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VC/NVA SAPPER / ENGINEER ORDER OF BATTLE

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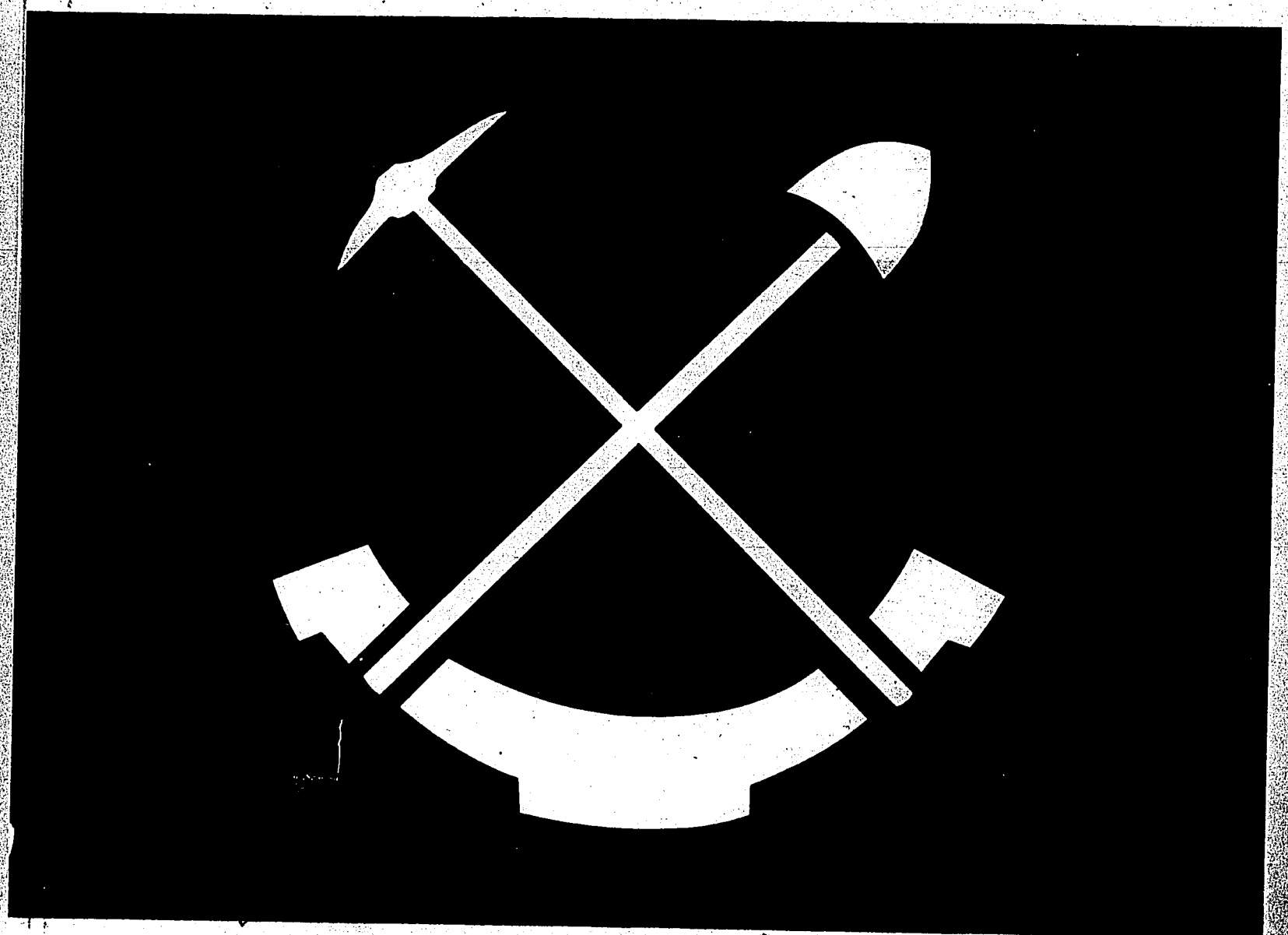

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8 November 1967

SUBJECT: VC/NVA Sapper/Engineer Order of Battle

TO: SEE DISTRIBUTION

1. Forwarded for your information is CICV Study ST 67-045, VC/NVA Sapper/Engineer Order of Battle.

2. This study presents a discussion of various aspects of VC/NVA sapper/engineer elements to include mission, organization, tactics and techniques, training and recruiting, logistics, weapons, equipment, and expedients.

3. Information for this study was obtained from captured documents, field reports, and ARVN and US files.

4. To achieve the maximum in timeliness, accuracy, and completeness in the production of intelligence, comments and additional information pertaining to this study should be forwarded to J2, ATTN: MACJ28.

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PHILLIP B. DAVIDSON, JR.
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BRIEF

THIS IS AN ORDER OF BATTLE STUDY OF VC/NVA SAPPER AND ENGINEER UNITS OPERATING IN SOUTH VIETNAM.

SAPPERS HAVE AN ELITE STATUS AMONG VC/NVA UNITS. SAPPERS ARE RECRUITED VERY SELECTIVELY AND TRAINING IS ESPECIALLY GEARED FOR DARING AND HIGHLY DANGEROUS COMBAT MISSIONS. SAPPERS SPEARHEAD INFANTRY ASSAULTS BY BREACHING OBSTACLES AND DESTROYING FORTIFICATIONS, AND THEY SHARE WITH ENGINEERS AN IMPORTANT ROLE IN LAND AND WATER MINE WARFARE, SABOTAGE, AND DEMOLITIONS.

INGENUITY IS THE GREATEST ASSET OF THE VC/NVA ENGINEERS, SINCE TRANSPORTATION DIFFICULTIES SEVERELY LIMIT THE AMOUNT OF SUPPLIES AND EQUIPMENT THEY CAN CARRY. BESIDES BEING TRAINED TO FIGHT AS INFANTRY WHEN NECESSARY, ENGINEERS ARE REQUIRED TO CONSTRUCT STREAM CROSSING EXPEDIENTS, HASTY ROADS AND TRAILS, TUNNELS, CAMP SITES, AND HOSPITALS. THEY ARE ALSO TRAINED IN DEMOLITIONS AND MINE WARFARE.

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VC/NVA SAPPER/ENGINEER ORDER OF BATTLE

I. INTRODUCTION.

A. The purpose of this study is to give a comprehensive report on VC/NVA sapper and engineer units currently operating in the Republic of Vietnam. It examines these units in light of the eight order of battle factors -- composition, disposition, strength, tactics, training, logistics, combat effectiveness, and miscellaneous data.

B. The enemy's deployment and assignment of engineer and sapper units in SVN is characterized by a lack of standardization. The guiding principle in the assignment of engineer or sapper units to an organization or area is based on requirements rather than on TOE. Likewise, the arms, equipment, and strength provided these organizations are determined by the specific mission of each unit.

C. The problems of transporting engineer TOE by an army that is virtually restricted to foot movement severely limits the amount of engineer equipment that can be transported. Since their mission is combat-oriented, the enemy must remain partly self-sufficient and mobile. These requirements force him to give priority to arms, ammunition, individual equipment, and food. The transportation of additional equipment is limited to those items which cannot be confiscated or obtained by other means from the local populace but are needed to accomplish the mission.

II. DISCUSSION.

A. Mission.

1. Sappers. The typical enemy sapper unit specializes in explosives and demolitions during combat operations. Its primary mission is to precede the enemy infantry in the attack, breaching barbed wire and other obstacles that impede the infantry's advance. The sapper unit is responsible for placing satchel charges against fortified positions and is often required to secure the first objective within a defensive perimeter before the infantry assault forces rush through the breach to overrun the position.[1] Additional missions normally performed by sapper elements include terrorism and sabotage, especially in the larger cities, water demolitions including bridge destruction, water mining, and protection of their own water routes of communication. Battalion-sized sapper units located near major ports are reported to have a frogman capability complete with underwater breathing apparatus and the equipment necessary to swim into shipping channels and attach explosives to ocean-going vessels.

2. Engineers. The missions of VC/NVA engineer units are also predominately combat-oriented. However, when the situation demands or permits, the engineer units engage in support activities such as the

construction of camps, base areas, trails, hasty roads, improvised fixed and floating bridges, and agricultural work. The combat-oriented missions assigned to engineer units include placing mines and demolitions, constructing fortifications, breaching obstacles, and fighting as infantry when required.[2]

B. Organization. (See Annex A.)

1. Sappers. The organization of a sapper unit is dependent on the location and mission of the unit. In the vicinities of the major cities, airfields, and harbors, complete sapper battalions are found with strengths up to 500 men. These units may operate in small groups, primarily involved in sabotage, assassination, and kidnapping. The larger units normally include a heavy weapons element[3] and an underwater demolitions capability.[4] There are separate sapper companies that specialize in mine warfare and the destruction of lines of communication (LOC). Friendly forces encounter units from battalion to platoon size with double designations, such as the sapper reconnaissance battalion or the sapper engineer company. These doubly designated units will be divided into smaller elements, some responsible for sapper activities and others responsible for reconnaissance or engineer tasks. At the lower levels, (VC district and province), there are often separate sapper platoons with missions of interdicting land and water LOC and performing infantry missions. Sappers are considered direct combat units and do not fall under combat support or rear services elements.[5]

2. Engineers. Within the NVA divisions there is some degree of standardization in the engineer structure. With some exceptions, there is one engineer battalion per NVA division and one engineer company per NVA infantry regiment. In separate independent regiments, the allocation of engineer units becomes inconsistent. Occasionally there is an independent engineer battalion subordinate to a VC military region and separate engineer companies or platoons under provinces and districts. Apparently the engineer mission in units, in provinces, and in districts which lack organic engineer support is assigned to sapper and engineer units. A special water demolition engineer battalion is found in the coastal areas of III CTZ with the primary mission of intercepting shipping on the Saigon area waterways.[6] Engineers are considered combat support units, but are often utilized in direct combat missions.

C. Tactics and Techniques.

1. Sappers. Sapper techniques are basically an outgrowth of tactics used during World War II, later tested and refined during the Indo-Chinese War. The methods and techniques used are the results of years of combat experience gained in Laos and Vietnam.

a. Sappers often operate in small, widely dispersed cells and squads.[7] In this dispersed manner each element is responsible for a specific mission within its assigned sector, whether it is laying mines

on highways, bridge destruction, or conducting sabotage and terrorist activities. Sapper elements are usually attached to a larger unit for administration and logistical support. All VC military and para-military units are considered capable of conducting sabotage activities, though they are usually carried out by sapper units or, at least, advised and led by sapper trained personnel. VC espionage activities generally result in the collection of complete and detailed intelligence on potential objectives. Sappers employ bar girls, cyclo drivers, civilian employees of Free World forces, and numerous others as informants or as participants in an actual operation. With such assistance, a sapper unit can conduct operations against virtually any Free World forces installation or can effect a form of local economic sabotage by control of the main arteries of transportation.[8] The greatest aid to sapper activity in independent attacks is their relative freedom of movement throughout a planned area of operation, which affords access to and surveillance of a wide variety of targets. The tactics used by sappers in their independent attack role may involve anything from concealing a grenade in a loaf of bread to driving an explosive-laden vehicle into a target area.[9]

b. Sapper action is a specific sabotage tactic employed on two levels: 1) In separate attacks on installations; and 2) In support of infantry and artillery attacks. In separate attacks conducted by as small a force as one person, the sappers infiltrate deep into the US and FWMAF controlled areas to sabotage airfields, docks, bridges, culverts, and other important buildings and installations and to accomplish kidnappings, assassinations and other acts of terrorism.[10] It is a common practice for the VC sapper units to assign a three-man cell to accomplish a two-man mission; the third man acts as an alternate, replacing either of the primary cell members in case one should become a casualty. The second method of employing sappers is in support of infantry and artillery units attacking a post or other important base. Their mission is to create a breach in the defenses of an enemy installation to permit an assault. In a typical attack of this kind, the sappers approach the outer perimeter while the infantry and heavy weapons support wait in concealment. They use sticks, prongs, or C-hooks to raise or spread the barbed wire, or they may use wire cutters on the least taut portions of the lower strands. The least preferred method is to climb over the fence, either by climbing the posts along the wire or by flattening the wire with boards. If the fence is patrolled, they may close up the holes in the wire temporarily while clearing a path through the minefield, setting bangalores, and placing boards and ladders over trenches and punji pits. Passages through minefields are marked with pegs or other means of identification. The final task in preparing for the infantry assault is to destroy blockhouses, watchtowers, machine guns, and other points with satchel charges and grenades, and at the same time to detonate any explosives they have planted along the fences or in the minefields.[11] Sometimes the first sapper explosion signals the start of the attack.[12] Other times, the sappers wait for the infantry and supporting weapons to open up with a heavy volume of

suppressing fire before they try to rush the strong points.[13] After opening the way for the infantry, the sappers may remain in the battle or they may withdraw and prepare to cover the infantry withdrawal.

c. Many sapper units have a mission of assisting in ambushes as well as in attacks on installations. The sappers' training and equipment for mine and demolition missions are used extensively in ambushes on roads and waterways.

(1) In a typical highway ambush of a truck convoy, antitank mines are exploded at both ends of the convoy to stop the vehicles and block retreat and at various places in the middle to break the convoy into sections. Antipersonnel mines and booby traps are often used on the sides of the road to kill those who run for cover in ditches or roadside foliage. In addition, mines and booby traps may be placed between the attackers and the convoy to impede a counterattack and to cover the withdrawal.[14]

(2) When ambushing watercraft, the enemy may use water mines and other weapons against the boat, and antipersonnel mines on shore in places where the crew might beach the craft or try to land for a counterattack.[15] Water mines are usually concealed underwater and detonated electrically from the shore. If the channel is wide, the mine may be attached to a rope and pulley rig so that it can be moved directly into the path of an oncoming boat.[16]

d. Sapper Raids.

(1) Another major mission of sappers is to conduct surprise raids on airfields, supply dumps, and other facilities in rear areas which cannot easily be approached by large infantry units. Small sapper units, often augmented by some mortar or recoilless rifle support, are sent in to blow up aircraft or stores of POL and ammunition.

(2) A description of raid tactics is found in an interrogation report of captives taken in the 4 December 1966 night attack on Tan Son Nhut Air Base. The attacking force consisted of about 40 men from the C.10 Special Action Forces (also known as the C.10 Sapper Battalion) and about 20 mortar and AT grenade launcher men from the 6th Battalion, Binh Tan Main Force. The entire group entered the base secretly through a hole cut in the outer fence. Their objective was a hangar area about 2000 meters from the point of entry, across the main runway. Nine men set up a 60mm mortar in the thick grass just inside the base, and an additional 14 men took up positions to cover the withdrawal. The remainder of the force proceeded toward the objective, armed with assault rifles, submachine guns, M79 and B-40 grenade launchers, carbines, and an assortment of explosive charges. They were spotted while coming across the runway and immediately opened fire, with mortar support from the rear. However, they were not

stopped until they reached a fence surrounding the hangar area. The fence was unexpected, having been overlooked in their reconnaissance. Failing to penetrate the fence, a withdrawal was quickly ordered after a short period of fighting in which many of the attackers were killed. The mortar squad and rear guard remained in place until they were discovered about an hour and a half later by patrolling guards.[17]

e. Sappers also have a mission of destroying bridges, and some units have personnel especially trained and equipped for this and other types of water demolitions work. A captured VC officer explained how he and his men had been planning to blow up an important bridge in Saigon:[18]

(1) The bridge, its defenses, and the surrounding terrain were reconnoitered. It was decided to attack at night, during the ebb tide, with two 250-kilogram charges of high explosives. The explosives, packed in two metal boxes, would be carried to the middle of the river by boat about a mile and a half upstream from the bridge and loaded onto rubber floats. The boxes would each measure about 16 x 20 x 40 inches. The floats were to drift downstream with the tide, guided by two men who would fasten the charges to both sides of one of the bridge's piers. If guided correctly, the charges would automatically stop at the pier, since they were to have been connected by a nylon cord; i.e., the pier would snag the cord as the charges passed on either side. The men's heads would be camouflaged to resemble floating debris, or their heads would be submerged and they would breathe through plastic tubes. (The rubber floats also would probably be camouflaged, although this was not mentioned in the report). After fastening the charges to the pier the men would continue to drift downstream as far as 500 meters and then electrically detonate the charges while in the water or from the shore.

(2) In case the men could not reach the bridge or if they failed to fasten the explosives in place, there were alternate plans for blowing up other targets in the vicinity, such as ships, docks, or a gasoline depot.

f. To date the VC have not demonstrated a formidable capability in underwater demolitions. However, there have been successful attacks against friendly shipping by VC frogmen. One report indicated that the VC have established a frogman school inside Cambodia for 500 to 600 trainees. The school was said to have six ChiCom instructors. Tactics taught include apprehending a man underwater, installing a mine on a junk, and capsizing a manned junk. As of mid-September 1965, at least 29 Vietnamese reportedly had been trained.[19]

g. Generally sapper operations are well planned, well coordinated, and rehearsed in detail. The amount of time and effort expended is directly dependent on the significance of a potential target and its system of defenses. Road and rail sabotage in rural areas requires only minimal planning, but attacks against important US installations may take

months of preparation. While greatly detailed planning increases chances for success, unforeseen events may disrupt their original plan of attack and result in its postponement or cancellation.[20]

h. The five basic principles of sapper tactics are:[21]

(1) Detailed planning and reconnaissance. Every mission is planned in the finest detail to insure success, and all roles are practiced until performance without error is assured.[22]

(2) Secrecy and surprise. Every unit performs its mission in the utmost secrecy and attempts to preserve the element of surprise. The importance of secrecy and surprise is stressed by constant training of personnel in tactical discipline and camouflage.[23]

(3) Speed. Units move rapidly to enable the assault troops to reach the objective in as short a time as possible and to exploit any aspect of the defenders' disorganization.

(4) Initiative. Units take advantage of any favorable circumstances which might arise during the mission. Initiative is encouraged by thorough training and indoctrination.

(5) Flexibility. Each mission dictates the type and amount of weapons and equipment to be used. The sapper unit tailors its needs to the individual characteristics of the mission. Reconnaissance of the objective normally covers:[24]

(a) Routes of advance and withdrawal.

(b) Surrounding terrain.

(c) Perimeter fencing.

(d) Minefields, trip wires, flares, punji pits.

(e) Strong point defenses.

(f) Guards (number, location, alertness).

(g) Construction of fortifications.

(h) Layout of barracks, headquarters, strong points, floodlights, power sources, and communication centers within installations.

2. Engineers.

a. Engineer tactics and techniques overlap those of the sapper, particularly within engineer units which are organic to divisions and regiments. Organizations which have organic engineer units normally assign to the engineer element the missions of breaching obstacles and barriers during the attack, road and bridge destruction, mine laying and clearing missions, and fighting as infantry when required. In rear areas and during periods of non-combat, enemy engineer units are utilized to construct base camps, roads, trails, fortifications, obstacles, bridges, and rafts.[25]

b. The enemy construction effort in South Vietnam is characterized by a lack of standardization in methods of construction and the use of material. The long and arduous supply route and primitive methods of transportation have forced the VC/NVA engineer construction effort to satisfy its austere requirements by the maximum use of expediency in construction methods and materials selected.[26]

D. Training and Recruiting. (See Annex E.)

1. Sappers. Sapper training schools are conducted at battalion level and above. These courses are designed 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 numbers and types 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.[27] Evidence indicates this training is well organized and continuous. Following an actual operation, sapper performance is evaluated, reappraised, and as appropriate, a retraining process in instituted.[28] 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 consists of classroom and field exercises. The second 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 training program, enabling trainees to observe and point out each other's strong and weak points.[29]

a. Since sappers have a highly specialized and dangerous mission, their initial recruitment campaigns accepted only those individuals who exhibited a high degree of dedication, courage, and professional skills.[30] However, recent battle losses and difficulty in recruitment have lowered these requirements. The qualifications desired in a sapper trainee are aggressiveness, resourcefulness, bravery, combat experience, and thorough political indoctrination. Those having relatives working for the

GVN are not chosen unless their loyalty to the VC cause is unquestionable. An attempt is also made to recruit people who live in the area where they will be utilized. Generally, those who have just reached adulthood are most desirable, since they are usually single and more easily swayed by the Communist propaganda. The above qualifications are often waived because of the number of sapper trainees required as replacements. This large number is due to the extremely dangerous nature of sapper work and the consequent rapid loss of sapper personnel.[31] If the trainee is being selected from other than a military unit, a five-step process is often used:[32]

(1) Selection. A trainee's selection is based on the potential utilization of his civilian position and location.

(2) Contact. Upon selection, contact is made through friendship or an offer of financial assistance. Intimidation is used if the selectee's background contains exploitable information and other approaches fail. During this step, indoctrination upon which the trainee may be tested is initiated.[33]

(3) Activity Test. The trainee is sent on one mission, possibly reconnaissance, to test his sincerity and potential.

(4) Formal Training. The trainee is then sent to a training camp to undergo sapper training. A captured document from Military Region IV indicated that the emphasis for training of sappers is to be placed on the following: the effective attack of a post, combined sapper-infantry operations, instilling an attitude of dedication, the attack of communication routes on land or water, and knowledge of battlefield fortifications.[34]

(5) Formal sapper operations. Opportunity is generally provided to gain proficiency through operation with experienced personnel.

b. Subjects taught to sapper trainees vary according to current combat needs and the physical limitations of the training site.

(1) The following is a combined list of basic courses extracted from numerous reports:[35]

(a) Weapons. Target practice, aiming methods, weapons assembly and disassembly.

(b) Explosives. Employment and characteristics of explosive charges and preservation of explosives.

(c) Unarmed Combat. Arm and leg holds, defense against knife and rifle.

(d) Political indoctrination.

(e) Individual combat. Use of bayonets and grenades.

(f) Light discipline.

(g) Sapper tactics. Theory and principles of attacking blockhouse posts, enemy troops, ships, docks, airfields, and installations.

(h) Reconnaissance. Use of compass and binoculars, use of maps and sketching, infiltration to achieve observation, camouflage, choosing observation points, and crossing obstacles.

(2) A typical program of field training for sapper units consists of the following practical exercises:36

(a) Techniques of crossing spike traps, minefields, moats, ditches, streams, and swamps.

(b) Movement over fields with stubble brush, dry leaves, mud, sand, or high grass, and areas of loose stone or gravel.

(c) Clearing obstacles such as barbed wire (concertina, fence, and barbed wire with alarms -- for example, tin cans, trip wires, and electrical devices).

(d) Assembly and transportation of explosives.

(e) Methods of assaulting strong points and blockhouses.

(f) Noise discipline.

(g) Use of bamboo ladders and ropes in support of infantry crossing moats, ditches, and storming walls.

c. School Training. (See Page B-1.)

(1) 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 confident of their abilities. A theoretical test was administered at the end of the course and a highlight of the in-

struction was a special trip to Haiphong 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.[37]

(2) 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. This sapper training was conducted at Loc Thuan Village, Cu Chi District, Gia Dinh Province. The subjects taught during this course included the following: CKC rifle, AK-47 assault rifle, B40 AT grenade 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.[38]

(3) 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 was divided into three phases. Phase one was 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 uses of explosives were studied. Special attention was given to the use of explosives against ships, bridges, and vehicles. Methods of attacking an outpost were studied, including methods of quieting barking dogs. The final phase was a critique of the course.[39]

2. Engineer.

a. Officers.

(1) 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.

(2) The engineer officer may take his training at the Thi 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 in an attempt to prepare the officer for the complex formulas and lessons.[40]

(3) 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 engineer subjects for all engineer officers. After 1960, students were selected from the engineer enlisted cadre with a rank of NCO or lower. Upon graduation, the student was pro-

moted to lieutenant platoon leader and assigned to an engineer unit in that capacity.[41]

b. Enlisted. The NVA enlisted engineer training program (see page B-2 to B-10) 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:[42]

(1) 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 NFLSVN, policy of civilian and military proselyting, and conduct towards captives and ralliers.

(2) 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.

(3) 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.

c. Training Mission.

(1) An engineer training order issued by the 95th NVA Regiment to its supporting units provides a description of the mission of engineer training:

> Have a continuous program of political indoctrination and the proletariat stand. Be loyal to the revolution, have deep hatred of the enemy, have a will to fight, make a decision to fight the Americans and their lackeys. Train cadre and soldiers so they understand the military line of the party, the concentrated and combined attack to exterminate the enemy, and the leadership principles and the fighting attitude of the revolutionary troops. . . . . Give troops effective training in order that they may have a resistant and supple physical strength which will help them improve their fighting capability and technical ability. Diagram combined attacks and set up a stable and strong engineer unit ready to accept any difficult mission.[44]

(2) A document captured by the 1st US Infantry Division on 20 December 1965 outlines the engineer training program for province and district engineer units and village and hamlet guerrillas. This document was issued by the headquarters of the Military Region I engineer section. It states the training mission is to "heighten the tactical and technical knowledge, and leadership capabilities."[45]

(3) The specific mission of engineer training stresses techniques and tactics used when launching combined attacks. Another document states that training will emphasize

> . . .use of engineer materials and equipment in coordination with infantry, to participate in mobile-combat, including head-off and tail-lock missions [attack on front and rear elements] and the protection of flank elements with the use of obstacles; breaching by stealth and by force, the use of stealth being preferred. . . . insure the continued movement of infantry during combat over land and across rivers. proper protection of the regimental C.P. Destroying and removing obstacles left by the enemy, such as bombs, mines, and other obstacles. . . . Use of engineer equipment and materials alone, or in coordination with the infantry, to attack lines of communication, and laying of mines and grenades against enemy infantry, mechanized units, and troops landing from aircraft in predicted terrain.[46]

(4) Sapper and engineer training plans for 1967 dated 13 December 1966 addressed to Di An District reveal that the mission shall be the development of guerrilla engineers for the purpose of increasing attacks on communication axes and rear base installations. Emphasis is to be placed on demonstration and practical work.[47]

(5) Training requirements for new soldiers include basic subjects, while experienced soldiers are to improve weak points and learn new subjects to insure a wide knowledge in techniques. Cadre must know theory and leadership principles. Squad cadre and above must know how to apply theory and calculate explosive charges. They must understand all unit missions and carefully account for the unit engineer equipment during combat. There also must be an understanding of combat tactics of small units and methods of construction.[48]

d. Precepts for training are as follows:[49]

(1) Political training is basic.

(2) Training must have tactics as the center, infantry as the main point, and techniques as a support for tactics.

(3) The cadre is the center of training.

(4) Use experience gained by the unit when conducting combat training.

(5) Maintain relations between the following: techniques and tactics, theory and practice, global training and training for a focal point, and attitude and thought.

f. Several captured documents list other factors concerning training methods:[50]

(1) Prepare training plans and good training aids.

(2) Improve instructors' knowledge.

(3) Give alternating training, both military and political.

(4) Progress from simple to complicated. Immediately correct mistakes.

(5) Increase practical training exercises at night. Disseminate experiences.

(6) Conduct critique sessions after every battle to draw experiences for the improvement of technical knowledge.

g. Training time is planned according to the specific mission of the unit. (See Page B-11.)

E. Logistics.

1. Sappers. Little information is currently available on sapper resupply channels. However, it is assumed that they follow the same principles as engineer units; i.e., direct support units are resupplied by their parent unit, and independent units are resupplied by the Rear Services or Forward Supply Councils in the unit's operating area.

2. Engineers.

a. Supply Channels. Resupply of VC/NVA engineer units is conducted on a mission-by-mission basis through requisition procedures from the unit's Rear Service element to the appropriate Rear Services agency or Forward Supply Council. If the unit is operating in direct support of its parent unit, the parent unit is normally responsible for resupply. When the unit is operating independently within a province or district, the province or district military Rear Services or civilian Forward Supply Councils are responsible for resupply. The military Rear Services elements are responsible for transporting, stockpiling, and issuing of common military supplies. The civilian Forward Supply Councils are

responsible for local purchasing of items not available in military supply channels. Funds for local purchases are obtained from Nam Truong (COSVN).[53]

b. Transportation. The VC/NVA engineer force in SVN has no organic vehicles with which to transport heavy items of engineer equipment and supplies. The battlefield situation in SVN has forced the enemy to maintain a capability to move by foot at a moment's notice. This requirement seriously limits the items of engineer equipment that the enemy is able to retain in his TOE inventory. Each soldier must carry his individual field equipment, clothing, food, weapons, and ammunition. This leaves a very small capability to transport engineer tools and equipment. The unit will attempt to carry certain items that cannot be readily obtained from the countryside, such as mine detectors, demolition kits, and voltmeters. However, the vast majority of construction materials, carpenter tools, and excavating tools are obtained from the countryside through loan, rent, purchase, or confiscation.

c. Construction Materials. VC/NVA engineers make maximum use of native materials.[54] Experience has shown that the enemy is a master of improvising with whatever material is on hand.[55] Standard construction items which are essential are often made in local shops. One engineer battalion operating in SVN has an organic blacksmith squad which can manufacture such items as nails, hinges, straps, and shovels.[56] Other engineer battalions are believed to possess this ability in varying degrees. In addition, the province and district workshops which normally manufacture weapons and munitions could be utilized to fabricate engineer items not available in supply channels.

F. Weapons, Equipment, and Expedients.

1. Sappers.

a. Sappers usually have more automatic weapons, especially submachine guns, than an infantry unit of the same size.[57] Some of the larger sapper units have organic heavy weapons support elements, equipped mainly with B40 AT grenade launchers, mortars, heavy machine guns, and recoilless rifles.[58] Especially characteristic of sappers is the emphasis on mines, grenades, and explosives in their arsenal. Small tactical radios appear often on lists of sapper equipment. Units operating on rivers and waterways have motorboats and sampans.

b. There is no standard TOE for sapper units, but to give an idea of how they might be armed, captives taken in the 4 December 1966 raid on Tan Son Nhut Air Base said that the three 12-man squads in the assault team carried the following weapons:[59]

(1) First squad:
- 1 B40 antitank grenade launcher
- 9 AK-47 assault rifles and K51 submachine guns
- 1 M-1 rifle
- 1 carbine

(2) Second squad: 1 B40 antitank grenade launcher
1 M79 grenade launcher
6 AK-47 assault rifles, K51 submachine guns
2 CKC rifles

(3) Third squad: 1 M79 grenade launcher
unknown number of AK-47 assault rifles
and K51 submachine guns

(4) In addition, the group carried at least 10 bangalore torpedoes, a 15-kilogram mine, and several grenades.[60] Some of the men may not have carried firearms, which is apparent in adding up the lists of weapons. This is not unusual in sapper operations; some sappers carry only explosives.[61]

2. Engineers.

a. Equipment: The VC/NVA engineer units in SVN have a limited ability to maintain and transport large items or inventories of engineer equipment and supplies. The items of engineer equipment in the hands of the troops are normally easily portable; only items needed for the immediate mission or for future missions and unavailable either in supply channels or through confiscation are carried. Several agent reports have been received indicating that the NVA has infiltrated approximately 20 tunnel-digging tractors into SVN.[62] These reports are unconfirmed; however, the number of reports from different sources lends some credence to them. Aerial observers have reported isolated sightings of camouflaged bulldozers. In addition, friendly forces have captured a limited number of generators and various types of shop machinery.[63] Although the VC/NVA will occasionally have items of heavy engineer equipment in their possession, it is believed that the majority of it was obtained from the local area for a specific mission, and permanent possession was not contemplated.

b. Expedients: The construction practices of VC/NVA engineers are characterized by their dependence on human labor (troop labor, volunteer and conscripted civilian labor) and the maximum utilization of locally available resources. Installations such as hospitals and base camps are constructed from materials that are native to the area and are generally similar to the native construction methods within that area. Bamboo, mud, thatch, and logs are primary building supplies.[64] However, when they are available, cement, roofing tin, and milled lumber are used. When faced with a construction problem of considerable magnitude, the enemy has shown unusual patience and ingenuity in solving the problem. Examples of these virtues can be found in extensive tunnel complexes, fortifications, and in his ingenuity and improvisation in crossing water obstacles.

G. VC/NVA Sapper and Engineer Units.

1. Annex C to this study provides detailed information on all confirmed and reported engineer and sapper units presently operating in SVN. An item of special interest is the enemy's tendency to avoid becom-

ing stereotyped in his unit organization. With the exception of his division engineer battalions and regimental engineer companies, the enemy has shown little consistency in forming and equipping engineer and sapper units. He has retained the flexibility to form and equip units according to the battlefield requirements and the availability of men and equipment.

2. As of September 1967, there were reports on the existence of 210 sapper, engineer, sapper reconnaissance, and demolitions organizations in South Vietnam, ranging in size from squad to battalion. About 36% of these reports are confirmed. (See Annex C.)

3. About 64% of the reported units operate independently or in support of unspecified units in a particular region, province, or district. About 22% of the reported units operate independently or in VC parent units, and the remaining units, about 14% of the total, are subordinate to NVA parent units.

4. Twenty-nine of the reported units were battalions, ranging in size from 100 to 800 men and averaging 337 men. One-hundred-fifteen units were companies, ranging in size from 35 to 175 men and averaging 90. There were 57 platoons, ranging from 15 to 90 men, with an average of 25, and 9 squads of 4 to 13 men, with an average of six. Strength figures were not reported for all units, but the averages should be fairly representative.

a. Here is a breakdown of the reported units by size and CTZ:

	Battalions	Companies	Platoons	Squads
I CTZ	16	41	9	0
II CTZ	7	30	4	0
III CTZ	5	20	11	0
IV CTZ	1	24	33	9

b. Following is a breakdown of the units by size, CTZ, status, and type of affiliation -- VC, NVA, or independent. The status of the units is subdivided into two categories. Column A represents the reported units (those units which have not been officially verified); column B represents the confirmed units. The "independent" category includes units assigned to an area of operation rather than to a specific parent unit and a few units for which neither an assigned area nor a parent unit is known.

	Independent		VC		NVA	
	(A)	(B)	(A)	(B)	(A)	(B)
I CTZ						
Bn	6	0	4	3	1	2
Co	17	1	9	5	5	4
Plt	2	0	7	0	0	0
Sqd	0	0	0	0	0	0
II CTZ						
Bn	2	0	0	2	1	2
Co	4	0	8	5	0	13
Plt	0	0	4	0	0	0
Sqd	0	0	0	0	0	0
III CTZ						
Bn	0	0	1	4	0	0
Co	2	0	7	8	0	3
Plt	2	0	9	0	0	0
Sqd	0	0	0	0	0	0
IV CTZ						
Bn	1	0	0	0	0	0
Co	9	0	7	8	0	0
Plt	1	0	17	15	0	0
Sqd	0	0	9	0	0	0
Total	46 (47)	1	82 (132)	50	7 (31)	24

5. The outstanding feature about the organization of enemy sapper and engineer units is a lack of standardization. With the exception of division engineer battalions and regimental engineer companies, the enemy has shown little consistency in forming and equipping sapper and engineer units. Organization is generally based on battlefield requirements and the availability of men and equipment, rather than on a preset organizational doctrine. The elements of the larger units may be dispersed over a wide area. (See Annex A for charts showing sapper and engineer organization in an NVA division, in Military Region 4, and in Kien Hoa Province. See Annex C for the particular characteristics of each reported unit.)

III. CONCLUSION.

A. Sappers. Enemy sapper units in SVN, when compared to a typical infantry unit, enjoy a more elite status. They are thoroughly schooled in the indispensable virtues of a sapper. Selection criteria for a sapper are high and only the most outstanding and dedicated are accepted. These factors have assisted in creating a higher esprit de corps within sapper units and, as a result, combat effectiveness of sapper units is generally high.

The missions of sapper units are highly combat-oriented. They are responsible for breaching obstacles and destroying fortifications which impede the infantry attack. They share with the engineers an equal, if not greater, role in the employment of mine warfare and the utilization of explosives and demolitions to destroy bridges and installations. Enemy sapper units are sufficiently trained and motivated to accomplish their mission. The ratio of sappers to infantry troops has increased, indicating that the enemy has reason to believe that the sapper is an important and effective combatant on the battlefield.

B. Engineers. Enemy engineer units in SVN do not have the necessary engineer equipment inventory or the technically qualified engineers to engage in sophisticated engineer construction projects such as flood control, harbor and pier construction, major rail and highway bridge construction, hard surface road construction, and permanent building construction. However, the men and the means are available to provide for the combat requirements of the present battlefield. Training is combat-oriented. The enemy is well qualified to perform missions employing mine warfare, using demolitions to destroy fortifications and structures, providing expedient stream-crossing equipment and construction of hasty roads and trails, tunnels, fortifications, temporary camps, and hospitals. They always maintain the capability of fighting as infantry when required. The enemy's battlefield requirements are simple, requiring little, if any, sophistication. The ratio of engineers to combat troops is sufficient to provide the direct support demanded on the battlefield.

FOOTNOTES

1. USMACV CDEC Log #8-0815-66.
2. MACJ214 Translation Report Log #06-1421-66.
3. III MAF 9th ITT, 54-67.
4. COMNAVFORV INTSUM 175-66.
5. CICV, III Corps OB Briefing, 17 February 1967.
6. USMACV CDEC Log #9-0797-66.
7. CICV, III Corps OB Briefing.
8. CICV Project 133-66, "Vietnam Intelligence Estimate of the Situation," 31 March 1966.
9. USAJFKCENSPWAR, The Viet Cong, 2nd Revision, November 1965.
10. MIC Report Log #6-49-65.
11. CICV Study ST 67-027, VC Attacks on Fixed Installations, 6 January 1967, p. 4.
12. USAJFKCENSPWAR, op. cit.
13. CICV Study ST 67-027.
14. CICV Study ST 67-026, VC Ambush Tactics, 6 January 1967, pp. A-18, A-19.
15. Ibid., p. A-20.
16. CICV Handbook, VC/NVA Employment of Mines and Boobytraps, pp. 24, 25.
17. CMIC Log #12-017-66.
18. Ibid.
19. Chief, Naval Advisory Group DF, "Viet Cong Frogmen," 14 March 1966.
20. CICV Project 133-66.
21. USMACV CDEC Log #5-340-65.
22. USMACV CDEC Log #8-0815-66.
23. Ibid.

FOOTNOTES (Cont)

24. Ibid.

25. MACJ214, op. cit.

26. USMACV DEC Log #02-1093-66.

27. USAJFKCENSPWAR, op. cit.

28. Ibid.

29. MIC Report Log #6-49-65.

30. MACJ214 Log #5-1552-66.

31. MIC Report Log #6-49-65; USMACV DEC Log #4-0739-66; USMACV DEC Log #5-340-65.

32. USMACV DEC Log #01-1429-66.

33. CMIC Special Report #US 589-66/1336.

34. MIC Report Log #6-49-65; USMACV DEC Log #5-340-65; USMACV DEC Log #4-0739-66.

35. USMACV DEC Log #4-0073-66; USMACV CDEC Log #5-340-65; MIC Interrogation Report Control #0496 Log #12-377; SIC Interrogation Report Control #416/65.

36. MIC Interrogation Report Control #1614.

37. CMIC Special Report #US 363-66/021CH.

38. CMIC Special Report #US 589-66/1336.

39. II FFORCEV PERINTREP 24, 30 August 66.

40. NIC Interrogation Report #601-66; NIC Interrogation Report #586-66.

41. USMACV CMIC Log #04-0214-66.

42. USMACV DEC Log #5-0005-66; USMACV DEC Log #5-0024-66; USMACV DEC Log #06-0244-66.

43. MACJ214 Transportation Report Log #06-1421-66.

44. Ibid.

45. USMACV CDEC Log #12-1089-66.

FOOTNOTES (Cont)

46. MACJ214 Transportation Report Log #06-1421-66.

47. MACV Message 04816, 9 February 1967.

48. MACJ214 Transportation Report Log #06-1421-66.

49. Ibid.

50. MACJ214 Transportation Report Log #06-1421-66; USMACV CDEC Log #02-1089-66.

51. MACJ214 Transportation Report Log #06-1421-66.

52. USMACV CDEC Log #02-1089-66.

53. MACJ214 Bulletin #2237, 21 January 1967.

54. USMACV DEC Log #02-1093-66.

55. CICV Study ST 67-007, VC Structures and Field Fortifications, 23 August 1966.

56. 1st Marine Division 3rd ITT #95-12-66.

57. III MAF 9th ITT #121-67.

58. III MAF 9th ITT #54-67.

59. CMIC Log #12-017-66.

60. Ibid.

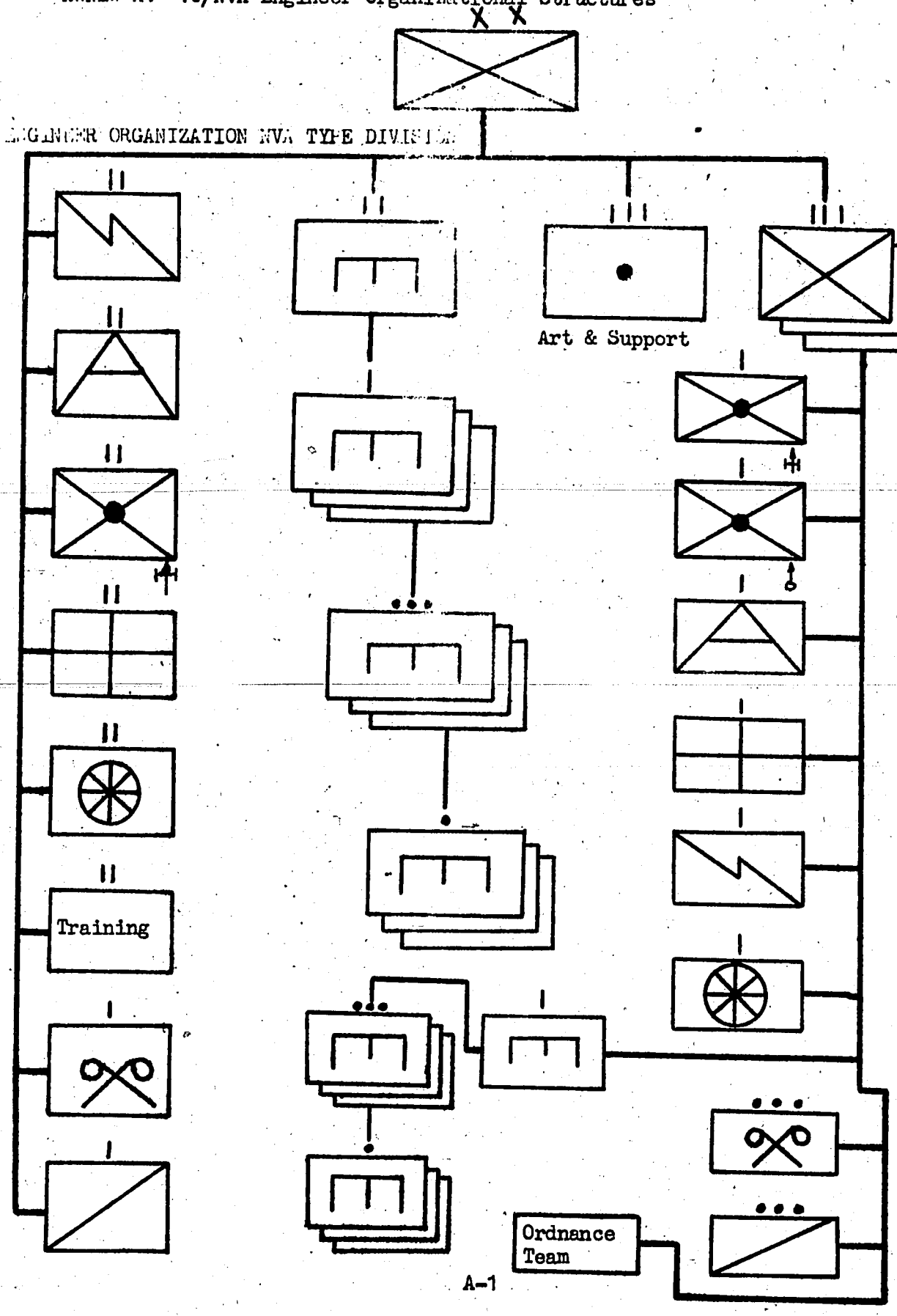
61. Response to SICR U-UPE-U0284, 10 April 1966.

62. IR 6-075-8988-67, 4 April 1967; IR 6-075-6171-66, 23 September 1966; IR-6-026-3097-66, 9 December 1966; DEC Log 5-0804-66, 3 June 66.

63. II FFORCEV INTSUM #286, 25 December 1966.

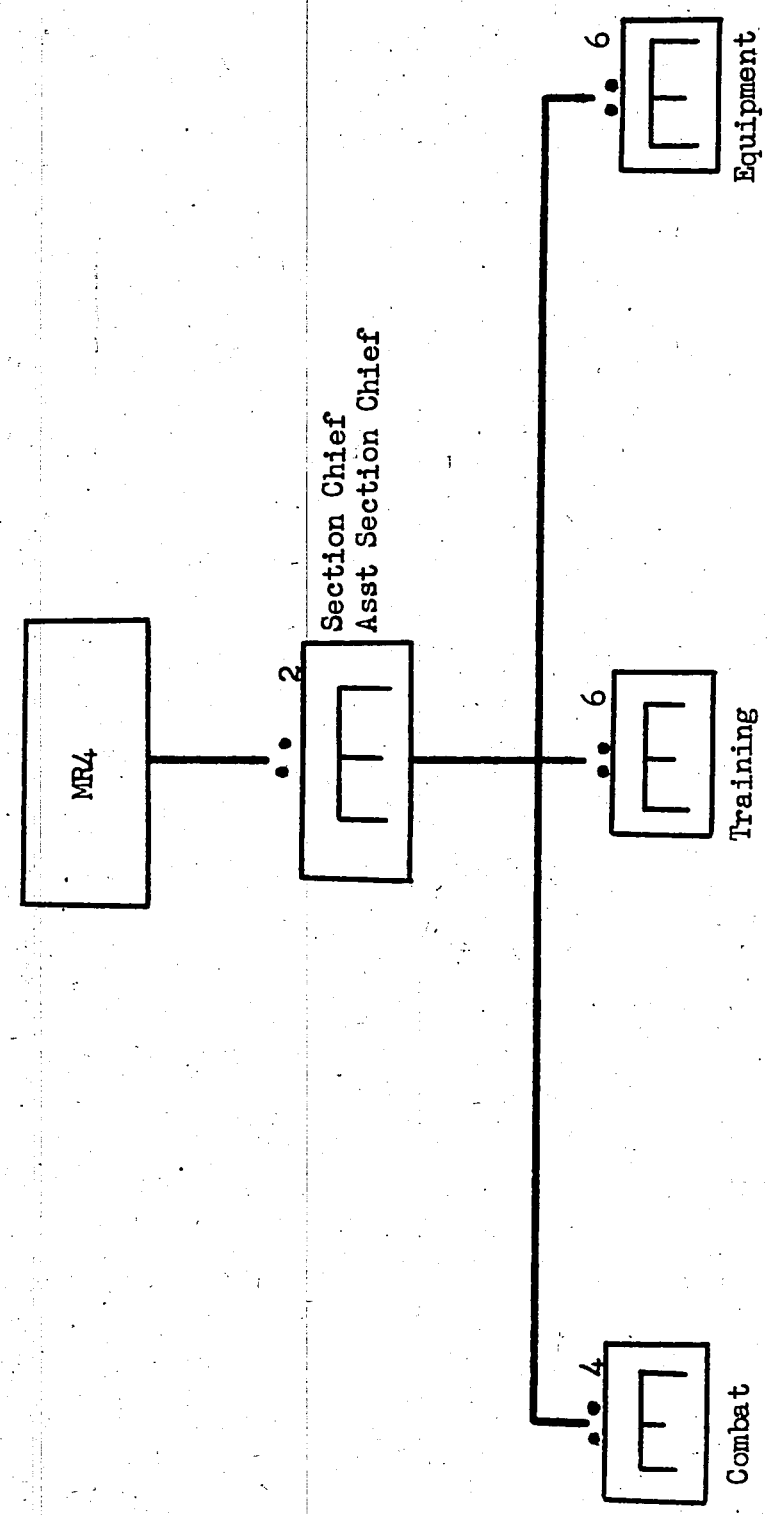
64. CICV Study ST 67-007, VC Structures and Field Fortifications, 23 August 1966.

ANNEX A: VC/NVA Engineer Organizational Structures



ANNEX A: VC/NVA Engineer Organizational Structures (Cont)

ENGINEER STAFF ORGANIZATION MR4



MISSION:

Produce improvised mines, issue and maintain engineer supplies and equipment.

MISSION:

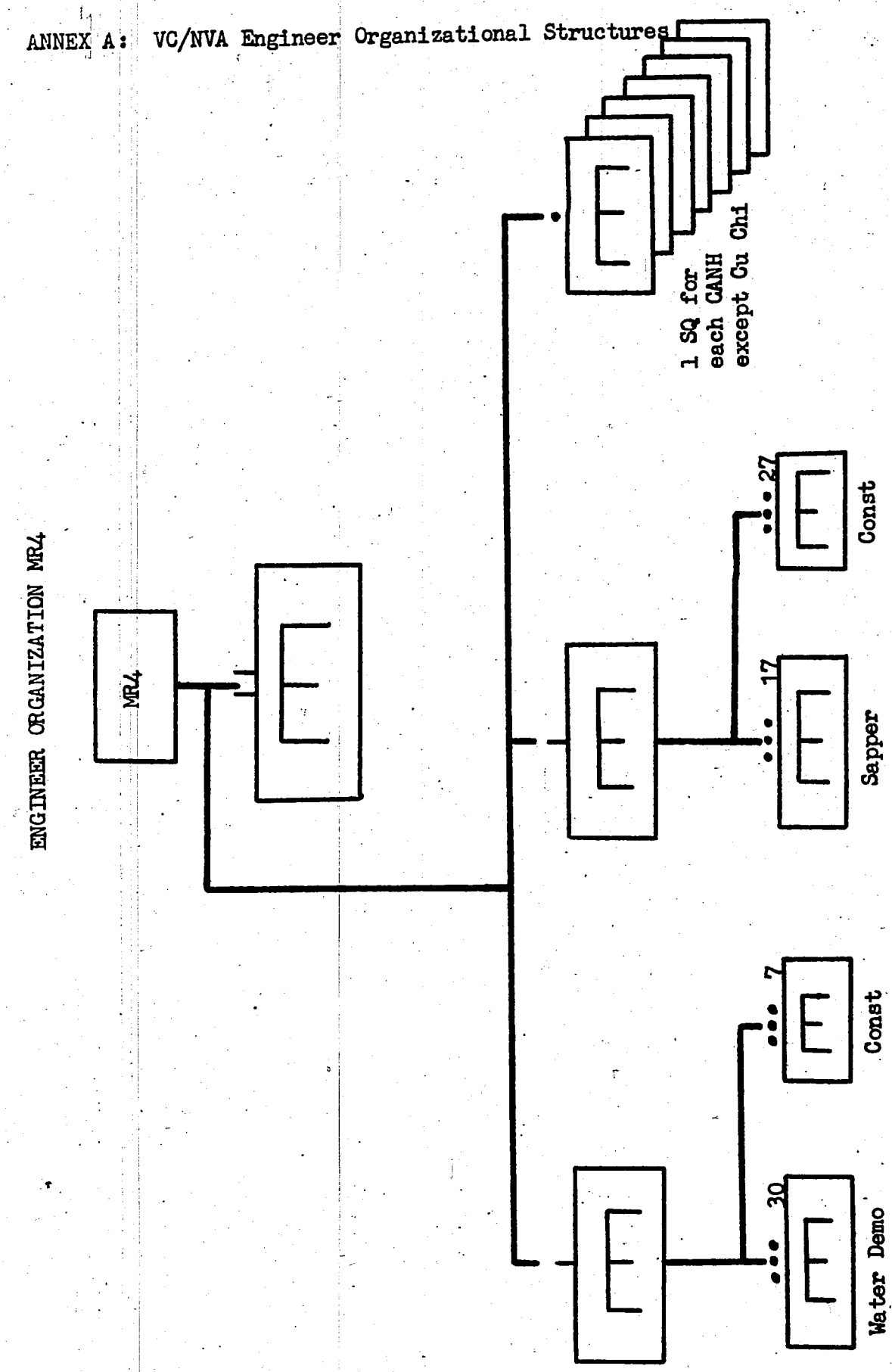
Train engineer personnel of concentrated and guerrilla units.

MISSION:

Provide technical advice to water guerrilla and engineer units within the six CANH's.

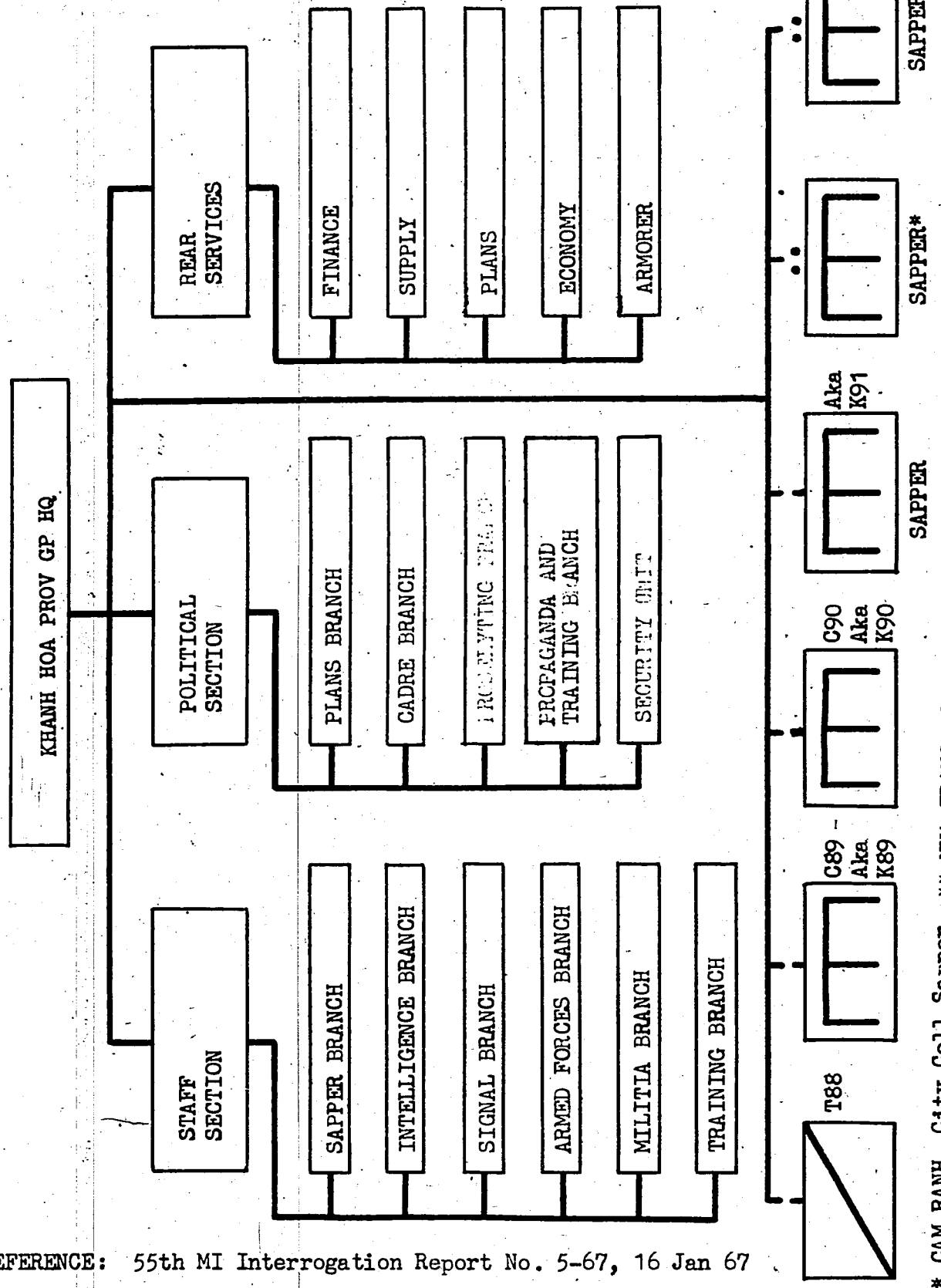
REFERENCE: MACJ214 Bulletin No. 2278, 23 Jan 67

ANNEX A: VC/NVA Engineer Organizational Structures



REFERENCE: MACJ214 Bulletin No. 2278, 23 Jan 67

ANNEX A: VC/NVA Engineer Organizational Structures.(Cont)



* CAM RANH City Cell Sapper ** NHA TRANG City Cell Sapper
NOTE: For the purpose of this study only the Sapper/Engineer organization is given in detail. Detailed information on the above listed Sapper Engineer units can be found in Annex C.

REFERENCE: 55th MI Interrogation Report No. 5-67, 16 Jan 67

ANNEX B: Training

CONFIRMED VC/NVA ENGINEER/SAPPER TRAINING FACILITIES IN SVN/NVN

1. Thi Cau Engineer Officer School, Bac Ninh Province, NVN, XJ 120438, 18-month course.[1]

2. Sapper Training Center, Kien Hoa Province, SVN, vic XR 770864, 8-week course.[2]

3. 402nd Sapper Battalion Training Center, Quang Nam Province, SVN, vic AT 845562, 2-month course.[3]

4. Underwater Demolition/Mine School, Bien Hoa Province, SVN, vic YS 011603, 3-month course.[4]

Footnotes

1. NIC Report No. 568/66, 9 Nov 66; NIC Report No. 601/66, 24 Nov 66; CMIC Special Report #05-0234-66; CMIC Special Report #08-087-66.

2. IR 6-075-8025-66, VC Sapper Tng Center (U), 21 Oct 66; IR 6-075-6918-66, VC Sapper Tng, 5 Oct 66.

3. III MAF INTSUM No. 320, 17 Nov 66; III MAF INTSUM Nr. 162, 11 Jun 66.

4. COMNAVFORV INTSUM 167-66, 15 Oct 66; COMNAVFORV INTSUM 130-66,1 Sep 66.

ANNEX B: Training (Cont)

Subjects and Periods for an Engineer Company

General Training Subjects

Item#	Themes	Time
1.	Use of weapons	3 days
2.	Launching and laying of grenades	1 day
3.	Regulations for warning, patrols, and guards	1 day
4.	Regulations for interior affairs (responsibility)	1 day
5.	Reconnaissance drill-security of positions	2 days
6.	Individual and cell attack by maneuvering troops	2 days
7.	Squad attack by maneuvering troops under artillery fire	1 day
8.	Chemistry, first aid and dressings	2 days
	Total	13 days

Skill Training

1.	Mine	21 days
2.	Explosive charges	25 days
3.	Tactics and construction	26 days
4.	Revision and control	5 days

Detail of Each Training Subject

I. Mines

1.	Anti-infantry mines, illuminating mines, claymore mines.	3 days
2.	Various types of bombs and their removal.	1 day
3.	Anti-infantry mines (claymore mines, mosquito mines)	1 day
4.	Anti-infantry mines, laying of automatic mines, trapping mines and torpedoes.	1 day

[The above, plus pp B-3 & B-4, are verbatim extracts of the document referenced on p B-4.]

ANNEX B: Training (Cont)

Item #	Themes	Time
5.	Anti-mechanical mines	2 days
6.	Anti-helicopter	1 day
7.	Mine detectors (responsibility of the detachment)	2 days
8.	Engineer cell and squad laying mines, platoon setting up obstacles.	4 days
9.	Engineer squad opening routes through mine fields	4 days
10.	Engineer squad laying mines and attacking enemy infantry in formation.	2 days
	Total	21 days

II. Explosive charges

1.	Various types of explosive charges	1 day
2.	Explosive charges in cake or powder form	2 days
3.	Assembly of igniter and detonator of an ordinary explosive charge.	2 days
4.	Electric detonation instruments	1 day
5.	Electric line and its camouflage, computing, selection	3 days
6.	Destruction of wood and wooden structures	2 days
7.	Destruction of iron and ironworks	2 days
8.	Destruction of concrete constructions	
9.	Cell and squad opening routes through obstacles where electric detonator lines are laid	6 days
10.	Cell and squad opening routes by explosive charge and use of explosive charges to attack fortifications and resistance positions.	4 days

III. Tactics and construction: 26 days (specific training will be disseminated later).

ANNEX B: Training (Cont)

IV. Revision and control under drill form for five days.

Additional Cadre Training

-Computing electric detonator line and selecting electric current.

-Computing explosive forces to destroy wooden, iron, and reinforced concrete structures. (gathering specific experiences)

-Computing floating capability of materials and instruments to insure transportation across the river.

-Use of field glasses, compass, and map.

Reference: MACJ214 Transportation Report Log #06-1421-66, 16 Aug 66.

ANNEX B: Training (Cont)

Subjects and Periods for a Province Engineer Unit

Contents of the Specialized Subjects

SUBJECT	CONTENTS	DURATION
	-Use of our (VC) mines. -Bazooka, artillery shell, booby trap grenades	24 hours
	DH-10	
Mines	-Min Moi Hanh (TN: mine which is placed in a hole in the ground)	8 hours
64 hours	-Grenade launching hole	8 hours
	-Enemy mines: M18, M130, M83, M16E3, M48, M2A1	24 hours
		64 hours
Explosive	-Characteristics of explosives	5 hours
charges	-Packing of explosive charges	8 hours
64 hours	-Assembly of detonating devices	8 hours
	-Maintenance	3 hours
	-Transportation of explosive charges method of continuously attacking with explosive charge to destroy obstacles	24 hours
	-The selection by the squad leader of objectives to be destroyed by explosives	16 hours
		64 hours
	-Digging of individual fortification, prone and standing position, communication trench, combat and camouflage	16 hours
Construction of fortifications	-Digging of fortifications for AR, MG and RR	8 hours

[The above, plus pp B-6 & B-7, are verbatim extracts of the document referenced on p B-7.]

ANNEX B: Training (Cont)

SUBJECT	CONTENTS	DURATION
40 hours	-Setting up of obstacles against tanks	8 hours
	-Field observation tower	8 hours
		40 hours
	-Method of destroying wooden, steel and concrete bridges	8 hours
Bridge and river crossing 24 hours	-Making of bridge with tools on hand for infantry and heavy weapons to cross small rivers and deep streams	8 hours
	-Packing of weapons at the river crossing area	8 hours
		24 hours
Road	-Sabotage of macadam, dirt and asphalt roads and railroad (railway and train turn table).	11 hours
24 hours	-Repair of destroyed section of road	5 hours
		16 hours [sic]
	-Fundamentals of electricity, the measure of the power of the line.	8 hours
Electricity	-Assembly of batteries in parallel and in series	8 hours
		16 hours

ANNEX B: Training (Cont)

SUBJECT	CONTENTS	DURATION
Reconnaissance of enemy structure	-Reconnaissance of bridge and road, drawing sketches and making reports.	8 hours
	-Reconnaissance of mine fields, drawing sketches and making reports.	8 hours
		16 hours
Engineer tactics	-Engineer in attack on posts and counter-sweep operation	11 hours
	-Engineer in attack on communication axis	5 hours
		16 hours

Reference: USMACV DEC Log #02-1089-66.

ANNEX B: Training (Cont)

Subjects and Periods for 1966 Training Program for an Engineer Detachment

TRAINING SUBJECTS	THEMES	TIME (Days)
General training	Weapons-firing, 1st and 2nd phase	3
	Grenades-launching and laying	1
	Defense, guard, patrol, and warning regulations	1
	Internal affairs and military responsibilities	1
	Security of positions	2
	Mobile combat for individual and cell	2
	Squad mobility under enemy artillery fire	1
	Chemistry-Preventive measures, first aid, dressing	2
Political training	In accordance with guidance of the unit political section	30 (main training)
		5 (secondary training)
Mines	Use, structure, laying and removal of enemy mines	3
	General purpose bombs, time bombs and removal	1
	Anti-infantry mines	1

[The above, plus pp B-9 & B-10, are verbatim extracts of the document referenced on p B-10.]

ANNEX B: Training (Cont)

TRAINING SUBJECTS	THEMES	TIME (Days)
	Traps coordinated with torpedoes	1
	Anti-tank mines	2
	Anti-helicopter mines	1
	Mine detectors	2
	Engineer cell and squad laying mines, platoon deployment of obstacles	4
	Squad opening routes through obstacles	4
	Engineer and squad laying mines in formation	2
Explosive charge	Detonating powder used for explosive charges	1
	Wrapping of detonating powder	1
	Assembly of igniter and detonator	2
	Electric detonator instruments	1
	Lines of electric detonators	3
	Destruction of wood and wooden structures	2
	Destruction of concrete constructions	2
	Destruction of iron and ironworks	2
	Engineer cell secretly opening routes and destroying electric fences	6

ANNEX B: Training (Cont)

TRAINING SUBJECTS	THEMES	TIME (Days)
	Engineer cell and squad opening routes by continuous explosive charges	5
Construction tactic revision	Themes will be disseminated later	26
	Control under the form of drill and discussion	5
	TOTAL	125

Remarks: Construction tactics consist of the construction of bridges, roads, and fortifications.

-Request the detachment study subjects and times and suggest necessary corrections so that the higher echelon can make appropriate changes.

-Besides the main time, request you make an appropriate use of 15 days of secondary time for military purposes.

-Use as much time as possible for the training, make a careful record of the training for future organization.

Reference: MACJ214 Translation Report Log #06-1421-66, 16 August 1966. [The above is a verbatim extract of the document.]

ANNEX C: VC/NVA Sapper/Engineer Organizations

(ANNEX C IS BOUND SEPARATELY AND DISTRIBUTED IN-COUNTRY.)

ANNEX D: Lessons Learned

The Viet Cong are very resourceful and thorough, and make maximum use of their limited manpower and resources. Sappers are highly trained and extremely proficient in planning and executing attacks on fixed installations. Based on a detailed analysis of enemy sapper tactics and operational techniques employed in SVN, the following guidelines could prove useful in deterring or negating a sapper assault.

1. The enemy usually reconnoiters targets thoroughly and carefully. Sometimes this reconnaissance may take a year to be considered sufficient for a successful operation to be conducted. During this period, the reconnaissance personnel prepare sketches and gather information from legal covert and semi-covert agents working within the objective area. All defensive positions, communication trenches, CPs, OPs, and the location of key personnel are obtained, including avenues of approach to and within the objective. After the period spent studying the objective, exercises take place which include sand-table demonstrations and, if possible, rehearsals in similar terrain. When all elements know the mission thoroughly, the attack occurs. To counter this effective reconnaissance, friendly forces should consider:

a. Shifting crew-served weapons and key personnel frequently.

b. Not allowing strange Vietnamese within the compound.

c. Not setting patterns for times of changing sentries, sending out patrols, and similar activity.

d. Using dogs as an early warning system.

2. After they penetrate the perimeter, sappers divide into small groups and head for pre-selected targets to place satchel charges and attack personnel with small arms. A possible deterrent is the use of internal wire barriers to slow, confuse, and channelize the enemy into pre-selected killing zones covered by automatic weapons. These barriers should not be permanently emplaced, but prepared in such a manner that they can be periodically shifted. This change should be made after dark.

3. Most of the installations that have been overrun had no listening posts or observation posts beyond the perimeter. Another common failure was the lack of aggressive and constant night patrolling.

4. In many of the attacks, the majority of friendly KIA resulted from the lack of overhead cover for trenches. Many have been killed by being shot in the head or back while crouching to shield themselves from incoming mortar rounds. In actuality, the explosions mistaken as mortar fire were

ANNEX D: Lessons Learned (Cont)

bangalores and satchel charges. Usually, the enemy had already penetrated the defense when suppressive mortar fire was lifted. A favorite VC tactic is for sappers to crawl forward to the wire while the supporting mortar fire keeps the defenders down. This tactic can be countered by having a portion of the troops in positions which provide visual surveillance of the entire perimeter during mortar attacks.

5. Sappers are proficient with all forms of mines and explosives and may make use of friendly defensive mines during an attack. Mines should be checked periodically to be sure that they are still present and have not deteriorated due to age and weather. Claymores should be checked for sabotage to the firing wire and to be sure that they are facing in the right direction.

6. Based upon the enemy's tactics and capabilities in breaching perimeter barriers, the following recommendations are made to reduce the possibility of the perimeter being breached:

a. At least three separate apron/concertina fences should ring the installation, with defensive minefields placed between them.

b. The distance between the outermost and innermost fence must be at least 100 meters. Fences closer together can be breached by one single detonation.

c. The distance between any two fences should be at least 30 meters.

d. Patrols should be conducted each morning to make a careful inspection for signs of tampering and/or tracks near the perimeter.

e. Supplementary trip flares and mines should be placed along the likely avenues of approach early each evening.