unit counter to its 'on' or 'off' side in the Admin Phase. Fire Cans with the radar off may not attack enemy flights.

Anti-radiation missiles (ARMs) can force Fire Can radars to shut down [See 17.53].

14.45 Fire Can as Targets

Fire Can units are target profile C [17.13].

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14.5 Advanced AAA Rules

14.51 Small Arms

All urban and railroad hexes and NVA counters [26.31] project small arms flak barrage. No counters are placed to indicate the flak. The barrage zone only occupies the urban, railroad or NVA counter's hex, not the adjacent hexes. Small arms concentrations are always activated.

14.52 Organic SAM Flak

All non-hidden SAM battalions [15.1], including dummies, project light flak barrages. The barrage zone only occupies the SAM counter's hex, not the adjacent hexes. Organic SAM flak is always activated. Attacks on the SAM unit that generate damage result in suppression of the organic flak as if it was a AAA site [see 18.21]. If the SAM battalion is totally destroyed, so is its organic flak.

14.53 MiG/AAA Deconfliction

DESIGN NOTE: The DRV has set 'corridors' based on altitude to allow aircraft to pass safely through AAA zones.

DRV flights (including dummies) that enter a hex at Deck altitude are not attacked by flak barrage unless they entered as a consequence of scatter.

15 SAMs

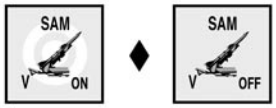
DESIGN NOTE: The Surface to Air Missile (or SAM) is one of the most feared anti-aircraft weapons in the Vietnamese arsenal. The S-75 Dvina missile (NATO codename: SA-2 Guideline) is the mainstay of the defense, firing from prepared sites and able to move between sites in hours.

Running battles are fought between DRV SAMs and specialist American SAM-hunting units codenamed 'Iron Hand'. Deception and the use of dummy SAM units or fake radar emitters are a part of this cat-and-mouse fight.

SAM battalions are ground units that can attack US flights with missiles.

Each SAM unit is identified by a letter printed on its counters. A SAM uses three counters: a SAM Warning counter for when it is unlocated; a SAM counter for when it is located and an Acquisition marker to mark acquired targets.

15.1 SAM Deployment



radar on radar off

The DRV is allocated a number of SAM battalions by the scenario. In addition, they are assigned Dummy SAMs [15.14] and Dummy Radars [15.15]. In the Planning Phase the DRV player secretly plots the locations of battalions and dummies. For each battalion and dummy, make out a SAM entry on the DRV flight log. This should note the battalion's ID letter, hex, target profile and shots remaining.

15.11 SAM States

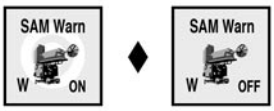
SAM battalions may be in one of three states: located, unlocated and hidden. Show a located SAM battalion by placing a SAM counter on the map. Show an unlocated battalion by placing a SAM Warning counter. Hidden SAM units do not appear on the map.

Located SAM battalions can be attacked by any US flight whose tasking permits it [8.2]. Unlocated SAM battalions may only be attacked by US flights using ARM ordnance [17.5]. Hidden SAM units may not be attacked.

Prior to the start of play, the DRV player must set up some SAM battalions on map as located units [27.62]. The remaining SAM units begin the game hidden.

15.12 SAM Warning

When hidden SAM battalions switch their radars on place a SAM Warning counter with the appropriate ID letter on the map in the battalion's hex. When the battalion is located remove the SAM Warning counter and replace it with the SAM battalion counter with the same ID.



radar on radar off

15.13 SAM Location

DESIGN NOTE: SAM sites are camouflaged against detection by SEAD forces. However, radar emanations and the launch plumes of missiles are a giveaway.

In the SAM Location Phase the US player may try to locate unlocated SAMs marked with SAM Warning counters. Roll for each unlocated SAM within three hexes and line of sight [22.1] of a SEAD or Rescue Support flight. (Increase the range to eight hexes if the SAM is marked with a SAM Launch marker.) If out of range and line of sight of a SEAD/Rescue Support flight, the SAM unit cannot be located.

Roll one die and modify as indicated in the play aids. If the roll is equal to or greater than 10, the battalion is located and the SAM Warning counter is replaced with a SAM unit counter with a matching ID. Otherwise it remains unlocated.

15.14 Dummy SAM Sites

Scenarios may supply the DRV with dummy SAM battalions. Dummy SAM units use SAM counters and always set up located [27.62]. Dummy SAMs have no radar and cannot switch on. They cannot fire SAMs.

Dummy SAM sites can be attacked and destroyed like regular SAM battalions; however, they never count for Victory Points.

15.15 Dummy Radars

Scenarios may supply the DRV with dummy radar units. Dummy radars use regular SAM and SAM Warning counters and may set up located or hidden. Dummy radars behave as regular SAM battalions in all respects except they have no ammo and cannot fire SAMs.

Dummy radars can acquire targets with their radar, switch their radar on and off, and be forced to shut down by ARM attacks. They can be attacked and destroyed like regular SAM battalions. Dummy radars never count for Victory Points.

15.16 SAM Units as Targets

SAM battalions and dummies may be revetted or unrevetted. Revetted SAM battalions are target profile C. Unrevetted battalions

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are target profile D [17.13]. SAMs and dummies that set up within four hexes of downtown Hanoi and Haiphong (hexes 2028 and 2410) are revetted. All others are unrevetted unless otherwise stated by SSRs.

15.2 SAM Radars

SAMs may only acquire and attack targets if their radar is switched on. Radars switch on or off in the Admin Phase; flip the counter to its 'on' or 'off' side. SAM radars can also switch on in the SAM Acquisition Phase if they attempt a quick acquisition [15.31]. Anti-radiation missiles (ARMs) can force SAM radars to shut down [see 17.53].

15.3 SAM Acquisition

SAM units must acquire their targets on radar before they can fire. A SAM not marked with a SAM Launch counter may attempt to acquire an enemy flight in the SAM Acquisition Phase. A SAM battalion marked with a SAM Launch counter can only roll to maintain acquisition on its current target.

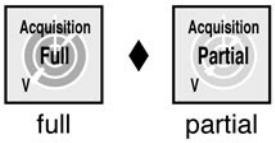
15.31 Acquisition Restrictions

Each SAM battalion may acquire only one target at a time. The target flight must be within 12 hexes. It must not be terrain masked [15.34].

If the SAM radar is switched off, it may try a 'quick acquisition'. Quick acquisition may only be attempted against detected flights. The SAM radar switches on immediately but applies the quick acquisition penalty modifier.

15.32 Resolving Acquisition

DESIGN NOTE: Targets must be acquired on radar as a prerequisite for launching missiles. Full acquisition indicates that the SAM battalion has a clean radar track on the target. Partial acquisition indicates that the SAM unit is having problems tracking the target, as a result of jamming or other factors.



To resolve acquisition roll two dice on the SAM Acquisition Table. Apply modifiers as indicated and consult the column corresponding to the target's current status: detected, undetected or acquired by that SAM unit. Cross-reference with the result column. The results are as follows:

No Acquisition. The target is not acquired. Do not place an Acquisition marker. Remove the SAM's Acquisition marker from the target.

Partial Acquisition. Place the Partial Acquisition marker matching the SAM unit's ID on the target.

Full Acquisition. Place the Full Acquisition marker matching the SAM unit's ID on the target.

15.33 Maintaining Acquisition

If a target is marked with an acquisition marker at the beginning of the SAM Acquisition Phase, the SAM unit must roll to retain acquisition or change acquisition status. Roll on the Target Acquired column and place or remove the SAM's acquisition marker accordingly.

EXAMPLE: A target is marked with a Partial Acquisition marker. The SAM with the acquisition rolls on the Target Acquired column. A roll of 10 results in Full acquisition. Place a Full marker by flipping it from its Partial to Full side.

The acquisition marker is removed the moment a SAM battalion's radar is switched off or if the target reaches a distance of 13 or more hexes away from the SAM. The DRV player may voluntarily lose acquisition at any time.

15.34 Terrain Masking

DESIGN NOTE: Descending into hilly terrain is a certain way to break radar acquisition.

If a target flight enters a rough hex while on the deck, the acquisition marker is removed before any SAM attack can be made. Also, if the target is on the deck and at any time there is a ridgeline hexside between the SAM battalion and the flight, remove the marker. Draw a straight line between the centers of the SAM battalion's hex and the flight's hex or hexside. If this line crosses any part of the ridgeline artwork, acquisition is lost.

15.35 Anti-Radar Tactics

DESIGN NOTE: A rapid descent maneuver followed by low-level flight can degrade SAM radar acquisition.

US flights with RWR capability which are acquired can declare Anti-Radar Tactics at the beginning of their movement. The flight's first movement point must be used to descend or dive to Low or Deck altitude unless it is already on the deck.

After expending the first MP, and before any SAM attacks can be launched, SAMs that have acquired the target must roll to maintain acquisition as per 15.33. The result of the roll may never improve the SAM unit's acquisition (i.e., if the SAM battalion has a partial acquisition but rolls a full acquisition result, the acquisition remains partial).

A SAM battalion never rolls more than once for Anti-Radar Tactics in a Movement Phase. However, it rolls to maintain acquisition as usual in the SAM Acquisition Phase.

Apply the Anti-Radar Tactics modifier to all acquisition rolls made against the flight that game turn.

Flights that declare Anti-Radar Tactics cannot climb, initiate air-to-air combat, or make air-to-ground attacks during that Movement Phase. They also lose defensive jamming [19.21]. Aircraft noted as having Poor SAM Defense may not employ Anti-Radar Tactics.

15.4 SAM Attacks

SAM battalions may fire at enemy flights up to 8 hexes away.

15.41 SAM Fire Prerequisites

SAM battalions may only fire at flights during the Movement Phase following the target's expenditure of a movement point, or immediately after it has scattered or performed a SAM avoidance maneuver. Resolve SAM attacks after all AAA barrage and Fire Can attacks have been resolved.

SAM battalions only fire at acquired flights and may fire no more than once per game turn. SAMs may not fire at targets at a range of zero or one hex. No more than two SAM battalions may attack the same flight in a game turn.

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DESIGN NOTE: The air defenses are divided into zones. SAMs in a zone are ordered not to fire if friendly aircraft are passing through. We represent this by preventing SAM fire if MiGs are in the vicinity.

SAMs may not fire if a DRV flight (including a dummy) is within five hexes of the target flight. (Three hexes for scenarios set in 1972 or later.)

15.42 Resolving SAM Attacks

To resolve a SAM attack, the DRV player rolls two dice and applies the attack modifiers as indicated. Look up the result on the SAM Attack Table. It gives a Hit or Miss result.

When the DRV player rolls an attack, the US player simultaneously rolls two dice and applies defense modifiers. Look up the result on the SAM Defense Table using the column corresponding to whether the flight has no defensive jamming capability, has defensive jamming [19.2], is in a jamming cell [19.53], or is in a chaff corridor [19.4]. If more than one applies use the rightmost column (i.e., the best defense) that applies to the target flight. Results are as follows:

No Effect. The rolled result of the SAM attack is allowed to stand.

Miss. The attack is negated by the flight's defensive tactics. The SAM attack misses regardless of whether the DRV player rolled a hit.

Avoidance. The SAM attack misses and the target flight must perform a SAM avoidance maneuver [15.43]. Aircraft noted as having Poor SAM Defense treat this result as No Effect.

If the result of the attack is a hit and this is not negated by the SAM defense roll, roll one die on the SAM Damage Table, using the column for a Full or Partial target acquisition, as appropriate. Apply the results to the target flight as indicated.

After resolving the attack, mark the SAM battalion with a SAM Launch marker [15.3]. The target flight may continue movement, if it has MP remaining.

The DRV player may choose to fire a 'salvo' of SAMs, to obtain an improved modifier. This uses more ammo [15.44].

15.43 SAM Avoidance

DESIGN NOTE: A carefully timed roll and dive, sometimes called an orthogonal roll, is an effective last-ditch maneuver against incoming SAMs.

If the flight must perform a SAM avoidance maneuver, consult the SAM Avoidance Chart. Turn and move the flight into any of the indicated hexes, as if conducting regular movement, and descend one altitude band (do not descend if on the deck).

The SAM avoidance maneuver uses up one MP. If the flight has no more MP remaining, place a SAM Avoidance marker. In its next Movement Phase it costs the flight one MP to remove the marker, expended as its first MP of the Phase.

Flights that perform a SAM avoidance maneuver must jettison all non-ARM ordnance. They cannot initiate air-to-air combat or make air-to-ground attacks during that Movement Phase.

15.44 SAM Ammo

DESIGN NOTE: A standard SAM attack represents the launch of two missiles. A salvo is three or four missiles.

SAM battalions have three shots. Each regular attack uses up one shot. Salvoes [15.42] use two shots. A battalion that has fired all three shots is depleted. Depleted battalions may not fire for the remainder of the raid.

15.5 Advanced SAM Rules

15.51 Lock-On After Launch

DESIGN NOTE: In order to limit the amount of time their radars are switched on because of the ARM threat, the DRV sometimes resorts to desperation tactics, launching missiles before the radar switches on and hoping to acquire the target while the missile is in flight.

From 1967 onward SAM battalions may perform Lock On After Launch (LOAL) attacks. Only SAM units with their radar off make LOAL attacks and the target must be detected. No acquisition is required prior to the attack, though all other prerequisites apply.

Declare the LOAL attack and switch the SAM radar on. Then roll to acquire the target, applying the Lock On After Launch modifier. If the result is no acquisition, the attack fails. Otherwise mark the target with an acquisition marker and resolve the attack as normal. Regardless of the acquisition's success, the attack always expends one shot of ammo (two if a salvo [15.42] is declared) and results in the placement of a SAM Launch counter.

15.52 High Altitude Targets

For the purposes of attack rolls and burn-through [19.22] add 1 to the distance in hexes from the SAM to the target if that target is at High altitude.

EXAMPLE: A B-52 flight at high altitude is adjacent to a SAM battalion's hex. Normally, the SAM is not permitted to attack an adjacent target, but adding one to the distance for altitude puts the B-52s two hexes away. They can now be attacked.

16 Air-to-Ground Ordnance

US flights carry ordnance to attack ground targets.

16.1 Ordnance

US flights tasked with Bombing, Strike/CAP, SEAD, Armed Escort and Rescue Support carry air-to-ground ordnance. Flights tasked with Chaff Laying carry chaff bombs or chaff dispensers.

16.11 Ordnance Types

There are several types of ordnance, some of which are only available via SSR. Ordnance types are as follows:

- **Bombs:** This is the default ordnance type. If no ordnance is specified by the scenario or order of battle, flights are assumed to carry bombs. CBUs [17.61] and rockets (see USN ADC note [j]) are a variant of bombs.
- **Chaff Bomb:** Chaff Bombs [19.41].
- **Chaff Disp:** Chaff Dispensers [19.41].
- **LGB:** Laser Guided Bombs [17.36].
- **EOGB:** Glide Bombs [17.37]. Available in two types: Walleye I (available from January 1967 on), and Walleye II (from January 1972 on).
- **Shrike:** Shrike Anti-Radiation Missile (available from April 1966 on).
- **Standard:** Standard Anti-Radiation Missile. Available in two

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types: Standard A (available March 1968 on) and Standard B (from April 1968 on).

Flights usually carry only one type of ordnance. Aircraft are permitted to carry multiple types of ordnance simultaneously, but only as noted on the ADC. In addition to the listed ordnance, flights may make strafing attacks using their air-to-air gun weapons.

16.12 Bomb Ammunition

DESIGN NOTE: The term 'bombs' actually represents a wide range of unguided 'dumb' munitions, including rockets. Some primitive guided munitions, such as the Bullpup missile, are also rated as bombs.

Bomb ordnance loads are expressed as an attack strength, which is listed on the ADC. When making an attack, the flight may expend some or all of the attack strength in increments of whole or half strength points. When it makes an attack, the expended points are subtracted from the flight's strength. A flight may never exceed its current bomb strength in an attack.

EXAMPLE: A flight with bomb strength 2.5 makes an attack. It attacks and uses 1.5 strength points in the attack. This leaves the flight with 1 point of strength remaining.

16.13 Strafing Ammunition

Flights that are strafing roll for depletion as if the flight had just been in air-to-air combat (do not modify the roll). A successful roll depletes the gun and not any other weapons.

16.14 PGM Ammunition

DESIGN NOTE: Precision Guided Munitions (or PGM) have had a profound impact on warfare, as they are able to achieve great levels of accuracy. A PGM 'shot' represents a single bomb or missile.

LGB, EOGB, Shrike and Standard ordnance are listed on the ADC as having a number of 'shots' (in parentheses). The flight starts with a number of shots equal to the ADC value, multiplied by the number of aircraft in the flight. Note the number of shots on the flight log.

Each shot represents one attack die roll. When a flight makes an attack it may expend any number of shots, which must be announced before the attack is rolled. Each shot is resolved separately. When all of a flight's shots are expended, it may not make any more attacks with that ordnance.

A flight may never have more shots than the ADC value multiplied by the number of currently undamaged aircraft. If the remaining number of shots exceeds this value, reduce them to the maximum permissible.

EXAMPLE: A flight has an ADC value of two Shrike shots. There are two aircraft in the flight so it starts with a total of four Shrike shots. The flight shoots one Shrike shot during play, leaving three remaining, and then takes damage to one of the aircraft. The remaining number of shots is reduced to two: the maximum the flight is now allowed.

16.2 Carrying Ordnance

16.21 Clean and Laden Status

DESIGN NOTE: An aircraft performs best when it is 'clean' — i.e., not weighed down with bombs or other ordnance. Laden aircraft have their performance reduced due to weight and aerodynamic drag.

Flights carrying air-to-ground ordnance are classed as laden until all ordnance is jettisoned or expended, at which point they become clean. Laden flights use laden Movement Point and Maneuver values. As soon as flights jettison or expend all their ordnance, they use the clean values [see 6.2].

DESIGN NOTE: Shrike is a lightweight missile with little drag.

Flights carrying Shrike and no other ordnance are treated as clean.

16.22 Carriage Limits

DESIGN NOTE: Bombs cannot be carried at speeds faster than their carriage limits or the weapons will malfunction.

If a flight laden with bombs, LGB, EOGB or chaff bombs exceeds a speed of four MP in a movement phase, that ordnance is rendered useless and cannot be used (though it can still be jettisoned).

16.23 Jettisoning Ordnance

At any time during movement ordnance may be jettisoned. Ordnance may also be jettisoned prior to air-to-air combat [11.25]. SAM avoidance maneuvers [15.43] and the results of morale checks [13.1] require flights to jettison.

ARM weapons are never jettisoned unless the US player does so voluntarily.

EXAMPLE: An A-4 flight is carrying bombs and Shrike. The flight is forced to jettison as a result of a morale check. The bombs are jettisoned, but the Shrikes are not.

17 Air-to-Ground Attacks

DESIGN NOTE: The US player's primary task in the game is to destroy targets on the ground. There are many methods of air-to-ground attack, which depend on the ordnance carried and the attacking aircraft's capabilities.

17.1 Attacks

Non-disordered US flights can attack ground targets during the Movement Phase. A flight may only attack once per game turn and may not attack more than one target. A flight that declared Anti-Radar Tactics or performed a SAM Avoidance maneuver earlier that turn cannot make air-to-ground attacks [15.35, 15.43].

17.11 Tasking Restrictions

A flight tasked with Bombing may attack any targets in the raid's target hex. It may also attack AAA, Fire Can and located SAM battalions in the same or adjacent hex to the target. It may not attack any other targets.

Units tasked with SEAD may attack any AAA, Fire Can or SAM battalion on the map.

Flights tasked with Rescue Support may attack any NVA unit, AAA, Fire Can or SAM battalion on the map.

17.12 Ordnance Restrictions

Flights must have ordnance of the correct type to launch an air-to-ground attack. Bombs may be used against any target. LGB and EOGB may only be used against the raid target. ARMs may only be used against SAM battalions and Fire Can.

Flights carrying ordnance cannot make strafing attacks. Flights with guns but no ordnance may conduct strafing attacks against any target

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with a profile of C or D [17.38]. The 'no ordnance' restriction does not apply to flights on Rescue Support tasks; such flights may strafe while carrying unexpended ordnance.

17.13 Target Profiles

Ground targets are rated by their target profile, as described in the scenario. Target profiles are a measure of the target's vulnerability to attack and range from D (most vulnerable) to A (least vulnerable). Target profiles modify attack rolls.

17.2 Bomb Runs

To attack, the flight must first complete a bomb run. The flight starts its bomb run at an Initial Point (or IP), which can be any hex on the map. Announce the bomb run is starting, then from the IP move the flight directly toward the target hex *without turning*. When the flight reaches the target hex, and after all flak/SAM attacks have been resolved, the attack takes place.

The attack usually takes place within the target's hex, but some ordnance types permit attacks from one or more hexes away. Once the attack has been executed the flight finishes its remaining movement. Free turns are not permitted directly after an attack (i.e. before another MP is expended).

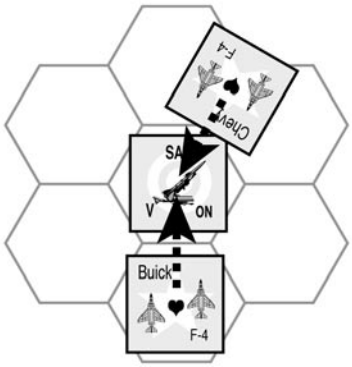

Illustration: Two Phantom flights are attacking a SAM site. Both are using dive bombing profiles and are at their Initial Point, which is one hex from the target. They must enter the target hex to execute the attack.

17.3 Attack Profiles

There are many different attack profiles, based on the type of ordnance and other conditions. The attack profile specifies the conditions to be met to make the attack. If any of these conditions aren't met no attack is allowed.

Attack profiles are defined as visual bombing or blind bombing. Visual bombing attacks require a line of sight to the target [22.1] throughout a bomb run. Blind bombing attacks do not require a line of sight.

17.31 Dive Bombing Profile

DESIGN NOTE: Dive bombing is the most common form of visual bombing attack. Unless the flight dives during its bomb run, the diving is assumed to take place within the flight's altitude band.

Use bomb ordnance. Visual bombing attack. IP one hex from target. The flight must be at Low altitude or higher. No climbing permitted during an attack. The attacker may announce they are 'pressing' an attack, which gives a bonus attack modifier. However, the defender gets an additional flak barrage attack just before the bombing attack [14.3].

17.32 Level Bombing Profile

Use bomb ordnance. Visual bombing attack. IP one hex from target. No climb or dive permitted during the attack. Apply the level bombing modifier.

17.33 Radar Bombing Profile

DESIGN NOTE: Flights can attack targets using their radar to aim. Only a handful of aircraft, such as the A-6, F-111 and B-52 are truly effective at this technique.

Radar Bombing Capability required. Use bomb ordnance. Blind bombing attack. IP is two hexes from target. No climb or dive permitted during the attack. Apply the radar bombing modifier.

17.34 Toss Bombing Profile

DESIGN NOTE: To toss-bomb the bombs are hurled at high speed in a climb from a distance (usually outside the range of flak). The climb is assumed to take place within the altitude band. Toss bombing is not very accurate.

Radar Bombing Capability required. Use bomb ordnance. Blind bombing attack. IP is four hexes from target. The target is attacked from two hexes away. The flight must have declared it is moving at a speed of four MP or more. No climb or dive permitted during the attack. Expend one MP to make the attack. Apply the toss bombing modifier.

17.35 Radio Nav Bombing Profile

DESIGN NOTE: The US can use radio-navigation aids such as Combat Skyspot and LORAN to bomb through the clouds. However, this technique has very poor accuracy.

Radio Nav Bombing Capability required. Use bomb ordnance. Blind bombing attack. IP is four hexes from target. The flight must be at Medium altitude or higher. No climb or dive is permitted during the attack. Apply the Radio Nav Bombing modifier.

17.36 LGB Profile

DESIGN NOTE: Laser Guided Bombs follow a laser beam down to the target. The beam and the bombs can be defeated by bad weather or dust kicked up from earlier attacks.

Use LGB ordnance. Visual bombing attack. IP one hex from target. No climbing is permitted during the attack. Attacks are not permitted from the High altitude band. No attacks are permitted where the line of sight passes through a cloud layer, or when the target is in mist.

17.37 EOGB Profile

DESIGN NOTE: Electro Optical Guided Bombs home in on a TV image of a target. Poor image contrast due to weather or dust can confuse the bomb guidance.

Use EOGB ordnance. Visual bombing attack. IP three hexes from target, but target must be attacked from one or two hexes away. Attacks are not permitted from the High altitude band. No attacks are permitted where the line of sight passes through a cloud layer, or when the target is in mist.

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17.38 Strafing Profile

DESIGN NOTE: If all else fails aircraft can simply shoot targets with their cannons.

No ordnance required, but flight must have a gun weapon. Visual bombing attack. IP one hex from target. Must attack on the deck at combat throttle. No climbing permitted during attack. Only targets with profile C or D may be attacked.

17.39 Shrike/Standard

See Anti-Radiation Missile rules [17.5].

17.4 Resolving Attacks

Resolve attacks as follows.

17.41 Calculate Attack Column

First find the column the flight uses on the Air-To-Ground Attack Table. Flights with bomb ordnance take the declared bomb strength expended and multiply it by the number of undamaged aircraft in the flight to find the attack value. Use the highest numbered column that is equal to or less than the attack value.

EXAMPLE: A flight of four F-105D has a single aircraft damaged. The flight attacks a ground target, declaring 2 points of bomb strength. The attack value is 2 (bomb strength) multiplied by 3 (number of undamaged aircraft) for a result of 6. The attack uses the 6 column of the attack table.

Strafing flights calculate the column as for flights with bomb ordnance. However, the bomb strength for a strafing attack is 0.5 per aircraft.

LGB and EOGB [17.36, 17.37] use the PGM column of the table. Shrike and Standard ordnance [17.5] use the ARM column.

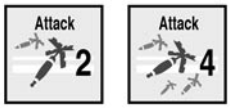
17.42 Attack Roll

Roll two dice and modify the roll as indicated. Look up the result on the attack column of the Air-to-Ground Attack Table.

The flak modifier [14.32] applied to the attack is the largest one that applied in any hex or altitude band flown through on the bomb run. Do not apply flak modifiers to blind bombing attacks.

LGB, EOGB and ARMs apply only the modifiers listed for those ordnance types. PGMs roll once for each shot declared [16.14].

EXAMPLE: LGB apply only LGB modifiers, not any regular bombing modifiers. The expenditure of two LGB shots results in two attack rolls.



The result is an attack success value from 0 to 4. If the success is 1 or better, place a marker equal to the attack success on the target hex. If more than one attack is made on the target, place a separate marker for each attack.

Roll for damage resolution at the appropriate time [see 18.1].

DESIGN NOTE: Success numbers represent the US pilots' perception of how well the attack has gone. A low success means no effects are seen after the attack. A high success means secondary explosions or debris are seen. The actual damage is not known until after the raid.

17.5 Anti-Radiation Missiles

DESIGN NOTE: Anti-Radiation Missiles home in on radar transmissions and knock out enemy radars. They are the principal weapon in the battle against SAM and Fire Can units.

Anti-Radiation Missiles (ARMs) may be used to attack Fire Can units or SAM battalions that have their radars switched on. ARMs may not be used against any other type of target.

17.51 ARM Types

Anti-Radiation Missiles come in three types: Shrike, Standard A and Standard B. Some aircraft may carry Shrike and Standard ARMs together. However, aircraft cannot carry both Standard A and B. They carry either one type or the other.

17.52 ARM Launches

ARMs have a maximum range, which varies with delivery method and altitude. They may be launched at any distance from the target from one hex away up to their maximum range. A flight may only launch one ARM type each game turn, though it may launch multiple shots of that ARM type against the same target.

When an ARM is launched, the US player indicates the launching flight and the number of shots, but not the target or ARM type. The US player notes the target on a piece of scrap paper and keeps this information secret until after the DRV player has declared which unit(s) will voluntarily shut down their radars [17.53]. Only then is the target noted on the paper revealed and the attack resolved.

ARM launches are blind bombing attacks. There is no IP for an ARM bomb run. Instead the flight may fire after expending any MP provided the target is in a launch arc designated in the weapon description. The ARM is then launched.

ARMs may be lofted to extend their maximum range. Expend an additional MP in the launch hex without moving to execute a lofted attack. For all ARM types, lofts are not permitted closer than 4 hexes from the target.

17.53 Radar Shut-downs

DESIGN NOTE: The easiest way to defeat ARMs is to simply turn the radar off, denying the missiles a target. However, this puts them off-air, conceding the skies to the US.

ARMs may only be launched at targets that have their radar switched on. (Exception: Pre-emptive ARM launches [17.58].) They may not be used against switched-off targets.

The DRV player may shut down SAM and Fire Can radars the moment an ARM weapon is launched (the ARM does not have to be targeted at the unit) provided the launching flight is detected. The radar is switched off and the unit flipped to its 'radar off' side. If the DRV player does not voluntarily switch off the targeted radar, roll an ARM Morale Check immediately after the target is declared to see if the radar crew detect the launch and shut down in time. Roll one die. If the roll is equal to or less than 5, the radar shuts down. Add 3 to the roll if the launching flight is undetected.

Roll an ARM Morale Check for each ARM launched at the target. If a radar shuts down, mark it with a shut down counter. All Shrike and Standard A ARM attacks against the radar immediately fail. Do not roll an attack on the target, though the ordnance is expended. Standard B ARMs roll for an attack but must apply the shut down radar modifier.

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Radars that shut down voluntarily or because of an ARM Morale Check switch back on in the Admin Phase. Roll a die. On a result of 8 or greater the radar switches on, otherwise it remains off. Roll each Admin Phase until it switches back on.

17.54 Shrike

DESIGN NOTE: The first ARM deployed in Vietnam, the Shrike is effective at scaring radar operators off the air. However, its tiny warhead rarely causes major damage.

The launch arc for a Shrike is the flight's forward arc. Maximum range is one hex. However, if the attack is made from Medium altitude or higher, the range is increased to two. A lofted Shrike attack increases the range to five hexes.

Damage caused by Shrike attacks is reduced [18.2]. From August 1966 Shrikes have phosphorus target markers [17.57].

17.55 Standard A

DESIGN NOTE: The Standard is a missile with a warhead big enough to wreck a radar. The Standard A is an early version using the Shrike's radar seeker.

The launch arc for a Standard A is the flight's forward arc. Maximum range is 10 hexes. A lofted Standard attack increases the range to 15 hexes.

17.56 Standard B

DESIGN NOTE: The Standard B has an improved and more accurate seeker. It also has the ability to 'remember' where a shutdown radar is, giving it an outside chance to hit.

The launch arc for a Standard B is the flight's forward hemisphere. Maximum range is 10 hexes. A lofted Standard attack increases the range to 15 hexes. Standard B may continue to attack after a radar shuts down [17.53] and has a phosphorus target marker [17.57].

17.57 Phosphorus Target Markers

DESIGN NOTE: Phosphorus markers indicate a SAM site for follow-up attacks.

Shrike and Standard B ARMs have phosphorus target markers. If the weapon achieves an attack success of 2 or better against a SAM target, it is automatically located. Replace the SAM Warning counter with the unit counter matching its ID [15.12].

17.58 Pre-emptive ARM Launches

Only USN units may conduct pre-emptive ARM launches.

ARMs may be launched pre-emptively at SAM battalions whose radars are turned off. Pre-emptive launches must use loft delivery. Pre-emptive ARMs do not resolve the attack until the SAM Acquisition Phase. An attack is resolved only if the target SAM battalion switches its radar on. If the target does not switch on its radar, it is not attacked and the ordnance is expended for no effect.

A SAM battalion that comes under attack from a pre-emptive ARM must roll an ARM Morale Check [17.53] before the attack is resolved. If more than one SAM battalion is eligible to be attacked by the pre-emptive method, the US player does not have to announce the target, but can 'fake out' the DRV player. Secretly note the ARM target on a piece of paper. Only reveal the target when it is attacked.

The unlocated target modifier applies to pre-emptive attacks regardless of whether or not the target was located. PAT-ARM may not be used for pre-emptive attacks.

17.59 PAT-ARM

DESIGN NOTE: The A-6B is equipped with PAT-ARM (Passive Angle Tracking via ARM), a system that can triangulate on a radar's location using a Standard missile seeker head.

A-6B aircraft equipped with PAT-ARM capability gain modifiers to attack SAM units with ARM. To use PAT-ARM, the flight must have one or more shots of Standard ordnance remaining. The unlocated SAM modifier does not apply to ARM attacks made using PAT-ARM.

17.6 Advanced Bombing Rules

17.61 Cluster Bomb Units

DESIGN NOTE: Cluster bombs, capable of spreading hundreds of tiny bomblets far and wide, are the weapon of choice against 'soft' targets such as AAA and radar units.

Prior to play, a flight carrying bomb ordnance may exchange bombs for Cluster Bomb Units (CBU) if permitted by the order of battle tables or SSRs. Note CBUs on the flight log.

CBUs are treated as normal bombs. However, the bomb strength of CBUs is doubled versus AAA, SAM Battalion, Fire Can, NVA units and aircraft on the ground. The strength is halved versus all other targets.

17.62 Pathfinders

A unit conducting a radar bombing attack [17.33] or radio nav attack [17.35] may be designated a Pathfinder unit by SSR. A pathfinder unit may lead any number of flights of aircraft on a radio navigation or radar bombing attack provided they are in close formation with it. The other flights do not require navigation or radar bombing capability—the pathfinder grants them that capability for the mission. All flights also receive the pathfinder's bombsight modifier for the attack.

17.63 Flak Suppression

Flights attacking AAA concentrations with bombs (or CBUs) may split their attack value in any way the attacker wishes between the AAA concentration and any Fire Can units in the hex. Roll the attacks and determine damage results separately.

EXAMPLE: An F-105D flight with four aircraft attacks a Medium AAA concentration that shares the hex with two Fire Cans. The total attack value is 8. This is split so that 4 points are used against the AAA and 4 against one of the Fire Cans. An alternative scheme would be to use 4 against the AAA and 2 against each of the Fire Cans.

18 Ground Target Damage

Resolve damage against ground targets as follows.

18.1 Damage Rolls

Damage resolution for a target is rolled in the following circumstances:

a. If the success level was 0, roll immediately for any potential collateral damage [18.3].

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b. Roll immediately for damage to AAA concentrations, Fire Can units, SAM battalions and NVA units.

c. For all other targets roll damage resolution in the Bomb Damage Assessment Phase at the end of the raid, after all recon tasks have been completed. In campaigns only roll in the Campaign BDA Phase for those targets that have been photo-reconnoitered for BDA [24, 28.35].

18.2 Resolving Damage

To resolve damage roll two dice for each success marker and cross-reference with the column of the Damage Table corresponding to the attack's success value. The result is listed as follows:

NE: No effect: No effect to target.

S: Slight Damage: Target is slightly damaged. NVA units are suppressed. Fire Can units and SAM Battalions are damaged and immediately shut their radar down for the remainder of the raid. AAA concentrations are at suppression level 1.

H: Heavy Damage: Target is heavily damaged. Fire Can units and SAM Battalions are damaged and immediately shut their radar down for the remainder of the raid. One NVA unit in the hex is destroyed. AAA concentrations are at suppression level 2.

T: Total Destruction: Target is destroyed. SAM Battalions and Fire Can units are destroyed. All NVA units in the hex are destroyed. AAA concentrations are at suppression level 3.

Damage is *not* cumulative. The target is affected only by the highest damage level applied.

Shrike ARMs reduce their damage result by one level, so Slight Damage has no effect, Heavy Damage is counted as Slight and Total Destruction is treated as Heavy Damage.

18.21 AAA Suppression Levels

Suppressed AAA concentrations are marked with a counter equal to the suppression level and add penalty modifiers to their rolls on the Flak Damage Table. Each level of suppression reduces the parenthesized flak modifier on the AAA Table by 1 (toward 0) [14.32].

Suppressed AAA concentrations roll a die in each Admin Phase (including the game turn in which suppression was placed on the target). On a roll of 8 or greater, the suppression counter is removed, regardless of suppression level.

18.22 Bridge Spans

Bridges have a number of spans listed. Each span is a separate part of the bridge target.

When attacking bridge targets, assign attacks to spans. More than one attack may be assigned to each span. Assess damage on each span separately. Victory conditions are assessed on the number of spans affected [27.81].

18.3 Collateral Damage

If the damage result is asterisked AND the target is in an urban hex, then collateral damage has occurred. If the damage result is double-asterisked, collateral damage applies regardless of the hex type. Place a collateral damage marker on the hex. The DRV player gains victory points for collateral damage [27.82].

19 Electronic Countermeasures

DESIGN NOTE: As the DRV deploys increasing numbers of SAMs and radar-directed flak against the American raids, jamming equipment becomes essential protection against anti-aircraft attack. Standoff jamming aircraft broadcast powerful beams to overwhelm enemy radars, while defensive jammers are fitted to aircraft as under-wing pods and other electronic 'black boxes' to deceive or blank out radars.

Electronic countermeasures (termed 'jamming') affect Fire Can and SAM attacks.

19.1 Jamming Strengths

There are two types of jamming: standoff jamming and defensive jamming. These generate a jamming strength value. Jamming strengths are applied to acquisition and combat die rolls as modifiers.

19.2 Defensive Jammers

DESIGN NOTE: Defensive jamming equipment begins to appear in large numbers in 1966. The Navy uses deception jammers - tactically, a more flexible system than the Air Force's noise jamming systems. However, noise jammers permit use of jamming cell tactics to defeat enemy radars.

Aircraft may carry defensive jammers, as noted on the ADC. Defensive jammers are listed as noise or deception jammers.

Defensive jammers have a jamming strength. The jamming strength is applied as a modifier to Fire Can attacks and SAM acquisition rolls against the flight. The strength value applies regardless of the number of aircraft in the flight.

EXAMPLE: An A-7 flight with four aircraft has a jamming strength of 3. The strength is still 3 even if the flight is reduced to two aircraft.

19.21 Loss of Jamming

A flight's defensive jamming is temporarily lost in certain circumstances.

a. Whenever a flight turns more than its free turn allowance in a hex in a Movement Phase. The jamming loss occurs immediately after the flight has turned and lasts until the flight expends its next MP.

b. While the flight is marked with a Maneuver marker.

c. The flight declared Anti-Radar Tactics [15.35] that turn.

A flight that loses jamming has a defensive jamming strength of zero. It has NO defensive jamming capability for the purposes of SAM defense. Jamming is regained when the loss conditions no longer apply.

19.22 SAM Burn-through

DESIGN NOTE: At close range defensive jammers can no longer defeat the radar's broadcast signal. This is known as the 'burn-through' range.

Against SAM units only (not Fire Can), a flight's defensive jamming is lost if it is within burn-through range of the SAM. The burn-through range is 0–4 hexes against large aircraft targets and 0–2 hexes against all other air units.

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Decrease the burn-through range by 1 if the target is in a jamming cell formation [19.53].

Burn-through does not affect beacon jamming [19.54].

19.3 Standoff Jamming

A scenario may allocate the US player a number of standoff jamming flights organized into jamming missions. The US player must decide whether to deploy these missions on-map or off-map.

Each jamming flight has an associated standoff jamming marker. Standoff jamming markers are placed on the map with their arrows pointed toward a hex corner or hexside. Jamming extends out in a 60 degree arc in the direction indicated by the arrow.

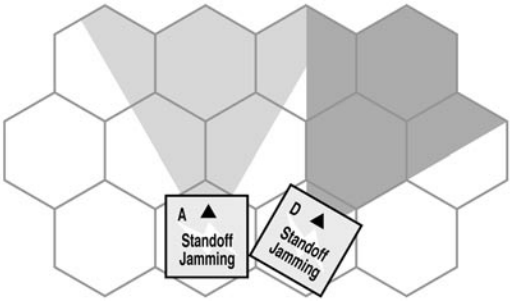

Illustration: Standoff jamming markers radiating jammer arcs toward a hex corner and hex side.

19.31 Standoff Jamming Strengths

DESIGN NOTE: Standoff jamming is most effective when jamming directly into the radar's beam. When the radar is pointed away from the jammer, the resulting 'side-lobe' jamming is less productive.

Each jamming marker has a standoff jamming strength. Standoff jamming strength affects Fire Can attacks, SAM acquisition rolls and SAM attacks made by ground units in the jammer arc. It does not affect attacks and rolls outside this arc.

Standoff jamming strengths vary with the range and are listed on the ADC. Count the range from the jamming marker to the Fire Can or SAM battalion. Multiply the strength by the number of undamaged aircraft in the jamming flight.

At the moment of a Fire Can attack, SAM acquisition attempt or SAM attack, the DRV player should define a 60 degree arc on the map, projected by the Fire Can or SAM battalion. The target's hex must be in this arc (select a hex in the case of targets on hexsides [6.12]). The projected arc must totally encompass the target's hex—the target cannot be in a hex partially covered by the arc. If standoff jamming markers are also in the projected arc, their jamming strength affects the radar at full strength, otherwise they affect it at half strength.

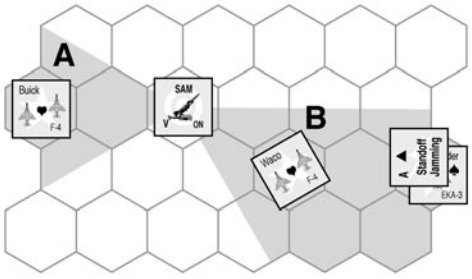

Illustration: A SAM attempts to acquire flight A. The standoff jammer is not in the radar's arc (shaded) so affects it at half strength. If the SAM tries to acquire flight B, the standoff jammer is in the arc and so contributes its full strength.

Total the strength of all standoff jammers that can affect the radar then round fractions to the nearest whole value (0.5 results round up).

EXAMPLE: an EB-66E flight with one aircraft affects a SAM battalion making an attack. It is at range 10 and is in the radar arc. The jamming strength value is 1. If the EB-66 is not in the SAM's arc, the total is 0.5 rounded up to 1.

19.32 On-Map Standoff Jamming

Jamming-capable flights may enter on-map in jamming missions. The standoff jamming marker is placed on the jamming flight's counter in the Jamming Phase and can be pointed in any direction. The marker moves with the flight. Do not change the direction the marker is pointed as the flight moves.

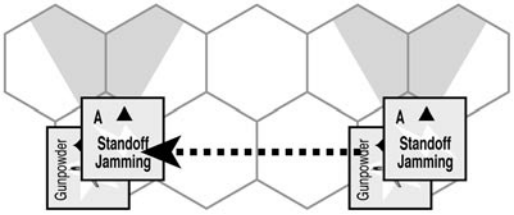

Illustration: A standoff jamming marker is placed on a jamming flight in the Jamming Phase, pointing abeam. In the Movement Phase the flight moves three hexes but the jamming marker does not change its orientation.

If the jamming flight is on or moves onto a hexside, place the marker in one of the hexes either side of the flight.

Flights must be at High altitude to place standoff jamming markers. If the flight turns during movement remove the jamming counter immediately. It cannot be placed again until the next Jamming Phase.

If the flight is at medium or lower altitude, marked with a maneuver marker or damaged/crippled/shot down, also remove the jamming counter. Such flights cannot place jamming counters in the next Jamming Phase.

19.33 Off-Map Standoff Jamming

If a jamming mission is off-map, no flights from that mission are entered. Instead, each standoff jamming counter may be placed on any eligible map edge in the first Jamming Phase of the raid. Eligible map edges are any map edge hex within 5 hexes of an entry arrow.

In subsequent Jamming Phases, each standoff jamming marker may be moved one hex along the map edge, and/or have its facing changed by 60 degrees. However, no marker may move onto a non-eligible map edge hex.

19.34 Spot Jamming

Jamming flights with spot jamming capability may place a spot jamming marker on any SAM or Fire Can unit with its radar switched on in the flight's standoff jamming arc in the Jamming Phase. The standoff jammer's strength against that unit is doubled for the game turn.

Each jamming flight places only one spot jamming marker. Remove all spot jamming markers in the Admin Phase. Spot jamming does

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not prevent the jamming flight's standoff jamming from affecting other radars.

19.4 Chaff Corridors

DESIGN NOTE: Chaff is the name for strips of radar-reflecting material. When dropped in great quantities they are capable of masking aircraft. The US can lay down airborne corridors of chaff many miles long to protect their flights.

A chaff corridor exists in a hex at a specified altitude band (the corridor should have an altitude marker next to it to note the band). Chaff corridors affect tracking [10.3], Fire Can [14.43], SAM acquisition [15.32] and SAM attacks [15.42] against flights that occupy the corridor hex at the same altitude band.

19.41 Chaff Laying

Flights with a chaff-laying task may create chaff corridors. Only non-disordered flights comprising 3 or more aircraft and carrying chaff bomb or chaff dispenser ordnance may lay chaff corridors. Declare the laying of a chaff corridor at any point during movement. Place an unbloomed chaff counter in the hex and note the altitude band. The chaff is placed in the same altitude band as the chaff laying flight. Chaff may only be placed in Medium or High altitude bands.

After declaring that laying has commenced, the flight places chaff in each hex it enters. Chaff placed on a hexside affects both hexes that share the hexside. If the flight stops laying chaff for any reason or is otherwise interrupted by combat, it may not lay any more chaff for the remainder of the raid.

Unbloomed chaff counters have no effect on play. The chaff counters stay on their unbloomed side until ten game turns after they are placed. Then in the tenth Admin Phase after placement they are flipped to their chaff corridor side and have full effect thereafter. Chaff counters are removed from the map 25 game turns after laying.

Flights with chaff bombs may place 16 chaff counters. Flights with chaff dispensers may place 52 chaff counters.

If there is a shortage of chaff counters, place them instead at intermittent points on the chaff layer's flight path. The arrow on the counter can be used to point at the next counter on the path. All hexes on the line between the counters are assumed to contain chaff counters.

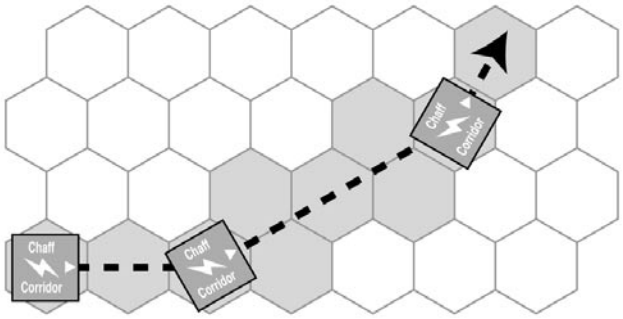

Illustration: The dashed line represents the path flown by the chaff laying flight. The chaff counters are placed at the turn points on the path. All shaded hexes are affected by chaff.

19.5 Advanced Jamming Rules

19.51 Noise Jamming

DESIGN NOTE: Noise jamming is only effective against SAMs when aircraft fly a tight 'jamming pod' formation. Casualties and hard maneuvers degrade the jamming.

Flights with defensive noise jamming capability lose their jamming against SAM units (not Fire Can) when any of the following apply:

a. The flight comprises less than three aircraft.

b. The flight is at deck altitude.

c. The flight performed a SAM Avoidance Maneuver that turn.

d. The flight is making a bombing run for a dive bombing attack. The penalty applies from the moment the bombing run is declared to the moment the attack is resolved.

e. The flight is disordered.

19.52 Large Aircraft Noise Jamming

Large aircraft with noise jamming capability lose their jamming when they turn greater than 30 degrees in a hex. The jamming loss occurs immediately after the flight has turned and lasts until the flight expends its next MP.

19.53 Jamming Cell Formation

DESIGN NOTE: The jamming cell enhances USAF noise jamming but at the price of forcing flights into close, vulnerable, formations.

A jamming cell formation is a form of close formation [7.2] designed to enhance jamming effects against SAMs [15.42]. Flights in a jamming cell use the Jamming Cell column of the SAM Defense Table. A jamming cell comprises four or more USAF flights with defensive noise jamming capability. Each flight must not have lost jamming and must be in close formation. Benefits of the jamming cell formation are lost if the number of eligible flights in formation drops to fewer than four, or close formation is lost.

19.54 Beacon Jamming

DESIGN NOTE: From late 1967 the USAF starts jamming the guidance frequencies—or 'beacons'—of the SAM units.

From December 1967 to the end of the war, USAF units with defensive noise jamming capability can claim the beacon jamming modifier to their SAM defense roll.

The beacon jamming modifier may be claimed even if jamming is lost [19.21, 19.51] or the flight is within burn-through range of the SAM [19.22].

19.55 Burn-through Limits

DESIGN NOTE: At the limits of burn-through range, burn-through is dependant on factors such as target aspect. The SAM radar does not always get through the jamming.

At the limits of burn-through range [19.22] (normally 2 or 4 hexes, though this can be reduced by jamming cell formations) the SAM must roll one die to claim burn-through benefits. On a 1-5 the target retains defensive jamming. On a 6-10 the radar burns through and the target's jamming is lost as normal.

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20 Fuel

Because high-speed flight consumes large amounts of fuel, flights are permitted a limited number of turns at dash throttle.

20.1 Fuel Allowance

DESIGN NOTE: The fuel point totals are the fuel reserve allowed over the combat zone. Each fuel point represents one minute of flight at maximum power.

Flights have a limited allowance of game turns they are allowed to spend at dash throttle. This number of turns is equal to the Fuel point value on the ADC. Flights may exceed this allowance during a raid, but if they do so they receive a penalty to their chances of recovering at a friendly airfield.

If the flight travels at dash throttle in a game turn or engages in air-to-air combat, note that it has used one point of fuel on the flight log in the Fuel Phase. Flights never consume more than one point of fuel per game turn, even if they conduct air-to-air combat and fly at dash throttle.

20.2 Recovery Rolls

DESIGN NOTE: Damaged and fuel-low aircraft didn't always make it home. Great efforts were made to get fuel-hungry planes to airborne tankers or nurse cripples back to base.

If a flight exits the map, lands at an airfield or the scenario ends while it is still on the map, it must roll for recovery if:

a. The flight's fuel allowance has been exceeded.

b. A US flight exits the map further than 5 hexes from its egress hex.

c. The flight has damaged or crippled aircraft. (In this instance roll only for the damaged/crippled aircraft, unless a. or b. above also apply.)

Rolls take place in the Fuel Phase that the flight exits or lands, or in the Recovery Phase if it ends the scenario on the map.

Roll two dice for each aircraft (not flight). If the roll is 2 or greater the aircraft recovers (lands) safely at a friendly airfield, otherwise it is lost. Modify the roll as follows:

–3 per point of fuel limit exceeded.
–2 the aircraft is damaged.
–7 the aircraft is crippled.
–1 per full or fraction of 5 hexes the flight's exit hex is away from its planned egress hex.

20.3 DRV Fuel

DRV flights roll for recovery like US flights, but only apply modifiers for exceeding the fuel limit and damaged/crippled state.

DRV units that start in flight expend two fuel points before play begins [27.63].

21 Random Events

In the Random Events Phase of each game turn (except the first turn of a raid scenario), roll two dice and look up the resulting event on the Scenario Random Events Table. Follow the instructions there. There may be no more than one random event per game turn.

22 Weather

DESIGN NOTE: Weather has a profound impact on the war over Hanoi. For fully six months a year, weather makes visual bombing next to impossible, forcing the US to use blind bombing techniques that are rarely accurate.

Weather effects in the game include cloud, mist, haze and good contrast conditions. Weather conditions are listed in the scenario instructions.

22.1 Line of Sight

Many game functions rely on there being an unblocked line of sight (LOS) from one unit to another.

Draw an imaginary line from the center of the unit's hex (or hexside) to its target. If one or more hexes of dense cloud lie along the line and the cloud layer is between the unit and target's altitude, the LOS is blocked. If the intervening hexes contain a broken cloud layer and the range is greater than two hexes, the LOS is also blocked. (If the range is two or less the LOS is not blocked.) Treat ground units/targets as being on the deck for the purposes of this rule. If both units are on the deck and the line passes through a ridgeline hexside (or a hex corner touched by the ridgeline artwork), the LOS is blocked.

If the line of sight is blocked, then no visual sighting [10.21] is possible, no SAM location rolls [15.13] are allowed and no visual attack bomb runs are permitted [17.3]. Flights rolling to engage in air-to-air combat without a line of sight to the enemy must use the Night row of the Engagement Table [11.22].

22.2 Rolling For Weather

There are two weather tables: one for the Northeast Monsoon (November to April scenarios) and one for the Southwest Monsoon (May to October). In the Early Warning Phase, roll one die to determine the weather. Roll on the Clear or Poor column corresponding to the weather listed in the scenario. Apply the rolled weather to the raid.

22.3 Haze

If Haze is in effect, a haze layer extends from the deck up to the highest band indicated. Flights are in haze if they are flying at these altitude bands.

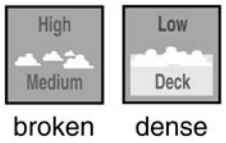
Haze affects engagement rolls and LGB/EOGB attacks.

22.4 Clouds

22.41 Cloud Layers

A cloud layer exists between two altitude bands. The altitude bands on either side of the layer define it.

EXAMPLE: A cloud layer at Deck/Low is considered to be between the Deck and Low altitude bands.



A cloud layer covers the entire map (Exception: weather fronts [22.42]). Cloud layers are listed as dense or broken cloud and have different effects on the line of sight [see 22.1].

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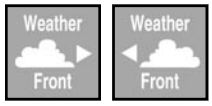
22.42 Weather Fronts



SSRs may specify weather fronts for cloud. A weather front is a row of contiguous hexes from one map edge to another. Weather front markers placed on each map edge define the front. The SSR defines which side of the weather front the cloud exists in. Cloud exists in all the hexes along the weather front and the indicated area north, south, east or west of the line. All other hexes on the map are clear of cloud.

EXAMPLE: An SSR specifies a weather front to the west of the line 0114 to 3933. Place a weather front counter in each map edge hex, the arrows pointing at each other. All hexes on and to the west of that line are cloud.

22.43 Breaks

SSRs may specify cloud breaks. The US player places a number of break counters in any cloud hexes on the map in the Early Warning Phase. Break counters are placed in hexes containing cloud layers. No break may be placed closer than two hexes from any other break counter. They project an area clear of cloud for a distance of two hexes around.

22.44 Low Cloud Base

If a flight dives or descends through a dense cloud layer at Deck/Low, roll a die for each aircraft in the flight. On a roll of 1 the aircraft impacts the ground and is eliminated (1-2 if in a rough hex). Aircraft with Terrain Following Radar (TFR) capability [23.22] do not roll for impact.

22.5 Mist

If mist conditions are in effect, there is a mist layer on the deck across all land hexes. Flights on the deck are in the mist. The rules for terrain following flight [23.22] apply to flights in the mist. No Moon conditions apply.

AAA barrages always apply the 'No LOS' modifiers in mist conditions.

22.6 Good Contrast Conditions

Good contrast conditions result in a modifier to EOGB attacks [17.37].

23 Night

DESIGN NOTE: Though US night raids take place regularly throughout the war, it is only when Linebacker II opens that a concerted, massive night bombing campaign begins.

Night conditions apply where specified by the scenario. Night limits the ability of units to fly and fight.

23.1 Night Scenarios

23.11 Moon Phase

The scenario should specify the moon phase: Full or No Moon. Any flight beneath a cloud layer is considered to be operating in No Moon conditions.

23.12 Visual Sighting

US visual sighting [10.21] cannot take place at night.

23.13 DRV MiG Purchase

The DRV may not purchase flights larger than one aircraft at night [27.21].

23.14 Visual Identification

Flights may not be visually identified at night [10.4]. Do not reveal visual ID information [4.22] to an opponent.

23.15 CSAR

CSAR [26] may not take place at night.

23.2 Night Navigation

23.21 Night Flight

Only aircraft equipped with night navigation capability may fly at night. Regardless of speed, the maximum turn value [6.32] of flights at night is 60 degrees.

23.22 Terrain Following Flight

DESIGN NOTE: Only US aircraft equipped with sophisticated radar can fly safely on the deck at night or in poor weather.

Aircraft may not fly on the deck safely at night unless they are taking off [9.43], entering a landing approach [9.44], or they have Terrain Following Radar (TFR) capability.

A flight that doesn't have TFR that finds itself on the deck must roll one die for each aircraft in the flight for the first deck hex entered via movement, SAM avoidance or scatter in the Movement Phase. On a 1 the aircraft is eliminated by a collision with the ground (1-2 if in a rough hex). Subtract 1 if No Moon conditions apply.

A flight that is landing or is in the first two turns of flight after taking off does not have to roll for ground collision.

23.3 Combat

23.31 Air-to-Air Combat

Night combat modifiers apply at night. No maneuver differential modifiers are applied to air-to-air combats.

23.32 AAA

AAA barrages always apply the 'No LOS' modifiers at night.

23.33 Bombing

Only blind bombing [17.3] is permitted at night.

24 Recon Missions

DESIGN NOTE: Knowing the result of a bombing attack is vital. Recon missions are sent in shortly after a raid to gather photos of bomb damage. Without these the theater commanders are in the dark about whether the target is destroyed or needs to be struck again.

Recon flights are used to gather Bomb Damage Assessment (BDA) information. In campaign scenarios BDA is a prerequisite for rolling for damage in the Campaign BDA Phase [18.1, 28.35].

24.1 Photo Recon Runs

To gather BDA a photo recon-capable flight must complete a recon run over the raid's target hex. The recon must take place no sooner than five game turns after the last attack on the target or it automatically fails. (This allows time for the dust to settle.)

Recon runs are conducted as bomb runs [17.2], with the differences listed below. Recon runs qualify the flight for the bombing run Flak modifier [14.31]. The flight starts its recon run at an Initial Point (or IP), which must be two hexes from the target and at deck, low

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or medium altitude band. The flight must have a line of sight to the target. The flight then moves directly into the target hex *without turning or changing altitude*.

As soon as the flight has exited the target hex, the recon run is complete. If the recon flight successfully recovers one or more recon aircraft the task is successful and BDA has been obtained, otherwise it has failed.

25 Helicopters

Helicopters perform Rescue Support tasks. Helicopter flights comprise a single rescue helicopter with a crew of 3.

All helicopters have a maneuver rating of 2. They have no weapons. They do not scatter, suffer Morale Checks, become disordered, enter formations, or have Maneuver markers placed on them. Do not track fuel for helicopters. Helicopters are classed as having Poor SAM defense.

Helicopters have a combat speed of one MP and may not dash. They may freely turn any amount prior to and after their MP expenditure. Helicopters may fly at a speed of 0 MP, in which case when they move they are treated as if they have spent 1 MP but without moving. They fly only at Low altitude band or below.

Helicopters on the deck may land or take off in any hex by expending all their MPs for the Movement Phase. Landed helicopters do not move except to take off. If a helicopter stays landed for the whole of the Movement Phase, the DRV player may conduct AAA attacks on that helicopter after all other movement in the phase is complete.

Do not plot flight paths for helicopters. Helicopters may move freely.

26 CSAR

DESIGN NOTE: The US will make considerable efforts to rescue shot down aircrew before they can be captured. However, Combat Search and Rescue (CSAR) missions into the Red River region are highly risky.

OPTIONAL RULE: The CSAR rules are optional and model Combat Search and Rescue missions. If CSAR rules are used, players must agree whether to use the simple or detailed CSAR mechanics.

Players using the simple CSAR mechanics use only rules sections 26.1 to 26.2. Players using the detailed CSAR mechanics use all rules sections except for 26.2.

CSAR does not take place in night scenarios [23.15].

26.1 Bail Outs

If a US aircraft is shot down [12.23], roll a die for each crew member. On a roll of 4 or less the crewman fails to survive, on a 5 or more he bails out and a parachute counter representing him is placed on the map. Place the counter in the same hex as the flight of the lost aircraft. If the flight is on a hexside, place the counter in the hex where the combat took place [6.12].

If the bailout roll was a 10, the crew member flew some distance before he was forced to bail out. Roll one die and move the counter a number of hexes away from the flight equal to the roll (the US player may choose where to move the counter).

The final hex occupied by the parachute counter is the hex the crew lands in. Flip the counter to its downed crew side. Helicopter crews always bail out into the hex they occupy the moment they are shot down.

It takes a number of game turns before the parachuting crew lands in the hex. Bailouts on the deck happen immediately. Bailouts from Low altitude take 2 turns. Bailouts from Medium and High altitude take 10 turns. Landings occur in the Admin Phase of the game turn.

26.11 Crew Loss

If the crew lands in an urban, railroad or airfield hex, he is immediately captured and the counter removed from play. If the crew lands in a sea hex, roll a die. On a 1-3 he is lost (i.e., drowned) and the counter is removed from the game. On a roll of 4 or more the crew is safely 'in the water' and may be rescued.

26.2 Simple CSAR Rules

After checking for crew loss roll one die if the simple CSAR rules are in effect. Modify by –2 if the crew is adjacent to an urban, railroad hex, or AAA concentration. Modify by –3 if the crew is within 10 hexes of downtown Hanoi (hex 2028). Modifiers are cumulative.

If the modified roll is 8 or greater the crew member has been rescued by US CSAR units. Otherwise he has been captured by the DRV. Crew members in sea hexes are automatically rescued. Remove the crew counter from play.

26.3 Detailed CSAR Rules

DESIGN NOTE: The area around Hanoi is the most hazardous volume of airspace in the world. Any rescue attempt into this zone risks losing the rescuers as well as the downed pilot. Because of the danger, not all losses generate rescues.

If the detailed CSAR mechanics are in effect, on landing crew counters remain stationary in their hex and the US player may roll to trigger a CSAR mission (either USAF or USN - the US player's choice). Roll one die and modify by –3 if the crew is within 10 hexes of downtown Hanoi (hex 2028). On a roll of 7 or more the mission is triggered. If the mission fails to trigger, the crew is automatically captured and the counter removed from play.

A triggered mission may be refused by the US player if he believes there is little chance of success.

If a mission is triggered, in the Admin Phase of the turn the crew land and in each turn thereafter they roll for capture. Roll two dice and compare to the capture value, which is 5 if the crew member is within two hexes of an urban or railroad hex and 3 in all other hexes. Do not roll for capture if the crew is in a sea hex.

If the roll is less than the capture value, the crew is captured. If the roll equals the capture value, place an NVA infantry unit in the crew's hex. If the roll is greater than the capture value there is no effect.

26.31 NVA Infantry Units

DESIGN NOTE: The majority of captures are by local village cadres. But sometimes the North Vietnamese Army turns out for a manhunt.

NVA units have a target profile D and cannot move. They project small arms flak barrages [14.51]. Each NVA unit in the crew's hex applies a –1 modifier to the capture roll. (If there are two NVA units in a hex, flip the NVA counter to its reverse '–2' side.)

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Suppressed NVA units do not modify the capture roll. Remove the suppression at the end of the Admin Phase. If there are multiple NVA units in a hex, they must be attacked and suppressed separately.

26.4 CSAR Missions

If a USN or USAF CSAR mission is triggered [26.3], see the Order of Battle Table E for details of the mission. CSAR missions use the crew counter as their target point.

26.41 USN CSAR

USN CSAR Missions comprise a single helicopter, which may be set up prior to the raid in any sea hex 8 or more hexes from a land hex. If a USN mission is triggered the US player may begin to move the USN helicopter. Select one USN entry hex to be the egress point for the mission.

26.42 USAF CSAR

If the USAF mission is triggered, a CSAR mission appears 10 turns after triggering. All units in a CSAR mission must enter on the same map edge and within 5 hexes of any one USAF entry arrow. Select one hex to be the ingress and egress point for the mission. No more than one USAF CSAR mission may be triggered per raid.

26.43 ResCAP

DESIGN NOTE: Flights will often hang around to provide cover for a comrade while a rescue is being organized.

Two flights belonging to the raid the crew was shot down from may elect to act as Rescue CAP. Such flights must have at least one operational air-to-air weapon or some remaining ordnance. They treat the crew counter as their target hex. Rescue CAP flights have their task changed to Rescue Support.

26.44 Helicopter Rescue

DESIGN NOTE: Helicopters hover and winch down a pararescueman to recover the crew. This procedure is treated as a landing in the game.

To rescue the crew member on land or sea, a helicopter must land in the crew's hex and roll in the Admin Phase. Roll 1 die. The crew member is rescued on a roll of 5 or more. Add –1 for each NVA unit present in the hex and add the highest flak modifier [14.32] in effect in the hex. If the crew member is not rescued, the helicopter may try again next game turn.

USAF

27 Raid Scenarios

DESIGN NOTE: While some scenarios try to recreate the exact order of battle and conditions for an historical raid, most of them recreate typical raids of a particular period of a campaign.

Each raid scenario provides the information required to set up and play.

27.1 Raid Scenario Format

The information in the scenario is as follows:

Background. Historical background to the scenario.

Targets. The US player secretly rolls one die and reads off his target from the list. Some results may generate multiple targets; the raid is expected to attack all those targets.

The table lists the hex the target is in, the target profile, and whether a USN or USAF raid is required to attack it. Where a USAF or USN raid is allowed, the US player must choose one service (not both) to conduct the raid.

Date. Date of the scenario. Certain aircraft, weapons or capabilities may not be available on the given dates. Check the order of battle tables and ADC notes for date information.

Time of Day. This lists whether the raid takes place in the day or at night [23], and the time (using the 24 hour clock) that the first raider enters the map.

Detection Level. The detection levels [10.11] for the US and DRV players.

GCI Level. The DRV player's GCI level [10.12].

Weather. This designates the column of the weather table to be used [22.2].

Open DRV Airfields. This lists which DRV airfields are open [9.41] and which aircraft types may take off from or land there.

US Order of Battle. This lists which order of battle table the US player should refer to and the ID of any Navy aircraft carriers taking part in the raid. It also lists the pilot training levels [27.4] for the US forces.

DRV Order of Battle. The DRV order of battle lists the basic MiG Availability Points (MAPs), reinforcement MAPs, available aircraft types, number of dummy air units, number of SAM battalions (including the number of located SAMs), dummy SAMs, dummy radars, AAA points and Fire Can units. It also lists the pilot training levels for the DRV forces.

Scenario Special Rules. This lists any SSRs that apply. It also lists conditions such as ordnance/capability, availability, etc.

Victory Conditions. This lists any changes or alterations to the standard victory conditions [27.8].

27.2 DRV Force Purchase

Prior to the deployment of any air units, the DRV player purchases air units and any reinforcements.

27.21 Purchasing Air Units

DESIGN NOTE: MiG Availability Points (MAPs) are a measure of aircraft availability for combat and the ability of the DRV to generate sorties. Most scenarios are built on the premise that the DRV are making a big effort to stop raids. Frequently they wouldn't send up any MiGs at all.

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In the DRV Air Deployment Phase the player must purchase the flights to be used during the raid. The scenario indicates the basic number of MiG Availability Points (MAPs) available to expend on air units. The table below indicates the cost in MAPs for purchasing flights:

Aircraft Type	*Cost to Purchase Flight*	*Cost per Subsequent Aircraft*
MiG-17F/PF	4	2
MiG-19	6	3
MiG-21F-13	8	5
MiG-21PF/PFM	8	5
MiG-21MF	9	5

The first column indicates the cost to purchase a flight of the indicated type of aircraft. A newly purchased flight consists of one aircraft. The second column indicates the cost to add an additional aircraft to the flight.

EXAMPLE: A MiG-17 flight of two aircraft costs 4+2=6 MiG Availability Points to purchase. A four-aircraft MiG-17 flight costs 4+2+2+2=10 MAPs.

The scenario will indicate which aircraft types are eligible for purchase. A flight cannot mix aircraft of different types and may not be larger than four aircraft. (Exception: In night raids DRV flights cannot be larger than one aircraft [23.13].) The number of flights of a given aircraft type may not exceed the counter mix. Unspent MAPs are lost and have no further effect on the scenario.

27.22 Air Unit Reinforcements

The DRV player may increase the number of MiG Availability Points available to him by expending Victory Points [27.81]. Expending 1, 2, 3, 5 or 8 VPs gains the number of MAPs indicated below the VP cost on the scenario.

EXAMPLE: The MAPs listed below the VPs for a scenario are +10, +14, +16, +26 and +38. Expending 2 VP gets an extra 14 MAPs while 5 VP buys an extra 26.

Reinforcement MAPs are added to the DRV player's basic total for the scenario.

27.23 Reinforcement Limits

The number of VPs expended on reinforcements are not revealed to the US player until the end of the scenario. No more than 8 VPs may be expended on reinforcements in a raid.

27.3 Planning Phases

27.31 US Order of Battle

The US player generates forces for the raid. Consult the Order of Battle Table. This lists the raid forces in three parts: the Pre-Raid, Main Raid and Post-Raid forces. This division is to separate the raid into those units that enter first, second and last [27.32].

Each force comprises one or more missions [8.1]. The US player gets all the missions listed for that force. Each mission lists the flights in that mission, the number of aircraft in each flight and their tasks, as follows:

Number of Flights times {number of aircraft in each flight} Aircraft Type, Tasking

EXAMPLE: A Strike mission is listed as comprising 4x{4} F-105D, Bombing. This strike mission consists of four flights of F-105D, four aircraft in each flight, tasked with bombing.

If an aircraft type is listed in the description, the flight(s) use that aircraft type. If no aircraft type is listed, just a task type [in square brackets], the player must determine the aircraft type based on its tasking. (See the Order of Battle Tables.)

EXAMPLE: In an April 1967 scenario, a USAF MiGCAP mission is listed as: 2x{4} [CAP], CAP. Refer to the Aircraft Type section of Order of Battle Table A. Under CAP it says to roll a die to determine the aircraft type. As it is an April 1967 scenario, a roll of 1-9 results in two CAP flights of F-4C. A roll of 10 results in a CAP of F-104s.

The aircraft types used in Navy raids are dependant on the aircraft carrier the raid is launched from. The scenario will specify the ID of the aircraft carrier used in the raid. Look up the aircraft carrier on the Navy Order of Battle Table to determine the aircraft types used.

Scenario special rules (SSRs) may list variant orders of battle for entire raids or missions within a raid. The order of battle tables list common variants, for ease of reference.

27.32 US Planning

The US player plots the flight path for the raid [8.31] and the game turn of entry for each mission. At least one flight from the mission must enter the map on that game turn. The remaining flights may enter on any game turn thereafter.

All pre-raid forces must enter the map before the main raid forces may enter. Post-raid forces only enter after all main raid forces have entered.

Some scenarios permit multiple raids to enter the map simultaneously, each with a separate target. Plot a separate flight path for each raid.

27.33 DRV Planning

The DRV player secretly plots the location of each SAM battalion, dummy SAM and dummy radar, filling out an entry on the log sheet and noting the hex the unit sets up in.

The DRV player also plots the locations of additional AAA and Fire Can units. Note the hex and density of each concentration and the hex of each Fire Can on the DRV log sheet.

See 27.61 and 27.62 for restrictions on AAA and SAM set-up.

27.4 Flight Quality Generation

DESIGN NOTE: Pilot quality is a decisive factor in combat as reflected in the Aggression Value. It is the product of each air force's experience and training.

The scenario will list pilot training levels for the forces on each side: Rookie, Trained, Regular, Veteran or Top Gun. When filling out the flight details on the log sheet, roll two dice for each flight on the Flight Quality Table, referencing the flight's pilot training level to determine the aggression rating. Note the rating on the flight log.

OPTIONAL RULE: Do not roll a flight's aggression rating until the first time the value is needed for air-to-air combat or a morale check roll.

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27.5 Early Warning

DESIGN NOTE: The first clue the DRV has of a US attack is when the raid first appears on their plotting boards. Early warning is the product of radar intelligence, as well as spies at the airbases counting aircraft taking off. Timely warnings can give the DRV time to guess the approximate target and scramble aircraft into position.

After both sides have finished planning, the US player secretly rolls for Early Warning to see how much information must be revealed about the raid.

The US player may allocate standoff jamming aircraft to early warning jamming to obtain modifiers to the early warning roll. Standoff jamming flights used for early warning jamming may not be used for standoff jamming during the raid.

Roll two dice and add the indicated modifiers. Announce the result and follow the instructions regarding MiG set up and the information to be given to the DRV player.

27.6 Set Up

27.61 DRV AAA Set Up

In the DRV Ground Deployment Phase all AAA upgrades and half the number (round up) of purchased AAA concentrations (not AAA points) must be set up on the map, either active or inactive as desired [14.11]. The remaining AAA concentrations are hidden and inactive at the start of play.

AAA concentrations may be placed in any land hex. No more than one concentration may be set up in a hex (so additional AAA cannot be stacked in a hex with printed AAA).

Concentrations may be placed in rough or marsh terrain hexes within the following restrictions: only Light concentrations may be placed, and only in urban, installation, bridge or railroad hexes. (Exception: Thud Ridge may have one Light concentration placed on it from September 1967 on.)

Fire Cans set up hidden in the same hexes as AAA concentrations [14.41, 14.42].

27.62 DRV SAM Set Up

The scenario specifies the number of real SAM battalions (not dummies) that set up located on the map in the DRV Ground Deployment Phase. The DRV player can locate more battalions during set up, if he wishes. All remaining SAM units set up hidden.

Dummy SAMs set up located on the map. Dummy radars may set up located or hidden, DRV player's choice.

SAM units, real and dummy, must be placed in land hexes. Battalions must be sited within one hex of a railroad or urban hex, or in a highway hex. SAMs may not set up in a rough or marsh hex unless it contains urban or highway terrain. They may not be placed adjacent to a ridgeline hexside. Only one SAM unit may be sited in a hex.

Half (round up) of all SAM battalions must be placed within 4 hexes of downtown Hanoi (hex 2028) or downtown Haiphong (hex 2410). No SAM battalion may be sited in downtown Hanoi itself. Dummy SAMs and dummy radars are not subject to these restrictions.

27.63 DRV MiG Set Up

In the DRV Air Deployment Phase the DRV player places flights at airfields, in ready/unready/revetted states, or already positioned in the air. The early warning level [27.5] determines which flights may set up already in the air. Flights may only set up at an airfield if it is eligible to take the aircraft type, as listed in the scenario [27.1]. One flight at each airfield may set up ready [9.42].

Dummy flights may set up in the air, or at an airfield like MiG flights. Dummy flights may take off like regular flights.

Flights that start in the air near orbit points/airfields are placed at any altitude band within three hexes of a MiG orbit point or an open (not closed) airfield. MiG orbit points may not be used for set up for dates prior to 1967 [9.1].

Flights that start in the air have expended two fuel points before play begins [20.3]. All DRV flights begin the raid undetected.

27.64 US Set Up

The US player sets up all flights entering on the first game turn off-map at the edge of the map next to their ingress hex [8.11]. They begin detected or undetected as indicated by the early warning level [27.5]. Flights enter on their mission's plotted game turn of entry or thereafter. US flights that enter on subsequent game turns must set up at the end of the Admin Phase prior to entry.

Pre-Raid jamming missions plotted as off-map standoff jamming [19.33] do not enter the map. Instead, standoff jamming markers are placed in map edge hexes. Flights tasked for CAP in Jamming missions may not enter the map until at least one jamming flight in that mission enters the map.

27.65 DRV Radars

In the DRV Radar Phase the DRV player may switch on any Fire Can or SAM radars he wishes. If an unlocated SAM or dummy radar switches its radar on, place a SAM Warning counter with the appropriate ID on the map [15.12]. Inactive AAA may be activated in this phase [14.2].

27.66 Pre-Raid Forces

OPTIONAL RULE: To save playing time, the US player can set up pre-raid forces on the map, provided the DRV player agrees to this. Pre-raid forces include jamming, chaff missions and even chaff counters laid along the raid flight path.

On-map set-up should be agreed before the Early Warning Phase. On-map set-up improves the DRV player's Early Warning level by one. All pre-raid forces set up on-map are detected, regardless of the Early Warning result [27.5].

Pre-raid forces set up on-map can set up anywhere. MiG units that set up in the air cannot set up within ten hexes of a pre-raid unit, and DRV players should consider the potential consequences of this restriction before agreeing to use this rule.

The US player is welcome to outline his set-up before the DRV player agrees if this makes agreement easier.

27.7 Raid Completion

The raid is completed either when the last US flight has exited the map, or both players agree to end the raid because there is unlikely to be any more combat.

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27.8 Victory Conditions

At the end of a scenario, both the US and DRV player total their Victory Points.

27.81 US Victory Points

The US scores victory points as follows:

VPs	*Objective Achieved*
9 (12)	**Target Destroyed.** The raid target is totally destroyed.
5 (8)	**Heavy Damage.** The raid target is heavily damaged.
2 (4)	**Slight Damage.** The raid target is slightly damaged.
0	**No Damage.** The raid target is undamaged.
2	**MiGs**. VPs are per DRV aircraft lost. (Add 1 VP for each MiG shot down over an all-sea hex.)
1	**SAMs.** VPs are per SAM battalion damaged.
2	**SAMs.** VPs are per SAM battalion destroyed.
1	**Reinforcement.** VPs are per point expended on DRV reinforcements.

If the target is underlined in the scenario target list, use the VP values above (in parentheses).

Where there are multiple targets (such as at an airfield) total the VPs for each target then divide by the total number of targets and round up to determine the VPs.

EXAMPLE: An airfield has a heavily damaged runway, a slightly damaged tower and slightly damaged revetments. The VPs are 5 for the runway and 2 each for the tower and revetments. The total VPs are (5+2+2)/3=3.

If the target is a bridge, target damage victory points are based on the most damaged span [18.22]. For each other span, add half the VPs (round up) for the damage scored against it.

27.82 DRV Victory Points

The DRV scores victory points as follows:

VPs	*Objective Achieved*
3	**No BDA.** There is no successful BDA of the target.
2	**Fighters Lost.** VPs are for each US fighter lost. (Fighters are defined as any non-EB-66, EKA-3 or B-52 aircraft.)
1	**Crews Lost.** VPs are for each crewman aboard a lost US fighter. (Fighters are defined as above.)
5	**Bombers Lost.** VPs are for each EB-66, EKA-3 or B-52 lost.
2	**Zone Violation.** VPs are per US flight that violates the Chinese Buffer Zone [9.3].
1	**Collateral Damage.** VPs are per collateral damage counter. Double the VPs if the damage is within 1 hex of Hanoi (2028) or Haiphong (2410).

Aircraft that are lost as a result of recovery rolls [20.2] count toward VPs, but their crew don't (they are assumed to be picked up or rescued).

When using the CSAR mechanics [26], each recovered crew member scores zero VPs for the DRV, but each captured crewman scores double.

27.83 Victory Levels

The victory total is obtained by subtracting the DRV VP total from the US VPs. The result can be a negative value. The victory total determines the victory level as follows:

VPs	*Victory Level*
13+	**Decisive Victory.** US forces perform a dazzlingly successful mission. Decorations are awarded. Drinks all round at the O-Club bar.
9-12	**Victory.** The mission was an American success and the objectives were achieved. Analysts announce significant material damage to the Communist war machine.
5-8	**Inconclusive Operation.** US objectives were not achieved. The target may have to be restruck.
0-4	**Defeat.** The US objectives were not achieved. The target will probably have to be restruck. North Vietnamese resistance to American imperialism is unbroken.
< 0	**Significant Defeat.** US objectives were not achieved and Hanoi proclaims a great victory over the 'Yankee Air Pirates'. Attacks into the upper Route Packs halt temporarily to evaluate lessons learned.

DESIGN NOTE: These victory levels are designed to create a balanced and exciting play experience. But historically this was a war of attrition and the US was mindful of casualties. No mission was worth big losses. US losses of three or more aircraft over DRV airspace should be classed as a moral victory for the Vietnamese regardless of the victory level.

28 Campaign Game

DESIGN NOTE: The great air campaigns into Route Pack 6 lasted months and years. The campaign game provides a snapshot of operations over a brief period of clear weather.

The campaign is a series of consecutive raid scenarios, simulating a number of days of air raids.

28.1 Campaign Game Concepts

Campaign Type. The campaign will be listed as one of three types: a USAF campaign, a USN campaign or Joint campaign.

Days. A campaign is divided into a number of game days. To complete a game day the players must play a number of raids.

Target List. The campaign target list shows all the targets eligible to be attacked in the campaign.

28.2 Campaign Scenarios

The information in campaign scenarios is as follows:

Target List. The campaign target list shows all the targets eligible to be attacked in the campaign. It also lists the target locations, profiles and which organization (USAF or USN or both) is allowed to attack each target. Finally, the target list shows the Campaign Victory Points (CVP) for damaging or destroying each target.

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Background, Date, Detection Level, GCI Level, Open DRV Airfields, US Order of Battle, SSRs. This information is exactly the same as in scenarios. Note that it applies to all raids in the campaign.

Campaign Length. This is the number of days in the campaign. The campaign ends once all days have been played.

Weather. The weather for a campaign is listed as clear or poor. This applies to all raids in the campaign. Prior to a raid, roll on the appropriate weather table.

DRV Order of Battle. This lists the number of SAM battalions, dummy SAMs, dummy radars, AAA points and Fire Can units the DRV player has. It also lists the air unit dummies and pool of MAPs available to the DRV player.

28.3 Days

The Day is an administrative division in the campaign. Players will play a number of raids in a day. At the end of the day they tend to administration and then plan for the next day's raids.

28.31 Day Raids

In a USAF or USN campaign players play two raids per day-one morning and one afternoon raid. In a USAF campaign the US player flies only Air Force raids, and in a USN campaign only Navy raids.

In a joint campaign players play four raids per day (two USAF, two USN). These are divided into two morning raids (one USAF and one USN) and two afternoon raids (one USAF and one USN). The US player decides in which order the raids are conducted, provided the afternoon raids follow the morning raids.

Exception: During Linebacker campaigns from May to July 1972, the USAF may only fly one raid per day. This may be a morning or afternoon raid.

28.32 First Day Planning

Prior to the first day the US player plans all the raids for the day. He also decides the order the raids are played.

EXAMPLE: In a joint campaign the US player decides to play the raids in the following order: USN morning; USAF morning; USAF afternoon; USN afternoon. He then plans four separate raids, determining the order of battle for each raid and plotting each one on a separate planning sheet.

28.33 Planning

Planning in the campaign is exactly as for scenarios, except that it takes place prior to the day's raids being played. When planning a raid the US player secretly chooses their target from the target list instead of having to roll for it. The US player may choose a target already attacked earlier in the campaign.

28.34 Raid Execution

Each raid is played, in the order set by the US. Raids are played exactly as scenarios except with the following changes.

- The DRV ability to set up ground units is restricted [see 28.42].
- There is no US Planning Phase for a raid, since raid planning is done prior to the current day [28.33, 28.35].
- The DRV may not trade VPs for extra MAPs.
- Damage is not rolled at the end of the raid. Instead this is deferred to the Campaign BDA Phase [28.35]. Leave the attack success value counter on the target.

Campaign victory is not assessed after the raid.

28.35 End of Day Administration

After all a day's raids have been played and resolved, a number of end of day administration phases are conducted. These comprise the following phases, in order:

A. Campaign BDA Phase. The US player rolls for damage on all targets marked with attack success counters that have been successfully photo-reconned for BDA. Those targets that have not been photo-reconnoitered for BDA that day leave the attack success counters in place.

B. Campaign Random Events Phase. Roll for a campaign random event [28.7].

C. DRV Refit and Redeployment Phase. The DRV player receives replacements for damaged or destroyed SAM battalions, dummy SAMs, dummy radars and Fire Can units. They may relocate some ground units to other hexes. After all replacement and relocation is complete SAM, AAA and Fire Can units are hidden. A number of those units must then be revealed [28.45].

D. US Day Planning Phase. The US Player plans all raids for the following day and decides the order the raids are played. (This is done as for the first day planning, [see 28.32.])

E. New Day. A new campaign day begins.

28.4 DRV Campaign Rules

28.41 DRV Air Units

In the campaign scenario the DRV is given a fixed pool of MiG Availability Points with which to buy flights in the Planning Phase of each Raid. This MAP pool must last for the entire campaign. Unlike raid scenarios, the DRV player may not expend CVPs to increase the MiG Availability Point pool.

The DRV player may never spend more than 20% of the original pool total on any single raid. When flights and aircraft are purchased, points from the pool are expended.

In addition, each time an aircraft ends a raid damaged, crippled or shot down, the following points are subtracted from the points pool:

Aircraft Type	*MAPs Lost*
All MiG-17 variants	2
MiG-19	3
All MiG-21 variants	4

EXAMPLE: the DRV player buys a four-ship of MiG-17s for 10 points to defend against a raid. In the raid two of the MiGs are damaged. The schedule says the DRV loses 2 MAPs per loss, so in addition to spending the 10 points on the flight, the DRV player expends a further 4 points for losses.

28.42 DRV Ground Units

The DRV player plots and sets up ground units on the first raid of the first day of the campaign. After that point, his ability to alter the deployment of ground units is limited. The DRV may not alter the set-up from raid to raid, except as allowed by rule 28.45.

At the end of each raid, all SAM, AAA and Fire Can units that started the scenario hidden become hidden and unlocated again. SAMs and AAA that were located at the beginning of the raid stay located.

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28.43 Persistence of Damage and Destruction

At the end of a raid, all AAA suppression is removed from AAA concentrations. However, damage to or destruction of SAM battalions, dummy SAMs, dummy radars and Fire Can units persists to subsequent raids in the same day.

EXAMPLE: In the first raid of the day a Fire Can unit is destroyed. That Fire Can remains destroyed for all other raids later that day.

At the end of a day, in the DRV Refit and Redeployment Phase all damaged or destroyed SAM battalions, dummy SAMs and Fire Can units are removed from play and replaced with new ground units of the same type. Destroyed or damaged dummy radars are not replaced.

Damage to all other ground targets persists from raid to raid and day to day in a campaign. Targets are never repaired. If an airfield is closed as a result of bombing [9.41], it remains closed for the day but will open again the following day.

If the US player fails to photo-recon an airfield target for BDA the DRV player must roll for the damage in secret, keep a note of it, and reveal it to the US player at the end of the campaign.

28.44 SAM Ammo

At the beginning of each raid, SAM battalions are reloaded with a full complement of three SAM shots.

28.45 DRV Redeployment

In the DRV Refit and Redeployment Phase, the DRV may change the set-up location of AAA concentrations, SAM battalions, dummy SAMs, dummy radars and Fire Can units.

All SAM battalions (including dummy SAMs and radars), half of all Fire Can units and half the DRV's AAA Points may be redeployed in a phase (round halves up). AAA concentrations that are printed on the map may never be redeployed, although points used to upgrade printed concentrations may be.

The redeployed units set up in any eligible location for their unit type. Replacement units received as a result of damage or destruction also set up in any eligible location—they do not have to be deployed in the hex of the unit they replaced.

After all redeployment is complete, all SAMs, non-printed AAA and Fire Can units become hidden. The DRV player must then reveal half the number of purchased AAA concentrations. A number of SAMs equal to the located value listed in the campaign scenario must also be set up on the map located. Dummy SAMs are always set up located.

DESIGN NOTE: US intelligence keenly tracks the deployment of the DRV's air defenses. Electronic listening intelligence (or ELINT) is vital for following the movements of the SAM units. This ELINT capability is represented by the located SAM value in the scenarios.

28.5 US Campaign Rules

28.51 Capabilities and Weapons

Some aircraft capabilities and weapons are limited by ADC notes and SSRs. The US player may only use these if explicitly permitted by the campaign scenario.

The campaign scenario may list restrictions or limits on the use of capabilities and weapons, such as the maximum number of times they may be used in a campaign.

28.6 Campaign Victory

After all the campaign days have been played out, the campaign ends. Roll for all remaining unresolved damage. Then players total the campaign victory points (CVP) they scored over all the raids.

28.61 Campaign Victory Points

The US scores campaign victory points as follows:

CVPs	*Objective Achieved*
?	**Target Damaged or Destroyed.** A campaign target is damaged or destroyed. The CVP value is listed as three numbers separated by a slash, corresponding to Slight/ Heavy/Total Destruction.
2	**MiGs.** CVPs are per DRV aircraft lost. (Add 1 CVP for each MiG shot down over an all-sea hex.)
1	**SAMs.** CVPs are per SAM battalion damaged.
2	**SAMs.** CVPs are per SAM battalion destroyed.

If the target is a bridge, target damage victory points are based on the most damaged span [18.22]. For each other span in the bridge, add half the VPs (round up) for the damage scored against it.

The DRV scores campaign victory points as follows:

CVPs	*Objective Achieved*
2	**No BDA.** For each target struck for which there is no successful BDA.
2	**Fighters Lost.** CVPs are for each US fighter lost.
1	**Crews Lost.** CVPs are for each crewman aboard a lost US fighter.
5	**Bombers Lost.** CVPs are for each EB-66, EKA-3 or B-52 lost.
2	**Zone Violation.** CVPs are per US flight that violates the Chinese Buffer Zone [9.3].
1	**Collateral Damage.** VPs are per collateral damage counter. Double the VPs if the damage is within 1 hex of Hanoi (2028) or Haiphong (2410).

Aircraft lost as a result of recovery rolls [20.2] count toward CVPs, but their crew don't.

When using the CSAR mechanics [26], each recovered crew member scores zero VPs for the DRV, but each captured crewman scores double.

28.62 Victory Levels

The victory total is obtained by subtracting the DRV CVP total from the US CVPs. The result can be a negative value. The campaign scenario will list the total CVPs for each victory level, and what the victory levels represent.

28.7 Campaign Random Events

Each Campaign Random Events Phase roll two dice and read the results from the Campaign Random Events Table. Apply the result (if any). Only one random event is rolled per day.

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28.8 Advanced Campaign Rules

28.81 Realistic Planning

Historically, US air commanders planned two days ahead, not one day. If realistic planning is in effect, prior to the first day of the campaign the US player plans two day's worth of raids. In the US Day Planning Phase, the US player plans raids for the day *after* the next day.

28.82 Airfield Repair

Airfields with runway damage must be repaired first before that airfield may open again. Each DRV Refit and Redeployment Phase roll one die and cross reference with the damage taken by the runway:

Damage	*Roll*
Slight	6+
Heavy	8+
Destroyed	10

If the die result is equal to or greater than the roll value, the runway damage is repaired. Airfields may not reopen if the runway remains damaged.

28.83 Operation Bolo

In any Rolling Thunder campaign, from Jan 67 on, the US player may secretly plot any USAF raid to be an 'Operation Bolo' fighter sweep. Bolos are treated as regular raids except that no aircraft in the raid carry any ordnance and all flights are tasked with CAP. F-105 units may carry AIM-9B IRMs.

28.84 Midday Redeployments

DESIGN NOTE: The S-75 SAM was capable of quick redeployment to nearby sites. The DRV could move them in the interval between the morning and afternoon raids if they thought their security was compromised.

In the gap between the US morning and afternoon raids, the DRV may redeploy half of all the located SAM battalions (not dummies). Move the SAMs up to 5 hexes from their original location.

The SAMs set up in their new locations hidden and unlocated.

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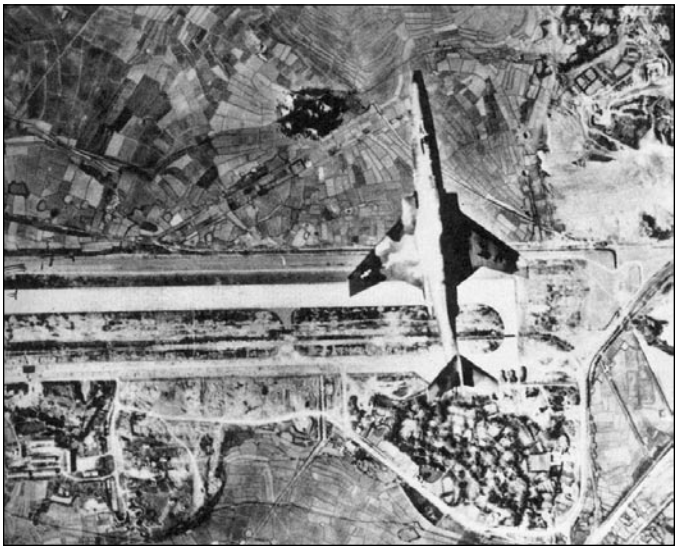

29 Designing Downtown

Commentary by Lee Brimmicombe-Wood

29.1 Why Go Downtown?

The air war over Hanoi is a difficult subject to wargame. Strategically, the American air campaign was a disappointment, failing to achieve a decisive victory over the North Vietnamese. Its most significant successes came in 1972, when it helped halt the North Vietnamese Army's (NVA's) invasion of the south and then nudged Hanoi into the Paris peace treaty. However, even this apparent victory for US air power wasn't clear-cut. The NVA was not decisively defeated or thrown out of South Vietnam, while the Paris treaty was an agreement that Hanoi had accepted in principle long before the B-52s were unleashed. Both America and the North Vietnamese declared a victory after Linebacker II, and after bloodying each other's noses both had a right to.

Fought over eight years, the air campaign was not (excepting maybe Linebacker II) a conflict marked by great battles. It was a war of attrition; an unfocused campaign compromised by decision makers—civilian and military—who couldn't decide whether it was meant to be an interdiction campaign or a strategic bombing effort. To this day there remains doubt as to whether air power could ever have 'won' the war. So why wargame it?

One reason is that it was a crucible of new technologies and techniques. Electronic warfare, surface-to-air missiles and precision-guided bombs all came to maturity here. Also, this was a test for two different philosophies of war, the Americans with their high-technology raid packages and the Vietnamese with their Soviet-style integrated defense. The weapons and tactics of World War Three were tested here and found to be wanting. Since 1972 modern US air power has been able to wage a succession of dazzling air campaigns, but that success was born out of the mistakes made in and learned from Vietnam.

So the focus of *Downtown* is not on the strategic or operational war, but on the tactical and technical battle. It's about the day-to-day minor victories of US air power against the most lethal air defense system the world had ever seen.

29.2 The Concept

The idea for *Downtown* came out of conversations with Tony Valle about a new kind of air wargame. This would feature large numbers of aircraft operating in flight-sized units across a theater-sized map. At this game scale, aircraft performance mattered less than sensors, systems, weapons, leadership, command and control. The fundamental notion was to test what happened when a 'gorilla package' of bombers and support aircraft penetrated an Integrated Air Defense System (IADS).

The original idea focused on a Gulf-like scenario. Adapting this to Vietnam took an enormous effort. Many concepts were tried and ditched along the way but the central tenets held: the basic maneuver unit was to be the flight, and the game would test raid packages against an IADS.

The result is a truly asymmetric battle. This is reflected in the victory conditions. The US player's job as raid commander is to put bombs on the target with the minimum of friendly casualties. The DRV's job as air defense commander is to stop the American, by hook or crook. The Vietnamese don't have to shoot down their enemies to win. Simply forcing the bombers to jettison ordnance is a 'mission kill'.

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29.3 Scale

The game went through about three separate scales before settling on the current 2.5 nm/hex and 1 minute/turn. An early map covered most of North Vietnam and intended to show raid form-up and air refueling. A subsequent incarnation included a second map covering Route Packs 3 and 4 and the Thanh Hoa bridge. But it soon became clear that all the interesting action was happening in RP6 where the IADS was densest. Gradually the map was whittled down to the Hanoi defense zone. Rather than waste time flying to the combat zone, raids start on the edge of the defended zone and fight their way in and back again.

29.4 Aircraft

Downtown models aircraft performance very broadly, because its real focus is on systems, weapons and capabilities. At this scale fine details of performance are not as important as whether an aircraft has a particular method of bomb delivery or can carry PGMs.

In some cases capabilities have been denied to aircraft that on paper had them. This was because they were ineffective or were not a factor in the battles represented in the game.

29.5 Intelligence and Detection

Intelligence on enemy forces manifests itself in *Downtown* in three ways: through the detection mechanics, visual identification and the engagement rolls.

Historically, fog of war was a real problem for the US, given that they were operating at the limits of friendly radar coverage. Detection favors the DRV who are operating over their home ground. The lower altitudes, beneath the US radar cover, are a haven for Vietnamese aircraft. However, they must come up to higher altitudes if they are going to take on the US raids. Dummy units help make the fog of war work in the absence of an umpire.

Players may find it strange that a flight can be detected by visual sighting and not visually identified, or detected and not picked up by an engagement roll. However, the 'air picture' is a fragile thing, not always communicated perfectly to the pilots at the sharp end. Procedures and communications can fail, and the human element can often prevent information from being used in a timely manner.

29.6 Organization and Navigation

US units behave much as their historical counterparts did. The tasking system fell out of the need to distinguish between the roles of aircraft rather than their simple capabilities. A Phantom that is bombing behaves very differently compared to one that is CAPing.

The plotted flightpath is a simplification of the planning procedures real-life raid commanders went through and forces the US player to stick to the script, rather than exploit the God's-eye view of the battle.

29.7 Air Combat

Air battles of this era were rarely decisive unless one side or the other had surprise, and the air combat system reflects this. Casualty rates were low and players shouldn't expect too many shootdowns unless the enemy gifts them. However, it's not always necessary to get kills. MiG pilots who force bombing flights to jettison their stores before reaching their target have more than earned their combat pay.

Given that air combats in the game are infrequent, I opted for a detailed treatment of combat, going through the stages from approach to maneuver to shooting to disengagement.

Some of the details are worth explaining: Fluid Four was a World War Two tactic that had become obsolete by the missile age. It forced USAF flights to support the flight leader, reducing the number of 'shooters' in the flight from four aircraft to one. The Navy's two-ship 'loose deuce' formations were far more efficient.

The maneuver differential is an assessment of relative aircraft performance. Maneuver ratings account for wing loading, top speed and excess power.

Historically, training, tactics and pilot quality were often decisive in securing kills. Adopting the term 'Aggression value' for this reflects the extent to which the willingness to close and fight is a key aspect of these 'human factors'.

The Morale check mechanism has less to do with élan and more to do with maintaining formation and unit cohesion after a fight. Once a flight's cohesion goes and it becomes disrupted, it can no longer operate offensively.

29.8 Surface-to-Air Weapons

Finding an accurate AAA order of battle for the DRV was impossible, so the system of AAA concentrations is both an abstraction and a reasonable extrapolation of the flak defenses. Flak was the biggest killer in the Vietnam air war. But to do its job flak doesn't have to shoot down enemy strike planes. It simply has to reduce their chance of bombing successfully.

AAA barrage assumes that barrage fire obeys a law of diminishing returns. Adding Medium flak to Medium flak doesn't make it much more effective. This is why only one (usually the densest) barrage in a hex is counted and is not cumulative.

SAMs were originally a much simpler rule, but the playtesters wanted to recreate the cat-and-mouse contest of the Iron Hand forces against the DRV's 'rocket forces'. This led to a more detailed treatment that accounts for the advances in the electronic battle (jamming, jamming cells, etc.) and defensive options such as SAM Avoidance maneuvers. Anti-radar tactics are not so much formal tactics as good practice when defending against SAMs.

29.9 Air-to-Ground

At the end of the day, the US player's job is to 'move mud': get bombs on the target. The air to ground system is a comprehensive model of the bombing techniques used in the war. In particular the game depicts the difference between 'dumb' (i.e., unguided) bombing and the introduction of guided munitions. In Rolling Thunder a target may have had to be restruck several times to destroy it. In Linebacker the same target usually only required one raid.

I deliberately avoided letting the US player weaponeer their aircraft. Some players may lament they can't work out bomb loads on a weapon-by-weapon basis, but abstracting this to a simple 'bombs' rating was a necessary simplification. For the record, one point of bomb strength is 2,000lb of munitions or the equivalent. (As a side note, the rockets rule for the F-8 does not mean that only F-8s have rockets—see the design note for 16.12—rather that this was a rule that best reflected that aircraft's unique weapons loadout.)

We do not track laser designators in the game. The Laser Guided Bombs in Linebacker required the use of designation pods known as 'Pave Knife'. The lack of these pods caused USAF commanders many headaches. I decided not to detail the pods to keep the game simple. It is assumed they are carried by aircraft in the flight who are 'buddy lasing' (i.e., designating targets for their comrades).

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Differentiating between bombing success and actual combat results is important for two reasons. First, it removes the God-like omnipotence of the player. They don't truly know the results of bombing until they get back to base, and so can't assume that an apparent success by one bombing flight means the target is destroyed. Second, in the campaign, failed BDA forces the US player to consider whether or not to restrike a target to make sure they've finished the job.

29.10 Electronic Warfare

The electronic warfare rules have gone through many revisions. The current rules are by far the simplest and have reduced some complex interactions to simple add-up modifiers, though at the cost of some subtlety.

The big advances in electronic warfare were the deployment of standoff jammers, radar warning receivers, defensive jamming equipment and chaff. In the 1965 to 1966 scenarios, players should be able to follow the progression from having no countermeasures to a full EW suite.

Early rules sets dealt with the USAF's use of jamming pods in much more detail, even introducing a special 'pod formation', with jamming strengths varying with the number of aircraft in the flight or maneuvers flown. The advanced Noise Jamming rules are the remaining echo of that, boiled down into a rule that doesn't give players a headache.

Other areas of the electronic war, such as signals intelligence, are built into the detection, set up and early warning mechanics.

29.11 Fuel

Initially, it was intended that actual aircraft fuel loads would be tracked. When it became clear this would be a bookkeeping nightmare the present system was adopted, which tracks only the flights' combat fuel reserve. This was generally reckoned as five minutes of full power for most aircraft, which is why most fuel ratings are 5.

29.12 Orders of Battle

The Navy and Air Force used standardized orders of battle for most of the war. The Navy's Alpha strikes were based on the forces a carrier wing had available. The aircraft mix would change as carriers rotated on and off the line.

In the Air Force strikes were standardized both for ease of planning and because of limits on available air refueling capacity. When the Air Force radically increased the size of the support forces for Linebacker raids, it was a while before tanking capacity caught up and was able to support more than one raid a day 'Downtown'.

DRV orders of battle are the subject of speculation. We have estimates of aircraft numbers, but pressures on the Vietnamese maintenance and logistics system meant that only a limited number of sorties could be flown in a day. SAMs we are more certain about. We know the DRV had in the region of 30-35 battalions in total, with a handful deployed to the south of the country and the remainder stretching from Thanh Hoa (just off the map to the south in Route Package 4) up to Hanoi and Haiphong. It was impossible to research the locations of prepared SAM sites, so the SAM deployment rules account for likely set-ups.

29.13 Scenarios and Campaigns

The scenarios are representative of different periods of the war. In some cases they depict actual missions. In general, scenarios represent days when the DRV fighters came up in force to fight - not the quiet days often forced on the Vietnamese because of the lack of available aircraft or because the fighter force was regrouping and retraining.

MiG Availability Points represent the uncertainty the US player has about the size of the fighter force they are facing. Reinforcement MAPs allow the DRV to surge their sortie rate and really make a 'push' against the Americans, but at the cost of dislocating their defensive effort.

To better understand the rhythms of day-to-day combat it's best to play a full campaign. Here, the Vietnamese don't have the wherewithal to send up MiGs in numbers every day and the US can regularly 'go Downtown' with only the ground defenses to tackle.

One thing to keep in mind is that in Rolling Thunder scenarios it is uphill work for the US player to achieve a victory. The lack of PGM makes it difficult to destroy targets—particularly bridges. In Linebacker the opposite is true and with better aircraft, weapons and large strike packages ranged against them, the DRV may find they need to work to scrape a win.

Not all situations in the war are represented. The game is, in part, a 'tool kit' for players to create their own scenarios and experiment with alternatives.

30 Tactical Hints

30.1 US Tactics

US tactics are based on an understanding of the raid forces and how they all fit together in the tactical 'jigsaw'. The US player controls many different kinds of aircraft, each with a specialist job to do. The first step to understanding tactics is to look at the order of battle tables and see how a raid is broken down into forces and missions.

30.11 Pre-Raid Forces

The job of the pre-raid force is to enter the map first and provide electronic protection for the main raid force.

The job of the jamming mission is to use standoff jamming to impair SAM acquisition and the effect of Fire Can units. Don't underestimate the value of the electrons these birds broadcast. The rule is "all 'trons are good 'trons". Even small standoff modifiers can tip the balance in a SAM or Fire Can engagement.

Standoff jamming strength is greatest when the SAM or Fire Can is looking in the direction of the jamming aircraft. So the best place to position standoff jammers is along the axis of the raid flightpath.

Off-map jammers are safe from enemy MiG attacks, but the enemy radars will be at long range where jamming strength is weakest. On-map jammers can creep closer to the radars, but are vulnerable to enemy attack.

Chaff-laying missions advance ahead of the main raid. Their task is to lay a chaff corridor for the main raid forces to funnel through. Because of the time it takes for the corridor to bloom, it needs to be laid 10-15 turns prior to the arrival of the main raid force.

Chaff corridors can be laid by flying the chaff layers out ahead of the main raid force, laying chaff as they go. An alternative method is to send the chaff flights to the target and then begin to lay chaff from the target back toward the main raid force. Properly planned and executed this method will compress the time between the chaff flights and main raid.

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30.12 Main Raid Forces

The heart of the raid is the strike mission. This should enter with all the flights close together, so they can be on and off the target in the same game turn. USAF flights with noise jamming have the option of creating a jamming cell for additional SAM protection.

The sole task of the CAP flights is to keep MiGs at bay. They can stay with the Strike mission, peeling off to engage approaching MiGs, or they can sweep ahead of the bombers.

Iron Hand missions have the job of keeping enemy AAA and radars (SAM and Fire Can) quiet. Bombs are the most lethal method of silencing the enemy—this is the reason why F-4E bombers are added to the SEAD force in Linebacker—but ARMs are good at forcing radars to shut down briefly.

SEAD flights should enter one to five turns ahead of the Strike mission, clearing a path for the bombers. They should hang around until the strike has gone before they leave. Navy Armed Escort flights are great for suppressing AAA concentrations around the target and have a secondary role as CAP.

30.13 Post-Raid Forces

Getting the recon flight through is vital, to get battle damage assessment of the target. Recon flights fly fast using dash speed to avoid trouble. It may be worth leaving some of the main raid CAP behind to cover the recon mission.

30.14 Campaign Tactics

The US should concentrate force where possible. Hitting targets in a localized area in the morning will attrite the defenses and offer better odds for attacks in the afternoon. (Targets near the RP6a/RP6b border are good for this.)

30.2 DRV Tactics

The DRV does not have the firepower or numbers to destroy a raiding force. But they can stop the raiders completing their mission. If the DRV player can get the 'Yankee Air Pirates' to go home empty-handed, target unharmed, it's a DRV victory. Shootdowns are not necessary to achieve this goal. Instead, the DRV must box clever and use guile.

The DRV player should remember that a 'mission kill' is any kind of result that stops the US flights from doing their job. For example, a bombing flight that jettisons its bombs before it attacks is a mission kill for the DRV.

The DRV's defensive trident is their AAA, SAM and MiG force.

30.21 AAA

AAA can be used in three ways: to defend targets, to ambush raids and to shepherd the raid force where you want them to go. Defending a target with flak barrage threatens losses to the raiders and protects against bombing by applying modifiers to air-to-ground attacks.

Setting up hidden AAA along suspected flightpaths can make for some nifty ambush tactics. Lighting up barrage and Fire Can as a raid passes overhead can ruin the US player's day.

Setting up non-hidden flak can keep the raiders away from places they shouldn't go. The presence of Light flak barrage will cause the US player to think twice about trying to fly through it. Use AAA in this fashion to funnel the raid into 'kill zones' where SAMs or MiGs are set up.

30.22 SAMs

SAMs are more fearsome-looking than they really are. Shootdowns are infrequent, but a bombing flight forced to jettison because of a SAM avoidance maneuver is a mission kill and a good day's work for the SAM crew.

SAMs are best used *en masse*. One or two SAMs on their own are easy pickings for a raid's Iron Hand force. Four or more SAMs are needed near a target to make life hard for the US player. Another consideration is the need to give the MiGs space to operate in. A common rookie error is to spread the SAMs evenly across the defended area. This leaves SAM battalions unsupported against the attacking Iron Hand, while the presence of MiGs prevents the SAMs from firing. Careful planning is needed to deconflict the MiGs and SAMs.

Better practice is to concentrate SAMs in clusters around Hanoi, Haiphong and one or two critical targets, leaving the rest of the airspace to the MiGs. The coast would be the exception, where a picket line of SAMs is advisable. Both the USAF and USN can use the Gulf of Tonkin as an exit. A picket line can pick off stragglers and aborting flights.

When the enemy launch ARMs at SAM units, don't hesitate: shut the radars down. The SAMs will probably be back on line in two or three game turns. Unless the situation is desperate, it's just not worth the risk, however small, of losing them.

30.23 MiGs

The decision about what MiG flights to purchase will depend on the raid. In Rolling Thunder the USAF raids are generally easier to handle than the USN's Top Gunners. If the Navy 'Fates' (F-8 Crusaders) are flying it might be cheaper to hold off the MiGs and let the ground defenses handle it.

The DRV player won't have many MiGs, so he must use the threat of them to keep the raiders off-balance. Playing shell games with dummy flights is an essential tactic. If the American looks like they've seen through a dummy, take it off the map and regenerate it.

MiGs will usually start at low altitude or on the deck, in the ground clutter where they are difficult to detect. Increasing altitude risks exposure to US detection and will get the attention of the American CAP. Use MiG-17s to bait the Americans to low altitude if possible. Only climb them if there is a clear shot at the strike mission, otherwise the Yankees will chew them to pieces. MiG-21s are excellent for high-altitude fights, but sharp timing is required to zoom them to the medium or high band for an intercept and slash attack.

Always remember that air combat automatically causes bombing flights to jettison. If the USAF are running a jamming cell formation the multiple attack and MiG Panic rules can be useful allies.

30.24 Campaign Tactics

The DRV should manage their MAP pool carefully. It's easy to waste it fighting every raid on the first day or two, only to find there are no more MiGs for the rest of the week. Keep a reserve for the later battles.

If a flight is damaged or its Aggression depleted by morale, try to preserve the aircraft rather than waste MAPs in futile combat. Prudence is the watchword.

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APPENDICES

31.1 Select Bibliography

This is a selection of the reading used in researching the game:

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31.2 Online Support

Support for Downtown can be found online at the GMT website: http://www.gmtgames.com as well as the designer's website: http://www.airbattle.co.uk/downtown.html

31.3 Track Listing

For the authentic Downtown experience, spin these discs while you play the game.

Downtown, Petula Clark 1964
Surfin' Bird, The Trashmen 1964
Here, There and Everywhere, The Beatles 1966
You Keep Me Hangin' On, The Supremes 1966
All Tomorrow's Parties, The Velvet Underground and Nico 1967
Fall On You, Moby Grape 1967
I Wish It Would Rain, The Temptations 1967
The Match Game, Otis Redding 1967
Respect, Aretha Franklin 1967
Spirit in the Sky, Norman Greenbaum 1967, 1970
The Wheel of Hurt, Margaret Whiting 1967
Beginnings, Chicago Transit Authority 1969
Graveyard Train, Creedence Clearwater Revival 1969
The Dust Blows Forward 'n the Dust Blows Back, Captain Beefheart and his Magic Band 1970
What's Going On, Marvin Gaye 1971
Thick as a Brick, Jethro Tull 1972
Smoke on the Water, Deep Purple 1972
Superfly, Curtis Mayfield 1972
Walk on the Wild Side, Lou Reed 1972
Will the Circle be Unbroken, Nitty Gritty Dirt Band 1972
Where Are You Now, My Son? Joan Baez 1973

31.4 Credits

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USAF

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Downtown

When you get up at two o'clock in the morning
You can bet you'd go—downtown.
Shaking in your boots, you're sweating heavy all over
'Cause you've got to go—downtown.

Smoke a pack of cigarettes before the briefing's over,
Wishing you weren't bombing, wishing you were flying cover;
It's safer that way.
The flak is much thicker there,
You know you're biting your nails and you're pulling your hair;

You're going…
Downtown, where all the lights are bright,
Downtown, you'd rather switch than fight,
Downtown, hope you come home tonight—downtown.

Planning the route you keep hoping that you
Won't have to go today—downtown.
Checking the weather and it's scattered to broken
So you still don't know—downtown.

Waiting for the guys in T.O.C. to say you're cancelled,
Hoping that the words they give will be what suits your fancy.
Don't make me go.
I'd much rather R.T.B.
So you sit and you wait, thinking, oh f***, s***, hate!

I'm going…
Downtown, but I don't want to go
Downtown, that's why I'm feeling low
Downtown, going to see Uncle Ho—Downtown.

> *". . . Pistol Force, burners now...Barracuda has sweeping guns. Disregard the launch light, no threat..."*
> *"WHADDAYA MEAN NO THREAT!!! There's a pair at two o'clock!! TAKE IT DOWN…!!"*

Sung: *Downtown*

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