

UNCLASSIFIED

AD NUMBER

AD347543

CLASSIFICATION CHANGES

TO: unclassified

FROM: confidential

LIMITATION CHANGES

TO:

Approved for public release, distribution unlimited

FROM:

Controlling DoD Organization: Assistant Chief of Staff for Force Development [Army], Washington, DC 20310.

AUTHORITY

31 Dec 1972 per GDS document marking;
Asst. Chief of Staff for Force Dev [Army]
ltr dtd 13 Sep 1973

THIS PAGE IS UNCLASSIFIED

GENERAL DECLASSIFICATION SCHEDULE

IN ACCORDANCE WITH
DOD 5200.1-R & EXECUTIVE ORDER 11652

THIS DOCUMENT IS:

CLASSIFIED BY

Subject to General Declassification Schedule of
Executive Order 11652-Automatically Downgraded at
2 Years Intervals- **DECLASSIFIED ON DECEMBER 31, 1972**

BY

Defense Documentation Center

Defense Supply Agency

Washington, D.C.

DD FORM 129

UNCLASSIFIED

AD

347543

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION ALEXANDRIA VIRGINIA



Best Available Copy

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

NOTICE:

THIS DOCUMENT CONTAINS INFORMATION
AFFECTING THE NATIONAL DEFENSE OF
THE UNITED STATES WITHIN THE MEAN-
ING OF THE ESPIONAGE LAWS, TITLE 18,
U.S.C., SECTIONS 793 and 794. THE
TRANSMISSION OR THE REVELATION OF
ITS CONTENTS IN ANY MANNER TO AN
UNAUTHORIZED PERSON IS PROHIBITED
BY LAW.

CONFIDENTIAL



AD No. 347543
DDC FILE COPY

0 ✓

DDC
FEB 28 1964

ARMY CONCEPT TEAM IN VIETNAM
APO 143, SAN FRANCISCO, CALIFORNIA

CONFIDENTIAL

CONFIDENTIAL

ARMY CONCEPT TEAM IN VIETNAM
APC 143, San Francisco, California

ACTIV-GM

6
Mechanized Rifle Troop
(M13) (U).

INTERIM TEST REPORT NUMBER 8

9
1-30 September 1963.

1
FEB 20 1964

This page is UNCLASSIFIED
when separated from
classified inclosures

1

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL

ARMY CONCEPT TEAM IN VIETNAM
APO 143, San Francisco, California

ACTIV-QM

17 November 1963

SUBJECT: Interim Test Report Number 8 - Mechanized Rifle
Troop (1-30 September 1963) (U)

TO: See Annex C

1. 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 (to CGUSACDC), subject: "Plan of Test, Mechanized Rifle Troop (M113)," 28 November 1962.

c. ACTIV letter (to CINCPAC through COMUSMACV), subject: "Summary of Test Plan for Mechanized Rifle Troop (M113)," 3 December 1962.

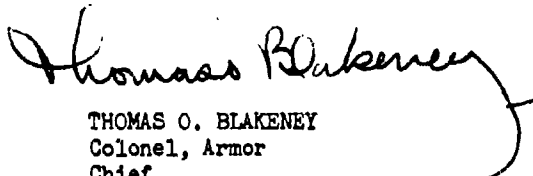
d. CINCPAC message, subject: "Proposal for US Army Test in Vietnam," DTG 2202216Z (January 1963).

e. Monthly Test Reports Numbers 1-7, Mechanized Rifle Troop (M113) (U), Army Concept Team In Vietnam.

2. Transmitted herewith is the eighth interim report of the ACTIV test of the Mechanized Rifle Troop (M113) in counterinsurgency operations in Vietnam.

3. Commencing with the preceding report, and until the final report is published, M113 test reports are called "interim", rather than "monthly" reports. They may or may not be issued on a monthly basis, depending upon operational developments.

Incl
as


THOMAS O. BLAKENEY
Colonel, Armor
Chief

111

CONFIDENTIAL

CONFIDENTIAL

iv

CONFIDENTIAL

CONTENTS

I	SUMMARY	1
II	OPERATION IN THE VICINITY OF GO CONG (IV CORPS)- 9 September 1963	2
III	OPERATION IN THE VICINITY OF GO DEN (LONG AN PROVINCE)- 16 September 1963	16
IV	CANAL CROSSING TECHNIQUES	28
V	A - FRAME PUSH BAR	32
	ANNEX A - TERRAIN IN VIETNAM	38
	ANNEX B - TWX: ARMOR DEFEATING GRENADE	56
	ANNEX C - DISTRIBUTION	60

CONFIDENTIAL

I (C) SUMMARY

Mechanized rifle troops in three of the four ARVN Corps continued to perform route and area security missions, as reported for the preceding period. Increased activity in mechanized operations was noted only in the area of IV Corps in which two actions of significance were observed. Narrative reports of these are contained in Sections II and III of this report.

In addition to the narratives of M113 operations, this report contains a discussion of developments in canal crossing techniques (~~Section IV~~); a photographic record of the use of an A-frame "push bar" to assist in canal crossing, (~~Section V~~), and a description of terrain in Vietnam. (~~Annex A~~).

A description of test units, discussion of test objectives, and operational plan of test are contained in previous test reports.

The test is considered to be 78 percent complete.

Increased insurgent attention to possible means of defeating armor is reflected in an apparent build-up of antitank weapons in the Delta area. Increased numbers of 57mm recoilless rifles have been noted as well as armor piercing caliber .30 ammunition and a larger number of automatic weapons. No hull penetrations by caliber .30 AP ammunition has been noted to date; however, partial penetrations of 1 3/4-inches have been recorded. Insurgent tactics of sweeping the top of the M113s with automatic weapons fire reflect recognition of the firepower of the M113 and efforts toward suppression.

Another indication of the insurgent effort to achieve equality in engagements with armor is a recently introduced armor-defeating hand grenade (see Annex B).

1
I - Summary

CONFIDENTIAL

CONFIDENTIAL

**II (C)
OPERATION.... GO CONG**

OPERATION IN THE VICINITY OF GO CONG (IV CORPS) - 9 September 1963

A. (U) INTRODUCTION

The account of this operation was derived from interviews with men who participated in it rather than from personal observation of the action by ACTIV evaluators. Although this is a departure from the practice of reporting only information obtained by personal observation, this action is considered of such significance, both in terms of error and effectiveness, that it merits inclusion in this interim report.

B. (C) NARRATIVE

The 4th Mechanized Troop, 2d Armored Cavalry Squadron was alerted to move at 0530, 9 Sep 1963. A Civil Guard company had made contact with a large force of VC in the vicinity of GO CONG, and 4th Troop, 2d Squadron was given a reinforcing mission. The troop departed MY THO at 0700 and arrived at the CHO GAO ferry at 0720. Here a Civil Guard company was attached. By 0755, the troop, plus attachments, had crossed on the ferry. The troop proceeded east toward GO CONG.

Four km east of CHO GOA the troop encountered a large dirt road block. Twelve road blocks were encountered in the next 4 km. The M113s were able to run over all of these, but the speed of the column was considerably reduced.

At 0930, the troop halted at a location 9 km west of GO CONG while the troop commander proceeded to GO CONG to contact the 12th Regiment headquarters. Although it was only 4 km from where the Civil Guard company was in contact, this headquarters was not abreast of the situation and was also unaware that the mechanized troop had been sent to reinforce the unit in contact.

By 1000, an operation was devised and an order issued to the troop commander by the 12th Regiment. At 1030, 4th Troop, 2d Squadron moved into GO CONG, and by 1045 it was moving to the northeast to contact.

CONFIDENTIAL

CONFIDENTIAL

At 1110 an estimated platoon of VC was sighted. These men were running in a rice paddy and the troop left the road in pursuit. While the troop was on the road, one mine was detonated near the lead M113 and another under it. The lead M113 also was hit by a 57mm RR round on the lower right corner of the engine compartment door. The platoon leader reported that the carrier was still operational, but as it moved off the road the vehicle caught fire and the crew was forced to evacuate. All of these men were burned, but none were killed. The carrier later exploded. The cause of the fire was determined to be a mine fragment penetration of the gas tank.

The second carrier was hit in the left side by a 57mm HEAT round. (See Figures 13 and 14.) This round penetrated the carrier and killed one man.

The troop deployed into a horseshoe formation, receiving fire from the right and left flanks and from the front. The fire was from small arms, automatic weapons and 57mm RRs. The Civil Guard companies deployed to the tree-line of the left flank, supported by fire from the M113 troop. Five more hits were received from 57mm RRs.

At this time the troop redeployed and oriented itself on the left front (NE) side of the objective. The troop commander located the 57mm emplacement in this area and brought maximum fire to bear on it, routing the VC located there. The troop then assaulted to the front of the objective, moving onto and through the positions. The Civil Guard and dismounted rifleman cleared the overrun positions.

An L-19 spotter plane observed VC running east at XS 884 493 (see Figure 1). The troop took these VC under fire and an air strike was called. The troop fire pinned the VC down and prevented them from either running or firing at the aircraft. After the strike, the troop assaulted, catching the VC in the open field.

At the time of the assault, the main body of VC was moving toward the east. The troop did not pursue them, but stayed in the area of the assault, searching for weapons and bodies. The L-19 called air strikes on the estimated 200 VC fleeing the area.

Although the rear elements of the VC column were in sight and the terrain was ideal for M113s, the troop commander was ordered to hold this position. At 1515 he was told that an infantry battalion was being moved in and that it was proceeding east from a position 3 km south of the troop's location.

The troop remained at this location and at 1700 was resupplied with ammunition. It was then ordered to attack to the east to seize 3 objectives.

The first objective was cleared by 1815, and the troop deployed into an open field. At this time the L-19 reported one company of VC moving to the

CONFIDENTIAL

CONFIDENTIAL

SE carrying litters. Another 50 VC could be observed running 2 km to the south. At 1845, while the VC were still in sight, the order was given to withdraw to the vicinity of the destroyed M113 and secure the area. This order was complied with.

The following morning the troop secured the same area while the press and VIPs inspected it. It was later determined that the main body of VC spent the night only 4 km from this location (XS 915 488) and were still vulnerable to aggressive action.

The troop remained in the same area all day and then departed for MY THO, arriving at 1830.

C. (C) OBSERVATIONS

1. Valuable time was lost in the initial employment of 4th Troop, 2d Squadron because the 12th Regiment was unaware that the troop was to be employed.

2. In a situation of this type either the ground commander should be able to use his initiative or the CP should be in a position to observe the action. On two different occasions the troop could have had a major success. The VC were caught in the open rice paddies with no place to hide. Instead of an assault that would have annihilated the VC, the orders were in one case to halt and in another to withdraw.

3. The 4th Troop commander is very aggressive and when allowed by the CP will not hesitate to close with the enemy. When ordered to withdraw and regroup after the M113 was destroyed, he informed the CP that he had to assault.

4. The confusion and time wasted while the mechanized rifle troop commander tried to get permission to assault allowed the VC to make a total of seven 57mm hits on the halted M113s. Had the assault been immediately and aggressively launched, the VC would have been unable to employ their weapons effectively.

5. The total destruction of the insurgent force could, and should have been accomplished. Failure to maintain contact allowed the fleeing force to regroup and rest overnight at a location less than 4000 meters from the site of the engagement. Contact once gained must be retained.

6. The value of the M113 as an assault vehicle was proven here. One mechanized troop followed by 2 companies of Civil Guard succeeded in routing a dug in, well armed VC force estimated at over 200 men.

D. (C) RESULTS

CONFIDENTIAL

CONFIDENTIAL

ARVN PERSONNEL

KIA - 11
WIA - 25

ARVN EQUIPMENT

1 M113 destroyed
1 Cal .50 MG damaged
1 Cal .30 MG damaged
2 BAR destroyed
1 Carbine destroyed

VC PERSONNEL

KIA - 83 (estimated)

VC EQUIPMENT

1 57mm RR
3 BAR
7 Russian carbines
3 US carbines
2 US M-1s
6 MAS 36
1 US SMG
57mm rounds and shell casings
Hand grenades
Mines
Small arms magazines and ammo
Tripod and firing cable of a
57mm believed damaged by an
artillery round.

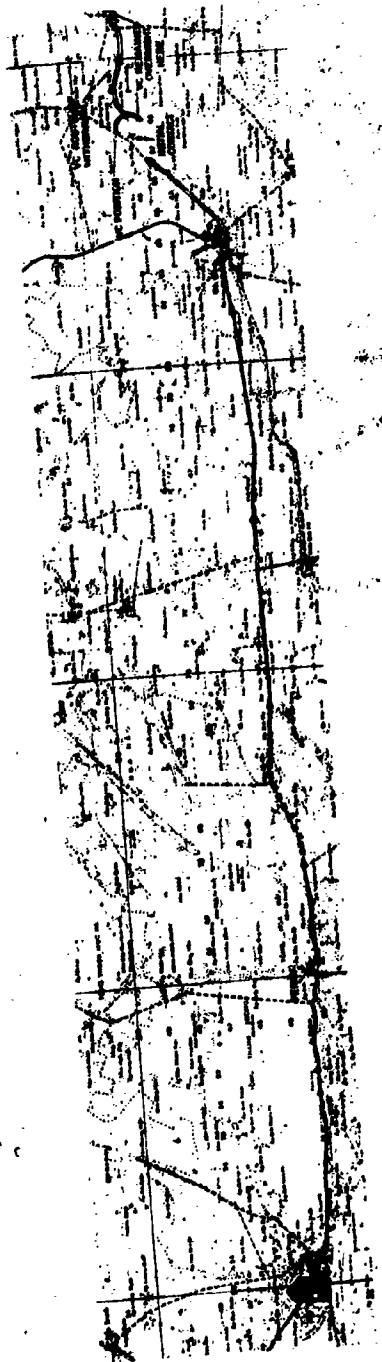
E. (C) ADDENDUM

On 10 September 1963, action was undertaken to recover the M113 destroyed on the GO CONG operation. The same route was used as the one over which the initial approach to contact was made. During the movement to the area a mine detonated under the wrecker resulting in total loss of the vehicle.

This incident further emphasizes the insurgent practice of mining areas or routes previously used by ARVN forces and points up the necessity for selection of alternate and varying routes to a given area.

The probability of mine emplacement on the route was brought to the attention of the ARVN unit commander before he started the recovery operation, and a recommendation was made that an alternate route be selected.

CONFIDENTIAL



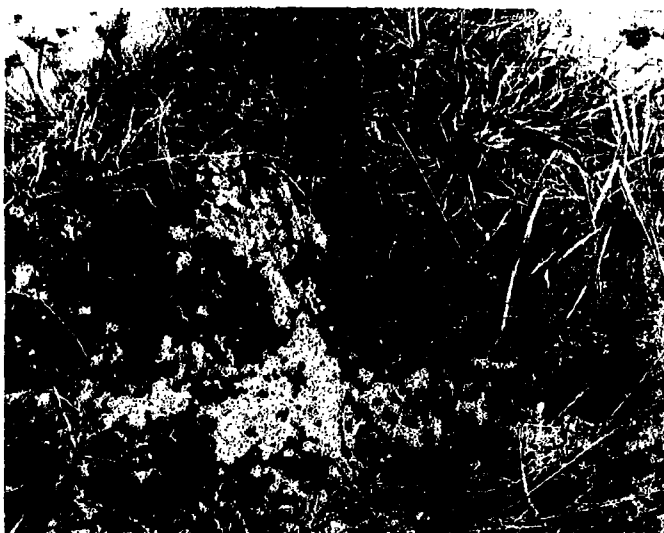


FIGURE 2 (U)
VC foxhole in objective area.



FIGURE 3 (U)
VC foxhole. Note camouflage.



FIGURE 4 (U)
VC 57mm Recoilless Rifle emplacement.



FIGURE 5 (U)
VC hit with cal .50 round.



FIGURE 6 (U)
On the objective. Note M113 tracks.



FIGURE 7 (U)
Note position of M113 tracks and VC bodies. Also note
inundated area over which M113s assaulted.



FIGURE 8 (U)
Side view of Figure 7. Note VC still in his destroyed foxhole.



FIGURE 9 (U)
These 2 VC were in the same foxhole.

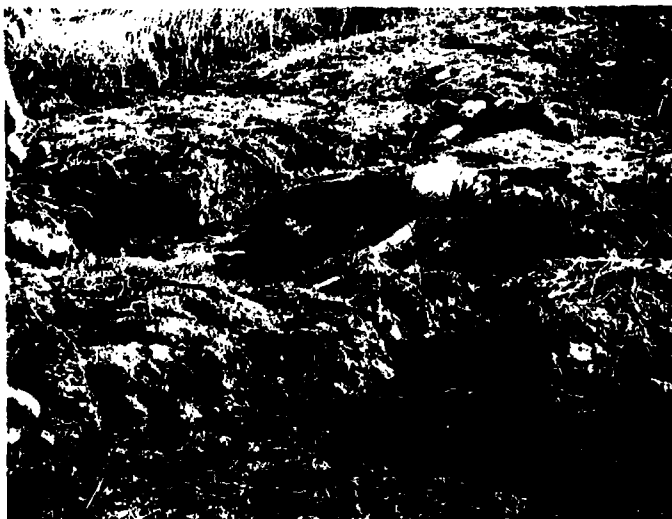


FIGURE 10 (U)
Note mutilation of far VC body - caused by M113 tracks.



FIGURE 11 (U)
Another VC position overrun by M113 APCs.

CONFIDENTIAL



FIGURE 12 (U)
Weapons and equipment captured.

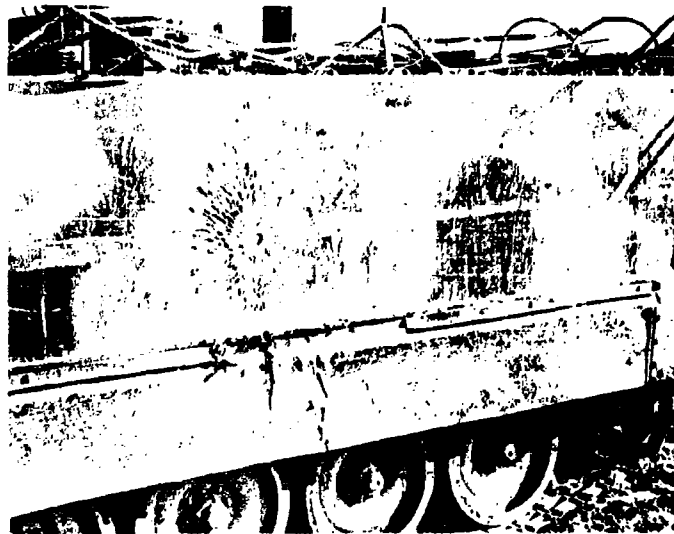


FIGURE 13 (C)
Effect of 57mm HEAT round.

CONFIDENTIAL

CONFIDENTIAL

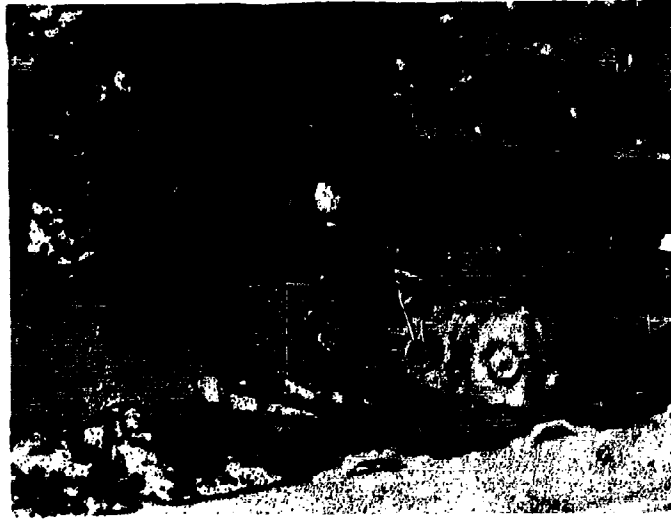


FIGURE 14 (C)
Inside effect of round in Figure 13. Note lack of spalling.



FIGURE 15 (C)
Effect of 57mm round on front slope of M113.

CONFIDENTIAL

CONFIDENTIAL



FIGURE 16 (C)
Effect of 57mm HEAT round.

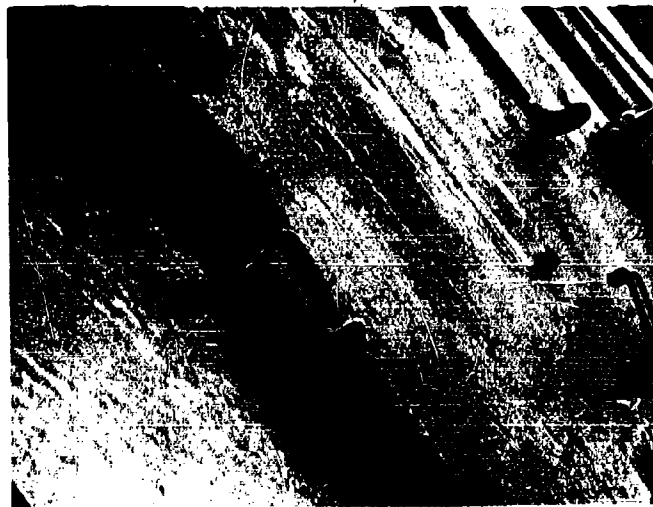


FIGURE 17 (C)
This 57mm round was deflected and did not penetrate the M113.

CONFIDENTIAL

CONFIDENTIAL

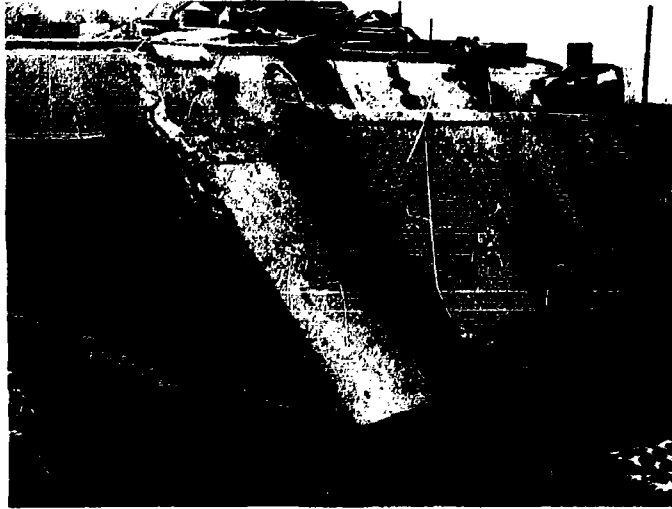


FIGURE 18 (C)
Note effect of this round on track shroud, trim vane,
and headlight assembly.

II - GO ONG

15

CONFIDENTIAL

CONFIDENTIAL

III (C) OPERATION.... GO DEN

OPERATION IN THE VICINITY OF GO DEN (LONG AN PROVINCE)
16 September 1963

A. (C) NARRATIVE

At 0900, 16 September, the 4th Mechanized Rifle Troop, 4th Squadron was ordered to move from its home station at MY THO to the 47th Infantry Regiment CP located at GO DEN, a distance of 40 kilometers. The troop departed MY THO at 0930 and arrived at GO DEN at 1030. There the troop commander was briefed on the operation. The 47th Infantry Regiment, on a planned operation, had struck a large force of VC estimated to be two companies in size. The VC were known to have a mortar, a cal .30 MG, several automatic rifles, and a large number of small arms.

The mechanized troop was ordered to move to the battle area and reinforce the 47th Regiment. The 47th Regiment Ranger Company was attached to the troop for the operation.

At 1100, the troop departed from GO DEN. At 1130 contact was made with the 47th Regiment. The troop commander was given a rapid briefing of the ground situation by the 1st Battalion Commander. The troop came under fire at 1200 while still in column on the road, at coordinates 718716, (see Figure 19). The fire was both automatic and single rounds, mainly from small arms. A general fire fight ensued allowing the commander to make an estimate of the situation.

At approximately 1210 the troop began to receive fire from a 60mm mortar. After 5 rounds had landed, the commander started to redeploy his troop. By 1230 the troop was in the initial positions shown in Figure 20.

At 1330 an assault was launched with 4 M113s and elements of the Ranger Company. The assault was most aggressive on the part of the M113s. They moved directly into the woodline, firing their cal .50 MGs as they moved. The infantry, however, was reluctant to move. They did not take advantage of the shock action of the assaulting carriers to advance, but rather held back until the carriers were into the woodline before advancing.

CONFIDENTIAL

CONFIDENTIAL

At 1400 the 1st Battalion, 47th Infantry arrived and a company-size force began to move into the position held by the M113s. It was later found that the infantry advanced only far enough to pick up the weapons and equipment of the VC killed by the M113s and then remained static.

At 1445 the forces on the west side of the objective were located in the positions shown in Figure 20. It may be noted from this sketch that the enemy positions were flanked by 4 M113s and a large force of Infantry. They were in an ideal position to move down the line of positions and destroy the enemy piecemeal. This, however, was not done.

When the troop commander was asked why another assault was not made, he replied that he would have to wait, as the CP had ordered that the objective be softened up with artillery and air strikes.

At 1705, an M113 was hit by 57mm recoilless rifle fire. The HEAT round penetrated the bow plate (see Figure 23) and damaged the differential housing. However, this carrier was able to move back to a safe area under its own power.

At 1720, a second M113 was hit by a 57mm round. This HEAT round penetrated just below the right forward lifting eye (see Figure 24), damaging the radiator. This M113 was also able to withdraw under its own power.

At 1745, a third carrier was hit with two 57mm rounds. The first round struck a box of cal .50 ammunition on the top deck, exploding it. The second round struck the gun shield penetrating it and wounding the gunner (see Figure 25). This was the only casualty inflicted by the four 57mm hits received.

All three of the carriers hit by 57mm fire had been sitting in an open rice paddy, where they had been since approximately 1400. The distance from the objective to the carriers that were hit varied from 300 to 500 meters.

By 1900, 11 sorties of air strikes had been flown. When the troop commander was asked at this time about an assault, he said that he could not because he had no order, and also another airstrike was on the way.

At 2000, while the 13th air strike was taking place, the troop was ordered to break contact and move to an assembly area 800 meters to the east. The VC were still in the objective area and were still firing at this time.

The southern position of the objective was never overrun. Although there were three battalions of infantry available to completely cut off the position, this was not done. Soon after the mechanized troop broke contact, one of the attacking aircraft observed 100 VC fleeing to the south. An air strike was made on them. The strike area was illuminated by fires started with napalm.

CONFIDENTIAL

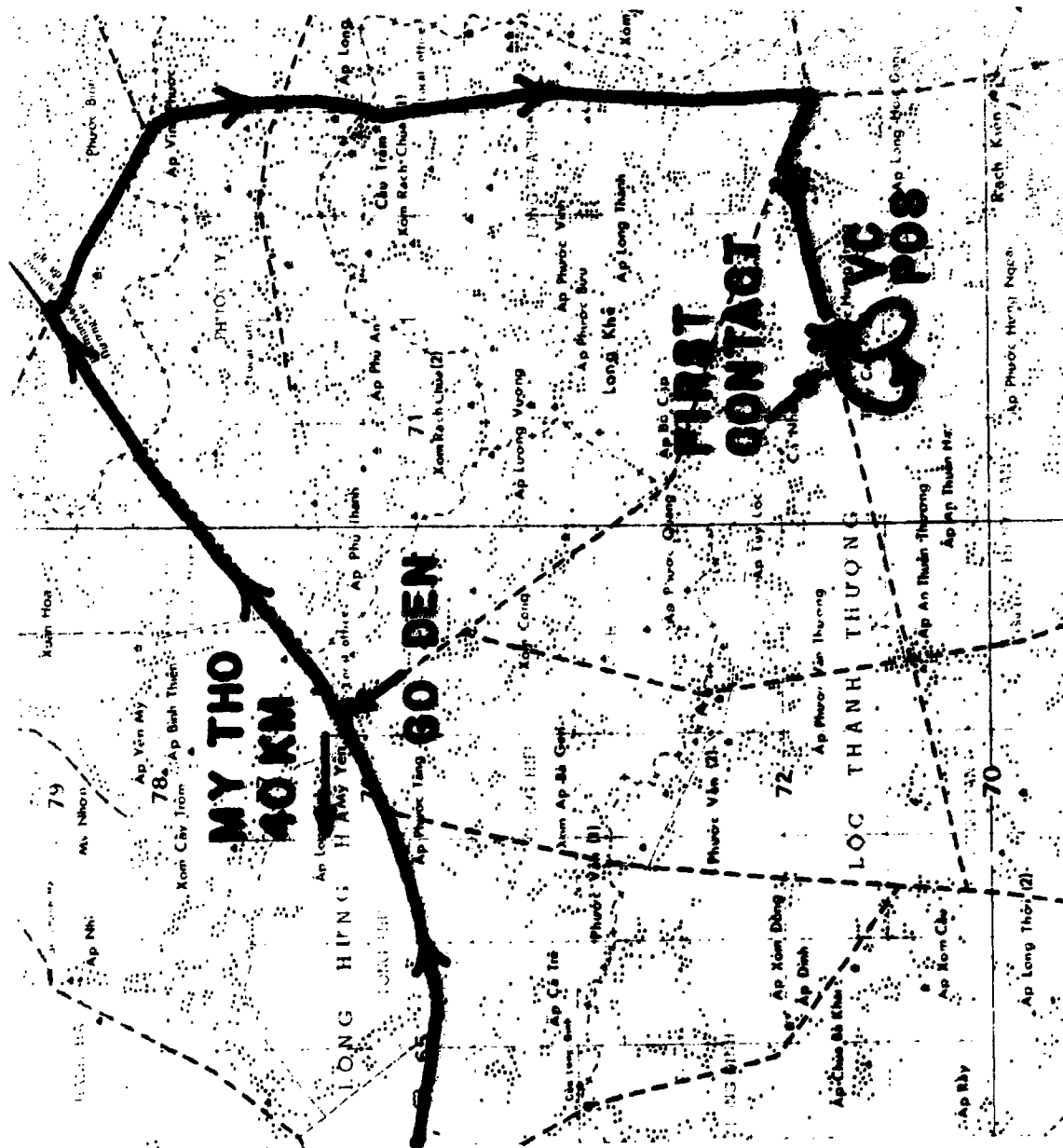


FIGURE 19
 OPERATION IN THE VICINITY OF
 GO DEN (LONG AN PROVINCE)

CONFIDENTIAL

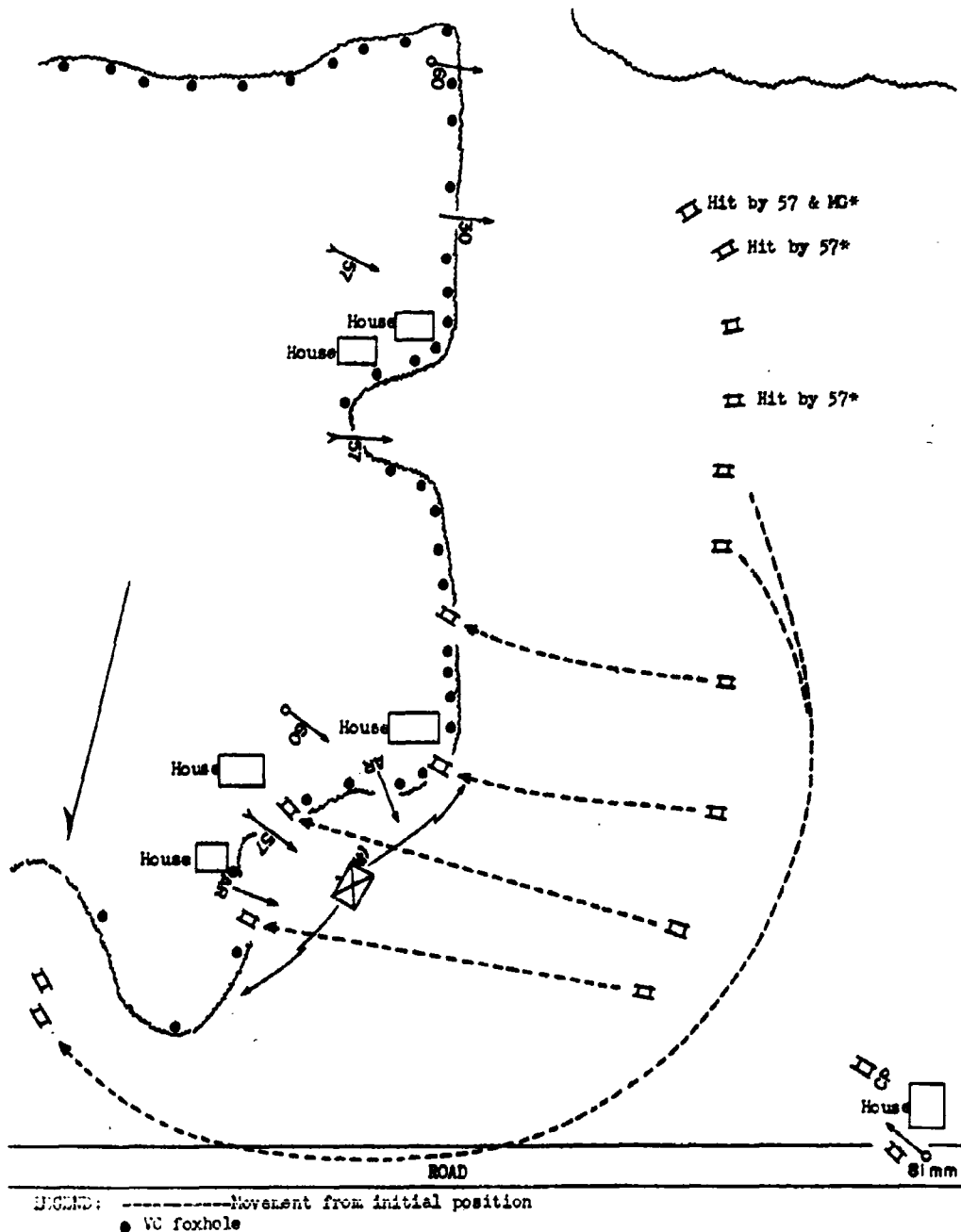


FIGURE 20
M113 Movements - GO DEN Operation

Initial contact (M113s hit by 57mm withdrew to a position behind CP)

CONFIDENTIAL

III - GO DEN

CONFIDENTIAL

B. (C) COMMENTS

1. This mechanized troop moved in an outstanding manner from its home station to the battle area. It reached the battle area two hours after leaving MY THO. The battle area was 55km away and stops were made to pick up an attached company and to get an order and a briefing.

2. The troop commander showed his aggressiveness early in the battle when he launched the initial assault. This unit will fight aggressively when the CP allows it to.

3. The M113s that remained 300 to 500 meters from the wood line in the open field received nearly all the hits from enemy fire. There were four hits by a 57mm RR on these M113s, and one vehicle received a total of 62 small arms hits on the front slope alone (Figure 26). Conversely, the M113s that closed rapidly and aggressively received a total of only 3 small arms hits. It is interesting to note that these M113s overran and captured a 57mm recoilless rifle. The crew was unable to man the gun under the withering assault fire laid down by the attacking M113s. Also captured by these four M113s were 2 automatic rifles and several individual weapons. The fact that only three hits were received by these carriers from small arms is evidence that the VC cannot fire effectively when faced with the firepower and shock action of a moving armor unit.

4. When the mechanized troop broke contact with the VC, it gave them a chance to escape. Had a flare plane been called in, a night attack could have been launched to overrun the objective.

5. Although the air strikes and artillery caused some casualties in this operation, their value would be considered marginal if the valuable daylight hours that they consumed are considered. If even the last four sorties of air had been withheld, there would have been sufficient time for an assault.

C. (C) RESULTS

ARVN losses: 4th Troop, 4th Squadron: 1 KIA
8 WIA
3 M113s damaged

VC losses: 30 KIA by actions of the ground forces. An additional 100 were reported killed by air strikes. Neither of these figures can be confirmed as the VC still had control of the objective during the night and could have carried most of the bodies away.

Captured: 1 57mm recoilless rifle
2 BARs
12 Individual weapons
1 SMG
Base plate and sight for 60mm mortar

CONFIDENTIAL

CONFIDENTIAL

Tripod for another 57mm RR
A dummy training round for the 57mm RR
Several 57mm RR rounds
Several 60mm mortar rounds
A large quantity of cal .30 ammunition
40 BAR magazines
A medical chest containing syringes, ampules of drugs, and
other medicines.

CONFIDENTIAL

CONFIDENTIAL

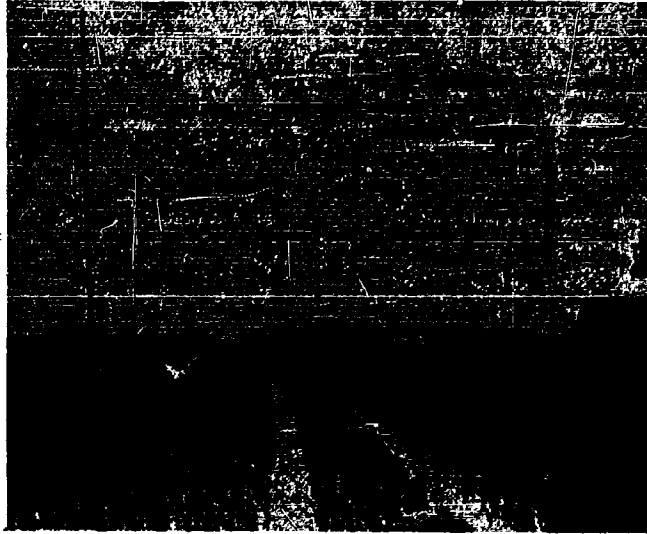


FIGURE 21 (U)
M113's assault north end of objective.

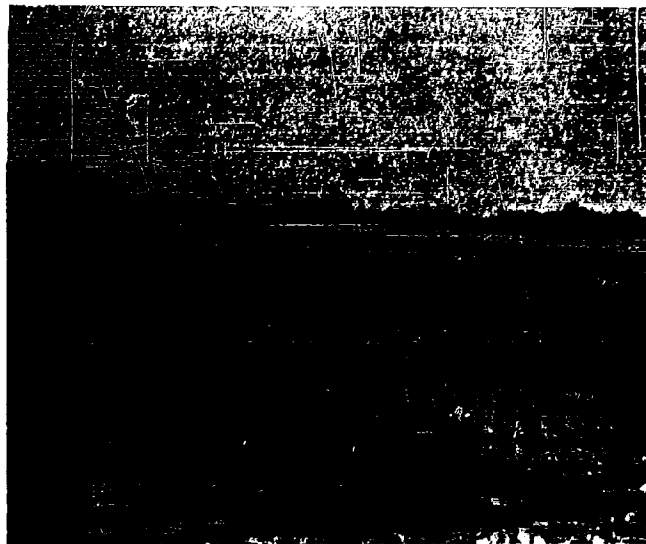


FIGURE 22 (U)
Infantry crouched along dikes. They reached the objectives long after the M113s had closed.

CONFIDENTIAL

CONFIDENTIAL



FIGURE 23 (C)
HEAT round penetrated bow plate, damaged differential housing. No injuries.

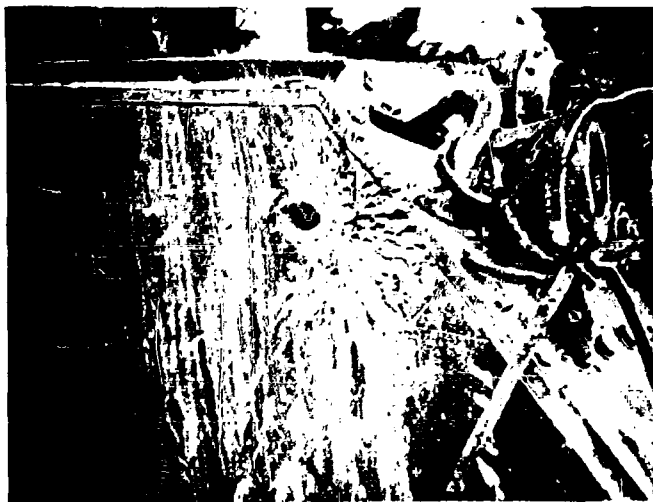


FIGURE 24 (C)
HEAT round penetrated side of M113, damaged radiator. No injuries.

CONFIDENTIAL

CONFIDENTIAL



FIGURE 25 (C)
HEAT round penetrated gun shield. One man wounded.

III - GO DEN

24

CONFIDENTIAL

CONFIDENTIAL



FIGURE 26 (C)
62 Rounds from cal .30 MG hit this M113 on the front slope.
The trim vane is in the down position here to show the hits
on the hull. There were no penetrations.

CONFIDENTIAL

CONFIDENTIAL



FIGURE 27 (C)
Effects of a rifle grenade on the intake grill.

CONFIDENTIAL



FIGURE 28 (U)
Weapons, ammunition and equipment captured on this operation.
The mechanized troop commander has his hand on the 57mm re-
coilless rifle.

IV (U) CANAL CROSSING

CANAL CROSSING TECHNIQUES FIELD EXPEDIENT FOR SWIFT CURRENTS

M113s have often have difficulty in crossing wide canals or rivers that have a fast rate of flow. This is particularly true in the Delta region of Vietnam where the waters are tidal for a great distance inland. When the effect of a falling tide is added to the natural seaward flow of a canal or river, the current becomes quite strong. An M113 APC entering such a stream from the near bank will be swept far downstream before it is able to reach the far bank. In some cases the current is so strong that the M113 finds it difficult to return to a suitable landing site on the far bank.

For these types of crossings in the Delta, crossing sites must be chosen carefully and, in most cases, some preparation must be made on the exit site. It is therefore imperative that swimming vehicles reach the proper landing site.

A very simple and effective method of bringing a swimming M113 to the proper landing site is used by one unit in the Delta area. A nylon rope is tied to one of the front lifting eyes. The free end is then taken to the far bank either by boat or by a swimmer. A squad of men (or more) is also dispatched at this time to the far banks. As the M113 enters the water, the line is kept taut by the squad of men. If the current is not too swift, the men can position themselves just upstream from the crossing site. For swifter currents they can position themselves farther upstream so as to effect more lateral pull. If need be, another rope can be fastened to the rear lifting eye to keep the M113 from broaching. However, normally the one rope plus the propulsion of the M113 are all that is required.

The nylon rope used in this operation is the rope used with the capstan kit. This rope has the advantages of being strong, light in weight, and bouyant. It also does not become water-logged after long periods of use.

FIGURE 29 (U)
Canal Crossing Techniques



FIGURE 30 (U)
Preparing to attach nylon rope to M113.



FIGURE 31 (U)
Rope is attached and free end taken across. Note men holding free end.

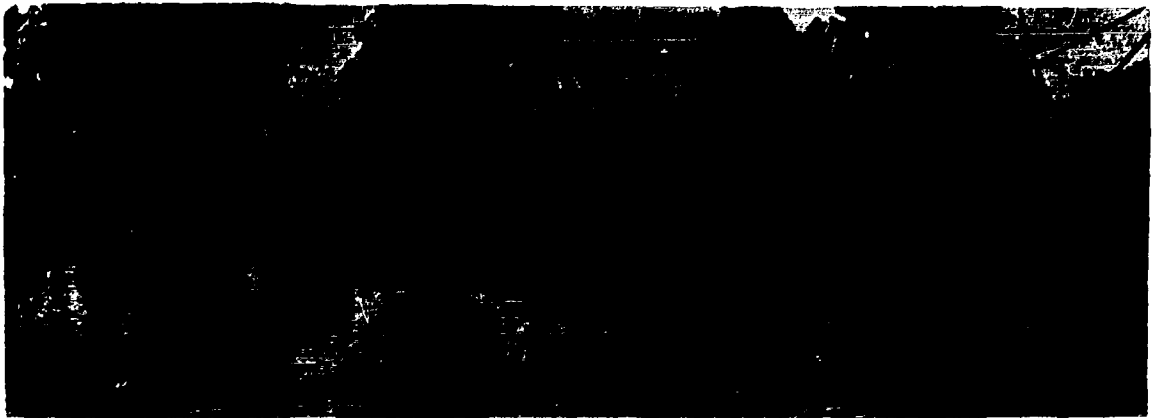


FIGURE 32 (U)

This M113 was carried downstream because there was not enough tension on the rope. It broached because the rope was tied to the wrong side. Note swift current; tide was falling here.



FIGURE 33 (U)

Using the proper technique, this M113 reached the landing site quickly.

V (U)
A - FRAME

The following photographs show the first field test of the redesigned A-Frame "Push Bar" discussed in inclosure 5 of the preceding report. Results of additional tests and refinements will be included in future reports.



FIGURE 34 (U)
M113 cannot exit from the canal unassisted.



FIGURE 35 (U)
The pushing vehicle moves up to have the push bar mounted.



FIGURE 36 (U)
The adaptor is mounted on the M113 tow eyes.



FIGURE 37 (U)
The "push foot" is mounted on the connecting timber.



FIGURE 38 (U)

The "push foot" has serrated track pads mounted for cushioning and non-slip qualities.



FIGURE 39 (U)

The pushing vehicle enters the canal using a rope to support the push bar.



FIGURE 40 (U)
Three ARVN soldiers position the "push foot" on the impeded vehicle.



FIGURE 41 (U)
The pushing operation starts. Both vehicles use 1-2 drive range.



FIGURE 42 (U)
The impeded vehicle starts its exit.

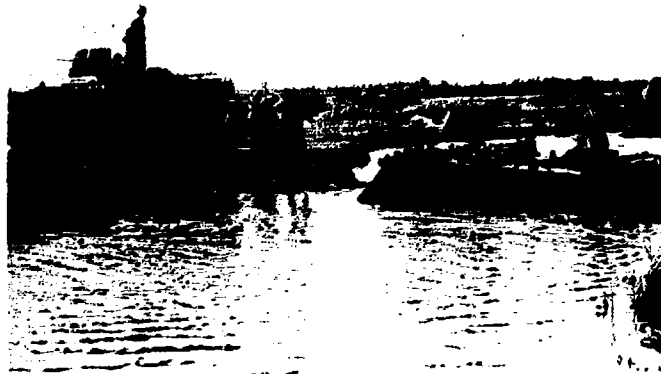


FIGURE 43 (U)
The successful exit is completed. The lead vehicle will
now be used to tow others across the obstacle.

ANNEX A (U)

ARMOR OPERATIONS

TERRAIN IN VIETNAM

The characteristics of terrain in Vietnam vary widely from place to place and from season to season. These variations directly affect the mission and employment of armor in Vietnam. Armor can traverse some areas only in the dry season but other areas in both the wet and dry seasons. The only sure way of determining the capability of employing armor on certain terrain in a given season is experience. Armor units should maintain trafficability maps based on actual experience as one unit in the Delta area is doing with considerable success.

Vietnam can be divided into five different areas of terrain classification: The Delta area, the Plain of Reeds, the coastal plain, the foothills, and the mountains (see Figure A-1). These will be discussed in turn.

1. Delta Area

The soil in this area is generally alluvial and a large part of the land is devoted to the production of rice (see Figures A-1 through A-4). The rice paddies are formed by dikes and are irrigated by a vast network of natural and man-made canals and ditches. During the wet season the paddies are flooded and the ground is covered with a thick layer of sticky mud. This mud slows the advance of armor and increases fuel consumption. One advantage, however, is the softening of the dikes, which allows vehicles to drive over and break through them at a rate of speed that would cause damage to the vehicles and injury to the men in them if the dikes were hard, as they are in the dry season. In the dry season the paddies afford good cross-country mobility which is limited only by the canals and irrigation ditches. Dikes present no major problem unless they are adjacent to canals. They do, however, slow the progress of the vehicles, as care must be exercised in crossing them to avoid damage to vehicles (especially torsion bars) and injury to the crews and passengers.

2. Plain of Reeds

This is a large undeveloped area east of the Mekong River and, for the purpose of operations, is bounded on the north by the Cambodian Border. During dry season the Plain has excellent terrain for armor, including light tanks (see Figures A-13 through A-15). There are canals and streams, but not nearly in the abundance found in the Delta area to the south. During wet season the plain is largely inundated, making progress much slower and eliminating the use of light tanks.

3. Coastal Plain

Except for a narrow strip along the coastline, the same general comments that apply to the Delta apply here.

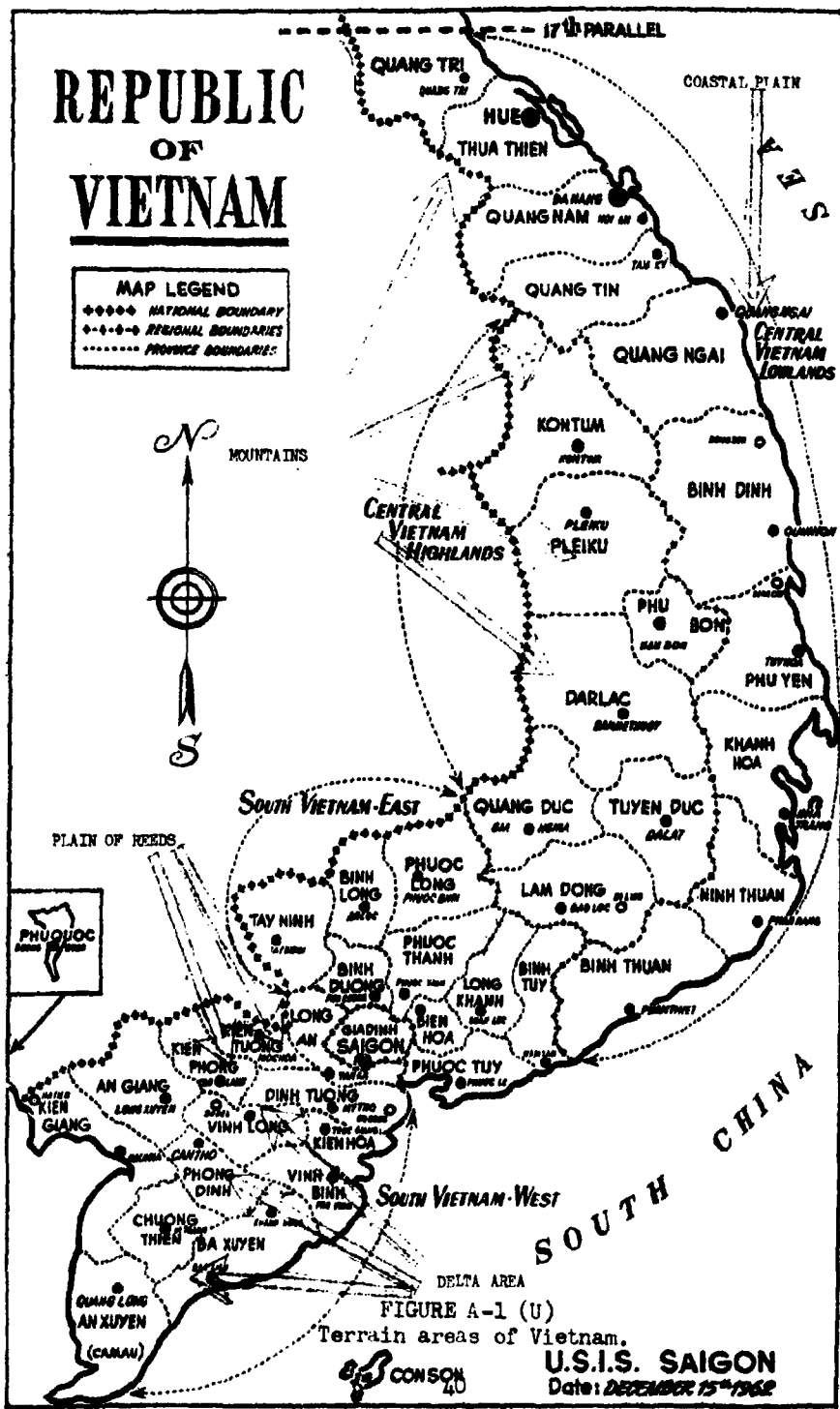
4. Foothills

The foothills usually offer good trafficability during both wet and dry seasons. Here again, experience is the best method of determining trafficability (see Figure A-21).

5. Mountains

Most of the mountainous areas have dense vegetation and in some cases jungle (see Figures A-23 through A-26). In many of these areas, armor vehicles are road bound and are used only for road security missions.

Although the terrain in Vietnam is not the most ideal, armor can be successfully employed here provided that a good working knowledge of recovery techniques is maintained. Many new recovery techniques have been developed in Vietnam and have been reported by the Army Concept Team. By using these techniques - and ingenuity - armor in Vietnam can maintain one of its essential capabilities - MOBILITY.



ANNEX A

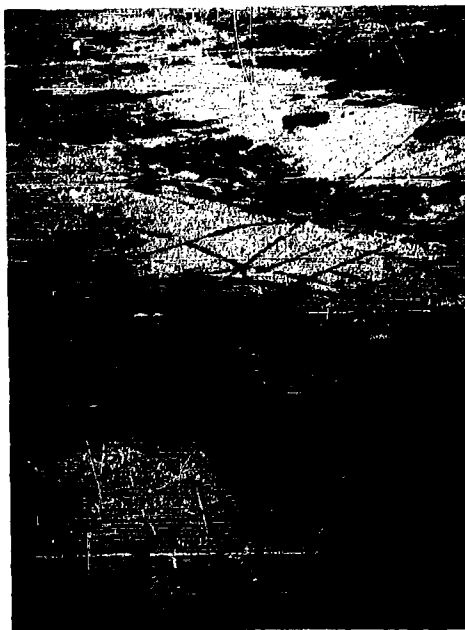


FIGURE A-2 (U)
Aerial view of the Mekong River Delta area. Light areas
are inundated rice paddies.

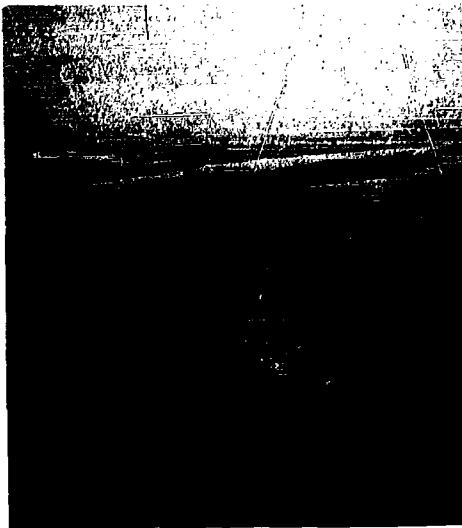


FIGURE A-3 (U)
Aerial view showing several branches of the Mekong River.
Light areas in the foreground are canals and inundated areas.



FIGURE A-4 (U)
Ground view of inundated rice paddies (Delta area).



FIGURE A-5 (U)
Drained rice paddy, Delta area. Note dikes.



FIGURE A-6 (U)
Medium-width canal, Delta area.

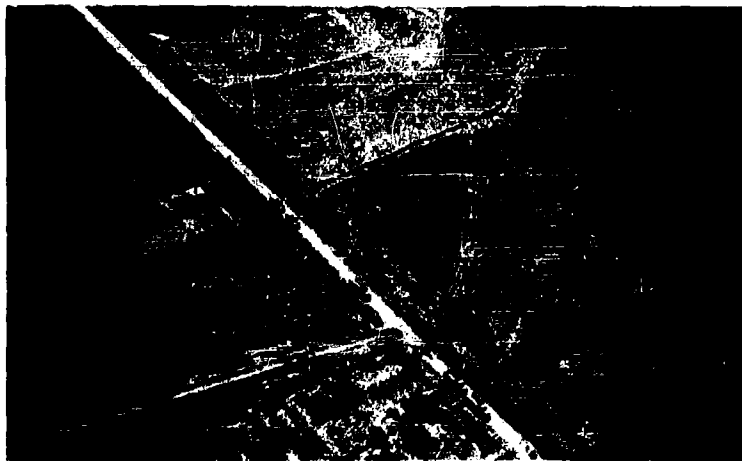


FIGURE A-7 (U)
Aerial view of rice paddies, Delta area, dry season.

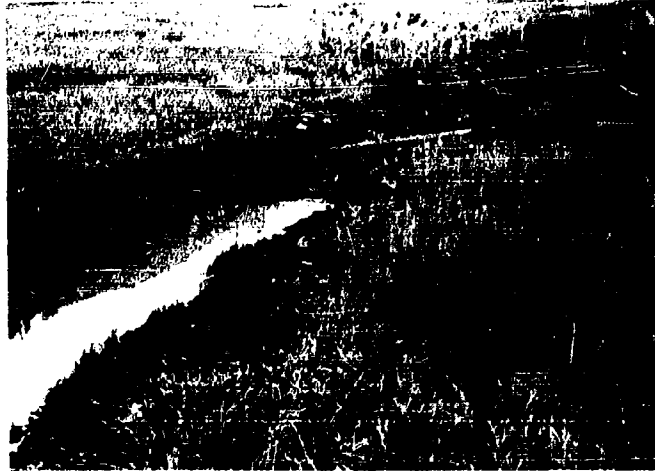


FIGURE A-8 (U)
Irrigation ditch typical of those encountered in the Delta
area. Width is about 4 meters.



FIGURE A-9 (U)
Areas such as this one are found throughout the Delta,
even in dry season.

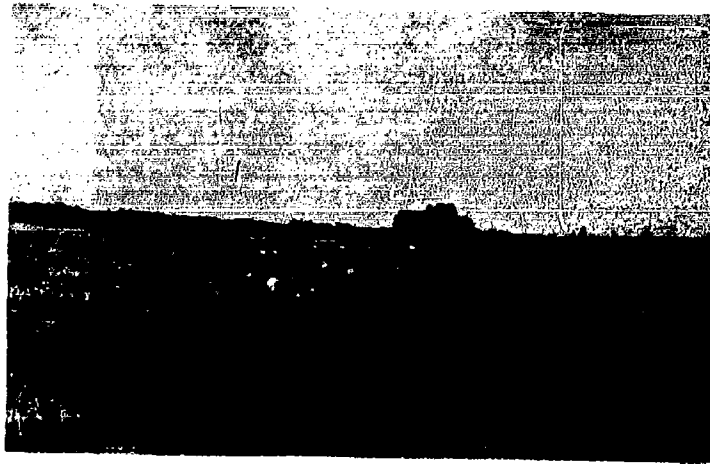


FIGURE A-10 (U)
Delta area, dry season.

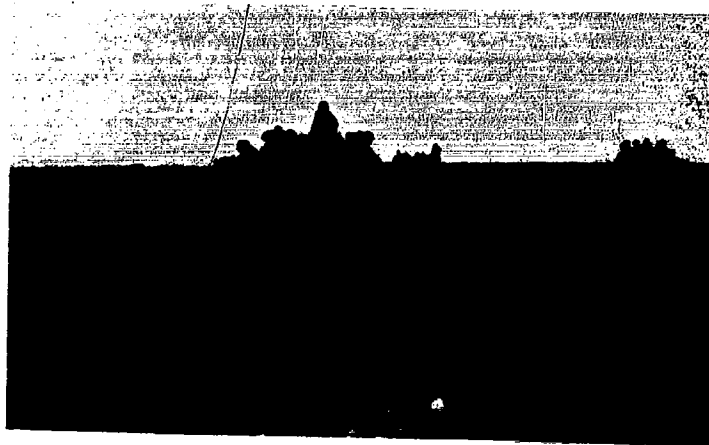


FIGURE A-11 (U)
Delta area, dry season.



FIGURE A-12 (U)
Delta area, dry paddy.



FIGURE A-13 (U)
Open terrain, Plain of Reeds, dry season.



FIGURE A-14 (U)
Brush area, Plain of Reeds, dry season. This is
inundated in wet season.

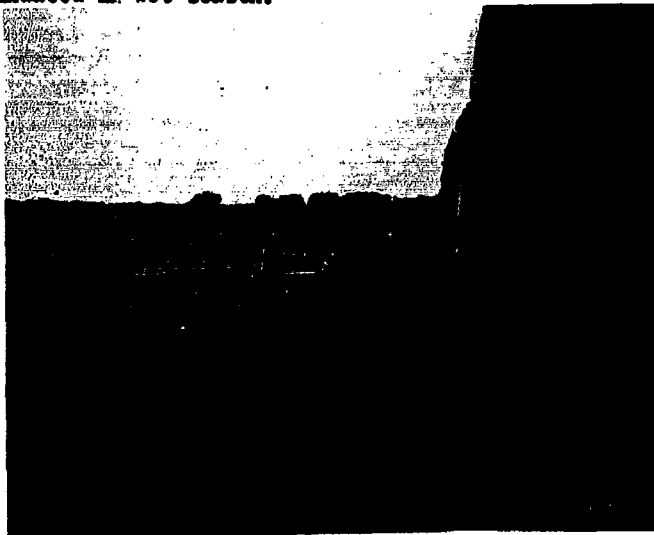


FIGURE A-15 (U)
Fields and brush, Plain of Reeds, dry season. This is
inundated in wet season.

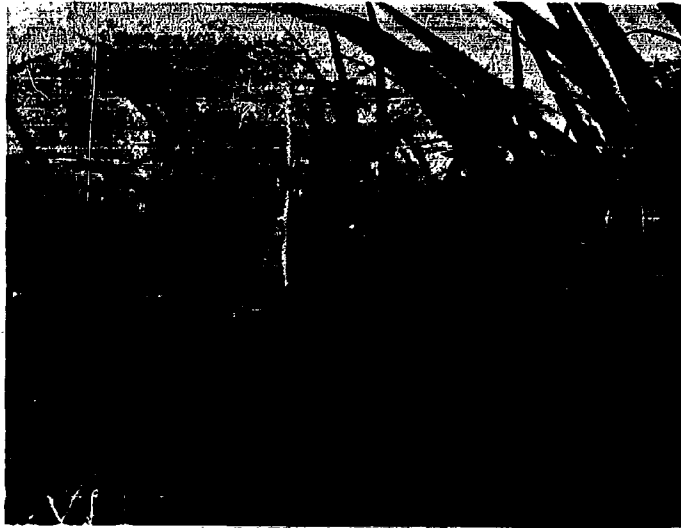


FIGURE A-16 (U)
Tall grass, Plain of Reeds. This grass is 8' tall.

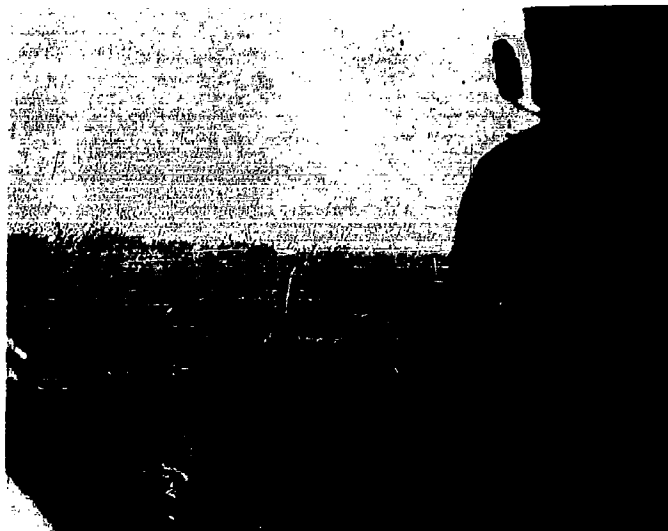


FIGURE A-17 (U)
Plain of Reeds.

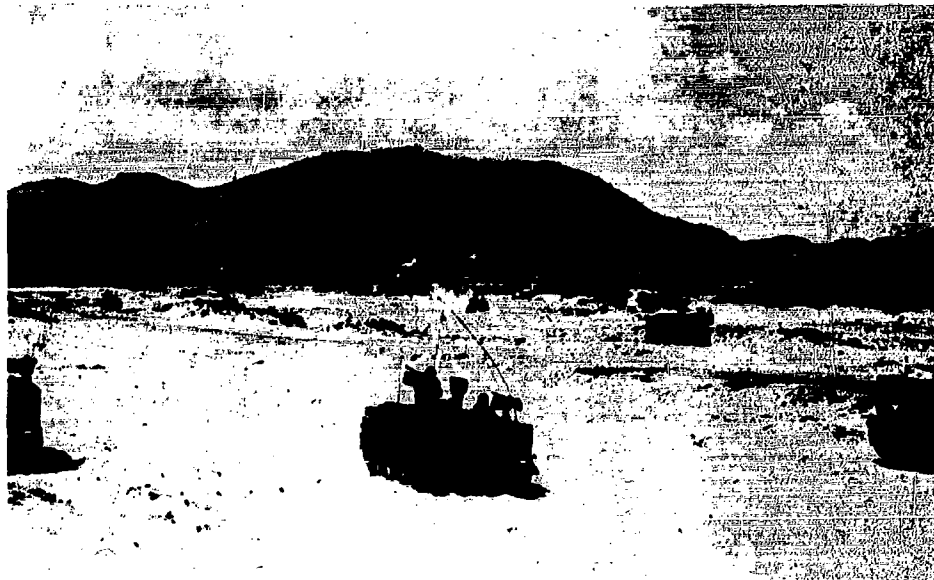


FIGURE A-18 (U)
Sandy beach north of Saigon.



FIGURE A-19 (U)
Here the coastal plain meets the mountains.

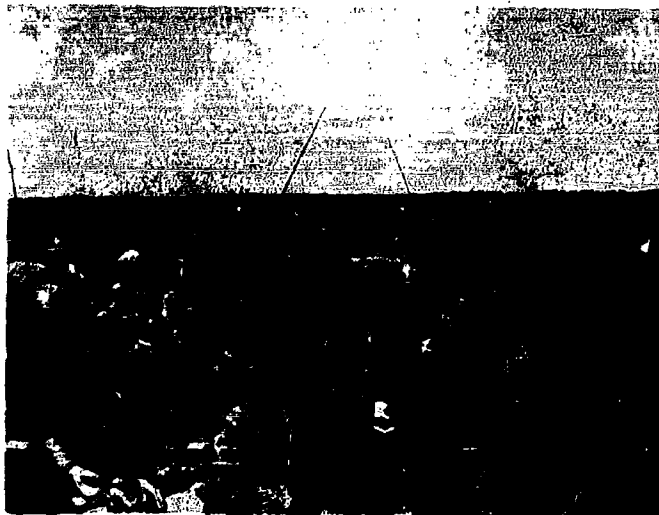


FIGURE A-20 (U)
Plain of Reeds. The individuals here are standing on top of M113 APC's.



FIGURE A-21 (U)
Brushy area, coastal plain, north of Saigon.



FIGURE A-22 (U)
The foothills.



FIGURE A-23 (U)
Mountain area. Note lush vegetation and narrow trails.



FIGURE A-24 (U)
Mountain area. Note lush vegetation and narrow trails.

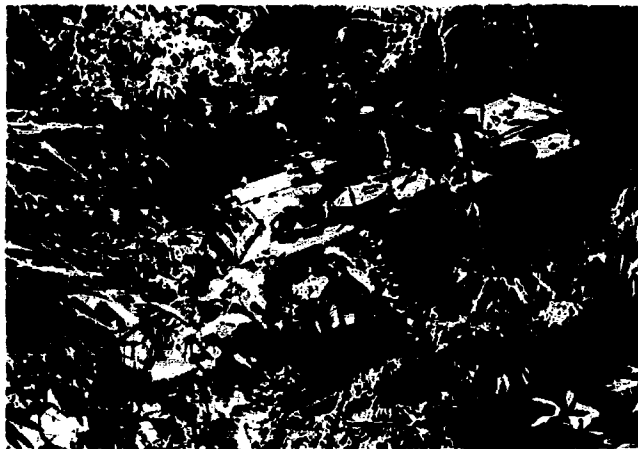


FIGURE A-25 (U)
Mountain area. Note dense jungle.



FIGURE A-26 (U)
Mountain stream.



FIGURE A-27 (U)
Mountain area.

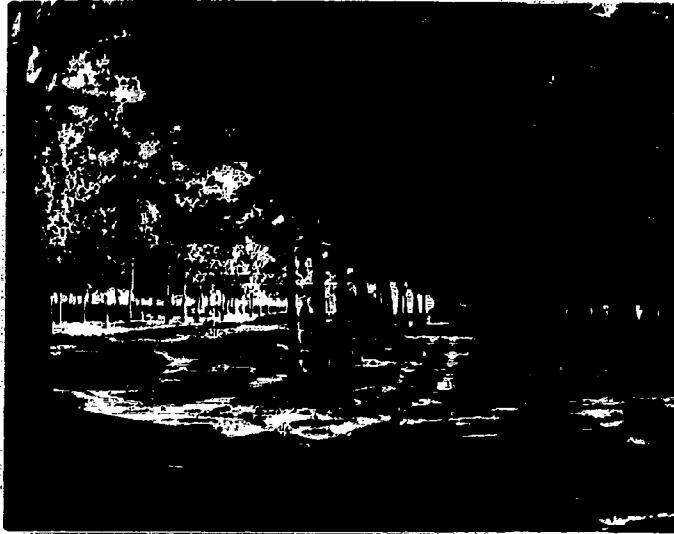


FIGURE A-28 (U)
Rubber plantation northwest of Saigon.

CONFIDENTIAL

ANNEX B(C)

TWX: ARMOR DEFEATING GRENADE

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL
CLASSIFICATION

SUBJ: ARMOR BREACHING GRENADE

ON 19 AUG 63 SF DET A-31 CAPTURED ONE GRENADE AT COORD
XR 555 645. ON 19 SEP 63 SOC CAPTURED GRENADE AFTER ATTACK
ON TAN PHONG POST WR 205115. ON 20 SEP 63 IN SOC TRANG
XR 0860 POLICE APPREHENDED A WOMAN CARRYING ONE OF THESE
GRENADES.

CONFIDENTIAL

THESE GRENADES ARE IDENTIFIED AS ARMOR BREACHING
GRENADES. COUNTRY OF ORIGIN UNKNOWN. THE GRENADE IS THREE
PART CONSTRUCTION. SHAPED CHARGE CYLINDRICAL HEAD, BOOSTER-
DETONATOR, AND STABILIZER HOUSING HANDLE. THE HEAD AND THE
HANDLE ARE OF STAMPED SHEET METAL CONSTRUCTION. THE GRENADE
IS 14 INCHES LONG WITH HEAD DIAMETER OF 3 INCHES. WEIGHT
APPROXIMATELY 1 1/2 POUNDS. BY INSERTING A BLASTING CAP INTO
THE SHAPED CHARGE, THE HEAD CAN BE RIGGED AS A MINE.

DO NOT, REPEAT NOT, ATTEMPT TO THROW THIS HAND GRENADE.
IT IS KNOWN THAT THIS GRENADE WILL FUNCTION ON IMPACT. IT
MAY ALSO FUNCTION ON TIME. THE DELAY PERIOD IS NOT KNOWN.
DEFINITE PENETRATION CAPABILITY NOT KNOWN HOWEVER IT WILL
PENETRATE M113 AND M114 ARMOR. REPORT CAPTURE OF THESE
GRENADES.

CONFIDENTIAL

TO: ACTIV
CG JOEG-V/ARPA
CH MAAG

COURIER

H		PRECEDENCE	PRIORITY	CLASSIFICATION	CONFIDENTIAL
FM: COMUSMACV		INFO:	58	MAC	7894
TO: SR ADV I CORPS				J23 (TI)	RELEASE
SR ADV II CORPS		CONFIDENTIAL		DTG	040826Z OCT 63
SR ADV III CORPS					
CG USASFCV					
CG USASGV (COURIER)					

ANNEX C(U)

DISTRIBUTION:	<u>Mr of copies</u>
Chief of Research and Development, Department of the Army	5
Deputy Chief of Staff for Military Operations, Department of the Army	5
Deputy Chief of Staff for Logistics, Department of the Army	5
Deputy Chief of Staff for Personnel, Department of the Army	5
Assistant Chief of Staff for Force Development, Department of the Army	10
Office of the Assistant Chief of Staff for Force Development, ATTN: ACTIV Liaison Officer, Department of the Army	10
Commanding General, US Continental Army Command	30
Commanding General, US Army Materiel Command	35
Commanding General, US Army Combat Developments Command	50
Commander-in-Chief, US Army Pacific	5
Commander, US Military Assistance Command, Vietnam	6
Chief, Military Assistance Advisory Group, Vietnam, ATTN: Chief, Army Section	35
Commanding General, US Army Support Group, Vietnam	20 (includes 5 for CG USARYIS)
Director, Joint Operations Evaluation Group, Vietnam	5
Chief, OSD ARPA R&D Field Unit, Vietnam	5
Commanding General, 11th Air Assault Division	5
Commandant, United States Army Infantry School, Fort Benning, Georgia 31905	2

UNIT XEATA

**Commandant, Armor School, US Army Armor Center,
Fort Knox, Kentucky**

**Commandant, Artillery School, US Army Artillery and
Missile Center, Fort Sill, Oklahoma**

**Asst Chief of Staff for Intelligence (ATTN: Director
Surveillance and Reconnaissance, Doctrine Division)**

**Office of the Chief of Staff of the Army (ATTN: Director
of Coordination and Analysis, Coordination Division)**

**Joint Test and Evaluation Task Force (JTEF) WESTWING,
MacDill AFB, Fla. (ATTN: Major General Rosson)**

**Commanding Officer, Defense Documentation Center Cameron
Station, Alexandria, Virginia**