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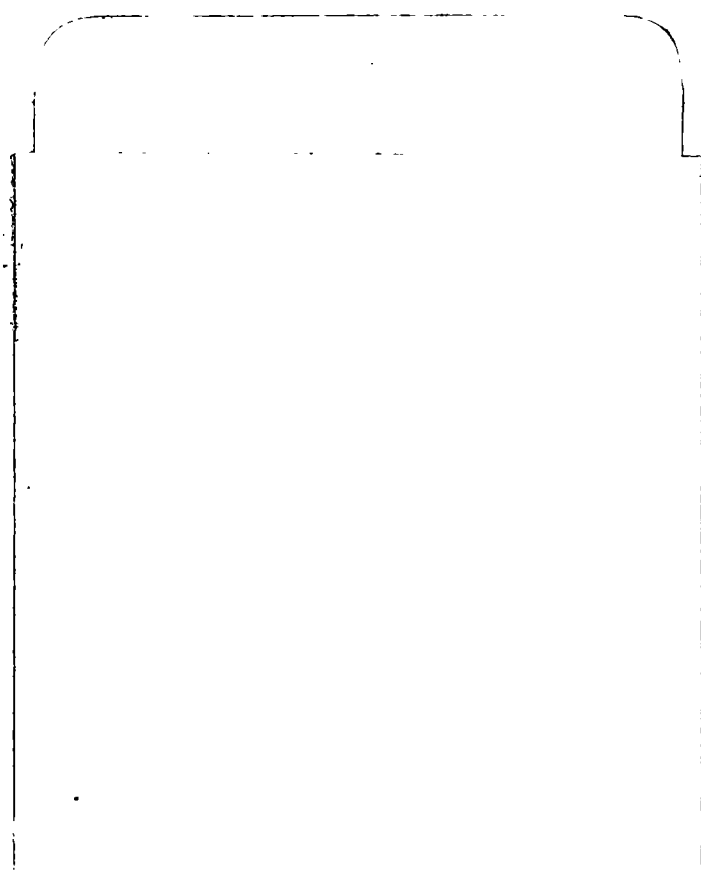
FIELD MANUAL

ARMY TERMINAL OPERATIONS

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ARMY TERMINAL OPERATIONS

	Paragraph	Page
CHAPTER 1. INTRODUCTION	1-1, 1-2	1-1
2. GENERAL CONCEPTS	2-1-2-9	2-1
3. TRANSPORTATION TERMINAL BRIGADE	3-1-3-4	3-1
4. TRANSPORTATION TERMINAL GROUP	4-1-4-4	4-1
5. TRANSPORTATION TERMINAL BATTALION	5-1-5-4	5-1
6. TRANSPORTATION TERMINAL SERVICE COMPANY	6-1-6-4	6-1
7. TRANSPORTATION TERMINAL TRANSFER COMPANY	7-1-7-3	7-1
8. PORT TERMINAL OPERATIONS	8-1-8-12	8-1
9. LOGISTICS OVER-THE-SHORE OPERATIONS	9-1-9-9	9-1
10. AMPHIBIOUS OPERATIONS	10-1-10-6	10-1
11. INLAND WATERWAY OPERATIONS	11-1-11-5	11-1
12. INLAND TERMINAL OPERATIONS	12-1-12-10	12-1
13. INTERMEDIATE STAGING AREAS	13-1-13-4	13-1
APPENDIX A. REFERENCES		A-1
B. EMPLOYMENT OF NON-AIR DEFENSE WEAPONS AGAINST HOSTILE AIRCRAFT		B-1
C. STANAG 2165, FORECAST MOVEMENT REQUIREMENTS—RAIL, ROAD AND INLAND WATERWAYS		C-1
D. STANAG 2166, MOVEMENTS AND TRANSPORT DOCUMENTS USED FOR MOVEMENTS BY SHIP		D-1
E. STANAG 3465, SAFETY EMERGENCY AND SIGNALLING PROCEDURES FOR TACTICAL AIR TRANSPORT OPERATIONS		E-1
INDEX		Index-1

* This manual supersedes FM 55-51, 3 July 1957; FM 55-55-1 (TEST), 16 March 1967; FM 55-56, 8 April 1965; and Part Five of FM 55-52, 30 July 1957.



CHAPTER 1

INTRODUCTION

1-1. Purpose and Scope

a. This manual is a planning and operational guide for commanders and staff officers concerned with the operation of Army terminals and the employment of transportation terminal units in a theater of operations. It prescribes basic doctrine for all types of Army terminal operations and contains procedures and techniques to be used in planning, executing, and controlling Army water, motor, rail, and air terminal operations. It briefly describes the organization, mission, capabilities, and concept of employment of the following units:

(1) Headquarters and headquarters company, transportation terminal brigade, TOE 55-111.

(2) Headquarters and headquarters company, transportation terminal group, TOE 55-112.

(3) Headquarters and headquarters company, transportation terminal group, TOE 55-112.

(3) Headquarters and headquarters company, transportation terminal battalion, TOE 55-116.

(4) Transportation terminal service company, TOE 55-117.

(5) Transportation terminal transfer company, TOE 55-118.

(6) Transportation terminal service teams, TOE 55-560.

b. The contents of this manual are applicable to—

(1) General war, to include consideration of the employment of nuclear weapons and chemical agents, and defensive measures to be taken when operating in a chemical, biological, or radiological environment.

(2) Limited war.

(3) Cold war, to include stability operations assistance in internal defense and internal development operations.

c. Users of this manual are encouraged to submit recommended changes and comments to improve its clarity or accuracy. Comments should be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will be provided for each comment to assure understanding and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commanding Officer, U.S. Army Combat Developments Command Transportation Agency, Fort Eustis, Virginia 23604.

d. This manual is in consonance with the following international standardization agreements (STANAG's) which are identified by type of agreement and number at the beginning of each appropriate chapter in the manual:

TITLE	NATO STANAG	SEATO SEASTAG
Forecast Movement Requirements—		
Rail, Road and Inland Waterways	2165	
Movements and Transport Documents		
Used for Movement by Ship -----	2166	
Safety Emergency and Signalling		
Procedures for Tactical Air Transport Operations -----	3465	3465

1-2. Types of Terminal Operations

a. General. A terminal is any military or commercial facility, regardless of size or complexity, at which cargo or personnel are loaded, unloaded, and handled in transit between any of the various modes or means of transportation. Terminal operations are an integral part of the following:

- (1) Port terminal operations.
- (2) Logistics over-the-shore (LOTS) operations.
- (3) Amphibious operations.
- (4) Shore-to-shore operations.
- (5) Inland waterway operations.
- (6) Inland terminal operations (serving air, rail, and motor transport).
- (7) Intermediate staging area operations.

b. Port Terminals. Port terminals are developed shoreside installations varying in size from large

deepwater complexes containing several wharves, anchorage areas, shore-based cranes, drydocking facilities, cargo sheds, sorting and in-transit storage areas, rail sidings, etc., to small, shallow-draft, one- or two-wharf facilities with minimum provisions for cargo handling, storage, and clearance at which passengers or cargo are transhipped between oceangoing ships and land transport equipment.

c. Logistics Over-the-Shore Operations. A LOTS operation is the loading and unloading of ships without the benefit of fixed port facilities in friendly or nondefended territory and in time of war during phases of theater development in which there is no opposition by the enemy. These operations may be conducted from ship to shore or from shore to shore. LOTS operations may be instituted to supplement or increase tonnage capabilities of an existing terminal, to replace the tonnage capacity of a terminal made untenable by enemy action, to relieve congested lines of communication, or to reduce the land transportation required to support combat forces.

d. Amphibious Operations. An amphibious operation is an attack launched from the sea by naval and landing forces, embarked in ships or craft involving a landing on a hostile shore to gain a lodgement area from which to carry out further combat operations ashore, to obtain an advanced air or naval base area, or to deny the use of seized positions to the enemy.

e. Shore-to-Shore Operations. A shore-to-shore operation is a land force operation involving a water crossing in assault craft or in assault craft and aircraft, for the purpose of establishing a force on or withdrawing it from the far shore; it is usually a uniservice operation. As indicated in *c* above, LOTS operations may also be conducted as

part of or in support of a shore-to-shore operation.

f. Inland Waterways. An inland waterway in a theater of operations is normally operated as a complete system involving—singly or in combination—rivers, lakes, canals, or intracoastal waterways and two or more water terminals. These waterways are normally used for civilian traffic but they can be used for military traffic when civilian use has been suspended or limited. Inland waterways can be used to relieve the pressure in other modes of transportation and are especially useful for moving a large volume of bulk supplies and heavy, outsize items not easily transported by other means. Although inland waterways are an economical means of transport, they are relatively slow compared to other modes and are especially vulnerable to enemy action and to climatic changes.

g. Inland Terminals. Inland terminals provide cargo transfer facilities at interchange points between air, rail, and truck transportation nets and form connecting links between these modes when terrain and operational requirements necessitate a change in carrier.

h. Intermediate Staging Areas. An intermediate staging area is a general locality between the mounting area and the objective of an airborne or air landed force through which the force or parts thereof pass after mounting for refueling, regrouping of aircraft, and exercise, inspection, and redistribution of troops and equipment preparatory to an airborne or air landed assault. The support required by the assault force in the intermediate staging area is provided primarily by Army elements and includes administrative services, messing, billet areas, logistic support, communications, preparation of loads, loading of aircraft, and combat configuration of the force.

CHAPTER 2

GENERAL CONCEPTS

2-1. Command Relationships

a. The command element in the communications zone is the theater army support command (TASCOM), which provides an integrated support system for one or more field armies. Its operational area extends from the ocean terminals of the theater to the rear boundary of the field army support command (FASCOM), thereby providing the necessary link between the combat force and its source of manpower and materiel replenishment in the continental United States (CONUS). The TASCOM is organized with five mission commands and an area support command (fig 2-1). Details of TASCOM operations are contained in FM 54-7.

b. The transportation command (fig 2-2) is one of the five mission commands of TASCOM. It has the necessary movement control, motor transport, aviation, rail, and terminal service and lighterage units to provide an integrated transportation system capable of supporting the TASCOM mission. The transportation command receives personnel replacements and supplies at shipside, air terminals, or rear area depots and delivers them as far forward as possible toward the combat zone with minimum unloading, reprocessing, rehandling, or transshipping at intermediate points. The operational functions of the transportation command are detailed in FM 55-6-1 (TEST).

(1) Depending on the size and complexity of the theater, the senior terminal headquarters under the transportation command will be either a transportation terminal brigade or transportation terminal group. The group provides command, planning, supervision, and coordination of the operations of up to six terminal battalions—a force normally sufficient to support one field army. Normally a transportation terminal brigade is employed to command three or more transportation terminal groups. In certain deployment situations, a terminal brigade headquarters may be required for command and control of two terminal groups. A brigade may be assigned to provide an intermediate level of command, thereby becoming the terminal “mission” headquarters for the theater. In each case, the group and brigade functions are essentially the same, and their internal organization reflects this similarity.

(2) The transportation terminal battalion is the basic operating unit or headquarters in the terminal structure and provides the command element for each water terminal in the theater.

2-2. Water Terminal Operating Environment.

a. Water terminal operations are conducted at established port facilities and over beaches. Because of the vulnerability of fixed port facilities, water terminal operations in a theater are charac-

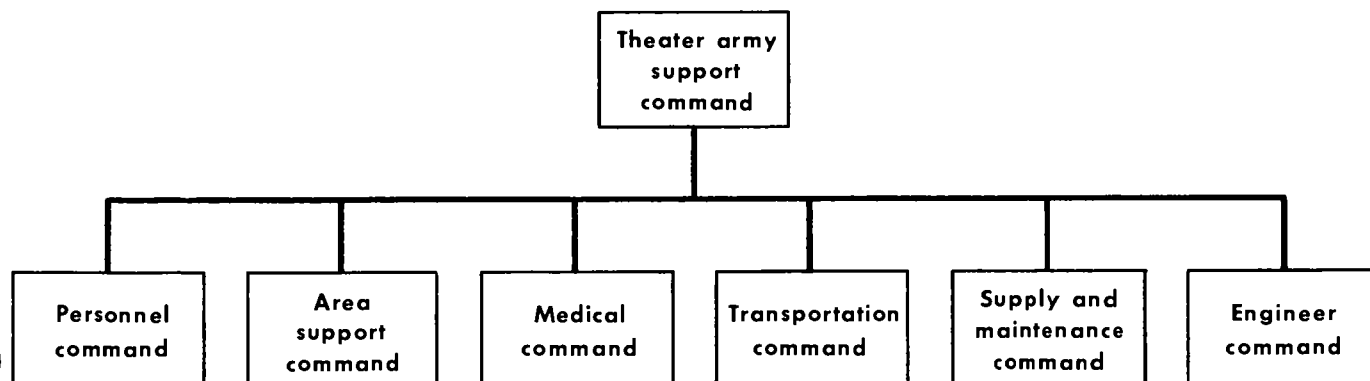


Figure 2-1. Theater army support command organization.

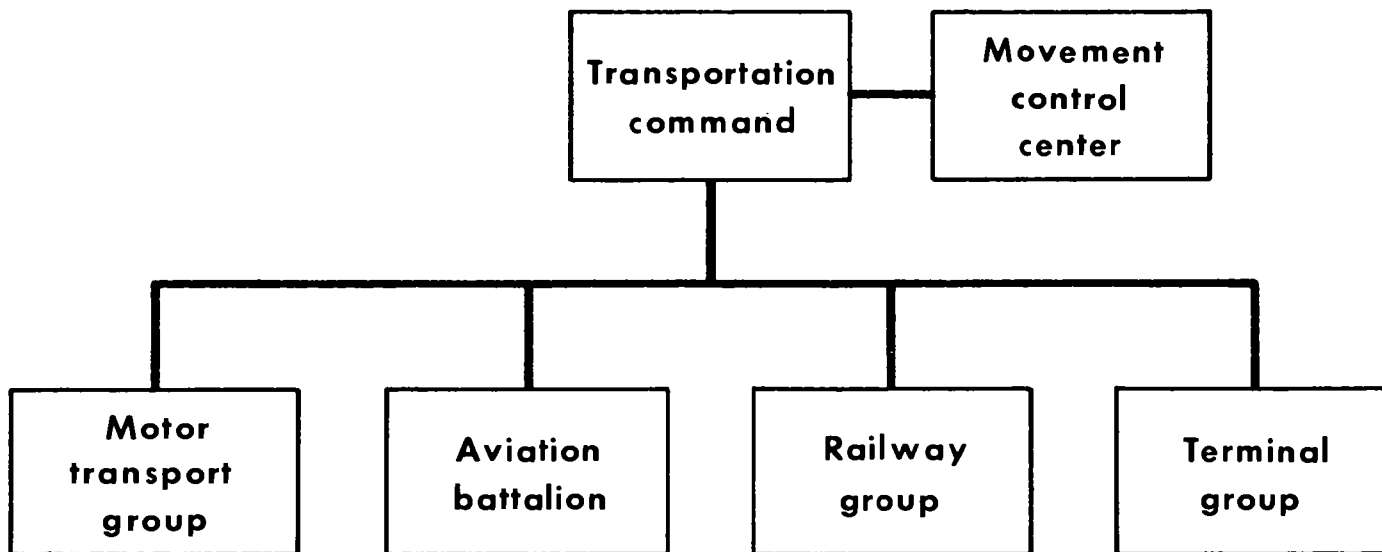


Figure 2-2. Type transportation command organization.

terized by the use of numerous small terminals rather than a few large ones. The degree of dispersion depends on, among other things, the nature of the enemy threat, the availability of suitable facilities, and the transportation net available to clear cargo from the terminals. Terminal activities may, in fact, be spread over hundreds of miles of coastline. As a result, subordinate terminal units down to battalion and, on occasion, down to separate companies may have to operate independently in locations far removed from parent units, sources of support, and main supply routes. Since physical security is a continual problem, the terminal commander may appoint a cargo security officer to prevent mishandling and pilferage of Government cargo aboard a vessel at a terminal from the time of arrival until it leaves, to report damage and pilferage, to make recommendations for preventing such losses, and to deliver special cargo entrusted to his care to the proper receiving officer. (For details on physical security, see FM 19-4 and FM 19-30.) Problems of communication, command, control, and efficient use of lighterage and land transport resources multiply under these conditions and planning must be directed to these factors at all levels.

b. Dispersion, however, should be kept to a practical minimum consistent with the theater

commander's estimate of the threat and the problems incident to defense of the dispersed terminals. Normally, the direct-line distance between ships and between ships and major shoreside activities should be at least 1 nautical mile. In the event that large, long-range nuclear weapons are employed, not more than four ships should be berthed simultaneously in a single port or harbor area or within an area less than 5 nautical miles square. Not more than two ships should be handled simultaneously at one beach terminal, and these should be kept at least 1 nautical mile apart. The distance between each two-ship operation should be at least 5 nautical miles.

2-3. Cargo Mix

a. Approximately 95 percent of theater daily resupply requirements will arrive by surface transport. At least 60 percent of this tonnage will consist of dry cargo, and the remainder will be bulk petroleum, oils, and lubricants (POL). Half of the dry cargo will normally be moved forward into the theater by rail, 35 percent by motor transport, and 15 percent by air. Upwards of 40 percent of all cargo arriving by surface means will be delivered through beach terminals.

b. The percentage of dry cargo that will move directly forward, by-passing TASCOM rear area

depots, will depend on a number of factors. These include the depth of the theater, the effectiveness of the supply control system, and the extent to which problems attending unitization of supplies, repair parts, and equipment into tailored, unit consumption loads are solved. Whatever the conditions, the transportation system must be capable of clearing all incoming cargo from the immediate vicinity of the entry points without delay so as to avoid target-size accumulations of supplies and equipment on or near the shoreline.

c. Dry cargo which is adaptable to unitization will arrive in the theater on pallets and in containers of various sizes. Some 65 percent by weight of theater dry cargo requirements will be so unitized. Most of the remainder will consist of vehicles and of items which can be considered unitized loads in themselves as, for example, crated or wheel-mounted compressors, generators, and construction machinery. An estimated 5 percent will consist of items which are by their nature not adaptable to unitization as, for example, telephone poles and structural components of major items of equipment. The priority for use of berth facilities and priority for discharge of cargo from vessels will be determined by the particular theater requirement. The use of unprotected anchorage berths will be avoided if at all possible because of the danger of attack from the sea and the degrading effects which wind and sea state have on productivity. Ships will be loaded in CONUS in a manner which will permit discharge with their own cargo gear to the maximum extent practicable.

d. Ships lying at anchorage berths will be discharged into lighters. When lighters can be unloaded at wharves, amphibians are not required, and military flat barges and locally procured lighters will be employed. When the delivery point is a beach or an unimproved section of a port area, amphibians and landing craft must be employed. Vehicles, containers, and heavy, outsize equipment will be transported by landing craft, mechanized, Mark VIII (LCM 8); landing craft, utility (LCU); beach discharge lighter (BDL); or lighter, amphibious, resupply, cargo 60-ton (LARC-60). LARC-5's will normally be used for general cargo up to palletized loads, and LARC-15's will be employed as the ship-to-shore delivery means for CONEX-type containers and small vehicles. Helicopters can be utilized in a cargo lighterage role; however, safety, weather, and cargo compatibility must be considered. TM

55-500 contains marine equipment characteristics and data information.

e. Bulk petroleum products arriving by large oceangoing tankers must be discharged at berths especially designed for the purpose. Since fixed tanker berths are usually collocated with tank farms, which are extremely vulnerable to all forms of attack and sabotage, the majority of tankers will have to be discharged at offshore berths equipped with submarine pipelines. If the oceangoing tanker is too large to use available berths, it may be necessary to lighten it by pumping the product to coastal tankers and fuel barges for subsequent transfer to dispersed and concealed storage facilities and pipelines. Bulk POL may also be transferred directly over the shore to hastily built storage facilities by use of submarine or floating pipelines. The responsibility of the terminal battalion is limited to providing berthing services for the tankers. The petroleum group of the supply and maintenance command is responsible for discharging the vessel and clearing POL from the terminal.

2-4. Night Operations

During hours of darkness, floodlighting systems will be used on piers, at transfer points, and aboard ships in protected harbors whenever the enemy situation permits. When the ship berths are directly visible from the sea, as in logistics over-the-shore (LOTS) operations, personnel will be equipped with light-intensification equipment, or luminescent materials, such as paint and tape, will be applied to cargo and equipment to enhance visibility. The same equipment and aids to night vision will be used in ports and harbors when enemy action prevents the use of ordinary lighting equipment.

2-5. Communications

The transportation terminal group and brigade require an efficient communications system for both internal and external communications. This service will include telephone, teletypewriter, radio, and data transmission circuits connecting command headquarters with subordinate units and with the transportation command, the supply and maintenance command, and the theater movement control system. The communications system must be extremely responsive, reliable, flexible, and secure to assure that the commander will be able to exercise effective control over his widely dispersed operations.

2-6. Communications Security (COMSEC) Considerations

a. Due to the importance of Army terminal operations, it should be assumed that the enemy may give special attention to determining the location, nature, and extent of those operations, and to interfering with them in any way. The communications structure, usage patterns, and message traffic content associated with Army terminal operations can provide enemy communications intelligence (COMINT) elements with valuable insights not only into the plans and activities of the terminal units themselves, but, more importantly, into the plans and activities of the supported element as well. Intercept and direction-finding of terminal communications may enable the enemy to either bring fire to bear on them or to evaluate the meaning of messages to aid in developing order-of-battle information.

b. Enemy use of electronic countermeasures (ECM) against friendly terminal communications can profoundly affect the ability of transportation terminal units to coordinate and control their operations, thus jeopardizing the flow of supplies to supported commands.

c. For the reasons cited above, special attention should be given at all times to security for terminal communications. FM 24-1 contains general unclassified doctrine and guidelines on COMSEC. Additional general doctrine is contained in FM 32-5. The following guidelines are especially pertinent to Army terminal activities:

- (1) Use wire and messenger communications means wherever practicable.
- (2) Use cryptologic devices, where available, to encipher radio message texts, or, as a minimum, those message text elements which will reveal specific details on impending activities.
- (3) Authenticate all radio transmissions and request a second authentication in the event of suspected deception.
- (4) Avoid patterns of radio usage and message transmissions which can be associated with patterns or sequences of events in terminal operations or operations of supported commands.

2-7. Water Terminal Operating Organizations

The water terminal organization (fig 2-3) consists of terminal service, harbor craft, and lighterage companies; attached transportation lighterage direct support maintenance units; and the

command units necessary to supervise and coordinate their operations. The size and composition of the water terminal organization in a theater depends on a number of variables, such as the number of ports and beaches to be used, the quantity of cargo and number of personnel to be moved through the terminals, and the capabilities and availability of local resources and facilities. As the basic operating headquarters in the theater terminal structure, the terminal battalion provides direct command, control, and operational supervision over the terminal service companies and the amphibian and boat units attached to deliver cargo to and through the beach. The following units provide the terminal operating elements for the battalion:

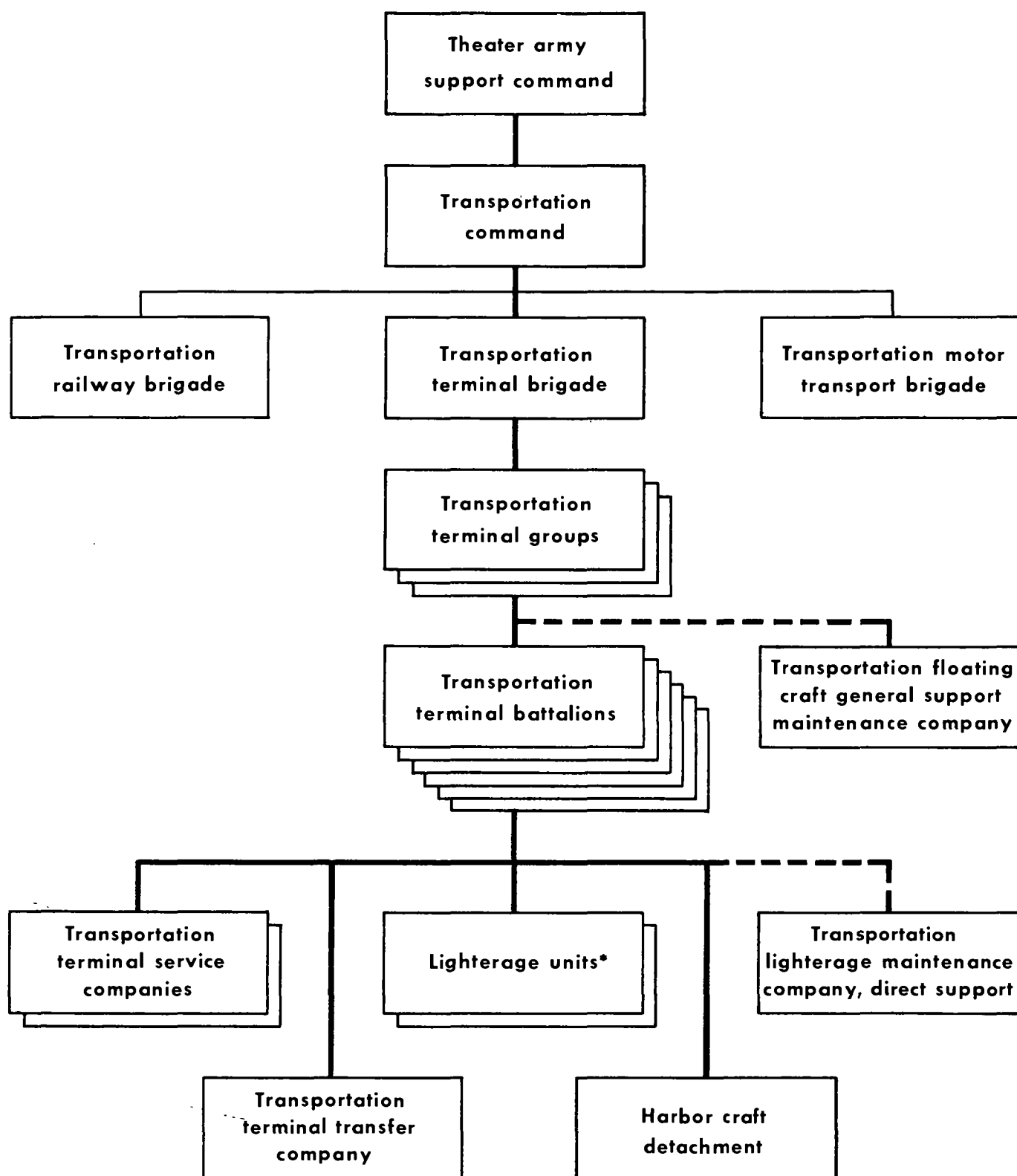
a. The transportation terminal service company (TOE 55-117) loads, unloads, and transships cargo in conventional water terminals or in LOTS operations.

b. Transportation amphibian units (TOE 55-138, 55-139, and 55-530, Team FN), along with transportation boat companies (TOE 55-128 and 55-129), move cargo and personnel from ship to shore (FM 55-50-1 (TEST) and FM 55-58). They are equipped with amphibians and landing craft of various sizes to permit the handling of all types of cargo. Amphibians can move cargo directly to transfer points inland and thereby avoid congestion on beaches. Harbor craft (tugs, barges, picket boats, floating cranes) are provided for in cellular teams contained in TOE 55-530 (FM 55-57).

c. The transportation lighterage maintenance company, direct support, (TOE 55-158) provides direct support maintenance for and receives, stores, and issues all repair parts required for organizational and direct support maintenance of wheeled amphibians and landing craft (FM 55-50-1 (TEST)).

d. The transportation floating craft general support maintenance company (TOE 55-157) provides general support maintenance on amphibians, landing craft, and harbor craft and receives, stores, and issues supplies peculiar to these craft. This company is assigned to the supply and maintenance command of TASCAM, but its day-to-day operations are controlled by the transportation terminal group or brigade to which it is attached (FM 55-50-1 (TEST)).

e. Transportation truck companies (TOE 55-17, 55-18, and 55-67) and transportation truck bat-



*Boat or amphibian companies as required.

--- Attachment

Figure 2-3. Type theater terminal organization.

talions (TOE 55-16) are attached to provide port clearance services to the level required to handle the known daily workload.

2-8. Inland Terminals

Inland terminals are established at both ends of and at interchange points along theater air, rail, and motor transport systems to provide for the transshipment of cargo and personnel carried by these modes. Army cargo handling at these inland terminals is a primary function of the transportation terminal transfer company (TOE 55-118). In the field army area, these companies are assigned to the transportation brigade and, in the communications zone, to the transportation command. Normally, operation and control of the entire inland terminal facility is assigned to the mode battalion or group having primary transport responsibility for the system, and transportation terminal transfer companies are attached to these elements for operational control. In the case of terminal transfer companies or elements employed at air terminals operated by the Air Force, the terminal transfer company is normally attached to the mode operating battalion having responsibility for clearing cargo from the air terminal. A detailed discussion of inland terminal operations is contained in chapter 12.

2-9. Coordination Requirements with Intelligence Units

a. Transportation centers, be they ocean terminals, inland waterway terminals, or air terminals, represent sensitive and vulnerable targets to enemy sabotage and guerrilla actions. This vulnerability is compounded by the fact that terminal operations in general require extensive indigenous labor support. For this reason, staff and operational elements of transportation terminals should closely coordinate their plans and operations with intelligence and counterintelligence organizations which are capable of providing extensive assistance in making such terminals secure from enemy action, including subversive activities and acts of sabotage.

b. The key intelligence organization which supports TASCOT is the military intelligence group, counterintelligence, Army Service Command (ASCOM), (TOE 30-60). Its mission is to provide intelligence support to the TASCOT area. Subordinate to the military intelligence group are military intelligence companies, counterintelligence, with one company supporting each area support group.

CHAPTER 3

TRANSPORTATION TERMINAL BRIGADE

(STANAG's 2165, 2166)

3-1. General

The headquarters and headquarters company, transportation terminal brigade (TOE 55-111), is normally activated when the size and complexity of terminal operations make it necessary to employ three or more terminal groups. This activation is also influenced by the number of other mode group headquarters attached to the transportation command. If the number of mode groups becomes excessive, it may be desirable or necessary to interpose a terminal brigade to simplify overall command control problems for the transportation command. The brigade is also employed when circumstances prevent adequate supervision and coordination of theater terminal operations by one or two transportation terminal groups.

3-2. Mission and Assignment

The mission of headquarters and headquarters company, transportation terminal brigade, is to provide command and staff planning for units employed in the operation of water terminals. The brigade is assigned to the theater army support command (TASCOM) and is normally attached to a transportation command.

3-3. Capabilities

a. The transportation terminal brigade is capable of providing command, control, and administration for up to five transportation terminal groups.

b. The brigade depends on the servicing personnel activity for personnel administration; on units of the TASCOM medical command for medical staff advice and unit level medical service; on finance direct support company (TOE 14-4) for payment of troops; on teams from TOE 14-500, finance service organization, when a comptroller section is required, and on supporting signal units for trunking into the theater army communications system and organizational maintenance of

signal equipment. Details for personnel, administrative, and finance services to the individual assigned to the transportation brigade are contained in FM 12-2, 14-3, 29-6, and 54-6.

3-4. Functions

a. The brigade headquarters is responsible for command of units attached to the brigade and of all terminal activities in the assigned areas of operation. These activities include reception, debarkation, embarkation, and transshipment of personnel; receipt, loading, unloading, segregation, and transshipment of cargo to initial destination; safety policies; training of all assigned and attached troops; preparation of defense plans for assigned areas; and liaison and coordination with appropriate mission commands of TASCOM, the Navy, the Air Force, the Military Sea Transportation Service, the Military Airlift Command, and military and civilian agencies of allied and occupied countries in accordance with prescribed policies.

b. In carrying out these activities, the brigade headquarters is responsible for—

(1) Management of military and civilian personnel.

(2) Administering labor management policies with respect to non-United States civilians and employees, executing policies regarding non-United States civilian labor, and maintaining coordination with appropriate civil affairs elements.

(3) Intelligence, including collection, processing, and dissemination of information of intelligence value; supervision of intelligence training; conduct of security investigations; and supervision of military and civil censorship activities.

(4) Preparation of standing operating procedures, directives, and plans for installation-type security, area security, and area damage control within assigned area and coordination of those

plans with subordinate commanders and area support commands.

(5) Preparation of current and long-range plans, procedures, policies, and programs pertaining to terminal operations and functions.

(6) Selection and allocation of units by types and numbers required to support the mission of the transportation terminal brigade.

(7) Inspection of units, installations, and activities of subordinate units.

(8) Supervision and planning for training of subordinate units.

(9) Development of plans for moving personnel and cargo through subordinate terminals.

(10) Coordination with the movement control center for terminal clearance.

(11) Development of requirements for communications and automatic data processing systems service required for the support of the terminal brigade and subordinate units.

(12) Development of requirements for construction, rehabilitation, maintenance, and repair of facilities and installations and for provision of utilities and firefighting support in the terminal area.

(13) Local procurement of materiel and services, particularly stevedoring contract services, for support of the brigade and subordinate units.

(14) Provision of field services to include food service supervision.

(15) Development of standing operating procedures, directives, current and long-range plans, procedures, policies, and programs in the logistic field pertaining to subordinate units and coordination with direct support elements supplying materiel and equipment used in operating terminals.

(16) Maintenance management, including development of appropriate policies, procedures, and operational instructions relative to maintenance and safety activities for issuance to subordinate units.

CHAPTER 4

TRANSPORTATION TERMINAL GROUP

(STANAG's 2165, 2166)

4-1. General

The headquarters and headquarters company, transportation terminal group (TOE 55-112), is normally responsible for all theater terminal operations for the theater army support command (TASCOM). When the size and complexity of the theater require the employment of two or more transportation terminal groups, a theater terminal brigade assumes the responsibility for all theater terminal operations. The terminal group, when subordinate to the brigade, is responsible for assigned terminal operations.

4-2. Mission and Assignment

a. The mission of headquarters and headquarters company, transportation terminal group, is to provide command and staff planning of units employed in the operation of water terminals.

b. The group is assigned to TASCOM and is normally attached to a transportation terminal brigade or a transportation command.

4-3. Capabilities

a. The transportation terminal group is capable

of providing command, control, staff planning, coordination, and supervision of operations, training, and administration of up to six transportation terminal battalions.

b. The group depends on a personnel service company (TOE 12-67) for personnel administration services, on units of the TASCOM medical command for medical staff advice and unit level medical service, on the finance direct support company (TOE 14-17) for finance service support, and on direct support maintenance units serving the area for organizational maintenance of communications equipment. Details for personnel, administrative, and finance services to the transportation terminal group are contained in FM 12-2, 14-3, 29-6, and 54-6.

4-4. Functions

Whether operating as the terminal mission headquarters for the theater or as a subordinate element of a transportation terminal brigade, the transportation terminal group performs, within its area of responsibility, essentially the same functions as those listed for the brigade in paragraph 3-4.



CHAPTER 5

TRANSPORTATION TERMINAL BATTALION

(STANAG's 2165, 2166)

5-1. General

a. The headquarters and headquarters company, transportation terminal battalion (TOE 55-116), provides the basic operating headquarters for theater terminal operations and is the normal command element for each two- to four-ship water terminal. In addition, the terminal battalion headquarters also acts as the command element in the operation of intermediate staging areas for airborne units (chap 13) and is the key terminal organization in support of amphibious operations (chap 10). It also acts as the command element in the operation of inland waterways (chap 11).

b. The terminal battalion, therefore, is necessarily a flexible organization, its components varying according to the particular requirements of each of its diversified missions. Tailoring is done by modifying the number and types of units attached for each task. In addition to the units listed in paragraph 5-3a, transportation truck companies and certain nontransportation units may be attached to the terminal battalion to meet specialized mission requirements.

5-2. Mission and Assignment

a. The mission of headquarters and headquarters company, transportation terminal battalion, is to provide command administration of units employed in the operation of water terminals.

b. The transportation terminal battalion is assigned to a theater army support command (TASCOM) and is normally attached to a transportation terminal group. It may be attached to a transportation terminal brigade or may operate separately under the supervision of a transportation command. When providing combat service support in an amphibious operation, the terminal battalion is normally attached to an engineer amphibious brigade.

5-3. Capabilities

a. The transportation terminal battalion is capable of commanding up to seven transportation terminal-type units (terminal service, terminal transfer, boat, amphibian, harbor craft, or lighterage direct support maintenance companies) or the equivalent of a four-ship terminal in an established port facility or a two-ship terminal in a beach operation.

b. This unit depends on the personnel service company (TOE 12-67) for personnel administration, on units of the TASCOM medical command for medical staff advice and unit-level medical service, and on the finance direct support company (TOE 14-17) for finance service. Details for personnel, administrative, and finance services to the individuals assigned to the transportation terminal battalion are contained in FM 12-2, 14-3, 29-6, and 54-6.

5-4. Functions

a. The headquarters and headquarters company, transportation terminal battalion, is responsible for—

(1) Command of units conducting water terminal operations.

(2) Operational control of loading, unloading, and cargo transfer operations.

(3) Overall supervision of documentation activities of the battalion and maintenance of ships files.

(4) Determining the estimated workload and requirements for transportation and assuring that necessary transport equipment is available.

(5) Assisting and advising subordinate operating units concerning identification, segregation, and documentation of cargo, either aboard ship or on shore.

(6) Consolidating requisitions and procuring supplies and equipment for subordinate units.

(7) Conducting maintenance inspections of vehicles and equipment.

(8) Exercising staff supervision over all maintenance, supply, equipment, evacuation, real estate, safety policies, and food service activities of the battalion.

(9) Providing wire communications and message center service for communication with higher headquarters and with subordinate units of the battalion.

(10) Command and control of intermediate staging areas for airborne operations.

(11) Supervision of contract operations.

b. The headquarters company of the transportation terminal battalion may elect to consolidate some of the functions of subordinate units, such as materials handling equipment, operations, and documentation. Consolidated operations, under some circumstances, may provide better allocations, management, and control of scarce skills and resources.

CHAPTER 6

TRANSPORTATION TERMINAL SERVICE COMPANY

6-1. General

a. The transportation terminal service company (TOE 55-117) is the basic working unit in theater water terminal operations. It is organized to work a single ship on a two-shift, around-the-clock basis but may be employed to handle two ships simultaneously in a one-shift, 10-hour day without changing its total daily capability.

b. The terminal service company may operate separately, or its operations may be integrated with those of one or more other terminal service and lighterage units supervised by the same battalion. When time, space, and tactical conditions permit, it is generally more economical for a terminal battalion to operate centralized equipment pools, maintenance shops, and documentation centers. Under these circumstances, the battalion controls the equipment, the maintenance personnel, and the documentation clerks of the companies. This relieves the company commander of the responsibility for all functions except handling cargo—discharging from ship to pier or lighter and loading the cargo aboard clearance transport or moving it to a temporary holding area. When operating separately, however, the company must analyze proposed operations against equipment available and must notify the terminal battalion or group of any additional support needed. It must also perform all documentation needed to forward the cargo to its initial destination (depot or user).

c. Higher headquarters provides or arranges for such services as utilities, finance, courts and boards, supply, medical, and maintenance support. The terminal service company is responsible for loading or discharging cargo, documenting it, and placing the cargo aboard the clearance mode. Dependent on the operational situation within the operating terminal, it may be necessary to place cargo into in-transit storage areas prior to loading on clearance modes. Rail and motor transport clearance will be arranged for on a mission basis by the headquarters supervising the operation. As in all discharge operations, the request for clear-

ance conveyances is based on the cargo disposition instructions, which also furnish the movements information necessary to forward the cargo to its initial destination.

6-2. Mission and Assignment

a. The mission of the transportation terminal service company is to load, unload, and transship cargo at conventional water terminals and in over-the-beach operations. In addition, the unit sorts cargo by destination and prepares all required documentation to account for and record the movement of cargo into and out of the terminal.

b. The terminal service company is normally attached to a transportation terminal brigade or group and is further attached to a transportation terminal battalion for operational supervision. When committed in support of amphibious operations, the company is attached to an engineer amphibious brigade, group, or battalion.

6-3. Capabilities

a. At full strength, operating on one ship on a two-shift basis, or on two ships on a one-shift basis, at piers or over beaches, the transportation terminal service company for long range planning can discharge 720 short tons of cargo per day, or can load 500 short tons of cargo per day. Discharging includes sorting by destination and loading cargo on land transportation at the pier or waterline; loading includes receiving cargo from land transportation at the pier or waterline and providing in-transit storage as required. Both functions also include accounting for all cargo handled and preparing necessary transportation documentation, as required by MILSTAMP (Military Standard Transportation and Movement Procedures) procedures (DOD Regulation 4500.32-R).

b. In beach operations, the effects of weather and sea state on the supporting lighterage unit in sustained operations may reduce productivity significantly below that given in *a* above. In planning

for specific operations, consideration must be given to those factors which degrade the over-all tonnage potential of these units over extended periods. These factors are described in FM 55-50-1 (TEST) and FM 55-58.

6-4. Organization and Functions

a. The transportation terminal service company is composed of a company headquarters, two ship platoons, two shore platoons, a documentation platoon, and a stevedore gear and equipment maintenance platoon.

(1) Company headquarters consists of a commander and administrative and supply personnel.

(2) Each ship platoon is designed to work one standard five-hatch ship and is made up of five 15-man hatch sections. In normal 20-hour-day employment, each platoon works one shift. In discharge operations, the ship platoon is responsible for breaking the cargo out of the hold, lifting it over the side, and landing it on the wharf or into lighters. During the loading, the ship platoon receives cargo at shipside, lifts it into the ship, and stows it in the hold. Each hatch section is composed of a hatch foreman, an assistance foreman, a signalman, two winch operators, and 10 longshoremen.

(a) The hatch foreman is responsible for loading or unloading the hatch assigned to his section. He usually stations himself on deck where he can observe the entire operation. He selects and obtains the proper type of cargo gear and equipment and assigns tasks to the personnel of his section during each operation. He supervises the positioning and rigging of booms, save-alls, cargo nets, etc., and observes and enforces safety regulations.

(b) The assistant hatch foreman personally directs and supervises the longshoremen working in the hold. He directs the stowing, bracing, and lashing or the breakout of cargo and enforces safety regulations.

(c) On most ships, the winch operators are unable while operating the winch to see the cargo hook after it passes into the hold or over the side of the ship. A signal man positions himself so that he can see the draft of cargo at all times and makes certain that his signals can be clearly seen by the winch operators. Standard signals for winch operators are illustrated in TM 55-513.

(d) Modern cargo handling methods use winches, cranes, and side or stern loading ports, or any combination of these methods to load or

discharge cargo. On some ships, the winches are located so that one man can operate both, and this is normally speedier and more efficient. In many cases, however, the winches are designed so that an operator is required for each, and both winchmen must be trained and teamed so that each is familiar with the other's habits and reactions. Both must be thoroughly trained in the operation of all the various types of winches found on modern cargo ships.

(e) Eight of the longshoremen work in the hold in two teams of four each under the supervision of the assistant hatch foreman. The remaining two work on the pier or in the discharge area.

(3) The shore platoons provide the materials handling equipment and personnel to load and unload cargo on the wharf or at the beach. Each platoon is made up of a headquarters and a cargo handling section, and each is manned for one-shift operation. Each cargo handling section is headed by a cargo equipment foreman, who is overall section chief, and a stevedore foreman, who supervises the longshoremen. Materials handling equipment operators and truck drivers are assigned to both sections, but the equipment of each is pooled and operated around the clock. The unit is authorized rough terrain cranes and forklift trucks to handle cargo on the wharf or at the beach. The longshoremen move cargo to and from the ship's gear and into and from clearance and incoming transportation and assist in handling cargo moved within the terminal and temporary holding areas.

(4) The documentation platoon accounts for all cargo handled by the company and prepares all transportation documentation required for movement of cargo within the terminal. The platoon is composed of a headquarters, a documentation section, and a cargo checking section, each of which is manned for two-shift operation. All cargo documentation at shipside is done by the cargo checking section, which tallies each item as it is loaded or unloaded and ascertains that each is properly marked and documented. Two checkers are assigned to check cargo into or out of each hatch—one in the hold and one on the wharf or in the discharge area. The 12 clerks in the documentation section are normally pooled with clerks of other terminal service companies in a battalion-operated documentation center. In those cases when the terminal service company is operating separately, the documentation section works directly with its parent unit in two shifts of six men each.

(5) The stevedore gear and equipment maintenance platoon is responsible for storing, accounting for, and performing organizational maintenance on cargo handling equipment, gear, materials handling equipment, and other hardware authorized by tables of organizations and equipment. Although not specifically designed for two-shift operation (that is, duplication of skills), the platoon is normally required to work around the clock, and the engineer equipment repair technician in charge must assign his personnel to shifts according to the amount and type of maintenance to be performed.

b. There are a number of functions which normally are performed in ocean terminal cargo op-

erations for which no TOE positions have been provided. These functions include the operation of a dunnage yard, the performance of the warehousing functions incidental to providing in-transit and security storage, and light engineering effort within the capabilities of the engineer equipment assigned. Manning for these functions must be arranged as needed from within the TOE personnel available.

c. The terminal service company commander should be cognizant of the requirement for physical security to prevent pilferage and mishandling of Government cargo. (For details on physical security, see FM 19-4.)



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CHAPTER 7

TRANSPORTATION TERMINAL TRANSFER COMPANY

(STANAG 3465)

7-1. Mission and Assignment

a. The mission of the transportation terminal transfer company (TOE 55-118) is to transship cargo at Army air, rail, motor, and inland barge terminals. This includes unloading, segregating, cooperating, temporary holding, documenting, and loading cargo whenever a change in carrier occurs. The terminal transfer company or elements thereof may also be used at Air Force air terminals to operate in-transit cargo areas, to provide a break-bulk facility for consolidated shipments and to operate a small shipment consolidation point for retrograde cargo.

b. The terminal transfer company may be attached to a transportation brigade in the field army area or to a transportation command in the communications zone.

(1) When employed in the field army area, the company is normally attached to a motor transport group or to an aviation group. These attachments are on a mission basis and provide the group with the necessary cargo transfer capability. Operational control of the entire terminal facility is assigned to a battalion or a company of the group having primary transport responsibility.

(2) In the communications zone, the company may be attached to a terminal brigade or group to operate inland terminals or transfer points directly related with the forward movement of cargo entering the theater through air and water terminals. The company or its elements may also be attached to a terminal battalion to support terminal service company shore platoons in relieving in-transit area congestion at water terminals by loading backlogged cargo onto clearance transportation.

(3) The terminal transfer company is not normally assigned to operate at distribution points, but the company or its elements may be committed in support of supply units performing these functions if cargo backlog or similar condi-

tions indicate a requirement for temporary employment of this type. The increased capacities of the C-5A and other heavy lift aircraft will make more items eligible for air movement, will provide greatly increased capacity for retrograde movements, and will result in large payload deliveries at a rapid pace into the oversea theater. These large shipments may require the establishment of in-transit cargo areas, operated by the terminal transfer company, at or near the air terminals. Consolidated shipments consigned to multiple consignees will be turned over to the terminal transfer company for unstuffing and will then be expeditiously delivered to consignees. Similarly, oversea theater units will ship less-than-release units of retrograde cargo to the in-transit area. The terminal transfer company will consolidate shipments by materiel commodity and by the destination maintenance depot in the continental United States (CONUS), to the greatest extent possible. These consolidated shipments will be forwarded to the intertheater air terminal as directed by the appropriate Army movement control element.

(4) Inland waterway terminal assignment of this unit is limited to the transfer of cargo between inland waterway vessels and other transportation modes. Port, beach, and inland ship canal cargo discharge operations are functions of the transportation terminal service company.

(5) The terminal transfer company may also be employed to assist in staging units taking part in airborne operations or to assist in clearing cargo backlogs in ocean or air terminals.

7-2. Capabilities

a. A full-strength terminal transfer company is capable of transshipping an average of 900 short tons of cargo daily. This tonnage capability is based on a 20-hour day and takes into account all procedures incident to the movement of cargo.

b. Each operating platoon with its normal complement of personnel and equipment can transfer 300 short tons of cargo per day.

7-3. Organization and Functions

a. The company is organized and equipped to transfer cargo at all types of Army inland terminals except large inland waterway terminals serving ocean-type shipping. It consists of a company headquarters, an equipment platoon, and three terminal transfer platoons, each containing a platoon headquarters, a cargo equipment squad, and four 10-man cargo transfer squads. This structure includes personnel to process and prepare documentation for all cargo handled, and it includes personnel and tools to perform organizational maintenance on unit equipment.

b. The terminal transfer company is equipped with 4,000- and 6,000-pound commercial-type forklifts, 15,000-pound rough terrain forklifts, 20-ton rough terrain cranes, handtrucks, roller conveyors, cargo trucks, and semitrailer-tractor

combinations and various cargo slings necessary for performing its mission. Other equipment additions or substitutions may be provided for particular missions under special authorization. In addition, sufficient tools and repair parts are provided for organizational maintenance of all unit equipment.

c. The company is normally employed with each of its three transfer platoons assigned to work a separate terminal. When elements of less than platoon size are needed, the required number of cargo transfer squads and the necessary equipment can be detailed to other terminals or transfer points for short periods. The company headquarters or platoon headquarters should be located where it is evident that administrative, maintenance, and communication problems can be reduced or eliminated by decreasing the distance between elements.

CHAPTER 8

PORT TERMINAL OPERATIONS

8-1. General

a. In order to efficiently accomplish its mission of placing men and materiel where and when needed, the Army logistic system must be planned and coordinated from its origin in the continental United States (CONUS) to its final destination in the theater. Cargo must be palletized or containerized to the maximum extent to facilitate handling and consolidating for movement direct to the ultimate receiving activity or the most distant break-bulk point. Vessels must be stowed so that the integrity of shipments is maintained and sorting of components is not required in the theater. Upon arrival of supplies and material in the theater, the transportation command is responsible for continuing their uninterrupted movement as far forward as possible and to the consumer if feasible. Because this forward movement begins in the theater at the ocean terminals of arrival, terminal operations have a major impact on the whole transportation system. Vessel discharge and port clearance are paced by the capabilities of the transportation system and the receiving capabilities of the receivers. Terminal operators must be alert to these capabilities and their fluctuations in operational planning. Problem areas must be identified and solutions reached either by direct coordination with made operators and receivers or through channels to the transportation command and the TASCOT (theater army support command).

b. A free flow of information on an informal basis is necessary to augment formal transactions and to assure that the movements systems of CONUS activities mesh with those of the theater. This information should include required changes in port designators for individual shipping address codes as units displace or changes occur in the transportation system. Based on information received from terminal operators, the movement control center advises Military Traffic Management and Terminal Service (MTMTS) and CONUS terminals of changed terminal capabilities (ability to handle particular commodities, such as petroleum, oils, and lubricants (POL),

ammunition, or heavy lifts, or increases or decreases in daily tonnage capabilities). It also advises on other factors which influence either the CONUS or transoceanic routing of shipments or shipping and receiving facilities limitations listed in AR 55-357.

8-2. Planning

a. *General.* Although passive defense demands dispersion of ships and shoreside transfer activities, it is not intended that existing developed ports in a theater will be ignored. The physical layout of most harbors and ports is such that a limited degree of dispersion can be achieved within the boundaries of the port itself. Dispersion within an established terminal does not permit maximum use, but it does allow the commander to take partial advantage of the many facilities of the port without unduly endangering the accomplishment of his mission. The extent to which the commander uses the established terminal represents a calculated risk taken after a careful evaluation of the likelihood of an attack resulting in destruction of the port and the probable effect on the theater logistical plan.

(1) Planning must be based on numerous factors, including the following: physical characteristics and layout of the port and/or beaches, logistic support requirements as determined by the overall scheme of operations, and personnel and equipment which the terminal units must have to meet the target tonnage requirements. In both the planning and operations phases, these factors greatly affect each other. The target tonnage factor is the basic factor, for it is in effect the mission of the terminal units. To accomplish this mission, personnel and physical facilities must be balanced. This will involve the employment of beaches, rehabilitation of destroyed or damaged piers, construction of new piers, use of indigenous or contract labor and equipment, or a combination of these.

(2) The ship and the terminal service company are the basic units to be considered in planning all discharge operations. The terminal serv-

ice company is capable of discharging one five-hatch ship around the clock at a rate of 720 short tons per 20-hour operating day. This tonnage should be used for long-range planning purposes.

(3) Using the ship and the terminal service company as basic factors, the personnel and equipment factors may be determined. Upon determining these factors, planners can estimate requirements quickly and accurately for either pier operations or beach operations or a combination of both.

b. Operational Planning. The plans, operations, and security section of the terminal battalion begins its planning immediately upon assignment of the mission. This mission assignment to discharge a specific ship will be accompanied by the ship's papers (cargo stowage plan, hatch lists, and ocean manifest) and the cargo disposition instructions. Planning is based on these papers and the personnel and equipment available. It includes a determination of—

- (1) Point of discharge (wharf or anchorage).
- (2) Types of terminal units required.
- (3) Special equipment required for special or heavy lifts.
- (4) Priorities of discharge if any.
- (5) Arrangements for terminal clearnace, including transportation required and necessity for temporary holding or further segregation.
- (6) Security and safety requirements.

c. Handling of ammunition and Hazardous and Classified Cargo. Planning must also take into consideration the special requirements for handling ammunition, explosives, and other hazardous cargo. Provisions must be made for classified storage facilities and properly cleared personnel for handling classified cargo (AR 700-65). Constant coordination between terminal operators and ammunition units on the inspection, unloading, clearance, courier service, safety, and special security requirements for conventional and special ammunition entering terminals is an absolute necessity. Special requirements governing transportation and handling of military explosives and other hazardous cargo on board vessels and in ports are provided in Title 46, Code of Federal Regulations (Coast Guard Publication 108). Special shipping instructions for military biological research material and hazardous-type cargo by various modes are contained in AR 55-8, AR 55-16, and AR 55-228. (See AR 700-65 for nu-

clear weapons and nuclear weapons materiel. For a hazardous-type chemical shipment, FM 101-40 sets forth a requirement for a munitions safety control (technical escort) unit to guard shipments, protect personnel handling the shipments, dispose of damaged munitions, and decontaminated objects and areas accidentally contaminated during shipment. Details about handling chemicals and ammunition are given in TM 3-250 and TM 9-1300-206. Information on decontamination is given in TM 3-220, and instructions for first aid for individuals exposed to chemical agents are given in FM 12-41 and TM 8-285.

8-3. Estimating Throughput Capacity

A terminal battalion's mission will include an assigned tonnage based on the throughput capacity of the terminal. Terminal throughput capacity is the estimated daily tonnage that can be brought into, discharged, and cleared from the terminal. Terminal throughput capacity is determined by three major factors: terminal reception capacity, terminal discharge capacity, and terminal clearance capacity. The smallest of these three figures (expressed in short tons) is the limiting factor and is therefore the terminal throughput capacity. For general planning purposes, each of these three capacities are estimated and expressed in short tons handled per 20-hour working day. The three factors are defined as follows:

a. Terminal reception capacity is the physical capability to receive ships into a harbor or coastal area and to accommodate them for discharge. This capacity can be expressed in an estimated tonnage that could be discharged from the accommodated ships daily and is based primarily on an evaluation of the physical facilities of the terminals (wharf spaces, anchorages, etc.).

b. Terminal discharge capacity is the number of tons that can actually be discharged from the accommodated ships daily. This capacity is based primarily on an evaluation of the available cargo handling equipment and personnel.

c. Terminal clearance capacity is the number of short tons that can be moved through and out of the terminal daily on inland conveyances. This capacity is based on available clearance transportation and cargo handling equipment and personnel over and above that engaged in direct ship discharge.

8-4. Ship Destination Meeting

- a. Surface shipping destined for a major over-*

sea theater is normally moved in Navy-controlled convoys or under Navy supervision. This procedure results in wide fluctuations in terminal workloads, as ships arrive in groups rather than singly. To determine where each ship in a convoy should be discharged and to what destinations its passengers and cargo should be shipped requires careful advance planning and constant coordination. The overall destination of shipping is determined at theater army support command (TASCOM) staff level.

b. The assistant chief of staff (ACofS), movements, TASCOM, conducts periodic meetings at which detailed ship destination decisions are made. These meetings should be held as early as feasible in order that planning at operating echelons may be completed prior to the arrival of the vessel. Normally present at these meetings will be representatives of the TASCOM staff, the movement control center, the inventory control center, the principal mission commands (personnel, supply and maintenance, transportation), the U.S. Navy, and the Military Sea Transportation Service (MSTS), as well as the host nation and allied forces which may be concerned. The transportation command commander will normally have his terminal commander (brigade or group) accompany him to these meetings to provide information on current and projected water terminal capabilities. Based on workloads of the theater terminals, relative location of depots for inbound cargo, throughput cargo, and capabilities of the segments of the transportation system, incoming ships are directed to specified terminals for discharge. Upon determining the terminal of discharge and based on cargo destination information furnished by the inventory control center, the movement control center issues cargo disposition instructions and determines the mode of transport to be used for moving cargo from the terminal of discharge to its designated depot. This information, along with vessel manifest information, is relayed to the terminal battalion responsible for the terminal at which the vessel is to be discharged. This plan is included in the TASCOM movements program, and extracts are furnished to the consignee and to interested transportation movements offices so that they can plan for receiving the cargo. Based on cargo disposition instructions, the terminal battalions make plans and give specific assignments to terminal units for discharge of vessels and for terminal clearance.

c. After the major decision as to disposition of the incoming shipping is made, there are a number of actions which the terminal brigade or group must coordinate with other agencies before ship discharge and port clearance operations can commence. Principal among these are—

(1) Detailed cargo disposition instructions for military and civilian aid cargo, to include diversions, and detailed routing instructions.

(2) Arrangements for clearance of personnel and cargoes which are to be moved directly forward, bypassing TASCOM rear area facilities.

(3) Individual ship-berth assignments.

d. Ship berth assignments require coordination with local MSTS representatives and may also involve local host nation authorities and will usually be made at the terminal battalion level. Detailed disposition and routing instructions for personnel and U.S. allied military cargo, and military aid cargo require coordination with the supply and maintenance command, the personnel command, and the recipient nation or allied command—the latter through the liaison officers attached to the terminal group. Disposition of civilian aid cargoes will require liaison with representatives of the government of the recipient nation; assistance in this matter may be given by foreign liaison officers and U.S. civil affairs personnel. The movement control center will provide detailed routing instructions for U.S. military cargo and will have personnel at each discharge site to assist terminal personnel. Movement control teams will also arrange for local and line haul transport equipment to be available to the terminal operators and will coordinate with transportation mode operators to that end.

8-5. Vessel Unloading

a. Based on the vessel manifest and cargo disposition instructions received, the terminal battalion plans the discharge of individual ships in advance of their arrival. This planning includes the specific location within the terminal to be used, the method of discharge (floating or shoreside cranes, alongside or offshore discharge, and order of hatches and cargo within the hatches to be worked), and the designation of specific units to work each vessel.

b. The operating terminal battalions work closely with the local transportation movements office to assure that variations from the vessel discharge plan are coordinated with clearance

mode operators to prevent unnecessary delays to cargo, personnel, or clearance transport equipment.

c. When a terminal service company has been assigned the mission of unloading cargo from a vessel and it has been determined that all papers (manifest, stowage plan, hatch lists, and cargo disposition instructions) are in order and that all cargo handling equipment necessary for the job is on hand, unloading operations can begin. Detailed procedures and techniques for unloading cargo vessels are contained in TM 55-513.

d. Before movement or unloading of the first draft of cargo, a boarding party goes aboard the vessel to coordinate with the vessel master and inspect the cargo to be discharged and its manner of stowage. The boarding party may consist of all or a number of the following personnel with interests as indicated:

(1) *The terminal operations officer*, who determines and reports the general condition of ship's equipment and facilities, delivers pertinent terminal regulations and orders of the terminal commander to the master of the vessel and to the military troop commander, obtains copies of ship's papers when advance copies have not been received, determines major damage to or pilferage of cargo, and obtains other information pertinent to the unloading of the vessel's cargo.

(2) *A customs representative*, who checks for clearances, narcotics, and weapons, and performs other necessary customs activities in accordance with theater directives and laws of the host nation.

(3) *An MSTs representative*, who determines from the ship's officers the requirements for repair, fuel, stores, etc., and delivers MSTs instructions to the vessel master.

(4) *The surgeon and/or veterinarian*, who check for communicable diseases, sanitary conditions of troop spaces and facilities, and condition of perishable cargo.

(5) *The harbormaster*, who coordinates matters pertaining to berthing, tug assistance, and employment of floating cranes and other harbor craft under his control.

(6) *The ship platoon leader*, who coordinates the detailed plans for cargo unloading.

(7) *Lighterage unit representatives*, who coordinate plans for employing lighters for unloading vessels at anchorage berths.

(8) *The troop movement officer*, who coordinates plans for the movement of troop units or casualties through the terminal.

(9) *A military police representative*, who determines needs and makes plans for provision of military police support required during unloading and debarkation operations. (See FM 19-30 and FM 19-4.)

8-6. Cargo Clearance

a. Based on the locations and the requirements for transport, the transportation movements officer coordinates with the terminal and mode operators for placement of appropriate transport at the locations and times necessary to clear cargo from the terminal. Cargo clearance is the act of moving cargo from shipside and transporting it to its first destination outside the terminal operating area. This first destination may be the final destination or it may be a rear area depot, and will be identified in the cargo disposition instructions.

b. The importance of prompt clearance of cargo is emphasized. It is essential to the efficiency and success of the total theater logistic system, and it is necessary in order to avoid congestion in the terminal area. A continuing cargo backlog feeds upon itself and slows down operations to a point that it can bring on a collapse of the entire terminal effort.

c. The most efficient method of clearance is to discharge cargo directly from the ship to clearance transport; however, operating conditions do not always permit this. Conditions which may prevent direct clearance from shipside are: cargo mixed to such an extent that it cannot be segregated without delaying operations; special situations which require segregation by time, lot, or weight; lack of proper transport; inability of receiving installations to accept cargo; and delays in receiving cargo disposition instructions. When such conditions exist, cargo should be moved to temporary in-transit storage areas.

d. Temporary in-transit storage areas are usually located adjacent to or very near the pier discharge area. Cargo should never be placed in temporary in-transit storage areas until every effort has been made to clear it from the terminal. If temporary holding is necessary, the cargo held should not exceed 1 day's discharge and should be cleared from the terminal at the earliest possible time. If the amount of cargo in the temporary in-transit storage area becomes excessive, a terminal

transfer element (platoon or company) should be attached to load clearance transport equipment as it becomes available to relieve the terminal service units discharging the ships from this additional and capability-reducing burden.

e. The number and location of temporary in-transit storage areas within the terminal depend on the availability of suitable sites, type and quantity of cargo to be discharged, equipment and personnel available, and location and modes of transportation employed in the terminal clearance operation. The areas should have a hard surface and should be located between the discharge points and the inland transportation net to permit efficient use of materials handling equipment in moving cargo from shipside to the area, within the area, and from the area to the transportation net.

8-7. Vessel Loading

a. Although the primary function of a terminal organization in a theater is the reception, debarkation, and transshipment of troops and materiel, there are occasions when it is necessary to load troops and supplies aboard vessels. These outbound movements may vary from small to large-scale shipments of cargo and personnel. The terminal commander's responsibility for outbound cargo is approximately the same as for inbound cargo. The primary difference is that the operation is performed in reverse order. It includes initiating port releases; booking, receiving, and stowing cargo; and preparing the necessary documentation. The terminal group commander assigns the loading mission to a terminal battalion and coordinates as necessary with MSTs.

b. The ACofS, movements, TASCOT, establishes procedures for movement of freight from points within the theater to the terminal for further movement to CONUS or other destination outside the theater. These procedures generally provide for the shipping agency to submit a request to the movement control center, which coordinates the necessary shipment actions at the periodic ship destination meetings. Then, based on overall workload, ship and delivery transport availability, and cargo location, a loading terminal is selected, the mode of transportation is determined, and bulk shipping space is allocated.

c. The terminal group issues cargo booking information to the terminal battalion operating the selected terminal, and this information is used to preplan vessel stowage, storage requirements, and

operational workload. When the berthing time of the vessel has been definitely established, the battalion assigns the loading mission and disseminates the following information to its subordinate units:

- (1) Location of loading berth.
- (2) Time that loading is scheduled to begin.
- (3) Time that cargo is to be received.
- (4) Estimated departure date of the vessel.
- (5) Special cargo to be loaded and materials handling equipment required.

d. Plans are made for the receipt, temporary holding, and movement of cargo to the loading area, and port releases are forwarded to the shipping agency by the terminal battalion. Port releases are carefully scheduled to prevent interference with the terminal clearance program and to avoid delays in loading.

e. When the nature of the cargo has been determined, the battalion prepares a prestowage plan (TM 55-513) for loading the particular vessel with the cargo indicated. The prestowage plan is presented to the appropriate vessel authority for approval and, upon arrival of the vessel, it is presented to the ship's master or his representative for final approval. When the vessel is berthed, it is also necessary to conduct a thorough inspection of holds, hatches, and ship's gear to check for any difficulty that might arise during loading operations.

f. The prestowage plan prepared by the battalion and approved by the appropriate ship's representative becomes the basis on which to call cargo forward to the terminal area. In calling the cargo forward, the battalion commander must consider planned loading time aboard ship and the area available for temporary holding in the event that the cargo arrival time and loading time do not coincide. It is desirable to have sufficient cargo on hand to sustain 1 day's loading operation prior to the initiation of loading operations. This will assure continuous loading in case some shippers cannot meet the planned port call date. Cargo received before the loading time must be moved into a temporary in-transit storage area so as not to interfere with any clearance operation.

g. Retrograde cargo (containers, trucks, tanks, aircraft, SEAVANS, MILVANS, etc.) being returned to CONUS will be prepared and processed for CONUS Department of Agriculture quarantine inspection prior to being loaded aboard air-

craft or vessels in accordance with TM 750-series and Joint Regulation AR 40-12. Plans should be made in advance to ensure that adequate cleaning equipment and appropriate insecticide chemicals and rodent poison bait blocks are on hand so that retrograde cargo can be properly processed expeditiously.

8-8. Documentation

a. General. Cargo moving through Army terminals is documented in accordance with DOD Regulation 4500.32-R. The basic document for all cargo movements under these procedures is DD Form 1384, Transportation Control and Movement Document (TCMD), a multipurpose form which can be prepared manually or mechanically as a punchcard. The manual version of the form is a seven-part document, which is originated by the shipper for each transportation unit and which accompanies the cargo to the ultimate consignee. Detailed procedures for preparing and processing the TCMD and allied documents are contained in DOD Regulation 4500.32-R, but a general outline of the internal documentation procedures at Army terminals is provided in this paragraph. The TCMD is used—

(1) To provide advance notice of shipment to consignees.

(2) As an airbill, a highway waybill, a dock receipt, and a cargo delivery report.

(3) For movement control of shipments worldwide within the Department of Defense transportation system, including in-transit reporting and tracing actions.

(4) As a source document for mechanically prepared air and ocean manifests.

(5) As a source of logistic management data.

b. Inbound Movements.

(1) For ships loaded in CONUS, MTMTS transmits manifest information to the transportation command's movement control center. A copy of the manifest is provided the inventory control center so it may make any necessary changes in consignee or destination of the cargo. The movement control center incorporates any necessary changes and transmits manifest information to the terminal command element responsible for discharge of the ship. Depending on the degree of sophistication of the computer and program used by the movement control center, hatch tallies and partial TCMD's may also be provided to the terminal element.

(2) The terminal battalion reproduces the incoming data in a format and in the number of copies necessary for the actual discharge of the ship. Detailed cargo disposition instructions are provided by the movement control center.

(3) Upon arrival of the ship, the reproduced manifest is used as a basis for checking the cargo off the ship. The data as to quantity, identity, and condition of incoming cargo developed by the unloading terminal service unit are used to prepare the cargo outturn message and to reconcile the manifest. Upon reconciliation of the ship discharge data with the manifest, the terminal battalion prepares a cargo outturn report and forwards it to group headquarters for transmission to MTMTS and to other interested agencies as listed in MILSTAMP (Military Standard Transportation and Movement Procedures) (DOD Regulation 4500.32-R). (See AR 55-38 for reporting of transportation discrepancies in shipments.)

(4) The above general procedures may have to be modified somewhat when ships arrive from theaters other than CONUS, especially if no data processing equipment is available at the loading port. In this case, the manifest will be forwarded by airmail or courier to the terminal group, which retransmits it to the designated discharge port. If the sea distance is short, the manifest may not arrive before the ship, and the terminal battalion responsible for discharging the ship may have to obtain a copy of the manifest from the ship's master.

(5) The TCMD will normally be used as the basic document for checking and documentation incoming cargo, although other forms, made up locally if necessary, may serve the purpose. The hatch checker originates a partial TCMD (in six copies) for each lighter or truck load. When drafts of cargo are moved away from the ship's hook separately, a separate partial TCMD is made out for each draft. To avoid delays, information which the hatch checker transcribes on the TCMD should be confined to data essential for identification and onward routing of the cargo, including—

(a) Transportation control number (TCN).

(b) Destination (as per markings).

(c) Number and types of pieces (boxes, pallets, and serial numbered containers, giving the serial numbers of the latter).

(d) Commodity.

(e) Lighter, truck, or container number.

(f) Signs of loss, pilferage, or damage to cargo.

(g) Vessel name, voyage number, stowage location.

(h) Checker's name and date.

(6) The hatch checker retains one copy of the TCMD and turns the remaining five copies over to the lighter, vehicle, or forklift truck operator, or to another checker at dockside. The operator turns over four copies to the next custodian of the cargo, retaining one copy as a receipt and as proof of delivery.

(7) Except when cargo is moved directly from shipside to a local consignee, it must be reconstituted into transportation units, such as rail-car loads or line haul truckloads, before clearing the terminal area. These units may differ from those in which the cargo left shipside and may require new sets of TCMD's. A copy of these new, and more complete, TCMD's accompanies the cargo to destination. The TCMD forms the basis for preparing bills of lading, freight warrants, and train manifests as required. Both the hatch checker's partial TCMD's and the TCMD's prepared to cover onward movement are used by the documentation section of the terminal battalion to reconcile the ship's manifest and to prepare cargo outturn messages and outturn reports. They are used further by movement control personnel to notify in advance consignees (report of shipment) that shipments are on the way and to follow the shipment's progress to destination.

c. Outbound Movements.

(1) Procedures for offering cargo for shipment, handling movement releases, and documenting outbound cargo are subject to theater regulations. Theater regulations will be designed, however, for compatibility with Department of Defense procedures as laid down in AR 725-50 and DOD Regulation 4500.32-R.

(2) The TCMD is used to cover outbound movements in either manual or punchcard form. Freight warrants and/or bills of lading will cover the cargo if shipped to the loading port by commercial means, and the TCMD will serve as backup for these documents.

(3) In planning for handling outbound cargo, the terminal commander must consider the size of the shipment and the type of cargo because these affect the choice of loading berth as well as of equipment and personnel. Also of importance are the volume and schedule of inbound traffic and the clearance requirements created thereby.

(4) The terminal service unit actually charged with loading the cargo prepares pre-stowage plans, which are subject to approval by MSTs, and the necessary ocean shipping documents (manifest, stowage plan, and, if required, hatch lists.) Upon receipt of ship loading data from the terminal concerned, the terminal group transmits the cargo traffic message to the discharge port and arranges for forwarding the ship's manifest data to destination by electronic means or by airmail or courier as appropriate. If more than one loading terminal is involved, each is responsible for notifying the next terminal of the ship's departure and for manifesting the cargo loaded. The final loading terminal consolidates the manifest and transmits it to the terminal group for further transmission to the destination terminal. The last loading terminal also prepares the ship's departure message. Any special discharge requirements will be included in the ship's departure message, cargo traffic message, and ship's manifest.

d. Daily Operations Report. In addition to the documentation required by existing regulations, the terminal group will normally require that a daily operations report be prepared by each terminal battalion operating a port or beach terminal. This report will normally include the following information:

(1) Number of passengers embarked, debarked, and awaiting embarkation and debarkation. Also, number of passengers to be handled during the next 24 hours.

(2) Number of short tons (weight and measurement tons) of cargo by major category (general, vehicles, POL) discharged, loaded, cleared (by mode), and awaiting discharge, loading, and clearance. Also, the number of tons booked and expected in the next 24 hours.

(3) Number of ships which have arrived, have departed, remain in port, and are expected to arrive and depart during the next 24 hours. Also, the status of ships in port, such as discharging, loading, awaiting orders, under repair, etc.

(4) Workload for the month so far, and anticipated for next month.

(5) Summaries of available ship berths, number and capacity of lighters and trucks, number of gangs for ship and pier work, covered and open storage space, number of railroad cars which can be accommodated and cleared, materials handling equipment availability, etc.

8-9. Floating Craft Maintenance

a. Maintenance and repair of floating craft used in water terminal operations poses problems and requires arrangements which are somewhat different than for other types of equipment. Except for amphibians, which can move inland for maintenance work, maintenance and repair facilities for landing craft and other floating equipment must be located afloat or near the water's edge. This fact may also influence the location of units and facilities for maintenance and repair of other equipment used in terminal areas.

b. The larger floating equipment items such as tugs, Y-tankers (fuel tankers), floating cranes, and beach discharge lighters carry allowances of repair parts and are self-sufficient to a certain extent with respect to direct support and some aspects of general support maintenance. Smaller craft which carry few if any spare parts are more directly dependent on direct and general support units for their maintenance support. Floating repair shops of the floating craft general support maintenance companies provide the bulk of backup maintenance for floating equipment operating in port terminals. TM 55-500 contains marine equipment characteristics and data information.

c. Because of the wide dispersion of water terminal operations, much direct and general support maintenance, especially for amphibians and landing craft employed in logistics over-the-shore operations, will be provided by contact (mobile repair) units. This will also hold true for emergency repair and salvage operations. An explanation of the floating craft maintenance system and the operation of support units is contained in FM 55-50-1 (TEST).

d. A marine engineer technician on the terminal battalion staff is responsible for staff supervision of organizational and direct support maintenance for all marine equipment in the attached companies. He is additionally responsible for staff supervision of general support maintenance if this function is assigned at battalion level. This officer supervises correct recording of maintenance activities within the battalion in accordance with existing directives and conducts periodic inspections as necessary. He prepares reports of inspections, disseminates technical information, and provides technical maintenance assistance when required.

e. A marine maintenance officer is provided on the staff of the terminal group and terminal bri-

gade to exercise staff supervision over general support maintenance functions for the command. The commanders of the assigned general support units also act as special advisers on floating craft maintenance to the marine maintenance officer and to the terminal group or brigade commander.

8-10. Personnel Moves

Personnel moves may consist of casualties or units being deployed or redeployed or may occur as a part of a tactical operation. The following subparagraphs discuss the transportation terminal units' responsibility for personnel moves under the two general headings of inbound and outbound.

a. Inbound Personnel Moves (Debarkation).

(1) To plan properly for debarkation and disposition of personnel, the troop movement officer of the terminal group headquarters and the commanders of the terminal operating units (battalions and terminal service companies) require certain advance information. This advance information is obtained from approved movement programs; directives of higher headquarters; projected information, such as preembarkation radio messages and lists of personnel in embarkation terminal staging areas awaiting transportation to the oversea theater; passenger lists; and prearrival information. The movement programs and projected information enable the troop movement officer and the air, rail, and motor transportation planning officers to make advance plans.

(2) Receipt of the passenger list enables the troop movement officer and others concerned to make specific and detailed plans for receiving incoming personnel. The passenger list provides the name, rank, serial number, shipment number, and organization of all personnel aboard a vessel, broken down by units, casualties, officers, warrant officers, enlisted personnel and civilians. This information is necessary for the staging areas to make preparations for billeting and messing. The staging area commanders notify the troop movement officer and the terminal operating unit commanders of the location of each unit's billet. The air, motor, and rail transportation planning officers are also given this information. Based on this information and the tentative date of the vessel's arrival, aircraft, trucks, buses, and/or rail equipment can be ordered through the movement control center. The information contained in the passenger list is distributed to all other interested agencies.

(3) Usually the last item of advance information necessary to permit final planning is an accu-

rate forecast of the estimated time of arrival of a vessel, which an oversea terminal ordinarily receives in the radio message sent by the ship's master 24 to 48 hours before the ship's arrival.

(4) Detailed coordination is necessary at the terminal command level before actual debarkation to provide the terminal battalion commander with the information and support required for an orderly and efficient debarkation. Agencies and personnel concerned with predebarkation planning and coordination include the following:

- (a) Troop movement officer.
- (b) Movements officer.
- (c) Rail transportation planning officer.
- (d) Air transportation planning officer.
- (e) Highway transportation planning officer.
- (f) Provost marshal.
- (g) Post surgeon.
- (h) Staging area commander.
- (i) Replacement regulating detachment (if casualties are involved).
- (j) Commanders of the terminal operating units assigned this mission.
- (k) Military Sea Transportation Service representative.

(5) Items requiring coordination include the following:

- (a) Estimated time of arrival of vessel.
- (b) Exact mission assignment, including pier or anchorage and lighterage assignment for the vessel.
- (c) Time debarkation operations are to begin and estimated time hold baggage and other impedimenta will be available.
- (d) Final arrangements for: assignment of boarding parties, provision of adequate facilities for the use of debarking troops, order of debarkation, security measures, traffic control plan, provision of adequate transportation to clear the terminal, designation of routes to the staging area, and provisions of escorts if trucks or buses are used.
- (e) Special information, if any, which may affect debarkation plans, such as the length of time a vessel can remain at the terminal.

(6) After effecting the necessary coordination, the troop movement officer publishes a debarkation order incorporating all final plans. If the estimated time of arrival is changed after the debarkation order has been published, the troop

movement officer is responsible for obtaining and furnishing a new estimated time of arrival to all interested personnel as soon as possible. The actual debarkation is accomplished by the responsible terminal battalion and one or more of its terminal service companies.

b. Outbound Personnel Moves (Embarkation).

(1) Careful coordination is required to assure an orderly and efficient embarkation. In addition to the personnel listed for debarkation in *a*(4) above, embarkation coordination also involves representatives from the embarking units and the military departments aboard the vessel(s). Personnel being returned to CONUS must be processed in advance in accordance with Joint Regulation AR 40-12 to meet the requirement of the CONUS quarantine inspection and also must be processed for CONUS customs inspection (AR 55-73).

(2) The problems which must be resolved to provide the operating unit commander and others with required information and support are similar to those incurred in inbound movements (*a* above). Detailed plans and final arrangements must be completed for the following:

(a) Composition and designation of the advance party and the time it will embark. These advance details should include cooks; bakers; butchers, if necessary; kitchen police; guards; and guides.

(b) Baggage details, arrangements for loading of equipment to accompany troops, and any additional equipment that appears on the organizational equipment list. (An officer from each unit or movement order of casualties should be appointed unit transport baggage officer.)

(c) Method of transporting troops from staging area to shipside. Schedules, showing time of departure of each unit from the staging area and arrival and embarkation times at the pier.

(d) Detailed traffic control arrangements, including military police to escort truck and bus convoys if necessary.

(e) Pier traffic plan.

(f) Number of gangplanks to be used in the embarkation of each ship.

8-11. Communications

Efficient exercise of command and prompt transmission of information and instructions require the establishment of a reliable signal communications system. When operations are being con-

ducted under dispersed conditions, the problem becomes more complex because of increased distances between the headquarters and its subordinate elements. A good communications system within and between ports, depots, beach sites, and control points and other transportation activities is essential. A wire communications system is preferable for this purpose, particularly in a static situation; however, radio or motorized messenger service may be used. Coordination of the complex operations incident to the proper functioning of a terminal group requires early establishment and continued operation of an efficient integrated signal communications network. Communications requirements are developed on a project basis and vary according to size and composition of the terminal organization and the number of sites operated. In addition to the communications traffic necessary for operating and administering a terminal group and its subordinate units, a requirement may exist for direct visual and radio communication with incoming or outgoing military-operated or military-controlled vessels for information concerning berthing, anchoring, movement, and status or for other operating instructions or information. When such a requirement exists, it will be developed on a project basis. Coordination of details involving planning, technical matters, supply, and personnel, including security, training, and operational procedures involving signal equipment and communications systems, is effected by the signal officer in accordance with policy established by the commander. The establishment of radio and telephone circuits to and between the terminal group and subordinate battalions is a command function for which the communications officer has planning and coordinating responsibility. Owing to the large volume of traffic generated by subordinate terminal units and the urgency for prompt transmission, total reliance on signal long lines is infeasible.

8-12. Area Defense and Rear Area Protection (RAP) Operations

a. General. The terminal headquarters and its subordinate units are required to defend their administrative and operating areas against enemy attack. Inasmuch as terminal units operate only in areas which are friendly from the outset or have been militarily secured, the principal types of ground attack to which they are subject will normally involve irregular forces and saboteurs. When wide dispersion is practiced because of the threat of mass destruction weapons and/or the

nature of combat operations and geography of the theater, the terminal operating units become especially vulnerable to guerrilla attack. Terminal units operating in developed port areas, on the other hand, are more vulnerable to sabotage and underwater demolition than to surface attack. The seriousness of these threats depends to a large extent on the attitude of the local population and on the effectiveness of local administrative, police, and security organizations. For a complete discussion of RAP operations, see FM 19-45-1 (TEST).

b. Planning for Defense.

(1) The director of plans, operations, and security is responsible to the terminal brigade or group commander for planning the defense of operational areas of units under his jurisdiction. The defense will be planned in coordination with the area support commander. Other agencies with which prior coordination is required are the U.S. Navy and host nation civil and defense forces, if any. Cooperation with local host nation agencies and establishment of communications with them are essential in defense against guerillas and control of sabotage efforts.

(2) Included in the planning function are—

(a) Thorough analysis of actual and potential enemy threats.

(b) Analysis of physical features of the operational areas to determine the best method for organizing their defense with available resources.

(c) Analysis of local communications facilities to determine how they can augment or be included in the military communications system to advance defensive capabilities.

(d) Coordination of plans with those of the area support command.

(3) On the part of the terminal brigade and its subordinate units, defense against air attack is passive; active defense will be provided by air defense units. Harbor defense and defense against submarine attack are naval responsibilities, which may be assigned to either U.S. or allied naval forces. (See app B for procedures and techniques for employing unit non-air defense weapons against low-altitude enemy aircraft.)

c. Nonmilitary Considerations.

(1) The defense of water terminal areas directly or indirectly involves the local population. If the local population and authorities are friendly, defense will be facilitated or may even

be confined largely to internal security measures. If all, or a sizable part, of the local population is unfriendly, area defense is vastly complicated, regardless of the official attitude of the authorities.

(2) A perimeter defense usually will cause some residential areas to be enclosed. This causes serious security problems and imposes hardships

on the local population. If the local population is considered unfriendly or unreliable, a choice will have to be made between clearing the area of all civilians or imposing strict controls to include pass systems, curfews, and screening. Assistance from civil affairs units and rear area operations centers will have to be sought in these matters.



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CHAPTER 9

LOGISTICS OVER-THE-SHORE OPERATIONS

9-1. General

a. The probability that existing port capacities in many areas will be insufficient to support theater tonnage requirements and the possibility of enemy/insurgent activities requires that emphasis in planning be shifted from large port complexes to widely scattered beach operations. For general planning purposes, it is estimated that upwards of 40 percent of all cargo entering a theater by surface means will be delivered through dispersed beach terminals. Accordingly, the senior terminal commander in the theater must continually plan and provide for the opening of new beaches to accommodate increased tonnages to replace the tonnage capacity of a port or beach that has been made untenable by enemy action, to relieve congested routes of communications, and to reduce the land transportation required to support the combat elements. Plans should include the proposed location and layout of the area, the type of lighterage to be used, the task organization necessary to attain the desired tonnage capacity, the route and methods of movement to the area, construction effort required, communication requirements, and logistical support procedures.

b. In planning for the opening of new logistics over-the-shore (LOTS) sites, the first step is to determine the beach areas available. The degree of dispersion that can be attained is directly related to the daily tonnage requirement and the size and nature of the assigned area. As soon as practicable after the limiting points of the area have been designated, reconnaissance should be made to determine the sites most suitable for operations. The selection of these sites should be based primarily on the existing capability to accommodate the desired tonnage. Major factors considered in selecting beach discharge sites include tide, surf, beach gradients, bars, characteristics of the bottom and beach surface, anchorage areas, weather, and topographic features (FM 55-50-1 (TEST) and FM 55-58).

c. The commander should not lose sight of the fact that LOTS operations are almost wholly de-

pendent on favorable weather and that lighterage operations alongside a vessel are particularly hazardous if more than a moderate sea is running. Heavy surf reduces the amount of cargo brought in by lighters and can cause suspension of the entire operation (FM 55-50-1 (TEST)).

d. After the initial reconnaissance has been completed and the terminal battalions have been assigned to dispersed sites along the coastline, the terminal group commander must assure that each battalion has the units, equipment, and other support necessary for the assigned mission. Beaches ideally suited for LOTS operations without prior preparation or alteration are seldom found, and some degree of engineering support is usually required to enable landing craft to beach and to provide exits from the beach to discharge areas and the clearance transportation net.

e. At each LOTS discharge point, the beach area operations require the closest attention and the greatest supervision. The success of each beach operation depends to a great extent on the efficiency of cargo operations on the beach itself. Supplies and equipment being brought to the beach must be kept moving across it toward inland destinations as rapidly as possible. A cluttered beach offers a lucrative target to the enemy and hinders movement of cargo. Employing amphibians (FM 55-50-1 (TEST)) to the maximum extent feasible for lightering general cargo aids significantly in reducing beach congestion.

f. The employment of terminal units over widely separated distances along a coastline requires careful evaluation of the maintenance system supporting a complex of scattered operations. When operations are conducted in a dispersed situation, increased emphasis must be placed on organizational maintenance. Unit maintenance personnel should be well trained, and every effort must be made to remedy minor troubles to prevent costly breakdown of equipment. The terminal group standing operating procedure should establish the procedure for providing maintenance support. Floating craft maintenance

units operating in support of terminal operations over an extended length of coastline require mobile marine repair facilities and on-site repair service.

g. In dispersed beach terminal operations, all terminal units, operating equipment, cargo, and facilities are separated as widely as operational efficiency permits. Troops, materials, establishments, and activities are spread over a wide area to avoid offering the enemy a concentrated target. Discharge operations are scheduled so as to offer the enemy a remunerative target as seldom as possible and for as short a time as possible.

h. Dispersion of terminal units greatly increases the reliance on radio communications for effective command, control, and coordination. Therefore, communications security (COMSEC) and electronic counter-countermeasures (ECCM) are all the more critical to maintenance of reliable communications.

i. Each of these two-ship terminals will be under the direct operational supervision of a terminal battalion and, as a minimum, will be manned by two terminal service companies, two light or medium amphibian companies, one medium boat company, and a lighterage direct support maintenance element. In addition, one or more truck companies may be attached for intraterminal transportation and clearance assistance, and terminal transfer elements may be required to aid in clearing cargo backlogs in discharge areas. Harbor craft teams may also be attached as required. The functions of a number of these terminals, dispersed along a maximum of 150 miles of shoreline, will be coordinated by a terminal group or brigade. General support maintenance for the lighterage employed is provided at group level by the transportation floating craft general support maintenance company (TOE 55-157) as described in FM 55-50-1 (TEST).

j. The minimum troop assignments given above are based on the average planning factor that 25 percent of all cargo entering a theater will be vehicles and other heavy lifts and that the remainder will be general cargo. Of the 1,440 short tons of mixed general cargo which two terminal service companies are capable of discharging per day (720 each), 75 percent, or 1,080 short tons, will be lightered by the amphibian units. The remaining 25 percent will be delivered ashore by the medium boat company.

k. In addition to the environmental factors de-

lineated in this chapter, the same planning considerations and the same operational functions and procedures described in chapter 8 must be provided for and carried out by the terminal organizations assigned to conduct LOTS operations.

9-2. Reconnaissance and Site Selection

a. Normally, the initial selection of possible beach sites for LOTS operations is made by the terminal group or brigade commander in consultation with naval authorities from an extensive study of maps and hydrographic charts and from an analysis of aerial reconnaissance reports. Final determination as to the feasibility of operations at these sites is made by a detailed ground and water reconnaissance of the selected area, as thorough as time and the situation permit. Aerial reconnaissance is useful in verifying information obtained from the map reconnaissance. Road nets shown on the map may have been destroyed or made impassable, new roads may have been built, bridges may have been destroyed, or structures may have been built on the beach. It is imperative that naval authorities be consulted early in the study so that advice about possible anchorage areas as well as about difficulties and hazards to navigation will be available as nearly as possible.

b. The party to conduct the ground and water reconnaissance must include personnel capable of advising the terminal group commander on such matters as the—

(1) Engineering effort required to prepare and maintain the area.

(2) Signal construction and maintenance required for necessary communication within the beach area, as well as between the beach area and the terminal group headquarters.

(3) Need for and location of beach dumps, transfer points, maintenance areas, etc.

(4) Type of lighterage that could be employed most effectively.

(5) Need for and location of safe haven facilities for lighterage.

(6) Location and desirability of anchorage areas.

(7) Possibility of using spud (self-elevating, nonpropelled) piers and other special equipment.

(8) Vulnerability to enemy attack of the terminal area, its seaward approaches, and its connections with the interior.

c. The typical reconnaissance party should consist of but should not be restricted to the following personnel:

(1) Representatives of the terminal group commander to coordinate or supervise the reconnaissance team and to recommend task organization.

(2) The terminal battalion commander and appropriate members of his staff.

(3) An engineer officer, preferably from the supporting engineer unit.

(4) A signal officer, preferably from the supporting signal unit.

(5) Representatives of amphibian units to be employed to locate desirable entrances to and exits from water, transfer points, etc.

(6) Representatives of landing craft units to be employed to select beach areas, anchorages, maintenance areas, navigation aids, etc.

(7) Representatives of units with special type equipment to be employed.

(8) Naval representatives to advise on anchorage areas and naval support required.

(9) A military police representative to determine needs and make plans for the provisions of military police support required for traffic control operations (para 9-6) and beach management (para 9-7).

d. In addition to gaging beach area characteristics in accordance with the criteria described in FM 55-50-1 (TEST) and FM 55-58, the reconnaissance party must determine whether the beach area selected has sufficient anchorage to accommodate the number and types of ships required to support the beach operations being planned. If the naval representative has indicated the anchorage areas that are acceptable to the Navy, they must be examined to determine whether the lighterage to be used can traverse the area between the anchorage areas and the beach. For example, sandbars or reefs just offshore may preclude the use of LCM's (landing craft, mechanized), LCU's (landing craft, utility), or barges in certain areas and necessitate the use of amphibians until a channel can be cleared. Among the salient features to be considered are—

(1) *Depth.* For large cargo ships, a minimum depth of 30 feet and a maximum of 210 feet is required. The minimum depth is dictated by the maximum draft of ships to be discharged and the ground swell conditions; the maximum depth is

imposed by the length and weight of anchor chain.

(2) *Size.* For planning purposes, the anchorage area should be a circle with an 800-foot radius to provide a safe free-swinging area, which is required for the standard five-hatch vessel. If larger vessels are anticipated in the operation the following formula should be used:

$$7D + 2L = R$$

where

D = depth of water in feet

L = length of vessel in feet

R = radius of free-swinging area in feet

Dispersion requirements, however, may necessitate a much larger radius if operations are being conducted under threat of nuclear warfare. Bow and stern mooring is not considered desirable in tidal areas because athwartship currents cause excessive strain on mooring gear and appreciable changes in depth necessitate continuous watching of the anchored vessels. The type of offshore bottom also has a significant bearing on how close ships can be anchored to each other because a ship will drag anchor if the bottom is too rocky or slushy.

(3) *Landmarks.* Landmarks (especially those assisting navigation and location of beaches), such as prominent hills, are helpful.

(4) *Underwater obstacles.* Underwater obstacles, such as bars, shoals, reefs, rocks, wrecks, and enemy installations which might interfere with the passage of vessels to and from the area should be noted. An estimate should be made of the degree of interference offered and the amount of work involved in clearing channels.

e. During the reconnaissance, the terminal battalion commander also selects and assigns company areas and frontages, indicates areas of defense responsibilities, and tentatively organizes the area of operations. Upon completion of the reconnaissance, the findings are analyzed and the most desirable beach areas are selected. Alternate beaches are chosen and listed in order of suitability. The sites selected are submitted by the battalion commander to the terminal group commander along with a written plan for implementing operations at the selected beach.

9-3. Beach Capacity

a. *General.* For general planning, beach capacity may be determined by applying the data contained in FM 101-10-1. However, these data are

based on average conditions and must be adapted to a specific beach operation. To determine the capacity of a particular discharge site, several factors must be considered. These factors can be divided into two groups—those which limit the cargo handling capacity of the beach and those which restrict the flow through the area because of the nature of the beach and the hinterland. The group of factors which most limit the quantity of supplies that can be handled determines the capacity of the beach.

b. Factors Affecting Handling Capacity. Cargo handling capacity is affected by the following factors:

(1) Personnel available for discharging ships and handling cargo on the beach and in the discharge areas.

(2) Type and availability of mechanical aids and transportation equipment for beach clearance.

(3) Types and amount of lighterage available for operation.

(4) Enemy's ability to interrupt operations.

c. Limitations Imposed by Terrain. Most of these factors are self-explanatory but, since beach exits and the nature of the hinterland play such important roles in beach capacity, they are discussed in detail. Possible limitations are—

(1) Length and width of the beach.

(2) Underwater obstacles.

(3) Tidal range.

(4) Strength and direction of tidal stream (rip currents and littoral currents).

(5) Surf.

(6) Gradient of beach as it affects the landing of lighterage and movement of supplies across the beach proper.

(7) Bearing surface of the beach.

(8) Availability and nature of beach exits.

(9) Nature of the hinterland.

(10) Weather.

d. Beach Exits.

(1) The capacity of a beach to discharge and clear supplies and personnel to inland destinations is often limited by the capacity of the road net from the waterline to dumps, to principal inland areas, and to the interior communications net. The useful capacity of the beach can never exceed the capacity of this road net. Therefore, an early and detailed analysis must be made to determine

the capacity of the existing road net. If the capacity is inadequate, new roads must be built. This requires additional engineer support for both construction and maintenance.

(2) The number of exits required varies according to the physical characteristics of the roads, the type and amount of cargo to be handled, and the type of conveyance to be used in beach clearance. Different types of equipment should have separate routes.

(3) The nature of the area adjacent to the beach is a factor which may limit the number of possible exits from the beach. An otherwise ideal beach may be backed by sand dunes, seawalls, swamps, or other obstacles which hamper beach clearance operations.

e. Hinterland. In selecting a beach for unloading cargo, the reconnoitering officer must consider more than the beach and its exits. Thought must be given to the availability of a road or rail net or the possibility of building one to tie the beach exits and/or beach dumps to the main transportation net. Consideration must also be given to the existence of or need for telephone and telegraph lines, radio stations, and power lines. If suitable roads exist, thorough reconnaissance should be made to determine their exact physical characteristics. The strength and width of any bridges in a road net are of prime importance in evaluating capabilities or limitations. Since helicopters may be used for clearance operations the reconnoitering officer should consider a suitable area for establishing a heliport.

9-4. Beach Transfer Points

a. The requirement for beach transfer points must be considered during the reconnaissance and their locations should be designated.

b. Beach transfer points are those locations where cargo is transferred from amphibians to a clearance mode of transportation for delivery to destination. A desirable beach transfer point will have the following characteristics:

(1) It should be located to the rear of the beach so as not to interfere with operations at the shoreline (FM 55-50-1 (TEST)).

(2) It should be on the route the amphibians travel in moving from and to the water.

(3) It should be near the clearance route from the beach where cargo trucks moving in the traffic pattern can receive their load without in-

interference with other traffic and still have access to and exit from the transfer point.

(4) It should be so selected that the amphibians will cross the beach and make it unnecessary to prepare a beach roadway for the cargo trucks.

(5) There should be room for a roadway on either side of the materials handling equipment operating at the transfer point so that there is no interference between the amphibian and the cargo truck.

(6) Cranes should be located on firm, level ground with their longer axis parallel to the direction of movement of the vehicles so that loads can be transferred with the least amount of movement of the boom.

9-5. Temporary Holding Areas

a. In general, the problems of cargo clearance in beach operations are the same as for conventional port terminals. However, differences in the physical characteristics of the operating areas may require modification of procedures and use of different types of equipment. In an ideal situation, clearance transportation capacity is balanced with the discharge capability and cargo is moved through and out of the terminal area as fast as it is unloaded from the ships. This balance seldom occurs, however, and some degree of cargo backlog must be anticipated and provided for by the establishment of temporary in-transit storage areas. These areas should be located near the transfer points used by amphibians to accommodate cargo that cannot be immediately transferred to clearance conveyances. Cargo unloaded from landing craft that cannot be immediately cleared should also be brought to these same in-transit storage areas to avoid congestion and cargo pile-up on the beach.

b. When clearance transportation later becomes available to move this cargo from the in-transit storage areas, an additional burden is imposed on the terminal service companies engaged in their primary task of unloading lighters delivering cargo from the ship. Any effort diverted by these units toward handling cargo in the in-transit storage areas only serves to impair capability to keep the lighters moving, and if this practice is continued, the entire operation will eventually collapse. This problem is solved by assigning terminal transfer elements (squads, platoons, or companies) to load backlogged cargo in the in-transit storage area onto clearance transportation, thereby maintaining the flow of cargo out of the

terminal without disrupting the discharge operation at the ship by slowing lighter turnaround.

c. Temporary in-transit storage areas should be located away from main clearance roads in order to minimize road congestion and to present less lucrative targets. Roads leading from the main clearance roads to the in-transit storage area must be kept in good condition, and each area should have a separate entrance and exit. If tracked vehicles are to be used as well as trucks and amphibians, separate traffic nets may be necessary. The ground should be level, firm, and dry, and the surrounding area should be large enough so that in-transit storage facilities can be expanded to meet anticipated maximum requirements.

9-6. Traffic Control

Adequate traffic control (FM 19-95) is a vital factor in preventing congestion in the terminal area and promptly clearing cargo to its initial destination. Careful consideration should be given to the following factors in controlling vehicular traffic in the beach area:

a. There should be a sufficient number of drivers, materials handling equipment, and supervisors for around-the-clock operations.

b. The employment of motor transport equipment should be carefully planned for maximum use (FM 55-30).

c. Motor transport units should be attached at group level to the operating terminal battalions according to requirement fluctuations and the degree of dispersion between beach sites.

d. Vehicles should be loaded to capacity whenever this practice is consistent with cargo segregation requirements.

e. Where practical, vehicles should be loaded in such a way that they can be unloaded completely at one discharge point to expedite turnaround time of the vehicle.

f. Control procedures should be set up to provide readily available information on the location and current employment of all motor transport facilities so that equipment or units can be expeditiously diverted with a minimum of disruption of the overall operation.

9-7. Beach Management

The requirements for clearing personnel, supplies, and equipment from beaches usually exceed available capacity. Careful planning and close supervision are necessary to achieve maximum use of

available equipment, personnel, and facilities. Some measures which assist in clearing supplies and equipment from the beach area are—

- a. Making maximum use of amphibians.
- b. Continuous improvement of the beach in general to increase overall operational capacity and efficiency.
- c. Advance planning to enable the handling of peak workloads without disrupting operations.
- d. Maintaining close liaison and coordination with cargo transfer points and temporary holding areas so as not to exceed their receiving capacities and yet maintain a near-capacity flow of cargo to them.
- e. Separation of landing points for amphibians and landing craft to prevent clearance conflict.
- f. Holding documentation, records, and reports to a minimum.
- g. Locating beach parking areas for materials handling equipment and clearance vehicles in areas readily accessible to discharge points.
- h. Adopting an enforced traffic circulation plan to avoid conflict in the flow of traffic.
- i. Locating bivouac areas and messing areas so as to prevent unnecessary loss of time in moving personnel to and from working points.
- j. Adoption of alert systems and defense plans to prevent a surprise enemy attack and to enable the terminal to maintain an adequate defense.

9-8. Expediting Unloading Operations

When unloading operations are being conducted, terminal service company personnel should be constantly alert for new ways to expedite the movement of cargo. Some practical expedients are:

- a. Where operating conditions are favorable such as moderate surf, firm beach, etc., empty semitrailers may be placed in landing craft and cargo may be loaded into the semitrailers at shipside. When the landing craft is beached, the semitrailer may be towed directly from the landing craft to the depot or to the temporary area, thus eliminating a shoreline transfer operation.
- b. When barges are used in the discharge operation, stowage of cargo aboard and movement of the cargo to the hook of fixed or mobile shore-based cranes may present a problem. The use of

forklift trucks aboard a barge and a crawler crane alongside on a separate barge has been found practicable to facilitate operations.

- c. Normally, rough terrain cranes are necessary at the shoreline when cargo must be lifted from landing craft and placed in highway transport equipment.

- d. Pontoon causeways or beached barges, if available, or causeways made of sandbags or other solid material, reaching from the shoreline to the beaching area of large landing craft on shallow beaches, will facilitate the unloading of motor vehicles. These causeways will eliminate the possibility of drowning out, because vehicles can roll ashore without passing through the water.

- e. Each terminal service company operation site should have at least one truck dispatcher when clearance is being accomplished by truck. The dispatcher uses DD Form 1384, Transportation Control and Movement Document, to back up his dispatch slip which shows destination of load. He can thus dispatch loaded trucks immediately, saving time and avoiding the congestion which might result if there were only one dispatch point in the battalion area. If movement by convoy is dictated, the formation of convoy serials is expedited because of the faster rate of dispatch of single vehicles to make up these serials (FM 55-30).

9-9. Shore-to-Shore Operations

Shore-to-shore operations—both tactical and logistical—may be conducted across or along rivers, between islands, along a coastline, or between a continental land mass and an offshore island. Except for the fact that ocean shipping is not involved, terminal unit functions in these operations are the same as described herein for LOTS and amphibious operations. In a shore-to-shore assault, terminal organizations are attached to the combat unit conducting the operation and provide the same support as described in chapter 10. Command elements and relationships in logistical shore-to-shore operations are the same as in conventional water terminals and in ship-to-shore LOTS operations. The terminal service company ship platoons work in the loading area on the near shore, and the shore platoons operate discharge points in the objective area. Amphibian and landing craft units provide the lighterage service, and terminal transfer elements may be assigned to clear cargo backlogs.

CHAPTER 10

AMPHIBIOUS OPERATIONS

10-1. General

a. The Army component of an amphibious task force is a task organization formed of Army units assigned for the specific purpose of participating in an amphibious operation. This component is referred to as the Army landing force. The composition and size of the Army landing force vary with the type and size of the amphibious operation, the landing force mission, and the operational environment.

b. The Army landing force and each of its subordinate echelons must be balanced forces capable of independent operations for execution of the amphibious attack. An amphibious operation by its very nature requires reinforcement of the basic tactical element at each echelon of the landing force to provide combat support and interim combat service support capability pending establishment of normal support systems in the objective area. The Army meets the requirements of the amphibious operation through temporary internal reorganization of assault units and grouping of units as task organizations, including certain units which by design provide specialized support needed in the assault on a hostile shore.

10-2. Engineer Amphibious Units

Engineer amphibious units are among the Army units designed to provide specially qualified personnel and units for performing combat support and interim combat service support functions as part of the Army force executing landings. Engineer amphibious units provide only certain specialized elements required for formation of shore parties to support various size landing forces as follows (further details are contained in FM 5-144):

a. Engineer amphibious brigade: shore party headquarters for a corps landing force.

b. Engineer amphibious group: shore party headquarters for a division landing force.

c. Engineer amphibious battalion: shore party headquarters for a brigade landing team.

d. Engineer amphibious company: shore party headquarters for two battalion landing teams landing abreast.

10-3. Shore Party

a. The shore party is organized to accomplish combat engineer type tasks which facilitate landing and passage of the beach obstacle and to afford an interim logistic support capability through development and operation of a beach support area. The conduct of shore party operations is a command function of the landing force. The Army landing force commander exercises his shore party command function through the appropriate engineer amphibious commander.

b. Since engineer amphibious units provide only the basic components of shore parties, the shore party task organization at each echelon must include other combat and combat service support units as required. Among these are selected staff elements of terminal groups and terminal battalions, as well as terminal service companies, boat companies, and amphibian companies.

10-4. Relief of the Shore Party

a. As soon as the amphibious assault phase of the operation is completed and the landing force is firmly established on the beach, the shore party is dissolved and the engineer amphibious units are relieved to support combat operations inland or to start planning the next amphibious assaults. Upon termination of the assault phase, control of the beach support area is passed to a corps support command (COSCOM) or a field army support command (FASCOM), depending on the size of the operation and anticipated theater development. Selected staff elements of these commands, as well as of the supporting transportation brigade, are initially attached to the landing force to facilitate a smooth transition of command when the engineer amphibious units are relieved. A terminal group or terminal battalion, operating under the transportation brigade of either a FASCOM or COSCOM, immediately assumes responsibility for

water terminal operations in the objective area. The terminal service companies and lighterage units employed then revert to terminal battalion control and continue logistical beach operations in support of the landed force.

b. Other units attached to the engineer amphibious brigade for combat service support should be those which are scheduled to become elements of the FASCOM or COSCOM that is to assume base or theater development responsibility. This procedure assures continuity of logistic effort and reduces the shipping space required to transport logistic units to the objective area.

10-5. Terminal Group Staff Planning

a. Terminal group staff plans are based on personnel and cargo (tonnages and characteristics) to be landed on each assault beach of the amphibious operation and the subsequent logistics over-the-shore operations to be conducted in support of the landed force. These factors determine the transportation units and equipment that are required for conducting the anticipated terminal operations. Transportation terminal, amphibian, boat, and truck units are among the principal elements that are attached to the engineer amphibious brigade. Plans for employment of Army lighterage must take into consideration both the requirements for supporting or augmenting Navy lighterage during the amphibious operation proper and the assumption of the logistic lighterage role when the engineer amphibious brigade is phased out.

b. As terminal operations in the early stages of an amphibious operation are actually an interim function performed as a part of the shore party mission of the engineer amphibious brigade, a transportation troop list must be submitted to the engineer amphibious brigade headquarters for approval. When the troop list is approved, the plan is then developed for embarkation, movement, and debarkation of the units required for the terminal operation and coordinated with the engineer amphibious brigade headquarters. Subsequently, another troop list, which includes other combat service support units normally assigned to the terminal group, is prepared for the logistic support of the objective area and submitted to FASCOM (or COSCOM) through the transportation brigade for approval and coordination. Upon approval, a plan is developed for the embarkation, movement, and debarkation of these units. The terminal group staff coordinates with the trans-

portation brigade staff in selecting suitable sites (which may or may not be the assault beaches) for terminal operations to assure that the development of these sites and facilities is included in the base development plan.

10-6. Terminal Unit Functions

a. Selected elements of the terminal group or terminal battalion are attached to the engineer amphibious brigade at the beginning of the planning phase of the operation, with additional elements to be phased in later as the situation develops. Terminal service companies and lighterage units are attached as working elements of the shore party and actively participate in embarking and debarking the landing force and its equipment. This procedure assures continuity of water terminal operations when control of the logistic support effort passes from the engineer amphibious brigade to the relieving command (FASCOM or COSCOM).

b. Terminal group and battalion personnel perform liaison duties between the two commands and are actively employed in planning for the operation. In performing their liaison duties, they send operational information, intelligence pertaining to beach operations, special supply requirements, and other appropriate planning data to the participating headquarters. The specific number and category of personnel required are governed by the size and complexity of the particular amphibious operation.

c. The attached terminal units train with the shore party and support the assault elements by performing combat service support functions within their capabilities and as required by the engineer amphibious brigade. These functions include embarking the landing force; unloading ships and aircraft in the objective area; initial receipt, unloading, movement inland, temporary holding, and segregation of cargo; and assisting troop units to land and move across the beaches. As the combat situation permits, the engineer amphibious brigade headquarters, with attached terminal group personnel, becomes operational ashore. Terminal group personnel supervise operations of the terminal battalions as other transportation units are phased ashore and become operational under terminal battalion control.

d. When operating together, the FASCOM (or COSCOM) elements, including the transportation brigade and the terminal group, and the engineer amphibious brigade complement each other.

Under normal circumstances, the engineer amphibious brigade supervises the initial operation of the entire logistic support effort, with certain elements of the terminal group attached. As the area is stabilized and space ashore permits, elements of the FASCOM and the transportation brigade and remaining elements of the terminal group are phased ashore and the engineer amphibious brigade is phased out.

e. The landing force commander's decision to relieve the engineer amphibious brigade depends on the tactical situation, the development of facilities, and the establishment of adequate logistic

units and staffs in their operating areas. When the decision to relieve the engineer amphibious brigade has been made, the shore parties are dissolved and the attached service units are transferred from the engineer amphibious brigade to the relieving FASCOM (or COSCOM). Since the transportation units have been operating under the terminal group from the outset, the flow of supplies and vessel discharge operations are not interrupted by this transfer of control. Elements of the engineer amphibious brigade, if more appropriate units are not available, may be attached to the terminal group or FASCOM (or COSCOM) to perform normal engineer functions.



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CHAPTER 11

INLAND WATERWAY OPERATIONS

11-1. General

a. The use of inland waterways for military purposes can complement the existing transportation system. Inland waterways are principally used for the civilian economy. Military use is dependent on the degree of waterway development and necessary rehabilitation, the tactical situation, and the impact military utilization will have on the civilian economy.

b. Two advantages of using inland waterways as a transportation mode are the ability to move large quantities of volume cargo and the relative ease of movement of large, heavy, or outsize loads. Disadvantages include seasonal interruptions such as those in underdeveloped areas that have no dams or flood/drought controls. Also, in the northern hemisphere the freezing of the water, even with the use of ice breakers, could restrict or suspend operations during extreme conditions. Vulnerability to sabotage and enemy actions is equal to other modes in respect to stationary bridges, banks, etc. With these facts in mind the planner should weigh carefully all the pros and cons of the specific waterway in question prior to the decision on whether to use it and to what extent.

11-2. Inland Waterway Terminals

a. An inland waterway terminal normally includes facilities for mooring, cargo loading and unloading, dispatch and control, and repair and service of all craft capable of navigating the waterway. Terminals either exist or are established at the origin and terminus of the inland water route, and intermediate terminals are located along the way wherever a change in transportation mode is required.

b. Terminals on an inland waterway system can be classified as general cargo, liquid, or dry bulk commodity shipping points. Terminals of the two latter types usually include special loading and discharge equipment that permits rapid handling of great volumes of cargo.

11-3. Organization for Inland Waterway Operations

a. When required, an inland waterway service may be formed to control and operate a waterway system, to formulate and coordinate plans for using inland waterway transport resources, and to provide for integrating and supervising local civilian facilities used in support of military operations. This operational organization may vary in size from a single barge crew to a complete inland waterway service, depending on the requirements. It may be composed entirely of military personnel or may be manned by local civilians supervised by military units of the appropriate transportation staff section.

b. Inland waterway units are normally a part of the theater army support command transportation intersectional service, but they may be assigned to the field army support command if the inland waterway operation takes place wholly within its area of responsibility.

c. Although an inland waterway service may be operated by a terminal group, a terminal battalion composed of appropriate terminal service, terminal transfer, harbor craft, boat, and/or amphibian units will most often be employed in this capacity. A typical inland waterway organization is shown in figure 11-1.

11-4. Estimating Inland Waterway Capabilities

When determining the capability of an inland waterway, the following must be considered:

- a.* Restricting widths and depths of channel.
- b.* Vertical and horizontal clearance of bridges.
- c.* Location of dams or other bars to navigation.
- d.* Location of locks; dimensions, timing, method of operation, and other limiting factors.
- e.* Frequency, duration, and effect of seasonal floods and droughts.
- f.* Normal freezeup and opening dates.
- g.* Navigation hazards—rapids, falls, etc.
- h.* Speed and fluctuation of current.

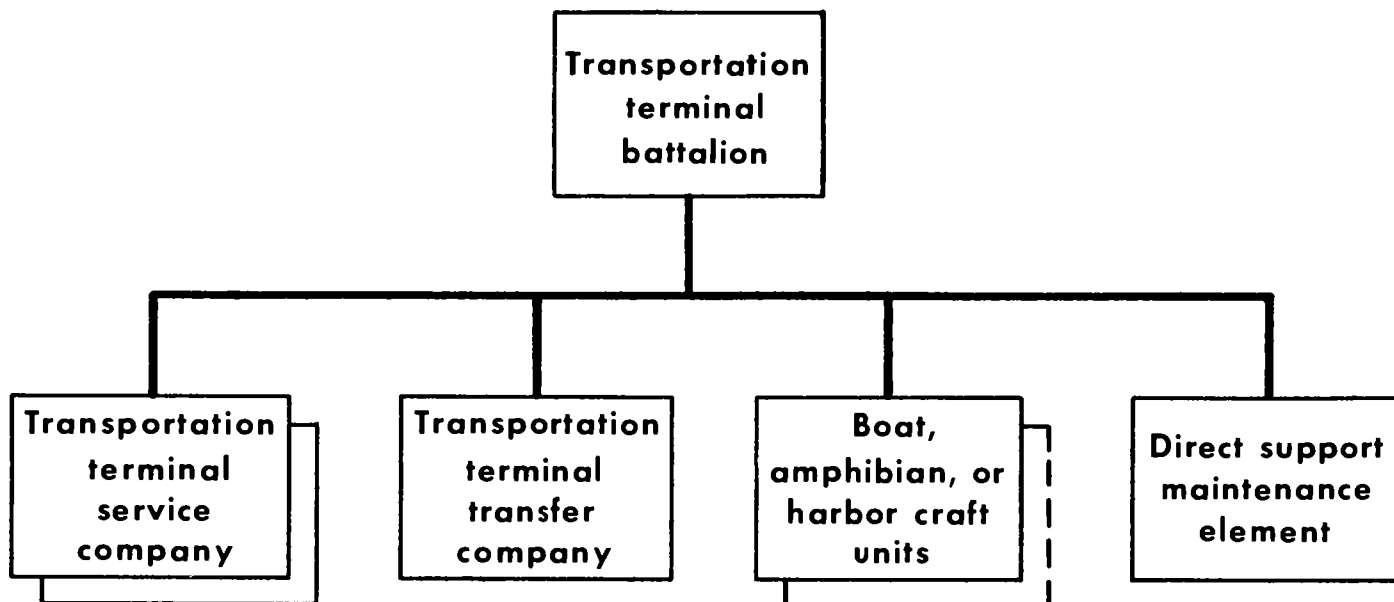


Figure 11-1. Sample organization for inland waterways service.

- i. Waterway maintenance requirements.
- j. Changes of channel.
- k. Availability of civilian and/or military craft.
- l. Availability of skilled bargemen, pilots, and tugboat operators from civilian and/or military sources.
- m. Number of terminals.
- n. Terminal facilities, including wharves, cranes, materials handling equipment, marine maintenance shops, and port cleanance.
- o. Ability of the waterway to displace its capacity daily for a considerable time.

11-5. Determination of Inland Waterway Movement Capability

a. *General.* The capacity of a waterway, the availability of craft, and the adequacy of terminal facilities are factors that must be considered when estimating inland waterway movement capability. Any of these factors may limit an inland waterway operation; each one must be exam-

ined to determine its impact on the waterway movement capability.

b. *Assumptions.* It is necessary, in the absence of definite information, to make certain assumptions when estimating inland waterway movement capability. It is assumed that—

- (1) Waterway is usable.
- (2) Weather is favorable.
- (3) Civilian use of the waterway is controlled to allow joint use or, if required, suspended.
- (4) Manpower and fuel are available and adequate.
- (5) Vessels are weight-loaded to 60 percent of capacity.
- (6) Average deadline rate is 20 percent.
- (7) Waterway operations are 24 hours per day.
- (8) Average speed is 4 miles per hour (6.4 kilometers per hour).
- (9) Port operations are 20 hours per day.
- (10) Cargo handling averages 30 tons per hour per barge.

(11) Average locking cycle is 45 minutes.

(12) Empties pass through the locks on the return trip.

(13) Effect of current is ignored.

c. Waterway Movement Capability. There are two types of waterways—open and restricted. In this discussion, lakes, rivers, channels, canals, and other navigable inland bodies of water without locks or other restrictive features are open waterways, and waterways with locks or other restrictive features are restricted waterways. The actual movement capability of a waterway depends on the length of time that the daily capacity can be maintained.

d. Capacity Formulas.

(1) *General.* The formulas given below may be used to determine movement capability over waterways. In these formulas and in the formulas for determining barge and tug requirements discussed in *e* below, the letters used have the following meanings:

- A = number of barges
- B = short tons per barge
- C = percentage of usable barges
- D = one-way distance in miles or kilometers
- E = navigating hours per day
- F = average speed in miles or kilometers per hour (mph or kmph)
- G = actual load of one barge in short tons
- H = ocean terminal handling rate in short tons per hour
- I = inland terminal handling rate in short tons per hour
- J = length of terminal working day in hours
- K = number of locks
- L = length of average locking cycle in minutes
- M = lock operating hours per day
- N = tows per mile
- O = number of passages per day
- P = daily tonnage requirements
- Q = turnaround time in days for barges
- R = number of barges per short ton
- S = turnaround time in days for tugs
- T = short tons per tow
- U = barges per tow

(2) *Turnaround time.* The turnaround time in days for barges and tugs used in the formulas is the sum of navigating time, terminal time, and lock time. Methods of determining these times are—

$$\text{Navigating time (days)} = \frac{D \times 2}{E \times F}$$

$$\text{Terminal time (days)} = \frac{G \times 2}{J(H + I)}$$

$$\text{Lock time (minutes)} = \frac{2K \times L}{M \times 60}$$

(3) *Capacity formula for open waterway.* A simple formula applicable only to waterways is—

$$\text{Capacity in short tons} = N \times F \times E \times T$$

(4) *Capacity formula for restricted waterway.* When the waterway is restricted but the number of possible passages per day is known, a simple formula is—

$$\text{Capacity in short tons per day} = T \times 10$$

(5) *Capacity formula for both open and restricted waterways.* If the number of possible passages per day is not known, but basic information is available, the following formula may be used for an open or restricted waterway:

$$\text{Capacity in short tons} = \frac{A \times B \times C}{\frac{D \times 2}{E \times F} + \frac{G \times 2}{J(H + I)} + \frac{2K \times L}{M \times 60}}$$

Example: How many short tons of military stores per day can be moved on a 300-mile (483-kilometer) waterway that has 10 locks if—

One hundred 1,000-ton-capacity self-propelled barges are available.

The percent of usable barges is 80.

Navigating hours per day are 24.

Average speed is 4 mph (6.4 kmph).

Load of each barge is 600 short tons.

Ocean terminal handling rate per hour is 7.2 short tons.

Length of terminal working day is 20 hours.

Inland terminal handling rate per hour is 25 short tons.

Average locking time is 45 minutes.

Locking operating hours per day are 24.

$$\begin{aligned} \text{Capacity} &= \frac{100 \times 1,000 \times .80}{\frac{300 \times 2}{24 \times 4} + \frac{600 \times 2}{20(7.2 + 25)} + \frac{2(10) \times 45}{24 \times 60}} \\ &= \frac{80,000}{\frac{600}{96} + \frac{1,200}{644} + \frac{900}{1,440}} \\ &= \frac{80,000}{6.2 + 1.9 + .6} \\ &= \frac{80,000}{8.7} \\ &= 9,195 \text{ short tons per day} \end{aligned}$$

e. Availability of Craft.

(1) *Barges.* Barge requirements can be determined after the route capability is computed or after the daily tonnage requirements are established. The formulas given below may be used to determine the number of barges required for open and restricted waterways.

(a) Open waterway.

$$\text{Barges required} = \frac{P \times Q}{B}$$

(b) Restricted waterway.

$$\text{Barges required} = O \times Q$$

(2) *Tugs.* When tugs are used, the arrangement of the tows must be considered. It is sometimes possible to operate with fewer tugs than tows because the tugs do not have to wait in port while the cargo is being transferred. Moreover, one tug can often tow more than one barge. In planning a towing operation, the fit of the tow in the locks must be considered. The following formula can be used to determine the number of tugs

or towboats required to move the available barges:

Number of tugs or towboats required

$$= \frac{A \times S}{R \times Q}$$

f. Adequacy of Terminal Facilities. Generally, lack of terminal facilities does not restrict inland waterway movement since temporary berthing facilities can usually be constructed. Without mechanical handling facilities, general cargo can be handled at the rate of 10 short tons per hour per barge. With forklifts, at least 30 short tons per hour per barge can be handled. Nevertheless, when existing port facilities are inadequate and additional facilities cannot be improvised, the existing port facilities may be the most restrictive factor in the entire movement. In such a case, the capacity of port facilities determines the inland waterway movement capability. This problem cannot be solved by using formulas; its solution requires careful analysis and sound judgment.

CHAPTER 12

INLAND TERMINAL OPERATIONS

(STANAG 3465)

12-1. Operational Environment

a. In most situations, field army transport services are provided principally by motor and air transport. Therefore, inland transfer operations are conducted chiefly at terminals and transfer points serving those modes. These terminals are established throughout corps, division support area, and army rear areas as required to provide an adequate transportation service. If usable terminal facilities exist, they are incorporated into the transportation network. However, since transportation must be responsive to combat service support needs, cargo transfer activities normally occur under austere circumstances. Terminal serving rail and inland waterways are established as required along existing routes whenever sufficient lift capability cannot be provided by motor and air.

b. Cargo transfer operations at inland terminals are conducted by the terminal transfer company in the field army area under the supervision of the transportation brigade in the field army support command (FASCOM) and in the communications zone under the transportation command of the theater army support command (TASCOM). Assignment and attachment, command relationships, unit functions, and operational techniques will vary according to the needs of the respective terminals. The operational variations imposed by different modes of transport are discussed individually in this chapter.

c. FASCOM is established as a major subordinate unit of the field army to command and control field army combat service support units and operations. The FASCOM headquarters operates generally on the basis of assigning missions to subordinate units for execution—a system of centralized control and decentralized operations. Detailed functions and responsibilities of the support command are contained in FM 54-3.

d. The transportation brigade provides transportation support on an armywide basis, deploy-

ing its units throughout the field army area to provide both local haul and line haul transportation support, transportation movements management (FM 55-10), and terminal facilities. The structure of the transportation brigade is tailored to match the particular support requirements, and the number of subordinate units, including terminal transfer companies, will vary according to the situation. Figure 12-1 shows a type transportation brigade. Essentially, the brigade transport units provide the connecting link between the transportation intersectional services and direct support, general support, and/or using units in the field army area. In addition, the brigade provides forward-moving transportation for cargo delivered by Air Force aircraft into the field army service area. Detailed operational responsibilities of the brigade and its organizational elements are discussed in FM 55-9.

12-2. Staff and Unit Planning

a. A determination as to numbers, types, and locations of terminals within the theater results from staff planning at FASCOM or TASCOM and transportation brigade or command level. Terminal planning at this level normally includes the following five-step process:

(1) Computation of the terminal workload required to support the operation, expressed as cargo tonnage per day.

(2) Estimation of terminal capacity, which is the total tonnage that can be received, processed, and cleared through the terminal in one day.

(3) Estimation of construction requirements, which are the requirements for repair and rehabilitation of facilities and construction of new facilities necessary to increase the terminal capacity to equal the required terminal workload.

(4) Estimation of equipment requirements, which is the amount of equipment needed to process the required workload through the terminal with maximum efficiency.

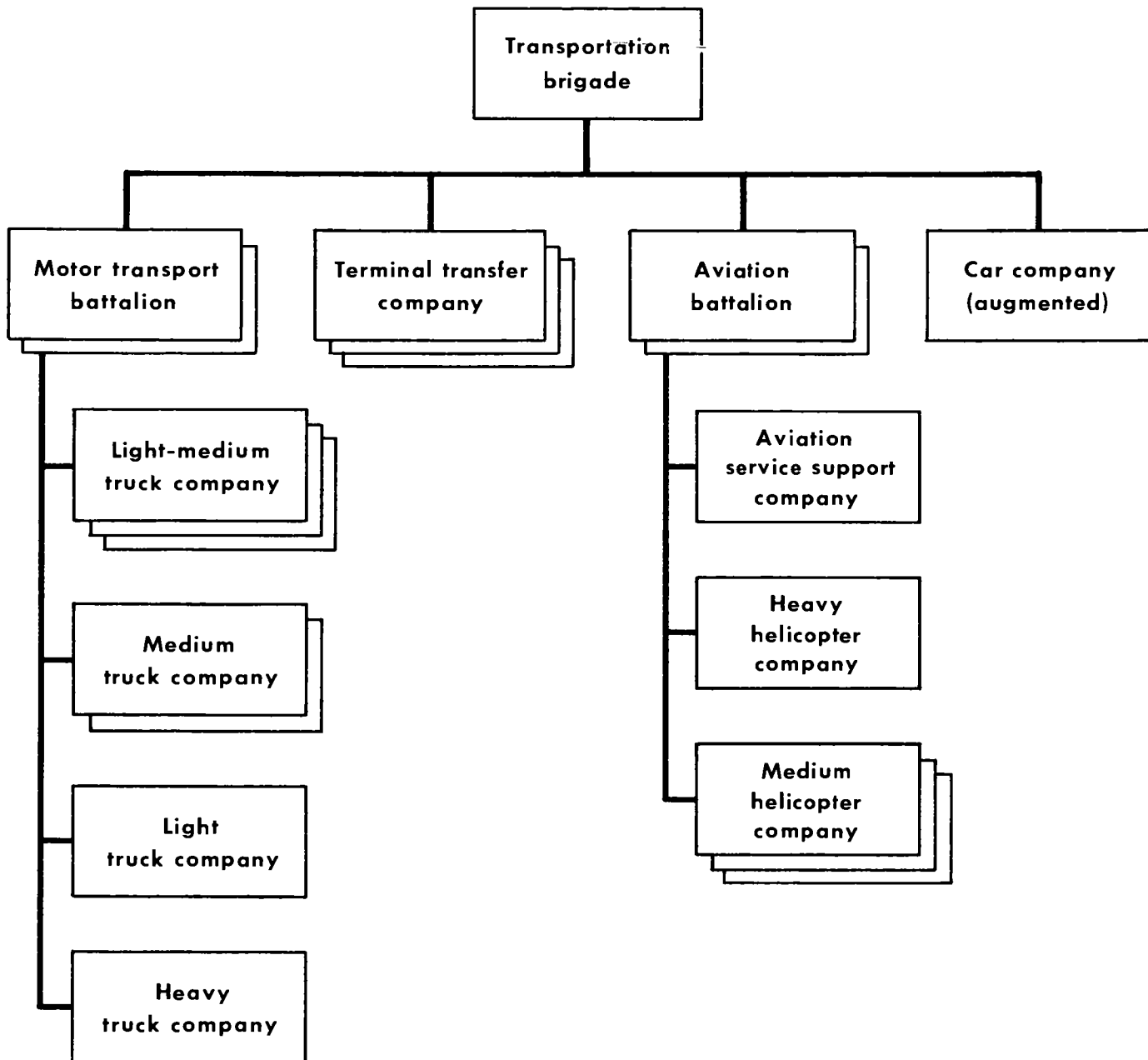


Figure 12-1. Type transportation brigade organization, field army support command.

(5) Estimation of personnel requirements, which are the units and individuals needed for administration and operation in processing the required workload through the terminal.

b. FM 101-10-1 contains a detailed checklist for estimating inland terminal capacity and treats terminal planning at staff level in detail.

c. Unit level planning begins when a company is assigned the mission to perform terminal transfer functions at a specific site. If the terminal facility

exists before the assignment of a terminal transfer company or its elements, initial procedures will include a meeting between the transfer unit commander and the transport mode commander to define and determine mutual support requirements. The meeting should be followed by a joint inspection of the terminal area to acquaint the transfer unit commander with the layout. Tentative real estate allocations for all units to operate at or from the proposed terminal are normally made during this area reconnaissance.

12-3. Operational Planning

Once the area and general mission are assigned, the following factors provide the basis for operational planning by the unit commander:

a. Physical characteristics and layout of the terminal area.

- (1) Physical restrictions on working space.
- (2) Availability of hard surfaces in transfer areas.
- (3) Existing facilities for storage and maintenance of materials handling equipment and other equipment.
- (4) Proximity of exit routes to transfer points.
- (5) Distances between unloading and loading points and temporary holding areas.

b. Characteristics of transportation equipment.

- (1) Number of individual carriers that can be handled simultaneously.
- (2) Turnaround time of delivery transportation.
- (3) Unit loading and unloading rates for types of transportation.
- (4) Effects of size and maneuverability of carriers on location of transfer points within the terminal.
- (5) Effects on use of and requirements for materials handling equipment.

c. Types of cargo to be handled.

- (1) Size and type of packaging.
- (2) Average weights of units of cargo.
- (3) Requirements for breakdown into smaller lots or consolidation for reloading.
- (4) Shelter and security protective requirements in in-transit storage areas.
- (5) Fragility and/or perishability.
- (6) Problems involved in and precautions for handling hazardous cargo.

d. Requirements for and selection of temporary in-transit storage areas.

- (1) Estimated availability of clearance transportation as compared with volume of delivery transportation.
- (2) Shelter and security protection requirements.
- (3) Additional documentation required.
- (4) Distances from loading and unloading points.
- (5) Requirements for materials handling equipment in holding area.

e. Composition of work force.

(1) Number and size of teams required, based on the above factors and the planning guides outlined in paragraph 12-4.

(2) Allocation of materials handling equipment according to types of carriers and types of cargo.

(3) Arrangement of shifts for around-the-clock operation.

(4) Provisions for consolidation of documentation.

f. Establishment of unit procedures for documentation, communications, supply, safety, and maintenance of equipment.

g. Provisions for area defense and damage control (based on overall terminal and area plans).

12-4. Personnel and Equipment Requirements

a. Time studies of cargo handling operations indicate that the following are valid averages for long-range planning purposes:

(1) When cargo must be handled entirely by hand, personnel requirements can be computed on the average of $\frac{1}{2}$ ton per man-hour for a 10-hour shift. For example, the number of men required to handle 120 short tons of cargo per 10-hour shift is computed as follows:

$$\begin{aligned}
 \text{Number of men} &= \frac{\text{Daily tonnage}}{\text{Shift lengths in hours} \times \text{Man-hour manual capability in tons per given shift}} \\
 &= \frac{120}{10 \times \frac{1}{2}} \\
 &= \frac{120}{5} \\
 &= 24
 \end{aligned}$$

(2) The above formula is valid only for the normal 10-hour shift where the daily tonnage requirement is expected to remain constant. It includes the working supervisors but does not provide for documentation of the cargo. Generally, one cargo checker per shift is sufficient at each loading or unloading site. However, it is good practice to train terminal transfer unit cargo handlers as checkers to meet additional requirements should they occur.

(3) Normally, a maximum of five men can be effectively employed to load or unload an Army aircraft or truck by hand. This crew consists of a

working foreman and four cargo handlers, or a half-squad. Two of the men work in the cargo compartment of the carrier and the other two on the ground, loading platform, or other carrier involved in the cargo transfer. The foreman divides his time between the two groups and assists as needed. One squad can load or unload two trucks or two aircraft by hand when the carriers are located close enough together to permit the squad leader and the single cargo checker to properly perform their duties at each location.

(4) An entire cargo transfer squad is required to load or unload a railcar by hand or augmented by materials handling equipment—four working in the car and four on the outside. The supervisor and checker assist as required.

(5) Because inland waterway craft do not normally carry cargo that can be entirely man-handled, full employment of the equipment platoon and the cargo equipment squads is required in this type of operation.

b. Cargo should be transferred mechanically when supplies are unitized and materials handling equipment is compatible with the carriers. For planning purposes, personnel requirements for mechanical handling of cargo by such equipment as rough terrain forklifts, cranes, and/or tractor-trailer trains is usually limited to an operator for each piece of materials handling equipment, a checker, and appropriate supervisory personnel.

12-5. Air Terminals

a. 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 Military Airlift Command or tactical airlift aircraft, including loading and unloading both the aircraft and Army clearance and delivery transport equipment. However, the Army commander may, by local agreement (AR 59-106), provide personnel to participate in loading and unloading Army transportation at these facilities, and accept responsibility for loading and unloading Air Force aircraft at forward landing fields or airstrips that are not a regularly scheduled stop for tactical airlift aircraft. In each of these situations, the terminal transfer company or its elements would be employed. In addition, the transfer company or its elements may furnish personnel to load and unload Air Force tactical airlift aircraft conducting Army unit moves. The terminal transfer company is required to accept cargo from the Air Force pending cargo disposi-

tion instructions. It may provide break-bulk facilities for consolidated shipments and cargo awaiting Army transport means. The transfer company may also operate a consolidating point for retrograde air shipments. Retrograde cargo being returned to CONUS will be processed for CONUS quarantine inspection prior to being loaded aboard aircraft in accordance with joint regulation AR 40-12.

b. FASCOM establishes and operates Army air terminals in corps and field army rear areas to support Army air lines of communication. Necessary facilities and services are provided at these terminals to obtain timely and effective air movement of troops and supplies and to facilitate efficient use of available aircraft. The senior Army officer of the transport units operating at these points normally acts as terminal commander. Terminal transfer units load and unload aircraft, document cargo moving through the terminal, and operate cargo segregation and temporary holding facilities. The transportation movements officer located at or near the terminal coordinates the flow of cargo and passengers into and out of the airlift system.

c. When Army aircraft are employed in a local distribution operation, shipping and receiving agencies, rather than the terminal transfer company, are responsible for loading and unloading aircraft.

d. At division level, the division support command is responsible for air terminal operations, establishing one or more air terminals according to the volume of cargo received or distributed by air. Normally, division air terminals are operated by the supply and transport battalion, but elements of the terminal transfer company may be transported by air to forward airstrips to unload cargo for limited time periods.

e. Terminal transfer companies or their elements are assigned to air terminals on the basis of the daily tonnage to be moved through a terminal. To obtain a smooth flow of cargo through these terminals, capacities of clearance and delivery transport equipment must be balanced with the transfer capability. The ideal situation is a perfect match in which cargo moves through and out of the terminal at the same rate that it comes in. This seldom occurs, however, because the movement of priority cargo must override the first-in first-out concept. If the backlog becomes too great, throughput capacity of the terminal is reduced by the resulting increase in cargo handling within the holding areas. In all situations,

every effort must be made to assure that cargo availability and clearance transportation are equal to the tonnage requirements of the ultimate user.

f. Most of the cargo delivered by air will be unitized on 40- by 48-inch pallets. The transfer unit's forklifts will be used to unload and move cargo from the aircraft unloading point to clearance transportation or temporary holding areas. Forklifts and cranes will be employed when loading or unloading surface transportation, and cargo discharged from aircraft will frequently be consolidated to make the most efficient use of the heavier cargo handling equipment. Conversely, cargo unloaded from surface carriers may have to be segregated and prepared into units compatible with aircraft space and weight capacities.

g. The terminal transfer company is also provided with a variety of slings for rigging external loads for helicopter delivery, and arrangements must be made for periodic return of these items by the aircraft units so that a sufficient supply will always be available in the terminal.

h. Safety precautions to be observed during aircraft loading and unloading are outlined in appendix E (STANAG 3465).

12-6. Motor Transport Terminals

a. Motor transport terminals in the field army area are normally located at both ends of a line haul operation where they form the connecting link between local hauls and the line haul service. They may also be located at intermediate points along the line haul route where terrain necessitates a change in type of carrier. Terminal transfer elements provide cargo handling service at motor transport terminals and function under the operational control of the senior motor transport commander. Cargo transfer at forward terminals is a responsibility of division support command personnel.

b. Motor transport unit capabilities extend from 720 to 2,160 short tons per company per day for local hauls and from 360 to 1,080 short tons per day for line haul operations. (Detailed information on motor transport operations is contained in FM 55-30.) Therefore, terminal transfer requirements at motor transport terminals will range from an augmented platoon (additional squads) to two augmented companies (additional platoon), depending on the number of truck units operating through the terminal.

c. Based on the planning factors noted in paragraph 12-4, a full-strength terminal transfer com-

pany is capable of discharging 12 trucks at a time when employed on a 10-hour-per-day basis. Both light and medium truck companies operate with an average availability of 45 vehicles, each making four trips per day in local haul operations and two trips per day in line hauls. To permit the truck units to maintain this turnaround schedule, each transfer squad must load or unload an average of one truck per hour. At normal manual handling rates, this average can be maintained with relative ease—particularly when 2½-ton trucks are being used. However, when heavier vehicles are employed, the unit commander must assure that handling rates keep pace with the truck turnaround schedules by carefully allocating the unit's heavier cargo handling equipment among the squads so that delays at each transfer point are held to a minimum.

12-7. Rail Terminals

a. Rail terminals may include yard tracks, repair and servicing facilities, accommodations for traincrews, and railheads. They are located at originating and terminating points of trains and at sites which mark the limits of rail operating divisions. A railhead is a small yard or terminal on or at the forward end of a military railway where troops, supplies, and equipment are transferred to other modes of transportation for further movement forward.

b. Army and/or host nation rail units provide an intersectional transportation service. The Army units are assigned to the transportation command, TASCOT, and operational control is exercised by the transportation railway group or brigade. Rail capability within the field army will be exploited whenever usable facilities exist, provided tactical considerations are favorable. Fluidity of the front, ability to maintain air superiority, extent of guerrilla activity, and the attitude of the local populace are some of the factors affecting the decision to employ rail units and the extent of their employment in the combat zone.

c. Terminal transfer units are employed at terminating railheads in the field army area to transfer cargo delivered from communications zone depots and terminals to forward-moving FASCOM transportation. When so employed, the transfer unit works with the railway detachment operating the terminal but is under the operational control of the FASCOM transport organization responsible for further movement of the cargo forward.

d. The transfer unit's heavier cargo handling equipment, particularly the 20-ton rough terrain cranes, will be put to maximum use at rail terminals. In general, the cranes will be employed to unload vehicles and other heavy equipment from flatcars and gondolas, and forklifts and conveyors will be used to unload boxcars. Although heavier cargo items are handled in large proportion at rail terminals, the increased requirement for temporary holding and cargo breakdown and repackaging may tend to lower average handling rates, and this factor should be taken into consideration when throughput and clearance capacities are being computed.

e. One cargo transfer squad, appropriately augmented with materials handling equipment, will be employed to unload each rail car. Although the capacities of U.S. rail cars average 50 tons each, 75 to 80 percent of the cars used in overseas theaters will be local equipment, most of which is rated in the 15- to 30-ton range. Generally, rail cars loaded with heavy, bulky items such as ammunition, barbed wire, cement, vehicles, packaged weapons, and tools will be loaded to rated capacity. However, when the cargo is made up of such items as rations, clothing, and tentage, loads will average from 50 to 75 percent of the car's rated capacity.

f. Detailed information on transportation railway operations is contained in FM 55-20. Planning factors and other reference data are tabulated in FM 55-15.

12-8. Inland Waterway Terminals

a. Terminal transfer units are employed only at small intermediate cargo transfer points on inland waterway systems (chap 11). Limitations on the unit's employment at these points are 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 barges, landing craft, and similar types of floating equipment, the terminal transfer company may be employed in the transshipping process. However, when larger, ocean-type shipping is operated, transportation terminal service companies (TOE 55-117) must be assigned for loading and discharge. In the latter situations, the terminal transfer unit may be assigned to support terminal service company shore platoons in relieving holding area congestion by loading backlogged cargo onto clearance transportation.

b. Generally, if the waterway originates in the field army area, the terminal transfer company will be attached to the organization operating the waterway. However, if the waterway system originates in the communications zone and is part of the intersectional transportation service, the transfer unit in the field army area will be under the operational control of the commander providing clearance transportation.

12-9. Personnel Moves

While the transportation terminal transfer company is designed to function primarily in cargo transfer operations, it may on occasion be required to assist in the movement of personnel through a terminal to which it is assigned. Situations in which it could be so employed are as follows:

a. *Intraterminal Unit Moves.* When requested by the troop movement officer or the terminal commander, transfer company personnel can assist in processing a unit through the terminal by serving as guides and by providing transport and materials handling equipment for moving troops and equipment from the point of debarkation to the loading area.

b. *Patient Evacuation.* Terminal transfer personnel may assist in evacuating patients only when requested to do so by the senior medical representative responsible for transfer of the patients and only in the manner directed by him and his assistants. Extreme care must be exercised when moving the sick and injured, and personnel untrained in this duty should not be used. However, the transfer operation can be materially aided by using unit personnel as terminal guides and as assistants in loading and unloading accompanying supplies and equipment.

c. *Prisoners of War, Refugees, and Displaced Persons.* Intraterminal movements of persons in these categories will be conducted under the control and supervision of military police and/or civil affairs personnel. When requested, members of the terminal transfer company may assist as guards, guides, or interpreters and may help move property, supplies, and equipment.

12-10. Documentation

a. The terminal transfer company uses the transportation control and movement document (TCMD) (para 8-8) as a dock receipt for cargo arriving at the terminal, as a cargo delivery receipt when the cargo is cleared forward, as an

accountable document during temporary holding, and as a record of all shipments handled. Spaces are provided on the form to record transshipment and temporary holding by location, time, and type of carrier. Normally, these are the only entries that will be made by terminal transfer personnel. However, when accompanying TCMD's are mechanically prepared or when extra copies are not available, record copies containing details such as control numbers, commodity designations, weight, pieces, cube, shipper, consignee, will be prepared by the transfer company. In addition, a locally prepared register or index of these record documents should be maintained by platoon or company documentation sections.

b. The receiving checker is responsible for tallying the cargo actually received against the accompanying TCMD and for indicating discrepancies, damages, improper packing, and improper or insufficient markings on the form. When the receipted cargo is to be immediately shipped out, the checker records transshipment and handling data in the spaces provided on the document, prepares record copies as required, and hands the completed TCMD to the operator of the forwarding carrier. The record copy is signed by the carrier and sent to the company or platoon documentation section for registering and filing.

c. If a shipment is to be held temporarily because of lack of sufficient clearance transportation, receiving and storage data are recorded on the accompanying document and a record copy is prepared for filing by the documentation section. When the cargo is ready for forwarding, the documentation section prepares any new documents necessitated by consolidation or breakdown of shipments and turns these over to the proper checker, who completes the shipping information in the spaces provided. Completed record copies are then registered and filed by the documentation section.

d. In large terminal complexes, the volume of cargo handled may require more detailed shipment planning by the terminal transfer company, in which case a shipment planning worksheet may be used. This document, which is explained in detail in DOD Regulation 4500.32-R, facilitates assembly of shipment units and transportation units for both storage and transporting activities and provides a basis for preparing the TCMD's.

e. Additional forms and documentation procedures that may be required will be explained in appropriate theater, FASCOM, or TASCOC directives.



CHAPTER 13

INTERMEDIATE STAGING AREAS

13-1. General

a. An airborne or air landed operation involves the movement and delivery by air of combat forces and their logistic support into an objective area for execution of a tactical or strategic mission. An administrative movement of airborne or air landed forces by any mode of transportation into an area located between the origin of the movement and the objective may precede an airborne or air landed operation. The stopover point between the origin of the movement and the objective area is identified as the intermediate staging area. The intermediate staging area is defined as a general locality between the marshaling area and the objective of an airborne or air landed force through which the force or parts thereof pass after mounting for refueling, regrouping of aircraft, redistribution of troops and equipment, inspection, and exercise preparatory to an airborne or air landed assault.

b. In executing a strategic mission, the airborne or air landed force may not proceed beyond the intermediate staging area. Normally, the task force will remain in the intermediate staging area for a very short period (12-36 hours). If the situation necessitates that the task force be enlarged or remain for an extended time, the intermediate staging area may become an intermediate staging base.

c. The composition and size of support element troop units in the intermediate staging area are based on the requirement to stage an airborne brigade, the largest combat force capable of maintaining unit integrity in an assault configuration. The support element troop organization in the intermediate staging area provides the minimum essential support for assault forces and provides the base for expansion to accommodate larger size forces. The units making up the intermediate staging area organization are predesignated and must be trained for their mission. It is mandatory that the intermediate staging area organization be capable of rapid assembly for movement by air to a selected staging area in advance of assault elements for which it will provide support.

d. The airborne brigade will arrive at the intermediate staging area by one or a combination of the following transportation modes:

- (1) Combat loaded in assault aircraft.
- (2) Administrative movement in Air Force aircraft.
- (3) Administrative movement in motor transport.
- (4) Administrative movement by a combination of rail and motor transport.
- (5) Administrative movement by water transport.

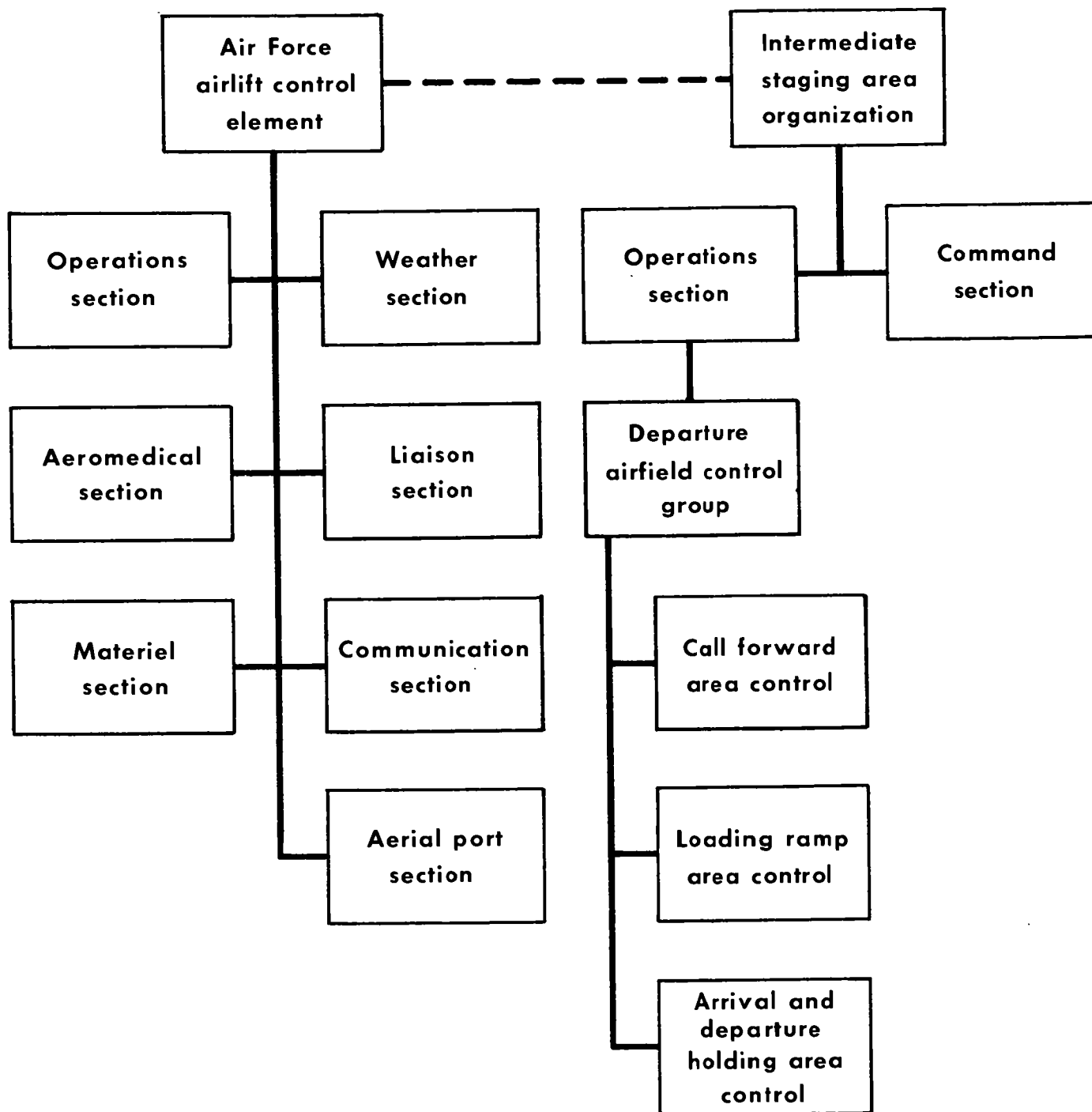
e. The mode of arrival at the intermediate staging area airfield complex will influence the extent of support required by the airborne or air landed assault force while in the intermediate staging area.

13-2. Command and Control

To control the staging of an airborne or air landed force, regardless of the mode of arrival of the force, the component commanders will establish a joint or coordinating force at the intermediate staging area departure airfield. The joint or coordinating force will be composed of an Air Force airlift control element and an intermediate staging area command (fig 13-1). The airlift control element and the intermediate staging area are extensions of the commander, Air Force forces, and commander, Army forces, command and control systems, and as such will control the operations of their respective forces on the airfield and in the intermediate staging area.

13-3. Organization of an Intermediate Staging Area Command

A type intermediate staging area command is shown in figure 13-2. This is an austere organization, structured on the premise that the supported brigade will perform as much of its own processing as it is capable of. Should the task force remain in the intermediate staging area for any length of time, additional support and facilities may be phased in.



— — — — — Coordination

Figure 13-1. Organizational chart of Army and Air Force units required to control an airborne operation at an intermediate staging area.

13-4. Support Activities

a. When practical, organic support elements of the airborne or air landed force precede the combat elements into the intermediate staging area. This will allow support elements additional

time to complete plans with intermediate staging area personnel for organizing and establishing support activities.

b. Support activities for which organic elements of the airborne or air landed force have responsibility are as follows:

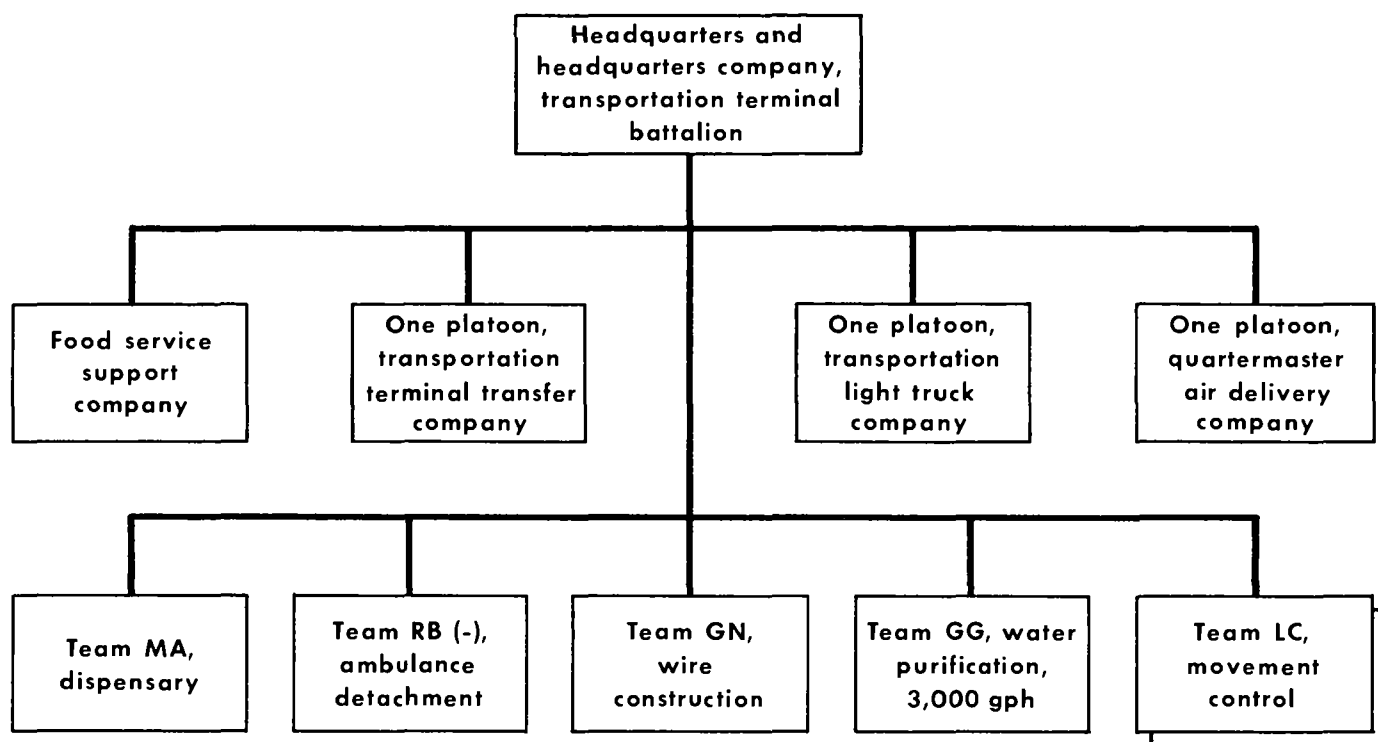


Figure 13-2. Type intermediate staging area command organization.

(1) *Bivouacs.* The force being staged will be required to develop its own bivouac area to include provisions for latrines, trash and garbage pits, and working facilities.

(2) *Maintenance.* Task for vehicles will arrive in the intermediate staging area in a combat-ready condition. Therefore, the intermediate staging area command will not provide maintenance support. The task force commander will provide any maintenance required for task force vehicles.

c. Support activities for which the intermediate staging area command has responsibility are as follows:

(1) *Administrative services.* A headquarters and headquarters company, transportation terminal battalion (TOE 55-116), commands and operates the intermediate staging area. Personnel from the battalion headquarters provide limited adjutant general, finance, chaplain, mail, and special services. Should the task force remain in the intermediate staging area over an extended period, additional support may be phased in (for example, bath facilities and a visitor's bureau).

(2) *Terminal transfer.* Transshipping functions are performed by the terminal transfer platoon assigned to the intermediate staging area command (TOE 55-118).

(3) *Transportation.* A minimum amount of vehicle transport is required for the messes and for administrative support. A light truck platoon is provided for this purpose and for movement of impedimenta and cargo to, from, and between aircraft (TOE 55-17).

(4) *Food service.* Consolidated messes are operated by the food service support company of the intermediate staging area command (TOE 10-104).

(5) *Rigging supplies.* While the task force is in the intermediate staging area, it will be required to rig supplies for airdrop and turn them over to the Air Force along with the unriggered accompanying supplies to be delivered by air. Intermediate staging area riggers from the air delivery platoon (TOE 10-407) may assist the task force and will ring the required automatic followup and on-call followup supplies that may be required. The terminal transfer platoon also assists in rigging supplies.

(6) *Medical.*

(a) Limited medical support in the form of dispensary service will be required for intermediate staging area personnel and the task force. The dispensary and ambulance detachment teams of the intermediate staging area command provide this service (TOE 8-500).

(b) Contingency plans will provide for emergency aeromedical evacuation from the intermediate staging area on an on-call basis.

(7) *Communications.*

(a) A wire circuit is required throughout the intermediate staging area, and telephones will be installed through battalion level. The wire construction unit, team GN, of the intermediate staging area command will provide, install, and service this communications net.

(b) The intermediate staging area command will provide a radio net during outloading operations.

(8) *Water.* Appropriate water purification teams of the TOE 5-520 series are attached to or

placed in support of the intermediate staging area command to provide potable water.

(9) *Movement Control.* Two movement control teams (LC) from the intermediate staging area command will be used for the planning, routing, scheduling, and control of personnel and supply movements.

d. The mission of the intermediate staging area command is completed when the task force has departed. Personnel of the intermediate staging area may then be considered as an element of the forward supply base responsible for continuing logistic support of the Army elements in the objective area(s).

APPENDIX A

REFERENCES

A-1. Army Regulations (AR)

40-12	Medical and Agricultural Foreign and Domestic Quarantine Regulations for Vessels, Aircraft, and Other Transport of the Armed Forces.
55-8	Transportation of Biological Materials.
55-16	Movement of Cargo by Air and Surface—Including Less Than Release Unit and Parcel Post Shipments.
55-38	Reporting of Transportation Discrepancies in Shipments.
55-73	Customs and Other Entry Requirements and Related Services.
55-228	Transportation by Water of Explosives and Hazardous Cargo.
55-357	Terminal Facilities Guide; United States Army.
59-106	Operation of Air Force Air Terminals.
310-25	Dictionary of United States Army Terms.
310-50	Authorized Abbreviations and Brevity Codes.
700-65	Nuclear Weapons and Nuclear Weapons Materiel.
725-50	Requisitioning, Receipt, and Issue System.

A-2. Field Manuals (FM)

5-144	Engineer Amphibious Units.
12-2	Adjutant General Support in Theaters of Operations.
14-3	Comptroller Support in Theaters of Operations.
19-4	Military Police Support, Theater of Operations.
19-25	Military Police Traffic Control.
19-30	Physical Security.
19-45-1 (TEST)	Rear Area Protection.
21-41	Soldier's Handbook for Defense Against Chemical and Biological Operations and Nuclear Warfare.
23-65	Browning Machinegun, Caliber-.50 HB, M2.
24-1	Tactical Communications Doctrine.
29-6	The Personnel Command.
(C) 32-5	Signal Security (SIGSEC) (U).
44-1	U.S. Army Air Defense Employment.
54-3	The Field Army Support Command.
54-6	The Area Support Command.
54-7	The Theater Army Support Command.
55-6	Transportation Services in Theaters of Operations.
55-6-1 (TEST)	Transportation Services in a Theater of Operations.
55-9	Transportation Services and the Transportation Brigade in the Field Army.
55-10	Army Transportation Movements Management.
55-15	Transportation Reference Data.
55-20	Army Rail Transport Operations.
55-30	Army Motor Transport Operations.
55-46	Army Air Transport Operations.
55-46-1 (TEST)	Army Air Transport Operations.
55-50-1 (TEST)	Transportation Amphibian Operations.

55-57	Transportation Harbor Craft Units and Marine Maintenance Units.
55-58	Transportation Boat Operations.
101-10-1	Staff Officers' Field Manual: Organization, Technical, and Logistical Data —Unclassified Data.
101-40	Armed Forces Doctrine for Chemical and Biological Weapons Employment and Defense.

A-3. Technical Bulletin (TB)

55-46	Standard Characteristics (Dimension, Weight, and Cube) for Transportability of Military Vehicles and Equipment.
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A-4. Technical Manuals (TM)

3-220	Chemical, Biological, and Radiological (CBR) Decontamination.
3-250	Storage, Shipment, and Handling of Chemical Agents and Hazardous Chemicals.
8-285	Treatment of Chemical Agent Casualties.
9-1300-206	Care, Handling, Preservation, and Destruction of Ammunition.
55-500	Marine Equipment Characteristics and Data.
55-513	Military Stevedoring.
750-134 through 750-226	Procedure for Rapid Deployment, Redeployment and Retrograde of Supplies and Equipment.

A-5. Tables of Organization and Equipment (TOE)

5-520	Engineer Equipment Operating Teams.
8-500	Medical Service Organization.
10-104	Quartermaster Air Delivery Company.
12-67	Personnel Service Company.
14-4	Finance General Support Group.
14-17	Finance Direct Support Company.
14-500	Finance Service Organization.
30-60	Military Intelligence Group, Counterintelligence.
55-16	Headquarters and Headquarters Detachment, Transportation Motor Transport Battalion.
55-17	Transportation Light Truck Company.
55-18	Transportation Medium Truck Company.
55-67	Transportation Light-Medium Truck Company.
55-111	Headquarters and Headquarters Company, Transportation Terminal Brigade.
55-112	Headquarters and Headquarters Company, Transportation Terminal Group.
55-116	Headquarters and Headquarters Company, Transportation Terminal Battalion.
55-117	Transportation Terminal Service Company.
55-118	Transportation Terminal Transfer Company.
55-128	Transportation Medium Boat Company.
55-129	Transportation Heavy Boat Company.
55-138	Transportation Light Amphibian Company.
55-139	Transportation Medium Amphibian Company.
55-157	Transportation Floating Craft General Support Maintenance Company.
55-158	Transportation Lighterage Maintenance Company, Direct Support.
55-530	Transportation Watercraft Teams.
55-560	Transportation Terminal Service Teams.

A-6. Department of the Army Pamphlets

310-series Military Publication Indexes.

A-7. Forms

DA Form 2028 Recommended Changes to Publications.
DD Form 1384 Transportation Control and Movement Document.

A-8. DOD Regulations

4410.6 Uniform Materiel Movement and Issue Priority System (UMMIPS)
4500.32-R Military Standard Transportation and Movement Procedures (MIL-STAMP).

A-9. Other Publications

U.S. Coast Guard Publication 108, Title 46, Code of Federal Regulations, Rules and Regulations for Military Explosives and Hazardous Munitions.

Transportability Guidance Index of Publications. This index provides a numerical and alphabetical listing of current transportability guidance publications that contain significant transportability and safety considerations for the movement of various items of materiel, special weapons, and ammunition via all modes of transportation (including helicopter and airplane). Copies of the Index of Transportability Guidance Publications may be obtained by submitting a request to the U.S. Army Transportation Engineering Agency, Military Traffic Management and Terminal Service, Fort Eustis, Virginia 23604.



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APPENDIX B

EMPLOYMENT OF NON-AIR DEFENSE WEAPONS AGAINST HOSTILE AIRCRAFT

B-1. General

The doctrine contained in this appendix prescribes the normal conditions under which non-air defense weapons will be employed against the low-altitude air threat. Commanders at all levels must recognize the potential effect of the large volume of small arms fire that can be furnished by organic weapons against low, slow-flying hostile aircraft and the fact that the low altitude air threat faced by units in a combat theater may be partially countered by aggressive use of the large volumes of fire which non-air defense weapons can place against this threat. The doctrine in this appendix has the objectives of increasing the effectiveness of these fires and of reducing the incidence of indiscriminate employment of these weapons when their use is not appropriate or is likely to be ineffective.

B-2. Concept

a. The substantial low-altitude air threat faced by units in a combat theater may be partially countered by aggressive use of the large volumes of fire which non-air defense weapons can place against this threat.

b. Exercise of the individual and collective right of self-defense against hostile aircraft must be emphasized. Hostile aircraft include all attacking aircraft and those positively identified enemy aircraft which pose a threat to the unit. Large volumes of fire from non-air defense weapons have proven capable of destroying both high- and low-speed aircraft or disrupting their attack. Exercise of this right does not demand specialized use of communications and is independent of theater air defense rules for engagement and air defense control procedures.

c. Indiscriminate use of non-air defense weapons must be prevented because of the danger to friendly aircraft and troops and the requirement to place in proper perspective the techniques of withholding fire to preclude disclosure of positions. Effective and safe employment of these weapons necessitates Armywide training.

d. Situations may arise in which the exercise of the right of self-defense should be temporarily suppressed or in which freer use of non-air defense weapons against hostile aircraft should be encouraged. The former case involves a local decision that prevention of position disclosure is paramount. Notice of such restriction is disseminated through command channels. The latter case should be based on a theater-level decision.

e. Use of a single rule for engagement—"Engage hostile aircraft"—is based on common sense interpretation. For example, all aircraft attacking a unit and enemy aircraft performing operations such as forward air control, reconnaissance, surveillance, or dropping or landing troops are clearly hostile aircraft.

B-3. Rule for Engagement

In the absence of orders to the contrary, individual weapon operators will engage attacking aircraft. Engagement of all other hostile aircraft will be on orders issued through the unit chain of command and will be supervised by unit leaders. Nothing in this rule is to be taken as requiring actions prejudicial to accomplishment of the primary mission of the unit.

B-4. Aircraft Categories

To simplify engagement procedures, aircraft may be considered in two categories:

a. *Low, Slow-Speed Aircraft.* This includes observation helicopters and liaison, reconnaissance, and slow-flying, fixed wing propeller aircraft.

b. *High-Speed Aircraft.* This includes all other propeller aircraft and all jet fixed wing aircraft.

B-5. Techniques of Fire

The following techniques should maximize the destructive and/or deterrent effect against hostile aircraft.

a. *Engagement of Low, Slow-Speed Aircraft.* In accordance with the rule for engagement, low,

slow-speed enemy aircraft are engaged with aimed fire, employing the maximum weapon rate of fire. Aerial gunnery techniques (less lead) generally applicable to all small arms and automatic weapons are presented in FM 23-65.

b. Engagement of High-Speed Aircraft. In accordance with the rule for engagement, high-speed enemy aircraft are engaged with maximum fire aimed well in front of the aircraft and above its flight path to force it to fly through a pattern of fire. This technique is not unaimed barrage fire, but requires a degree of aimed fire. It does not, however, call for careful estimation of aircraft speed and required lead.

c. Use of Tracer Ammunition. Automatic weapons should use the highest practical proportion of tracer ammunition to enhance the deterrent or disruptive effect of the fire.

d. Massed Fire. Units should employ a massed fire technique when using small arms and automatic weapons in an air defense role.

B-6. Preparation of Standing Operating Procedures (SOP)

Command supervisory headquarters will prepare detailed SOP for identifying and engaging aircraft to include how identification is to be accomplished, weapons to be employed, techniques of fire to be used, rule for engagement, and controls to be used. Company level SOP will include, but not be limited to, and the following items relevant to engagement of aircraft with non-air defense weapons:

a. Applicability. Operators of designated weapons.

b. Relation to Primary Mission. Primary mission is never prejudiced.

c. Relation to Passive Air Defense. The necessity for aggressively engaging hostile aircraft balanced with the requirement to place in proper perspective the tactic of withholding fire to preclude disclosure of position.

d. Authority To Engage. Authority to engage attacking aircraft delegated to individual weapons operators and to engage all other hostile aircraft ordered through unit chain of command, subject to the rule for engagement and rules for withholding fire.

e. Rule for Engagement. Normally self-defense only against all attacking aircraft and those positively identified enemy aircraft which pose a threat to the unit.

f. Rules for Withholding Fire. When ordered; when not positive that aircraft are actually attacking or otherwise hostile; when friendly aircraft or troops are endangered.

g. Position Selection. (See FM 44-1.) Applicable only to weapons specifically assigned an air defense role; for example, designated single barrel, caliber-.50 machineguns.

h. Firing Techniques. Lead and superelevation; massed fire; maximum rate of fire; maximum use of tracer ammunition.

i. Unit Training Requirements. Motivation and discipline; gunnery; aircraft recognition.

B-7. Training

Individual training will stress aircraft recognition, techniques of firing at aerial targets, and response to control methods. Application of employment of non-air defense weapons against hostile aircraft will be incorporated into unit training phase, field problems, maneuvers, and other training media.

APPENDIX C
STANAG 2165,
FORECAST MOVEMENT REQUIREMENTS—RAIL, ROAD AND INLAND WATERWAYS

NATO UNCLASSIFIED

Agreed English/French Texts

STANAG 2165

DETAILS OF AGREEMENT (DofA)

FORECAST MOVEMENT REQUIREMENTS—
RAIL, ROAD AND INLAND WATERWAYS

Annexes: A(DofA). Table of Forecast Movement Requirements—
Rail, Road, and Inland Waterways.

AGREEMENT

1. The NATO Armed Forces agree to use the standard format found at Annex A for the "Table of Forecast Movement Requirements—Rail, Road and Inland Waterways".

STATEMENT OF DETAILS

2. Forecast movement requirements.

a. It is to the advantage of military authorities as soon as they have knowledge of their movement (or transport) requirements for a given period of time, to inform the military authority responsible for the organization of movements (or transport) in the originating nation (or in the originating zone in a nation) as soon as possible.

b. The requesting authority must use the format of the "Table of Forecast Movement Requirements—Rail, Road and Inland Waterways" shown at Annex A (DofA) when forwarding the essential information:

- (1) Action : To the military authority of the originating nation (or in the originating zone in a nation) in charge of the organization of movements.
- (2) Information : To the military authorities concerned of the transmitting nation and nation of destination (or the transmitting zone and zone of destination in a nation).

c. Study of the "Table of Forecast Movement Requirements—Rail, Road and Inland Waterways" will allow the military authority in charge of the organization of movements in the originating nation (or in the originating zone in a nation):

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(1) To carry out a preliminary survey on the possibilities of granting the request;

(2) To take the first steps with the military authorities of the transiting nation and nation of destination (or the transitting zone and zone of destination in a nation);

(3) To select the type of transport to be used;

(4) To inform the requesting authority;

(a) Of steps taken to satisfy his requests;

(b) Of the movements for which it will be necessary for the requesting authority to make out a "Transport Request" in accordance with the provisions of STANAG 2165.

d. The "Forecast Movement Requirements—Rail, Road and Inland Waterways" must be forwarded, if possible, in writing in at least one of the two official NATO languages. It can also be forwarded by signal or by telephone by using the code identifying the different items and columns. A specimen of the "Forecast Movement Requirements—Rail, Road and Inland Waterways" as transmitted by signal, is enclosed at Appendix 1 to Annex A (DofA).

IMPLEMENTATION OF THE AGREEMENT

3. This STANAG will be considered to have been implemented when the necessary orders/instructions bringing into use the document mentioned in the Agreement have been issued to the forces concerned.

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ANNEX A (DofA) TO STANAG 2165

CLASSIFICATION (1) ANNEX A (DofA) TO STANAG 2165

TABLE OF FORECAST MOVEMENT REQUIREMENTS - RAIL, ROAD AND INLAND WATERWAYS (Suggested Format)

For the Period of Time from(date) to (2)

FROM (Requesting Authority) (3)

TO (Competent Authority of the Originating Nation) (4)

Serial or Line Item	Refer- ence No or Nick- name	Consig- nor	AREA/POINT of depar- ture + (coordi- nates)	Consig- nee	AREA/POINT of des- tination + (coordi- nates)	Nations/ National zones concerned	Type of trans- port pre- ferred	LOADS						Rate of dis- patch	Date move- ment to com- mence	Date move- ment must be com- pleted	Prior- ities	Remarks		
								PAX Number	Type	Cate- gory or Type	Weight	Cube	Number						SPECIAL LOADS Weight of each	Class 2021 2153	Class
	ALFA	BRAVO	CHARLIE	DELTA	ECHO	FOXTROT	GOLF	HOTEL	INDIA	JUL- IET	KILO	LIMA	MIKE	NOVEN- BER	OSCAR	PAPA	QUE- BEC	SIERRA	TANGO	UNIFORM
ONE																				
TWO																				
THREE																				
FOUR																				
FIVE																				
SIX																				
SEVEN																				
EIGHT																				
NINE																				
TEN																				

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CLASSIFICATION _____ (1)

ANNEX A(MdeA) AU STANAG 2165

TABEAU DES PREVISIONS EN BESOIN DE TRANSPORTS - RAIL, ROUTE ET VOIES NAVIGABLES (Formulaire proposé)

POUR LA PERIODE DU (date)au.....(2)

DE (Autorité bénéficiaire)(3)

à (Autorité compétente de la nation d'origine)(4)

CARGAISONS																								Observations			
ZONE/POINT				ZONE/POINT		Desti- nataire		Expé- diteur		No de référence ou Appella- tion con- vention- nelle		No de série		Expé- diteur		No de référence ou Appella- tion con- vention- nelle		No de série		Expé- diteur		No de référence ou Appella- tion con- vention- nelle					
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NATO UNCLASSIFIEDAPPENDIX 1 TO ANNEX A (DofA)
TO STANAG 2165

TABLE OF FORECAST MOVEMENT REQUIREMENTS

HEADINGS	MEANING	REMARKS
1.	Classification	Enter classification of report as determined by originating agency
2.	Period of Forecast	Enter period of forecast as announced by the appropriate national authority
3.	Requesting Authority	Enter unit designation of organization responsible for submitting, e.g., 97th Signal Group
4.	Competent Authority of the Originating Nation	Enter unit designation of organization directed to receive forecast within origination nation

COLUMN	MEANING	REMARKS
	Serials/or Line Items	Use separate serial or line item number for each shipment forecast
Alpha	Reference Number or Nickname	
Bravo	Consignor	Enter specific shipping agency
Charlie	Location and Coordinates	Enter exact location and coordinates
Delta	Consignee	Enter specific receiving agency
Echo	Location and Coordinates	Enter exact location and coordinates
Foxtrot	Nation/National Zones concerned	Enter National Zones abbreviations as provided in STANAG 1059
Golf	Type of Transport Preferred	Enter preferred mode: TRK, IWW, Rail (see STANAG 2156)
Hotel/India	Number and Type Passenger	Enter number of passengers and general description. Personnel are normally listed as troops, patients, civilians, POWs and such other categories as will assist the movements personnel in selecting the mode of transportation.

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COLUMN	MEANING	REMARKS
Juliet/ Kilo/ Lima	Class of Supply and Tonnage	Enter class of supply, estimated tons and cube. The movement programmers are not normally concerned with an inventory of specific items within a class; however, items requiring special handling must be specified in the remarks column so that outstanding characteristics can be readily identified. For example, heavy lifts other than vehicles should be expressed in units, dimensions and tons for each lift.
Mike/ November/ Oscar/Papa	Special Loads	Enter number of vehicles/tanks to be moved, weight in tons for each, military classification in accordance with STANAGs 2153 (Rail) and 2021 (Road).
Quebec	Rate of Dispatch	Enter tons of cargo or number of vehicles/tanks which can be moved daily (the capacity of the shipping and receiving organization determines)
Romeo	Date Movement to Commence	Enter earliest date that movement can commence
Sierra	Date Movement must be Completed	Enter date movement must be completed
Tango	Priorities	Forecasting organization enter separate priority for each line item/serial
Uniform	Remarks	Enter any information which will assist in planning the move, e.g., heavy lifts, dangerous material, special handling, date on wheeled vehicle and passenger requirements.

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NATO UNCLASSIFIEDAPPENDIX 2 TO ANNEX A (DofA)
OF STANAG 2165MESSAGE (Specimen)
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FROM : HQ/ADVANCED BASE UK
 TO : EMG/CM TPT
 SUBJECT : TABLE OF FORECAST MOVEMENT
 REQUIREMENTS— (SURFACE RAIL,
 ROAD AND INLAND WATERWAYS)
 FOR PERIOD OF 10 JAN TO 16 JAN
 1966

PRIORITY : ROUTINE

ONE	ALFA	P/156
	BRAVO	3 REPL BN
	CHARLIE	ZEEBRUGGE ES 1486
	DELTA	9 REPL CO
	ECHO	MUNSTER MC 0558
	FOXTROT	BE/NL/GE
	GOLF	RAIL
	HOTEL	200
	INDIA	TROOPS
	JULIET	BAGGAGE
	KILO	8T
	LIMA	400 CU FT
	MIKE	NIL
	NOVEMBER	NIL
	OSCAR	NIL
	PAPA	NIL
	QUEBEC	50 PER DAY
	ROMEO	12 JAN
	SIERRA	15 JAN
	TANGO	TWO
	UNIFORM	NIL

TWO	ALFA	S/723
	BRAVO	DEPOT 603
	CHARLIE	ZEEBRUGGE ES 1486
	DELTA	ASP 503
	ECHO	MUNSTER MC 0558
	FOXTROT	BE/NL/GE
	GOLF	RAIL
	HOTEL	NIL
	INDIA	NIL
	JULIET	AMMUNITION
	KILO	5000 T
	LIMA	1500 CU METRES

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	MIKE	NIL
	NOVEMBER	NIL
	OSCAR	NIL
	PAPA	NIL
	QUEBEC	1000 T/PER DAY
	ROMEO	12 JAN
	SIERRA	16 JAN
	TANGO	TWO
	UNIFORM	NIL
THREE	ALFA	Q/415
	BRAVO	DEPOT 605
	CHARLIE	GEEL FS 4070
	DELTA	SP 505
	ECHO	RHEINDAHLEN LB 1570
	FOXTROT	BE/NL/GE
	GOLF	RAIL
	HOTEL	NIL
	INDIA	NIL
	JULIET	NIL
	KILO	NIL
	LIMA	NIL
	MIKE	10
	NOVEMBER	60T
	OSCAR	40
	PAPA	8
	QUEBEC	2 PER DAY
	ROMEO	12 JAN
	SIERRA	17 JAN
	TANGO	TWO
	UNIFORM	HEAVY LIFT REQUIRED AT DESTINATION

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APPENDIX D

**STANAG 2166,
MOVEMENTS AND TRANSPORT DOCUMENTS USED
FOR MOVEMENTS BY SHIP**

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Agreed English/French Texts

STANAG 2166

DETAILS OF AGREEMENT (DofA)
MOVEMENTS AND TRANSPORT DOCUMENTS USED
FOR MOVEMENTS BY SHIP

Enclosures: See paragraph 1 below.

AGREEMENT

1. The Nato Armed Forces agree to adopt the following documents for movements by ship between NATO Nations:

- a. STRENGTH RETURN—MOVEMENTS BY SHIP See Annex 'A' (DofA).
- b. SAILING SIGNAL—FREIGHT (VICE) See Annex 'B' (DofA).
- c. SAILING SIGNAL—TROOP TRANSPORT (VICE) See Annex 'C' (DofA).

NOTE: The following Annexes are still under preparation and will be forwarded at a later date for ratification:

- d. CARGO AND STOWAGE REPORT To be issued as Annex 'D' (DofA).
- e. STOWAGE PLAN To be issued as Annex 'E' (DofA).
- f. SHIP'S DISCHARGE BOOK To be issued as Annex 'F' (DofA).

IMPLEMENTATION OF THE AGREEMENT

2. This STANAG will be considered to have been implemented when the necessary orders/instructions, bringing into use the documents mentioned in the Agreement, have been issued to the forces concerned.

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NATO UNCLASSIFIEDANNEX 'A' to DETAILS OF AGREEMENT
of STANAG 2166

STRENGTH RETURN—MOVEMENTS BY SHIP

1. The purpose of the form "Strength Return—Movements by Ship" (Appendix 1) is to provide a summary of personnel embarked to military authorities responsible for troop transport.
2. The form may also be used for embarkation of military or military sponsored personnel travelling on commercial ships.
3. The form is supported by a nominal roll or passenger-list, which gives the personal particulars of all passengers embarked.
4. The form is amended as necessary during the process of embarkation by the Embarkation Staff Officer (ESO). When ultimately signed by him, it becomes a certificate of personnel actually embarked on the ship.
5. The Strength Return deals with personnel only. No unit equipment (other than personal) will be entered on the form. Only the number of pieces of personal baggage will be entered; separate baggage receipts will be made out.
6. Unit equipment (other than personal) will be shipped on separate cargo documents, irrespective of whether or not the cargo is loaded on the same ship as the unit.
7. A distinction will be made between male and female personnel, military and civilian, travelling under military sponsorship.
8. As certain NATO countries have special arrangements concerning time served in the tropics (between Tropic of Cancer and the Tropic of Capricorn) the dates of crossing these tropics must be entered on the form by the Embarkation Staff Officer (ESO) at the time of disembarkation. The exact information will be taken from the Master's logbook.
9. The instructions for the completion of the form and the distribution of the copies of the Strength Return will be printed on the reverse side of the form, as shown in Appendix 2.
10. The form will be printed in:
 - a. English and French, if the language of the country of origin is English or French;
 - b. The language of the country of origin and in English and French if the language of origin is not English or French.
11. The form will be printed on the standard size paper of the country concerned, approximately 30 x 20 cm (12 x 8 inches).

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NATO UNCLASSIFIEDAPPENDIX 1 to ANNEX 'A' (DofA)
OF STANAG 2166

Security Classification (1)							
<u>STRENGTH RETURN</u>							
<u>MOVEMENTS BY SHIP</u>							
On embarkation and disembarkation of (2)							
moving from (3) to (4)							
To be entered by the ESO (5)							
EMBARKED at, date							
Crossing Tropic of <u>Cancer</u> , per MV/SS, Capricorn date							
DISEMBARKED AT, date							
D E T A I L (6) (a)		Strength on departure for Port of Embark. (b)	Casualties en route for Port of Embark. (c)	Strength actually EMBARKED (d)	Casualties during sea voyage (e)	Strength actually DISEMBARKED (f)	R E M A R K S (7) (g)
MALE	Officers	
	W/Officers I	.....	.....	.....	.....	.....
W/Officers II	.....	.....	.....	.....	.....	.....
S/Sergeants	.....	.....	.....	.....	.....	.....
Sergeants	.....	.....	.....	.....	.....	.....
Corporals and below	.....	.....	.....	.....	.....	.....
T O T A L		.....	.....	.....	.....	.....
FEMALE	Officers	.....	.....	.....	.....	.....
	W/Officers I	.....	.....	.....	.....	.....
W/Officers II	.....	.....	.....	.....	.....	.....
S/Sergeants	.....	.....	.....	.....	.....	.....
Sergeants	.....	.....	.....	.....	.....	.....
Corporals and below	.....	.....	.....	.....	.....	.....
T O T A L		.....	.....	.....	.....	.....
CIVILIAN	Male	.....	.....	.....	.....	.....
	Female	.....	.....	.....	.....	.....
Children (under 10 years)	.....	.....	.....	.....	.....	.....
T O T A L		Number of pieces of baggage in the hold:
G R A N D T O T A L		.....	.....	.....	.....	.....
OC despatching unit ESO Port of EMBARK. OC unit/OC troops (8) ESO Port of DISEMB.		Name		Rank	Signature		
			
			
			
Security Classification (1)							

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APPENDIX 2 TO ANNEX 'A' (DofA)
of STANAG 2166

INSTRUCTIONS FOR COMPLETION AND DISTRIBUTION
OF THE FORM

COMPLETION

- (1) Issuing authority will insert the security classification given in the administrative or other instructions for the move for which this form is prepared.
- (2) Insert title or serial number (if applicable) of unit or portion of unit moving.
- (3) Insert station and country of departure, unless otherwise instructed.
- (4) Insert place and country of final destination, unless otherwise instructed.
- (5) To be entered by the ESO:
 - a. Port, country and date of embarkation.
 - b. Name of the vessel.
 - c. Date of crossing the Tropic of Cancer/Capricorn (delete if not appropriate), to be taken from the Master's logbook.
 - d. Port, country and date of disembarkation.
- (6) Substitute, if necessary, rank designations of the nation and service concerned.
- (7) Insert, if appropriate, particulars of any casualties.
- (8) Delete if not appropriate.

DISTRIBUTION

- a. This form will be prepared in six copies by the unit or authority responsible for assembling the personnel concerned and sending them to the port of embarkation (despatching unit). All six copies of this form will be handed to the movements staff at the port of embarkation.
- b. After completion and signing (as far as possible) of the forms the movements staff at the port of embarkation will retain two copies for its own use and deliver or forward four copies as follows:
 - (1) One copy to the officer commanding the unit or to the OC Troops;
 - (2) One copy to the despatching unit;
 - (3) Two copies to the movements staff at the port of disembarkation; these copies will be sent by different means, one of them the fastest possible.
- c. On arrival at the port of disembarkation the officer commanding the unit or the OC Troops will hand his copy (signed and amended as necessary in the event of casualties, etc.) to the movements staff at the port of disembarkation.

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REFERENCES

- a. State if necessary the specific regulations of the country of origin

- b. State if necessary the specific regulations for the movements staff of
 the country concerned at the port of disembarkation

NATO UNCLASSIFIEDANNEX 'B' to DETAILS OF AGREEMENT
of STANAG 2166

SAILING SIGNAL—FREIGHT (VICE)

1. Movements staffs at port of loading will despatch a sailing signal for each ship carrying military cargo as soon as loading has been completed. Instructions for preparing these signals are given below.

2. *Precedence*. Sailing signals will be assigned a precedence in accordance with existing NATO procedures.

3. *Security Classification*. The originator is to insert the appropriate security classification.

4. *Text*.

a. The text of the signal will clearly begin with the word "Vice" (traditional abbreviation for "Advice"). When it is not clear from either the address or the originator's number that the signal is for Movements, the text will begin "For Mov" (.) (Vice) (.)

b. The body of the signal will consist of the particulars given below, preceded by the code letter shown against each:

(A) Name of ship.

(B) Port of loading and ETD (Estimated Time of Departure).

(C) Port of discharge (if known) and ETA (Estimated Time of Arrival). If the port of discharge is not known the country of discharge will be stated.

(D) Consignee.

(E) Deadweight tonnage of stores by types, excluding those details in (F), (G) and (H) below.

(F) Appropriate description of classified equipment, ammunition and explosives with the total deadweight tonnage and stowage.

(G) Full description of cabin freight and "lock up" stores, with deadweight tonnage and full details of stowage.

(H) Full description of stores stowed on deck, with deadweight tonnage.

(J) Numbers and types of vehicles and tanks, showing separately those stowed on deck.

(K) Total deadweight of cargo including vehicles and tanks.

(L) Remarks including details of awkward and exceptionally heavy lifts (e.g. mobile vehicles and lifts exceeding the capacity of ship's derricks).

c. When copies of Movement Instructions (Freight) have been despatched so as to reach the action addressees before the possible arrival of a sailing signal, an abbreviated sailing signal will be sent in the following form:

(A)	}	As in sub-para. b. above.
(B)		
(C)		

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- (D) Does not apply.
- (E) Reference to the Movement Instructions (MI) (Freight) with details of variations, e.g.:
 - (i) MI (Freight) NoComplete
 - (ii) MI (Freight) Noless (Stores Identification No.),
or less . . . "shut out"
 - (iii) MI (Freight) Noplus (Stores Identification No.) with
full description of additional
cargo
- (F) Does not apply.
- (G) As in sub-para. b. above.
- (H) and (J). Does not apply.
- (K) } As in sub-para. b. above.
- (L) }

NOTE: When a full description is required, the following information will be given:

- Identification Number.
- Number of packages.
- Type of stores.
- Consignee.

5. *Specimen Signal—Freight (Vice)*. A Specimen Sailing Signal—Freight is given at Appendix 1 to Annex 'B' (DofA).

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APPENDIX 1 to ANNEX 'B' (DofA)
of STANAG 2166

SPECIMEN SAILING SIGNAL—FREIGHT (VICE)
MESSAGE FORM

PRECEDENCE — ACTION	PRECEDENCE — INFO	DATE-TIME-
PRIORITY	DEFERRED	GROUP
		190700 Z

FROM: PORTMOVES LONDON SECURITY CLASSIFICATION

TO : MOV ANTWERP UNCLASSIFIED
(Classified in Wartime)

INFO : WAR OFFICE Q(M)1	ORIGINATORS NUMBER
HQ BAOR	MOV 363
COMD NCG/INTER	

VICE

- (A) SS BENARTY
- (B) LONDON 19 JUN
- (C) ANTWERP 20 JUN
- (D) TKS AND B VEHS TO 5 BOD. SUPS TO 3 SRD. SIG EQPT AND MED STORES TO 12 INF BN
- (E) SUPS 120 TONS. POL 500 TONS. ORD 600 TONS
- (F) ONE CWT SIG EQPT CATEGORY ONE STOWED NO 2 TWEEN DECK LOCK-UP
- (G) ONE CWT MED STORES C/O CHIEF OFFICER CABIN
- (H) 5 TONS ENGR BRIDGING EQPT
- (J) 3 CENTURIONS NO 2 LOWER HOLD. TEN 3 TON B VEHS PORT AND STARBOARD OF NO 1 HATCH
- (K) 895 TONS 2 CWT
- (L) LOCO BOILER DW 35 TONS STOWED NO 1 LOWER HOLD BEYOND CAPACITY OF SHIPS' DERRICKS.

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ANNEX 'C' to DETAILS OF AGREEMENT
of STANAG 2166

SAILING SIGNAL—TROOP TRANSPORT (VICE)

1. Movements staffs at ports of embarkation will ensure that a signal is despatched to all concerned, as soon as possible after the sailing of a ship on which Forces or Forces sponsored passengers have been embarked. Instructions for preparing these signals are given below.
2. Precedence. Sailing signals will be assigned a precedence in accordance with existing NATO procedures.
3. Security Classification. The originator is to insert the appropriate security classification.
4. Text.
 - a. The text of the signal will clearly begin with the word "Vice" (traditional abbreviation for "Advice"). When it is not clear from either the address or the originators number that the signal is for Movements, the text will begin "For Mov". (Vice).
 - b. The body of the signal will consist of the particulars given below, preceded by the code letter shown against each:
 - (A) Name of ship.
 - (B) Port of Embarkation and ETD (Estimated Time of Departure).
 - (C) Port of Disembarkation and ETA (Estimated Time of Arrival).
 - (D) Numbers of passengers on board by categories.
 - (E) Destination of passengers.
 - (F) Tonnage of baggage by categories and stowage. (This may be the subject of a separate signal if desired).
 - (G) Remarks including medical assistance required on disembarkation, prisoners etc.
5. If necessary, sailing signals may be compiled in several parts, each relating to one port of call.
6. *Specimen Sailing Signal—Troop Transport (Vice)*. A Specimen Sailing Signal—Troop Transport (Vice) is given at Appendix 1 to Annex 'C' (DofA).

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APPENDIX 1 to ANNEX 'C' (DofA)
of STANAG 2166

SPECIMEN SAILING SIGNAL—TROOP TRANSPORT (VICE)

MESSAGE FORM

PRECEDENCE—ACTION	PRECEDENCE—INFO	DATE-TIME-
ROUTINE	DEFERRED	GROUP
		190600 Z

FROM: EMBARKING LIVERPOOL SECURITY CLASSIFICATION

TO : MOV ANTWERP UNCLASSIFIED
(Classified in Wartime)

INFO : WAR OFFICE Q(M)2
HQ BAOR
COMD NCG/INTER

ORIGINATORS NUMBER
MOV 12

VICE

- (A) EMPIRE WANSBECK
- (B) LIVERPOOL 190545Z
- (C) OSTENDE 200400Z
- (D) MALES: OFFICERS 50. WO AND SGTS 100. CPL & BELOW 700.
FEMALES: OFFICERS 10. WOs AND SGTS 30. CPL & BELOW 70.
FAMILIES/DEPENDENTS: 1ST CLASS 40. 2ND CLASS 60. 3RD
CLASS 100.
- (E) MALES TO TRANSIT CAMP OSTENDE. FEMALES TO HOSTEL
BRUSSELS.
- (F) 50 TONS TO OSTENDE. 10 TONS TO BRUSSELS. STOWED No. 2
HOLD.
- (G) AMB REQUIRED FOR 6 FEMALE CASUALTIES.

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APPENDIX E

STANAG 3465,
SAFETY EMERGENCY AND SIGNALLING PROCEDURES FOR
TACTICAL AIR TRANSPORT OPERATIONS

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Original French/English Translation

STANAG 3465
(Edition No. 3)

DETAILS OF AGREEMENT (DofA)
SAFETY EMERGENCY AND SIGNALLING PROCEDURES FOR
TACTICAL AIR TRANSPORT OPERATIONS

Annexes: A (DofA)—Safety Perimeter and Vehicle Access Routes to Transport Aircraft.

B (DofA)—Warning Signals and Signals of Execution for Emergency Procedures. (Not included in this copy.)

AGREEMENT

a. Safety on the Ground.

For each type of aircraft, a safety perimeter must be defined and forbidden to all personnel not taking part in the maintenance, supplying and loading operations.

a. Safety Perimeter. Annex A shows a typical safety perimeter.

b. Vehicle Traffic.

(1) All traffic on the airfield will be regulated according to a traffic plan. The maximum speed of vehicles must be indicated by signposts on congested or dangerous routes.

(2) The movement of vehicles is forbidden within the safety perimeter except for supply, loading or unloading operations. A diagram for approach and clearing by vehicles is shown in Annex A—Safety Perimeters.

c. Loading, Unloading and Supplying of Aircraft.

(1) In order to avoid any damage to the aircraft, the loading and unloading operations must be carried out under the control of a competent representative of the Air Transport Unit with experienced personnel and appropriate equipment.

(2) Special attention must be given to the movement of vehicles within the safety perimeter. In all cases chocks will be placed at such a distance that the vehicle cannot damage the aircraft.

(3) The loading and unloading of heavy or bulky loads must be carried out with special precautions.

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d. *Fire Risks.*

(1) It is essential that all fire risks be eliminated on the hard standings. Any flame must be prohibited within 30 metres of the safety perimeter. Smoking will be prohibited within the same area.

(2) Fire extinguishing equipment (extinguishers, sand) must be placed in conspicuous positions near the hard standings.

e. *Explosives, Ammunition, Dangerous Cargoes.*

(1) Those must be stocked at the prescribed safety distance (where applicable) from the hard standings.

(2) The handling of this type of cargo must be carried out with the prescribed precautions. See STANAG 3327, Air Transportation of Dangerous Cargo.

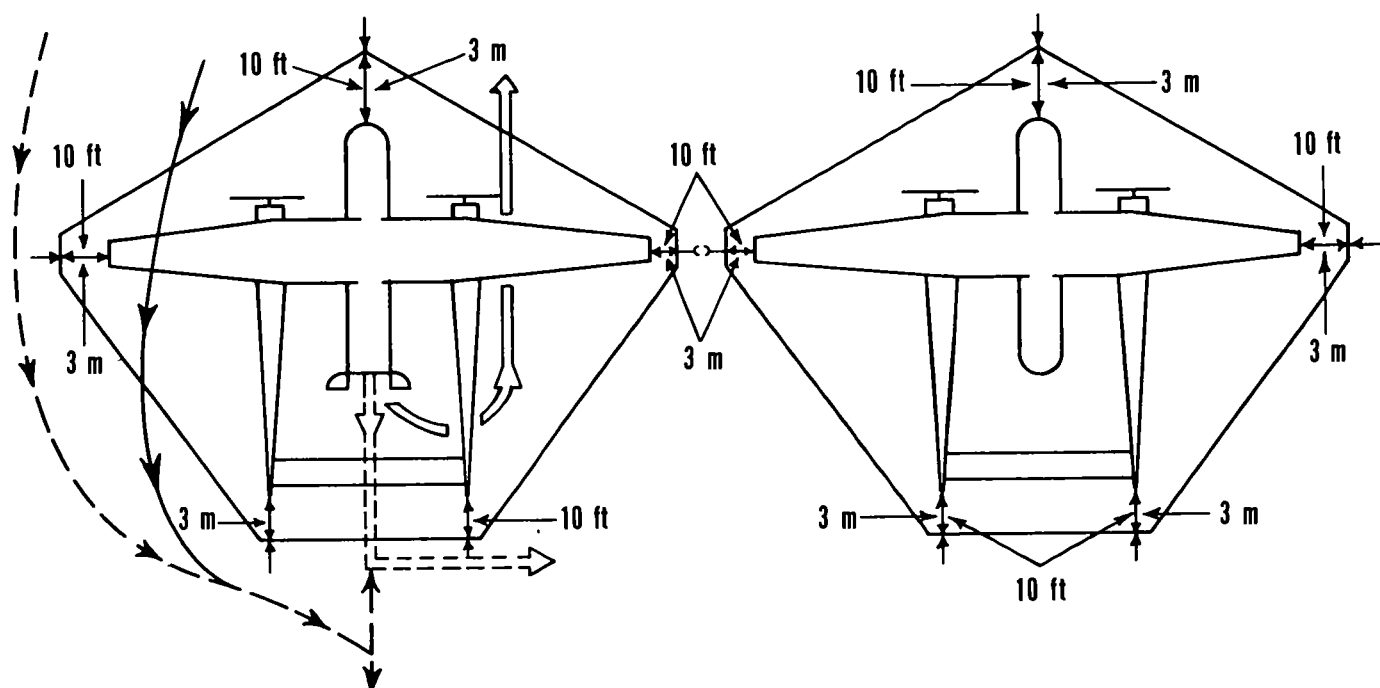
(3) The air transport unit will ensure that aircraft are properly earthed (grounded) to provide for electrical discharge.

* * * * *

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ANNEX A TO STANAG 3465



- Approche autorisée - Authorized approach to the aircraft
- ==⇐== Degagement autorisé - Authorized exit path from the aircraft
- Approche interdite - Forbidden approach path to the aircraft
- ==⇐== Degagement interdit - Forbidden exit path from the aircraft

m = metres ft = feet

SAFETY PERIMETER AND VEHICLE ACCESS ROUTES TO TRANSPORT AIRCRAFT
PERIMETRE DE SECURITE ET SCHEMA D'APPROCHE ET DE DEGAGEMENT DES VEHICLES

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INDEX

	Paragraph	Page
Air terminal operation division level	12-5 <i>d</i>	12-4
Air terminals	12-5 <i>a-h</i>	12-4, 12-5
Amphibious operations	1-2 <i>d</i> ,	1-2,
	10-1 <i>a</i> —10-6 <i>e</i>	10-1—10-3
Area defense and rear area protection operations	8-12 <i>a-c</i>	8-10
Army air terminals and Air Force cargo transfer operations	12-5 <i>a</i>	12-4
Army air terminals in corps and field army rear area	12-5 <i>b</i>	12-4
Army aircraft in local distribution operations	12-5 <i>c</i>	12-4
Assignment of terminal transfer companies	12-5 <i>e</i>	12-4
Beach management	9-7 <i>a-j</i>	9-6
Beach operations	6-3 <i>b</i>	6-1
Beach selection, limitation, capacity	9-3 <i>a-e</i>	9-3, 9-4
Beach transfer points	9-4 <i>a-b</i>	9-3, 9-4
Cargo clearance	8-6 <i>a-e</i>	8-4, 8-5
Communications	8-11	8-9
Communications security considerations	2-6 <i>a-c</i>	2-4
Defense, non-air	App B	B-1
Documentation	8-8 <i>a-d</i> ,	8-6, 8-7,
	12-10 <i>a-d</i>	12-6, 12-7
Estimating throughput capacity	8-3 <i>a-c</i>	8-2
Expediting unloading operations	9-8 <i>a-e</i>	9-6
Floating craft maintenance	8-9 <i>a-e</i>	8-8
Inland terminal operations	12-1—12-4	12-1—12-3
Inland terminals	1-2 <i>g</i> , 2-8, 2-9	1-2, 2-6
Inland water terminals	12-8, 12-9	12-6
Inland waterway operations	1-2 <i>f</i> ,	1-2,
	11-1—11-5	11-1, 11-2
Intermediate staging area	1-2 <i>h</i> ,	1-2,
	13-1—13-4	13-1, 13-2
Logistics over the shore	1-2 <i>c</i> ,	1-2,
	9-1—9-2	9-1, 9-2
Motor transport terminals	12-6 <i>a-c</i>	12-5
Personnel moves	8-10 <i>a-b</i>	8-8, 8-9
Port terminal operations	1-2 <i>b</i> , 8-1—8-2	1-1, 8-1
Rail terminals	12-7 <i>a-e</i>	12-5, 12-6
Ship destination meeting	8-4 <i>a-d</i>	8-2, 8-3
Shore-to-shore operations	1-2 <i>e</i> , 9-9	1-2, 9-6
Temporary holding areas	9-5 <i>a-c</i>	9-5
Theater army support command organization	2-1—2-5	2-1—2-3
Transportation terminal battalion	5-1—5-4	5-1
Transportation terminal brigade	3-1—3-4	3-1
Transportation terminal group	4-1—4-4	4-1
Transportation terminal service company	6-1—6-4	6-1, 6-2
Transportation terminal transfer company	7-1—7-3	7-1, 7-2
Traffic control	9-6 <i>a-f</i>	9-5
Type terminal operations	1-2	1-1
Vessel loading	8-7 <i>a-g</i>	8-5
Vessel unloading	8-5 <i>a-d</i>	8-3, 8-4



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By Order of the Secretary of the Army:

Official:

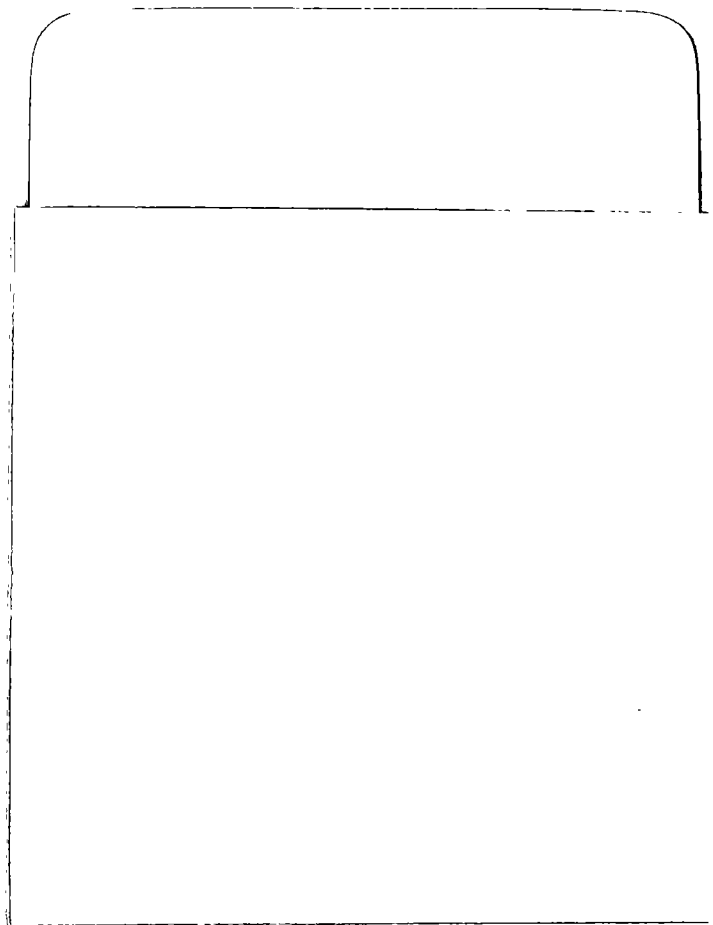
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*Major General, United States Army,
The Adjutant General.*

W. C. WESTMORELAND,
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