SECTION X

OPERATIONS IN SWAMPY AND INUNDATED AREAS

38. General

Operations in swampy and inundated areas in Vietnam are generally associated with the Mekong Delta -- that region of Vietnam which lies south and west of the city of Saigon laced with rivers, streams, and canals. However, some of these same conditions exist along the northern coastal plain in small delta areas. Rice paddies comprise most of the Delta. Two other types of areas within the Delta, the Plain of Reeds and the Mangrove Swamps, are treated separately below.

39. Characteristics of the Delta Area

a. Rice Paddy Areas.

(1) Area traits. The rice paddy land of the Delta is the most heavily populated rural area in RVN; dwellings are found along nearly every waterway. Streams, canals and rivers interlace this area; trees and other vegetation along the waterways sometimes extend 300 meters on each side. The land between the waterways is covered by rice paddies and during the rainy season these paddies are covered with water to a depth of one foot or more. In the dry season these same rice paddies dry up and crack open.

(2) Movement capabilities.

(a) Routes. There is an extensive network
of rivers and canals useable throughout the year, and
generally capable of supporting craft as large as landing
craft, Mechanized (LCM). River craft are confined to
the major canals and to the rivers. Overhead bridge
clearance and depth of water at high and low tide must
be considered in planning use of river boats. Assault
boats can operate freely on minor canals only during
high tide. Native sampans operate at all times.

(b) Cross-country. Troops can maneuver
in the paddies on foot the year-round. Foot movement
during the dry season averages three to four kilometers
per hour during the day and one and one-half kilometers
per hour at night. During the wet season foot movement
may be slowed by difficulties in crossing canals; a com­
bination of deep water and steep muddy banks may result
in insufficient traction. Consideration of the tide is
necessary, even far inland, as high tide favors boat
movement, while low tide favors wading across canals
in most search operations. Several large-scale opera­
tions have failed or have been aborted because the
effects of the tide were not considered.

(c) Helicopters. Most rice paddies in
both the wet and dry season are potential landing or
loading zones.

(d) Airborne. Airborne forces can be
employed year-round with few limitations on the size
of the force dropped. During the wet season the water
depth of the rice paddies should be considered when
selecting drop zones. If the situation requires it, drop
zones can be successfully selected immediately prior
to the drop.
(e) Dogs. Dogs may be used with good effect during the dry season particularly during searches and night operations.

(3) VC practices.

(a) VC greatly enhance their mobility through the use of sampans.

(b) Because of the danger of being boxed in between tree lines during daylight, the VC prefer to withdraw to successive fortified positions when friendly forces attack. When necessary they will fight from one of the many well constructed defensive positions they have built throughout the area.

(c) Barriers and mines are employed across canals and streams to protect VC positions.

(d) Mines and foot traps are used extensively throughout the area.

(e) The VC use guerrillas extensively as screening and diversionary forces. They customarily employ a rear guard to delay pursuing forces.

b. Plain of Reeds:

(1) Area traits. The sparse population is scattered throughout the small hamlets at canal or stream junctions and along the banks of these waterways. During the rainy season when the entire area is inundated, the people live in elevated houses or in sampans. Even during the dry season, the area is continuously covered with water varying from
ankle to shoulder depth and blanketed by reeds and grass one-half to four and a half meters high. There are trees scattered along the small number of canals and streams in the area. During the dry season many parts of the area resemble the midwest prairies from the air. In the wet season it looks like a sea or large lake.

(2) Movement capabilities.

(a) Routes. Only two major canals and a single road cross the area. Inhabitants normally travel by boat and sampan, often directly across flooded fields.

(b) Cross-country. The average rate of travel cross-country by foot in the dry season is 1.5 kilometers per hour. During the wet season foot travel seldom exceeds one kilometer per hour and in many places is not possible at all. The sampan provides the fastest and best means of travel. Swimmer support boats (SSB), wide shallow-draft boats, can be used but normally must be poled cross-country because the reeds tangle in the propeller. (See paragraph 41, Small Boat Operations). Armored personnel carriers are most valuable in this area, although frequent stops are necessary to cut the reeds and grass from the tracks and drive sprockets. River force craft are limited to larger streams and canals. They are sometimes used to carry troops to the general area of operations but can seldom be utilized to support an assault operation.

(c) Helicopters. Helicopter landing zones in the Plain of Reeds are limited. In the dry season canal and river banks may be used for landings, but in the rainy season troops must be loaded and unloaded from hovering helicopters. Care must be taken not to offload troops in water.
reaching over their heads. Small boats can be lashed to the skids of helicopters and used to disembark troops.

(d) Airborne. Airborne troops can be employed effectively throughout most of the area depending upon the depth of the water and the season of the year.

(3) Fire Support. Moving artillery into position to support operations requires boat or helicopter transportation and usually compromises security. Heavy mortars and artillery which can be delivered by helicopter still possess the disadvantage of limited range for the usually large area operations conducted in the Plain of Reeds. Naval guns can support operations within range of the Mekong river. Tactical air support and armed helicopter support are most useful. Assault boats or sampans may be used to carry heavier crew served weapons and ammunition.

(4) VC practices.

(a) Mobile VC units live in and fight from small sampans during the rainy season.

(b) VC use the area for training bases, manufacturing sites, and rest areas, most of which are located near the Cambodian border.

(c) Foot troops escape and evade by going under water and breathing through reeds or by hiding in high grass.

(d) VC use barriers and mines to protect canals, streams and rivers leading to their "secret bases."
c. Mangrove Swamps.

(1) Area traits. Population is very sparse and is concentrated along the shore line or at river and stream junctions. Most houses are built on stilts because of the wide variations of the tides. Few people actually live in the swamps. Trees, vines, exposed roots and dense undergrowth are marks of the Mangrove Swamps. Swamp depths, depending on the tide, vary from one meter of mud to one meter of mud covered by two meters of water. Tides cause river currents to reverse direction as the tide changes.

(2) Movement capabilities.

(a) Routes. There are no roads in the Mangrove Swamps. Boats traveling into the area during high tide can be stranded at low tide and may have difficulty reaching shore. Sampans can enter the area from the sea only during high tide. Although these conditions hamper tactical troop landings, several successful landings have been made. LCMs and LCVPs can get close to shore only by following river channels.

(b) Cross-country. Foot movement is very slow. The average rate of foot movement is one kilometer per hour, and may be only a few hundred meters per hour. Armored personnel carriers can operate in only a few parts of the Mangrove Swamps, generally around the edges. Sampans and SSBs are limited to the few streams and are likely to be stranded at low tide.

(c) Helicopters and airborne. Helicopter and airborne forces can be employed in mass only on the fringe
areas of Mangrove Swamps.

(d) Dogs. Dogs are partially effective on stream banks. They can also be used in the swamps during low tide, but they tire easily. During high tide the dogs must be carried or placed in boats.

(3) Fire support. The planning considerations for the use of artillery, mortar and air support are similar to those necessary for operations in the Plain of Reeds. Naval gunfire can be used. Consideration should be given to the use of assault boats or sampans to carry heavier crew-served weapons and ammunition.

(4) VC practices.

(a) VC dominate the Mangrove Swamps and occupy most of the villages.

(b) This area (like the Plain of Reeds) contains many secret bases for training, manufacturing and storage of war material, hospitals, and rest areas.

(c) Escape and evasion is normally to the sea by sampan or by dispersion into the swamps.

(d) Mines, foot traps, and mantraps are used extensively throughout the area. Almost every path and route into the swamps is mined and heavily trapped.

40. Planning Considerations

a. Throughout most of the Delta the terrain is such that small forces are employed to develop the situation,
with mobile reserves for commitment as required.

b. Most operations are aimed at encircling a suspected VC force in a given general area. Often the lack of definite intelligence leads to the selection of terrain objectives rather than VC locations as control measures. All forces must be quick to follow the VC, to keep pressure on him if possible, in order to rapidly develop the situation and fix him in a killing zone. Secondary forces are assigned blocking positions on both sides of wooded canal lines leading into the suspected VC area. These forces must be strong enough to withstand a VC breakout attempt, particularly at night. Maneuver elements usually advance along wooded canal lines, which offer very limited frontages (generally limited to platoon size on each bank of the canal). For this reason, it is often difficult to bring large forces to bear on VC positions on both sides of the canals. The use of screening smokes laid by aircraft or artillery may permit flanking movements through the open rice fields.

41. Small Boat Operations

a. General. In the Delta region, small boats can provide a high degree of mobility for a military force. They are used to perform military tasks in much the same manner as light trucks.

b. Description of small boats.

(1) Dong Nai Boats, also called Swimmer Support Boats (SSB). These are wide, shallow-draft styrofoam boats weighing 500 pounds. Their styrofoam construction makes them buoyant enough to prevent sinking even if swamped (figure 47).
Figure 47. Swimmer Support Boat (SSB)

Figure 48. Plastic Assault Boat (PAB)
(2) Plastic Assault Boats (PAB). The assault boat M3 weighs 300 pounds. It is narrower, deeper, and also has a tougher outer surface than the Dong Nai boat and hence is more suitable for being run up onto river or canal banks during landing operations (Figure 48).

(3) Modified Plastic Assault Boats. These are PABs to which styrofoam sections have been bonded to provide greater buoyancy. Like the Dong Nai boats, modified PABs are unsinkable. They weigh about 475 pounds.

c. Planning Considerations

(1) General. Boat operations are basically the same as other operations which use special means to increase the speed of movement. Backward planning should be used, and the general scheme of maneuver should not depend solely on the available water routes. Boats are intended to increase, not restrict the choice of routes. Small boats are not normally used as fighting vehicles. Troops usually debark and fight on foot; boat crews and security forces remain with the boats.

(2) Advantages.

(a) Speed. Normally, 40-horsepower outboard motors are used which can propel combat loaded boats at speeds up to 27-30 kilometers per hour (17-20 knots). A minimum depth of 26 inches is required for powered operation, but with the propeller raised, boats propelled by paddles or poles can operate in as little as 10 inches of water.

(b) Weight carrying capacity. The SSB and PAB
are both capable of carrying 10-12 troops. Units moving in boats can carry far more weapons, ammunition and equipment than foot elements, so commanders must insure that means will be available to move the equipment after debarkation.

(3) Limitations.

(a) Restricted movement.

(b) Lack of concealment and cover. Waterways lack cover and concealment, especially if they are wide. Boats can be seen and fired upon easily in daylight. This disadvantage can be reduced by moving at night and traveling close to the stream banks where shadow and overhead branches aid concealment.

(3) Noise. The noise of motors eliminates the chance for stealth and surprise.

d. Special Consideration.

(1) Intelligence.

(a) Terrain intelligence takes on special importance for units conducting small boat operations. The pattern of canals and streams requires very careful analysis.

(b) Visual reports concerning obstacles, possible ambush sites, water current speed and direction, extent of water plant growth, amount of tidal effect and any other factors which influence boat operations, should supplement maps and photo information. Accurate tide information is absolutely essential in the earlier planning stages.
(2) Training. Small boat operations are not difficult, but their success depends on mastery of basic techniques and on mutual confidence between boat crews and the transported infantry elements. Team training is essential, especially for troops unaccustomed to boat movement. For example, troops must unhook web equipment while over deep water so they can shed their equipment if they fall overboard.

(3) Supply and maintenance. Infantry units supported by small boat elements must plan to assist the boat units in supply and maintenance matters, including gasoline supply.

(4) River Assault Groups. The VNN River Assault Group (RAG) has a capability for providing fire support and troop lift for ground forces, using Monitors, Commandaments, River Patrol Craft, LCM, LCVP and related boats. See figure 49 for tabulated data. When RAG forces are employed, they should be preceded by minesweeping LCVP's.

<table>
<thead>
<tr>
<th>BOAT TYPE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landing Craft, Vehicles,</td>
<td>Capacity 10-12 troops. Speed 10 mph. RAG LCVP's are armed with one</td>
</tr>
<tr>
<td>Personnel (LCVP) (Figure 50)</td>
<td>20mm and three cal .30 MG and are used primarily for fighting craft</td>
</tr>
<tr>
<td></td>
<td>rather than transports.</td>
</tr>
<tr>
<td>Landing Craft, Mechanized (LCM)</td>
<td>Capacity 90 troops. Speed 10-12 mph. Max. draft 5' and bridge clearance</td>
</tr>
<tr>
<td>(Figure 51)</td>
<td>12'. LCM's are armed with three 20mm and two cal .50 MG.</td>
</tr>
</tbody>
</table>
COMMANDAMENT
(Figure 52)

Used as a mobile command ship. Speed 10-12 mph. The CDT's have one AN/PRC-10, one AN/VRC-34, and two TCS-12 radios and are armed with two 20mm guns.

MONITOR
(Figure 53)

Used for gunfire support. Speed 10-12 mph. Armed with one 40mm, two 20mm, one cal .50 MG, and one 81mm mortar.

River Patrol Craft (RPC)
(Figure 54)

Capacity 18 troops. Speed 10-12 mph. Mounts two twin cal .50 HMG and two cal .30 LMG. Normally used for river patrol.

Figure 49. Data Pertaining to RAG Boats
Figure 50. Landing Craft, Vehicles, Personnel (LCVP)

Figure 51. Landing Craft, Mechanized (LCM)
Figure 52. Commandament

Figure 53. Monitor
Figure 29. River Patrol Craft (RPC)
SECTION XI. DEFENSIVE CONSIDERATIONS

42. General

While continuous emphasis must be placed on offensive operations, establishment of sound defensive positions is essential. Planning and execution of the defense must be flexible and provide for rapid reaction to VC attacks.

43. Considerations

a. The best defense is offensive action; a series of outposts and ambush sites should be established in depth at dusk or shortly after dark. During daylight, saturation patrolling as well as outposts should be employed.

b. Defensive positions must provide all around protection with the capability for rapidly massing fires on any location around or within the perimeter.

c. For fixed and semi-fixed installations barbed wire barriers (concertina, single and double apron fence, tanglefoot) should be constructed around the perimeter of the installation and around sensitive locations inside the perimeter. Although a good barrier plan is essential, the internal security cannot depend alone on the physical barriers placed around the installation.

d. Trenches should be dug in a zig-zag pattern between bunkers. Grenade sumps are required in trenches.
e. Bunkers, by the nature of their fixed positions, are most vulnerable to infiltration attack, or attack by direct fire weapons. Bunkers must be located at least 50 meters behind the inner barrier wire to reduce the damage from VC-emplaced claymore mines. All bunkers should have reinforced overhead cover capable of withstanding the effects of mortar fire. They should be camouflaged if possible to increase the problem of identifying them at night.

f. Claymore mines, emplaced inside the barrier wire for command detonation, are most effective against personnel. Improvised flame devices, such as the electrically detonated "fougasse", are also effective.

g. The M79 grenade launcher is effective in covering dead space in final protective fires close to the edge of the defensive perimeter.

h. A well coordinated illumination plan tightly controlled by the commander must be developed in order to prevent indiscriminate use of illumination. Improper illumination may reveal friendly forces and defensive positions to the VC.

i. Locate guard or reserve forces throughout the internal area to combat small unit infiltrations. A plan to utilize reserve forces to prevent or repel VC penetrations of the perimeter must be developed. This important fundamental was learned the hard way by the valiant defenders at Camp Bu Dop in July 1965. The VC attacked with two battalions, succeeding in penetrating the northwest corner of the camp. From this position inside the compound the VC fired into the backs of the defenders and inflicted heavy casualties. This situation could have been prevented if a reserve force had been constituted and committed to repel the VC penetration.
j. Establish multiple means of communication with bunkers and internal security posts.

k. There must be a minimum of movement inside the perimeter after dark. If firing of weapons or explosions of grenades occur inside the perimeter (not from protective bunkers or firing pits) all personnel not in protective positions should "freeze" in a firing position. Anyone running or moving about should be considered enemy. Signals must be used to identify friendly counterattack forces. After firing ceases conduct a sweep inside the perimeter.

l. Disperse key personnel, weapons and equipment in order to avoid excessive losses.

m. The chain of command within all units must be well defined to preclude confusion resulting from casualties.

n. Emergency plans to restore communications and medical aid and to assure uninterrupted defense of the area must be developed and rehearsed.

o. Search civilian workers upon their departure from the installation to prevent removal of arms, ammunition or other property. Areas where personnel were working must be swept to remove marker signs emplaced to locate bunkers, automatic weapons sites, or other sensitive fixtures for unfriendly forces outside the installation.

p. Establishment of hasty defensive perimeters during the conduct of other operations requires consideration of the following:
(1) Ambush patrols and early warning devices to cover avenues of approach into the perimeter. Em­place the ambushes while moving into the area.

(2) Stop before dark to set up camp for the night.

(3) Halt on the most defensible terrain available. During rest stops, insure that designated guards are alert and outposts are placed.

q. The VC will make every effort to remove all casualties, weapons and documents from the battlefield in order to prevent accurate assessment of their losses. Use long range automatic weapons fire combined with continuous illumination of the area to keep the VC from "policing" the battlefield as they withdraw. Casualties left behind by the VC are often booby trapped. Exercise extreme caution when searching or moving VC casualties.

r. Remove all trip flares and booby traps at first light.

s. Do not disclose automatic weapon positions by firing when the VC harass with sniper fire.

t. Increase security forces on nights of extremely limited visibility (no moon) and during periods of heavy rain. The VC often attack at such times.

44. Sentry Dogs

Sentry dog units are employed to safeguard installations against unauthorized entry. Each dog is trained to use its keen sense of hearing and smell to alert its handler to the presence of humans and animals. On order from
the handler, the sentry dog will attack an intruder. Guard duty tours for sentry dogs should be about four hours long, covering a post of approximately 200 yards in length. Rotation between guard posts should be on a regular basis to prevent the dog from becoming overconfident and less alert in familiar surroundings.

SUMMARY

Early, detailed and continuous acquisition of intelligence information in all operations will facilitate the application of maximum combat power at precise times and places, utilizing fully the time and space advantages our greater mobility afford us. The success of military operations in the counterinsurgency environment of Vietnam depends upon the application of old and new tactics and techniques -- in bold and imaginative ways. These must constantly be improved to bring the enemy to combat repeatedly and inflict heavy losses upon him.
CHAPTER 4

COMBAT SUPPORT

INTRODUCTION

Tactical air support, armed helicopters, artillery, and naval gunfire have proven extremely effective against the Viet Cong. As a consequence he has learned to take full advantage of inadequacies in fire support planning and exploit the limitations placed on fire support means by bad weather or poor visibility. Thorough fire support planning and coordination is therefore imperative. A number of effective techniques for the employment of these combat support means are discussed below.

SECTION I. AIR SUPPORT

1. General

Air power in all its forms plays a vital role in the war against the Viet Cong. Well-directed air strikes have often forced them to abandon carefully dug-in complexes. The frequent and deadly attacks by Strategic Air Command B-52 bombers have made VC installations in former safe havens vulnerable and lucrative targets. Improvements in the use of aircraft for all purposes will continue to increase the effectiveness of our air power.
2. Tactical Air (figures 55 thru 69)

a. Missions of Tactical Air. The primary role of tactical air in Vietnam is to provide close air support for ground forces and to strike VC encampments and routes of communication. Tactical air also performs reconnaissance and can provide assault airlift as required.

b. Armament Available.

(1) High explosive bombs varying from 100 to 2000 pounds are used when destruction of a target is desired.

(2) Napalm is an effective antipersonnel weapon frequently used against the VC. Although it will neither collapse nor destroy reinforced bunkers, it will usually kill the occupants.

(3) Fragmentation bombs are extremely effective against exposed personnel. Since they explode in the air and shower thousands of fragments in all directions, they are excellent preassault and area suppression munitions.

(4) Air-to-surface missiles are used against fortified positions and other point targets. Thus far, only a few VC targets suitable for destruction by air-to-surface missiles have been located.

(5) 20mm guns installed on most tactical aircraft provide highly accurate firepower effective against
Figure 55. 0-1 Observation Aircraft

Figure 56. B-57 "Canberra"
Figure 57. A-1E "Skyraider"

Figure 58. A-1H "Skyraider"
Figure 59. F-100 "Supersabre"

Figure 60. F-105 "Thunderchief"
Figure 61. A4C "Skyhawk"

Figure 62. F8A "Crusader"
Figure 64. F4H "Phantom"
Figure 65. A3B "Skywarrior"
Figure 66. RF 101 "Voodoo"
Figure 68. C 123
Figure 69. C 130
a large variety of ground targets.

c. Operating Techniques.

(1) Tactical Air Control System (TACS).

(a) The tactical air control center (TACC) is located at Tan Son Nhut Air Base near Saigon, and is the combined US and VNAF facility which plans and coordinates the entire tactical air effort within Vietnam.

(b) Direct air support centers (DASC) are located with the four corps headquarters. The primary function of the DASC is to process and approve all requests for immediate and preplanned close air support.

(c) Tactical air control parties (TACP) are attached to each battalion and higher level ground force tactical headquarters. The TACP at separate brigade and division level consists of an air liaison officer (ALO). The TACP at battalion level consists of one forward air controller (FAC). All TACPs have communications personnel and equipment. A FAC is attached to each province advisory team in Vietnam. This FAC advises the province chief on the use of tactical air and controls the air strikes within that province. TACPs are normally located with the unit fire support coordination center (FSCC) or tactical operations center (TOC) as appropriate. Duties of TACP personnel are as follows:
1. The ALO advises the ground force unit commander on all matters pertaining to the capabilities and employment of tactical air.

2. The FAC is an experienced tactical fighter pilot who has extensive knowledge of tactical air ordnance capabilities and fighter delivery techniques, and who has been specially trained to perform his primary mission of directing air strikes. Experience in Vietnam has shown that the FAC is most effective in directing air strikes when he is airborne. When an ARVN Ranger Battalion in IV Corps was hit by a large VC force one night in March 1965, a FAC at province headquarters immediately requested a flareship and fighters. He proceeded to the battle area in an O-1F and established radio contact with the US advisors who were trapped in the compound. Being completely familiar with the area and having obtained the location of VC forces from the US advisors, the FAC was able to direct the fighters effectively on target. The Ranger unit, together with the Americans, took advantage of this situation and withdrew to a secure area. A reaction force sent in the next morning credited the air strike with killing 38 VC and preventing them from overrunning the post.

(2) Air Support Request Procedures.

(a) Requests for immediate air strikes may originate at any echelon and are forwarded through normal channels of communication to the battalion CP. The
requests are validated by the battalion commander or his representative and given to the TACP for submission directly to corps headquarters direct air support centers (DASC). The TACPs at province, brigade and division levels monitor all requests and coordinate with the fire support coordination center (FSCC) at their level. Provided no echelon above the battalion disapproves the request, the DASC completes the necessary coordination and orders the mission. If available aircraft are in the vicinity of the target area, the response time will be a matter of minutes. If the immediate air strike mission requires the scrambling of fighters from ground alert, it may be thirty minutes before the fighter aircraft are over the target area.

(b) Preplanned requests for air support are forwarded to the DASC where they are evaluated, assigned a priority, consolidated and then incorporated into the fire support plan for the attack.

(3) Locating VC Movement at Night. Two techniques for locating VC movement at night have proven to be extremely successful. Both methods, "Snipehunt" and "Lightning Bug", employ airborne radar combined with quick reacting armed aircraft.

(a) Snipehunt. Fighter aircraft are the quick reaction fire power used in the Snipehunt. Once a target has been located by airborne radar and clearance has been obtained from the ground force commander, a flareship is called in to illuminate the target area for a FAC-controlled fighter aircraft. An example of the effectiveness of this technique was demonstrated in August 1965. The VC had just completed loading seven sampans with
supplies, and started moving across the Saigon River in the middle of the night. The sampans' movement was detected by airborne radar and, in a matter of minutes, airborne fighter aircraft and a flareship were summoned and all seven sampans were sunk.

(b) Lightning Bug. The Lightning Bug method employs a team of searchlight-equipped helicopters and three or four armed helicopters. After the target has been located by airborne radar and clearance obtained from the ground force commander, the helicopter team is called into action. The searchlight helicopter illuminates the target and the armed helicopters attack and destroy it. A variation of this method is the armed ship and the searchlight helicopter working as a team without the assistance of radar. Once a target is identified and illuminated, the armed ships attack and destroy it. Lightning Bug teams have been particularly successful against VC vehicular and boat movements.

3. Armed Helicopters

a. Missions. Armed Helicopters can provide timely and accurate fire support in both offensive and defensive actions. They are normally employed to escort transport helicopters and deliver suppressive fires. Other missions include:

(1) Armed visual reconnaissance. The purpose of this type mission is to obtain enemy information and to locate and destroy VC targets. Normally a minimum of two armed helicopters are utilized.
(2) Convoy escort. There are two methods of performing this mission. In the first method, an O-1 type observation aircraft stays with the convoy at all times, while armed helicopters deploy by bounds as the convoy progresses. The armed ships are always within five minutes flying time of the convoy. If the convoy is ambushed, the O-1 pilot immediately scrambles the armed ships by radio and directs the initial strikes on the VC ambush force. The second method -- armed helicopters flying continuous column cover -- is used when an O-1 aircraft is not required because the convoy distance is short or if the danger is great.

(3) Overhead cover for ground operations. The purpose here is to allow uninterrupted movement of friendly forces by providing aerial fire support as needed. The armed ships fly at an altitude which will afford the best observation without undue risk. They assist the ground force commander by:

(a) Screening flanks, front and rear of his troop units.

(b) Advising him of likely ambush sites.

(c) Advising him of likely enemy locations so he can reconnoiter by fire with small arms, artillery or armed helicopters.

(d) Providing radio relay and control.

b. Armament. Armed helicopters may have one or more of the following weapons systems: four 7.62mm
machine guns and fourteen 2.75 inch aerial rockets; two rocket pods, each carrying twenty-four 2.75 inch rockets; a nose-mounted XM-75, 40mm grenade launcher; two pod-mounted .50 caliber machine guns; two 7.62mm machine guns mounted on each side of the helicopter; and/or three wire-guided missiles mounted on each side of the helicopter.

c. Operating Techniques.

(1) For the proper employment of the ships and their armament, the pilots must know:

(a) The location of friendly forces. Identify friendly unit locations by using panels, smoke, colored scarves or an easily identifiable terrain feature.

(b) The location of enemy forces. Identify positions of VC forces by giving the pilot an azimuth and distance from a known location. When identifying VC forces, exercise extreme care to avoid inflicting unnecessary noncombatant casualties.

(c) The long axis of the target. Maximum advantage should be taken of the armed helicopter weapons "beaten zone" by identifying the long axis of the target.

(d) Friendly force movements, artillery fires and the presence or absence of tactical air support. This information allows the pilot to plan his time over the target area and his rate of ammunition expenditure.

(2) Armed helicopters can be successfully employed at night if the target is illuminated by flares, searchlights, or by moonlight. This capability has been used to
SECTION II. ARTILLERY SUPPORT

4. General

The missions assigned to artillery units, the ammunition used, and the basic techniques of employment are not different in Vietnam than elsewhere in the world. Here, as in Korea, artillery accounts for a large percentage of the enemy casualties. Instances have been discovered in which the Viet Cong have actually called off attacks on friendly installations because of their fear of artillery. There are, however, refinements in artillery techniques required by the special circumstances of the fight against the VC. For example, special attention must always be given to the reduction of casualties among noncombatants. Listed below are a number of local variations in normal artillery employment procedures which may increase the effectiveness of fire support missions.

5. Employment Techniques

a. Positioning Artillery.

(1) Since the effectiveness of artillery fire decreases as the number of firing elements is reduced, artillery normally should not be employed in less than battery size units. Three suitable battery position layouts which may be used are the "Triangular," "Hexagonal" and "Star" formations. The advantage of such dispositions is that a good dispersion pattern is maintained regardless
of the direction of fire. The large number of areas requiring artillery support may reduce the number of units which can be massed on a single target; however, each fire unit should have another fire unit within supporting range for mutual defense against ground attack. Artillery must be disposed to provide support for all deploying units at all times.

(2) Be prepared for the unexpected; never assume artillery will not be needed. The threat of a VC attack from any direction is constant. Artillery units should always be prepared to fire in any direction from the firing position.

(3) The requirement for all-around fire support necessitates a change in the normal plotting chart procedures used in the FDC. Battery positions are frequently plotted at the center of the chart and the size of the chart is increased on one or all four sides to permit maximum range measurements for the weapon being employed.

(4) Azimuth stakes should be positioned around the gun pit revetment every 800 mils to facilitate rapid change of direction and reduce the possibility of firing in the wrong direction (3200 mils out). For the same reason, fire commands include the desired azimuth of fire as their second element.

(5) The VC try to camp out of range of the artillery whenever possible. VC operational plans take into account range and location as well as probable time required for the artillery to respond to fire requests. Frequent changes of position will add to the effectiveness and the security of artillery and disrupt VC plans.
(6) Artillery units should also be prepared for rapid movement to new areas by boats, helicopters, transport airplanes, M113s or conventional vehicles. Helicopter air movement has the advantage of increasing the number of accessible firing positions while not requiring secure ground routes.

(7) The VC consider artillery positions prime targets for mortar and ground attack. Consistent with providing prompt fire support, defensive positions with overhead protection should be prepared and improved as time permits. The FDC and ammunition should be revetted first and the position continuously improved while occupied. Defensive positions should be destroyed upon departure, since the VC may occupy abandoned positions and attempt to prevent our return. In most cases, artillery security requires reinforcement of artillery position area defenses with infantry.

b. Fire direction.

(1) Ground observation of artillery fire is hampered by dense vegetation, especially in the jungle areas of II and III Corps. To overcome this limitation, units should take advantage of air observers for adjustment of artillery fire. The employment of WP, smoke, or a high air burst on the first round will often assist the observer in bringing subsequent rounds rapidly on target.

(2) Ground and aerial observers can often be employed effectively as a team. The ground observer marks his position and gives directions to the aerial observer, who subsequently adjusts the fire.
(3) A system has been developed for rapid location of target areas using an alphabetical designation for each 1000 meter map grid square within a unit's sector of responsibility. The system has been used to good advantage by some units.

c. Coordination and Communication.

(1) There is a great volume of air traffic throughout Vietnam. Consequently, the ability for close, rapid coordination must be maintained with operational flight elements at all times. In addition, each unit should have an individual at the firing position watching for friendly aircraft along the gun-target line. Artillery can be safely fired over air columns if the fires are closely coordinated with the flight leaders.

(2) Radio has been the primary means of communication for the artillery. Experience has indicated that most artillery units are employed beyond the normal rated range of their FM radios. As a result, it frequently is necessary to rely on continuous employment of FM airborne radio relays and on use of AM radio communication in order to control artillery fires.

d. Special Considerations.

(1) In addition to delivering destructive fires on the VC, artillery can be utilized to illuminate critical areas at night, to orient friendly combat forces in dense undergrowth areas, to flush VC from hidden locations, to deny him escape routes, to deceive him on avenues of attack, to interdict suspected VC positions and for numerous other missions. Harassing and interdiction (H&I)
Figure 70. 155mm Howitzer
Figure 71. 175mm Gun
fires based on an understanding of the current intelligence situation can be very effective in demoralizing the VC both day and night.

(2) The selection of fuze action cannot invariably be dictated by terrain, as might be expected; rather, the fuze action that actually gives the best results against each specific target must be determined and selected. For example, it had long been thought that the employment of the VT fuze in the dense jungle areas of II Corps would be ineffective. The VC had placed numerous snipers high in the trees in this zone. VT fuze action was used successfully to attack this type of target.

(3) Aerial artillery of the Air Cavalry Division provides an added artillery support capability. One of the artillery battalions in the division is equipped completely with helicopters armed with 2.75 rockets, SS-11 missiles, and searchlights. Elements of the battalion are used to provide closely coordinated fires in support of air assault elements, against targets that rapidly develop on the battlefield, and for attacking moving targets. The artillery countermortar program is enhanced by placing aerial artillery helicopters on countermortar air alert. These airborne ships are continuously alert for mortar flashes and immediately strike known or suspected locations.

SECTION III. NAVAL GUNFIRE SUPPORT

US Navy ships operating off shore can provide fast, accurate fire support for ground forces operating in the vicinity of the coast. This support can be either direct fire, where the target is visible from the ship, or
indirect fire directed by air or ground observers. Because of their mobility, ships can be used to provide fire support over a wide area with little time lost between missions. Their support should be used whenever conditions permit. Ammunition available includes high explosive, white phosphorous, and illuminating rounds with mechanical time, point detonating, or VT fuzes.

6. Requests for Naval Gunfire

Any qualified observer can originate a request for artillery. The request for naval gunfire support (NGFS) is transmitted through normal fire support channels to the nearest fire support coordination center (FSCC) where a naval gunfire liaison officer (NGLO) is located, or to the nearest coastal surveillance center (CSC). The CSC or NGLO will complete processing of the request. The NGLO will also make arrangements for the necessary observers or spotters. Requests for NGFS must contain the following information:

(1) Coordinates of target.

(2) Target description (troops in open, caves, etc.).

(3) Time ship is to commence firing.

(4) Type ammunition desired.

7. Gunfire Support

a. NGFS falls into two broad categories:
(1) Pre-planned (requested or scheduled 48 hours or more in advance).

(2) Nonscheduled (normally requests requiring quick response).

b. An example of the rapid reaction and accuracy of naval gunfire support occurred during the US Marine Corps operation "Starlite" in August 1965. A large group of VC attempting to cross a clearing to escape encirclement were seen by a forward observer. The grid coordinates of the clearing were radioed to the offshore ships and, within seconds, the first rounds were "on the way." When the smoke had settled, the clearing was littered with the bodies of over 60 VC.

8. NGFS Ship Capabilities:

<table>
<thead>
<tr>
<th>TYPE SHIP</th>
<th>LARGEST GUN</th>
<th>RATE OF FIRE (RD/MIN)</th>
<th>MAXIMUM EFFECTIVE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Cruiser</td>
<td>8&quot;</td>
<td>4</td>
<td>23,800 meters</td>
</tr>
<tr>
<td>(Figure 72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Cruiser</td>
<td>6&quot;</td>
<td>8</td>
<td>19,200 meters</td>
</tr>
<tr>
<td>Destroyer</td>
<td>5&quot;</td>
<td>15</td>
<td>13,700 meters</td>
</tr>
<tr>
<td>(Figure 73)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Destroyer Escort</td>
<td>3&quot;</td>
<td>20</td>
<td>6,900 meters</td>
</tr>
<tr>
<td>Rocket Ship</td>
<td>5&quot; rkt</td>
<td>200</td>
<td>9,100 meters</td>
</tr>
</tbody>
</table>
Figure 72. USS ST. PAUL
Figure 73. USS RICHARD B. ANDERSON
SUMMARY

Effective use of our combat support means has resulted in large numbers of VC casualties. To prevent prohibitive losses, the VC will try to neutralize or avoid our supporting fires. Sound and timely fire support planning and coordination will anticipate and thwart the defensive actions of the enemy. To be truly effective, this planning and coordination must be accomplished at all command echelons and in both the supporting and combat arms.

Users of this handbook are encouraged to submit recommendations for its improvement to HQ, MACV, ATTN: J343 APO US Force 96243. Comments should refer to specific pages and paragraphs.
APPENDIX I

PERSONAL HYGIENE TIPS

1. Uniforms

DO NOT CUT OFF OR SHORTEN SLEEVES ON FATIGUE UNIFORMS. Keeping the forearms covered prevents cuts and infections caused by dense underbrush and reduces the incidence of mosquito bites.

2. Food

LOCAL PRODUCE MUST BE PROPERLY CLEANED AND PREPARED. All local vegetables must be soaked in chlorinated water for thirty minutes and cleaned before eating. Fruits must be peeled before eating.

3. Water

a. BOIL OR TREAT ALL WATER USED FOR DRINKING. All water in Vietnam must be assumed to be non-potable and must be boiled or disinfected with chlorine or iodine before drinking. When using water purification tablets, use one tablet per canteen if the water is clear, two if the water is cloudy. Permit the water to stand 30 minutes before drinking. Water used to make ice should be treated in the same manner.

b. DRINK MORE WATER. The body requires more water in a tropical climate to replace body fluids lost due to the heat and humidity. Carry two canteens of water in field operations and drink as much water as your body requires. However, you should drink small amounts at a time to avoid the possibility of getting stomach cramps.
4. Insects

   a. USE INSECT REPELLENT FREELY. Insect-borne diseases common in Vietnam are malaria, dengue fever, encephalitis and plague. The only sure way to prevent contracting any of these diseases is not to get bitten by disease-bearing insects. Liberal use of insect repellent and the use of mosquito nets will assist in the prevention of insect bites.

   b. TAKE THE ANTIMALARIA TABLET WEEKLY. Most malaria can be prevented if the antimalaria tablet is taken faithfully once a week. Commanders must establish a specific day of the week for all personnel within their command to take the antimalaria tablet.

5. Snakes

   TREAT ALL SNAKEBITES AS POISONOUS. If an individual is bitten by a snake, take no chances; consider the snakebite to be poisonous. If possible, kill and keep the snake so that it can be identified and the proper anti-venom serum given. Be sure all personnel are familiar with first aid procedures for snakebites.

6. Leeches

   AVOID LEECH BITES. Leeches live in water or on moist jungle undergrowth. Before entering streams, canals or rivers, tighten jacket cuffs to the wrists and fasten the bottom of trousers legs outside the boot. Apply insect repellent to uncovered portions of the body and check the clothing and body frequently. If leeches are found on the body do not pull them off quickly as they
will leave their heads in the bite and thus cause infection. Insect repellent or heat (from a cigarette for example) will cause them to release their grip and drop off. If these remedies are not available, remove the leech carefully, attempting to remove the head. Seek treatment from your unit medical personnel.

7. Fungus

TAKE MEASURES TO PREVENT FUNGUS INFECTIONS. Superficial fungus infections such as "Jock itch" and athletes foot are quite common in a tropical climate. Cleaning and drying of armpits, groin and feet whenever possible will help prevent fungus infections as well as frequent changes of clothing and socks. Apply foot powder daily. If fungus persists or worsens, seek proper medical attention.

8. Sunstroke

a. KNOW THE SYMPTOMS OF SUNSTROKE. They are:

1. Flushed face.
2. Dry skin.
3. Spots before eyes.
5. High temperature.

b. If sunstroke is known or suspected, treat in the following manner:

1. Remove individual from sun.
(2) Loosen clothing.

(3) Elevate head and shoulders.

(4) Apply cool compresses or bathe patient in cool water.

(5) Give patient cool salt water.

9. Heat Exhaustion

a. KNOW THE SYMPTOMS OF HEAT EXHAUSTION. The are:

(1) Dizziness.

(2) Nausea.

(3) Cramps.

(4) Pale face.

(5) Cold clammy skin.

(6) Weak pulse.

b. If heat exhaustion is known or suspected, treat in the following manner:

(1) Move patient to shade.

(2) Loosen clothing.

(3) Give patient cool salt water.
APPENDIX II

CONVERSION TABLE - WEIGHTS AND MEASURES

<table>
<thead>
<tr>
<th>Multiply</th>
<th>By</th>
<th>To Obtain</th>
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</thead>
<tbody>
<tr>
<td>Acres</td>
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<td>Hectares</td>
</tr>
<tr>
<td>Caliber</td>
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<td>Millimeter</td>
</tr>
<tr>
<td>Centimeters</td>
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<td>Inches</td>
</tr>
<tr>
<td>Degrees</td>
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<td>MILS</td>
</tr>
<tr>
<td>Fathoms</td>
<td>6</td>
<td>Feet</td>
</tr>
<tr>
<td>Feet</td>
<td>.1667</td>
<td>Fathoms</td>
</tr>
<tr>
<td>Gallons (US)</td>
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</tr>
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<td>Grains</td>
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</tr>
<tr>
<td>Grams</td>
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<td>Ounces</td>
</tr>
<tr>
<td>Hectares</td>
<td>2.471</td>
<td>Acres</td>
</tr>
<tr>
<td>Inches</td>
<td>2.54</td>
<td>Centimeters</td>
</tr>
<tr>
<td>Kilograms</td>
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<td>Pounds</td>
</tr>
<tr>
<td>Kilometers</td>
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<td>Miles</td>
</tr>
<tr>
<td>Knots</td>
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<td>Miles per hour</td>
</tr>
<tr>
<td>Liters</td>
<td>.2642</td>
<td>Gallons (US)</td>
</tr>
<tr>
<td>Meters</td>
<td>1.094</td>
<td>Yards</td>
</tr>
<tr>
<td>Miles</td>
<td>1.609</td>
<td>Kilometers</td>
</tr>
<tr>
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<td>Knots</td>
</tr>
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<td>Caliber</td>
</tr>
<tr>
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<td>Degrees</td>
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<td>Grains</td>
</tr>
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<td>Ounces</td>
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<td>Grams</td>
</tr>
<tr>
<td>Pounds</td>
<td>.4536</td>
<td>Kilograms</td>
</tr>
<tr>
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<td>1.8</td>
<td>Temperature (F)</td>
</tr>
<tr>
<td>Temperature (F) -32</td>
<td>.5556</td>
<td>Temperature (C)</td>
</tr>
<tr>
<td>Yards</td>
<td>.9114</td>
<td>Meters</td>
</tr>
</tbody>
</table>


APPENDIX III -- ROAD MAP
THE SECRETARY OF DEFENSE

WASHINGTON

10 June 1966

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NG and USAR: None.

**Air Force:** S (as AFP 34 series); X:
- 7th AF (CO1) APO San Francisco 96307  - - - - - - - - - 15,000
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**Marine Corps:**

Marine Corps List: 7315(2); 2010-03/2020-06/3700-04/6600-04/
- 6900-01(50); 2020-01, -05, -07/6600-06/
- 6900-02/6905(100); 2020-04/2020-04(200); 2010-04/
- 2020-02/2030-2(300); 2010-01(400); 1025-01/
- 3700-01/6600-02(6902-03;500); 2030-03/
- 7230-01(1,000); 1025-09(2,000); 3700-02/
- (3,000); 2030-01(7,000); 6600-01, 03(20,000).

RING OFFICE: 1966 O - 223-188