items which are essential are often made in local shops. One engineer battalion operating in RVN has an organic blacksmith squad which can manufacture such items as nails, hinges, straps, and shovels. Other engineer battalions are believed to possess this ability to varying degrees. In addition, the province and district workshops which normally manufacture weapons and munitions can be utilized to fabricate engineer items not available in supply channels.

e. Guerrilla Units

(1) Role of Guerrillas. The role of guerrillas can best be explained by the type of mission that he is given. The full-time guerrilla must remain on the move. His mission is offensive in nature. He does not assume a defensive posture unless he is surprised by friendly units, in which case he flees and goes into hiding. Guerrillas are used to reinforce Local Force (LF) and Main Force (MF) units only in operations near enough to the guerrilla village to allow them to return and assume their passive role of normal civilian pursuits. The guerrilla role in VC operations with Local and Main Force units will vary according to mission and capabilities of the units.

(2) Organization and Control. The size and organization of VC guerrilla units will differ in hamlet, village, district, province, and region. These differences are influenced by the geographical region, the amount of VC or GVN control in the area, and the populace of the area. The guerrilla unit which is directly subordinate to the Party Committee is controlled by the Military Affairs Section of the political/military headquarters at each command level (see Figure A-15, Typical Party Committee Organization). For this reason, guerrilla forces receive their orders from party committees and not from Main Force or Local Force units operating in the same area. The organization and strengths of guerrilla elements at lowest echelons are as follows:

<table>
<thead>
<tr>
<th>Hamlet Organizations:</th>
<th>Village Organization:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GVN-controlled Hamlet: 1 cell</td>
<td>1. GVN-controlled village: 1-1½ squads</td>
</tr>
<tr>
<td>2. Contested Hamlet: 2 cells</td>
<td>2. Contested village: 1-2 squads</td>
</tr>
</tbody>
</table>

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Echelon Party Committee

Executive Committee

Current Affairs Committee

Organization Section

Finance and Economy Section

Military Proselytizing Section

Civilian Proselytizing Section

Propaganda, NLF, SVN Committee

Sub-Sections

Security Section

Communist Liaison Section

Civilian Health Section

Military Affairs Section

Political Section

Staff Section

Rear Services Section

Guerrilla Unit

(C) Figure A-15 Typical Party Committee Organization.
(c) District and Province organization:

1. GVN-controlled areas: 1 platoon
2. VC-controlled or contested areas: 1-2 platoons

Number of personnel in a platoon varies from 30 to 32. Number of personnel in a squad is usually 10 and in a cell from three to five. The size of the unit, however, varies depending upon the population of the area.

(3) Missions and Employment. Depending upon the situation, unit capabilities, and requirement placed upon them by the province, district, and village party committees, the guerrillas are charged with the following missions:

(a) Provision of security to their own hamlet or village and in most instances to Local Force battalions when they are operating in the guerrillas' area.

(b) Production of food, collection of taxes, provision of assistance to munitions factories.

(c) Political and military proselytising (combination of recruiting, training, and indoctrination, to include propaganda).

(d) Planning and conducting terrorist activities.

(e) Reconnaissance and espionage.

(f) Sabotage.

(g) Extending battlefield. When VC are engaged in combat, local guerrillas may attack an installation, outpost, or watch tower at the same time, in the same general area. This gives the VC element an appearance of greater strength and may divert friendly troops.

(h) Replacement source for Main Force and Local Force units.

(i) Improvement of village defense. Guerrillas patrol hamlets and supervise the work of their inhabitants. They supervise the construction of combat positions, laying mines and booby traps, and emplacing punji traps around their area.

(k) Acting as cover force for LF and MF unit withdrawals.

(l) Miscellaneous missions, such as serving as guides or front line laborers.
(4) Conclusion. The guerrillas' chain of command and organizational structure indicates that their activities are restricted to small scale operations close to their homes and in defense of their villages. Limited training and equipment further restrict their usefulness as Local Force and Main Force units. Nevertheless, guerrilla units do serve as manpower pools for LF and MF elements. However, they make poor fighters for these units because they are basically home-oriented; therefore, they resist all moves that may separate them from their families. The guerrilla and guerrilla units are motivated primarily for local defense. There are no signs that the VC can be expected to change in the future.

7. (C) SAPPER AND ENGINEER TRAINING

a. General

The following discussion provides some details on sapper and engineer training to include training cycles, programs, and extent of training. As indicated by verbatim extracts of captured training programs (see Appendix 2), the enemy sapper and engineer training is combat oriented, comprehensive, and very effective. Upon completion of the specialized training, sappers and engineers are well qualified to perform any type of mine warfare mission and terrorist activities assigned to them.

b. Sapper Training

(1) Scope and training cycle. Sapper training is conducted at battalion level and above. Special courses are designated to qualify VC recruits as members of sapper cells in Main Force and Local Force units. Training prepares these cells to conduct reconnaissance of the battlefield prior to the initiation of action; to gather detailed intelligence of the objective, such as number and type of enemy troops; to pinpoint the location of automatic weapons; to note in detail the layout and construction of bunkers and fortifications; to record the location and types of obstacles; and to perform sapper tasks during the actual engagement. The training is well organized and continuous. Following an actual operation, sapper performance is evaluated, reappraised, and as appropriate, a retraining process is instituted. The training cycle lasts from three to six months, based on tactical expediency and on the level at which the training is taking place. The cycle is divided into two phases. The first phase involves actual combat, generally with an experienced unit or element. Classroom activities are normally held during the day and field exercises are conducted at night. Self-criticism is a very important part of the program enabling trainees to observe and point out other's strong and weak points.

(2) Basic Courses. Subjects taught to sapper trainees vary according to current needs and the physical limitations of the training site.
(a) The following is a combined list of basic courses extracted from numerous reports:

1. Weapons. Target practice, aiming methods, weapons assembly and disassembly.
2. Explosives. Characteristics and employment of explosive charges and preservation of explosives.
3. Unarmed combat. Arm and leg holds, defense against knife and rifle.
4. Political indoctrination.
5. Individual combat. Use of bayonets and grenades.
7. Sapper tactics. Theory and principles of breaching obstacles, attacking blockhouse posts, enemy troops, ships, docks, airfields, and installations.
8. Reconnaissance. Use of compass and binoculars, use of maps and sketches, infiltration to achieve observation, camouflage, choosing observation points, and crossing obstacles.

(b) A typical program of field training for sapper units consists of the following practical exercises:

1. Techniques of crossing spike traps, minefields, moats, ditches, streams, and swamps.
2. Movement over fields with stubble brush, dry leaves, mud, sand, or high grass, and areas of loose stone or gravel.
3. Clearing obstacles such as barbed wire (concertina, fence, and barbed wire with alarms - for example, tin can, trip wires, and electrical devices).
4. Transportation, assembly, handling, and employment of explosives of various types.
5. Methods of assaulting strong points and blockhouses.
7. Use of bamboo ladders and ropes in support of infantry, crossing moats, ditches, and storming walls.
(3) School Training

(a) A sapper training school located in Ha Dong Province, North Vietnam, conducted a 12-month course. Approximately three months of instruction were devoted to the methods of attacking boats, one month was given on the destruction of bridges, and three months on a specialized course in methods of ambushing convoys. Another three months were used to train the students in the tactics of attacking outposts. The remainder of the time was utilized for constant repetition of procedures to enable the students to become more competent in their abilities. A theoretical test was administered at the end of the course and a highlight of the instruction was a special trip to Hanoi, Harbor, where, under the direct supervision of highly skilled cadre, all students were given the opportunity to convert theory into practical application in the destruction of boats.

(b) Prior to December 1965, the C.10 Training Company of the C.10 Sapper Battalion conducted a two-and-a-half-month sapper training course for all new recruits being assigned to the C.10 Sapper Battalion. The sapper training was conducted at Loc Thuan Village, Cu Chi District, Hau Nghia Province. The subjects taught during this course included the following: SKS rifle, AK-47 assault rifle, 840 AT rocket launcher, grenade throwing, handling and use of explosives, and how to swim without being detected. Also taught were methods of attaching explosives to the hull of a boat, handling and employment of claymore mines, camouflage, fortifications, combat tactics, first aid, and political training.

(c) A VC sapper swimming course conducted in the Rung Sat Special Zone is reportedly three months long and includes physical conditioning, discipline, camouflage techniques, explosive characteristics, placement of explosives, and swimming. The course is divided into three phases. Phase one is a two-week trial period in which the student was taught self-sufficiency, military discipline, ideological washing, and camouflage techniques. In phase two, the basic part of the course, characteristics and use of explosives are studied. Special attention is given to the use of explosives against ships, bridges, and vehicles. Methods of attacking an outpost are studied, including methods of quieting barking dogs. The final phase was a critique of the course.

(d) Confirmed enemy engineer/sapper training facilities currently in North and South Vietnam are as follows:

1. Thi Cau Engineer Officer School, Bac Minh Province, NVN, XZ 120 438; 18-month course.

2. Sapper Training Center, Kien Hoa Province, SWV, XR 770 864; 2-month course.

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3. 402d Sapper Battalion Training Center, Quang Nam Province, SVN, vic AT 845 562; 2-month course.


c. Engineer Training

1. Officers

(a) The typical NVA engineer officer is qualified to construct expedient or temporary tactical structures but he must rely on the NVN Public Works Ministry for the construction of more sophisticated projects.

(b) The engineer officer may take his training at the Tho Cau Engineer Officer School in Bac Ninh Province, North Vietnam. Courses at this school last 18 months and approximately 500 students attend each course. Entry requirements specify that each student must have completed a ninth form education (US 11th grade), but they are accepted with a third to seventh form education (US third - eighth grade). Preparatory courses are given to each officer for the complex formulas and lessons.

(c) Another NVA engineer officer school was reported to be located in Son Tay Province in 1964. Prior to 1960, this school specialized in providing advanced training in engineering subjects for all engineer officers. Since 1960, students have been selected from the engineer enlisted cadre with a rank of W2 or lower. Upon graduation, the student is promoted to lieutenant platoon leader and assigned to an engineering unit in that capacity.

2. Enlisted Personnel. The NVA enlisted engineer training program is normally three to four months long. Little emphasis is placed on methods of construction, apparently because the NVA relies on its troops' own ingenuity to solve field construction problems. The program of instruction includes three general categories: political, general military, and specialized. The exact time spent on each subject is unknown.

(a) Political training includes traditions of the army, US "imperialist aggressors", situation from French domination to the present, situation in NVN and situation in SVN, duties of army, and youth in NVN for liberation of SVN, policy of NPLSVN, policy of civilian and military propelyting, and conduct towards captives and ralliers.

(b) Military subjects include general techniques such as rolling, crawling, disassembly and assembly of weapons, practice firing, patrol and sentry duty, and heavy load carrying. They also study unit tactics, which include attacks by maneuvering troops, attacks on strongholds, raids, and defensive tactics.

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(c) The specialized courses include general engineer-type subjects: theory and practical use of antitank mines, antipersonnel mines, TNT explosive charges, grenades, batteries, firing devices, firing wire, time fuzes, detonators, detonating cord, cutting barbed wire, road building, and bridge and road sabotage.

d. Training Programs. Appendix 2 provides a sample of detailed engineer training program for the following three types of units:

(1) Engineer Company
(2) Province Engineer Unit
(3) Engineer Detachment

All three programs are verbatim extracts of captured documents.

e. Weaknesses in Sapper/Engineer Activities

Regardless of the extensive training and competence of the individuals in their special skill, certain shortcomings in planning and conduct of operations by the sapper units are apparent. A captured enemy document lists some of the weaknesses as follows:

(1) Lack of overall coordination and over-reliance on small details in the operation plans.

(2) Excessive reliance on sappers and failure to exploit capabilities of the supported unit.

(3) Lack of pattern of proper guidance in selection of targets and priority of targeting.

(4) Failure to deny FNSAF covert intelligence effort.

(5) Failure to recognize the FNSAF reaction capabilities.

1. Reference 14.
SECTION III. (C) LOGISTICAL ASPECTS OF ENEMY WARFARE

8. (C) MATERIAL FLOW INTO SOUTH VIETNAM

a. General

While it is difficult to determine what exact routes of supply are used from out-of-country sources, there are general directions of movement that are common to the infiltration of both personnel and supplies. There are approximately 69 departure points from North Vietnam, located in 17 of the 31 provinces. For a detailed listing of those departure points, see Inclosure 1, Appendix 3. Most of the information below concerns personal infiltration and is included since it can be safely assumed that logistical routes and procedures are similar.

b. Travel in North Vietnam

(1) Utilization of the several modes of transportation available creates a variance in the time factor in moving a group, unit, or supplies from the vicinity of Hanoi to the last commo-liaison station or border post in North Vietnam. The time element is consistent throughout reports received and varies from 3 to 45 days. Prior to air interdiction of the extended battle area, the mode of travel was normally by truck or train into Quang Binh Province. Subsequent to November 1965, the distance travelled using these methods of transportation was restricted to the first or second river crossing sites south of Hanoi. The NVA continue to use Route 1A for troop movement during the hours of darkness, which is evident by the numerous bypasses and the construction crews who are continually reconstructing and repairing man-made interdictions. Recent aerial photo coverage reveals that the NVA has prepared individual shelters along the route for use by troops attacked during the night from the air. Roads which are now being utilized for vehicular traffic to the greatest degree are Routes 101, paralleling 1A, and 137 leading southwest to Laos.

(a) Vehicular Transportation. Reports indicated that groups averaging 144 persons required eight 2 1/2 ton Soviet Kolotova trucks for the movement to the last commo-liaison station in North Vietnam. The personnel embarked either with full individual equipment or with the supplies to be infiltrated. The trucks were heavily loaded and canopied to prevent detection by the local populace. The convoy departed at 0000 hours and travelled on Route 1 until 1400 hours. All members of the unit were then invited into the home of the villagers for a hot meal which had been prepared for them. Sources indicated that this pattern was maintained during the four days of movement by truck to the last commo-liaison station prior to departing North Vietnam. Groups travelling through North Vietnam by vehicle depart from places of origin between two to seven days apart.

(b) Rail Transportation. Two groups have departed from the Van Dien railroad station in Hanoi and another from Tuen Kien station in...
Hu Tho Province. One source indicated that he had travelled from Hanoi to Do Len railroad station, where he had to disembark due to the destruction of the railroad bridge over the Len river. Interdicted bridges now considerably limit the extent of rail traffic as a means of infiltration movement.

(c) Foot Movement. Travel by foot is the most accepted means of travel for the infiltrating forces. The average number of days spent in travel between Hanoi and the last station in North Vietnam is from 41 to 45 days. Groups depart separately and normally send out an advance party of two to four persons, including a political officer and a reconnaissance sergeant. The mission of the advance party is to prepare the route for the main body. They are concerned with procurement of food and bivouac areas along the line of march. They have been said to precede the main body by 24 hours. One of the directives to the local populace is to caution them against giving locations or names of the villages to the infiltrating personnel. The infiltration groups marched from 1800 hours to 0500 hours in the morning, and then they took shelter among the people in the village by day to preserve secrecy and to prevent the possibility of being struck by US/AF aircraft. There were times when the soldiers would sleep in the homes of the villagers and use the same cooking fires to prevent detection by aircraft. Each soldier carries a load of approximately 25 kilograms. From Hanoi to Ha Tinh the roads were good, but, for the remainder of the route, the roads were in poor condition, and the movement was slow. Repair crews were busy at each place where the road had been heavily damaged. During times of the full moon, only small lights were used. The trucks kept about eight meters distance between vehicles. The crossing of the Gian river was made by a single-engined ferry capable of carrying four loaded trucks. At night, the soldiers were not allowed to leave their shelters. If they asked the villagers for the names of the towns or in which direction they were moving, they were upbraided for their curiosity. Some rivers were crossed by boats that were sometimes large enough to carry 30 fully loaded personnel. The infiltrators often met refugees who had fled from the bombing at Dong Hoi and were consequently living in the countryside. The units marched for an hour with a ten minute break at the end of every hour except for the first break of the day, which came after the first one and one-half hours. If the terrain was difficult, 30 minute breaks were taken every one and one-half hours. During breaks, a battalion divided into equal segments, one on each side of the trail. There were three guards posted at the head and rear of the columns. During meals, the battalion reconnaissance squad acted as an advance guard, and an infantry squad, a different one each day, acted as the rear guard. At each one-day rest station, every three or four days, the groups stopped to wash clothes and rest. During rest periods, two three-man cells from each company stood guard. If the rest periods were more than one-half day in length, tunnels were dug for protection. If the stop was more than two days, tunnels would be completely camouflaged. Length of these rest halts was determined by the battalion cadre. The word was passed to the personnel by means of meetings at company level with the platoon leaders and the company commander.
(2) Final station in North Vietnam

(a) The final communications station has been reported in several locations. The location most often reported is Ho village, also called Lang Ho or Two Elephants Station. The most probable location as determined from several reports is in the vicinity of XD 743 760. The infiltration groups normally remain in Ho village for two days and nights, preparing for their journey through the Republic, Laos, and Cambodia.

(b) Station Number 1 (also known as 2C) is reported to be composed of approximately 30 thatched houses of varying size which are utilized as the station offices, barracks, and animal shelters. One source reported the station to be manned by two companies of personnel whose function was to farm and raise cattle.

(3) From Ho station, groups moved either south through the Demilitarized Zone or southwest to Laos. Crossing of the Ben Hoi river is mentioned in nearly every report, as is Hill 1001, which is one to two days march from Ho village. The infiltration groups normally climbed to the summit of Hill 1001 on the first day of departure from Ho village, camped overnight in the forest, and marched to the base of Hill 1001 on the following day. The groups normally associated travel after the first three days out from Ho village as being either in the Republic or in Laos.

(4) There are two main routes used to infiltrate personnel and supplies into the Republic through the DMZ from North Vietnam. One moves from Ben Lang city (YD 069 861), along the Song Ben Hoi river valley from XD 94 77, across the Song Ben Hoi river (vicinity XD 91 66), and south through Quang Tri province. The other route moves southwest from Vinh Linh city (YD 145 875), across the Song Ben Hoi (vicinity XD 095 765), and southwest towards Van Lo (XD 14 60). Recent reports indicate that supplies are being moved south through the Song Ba Long river valley.

c. Travel through Laos

(1) The infiltrating army units spend an average of 45 days travelling south through Laos. The units or groups entered Laos through the Nape and Mia Gia passes from the western portion of the DMZ and then across the Bang Heng river. Sources normally referred to this as the Song Ben Hoi river. The infiltrator normally realized that he was in Laos only after crossing Route 9 and the Se Pone river. The route in Laos is travelled both night and day, depending on the overhead concealment offered by jungle canopy. The route in Laos is often mentioned by sources as the Ho-Chi-Minh trail or the Strategic Route. For further information on this, see Inclosure 5, Appendix 3.

(2) Methods of accomplishing river crossings vary with each unit. Some have waded through chest-high waters, while others have crossed by swimming with the aid of inflated nylon cloth. One group crossed the Se Pone
river on a ferry formed by two boats and manned by NVA members. The boats were linked tightly together and were four meters wide and seven to eight meters long. The dock was made of boards, and the source indicated that 100 personnel fully equipped and standing upright made the trip. Small streams were crossed on footbridges suspended from the banks of streams. All of these small bridges were similar: each one of them had two large ropes that ran parallel from one bank to the other, with a space of about one meter between the ropes. To keep the ropes from being displaced, pieces of bamboo were placed on them, enabling one to walk on the bridge. Two other ropes were placed at chest height for use as hand rails.

(3) The groups normally rested one day for every five days of movement through Laos. The rest halt was accomplished at one of the commo-liaison stations that provided the infiltrators with rice and limited medical care at the end of each day. The commo-liaison agents guiding the troops were either NVA soldiers or Montagnard tribesmen who returned to the previous commo-liaison station on the following morning. The commo-liaison stations are normally centered around three or four thatched houses, each measuring five by eight meters.

(4) Sources have reported seeing vehicles carrying weapons and food for the NVA personnel in the Republic while marching through Laos. Sources also saw vehicles with 10 wheels travelling in groups of 10 at 50-meter intervals. The convoys moved at night, using blackout lights, and parked under thick trees along the roadside during the day.

(5) Characteristics of Roads in Laos

(a) The north-south roads in Laos used in the infiltration of supplies are all motorable except when they are temporarily interdicted by air strikes. Routes 8, 12, 23, 92, and a portion of Route 9 are motorable during the majority of both the wet and dry seasons. Route 10, east and west, is motorable for trucks in the dry season, and bicycles are used on this route for transport during the rainy season.

(b) Many engineering groups are involved in the repair of roads in Laos. Each group was estimated to be of platoon size, and they resurfaced the cratered and cut roads with bamboo and gravel.

(6) That portion of the route that passed through Laos is often the worst part of the journey south. Cases of malaria, dysentery, beri beri, and typhoid increase as travel progresses through dense jungles, rain, and mosquito-laden forests. Sources have indicated that rice received in Laos is inferior in quality and tasteless compared with that of North Vietnam. The infiltrators endure extreme hardships characterized by heavy loads, unpotable streams, slippery paths, high steep slopes, and shortage of food. Reports reveal that some infiltration groups lost 40 percent of their entire complement to disease, defection, or bombardments.

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(7) The groups traveled for approximately 14 hours per day in Laos and attempted to move 20 to 30 kilometers during the time. At times, the guides or liaison agents forbade the infiltrators to smoke, cook, or make noise for fear of being shelled or attacked by aircraft. Camouflage discipline was observed at all times and was enforced by the cadre and the liaison agents to the extent that all foot tracks had to be erased from shorelines after crossing rivers.

(3) The infiltration groups moved normally into Quang Tri, Thua Thien, or Kontum provinces in the Republic upon departing Laos, and some units proceeded south into Cambodia for further movement to southern I CTZ or III CTZ. (See Figure 4-16, Administrative Divisions and Military Regions).

d. Travel through Cambodia.

(1) North Vietnamese infiltrators have used Cambodia as part of their route since 1961. The main mode of travel on the infiltration is by foot. Reports have been received of enemy troops being infiltrated by truck through Cambodia; however, this vehicular traffic is used primarily to transport enemy supplies. The exception is the clandestine movement of high ranking officials by automobile between the Republic and Hanoi via Phnom Penh.

(2) Early infiltrators were cadre, military staff personnel, and party organizers who were assigned to various military and political committees within COSVN. Later, NVA combat units joined these cadre groups in the use of Cambodia for infiltration in the Republic. Since that time, the groups have increased in size and frequency of infiltration. Along with this rise in personnel infiltration through Cambodia came the rise of infiltration of supplies.

(3) There is no single Cambodian infiltration trail; rather it is similar to the Ho-Chi-Minh trail in that it utilizes narrow jungle trails, river valleys, portions of highways, and mountain passes, peaks, and slopes. Any combination of these may be utilized by any one infiltration group. Reports and captured documents do not reveal what factors are considered in determining the route or portions of the route which each of the units uses during infiltration. Some of the more logical factors which affect the decision are the ultimate assignment area of the unit, the size of the unit, the weather as it would affect one series of trails differently from another series, and the tactical situation. The trip through Cambodia may take as little as one day or as long as one month. The infiltrators were guided through Cambodia by agents described by different sources as being Cambodian, North Vietnamese, or South Vietnamese. It is possible that the actual infiltration management is conducted by the North Vietnamese personnel and that the others seen on the trails or at way stations were civilian personnel hired by the NVA or Viet Cong personnel.

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(U) Figure A-16. Administrative Division and Military Regions

A-73
(a) The personnel infiltration route leads into Cambodia from both Laos and Kontum province in the Republic, with entry points from both countries located near the tri-border area. Other crossing points to Cambodia from the Republic have been reported further south in the area of the Se San river and Route 19, as well as numerous crossing points either mentioned in interrogation reports, sightings by friendly units, or interpretations from ground and aerial photography of the area. The corridor in Cambodia generally runs parallel to the Cambodian border, since the general lay of the mountain ranges and the abundance of the north/south river valleys (including the Se San and the Prek Dak Dem, which form part of the border itself) tend to favor a route of movement parallel to the border.

(b) Interrogation, imagery, and agent reports show that a corridor of infiltration trails and way stations exists as little as ten meters to the west of the border, with a concentration of troop movement reports, crossing points, way stations, and installations in the vicinity of the tri-border area, and another such concentration in the Chu Prong area (Base Area 701). Although the information contained in interrogation reports is not in sufficient detail to locate precise points along the Cambodian infiltration corridor, they do indicate that personnel infiltration continues southward in Cambodia to points in the Republic including Kontum, Pleiku, Bariac, Quang Duc, Phuoc Long, Minh Long, and Tay Minh provinces (Figure A-16).

(4) The way station system in Cambodia is similar to the one in Laos in that the stations are 1 day's march or about 15 kilometers apart, with food resupply points 3 to 10 days apart. The stations, especially the ones used for resupply, consist of a few jungle huts used for food and material storage and as shelter for sick and injured personnel. Infiltrators are issued several days rice ration amounting to about seven hundred grams per man. Not all of the way stations contain structures or issue points. Some are merely bivouac areas at which infiltrators rest and cook the rice issued to them at a previous station. The stations are connected by foot trails one-half to one meter in width. The trails are old and are obscured for the most part from air observation. In some sections this concealment from air was accomplished by tying large tree branches together above the trails. Some sections of the trail are lined with spikes and booby traps. The infiltrators march for as long as 10 to 13 hours per day in Cambodia, with a ten minute break each hour during movement. They ford the smaller streams, and they are ferried across the larger ones, such as the Tonle San river, in 4- to 20-man boats. Different sources identified the operators of these boats as being North Vietnamese soldiers and Cambodian nationals. The infiltrators move in a close single file formation, moving during the daylight hours.

(5) Characteristics of roads in Cambodia

(a) Route 1 is an all-weather, bituminous surface treated
road, and is in good condition. Shoulders are one to five meters wide, made of earth and grass, and are in fair condition. The route is embanked above surrounding low area. Capacity: 3.68 dry/1.551 wet short tons forward per day (STPD).

(b) Route 2 is an all-weather, bituminous surface treated, and fair weather improved earth and crushed stone road, 3.0 to 5.0 meters wide. The route is subject to short-term flooding. Capacity: 688 dry/0 wet STPD.

(c) Route 7 is an all-weather, bituminous surface treated road, 4.2 to 5.0 meters wide, in good condition that deteriorates to a crushed stone road and is in fair condition near the Republic border. Shoulders are of grass and earth, 1.0 meter wide. Capacity: 3.6 dry/1.571 wet STPD.

(d) Route 13 is an all-weather, bituminous surface treated road, 2.5 to 4.0 meters wide, and is in fair to good condition. The route is embanked through low-lying area. Shoulders are 1.0 to 1.5 meters wide of earth and grass. Capacity: 3.665 dry/1.572 wet STPD.

(e) Route 14 is an all-weather, bituminous surface treated road that is 2.5 to 4.0 meters wide, and is in fair condition. The route is embanked through low areas, and the shoulders are of earth and grass, 1.0 to 1.5 meters wide. Capacity: 408 dry/0 wet STPD.

(f) Route 15 is an all-weather, bituminous surface treated road, 3.5 to 4.8 meters wide, and is in fair condition. Shoulders are of earth and grass, 1.0 meters wide. The route is embanked above low-lying area. Capacity: 510 dry/102 wet STPD.

(g) Route 16 is a 4.5 meter wide, limited all-weather, bituminous surface treated, and earthbound macadam road, and is in fair to good condition. Shoulders are 0.7 to 1.0 meters wide and in poor condition. Short-term flooding occurs locally in low areas. Capacity: 3.617 dry/1.862 wet STPD.

(h) Route 17 is a limited all-weather, earthbound gravel road, 3.5 meters wide, and is in fair to poor condition. Shoulders are 0.5 meters wide of earth and grass. Capacity: 2.228 dry/1.810 wet STPD.

(i) Route 19 is a limited all-weather, earth and sand bound macadam and improved earth (laterite) road, 3.5 to 4.0 meters wide, and is in fair to poor condition, deteriorating to a fair-weather, improved earth road in poor condition. Shoulders are from 0 to 1.5 meters wide and consist of earth, grass, and brush, and are in poor condition. The route, near the Republic's border, has been rutted and washboarded by heavy trucks. Some sections consist of soft sand, and temporary flooding during heavy rains
makes passage difficult even for four-wheel drive vehicles. Some sections are being improved. Capacity 961 dry/317 wet STPD.

(j) Route 22 is a limited all-weather, earthbound macadam road, 4.0 meters wide, and is in poor condition. Shoulders are of earth and grass, 1.0 meter wide, and are in poor condition. The route is embanked through low-lying areas, and some sections have deteriorated from lack of maintenance. Capacity: 923 dry/155 wet STPD.

(6) Characteristics of Cambodian Waterways

(a) Tonle Bassac (Song Hau Giang). This river has an average width of 300 meters. The safe drift is estimated to be 0.8 meters at low water (January-May) and 2.5 meters at high water (July-October). The velocity varies between five and seven kilometers per hour during high water. Local guides are required for safe navigation at low water by LCIs, junks, sampans, and self-propelled barges. At low water, it is navigable by small native craft. Tidal influence is felt at low water only.

(b) Tonle Mekong (Song Tien Giang). This river has a width varying from 800 to 2,500 meters, while the average is 1,000 at mean water. The controlling depth is 2.0 meters at low water and 8.0 meters at high water. The normal velocity at high water is 14 kilometers per hour. The channel is difficult to navigate and is braided. Rock sills and rapids at outcrops are common at low water. It is navigable at high water by LCIs and LCTs and at low water with difficulty by small powerful craft of up to 30 tons capacity.

(c) Tonle Sap (Ya Krong Bolah). This river has an average width of 350 meters at low water, diminishing to two meters near the Republic's border. Safe draft is estimated to be 0.8 to 1.5 meters at high water. Velocity varies between 0.9 and 1.1 kilometers per hour at high water. Mean water occurs in January, June, and November, with high water/low water periods occurring inconsistently in between. The river is believed to be navigable to small motor launches at high water and to native craft all year.

(d) Tonle Srepok (Ya Krong). This waterway exhibits an average width of 200 meters at mean water, with a minimum of 90 meters at low water and a maximum of 400 meters at high water. Velocity varies from 0.9 kilometer per hour at low water to 7.9 kilometers per hour at high water. Mean water occurs in June and November, with high and low water stages occurring inconsistently in between. The Srepok is believed to be navigable to small motor launches at high water, and to sampans and native river craft all year.

(7) Reports have indicated that the Viet Cong are using Cambodian ports, such as Phnom Penh and Kampong Cham, as transfer points for out-of-country sources. From these ports and other sources, goods from North
Vietnam and other communist sources are transferred to numerous small craft that resemble Vietnamese commercial and freight vessels in current usage for eventual shipment to various points in South Vietnam by way of numerous inland waterways. These exact routes of infiltration are hard to determine due to the vast inland waterway net. The major routes used to move supplies from the Cambodian border are as follows:

(a) From Cambodia to Phu Quoc island to Kien Giang and An Xuyen provinces.

(b) From Cambodia through the Tri Lien Forest, the Three Sisters Mountain, and into An Xuyen province.

(c) From the Dung Van base area via the Kinh Tri Ton canal to the Seven Mountain base area.

(d) From the Giang Bau base area via the Kinh Bien Than Nonh canal to the Song Hau Giang river.

(e) Via the Kinh Gai Co canal through the Flaine des Joncas base area to the Kinh Cong Hax canal and west to An Giang and Chau Doc provinces. For a more detailed description of the IV CTZ inland waterway transportation routes, see Inclosure 3, Appendix 3.

e. Movement Corridors Within the Republic of Vietnam (See Figure A-17)

(1) Reports of enemy logistical movement are used to identify patterns of movement which are possibly associated with supply corridors. A supply corridor is not confined to one route but is generally composed of many trails, roads, and/or waterways. This is due to both the Viet Cong's methods of transportation and to friendly forces' superior firepower, air activity, and mobility. Corridors are divided into possible and probable categories. A possible corridor is based on one interrogation report or three different agent reports. A probable corridor is based on one or more interrogation reports supplemented by any number of agent reports. Logistical movement may be in either direction within a corridor. The logistical corridors have a width of ten kilometers or less; they are based on interrogation and agent reports with the exception of IV CTZ where the corridors are also substantiated by red hue emissions and SIAR returns.

(2) Within Military Region 5 (Figure A-17), logistical corridors fall into several categories. There are corridors which move from low to high terrain; corridors which move within the highlands; corridors which start near the sea, or start near main rivers leading to the sea that may indicate sea infiltration; and out-of-country corridors that enter the Military Region. Any one corridor may fall into several categories. Most of the logistical corridors in Military Region 5 start in coastal or inland piedmont areas and lead towards the highlands where most enemy headquarters base areas are found. Practically all the movements in these corridors are reported to be rice movements. In addition, civilian laborers and boats transport ammunition and foodstuffs along these corridors.
(U) Figure A-17. Supply Routes & Movement Corridors Leading Into RVN

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(3) There are several corridors which originate in areas close to the coastline or cross inland waterways that lead to the sea. These corridors may indicate sea infiltration landing points or waterways used to move infiltrated supplies from coastal to inland areas. Ammunition and food stuffs are the primary supplies moved along these corridors.

(4) Corridors which originate in the highlands and move through lowland areas to other highland areas may indicate a redistribution of supplies among enemy base areas. In these corridors, civilian laborers transport rice and munitions. There are several out-of-country corridors that enter Military Region 5, one of which starts in the eastern 17Z and moves south into the Tri-Thien-Hue Sub-region. Another infiltration route in the A Shau valley has been identified from reports of enemy truck movements and road construction activities. It runs along Route 922 in Laos and continues on Route 542 in the Republic. At the present time, it is not known what type of supplies are being infiltrated on these routes. Since trucks are used, weapons, ammunition, and other heavy materials could be transported. In time, other corridors may be developed from reported trail movements and road construction activities in this area. The A Shau corridor may connect with the corridor that runs between the highlands and lowlands of Thua Thien province. Civilian laborers have moved food and munitions along this corridor. From Cambodia and Laos, there are several approaches to the border of Military Region 5. The portion which leads into Kontum province is composed of both land and waterway approaches. The portion leading into Pleiku and Daklak provinces is also composed of land and waterway approaches. Principally, trucks are used on the latter routes. Boats generally follow the Srepok river and move along its tributaries which approach the border. Movement appears to be freer in Cambodia, and the major LOC's are used more frequently. Food and clothing are known to have been moved along this corridor. There is a possibility that the lower part of this corridor connects with two other corridors in the Republic. Rice and ammunition have been moved on both of these corridors by civilian laborers.

(5) There are few reported logistical movements within Military Region 6, and therefore few logistical corridors are shown in this region. The movements in these corridors are similar to those in Military Region 5, where the majority of the supplies were transported from low to high terrain. Rice, munitions, and unidentified supplies were transported on these corridors by civilian laborers, oxcarts, and sampans. These two corridors appear to originate in Phan Thiet city (vicinity AN 13 09) which is located in a possible sea infiltration area. A Cambodian corridor is supposed to enter Military Region 6, based on reports of Cambodian military trucks moving rice, fish, muoc mam, and ammunition into the Nam Ly mountain area of Cambodia.

(6) Most reports of logistical movement in the Republic come from Military Region 1. There are many probable corridors in this region, several of which originate near the sea. Other corridors appear northwest and northeast of Saigon, while others originate in Cambodia or are located...
near the Cambodian/Republic border. The two corridors which originate in areas near the sea have been developed on reported movements of rice and unidentified supplies, possibly shipped in from Military Region 2. The corridor directly east of the Hung Sat Special Zone southeast of Saigon is possibly connected with one in the north.

(7) Northwest of Saigon is a complex of corridors which seems to center around the Ho Bo/Loi Woods complex mentioned previously. Supplies are moved along these corridors by such means of transportation as bicycles, boats, trucks, civilian laborers, and oxcarts. Three corridors located along the Cambodian border are centered on the Song Vam Co Dong river. Foodstuffs, tobacco, batteries, and munitions have been moved by civilian laborers, oxcarts, and the boats along these corridors. Some of the goods shipped along these corridors may come from Cambodia. There are two possible logistical entry corridors between the Republic and Cambodia in Military Region 1, based on reports of movement of rice, munitions, and clothing by truck to the border area where the goods were unloaded and taken into the Military Region by civilian laborers.

(8) Several corridors that start in Military Region 2 cross into Military Region 1. These complexes, which are located southwest of Saigon, are oriented in the direction of corridors leading to the Ho Bo/Loi Woods complex. One such corridor is thought to cross the Song Vam Co Tay river. Civilian laborers, oxcarts, and boats have been reported moving rice, weapons, and ammunition along these corridors. The corridor that originates in Go Cong and Kien Hoa provinces, and points inland probably has its origins in a sea infiltration area. Civilian laborers and boats have moved munitions along this corridor which probably connects with other corridors further north and appears to be a main munitions infiltration route.

(9) There are several reported movements in Military Region 3. SLAR returns and Red Haze emissions have established an identifiable pattern from which a corridor can be established. Those corridors established primarily follow the waterways because of the ease of movement afforded by the considerable number of small canals and rivers in the area. Charted main and secondary LOCs do not necessarily fall within an identified corridor.

(10) Many of the corridors start in, pass through, or point in the direction of CVC-accepted base areas (Inclosure 1, Appendix 5). If a corridor does not fall into one of these categories, it may be part of a larger corridor, it may be abandoned, or it may start or end in an undiscovered base area. Most of the enemy division headquarters are located within or near logistical corridors or base areas.

f. Carriers Used in Infiltration into the Republic of Vietnam

(1) The carriers used to transport supplies into the Republic of Vietnam range from human porters to modern trucks. Most carriers are
modified in some way, since a pack or load-carrying rig is generally attached to make transporting easier. Pack bicycles, for instance, are modified by the removal of the driver's seat and the installation of bamboo rods in one handlebar and in the former position of the seat. Trucks are primarily used on roads in North Vietnam and Laos with only isolated instances of their use in the Republic. The load-carrying capabilities of the various transportation modes used to carry supplies into the Republic are as follows:

(a) Male porters 68 lb
(b) Female porters 55 lb
(c) Pack bicycles 525 lb
(d) Oxcarts 2,200 lb
(e) Elephants 440 lb
(f) Trucks 4,400 lb (average of five kinds)

(2) Carriers vary from dry to rainy seasons, because portions of the roads trafficable by vehicle and porter during the dry season will become nearly impassable during the rainy season. One source reported that 140 trucks, which were used to transport 1,200 tons of supplies per month along Route 110 in Laos, were replaced by 2,000 bicycles during the rainy season. The rainy season does slow the flow of supplies to some extent; however, methods of employing porters, pack animals, and oxcarts have proven effective during this period.

g. Sea Infiltration (Figure A-16)

(1) The supply of weapons, ammunition, and explosives to the Viet Cong has been built up sporadically since 1960. An enemy junk was detected and captured off Ly Son (Cu Lao Pa) island, Quang Ngai province, I CTZ, on 31 January 1960, and a cache of over 200 tons of munitions, mostly of communist origin, was found during an operation in An Xuyen province in 1962. In 1963, when the enemy armed forces in the Republic began to develop rapidly, the infiltration by sea was stepped up. Two shiploads of heavy weapons and tens of tons of ammunition and explosives from North Vietnam arrived in Vinh Binh province around December 1963. A ship with a capacity of over 100 tons was discovered in Vung Ro Bay on 16 February 1965. On 31 December 1965, a similar trawler was discovered off of the Ca Mau Peninsula. Upon discovery, the ship changed course and was tracked to a point north of Hai Nan Island off of the coast of mainland China. A third ship bearing a striking resemblance to the ship sighted on 31 December was discovered and sunk at the mouth of the Rach Hia stream at An Xuyen Province on 20 June 1966. In the summer of 1967, a gunrunner was run aground on the Batangan peninsula (vicinity BS 7985), Binh Son District, Quang Ngai
Figure A-18. Typical NVA Naval Gunrunner Route
Province, I CTZ. It was carrying a cargo destined to go to the Viet Cong 42th Local Force Battalion. Recently, on or around 29 February 1968, four simultaneous landings were attempted and intercepted, ranging from Quang Tri and Chu Lai in I CTZ, Nha Trang in II CTZ, to the Bo De estuary, An Xuyen Province in IV CTZ. Fortunately, US/NMAF patrol boats were in the area at the time of the landing, and they were successfully denied. A captive and a returnee, both of whom had participated in sea infiltration activities since 1962, disclosed that since 1963 the Viet Cong had made well over 40 shipments of weapons and ammunition. The returnee stated that the supply of weapons to the Republic, "was interrupted from April to October (1965) by the intensive activity of the US Seventh Fleet. Therefore, only six or seven trips were conducted in 1964." According to the same sources, the Viet Cong had seven or eight ships in 1964 that made runs to the Republic. The tonnage capacities of these ships varied from 100 to 250 tons.

(2) Routes and landing points. After leaving Hai Phong, the route followed by the larger ships is generally east through the Hai Nan straits, and then south through the international waters of the South China Sea. Upon arrival near Con Son Island (Xu 81 69), the ships change course and make a straight run for the landing points along the eastern Delta region coast. Documents captured aboard the ship at Ba Dong, Vinh Binh Province, confirm that the above route is still in use by the communists (see Enclosure 5, Appendix 3, and Figure A-18). On the average, the trip takes about five to ten days. Junkers use routes closer to shore and have been reported landing all along the Republic's coastline. Junkers are used more in the northern part of the Republic to supply the I and II CTZ area. Routes generally followed by these craft are from southern North Vietnam to northern South Vietnam, about three miles offshore.

(3) Landing procedures. The optimum time for the voyage is during the first or last part of the lunar month. During this period (new and first quarter phases), there is either no moon or else the quarter moon sets before midnight. A second consideration is the ocean tides and tidal currents. The large steel-hulled ships from North Vietnam must make their approach to the Republic's shore under cover of darkness and during periods of lunar high tides. The voyage is planned so that the ship arrives about 60 miles offshore at about 2300-2400 hours. This is just outside of the effective range of friendly surveillance. The ship then makes a four-hour straight-line run for the beach, arriving on the high tide in the early morning hours. Signals from the beach indicate the landing point and the "all clear" sign to the ship's pilot. Once inside of the Republic, the ship can be easily concealed in a number of locations along the eastern Delta. The 100-foot triple canopy of the Nam Can forest allows the effective concealment of large (up to 120-feet) steel-hulled ships.

(4) Off-loading. The ship may remain in the area for two or three nights while off-loading operations are carried out. A temporary dock is usually constructed for the operation. Off-loading is accomplished under
the cover of darkness by special platoon-size stevedore units. The supplies are stored temporarily near the off-loading point while awaiting later distribution to other areas of the Delta.

(5) Units Involved

(a) I CTZ. It has not been possible to positively identify any units in I CTZ as being specifically responsible for receiving shipments of sea-infiltrated supplies. It is possible, however, that the 574th Transportation Battalion of the 403d Transportation Regiment, subordinate to the Quang Ngai Provincial Forces, may be involved in the handling and transporting of sea-infiltrated supplies.

(b) II CTZ. In II CTZ it has been possible to identify two units which may be used for receiving supplies from sea infiltration. In Binh Dinh the 50th Viet Cong Main Force Battalion is apparently transporting supplies from the coast (vicinity CR 11 45) to points inland (EF 86 62). This assumption is based on an analysis of reported movements of this unit and from the vicinity of a known supply point (CR 11 45) on the coast of Binh Dinh Province. Similar analysis indicates that transportation elements of the Sao Vang Division move supplies from the coast (vicinity BS 93 94) to points inland.

(c) III CTZ. Information on enemy supply procedures and units involved in sea infiltration in the III CTZ is limited. It is known that the 806th Viet Cong Local Force Battalion operates along the coast of Phuoc Tuy Province. Also, there has been at least one recent report of sea infiltration in this area (vicinity VS 67 58). There was a report of Viet Cong Main Force units that planned to meet two submarines in or near the Rung Sat Special Zone on or around 18 May 1966. These submarines were reported to be gunrunners from North Vietnam.

(d) IV CTZ.

1 Information on enemy supply procedures in IV CTZ is much more voluminous than information available in other CTZs. Considering the overall amount of reports and their content, the major enemy sea infiltration effort would appear to be directed towards and executed within IV CTZ.

2 Document analysis reveals a five-fold mission of all supply units in the Delta; transporting supplies to base areas to include transportation to base areas, receipt and storage of material, security, procurement of boats and recruitment of personnel, and movement of supplies from base areas to combat units in the Delta and in War Zone "C".

Analysis of field reports and interrogation reports from IV CTZ suggests the presence of a transportation group located along
the eastern coast of IV CTZ, responsible for the logistics of this area. Order of battle holds this group to be the A.101 Transportation Group, located in Kien Hoa Province. The suspected group consists of four battalions and a Group Headquarters. Headquarters and the 518th Coastal Security Battalion are probably located in Vinh Einh and Ba Xuyen Provinces. Identifying data and probable locations of the other two battalions are currently not available. The mission of the A.101 Transportation Group is to receive, store, and safeguard material infiltrated into the Republic from North Vietnam by sea. The organization of each battalion within its province is probably very flexible and decentralized, with each battalion's strength and organization varying with its mission and the workload of the province. The 330th Battalion (old NC.1231 Battalion) of the A.101 Transportation Group in An Xuyen Province is the only unit about which much is known. The 330th is a security Guard Battalion and has the mission of maintaining security in the areas used by the North Vietnamese gunrunning ships. The unit also receives the armament and explosives, temporarily stores them, and then issues them. The 330th Battalion is assigned an area of responsibility centered around a river mouth that could be used for sea infiltration in the Ca Mau Peninsula. The size of the 330th in An Xuyen, along with the statements of the returnees from this unit, strongly suggests a major effort directed towards sea infiltration in this area.

(6) How much ammunition can be bought in by sea in a single shipment was demonstrated by the amount of material salvaged from the Viet Cong ship sunk in Vung Ro Bay in February 1965:

(a) 840 TNT charges
(b) 88 Antitank mines
(c) 42 Bangalore torpedoes
(d) 1 box detonating cord
(e) 11 boxes fuses
(f) 20 grenades
(g) 1,680 stick grenades
(h) 840 rockets
(i) 2 60mm mortar shells
(j) 12,900 82mm mortar shells
(k) 9 - 57mm recoilless rifle shells
(l) 722 - 75mm recoilless rifle shells

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9. (c) ORGANIZATION METHODS OF IN-COUNTRY DISTRIBUTION AND SUPPLY ROUTES

a. General

The enemy's movement of supplies from in-country and out-of-country sources is controlled through an intricate system of relay stations and transfer points known as the Postal, Communications, and Transportation (PC&T) system. This system links base areas within the Republic of Vietnam, and the transportation of goods is only a part of its mission. It is also responsible for the guiding of travelers and for food production. The transportation sub-section of each PC&T Committee is responsible for controlling movement of civilian and military freight, the inspection and maintenance of goods, the security of goods, and the organization of labor and transportation facilities. Personnel manning these stations divide their time between producing food and commo-liaison duties.

b. Background

Prior to 1964, the system did not engage in movement of supplies and was known as the Protective Liaison Committee. Due to the capture of key cadre, destruction of bases, and the capture of important documents resulting in ARVN operations, it was reorganized as the Postal, Communications, and Liaison Committee cadre. Civilian labor would pick up supplies from various caches and dumps and distribute them to various points in the provinces.

c. Postal, Communications, and Transportation Committee

The PC&T Committee is composed of a command section and several subordinate elements. The commo-liaison teams conduct the main activities of the system in the transportation and storage of goods. A self-production unit is required to feed personnel through self-sufficient production. Each section maintains a health station and a security team.

d. Control

Close control is maintained over goods while they are stored at a holding station awaiting transit. A daily register is used to record receipt and issue of goods to include backlogs and losses. Personnel receiving goods are required to sign a receipt. Monthly and semi-annual plans are made for guidance on the requirements and use of transportation facilities. Close follow-ups are made to determine if goods arrived at their destination. Once supplies reach their destination, they are stored for future consumption and utilization.

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e. Supply System

The enemy has established what could be labeled an area supply system. Numerous small depots are scattered over a wide area to support any unit which may be operating in the area. This prohibits the enemy from being dealt a serious blow by the loss of a single base and eliminates the necessity of being confined to the dependence on a single logistical base.

f. Supply Points

Within a particular unit, the enemy uses a supply point system. Depots may be used as supply points depending on the proximity to the combat units. Regiments are responsible for setting up supply points while the division designates a village or depot as a supply point.

g. Forward Supply Council

The agency by which the enemy utilizes all men and material to serve the battlefield is the Forward Supply Council. The Forward Supply Council is directly subordinate to the Current Affairs Committee of the People's Revolutionary Party, and it is found at all levels from COSVN down to village. All echelons take charge of supplying recruits, civilian laborers, food, money, and necessary facilities for Viet Cong Main Force units on the battlefield. They have the mission of organizing labor and transportation facilities to transport supplies and ammunition from supply depots to the using unit.

h. Transportation and Labor

(1) Types of transportation used by the enemy have been discussed in paragraph 8, Section III. The type of transportation used will be governed by the load, locale, terrain, climate, and operational environment. A study of reports of supply movements indicates that the trend is to the utilization of the type of transportation that is indigenous to the area. This lessens the chance of being stopped at checkpoints or by local officials. Rather than large single movements of supplies, small shipments are used. This eliminates any large loss in case a single vehicle or vessel is discovered or captured enroute to its destination.

(2) The Forward Supply Council is responsible for organizing labor to serve the battlefield. Laborers are used to carry food, ammunition, and weapons. The number of workers allocated to a unit depends upon its size and the mission to be performed.

(3) The civilian labor subsection of the Forward Supply Council organizes labor down to village level. In drafting laborers, all who are of age and physically qualified are considered. The average labor mission is three months out of a year. Depending upon sex and physical condition, laborers are required to serve on a long-term battlefield support basis in support of Main Force units. Regardless of length of service, all do the same kind of work: hauling ammunition and supplies, carrying weapons, and evacuating the dead and wounded.
1. Methods of Resupply

The method of resupply is best understood by examining the system of resupply of ammunition and explosives. After each engagement, squad leaders are required to conduct an inspection to determine the amount of ammunition and explosives expended. A report is then submitted through platoon to the company armament section. Company expenditure reports are then submitted to battalion. At battalion level, the adjutant is responsible for resupply and maintains liaison with the Rear Services Section to the province unit which provides ammunition and explosives for them. If no supply is available at battalion level, the adjutant will request the necessary items from the regimental level. Once requests for ammunition are received at regiment, they will be forwarded to that supply unit assigned to support the regiment. The regiment will be notified to pick up ammunition and explosives when they become available. If resupply cannot be handled by organic personnel, one of the transportation units will recruit laborers and transportation for the supplies. This is accomplished under the auspices of the Forward Supply Council. Once ammunition returns to company level, members of the company will be guided by the battalion armorer to an area to collect the ammunition and explosives. Resupply at company level requires from three to seven days. Issuance of the ammunition and explosives is subject to strict accounting and control procedures. This also applies to captured weapons and ammunition which are integrated into the inventory. This is the basic process that must be undergone to obtain resupply of mines, booby traps, and ammunition. For the actual principles of application of the above, see Inclosure 1, Appendix 4.

2. Units Involved in In-Country Transportation

(1) In the I CTZ there are four transportation battalions: the Bac Son, the Binh Son, the 500th, and the Tay Son.

(a) In April 1962, the Bac Son Group was engaged in transporting goods and operating comms-liaison stations to guide infiltration groups from Route 9 to the "Pine Forest" area, vicinity YC 05 97. In April 1963, the Bac Son Group was reinforced and became the Bac Son Battalion. The Bac Son is presently thought to be operational in Quang Tri and the upper portions of Thua Thien Province.

(b) The Binh Son Battalion's area of operations is the eastern half of Thua Thien and Quang Nam Provinces. Its mission is to transport cargo north to south from the area of the Thua Thien/Quang Nam border to Route 14 in Quang Tin Province.

(c) The 500th Transportation Battalion's area of operations has been reported to be in Quang Ngai Province and possibly Binh Dinh and parts of Kontum Provinces. The battalion is subordinate to the 3d Division.
(d) The Tay Son Battalion has been reported to be in the eastern half of Kontum and the western portions of Guang Ngai and Ghinh Dinh Provinces. Its mission is to transport supplies and maintains communication stations to guide infiltrators.

(2) II CTZ is the operating area for the 19th and the Nam Song Transportation Battalion. The 19th Battalion is located in Pleiku and Daklak Provinces, with an approximate strength of 300 men and three companies. The mission of the unit is to furnish transportation support to the units of the 1st Division. According to one source, the battalion has never utilized civilian laborers. The Nam Son Transportation Battalion is located in the western portion of Kontum Province along a route from Route 14 to the Song Than area, the reported former headquarters of Military Region 5. It is directly subordinate to Military Region 5.

(3) Present indications show that there are seven COSVN Rear Service Groups which provide logistical support to units in the III CTZ. The groups supply the COSVN Main Force combat units (5th and 9th VC Division, 7th NVA Division, 273d and 70th VC Regiments) with most of their requirements for food and engineer supplies and virtually all of their requirements for funds, equipment, ammunition, explosives, and a limited amount of POL. These groups are Group 81, Group 82, Group 83, Group 84, Group 85, Group 86, and Group 87. Their missions are similar, the only difference being their areas of responsibility.

(4) The A.101 Transportation Group and its subordinate battalions, which have the responsibility for IV CTZ, have already been discussed in paragraph 8.

k. In-Country Supply Routes

It is impossible to give anything more than a vague outline of in-country land resupply routes. Normally they are not too clear and, as they are subject to Allied harassing and interdicting fires, they are constantly changing. The best documented routes are those of the Delta area of IV CTZ. The enemy uses inland waterways in the Delta both as interprovincial supply routes and for moving troops and supplies north to War Zones C and D. The major base areas in the Delta are: U Minh Thuong, U Minh Hoa, and Dan Hoa base areas in An Xuyen Province; Dong Trap Hoi in the Plaine des Joncs, Kien Phong and Kien Thuong Provinces; Long Toen and Duc base areas in Kien Hoa Province. From these base areas supplies are shipped by water routes to resupply points.

(1) The resupply line from the Dan Hoa base area in An Xuyen Province to the northern provinces passes through the Bac Lieu Province communication route to the mouth of the Song Hau Giang River. The principal waterways used by the enemy in Bac Lieu Province consist of the Kinh Genh Hao Canal at WR 515 210, north to the base areas in Chuong Thien Province.
and the Song My Thanh River from KP 75C 290 to the mouth of the Song Giang River at KP 30C 43. This route continues north to the base areas in Vinh Binh, Kinh Hoa, and Go Cong provinces and to the Hung Sat Special Zone.

(2) From the Long Toan base area, Vinh Binh Province, the liaison route moves northwest along the Song Hau Giang River to the Song Ma Thit River. From the Thanh Long base area, Vinh Binh Province, the principal waterway north is the Song Co Chien River from XD 72 77 north to XD 32 25. From the Thanh Phuong base area, Kien Hoa Province, the Song Hanh Thit River moves along the Song Co Chien River from XD 72 77 north to XD 32 25. From the Thanh Long base area, Vinh Binh Province, the Song Hanh Thit River moves along the Song Co Chien River from XD 72 77 north to XD 32 25.

(3) For a typical, well-detailed supply route in the IV CTZ, see Inclosure 2, Appendix 4.

10. (c) STORAGE SITES, DEPOSITS AND DEPOTS

a. General

As has been previously pointed out, the enemy has an area-type supply system that is tailored to provide logistical support to units operating in the immediate area. The foundation for this area-type supply system is in the base area concept. A base area is an area over which the enemy has established complete economic and administrative control. It serves as a base of operations from which to launch attacks on selected Allied targets, expand control over the population, and support operational preparation for operations; manufacture and storage of weapons, munitions, and medical equipment; and personnel services. The size of the base varies, and each may contain any number of installations and structures. There are several characteristics which are common to most base areas. Each has a command section, an operations section, a food production section, trained cadre for schools in enemy controlled areas, a security section, and entertainment section, and a communication section which maintains communications with other base areas.

b. Base Areas

There are a number of categories of base areas. The largest base areas normally consist of a number of small base areas. Base areas are extensive in size and serve as the enemy rear area. Examples of these are the Do Xa area in northern II CTZ and southern I CTZ, War Zones C and D in III CTZ, and U Minh Ha, U Minh Thuong, and Dong Thap Muoi in IV CTZ. Provincial base areas serve as the headquarters of provincial and district committees. These areas provide logistical support to forces in areas where the enemy
(d) The Tay Son Battalion has been reported to be in the eastern half of Kontum and the western portions of Gia Lai and Ginh Dinh Provinces. Its mission is to transport supplies and maintain commodity stations to guide infiltrators.

(2) III CTZ is the operating area for the 19th and the Nam Song Transportation Battalion. The 19th Battalion is located in Pleiku and Durlac Provinces, with an approximate strength of 350 men and three companies. The mission of the unit is to furnish transportation support to the units of the 1st Division. According to one source, the battalion has not utilized civilian laborers. The Nam Son Transportation Battalion is located in the western portion of Kontum Province along a route from Route 14 to the Song Than area, the reported former headquarters of Military Region 5. It is directly subordinate to Military Region 5.

(3) Present indications show that there are seven COSVN rear Service Groups which provide logistical support to units in the III CTZ. These groups supply the COSVN Main Force combat units (5th and 9th VC Division, 6th NVA Division, 7th NVA Division, 273d and 70th VC Regiments) with most of their requirements for food and engineer supplies and virtually all of their requirements for funds, equipment, ammunition, explosives, and a limited amount of POL. These groups are Group 31, Group 82, Group 83, Group 84, Group 85, Group 86, and Group 87. Their missions are similar, the only difference being their areas of responsibility.

(4) The A-101 Transportation Group and its subordinate battalions, which have the responsibility for IV CTZ, have already been discussed in paragraph 8.

k. In-Country Supply Routes

It is impossible to give anything more than a vague outline of in-country land resupply routes. Normally they are not too clear and, as they are subject to Allied harassing and interdicting fires, they are constantly changing. The best documented routes are those of the Delta area of IV CTZ. The enemy uses inland waterways in the Delta both as interprovincial supply routes and for moving troops and supplies north to War Zones C and D. The main base areas in the Delta are: U Minh Thuong, U Minh Ha, and Dan Noi base areas in An Xuyen Province; Dong Trap Mui in the Plaine des Joncs, Kien Phong and Kien Tuong Provinces; Long Toan and Dac base areas in Kien Hoa Province. From these base areas supplies are shipped by water routes to resupply points.

(1) The resupply line from the Dan Noi base area in An Xuyen Province to the northern provinces passes through the Bac Lieu Province commodity route to the mouth of the Song Hau Giang River. The principal waterways used by the enemy in Bac Lieu Province consist of the Kinh Ganh Hao Canal at WR 515 210, north to the base areas in Chuong Thien Province.
and the Song My Thanh River from KP 750 290 to the mouth of the Song Giang River at XW 36 43. This route continues north to the base areas in Vinh Binh, Kien Hoa, and Go Cong Provinces and to the Rung Sat Special Zone.

(2) From the Long Toan base area, Vinh Phinh Province, the liaison route moves northwest along the Song Hau Giang River to the Song Mong Thit River at K 015 020 and north to the Song Co Chien River. From the Thanh Long Ha base area, Vinh Phinh Province, the principal waterway north is the Song Co Chien River from XW 70 77 north to XS 29 25. From the Thanh Phuong base area, Kien Hoa Province, the enemy uses three major waterways to the north: the Song Ham Luong River from XS 65 07 northwest to XS 42 40, and the Song Pen Tre River north from XS 55 20 to the Song My River at XS 59 40. Exact routes north of the Song My Tho are not known. However, it is known that the Viet Cong make extensive use of the Song Van Co Tay River from XS 71 62 to the Cambodian border, the Song Van Co Dang River from XS 71 62 to X7 43 06, and the Kinh Bo Lo Canal from XS 53 76 to XS 38 92.

(3) For a typical, well-detailed supply route in the IV CTZ, see Inclosure 2, Appendix 4.

10. (c) STORAGE SITES, DEPOTS AND DEPOTS

a. General

As has been previously pointed out, the enemy has an area type supply system that is tailored to provide logistical support to units operating in the immediate area. The foundation for this area-type supply system is the base area concept. A base area is an area over which the enemy has established complete economic and administrative control. It serves as a base of operations from which to launch attacks on selected target areas, expand control over the population, and support operational preparation for operations; manufacture and storage of weapons, munitions, and medical equipment; and personnel services. The size of the base varies, and each may contain any number of installations and structures. There are several characteristics which are common to most base areas. Each has a command section, an indoctrination section, a food production section, trained cadre for schools in enemy controlled area, a security section, and entertainment section, and a communication section which maintains communications with other base areas.

b. Base Areas

There are a number of categories of base areas. The largest base areas normally consist of a number of small base areas. Base areas are extensive in size and serve as the enemy rear area. Examples of these are the Do Xa area in northern II CTZ and southern I CTZ, War Zones C and D in III CTZ, and U Minh Ha, U Minh Thuong, and Dong Thap Mu in IV CTZ. Provincial base areas serve as the headquarters of provincial and district committees. These areas provide logistical support to forces in areas where the enemy
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is trying to expand his control. Unit bases are used by both Main Force
and local Force units. They are used for resting and refitting after
operations. Food producing bases may operate independently or as part of
a network of sites that are part of an area self-sufficiency program (Inclos-
ure 1, Appendix 5).

c. Miscellaneous

Miscellaneous types of depots include arms and engineer workshops,
storage areas, liaison stations, and medical facilities. These stations
are usually small and easily moved.

d. Method

Prior to establishing a base area, certain criteria must be met. It
must be relatively inaccessible to large-scale FWA operations and in
proximity to Viet Cong commo-liaison lines. The local people must be
under Viet Cong control or at least sympathetic to the cause so that the
Viet Cong can draw on a maneuver pool. The local economy must be able to
support the Viet Cong. Types of storage structures in depots and base areas
vary greatly. They include a range of designs from simple holes in the
ground to stable surface-type warehouses. Underground structures in for-
ward areas can be built near houses and are easily prepared. The size of
these structures varies according to need. Substantially built caches are
built in sparse and thinly populated Viet Cong safe areas. The Viet Cong
use forced labor to build and improve structures. Advantage is taken of
old family-type structures for camouflage and concealment. In villages and
built-up areas, underground cache's are normally mined and booby trapped in
case of evacuation. The biggest advantage of underground storage is its
relative immunity to artillery fire and air strikes. Surface structures
are normally employed in Viet Cong safe areas and are of a type normally
found throughout Vietnam. They are actual depot areas and usually consist
of from 1 to 50 buildings. (See Inclosure 2, Appendix 5 for a more
detailed description of the actual storage buildings.) Other types of
storage include fissures in rock formations which provide both camouflage
and protection against bomb damage. Equipment may also be stored on the
ground, concealed by undergrowth. Weapons may be stored for short periods
of time by coating them with grease and submerging them in water. (See
Figure A-19 for location of enemy storage sites and munition factories and
see Inclosure 3, Appendix 5 for a more complete listing of the known ordnance
and munition storage facilities as of 18 February 1968 in RVN.)

II. ENEMY UTILIZATION OF ALLIED DUD MUNITIONS

a. General

A major portion of enemy mines and booby traps are fabricated from
dud munitions of the Free World Military Forces. The enemy recovers these
(U) Figure A-19. Location of Enemy Storage Sites and Munition Factories

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dud munitions and often with very little modification turns them against his foe. At other times, duds will be cut open to extract explosives for weapons of enemy design such as the DM series fixed directional mines. In either case, dud munitions are readily available to cost and reduce enemy reliance on infiltrated supplies.

b. How US Munitions Fall Into Enemy Hands

Allied munitions are acquired by the enemy as a result of dud firing or abandonment on the battlefield or they may be stolen or captured. A detailed discussion of this subject is presented in Volume 6, Denial Operations.

c. Quantities Available for VC Exploitation

(1) The computation of exactly how many rounds or tons of explosive are being made available to the enemy as a result of duds is nearly impossible. The vast majority of ammunition expended is unobserved on impact, no accurate dud reports are vigorously maintained, and 300 incident reports reflect only a small fraction of the problem. Different agencies use different expenditure and dud rate figures. Any figures mentioned hereafter result from records, reports, and comments from qualified OD personnel. In all computations and percentages, the benefit of any doubt is always resolved optimistically in favor of reliability of the equipment.

(2) A general appreciation of the magnitude of the problem and its contradictory aspects can be discovered by reviewing selected comments from field units.

(a) In the 9th Infantry Division area, there were 349 mining incidents over a four month period. Of these, there were 258 mines made from dud ordnance fired by US Forces.

(b) During the first eight month of 1967, the 4th Infantry Division suffered few mine and booby trap incidents involving American dud rounds. Only three to five mines obviously manufactured from US dud munitions were encountered during this period. Some 81mm mortar rounds were used as mines; C-4 was used to booster mines; a few M26 fragmentation grenades were used as booby traps. Ninety-five percent of the division's 340 mining incidents in the 8 months involved CH1111 copies of the M1A1 US AT mine and were manufactured in North Vietnam or Red China.

(c) The 199th Infantry Brigade encountered hand grenade type mines and booby traps. They also found one M14 AP plastic mine, two M16A1 AP bounding mines, and several booby trapped dud bombs, artillery, and mortar shells. For example, a mine was fabricated through the use of a 105mm shell and an 81mm mortar round. Bombs were found cut in half and the explosive removed. In summary, over a four-month period, approximately ten percent of all mines found were dud munitions. They were for the most part artillery and mortar duds refused and rigged with a trip wire. The BW-3/B bomblet was found employed as a pressure activated mine.

1. Reference 1.
(d) The 3d Marine Division often encountered mines obviously manufactured from US dud munitions. Munitions found were 100 to 500 pound bombs, artillery rounds, and mortar rounds. The explosives used were primarily US or MGM-155 TNT.

(e) The 19th Engineer Battalion recorded several incidents where the BLU-3/3 was used as a booster detonator. One case involved a 155mm illuminating round, a 155mm HE projectile, and a Navy 5" HE shell with a BLU-3/3 in its fuze well.

(f) The 1st Engineer Battalion considered US Forces to be one of the major sources of VC explosives. This unit encountered mines obviously manufactured from US dud munitions almost every day. The BLU-3/3 was used as a booby trap with a trip wire and 155mm VC grenades. Artillery projectiles, usually 105mm, were encountered in an electrical command detonation configuration.

(g) The 39th Engineer Battalion found explosives from dud US HE ordnance, PETN and TNT in powder forms, cast TNT, and C-4 still in blocks. Two instances of 250 pound bombs used as antivehicular mines were reported along with a high number of duds along roads. Ninety percent of the mines found were of dud ordnance or explosives from duds. Five percent of these mines contained US C-4. Twenty percent were US duds. There is mention of 155mm and 175mm artillery shells, mortar rounds, and mortar fuses which were used as detonators. These dud rounds were fired electrically.

(3) In order to place the above information in some perspective, it is helpful to explore US munitions expenditures and currently accepted dud rates.

(a) During the final two months of 1967 and January 1968, 7th Air Force reported expending 100,682 hard case bombs, ranging in size from 250 to 1,000 pounds against targets in RVN. Of these, one percent, or 1,006 weapons can be assumed to have been duds. The one percent figure was arrived at and is used by the Directorate of Air Munitions from observation by delivering pilots and "AC's of failure to detonate. The one percent figure includes pilot error, i.e., delivery too low, and loading error but does not include unobserved malfunctions. This dud rate figure disagrees radically with that claimed in SEA Analysis Report. This document states, "On the average, three percent of the air and artillery ordnance delivered are duds. This amounts to 177 tons per day. Tactical air and F-52 strikes average 5 percent duds, or 80 tons per day." As a result of the 1,006 faulty bombs an estimated 180.5 tons of explosive were placed within reach of the enemy.

(b) This large quantity of explosives results not from an unacceptable or high dud rate but from the massive amounts of munitions

1. Reference 15
being expended. With 7th Air Force's monthly expenditure average approaching 30,000 tons, even a dud rate of less than one percent equates to many tons of available explosives.

(c) During the same three-month period, US Air Force aircraft expended 4,331 CBU12's and 1,404 CBU14's. Each CBU2 contains 409 BLU-3/B bomblets while each CBU14 dispenses 114 of the same bomblet. These small cylindrical bomblets have been known to produce up to a 20-percent dud rate. In dense foliage, they hang up in trees failing to achieve sufficient positive nose impact to detonate. Using the most conservative one-percent dud rate figure and assuming the equivalent of 409 bomblets in 43 CBU12's and 114 bomblets in 14 CBU14's failed to function, it can be reasoned that 19,183 defective bomblets were exposed to potential enemy exploitation.

(d) The BLU-3/B bomblet is the easiest item of ordnance in the Air Force inventory to disarm and requires little modification to be used by the enemy in any number of ways. It has been found in the field as a trip wire activated booby trap, a detonator booster, an anti-helicopter device, a bizarre booby trap using fulcrums and pivots, and as a rifle grenade. CMEE, the 533d Ordnance Detachment (EOD), and the 7th Air Force EOD section all maintain museums exhibiting the BLU-3/B in several different enemy employment configurations.

(e) During the period from 22 September 1967 through 25 November 1967, the 25th Ordnance Detachment handled several incidents involving 22 BLU-3/B bomblets, nearly one-third of which had been VC modified. In another incident, the flattened nose cap and fin springs of a BLU-3/B were used in a VC improvised mine. In one day, 7 December 1967, the 42d Ordnance Detachment (EOD) handled four incidents involving 811U-3/B bomblets improvised as grenades destined to be propelled across a perimeter. This arrangement is similar to the anti-helicopter utilization.

(f) In an impressive display of his cunning and resourceful use of any munitions items made available to him, the enemy has been known to place the tail fins of a 250-pound bomb on the ground, creating the appearance of a dud. Explosive ordnance disposal personnel called to investigate discovered a VC modified BLU-3/B using a mouse trap firing device placed and camouflaged beneath the bomb fins. Disturbance of these fins by unwary troops would have resulted in casualties.

(g) After attempting to determine dud quantities by using total expenditure figures multiplied by an established dud rate figure, it is necessary to check these findings by using another approach. Figures A-20 and A-21 are summaries prepared by MAGV EOD. Figure A-20 covers the period from 1 February 1967 through 31 July 1967 and was compiled from EOD incident reports from the Army, Navy, and Air Force. Marine reports were unavailable. Figure A-20 covers a typical 60-day period.

1. Reference 3
1 February 1967 - 31 July 1967

<table>
<thead>
<tr>
<th>Type Explosive</th>
<th>Unexploded Booby Tp Found</th>
<th>Booby Tp Found</th>
<th>Corps Area</th>
<th>Environment where found</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
</tr>
<tr>
<td>BLU-3/B</td>
<td>2668</td>
<td>73</td>
<td>0</td>
<td>393</td>
</tr>
<tr>
<td>N83</td>
<td>35</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Bomb, frag, 20#</td>
<td>61</td>
<td>1</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td>Bomb, WP, 100#</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bomb, GP, 100#</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Bomb, frag, 220#</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Bomb, GP, 250#</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Bomb, LD, 250#</td>
<td>55</td>
<td>9</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Bomb, LD, 500#</td>
<td>44</td>
<td>6</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Bomb, GP, 500#</td>
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<td>1</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Bomb, fire, 500#</td>
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<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Bomb, demo, 750#</td>
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<td>1</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Bomb, LD, 750#</td>
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<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Bomb, fire, 750#</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>Bomb, GP, 1,000#</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

(C) Figure A-20. Unexploded Found Explosives
(h) It is estimated that EOD personnel respond to incidents in which they recover, dispose of, or destroy approximately 40 percent of the dud fired munitions generated by US and Free World Forces. The remaining 60 percent are disposed of or destroyed by our own ground troops or recovered by enemy forces for utilization as explosive ordnance devices which are employed against US and Free World Forces.

d. Countermeasures to be taken to reduce enemy use of dud munitions. These measures are discussed in Volume 6, Denial Operations in detail.

(60 day period)

Using the known recovered dud fired munitions figure in Column A, Figure A-21 and multiplying by 1.5, the figure arrived at in Column B, Figure A-21, equals the 60 percent unaccounted for by the incident reports. Unfortunately, these figures in no way relate to conclusions and figures drawn from the first effort to determine the extent of the dud problem. They provide a rough estimate only.

<table>
<thead>
<tr>
<th>Type Munition</th>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>40mm grenade</td>
<td>142</td>
<td>213</td>
</tr>
<tr>
<td>M26 grenade</td>
<td>110</td>
<td>165</td>
</tr>
<tr>
<td>BLU-3/B</td>
<td>113</td>
<td>169</td>
</tr>
<tr>
<td>60mm mortar</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>81mm mortar</td>
<td>42</td>
<td>63</td>
</tr>
<tr>
<td>4.2&quot; mortar</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>90mm artillery projectile</td>
<td>26</td>
<td>39</td>
</tr>
<tr>
<td>105mm artillery projectile</td>
<td>113</td>
<td>169</td>
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<tr>
<td>106mm artillery projectile</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>155mm artillery projectile</td>
<td>61</td>
<td>91</td>
</tr>
<tr>
<td>175mm artillery projectile</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>5&quot; artillery projectile</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>6&quot; artillery projectile</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Type Munition</th>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; artillery projectile</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>LAW, HEAT</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Mk 24 flare</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>115A Destructor</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.75&quot; rocket</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>20# frag bomb</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>250# GP bomb</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>100# GP bomb</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>250# LD bomb</td>
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<td>42</td>
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<tr>
<td>500# LD bomb</td>
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<td>22</td>
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<td>500# GP bomb</td>
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<tr>
<td>750# LD bomb</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>750# GP bomb</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>115# WP bomb</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

(C) Figure 4-21. Dud Fired US Munitions

1Of the above munition, 13 of the bombs still had the arming wire in place or the fuse had not armed, and 77 of the artillery and BLU-3/8 rounds were booby trapped.
12. (C) FABRICATION TECHNIQUES AND IN-COUNTRY PRODUCTION

a. General

There are four distinct organization levels of enemy munitions shops: regional workshops, provincial workshops, district workshops, and village and inter-village armament cells. All of these receive their missions from the Rear Services section of COSVN through coordination with the Forward Supply Council. Each level must provide a munitions supply for forces in its area and also support the overall Viet Cong munitions supply and distribution program. A very few of these munitions factories are large establishments with 300 or more workers. The majority of them are very small workshops with 5 to 20 workers.

(1) Viet Cong ordnance facilities may be mobile or stationary. Many of the small workshops are completely mobile and can displace rapidly to new locations. A number of insurgent facilities are located near the Cambodian border or within Cambodia as shown in Figure A-19. One such workshop is reported to load its equipment in ox carts and move across the border into Cambodia whenever US or Allied forces conduct operations in their area. Usually, Viet Cong ordnance facilities are either underground or well camouflaged under jungle canopy or in dense wood. When natural cover is not available, the Viet Cong are reported to use leaves or other vegetation to camouflage their workshops. Underground ordnance facilities are reported to be as much as six meters below ground level. Locating workshops in the huts of a village also affords protection from observation.

(2) Most reports indicate that insurgent ordnance facilities and workshops are normally well guarded. The security force of one of these installations is frequently a platoon or a squad, but it has sometimes been reported as large as a battalion. Weapons and ammunition caches are frequently located in close proximity to ordnance workshops. Sections cells that compose a workshop are often dispersed throughout an area except for those located in secure Viet Cong base camps.

(3) There are reported instances of Chinese Communist advisors in these ordnance shops. Their presence is not unreasonable in the view of the increasing use by the Viet Cong of weapons and munitions manufactured in the USSR and Communist China.

b. Regional Workshops

Only limited information is available on the organization of regional workshops. Their primary mission is to produce water mines, mortar shells, bazookas, rocket launchers, petards (sic), antivehicular mines, delayed action mines, fuses and rifle grenades, and to reload cartridges of various types. Their secondary mission is to manufacture antipersonnel mines and booby traps, repair weapons, and provide raw materials for village shops involved in the limited production of munitions.
c. Provincial and District Workshops

(1) Mission. The principal mission of provincial and district workshops is to manufacture antivehicular and antipersonnel mines, Bangalore torpedoes, petards (sic), rifle grenades, and fuzes, and to reload cartridges. Both workshops have a secondary mission of assisting subordinate armament workshops and cells. The provincial workshop provides material and technical guidance for various district, village, and inter-village armament cells in establishing shops. The provincial workshops also provide a mobile repair or contact team service, which moves along with the provincial military units performing on-the-spot minor repairs of light weapons.

(2) Organization

(a) The internal structure of the provincial workshops is not known. Sources reveal, however, that it is similar to the district workshop and correspondingly larger.

(b) The district workshop is composed of a managing board, four sections, and eight cells.

1 Managing board. The managing board supervises the workshop and consists of a manager and a deputy manager.

2 Planning section. This section consists of a section chief, a deputy, and about ten members. Its duties are to fix quotas, to estimate time periods of phases of production and repair, and to establish quantities of raw materials.

3 Administration section. This section consists of a section chief, a deputy, and about ten members. It performs workshop administration, food supply, personnel assignment, and health care of assigned personnel.

4 Supply section. This section consists of a section chief, a deputy, and about ten members. The functions of this section are to store supplies and tools and to provide the workshop with raw materials.

5 Technical production cell. This cell consists of a section chief, a deputy, a weapons specialist, a metallurgy specialist, a chemical production specialist, and two laboratory specialists. The functions of this cell are to receive and elaborate upon basic weapons sketches, make up instructions to guide the production process, and to inspect the work of the production section.

6 Production section. This section consists of a section chief, a deputy, and 70 members comprising 7 cells.
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a. The blacksmith cell produces steel components of firearms, reshaped cartridge casings, mine casings, and other metallic items such as rifle grenade tail sections and fragments.

b. The machine cell’s function is to manufacture assorted hardware for assembling major components and producing complete assemblies such as rifle grenade launchers. Steel components produced by blacksmith cells are finished by this cell.

c. The machinery cell operates the workshop. The most qualified mechanics are in this cell.

d. The fitting cell is composed of two small sub-cells. The repair sub-cell’s function is to receive weapons for repair. The parts replacement sub-cell provides and replaces parts.

e. The foundry cell casts iron components for weapons and explosives. Casting fragment grenade liners and molding detonators are part of this cell’s job.

f. The chemical cell manufactures explosive filler for ammunition, grenades, and mines. Salvaging explosive filler from unexploded cartridge cases and reloading them is part of the cell’s function. Final assembly of the finished munitions is performed here.

g. The carpentry cell manufactures replacement rifle and machinegun stocks for the refitting cell, and produces molds for the foundry. Wooden handles for "potato masher" hand grenades are made here as well as furniture for the shop. Part of this cell’s responsibility is construction of the buildings required for the installation.

d. Village and Inter-Village Cells

(1) When manpower is deemed insufficient for one village to staff a village workshop, several villages combine their men into an interim organization called an inter-village armament cell. As soon as enough workers are recruited at village level, the inter-village armament cell dissolves, and each village forms its own village cell. Each village cell has the mission of producing antipersonnel mines, crude homemade rifles and spikes, and the reloading of cartridges to support the local militia. The inter-village cell has the mission and capability of producing only one or two types of weapons in limited quantities. Products from the village and inter-village levels which are not needed by forces in their locale are pooled at provincial level.

(2) The village and inter-village cells usually have a crew of 15 men divided into 3 sections according to their functions.
(a) The chemical section procures materials locally or through supply channels and prepares explosive fillers, fuses, and powder for the reloading of rifle cartridges.

(b) The casting section produces petard (sic) and grenade bodies and completes assembly of these munitions.

(c) The fitting section repairs weapons, reloads cartridges, and produces spikes.

e. Inclosure 1, Appendix 6, contains a listing of reported locations of Viet Cong munitions production facilities.

f. Training

The production of munitions depends upon the ability of the personnel involved in the manufacturing process. Engineers and technicians trained in North Vietnam are the nucleus around which the Viet Cong organize their munitions production. Personnel trained at the Armament School, Son Tay Province, North Vietnam, have been infiltrated into the Republic of Vietnam since early 1963, and have worked as cadre at all levels of munitions production facilities. These technicians, most of whom have had previous civilian or military training, are highly qualified in their specialties and are able to train personnel in the skills needed to produce munitions. Apprenticeship and on-the-job training programs have been set up by the Viet Cong at provincial levels, at which mechanically inclined personnel, such as bicycle or sewing machine repairmen, are actively recruited. Continued infiltration and training of available recruits will continue to supply the required manpower to sustain the production of the munitions industry.

g. Supply

(1) Local supply. The main source of raw materials for the munitions shops continues to be locally procured items or items available through clandestine supply channels. In Viet Cong-controlled areas, the Rear Services sections collect available sheet metal, scrap iron, lead, copper, and brass from the local populace. Steel reinforcing rods for concrete are cut into small lengths to serve as projectiles for claymore-type mines in the DH series. Nails, broken glass, and bolts are also used. Charcoal is available throughout the countryside and when combined with sulphur and potassium nitrate (saltpeter), produces an effective black powder. Cartridge cases are retrieved from the battlefield and are easily reloaded. Captured or recovered artillery and bomb duds are another source of explosive filler. Bicycles brake handles are used as safety levers on hand grenades or petards (sic). In areas under SVN control, material is obtained through agents making small purchases or by theft of particularly needed items.
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(2) External supply. Equipment and raw materials not available in the Republic through normal supply channels or clandestine supply channels are obtained from North Vietnam, Laos, or Cambodia. These shipments are infiltrated into the Republic by the methods described in paragraph 9. In most cases, these shipments consist of chemicals, cartridges, cartridge primers, cartridge powder, and shop machinery.

h. Production Control

(1) Planning. Indications of the emphasis the enemy places on planning and management in his munitions production are contained in captured documents. These documents include work registers, direct exchange tags, standard operating instruction, estimation data on fabrication of replacement parts, and routing and flow charts. All of these management techniques compare favorably with existing United States ordnance production control procedures. Efficient shop operation can only be attained through projecting work and estimating time required for tasks assigned. Typical use of this management indicator is shown in captured documents listing various weapons spare parts and the time involved in the fabrication of the parts.

(2) Management. The Viet Cong logistical support system of the armament industry is the most critical area of management interest at the present time. Stringent control is exercised through receipt and inventory procedures at the top level. All inter-shop issues of raw materials and tools are approved at the managing board level by the shop manager or his deputy. All sections or cells at the facility are directly responsible to the managing board for production and quality control of the end product.

i. Shop Operations

(1) Production. Viet Cong munitions shop facilities are usually organized into a number of production units. Each unit or cell producing or repairing like commodities can be divided into the three major categories of production line, job shop, and bench shop.

(a) Production line operations consist of a series of work stations through which each item is passed, with certain operations performed at each station. In this type of operation, workers of limited capabilities may be trained to perform skillfully a specific job at a particular station. Production lines are most frequently used by Viet Cong munitions shops engaged in the production of the following items; grenades or petards (sic) (all types), grenade launcher, cartridge (reloading), and mortar ammunition.

(b) The job shop production is used when varied jobs are performed in a shop by an assigned crew of technicians. In this area, assemblies may be removed from an item and sent to other shops for
necessary work. By this method, parts required are usually determined for each job and are obtained before work is begun. An example of this is the small arms repair shop, where a particular weapon is inspected and a faulty part discovered. The machine shop would then be tasked to produce a like component, and the weapon would be reassembled and tested by the small arms shop.

(c) Mach shops are generally cells where the repair, fabrication, or production of material requires a fairly high degree of technical skill. Some examples of this type of section are the machine shop where lathe and drill press work is done, the carpentry shop where carving and inletting of stocks or hand guards is performed, and the chemical section where various fillers and powders are prepared.

(2) Tools, equipment, and raw materials, the tools, equipment, and raw materials in general use by the shops are procured from many sources. Most of the equipment is locally procured by the Rear Services section of the local higher headquarters. Inclosure 2, Appendix 6, describes some of the tools, equipment, and raw materials required for production and normally found in most of the ordnance production workshops.

(3) Production capability

(a) The paucity of quantitative information on insurgent production of munitions prevents a meaningful estimate of the amount of total countrywide production. An attempt to make such an estimate is hampered by the apparent absence of uniformity in the size, organization, and technology of Viet Cong ordnance production facilities. It is instructive, though, to indicate the reported production capabilities of a district level and a province level ordnance workshop, but these figures should not be treated as necessarily typical. The enemy's Tan Tru district ordnance workshop in Long An Province, Military Region II (Figure A-16), with a staff of 8 workers and 1 supervisor, was reported in February 1966 to have reloaded 300 rounds of 7.62mm Russian ammunition and to have manufactured 10 grenades per day. Another report states that the armament sub-section of the Viet Cong Tay Ninh Province committee produced 39,000 rounds of ammunition, 188 mines, and 600 grenades from the period 1 January to 25 May 1966. A further indication of the insurgents' capability to produce munitions is shown in the reported outputs of the most productive Viet Cong ordnance workshops, according to current information. One of these in Vinh Long Province, Military Region II, reportedly produced in March 1966 a daily average of 500 rounds of 7.62mm Russian ammunition, 100 land mines and grenades, 3 to 4 antitank mines, 5 claymore-type mines, and an unknown quantity of pungi stakes. The other workshop, in Long An Province, staffed by only 30 workers under the supervision of an engineer, and a reported daily output of 1,000 rounds of ammunition, 50 grenades, and 15 mines.
(b) The following information concerns district and inter-village munitions workshops:1

1. Average monthly output of F8 (district workshop)

(MAGV 32 Log #1457):

- Gasoline mines (sic) (column type) 35
- Petards 200
- Antivehicular mines 15
- Demolition charges 15
- Antipersonnel mines 100
- Grenades (various types) 700
- Locally made cartridges 400
- Reloaded cartridges 7,000

2. Average monthly output of F5 (inter-village workshop)

(CHIC Log #11-036-66):

- Petards (sic) 100-120
- Mines 120-150
- Reloaded cartridges 500-600
- Spikes 200-300

(c) See Inclosure 3, Appendix 6, for further information on monthly outputs of various munitions production facilities.

4. Inspection and Quality Control

(1) Inspection. In-process and final inspections of material produced in Viet Cong munitions shops are done by the technical production cell in the larger facilities. In small shops at the village or inter-village level, inspection is the responsibility of the shop manager.

(2) Quality control. Quality control is maintained by workshops through the use of a research branch usually located at the military region level. This unit conducts tests and experiments on samples of workshop outputs to determine accuracy and effectiveness of the finished product before a workshop goes into full production.

1. Reference 16.

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k. Marking and Packing

(1) Marking. A standardized marking system has been developed by the Viet Cong to simplify requisition and issue procedures. This system extends to all weapons and ammunition. Crated ammunition and documents with listed designations dealing with ammunition have been captured in the Republic (see Inclosure 4, Appendix 6).

(2) Packing. Most of the containers in which munitions and explosives are packed after production, including used cans and boxes of various sizes, are procured in surrounding populated areas. These containers are painted and marked according to contents. Individual wrapping of items for protection from slipping damage and moisture is done with old newspapers and plastic sheeting.

3. Distribution

This is accomplished by the means outlined in paragraph 10.

13. (C) LOGISTICAL PROBLEM AREAS

a. General

It is well known that the enemy logistical system has been hurt by allied harassment and interdiction of supply routes. Allied operations have at times either forced depots and production facilities to move or else have destroyed them. Allied air and naval operations have hindered infiltration of supplies. Republic of Vietnam National Police Resources Control Branch checkpoints have hampered in-country movement of materials and supplies. If government control continues expanding to the rural areas, the Viet Cong will find it increasingly difficult to make purchases of the necessary raw materials on the local economy. School-trained cadre are also becoming increasingly scarce.

b. Specific

The following are included to indicate what the Viet Cong themselves say their problem areas are.

(1) (The following is taken from a translation of notes from an ordinance meeting of the Tan Tri district workshop, Long An Province) Conclusion: The yearly production is below combat requirements. There was a shortage of cadre, because some were trained to different districts. Performance, organization, and leadership were unsatisfactory. The cadre lacked initiative. The village weapons production cell failed to give adequate support to guerrilla units.

1. Reference 17.
(2) (The following is taken from a translation of a report by the C.10C Unit of Huan BM1) Criticism: In March many personnel of A1 were sick; they lacked material for the struggle; and they did not closely follow the predetermined technical plan, so that in the first half of the month they only achieved 50 percent. For A2, in the first half of the month, the die to make tubing was out of order; it was repaired in the latter half; but if was not good enough. A2 lacked copper and brass to make detonating caps; 8 an #8, type 10 iron, and canvas. A3 received dies and press machines too late. A4 did not reserve raw materials. Overall, the control was not good enough; so based upon the receiving and delivering slips, there were many unusual parts. The supply council did not deliver or receive properly.

(3) (The following is taken from the interrogation report of Nguen-ngoc-Anh, Personel Section, 3d.N.A. Division.)
Source (Anh) said the Viet Cong no longer used the sea to infiltrate supplies very much. He said that the Free World Navies controlled the sea much better than in previous periods. Most of the supplies which are infiltrated are either man-packed or are brought in by truck through Laos.

Conclusions
As the level of the war increases, the enemy can be expected to expand the number and output of facilities, especially if supplies from out-of-country are reduced. The present greatest restriction to production is a lack of in-country resources and trained technicians.

1. Reference 18.
2. Reference 19.