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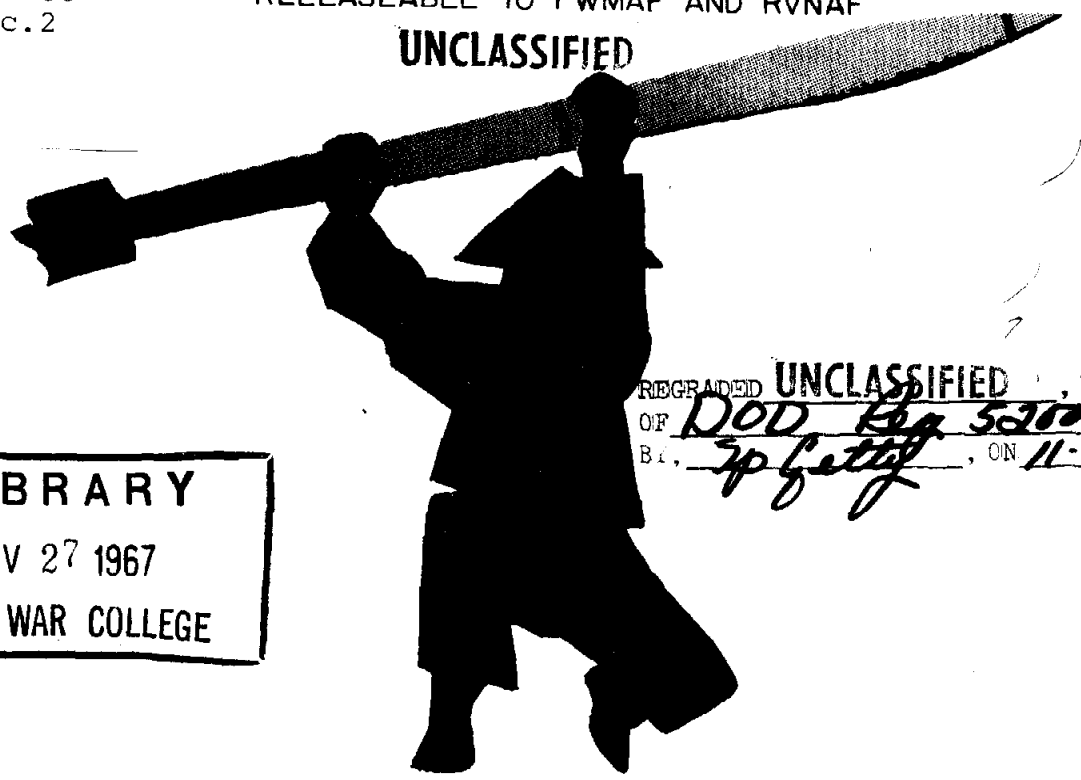

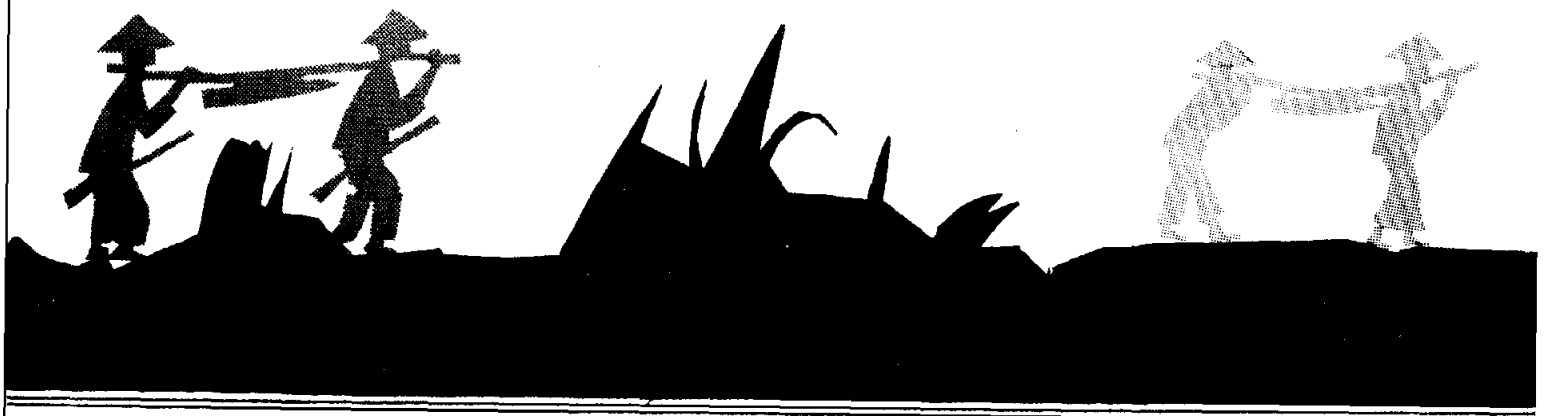

COUNTERINSURGENCY LESSONS LEARNED NO. 66

COUNTERMEASURES FOR 102 MM, 122MM AND 140 MM ROCKETS (U)

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UNITED STATES MILITARY ASSISTANCE COMMAND, VIETNAM
APO 96222

MACJ343 10 November 1967

SUBJECT: Counterinsurgency Lessons Learned No. 66: Countermeasures for 102mm, 122mm, and 140mm Rockets (U)

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1. Attached for your information is a "Lessons Learned" from current counterinsurgency operations in South Vietnam.

2. The information contained in this "Lessons Learned" may be of value for direct application to training, or to reinforce existing doctrine, based on combat experience in South Vietnam.

3. Comments or questions concerning the document, or requests for changes or additions in the distribution of Lessons Learned, should be addressed to this headquarters, Attention: MACJ343.

FOR THE COMMANDER:

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MACJ343 10 November 1967

COUNTERINSURGENCY LESSONS LEARNED NO 66

COUNTERMEASURES FOR 102MM, 122MM, AND 140MM ROCKETS (U)

1. (CMFA) INTRODUCTION:

a. The first rocket attack in South Vietnam occurred on 27 February 1967, when Da Nang Air Base was attacked with 66 rounds of Soviet 140mm rockets. Since then, the enemy has conducted attacks with Chinese 102mm rockets, the advanced Soviet 122mm rocket, and additional 140mm rockets. With the introduction of rockets, the problems of detecting and reacting to the enemy have been compounded as his effective stand-off distance increased from a maximum range of 5,700 meters for the 120mm mortar to 11,000 meters for the 122mm rocket.

b. Use of rockets has proved to be an effective method of attacking friendly installations as attested by the loss of lives and equipment. The ability to launch attacks swiftly, without warning, and normally during the hours of darkness, works to the advantage of the enemy by hampering friendly forces reaction and defense measures.

c. The most positive method of reducing attacks is to deny the enemy the opportunity to occupy desired launch positions. Acknowledgment that absolute denial may not be attained requires that effort and attention be directed to immediate reaction to cause the enemy to abandon an attack once it has commenced. Finally, to reduce the effectiveness of attacks, extensive passive defense measures must be taken to protect lives and equipment.

2. (U) PURPOSE:

a. To familiarize personnel with the type rockets being employed by the enemy in South Vietnam.

b. To review past rocket attacks.

c. To consider the aspects of denial, reaction, and protection.

d. To cite post-attack observations.

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e. To highlight significant observations and lessons learned.

f. To provide a checklist for rocket defense of an installation or complex.

3. (CMHA) CHARACTERISTICS AND EMPLOYMENT:

a. 102mm CHICOM Rocket (figure 1):

(1) Characteristics:

(a) Length, overall with fuse - 28.1 inches.

(b) Weight - 34 pounds.

(c) Range - 7,000 meters.

(d) Fuse - instantaneous.

(2) Employment: This has been the least used rocket in the enemy's inventory. The 102mm rocket was employed in the vicinity of the Demilitarized Zone (DMZ) on three occasions in June and three occasions in September 1967. During these six attacks, approximately 190 rockets were expended.

b. 140mm Soviet Rocket (figure 2):

(1) Characteristics:

(a) Rocket, spin stabilized.

1. Length, overall with fuse - 42.3 inches.

2. Weight with fuse - 90 pounds.

3. Range - 10,000 meters.

4. Warhead - 9.5 pounds explosive.

5. Fuse - instantaneous or delay.

(b) Launcher tube.

1. Length overall - 45 inches.

2. Weight single tube - 22 pounds.

(2) Employment:

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(a) The 140mm rocket has been used extensively against all types of friendly installations. Attacks were of short duration, usually being completed in one or two minutes. The launching positions were prepared after dark with minimal effort by scooping shallow holes and piling the dirt forward to provide launching ramps of the desired elevation. When first employed, the 140mm rockets were fired from single or double launcher tubes mounted on wooden boards approximately four feet long. In some later attacks, the rockets were fired without benefit of launcher tubes by merely laying them on the dirt ramps and firing for area coverage (figure 3).

(b) In most cases, small aiming stakes were placed at the front or sides of the rockets to provide directional reference. Since enemy surveys were probably conducted in daylight hours, the only indication before an attack that a launching site has been selected would be nothing more than emplaced aiming stakes and possibly stakes to indicate the locations where the launchers or rockets were to be positioned.

c. 122mm Soviet Rocket (figure 4):

(1) Characteristics:

(a) Rocket, fin stabilized.

1. Length - 6.2 feet.

2. Weight - 101 pounds.

3. Range - 11,000 meters.

4. Warhead - 15 pounds explosive.

5. Fuse - instantaneous or delay.

(b) Launcher (figure 5).

1. Length - 8.1 feet.

2. Weight - 55 pounds.

(2) Employment:

(a) The 122mm rocket is one of the newest rockets to be manufactured by the Soviets. It was first introduced into South Vietnam with an attack on Camp Carroll, adjacent to the DMZ, in early March 1967. Since that time, the 122mm rocket has been used for attacks against installations almost as far south as Saigon. The VC/NVA have been quite accurate

with the 122mm rocket as attested to by the groupings of plotted hits.

(b) Attacks by 122mm rockets were normally of greater duration than other rocket attacks, frequently lasting as long as 15 to 20 minutes. This longer period was evidenced by the fact that the rocket launchers were reloaded during the attack, with each launcher probably firing three to five rockets. Time to reload a launcher is estimated at two to four minutes. A rocket battalion is composed of 18 rocket launchers consisting of three batteries with six launchers each. Attacking forces have varied in size from only three launchers up to two battalions.

(c) Preparation of the launching areas was more extensive than for the 140mm rockets, but was not particularly complex. The tripod mounted launcher required that holes be dug approximately six inches deep and five to eight feet apart to emplace the tripod legs. A shallow hole was dug behind each launcher to facilitate reloading and trenches beside the launchers apparently served to protect the crews during firing and during any retaliatory fires.

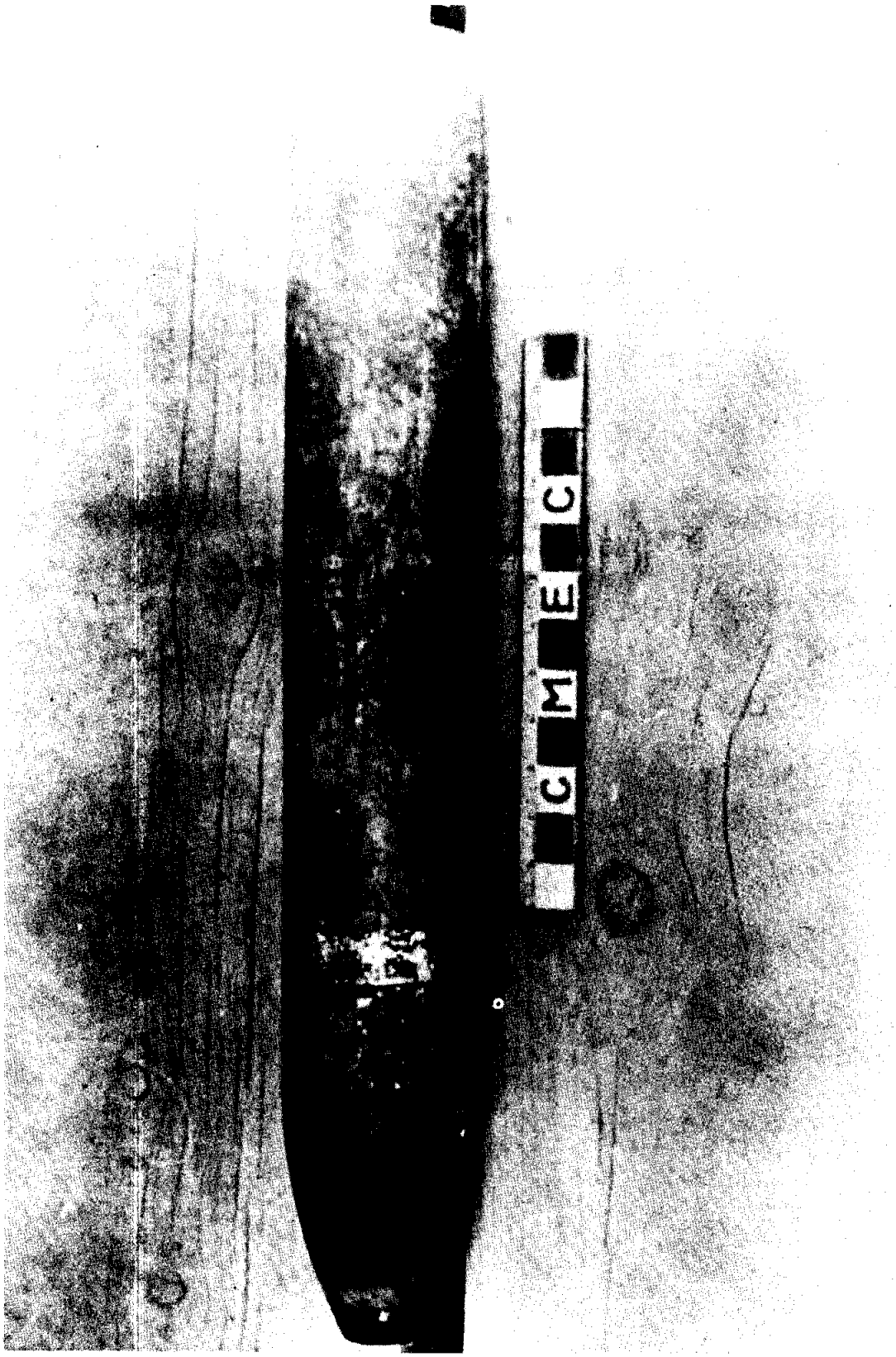

FIGURE 1. 102MM CHICOM ROCKET

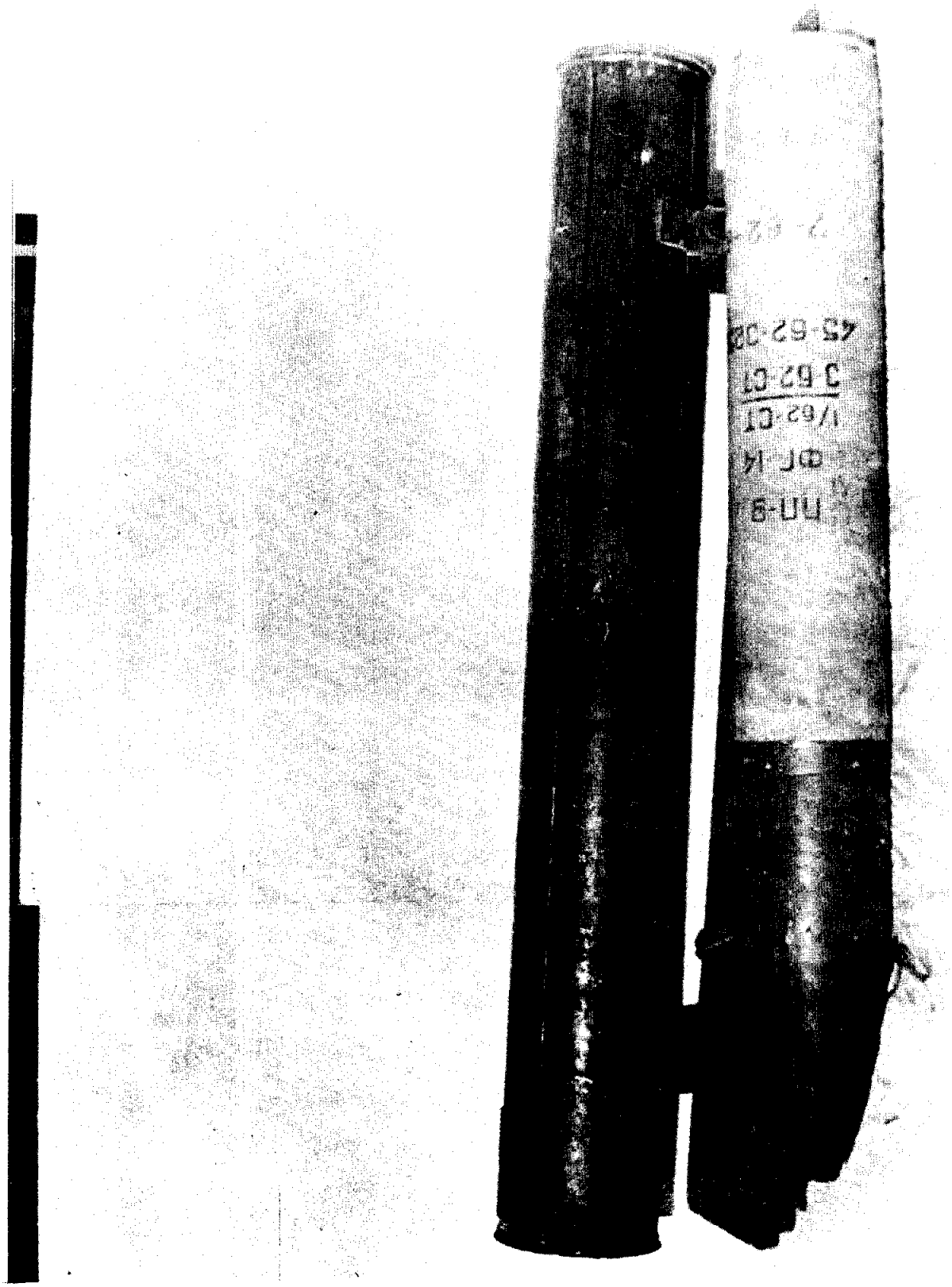

FIGURE 2. 140MM SOVIET ROCKET AND LAUNCHER TUBE

FIGURE 3. 140MM ROCKETS WITHOUT LAUNCHERS IN FIRING POSITION

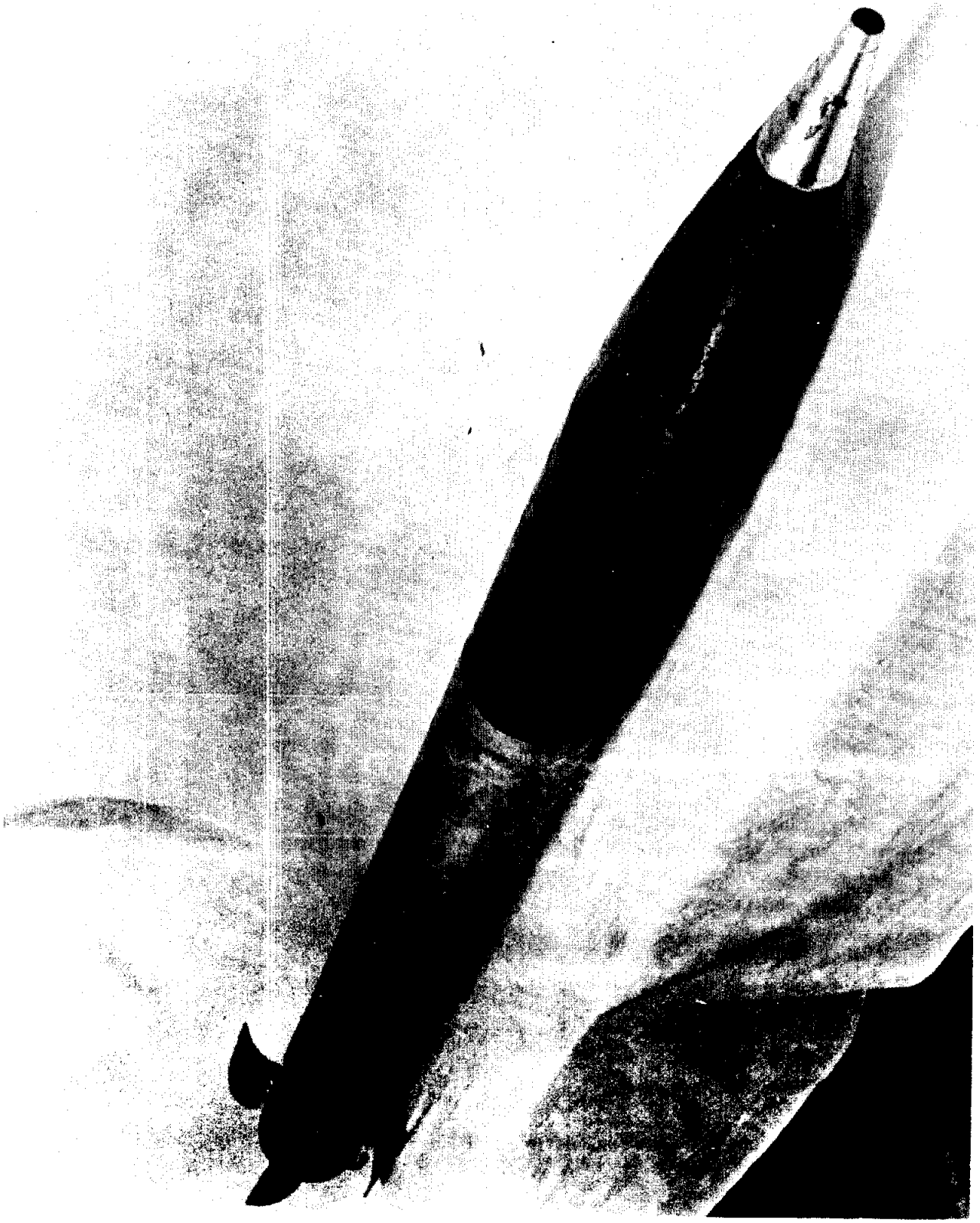

FIGURE 4. 122MM SOVIET ROCKET

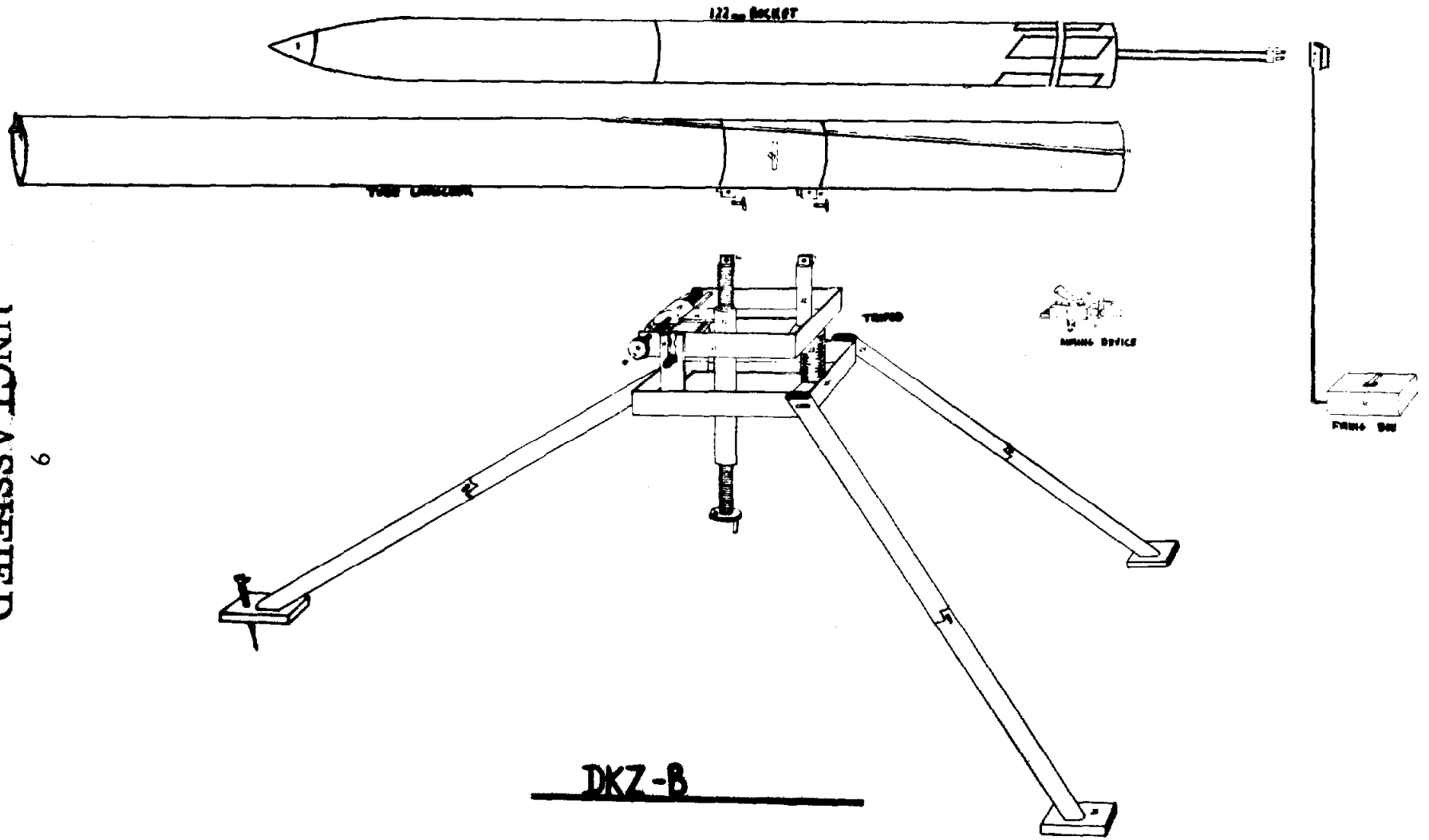

FIGURE 5. 122MM ROCKET AND LAUNCHER (ARTISTS SKETCH BASED ON PW DESCRIPTION)

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4. (CMHA) SELECTED REPORTS:

a. Da Nang Air Base, 27 February 1967:

(1) At 0310 hours, 27 February 1967, Da Nang Air Base was attacked with 66 rounds of 140mm rockets. The attack lasted less than 60 seconds and resulted in eleven US deaths, over 100 injuries, 13 aircraft damaged and extensive Vietnamese civilian casualties and destruction.

(2) Investigation of the launch area revealed the rockets were laid out in two straight lines approximately 400 meters apart. The positions were in a clear area near a river. Six rocket rounds were left in a pit that had been dug. Two of the rounds were booby-trapped with the rounds being placed on "mouse-trap" pressure release detonators.

(3) The following comments were noted in the after action report:

(a) Several casualties were sustained by personnel attempting to take cover in nearby bunkers. Had they immediately hit the dirt, casualties would have been minimized.

(b) All quarters and guard posts should be sandbagged for four sided protection.

b. Bien Hoa Air Base, 12 May 1967:

(1) At 0101 hours, 12 May 1967, Bien Hoa Air Base was attacked with 47 rounds of 122mm rockets as well as 82mm mortars and 75mm recoilless rifles. The attack lasted approximately nine minutes and resulted in eight deaths, 31 injuries, 16 aircraft with major damage or destroyed and numerous structures and vehicles destroyed or damaged. This was a coordinated attack with the mortars and recoilless rifles firing from east of the base and the rockets firing from an area north-northeast of the installation.

(2) Three rocket launching sites were located 10,000 meters north-northeast of the installation and six tripod type launchers had been placed at each site (total of 18 launchers). One unfired rocket was located some distance from the firing site. This was the first 122mm rocket to be captured. Reaction aircraft encountered heavy antiaircraft fire from the launching area.

c. Da Nang Air Base, 15 July 1967:

(1) At 0020 hours, 15 July 1967, Da Nang Air Base was attacked with between 50 and 60 rounds of 122mm rockets. The attack lasted approximately 20 minutes and resulted in eight deaths, 140 injuries,

ten aircraft destroyed and 37 damaged, and numerous structures and vehicles destroyed or damaged.

(2) This was a well coordinated attack with the rockets being fired from two main sites approximately 1,000 meters apart. Each site consisted of 18 launchers. The positions were in the vicinity of friendly hamlets, several observation posts, and a platoon outpost. The observation posts and the outpost received 60mm mortars, grenades, automatic weapons and small arms fire during the period of the rocket attack. Counterbattery fire was initiated within one minute and was brought to bear on one of the main locations within approximately three minutes. Despite this, evidence indicates that the enemy remained in position and completed the planned attack in its entirety. The launch crews were able to exfiltrate the area with all their equipment except for four 122mm rockets.

(3) The following comments were noted in the after action report:

(a) Several casualties were sustained by personnel attempting to take cover in bunkers.

(b) The 122mm rocket releases a large amount of diamond shaped fragments.

(c) Most of the rocket fuses had been set on delay with a few set of instantaneous.

d. Phuoc Vinh, 27 July 1967:

(1) At 0030 hours, 27 July 1967, the base camp at Phuoc Vinh (35 miles north of Saigon) was attacked with 80 rounds of 122mm rockets and 72 rounds of 82mm mortar. The attack lasted 15 to 20 minutes and resulted in 12 deaths and 68 injuries.

(2) Three groups of six launchers each were used for the rocket attack. The launch area was 9,500 meters northwest of the installation, within 700 meters of a river. Heavy antiaircraft machine gun emplacements were located in the launch area. An airborne mortar/rocket watch first reported the direction and range to the rocket flashes. The counterbattery program was initiated within two minutes and flareships were overhead within 15 minutes. Helicopters and airstrikes were also employed. A ground reaction force found four enemy bodies and extensive cratering in the vicinity of the launch site.

(3) The following comments were noted in the after action report:

(a) Despite the fact that friendly fire was brought to

bear in the vicinity of the launching positions, all indications point to the conclusion that the enemy unit completed its mission as planned.

(b) The presence of more than one observation post would provide for determination of the launch positions.

(c) Canvas cases used to carry the rockets were found in the launch area.

e. Phu Loi, 29 July 1967:

(1) At 0035 hours, 29 July 1967, the base camp at Phu Loi (13 miles north of Saigon) was attacked with forty-nine 122mm rockets and 150 rounds of 82mm mortar. The rocket portion of the attack lasted approximately 15 minutes; however, the mortar attack continued for some 50 minutes. The attack caused two US deaths, 31 injuries, three helicopters destroyed, three helicopters damaged and miscellaneous damage to vehicles and structures.

(2) The rocket launching area was located 9,500 meters north of the base. Defensive positions were established on the flanks and antiaircraft machine gun positions were located to the north of the launch positions. The launch positions were close to a road and it was believed that vehicles or carts were observed by airborne personnel during the attack. The counterbattery program was initiated within three minutes. An air observer began adjusting counterbattery fires within six to eight minutes on what he believed to be the rocket launch positions. However, investigation of the launching area revealed that only one artillery round had landed in the rocket launch position. The AN/MPA-4A radar provided four locations, all unrelated to rockets. Personnel in five observation towers provided no information on firing positions or direction of attack. Armed helicopters were engaged by enemy weapons.

(3) The following comments were noted in the after action report:

(a) The launching positions were not located accurately and therefore counterbattery fire was ineffective.

(b) There was evidence that vehicles were used to transport the enemy's equipment and rockets.

(c) Damage to the installation was minimized because of good dispersion of facilities and revetment of aircraft.

(d) Casualties were minimized because a number of the quarters have concrete or brick walls from the ground up to four or five feet.

f. Dong Ha (near DMZ), 28 August 1967:

(1) On two occasions during daylight hours, 28 August 1967, Dong Ha Base was attacked with 140mm rockets. Shortly after the second attack, two adjacent 140mm rocket sites were located with 35 rockets being found at one site and 15 rockets at the other. The rockets were wired and laid on azimuth to Dong Ha. There were no rocket launchers; rather, the rockets were positioned on dirt mounds, ready to be fired.

(2) This marked the first time that a prepared enemy rocket position had been located in daylight hours. Also significant was the fact that the rockets were prepared to be fired without benefit of launchers. Four of the rockets had been booby-trapped.

g. Da Nang Air Base, Force Logistics Command, and Artillery Base Camp, 2 September 1967:

(1) At 0055 hours, 2 September 1967, three separate installations were attacked simultaneously from three separate launch areas. Da Nang Air Base was struck by six 140mm rockets; the USMC Force Logistics Command Base, located eight miles northwest of Da Nang, was attacked by thirteen 122mm rockets; and an Artillery Base Camp, located 1½ miles west of the Logistics Base, was struck by nine 122mm rockets. These attacks resulted in two deaths, over 100 injuries and moderate damage to aircraft, vehicles, supplies, and structures.

(2) This was the first reported instance of an apparent coordinated attack with rockets on more than one installation. Previous reports indicated that diversionary tactics were employed in conjunction with rocket attacks. (One such tactic was in evidence on 15 July 1967 when Da Nang was attacked by 122mm rockets approximately one hour after some 960 prisoners were released in a ground attack on Hoi An prison, 15 miles southeast of Da Nang.)

5. (CMHA) DEFENSIVE MEASURES:

a. Denial:

(1) It is readily apparent that the optimum method of preventing rocket attacks is to deny the enemy the opportunity to occupy launching positions. Therefore, consideration must be given to finding ways and means of detecting and destroying the enemy before an attack can be launched. Such considerations should include, but not be limited to, the following:

(a) Frequent aerial and ground reconnaissance of suspected rocket infiltration routes.

(b) Conduct of long range patrols and establishment of

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night ambush sites at extended distances from friendly installations.

(c) Development of appropriate procedures for immediate follow-up of pertinent intelligence indicators and data.

(d) Establishment of procedures to insure immediate dissemination of information pertaining to movement or location of suspected rocket units.

(e) Conduct of realistic and continuing studies from which appropriate offensive operations can be developed and implemented.

(2) A number of actions have been taken to counter the rocket threat and to deny the enemy the opportunity to accomplish his objectives. Although the full effectiveness of these actions cannot be assessed at this time, they are noteworthy in that critical analyses and evaluations have resulted in implementation of specific counterrocket programs. Some of these programs include the following:

(a) Intelligence studies of likely infiltration routes and storage points as obtained from POW's, ralliers, and friendly forces.

(b) Topographical studies and analyses to focus attention to likely infiltration routes and storage points.

(c) Aggressive dissemination of information pertaining to the Volunteer Informant Program and the increased rewards for Vietnamese civilians who provide early warning information on enemy rockets.

(d) Establishment of a "rocket belt" encompassing that area between 8,000 and 12,000 meters radius around installations with particular emphasis directed to activity within this belt.

(e) Alignment of areas of responsibility (TAOR, TAOI) to insure that enemy avenues of approach fall within one area rather than across boundaries.

(f) Establishment of maximum number of specified strike zones and concentration of H & I programs on likely launch sites and avenues of approach.

(g) Utilization of routine flights to provide daily visual reconnaissance of specific segments of the rocket belt with the same crews observing the same area on each flight.

(h) Use of potential launch areas as registration points for counterbattery fires.

b. Reaction:

(1) Until such time as the denial aspect of the counter-rocket program becomes 100 percent effective, efforts must be directed to development and implementation of integrated defense and supporting plans. The uniqueness of each fixed installation, along with the forces and resources available to react to rocket attacks, requires that detailed planning and coordination be effected to insure an adequate rocket defense.

(2) Reaction must be swift and accurate to diffuse the enemy's effort, cause him to halt the attack, and inflict maximum punishment upon personnel participating in the attack. Considerations in planning should include, but not be limited to, the following:

(a) Establishment of a joint command center, properly staffed, protected, and furnished with adequate communications to direct and control the reaction effort.

(b) Detailed coordination and development of formal agreements with appropriate Free World Forces, collocated forces, and tenant units for participation in rocket defense operations.

(c) Development of positive procedures for delegation of authority to preclude delays in implementation of reaction plans.

(d) Maximum use of patrols, ambushes, observation posts, aerial observers, countermortar/rocket radar, and airborne/ground detection devices.

(e) Control and observation of waterways leading into likely launch sites.

(f) Establishment of "clearance to fire" procedures so no delays are encountered.

(g) Observation personnel must be trained in detecting, locating, fixing, and reporting launch positions.

(h) Sufficient flexibility to counter simultaneous attacks from more than one launch area.

(i) Conduct of frequent drills and rehearsals.

(3) Reaction procedures are constantly being developed, revised, and implemented. Some examples of reaction planning are as follows:

(a) Increased effort in exercising counterbattery units.

Reduction in response times was emphasized.

(b) Improved procedures to insure that night aerial observation was always on station. At one location where AC-47 aircraft normally perform night observation, procedures were established to immediately scramble a stand by FAC to perform AO duties if the AC-47 were diverted.

(c) Communications nets were added or rerouted to expedite coordination between controlling agencies.

(d) Procedures were established to permit immediate counterfires on rocket launching positions when accurate three-way intersections were obtained.

(e) Announcement by message and other means to applicable units of increased alert when intelligence data indicates an increased probability of attack.

c. Protection:

(1) Protection, or passive defense, includes those measures taken to minimize damage caused by hostile action. The rapidity with which rockets can be launched permits little if any time in which to take cover or increase protection. As noted in paragraph 4 of this document, rocket attacks of short duration can have devastating effects in both casualties and equipment destruction.

(2) Passive defense, of necessity, involves those actions that are taken before the fact to protect personnel and equipment. Some passive defense measures that have been noted include the following:

(a) Widest possible dispersion of real property and equipment. In one attack, dispersion resulted in damage being held to a minimum despite the large number of 122mm rockets and 82mm mortars that were involved. Structures were well dispersed and aircraft were either revetted or dispersed to other locations.

(b) Quarters constructed only one story high with the lower four or five feet of wall construction being made of cement or brick have precluded personnel injury.

(c) Greater dispersion and reduction in Class III and V stocks have been accomplished at several installations.

6. (CMHA) POST-ATTACK OBSERVATIONS:

a. Impact area:

(1) Both 122mm and 140mm rockets were employed with mixtures of instantaneous and delay fuses. Instantaneous fusing normally provides maximum fragmentation and was used most effectively against aircraft and personnel in open areas. Delay fusing was most effective against structures where penetration of the structure was desired before the weapon detonated.

(2) The explosive force and fragmentation effects of rockets are shown in figures 6 thru 9.

b. Launch areas.

(1) Launch positions were normally located in relatively clear areas such as open fields or dry paddies, although in several cases, the positions were located in heavy grass with shrubs and trees to the front of the position. Initially, attacks were always launched from the vicinity of rivers and it is believed that most transportation was by boat or sampan. However, later attacks were launched from positions where overland transportation was required. A 140mm launch position is shown at figure 10 and a 122mm position is at figure 11.

(2) Various types of aiming stakes were employed and were probably emplaced by the survey teams prior to the launch position being prepared. Two types of aiming stakes are shown in figures 12 and 13.

(3) The decision by the enemy to fire 140mm rockets without launchers has simplified the problem of launching attacks. An example of the method of emplacing the rockets without launchers is shown in figure 14.

(4) The 122mm rocket assembly was transported in three canvas carrying cases. The largest case, approximately 48 inches long, was used for the rocket motor; a shorter case for the warhead; and a small case for the fuse. These cases were frequently found at or near the launch position (figure 15).

(5) The enemy sometimes booby-trapped items left at the launch position. In one instance where fifty 140mm rockets were discovered in firing position, it was found that four of the rockets had been booby-trapped. In another instance, six 140mm rounds were abandoned in a hole and two of the rounds had been placed on "mouse-trap" type pressure release detonators (figure 16).

FIGURE 6. 122MM ROCKET (NOTE FRAGMENTATION EFFECTS IN THE SIDE OF THE BUILDING)

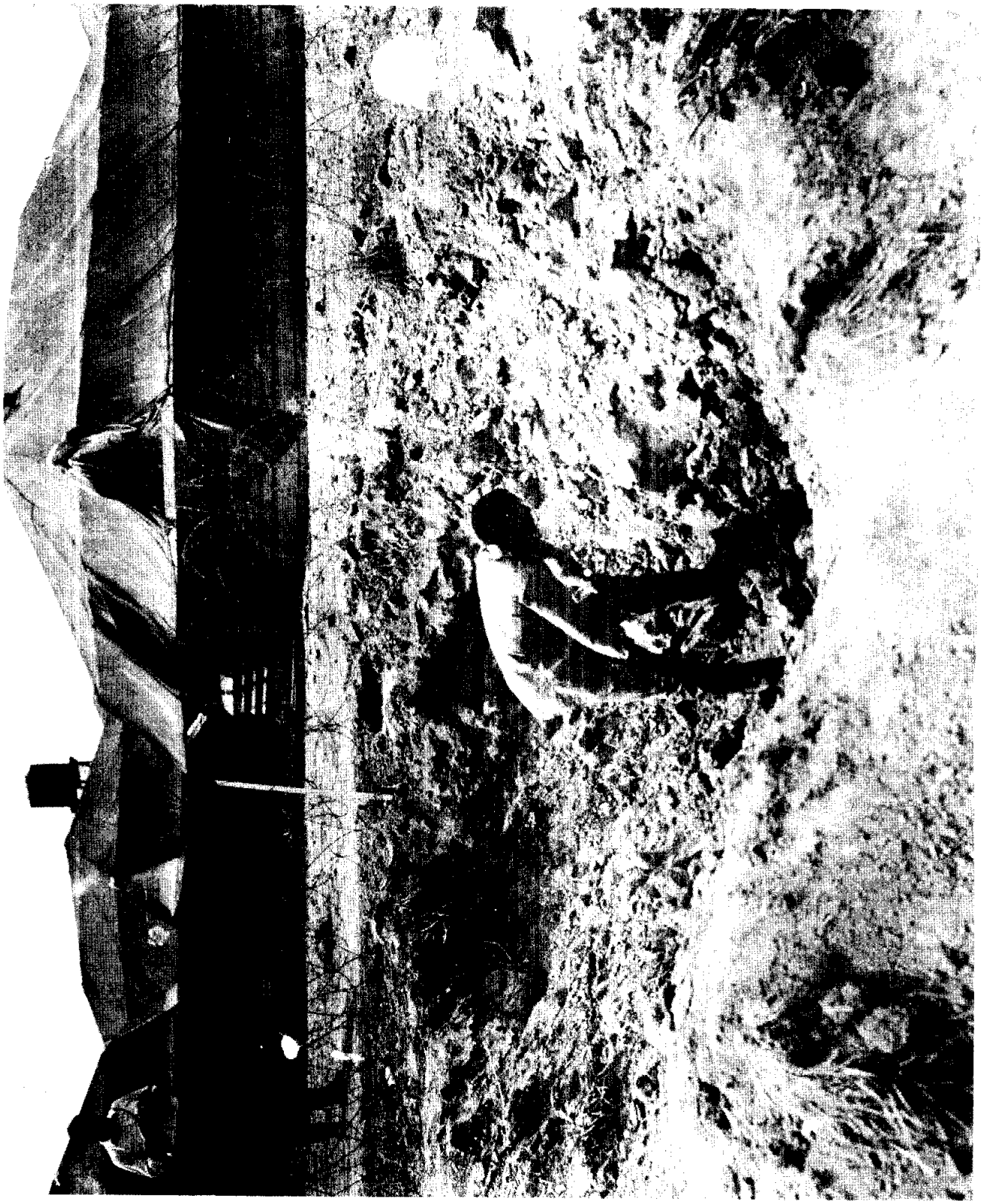


FIGURE 7. EXPLOSIVE FORCE OF 122MM ROCKET IN DIRT

FIGURE 8. EXPLOSIVE FORCE OF 40MM ROCKET IN SAND

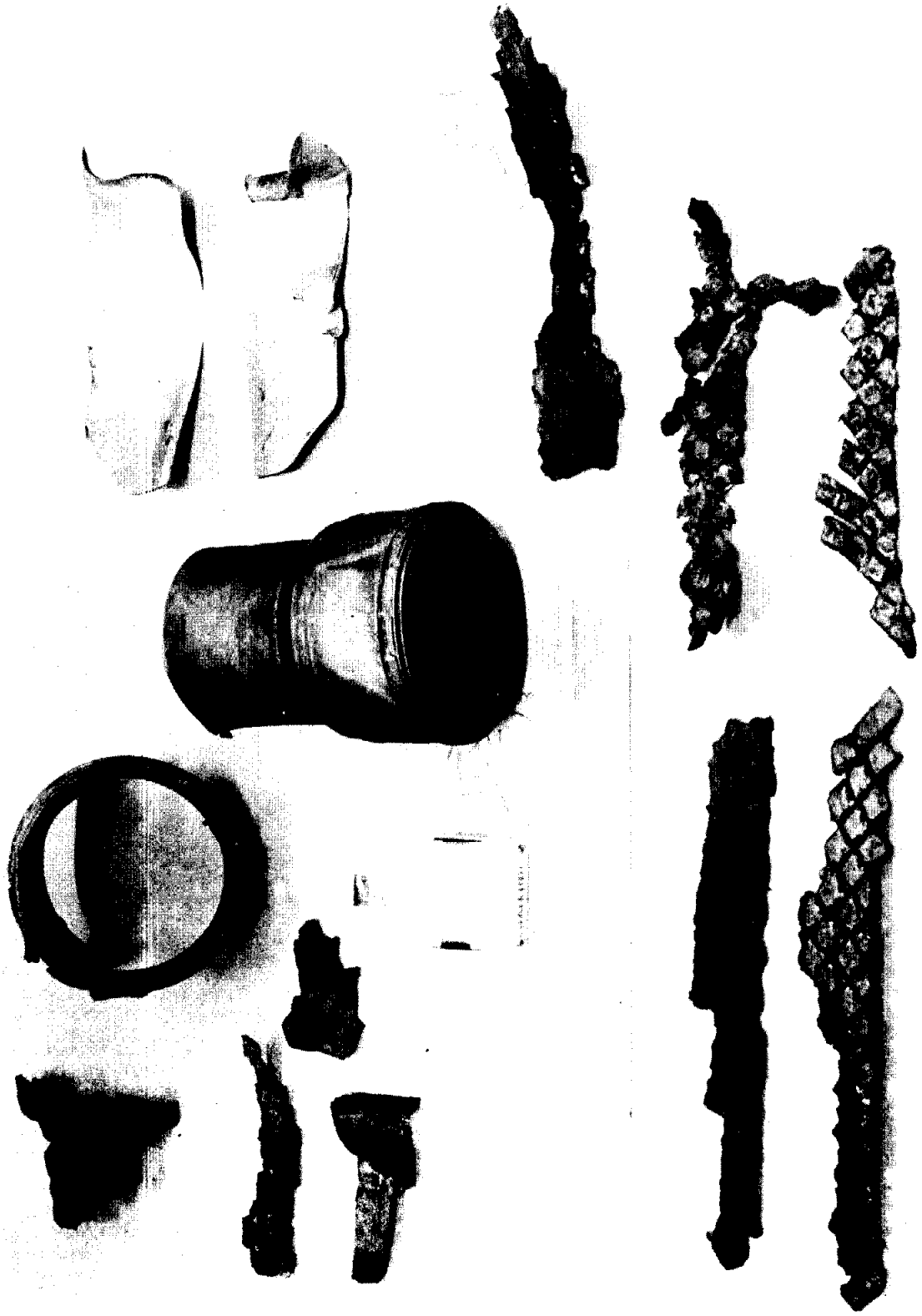


FIGURE 9. 122MM ROCKET FRAGMENTS

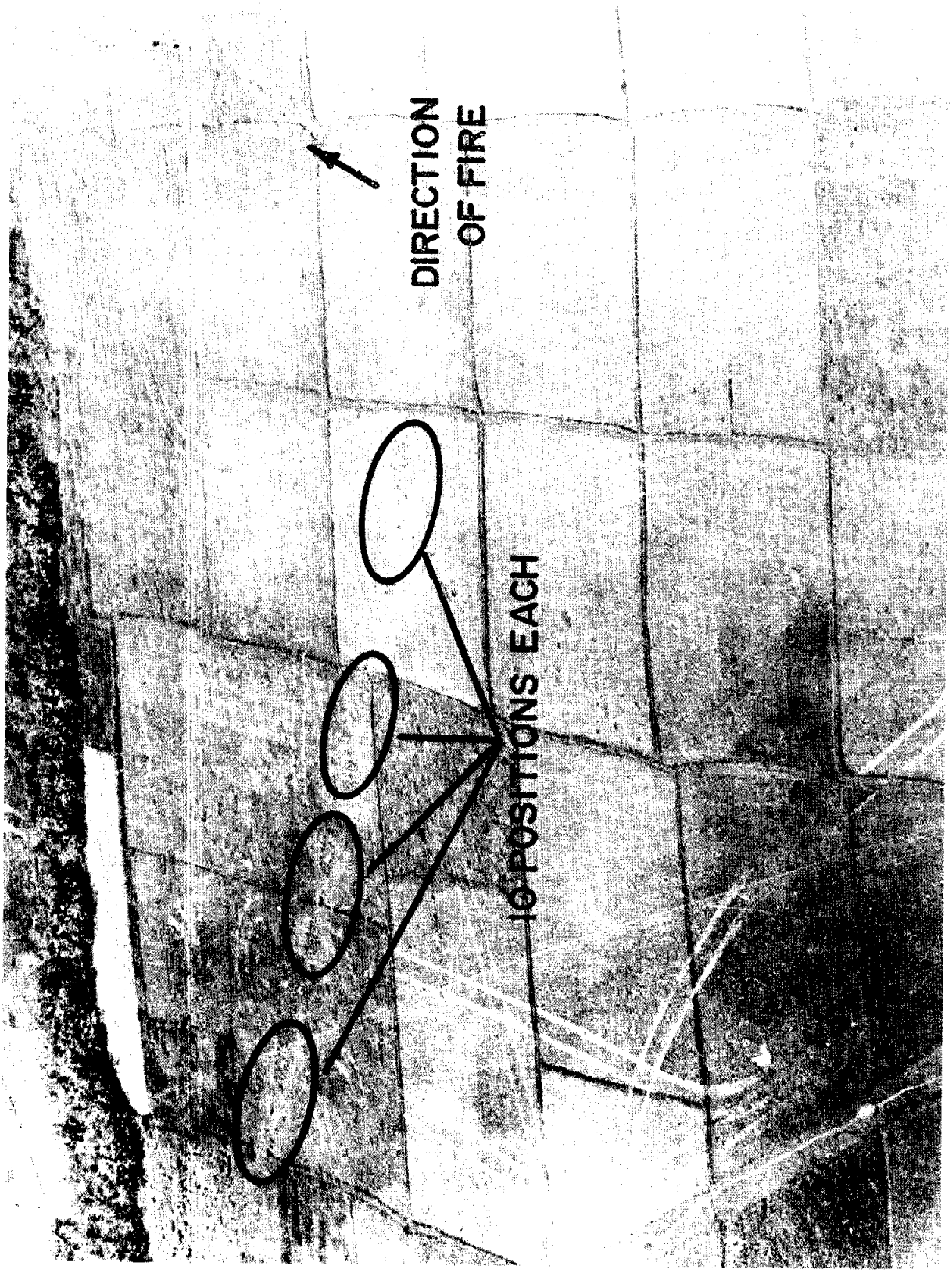


FIGURE 10. 140MM ROCKET LAUNCHING AREA AND POSITIONS

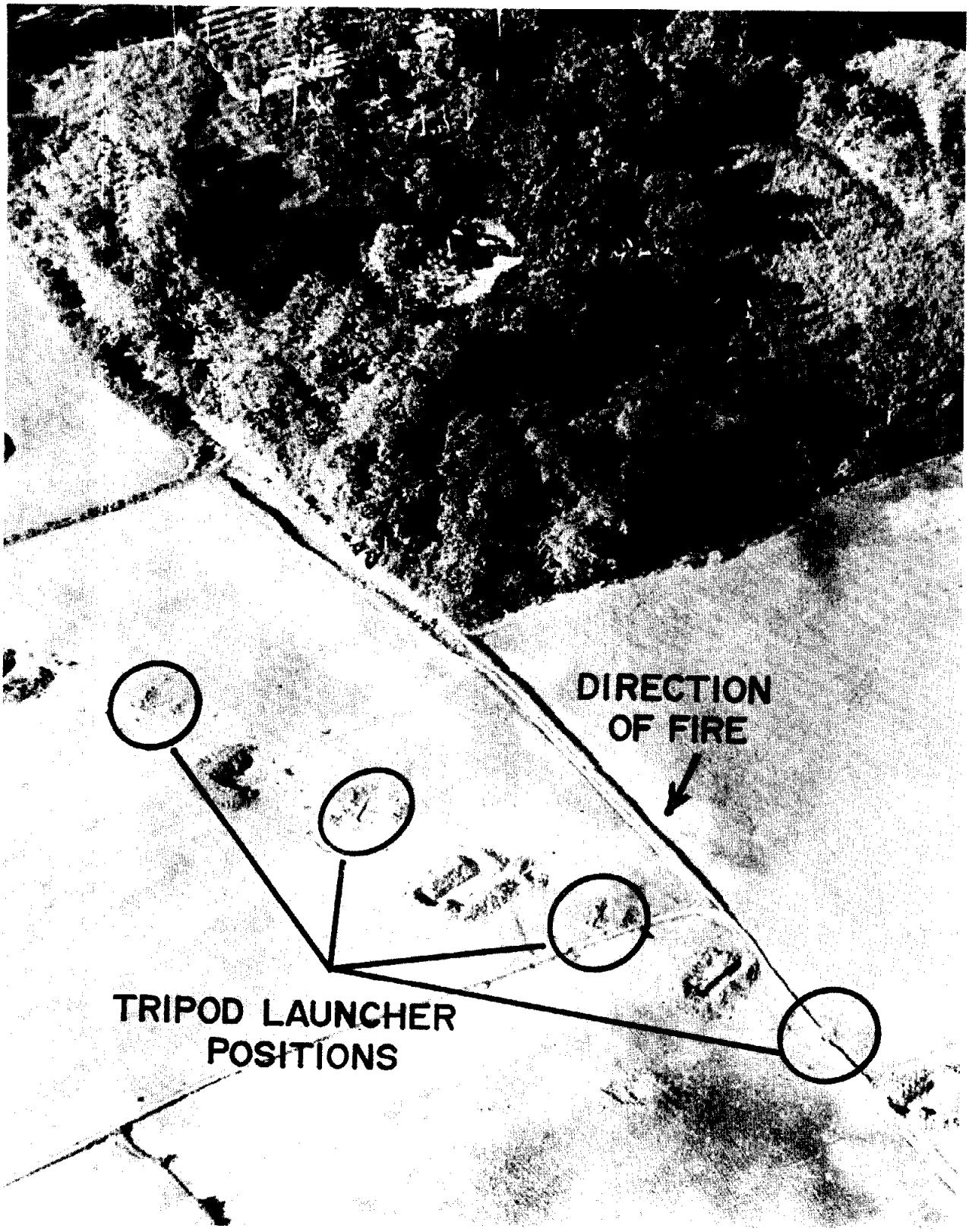


FIGURE 11. 122MM LAUNCH POSITION. "L" SHAPED TRENCHES WERE FOR CREW PROTECTION

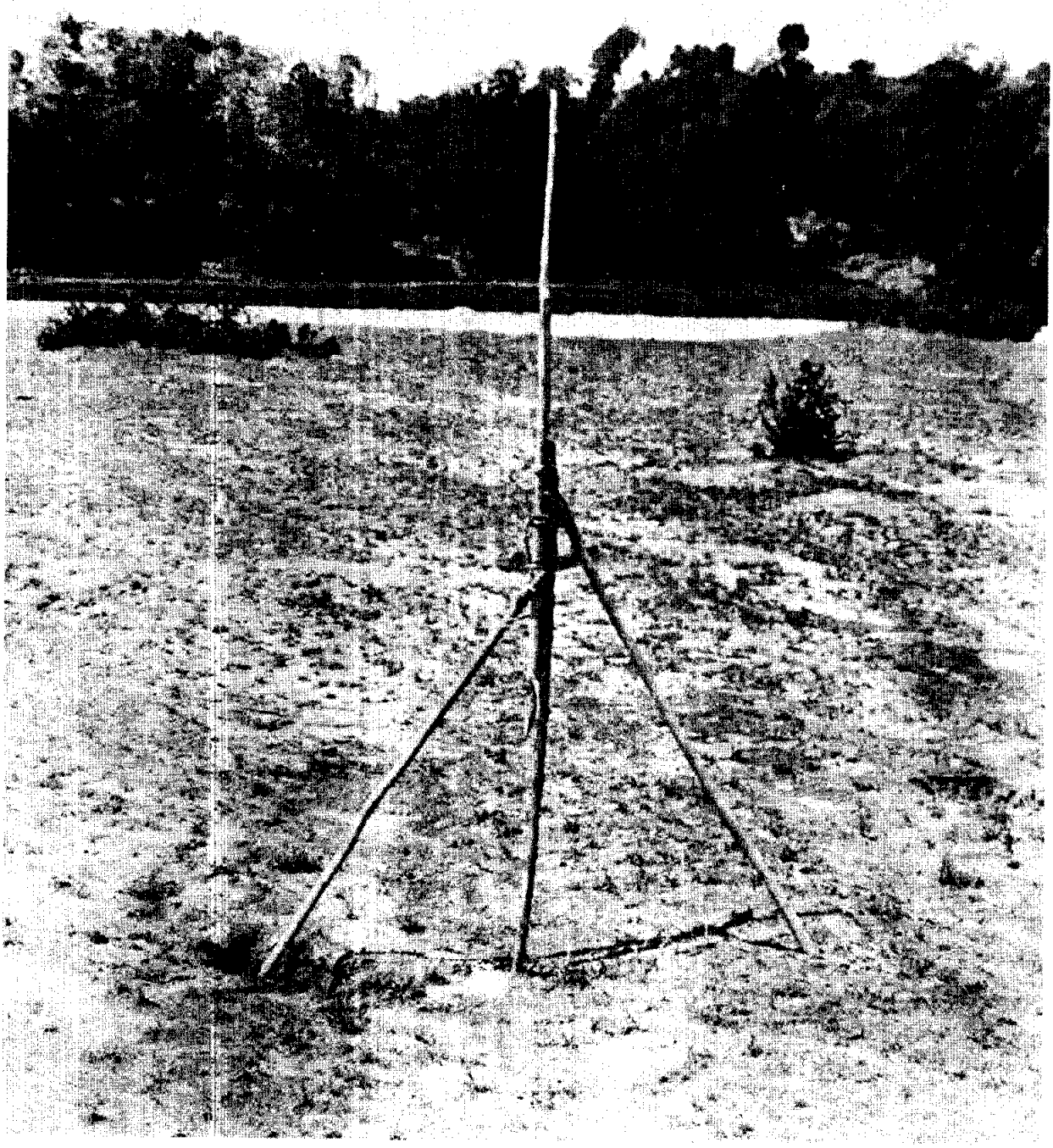
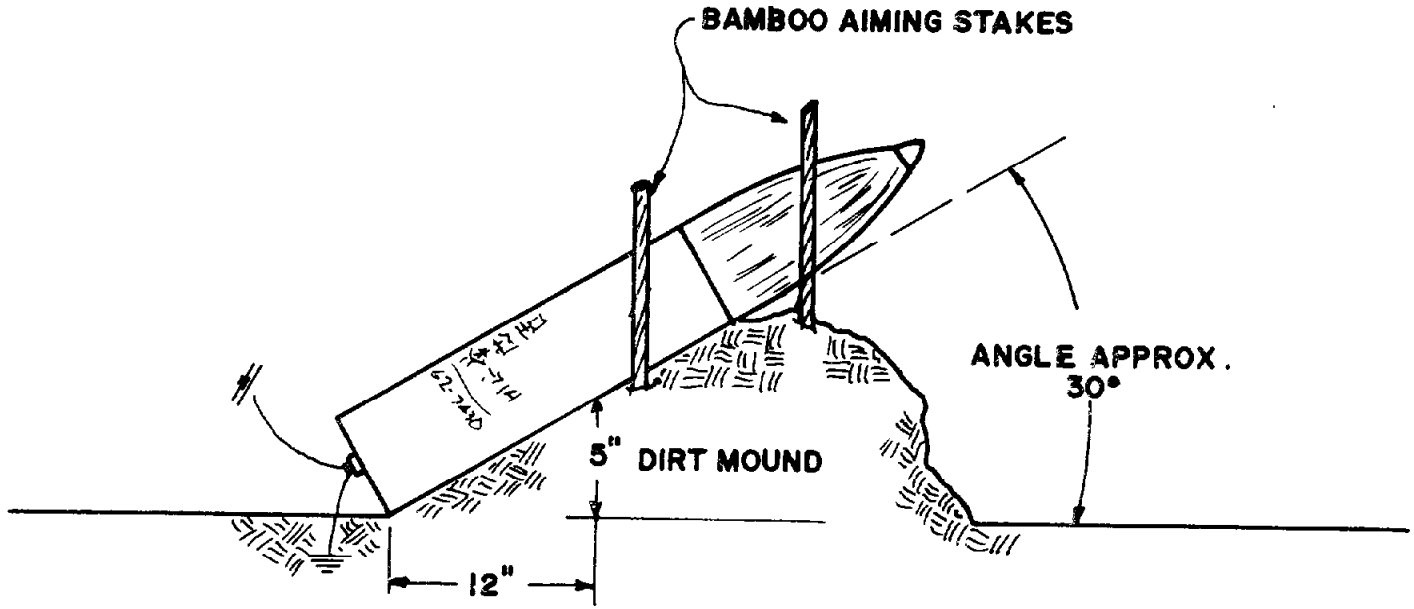


FIGURE 12. AI.ING STAKE USED DURING 122MM ROCKET ATTACK

FIGURE 13. 140MM ROCKET WITHOUT LAUNCHER IN FIRING POSITION. (NOTE TWO BAMBOO AIMING STAKES AT SIDE OF ROCKET.)

1ST AMTRAC BN FMF
3D MAR DIV FMF
28 AUG 67
YD 250677
(VIC. KY LAM)



140 MM ROCKET
FREE LAUNCHED

— SIDE VIEW —

NOT TO SCALE

FIGURE 14. 140MM ROCKET WITHOUT LAUNCHER IN FIRING POSITION

FIGURE 15. 122MM ROCKET CARRYING CASES. (LEFT - ROCKET MOTOR; CENTER - WARHEAD; RIGHT - FUSE.)

FIGURE 16. ABANDONED 140MM ROCKETS THAT HAD BEEN BOOBY-TRAPPED

7. (CMHA) SIGNIFICANT OBSERVATIONS AND LESSONS LEARNED:

a. The enemy normally begins moving into the launching area after darkness. Most rocket attacks have occurred between midnight and 0300 hours, indicating that several hours are required to prepare the firing positions. The period of greatest danger is during the period 2300 to 0400 hours. An exception to this was noted in areas adjacent to the DMZ where rockets were employed during daylight hours in conjunction with mortars and artillery.

b. There were no instances in which survey teams or launch crews were discovered in a launching area prior to an attack taking place. Generally, the only indication that a specific location is planned as a launching area is the probability that one or more days before an attack, a survey team will emplace stakes to indicate launcher positions and azimuth. Any area in which a pattern of stakes is observed should be immediately checked as a possible launching position. (In one case, 50 rockets were found in firing position, but no enemy personnel were located.)

c. The enemy has selected launching areas adjacent to friendly hamlets, observation posts and outposts. Rockets have been launched from positions within 500 meters of friendly forces. Do not exclude such areas when considering possible enemy launching areas.

d. In one case, the same launch area was used on two separate occasions to attack two different targets. In another case, on four separate occasions, attacks were directed against the same installation from launch positions that could be located within a 1,500 meter radius circle. Particular attention should be directed toward surveillance of areas in the vicinity of previously used launch positions.

e. Greater effort was taken to prepare 122mm launch positions than the 140mm positions. In all cases when 122mm rockets were employed, well organized firing pits, protective trenches, and security holes were developed. Minimal effort was apparent in the development of 140mm positions. It is probable that this difference in preparation was due to the fact that several rounds were normally fired from each 122mm launcher, requiring the launch crews to remain in position for a greater period of time than 140mm crews. Thus, more time is normally available to reaction forces to find and fix the 122mm positions than the 140mm positions.

f. In all cases where 122mm rockets were employed in III Corps Tactical Zone (CTZ), the launching areas were protected by antiaircraft machine guns and security forces. This type protection was not noted in launching areas in I CTZ. Airborne reaction forces should anticipate that antiaircraft weapons might be employed in conjunction with rocket attacks.

g. Multiple attacks and diversionary tactics were employed. Procedures should be developed for immediate alerting of other area installations whenever an attack occurs.

h. During most attacks, accurate counterbattery fire was not immediately brought to bear on the launch position. There is limited evidence to indicate that counterfires were responsible for causing the enemy to break off an attack before the planned firing program was completed. Continued effort is required to train ground and air observers in locating launch positions accurately and immediately adjusting counterbattery fires.

i. Extreme caution must be exercised when investigating equipment left in launch positions due to the possibility of booby-traps.

j. Casualties were sustained by personnel attempting to reach bunkers after an attack had commenced. Evidence indicates that fewer casualties occur if personnel caught in the open will immediately hit the dirt and roll to the nearest ditch. Those caught inside buildings, should seek cover under beds, desks, etc., and not attempt to run from a building to a bunker some distance away.

8. (U) CHECKLIST FOR ROCKET DEFENSE:

a. In view of the severity of some of the rocket attacks, an overall effort was directed toward finding ways and means of reducing the rocket threat. One of the command-wide actions was to develop a MACV Checklist for Rocket Defense of an Installation or Complex.

b. The MACV Checklist, which is an appendix to this document, is a consolidation of recommendations obtained throughout the command. It is intended to be used as a guide or a reminder of areas pertaining to the rocket threat that should be considered when preparing or reviewing defensive plans at major installations and complexes.

2 Appendices
1. MACV Checklist for Rocket Defense of an Installation or Complex
2. References

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CHECKLIST FOR

ROCKET DEFENSE OF AN INSTALLATION OR COMPLEX

A. (C) GENERAL:

1. Is there an integrated defense plan which includes, in addition to internal and perimeter defense, measures for friendly tactical operations (surveillance/patrols/ambushes/search and destroy) in the area out to the maximum range of the rocket threat as well as rapid reaction to limit the effectiveness of an attack and destroy the enemy?

2. Have major installations (likely rocket targets) within a complex been identified?

3. Has rocket belt been delineated? (Rocket belt defined as area encompassed between two arcs swung from central point within the installation; one arc representing maximum range of rocket, the other representing the closest most likely point of penetration of enemy rocket launch units. Arcs may be swung from more than one point within complex depending upon number and disposition of major installations therein).

B. (C) ENEMY SITUATION:

1. Where are probable launch areas? Within launch areas, where are most probable launch sites?

2. What are enemy capabilities? Type rockets? Size and identity of forces? Maneuverability?

3. What are enemy's routes of ingress and egress from rocket belt?

4. What are enemy's most probable lines of communication within rocket belt?

C. (C) FRIENDLY SITUATION:

1. Do maneuver elements operating in areas adjacent to the installation:

a. Concentrate surveillance/detection means and efforts within the rocket belt and approaches thereto; utilize to maximum availability electronic/mechanical/optical sensory equipment?

b. Conduct high density patrolling of probable launch areas within the rocket belt and approaches thereto? Are patrols briefed on launch area characteristics and what to look for?

CHECKLIST FOR ROCKET DEFENSE OF AN INSTALLATION OR COMPLEX (Cont)

c. Maintain positive control over waterways leading into and within the rocket belt?

d. Coordinate counterrocket activities, surveillance, patrolling, etc., with GVN, RVNAF, NP, FWF and other US forces in area of responsibility?

e. Provide ground/helicopter borne reaction forces to seal off enemy routes of egress, seek out and capture or destroy enemy rocket forces? Are LZ's available or established near probable launch areas to expedite insertion of helicopter borne reaction forces?

2. Are long range reconnaissance units tasked to recon routes of ingress into rocket belt?

3. Has a coordinated, integrated surveillance plan been established?

4. Artillery support.

a. Have specified strike zones been established in all possible areas?

b. Is there a dynamic harassment and interdiction program?

c. Does artillery have responsibility for coordinating detection means?

d. Are "clearance to fire" procedures established? Does artillery have authority to attack without clearance all detected launch sites based on either:

(1) Direct and positive observation?

(2) A reliable three-way intersection achieved from azimuths reported by established observation posts?

e. Are rules of engagement clear and understood?

f. Do artillery AO's overfly the rocket belt and approaches thereto frequently and thoroughly?

D. (C) OBSERVATION POSTS:

1. Are OP's and searchlights collocated? If not collocated, are direct communications established between them?

2. Are OP's surveyed in?

3. Has selective defoliation been accomplished to improve observation and surveillance?

CHECKLIST FOR ROCKET DEFENSE OF AN INSTALLATION OR COMPLEX (Cont)

4. Have OP's been specifically tasked for detection and reporting of rocket launchings? Have positive communications to counterrocket control center been established? Are all OP's tied in?

5. Are OP's prepared to report accurately and immediately? Are all equipped with instruments capable of measuring azimuths? Are personnel trained in flash ranging as well as forward observer procedures?

6. Has format been prepared for OP use in reporting rocket launchings?

7. Is provision made for counterrocket drills to exercise OP's?

8. Are personnel manning observation posts (other than artillery OP's), listening posts, ambush points, etc., trained in basic forward observer procedures, to locate enemy weapons firing and call in counterfire?

9. Do aerial observers know what to look for regarding rocket attacks; indications of impending attack, characteristics and locations of probable rocket launch areas and launch sites? Are airborne Forward Air Controllers and personnel airborne for other purposes utilized in supplementary observation role?

E. (C) AIR SUPPORT:

1. Have supporting aviation units been briefed on location of the rocket belt, enemy capabilities and potential launch sites?

2. Does air support unit understand and concur with coordinating procedures for counterrocket fires?

3. Is firefly available? If so, is it employed effectively?

4. Is there a capability to employ TPQ-10 (MSQ77) air strikes? Are they utilized in conjunction with other harassment and interdiction fires? Before and after rocket attack?

5. Is SLAR/IR type equipment available? Is it utilized?

F. (C) CONDUCT OF THE DEFENSE AGAINST ROCKET ATTACKS:

1. Are daily surveillance activities conducted?

   a. Patrols?

   b. Overflights?

   c. Reconnaissance inserts?

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CHECKLIST FOR ROCKET DEFENSE OF AN INSTALLATION OR COMPLEX (Cont)

d. Waterway patrols?

2. Are air strikes (AN/TPQ-10) utilized? Carefully selected?

3. Is flow of intelligence sufficient to anticipate enemy rocket attacks? Are procedures established for rapid dissemination of rocket intelligence?

4. Are PW's and Chieu Hoi's habitually interrogated for rocket information?

5. Has a rocket intelligence log been established to record all intelligence information pertaining to rockets indicating action taken?

6. Are daily checks made with local police and hamlet/village officials in or near the rocket belt?

7. Does emphasis continue to be on prevention rather than reaction?

8. Is plan flexible enough to counter simultaneous attacks from several launch areas?

G. (C) PASSIVE DEFENSE:

1. Is an alert system in effect at each major installation within vital area? Are personnel familiar with it? Are drills held?

2. Are personnel and critical equipment provided adequate protective shelter? Does each person know the location of his assigned shelter?

3. Are passive defense measures satisfactory?

4. Are large amounts of Class III and Class V supplies on hand? Dispersed and revetted?

5. Are provisions made for fire protection, medical aid, medical evacuation, and damage control?

H. (C) COMMAND AND CONTROL:

1. Is a single commander responsible for the integrated defense against enemy ground, air, mortar, rocket and artillery attack?

2. Does the commander have a single Operations Center to control all elements of the defense?

CHECKLIST FOR ROCKET DEFENSE OF AN INSTALLATION OR COMPLEX (Cont)

3. Are all elements of the defense represented in the Operations Center?

4. Does the Operations Center have the capability to plan, initiate, coordinate and control, when necessary, all defensive fires and defensive actions within the area out to the maximum range of attacking weapons?

5. Is there a reliable communications system established in the area of responsibility between all command and control centers, maneuver forces, firing elements, aircraft support and the observation/surveillance network?

I. (C) POST-ATTACK INVESTIGATION:

1. Has an after action inspection team been established? Trained? Equipped?

2. Are provisions made for cordoning off uncovered rocket position areas/impact areas until investigations are complete?

3. Are procedures established for early insertion inspection teams into rocket position and impact areas?

4. Are inspections conducted in accordance with after action inspection checklist?

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10. First Marine Division (Rein) FMF, Division Order 03120.19, Counter Rocket Program, 22 July 1967.

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