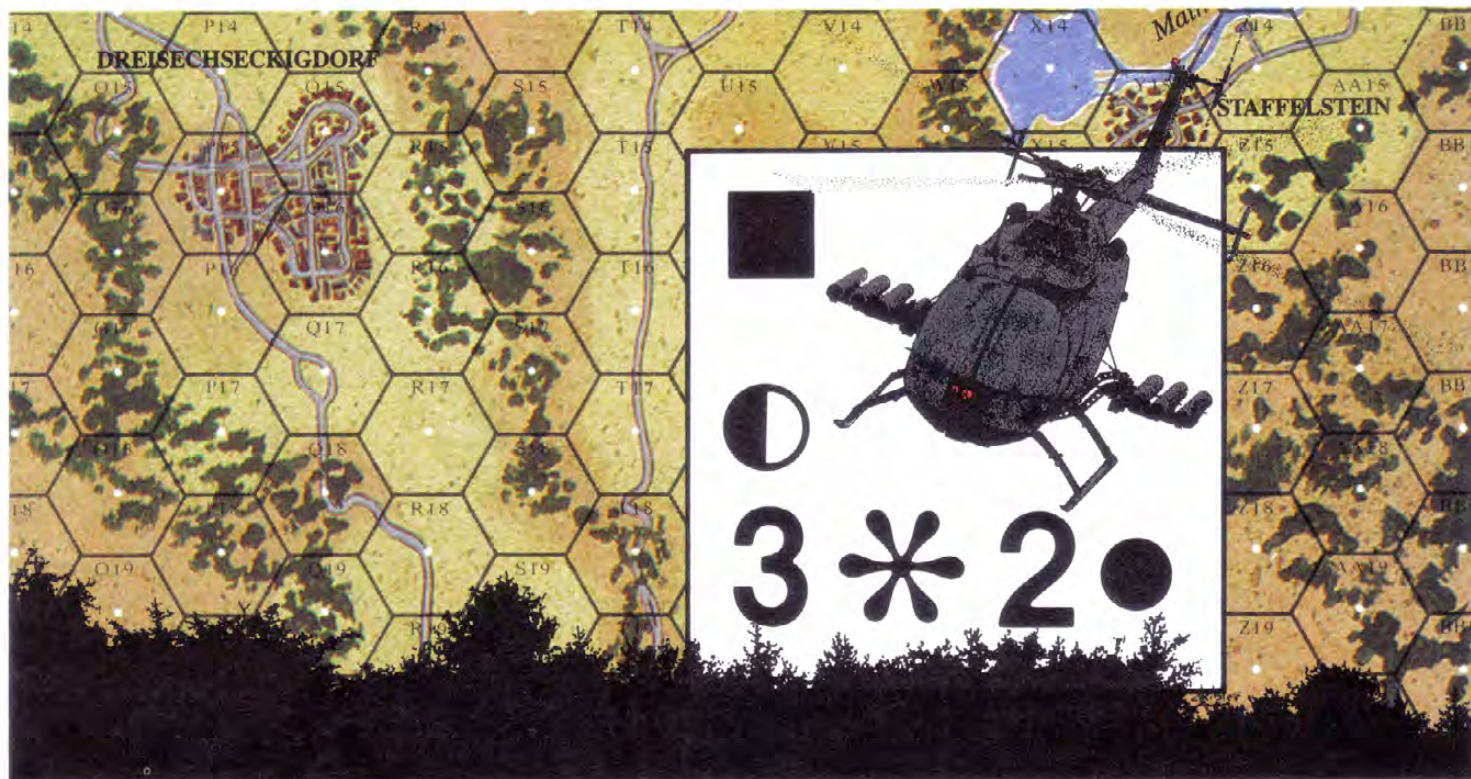




TACTICAL AIRPOWER DOCTRINE

Guidelines for Managing Airpower in TAC AIR

By Gary C. Morgan

TAC AIR, short for TACTical AIRpower, was created to fill the void which has existed in modern operation wargames—they don't realistically replicate tactical airpower, including troop air defenses. Some games have approached a good simulation of individual jet/flight airpower and small company/battalion air defense on the tactical level, but only covering the Close Air Support (CAS) role right on the front lines. Examples include aircraft like A10s and MiG27s against man-portable shoulder-fired Surface-to-Air Missiles (SAMs), armored personnel carrier mounted infra-red SAMs of the SA-9/13 and Chapparal class, and an occasional ZSU 23-4 Self-Propelled Anti-Aircraft Artillery.

Prior to the past couple of years, very little tactical airpower or opposing air defenses were seen in conflict simulations. Airpower was a factor considered in the games, but highly abstracted and unrealistically applied. It was considered as off-map artillery with some small regard to counter-air or air superiority, and little or no concept of penetrating an Integrated Air Defense System (IADS). *TAC AIR* now gives the wargamer all the classic tactical air missions, representative air units to use, and detailed troop air defenses for engaging hostile airpower, all on top of an intense mechanized ground battle! This article will describe the combat air functions that the game simulates, and should give you some basic guidelines for the tactical air missions your fighters will need to fly to achieve success in the game.

THE GROUND WAR

All air missions in some way support the soldier on the ground. Only the army can take and hold ground; aircraft only support these efforts. "If you take off and shoot down every MiG in the sky, return to your base and find a Soviet T-80 sitting in your aircraft shelter, you've lost the war, Jack!"

The preceding is a favorite quote, and is certainly appropriate to lead off discussion on how the air battle and the ground battle interrelate. *TAC AIR* functions on two dimensions: first the ground war on the operational level, replete with armor, mech infantry, artillery and attack helicopters (which are a hybrid of the ground and air environment, and can be considered belonging to both). To complement the ground battle, tactical fighters support their ground forces by performing the myriad classic air missions, and troop air defenses accompany the ground units to engage hostile airpower. This creates a second dimension of an air battle which overlays the ground battle and interacts totally.

The player must think in both ground and air commander frames of reference. Fixation on one, to the exclusion of the other, will lose the game. This special feature makes *TAC AIR* a superb multi-player game. With at least two players to each side, one can act as air commander while the other acts as ground commander. Winning at *TAC AIR* is accomplished by refining the subtle cooperation required in the prosecution of modern air-land combat. It is highly challenging and difficult to master . . . but easy to learn. One can quickly appreciate the years of experience, judgment and vision required of a tactician in either the army or the air force. *TAC AIR* poses many of the decisions, challenges, and considerations these generals could face on the battlefield of tomorrow.

While many *GENERAL* readers may feel confident playing mechanized ground wargames from World War II to modern day, some caution is advisable when playing *TAC AIR*'s ground battle. The Advanced Game adds command and supply units to the combat battalions of the Basic Game. These are very "soft" and are vulnerable to attack from either air or ground, thus creating the opportunity to have penetrating missions ("Air Interdic-

tion"). The player must keep them just far enough to the rear to preclude concerted attack by hostile maneuver battalions in a breakthrough attempt, or by artillery or aircraft. However, they must be far enough forward to perform their mission or the ground units they support/command will lose their momentum and staying power. Similarly, air defense units are almost as soft if caught by maneuver battalions too far forward. They are critical protection for your ground units against hostile air attack. Unlike many mechanized wargames, there is now some "tail" to the "teeth" of your divisions. You must now begin to think about logistics, C2 (command and control), and air defense of your rear areas where in the past players focused on just their front lines. You can rest assured that your opposing air commander is watching as well! As you read the following information on the tactical air missions and how they are employed, keep also a ground commander's viewpoint on how hostile fighters will perform these missions against your own ground forces.

THE AIR BATTLE

Tactical air operations are divided into five combat air functions—Counter-Air, Close Air Support, Air Interdiction, Tactical Air Reconnaissance, and Tactical Airlift. The order of precedence of these five functions is dependent on the threat and the results desired. The fundamental principle is to neutralize the enemy threat having the most profound and continuing influence on the total battle situation. Normally, all five combat functions are performed concurrently because they are mutually supporting.

Tactical airpower is employed to attain a common objective. Selecting, and adhering to, a common objective is critical to successful employment of tactical airpower. Plans need to be continuously

evaluated for their contribution to attaining the objective, which must be clearly defined. Tactical airpower must take advantage of the principles listed below:

Initiative. It is necessary to create opportunities and to take advantage of those which present themselves. Initiative enables airpower to apply force at the time and place deemed advantageous. The inherent flexibility of tactical airpower enables it to rapidly shift between the various missions and exercise initiative. Keeping an enemy on the defensive may preclude his ability to mount offensive operations.

Surprise. Surprise can be achieved through speed, deception, concentration, audacity and originality. Concentration of force at an unexpected time and place has a high probability of success.

Concentration. Tactical airpower can concentrate power in precise times and locations due to the speed and mobility of flying platforms. Care must be taken not to needlessly concentrate more combat power than is necessary to accomplish the desired objective, or conversely fail to commit adequate resources to get the job done. Air forces must be organized as an entity, and centrally controlled to enable them to be employed in a concentrated manner.

Security. Adequate intelligence is required and the threat must be minimized for the opportunity of success to be realized in any air operation.

Tactical air operations must be planned with consideration to the three factors listed below:

Objectives. The objectives must be set by the ground commander based on the battle situation. Objectives for a force on the attack may differ from the objectives for a defensive stand.

Threat. The threat drives planning. Operations must consider the best intelligence available to minimize the threat to the force. The advantage of tactical airpower is its capability to regenerate, by returning to base to refuel and rearm and repeatedly return into battle. Losses of aircraft have a geometric effect, since aircraft are not only lost for the current mission, but will also be unavailable for any future missions.

Force Capabilities. The number and type of forces must be considered to attain the objective with minimal losses, particularly from SAM and air-to-air threats. The targets, routes, weather, defenses, aircrew skill, and weapon systems must all be factored in planning to insure adequate, but not wasteful, application of combat power.

COUNTER-AIR OPERATIONS

The objective of counter-air operations is to gain and maintain air superiority, preventing enemy forces from interfering with friendly ground and air operations. This requires destruction or neutralization of the enemy's offensive and defensive air systems. Counter-air operations are targeted against the enemy air threat and may not necessarily directly relate to ground operations. Control of the air is desired. The absence of both hostile aircraft and missiles permits friendly aircraft freedom of movement and offers opportunities for offensive action. Air superiority may be total and permanent if the entire enemy air defense system is destroyed.

Often, air superiority may be local, in a certain area for a certain time period. Suppression of Enemy Air Defenses (SEAD) involves, for the Americans, specialized "Wild Weasel" aircraft which can seek out ground-based electromagnetic emitters and destroy or disable them using standoff weapons or direct attack. This is considered an Offensive Counter-Air (OCA) mission, by seeking out and destroying hostile air power as close to its source as possible. Other OCA missions may include attacking airfields, command and control facilities, fuel and munitions storage for hostile aircraft or SAM systems, aircraft either flying or on the

ground, and SAM defense sites. Defensive Counter-Air (DCA) operations consist of employing an IADS of tactical fighter/interceptor aircraft, SAM, and AA artillery, all controlled to protect friendly forces from hostile air engagement.

Air operations over friendly forces require positive coordinated airspace control to minimize interference and fratricide, while efficiently identifying, intercepting and destroying/neutralizing any hostile air attacks. This is normally accomplished by construction of airspace control plans or orders and integration of these orders and plans throughout the friendly AIDCS. Counter-air operations take the form of several types of missions:

Counter-Air Strikes against surface targets of the enemy airpower complex may be directed against defensive systems, but should concentrate on destroying the enemy's offensive air capability if feasible.

Fighter Sweeps have the mission of finding and destroying enemy air forces in the air. As enemy fighters are destroyed, friendly air control increases and the threat of hostile air attack decreases.

Fighter Screens restrict enemy air movement by placing airborne tactical fighters between friendly forces subject to hostile air attack and the threat, either in friendly territory or along the line of contact.

Combat Air Patrol (CAP). Fighters may be tasked to intercept and destroy enemy aircraft in a localized area. CAPs are usually over or near the area/force to be protected while screens are imposed between the threat and friendly area/force.

Air Escort. Friendly air forces enroute to an objective area subject to enemy air attack may be accompanied by friendly tactical fighters configured for air-to-air combat. The escorting fighters will engage hostile aircraft in order to allow escorted aircraft to pursue their missions with minimal interference.

Air Intercept of enemy and unidentified aircraft should be accomplished when hostile offensive air action is threatened. This interception is normally accomplished over friendly territory, but forward from vital target areas to permit defense in depth. Fighter aircraft and an integrated ground/air radar control system are normally essential.

CLOSE AIR SUPPORT OPERATIONS

CAS is air action against hostile targets in close proximity to friendly forces, and requires detailed integration of each air mission with the fire and movement of those forces. Tactical air forces are applied against targets of immediate concern to surface forces when surface combat cannot produce the desired effect with organic weapons. The task of CAS is to provide selective and discriminate firepower, when and where needed in support of ground forces. Thus, CAS must be available, responsive, integrated and controlled.

Availability. The joint force commander (who commands both air and ground forces) daily determines the proportion of tactical air effort to be applied to CAS. The air commander notifies the ground commander of the daily number of aircraft *sorties* (missions) he will commit to the CAS effort. The ground commander then prioritizes his CAS requests from each ground unit to correspond with the number of missions allocated.

Responsiveness. CAS missions are flown to support the ground force commander. Communications must rapidly process requests. Fighter wings must maintain aircraft on various states of alert to insure rapid reaction and immediate response. Alert aircraft may be selectively launched based on ordnance loaded and target characteristics. CAS missions may be either *preplanned* or *immediate*. Preplanned missions are targeted against fairly static targets, while immediate missions employ alert aircraft against fleeting targets as they become available.

Integration. CAS missions must be closely integrated with the organic fire of the ground forces to achieve mutual support. CAS must also be closely integrated with the movement of ground forces to insure air support is provided when and where required, and to minimize fratricide of friendly troops. This integration is accomplished by air and ground liaison/control systems. Air and ground units exchange personnel to perform these functions.

Control. The mobility of ground forces and the fluidity of modern battle require positive control of CAS aircraft. Target area control is performed by a Forward Air Controller, who insures direct coordination with the ground unit being supported and target identification by the CAS aircraft. The Air Controller may be flying in special aircraft or may be on the ground with the supported ground unit.

CAS aircraft are most effective against hard, mobile targets. Typical targets are enemy troop concentrations, fixed/hardened positions, and mechanized/airmobile elements in the immediate battle area. Favorable opportunities for CAS occur when enemy forces are on the move and exposed to air attack. There are several CAS Operations Concepts to govern the action:

Support of Offensive Ground Operations. Ground forces on the attack provide one of the best opportunities for CAS. It can provide the firepower needed to breach enemy strongpoints, creating an ideal opportunity for exploitation by friendly ground units. Attacks are directed against strong defensive positions, enemy troop concentrations, suspected ambush sites, and other centers of resistance. The enemy must not be permitted to regroup or initiate a counteroffensive.

Support of Ground Exploitation Operations. Breakthrough opportunities must be immediately exploited. Enemy forces on the move attempting to reinforce the breakthrough area will be vulnerable to air attack.

Support of Defensive Ground Operations. CAS may be used to prevent friendly defensive positions from being overrun. CAS can also be used to cover forces pulling back in retrograde movements, and may also cover friendly reconnaissance elements probing into enemy territory for information. These types of missions require positive identification of targets and maximum delivery accuracy to minimize friendly casualties.

As for specific CAS missions:

Airborne/Airmobile Operations. CAS is essential for drop/landing zone preparation and suppressive fire since organic artillery is normally not available during the early stages of the drop/landing. CAS may be required to continue necessary fire support of light troops inserted by parachute or helicopter.

Amphibious Operations. CAS may be necessary to support amphibious forces when they exceed the range of naval gunfire, or if naval gunfire is inadequate or unavailable. Air attacks are conducted prior to the assault to reduce enemy resistance. Further support for the establishment of the beachhead, and assisting the landed troops to break out, are additional CAS tasks.

Column Cover. Movements of columns may require air cover which can detect ambushes, provide warning to the column, and attack the threatening enemy forces while ground units deploy from column to battle formation.

Counter-Mechanized Operations. CAS can disrupt and destroy hostile mechanized forces and formations. Special CAS aircraft are optimized with weapon systems effective against armored vehicles. CAS can attack mechanized forces which are enroute to the battle area, or while grouping together in assembly areas.

AIR INTERDICTION OPERATIONS

Air Interdiction operations can destroy, neutral-

ize or delay the enemy's military potential before it can be brought to bear effectively against friendly forces, and can restrict the mobility of enemy forces by disrupting their lines of communication. Air Interdiction missions do not require detailed integration with fire and movement of friendly forces since strikes are conducted beyond the range of ground artillery support. The effects of a concerted Air Interdiction campaign may not be immediately apparent; however, enemy forces will lose logistical resupply capability and cannot sustain high tempo offensive operations without appreciable supplies of POL, ammunition and replacement personnel and equipment.

Identification of the enemy's lines of communication is essential to a successful Air Interdiction effort. Air Interdiction may also delay or pin reinforcements moving toward the front lines. Denying the enemy the swift employment of exploitation forces may bring a breakthrough offensive to a halt, and will allow friendly forces to continue to engage first echelon enemy forces without being overwhelmed by the enemy's second echelon units in reinforcement. The objective(s) of Air Interdiction must be planned in relation to the ground situation, and will require good reconnaissance and intelligence support. Normally, only a limited amount of aircraft sorties are available for Air Interdiction, and must be concentrated against specific targets to have significant effect. Air Interdiction missions must penetrate into enemy territory and inherently are the riskiest since they may be engaged by the full extent of the enemy's IADS. Penetration support and air escort may be required to give the Air Interdiction aircraft reasonable probability of survival.

Air Interdiction may not achieve complete isolation of the area of conflict, but may rapidly reduce the enemy's battlefield reserves to critical levels and seriously limit his capability to continue effective action. When offensive friendly ground operations are conducted in combination with Air Interdiction, it accelerates the consumption of the enemy's material and capitalizes on his reduced combat effectiveness.

Air Interdiction operations reduce the enemy's capability to mount an offensive, restrict the enemy's freedom of action and increase his vulnerability to friendly attack, and prevents the enemy from countering an increase in friendly strength. Interdiction is never complete or permanent. Friendly ground action forces the enemy to use up what forces and material that do arrive. Once the Air Interdiction objective has been reached, the amount of effort required to maintain the campaign may be disproportionate to the results achieved. Enemy defenses eventually will be optimized against the Air Interdiction routes and targets. Air Interdiction takes the form of two types: Air Strikes and Armed Reconnaissance.

Air Strikes. Strikes against specific targets require target intelligence information for planning. The size of the strike force must be calculated along with target aimpoints, attack/navigation routing, and appropriate weapons to be delivered. Targets may be preplanned (bridges, crossroads, etc.) prior to development of the battle.

Armed Reconnaissance. Armed Recce missions are planned when the exact target location is not certain. Armed Recce missions are flown with the objective of locating and attacking targets of opportunity. The objectives may be located in general areas, or along main lines of communication.

TACTICAL AIR RECONNAISSANCE OPERATIONS

Tactical Air Reconnaissance (*Recce*) provides an airborne means for collecting intelligence for the ground commander. Classic Recce has utilized cameras mounted in high speed tactical fighters to overfly target areas, then have the film analyzed by



SUPPLEMENTARY UNITS

TAC AIR depicts operational Air-Land battle in the VII Corps area of responsibility in the southeastern Federal Republic of Germany. The game includes the units most likely to engage in combat in that area. Not included in the game, but comprising additional forces located near the area are the 4th Canadian Mechanized Brigade and the French I/II Corps, and supporting French air units.

While the Canadian brigade may be used as a reserve in the U.S. V or VII Corps areas, the French ground forces' appearance is more problematical. They could be used *anywhere* along the Allied Forces Central Europe (AFCE) front, depending on French commitment, strategy and the progress of the war. Since the use of the Canadian brigade and the French air units in the VII Corps area is the most likely possibility, these are the extra units provided with *THE GENERAL*. In addition, there are a number of new aircraft counters showing airpower which may find its way over the VII Corps skies during the next few years.

ADDITIONAL TAC AIR UNITS

1. French Aircraft: If France fights near the VII Corps area, several types of French aircraft could augment the 4th Allied Tactical Air Force (4ATAF). These French air units can be added to the NATO forces in any of the Master Scenarios if the additional PACT aircraft (see 2. and the SU-27 entries below) are also used to counterbalance them:

Jaguar (NATO 51-53): The Jaguar flies in the air forces of France and Great Britain, and would be a regular in the skies further north. The Jaguar is primarily an attack jet (DAS, Interception, and possibly SEAD orders) which carries a limited bomb load.

Mirage F.1C (NATO 54-55): The Mirage F.1C is France's standard air defense interceptor. It is capable of night/all-weather air combat operations and carries radar homing missiles (see 11.4.1) on air control missions.

Mirage F.1R (NATO 56): This is the reconnaissance version of the Mirage F.1C. It is a dedicated recon aircraft that is used only for reconnaissance missions (RF).

Mirage 2000 (NATO 57-58): The Mirage 2000 is the replacement for the Mirage 3 and 5 series, and is just entering French service. Very flexible, it carries radar homing missiles on air control missions, but is also useful for close air support.

Alpha Jet (NATO 59-60): The French have significant numbers of these combat-capable trainers and they are the same as the West German units already included in *TAC AIR*.

2. Additional PACT Aircraft: The new MiG-23 (PACT 31-33) and MiG-27 (PACT 34-36) units can be added to the PACT forces in any of the Master Scenarios if the French aircraft are also used.

3. Future Aircraft: Air orders of battle are constantly changing as new equipment replaces old. These aircraft could be deployed in the near future by both sides.

SU-27 "Flanker" (PACT 25-30): This is a new air superiority fighter/interceptor currently deployed inside the Soviet Union. It is the size of the F-15 and similar in capability, although it looks more like an F-18 in shape. It is capable of night/all-weather air combat operations and carries radar homing missiles on air control missions. Eventually, it should be deployed into the Central Region and could augment forces at war in East Germany or Czechoslovakia. They can all be added to PACT forces in Master Scenario #12 if the NATO future aircraft are used to replace older units in cases where this is possible. Two units can be added (with the additional PACT aircraft above) in any of the Master Scenarios where the French aircraft are used.

Reconnaissance Drones (NATO 61-62 and PACT 36): These units represent unmanned camera platforms and can be added to the forces of both sides in any desired scenario when option 21.0 is used. The units must be used only with "RF" orders and gather "information" the same as manned recon flights. Because these drones use television cameras for "real time" transmission, no collected "information" is lost if the unit is eliminated. Because of their small size and low radar signature, radar air defense units may not be used to engage them in air defense combats and aircraft with radar homing missiles cannot use them to attack drones. A drone unit is eliminated by a half-flight or entire flight combat effect, but abort results are ignored.

Additional Tornados (NATO 43-44): The West German F-104s were included in *TAC AIR* largely for variety and historical interest. They may be replaced by these additional Tornado units (which have the same numerical designations) in any scenarios in which they appear.

F-4F ICE (NATO 33-36): The West German F-4Fs are currently being updated with new wings and radar to permit their effective use into the next century. The updated aircraft will be able to carry radar homing missiles on air control missions. The F-4 ICE units can be used to directly replace the F-4F units with the same numerical designation in any scenarios in which they appear.

F-15E (NATO 21-22): The F-15E "Strike Eagle" is approaching "Initial Operational Capability" and should eventually be deployed to U.S. Air Forces Europe (USAFE). The F-15E has a two-man crew, has night/all-weather capability, Synthetic Aperture Radar for almost photographic ground mapping ability, computer aided weapons delivery and navigation, and an awesome weapons payload and range. Useful for close air support, the F-15E can alternatively be changed from mission-to-mission for use in recon (RF) missions, or can carry radar homing missiles for air control missions. The F-15Es can be used to directly replace the A-10 units with the same numerical designation in any Tournament or Master scenario in which they appear.

F-15G (NATO 10-11): Strike Eagle Follow-On Wild Weasel (FOWW) variant is also being considered for the future. These follow the usual Wild Weasel rules except that they can exploit their large bomb load to launch an ARM attack up to every Air Round, rather than only once. The F-15Gs can be used to directly replace the F-4G units with the same numerical designation in Master Scenario #12 only.

F-117A (NATO 23-24): The supersecret F-117A "Ghostrider"/"Frisbee" stealth fighter, on which hard data is unobtainable, invites speculation regarding its probable capabilities. Hard to "see" electronically, it would have to carry a very limited load of ordnance to keep its low radar cross-section. Its relative invisibility would be useful while using its laser designator to guide other aircraft's attacks using laser guided bombs. The F-117As can be used to directly replace the A-10 units with the same numerical designation in any scenarios in which they appear. Special rules required for this unique aircraft are as follows:

- The F-117A basically can't be seen by radar, thus it cannot be attacked by radar air defense units or by radar homing missiles. Still a target for guns or infrared missiles in daylight, the planes are almost invulnerable at night or in bad weather.
- Despite its underlined "A" factor, the F-117A does not carry radar homing missiles. The underlined "A" factor is, in this case, to show that it can attack for air combat (fly air control missions) at night or in bad weather.
- To use its laser designator to guide other aircraft's laser guided bombs, an F-117A unit's "B" factor may be added to that of any other single air unit's factor for air support combat by that other air unit if the F19A unit is within two hexes of the target when the other unit attacks. This can be done repeatedly with different other air units and in addition to the F-117A's own attack.

4. Canadian 4th Mechanized Brigade: This formation can be added to the NATO forces on in Master Scenario #12.

Editor's Note: The counters for these new units are found on the accompanying die-cut counter sheet (enclosed for SUBSCRIBERS only). Those readers who are not subscribers may purchase the counter sheet—which contains 130 variant counters for upcoming articles in future issues as well—direct from The Avalon Hill Game Company (4517 Harford Road, Baltimore, MD 21214). Please specify the counter sheet "The GENERAL, Vol. 25, No. 2" and enclose \$3.00 (usual shipping and handling charges apply).

photo-interpreters. Photographic Recce is still a primary mission for most Tactical Air Reconnaissance units. It is being supplemented by new sensors which can detect information at night or at greater distances than were possible with standard photographic means. Also, new means of getting the information back in real time, or near real time, have made it possible to minimize the delay inherent with a returning aircraft and photo processing/analysis. Even if the aircraft is lost to enemy defenses, the information has already been sent back for utilization.

More emphasis is currently being placed on unmanned recon drones which make smaller targets and can overwhelm adversary air defenses by sheer numbers. Modern technology has continued to introduce more strategic recon platforms (such as the U-2, SR-71, FOXBAT, etc.) which collect imagery or electronic emissions from deep battlefields at long range. With detailed airborne intelligence, ground and air commanders are better able to plan friendly operations and counter enemy offensives. Air reconnaissance supplements the intelligence and recon information derived from ground sensors and units such as Long Range Recon Patrols, electronic intelligence, forward observers, and combat reports from ground units in action.

Tactical Air Reconnaissance is a dedicated operational mission to many squadrons in air forces worldwide with specially configured aircraft mounting cameras and other recon sensors. Other air forces prefer to add this as an additional mission to attack or air superiority squadrons by mounting special recon pods on the aircraft when reconnaissance missions need to be flown.

The former concept offers usually more capable, dedicated aircraft and crews who excel in the recon mission. The latter concept offers flexibility by configuring aircraft for another role when it is not flying Recce missions. Dedicated recon platforms usually need all the speed possible, and the phrase "Alone, Unarmed, and Afraid" has become the motto of reconnaissance. Aircraft flying recon pods may or may not be armed, and adversary fighters may avoid engaging such Recon sorties, mistaking them for armed aircraft on other missions.

There are several Tactical Air Recon missions, among them:

Battlefield Surveillance. Recon aircraft may be tasked to overfly or fly near suspected enemy assembly areas, to identify possible attacks. Overflight of assault objective areas and routes may reveal the presence of enemy defenses, their type and strength. Reconnaissance missions over marshalling yards and along lines of communication may show enemy intentions for an upcoming offensive, or the flow of reinforcements/replacements in a particular sector of the battlefield.

Pre/Post Strike Reconnaissance. Pre-strike recon is used for the "before", while post-strike recon is used for the "after" when airstrikes are planned and conducted against enemy targets. By comparing the condition of the target just prior to attack with its condition just after the attack, an accurate assessment of actual target damage can be concluded.

Strike Control and Reconnaissance (SCAR). SCAR is a concept which puts a recon aircraft in the role of a type of flying forward air controller, only against interdiction-type targets farther behind enemy lines. The recon arrives in the target area first, identifies targets, and passes targeting information to the inbound attack aircraft for engagement.

TACTICAL AIRLIFT OPERATIONS

Tactical Airlift performs the obvious mission of aerial resupply. This may be the movement of material and men from airheads or ports to forward

staging/resupply points. Other resupply may be to airborne, airmobile or amphibious forces who may depend totally on airlift for logistical support, having no other lines of communication. Tactical Airlift may also be used to evacuate wounded or troops cut off from any other form of retreat. Tactical Airlift's most direct contribution to combat is the airborne delivery of special forces, airborne or airmobile troops—normally behind enemy lines.

BALANCING THE TACTICAL AIR MISSIONS

This article can't presume to tell you how to specifically employ your fighters in *TAC AIR*. The above synopsis of tactical air doctrine will give you some general guidelines for smart ways to approach the problems. If you read and understand what has been presented above, you will have an advantage over an opponent who has never heard of these concepts and is unfamiliar with the missions over a modern battlefield. Doctrine differs from tactics in that it lists things to consider which should work well in the majority of situations. Tactics specifically apply doctrine to the particular situation at hand. When you begin to formulate your own doctrine or apply that described in this article, bear in mind two things: what is happening with your own forces, and the enemy's forces/intentions. One of the secrets of successful employment of tactical airpower is second-guessing what the opponent has and what he's up to.

The Advanced Game of *TAC AIR* has the full gamut of tactical air missions. We have tried to give you at least a small appetizer of each mission when possible in the Basic Game. Of vital significance even in the Basic Game is CAS! Whether you are the Soviets on the roll, or NATO on defense, CAS will be a major factor in the ground battle with immediately apparent results. Each side has a limited number of special CAS jets (A-10 or FROGFOOT). Major CAS efforts will necessitate drawing your other fighter-bombers away from Counter-Air or Air Interdiction missions.

Tank and Mech Infantry battalions are fairly hard targets, and it will take some significant CAS assets to hurt them severely. Artillery is somewhat softer and CAS can damage it more effectively. Depriving your opponent of his artillery will make a big difference! CAS attacks on soft command units can be deadly and can cripple a combat formation of brigade/regiment size. If brigade/regiment supply units poke too far forward, CAS can quickly eliminate them, causing maneuver units to lose their staying power. This is called "Battlefield Air Interdiction", which is a hybrid of CAS and Air Interdiction. When employing your CAS forces, watch out for the deadly troop air defenses! Concentrations of mobile SAMs can quickly devastate your vital CAS aircraft. Also, watch out for major counter-air efforts by your opponent to clear the skies of your jets so he can begin his attack campaign. Remember the principle of *concentration*! Identify the big payoff CAS target(s) and put your forces there, along with some SEAD to keep the defenses down. You won't achieve much by spreading your CAS aircraft thinly all along the front.

Before ground forces engage, one of the best missions for your airpower is Counter-Air. The shallow depth of the *TAC AIR* battlefield doesn't depict the airfields in the rear areas, nor does it allow attacking them. *TAC AIR* was designed to show combat in the Forward Edge of the Battle Area (FEBA)—its former name as an Air Force game. With airfield attack out of the picture, you may elect to fly Fighter Sweeps with your jets loaded up for air combat, or you might try to conduct a SEAD campaign by knocking out some key SAM sites which will later take their toll on your CAS and Interdiction missions. If you think the enemy will be trying to soften up your forces in anticipation of an impen-

ing attack, you may decide to send up some CAP flights to stay over your own lines and engage enemy attack flights. Again, concentration is essential. Task your strongest air combat jets in the Counter-Air role—normally jets are strong in either air combat (air-to-air) or air attack (air-to-ground), but usually not both. Newer aircraft like the F-16, F-18, F-15E Strike Eagle, and Mig-29 FLUCRUM are being produced with strong capability in both roles and offer the air commander ultimate flexibility.

Air Interdiction and CAS both come into high demand once the battle has been joined, and the primary main effort has been identified. Counter-Air continues to be significant, both for intercepting and destroying enemy attack missions and for the escort of friendly attack missions against hostile intercept. Escorting fighters are limited in flexibility by being tied to the attacking aircraft, but can help insure the success of their mission against enemy engagement. Combining escorted attack forces with Fighter Sweeps will give the hostile air commander a dual problem. The secret is to have enough good air combat jets to do both. You can't fly your jets every game turn; they must stand down the following game turn for fuel and ordnance. You must have a plan in mind for which jets will fly particular game turns. You can opt for constant air over the battlefield by rotating flights in the air and on the ground. Your other option is to surge and fly *everything* all in one game turn—"The Gorilla".

Although you as the player can see most of what's going on down on the battlefield (unless you are playing an "Umpired" game), you would need some tactical intelligence about what is happening behind enemy lines to consider launching Air Interdiction missions. While they have little or no combat power, Tactical Air Recon aircraft provide you with the capability to attack targets deep in enemy territory. Recce missions will detect targets behind the lines and allow you to plan Air Interdiction missions on following game turns. Again, you can attack hard combat units on roads moving toward the front and cause some minor disruption, or you can hit division command and supply units with catastrophic effects. Everything that was mentioned above about CAS is applicable with Air Interdiction, only it happens deep behind enemy lines. Air Interdiction flights are exposed to more SAMs, AA and enemy Counter-Air flights, so send enough airpower to get the job done, and give them some support so they can make it home. Expect some losses on a big operation.

Don't forget about Electronic Combat (EC) aircraft. They can make a big difference against enemy air defenses. Putting your SEAD effort and jammer aircraft against the defenses on the route your Air Interdiction flights plan to fly may mean the difference between hitting the target or aborting/being destroyed. Again, concentration is fundamental since your EC assets are very limited. Applying them piecemeal may result in barely any effect across the battlefield. If you expect to use your EC assets more than one game turn, you'd better give them some air combat protection, either by launching CAPs or escort. You can mount a major SEAD effort by tasking CAS flights to take out forward air defense units, and launching Weasel missions against areas/units you feel will be troublesome to your attack flights. It is possible to strip a brigade/regiment or even a division of its air defenses, making it vulnerable to air attack later on. Don't forget to use your artillery and attack helicopters if they can be spared to assist in the SEAD effort.

Your whole air strategy will be driven by the scenario, what your adversary is doing, and the development of the battle each game turn, with objectives and priorities in a constant state of change. Further complicating the operation are the unpredictable elements of weather and airborne/

airmobile forces. Just when you are ready to launch the big air gorilla, suddenly the weather grounds all of your jets! You can predict when the weather has a higher probability of being good and bad, and may plan accordingly. You may also see the effect of your limited numbers of Night/All-Weather aircraft during night and bad weather game turns to keep constant pressure on the enemy. The possibility of an airborne or airmobile assault on your enemy's flanks or rear areas will definitely keep him on his guard. This is one of the most powerful trump cards you have. Even if you never use it, the threat of it will keep the enemy worrying.

SUMMARY

Hopefully, this article has given experienced TAC AIR players some food for thought on past successes and mistakes, and given the beginning players some hints for future play, and—most importantly—given those readers who haven't played TAC AIR an idea of what is available in this revolutionary game. If modern day Air-Land battle is what you seek, TAC AIR should satisfy your desire for realism, authenticity and playability. Just about everything on the modern operational European battle is included in a game which is fairly easy to play/teach and won't take weeks to finish. It is especially suitable for the gamer who plays with several friends, although it can be played easily by two opposing players. It is the first game to offer all of the tactical air missions and detailed integrated air defense forces on both sides. The hints on play described above should convince you that TAC AIR is one game that will continue to teach you lessons on the subtle considerations for employment of tactical airpower and ground forces, and you should find it challenging for years as you perfect and refine your mastery of modern combined arms warfare.



SO THAT'S WHAT YOU'VE BEEN PLAYING

Titles Listed: 154

Total Responses: 681

Rank:	Title	Pub	Rank Times		
			Last	On	Freq. Ratio
1.	Advanced SL	AH	1	16	4.4
2.	Third Reich	AH	3	45	3.1
3.	Britannia	AH	—	1	3.0
4.	St. Nazaire	AH	2	4	2.5
5.	B-17	AH	10	17	1.9
6.	Russian Campaign	AH	11	45	1.8
7.	Up Front	AH	5	3	1.7
8.	Diplomacy	AH	16	17	1.6
9.	Squad Leader	AH	6	45	1.6
10.	World in Flames	ADG	—	1	1.5
11.	Guns of August	AH	17	3	1.4
12.	Civilization	AH	14	4	1.3
13.	Empires in Arms	AH	15	8	1.2
14.	Gettysburg '88	AH	—	1	1.2
15.	Partisan	AH	—	1	1.1
16.	Patton's Best	AH	13	6	1.1
17.	War & Peace	AH	—	1	1.1
18.	Yanks	AH	7	7	1.1
19.	Panzer Leader	AH	—	1	1.0
20.	VITP	AH	9	3	1.0

The appearance of an issue devoted to highlighting BRITANNIA brings it to the top, and seems to have caused a few more folks to break out their copy of CIVILIZATION. Among the several games finding their way onto this survey of what the readership is playing is the surprising WORLD IN FLAMES, one of the few non-Avalon Hill/Victory Games titles to ever show up here. Solitaire games—in the form of B-17, RAID ON ST. NAZAIRE, and PATTON'S BEST—continue to make a strong showing. Another pleasant surprise is the appearance of the new GETTYSBURG, Craig Taylor's introductory design. As usual, a number of titles failed to make the list, but other equally fine games show up for the first time in awhile.

THE AVALON HILL GAME COMPANY'S BEST SELLER LIST

As is our custom, the editor's once again present sales rankings for our line of game titles based on totals for the 1987 Fiscal Year, which began May 1987 and ended April 1988. Figures for the All-Time List include all versions of a title sold to date, provided the game system has not radically changed in any subsequent printing over the years. D-DAY and FOOTBALL STRATEGY, by way of example, have collectively passed through eight different editions—but each retains its original system. GETTYSBURG, on the other hand, has changed dramatically in each of its five versions and is therefore omitted from the list—even though the collective totals of its various incarnations would normally grant it a place. Titles are placed on the All-Time List only after having sold in excess of 100,000 copies while under The Avalon Hill Game Company's ownership. Readers should note that there are several games that qualify under this restriction but have not, as yet, surpassed the sales of WAR AT SEA.

1987 BEST SELLERS

Rank:	Title	1986 Rank
1.	STATIS-PRO BASEBALL	2
2.	PLATOON	—
3.	PATTON'S BEST	—
4.	STATIS-PRO FOOTBALL	4
5.	SQUAD LEADER	7
6.	RAID ON ST. NAZAIRE	—
7.	YANKS	—
8.	FLIGHT LEADER	3
9.	BRITANNIA	—
10.	PARTISAN!	—
11.	CIVILIZATION	14
12.	THIRD REICH	12
13.	DIPLOMACY	8
14.	STATIS-PRO BASKETBALL	11
15.	RAIL BARON	18
16.	ADVANCED SQUAD LEADER	—
17.	HEDGEROW HELL	—
18.	PAYDIRT	9
19.	PARATROOPER	6
20.	THUNDER AT CASSINO	—

ALL-TIME BEST SELLERS

Rank:	Title	1986 Rank
1.	OUTDOOR SURVIVAL	1
2.	FACTS IN FIVE	2
3.	PANZERBLITZ	3
4.	SQUAD LEADER	4
5.	PANZER LEADER	21
6.	THIRD REICH	5
7.	TACTICS II	6
8.	LUFTWAFFE	7
9.	BLITZKRIEG	8
10.	STATIS-PRO BASEBALL	10
11.	FOOTBALL STRATEGY	9
12.	ACQUIRE	11
13.	DIPLOMACY	12
14.	MIDWAY	13
15.	PAYDIRT	14
16.	STARSHIP TROOPERS	15
17.	D-DAY	16
18.	AFRIKA KORPS	17
19.	WIZARD'S QUEST	18
20.	WAR AT SEA	19

The General

Volume 25 Number 2

Front

1776

Bulge '81

Empires in Arms

TAC AIR

Howe ★★ 1-0-10	H. Clinton ★★ 2-1-10	Cornwallis ★★ 3-1-10	Burgoyne ★★ 4-0-10	Leslie ★★ 5-1-10	Grey ★★ 6-1-10	Prevort ★★ 7-1-10	Carleton ★ 1-2-10	Fraser ★ 2-1-10	Phillips ★ 3-1-10
G. Clinton ★ 4-1-10	vonRiedest ★ 5-1-10	Knyphasen ★ 6-1-10	von Heister ★ 7-1-10	Rall ★ 8-1-10	Tarleton ★ 9-2-10	Rawdon ★ 10-2-10	Leader A ★ 0-0-10	Leader B ★ 0-0-10	Leader C ★ 0-0-10
Leader D ★ 0-0-10	Arnold ★ 11-1-10	Arnold ★ 2-2-10	Washington ★★ 1-1-10	Lee ★★ 2-0-10	Gates ★★ 3-0-10	Green ★★ 4-2-10	Lincoln ★★ 5-1-10	Leader A ★ 0-0-10	Leader B ★ 0-0-10
D'Estrang ★★ 1-1-10	Rchambeau ★★ 2-1-10	Leader A ★ 0-0-10	Sullivan ★ 1-1-10	de Lafayette ★ 3-2-10	Sterling ★ 4-1-10	Wayne ★ 5-2-10	Montgomery ★ 6-1-10	Morgan ★ 7-2-10	Schuyler ★ 8-0-10
6 III 2 III 23 6-4	A III 1 III 16 6-4	P III 1 III 404 4-2-4	3 III 1 III 9 7-4	E III 2 III 3 9-4	7 III 1 III 33 8-4	4 II 4 II 402 4-2	5 II 4 II 410 5-3	4 II 3 II 386 4-2	4 II 3 II 403 4-2
B III 1 III 18 6-4	B III 1 III 26 6-4		4 III 10 IV 10 8-4		4 III 11 III 12 10-4	4 II 4 II 401 4-2	6 II 7 II 706 6-3	4 II 4 II 406 4-2	4 II 4 II 405 4-2
MOREAU 4.4.4C	BONAPRTE 5.5.3C	BONAPRTE 5.5.4.B		SUVAROV ★ 4.5.4.B	ACHMED PASHA 2.3.2.B		YORK 2.2.2.A	DE LA UNION 2.2.3.A	WURMER 1.3.2.B
★ HOCHIE 4.5.3C	DUMRIEZ 3.3.3.B	PCHEGRU 3.4.3C		FERSEN 2.3.2C			ABRCHMBY 3.4.2.B	RUBY 1.2.2.B	MELAS 2.3.3.D
ICOF-4ICE 33 13 13	ICOF-4ICE 34 13 13	ICOF-4ICE 35 13 13	4 0/2(10)	IRCHA 3-2 [8]	RCD 6-5	4 3-4		IRCHA 0:1 (6)	
ICOF-4ICE 36 13 13	Torn 1 43 4	Torn 1 44 4			2PP 3-4	1/22 3-4		4 0:1 (6)	
ICnSu-27 25 8 1	ICnSu-27 26 8 1	ICnSu-27 27 8 1	ICnSu-27 28 8 1	ICnSu-27 29 8 1	ICnSu-27 30 8 1	F-15E 21 4 3 5	F-15E 22 4 3 5	F-15G 10 4 3 5	F-15G 11 4 3 5
ICnMG-23 31 8 1	ICnMG-23 32 8 1	ICnMG-23 33 8 1	ICnMG-27 34 8 3	ICnMG-27 35 8 3	Drone 36 0 3	ICnF-117 23 2 2	ICnF-117 24 2 2	Drone 61 0 3	Drone 62 0 3
ICnJaguar 51 1 2	ICnJaguar 52 1 2	ICnJaguar 53 1 2	ICnJaguar 54 1 2	ICnJaguar 55 1 2	ICnJaguar 56 1 2	ICnJaguar 57 1 3	ICnJaguar 58 1 3	ICnJaguar 59 1 2	ICnJaguar 60 1 2

