

**CHAPTER 7**

Combat Service Support

**Section I. GENERAL**

---

Combat service support elements in a jungle environment retain the same basic missions and capabilities as in other environments. However, they must make adjustments due to terrain, weather, and vegetation.

Jungle operations subject personnel and equipment to effects not found in other environments. Trafficability and security problems, discussed in other chapters, often affect combat service support elements as much as maneuver forces.

The lack of an extensive all-weather transportation network in many jungle areas makes the mission of support units more difficult. Transportation difficulties may dictate that maneuver units be resupplied by air, pack animals, or human portage.

US Army forces in the jungle will normally operate at the end of a long line of

communication. Cargo space must not be wasted on unessential items. Transportation priority must be given to essential materials, and support areas must not become crowded with comfort items.

Jungle combat operations are characterized by ambushes and infiltration. The security threat caused by infiltrators will require that lines of communication be patrolled frequently and convoys be escorted. Consequently, it is essential that combat service support is performed as far forward as the tactical situation permits. This not only improves response time, but reduces road movement and allows the combat service support elements to take advantage of the security offered by combat units.

The heat and humidity of jungle areas also have harmful effects on men and equipment.

SECTION	CONTENTS	PAGE
I. General .....		7-1
II. Logistics .....		7-2

Weapons tend to rust quickly, and must be cleaned and oiled more frequently than in most other areas.

Canvas items rot and rubber deteriorates much faster than in more temperate areas.

Battery life is shorter than is normal.

Electrical connections corrode quickly.

Lenses and dials become quickly fogged with internal moisture.

Troops drink more water, requiring greater water purification and transport means.

## **Section II. LOGISTICS**

---

### **TRAINS**

The variations of terrain, weather, and vegetation in the jungle affect the organizing, positioning, and securing of combat service support.

#### **EFFECTS OF THE JUNGLE ON OPERATING THE TRAINS**

Organizing the trains is often simplified in the jungle. Because of the terrain, aerial resupply will usually be common practice. The responsiveness provided by aerial resupply requires fewer supplies stockpiled in the combat trains. Thus, combat trains consisting of medics, a maintenance element, and small amounts of C rations, ammunition, and lubricants may be the only requirement. The remainder of the logistical assets will be

located in the field trains, to include: petroleum, oils, and lubricants (POL); most vehicles; stockpiled ammunition and other ordnance items; the aid station; rations; maintenance contact teams; and, when available, water purification facilities.

Trains should be far enough forward to respond quickly to troop needs, yet far enough to the rear to have minimum exposure to the enemy. The jungle offers excellent sites for concealment, defilade, and dispersion. Since most resupply is done by air, the combat trains may often be located with the field trains in the brigade trains area. Thus, they can be a greater distance to the rear than normal. All trains should be located near LZs. Field,

**A JUNGLE LANDING ZONE**



combat, and company trains should also be located close to a road, river, or trail which may be used as an alternate method of resupply. If none of these are available, LZs and supply routes may have to be constructed.

Securing the trains area is a major problem in the jungle. Infiltration of enemy units into rear areas is highly probable. In the defense, the trains should be located within a reserve unit defensive perimeter (*see IV, chap 5*). In the offense, the trains personnel normally have to provide their own security. If other forces are available—for example, the reserve—they are integrated into this security plan.

Frequent displacement of the trains is often required, either to evade enemy infiltration or to keep up with combat elements. The combat trains usually move with the combat elements when they displace. They can move independently of the forward combat elements if a unit is provided to secure them. The field trains will normally displace when the brigade trains displace.

### RESUPPLYING UNITS

Airlift is key to jungle resupply operations to include movement of supplies to attacking or defending units. Returning aircraft should be used to evacuate casualties.

Since the combat trains in a jungle environment are smaller yet less mobile than in more open terrain, most of the class III (POL) and V (ammunition) will be stocked in the field trains. The helicopter can provide timely resupply when ammunition, POL, etc., are not stored in the combat trains. These supplies can often be moved more quickly by air (helicopter or airdropped by parachute) from the field trains than overland from combat trains. The normal method in the jungle is to deliver supplies directly to forward companies (unit distribution).

### SECURITY OF SUPPLY ROUTES

A special security problem exists when supplies are not moved by air. Enemy ambushes and mines are a constant threat on ground supply routes. The following actions may be taken to minimize the threat to supply routes.

Commanders should locate fire support elements, command posts, and defensive positions near supply routes. Subordinate units can then conduct clearing and route security operations. Each unit should be given an area to clear and secure. Maneuver units should operate on the flanks of the route to guard against ambush.

#### CLEARING TEAM



Infantry, armor, and engineer elements can organize mine-clearing teams which methodically search for and clear mines, bodytraps, and roadblocks. Engineers with mine detectors and probes sweep the road. The infantry and tanks provide security against ambush. Any mines detected are marked and either deactivated or blown in place.

Working behind the mine-clearing teams, dump trucks fill holes in the road with gravel. Other engineer teams replace culverts, repair bridges and stream crossings, and clear vegetation back from the edge of the road.

The road-clearing process is repeated each morning before traffic starts to move. The enemy may replace removed mines during the night.

Security against ambush and attack is provided mainly by patrols to either flank of the route to discover enemy forces before they can get into position to launch an ambush. These patrols should range as far out as possible to reduce the danger of the main body being ambushed. Routes should be patrolled at irregular intervals throughout the day and night.

Clearing the vegetation back from the road's edge will also help to prevent ambush, but may be a very large undertaking. It also increases the enemy's difficulty of mining the road, and facilitates friendly aerial observation and airmobile operations along the road.

Airborne artillery observers, forward air controllers, attack helicopters, and air cavalry reconnaissance increase the security by flying reconnaissance and surveillance missions.

At night, counterambush patrols should be sent out. Scout dogs are very useful to these patrols in detecting the enemy.

As additional security on the supply route, STANO devices should be emplaced to detect enemy movement at critical points along the route.

Bridges are vulnerable links in any supply route. They must be protected. A static security post may be required to secure the bridge against attack by guerrillas or infiltrators. Static security posts are best organized in a perimeter defense. The size of the defending force depends on the mission, the size and characteristics of the hostile force, and the importance of the bridge to the mission. Such posts in remote areas will be larger than those nearer supporting forces. The parent unit must be prepared to counterattack with reserves to assist each post.

It will usually be necessary to form armed convoys, escorted by armed vehicles from a military police, cavalry, or maneuver unit. At least one helicopter should fly ahead of the main body to give early warning of ambushes or evidence of hasty mining and provide additional communications capability. On-call fires should be planned on likely ambush sites. Convoys should not be scheduled at regular intervals.

If ambushed, the escort vehicles should immediately return fire. The cargo vehicles should be moved out of the kill zone as rapidly as possible. Attack helicopters and trailing combat vehicles can then maneuver to destroy the ambush.

## **CLASSES OF SUPPLY**

### **CLASS I (SUBSISTENCE ITEMS)**

Nonperishable canned, dried, or dehydrated items primarily should be used when the unit is not actively engaged in combat. This requires kitchen facilities, except for refrigeration. Rations (individual

combat meal, long-range patrol, or small detachment rations) normally will be issued to units actively engaged in combat. The number of rations earned by the individual soldier should be determined by such factors as weight, how and in what quantities food can be brought forward, when resupply will be conducted, and the estimated duration of the operation. Hot meals should be served when the combat situation allows. These should be prepared in the field trains and delivered by helicopter. Feeding is usually accomplished during the day because of the danger and difficulty of movement at night and the possibility of enemy ambush or night attack.

**CLASS II  
(INDIVIDUAL EQUIPMENT  
AND GENERAL SUPPLIES)**

In a tropical environment, rapid deterioration is a primary consideration in class II supply. Issue clothing, particularly combat boots and socks, lasts a very short time. Normal wear and tear on clothing may require a resupply every 5 to 6 days. Class II resupply can be a major morale builder. Class II requirements should be estimated well in advance and special provisions should be made for timely resupply. At battalion level, limited emergency supplies of assorted combat boots, socks, uniforms, and similar items of short wear periods should be stocked in the field trains.

**CLASS III (POL)**

The supply of class III items does not initially present a great problem, as relatively few vehicles will be forward during the operation. However, aviation fuel will be required in large amounts. Units must establish class III distribution points for vehicles and aircraft, as required, in the field trains. Tank trucks will be used as far forward as possible. Collapsible fuel drums can be brought forward by helicopter. Units

must take care to insure that diesel and motor gasoline fuel drums are available and marked. When circumstances permit the use of tracked vehicles, planning must include additional POL since tracked vehicles normally have a high fuel consumption rate when operating in rugged terrain. Additional lubricants for weapons will also be required due to the greater requirement for cleaning and protection.

**CLASS IV  
(CONSTRUCTION MATERIALS)**

Barrier material and special equipment is extremely bulky and heavy. The use of large amounts of it for defensive positions will create transportation problems. Heavy lift helicopters are the most practical means to move these items.

**CLASS V  
(AMMUNITION)**

Because of weight and bulk involved, resupply of ammunition and explosives presents a difficult problem. The nature of the terrain and climate in the jungle magnifies the problems in ammunition storage. Steep terrain should be avoided when selecting suitable sites for storage. Level, firm ground may become too soft in heavy rain. Rain and intense heat combine to speed the deterioration of containers and ammunition, especially if it is taken out of the packing material. To counteract these conditions, adequate dunnage, shelter, and ventilation must be used. Ammunition in the field trains should be left in packing materials until ready for use. Frequent checks should be made for deterioration of packing material.

When the ammunition is unpacked and taken to the field, it is more susceptible to rain, heat, and humidity. Therefore, as a general rule, ammunition which is not used within two weeks should be exchanged for new ammunition. While in the field, however,

measures must be taken so that ammunition is never exposed needlessly to the weather. It should be carried in ammunition pouches or containers and protected when stored in positions.

**CLASS VI  
(PERSONAL DEMAND ITEMS)**

Such items as soap, cigarettes, candy, etc., are important morale builders. They should be supplied on a regular basis.

**CLASS VII  
(MAJOR END ITEMS)**

Storage areas must be designed to protect these items from the jungle environment. Weapons, vehicles, and other items in storage must be inspected more frequently than in other environments. Protective lubricants must be maintained on all surfaces that can rust.

Operational readiness of all stored equipment must be insured by frequent inspections and maintenance. Commanders should turn in those items for which they have no need in the jungle. When major end items are not in use, they are stored or maintained in rear areas.

**CLASS VIII  
(MEDICAL SUPPLIES)**

Because the heat and high humidity can cause deterioration of certain medical materials and medicines (for example, penicillin, hydrocortisone liquids, sulfa liquids), frequent resupply and replacement of these items may be required. There will also be a priority need for refrigeration equipment to store class VIII supplies. There will be an increased requirement for antiseptic material because the high heat and humidity increase the incidence of infection in wounds.

**CLASS IX  
(REPAIR PARTS)**

Equipment parts that deteriorate or wear out faster in the jungle environment must be determined. Prescribed load list (PLL) must reflect the increased turnover of these parts.

**CLASS X  
(NONMILITARY ITEMS)**

These items, for example, agricultural tools and equipment, are not required for the conduct of conventional combat operations in the jungle; however, they are very important in the conduct of civil-military operations. These items should not be stocked unless a unit is actively participating in a civil-military operation.

**OTHER SUPPLIES**

Maps exposed to humid jungle air quickly deteriorate. A greater stockage of maps will be required than in other environments.

Water is critical in the jungle. Water must be obtained from the divisional water points using battalion transportation or purified by units themselves in the field. There is a greater demand for water purification tablets and water points. Units should also carry a greater number of lyster bags and other water containers. Close supervision should be exercised to insure that soldiers do not drink unpurified water.

The lack of suitable landing zones makes water resupply extremely difficult if the aircraft cannot land. Numerous techniques have been tried in dropping water through the jungle canopy, for example, free drop, parachute. However, they have met with only limited success and for the most part are impractical. The following water resupply technique has proven to be extremely successful. Water should be placed in either collapsible 5-gallon containers or in 2-quart containers. These containers should be placed inside lightweight, portable

containers, that is, rucksacks or duffel bags, which a soldier can quickly move off the DZ. No more than 10 gallons of water (80 pounds) should be placed in each bag for lowering. The bags will be lowered from a helicopter by use of the equipment belay system.

**Equipment needed for platoon-size element to supply water by helicopter, using collapsible containers and the Equipment Belay System:**

**Two 120-foot climbing ropes.**

**Eleven snap links.**

**Three 12-foot utility ropes (sling ropes).**

**One doughnut ring or similar anchoring device.**

**One rappel D-bag.**

**Eight 5-gallon containers and four duffel bags.**

## **MAINTENANCE**

Maintenance organizations function essentially the same as in other operations. The high humidity and temperature prevalent in jungle areas will increase maintenance requirements. Preventive maintenance on any item affected by moisture and heat is extremely important. Emphasis must be placed on on-site maintenance and the use of aircraft to transport maintenance contact teams and repair parts to unit level. To respond to the need for responsive maintenance support, the number of repair parts for immediate direct exchange must be increased.

## **TRANSPORTATION**

Units fighting in the jungle should consider all types of transportation. Surface

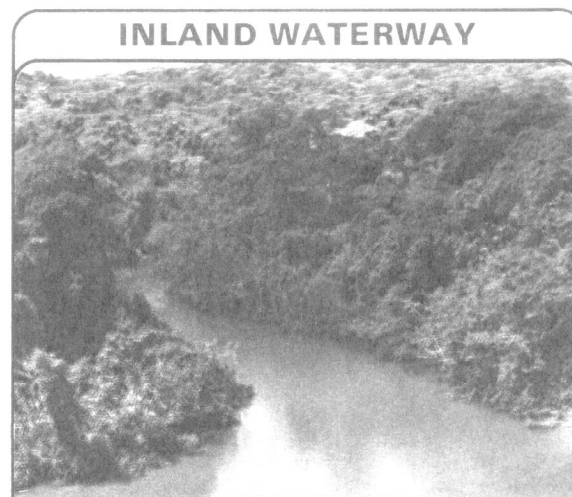
transportation facilities are poor in most jungle areas and cannot handle heavy military traffic without extensive improvements. An air line of communication can eliminate many of the problems associated with surface movement.

### **HUMAN PORTAGE**

This is a basic means of moving supplies and equipment in jungle operations. At best, this method is slow, laborious, and inefficient. Yet, in certain extreme situations, it may be the only method available.

### **WHEELED AND TRACKED VEHICLES**

Wheeled vehicles are normally restricted to roads and wider trails, and even these may prove impassable during heavy rains. Sometimes, goods must be transported by cross loading from wheeled to tracked vehicles. For example, large wheeled vehicles move the supplies as far forward as possible, where they are transloaded to tracked vehicles which move them cross-country. In rugged terrain, the supplies may have to be further transloaded to pack animals or native supply bearers.



## INLAND WATERWAYS

These channels are a very important part of a transport system, especially in remote areas. Large rivers often allow small ships and large boats to penetrate several hundred miles inland. Where smaller streams branch out, a unit may establish transfer points for the transloading of cargo into smaller watercraft. A river that is normally very shallow during the dry season will be deeper during the rainy season, permitting travel by larger craft.

A unit should establish supply points high enough above the level of the water to prevent damage in the event of flash flood.

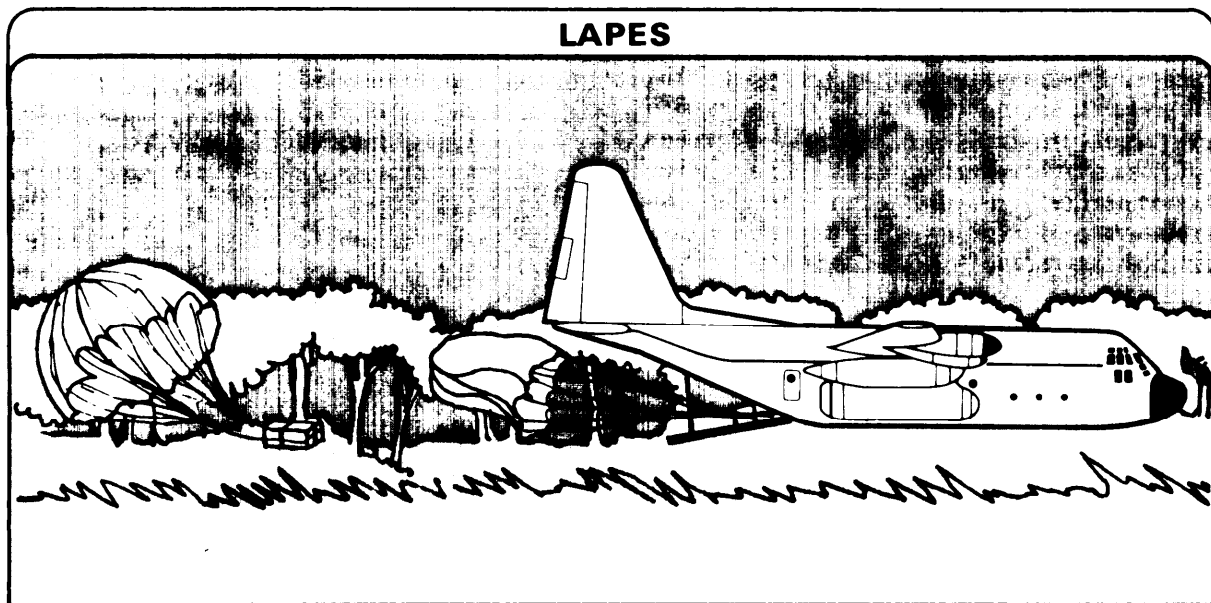
## FIXED-WING TRANSPORT AIRCRAFT

These aircraft can usually operate at greater distances without refueling than cargo helicopters. However, use of fixed-wing aircraft to airland supplies requires more landing strips than may be present. Construction and maintenance of airfields in jungles is a difficult engineer task, but open savanna may be large enough and firm enough to use as an airstrip.

Airdrop of supplies is an alternative to airlanding. Airdrop by parachute is a rapid means of delivery and makes deliveries to isolated units possible without further transloading.

Disadvantages include the dispersion of supplies and the possibility of lost cargo in the jungle canopy, vulnerability to local enemy air defense, and requirement for at least local friendly air superiority.

A variation of airdrop by parachute is the low altitude parachute extraction system (LAPES). The parachute is used to pull the load from the rear ramp of an aircraft flying at a reduced speed just a few feet off the ground. LAPES solves dispersion and tree hangup problems, allowing use of the smaller drop zones more common in jungle areas. However, fragile equipment might not survive this type of drop. In areas where the aircraft can make a low-level approach, such as savannas, LAPES may be a valuable resupply technique. It is used with C-130 aircraft only.



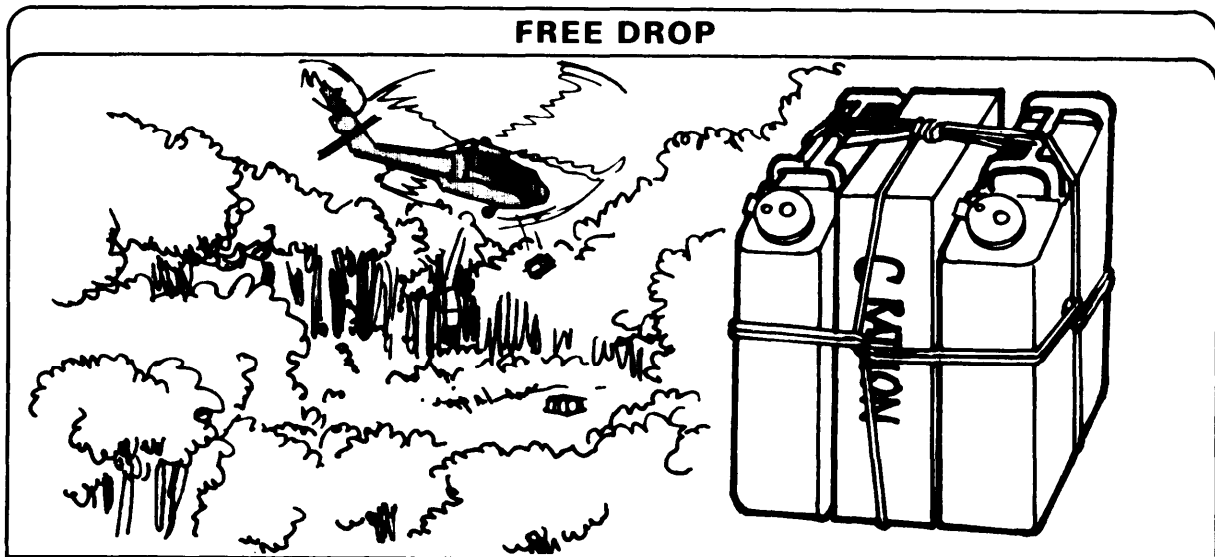
The container parachute delivery system provides single pass delivery of from 1 to 16 individually rigged A-21 containers into a small drop zone (DZ) at altitudes of 500 to 600 feet.

When using this system, selection of a DZ is critical to accurate delivery of the bundles. The nature of jungle terrain and the small DZs do not allow for accurate delivery of bundles. The DZ must be at least a 400-meter by 400-meter area. A straight stretch of road or a large field visible from the air may be used. If an open ground area cannot be located, the next step is to try to make the drop in a river, lake, or ocean. If dropped in the water, bundles must be rigged with adequate buoyancy (empty water cans will do). Recovery of the bundles must be

preplanned and executed immediately upon completion of the drop.

Another method which can be used for small loads of some sturdy types of supplies and equipment is the free drop. Here, the load is simply dropped, without parachute, from a low-flying aircraft.

Helicopters are very effective in this technique because they can hover low over a unit and drop the supplies exactly where desired. Because helicopters are vulnerable to small-arms fire, however, the unit on the ground must take adequate security measures. It should establish a perimeter defense around the area over which the helicopter will hover, and it should conduct patrols prior to the resupply to insure that the surrounding area is cleared of enemy.



### MEDICAL OPERATIONS

Medical support in jungle operations follows the basic principles of military medicine, but medical treatment and evacuation will often be complicated by the extended distances and inaccessibility due to

terrain and vegetation. The manner in which medical units support tactical operations will depend on the employment of the supported unit and the type of jungle in which they are operating. The relatively high incidence of

disability caused by heat, humidity, and insect-borne diseases will require increased emphasis on health and sanitation measures.

The evacuation of wounded in jungle warfare presents numerous problems. Because of the prevalence of rapidly debilitating tropical diseases and the likelihood of quick infection of wounds in the jungle, speedy evacuation is vital. Units must use all available methods to augment organic medical evacuation means. These may include tracked vehicles, pack animals, watercraft, helicopters, and litter bearers. Ground medical evacuation in the jungle will normally be along supply routes, as they are usually given all possible protection from the enemy.

The difficulties of overland medical evacuation in jungle operations emphasize the advantages of air evacuation. When weather, aircraft availability, and friendly air superiority permit their use, helicopters provide fast, comfortable, and efficient transportation for casualties. The reduction of time between injury and treatment increases the chance of survival and raises morale. A helicopter equipped with a cable hoist system can evacuate casualties from thick jungle vegetation where no landing zones are available.

In some remote and densely foliated jungles, the only means of evacuation may be by litter. This is a slow and exhausting task requiring well-conditioned soldiers to carry the litters. At best, litter teams can carry patients only a few hundred meters over rough jungle terrain before needing rest or relief.

There are several types of litters. In very rugged terrain, the mountain-type metal basket litter offers most security to the

patient. However, it is bulky to carry even during normal operations. The standard folding litter or field expedient variations made of cloth and poles are less bulky and get the job done just as well if patients are moved with great care.

Litter hauls should be as short as possible. Medical facilities should be as close as practicable to the troops.

## **PERSONNEL MANAGEMENT CONSIDERATIONS REPLACEMENTS**

The jungle may appear as a fearsome place to the uninitiated. Individual replacements may doubt their ability to cope with tropical diseases; heat; oppressive humidity; entangling close vegetation; the constant threat of ambush and close combat; wildlife; and periodic isolation from support elements. Commanders must realize that these are natural fears and must provide a period for acclimation and psychological adjustment. All new arrivals must receive a complete orientation on the unit, its mission, and the enemy, and be trained in the routines of jungle living, working, and fighting.

## **GRAVE REGISTRATION**

Direct support for the recovery, identification, and evacuation of deceased personnel will normally be available in the jungle. However, the hot and humid climate presents special problems, and it is important that the remains of the dead be removed rapidly to prevent their deterioration. *This may have profound effect on troop morale.* Hasty burials should be conducted as a last resort. Grave sites should be marked clearly and reported.