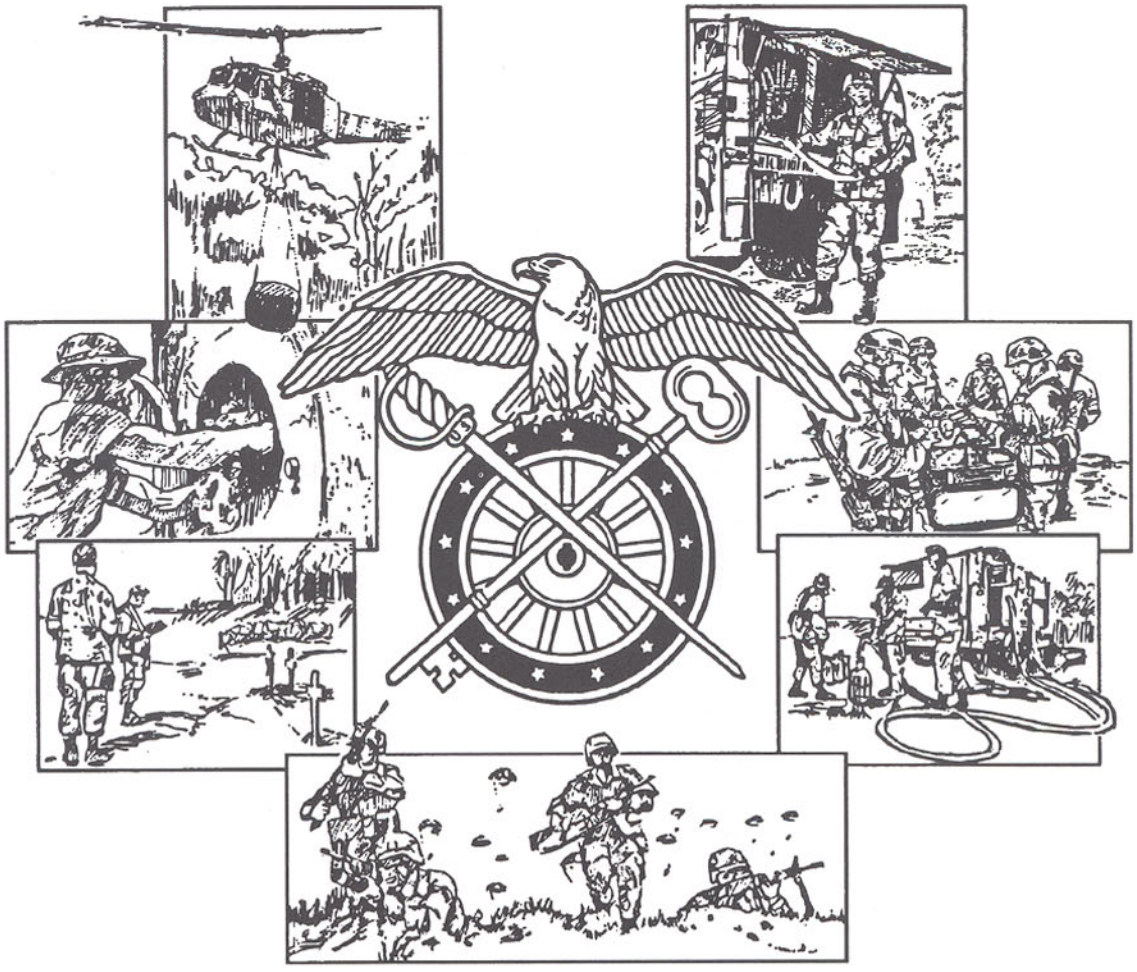
FM 10-1

QUARTERMASTER PRINCIPLES



HEADQUARTERS, DEPARTMENT OF THE ARMY

Field Manual
No. 10-1

Headquarters
Department of the Army
Washington, DC, 11 August 1994

QUARTERMASTER PRINCIPLES

TABLE OF CONTENTS

* This publication supersedes FM 10-1, 24 September 1991.

PREFACE

PURPOSE

FM 10-1 is the Army's capstone manual for Quartermaster (QM) Corps soldiers and units. It focuses on current doctrine in FMs 100-5, 100-10, and 100-16. It also considers recent combat experience from operations Desert Shield/Storm; guidance in TRADOC Pamphlet 525-5 and the Combined Arms Support Command's publication *Vision of Combined Arms Support*; and information from TRADOC battle labs and warfighting lens analyses.

This manual looks at the role of quartermasters and QM units as they function on the battlefield. It will guide the development of quartermaster doctrine, tactics, techniques, and procedures related to the following publications and subject areas:

- FM 10-15 - Supply and storage.
- FM 10-23 - Army field feeding.
- FM 10-27 - General supply.
- FM 10-52 - Water supply.
- FM 10-63 - Mortuary affairs.
- FM 10-67 - Petroleum supply.
- FM 10-500-1 - Airdrop support operations.

It also will serve as a guide for the future development of training, leader development, organizations, materiel, and soldier support. Users of this manual should note that supply and field service needs for each theater are unique. The supply and field services doctrine and structures presented in this manual must, therefore, be adapted to meet theater-specific requirements.

SCOPE

This manual sets guidelines for unit commanders and their staffs operating within the Army's support structure. Further, it--

- Realigns supply and field service functions within the Quartermaster Corps (QMC) and explains how they relate to classes of supply and field services.
- Explains to combat arms, combat support, and combat service support commanders and their staffs how and where they will receive QM proponent supply and field services support.
- Introduces QM unit missions and explains unit operations.
- Outlines relationships between the various levels of supply and field services support.

The proponent of this publication is HQ TRADOC. Send comments and recommendations on DA Form 2028 directly to:

Commander
US Army Quartermaster Center and School
ATTN: ATSM-CDC
Fort Lee, VA 23801-5000

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

CHAPTER 1
A QUARTERMASTER CORPS OVERVIEW

INTRODUCTION

Since 1775, the QMC has provided logistical support to the United States (US) Army's combat forces. During its long history, it has developed a special one-to-one relationship between quartermasters and supported soldiers. This has been a critical factor in the success of the Corps and the keystone to its heritage. QM soldiers and units have a dual responsibility. They must be technically proficient and prepared to provide supply and field service support to the force. And, they must be tactically proficient and prepared to deploy as quickly as the combat and combat support forces. Once deployed, they must be able to fight and defend themselves. At the same time, they must concurrently provide logistical support on an extended battlefield.

The QMC is one of the more complex and diverse branches of the Army. It has personnel proponency for 11 enlisted military occupational specialties (MOSs) in three career management fields, four warrant officer MOSs, and five officer areas of concentration. QM personnel serve in every type of unit--from units at the forward line of own troops (FLOT) to the theater rear boundary. These units range from light infantry to armor units, from special operations units to personnel and administration units, from artillery to signal units, and from ordnance to transportation units. We can also see the QMC diversity in the six tactical logistics functions described in Table 1-1.

RESPONSIBILITIES

QMC diversity can also be seen by a review of its mission and functions. The QMC, throughout the range of military operations, procures, provides, manages, and distributes supplies and field services. These support and sustain units, soldiers, and related materiel.

Table 1-1. CSS tactical logistics functions related to the QMC

FUNCTIONS	RELATIONSHIP TO QMC
Manning the force	The mortuary affairs function is responsible for the recovery and identification of soldiers killed in battle. This information feeds both the casualty notification and the personnel replacement systems.
Arming the force	Ammunition transfer points are organic to divisional supply companies.
Fueling the force	Total QMC responsibility.
Fixing the force	QMC is responsible for Class IX supply support and repair of airdrop equipment.
Moving the force	QMC is responsible for airdrop, development of deployment and storage systems, operation of pipelines, and movement of petroleum in tankers within divisions and separate brigades and ACRs.
Sustaining the soldier and his systems	QMC provides field services such as feeding, laundry, shower, clothing repair, and mortuary affairs, as well as supply support for all classes of supply except medical.

Supply Responsibilities

The QMC supply mission is to provide the doctrine, training, leader development, organizations, materiel, and soldier support in the following areas:

- Class I: Subsistence, including health and welfare items (health and comfort packs). See Chapter 9.
- Class II: Clothing, individual equipment, tentage, tool sets, and administrative and housekeeping supplies and equipment. See Chapter 10.
- Class III: petroleum, oils, and lubricants (POL) including petroleum fuels: lubricants, hydraulic and insulating oils, preservatives, liquid and compressed gases, chemical products, and coolants. See Chapters 10 and 11.
- Class IV: Construction materials, including installed equipment and all fortification and barrier materials. See Chapter 10.
- Class VI: Support to tactical field exchanges. See Chapter 12.
- Class VII: Major end items. See Chapter 13.
- Class IX: Repair parts. See Chapter 14.
- Water: Storage and distribution. See Chapter 15.

Field Services Responsibilities

The QMC field services mission is to provide doctrine, training, leader development, organizations, materiel, and soldier support in the following areas:

- Airdrop: Parachute packing, air item maintenance, and rigging of supplies and equipment for airdrop. See Chapter 17.
- Feeding: Providing the soldier with three quality meals a day, served hot, to include supplements. See Chapter 9.
- Laundry: Soldiers will be provided with 15 pounds of laundry support a week. See Chapter 19.
- Shower: The Army standard is one shower a soldier a week. The goal is two showers a week. See Chapter 19.
- Water production: The water purification process is a field service. Storage and distribution are supply functions. See Chapter 15.
- Mortuary affairs: Recovery, identification, and processing of human remains. See Chapter 18.
- Clothing and light textile repair: Minor repairs will be made on clothing being laundered. See Chapter 19.

Developmental Responsibilities

The QMC also has various developmental responsibilities. These include contingency contracting, split-based operations, supply and field services automation, selected materials handling equipment, tents and shelters, and various planning factors. It also provides significant support in the development of nonproponent doctrine and organizations. This support includes property disposal operations, materiel management centers, division redesign efforts, and command and control headquarters (such as the corps support battalion).

CHAPTER 2
OPERATIONAL CONSIDERATIONS

INTRODUCTION

The end of the cold war, operations Desert Shield/Storm, and Somalia have left us facing a different enemy, different threats, and changing missions. To perform these new missions and counter threats, the logistician must plan for more frequent deployments of relatively short duration. These deployments will be to undeveloped theaters anywhere in the world. Therefore, the logistics support structure must be prepared to support task-force-sized elements during deployment and immediately upon arrival into the area of operations (AO). It must then sustain the forces until they are redeployed. These tasks will not negate our responsibility to provide support to nondeploying customers.

QMC SUPPORT OF NATIONAL MILITARY STRATEGY

The foundation of our national military strategy is the national security. The four basic demands fulfilled by the military that must be logistically supported are the following:

- Ensuring strategic deterrence and defense.
- Exercising forward presence in vital areas of the world.
- Responding effectively to a crisis.
- Retaining the capacity to reconstitute forces.

It is the Army's ability to react promptly and conduct sustained land battle that makes it decisive. To the QMC this means ensuring logistics reaches the hands of the war-fighter on time and in the right quantities to support and sustain operations. Support of the war-fighter's mission on a moment's notice, anywhere in the world, is woven into the fiber of the QMC.

The QMC must remain capable of full-dimensional operations. Quartermasters must think war and employ all available means to complete any given mission across the range of military operations. Support should be effective and efficient.

Supply and field services units must train as part of a joint, combined, United Nations, or interagency force. Logistics plans must mesh with the tactical commander's plans and his intent. This ensures timely logistical support and sustained operations.

Logistics commanders and planners must tailor support packages to theater requirements for a variety of strategic contingency plans. This capability will be enhanced through the planned modularity of logistics units. Modular units, coupled with pre-positioned supplies and equipment on land and at sea, will ease the burden on strategic lift requirements.

The keys to ensuring QM units are expansible are trained and ready active and reserve component units that can respond to support any crisis in the world. Timely mobilization of QM forces will allow the effective and efficient support of US forces in war and operations other than war.

The changing mission of the Army calls for highly mobile, multifunctional organizations capable of projecting logistics power anywhere in the world. Success is measured in the ability of combat service support elements to project a logistics structure that will effectively and efficiently sustain maneuver forces in a wide variety of mission profiles anywhere in the world.

FORCE PROJECTION CONSIDERATIONS

Force projection is the demonstrated ability to quickly alert, mobilize, deploy, and operate anywhere in the world. Operations Just Cause and Desert Shield/Storm dramatized the ability of QM

units to synchronize assets at all levels of war and respond rapidly to a force projection crisis.

Successful force projection requires tailorable, flexible QM units. The nature and size of a logistical projection depends on the size of the deploying task force to be supported, maturity of the theater of operations, availability of in-theater stocks, and the host-nation support structure. The existing infrastructure will greatly affect supply and field service planning. Road networks and capacities, seaports, inland waterways, climatic conditions, and the availability of airfields, utilities, buildings, construction capabilities, and raw resources will affect the types of supply and field service units required to support operations. Infrastructure in the area of operations will also affect unit and supply sequencing. A detailed discussion of logistics preparation of the theater is found in Chapter 5.

Consideration of infrastructure and unit requirements is important. The development of forward logistics bases, intermediate staging areas, and lodgments in a theater may be required. The theater may have full port facilities (air and sea); or it may require over-the-shore or austere air flow operations. Additionally, the supply and field service planner must consider contract supplies and field services (if available) as a means to augment and assist military capabilities. This is critical during the initial phases of an operation.

The intent and purpose of force projection requires that logistics commanders deploy only those forces necessary to support the task force. Logistics commanders and planners must tailor units to meet the task force requirements. Only personnel, equipment, and supplies required to support the mission should be deployed.

The Army is becoming smaller and more CONUS-based. Therefore, logistics planners must consider split-based logistical operations in supporting deployments. Split logistical operations will reduce deployment flow requirements and supply stockage build-up in the area of operations. However, they rely heavily on assured communications systems to be effective. These systems will allow support of both nondeployed and deployed forces for short duration deployments. The nondeployed logistics base would receive and act on requirements from forward deployed elements, pushing required supplies to the forward deployed unit's area of operations. As the theater develops (for longer duration deployments), the forward deployed element becomes the nucleus for follow-on supply and field service elements.

Besides supporting task force deployments and combat operations, the logistics planner must plan for and execute post-conflict support. Supply and field service units should plan to be among the first into an area of operation and the last to redeploy. This is primarily due to the need for supplies and field services support before, during, and after operations.

Force projection operations will challenge logistics leaders at all levels. Force projection requires early critical analysis of the tactical commander's intent and the threat. Analyses will be required at every level of logistics--strategic, operational, and tactical--and in operations other than war. The keys are anticipation of requirements and the synchronization of supplies and field services to the tactical commander's mission.

To anticipate requirements, the supply and field service planner must fully understand the commander's intent. He must also know the location of supported units, maintain total asset visibility before and throughout the operation, and maintain a continuous intelligence picture of the area of operations.

TACTICAL LOGISTICS FUNCTIONS

The changing mission of the Army requires highly mobile multifunctional organizations that can project logistics power anywhere in the world. Success is measured in the ability of combat service support elements to project a logistics structure that will successfully support the force anywhere in the world. The tactical logistics functions are manning, arming, fueling, fixing,

moving, and sustaining soldiers and their systems. The QMC plays a role in each of these, with primary responsibilities for fueling and sustaining soldiers and their systems. The logistics characteristics that apply to these areas are anticipation, integration, continuity, responsiveness, and improvisation. The tactical logistics functions are discussed, from a QM standpoint, below.

Manning

QM units depend on the manning function for the maintenance of their strength levels. The field service function of mortuary affairs, through the recovery and initial identification of soldiers killed in operations, supports the manning function. Information collected during mortuary affairs operations feeds both the casualty notification system and the personnel replacement system. Chapter 18 discusses mortuary affairs.

Arming

The QMC provides the organizational structure and support, at brigade level, for operating the ammunition transfer point (ATP). The ATP provides ammunition support for maneuver units. Logisticians must anticipate the space and road and rail requirements needed to handle350 to 500 short tons of ammunition daily. Logisticians must consider the gravity of having 20 to 50 semitrailers of ammunition without direct means of moving these supplies. Transferring these supplies quickly to prevent giving the enemy a target of opportunity is paramount.

Fueling

Changing technology--coupled with plans for increased mobility, modularity of units, and a single fuel Army--will enhance performance in providing fuel to the force. Even with these enhancements, fueling the force will be a major undertaking. Improved combat systems with greater range and fuel consumption will pose a challenge for logistics planners. Logistics planners must anticipate fuel needs and forecast requirements, developing a delivery system that will assure continuous flow of support forward. The system developed must be flexible enough to allow the continuous flow of fuel forward to maneuver elements even if a section of the system is destroyed or cut off. Chapter 11 discusses the fueling function.

Fixing

The successful maintenance and repair of soldiers' systems relates directly to the ability of QM personnel to provide the proper repair parts. The key to success is a rapid and continuous flow of supplies forward. An effective repair parts supply system requires diligent planning by personnel at all levels. This is especially true in force projection operations. Logistics planners, at the outset of deployment notification, must correctly identify and move only mission essential parts having anticipated demands. The distribution system must allow total asset and in-transit visibility. This will greatly enhance capabilities and will mean fewer stockpiles of parts in a theater of operations. In short, anticipation of need, coupled with improvements in distribution systems and implementation of new technologies, will enhance the maintenance posture of combat forces. Chapter 14 discusses repair parts supply.

Moving

QM units must move rapidly with enough supplies to support the mission. Mission requirements frequently require the timely concentration of units and supplies. The linchpin in providing information on movement of supplies and equipment is the automation systems that provide in-transit visibility. The supply and movement functions are inexorably tied together. Airdrop (a field service function) supports the movement function by moving personnel, supplies, and equipment--from an aircraft to the ground via parachutes. Chapter 17 discusses airdrop.

Sustaining Soldiers and Their Systems

There are five elements involved in sustaining soldiers and their systems. These are personnel

services, health services, field services, quality of life, and general supply. Of these, the QMC is directly responsible for field services, quality of life, and general supply.

Field services. Field service functions include airdrop, mortuary affairs, field feeding, laundry and shower, clothing and light textile repair, and water purification. They serve to keep soldiers' morale high and lead to enhanced effectiveness and mission success.

Quality of life. Quality of life is a command responsibility. Both the soldier and his family must be considered. With the streamlining of US forces, support troops may spend longer periods of time deployed away from home bases. It is incumbent on QM commanders to ensure that equitable opportunity exists for QM soldiers to share in morale, welfare, and recreational support activities; rest and recuperation operations; tactical field exchanges; and any other benefits being offered in a theater of operations. It is also incumbent on the commander to ensure that a soldier's family receives the proper care and attention during the sponsor's absence. This will have a direct correlation on the soldier's ability to perform his or her primary mission.

General supplies. Providing items to equip, maintain, and support the force is a primary mission of the QMC. How well the logistician requests, receives, procures, produces, stores, and moves supplies could decide the success of future operations. They will, for the most part, be done with longer lines of communication and with fewer personnel deployed. The success of supply operations will therefore hinge on timely and correct anticipation of maneuver force requirements coupled with a high speed transportation system, Use of initiative and agility by the logistician in support of the maneuver force is critical.

PROTECTION

Protection is not listed as a tactical logistics function. However, it is critical to QM units that must protect themselves during movements and when providing support. Protection of fuel, ammunition, and general supplies needed to support operations is important. As modular elements of QM units deploy, instead of full units, self-protection becomes more difficult. A greater reliance on the maneuver elements to assist in protection will be required. Therefore, QM unit commanders must coordinate with their supported tactical commanders while developing their own protection plan. Additionally, requirements will exist for protection of logistical facilities during OOTW. The best form of protection in these situations comes from an awareness and anticipation of the unexpected. Logistics leaders must consistently assess vulnerabilities of the organization and apply defensive tactics within constraints of mission accomplishment. Logistics leaders at all levels must see that--

- Personnel are properly trained and NCOICs are briefed on routes, contingencies, and defensive measures.
- Defensive plans consider not only tactical measures but also mission support.
-]Logistics soldiers fully understand the unit's concept of defense.

RECONSTITUTION OPERATIONS

Strategic-level reconstitution refers to those functions 'and activities required to restore the Army's ability to respond to any mission. It involves the industrial and mobilization base of the nation. The Army's strategic reconstitution hinges on integration of national efforts to restore a capability to mobilize, deploy, and conduct future operations. At the operational and tactical levels, reconstitution refers to the reorganization and regeneration of units to restore mission capability.

Reorganization

Reorganization is the regaining of mission capability by a unit through the internal realignment and cross-leveling of personnel, supplies, and equipment. The result is a unit capable

of performing its mission, even though it may be smaller and less than 100 percent mission capable.

Regeneration

Conversely, regeneration of combat forces is METT-T dependent and logistics intensive. It requires careful planning and execution. Because it is so logistics intensive, it should be planned for in advance. It should be administered by a commander, having control of the required resources, at least two levels above the force being regenerated. The identification of likely candidates is difficult. However, the general requirements and possible site location can be determined. Logistics planning considerations for regeneration include: rail and road networks, equipment requirements, supply replenishment, transportation, medical, maintenance, decontamination, and training. Regeneration will require a maneuver force to disengage and move to the regeneration site to be brought back to some level of readiness. Usually a 15 percent increase in readiness can be achieved. Regeneration requires time, especially for training and development of unit cohesion.

Weapons Systems Replacement

Weapons systems replacement using a linkup of personnel in the division or brigade support area is an efficient and effective method of reviving the force. In this method, systems are pushed to logistic support areas and crews are identified prior to issue to maneuver forces. This method uses less logistics structure and is less intensive than regeneration. And, the maneuver force does not have to disengage from its combat mission. Equipment, however, must be fully reprocessed and weapon systems bore sighted in the theater rear before shipment forward.

THREAT

The collapse of the Soviet Union has changed but not ended the threat. The main danger is now the resurgence of hard-line politics in any of the former soviet republics trying to revive its former power. Economic chaos has added to the threat imposed by the former soviet republics, as they sell weapons and technology worldwide to stabilize their economies. Also, their involvement in ethnic conflicts outside the former Soviet Union under the guise of ethnic solidarity poses a threat.

The threat environment has changed because of the collapse of the Soviet Union and the end of the cold war. This has made the world a more unstable place since the former Soviet Union suppressed many regional conflicts that are now emerging. Possible conflict areas which now threaten US and allied interests are global. They span countries and regions such as Korea, Kurdistan, the Balkans, the Andean Ridge, the Persian Gulf, and Palestine. The possible conflicts range from nuclear war to major regional conflicts to insurgences and terrorism. Plausible threats are now so varied that scenarios developed for planning purposes are inadequate. This new environment also includes the impact of global news networks that provide near-real-time reporting. This enhances the ability of threat governments to use the media as a tool of warfare.

A lesson learned from the Gulf War is that US technology must be equal to or greater than that of any opponent. As nations modernize they generally follow one of three paths in force development:

- A large force that employs run-of-the-mill technology.
- A small force employing high technology.
- A large force with a few high technology features.

Without the pressure of a superpower rivalry and with the erosion of imposed restrictions, high technology weaponry is being proliferated at a tremendous rate. Although few nations can afford to modernize their entire force, most can afford to purchase some advanced weaponry. Weapons of particular concern are theater ballistic missiles and weapons of mass destruction (nuclear, biological, and chemical). An enemy can use these to deny US forces the time to build up strength.

One can assume that potential enemies have studied US performance and tactics during operations Desert Shield/Storm and are developing ways to counter the strengths displayed. Tactics that the enemy will be likely to employ to counter US forces include--

- Preventing the buildup of US and allied forces. They might try to do this by deploying their attack forces into a theater to prevent the buildup of our heavy forces and by attacking our rear echelon infrastructure.
- Slowing the operational tempo of US forces. They might do this by improving their armor and antiarmor capabilities, degrading US battlefield identification capabilities, and maximizing use of land mines.
- Degrading the relative advantage of our command, control, communication, and intelligence (C^3I) capabilities. They might achieve this by using electronic countermeasures and stealth or low-observation materials and technologies.
- Maximizing US casualties through use of guerrilla attacks and biological and chemical agents.

Since a threat of war still exists anywhere on the globe, the quartermaster must be prepared to support the' 'next" battle. To do this successfully requires training of our soldiers in defensive and offensive tactics in a variety of situations and environments, planning, anticipation, and a thorough understanding of the maneuver commander's objectives and tactics. These, coupled with flexibility and vision, will ensure that supplies and field services are applied on time and in the right quantities to give the maneuver commander the decisive edge.

QM VULNERABILITIES

QM units have vulnerabilities that can affect their ability to provide support. Some of these are discussed in more detail below.

Limited Survivability and Defensibility

QM units, personnel, equipment, and supplies are vulnerable to threat attack. QM units have only limited firepower and a limited capability to defend themselves. Joint rear area security planning by QM leaders, military police (MP) unit leaders, and maneuver commanders will reduce the effects of attack by threat forces. QM leaders must recognize the symbiotic relationship between MP teams and platoons charged with area security, battlefield circulation responsibilities, and QM unit functions. Limited QM unit self-defense capabilities are enhanced by close coordination with MP units.

Loss or Interdiction of Key Areas

Loss or interdiction of airfields, pipelines, main supply routes, and transportation nodes will impair a logistic unit's capability to move supplies. The logistician will have to consider this in planning measures to counteract such losses.

NBC Attacks

Threat use of NBC weapons or warfare will hamper logistics units in providing support. The requirement for CSS units to perform their mission in a contaminated environment will seriously tax operations. In planning, commanders should take into consideration the degradation that will result in military task performance in an NBC environment caused by wearing mission-oriented protection posture (MOPP) gear. Soldiers wearing MOPP4 take considerably longer to perform most tasks because the protective clothing reduces mobility, agility, coordination, and dexterity. Decision-making and precision-control tasks are slowed even more than manual tasks. In an NBC environment, command, control, and communications are difficult. Wearing the protective mask degrades hearing, vision, and speech. Commanders and leaders must plan for a slower pace of operations and degradation of unit performance because of behavioral changes and leader exhaustion. The first priority will be to try to avoid a contaminated environment or NBC attack. Attacked units will require decontamination. Decontamination support will probably be limited, so units must apply resources to decontaminate as

soon as and as far forward as possible to limit the spread of contamination. Also, decontamination agents are highly corrosive and may affect the operation of some equipment or the condition of some supplies. Decontamination of food presents particular problems. Veterinary services will determine if food is contaminated. The remaining classes of supply may also present special problems. Cardboard boxes and other packaging material used for many types of supplies provide little or no protection against NBC agents or decontaminants.

Loss of Materials Handling Equipment (MHE)

Changes in force structure have reduced the number of soldiers in many logistics units. Future deployments will call for smaller forces. Loss of MHE could cause extended delays in support since additional soldiers needed to carry out the work load will, normally, not be available.

Loss or Delay of Reserve Forces

Over half of the Army's supply and field services structure resides in the reserve component (RC). This makes the RC a vital link in the overall logistics posture. Delay or loss of RC forces can directly result in backlogs of work. In mortuary affairs where RC units provide the bulk of the capability, a delay would result in a longer time for processing remains and possibly an increase in temporary burials. Other areas dramatically affected by the loss or delay of RC forces would include water, bath, fuel, and supply.

Vulnerability of Automation and Communication Equipment

A QM unit's success depends greatly on communication and automation equipment. The circuitry of these systems is highly vulnerable to the electromagnetic pulse, heat, and shock waves caused by nuclear explosions. With loss of automation equipment, a manual supply system will be needed. This could result in increased errors and delays. The loss of communications nodes will result in courier runs being made to the next available node until communications can be reestablished.

OPERATIONAL OVERVIEW

Good planning is the key to mission accomplishment. Regardless of the operation, the planning process is basically the same. Logistical preparation for an operation must be considered equal to the tactical and intelligence preparation. Successful QM commanders and staff personnel will have a comprehensive knowledge of the distribution system from the FLOT to the continental United States (CONUS) base and an understanding of the supported commander's intent. This knowledge will allow the commanders and staff personnel to anticipate requirements. It also is the basis for instant problem resolution, when required.

As the army becomes more CONUS-based, deployments of smaller, more mobile QM elements will emerge and we can expect more deployments but of shorter duration. Planning and training must focus on the maneuver commander's successful mission accomplishment, not simply on the buildup of supplies. QM leaders must anticipate requirements of the maneuver commander and project the correct supply and field services support to the area of operations. This will ensure the maneuver commander has the decisive edge required to fight and win the next battle.

The key to success for future deployments is extensive training with maneuver elements to gain an understanding of their intent and mission requirements. This and the development of deployable logistical support modules will ensure that QM units provide support at the right time and place and in the right amount.

CHAPTER 3
LOGISTICS AUTOMATION

INTRODUCTION

The goal of logistics is to provide the support required to ensure that operations succeed. A dependable, uninterrupted logistics system helps commanders seize and maintain the initiative. Logistics arrangements cannot be so meager that they do not meet the needs of commanders. Nor can they be so excessive that they overwhelm the ability of commanders to move, protect, and employ them efficiently. The logistics system must strike a balance and not burden commanders with more support than needed. QM units must provide the right supplies at the right location and at the right time. The automated supply systems must allow supported units to request supplies rapidly and QM units to provide them quickly.

RESPONSIBILITIES

QM units must provide adequate and timely supplies to supported units. The materiel management center (MMC) in each echelon of the force--at division, separate brigade, or armored cavalry regiment (ACR) level and higher--manages the supplies.

CONCEPT OF OPERATIONS

Many of the Army's deployed systems evolved from commodity-oriented management systems. They have been restrained by their original 1970s technology. Their limitations are well known. These systems are being replaced at all logistics levels--tactical, operational, and strategic--as quickly as resources permit.

CURRENT OPERATIONAL AND TACTICAL SUPPLY SYSTEMS

There are many supply-related systems in use at the operational and tactical levels of logistics. These are discussed in the following paragraphs.

Unit Level Logistics System (ULLS)

The proliferation of automation has allowed the Army to provide computers to automate the organizational prescribed load list (PLL). This automation improves accountability and provides for better asset visibility.

ULLS was developed to meet the needs of unit maintenance and repair parts management. It provides timely, accurate, and relevant information on the status of equipment, requested parts, operator qualifications, PLL usage, fuel consumption, and unit maintenance schedules. ULLS allows for the automated submission and processing of--

- Class IX repair parts transactions.
- Maintenance work orders.
- Equipment dispatches.
- Maintenance of historical records.
- Equipment usage, fault, modification, and forecast reports.
- Motor fleet readiness data.

It provides automation to the PLL clerk for the management of Class IX repair parts operations in the motor pool and The Army Maintenance Management System (TAMMS) functions. It is a user friendly, menu-driven system. It interfaces with the standard army maintenance system (SAMS- 1) and the standard army retail supply system (SARSS-1) at the DS level.

Another element of ULLS is the development of the S4 module. ULLS-S4 will provide near-real-time logistics management and decision support information. It will automate the battalion S4 and unit supply processes. These processes

include subhand-receipts, component lists, shortage annexes, basic and operational loads and movement planning, materiel readiness reporting, asset visibility, ration requests, map requisitions, and battle losses. Additional information about ULLS-S4 appears later in this chapter.

SARSS-1 Interim (I)

SARSS - 1 (I) is subordinate to the direct support unit standard supply system (DS4). It improves responsiveness of DSU supply operations. It also improves customer support through increased asset visibility. It operates on the Tactical Army Combat Service Support (CSS) Computer System (TACCS). SARSS-1(I) will be replaced by the SARSS-Objective (SARSS-O) family of systems. These systems support the forward and main supply support activity (SSA) at the DS level and interface with SAMS, ULLS, SPBS-R, DS4, and the reserve component automation system (RCAS). SARSS-1(I) serves several functions. These include--

- Providing DSUs with an automated capability for issuing, receiving, and storing supplies through interactive processing.
- Accomplishing release of due-outs at the DSU level upon receipt of supplies.
- Increasing responsiveness to customers by providing an automated capability to process requests for follow-up at the DSU level.
- Reducing the input error rate in the supporting supply system by providing transaction edit capabilities at the DSU.
- Providing DSU personnel a capability to continue operations temporarily should the DSU become separated from its supporting activity.
- Ending the use of punched cards in DSU operations.

DS4

DS4 is an automated inventory management system at the DS level. It manages all classes of supply, less ammunition, medical, bulk petroleum, subsistence, and contractor-operated supply accounts. Also, it does not manage supplies provided the Directorate of Public Works (DPW) for repairs and utilities work at the DS level. DS4 interfaces with the Standard Army Intermediate Level Supply System (SAILS) at the installation or corps support command (COSCOM) and with SARSS-1(I), SAMS, and ULLS. It automates the management functions of supply and stock control in the division (DMMC), brigade (BMMC), and the nondivisional stock control section. It gives DSUs an automated capability to receive, store, and issue supplies. Both divisional and nondivisional DSUs use DS4.

Divisional DSUs. In divisions, DS4 uses the umbrella concept, with multiple DSUs. System parameters identify units authorized for support. The division support command (DISCOM) commander directs the DMMC's CSS automation management office (CSSAMO) formerly known as the logistics automation system support office (LASSO). The DISCOM commander also directs SSA and division materiel management center (DMMC) operations.

Nondivisional DSUs. In nondivisionaI units, DS4 normally uses the single DSU concept. If required, it can provide support using multiple DSUs. The supply support unit may consist of a company or platoon. It will have a stock control section and a storage activity. Its table of organization and equipment (TOE) or modification table of organization and equipment (MTOE) designates the authorized supply personnel. The stock records officer is the accountable officer.

Recapitulation. Differences between the divisional and nondivisional systems result from the organizational differences. Divisions operate under the multiple DSU concept. Main DSUs maintain backup stock for forward DSUs. They also replenish forward DSU stock as necessary. Most nondivisional DSUs operate as stand-alone support activities. In divisions, CSSAMO personnel operate the computer. In nondivisional DSUs, stock control personnel operate the computer. SARSS-O will replace DS4.

SAILS

SAILS is a DA standard automated supply management information system. It is designed to accomplish all stock control, supply management, and related financial management interface processing functions. It operates at the intermediate level between the CONUS supply level and the manual and automated unit/direct support supply level. It processes information on supply classes II, III (packaged), IV, VII, VIII, and IX. The system can be operated in multiple intermediate level supply environments. It now operates at theater army materiel management centers (TAMMCs), corps materiel management centers (CMMCs), and installation level. At the strategic level, mobilization requirements management by SAILS includes theater war reserves and operational projects. It is scheduled to be replaced by SARSS-O. Figure 3-1 depicts the current automated supply system from the unit level to the strategic level with related standard army management information systems (STAMISs) included.

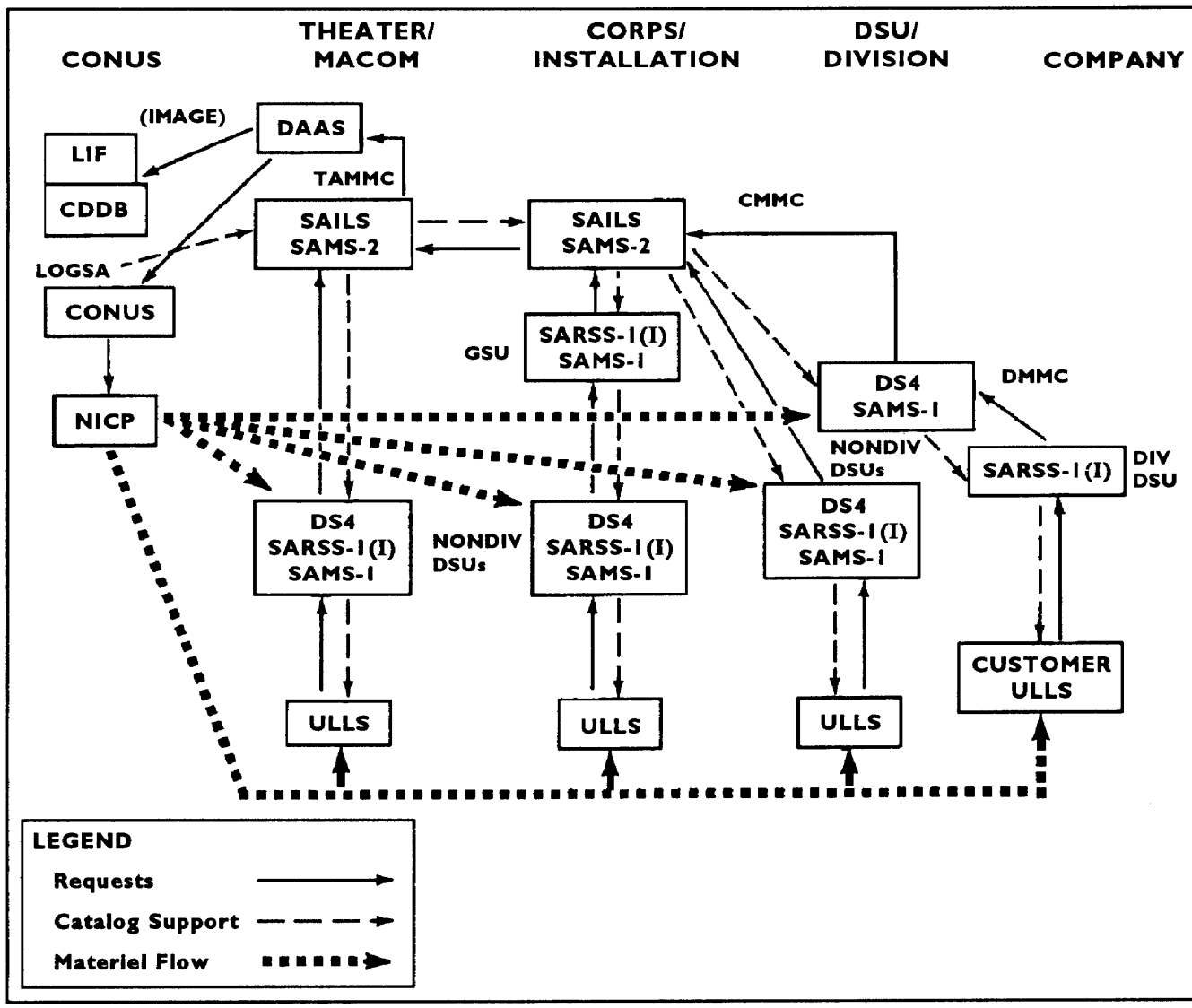


Figure 3-1. Current automated supply system

SARSS-O Systems Overview

The Army has partially implemented and will continue to implement SARSS-O. It will replace the aging SARSS-1(I), SAILS, and DS4 and expand the automation of supply activities.

Today's newer CSS systems address the shortfalls of earlier systems. Modern microcomputers provide interactive processing and capabilities formerly found only in mainframe computers. WhiIe these systems are great improvements, they do not support vertical inventory management to the degree called for by doctrine and the requirements of the Defense Management Review (DMR). Figure 3-2 (page 3-5) depicts the SARSS-O concept of operations. It also shows the interfaces between structures from the tactical to the strategic level. SARSS-O is to be a multilevel supply management system. It will operate in peacetime or war. It will operate at every level of supply, from the DSU/generaI support unit (GSU) through the theater Army in a theater of operations. It will also operate from the warehouse through the installation supply division in CONUS. The system consists of SARSS-1, 2A, and 2B which are subsets of the entire SARSS-O system.

FUTURE TACTICAL/OPERATIONAL LEVEL AUTOMATED SYSTEMS

There are several logistics systems that are being developed. The following paragraphs discuss those with supply and field services implications.

ULLS-S4 Module

The ULLS-S4 module will provide automation and near-real-time logistics management and decision support information for the battalion S4 and unit supply rooms. It will consist of six functional areas. Three of the primary areas and their coverage are as follows:

- Supply function: Performs request, receipt, status, document control register, and catalog management functions.
- Property function: Prepares hand receipts, component lists, property adjustments, asset visibility, property inventory, and organizational clothing documentation.
- Materiel status function: Automates the materiel condition status report and the unit status report (logistical portion).

Standard Army Retail Supply System-2A (SARSS-2A)

SARSS-2A will perform time-sensitive supply management functions at the MMC level. It will rapidly respond to documentation received from subordinate SARSS-l, SARSS-2A, or DS4 activities. It is to be an on-line, transaction-oriented, management system allowing users to enter data and query the system using a keyboard. It will use near-real-time batch processing for transactions received from other activities. SARSS-2A, like the other SARSS subsystems, will maintain control of transactions by assignment of serial numbers to the frequent small batches of data passed between activities. It will maintain asset visibility of subordinate SARSS-1 accounts, provide requisition routing, and perform lateral searches of stocks to fill unsatisfied requirements. It will also release controlled items, provide gross obligation of consumer funds, and provide disposition instructions for redistribution or retrograde of excess materiel.

Standard Army Retail Supply System-2B (SARSS-2B)

This module is also scheduled to replace elements of the SAILS and the DS4. It will perform less time-sensitive actions. These include demand history and analysis, document history, and cataloging. It will process on corps/theater automated service centers (CTASCs) at the operational and tactical levels. It will process on the Army Standard Information Management System (ASIMS) at installations.

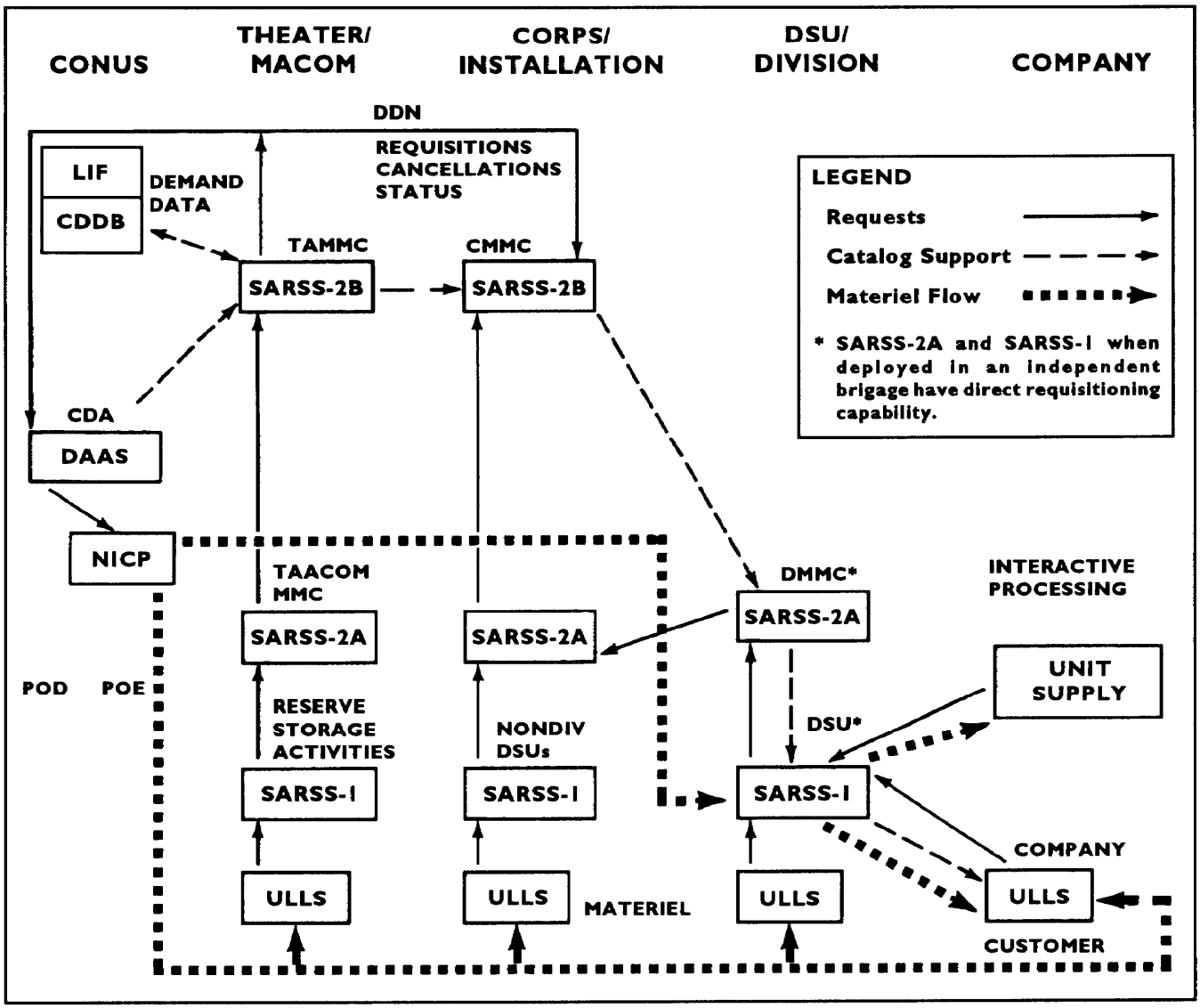


Figure 3-2. Emerging automated supply systems

Standard Property Book System-Redesign-Installation/Table of Distribution and Allowance (SPBS-R-I/TDA)

Figure 3-3 (page 3-6) illustrates future STAMIS interfaces for unit supply functions using the ULLS-S4 module through SPBS-R-I/TDA and SARSS-O. SPBS-R-I/TDA will provide standardized, automated functional procedures and processes for property accounting, equipment management, and asset reporting. It will operate in installation and TDA environments. SPBS-R-I/TDA is to be an interactive, menu-driven functional application operating on dedicated microcomputer hardware. It will replace local unique systems and automate property books that are currently maintained manually. It will be the Army's property accountability and equipment management system for installations and TDA activities.

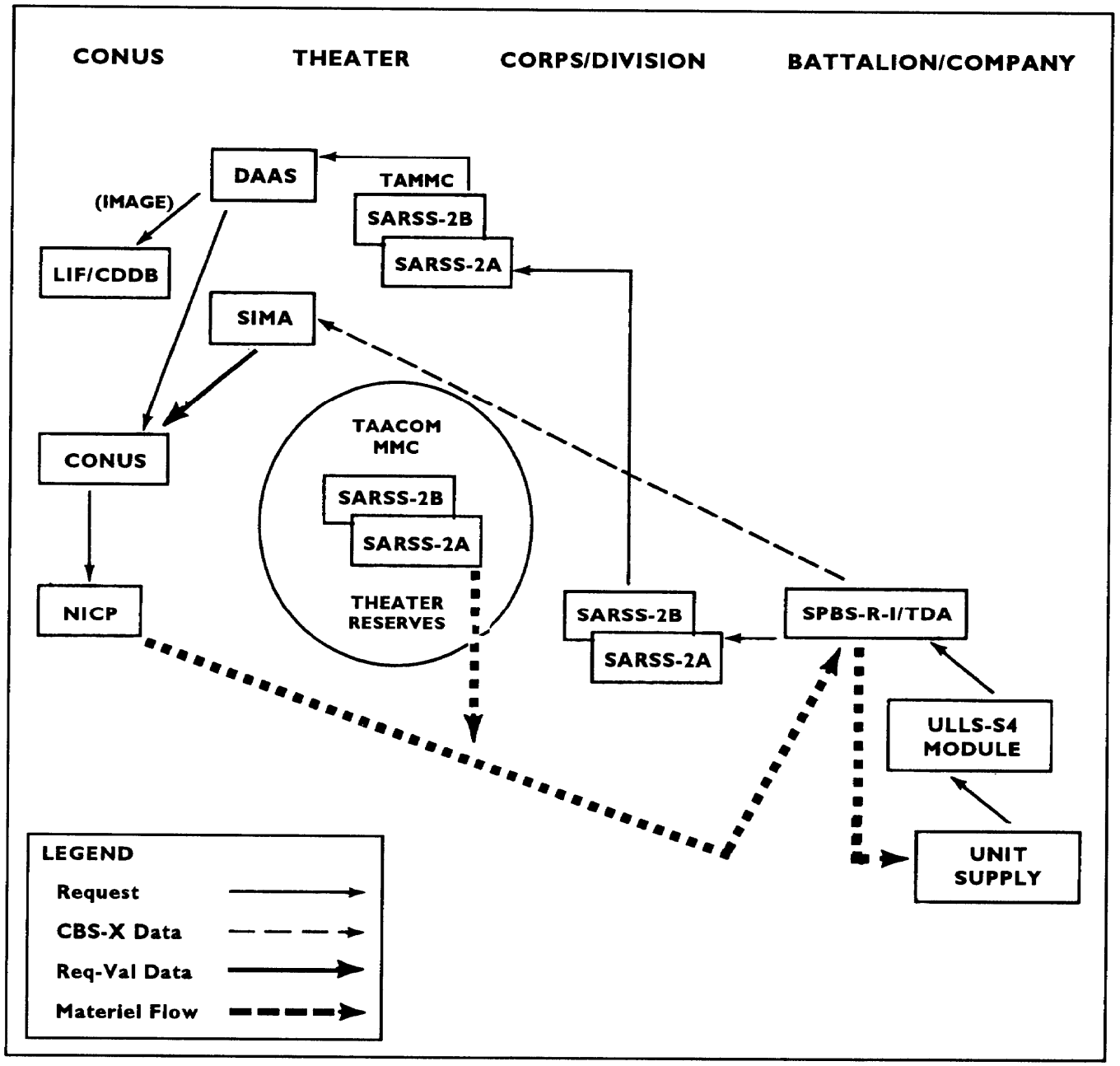


Figure 3-3. Future STAMIS interfaces

FUNCTIONAL SUPPLY CONCEPTS

The following tables detail the current and proposed supply system concepts (manual and automated) by organizational level. The first column lists the systems as they now exist. The second column lists the supply systems concept for the future. Table 3-1 (page 3-7) depicts the unitlevel concept, Table 3-2 (page 3-7) the division level, and Table 3-3 (page 3-7) the intermediate, installation, corps, and theater level.

Table 3-1. Unit level functional concepts

CURRENT FUNCTIONAL CONCEPT	PROPOSED FUNCTIONAL CONCEPT
Supply functions performed at unit level include: • Standard automation to battalion and company level activities authorized to stock PLL items. • Receipt, storage, issue, and accounting for PLL assets. • Status/reconciliation/validation. Automated support features: • Preparation of TAMMS data. • Serial number tracking capability.	Automate logistics functions currently done manually. Compute non-MPL stockage requirements. Monitor fund commitment. Provide support features: • Tutorial instruction. • Interactive processing. • Report query. • Built-in Army materiel system reporting interface to SAMS.

Table 3-2. Division level functional concepts

CURRENT FUNCTIONAL CONCEPT	PROPOSED FUNCTIONAL CONCEPT
Supply functions centralized at DMMC: • Status/reconciliation/validation. • Asset visibility and reporting for division stocks. • Demand processing for DS requirements. • Edit, receipt, storage, issue, and requisition processing for all DSUs. • Materiel returns responsibility. DSUs and GSUs forward asset and demand data to CMMC.	Enhance mobility and survivability by decentralizing primary wartime functions to each DSU/GSU and SSA. These functions include: requisitions, storage, issue, receipt, stock accounting (less PLL level computation), and asset reporting. DSUs and GSUs must have independent capabilities to direct requisitions to the CONUS base. Provide asset visibility for requirements determination and redistribution.

Table 3-3. Intermediate, installation, corps, and theater level functional concepts

CURRENT FUNCTIONAL CONCEPT	PROPOSED FUNCTIONAL CONCEPT
Supply functions centralized at MMC: • Status/reconciliation. • Asset visibility for intermediate stocks only. • Selected catalog functions. • Edit, receipt, storage, issue, and requisition processing. • Demand analysis. • Status/reconciliation. • Excess/war reserve management/requirements at theater level.	Perform centralized management functions for all supported DSUs, GSUs, and SSAs including cross-leveling of DS and GS stocks. Evaluate corps stockage requirements and determine corps versus theater management requirements. Implement cross-leveling of stocks.

RELATED SYSTEMS

Automation serves as a "combat multiplier" for US forces, enabling them to gain an advantage over potential enemies. It increases the responsiveness of logistics support, enhances decision-support information, and improves management of critical resources. The automation concept is designed to provide Armywide integration and standardization for systems. It also provides for viable communications, backup support, total Army asset visibility, and improved materiel management. The future dictates the tailoring of systems to a smaller, more mobile Army. The Army will have a worldwide orientation and increased reliance on the use of joint forces. There are severaI automated systems related to supply and field services functions. These are discussed in the following paragraphs.

Standard Property Book System-Redesign (SPBS-R)

SPBS-R was developed to provide a transition from the standard property book system (SPBS) in the DAS3 environment to TACCS. Further development converted SPBS-R from the TACCS to nondevelopmental items (NDI). SPBS-R allows the functional capabilities of SPBS to remain. It reduces the number of master files and cycles required. The system is an online interactive system that provides a means of centralizing property book accounting. It provides asset visibility and automated organizational property books. The system generates reports to the Major Item Information Center (MIIC). It interfaces with the Continuing Balance System - Expanded (CBS-X) process and serial number tracking (SNT). This provides local commanders and managers with necessary property book asset management data.

SPBS-R has two basic applications or modules. These are property accountability (PA) and asset visibility (AV). SPBS-R (PA and AV) is centralized in the DMMC in all divisions. In nondivisionaI environments, SPB S-R (PA) is decentralized to battalion level, with commandwide AV provided to the supporting group or brigade headquarters. SPBS-R interfaces with SARSS, DS4, and SAILS.

SAMS

SAMS is a multilevel maintenance and readiness management system. It provides automated forecasting, distribution, scheduling, and production control of maintenance work loads commensurate with operational readiness. SAMS-1 operates at the intermediate DS and GS levels. It interfaces with SAMS-2, SARSS-1, and ULLS. SAMS-2 operates at the DISCOM, COSCOM, Theater Army Area Command (TAACOM), and MMC levels. It interfaces with SAMS-1 and passes equipment performance and maintenance operation data to the major Army command (MACOM).

Combat Service Support Control System (CSSCS)

CSSCS is to be an automated system that can rapidly collect and analyze logistical information. It will allow CSS and force level commanders to accelerate and improve the tactical decision making process. It will function as an integral part of the Army tactical command and control system (ATCCS). Its purpose will be to collect, analyze, and distribute essential command and control (C2) information. Information will be obtained from the CSS STAMIS and from the four battlefield functional areas (BFAs) within ATCCS. CSSCS is to be employed throughout the operational and tactical levels. It will be used in all divisions, corps, echelons above corps (EAC), separate brigades, and ACRs. The equipment necessary to operate CSSCS will be organic to these organizations' CSS units and headquarters staff elements. These include forward support battalions (FSBs), main support battalions (MSBs), separate CSS units, and EAC, corps, and division G4 staff sections. The total Army force structure--active component, Army reserve, and

the Army National Guard--is to be included in the fielding plan.

Supply Management Modernization (Class I)

A Class I module, formerly called the Army Field Feeding Management Information System (AFFMIS), will provide a standard automated capability to manage Class I supply. This module will be used in the supply STAMIS. It will link the entire Class I requisitioning, inventory management, and supply distribution functions from the battalion S4 of the maneuver unit to the supporting MMC. It will transmit requisitions to the national level.

This module will allow the user to process ration requests from the battalion S4 level. It will input them to the source of supply using existing STAMIS automation and communication nodes. It will provide supply and shipment status to the intermediate MMC, SSA, and MCC for shipment and receipt planning. When fully fielded, this module will interface with the finance battlefield system to record peacetime training expenditure data. It will interface with the Defense Personnel Support Center (DPSC) Defense Integrated Subsistence Management System (DISMS) to requisition sustainment supply. Intransit visibility will be available through interface with the transportation systems. The automation of tactical Class I functions will be done through the modernization and optimization of existing supply STAMISS (for example, ULLS and SARSS).

Mass Fatality Field Information Management System (MFFIMS)

The MFFIMS supports the requirement for a battlefield human remains tracking system. It provides the supporting mortuary with intransit visibility and accountability of human remains. It is installed on commercial, off-the-shelf (COTS) hardware platforms and uses assured communication networks. There is a requirement for one laptop computer with application software at each collection point, aerial port of embarkation and debarkation (APOE, APOD), and mortuary. The basic personnel data entries are made at the collection point. The information is sent electronically to the supporting mortuary. The application software is being revised to add required capabilities identified from operations Desert Shield/Storm (ODS/S).

Airdrop Missions and Equipment Management System (AMEMS)

The AMEMS is an automated airdrop equipment management system. It enables airdrop support units to plan airdrop mission equipment requirements more efficiently. Using a portable computer system, the user can plan a mission by identifying the type loads and quantities to be airdropped. The computer then generates an output report which lists the type and quantity of equipment items required to rig the loads. AMEMS includes an interface with the Army Master Data File (AMDF) for calculation of airdrop equipment cost, which may be used for budget forecasting. The US Army Quartermaster Center and School (USAQMC&S) is now evaluating the AMEMS for possible worldwide fielding. If the system is adopted, AMEMS training will be added to programs of instruction (POIs) for parachute riggers and aerial delivery technicians.

Reserve Component Automation System (RCAS)

The RCAS will support commanders and staffs by providing timely and accurate readiness status of personnel, equipment, and training. It will provide automated mobilization plans and readiness assessments that are comprehensive and fully integrated. There are to be three blocks of RCAS software. Block 1 software will accommodate military personnel and force authorizations. It is to be ready for delivery to the field for user familiarization and training during fiscal year

(FY) 94. Block 2A software will include training, pay, supply, maintenance, and transportation data. It will be ready for operational testing in 1995. Block 2B will contain mobilization, engineering, and aviation maintenance elements. It will be ready for field testing in 1996. Fielding of the RCAS will be completed in FY 98 under the current Army funding program.

Split-Based Operations

The full integration of supply and transportation functions into a vertical distribution system is critical. Enhanced and assured communications allow selected logistics management functions to be accomplished from CONUS or from a forward-presence location. Only those functional capabilities absolutely necessary in the area of operation will be deployed. This is called "split based operations." These operations can provide materiel management support to the force wherever it is located. To do this, part of the MMC remains in CONUS or its peacetime forward-presence location while force-projection cells deploy with the supported force.

The deployed MMC cells consist of personnel and equipment in modular components. These provide a conduit for electronic transmission of logistics data, voice communications, and message traffic. The rear MMC continues to support the stay-behind force. It concurrently interfaces with the deployed cells to provide the support required forward. With assured communications and automation, the forward deployed MMC cells can interface with the supporting MMC in the rear. Split operations apply to all logistics functions. Planners must assess the capabilities and assets available in the theater to determine how to supplement them without unnecessary duplication.

Miscellaneous Systems/Technology

Technological improvements are being implemented in SAILS and SARSS. These improvements include logistics marking and reading symbols (LOGMARS), microcircuit technology in logistics applications (MITLA), and automatic identification technology (AIT). AIT is a family of data-capturing devices that combine various technologies. These include barcoding symbologies, microchips, magnetic strips, and radio frequency (RF) communications. Typical applications for AIT include--

- Streamlining of warehouse functions--receiving, storing, picking, issuing, inventorying, shipping, distributing, and quality assurance.
- Identifying and tracking of major end items; high-dollar, high-visibility items; and small arms and weapons systems.
- Tracking of serial numbers for sensitive items.
- Collecting and storing maintenance, warrarity, and calibration information.
- Identifying pallets, shipping containers, and intransit equipment.
- Providing theater and corps asset visibility and transportation intransit tracking.
- Providing for an automated system to collect and store parachute information. This includes inventory control, service life criteria, packer and inspector data, parachute identification, and date packed.

AIT will cut labor-intensive activities. It will abolish much of the paperwork and the entries required in the applications described above.

CHAPTER 4
CONTINGENCY CONTRACTING

INTRODUCTION

US forces are deployed throughout the world on a contingency basis in support of vital national interests. These contingency operations involve military and other public, joint, or allied elements. Contracting can be an essential tool in support of these missions. When properly used, contingency contracting is an effective force multiplier of CSS for deployed forces. Contracting is only one part of the system to provide supplies and services to US forces in an area of operations. All requests for items of supply or for services are processed in the same manner. The G4/S4 determines whether to fill the supply or service requirement from the military supply system, by host-nation support (HNS), through the logistical civil augmentation program (LOGCAP), or by contracting. Ordering officers can purchase specific supplies or services. Purchasing limits are specified by a warranted contracting officer or by regulatory guidance. Contracting can increase the existing logistics support capability. It can provide a new source for critically required supplies and services. For example, contracting can fill all the following supply and services requirements that US forces would otherwise fill:

- Supplies: Class I, II, III, IV, IX (limited), and water.
- Services: Labor, mortuary (within specific parameters), laundry, shower, water purification, dining facility, billeting, port operations, transportation, and copying.

RESPONSIBILITIES

The operational situation determines when contracting personnel will deploy. In most contingency scenarios, contracting personnel--along with supporting finance, resource management, and legal personnel--should precede the arrival of the main body of US forces.

Contracting support for a deployment or contingency will be done by organic contracting elements. The elements are part of the various logistical headquarters involved in the operation. Contingency contracting officers at all levels must follow the applicable publications. These include the Federal Acquisition Regulation (FAR), the Department of Defense Federal Acquisition Regulation Supplement (DFARS), and the Army Federal Acquisition Regulation Supplement (AFARS) (Manual 2). MACOM supplements also apply.

The contracting element at each command level gets its contractual authority and funding from the head of contracting activity (HCA) of the designated contracting agency. Each contracting officer has a certificate of appointment that sets the dollar limitation of his or her purchase authority.

Contracting elements will be composed of warranted contracting officers and contracting support personnel. Finance units, while working closely with the contracting element, will be independent. Legal support will be provided by the headquarters fielding the contracting element or by the next higher headquarters containing a Staff Judge Advocate (SJA) office. The SJA may want to have a contract attorney available at corps level. This attorney would fulfill AFARS requirements for legal participation in the contracting process.

CONCEPT OF OPERATIONS

Contracting can bridge gaps that may occur before LOGCAP resources can be mobilized or

when the scope or time limitations of a deployment militate against their use. It also will be valuable where no HNS agreements exist or where they do not provide for the supplies or services required. It can reduce dependence on the CONUS-based logistics system. Satisfying requirements for supplies and services by contracting can improve response time. Contracting will also free airlift and sealift resources for other priorities.

LOGCAP

LOGCAP is authorized by AR 700-137. The DA DCSLOG is the proponent, and the Army Corps of Engineers is the contracting activity. Its purpose is to use civilian contractors to perform selected services for military forces deployed to a theater of operations. The support includes transportation, food service, ice, potable water, laundry, showers, latrines, refuse removal, contingency equipment, and an unskilled labor pool, The mission statement requires the contractor, on order and within 15 days, to initiate specific logistical and engineering support for 20,000 arriving troops for up to 180 days.

Contingency Contracting Support Kit

Units with contracting elements set up and maintain contingency contracting support kits. These kits contain enough required forms, general supplies, and equipment to support a contracting office for a predetermined time at a remote deployment location. In addition, separate data bases for as many potential deployment locations as possible may be developed. Both the basic kit and the data base for the specific deployment area will be taken with the contracting team. In developing the area data bases for the kits, contracting personnel must use all available sources of local resources. This data may include area studies, locally developed logistical support data bases, and recommendations from State Department foreign service personnel. Information comes from US civilians or others familiar with the area. A thorough knowledge of existing LOGCAP and HNS agreements available in the area of operation is also necessary. Contracting element personnel must continually update this information. Help from supporting finance and civil affairs units should be obtained.

Organizations With Contracting Capability

There are several organizations with an organic contracting capability. These are discussed below.

Theater Army. The army service component commander, with the approval of the Secretary of the Army for Research, Development, and Acquisition, has the authority to setup a theater contracting agency. This agency will provide policy, procedures, and guidance for contracting officers. The agency may set up contracting offices and teams, if required.

Corps. A corps, to execute its mission, may be delegated limited contracting office authority by the HCA. At a minimum, a corps should have the authority to appoint ordering officers, ratify contracts up to a specified dollar amount, and give preaward and postaward approvals up to a specified dollar amount.

Corps Support Command (COSCOM). **The** COSCOM contracting element provides contracting support to corps nondivisional units, corps headquarters, and corps troops. It also provides oversight and backup contracting support. It aids other contracting elements in its area of operations.

Corps Support Group (CSG). The CSG includes a contracting element that reports directly to the CSG commander. When not deployed, CSG contracting personnel should work within an installation directorate of contracting. This will assist them in developing contracting skills and in maintaining proficiency in current contract laws and procedures.

DISCOM. Contractual support to the division is provided by a contracting element in the DISCOM. This element maintains contingency contracting

kits. The kits include the maintenance of data bases of potential suppliers located in possible deployment areas. The contacting element also trains ordering officers. Personnel of the contracting element will work in an installation directorate of contracting during peacetime.

Ordering Officers. Unit commanders nominate ordering officers from within their organizations. Those nominated are then appointed by persons authorized in the AFARS. They receive instructions and guidance from the contracting officer. They are not assigned or attached to the contracting element. They make purchases using imprest funds. They can make over-the-counter purchases not exceeding a predetermined amount. Assignment and location of ordering officers may vary based upon geographical, political, or military requirements. Additional ordering officers may be placed at ports of entry or special locations that will produce more than average numbers of contracts or require more than average control.

PLANNING CONSIDERATIONS

Unplanned deployments do not preclude planning for their support. Planning must be done at all levels to perfect the mechanisms and organizations required to accomplish support with a minimum of time and effort. The mechanism for planning is the contingency contracting support plan (CCSP). The CCSP is written at the MACOM level and incorporates each successive lower level of command. It assures that contingency plans and procedures are established, reviewed, and carried out. The CCSP assures full use of HNS and LOGCAP resources. It also assures that contracting solutions receive consideration in logistic planning for contingency deployments. Each MACOM and theater army will assure that senior subordinate units have a CCSP to cover probable deployments of the units supported. Units with requirements that may be met by HNS, LOGCAP, or contracting support must be made aware of the CCSP. The units must help the supporting contracting element develop procedures and plans to cover various contingencies. Copies of MACOM-approved CCSPs are given to supported activities, units, and functions.

EMERGING CONCEPTS

Most recent deployments of US forces have involved joint operations supporting contingencies in areas of the world outside developed theaters. World events suggest such operations will become more probable in the future. Such operations will require the creation of joint contracting elements. These would be staffed by personnel from all services operating in the theater. This would more effectively utilize scarce personnel resources. Additionally, a joint contracting element would preclude unnecessary competition for local supplies and services.

RELATED DOCTRINE

A number of administrative and doctrinal publications are related to the topics discussed in this chapter. Table 4-1 lists some of these publications.

Table 4-1. Publications related to the contracting function

Army Regulations	Topic
27-20	Claims
30-18	Army troop issue procedures
570-9	Host nation support
600-50	Standards of conduct
700-137	Logistics civil augmentation program (LOGCAP)
715-30	Secure contracting
AFARS	Contingency contracting (Manual 2)
Field Manuals	**Topic**
14-7	Finance
41-10	Civil affairs
54-23	Materiel management center
54-30	Corps support group
63-2	Division combat service support
63-3	Corps combat service support
63-4	TAACOM combat service support
100-5	Operations
USAF Regulations	**Topic**
70-7	Contingency contracting

CHAPTER 5

LOGISTICS PREPARATION OF THE THEATER (LPT)

INTRODUCTION

The term LPT is a relatively new term. It entered into Army doctrine in CY 93 through FM 100-5. This chapter expands on the information contained in FM 100-5. LPT can be compared to intelligence preparation of the battlefield (IPB). Some products generated under IPB should become a part of the data file of logistics essential elements of information (LOGEEI) used to develop the plan for LPT.

Logistics Intelligence Analysis

FM 7-98 defines logistics intelligence as the operational and tactical information required by the logistician. It is used to develop and execute the logistic support plan. Logistics intelligence is critical to the low-intensity planning effort. It is helped by long-range preliminary planning, in eluding area studies and target information folders. Some of the areas that should be included in any logistics intelligence analysis are listed below:

- Intent to engage in combined operations and the extent of logistics support to be provided to non-DOD agencies and allies.
- Available resources in the area of operations.
- Conditions that alter consumption factors, such as severe climate changes or a requirement to provide support to allies.
- Capabilities of local facilities to support reception and sustainment operations.
- Foreign military logistics structure, national infrastructure capabilities, and political inclination to facilitate US forces support.
- Environmental, geographical, climatological, and topographical factors that may affect logistics operations.
- Analysis of the capabilities of the host nation's and region's lines of communication and capabilities to support the operation.
- Analysis of theater requirements to support and operate enemy prisoner of war and civilian internee detention facilities.

Logistics intelligence is equally critical for war and OOTW. Logisticians must have a complete logistics data base or file to develop a solid plan for the LPT.

Definition of LPT

LPT is those actions (force structure, resources, and strategic lift) taken to reduce the cost of logistically supporting an operations plan or a contingency plan. LPT minimizes or eliminates potential problems during deployment, at the outbreak of hostilities, and throughout the campaign. It is a systematic tool used by logisticians and commanders to complete their mission. It becomes the basis for deciding where, when, and how to deploy limited resources--supplies, equipment, and people.

RESPONSIBILITIES

Planning for operations requiring Army forces is the responsibility of the unified commands, such as USPACOM, USEUCOM, or USSOUTHCOM. See Figure 5-1 (page 5-2).

THE LPT CONCEPT

The Army component commander of a unified command will prepare supporting Army plans with logistics planners concentrating on the logistics plans. Once logistics planners know the contingency country or geographic region,

they can begin to build a LOGEEI data base. This applies even if the command has a small chance of being deployed to a particular area. Once completed, the information in the database file can be used to develop a comprehensive plan for LPT. The relative priority given to this effort will depend on the concept of operations and other command priorities. The key point is that the logisticians cannot afford to wait until maneuver units deploy to begin the LPT. It is a complex and time-consuming function. If planners anticipate correctly at the national and unified command levels, we should never have to insert troops into a completely "cold" base.

Any actions that can reduce the cost of moving supplies, equipment, and people into an objective or contingency area are candidates for inclusion in the LPT plan. Planning must provide for the timely arrival of CSS assets that are balanced according to the mission. Strategic lift assets are extremely limited. Commanders cannot afford to squander even one sortie on movement of unnecessary supplies, equipment, or personnel. A well-thought-out LPT plan, and the time required for proper execution, will allow better use of our scarce strategic lift capability.

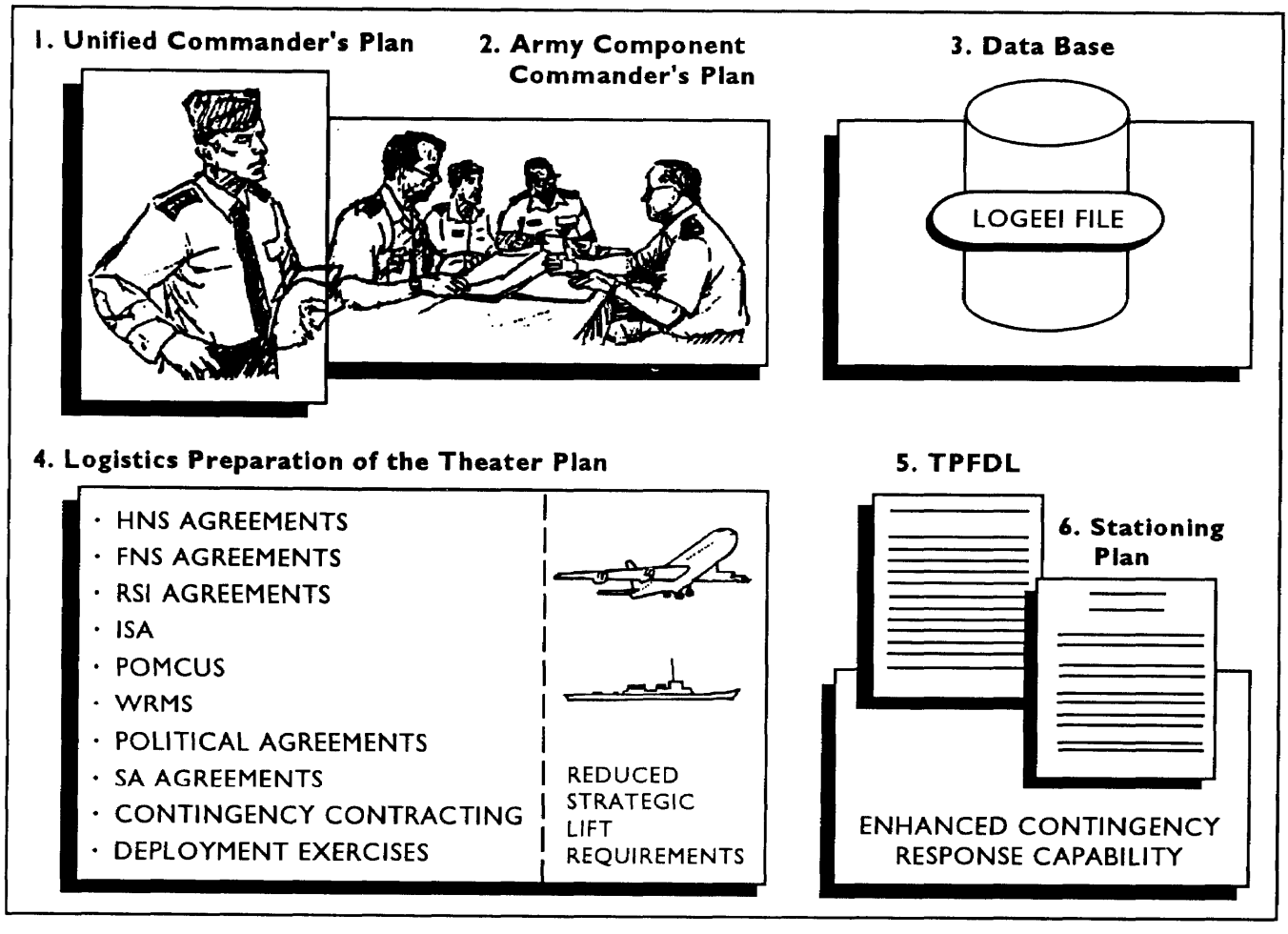


Figure 5-1. Logistics preparation of the theater planning cycle

Logistics Essential Elements of Information

Since LPT is an evolving concept, an explanation of the LOGEEI development process is provided. Figure 5-2 shows a type of LOGEEI file with some suggested major categories of information. These categories will be discussed briefly. Focus will be on supply and field services aspects and applications. Keep in mind, however, that a detailed LPT plan will cover all logistical areas.

Geography. Collect information on climate and terrain in the area of operation. Determine if current maps are available. Use this information to determine when various types of supplies, equipment, and field services will be needed. For example, use water information to determine the need for early deployment of well-digging assets and water production and distribution units.

Supply. Collect information on supply items that are readily available in the area of operation. Determine which of these can be used in support of US forces. Subsistence items, bulk petroleum, and barrier materials are the most common. Collect information on the supply system of the armed forces of the supported country. Is it compatible with ours? Are major equipment items compatible? Has the host nation bought, through foreign military sales, repair parts supporting current US systems? Answers to these types of questions will help you decide if host-nation support negotiations are possible?

Facilities. Collect information on warehousing and cold storage facilities, production and manufacturing plants, reservoirs, administrative facilities, sanitation capabilities, and hotels. Their availability could reduce the requirement for deployment of similar capacity. For instance, the Force Provider will house about 3,300 personnel. If space is available in a complex of hotels in the required location with the requisite support available, deployment of the Force Provider with its significant strategic lift requirements could be deferred. Chapter 6 contains additional information on the Force Provider.

Transportation. Collect information on road nets, truck availability, rail nets, bridges, ports, cargo handlers (longshoremen), petroleum pipelines, and materials handling equipment. Also collect information on traffic flow, choke points, and control problems.

Maintenance. Collect information on maintenance facilities that could support US or coalition equipment. Examine the supported country's armed forces. Could they supplement our capability? Is there a commonality in equipment and repair parts? Does the country have adequate machine works for possible use in the fabrication of repair parts?

General Skills. Collect information on the general population of the supported country. Is English commonly spoken? Are personnel available for interpreter/translator duties? Will a general labor pool be available? What skills are available that can be translated to our use? For instance, will drivers, clerks, MHE operators, food service personnel, guards, mechanics, and longshoremen be available?

Miscellaneous. Include any other information that could prove useful. Set up other categories as needed.

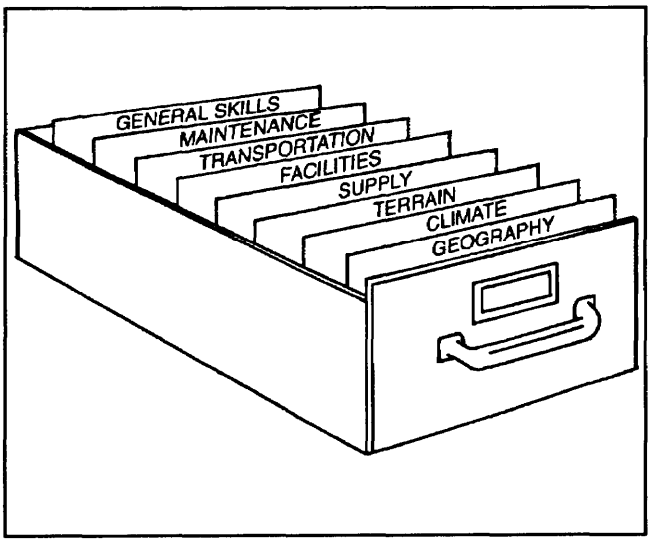


Figure 5-2. LOGEEI file

Sources of Logistics Intelligence

Collecting logistics intelligence is not as difficult as it first may appear. A lot of information is routinely collected. There are several sources that can aid the logistician in building the LOGEEI file.

Embassy staffs. The State Department has a worldwide network of embassies. These embassies are excellent sources of detailed information on a particular country. Embassy staffs routinely do country studies that, when current, can provide the bulk of the information you may need. A good library is another excellent source of information.

IPB-related data. The weather and terrain data bases in the IPB, with its overlays, can provide excellent current information. This can be used in preselecting lines of communication and sites for logistics facilities. The event analysis matrix and template in the IPB (see FM 34-130) can also be used to assess the need for road improvements and bridge reinforcements.

Civil affairs data. If US Army civil affairs or civil-military operations units are either in-country or targeted on a specific country, a wealth of logistics intelligence information will be available. These units have functional specialists who focus on particular areas. These include civilian supply, public health, public safety, and transportation. These functional specialists can conduct specific country studies. They can also provide outstanding support when the logistician begins to develop the plan for LPT.

Uses of Logistics Intelligence

As the logistician focuses on a specific country, a comprehensive LOGEEI data file should be developed. Logisticians can use it as the primary source for development of the LPT. The following examples show the usefulness of this file in three quartermaster areas.

Petroleum support. Logisticians concerned with petroleum support can review the supply portion of the LOGEEI data file to assess what is available in the objective area. If large quantities of petroleum, oils, and lubricants (POL) are readily available, there will be no need to use scarce airlift resources to transport them. In Operation Urgent Fury, some early air frames were used to move bulk POL. Logistics planners later found that a US firm owned a large tank farm on Grenada which could have been exploited.

Water support. A review of the climate and terrain portions of the LOGEEI data file may show that potable water in the objective area is a problem. This type of information could show a need for early deployment of engineer well-drilling teams, water purification equipment, or water trucks. Or, conversely, the logistics planners may choose to negotiate host-nation support to provide supply and distribution of water (as in ODS/S). This would allow the early air frames to be used for other urgent requirements. HNS is an extremely important part of LPT. However, it takes time to develop good HNS agreements; and there is a strict regimen to follow to reach such agreements. Most unified commands have special offices dedicated to HNS--a sign of its value.

LOC support. Assume that the command targets an undeveloped country with an extremely poor road network. A review of the proposed concept of operation reveals the need for a lengthy north-south main supply route (MSR). Neither a road nor rail network is available. A dirt road, frequently impassable even to carts pulled by animals, is the only route available. This dirt road is crossed frequently by streams that are breached by primitive bridging. Using logistics team training, logistics planners may want to develop, using the LPT plan, a humanitarian or civic assistance program. This program would help the host nation in building a road with bridges that will handle heavy host-nation traffic. Operation Blazing Trails provides an excellent example of how this concept was used in South and Central America. US Army engineers, including several units from the RC, worked with host-nation engineers during

a training exercise. They were successful in constructing a road network that expanded the local economy, yet could be used as lines of communication (LOC) if military action developed. There are legal limitations and restrictions on these types of projects. The logistics planner must ensure such efforts are coordinated and approved in advance. ***(NOTE:*** *Use of US forces to support other country projects is a sensitive issue. Such projects must directly support a US forces train - ing need that cannot be achieved elsewhere at* less *cost.)*

Considerations in LPT

A number of other assets or tools are available to logistics planners developing the LPT. These include--

- the use of pre-positioned materiel configured to unit sets (POMCUS).
- war reserve materiel stocks (WRMS).
- use of containerization to limit handling.
- HNS agreements. ***(NOTE:*** *If a command plans to use HNS or foreign nation support (FNS), a primary objective must be to ensure that it does not disrupt the internal support of the nation providing the support.)*
- interservice support agreements.

Support to Major Planning Functions

The LPT plan is a living document that will be in a continual state of review, refinement, and use. It will be routinely used in two major planning functions carried out by the ASCC--the time phased force deployment list (TPFDL) and total Army analysis (TAA) process. It is synchronized on a regular basis with the TPFDL to ensure that only the logistics capabilities that cannot be met, with assurance, from another source are phased into the operational area. This synchronization should take place each time the LPT plan is updated. This will assure that only the minimum amount of strategic lift is committed to support of logistics.

The ASCC under each CINC participates in the TAA process which identifies the number of combat support and combat service support organizations required to support the national strategy. This becomes the basis for decisions concerning resourcing of the various force compositions (for example, active Army, US Army Reserve, and Army National Guard) as well as stationing plans. The TAA process is run on a two-year cycle with decisions being announced for implementation within six years. A current, well-developed LPT plan will enable the ASCC to make sound resourcing decisions for his area of responsibility as well as for the total Army.

In addition to the above, the LPT plan should be the basis for negotiating host-nation support agreements; pre-positioning of supplies and equipment; civilian support contracts, both US and other country; OCONUS training programs; and humanitarian and civil assistance programs designed to enhance both the development/cooperative solidarity of the host country and to provide infrastructure compensation should deployment of forces to the target country be required. The logistics planner must ensure such efforts are appropriately coordinated and approved in advance. Senior Army commanders must be careful not to commit the US government to providing any assistance that could be construed as security assistance without following the statutory requirements.

LPT is a tool that will prove useful in logistics planning. However, the logistics planner must not underestimate the time and resources required to accomplish many of these actions.

CHAPTER 6
OPERATIONS OTHER THAN WAR (OOTW)

INTRODUCTION

The world today is less volatile than at anytime in the recent past. Then tensions were high and the chance of armed conflict between allied and communist superpowers was a real threat. The dramatic end of the cold war has caused significant changes in the nation's domestic and foreign policies and priorities. During the cold war era, our national attention and military might were focused on the external threat and related issues. The Army is moving from a forward deployed to a force projection strategy. Additionally, there is an acute awareness of the need for increased military involvement in OOTW. FMs 100-19 and 100-23 emphasize the priority being placed on military involvement in noncombat operations. Additional umbrella doctrinal publications are on the horizon. These will embrace nontraditional roles of peacetime operations for the Army.

Over the years, QM units have provided literally mountains of supplies and vital services worldwide to victims of disasters. These disasters have included floods, fires, earthquakes, tornadoes, cyclones, hurricanes, famines, and epidemics both at home and abroad. Supply support provided included food, clothing, tents, blankets, cots, water, and petroleum. Service support provided included cooking, laundry, and showers. History is replete with instances in which QM units responded to humanitarian relief efforts during our nation's greatest disasters. These included the Chicago fire and Johnstown flood of the 1880s; the 1906 San Francisco earthquake; the many floods in the Mississippi Valley in the 1910s, 20s, and 30s; hurricanes Betsy, Beulah, and Camille in the 1960s; and most recently the devastating hurricane Andrew in Miami in 1992. In each case, QM units and soldiers used their resources and skills to ease widespread suffering and to help people in need.

QM units and personnel may be assigned a range of missions related to OOTW. These missions will include both combat and noncombat operations. Examples are depicted by the matrix shown in Figure 6-1 (page 6-2). As QM support is crucial to military operations involving war, so it is with military OOTW.

RESPONSIBILITIES

QMC responsibilities in support of OOTW may differ from support of combat operations. This is based on the diversity of missions and the environment under which support would be provided. Some logistics support missions may be performed under rigid tactical conditions. Others may be accomplished under purely nontactical administrative conditions. For example, QM support in peacetime operations may be less constrained by enemy threat actions than support to military conflicts. The type support required for peacetime operations may primarily involve field services. Support for military conflicts may focus on supply support. There also may be legal considerations involved in support to OOTW that are not applicable to support of combat operations. At times, US Army elements may participate as a part of a United Nations (UN) force. This could mean that US elements will receive supply support from a non-US SSA using UN supply procedures--markedly different from US Army supply procedures. This type of situation will pose a particular training challenge that must be quickly addressed. QM personnel tasked to provide support to OOTW should consult Army

legal authorities to ensure legality of support operations. Chapter l outlines the specific supply and field services missions for which the QMC is responsible.

CONCEPT OF OPERATIONS

QM units may be called upon to perform supply and field service missions involving the conditions shown in Figure 6-1. In a military conflict, support may be limited to that required for the supporting Army units. In peacetime, support will most likely extend to the civil populace. When this occurs, QM support supplements civil agency responsibilities. Army policy guides the degree to which supply support may be provided to civilians under certain conditions and circumstances. The policies are restrictive in nature. They stipulate that supply support to civil authorities will be provided on a minimum essential basis and will end at the earliest practical time. Likewise, military supplies and equipment will not be set aside, earmarked, or stockpiled for use in certain peacetime operations (for example, disaster relief operations). When practical and required, QM supply and field service support will be provided based on established Army standards. Adherence to hygiene and feeding standards are priority goals that should be achieved at the earliest practical time.

STATES OF THE ENVIRONMENT	GOAL	MILITARY OPERATIONS		EXAMPLES
WAR	FIGHT AND WIN	WAR	COMBAT	LARGE-SCALE COMBAT OPNS ATTACK DEFEND
MILITARY CONFLICT	DETER WAR AND RESOLVE CONFLICT	OPERATIONS OTHER THAN WAR		STRIKES AND RAIDS PEACE ENFORCEMENT SUPPORT TO INSURGENCY ANTITERRORISM PEACEKEEPING NEO
PEACETIME	PROMOTE PEACE	OPERATIONS OTHER THAN WAR	NONCOMBAT	DISASTER RELIEF · *HURRICANE* · *EARTHQUAKE* · *TYPHOON* · *FLOOD* COUNTERDRUG CIVIL SUPPORT PEACE BUILDING NATION ASSISTANCE

Figure 6-1. Range of military operations

OOTW are conducted as domestic operations within CONUS. Outside CONUS, OOTW are conducted as peace operations. During domestic operations, QM units involved in OOTW may be required to work and coordinate with various agencies. These include the Federal Emergency Management Agency (FEMA) and other federal, state, and municipal elected and appointed officials, such as state governors, state adjutants general, city managers, American Red Cross officials, and state and local police. During peace operations, QM units may be required to work with UN agencies, multinational units, nongovernment organizations, or private volunteer organizations who provide international humanitarian assistance. It is crucial that everyone understands and adheres to the chain of command and that legal authorities resolve any legal questions involving support.

PLANNING CONSIDERATIONS

Early coordination with local authorities will more clearly determine the support required. Military planners should consider early deployment of QM supply and field services units to satisfy immediate needs of the civil populace. These units can receive, store, and distribute supplies coming from a variety of agencies.

In planning for support, commanders and staffs of QM units must consider the total spectrum of QM logistics. This includes support to both supported and supporting personnel. This is particularly applicable when supporting disaster relief operations involving the civilian populace. Planning must include assessing the availability and compatibility of communications equipment required for command and control and coordinating with other services and other federal and civil agencies. Assured communications is critical to the support of OOTW. Before deployment, commanders of QM units may form emergency response teams to react immediately to emergency situations. These teams should arrive on the scene early to assess the impact and severity of a crisis before commitment of operational forces.

Unlike a wartime combat operation where mission completion is clearly defined and recognized, the end state or mission termination of OOTW actions must be established early. Refer to FM 100-19 for more information on the termination of support. Commanders must know when and how to end the mission. Redeployment or dislodgement must be phased to allow for continued and uninterrupted support to the receiving forces or civilian population. Military support must not be curtailed before other appropriate authorities assume the support mission.

EMERGING CONCEPTS, SYSTEMS, AND MATERIEL

The Army's Force Provider is an emerging action encompassing concept, systems, and materiel. It will provide the frontline soldier with a brief respite from the rigors of a combat theater. It is also ideally suited for supporting OOTW, particularly disaster assistance and humanitarian aid operations. This system, which can provide support for 3,300 persons, is designed in modules. Each module can be operated independently. The unit includes billeting facilities with heating and cooling, kitchens, latrines, showers, laundries, power generation, and water storage and distribution. Figure 6-2 (page 6-4) shows a 550-person module of the Force Provider.

SAFETY

QM units may need to provide supply and field service support to a community in support of domestic assistance operations. The potential for a serious accident increases if equipment designed for combat is used for disaster assistance. If, out of expediency, soldiers perform services for which they have little or no formal training (for example, civil disturbance control, flood control, and firefighting), the result could be the loss of soldiers or military equipment and additional damage to the community the soldiers are trying to support. Army safety services must focus on both the Army unit providing the support and the civilian community receiving it.

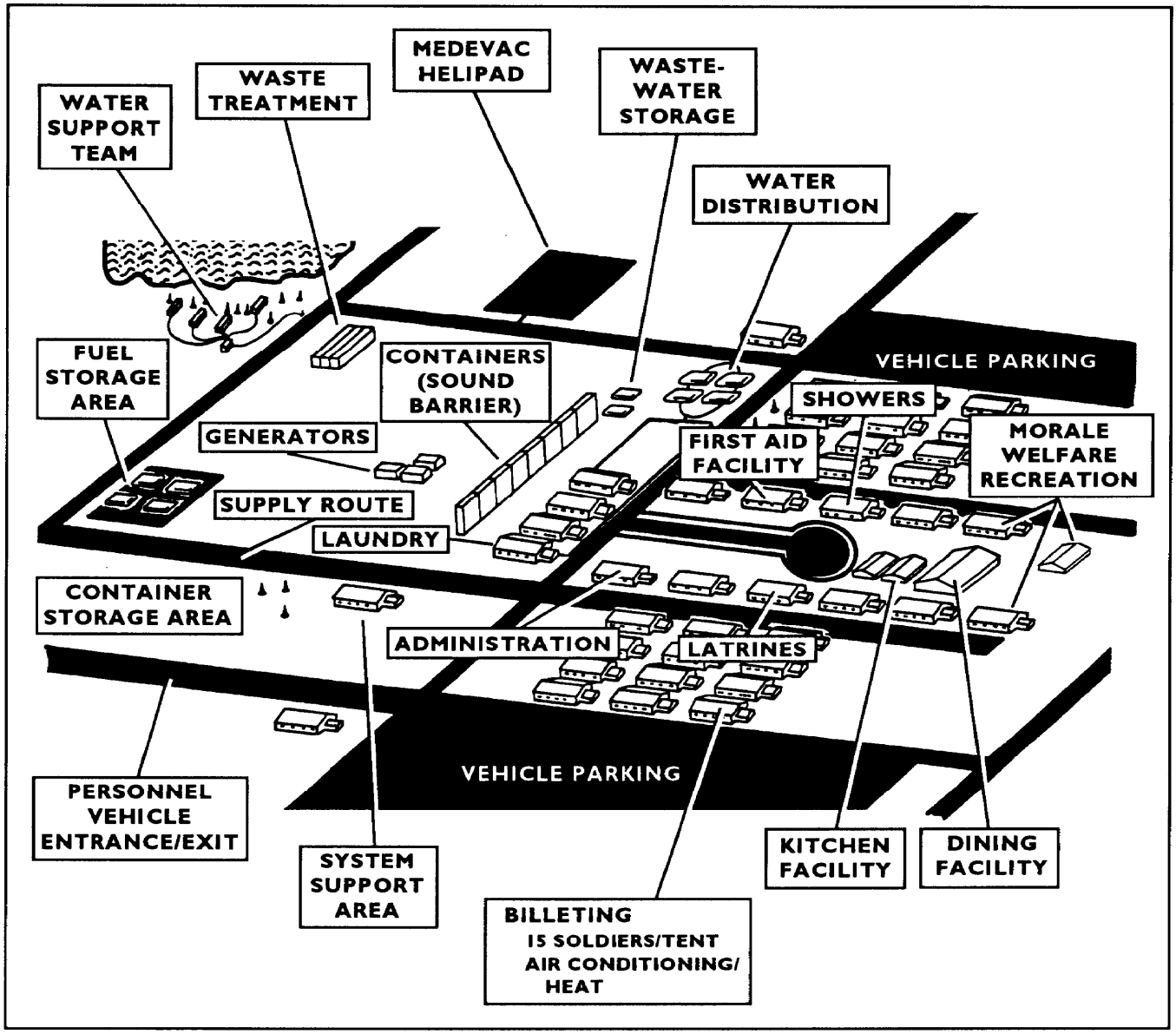


Figure 6-2. Force Provider

RELATED DOCTRINE

FM 100-19 is the Army's overarching doctrinal manual on domestic support operations. Table 6-1 lists other publications related to chapter contents.

Table 6-1. Publications related to OOTW

Field Manuals	Topic
FM 10-23	Army field feeding
FM 10-52	Water supply
FM 10-280	Laundry and shower
FM 21-10	Field hygiene
FM 63-3	Corps combat service support
FM 100-5	Operations
FM 100-23	Peace operations

CHAPTER 7

FUTURE OPERATIONS OF THE QUARTERMASTER CORPS

INTRODUCTION

The QMC sustains soldiers. This has been proven during fairly recent operations, such as Urgent Fury, Just Cause, and Desert Storm, and throughout the winning of the cold war. The Army is being reshaped and downsized to adjust to changes in our national strategy. The QMC of the future will continue to provide the total spectrum of support to sustain soldiers and their systems.

QMC FOCUS

The QMC has supply and field services responsibilities at the strategic, operational, and tactical levels of logistics. See Figure 7-1.

Strategic Level

At the strategic level, the QMC acquires supplies from the source (Defense Logistics Agency (DLA), manufacturers, suppliers, other nations) and coordinates their displacement to the theater of operations. Positioning of field service support is also important at this level.

Operational Level

At the operational level, the QMC allocates and distributes resources to support the tactical logistics functions. These are manning, arming, fueling, fixing, moving, and sustaining soldiers and their systems. Contingency operations by their very nature will be joint and, very likely, combined or interagency operations. QMC doctrine will encompass all these probabilities. Emphasis must first be on effective (successful) logistics operations. Emphasis is then placed on further refinement to identify the most efficient means to mission accomplishment.

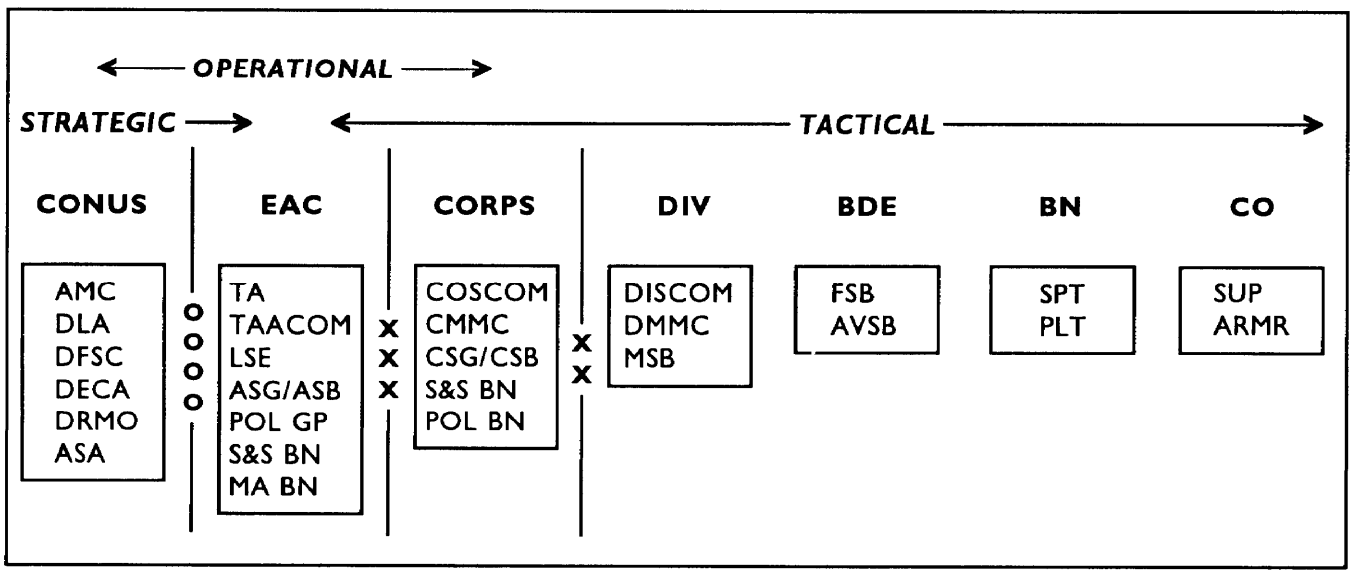


Figure 7-1. Supply and field services continuum

RESPONSIBILITIES

In most scenarios the QMC will have theater-level (to include joint) responsibility for various distribution and field service functions. There are implied responsibilities as well.

Improved standardization between the services for those functions for which the QMC has total force support responsibility is required. The QMC will actively participate in the creation of joint doctrine (to include interagency). RSI with allied forces will continue to be promoted.

There is a virtual explosion of emerging technology in QM areas of interest. This must be fully exploited. Automation, satellite communications, distribution techniques and equipment, and significant improvements in the quality of life for our most-forward-positioned soldiers are near-term capabilities that are being pursued. Also, development of food items using thermostabilization, freeze-drying, dehydration, and irradiation technology will yield a longer shelf life. Many field service functions will take advantage of advancements being made in containerization. This will enhance deployment and forward support to the soldier. Shrink- and vacuum-pack technology can reduce the bulk of a wide range of items. This will reduce storage space and shipping and handling costs. This technology will also provide an enhanced level of protection to the material. Implementation of a "single fuel on the battlefield" policy will be pursued. Use of emerging technology to improve fuel testing, oil and lubricants, refuel-on-the-move operations, and hot refueling operations will continue. In repair parts resupply, use of automation and artificial intelligence advancements will be pursued. This will allow for the provision of the needed part at the right place, in the right quantity, at the right time. Costly, ineffective layering will end.

Changes that the Army undergoes will demand more effective and efficient training programs for soldiers, leaders, and units. Downsizing of the Army, the growing use of new technology, development of new combat service support strategies, and reductions in training support resources will cause changes in the current training system. The proposed training strategy will combine MOSs and provide generic advanced individual training. It will also refine noncommissioned officer (NCO) and officer training and provide reduced course lengths supported by distributive training. Doctrinal and training literature requirements will be reduced.

STRATEGIC-LEVEL SUPPLY AND FIELD SERVICES

Strategic supply and field service operations focus on support to the theater of operations from our economic and industrial base. See Figure 7-2 (page 7-3)

Strategic Vision

The QMC is focused on the determination of realistic, supportable resource requirements; the acquisition, management, and positioning of nationally-owned supplies and equipment; and the coordinated displacement of that materiel into the theater of operations. Supplies must be packaged for tactical transportability. They must also be configured in such a way that they can be throughput to the user with minimal additional handling in the theater of operations.

At the strategic level, required improvements in the areas of doctrine, training, leader development, organization, materiel, and soldiers (DTLOMS) are examined by the US Army Training and Doctrine Command. In addition, efficiencies or support that can be garnered from the various QM-related defense agencies must be considered. These include the Defense Fuel Supply Center (DFSC), the Defense Personnel Support Center (DPSC), and the Defense Reutilization and Management Office (DRMO).

The design of materiel to be used by supply and field services units in mission support is important. Consideration must be given to the

development of lightweight systems with enhanced capabilities and transportability characteristics. A smaller, more capable force must be developed. It must capitalize on the strengths of the Army, Air Force, Marine Corps, Navy, non-DOD agencies, and potential allies. The goal must be to provide centralized management of particular functions (reducing redundant effort).

Strategic Challenges

Detailed analysis and prioritization of potential threats are critical to decisions on where limited war reserve materiel, supplies, and equipment are positioned. Wartime sustainment will determine what should be stockpiled. Nontraditional alternatives available to compensate for the lack of a "warm" production base will also be examined.

Supply sustainment can be viewed as a four-tier system that encompasses the military and civilian economic base. Tier one will be supplies pre-positioned in selected overseas regions (primarily with forward presence forces) for initial support. At tier two selected supplies and unit equipment will be located afloat to provide flexible sustainment support to forward presence, reinforcing, or contingency forces. The optimal composition of QM functions and capabilities to be stored afloat is a key ingredient in the force projection equation. Tier three consists of CONUS military stockpiles of supplies and equipment. Tier four is material routinely available directly from the economic base. This includes food, petroleum products, and construction supplies. When required, tier three and four stocks will be unitized or packaged in CONUS to reduce handling requirements in the theater. For example, rations should be packaged so that each pallet contains a combination of breakfast and dinner meals with adequate variety for a specified period and number of soldiers.

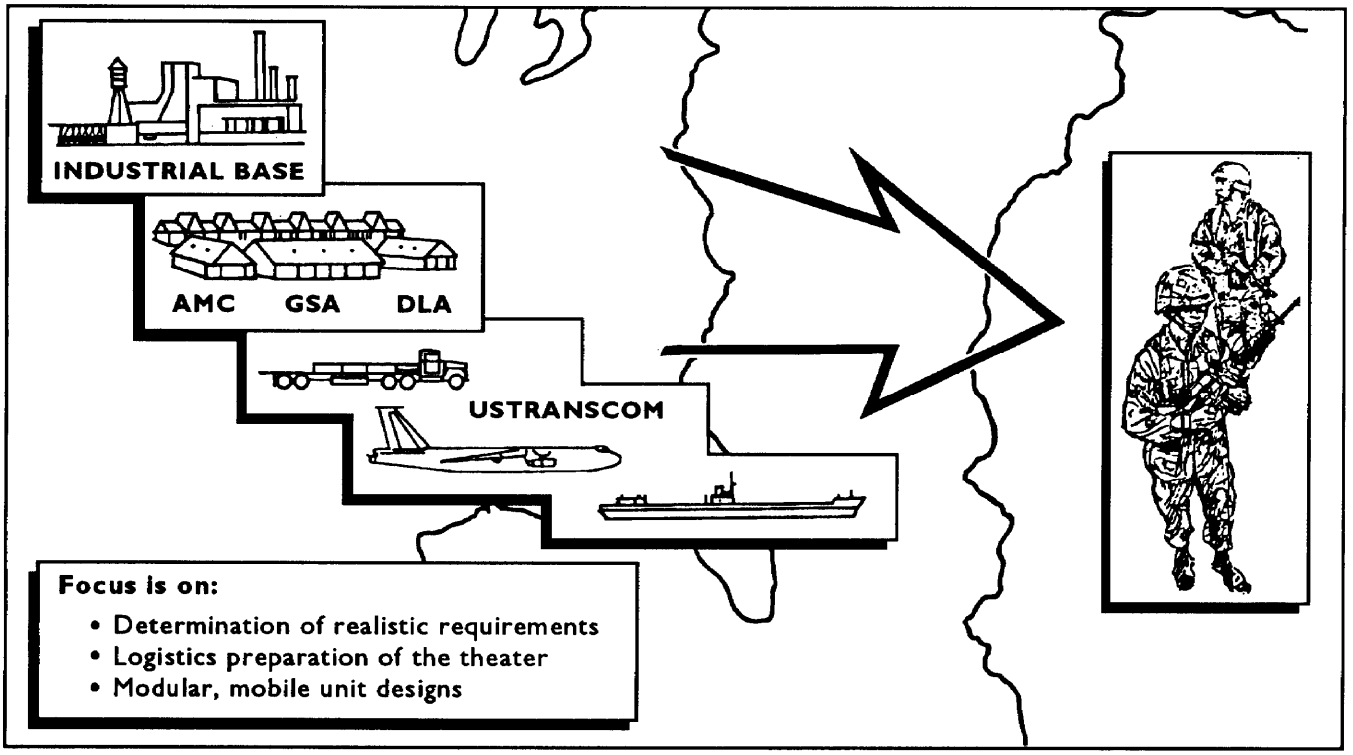


Figure 7-2. Strategic supply and field services

Responsive supply sustainment, especially when resources are constrained, relies heavily on worldwide, real-time automation and communications capabilities. These capabilities must be seamless and integrate the fill spectrum of logistics functions into a single system. They must also be tailored so that unnecessary accounting, bookkeeping, and status or advice information can be suppressed during operations. This will reduce the burden on the communications systems. It will also prevent units from being burdened with large quantities of unneeded data.

Bold steps must be taken to integrate fully the supply and transportation functions into a vertically integrated distribution system. With use of enhanced communications capabilities, much of the distribution management function can be accomplished from CONUS locations. Only those management functions absolutely necessary will be deployed in the theater of operations. The initiatives in the total distribution action plan (TDAP), when carried out, will guide the development of doctrine in making the transition from peace to war. They will also provide total asset visibility and control from the origin of supplies in the economic base to their delivery to the consuming unit. This will be done by the packaging of supplies in CONUS for throughput to the supported unit. This will eliminate the need for break-bulk operations and in-theater repackaging.

A challenge facing the logistician is the proper deployment of supply and field service support. Logisticians must be able to address deployment capabilities with the operational commander to ensure that supply and field service support is provided when and where it is needed and in the proper amount. Responsive, tailorable, and multifunctional support to a force projection Army must be provided. Restructuring of supply and field services organizations will enhance this capability.

Development and training to standards which relate to overall readiness of supported units and systems is an imperative, along with the design of systems to attain these standards. This will be important in the area of repair parts resupply.

Units and equipment must be designed to provide responsive support on an extended battlefield. They should be modular (building block principle), containerized, small, and lightweight and have an improved support capability. Increased intra-theater mobility requirements are expected on the extended battlefield. Therefore, designs will, where practical, permit both internal movement on C-130 type aircraft and external air transport (sling load) using UH-60A type aircraft.

OPERATIONAL-LEVEL SUPPLY AND FIELD SERVICES

Operational logistics is the combination of activities needed to sustain the major operations that will mean success at the tactical level. See Figure 7-3 (page 7-5)

Operational Vision

Operational logistics overlaps the remainder of the logistics continuum during the initial buildup in a theater of operations. The operational commander may, depending on the scope of the operation, assume some strategic-level logistics responsibilities. The tactical commander may, initially, have to assume some operational logistics responsibilities. The focus of operational logistics is on sustainment--reception, facilities, and distribution management and processes. Of these, the QMC is primarily involved in reception and the distribution management processes. These include acquisition, receipt, storage, control, and issue of supplies and equipment.

Operational logistics can be viewed as the bridge between strategic and tactical operations. This bridge will accommodate both of the primary QM functions--field services support to soldiers and supply support to the force. Quality of life for the soldier during transition operations will be improved. A transition complex will be established for use by arriving soldiers as they undergo

the acclimatization process. Supply support to the force will be enhanced through a variety of DTLOMS actions.

Operational-level units must be modularly designed. They must be tailorable to support deployments from brigade to corps-plus size. As force structure is developed, consideration must be given to all operational logistics alternatives. These include the extension of strategic capabilities into operational roles and expanded in-theater operations by civilian contractors and activities, normally CONUS-based. The distinction between general supply support and direct supply support will become less clear. Some of these types of units may be required to perform both functions.

Operational Challenges

Under the developing force deployment strategy, the QMC must be prepared to provide operational-level support to battalion- or brigade-sized or larger units deploying to multiple locations. See Figure 7-4 (page 7-6).

The greatest challenge at this level will be the anticipation of tactical-level requirements and the tailoring of the right organization for a given scenario or environment. The capability must exist to execute operational-level functions on a modular basis while providing sustainment support from multiple, independent locations. This approach will conserve strategic lift by deploying only that capability required to support a given operational and tactical level of activity. And, it will allow the introduction of operational-level sustainment functions concurrently with tactical-level units.

The entire contingency force will not necessarily be deployed. As a result, QM units at all levels, theater through division, must be modular and agile. A proper mix of capabilities in the active and reserve components in support of deployments is required.

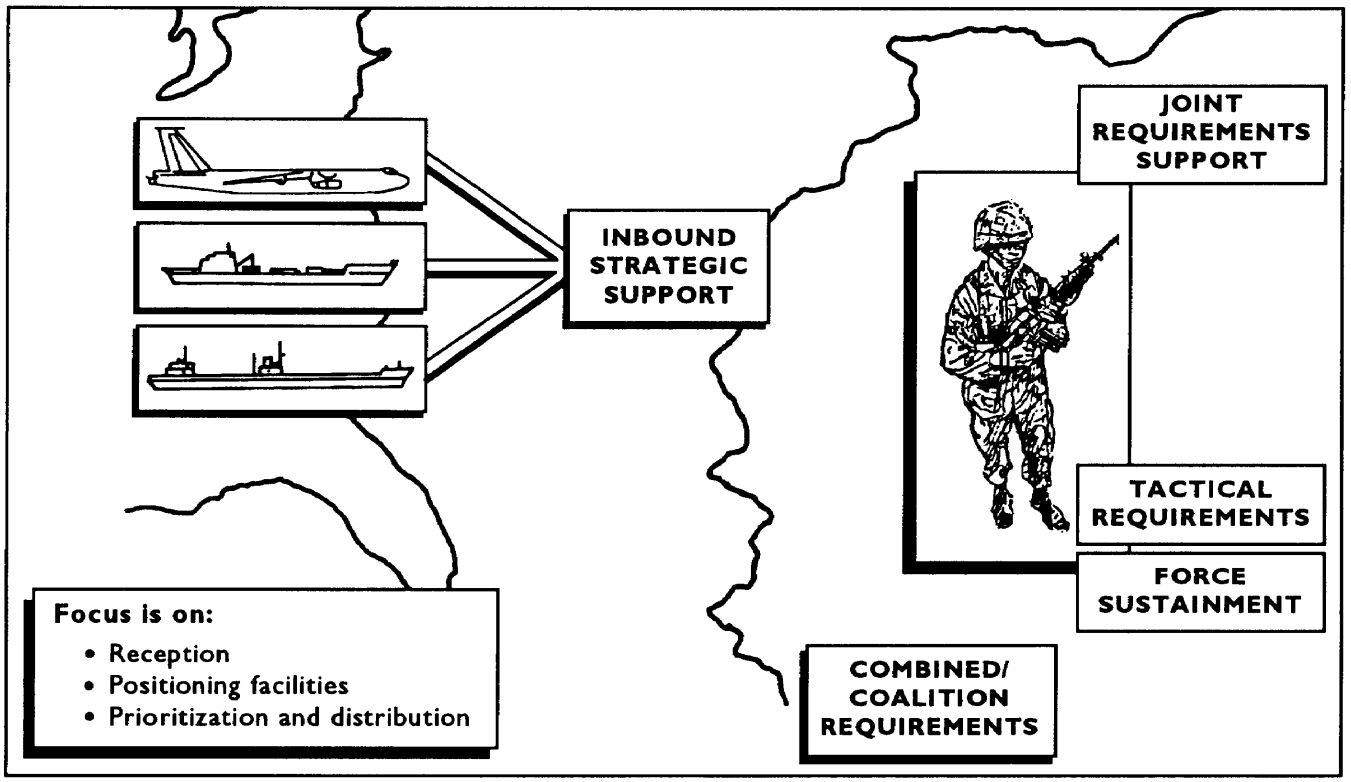


Figure 7-3. Operational supply and field services

Logistics requirements determination is another critical function. Requirements must be accurately determined not only for the Army, but also for other joint and allied forces. Good consumption estimates and current, accurate planning factors coupled with a knowledge of how the commander plans to employ his forces are essential. This allows for the anticipation of requirements.

Knowledge of distribution system capacity and capability is the other key to solid logistical estimates. In addition to knowing the requirements, the effective logistician must also know where supplies are, how rapidly they can be moved, how they are packaged, and when supported units need them. A knowledge of reception and clearance capabilities, transportation availability, and commodity criticality is also essential. Total asset visibility will allow the operational commander to provide responsive sustainment support on a vertical and lateral basis. This will reduce in-theater storage requirements.

QMC responsibilities at the operational level are diverse and complex. These responsibilities are discussed here.

Class I. It is important to ensure early and continued availability of subsistence. The active component force must be capable of quickly deploying an operational capability to receive and further distribute perishable and shelf-stable subsistence items and health and comfort packs. Throughput of health and comfort packs to supported battalions will be effected. Standardized containers will allow unitization to battalion-size elements. The use of commercially available food products will increase. A dependence on industry to offset requirements for CONUS-based war reserves will become more predominant.

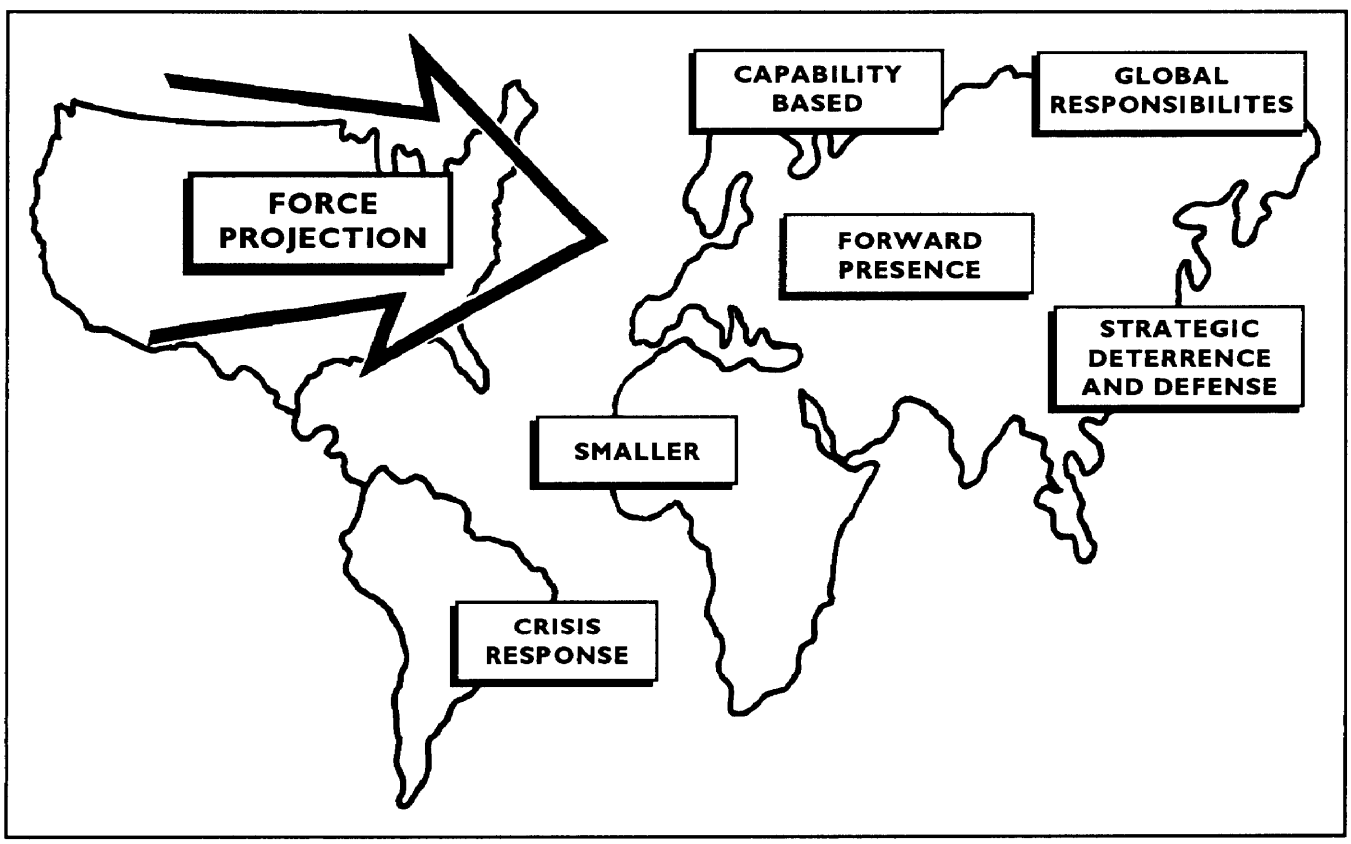


Figure 7-4. Force deployment strategy

General supplies. Handling of these supplies at the operational level will be enhanced by selective unitization and packaging of supplies in unit loads in the industrial base. Along with improved packaging, more versatile MHE will be developed. This MHE will increase capabilities (particularly in unstuffing containers with extended boom design). It will also reduce transport requirements as it will be intra-theater airlift compatible. New containers, in varying sizes, will be provided. They will increase the capability for packaging supplies by unit load as well as provide protection during storage and movement.

Class III. At the operational level, QM units will provide fuel support for all US (and, potentially, coalition) land-based forces. Petroleum handling, storage, and pipeline equipment will be maintained afloat on pre-positioned ships or located in CONUS near ports of debarkation. This will allow the introduction of this function into the theater of operations quickly. Establishing a single battlefield fuel will simplify petroleum management and enhance force structure capabilities. The entire fleet of trailer tankers used in the operational area will, when determined appropriate, be capable of performing direct support operations. The tractors that pull them will be more mobile because of their central tire inflation features. Additionally, unmanned caches, pod-mounted on flat racks and positioned at critical locations around the battlefield, will provide emergency fuel. This will allow maneuver units to refuel and maintain their momentum.

Class VI. Soldiers usually deploy with a 60-day supply of health and comfort items. Health and comfort packs (Class I) can be supplied through supply channels. Tactical field exchanges (TFEs) provide Class VI supply support beyond the health and comfort packs. Class VI support can be limited to basic health and hygiene needs or expanded to include food, beverages, and other items based upon the requirements outlined by the theater commander. The availability of health and comfort packs and Class VI items can greatly enhance morale.

Class IX. Significantly reducing the density and redundant layering of repair parts, particularly at the DS level, is an imperative. This will be accomplished through two steps. First, asset visibility of critical repair parts on the battlefield must be maintained. And, the transportation to distribute them quickly to requesting units must be effectively coordinated. Automation will allow tactical and logistics commanders to direct critical repair parts to any location on the battlefield.

Water. There is a need to move from supply point distribution to unit distribution of water at the divisional level. This will precipitate new and better packaging concepts. Some packaged water requirements will be handled as dry cargo. This may require change of some supply unit personnel and equipment requirements at the tactical level to handle the increased tonnages involved. Hard wall tankers and water hose line systems will also be used in moving and distributing bulk water through the operational level to the tactical level.

Airdrop. In-theater airdrop support will be provided primarily from the tactical (corps) level. However, quantities of all classes of supply prerigged for airdrop are maintained in CONUS. This means that airdrop doctrine must be extended to include procedures for requesting and providing strategic airdrop resupply support. Developmental airdrop systems need to provide the capability of airdropping from low altitudes and at fast speeds.

Mortuary affairs. A remains tracking system will be developed. It will provide real-time information on the location of remains from the collection point to the CONUS port of entry mortuary. It will also be linked to the casualty affairs system to ensure timely, official notification. Mortuary affairs units will be able to decontaminate human remains. Decomposition of remains will be slowed through increased use of refrigeration. Mortuary

affairs doctrine will be jointly developed and published. A concept and force structure for mortuary affairs will be developed as the basis for personnel and equipment to support requirements from disasters and regional conflicts to mobilization.

Laundry and shower. This function will be provided by corps units. Support will be projected as far forward as the brigade area. In the rear areas, this function will be provided primarily through HNS or contractor support. The goal is to provide soldiers with two showers per week. In addition, soldiers will be provided up to 15 pounds of laundered clothing per week. Laundry and shower capability will be enhanced through the development of containerized units. These will improve deployment, mobility, and productivity.

Clothing and light textile repair. Technological advances in self-application repair are being examined. If adopted, these will provide opportunities for further in-theater force structure off-sets.

Fieldfeeding. The Army requires that soldiers be provided with three quality meals a day. One of these must be an A/B-Ration meal served hot (METT-T allowing).

Water purification. Water purification, storage, and distribution equipment will be maintained on pre-positioned ships. This will permit the timely establishment of water support operations in the operational base.

TACTICAL-LEVEL SUPPLY AND FIELD SERVICES

QM tactical logistics includes all the supply and field service activities needed to support military operations. These include activities in preparation for operations, such as unit training, exercises, and rehearsals. Also included are follow-up military operations, such as post conflict humanitarian assistance, reconstitution, and redeployment. Tactical logistics will focus primarily on readiness--direct and organizational support to units and soldiers in the corps and division areas. See Figure 7-5 (page 7-9).

Tactical Vision

Tactical-level logistics involves the synchronization of the tactical logistics functions. These are manning, arming, fueling, fixing, moving, and sustaining soldiers and their systems. The QMC is primarily responsible for sustaining soldiers and their systems and for fueling the force. Sustaining soldiers involves the provision of food, water, shelter, and field services. There is a one-to-one relationship between quartermasters and individual soldiers. This is a critical factor in the success of all missions. It has been the keystone to the heritage of the QMC.

QM leaders must know logistics doctrine and the commander's plans and intent. This allows for the right tactical logistical support to be provided. This allows the combat commander to focus on the fight. Supporting over an extended (width and depth) battlefield will also influence organizational structure. The QMC will move away from the large, slow-moving units and stockpiles designed under the Army of Excellence concept. Smaller, more mobile, and better protected units will be required. The functional differences between DS and GS supply units will become less clear. The seamless logistics philosophy allows for a smoother supply flow between the strategic, operational, and tactical levels.

A primary QMC focus at the tactical level will continue to be on sustainment of the soldier. Each company-sized unit will have two cooks and a small, state-of-the-art field kitchen. This provides a limited capability to prepare or heat meals and supplements. An improved containerized capability for providing responsive laundry and shower support well forward on the battlefield must be developed. Frontline soldiers require brief respites from the rigors associated with combat. A facility complex (Force Provider) will be available in which they can shower, clean their clothes, eat hot meals, and rest in an environmentally controlled shelter.

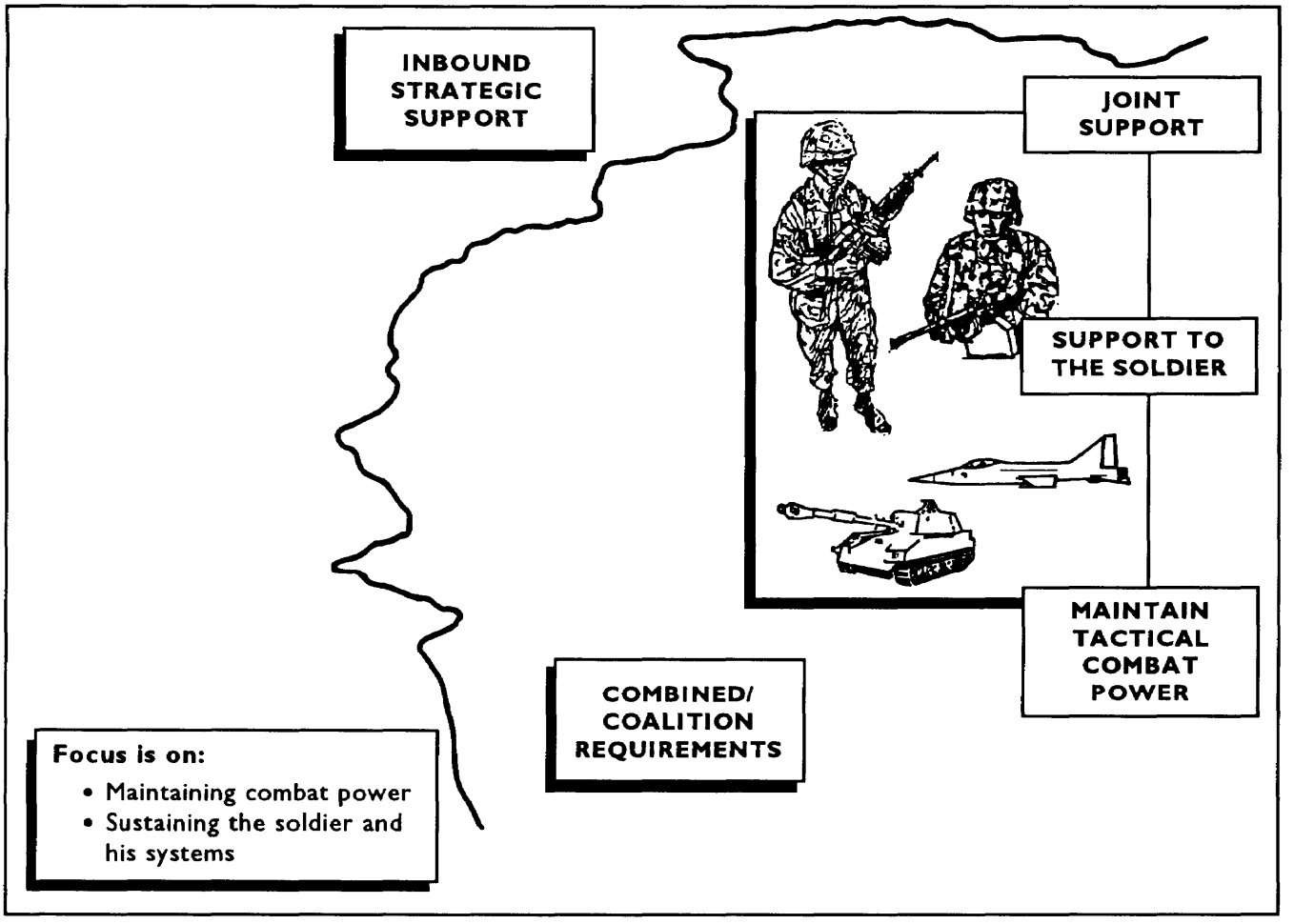


Figure 7-5. Tactical supply and field services

Tactical Challenges

To implement anticipatory logistics at all three levels fully, leaders must be technically proficient and tactically tough. They must understand and support the combat commander's intent and scheme of maneuver. Anticipation of supported unit requirements will come through a knowledge of the maneuver commander's intent, solid planning factors, current consumption data, and an appreciation of the operational environment. The flow of vital information is expected to be enhanced through the CSSCS and its relationship with the other systems of ATCCS. Tactical communications must be capable of handling automation and command and control requirements. They must provide near-real-time requisition status. Asset visibility is needed to identify where supplies are and when they should arrive.

Doctrine and training literature must keep pace with the significant changes being made in the way supply and field service operations are conducted. Defense-related resources are becoming increasingly scarce. Efforts must be made to reduce (selectively) the volume of doctrinal literature in the areas of supply and field services. More efficient, cost-effective procedures must be found for the publication of all types of doctrinal literature.

In the areas of materiel and organization, solutions to the myriad of identified shortfalls

must be vigorously pursued. These include the enhancement of supply and field service unit mobility at the tactical level and the upgrading of combat and combat support unit capabilities in QM proponency areas.

Enhancing unit mobility. This can be achieved through increased containerization, the design of modular organizations, and extensive use of the new generation of transport equipment. This includes equipment with self-loading capabilities.

Upgrading support capabilities. Units will be provided standard containers that are flat rack/ Organization for International Standards (ISO) compatible. These will be used for moving PLLs, unit property, and unit basic loads (UBLs). The size of PLLs will be drastically reduced by resupplying repair parts through a responsive, readiness-based system. This system will provide asset visibility and assured transportation. Unit commanders will be able to order and receive maps using the same procedures as for other general supply commodities. Commanders will be able to select, based on METT-T, the appropriate meal from a family of rations. They will be provided with a state-of-the-art containerized kitchen. It will allow rapid food preparation and a capability to warm food in the company trains area.

The QMC of the next decade will be reshaped to meet the challenges of a force projection Army. See Figure 7-6. The QMC mission will drive the solution sets developed in the areas of doctrine, training, leader development, organization, materiel, and soldiers.

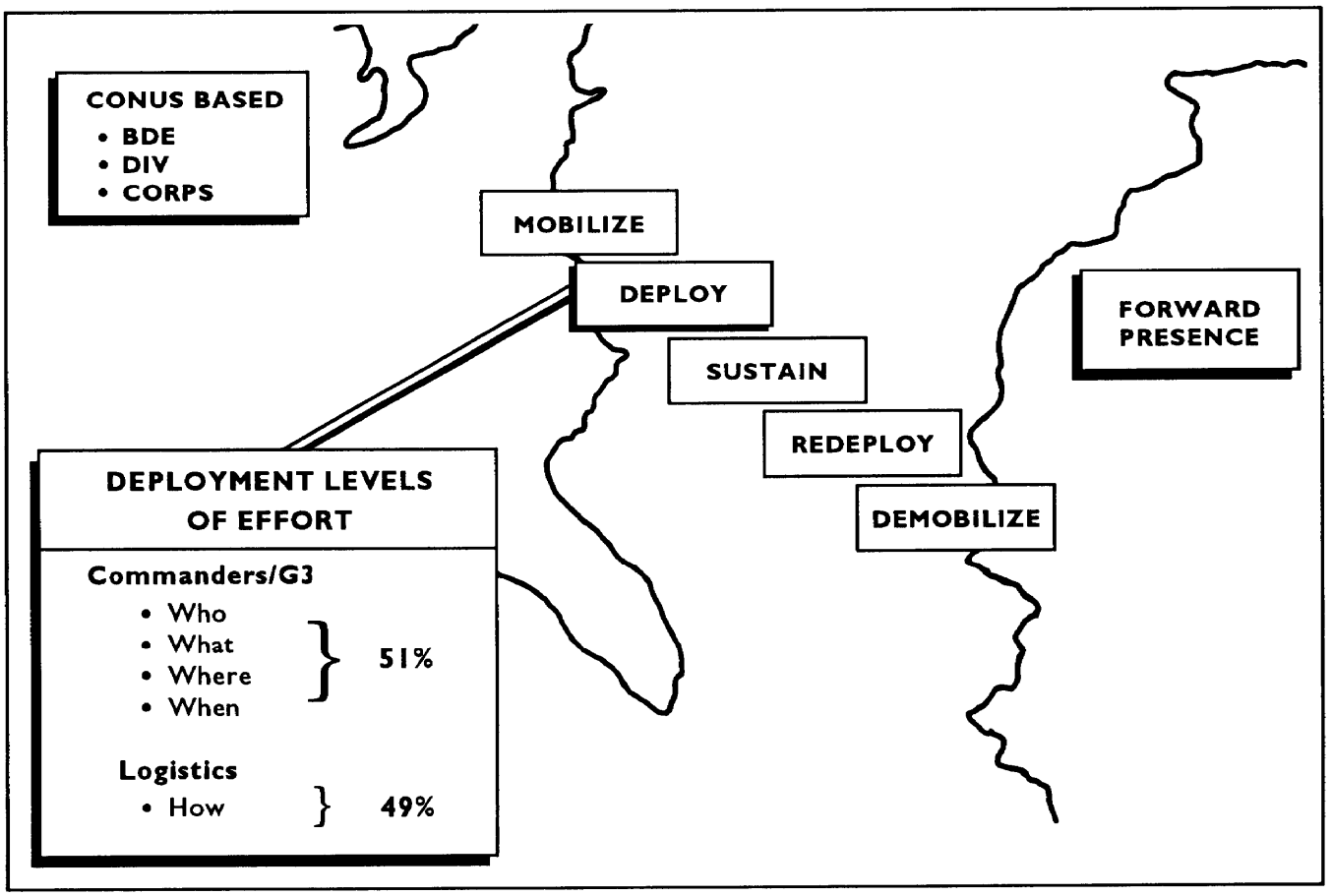


Figure 7-6. Logistics for a smaller, force projection Army

CHAPTER 8
SUPPLY OVERVIEW

INTRODUCTION

Supplying the force is one of the major elements in sustaining the battle. It is the process of providing all items necessary to equip, maintain, and operate a unit. Supply operations involve the storage, distribution, requisitioning, protection, maintenance, and salvage of supplies. Its primary purpose is to sustain the soldiers and weapon systems in strategic, operational, and tactical environments on the modern battlefield. As the battle progresses, QM units must provide the right supplies at the right locations in time to contribute to the fight. It is imperative that the systems be in place to allow the supported units to place their demands rapidly and to assist the QM units in providing the supplies in a timely manner.

RESPONSIBILITIES

QM units are responsible for providing adequate and timely supply to supported units. The supplies that these units provide are managed by MMCs in each echelon of the force, from separate brigades and armored cavalry regiments to the theater army level. At the national level, supply operations are managed by NICPs assigned to the AMC, the DLA, and other defense agencies. Additionally, some commodities can be provided by other government agencies, such as the GSA. There are 10 classes of supply, as shown in Table 8-1 (page 8-2).

DSUs

QM supply support activities (SSAs) organic to divisional and nondivisional DSUs provide supplies directly to the using units. They receive, store, and issue to using units Class I, II, III, IV, VI, and VII supplies and unclassified maps. Class VIII items are the responsibility of medical units. Class IX items are issued through SSAs that are in the maintenance companies. The DSUs in separate brigades and divisions also transload ammunition through Class V ATP operations. COSCOM and TAACOM ordnance ammunition units store and issue all other Class V to divisional and nondivisional units.

GSUs

GSUs provide supplies to replenish DSUs. They fill nonstockage supply requests. QM GSUs are supply class or commodity oriented. They are normally located in the COSCOM rear and TAACOM areas. If the operational theater has stockage buildup or safety levels, they will be held by GSUs.

MMCs

The MMCs are the materiel managers for the units that they support. They manage materiel for weapons systems, control maintenance priorities, and coordinate and control supply functions to meet the operational needs of the units being supported. The different types of MMCs found in a theater of operations are described below.

DMMC (division, separate brigade, and regimental). The DMMC manages all materiel for which the DISCOM is responsible, except Class VIII supplies, communications security equipment, and classified maps. The DMMC provides for the receipt and processing of requests for issue from the supported units' activities.

COSCOM MMC. The COSCOM MMC is the central manager for the corps-level general support (GS) supply system. Its management is based on decentralized stockage locations with a

centralized management process. The MMC performs the functions of integrated supply management for the corps. This supply management is for all classes of supply except Class VIII, communications security materiel, and classified maps. Additionally, it provides for management of all the maintenance activities of the COSCOM. The COSCOM MMC accepts requisitions from the DMMC and from nondivisional DSUs. The MMC can cross level assets within the corps area of responsibility. To satisfy urgent demands, the COSCOM MMC (or DMMC) may laterally transfer stocks. It may also redirect the distribution of stocks from those supply sources considered to have excess quantities on hand. If items are not available for issue within the corps, the COSCOM MMC transfers the requisition to the TAMMC or to an NICP.

TACOM MMC. The TAACOM MMC provides support and performs functions that are similar to those of the COSCOM MMC. This support is provided to units at the operational level.

TAMMC. The TAMMC provides inventory management functions for the entire theater. Its focus is on distribution of war reserves and the management of command-controlled items. Requisitions for non-command-controlled items are transmitted directly to an NICP, with an information copy going to the TAMMC.

Table 8-1. Classes of supply

CLASS	SUPPLIES
I	Subsistence and gratuitous health and comfort items.
II	Clothing, individual equipment, tentage, organizational tool sets and kits, hand tools, and administrative and housekeeping supplies and equipment.
III	Petroleum fuels, lubricants, hydraulic and insulating oils, preservatives, liquids and gases, bulk chemical products, coolants, de-icer and antifreeze compounds, components and additives of petroleum and chemical products, and coal.
IV	Construction materials including installed equipment and all fortification and barrier materials.
V	Ammunition of all types (including chemical, radiological, and special weapons), bombs, explosives, mines, fuzes, detonators, pyrotechnics, missiles, rockets, propellants, and other associated items.
VI	Personal demand items such as snack foods, beverages, cigarettes, soap, toothpaste, writing materials, cameras, batteries, and other nonmilitary sales items.
VII	Major end items such as launchers, tanks, mobile machine shops, and vehicles.
VIII	Medical materiel, including repair parts peculiar to medical equipment.
IX	Repair parts and components to include kits, assemblies and subassemblies (reparable or nonreparable) which are required for maintenance support of all equipment.
X	Material to support nonmilitary programs such as agriculture and economic development (not included in Classes I through IX).
Miscellaneous	Water, maps, salvage, and captured material.

CONCEPT OF OPERATIONS

To be successful, supply support must be both effective and efficient. Limited resources require that supply operations be efficient. However, efficiency cannot handicap effectiveness. Five logistics characteristics facilitate effective, efficient supply operations. Foremost among these is *anticipation.* Commanders and logisticians must anticipate requirements, and the supply system must also be anticipatory. They *integrate* supply concepts and operations with strategic, operational, and tactical plans. Supply operations and systems must be *responsive* to the commander and provide *continuous* support to forward-depIoyed forces. Finally, logisticians must *improvise* to expedite actions when needed and adapt to changing dynamics on the battlefield.

Levels of Supply

Levels of supply are broadly classified under the categories of tactical, operational, and strategic. Tactical and operational supplies are further broken down as unit, DS, and GS. Strategic supplies are those that are under the control of the NICPs. Various dynamics of change are being introduced into the supply system. There is a concerted effort to merge the tactical, operational, and strategic levels into a seamless supply system. As total asset visibility becomes a reality, the absolute control of supply stockage will be more obtainable. The system will then have become seamless.

Strategic level of supply. At the strategic level, supply is largely the purview of the CONUS industrial and civilian sectors. National political and military leaders, as well as civilian and military suppliers and contractors, effectively combine efforts to provision the force. Strategic-level supply is involved with mobilization, acquisition, force projection, mobility, and the concentration of supply support in the theater base and the communications zone (COMMZ). It is the link between the nation's economic base and the military supply operations in a theater. Strategic and operational levels interface in a theater of operations.

Operational level of supply. Operational-level supply focuses on sustainment, supply unit deployment, and the distribution and management of supplies and materiel. Contractors and civilians provide support from within as well as outside the theater of operations. In theater, contractors and DOD civilians perform specified supply support functions. The theater commander provides strategic guidance and priorities for operations while the service component commanders identify strategic and operational requirements to the national industrial base. Deployment and integration of forces in the theater are based on the commander's campaign plan. At the strategic level supplies and materiel are centrally managed and distributed. This facilitates decentralized execution of logistics at the operational and tactical levels. The operational level of supply encompasses that support required to sustain campaigns and major operations. It enables success at the tactical level of war. Supply support significantly impacts on the Army force (ARFOR) commander's decision process. METT-T analysis determines time and distance factors and requirements. Assured communications supporting high data transmission rates with the national industrial base provide total asset visibility of critical items.

Tactical level of supply. Tactical-level supply focuses on readiness. It supports the tactical commander's ability to fight battles and engagements. Successful support is anticipatory. It provides the right supplies at the right time and place to supported units. Major emphasis is placed on fueling the force and supporting soldiers and their systems. Tactical commanders must integrate supply support with their concept of operations during the tactical planning phase. Mobile, responsive capabilities are essential for accomplishing the supply mission.

Sources of Supply

Units maintain a sustaining level of supply that is formed from the UBLs and PLL. This sustaining level is continually replenished by the next higher source. This source may be the parent battalion or a DSU. The DSU converts the unit's request into a requisition. The DSU either satisfies the demand or forwards it to the supporting MMC. As described previously, the functions of an MMC depend on its type and its location of the battlefield. Each intermediate MMC is a potential source of supply. The TAMMC has an overview of all the command-controlled items throughout the theater of operations. Requisitions passed out of the theater are directed to the appropriate NICP for supply action.

Mobility of Supplies

Supplies (UBLs and PLLs) that are maintained in a unit should be 100 percent mobile. DSU forward elements supporting a brigade or regiment must be able to move 90 percent of their cube within 30 minutes. The remaining 10 percent should be moved within four hours. All DSU rear units supporting division or larger combat units must have 50 percent mobility. They must be able to move their remaining authorized stockage list (ASL) cube by shuttle. GSU activities have limited capability to move their ASLs. However, it is recognized that the frequency of movement of these units is less than that of the DSUs. The preferred method of moving stocks of GS units is to set up a satellite operation at the new location, have replenishment stocks redirected into the new area, and draw down stocks from the existing location. Specific mobility objectives are established by AR 710-2.

Transition to War or OOTW

This phase begins with the warning of an impending operation. During the transition phase, all supplies nonessential to the operational aspects of the operation must be curtailed. Priority of strategic lift should be given to those items and commodities that will have the greatest influence on the outcome. SSAs will begin selective cancellation action of those requisitions nonessential to the operation or unnecessary for individual health and welfare. Limiting supply actions to only essential items allows the operators and managers to focus their time and resources on preparing to support the operation. Initially, deployed forces must rely on accompanying basic loads, oversea war reserves, and air delivery of Class IX and maintenance-related Class II items. General supply items and routine follow on supplies will generally be shipped by sea lines of communications (SEALOC). Global strategy is moving toward a force projection Army. There will be a lessening of reliance on forward-deployed units and prepositioned war reserves. This will increase the criticality of precise planning to ensure that proper supply support is provided. This also highlights the need for LPT. HNS, LOGCAP, and contingency contracting can provide supplies that would have taken up valuable strategic lift for both supplies and CSS units.

Supply Units

Supply units are found throughout the operational and tactical levels. They are found from the forward area of the brigade support area (BSA) to the rear port area. Following are summaries of the mission of the QM proponent supply units.

Division, brigade, and regimental supply companics/troops. These units provide DS supplies to the organic units of the division, brigade, and regiment. Generally, they provide Class I, II, III, IV (limited), VI, and VII items. Class V is also issued through ammunition transfer points.

Supply company (DS). This unit provides supply support to nondivisional units assigned to echelons above division (EAD). Generally, this unit provides Class I, II, III, IV, VI, VII, and water. Nondivisional units operating in the divisional area should receive supply support from this unit. However, divisional units described above could, within their capabilities, provide

supply. This will be based on the particular class of supply, maturity of the theater, and METT-T.

Supply company (GS). This unit provides support to divisional and nondivisional supply units for Class I, II, III (packaged), IV, and VI supplies. The supply company (GS) is usually assigned to the CSG (rear) or the TAACOM. Supplies are primarily received from APODs and seaports of debarkation (SPODs) on theater transportation assets.

Heavy materiel supply company (HMSC). This unit provides divisional and nondivisional units with Class VII supplies. The HMSC is normally assigned to the CSG (rear) or the TAACOM. Major end items are either received from APODs and SPODs or as assets generated from the GS maintenance units operating in the theater. Most Class VII stocks are command-controlled items. These items are managed by the TAMMC.

Repair parts supply company. This unit provides divisional and nondivisional units with Class IX supplies. The repair parts supply company is normally assigned to the CSG (rear) or the TAACOM. A large portion of items stocked in the theater will consist of theater reserves and the safety buildup delivered by SEALOC. Repaired items generated by the GS maintenance units are also included. Most Class IX will be provided to units from CONUS by direct supply support (DSS). Parts will be delivered by air lines of communication (ALOC) and marked for the requesting unit.

Petroleum supply units. These units are discussed in detail in Chapter 11.

Water supply units. These units are discussed in detail in Chapter 15.

Flow of Supplies and Supply Requests

Requests generally flow from the user to the higher sources of supply. As reporting procedures become faster and more reliable, it will be possible to better anticipate the requirements of the unit. A greater portion of the supplies will be pushed to the unit without the formality of requisitions and processing by intermediate management activities. This will facilitate delivery by throughput or a hub and spoke delivery system. The flow of requests for specific supplies is discussed in the commodity chapters (refer to the Table of Contents).

Retrograde/Salvage of Supplies

Retrograde is usually associated with items of supply and equipment that are reparable (either in or out of the theater). These items are generally in the maintenance channels and are returned to the supply channels after they have been restored to a serviceable, ready-for-issue condition. Salvage items are normally placed into supply channels at the time they are classified as unserviceable, uneconomically reparable. Based on theater policy and instructions from the NICP, salvage items are either evacuated through the system, destroyed, or demilitarized. Once the items are considered as not usable or required by the ARFOR, they are reported to the appropriate Defense Reutilization and Management Office (DRMO) for disposition. Mature theaters will normally have a DRMO located in the rear portion of the COMMZ.

Planning Considerations

Planning for supply at all levels involves several critical decisions about the interface of combat, combat support (CS), and CSS activities. Support of major operations, battles, and engagements requires the merging of organizations and resources into an overall concept. Planners must seek innovative ways to reduce strategic lift requirements. Strategic lift is a scarce resource. Ways to reduce strategic lift requirements should be developed. Planners should consider echeloning CSS support into the theater, establishing split-based operations, preconfiguring materiel, and using civilian contractor, allied, and host-nation capabilities.

LPT. This combines peacetime planning actions taken by logisticians at all levels to increase the

means to support the commander's plan. These actions include, but are not limited to, identifying and preparing bases of operation, selecting and improving LOCs, projecting and preparing forward logistics bases, identifying potential supply sources, negotiating host-nation agreements, and forecasting and building operational stock assets forward and afloat. These actions focus on identifying the resources available in a potential theater of operations for use by friendly forces. See Chapter 5 for more information on LPT.

Force composition. Active and reserve component force composition influences the time needed to establish a logistics base and prepare it for operations. The ratio of combat, CS, and CSS troops is equally important. The majority of CSS capability is in the reserve components. This requires early consideration of the force composition. This allows a determination to be made as to which capabilities may be limited due to mobilization time lag. Civilian and contractor support will be necessary for virtually all deployment and logistics operations. The theater support structure may be augmented by table of distribution and allowances (TDA) organizations. The AMC's logistics support element (LSE) is such an organization. Theater entry considerations require a thorough review of the mobilization and deployment plans to ensure the best mix of units and the integration of arrival times. As combat power builds, the logistics base must be dynamic and expand to meet the needs of the combat force.

Logistics priorities. The priorities of supporting commanders are governed by the theater commander's guidance and priorities under his command authority. Logistics priority is the prerequisite for developing a support plan. Priorities may shift between units or to different areas. As they do, it is necessary to check the capability of the existing supply system to support such a shift.

Joint and combined operations. Involvement in joint or combined operations requires increased logistics planning and coordination. This will ensure that all facets of responsibility are included in the planning process. Prearranged effective dates of support must be established for each commodity of supply or type of service. Hand-off and assumption of support responsibilities must be coordinated early on, and the force structure and other resource requirements must be identified during the planning process. If limitations exist, they must be elevated to the commander early in the decision-making process.

HNS. Pre-established arrangements for HNS can reduce the requirement for early deployment of US assets. HNS can offset requirements for early strategic lift by reducing requirements for moving resources to the theater. See Chapter 5.

Contingency contracting. Whether or not the Army has a HNS agreement, contingency contracting support should deploy early to arrange access to host-nation capabilities. See Chapter 4 for more information on contingency contracting.

EMERGING CONCEPTS, SYSTEMS, AND MATERIEL

There are several emerging supply concepts. The most significant are AIT, ULLS-S4, SARSS-0, and the CSSCS. These systems are described in detail in Chapter 3.

SAFETY

Safety considerations in the area of supply involve equipment operations and handling of supplies. These areas are discussed in the following paragraphs.

Equipment Operations

Safety in operating materials handling and other equipment is a major consideration in any supply operations area. Operators must be

adequately trained in safe operations. Supervisors must establish safe operating procedures and ensure that they are adhered to.

Supply Handling

The handling of supplies has inherent safety considerations. This is particularly true when a commodity or item has a potential hazard. This could be from either the composition of the item or the way in which it is packaged. Supply personnel must be aware of these inherent dangers. They must be trained in the safe handling of all commodities.

RELATED DOCTRINE

A number of publications exist which cover or expand on the principles of supplying the force. Table 8-2 lists the major publications.

Table 8-2. *Publications related to this chapter*

Update Publications	Topic
Unit Supply UPDATE	Various ARs & DA Pams related to supply
Army Regulations	**Topic**
725-50	Requisitioning, receipt, and issue system
Field Manuals	**Topic**
10-15	Supply and storage
10-27	General supply
10-27-1	QM GS supply operations
10-27-2	QM DS supply and field services
10-27-3	QM headquarters organizations

CHAPTER 9

CLASS I AND ARMY FIELD FEEDING OPERATIONS

INTRODUCTION

This chapter describes the doctrinal principles of field feeding on the current and future battlefield. These principles serve as the direct link to existing field feeding and subsistence doctrinal manuals. They also provide a link to the tactics, techniques, and procedures manuals under development or revision.

RESPONSIBILITIES

Unit commanders are responsible for the overall field feeding operation. Commanders are supported in this effort by DSU and GSU commanders and by the food service section of their unit or of the supporting unit. The responsibilities of the unit commander, the DS and GS commander, and the unit food service section are outlined in the following paragraphs.

Commander

The commander must ensure that--

- The unit has all the authorized field kitchen equipment listed by the MTOE, AR 71-13, and applicable CTAs.
- All field feeding equipment is properly maintained and ready for operation.
- Food service personnel needed to perform the mission are available, properly trained, and provided adequate time to perform their duties.
- A transportation support capability exists to provide the required mobility.
- Personnel strength data reports are submitted by supported units to supporting units promptly to ensure timely subsistence supply support. Data should include those present for duty by service component and meals sold for cash.
- Food service operations follow field feeding provisions of AR 30-21 and FM 10-23 and sanitation standards in FM 21-10.

DSU and GSU Commanders

The DSU and GSU commanders must ensure that--

- Subsistence items are available based on the theater feeding plan (push system) or unit requisition (pull system), as appropriate.
- Bread is provided through Class I channels or procured from commercial sources. Phaseout of the field bakery units now in the force structure will be completed in FY 95.

Food Service Section

The food service sergeant (FSS) of the supporting food service section must ensure that--

- Work schedules for food service personnel are adequate to provide proper support to the supported units.
- Equipment and subsistence are accounted for properly.
- Coordination is maintained with supported unit commanders and DSU or GSU subsistence support sections. This will ensure timely strength data input and timely subsistence supply support.

CONCEPT OF OPERATIONS

The end of the cold war and ensuing world events have changed the nature of the threat facing the Army. The Army has gone from being forward deployed to a force projection Army. It is prepared to deploy forces anywhere in the

world on short notice. Deployments could be from the continental United States (CONUS) or from forward-presence locations. This shift in strategy requires more mobility, responsiveness, and flexibility from Army field feeding operations. The new Army Field Feeding System-Future (AFFS-F) is designed to meet these requirements. The AFFS-F improves Army field feeding operations; provides efficiencies in labor, water, and fuel requirements; and increases mobility.

ARMY FIELD FEEDING CONSIDERATIONS

The feeding standard; rations, bread, and the equipment used in support of field feeding; and the area feeding concept are main elements of both the AFFS and AFFS-F. Other important ancillary considerations involve ice, garbage disposal, and refrigeration; veterinarian support; and subsistence shelf life.

Feeding Standard

The feeding standard is that soldiers will be provided three quality meals daily. When units deploy under combat conditions or in support of contingency plans, they will initially consume the meal, ready-to-eat (MRE). As the theater matures and METT-T allows, soldiers will also consume a variety of group feeding rations. Among these rations are the T- (heat-and-serve), B-, and A-Rations. Under AFFS-F the group rations will be configured in unitized group rations (UGRs). The meals are configured in six boxes (core module-4 boxes, and sustainment module-2 boxes) which contain all components with the exception of the main entree. The main entree will be either the T- (heat and serve), B-, or A-Ration entree and any authorized supplemental items such as fresh fruits and vegetables. Each pallet contains sufficient meals to feed 400 soldiers. Since the choice of entree and availability of personnel and equipment affect one's ability to prepare A- and B-Ration meals, the commander must consider these factors when deciding on the type meals to be requisitioned.

Rations

Rations are packaged as individual meals or group meals. The MRE is the general individual operational ration. Both types of meals are discussed below.

Individual meal. This operational ration is best suited for intense levels of combat, when soldiers are in transit, in movement to contact, or in convoy. It is supplemented with an individual ration-heating device, the flameless ration heater (FRH). It may also be heated by using the new mounted water/ration heater (MWRH) for tracked vehicles and some wheeled vehicles. These meals are issued for consumption in the fighting position, in tracked vehicles, or at remote sites when it is not possible to use a prepared group ration.

Group meals. The group meals (T- [heat and serve], B-, or A-Rations or the new UGR) are best used when units are located in more stable or uncontested regions on the battlefield or in the area of operations. Group meals can be prepared by the heat-and-serve method (T-Rations) or the full-scale, raw food preparation method using a combination of B- or A-Ration components. These meals require more time and other resources (water, fuel, labor) to prepare and serve. The supply system is responsible for delivering all Class I components. Details on equipment needed to support field feeding operations are in FM 10-23.

Bread

Bread or bread-like components are essential components of Army field feeding. When the MRE is used, pouch bread will be the primary source for bread. It will always be the initial source for bread on the battlefield. As the tactical and logistical situations permit, fresh

bread may be provided by host-nation support or commercial vendors. Host-nation support or commercial contracting will be the primary source of fresh loaf bread.

Equipment

There are several items in the Army inventory used in support of field feeding. They range from individual pieces of equipment such as the canteen cup stand to items designed to support entire units such as large field kitchens. The two primary pieces of equipment remain the mobile kitchen trailer (MKT) and the kitchen, company level field feeding (KCLFF) or KCLFF-Enhanced (KCLFF-E).

MKT. This is a fully equipped kitchen mounted on a field trailer. It is fully deployable by airlift using a helicopter or cargo aircraft. It can also be towed by a standard 2 l/2-ton or 5-ton cargo truck. It is designed to prepare up to 300 A-, B-, or heat-and-serve Ration meals three times daily. It requires a crew of four personnel (MOS 94 B). The components, uses of, capabilities, and maintenance procedures for the MKT are outlined in FM 10-23.

KCLFF-E. This is an assemblage of various pieces of equipment (tray pack heater, field range, and insulated food containers). It is designed primarily for serving heat-and-serve meals or T-Ration meals with a limited A-Ration capability. It can be transported in the HMMWV, CUCV, or 5-ton cargo truck. It can serve 200 soldiers one T-Ration (heat and serve) meal per day. It requires a crew of one MOS 94B soldier and one other soldier (non-MOS specific) provided by the unit.

Area Feeding Concept

Feeding schedules are based on established operations orders and time lines established by the commander. Units may operate in areas with no food service capability. In that case, they will either subsist on the MRE or be serviced by other units in the area that have food service capabilities. Before the latter will occur, careful prior coordination must be made to ensure adequate rations are available. Coordination must also be made to ensure adequate personnel are provided to help with the increased meal preparation requirement.

Ice, Garbage Disposal, and Refrigeration

Food service operations also require that provisions be made for ice, garbage disposal, and refrigeration. These are discussed below.

Ice. Ice will be obtained through HNS, commercial support, or from the limited organic equipment available. As water must be inspected by preventive medicine personnel for potability, so must ice. If trained veterinary personnel are not available, medical or field sanitation personnel may inspect the ice.

Garbage disposal. It is very important to dispose of all garbage properly to avoid leaving signature trails. If possible, make arrangements to back haul garbage. UGRs come with plastic bags for waste disposal. Since garbage takes last priority on any vehicle, make the bundles as small as possible by nesting items (for example, plates, cups, and empty tray packs) to take up minimal space.

Refrigeration. The number of A-Ration meals will be determined by the available refrigeration. Refrigeration may be organic or obtained through host-nation support.

Veterinarian Support

All subsistence (to include water and ice) must be inspected upon receipt, during storage, and before issue or consumption. At theater and corps levels veterinary personnel will perform these inspections. Below corps level these inspections will be performed by assigned medical personnel. If large quantities or entire lots of

subsistence are suspected of being spoiled or unfit for consumption, veterinary personnel can be requested to perform further inspections.

Subsistence Shelf Life

All subsistence items carry a shelf life. This shelf life can be drastically reduced if precautions are not taken to control storage and climate conditions. Shelf life is shortened and subsistence items damaged in both arid and frigid environments. Every effort must be made to ensure proper storage and refrigeration requirements are met. Avoid prolonged exposure to extreme temperatures to prolong shelf life and reduce spoilage.

SAFETY

There are some safety concerns when storing, preparing, and serving food on the battlefield. Pest control, foodborne illness from spoilage, and the special concerns associated with an NBC environment are just a few. Pests can be avoided if proper storage techniques are observed. This includes the use of available equipment such as trailers and pallets. The packaging used on most subsistence items will protect them from moisture and biological contaminants. Additional foodborne illness can be avoided if food is properly inspected, stored, and prepared. Protective measures specific to NBC conditions include the following:

- Cover all Class I supplies with plastic sheeting or a tarpaulin. Plastic sheeting offers the best protection while tarpaulins offer limited protection.
- Place food items in a natural or man-made hole in the earth to protect them against moisture and other contaminants. To protect against nuclear contamination, chemical liquids, or aerosols, cover food items with dirt while keeping them in the hole. If this is not an option, use heavy (not less than 10-millimeter) plastic sheeting.
- ***DO NOT*** prepare or consume rations when NBC contamination is present.
- Have the food service sergeant work with the NBC decontamination team to ensure evacuation and decontamination of food items and equipment. Evacuate all subsistence from the contaminated area before decontaminating, preparing, or serving food. Once decontamination is complete, the food service sergeant will tell the commander when it is safe to serve operational rations or prepared meals.

DISTRIBUTION

Based on lessons learned in operations Just Cause and Desert Shield/Storm, the Class I distribution process is under concept revision. The current system and the system being developed under AFFS-F are outlined below.

Current System

During the initial phase of a conflict, all rations will be pushed forward. Personnel strength, unit locations, type of operations, and feeding capabilities will determine the quantities and types of rations ordered and pushed forward. As the situation permits and the battlefield stabilizes, the determination will be made to go to the pull system. Within a division using the pull system, a unit submits a requisition to the forward Class I supply point where all Class I requests are consolidated and submitted to the DMMC Class I section. From there, the request is sent to the COSCOM. Rations are then delivered to the DSA ration breakdown point (RBP). There they are broken down and delivered to the BSA RBP for issue to the requesting unit. In delivery of Class I, corps assets are used for movement forward. Rations are throughput as far forward as possible. If the situation permits, the perishable subsistence platoon will distribute A-rations in the theater.

AFFS-F Concept

During the initial phase of a conflict, subsistence will still be shipped under the push system. Changes are evident once the pull system begins.

The new concept calls for a theater subsistence distribution company (TSDC) that will be responsible for subsistence throughout the theater. This company will be responsible for receiving and requisitioning subsistence for the theater. Another change is the configuration of the rations. Rations will be in modules that contain all the items needed for a complete meal, less the fresh items. Each UGR module will be able to feed 100 soldiers. Units will order subsistence based on the number and type of breakfast, lunch, and dinner modules required. Additionally, the request must state if any enhancements or supplements (bread, fruit, chocolate milk) are needed. Eventually, these requisitions will be automated to ensure more accurate and faster delivery. Once the order is received, the TSDC will throughput the UGR to the subsistence platoon in the corps forward area. Subsistence platoons will break down rations to the battalion level and deliver them to the servicing RBPs. At this location, MREs and unit piles will be merged for unit pickup.

EMERGING CONCEPTS AND MATERIEL

Army field feeding is constantly evolving as technologies emerge and requirements change. Some of the new technologies are described below.

Containerized Kitchen (CK)

The CK is a self-contained, trailer-mounted, multifueled field kitchen with multiration capability. It has the ability to prepare and serve up to 550 prepared meals three times daily. The flexibility the CK provides the field commander is immeasurable.

KCLFF-Enhanced (KCLFF-E)

The KCLFF-E can support company-level field feeding for up to 90 days. It is intended to provide the added capability of one A- or B-Ration per day. It is used when a complete field kitchen cannot be operationally deployed.

Powered Multifuel Burner (PMB)

There are now no burners available for field feeding that use battlefield fuels. The PMB will modify the M2/M2A burner to allow for hot meals using existing fuels already found on the battlefield.

Insulated Food Container (IFC)

The IFC will provide the capability to maintain cook-prepared meals at proper serving temperatures for up to four hours. This will enhance the morale of soldiers at remote sites and ensure they receive properly prepared meals, served hot.

Meal, Ordered Ready-to-Eat (MORE) and Self-Heating Meal, Ordered Ready-to-Eat (SMORE)

Both items use commercially available, easily recognizable, and shelf-stable food items. They include entrees, fruit and pudding cups, beverages, and deserts. The only difference between the two rations is the self-heating capability of the SMORE.

FUTURE DOCTRINE

Future doctrine and concepts, such as the new distribution concept and the new equipment, have already been discussed. The success of these new ideas and all future Class I support is based on the assumptions that--

- The CK has a limited ability to produce fresh-baked bread and pouch bread is available. Even so, the host nation will continue to provide most of the fresh bread products.
- Other services will provide their own field feeding support.
- NO special requirements will exist for medical rations.
- Cook personnel will drive prime movers in support of field feeding.
- All rations will be unitized, within capabilities.
- Automation will be developed to support ordering rations in a nongarrison environment.

All future concepts support feeding of group and individual meals during battle stages 1 through 4. They also support the expanded role of the Army in OOTW missions. As automation continues to develop and is fielded in the operational area, requisitions will be made simpler and quicker. More host-nation purchases will be possible.

RELATED DOCTRINE

A number of publications exist which cover or expand on Class I supply and Army field feeding operations. Table 9-1 lists these publications.

Table 9-1. Publications related to class I and field feeding

Army Regulations	Topic
30-21	The Army field feeding system
Field Manuals	**Topic**
10-23	Basic Army doctrine for field feeding
10-23-1	Commander's guide to food service
10-27	General supply
10-27-1	QM GS supply operations
10-27-2	QM DS supply and field services
10-27-3	QM headquarters organizations

CHAPTER 10
CLASSES II, III (PACKAGED), AND IV AND MAPS

INTRODUCTION

Classes II, III (Packaged), and IV and maps represent a broad range of general supplies that are less visible than other commodities. Nevertheless, they contribute significantly to support of the mission. While the individual item cost is low, the total dollar value that is required and consumed is high. Therefore, controls are necessary to ensure that limited resources are not wasted. Because of cost and the chance of emergency demands, Class IV items (and some Class II) may be placed under controls not normally applied to other general supplies. These controls include selective stockage and command approval of items before they are issued. In a theater of operations, these items would be controlled by the TAMMC in much the same manner as major items. Consumption of these commodities is more predictable. Demand history, together with knowledge of anticipated fluctuations, can provide accurate forecasting of demands.

RESPONSIBILITIES

Supply responsibilities are equally critical at each level of logistics. Some of the major ones are discussed below.

NICPs

The NICPs (commodity commands) acquire and manage these secondary items at the strategic level. The degree of management depends on the cost and complexity of the particular item. A large percentage of these items is also used by other services, government agencies, and the civilian sector. Inventory managers at the NICPs must be aware of all potential customers and vendors to ensure that adequate stockage is available or obtainable to satisfy service demands on short notice.

MMCs

In a theater of operations, the MMCs manage these items. The MMCs of the division, separate brigade, and regiment accept requisitions from customers. Based on the commodity, cube, and criticality, certain items are also stocked at this level. Requests for items not on hand or not authorized for stockage are passed to the CMMC. The CMMC will fill the requisition if stocks are on hand. If stocks are not on hand, the requisition will either be passed to the TAMMC (for command-controlled items) or sent to a CONUS NICP for action. TAACOM MMCs process requests from EAC DSUs in the same manner as the CMMCs.

Units

Units maintain basic loads of Class II supplies. Basic loads support operations in combat for a prescribed number of days. The normal depth of stockage is 15 days. These loads may be moved into combat if transportation assets are available. The commander maintains control of these items. Hand-receipt procedures are used to assign responsibility for durable goods but are not required for expendable items. For clothing, hand tools, and other like items, personal responsibility may go down to the individual soldier.

CONCEPT OF OPERATIONS

While these commodities are grouped as general supplies, the ways in which they are authorized, managed, and obtained vary widely. Many items, such as clothing, tents, and office furniture, are authorized by CTAs. As an example, requirements for clothing and individual equipment are based on seven climatic zones. These wide variances require the commander and the supporting supply activities to be aware of the mission profile of the unit and to ensure that the right stocks are issued or on order.

The Strategic Level of Supply

Many of the Class II, III (Packaged), and IV items are jointly used by other services and the civilian sector. Normally, this will provide a broad base for acquisition and a capability to increase the production base. This allows the commodity commands to rely on readily available supply sources to satisfy normal and surge requirements. On the other hand, there are items, such as clothing and maps, that are unique to the military and perhaps to the Army. The management of these items is much different, and the maintenance of the production base is much more critical. Generally, these commodities are moved to the theater by SEALOC. This means that the extended shipping times must be incorporated into the the stockage requirements. Also, the use of pre-positioned war reserves and operational project stocks must be considered for the same reasons as for major items.

The Operational Level of Supply

The reserve stocks within the theater are stored and maintained by the supply companies (GS) located at the operational and tactical levels. Initially, this would include theater reserves and operational project stocks. If the items are command-controlled, inventory management would be performed by the TAMMC. Non-command-controlled items would be handled using normal requisitioning procedures. Requisitions from the corps DSUs and DMMCs will be passed to the CMMCs. EAC DSUs will pass requisitions to the TAACOM MMCs. Requisitions that cannot be satisfied from GS stocks will be passed directly to CONUS. Many of the items may also be available from other in-theater sources, such as HNS and the local economy. Those items must be identified to the lowest levels so as to take full advantage of the resources that are readily available. Many items are reparable at the operational level. Foremost are clothing and other textiles, such as tents and air delivery items. The repair capability must be considered in establishing stockage levels. Any requirements that are satisfied in the theater can offset the requirement for transportation lift from CONUS. Another example is the refilling of compressed gases that are used for various reasons throughout the theater. Both of these functions are also viable candidates for HNS, thereby reducing the in-theater requirement for force structure.

The Tactical Level of Supply

The major GS supplier for Classes II, III (Packaged), and IV and maps is the supply company (GS). It also maintains a portion of the reserve stocks. Forward units are supported by the supply companies and troops of the division, brigade, and regiment. The supply company (DS) supports nondivisional troops located throughout the theater. Supplies are distributed by either the supply point or unit distribution method. The unit distribution method is preferred. However, a combination is usually used to ensure that the required stocks are received as quickly as possible. Items that are returned to the supply system must be classified and turned in for repair or disposed of under established criteria. The requisition and materiel flow of Classes II, III (Packaged), and IV is shown in Figure 10-1 (page 10-3).

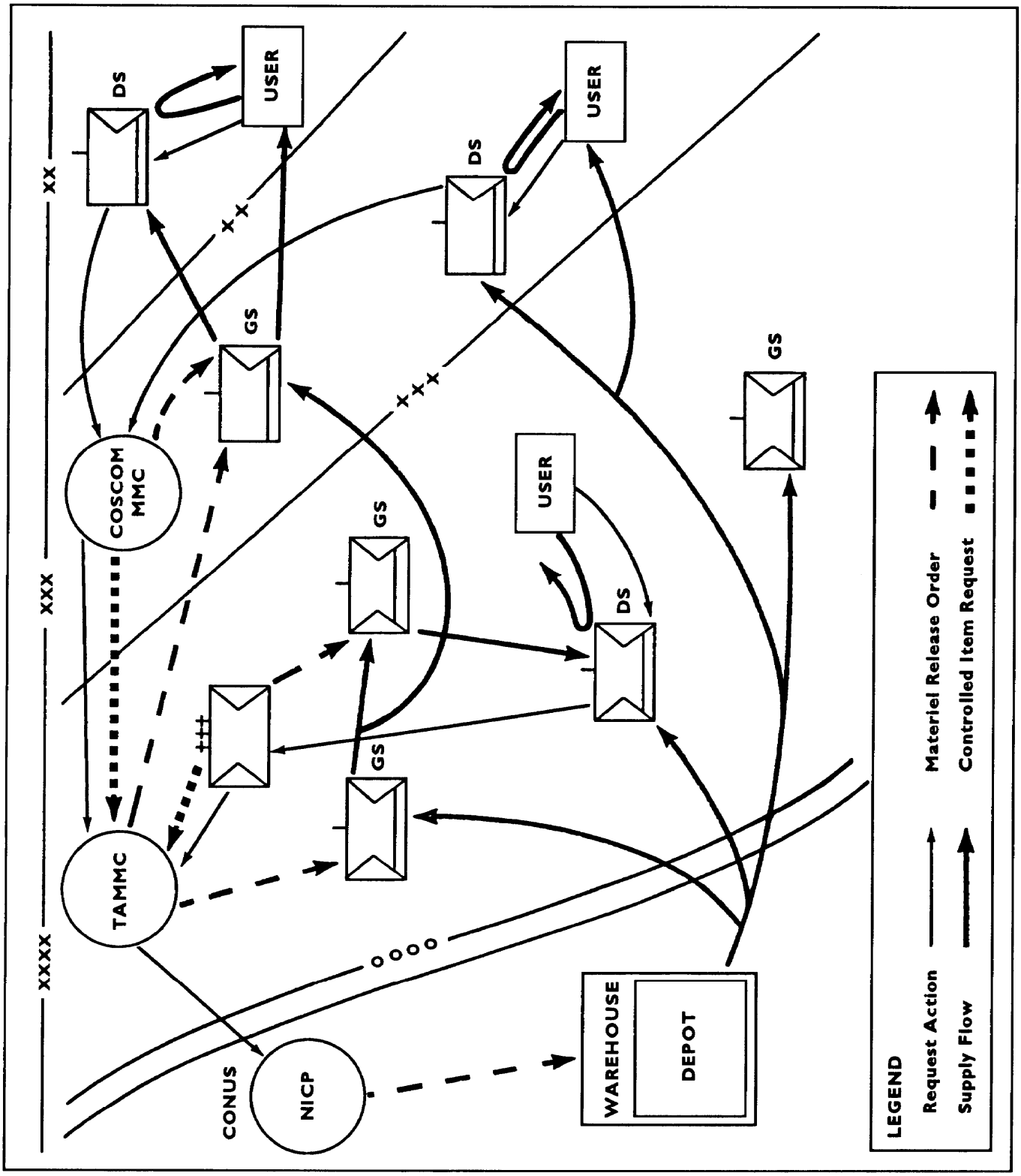


Figure 10-1. Class II, III (Packaged), and IV requisition and materiel flow

PLANNING CONSIDERATIONS

Supply planners track the tactical situation, troop buildup, and equipment readiness. This allows them to request critical supplies without waiting on unit requests. It enables them to reorganize supply elements and request backup support for the most critical requirements. Planners must also coordinate with their supporting MMC to ensure supply of items that are used sparingly or not at all in peacetime. Unique requirements may exist for support of other service elements, allied forces, and enemy prisoners of war. Procedures must also be established for managing items designated as command-controlled. Other planning considerations are discussed below.

Pre-positioned War Reserves (PPWR)

PPWR are critical during the transition to war phase. They allow for supply of items that maybe affected by a surge of requirements. This surge would not allow the supply system or the industrial base to support the anticipated demands. The establishment of supply levels must be carefully calculated. Proper coordination will ensure that the stocked amount represents a quantity that will support combat effectiveness. The amount stocked must be cost effective.

Operational Project Stocks

Operational project stocks are acquired in support of specific operations, contingencies, and war plans. This allows for consolidation and, perhaps, forward projection of stocks, These would be used to support a specific operation or contingency. An example would be the Class IV items required to support a particular barrier plan. These are items that would undoubtedly be needed in the early part of an operation or contingency. Because of their weight and cube, they would require considerable strategic lift to deploy from the CONUS base.

HNS and Contingency Contracting

Both HNS and contingency contracting play a key role in the transition to war phase. Many of the items may be readily available on the local economy. With proper LPT, vendors can be identified and contracts can be set up. Use of the host nation as a source of supply can significantly reduce the strategic mobility requirements and the impact on the CONUS production base. See Chapters 4 and 5 for more details.

EMERGING CONCEPTS, SYSTEMS, AND MATERIEL

There are several areas being developed that will impact favorably on the distribution of supplies within a theater of operations. The major ones are discussed below.

Packaging of Supplies

Handling of general supplies at the operational level will be enhanced by selective unitization and packaging of supplies to unit loads in the industrial base. Cargo parachutes will be packed by the manufacturer and stored in a vacuum pack. This will reduce volume by half and provide extra protection during storage and shipment.

MHE

More versatile MHE will replace the variety of equipment that now exists in the inventory. This MHE, some of which wil1 have an extended boom capability, will increase our capabilities. This will be particularly significant in stuffing and unstuffing containers. It will also reduce transport requirements as it will be intratheater airlift compatible.

Containers

New containers, in varying sizes, will provide increased capabilities for packaging supplies by unit load. They will also provide protection during storage and movement. Handling of containers on the battlefield, especially in the forward areas, offers a real challenge. In the near term, basis of issue plans will be updated to ensure the correct mix of rough terrain cargo handlers

(RTCHs). The long-term fix will be to explore alternatives to the RTCH. Alternatives include self-loading and unloading trailers, the Palletized Loading System (PLS), and various container mixes.

Maps

The Defense Mapping Agency (DMA) provides standard maps. Engineer cartographic units in the theater update and, as necessary, prepare locally unique nonstandard maps. Requisitions for unclassified maps are handled by a manual process both in the theater and at the DMA NICP. The current systems and requisitioning process will be integrated into the standard supply system. This will allow for more responsiveness to the commander's needs. It will end the manual, stovepipe system.

SAFETY

Since many of the commodities have hazardous and flammable properties, a number of precautions must be observed during storing and handling. Gases may be flammable or explosive. They are compressed~tnto containers with a pressure exceeding 40 to 104 pounds per square inch. Gases can also induce irritation to skin and other sensitive areas.

RELATED DOCTRINE

A number of publications present information on the topics covered in this chapter. Some of the major ones are listed in Table 10-1.

Table 10-1. Publications related to this chapter

Update Publications	Topic
Unit Supply UPDATE	Various ARs & DA Pams related to supply
Field Manuals	**Topic**
10-27	General supply
10-27-1	QM GS supply operations
10-27-2	QM DS supply operations
10-27-3	QM headquarters organizations

CHAPTER 11

CLASS III (BULK)

INTRODUCTION

The Army's ability to move and fight depends upon its supply of fuel. The QM mission is to provide the user with fuel that meets specifications for the intended use by the most effective, efficient, and safest method available. Any interruption in the flow of fuel could have a devastating effect on the Army's ability to dominate the conflict.

RESPONSIBILITY

Today's military consumes large quantities of petroleum products in support of combat operations. To carry out the QM mission, specific channels of responsibility have been set up to ensure an uninterrupted supply of petroleum. They are discussed below.

The Theater Army Commander

The theater army commander provides broad planning guidance for Army petroleum support, supervises current operations, and conducts long-range planning. To meet petroleum specifications set at DOD level, products undergo quality surveillance and control from the time they are procured until they are used. This includes recovering, upgrading, downgrading, or disposing of fuel products.

The Joint Petroleum Office (JPO)

The JPO is a staff element of the unified commander. It provides staff management of petroleum at the theater level. Subarea petroleum offices (SAPOs) may be established at the subunified command level to provide in-country staff responsibilities for all services.

The TAMMC

The TAMMC is the theater petroleum manager for both bulk and packaged petroleum products. It also collects long-range petroleum requirements for the theater.

The Petroleum Group

The petroleum group is the principal organization for bulk fuels distribution at the operational level. The group is responsible for the detailed petroleum distribution planning. This becomes the basis for design, construction, and operation of the distribution system for the theater. The group is also responsible for quality surveillance (up to full specification testing of petroleum products).

The Petroleum Pipeline and Terminal Operating Battalion/Company

These units operate and maintain petroleum distribution facilities required to support the theater petroleum mission. A pipeline battalion supervises from two to five pipeline companies. The petroleum pipeline and terminal operating company operates about 150 kilometers (90 miles) of military multiproduct pipeline and related terminal facilities. It stores and distributes bulk fuels on a 24-hour basis. Construction of military pipelines is an engineer responsibility. Pipeline and terminal operating units aid engineer units in installing tactical pipe sections to replace

damaged sections and operate and maintain pipelines. The battalions supervise the operation and maintenance of a military petroleum distribution system. The system may extend for up to 450 miles of pipeline.

The Petroleum Supply Battalion

This battalion provides petroleum GS at the operational and tactical levels of logistics. The mission of the petroleum supply company is to receive, store, and transfer bulk petroleum to divisional and nondivisional DS supply and service units on a 24-hour basis. These units set up operating areas for the receipt, storage, and issue of POL. In an undeveloped theater, the petroleum group, under the COSCOM, commands and controls the petroleum supply battalions.

CONCEPT OF OPERATIONS

The basic petroleum operating concept is to keep storage tanks always full. The availability of fuel depends on the location of the theater of operations. In industrialized areas, initial supplies will be obtained locally if possible. Subsequent supplies will be brought in by tanker ships. Major portions of the petroleum distribution system, such as storage tanks and pipelines, may already be in place. It may be necessary to renovate the existing system or supplement it with hose lines and collapsible tanks. In undeveloped areas, initial supplies of fuel are brought in by tanker ships. The Army will provide its own integrated distribution system using different modes of transportation. The QM mission also includes providing fuel to all inland forces, to include the Air Force, Navy, and Marine Corps and, if required, allied forces. QM petroleum liaison teams and host-nation support teams are often used for coordination.

Developed Theater

Bulk petroleum that is not locally procured is received from ocean tankers at marine petroleum terminals in a developed theater. It is then transferred by pipeline to the tank farms. Large-scale combat operations may justify construction of welded or coupled pipelines to move bulk fuel from the operational storage locations to the tactical level. The pipeline system extends as far forward as practical, usuaIly into the corps rear area. Assault hose line extensions carry the product into corps storage sites. Air bases and tactical airfields are serviced by the pipeline system when possible. Hose lines are used to supply smaller or temporary large-volume requirements. Bulk petroleum makes up over 50 percent of the tonnage moved in the theater of operations; therefore, pipelines significantly reduce other transportation requirements. The system is supplemented by other means of bulk delivery, such as barges, rail tank cars, tank vehicles, and aircraft. Branch lines are used where practical to supply major users from the main pipeline. Hose lines are used as temporary means of supply to general support suppliers. Tank vehicles, rail tank cars, and hose lines are used to move bulk petroleum products from GS to DS echelons. Bulk transporters normally move bulk fuel from the DS echelon to using units. Using units are authorized organic petroleum equipment to receive the bulk products and to refuel their vehicles and aircraft. In a developed theater, the petroleum group commands and controls the petroleum operating battalions. If the group works for the TAACOM, then the EAC petroleum supply battalions work under the petroleum group.

Undeveloped Theater

Bulk petroleum supplies are received in the undeveloped theater from the Navy's offshore petroleum discharge system in over-the-beach operations. It is the Navy's responsibility to provide fuel to the high water mark on the beach. The Army then takes responsibility for the fuel in tactical petroleum terminals. Hose lines initially carry the product inland. Transition to a coupled pipeline should be made as soon as practical. Under emergency conditions, fuels may be airlifted by Air Force transport to resupply ground

forces. Coastal tankers may be used to move product from deep-draft tankers anchored offshore to mooring in the water at wharves. Bulk fuel is transferred by hose lines to tank farms made up of collapsible storage tanks. Maximum use is made of pipelines, dock manifolds at ports of entry, tank farms, and other storage facilities for distribution of bulk fuel products through terminals and pump stations. To ensure continued effective support under all terrain and tactical conditions, rail, motor, air, and water transportation are normally used with pipelines. As soon as practical, the COMMZ, corps support, and division support areas will be formed. In the early stages, the theater may consist of only a division support area, which later expands to add the corps rear area. The operational level may never be formed, depending upon the duration and geographic expansion of the operation. In that case, the strategic level must be directly linked to the tactical level Bulk petroleum supply is generally moved from base terminals and rear storage locations to the tactical level by hose lines. Coupled pipelines are used when the beachhead is expanded. Tactical air bases are connected to the main hose line or pipeline and to the appropriate tank farm initially by hose lines. The pipeline and hose line system extends as far forward as possible, usually into the corps rear area. Hose lines offer the most rapid and easily deployed system. When the hose line system exceeds 10 to 15 miles, a more permanent system is required. The initial system will consist of the tactical petroleum terminal, portable 350- and 600-gallons per minute (GPM) pumps, hose lines, and collapsible tanks. As the beachhead is expanded and the theater expands, rigid tactical pipelines, bolted storage tanks, and fixed pumping assemblies will be required. Other means of delivery such as tank vehicle, barge, and aircraft will be incorporated into the system as required. In an undeveloped theater, the petroleum group is under the command and control of the COSCOM. The group commands and controls both the petroleum operating and supply battalions.

PLANNING CONSIDERATIONS

DA, through Army regulations, sets supply levels for the theater army for days of supply. The theater army commander sets the tactical and operational levels. Supply levels at all echelons consider the needs of all users which include the Air Force, Navy, Marine Corps, and allies, when designated. For planning purposes in an undeveloped theater, a minimum of 15 days of supply should be established.

Supply Levels

At the unit level, the basic load is directed by the commander. The division should maintain one DOS at the DS level. In the corps, one DOS of DS storage and four DOS of GS storage is maintained. This equates to a total of five DOS. In the developed theater, a minimum bulk fuel supply of 30 days should be established as the theater supply level.

Petroleum Requirements Computations

An important planning element for petroleum support is requirements computation. Accurate fuel requirements are essential in designing an effective fuel distribution system. Requirements are needed for all consumers by location and for the appropriate time period. All consumers must estimate their own fuel requirements. To compute or determine petroleum requirements for a unit, several methods are used. These methods are used alone or in combination. The choice of method depends upon time, distance, weather, geography, personnel, and type of mission.

The historical data method. This method uses information from previous after-action reports of a similar mission. This is the most accurate method of measurement, but only when the terrain, weather, organizational strength, vehicles, and equipment remain constant.

The gallons-per-man-per-day method. This method is used in the early planning stages when no definite information is available on the number and types of vehicles. This method is seldom used below theater army level and never below corps

level. However, once established for a given theater, the estimated requirements can be used for requisitioning by division or separate brigades. This method is used only as a guide. It is not a substitute for exact consumption data.

The equipment consumption method. This method is used to compute the equipment consumption requirements for a particular unit. Information must be available on the type and quantity of equipment (density) in the organization, amount of fuel consumed by each type of equipment (consumption rate), and the usage rate. The consumption rates for some equipment may be high. For example, smoke-generator units consume 55 gallons of fog oil per generator per hour.

The fuel consumption unit method. North Atlantic Treaty Organization (NATO) allies use this method (employing a standardization agreement (STANAG)) for calculating consumption. The fuel consumption unit is the quantity of fuel required to operate a given unit under average conditions.

The combat profile method. This method is used for combat vehicles only, and it is the second-most accurate method of determining petroleum requirements. It produces an accurate forecast of the consumption rate and is based upon hourly usage factors. This method is a refinement of the equipment consumption method. It uses actual projected hours instead of tables.

Communications

Long-range communications systems are required in petroleum operations. FM 10-67 outlines pipeline communications requirements. Effective, secure communications are required by the petroleum group, the petroleum pipeline and terminal operating battalions, the petroleum supply battalions and companies, and other supported services. Communications systems must be compatible with those used in ship-to-shore operations and by supported air bases.

JOINT PETROLEUM OPERATIONS

Each service provides bulk petroleum support to its own forces. The Army provides GS POL support to the other services when requirements exceed their capabilities. GS (petroleum) is defined as developing and maintaining equipment to support the overland distribution of bulk petroleum to all services. This includes providing the necessary force structure to construct, operate, and maintain overland petroleum pipelines. In some areas of operation the Army will not be the predominate service. In those cases GS will be provided by that service determined by the unified commander to be the predominant service. In addition to those responsibilities which must be performed by all services, there are others that are service-peculiar. These are listed below by service.

Army

The Army must maintain a force structure capability to provide bulk petroleum support to the Army and GS to the other services. It must develop and maintain equipment to support the overland distribution of bulk petroleum to all services. This includes providing the necessary force structure to construct, operate, and maintain overland petroleum pipelines. In an undeveloped theater, this also includes providing a system that transports bulk petroleum inland from the high-water mark of the designated ocean beach. It must also manage the overland distribution of bulk petroleum in a theater of operations. In areas of operation where the Army is not the predominate service, GS will be provided by that service determined by the joint force commander to be the predominate service.

Air Force

The United States Air Force (USAF) must maintain a capability to provide bulk petroleum support to USAF units. In support of joint operations, it must provide the Army component with any specific general support requirements.

Navy

The United States Navy (USN) must maintain a capability to provide bulk petroleum support to

its afloat and ashore forces. In support of joint operations, it must provide the Army component with any GS requirements. It provides for the delivery of bulk petroleum to the high-watermark for all services in a theater of operations. It constructs and operates coastal-based terminals and facilities that provide over-water bulk petroleum shipment to US sea- and land-based forces of all services. It must plan for petroleum marine terminal facilities and loading capability to allow efficient use and rapid turnaround of the largest tankers expected to be available and economically feasible for use in military bulk petroleum supply operations.

Marine Corps

The United States Marine Corps (USMC) must maintain a capability to provide bulk petroleum support to USMC units. In support of joint operations, it must provide the Army component with any specific GS requirements. It must also develop, operate, and maintain an expedient over-the-shore bulk petroleum distribution system.

DISTRIBUTION

The inland petroleum distribution system (IPDS) has been designed to meet any undeveloped theater petroleum distribution requirement. The four primary functional elements of an IPDS are the tactical petroleum terminal, pump station, pipeline set, and pipeline support hardware. The system consists of lightweight aluminum pipe with Victaulic quick-couplings, 800-GPM mainline pumps, 1,250-GPM flood and transfer pumps, 600-GPM hose line pumps, and the bulk fuel tank assemblies.

It is designed to meet the Army's need for a rapidly deployable, high-volume pipeline system. The installation, operation, and maintenance of the pipeline are QM responsibilities.

In the heavy division, consumers will come to a petroleum supply platoon and pickup fuel. See Figure 11-1 (page 11-6). The brigade S4 forecasts fuel requirements and forwards them to the DMMC. The DMMC, in turn, passes its forecasts to the COSCOM. The COSCOM provides the petroleum supply battalion the unit's allocation, priorities, and projected daily requirements to be pushed forward. The petroleum supply battalion directs the petroleum supply company (GS) to resupply the supply points using tankers from the transportation medium truck company (petroleum) if required. One of the supply points could be a refuel on the move (ROM) site. The primary purpose of ROM is to ensure that the fuel tanks on all combat and fuel-servicing vehicles are topped off before they arrive in the unit's tactical assembly area. A ROM system consists of enough hose connections, fittings, valves, and nozzles to operate a four-to eight-point refueling operation using 5,000-gallon tankers, HEMTT refuelers, or other mobile bulk fuel sources. ROM operations will normally be conducted from behind the division rear boundary to the rear of the brigade rear boundary. Although ROM may be configured in many ways, a ROM kit has been developed from existing hardware that will allow eight-point refueling from a 5,000-gallon tanker. In the light division, all fuel will be throughput to the BSA (for JP-4, whenever the division Class III officer and the aviation brigade S4 determine it should be delivered).

The petroleum supply battalion provides requirements for resupply through the COSCOM and TAACOM to the Director of Bulk Fuels at the TAMMC. The TAMMC Class III section passes requirements to the theater petroleum supply group. The petroleum group directs the petroleum pipeline and terminal operating battalions and transportation medium truck companies (petroleum) to resupply fuel forward to the petroleum supply battalion in the COSCOM and TAACOM area of operations using all distribution modes available, such as pipeline, hose line, barges, rail tank cars, and tank trucks.

The HEMTT tanker aviation refueling system (HTARS) is a kit that contains enough hose, fittings, and nozzles to expand the HEMTT tanker's capability to hot refuel four helicopters at the same time by using the on-board fuel-servicing pump.

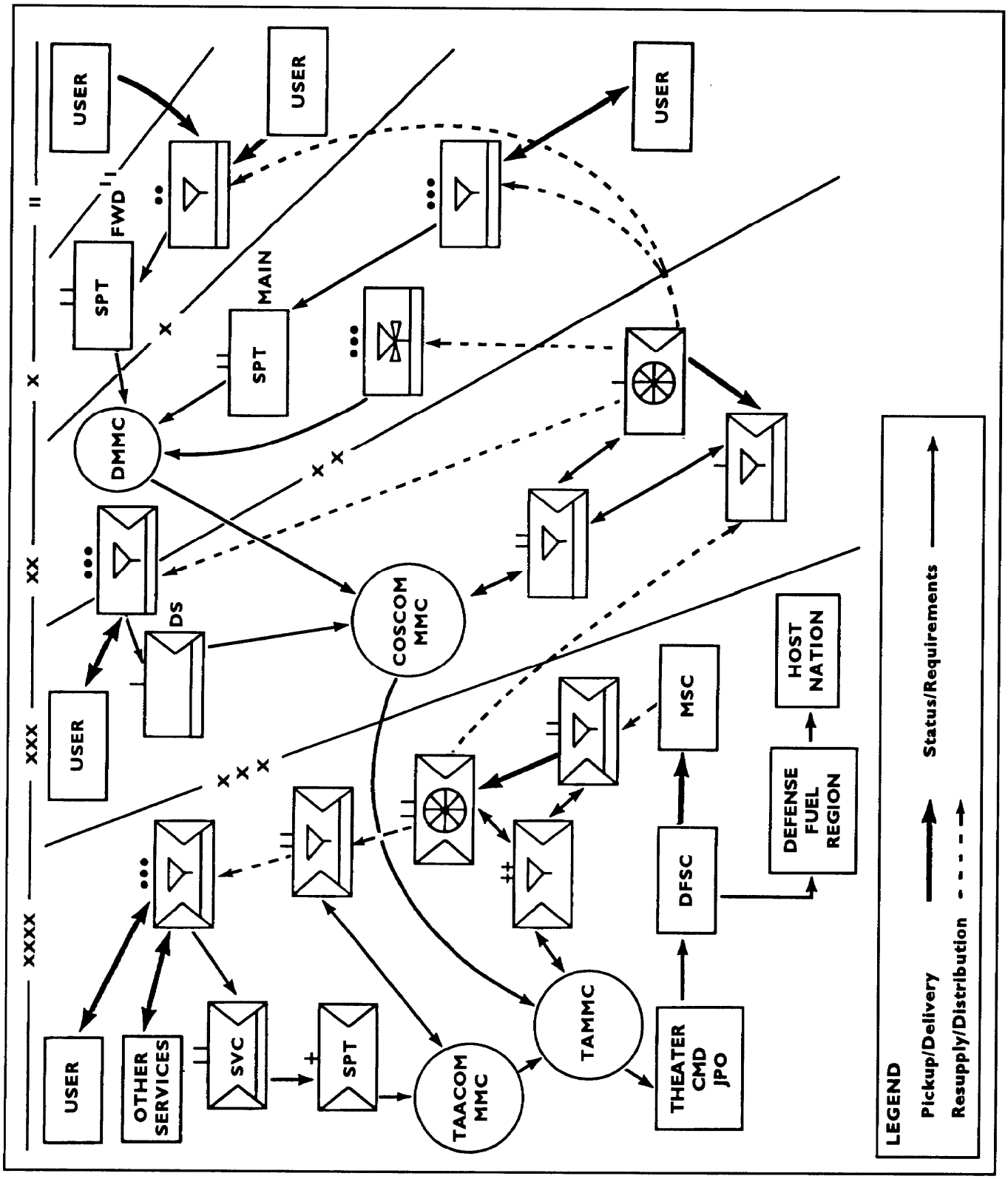


Figure 11-1. Petroleum distribution in a theater of operations

The TAMMC sends the theater Army resupply requirements to the JPO in the J4 office at theater headquarters. The JPO receives Army, Air Force, Navy, and Marine Corps fuel requirements. It combines them and forwards the requirement to the DFSC. The DFSC arranges transportation of POL products to the theater of operations. The petroleum pipeline and terminal operating battalions of the petroleum group receive the theater fuel requirements to support theater resupply.

SAFETY

Safety is important in handling petroleum products. Because of their characteristics, they can present fire, vapor inhalation, and skin contact hazards. All safety precautions described in FMs 10-18, 10-67, 10-68, 10-69, and 10-71 must be followed. The hazards and vulnerabilities of petroleum products and their distribution systems are discussed below.

Fire Hazards

Many of the petroleum products used by the Army are very volatile, especially fuel. The right combination of vapors, oxygen, and a source of ignition can cause a fire or explosion that could kill or injure personnel and damage equipment. Use proper bonding and grounding procedures during all fuel-servicing operations. Do not permit smoking materials in or around refueling areas or low-lying areas where fuel vapors may collect.

Vapor Hazards

Avoid inhalation of vapors from petroleum products, especially fuel vapor. Always stand to the side of fuel hatches during operations. Be aware that fuel vapors collect in low-lying areas close to refueling points.

Skin Contact Hazards

Petroleum products act as irritants on the skin. Therefore, protect your skin and eyes. If a petroleum product is splashed in your eyes, flush them immediately with water. If they get on your skin, wash the affected area with soap and water. When articles of clothing are soaked with fuel, wet them with water first before you take them off. If no water is available, take hold of a grounded piece of equipment before taking your clothes off to prevent sparks. If you get petroleum product in your mouth, flush it with water. Do not swallow the water. Seek medical attention at once.

Systems Vulnerabilities

Pay particular attention to the vulnerability of nonhardened fuel storage containers, such as collapsible tanks and drums and assault hose line. They can easily be ruptured by small arms fire and knives as well as direct fire. Therefore, make every effort to cover and conceal the tanks, drums, and hose lines when possible. Use proper spacing between tanks to lessen the chance of losing multiple tanks with a single round. Fuel is highly susceptible to contamination which maybe easily introduced into vehicles, storage tanks, pipelines, and hose lines. These contaminants may slow or halt fuel supply support. Since contaminants can clog filter/separators and enter aircraft fuel tanks, they may cause a plane to crash.

EMERGING CONCEPTS

Three emerging concepts are presented here. They are the arctic forward area refueling equipment (AFARE), the advanced aviation forward area refueling system (AAFARS), and the petroleum quality analysis system (PQAS).

AFARE

This system consists of an arctic forward area refueling system (AFARS) and an arctic fuel system supply point (AFSSP). The AFARE can be operated, stored, and transported under field conditions in very cold climates (to -60 degrees Fahrenheit). The system is basically the same as the present forward area refueling equipment (FARE) and fuel system supply point (FSSP) systems. The new system is designed for cold temperature use. The AFARS system can be operated in very cold climates (to -60 degrees Fahrenheit). Its main

function is to refuel "hot" helicopters rapidly during tactical operations in an arctic environment. The system consists of--

- a gas-turbine engine-driven, 200-GPM pump;
- a hose (constructed from polymers) that remains flexible at temperatures to -60 degrees Fahrenheit;
- 500-gallon, coated-fabric fuel storage drums;
- a 200-GPM horizontal arctic filter/separator; and
- 6-inch-diameter flexible hose for transferring exhaust-gas-heated air to the filter/separator to keep ice from forming.

The AFSSP will be used in the arctic and will serve as the bulk fuel receiving, storing, and issuing facility for continuous resupply of corps, divisional, nondivisional, and brigade units. It will be capable of issuing and receiving fuel to and from 5,000- and 7,500-gallon tankers, railcars, bladder birds, HEMTT tankers, and tank and pump units.

AAFARS

AAFARS will allow the refueling of four helicopters simultaneously at 50 GPM per nozzle. This wilI allow two AAFARS to support the aviation doctrine of refueling an attack helicopter company in less than 10 minutes, to include lead-in and take-off times. Current plans call for AAFARS to replace the current FARE in aviation units. Ground units will continue to use the current FARE.

PQAS

PQAS will allow the projection of mobile petroleum laboratory capabilities forward of the FSB. It is designed to take advantage of fuels of opportunity while providing the capabilities required for long-term small deployments. PQAS will take advantage of current and emerging technologies to reduce both the space required for equipment and the personnel needed to operate the system. It will include fax/modem capability and current communications to allow information flow both up and down the chain of command. It will be transportable by all military aircraft and vehicles having a cargo mission, thus ensuring its mobility.

RELATED DOCTRINE

A number of FMs cover doctrine or operational procedures related to petroleum operations. The more important of these are listed in Table 4-1.

Table 4-1. *Publications related to petroleum and petroleum operations*

Field Manuals	Topic
10-18	Terminal and pipeline operations
10-67	Petroleum supply
10-68	Aircraft refueling
10-69	Supply point equipment and operations
10-71	Tank vehicle operations
10-72	Laboratories and kits

CHAPTER 12
CLASS VI AND TACTICAL FIELD EXCHANGES

INTRODUCTION

Class VI supplies (personal demand items) are Army and Air Force Exchange Service (AAFES) items for sale to troops and authorized individuals. Army personnel are usually required to deploy with the required health and comfort items. The ASCC may authorize the issue of health and comfort packs (HCPs) through the supply system. As requested by the theater commander, AAFES provides Class VI supply support beyond HCPs. Class VI supply support can be limited to basic health and comfort items or expanded to include food and beverages and entertainment items. The availability of Class VI items can enhance morale.

AAFES Class VI supply support to locations without established Post Exchanges is provided by tactical field exchanges (TFEs) or AAFES imprest fund activities (AIFAs). Both are operated by military personnel. This chapter refers to TFEs and AIFAs collectively as TFEs.

Class VI supplies may be available through procurement, through transfer from theater stocks, or through requisitioning from AAFES in CONUS. Available shipping space dictates allocation and shipment of Class VI supplies to the theater. This chapter describes the procedures for providing Class VI supplies on the battlefield.

RESPONSIBILITIES

Class VI supply responsibilities differ significantly from the other classes of supply. Some of the major responsibilities at the strategic, operational, and tactical levels of supply are discussed in the following paragraphs.

Strategic Level of Supply

The strategic level of supply equates basically to the CONUS base or what was formerly referred to as the wholesale base. In the case of Class VI supplies, the strategic level has been extended to Germany (AAFES-Europe Region) and to the Pacific area (AAFES-Pacific Rim Region). Major responsibilities at this level are discussed below.

AAFES. AAFES provides worldwide planning and monitoring of all tactical field exchanges. Tactical operations within the NATO area of responsibility are planned and monitored by AAFES-Europe Region. In the Pacific area, operations are planned and monitored by AAFES-Pacific Rim Region. Other regions are the responsibility of HQ AAFES (Dallas, Texas). In coordination with the theater commander, AAFES determines requirements; procures, stores, and distributes supplies; operates resale facilities; designates the parent exchange; and determines if an operational site general manager will be appointed for the particular operation.

Parent Exchange. Tactical field exchanges are designated as branches of a parent exchange (by one of the three AAFES headquarters elements discussed above). Tactical field exchanges are assigned a unique facility number which is used on all transactions. All transactions are routed through the parent exchange. The parent

exchange orders the merchandise to be sold, prepares the equipment and supplies required, and prepares a change fund and petty cash fund. These will then be issued to the tactical field exchange officer (TFEO). In coordination with AAFES, the parent exchange arranges to train the TFEO and personnel identified to operate the TFE.

Operational Level of Supply

The operational level equates to the communications zone in a theater. Some of the major responsibilities are described below.

Theater commander. The theater commander must give AAFES planning guidance and logistical support. The theater commander establishes the transportation priority for Class VI supplies and the extent of support (from basic necessities through entertainment items). Transportation of Class VI supplies into the theater is the responsibility of the military in those instances where AAFES does not have established means of transportation. The theater commander is responsible for ensuring that subordinate commanders provide the required support. These support requirements are outlined in Exchange Service Regulation (ESR) 8-4.

Operational site genera! manager. When a particular tactical operation involves a large number of TFEs, AAFES may assign a civilian manager as the operational site general manager (GM). The site GM, if appointed, assumes many of the responsibilities of the parent exchange. In large operations, it is likely that AAFES will establish a warehouse or chain of warehouses to support the TFEs within the area of operations. Specific responsibilities will be outlined in the military operations plan or exercise directive and the AAFES support directive.

Tactical field exchange liaison officer (TFELO). For major operations, AAFES may appoint a TFELO to assist the site GM. The TFELO is usually a military officer who is assigned full-time to AAFES. The TFELO will travel to the operational site with the participants and assist the TFEO or site GM. He or she serves as the liaison officer between the military commands and AAFES.

Operational-level commanders. Commanders must give AAFES a wide range of support. This includes transportation, communications, security, postal, finance, veterinary and preventive medicine services, and miscellaneous other support. The commander is responsible for providing the facilities from which the TFEs operate and the support normally associated with "life support." Responsibilities of commanders in supporting AAFES in the provision of Class VI supply support are outlined in ESR 8-4.

Tactical Level of Supply

The tactical level equates to the combat zone or corps operational area. Some of the major responsibilities at this level are shown below.

Tactical field exchange officer (TFEO). The TFEO is an officer or NCO appointed by the ASCC or subordinate commander to manage a TFE. Responsible and accountable to AAFES for all TFE operations, the TFEO is the store manager. The TFEO and the personnel identified to operate the TFE will receive training arranged by the parent exchange. Responsibilities of the TFEO are outlined in ESR 8-4.

Tactical units. The unit being supported by a TFE assigns an appropriate number of military personnel to operate the TFE. The TFEO and all military personnel assigned to the TFE work for the local commander. They are responsible to the commander for normal military functions and daily operations. The local commander provides support for the TFE similar to that described at the operational level. Minimum support requirements are listed in Exchange Operating Procedures (EOPs) 8-1 and 8-6 and ESR 8-4.

CONCEPT OF OPERATIONS

As with any operation, planning is required to ensure Class VI supplies are available to the troops

at the time and place required. The TFE concept of operation is divided into three phases. These phases are described below.

Predeployment Phase

The predeployment phase is also referred to as the loading and shipping phase. During this phase military planners working with AAFES will determine the stock assortments and quantities of each item to be shipped for a particular TFE. The assortment of Class VI items will be tailored to fit the situation. They can include items to entertain the troops and to make daily life more comfortable. These items will be ordered by AAFES and shipped to the parent exchange for consolidation and loading into containers for shipment to the deployment location. Operating supplies required for the TFE will be provided by the parent exchange. Complete details on actions during this phase are contained in EOP 8-6.

Deployment Phase

Containers with the Class VI items are shipped to the operational area. The TFEO deploys as specified in his or her unit's TPFDL. Immediately upon arrival in the operational area, the TFEO must locate the containers shipped from the parent exchange and arrange for their further movement to the TFE site. When the containers arrive at the TFE site, the TFE staff conduct the appropriate inventories and establish TFE operations. Class VI resupply is coordinated between the TFEO and the parent exchange. Complete details on receipt procedures and site operations are contained in EOPs 8-1 and 8-6.

Postdeployment Phase

Once the operation has been completed, remaining inventory and operating supplies and equipment will be packaged and returned to the parent exchange. Returned merchandise and operating supplies and equipment are inventoried, accounted for, and returned to AAFES stocks. In addition, all documentation, sales receipts, and returns are reconciled. At this time, the TFEO is relieved of accountability for the TFE. Complete redeployment and closeout procedures are covered in EOPs 8-1 and 8-6.

PLANNING CONSIDERATIONS

Planning for the use of Class VI supplies and TFEs is somewhat different than for other supply classes. Some basic considerations are discussed in the following paragraphs.

Planning Factors

ESR 8-4 shows a planning factor of 2.06 pounds per person per day (intemperate climates) that can be used for estimating Class VI requirements. The planning factor is adjusted with a multiplier based upon the climate (temperate, arctic, or arid/tropical) in the area of operations. These planning factors will replace those shown in FM 101-10-1/2 during its next update. The consumption rate for various items is shown in Table 12-1.

Projected Staffing

Staffing standards are shown in EOPs 8-1 and 8-6. When possible and practical, an officer or warrant officer should be appointed as the TFEO. If not, then the senior NCO from the TFE staff may be appointed. Table 12-2 (page 12-4) reflects the suggested staffing standard for a TFE supporting 1,000 customers.

Table 12-1. Class VI consumption rates

ITEM	LB/ PERSON/ DAY	THEATER MULTIPLIER
Tobacco products	.05525	
Snacks	.44420	
Beverages	1.46683	
Personal hygiene	.04675	
General	.04395	
Temperate climate total	2.05688	1.000
Arctic climate total	1.7494	.849
Arid/tropical climate total	3.39442	1.650

Table 12-2. Projected staffing

POSITION	NUMBER	MOS	GRADE
TFE Officer	1	92A40*	E7*
TFE Sales Supervisor	1	92A20	E5
TFE Sales Clerk	2**	92A10	E3/4

* This is the suggested MOS and grade if an officer or warrant officer cannot be appointed.
** Two additional sales associates will be added for each additional 1,000 customers supported.

Health and Comfort Packages

Health and comfort packages (formerly referred to as sundry packages) are Class I supply items managed by DPSC. They have a national stock number and are issued through the standard supply system (normally Class I supply channels) without cost to soldiers during combat operations. They contain items such as disposable razors, toothbrushes, toothpaste, and other personal care items. The female health and comfort package contains additional items for female soldiers such as cleaning creams, tissues, sanitary napkins, and tampons. AR 700-23 contains additional information on health and comfort packages.

EMERGING CONCEPTS

The USAQMC&S is currently developing a new concept for AAFES support to soldiers in the field. This concept generally follows the guidelines shown in this chapter. It ties together the use of AAFES imprest fund activities, TFEs, and Direct Operation Exchange - Tactical (DOX-T). DOX-T was not discussed in this chapter. The primary difference between a DOX-T and a TFE or an Imprest Fund Activity is that the DOX-T is staffed with AAFES civilian personnel. The decision as to whether to support with a TFE or a DOX-T is situation-dependent. The decision will be made by the AAFES commander in coordination with the theater commander. Another key point in the emerging concept is the need for early selection and training of military personnel selected to operate TFEs.

RELATED DOCTRINE

A number of publications present information on the topics covered in this chapter. Some of the major ones are listed in Table 12-3.

Table 12-3. Publications related to this chapter

Army Regulations	**Topic**
700-23	Health and comfort items
Field Manuals	**Topic**
100-16	Operational support
101-10-1/2	Planning factors
AAFES EOP*	**Topic**
8-1	AAFES imprest funds
8-6	Tactical exchanges
AAFES ESR*	**Topic**
8-4	Emergency operations

* AAFES publications can be obtained from the local exchange or from HQ AAFES.

CHAPTER 13
CLASS VII

INTRODUCTION

Class VII represents the major end items of supply. A major end item is a final combination of end products which is ready to use. Major end items represent a low percentage of the total line items of the Army inventory but a high percentage of its total dollar value. Because of their high dollar cost and overall importance to combat readiness, major end items are usually controlled through command channels. The requisitioning, procurement, distribution, maintenance, and disposal of these items are intensely managed at each support level to ensure visibility and operational readiness. Worldwide requirements for major end items are individually specified, computed, and programmed to meet the requirements of current or future force structures. Major end items are controlled and distributed IAW carefully developed distribution plans and directions.

RESPONSIBILITIES

Class VII supply responsibilities are equally critical at all levels of logistics. Some of the major responsibilities are discussed below.

DA Deputy Chief of Staff for Operations and Plans (DCSOPS)

The DA DCSOPS is responsible for setting equipment distribution priorities and developing distribution plans for Army modernization items of equipment. Distribution priorities are listed on the Department of-the Army Master Priority List (DAMPL) in AR 11-12.

Theater Army

During wartime, the distribution of major end items is delegated to the theater army commander and staff. These items are managed by the TAMMC. Major end items are command-controlled, and supply requisitions are routed through the TAMMC.

NICPs

The NICPs (commodity commands) acquire and manage major end items. The degree of management depends on the cost and complexity of a particular item. Additionally, if depot maintenance is authorized, it will be managed or controlled by the NICP.

TRADOC

TRADOC develops mission profiles which project daily usage of selected end items. Usage is based on the initial 15 days of combat. It is reported as miles driven, rounds fired, or hours flown. These profiles are used for many purposes, including development of Class IX requirements and maintenance man-hour requirements.

CONCEPT OF OPERATIONS

No two wars or engagements are ever fought under the same conditions. The rate at which items are consumed varies according to the intensity and length of combat. Wartime replacement factors are used to compute combat consumption and to determine war reserve requirements. Replacement factors are based on the type of combat mission and the ways in which equipment might be lost in combat. They include a combat intensity factor tailored to the degree of consumption expected in each area. Class VII items

are stocked and distributed in support of TOEs and TDAs for existing forces. Replacement is based on combat or other type losses. The intensity of the conflict and the criticality of employed systems will dictate the degree of weapons systems management required. These factors will also determine the particular levels of command that will require management offices. The weapon systems managers (WSMs) will ensure that the critical combat systems assets are allocated to the commands with the greatest needs. Weapons systems management is discussed in FM 63-3.

Strategic Class VII Supply

The strategic level of Class VII supply deals with the mobilization, acquisition, force projection, and movement of major end items to the theater in support of combat operations. It is the link between the nation's economic base and the military operations in the theater. The focus is on the determination of realistic, supportable resource requirements; the acquisition, management, and positioning of nationally owned supplies and equipment; and the coordinated displacement of that material in the theater of operations. The resources currently available in the theater of operations for use by friendly forces must be identified and access to them assured. Detailed analysis and prioritization of potential threats are critical to decisions on where our limited war reserve equipment is prepositioned. Wartime sustainment will be maintained by determining what should be stockpiled and where nontraditional alternatives are available to compensate for the lack of a warm production base.

Operational Class VII Supply

The operational level of Class VII supply concentrates on the distribution and management of supplies and materiel. When Class VII items are managed as controlled items, the TAMMC oversees their distribution. Priority of distribution is set by the theater army commander. It is essential that asset visibility and operational status be maintained. This will provide the information required to increase the combat power provided by the major end items of equipment. Weapons systems replacements may be issued from pre-positioned war reserve stocks. Items must be ready for issue within a few hours. There is a requirement to manage both the supply and the maintenance aspects of major items. Items that enter the GS level of maintenance and are repaired are returned to the supply system through the heavy materiel supply company (HMSC). This process allows for the theater to regenerate assets and, thereby, reduce the impact on the strategic level. Weapons systems are also sent from CONUS to the HMSC. From there, they are shipped to the division or directly to a unit.

Tactical Class VII Supply

The property book officer (PBO) in the DMMC is the weapons system manager in the division. Based on command guidance and through coordination with the G3, G4, and the DMMC, the PBO redistributes assets in the division to reduce shortages and weight the combat power of a particular portion of the force. Nondivisional units in the corps submit requests to their supporting DS supply company. The DSU sends the requests to the CMMC. The CMMC also receives Class VII requests from DMMCs and separate brigade and regimental MMCs. The CMMC submits a daily battle loss report to the TAMMC. If an item is on-hand in the theater and authorized for issue to the requesting unit, the TAMMC produces a materiel release order (MRO) directing the issue. Depending on transportation assets, the item will be scheduled for delivery to the requesting unit. If the item is not controlled by the TAMMC, the CMMC or TAACOM MMC can generate the MRO. The requisition and materiel flow of Class VII is shown in Figure 13-1 (page 13-3).

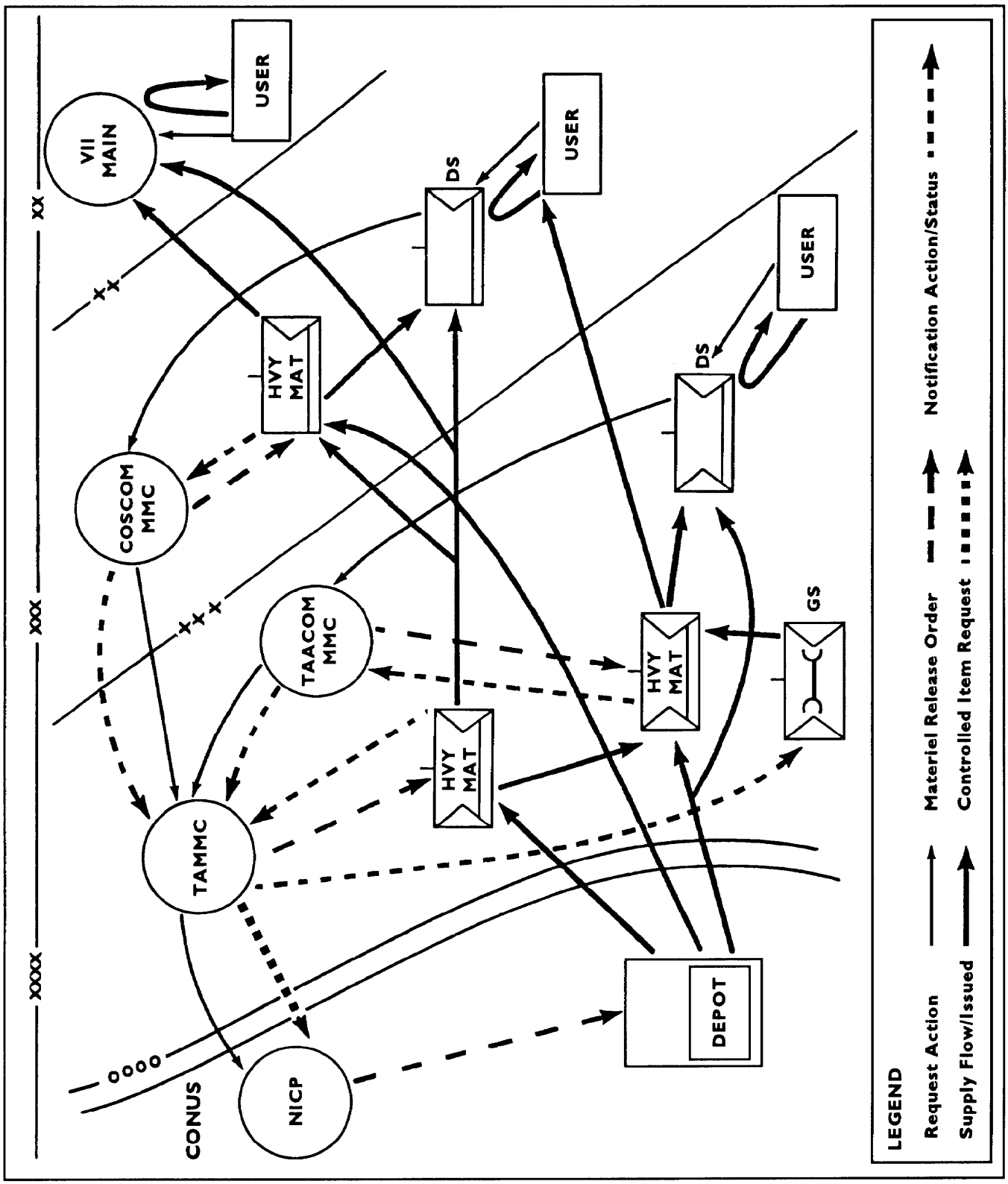


Figure 13-1. Class VII requisition and materiel flow

PLANNING CONSIDERATIONS

The supply and resupply of a major end item are linked to the acquisition process and must be closely managed throughout the life cycle of the item. This will be especially important during the force modernization process. Systems and processes must be in place to ensure that new items being introduced will have minimum impact on readiness and the overall combat effectiveness of a unit. New items are introduced with a total package that includes the item, spares to support it, maintenance capability, and training for operators and maintainers. Operational readiness and accurate reporting are key to the planning process. The correct status of all items that support the combat mission is critical logistics information for the assessment of units and their possible contribution to the anticipated operation. Due to the size, weight, and cube of major end items, transition to war, for a force projection Army with its reliance on strategic lift, requires careful preparation. Two planning considerations are discussed below.

PPWR

PPWR are critical during the transition-to-war phase to allow for the provisioning of major end items. These reserve stocks are acquired during peacetime to meet sustainment needs until the production base capacity can be expanded to meet wartime requirements. When possible, PPWR should be positioned in locations that best support approved contingency, mobilization, and distribution plans. Maintenance of PPWR is the responsibility of the commander who controls the geographical area of location. Under the force projection strategy, this responsibility will place an additional work load on the CONUS base.

Operational Project Stocks

Operational project (OPROJ) assets are acquired during peacetime. They are used for initial provisioning of equipment and supplies in support of specific operations, contingencies, and war plans. These items are for initial provisioning in contrast to war reserves that are intended for replacement and sustainment purposes. Operational projects are used to identify equipment above normal allowances to support operations, contingencies, and war plans.

RELATED DOCTRINE

A number of publications expand upon the concepts and material covered in this chapter. Some of these are listed in Table 13-1.

Table 13-1. Publications related to this chapter

Update Publications	Topic
Unit Supply UPDATE	Various ARs & DA Pams related to supply
Field Manuals	**Topic**
10-27	General supply
10-27-1	QM GS supply operations
10-27-2	QM DS supply operations
10-27-3	QM headquarters organizations

CHAPTER 14
CLASS IX

INTRODUCTION

Class IX items (repair parts) consist of any part, subassembly, assembly, or component required for installation in the maintenance or repair of an end item, subassembly, or component. They support the maintenance and repair functions performed throughout the Army on all materiel except medical materiel. They range from small items of common hardware to large, complex line replaceable units (LRUs). The levels of management that are applied to these commodities are equally broad in scope. Many common hardware items are kept in bins and reordered when the maintenance section notices that the level of stocks on hand has fallen to a certain point. Consumption records are not kept, and formal inventories are not required. This is in contrast to high-dollar items that are recoverable and reparable. Many of these items are intensely managed at the national level, and visibility is maintained throughout their life cycle.

RESPONSIBILITIES

Regardless of the intensity of their management, these items support the maintenance functions and operational readiness of all units. Some of the primary management responsibilities in maintaining this support are outlined in the paragraphs below.

NICPs

The NICPs (commodity commands) provide the overall management of repair parts. The repair parts that support the Army's end items may be managed by more than one NICP. Also, repair parts may support more than one item of equipment. The depot level of repair of LRUs is also managed by the NICPs. The ability to repair these items and return them to stock is a vital part of their life cycle management. An item that can be returned to the supply system represents a savings. NICP managers decide the quantity to be repaired and what should be bought to make up any shortfall in requirements. Most repair parts are low cost and their demand relatively predictable. Repair parts are primarily managed using a computer system. Item managers monitor status using management reports and exception data.

MMCs

At the operational and tactical levels, the management of repair parts is the responsibility of the various MMCs that are located throughout the theater. Most repair parts that enter the theater are shipped using ALOC. Requisitions for items that use ALOC are not processed by the TAMMC. They bypass that level of management and go directly to the NICPs for processing. The TAMMC receives an image copy for information and monitoring purposes. TAACOM MMCs and CMMCs manage the GS parts mission at the operational and tactical levels respectively. They are the source of supply for the units located in their support areas. Repair parts that are stored at the GS level are located in the repair parts supply companies (GS) that are located in the corps and theater army areas. MMCs that have GS maintenance missions also control those operations. LRUs that are repaired at the GS facilities are returned to stock. The serviceable assets that are generated within the theater provide an offset to requirements that would otherwise be placed on the CONUS base.

SSAs

SSAs that provide the DS supply of repair parts are normally located in units that provide DS maintenance to their customers. Stock control and inventory management are performed for repair parts that are used in both the organizational and DS maintenance missions. SSAs in divisional-type maintenance units usually support the organic and attached units. Nondivisional repair parts SSAs located in maintenance units support units on an area basis.

Units

A unit with an organizational maintenance mission can stock a limited number of line items in support of its operations. These parts are authorized for stockage by the PLL for that particular unit. The philosophy is to stock high-consumption parts that are critical for maintaining end items for combat. Items that do not meet these criteria are not authorized for stockage and are requested on an as required basis from the supporting SSA.

CONCEPT OF OPERATIONS

The degree of management of repair parts is generally proportional to the contribution they make to the operational readiness of the end items they are supporting. Items, such as major assemblies, that directly affect the ability of the end item to operate in combat receive particular attention. Another criterion is the dollar value of the repair part. Items that are combat essential and high cost are intensely managed at all levels. Low cost, non-combat-essential items may be managed within the set parameters of the STAMISs at the various levels of supply. This allows the manager to concentrate on a lesser number of items. Responsibilities at the strategic, operational, and tactical levels of logistics are discussed in the following paragraphs.

Strategic Level

The management of repair parts at the national or strategic level is normally based on the general classification of the item rather than its end item use. Therefore, requisitions in support of a unit's maintenance mission go to more than one NICP or commodity command. Where the end item is a major system (for example, an Abrams tank), a program manager (PM) ensures that the logistics support of that end item is effective and efficient. Therefore, units experiencing difficulties have a single point to contact for expressing their concerns. The PM can also help when new or improved systems are being phased into the units. At this level, supply requirements may drive the NICP manager to use depot maintenance to repair unserviceable assets to support supply requirements.

Operational Level

The operational level of supply centers on providing a GS safety level for all repair parts and a level of stockage for the items that will not be sent to the theater by ALOC. Easing these supply requirements are the serviceable assets that will be generated by the GS maintenance repair of LRUs. These items will become theater-generated assets that can offset a requirement to support from the strategic level of supply.

Tactical Level

Repair parts for the tactical level (corps and below) support organizational and DS maintenance missions. Organizations can stock a limited number of items on the PLL to support their organizational maintenance. Normally, the number of lines is restricted to about 300; however, they should be demand supported and combat essential. The commander is authorized some latitude to accommodate expected requirements and for other justifiable reasons. Mobility of PLL items is another consideration. The PLL should be 100 percent mobile on unit transportation.

DS SSAs provide organizational repair parts to customers and DS level parts to their organic

DS maintenance activities. Levels of stockage are computed and maintained by the SSA. The levels are based on quantity demanded and the length of time required to order and receive the requested items. Repair parts authorized for stockage are called ASL items. To ensure mobility of stocks, DS SSAs in the theater are limited in size (5,000 lines) and type of items that can be stocked. Stocks stored by divisional forward SSAs are required to be 100 percent mobile. The requisition and materiel flow of Class IX is shown in Figure 14-1 (page 4-4).

PLANNING CONSIDERATIONS

Proper implementation of policies and procedures that govern supply of repair parts is the best approach to planning. Other planning considerations are discussed in the following paragraphs.

General

Authorization for stockage of items is based primarily on quantities demanded over a period of time. This must be tempered with known changes that would influence consumption. This anticipatory aspect is critical for repair parts managers who must support a force that maybe changing its location, environment, or operational tempo. The logistician must be aware of the operational and training plans of supported units. This will ensure that the required parts will be available to support the maintenance requirements.

Transition to War

Transition to war requires that SSAs divest their ASLs of non-combat-essential items. They must maintain parts that will be needed to prepare the units' equipment for war and sustain it during combat. These stocks may be additional lines that did not have adequate demands to authorize stockage. Also, they may provide additional depth to existing ASL items to allow for expected increased usage or longer shipping times. The Logistics Support Activity can help in determining combat usage profiles for items in a particular combat environment. This will provide the supply activities with general planning factors that can be applied to the decision-making process. Transition to war must also consider the changes in support relationships. The units that the maintenance company supports in peacetime may be radicalIy different in wartime. This was particularly noticeable during operations Desert Shield/Storm. Maintenance units were mobilized and deployed with either no ASL stocks on hand or with stocks that would not support their customer units. This condition was further complicated by long supply lines and transfer in and out of supported units. SSAs had difficulty receiving supplies in a timely manner; and frequently when the item did finally arrive, the requesting unit had moved to another sector.

EMERGING CONCEPT (CLASS IX REDESIGN)

Several initiatives are emerging from the Class IX Redesign concept. They range from tailored packages to the restructuring of the logic for stocking parts at the various echelons. Essential to most of these initiatives is the improvement in the automation and communications packages that will support them. Computer systems allow near-real-time processing, and the distribution system is becoming more responsive. This means that costly supply lines can become shorter and more responsive to the readiness needs of the units. Also, the development of total asset visibility will allow the repair parts managers to know where the parts are and to distribute or redistribute them where needed.

RELATED DOCTRINE

A number of publications are related to the topics presented in this chapter. Some of the more important ones are listed in Table 14-1 (page 14-5).

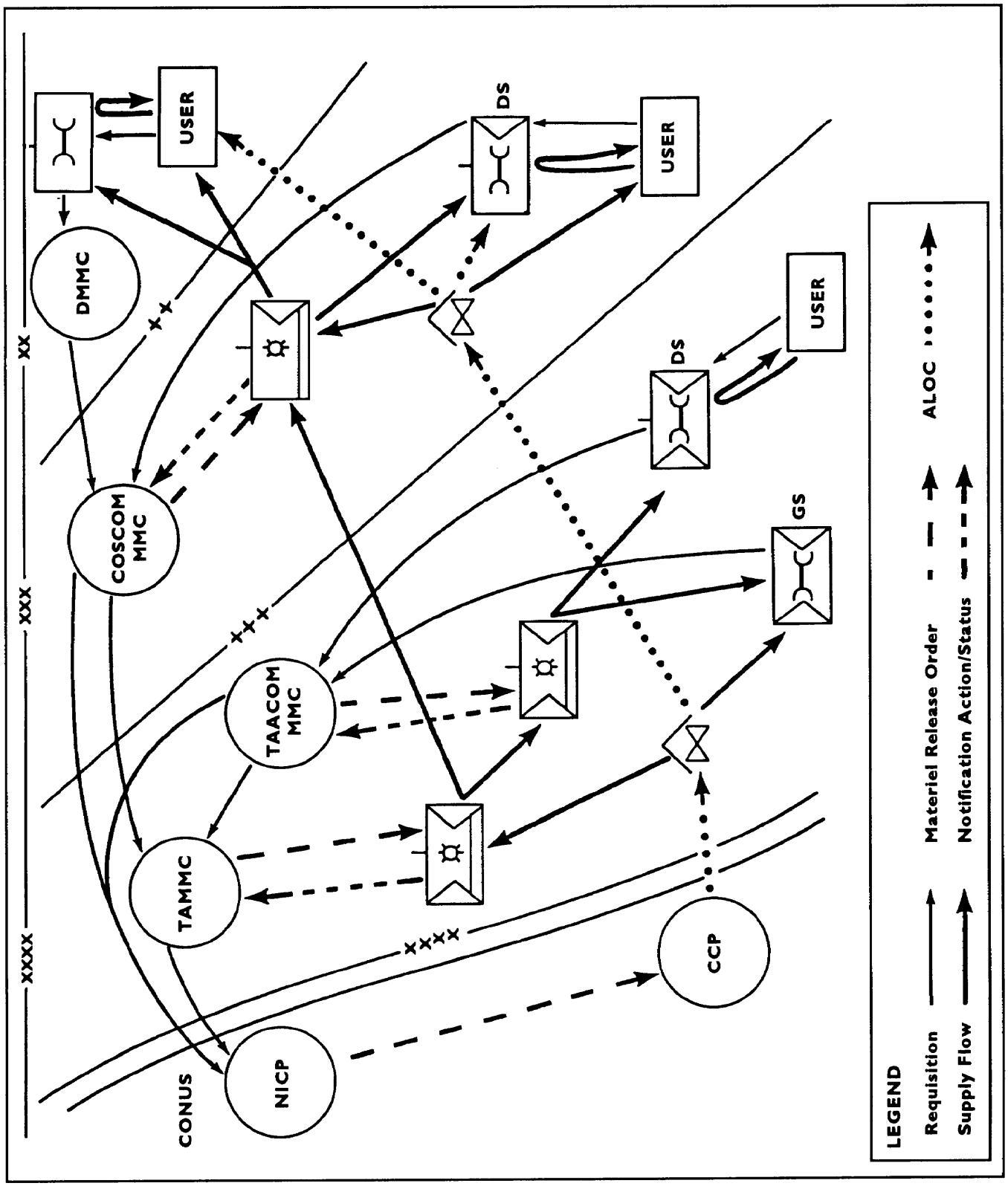


Figure 14-1. Request and delivery for noncontrolled Class IX supplies (less aircraft)

Table 14-1. Publications related to this chapter

Update Publications	Topic
Unit Supply UPDATE	Various ARs and DA Pams related to supply

Field Manuals	Topic
10-27	General supply
10-27-1	QM GS supply operations

Field Manuals	Topic
63-2	The DISCOM
63-3	CSS in a corps
63-4	CSS in a TAACOM
63-20	Forward support battalion
63-21	Main support battalion

CHAPTER 15
WATER OPERATIONS

INTRODUCTION

An integral part of our ability to support combat operations is the field water supply system. Water is an essential commodity. It is required for sanitation, food preparation, construction, and decontamination. Our modern combat and support activities, such as helicopter maintenance and medical facilities, consume large volumes of water. It is critical to our most precious combat element--the soldier.

Water is one of the few items which we still forage for on the battlefield. The quantity required depends upon the regional climate and the type and scope of operations. Temperate, tropic, and arctic environments normally have enough fresh surface and subsurface water sources to meet raw water requirements for the force. In arid regions, the timely provision of water takes on significant new dimensions. Soldiers must drink more water. Water requirements are significantly greater in rear areas, where there is heavy demand for water for aircraft and vehicle washing, medical treatment, laundry and shower facilities, and construction projects. Water support for enemy prisoners of war is often underestimated because of the absence of a sufficient water capability in enemy units and the requirement for on-site sanitation, shower, delousing, and medical support for incoming prisoners. Since water is critical in arid regions, it must be strictly managed. Commanders must set up priorities and allocation systems. They must make sure consumption and requirements are monitored.

Proponency for water is somewhat different from other commodities. That is, it is both a field service and a supply function. Water purification is considered a field service. However, it is normally accomplished by QM supply units in conjunction with storage and distribution of potable water--a supply function. The Corps of Engineers is also a major part of this unusual commodity. The engineers have developed and maintain an automated data base for rapid retrieval of water-related data. They also maintain and operate permanent, semipermanent, and nontactical water facilities. Other engineer water-related missions are discussed later.

RESPONSIBILITIES

The responsibilities of Army elements for water supply are covered in detail in AR 700-136. They are briefly discussed here.

The Army coordinates policy and procedures for joint plans and requirements for all DOD components that are responsible for water resources in support of land-based forces in contingency operations. It ensures that coordinated plans for technological research and development and equipment acquisitions meet DOD goals. It also ensures that duplicative efforts are resolved. Each service provides its own water resource support. However, the Army or another service will provide support beyond a service's capability in a joint operation.

Within the theater, the theater Army commander controls water and distributes it to US Army forces, to other US services, and, as required, to allied support elements. The senior engineer headquarters and its subordinate organizations are responsible for finding subsurface water. They drill wells and construct, repair, maintain, and operate permanent and semipermanent water facilities. They also aid QM water units with site preparation when required. The

command surgeon performs tests associated with water source approval, monitors potable water, and interprets the water testing results.

Water quality monitoring is primarily the responsibility of preventive medicine personnel of the medical command or corps. Water supply units perform routine testing.

CONCEPT OF OPERATIONS

Water support in a theater of operations is provided at two levels--DS and GS. Water is normally provided by QM units using supply point and limited unit distribution. In most regions of the world, surface water is readily available and normal DS capabilities are enough to meet requirements. In an arid environment, available water sources are limited and widely dispersed. Surface fresh water is almost nonexistent, and the availability of subsurface water varies by geographic region. The lack of water sources mandates extensive storage and distribution. GS units provide this capability.

Strategic Level

Because of the scarcity of potable water in Southwest Asia, water support equipment is propositioned afloat. This will allow for the initial support to a contingency force. Additional water equipment--controlled by the PM, Petroleum and Water Logistics--is available in CONUS depots to sustain operations. Most of this equipment is packaged for tactical transportability. It is configured to allow for throughput to the user with minimal handling in the theater of operations.

Operational Level

In an operation where surface water is abundant, water is provided by the QM supply company (DS) on demand. During the early stages of the operation, divisional forces, using organic water purification equipment, may be required to provide water until CSS units arrive.

In arid regions where sufficient water sources are not available, GS water systems are established. The petroleum group provides command and control of all GS water assets. In the absence of the petroleum group, command and control is provided by an area support group. The water supply battalion commands two to six water supply companies, purification detachments, and transportation medium truck companies--dedicated to the line-haul of water. GS purification detachments and teams and DS water elements produce all potable water required within the theater. Water supply companies are assigned to the force to set up and operate bulk storage and distribution facilities. Arrival in theater is such that the water distribution system expands with growth of the theater and provides adequate support to tactical operations. Tactical water distribution teams are assigned to water supply companies, as required, to augment capabilities for hose line distribution. Potable water is distributed to terminals within the theater army area and forward into the corps.

Tactical Level

DS water elements provide potable water by supply point and limited unit distribution. Water supply points are set up as far forward as possible. Exact locations depend on METT-T and available water sources, consuming units, and the commander's tactical plan. The most forward location is normally the brigade support area (BSA). Supported units draw water from supply points using organic transportation. Water purification elements draw and purify water from ponds, lakes, streams, rivers, wells, and local water systems. When water elements are unable to meet user requirements, they request aid from higher headquarters. See Figure 15-1 (page-15-4) for DS water support operations. See Figure 15-2 (page 15-5) for GS operations.

Corps QM DS supply companies provide nondivisional water support on an area basis. The water supply section is structured to operate three water points. Each point can produce as much as

,000 gallons of potable water per hour and store up to 30,000 gallons. The unit delivers water to major users unable to support themselves. It also sets up mobile supply points. Water elements provide divisional water support on an area basis. The division or brigade establishes procedures and allocations for subordinate units. The water section of the division main support battalion sets up water points in the division support area (DSA) and each BSA. The division, as well as the separate brigade and armored cavalry regiment, has enough water production and distribution capabilities to allow it to be self-supporting under normal conditions. Water element capabilities vary according to TOE. See FM 10-52 for more details on unit capabilities.

In arid regions, GS water units are assigned to the corps to supplement DS water elements. Because of the lack of sufficient water sources, treated water will most likely be transported from the theater army area by hose line, pipeline, or tanker truck to terminals operated by GS water supply companies. Terminals range in capacity from 400,000 to 1,600,000 gallons. They store a portion of the theater reserve. In GS operations, divisions are augmented with storage and distribution systems to provide for one day of supply on the ground in both the the DSA and BSA. Corps truck companies augmented with semitrailer-mounted fabric tanks (SMFTs) line-haul potable water throughout the theater.

PLANNING CONSIDERATIONS

The key to a successful water support mission is innovative and flexible planning. The focus of Army planning is to provide adequate water support in all environments.

DS water elements normally can meet user requirements in most regions of the world. In areas where the DS system cannot support potable water requirements (usually arid regions), a GS system is used. Since requirements greatly increase in arid regions, additional water purification, storage, and distribution capacity is required. Planners must be careful in setting total requirements for water in arid environments, especially those pertaining to storage and distribution. Introduction of GS water supply units greatly increases transportation requirements.

Planners must structure forces so that there is enough water production, storage, and distribution to meet requirements. They must also schedule the buildup of theater forces so that water support and preventive medicine units arrive on time to assure adequate and continuous water support. Staff officers at each level must include water supply guidance in their logistic support plans. They must include the following areas critical to any water support plan:

- Detailed inland distribution plans showing units by unit identification code (UIC) and their expected location for operations.
- Water support requirements for the other services, allied forces, and any host-nation labor forces.
- Applicable STANAGs or QSTAGs.
- Development of operational project (OPROJ) stocks that support specific operational plans. This is critical in arid regions where a great deal of GS water equipment will be required. The OPROJ is linked to the inland distribution plan at the UIC level and to any other theater equipment pre-positioning initiatives.
- Full development of a force that supports the water purification, storage (including days of supply), and distribution mission of the theater.

Time-phased water requirements are estimated, using consumption planning factors. See FM 10-52. The process begins with the identification of the force size and troop deployment rate. Units are then selected and scheduled for deployment so that water supply capabilities meet requirements. In arid region operations, CSS water units are normally deployed early on the TPFDL. This is necessary because of the increased consumption requirements, limited aircraft available for aerial resupply, and the need for centralized production.

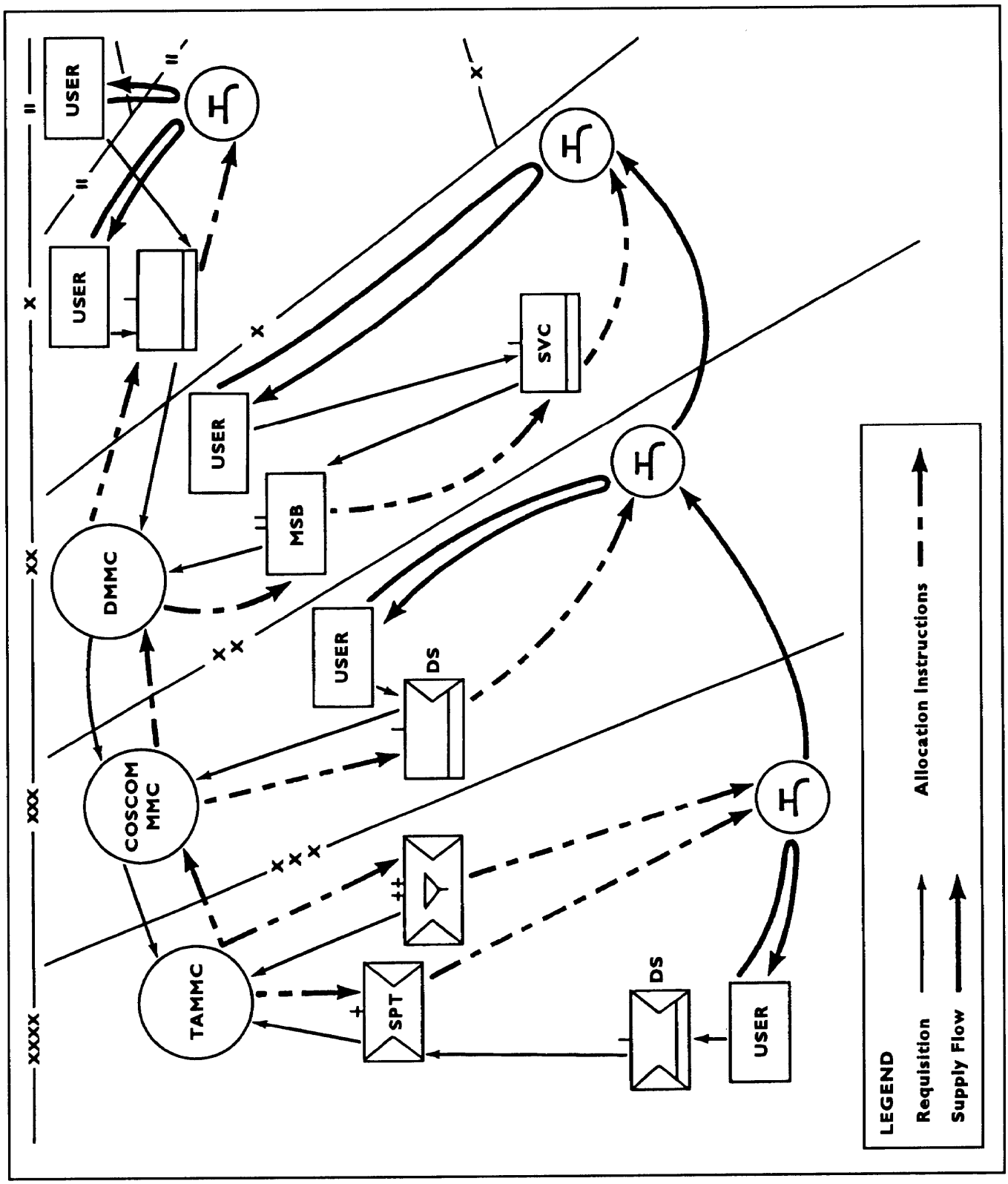


Figure 15-1. DS water support in nonarid regions

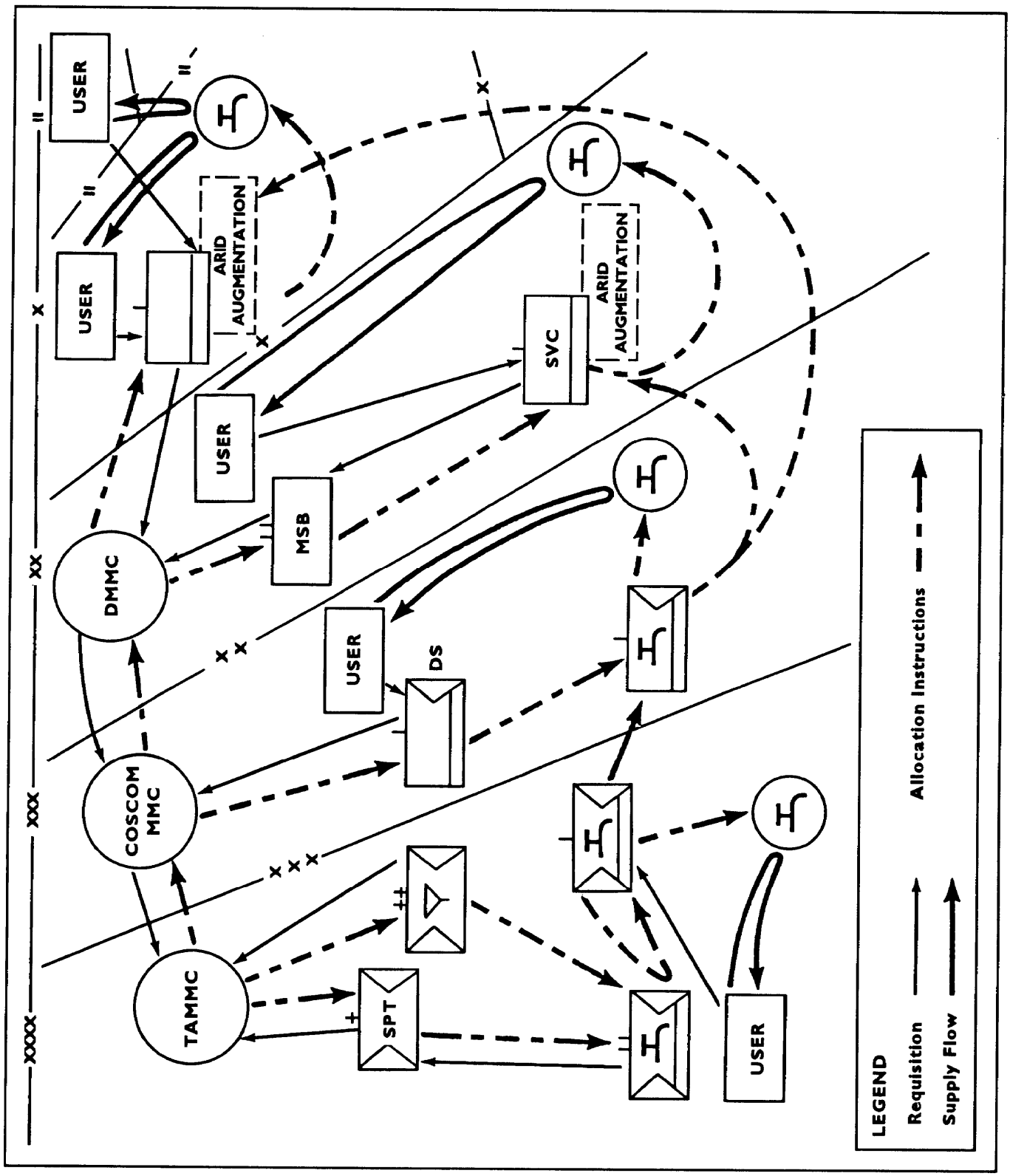


Figure 15-2. GS water support in arid regions

It is difficult to predict whether Army divisions and other services will be able to produce enough water to meet their own requirements. Logistics planners must provide a force structure adequate to do the job. They should also develop contingency plans with host nations to identify and determine the water resources available for US forces. They should use host-nation communication channels to help meet water requirements.

Planning for water support at all levels begins with determining the quantities of water required. The quantities depend on the battlefield environment (temperate, tropic, arctic, or arid), the expected duration of operations, and the size of the force. Water to meet certain uses is always essential. Water for some uses may be denied indefinitely. For some uses, it maybe denied for several weeks. Temperate, tropic, and arctic regions usually do not require large amounts of potable water to be stored. Nonpotable water requirements, such as decontaminating chemical and biological agents, can be met by raw water sources in those regions. Arid regions require the storage of large quantities of water and use of potable water for all requirements.

Seven water consumption planning factors relate directly to the number of people in the force. These are shown in Table 15-1 (page 15-7).

Six activities that require water do not relate directly to the number of soldiers in a force. Work load and the number of items of equipment determine requirements for--

- Hospital medical treatment.
- NBC decontamination.
- Vehicle maintenance.
- Mortuary affairs support.
- Engineer construction.
- Aircraft washing.

EMERGING CONCEPTS AND SYSTEMS

Recent operations such as Desert Shield/Storm and Restore Hope have reinforced the need to move from supply point distribution to unit distribution. The ability to provide potable water to the force is now limited by lack of appropriate distribution assets. The SMFT is a pressurized container that must be transported completely full or empty. It was procured to provide line-haul of potable water in arid regions. It was never intended to be used as a servicing vehicle. Many units do not have adequate storage containers to maintain the desired one-day supply of water. Nonexpendable water resupply equipment now in use, such as S-gallon cans and collapsible drums, is not adequate in situations where it cannot be recovered. Emergency water purification for small units and individual soldiers that are separated from supply channels is now limited to the use of emergency disinfectants, such as iodine tablets and chlor-floe tablets. The future water concept provides for distribution of water to unit trains and logistic release points (LRPs). It also provides for increased water storage assets, organic water packaging capabilities, and additional water purification capabilities. Units will be resupplied with water daily at the water supply points or water will be delivered to unit trains and LRPs, depending on the unit's location on the battlefield and METT-T.

Many units cannot now store and transport a one-day supply of water. In the future, units will be able to maintain a one-day supply of water using increased-capacity water trailers and packaged water.

EAD water elements will be able to package water. The packaging will involve an expendable, lightweight material. There will be a broad spectrum of package sizes, providing added flexibility to consumer units. The packages will be used for water distribution, logistic packages, and caches.

Lightweight, portable, and compact water purification equipment will allow individual soldiers and small groups to purify water when traditional resupply methods cannot be employed.

The 5,000-gallon hard wall tanker procured during operations Desert Shield/Storm will enhance the effectiveness of the water resupply system. It will be used as a servicing vehicle at

logistics transfer points and unit trains. The SMFT will continue its useful line-haul function in GS or arid regions.

SAFETY

Measures to protect water supplies include proper storage, dispersion of supplies and installations, protection against NBC contamination, and use of natural and artificial protective shelters or other shielding devices. Water support personnel must take advantage of natural cover and camouflage for water purification, storage, and distribution equipment. Dispersion of equipment on the battlefield limits losses of potable water from enemy attack. Proper storage procedures and the use of covers on open-top tanks reduce contamination of water supplies.

Before treated water is issued to the soldier or unit, it must be certified by the supporting preventive medicine unit. If preventive medicine support is not available, senior water treatment personnel may certify water treated by water purification equipment. Water treatment personnel routinely analyze the water supply. If they find it to be contaminated, they discharge it and disinfect and clean the equipment it came in contact with. Although the reverse osmosis water purification unit (ROWPU) removes most known contaminating agents, only uncontaminated raw water sources should be used for purification operations when possible.

Some water supply functions require soldiers to handle hazardous chemicals in the performance of their duties. The commander must ensure that everyone observes established safety precautions. The appropriate technical manual provides all the necessary information about the nature of a particular chemical and first aid procedures for it. Soldiers must wear eye protection and rubber gloves when handling chemicals. To protect them from high noise levels, they should wear ear protection when working around equipment such as pumps and generators. Supervisors must enforce safety rules.

Soldiers must be informed of the nature of arid environments and conditions and their reaction to them. They must be told of the extreme danger of dehydration. As the soldier loses water from his body, he will lose his desire for water (thirst). This can be serious, even deadly. Military leaders must enforce dehydration. Commanders must require all subordinate leaders to begin forced dehydration of troops. Supervisors must insist and ensure that each soldier drinks at least one pint of water each hour. This will significantly reduce heat stroke and exhaustion.

Table 15-1. Water consumption planning factors

USE	POTABLE	NONPOTABLE
Drinking water	X	
Heat casualty	X	
Personal hygiene requirements	X	
Centralized hygiene requirements		X *
Food preparation	X	
Laundry requirements		X
Medical staff requirements	X	

* Potability is not mandatory, but treated water may be required by local medical personnel.

WATER QUALITY

Commanders must ensure water supplies are potable. To do this, preventive medicine personnel frequently analyze the water from distribution points. They also perform biological examinations on the water supply at least twice a week, and more often, if possible. They ensure that the prescribed chlorine residual is always maintained. Unit sanitation teams are a valuable asset. They monitor water issue operations and perform routine chlorine testing of unit water supplies. Commanders must activate and task the teams to begin water monitoring as soon as possible.

RELATED DOCTRINE

A number of publications expand on information covered in this chapter. Some of the more important ones are shown in Table 15-2.

Table 15-2. Publications related to water supply operations

Field Manuals	Topic
5-104	Corps of Engineer responsibilities
10-52	Planning, organizing, and operating Army field water supply systems
10-52-1	Military water supply equipment and water point development
Technical Bulletins	**Topic**
MED 577	Preventive medicine guidance on field water supplies
Technical Manuals	**Topic**
5-813-series	Corps of Engineer responsibilities

CHAPTER 16
FIELD SERVICES OVERVIEW

Chapters 16 through 19 of this FM discuss field services. They signal several changes field services as they have existed or been defined in the past.

INTRODUCTION

A major change is that field services are no longer being classified as either primary or secondary. Instead, all field services will receive the same basic priority, leaving the decision as to which is most important to the theater Army commander. The theater Army commander influences priorities through the total Army analysis (TAA) process or through the time-phased force deployment list (TPFDL). For instance, laundry and shower units may be top priority in desert contingencies while airdrop resupply may be top priority in mountain contingencies.

Another change is that salvage operations, classified before as a field service, are now classified as a supply function. Salvage operations are discussed, as such, in Chapters 8 and 10.

Water purification and field feeding are now classified as field services. Water and Class I supply are classified as supply functions.

The bakery function, classified before as a field service, will now be an integral portion of field feeding. Production of bread on the battlefield, other than in the field feeding system or through contractor support, will no longer take place. The last QM field bakery unit will be phased out of the force structure by the end of calendar year 1995. Pouched bread will be processed through normal Class I supply channels. Therefore, the bakery function as a stand-alone field service will no longer exist.

The remaining field services are unchanged. As redefined, field services now include:

- Field feeding (includes the bakery function). See Chapter 9.
- Water purification. See Chapter 15.
- Airdrop (to include parachute packing, air item maintenance, and airdrop rigging for both initial insertion and resupply operations). See Chapter 17.
- Mortuary affairs (previously called graves registration). See Chapter 18.
- Laundry and shower. See Chapter 19.
- Clothing and light textile repair. See Chapter 19.

The tactical logistics functions outlined in FM 100-5 are discussed in Chapter 2. They are manning, arming, fueling, fixing, moving, and sustaining soldiers and their systems. The five elements of sustaining soldiers and their systems are personnel services, health services, field services, quality of life, and general supply support. Chapters 16 through 19 of this FM deal with one of the five elements--field services.

BATTLEFIELD LOCATIONS

As shown above, the classification of field services covers multiple and varied services or functions. These are provided primarily by QM personnel serving in a variety of units at the tactical and operational levels of logistics. During operations involving war, most of the field

services support provided at the tactical level will be provided by military personnel, with only a limited amount being provided by HNS or contractors. Conversely, at the operational level most field services support will be provided by HNS or by contractors. During OOTW field services support at all levels may come from a variety of sources.

Field feeding is a basic unit function performed by QM food service personnel throughout the theater of operations. Virtually every type of unit in the force structure, divisional and nondivisional, has some organic food service personnel. These personnel control the unit's food service program as directed by the commander.

Mortuary affairs personnel, on the other hand, are very limited. Each division will have a small mortuary affairs element (two to three personnel) organic to the DISCOM. They will train division personnel to perform initial search, recovery, identification, and evacuation of human remains. During hostilities, the mortuary affairs personnel organic to the division will operate the initial collection point--with the collection and return of the human remains remaining a basic unit function. This procedure will continue until the division is augmented with additional mortuary affairs personnel or a mortuary affairs unit. Nondivisional units at the tactical and operational levels will be supported on an area basis by a mortuary affairs unit assigned to the COSCOM or TAACOM.

The airborne division is the only division with an organic airdrop support capability. The airborne division capability is designed primarily for preparing the division for the initial insertion into an operational area. Following insertion, the airborne division can provide its own airdrop resupply support for 10 days. At that time, the airborne division will receive its airdrop resupply support from a light airdrop supply company assigned to the COSCOM or a heavy airdrop supply company assigned to the TAACOM.

DS laundry and shower support at the tactical level will be provided by a field service company having the capability of sending small teams as far forward as desired by the supported commander. At the operational level, this support will be provided by a combination of field service companies, HNS, and contractors. A GS laundry capability will be provided by a laundry and renovation company assigned to the TAACOM. A limited capability for minor clothing repair resides in the field service company. A larger capability will exist in the laundry and renovation company. In addition, QM fabric repair specialists are organic to selected maintenance units for the repair of a variety of canvas and fabrics used on tactical vehicles.

Water purification for the divisions is provided by elements organic to the DISCOM. Water purification for nondivisional elements at the tactical and operational levels is provided by the supply company (DS) on an area basis. These DS capabilities can normally provide the needed water. However, a GS capability, in the form of QM water purification detachments, will be necessary when operating in arid regions.

Field services, other than field feeding and water purification, will be discussed in the following chapters. Field feeding was covered in Chapter 9. Water purification was covered in Chapter 15.

RELATED DOCTRINE

A number of publications expand on information contained in this chapter. Some of the major ones are shown in Table 16-1.

Table 16-1. Publications related to this chapter

Field Manuals	Topic
10-16	Fabric repair
10-23	Basic field feeding doctrine
10-52	Water supply
10-63	Handling deceased personnel
10-280	Mobile field laundry
10-500-1	Airdrop operations

CHAPTER 17
AIRDROP OPERATIONS

INTRODUCTION

Airdrop is a field service that may be required on the battlefield at the onset of hostilities. This chapter outlines, in broad terms, the current Army doctrine on airborne insertions and airdrop resupply. Airborne insertions involve the delivery of a fighting force, along with its supplies and equipment, to an objective area by parachute. This category deals with airborne forces exclusively. Airborne insertions are covered in detail in FM 100-27. Airdrop resupply operations apply to all Army forces. This chapter is devoted primarily to airdrop resupply, including emerging concepts and systems.

RESPONSIBILITIES

Responsibilities for the airdrop function are spread throughout the theater. Some of the major responsibilities are explained here.

Divisions

The airborne division is the only division with organic airdrop support capability. The airdrop support company in the airborne division has the primary responsibility for supporting an airborne insertion. This company provides the necessary air delivery equipment in a ready-to-use configuration. It prepares division equipment for airdrop. After the division has been inserted, the airdrop support company provides limited airdrop resupply for 10 days. The unit also provides support for recovery of airdrop equipment. This allows the company to prepare for a second insertion, if required. All divisions, to include the airborne division, request and receive airdrop resupply support from the corps or theater. Most airdrop operations will support a division deployed close to the FLOT.

Corps

Each corps requires an airdrop support unit. This unit may be assigned to one of four force compositions (COMPO). The four are COMPO 1, active Army; COMPO 2, Army National Guard; COMPO 3, Army Reserve; and COMPO 4, unresourced force composition. This unit provides airdrop resupply support to all elements of the corps. As a rule, it provides this support to the divisions and separate units located near the FLOT. Under unusual circumstances, units at EAD may require airdrop resupply. Requirements that are beyond the capability of the corps unit are passed to the supporting TAACOM.

EAC

For a fully developed theater of operations, airdrop support units are required in each TAACOM. An airdrop supply company provides airdrop resupply to elements in the corps and forward areas when the corps airdrop support unit is unable to furnish it.

Special Operations Forces (SOF)

SOF have a limited TOE airdrop capability in the special operations support battalion. The ranger regiment has a TDA capability, and the special forces groups have a TOE capability. The theater Army commander can be tasked for airdrop support of these forces after they are deployed.

Long-Range Surveillance Units

Long-range surveillance units are found at both division and corps levels. The airdrop support unit at corps or theater level provides personnel parachute support and airdrop resupply support to these units.

Combined Operations

At corps and below, command organizations are usually national. Airdrop resupply is normally a national responsibility. Normally, each country has its own airdrop capability. However, the airdrop request form is addressed under a NATO STANAG. When directed by the supreme allied commander, the doctrine in this chapter can be changed to fit the situation.

CONCEPT OF OPERATIONS

The onset of hostilities, which may severely disrupt land LOCs, may require the use of airdrop. Later increases in combat intensity, depth, and duration may also dictate its use. Airdrop is a vital link in the distribution system. It extends ALOC and serves as an important combat multiplier. It provides the flexibility required of the supply and distribution systems. Normally, airdrop in a theater of operations is a joint effort involving Air Force aircraft and Army ground support. Joint service FMs of the 10-500 series give the procedures for rigging supplies and equipment. Some Army helicopters are capable of airdropping small bundles. However, aircraft range and weight restrictions severely limit the use of Army aircraft in airdrop operations.

Advantages of Airdrop

Airdrop resupply has several advantages over conventional distribution systems. These advantages include the following:

- Airdrop permits throughput of supplies from the corps and TAACOM area directly to the using unit, even if a unit is in an otherwise unreachable area. In contingency operations where stocks have been established and prerigged, supplies can be throughput directly from CONUS or OCONUS locations outside the contingency theater.
- Airdrop reduces the need for forward airfields or landing zones.
- It permits greater dispersion of ground tactical forces.
- Airdrop reduces delivery time.
- It reduces congestion at forward airfields and reduces the need for materials handling equipment.
- Airdrop provides a shorter turnaround time for aircraft than air landing, thus increasing their availability.

Disadvantages of Airdrop

While airdrop gives flexibility to supply and distribution systems, commanders and other planners must weigh the disadvantages. These disadvantages include the following:

- Vulnerability to enemy aircraft and ground fire.
- Fewer supplies and equipment that can be carried because of the need to carry special airdrop equipment and air items.
- The need for specially trained rigging personnel and appropriate airlift aircraft with trained crews.
- The impact of adverse weather on delivery capabilities and accuracy.

Unit Responsibilities

The unit requesting the airdrop resupply must select, prepare, and secure the drop zone. It must also control the drop zone in the absence of the Air Force combat control team, recover supplies and equipment, and recover and provide for the retrograde or destruction of air delivery equipment as the situation dictates.

Request Procedures

There are two types of airdrop resupply requests--preplanned and immediate. They are described here.

Preplanned requests. These are based on known or projected requirements and can be programmed in advance. Figure 17-1 (page 17-4) shows the channels for a preplanned request. The request normally flows through logistic channels (S4 or G4) to the appropriate support level (corps or TAACOM). The MMC and MCC direct Army actions. Army responsibilities include moving the supplies and equipment from the storage site to the rigging site. After they are rigged, they are moved to the supporting airfield. They should then be loaded aboard the delivery aircraft. If not loaded immediately, they are temporarily stored in a location chosen by the supporting aerial port personnel. Loading on Air Force aircraft is an Air Force responsibility, although Army personnel may help. The senior Army validator submits an airlift request to the joint force commander's (JFC) designated agent. The JFC agent validates the request, assigns a priority, and then sends it to the Air Force Airlift Control Center (ALCC) for execution. The ALCC directs the Air Force actions.

Immediate airdrop. These requests stem from unanticipated, urgent, or priority requirements. These requirements are critical for a unit to survive or complete its tactical mission. An immediate request may be filled by an immediate mission or by diverting an aircraft from a preplanned mission. These requests flow through Army operational channels (S3 or G3) to the validating authority. This saves time. When possible, the request is passed at the same time through Air Force channels. This allows maximum time for identifying support aircraft and coordinating with the JFC agent. DD Form 1974 is the airlift request form. The use of this form is explained in Joint Publication 1-02 and FM 100-27. STANAG 3093 also endorses DD Form 1974 for use in communications between the US and its allies. The information on the form is required to plan and perform a successful airdrop. An airdrop request is considered to be validated when it is passed to the next level.

Retrograde

The unit receiving the airdrop resupply is responsible for recovering and initially evacuating airdrop equipment. If the situation permits, the unit collects the equipment from the drop zone and returns it to the nearest salvage collection point or collection and classification point. Airdrop equipment is expensive and usually in limited supply. It should be retrograded as quickly as possible for maximum reuse. If the tactical situation does not permit the recovery and retrograde of this equipment, it should be destroyed or buried.

PLANNING CONSIDERATIONS

Airdrop planning factors are found in FM 101-10-1/2. Staff planners at all levels use these factors. Planning factors help determine force structure and aircraft requirements, airdrop work load, air delivery equipment stockage levels, and equipment recovery rates.

Force Composition

Many airdrop support units are in force compositions other than the active Army (COMPO 2,3, or 4). An important consideration for the airdrop planner at theater, corps, or division level is the location and availability of airdrop forces to support the force. Division logistics planners should be sure that the supporting COSCOM and theater logistics planners address these points". If the required force structure is not available in a particular COSCOM or TAACOM, then the planner should--

- Examine the appropriate TPFDL to determine when the forces will be available.
- Determine whether the designated airdrop support units are in the active Army, Army National Guard, Army reserve, or unresourced force structure.
- ***Determine the*** state of unit readiness.
- Determine if the units are committed to more than one TPFDL.

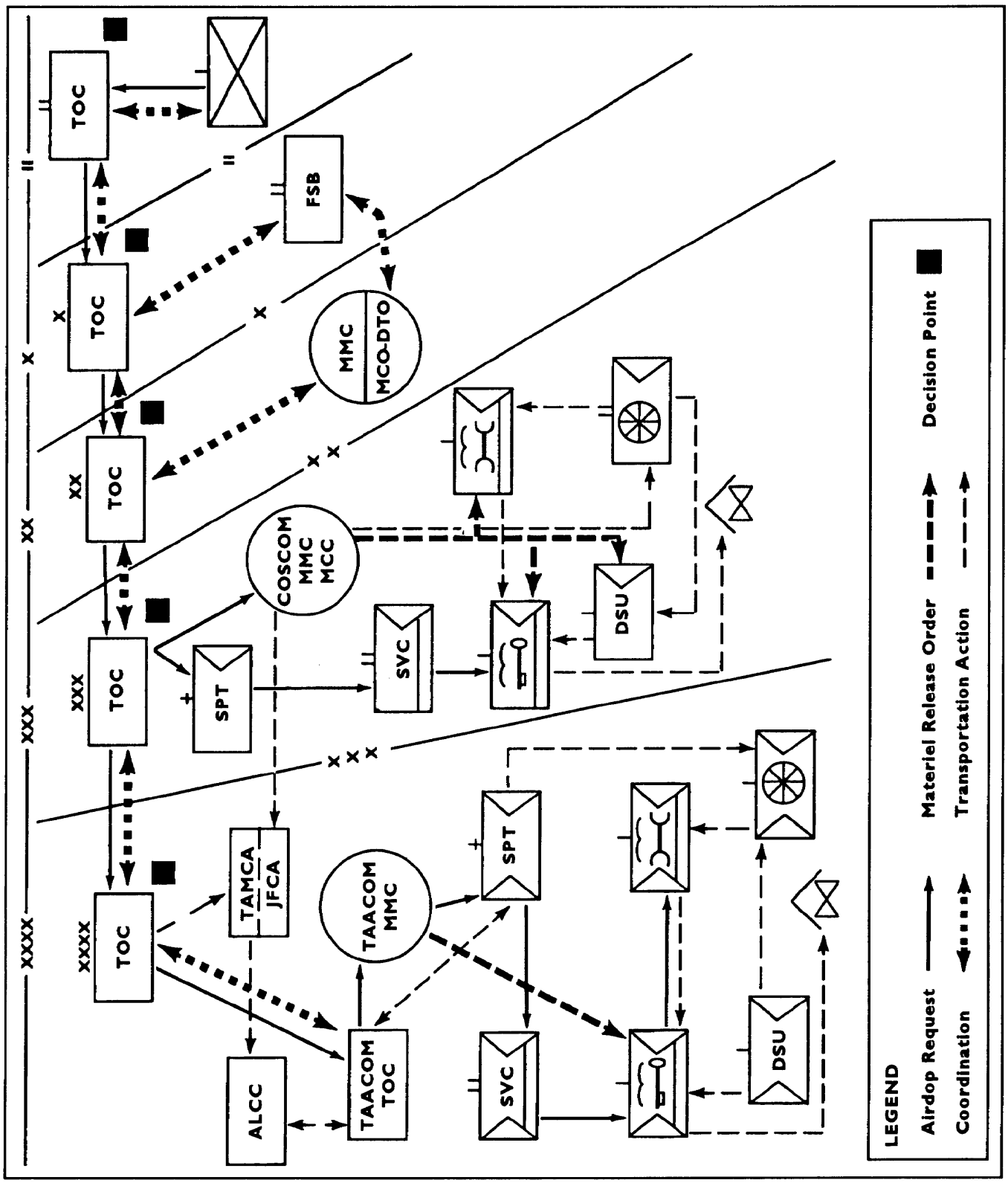


Figure 17-1. Channels for airdrop requests

Alternatives

Airdrop support units may not be available or may not arrive in time to influence the action. Therefore, planners should consider alternatives. One alternative is to prerig critical supplies and equipment for airdrop. This task can be done as an OPROJ. The logistics planner must determine--

- The types and quantities of supplies to be prerigged.
- The air delivery equipment required for rigging supplies.
- HOW much storage area is required for the prerigged supplies.
- Who will rig the supplies and perform in-storage inspections.
- HOW the unit will request delivery of the prerigged supplies.

SAFETY

An airdrop support unit's main contribution is to enable the supply and distribution systems to provide continuous sustainment support to forward elements. Airdrop support operations are dynamic in nature. This is true whether the requirement is for parachutists (airborne insertion) or for airdrop resupply.

Operations

Procedural manuals and regulations outline various safety precautions and procedures. These must be followed to allow airdrop rigging operations to be conducted in a relatively accident-free environment. They also ensure that the delivery aircraft will not be damaged during extraction or release of airdrop loads (a prime consideration). The main goal of airdrop resupply operations is the timely delivery of supplies or equipment to the user in a usable condition.

Threat

Most airdrop support units will be located in the corps rear area or at the operational level. Modern threat capabilities and doctrine make them susceptible to many threat tactics. The units use normal defensive procedures before a threat attack. Airdrop support units must provide as much NBC protection as possible for airdrop equipment. No decontamination procedures are now available for the nylon components of airdrop equipment. Some effective passive measures include decentralization of storage locations, the use of indoor storage facilities, and the use of some type of protective cover for supplies stored in the open. Decentralization of storage locations is especially effective against direct and indirect fire weapons. During periods when NBC contamination is present, rigging operations stop. This is necessary because--

- Airdrop equipment will be contaminated if it is rigged when contamination is present. Once a contaminated area has been cleared and airdrop supplies and equipment have been checked for contamination, rigging operations can continue.
- Contaminated airdrop equipment will not normally be allowed on board an airdrop aircraft.

DISTRIBUTION

Combat units take only the supplies and equipment needed to keep them operational until they can be resupplied, so planning and coordination must be continuous. The airdrop distribution system allows the timely delivery of supplies and equipment to supported units. While classified as a field service, airdrop provides a vital link in the distribution system, so both field service and transportation planners must consider it carefully.

EMERGING CONCEPTS AND SYSTEMS

Within the next few years, a new airdrop support concept should be in place. There are several new airdrop systems in research and development that will improve survivability in relation to the threat. The new systems pertain to the airdrop aircraft and the actual supplies and equipment being dropped.

Concepts

A new airdrop support concept is outlined in FM10-500-1. Basically, each corps is authorized a light airdrop supply company. This unit can rig 120 tons of supplies per day for airdrop delivery using the container delivery system (CDS), primarily with the A-22 container. A single A-22 container will hold up to 2,200 pounds of supplies. A C-130 aircraft can deliver up to 16 of these containers in a single pass across a drop zone. The C-141 can deliver up to 40 containers on a single pass. Supply and maintenance support for the light airdrop supply company will come from an airdrop equipment repair and supply company located in the supporting TAACOM. Airdrop resupply support for the heavier loads, such as bridging materials, will be forwarded to a heavy airdrop supply company located in the TAACOM. See FM 10-500-1 for more details of the new airdrop support concept.

Systems

In the 1980s Army and Air Force personnel examined threat air defense capabilities and determined that future airdrop systems should be capable of being used on aircraft flying low and fast. A new airdrop aircraft is being tested by the Air Force. It has been designed with the capability of flying airdrop missions at low altitudes (300 feet above ground level (AGL)) and high speeds (up to 235 knots indicated air speed (KIAS)). The container delivery system has already been changed to allow airdrop at altitudes down to 300 feet AGL. An improved version will allow the airdrop of the CDS at speeds up to 250 KIAS. The thrust of Army developmental efforts in airdrop equipment is to reduce vulnerability and capitalize on the delivery capability of developmental aircraft. The 60,000-pound-capacity airdrop system will allow platform loads weighing from 42,000 to 60,000 pounds to be dropped from the C-5 and developmental aircraft. The Army and Air Force are jointly revalidating the need for low and fast systems. The need for a high-altitude, offset delivery capability is also being explored.

RELATED DOCTRINE

A number of publications expand on the information contained in this chapter. The major ones are listed in Table 17-1.

Table 17-1. Publications related to airdrop operations

Field Manuals	Topic
10-500-series	Specific rigging procedures for all types of loads approved for airdrop
10-500-1	Airdrop support operations in a theater of operations
10-500-9	Operating details of the various airdrop support units
100-27/ AFM 2-50	Army and Air Force joint doctrine for airborne and tactical airlift operations
Technical Manuals	**Topic**
10-1670-series	Organizational, GS, and DS maintenance instructions for Army parachutes and other airdrop equipment

CHAPTER 18
MORTUARY AFFAIRS

INTRODUCTION

Traditionally, the US Army cares for its dead soldiers with a level of support and respect unmatched by any other nation's military force. Americans expect as a tenet of faith that the Army will take proper care of the remains of service members. This high-quality support is the standard that mortuary affairs personnel must continue to uphold. It is a most important and vital field service.

In early wars, in-theater burials were the primary battlefield method of handling dead soldiers. The military called this "graves registration. " The QMC, receiving the "graves registration" mission during the civil war, continued the practice of in-theater interment on or near the battlefield. With the establishment of overseas mortuaries, faster transportation, and improved technology, remains are initially processed in-theater and then evacuated to CONUS. Recent wars and OOTW have shown this policy is quite effective.

RESPONSIBILITIES

The Mortuary Affairs Program is a broadly based program used by the military services to provide the necessary care for deceased personnel. The joint staff provides general guidance and policy to the unified commands and military departments within the DOD. Within DA, the Deputy Chief of Staff for Personnel creates policy. The Deputy Chief of Staff for Logistics implements the policy and recommends force structure. The unified command develops implementation plans based on joint staff policy, the force structure, and doctrine. TRADOC develops the standardized training and doctrine for the military services to use.

All commanders are responsible for the search for, recovery, tentative identification, and care of remains and their evacuation to the nearest collection point or mortuary. Temporary burial is approved only when evacuation of remains is not possible. All remains temporarily interred will be recovered as soon as the situation permits and evacuated to the nearest collection point or mortuary.

CONCEPT OF OPERATIONS

The Mortuary Affairs Program supports both peacetime and wartime operations. It is designed to support the battlefield in a force projection environment under all combined and joint contingency operations. This program is flexible enough so that theater commanders can tailor it to meet their needs. The Mortuary Affairs Program is divided into three subprograms. These are current death, graves registration, and concurrent return. These are described in Table 18-1 (page 18-2).

Each service has the responsibility for the return of remains and personal effects to CONUS. The Army will provide general support when other services' requirements exceed their capabilities. The Mortuary Affairs Program goal is to return remains to CONUS while maintaining morale, providing field sanitation, and complying with all international laws, rules of land warfare, and international agreements.

Collection points located throughout the theater receive, process, and evacuate remains and personal effects. Depending on the subprogram in effect, as determined by the theater commander, remains and personal effects are

evacuated to the theater evacuation point or temporary interment site. Interments are only temporary. Collection points are staffed to receive and process remains and personal effects.

At theater level, a mortuary affairs company will operate a mortuary and personal effects depot. Remains and personal effects are evacuated, usually by air, to a CONUS point of entry mortuary.

At the CONUS port of entry mortuary, forensic specialists make a positive identification of the remains and prepare them for release IAW the wishes of the next-of-kin.

PLANNING CONSIDERATIONS

Mortuary affairs is a sensitive responsibility. Proper planning and coordination will ensure the effective evacuation of remains. Commanders at all levels should have plans for the rapid evacuation of remains. At the unified command level, a Joint Mortuary Affairs Office (JMAO) is established to provide the commander with guidance, coordination capability, and staff supervision for all mortuary affairs operations. JCS Joint Mortuary Affairs Policy CJCS MOP 16 and FM 10-63 provide policy and doctrine on mortuary affairs.

EMERGING CONCEPTS AND SYSTEMS

Mortuary affairs capabilities will always include support for all operations. This support will include the the basic skills of assisting search and recovery missions, tentative identification, and timely evacuation of remains and personal effects. Some of the emerging concepts and systems are discussed below.

Revised Concept of Operation

The revised concept of operation, which is under development, continues to support the three mortuary affairs subprograms. The key change is added flexibility to support conflicts ranging from war to OOTW. See Figure 18-1 (page 18-3). The revised concept provides for the development and placement of a collection company in the corps area to operate collection points throughout the corps, division, and brigade areas. These points will receive remains from the maneuver units, conduct search and recovery operations, and arrange for the evacuation of remains to a mortuary or temporary burial site.

Table 18-1. Mortuary affairs subprograms

PROGRAM	PURPOSE
Current Death	Provides mortuary supplies and services for permanent disposition of remains and personal effects of persons for whom the Army is or becomes responsible. Operates around the world in peacetime; may continue in areas of conflict depending on logistical and tactical situation.
Graves Registration	Provides for search, recovery, initial identification, and evacuation of remains for temporary interment. Provides for care and maintenance of those burial sites. Provides for handling and disposition of personal effects.
Concurrent Return	Provides for search, recovery, and evacuation of remains to a mortuary. Provides for the positive identification, embalming, and disposition of remains as directed by the next of kin. It also provides for the handling and disposition of personal effects. Is activated during emergencies or major military operations when conditions and capabilities permit.

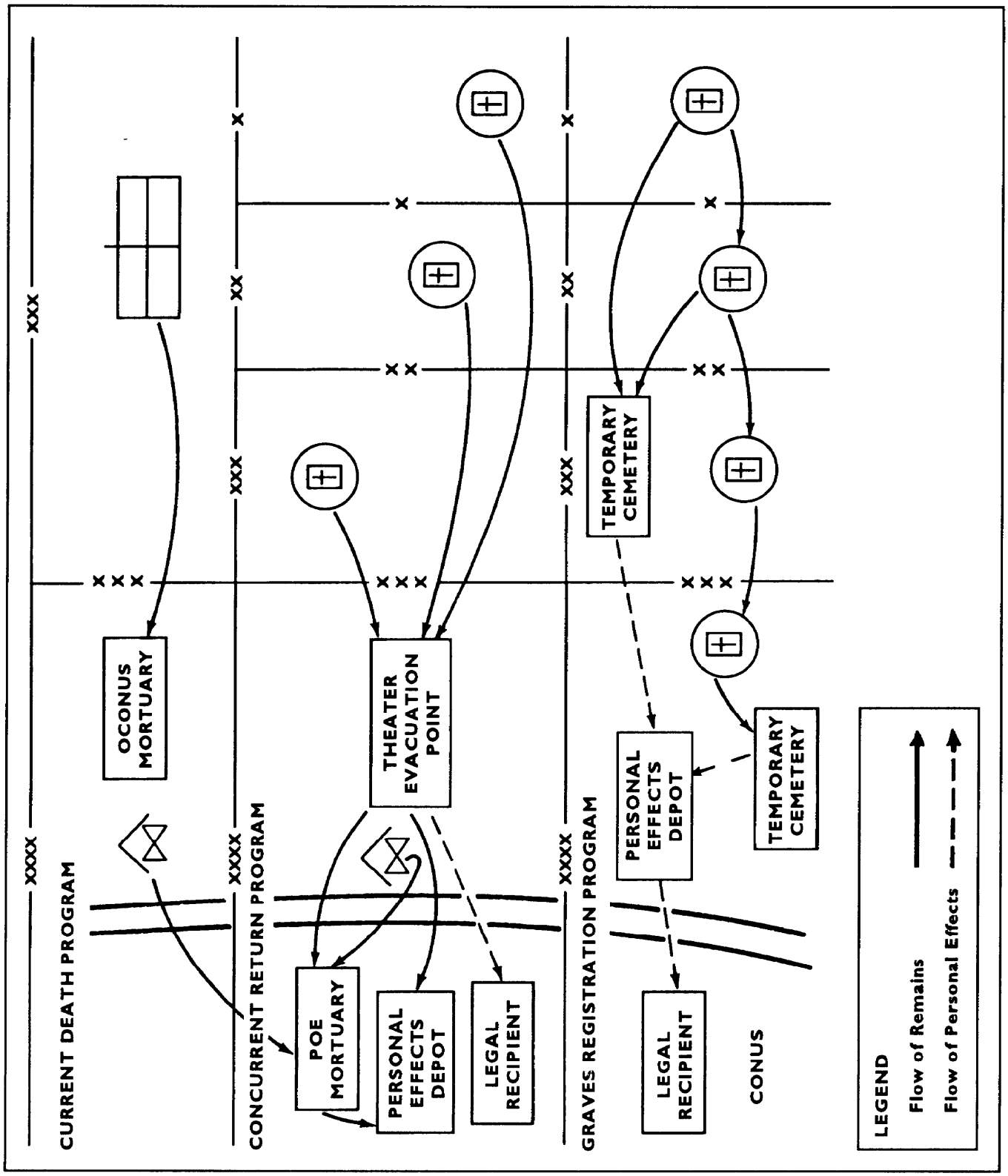


Figure 18-1. Wartime concept of operation for theater mortuary affairs

This revised concept also includes the development and placement of a mortuary affairs company in the TAACOM. This company can operate a personal effects depot. It can also operate two temporary burial sites, two theater evacuation points, or one in-theater mortuary.

Computer-Assisted Postmortem Identification (CAPMI) System

CAPMI is a microcomputer-based rapid-sorting software program. By sorting a large data base of antemortem (predeath) and postmortem (postdeath) records, a list of possible identities is quickly generated. This speeds up the identification process. The Armed Forces Institute of Pathology is proponent for CAPMI.

X-Ray System, Dental, Miniature

This hand-held X-ray machine runs on a rechargeable battery system and can produce high quality X-ray images. Using self-developing film, the system will afford mortuary affairs personnel an opportunity to gather postmortem dental data rapidly in a temporary field facility.

Mortuary Affairs Automation System

The mass fatality field information management system (MFFIMS) is a laptop computer based information and tracking program. Using MFFIMS, forward collection points can rapidly send information about remains to the rear and to CONUS. It also provides near real-time location status for each remains. MFFIMS is especially useful when managing a mass fatality event.

Decontamination Operations

To further our national policy of returning all US service personnel who die in any theater of operation to the next of kin, new decontamination procedures are being developed. Plans call for the establishment of a task-organized mortuary affairs decontamination collection point (MADCP). A MADCP will setup and operate near areas that have a large number of contaminated remains. For other cases, collection point teams may decontaminate e remains.

SAFETY

The Army's increasing deployment to areas in which disease prevention and control is inadequate greatly increases the risk to mortuary affairs soldiers from blood-borne diseases. Increased personnel protective measures, including immunizations, should reduce this threat.

RELATED DOCTRINE

A number of publications provide mortuary affairs support information. Some of the more important of these are listed in Table 18-2.

Table 18-2. *Publications related to mortuary affairs*

Army Regulations	Topic
AR 600-8-1	Army casualty and memorial affairs
AR 638-30	Graves registration organization and functions
Field Manuals	**Topic**
10-27-2	QM DS supply and field services
10-63	Handling deceased personnel
10-286	Identifying deceased personnel

CHAPTER 19

LAUNDRY AND SHOWER OPERATIONS AND CLOTHING AND LIGHT TEXTILE REPAIR

INTRODUCTION

During peacetime, laundry and shower services are normally provided through fixed facilities or field expedient methods for short-duration field exercises. In support of long-term training, war, or OOTW, these services must be provided on a timely, efficient basis in the field. These functions will be provided from the tactical and operational levels with projection as far forward as the brigade area. The goal is to provide soldiers with two showers each week. In addition, soldiers will be provided up to 15 pounds of laundered clothing each week. In this process, soldiers will receive their clothing back from the tactical laundry within a 24-hour period. Laundry and shower capability will be enhanced through the development of containerized equipment that will improve deployment, mobility, and productivity. The force structure is equipped and manned to provide each soldier one shower a week. The second shower would be provided by field expediency, small-unit shower equipment, HNS, or contract operations.

RESPONSIBILITIES

The need to provide clean, serviceable clothing and a shower has long been recognized as essential for hygiene and morale purposes. The units responsible for providing this support are discussed below.

QM Field Service Company (FSC), DS

This company is the primary provider of tactical field services to divisional and nondivisional personnel from the corps forward area to the FLOT. This includes shower, laundry, limited clothing repair, and delousing. It is normally assigned to a CSB in a COSCOM.

Combat Support Hospital (CSH)

This field hospital has organic equipment to support its patient load. Hospital staff personnel are supported by the FSC in their area of operation. The hospital must request and coordinate staff services through support channels.

Laundry and Renovation Company, GS

The mission of the laundry and renovation company, GS, is to receive, classify, launder, renovate, and temporarily store clothing and lightweight laundered textiles. The company also processes and stores seasonal clothing and equipment. It is assigned to a TAACOM and attached to a supply and service battalion in an area support group. The company operates on two shifts and is organized with a headquarters section, operations section, classification and storage platoon, and a laundry and renovation platoon. The classification and storage platoon consists of a platoon headquarters, a classification section, and a storage section. The laundry and renovation platoon consists of the platoon headquarters, renovation section, and a laundry section. The company is capable (weekly) of receipt, classification, and temporary storage of about 22 tons of clothing and lightweight textiles; renovation of about 35,000 items; and laundering of 44,000 pounds of clothing.

QM Laundry Service Team

This team is normally attached to a TAACOM hospital unit, base (field), or a TAACOM hospital

unit, base (general). The team provides weekly laundry service for 500 hospital patients based on 77 pounds for each patient a week.

CONCEPT OF OPERATIONS

The concept for laundry and shower support has been developed around the FSC, DS. It will, therefore, be addressed in depth. Although the laundry and renovation company and the QM laundry service teams have a recognized need, they are not currently resourced.

General

At level one capability the FSC, DS, can support 17,500 soldiers a week. It can cleanup to 15 pounds of laundry for each soldier a week, provide one shower for each soldier a week, and perform limited repair for clothing being laundered. The company has equipment to provide mass delousing under the direction and supervision of medical personnel. It provides its own food service and organizational maintenance for organic equipment, less communications equipment. The FSC depends on corps elements for medical, legal, personnel, administrative, and religious services; maintenance of communications security equipment; and additional transportation. It depends upon battalion headquarters for organizational maintenance of communications equipment.

Support Flow **(Normal and Contingency)**

The FSC normally operates at the tactical level of logistics in the corps forward or division area as far forward as METT-T allow. Maximum use of available HNS and local contracts is encouraged for shower, laundry, and clothing repair to increase the capabilities of the FSC. HNS and contract support must be used for soldiers in the corps rear and in the operational level of logistics. They are also required for general support for the cleaning and repair of organizational clothing and individual equipment (OCIE).

The company is modular by design with a platoon headquarters and five shower, laundry, and clothing repair (SLCR) sections. The SLCR sections will start from the company base and be sent to supported units as scheduled by the SLCR platoon headquarters. The platoon headquarters coordinates platoon functions (with supported units), site selection, preventive medicine, and site security. Access to a water source is preferred, but the organization has limited water storage capability when a water source is not available. Supported units will provide additional personnel to guard weapons and valuables of their personnel and to carry out mass delousing operations. They may also be requested to help in site setup. An FSC shower, laundry, and clothing repair section can support 3,500 soldiers a week (500 per day) and may be deployed in support of a brigade-size element. The SLCR sections are 100 percent mobile. Additional transportation may be required for other company elements.

The FSC must communicate with battalion headquarters, supported units, and the SLCR sections. The commander assigns the communication assets as needed to perform the mission. Since the SLCR sections are not collocated with the company headquarters, they should have telephones and local switchboard support in their areas of operation. When support is completed in one area, a section recovers equipment and moves to the next location. Prior coordination through support channels determines the next location. See Figure 19-1 (page 19-3). The SLCR sections may be task-organized to accommodate a particular strength requirement.

Operations

Supported personnel would arrive at the shower point with their dirty laundry and a change of clothing to wear after they shower. After showering they would go to the laundry point and turn in up to **15** pounds of dirty clothing. The soldiers place their dirty clothing in mesh bags. Clothing needing repair will be identified when turned in

for cleaning. The dirty clothing is laundered, repaired (as necessary), and returned to the supported unit within 24 hours. Coordination may be made with the supported unit for pickup, The SLCR section uses organic vehicles to deliver clean individual laundry to the supported uniter battalion S4.

When medical personnel determine that mass delousing is required, a delousing station is set up and is manned by supported unit personnel under the supervision of shower point personnel. A medical representative must be present during mass delousing operations. The supported unit coordinates the presence of medical personnel with their supporting medical facility. Delousing operations, when required, are performed with shower operations.

Shower Services

The shower point is staffed with three personnel. Supported units must provide guards for valuables and individual weapons. Each supported unit receives a scheduled time for SLCR support so that services are provided in a timely and orderly manner. Females will be scheduled separately from males. Upon completion of a shower, the supported soldiers must take their soiled clothing to the laundry turn-in point.

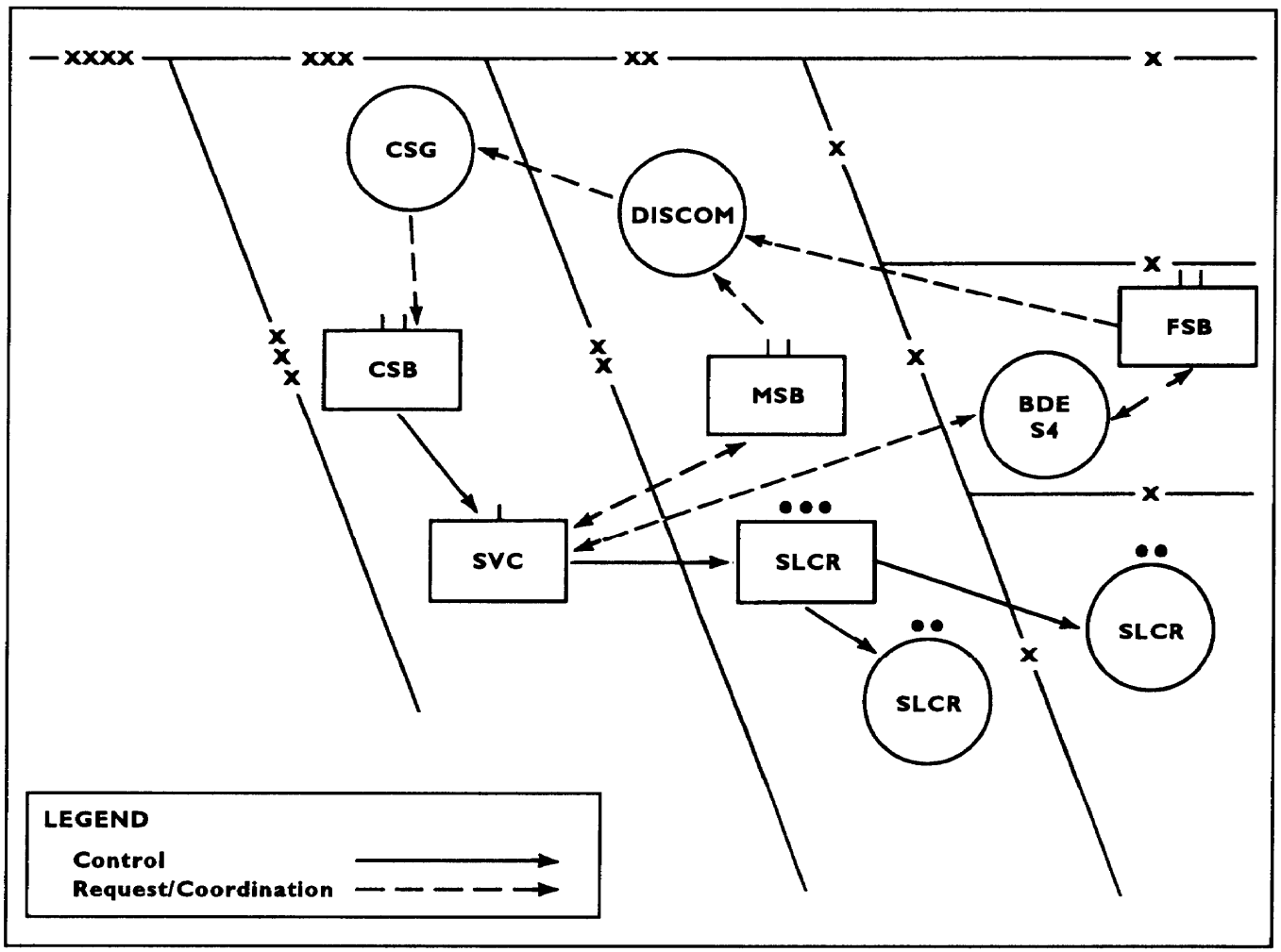


Figure 19-1. Support channels for SLCR sections

Laundry Services

As soldiers turn in their soiled clothing they must identify clothing requiring repair. All soiled clothing is cleaned and sent to clothing repair, if required, or the shipping point. At the shipping point clothing bundles are separated by unit and returned to the supported unit.

Clothing Repair Operations

Clothing repair performed by the SLCR sections is in support of shower and laundry operations. Repairs are limited to individual clothing of units being supported with shower and laundry services. No single repair shall exceed five reinutes in duration and no item of clothing will be repaired if total repairs exceed 15 minutes. Any items exceeding these limitations will be returned to the soldier for replacement through normal supply channels. Table 19-1 (page 19-5) shows a list of the repairs made by the SLCR sections and the approximate time for each repair.

MOS 43M soldiers (fabric repair specialists) are assigned to the field service companies to repair lightweight textiles and clothing items. These specialists are also authorized (in selected maintenance TOEs) to repair medium-weight and heavyweight textiles. They repair canvas and fabrics used on vehicles and items such as seat covers, tarpaulins, cargo covers, and swim barriers. The FSC fabric repair specialists are authorized clothing repair shops (trailer-mounted) and the canvas worker's tool kit. The fabric repair specialists in maintenance companies are authorized the canvas and glass shop (shelter-mounted) and the canvas worker's tool kit. It is important to note that the fabric repair specialists assigned to an FSC do not have the equipment to repair medium-weight and heavyweight fabrics like tents and tarpaulin.

NBC Decontamination Operations

The FSC does not provide laundry decontamination support, and showers are not required for detailed troop decontamination of chemical and biological agents. A shower may or may not be needed for radiation decontamination. If mission-oriented protection posture (MOPP) was used as a protective measure against fallout, no showers will be needed. If MOPP 4 was not used, then contamination will be lodged in hair and on skin and can only be removed by showering. The assessment and recovery team will coordinate these showers with the FSC. The runoff from these showers will be contaminated and should be controlled. For decontamination procedures refer to FM 3-5. The new chemical protective clothing being developed and issued can be cleaned before being contaminated and still keep its protective qualities. Once exposed to contamination, however, it must be disposed of under theater policies.

PLANNING CONSIDERATIONS

Since SLCR force structure is rather limited, planning is very important. Some planning considerations are discussed below.

Site Selection

The mission assigned to the FSC by higher headquarters is the chief consideration when selecting a site for operations. A site is selected based upon the number of personnel to receive services, the location, and time constraints. The site should be located as close to the unit or command being supported as possible. It should have plenty of clean water, proper drainage, gently sloping terrain, good roads, and natural cover and concealment. A ditch or drainage system should be available to carry off wastewater. Suggested site layout is shown in Figure 19-2 (page 19-5).

Water

The SLCR site must have an ample supply of clean water. The water must be as free from impurities as possible. Each laundry trailer uses about 350 gallons of water per hour, and each nine-head shower uses about 1,200 gallons per hour. In accordance with AR 700-135, each

soldier will be provided a minimum of one shower and have laundry service provided once a week while in the field. Laundry and shower planning and authorizations are based on this weekly cycle. Laundry and shower support above the standard will require additional water supplies and will decrease the number of soldiers that an FSC can support. Remember that potable water is not required for normal operations and most climatic areas. The water may require some treatment to remove foreign matter and microorganisms. When nonpotable water is used for showers, signs must be posted warning soldiers not to drink it.

The Army water doctrine requires potable water to be used in an arid environment. In arid environments or areas in which potable water must be supplied, the SLCR sections coordinate their potable water requirements thorough the battalion to the MMC. Refer to Chapter 15 for water request procedures.

Table 19-1. *Types of clothing repairs and repair times*

REPAIR	APPROXIMATE TIME (Minutes)
Sew Name Tag	4
Sew US Army Tag	4
Sew Unit Insignia	3
Replace Button	1
Darn Small Holes, Rips, and Tears	5
Iron on Patch	5
Restitch Seams	5

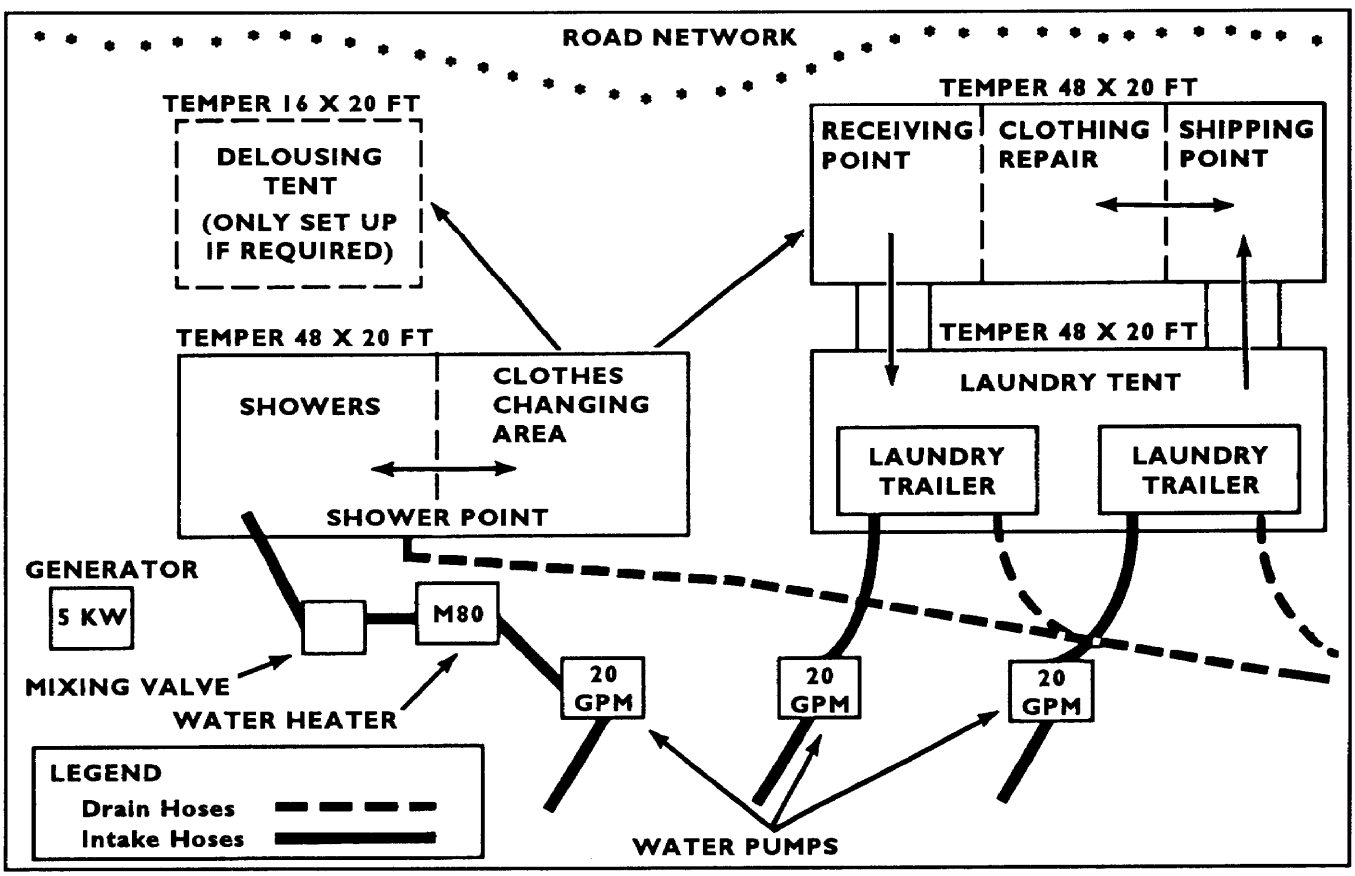


Figure 19-2. Possible site layout for SLCR operations

Currently there is no standard form used to request water. Normally, the platoon sergeant or section sergeant will select a site with an abundant water supply. When operations take place in towns and cities, local water supplies can be used. The SLCR sections are equipped with 3,000-gallon collapsible water tanks when they need to have water transported to them. If hard water is used (high mineral content), it is important that the proper amount and type of detergent be used. The recommended water consumption factor for hot, cold, and temperate climates is 6.5 gallons per soldier per day for laundering of clothing and *3* gallons per soldier per day for showers. As a rule of thumb, it requires 3 gallons of water for every pound of clothing processed and a flow rate per shower head of 2.5 gallons per minute. Table 19-2 shows the water planning data used for laundry and shower operations.

Fuel

Proper planning and coordination of fuel support are required if operations are to start up immediately upon arrival at a site. Table 19-3 (page 19-7) provides the hourly requirement for each piece of equipment.

Table 19-2. Laundry and shower planning data

LAUNDRY WATER PLANNING DATA

A Gallons Per Load	B Pounds Per Load	C Gallons Per Pound (A ÷ B)	D Pounds Per Soldier/Week	E Pounds Per Soldier/Day (D ÷ 7)	F Gallons Per Soldier/Day (C x E)
180	60	3	15	2.14	6.42

SHOWER WATER PLANNING DATA

A Minutes Per Shower	B Cycles Per Hour (60 ÷ 7)	C Soldiers Per Cycle	D Soldiers Per Hour (B x C)	E Usage ** Factor	F Showers Per Hour (D x E)
7	8.6	9	77.14 *	.70 Division .85 Corps .90 COMMZ	54 66 69

G Gallons Per Hour (Equipment)	H Gallons Per Soldier/Week (G ÷ F)	I Gallons Per Soldier/Day (H ÷ 7)
1,200	22.17 Division 18.20 Corps 17.40 COMMZ	3.17 Division 2.60 Corps 2.48 COMMZ

* The 77.14 showers per hour assumes a constant flow of traffic where nine soldiers would instantaneously replace the soldiers using the showers without any break in the queue.

** The usage factor is based on unscheduled maintenance, late troop arrival, and working requirements of the supported unit.

Table 19-3. SLCR fuel planning data

COMPONENT	GALLONS PER HOUR	TYPE OF FUEL
10-KW Generator	1.09	Diesel
M85 Water Heater	2.50	Diesel
Dryer	2.10	Diesel
3-KW Generator	0.84	MOGAS
M80 Water Heater	2.50	Diesel
Delouser	0.35	MOGAS

EMERGING CONCEPTS, SYSTEMS, AND MATERIEL

An emerging concept and several new systems will impact on laundry, shower, and clothing repair operations in the next few years. These are discussed below.

Emerging Concept

The emerging concept will formalize a team organization where the shower, laundry, and clothing repair functions will be collocated.

Emerging Systems and Materiel

The major initiative in the laundry arena is to develop and field a dry cleaning system. Such a system, using an environmentally safe solvent, will end the requirement for water in laundry operations. The closed-loop system will regenerate the solvent for unlimited use. Replacement solvent would be required for that lost through maintenance, evaporation, or improper operation. The system would be containerized to make setup and tear-down faster. Now in development, the system has a projected fielding date of FY 97.

A containerized shower is being developed which will allow for faster setup and tear-down, better control of wastewater, and increased mobility. The fully developed system could be fielded by FY 99. In a related soldier enhancement program initiative, a small unit shower is being developed for fielding in FY 95. This shower would provide an added capability to give the soldier more than one shower per week. It would also provide small detached units a shower capability when they cannot be supported by an organized QM shower unit. It will be a CTA item available to most units.

SAFETY AND ENVIRONMENTAL ISSUES

Safety and environmental issues are always prime considerations when developing new equipment and systems. Some of these that pertain to laundry, shower, and clothing repair operations are discussed in the following paragraphs.

Safety

Equipment in the field is constantly being evaluated for safety and health hazards. Laundry and shower equipment items present safety and health hazards with their liquid fuels, hot surface temperatures, hot water, carbon monoxide from hot exhaust air, and electrical shock potential. An added health hazard concern is personnel assigned to the laundry handling soiled clothing and hospital items. It is possible that such items could have been used by personnel with contagious or infectious diseases, lice, or other health hazards. Laundry personnel should wear protective latex or rubber gloves, surgical mask, and possibly rubber or waterproof aprons.

Environmental

The main environmental concern with laundry and shower operations is disposal of wastewater. In many areas the practice of draining wastewater downstream in a river or into a sump is being stopped. Certain areas may require that wastewater be stored and hauled to an approved dump site. The use of an approved sewage system is not only encouraged but now mandatory on some Army posts. In accordance with AR 700-135, commanders are required to check with local environmental engineers before discharging any water on the ground. Laundry and shower personnel must be sure that drainage ditches are dug around components and drain hoses feed into the ditches to control water discharge. The proper

use of detergents, bleaches, and other chemical supplies is necessary to control environmental impact. Fuel is supplied in 55-gallon drums or 20-liter fuel cans and connected to the equipment components by fuel lines (dryer and water heaters) or poured directly into fuel tanks on the other components (generators). Extreme caution must be exercised to prevent fuel spills.

RELATED DOCTRINE

A number of publications expand on and further explain the laundry, shower, and clothing repair functions. Some of these publications and the topics they cover are listed in Table 19-4.

Table 19-4. SLCR-related publications

Army Regulations	Topic
700-135	Mobile field laundry and bath operations
Field Manuals	**Topic**
3-5	NBC decontamination
10-27-2	Tactics, techniques, and procedures for QM DS supply and field services operations
10-52	Water supply in theaters of operations
10-280	Mobile field laundry, clothing exchange, and bath operations

GLOSSARY

AAFARS advanced aviation forward area refueling system

AAFES Army and Air Force Exchange Service

ACR armored cavalry regiment

admin administrative

AFARE arctic forward area refueling equipment

AFARS Army Federal Acquisition Regulation Supplement; artic forward area refueling system

AFDE arctic fuel dispensing equipment

AFFMIS Army Field Feeding Management Information System

AFFS Army Field Feeding System

AFFS-F Army Field Feeding System - Future

AFSSP arctic fuel system supply point

AGL above ground level

AIFA Army and Air Force Exchange Service imprest fund activity

AIS automated information system

AIT automatic identification technology

ALCC Airlift Control Center

ALOC air lines of communication

AMC Army Materiel Command

AMDF Army Master Data File

AMEMS Airdrop Missions and Equipment Management System

AO area of operations

APOD aerial port of debarkation

APOE aerial port of embarkation

AR Army regulation

ARFOR Army force

armr armorer

ASA Army Supply Agency

ASB area support battalion

ASCC army service component commander

ASG area support group

ASIMS Army Standard Information Management System

ASL authorized stockage list

assoc associate

ATCCS Army tactical command and control system

ATP ammunition transfer point

attn attention

auto/comm automation and communication

AV asset visibility

AVSB aviation support battalion

bde brigade

BFA battlefield functional area

BMMC brigade materiel management center

bn battalion

BSA brigade support area

C2 command and control

C³I command, control, communications, and intelligence

CAPMI computer-assisted postmortem identification

CBS-X Continuing Balance System - Expanded

CCP consolidation and containerization point

CCSP contingency contracting support plan

CDA catalogue data activity

CDDB centralized demand data base

CDS container delivery system

CG commanding general

CINC Commander in Chief

CK containerized kitchen

cmd command

CMMC corps materiel management center

co company

COMMZ communications zone

COMPO force composition (COMPO 1, 2, 3, 4)

CONUS continental United States

COSCOM corps support command

COTS commercial off-the-shelf

CS combat support

CSB corps support battalion

CSG corps support group

CSH combat support hospital

CSP contingency support plan

CSS combat service support

CSSAMO Combat Service Support Automation Management Office

CSSCS combat service support control system

CTA common table of allowances

CTASC corps/theater automated service center

CUCV combat utility commercial vehicle

CY calendar year

DA Department of the Army

DAAS Defense Automatic Addressing System

DAMPL Department of the Army Master Priority List

DAS3 decentralized automated service support system

DC District of Columbia

DCSLOG Deputy Chief of Staff for Logistics

DCSOPS Deputy Chief of Staff for Operations and Plans

DDN defense data network

DECA Defense Commissary Agency

DFARS Department of Defense Federal Acquisition Regulation Supplement

DFSC Defense Fuel Supply Center

DISCOM division support command

DISMS Defense Integrated Subsistence Management System

div division

DLA Defense Logistics Agency

DMA Defense Mapping Agency

DMMC division materiel management center

DMMO division materiel management office

DMR Defense Management Review

DOD Department of Defense

DOS days of supply

DOX-T Direct Operation Exchange - Tactical

DPSC Defense Personnel Support Center

DPW Directorate of Public Works

DRMO Defense Reutilization and Management Office

DS direct support

DS4 direct support standard supply system

DSA division support area

DSS direct support system

DSU direct support unit

DTLOMS doctrine, training, leader development, organization, materiel, and soldiers

DTO division transportation officer

EAC echelons above corps

EAD echelons above division

EEI essential elements of information

EOP exchange operating procedures

equiv equivalent

ESR exchange service regulation

FAR Federal Acquisition Regulation

FARE forward area refueling equipment

FEMA Federal Emergency Management Agency

FLOT forward line of own troops
FM field manual
FNS foreign nation support
FRH flameless ration heater
FSB forward support battalion
FSC field service company
FSS food service sergeant
FSSP fuel system supply point
ft feet
fwd forward
FY fiscal year
G3 Assistant Chief of Staff, G3 (Operations and Plans)
G4 Assistant Chief of Staff, G4 (Logistics)
gen general
GM general manager
gp group
GPD gallons per day
GPM gallons per minute
GS general support
GSA General Services Administration
GSU general support unit
HCA head of contracting activity
HCP health and comfort packs
HEMTT heavy expanded mobility tactical truck
HMMWV high mobility multipurpose wheeled vehicle
HMSC heavy materiel supply company
HNS host-nation support
HQ headquarters
HTARS HEMTT tanker aviation refueling system
hvy heavy
IAW in accordance with
IFC insulated food container
ILS integrated logistics support
IPB intelligence preparation of the battlefield
IPDS inland petroleum distribution system
ISA interservice support agreement
ISO Organization for International Standards
J4 Logistics Directorate
JCS Joint Chiefs of Staff
JFC Joint Force Commander
JFCA Joint Force Commander's Agent
JLOTS joint logistics over the shore
JMAO Joint Mortuary Affairs Office
JPO Joint Petroleum Office
KCLFF kitchen, company-level field feeding
KCLFF-E kitchen, company-level field feeding - enhanced
KIAS knots indicated air speed
KW kilowatt
LASSO logistics automation system support office
lb pound(s)
LIC low-intensity conflict
LIF logistics intelligence file
LOC lines of communication
log logistics
LOGCAP logistical civil augmentation program
LOGEEI logistics essential elements of information
LOGMARS logistics marking and reading symbols
LOGSA logistics support activity
LPT logistics preparation of the theater
LRP logistics release point
LRU line replaceable unit
LSA Logistics Support Agency
LSE logistics support element
MA mortuary affairs
MACOM major Army command

MADCP mortuary affairs decontamination collection point

MASH mobile army surgical hospital

mat materiel

MCC movement control center

MCO movement control officer

MEDEVAC medical evacuation

METT-T mission, enemy, terrain, troops, and time available

MFFIMS mass fatality field information management system

mgr manager

MHE materials handling equipment

MIIC Major Item Information Center

MITLA microcircuit technology in logistics applications

MKT mobile kitchen trailer

MMC materiel management center

MOGAS motor gasoline

MOPP mission-oriented protection posture

MORE meal, ordered ready-to-eat

MOS military occupational specialty

MP military police

MPL mandatory parts list

MRE meal, ready-to-eat

MRO materiel release order

MSB main support battalion

MSC major subordinate command

MSR main supply route

MTOE modification table of organization and equipment

MWRH mounted water/ration heater

NATO North Atlantic Treaty Organization

NBC nuclear, biological, chemical

NCO noncommissioned officer

NCOIC noncommissioned officer in charge

NDI nondevelopmental item

NEO noncombatant evacuation operations

NICP national inventory control point

no number

nondiv nondivisional

OCIE organizational clothing and individual equipment

OCONUS outside continental United States

ODS/S Operation Desert Shield/Storm

OOTW operations other than war

opns operations

OPROJ operational project

PA property accountability

PBO property book officer

PLL prescribed load list

PLS palletized loading system

plt platoon

PM program manager

PMB powered multifuel burner

POD port of debarkation

POE port of embarkation

POI program of instruction

POL petroleum, oils, and lubricants

POMCUS prepositioning of materiel configured to unit sets

PPWR prepositioned war reserves

PQAS petroleum quality analysis system

PWRMR prepositioned war reserve materiel requirement

PWRMS prepositioned war reserve materiel stocks

QM quartermaster

QMC Quartermaster Corps

QSTAG Quadrapartite Standardization Agreement

RBP ration breakdown point

RC reserve component

RCAS reserve component automation system

REQ/VAL requisition/validation

RF radio frequency

ROM refuel on the move

ROWPU reverse osmosis water purification unit

RSI rationalization, standardization, interoperability

RTCH rough terrain cargo handler

RTS remote image transmission system

S3 Operations and Training Officer (US Army)

S4 Supply Officer (US Army)

SA security assistance

SAILS Standard Army Intermediate Level Supply System

SAILS-2 Standard Army Intermediate Level Supply System - 2

SAMS standard army maintenance system

SAMS-1 standard army maintenance system - 1

SAMS-2 standard army maintenance system - 2

SAPO subarea petroleum office

SARSS standard army retail supply system

SARSS-1(I) standard army retail supply system - 1 (Interim)

SARSS-2A standard army retail supply system -2A

SARSS-2B standard army retail supply system -2B

SARSS-I standard army retail supply system -Interim

SARSS-O standard army retail supply system -objective

SCS subsistence central system

SEALOC sea lines of communication

SIMA Systems Integrated Management Activity

SJA Staff Judge Advocate

SLCR shower, laundry, and clothing repair

SMFT semitrailer-mounted fabric tank

SMORE self-heating meal, ordered ready-to-eat

SNT serial number tracking

SOF special operations forces

SPBS standard property book system

SPBS-R standard property book system-redesign

SPBS-R-I/TDA standard property book system-redesign-installation/table of distribution and allowances

SPOD seaport of debarkation

spt support

supvr supervisor

S&S supply and service

SSA supply support activity

STAMIS standard army management information system

STANAG standardization agreement

sup supply

svc service

TA Theater Army

TAA total Army analysis

TAACOM Theater Army Area Command

TACCS Tactical Army Combat Service Support (CSS) Computer System

TAMCA theater army movement control agency

TAMMC theater army materiel management center

TAMMS The Army Maintenance Management System

TDA table of distribution and allowances

TDAP total distribution action plan

TDS total distribution study

TFE tactical field exchange

TFELO tactical field exchange liaison officer

TFEO tactical field exchange officer

TM technical manual

TOC tactical operations center

TOC tactical operations center

TOE table(s) of organization and equipment

TPFDL time-phased force deployment list

TRADOC United States Army Training and Doctrine Command

TSDC theater subsistence distribution company

UBL unit basic load

UGR unitized group ration

UIC unit identification code

ULLS unit level logistics system

ULLS-S4 unit level logistics system-S4

UN United Nations

US United States (of America)

USAF United States Air Force

USAQMC&S United States Army Quartermaster Center and School

USCENTCOM United States Central Command

USEUCOM United States European Command

USMC United States Marine Corps

USN United States Navy

USPACOM United States Pacific Command

USSOCOM United States Special Operations Command

USSOUTHCOM United States Southern Command

USTRANSCOM United States Transportation Command

VA Virginia

WRMS war reserve materiel stocks

WSM weapons system manager

REFERENCES

SOURCES USED

These are the sources quoted or paraphrased in this publication.

Army Publications

The Quartermaster Corps: A Vision of the Future. 15 January 1993.

Combined Arms Support Command's *Vision of Combined Arms Support.* 30 October 1992.

Army Long Range Logistics Plan 1990-2020. 2 March 1990.

Army Modernization Plan. 31 August 1992.

AR 611-101. *Commissioned Officer Classification System.* 30 April 1992.

AR 611-112. *Manual of Warrant Officer Military Occupational Specialties.* 30 April 1992.

AR 611-201. *Enlisted Career Management Fields and Military Occupational Specialties.* 30 April 1992.

AR 638-30. *Graves Registration Organization and Functions in Support of Major Military Operations.* 1 September 1980.

AR 700-135. *Mobile Field Laundry and Bath Operations.* 1 August 1984.

AR 700-136. *Tactical Land Based Water Resources Management in Contingency Operations.* 1 April 1993.

FM 7-98. *Operations in a Low-Intensity Conflict.* 19 October 1992.

FM 10-15. *Basic Doctrine Manual for Supply and Storage.* 12 December 1990.

FM 10-23. *Basic Doctrine for Army Field Feeding.* 12 December 1991.

FM 10-27. *General Supply in Theaters of Operations.* 20 April 1993.

FM 10-52. *Water Supply in Theaters of Operations.* 11 July 1990.

FM 10-63. *Handling of Deceased Personnel in Theaters of Operations.* 28 February 1986.

FM 10-67. *Petroleum Supply in Theaters of Operations.* 16 February 1983.

FM 34-130. *Intelligence Preparation of the Battlefield.* 23 May 1989.

FM 63-3. *Corps Support Command.* 30 September 1993.

FM 100-5. *Operations.* 14 June 1993.

FM 100-7. *The Army in a Theater of Operations.* (Projected publication date - September 1994.)

FM 100-9. *Reconstitution.* 13 January 1992.

FM 100-10. *Combat Service Support.* 18 February 1988.

FM 100-15. *Corps Operations.* 13 September 1989.

FM 100-16. *Army Operational Support.* (Projected publication date - September 1994.)

FM 100-17. *Mobilization, Deployment, Redeployment, Demobilization.* 28 October 1992.

***Army and Air Force Exchange Service Publications**

EOP 8-1. *AAFES Imprest Fund Activities.* 25 August 1989.
EOP 8-6. *Military/AAFES- Operated Tactical Exchanges.* 29 March 1991.
ESR 8-4. *Emergency Operations. 2* January 1992.

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

AR 310-25. *Dictionary of United States Army Terms.* 15 October 1983.
AR 310-50. *Authorized Abbreviations and Brevity Codes.* 15 November 1985.
AR 710-2. *Supply Policy Below the Wholesale Level.* 31 January 1992.
DA Form 2028. *Recommended Changes to Publications and Blank Forms.* February 1974.
DA Pamphlet 25-30. *Consolidated Index of Army Publications and Blank Forms.* 1 October 1993.
FM 3-3. *Chemical and Biological Contamination Avoidance.* 16 November 1992.
FM 3-4. *NBC Protection.* 29 May 1992.
FM 3-5. *NBC Decontamination.* 30 September 1993.
FM 10-18. *Petroleum Terminal and Pipeline Operations.* 3 December 1986.
FM 10-52-1. *Water Supply Point Equipment and Operations.* 18 June 1991.
FM 10-115. *Quartermaster Water Units.* 15 February 1989.
FM 10-500-1. *Airdrop Support Operations in a Theater of Opera tions.* 19 June 1991.
FM 54-23. *Materiel Management Center, Corps Support Command.* 28 December 1984.
FM 54-30. *Corps Support Group.* 17 June 1993.
FM 54-40. *Area Support Group.* 29 July 1987.
FM 55-1. *Army Transportation Services in a Theater of Operations.* 30 November 1984.
FM 100-19. *Domestic Support Operations.* 1 July 1993.
FM 100-27. *United States Army/United States Air Force Doctrine for Join Airborne and Tactical Airlift Operations (AFM 2-50).* 31 January 1985.
FM 101-5. *Staff Organization and Operations.* 25 May 1984.
FM 101-5-1. *Operational Terms and Symbols.* 10 December 1993 (initial draft).
FM 101-10-1/1. *Staff Officers Field Manual-Organizational, Technical, and Logistical Data (VOL I).* 7 October 1987.
FM 101-10-1/2. *Staff Officers Field Manual-Organizational, Technical, and Logistical Data, Planning Factors (VOL II).* 7 October 1987.
FM 700-80. *Logistics.* 15 August 1985.
FM 701-58. *Planning Logistics Support for Military Operations.* 27 May 1987.
FM 704-28. *Classes of Supply.* 1 February 1979.
TB MED 577. *Occupational and Environmental Health: Sanitary Control and Surveillance of Field Water Supplies.* 7 March 1986.

* AAFES publications can be obtained from the local exchange or from HQ AAFES.

Unit Supply UPDATE 2-14. 28 February 1994. (Check DA Pamphlet 25-30 for latest issue.)

READINGS RECOMMENDED

These readings contain relevant supplemental information.

Army Publications

AR 11-12. *Logistics Priorities.* 1 February 1982.
AR 27-20. *Claims.* 10 July 1987.
AR 30-18. *Army Troop Issue Subsistence Activity Operating Procedures.* 4 January 1993.
AR 30-21. *The Army Field Feeding System.* 24 September 1990.
AR 71-13. *The Department of the Army Equipment Authorization and Usage Program.* 3 June 1988.
AR 570-9. *Host Nation Support.* 9 October 1990.
AR 600-8-1. *Army Casualty and Memorial Affairs and Line of Duty Investigations.* 18 September 1986.
AR 600-50. *Standards of Conduct for Department of the Army Personnel.* 28 January 1988.
AR 700-23. *Supply of Health and Comfort Items.* 1 November 1981.
AR 700-137. *Logistics Civil Augmentation Program (LOGCAP).* 16 December 1985.
AR 715-30. (C) *Secure Environment Contracting (U).* 1 August 1989.
AR 725-50. *Requisition and Issue of Supplies and Equipment: Requisitioning, Receipt, and Issue System.* 26 January 1993.
FM 5-104. *General Engineering.* 12 November 1986.
FM 10-16. General Fabric Repair. 13 June 1984.
FM 10-23-1. Commander's Guide to Food Service Operations. 17 March 1992.
FM 10-27-1. *Tactics, Techniques, and Procedures for Quartermaster General Support Supply Operations.* 20 April 1993.
FM 10-27-2. *Tactics, Techniques, and Procedures for Quartermaster Direct Support Supply and Field Service Operations.* 18 June 1991.
FM 10-27-3. *Tactics, Techniques, and Procedures for Quartermaster Headquarters Operations.* 30 October 1990.
FM 10-63-1. Graves *Registration Handbook.* 17 July 1986.
FM 10-68. *Aircraft Refueling.* 29 May 1987.
FM 10-69. *Petroleum Supply Point Equipment and Operations.* 22 October 1986.
FM 10-70-1. *Petroleum Reference Data.* 27 December 1983.
FM 10-71. *Petroleum Tank Vehicle Operations.* 12 May 1978.
FM 10-72. *Petroleum Surveillance: Laboratories and Kits.* 11 August 1986.
FM 10-280. *Mobile Field Laundry, Clothing Exchange, and Bath Operations.* 22 October 1986.
FM 10-286. *Identification of Deceased Personnel.* 30 June 1976.
FM 10-296. *Headquarters and Headquarters Units, Graves Registration Battalion.* 10 February 1986.
FM 10-297. *Graves Registration Company. 25* April 1986.

FM 10-500-9. *Tactics, Techniques, and Procedures for Quartermaster Airdrop and Airdrop Support Units.* (Projected publication date-August 1994.)

FM 14-7. *Finance Operations.* 9 October 1989.

FM 21-10. *Field Hygiene and Sanitation. 22* November 1988.

FM 41-10. *Civil Affairs Operations,* 11 January 1993.

FM 55-10. *Movement Control in a Theater of Operations.* 8 December 1992.

FM 55-15. *Transportation Reference Data.* 9 June 1986.

FM 55-30. *Army Motor Transport Units and Operations.* 14 March 1980.

FM 63-1. *Support Battalions and Squadrons, Separate Brigades and Armored Cavalry Regiment.* 30 September 1993.

FM 63-2. *Division Support Command, Armored, Infantry, and Mechanized Infantry Divisions.* 20 May 1991.

FM 63-2-1. *Division Support Command Light Infantry, Airborne, and Air Assault Divisions.* 16 November 1992.

FM 63-4. *Combat Service Support Operations - Theater Army Area Command. 24* September 1984.

FM 63-6. *Combat Service Support in Low-Intensity Conflict.* 21 January 1992.

FM 63-20. *Forward Support Battalion.* 26 February 1990.

FM 63-21. *Main Support Battalion.* 7 August 1990.

FM 100-23. *Peace Operations.* (Projected publication date - September 1994.)

TM 5-813 series. Water treatment, storage, and distribution. (See DA Pamphlet 25-30 for titles and dates.)

TM 10-1670 series. Parachute packing and maintenance procedures. (See DA Pamphlet 25-30 for titles and dates.)

TRADOC Pamphlet 525-5. *AirLand Operations: A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond.* 1 August 1991.

Air Force Publications

USAFR 70-7. *Contingency Contracting Support Program.* 2 July 1982.

Joint and Multiservice Publications

DD Form 1974. *Joint Tactical Airlift Request.* April 1975.

DOD 4140.25. *Department of Defense Management Policy.* 8 January 1993.

DOD 4140.25-M. *Management of Bulk Petroleum Products, Storage, and Distribution Facilities.* 1 July 1988.

Joint Pub 1-02. *Department of Defense Dictionary of Military and Associated Terms.* 1 December 1989.

Joint Pub 3-07. *Doctrine for Joint Operations in Low-Intensity Operations.* 18 October 1990.

Joint Pub 4-0. *Doctrine for Logistic Support of Joint Operations.* 25 September 1992.

Joint Pub 4-01.6. *Joint Tactics, Techniques, and Procedures for Joint Logistics over the shore (JLOTS).* 22 August 1991.

JCS Memo 16. *Joint Mortuary Affairs Policy.* 31 May 1990.

CJCS MOP 16. *Joint Mortuary Affairs Policy.* 31 May 1990.

Military Handbook 200G. *Quality Surveillance Handbookfor Fuels, Lubricants, and Related Products.* 1 July 1987.

Procurement Publications

FAR. *Federal Acquisition Regulation.* 1 October 1990.

AFARS. *Army Federal Acquisition Regulation Supplement (AFARS).* 1 April 1988.

DFARS. *Defense Federal Acquisition Regulation Supplement (DFARS).* 31 December 1991.

Quadrapartite Standardization Agreements and Standardization Agreements

QSTAG 655. *Emergency War Burial Procedures.* 2 May 1983.

STANAG 2070. *Emergency War Burial Procedures.* 22 February 1974.

STANAG 3093. *NATO Air Transport Request and Answer to Air Transport Request.* 7 February 1987.

STANAG 3570/ASCC 44/13G. *Drop* Zones *and Extraction Zones--Criteria and Markings.* 26 March 1986.

INDEX

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
06856

DISTRIBUTION:

Active Army, USAR, and ARNG: To be distributed in accordance with DA Form 12-11E, requirements for FM 10-1, Quartermaster Principles (Qty rqr block no. 5043).

*U.S. Government Printing Office: 1994 — 528-027/80143

PIN: 068598-000