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# LESSONS LEARNED

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U.S. Army Military History Institute

## 56



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UNITED STATES MILITARY ASSISTANCE COMMAND, VIETNAM  
APO San Francisco 96243

Ser No 0523  
18 April 1966

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SUBJECT: Lessons Learned No 56: Operations Against Tunnel Complexes (U)

TO: SEE DISTRIBUTION

1. (CMHA) INTRODUCTION:

a. This issue of Lessons Learned deals with recent operations against VC tunnel complexes by US and Australian units in the III Corps area. Emphasis is placed on the problems associated with the detection and exploitation of "fighting" tunnel complexes particularly as found in the war zones and VC base areas.

b. The information contained herein is an expansion of that currently available in Lessons Learned No 45: Viet Cong Tunnels, 12 February 1965; Lessons Learned No 52: Operational Employment of the Mity Mite Portable Blower, 22 November 1965 and Handbook for US Forces in Vietnam, December 1965.

2. (CMHA) BACKGROUND:

a. The use of tunnels by the VC as hiding places, caches for food and weapons, headquarters complexes and protection against air strikes and artillery fire has been characteristic of the guerrilla nature of the war in Vietnam. The "fortified village" usually underlaid by an extensive tunnel system containing conference, storage and hiding rooms as well as interconnected fighting points has also been frequently encountered. As operations progressed into the war zones subsequent to 1 January 1966, an even more extensive type of tunnel complex has been encountered which combines underground security of personnel and supplies with an integrated, tactically located defensive system of fighting bunkers.

b. The tunnel/bunker complexes encountered in the war zones are obviously the result of many years of labor, some in all probability having been initiated as early as World War II, with extension and improvement continuing throughout the war against the French and up until the present time. These complexes present a formidable and dangerous obstacle

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to current operations which must be dealt with in a systematic, careful and professional manner. Additionally, they are an outstanding source of intelligence, as evidenced by the several tons of documents found during the clearing of the Saigon-Cholon-Gia Dinh headquarters complex by 173d Abn Bde in Operation CRIMP (January 1966).

3. (CMHA) TUNNEL CHARACTERISTICS:

a. The first characteristic of a tunnel complex is normally superb camouflage. Entrances and exits are concealed, bunkers are camouflaged and even within the tunnel complex itself, side tunnels are concealed, hidden trapdoors are prevalent, and dead-end tunnels are utilized to confuse the attacker. In many instances the first indication of a tunnel complex will be fire received from a concealed bunker which might otherwise have gone undetected. Spoil from the tunnel system is normally distributed over a wide area, but may be left in piles close to an entrance or exit under natural growth.

b. Trapdoors are utilized extensively, both at entrances and exits and inside the tunnel complex itself, concealing side tunnels and intermediate sections of a main tunnel. In many cases a trapdoor will lead to a short change-of-direction or change-of-level tunnel, followed by a second trapdoor, a second change-of-direction and a third trapdoor opening again into the main tunnel. Trapdoors are of several types; they may be concrete covered by dirt, hard packed dirt reinforced by wire, or a "basin" type consisting of a frame filled with dirt. This latter type is particularly difficult to locate in that probing will not reveal the presence of the trapdoor unless the outer frame is struck by the probe. Trapdoors covering entrances/exits are generally a minimum of 100 meters apart. Booby traps are used extensively, both inside and outside entrance/exit trapdoors. Grenades are frequently placed in trees adjacent to the exit, with an activation wire to be pulled by a person underneath the trapdoor or by movement of the trapdoor itself. Typical trapdoor configurations are shown in the sketches below.

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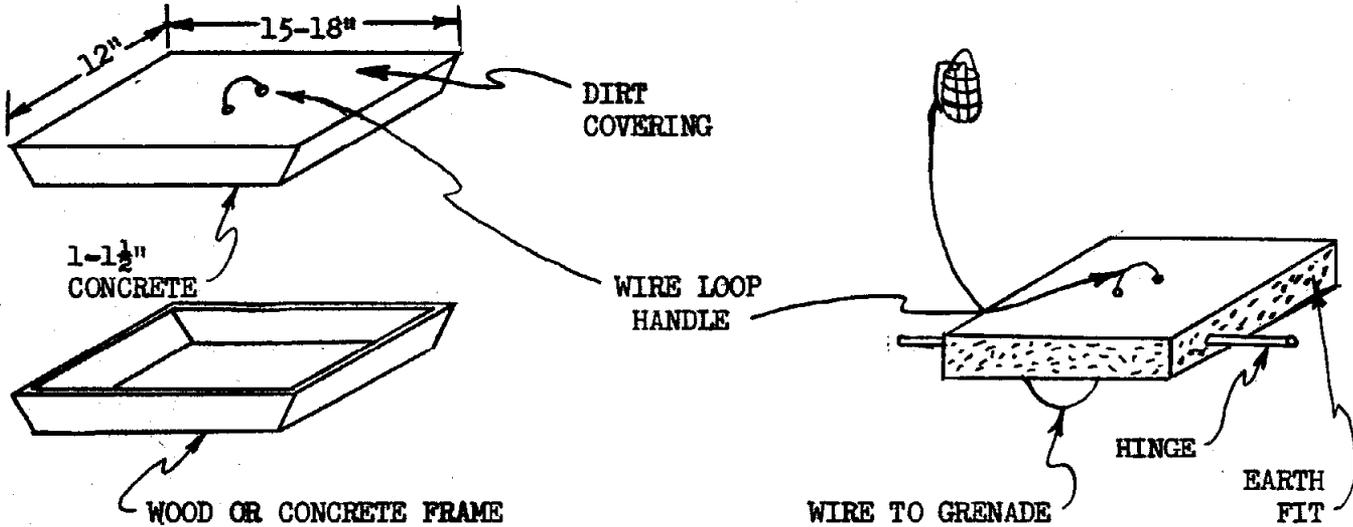
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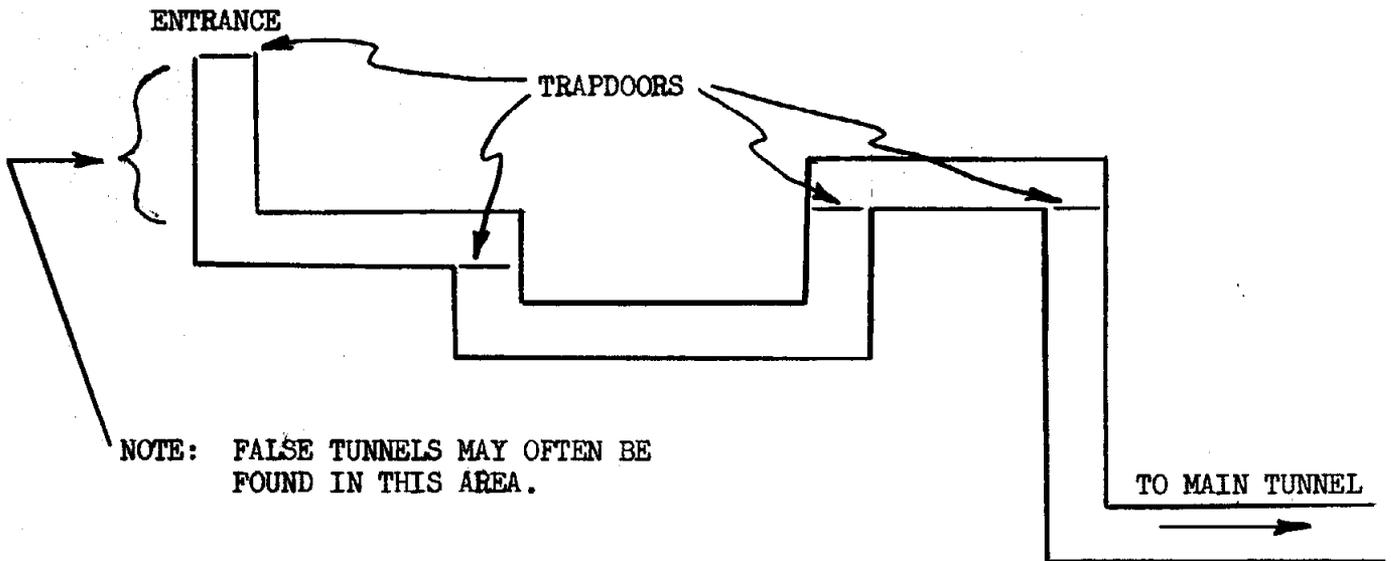
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The following typical elevation view of a tunnel entrance section illustrates use of trapdoors:



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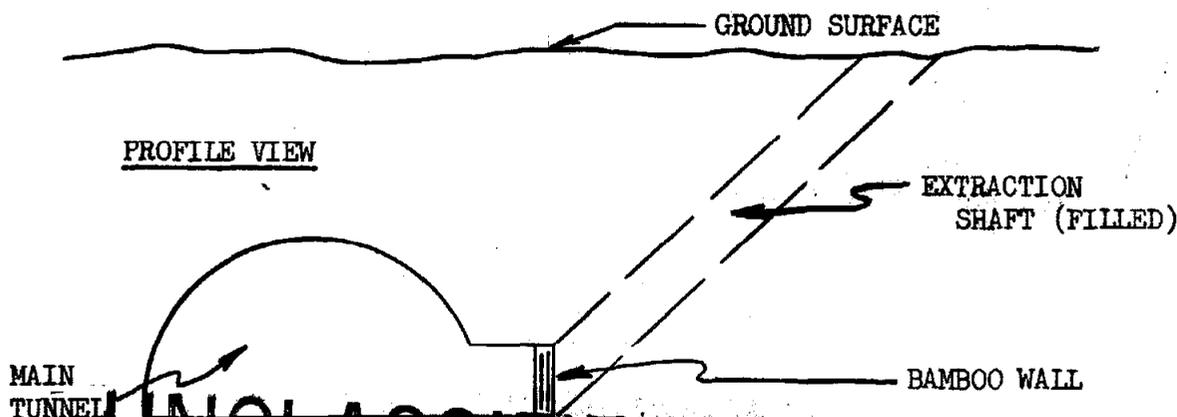
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c. Tunnel complexes discovered in the War Zones have generally proven to be more extensive and better constructed than those found in other areas. In some cases these complexes were multileveled, with storage and hiding rooms generally found on the lower levels. Entrance is through concealed trapdoors and secondary tunnels. In the deeper complexes, foxholes are dug at intervals to provide water drainage. These are sometimes booby trapped and have been known to contain punji stakes for the unwary attacker.

d. Although no two tunnel systems are exactly alike, a complex searched by 1st Bn, RAR, during Operation CRIMP may serve as a good example. The main tunnel length in this case was approximately 700 meters, with the longest straight stretch being approximately 10 meters and the shortest approximately one meter. Fifty foot side tunnels, or offshoots, were located about one for every 50 meters. The average tunnel size was two feet wide and 2 1/2 - 3 feet high. Other tunnels have been discovered, however, large enough to accommodate a man in an almost upright position. Air shafts are spaced at intervals throughout the system and are generally conical in shape, approximately 12 inches at the base and 2 inches at the top. Experience from the US 25th Infantry Division indicates that in some cases the shafts are dug from inside the tunnel by rodents held against the tunnel roof in cages, the animals in turn burrowing to the surface leaving an extremely difficult to detect, but functional air shaft. Rooms approximating four feet by six feet by three feet in height, were found about every 100 meters. Shelves were provided along one side wall together with various types of seats. These rooms were also found at the ends of secondary (offshoot) tunnels. At 30 to 40 meter intervals in the main tunnel wall, small offshoots were noted with bamboo backwalls. Further investigation revealed excavation shafts leading to the surface from behind the bamboo walls; the shafts, however, being filled in with dirt after the adjacent tunnel section had been completed (see Sketch below).



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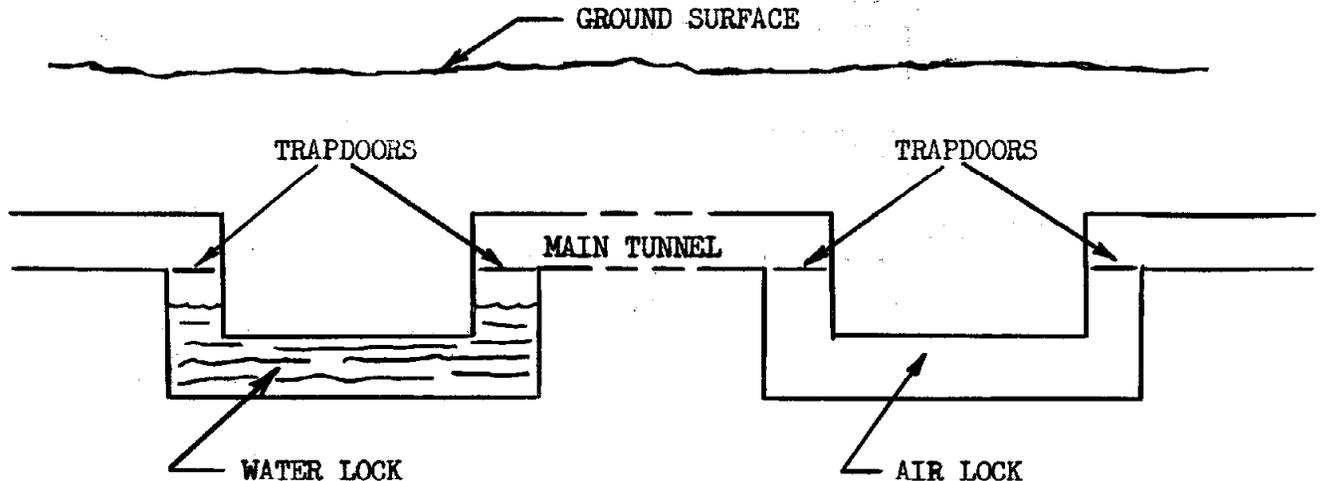
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e. Another tunnel characteristic of note is the use of air or water locks which act as "firewalls", preventing blast, fragments or gas from passing from one section of the tunnel complex to another. Use of these "firewalls" is illustrated in the following sketch:



f. Recognition of their cellular nature is important for understanding tunnel complexes. Prisoner interrogation has indicated that many tunnel complexes are interconnected, but the connecting tunnels, concealed by trapdoors or blocked by three to four feet of dirt, are known only to selected persons and are used only in emergencies. Indications also point to interconnections of some length, e.g. 5-7 km, through which relatively large bodies of men may be transferred from one area to another, especially from one "fighting" complex to another. The "fighting" complexes terminate in well-constructed bunkers, in many cases covering likely landing zones in a war zone or base area. Bunker construction is illustrated by the following sketches (bunkers located by 1st Bn, 503d Abn Inf, on Operation GRIMP):

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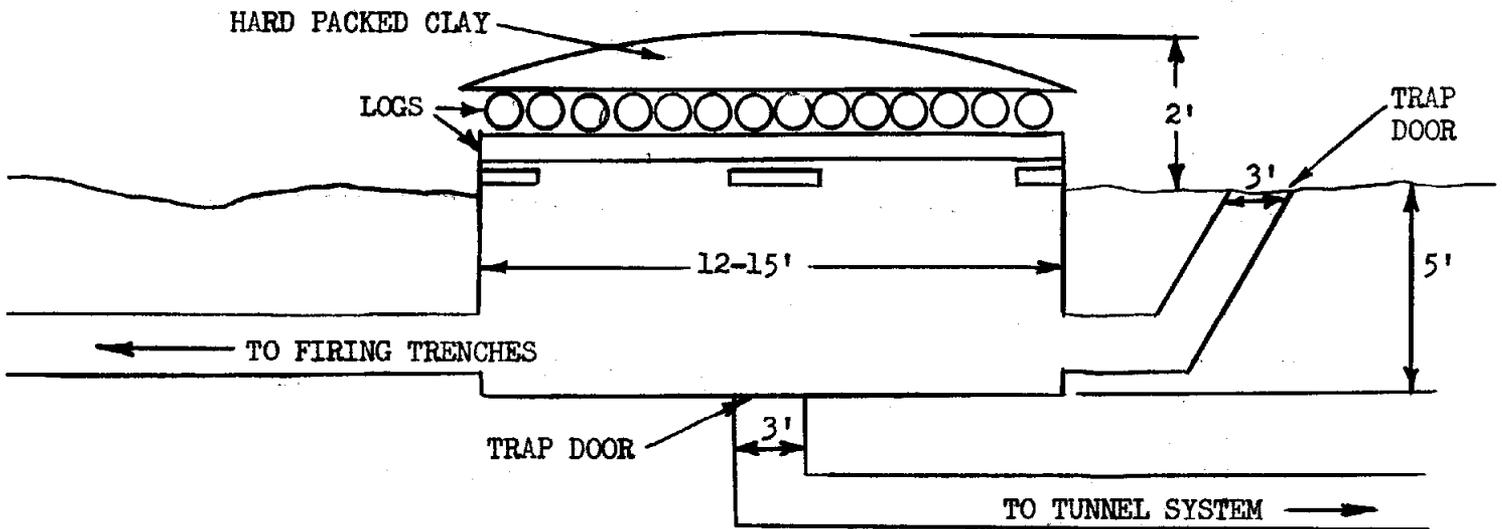
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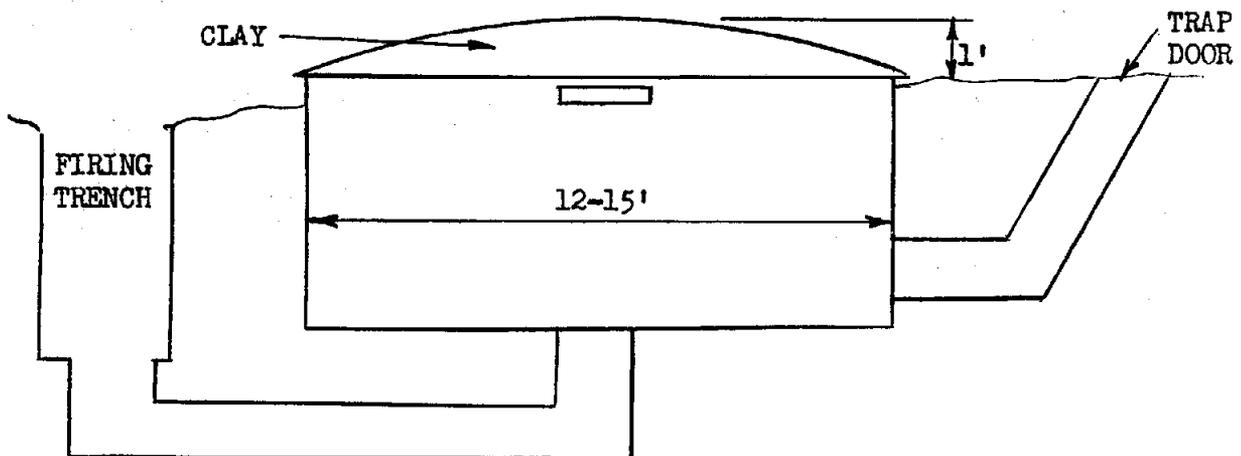
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(1) Bunker raised three feet with four firing ports.



(2) Bunker raised approximately one foot with one firing port.



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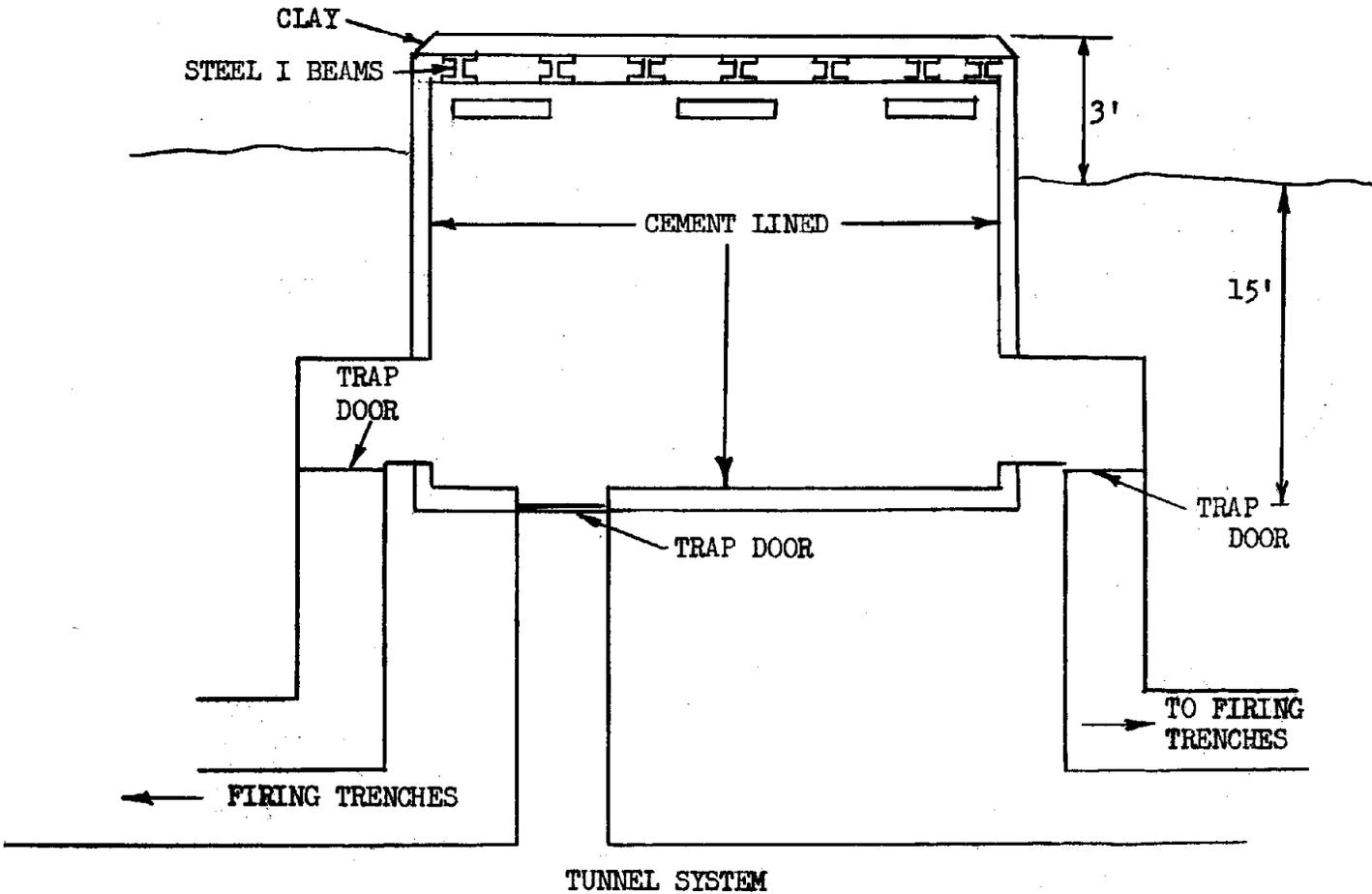
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(3) Command Bunker..



g. Integration of these bunkers into a "fighting" complex is illustrated by the following diagram apparently used as a guide for VC construction in the CRIMP area.

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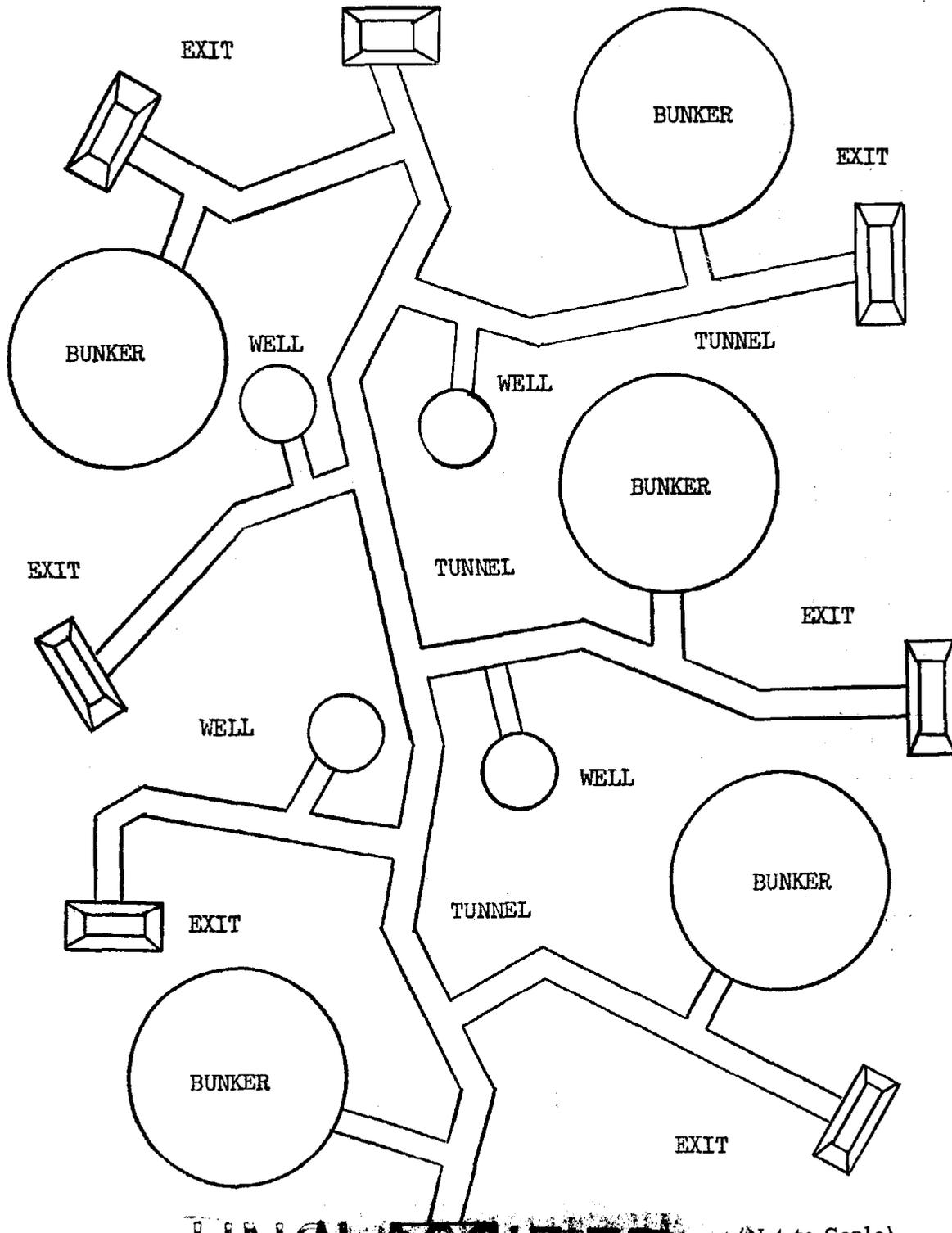
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4. (CMHA) OPERATIONS AGAINST TUNNEL COMPLEXES: The following experience of the 1st Inf Div in the Di An and Cu Chi areas is representative of tunnel operations to date:

a. Tunnel Exploitation and Destruction: In both operations the tactical situation permitted the employment of the following techniques:

(1) The area in the immediate vicinity of the tunnels was secured and defended by a 360 degree perimeter to protect the tunnel team.

(2) The entrance to the tunnel was carefully examined for mines and booby traps.

(3) Two members of the team entered the tunnel with wire communications to the surface.

(4) The team worked its way through the tunnel, probing with bayonets for booby traps and mines and looking for hidden entrances, food and arms caches, water locks, and air vents. As the team moved through the tunnel, compass headings and distances traversed were called to surface. A team member at the surface mapped the tunnel as exploitation progressed.

(5) Captured arms and food items were turned over to the unit employing the team.

(6) As other entrances were discovered and plotted, they were marked in such a way as to indicate if the Viet Cong used them after discovery, but before destruction could be accomplished. In many cases tunnels were too extensive to be exploited and destroyed in the same day and the Viet Cong mined entrances and approaches during the night after the tunnel team departed.

(7) Upon completion of exploitation, forty-pound cratering charges were placed fifteen to twenty meters from all known tunnel entrances and, where extensive tunnel complexes existed, ten pound bags of CS-1 Riot Control Agent were placed at intervals down the tunnel at sharp turns and intersections and tied into the main charge. Where sufficient detonating cord was not on hand to tie-in all bags of CS-1 to the main charge, bags of CS-1 were dispersed in the tunnel by detonation with a defuzed M-26 fragmentation grenade fuzed with a nonelectric cap and

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a length of time fuze. Sharp turns in the tunnel protected the demolition man from the grenade blast, if the detonation occurred before he exited the tunnel. It must be emphasized, however, that the denial achieved by the use of CS-1 is only temporary in duration.

b. Tunnel Flushing and Denial: When the tactical situation is fast-moving and enemy contact is heavy, two hasty methods may be utilized for flushing Viet Cong from tunnels and temporarily denying these tunnels as Viet Cong hiding places.

(1) Immediate Interdiction and Harrassment:

(a) The infantryman discovering a spider hole or tunnel entrance during intensive combat lobs an M-25 CS "baseball type" grenade in the hole, followed by a fragmentation grenade. The bursting of the CS grenade places an instantaneous cloud of CS in the tunnel and the fragmentation grenade blows the CS through a section of the tunnel while killing any Viet Cong near the entrance.

(b) The low level contamination resulting from the above method would serve only to discourage rather than prevent future Viet Cong use of that tunnel entrance.

(2) Hasty Tunnel Flushing and Denial:

(a) In some areas the combat situation will permit a hasty search for hidden tunnel entrances but either lack of time or Viet Cong occupation of the tunnel will not permit exploitation by the tunnel team in the manner described in paragraph 4a.

(b) In this case the Mity Mite Portable Blower can be employed to flush the Viet Cong from the tunnels using burning type CS Riot Control Agent grenades (M7A2). In addition, the smoke from the grenades will, in most cases, assist in locating hidden entrances and air vents (operational employment of the Mity Mite is described in Lessons Learned No 52).

(c) After flushing with CS grenades, powdered CS-1 can be blown into tunnel entrances with the Mity Mite to deny the tunnel to the Viet Cong for limited periods of time. It must be borne in mind, however, that this method will only be effective up to the first "fire-wall".

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d. A representative equipment list for a tunnel team is shown below:

- (1) Protective Masks - one per individual.
- (2) TA-1 telephone - two each.
- (3) One half mile field wire on doughnut roll.
- (4) Compass - two each.
- (5) Sealed beam 12 volt flashlights - two each.
- (6) Small caliber pistols - two each.
- (7) Probing rods - twelve inches and thirty-six inches.
- (8) Bayonets - two each.
- (9) Mity Mite Portable Blower - one each.
- (10) M7A2 CS grenades - twelve each.
- (11) Powdered CS-1 - as required.
- (12) Colored smoke grenades - four each.
- (13) Insect repellent and spray - four cans.
- (14) Intrenching tools - two each.
- (15) Cargo packs on pack board - three each.

5. (CMHA) DANGERS: Dangers inherent in the above operations fall generally into the following categories and should be taken into account by all personnel connected with these operations:

- a. Mines and booby traps in the entrance/exit area.
- b. Punji pits inside an entrance.
- c. Presence of small but dangerous concentrations of carbon monoxide produced by burning-type smoke grenades after tunnels are smoked. Protective masks will prevent inhalation of smoke particles,

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which are dangerous only in very high concentration, but will not protect against carbon monoxide.

d. Possible shortage of oxygen as in any confined or poorly ventilated space.

e. VC still in the tunnel — these VC pose a danger to friendly personnel both above and below ground (in some instances, dogs have successfully detected VC hiding in tunnels).

6. (CMHA) LESSONS LEARNED:

a. Tunnel techniques.

(1) A trained tunnel exploitation and denial team is essential to the expeditious and thorough exploitation and denial of Viet Cong tunnels. Untrained personnel may miss hidden tunnel entrances and caches, take unnecessary casualties from concealed mines and booby traps, and may not adequately deny the tunnel to future Viet Cong use.

(2) Tunnel teams should be trained, equipped and maintained in a ready status to provide immediate expert assistance when tunnels are discovered.

(3) Careful mapping of a tunnel complex may reveal other hidden entrances as well as the location of adjacent tunnel complexes and underground defensive systems.

(4) Small caliber pistols or pistols with silencers are the weapons of choice in tunnels, since large caliber weapons without silencers may collapse sections of the tunnel when fired and/or damage eardrums.

(5) Personnel exploring large tunnel complexes should carry a colored smoke grenade to mark the location of additional entrances as they are found. In the dense jungle it is often difficult to locate the position of these entrances without smoke.

(6) Two man teams should enter tunnels for mutual support. The second man can assist the first in emergencies.

(7) Tunnel team members should be volunteers. Claustrophobia and panic could well cause the failure of the team's mission or the death of its members.

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(8) Constant communication between the tunnel and the surface is essential to facilitate tunnel mapping and exploitation.

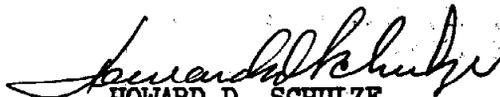
b. Tunnels are frequently outstanding sources of intelligence and should therefore be exploited to the maximum extent practicable.

c. Since tunnel complexes are carefully concealed and camouflaged, search and destroy operations must provide adequate time for a thorough search of the area to locate all tunnels. Complete exploitation and destruction of tunnel complexes is very time consuming and operational plans must be made accordingly to ensure success.

d. The presence of a tunnel complex within or near an area of operations poses a continuing threat to all personnel in the area. No area containing tunnel complexes should ever be considered completely cleared.

e. Current chemical denial methods are only temporarily effective against tunnel complexes. Test results to date indicate that CS-1 effects should last about seven days. Extensive research and development efforts have been requested in the entire field of tunnel location and denial to provide increased effectiveness in operations against tunnel complexes.

FOR THE COMMANDER:



HOWARD D. SCHULZE

Major, AGC

Asst AG

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