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JOINT TACTICS, TECHNIQUES, AND PROCEDURES FOR WATER TERMINAL OPERATIONS

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JOINT TACTICS, TECHNIQUES, AND PROCEDURES FOR
WATER TERMINAL OPERATIONS

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JOINT TACTICS, TECHNIQUES, AND PROCEDURES FOR WATER TERMINAL OPERATIONS

PREFACE

1. Purpose. This publication contains joint tactics, techniques, and procedures (JTTP) for the conduct of water terminal operations. It covers command responsibilities and relationships and the planning and execution for the establishment and operation of water terminals in support of joint operations.

2. Application

a. The JTTP in this publication are applicable to joint force commanders (JFCs) and to their subordinate component commanders. These JTTP may also apply when significant forces of one Service are attached to forces of another Service, or when significant forces of one Service support forces of another Service. This publication is authoritative but not directive. Commanders will exercise judgment in applying the procedures herein to accomplish their missions. The JTTP should be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence for activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the Joint Chiefs of Staff, has provided more current and specific guidance.

b. In applying the principles and doctrine set forth in this publication, care must be taken to distinguish between distinct but related responsibilities in the two channels of authority to forces assigned to combatant commands. The Military Departments and Services recruit, organize, train, equip, and provide forces for assignment to combatant commands and administer and support these forces. CINCs exercise Combatant Command (command authority) over these assigned forces. Service component commanders are responsible both to JFCs in the operational chain of command and to the Military Departments and Services in the chain of command for matters that the joint force commander has not been assigned authority.

3. Scope. This publication addresses the requirements and responsibilities and provides guidelines for operation of water terminal facilities in support of a US joint force.

4. Basis. The following is a list of the laws, directives, policies, and procedures that provide the basis for developing this publication.

a. Title 10, United States Code, as amended by the DOD Reorganization Act of 1986.

b. DOD Directive 5100.1, "Functions of the Department of Defense and Its Major Components."

c. Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)."

d. Joint Pub 1-01, "Joint Publication System: Joint Tactics, Techniques, and Procedures Development Program."

e. Joint Pub 1-02, "DOD Directory of Military and Associated Terms."

f. Joint Pub 4-0, "Doctrine for Logistic Support of Joint Operations."

g. Joint Pub 4-01 (formerly JCS Pub 15), "Doctrine for the Defense Transportation System."

h. DOD Directive 4000.25, "Administration of Defense Logistics Standard System."

TABLE OF CONTENTS

CHAPTER I

WATER TERMINALS OVERVIEW

1. Purpose. This chapter contains an overview of the establishment and employment of water terminals in support of joint operations. It defines command relationships and discusses key definitions to facilitate an understanding of the doctrinal concepts presented in subsequent chapters. The chapter also presents the responsibilities of supporting and supported theater combatant commanders. It concludes by summarizing the responsibilities of component commanders and the Service capabilities to operate water terminals.

2. General. Water terminals are key nodes in the total distribution system that must be established to ensure the success of a military operation. Historically, approximately 85 to 95 percent of the unit equipment and sustainment cargo is moved into a theater or area of operations using sealift and is offloaded through existing seaports or water terminals. Water terminals are absolutely vital to deploying and sustaining a joint force and could be among the initial key objectives seized during a forcible entry. Water terminal selection must consider all relevant factors because sustainment will hinge heavily on the water terminal's effectiveness. Without adequate water terminals, a theater combatant commander's deployment, employment, and sustainment concepts may become insupportable.

3. Command Authority. The provisions of Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)," will be followed when establishing command authority relationships relating to the operation of water terminals. Theater combatant commanders exercise COCOM over assigned forces. COCOM includes the authority to give direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command. Theater combatant commanders are responsible for maintaining an effective distribution network throughout the spectrum of operations and for prescribing policies and procedures relating to that distribution network. Thus, theater combatant commanders have overall responsibility for water terminal operations within their theaters. The theater combatant commander may delegate this responsibility to subunified commanders or joint task force (JTF) commanders in the conduct of their assigned missions.

4. Selection and Operation of Water Terminals. The selection and operation of water terminals within the continental United States (CONUS) is the responsibility of the Commander in Chief,

US Transportation Command (USCINCTRANS). The selection and operation of water terminals in an overseas theater or area of operations is the responsibility of the theater combatant commander. However, the theater combatant commander may opt to enter into a command arrangements agreement (CAA) with USCINCTRANS, to allow the US Transportation Command (USTRANSCOM) to operate some or all water terminals in its theater or area of operations.

5. Categories of Water Terminals. Water terminals can be categorized based on three main characteristics: physical facility, commodity handled, and methods for cargo handling.

a. Physical Facility. The three types of terminals based on the physical facility are:

(1) Fixed. Fixed water terminals are where deep-draft vessels come alongside for berthing and discharge cargo directly onto a wharf, pier, or quay. The cargo is then moved to in-transit storage areas to await terminal clearance or loaded directly onto surface transport for onward movement. Fixed terminals are generally characterized by a high degree of sophistication in facilities, equipment, and organization to support cargo handling and port clearance operations. They are the most capable terminals for handling large volumes of equipment and containerized cargo. In any military operation of meaningful size, the theater combatant commander must strive to acquire or develop fixed facilities for mission accomplishment.

(2) Unimproved Facility. An unimproved water terminal is a site not specifically designed for cargo discharge. It does not have the facilities, equipment, or infrastructure of a fixed water terminal. An unimproved water terminal facility lacks sufficient water depth, materials handling equipment (MHE), and berthing space to accommodate deep-draft cargo vessels. Vessels could be anchored in the harbor and shallow draft lighterage used to accomplish load and discharge operations. These terminals are normally established when fixed water terminals are not available or to increase throughput to meet increasing requirements of the joint force.

(3) Bare Beach. For this type of operation, lighterage is used to offload ships, and cargo is moved across a beach or to the shore. Beach facilities require specifically selected sites to enable lighterage to move cargo to or across the beach into marshaling yards or onto clearance transportation. Bare beach operations are conducted under less than desirable conditions, and their establishment requires significant engineer

support to prepare access routes to and from the beach. Bare beach facilities should be established only when no other terminal facilities are available and should not be relied upon to support major military operations for significant periods of time (in excess of 60 days). This type operation is discussed in detail in Joint Pub 4-01.6, "Joint Logistics Over the Shore (JLOTS)."

b. Commodities Handled. Individual water terminals are categorized by the types of cargo handled at a specific terminal. The special requirements for handling ammunition, explosives, bulk fuel, and other hazardous cargo must be carefully planned. Constant coordination is needed between terminal commanders and receiving units concerning inspections, unloading, clearance, courier service, safety, and special security requirements to deal with ammunition and other hazardous cargo. Provisions must be made for classified storage facilities, and personnel must be properly cleared for handling classified cargo. Additionally, bulk fuel ships will normally dock at special fuel unloading facilities; however, they may also be discharged at offshore anchorages using specialized equipment.

c. Methods for Cargo Handling. Water terminals are categorized by the type of cargo-handling capability being employed. These handling capabilities are:

(1) Container. Containerization is the term used to describe the transportation of goods in standardized boxes or containers (usually 8-feet wide by 8-feet high by either 20- or 40-feet long) so that shipments may be unitized and thereby reduce handling costs and increase cargo security during movement. In general, a significant infrastructure (cranes, specialized MHE and secure open storage space) is required in the container terminal to receive, handle, store, and dispatch containerized cargo. The most significant infrastructure element is the large gantry-type container-handling crane used to load and discharge ships. Because of this extensive infrastructure requirement, container terminals are usually fixed facilities. However, containers may be moved using a vessel's organic cranes (e.g., from a self-sustaining container ship or by a auxiliary crane ship). In these cases, shore cranes are not required. When using container-handling cranes at a fixed-terminal facility, loading or discharge rate can approach 600 containers per crane per day. Ships loading or discharging cargo frequently employ two or more container gantry cranes simultaneously. These

terminals can handle all types of nonbulk dry cargo and some dry and liquid bulk cargos in specially configured containers. When operationally feasible and the tactical situation allows, container operations are the preferred method for handling cargo through a water terminal, especially when large volumes are required for sustainment operations. Container management and onward movement may have negative impact on operations and must be balanced with other logistic considerations (See Joint Pub 4-0, Chapter IV).

(2) Roll-On/Roll-Off. Roll-On/Roll-Off (RO/RO) operations use ships designed to carry vehicles. Vehicles may either be driven or towed on and off ships. RO/ROs are the preferred method of transporting vehicular unit equipment overseas. Because of the requirement for parking large numbers of vehicles, RO/RO terminals should ideally have sufficient open hard surface storage space, wharfs, piers, or quays with wide aprons and fixed facilities. A RO/RO discharge rate of approximately 4,000 square feet or 350 measurement tons (MTONs) of vehicles per hour is normal. For an equivalent square footage, heavy tracked vehicles take longer to load or discharge than light nontactical vehicles. Loading operations at a RO/RO terminal may take up to twice as long as the discharge operation, depending on the familiarity of terminal personnel with the characteristics and operation of military vehicles. Many RO/RO terminals can handle containerized cargo.

(3) General Cargo. General cargo (breakbulk) are those items loaded aboard a ship and handled in their basic shipping package or configuration. Individual packages or shipping units may be palletized or otherwise unitized for ease in handling but not loaded into a standard shipping container as described above. On the average, breakbulk terminals can handle up to 2,500 measurement tons (MTONs) of cargo each day per ship. As a minimum, the berth should (a) have an apron for the full length of the ship, (b) be sufficiently wide to support MHE operations, and (c) provide sufficient covered storage to protect the cargo until it is loaded aboard ship or surface transportation is available for onward movement to its destination. General cargo (breakbulk) is a time-consuming, MHE-dependent, and manpower-intensive method of handling cargo.

(4) Lighterage. This cargo handling method involves using self-propelled and towed floating craft to carry cargo between a ship at anchor and a fixed, unimproved, or bare beach facility. Lighterage operations are inherently hazardous, complex, time consuming, manpower

intense, and may involve cargo in containers, RO/ROs, or breakbulk configurations. This method should be used only when no other capability is available, when moving cargo through inland waterways to inland terminals, or to augment other ongoing cargo-handling operations. Some equipment used to perform these operations include lighter aboard ship (LASH) and sea barge (SEABEE) barges, commercial self-propelled and towed barges, Army and Navy landing craft, and air cushion vehicles.

6. Responsibilities of USCINCTRANS. USCINCTRANS is responsible for providing designated theater combatant commanders with strategic transportation support to deploy and sustain their forces. This support is normally developed while following the deliberate or crisis action planning process of the Joint Operation Planning and Execution System (JOPES). Part of this planning involves the routing of units and cargo to USCINCTRANS designated ports of embarkation (POEs). The POEs are selected by USCINCTRANS in coordination with the supported and supporting combatant commanders and the Chairman of the Joint Chiefs of Staff. The responsibilities of USCINCTRANS also include developing a system to assist the combatant commander in tracking the movement of units and supplies into the theater or area of operations. USTRANSCOM's Global Transportation Network (GTN), as it interfaces with JOPES, will provide the CINC with the force tracking and in-transit visibility support capability. USCINCTRANS uses its transportation component commands (TCCs), Air Mobility Command (AMC), Military Sealift Command (MSC), and Military Traffic Management Command (MTMC) to execute these tasks. MSC and MTMC are the USTRANSCOM TCCs directly involved with sealift and water terminal operations.

a. Military Sealift Command. MSC is the naval component command of USCINCTRANS and is responsible for common-user ocean transportation operations. MSC is responsible for the preparation of employment plans for and the expansion of MSC common-user sealift transportation in time of war and/or national emergency. MSC has Military Sealift Command Offices (MSCO) at many CONUS and some overseas POEs. Other MSCOs may be established in time of conflict both in CONUS and overseas, as directed by USCINCTRANS. Each MSCO is responsible for coordinating the arrival, loading or discharge, and departure of vessels under the operational control (OPCON) of MSC with the water terminal commander. Joint Pub 4-01.2, "JTTP for Sealift Support of Joint Operations," contains more information on the operations of MSC.

b. Military Traffic Management Command. MTMC is the USTRANSCOM Army component command and also a major Army command (MACOM). MTMC provides traffic management, CONUS-based surface transportation, strategic seaports, designates the sea ports of embarkation (SPOE) for all CONUS terminals, and mandates unit cargo arrival times at SPOEs. Additionally, MTMC serves as the point of contact for obtaining and contracting commercial containers. MTMC may establish a memorandum of understanding (MOU) with Service component commanders to identify port support activities (PSAs) or augment Service-unique water terminal organizations.

7. Responsibilities of the Supported Joint Force Commander

a. The supported combatant commander is responsible for identifying the deployment and sustainment requirements of the joint force to accomplish the tasks assigned by the National Command Authorities (NCA). These requirements are usually identified through the joint planning process. As a part of this process, the combatant commander develops a theater or area of operations total distribution system for the reception, onward movement, and sustainment of the force. The combatant commander selects, in coordination with component commanders and USTRANSCOM, the water terminals and units to operate these facilities. Water terminal operations forces are normally organized along Service functional lines. The Army component is normally responsible for water terminal operations in theater and its transportation system is specially designed to provide command and control of operating units responsible for terminal services. The size of the designated SPOD, the CINC's deployment flow requirement, and the availability of host nation (HN) support will normally determine the port commander and subordinate terminal units required. Where HN or contract labor is assured, the combatant or JTF commander may direct the establishment of a CAA with USTRANSCOM for MTMC to open and operate port in theater. However, the selection of a water terminal commander is a prerogative of the combatant or JTF commander, and is normally based on the capabilities of a component to operate water terminals, together with the deployment and sustainment requirements of the entire force. Finally, the combatant commander may augment water terminal operations with personnel through coordination with USTRANSCOM.

b. The integration of the total theater transportation system can be maintained through a designated Joint Movement Center (JMC) or activity. The JMC will exercise operational control of all nodes of the transportation system to include SPOD, APOD, JLOTS (if employed), highway, rail, and pipeline operations in theater. The JMC will ensure that the transportation network is adequately established in the COMMZ and

readied for expansion throughout the combat zone as the theater matures. The JMC commander will be responsible to the JTF commander or J-4 as directed by the combatant commander. The JMC will prioritize movements among the different intratheater modes in accordance with the combatant commander's requirements and will advise the commander on the types and flow of logistic units into the theater. Detailed organization and responsibilities of the JMC are delineated in Joint Pub 4-01.3, "Joint Tactics, Techniques, and Procedures for Joint Movement Control."

c. The Water Terminal commander may also be designated as the Joint Logistics Over the Shore (JLOTS) commander. Where naval amphibious operations are employed, the Navy officer in tactical command will normally be the initial JLOTS commander until the transition from amphibious assault to JLOTS is complete. At that time, the combatant commander or JTF commander would designate a JLOTS commander. Detailed organization and responsibilities of the JLOTS commander are contained in Joint Pub 4-01.6, "Joint Tactics, Techniques, and Procedures for Joint Logistics Over the Shore." The water terminal and JLOTS commanders are responsive to the JMCC for priorities and guidance.

d. Designation of port support activities (PSAs) or Service-unique water terminal organizations are elements to be considered by the combatant commander. For example, PSAs are ad hoc organizations, usually established by the deploying and receiving force in coordination with the water terminal commander at the seaport of embarkation (SPOE) or seaport of debarkation (SPOD). The PSA performs limited maintenance on deployable equipment and provides operators for unique equipment. The PSA is usually placed under the OPCON of the water terminal commander. Detailed information on how PSAs are used can be found in subparagraph 12b of Chapter II.

e. The combatant commander must also ensure that an Ocean Cargo Clearance Authority (OCCA) is established for the theater. The OCCA, working with the component movement control activities, is responsible for the required coordination to effect the movement of cargo destined for retrograde or redeployment sealift to CONUS or other overseas areas. If the combatant commander opts for USTRANSCOM to operate the ports in the theater or area of operations, MTMC will perform the OCCA functions at each terminal for which it has responsibility.

8. Responsibilities of the Supporting Joint Force Commander. A requirement may develop for one combatant commander to support another. Usually, this support involves assistance in deployment and sustainment. The supporting combatant commander follows the procedures explained above when establishing and operating water terminals outside the continental United States (OCONUS).

9. Responsibilities of the Service Component Commanders. The Service component commanders develop supporting plans to achieve the objectives of the combatant commanders. When developing these plans, Service component commanders recommend concepts of operation for water terminals to support the overall strategy. These recommendations establish how these terminals are to be staffed and operated. Normally, Service component commanders provide the resources to staff PSAs or Service-unique water terminal organizations. Appendix A contains details on unit capabilities, by Service, to support water terminal operations.

CHAPTER II

WATER TERMINAL OPERATIONS PLANNING

1. Purpose. This chapter addresses planning for the operation of water terminals during joint operations. It begins at the strategic level and concludes with considerations applicable at the terminal unit level.

2. General. To efficiently accomplish the mission of placing personnel and materiel where and when needed, water terminal operations must be planned and coordinated to consider cargo flow from origins to destinations in the theater. Water terminal operations have a major impact on the transportation system because movements go through the SPOE to the theater SPOD terminals. The reverse is true during redeployments. Vessel discharge and port clearance are key elements in planning to ensure the smooth flow of cargo and passengers. When rapid offload and harbor clearance are critical operational factors, cargo should be containerized, or at a minimum, palletized to the maximum extent possible to speed up handling and consolidation for direct movement to the ultimate receiving activity. Water terminal operators must be alert to these capabilities and their fluctuations when planning terminal operations.

3. Joint Operational Planning at the Strategic Level. Joint operational planning is conducted within the operational chain of command that extends from the NCA to the combatant commanders and is primarily the responsibility of the Chairman of the Joint Chiefs of Staff and the combatant commanders. Joint operational planning is accomplished using deliberate and crisis action procedures and includes the preparation of joint operation plans (OPLANs) by the combatant commanders, as well as those joint planning activities that support the preparation of OPLANs by providing for strategic direction and integration with the functions of the military departments and Services. The Joint Pub 5 series establishes the joint planning process. Joint Pub 5-0, "Doctrine for Planning of Joint Operations," establishes doctrine and general principles. The Joint Pub 5-03 series explains the JOPES. Specific applications for transportation at this level are found in Joint Pub 4-01, "Joint Doctrine for the Defense Transportation System." The strategic level of planning establishes the context in which the combatant commander identifies requirements for seaports where water terminals will need to be operated.

4. Joint Force Staff Planning. A determination as to numbers, types, and locations of terminals within the theater or area of operations results from staff planning at several levels. Planning would typically involve the joint force staff and

Service components, in coordination with USTRANSCOM and its TCCs. Terminal planning normally includes the following processes:

a. Computation of the time-phased terminal workload required to support the operation, expressed as cargo tonnage (STONs) per day and square footage of vehicular cargo per day.

b. Estimation of time-phased terminal throughput capacity, which is the tonnage that can be received, processed, or cleared through the terminal per day.

c. Estimation of time-phased construction requirements for repair and rehabilitation of facilities and construction of new facilities to increase terminal capacity to the required terminal workload. It should be noted that major repair, maintenance, and construction of water terminals is an extremely time and resource intensive process that may not be responsive to a rapidly developing crisis. The combatant commander should evaluate carefully the time required to perform rapid repair, rehabilitation, or upgrade of water terminal facilities to achieve significant water terminal throughput capability.

d. Estimation of time-phased equipment requirements to ensure sufficient equipment availability to process the required workload through the terminal with maximum efficiency.

e. Estimation of time-phased personnel requirements for units and individuals needed for administration and operation in processing the required workload through the terminal.

Water Terminal Planning

a. General Considerations. General considerations for water terminal planning are:

(1) Geophysical Characteristics of Theater. Water terminal planning requires a study of the geophysical characteristics of the theater or area of operations. Factors to be considered include the physical characteristics and layout of the port and/or beach, the logistic support requirements as determined by the overall concept of operations, the relative locations of highway and inland waterway networks, and the locations of supported and supporting units.

(2) Steps in Water Terminal Planning. Water terminal planning involves six basic steps, with each step developing logically from the preceding one.

(a) Determine the type or category of existing terminals (e.g., container, RO/RO, breakbulk, special commodity (ammunition), bulk fuel, or a composite capability for multipurpose or combi-terminals).

(b) Estimate the existing terminal throughput capacity. This is the estimated total tonnage, equipment square feet, number of personnel, and containers that can be received, processed, and cleared through the terminal in a day. (A day is considered to be two 10-hour shifts plus two 2-hour maintenance periods.)

(c) Review the terminal workload that supports the operation. The workload is expressed as numbers of personnel, vehicles, containers, STONs, and square feet of equipment for noncontainerized cargo. This computation includes the total tonnage and number of personnel and containers that must be received, processed, and cleared through the terminal per day.

(d) Determine, when appropriate, the time and resources required to improve, repair, and rehabilitate existing facilities and/or new construction needed to increase existing terminal throughput capacity to equal the estimated terminal workload.

(e) Estimate the requirements for MHE and other items, such as tugs, barges, and floating cranes and the operating personnel. It should be noted that to meet such requirements, it may be necessary to deploy a quantity of tugs, barges, and/or floating cranes. Such deployment usually requires the use of specialized heavy-lift shipping that may not be immediately available.

(f) Estimate the number of transfer units, individuals, and supervisory and command elements required to operate the terminal. Security personnel should also be included if military police or host nation support (HNS) is not available.

(3) Basic Factors in Planning Discharge Operations. Ship type and transfer unit discharge rates determine the personnel requirements in subparagraphs (2)(e) and (2)(f) above.

b. Operational Planning. The combatant commander decides, during this planning stage, the concept that the joint force will use to staff and operate the water terminals. This decision usually involves not only the location of the water ports, but how and who will operate the water terminals; i.e. joint, single Service, combination, or USTRANSCOM. The campaign plan, developed by the combatant commander, guides this decision. Once selected, terminal units begin their detailed planning effort. Appendix B contains a list of considerations that should be followed by the terminal commanders to ensure a well-executed discharge operation. These considerations are applicable regardless of the method used by the combatant commander to exercise command and control of the water terminals.

6. Deployment Phases. The different phases reflect changes in type and volume of cargo that are more efficiently handled by different types of water terminals. The four deployment phases are: initial or surge, tactical resupply, sustained resupply, and build-down or redeployment.

a. Initial or Surge Phase. This phase is almost entirely dedicated to the movement of deploying units with their unit equipment, vehicles, etc., and accompanying supplies. This phase will rely predominantly on RO/RO and breakbulk cargo terminals. A very important factor during this phase is that deploying units require a high level of unit integrity of their personnel, unit equipment, and accompanying supplies. A key consideration during this phase is that the military terminal organization will also be in its early stages of development and will be unable, by itself, to handle large volumes of cargo. This development stage may be shortened by the early activation and employment of Reserve component water terminal operation units. Significant reliance will be placed on the existing commercial water terminal infrastructure and HNS to handle cargo during this phase. Unimproved or bare beach and/or LOTS facilities may be used during this phase as operational circumstances require, but fixed water terminal facilities are greatly preferred, even where they are only marginally operational.

b. Tactical Resupply. This phase occurs when the water terminals must support the minimum-essential materiel levels (readiness) as well as the ability to initiate combat operations. During this phase, the combatant commander may begin to operate and develop existing water terminal facilities and land transportation nets in a dedicated mode. However, early in this phase, the theater will not be able to support large volumes of cargo (either containerized or noncontainerized) without significant HNS. This phase's level of deploying unit moves normally decreases with an associated reduction in the number of vehicles being handled.

Some use of unimproved facilities and limited use of bare beach and/or LOTS facilities may be required, based on operational circumstances. To avoid discharge bottlenecks or constraints on operational reach of combat forces, bare beach and/or LOTS use must be minimized, with a strong emphasis by the combatant commander on the use of fixed water terminal facilities.

c. Sustained Resupply. This phase occurs when the water terminals must support the materiel levels necessary to sustain those forces engaged in combat operations, while building a theater war reserve supply level. Bottlenecks occur when a combatant commander's water terminals and theater transportation net are not able to receive and process large volumes of cargo (both containerized and noncontainerized) for onward movement to their final destination. During this phase, reliance on unimproved or bare beach and/or LOTS facilities must be avoided because they will seriously reduce overall theater cargo throughput capacity and, thereby, the ability to support major land, air, and naval forces.

d. Build Down or Redeployment. This phase includes the transfer of units, personnel, or supplies deployed to one area of operations or theater to another theater or back to CONUS. During the tactical and sustained resupply phases, planning for terminal operations to support this phase must be conducted. These plans must consider the prevention of port congestion, means to minimize the effects of port congestion on terminal throughput should it occur, and efficient scheduling to enable simultaneous inbound and outbound cargo operations to be conducted, if required.

7. Cargo Considerations. The amount of containerized, breakbulk, and vehicular cargo greatly influences the transportation plan. In peacetime, the estimated ratio of containerized to noncontainerized cargo is four to one. Return of empty containers within detention-free time allowances must be considered as well as storage of empty containers. In wartime, the large volume of unit equipment to be deployed will initially reverse this ratio; however, as the theater matures, the original ratio will return. Packaging dictates a need for specialized equipment and trained personnel. Cargo handlers may be required to load or off load heavy, outsize, or special cargo. Some cargo requires covered storage sites. Dangerous or hazardous cargo requires careful handling, segregation, or possibly a separate and isolated terminal. A great amount of ammunition will be transported through water terminals, and the transportation planner must evaluate the terminal operation plan and project which areas will handle shipments of ammunition and other hazardous cargo.

Appropriate quantity-distance arcs must be computed based on the net explosive weight of ammunition moving through the port. Ammunition requires special equipment (explosion-proof or spark-proof MHE) and must be processed in a segregated area. Waivers may have to be considered, based upon the requirement and the local situation.

8. Water Terminal Throughput Capacity Estimation. Terminal throughput capacity estimation encompasses a careful evaluation of several factors: reception, discharge, transfer, storage, and clearance.

a. Terminal Reception Capacity. This capacity is based on the number of ships, by type, length, and draft, that can be berthed or anchored in a harbor or at a terminal.

(1) Wharves at Fixed Terminals

(a) The best type of berth for any given ship is one in which the terminal type (container, RO/RO, breakbulk, POL, etc.) matches the vessel type. For example, containers may be handled from a container ship at a breakbulk terminal but the highest throughput for a container ship would be at a container terminal.

(b) Vessels require 75- to 100-linear feet of berth length in addition to their overall measured length to account for mooring lines and tidal movement.

(c) The minimum water depth alongside the berth at mean low tide will determine the maximum allowable draft for vessels at that berth. At maximum load or draft, a ship should have at least 2 feet of water depth under its keel.

(2) Petroleum Wharves. Where available, these berths will be part of a fully developed theater distribution system that includes ship discharge facilities (with tanker moorings, piers, docks, and piping manifolds at the ports), port and inland tank farms, pump stations, and pipelines.

(3) Anchorages. Anchorage capacity may be added to berth capacity to determine the total reception capacity if there is sufficient lighterage, tugs, and pierside reception space to accomplish offshore discharge. The rate of discharge depends upon the distance from shore, the number of hatches or container cranes operating, number and types of lighterage, the type of ship being offloaded, and the expected weather conditions. More

detailed discussion of offshore discharge considerations is found in Joint Pub 4-01.6, "Joint Tactics, Techniques, and Procedures for Joint Logistics Over the Shore (JLOTS)."

(4) Ammunition Wharves. Ammunition discharge operations must be located in separate areas of the terminal facility, at anchorages in the stream, and a safe distance from populated areas.

b. Terminal Discharge Capacity. The cumulative amount of cargo that can be discharged from each of the berths and anchorages is known as terminal discharge capacity. This is an evaluation of discharge facilities and equipment found on the berths and of the type of ship to be docked on the berths. This capacity is expressed in 20-foot equivalent units (TEU) or 40-foot equivalent units (FEU) for containers, STONs, measurement tons, square feet, net explosive weight (NEW), barrels, or other appropriate unit of measure for specific cargos and in numbers of personnel per hour or day for passengers.

c. Terminal Transfer Capacity. This is the total capability to transfer from shipside to storage, measured in cargo units per unit of time. For example, if a pallet is one MTON and the cycle time is 10 minutes for a single transfer vehicle such as a forklift, the contribution to the transfer capacity of that vehicle is one MTON per 10 minutes, or 120 MTONs per 20-hour day. Ten forklifts operating without space constraints would produce a transfer capacity of 1,200 MTONs per day. Transfer capacity is computed twice when discharging ships at LOTS sites or from anchorage: once for the transfer to lighterage and once for the MHE operations on the beach.

d. Terminal Storage Capacity. This is a measure of the amount of cargo that can be stored at any one time. It can be expressed in square feet, MTONs, or number of TEU, FEU, or NEW. The physical space available is determined by the dimensions of the storage area; some space must be left empty to maintain access to and movement of cargo. Operational experience shows that congestion starts at about 60-percent fill, becoming critical at about 89-percent usage of the physical space. The effect of storage space limitations on terminal throughput capacity is determined by the average dwell time (time-in-storage) of the cargo. The average rate of flow into the storage facility must equal the average outflow rate, and this common value cannot exceed the quantity calculated by dividing the operational storage capacity by the dwell time.

e. Terminal Clearance Capacity. This measures the ability to move cargo away from the terminal in terms of tonnage per unit of time.

f. Terminal Throughput Capacity. In every instance, the lowest value of the reception, discharge, or the clearance capacity will be the terminal's throughput capacity. All five capacities must be estimated carefully, considering all operational aspects, even if the limiting capacity is obvious. These estimates will make it possible to determine where improvements can generate the greatest increase in throughput capacity. The threat, weather, labor, and other factors not a function of the estimating process must also be taken into account. One of these may even become the dominating factor. Table II-1 shows the terminal capacity estimation process.

9. Ship Arrival Planning and Scheduling

a. Surface Shipping Destined for a Major Overseas Theater. In a hostile environment, surface shipping destined for a major overseas theater or area of operations may transit the hostile area using Navy-controlled convoys, unescorted, or under Navy supervision. This may result in wide fluctuations in terminal workloads, because ships could arrive in groups rather than individually. Careful advance planning and constant coordination are required to determine where each ship should be discharged and where its passengers and cargo should be sent.

b. Ship Destination Meetings. The theater J4 will designate a representative to conduct periodic meetings where detailed ship destination decisions are made. These meetings should be held as early as possible before the arrival of the ship so that planning at operating echelons may be completed before the vessels arrive. Normally represented at these meetings are the JMC, USTRANSCOM, component representatives, HN, and other concerned allied forces. Additionally, a representative of the Naval Control of Shipping Organization (NCSORG) attends meetings. The NCSORG carries out responsibilities for the control of movement, routing, reporting, convoy organization, and tactical diversion of allied merchant shipping. It does not include the employment or active protection of such shipping.

Table II-1. Terminal Capacity Estimation Checklist

Collect these data:	Compute these factors:	Evaluate to determine:
Channel depth Channel width Length of berths Type of berths (such as quay, pier) Diameter of anchorages Depth of water at berth Type of terminal at berth Height restrictions on channels	(1) Ref Ch II, subpara 8a	Water terminal reception capacity and availability of local pilots/tugs
Discharge equipment onboard Discharge equipment ashore Width of apron Special lift equipment Number of discharge equipment	(2) Ref Ch II, subpara 8b	Water terminal discharge capacity
Type of cargo Type of cargo handling equipment Round-trip distance Number of cargo handling equipment	(3) Ref Ch II, subpara 8c	Water terminal transfer capacity
Intrinsic capacity Average dwell time Operating capacity Terminal facilities Stacking methods Equipment used	(4) Ref Ch II, subpara 8d	Water terminal storage capacity
Clearance conveyance by mode Terminal equipment and personnel Gate capacity	(5) Ref Ch II, subpara 8e	Water terminal clearance capacity

NOTE: Once all of the above evaluations are completed, apply threat assessment,the effects of weather and oceanographic conditions, and training level of labor.

(1) Directing Incoming Ships. Incoming ships are directed to specified terminals for discharge based on the overall operational necessity, final cargo destination(s), workloads of theater terminals, relative location of depots for inbound cargo, terminal throughput capacity, and capabilities of all segments of the transportation system. Cargo destination information is furnished by an inventory control center, the Service component's center providing theater materiel management. These centers issue cargo disposition and transportation mode instructions through their JMC representatives, if a JMC is established.

(2) Planning Ship Arrival. The above information, along with vessel manifest information, is relayed to the water terminal commander responsible for the discharge. Extracts are furnished to the consignee (authorized receiving agent) and to the JMC, or interested transportation movement control activities, so that they can plan for the onward movement of the cargo. Based on cargo disposition instructions, the water terminal commander makes plans and gives specific assignments to terminal units for discharge of vessels and terminal clearance.

c. Coordination. After deciding on the disposition of the incoming cargo, the water terminal commander must coordinate a number of actions with other agencies before ship discharge and port clearance operations can begin. Basic among these are:

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

(2) Arrangements for clearance of personnel and cargo to be moved directly forward, bypassing rear area facilities (water or air interface), when required.

(3) Individual ship berth assignments.

d. Ship Berth Assignments. Ship berth assignments require coordination with local MSC representatives and HN authorities. Berth assignments will usually be made at the terminal or Naval Cargo Handling Force (NCHF) battalion level. (See Appendix A, Annex B, for detailed information on the responsibilities and capabilities of NCHF units.) Detailed disposition and routing instructions for personnel, allied military cargo, and military aid cargo require coordination with Service component agencies and the recipient nation or allied command (the latter through the liaison

officers attached to the water terminal headquarters).

Disposition of civilian aid cargoes will require liaison with government representatives of the recipient nation. Foreign liaison officers and US civil affairs (CA) personnel may give assistance in this matter. Area movement control teams will arrange for local and line-haul transport equipment to be available to the terminal operators and will coordinate with transportation mode operators.

10. Personnel and Equipment Requirements. Time studies of cargo-handling operations indicate that the following are valid for long-range planning purposes:

a. Cargo Handled by Hand. When breakbulk cargo must be handled entirely by hand, personnel requirements can be computed on the average of 1/2 ton per manhour for a 10-hour shift. This 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, there are several cargo checkers per shift, to include checkers on the pier, under the hook, and in the hold.

b. Materiel Handling Equipment. Cargo should be transferred mechanically when supplies are unitized and MHE 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-trailers are usually limited to an operator for each piece of MHE, a checker, and appropriate supervisory personnel per shift.

11. Ship Characteristics. The single most important factor in the efficient loading or discharge of a ship is possession of an accurate hold arrangement or capacity plan and cargo stowage plan for the vessel in question. In the case of ship loading, a preliminary stowage plan based on available information must be developed prior to ship arrival. Sources of this information include the vessel owner or operator, MSC Ship's Loading Characteristics Pamphlets, MTMC-TEA documents such as "Vessel Characteristics for Shiploading" (PAM 700-4), and pertinent ADP systems fielded by MTMC for this purpose. However, not all ships, particularly foreign flag ships, are covered by these sources. The only sure source of this information for loading is from the ship itself and its Master. In discharging, the "as loaded" stowage plan is extremely important for the water terminal commander to have in advance of the ship's arrival at the SPOD. If this proves impractical, this information should be carried aboard the ship and must be obtained by the terminal commander as soon as possible upon ship arrival. A properly filled out stowage plan will show the precise location of every piece of cargo aboard the vessel and is, therefore, the basis of any

executable discharge plan. Strategic characteristics are available in Appendix C, Joint Pub 4-01.6.

12. Logistic Support

a. General. Under crisis action or wartime conditions, and where critical situations make diversion of the normal logistic process necessary, the logistic authority of the combatant commanders is expanded to authorize them to use all facilities and supplies of all forces assigned to their commands, as necessary, for the accomplishment of their missions. The theater combatant commanders may delegate this authority to the subunified commanders or JTF commanders in the conduct of their missions. The combatant commander's directive authority over logistic operations does not release the Services from their responsibility to staff, equip, train, and sustain their components. Combatant commanders will ensure that proper authority is obtained for negotiations with the HN through appropriate channels. HNS assistance can include air, sea, and ground transportation; petroleum, oils, and lubricants (POL); telecommunications; civilian labor; rear area operations; facilities; contracting; acquisition of equipment; supplies; services; and health service support.

b. Deploying Force Requirements. Organic support elements of deploying forces normally form a PSA or Service-unique water terminal organization to assist with the deployment. This element must precede its main body of equipment and troops to the terminal. A PSA will arrive at the water terminal in advance of its parent organization to provide support for terminal operations. Its organization and capabilities are tailored to the specific deployment or reception operation and are developed in coordination with the terminal commander. PSA support requirements are provided under a MOU between the deploying or arriving unit and the appropriate terminal commander. When the parent organization has passed through the terminal, the PSA will be disestablished. The PSA may be responsible for performing maintenance and providing repair parts, correcting deficiencies in the shipping configuration, providing equipment operators for unique equipment and providing security for sensitive equipment and classified cargo.

13. Other Documentation. In addition to documentation required by existing regulations, the water terminal commander will normally require each operating terminal organization to prepare a daily operations report. This report will usually include:

a. Passenger Manifests. Number of passengers moved and awaiting movement; also, the number of passengers to be processed during the next 24 hours.

b. Cargo Reports. Number of tons (STONs and MTONs) or square feet of cargo by major category (general, vehicles, POL, hazardous materials) that have been discharged or loaded; the number of pieces of unit equipment by type on each ship, cleared (by mode), and awaiting discharge; and number of tons booked and expected in the next 24 hours. An example of operations data follows:

(1) Ship Data

(a) Ship name/type.

(b) Scheduled/actual time in berth.

(c) Vessel ready for load.

(d) Scheduled/actual start loading.

(e) Scheduled/actual finish.

(f) Scheduled/actual time of departure.

(2) Barge Ship Data

(a) Barges to load.

(b) Barges loaded.

(c) MTONs loaded.

(3) Cargo Data

(a) Major units.

(b) Pieces loaded.

(c) Actual square footage loaded.

(d) Supercargoes.

(e) MTONs.

(4) Cargo Summary

(a) Pieces of cargo marshaled.

(b) Pieces of cargo lifted.

c. Ship Traffic. Number of ships that have arrived, departed, remain in port, and are expected to arrive and

depart during the next 72 hours. Also, the status of ships in port, such as discharging, backlog of ships to unload, loading, awaiting orders, or under repair.

d. Workload Projections. Workload for the month to date and anticipated for the remainder of the month.

e. Personnel and Equipment Summaries. Summaries of available ship berths, number and capacity of lighters and trucks, number of gangs for ship and pier work, available covered and open storage space, number of railroad cars that can be accommodated and cleared, and MHE availability.

14. Area Defense Threats. Water terminals are critical logistic installations that are high-value targets and must be safeguarded by both active and passive means. Water terminals are vulnerable to air and missile attack, especially if US and allied forces have not established air and sea superiority. Joint Pub 3-10, "Doctrine for Joint Rear Area Operations," provides guidance on the subject of joint rear area defense. Joint Pub 3-10.1, "JTTP for Base Defense," provides specific guidance on base defense and the integration of naval areas of operations and the joint rear area. Terminal units, which are normally located in a naval area of operations, are also vulnerable to hostile unconventional forces. Water terminals are particularly susceptible to threats and must expect and prepare for sabotage, terrorism, mining, and espionage. Prevention of these threats depends to a large extent on the support of the local population and on the effectiveness of local administrative, police, and security organizations.

CHAPTER III

WATER TERMINAL OPERATIONS EXECUTION

SECTION A--OCEAN TRANSPORT RECEPTION

1. General. Strategic sealift is the principal means of delivering equipment and logistic support for land, air, and sea forces in a major conflict. Water terminal operations could include MSC common-user ships, maritime pre-positioning ships (MPS) capable of over-the-shore and port operations from anchorage, multipurpose ships, and other ships that may be chartered or provided by HNS as required. This chapter addresses elements essential to the reception of strategic sealift ships and the handling and onward movement of cargo.

2. Overseas Resources. Key to planning the reception of sealift assets is an understanding of the theater's reception and onward movement capabilities. Knowing the true capabilities of PODs and the resources available within the theater or area of operations to provide harbor support for the arriving ships is critical. There are three sources of lighterage and watercraft resources in an overseas area. The first is military assets assigned to the combatant commander for common transportation service. Army harbor support vessels (i.e., tugs and landing crafts such as Logistic Support Vessels (LSV) and air cushion vehicles) are prime examples (see Appendix A). The second is HNS negotiated through bilateral or multilateral agreements. Under HN agreements, a nation may either accept responsibility for a particular function within its borders (e.g., water terminal cargo clearance), or it may designate civilian resources to be used under military control. The third source is commercial hire or charter service from a third nation.

3. Assigning Berths and Anchorages. A combination of factors will dictate where a ship is berthed or anchored at a given water terminal.

a. Oceanographic Conditions. Harbor channel depth and width, currents, tidal fluctuations, prevailing winds, sea states, and seasonal storms contribute to assignment of berths and anchorages.

b. Cargo Types. The type or category of cargo (e.g., container, RO/RO, breakbulk, special commodity (ammunition), bulk fuel) will dictate berths at existing terminals.

c. Routing Scheme. The routing scheme is the plan by which ships are scheduled through the terminal. The terminal

throughput capacity, ship type, and quantity and priority of the cargo will determine the routing scheme developed by the terminal commander.

d. Anchorages. MSC or Navy representatives, if available, will advise on anchorage areas and the naval support required. If the naval representative has indicated that the anchorage areas are acceptable, an examination must determine if lighterage can traverse between anchorage areas. Sandbars, reefs, and other underwater obstructions may prevent using certain landing craft in certain areas. Vessel masters, harbor masters, pilots, and others with "local knowledge" should be consulted by MSC, Navy, or other Service personnel when establishing anchorage areas.

4. Ship Arrival Meeting. The first communications between a vessel master and water terminal operators should include plans for a ship's arrival meeting. This meeting will establish how and when the vessel will load or discharge and set a target sailing date. The ship's master and mates, the commander of the water terminal and his or her representatives, the deploying military unit commander or representatives, the stevedore supervisor, the MSC representative, and the security and safety officer should attend the meeting.

5. Ship Chandler Services (Hotel Services)

a. General. Chandler services include reprovisioning a ship with all classes of supply necessary for the vessel to continue its voyage. Commercial steamship lines coordinate chandler services through commercial chandlers located at ports on their vessels' trade routes. MSC handles chartered vessels in the same manner. Navy vessels coordinate chandler services through the nearest naval or diplomatic activity. MSC representatives will assist in coordinating routine chandler services at the port. When there is no Navy or MSC presence at the port, terminal commanders may be asked to provide or coordinate for chandler services.

b. Limited Resources in a Theater. When commercial resources are nonexistent or in limited supply, vessels will maximize chandler services outside of the theater. The combatant commander, through the logistic staff, will prioritize the use of all limited resources, to include chandler services.

6. Ship Support Services. For MSC ships, the ship's agent will arrange for support services related to pilots, tugs, line handlers, and payment of dues and port charges.

SECTION B--SHIP DISCHARGE OPERATIONS

7. General. Cargo offload of strategic sealift may be conducted by Navy, Marine, Army, or joint terminal forces, augmented by HNS, civilian ship crews, and stevedores, depending on the scenario. This section addresses those ship discharge operations pertaining to preparation, cargo type, and offload system limitations.

8. Preparation

a. Advanced Planning. Based on the vessel manifest and cargo disposition instructions received, the terminal unit plans the discharge of individual ships in advance of their arrival. This planning is applicable regardless of the Service component operating the terminal. The plans include:

(1) Terminal Location. The specific location to be used within the terminal.

(2) Discharge Method. The method of discharge (e.g., floating or shoreside cranes, alongside or offshore discharge, and order of hatches and cargo within the hatches to be worked).

(3) Assignment of Units. The designation of specific stevedore units to work each vessel.

b. Coordination. The operating terminal units work closely with the local transportation movement team. The terminal unit ensures that variations from the vessel discharge plan are coordinated with clearance mode operators. Proper procedures and coordination in the following areas will prevent unnecessary delays in port clearance:

(1) Unit Assignments. Assigning terminal unit(s) the mission of unloading cargo from a vessel.

(2) Documentation. Ensuring that all documentation (manifest, stowage plan, hatch lists, and cargo disposition instructions) is in order.

(3) Cargo Handling Equipment. Ensuring all cargo handling equipment needed for the job is available.

c. Boarding Party. Before moving or unloading cargo, a boarding party goes aboard to coordinate with the vessel's master and chief mate or first officer. The chief mate or first officer is the expert on the arrangement of the ship's

holds and is responsible for ensuring the ship loads or discharges the maximum possible quantity of cargo in the shortest possible period of time. This individual is also responsible for the calculations on vessel stability and will have the ultimate and only valid recommendation to the vessel's master regarding the overall safety to the ship of the stowage plan proposed by the water terminal commander. During this visit and inspection of ship and cargo, the boarding party may decide to alter the initial discharge plan. Normally, MSC provides a prearrival message giving the ship's operational status and capacity of all lifting gear. Unforeseen conditions, such as damage to ship's gear, unexpected priority cargo, or oversize or heavy lifts not noted on advanced stow plans, may cause changes to the initial discharge plan. The boarding party is normally composed of the MSC representative and the port terminal representative. However, in more complex operations, or when the ship calls at the port infrequently, the boarding party may be composed of all or a number of the following persons:

(1) Terminal Operations Officer. Determines and reports the general condition of ship equipment and facilities. This officer delivers pertinent terminal regulations and orders of the terminal commander to the vessel master and to the commanding officer of troops. The terminal operations officer obtains copies of ship papers when advance copies have not been received and determines major damage to or pilferage of cargo by having the holds inspected before commencing discharge. This inspection also helps to identify any special unloading problems that may be caused by cargo becoming adrift in the hold and is critical when chartered civilian shipping is used. The terminal operations officer also obtains other information pertinent to unloading the vessel's cargo.

(2) Customs Personnel. These representatives check for clearances, narcotics, weapons, and other potential contraband cargo. They also may perform other necessary customs activities according to theater directives and HN laws.

(3) MSC Representative. MSC representatives will support all of the ship's requirements. These requirements may include repairs, fuel, and stores. In addition, the MSC representative delivers instructions to the vessel master.

(4) Surgeon. Checks for communicable diseases, sanitary conditions of troop spaces and facilities.

(5) Veterinarian. Inspects the condition of perishable cargo.

(6) Harbormaster. Coordinates matters pertaining to berthing, tug assistance, and employment of floating cranes and other harbor craft under his or her control.

(7) Embarkation Officer/Ship Platoon Leader. Coordinates the detailed plans for cargo loading and unloading.

(8) Lighterage Unit Representatives. Coordinate plans for employing lighters for unloading vessels at anchorage berths.

(9) Troop Movement Officer. Coordinates plans for movement of troop units through the terminal.

(10) Military Police. Determine needs and provide support required during unloading and debarkation operations.

(11) Signal Officer. Coordinates all signalling and other communication methods to be used during ship discharge operations.

d. Vessel Policies. Although the boarding party coordinates with the vessel's master when the ship first arrives, the vessel's chief mate or first officer will be the Cargo Officer for every merchant vessel. As such, the chief mate is responsible to the Master for the prompt, efficient, and safe loading, securing, and discharge of the vessel's cargo. The chief mate will require notification of changes in stow or offload plans, when ship's gear is rigged or spotted, when hatches are opened or closed, when heavy lifts are rigged, or when the vessel sustains any damage. It is not unusual for the chief mate to insist that ship personnel rig the ship's gear, open and close hatches, or even operate winches. These requirements should be coordinated early in operational planning, and special requirements should be noted in the ship files to facilitate planning for subsequent discharge operations.

e. Special Considerations. Packaging dictates a need for specialized equipment and trained personnel. Cargo handlers may be required to construct special slings and bridles to move heavy, outsize, or special cargo. Some cargo requires covered storage sites. Cargo that is dangerous or hazardous will require careful handling, segregation, or possibly a separate and isolated terminal.

9. Productivity

a. Terminal Service Units. Capabilities of terminal service units (breakbulk or container) are in Appendix A.

b. Production Capabilities. The capabilities cited are based on the production achieved by working five-hatch breakbulk cargo ships and commercial container vessels. In an austere water terminal, operations might entail discharging varied watercraft, such as barges and tank landing ships, in addition to general cargo, RO/RO, and container ships. Production figures for these smaller carriers will vary significantly from those of large vessels and must therefore be developed locally.

c. Production Factors. Many factors affect production during discharge operations. The threat, weather, sea conditions, visibility (fog, darkness, sandstorm), crew experience, type of lifting gear (shore crane or ship's gear), cargo stow, tactical situation, type of cargo, packaging, and PSA availability all impact on discharge production. The combined positive and negative influences of these factors result in the number of lifts that can be obtained per hour. This average can be computed by hatch or for the entire vessel and can be obtained from historical data by timing the lifts for a specified period or from computations using information from tally sheets at the end of a shift. Forecasts of unit productivity are adequate for general planning purposes, but should not be applied as a yardstick for measuring unit efficiency. Unit efficiency must be judged on the basis of factors and conditions as they affect a specific discharge operation. Attainment of a lesser tonnage production might be considered exceptional if accomplished under less than ideal circumstances. Personnel responsible for management of cargo discharge and port clearance operations must constantly evaluate those operations to improve efficiency and productivity.

10. Petroleum Doctrine and Tankers

a. Joint Bulk Petroleum Doctrine. Joint doctrine for bulk petroleum is contained in Joint Pub 4-03, "Joint Bulk Petroleum Doctrine." Each Service is responsible for providing retail bulk petroleum support to its forces. Retail bulk petroleum support is coordinated by each Service control point with the Defense Fuel Supply Center (DFSC). This requires the Services to compute requirements, establish delivery plans, and maintain contracts and budget programs. In joint force operations, the J4 and the Joint Petroleum Officer will develop the petroleum logistic support plan. A key consideration is the compatibility between interfaces of fuel transfer systems. The Joint Petroleum Officer will

coordinate fuel resupply within the theater between Navy and commercial tankers delivering petroleum to and through specialized Navy-operated and joint water terminals to Army, Navy, and Marine units for retail use by themselves and other Services.

b. Developed Theater. DFSC contracts with CONUS or OCONUS commercial suppliers to deliver the required petroleum to the appropriate Service in the theater. DFSC may also be responsible for the operation of all or part of the storage, handling, and distribution systems that move petroleum through the theater to the point of sale to the Service. Actual procedures for delivering bulk petroleum products to the end user will depend on conditions in the area of operations. A fully developed theater distribution system includes ship discharge facilities (with tanker moorings, piers, docks, and piping manifolds at the ports), port and inland tank farms, pump stations, and pipelines.

c. Undeveloped Theater. Coastal tankers or barges may be used to move products from deep-draft tankers to moorings in water too shallow for the larger ships. Bulk petroleum is transferred using the amphibious assault bulk fuel system (AABFS) flexible hoselines to tank farms made up of collapsible storage tanks. The petroleum supply system in an undeveloped theater may include limited tanker mooring facilities, floating hoselines, submarine pipelines, inland tank farms and terminals, collapsible tanks, and any available bolted steel tanks. It may also include pump stations, flexible hoselines, coupled pipelines, and tank vehicles. Bulk petroleum is received in the undeveloped theater in JLOTS using the AABFS or Navy Offshore Petroleum Discharge System (OPDS). The Navy OPDS delivers fuel to bulk fuel storage located in either the Marine Corps bulk fuel company, Army pipeline and terminal operating units, or Army petroleum supply units near the shoreline.

d. Navy Responsibilities

(1) Maintain a capability to provide retail bulk petroleum support to Navy and Coast Guard afloat and ashore forces.

(2) Provide the theater petroleum manager, if required.

(3) In an undeveloped theater, provide for the delivery of bulk petroleum to the high water mark for all Services in the theater. Delivery systems must be compatible with the Army and Marine Corps inland distribution systems.

e. Army Responsibilities

(1) Maintain the tactical force structure necessary to support Army and other Service requirements, where the Army is the dominant user in the area of operations.

(2) Provide the theater petroleum manager, if required.

(3) Develop and maintain equipment to support the overland distribution of bulk petroleum to all Services. In an undeveloped theater, this includes providing a system that transports bulk petroleum from the high water mark of the designated ocean beach to inland pump or storage locations. Developed systems will be compatible with Navy OPDS.

f. Air Force Responsibilities

(1) Maintain a capability to provide retail bulk petroleum support to USAF units.

(2) Provide the theater petroleum manager, if required.

g. Marine Corps Responsibilities

(1) Maintain a capability to provide bulk petroleum support to USMC units.

(2) Provide the theater petroleum manager, if required.

11. Lighterage Use. The basic JTTP stated in Joint Pub 4-01.6 are applicable to the discharge of ships in ports using lighterage. This situation may occur when lighters are available to discharge ships over the pier as opposed to over the shore. The water terminal commander will coordinate fixed terminal discharge operations using lighterage with JLOTS occurring in the area.

SECTION C--TERMINAL RECEPTION AND CLEARANCE

12. Introduction. The water terminal commander establishes reception and clearance procedures to achieve the combatant commander's objectives. A key to efficient terminal reception and clearance operations is marshaling yards, which are discussed in this section and Appendix B.

a. General. Efficient loading and discharging of vessels require rapid and controlled movement of cargo between ship and shore. Improvements in cargo packaging, particularly containerization, increase ship and cargo-handling productivity. The cargo marshaling yard is an essential part

of this shoreside operation, providing a place to hold and process cargo pending further movement.

b. Rapid Clearance. Use of a marshaling yard allows rapid clearing of the water terminal facilities. It makes vessel working space available for its primary purpose of loading or offloading cargos. It reduces pier congestion, thus reducing the potential for work slowdowns or stoppages in discharge operations. With proper management of MHE, chassis, tractors and trailers, and flatcars, most containerized and RO/RO cargo can go directly onto the inland mode of transportation. Checking and other documentation can be done during discharge, allowing cargo to be cleared rapidly. Conceptually, all cargo should move through the terminal without delay. However, this is not always possible because:

(1) Consignee's reception capacity may be limited.

(2) Movement plan (e.g., lack of rail cars) may cause some delay in clearance.

(3) Damaged cargo may require repairing or restowing of contents before further movement.

(4) Containers may require segregation by destination or priority. Some cargo may need reassembly or removal of packaging.

(5) Cargo may require redocumentation before further movement.

(6) Where required, retrograde cargo must be cleaned and fumigated to pass both US Customs and Department of Agriculture import requirements.

(7) Containers found with broken seals or apparent pilferage must be inventoried and a new seal applied before further movement.

(8) The threat situation may cause battle damage or disruption to the transportation system.

c. Cargo Marshaling Yard. This yard provides temporary in-transit storage and permits fast discharge operations with rapid and continuous movement of cargo to or from the pier. Marshaling cargo allows leveling of line-haul peak workloads that result from discharge operations. Concurrently, marshaling cargo allows selective, controlled, and flexible phasing of container or cargo movement to destination or

vessel. In container operations, the yard provides an area for cargo/container:

(1) Maintenance, repair, servicing, and inspection.

(2) Stuffing or stripping.

(3) Documentation.

(4) Cleaning and decontamination.

(5) Marshaling for retrograde movement.

(6) Staging.

(7) Security.

13. Organization and Functions. No set organization or physical layout for a marshaling yard exists. It is organized to meet operational requirements within available space. By grouping related functions, marshaling yard design should eliminate lost motion, reduce container and cargo handling requirements, and permit a logical flow of containers and cargo through the terminal.

a. Cargo can be subdivided into any number of categories. The most widely used are general (breakbulk); containerized (general, vehicle, or refrigerated); RO/RO (vehicles, containers on chassis); and special (oversize, heavy lift, hazardous, or security) cargo. These categories and the volume in each play a significant role in marshaling yard organization.

b. All marshaling yards should provide for the activities and functions listed in Appendix B.

c. The organization of and traffic flow through a fixed-port container transfer facility is shown in Figure III-1.

14. Location of the Marshaling Area. The marshaling area (general cargo, container, or both) is located as near the vessel, rail, air, truck discharge, or load site as practical. Enemy capabilities and activities may require dispersion of activities or may otherwise affect selection of marshaling yard location. The marshaling yard in an existing terminal is normally next to the pier area, with sufficient pier apron (100- to 500-feet) between the yard and shipside. These distances will accommodate container discharge and clearance activities and will be more than adequate for general cargo operations. Rail spurs, warehouses, and similar facilities usually exist, but may require rehabilitation. Construction of the marshaling yard should encompass any existing hardstand, structures, and rail lines.

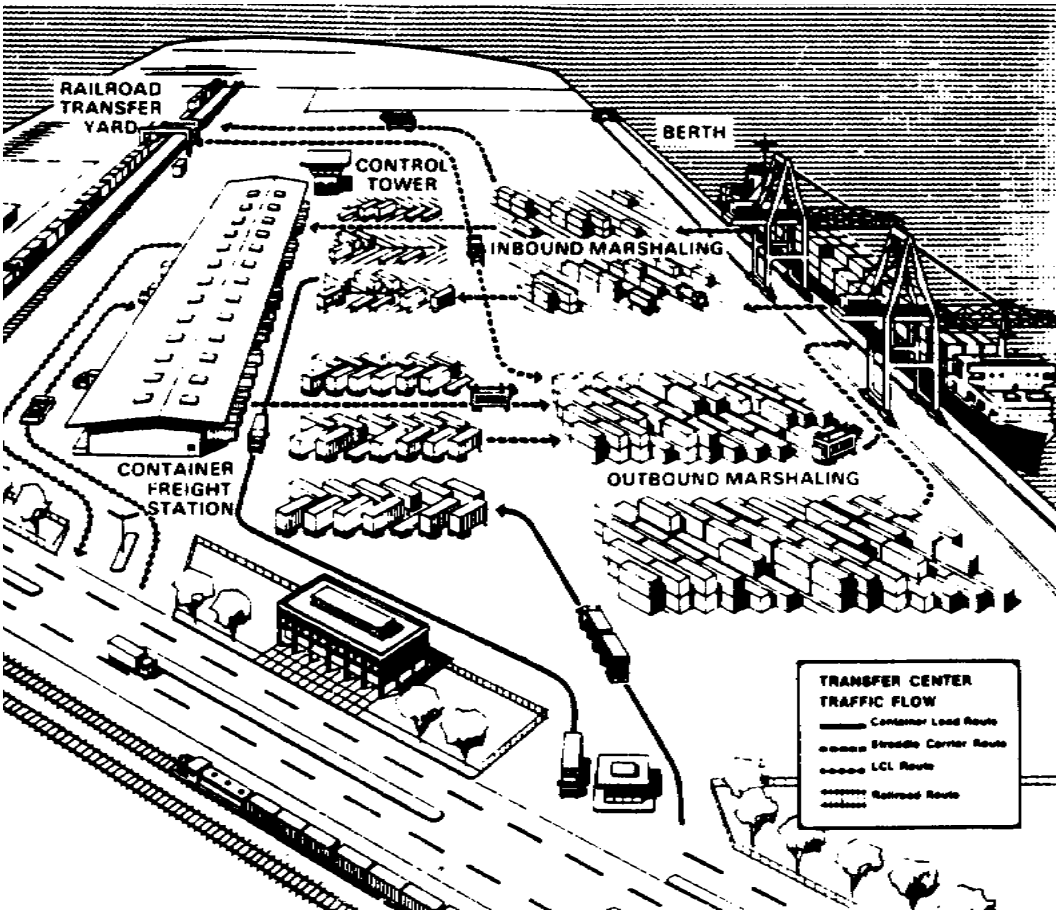

Figure III-1. Organization of and Traffic Flow Through a Fixed-Port Container Transfer Facility (Schematic courtesy of Matson Navigation Company)

15. Container Stacking Configuration

a. Chassis. Containers may be stored in the marshaling yard either on or off trailers (chassis). Retaining containers on chassis reduces container handling and accelerates operations but requires a one-for-one matching of chassis to containers. Storing or staging containers on chassis also increases space requirements in the marshaling area. When containers do not remain on chassis throughout the system, one chassis for every two to three containers is needed.

b. Concept. Loaded containers are stacked, after removal from their chassis, to a maximum of two high using the turret stacking method. Empty retrograde containers can be stacked five high if this height is within the capability of

container-handling equipment. Another space consideration is stacking collapsed flat racks. Flat racks should be stacked as high as possible by available container-handling equipment to ease retrograde backloading. Although stacking containers increases handling, it also requires fewer chassis and reduces requirements for marshaling yard space.

16. Terminal Activities

a. Offload or Backload Operation. The objective of ship discharge operations is to maximize the onward movement of cargo while minimizing the turnaround time of the ship. One way to achieve this is to have the terminal tractors available and positioned properly at the cranes working the ship. To do this efficiently, with a minimum of congestion, the tractors should travel the least distance possible. Each stacking area should be divided for import and export breakbulk and container cargo to make it easier to drop off imports and pick up exports in one circular trip.

b. Potential Bottlenecks

(1) Dwell time of containers.

(2) Frustrated containers.

(3) Processing of containers at control points.

(4) Stuffing or unstuffing containers.

(5) Cleaning or maintenance of containers.

(6) Container accountability.

(7) Vehicle delay and congestion.

c. Marshaling Yard Clearance Operation. To ensure rapid and uniform flow of cargo from dockside to the consignee (and vice versa) and to minimize terminal congestion and work stoppages, marshaling yard clearance operations are tailored to port unload or backload output. An inbound container should not remain in the marshaling yard longer than 24 hours. This also holds true for retrograde cargo, provided a ship is available for backloading. The normal procedure in clearance operations is to designate specific truck units to support a specific unload or backload operation.

17. Cargo Movement by Rail. Cargo movement by rail is used wherever possible because rail presents a mass movement capability with little interference from weather or refugee

traffic. Unless inland waterway and barges or barge MHE are available, rail is the most economical mode for moving cargo.

18. Marshaling Yard Procedures

a. Operations Responsibility. The water terminal commander is responsible, through the operations officer, for operations of the marshaling yard. The operation may use automated documentation or, if automated data processing equipment is not available, manual procedures.

b. Import Cargo. The shipping water terminal transmits an advance manifest to the receiving water terminal (theater). Upon receipt of the advance manifest, the water terminal sets up files to be used for preparing documentation. These files include hatch summaries, cargo disposition instructions (CDIs), and transportation control and movement documents (TCMDs). Hatch summaries, preprinted from the advance manifest, provide the operator with advance notice of types (e.g., cargo, refrigerated) by size and quantity of incoming containers and cargo, movement priorities, and ultimate destination. This information permits the operations officer to preplan marshaling yard space requirements and predetermine where offloaded cargo will be placed or stacked in the yard. This is particularly important when planning onward movement of outsize and/or overweight cargo.

c. Communications. The cargo checker can direct the yard transporter to the designated stacking location using information from a cargo tally printout. Radio communication, where feasible, between the cargo checker and the marshaling yard is the best way to ensure adequate operational control, especially in a large yard or in a highly fluid situation. If computer equipment is not available, operations should display a visual status board of the stacking area to identify and locate containers. A manual display system requires appropriate internal communications.

d. Cargo Disposition Instruction. CDIs are used as a consignee advance notification document. Based on the CDIs, the port's movement control team coordinates with the consignee's movement control team to ensure that the consignee can receive the shipment, arrange for delivery dates, and transport cargo from the marshaling area to its final destination.

e. LOGMARS Documentation. When cargo enters the marshaling yard, the cargo or container transporter driver inspects the container. Terminal documentation personnel use the

logistics application of marking and reading symbols (LOGMARS) to document the cargo and then direct the driver to the point where the cargo is to be unloaded. A LOGMARS check is required each time cargo is moved from the area of last report. No container can be moved from the marshaling yard exit or entry point without proper documentation and inspection. Where numbers are present, the cargo or container, the cargo or container transporter, and the cargo or container seal numbers all must agree with those shown on LOGMARS. If they do not agree, the cargo or container becomes frustrated (cannot be moved) until proper documentation is prepared. When the cargo or container departs the marshaling yard, LOGMARS documentation is retained for entry into the central processing unit to show that the cargo has been shipped to the consignee and to update the computerized inventory. Similar procedures are used for cargo being retrograded. LOGMARS documentation can also be used to develop a ship's manifest.

19. Marshaling Yard Security

a. Cargo Theft and Pilferage. Reducing cargo theft and pilferage is a significant benefit of containerization. Compared with losses suffered in breakbulk operations, the reduction is indeed noteworthy. Nonetheless, containerization losses happen, and terminal commanders must take actions to eliminate this situation.

b. Control of Inbound/Outbound Traffic. Strict control of incoming and outgoing traffic is a key factor in marshaling yard security. Restriction of vehicular traffic, entering or exiting the container stacking area to container transport equipment, MHE, and mobile scanning equipment, is essential. Establishment of a single control point (gate) for vehicular traffic entering or exiting cargo areas is also essential. This point should be staffed and operated by US military personnel who are assisted, as necessary, by foreign national police or interpreters. Finally, a separate control point for pedestrian traffic is needed, operated by US military personnel and assisted, as necessary, by foreign national police or interpreters.

(1) Surveillance and control functions of the vehicular control point include:

(a) Preventing entry of unauthorized vehicles.

(b) Inspecting inbound and outbound containers. This is a thorough physical inspection including cargo condition; presence and condition of seals and/or locks; evidence of illegal entry (such as tampering with or removal of door hinges); and,

particularly for outbound cargo, a check for stolen items by looking on top of and under containers and inspecting transporter cabs.

(c) Verifying documentation for correctness, completeness, and legibility. (Ensuring that transporter, container, and container seal numbers match those shown on the TCMD.)

(d) Operating scanning equipment. (If there is no scanning capability, cargo numbers are reported manually to operations to update the yard inventory.)

(e) Signing one copy of the TCMD for retention by transporter operator as a delivery receipt (inbound cargo).

(2) Surveillance and control functions of the pedestrian control point include:

(a) Permitting only authorized personnel to enter marshaling areas.

(b) Maintaining, controlling, and safeguarding the pass system for foreign national personnel authorized to be in the area.

c. Perimeter Security. Security of the marshaling yard perimeter backs up control point security in keeping unauthorized persons out of the area. Such persons may engage in sabotage, petty and large-scale theft operations, and in establishing inside contacts with foreign nationals or other persons working in the yard. Although it may not be possible to fence the entire yard perimeter, the security (sensitive, classified, high-dollar-value cargo) area should be fenced with its own military-guarded control point and military police (MP) control. Perimeter defense measures may include one or a combination of the following:

(1) Chain-type fencing topped by three strands of barbed wire. (Inspect fence daily to ensure no holes or breaks exist).

(2) Concertina wire.

(3) Sensors and TV video monitors.

(4) Patrols.

d. Container Transporter Operator. Drivers of line- and local-haul container transporters are required to remain in the cabs of their trucks when operating within cargo areas.

e. Security Cargo. Security cargo should be stored separately in its own secured area. Whenever possible, security cargo should be unloaded from the ship during daylight hours. If possible, MP security personnel should observe unloading operations.

f. Verification of Container Arrival at Destination. Upon receipt of the cargo or container, the consignee returns a copy of the TCMD to the shipping terminal activity with the consignee signature; date of receipt; and condition of cargo, container, and container seal.

APPENDIX A

TERMINAL UNITS

Army elements of a Transportation Terminal Group, Navy elements of a Cargo Handling Battalion (CHB), Marine elements of the Landing Support Battalion (LSB), Air Force liaison offices are included in Annexes A through D. Specifics on Coast Guard Port Security Units (PSU) and Maritime Administration (MARAD) (National Shipping Authority) are located in Joint Pub 4-01.2, "JTTP for Sealift Support to Joint Operations."

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ANNEX A

ARMY UNITS

1. US Army Transportation Terminal Group. The transportation terminal group is normally responsible for all Army terminal operations.

a. Mission and Assignment. The transportation terminal group provides command and staff planning for Army units employed in the operation of water terminals. The group is assigned to the transportation command of the Theater Army (TA) and is normally attached to a transportation terminal brigade.

b. Capabilities. The group provides command, control, staff planning, coordination, and supervision of operations, training, and administration of up to six transportation battalions. It depends on appropriate elements of the TA for motor transport, health services, signal, finance, legal, and personnel administrative service support.

c. Functions. The transportation terminal group is responsible for:

(1) Managing both military and civilian personnel, administering or executing labor management policies with respect to non-US civilians and employees, and maintaining coordination with appropriate CA elements.

(2) Preparing standing operating procedures (SOPs), directives, and plans for installation and area security and area damage control within assigned areas; coordinating these plans with subordinate commanders and area support commands.

(3) Preparing current and long-range plans, procedures, policies, and programs pertaining to terminal operations and functions; selecting or allocating units, by types and numbers required, to support the mission of the transportation terminal brigade.

(4) Inspecting units, installations, activities, and supervising or planning the training of subordinate units.

(5) Developing plans for moving personnel and cargo through subordinate terminals, and coordinating with the movement control center for terminal clearance.

(6) Developing requirements for communications and automatic data processing systems required for supporting the terminal group and subordinate units; coordinating these requirements with the water terminal signal officer.

(7) Procuring materiel and services locally, particularly stevedore contract services, for support of the group and subordinate units.

(8) Providing limited field services, including food service supervision.

(9) Developing SOPs, directives, current and long-range plans, procedures, policies, and programs in the logistic field pertaining to subordinate units; coordinating with direct support elements to supply materiel and equipment used in operating terminals.

(10) Managing maintenance, to include development of appropriate policies, procedures, and operational instructions related to maintenance and safety activities for issuance to subordinate units.

2. Transportation Terminal Battalion

a. Mission and Assignment. The transportation terminal battalion acts as the command element in operating intermediate staging areas for airborne units and for units employed in water terminals. It is the key terminal organization in support of Army amphibious operations (PHIBOPS), and it acts as the command element in operating inland waterways. While assigned to the Theater Army Transportation Command, it is normally attached to a terminal group; however, it may be attached to a terminal brigade or operate separately.

b. Capabilities. The transportation terminal battalion can command up to seven transportation terminal units. Examples of the various types of units are terminal service, transfer, boat, amphibian, hovercraft, harbor craft, truck, cargo documentation, security, and PSAs. It can support the operation of the equivalent of a four-ship terminal in an established port facility or a two-ship terminal in a beach operation. This unit must be supported by a personnel service company for personnel and financial support and by area health services for medical support.

c. Functions. The transportation terminal battalion is responsible for:

(1) Providing command and control of water terminal operating units.

(2) Controlling loading, unloading, and cargo transfer operations.

(3) Supervising documentation activities.

(4) Determining the estimated workload and transportation requirements and to ensure the availability of necessary equipment.

(5) Advising subordinate operating units concerning identification, segregation, and documentation of shipboard or onshore cargo.

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

(7) Conducting maintenance inspections of assigned vehicles and equipment.

(8) Supervising all maintenance, supply, equipment, evacuation, real estate, safety policies, and food service activities of assigned units.

(9) Providing communication between higher headquarters and supported units under the direction of the water terminal signal officer.

(10) Supervising contract operations.

(11) Reviewing intelligence data to assess impact on operations and to allow for defensive measures.

(12) Obtaining from the Command Surgeon military quarantine inspection documentation on retrograde cargo, if required.

(13) Coordination of harbormaster, security, HN activities, and movement of marine assets.

3. Transportation Terminal Service Company (Breakbulk)

a. Mission and Assignment. The Transportation Terminal Service Company (Breakbulk) is the basic working unit in Army water terminal operations for breakbulk cargo. The company may operate separately or may be integrated with units of other terminal service and lighterage units commanded by a single battalion. Its responsibilities

include discharging cargo from ship to pier or lighter or a temporary holding or marshaling area or loading cargo aboard clearance transport. The company prepares all documentation needed to forward the cargo to its depot or user destination in accordance with cargo disposition instructions.

b. Capabilities. The company can work one ship on a two-shift basis, or two ships on a one-shift basis. At piers or over beaches, with 75-percent availability of equipment, the company can discharge or load 600 STONs during LOTS operations or 2,500 STONs at fixed facilities. Discharging includes sorting by destination and loading cargo on 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 include accounting for all cargo handled and preparing necessary military standard transportation and movement procedures (MILSTAMP) transportation documentation.

4. Transportation Terminal Service Company (Breakbulk/Container)

a. Mission and Assignment. The transportation terminal service company handles breakbulk and containers in a theater water terminal operation. If augmented with personnel and equipment for command and control, port security, and cargo documentation capabilities, the unit can work a container or breakbulk port or a port capable of handling both breakbulk and containerized cargo. The unit is normally attached to a terminal battalion for command and control, but may be assigned to a theater transportation command or a Corps Support Command (COSCOM) when supporting independent corps operations.

b. Capabilities. Operating on a two-shift basis, the company is capable of handling 200 containers per day or discharging 1,600 STONs of breakbulk cargo per day in a LOTS environment. In a fixed port, the company is able to handle 400 containers or 2,500 STONs of breakbulk cargo in a two-shift operation with 75-percent operational equipment availability. The company must be augmented by a heavy crane platoon to handle containers.

c. Functions. The breakbulk or container terminal service company can operate independently, or may be integrated with other water terminal units commanded by a single battalion. Centralizing equipment, maintenance, and documentation at battalion level is also possible within the constraints imposed by container-peculiar equipment and equipment operators.

5. Transportation Cargo Transfer Company

a. Mission and Assignment. The transportation cargo transfer company transships cargo at air, rail, and motor terminals. This includes unloading, segregating, repairing, temporary holding, documenting, and cargo loading responsibilities whenever a change in carrier occurs. The company may also operate in-transit cargo areas to provide a breakbulk facility for consolidated shipments or operate a small retrograde cargo shipment consolidation point. The company is normally assigned to either a Theater Army Area Command (TAACOM) or COSCOM and attached to a theater transportation command, transportation group, or corps support group. The company or its elements may also be attached to a terminal battalion to support terminal service company shore platoons by loading backlogged cargo into clearance transportation. The company is not normally assigned to operate at distribution points. However, the company or its elements may be committed to support supply units at distribution points if excessive cargo backlog or similar conditions create a need for temporary support.

b. Capabilities. A company can transship an average of 3,000 STONs of breakbulk cargo or 450 containers per day when container-handling equipment is available, based on a 20-hour day; this capability considers all functions incident to cargo movement. It can operate three separate terminals on a round-the-clock basis and transship 300 STON of breakbulk cargo or 200 containers a day. The unit can redocument transshipped cargo or containers, as required, and stuff or unstuff containers on a limited basis.

6. Transportation Terminal Unit

a. Mission and Assignment. Transportation terminal units (TTUs) are US Army Reserve organizations established to provide an expanded capability to direct water terminal operations. A TTU is designed to conduct water terminal operations at established commercial CONUS ports in which the equipment and manpower are available to perform the actual terminal operations. When operating terminals with the United States, TTUs operate under OPCON of USTRANSCOM and MTMC using existing terminal equipment and union labor. However, they may, if required, be deployed OCONUS to provide the combatant commander with the capability to expand the number or capabilities of ports for sustainment or redeployment purposes. When operating in support of a theater CINC, terminal equipment and labor must be made available through HNS agreements. Command arrangements for OCONUS operations will be as determined by MOU between the

supported combatant commander and USCINCTRANS. The organization of a TTU will vary depending on the terminals they are assigned to operate. As a minimum, each TTU has a commander and staff elements to supervise movement operations, contracts, cargo documentation, physical security, and the flow of information.

b. Capabilities. The capabilities of the TTUs depend on the size of the organization deployed, the sophistication of the fixed-port facility they are tasked to operate, and the availability of contract stevedores or HNS. As a result, capabilities determinations must be made on a case-by-case basis.

7. Water Transport

a. Mission and Assignment. Normally, water transport operations will be confined to a logistic support role in the theater or area of operations rear area. Army water transport units normally operate as part of a terminal service organization. There are three major types of water transport company-sized units in the Army. These are the medium-boat company (Landing Craft, Mechanized, or LCM), heavy-boat company (Landing Craft, Utility, or LCU), and medium-amphibian company (air cushion vehicle) (LACV-30). Also, several separate watercraft teams are designed to perform special marine service support in operating coastal, harbor, and inland waterway vessels.

b. Capabilities. The following lists the various water transport units available for use by the water terminal commander:

(1) Medium Boat Company. The LCM provides and operates landing craft for moving personnel and cargo. It also augments Navy craft in conducting joint amphibious operations. The medium-boat company can transport an average of 1,600 STONs of noncontainerized cargo or 240 containers daily. The company can, using all 16 LCMs, transport 3,200 troops at one time.

(2) Heavy Boat Company. The LCU provides and operates landing craft for transporting personnel, containers, vehicles, and outsize cargo in offshore discharge operations. It may be attached to the Navy in support of a joint amphibious operation. There are two classes of LCUs (the 1600 and 2000 classes).

(a) LCU-1600 Class. This class has dual screws, four rudders (including two flanking rudders), and a drive-through capability. It can carry 202 STONs of general cargo, 10 TEU containers, 1,600

square feet of vehicles, or three combat-loaded M-1 tanks.

(b) LCU-2000 Class. This class has dual screws with rudders and bow thruster and has no drive-through capability. It can carry 343 STONs of general cargo, 30 TEU, 2,200 square feet of vehicles, or four combat-loaded M-1 tanks.

(3) Medium Amphibian Company (Air-Cushion Vehicle). The LACV-30 provides lighterage between ships and shore in logistic beach operations. It can also support coastal, harbor, and inland waterway container or transport requirements. This unit is especially useful in swampy areas and in beach operations when the gradient is slight. There are 12 LACV-30s in the company. Each LACV-30 can carry two TEU or 30 STONs of cargo.

c. Watercraft. Watercraft detachments provide crews required to perform specialized functions in operating coastal and inland waterway vessels. Each detachment must be fully supported by the unit to which it is attached. These detachments are:

(1) LA Detachment. The LA detachment provides the crew for nonpropelled dry cargo barges. The barges are in various sizes, from 45.5- to 120-feet long, with capacity ranging from 22 to 636 STONs. The larger barges can carry bulk liquid or deck cargo.

(2) LB Detachment. The LB detachment operates picketboats, coastal or harbor inland boats 65 feet and smaller. Picketboats provide water transportation, water patrols, command, inspection, and general utility services in support of water terminal operations.

(3) LC Detachment. The LC detachment consists of marine engineer and deck personnel required to operate the pumps and to crew the 120-foot, non-self-propelled liquid cargo barge to transport deck or bulk-liquid cargo. The barge can transport 4,160 barrels of liquid cargo or 655 STONs of dry cargo.

(4) LD Detachment. The LD detachment has the necessary personnel to operate the 70-foot tug (small tug (ST)) rated as a 65-foot tug by the Army. Its operational missions include firefighting, shifting and towing barges, and assisting in docking and undocking large vessels.

(5) LE Detachment. The LE detachment loads and discharges heavy-lift cargo that is beyond the capability of a ship's gear. It provides crews for the 60-STON non-self-propelled floating crane and the 100-STON floating crane.

(6) Team FJ. Team FJ provides the operating capability for the 107-foot tug rated as a 100-foot large tug (LT) by the Army. It is capable of heavy tows within a harbor area or limited offshore towing between terminals, berthing, and unberthing deep-draft vessels.

(7) LI Detachment. The LI detachment provides the operating capability for the 128-foot LT. It can dock and undock vessels and conduct barge-towing operations and limited salvage services.

(8) LJ Detachment. The LJ detachment operates the logistics support vessel (LSV). It provides the capability to carry cargo and/or equipment throughout the theater or on intratheater routes not otherwise serviced by MSC. The 272-foot self-propelled vessel can carry up to 1,963 STONs of cargo along inland waterways, intracoastal, inter-island, and on open seas. The LSV will also assist in RO/RO or LOTS operations, particularly with container-handling equipment, vehicular and other oversize or overweight cargo.

(9) LH Detachment. The LH detachment provides amphibious lighterage service primarily for items of heavy, outsize, or bulky equipment. The daily capacity of LARC-60s in this detachment is 450 STONs of heavy, outsize, or bulky noncontainerized cargo, or 21 TEU.

8. Army Port Construction Companies. Port construction support companies provide technical personnel for the construction and restoration of ports, JLOTS facilities, inland waterways, and POL water terminals. Engineer teams, such as diving teams, support the construction effort.

ANNEX B

NAVY UNITS

1. Mission and Assignment. Each CHB is organized into 16 seven-man hatch teams capable of offloading two ships simultaneously when assisted by sufficient personnel. Naval Reserve Cargo Handling Battalions (NRCHB) have limited cargo documentation capabilities that can perform rudimentary documentation functions in an austere environment such as a forward logistic site. If assigned to an Army-operated water terminal, the CHB must be augmented by an appropriate number of Army Cargo Documentation Detachments to accomplish the documentation mission. CHBs operate most effectively when employed solely for ship loading or discharge operations and when each of the 16 hatch teams is augmented by seven unskilled personnel from the supported activity.

2. Capability. The specific tasks of a CHB include, but are limited to:

a. Providing command or control personnel and skilled stevedores capable of in-stream or pierside loading or discharging of commercial or MSC cargo ships associated with an amphibious assault follow-on echelon.

b. Providing shipboard heavy lift crane operators for maritime pre-positioning ships (MPS), container ships, auxiliary crane ships (T-ACS), or other specialized operations.

c. Providing loading or discharging capabilities for all classes of cargo, including munitions, in a developed or undeveloped port. This may involve expanding an established port or increasing personnel when establishing and/or operating a fixed port.

d. Providing managerial and technical personnel for augmenting an established port or operating a limited marine cargo terminal in support of ship loading or discharging operations. These functions consist of ship offload, pier operations, delivery to a transit facility on or close to the pier, and operation of a transit facility for transitting cargo lots identified by transportation control numbers (TCNs).

e. CHBs may bring a variety of equipment packages tailored to support specific missions.

(1) A Personnel and Basic Personnel Support Equipment Package provides personnel and basic personnel support equipment required to work all cargo handling scenarios. Supplemental equipment packages can add to the basic unit to meet the environmental and mission requirements of specific missions.

(2) An Expanded Core Equipment Package provides cargo-handling equipment (e.g., slings and bridles) necessary to support one CHB in mission scenarios other than the MPS. Equipment packages will be provided for CHBs whenever they conduct such operations.

(3) A Cargo Handling Civil Engineering Support Equipment (CESE) Package provides Naval Facilities Engineering Command (NAVFACENGCOM) civil engineer support equipment (e.g., trucks, trailers, etc.) necessary to support a CHB in establishing or expanding a port. This package is necessary for a battalion in ports where CESE is not locally available. (NOTE: This package provides the CESE with pier, marshaling yard, and terminal delivery operations capability only; it does NOT provide a line-haul capability.)

(4) The Cargo Handling MHE package provides the Naval Supply Systems Command (NAVSUPSYSCOM) MHE necessary to support pier and transit shed operations of a CHB establishing or augmenting a port. This equipment package is necessary for a battalion in ports where MHE is not locally available.

(5) A Container Handling Crane/Equipment Package provides NAVFACENGCOM mobile cranes, NAVSUPSYSCOM container handling forklifts, and equipment necessary to support a CHB establishing or augmenting a port. This package of equipment is necessary for battalions in ports where cranes and container-handling forklifts are not locally available or where there are insufficient lifting capacities. It should also be provided where it is desirable for CHB to offload and/or load containers from lighterage or barges and to operate a container marshaling yard on or close to the ocean terminal. This package contains a single 90-ton air-deployable mobile crane. The main use of the mobile crane is to offload lighterage or barges pierside or stack containers in the container yard. The crane is also capable of offloading, pierside, a non-self-sustaining container ship (NSSCS), provided the horizontal and/or vertical reach and extended boom weight capacity are sufficient for the particular ship and container load.

(6) The Expeditionary Tent Camp Equipment Package provides all the equipment necessary for one CHB to establish and operate an air-deployable austere expeditionary tent camp to provide berthing and meals-ready-to-eat (MRE) messing for its personnel. This package should be provided to each CHB where berthing or messing is not locally available or provided by another advanced base functional component (ABFC) unit. If a tent camp is required for more than 30 days, this component should be expanded with the Expeditionary Tent Camp Package. This package contains MHE and supplies to support an expeditionary tent camp requirement for more than 30 days. The materials and supplies are of such a quantity that they are not reasonably air-deployable.

(7) Large Fuel Packages contain sufficient fuel and POL material for support of CESE in environments either above or below temperatures of 32.5 degrees Fahrenheit.

(8) Small Fuel Packages contain sufficient fuel and POL material for support of MHE in an environment either above or below temperatures of 32.5 degrees Fahrenheit.

(9) A Communications Equipment-Limited Ocean Terminal/Port Package contains limited communications capabilities with no organic message generation, encryption, or communication equipment repair capabilities. This package is limited to base-station manpack versions, basic field telephone components, and ground communications to support a limited water terminal or port.

(10) A Cold Weather Clothing Package provides cold weather clothing to support a CHB in an extremely cold or arctic environment.

f. Tied to the Navy's concept for ship offload is the establishment of Naval Advanced Logistic Support Sites (ALSSs) and Naval Forward Logistic Sites (FLSs).

(1) ALSS are used in an overseas location as the primary theater transshipment point for fleet logistic support. ALSSs possess full capabilities for storage, consolidation, and transfer of supplies and support of forward-deployed units during major contingencies or wartime. ALSSs, which have seaport and airfield facilities in close proximity, possess the throughput capacity required to accommodate incoming intertheater and outgoing intratheater airlift and sealift. When

fully activated, ALSSs should consist of facilities and services provided by theater support personnel augmented by HNS.

(2) Overseas, FLSs with port and airfield facilities nearby provide logistic support to naval forces during major contingencies and wartime. FLSs should be located in close proximity to fleet operating areas to permit forward staging of services, throughput of high-priority cargo, and fleet maintenance and battle damage repair. FLSs are linked to ALSSs by intratheater airlift and sealift, but may also serve as transshipment points for intertheater movement of high-priority cargo fleet operating units. FLS facilities may range from being very austere to virtually like those of an ALSS.

3. Water Transport. Examples of various means of water transport that may be involved in offloading and transfer are listed below:

a. Auxiliary Crane Ship. The T-ACS is a converted containership from the Ready Reserve Force, modified by the installation of twin-boom marine cranes. The primary mission of the ship is to offload non-self-sustaining cargo or container ships moored alongside with offload operations conducted at anchor, in the stream, or in undeveloped or damaged ports.

b. Causeway Section, Powered. The causeway section, powered (CSP), is constructed with pontoons and a waterjet propulsion assembly consisting of three modules (port and starboard engines and fuel storage in the center). It can carry 35 STONs of cargo and is used to push causeway ferries. A causeway ferry consists of a CSP and one or more causeway section, nonpowered (CSNP) units. Each CSNP carries 90 STONs of cargo.

ANNEX C

MARINE UNITS

1. General. The Marine Landing Support Battalion (LSB) is organized into six separate companies to provide landing, terminal service, material handling, and air delivery support for the landing force (LF) in the amphibious operation and subsequent operations ashore.

2. Mission and Assignment. An LSB provides a nucleus of personnel and equipment to which other elements of the Marine Air-Ground Task Force (MAGTF) may be assigned to form a task-organized LF support party to provide initial combat service support to units up to Marine Expeditionary Force (MEF) size. The LSB provides the command and control structure, administrative and operational personnel, and equipment to support LF, shore party, and helicopter support team operations. It provides specialized MHE and personnel for management of passengers and breakbulk or container cargo during terminal operations at seaports, airports, railheads, and beaches. It also provides air delivery support equipment and personnel during extended operations ashore. The LSB is responsible for performing engineer tasks required for landing operations, to include austere site preparation, construction or removal of obstacles and barriers, and establishment of routes from the beach.

3. Capabilities

a. Landing Support Company. The landing support company provides landing and throughput support to the MEF and smaller MAGTFs during amphibious and helicopter borne operations requiring logistics support in excess of the supported unit's organic capabilities. The company will be reinforced with assets from beach and terminal operations company and/or landing support equipment company when special equipment is required. When augmented by elements of the naval beach group, it provides coordination of initial throughput and sustainment support for the MEF. The company provides shore party and/or helicopter support teams, as required, that are capable of preparing, marking, and controlling landing beaches or zones. The company can establish temporary multiclass supply storage sites; coordinate the unloading of supplies from landing craft, ships, and helicopters; and coordinate transportation support for the evacuation of casualties and enemy prisoners of war.

b. Beach and Terminal Operations Company. The beach and terminal operations company provides general transportation support in coordinating throughput operations of the MEF. The company provides personnel and equipment for the loading, unloading, and movement of supplies of designated ports, beaches, rail heads, air heads, cargo terminals, dumps, and depots. The company can also provide air delivery support and air freight operational capabilities.

c. Landing Support Equipment Company. The landing support equipment company provides centralized, general support, landing support, and maintenance support to facilitate and expedite throughput operations in support of the MEF. It is equipped with tactical engineering cranes, buckets, graders, forklifts, and lighting sets to facilitate throughput operations. The landing support equipment company provides MHE support to the MEF and provides specialized MHE and container handling support for the management of breakbulk or container throughput operations at ports, beaches, rail heads, air heads, and cargo terminals.

d. Headquarters and Service Company. Headquarters and service company provides the C2, administration, and command support functions for the battalion. This includes internal communications, supply, ordnance, security, and food service support for the battalion.

ANNEX D

AIR FORCE UNITS

The Air Force establishes a Water Terminal Logistic Office (WTLO) at selected water terminals in CONUS and OCONUS for processing bulk or containerized Air Force-sponsored cargo transported under cognizance of USTRANSCOM. The WTLO provides assistance to the water terminal commander for expediting and tracking Air Force-sponsored shipments and to ensure that Air Force cargo flows in accordance with the supported CINC priorities. The WTLO also resolves problem areas between the Air Force shipper and consignee; provides the terminal command disposition instructions to ensure prompt movement of Air Force cargo that is frustrated, found, or damaged; acts as liaison at the port with other Service components; and assists the terminal command for diverting cargo from surface to air.

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APPENDIX B

WATER TERMINAL PLANNING CONSIDERATIONS

This appendix identifies the terminal commander's responsibilities and lists data normally required to understand operational considerations of potential water terminals. These lists are also for use by JFCs and their staffs in planning joint water terminal operations.

1. Terminal Commander's Responsibilities. The terminal commander is normally responsible for the overall operation of the terminal, to include:

a. Water terminal planning and operations:

(1) Notification of consignees.

(2) Port clearances.

(3) Vessel scheduling.

(4) Availability of local pilots.

b. Statutory and regulatory constraints.

c. Military construction.

d. Environment and natural resources preservation.

e. Energy conservation.

f. Terminal readiness.

g. Terminal performance measurement and reporting.

h. Safety management.

i. Terminal security.

j. Terminal and warehouse operations.

k. Railcar and truck unloading and loading operations.

l. Container freight station operations (receiving, stuffing, and unstuffing).

m. Pier operations.

n. Cargo movement control and documentation.

o. Contract management.

p. Stevedores and related terminal services.

q. Performance work statements.

r. Ship stowing.

s. Ship scheduling, on and off berth.

t. Proper handling of hazardous material and cargo.

u. Crisis response and/or clean-up facilities for POL or hazardous material accident or spills.

v. Manifesting of retrograde cargo or transshipments.

2. General Water Ports Data. General information on water ports includes:

a. Map sheet number (series, sheet, edition, date).

b. Nautical chart number.

c. Grid coordinates and longitude and/or latitude.

d. Military water terminal capacity and method of estimation.

e. Dangerous or endangered marine or land animals in the area.

f. Names, titles, and addresses of port authority and agent personnel.

g. Nearest US consul.

h. Port regulations.

i. Current tariffs.

j. Frequencies, channels, and call signs of the port's harbor control.

k. Complete description of the terrain within 25 miles of the port.

l. Location of nearest towns (see community information (Para 16)), airports, and military installations.

m. Maintenance of navigational aids.

3. Specific port data includes:

a. Types of ports.

b. Lengths and locations of breakwaters.

c. Depth, length, and width in the fairway.

d. Current speed and direction in the fairway.

e. Size and depth of the turning basin.

f. Location and description of navigational aids.

g. Pilotage procedures required.

h. Location and degree of silting.

i. Size, frequency, and effectiveness of dredging operations.

j. Description of the port's dredger.

k. Description of sandbars or reefs in the area.

l. Identity of any marine plants that could inhibit movement of ships or lighterage.

m. Composition of the harbor bottom (percentage).

n. Description of approach to harbor.

4. Weather and Hydrography. Weather and hydrography information includes:

a. Types of weather conditions encountered in the area.

b. Time of year these conditions occur.

c. Prevailing wind direction per calendar quarter.

d. Per calendar quarter, percentage of time for wind speed within 1 to 6 knots, 7 to 16 knots, and over 17 knots.

e. Maximum, minimum, and average precipitation per month to the nearest tenth of an inch.

f. Maximum, minimum, and average surface air temperature per month.

g. Frequency, duration, and density of fog and dust.

h. Effects of weather on the terrain.

i. Effects of weather on sea vessel travel.

j. Effects of weather on logistical operations (offloading materials on vehicle or rail, etc.).

k. Seasonal climatic conditions that would inhibit port operations for prolonged periods (24 hours or more).

l. Type and mean range of the tide.

m. Direction and speed of the current.

n. Minimum and maximum water temperature.

o. Per calendar quarter, percentage of time that surf is within 0 to 4 feet, 4 to 6 feet, 6 to 9 feet, and over 9 feet.

p. Per calendar quarter, percentage of time that swells are within 0 to 4 feet, 4 to 6 feet, 6 to 9 feet, and over 9 feet.

q. Daylight charts.

5. Anchorages. Essential information on anchorages include:

a. Distance and true bearing from release point (RP) of all anchorages.

b. Maximum and minimum depth for each anchorage.

c. Speed and direction of the current at each anchorage.

d. Radius of each anchorage.

e. Bottom material and holding characteristic of each anchorage.

f. Exposure condition of each anchorage.

g. Offshore or nearshore obstacles, what they are, and their distance and true bearing from the port.

6. Wharves. Essential information on wharves include:

a. Types of quays and piers (e.g., wooden, concrete) located along shoreline.

b. Length and width of quays and piers along shoreline.

c. Present condition of quays and piers along shoreline.

d. Type and location of equipment on quays and piers that may be used by personnel to offload cargo.

e. Number and types of vessels that quays and piers can accommodate at one time.

f. Safe working load level of the quays and piers (capable of supporting 60-, 130-, 150-ton vehicles or equipment).

g. Water depth alongside and leading to the quays and piers.

h. Services available (water, fuel, electricity, etc.).

i. Available storage.

j. Specialized facilities available for the discharge of RO/RO vessels (e.g., ramps).

k. Height of wharves above mean water level.

l. Current use of wharves.

m. Type of fender system the terminal has on its wharves.

n. Trackage (if any), length and gauge.

o. Special considerations for handling ammunition and hazardous cargo.

7. Cranes. Essential information on cranes include:

a. Number and location of cranes.

b. Characteristics for each crane:

(1) Lift capability.

(2) Type of power.

(3) Dimensions (maximum or minimum radii, outreach beyond wharf face, and above or below wharf hoist).

(4) Speed (lifting, luffing, and revolutions).

(5) Height and width of terminal clearance.

(6) Track length and gauge.

(7) Make, model, and manufacturer.

(8) Age and condition.

(9) Emergency power availability.

(10) Certification and characteristics for handling explosive and hazardous cargo.

8. Materiel Handling Equipment. Essential information on materiel handling equipment includes:

a. Number, location, and type of MHE.

b. Characteristics for other MHE (other than cranes):

(1) Type of power.

(2) Lift capability.

(3) Dimensions.

(4) Make, model, and condition.

(5) Age.

(6) Compatibility with military equipment lifting or handling points.

(7) Certification and characteristics for handling explosive and hazardous cargo.

9. Stevedores. Essential information on stevedores includes:

a. Number and size of gangs.

b. Efficiency of each gang.

c. Working hours of gangs.

d. Availability and condition of stevedore gear and local vendor to replace or purchase damaged gear.

e. Arrangements for gangs.

f. Availability of other local, national, or third country labor.

g. HNS.

10. Watercraft. Essential information on watercraft include:

a. Number, type, and location of small craft (e.g., tug, pusher, ferry, fishing, pipe laying, barges, fire, patrol, salvage, hazardous spill control) located in or near the port.

b. Characteristics for each craft:

(1) Size and capacity.

(2) Number of crew.

(3) Berthing spaces.

(4) Types of engines.

(5) Number of engines and number of propellers.

(6) Types of generators.

(7) Number of generators.

(8) Number of kilowatts for each generator.

(9) Types and number of air compressors.

(10) Cubic feet per minute (CFM) of air compressors.

(11) Types of engine control (e.g., hydro, air).

(12) Location of engine control (wheelhouse or engine room).

(13) Normal working hours per day of crew.

(14) Telegraph engine signal, if any.

(15) Engine manufacturers (e.g., Fairbanks, Morse, Detroit Cooper-Bessemer); types of hull (e.g., modified V or round).

(16) Materials of construction (e.g., wood, steel, cement, or fiberglass).

(17) Number of rudders and types of rudder (e.g., steering or flanking).

(18) Number of propellers (e.g., single or twin).

(19) Type of radio (e.g., MFG, AM, or FM), and frequency range.

(20) Layout of the rail and road network in the terminal.

11. Storage Facilities. Essential information on storage facilities include:

a. Number and location of storage facilities.

b. Characteristics of each:

(1) Product stored.

(2) Type of storage (e.g., open, covered, or refrigerated).

(3) Capacity and/or dimensions.

(4) Floor material.

(5) Wall material.

(6) Roof material.

(7) State of repair.

(8) Special facilities.

(9) Security facilities.

(10) Map of storage facilities.

(11) Hazardous materials facilities.

12. Terminal Equipment Repair Facilities. Essential information on terminal equipment repair facilities include:

a. Location, size, and capabilities of repair facilities.

b. Type of equipment.

c. Number and ability of repairmen.

d. Availability and system of procuring repair parts.

13. Ship Repair Facilities. Essential information on ship repair facilities includes:

a. Number and type of dry dock and repair facilities.

b. Quality of work and level of repairs that can be made.

c. Capacity of dry dock(s).

d. Location, size, and use of other buildings in the terminal.

e. Method for obtaining potable and boiler water in the terminal.

f. Method for obtaining fuel, lube, and diesel oil in the port.

g. Medical personnel in port.

h. Electrical generating facilities in port or provisions for obtaining electricity from an external source.

i. Ship-handling services available in the port.

14. Lines of Communications (LOC) Availability. Essential formation on LOCs include:

a. Primary and Secondary Roads

(1) Type of primary roads (e.g., concrete, asphalt, etc.).

(2) Primary and secondary roads that allow north-south and east-west movement.

(3) Capacity of intraterminal road networks.

(4) Present condition of these roads.

(5) Bridges constructed along these roads.

(6) Bridge construction materials along these routes.

(7) Width and weight allowance of these bridges.

(8) Overpasses and tunnels located along these routes.

(9) Width and height allowances of the overpasses and tunnels.

(10) Major cities that roads enter and exit.

(11) Names, addresses, and telephone numbers of highway authorities, if any.

(12) Tolls or user fees for use of port area roads and bridges.

b. Rail

(1) Rail capacity.

(2) Type of rail line.

(3) Type of rail network.

(4) Location of rail bridges.

(5) Weight allowance of rail bridges.

(6) Location and restriction of overpasses and tunnels that pass over rail lines.

(7) Gauges.

(8) Equipment available; e.g., locomotives (steam or diesel), flatcars, and boxcars.

(9) Ownership of rail network (private or government).

(10) Address and telephone number of rail network authorities.

c. Inland Waterway

(1) Width of the waterway.

(2) Average depth, speed of the water, and shallow point.

(3) With a given cargo weight, how close to the shore will water depth allow vessels.

(4) Capacity to conduct clearance operations by inland waterway.

(5) Points at which tugs will be needed to support travel of vessel.

(6) Points along the coast that are most suitable for different types of sea and/or land operations.

(7) Types of channel markers.

(8) Points that are most suitable for mining of waterway.

(9) Effect that mining would have on ship passage.

(10) Locations at which waterways narrow into choke points.

(11) Other than choke points, locations where vessels are vulnerable to shore fire.

(12) Security that is available for vessels (underway, at anchor, or tied up).

(13) Type of hostile special operations units that can threaten vessels.

(14) Local shore security available to protect vessels once they are docked.

(15) Type and number of local watercraft available to move cargo.

(16) Maintenance capability that exists for these vessels.

(17) Docks along the waterway.

(18) Local regulations that govern inland waterway operations.

(19) Addresses and telephone numbers of the waterway authorities, if any.

15. Threat. Essential information on threat includes:

a. Enemy threat and capability in the area of operation (e.g., air; naval; ground; or nuclear, biological, and chemical (NBC)).

b. Description of local overt or covert organizations from which hostile action can be expected.

c. Availability of local assets for rear area security operations.

d. In addition to port and/or LOTS operations, other primary targets in the area (e.g., military bases, key industrial activities, political/cultural center, satellite communications (SATCOM) facilities, etc.).

e. Physical security characteristics of port area.

16. Community Information. Community information should include:

a. General

(1) Name of town(s) within a 25-mile radius.

(2) Grid coordinates and longitude and latitude of the town.

(3) Size and significance of the town.

(4) Primary means of livelihood for the town.

(5) Form of government that exists.

(6) Description of the local police and/or militia.

(7) Description of the local fire department and equipment.

(8) Local laws or customs that will impact on operations in this area.

(9) Availability of billeting.

b. Population

(1) Size of the population.

(2) Racial breakdown of the population.

(3) Religious breakdown of the population.

(4) Languages spoken.

(5) Political or activist parties that exist in the town.

(6) If population is considered friendly or hostile.

c. Labor. Names, addresses, and telephone numbers of contracting agents available with services that may be needed during operations (e.g., husbanding agents, potable or boiler water, ship repair, coastal vessels, lighterage, machinists, and skilled and unskilled labor).

d. Water

(1) Availability of potable and boiler water.

(2) Size, location, and condition of water purification or desalinization plants.

(3) Other sources of water, if any.

(4) Quantity, quality, method, and rates of water delivery.

(5) Special size connections required, if any.

(6) Water barges available, if any.

(7) Water requiring special treatment before use, if any.

e. Health Service Support

(1) Locations, size, capabilities, and standards of local hospitals and other medical treatment facilities.

(2) Availability of physicians (specialized), nurses, hospital beds, medical evacuation assets, medical, supplies, and potable water.

(3) Any local diseases that require special attention or preventive action.

(4) Overall health and sanitary standards of the town and surrounding area.

(5) Method of reimbursement for health service support.

(6) Health service support requirements if HNS is not available.

f. Electricity

(1) Location, size (kilowatts), and condition of the power station servicing the area.

(2) How power station is fueled.

(3) Location and size of transformer stations.

(4) Voltage and cycles of the electricity.

(5) Other significant sources of electricity (e.g., large generators) in the area.

g. POL

(1) Locations and size of wholesale fuel distributors in the area (including type of fuel).

(2) Location and size of POL storage areas or tanks in the area (including type of fuel).

h. Communications

(1) Address of telephone or telex office.

(2) Description of domestic telephone service in the area (e.g., type, condition, number of lines, switching equipment, and use of landlines or microwave).

(3) Description of required US military and Government communications services. Refer to Appendix G, "J-6, Communication" in Joint Pub 5-00.2, "Joint Task Force Planning Guidance and Procedures," for a comprehensive description and checklists on JTF communications planning.

17. Marshaling Yard Provisions and Considerations

a. A central control and inspection point with multiple lanes for cargo and containers entering or exiting the marshaling yard.

b. Auxiliary internal checkpoints for containers and cargo entering the yard from a beach or rail spur, or by helicopter to a landing pad within the yard.

c. A traffic circulation plan showing movement flow into, through, and out of the marshaling yard.

d. Segregation of inbound containers and cargo by size and type and, within these groupings, further segregation by priority, destination, and special handling (security, mail, hazardous cargo, etc.).

e. Segregation of retrograde cargo and containers by type and size, with empty and loaded containers further segregated.

f. Running inventory of containers by location and status within the yard.

g. Security area for breakbulk or containerized sensitive and high-dollar-value cargo.

h. External power source for refrigerated containers. (In an unimproved or bare beach LOTS environment, self-contained refrigeration units may be needed. This will mandate separate propane or diesel refueling areas.) Refrigeration maintenance must also be provided.

i. Sheltered facilities for inventory and control, documentation, and movement control elements.

j. Covered facilities for stuffing and stripping containers and coopering cargo.

k. Cleaning and/or decontamination of retrograde containers, equipment, supplies, and vehicles.

l. Minor repair of damaged containers.

m. Equipment parking.

n. Unit maintenance of equipment.

o. Messing and comfort facilities.

18. Terminal Units Operational Planning Determinations

a. Point of discharge (wharf or anchorage).

b. Piloting services (MSC coordinated).

c. Types of terminal units required.

d. Tugboat requirements (MSC-coordinated).

e. Equipment required for special or heavy lifts, and priorities of discharge, if any.

f. Arrangements for terminal clearance, including transportation.

g. Requirements for temporary holding or further segregation of cargo.

h. Security and safety requirements.

i. Estimates of hatch or vessel completion times.

j. Considerations of specific ship characteristics; e.g shore cranes may be used to load flatracks or seasheds on fast sealift ships.

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APPENDIX C

HOST NATION SUPPORT

1. Host Nation Support. Use of HNS for US forces will assist the combatant commander in accomplishing the mission while reducing the requirement for US personnel, materiel, and services. HNS applies to hostilities other than war and war, and to the peacetime operations support that contributes to the preparation for war, and conduct of exercises. Except for rear area operations, combat operations are not conducted under HNS agreements.

a. Procedures. The combatant commander will ensure that proper authority is obtained for negotiations with HN. The combatant commander and the Service component commanders will establish procedures for:

(1) Determining specific combat support (CS), combat service support (CSS), and rear operations requirements that can be met through the use of HN resources.

(2) Assessing and identifying, in conjunction with the HN, which HN assets are available and what quantities can be provided.

(3) Integrating support requirements into the overall command and control systems.

(4) Designating points of contact at each required command level to coordinate activities related to HNS in peacetime, transition, and wartime.

b. The Role of CA. CA assists and coordinates efforts to identify and acquire HNS. CA personnel in a friendly country aid civil-military cooperation by providing interface with local authorities or military forces. In peacetime, CA personnel conduct area studies and review HN agreements to assist in planning for the optimal use of HNS. Joint Pub 3-57, "Doctrine for Joint Civil Affairs," provides doctrine for joint CA.

c. HNS Planning Considerations

(1) In a theater where forces are in forward-deployed positions, the commander has extensive knowledge of HNS capabilities. The commander can analyze the mission and determine what functions and tasks can be performed by HNS elements.

(2) For contingency operations, the commander may have limited information regarding the availability of HNS. Hopefully, some degree of HNS may be expected.

d. HNS Suitability Factors. Factors in determining the suitability of using HN resources to accomplish specific missions and functions include:

(1) Capability, dependability, and willingness of the HN to provide and sustain identified resource needs.

(2) Shortfalls in US force structure, as well as areas in which US force structure requirements could be reduced by using HNS resources.

(3) Effect of HNS on the morale of US soldiers.

(4) Operational security and reliability.

(5) Capability of US forces to accept and manage HNS resources.

(6) The risk associated with HNS being available in the type and quantity agreed upon.

e. Support Agreements

(1) HNS is normally based on agreements that commit the HN to provide specific support under prescribed conditions. Agreements may occur at various levels, including nation-to-nation, between component commanders, between major commands, and at lower command levels. Peacetime support arrangements are considered viable sources of wartime HNS when authorized by some type of formal agreement. A formal agreement, although preferred, is not an absolute prerequisite for obtaining HNS.

(2) The use of HNS in contingencies requires broad planning for the various situations that may arise and the different countries that may become involved. Some nations may not sign, or are incapable of administering, support agreements with the United States. In such instances, peacetime planning for and use of local HN resources may still be required to successfully accomplish missions assigned to US forces, but this becomes a major factor when considering risk.

(3) The major uncertainty associated with contingency operations is identifying those areas in which conflicts are likely to occur. Once those areas and nations are identified, CA area studies are requested. Other

studies are available from the Department of State, Department of Defense, the Agency for International Development, and agencies such as the Defense Intelligence Agency.

(4) In contingency situations where neither planning nor agreements are concluded, CA personnel should be among the earliest arrivals in the area. They must rapidly identify the support that the HN can provide, then assist in coordinating and integrating that support into the logistics plan. Once HNS agreements have been concluded, CA personnel can continue to serve as the single point of contact between the HN activity and the supported units.

2. Types of HNS

a. Government Agencies. HN government agencies build, operate, and maintain facilities and systems such as utilities and telephone networks that may provide services in support of US requirements. Police, fire companies, and border patrols may be available to support US forces.

b. Civilian Contractors. Host-country, third-country, or US contractors located in the theater employing HN or third-country personnel may provide supplies and services such as laundry, bath, bakery, transportation, labor, and construction.

c. HN Civilians. US manpower needs range from low-skilled laborers, stevedores, truck drivers, and supply handlers to more highly skilled equipment operators, mechanics, computer operators, and managers. The HN labor pool may provide personnel having these skills.

d. Type B US Units. Type B units may be assigned to assist in performing HNS-type functions. These units are configured to conserve Service manpower by substituting non-US personnel in specified positions.

e. HN Military Units. HN military or paramilitary units support US requirements during wartime in functions such as traffic control, convoy escort, installation security, or cargo and troop transport and rear operations.

f. HN Facilities. US forces may use HN buildings or facilities for such things as hospitals, headquarters, billets, maintenance shops, or supply activities. HN facilities may be nationalized, come under HN control, or be provided by contractual agreement.

g. Selected Functions. A HN performs particular functions in a designated area or for a particular organization within national boundaries. Some examples are rail operations, convoy scheduling, air traffic control, and harbor pilot services. These services will normally operate under host government control by authority of national power acts.

h. Supplies and Equipment. Supplies and equipment needed for mission accomplishment may be acquired locally, precluding or reducing materiel shipments from the United States.

3. Employment and Supervision. The degree of C2 exercised by US forces over HNS depends on the type of support, location, tactical situation, political environment, and provisions of technical agreements. Some HNS functions may be performed by HN military personnel because of the closeness of combat operations.

4. Activities Inappropriate for HNS. Some functions and services are inappropriate for a HN to provide. Usually, the decision is based on security reasons and the need for national control. Listed below are some functions and services (not all-inclusive) identified as inappropriate for HNS. Therefore, the user country will provide these functions and services from its national assets.

a. Command and control of health service support, supply, service, maintenance, replacement, and communications.

b. Triage, treatment, and hospitalization of the sick, injured, and wounded.

c. Veterinary subsistence inspection.

d. Law and order operations (US forces).

e. Control and maintenance of nuclear and chemical ammunition.

f. US prisoner confinement operations.

g. Accountability and security of EPW retained in US custody.

h. Medical supply accountability.

i. Identification and burial of the US dead.

j. Repair of nuclear weapons delivery sites.

k. Patient administration.

5. Training. US personnel, in particular CA personnel, must be trained in the proper procedures for HNS. Additional language training may be required. US personnel should be familiar with Status of Forces Agreements and other agreements, as well as command directives regarding behavior and relationships in the host country. They should also be aware of activities and behaviors that will enhance and encourage HNS and be cautioned against those activities and behaviors that detract from a positive relationship. The CA area study is essential in developing these guidelines.

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APPENDIX D

RELATED PUBLICATIONS

1. DOD Directives

   DOD 5160.53, "Single Manager Assignment For Military Traffic, Land Transportation, and Common User Terminals."

2. Joint Publications

   a. Joint Pub 0-2, "Unified Action Armed Forces (UNAAF)."

   b. Joint Pub 1-01, "Joint Publication System (Joint Doctrine and JTTP Development Program)."

   c. Joint Pub 1-02, "DOD Dictionary of Military and Associated Terms."

   d. Joint Pub 1-03.16, "Joint Reporting Structure, Joint Operations Planning System."

   e. Joint Test Pub 3-02.2, "Joint Doctrine for Amphibious Embarkation."

   f. Joint Pub 3-10, "Doctrine for Joint Rear Area Operations."

   g. Joint Pub 3-57, "Doctrine for Joint Civil Affairs."

   h. Joint Pub 4-0, "Doctrine for Logistic Support of Joint Operations."

   i. Joint Pub 4-01, "Joint Doctrine for the Defense Transportation System."

   j. Joint Pub 4-01.1, "JTTP for Airlift Support to Joint Operations."

   k. Joint Pub 4-01.2, "JTTP for Sealift Support to Joint Operations."

   l. Joint Pub 4-01.3, "JTTP for Joint Movement Control."

   m. Joint Pub 4-01.6, "JTTP for Joint Logistics Over the Shore (JLOTS)."

   n. Joint Pub 4-03, "Joint Bulk Petroleum Doctrine."

o. Joint Pub 5-0, "Doctrine for Planning of Joint Operations."

p. Joint Pub 5-00.2, "Joint Task Force (JTF) Planning Guidance and Procedures."

q. Joint Pub 6-0, "Doctrine for Command, Control, Communications, and Computer Systems (C4) Support to Joint Operations."

3. Army Publications

a. AR 40-12/SECNAVINST 6210.2/AFR 161-4, "Medical and Agricultural Foreign and Domestic Quarantine Regulations for Vessels, Aircraft, and Other Transports of the Armed Forces."

b. FM 100-5, "Operations."

c. FM 55-10, "Movement Control in a Theater of Operations."

d. FM 55-60, "Coordinating Draft, Army Terminal Operations."

e. FM 55-50, "Army Water Transport Operations."

f. FM 101-10-1/2, "Staff Officers Field Manual, Organizational, Technical and Logistical Data Planning Factors."

4. Navy Publications

a. NWP 1, "Strategic Concepts of the Navy."

b. NWP 8, "Command and Control."

c. NWP 39, "Naval Coastal Warfare Doctrine."

d. NWP 80, "Strategic Sealift Planning and Operations Doctrine of the US Navy."

e. TAC MEMO PZ 005700-1-88/OH 7-8, "Deployment of the Assault Follow-on Echelon (AFOE)."

f. TAC MEMO PZ 0022-1-90/OH 1-5, "Maritime Pre-positioning Force (MPF) Operations."

5. CINC Publications

a. FORSCOM Regulation 55-1, "Transportation and Travel (Unit Movement Planning)."

b. MTMC Regulation 55-69, "Surface Transportation Terminal Operations."

c. MTMCTEA Report, SE 90-3d-50, "Port Operational Performance Simulator (POPS) Version 2.0, Users Manual."

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APPENDIX E

USERS EVALUATION REPORT
ON JOINT PUB 4-01.5

1. Users in the field are highly encouraged to submit comments on this pub. Please fill out the following: Users' POC, unit address, and phone (DSN) number.

_____
_____

2. Content

a. Does the pub provide a conceptual framework for the topic? _____
_____
_____

b. Is the information provided accurate? What needs to be updated?
_____
_____

c. Is the information provided useful? If not, how can it be improved? _____
_____

d. Is this pub consistent with other joint pubs? _____
_____
_____

e. Can this pub be better organized for the best understanding of the doctrine and/or JTTP? How? _____
_____
_____

3. Writing and Appearance

a. Where does the pub need some revision to make the writing clear and concise? What words would you use? _____
_____
_____

b. Are the charts and figures clear and understandable? How would you revise them? _____
_____

4. Recommended urgent change(s) (if any). _____
_____

5. Other _____
_____

6. Please fold and mail comments to the Joint Doctrine Center (additional pages may be attached if desired) or FAX to DSN 564-3990 or COMM (804) 444-3990.

(FOLD)

FROM:

JOINT DOCTRINE CENTER
BLDG R-52,
1283 CV TOWWAY STE 100
NORFOLK, VA 23511-2491

(FOLD)

APPENDIX E

USERS EVALUATION REPORT
ON JOINT PUB 4-01.5

1. Users in the field are highly encouraged to submit comments on this pub. Please fill out the following: Users' POC, unit address, and phone (DSN) number.

_____
_____

2. Content

a. Does the pub provide a conceptual framework for the topic? _____
_____
_____

b. Is the information provided accurate? What needs to be updated?
_____
_____

c. Is the information provided useful? If not, how can it be improved? _____
_____

d. Is this pub consistent with other joint pubs? _____
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_____

e. Can this pub be better organized for the best understanding of the doctrine and/or JTTP? How? _____
_____
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3. Writing and Appearance

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GLOSSARY

PART I--ABBREVIATIONS AND ACRONYMS

AABFS	amphibious assault bulk fuel system
ABFC	advanced base functional component
ALSS	advanced logistic support site
AMC	Air Mobility Command
AOR	area of responsibility
BSSG	Brigade Service Support Group
CA	civil affairs
CDI	cargo disposition instructions
CESE	Civil Engineering Support Equipment
CFM	cubic feet per minute
CHB	Cargo Handling Battalion
CINCFOR	Commander in Chief, Forces Command
COCOM	Combatant Command (command authority)
COMLOGFOR	Combat Logistics Force
CONUS	continental United States
COSCOM	Corps Support Command
CS	combat support
CSNP	causeway section, nonpowered
CSP	causeway section, powered
CSS	combat service support
DFSC	Defense Fuel Supply Center
DIA	Defense Intelligence Agency
FEU	forty-foot equivalent unit
FFTU	Forward Freight Terminal Unit
FLS	forward logistic site
GTN	Global Transportation Network
HN	host nation
HNS	host nation support
JFC	joint force commander
JLOTS	joint logistics over the shore
JMC	Joint Movement Center
JOPES	Joint Operation Planning and Execution System
LACV-30	lighter, aircushion vehicle
LARC-60	lighter, amphibious resupply cargo
LASH	lighter aboard ship
LCM	landing craft, mechanized
LCU	landing craft, utility
LOC	lines of communications

LOGMARS	logistics application of automated marking and reading symbols
LOTS	logistics over the shore
LSB	Landing Support Battalion
LSV	logistics support vessel
LT	long ton
MAGTF	Marine Air-Ground Task Force
MARAD	Maritime Administration
MCA	Movement Control Agency
MCC	Movement Control Center
MEF	Marine Expeditionary Force
MHE	Materials Handling Equipment
MILSTAMP	Military Standard Transportation and Movement Procedures
MMC	Materiel Management Center
MOU	memorandum of understanding
MP	military police
MPS	maritime pre-positioning ships
MRE	meals-ready-to-eat
MSC	Military Sealift Command
MTMC	Military Traffic Management Command
MTMCTEA	Military Traffic Management Command Transportation Engineering Agency
MTON	measurement ton
NAVCHAPGRU	Navy Cargo Handling and Port Group
NAVFACENGCOM	Naval Facilities Engineering Command
NAVSUPSYSCOM	Naval Supply Systems Command
NCA	National Command Authorities
NCHF	Naval Cargo Handling Force
NCS	naval control of shipping
NEW	net explosive weight
NSE	Naval Support Element
NSSCS	non-self-sustaining containership
OCCA	Ocean Cargo Clearance Authority
OCONUS	outside continental United States
OPCON	operational control
OPDS	Offshore Petroleum Discharge System
OPLAN	operation plan
PHIBOPS	amphibious operation
POD	port of debarkation
POE	port of embarkation
POL	petroleum, oils, and lubricants
POPS	Port Operational Performance Simulator
PSA	Port Support Activity
PSU	Port Security Unit

RO/RO	roll-on/roll-off
RP	release point
RRF	Ready Reserve force
SATCOM	satellite communications
SEABEE	sea Barge
SOFA	Status of Forces Agreement
SOP	standing operating procedure
SPOD	seaport of debarkation
SPOE	seaport of embarkation
ST	small tug
STON	short ton
TAACOM	Theater Army Area Command
T-ACS	tactical auxiliary crane ship (MSC owned)
TCC	Transportation Component Command
TCMD	Transportation Control and Movement Document
TCN	Transportation Control Number
TEU	twenty-foot equivalent unit (containers)
TPFDD	time-phased force and deployment data
TTU	transportation terminal unit
UNAAF	Unified Action Armed Forces
USCINCTRANS	US Commander in Chief, Transportation Command
USTRANSCOM	United States Transportation Command
WTLO	water terminal logistic office

area of responsibility. 1. A defined area of land in which responsibility is specifically assigned to the commander of the area for the development and maintenance of installations, control of movement and the conduct of tactical operations involving troops under his control along with parallel authority to exercise these functions. 2. In naval usage, a predefined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation. (Joint Pub 1-02)

coordinating authority. A commander or individual assigned responsibility for coordinating specific functions or activities involving forces of two or more Services or two or more forces of the same Service. The commander or individual has the authority to require consultation between the agencies involved, but does not have the authority to compel agreement. In the event that essential agreement cannot be obtained, the matter shall be referred to the appointing authority. (Joint Pub 1-02)

deployment data base. The JOPES (Joint Operation Planning and Execution System) data base containing the necessary information on forces, materiel, and filler and replacement personnel movement requirements to support execution. The data base reflects information contained in the refined time-phased force and deployment data from the deliberate planning process or developed during the various phases of the crisis action planning process, and the movement schedules or tables developed by the transportation component commands to support the deployment of required forces, personnel, and materiel. (Joint Pub 1-02)

fixed port. Water terminals with an improved network of cargo-handling facilities designed for the transfer of oceangoing freight. (Approved for inclusion in the next edition of Joint Pub 1-02)

frustrated cargo. Any shipment of supplies and/or equipment which while en route to destination is stopped prior to receipt and for which further disposition instructions must be obtained. (Joint Pub 1-02)

harbor. A restricted body of water, an anchorage, or other limited coastal water area and its mineable water approaches, from which shipping operations are projected or supported. Generally, a harbor is part of a base, in which case the harbor defense force forms a component element of the base

defense force established for the local defense of the base and its included harbor. (Joint Pub 1-02)

host nation. A nation which receives the forces and/or supplies of allied nations and/or NATO organizations to be located on, or to operate in, or to transit through its territory. (Joint Pub 1-02)

host nation support. Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, times of crisis/emergencies, or war based upon agreements mutually concluded between nations. (Joint Pub 1-02)

joint force commander. A general term applied to a commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC. (Joint Pub 1-02)

joint task force. A force composed of assigned or attached elements of the Army, the Navy or the Marine Corps, and the Air Force, or two or more of these Services, which is constituted and so designated by the Secretary of Defense or by the commander of a unified command, a specified command, or an existing joint task force. (Joint Pub 1-02)

logistics over the shore operations. 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. (Joint Pub 1-02)

Military Sealift Command. USTRANSCOM's component command responsible for designated sealift service. Also called MSC. (Approved for inclusion in the next edition of Joint Pub 1-02)

Military Traffic Management Command USTRANSCOM's component command responsible for military traffic, CONUS air and land transportation, and common-user water terminals. Also called MTMC. (Approved for inclusion in the next edition of Joint Pub 1-02)

operational control. Transferable command authority which may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in Combatant Command (command authority) and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving

authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations; normally this authority is exercised through the Service component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called OPCON. (Joint Pub 1-02)

pier. 1. A structure extending into the water approximately perpendicular to a shore or a bank and providing berthing for ships and which may also provide cargo-handling facilities. 2. A structure extending into the water approximately perpendicular to a shore or bank and providing a promenade or place for other use, as a fishing pier. 3. A support for the spans of a bridge. See also wharf. (Approved for inclusion in the next edition of Joint Pub 1-02)

port. A place at which ships may discharge or receive their cargoes. It includes any port accessible to ships on the seacoast, navigable rivers or inland waterways. The term "ports" should not be used in conjunction with air facilities which are designated as aerial ports, airports, etc. (Joint Pub 1-02)

quay. A structure of solid construction along a shore or bank which provides berthing and which generally provides cargo-handling facilities. A similar facility of open construction is called a wharf. (Approved for inclusion in the next edition of Joint Pub 1-02)

Service component command. A command consisting of the Service component commander and all those individuals, units, detachments, organizations, and installations under the command that have been assigned to the unified command. (Joint Pub 1-02)

strategic sealift. The afloat pre-positioning and ocean movement of military material in support of US and allied forces. Sealift forces include organic and commercially acquired shipping and shipping services, including chartered foreign-flag vessels. (Approved for inclusion in the next edition of Joint Pub 1-02)

supporting forces. Forces stationed in, or to be deployed to, an area of operations to provide support for the execution of an operation order. Operational command of supporting forces is not passed to the supported commander. (Joint Pub 1-02)

time-phased force and deployment data. The computer-supported data base portion of an operation plan; it contains time-phased force data, non-unit-related cargo and personnel data, and movement data for the operation plan, including:

a. In-place units.

b. Units to be deployed to support the operation plan with a priority indicating the desired sequence for their arrival at the port of debarkation.

c. Routing of forces to be deployed.

d. Movement data associated with deploying forces.

e. Estimates of non-unit-related cargo and personnel movements to be conducted concurrently with the deployment of forces.

f. Estimate of transportation requirements that must be fulfilled by common-user lift resources as well as those requirements that can be fulfilled by assigned or attached transportation resources. Also called TPFDD. (Joint Pub 1-02)

transportation component command. The three component commands of USTRANSCOM: Air Force Air Mobility Command, Navy Military Sealift Command, and Army Military Traffic Management Command. Each transportation component command remains a major command of its parent Service and continues to organize, train, and equip its forces as specified by law. Each transportation component command also continues to perform Service-unique missions. Also called TCC. (Joint Pub 1-02)

water terminal. A facility for berthing ships simultaneously at piers, quays, and/or working anchorages, normally located within sheltered coastal waters adjacent to rail, highway, air, and/or inland water transportation networks. (Approved for inclusion in the next edition of Joint Pub 1-02 and replaces Joint Pub 1-02 definitions for "alternate water terminal, secondary water terminal, and major water terminal.)

wharf. A structure built of open rather than solid construction along a shore or a bank which provides cargo-handling facilities. A similar facility of solid construction is called quay. See also pier. Approved for inclusion in the next edition of Joint Pub 1-02)