ACTIV-AM
Final Test Report — Armed helicopters

SECTION I — Introduction.

1. (C) PURPOSE OF THE TEST.

To test and evaluate concepts of employment for armed helicopters in escort of transport helicopters and ground troops involved in airmobile operations.

2. (C) SCOPE OF THE TEST.

Test objectives called for . . .

... appraisal of the tactics and techniques employed by armed escort helicopters;

... assessment of the effect on insurgents of suppressive fires delivered by armed escort helicopters in the landing zone;

... determination of command, control, and communications procedures required for successful employment of armed escort helicopters;

... description of methods used by armed escort helicopters to locate insurgents;

... prescription of the optimum organization for an armed escort company; and

... estimation of logistical requirements for support of an armed escort helicopter company.

3. (C) LIMITATIONS ON TESTING.

a. Terms of reference for the conduct of the test provided that the test activity must not have an unacceptable impact on military operations. To insure compliance with this injunction, testing was undertaken only in connection with actual operations, and the test unit was in no case required to engage in activities designed solely or primarily for test purposes. As a result, "controls" normally associated with testing could not be imposed.

b. US Army armed helicopters were governed by "rules of engagement" specifying conditions under which they might deliver fire. These rules, imposed in recognition of the advisory and supporting role of the US in the Republic of Vietnam, precluded testing of tactical concepts involving "offensive" employment of the armament capabilities of armed helicopters.

(1) Initially, the rules of engagement provided that the armed helicopters could deliver fire only after they or the escorted transport helicopters had been fired upon.

(2) In late February, the rules were modified to permit the armed helicopters to initiate fire against clearly identified insurgents who threatened their safety or the safety of escorted helicopters.

4. (C) THE TEST ENVIRONMENT.

a. Physical factors.
Most of the activity covered by this report took place in the Mekong Delta region during the dry season. Late in the test period, a detached platoon of six armed helicopters operated for 30 days in a mountainous jungle area. Terrain and weather conditions in the RVN (Republic of Vietnam) are discussed at length in Annex C.

b. Military considerations.
For the conduct of military operations, the RVN is divided into four corps areas. Each of these areas is unique in terms of terrain, weather, and enemy dispositions. Within the framework of an overall plan, each corps is given objectives and a set of priorities for their accomplishment; these vary among the corps. Coordinated effort involving elements of two or more corps is infrequent, and there seldom is any need for shifting large bodies of troops among corps areas. Although guided by central authority, each corps operates quite independently in a military sense. Within a corps, operations are planned and carried out at division, regimental, or lower level. The military situation, in short, is decentralized and compartmentalized.

5. (c) THE TEST ORGANIZATION.

a. Test results are based on evaluation of operations conducted by the UTTHC (Utility-Tactical Transport Helicopter Company). This provisional unit was equipped initially with 15 UH-1A helicopters, each armed with a locally-fabricated weapons system consisting of two .30-caliber machine guns and 16 2.75-inch rockets. The unit was augmented with 11 UH-1B helicopters in November 1962. Subsequently, A-models were gradually replaced by B's, and at the end of the reporting period the company had six A's and 20 B-models. The B's were equipped with factory-installed XM-683 weapons systems with four M-60C machine guns per aircraft. Locally-fabricated rocket systems were installed as the result of a sub-test conducted midway in the test period. A cluster of eight 2.75-inch rockets was mounted on each side of the fuselage.

b. Throughout the test period the UTTHC was under the operational control of COMUSMACV (Commander, US Military Assistance Command, Vietnam), was assigned to the USAVC (US Army Support Command, Vietnam) for administration and logistical support, and was further assigned to the 45th Transportation Battalion.

c. The UTTHC was based at Tan Son Nhut on the outskirts of Saigon. From this base it supported transport operations of the 57th, 33d, and 93d light helicopter companies, all equipped with CH-21 aircraft. On 27 February, one platoon was detached for basing at Qui Nhon. It supported the 8th and 81st light helicopter companies (also equipped with the CH-21).

d. During the test period the UTTHC...

... conducted 78 armed escort missions;
... escorted transport helicopters into 257 landing zones;
... received enemy fire in 73 landing zones; and
... flew 3382 combat support sorties in 1779 flying hours.
6. (C) THE ESCORT CONCEPT.

The plan of test called for an evaluation of the armed helicopter in the escort role. "Escort" was not defined. The average mission required elements of the UTHCO to go to a loading zone where ARVN (Army of the Republic of Vietnam) soldiers were being loaded on transport helicopters, accompany the transports to a landing zone, and protect the transports in the landing zone. Many missions required shuttles from the loading zone to one or more landing zones; the average mission involved 3.3 movements to and unloadings in landing zones. Through analysis of sorties performed, it was determined that the escort role has the following components:

a. En-route phase. This term is used to denote that portion of the loading-zone-to-landing-zone route that was flown at a "safe" altitude, i.e., an altitude at which helicopters were relatively immune to insurgent ground fire. In this phase, the armed helicopters simply accompanied the transports. They had no other function unless a helicopter from the formation was forced down by mechanical trouble, in which case an armed helicopter would descend to protect the downed aircraft and, if required, to evacuate its crew and passengers. In some instances, helicopter formations going to landing zones were accompanied by fixed-wing armed aircraft which were available to orbit over the downed machine to give protection against insurgents.

b. Approach phase. In most heliborne operations, surprise was a paramount consideration. For this reason, the heliborne force (transport and escort helicopters) usually descended to nap-of-the-earth height while several kilometers away from the landing zone. This maneuver brought the force into an area of vulnerability to enemy ground fire. In some cases — where loading zones were close to landing zones — this area extended over the entire distance, as nap-of-the-earth flight was employed all the way. The combination of speed and low-level flight gave a high degree of protection against insurgent fire. Armed helicopters could fire en passant at insurgents delivering fire but could not, because of insufficiently high dash speed, leave the formation in order to deal with sources of fire. In some cases, accompanying fixed-wing aircraft engaged such targets after the heliborne force had moved on.

c. Landing zone phase.

(1) Here the function of the armed escort helicopters was to protect the transports and the unloading troops by suppressing insurgent fires. Methods of performing this function are discussed in Section III; effectiveness is covered in Section III. This was the period of maximum vulnerability of the heliborne force; statistics presented in Section III indicate that vulnerability outside the landing zone was virtually negligible. To the degree that "escort" denotes an active function (as opposed to a passive "accompaniment"), this function was exercised primarily and almost exclusively in the landing zone.
(2) Armed helicopters, with their capabilities of loitering and providing continuous and accurate firepower, provided a high degree of protection during this brief and critical period. Where communications and coordination techniques permitted, fixed-wing aircraft provided the potential for a high degree of "shock action" against the insurgents during the same critical period.

(3) When the transports in the heliborne force were unloaded, the armed escorts left the landing zone with them; the rules of engagement did not permit the escorts to remain at the landing zone to support the ground operation.

7. (c) TEST RESULTS.

Test results are summarized below under headings corresponding to test objectives. More detailed discussion is presented in Sections II through XI of the report.

a. Tactics and techniques.

The seminal influence on the development and evolution of tactics and techniques was the requirement for suppressive fires to be delivered in landing zones. Entry into landing zones was contested by the VC (Viet Cong) on 73 occasions — i.e., in 28% of the cases. When there was a requirement for suppressive fire, the need developed instantaneously — with the firing of the first VC round — and demanded immediate response. Battles for landing zones were of short duration, and events developed very rapidly within a limited area. These battles were compressed both spatially and temporally, and within this compressed framework the unique characteristics of the armed helicopter were demonstrated to good advantage —

-- Its ability to fly low and slow and to maneuver with great dexterity allowed it to operate within the same spatial "envelope" occupied by the transport helicopters.

-- Proximity to the transports allowed immediate response to insurgent threats.

-- The stability of the platform, the flexibility of the weapons systems, and the accuracy of the weapons permitted delivery of fires at the precise points of threat; the low-end-slow characteristics of the helicopters made for quick identification of those points.

-- Faculty of intelligence on enemy strength, dispositions, and capabilities precluded precalculation of the amount of suppressive fire that would be needed in any given landing zone. Tactical formations and techniques of fire had of necessity to be adapted to an empirically-determined "average" requirement. There were no pressures contributing to a determination of minimum force for the task. Stimulus in the opposite direction was provided by the relative abundance of armed helicopters in relation to the number of transports needing escort.

The entire range of possible tactics and techniques was not
exploded. Test results therefore tend to point to solutions that are tenable rather than optimal. It was demonstrated, for instance, that escort platoons of both five and six aircraft could be used effectively; a clear superiority of one over the other was not shown. Platoons of other sizes were used in relatively few cases; thus, not firm conclusions can be drawn on their merits.

A scout element was added to the basic platoon late in the test period. The usefulness of such an element has been accepted on a tentative basis. Further testing will be needed to determine whether scouting should be considered a separable facet of the escort mission and whether aircraft must be added to the platoon to perform this function.

The soundness of the tactics and techniques developed by the UTHCC is revealed in the before-and-after statistics given in Section III of this report. These are summarized in the following paragraph.

b. Effect on insurgents.

Objective 2 asks whether "the presence of armed escorts reduces the amount and accuracy of fire placed on transport helicopters by insurgent forces." Objective 6 seeks a determination of "the effectiveness of close-in aerial suppressive fire support delivered in protection of helicopters" in the landing zone. It seems evident that the term "presence," in Objective 2, does not mean "more presence," but that it refers rather to "presence plus delivery of protective fires." If this meaning is accepted, then objectives 2 and 6 become substantially identical. They have been so treated in this report; data applicable to either of the objectives were considered to be responsive to the other. The quest has been for data that would show how armed helicopters have "made a difference" in heliborne operations. Several sources were used —

— Transport helicopter crews were questioned.
— ACTIV project officers observed actual heliborne operations.
— Unit mission reports and ground fire damage reports were analyzed.
— Captured enemy documents were scrutinized.
— Questions for inclusion in interrogations of captured members of the VC were submitted. (To date, no data have been received from this potential source.)

Statements from VC personnel who have been subjected to fires from armed helicopters would be direct evidence — but not necessarily reliable evidence — on the effectiveness of those fires. Although the enthusiasm generated among the crews of transport helicopters by the presence of armed escorts was an indicator of effectiveness, a more objective approach was sought. The search led to the record of hits received by helicopters participating in airborne operations. If it could be shown that armed helicopters — by their presence and their actions — reduced the number of transport helicopters hit by insurgent ground fire, then it could be concluded that the armed helicopter is an "effective" instrument in the escort role.
SECTION I — Introduction (continued)

There were inherent methodological complexities in this approach to effectiveness —

— Initially, data were gathered both on number of helicopters hit and on total number of hits received. The later was discarded as an index. Its use gave undue weight to cases of multiple hits received by a single helicopter (as in the case of a craft downed in the landing zone; such a craft is susceptible to multiple hits, but these are acquired at a time when it is not functioning as a helicopter). Once a hit is received, the probability of additional hits is increased. Data on hits as presented in this report relate to number of helicopters hit rather than to the total number of hits (rounds) received.

— Hits are to some degree of function of exposure. The number of combat support hours flown was taken as a valid measure of exposure. "Hits per flying hour" was developed as the statistical index.

— Hits are also, to some degree, a function of the level of enemy activity. No adequate measure of levels of enemy activity was developed during the test. Captured enemy documents indicated increasing VC-preoccupation with the problem of coping with heliborne attacks, and, as the test period progressed, increasing numbers of unescorted friendly aircraft were hit by ground fire. In gross terms, then, it could be said that — over all — the level of VC activity against helicopters increased during the reporting period.

— Friendly tactics changed in response to the VC threat. For example: nap-of-the-earth flying over the entire route from loading zone to landing zone was for the most part discontinued in favor of flying at altitude over the greater part of the route. This change was made to reduce the probability of collecting hits enroute. Friendly and enemy tactics are always in a state of interaction: threat produces response, and the response may be viewed as a threat requiring a counter-response.

— It was determined — not surprisingly — that most hits were received while helicopters are at low altitude and slow speed. This combination obviously is related to the landing zone, but it could not be correlated with a particular time frame or with specific distances. "Landing zone," therefore, has remained a loosely-defined term whose denotation is geographically; further collection of data is required if it is to be precisely related to actions by the heliborne force in either a spatial or temporal framework. Already-collected data showing the speeds and altitudes at which most hits occur should be useful in the development of better tactics and techniques and in influencing the design of future escort helicopters.

Prior to the advent of escort by the UTHCCO, transport helicopters on "dangerous" combat support missions were hit at a rate of .0074 hits per flying hour. For similar missions escorted by the UTHCCO, the rate declined to .007%. During the same period of time, the hit rate for all other flying done by the 45th Transportation Battalion (i.e., unescorted, "non-dangerous" flying)
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SECTION I — Introduction (continued)

nose from .0001 to .002%. VC effectiveness against unescorted aircraft doubled
while the efficacy of their fires against escorted aircraft dropped off by
35 per cent.

Other things being equal, the increased level of VC effort would
have produced the best payoff (for the VC) if concentrated against missions in
direct support of combat operations — as opposed to administrative and logis-
tical missions. Given such a concentration and an absence of armed escorts,
VC effectiveness against combat support missions would have increased even more
than two-fold. Instead, it declined. Consequently, it was concluded that the
suppressive fires delivered by armed escort helicopters were highly effective
in reducing the amount and accuracy of insurgent fires placed on transport
helicopters — as reflected in the number of hits received by the transporta...

o. Command, control, and communications procedures.

Objectives 3 and 5 overlapped. As number 3 was the broader objec-
tive, data relevant to number 5 are reported here under objective 3. This ob-
jective calls for determination of "optimum" procedures for command control,
communications, and coordination among the several elements involved in hel-
borne operations, namely . . .

- . . transport helicopters;
- . . armed escort helicopters;
- . . tactical aircraft; and
- . . the supported ground commander.

Ground operations are commanded and controlled by officers of
the ARVN (Army of the Republic of Vietnam). Transport and escort helicopters
participating in heliborne portions of such operations remain under the con-
trol of US officers. They are linked to the ground commander through the
senior US advisor to that commander. Aircraft other than US Army are com-
manded by officers of the VNAF (Air Force of Vietnam) or by US Air Force
officers acting as instructors for VNAF personnel. These aircraft are linked
to the ground commander through a tactical air control system (TACS) based
on its US counterparts.

With so many diverse elements participating, ground operations
that include heliborne elements can be expected to go smoothly only if . . .

. . . there is detailed planning, briefing, and cross-
briefing by all concerned;

. . . rules of coordination are established by a joint-
combined directive and are thoroughly understood by all participants;

. . . coordination requirements are reduced by standing
operating procedures that are followed by all concerned;

. . . common communications facilities are available to
all participants; and
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SECTION I -- Introduction (continued)

...communications facilities are strictly controlled
and volume of radio traffic minimized by use of signals and short
code words and phrases.

That these requirements are difficult to meet is demonstrated by
the description of the current "state of the art" given in Section IV.

Command and control measures and communications procedures can
perhaps best be optimized by use of an airborne command post which would give
the ground commander direct communications with representatives of all support-
ing elements. From such a vehicle the commander could . . .

... observe and evaluate the progress of the operation
from a relatively safe site accessible to but detached from the battle
in progress;

... move quickly to any critical point in the area of
operations; and

... influence the activities of the ground combat force
and all supporting forces.

Suggested staffing of and concept of operations for an airborne
command post are given in Section IV.

d. Optimum formations.

Formations are directly related to platoon structure. As pointed
out above, optimum platoon size was not determined. Neither was an optimum
formation arrived at. Formations used successfully during the test period are
described in Section II.

e. Insurgent identification.

Except when they choose to wear distinctive dress or to disclose
themselves by a hostile act, insurgents are indistinguishable from the general
public.

En route and approach phases of airborne operations seldom pre-
sented occasions calling for identification or location of insurgents. Any
individual who fired at the airborne force was self-identified if seen; if
not seen, he was immune to retaliation — escorts could not leave the forma-
tion to seek him out.

In landing zones, location is likely to be a more critical prob-
lem than is identification. When fire is received, armed escorts must pin-
point the source of the fire and react against it. The low-and-slow cap-
ability of the armed helicopter and its configuration permitting unobstruct-
ed visibility make it an excellent vehicle for aerial observation. If fire
comes from prepared positions or from positions in treelines or dense growth,
the individuals delivering the fire may never be seen, although their positions
may be disclosed by the discharge of their weapons. In such cases, armed es-
corts react against a location rather than against identifiable individuals.
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SECTION I — Introduction (Continued)

Individuals fleeing from a landing zone generally do not constitute a "clear threat" — in terms of the rules of engagement — to the heliborne force; they therefore are not taken under fire.

Except for brief scouting forays in landing zones, armed helicopters did not perform reconnaissance or surveillance. They were not called upon to conduct patrols for the purpose of seeking out insurgents on their strongholds. Identification and location of insurgents, accordingly, were not critical problems except in the landing zone and in the limited sense indicated above.

f. Optimum organisation.

This objective included the phrase "determine ... whether armed helicopters should be included in the TOE of transport companies or should the armed helicopter unit be as support of the transport company." No occasion was offered during the test period to evaluate armed helicopters organic to transport units. Such an evaluation can best be made by testing a transport unit that has built-in escort capabilities. This possibility is discussed in Section II.

None of the combat support missions undertaken by the UTHCO during the test period required the simultaneous employment of two or more Platoons. Escort was in all cases conducted by a single platoon. The platoon, therefore, is the starting point for the theoretical formulation of a "type" escort company. A "type" company is presented in Section IX. It is based on a 7-aircraft platoon. Although not proposed as the optimal platoon, its tentative acceptance is based on . . .

... the employability, demonstrated throughout the test period, of the platoon of five aircraft, and

... the utility of a section of two scouts as an addition to the basic platoon.

Regardless of platoon size, the escort company needs certain organisational elements that were not made available to the UTHCO. Operations during the test period established well-defined requirements for . . .

... an armament section to maintain and repair helicopter weapons systems;

... an organic capability for avionics maintenance;

... expanded aircraft maintenance capabilities, including provision for adequate direct maintenance support for Platoons detached from the company base; and

... gunners for armed helicopters.

g. Logistical problems.

UH-1 availability rates:
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SECTION I — Introduction (continued)  

World-wide average for six months preceding test . . . 55%.  

UTTHCO average for the test period . . . . . . . . . . . 65.9%.  

These availability figures indicate that the UTTHCO encountered no insoluble supply or maintenance problems during the test period. Certain logistical deficiencies, however, had no direct effect on aircraft availability and are not reflected in the figures —  

--- In 25% of its combat support missions, the UTTHCO encountered refueling difficulties at troop pick-up sites because of lack of fuel or pumping equipment or both. This situation began to improve toward the end of the test period. — The UTTHCO completed eight missions during the final month of testing and had a refueling problem only once.  

The lack, in the RVN, of a heavy-lift helicopter capable of recovering downed UH-1's imposes requirements for extraneous expenditure of man-hours by recovery and security personnel whenever a helicopter is forced down in an insecure area. Introduction into the RVN of the CH-57 (or a similar evacuation-type helicopter) is understood to be in the offing. These aircraft will provide the means for rapid and economical recovery of downed helicopters.  

--- The UTTHCO had difficulty in giving adequate logistical support to a detached platoon based 300 miles away from the company base. The difficulty stemmed from a combination of factors:  

--- Insufficient stockage of spare parts to permit the detached platoon to establish a stock of its own.  

--- Inability to provide the platoon with an organic maintenance capability because of overall shortage of maintenance personnel.  

--- Lack of adequate air transport.  

2. Ammunition day of supply.  

A proposed day of supply, by ammunition type, is —  

--- 3 rounds for each .30-caliber machine gun.  

--- 6 rounds for each 7.62-mm machine gun.  

--- 1 round for each 2.75-inch rocket tube.  

The method used for calculating the day of supply is explained in Section IX.  

2. (U) EXTRA-TEST OBSERVATIONS.  

This test called for evaluation of armed helicopters in only one role.
escort. Although the test effort concentrated on production of data relevant to this role, the data-gathering process provided bases for judgments in related areas. Observation of the successes and shortcomings of the armed helicopter led to two broad questions —

--- What tasks can be performed by this instrument?
--- How can the instrument be better adapted to the tasks?

Considering only the environment of counter-insurgency, the present armed helicopter appears to be capable of...

... performing aerial reconnaissance;
... serving as an airborne command post for a ground operation;
... escorting ground convoys;
... providing the means of mobility and fire support for a quick reaction force to assist beleaguered hamlets and outposts;
... furnishing the ground commander a widely-ranging, shock-action force for application at critical times and places; and
... giving direct fire support to ground troops. (This is not intended as a argumentum ad rem concerning service roles in the RVN. It is, rather a statement of a capability; determination of where and when the capability should be applied is outside the scope of this report.)

To perform these tasks with maximum effectiveness, the armed helicopter should —

--- Be powered to give...
... a dash speed of near 200 knots, and
... sufficient lift to allow armor protection for crew and critical components.

--- Carry a variety of armament to permit selective employment of weapons against either point or area targets.

--- Afford all-around visibility.

9. (U) DATA-COLLECTION FORMS.

Samples of the data collection forms and questionnaires used during the test period are available and will be sent to interested agencies upon request.
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SECTION II — Objective 1 (Tactics and techniques)

1. (C) OBJECTIVE;

"Determine the tactics and techniques employed in providing armed escort for transport helicopters."

2. (C) DISCUSSION.

a. General.

(1) Troop-carrying helicopters were introduced into combat operations in the RVN to give increased mobility to ARVN units in operations against the insurgent VC. Heliborne operations normally have called for a troop lift of relatively short duration, from a secure loading zone to a landing zone adjacent to or close to known or suspected insurgent positions. As conceived initially, the mission of armed escort helicopters was to accompany the transport force and reduce its vulnerability by delivering suppressive fires against insurgent ground fire encountered on route to or in the landing zone. This mission changed somewhat during the course of the test due to a change in transport tactics. Initially, nap-of-the-earth flying was frequently used en route to a landing zone, and there was a need for armed helicopters to counter ground fire that might be received en route. Later, it became customary for the transports to fly at altitude, descending to nap-of-the-earth only upon approaching the landing zone. This tactic largely eliminated the possibility of receiving ground fire en route, and the armed escort helicopter became essentially an instrument for employment in the landing zone.

(2) Evaluation of the entire range of possible armed escort tactics was restricted by two factors:

(a) Testing was conducted only in connection with actual operations. Testing requirements were in all cases subordinated to operational requirements. "Pure" testing of tactical concepts was not feasible.

(b) Because they were US rather than Vietnamese resources, the armed helicopters could use armament only for defense. "Rules of engagement" specified, initially, that armed helicopters could fire only after fire was received from insurgents. Toward the end of the test period, the rules were modified to allow firing at clearly-identified insurgents who posed a clear threat to the transport helicopters or their accompanying escorts.

(3) In addition to "artificial" influences such as those just mentioned, the range of possible armed escort tactics and techniques is influenced by:

(a) Helicopter characteristics. If transport and escort helicopters are not of the same type, differences in speed, hovering ability, maneuverability, etc., affect tactics. These differentials have applied in the RVN, where CH-21 transports have been escorted by UH-1A and UH-1B armed helicopters.

(b) Armament characteristics. During the test period, the VNAF used UH-1A and UH-1B helicopters equipped with both machine guns and rockets. Tactics built around a mix of "pure" machine gun and "pure" rocket aircraft were not developed.
(c) Size of the transport element. In operations to date, helicopter transport elements have included 15 to 30 aircraft. Experience has shown that an armed escort platoon can provide an acceptable level of protection for forces of this size. Larger transport forces, which might call for the simultaneous use of two or more escort platoons, have not been employed; accordingly, there has been no opportunity for developing tactics and techniques for an escort force of two or more platoons.

(d) Command and control facilities. US heliborne forces lifting troops into a combat zone normally have not been under the operational control of the ARVN ground commander. The heliborne force has been virtually autonomous, and communication between the en route heliborne force and the ground commander has been either lacking or deutilitary. Escort tactics which have been developed in this situation might not be entirely adaptable to situations in which a US heliborne force is under the operational control of a US ground commander and in constant communication with him.

(4) UTHEO tactics and techniques have been examined in terms of:

(a) Organisation for combat,

(b) Methods of employment:

1. Techniques of fire,

2. Formations,

3. A typical escort mission,

(c) Vulnerability.

b. Organisation for combat.

UTHEO missions have not required simultaneous employment of two or more platoons. Test results are based upon single-platoon operations.

(1) For the purposes of this report, "platoon" is defined as "an armed helicopter element capable of providing protection for a transport helicopter force of from 20 to 25 transports."

(2) A number of factors influencing platoon size and structure can be isolated. These include:

(a) Mission implications. The escort mission implies that armed helicopters will:

1. Suppress insurgent fire directed at transport helicopters,

2. Attract insurgent fire, thereby diverting fire from the transports,

3. Create an opportunity for transport pilots to give their full attention to the problem of landing and unloading their heavily-loaded and difficult-to-control aircraft.
SECTION II — Objective 1 (continued)

(b) Requirement for firepower. The amount of firepower needed in the landing zone is determined by the level of insurgent activity, i.e., strength, dispositions, armament, etc. UTTHCO experience indicates that, in general, a landing zone must be secured for from one to three minutes to allow troops to unload and transports to depart. UH-1B helicopters mounting the XM-6 machine gun system can produce three minutes of sustained fire. In addition, each aircraft mounts 16 rockets; these usually are fired in pairs. For a 1-minute landing zone action, the rocket supply allows firing of a pair every 7.5 seconds; the rate decreases to one pair per 22.5 seconds for a 3-minute action. The firepower requirement cannot be calculated in advance; intelligence on enemy strength and dispositions usually is much too meager to permit such a calculation. The escort platoon thus must include enough aircraft to produce the level of firepower required in the "average" landing zone. This average has not been determined with any degree of precision. In UTTHCO experience, opposed landings occurred somewhat less than half the time. In opposed landings, the level of insurgent activity varied from light to relatively intense. As to Ap Bac (see Monthly Test Report Number 3), where insurgents in strength fought from prepared positions, the Ap Bac operation was atypical.

(c) Span of control. In the landing zone, events can develop so rapidly that time is "compressed." Reaction time is limited, and the escort platoon leader frequently must make an almost instantaneous estimate of the situation followed by immediate instructions to the elements of his platoon. This situation points to a platoon of relatively small size and simple structure, with the smallest possible number of elements that are different in function.

(d) Landing zone characteristics. Although each landing zone is unique, certain common features have a bearing on platoon size and structure. These are:

1. Size. Although armed escorts usually do not land in the landing zone, and therefore do not compete with the transports for landing space, a small landing zone may force concentration of transports and thus reduce the perimeter of the area to be protected by the escorts. A small perimeter can be patrolled effectively by relatively few armed helicopters.

2. Cover and concealment for the enemy. Abundant cover on the perimeter of a landing zone may mask a concentration of insurgent forces. Other things being equal, an area with such cover will call for more suppressive firepower than an area with sparse cover or none at all.

3. Air space for maneuver. Natural features such as trees, bluffs, defiles, etc., may constrict maneuver space and thus limit the number of armed helicopters that can be employed.

(e) Cost considerations. In most counter-insurgency situations, resources will be limited, and it can be assumed that the demand for armed helicopters will equal or exceed the supply. For such situations, an a priori determination could be made for "optimum" platoon size: optimum = minimum that can do the job; considerations of economy dictate that the effective minimum be sought and used on a trial basis. The following table reflects the infrequent use by the UTTHCO of platoons of less than five.
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SECTION II — Objective 1 (continued)

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</table>

During the test period the armed helicopters of the UTTHCO were plentiful in relation to the number of transport helicopters to be transported. Platoons of less than five aircraft probably can be tested most profitably in a transport helicopter unit that has a self-escorting capability. In such a unit, the escort/transport ratio is likely to be a matter of critical concern in all missions undertaken.

(2) Degree of risk. In the absence of reliable intelligence on enemy strength, dispositions, armament, and intentions, determination of an "acceptable" degree of risk must be based upon consideration of landing zone characteristics, mission implications, and economic strictures. The risk of paramount importance is that to which the transport helicopters — not the armed escorts — will be exposed. In assessing the amount of protection needed by the transports, however, it should not be assumed that an increased number of armed escorts necessarily will decrease the overall risk to the airborne force — a greater number of escort helicopters presents to the enemy a larger total target, and may thereby, to some small degree, increase his probability of getting hits with a given volume of fire.

(3) The UTTHCO used a platoon of five aircraft 46% of the time, and a 6-aircraft platoon 42% of the time. Both platoons were viable, and both lent themselves to effective tactics.

(a) The 5-ship platoon consisted of a platoon leader and two fire-and-maneuver elements of two helicopters.

(b) The addition of a sixth aircraft gave added flexibility of employment. It permitted use of three 2-ship elements or two 3-ship elements. In either case, the platoon leader's aircraft was part of one of the fire-and-maneuver elements. This structure favors early commitment of the platoon leader's helicopter and is potentially disadvantageous — the platoon leader normally should remain disengaged until the pattern of the action is established; at that time, his commitment may be decisive.

(4) During the final two months of the test, the UTTHCO developed a reconnaissance technique involving the use of one or more "scout" helicopters.

(a) As first developed, this technique used one helicopter from the 6-aircraft platoon as the scout. This aircraft preceded the main body into the landing zone by 15-45 seconds, flew across the zone at an altitude of 20-50 feet, looked for insurgent activity, and attempted to draw fire that would disclose insurgent positions. Upon arrival of the main body, the scout rejoined the escort platoon.

(b) Toward the end of the test period, the UTTHCO developed a reconnaissance element of two scouts. This element was intended to be used in conjunction with the 5-ship platoon.
(c) Although the use of scouts appears to be a sound idea, the concept needs further analysis and refinement. Test and analysis should be conducted to determine:

1. Whether "scouting" can be considered a separable function within the escort mission. It seems that the actions performed by the scouts are essentially the same actions they would perform 15-45 seconds later if they remained with the main body. In any event, the scouts fuse with the main body of the escort element as soon as the "scouting" action is terminated by the arrival of the main element.

2. Feasibility of performing the scouting actions by momentary detachment of one or two aircraft from an escort platoon of five or less aircraft.

3. Consequences of sending the entire escort element into the landing zone shortly ahead of the transport element. Conceptually, this would eliminate the "reconnaissance" function by making it an indistinguishable part of the escort function. Data in Section III on time-frames and altitudes of maximum vulnerability appear to indicate that such a method of employment is feasible. These data show that transports are relatively safe until they enter the landing zone. Escort is not needed except in the landing zone. Escorts may therefore be able to enter the landing zone ahead of the transports without prejudice to the safety of the latter.

(5) Continued test and analysis can be expected to produce data needed for determination of optimum platoon size. With such data, cost-effectiveness studies can be undertaken with some degree of confidence that they are based on experience or demonstrated need.

(6) Before any "optimum" is "hardened" by incorporation in TOE's, logistical implications should be fully considered. An optimum has little meaning unless it can be attained with some consistency. Given the present "acceptable" levels of helicopter availability, an optimum-size platoon will seldom get into the air unless an adequate "maintenance float" is immediately available. In a company that could keep 75% of its aircraft flyable, a TOE platoon of seven aircraft normally would have only five available for any given mission — unless the others were available from a float. Tactics and techniques optimized for a platoon of given size may be only marginally applicable to the platoon that is forced to operate at less than given size. An optimum is only a theoretical ideal — not an operational reality — unless the logistical support apparatus is geared to the maintenance of the optimum.

(7) Since, in all UTHCO missions, the single platoon was the escorting unit, the platoon must be considered the basic "building block" for fashioning an escort company. Objective 8 calls for a determination of optimum organizational structure for the company. In the absence of a finding on optimum platoon size, it would seem that the larger problem of company structure is beyond solution. The test did, however, reveal a number of inadequacies in the composition of the UTHCO. In order to formulate a "type" company in which these inadequacies would be corrected, a platoon of some given size had to be tentatively accepted. For this purpose, the 7-aircraft platoon has been used. This selection was based on:
ACTIV-AM
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SECTION II — Objective 1 (continued)

(a) The demonstrated utility of the 5-helicopter platoon.

(b) The logically demonstrable need for a reconnaissance element to precede the main air mobile force into the landing zone. In some landing zones, one scout can meet this requirement. In others, two will be needed, either because of the size of the zone, the wealth of concealment offered by the enemy, or the desirability of having one scout watch for enemy fire and "cover" the movements of the other. A 2-ship reconnaissance element has been accepted provisionally to give a capability for dealing with these contingencies.

(2) Methods of employment.

(1) General.

The range of possible methods of employment is limited by the maximum potential of the equipment employed. Equipment characteristics relevant in this connection are:

(a) Helicopter configuration.

1. The UH-1B has virtually unobstructed visibility upward, downward, forward, and to the sides.

2. Its large cargo compartment can accommodate flank gunners, ARVN observers, a 6000-round basic load of machine gun ammunition, supplies of smoke and fragmentation grenades, and an auxiliary fuel tank that extends flight time by one hour (i.e., from two to three hours).

(b) Flight characteristics.

1. The UH-1B's speed range (0 to 100 knots) and its ability to move vertically from the ground to 1000 feet and back to ground in less than a minute give this aircraft a remarkable potential for acquiring and placing fire on hostile targets. The ability to hover, move vertically, and sustain flight at any speed within its range, permits this helicopter to take full advantage of any cover and concealment afforded by the terrain.

2. Armed helicopters can be serviced and operate from the same forward sites used by the transport helicopters.

(c) Armament.

The XM-6 flexible mounting for machine guns permits delivery of fire through arcs of 140 degrees laterally and 60 degrees downward. This flexibility, together with the maneuverability of the helicopter, allowed engagement of targets from any direction.

(2) Techniques of fire.

(a) In the delta area, insurgent positions were normally found along the tree lines and canals. The primary firing technique employed in this terrain was running fire with rockets and machine guns. It was
ACTIV-AM

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SECTION II — Objective 1 (continued)

determined that enfilade fire was effective and discriminating — only the insurgent positions were taken under fire — and permitted firing close to transports landing near tree lines. By aligning the helicopter with the long axis of the enemy's positions, machine guns and rocket launchers could be brought to bear simultaneously. By flying slowly (40-60 knots) along the tree line, suppressive fire could be delivered the full length of the enemy position. The interval between helicopters was adjusted to provide continuous fire; as one helicopter broke off his firing pass a second was in position to fire. By maneuvering his helicopters, the platoon leader tried to insure that at least one helicopter was firing at all times. In landing zones bordered on both sides by tree lines, this took place on both sides simultaneously.

(b) In mountainous terrain, landing zones were small, bordered by jungle, and irregular in shape. Here the flexibility of the XM-6 permitted firing almost straight down while the helicopters flew around the irregular landing zone perimeter. Rockets were fired into the tops of the trees to obtain tree burst or fired directly at the edge of the wood line when enemy positions were identified.

(c) Unless the fire of an armed helicopter platoon is controlled, the fire teams may expend ammunition needlessly and ineffectively. Sufficient fire must be delivered to suppress insurgent fire and to maintain this condition until the transport helicopters have left the landing zone. The platoon leader controls the distribution and volume of fire. He lends the weight of his own fire-power where the situation requires. In mountainous terrain, small landing zones permit only a few transport helicopters to land at any one time. The escort platoon must be prepared to sustain its suppressive fires much longer here than in the delta. Landings in mountainous terrain may last 10-15 minutes; in the delta 1-3 minutes is normal.

(d) Supplementary to the main helicopter weapons, flank gunners stationed in the doors on each side of the helicopter provided protection to the flanks, observed for insurgent locations, and provided suppressive fire. They usually were equipped with hand-held automatic weapons.

(3) Formations.

(a) En route. The formation generally used is shown in Photo 1, Appendix 1. As the transports normally flew a staggered trail formation, the armed escort formation conformed to this pattern.

(b) In the landing zone. Four landing zone formations developed during the test period were successfully used both in delta and mountainous terrain. These are shown in Photos 3-6, Appendix 1. A scout element was used consistently during the last month of testing.

(c) Development of landing zone formations was influenced by the following factors:

1. The landing plan developed by the airmobile force commander. Formations had to be adapted to landing plans. For example, a landing plan calling for simultaneous landing in two landing zones required the armed escort to employ a formation congruent with this requirement.
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SECTION II — Objective 1 (continued)

2. Need for all-around protection. As knowledge of the enemy situation normally was vague, armed helicopters had to be positioned to place immediately responsive fire on any quadrant of the landing zone. Response was needed within a few seconds after fire was received or was reported by CH-47 pilots. Suppressive fires had to be available as long as the troop transports remained in the landing zone.

3. Need for flexibility. In the event insurgent firing was heavy from one point in a landing zone, the formation had to be flexible enough to permit massing of return fire. In general, formations should allow for fire from several directions to divide the insurgents' attention.

4. Terrain considerations. Configuration of tree lines and location of high ground around the landing zone were the primary terrain factors to be taken into account.

5. Maneuver space. Escort elements tended to mask each other's fires when formations were held too tight. The escorts stayed close enough together to be able to maintain continuous fire on a target.

6. Desirability of diverting fire away from transport helicopters. Each round fired at an armed helicopter was a round which otherwise might have been fired at a transport. When possible, the escorts took up formations that placed them between the transports and the sources of hostile fire.

(4) Typical escort mission.

Actions of armed helicopters on a typical escort mission are described in Appendix 2, attached.

d. Vulnerability.

(1) Although the safety of the transport helicopters is the primary consideration in escort operations, the vulnerability of the escort vehicles is a matter of consequence. The tactics used by the UTHCO, as described above, were designed to give maximum protection to the transport force, not to minimise the exposure of the armed escorts. Landing zone formations used by the escorts placed them usually within 200-500 feet of actual or potential sources of insurgent fire. The effect of escort activities on the vulnerability of the transport helicopters is fully described in Section III, infra. As for the vulnerability of the escorts, the following factors are relevant:

(a) Time of exposure. Escorts precede the transports into landing zones and remain until all transports have departed. A transport force in an extended formation — such as the much-used staggered trail — requires a relatively extended time to land, unload, and get off again. The longer the period required for the transport force to get clear of the landing zone, the longer is the period of exposure for armed escorts.

(b) Speed. Data presented in Section III show that vulnerability decreases as speed is increased. UTHCO tactics — developed primarily for use in delta terrain where lack of cover discouraged the use of fires delivered from the hover in Jack-in-the-box fashion — called for the escorts to
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SECTION II - Objective I (continued)

maintain an airspeed of at least 40 knots while on firing runs in the landing zone.

(c) Altitude. Data in Section III confirm the intuition that there is safety in altitude. In landing zone actions, armed escorts obtained effectiveness by flying at no more than 100-200 feet above the ground. This placed them within the zone of maximum vulnerability in terms of altitude.

(d) Firepower. Suppressive fires delivered in protection of transport helicopters were at the same time a source of protection for the escort delivering such fires. The amount of the escort was sufficiently accurate and powerful to suppress insurgent fires encountered during the reporting period.

(e) Level of enemy activity. Whether a given amount of escort firepower is sufficient to suppress hostile fires depends upon the type and volume of those fires and upon the degree of protection available to the hostile firers. In operations to date, insurgents in the RVN have employed only small-caliber weapons (including automatic weapons) firing non-explosive projectiles. They have used prepared positions only infrequently; where used, the positions were relatively crude, consisting largely of foxhole-type shelters and emplacements.

2. During the test period, the UTHCC escorted transports to and from 27 landing zones. In 73 of these, landings were contested by the VC. Of the 11 armed helicopters hit by hostile fire, nine incurred hits while on escort missions; none of the nine was disabled. (The other two aircraft received hits while on flights not involving escort of transports.) On the average, then, one escort was hit per eight landing zones contested. This ratio suggests that the armed helicopters were relatively invulnerable and that the price of conducting armed escort was reasonable, particularly in terms of the benefits derived. The pay-off from employment of armed helicopters is discussed in Section III.

3. No effort was made during the test to define an "acceptable" level of vulnerability. Cost-effectiveness analyses can be undertaken at a later date, when more statistical data are available. In the absence of guidelines based on such analyses, the commander must make at least a gross estimate of the risks involved. He weighs this estimate against tactical advantages to be gained, and judges whether the probable risk is acceptable. "Acceptability" is defined by the contexts of particular situations. After-the-fact balancing of actual gains and losses is seldom conclusive as to the wisdom of the original decision, because of the unsuspected failings of men and equipment expected during the engagements. In the case of armed helicopters employed in the Mekong Delta, however, even an after-the-fact assessment supports a conclusion that the risks taken were well within "acceptable" limits.

4. The configurations, flight characteristics, and armament-bearing ability of the UH-1D helicopter make it a completely suitable vehicle for escorting UH-21 transport helicopters engaged in air mobile operations in a counterterrorism environment.
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SECTION II — Objective 1 (continued)

b. The airmobile force requires escort by armed helicopters only in landing zones and during the low-level approach to those zones.

c. A platoon of from five to seven armed helicopters can protect a transport helicopter force of from 20 to 25 aircraft.

d. Formations, tactics, and techniques developed during the test period and described in this report are responsive to the requirement for protection of transport helicopters in an airmobile force operating in delta-type terrain.

e. Armed helicopters are relatively invulnerable to hostile fires in a counter-insurgency environment characterized by a level of insurgent activity similar to that now prevailing in the delta region of the RVN.

f. Experience in mountainous regions has been insufficient for developing and proving tactics and techniques adapted to that terrain.

4. (0) CONCLUSION.

In delta-type terrain, against an insurgent force similar to the VC, armed helicopters employing tactics and techniques developed by the UTTHCO in the RVN can provide adequate protection for transport helicopters engaged in airmobile operations.

5. (0) ATTACHMENTS.

a. Appendix 1 — Description of formations.

b. Appendix 2 — Description of a typical escort mission.
Formations developed and used by the UTHCC during the test period are shown on the attached photographs. The following symbols and color code are used:

**Red** — control measures:
- ACP = air control point
- EP = release point
- LZ = landing zone (objective area)

**Blue** — transport helicopters of the airmobile force

**Yellow** — armed helicopters
- ◦ = scouts
- □ = other armed helicopters

The platoon leader is designated by the number "*".

- "2" and "3" represent the scouts.
- "4" and "6" and "5" and "7" represent the fire-and-maneuver elements.

The direction of attack to be undertaken by the ground force is shown by an arrow:

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**Photo 1** — En route formation. This grouping sends a reconnaissance element ahead by 15-25 seconds and places a fire-and-maneuver element on each flank of the transport force. The platoon leader can support either flank. The airmobile force descends to contour flight level prior to crossing air control point 3 and remains at this altitude until leaving the landing zone.

**Photo 2** — Approach formation. If multiple landing zones are to be used, the airmobile force splits into two elements after crossing the release point. Each element begins its approach into its landing zone. The armed scout element is now reconnoitering in and around the landing zone. The escort platoon leader has placed his escorts in positions to provide flank protection from insurgents who might be located in the tree line along the canal.

**Photo 3** — Landing zone formation ALPHA-I is used when a large objective area is supported by two landing zones separated by a terrain feature such as a canal. The platoon is in position to return fire on either side or to shift its weight to either landing zone.

**Photo 4** — Landing zone formation ALPHA is similar to ALPHA-I. It is used when the insurgent situation is unknown and there is a potential threat from all sides. Section 1 (aircraft 4 and 6) can support Section 2 (aircraft 5 and 7). The platoon leader reinforces as necessary.

**Photo 5** — Landing zone formation BRAVO is used when the landing zone is
Appendix I to SECTION II — Formations

bordered by a tree line on one side and an open area on the other. As insur- 
gent fire is most likely to come from the tree line, BRAVO puts weight on that 
side.

Photo 6 — Landing zone formation CHARLIE was developed for use in jungled 
mountainous terrain, where the landing zones frequently are bordered on all 
side by hill masses or heavy jungle growth. It provides for continuous 360-
degree coverage and permits firing at any point on the perimeter. The scout 
element ascends to an altitude from which it can react to enemy fire delivered 
from positions on the sides or tops of the surrounding hills.
Appendix 2 to SECTION II — Description of a typical escort mission.

It is 1400 hours. In the command post of the 19th ARVN Division, the division commander and his senior US advisor are busily examining information just given them by the G2. A reinforced Viet Cong company of hard-core infantry has been discovered in bivouac in the wooded area along the canal shown in Photo 1 (Appendix 1, supra). The G2 has been following the movements of the VC company for several days. It has been widely scattered in squad and small patrol-size units; it has been difficult to trace its course. Preliminary planning for an airborne assault had been made but, until now, no one knew where the insurgents might assemble. It appears the VC position is now fixed, and the division commander orders an airborne assault for 0700 hours tomorrow. The plan is to land six ARVN infantry companies, two in each of three selected objective areas along the canal. Each of the three objective areas will be attacked from two landing zones, one on each side of the canal. One company will be placed in each landing zone. This will position troops along approximately 2000 meters of both sides of the canal. By converging troops from all six landing zones, it is planned that the insurgent force will be forced into a tight perimeter from which it cannot escape. The first objective area and its two LZs are shown in Photo 1. The other two areas are farther to the left (west) and not shown in the photo.

At the UOUTHCO command post at 1500 hours a warning order is received from the senior US advisor of the 7th ARVN Corps. The UOUTHCO is ordered to furnish one armed helicopter platoon to escort 20 transport helicopters in tomorrow’s airborne operation. Receipt of this order triggers the company into action. The 1st Platoon is assigned the mission. Preparation of aircraft, weapons and personnel begins. At 1700 hours a planning conference is held. Representatives of the ground commander, the transport commander, UOUTHCO, and the fixed-wing strike aircraft pilots are present. Command and communication procedures are established. At 1830, the armed helicopter platoon leader completes his preparations and issues orders for the operation.

At 0520 hours the following day first light is just breaking. The 1st Armed Helicopter Platoon with its platoon leader, a scout team, and two fire and maneuver teams — seven helicopters — departs from the company base area at Tan Son Nhut airfield, Saigon. As the platoon turns south into the heart of the Mekong Delta, the platoon leader notes that visibility is limited by the early morning haze. But experience tells him that the air will clear; and high, thin clouds foretell good weather for the operation. The flight of armed helicopters follows a heading which will lead them to their rendezvous with the airborne force at a loading area 120 kilometers away. H-hour for the first lift of the operation is scheduled for 0700 hours.

At 0615 hours, after an uneventful flight, the 1st Platoon arrives at the rendezvous area where the ground troops and transport helicopters have already assembled. The armed helicopters refuel quickly from 1200-gallon tank trucks spotted at the airstrip. The platoon leader and pilots make last-minute inspections of their aircraft and weapons, and huddle with the other key leaders.

1 — H-hour for airborne operations is that time at which the airborne force touches down in the objective area. Timing of all actions is planned and expressed in relation to the moment of touch-down.

2 — En route to the rendezvous area, the armed helicopter platoon habitually conducts a series of drills and maneuvers to sharpen individual reaction time to commands and to insure that all platoon members are familiar with their duties.

TAB II-B
ACTIV-AM
Final Test Report — Armed helicopters.
Appendix 2 to SECTION II (continued)

for last-minute coordination.

It is now H-30 minutes. The force commander orders the first two companies to load aboard the transports. For this operation the 56th Transportation Helicopter Company with 15 helicopters, reinforced by five helicopters from the 92d Transportation Helicopter Company, will move the six companies of ARVN infantry. Three lifts will be made; two landing zones will be employed for each lift. Ten transport helicopters will be sent to each landing zone with 12 ARVN troops aboard each transport.

Now it is H-20 minutes, five minutes before departure time, and all helicopters start engines. At H-18 minutes, two strike aircraft — T-28's — and an O-1E observation aircraft check into the radio net. Prestrikes will not be used for this operation. As can be seen in Photo 1, the nature of the terrain and the possibility of insurgents intermingling with the local populace along the canal requires more discriminating fire than can be achieved with napalm and fragmentation bombs. If the VC attempt to escape from the wooded area when the ground troops close in, good use can be made of the strike aircraft.

At H-15 minutes the airmobile force first lift departs on the first leg of the route to the LZ, 16 miles away. The flight altitude on route will place the transports 2000 feet above the ground. Descent to contour level will be made as the flight crosses air control point three on the third leg (see Photo 1). As the transports depart the loading area, the armed helicopter platoon assumes its en route formation as shown in Photo 1. It will fly at the same altitude as the transports.

Insurgent fire may be encountered en route. If it is, the fire teams will try to deliver suppressive fire on the insurgent positions as they pass by. Their presence in the landing zone at the time of touch-down is essential; therefore, they will not leave the formation to engage targets on route.

No fire is encountered in the first two legs, and the force approaches control point three at H-5 minutes. The observation aircraft has moved ahead to mark the landing zone just as the scout element of the escorts approaches the area. At H-1 minute the airmobile force crosses the release point and

3 — Three or more lifts, by shuttle movement, are customary. Dependent upon the number of transports available, 120 to 200 troops are moved in each lift.

4 — The observation aircraft carries the guide who provides navigation assistance on route and marks the landing zone with smoke. The guide flies at several thousand feet to see both the transport force and the LZ's. He provides continuous directional information by voice radio. Strike aircraft, also in communication with the force commander, provide on call strikes on targets of opportunity along the flight route. When pre-planned strikes are made in the LZ's, they should continue until just prior to the marking of the LZ by the observation aircraft.

5 — Distances between loading areas and landing zones vary from 10 to 40 miles. Flight times are usually between 15 and 30 minutes.
Appendix 2 to SECTION II (continued)

enters the approach phase. The armed helicopter fire teams now take up their landing zone formation, placing themselves between likely VC firing positions in the tree line and the transports. The transports have split into two groups of ten helicopters each and are headed for their respective landing zones (see Photo 2).

The scouts are now low over the landing zone, 30 seconds ahead of the force. They report seeing people in the landing zone but no hostile movement. The force commander decides that a landing close to the woods can be made. Strike aircraft have stayed out of sight so as not to compromise surprise. They have stayed to the rear and in an orbit pattern at 2000 feet where they will remain to provide on-call support.

Transports are now approaching their touch-down points (see Photo 3). As they slow down, close to the tree line, the pilots know that now the threat of VC ground fire is greatest. Armed helicopters slow their speed and stick close to the transports. Their mission is to prevent or minimize damage inflicted on the transports by hostile ground fire. To accomplish this they must be ready to deal immediately with any hostile act in the landing zone.

Suddenly, in the right landing zone, there is a burst of machine gun fire from the tree line. 1st Platoon Leader orders fire team 1 to attack and tells fire team 2 and the scout team to be prepared to reinforce team 1 on call. 1st Platoon Leader now moves above the action to a position from which he can control and observe the platoon. A transport pilot barks into his radio that he is receiving more fire in the right landing zone, coming from another clump of trees. 1st Platoon Leader commits fire team 2 to the right landing zone. This action intensifies the suppressive fire, and the hostile ground fire ceases. All this has taken place in a matter of seconds.

The transports quickly unloaded their troops and the assault on the tree line has begun. The troops' fire combined with the armed helicopter suppressive fires permit the transport helicopters to depart the landing zone without further opposition. They climb quickly to 2000 feet and head back to the loading area to pick up the second lift. The second lift is underway headed for the two landing zones farther to the west along the same canal. 1st Platoon (armed helicopter) has enough ammunition remaining to protect one more landing. It takes up its position in the flight to the second lift landing zones. The second lift is unopposed, and the third lift meets only light resistance. In this third lift, fire comes from both sides of the canal but is quickly suppressed by the fire teams on each side of the canal. All helicopters return to the loading area by 0900 hours.

Here, the ground commander has positioned a reserve of one company, and all helicopters must refuel and rearm quickly in preparation for a possible commitment of the reserve. During the waiting period, 1st Platoon Leader and his pilots review their actions and prepare notes for debriefing. At 1500 hours the ground commander determines that the ground operation has been successful and the reserve will not be needed. The armed helicopters are released to return to Tan Son Nhut.
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SECTION III — Objective 2 (Armed helicopter effectiveness)

1. (C) OBJECTIVE.

"To determine the effect of armed escort on insurgent forces. In this respect, does the presence of armed escort reduce the amount and accuracy of fire placed on transport helicopters by insurgent forces?"

2. (C) DISCUSSION.

a. General.

(1) The evidence bearing on this objective is primarily indirect. It falls into three categories: data on frequency of hits received, attitudes and opinions of those who are escorted, and the influence of armament and suppressive fire on the pattern and number of aircraft hits received. Absolute evidence is probably not possible to come by without interfering with operations.

(2) Comparisons of enemy fire on escorted and unescorted missions do not reflect the value of escorts because in general only missions that are "dangerous" (i.e., most likely to encounter relatively heavy ground fire) are escorted.

(3) Three appendices are included that indicate a change in enemy tactics and the friendly reaction to this change. The first two are translations of captured Viet Cong documents; the third is excerpted from US Army reports.

(a) Appendix 1 is a VC reference document and apparently was not designed as a training manual. Nevertheless, it gives the necessary background for devising training procedures and for writing training manuals. No VC training manuals are currently available, but the existence of this document indicates that training procedures have been established. The document contains errors — such as the statement that transport helicopters have two engines — but it has much important information. The following points bear on VC doctrine against helicopter: concentrate fire on one ship at a time; withhold fire until the ship is committed to landing; fire when the ship is low and slow; estimate the speed, direction and range in order to get a proper lead; try to hit the pilot and engine. This document apparently was produced before the UTHCCO became operational in the RVN.

(b) The second captured document, Appendix 2, is more general. It summarizes the threat to VC activities that the use of transport helicopters poses, and it stresses the need to deal with this threat. Determined resistance from prepared positions and training in shooting at helicopters are included as solutions to heliborne attacks. No date appears on this document; it was captured 16 November 1962. It makes no mention of "escorts," either fixed or rotary-wing.

(c) A friendly agent's intelligence report of 10 January, concerning plans for VC anti-aircraft activity in the RVN, indicates the VC are developing competition to encourage firing at all types of aircraft, both fixed and rotary-wing. This is to be accomplished as follows:

"...creating a competitive movement among the armed forces of the hamlets and villages; giving the soldiers technical training; organizing them to fire at our military planes; creating in all cadres' minds the idea that they must shoot at planes whenever they have the opportunity; and making them pay attention to permanent air defense...."
Any soldier shooting down an aircraft is rewarded. The Party Commissariat of Intersector Five (now VC Districts 5 and 6) issued the following instructions:

"All echelons are directed to use all means at their disposal to bring down government aircraft. Anyone doing so will be designated 'Hero of the Revolution', and will receive an increase in rations."

It is reasonable to assume that similar instructions were sent to all military districts.

(d) These documents corroborate the judgment that VC concern regarding helicopter effectiveness is intensifying. Appendix 3 illustrates the evolving friendly reaction. Consisting of excerpts from quarterly reports of the 45th Transportation Battalion, it focuses on friendly tactics as described by the various CH-21 companies. Procedures have been devised to minimize risk within the requirements of missions. Current friendly tactics include: contour flying only to achieve surprise, not to reduce the likelihood of being hit; flying at higher altitudes with steep approaches to and take-offs from the landing zone; better information on enemy actions and locations; more and better firepower on the CH-21; and more and better suppressive fire from escorts. Taken together these procedures are designed to permit safer operation in the RVN environment.

(e) Both CH-21's and UH-1's are protected by firepower; they also have passive protection — armor. Annex A details both armament and armor.

b. Frequency of aircraft hits.

(1) Conclusions based on aircraft hit with and without escort must take account of the nature of the missions on which escort is used or not used. Escort helicopters are not used on all flights — only those considered most dangerous. Consequently, their contribution should be evaluated in terms of "dangerous" missions. Each helicopter company reports its flying record in terms of four categories: (a) support of ARVN combat missions, (b) administrative and logistical, (c) training, and (d) maintenance. In general, but not in all cases, the UH-2A's offer combat support missions and not the others. In order to maintain a consistent standard, the comparisons given below are based on these categories rather than on a selection of specific escorted missions. Data given in Table I are based on either combat support missions or on other missions during the 15-month period of CH-21 troop transport operations of which the last six months has involved escort helicopters.

(2) Table I shows the hours flown and aircraft hit (graphically shown in Figure 1) for US Army helicopters in the RVN from 11 December 1961 to 15 October 1962 and from 16 October 1962 to 15 March 1963. This table documents the increase in flying hours and in aircraft hit during this period. Hours flown and aircraft hit are the measurements presented for the following reasons:

(a) Hours flown tends to reflect the total exposure of the aircraft more than do sorties or missions, especially since a large portion of flights are over hostile territory. Furthermore, the interpretations of a "sortie" and "mission" are not uniform in the RVN at the present time and vary even less so in the past.
(b) Aircraft hit is selected as a unit of measurement rather than total hits on aircraft for the following reasons:

1. Some hits (an unknown number) are sustained while a downed helicopter remains in a landing zone, and it is impossible to know how many represent hits sustained during a fire fight on the ground.

2. The record is obscure as to the number of hits received; prior to July 1962 reporting procedures were not formalized, and even since then the prescribed ground fire damage report form has not required an explicit statement of the number of hits.

3. Undue weight is given to those cases where multiple hits are received; conditions under which a hit sustained are rare, but once the first hit is received a second is much more likely.

4. In the entire flying record the number of aircraft hit per flying hour has decreased in the past five months (line 1, Table 1) from .0042 to .0034. This single comparison should be amplified to state that the decrease is directly due to the change in hits received on escorted missions. The combat support missions rate (line 1) decreased by one-fourth during this period from .011 to .0074. During the same period the number of aircraft hit per flying hour in all other flying (line 2) doubled, going from .0011 to .0024.

4. On the basis of the unescorted flying record, the threat posed by VC fire has more than doubled. Without escort a similar increase might well have occurred in the combat mission rate. If so, the number of CH-21's hit would have been 135 and might well have been unacceptably high (see Figure 4). In any case, nine UH-1's hit while performing escort was a small price to pay for preventing a predictably high rate of hits on transport helicopters.

c. Spatial and temporal requirements for escort.

1. Most transport helicopters are hit when near the ground even though they fly at altitude most of the time. This fact is illustrated in Figure 2, a cumulative plot of the heights at which helicopters were hit. Over half were hit at 50 feet or less, and two-thirds were hit below 100 feet. On a typical mission, less than 10 percent of the time would be spent below 100 feet. These data are based on ground fire damage reports submitted after aircraft were hit. The report has been used since July 1962. Figure 2, therefore, does not represent the entire number of CH-21's hit. Thirty of the aircraft represented in Figure 2 were hit before 15 October and 87 were hit after that date. All are combined in the graph. Examined separately, the pre-UTHCO record is very much like the post-UTHCO record. Data in Figure 2 are based on all flying, not just combat support missions.

2. The threat from enemy ground fire is greatly increased as the transports fly closer to the ground. It is during this period that escort is most urgently needed. An important change in helicopter tactics in the SVN is the new approach to contour flying. Nap-of-the-earth flying is used to heighten surprise in spite of the fact that it increases vulnerability. As its purpose is to achieve surprise, the first lift into the landing zone may be at contour but subsequent lifts at altitude — unless the distance is so short as to make reaching a safe altitude infeasible.
(3) Speed of transports is related to hit record in Figure 3. This is a cumulative plot of the speed the helicopters were flying when hit. About one-quarter were hit at less than 30 knots, half at less than 60 knots, and nearly all at speeds below 80 knots. On a typical mission less than ten percent of the time would be flown at speeds below 70 knots. (These data come from the same source as those in Figure 2. The 30 cases occurring before 15 October are similar to the 87 occurring after that date.)

(4) The two graphs are very different. Altitudes appears to be more critical than speed. There is an interrelation between speed and altitude when taking off or landing, the pilot having some option as to whether to try for greater speed or greater altitude. It would appear that, to the extent possible, he should opt for altitude.

d. Effectiveness of suppressive fire.

(1) General.

(a) Definition. Suppressive fire is that fire delivered against hostile weapons and positions with the primary purpose of subduing or silencing actual or threatened insurgent fire during airborne operations.

(b) Employment... Suppressive fire was used primarily during the landing phase of airborne operations — that is, from the time the transport helicopters were one minute away from the landing zone until the last helicopter off-loaded its troops and cleared the LZ. Rules of engagement permitted firing upon insurgents only after positive identification and only if they threatened the operation. Each UHICO helicopter carried an ARVN observer to assist in the identification of insurgents observed running away did not constitute threat and were not fired upon. Armed VC, positively identified in the immediate vicinity of the LZ, were brought under fire.

(c) Weapon systems. UHICO helicopters used a combination of the XM-683 armor-piercing sub-system and the 2.75-inch slow spin folding fin aircraft rocket (SSPFAR). The XM-683 sub-system contains four M60G, 7.62-mm machine guns; two guns are turret-mounted on each side of the aircraft. The turrets give an elevation, depression, and traverse capability. Fifteen-hundred rounds of ammunition per gun are included in the system. The rockets are mounted eight to a side immediately above the machine gun turrets. They may be fired in single pairs or in single burst. This combined system is pictured in Annex A.

(d) With the approval of COMUSMACV, ACTIV is continuing to gather data on suppressive fire from helicopters as it affects ground fire. After every mission in which helicopter crews knew they were fired on, knowledgeable crew members, CH-21 and UH-1, are questioned. Descriptions of circumstances and volumes and types of fire they saw or heard will be related to the hits received on the aircraft, if any. The adequacy of the crew reports will be checked on sample missions by comparing their recall of each mission with a detailed tape-recorded documentary made during the mission: this tape record will include an annotation by an observer, recorded communications among the aircraft, and recording from equipment designed to pick up the sound of passing rounds.
The UTHICO flew 1779 combat support hours from 16 October 1962 through 15 March 1963. Normally, armed helicopters escorted transport aircraft of the 33d, 57th, and 93d Helicopter Companies. Most of the operations were conducted in the III and IV Corps Tactical Zones. Hostile ground fire during this period resulted in nine armed helicopters being hit. Suppressive fire delivered by the escort helicopters accounted for an estimated 246 insurgent casualties. Mission reports listed many VC observed who, not being a threat, could not be engaged within rules of engagement. No armed helicopters were shot down during escort missions; however, one UH-1B was severely damaged as a result of ground fire. Although thought at the time to be uneconomical to repair it is now being repaired. This aircraft was on an approach to picking up the crew of a disabled CH-21 transport helicopter.

(3) Advantages of suppressive fire from helicopters.

Escort helicopters stay with the transport helicopter formation all the way into the landing zone. They deliver accurate, immediately responsive suppressive fires during the off-loading of troops. Escorts, using the formations discussed in Section II, deliver fire on the periphery of the landing zone and can return any hostile fire immediately. By flying patterns 100 to 200 feet above the ground, the escort helicopters increase their observation and do not mask the fire of the landing troops or the transport helicopters. Hostile fire observed by any aircraft and reported on the radio is immediately returned by the escort without endangering friendly troops. Transport pilots queried on the time required by the escort helicopters to engage such targets, estimated 15 to 30 seconds as the normal requirement. This immediate reaction is made possible by the maneuverability of the helicopter, its slow speed capability, and its four-man crew which contribute to an observation and suppressive fire capability of approximately 70 degrees to the left and 70 degrees to the right of the aircraft. Escort helicopters are able to react quickly because of their proximity to the transport helicopters, low altitude, and ability to maintain continual coverage with the formations used. Flexible machine guns can fire at targets below or to the flanks of the helicopters while they patrol the landing area.

e. Pattern of hits.

(1) A direct confirmation of the value of helicopter-mounted firepower, and an indirect confirmation of escort helicopter firepower, comes from the hit experience of the US Marine Corps CH-34 helicopters operating in the mountainous north. These aircraft have one door, on the right side, in which is mounted an M-60 machine gun, the only armament carried. The left side has no weapon. These aircraft are usually flown in left echelon formation to help cover the "blind" side.

(2) The asymmetry of defensive weapons offers a unique opportunity to determine whether there is corresponding asymmetry in the location of hits. Unlike the question of the hit frequency of escorted and unescorted helicopters, changes in enemy effort and capability would not affect this comparison and the friendly tactics would be expected to minimize differences between the "protected" and "unprotected" sides. The differences are considerable: for every hit on the protected (right) side, seven hits were taken on the unprotected (left) side.
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SECTION III — Objective 2 (continued)

Figure 4 shows total hits received on the left, top, bottom and right sides. These data are based on hits received between 24 April 1962 and 8 February 1963 — except for 15 hits on which no location was recorded. Some of these are single, some multiple, hits. Table 2 presents the frequency of hits and aircraft hit.

(3) Marine helicopter operations tend to be accompanied by pre-strikes to a much greater degree than in the Mekong Delta because there are fewer villages and civilians involved in the area of Marine operations. Their only "escort" during the time these records were taken was fixed-wing.

f. Opinions and attitudes of CH-21 pilots.

(1) A questionnaire was given to the transport helicopter pilots. It asked generally what effect the UTHCO had on operations. (See Appendix 4.)

(2) The respondents were clearly enthusiastic. The questionnaire tapped only the upper most thoughts in the pilots' minds, since it merely asked for comments. The relatively high proportion of answers falling under the general area of suppressive fire indicated a perceptually-compelling causal relationship between escort fire and ground reaction to it.

(3) Taken by themselves, opinions of "users" are not sufficient justification for a tactic, technique, or item of equipment. Users generally are not aware of alternatives; their views frequently stem from judgments of an "all or nothing" type.

3. (C) FINDINGS.

a. One-third fewer transport helicopters were hit by ground fire when escorted than when unescorted despite a two-fold increase in the effectiveness of VC anti-helicopter fires.

b. The number of armed helicopters hit while escorting was approximately 10 percent of the number of CH-21's that probably would have been hit if no escort had been provided.

c. The greatest need for escort occurs when the transports are below 100 feet, are moving at less than 70 knots, or both.

d. Although increases in either speed or altitude lessen helicopter vulnerability, altitude appears to be the more critical; given a choice, the pilot should favor increased altitude over increased speed.

4. (C) CONCLUSIONS.

Suppressive fires from escorts reduce significantly the number of hits received by escorted helicopters.

5. (U) ATTACHMENTS.

The following supporting documents are attached:

Appendix 1 • Captured VC document (Tab III-A).
SECTION III — Objective 2 (continued)

Appendix 2  Captured VC document (Tab III-B).

Appendix 3  Excerpts from quarterly reports of helicopter units (Tab III-C).

Table 1  Aircraft hit rate per flying hour (Tab III-D).

Figure 1  Aircraft hit (actual vs projected) (Tab III-E).

Figure 2  Altitudes at which hits were received (Tab III-F).

Figure 3  Speeds at which hits were received (Tab III-G).

Figure 4  Hits on CH-34 helicopters (Tab III-H).

Table 2  Number of CH-34's receiving hits (Tab III-I).

Appendix 4  Data from questionnaires (Tab III-J).
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Appendix I to Section III — Captured VC document.

This appendix consists of the attached 4-page captured document.
The classification KIN corresponds to US CONFIDENTIAL.

This page regraded UNCLASSIFIED when separated from classified inclosure.
III. RECONNAISSANCE AIRCRAFT
(the most commonly used type is the L-19)

A. The enemy used this type of aircraft for observation, guiding the fighter aircraft, strikes, aerial photography and liaison with the spies on the ground. It sometimes opens sub-machine gun fire or drops grenades at our scattered troops.

Its structure is the same as the fighter's.

Its most vulnerable moment is when it hovers low above the rice fields.

The best moment to hit it is when it hovers low for observation and makes a circle of 100m diameter, at an altitude of 100 meters.

- Top speed: 300km/h
- Average speed: 150 to 200km/h
- Observation speed from 70km/h to 100km/hour

B. How to fire at an observation aircraft

The fuselage of this type aircraft is about 10m long.

Observation speed: 100km/h or 27m second.

So, at a 250m distance the lead will be:

\[ \frac{27m/s \times 0.35}{10} = \frac{8}{10} \text{ of fuselage or } 8m \]

At 200m distance:

\[ \frac{27m/s \times 0.25}{10} = \frac{7}{10} \text{ or } 6.75m \]

At 150m distance:

\[ \frac{27m/s \times 0.25}{10} = \frac{6}{10} \text{ or } 5.94m \]

IV. HELICOPTERS
(2 Engine)

A. The enemy is employing helicopters to airlift his troops in the operation launched at our base areas, in the reinforcement of their mauld troops, or in the cutting-off of our routes of withdrawal, etc.

In a certain respect, this tactic has caused difficulties to our troops and confusion for the population, but the helicopter actually is very vulnerable.

Structure: Length: up to 18m
Both engines can be easily hit.
The electrical system is located on both flanks.
The landing and take off are very slow.

At 600meters, on the ground, it can easily be hit by rifles, AR's and MG's and the range spread will be less than 1m.

Especially before unloading the troops, the helicopter must hover above the area, land very slowly and this gives us enough time to adjust our fire. In this case, we can open fire when it is 50m above the ground because at this altitude, its speed is reduced to 20 or 25km/h.

B. When firing at a helicopter on the ground, the gunner should:

- Estimate accurately the distance
- Adjust the sight at the proper range
- Aim at the middle of the aircraft
EXAMPLE: For a fighter aircraft,
- At altitude 200m, take 1 fuselage lead (13m75)
- At altitude 300m take 1 3/4 fuselage lead (23.10 meters)
III. RECONNAISSANCE AIRCRAFT
(the most commonly used type is the L-19)

A. The enemy used this type of aircraft for observation, guiding the fighter aircraft, strikes, aerial photography and liaison with the spies on the ground. It sometimes opens sub-machine gun fire or drops grenades at our scattered troops.

Its structure is the same as the fighter's

Its most vulnerable moment is when it hovers low above the rice fields.

The best moment to hit it is when it hovers low for observation and makes a circle of 100m diameter, at an altitude of 100 meters.

- Top speed: 300km/h
- Average speed: 150 to 200km/h
- Observation speed from 70km/h to 100km/hour

B. How to fire at an observation aircraft

The fuselage of this type aircraft is about 10m long. Observation speed: 100km/h or 27m second.

So, at a 250m distance the lead will be:

\[
\frac{27m/s \times 0.25}{10} = 8 \text{ of fuselage or } 8m45
\]

At 200m distance:

\[
\frac{27m/s \times 0.25}{10} = 7 \text{ or } 6.75m
\]

At 150m distance:

\[
\frac{27m/s \times 0.25}{10} = 6 \text{ or } 5.94m
\]

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B. When firing at a helicopter on the ground, the gunner should:

- Estimate accurately the distance
- Adjust the sight at the proper range
- Aim at the middle of the aircraft
To help the infantry in firing at enemy aircraft, following are some subjects to be studied and taught to the troops on how to fire at the aircraft with small arms. This data is based on a common standard.

Firing data have been computed for each type of aircraft and should be known by heart.

The anti-aircraft firing formation is mentioned in this document but it should be adapted to the terrain, provided that the fire power is concentrated.

Content of Document

1. Nature of Objective in the air
2. Fighter aircraft
3. Reconnaissance aircraft
4. Helicopter
5. Anti-aircraft firing organisation and formation
6. Anti-aircraft fire command.
7. Method of firing at aircrafts with infantry weapons

I. NATURE OF AN OBJECTIVE IN THE AIR

a) Characteristics

1. High altitude
2. Mobility
3. Small volume
4. High speed

b) Essential data

1. Speed: determined according to the type of aircraft in order to take leads.
2. Distance: measured by estimate.

c) Shape of aircraft depends on its position:

1. If the plane approaches or moved away directly into the line of fire, it represents a minimum-size target, or 0/4.
2. If the tail appears to be under the half of the wing next to the fuselage, the target size is 1/4.
3. If the tail appears to be over the half of the wing next to the fuselage, the target size is 2/4.
4. If the tail appears to be at the tip of the wing, the target size is 3/4.
5. When the entire fuselage can be seen, the target size is 4/4.
Following are the target size of an aircraft at different angles:

1. At 15° we only see the aircraft nose. Target size 1/4.
2. At 30° we can see the wing and fuselage, equal in size target size 2/4.
3. At 50° the wings seem longer than the fuselage target size 3/4.
4. At 90° we see the entire aircraft, or target size 4/4.

II. FIGHTER AIRCRAFT

A. The enemy used fighter aircraft to attack the Revolutionary Forces. (When striking an area, this type of airplane flies at a speed of 200km/h and from 150 to 200m altitude).

At that distance, the fire power of rifles, AP's and MG's is very efficient. Example: For a 7.9mm (German) rifle, the muzzle velocity is 600m/hour (sic) and at 200 meters it will be 642m/h (sic) and the armor-piercing capability will be 2mm. Moreover, the target in motion will create a shock and the bullet will make a big hole.

Structure of the aircraft: The engine is situated ahead of the fuselage, the gas tanks are in the wings and the rockets are carried under them. Above the gas tanks are electrical wires lain in zigzag. The fuselage also contains bombs and the tail is for directional guidance. The weak area of this type aircraft is the wings and head of the fuselage. When hit by a bullet, it will immediately explode or catch fire. The best moment to fire at an aircraft is when it dives to attack our position because it then flies at lowest altitude.

B. How to fire at a fighter aircraft

- The fuselage is an average of 13 meters long
- Aircraft speed is 200km/h or 55 meters second

Formula used to take lead, when aircraft altitude is 300m

\[
\text{Lead} = \frac{\text{Length of aircraft}}{\text{Aircraft Speed} \times \text{Period of bullet trajectory}}
\]

OR 55m/second X 0.427 = \( \frac{1}{3/4} \) fuselage (23:10m lead)

When the aircraft is 200m away, the formula will be

\[
\frac{55m/s \times 0.25}{13} = \frac{1}{3} \text{ fuselage (13m 7.5 lead)}
\]

The latter formula can still be used when the aircraft altitude is only 150 meters or less.
ACTIV-AM  
Final Test Report — Armed helicopters  
Appendix 2 to Section III — Captured VC document

This appendix consists of the attached 4-page captured document.

This page regraded UNCLASSIFIED when separated from classified inclosure.
Headquarters must establish overall defensive plans based on perimeter defense or mutual supporting fire between separate positions to prevent enemy landings within our positions and difficult for him to surround. Our dispositions should also be made so that a counter strike can be mounted by the attacked forces if the situation permits. Displacements must be made within the framework of an overall plan at specified times and to specified areas to insure that scattered forces can be concentrated rapidly.

4. Counter Intelligence Measures, strengthening our internal organization and the diligent elimination of local spies must be implemented. Enemy heliborne operations are dependent on the latest info transmitted by the most rapid means, so we must exercise careful controls and particularly eliminate spies carrying communications equipment. Boats must be carefully inspected because the enemy may have secret radios in them. Passengers on common carriers and private conveyances must carefully be checked and we must avoid locating our forces in positions near communications axis where spies can easily maintain surveillance and rapidly transmit their info. Persons known to be in frequent proximity to GVN posts must be carefully checked for communications equipment.

5. Camouflage must be stressed to mislead the enemy and positions must be selected in heavily wooded areas which are difficult for the enemy to approach or attack.

6. Armed and para-military and self defense forces must be trained in shooting at helicopters and other aircraft. Training must be given immediately in anti-heliborne tactics. Experiences gained from our defeats and victories against heliborne operations will be disseminated for instructional purposes.

7. When the enemy conducts an airborne strike against an area, the people must, without panicking rapidly secure their valuables and themselves and maintain surveillance over the enemy’s actions and attitudes and determine when the moment is opportune to conduct political activities and troop propagation among the enemy’s troops. When the enemy lands he is expecting resistance from the local populace so if they resist at that moment they may suffer serious losses. Village guerrillas will instead, with their rudimentary armament, attempt to reduce the enemy’s capability and harass them when they are eating or sleeping so that on the following day they will be unable to continue their attack and bring their operation to a rapid halt or provide proper conditions for a counterattack by our own main force units. If attacked, the district, province and main force units will resist to defend themselves. Will, if conditions permit, fire at the helicopters when they approach, engage his forces when they land, resist him as he advances and pursue him when he withdraws. Any unit can engage the enemy’s airborne attacks but they must attack rapidly, achieve a rapid decision, withdraw rapidly, have adequate firepower and be trained in active anti-aircraft measures.

8. The withdrawal is an important phase of the resistance, because the enemy can attack anywhere at any time we must know how to withdraw. Do not withdraw across open areas and withdraw under supporting fire. If we succeed in drawing the battle out till the hours of darkness we must not think that our withdrawal can be made with impunity because the enemy has employed booby traps, mines, ambushing forces or interdictory fire to block our withdrawal.

9. Attacks must be organized against enemy helicopters by luring them into our prepared positions. Areas where forces and firepower can be effectively concentrated should be organized for anti-heliborne defense (based on the enemy’s heliborne capabilities). A method which can be employed is to
surround and attack an enemy installation and deploy the majority of our local forces to engage the heliborne reinforcements as they land. (The selected area should be one in which our deployment can be effectively made and in which the enemy can effect heliborne landings. In addition, because the enemy may not land their troops in cleared areas, but instead lower them by lines from helicopters to avoid our ambush, our deployments must be mobile in nature to meet enemy landings by this means. In addition the deployment of our local forces attacking the enemy’s fixed position and support the withdrawal of those forces. This deployment will also serve to mislead the enemy’s spies as to the true nature of our disposition. The target selected should be a small post far enough away from enemy supporting forces to require the use of heliborne forces to relieve it.

Prior reconnaissance must be made of helicopter landing fields in towns and cities in order to select positions to employ mortars and other weapons against them or to determine means of employing our special mission personnel to destroy the enemy’s helicopters.

10. Following the enemy’s withdrawal we must approach the battle area with caution. The enemy have been known to booby trap an area prior to withdrawing and have, as a consequence, caused us some losses. The police of the battle field must be carefully organized and employ all military, para military and civilian manpower in order to search out and disarm the enemy’s booby traps.

Above are some opinions and principles which units and organisations can employ in preparing plans to safeguard our forces against enemy attacks.

COMMENT I CORPS G2 ADVISOR: Above document was seized during Operation NGO QUEN V on 16 Nov vicinity ATY310.
TO: All Units and Administrative Units

SUBJECT: Comments on Countering Heliborne Landings and Raids

Profiting from the French experiences in Algiers and the English experience in Malaya, the USA has made extensive use of surprise heliborne raids against our units and rear areas. A striking example of US employment of these tactics was seen recently in the Binh Tay Operation (Western South Vietnam).

It can be said that all the recent augmentations of forces that the USA has sent to the Diem government were primarily intended to strengthen the Diem rear area forces, increase their ability to pass information rapidly and the wide employment of helicopters in the movement of troops. Therefore if we can destroy or greatly reduce the enemy's heliborne capability we will, in essence, have destroyed the mobility necessary to the US raid tactics.

Although we have succeeded in inflicting some loss on the enemy in his heliborne operations the enemy has in some places caused us fairly heavy losses. We must therefore find means of coping with the enemy's helicopter tactics. Widespread efforts must be directed to combatting heliborne landings and shooting at helicopters. Following are the advantages which the enemy enjoys due to his employment of heliborne strike tactics:

1. Careful planning and preparations are possible together with complete mobility in an attack, support or relieving role.
2. Secrecy can be preserved and surprise strikes can be accomplished.
3. Landings can be effected deep into our rear areas with the capability to attack and withdraw rapidly.
4. An appropriate means of destroying our forces while they are still weak.

However these tactics suffer the following disadvantages:

1. The population in our rear areas is on our side and will resist the enemy in every way.
2. Small forces are usually employed by the enemy in their deep strikes and if counterattacked may find it difficult to withdraw.
3. Heliborne operations require the latest information (old info may have lost its timeliness and new info must be checked for accuracy. If the time is taken to acquire confirmatory info then the situation may have changed rendering the info inaccurate.
4. The enemy's strike elements are usually unfamiliar with the terrain and can easily be surrounded and rapidly defeated.
5. The present available helicopters prevent the enemy from employing large forces (although this is only a temporary disadvantage it will take the enemy some time before he will be able to overcome it.)
6. The effectiveness of heliborne tactics is greatly reduced in forested and jungle covered mountain areas where a clear knowledge of the nature of the terrain cannot be discerned from the air, where landings are difficult and ambushes easily employed against the landings.

7. The disadvantages inherent in helicopters are difficult to overcome. If they are flown slow or low they are vulnerable to ground fire; every flying hour must be complemented by 3 hours ground maintenance; they cannot be flown for more than 70 hours in any 2 or 3 days (TN: Obvious typographical or technical error, 10 hours in 2 or 3 days seems appropriate); the helicopter consumes much fuel, carrying a full load of troops its fuel capacity is reduced and as a consequence its range is reduced, as a result the starting point for heliborne operations is usually near the objective and thus the enemy's element of surprise can be compromised. A landing right within our position is the most effective, but also subject to coming under our firepower while a landing outside of our position, though avoiding our firepower loses the element of surprise.

SOLUTIONS TO THE PROBLEM:

Based on the above listed advantages and disadvantages of heliborne strikes and from our experiences with enemy heliborne operations in the South we propose the following principles to contend with this enemy capability:

1. Our rear areas are weak and small and they can, through the use of heliborne tactics, become the enemy's front line at anytime so we must develop a widespread development of strong guerrilla forces in our rear areas, the enemy, despite his initiative in choosing the point of attack will, on landing find that he has landed in a hornet's nest of guerrillas ready to fight him and he may find himself in danger of being surrounded. Moreover (and this is backed up by our actual experience) this guerrilla resistance may prove sufficiently strong to prevent them from landing forces.

2. The enemy can make a heliborne landing at any time and anyplace in southern South VN and particularly in cleared heavily populated areas at which time they can inflict heavy losses on us (particularly when they are landing they will fire at anything that moves to protect their landing parties). Therefore we must instruct the people that they must prepare positions in which they can be safeguard their lives and property. These foxholes must be prepared at any place that they are likely to go.

Our armed and para-military forces as well as the masses must have self protective plans ready and the people must realize that though a heliborne operation can be launched in their midst that helicopters have many inherent weakness.

3. Our district and higher units and installations are the main targets of enemy heliborne operations so they must be mobile, properly trained and equipped to oppose the enemy. Our installations and units must not become fixed to any specific location: For example units and installations in the lowlands must be moved once every week or ten days. Units or installations in the highlands must be moved frequently. Locations must be selected with an eye to defense, concealment, offense and routes of withdrawal. On arrival in a new area the unit or installation must deploy immediately and be prepared to resist an attack, prepare defensive positions and avoid unnecessary concentrations.