

## Chapter 5

### Transportation

Effective transportation requires a balanced and integrated system of movements control, modal operations, and terminal operations. The system is divided into intertheater and intratheater aspects, but connectivity between the two is imperative. The transportation system connecting one theater to another is a combination of US military and commercial transportation, HN military and civilian carriers, and/or, in special cases, non-US flag carriers. It must be capable of transporting military forces to overseas destinations in accordance with existing plans. USTRANSCOM is a unified command that manages and provides strategic common-user airlift, sealift, terminal services, and US commercial air, sea, and land transportation for US forces worldwide.

### PLANNING

Transportation planning consists of determining what must be moved, where and when it must be moved, and the best way to move it. Planning in support of a unified commander's operations plan covers both strategic-level and in-theater movement and reception of personnel, materiel, and equipment into the theater and onward movement to their final destinations. Planners must assess competing requirements for mobility support facilities and theater transportation assets in terms of their impact on mission accomplishment. The commander's priorities must be clearly articulated and translated to all transportation efforts.

The payoff in transportation planning lies in the timely delivery to planned destinations

of both effective combat forces and the means for their sustained support. Transportation planners must recommend methods of prioritizing in-bound shipments, which may involve providing liaison to the PO ES, to CCPs, or to other activities. Receiving activities must be capable of receiving in-bound shipments. Shipments must be monitored en route to assure timely delivery and advance warnings of bottlenecks. Transportation bottlenecks at CONUS activities directly impact theater support. A shortfall in any element reduces the capability of the entire system. When bottlenecks occur, the operational MC element must rapidly identify and prioritize them to increase the system's effectiveness.

### MOVEMENTS PROGRAM

A movements program is used to preplan both known and anticipated transportation requirements for reception and onward movement and sustainment. Movement planners allocate available transportation resources to support requirements based on the commander's priorities. The program supports these priorities by establishing which requirements can be resourced given available CSS assets, units, and infrastructure. A forecast of programmed movements, the

program serves as the authority by which units or shipping activities initiate actions to obtain transportation. It authorizes movement control teams (MCTs) to issue movement releases, directs the mode operators to furnish assets, and alerts receiving agencies to accept programmed shipments.

METT-T, the ability of supply and personnel agencies to forecast their requirements, and the ability of transport operators to forecast their capabilities govern

the time covered in the program. MCTs use the program as authority to commit mode operators, and the mode operators use the program as a basis for furnishing transportation. Coordinated with all interested

agencies before approval, the program is designed to keep movements organizations, mode operators, supply managers, and other agencies abreast of the evolving pattern of logistical activity.

### **STRATEGIC-LEVEL TRANSPORTATION**

Strategic-level transportation involves CONUS inland transportation, movement through POEs, and strategic sea or air movement to the PODs in the theater base or COMMZ. USTRANSCOM and its components use both commercial and military transport resources to carry out strategic-level transportation. MTMC plans and routes CONUS surface movements and movements through CONUS water terminals in conjunction with the servicing installation transportation office (ITO), traffic management office (TMO), or US Property and Fiscal Office (USPFO).

During the initial execution of the deployment, air deployment of high-priority units is the primary emphasis of strategic-level transportation. Air Mobility Command will air-

deploy these units using primarily military and Civil Reserve Air Fleet (CRAF) aircraft. USTRANSCOM schedules deployment based on the theater commander's priorities in coordination with its components and the supporting commands providing forces. Strategic airlift capabilities will also be employed to deliver mission-essential supplies and equipment from CONUS as pre-rigged stocks or AWRPS. Simultaneously, the MTMC and the Military Sealift Command (MSC) concentrate on moving other high-priority units and supplies with surge sealift capability—including pre-positioned afloat—and on establishing the SLOCs. The SLOCs will be the sustaining strategic-level transportation system for the movement of supplies, equipment, and follow-on unit deployments.

### **THEATER TRANSPORTATION**

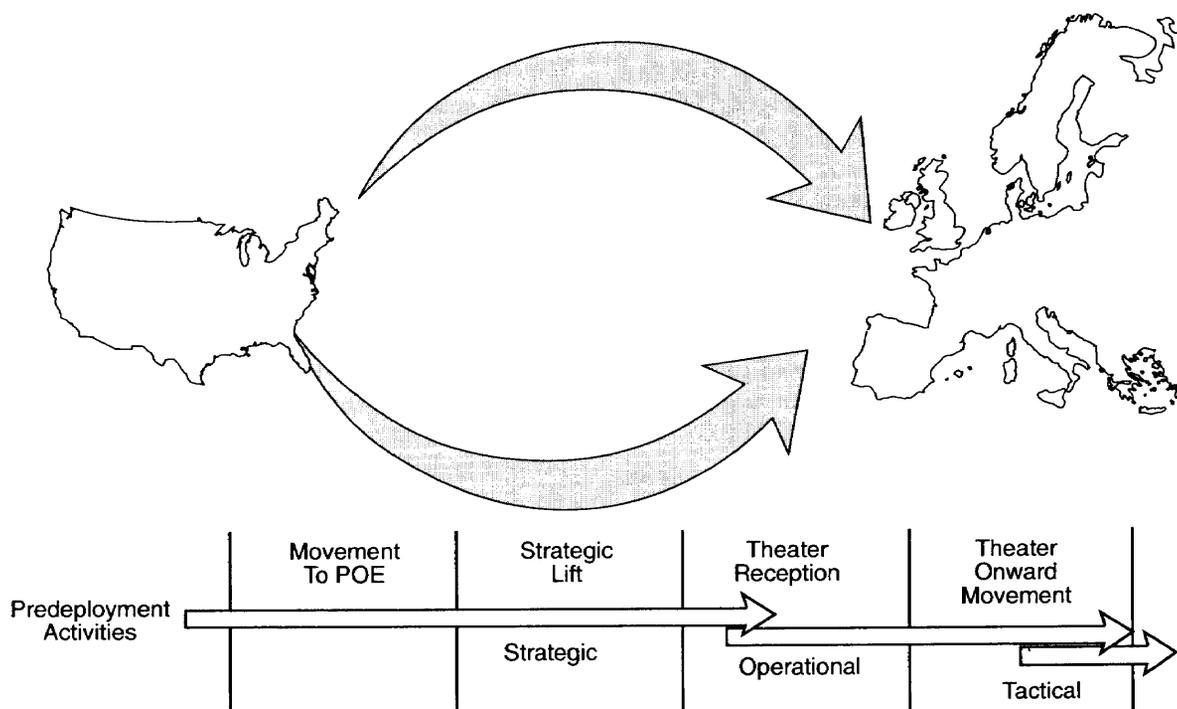
Theater transportation occurs wholly within the theater. It consists of movement control, modal operations, and terminal operations, which work together to provide transportation support to the theater, to carry out linkages to strategic transportation, to perform operational tasks, and to support reception and onward movement. Included may be support to other service components of a joint operation or other participating nations and the integration of HNS.

#### **MOVEMENT CONTROL**

MC is the planning, routing, scheduling, controlling, coordinating, and ITV of personnel, units, equipment, and supplies moving over LOG and the commitment of allocated transportation assets according to command priorities. It involves synchronizing and integrating CSS, movement information, and programs that span the strategic, operational,

and tactical levels of war. MC is guided by a system that balances requirements against capabilities and assigns resources based on commander's priorities. Within the COMMZ, one of the primary missions of movement control units is to support the reception, onward movement, and redeployment of forces arriving in and departing the theater. See Figure 5-1 for deployment stages.

For units and non-unit-related personnel and equipment, deployment includes reception at the PODs and onward movement to the area where forces will either be assembled or committed. During redeployment, it includes coordinating movement to POEs. MC is a component of movement synchronization, which includes maneuver and battlefield circulation control. Maneuver directs the tactical displacement of units supported by fire to achieve a position of advantage over the enemy. Competing demands for common routes



**Figure 5-1. Stages of Deployment**

for movement and maneuver must be carefully synchronized between movement control and operations staffs at each echelon. Battlefield circulation control is a major MP mission, which supports movement control and maneuver by providing route reconnaissance and traffic control to enforce highway regulation and operations plans.

### Joint Movement

Within a theater of operation, US forces are normally employed under a joint or multinational command. The CINC organizes the command to meet the needs of the theater of war. He exercises directive authority for logistics to maintain effectiveness and economy of operation and to prevent or eliminate unnecessary duplication of facilities and resources. In exercising directive authority for transportation services, the CINC may delegate the operation of theater-controlled common-user transportation and terminal functions to a service component, while retaining the authority to set priorities, appropriate resources, and monitor the entire operation. He may also allow component commanders to plan for and perform their own movement control or create fully integrated

joint organizations such as a joint movement center (JMC) or a joint transportation board (JTB). The JTB, usually made up of representatives of the service components, interprets policies and resolves overlapping transportation priorities for the JFC. The JMC coordinates strategic movements with USTRANSCOM and oversees execution of theater transportation priorities. It plans future operations and monitors overall theater transportation performance. The JMC is normally organized along functional lines and is the nucleus of an organization that can be expanded in proportion to the size of a joint force. Its major responsibilities include—

- Planning common-user theater transportation by land, sea, and air by developing a movement plan that supports the CINC's priorities.
- Apportioning the command's common-user transportation capability among the projected transportation tasks.
- Forecasting long-term movement requirements to the Defense Transportation System (DTS) by analyzing requirements, capabilities, shortfalls, alternatives, and enhancements; developing options; and recommending courses of action.

- Receiving and acting on authorized component validators' airlift requests by monitoring aerial ports' airlift performance and operations, reviewing and validating airlift channels, monitoring air deployment of major forces, and effecting changes to movement requirements and priorities in the Joint Operations Planning and Execution System (JOPES).
- Monitoring sea deployment of forces and recommending changes to movement requirements and priorities in JOPES.
- Deconflicting transportation requirements that cannot be met at lower levels in the movement control system by monitoring movement of forces during deployment; monitoring port clearance, rail, highway, and waterway activities; maintaining and disseminating military route information; developing plans for maintaining road networks; and coordinating with engineers and HNS.

Normally, the Army will be tasked to control movements on inland LOC. In a multinational theater of operations, the multinational commander may also exercise authority to apportion theater transportation capability among multinational commands. He may establish a multinational transportation movement control agency with representatives of each nation to perform movement control based on the mission and the magnitude of the transportation tasks required.

### **Army Movement Control**

At the operational level, centralized movement control is imperative to accomplish reception and onward movement. It is vital for sustaining Army forces, along with supporting any joint service requirement.

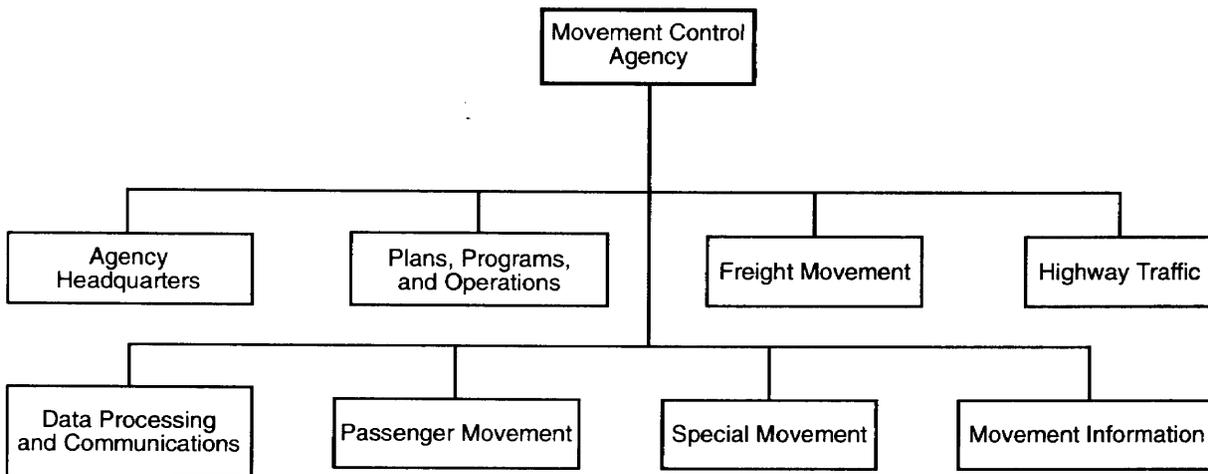
An operational-level movement control organization assigned to the senior Army headquarters within the area of operations performs movement control functions. It could be a theater army movement control agency (TAMCA) assigned to an ASCC headquarters or an augmented corps movement control center (MCC) assigned to a corps. The senior movement control organization's mission is to provide movement management services and highway traffic regulation to coordinate

personnel and materiel movements into, within, and out of the theater. It coordinates with allied nations, HNs, sister-service movement control organizations, and USTRANSCOM or its components as required. MC organizations can be deployed to meet the specific movement control requirements of the theater.

The senior MC organization, through the JMC, maintains close functional relationships with strategic transportation activities such as USTRANSCOM and CCPs. CONUS-based—primarily USTRANSCOM—activities provide the movement control organization advanced information on unit and nonunit movement and resupply strategic movements. The movement control organization can then make timely decisions to facilitate reception and onward movement. It must routinely coordinate with the MMC to integrate the movement of supplies into the distribution system and the theater movements program. This involves programming adequate highway, rail, water, or air transportation to meet movement requirements according to command priorities. This coordination ensures close integration of supply, maintenance, personnel, and transportation support. The senior MC organization also coordinates with MTMC and JMC/JTB. See Figure 5-2.

Although the MC organization does not command any transportation modal operating units, it does allocate their capabilities and control the transportation effort. The senior movements control organization in theater is charged with implementing five principles of movement: centralize control/decentralize execution, regulate movements, make movement fluid and flexible, make maximum use of carrying capacity, and provide forward support.

***Centralized Control/Decentralized Execution.*** Movement control will be centralized at the highest level charged with providing logistical support and monitoring the transportation system and infrastructure. This requires a focal point for transportation movement planning and resource allocation at all levels. Decentralized execution enhances flexibility to meet local requirements and to rapidly reprioritize support as required.



**Figure 5-2. Notional Operational-Level Army MCA**

**Regulated Movement.** Regulation of transportation assets and LOC is required to prevent congestion and conflicting movements. This is critical if US forces must share available airfields, roads, rail lines, water terminals, and inland waterways with allied forces and HNs. Movements must be regulated according to command priorities.

**Fluid and Flexible Movement.** The transportation system will provide uninterrupted flow of traffic. Movement planners must anticipate the need for alternate modes and routes,

**Maximum Use of Carrying Capacity.** This involves more than loading each transport vehicle to its maximum carrying capability. Unused capability cannot be stored to provide an increase in capability later. Similarly, fully loaded transport equipment sitting idle or being used for storage is as inefficient as moving partially loaded transport equipment. While allowing for adequate equipment maintenance and personnel rest, planners must keep transportation assets loaded and moving as much as the tactical situation permits.

**Forward Support.** Forward-oriented transportation support is a combat multiplier. It depends on fast, reliable transportation to move supplies and personnel as far forward as required. The senior movement control organization prepares movement plans and programs, conducts necessary liaison with higher and lower movement elements, supervises the activities of the subordinate movement control

battalions and teams, and ensures proper use of available movement capabilities.

MC units will normally deploy in proportion to the total force size and level of transportation effort required. They deploy in echelons with their force. Therefore, a complete operational-level movement control organization, such as an MCA, will not be deployed during the early stages of deployment. Tactical-level MC units, such as corps movement control centers or teams, will perform initial movement control functions. As soon as feasible, an operational-level MC unit, such as a transportation battalion (MC), is deployed to relieve the tactical level from continuing to perform operational movement control and allow it to focus on the tactical level. This augmentation will provide interim operational-level MC functions while tactical-level movement control elements concentrate on the onward movement of the tactical organization. For additional details, refer to FM 55-10 and Joint Pub 4-01.3.

### **Movement Control Battalions and Teams**

To decentralize execution of transportation management and MC functions, the COMMZ may be divided into transportation movement regions. The number of customers served, the number of modes and nodes, and the geographical size of the COMMZ determine the size of these regions. Transportation battalions (MC) provide C<sup>2</sup> of MC functions within the transportation movement regions.

Transportation battalions (MC) are responsible to the Army MCA for control and management of all movement matters in the theater transportation system that take place in their region.

Under the supervision of the transportation battalion (MC), MCTs function as field representatives of the senior movement control organization, directly interfacing and tasking the mode operators, shippers, and receivers. Figure 5-3 shows an example of a COMMZ with a sea and aerial port, MMC, theater storage area, and GS units with the senior MC organization and its attached MCTs.

### Corps-Level Movement Control

The corps MCC provides centralized transportation management in the corps. It coordinates with the operational-level MC organization for additional assets and to

determine the identification and capabilities of supply routes that cross the boundary between corps and operational levels. See Figure 5-4.

### MODAL OPERATIONS

The senior transportation organization is the principal mode operating headquarters in the AO. It provides theaterwide transportation support through its subordinate motor, rail, watercraft, air, and terminal units and may also operate common-user ocean terminals if they are not operated by MTMC. It coordinates transportation service support matters with other US forces, ASCC subordinate commands, allied/coalition forces, and the HN. The senior transportation organization may be a transportation command (TRANSCOM) or a composite group, including motor battalions, railway operating battalions, and terminal battalions. The principal functions of these

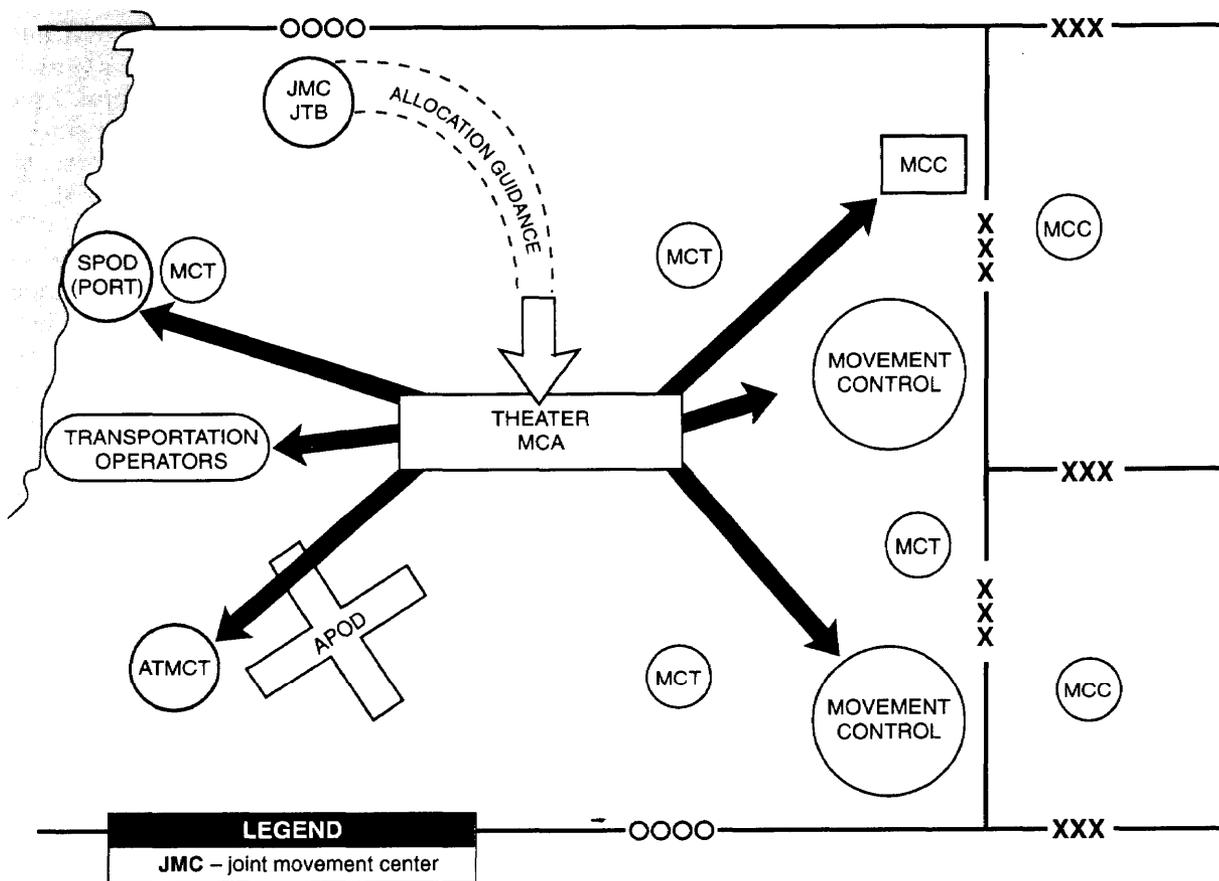


Figure 5-3. MC in a Theater Communication Zone

units, which provide common-user transportation services throughout the area of operations, include-

- Transportation support in the areas of highway transportation, cargo transfer operations, and terminal service operations.
- C<sup>2</sup> of assigned transportation units. FM 55-1 contains detailed information on modes of transport.

The senior transportation organization also provides staff assistance to the senior Army component organization for plans, policies, and procedures and controls transportation resources allocated to the Army transportation services. It controls all modes of Army transportation, as well as cargo transfer units. However, the planning, use, and commitment of transportation assets are vested in the senior Army MCA in the theater of operation.

### Air Transport

Air transport is a flexible and essential element of the transportation system. Wide-ranging CSS needs within the theater require Air Force and Army airlift assets to support the

force. Although it may be restricted by weather, airlift can nevertheless provide rapid movement of cargo, passengers, and equipment without regard to terrain restrictions. Army air transport is not designed to compete with the Air Force; its purpose is not only to provide high-priority, rapid transport but to supplement the lift capability of other Army transportation.

**Strategic-Level Air Transport.** The Air Mobility Command provides intertheater air transportation. As a single-manager agency, it moves high-priority personnel, equipment, and supplies for all of DOD.

**Theater Air Transport.** Allocated Air Force support, FIN, and Army aviation units provide air transportation within a theater. Army air transport is used to extend ALOC. Airlift provides support for aerial preplanned and immediate resupply, movement of critical high-priority Class IX, retrograde of reparable, pre-positioning of fuel and ammunition, and movement of low-density/high-cost munitions when time, distance, or road conditions prohibit ground transportation.

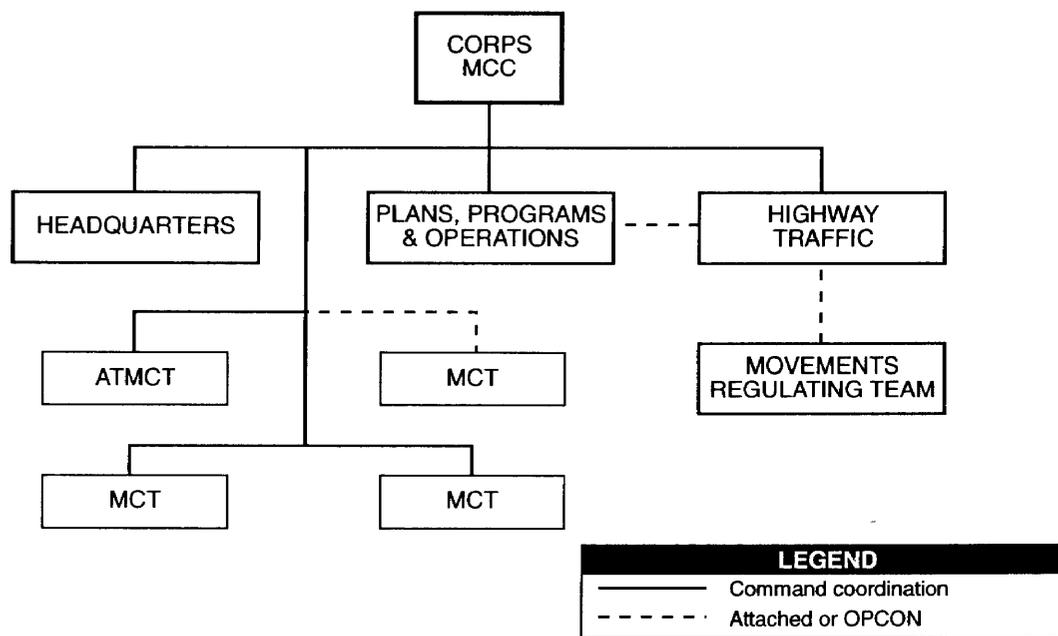


Figure 5-4. Corps Movement Control Center

**Army Air Terminal Movement Control Teams (ATMCTs).** Army ATMCTs, which are usually located in the Air Force terminal, are under the direction of the Army MCA. Their function is to arrange transport, coordinate loading, and expedite movement of Army units, personnel, and materiel through the terminal. Serving as the link between the Army and the Air Force at the terminal, Army ATMCTs may also interface with the HN in performing reception and onward movement functions at the APOD operated by HN agencies. The Army MCA often authorizes ATMCTs to move Army cargo from the air terminal to the consignee. ATMCTs also coordinate with line-haul modes to assure timely arrival of transportation at the air terminal or at the in-transit area.

**CSS Air Movement.** Army helicopters complement other modes of transportation when speed is essential. Army air transport can be designed to provide the connecting link between theater air and sea terminals and receiving supply activities, receiving units, or cargo transfer points. The corps MCC manages Army air transport originating in the corps. It obtains its airlift from the corps aviation brigade.

### Motor Transport

Army motor transportation is a key element of the integrated transportation system. The most versatile mode of transport, it is normally the primary mode of support to Army forces. It provides the connecting link between the receiving units, major aerial and sea ports, supply centers, and rail and inland waterway terminals. Motor transport units not only provide support to the COMMZ but also line-haul service as far forward as the brigade support area. Functionally, motor transport falls into two general categories: nontactical and tactical.

**Nontactical Movements.** Nontactical movements are characterized by maximum use of available vehicles and the economical use of cargo capacities.

**Tactical Movements.** Tactical movements are characterized by the preservation of task organization or unit integrity for tactical control, combat loading for availability upon arrival, and speed.

**Highway Regulation.** Operational requirements place a severe burden on road networks, which must accommodate tactical moves, motor transport convoys, unit transportation, and all kinds of vehicles and refugees. MC planners must regulate highways to obtain efficient use, to prevent conflicts, and to support priorities. Highway regulation—the responsibility of the senior Army commander—includes planning, routing, scheduling, and deconflicting the use of certain priority road networks in the operational area. In the COMMZ, it may be a HN responsibility, performed in coordination with the senior movement control organization. Figure 5-5 shows six movement regulating teams along a main supply route.

### Rail Transport

Military rail unit capabilities are limited. Therefore, US forces will rely on HN rail transportation to the maximum extent possible for port clearance and inland movement of high-tonnage and high-density equipment and supplies. The railway battalion is normally assigned to the senior transportation organization. The operation of military railways may be accomplished in three phases. Although the phases normally progress in sequence, this need not be the case. When appropriate, a Phase II or III operation may be initiated without the preceding phase.

- During Phase I, which occurs during the early stages of a military operation, military personnel operate and maintain railway lines. The employment of civilian personnel is not practical in or near the CZ. Restrictions on the employment of civilians are necessary for military or security reasons.
- During Phase II, military railway personnel, augmented with local civilian railway personnel under direct military supervision, operate and maintain railway lines.
- Phase II is instituted as soon as practicable to allow the release of military railway personnel. Local civilian railway personnel operate and maintain railway lines under the direction and supervision of the highest military railway echelon in the theater.

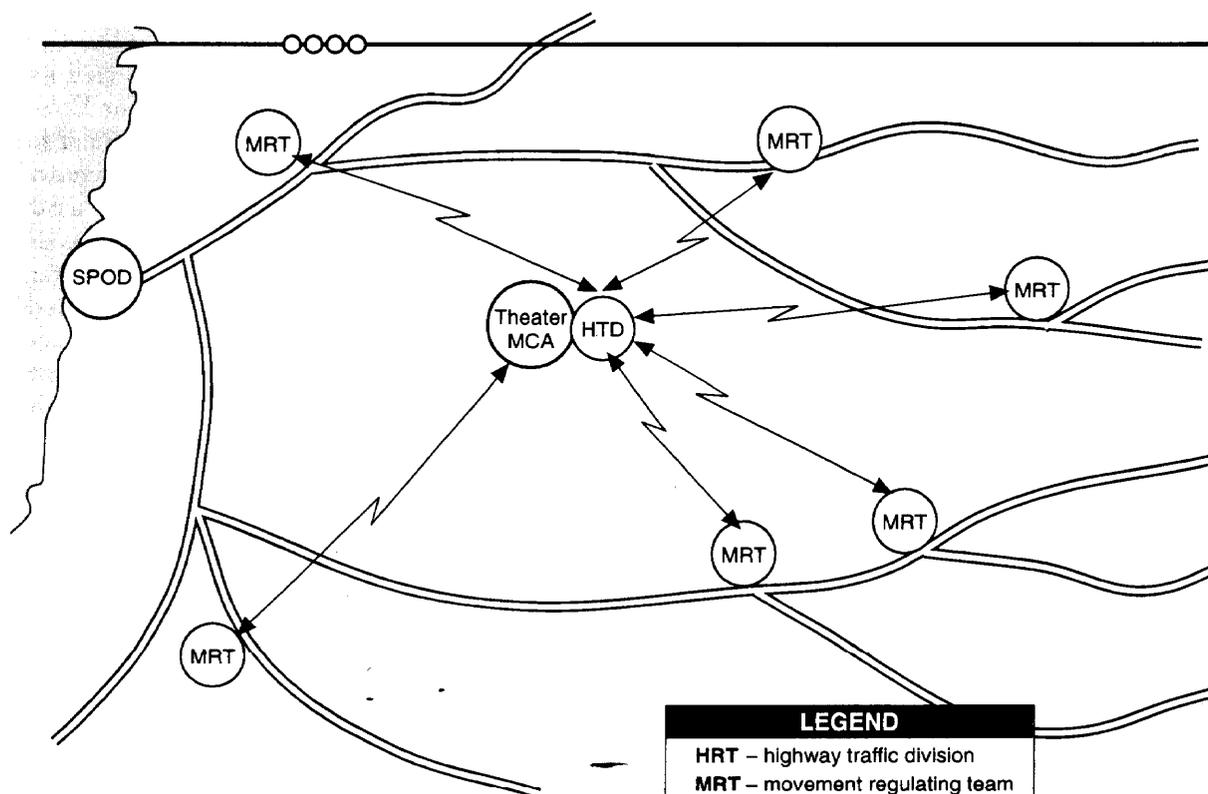


Figure 5-5. Highway Regulating Points

## Water Transport

Army water transport units and teams provide water transport and port and harbor support in harbor areas and inland waterways and along theater coastlines. Water transport units support movement of military cargo and personnel through and between Army water terminals, as far forward as inland waterways and the tactical situation allow. Water terminal operations are conducted at established ports, at beach sites, or at unimproved facilities and are an integral part of inland waterway and LOTS operations. Army water transport units are normally operated as part of a terminal battalion and are attached to and commanded by an element of the transportation organization.

**Types of Services.** The two major types of water transport provided by Army watercraft are port and harbor logistics support and lighterage service. In harbors, the terminal battalion may employ nonbeaching vessels that are designed to provide floating craft services in port areas. Lighterage service refers to the

transportation of personnel, equipment, and cargo between ships and the shoreline, fixed ports, or bare beaches. Refer to FM 55-50 for additional information.

**Types of Operations.** Army watercraft are used in support of various types of operations. They range from large, fixed-port operations to LOTS operations to inland waterway operations. Each type of operation may require different mixes of watercraft as well as terminal units to actually handle the cargo.

## TERMINAL OPERATIONS

A terminal is any facility, regardless of size or complexity, at which cargo or personnel are loaded, unloaded, and handled in transit between elements of any of the various transportation modes. Terminals are established at origins, destinations, and in-transit transfer points.

In a theater of operations, Army terminal operations include loading, unloading, and handling in-transit cargo and personnel between any of the various modes of-

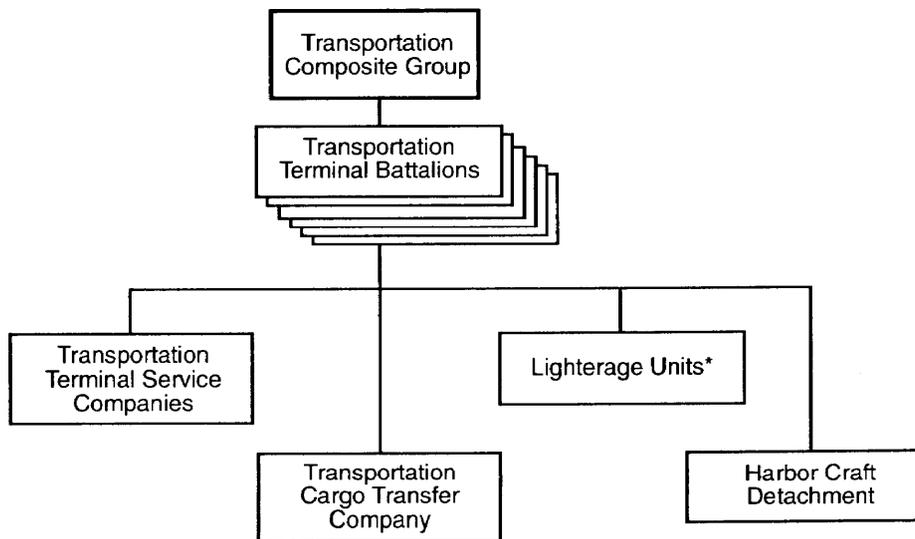
### Ocean Water Terminal Operations

transportation. Terminals are established for cargo being carried at beginning, destination, and in-transit points. The transportation composite group is the senior terminal activity in the theater of operations. When two or more composite groups are deployed, a senior transportation organization will be assigned to the theater for C<sup>2</sup> of all operational-level transportation modal and terminal elements. Figure 5-6 shows a theater terminal organization. The composite group primarily commands deep-water terminals, Army air terminals, or similar activities that are conducted with adjacent or related water terminal activities. The transportation composite group is a planning and control organization that does not enter into day-to-day operations.

The Army transportation system includes headquarters elements specifically designed to provide C<sup>2</sup> of operating units responsible for terminal services to support mode operators. The primary categories of Army terminal operations are ocean water terminal operations and inland terminal operations.

Ocean water terminals are classified as fixed facilities, unimproved facilities, or bare-beach port facilities. Normally, general cargo terminal operations apply to all ocean terminals. Container, *RO/RO*, and *combination terminal* usually refer to fixed-port facilities. LOTS operations no longer refer to only bare-beach operations; the expanded definition applies to an operation where oceangoing cargo vessels are discharged to lighterage for subsequent discharge to bare-beach (improved or unimproved) facilities.

**Major Port Facilities.** Major port facilities are an improved network of cargo-handling facilities specifically designed for transfer of oceangoing freight, vessel discharge operations, and port clearance. Deep-draft oceangoing vessels come alongside a pier, ship, or quay and discharge cargo directly onto the apron. Most cargo is moved into open or covered in-transit storage to await terminal clearance. Selected cargo may be discharged directly to land transport. Major-port facilities may also have state-of-the-art facilities and



\*Boat or amphibian companies as required.

Figure 5-6. Theater Terminal Organization

equipment to support cargo discharge and port clearance operations.

**Minor Port Facilities.** Any one or a combination of conditions qualifies a port as a minor port facility that, to discharge vessels, may require augmentation from a terminal service company and shallow-draft lighterage. The use of augmenting resources qualifies as a LOTS operation. Minor port facilities have at least one of the following conditions that make them less productive than a major port facility:

- They are not designed for the type cargo carried, that is, containers.
- They lack permanent fixed equipment or the right type equipment in working areas.
- They lack or have poor clearance networks, that is, poor rail, nonexistent road.
- The berth length and/or water depth alongside the berth is insufficient for the type vessel used.
- Exposure to the elements and passing traffic hinders vessel operations.

**Bare-Beach Facilities.** In bare-beach facilities, Army lighterage is discharged across the beach. No facilities equipment or infrastructure may exist at the LOTS site to discharge cargo or conduct port-clearance operations. Beach terminals require specifically selected sites where cargo is delivered by lighterage to or across the beach and into marshaling yards or onto waiting clearance transportation. Landing craft, amphibians, and terminal units are used in a beach operation under the C<sup>2</sup> of a terminal battalion.

**Container Terminals.** Container terminals are specialized facilities designed for uninterrupted, high-volume flow of containers between ship and inland transportation modes and vice versa. These terminals are serviced by specialized, largely non-self-sustaining vessels loaded by high-productivity container-handling equipment. These terminals may have facilities for consolidating break-bulk cargo into containers.

**RO/RO Terminals.** RO/RO terminals are designed for handling cargo on wheels. They have a deep-water berth, centralized-control

in- and out-processing facilities, and a large, open, unrestricted parking area. Their key element is that all cargo remains on wheels throughout the transit cycle. Nontrailerable cargo is placed on specially designed, low-silhouette cargo trailers for ocean transit.

### **Inland Terminal Operations**

USTRANSCOM or the transportation group establishes inland terminals at both ends of and at interchange points along theater air, rail, and motor transport systems to provide for transshipment of cargo and personnel carried by these modes. Normally, operation and control of the entire inland terminal facility are the responsibility of the mode battalion or group having primary transport responsibility in the region the terminal is located.

Cargo transfer companies and trailer transfer points (TTPs) conduct inland transfer operations at terminals, depots, and transfer points. The terminals are established throughout the COMMZ, corps, and division rear areas, as required, to provide adequate transportation service. The senior movement control organization identifies requirements for terminals serving rail and inland waterways along existing routes whenever sufficient lift capability cannot be provided by motor and air. The cargo transfer company conducts cargo transfer operations at inland terminals under the supervision of the COSCOM in the corps and senior transportation organization of the theater army in the COMMZ.

**Air Terminals.** Air cargo transfer operations within the theater take place at both Air Force and Army air terminals. The Air Force commander is responsible for providing terminal facilities at all points served by the Air Mobility Command or theater airlift aircraft. This responsibility includes loading and unloading aircraft. The Army commander may, by local agreement, provide personnel to participate in loading and unloading aircraft at these facilities. He may also accept responsibility for loading and unloading Air Force aircraft at forward landing fields that are not a regularly scheduled stop for theater airlift aircraft. In such cases, the cargo transfer

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company would be employed. The cargo transfer company may also furnish personnel to load and unload aircraft conducting Army unit moves. The company will provide break-bulk facilities for consolidated shipments and cargo awaiting Army transport.

***Motor Transport Terminals.*** Motor transport terminals are located at both ends and intermediate points along line-haul routes serving as a connecting link between local-haul and line-haul service or where terrain necessitates a change in the carrier or mode.

***Rail Terminals.*** Rail terminals may include yard tracks, repair and servicing facilities, accommodations for train crews, and railheads. They are located at originating and terminating points of trains and at sites that

mark the limits of rail operating divisions. Army and/or HN rail units provide intersectional transport service. The rail capability within the theater will be exploited whenever usable facilities exist.

***Inland Waterway Terminals.*** Cargo transfer units are employed only at small intermediate cargo transfer points on inland waterway systems. Limitations on a unit's use at these points consist of the size and configuration of the waterway craft and the capabilities and capacities of the unit's cargo-handling equipment. When the waterway delivery means is composed largely of floating barges, landing craft, and similar types of floating equipment, the cargo transfer service may be used in the transshipping process.

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