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AD 343704

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(1)

U. S. ARMY CONCEPT TEAM IN VIETNAM
APO 143, San Francisco, California

ACTIV-AM

(11) 8 Mar[redacted]63,

(7) [Operational Evaluation of Armed Helicopters] (C).

~~(Short Title:~~ (6) OPEAH) [U]. (8)

(9) MONTHLY REP[redacted] no. 4,

16 Jan[redacted] - 15 Feb[redacted]63.

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U. S. ARMY CONCEPT TEAM IN VIETNAM
APO 143, San Francisco, California

ACTIV-AM 8 March 1963

SUBJECT: Monthly Test Report Number 4 -- Operational Evaluation of Armed Helicopters (16 January - 15 February 1963) (C)

TO: See Annex O

1. (C) General:

a. 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.

b. Purpose of the report.

(1) This report gives a monthly summary of the operational missions performed by the test unit and a discussion of test objectives, with findings.

(2) Monthly reports give an indication of progress and provide for an orderly collection of data for inclusion in the final test report.

c. Test unit.

(1) The Utility-Tactical Transport Helicopter Company (UTTCO) serves as the test unit.

(2) UTTCO personnel strength and equipment status (as of 15 February 1963):

		TD Authorization	Present for Duty
(a)	Personnel		
	Officers	14	27
	Warrant Officers	16	9
	Enlisted Men	83	88
(b)	Equipment		
	Helicopter, armed, UH-1	25	20 (*)

(*) - 10 UH-1A and 10 UH-1B

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SUBJECT: Monthly Test Report Number 4 — Armed Helicopter

d. Concept of test.

(1) All test and observations were made while the UTTCO was engaged in operational missions. Comments of selected military observers and judgments of other knowledgeable persons provided many of the data from which this report was derived.

(2) The UTTCO is assigned to the 45th Transportation Battalion. It furnished armed escort for the 33d, 57th, and 93d Transportation Companies (Light Helicopter). The UTTCO provides direct support to the US Senior Advisor of the IV Corps, Army of the Republic of Vietnam (ARVN). Support is also given to the III Corps.

(3) Planned movement of a portion of the UTTCO to the I or II Corps area for operations and testing was delayed due to mechanical difficulties with the UH-1B helicopters. A discussion of this problem is included in Inclosure 2 to Annex I. It is anticipated that this movement will be made during the next reporting period.

e. Test progress.

The test is considered to be approximately 80 percent complete.

f. Selected mission data:

Operations	Totals to 15 Jan 63	16 Jan 63 to 15 Feb 63	Cumulative totals
Number of missions	61	9	70
Mission hours	545	51	596
Combat support hours	1415	178	1593
UH-1 sorties	1286	121	1407
CH-21 sorties	2940	162	3102
CH-34 sorties	42	21	63
Landing zones protected	219	18	237
Eagle flights escorted	26	0	26
Medical evac flights escorted	6	2	8
Armament			
Missions in which fire was returned	30	2	32

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Armament	Totals to 15 Jan 63	16 Jan 63 to 15 Feb 63	Cumulative totals
Caliber .30 rounds expended	36700	4000	40700
7.62mm rounds expended	20250	3200	23450
2.75" rockets expended	785	80	865
Effects			
Estimated insurgent casualties (KIA + WIA)	203	24	227
US KIA	2	0	2
US WIA	3	0	3
UH-1's hit by insurgent fire	10	1	11
Number of hits on UH-1's	14	1	15
UH-1's disabled by insurgent fire	1	0	1
Aircraft availability			
Average Nr of UH-1's on hand	20	20	—
Average Nr of UH-1's flyable	14	13	—
Average availability rate	68%	64%	—

Note: Data on escorted helicopters hit by insurgent fire are presented in Annex B

2. (U) Completeness of findings.

Testing to date has revealed that, within the time frame of the present test, only tentative conclusions can be drawn. This is a consequence both of the number of objectives specified by the test plan and of the breadth and scope of certain of the objectives.

3. (U) Report content and format.

a. Much material published in Monthly Test Reports Numbers 1, 2, and 3 (references 4c, d and e) will not be repeated here.

b. Annexes A through J cover the ten test objectives. Supporting data are contained in Annexes K through N. Distribution of the report is shown in Annex O.

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SUBJECT: Monthly Test Report Number 4 — Armed Helicopter

4. (C) References.

a. USMACV letter, 29 September 1962, subject: "Test Plan, Operational Evaluation of Armed Helicopters (C)."

b. DA letter, 6 November 1962, AGAM-P (M) 381 (31 Oct 62) DCSOPS, subject: "Army Troop Test Program in Vietnam (U)."

c. Test reports, Army Concept Team in Vietnam, subject: "Operational Evaluation of Armed Helicopters (C)" —

(1) Monthly Test Report Number 1, 30 November 1962.

(2) Monthly Test Report Number 2, 30 December 1962.

(3) Monthly Test Report Number 3, 31 January 1963.

E. L. Rowny

15 Incl
List on next page

E. L. ROWNY
Major General, USA
Chief

DISTRIBUTION:
See Annex O

ACTIV-AM
SUBJECT: Monthly Test Report Number 4 — Armed Helicopters

LIST OF INCLOSURES

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1. ANNEX A . . . Objective 1 . . . Tactics and techniques;
2. ANNEX B . . . Objective 2 . . . Armed helicopter effectiveness.
3. ANNEX C . . . Objective 3 . . . Command control, communications.
4. ANNEX D . . . Objective 4 . . . Formations.
5. ANNEX E . . . Objective 5 . . . Communications procedures.
6. ANNEX F . . . Objective 6 . . . Suppressive fire effectiveness.
7. ANNEX G . . . Objective 7 . . . Insurgent identification.
8. ANNEX H . . . Objective 8 . . . Optimum organization.
9. ANNEX I . . . Objective 9 . . . Logistical problems.
10. ANNEX J . . . Objective 10 . . . Ammunition day of supply.
11. ANNEX K . . . . . Daily mission statistics.
12. ANNEX L . . . . . Aircraft and armament systems.
13. ANNEX M . . . . . Aircraft status report.
14. ANNEX N . . . . . Ground fire damage reports.
15. ANNEX O . . . . . Distribution of report.

List of Inclosures.

List of Inclosures.

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Monthly Test Report Number 4 -- Armed Helicopter

ANNEX A -- Objective 1 (Tactics and techniques)

1. (C) Objectives.

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

2. (C) Discussion.

a. General:

(1) The UTTCO provided armed escort for nine airmobile operations during this reporting period. This unusually low number of escort missions can be attributed directly to a reduced number of airmobile operations in the delta area. No changes in insurgent tactics were observed nor were any unusual situations or operational conditions encountered which warrant special examination or which influenced findings of previous reports.

(2) Planned deployment of one platoon for testing in mountainous terrain was delayed by the mechanical trouble discussed in Inclosure 2 to Annex I. The deficiencies were later corrected, and required testing will be accomplished during the next reporting period.

b. Organization for combat:

(1) During this reporting period, five- and six-helicopter platoons were tested four and five times, respectively. Tactics employed by the five-helicopter platoon were generally the same as discussed in previous reports. A variation was noted with the six-helicopter platoon. As reported in Monthly Test Report Number 2, platoon leaders desired that a sixth helicopter be added to the platoons to provide more flexibility and added firepower. It now appears that the sixth helicopter can initially be more effectively employed as a scout element to precede the airmobile force into the objective area. This method of employment is discussed below. Its effect on formations is treated in Annex D.

(2) From a command and control standpoint or because of those factors of organization discussed in Monthly Test Report Number 3, it may be more desirable to limit the platoon to five helicopters. If it is so determined, then a requirement may exist for a scout section or platoon organic to the armed helicopter company to satisfy this reconnaissance requirement. A recommended mode of organization will be presented in the final test report.

c. Method of scout employment:

Monthly Test Report Number 3 stated a requirement for testing the employment of a scout element as part of the escort force. Since then this technique has been employed in three landing zones. The following observations were recorded:

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ANNEX A -- Objective 1 (Continued)

(1) The scout preceded the main body into the landing zone by approximately 15 seconds.

(2) The scout flew across the landing zones at a low altitude (20-50 feet), reconnoitering for insurgent activity and attempting to draw fire which would disclose insurgent positions.

(3) No insurgent activity was observed by the scout in the three landing zones, and none was encountered by the main body.

(4) Upon the arrival of the main body at the landing zone, the scout joined the landing zone formation employed by the armed helicopter platoon.

(5) The addition of a self-contained navigation system mounted in the scout helicopter would permit the scout to lead the main body to the landing zone at night or during periods of low visibility. This would eliminate the need for a control aircraft orbiting at altitude in the vicinity of the landing zone and would prevent the possible compromise of surprise. Use of such a navigation system would facilitate operations during frequent periods of poor visibility that occur in the annual monsoon seasons.

(6) The use of the scout helicopter operating at the same altitude and airspeed is considered the best means of guiding transports into a landing zone.

3. (C) Findings.

Further testing of an armed helicopter reconnaissance element is required to determine its usefulness and optimum methods of employment.

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ANNEX A

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Monthly Test Report Number 4 — Armed Helicopter

ANNEX B — 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) Previous monthly reports have presented graphs showing — by month, since January 1962 — the experience record of the escorted companies with respect to the following: total number of hits received, number of aircraft hit, combat support hours flown, sorties, and hits per hour flown. These graphs are extended in this annex (Figures 1 through 4, attached).

(2) The graphs show that the number of hits per hours flown (or per sortie) remains at about the same level as last month; although the number of hits was much lower than in the previous period, so was the number of combat support operations flown by the transport helicopters.

(3) Data shown in the graphs have been collected in an effort to compare hit rates — on transport helicopters — before and after escort operations were begun by the UTTCO. It is assumed that hit rates provide and index of the volume and accuracy of insurgent fire. This hypothesis will not be subject to verification until such time as an independent measure of volume of fire can be developed. Methods for obtaining such a measure are under investigation.

(4) Thus far, comparison of hit rates before and after the beginning of UTTCO escort operations rests on two additional assumptions. These are:

(a) Constant level of insurgent effort. In the absence of specific intelligence on insurgent strength, dispositions, and firepower capabilities against heliborne operations, it has been assumed that these factors have remained constant. It is evident, however, that there have been variations in insurgent armament and in the skillfulness and aggressiveness with which it has been employed. In addition, captured documents reveal that the insurgents have instituted an anti-helicopter training program and have sought to bring more fire to bear on heliborne landings. An effort is being made to obtain quantitative intelligence information relating to the level of insurgent effort; such data as are developed will be included in the final report.

(b) Constancy of transport helicopter employment. It has been assumed that the tactics of transport helicopter employment (i.e., types of operations to which committed, selection of routes of approach,

ANNEX B -- Objective 2 (continued)

Selection of landing zones, etc.) were not changed by the advent of armed escort. The effect of availability of armed escort on plans for employment of transport helicopters is being explored through interviews with US advisors and helicopter pilots.

b. Passive protection of transport helicopters. In addition to active measures for protection, the transport helicopters have available to them two passive measures -- camouflage and armor -- that might be useful in reducing vulnerability. Camouflage may affect the probability of sustaining a hit; armor reduces the extent of damage from a hit.

(1) Camouflage.

(a) The primary purpose of camouflage painting on aircraft has been to reduce detection from the air, either when the aircraft was on the ground or flying low. In RVN operations, friendly air supremacy voids the need for camouflage for this purpose. When used here, camouflage is intended not so much to avoid detection as to confuse the enemy, who is always on the ground and usually below or at substantially the same level as the aircraft.

(b) At the present time 22 US helicopters, all CH-21's are camouflaged -- 20 in the 8th Transportation Company and two in the 57th. The 8th operates out of Qui Nhon, in the mountainous northern provinces, and the 57th in the delta. None of the other US helicopter units are camouflaged, although the USATCO plans to camouflage approximately four of its aircraft as a test. All US Army helicopter units in the RVN have painted out the large white stars on the sides of their aircraft.

(c) Where it is used, camouflage painting is adopted in the hope that it may possibly increase survivability by giving firers a somewhat more difficult target. This reasoning also underlies painting-out the white stars which give a good aiming point and denote the engine area on the CH-21's. The 8th Transportation Company continues to use camouflage painting because it certainly does no harm and may do some good, especially with respect to small arms. It is easy to do -- one man can paint a CH-21 in a day.

(d) Marine Corps CH-34's, operating in terrain similar to that overflown by the 8th Transportation Company, are not camouflaged; they actually are "painted up" so that each craft can be seen more easily from other helicopters on a mission. CH-21 pilots see no need for this kind of painting; they have no difficulty in maintaining visual contact with each other.

(e) Regional differences may be significant. A ground marksman within range of an aircraft is probably more likely to see it silhouetted against the sky in the delta than in the mountains. Camouflage probably is more effective against the mottled, tree-filled background of the highlands.

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ANNEX B

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Monthly Test Report Number 4 -- Armed Helicopters

ANNEX B -- Objective 2 (continued)

(2) Armor

(a) Armor kits have been received for all of the US transport helicopters in the RVN to protect the pilot and co-pilot; they do not give protection to the crew chief or gunner. Each kit weighs 183 pounds and consists of sheets of magnesium and doron. The magnesium is placed next to the plexiglass in the lower half of the cockpit and at the side near the seats. Pieces of 1-inch and ½-inch doron -- fiberglass layers bound together by plastic -- are installed around the bottom, back, and one side of the seats. The magnesium is designed to tip the bullet so that it hits the doron obliquely. This "tipping plate" principle has been found to give maximum protection per unit of weight. The tipping is only initiated by the magnesium; the round requires several feet to achieve proper obliquity. The dimensions of the CH-21 cockpit are such that the principle is active only for rounds that penetrate from the front. Rounds from the side have only approximately eight inches of tipping action.

(b) The kits are easy to install, requiring about 2½ hours per aircraft. With one exception, they do not interfere importantly with vision or operation of the helicopter. The exception is a rectangular sheet of 1-inch doron, weighing approximately 20 pounds, that rests on the pilot's lap and covers his abdomen and chest. The piece has not received much acceptance. It is so bulky, in combination with the armor jacket, that the pilot cannot move the control stick to the full aft position. It is uncomfortable if worn for long; consequently it is seldom used over lengthy periods of time. Body armor, on the other hand, is generally worn by crew members despite the heat it generates.

(c) Although instructions for installing the armor kits call for doron pieces on the inner sides of the pilot and co-pilot seats, installation on the outer sides obviously gives more protection. The outer installation has been adopted by some of the helicopter units.

3. (C) Findings.

a. In view of ease of application and relatively low cost, camouflage painting should be adopted by all US Army helicopter units in the RVN for such protection as might be given by such paint.

b. Continued collection of data is required to provide a basis for conclusions on the effectiveness of camouflage painting and armor for helicopters.

Page 3
ANNEX B

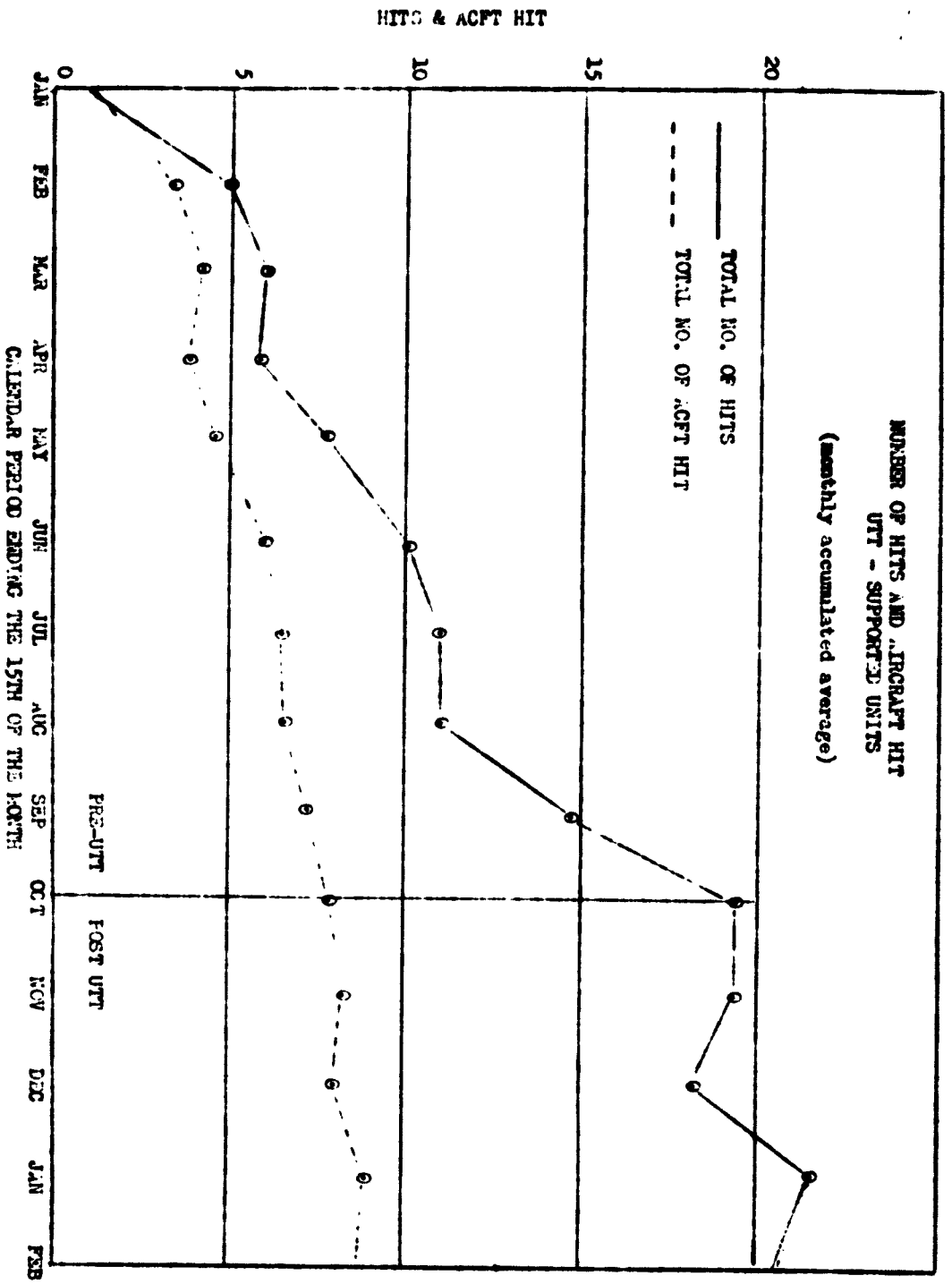

Figure 1
ANNEX B

Figure 1
ANNEX B

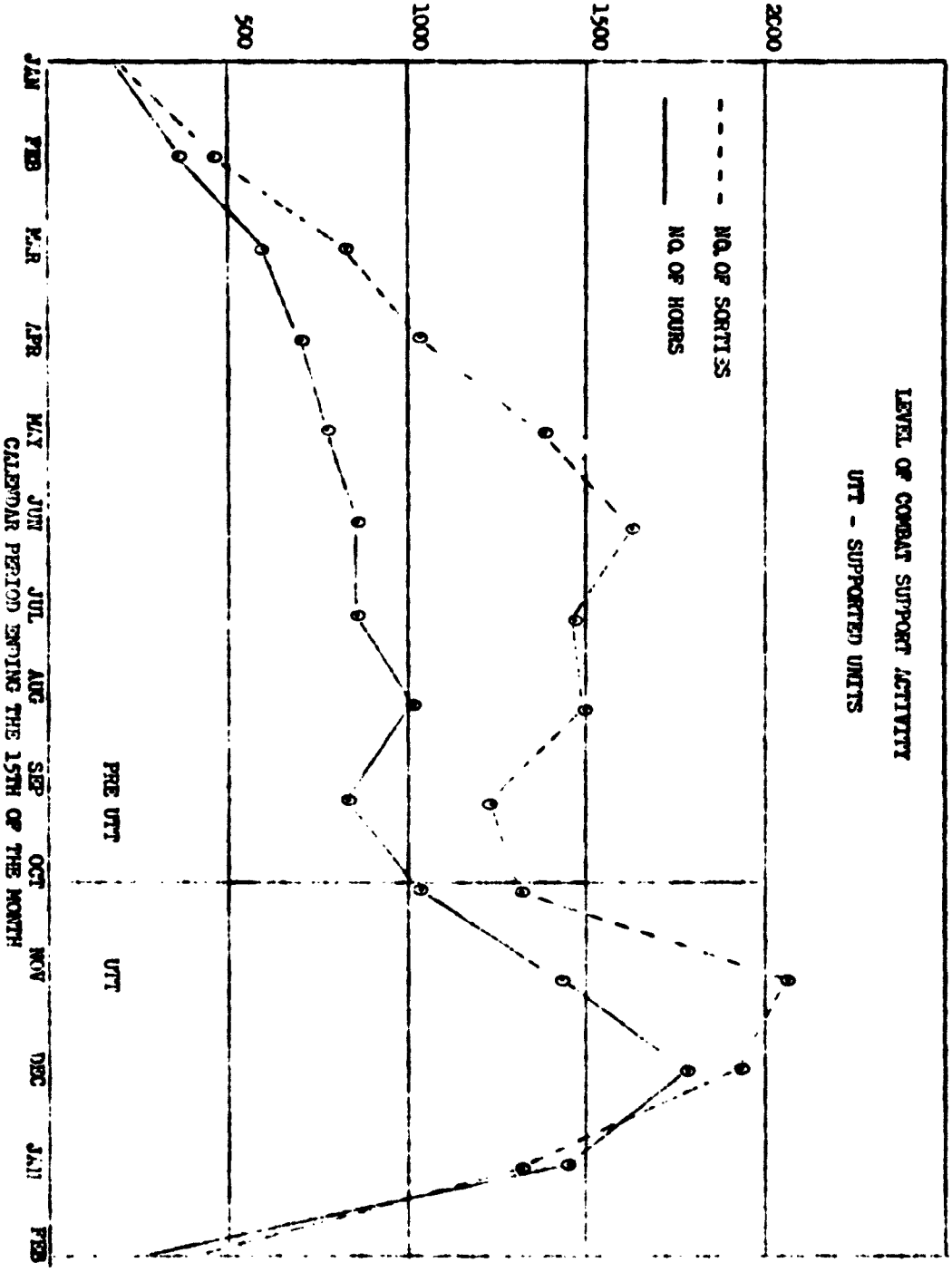

Figure 2
ANNEX B

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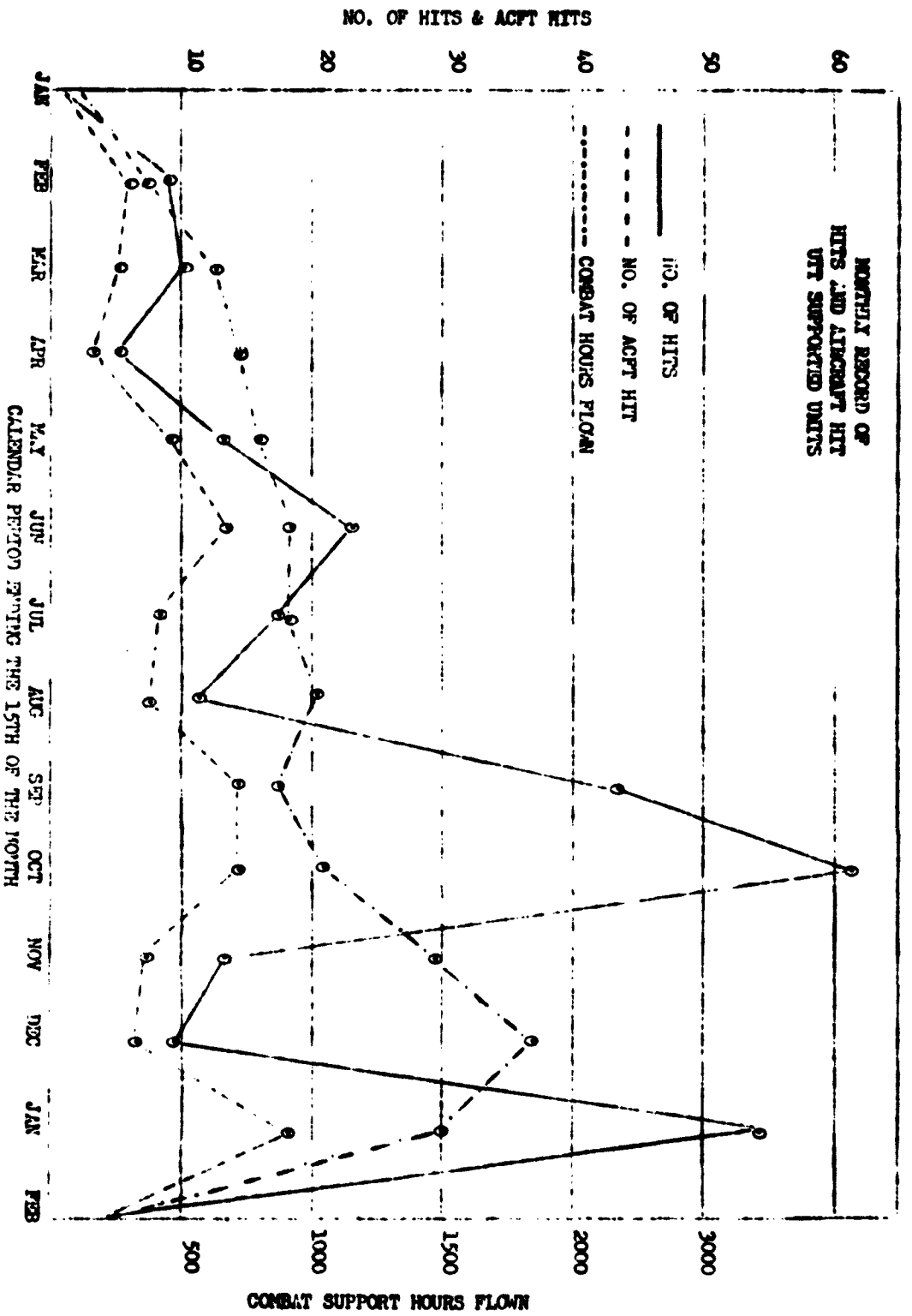

Figure 3
ANNEX B

Figure 3
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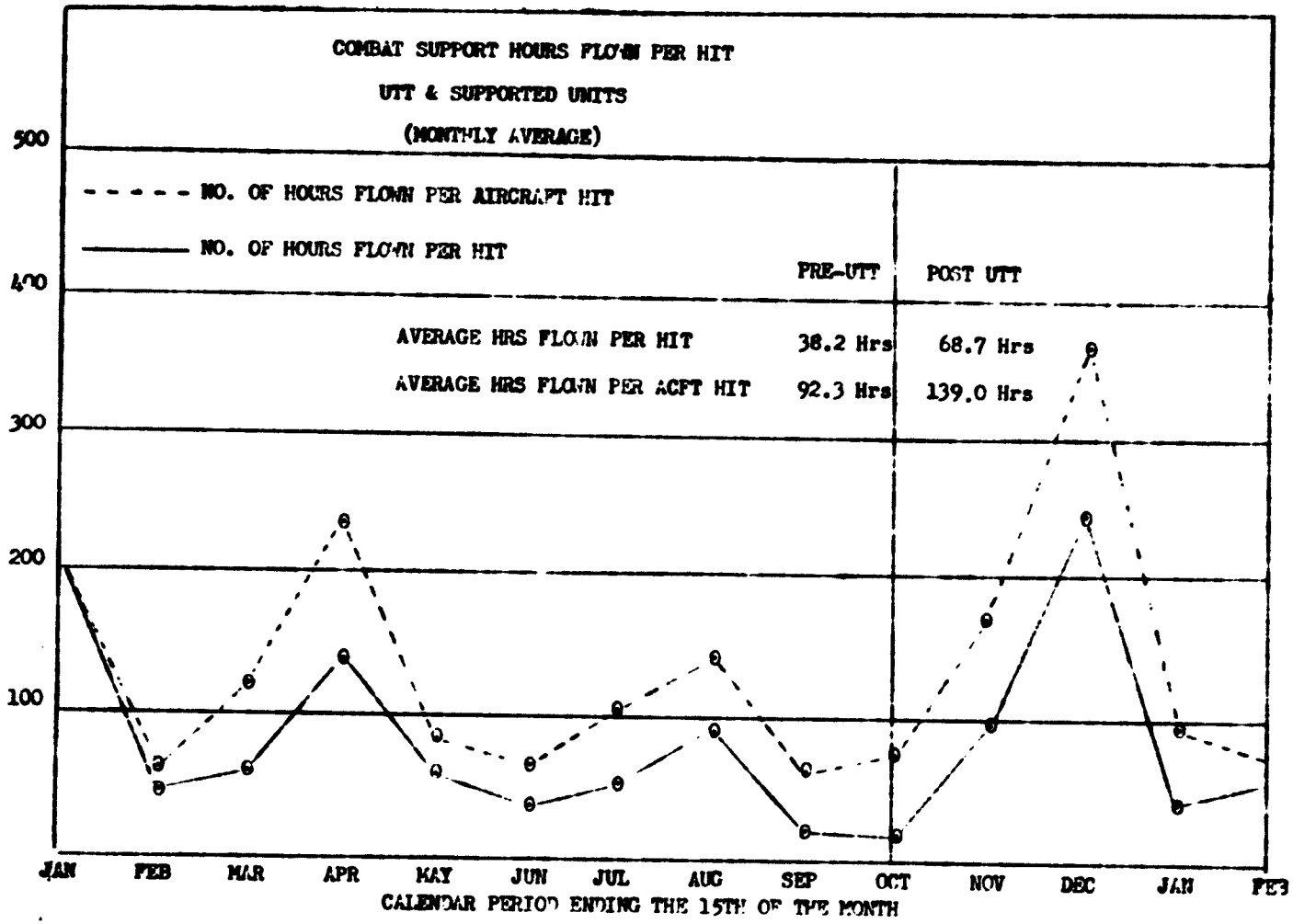

Figure 4
ANNEX B

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Monthly Test Report Number 4 — Armed Helicopter

ANNEX C — Objective 3 (Command Control; communications).

1. (C) Objective.

"Determine optimum control, communications, and coordination procedures used between the transport unit, the armed escort, the supported ground commanders, and tactical aircraft".

2. (C) Discussion.

a. Techniques of effective command control and coordination are contained in Annexes A and D of previous months' test reports.

b. Annex C of Monthly Test Report Number 3 discussed UTTCO requirements for additional communications equipment. During the current reporting period, the company's capabilities and requirements for organisational avionics maintenance were studied.

c. Normal missions of the UTTCO require full utilisation of all available radio equipment; the type operations conducted in the RVN places increased emphasis on the reliability of this equipment. The requirement for immediate fire support in response to requests from transport helicopters can only be met if all means of communications function properly. This standard of operation calls for an organic avionics maintenance capability. The present TD does not provide personnel for this purpose.

d. The UTTCO presently receives support from the 69th and 255th Signal Maintenance Detachments (Avionics). Each of these detachments is organised and equipped to provide third echelon maintenance for 25 aircraft. They are now supporting a total of 94 aircraft, including limited first through fourth echelon maintenance, in addition they provide emergency repair for transient aircraft at Tan Son Nhut airfield. These functions produce a 100% overload for the two detachments. Support now provided to the UTTCO has the following limitations:

(1) The UTTCO commander has no control over performance of required daily maintenance.

(2) Communications equipment receives maintenance only when it is unserviceable or the helicopter is grounded for scheduled inspections.

(3) Avionics maintenance support is not available to the unit when operating in remote areas.

e. Review of the UTTCO's avionics records show that:

(1) Only items essential for operations are being repaired,

(2) Fifty percent of the repairs performed by the supporting avionics units could have been accomplished at organisational level had

ANNEX C -- Objective 3 (continued)

organic avionics personnel been available.

f. Technical manuals list 42 line items requiring daily inspection. Forty minutes is the average time required for this inspection, and an average of two hours per day is required in testing and repair of equipment at organizational level. To perform this organizational maintenance, one electronics repairman (MOS 284.10) is required for each eight to ten aircraft.

g. The UTTCO is authorized 25 helicopters. Three electronics repairmen are required to support this fleet. Each repairman will need the following tools and test equipment:

(1)	Organizational tools	TK-87
(2)	Watt meter	AN/URM-43
(3)	Volt OHM meter	TS-352
(4)	Tube tester	TV-7

3. Findings.

a. The UTTCO should have an organic avionics maintenance capability.

b. An adequate avionics maintenance capability could be provided by the assignment of three electronics repairmen (MOS 284.10) and by the addition of appropriate tools to the UTTCO table of allowances.

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ANNEX C

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Monthly Test Report Number 4 — Armed Helicopters (C)

ANNEX D — Objective 4. (Formations)

1. (C) Objective:

"Determine optimum in-flight formations and deployment of armed helicopters in relation to the transport helicopter formation."

2. (C) Discussion:

a. Use of a scout element as discussed in Annex A, adds a variation to the basic formations discussed in Monthly Test Report Number 2. Sketches 1 and 2 show the position of the scout, in relation to the main body, while enroute and in the landing zone when the escort platoon uses formation ALPHA. The scout technique is similarly adaptable to other formations.

b. The scout precedes the main body by about 15 seconds. Surprise is not compromised.

c. The scout aircraft gives early warning to the main body and identifies targets to be engaged by escort ships 2 and 3 as they arrive in the landing zone. Without the scout, escorts 2 and 3 may be deep into the landing zone before insurgent fire is encountered, and consequently not in the best position to return fire. This situation can be corrected by having escorts 2 and 3 drop behind the lead transports by five to 10 seconds. This would allow the insurgents to expose their positions by firing first on the CH-21's just as escorts 2 and 3 are entering the landing zone and are in a good position to fire. However, this technique is not consistent with the principle, discussed in Monthly Test Report Number 3, that armed escorts will expose themselves and attempt to draw enemy fire away from the heavily-laden transports. To minimize the exposure of troop transports and still insure a maximum capability to deliver suppressive fire, either a scout must be used or escorts 2 and 3 must be positioned forward in the helicopter formation.

d. Eight escort operations during the reporting period used formations discussed in previous reports; the ninth added a scout. Although the orginal formations continue to be effective in the delta area, effectiveness is increased by the addition of a scout element.

3. (C) Findings:

a. Formations discussed in previous reports continue to be effective for supporting airmobile operations in the delta area.

b. The use of a scout element increases the effectiveness of the escort force through early warning of insurgent activity and consequently assures better initial target engagement by all elements of the escort force.

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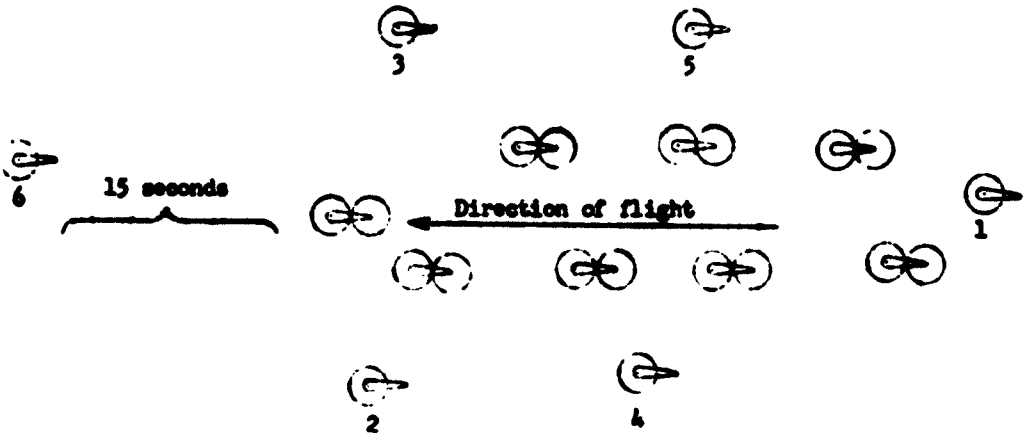
Sketch 1 to accompany ANNEX D

Formation ALPHA, with Scout

En route



UH-1

CH-21

Sketch 1
ANNEX D

Sketch 1
ANNEX D

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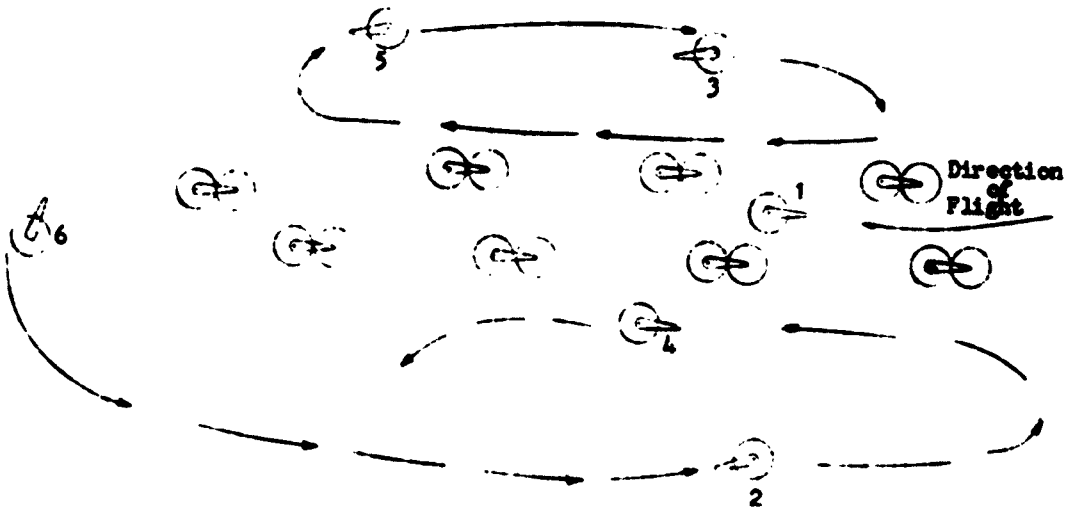
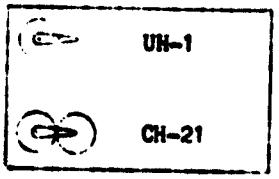
Monthly Test Report Number 4 — Armed Helicopters

Sketch 2 to accompany ANNEX D

Formation ALPHA, with Scout

Landing zone





Sketch 2
ANNEX D

Sketch 2
ANNEX D

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Monthly Test Report Number 4 -- Armed Helicopters

ANNEX E -- Objective 5 (Communications procedures)

1. (C) Objective.

"Determine communications procedures to be employed in flight, while landing, off-loading and during withdrawal of transport helicopters."

2. (U) Discussion.

a. No new procedures were developed during the reporting period.

b. Annex C contains a discussion of avionic maintenance requirements.

3. (U) Findings.

None

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Monthly Test Report Number 4 -- Armed Helicopters

ANNEX F -- Objective 6 (Effectiveness of suppressive fire)

1. (C) Objective.

"Determine the effectiveness of close-in aerial suppressive fire support delivered in protection of helicopters and ground forces during off-loading from transport helicopters."

2. (C) Discussion.

a. Most of the fire delivered by armed escort helicopters can properly be termed "suppressive fire." For all practical purposes, therefore, the discussion presented in Annex B is equally applicable to Objective 6.

b. Unless subsequent experience develops an operational usage by armed helicopters of fires that are not suppressive, data developed in connection with Objective 2 will be considered to apply also to Objective 6. Exceptions will be noted.

c. Efforts are being made to obtain data derived from interrogation of captured insurgents concerning effects of suppressive fire delivered by armed helicopters. Pertinent information acquired through this means will be included in the final test report.

3. (U) Findings.

None

ACTIV-AH
Monthly Test Report Number 4 -- Armed Helicopters

ANNEX G -- Objective 7 (Insurgent identification)

1. (C) Objective.

"Determine methods employed by armed helicopters to locate insurgent forces."

2. (C) Discussion.

a. No new methods were developed during this reporting period.

b. During the period, armed helicopter crews reported 33 suspected insurgents and 99 insurgents positively identified through hostile acts.

c. Grounding of the UH-1B's prevented testing of gun cameras mounted on the reflex sight of the XM-6 weapons system.

3. (U) Findings.

None

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Monthly Test Report Number 4 -- Armed Helicopters

ANNEX H -- Objective 8 (Optimum organization)

1. (C) Objective.

"Determine optimum organization to include whether armed helicopters should be included in the TOE of transport companies or should the armed helicopter unit be in support of the transport company".

2. (U) Discussion.

a. UTTCO requirements for additional communications maintenance personnel and equipment are covered in Annex C.

b. No new data were developed during this test period concerning optimum unit organization or possible inclusion of armed helicopters in the TOE of the transport helicopter company.

3. (U) Findings.

None.

ACTIV-AM
Monthly Test Report Number 4 — Armed Helicopters

ANNEX I — Objective 9 (Logistical problems)

1. (C) Objective.

"To determine logistical problems".

2. (C) Discussion.

a. Shortage of spare parts continues to be a logistical problem for the UTTCO even though three engines and a number of gear boxes for the UH-1B were received during this reporting period.

b. Requisitioned EDP items for the UH-1B helicopters reported in Annex I, Monthly Test Report Number 3, were not received. Additional EDP items on requisition are shown in Inclosure 1. In some instances, EDP requisitions are not filled due to issue of the next higher assembly. In the case of an aircraft EDP because of an engine part, for example, a new engine may be issued and the old engine subsequently turned in.

c. Discovery of an unsafe condition in the main rotor hub grounded nine of ten assigned UH-1B's. An Unsatisfactory Equipment Report (UER) was submitted. Detailed information is contained in Inclosure 2.

d. The only item remaining in short supply for the M-60 MG is the bolt plug assembly, FSN 1005-608-5056. Although twenty of these items have been received, the high usage factor leaves only four on hand. Fourteen others are due out.

e. The last monthly report covered some of the problems associated with recovery of downed helicopters. Examination of reports on recovery of CH-21's downed during the present reporting period indicates that this continues to be a major logistical problem. Introduction of helicopters with heavy-lift capability would provide a means of solution.

f. Grounding of UH-1B's prevented testing of the auxiliary fuel tank (60-gallon).

g. Supply of POL products continues to be a major logistical problem in helicopter operations. This problem — covered in detail in Annex I of the last monthly report — has not diminished. Adequate POL supply in troop pickup areas was lacking in four of the nine missions undertaken by the UTTCO during the present reporting period.

3. (C) Findings.

a. Spart parts supply for the UTTCO improved with the arrival of a number of major assemblies.

b. There is a continuing requirement for a heavy-lift helicopter for recovery of downed aircraft.

c. Supply of POL products at troop loading sites continues to be a serious logistical problem.

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Inclosure 1 to Annex I — UTTCO EDP status

ITEM	FSN	NR	DATE	A/C NUMBER	VOUCHER NR
Transmission Assy	1560-733-8309	1 EA	10 Jan 63	62-1884	3111/0101
Hub Assy M/R	1560-876-0106	1 EA	5 Dec 62	62-1884	2972/0110
Strainer, Fuel	2915-860-5545	1 EA	10 Dec 62	62-1884	1994/0106
*Bolt, Turbine	5306-655-7309	1 EA	11 Feb 63	59-1694	3291/0101
*Indicator, Oil Pressure	6620-526-9451	1 EA	4 Feb 63	62-1876	3258/0109

*NOTE: Items added since last report.

Incl 1
ANNEX I

Inclosure 2 to Annex I

MAIN ROTOR ASSEMBLY PROBLEMS

1. Main rotor assemblies on three UH-1B aircraft were disassembled on 8 February 1963 so that leaking rotor grip seals could be replaced.

2. Inspection of the disassembled components revealed metal particles (non-magnetic) lodged in the area of the tension-torsion strap fittings. Investigation showed that the metal particles came from the bearing spacer sleeve and were produced by a shaving action of the grip bearing inner races wearing against this sleeve. This shaving of the spacer sleeve resulted also in a loss of torque on the hub spindle nut. This condition was found in nine main rotor assemblies.

3. As the metal particles had caused no damage to the internal working parts of the mechanism, all the main rotor assemblies were cleaned of metal particles and the spindle nuts re-torqued. (NOTE: A design feature of this assembly permits the inner bearing races to rotate on their spindle journals under excessive load conditions of the main rotor blades).

4. On 9 February, an Emergency Unsatisfactory Equipment Report was submitted. Concurrently, a main rotor assembly was shipped to the manufacturer by air.

5. As corrective action progressed, five of the nine rotor assemblies were discovered to have a secondary discrepancy resulting from the first; scoring of the spindle journal in the area of the in-board bearing inner race. This was caused by minute steel particles wedging between the bearing inner race and the spindle journal. Corrective action was stopped pending contact with the manufacturer. Four days were required to make contact by telephone.

6. The engineering department of Bell Helicopter Company advised that the score mark tolerance in this area of the spindle could not exceed .010 inch in depth and 360 degrees around the journal circumference. When work was resumed on these assemblies, all were found to be well within the limits specified by the manufacturer. Although the assemblies were readied for re-installation on the aircraft, the US Army Transportation Materiel Command advised that the assemblies were to be sent back to the manufacturer for examination.

7. New main rotor hubs have been received and installed. Old assemblies have been processed for return to the manufacturer.

Incl 2
ANNEX I

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ANNEX J -- Objective 10 (Ammunition day of supply)

1. (C) Objective.

"To determine a day of supply for ammunition by type."

2. (U) Discussion.

Inclosure 1 shows ammunition expenditure for a three-month period, a computed rate of expenditure, and the derived day of supply by ammunition type.

3. (U) Finding.

Day of supply figures shown in column 5, Inclosure 1 are considered unreliable because of the short period of time on which the computations are based.

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Inclosure 1 to Annex J.

AMMUNITION EXPENDITURE (16 January 1963 to 15 February 1963)

(1) TYPE OF AMMUNITION		(2) ROUNDS EXPENDED		(3) GUN/TUBE-DAYS		(4) EXPENDITURE RATE PER GUN/TUBE		(5) DAY OF SUPPLY PER GUN/TUBE
.30 caliber	A.	5,100	A.	36	A.	141	A.	5
	B.	2,600	B.	41	B.	63	B.	3
	C.	4,000	C.	40	C.	100	C.	4
	D.	11,700	D.	117	D.	304	E.	4
7.62-mm	A.	10,000	A.	36	A.	278	A.	10
	B.	10,250	B.	42	B.	244	B.	9
	C.	3,200	C.	40	C.	80	C.	3
	D.	23,450	D.	118	D.	602	E.	7
2.75" rkt	A.	127	A.	352	A.	.36	A.	1
	B.	168	B.	165	B.	1.00	B.	1
	C.	80	C.	640	C.	.01	C.	1
	D.	375	D.	1,157	D.	.01	E.	1

A. = for period 15 November through 15 December.
B. = for period 16 December through 15 January.
C. = for period 16 January through 15 February.
D. = A+B+C.
E. = for period 15 November through 15 February.

Note 1. The expenditure rate for a given type of ammunition is computed by use of the formula RE/GTD=ER, where "RE" = "number of rounds expended," "GTD" = "gun or tube days," and "ER"="expenditure rate per gun or tube/per day of engagement," GTD is computed by multiplying the number of days on which ammunition of a given type was expended by the number of guns or tubes using that type.

Note 2. The "day of supply" is determined by dividing the total monthly expenditure of a given type of ammunition by the product of the number of days in the month (assumed to be 30) and the number of guns or tubes that use that type of ammunition. The resulting figures could be misleading unless interpreted carefully with full recognition of the limited experience on which they are based.

Note 3. The above ammunition was expended in operations in the counter-insurgency environment of the RVN under specific rules of engagement. It is not suggested that these data are valid for other situations.

Incl 1
ANNEX J

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ANNEX K -- UTTCO mission data.

Attachments:

Inclosure 1 -- Data on aircraft - sorties - hours.

Inclosure 2 -- Data on target - ammunition - results.

Regraded UNCLASSIFIED when separated from classified inclosures.

ANNEX K

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Inclosure 1 to ANNEX K

AIRCRAFT - SORTIES - HOURS
(18 Jan 63 - 15 Feb 63)

DATE:	MISSION #	UH-1A's	UH-1B's	C/S HOURS	UH-1 SORTIES	CH-21's	CH-21 SORTIES	CH-34's	CH-34 SORTIES	LANDING ZONES	EAGLE FLIGHTS	MEDICAL EVAC	PRISONER PICKUP	MISSION DURATION HOURS
18 Jan 63	62	3	3	17	20	7	7	0	0	1	0	0	0	5
31 Jan 63	63	2	3	27	15	4	12	0	0	3	0	0	0	10
1 Feb 63	64	2	3	17	9	4	4	0	0	1	0	0	0	7
2 Feb 63	65	2	3	9	4	10	10	0	0	1	0	1	0	3
3 Feb 63	66	2	3	33	18	7	22	6	2	4	0	0	0	10
8 Feb 63	67	6	0	34	16	9	27	15	5	2	0	0	0	6
11 Feb 63	68	6	0	21	15	10	40	0	0	2	0	1	0	4
14 Feb 63	69	5	1	7	6	10	10	0	0	1	0	0	0	2
15 Feb 63	70	5	1	13	18	10	30	0	0	3	0	0	0	4
TOTALS	9	33	17	178	121	711	162	7	21	18	0	2	0	51

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Inclosure 2 to ANNEX K

TARGET - AMMUNITION - RESULTS
(18 Jan 63 - 15 Feb 63)

DATE:	18 Jan	31 Jan	1 Feb	2 Feb	3 Feb	8 Feb	11 Feb	14 Feb	15 Feb	TOTALS
MISSION	62	63	64	65	66	67	68	69	70	9
NO. OF TARGET ENG.ELEMENTS	2	0	0	0	0	6	0	0	0	8
INSURGENT POSITION (a)										
OPEN FIELD	0	0	0	0	0	X	0	X	0	2
TREES & WOOD LINE	X	0	0	0	0	X	0	0	X	3
BUILDINGS	0	0	0	0	0	X	0	0	X	X
BUNKERS	0	0	0	0	0	0	0	0	0	0
ROUNDS EXPENDED										
30 Cal	1040	0	0	0	0	2960	0	0	0	4000
7.62MM	3200	0	0	0	0	0	0	0	0	3200
2.75" ROCKET	4	0	0	0	0	76	0	0	0	80
TYPE OF FIRE (INSURGENT)										
RIFLE	X	0	0	0	0	X	0	0	X	3
AUTO WPN	X	0	0	0	0	X	0	0	0	2
OBSERVED INSURGENT AND FIRE	10	0	0	0	0	80	0	6	X	96
OBSVD. FIRE ONLY	10	0	0	2	0	0	0	2	0	10
INSURGENT EST. CASUALTIES	5	0	0	0	0	19	0	0	0	24
US CASUALTIES	0	0	0	0	0	0	0	0	0	0
UH-1 HITS (b)	0	0	0	0	0	0	0	0	1	1

NOTES: (a) Insurgent positions indicated by X.
(b) See Annex N, Ground Fire Damage Reports.

Incl 2
ANNEX K

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ANNEX L — Aircraft and armament systems

1. (U) General.

The purpose of this annex is to consolidate information and discuss problem areas, pertaining to armed aircraft and aircraft weapon subsystems.

2. (C) Discussion.

a. Installation of the 2.75 inch SSFFAR (Slow Spin Folding Fin Aircraft Rocket) weapon kit as an adjunct to the XM-6E3 armament subsystem on the UH-1B helicopter was completed during this reporting period. Operational employment of this kit has been delayed by UH-1B grounding (see Annex I).

b. The UTTCO has found the XM-6E3 armament subsystem (excluding M-60C guns) to be effective and relatively trouble-free. During this reporting period, one amplifier board and two ammunition drive motors were replaced. Boresight drift continues to be a problem.

c. M-60C machine gun problem areas.

(1) Bolt plug assembly failures, FSN 1005-608-5056, continue to plague the M-60C machine guns. Impending failure of the bolt plug is indicated by chipping of the thread adjacent to the orifice in the plug. Inclosure 1 shows the area of failure in a bolt plug assembly. Average failure of this part, on four test guns, occured at 9000 rounds. Springfield Armory has redesigned this part. Use of the improved part, when available, should increase reliability of the M-60C machine gun.

(2) Thirty gas port plugs, FSN 1005-690-375, have failed at the base of the threaded portion since 23 November 1962. It is the opinion of the UTTCO armament officer that excessive torque applied during assembly is the cause of this failure. Proper maintenance procedures are being stressed and should correct this problem.

(3) One butt plate flange failed during this period due to seepage of oil into the buffer assembly. Proper lubrication, inspection of buffer assemblies, and replacement when required have prevented recurrence of this problem.

(4) There have been numerous failures to feed attributed to binding of ammunition within the ammunition boxes. The US Army Weapons Command is believed to be aware of this problem and endeavoring to solve it.

d. The XM-6E3 armament subsystem requires, as does any mechanism of equal complexity, timely preventive as well as corrective

maintenance by skilled, trained technicians. For the most part this corrective maintenance is beyond the technical capability of unit personnel. Reliability of these weapons will be enhanced by assignment to using units of aviation armament repairmen presently being trained at the Ordnance School.

Page 2
ANNEX L

Inclosure 1 to ANNEX L — Area of failure in bolt plug assembly.

Incl 1
ANNEX L

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ANNEX M -- Aircraft status report.

See next two pages.

Regraded UNCLASSIFIED when separated from classified pages 2 and 3, following.

ANNEX M

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ANNEX K (Continued)

JANUARY 1963

		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1.	ASSIGNED	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
2.	OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.	ON HAND	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
		A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B
4.	FLYABLE	5 8	5 8	7 8	7 8	8 8	8 8	6 7	6 7	6 6	7 7	8 7	8 7	8 5	7 5	8 6	8 7
	NON-	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B
5.	FLYABLE	5 2	5 2	3 2	3 2	2 2	1 2	1 3	1 3	1 4	1 3	2 3	2 3	2 5	3 5	2 4	2 3
		A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B
6.	ORG MAINT	4 0	4 0	2 0	2 0	2 2	0 2	1 1	1 1	0 2	0 1	1 1	2 1	0 3	0 3	1 1	1 0
	FIELD	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B
7.	MAINT	1 1	1 1	1 1	1 2	0 0	1 0	0 1	0 1	1 1	1 0	1 0	0 0	2 2	2 0	0 1	0 1
		A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B
8.	E.D.P.	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 2	0 2	0 2	1 2	1 2	1 2
9.	% AVAILABLE	65	65	75	75	80	85	80	80	75	80	75	75	65	60	70	75
10.	%SUB-A AVAILABLE	50	50	70	70	80	90	90	90	90	90	80	80	80	70	80	80
11.	%SUB-B AVAILABLE	80	80	80	80	80	80	70	70	60	70	70	70	50	50	60	70

NOTES

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	DAILY AVERAGE	
1. ASSIGNED	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20
2. OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
3. ON HAND	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20
	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A	B
4. FLYABLE	8 8	8 8	8 8	6 7	8 5	7 7	7 7	9 0	6 0	6 0	5 0	7 0	7 0	8 [illegible]	8 [illegible]	7.42	5.29
	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A	B
NON- 5. FLYABLE	2 2	2 2	2 2	4 3	2 5	3 3	3 3	1 10	4 10	4 10	5 10	3 10	3 10	2 9	2 9	2.58	1.71
	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A	B
6. ORG MAINT	0 0	0 0	2 0	2 1	1 0	2 0	2 0	0 0	3 0	3 0	3 0	1 0	2 0	0 0	1 0	1.39	0.643
FIELD	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A	B
7. MAINT	1 0	1 0	1 0	1 0	0 3	0 1	0 1	0 8	0 8	0 8	1 8	1 8	0 8	2 0	1 0	0.677	2.03
	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A	B
8. E.D.P.	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	0 9	0 9	0.516	2.14
%																	
9. AVAILABLE	80	80	70	65	65	70	70	45	30	30	25	35	35	45	45		64.19
% UH-1A																	
10. AVAILABLE	80	80	60	60	80	70	70	90	60	60	50	70	70	80	80		73.54
% UH-1B																	
11. AVAILABLE	80	80	80	70	50	70	70	0	0	0	0	0	0	10	10		56.52

NOTES

(a) Row 2 is provided for representing crashed aircraft or aircraft being processed for shipment. Not available for missions. Aircraft still assigned, but not included in Row 9 (aircraft availability percentages).

(b) Row 3 is total of Rows 4 and 5.

(c) In rows 4 through 8, both A and B models are shown.

(d) Aircraft availability, percentages are derived from a ratio of Rows 3 and 4.

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ANNEX N — Ground fire damage report.

1. Identification of Unit: USA UTT HEL CO
2. Type of aircraft and serial number: UH-1A 591672
3. Pilot's name and rank: Louis, John, Captain
4. Date of mission: 15 Feb 63 - Mission No. 70
5. Type of mission: Support ARVN Combat Opns
6. Description of conditions at time ground fire was received:
   a. Altitude in feet: 600 feet
   b. Airspeed in knots: 70 knots
   c. Approximate heading in degrees: 115 degrees
   d. Position number in formation of 2/6 aircraft.
   e. Visibility or obstruction to visibility: 10 miles. Haze
   f. Type of formation: Daisy Chain Right
   g. This was the 2 pass through the same area during this mission.
7. Source of ground fire was not observed.
8. If source was observed or can be estimated, complete the following:
   a. General description of source or terrain at source: Wooded Area.
   b. Direction of source from 12 o'clock (12 o'clock being direction of flight).
   c. Range to source in meters: 200 meters
   d. Type weapon: Rifle
9. If fire was returned, what were the results?

   Fire was not returned.
10. Summary of structural damage and/or casualties received:

    No casualties, minor skin damage station 391.
11. Remarks: NONE

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ANNEX O -- Distribution of report

Addressee	Nr. of copies
Commander, US Military Assistance Command, Vietnam (attention JOEG-V)	15
Commander-in-Chief, US Army Pacific	5
Commanding General, US Army Combat Developments Command	50
Commanding General, US Continental Army Command	5
Commanding General, US Army Materiel Command	5
Commanding General, US Army Support Group, Vietnam	20
Chief, Military Assistance Advisory Group, Vietnam (attention Chief, Army Section)	20
Deputy Chief of Staff for Military Operations, Department of the Army	10
Deputy Chief of Staff for Personnel, Department of the Army	5
Deputy Chief of Staff for Logistics, Department of the Army	5
Chief of Research and Development, Department of the Army	5
ACTIV Liaison Officer, ODCSOPS, Department of the Army	5