APPENDIX F

AIR DEFENSE

Section I. INTRODUCTION

F-1. GENERAL

Besides the increase in the number and quality of Threat ground forces, there has been a marked improvement and increase in Threat air forces. Threat air forces will be able to control parts of the battlefield airspace. This appendix discusses methods to defeat Threat high-performance (jet) aircraft and attack helicopters. Since the enemy can be expected to place troops in the battle area by helicopter and parachute, this appendix also discusses engagement of those types of targets.

To effectively defend against air attack, units must make maximum use of cover, concealment, camouflage, dispersion, and early warning. Units must also be proficient in the use of their weapons in an air defense mode. Enemy airmail can attack any ground force whose location has been discovered. The sighting of a few soldiers or vehicles can lead to the disclosure of a whole unit, even if the rest of the unit is well hidden. Concealment is the key to avoid an air attack.

Air attacks will probably be unexpected and swift. To prevent surprise, early warning of a probable attack is necessary so that troops have a chance to take cover. This warning may come down through normal command channels, or start with track leaders, local observation posts, or air guards. All TLs and OPs should have air-watch instructions, OPs should be positioned so they have a good view of the airspace around them, so a special air guard should be detailed.

F-2. THREAT TACTICS OF JET AIRCRAFT

Threat jets usually work together in two teams with two aircraft in each team. Using high speed for surprise and survival, they usually strike along the long axis of the target. This gives them a better chance to hit the target. They try to attack out of the sun to gain surprise. Threat jet aircraft weapons include automatic guns, rockets, and bombs. With guns and rockets, they can fire from a distance, but they must fly over or near the target to accurately deliver conventional bombs.
A common Threat tactic is to have one team of jet aircraft attack a target, followed by a second team 1 to 3 miles behind. The teams try to surprise the target and divert attention and defensive fire. When the lead team spots a target, it tells the trailing team; then, the lead team pops up in full view of the target. This draws fire to the lead team, while the trailing team, which has not yet been seen, flies in at high speed, for a low-altitude attack. The attack is usually level, under 1,000 feet, with cluster bomb units released along the target's long axis. The lead team then makes a sharp reverse turn to attack the target close-in, firing guns and rockets or divebombing for maximum effect. This tactic has two purposes:

1) If the target is surprised by the lead team and does not take evasive action, the trailing team will get maximum effect with the cluster bomb units.

2) If the target only evades the first attack and does not concentrate fire on the lead team, this team will get maximum results with rockets and bombs on its return pass.

The best defense against attacking Threat jet aircraft is to:

Be familiar with Threat air tactics and not be surprised by the trailing jet team.

Immediately concentrate volume fire on any attacking jet, while dispersing and taking evasive action.
F-3. THREAT TACTICS OF ATTACK HELICOPTERS

Attack helicopters fight in teams of two or more. They are more agile and maneuverable than jet aircraft and use ground cover and concealment while engaging from stand-off positions. They can employ a variety of weapons in support of this action:

- 57-mm free flight aerial rockets (FFAR).
- Antitank guided missiles.
- General purpose bombs.
- 12.7-mm machine gun.

Attack helicopters will be used extensively in forward areas in the following combat roles:

- Close air fire support — aerial fire support for the attacking forces similar to the A-10 support for US forces.

Combat air assault — airmobile operations in the friendly rear areas.

- Antitank fires — ATGM fires (AT-2 Swatter or more advanced systems) similar to US attack helicopters.

Air-to-air interdiction — a secondary mission together with one of the other combat roles.

The combat roles of enemy attack helicopters make contact between friendly forces more likely.

The best defense against attacking Threat helicopters is to:

- Immediately concentrate volume fire on any attacking helicopter within range (1,600 meters).
- Take evasive action and disperse.

Section II. TARGET ACQUISITION AND ENGAGEMENT

F-4. GENERAL

Where to Look. A map reconnaissance of the unit’s direction of movement or area of operations will help to pinpoint likely areas from which an enemy aircraft might attack. The back of woodlines, ridgelines, and folds in the terrain can be marked out to at least 3,000 meters as a guide to possible attack helicopter positions. Restrictive terrain, defiles, and narrow valleys, where the unit may have to close in, are also areas which should be approached with caution. Moving close together through such areas offers a lucrative target for tactical air attack along the long axis of movement.

How to Look. To see attacking aircraft soon enough for a platoon to react, TLs/gunners (mounted) and individual soldiers (dismounted) must constantly be on the alert for hostile aircraft. Observers may use one of two systematic methods of search to look for aircraft in any type of terrain. Members of the platoon should frequently focus on a distant object, such as a cloud or terrain feature. If this is not done, the eyes tend to relax, and distant objects become blurred.

In the first method, the observer searches the horizon by moving his eyes in short movements across the sky working his way up and across. He continues the scan pattern to below the horizon to detect nap-of-the-earth flying aircraft.
In the second method, the observer searches the sky using the horizon as a starting point and prominent terrain features as points of reference. He moves his eyes in short movements up the sky then back down, continuing the movement across the terrain. He scans in the same pattern below the horizon to detect aircraft flying nap-of-the-earth.

Searchers should be alert for:

- Sun reflection from aircraft canopies or cockpit windows.
- Blade flash from rotating helicopter blades.
- Smoke or vapor trails from jet aircraft missiles, or rockets.
- Dust or excessive movement of treetops and bushes in a particular area caused by the downwash of helicopter blades.
- Noise from helicopter blades, or jets breaking the sound barrier.

Searching for air targets at night is similar to searching for ground targets at night. How-
ever, the observers may have to rely more on hearing than sight for detecting aircraft. Techniques include short, jerky, abrupt movements of the eyes. Off-center vision (looking slightly to the side of an object) is used to prevent an image from fading. Night vision is aided by cupping the hands around the eyes to shield out distracting light.

When to Engage. Specific rules for engaging aircraft should be in the unit SOP. These rules are based on policies of higher headquarters. Without that guidance, the following is suggested:

Immediately engage all attacking aircraft.

Engage enemy aircraft not attacking your position only when told to do so. Aircraft must not be engaged arbitrarily. To do so may compromise your position.

The best defense against enemy aircraft may be passive measures, such as camouflage, cover, and concealment.

How to Suppress. Likely areas where Threat helicopters may be hiding (behind hills and treelines) should be suppressed by fire just as ground target areas are suppressed. This can be done by indirect fire of mortars and artillery.

Section III. AIRCRAFT ENGAGEMENT TECHNIQUES

F-5. AIRCRAFT ENGAGEMENT

Enemy aircraft are engaged to:

Destroy the aircraft, if possible.

Force the aircraft away from friendly positions.

Force the aircraft to fly higher so that it can be picked up and destroyed by friendly air defense weapons or friendly aircraft.

Spoil the hostile aircraft’s aim while it is engaging friendly forces.

Vehicles must take evasive action when engaging or being engaged by hostile aircraft. This lessens the effectiveness of the hostile aircraft’s fire. Evasive actions include:

Seeking cover and concealment.

Keeping vehicles dispersed.

Moving with frequent changes of speed and direction while turning away from the hostile aircraft’s axis of attack.

Avoiding use of lights at night.
F-6. ENGAGING FAST-MOVING AIRCRAFT

Because of its speed, a jet aircraft can best be engaged by the caliber .50 machine gun in a continuous burst. When the aircraft is flying a crossing course, the gunner uses a lead of 200 meters — two football field lengths. Fire is directed ahead of the aircraft, letting the aircraft fly through the machine gun’s cone of fire. The TL should not try to track or traverse with the aircraft. It flies too fast. The dismount element, with its M16A1 rifles, SAWs, and M60 machine guns, uses the same 200-meter lead to engage jet aircraft. For helicopter, a 50-meter (half a football field) lead is used. If the aircraft, either jet or helicopter, is flying directly toward the vehicle, the TL should aim slightly above the aircraft nose and fire.
A second technique to engage high-speed aircraft is to choose a reference point or a series of reference points. The platoon leader alerts the platoon to get ready. As the aircraft approaches a reference point, he orders, "ENEMY AIR, REFERENCE POINT 2 — FIRE." All APCs and all dismounted soldiers raise their weapons to a 45-degree angle over the designated reference point and fire.

**Figure F-7. ALL-WEAPONS FIRE.**

**F-7. ENGAGING HOVERING HELICOPTER**

If a hovering helicopter is picked up by the TL, the aircraft is engaged with the caliber .50 machine gun. Range to the target is estimated by making a quick check of the map for the target's location and range, using reference points whose range is already known, or estimating the range and adjusting the rounds until they hit the target. The Threat Hind helicopter is approximately the same height as a BMP when measured from the bottom of the aircraft to the top of the pilot's canopy. The gunner aims slightly above the fuselage. At longer ranges, tracers may appear to be striking the target when they are actually going under it.

**Figure F-8. ENGAGING HOVERING HELICOPTER.**
F-8. ENGAGING ENEMY AIRBORNE/AIRMOBILE FORCES

Enemy forces in the attack will frequently try to airdrop or insert troops into the battle area by helicopter or transport aircraft. If landing zones are not available, troops may rappel from their helicopters. If troop-carrying helicopters are sighted, they should be engaged as soon as possible using techniques previously discussed. If rappelling troops are sighted, the helicopter should be engaged, not the troops, because it is a better target.

It is harder to engage airborne soldiers because they are dropped from fast-moving aircraft at high altitudes and they descend too fast to track effectively. When using the SAW or the M60 machine gun, a lead must be taken to compensate for the airborne soldiers’ rate of descent. Use a lead of two man-heights beneath the dropping soldier.

Pilots who have bailed out of disabled aircraft should not be considered as airborne troops. Engaging parachuting pilots violates the covenants of the Geneva Convention.

F-9. SUMMARY

The platoon must search continually for hostile aircraft as well as ground targets.

Aerial targets can be destroyed or suppressed by mounted and dismounted weapons.

US troops must be familiar with Threat air tactics, both high-performance aircraft and helicopter.

Aircraft engagement rules should be part of the unit SOP.

US troops must take evasive action and engage with all appropriate weapons to destroy attacking aircraft.

Mounted and dismounted weapons are also effective against other aerial targets, such as airborne and airmobile infantry.