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

30 March 1963

CATALOGED BY DDCS 43692
ACTIV-AM
AS / D. I. J.

Employment of CV-2B (Caribou) Aircraft
in Support of Counter-Insurgency Operations

Monthly Report, ^{no.} Number 1,

1 February 1963 - 28 February 1963.

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

ACTIV-AM

30 March 1963

SUBJECT: Monthly Test Report Number 1 — Employment of CV-2B Aircraft in Counter-insurgency Operations, 1 through 28 February 1963 (U).

TO: See Annex S

1. (C) General.

a. Purposes of the test.

(1) To evaluate, through field test in an active theater, the performance and effectiveness of the tactical CV-2B (Caribou) company and its component elements in counter-insurgency operations, with primary emphasis on sustained support of the Special Warfare effort, forward area helicopter refueling, and operational support of ARVN (Army of the Republic of Vietnam) combat elements.

(2) To determine modifications in organization, doctrine, tactics, procedures, techniques, and equipment of the company.

b. Test concept.

(1) Data responsive to test objectives are derived from observation of combat support operations of the 1st Aviation Company (1st AVCO). The company is assigned to the USASGV (US Army Support Group, Vietnam); it is under the operational control of COMUSMACV (Commander, US Military Assistance Command, Vietnam).

(2) Test data are collected during operational missions. The test unit is not required to engage in activities whose sole or primary purpose is production of test data.

c. Test progress.

(1) This initial reporting period was devoted largely to establishing liaison, obtaining background information, and formulating procedures for data collection. The test is considered 5% complete.

(2) Findings presented here are based on fragmentary information; they necessarily are tentative, representing in some instances only points of departure for further investigation.

2. (C) Description of the test unit.

a. Mission.

The mission of the Caribou company is to provide air transport to expedite tactical operations and logistical support in the combat zone; tasks include tactical troop lift, forward area resupply, transportation of commanders and staffs, and medical evacuation.

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SUBJECT: Monthly Test Report Number 1 -- Employment of CV-2B Aircraft in Counter-insurgency Operations, 1 through 28 February 1963 (U).

b. Organization, equipment, and personnel.

See Tab M.

c. History.

See Tab O.

d. Operations.

Tab N. (1) Pre-test operations in Southeast Asia are summarized at

(2) Deployment of 1st AVCO.

<u>Allocation of aircraft</u>	<u>Aircraft based at</u>	<u>Missions received from</u>	<u>USMACV operational control exercised through</u>
2 to I Corps	Da Nang	Corps TOC	J3, USMACV
2 to II Corps	1 at Pleiku	Corps aviation advisor	J3, USMACV
	1 at Nha Trang	MAAG Transportation Section	J3, USMACV
2 to III Corps	Vung Tau	Corps aviation advisor	J3, USMACV
2 to IV Corps	Vung Tau	Corps flight operations section	J3, USMACV
4 to SEASAS (*)	Vung Tau	Combat Cargo Group, 2d Air Division	J4, USMACV

(*) Operations of the SEASAS (Southeast Asia Airlift System) are described at Tab P.

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SUBJECT: Monthly Test Report Number 1 -- Employment of CV-2B Aircraft in Counter-insurgency Operations, 1 through 28 February 1963 (U).

(3) Statistical summary.

	<u>1-28 February</u>	<u>Southeast Asia totals to date</u>
Passengers	8914	44721
Cargo (tons)	612	4090
Sorties	1495	(*)
Flight hours:		
Service	932	7301
Training	40	202
Total	972	7503
Aircraft availability	10,9 of 16 (68%)	10,6 of 16 (67%)

(*) Figures available for February only.

3. (C) Content and format of report.

a. Content.

Much of the material in this report gives background information on the 1st AVCO and on command relationships in the RVN. Most of this will not be repeated in later reports.

b. Format.

Tabs A through L cover the 12 test objectives. Tabs M through R give background information and data in support of certain findings. Distribution of the report is shown at Tab S.

4. (U) References.

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

b. ACTIV letter, subject: "Test Plan for the Tactical Transport FW/Lt AC-1 (Caribou) Company," 2 November 1962.

c. CINCPAC message, DTG 070606Z Jan 63, subject: "Test Plan for the Tactical Transport FW/Lt CV-2B (Caribou)."

19 Incl
list on next page

E. L. Romy
E. L. ROMY
Major General, USA
Chief

DISTRIBUTION

See Annex S

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SUBJECT: Monthly Test Report Number 1 — Employment of CV-28 Aircraft in Counter-insurgency Operations, 1 through 28 February 1963 (U).

LIST OF INCLOSURES

1. (Tab A) ANNEX A — Objective 1 (Support of the Special Warfare effort).
2. (Tab B) ANNEX B — Objective 2 (Short field operations).
3. (Tab C) ANNEX C — Objective 3 (Detached platoon operations).
4. (Tab D) ANNEX D — Objective 4 (Control of airspace).
5. (Tab E) ANNEX E — Objective 5 (Command relationships).
6. (Tab F) ANNEX F — Objective 6 (Navigational equipment).
7. (Tab G) ANNEX G — Objective 7 (Cargo delivery by "Snatch-and-Go").
8. (Tab H) ANNEX H — Objective 8 (Support of airborne operations).
9. (Tab I) ANNEX I — Objective 9 (Helicopter refueling).
10. (Tab J) ANNEX J — Objective 10 (Weather-avoidance radar).
11. (Tab K) ANNEX K — Objective 11 (Airborne command post).
12. (Tab L) ANNEX L — Objective 12 (Logistical support requirements).
13. (Tab M) ANNEX M — 1st AVCO organization, equipment, and personnel.
14. (Tab N) ANNEX N — Digest of 1st AVCO pre-test operations.
15. (Tab O) ANNEX O — Outline history of 1st AVCO.
16. (Tab P) ANNEX P — US military airlift system in Southeast Asia.
17. (Tab Q) ANNEX Q — Ground fire damage to aircraft.
18. (Tab R) ANNEX R — Captured Viet Cong document.
19. (Tab S) ANNEX S — Distribution of report.

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ANNEX A -- Objective 1 (Support of the Special Warfare effort)

1. (C) Objective.

"To determine the capability of the CV-2B (Caribou) company to air-drop and support Special Warfare teams requiring flights during daylight and darkness."

2. (C) Discussion.

a. Prior to 17 January 1963, two Caribou of the 1st AVCO were allocated daily to the US Army Special Forces Group, Vietnam (USASFGV). On 17 January, the Southeast Asia Airlift System (SEAAS) assumed responsibility for Special Forces airlift requirements. Since that date, missions have been coordinated by J4, USMACV, and flown in accordance with USMACV Directive Number 42 (see Tab P).

b. The SEAAS normally handles resupply missions on a scheduled basis, using primarily C-123 aircraft. USASFGV is given priority on the first two Caribou aircraft available to the airlift system.

c. SEAAS missions for the Special Forces are flown principally in the II, III, and IV Corps areas. In I Corps, a large share of the direct support Caribou effort available to the Corps is used to fill Special Forces requirements. In February, those requirements accounted for 34.0% of the sorties flown, 33.6% of the passengers carried, and 63.6% of the cargo lifted.

d. Nearly one-half (43.5% by weight) of the total CV-2B tonnage transported in I Corps and Quang Ngai Province was air-dropped to Special Forces outposts which have no landing facilities for fixed-wing aircraft. In terms of volume, air drops represented an even larger percentage of the total, since much bulky construction material -- thatch and bamboo matting -- was air-dropped.

e. Appendix 1, attached, gives a summary of CV-2B Special Forces airlift operations for February 1963.

f. Appendix 2, attached, indicates an increasing demand for CV-2B aircraft for support of Special Forces teams in the I Corps area. Principal reasons for the increase appear to be: timely response by direct-support aircraft to mission requests received; and reliance by Special Forces teams on the ability of CV-2B's to air-drop cargo into their small drop zones with minimum loss or dispersion. Inaccurate drops and wide dispersion may result in delivery of cargo outside the drop zone and into the hands of insurgents.

g. Quick response to mission requirements is a ging qua non for effective support of Special Forces. Monsoon weather conditions in outpost areas dictate that missions be flown during brief clear periods -- often only 2-3 hours a day. These clear periods are unpredictable, and tactical support missions can be accomplished only by aircraft immediately available to the corps or tactical commander. CV-2B aircraft in direct support meet this requirement. A system calling for preplanned missions scheduled days in advance

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Tab A

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ANNEX A -- Objective 1 (continued)

normally cannot react on such short notice.

h. During the reporting period there was no requirement for air-dropping Special Forces personnel by Caribou.

3. (C) Findings.

a. CV-2B aircraft can give effective support to Special Forces teams, particularly when quick response to mission requirements and air-drop accuracy are called for.

b. Special Forces teams received 63.6% of the total tonnage air-lifted by CV-2B's in direct support of I Corps during the reporting period.

c. There is an increasing demand for support missions for Special Forces teams in the I Corps area.

4. (U) Attachments.

a. Appendix 1 -- Summary of support to Special Forces

b. Appendix 2 -- Support of Detachment B-110, 1st Special Forces Group.

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Appendix 1 to Annex A -- Summary of support to Special Forces.

1. 1st AVCO support via Southeast Asia Airlift System (in II, III, and IV Corps areas):
 - a. Passengers 1269
 - b. Cargo (tons) 165
 - c. Sorties 266
2. 1st AVCO direct support to Special Forces in I Corps area:
 - a. Passengers 374
 - b. Cargo (tons)
 - Air-landed . . 48
 - Air-dropped . 37
 - Total 85
 - c. Sorties 54
3. Total support to Special Forces by 1st AVCO (sum of 1 and 2 above):
 - a. Passengers 1643
 - b. Cargo (tons) 250
 - c. Sorties 320

Tab A-1

Tab A-1

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Appendix 2 to Annex A -- Support of Detachment B-110, 1st Special Forces Group.

This annex reproduces a letter from the commander of Detachment B-110, 1st Special Forces Group (Airborne), APO 137, subject: "Airdrops for Special Forces Group (Airborne), APO 137, subject: "Airdrops for Special Forces in I Corps & Quang-Ngai Province," dated 13 March 1963. Text follows:

1. During the past five (5) months we have airdropped and airlanded some 695,510 lbs (347.76 tons) of cargo in 173 lifts with an average of 4,020 lbs per lift, by CV-2B (Caribou). During this same period we have air dropped and airlanded some 585,320 lbs (292.66 tons) of cargo in 74 lifts with an average of 7,910 lbs per lift by C-123. The following is exact break down by month of lifts made by each aircraft:

	CV-2B	C-123
a. 27 October 62 - 27 November 62	4	28
b. 27 November 62 - 28 December 62	29	33
c. 28 December 62 - 28 January 63	25	4
d. 28 January 63 - 28 February 63	80	5
e. 28 February 63 - 12 March 63	35	4

2. During this time period we have been able to observe the performance of the CV-2B in both air dropping and airlanding operations. The drop zones in I Corps and Quang-Ngai province are small and have very difficult approaches. We have observed that the airspeed of the CV-2B is slower and the drop altitude is lower than that of the C-123. This affords less dispersion on the DZ and more exact hits by the bundles. In areas such as Mang-Buk and Tra-Ty where there are mine fields on one end of the DZ and rice paddies on the other, it is to our advantage to have a small dispersion pattern. Otherwise our cargo will be lost.

3. In the I Corps area the CV-2B's are not under direct control as their 1st priority mission is to support MAAG. Therefore, our request for aircraft go through TOC for the use of the CV-2B's. They require 24 hours advance notice. It was not always effective to schedule loads that far in advance since during the rainy season our outposts would have unfavorable weather conditions the majority of the time. It was necessary for us to airdrop at the most opportune time. Numerous times we would have cargo on tracks at the airfield and would ask CV-2B pilots if they were flying missions for MAAG. If they weren't they would contact TOC and we would have the aircraft loaded and in the air in less than 30 minutes. We greatly appreciate this type of cooperation and responsiveness. During the rainy season, low ceiling made it necessary for the CV-2B's to fly in the valleys to reach areas such as Beto and Mang-Buk. If our deployed detachments gave us a weather report of 2 to 3 miles visibility and 1000 feet ceiling, 90 per cent of the time the CV-2B's could maneuver their way into the area.

Tab A-2

Tab A-2

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Appendix 2 to Annex A (continued)

4. In the I Corps area and Quang-Ngai province we feel the CV-2B is the most suitable type aircraft for Special Forces. The payload is more than adequate for our operations and the light loads that we sometimes have can be carried without wasting a larger aircraft. The capability of the CV-2B to land on short unimproved runways with difficult approaches is ideal for the mountainous terrain in this area.

5. It would be to our great advantage to have at least one (1) CV-2B (Caribou) assigned to the I Corps area in direct support of Special Forces operations.

s/MAJ I. C. WILSON
t/Edwin C. Wilson
Maj Inf
Commanding

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ANNEX B -- Objective 2 (Short field operations)

1. (C) Objective.

"To test the capability of the CV-2B Caribou Company aircraft to operate from airfields and locations with reduced runways, unimproved surfaces and approaches, and under varying weather conditions, day or night."

2. (C) Discussion.

a. Of the 128 airstrips and airfields in the RVN listed by USMACV, 122 can be used by CV-2B aircraft. Use of the remaining six is prevented by runway obstructions, deeply rutted landing surfaces, or lack of turn-around space -- length (or the product of length and density altitude) is not the primary precluding factor. Following is a tabulation based upon figures furnished by USMACV and the four corps headquarters:

<u>Aircraft</u>	<u>Can use (unshaded)</u>	<u>Cannot use (shaded)</u>
U-1A	128	0
CV-2B	122	6
C-123	90	38
C-47	59	69

b. Most of the airstrips in the Mekong Delta and Camau Peninsula areas are filled-in rice paddies characterized by insufficient sub-surface foundation, high water table, and California Bearing Ratio (CBR) of less than 10.

(1) If these strips are subjected to continuous use by the heavier types of cargo aircraft -- particularly during monsoon conditions-- landing surfaces deteriorate rapidly and can become unusable in short order. Minimum sub-grade CBR values for aircraft likely to use these airstrips frequently are: 5 for the U-1A;

7 for the CV-2B;

13 for the C-123.

(2) Thus far, daily use by CV-2B's has not resulted in determinable rutting or deterioration of surfaces.

(3) Later reports will classify air-strips in the RVN in terms

Tab B

Tab B

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ANNEX B -- Objective 2 (continued)

of their potential for accommodating various aircraft types and weights.

c. Only major terminal facilities have runway lighting. CV-2B crews have developed an ability to land at night on remote and unimproved landing strips. Field lighting (flare pots and vehicle headlights) has been used for these landings.

d. Through continual day-to-day use of short airstrips (1000 to 1500 feet, depending on wind and landing surface conditions), CV-2B crews have become practiced in making maximum-performance take-offs and landings with cargo up to gross weight (28,500 pounds) under varying weather conditions and density altitudes. Normal take-off and landing roll for the Caribou is approximately 550 feet on dry surface with medium braking. Length of roll can be reduced if maximum use is made of brakes on a good braking surface.

e. Over areas known or believed to be controlled by insurgents, flights between airfields normally are made at altitudes of 2000 to 3000 feet above the terrain. Aircraft at this height are relatively safe from hostile small-arms ground fire. The normal 1000-foot traffic pattern altitude has been increased to 1500-2000 feet when landing at airfields of doubtful security. The approach is begun above the airstrip in a steep (12-15 degrees) descending turn with a flap setting of 30 to 40 degrees. The final approach angle is approximately 8-10 degrees. This approach technique reduces exposure time over the airstrip and eliminates flight over areas -- outside the immediate airstrip perimeter -- which may be controlled by insurgents. Maximum performance take-offs are combined with a high rate of climb (1500-2000 feet per minute) to attain a safe altitude as soon as possible. For added safety, airstrip approach and departure directions and support mission schedules are continually varied to preclude establishment of time or direction patterns. In spite of these precautions, aircraft continue to receive hits in the vicinity of airfields (see Tab Q).

f. 1st AVCO operations in Southeast Asia have demonstrated a requirement for reversible pitch propellers. The following considerations apply:

(1) At least ten per cent of the airstrips in Southeast Asia are unusable when wet because of poor braking action.

(2) Braking action required on short airstrips causes excessive tire and brake wear.

(3) Reversible pitch propellers would assist in ground taxi maneuvers on muddy airstrips or those with marginal width for turnaround.

(4) Field tests conducted in the RVN on a CV-2A aircraft equipped with reversible pitch propellers showed that their use in conjunction with normal landing techniques (brakes, flaps, etc.) reduced the ground roll by 40 - 60% (see Appendix 1, attached).

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Monthly Test Report Number 1 -- Caribou

ANNEX B -- Objective 2 (continued)

3. (C) Findings.

a. The CV-2B Company has the capability to perform day or night tactical missions in support of counter-insurgency operations from short airstrips or landing zones under varied weather conditions and visibility.

b. The CV-2B is suited for continuous operations from 122 of the 128 airstrips in RVN, many of which are characterized by short runways and low capacity subgrade soils.

c. Reversible pitch propellers on all CV-2B aircraft in RVN would enhance operational safety and increase operational capability and effectiveness (see Appendix 1).

4. (U) Attachment.

Appendix 1 -- landing performance data.

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Monthly Test Report Number 1 -- Caribou

Appendix 1 to ANNEX B -- Caribou landing performance data.

<u>AIRFIELD:</u> Song Mao	<u>CONSTRUCTION:</u> Pierced Steel Planking (PSP)	<u>SURFACE CONDITIONS:</u> Somewhat slick because of heavy grass overgrowth
------------------------------	---	--

Ground Roll No Reverse	Ground Roll With Reverse	Brakes Used	Flaps Used
650 ft.	-	heavy	30°
800 ft.	-	medium	40°
-	300 ft.	heavy	40°
-	312 ft.	"	40°
-	318 ft.	"	30°
-	325 ft.	"	40°
-	332 ft.	"	40°
-	338 ft.	"	30°
-	340 ft.	"	30°
-	344 ft.	"	40°
-	346 ft.	"	30°
-	350 ft.	"	40°
-	352 ft.	"	40°
-	358 ft.	"	30°
-	362 ft.	medium	30°
-	365 ft.	"	40°

SURFACE WIND: 13 - 15 knots OUTSIDE AIR TEMPERATURE: 28° C

DENSITY ALTITUDE: 2000 ft. LANDING WEIGHT: 26,000 lbs.

PRESSURE ALTITUDE: 300 ft. OIL TEMPERATURE: 70° C

REMARKS: Moderate turbulence encountered on final flight path.
4.5° cross winds.

Tab B-1

Tab B-1

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 Monthly Test Report Number 1 -- Caribou
 Appendix 1 to ANNEX B (continued)

<u>AIRFIELD</u>		<u>CONSTRUCTION:</u>	<u>SURFACE</u>
Nui Bara		Laterite	<u>CONDITIONS:</u> Moist
<u>Ground Roll</u> <u>No Reverse</u>	<u>Ground Roll</u> <u>With Reverse</u>	<u>Brakes</u> <u>Used</u>	<u>Flaps</u> <u>Used</u>
825 ft.	-	Heavy	30
820 ft.	-	"	40
-	300 ft.	"	40
-	312 ft.	"	30
-	318 ft.	"	30
-	338 ft.	"	30
-	347 ft.	"	40
-	365 ft.	"	40
-	372 ft.	"	30
-	385 ft.	"	40
-	388 ft.	"	30
-	391 ft.	"	40
-	394 ft.	"	30
-	396 ft.	"	40
-	398 ft.	Medium	30
-	400 ft.	"	40

SURFACE WIND: Calm, except for a
 2 - 5 knot wind during the second
 landing in which reverse thrust was
 not used.

OUTSIDE AIR TEMPERATURE: 25° C

LANDING WEIGHT: 26,000 lbs.

OIL TEMPERATURE: 70° C

DENSITY ALTITUDE: 2400 ft.

PRESSURE ALTITUDE: 970 ft.

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Monthly Test Report Number 1 -- Caribou

Appendix 1 to ANNEX B (continued)

Landing Performance Data (C)

<u>AIRFIELD</u>	<u>CONSTRUCTION:</u>	<u>SURFACE</u>
Alouf	Dirt	Hard and dry

<u>Ground Roll</u>	<u>Ground Roll</u>	<u>Brakes</u>	<u>Flaps</u>
<u>No Reverse</u>	<u>With Reverse</u>	<u>Used</u>	<u>Used</u>
540 ft.	-	Medium	30°
560 ft.	-	"	40°
-	325 ft.	Heavy	30°
-	328 ft.	"	40°
-	331 ft.	"	30°
-	336 ft.	"	30°
-	345 ft.	"	40°
-	343 ft.	"	40°
-	352 ft.	"	40°
-	360 ft.	"	40°
-	362 ft.	"	30°
-	368 ft.	"	30°
-	369 ft.	"	40°
-	371 ft.	"	40°
-	374 ft.	"	30°
-	375 ft.	"	40°

SURFACE WIND: Calm

OUTSIDE AIR TEMPERATURE: 28° C

DENSITY ALTITUDE: 3900 ft.

LANDING WEIGHT: 25,500 lbs.

PRESSURE ALTITUDE: 1900 ft.

OIL TEMPERATURE: 70° C

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Monthly Test Report Number 1 -- Caribou

Appendix 1 to ANNEX B (continued)

Landing Performance Data (C)

<u>AIRFIELD:</u> Tra Vinh	<u>CONSTRUCTION:</u> Sod	<u>SURFACE CONDITIONS:</u> Wet sod and mud. four to five inches of wet grass.
------------------------------	-----------------------------	--

<u>Ground Roll No Reverse</u>	<u>Ground Roll With Reverse</u>	<u>Brakes Used</u>	<u>Flap Used</u>
870 ft.	-	Heavy	30°
900 ft.	-	Medium	40°
-	350 ft.	Heavy	40°
-	352 ft.	"	40°
-	363 ft.	"	30°
-	372 ft.	"	40°
-	376 ft.	"	30°
-	381 ft.	"	30°
-	383 ft.	"	40°
-	395 ft.	"	40°
-	407 ft.	"	40°
-	415 ft.	"	30°
-	419 ft.	"	30°
-	429 ft.	"	40°
-	432 ft.	"	30°
-	435 ft.	"	40°

SURFACE WIND: 5 - 7 knots OUTSIDE AIR TEMPERATURE: 28° C

DENSITY ALTITUDE: 2000 ft. LANDING WEIGHT: 24,000 lbs.

PRESSURE ALTITUDE: 300 ft. OIL TEMPERATURE: 70° C

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 Monthly Test Report Number 1 -- Caribou

Appendix 1 to ANNEX B (continued)

Landing Performance Data (C)

<u>AIRFIELD:</u>	<u>CONSTRUCTION:</u>	<u>SURFACE</u>
Tra Vinh	Sod	<u>CONDITIONS:</u>
		Thoroughly saturated sod and mud, with standing water & 4-5 inches of grass.

Ground Roll No Reverse	Ground Roll W/Reverse	Brakes Used	Flaps Used	Surface Wind (Knots)
1400 ft.	-	Heavy	30	Calm
1150 ft.	-	"	40	5 - 7
-	355 ft.	"	40	7 - 9
-	358 ft.	"	30	8 - 10
-	362 ft.	"	30	5 - 7
-	381 ft.	"	40	5 - 7
-	396 ft.	"	40	5 - 7
-	403 ft.	"	30	5 - 7
-	415 ft.	"	40	5 - 7
-	428 ft.	"	30	5 - 7
-	432 ft.	"	40	5 - 7
-	444 ft.	"	30	5 - 7
-	448 ft.	"	40	5 - 7
-	453 ft.	"	40	Calm
-	462 ft.	Medium	30	Calm
-	470 ft.	"	40	Calm

DENSITY ALTITUDE: 2000 ft. OUTSIDE AIR TEMPERATURE: 28° C

PRESSURE ALTITUDE: 300 ft. LANDING WEIGHT: 26,000 lbs.

OIL TEMPERATURE: 70° C

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Monthly Test Report Number 1 -- Caribou
Appendix 1 to ANNEX B (continued)

Landing Performance Data (C)

<u>AIRFIELD:</u> Nui Bara	<u>CONSTRUCTION:</u> Laterite	<u>SURFACE CONDITIONS:</u> Moist
------------------------------	----------------------------------	---

<u>Ground Roll With Reverse</u>	<u>Brakes Used</u>	<u>Flaps Used</u>	<u>Surface Wind (Knots)</u>
954 ft.	None	30°	Calm
955 ft.	None	40°	2 - 5
958 ft.	None	40°	Calm
960 ft.	None	30°	Calm

DENSITY ALTITUDE: 2400 ft. OUTSIDE AIR TEMPERATURE: 25° C

PRESSURE ALTITUDE: 970 ft. LANDING WEIGHT: 26,000 lbs.

OIL TEMPERATURE: 70° C

REMARKS: The purpose of this test was to determine the ground roll required by the aircraft when reverse power alone was used to stop it. Neither the regular brake system nor the emergency brake system was used to stop the aircraft in this test.

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Monthly Test Report Number 1 -- Caribou

ANNEX C -- Objective 3 (Detached platoon operations)

1. (C) Objective.

"To determine the capability of the CV-2B (Caribou) Company to support tactical operations requiring platoons to operate away from base airfields, to include security requirements, logistical support, communications, maintenance, and administration."

2. (C) Discussion.

a. Missions performed by the 1st AVCO during February did not require independent operations by platoons. With the present method of employment of the company, it is unlikely that testing of a detached platoon operation can be undertaken. Elements of less than platoon size, however, have operated on a detached basis. These operations will continue to be observed and evaluated; and data derived therefrom will be reported each month.

b. Location of the 1st AVCO (-) at Vung Tau allows flight elements supporting III and IV Corps and USMACV to operate directly from the company base.

c. Flight elements in direct support of I and II Corps are detached from the company base and are under the operational control of US senior Corps advisors. The following discussion relates to the operations of these elements.

(1) I Corps. Two CV-2B airplanes, each with two pilots and one crew chief, are based at Da Nang near I Corps headquarters. The flight element relies on the airbase unit for certain logistic and administrative support.

(a) Security. Da Nang airfield is secured by local US and RVN units. The flight element is not required to provide personnel or equipment for the security force. Tactical airstrips in the Corps area are either occupied or secured by ARVN units when scheduled for air-landing of supplies.

(b) Logistical support.

1. Messing and billeting. Flight crews are quartered in a leased civilian house. They mess with the local MAAG detachment.

2. Supply and maintenance. Only the supplies required on board the aircraft (tools, parachutes, etc.) are required by the flight element at Da Nang. These are issued to each flight crew prior to departure from the base airfield. Only first and limited second echelon maintenance is performed by the crew chief while the aircraft is away from its base. Other organizational and field maintenance is deferred until return to Vung Tau. If an aircraft is grounded by a mechanical deficiency that cannot be corrected, the aircraft is replaced from the maintenance float.

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ANNEX C -- Objective 3 (continued)

3. Refueling. POL support is obtained from the US Air Force unit at Da Nang.

4. Administration. Except for after-mission reports and weekly summaries of missions, all administration for the flight element is handled by the company headquarters. Weekly summaries provide data for inclusion in the 1st AVCO weekly activity report required by USAFSGV.

5. Communications. The flight element uses telephones and the CV-2B radios for communication with the base airfield and the supported unit.

(2) II Corps. Two CV-2B aircraft, each with two pilots and a crew chief support Corps. One is based at Pleiku, site of II Corps headquarters. The other is based at Nha Trang, in the III Corps area, close to a Quartermaster supply depot. This basing has substantially reduced the response time for air-land cargo missions.

(a) Security. Airfields are secured by local US and ARVN units. Flight elements are not required to provide personnel or equipment for the security force. Tactical airstrips are either occupied or secured by ARVN units during air-landing operations.

(b) Logistical support.

1. Messing and billeting. At both locations, flight crews mess with M/G units and live in government quarters.

2. Supply and maintenance. Same as for I Corps.

3. Refueling. The Pleiku element receives POL support from the USAF. The Nha Trang element is serviced by the 10th Aviation Company (FWTT).

4. Administration. Same as for I Corps.

5. Communication. Same as for I Corps.

3. (C) Findings.

a. The CV-2B company can support tactical operations with a platoon operating away from the base airfield.

b. Flight elements of one and two aircraft can provide effective direct support while operating away from the base airfield.

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ANNEX D -- Objective 4 (Control of airspace)

1. (C) Objective.

"To determine the most efficient method of controlling airspace where the CV-2B Caribou Company must operate in support of tactical operations, considering allocation of altitude, arrival and departure from base fields, movement over the tactical forces, and landing or air-dropping in the forward areas."

2. (C) Discussion.

a. Air traffic control of flights along the civil airways of South Vietnam is exercised by the RVN Directorate of Civil Aviation. International Civil Aviation Organization (ICAO) rules apply to all civilian air traffic and to military aircraft when tactical missions do not dictate otherwise. Air traffic vectoring services are available through the Air Force ground control intercept (GCI); however, its area coverage is too limited for extensive tactical use. There are no Army flight operations centers (FOC's) functioning in the corps areas and no agencies for air traffic control in and around tactical objective areas. The 1st AVCO base and the corps base airfields are located on civil airways. Terminal control is provided in accordance with ICAO rules and procedures.

b. Only rarely have Caribou been used in support of operations requiring close coordination of air space by participating air elements.

(1) In the I Corps area there were occasional Caribou missions utilizing VNAF (Republic of Vietnam Air Force) fighter-bomber escort in areas where insurgent ground fire previously had been encountered; coordination was accomplished through instructions issued at the Corps tactical operations center (TOC), pilot briefings at transport movements control, and air-to-air communications between the CV-2B flight and the escort.

(2) Generally, in all corps areas, direct support CV-2B's operated independently on logistical support missions. Special coordinating instructions, when required, were included in mission orders. Information on friendly air activities could be obtained through the corps TOC's.

(3) Within the tactical area in, for example, an airmobile operation, aircraft movements are best controlled by direct contact between the ground commander and his aviation support.

c. The purpose of airspace control in the combat zone is to coordinate and expedite the safe and orderly flow of air traffic, assist in air defense functions (where there is an enemy air threat), and provide in-flight assistance to aircraft. Control measures -- including altitude allocations and closely regulated route control -- are required in proportion to aircraft density. Because of the decentralized character of counter-insurgency operations and the small number of CV-2B's used in a tactical support role, control of airspace has not been a problem. There have been no known instances of CV-2B aircraft encountering delays or hazards which could be attributed to lack of airspace control. In-flight assistance has been available through communications with ground installations and other aircraft.

3. (C) Finding.

Caribou aircraft in support of tactical operations in such low density traffic situations preclude the collection of substantive data responsive to this objective.

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ANNEX B -- Objective 5 (Command relationships)

1. (C) Objective.

"To determine the appropriate command relationships of the CV-28 Caribou company in support of tactical operations."

2. (C) Discussion.

a. The mission of the Caribou company, as stated in the unit TOE, is to provide air transport to expedite tactical operations and logistical support in the combat zone.

b. Under the US Army's concept of employment, the Caribou company is a resource of a ground commander within the combat zone. It is made responsive to his requirements by being attached to or placed in direct support of his command. Control flows from the ground commander to the company through the simplest and most direct channels that can be established. The company deploys its aircraft so as to best meet the ground commander's requirements. Under this concept of employment, the company's "effectiveness" is judged in terms of:

(1) Assured availability for the ground commander.

(2) Responsiveness to the needs of the ground commander.

(3) Flexibility, i.e., ability to carry out a variety of tactical and logistical tasks within time limits expressed by the ground commander.

(4) Economy, i.e., an evaluation of acceptable costs to be paid in exchange for responsiveness and flexibility.

c. To date, the Caribou of the 1st AVCO have been used only in token amounts to support tactical operations in the combat zone.

(1) Eight of the company's 16 aircraft have been placed in direct support of ground commanders. Although this method of employment is consistent with Army doctrine, these aircraft have been used extensively for scheduled intra-corps supply runs and for transport into the corps from rearward installations. These necessary tasks have been accomplished at the expense of a more purely tactical method of employment -- i.e., movement of troops, forward-area refueling of helicopters and small fixed-wing aircraft, and resupply for tactical operations. Given the limited number of Caribou available and the volume of requirements for non-tactical airlift, there was little opportunity for employing the aircraft in the exact manner contemplated by Army doctrine.

(2) The company's remaining flyable aircraft -- usually three or four in number -- have been committed to the SMAAS (Southeast Asia Airlift System). This levy results from an overall shortage of

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ANNEX E -- Objective 5 (continued)

aircraft available to the SEAS and from the system's desire for an aircraft responsive to priority loads of sub-C123 size; the system also has a requirement for an aircraft adaptable to short runways unusable by larger craft. While the levy fills a bona fide theater requirement, these Caribou are not used in accordance with Army doctrine since they are not placed under the immediate control of ground commanders in combat areas.

d. The entire 1st AVCO comes under the operational control of COMUSMACV. For aircraft giving direct support to ARVN corps, control is delegated -- through the J3 at USMACV -- to the senior US advisers with those corps. The command relationship is in this case very simple: customer and supplier are in direct contact and service is given as and when ordered by the customer. For aircraft allocated to the SEAS, relationships are more involved. The following agencies come into play;

(1) J4, USMACV, prescribes priorities and makes allocations of available SEAS resources against approved requirements.

(2) Combat Cargo Group, 2d Air Division, furnishes aircraft, as available, to meet requirements approved by J4, USMACV.

(3) Air Traffic Coordinating Office, Headquarters Support Activity (HEDSUPACT), controls the flow of traffic into the airlift system at a rate commensurate with allocations established by J4, USMACV.

(4) 1st AVCO aircraft undertake missions assigned by HEDSUPACT.

e. Operations against insurgents in the RVN are conducted on a decentralized basis. Although the ARVN corps are not autonomous, each is an operational entity. Within the broad strategic plans of the central government, each corps pursues common objectives, but priorities of effort toward those objectives are different for each corps. Shifting of major resources from one corps to another is rare. In effect, then, each corps is involved in its own separate war. Central guidance is provided, and certain inter-corps and inter-sectional services -- primarily logistical -- are handled on a centralized basis. It is evident that different criteria must be applied to inter-corps and to intra-corps operations to obtain an assessment of the degree to which those operations meet their goals. For air line of communications requirements, the centralized system can be judged in terms of an "efficiency" criterion such as ton-miles; the tactical support system can best be judged in terms of "effectiveness" criteria such as "time-of-response" and "flexibility".

f. Since 1st AVCO aircraft are used under two entirely different concepts of employment, an attempt will be made to determine appropriate command relationships for each method of employment. For subsequent test reports, data will be accumulated in both areas. To the extent possible, cross comparison of efficiency and effectiveness will be made. Statistics on which efficiency could be determined are given in appendix 1, attached. Statistics and deductions on effectiveness will be presented

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ANNEX E -- Objective 5 (continued)

as further data are collected and observations recorded.

3. (U) Findings.

None

4. (U) Attachment.

Appendix 1 -- Summary of CV-2B operations, February 1963.

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Appendix 1 to ANNEX E -- Summary of CV-2B operations, February 1963

	<u>Corps</u>				<u>Corps total</u>	<u>SEAAS</u>	<u>Unit misc flights</u>	<u>Total</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>				
Passengers:								
Number	751	1678	2820	2257	7506	1269	139	8914
Tons(*)	68	151	254	203	676	114	12	802
Cargo (Tons)	151	106	97	80	434	165	13	612
Sorties	165	269	365	415	1214	266	15	1495
Weight per sortie (Tons)	1.32	.95	.96	.68	---	1.05	---	---
Ton miles per sortie	152	70	69	41	---	120	---	---

(*) Based on passenger weight of 180 pounds.

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ANNEX F -- Objective 6 (Navigational equipment)

1. (C) Objective.

"To determine the appropriate navigational equipment, both in the aircraft and on the ground, which will provide positive location as needed."

2. (U) Discussion.

a. No data were collected during the period 1 - 28 February.

b. Preliminary findings based on the pre-test period are at Tab M (paragraph 3f). These will be reviewed and refined as the test continues.

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ANNEX G -- Objective 7 (Cargo Delivery by "Snatch-and-Go" system)

1. (C) Objective.

"To determine the capability of the CV-2B Caribou aircraft to deliver loads through use of the "Snatch-and-Go" delivery technique to areas which prohibit landing, to include determination of the proper altitude for contact with the ground mechanism, length of cleared area needed, and characteristics of minimum approach obstacles."

2. (C) Discussion.

a. Delivery of ground and airborne equipment for the ground proximity cargo delivery system (commonly known as the "Snatch-and-Go" system) has been postponed by the Department of the Army.

b. Upon arrival, equipment will be tested in the II Corps area. The US senior advisor to II Corps estimates a 65-ton-per-month lift requirement for isolated units at locations that are inaccessible by road, do not have adequate landing space for fixed-wing transport aircraft, and due to high density altitude, are marginal for helicopter operation. These conditions obtain at Mang Buk (AS 975 420), where initial evaluation will be made.

c. Testing will be conducted in three phases:

<u>PHASE</u>	<u>ACTIVITY</u>	<u>LOCATION</u>	<u>TIME</u>
I	Aircraft crew training and equipment check.	Vung Tau	1 week
II	Training of load riggers and ground component personnel.	Pleiku-Mang Buk	1 week
III	Operational Evaluation (User Tests)	II Corps Area as required	2 weeks

3. (U) Findings.

None

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APPENDIX H -- Objective 8 (Support of airborne operations)

1. (C) Objective.

"To determine the capability, coordination, logistical implications, communications and maintenance required to support an airborne battalion operation, to include initial drop or air landing, resupply for 3 to 5 days and pick up and redeployment."

2. (U) Discussion.

No data are available.

3. (U) Findings.

None.

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ANNEX I -- Objective 9 (Helicopter refueling)

1. (C) Objective.

"To determine the capability of CV-2B Caribou aircraft to furnish a refueling capability for use by helicopters, to include determination of maximum fuel load, application of internal fuel contained and pumping system, number of helicopters which can be refueled simultaneously, and extension of helicopter radius action."

2. (C) Discussion.

a. Equipment to be installed in CV-2B aircraft for helicopter refueling includes: 500-gallon, non-vented, collapsible tanks; a new modification of the 50-gallon-per-minute electric pump; and 160 feet of hose per pump set.

b. Equipment is not yet available for testing.

3. (U) Findings.

None.

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ANNEX J -- Objective 10 (Weather-avoidance radar)

1. (C) Objective.

"To determine the capability of the CV-2B (Caribou) aircraft to operate under adverse weather conditions utilizing weather radar."

2. (U) Discussion.

Five sets of airborne weather-radar sets will be available for testing in Caribou aircraft during the approaching monsoon season. Results will be reported as obtained.

3. (U) Findings.

None.

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ANNEX K -- Objective 11 (Airborne command post)

1. (C) Objective.

"To determine the feasibility of installing and operating an airborne CP, for the control of air-ground operations, in the CV-2B aircraft."

2. (C) Discussion.

a. A CV-2B in direct support of I Corps is used as a basis for determining equipment needs, communications requirements, and the interior layout for an airborne CP. Investigation is in the initial stage, and gear used thus far -- map boards, tables, and communications equipment -- has been jury-rigged (see Photo A, attached).

b. The prototype CP has been used in three heliborne raid-type operations. Aircraft radios were augmented by mounting two AN/PRC-10 radios on the rear platform of the CV-2B (see Photos B and C, attached).

c. The AN/PRC-10's have been operated at ranges up to 80 kilometers, air-ground, from an altitude of 8000 feet. Because of the physical location of radios and antennas, operation of each was limited to a single channel, and several circuit outages were encountered due to aircraft shielding of the antenna.

d. Aircraft radios were utilized for fighter-bomber contact (air strikes), and contact with helicopter troop lifts. Use of the aircraft radios for airborne CP command functions proved unsatisfactory since it denied use of the radios and interphone system to the aircrew.

3. (C) Finding.

AN/PRC-10 radios as presently mounted on the CV-2B are marginally usable. A command communications system which is separate from the CV-2B's radio and intercom systems and which lends itself to quick installation and removal from the aircraft is desirable.

4. (U) Attachments.

Appendix 1 -- Photographs of airborne CP.

Tab K

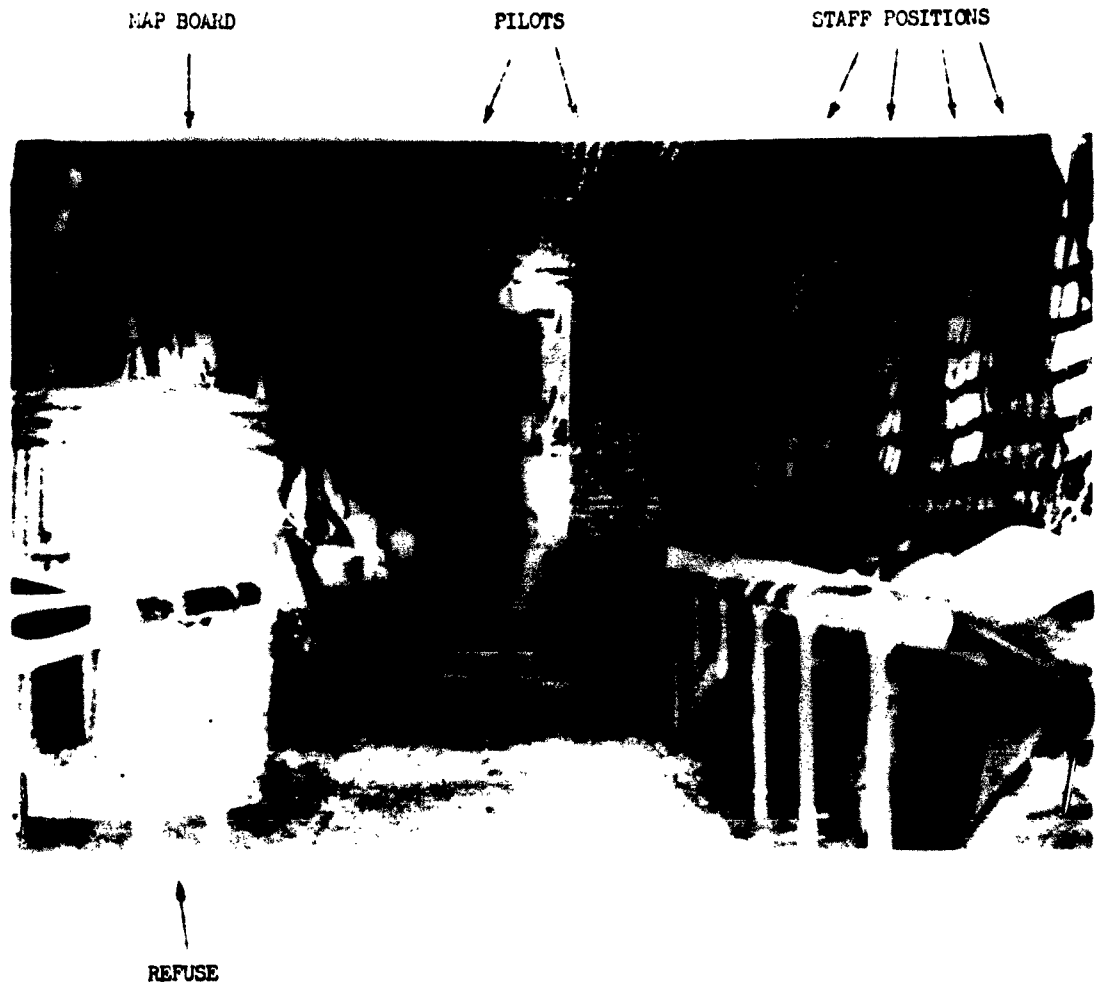
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Appendix 1 to ABBEY K -- Photo A (Interior of airborne CP)



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Appendix 1 to ANNEX K -- Photo B (AN/PRC-10S mounted on rear platform
of CV-2B)



↑
AN/PRC-10

↑
AN/PRC-10

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Appendix 1 to ANNEX K -- Photo C (AN/PRC-10 Antennas w/rope lashing, to prevent excessive whip lash)



↑
ROPE LASHING

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ANTENNA

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ANNEX I -- Objective 12 (Logistic support requirements)

1. (C) Objective.

"To determine the logistic support requirements of the CV-28 Caribou Company to include air base facilities, supply levels, personnel and equipment, POL personnel and equipment, and other support requirements."

2. (C) Discussion.

a. General.

(1) Information in this annex gives a background for future reports.

(2) The base airfield at Wung Tau is occupied by the 1st AVCO with attached units and the 611th Transportation Company (DS) (611th TRANSCO). The commanding officer of the 1st AVCO is also the airfield commander. Airfield and facilities existed prior to the unit's arrival.

b. Airbase facilities.

(1) Runway. The base airfield runway, 150 feet wide and 5904 feet long, surfaced with pierced steel planking (PSP), is laid in a north-south direction. Runway preparation required only removal of grass, bushes and debris. Centerline and numbers have been painted on the runway for aircrew convenience. Troop labor for this work was provided by 1st AVCO.

(2) Parking area and ramp. A former sod runway is used as the main parking area. It is adequate for CV-28 aircraft. Preparation for use required only trash and vegetation removal. The ramp is approximately 400 feet wide and 2,000 feet long. This area's long axis is surfaced with PSP and used as a runway during periods when there are high winds across the main runway.

(3) Control tower. An organic portable control tower, centrally positioned on the airfield, is elevated approximately 16 feet. Fm, UHF, and VHF radios are installed.

(4) Hangars and maintenance area. Seven hangars immediately adjacent to the ramp were a part of the airfield when the unit arrived. Three of these buildings are used by the 1st AVCO; the rest are assigned to the 611th TRANSCO. Hangars are approximately 210 feet wide, 50 feet deep, and 25 feet high in front, sloping downward toward the rear. Upright supporting posts along the front of each hangar block forward entry of CV-28 aircraft. Hangars are thus not usable for aircraft shelter during engine maintenance. Hangars are in a poor state of repair and have been damaged by storm and typhoon winds. Common hardware is stored in a CONEX (container, express). A van-type vehicle is used for storage of special tools. Aircraft spare parts are stored on the floors of the hangars. It was necessary to prepare the interior of these buildings prior to their use. 1st AVCO personnel accomplished this task.

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(5) Motor Pool. A motor pool, located inside the airfield complex, consists of a building and sod hardstand. The area meets minimum requirements.

(6) Billets. Enlisted men are billeted within the airfield area in a large building also housing the orderly room, supply room, operations office, weather station, unit communication section, survival equipment storage area, and a barber shop. This building was completely rebuilt by contract labor. Non-commissioned officers live in a smaller building at the airfield. Officers are billeted with MAAG officers in locally-rented space.

(7) Security. Airfield security is provided by AMVN forces supplemented by 1st AVCO and 611th TRANSCO personnel.

c. Supply.

(1) Class I. Type A and B rations are maintained at a three-day supply level and are received from USAFSGV three times a week. Type C rations, kept at a 15-day stockage level in accordance with regulations, are to be used only in event of an emergency.

(2) Class II and IV (less Transportation Corps air items).

1st AVCO's prescribed load list authorizes a 30-day level of spare parts. Survival equipment and certain spare parts peculiar to aviation units (e.g., radar and GCA parts), are difficult to obtain. Survival equipment is new to the army inventory and has not been distributed to all areas. Other parts are not commonly stocked in the RVN and require a long lead time. Parts necessary to maintain control tower air conditions are also difficult to obtain. Air conditioners are needed to maintain a constant temperature in the control tower in order to prevent damage to installed radios through overheating. Appendix 1 lists supply items on requisition for more than 45 days (Tab L-1).

(3) Class II and IV (air items). Regulations authorize a 30-day level of repair parts. Requisitions are submitted to 611th TRANSCO. Future reports will contain data for evaluation of this supply area.

(4) Class III and IIIA.

(a) Class III supplies are issued by the 611th TRANSCO. Supplies are requisitioned and issued using standard forms and procedures.

(b) Class IIIA products are requisitioned, received and stored by the 23d Quartermaster Detachment (POL Handling), attached to the 1st AVCO, to provide support for units based at Vung Tau. This detachment has eight petroleum specialists who supplement the 1st AVCO TOE POL section. POL is transported by commercial truck to Vung Tau, and stored by the Quartermaster Detachment in 10,000-gallon collapsible storage tanks. 1st AVCO POL Section transfers the petroleum products to its tank trucks for servicing aircraft as required. Aircraft operating away from the base

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airfield are serviced by other supporting units and agencies (see Tab C). Appendix 2 lists quantities of aviation gasoline (AVGAS) and oil received and issued each day at the Vung Tau airfield. Appendix 3 gives background information on the Quartermaster Detachment.

(5) Class V. US Army Ryukyus (USARYIS) Circular 700-4, requires the 1st AVCO to maintain the following basic lead of ammunition:

<u>Weapon</u>	<u>Nr of weapons</u>	<u>Nr Rds per weapon</u>
GUN, Machine, cal .30	4	3250
GUN, Machine, cal .50	2	600
LAUNCHER, Rocket, 3.5"	2	18
PISTOL, cal .45	39	31
RIFLE, M1	125	200

d. Personnel and equipment.

Deficiencies in the revised TOE under which the company is now operating are listed in Section IV, Tab M.

e. Aircraft maintenance.

Maintenance is accomplished by 1st AVCO Service Platoon; backup field maintenance support is provided by Air Vietnam. The Service Platoon is trained and equipped to do organizational maintenance. It has also had to do much of the company's field maintenance. Skills, equipment, and tools for field maintenance are not authorized by the TOE. Testing conducted at Fort Benning in 1961 disclosed the need for a direct support field maintenance detachment (third echelon), attached to the Caribou company, to: provide field maintenance and technical supply; assist in recovery of crashed or damaged (non-flyable) aircraft; control maintenance float aircraft; and furnish backup support for organizational maintenance. Field maintenance will be enhanced by the arrival of the 70th Transportation Detachment (DS) in the near future. This detachment of one officer, one warrant officer, and forty-five enlisted men is technically trained and equipped for field maintenance of CV-2B aircraft.

f. Aircraft availability.

Despite 1st AVCO efforts to schedule flight time for each aircraft and to insure adherence to schedules, operational requirements in support of tactical units have dictated flight time and overridden maintenance schedules. Appendix L shows that the average CV-2B aircraft availability rate for February was below the desired 75 per cent (Tab L-4). Contributing to the lower rate were: high aircraft usage during deployment of the company from Thailand on December 1962; and heavy flight schedules during January in support of ARVN. Maintenance deferred

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during the high usage periods became mandatory during February. Periodic inspection frequency increased as flying hours mounted. Spare parts usage rates accelerated on the same basis.

g. Flying hour program.

A monthly flying hour program for CV-28 aircraft in the RVN has not been found in any official directive available to the test team. To meet operational requirements, 1st AWCO has set a goal of eighty flight hours per aircraft per month. Aircraft availability of 75 per cent, translated into flying hours of support, would require 12 aircraft to fly 80 hours each for a total of 960 flying hours for the company. In February, the unit flew 972.1 hours -- 931.9 in normal support operations and 40.2 for pilot training.

h. Utilization of aircraft.

Optimum aircraft utilization is essential because of urgent logistical and tactical support requirements and the high cost of the aircraft involved. Indications are that aircraft availability rates probably will meet the desired 75 per cent if:

(a) Recommended TOE changes are approved.

(b) A field maintenance detachment is provided.

(c) Aircraft spare parts program rates are geared to the current flying hour program.

3. (C) Findings.

a. Airbase facilities at Vung Tau are adequate except for hangar capacity.

b. Certain equipment and spare parts are difficult to obtain because of recency of introduction into the Army inventory or because the items are not stocked locally.

c. Attachment of the 23d Quartermaster Detachment to the 1st AWCO for POL handling is justified; requisitioning, receiving, and storing class IIIA products under existing conditions in the RVN cannot be accomplished under the present company TOE.

d. Operations in the RVN confirm the need for a field maintenance unit to support the CV-28 company.

e. Delivery of spare parts for CV-28 aircraft is frequently delayed.

4. (U) Attachments.

a. Appendix 1 -- Items on requisition more than 45 days.

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- b. Appendix 2 -- Daily receipts and issues of POL.
- c. Appendix 3 -- 23d Quartermaster Detachment.
- d. Appendix 4 -- Aircraft availability.

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Appendix 1 to Annex L -- Items on requisition more than 45 days

Lifeboat MXU-1/P	(TC)
Packet, shark	(Eng)
Kit, first aid	(Med)
Radio VRC-11	(Sig)
Rifle, M6	(Ord)
Vibrator	(Sig)
Antenna AT/271	(Sig)
Telephone H79/AIC	(Sig)
Tube 26D6	(Sig)
Computer	(TC)
Plotter	(TC)
Gasket, manifold (air conditioner)	(Eng)
Pump, fuel, electric (air conditioner)	(Eng)
Steel bar 10" (air conditioner)	(Eng)

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Appendix 2 to Annex L -- Daily Receipts and issues of POL

Following is a list of daily receipts and issues of AVGAS 115/145 and 1100 oil used to support the CV-2B aircraft operating from the Vung Tau airfield during February 1963. Figures are not presently available for POL consumption of detached aircraft and do not reflect POL obtained at other stations by the aircraft based at Vung Tau.

<u>DATE</u>	<u>115/145 GAS</u>		<u>1100 OIL GAL</u>	
	<u>RECD</u>	<u>ISSUED</u>	<u>RECD</u>	<u>ISSUED</u>
1 Feb	0	2495		49
2	2378	661		0
3	0	2260		62
4	4755	2411	660	19
5	7925	1815		105
6	4755	2207		10
7	5812	2102		38
8	5283	1548		57
9	0	2847		94
10	0	3345		25
11	5283	295		0
12	0	2504		55
13	2642	2728		32
14	0	3583		61
15	3170	2178		24
16	6762	1259		33
17	0	1690		15
18	3170	1832		77
19	3170	1808		17
20	3170	3245		45

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Appendix 2 to Annex L (Continued)

21	0	2294		31
22	3170	3011		24
23	0	680		8
24	0	2789		55
25	3170	2564		83
26	3170	2673		18
27	3170	3369		91
28	<u>0</u>	<u>4366</u>	<u> </u>	<u>48</u>
Total Gallons	70,955	64,559	660	1,276

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Appendix 3 to Tab L -- 23d Quartermaster Detachment (POL Handling).

TOE: 10-5000

Personnel: 8 POL specialists.

Equipment:

12	10,000 gal. collapsible tanks
2	350 gpm pumps
2	350 gpm filter separators
6	Portable truck fill stands
6	1 inch nozzles
	Allied hose line and miscellaneous equipment
1	2½ ton truck w/trailer

Background:

Eight petroleum specialists of the 23rd Quartermaster Detachment were attached to the 1st AVCC, on 18 January 1963, for administration, quarters, rations and military discipline.

The 1st AVCC TOE includes seven petroleum specialists, four 5000-gallon tank truck/trailer units (M31A3) and one 1200-gallon tank truck (M49C). The TOE provides no bulk petroleum storage facilities other than five tankers. The M31A3 tankers are used for storing AVGAS 115/145 (total 20,000 gals) and the M49C for bulk SAE 1100 oil. Prior to 18 January 1963, 1st AVCC issued 3000 - 6000 gallons of AVGAS daily. Capacity of commercial delivery trucks in the RVN is only 2641 gallons (10,000 liters). Several deliveries had to be made each day. As this arrangement was unsatisfactory, USMACV requested assignment of the 23d QM Detachment to Vung Tau to provide a bulk storage capability.

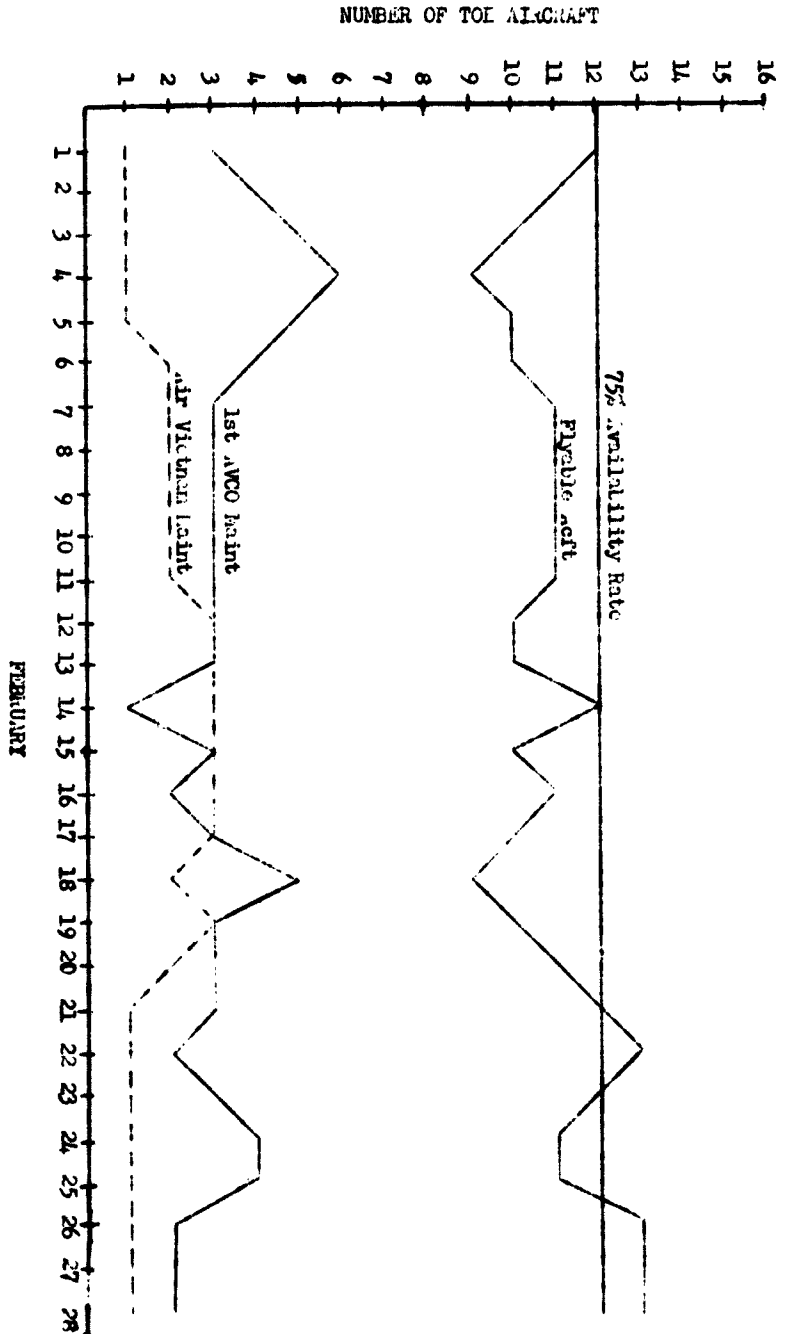
The 23d QM Detachment submits daily telephonic requests to USMACV Quartermaster Branch, POL Section. Deliveries are made approximately 48 hours later. All bulk fuel comes from commercial sources in Saigon and is transported to Vung Tau in the contractor's tank trucks. Civilian contract also supplied kerosene, diesel, and solvent in 55-gallon drums. Hydraulic fluid and other packaged products which are in the US Army inventory are flown to Vung Tau by Army aircraft.

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Appendix 4 to ANNEX L -- Aircraft availability, 1-28 February 1963



Not: During the month, the average number of airplanes flyable was 10.9 of 16 TOE aircraft, or 68.1%. Maintenance float aircraft were not included in calculations.

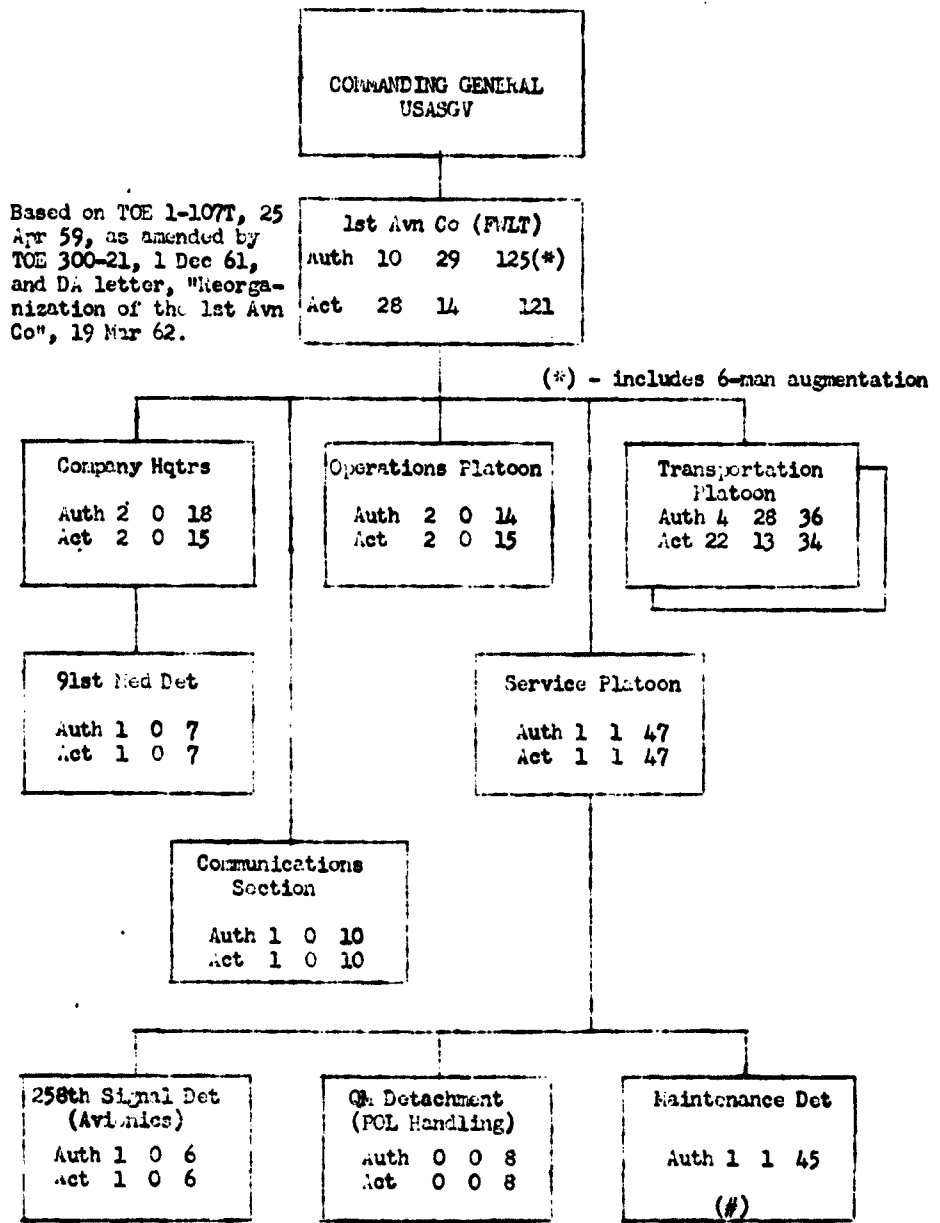
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ANNEX M -- Organization, equipment, and personnel, 1st AVCO

SECTION I - Organization Chart



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ANNEX M -- Organisation, equipment, and personnel, 1st AWCO

SECTION II - Authorized equipment (Major items)

1. Aircraft: Sixteen CV-2B's are authorized by the TOE. Two additional aircraft are assigned for maintenance float.
2. Airborne communications and navigation equipment installed in each aircraft:
 - a. One AN/ARC - 73 very high frequency (VHF)
 - b. One AN/ARC - 55 ultra high frequency (UHF)
 - c. One AN/ARC - 59 high frequency (HF)
 - d. One AN/ARC - 44 frequency modulated (FM)
 - e. One T - 3661/ARC VHF transmitter
 - f. Two AN/ARN - 59 low frequency (LF) automatic direction finder (ADF)
 - g. One AN/ARN - 30D VHF omni-directional receiver (VOR)
 - h. One AN/APX - 44 transponder, identification, friend of foe (IFF)
3. Ground communications and navigation equipment:
 - a. One AN/TSM - 1 mobile control tower equipped with AN/TRC - 42 VHF radio set, AN/TRC - 68 radio set, and AN/PRO - 2 FM radio set.
 - b. One AN/GRN - 6 medium power, LF, non-directional beacon.
 - c. One FPN - 33 ground-controlled approach (GCA) radar, equipped with VHF and UHF radio sets identical with the mobile control tower. An FM radio set is not issued with the GCA equipment.
 - d. One AN/GRC - 46 HF radio.
4. Fire fighting equipment:
 - a. One fire fighting truck, pumper, class 1500.
 - b. One fire fighting equipment set for Army aircraft.
5. Refueling equipment:
 - a. Four 5000 - gallon tankers, M131A3.
 - b. One tank truck, M-49C (used for oil servicing).

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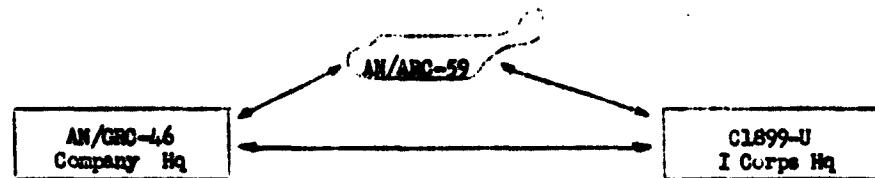
SECTION III - Communications

A. Ground communications.

Telephone (tropo-scatter) and HF radio are used for communication between company headquarters and supported units.

B. Air-ground communications.

1. AN/ARC-59 HF radios link 1st AVCO aircraft with company headquarters (AN/CRC-46 HF) and with I Corps (control radio set C1899 - U).

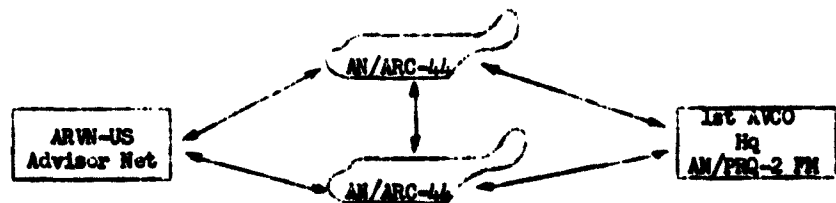


2. AN/ARC-55 UHF radios are used to communicate with II Corps.

3. AN/ARC-44 FM radios reach the MAAG transportation section at Nha Trang.

4. There is no direct radio link with III and IV Corps. Messages are relayed by ground control intercept (GCI) on UHF and VHF channels. (The relay method can also be used to reach Da Nang and Pleiku through GCI facilities at those sites.)

5. AN/ARC-44 FM radios are also used to enter the ARVN-US advisor nets, for interplane communication, and for direct contact with company headquarters.



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ANNEX M — Organization, equipment, and personnel, 1st AVCO

6. HF radios reach the Air Traffic Control System (Saigon Radio) when on extended IFR (instrument flight rules) flights.

7. GCI sites assist in traffic control on UHF and VHF frequencies. Approach and departure controls use UHF and VHF; most airfield towers use both UHF and VHF with FM as a standby.

SECTION IV - Proposed augmentation

1st Aviation Company has requested the following augmentation of personnel and equipment:

1. Headquarters:

a. Personnel:

(1) The requirement exists for one (1) additional Personnel Administrative Clerk (MOS 716.10).

Justification: The single administrative clerk now authorized is insufficient for the workload of maintaining the records of approximately one hundred and twenty-five (125) enlisted men and thirty-nine (39) officers. The great amount of travel and temporary duty peculiar to personnel in an aviation unit accounts for a disproportionately large number of finance actions. Thirty-four (34) officers and enlisted men have been maintained on temporary duty in South Vietnam since shortly after the unit's arrival in Thailand. The requirement for frequent short periods of TDY (for one or more flight crews) exists continuously for this unit. Anticipated gains of forty-five (45) enlisted men and two (2) officers of a maintenance support detachment will further increase this administrative burden.

b. Equipment: A requirement exists for two additional typewriters, non-portable, 11" carriages.

Justification: The one typewriter now authorized is required by the company clerk. The two personnel clerks each need a typewriter, since the majority of personnel work must be typed. Currently, these clerks do not have access to a TOE typewriter.

2. Operations:

a. Personnel:

(1) A requirement exists for one (1) Assistant Flight Operations Chief, E-6, MOS 907.60.

Justification: The following varied duties of the Operations Chief (which are intensified during periods of extended operations) indicate the need for assistance and/or relief:

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ANNEX M -- Organization, equipment, and personnel, 1st AVCO

(a) Overall enlisted supervision seven days a week as Flight Operations Chief and Platoon Sergeant.

(b) Administrative correspondence and filing.

(c) Requisitioning and maintenance of maps and flight publications.

(d) Preparation of training schedules and maintenance of all training publications.

(e) Preparation of flight orders and submitting of all requests for TDY orders for the entire unit.

(f) Maintenance of property and equipment of the Operations Platoon.

(2) A requirement exists for one (1) additional Flight Dispatcher, E-4, MOS 907.10.

Justification: Flight dispatching includes the receiving and scheduling of missions, maintenance of records, handling of flight plans, flight following, procurement of weather information, and performance of clerical duties. Two (2) dispatchers on a split shift can perform the routine day to day activities seven (7) days a week, provided they have no additional duties. The additional duty of maintaining thirty-nine (39) pilots' individual flight records (plus associated files, records, and reports) requires an additional man full time. In the past months, the Approach Control Section furnished this third man. Now that the GCA is operational, this man is required in his own section.

(3) A requirement exists for one (1) additional Tower Operator, E-4, MOS 901.10.

Justification: Normally, the tower functions 16-18 hours daily, 7 days per week, in support of the unit alone. The burden of additional traffic at the unit's present location has required supplementary assistance from the Air Force. Besides their job in the tower, operators are charged with the maintenance of equipment responsibilities.

(4) A requirement exists for augmentation of the crash crew assigned to the Airfield Service Section as follows:

(a) One (1) Assistant Fire Chief, E-5, 525.10.

(b) One (1) Fire Fighter, E-4, 525.10.

(c) One Crash Rescue Specialist, E-4, 525.10.

Justification: The five men currently assigned can expect to function

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ANNEX A -- Organization, equipment, and personnel, let AVCO

16-18 hours daily, seven (7) days a week. The personnel requirement stated above would allow for the use of two (2) four man crews to be utilized on a split shift basis. At many locations in Southeast Asia, the company may be expected to perform this duty without assistance from outside resources and therefore needs an augmentation to its existing capability.

(5) There is a need to change the MOS of the Parachute Repairman from 464.10 to 464.17.

Justification: The MOS authorized by TOE for this Parachute Repairman does not allow him to repack parachutes. This restriction has precluded this unit from fully utilizing this man's capabilities. Since adequate parachute repack service is not readily available, and may not be at many overseas locations, this man should be an experienced parachute rigger, MOS 464.17, and placed on jump status.

b. Equipment:

(1) The currently authorized AN/GKN-4 Non-Directional Radio Beacon and the FPN-33 Radar units need to be replaced by lighter comparable sets.

Justification: Experience has shown both the above sets to be too large, complex, and subject to continuous maintenance problems. Suitable technical assistance has not been available on either set. More appropriate equipment does exist in the FPN-8 Radar unit. Development and issue of a lightweight portable beacon should be investigated.

(2) A requirement exists for a Truck, cargo, 3/4 ton, 4x4, M37B1, without trailer.

Justification: The operations platoon is now authorized two (2) trailers without prime movers. One of these trailers, a 3/4 ton, houses the AN/GKN-6 Beacon and the vehicle mentioned above would suffice as the prime mover and would also provide lightweight transport for the section in reconnaissance, coordination, liaison, and control activities. The other trailer, a two (2) ton, has not been issued. However, when issued will be pulled by the 1200 gallon oil tanker.

(3) A requirement exists for a WRQ-2 Radio in the Operations Platoon.

Justification: The Operations Platoon does not have any communications other than that provided in the AN/TGW-1 tower. Radio communications are desirable for air to ground coordination and for ground communications in general while operating in the advance party of the unit. It is to be noted that the Executive Officer has no vehicle nor radio equipment and with the radio requested and the 3/4 ton vehicle requested in paragraph 2b(2), the necessary transport and communications would be provided for an advance party in unit moves.

(4) A requirement exists for an additional 1 by 6 carrier,

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ANNEX M -- Organization, equipment, and personnel, 1st AVCO

non-portable, 11" carriage.

Justification: The volume of correspondence, reports, records, and orders produced by the Operations Platoon is too great to be performed with the one (1) typewriter now authorized. Any maintenance problem with one (1) typewriter results in a hardship felt throughout the company. Experience indicates that one (1) additional typewriter would be adequate.

3. Maintenance:

a. Equipment:

(1) Recommend that truck, utility, 1/4 ton, 4x4, with trailer, amphibious, cargo, 1/4 ton, 2 wheel authorized under existing TOE be changed to road truck, cargo, 3/4 ton, 4x4, with trailer, cargo, 3/4 ton, 2 wheel.

Justification: Approval of this recommendation would greatly increase the capability of the Service Platoon in towing of aircraft, pick-up and turn-in of parts, transporting heavy tools and equipment to aircraft work areas.

(2) There is a need for research and development action to be initiated to develop a maintenance work platform to replace maintenance platform high level, mtd. on truck, 3/4 ton authorized under present TOE.

Justification: An excessive number of man hours are required to maintain present equipment in operating condition and repair parts are virtually non-existent. The maintenance platform is at best extremely unstable when extended to the heights required for work on CV-28 type aircraft, it affords insufficient work space, and is a continuous hazard to personnel and equipment when in operation.

(3) A need exists to delete one (1) each tool set, organizational maintenance set A and one each tool set organizational maintenance set B presently authorized under TOE.

Justification: This unit has operated under continuous satellite operations during the past six months without a set A and one B set in permanent storage. With the arrival of the field maintenance support unit, which is authorized a tool crib set B, this recommendation for deletion of tool sets would greatly reduce storage, maintenance, and inventory problems for the Service Platoon.

(4) The M-49 gas tanker, used as an aircraft oil service unit, has proven to be unsatisfactory for this particular operation. A requirement exists in CV-28 units for a liquid pump with an ability for pumping 1100 weight oil.

Justification: In field conditions it has been noted Class III supply points issue oil in 55 gallon drums. Addition of this pump would facilitate

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ANNEX N — Organization, equipment, and personnel, 1st AWCO

transfer of oil from drums to tanker; this would also eliminate the hazard to personnel and equipment present when servicing by oil cans.

(5) A requirement exists for the addition of one each typewriter, non-portable, 18" carriage to present TOE.

Justification: Two clerk typists are presently authorized in the Service Platoon. Approval of this request would enable both headquarters section and supply section of the platoon to conduct business concurrently.

(6) A requirement exists for a storage kit, aircraft repair parts to be authorized for use with the semi-trailer, van cargo, 6 ton, 2 wheel presently authorized.

Justification: This addition would greatly increase the capability of the supply section to maintain adequate stock location and accountability and would increase the mobility of the section in redeployment exercises.

(7) A requirement exists for one (1) 2-1/2 ton truck, water, M-50 to be added to the TOE.

Justification: Experience indicates a need for a water truck for personnel water needs. Maintenance requires a water truck for the aircraft washing which is accomplished with each periodic inspection.

4. Communications:

a. Personnel:

(1) A requirement exists for one (1) additional field radio repairman (MOS 296.20).

Justification: This requirement exists as a result of the need (mentioned in the equipment portion) for an AN/GRC-26 radio to replace the AN/GRC-46 equipment.

(2) A requirement exists for one (1) radio operator (MOS 053.10) to permit an extended operating capability for the AN/GRC-26.

Justification: Experience obtained from the AN/GRC-26 on loan indicates the need for an operator specifically trained on this equipment.

(3) It is felt that one (1) field wireman may be deleted.

Justification: Experience has shown that communication emphasis has shifted from wire to radio and three (3) men are adequate for wire operation of a unit of this type in this environment (four (4) are authorized in the present TOE).

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ANNEX M -- Organization, equipment, and personnel, 1st AVCO

(4) A requirement exists for one (1) message center clerk.

Justification: Experience has indicated that lack of trained message center personnel seriously hampers the efficient operation of the communication section under a normal workload in this environment.

b. Equipment:

(1) A need exists for AN/GRC-26 radio equipment to replace the present AN/GRC-46 equipment.

Justification: The unit has been stationed in Thailand for the past six (6) months supporting operations and operating satellite aviation sections in South Vietnam. Due to lack of adequate civil and military aviation communications, the burden of flight following has fallen largely on the unit communication section. The equipment presently assigned by TOE with the capability to net with aircraft in the high frequency range (AN/GRC-46) was tested in the flight following role for two months and found to be inadequate because of limited power and insufficient communication range (100 miles). An AN/GRC-26 was procured on a loan basis. It has been utilized for a four month period over ranges from 300 - 700 miles and found to afford 85% effectiveness.

(2) A requirement exists for a base station type of single side-band equipment of medium power and range. Also four (4) portable single side-band transceivers of medium power and range. The Collins KMA-2 single side-band transceiver with multi-range power supply would adequately fulfill this requirement.

Justification: Operation of the unit's aviation detachment in widely separated areas in Vietnam indicated a critical loss of control between the Company Commander, the Flight Platoon Leaders and the separate detachments. Occasionally, there is a complete lack of communication between Thailand and Vietnam and, for the majority of the time, an extended delay in message handling between the two countries. The distances and terrain in Vietnam have accounted for the platoon leaders being out of contact with their sections for relatively long periods of time. This lack of control has hampered or, in some cases, prevented mission accomplishment due to maintenance requirements being delayed or unfulfilled. Presently, the platoon or section leaders attempt to contact the unit base station or their own personnel through the high frequency radio installed in unit aircraft. Sustained operations of this type are practically prohibited except when in flight, hence this system has proved unsatisfactory for continuous all-weather operation. The above equipment and facility suggestions would largely rectify this deficiency.

5. Flight Platoons.

a. Personnel:

(1) A requirement exists for one (1) additional Fixed Wing aviator (Lt or WO, MOS 1980) to each flight platoon.

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ANNEX M -- Organization, equipment, and personnel, 1st WCO

Justification: The present composition of the Flight Platoon provides no means by which the platoon activities can be directed when all aircraft of the platoon are flying. The difficulties resulting from this platoon organization arise from the fact that the Platoon Commander is normally flying missions and is not available to effect coordination, liaison and to receive briefing on future operational requirements of the platoon. This situation is compounded when the platoon is operating independent of the company base airfield. With these considerations in mind, the proposal is made to assign the Platoon Commander to a position not included in the aircraft crew allotment. This should provide for constant supervision of all activities of the flight platoon, and permit the Platoon Commander to effect liaison, receive briefings and orders, and perform necessary mission planning concurrently with the execution of platoon operations.

(2) It is felt that the enlisted man now authorized as Assistant Crew Chief be placed on flight duty status.

Justification: The complexity, size, and normal utilization of the CV-2B has indicated that there is too much work for one CV-2B Crew Chief to accomplish in day-to-day operations. The requirements involved in performing the daily inspection, performing pre-flight duties related to loading and lashing of cargo, control of personnel on the aircraft, and the in-flight duties during the air-landed and air-drop missions, has demonstrated a need for an additional crewman on flight pay for each CV-2B. Requirements for this additional crewman have been demonstrated in the unit's operations during the past 6 months. At present the flight platoons are authorized an additional man not on flight pay to assist in ground maintenance of the aircraft. By placing the man on flight pay, he can be used to assist the Crew Chief in his flight duties. He has been found necessary in air-landed and air-drop missions; he is needed to relieve Crew Chiefs during extended duration missions, and to allow for replacement when Crew Chiefs are sick, on leave or absent for other administrative reasons.

b. Equipment: Requirement exists for the following additional equipment in the flight platoon:

- (1) One (1) 1/4 ton truck with AN/VRC-2.

Justification: The present 3/4 ton truck authorized the flight platoon does not provide adequate transportation for the platoon. This is especially true when the platoon is operating independent of the company base airfield. This problem is two-fold:

(a) The 3/4 ton truck can not be carried in the present aircraft which necessitates its being delivered by Air Force aircraft or driven to the platoon airfield. In counter-insurgency operations, such as South Vietnam, this can not always be accomplished due to roads not being secure or aircraft not being available to transport the vehicle.

(b) With only one vehicle assigned to the platoon,

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ANNEX M -- Organization, equipment, and personnel, 1st AVCO

anytime the vehicle is used by the Platoon Commander to effect liaison, receive briefings and orders, and perform necessary mission planning with a supported unit, it leaves the platoon personnel without much needed transportation. Also anytime the vehicle needs maintenance the platoon is left without transportation.

(c) Although the 3/4 ton truck is necessary to transport platoon personnel, equipment, supplies and to ground handle CV-2B, a requirement does exist to provide the Platoon Commander a vehicle in which he can conduct the operations of his platoon concurrently with the execution of platoon missions.

Communications: A problem confronting the Flight Platoon Commander when operating from satellite or dispersal airfields is that of maintaining communications in all the radio nets he must set up or enter. Specifically, the flight platoons are a part of the company command net and must be able to enter a supported unit's tactical net, as well as set up the individual airfield traffic control net. These alone require a capability of entering and monitoring at least three nets. For this reason the present AN/VRC-9 now authorized and mounted in the platoon 3/4 truck is inadequate. Additionally, considering that the vehicle on which the vehicular set is mounted will be used by the Platoon Commander in effecting liaison, receipt of orders and mission planning, the platoon will be left with an inadequate communications system. Although the AN/VRC-9 mounted in the 3/4 ton truck is necessary (primarily for airfield control), a requirement does exist for a AN/VRC-2 mounted in a 1/4 ton truck to provide the Platoon Commander the necessary communication means for command and control and effective liaison with supported units when operating independent of the company base airfield.

6. Motor Maintenance.

a. Personnel:

(1) Recommend the addition of one Ordnance Parts Specialist (MOS 763.10, EA) to the TOL.

Justification: This man is needed to requisition, receive, store, issue and turn-in parts, tools, and supplies. He would also handle the vehicle maintenance and dispatch records. Under the present TOL, these tasks are performed by the Motor Maintenance Sergeant; and they require so much of his time that he is unable to supervise adequately the maintenance and operations of the unit vehicles.

(2) Recommend the addition of one (1) Wheel Vehicle Mechanic (MOS 631.10, EA).

Justification: This unit normally operates as a separate company and performs the maintenance that is usually accomplished at Battalion level. SR 310-30-15, paragraph 40(b) authorized one mechanic per thirty vehicle equivalents over and above the number of mechanics authorized for company

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ANNEX K — Organisation, equipment, and personnel, 1st AVCO

level maintenance. This unit has a total of 35.9 vehicle equivalents, and is authorized three (3) vehicle mechanics. It is not possible to perform adequately all required maintenance on the unit vehicles with the present number of mechanics.

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ANNEX N -- Digest of 1st AVCO activities in Southeast Asia, 19 June through 31 January 1963

1. (U) General.

a. Although the field test of the Caribou began on 1 February 1963, 1st AVCO experience in Southeast Asia prior to the test period has relevance to some of the test objectives.

b. This annex presents pertinent information from the pre-test period. Much of this material was obtained through interviews with air crews and other key personnel closely associated with 1st AVCO operations in the pre-test period.

2. (C) Statistics.

Appendix 1, attached, gives significant figures from the company's activities summary reports.

3. (U) Organization of Material.

This digest is organized according to test objectives.

4. (C) Support of the Special Warfare Effort (Objective 1).

a. The 1st AVCO gave extensive resupply support to Special Forces teams. There was little opportunity for air-dropping personnel. Missions included air-landing and air-drop of ammunition, rice and other rations, weapons, and construction materials. Caribou carried large quantities of materials needed for building and equipping mountain outposts. Small air-strips serve some of the outposts (e.g., the 1300-foot strips at A Loui and Bato). Caribou crews used these strips almost daily in resupply from Da Nang. Small drop zones were used at other outposts (e.g., Tra My and Mang Buk).

b. On rice drops, bag breakage averaged 10% -- well within the users' limits of tolerance. Maximum breakage on any drop was 35%; this was due to malfunctioning parachutes and breakage of rigging straps. Free-fall deliveries of construction material were uniformly successful.

5. (C) Detached platoon operations (Objective 3).

a. After 1 August 1962, one platoon of the 1st AVCO operated in the RVN. The platoon was divided: two aircraft at Da Nang supported I Corps; two at Nha Trang supported II Corps; four were based at Saigon, two each in support of III Corps and USMACV. Two aircraft were allocated to IV Corps when that unit was activated in December. At the same time, the USMACV allocation was given to Special Forces. Workability of this arrangement over a five month period indicates that such satellite operations are feasible.

b. Following is a discussion of problems encountered in operating platoons or smaller numbers of Caribou away from the base field for extended periods of time:

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(1) Command: Provision should be made for freeing the commander of a separate platoon from duties as an air crew member. When all aircraft are flyable, the platoon commander is now required to fly as a member of the air crew. This leaves no one to conduct liaison or to consolidate mission requirements for the following day. The situation has been eased by providing an additional pilot from the other platoon to free the platoon commander for conduct of these duties. This cannot be regarded as a permanent solution to the problem.

(2) Communication: The company was required to establish communications with a subordinate unit approximately three hundred miles away. The AN/CRC 26 on loan to the company provided reliable communications 85% of the time. (A disadvantage in its use was the requirement to not with the aircraft AN/ARC-59 HF radio, there being no ground radio installation in the platoon in Vietnam.) In the majority of cases, communication was possible only when locations depended on the aircraft HF radios. (With the installation of troposcatter in the RVN, telephonic contact also became possible.) A single-side-band radio such as the Collins K&I-2 transceiver with multi-range power supply might meet the communications requirements.

(3) Maintenance: The company maintenance officer devised a maintenance fly-away kit which was sent with the first aircraft that went on this satellite operation. The kit contained common hardware items and spare parts which experience had shown should accompany aircraft operating for extended periods away from the base airfield. To allow for periodic inspection (each 100 hours) and to maintain eight operational aircraft in Vietnam, two aircraft were rotated back to the company base at Korat, Thailand, each week. This system was successful. It permitted a 7.5 aircraft availability rate and an eighty-hour flying program per month - in Vietnam throughout this period. Back-up demand maintenance was provided by Air Vietnam in Saigon.

c. Although the company was able to conduct platoon satellite operations, success hinged on several expedient measures discussed above. Personnel and equipment changes in TOE are indicated if such operations are to be continued.

6. (C) Control of airspace (Objective 4).

During operations in which other tactical aircraft were utilizing airspace in the zone of operation, control was affected by allocating altitudes and specifying arrival and departure times; this was handled by US Army and Air Force advisors during pre-operations briefings. Air crews attempted to exercise additional control during operations by maintaining radio contact and periodically exchanging information on their position, altitude, and intentions.

7. (C) Command relationships (Objective 5).

a. While conducting satellite platoon operations in the RVN, the 1st Aviation Company (-) in Thailand was attached to the 9th Logistical Command in Korat. The platoon in Vietnam was under the operational control of COMUSMACV. Direct support elements were based in the three ARVN corps. USMACV retained

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ANNEX N (Continued)

direct operation control of two of the four aircraft in the Saigon direct support element. Shortly before activation of the IV ARVN Corps (12 December 1962), these two aircraft were placed in support of the Special Warfare effort, and later in support of IV Corps. Fragmentation of the platoon and decentralization of control provided an effective means for responding to the Corps commanders' need.

b. Participation of the platoon in actual tactical operations was limited principally to resupply of the forward tactical outposts on a regular basis; thus, few data are available on special command relationships appropriate to combat operations. No information is available on employment of the entire company in such operations.

8. (C) Navigation equipment (Objective 6).

a. Equipment in the aircraft: The low-frequency automatic direction finder (ADF) and very-high-frequency omni-range (VOR) radios have proven adequate for use with navigational aids located at the larger terminal areas in the RVN. There is a need, however, for FM homing antennas on the aircraft to permit homing on ARVN or US Army advisors' FM radios in field locations. Since these radios are available at most ground installations, an FM homing capability in the CV-2B would be an advantage, particularly in locating the position of tactical units at night or during periods of inclement weather and low visibility.

b. Equipment on the ground:

(1) The company is now equipped with one AN/GRN-6 non-directional beacon. This is large, complex, and difficult to operate and maintain. A lightweight electronic homing beacon that is portable, rugged, and easily maintained and operated is needed. These beacons could be used for the base airfield, flight platoons on satellite missions, or at any airfield where the air traffic density or mission dictates.

(2) The unit is presently equipped with an AN/FPN-33 ground-controlled approach (GCA) equipment. The company has used this gear for three years in both field and garrison conditions and found it to be unsatisfactory. The set is heavy, bulky, and presents many problems in assembly, disassembly, and movement. The trailer authorized under the TOE to transport the set is now obsolete and unavailable. Personnel now assigned to operate and maintain this equipment, although school trained, are unfamiliar with it, having been trained on different (USAF) equipment. The air conditioner, required for proper operation of the GCA, is difficult to maintain. Due to scarcity of parts, this equipment has been inoperable since the company's arrival in Southeast Asia. (Two air conditioner fuel pumps on requisition since 9 December 1962 have not been received to date). Consideration should be given to the procurement of a GCA unit which can be transported in the unit's organic aircraft. In addition, the unit should be lightweight, rugged, dependable and easy to operate and maintain.

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ANNEX N (Continued)

c. A limited number of low-power non-directional beacons have been placed at outposts in the I Corps zone. It was intended that they should be turned on upon receipt of a radio message from Transportation Movement Control that a mission was scheduled for their station. Although the frequencies vary slightly from those published, and the low power out-put limits reception in the mountains, these beacons have been useful for close-in location of the station in poor weather. Further evaluation of their use will be contained in subsequent reports.

9. (C) Weather-avoidance radar (Objective 10).

a. Weather avoidance radar was not available. Experience of the 1st AVCO in Thailand and Vietnam indicated a need for such radar. The terrain and weather of Southeast Asia, limited enroute weather reporting facilities, lack of enroute weather information, and widely dispersed radar facilities caused an excessive number of missions to be aborted or cancelled. During the monsoon season, many operational missions were cancelled due to thunderstorm activity. Many of these operations might have been completed if storm-avoidance radar had been available.

10. (C) Airborne command post (Objective 11).

a. The fuel endurance (7-8 hours at normal cruise), stability, and relatively low noise level of the CV-28 make it a suitable CP platform. Modifications have been made in cabin radio jacks to allow personnel in the cabin to transmit as well as receive on the aircraft FM radios. The aircraft has served as an airborne CP, both for operations in the southern Delta and in the northern jungles, utilizing this system.

b. Commanders and their staffs expressed the need for a more sophisticated "roll-in, roll-out" radio console for air-ground communications.

11. (C) Logistical support requirements (Objective 12).

a. Airbase facilities including maintenance facilities:

(1) During platoon satellite operations in the RVN, aircraft were rotated back to the company base (Korat, Thailand) for periodic inspections and higher echelon maintenance. Limited 3rd and 4th echelon maintenance was performed, often with the use of field expedients and trial and error detection of malfunctions due to lack of necessary test equipment. Back-up contract maintenance was available through Thai Airways (at Bangkok, 110 miles away). An augmentation of specifically skilled personnel for 3rd echelon work was requested. This augmentation has been programmed: the 70th Maintenance Detachment at Fort Bragg is scheduled to move to the RVN.

(2) Lack of hangar space was a problem at Korat. In July 1962, for example, a main landing gear would not retract properly and there was no way to jack up the aircraft for checks. The aircraft was taken to Bangkok where hangaring was available for a very limited time. The trouble was not fixed.

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ANNEX N (Continued)

within that time and the aircraft was returned to Korat. Space was eventually located at Royal Thai Air Force facilities at Korat and remedial action was completed with the change of a selector valve.

b. Technical supply was a major problem. Supplies carried from CONUS were consumed much faster than requisitions were filled through normal supply channels. Cannibalization was resorted to in order to maintain the desired availability rate. Changes of critical parts cost an excessive number of man hours. Supply levels of the following items were especially critical:

(1) Brake pucks: Lack of brake pucks forced the use of U-1A pucks until this supply was exhausted. (U-1A liners subsequently caused brake malfunctions and proved unsatisfactory). Requisition for these items were not filled until November 1962.

(2) Spark plugs: 1050 spark plugs were brought with the unit and 872 were on requisition for stock. Requisitions were not filled until December 1962. This was especially critical as the flying hours program dictated a complete spark plug change (56 plugs per aircraft) approximately every three months, exclusive of non-scheduled replacements.

(3) Engine pin seals: A requisition for 300 was submitted on 27 June 1962. None were received prior to the company's deployment to Vung Tau.

(4) Tachometer generators: Cannibalization and over-haul have reduced aircraft down time in this area but at the expense of lost man hours. Numerous unsatisfactory reports have been submitted concerning repetitive failures of this item. A more reliable tach generator for the CV-2B is needed; it should have a low initial cost and be designated as non-recoverable, to be discarded when no longer economically repairable.

(5) Nose wheel bearings: Delay in filling requisitions resulted in a critical shortage. Continuous operation in and out of unprepared air strips required an abnormal frequency of replacement.

(6) Exhaust stacks: The installation system on the CV-2B appears defective in that repetitive cracks appear. (The system on the older model Y-5C 57-3080 presently in Vietnam has been virtually trouble-free).

(7) Main gear tires, nose wheel tires, and tube assemblies were initially in short supply, but were received in sufficient quantities during November 1962 to sustain operations. Again, the continuous use of air strips in various stages of improvement, necessitates frequent replacement of these items.

(8) Avionics: Support given by the 258th Signal Detachment was excellent but was limited by lack of bench test kits for the AN/ARC 73 and the emergency VHF transmitter T-366A. Certain radio component parts - e.g., transistors - were also in short supply.

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ANNEX N (Continued)

12. (C) Use of CV-2B aircraft for medical evacuation:

a. Medical evacuation by Caribou has emphasized responsiveness. Rarely has pre-operation planning placed the Caribou in a standby medical evacuation role. Often, however, Caribous have been diverted in flight or alerted on short notice, to conduct medical evacuation missions.

b. During an operation in Zone D last September, battle casualties and a large number of trench foot cases led to a late-at-night alert of Caribou crews in Saigon for flights at dawn the following day. One aircraft went to Phuoc Vinh airfield in Zone D; another stood by at Tan Son Nhut for use if needed. On 21 November 1962, Caribou crews were called upon to evacuate eighteen victims of a truck accident after dark from an unlighted airstrip at Song Be. This mission, refused by the Air Force because of operating limitations, was accomplished by the CV-2B crew.

c. Experience indicates a need for medical evacuation SOP's at Corps level to make more extensive provisions for use of the Caribou for medical evacuation. These would include provision for airmen, medical equipment and supplies tailored to the specific evacuation mission.

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Appendix 1 to ANNEX N -- Statistical summary of 1st AVCO operations.

I. Platoon operation in Vietnam (8 aircraft), 23 July-31 December 1962.

Period	Flight time (hours)		Passengers	Cargo (tons)	Avg a/cft availability
	Service	Training			
23 Jul-31 Aug	681	0	3207	444	7.5
1-30 Sep	682	0	2942	402	7.5
1-31 Oct	585	0	3953	432	6.4
1-30 Nov	500	0	3172	258	6.0
1-31 Dec	<u>664</u>	<u>0</u>	<u>5191</u>	<u>428</u>	<u>7.0</u>
TOTAL	3112	0	18465	1964	6.8 (86%)

II. Company operation in Vietnam (16 aircraft, 1-31 January 1963.

Flight time (hours)		Passengers	Cargo (tons)	Avg a/cft availability
Service	Training			
892	27:25	9755	587	10.3

III. Company operations in Thailand and Vietnam, 19 June 1962-31 January 1963

	19 Jun-31 Dec		1-31 Jan	Pre-test totals
	Co (-) (*)	Plt (#)	Co (C)	
Passengers	7587	18465	9755	35807
Cargo (tons)	927	1964	587	3478
Flight time	2499	3112	920	6531
(Service)	(2365)	(3112)	(892)	(6369)(x)
(Training)	(134)	(0)	(28)	(162)
Avg aircraft availability	3.6 (46%)	6.8 (86%)	10.3 (64%)	10.4 (65%)

NOTES -- (*) Thailand; eight aircraft.
 (#) Vietnam; eight aircraft.
 (C) Vietnam; sixteen aircraft.
 (x) 1st AVCO monthly activities summary gives a different figure;
 figure above is a corrected total.

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Monthly Test Report Number 1 -- Caribou

ANNEX O -- Outline history of the 1st Aviation Company

1. The unit was activated on 1 June 1955 at Fort Riley, Kansas, as the 14th Army Aviation Company (Fixed Wing Tactical Transport). The Company received its first U-1A Otter aircraft in February 1956. In August 1956 the 14th was redesignated the 1st Aviation Company (Fixed Wing Tactical Transport) and was moved to Lawson Army Airfield, Fort Benning, Georgia. Having been selected as the first army unit to be equipped with CV-28's, the company received its first Caribou in October 1960.

2. A troop test of company operations was conducted at Fort Benning from 17 April to 27 May 1961. Four Caribous and eight Otters were involved in the test. Forty-six missions flown included air-landing and air-dropping an airborne rifle company, air-landing and pick-up of Special Forces teams, and a 36-hour air-landed resupply operation. During the test, the company flew a total of 1,917 hours (500 at night), made 1969 maximum-performance landings, flew 165,234 nautical miles and air-lifted 807 tons of payload. The maintenance section achieved an 82.3% aircraft availability rate during the test.

3. On 17 May 1962, while participating in the Tactical Air Mobility Board Test at Fort Bragg, North Carolina, 1st AVCO was alerted for movement to Southeast Asia. Alert orders necessitated movement back to Fort Benning to prepare for the trip overseas. The first flight of CV-28's left Benning on 31 May. Second and third flights left on 1 and 10 June. The last flight departed on 21 June. After a flight of 11,000 air miles -- via northern Canada, the North Atlantic, and the Middle East -- the company's eighteen CV-28's (including two maintenance float aircraft) reached Korat, Thailand, on 10 July. This was the first time that an Army aviation unit moved in its organic aircraft from the US to an overseas station.

4. The company was assigned to the 9th Logistical Command and flew in support of Joint Task Force 116. Initially, it supported the 1st Battle Group, 27th Infantry, in weekly rotation of companies to positions near the Laotian border. Later, in support of the 1st Battle Group, 39th Infantry, 1st AVCO provided tactical transport in training exercises which took the troops to the remotest areas of Thailand. Typical missions included troop lift, air drop, aerial resupply, medical and equipment evacuation, and airlift of Thai Infantry and airborne units. Other missions included civic action projects (relief for storm victims, transport of medical supplies to a leper community, evacuation of sick and injured Thai nationals), flights for counter-insurgency training cadres, and transport of selected personnel on orientation trips to the RVN.

5. On 23 July 1962, the company deployed one platoon to the RVN. The rest of the company moved to Vietnam during December and set up headquarters at Vung Tau airfield.

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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX P -- US military airlift system in Southeast Asia.

1. USMACV Directive Number 42 is reproduced on the following pages. This directive pertains to the operation of the US military airlift system in Southeast Asia.

2. The directive is relevant to this test report inasmuch as certain CV-2B aircraft of the 1st AVCO are employed within the Southeast Asia Airlift System (SEAAS) (see Annex E).

This page is downgraded to
UNCLASSIFIED when separated from
classified inclosure.

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HEADQUARTERS
UNITED STATES MILITARY ASSISTANCE COMMAND, VIETNAM
APO 143, San Francisco, California

DIRECTIVE
NUMBER 42

11 October 1962
(MACM)

US MILITARY AIRLIFT SYSTEM WITHIN SOUTH EAST ASIA

1. PURPOSE. The purpose of this directive is to establish within South East Asia a US military airlift system for the movement of personnel and cargo.

2. SCOPE. This directive applies to:

a. Air transportation furnished with U.S. resources, including both scheduled and special airlift within SEA.

b. All military and civilian agencies of the U.S. responsible for submitting airlift requirements and capabilities or for programing, administering, assigning, or allocating airlift.

c. Requests for U.S. military airlift submitted by military and civilian agencies of friendly Foreign Governments in South East Asia.

3. DISCUSSION. Airlift support for the movement of personnel and material throughout South East Asia is provided by use of U.S. aircraft assigned to the subordinate components of MACV. These airlift resources have been integrated into a common system designed to provide users with the maximum possible support and to achieve the best utilization of airlift resources. Detailed information and instructions relative to the airlift system are contained in Inclosure 1.

4. RESPONSIBILITIES.

a. COMUSMACV has assumed responsibility for organizing and directing the airlift system in South East Asia.

b. Operational responsibilities of subordinate commands are assigned as indicated in Inclosure 1.

5. PROCEDURES. All using Commands and other agencies will comply with the procedures contained in Inclosure 1.

FOR THE COMMANDER:

1 Incl
a/s

/s/R. G. Woods
/c/R. G. WOODS
Major General, U.S. Marine Corps
Chief of Staff

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USMACV Directive Number 42 (continued)

FOREWARD

The operation of an airlift system requires the integration of the efforts of many activities. Principal among these are the activities of the airlift users, the aircraft operators, and the control agencies that act to coordinate the flow of personnel and materiel into the system and delivery to ultimate destinations.

In order that the airlift system be responsive to the demands placed upon it, there must be coordination and cooperation among the agencies which comprise the system. It is only through joint effort of all concerned that timely and effective airlift support can be provided to the users. Users also share in this effort through accurately forecasting airlift requirements. In this latter instance, the submission of accurate requirements in time to be given deliberate consideration permits the control agencies to plan for more effective use of the airlift resources.

This directive prescribes the various actions which must be accomplished by each activity in the system. Compliance with the provisions of this directive will insure that a highly critical commodity, airlift, is utilized to the maximum extent possible for the mutual benefit of all the U.S., RVNAF, and RTG forces in SEA.

PART I

ORGANIZATION AND RESPONSIBILITIES OF THE MAJOR ELEMENTS OF THE AIRLIFT SYSTEM

1. General. There are five essential elements responsible for the effective management of available airlift. The organization and responsibilities of these elements are as follows:

2. Organization.

a. Movements Branch, J-4 MACV, will insure optimum utilization of airlift capability provided from the transport and utility aircraft assigned to U.S. Forces in SEA essentially by prescribing priorities and making allocations of available resources against approved requirements.

b. Combat Cargo Group (CCG) is the agency that provides airlift capability on a day-to-day basis from actual available resources to satisfy the requirements of the users.

c. Air Traffic Coordinating Officer (ATCO). The ATCO will control the flow of traffic into the airlift system at a rate commensurate with the allocations established by the Movements Branch, J-4 MACV.

d. The Area, Sub-Area, or Installation Coordinator, or the Senior Officer or Non-Commissioned Officer where fewer than ten (10) US personnel are assigned, will designate an individual as transportation agent at those locations which receive airlift service. At those locations (other than Saigon) where Air Terminals are operated, the Air

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USMACV Directive Number 42 (continued)

Terminal Commander will act as the transportation agent for all air movements. The transportation agent will coordinate air movements at his respective location.

o. Air Terminals. At locations where the CCG establishes air terminals, the terminal will perform all air terminal services for aircraft operating in the airlift system.

3. Responsibilities.

a. Movements Branch, J-4 MACV, will:

(1) Advise COMUSMACV on all matters related to air transportation within SEA.

(2) Establish a priority system for the movement of personnel and materiel within SEA.

(3) Collect, review, and coordinate airlift requirements, capabilities, and utilization data.

(4) Evaluate requests for and allocate air transportation space.

(5) Make recommendations to COMUSMACV where requirements exceed the capabilities of the airlift available.

(6) Appropriately disapprove special airlift requests when other means of transport are available and could be better utilized to fill the movement requirement.

(7) Maintain direct liaison with the Joint Airlift Section (CCG) of the Air Operations Center and with the ATCO.

b. Combat Cargo Group (CCG) will:

(1) Exercise operational flight control over all aircraft used in the system.

(2) Report airlift capability to Movements Branch, J-4 MACV, and changes in capability, as required by paragraph 4, Section II, Part II of this directive.

(3) Prepare an operational plan for the scheduled airlift service, as required by paragraph 12a, Section I, Part II of this directive.

(4) In coordination with Movements Branch, J-4 MACV, provide airlift capability to meet allocated and special airlift requirements.

(5) Prepare and distribute the airlift system flight schedule.

(6) Maintain direct liaison with Movements Branch, J-4 MACV, and the ATCO.

(7) Publish necessary implementing instructions.

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USMACV Directive Number 42 (continued)

c. Air Traffic Coordinating Officer (ATCO) will:

(1) Provide liaison and coordination regarding the flow of traffic into the airlift system. The rate of flow will be based on the airlift allocations made by Movements Branch, J-4 MACV, adjusted to the resources actually made available by CGG.

(2) Insure Air Movement Designators (AMD) for passenger and cargo movements based upon the space allocations of the users.

(3) Take corrective action on traffic irregularities noted or reported.

(4) Make temporary adjustments in the pro-rata use of sub-allotted and opportune airlift.

(5) Establish a reservation system for passenger movement on scheduled flights.

(6) Submit reports on airlift utilization and other matters to Movements Branch, J-4 MACV as required.

(7) Be the single point of contact between the shipper (user) and CGG as pertains to operational matters of the airlift system.

d. Designated Transportation Agent will:

(1) Request space from the Movements Branch, J-4 MACV, Saigon for personnel and cargo originating at the designated location that requires the utilization of an entire aircraft or a diversion from scheduled routing. Passengers and cargo may be loaded at enroute points (less than full aircraft loads) provided space is available on the aircraft and the aircraft commander approves the onload.

(2) Manifest, load, and unload air traffic for the designated location where an air terminal has not been established.

(3) Maintain records and submit reports to the Movements Branch, J-4 MACV, Saigon as required.

e. OIC's of Air Terminals will:

(1) Receive and process all personnel and cargo for inbound or outbound movement in the airlift system.

(2) Manifest all personnel and cargo to be loaded on aircraft operating in the airlift system.

(3) Load and unload all aircraft of the airlift system at air terminals.

(4) Provide secure intransit storage for cargo.

(5) Prepare and submit traffic movement and backlog reports as directed by Movements Branch, J-4 MACV.

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USMACV Directive Number 42 (continued)

(6) In coordination with the ATCO, plan cargo and passenger movements to insure maximum utilization of airlift capability.

(7) Report traffic irregularities as appropriate to Movements Branch, J-4 MACV.

PART II Procedures

Section I - SUBMISSION OF AIRLIFT REQUIREMENTS AND ALLOCATION OF AIR TRANSPORTATION SPACE

A. General Instructions.

1. Requirements. All requirements for airlift will be submitted to the Movements Branch, J-4 MACV.

2. Effective Date of this Reporting System. The system for submitting requirements and allocating transportation space as prescribed in this directive becomes effective with the submission in October 1962 of requirements for November 1962. Appendix B prescribes the time table for each reporting and allocation action under this system.

3. Eligibility of Traffic. Traffic for which airlift requirements are submitted and space is allocated must meet the eligibility requirements defined in the following:

a. Joint Travel Regulations for the Uniformed Services and/or civilian personnel regulations.

b. Pertinent publications of the Department of Defense, the Military Departments, and the Joint Chiefs of Staff.

4. Traffic Selection and Movement.

a. The ATCO will assign an Air Movement Designator (AMD) to each shipment or passenger movement within the system. The precedence of movement will be determined in accordance with paragraph 5c below.

b. Within this airlift system cargo and passengers will move on scheduled flights as follows:

(1) Within the same priority and within each user's space allocation, the oldest traffic in the system will normally move ahead of other traffic. Normally through traffic of a user will be moved to its final destination ahead of traffic originating at intermediate points.

(2) Airlift will be provided uniformly over the period of each space allocation unless otherwise requested by a user or directed by COMUSMACV.

5. Air Movement Priorities. There are two areas of priorities within the system: mission priorities, which establish the precedence of flight operations, and movement priorities, which establish the precedence of movement for cargo and passengers airlifted in scheduled

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USMACV Directive Number 42 (continued)

service. Special missions are operated in accordance with mission priorities.

a. Mission priorities. Flights operated by the airlift system will be operated on the basis of a mission priority. The purpose of the mission priority is twofold: first, it describes the operational mission of the aircraft; second, when there are competing requirements for airlift capability, it provides the Movements Branch, J-4 MACV, and CCG with guidance for the application of available lift capability to satisfy the demands of the users.

b. Mission priorities are as follows:

- (1) Priority I - Airlift support of U.S., RVNAF, or RTG forces engaged in combat operations.
- (2) Priority II - Medical evacuation, delivery of emergency medical assistance, and disaster relief.
- (3) Priority III - Airlift support of units which must be maintained in constant state of readiness for immediate combat deployment.
- (4) Priority IV - Emergency airlift of logistic supplies or personnel to prevent AACP, EDP, and/or work stoppage.
- (5) Priority V - Scheduled flights operated for logistic resupply and personnel movement.
- (6) Priority VI - Training of US, RVNAF, or RTG forces.
- (7) Priority VII - Opportune airlift for the movement of personnel and materiel not covered by any of the above.

c. Movement Priorities (Scheduled Service). The precedence of movement of cargo and passengers to be transported by the scheduled airlift system will be determined as follows:

- (1) Priority I. This priority will be used to move passengers and cargo in an emergency so acute that precedence should be given to it over all other traffic moving on scheduled airlift. Its use will be limited to a relatively small amount of traffic. Priority I will be authorized only when the ATCO, together with the requesting agency, carefully determines that the urgency warrants the use of this priority. Traffic moving under it should under no circumstances be delayed enroute for other traffic. This priority will be used for combat support personnel or cargo.
- (2) Priority 2. This priority will be used to move traffic of an urgent nature which is required to meet a deadline and accomplish an essential mission, i.e., AACP, EDP, work stoppage, subsistence, and movement of TDY personnel.
- (3) Priority 3. This priority will be used to move traffic of an urgent nature which is required to accomplish an important mission, i.e., routine logistic resupply, PCS personnel, and personal baggage.

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USMACV Directive Number 42 (continued)

(4) Priority 4. This priority will be used to move traffic which is qualified for air movement and is desirable, which has no deadline or stated urgency, but does not qualify for priorities 1, 2, or 3.

6. Air Movement Designators (AMD). The code numbers and letters listed in Appendix 4 will be used by the ATCO in assigning Air Movement Designators to identify and indicate the precedence of cargo and passenger movement. (Note: These Designators do not necessarily constitute authorization for shipment by air). Each Air Movement Designator consists of code symbols in sequence as shown in the example "SGN-DNG 2A-5671-MG-06" and explained below:

a. SGN - Indicates the airport of origin of the traffic; in this example, Saigon. See Column 2, Appendix C.

b. DNG - Indicates the airport of destination of the traffic; in this example, Danang. See Appendix C.

c. 2 - Indicates the priority assigned for air movement; in this example, Priority 2. These priorities are assigned as explained in paragraph 5.

d. A - Indicates the type of traffic (code designator, i.e., whether passenger or cargo) moved; in this example, Cargo - Aircraft Parts. These code symbols are listed in Appendix D.

e. 5671 - Indicates the traffic movement serial number assigned by the ATCO; in this example, Movement No. 5671. These numbers will be issued consecutively from 0001 to 9999, after which the ATCO will begin again with 0001.

f. MG - Indicates the sponsoring component in whose interest the traffic is being moved; in this example, MAAG. These code symbols are listed in Appendix D.

g. 06 - Indicates the month in which the traffic is to be moved; in this example, June.

7. Criteria for Movements Branch, J-4 MACV, Allocation of Air Transportation Space for Scheduled Service. Three criteria listed here provide specific guidance for the allocation of airlift space to the users by Movements Branch, J-4 MACV:

a. Criterion 1. Traffic requirements meeting this criterion will be considered as mandatory airlift requirements for transportation space. This criterion may apply to:

(1) Movement of units and "filler" personnel, as directed by COMUSMACV, for the conduct and support of combat operations.

(2) Emergency medical supplies (including whole blood).

(3) Medical evacuees.

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USMACV Directive Number 42 (continued)

(4) Air mail, registered mail, ordinary official mail, and courier materiel.

(5) Special munitions.

(6) Any other air movement requirements declared mandatory by COMUSMACV.

b. Criterion 2. Traffic requirements meeting this criterion will be considered after Criterion 1 requirements have been met and before air movement requirements under Criterion 3 are considered. This criterion may apply to:

(1) Movement of combat units incident to their training.

(a) That are committed by jointly approved war plans to combat operations at the outbreak of hostilities.

(b) For which the concept of air movement has been approved by COMUSMACV.

(2) Movement of personnel and materiel (including mail) urgently needed in an area otherwise inaccessible because of its terrain, location, or climate.

(3) Movement of temporary duty and emergency leave personnel.

(4) Movement of high-cost critical items which have been procured on the basis of an airlift pipeline.

(5) Movement of items critically required for non-stock replenishment purposes.

(6) Class I Supply: Subsistence.

c. Criterion 3. All other passengers and cargo traffic for which airlift is justified, after requirements under criteria 1 and 2 are met.

8. CCG Airlift Schedule. At least 10 days prior to the beginning of each operating month, CCG will publish and distribute a standard schedule of flights to be operated over all regular airlift system routes. This schedule will show the maximum number of flights that can be accurately forecast.

9. Monthly Airlift Requirements Report. RCS: MACV 19J4(T). According to the time table in Appendix B, each user will submit monthly to the Movements Branch, J-4 MACV, a report of all inbound and outbound airlift requirements. Each user will develop and prescribe his own procedures for obtaining "feeder reports" of requirements from subordinate units. This report will be submitted on MACV Form 18, Appendix F, "Routine Airlift Requirements by User", as follows:

a. Requirements to be reported.

(1) Passenger-Report by the number of spaces required.

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USMACV Directive Number 42 (continued)

Space requirements will be entered by criterion in column I, II, or III.

(2) Cargo - Report by criterion in short tons.

(3) Mail and courier materiel - Reported by the Army Air Force Postal Service.

b. Preparation of the report. Each user will prepare the report on monthly airlift requirements as follows:

(1) In the "From" and "To" columns (of MACV Form 18) enter the official place name of the airlift system point where the traffic is to enter and leave the system. Use the geographical names given in Appendix C.

(2) On horizontal line enter all passenger requirements.

(3) Report cargo movement requirements by criterion, in short tons, to the nearest whole ton.

10. Special Airlift Requirements Report. RCS: MACV 20J4(T). These requirements are defined in Appendix A. Each user will submit special airlift requirements as expeditiously as possible to the Movements Branch, J-4 MACV, with an information copy to CCG. Requests will be prepared in the format shown in Appendix E regardless of method of transmission.

11. Changes in Requirements Report. Changes in routine requirements will be reported through the same procedures and channels prescribed for the initial submission of routine requirements reports. Since unrestricted changes react against reliable and economical airlift service, the users will monitor all proposed changes and keep them to a minimum.

12. Movements Branch, J-4 MACV, action on routine airlift requirements submitted by the users. Movements Branch, J-4 MACV, will consolidate all requirements received from the users. Total routine airlift requirements will be forwarded to CCG 22 days prior to the beginning of the operating month. CCG will develop and forward an operational plan to Movements Branch, J-4 MACV, 18 days prior to the beginning of the operating month for approval and allocation of airlift space to the users. CCG will indicate excesses and deficits in capability as appropriate.

13. Movements Branch, J-4 MACV, action on CCG operating plan.

a. When no deficits exist, Movements Branch, J-4 MACV, will notify users that all requirements for routine airlift will be met. Operating plan will be approved and returned to CCG for publication of the monthly schedule.

b. When deficits exist, Movements Branch, J-4 MACV, will work directly with the user as necessary to solve deficit problems. When a deficit problem cannot be resolved, a space allocation meeting will be called by COMUSMACV.

14. Space allocation meeting. At the direction of COMUSMACV, Movements Branch, J-4 MACV, will convene a space allocation meeting of the users concerned. The chairman of this meeting will be the Assistant Chief

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MACV Directive Number 42 (continued)

of Staff, J-4 MACV. CCG will present a report of the logistic airlift capability for the operating month and its proposed plan of operation. Movements Branch, J-4 MACV, will represent the proposed space allocations on the basis of the operating plan of CCG. The matter of resulting deficits will then be discussed for settlement. The proceedings of the meeting will record adjustments to the proposed space allocations for the month agreed upon in resolution of the deficit problem. Upon completion of the meeting, space allocations for the operating month will be considered final.

15. Distribution of space allocations. At the conclusion of the Space Allocation Meeting described above or when no unresolved deficits occur, whichever is earlier, Movements Branch, J-4 MACV, will send to each user and to ATCO a "Report of Air Space Allocation" showing by user the number of passengers and tons of cargo, mail, and courier mail for which space has been allocated, point to point.

16. Movements Branch, J-4 MACV, actions on requests for special airlift. When a request for special airlift as defined by paragraph 13, Appendix A, and submitted in the format shown at Appendix E is received, Movements Branch, J-4 MACV, will determine aircraft availability in coordination with CCG. Each request will be considered individually and the user requesting the special airlift will be notified of action taken by Movements Branch, J-4 MACV. Depending upon priority, requirements of this nature will not normally be met earlier than 48 hours following receipt of the request.

B. Reports of Utilization of Airlift Capability

1. A Report of Scheduled Airlift Utilization will be submitted by CCG to arrive at the Movements Branch, J-4 MACV, by the 10th day of each month, indicating the number of passengers and short tons of cargo moved, by user and segment of each scheduled flight, with mail in short tons listed separately; and indicating the total monthly flying hours utilized, by type aircraft.

2. A Report of Non-Scheduled (Special) Airlift Utilization will be submitted by CCG to arrive at Movements Branch, J-4 MACV, not later than the 10th day of each month, indicating utilization of special airlift provided during the preceding month. This report will indicate, by user and type aircraft, the number of passengers and short tons of cargo moved.

SECTION II

AIRCRAFT RESOURCES AND CAPABILITY REPORTING PROCEDURES

1. General. The airlift system within South East Asia provides service of two kinds: scheduled flights and special mission flights. In order to achieve maximum utilization of aircraft resources, it is necessary that there be centralized coordination in the use of the capacity of all the aircraft in the system. This coordination will insure that the most suitable aircraft available for a particular mission is utilized and that duplication of flights and routes is minimized.

2. Control Agency. CCG will exercise operational flight control over the aircraft of the airlift system.

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USMACV Directive Number 42 (continued)

3. Aircraft Resources. The following aircraft, under the operational command of COMUSMACV, comprise the resources of the airlift system. This airlift capability is allocated to requesting SE Asia organizations by the Movements Branch, J-4 MACV.

- a. C-123's of the 346th and 777th TC Squadrons.
- b. AC-1's of the US Army 1st Aviation Co. located in SVN.
- c. C-47's and C-54's of 2nd Air Division.
- d. R4D of HSAS.
- e. R4D of CTU 79.3.5.
- f. Utility (administrative) aircraft:
 - (1) L-23's of USA SGV.
 - (2) L-20's and L-23's of MACG Flight Det.

4. Reporting Airlift Capability.

a. Initial Report.

(1) The operators specified in paragraph 3a, b, c, d, e & f will report their airlift capability to CCG 30 days prior to the beginning of the next operating month.

(2) The report will indicate by type aircraft, the daily airframe and flying hour capability available for the airlift system for the following month.

b. Changes to Airlift Capability.

On the 1st day of the operating month, and each Friday thereafter, the operators specified in paragraph 3a, b, c, d, e & f will advise CCG of any changes in capability that have occurred since submission of the initial or last preceding report. If capability remains as programmed, a negative report will be submitted.

c. Air frames and flying hours necessary for crew training will not be reported.

d. CCG will consolidate according to the time table in Appendix B, the capability reports of the operators and will forward the total airlift capability to Movements Branch, J-4 MACV, showing daily airframe availability and flying hour capability.

e. CCG will report changes in capability that occur after the formal space allocations have been made, informing Movements Branch, J-4 MACV, when:

(1) Additional capability has become available, defining the area of its potential application.

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USMACV Directive Number 42 (continued)

(2) Changes in capability have occurred that cannot be replaced, making adjustment necessary in space allocations. Adjustments in space allocations will be made by Movements Branch, J-4 MACV after coordination with the users and will be based upon the same percentage proportions of the total space available originally allocated the various users.

Appendix A

Definitions

The following definitions will apply in this manual:

1. Air Movement Designator (AMD). A combination of code letters and numbers assigned by the ATCO to identify and indicate precedence of traffic movement within an authorized user's allocation.
2. Air Traffic Coordinating Officer (ATCO). The office within Headquarters Support Activity, Saigon which is assigned the responsibility for insuring and controlling the orderly flow of traffic in the airlift system.
3. Criteria. The classifications in which air movement requirements are submitted and which are used for determining relative essentiality of need for airlift in the allocation of air transportation space.
4. Combat Cargo Group (CCG). The organization which is assigned the responsibility for providing airlift capability and airlift schedules for logistic support requirements and for providing special airlift capability when and as required.
5. Mission Category. The priority sequence in which flights of the airlift system will be operated in response to airlift requirements.
6. Movements Branch, J-4 MACV. The office within J-4 MACV which is designated to insure the optimum utilization of transportation capabilities including airlift within South East Asia.
7. Non-scheduled Airlift. Airlift provided for the movement of personnel and material which cannot be accomplished by scheduled airlift or which is a one-time non-recurring requirement.
8. Operational Flight control. That control necessary to insure maximum safety to the passengers, crew, cargo, and aircraft in the accomplishment of the assigned airlift mission. In addition, this control is extended to include selection of special airlift capability to accomplish a specific task in order to best utilize the airlift resources available.
9. Opportunity Airlift. Airlift capability that develops between points where requirements are less than capability.
10. Priorities. The classifications used in movement control to indicate precedence of movement of traffic for which transportation space has been allocated and assigned.

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USMACV Directive Number 42 (continued)

11. Routine Airlift Requirements. Airlift requirements of personnel and materiel on a continuing basis, point to point within South East Asia which can be moved on scheduled airlift service operating on regular frequency.
12. Scheduled Airlift. Airlift provided for the movement of personnel and materiel between points where the requirements are of a continuing and/or repetitive nature, over a period of time, normally one month.
13. Special Airlift Requirements. Requirements which require special pickup and/or delivery by the logistic airlift system at other than those points within the scheduled service pattern, as well as requirements for movement within the system that require special consideration because of the number of passengers involved, the weight or size of the cargo, or other special factors such as security.
14. Tactical Airlift. Airlift support provided US, RVNAF or RTG forces engaged in combat operations.
15. Tactical Training. Exercises pre-planned to familiarise US, RVNAF, and RTG units with airborne operations.
16. Users. Those military (US and RVNAF) and RTG and Government agencies (US, GVN and RTG) which are authorized by Joint Regulations to utilize US Military Aircraft for the movement of passengers and cargo. See Appendix D, for code designation of authorized users.

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USMACV Directive Number 42 (continued)

Appendix B

TIMETABLE FOR THE SUBMISSION OF AIRLIFT REQUIREMENTS AND ALLOCATION OF TRANSPORTATION SPACE

NOT LATER THAN FOLLOWING NUMBER OF DAYS BEFORE 1ST OF NEXT MONTH	ACTION	ACTION AGENCY
25	USERS SUBMIT REQUIREMENTS TO MOVEMENTS BRANCH, J-4 MACV	USERS
25	CCG SUBMITS AIRLIFT CAPABILITY TO MOVEMENTS BRANCH, J-4 MACV	CCG
22	MOVEMENTS BRANCH, J-4 MACV, CONSOLIDATES REQUIREMENTS AND FORWARDS TO J4L FOR PREPARATION OF OPLAN	MOVEMENTS BRANCH J-4 MACV
18	CCG SUBMITS OPLAN TO MOVEMENTS BRANCH, J-4 MACV, FOR APPROVAL	CCG
16	MOVEMENTS BRANCH, J-4 MACV, REVIEWS OPLAN. IF NO DEFICITS, ADVISES USERS. IF DEFICITS CANNOT BE RESOLVED, PREPARES PROPOSED ALLOCATIONS FOR PRESENTATION AT SPACE ALLOCATIONS MEETING.	MOVEMENTS BRANCH J-4 MACV
15	COMUSMACV CONVENES ALLOCATIONS MEETING (IF NECESSARY) AND ADJUSTS SPACE ALLOCATIONS THEREAT. MOVEMENTS BRANCH, J-4 MACV, FORWARDS REVISED REQUIREMENTS TO CCG.	MOVEMENTS BRANCH J-4 MACV CCG USERS
10	MOVEMENTS BRANCH, J-4 MACV, DISTRIBUTES SPACE ALLOCATIONS TO USERS AND ATCC	MOVEMENTS BRANCH J-4 MACV
10	CCG PUBLISHES AND DISTRIBUTES SCHEDULE	CCG

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Appendix C

GEOGRAPHICAL PLACE NAMES IN SVN AIRLIFT SYSTEM

THE GEOGRAPHICAL PLACE NAMES IN COLUMN 1 SHOULD BE USED IN SUBMITTING REQUIREMENTS FOR AIRLIFT. USE THREE LETTER CODE SYMBOL IN COLUMN 2 FOR ISSUANCE OF AND.

COL 1	COL 2	COL 3	COL 4
GEOGRAPHICAL	CODE SYMBOL	PROVINCE	AIRLIFT SERVICE PROVIDED TO OR AIRPORT USED
AN LOC (HUAN LOC)	ALC	LONG KHUENH.	AN LOC
BAC LIEN	BLU	BA XUYEN	BAC LIEN
BAN ME THUOT	BMT	DARLAC	BAN ME THUOT EAST
BARIA	BBA	PHUOC TUY	VUNG TAU
BEN CAT	BCT	BINH DUONG	LAI KHE
BEN TRE	BTE	KIEN HOA	TAN HIEP
BLAO	BLO	LAM DONG	BAO LOC (BLAO)
CA MAU	CMU	AN XUYEN	CA MAU
CAN THO	CTO	PHONG DINH	CAN THO
CAO LANH	CLH	KIEN PHONG	CAO LANH
CHAU PHU	CFU	AN GIANG	LONG XUYEN
DALAT	DLT	TUYEN DUC	CAM LY
DANANG	DNG	QUANG NAM	DANANG
DI LINH	DLH	LAM DONG	DI LINH
DUC HI	DHY	KHANH HOA	NHA TRANG
HIEP KHANH	HXH	THUA THIEN	DANANG
HUE	HUE	THUA THIEN	HUE PHU BAI
KONTUM	KTN	KONTUM	KONTUM
LONG XUYEN	LXN	AN GIANG	LONG XUYEN
HOC HOA	HCH	KIEN TUONG	HOC HOA (GO BAC CHIEN)
NHA TRANG	NHL	KHANH HOA	NHA TRANG

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COL 1	COL 2	COL 3	COL 4
PHAN RANG	PRG	NINH THUAN	PHAN RANG NEW
PHAN THIET	PTH	BINH THUAN	PHAN THIET
PHU CAT	PCT	BINH DINH	QUI NHON
PHU CUONG	PCG	BINH DUONG	THU DAU MOT
PHU BAI	PBI	THUA THIEN	HUE
PHUOC BINH	PBH	PHUOC LONG	SONG BE (NUI BARA)
PHUOC VINH	PVH	PHUOC THANH	PHUOC VINH
PHU VINH	PUH	VINH BINH	TRA VINH
PLEIKU	PKU	PLEIKU	PLEIKU NEW
QUANG NGAI	QNI	QUANG NGAI	QUANG NGAI
QUANG TRI	QTI	QUANG TRI	DONG HA
QUI NHON	QNH	BINH DINH	QUI NHON
RACH GIA	RGA	KIEN GIANG	RACH GIA
SOC TRANG	SCT	BA XUYEN	SOC TRANG
SONG BE	SEB	PHUOC LONG	SONG BE (NUI BARA)
SONG MAO	SMO	BINH THUAN	SONG MAO
TAN CANH	TCH	KONTUM	KONTUM
TAN HIEP	THH	DINH TUONG	BEN TRANH
TAY NINH	TNH	TAY NINH	TAY NINH
TRUNG LAP	TRP	BINH DUONG	TRUNG LAP
TUY HOA	TYA	PHU YEN	TUY HOA NAM
VINH LONG	VLG	VINH LONG	
VINH THAIH	VTH	KIEN GIANG	
VUNG TAU	VTA	PHUOC TUY	
		CALBOJIA	
PHNOM PENH	PHN		PHNOM PENH

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COL 1	COL 2	COL 3	COL 4
THAILAND			
BANGKOK	BKK		DON MUANG
CHIANG MAI	CMI		CHIANG MAI
CHAN THA BURI	CTB		CHAN THA BURI
KORAT	KHT		KORAT
TAKHLI	TKI		BAN TAKHLI
UBON	UBN		MUANG UBON
UDORN	UDR		UDORN

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Appendix D

CODE DESIGNATOR SUFFIXES FOR AIR MOVEMENT DESIGNATORS

1. Code Designator for Classification of Traffic. Use one of the following suffixes, as appropriate, in each Air Movement Designator for passenger and cargo traffic:

a. Passenger Traffic Suffixes.

- PT - Authorized or directed military air travel in a temporary duty status.
- PC - Authorized or directed military air travel in a permanent change of station status, accompanied by dependents.
- PU - Authorized or directed military air travel in a permanent change of station status, not accompanied by dependents.
- CL - Emergency leave, civilian (space available).
- DA - Dependents accompanied by principal.
- DU - Dependents not accompanied by principal.
- EL - Emergency leave, military (space required).
- RL - Reemployment leave.
- RE - Reenlistment leave.
- SL - Sick leave.
- RR - Isolated area leave.
- OL - Ordinary leave (military only).
- SA - Miscellaneous space available travel.

Note: Air Movement Designators for the transportation of medical air evacuation (MAE) patients will be prepared in accordance with AFR 160-56.

b. Cargo Traffic Suffixes.

- A - Aircraft parts and equipment, including maintenance parts, engines and maintenance parts, aircraft accessories, aircraft hardware and rubber materials, USAM Technical Order Compliance Kits, aerial delivery equipment, tailored tarpaulins, and miscellaneous aerial equipment.
- B - Construction materials, including paint and related materials; prefabricated buildings; wood and wood products;

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USMACV Directive Number 42 (continued)

- metal and composition materials and their products; commercial hardware and miscellaneous items; cement; asphalt; building maintenance materials, etc.
- C - Chemical Corps items and all other chemicals not covered in other categories.
 - E - Engineer supplies (other than those listed in category B above).
 - F - Fuels and lubricants, including gases, fuel, and lubricating supplies and equipment; and gas generating supplies and equipment, other than noxious gases.
 - G - Printed forms, publications, drawings, etc.
 - H - Radio, radar, and communications equipment; electrical equipment and supplies.
 - K - Government issued clothing and parachutes, including individual clothing, equipment (except arms and chemical supplies), cordage, fabrics, and leather, etc.
 - J - Unaccompanied baggage.
 - M - Medical supplies.
 - N - Ship parts, Navy.
 - S - Office and school supplies and equipment, including: office machines, furniture and stationery, school supplies and equipment, synthetic and special training devices (other than training films), etc.
 - P - Photographic supplies and equipment, including training films.
 - R - Rations and subsistence supplies.
 - T - Household goods.
 - V - Vehicles; machinery; shop and warehouse equipment and supplies, including: special tools and equipment, ground servicing and special purpose vehicles, marine equipment and supplies, and repair and maintenance parts for the above.
 - W - Weapons, ordnance supplies, and ordnance equipment.
 - Y - Personnel services.
 - Z - Human remains.
- c. Mail and Courier Material. (Air Movement Designators not required.)

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USMACV Directive Number 42 (continued)

2. Code Designator for Sponsoring Activity. Use one of the following suffixes, as appropriate, in each Air Movement Designator, to indicate the Department sponsoring the traffic:

a. Department of Defense Traffic.

MV - MACV

NG - MAAG, Vietnam

SG - USASGV

AD - 2nd AIR DIVISION

HS - HSAS

RU - 3rd RRU

DC - OICC/SEA

RD - Advanced Research Projects Agency, JOEG-V, and CDTC - Vietnam

MC - MAAG Cambodia

b. US, other than DOD, traffic:

AM - American Embassy

OM - USOM

IS - USIS

CR - CARE

c. VN Department of Defense traffic:

VMA - ARVN

VNF - VNAF

VN - VNN

d. VN, other than DOD, traffic:

GVN - Government of Vietnam

e. Thailand.

JM - JUSMAG

CF - CJTF 116

RT - Royal Thai Government

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USMACV Directive Number 42 (continued)

Appendix E

FORMAT FOR SUBMISSION OF SPECIAL AIRLIFT REQUESTS (REQUIREMENTS)
(RCS: MACV 20 J4(T))

1. Requests for special airlift must contain the following, regardless of method of transmission employed:

- a. Unit or agency requesting airlift.
- b. Airlift point of origin.
- c. Airlift destination.
- d. Date and time of load availability.
- e. Date required at destination.
- f. Security classification if appropriate.
- g. Priority and justification (see paragraph 2, Section 5). Also indicate, if applicable, code word, nickname, operations order, or movement phase.
- h. Passengers - number and weight.
- i. Baggage - weight and cube.
- j. Material and equipment less vehicles - description, weight, and cube.
- k. Vehicles - weight and cube.
- l. Excessive dimension items - nomenclature, dimension in inches (L x W x H), and weight of any item of material and equipment other than vehicles which measure in excess of 60 inches in any dimension.
- m. Total airlift requirement - weight and cube.
- n. Special instructions and remarks - Indicate if cargo is classified, prohibitive, or restrictive and whether special handling or safeguarding is required. Include information concerning diplomatic clearance and pickup date for return airlift, when applicable.
- o. Contact officers - Name, organization, and telephone numbers of contacts at bases of origin and destination. Indicate contact information for return airlift, when applicable.

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USMACV Directive Number 42 (continued)

Appendix F

ROUTINE AIRLIFT REQUIREMENTS BY USER

ROUTINE AIRLIFT REQUIREMENTS. RCS:MACV 19 J4(T)

MONTH OF _____

FROM	TO	PASSENGERS			TOTAL	CARGO			TOTAL CARGO
		I	II	III	PAX	I	II	III	

MACV Form 18

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ACTIV-AM

Monthly Test Report Number 1 -- Caribou

ANNEX Q -- Ground fire damage to CV-28 aircraft.

1. During the period from 24 September 1962 to 28 February 1963, ten Caribou aircraft were hit by Viet Cong small-arms ground fire; seven of the ten had to be grounded for repair of damage.

2. Locations of hits on the seven grounded aircraft are shown on succeeding pages. A summary of hits follows.

<u>a. Aircraft Nr.</u>	<u>Date hit</u>	<u>Nr. of hits</u>	<u>Days for repair</u>	<u>See pages</u>
61-2387	24 Sep 62	4	4	2 and 3
60-5439	9 Oct 62	1	3	4 and 5
61-2384	14 Nov 62	1	6	6 and 7
61-2391	14 Dec 62	2	7	8 and 9
61-2394	31 Dec 62	3	5	10 and 11
61-2388	3 Feb 63	1	17	12 and 13
60-5430	10 Feb 63	1	11	14 and 15

b. Point of bullet entry:

Bottom of aircraft 8

Right side 4

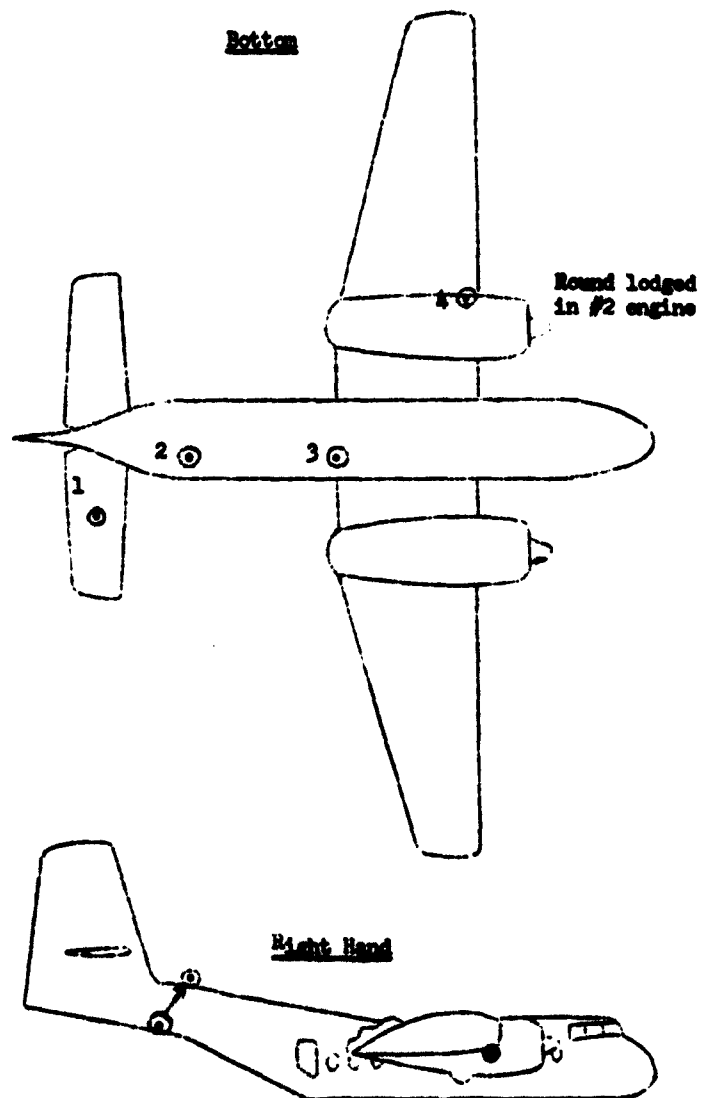
Left side 1

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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2387 (see next page also).



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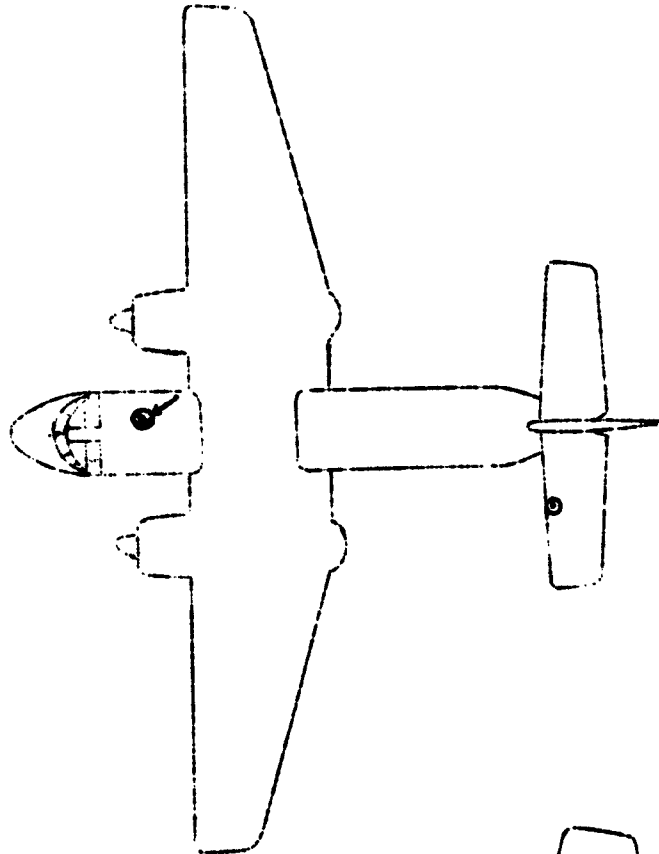
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

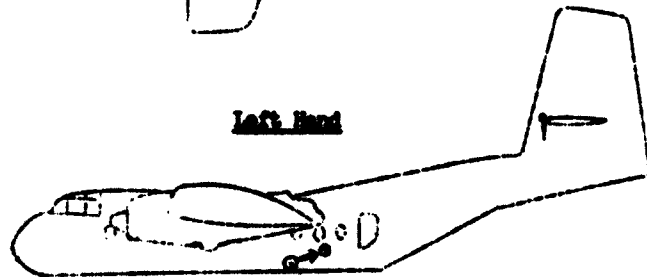
ANNEX Q (continued)

Hits on aircraft number 61-2387 (continued).

Top



Left Side



Page 3
Tab Q

Page 3
Tab Q

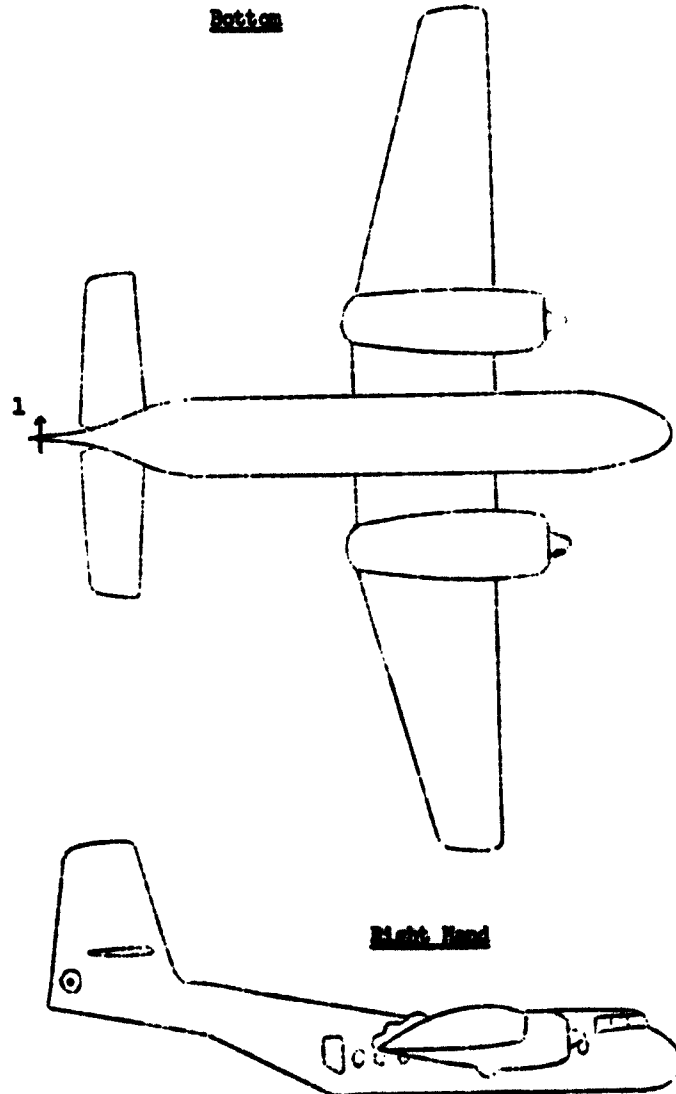
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 60-5439 (see next page also).



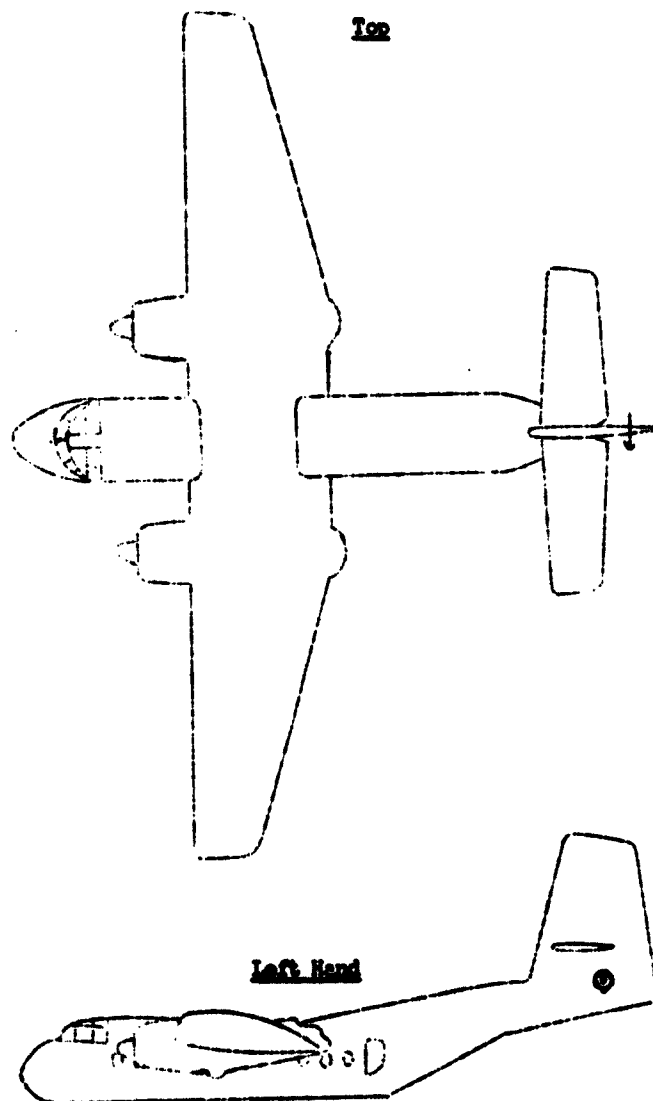
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 60-5439 (continued)



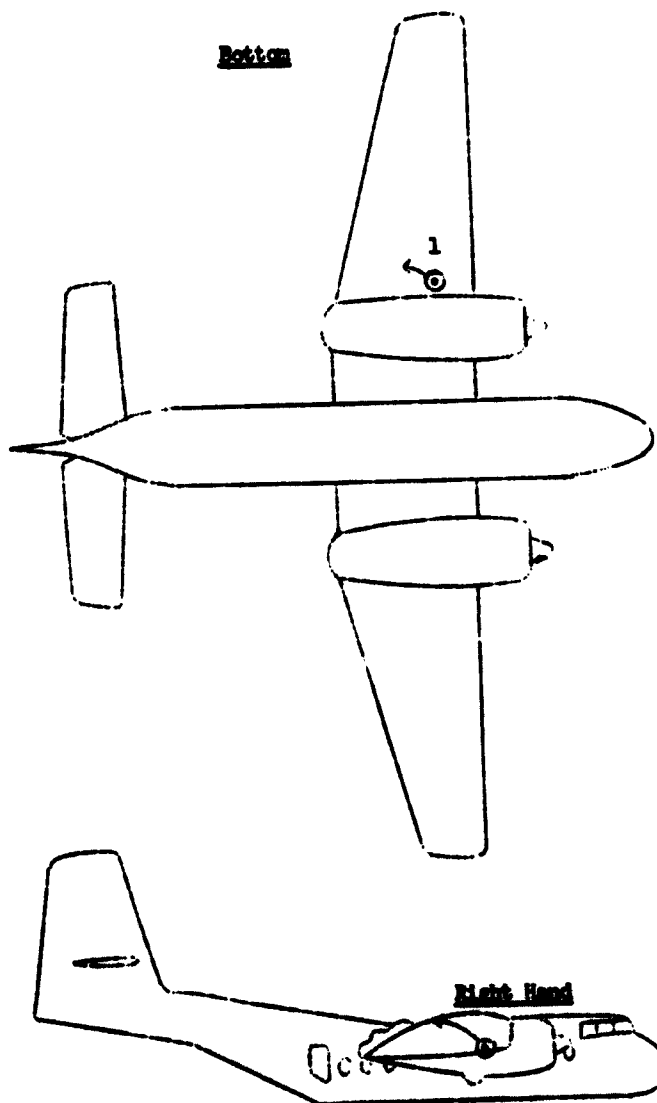
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2384 (see next page also)



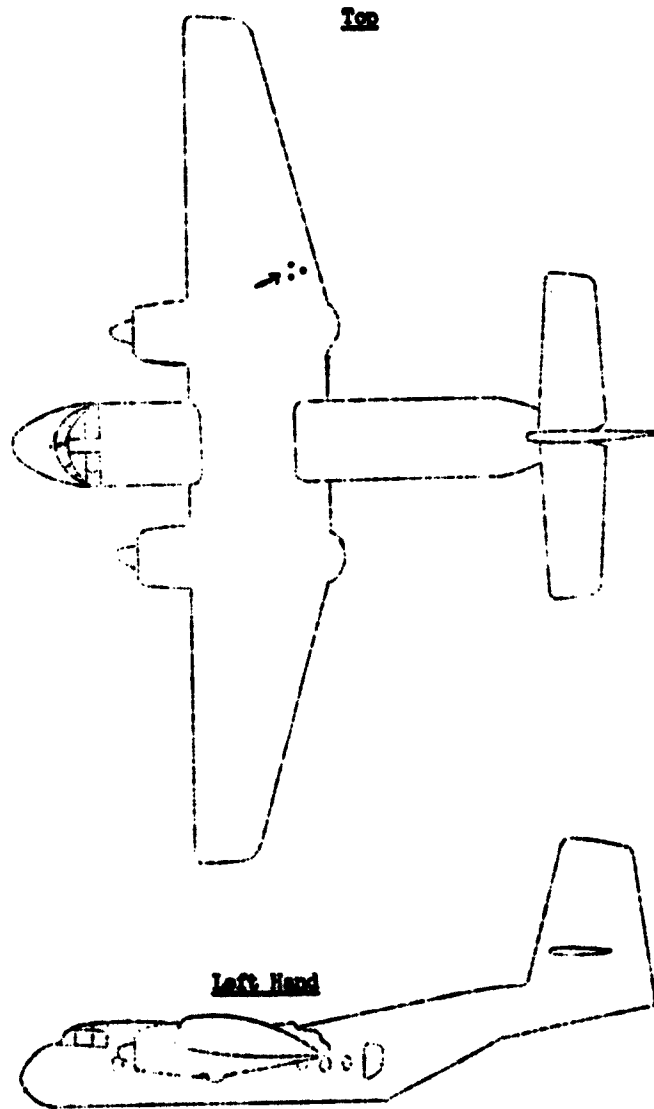
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2384 (continued).



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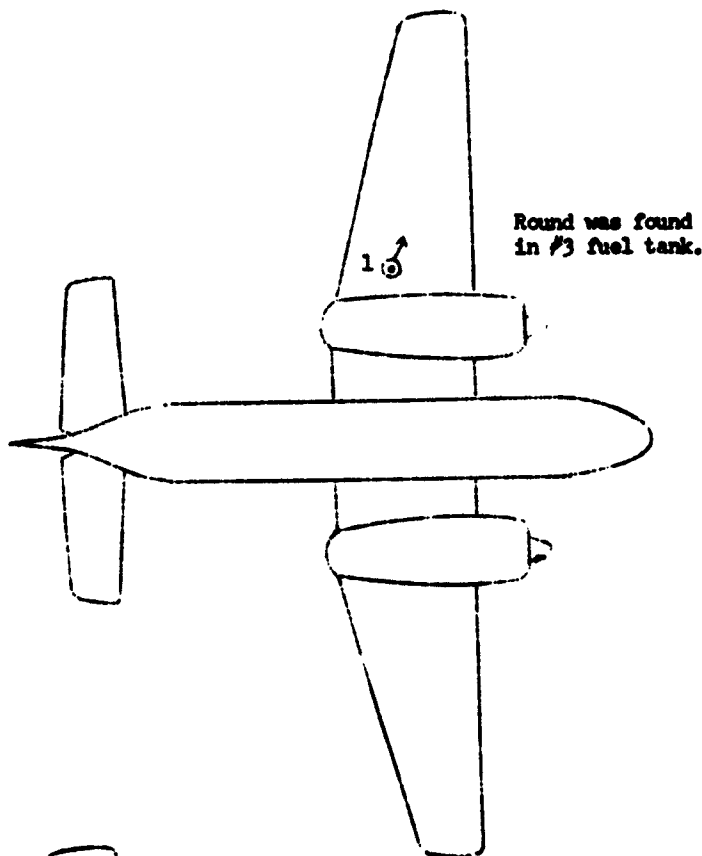
ACTIV-AM

Monthly Test Report Number 1 -- Caribou

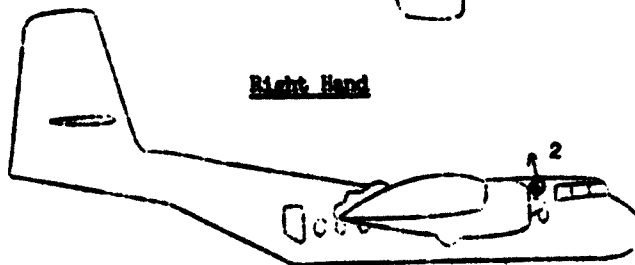
ANNEX Q (continued)

Hits on aircraft number 61-2391 (see next page also).

Bottom



Right Hand



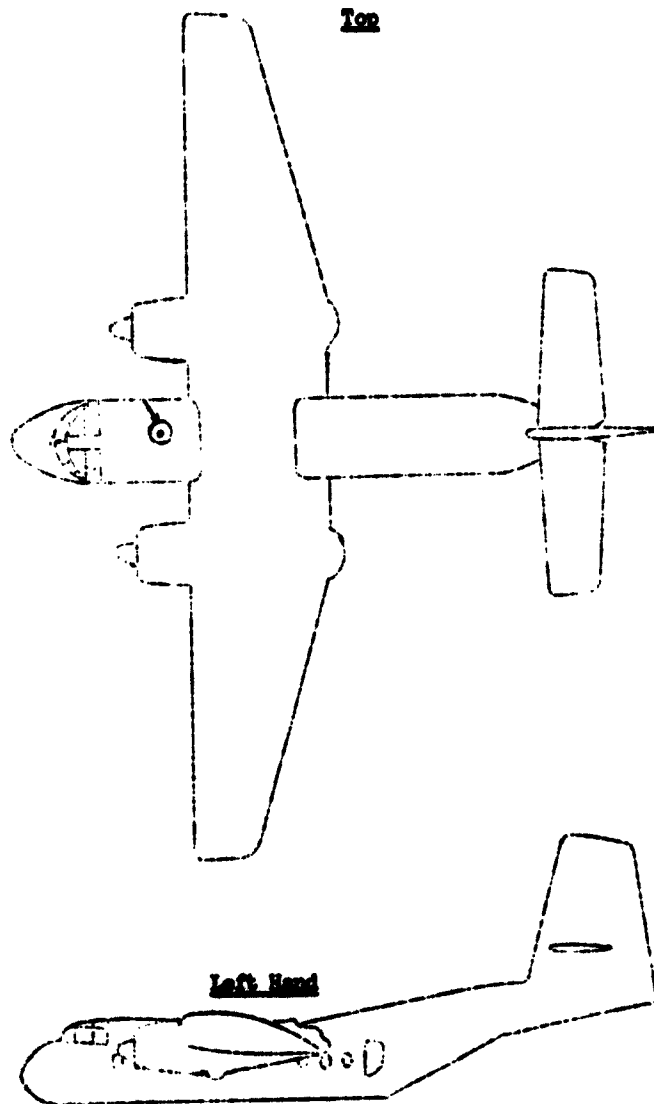
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q

Hits on aircraft number 61-2391 (continued).



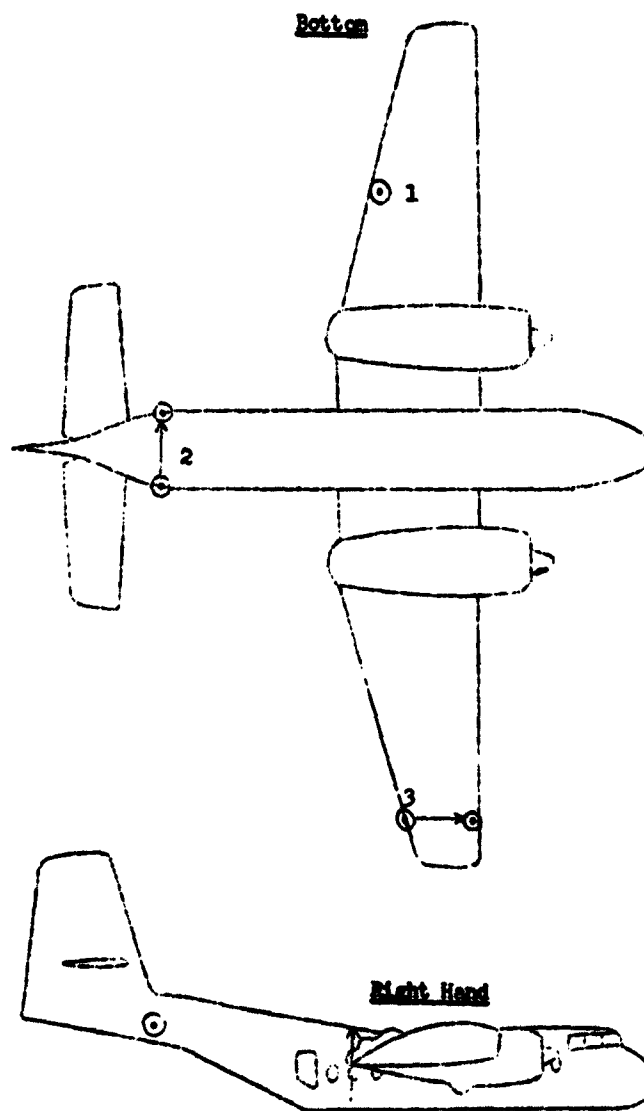
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2394 (see next page also).

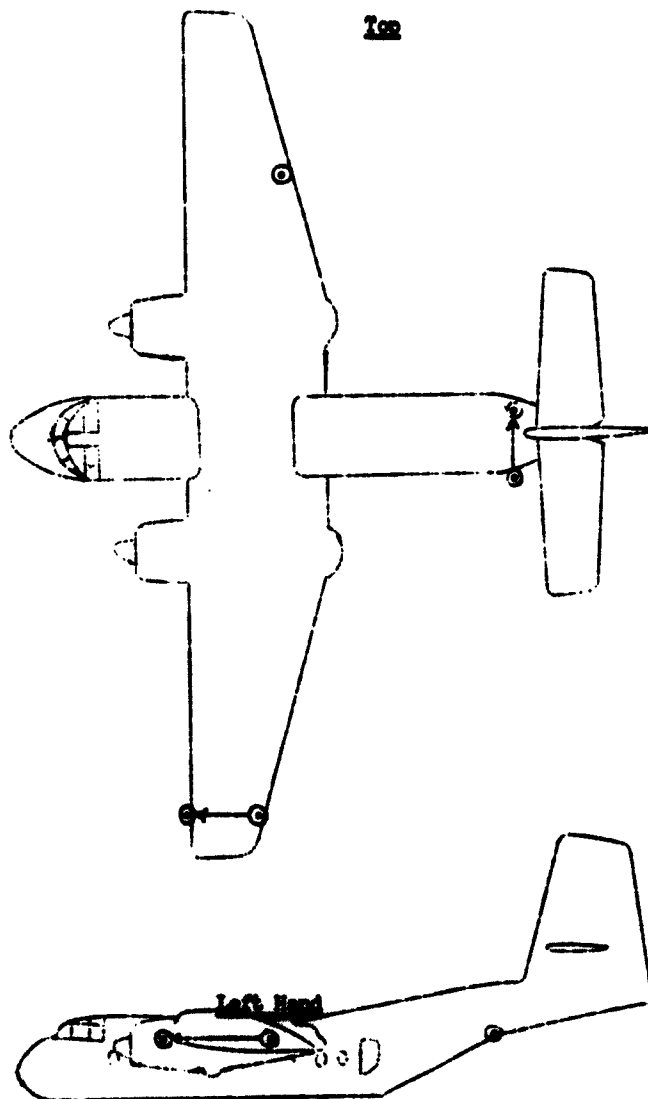


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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2394 (continued).



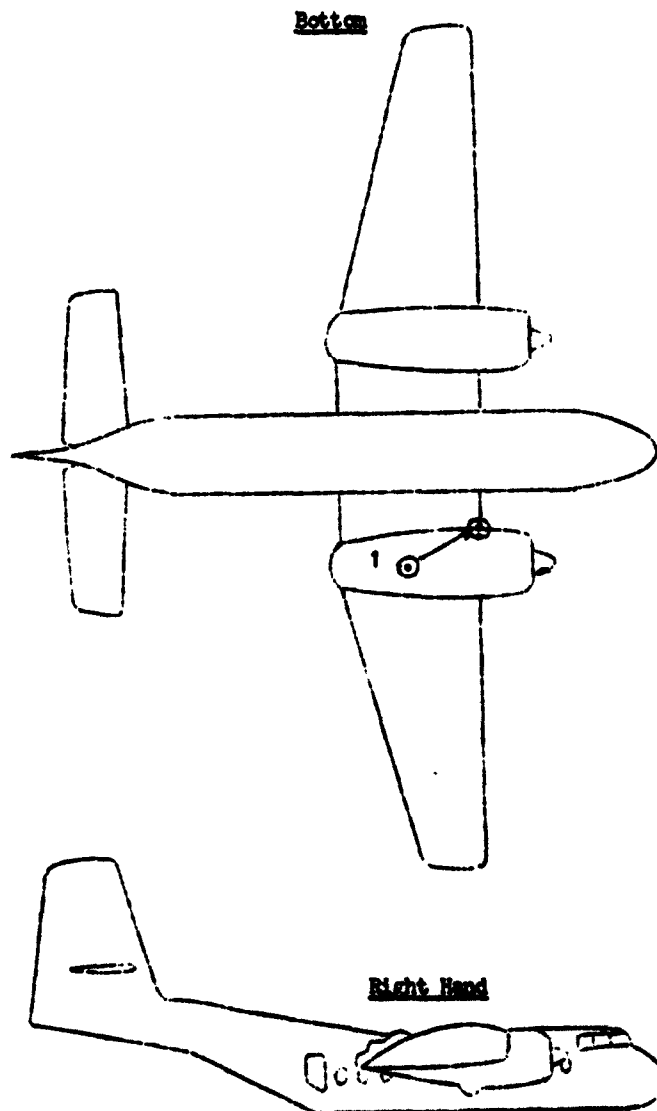
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2388 (see next page also).

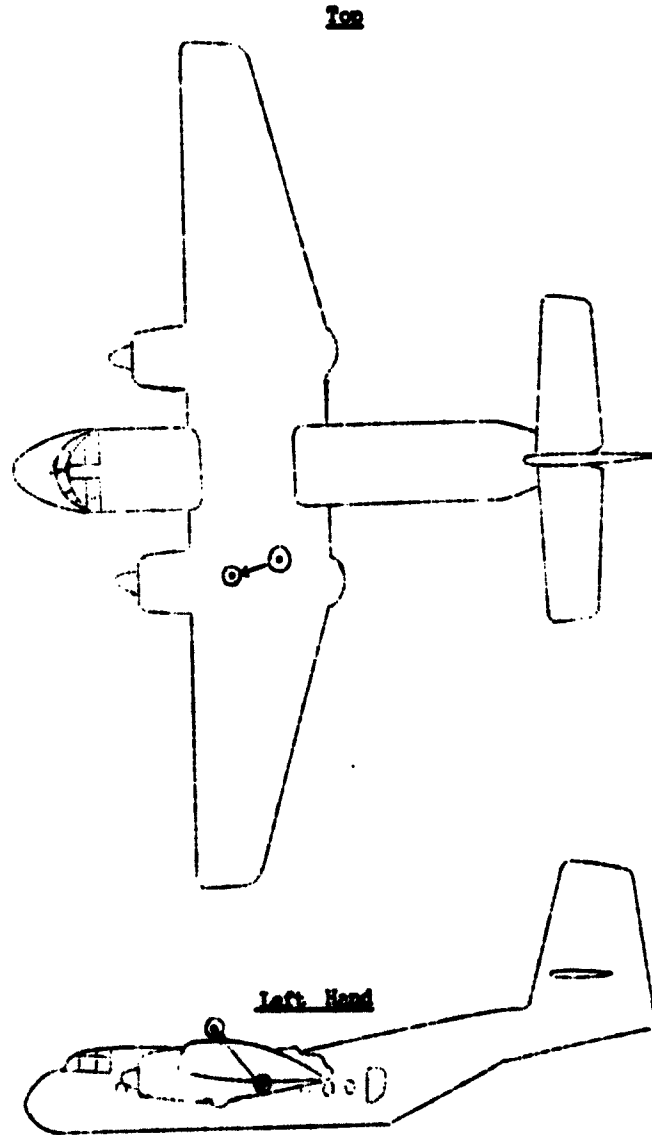


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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 61-2386 (continued).

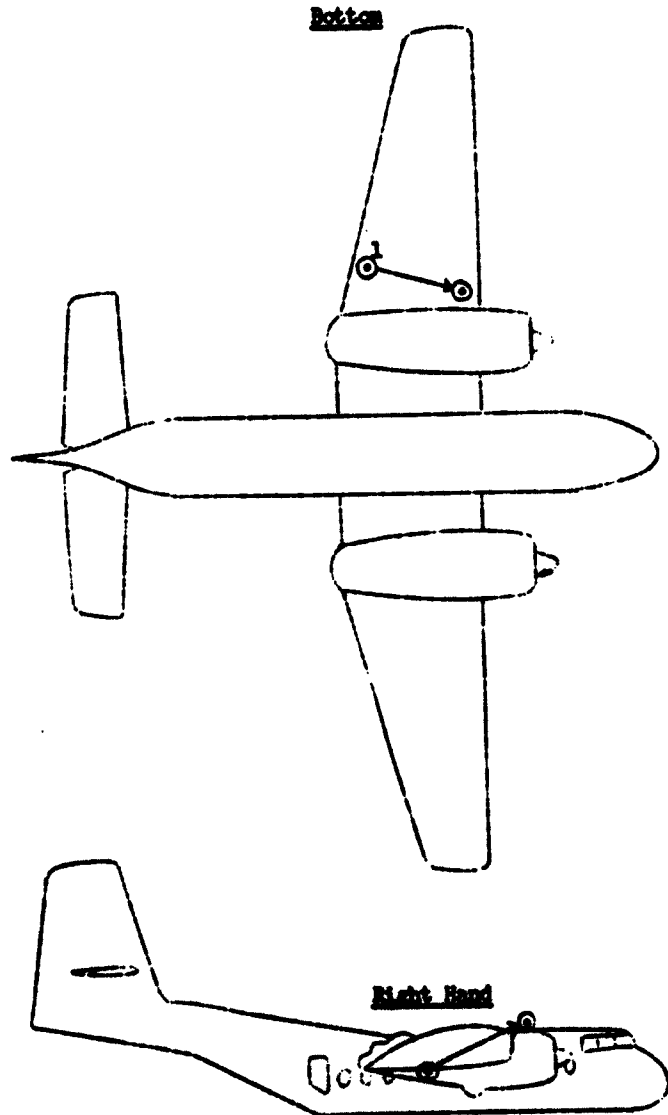


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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX Q (continued)

Hits on aircraft number 60-5430 (see next page also).



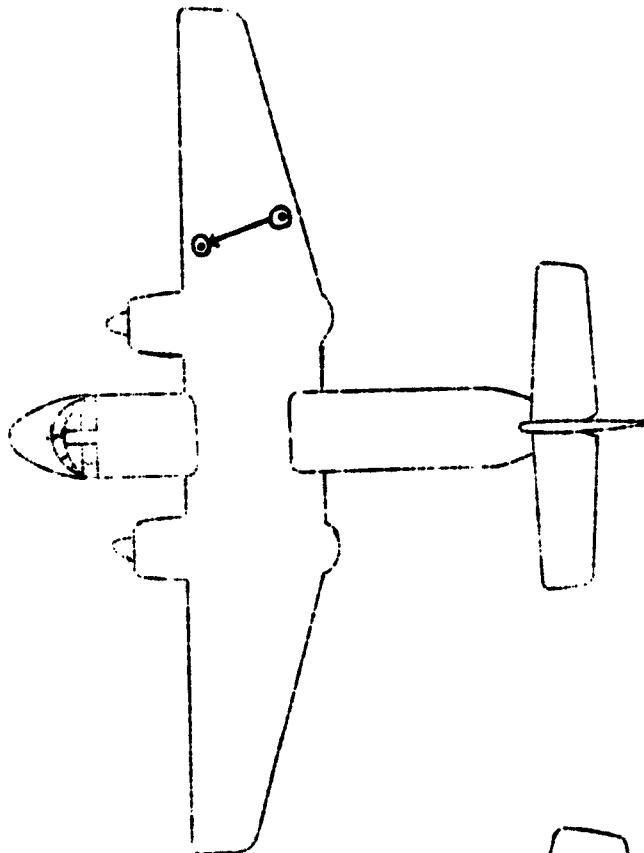
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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

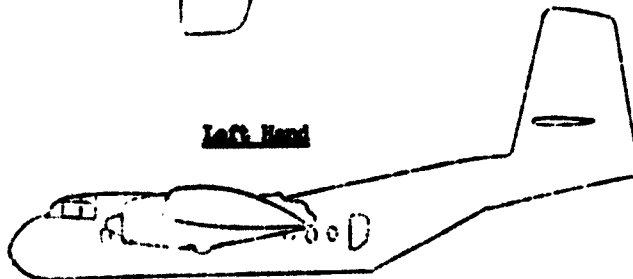
ANNEX Q (continued)

Hits on aircraft number 60-5430 (continued).

Top



Left Hand



ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANNEX R -- Viet Cong instructions for firing at aircraft.

1. The attached document (eight pages) is a translation of Viet Cong instructions on delivery of antiaircraft fires with infantry weapons.

2. The Vietnamese security classification "BT" is equal to US CONFIDENTIAL.

Tab R

Tab R

KIN

Nr. 54/25Y

REFERENCE DOCUMENT

FOR ANTI - AIRCRAFT FIRE WITH INFANTRY WEAPONS

###

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 organization 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 $0/L$.
2. If the tail appears to be under the half of the wing next to the fuselage, the target size is $1/L$.
3. If the tail appears to be over the half of the wing next to the fuselage, the target size is $2/L$.
4. If the tail appears to be at the tip of the wing, the target size is $3/L$.
5. When the entire fuselage can be seen, the target size is $4/L$.

KIN

KIN

KIN

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 air plane flies at a speed of 200km/h and from 150 to 200m altitude).

At that distance, the fire power of rifles, AR's and MG's is very efficient. Example: For a 7.9mm (German) rifle, the muzzle velocity is 600m/hour (sic) or 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 laid in zigzag. The fuselage also contains bombs and the tail is for directional guidance. So 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

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

$$\text{OR } \frac{55\text{m/second} \times 0.427}{13} = 1 \frac{3}{4} \quad \text{fuselage (23:10m lead)}$$

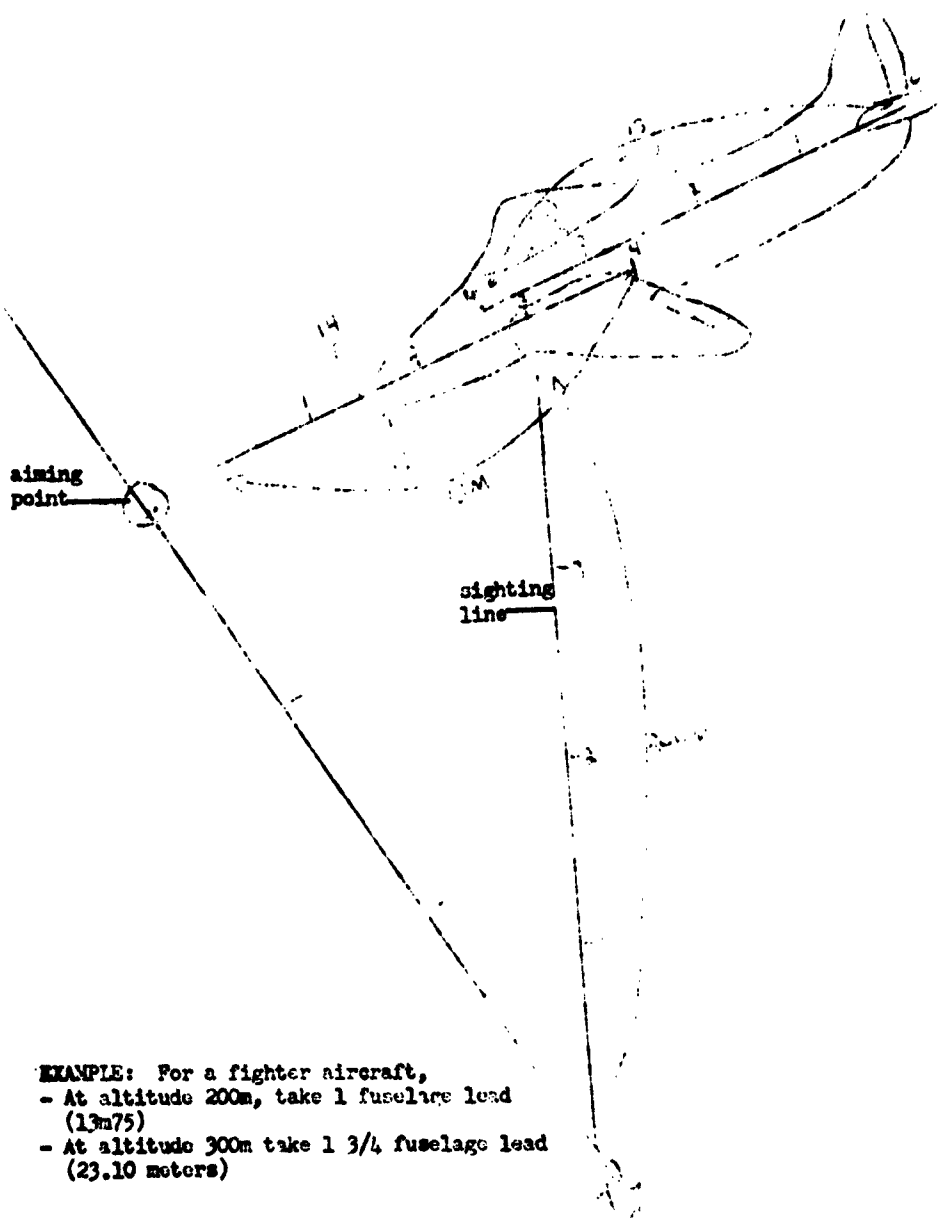
$$\text{When the aircraft is 200m away, the formula will be } = \frac{55\text{m/s} \times 0.25}{13} = 1 \text{ fuselage (13m 75 lead)}$$

The latter formula can still be used when the aircraft altitude is only 150 meters or less.

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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:

$$\frac{27m/s \times 0.25}{10} = \frac{8}{10} \text{ of fuselage or } 8m.5$$

$$\text{At 200m distance: } \frac{27m/s \times 0.25}{10} = \frac{7}{10} \text{ or } 6.75m$$

$$\text{At 150m distance; } \frac{27m/s \times 0.25}{10} = \frac{6}{10} \text{ or } 5.94m$$

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 mauled 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

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This way, all the bullets will hit the aircraft and the landing troops in spite of range spread.

firepower should be concentrated to destroy the aircraft one by one. Only switch to another after 1 minute of fire. Usually, the last or the 2nd aircraft carries the commanders and should be downed at any cost.

C. How to fire at aircraft 50m above the ground

Fuselage length: 18m
Speed at 50m: 20 to 25km/h or 7m/second
So, at 400m distance, the lead will be:

$$7\text{m/second} \times 0.55 = 3.83\text{m}$$

The gunner should aim at the aircraft nose and open fire. This way the bullets hit 4 meters behind.

Lead at 100m distance:

$$7\text{m/second} \times 0.42 = 2.94\text{ meters}$$

The gunner should open fire when the aircraft nose fully reaches the sight of his weapon in order to hit 4 meters behind the aircraft nose

Lead at 200m distance:

$$7\text{m/second} \times 0.25 = 1.75\text{m}$$

The gunner should open fire when the aircraft nose just passes over the sight and the bullets will hit 3.5 meters behind the nose.

Lead at 100m distance:

$$7\text{m/second} \times 0.13 = 1.75\text{ meter}$$

The gunner should open fire when the aircraft nose passes the sight of 3 sight widths.

Remarks

Above are only applied for aircraft a 90° angle. When it flies to the gun direction, the gunner should aim at its nose with the proper estimated range and open fire.

D. How to fire at an helicopter flying 100m/h

Average length of aircraft: 18 meters
Speed per seconds: 27 meters

Lead at 300m distance:

$$27\text{m/second} \times 0.42 = 11.34\text{ meters (or half a fuselage)}$$

The bullets will hit about 2m behind the nose.

Lead at 200m distance:

$$27\text{m/second} \times 0.25 = 6.75\text{ meter or } 1/3\text{ of fuselage.}$$

The type of helicopter with 1 engine has the same speed as the 2 engine helicopter. It is only a little smaller, and we should fire at them at closer range.

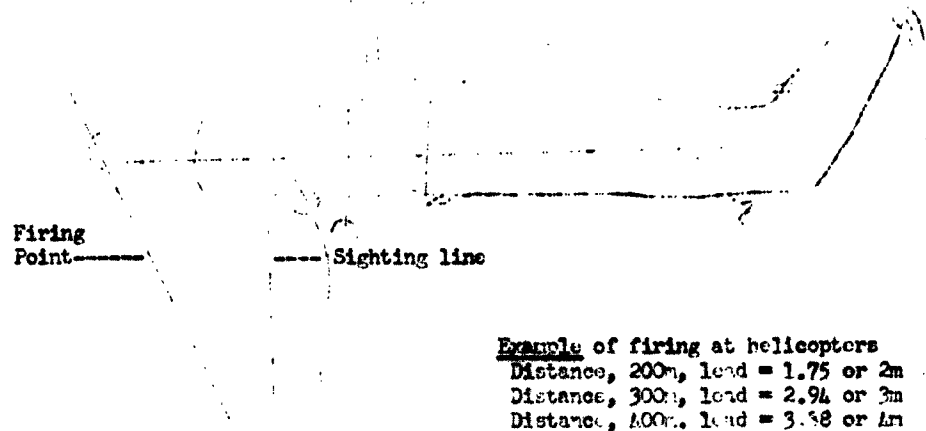
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At present, due to the lack of anti-aircraft sights we must take appropriate leads against each type of aircraft.

As we know, firing at a target in the air is more difficult than on the ground because it is a target of opportunity and requires lead fire.



V. ANTI-AIRCRAFT FIRING ORGANIZATION AND FORMATIONS

Only the rifles, AR's and LG's can be used against the aircraft.
(over 100m range, do not use SIG)

If available, tripods should be used with regular ball ammo to enable the gunner to observe the trajectory.

If the unit is a separate platoon, set up each squad as an anti-aircraft section.

If the unit is a company, set up the platoons as anti-aircraft section.

The "L" shape formation will be employed against the aircraft.

If a platoon has 2 AR's at the ends and 1 at the elbow of the L and the rifles between them, it will create a heavy barrage.

Against the aircraft, each company should be deployed into 3 platoons, forming a triangle, and each platoon should be deployed in L shape formation in order to facilitate the observation and command.

Each side of a squad formation is about 20m.

Each side of a platoon formation is about 30 to 35m.

The 3 platoons of a company's formation will be deployed within a diameter of 120 to 150m.

However, the platoon's formation is more convenient for the anti-aircraft command than the company's.

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VI. ANTI-AIRCRAFT COMMAND

Based on the weapons on hand and the training of the troops, it is impossible to compute and take different leads at a same time in a short period. Therefore, the unit only needs 1 single lead and 1 single fire angle. From different positions, the lead and angle of fire of each man is different.

The commander must:

- Determine the zone and time of fire for his unit.
- Determine the direction of the aircraft, the lead to be taken and the number of rounds to be fired by each man each time.
- If the aircraft makes a second pass, order the troops to fire again if they are ready. If not, wait for the 3rd pass.

REMARKS

If the troops are not prepared and cannot fire at the same time, they will have little chance to down the aircraft. On the contrary, they will waste the ammunition. In reality, we are fighting a guerrilla war, our firepower is limited and cannot meet the requirements.

Fire command.....direction of fire.....lead..suspected point.

Every time a fire cannot be observed, the commander should change the direction of fire. He should also see if the proper lead has been taken for the estimated distance. Error in lead should not exceed 50m because with the aircraft speed at 200km/h, it cannot be hit with such an error.

If tracers are fired and seen ahead of the aircraft, this means that we are firing too far ahead of the target because the bullets are always faster than our reactions.

When we see the tracers at the middle or rear of the fuselage, this means that we take the proper lead for the distance and aircraft speed. In this circumstance, adjust the line of sight and continue the fire.

VII. METHOD OF FIRING AT AIRCRAFT WITH INFANTRY WEAPONS

- a) Aircraft on the ground: Take advantage of the terrain to select the best position for firing. Avoid firing in a standing position.
- b) Aircraft in flight: Lay the weapons (rifle, AR or MG) on tree branches for support.

Employment of U.S. machine gun

- 1) Build a circular MG emplacement to have the MG raised by 45°. Do not use the traverse mechanism because it is too slow.
- 2) Lay the MG on a tree branch and fire. The assistant gunner should turn around with the weapon to feed the ammunition and keep the gun from jumping up and down.

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When using an artificial crutch to support the MG, the crutch should be tightly built to avoid shaking of the weapons and the rounds dispersion.

When firing at an aircraft in flight it is most necessary to lean against something in order to have an accurate sight at the moving target. In other words, the gunner must first have a steady position before he could effectively fire at a flying aircraft.

e) Methods of fires:

Same as the seven basic methods learned. However, when firing at an aircraft, we should remember 2 following factors:

1) Line of sight

Even when turning the weapon, the basic line of sight should not be moved, and at the same time, a proper lead should be taken. Frequent exercises will make a habit of the coordination of the eyes, arms and shoulder movements.

2) Squeezing

Only squeeze the trigger when the above requirements are met. The trigger squeezing is the final action of a combined work. But actually, when we fire, they only constitute a single action conducted at the same time.

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ACTIV-AM
Monthly Test Report Number 1 -- Caribou

ANTEX S -- Distribution of report.

<u>Addressees</u>	<u>Nr. of copies</u>
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Commanding General, US Continental Army Command	5
Commanding General, US Army Materiel Command	5
Commanding General, 11th Air Assault Division	5
Commanding General, US Army Support Group, Vietnam	20
Chief, Military Assistance Advisory Group, Vietnam (attention Chief, Army Section)	20
Assistant Chief of Staff for Force Development, Department of the Army	10
Deputy Chief of Staff for Logistics, Department of the Army	5
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Chief of Research and Development, Department of the Army	5
ACTIV Liaison Officer, OCSFOR, Department of the Army	5